INTERNATIONAL TELECOMMUNICATION UNION

FINAL ACTS

of the World Administrative Radio Conference

Geneva, 1979

Geneva 1980

INTERNATIONAL TELECOMMUNICATION UNION

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FINAL ACTS

of the World Administrative Radio Conference (Geneva, 1979)

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FINAL ACTS
OF THE
WORLD ADMINISTRATIVE RADIO CONFERENCE, GENEVA, 1979

The Plenipotentiary Conference of the International Telecommunication Union, Malaga-Torremolinos, 1973, in its Resolution No. 28, considering that, since 1959, various world administrative radio conferences had amended the Radio Regulations and Additional Radio Regulations on specific points without having been able to harmonize their decisions because of the limited nature of their agenda, resolved that a World Administrative Radio Conference be convened in 1979 in order to revise, as necessary, those regulations and instructed the Administrative Council to make preparations for convening that Conference.

At its 30th session (1975), the Administrative Council, in its Resolution No. 768, set up a group of experts from administrations to study a possible re-arrangement of the Radio Regulations and the Additional Radio Regulations.

The "Re-Arrangement of the Radio Regulations" as proposed by the group of experts was in principle endorsed by the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977, in its Resolution No. Sat – 10 in which it urged Member countries to use that re-arranged form of the Radio Regulations and the present form of the Additional Radio Regulations as a basis for submitting proposals to the present Conference.

At its 32nd session (1977) the Administrative Council, in its Resolution No. 801, resolved that the World Administrative Radio Conference, 1979, be convened in Geneva on 24 September 1979 for a duration of ten weeks and adopted the agenda for that Conference.

The World Administrative Radio Conference, Geneva, 1979, accordingly convened, and, in conformity with its agenda and on the basis of the aforementioned "Re-Arrangement of the Radio Regulations" and of the proposals submitted to it by administrations, considered, re-arranged and partially revised as to their contents the provisions of the Radio Regulations. As a result of its work, it adopted the Radio Regulations, Geneva, 1979, the text of which is incorporated in these Final Acts as an Annex hereto.

The World Administrative Radio Conference, Geneva, 1979, authorizes the Secretary-General of the International Telecommunication Union to make the necessary final numbering of chapters, articles, sections, sub-sections, paragraphs, sub-paragraphs and marginal numbering, the final numbering of the appendices, and the consequential cross-references thereto, with regard to the Radio Regulations, Geneva, 1979, of which certified true copies shall be sent by him to the Members of the Union.

Members of the Union shall inform the Secretary-General of their approval of the Radio Regulations, Geneva, 1979, as adopted by the World Administrative Radio Conference, Geneva, 1979. The Secretary-General shall inform Members promptly regarding receipt of such notifications of approval.

The delegates of the Members of the International Telecommunication Union represented at the World Administrative Radio Conference, Geneva, 1979, having signed these Final Acts, hereby declare that, should an administration make reservations concerning the application of one or more of the provisions of the Radio Regulations, Geneva, 1979, 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 of the International Telecommunication Union represented at the World Administrative Radio Conference, Geneva, 1979, have signed in the name of their respective countries these Final Acts in a single copy which will remain in the archives of the International Telecommunication Union and of which a certified true copy will be transmitted to each member of the Union.

Done at Geneva, 6 December 1979

For the Democratic Republic of Afghanistan:

ENG. M. Z. TAHIRY
A. SATAR TOKHY
K. D. KAMRAN

For Algeria (Algerian Democratic and Popular Republic):

N. BOUHIRED
M. ALI BELHADJ
ALI HAMZA
M. HARBI
M. KADI

For the Federal Republic of Germany:

HEINRICH L. VENHAUS
K. RUDOLF BINZ

For the People's Republic of Angola:

J. G. DE MATOS

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FAISAL AHMED ZAIDAN
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MOHAMED K. EL NAHEDH
ABDULLAH M. AL-SANIE

For the Argentine Republic:

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OSVALDO MARTÍN BEUNZA

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E. R. CRAIG

For Austria:

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ERNST STEINER

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MOHAMED REDHA AMIN

For the People's Republic of Bangladesh:

A. B. M. TAHER
M. HABIBULLAH
MD. RUHUL QUDDUS
MD. SOBHAN GANI MOLLA

For Belgium:

R. TASTENOY
GEWILLIG M. R. V

For the People's Republic of Benin:

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AMOUSSOU C. EVARISTE
H. VIGNON
JULIEN LOKOSSI
ASSAVÈDO ZINSOU GILBERT

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For the Republic of Botswana:

D. P. T. DISELE
P. MAKGEKGENENE

For the Federative Republic of Brazil:

ROMULO VILLAR FURTADO
PAULO RICARDO HERMANO BALDUINO

For the People's Republic of Bulgaria:

I. I. IGNATOV

For the Republic of Burundi:

RUVUZAKINONO BERNARD

For the United Republic of Cameroon:

JEAN JIPGUEP
LT. CEL. SING JOSEPH
KAMDEM-KAMGA EMMANUEL
YANZE EMMANUEL
ESSESSE-DIKONGUE JEAN

For Canada:

GABRIEL I. WARREN
EDWARD D. DUCHARME

For the Republic of Cape Verde:

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BENCHIMOL DE SOUSA LOBO
HERMANO MARCIANO ALMEIDA

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M. MBAYE

For Chile:

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S. ANGELLOTTI C.
H. HERNANDEZ L.
E. CLAUDE F.

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LIU YUAN
J. QIAN
ZHANG CHENG
HE DAZHONG

For the Republic of Cyprus:

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A. MICHAELIDES

For the Vatican City State:

SABINO MAFFEO
GIUDICI PIER VINCENZO
PACIFICI COSTANTINO

For the Republic of Colombia:

HECTOR CHARRY SAMPER
O. GALLO SUAREZ
ALFREDO REY CÓRDOBA
G. PRADO BRAVO
R. TARAZONA ALVARADO
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H. E. RODRIGUEZ VEGA
G. RODRIGUEZ BARATO
J. ACOSTA DURAN
G. MESIAS BENAVIDES
JUAN BARRERO CUERVO

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A. ONDONGO-KOGO

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For Costa Rica:

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For the Republic of the Ivory Coast:

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BANCOULI YAPI
NOGBOU CHRISTOPHE
AKA BONNY LÉON
YAO BLÉ GASTON
TIEMELE KOUANDÉ CHARLES
GNONSOA KOMOANGNAN JEAN
KOUADIO KOFFI THÉODORE
YAO KOUAKOU JEAN-BAPTISTE

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SALVADOR GUTIERREZ
CARLOS MARTINEZ

For Denmark:

BØRGE NIELSEN
P. V. LARSEN
ARNE H. LINDBLAD
H. N. ESKESEN
J. A. HEEGAARD

For the Arab Republic of Egypt:

H. S. ABOU ALY
ALY A. ABU-KANDEEL
IBRAHIM HASSAN KHATTAB
ABD EL RAHIM

For the Republic of El Salvador:

R. E. SANTOS MENDEZ
O. E. RODRIGUEZ TURCIOS
S. VÁSQUEZ GONZÁLEZ
J. A. PEÑATE SALAZAR

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MOHAMED REDHA AMIN

For Ecuador:

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MARCELO LASSO G.
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V. QUINTAS
F. MOLINA-NEGRO
N. REY-STOLLE
S. AGUADO BARBERO

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SAMUEL E. PROBST

For Ethiopia:

GIRMAW I.
G. ABEBE
G. ABAI

For Fiji:

E. NAQOVA
P. SINGH

For Finland:

K. TERÄSVUO
T. I. HAHKIO
J. K. KARJALAINEN

For France:

P. DUMAS
P. BASSOLE
M. THUÉ

For the Gabon Republic:

HELLA-ONDO
NTOUGOU GABRIEL
N'KOGHE N'DONG L.

For Ghana:

K. A. BUAGBE
J. B. BUAH

For Greece:

A. CHORAFAS
G. ANTONIOU
C. HAGER
A. CASMAS
E. NICOLAIDIS
N. BENMAYOR

For the Republic of Guatemala:

R. LEMUS
J. O. VÁSQUEZ
J. ALVAREZ
J. C. RECINOS BARRO

For the Revolutionary People's Republic of Guinea:

LINSENI BANGOURA
MAURICE SAADI
SIDIKI TOURE
MAMADOUBA KEITA
MAMADOU SALIOU DIALLO

For Guyana:

J. L. PHILADELPHIA
R. E. CASE
BARTON SCOTLAND

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ANTONIO RIMPEL
FRITZ JOASSIN

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YOUSOUF KABA
P. CLAVER SONGRÉ

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HORN DEZSÖ

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R. G. DEODHAR
N. N. KHANNA
O. P. KHUSHU
P. R. NARASIMHAN
P. N. NATARAJAN
DR. B. S. RAO
DR. M. K. RAO
DR. C. K. SANE
S. SINGH
BRIG SURJIT SINGH

For the Republic of Indonesia:

R. WIKANTO
P. A. MARTONO

For the Islamic Republic of Iran:

NOUREDDIN MADANI

For the Republic of Iraq:

DR. KHIDHIR ALIAS BUNI
SULMAN ISMAIL ISSA
A. M. H. AL-SHAHWANI
ABDUL-WAHID AL-SAAD
DR. HAFID TAHA ALHAFID
BASSIM K. MOHAMMED ALBAGHDAD
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A. AL-RAHMANI
DHAFER ABDUL HAMEED
ZUHAIR AL YAWER

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T. É. Ó DÁLAIGH
D. A. VICTOR-BYRNE

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JÓN SKÚLASON

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J. NITSAN

For Italy:

A. PETTI

For Jamaica:

K. G. ANTHONY HILL
F. A. L. SUBARAN
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P. D. CROSS
V. E. BETTON

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S. TANAKA

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ABU SHAM YOUSEF HILMI

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OKUNDI PHILIP OKOTH
ODUNDO I. N.
AMIRA CHARLES MBAGAYA
MALUMBE STANLEY AKOLO
ARAP CHEMAI S. K.
THIONG'O KAMAU J. P.
NGOKONYO FRANCIS W.
JALING H. V. O.
KIARIE SAMUEL NGIGI
KARIITHI DUNCAN NGUNJIRI
KILONZO WILLIAM MUSAU
CHALLO STEPHEN M.

For the State of Kuwait:

A. M. AL-SABEJ
A. R. AL-HUMAIDAH
SALEH AL-ANBU'E
ALI Z. AL-DAHMALY
ABDULLAH ERHAMAH

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F. M. RAMAKOAE
P. L. MOEPI
L. LETELE
T. KHABELE

For Lebanon:

MAURICE HABIB GHAZAL
ELIAS EMILE EID
FOUAD SEMAAN IBRAHIM

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SAMUEL H. BUTLER SR.
SEWELL T. BREWER
GEORGE B. COOPER
H. WALCOTT BENJAMIN

For Libya
(Socialist People's Libyan Arab Jamahiriya):

MOHAMED SALEH ALSABEY

For the Principality of Liechtenstein:

H. BLASER
H. A. KIEFFER

For Luxembourg:

DONDELINGER CHARLES

For the Democratic Republic of Madagascar:

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L. RAKOTONDRAINIBE
RANDRIANJAFISOLO A.
RAKOTOARIVELO BENJAMIN
RASAMIMANANA VICTORIEN
RAZAINALITERA EMMA CLAUDINE

For Malaysia:

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K. P. RAMANATHAN MENON
D. S. VARIYAN
TENGKU ISMAIL MAHMUD

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B. COULIBALY

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CHIEF SUPT. OF POLICE M. S. A. WHYTE
WARRANT OFFICER O. B. AJAYI
C. O. AWANI

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L. GRIMSTVEIT
ARNE BØE
THORMOD BØE

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NASSIR ISSA AL-KINDY
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HASAN MURTAZA KHAN SHIRWANI

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C. K. L. OKOT
P. SSEGGUJJA

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IRFAN ULLAH
MOHAMMAD ZUBAIR

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EVERTIUS B. W. ROMNEY
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R. S. HAMLETT
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S. KULUPI

For the Republic of Paraguay:

MIGUEL HORACIO GINI E.
SABINO ERNESTO MONTANARO

For the Kingdom of the Netherlands:

B. J. BAKKER
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K. KOZŁOWSKI

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DOMINGOS PIRES FRANCO
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JOÃO MANUEL ORTIGÃO DE MELO SAMPAIO
VITO RIBEIRO DE OLIVEIRA
FREDERICO JOSÉ DE FIGUEIREDO SERRA

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AHMAD M. NAFFAKH
ABDUL HALIM SKATI

For the German Democratic Republic:

DR. CALOV

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PAK YONG-CHAH

For the Ukrainian Soviet Socialist Republic:

V. A. SAVANTSHUK

For the Socialist Republic of Roumania:

G. AIRINEI
I. PETRARU
A. DRĂGHICI
A. CHIRICĂ

For the United Kingdom of Great Britain and Northern Ireland:

J. L. BANTOCK
D. E. BAPTISTE
W. H. BELLCHAMBERS
M. P. DAVIES

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GATABAZI HAKIZUMWAMI LIEVIN
HABIYAMBERE ZACHARIE
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ENG. AHMED MOHAMED ADEN

For the Democratic Republic of the Sudan:

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For the Democratic Socialist Republic of Sri Lanka:

L. H. R. WIJETUNGA
A. MANICCAVASAGAR
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E. SCHWARZ

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ROGATI ANAEL KAYANI
S. ODUNGA
MARTAN NGALOMBA

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HADJERO BARKAYE

For the Czechoslovak Socialist Republic:

J. JÍRA

For Thailand:

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P. SAKORN
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SUWATT JITHAVECH
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MAJOR SUWACHIT PICHITKUL
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ANDJO TCHAMDJA
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CARLOS J. MARTINEZ
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For the People's Democratic Republic of Yemen:

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OMER ABDULLA YAFAI

For the Socialist Federal Republic of Yugoslavia:

AVDO ZVONIĆ
LJUBOMIR DULOVIĆ

For the Republic of Zaire:

NUMBI MUYUMBA

For the Republic of Zambia:

S. W. MUNTHALI
C. F. MUTALE

ANNEX

- **RADIO REGULATIONS**

- **APPENDICES TO THE RADIO REGULATIONS**

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THE RADIO REGULATIONS

ADD

PREAMBLE

ADD **3000** 1 The application of the provisions of these Regulations by the permanent organs of the International Telecommunication Union does not imply the expression of any opinion whatsoever on the part of the Union concerning the sovereignty or the legal status of any country, territory or geographical area.

PART A

NI

CHAPTER I

NOC

Terminology

N1/1

ARTICLE 1

NOC

Terms and Definitions

MOD

Introduction

MOD **3001** 2
1 For the purposes of these Regulations, the following terms shall have the meanings defined below. These terms and definitions do not, however, necessarily apply for other purposes. Definitions identical to those contained in the International Telecommunication Convention (Malaga-Torremolinos, 1973) are marked "(CONV.)".

Note: If in the text of a definition below, a term is printed in italics, this means that the term itself is defined in this Article.

NOC

Section I. General Terms

ADD **3001A** 3 1.1 *Administration:* Any governmental department or service responsible for discharging the obligations undertaken in the Convention of the International Telecommunication Union and the Regulations (CONV.).

MOD **3002** 4
2 1.2 *Telecommunication:* Any transmission, *emission* or reception of signs, signals, writing, images and sounds or intelligence of any nature by wire, *radio*, optical or other electromagnetic systems (CONV.).

NOC **3006** 8 **5** 1.3 *Radio:* A general term applied to the use of *radio waves* (CONV.).

MOD **3005** 7 **6** 1.4 *Radio Waves* or *Hertzian Waves:* Electromagnetic waves of frequencies arbitrarily lower than 3 000 GHz, propagated in space without artificial guide.

NOC **3004** 9 **7** 1.5 *Radiocommunication: Telecommunication* by means of *radio waves* (CONV.).

NOC **3025** 21D **8** 1.6 *Terrestrial Radiocommunication:* Any *radiocommunication* other than *space radiocommunication* or *radio astronomy.*

MOD **3024** 21C **9** 1.7 *Space Radiocommunication:* Any *radiocommunication* involving the use of one or more *space stations* or the use of one or more *reflecting satellites* or other objects in space.

MOD **3026** 45 **10** 1.8 *Radiodetermination:* The determination of the position, velocity and/or other characteristics of an object, or the obtaining of information relating to these parameters, by means of the propagation properties of *radio waves.*

NOC **3027** 48 **11** 1.9 *Radionavigation: Radiodetermination* used for the purposes of navigation, including obstruction warning.

NOC **3028** 54 **12** 1.10 *Radiolocation: Radiodetermination* used for purposes other than those of *radionavigation.*

NOC **3068** 66 **13** 1.11 *Radio Direction-Finding: Radiodetermination* using the reception of *radio waves* for the purpose of determining the direction of a *station* or object.

NOC **3120** 74 **14** 1.12 *Radio Astronomy:* Astronomy based on the reception of *radio waves* of cosmic origin.

ADD **3120A** **15** 1.13 *Coordinated Universal Time (UTC):* Time scale, based on the second (SI), as defined and recommended by the CCIR [1], and maintained by the International Time Bureau (BIH).

For most practical purposes associated with the Radio Regulations, UTC is equivalent to mean solar time at the prime meridian (0° longitude), formerly expressed in GMT.

ADD **3023A** **16** 1.14 *Industrial, Scientific and Medical (ISM) Applications* (of radio frequency energy): Operation of equipment or appliances designed to generate and use locally radiofrequency energy for industrial, scientific, medical, domestic or similar purposes, excluding applications in the field of *telecommunications.*

ADD **3120A.1** **15.1** [1] The full definition is contained in CCIR Recommendation 460-2.

MOD

Section II. Specific Terms Related to Frequency Management

ADD **3023B** **17** 2.1 *Allocation* (of a frequency band): Entry in the Table of Frequency Allocations of a given frequency band for the purpose of its use by one or more terrestrial or space *radiocommunication services* or the *radio astronomy service* under specified conditions. This term shall also be applied to the frequency band concerned.

ADD **3023C** **18** 2.2 *Allotment* (of a radio frequency or radio frequency channel): Entry of a designated frequency channel in an agreed plan, adopted by a competent conference, for use by one or more administrations for a terrestrial or space *radiocommunication service* in one or more identified countries or geographical areas and under specified conditions.

ADD **3023D** **19** 2.3 *Assignment* (of a radio frequency or radio frequency channel): Authorization given by an administration for a radio *station* to use a radio frequency or radio frequency channel under specified conditions.

MOD

Section III. Radio Services

ADD **3023E** **20** 3.1 *Radiocommunication Service:* A service as defined in this Section involving the transmission, *emission* and/or reception of *radio waves* for specific *telecommunication* purposes.

In these Regulations, unless otherwise stated, any radiocommunication service relates to *terrestrial radiocommunication.*

(MOD) **3036** **21** 3.2 *Fixed Service:* A *radiocommunication service* between specified fixed points.
22

MOD **3102** **22** 3.3 *Fixed-Satellite Service:* A *radiocommunication service* between *earth stations* at specified fixed points when one or more *satellites* are used; in some cases this service includes satellite-to-satellite links, which may also be effected in the *inter-satellite service*; the fixed-satellite service may also include *feeder links* for other *space radiocommunication* services.
84AG

MOD **3038** **23** 3.4 *Aeronautical Fixed Service:* A *radiocommunication service* between specified fixed points provided primarily for the safety of air navigation and for the regular, efficient and economical operation of air transport.
24

NOC **3101** **24** 3.5 *Inter-Satellite Service:* A *radiocommunication service* providing links between artificial earth *satellites.*
84ATF

(MOD) **3100** **25** 3.6 *Space Operation Service:* A *radiocommunication service* concerned exclusively with the operation of *spacecraft,* in particular *space tracking, space telemetry* and *space telecommand.*
84ATE

These functions will normally be provided within the service in which the *space station* is operating.

(MOD) **3072** 30 **26** 3.7 *Mobile Service:* A *radiocommunication service* between *mobile* and *land stations*, or between *mobile stations* (CONV.).

MOD **3115** 84AGA **27** 3.8 *Mobile-Satellite Service:* A *radiocommunication service:*

– between *mobile earth stations* and one or more *space stations*, or between *space stations* used by this service; or

– between *mobile earth stations* by means of one or more *space stations.*

This service may also include *feeder links* necessary for its operation.

NOC **3087** 42 **28** 3.9 *Land Mobile Service:* A *mobile service* between *base stations* and *land mobile stations*, or between *land mobile stations.*

NOC **3119** 84AGD **29** 3.10 *Land Mobile-Satellite Service:* A *mobile-satellite service* in which *mobile earth stations* are located on land.

MOD **3079** 36 **30** 3.11 *Maritime Mobile Service:* A *mobile service* between *coast stations* and *ship stations*, or between *ship stations*, or between associated *on-board communication stations*; *survival craft stations* and *emergency position-indicating radiobeacon stations* may also participate in this service.

(MOD) **3117** 84AGC **31** 3.12 *Maritime Mobile-Satellite Service:* A *mobile-satellite service* in which *mobile earth stations* are located on board ships; *survival craft stations* and *emergency position-indicating radiobeacon stations* may also participate in this service.

NOC **3084** 37 **32** 3.13 *Port Operations Service:* A *maritime mobile service* in or near a port, between *coast stations* and *ship stations*, or between *ship stations*, in which messages are restricted to those relating to the operational handling, the movement and the safety of ships and, in emergency, to the safety of persons.

Messages which are of a *public correspondence* nature shall be excluded from this service.

(MOD) **3086** 37A **33** 3.14 *Ship Movement Service:* A *safety service* in the *maritime mobile service* other than a *port operations service*, between *coast stations* and *ship stations*, or between *ship stations*, in which messages are restricted to those relating to the movement of ships.

Messages which are of a *public correspondence* nature shall be excluded from this service.

MOD **3076** 33 **34** 3.15 *Aeronautical Mobile Service:* A *mobile service* between *aeronautical stations* and *aircraft stations*, or between *aircraft stations*, in which *survival craft stations* may participate; *emergency position-indicating radiobeacon stations* may also participate in this service on designated distress and emergency frequencies.

(MOD) **3116** 84AGB **35** 3.16 *Aeronautical Mobile-Satellite Service:* A *mobile-satellite service* in which *mobile earth stations* are located on board aircraft; *survival craft stations* and *emergency position-indicating radiobeacon stations* may also participate in this service.

NOC **3040** **36** 3.17 *Broadcasting Service:* A *radiocommunication service* in which the transmissions are intended for direct reception by the general public. This service may include sound transmissions, *television* transmissions or other types of transmission (CONV.).
28

(MOD) **3103** **37** 3.18 *Broadcasting-Satellite Service:* A *radiocommunication service* in which signals transmitted or retransmitted by *space stations* are intended for direct reception by the general public.
84AP

In the broadcasting-satellite service, the term "direct reception" shall encompass both *individual reception* and *community reception.*

(MOD) **3049** **38** 3.19 *Radiodetermination Service:* A *radiocommunication service* for the purpose of *radiodetermination.*
46

MOD **3111** **39** 3.20 *Radiodetermination-Satellite Service:* A *radiocommunication service* for the purpose of *radiodetermination* involving the use of one or more *space stations.*
84APC

(MOD) **3051** **40** 3.21 *Radionavigation Service:* A *radiodetermination service* for the purpose of *radionavigation.*
49

MOD **3112** **41** 3.22 *Radionavigation-Satellite Service:* A *radiodetermination-satellite service* used for the purpose of *radionavigation.*
84AQ

This service may also include *feeder links* necessary for its operation.

MOD **3055** **42** 3.23 *Maritime Radionavigation Service:* A *radionavigation service* intended for the benefit and for the safe operation of ships.
53

MOD **3114** **43** 3.24 *Maritime Radionavigation-Satellite Service:* A *radionavigation-satellite service* in which *earth stations* are located on board ships.
84AQB

MOD **3054** **44** 3.25 *Aeronautical Radionavigation Service:* A *radionavigation service* intended for the benefit and for the safe operation of aircraft.
52

MOD **3113** **45** 3.26 *Aeronautical Radionavigation-Satellite Service:* A *radionavigation-satellite service* in which *earth stations* are located on board aircraft.
84AQA

(MOD) **3056** **46** 3.27 *Radiolocation Service:* A *radiodetermination service* for the purpose of *radiolocation.*
55

NOC **3042** **47** 3.28 *Meteorological Aids Service:* A *radiocommunication service* used for meteorological, including hydrological, observations and exploration.
76

MOD **3106** **48** 3.29 *Earth Exploration-Satellite Service:* A *radiocommunication service* between *earth stations* and one or more *space stations*, which may include links between *space stations*, in which:
84ASA

– information relating to the characteristics of the Earth and its natural phenomena is obtained from *active sensors* or *passive sensors* on earth *satellites*;

– similar information is collected from airborne or earth-based platforms;

– such information may be distributed to *earth stations* within the system concerned;

– platform interrogation may be included.

This service may also include *feeder links* necessary for its operation.

NOC **3107** **49** 3.30 *Meterological-Satellite Service:* An *earth exploration-satellite service* for
84AT meteorological purposes.

MOD **3046** **50** 3.31 *Standard Frequency and Time Signal Service:* A *radiocommunication*
80 *service* for scientific, technical and other purposes, providing the transmission of specified frequencies, time signals, or both, of stated high precision, intended for general reception.

MOD **3109** **51** 3.32 *Standard Frequency and Time Signal-Satellite Service:* A *radiocommu-*
84ATB *nication service* using *space stations* on earth *satellites* for the same purposes as those of the *standard frequency and time signal service.*

This service may also include *feeder links* necessary for its operation.

NOC **3099** **52** 3.33 *Space Research Service:* A *radiocommunication service* in which *space-*
84ATD *craft* or other objects in space are used for scientific or technological research purposes.

MOD **3044** **53** 3.34 *Amateur Service:* A *radiocommunication service* for the purpose of
78 self-training, intercommunication and technical investigations carried out by amateurs, that is, by duly authorized persons interested in radio technique solely with a personal aim and without pecuniary interest.

NOC **3108** **54** 3.35 *Amateur-Satellite Service:* A *radiocommunication service* using *space*
84ATA *stations* on earth *satellites* for the same purposes as those of the *amateur service.*

NOC **3121** **55** 3.36 *Radio Astronomy Service:* A service involving the use of *radio*
75 *astronomy.*

MOD **3029** **56** 3.37 *Safety Service:* Any *radiocommunication service* used permanently or
69 temporarily for the safeguarding of human life and property (CONV.).

(MOD) **3030** **57** 3.38 *Special Service:* A *radiocommunication service,* not otherwise defined in
84 this Section, carried on exclusively for specific needs of general utility, and not open to *public correspondence.*

MOD

Section IV. Radio Stations and Systems

NOC **3031** **58** 4.1 *Station:* One or more transmitters or receivers or a combination of
21 transmitters and receivers, including the accessory equipment, necessary at one location for carrying on a *radiocommunication service,* or the *radio astronomy service.*

Each station shall be classified by the service in which it operates permanently or temporarily.

MOD **3034** 21E **59** 4.2 *Terrestrial Station:* A *station* effecting *terrestrial radiocommunication.*

In these Regulations, unless otherwise stated, any *station* is a terrestrial station.

MOD **3033** 21B **60** 4.3 *Earth Station:* A *station* located either on the Earth's surface or within the major portion of the Earth's atmosphere and intended for communication:

– with one or more *space stations*; or

– with one or more *stations* of the same kind by means of one or more reflecting *satellites* or other objects in space.

NOC **3032** 21A **61** 4.4 *Space Station:* A *station* located on an object which is beyond, is intended to go beyond, or has been beyond, the major portion of the Earth's atmosphere.

(MOD) **3075** 41 **62** 4.5 *Survival Craft Station:* A *mobile station* in the *maritime mobile service* or the *aeronautical mobile service* intended solely for survival purposes and located on any lifeboat, life-raft or other survival equipment.

NOC **3037** 23 **63** 4.6 *Fixed Station:* A *station* in the *fixed service.*

NOC **3039** 25 **64** 4.7 *Aeronautical Fixed Station:* A *station* in the *aeronautical fixed service.*

NOC **3074** 32 **65** 4.8 *Mobile Station:* A *station* in the *mobile service* intended to be used while in motion or during halts at unspecified points.

ADD **3115A** **66** 4.9 *Mobile Earth Station:* An *earth station* in the *mobile-satellite service* intended to be used while in motion or during halts at unspecified points.

NOC **3073** 31 **67** 4.10 *Land Station:* A *station* in the *mobile service* not intended to be used while in motion.

MOD **3088** 43 **68** 4.11 *Base Station:* A *land station* in the *land mobile service.*

NOC **3089** 44 **69** 4.12 *Land Mobile Station:* A *mobile station* in the *land mobile service* capable of surface movement within the geographical limits of a country or continent.

NOC **3080** 38 **70** 4.13 *Coast Station:* A *land station* in the *maritime mobile service.*

ADD **3118A** **71** 4.14 *Coast Earth Station:* An *earth station* in the *fixed-satellite service* or, in some cases, in the *maritime mobile-satellite service*, located at a specified fixed point on land to provide a *feeder link* for the *maritime mobile-satellite service.*

(MOD) **3081** 39 **72** 4.15 *Ship Station:* A *mobile station* in the *maritime mobile service* located on board a vessel which is not permanently moored, other than a *survival craft station.*

NOC **3118** **73** 4.16 *Ship Earth Station:* A *mobile earth station* in the *maritime mobile-satellite service* located on board ship.
84AGCA

NOC **3082** **74** 4.17 *On-Board Communication Station:* A low-powered *mobile station* in the *maritime mobile service* intended for use for internal communications on board a ship, or between a ship and its lifeboats and life-rafts during lifeboat drills or operations, or for communication within a group of vessels being towed or pushed, as well as for line handling and mooring instructions.
39A

NOC **3085** **75** 4.18 *Port Station:* A *coast station* in the *port operations service.*
38A

MOD **3077** **76** 4.19 *Aeronautical Station:* A *land station* in the *aeronautical mobile service.*
34

In certain instances, an aeronautical station may be located, for example, on board ship or on a platform at sea.

ADD **3077A** **77** 4.20 *Aeronautical Earth Station:* An *earth station* in the *fixed-satellite service*, or, in some cases, in the *aeronautical mobile-satellite service*, located at a specified fixed point on land to provide a *feeder link* for the *aeronautical mobile-satellite service.*

MOD **3078** **78** 4.21 *Aircraft Station:* A *mobile station* in the *aeronautical mobile service*, other than a *survival craft station*, located on board an aircraft.
35

ADD **3116A** **79** 4.22 *Aircraft Earth Station:* A *mobile earth station* in the *aeronautical mobile-satellite service* located on board an aircraft.

NOC **3041** **80** 4.23 *Broadcasting Station:* A *station* in the *broadcasting service.*
29

NOC **3050** **81** 4.24 *Radiodetermination Station:* A *station* in the *radiodetermination service.*
47

NOC **3053** **82** 4.25 *Radionavigation Mobile Station:* A *station* in the *radionavigation service* intended to be used while in motion or during halts at unspecified points.
51

NOC **3052** **83** 4.26 *Radionavigation Land Station:* A *station* in the *radionavigation service* not intended to be used while in motion.
50

NOC **3058** **84** 4.27 *Radiolocation Mobile Station:* A *station* in the *radiolocation service* intended to be used while in motion or during halts at unspecified points.
57

NOC **3057** **85** 4.28 *Radiolocation Land Station:* A *station* in the *radiolocation service* not intended to be used while in motion.
56

NOC **3069** **86** 4.29 *Radio Direction-Finding Station:* A *radiodetermination station* using *radio direction-finding.*
67

NOC **3070** **87** 4.30 *Radiobeacon Station:* A *station* in the *radionavigation service* the *emissions* of which are intended to enable a *mobile station* to determine its bearing or direction in relation to the radiobeacon station.
68

NOC 3071 68A **88** 4.31 *Emergency Position-Indicating Radiobeacon Station:* A *station* in the *mobile service* the *emissions* of which are intended to facilitate search and rescue operations.

MOD 3047 81 **89** 4.32 *Standard Frequency and Time Signal Station:* A *station* in the *standard frequency and time signal service.*

NOC 3045 79 **90** 4.33 *Amateur Station:* A *station* in the *amateur service.*

NOC 3122 75A **91** 4.34 *Radio Astronomy Station:* A *station* in the *radio astronomy service.*

NOC 3035 83 **92** 4.35 *Experimental Station:* A *station* utilizing *radio waves* in experiments with a view to the development of science or technique.

This definition does not include *amateur stations.*

NOC 3083 40 **93** 4.36 *Ship's Emergency Transmitter:* A ship's transmitter to be used exclusively on a distress frequency for distress, urgency or safety purposes.

NOC 3059 58 **94** 4.37 *Radar:* A *radiodetermination* system based on the comparison of reference signals with radio signals reflected, or retransmitted, from the position to be determined.

NOC 3060 59 **95** 4.38 *Primary Radar:* A *radiodetermination* system based on the comparison of reference signals with radio signals reflected from the position to be determined.

NOC 3061 60 **96** 4.39 *Secondary Radar:* A *radiodetermination* system based on the comparison of reference signals with radio signals retransmitted from the position to be determined.

MOD 3062 60A **97** 4.40 *Radar Beacon (racon):* A transmitter-receiver associated with a fixed navigational mark which, when triggered by a *radar,* automatically returns a distinctive signal which can appear on the display of the triggering *radar,* providing range, bearing and identification information.

NOC 3063 61 **98** 4.41 *Instrument Landing System (ILS):* A *radionavigation* system which provides aircraft with horizontal and vertical guidance just before and during landing and, at certain fixed points, indicates the distance to the reference point of landing.

NOC 3064 62 **99** 4.42 *Instrument Landing System Localizer:* A system of horizontal guidance embodied in the *instrument landing system* which indicates the horizontal deviation of the aircraft from its optimum path of descent along the axis of the runway.

NOC 3065 63 **100** 4.43 *Instrument Landing System Glide Path:* A system of vertical guidance embodied in the *instrument landing system* which indicates the vertical deviation of the aircraft from its optimum path of descent.

NOC 3066 64 **101** 4.44 *Marker Beacon:* A transmitter in the *aeronautical radionavigation service* which radiates vertically a distinctive pattern for providing position information to aircraft.

MOD **3067** **102** 4.45 *Radio Altimeter: Radionavigation* equipment, on board an aircraft or *spacecraft,* used to determine the height of the aircraft or the *spacecraft* above the Earth's surface or another surface.
65

NOC **3043** **103** 4.46 *Radiosonde:* An automatic radio transmitter in the *meteorological aids service* usually carried on an aircraft, free balloon, kite or parachute, and which transmits meteorological data.
77

(MOD) **3090** **104** 4.47 *Space System:* Any group of cooperating *earth stations* and/or *space stations* employing *space radiocommunication* for specific purposes.
84AF

NOC **3091** **105** 4.48 *Satellite System:* A *space system* using one or more artificial earth *satellites.*
84AFA

NOC **3092** **106** 4.49 *Satellite Network:* A *satellite system* or a part of a *satellite system,* consisting of only one *satellite* and the cooperating *earth stations.*
84AFB

MOD **3093** **107** 4.50 *Satellite Link:* A radio link between a transmitting *earth station* and a receiving *earth station* through one *satellite.*
84AFC

A satellite link comprises one up-link and one down-link.

MOD **3094** **108** 4.51 *Multi-Satellite Link:* A radio link between a transmitting *earth station* and a receiving *earth station* through two or more *satellites,* without any intermediate *earth station.*
84AFD

A multi-satellite link comprises one up-link, one or more satellite-to-satellite links and one down-link.

ADD **3094A** **109** 4.52 *Feeder Link:* A radio link from an *earth station* at a specified fixed point to a *space station,* or vice versa, conveying information for a *space radiocommunication service* other than for the *fixed-satellite service.*

MOD

Section V. Operational Terms

ADD **3094B** **110** 5.1 *Public Correspondence:* Any *telecommunication* which the offices and *stations* must, by reason of their being at the disposal of the public, accept for transmission (CONV.).

MOD **3007** **111** 5.2 *Telegraphy**: A form of *telecommunication* which is concerned in any process providing transmission and reproduction at a distance of documentary matter, such as written or printed matter or fixed images, or the reproduction at a distance of any kind of information in such a form. For the purposes of the Radio Regulations, unless otherwise specified therein, telegraphy shall mean a form of *telecommunication* for the transmission of written matter by the use of a signal code.
10

* See Resolution **68**.

MOD **3010** **112** 5.3 *Telegram* *: Written matter intended to be transmitted by *telegraphy* for
13 delivery to the addressee. This term also includes *radiotelegrams* unless otherwise specified (CONV.).

In this definition the term *telegraphy* has the same general meaning as defined in the Convention.

MOD **3011** **113** 5.4 *Radiotelegram:* A *telegram*, originating in or intended for a *mobile*
14 *station* or a *mobile earth station* transmitted on all or part of its route over the *radiocommunication* channels of the *mobile service* or of the *mobile-satellite service.*

MOD **3012** **114** 5.5 *Radiotelex Call:* A telex call, originating in or intended for a *mobile*
14A *station* or a *mobile earth station*, transmitted on all or part of its route over the *radiocommunication* channels of the *mobile service* or the *mobile-satellite service.*

MOD **3008** **115** 5.6 *Frequency-Shift Telegraphy: Telegraphy* by frequency modulation in
11 which the telegraph signal shifts the frequency of the carrier between predetermined values.

MOD **3016** **116** 5.7 *Facsimile:* A form of *telegraphy* for the transmission of fixed images,
20 with or without half-tones, with a view to their reproduction in a permanent form.

In this definition the term *telegraphy* has the same general meaning as defined in the Convention.

MOD **3013** **117** 5.8 *Telephony* *: A form of *telecommunication* set up for the transmission
17 of speech or, in some cases, other sounds.

MOD **3014** **118** 5.9 *Radiotelephone Call:* A telephone call, originating in or intended for a
18 *mobile station* or a *mobile earth station*, transmitted on all or part of its route over the *radiocommunication* channels of the *mobile service* or of the *mobile-satellite service.*

(MOD) **3019** **119** 5.10 *Simplex Operation:* Operating method in which transmission is made
4 possible alternately in each direction of a *telecommunication* channel, for example, by means of manual control [1].

(MOD) **3020** **120** 5.11 *Duplex Operation:* Operating method in which transmission is possible
5 simultaneously in both directions of a *telecommunication* channel [1].

(MOD) **3021** **121** 5.12 *Semi-Duplex Operation:* A method which is *simplex operation* at one
6 end of the circuit and *duplex operation* at the other [1].

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* See Resolution **68**.

(MOD) **3019.1** **119.1**
4.1
(MOD) **3020.1** **120.1**
5.1
(MOD) **3021.1** **121.1**
6.1

[1] In general, *duplex operation* and *semi-duplex operation* require two frequencies in *radiocommunication*; *simplex operation* may use either one or two.

MOD **3015** **122** 5.13 *Television:* A form of *telecommunication* for the transmission of transient images of fixed or moving objects.
19

NOC **3104** **123** 5.14 *Individual Reception* (in the broadcasting-satellite service): The reception of *emissions* from a *space station* in the *broadcasting-satellite service* by simple domestic installations and in particular those possessing small antennae.
84APA

NOC **3105** **124** 5.15 *Community Reception* (in the broadcasting-satellite service): The reception of *emissions* from a *space station* in the *broadcasting-satellite service* by receiving equipment, which in some cases may be complex and have antennae larger than those used for *individual reception*, and intended for use:
84APB

– by a group of the general public at one location; or

– through a distribution system covering a limited area.

MOD **3017** **125** 5.16 *Telemetry:* The use of *telecommunication* for automatically indicating or recording measurements at a distance from the measuring instrument.
15

MOD **3018** **126** 5.17 *Radiotelemetry: Telemetry* by means of *radio waves.*
16

MOD **3095** **127** 5.18 *Space Telemetry:* The use of *telemetry* for the transmission from a *space station* of results of measurements made in a *spacecraft*, including those relating to the functioning of the *spacecraft.*
84AW

ADD **3018A** **128** 5.19 *Telecommand:* The use of *telecommunication* for the transmission of signals to initiate, modify or terminate functions of equipment at a distance.

(MOD) **3097** **129** 5.20 *Space Telecommand:* The use of *radiocommunication* for the transmission of signals to a *space station* to initiate, modify or terminate functions of equipment on an associated space object, including the *space station.*
84AY

NOC **3098** **130** 5.21 *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.
84AZ

MOD

Section VI. Characteristics of Emissions and Radio Equipment

ADD **3133B** **131** 6.1 *Radiation:* The outward flow of energy from any source in the form of *radio waves.*

ADD **3133C** **132** 6.2 *Emission: Radiation* produced, or the production of *radiation*, by a radio transmitting *station.*

For example, the energy radiated by the local oscillator of a radio receiver would not be an emission but a *radiation.*

ADD **3006A** **133** 6.3 *Class of Emission:* The set of characteristics of an *emission*, designated by standard symbols, e.g. type of modulation of the main carrier, modulating signal, type of information to be transmitted, and also if appropriate, any additional signal characteristics.

ADD **3021A** **134** 6.4 *Single-Sideband Emission:* An amplitude modulated *emission* with one sideband only.

ADD **3021B** **135** 6.5 *Full Carrier Single-Sideband Emission:* A *single-sideband emission* without reduction of the carrier.

ADD **3021C** **136** 6.6 *Reduced Carrier Single-Sideband Emission:* A *single-sideband emission* in which the degree of carrier suppression enables the carrier to be reconstituted and to be used for demodulation.

ADD **3021D** **137** 6.7 *Suppressed Carrier Single-Sideband Emission:* A *single-sideband emission* in which the carrier is virtually suppressed and not intended to be used for demodulation.

ADD **3133D** **138** 6.8 *Out-of-band Emission* *: *Emission* on a frequency or frequencies immediately outside the *necessary bandwidth* which results from the modulation process, but excluding *spurious emissions.*

MOD **3141** 92 **139** 6.9 *Spurious Emission* *: *Emission* on a frequency or frequencies which are outside the *necessary bandwidth* and the level of which may be reduced without affecting the corresponding transmission of information. Spurious emissions include harmonic *emissions*, parasitic *emissions*, intermodulation products and frequency conversion products, but exclude *out-of-band emissions.*

ADD **3133F** **140** 6.10 *Unwanted Emissions* *: Consist of *spurious emissions* and *out-of-band emissions.*

MOD **3138** 89 **141** 6.11 *Assigned Frequency Band:* The frequency band within which the *emission* of a *station* is authorized; the width of the band equals the *necessary bandwidth* plus twice the absolute value of the *frequency tolerance.* Where *space stations* are concerned, the assigned frequency band includes twice the maximum Doppler shift that may occur in relation to any point of the Earth's surface.

NOC **3134** 85 **142** 6.12 *Assigned Frequency:* The centre of the frequency band assigned to a *station.*

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* The terms associated with the definitions given by Nos. **138**, **139** and **140** shall be expressed in the working languages as follows:

Numbers	In French	In English	In Spanish
138 (6.8)	Emission hors bande	Out-of-band emission	Emisión fuera de banda
139 (6.9)	Rayonnement non essentiel	Spurious emission	Emisión no esencial
140 (6.10)	Rayonnements non désirés	Unwanted emissions	Emisiones no deseadas

MOD 3135 143 6.13 *Characteristic Frequency:* A frequency which can be easily identified and measured in a given *emission.*
86

A carrier frequency may, for example, be designated as the characteristic frequency.

NOC 3136 144 6.14 *Reference Frequency:* A frequency having a fixed and specified position with respect to the *assigned frequency.* The displacement of this frequency with respect to the *assigned frequency* has the same absolute value and sign that the displacement of the *characteristic frequency* has with respect to the centre of the frequency band occupied by the *emission.*
87

MOD 3137 145 6.15 *Frequency Tolerance:* The maximum permissible departure by the centre frequency of the frequency band occupied by an *emission* from the *assigned frequency* or, by the *characteristic frequency* of an *emission* from the *reference frequency.*
88

The frequency tolerance is expressed in parts in 10^6 or in hertz.

MOD 3140 146 6.16 *Necessary Bandwidth:* For a given *class of emission*, the width of the frequency band which is just sufficient to ensure the transmission of information at the rate and with the quality required under specified conditions.
91

MOD 3139 147 6.17 *Occupied Bandwidth:* The width of a frequency band such that, below the lower and above the upper frequency limits, the *mean powers* emitted are each equal to a specified percentage $\beta/2$ of the total *mean power* of a given *emission.*
90

Unless otherwise specified by the CCIR for the appropriate *class of emission*, the value of $\beta/2$ should be taken as 0.5%.

ADD 3153C 148 6.18 *Right-Hand* (or Clockwise) *Polarized Wave:* An elliptically- or circularly-polarized wave, in which the electric field vector, observed in any fixed plane, normal to the direction of propagation, whilst looking in the direction of propagation, rotates with time in a right-hand or clockwise direction.

ADD 3153D 149 6.19 *Left-Hand* (or Anti-Clockwise) *Polarized Wave:* An elliptically- or circularly-polarized wave, in which the electric field vector, observed in any fixed plane, normal to the direction of propagation, whilst looking in the direction of propagation, rotates with time in a left-hand or anti-clockwise direction.

MOD 3143 150 6.20 *Power:* Whenever the power of a radio transmitter etc. is referred to it shall be expressed in one of the following forms, according to the *class of emission*, using the arbitrary symbols indicated:
94

– *peak envelope power* (PX or pX);

– *mean power* (PY or pY);

– *carrier power* (PZ or pZ).

For different *classes of emission*, the relationships between *peak envelope power*, *mean power* and *carrier power*, under the conditions of normal operation and of no modulation, are contained in CCIR Recommendations which may be used as a guide.

For use in formulae, the symbol p denotes power expressed in watts and the symbol P denotes power expressed in decibels relative to a reference level.

MOD 3144 95 **151** 6.21 *Peak Envelope Power* (of a radio transmitter): The average power supplied to the antenna transmission line by a transmitter during one radio frequency cycle at the crest of the modulation envelope taken under normal operating conditions.

MOD 3145 96 **152** 6.22 *Mean Power* (of a radio transmitter): The average power supplied to the antenna transmission line by a transmitter during an interval of time sufficiently long compared with the lowest frequency encountered in the modulation taken under normal operating conditions.

MOD 3146 97 **153** 6.23 *Carrier Power* (of a radio transmitter): The average power supplied to the antenna transmission line by a transmitter during one radio frequency cycle taken under the condition of no modulation.

MOD 3149 99 **154** 6.24 *Gain of an Antenna:* The ratio, usually expressed in decibels, of the power required at the input of a loss free reference antenna to the power supplied to the input of the given antenna to produce, in a given direction, the same field strength or the same power flux-density at the same distance. When not specified otherwise, the gain refers to the direction of maximum *radiation.* The gain may be considered for a specified polarization.

Depending on the choice of the reference antenna a distinction is made between:

a) *absolute or isotropic gain* (G_i), when the reference antenna is an isotropic antenna isolated in space;

b) *gain relative to a half-wave dipole* (G_d), when the reference antenna is a half-wave dipole isolated in space whose equatorial plane contains the given direction;

c) *gain relative to a short vertical antenna* (G_v), when the reference antenna is a linear conductor, much shorter than one quarter of the wavelength, normal to the surface of a perfectly conducting plane which contains the given direction.

MOD 3148 98A **155** 6.25 *Equivalent Isotropically Radiated Power (e.i.r.p.):* The product of the power supplied to the antenna and the antenna gain in a given direction relative to an isotropic antenna *(absolute or isotropic gain).*

MOD 3147 98 **156** 6.26 *Effective Radiated Power (e.r.p.)* (in a given direction): The product of the power supplied to the antenna and its *gain relative to a half-wave dipole* in a given direction.

ADD 3147A **157** 6.27 *Effective Monopole Radiated Power (e.m.r.p.)* (in a given direction): The product of the power supplied to the antenna and its *gain relative to a short vertical antenna* in a given direction.

NOC 3022 26 **158** 6.28 *Tropospheric Scatter:* The propagation of *radio waves* by scattering as a result of irregularities or discontinuities in the physical properties of the troposphere.

NOC 3023 27 **159** 6.29 *Ionospheric Scatter:* The propagation of *radio waves* by scattering as a result of irregularities or discontinuities in the ionization of the ionosphere.

ADD

Section VII. Frequency Sharing

ADD **3140A** **160** 7.1 *Interference:* The effect of unwanted energy due to one or a combination of *emissions*, *radiations*, or inductions upon reception in a *radiocommunication* system, manifested by any performance degradation, misinterpretation, or loss of information which could be extracted in the absence of such unwanted energy.

ADD **3142A** **161** 7.2 *Permissible Interference*[1]: Observed or predicted *interference* which complies with quantitative *interference* and sharing criteria contained in these Regulations or in CCIR Recommendations or in special agreements as provided for in these Regulations.

ADD **3140B** **162** 7.3 *Accepted Interference*[1]: *Interference* at a higher level than that defined as *permissible interference* and which has been agreed upon between two or more administrations without prejudice to other administrations.

MOD **3142** **163** 7.4 *Harmful Interference* *: *Interference* which endangers the functioning of a *radionavigation service* or of other *safety services* or seriously degrades, obstructs, or repeatedly interrupts a *radiocommunication service* operating in accordance with these Regulations.
93

ADD **3142B** **164** 7.5 *Protection Ratio* (R.F.): The minimum value of the wanted-to-unwanted signal ratio, usually expressed in decibels, at the receiver input, determined under specified conditions such that a specified reception quality of the wanted signal is achieved at the receiver output.

MOD **3157** **165** 7.6 *Coordination Area:* The area associated with an *earth station* outside of which a *terrestrial station* sharing the same frequency band neither causes nor is subject to interfering *emissions* greater than a permissible level.
103D

MOD **3156** **166** 7.7 *Coordination Contour:* The line enclosing the *coordination area.*
103C

MOD **3155** **167** 7.8 *Coordination Distance:* Distance on a given azimuth from an *earth station* beyond which a *terrestrial station* sharing the same frequency band neither causes nor is subject to interfering *emissions* greater than a permissible level.
103B

MOD **3154** **168** 7.9 *Equivalent Satellite Link Noise Temperature:* The noise temperature referred to the output of the receiving antenna of the *earth station* corresponding to the radio frequency noise power which produces the total observed noise at the output of the *satellite link* excluding noise due to *interference* coming from *satellite links* using other *satellites* and from terrestrial systems.
103A

ADD **3142A.1** **161.1**
ADD **3140B.1** **162.1**

[1] The terms "permissible interference" and "accepted interference" are used in the coordination of frequency assignments between administrations.

* See Resolution **68**.

ADD **Section VIII. Technical Terms Relating to Space**

NOC **3123** **169** 8.1 *Deep Space:* Space at distances from the Earth approximately equal to, or greater than, the distance between the Earth and the Moon.
84BA

NOC **3124** **170** 8.2 *Spacecraft:* A man-made vehicle which is intended to go beyond the major portion of the Earth's atmosphere.
84BAA

(MOD) **3125** **171** 8.3 *Satellite:* A body which revolves around another body of preponderant mass and which has a motion primarily and permanently determined by the force of attraction of that other body.
84BAB

MOD **3126** **172** 8.4 *Active Satellite:* A *satellite* carrying a *station* intended to transmit or retransmit radiocommunication signals.
84BAC

MOD **3127** **173** 8.5 *Reflecting Satellite:* A *satellite* intended to reflect radiocommunication signals.
84BAD

ADD **3127A** **174** 8.6 *Active Sensor:* A measuring instrument in the *earth exploration-satellite service* or in the *space research service* by means of which information is obtained by transmission and reception of *radio waves.*

ADD **3127B** **175** 8.7 *Passive Sensor:* A measuring instrument in the *earth exploration-satellite service* or in the *space research service* by means of which information is obtained by reception of *radio waves* of natural origin.

MOD **3128** **176** 8.8 *Orbit:* The path, relative to a specified frame of reference, described by the centre of mass of a *satellite* or other object in space subjected primarily to natural forces, mainly the force of gravity.
84BB

MOD **3129** **177** 8.9 *Inclination of an Orbit* (of an earth satellite): The angle determined by the plane containing the *orbit* and the plane of the Earth's equator.
84BC

MOD **3130** **178** 8.10 *Period* (of a satellite): The time elapsing between two consecutive passages of a *satellite* through a characteristic point on its *orbit.*
84BD

(MOD) **3131** **179** 8.11 *Altitude of the Apogee* or *Perigee:* The altitude of the apogee or perigee above a specified reference surface serving to represent the surface of the Earth.
84BE

NOC **3132** **180** 8.12 *Geosynchronous Satellite:* An earth *satellite* whose period of revolution is equal to the period of rotation of the Earth about its axis.
84BFA

MOD **3133** **181** 8.13 *Geostationary Satellite:* A *geosynchronous satellite* whose circular and direct *orbit* lies in the plane of the Earth's equator and which thus remains fixed relative to the Earth; by extension, a *satellite* which remains approximately fixed relative to the Earth.
84BG

ADD **3133A** **182** 8.14 *Geostationary-satellite orbit:* The *orbit* in which a *satellite* must be placed to be a *geostationary satellite.*

183 to **207** NOT allocated.

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N2 ARTICLE 2

NOC

Nomenclature of the Frequency and Wavelength Bands Used in Radiocommunication

MOD 3183 208 112 § 1. The radio spectrum shall be subdivided into nine frequency bands, which shall be designated by progressive whole numbers in accordance with the following table. As the unit of frequency is the hertz (Hz), frequencies shall be expressed:

– in kilohertz (kHz), up to and including 3 000 kHz;

– in megahertz (MHz), above 3 MHz, up to and including 3 000 MHz;

– in gigahertz (GHz), above 3 GHz, up to and including 3 000 GHz.

For bands above 3 000 GHz, i.e. centimillimetric waves, micrometric waves and decimicrometric waves, it would be appropriate to use "terahertz (THz)".

However, where adherence to these provisions would introduce serious difficulties, for example in connection with the notification and registration of frequencies, the lists of frequencies and related matters, reasonable departures may be made.

Band Number	Symbols	Frequency Range (lower limit exclusive, upper limit inclusive)	Corresponding Metric Subdivision	Metric Abbreviations for the Bands
4	VLF	3 to 30 kHz	Myriametric waves	B.Mam
5	LF	30 to 300 kHz	Kilometric waves	B.km
6	MF	300 to 3 000 kHz	Hectometric waves	B.hm
7	HF	3 to 30 MHz	Decametric waves	B.dam
8	VHF	30 to 300 MHz	Metric waves	B.m
9	UHF	300 to 3 000 MHz	Decimetric waves	B.dm
10	SHF	3 to 30 GHz	Centimetric waves	B.cm
11	EHF	30 to 300 GHz	Millimetric waves	B.mm
12		300 to 3 000 GHz	Decimillimetric waves	

Note 1: "Band Number N" (N = band number) extends from 0.3×10^N Hz to 3×10^N Hz.

Note 2: Prefix: k = kilo (10^3), M = mega (10^6), G = giga (10^9), T = tera (10^{12}).

ADD 3183A 209 § 2. In communications between administrations and the ITU, no names, symbols or abbreviations should be used for the various frequency bands other than those specified in No. **208**.

210 to **234** NOT allocated.

N2A ARTICLE 3

ADD **Nomenclature of Dates and Times Used in Radiocommunication**

ADD **3168** **235** § 1. Any date used in relation to radiocommunication shall be according to the Gregorian Calendar.

ADD **3169** **236** § 2. If in a date the month is not indicated either in full or in an abbreviated form, it shall be expressed in an all-numeric form with the fixed sequence of figures, two of each representing the day, month and year.

ADD **3170** **237** § 3. Whenever a date is used in connection with Coordinated Universal Time (UTC), this date shall be that of the prime meridian at the appropriate time, the prime meridian corresponding to zero degrees geographical longitude.

ADD **3171** **238** § 4. Whenever a specified time is used in international radiocommunication activities, UTC shall be applied, unless otherwise indicated, and it shall be presented as a four-digit group (0000-2359). The abbreviation UTC shall be used in all languages.

239 to **263** NOT allocated.

MOD N3

ARTICLE 4

NOC

Designation of Emissions

SUP **3209** to **3216** inclusive together with associated section headings.

ADD **3209A** **264** § 1. (1) Emissions shall be designated according to their necessary bandwidth and their classification.

ADD **3209B** **265** (2) Examples of emissions designated in accordance with this Article are given in Appendix **6**, Part B. Further examples may appear in the latest CCIR Recommendations. These examples may also be published in the Preface to the International Frequency List.

ADD

Section I. Necessary Bandwidth

ADD **3210A** **266** § 2. (1) The necessary bandwidth, as defined in No. **146** and determined in accordance with Appendix **6**, Part B, shall be expressed by three numerals and one letter. The letter occupies the position of the decimal point and represents the unit of bandwidth. The first character shall be neither zero nor K, M or G.

ADD **267** (2) Necessary bandwidths [1]:

between 0.001 and 999 Hz shall be expressed in Hz (letter H);
between 1.00 and 999 kHz shall be expressed in kHz (letter K);
between 1.00 and 999 MHz shall be expressed in MHz (letter M);
between 1.00 and 999 GHz shall be expressed in GHz (letter G).

ADD

Section II. Classification

ADD **3211A** **268** § 3. The class of emission is a set of characteristics conforming to No. **269**.

ADD **3212A** **269** § 4. Emissions shall be classified and symbolized according to their basic characteristics as given in No. **270** and any optional additional characteristics as provided for in Appendix **6**, Part A.

ADD **3210A.1** **267.1** [1] Examples:

0.002	Hz	= H002	6	kHz	= 6K00	1.25	MHz	= 1M25
0.1	Hz	= H100	12.5	kHz	= 12K5	2	MHz	= 2M00
25.3	Hz	= 25H3	180.4	kHz	= 180K	10	MHz	= 10M0
400	Hz	= 400H	180.5	kHz	= 181K	202	MHz	= 202M
2.4	kHz	= 2K40	180.7	kHz	= 181K	5.65	GHz	= 5G65

ADD **3213A** **270** § 5. The basic characteristics (see Nos. **271**, **272**, **273**) are:

(1) first symbol – type of modulation of the main carrier;

(2) second symbol – nature of signal(s) modulating the main carrier;

(3) third symbol – type of information to be transmitted.

Modulation used only for short periods and for incidental purposes (such as, in many cases, for identification or calling) may be ignored provided that the necessary bandwidth as indicated is not thereby increased.

ADD **3214A** **271** § 6. (1) First symbol – type of modulation of the main carrier

(1.1)	Emission of an unmodulated carrier	N
(1.2)	Emission in which the main carrier is amplitude-modulated (including cases where sub-carriers are angle-modulated)	
(1.2.1)	Double-sideband	A
(1.2.2)	Single-sideband, full carrier	H
(1.2.3)	Single-sideband, reduced or variable level carrier	R
(1.2.4)	Single-sideband, suppressed carrier	J
(1.2.5)	Independent sidebands	B
(1.2.6)	Vestigial sideband	C
(1.3)	Emission in which the main carrier is angle-modulated	
(1.3.1)	Frequency modulation	F
(1.3.2)	Phase modulation	G
(1.4)	Emission in which the main carrier is amplitude- and angle-modulated either simultaneously or in a pre-established sequence	D
(1.5)	Emission of pulses [1]	
(1.5.1)	Sequence of unmodulated pulses	P
(1.5.2)	A sequence of pulses	
(1.5.2.1)	modulated in amplitude	K
(1.5.2.2)	modulated in width/duration	L

ADD **3214A.1** **271.1** [1] Emissions, where the main carrier is directly modulated by a signal which has been coded into quantized form (e.g. pulse code modulation), should be designated under (1.2) or (1.3).

(1.5.2.3) modulated in position/phase M

(1.5.2.4) in which the carrier is angle-modulated during the period of the pulse Q

(1.5.2.5) which is a combination of the foregoing or is produced by other means V

(1.6) Cases not covered above, in which an emission consists of the main carrier modulated, either simultaneously or in a pre-established sequence, in a combination of two or more of the following modes: amplitude, angle, pulse W

(1.7) Cases not otherwise covered X

ADD **3215A** **272** (2) Second symbol – nature of signal(s) modulating the main carrier

(2.1) No modulating signal 0

(2.2) A single channel containing quantized or digital information without the use of a modulating sub-carrier [1] 1

(2.3) A single channel containing quantized or digital information with the use of a modulating sub-carrier [1] 2

(2.4) A single channel containing analogue information 3

(2.5) Two or more channels containing quantized or digital information 7

(2.6) Two or more channels containing analogue information 8

(2.7) Composite system with one or more channels containing quantized or digital information, together with one or more channels containing analogue information 9

(2.8) Cases not otherwise covered X

ADD **3216A** **273** (3) Third symbol – type of information to be transmitted [2]

(3.1) No information transmitted N

(3.2) Telegraphy – for aural reception A

(3.3) Telegraphy – for automatic reception B

ADD **3215A.1** **272.1** [1] This excludes time-division multiplex.

ADD **3216A.1** **273.1** [2] In this context the word "information" does not include information of a constant, unvarying nature such as provided by standard frequency emissions, continuous wave and pulse radars, etc.

(3.4)	Facsimile	C
(3.5)	Data transmission, telemetry, telecommand	D
(3.6)	Telephony (including sound broadcasting)	E
(3.7)	Television (video)	F
(3.8)	Combination of the above	W
(3.9)	Cases not otherwise covered	X

274
to NOT allocated.
298

NII

CHAPTER II

N4/12

ARTICLE 5

MOD

Technical Characteristics of Stations

NOC 3242 299 667

§ 1. (1) The choice and performance of equipment to be used in a station and any emissions therefrom shall satisfy the provisions of these Regulations.

NOC 3243 300 668

(2) Also, as far as is compatible with practical considerations, the choice of transmitting, receiving and measuring equipment shall be based on the most recent advances in the technique as indicated, inter alia, in CCIR Recommendations.

MOD 3244 301 669

§ 2. Transmitting and receiving equipment intended to be used in a given part of the frequency spectrum should be designed to take into account the technical characteristics of transmitting and receiving equipment likely to be employed in neighbouring and other parts of the spectrum, provided that all technically and economically justifiable measures have been taken to reduce the level of unwanted emissions from the latter transmitting equipment and to reduce the susceptibility to interference of the latter receiving equipment.

MOD 3245 302 670

§ 3. To the maximum extent possible, equipment to be used in a station should apply signal processing methods which enable the most efficient use of the frequency spectrum in accordance with the relevant CCIR Recommendations. These methods include, inter alia, certain bandwidth expansion techniques, and in particular, in amplitude-modulation systems, the use of the single-sideband technique.

NOC 3246 303 671

§ 4. (1) Transmitting stations shall conform to the frequency tolerances specified in Appendix 7.

MOD 3247 304 672

(2) Transmitting stations shall conform to the maximum permitted spurious emission power levels specified in Appendix **8**.

ADD 3247A 305

(3) Transmitting stations shall conform to the maximum permitted power levels for out-of-band emissions specified for certain services and classes of emission in the present Regulations, e.g. Appendices **17** and **27 Aer2** *. In the absence of such specified maximum permitted power levels transmitting stations shall, to the maximum extent possible, satisfy the requirements relating to the limitation of the out-of-band emissions specified in the most recent CCIR Recommendations.

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* *Note by the General Secretariat:* See No. **5189** and Resolution **400**.

MOD **3248** 673 **306** (4) Moreover, every effort should be made to keep frequency tolerances and levels of unwanted emissions at the lowest values which the state of the technique and the nature of the service permit.

MOD **3249** 674 **307** § 5. (1) The bandwidths of emissions also shall be such as to ensure the most efficient utilization of the spectrum; in general this requires that bandwidths be kept at the lowest values which the state of the technique and the nature of the service permit. Appendix **6** is provided as a guide for the determination of the necessary bandwidth.

ADD **3249A** **308** (2) Where bandwidth-expansion techniques are used, the minimum spectral power density consistent with efficient spectrum utilization shall be employed.

ADD **3249B** **309** § 6. (1) Wherever necessary for efficient spectrum use, the receivers used by any service should comply as far as possible with the frequency tolerances of the transmitters of that service, due regard being paid to the Doppler effect where appropriate.

ADD **3249C** **310** (2) Receiving stations should use equipment with technical characteristics appropriate for the class of emission concerned; in particular, selectivity should be appropriate having regard to No. **307** on the bandwidths of emissions.

ADD **3249D** **311** (3) The performance characteristics of receivers should be adequate to ensure that they do not suffer from interference due to transmitters situated at a reasonable distance and which operate in accordance with these Regulations.

MOD **3250** 675 **312** § 7. To ensure compliance with these Regulations, administrations shall arrange for frequent checks to be made of the emissions of stations under their jurisdiction. For this purpose, they shall use the means indicated in Article **20**, if required. The technique of measurements and the intervals of measurements to be employed shall be, as far as is practicable, in accordance with the most recent CCIR Recommendations.

MOD **3251** 677 **313** § 8. The use of damped wave emissions is forbidden in all stations.

314 to **338** NOT allocated.

NOC NIII

CHAPTER III

Frequencies

N5/3

ARTICLE 6

NOC

General Rules for the Assignment and Use of Frequencies

ADD 3276A 339 § 1. Members shall endeavour to limit the number of frequencies and the spectrum space used to the minimum essential to provide in a satisfactory manner the necessary services. To that end they shall endeavour to apply the latest technical advances as soon as possible [1].

MOD 3277 340 § 2. Members undertake that in assigning frequencies to stations which are
113 capable of causing harmful interference to the services rendered by the stations of another country, such assignments are to be made in accordance with the Table of Frequency Allocations and other provisions of these Regulations.

NOC 3278 341 § 3. Any new assignment or any change of frequency or other basic characteristic of an existing assignment (see Appendix 1 or Appendix 3) 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.
114

MOD 3279 342 § 4. Administrations of the Members shall not assign to a station any
115 frequency in derogation of either the Table of Frequency Allocations given in this Chapter or the other provisions of these Regulations, except on the express condition that harmful interference shall not be caused to services carried on by stations operating in accordance with the provisions of the Convention and of these Regulations.

NOC 3280 343 § 5. The frequency assigned to a station of a given service shall be separated
116 from the limits of the band allocated to this service in such a way that, taking account of the frequency band assigned to a station, no harmful interference is caused to services to which frequency bands immediately adjoining are allocated.

ADD 3276A.1 339.1 [1] No. 130 of the International Telecommunication Convention (Malaga-Torremolinos, 1973).

NOC **3281** **344** § 6. For the purpose of resolving cases of harmful interference, the radio
116A 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.

ADD **3281A** **345** § 7. For the purpose of resolving cases of harmful interference, the space research (passive) service and the earth exploration-satellite (passive) service shall be afforded protection from different services in other bands only to the extent that these different services are protected from each other.

MOD **3282** **346** § 8. Where, in adjacent Regions or sub-Regions, a band of frequencies is
117 allocated to different services of the same category (see Sections I and II of Article **8**), the basic principle is the equality of right to operate. Accordingly, the stations of each service in one Region or sub-Region must operate so as not to cause harmful interference to services in the other Regions or sub-Regions.

ADD **3283** **347** § 9. No provision of these Regulations prevents the use by a station in distress of any means of radiocommunication at its disposal to attract attention, make known its condition and location, and obtain assistance.

ADD **3284** **348** § 10. No provision of these Regulations prevents the use by a station, in the exceptional circumstances described in No. **347**, of any means of radiocommunication at its disposal to assist a station in distress.

349 to **373** NOT allocated.

N6/4

ARTICLE 7

NOC

Special Agreements

MOD 3308 118 **374** § 1. Two or more Members may, under the provisions for special arrangements in Article 31 of the Convention, conclude special agreements regarding the sub-allocation of bands of frequencies to the appropriate services of the participating countries.

MOD 3309 119 **375** § 2. Two or more Members may, under the provisions for special arrangements in Article 31 of the Convention, conclude special agreements, as a result of a conference to which all those Members concerned have been invited, regarding the assignment of frequencies to those of their stations which participate in one or more specific services within the frequency bands allocated to these services by Article **8**, either below 5 060 kHz or above 27 500 kHz, but not between those limits.

MOD 3310 120 **376** § 3. Members may, under the provisions for special arrangements in Article 31 of the Convention, conclude, on a worldwide basis, and as a result of a conference to which all Members have been invited, special agreements concerning the assignment of frequencies to those of their stations participating in a specific service, on condition that such assignments are within the frequency bands allocated exclusively to that service in Article **8**.

NOC 3311 121 **377** § 4. Special agreements concluded in accordance with the provisions of Nos. **374** to **376** shall not be in conflict with any of the provisions of these Regulations.

MOD 3312 122 **378** § 5. The Secretary-General shall be informed, in advance, of any conference to be convened to conclude such an agreement; he shall also be informed of the terms of the agreement when concluded; and he shall inform the Members of the existence of such agreements.

NOC 3313 123 379 § 6. In accordance with the provisions of Article **10**, the International Frequency Registration Board may be invited to send representatives to participate in an advisory capacity in the preparation of these agreements and in the proceedings of the conferences, it being recognized that in the majority of cases such participation is desirable.

MOD 3314 124 **380** § 7. If, besides the action they may take in accordance with No. **375**, two or more Members coordinate the use of individual frequencies in any of the frequency bands covered by Article **8** before notifying the frequency assignments concerned, they shall in all appropriate cases inform the Board of such coordination.

381 to **390** NOT allocated.

N7/5 ARTICLE 8

MOD **Frequency Allocations**

ADD **Introduction**

ADD **3414A** **391** § 1. In all documents of the Union where the terms ALLOCATION, ALLOTMENT and ASSIGNMENT are to be used, they shall have the meaning given them in Nos. **17** to **19**, the terms used in the three working languages being as follows:

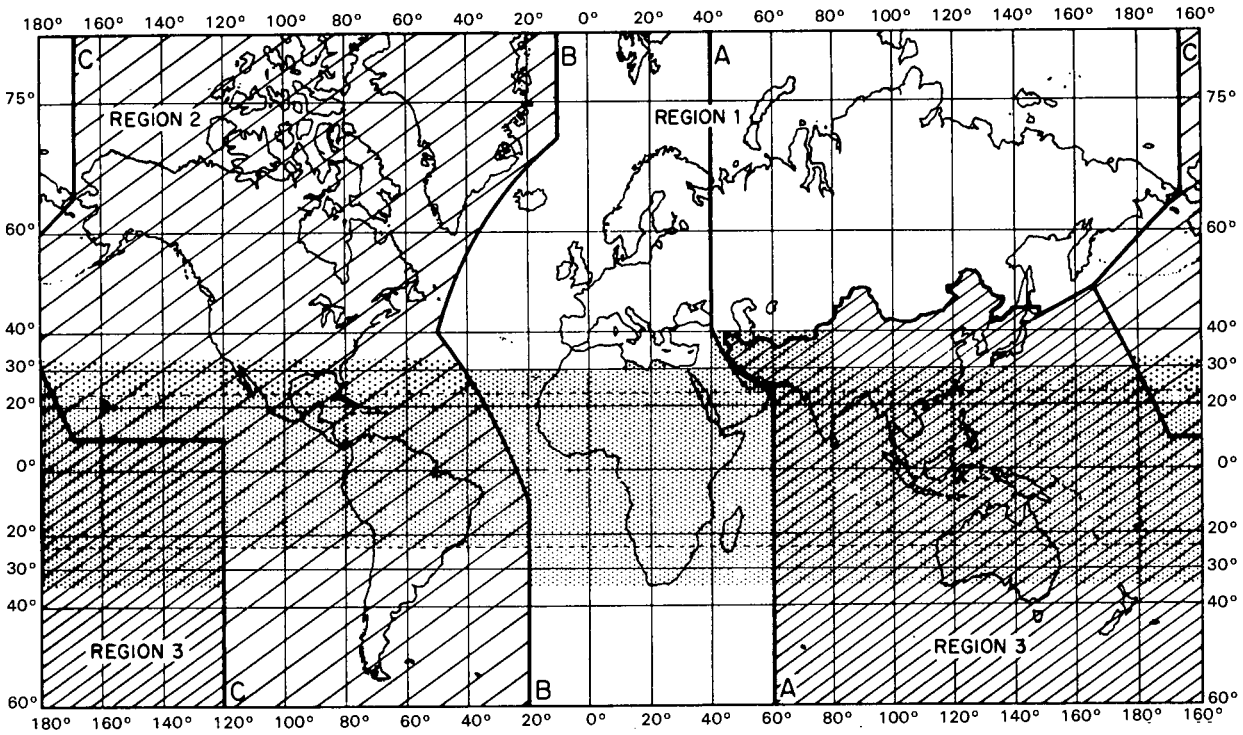
Frequency distribution to:	French	English	Spanish
Services	Attribution (attribuer)	Allocation (to allocate)	Atribución (atribuir)
Areas or countries	Allotissement (allotir)	Allotment (to allot)	Adjudicación (adjudicar)
Stations	Assignation (assigner)	Assignment (to assign)	Asignación (asignar)

SUP **A.N7/5**

NOC

Section I. Regions and Areas

MOD 3415 392 § 2. For the allocation of frequencies the world has been divided into three
125 Regions [1] as shown in the following chart and described in Nos. **393** to **399**:



The shaded part represents the Tropical Zone as defined in Nos. **406** to **410** and **411**.

NOC 3416 393 *Region 1:*
126

Region 1 includes the area limited on the east by line A (lines A, B and C are defined below) and on the west by line B, excluding any of the territory of Iran which lies between these limits. It also includes that part of the territory of Turkey and the Union of Soviet Socialist Republics lying outside of these limits, the territory of the Mongolian People's Republic, and the area to the north of the U.S.S.R. which lies between lines A and C.

NOC 3417 394 *Region 2:*
127

Region 2 includes the area limited on the east by line B and on the west by line C.

NOC 3418 395 *Region 3:*
128

Region 3 includes the area limited on the east by line C and on the west by line A, except the territories of the Mongolian People's Republic, Turkey, the territory of the U.S.S.R. and the area to the north of the U.S.S.R. It also includes that part of the territory of Iran lying outside of those limits.

NOC 3415.1 392.1 [1] It should be noted that where the words "regions" or "regional" are without a capital
125.1 "R" in these Regulations, they do not relate to the three Regions here defined for purposes of frequency allocation.

NOC 3419 396 The lines A, B and C are defined as follows:
129

NOC 3420 397 *Line A:*
130

Line A extends from the North Pole along meridian 40° East of Greenwich to parallel 40° North; thence by great circle arc to the intersection of meridian 60° East and the Tropic of Cancer; thence along the meridian 60° East to the South Pole.

NOC 3421 398 *Line B:*
131

Line B extends from the North Pole along meridian 10° West of Greenwich to its intersection with parallel 72° North; thence by great circle arc to the intersection of meridian 50° West and parallel 40° North; thence by great circle arc to the intersection of meridian 20° West and parallel 10° South; thence along meridian 20° West to the South Pole.

NOC 3422 399 *Line C:*
132

Line C extends from the North Pole by great circle arc to the intersection of parallel 65° 30′ North with the international boundary in Bering Strait; thence by great circle arc to the intersection of meridian 165° East of Greenwich and parallel 50° North; thence by great circle arc to the intersection of meridian 170° West and parallel 10° North; thence along parallel 10° North to its intersection with meridian 120° West; thence along meridian 120° West to the South Pole.

ADD 3422A 400 § 3. For the purposes of these Regulations, the term "African Broadcasting Area" means:

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

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

403 *c)* islands in the Atlantic Ocean east of Line B defined in No. **398** of these Regulations, situated between the parallels 40° South and 30° North.

MOD 3423 404 § 4. The "European Broadcasting Area" is bounded on the west by the
133 western boundary of Region 1, on the east by the meridian 40° East of Greenwich and on the south by the parallel 30° North so as to include the western part of the U.S.S.R., the northern part of Saudi Arabia and that part of those countries bordering the Mediterranean within these limits. In addition, Iraq and Jordan are included in the European Broadcasting Area.

NOC 3424 405 § 5. The "European Maritime Area" is bounded on the north by a line
134 extending along parallel 72° North from its intersection with meridian 55° East of Greenwich to its intersection with meridian 5° West, then along meridian 5° West to its intersection with parallel 67° North, thence along parallel 67° North to its intersection with meridian 30° West; on the west by a line extending along

meridian 30° West to its intersection with parallel 30° North; on the south by a line extending along parallel 30° North to its intersection with meridian 43° East; on the east by a line extending along meridian 43° East to its intersection with parallel 60° North, thence along parallel 60° North to its intersection with meridian 55° East and thence along meridian 55° East to its intersection with parallel 72° North.

MOD 3425 135 406 § 6. (1) The "Tropical Zone" (see chart in No. **392**) is defined as:

407 *a)* the whole of that area in Region 2 between the Tropics of Cancer and Capricorn;

408 *b)* the whole of that area in Regions 1 and 3 contained between the parallels 30° North and 35° South with the addition of:

409 1) the area contained between the meridians 40° East and 80° East of Greenwich and the parallels 30° North and 40° North;

410 2) that part of Libya north of parallel 30° North.

MOD 3426 136 411 (2) In Region 2, the Tropical Zone may be extended to parallel 33° North, subject to special agreements between the countries concerned in that Region (see Article **7**).

ADD 3426A 412 § 7. A sub-Region is an area consisting of two or more countries in the same Region.

NOC **Section II. Categories of Services and Allocations**

MOD 3427 413 *Primary, Permitted and Secondary Services*

MOD 3428 137 414 § 8. (1) Where, in a box of the Table in Section IV of this Article, a band is indicated as allocated to more than one service, either on a worldwide or Regional basis, such services are listed in the following order:

415 *a)* services, the names of which are printed in "capitals" (example: FIXED); these are called "primary" services;

416 *b)* services, the names of which are printed in "capitals between oblique strokes" (example: /RADIOLOCATION/); these are called "permitted" services (see No. **419**);

417 *c)* services, the names of which are printed in "normal characters" (example: Mobile); these are called "secondary" services (see Nos. **420** to **423**).

418 (2) Additional remarks shall be printed in normal characters (example: MOBILE except aeronautical mobile).

NOC 3429 138 419 (3) Permitted and primary services have equal rights, except that, in the preparation of frequency plans, the primary service, as compared with the permitted service, shall have prior choice of frequencies.

NOC **3430** 139 **420** (4) Stations of a secondary service:

421 *a)* shall not cause harmful interference to stations of primary or permitted services to which frequencies are already assigned or to which frequencies may be assigned at a later date;

422 *b)* cannot claim protection from harmful interference from stations of a primary or permitted service to which frequencies are already assigned or may be assigned at a later date;

423 *c)* can claim protection, however, from harmful interference from stations of the same or other secondary service(s) to which frequencies may be assigned at a later date.

MOD **3431** 140 **424** (5) Where a band is indicated in a footnote of the Table as allocated to a service "on a secondary basis" in an area smaller than a Region, or in a particular country, this is a secondary service (see Nos. **420** to **423**).

MOD **3432** 141 **425** (6) Where a band is indicated in a footnote of the Table as allocated to a service "on a primary basis", or "on a permitted basis" in an area smaller than a Region, or in a particular country, this is a primary service or a permitted service only in that area or country (see No. **419**).

MOD **3433** **426** *Additional Allocations*

MOD **3434** 142 **427** § 9. (1) Where a band is indicated in a footnote of the Table as "also allocated" to a service in an area smaller than a Region, or in a particular country, this is an "additional" allocation, i.e. an allocation which is added in this area or in this country to the service or services which are indicated in the Table (see No. **428**).

MOD **3435** 143 **428** (2) If the footnote does not include any restriction on the service or services concerned apart from the restriction to operate only in a particular area or country, stations of this service or these services shall have equality of right to operate with stations of the other primary service or services indicated in the Table.

MOD **3436** 144 **429** (3) If restrictions are imposed on an additional allocation in addition to the restriction to operate only in a particular area or country, this is indicated in the footnote of the Table.

NOC **3437** **430** *Alternative Allocations*

MOD **3438** 145 **431** § 10. (1) Where a band is indicated in a footnote of the Table as "allocated" to one or more services in an area smaller than a Region, or in a particular country, this is an "alternative" allocation, i.e. an allocation which replaces, in this area or in this country, the allocation indicated in the Table (see No. **432**).

MOD **3439** 146 **432** (2) If the footnote does not include any restriction on stations of the service or services concerned, apart from the restriction to operate only in a particular area or country, these stations of such a service or services shall have an equality of right to operate with stations of the primary service or services, indicated in the Table, to which the band is allocated in other areas or countries.

NOC **3440** 147 **433** (3) If restrictions are imposed on stations of a service to which an alternative allocation is made, in addition to the restriction to operate only in a particular country or area, this is indicated in the footnote.

NOC **3441** **434** *Miscellaneous Provisions*

NOC **3442** 148 **435** § 11. (1) Where it is indicated in these Regulations that a service may operate in a specific frequency band subject to not causing harmful interference, this means also that this service cannot claim protection from harmful interference caused by other services to which the band is allocated under Chapter **III** of these Regulations.

NOC **3443** 149 **436** (2) Except if otherwise specified in a footnote, the term "fixed service", where appearing in Section IV of this Article, does not include systems using ionospheric scatter propagation.

NOC **Section III. Description of the Table of Frequency Allocations**

NOC **3444** 150 **437** § 12. (1) The heading of the Table in Section IV of this Article includes three columns, each of which corresponds to one of the Regions (see No. **392**). Where an allocation occupies the whole of the width of the Table or only one or two of the three columns, this is a worldwide allocation or a Regional allocation, respectively.

MOD **3445** 151 **438** (2) The frequency band referred to in each allocation is indicated in the left-hand top corner of the part of the Table concerned.

NOC **3446** 152 **439** (3) Within each of the categories specified in Nos. **415** to **417**, services are listed in alphabetical order according to the French language. The order of listing does not indicate relative priority within each category.

ADD **3446A** **440** (4) In the case where there is a parenthetical addition to an allocation in the Table, that service allocation is restricted to the type of operation so indicated.

NOC **3447** 153 **441** (5) The footnote references which appear in the Table below the allocated service or services apply to the whole of the allocation concerned.

NOC **3448** 154 **442** (6) The footnote references which appear to the right of the name of a service are applicable only to that particular service.

NOC **3449** 155 **443** (7) In certain cases, the names of countries appearing in the footnotes have been simplified in order to shorten the text.

Section IV. Table of Frequency Allocations
(See No. **208**)

kHz
9 — 19.95

Allocation to Services		
Region 1	Region 2	Region 3
Below 9	(not allocated) 444 445	
9 — 14	RADIONAVIGATION	
14 — 19.95	FIXED MARITIME MOBILE 448 446 447	

MOD **3451** 157 **444** Administrations authorizing the use of frequencies below 9 kHz shall ensure that no harmful interference is caused thereby to the services to which the bands above 9 kHz are allocated (see No. **1816**).

ADD **3451A** **445** Administrations conducting scientific research using frequencies below 9 kHz are urged to advise other administrations that may be concerned in order that such research may be afforded all practicable protection from harmful interference.

ADD **3452A** **446** *Additional allocation:* in Bulgaria, Hungary, Poland, the German Democratic Republic, Czechoslovakia and the U.S.S.R., the band 14 — 17 kHz is also allocated to the radionavigation service on a permitted basis.

MOD **3453** 159 **447** The stations of services to which the bands 14 — 19.95 kHz and 20.05 — 70 kHz and in Region 1 also the bands 72 — 84 kHz and 86 — 90 kHz are allocated may transmit standard frequency and time signals. Such stations shall be afforded protection from harmful interference. In Bulgaria, Hungary, Mongolia, Poland, Czechoslovakia and the U.S.S.R., the frequencies 25 kHz and 50 kHz will be used for this purpose under the same conditions.

MOD **3452** 158 **448** The use of the bands 14 — 19.95 kHz, 20.05 — 70 kHz, 70 — 90 kHz (72 — 84 kHz and 86 — 90 kHz in Region 1) and 90 — 110 kHz by the maritime mobile service is limited to coast radiotelegraph stations (A1A and F1B only). Exceptionally, the use of class J2B or J7B emissions is authorized subject to the necessary bandwidth not exceeding that normally used for class A1A or F1B emissions in the bands concerned.

kHz
19.95 — 90
(see page RR8-9)

kHz
19.95 — 90

Allocation to Services		
Region 1	Region 2	Region 3
19.95 — 20.05	STANDARD FREQUENCY AND TIME SIGNAL (20 kHz)	
20.05 — 70	FIXED MARITIME MOBILE 448 447 449	
70 — 72 RADIO-NAVIGATION 451	**70 — 90** FIXED MARITIME MOBILE 448 MARITIME RADIO-NAVIGATION 451 Radiolocation	**70 — 72** RADIO-NAVIGATION 451 Fixed Maritime Mobile 448 450
72 — 84 FIXED MARITIME MOBILE 448 RADIO-NAVIGATION 451 447		**72 — 84** FIXED MARITIME MOBILE 448 RADIO-NAVIGATION 451
84 — 86 RADIO-NAVIGATION 451		**84 — 86** RADIO-NAVIGATION 451 Fixed Maritime Mobile 448 450
86 — 90 FIXED MARITIME MOBILE 448 RADIONAVIGATION 447	452	**86 — 90** FIXED MARITIME MOBILE 448 RADIO-NAVIGATION 451

ADD **3455A** **449** *Additional allocation:* in Bulgaria, Hungary, Poland, the German Democratic Republic, Czecoslovakia and the U.S.S.R., the band 67 — 70 kHz is also allocated to the radionavigation service on a permitted basis.

MOD **3459** 165 **450** *Different category of service:* in Bangladesh, Iran and Pakistan, the allocation of the bands 70 — 72 kHz and 84 —86 kHz to the fixed and maritime mobile services is on a primary basis (see No. **425**).

MOD **3456** 162 **451** The use of the bands 70 — 90 kHz (70 — 86 kHz in Region 1) and 110 — 130 kHz (112 — 130 kHz in Region 1) by the radionavigation service is limited to continuous wave systems.

MOD **3458** 164 **452** In Region 2, the establishment and operation of stations in the maritime radionavigation service in the bands 70 — 90 kHz and 110 — 130 kHz shall be subject to agreement obtained under the procedure set forth in Article **14** with administrations whose services, operating in accordance with the Table, may be affected. However, stations of the fixed, maritime mobile and radiolocation services shall not cause harmful interference to stations in the maritime radionavigation service established under such agreements.

kHz
90 — 110

Allocation to Services		
Region 1	Region 2	Region 3
90 — 110	RADIONAVIGATION 453 Fixed Maritime Mobile 448 454	

ADD **3461A** **453** Administrations which operate stations in the radionavigation service in the band 90 — 110 kHz are urged to coordinate technical and operating characteristics in such a way as to avoid harmful interference to the services provided by these stations.

MOD **3461** 167 **454** Only classes A1A or F1B, A2C, A3C, F1C or F3C emissions are authorized for stations of the fixed service in the bands allocated to this service between 90 kHz and 160 kHz (148.5 kHz in Region 1) and for stations of the maritime mobile service in the bands allocated to this service between 110 kHz and 160 kHz (148.5 kHz in Region 1). Exceptionally, class J2B or J7B emissions are also authorized in the bands between 110 kHz and 160 kHz (148.5 kHz in Region 1) for stations of the maritime mobile service.

kHz
110 — 130

Allocation to Services		
Region 1	Region 2	Region 3
110 — 112 FIXED MARITIME MOBILE RADIONAVIGATION 454	**110 — 130** FIXED MARITIME MOBILE MARITIME RADIO-NAVIGATION 451 Radiolocation	**110 — 112** FIXED MARITIME MOBILE RADIO-NAVIGATION 451 454
112 — 115 RADIO-NAVIGATION 451		**112 — 117.6** RADIO-NAVIGATION 451 Fixed Maritime Mobile
115 — 117.6 RADIO-NAVIGATION 451 Fixed Maritime Mobile 454 456		454 455
117.6 — 126 FIXED MARITIME MOBILE RADIO-NAVIGATION 451 454		**117.6 — 126** FIXED MARITIME MOBILE RADIO-NAVIGATION 451 454
126 — 129 RADIO-NAVIGATION 451		**126 — 129** RADIO-NAVIGATION 451 Fixed Maritime Mobile 454 455
129 — 130 FIXED MARITIME MOBILE RADIO-NAVIGATION 451 454	452 454	**129 — 130** FIXED MARITIME MOBILE RADIO-NAVIGATION 451 454

MOD 3464 170

455 *Different category of service:* in Bangladesh, Iran and Pakistan, the allocation of the bands 112 — 117.6 kHz and 126 — 129 kHz to the fixed and maritime mobile services is on a primary basis (see No. **425**).

MOD 3463 169

456 *Different category of service:* in the Federal Republic of Germany, the allocation of the band 115 — 117.6 kHz to the fixed and maritime mobile services is on a primary basis (see No. **425**) and to the radionavigation service on a secondary basis (see No. **424**).

kHz
130 — 285

Allocation to Services		
Region 1	Region 2	Region 3
130 — 148.5 MARITIME MOBILE / FIXED / 454 457 458	**130 — 160** FIXED MARITIME MOBILE 454	**130 — 160** FIXED MARITIME MOBILE RADIONAVIGATION 454
148.5 — 255 BROADCASTING 458 460 461 462	**160 — 190** FIXED 459	**160 — 190** FIXED Aeronautical Radionavigation
	190 — 200 AERONAUTICAL RADIONAVIGATION	
255 — 283.5 BROADCASTING / AERONAUTICAL RADIONAVIGATION / 463 458 462 464	**200 — 285** AERONAUTICAL RADIONAVIGATION Aeronautical Mobile	

MOD **3466** 173 **457** *Additional allocation:* in Bulgaria, Hungary, Mongolia, Poland, the German Democratic Republic, Roumania, Czechoslovakia and the U.S.S.R., the band 130 — 148.5 kHz is also allocated to the radionavigation service on a secondary basis. Within and between these countries this service shall have an equal right to operate.

ADD **3466A** **458** In Region 1, the change of the band limits from 150 kHz and 285 kHz to 148.5 kHz and 283.5 kHz respectively shall take place on 1 February 1986 for the lower limit and 1 February 1990 for the upper limit (see Resolution **500**).

MOD **3472** 179 **459** In the Region 2 polar areas (north of 60° N and south of 60° S), which are subject to auroral disturbances, the aeronautical fixed service is the primary service in the band 160 — 190 kHz.

MOD **3469** 176 **460** *Alternative allocation:* in Angola, Botswana, Burundi, the Congo, Malawi, Rwanda, South Africa and Zaire, the band 160 — 200 kHz is allocated to the fixed service on a primary basis.

ADD **3469AB** **461** *Additional allocation:* in Somalia, the band 200 — 255 kHz is also allocated to the aeronautical radionavigation service on a primary basis.

ADD **3469A** **462** *Alternative allocation:* in Angola, Botswana, Burundi, Cameroon, the Central African Republic, the Congo, Ethiopia, Kenya, Lesotho, Madagascar, Malawi, Mozambique, Namibia, Nigeria, Oman, Rwanda, South Africa, Swaziland, Tanzania, Chad, Zaire, Zambia and Zimbabwe, the band 200 — 283.5 kHz is allocated to the aeronautical radionavigation service on a primary basis.

ADD **3469AC** **463** *Different category of service:* in Sudan and Yemen (P.D.R. of), the allocation of the band 255 — 283.5 kHz to the aeronautical radionavigation service is on a primary basis (see No. **425**).

ADD **3472A** **464** *Alternative allocation:* in Tunisia, the band 255 — 283.5 kHz is allocated to the broadcasting service on a primary basis.

kHz
283.5 — 405

Allocation to Services		
Region 1	Region 2	Region 3
283.5 — 315 MARITIME RADIONAVIGATION (radiobeacons) 466 / AERONAUTICAL RADIONAVIGATION / 458 465	**285 — 315** MARITIME RADIONAVIGATION (radiobeacons) 466 / AERONAUTICAL RADIONAVIGATION /	
315 — 325 AERONAUTICAL RADIONAVIGATION Maritime Radionavigation (radiobeacons) 466 465 467	**315 — 325** MARITIME RADIONAVIGATION (radiobeacons) 466 Aeronautical Radionavigation	**315 — 325** AERONAUTICAL RADIONAVIGATION MARITIME RADIONAVIGATION (radiobeacons) 466
325 — 405 AERONAUTICAL RADIONAVIGATION 465	**325 — 335** AERONAUTICAL RADIONAVIGATION Aeronautical Mobile Maritime Radionavigation (radiobeacons) **335 — 405** AERONAUTICAL RADIONAVIGATION Aeronautical Mobile	**325 — 405** AERONAUTICAL RADIONAVIGATION Aeronautical Mobile

MOD 3471 178 **465** Norwegian stations of the fixed service situated in northern areas (north of 60° N) subject to auroral disturbances are allowed to continue operation on four frequencies in the bands 283.5 — 490 kHz and 510 — 526.5 kHz.

ADD 3472B **466** In the band 285 — 325 kHz (283.5 — 325 kHz in Region 1), in the maritime radionavigation service, radiobeacon stations may also transmit supplementary navigational information using narrow-band techniques, on condition that the prime function of the beacon is not significantly degraded.

MOD 3473 180 **467** *Different category of service:* in the U.S.S.R. and the Black Sea areas of Bulgaria, Roumania and Turkey, the allocation of the band 315 — 325 kHz to the maritime radionavigation service is on a primary basis (see No. **425**) under the following conditions:

a) in the Black Sea and White Sea areas, the maritime radionavigation service is the primary service and the aeronautical radionavigation service is the permitted service;

b) in the Baltic Sea area, the assignment of frequencies in this band to new stations in the maritime or aeronautical radionavigation services shall be subject to prior consultation between the administrations concerned.

kHz
405 — 415

Allocation to Services		
Region 1	Region 2	Region 3
405 — 415 RADIO-NAVIGATION 468 465	**405 — 415** RADIONAVIGATION 468 Aeronautical Mobile	

MOD 3475 182 **468** The frequency 410 kHz is designated for radio direction-finding in the maritime radionavigation service. The other radionavigation services to which the band 405 — 415 kHz is allocated shall not cause harmful interference to radio direction-finding in the band 406.5 — 413.5 kHz.

kHz
415 — 1 606.5

<table>
<tr><th colspan="3">Allocation to Services</th></tr>
<tr><th>Region 1</th><th>Region 2</th><th>Region 3</th></tr>
<tr><td>415 — 435
AERONAUTICAL RADIONAVIGATION
/ MARITIME MOBILE / 470

465</td><td colspan="2" rowspan="2">415 — 495
MARITIME MOBILE 470

469 471</td></tr>
<tr><td>435 — 495
MARITIME MOBILE 470
Aeronautical Radionavigation

465 471</td></tr>
<tr><td>495 — 505</td><td colspan="2">MOBILE (distress and calling)

472</td></tr>
<tr><td rowspan="3">505 — 526.5
MARITIME MOBILE 470
/ AERONAUTICAL RADIONAVIGATION / 473

465 471 474 475 476</td><td>505 — 510
MARITIME MOBILE 470

471</td><td rowspan="3">505 — 526.5
MARITIME MOBILE 470
/ AERONAUTICAL RADIONAVIGATION /
Aeronautical Mobile
Land Mobile

471</td></tr>
<tr><td>510 — 525
MOBILE
AERONAUTICAL RADIONAVIGATION</td></tr>
<tr><td>525 — 535
BROADCASTING 477
AERONAUTICAL RADIONAVIGATION</td></tr>
<tr><td rowspan="2">526.5 — 1 606.5
BROADCASTING

478</td><td rowspan="2">535 — 1 605
BROADCASTING</td><td>526.5 — 535
BROADCASTING
Mobile

479</td></tr>
<tr><td>535 — 1 606.5
BROADCASTING</td></tr>
</table>

ADD **3479A** **469** *Additional allocation:* in Afghanistan, Australia, China, the Overseas French Territories of Region 3, India, Japan and Papua New Guinea, the band 415 — 495 kHz is also allocated to the aeronautical radionavigation service on a permitted basis.

MOD **3479** **470** The use of the bands 415 — 495 kHz and 505 — 526.5 kHz (505 — 510 kHz in Region 2) by the maritime mobile service is limited to radiotelegraphy.
186

ADD **3479B** **471** The bands 490 — 495 kHz and 505 — 510 kHz shall be subject to the provisions of No. **3018** until the provisions of Recommendation **200** have been implemented.

NOC **3480** **472** The frequency 500 kHz is the international distress and calling frequency for radiotelegraphy. The conditions for its use are prescribed in Article **38**.
187

MOD **3481** **473** In Region 1, in the band 505 — 526.5 kHz, the administrations which operate stations of the aeronautical radionavigation service shall take the technical steps necessary to avoid harmful interference to the maritime mobile service.
188

ADD **3480A** **474** In the Federal Republic of Germany, Belgium, Spain, France, Iceland, Italy, Norway, the Netherlands, the United Kingdom, Sweden and Yugoslavia, the frequency 518 kHz is used on an experimental basis for the transmission by coast stations of meteorological and navigational warnings to ships, by means of narrow-band direct-printing telegraphy.

MOD **3478** **475** In the band 515.5 — 526.5 kHz, Austria may continue to operate only those broadcasting stations listed in Additional Protocol III to the Final Acts of the Regional Administrative LF/MF Broadcasting Conference (Regions 1 and 3), Geneva, 1975. This operation is allowed until the entry into force of a revision of the Geneva Plan, 1975, and subject to not causing harmful interference to the maritime mobile and aeronautical radionavigation services.
185

ADD **3478A** **476** *Additional allocation:* in the United Kingdom, the band 519.5 — 526.5 kHz is also allocated to the broadcasting service on a secondary basis for the transmission of public utility information.

MOD **3484** **477** In Region 2, in the band 525 — 535 kHz the carrier power of broadcasting stations shall not exceed 1 kilowatt during the day and 250 watts at night.
191

MOD **3483** **478** *Additional allocation:* in Angola, Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Zambia and Zimbabwe, the band 526.5 — 535 kHz is also allocated to the mobile service on a secondary basis.
190

ADD **3484A** **479** *Additional allocation:* in China, the band 526.5 — 535 kHz is also allocated to the aeronautical radionavigation service on a secondary basis.

kHz
1 605 — 1 800

Allocation to Services		
Region 1	Region 2	Region 3
	1 605 — 1 625	
1 606.5 — 1 625 MARITIME MOBILE / FIXED / / LAND MOBILE / 483 484	BROADCASTING 480 481	1 606.5 — 1 800 FIXED MOBILE RADIOLOCATION RADIONAVIGATION
1 625 — 1 635 RADIOLOCATION 487 485 486	1 625 — 1 705 BROADCASTING 480 / FIXED / / MOBILE / Radiolocation 481	
1 635 — 1 800 MARITIME MOBILE / FIXED / / LAND MOBILE / 483 484 488	1 705 — 1 800 FIXED MOBILE RADIOLOCATION AERONAUTICAL RADIONAVIGATION	482

ADD **3484B** **480** In Region 2, the use of the band 1 605 — 1 705 kHz by stations of the broadcasting service shall be subject to a plan to be established by a regional administrative radio conference (see Recommendation **504**).

ADD **3484C** **481** In Region 2, until the dates decided by the regional administrative radio conference referred to in No. **480**, the band 1 605 — 1 705 kHz is allocated to the fixed, mobile and aeronautical radionavigation services on a primary basis and to the radiolocation service on a secondary basis (see Recommendation **504**).

ADD **3492B** **482** *Additional allocation:* in Australia, Indonesia, New Zealand, the Philippines, Singapore, Sri Lanka and Thailand, the band 1 606.5 — 1 705 kHz is also allocated to the broadcasting service on a secondary basis.

ADD **3485A** **483** *Different category of service:* in Bulgaria, Hungary, Mongolia, Nigeria, Poland, the German Democratic Republic, Chad, Czechoslovakia and the U.S.S.R., the allocation of the bands 1 606.5 — 1 625 kHz, 1 635 — 1 800 kHz and 2 107 — 2 160 kHz to the fixed and land mobile services is on a primary basis (see No. **425**).

MOD **3490** **484** Some countries of Region 1 use radiodetermination systems in the bands
195A 1 606.5 — 1 625 kHz, 1 635 — 1 800 kHz, 1 850 — 2 160 kHz, 2 194 — 2 300 kHz, 2 502 — 2 850 kHz and 3 500 — 3 800 kHz. The establishment and operation of such systems are subject to agreement obtained under the procedure set forth in Article **14**. The radiated mean power of these stations shall not exceed 50 W.

ADD **3485B** **485** *Additional allocation:* in Angola, Bulgaria, Hungary, Mongolia, Nigeria, Poland, the German Democratic Republic, Chad, Czechoslovakia and the U.S.S.R., the bands 1 625 — I 635 kHz, 1 800 — 1 810 kHz and 2 160 — 2 170 kHz are also allocated to the fixed and land mobile services on a primary basis subject to agreement obtained under the procedure set forth in Article **14**.

ADD **3490B** **486** In Region 1, in the bands 1 625 — 1 635 kHz, 1 800 — 1 810 kHz and 2 160 — 2 170 kHz (except in the countries listed in No. **485** and those listed in No. **499** for the band 2 160 — 2 170 kHz), existing stations in the fixed and mobile, except aeronautical mobile, services (and stations of the aeronautical mobile (OR) service in the band 2 160 — 2 170 kHz) may continue to operate on a primary basis until satisfactory replacement assignments have been found and implemented in accordance with Resolution **38**.

ADD **3490A** **487** In Region 1, the establishment and operation of stations of the radiolocation service in the bands 1 625 — 1 635 kHz, 1 800 — 1 810 kHz and 2 160 — 2 170 kHz shall be subject to agreement obtained under the procedure set forth in Article **14** (see also No. **486**). The radiated mean power of radiolocation stations shall not exceed 50 W. Pulse systems are prohibited.

MOD **3488** **488** In the Federal Republic of Germany, Denmark, Finland, Hungary, Ireland, Israel,
194 Jordan, Malta, Norway, Poland, the German Democratic Republic, the United Kingdom, Sweden, Czechoslovakia and the U.S.S.R., administrations may allocate up to 200 kHz to their amateur service in the bands 1 715 — 1 800 kHz and 1 850 — 2 000 kHz. However, when allocating the bands within this range to their amateur service, administrations shall, after prior consultation with administrations of neighbouring countries, take such steps as may be necessary to prevent harmful interference from their amateur service to the fixed and mobile services of other countries. The mean power of any amateur station shall not exceed 10 W.

kHz
1 800 — 2 000

Allocation to Services		
Region 1	Region 2	Region 3
1 800 — 1 810 RADIOLOCATION 487 485 486	**1 800 — 1 850** AMATEUR	**1 800 — 2 000** AMATEUR FIXED MOBILE except aeronautical mobile RADIONAVIGATION Radiolocation
1 810 — 1 850 AMATEUR 490 491 492 493	 489	
1 850 — 2 000 FIXED MOBILE except aeronautical mobile 484 488 495	**1 850 — 2 000** AMATEUR FIXED MOBILE except aeronautical mobile RADIOLOCATION RADIONAVIGATION 489 494	 489

MOD **3492** **489** In Region 2, Loran stations operating in the band 1 800 — 2 000 kHz shall cease operation by 31 December 1982. In Region 3, the Loran system operates either on 1 850 kHz or 1 950 kHz, the bands occupied being 1 825 — 1 875 kHz and 1 925 — 1 975 kHz respectively. Other services to which the band 1 800 — 2 000 kHz is allocated may use any frequency therein on condition that no harmful interference is caused to the Loran system operating on 1 850 kHz or 1 950 kHz.
198

ADD **3492D** **490** *Alternative allocation:* in the Federal Republic of Germany, Angola, Austria, Belgium, Bulgaria, Cameroon, the Congo, Denmark, Egypt, Spain, Ethiopia, France, Greece, Italy, the Lebanon, Luxembourg, Malawi, the Netherlands, Portugal, Syria, the German Democratic Republic, Somalia, Tanzania, Tunisia, Turkey and the U.S.S.R., the band I 810 — 1 830 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

ADD **3492E** **491** *Additional allocation:* in Saudi Arabia, Iraq, Israel, Libya, Poland, Roumania, Chad, Czechoslovakia, Togo and Yugoslavia, the band 1 810 — 1 830 kHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

ADD **3492C** **492** In Region 1, the use of the band 1 810 — 1 850 kHz by the amateur service is subject to the condition that satisfactory replacement assignments have been found and implemented in accordance with Resolution **38**, for frequencies to all existing stations of the fixed and mobile, except aeronautical mobile, services operating in this band (except for the stations of the countries listed in Nos. **490, 491** and **493**). On completion of satisfactory transfer, the authorization to use the band 1 810 — 1 830 kHz by the amateur service in countries situated totally or partially north of 40° N shall be given only after consultation with the countries mentioned in Nos. **490** and **491** to define the necessary steps to be taken to prevent harmful interference between amateur stations and stations of other services operating in accordance with Nos. **490** and **491**.

ADD **3492F** **493** *Alternative allocation:* in Burundi and Lesotho, the band 1 810 — 1 850 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

ADD **3492A** **494** *Alternative allocation:* in Argentina, Bolivia, Chile, Mexico, Paraguay, Peru, Uruguay and Venezuela, the band 1 850 — 2 000 kHz is allocated to the fixed, mobile except aeronautical mobile, radiolocation and radionavigation services on a primary basis.

MOD **3499** **495** In Region 1, in making assignments to stations in the fixed and mobile services in the bands 1 850 — 2 045 kHz, 2 194 — 2 498 kHz, 2 502 — 2 625 kHz and 2 650 — 2 850 kHz, administrations should bear in mind the special requirements of the maritime mobile service.
205

kHz
2 000 — 2 170

Allocation to Services		
Region 1	Region 2	Region 3
2 000 — 2 025 FIXED MOBILE except aeronautical mobile (R) 484 495	**2 000 — 2 065** FIXED MOBILE	
2 025 — 2 045 FIXED MOBILE except aeronautical mobile (R) Meteorological Aids 496 484 495		
2 045 — 2 160 MARITIME MOBILE / FIXED / / LAND MOBILE / 483 484	**2 065 — 2 107** MARITIME MOBILE 497 498	
2 160 — 2 170 RADIOLOCATION 487 485 486 499	**2 107 — 2 170** FIXED MOBILE	

ADD **3493C** **496** In Region 1, the use of the band 2 025 — 2 045 kHz by the meteorological aids service is limited to oceanographic buoy stations.

MOD **3493** **497** In Region 2, except in Greenland, coast stations and ship stations using radiotelephony in the band 2 065 — 2 107 kHz shall be limited to class R3E or J3E emissions and to a peak envelope power not exceeding 1 kW. Preferably, the following carrier frequencies should be used ; 2 065.0 kHz, 2 079.0 kHz, 2 082.5 kHz, 2 086.0 kHz, 2 093.0 kHz, 2 096.5 kHz, 2 100.0 kHz and 2 103.5 kHz. In Argentina, Brazil and Uruguay, the carrier frequencies 2 068.5 kHz and 2 075.5 kHz are also used for this purpose, while the frequencies within the band 2 072 — 2 075.5 kHz are used as provided in No. **4245**.
200

ADD **3493B** **498** In Regions 2 and 3, provided no harmful interference is caused to the maritime mobile service, the frequencies between 2 065 kHz and 2 107 kHz may be used by stations of the fixed service communicating only within national borders and whose mean power does not exceed 50 W. In notifying the frequencies, the attention of the International Frequency Registration Board should be drawn to these provisions.

ADD **3493D** **499** *Additional allocation:* in Saudi Arabia, Botswana, Ethiopia, Iraq, Lesotho, Libya, Malawi, Somalia, Swaziland and Zambia, the band 2 160 — 2 170 kHz is also allocated to the fixed and mobile, except aeronautical mobile (R), services on a primary basis. The mean power of stations in these services shall not exceed 50 W.

kHz
2 170 — 2 194

Allocation to Services		
Region 1	Region 2	Region 3
2 170 — 2 173.5	MARITIME MOBILE	
2 173.5 — 2 190.5	MOBILE (distress and calling) 500 501	
2 190.5 — 2 194	MARITIME MOBILE	

MOD **3494** **500** The frequency 2 182 kHz is the international distress and calling frequency for radiotelephony. The conditions for the use of the band 2 173.5 — 2 190.5 kHz are prescribed in Articles **38** and **60**.
201

NOC **3495** **501** The frequencies 2 182 kHz, 3 023 kHz, 5 680 kHz, 8 364 kHz, 121.5 MHz, 156.8 MHz and 243 MHz may also be used, in accordance with the procedures in force for terrestrial radiocommunication services, for search and rescue operations concerning manned space vehicles.
201A

The same applies to the frequencies 10 003 kHz, 14 993 kHz and 19 993 kHz, but in each of these cases emissions must be confined in a band of ± 3 kHz about the frequency.

kHz
2 194 — 2 502

Allocation to Services		
Region 1	Region 2	Region 3
2 194 — 2 300 FIXED MOBILE except aeronautical mobile (R) 484 495 502	**2 194 — 2 300** FIXED MOBILE 502	
2 300 — 2 498 FIXED MOBILE except aeronautical mobile (R) BROADCASTING 503 495	**2 300 — 2 495** FIXED MOBILE BROADCASTING 503	
2 498 — 2 501 STANDARD FREQUENCY AND TIME SIGNAL (2 500 kHz)	**2 495 — 2 501** STANDARD FREQUENCY AND TIME SIGNAL (2 500 kHz)	
2 501 — 2 502 STANDARD FREQUENCY AND TIME SIGNAL Space Research		

ADD **3495A** **502** *Alternative allocation:* in Belgium, Cyprus, Denmark, Spain, France, Greece, Iceland, Italy, Malta, Norway, the Netherlands, Portugal, the United Kingdom, Singapore, Sri Lanka, Sweden, Turkey and Yugoslavia, the band 2 194 — 2 300 kHz is allocated to the maritime mobile service on a primary basis and to the fixed and land mobile services on a permitted basis.

(MOD) **3496** **503** For the conditions for the use of the bands 2 300 — 2 495 kHz (2 498 kHz in Region 1), 3 200 — 3 400 kHz, 4 750 — 4 995 kHz and 5 005 — 5 060 kHz by the broadcasting service, see Nos. **406** to **410**, **411** and **2666** to **2673**.
202

kHz
2 502 — 2 850

Allocation to Services		
Region 1	Region 2	Region 3
2 502 — 2 625 FIXED MOBILE except aeronautical mobile (R) 484 495 504	**2 502 — 2 505** STANDARD FREQUENCY AND TIME SIGNAL	
2 625 — 2 650 MARITIME MOBILE MARITIME RADIONAVIGATION 484	**2 505 — 2 850** FIXED MOBILE	
2 650 — 2 850 FIXED MOBILE except aeronautical mobile (R) 484 495		

ADD **3497A** **504** *Alternative allocation:* in Belgium, Cyprus, Denmark, Spain, France, Greece, Iraq, Italy, Malta, Norway, the Netherlands, Portugal, the United Kingdom, Sweden, Turkey and Yugoslavia, the band 2 502 — 2 625 kHz is allocated to the maritime mobile service on a primary basis and to the fixed and land mobile services on a permitted basis.

kHz
2 850 — 3 230

Allocation to Services		
Region 1	Region 2	Region 3
2 850 — 3 025	AERONAUTICAL MOBILE (R) 501 505	
3 025 — 3 155	AERONAUTICAL MOBILE (OR)	
3 155 — 3 200	FIXED MOBILE except aeronautical mobile (R) 506 507	
3 200 — 3 230	FIXED MOBILE except aeronautical mobile (R) BROADCASTING 503 506	

MOD **3500** 205A **505** The carrier (reference) frequencies 3 023 kHz and 5 680 kHz may also be used, in accordance with Nos. **2980** and **2984** respectively, by stations of the maritime mobile service engaged in coordinated search and rescue operations.

ADD **3496A** **506** Administrations are urged to authorize the use of the band 3 155 — 3 195 kHz to provide a common worldwide channel for low power wireless hearing aids. Additional channels for these devices may be assigned by administrations in the bands between 3 155 kHz and 3 400 kHz to suit local needs.

It should be noted that frequencies in the range 3 000 kHz to 4 000 kHz are suitable for hearing aid devices which are designed to operate over short distances within the induction field.

ADD **3498A** **507** *Alternative allocation:* in Belgium, Cameroon, Cyprus, the Ivory Coast, Denmark, Egypt, Spain, France, Greece, Iceland, Italy, Liberia, Malta, Norway, the Netherlands, the United Kingdom, Singapore, Sri Lanka, Sweden, Togo, Turkey and Yugoslavia, the band 3 155 — 3 200 kHz is allocated to the maritime mobile service on a primary basis and to the fixed and land mobile services on a permitted basis.

kHz
3 230 — 4 000
(see page RR8-29)

kHz
3 230 — 4 000

Allocation to Services		
Region 1	Region 2	Region 3
3 230 — 3 400	FIXED MOBILE except aeronautical mobile BROADCASTING 503 506 508	
3 400 — 3 500	AERONAUTICAL MOBILE (R)	
3 500 — 3 800 AMATEUR 510 FIXED MOBILE except aeronautical mobile 484	**3 500 — 3 750** AMATEUR 510 509 511	**3 500 — 3 900** AMATEUR 510 FIXED MOBILE
3 800 — 3 900 FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE	**3 750 — 4 000** AMATEUR 510 FIXED MOBILE except aeronautical mobile (R)	
3 900 — 3 950 AERONAUTICAL MOBILE (OR) 513		**3 900 — 3 950** AERONAUTICAL MOBILE BROADCASTING
3 950 — 4 000 FIXED BROADCASTING	511 512 514 515	**3 950 — 4 000** FIXED BROADCASTING 516

ADD **3499B** **508** *Additional allocation:* in Australia, Brazil, Canada, the United States, Japan, Mexico, New Zealand, Peru and Uruguay, the band 3 230 — 3 400 kHz is also allocated to the radiolocation service on a secondary basis.

ADD **3500B** **509** *Additional allocation:* in Honduras, Mexico, Peru and Venezuela, the band 3 500 — 3 750 kHz is also allocated to the fixed and mobile services on a primary basis.

ADD **3499A** **510** For the use of the bands allocated to the amateur service at 3.5 MHz, 7.0 MHz, 10.1 MHz, 14.0 MHz, 18.068 MHz, 21.0 MHz, 24.89 MHz and 144 MHz in the event of natural disasters, see Resolution **640**.

ADD **3500D** **511** *Additional allocation:* in Brazil, the band 3 700 — 4 000 kHz is also allocated to the radiolocation service on a primary basis.

ADD **3500C** **512** *Alternative allocation:* in Argentina, Bolivia, Chile, Ecuador, Paraguay, Peru and Uruguay, the band 3 750 — 4 000 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

ADD **3501A** **513** *Alternative allocation:* in Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Zambia and Zimbabwe, the band 3 900 — 3 950 kHz is allocated to the broadcasting service on a primary basis. The use of this band by the broadcasting service is subject to agreement obtained under the procedure set forth in Article **14** with neighbouring countries having services operating in accordance with the Table.

ADD **3502A** **514** *Additional allocation:* in Canada, the band 3 950 — 4 000 kHz is also allocated to the broadcasting service on a primary basis. The power of broadcasting stations operating in this band shall not exceed that necessary for a national service within the frontier of this country and shall not cause harmful interference to other services operating in accordance with the Table.

ADD **3502AA** **515** *Additional allocation:* in Greenland, the band 3 950 — 4 000 kHz is also allocated to the broadcasting service on a primary basis. The power of the broadcasting stations operating in this band shall not exceed that necessary for a national service and shall in no case exceed 5 kW.

ADD **3502B** **516** In Region 3, the stations of those services to which the band 3 995 — 4 005 kHz is allocated may transmit standard frequency and time signals.

kHz
4 000 — 4 650

Allocation to Services		
Region 1	Region 2	Region 3
4 000 — 4 063	FIXED MARITIME MOBILE 517 516	
4 063 — 4 438	MARITIME MOBILE 520 518 519	
4 438 — 4 650 FIXED MOBILE except aeronautical mobile (R)		**4 438 — 4 650** FIXED MOBILE except aeronautical mobile

ADD **3502C** **517** The use of the band 4 000 — 4 063 kHz by the maritime mobile service is limited to ship stations using radiotelephony (see No. **4373**).

MOD **3503** 208 **518** In Afghanistan, Argentina, Australia, Botswana, China, India, Swaziland, Chad and the U.S.S.R., in the bands 4 063 — 4 123 kHz, 4 130 — 4 133 kHz and 4 408 — 4 438 kHz, stations of limited power in the fixed service which are situated at least 600 km from the coast may operate on condition that harmful interference is not caused to the maritime mobile service.

MOD **3504** 209 **519** On condition that harmful interference is not caused to the maritime mobile service, the frequencies in the bands 4 063 — 4 123 kHz and 4 130 — 4 438 kHz may be used exceptionally by stations in the fixed service communicating only within the boundary of the country in which they are located with a mean power not exceeding 50 W.

MOD **3505** 209A **520** For the use of the carrier frequency 4 125 kHz in the zone of Regions 1 and 2 south of latitude 15° N, including Mexico, and in the zone of Region 3 south of latitude 25° N, see No. **2982**.

kHz
4 650 — 5 005

Allocation to Services		
Region 1	Region 2	Region 3
4 650 — 4 700	AERONAUTICAL MOBILE (R)	
4 700 — 4 750	AERONAUTICAL MOBILE (OR)	
4 750 — 4 850 FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE BROADCASTING 503	**4 750 — 4 850** FIXED MOBILE except aeronautical mobile (R) BROADCASTING 503	**4 750 — 4 850** FIXED BROADCASTING 503 Land Mobile
4 850 — 4 995	FIXED LAND MOBILE BROADCASTING 503	
4 995 — 5 003	STANDARD FREQUENCY AND TIME SIGNAL (5 000 kHz)	
5 003 — 5 005	STANDARD FREQUENCY AND TIME SIGNAL Space Research	

kHz
5 005 — 5 480

Allocation to Services		
Region 1	Region 2	Region 3
5 005 — 5 060	FIXED BROADCASTING 503	
5 060 — 5 250	FIXED Mobile except aeronautical mobile 521	
5 250 — 5 450	FIXED MOBILE except aeronautical mobile	
5 450 — 5 480 FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE	**5 450 — 5 480** AERONAUTICAL MOBILE (R)	**5 450 — 5 480** FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE

ADD **3496AA** **521** *Different category of service:* in the U.S.S.R., the allocation of the band 5 130 — 5 250 kHz to the mobile, except aeronautical mobile, service is on a primary basis (see No. **425**).

kHz
5 480 — 6 765

Allocation to Services		
Region 1	Region 2	Region 3
5 480 — 5 680	AERONAUTICAL MOBILE (R) 501 505	
5 680 — 5 730	AERONAUTICAL MOBILE (OR) 501 505	
5 730 — 5 950 FIXED LAND MOBILE	**5 730 — 5 950** FIXED MOBILE except aeronautical mobile (R)	**5 730 — 5 950** FIXED Mobile except aeronautical mobile (R)
5 950 — 6 200	BROADCASTING	
6 200 — 6 525	MARITIME MOBILE 523 522	
6 525 — 6 685	AERONAUTICAL MOBILE (R)	
6 685 — 6 765	AERONAUTICAL MOBILE (OR)	

MOD **3507** **522** On condition that harmful interference is not caused to the maritime mobile service, the bands 6 200 — 6 213.5 kHz and 6 220.5 — 6 525 kHz may be used exceptionally by stations in the fixed service, communicating only within the boundary of the country in which they are located, with a mean power not exceeding 50 W. At the time of notification of these frequencies, the attention of the International Frequency Registration Board will be drawn to the above conditions.
211

MOD **3508** **523** For the use of the carrier frequency 6 215.5 kHz in the zone of Region 3 south of latitude 25° N, see No. **2986**.
211A

kHz
6 765 — 7 300

Allocation to Services		
Region 1	Region 2	Region 3
6 765 — 7 000	FIXED Land Mobile 525 524	
7 000 — 7 100	AMATEUR 510 AMATEUR-SATELLITE 526 527	
7 100 — 7 300 BROADCASTING	**7 100 — 7 300** AMATEUR 510 528	**7 100 — 7 300** BROADCASTING

ADD **3508A** **524** The band 6 765 — 6 795 kHz (centre frequency 6 780 kHz) is designated for industrial, scientific and medical (ISM) applications. The use of this frequency band for ISM applications shall be subject to special authorization by the administration concerned, in agreement with other administrations whose radiocommunication services might be affected. In applying this provision, administrations shall have due regard to the latest relevant CCIR Recommendations.

ADD **3508B** **525** *Different category of service:* in Mongolia and the U.S.S.R., the allocation of the band 6 765 — 7 000 kHz to the land mobile service is on a primary basis (see No. **425**).

ADD **3508BA** **526** *Additional allocation:* in Angola, Iraq, Kenya, Rwanda, Somalia and Togo, the band 7 000 — 7 050 kHz is also allocated to the fixed service on a primary basis.

ADD **3508C** **527** *Alternative allocation:* in Egypt, Ethiopia, Guinea, Libya, Madagascar, Malawi and Tanzania, the band 7 000 — 7 050 kHz is allocated to the fixed service on a primary basis.

ADD **3508D** **528** The use of the band 7 100 — 7 300 kHz in Region 2 by the amateur service shall not impose constraints on the broadcasting service intended for use within Region 1 and Region 3.

kHz
7 300 — 9 995
(see page RR8-37)

kHz
7 300 — 9 995

Allocation to Services		
Region 1	Region 2	Region 3
7 300 — 8 100	FIXED Land Mobile 529	
8 100 — 8 195	FIXED MARITIME MOBILE	
8 195 — 8 815	MARITIME MOBILE 501	
8 815 — 8 965	AERONAUTICAL MOBILE (R)	
8 965 — 9 040	AERONAUTICAL MOBILE (OR)	
9 040 — 9 500	FIXED	
9 500 — 9 900	BROADCASTING 530 531	
9 900 — 9 995	FIXED	

ADD **3509A** **529** In Region 3, the stations of those services to which the band 7 995 — 8 005 kHz is allocated may transmit standard frequency and time signals.

ADD **3510B** **530** On condition that harmful interference is not caused to the broadcasting service, frequencies in the bands 9 775 — 9 900 kHz, 11 650 — 11 700 kHz and 11 975 — 12 050 kHz may be used by stations in the fixed service communicating only within the boundary of the country in which they are located, each station not using a total radiated power exceeding 24 dBW.

ADD **3510A** **531** The bands 9 775 — 9 900 kHz, 11 650 — 11 700 kHz, 11 975 — 12 050 kHz, 13 600 — 13 800 kHz, 15 450 — 15 600 kHz, 17 550 — 17 700 kHz and 21 750 — 21 850 kHz are allocated to the fixed service on a primary basis subject to the procedure described in Resolution **8**. The use of these bands by the broadcasting service shall be subject to provisions to be established by the world administrative radio conference for the planning of HF bands allocated to the broadcasting service (see Resolution **508**). Within these bands, the date of commencement of operations in the broadcasting service on a planned channel shall not be earlier than the date of completion of satisfactory transfer, according to the procedures described in Resolution **8**, of all assignments to stations in the fixed service operating in accordance with the Table and other provisions of the Radio Regulations, which are recorded in the Master Register and which may be affected by broadcasting operations on that channel.

kHz
9 995 — 13 200

Allocation to Services		
Region 1	Region 2	Region 3
9 995 — 10 003	STANDARD FREQUENCY AND TIME SIGNAL (10 000 kHz) 501	
10 003 — 10 005	STANDARD FREQUENCY AND TIME SIGNAL Space Research 501	
10 005 — 10 100	AERONAUTICAL MOBILE (R) 501	
10 100 — 10 150	FIXED Amateur 510	
10 150 — 11 175	FIXED Mobile except aeronautical mobile (R)	
11 175 — 11 275	AERONAUTICAL MOBILE (OR)	
11 275 — 11 400	AERONAUTICAL MOBILE (R)	
11 400 — 11 650	FIXED	
11 650 — 12 050	BROADCASTING 530 531	
12 050 — 12 230	FIXED	
12 230 — 13 200	MARITIME MOBILE 532	

ADD **3511A** **532** The bands 12 230 — 12 330 kHz, 16 360 — 16 460 kHz, 17 360 — 17 410 kHz, 18 780 — 18 900 kHz, 19 680 — 19 800 kHz and 22 720 — 22 855 kHz are allocated to the fixed service on a primary basis subject to the procedure described in Resolution **8**. The use of these bands by the maritime mobile service shall be subject to provisions to be decided by a competent world administrative radio conference. The date of commencement of operations in the maritime mobile service on a frequency in accordance with the above-mentioned provisions shall not be earlier than the date of completion of satisfactory transfer, in accordance with the procedure described in Resolution **8**, of all assignments to stations in the fixed service operating in accordance with the Table and other provisions of the Radio Regulations which are recorded in the Master Register and which may be affected by maritime mobile operations on that frequency.

kHz
13 200 — 14 990

Allocation to Services		
Region 1	Region 2	Region 3
13 200 — 13 260	AERONAUTICAL MOBILE (OR)	
13 260 — 13 360	AERONAUTICAL MOBILE (R)	
13 360 — 13 410	FIXED RADIO ASTRONOMY 533	
13 410 — 13 600	FIXED Mobile except aeronautical mobile (R) 534	
13 600 — 13 800	BROADCASTING 531	
13 800 — 14 000	FIXED Mobile except aeronautical mobile (R)	
14 000 — 14 250	AMATEUR 510 AMATEUR-SATELLITE	
14 250 — 14 350	AMATEUR 510 535	
14 350 — 14 990	FIXED Mobile except aeronautical mobile (R)	

ADD **3512A** **533** In making assignments to stations of other services to which the band 13 360 — 13 410 kHz is allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. **343** and **344** and Article **36**).

MOD **3513** **534** The band 13 553 — 13 567 kHz (centre frequency 13 560 kHz) is designated for
217 industrial, scientific and medical (ISM) applications. Radiocommunication services operating within this band must accept harmful interference which may be caused by these applications. ISM equipment operating in this band is subject to the provisions of No. **1815**.

MOD **3514** **535** *Additional allocation:* in Afghanistan, China, the Ivory Coast, Iran and the
218 U.S.S.R., the band 14 250 — 14 350 kHz is also allocated to the fixed service on a primary basis. Stations of the fixed service shall not use a radiated power exceeding 24 dBW.

kHz
14 990 — 18 030

Allocation to Services		
Region 1	Region 2	Region 3
14 990 — 15 005	STANDARD FREQUENCY AND TIME SIGNAL (15 000 kHz) 501	
15 005 — 15 010	STANDARD FREQUENCY AND TIME SIGNAL Space Research	
15 010 — 15 100	AERONAUTICAL MOBILE (OR)	
15 100 — 15 600	BROADCASTING 531	
15 600 — 16 360	FIXED 536	
16 360 — 17 410	MARITIME MOBILE 532	
17 410 — 17 550	FIXED	
17 550 — 17 900	BROADCASTING 531	
17 900 — 17 970	AERONAUTICAL MOBILE (R)	
17 970 — 18 030	AERONAUTICAL MOBILE (OR)	

ADD **3515A** **536** In Region 3, the stations of those services to which the band 15 995 — 16 005 kHz is allocated may transmit standard frequency and time signals.

kHz
18 030 — 19 990

Allocation to Services		
Region 1	Region 2	Region 3
18 030 — 18 052	FIXED	
18 052 — 18 068	FIXED Space Research	
18 068 — 18 168	AMATEUR 510 AMATEUR-SATELLITE 537 538	
18 168 — 18 780	FIXED	
18 780 — 18 900	MARITIME MOBILE 532	
18 900 — 19 680	FIXED	
19 680 — 19 800	MARITIME MOBILE 532	
19 800 — 19 990	FIXED	

ADD **3515B** **537** The band 18 068 — 18 168 kHz is allocated to the fixed service on a primary basis subject to the procedure described in Resolution **8**. The use of this band by the amateur and amateur-satellite services shall be subject to the completion of satisfactory transfer of all assignments to stations in the fixed service operating in this band and recorded in the Master Register, in accordance with the procedure described in Resolution **8**.

ADD **3515C** **538** *Additional allocation:* in the U.S.S.R., the band 18 068 — 18 168 kHz is also allocated to the fixed service on a primary basis for use within the boundary of the U.S.S.R., with a peak envelope power not exceeding 1 kW.

kHz
19 990 — 23 350

Allocation to Services		
Region 1	Region 2	Region 3
19 990 — 19 995	STANDARD FREQUENCY AND TIME SIGNAL Space Research 501	
19 995 — 20 010	STANDARD FREQUENCY AND TIME SIGNAL (20 000 kHz) 501	
20 010 — 21 000	FIXED Mobile	
21 000 — 21 450	AMATEUR 510 AMATEUR-SATELLITE	
21 450 — 21 850	BROADCASTING 531	
21 850 — 21 870	FIXED 539	
21 870 — 21 924	AERONAUTICAL FIXED	
21 924 — 22 000	AERONAUTICAL MOBILE (R)	
22 000 — 22 855	MARITIME MOBILE 532 540	
22 855 — 23 000	FIXED 540	
23 000 — 23 200	FIXED Mobile except aeronautical mobile (R) 540	
23 200 — 23 350	AERONAUTICAL FIXED AERONAUTICAL MOBILE (OR)	

MOD **3517** **539** *Alternative allocation:* in Bulgaria, Hungary, Mongolia, Poland, Czechoslovakia and the U.S.S.R., the band 21 850 — 21 870 kHz is allocated to the aeronautical fixed and the aeronautical mobile (R) services on a primary basis.
221B

ADD **3517A** **540** *Additional allocation:* in Nigeria, the band 22 720 — 23 200 kHz is also allocated to the meteorological aids service (radiosondes) on a primary basis.

kHz
23 350 — 25 070

Allocation to Services		
Region 1	Region 2	Region 3
23 350 — 24 000	FIXED MOBILE except aeronautical mobile 541 542	
24 000 — 24 890	FIXED LAND MOBILE 542	
24 890 — 24 990	AMATEUR 510 AMATEUR-SATELLITE 542 543	
24 990 — 25 005	STANDARD FREQUENCY AND TIME SIGNAL (25 000 kHz)	
25 005 — 25 010	STANDARD FREQUENCY AND TIME SIGNAL Space Research	
25 010 — 25 070	FIXED MOBILE except aeronautical mobile	

MOD **3518** **541** The use of the band 23 350 — 24 000 kHz by the maritime mobile service is limited to inter-ship radiotelegraphy.
222

ADD **3518A** **542** *Additional allocation:* in Kenya, the band 23 600 — 24 900 kHz is also allocated to the meteorological aids service (radiosondes) on a primary basis.

ADD **3518B** **543** The band 24 890 — 24 990 kHz is allocated to the fixed and land mobile services on a primary basis subject to the procedure described in Resolution **8**. The use of this band by the amateur and amateur-satellite services shall be subject to the completion of the satisfactory transfer of all assignments to fixed and land mobile stations operating in this band and recorded in the Master Register, in accordance with the procedure described in Resolution **8**.

kHz
25 070 — 27 500

Allocation to Services		
Region 1	Region 2	Region 3
25 070 — 25 210	MARITIME MOBILE 544	
25 210 — 25 550	FIXED MOBILE except aeronautical mobile	
25 550 — 25 670	RADIO ASTRONOMY 545	
25 670 — 26 100	BROADCASTING	
26 100 — 26 175	MARITIME MOBILE 544	
26 175 — 27 500	FIXED MOBILE except aeronautical mobile 546	

ADD **3521A** **544** The bands 25 110 — 25 210 kHz and 26 100 — 26 175 kHz are also allocated to the fixed and land mobile services on a primary basis subject to the procedure described in Resolution **8**. The use of these bands on an exclusive basis by the maritime mobile service shall be subject to provisions to be decided by a competent world administrative radio conference. The date of commencement of operations in the maritime mobile service on a frequency in accordance with the above-mentioned provisions shall not be earlier than the date of completion of satisfactory transfer, in accordance with the procedure described in Resolution **8**, of all assignments to stations in the fixed and land mobile services operating in accordance with the Table and other provisions of the Radio Regulations recorded in the Master Register and which may be affected by such maritime mobile operations on that frequency.

ADD **3521B** **545** The band 25 550 — 25 600 kHz is allocated to the fixed and mobile, except aeronautical mobile, service on a primary basis subject to the procedure described in Resolution **8**. The use of this band by the radio astronomy service shall be subject to the completion of the satisfactory transfer of all assignments to stations in the fixed and mobile, except aeronautical mobile, services operating in this band and recorded in the Master Register, in accordance with the procedure described in Resolution **8**. The band 25 600 — 25 670 kHz is allocated to the broadcasting service on a primary basis, subject to provisions to be established by the world administrative radio conference for the planning of HF bands allocated to the broadcasting service (see Resolution **508**). After completion of all the above-mentioned provisions, all emissions capable of causing harmful interference to the radio astronomy service in the band 25 550 — 25 670 kHz shall be avoided. The use of passive sensors by other services will also be authorized.

MOD **3522** **546** The band 26 957 — 27 283 kHz (centre frequency 27 120 kHz) is designated for
225 industrial, scientific and medical (ISM) applications. Radiocommunication services operating within this band must accept harmful interference which may be caused by these applications. ISM equipment operating in this band is subject to the provisions of No. **1815**.

MHz
27.5 — 38.25

Allocation to Services		
Region 1	Region 2	Region 3
27.5 — 28	METEOROGICAL AIDS FIXED MOBILE	
28 — 29.7	AMATEUR AMATEUR-SATELLITE	
29.7 — 30.005	FIXED MOBILE	
30.005 — 30.01	SPACE OPERATION (satellite identification) FIXED MOBILE SPACE RESEARCH	
30.01 — 37.5	FIXED MOBILE	
37.5 — 38.25	FIXED MOBILE Radio Astronomy 547	

ADD **3531A** **547** In making assignments to stations of other services to which the band 37.5 — 38.25 MHz is allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. **343** and **344** and Article **36**).

MHz
38.25 — 47
(see page RR8-53)

MHz
38.25 — 47

Allocation to Services		
Region 1	Region 2	Region 3
38.25 — 39.986	FIXED MOBILE	
39.986 — 40.02	FIXED MOBILE Space Research	
40.02 — 40.98	FIXED MOBILE 548	
40.98 — 41.015	FIXED MOBILE Space Research 549 550 551	
41.015 — 44	FIXED MOBILE 549 550 551	
44 — 47	FIXED MOBILE 551 552	

MOD **3533** 236 **548** The band 40.66 — 40.70 MHz (centre frequency 40.68 MHz) is designated for industrial, scientific and medical (ISM) applications. Radiocommunication services operating within this band must accept harmful interference which may be caused by these applications. ISM equipment operating in this band is subject to the provisions of No. **1815**.

MOD **3536** 238 **549** *Additional allocation:* in Botswana, Burundi, Lesotho, Malawi, Namibia, Rwanda, South Africa, Swaziland, Zaire, Zambia and Zimbabwe the band 41 — 44 MHz is also allocated to the aeronautical radionavigation service on a primary basis.

ADD **3538A** **550** *Additional allocation:* in Iran and Japan, the band 41 — 44 MHz is also allocated to the radiolocation service on a secondary basis.

MOD **3538** 240 **551** *Additional allocation:* in France and Monaco, the band 41 — 47 MHz is also allocated to the broadcasting service on a primary basis until 1 January 1986 and, in the United Kingdom, until 1 January 1987.

ADD **3538AB** **552** *Additional allocation:* in Australia and New Zealand, the band 44 — 47 MHz is also allocated to the broadcasting service on a primary basis.

MHz
47 — 68

Allocation to Services		
Region 1	Region 2	Region 3
47 — 68	**47 — 50**	**47 — 50**
BROADCASTING	FIXED	FIXED
	MOBILE	MOBILE
		BROADCASTING
	50 — 54	
	AMATEUR	
	556 557 558 560	
	54 — 68	**54 — 68**
	BROADCASTING	FIXED
	Fixed	MOBILE
	Mobile	BROADCASTING
553 554 555 559 561	562	

MOD **3541** 243 **553** *Additional allocation:* in Hungary, Kenya, Mongolia, Czechoslovakia and the U.S.S.R., the bands 47 — 48.5 MHz and 56.5 — 58 MHz are also allocated to the fixed and land mobile services on a secondary basis.

ADD **3541A** **554** *Additional allocation:* in Albania, the Federal Republic of Germany, Austria, Belgium, Bulgaria, Denmark, Finland, France, Gabon, Greece, Israel, Italy, the Lebanon, Liechtenstein, Luxembourg, Mali, Malta, MOrocco, Nigeria, Norway, the Netherlands, Poland, the German Democratic Republic, the United Kingdom, Senegal, Sweden, Switzerland, Tunisia, Turkey and Yugoslavia, the band 47 — 68 MHz, and in Roumania, the band 47 — 58 MHz, are also allocated to the land mobile service on a permitted basis. However, stations of the land mobile service in the countries mentioned in connection with each band referred to in this footnote shall not cause harmful interference to, or claim protection from, existing or planned broadcasting stations of countries other than those mentioned in connection with the band.

MOD **3539** 241 **555** *Additional allocation:* in Angola, Cameroon, the Congo, Madagascar, Mozambique, Somalia, Sudan, Tanzania, Chad and Yemen (P.D.R. of), the band 47 — 68 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a permitted basis.

MOD **3542** 244 **556** *Alternative allocation:* in New Zealand, the band 50 — 51 MHz is allocated to the fixed, mobile and broadcasting services on a primary basis; the band 53 — 54 MHz is allocated to the fixed and mobile services on a primary basis.

ADD **3543B** **557** *Alternative allocation:* in Afghanistan, Bangladesh, Brunei, India, Indonesia, Iran, Malaysia, Pakistan, Singapore and Thailand, the band 50 — 54 MHz is allocated to the fixed, mobile and broadcasting services on a primary basis.

ADD **3543A** **558** *Additional allocation:* in Australia, China and the Democratic People's Republic of Korea, the band 50 — 54 MHz is also allocated to the broadcasting service on a primary basis.

ADD **3541B** **559** *Alternative allocation:* in Botswana, Burundi, Lesotho, Malawi, Namibia, Rwanda, South Africa, Swaziland, Zaire, Zambia and Zimbabwe, the band 50 — 54 MHz is allocated to the amateur service on a primary basis.

MOD **3545** 247 **560** *Additional allocation:* in New Zealand, the band 51 — 53 MHz is also allocated to the fixed and mobile services on a primary basis.

ADD **3541C** **561** *Additional allocation:* in Botswana, Burundi, Lesotho, Malawi, Mali, Namibia, Rwanda, South Africa, Swaziland, Zaire, Zambia and Zimbabwe, the band 54 — 68 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

ADD **3543C** **562** *Different category of service:* in the French Overseas Departments in Region 2, Guyana, Jamaica and Mexico, the allocation of the band 54 — 68 MHz to the fixed and mobile services is on a primary basis (see No. **425**).

MHz
68 — 75.2

Allocation to Services		
Region 1	Region 2	Region 3
68 — 74.8 FIXED MOBILE except aeronautical mobile	**68 — 72** BROADCASTING Fixed Mobile 563	**68 — 74.8** FIXED MOBILE
	72 — 73 FIXED MOBILE	
	73 — 74.6 RADIO ASTRONOMY 569 570	
	74.6 — 74.8 FIXED MOBILE	
564 565 567 568 571 572	572	566 568 571 572
74.8 — 75.2	AERONAUTICAL RADIONAVIGATION 572	

ADD **3548B** **563** *Different category of service:* in Cuba, the French Overseas Departments in Region 2, Guyana, Jamaica and Mexico, the allocation of the band 68 — 72 MHz to the fixed and mobile services is on a primary basis (see No. **425**).

MOD **3548** **564** *Alternative allocation:* in Bulgaria, Hungary, Poland, Roumania and Czechoslovakia, the band 68 — 73 MHz is allocated to the broadcasting service on a primary basis and used in accordance with the decisions in the Final Acts of the Special Regional Conference, Geneva, 1960.
250

MOD **3546** **565** *Alternative allocation:* in Mongolia and the U.S.S.R., the bands 68 — 73 MHz and 76 — 87.5 MHz are allocated to the broadcasting service on a primary basis. The services to which these bands are allocated in other countries and the broadcasting service in Mongolia and the U.S.S.R. are subject to agreements with the neighbouring countries concerned.
248

MOD **3553** **566** *Additional allocation:* in Australia, China, the Republic of Korea, the Philippines, the Democratic People's Republic of Korea and Western Samoa, the band 68 — 74 MHz is also allocated to the broadcasting service on a primary basis.
254

ADD **3550A** **567** *Additional allocation:* in Bulgaria, Hungary, Mongolia, Poland, Czechoslovakia and the U.S.S.R., the band 73 — 74 MHz is also allocated to the broadcasting service on a primary basis. The use of this band by the broadcasting service in Bulgaria, Hungary, Mongolia, Poland, Czechoslovakia and the U.S.S.R. is subject to agreement obtained under the procedure set forth in Article **14**.

ADD **3531X** **568** In making assignments to stations of other services to which the band 73 — 74.6 MHz is allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. **343** and **344** and Article **36**).

MOD **3551** **569** In Region 2, the fixed, mobile and broadcasting services previously authorized in the band 73 — 74.6 MHz may continue to operate on a non-interference basis to the radio astronomy service until 31 December 1985.
253A

MOD **3552** **570** *Additional allocation:* in Colombia, Costa Rica, Cuba, El Salvador, Ecuador, Guatemala, Guyana, Honduras and Nicaragua, the band 73 — 74.6 MHz is also allocated to the fixed and mobile services on a secondary basis.
253B

MOD **3550** **571** *Additional allocation:* in Bulgaria, China, Hungary, Mongolia, Poland, Czechoslovakia and the U.S.S.R., the bands 74.6 — 74.8 MHz and 75.2 — 75.4 MHz are also allocated to the aeronautical radionavigation service, on a primary basis, for ground-based transmitters only.
252

MOD **3558** **572** The frequency 75 MHz is assigned to aeronautical marker beacons. Administrations shall refrain from assigning frequencies close to the limits of the guardband to stations of other services which, because of their power or geographical position, might cause harmful interference or otherwise place a constraint on marker beacons.
259

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

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

MHz
75.2 — 88

Allocation to Services		
Region 1	Region 2	Region 3
75.2 — 87.5 FIXED MOBILE except aeronautical mobile	**75.2 — 75.4** FIXED MOBILE 571 572	
	75.4 — 76 FIXED MOBILE	**75.4 — 87** FIXED MOBILE
	76 — 88 BROADCASTING Fixed Mobile	573 574 577 579
565 571 572 575 578	576	

ADD **3554B** **573** *Additional allocation:* in Western Samoa, the band 75.4 — 87 MHz is also allocated to the broadcasting service on a primary basis.

ADD **3554A** **574** *Additional allocation:* in China, the Republic of Korea, Japan, the Philippines and the Democratic People's Republic of Korea, the band 76 — 87 MHz is also allocated to the broadcasting service on a primary basis.

ADD **3548A** **575** *Additional allocation:* in Bulgaria, Hungary, Poland, Roumania and Czechoslovakia, the band 76 — 87.5 MHz is also allocated to the broadcasting service on a primary basis and used in accordance with the decisions contained in the Final Acts of the Special Regional Conference, Geneva, 1960.

ADD **3558X** **576** *Different category of service:* in the United States, the French Overseas Departments in Region 2, Guyana, Jamaica, Mexico and Paraguay, the allocation of the band 76 — 88 MHz to the fixed and mobile services is on a primary basis (see No. **425**).

MOD **3560** **577** In Region 3 (except in the Republic of Korea, India, Japan, Malaysia, the Philippines, Singapore and Thailand), the band 79.75 — 80.25 MHz is also allocated to the radio astronomy service on a primary basis. In making assignments to stations of other services, administrations are urged to take all practicable steps in the band to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. **343** and **344** and Article **36**).
261

ADD **3548C** **578** *Alternative allocation:* in Albania, the band 81 — 87.5 MHz is allocated to the broadcasting service on a primary basis and used in accordance with the decisions contained in the Final Acts of the Special Regional Conference, Geneva, 1960.

ADD **3553A** **579** *Additional allocation:* in Afghanistan and Australia, the band 85 — 87 MHz is also allocated to the broadcasting service on a primary basis. The introduction of the broadcasting service in these countries is subject to special agreements between the administrations concerned.

MHz
87 — 108

Allocation to Services		
Region 1	Region 2	Region 3
		87 — 100
		FIXED
87.5 — 100	**88 — 100**	MOBILE
BROADCASTING	BROADCASTING	BROADCASTING
581 582		580
100 — 108	BROADCASTING	
	582 583 584 585 586 587 588 589 590	

MOD **3566** 267 **580** *Alternative allocation:* in New Zealand, the band 87 — 88 MHz is allocated to the land mobile service on a primary basis.

MOD **3563** 264 **581** *Additional allocation:* in the Federal Republic of Germany, Spain, France, Ireland, Italy, Liechtenstein, Monaco, the United Kingdom, Switzerland and Yemen (P.D.R. of), the band 87.5 — 88 MHz is also allocated to the land mobile service on a permitted basis and subject to agreement obtained under the procedure set forth in Article **14**.

MOD **3564** 265 **582** *Additional allocation:* in the United Kingdom, the band 97.6 — 102.1 MHz is also allocated to the land mobile service on a permitted basis until 31 December 1989. The use of this band by the land mobile service is restricted to those stations in operation on 1 January 1980. The withdrawal of land mobile stations will be arranged in consultation with the administrations concerned.

ADD **3569A** **583** In Region 1, existing systems in the fixed and mobile, except aeronautical mobile (R), services may continue to use the band 100 — 104 MHz on a primary basis until the date of entry into force of the new regional broadcasting agreement referred to in Resolution **510** or 1 January 1985, whichever is the earlier date.

ADD **3570A** **584** Broadcasting stations in the band 100 — 108 MHz in Region 1 shall be established and operated in accordance with an agreement and associated plan for the band 87.5 — 108 MHz to be drawn up by a regional broadcasting conference (see Resolution **510**). Prior to the date of entry into force of this agreement, broadcasting stations may be introduced subject to agreement between administrations concerned, on the understanding that such an operation shall in no case prejudice the establishment of the plan.

MOD **3571** 272 **585** *Additional allocation:* in China, the Republic of Korea, the Philippines and Singapore, the band 100 — 108 MHz is also allocated to the fixed and mobile services on a permitted basis.

ADD **3566A** **586** *Alternative allocation:* in New Zealand, the band 100 — 108 MHz is allocated to the land mobile service on a primary basis and to the broadcasting service on a secondary basis.

ADD **3570B** **587** *Additional allocation:* in Austria, Bulgaria, Hungary, Israel, Kenya, Mongolia, Poland, Syria, the German Democratic Republic, the United Kingdom, Somalia, Czechoslovakia and the U.S.S.R., the band 104 — 108 MHz is also allocated to the mobile, except aeronautical mobile (R), service on a permitted basis until 31 December 1995 and, thereafter, on a secondary basis.

ADD **3570D** **588** *Additional allocation:* in Finland and Yugoslavia, the band 104 — 108 MHz is also allocated to the fixed service on a permitted basis, until 31 December 1995. The effective radiated power of any station shall not exceed 25 W.

ADD **3570C** **589** *Additional allocation:* in France, Roumania, Sweden, Turkey and Yugoslavia, the band 104 — 108 MHz is also allocated to the mobile, except aeronautical mobile (R), service on a permitted basis until 31 December 1995.

ADD **3570CA** **590** *Additional allocation:* in Italy, the band 104 — 108 MHz is also allocated to the land mobile service on a primary basis until the date of entry into force of the new regional broadcasting agreement referred to in Resolution **510** or 1 January 1985, whichever is the earlier date.

MHz
108 — 138

Allocation to Services		
Region 1	Region 2	Region 3
108 — 117.975	AERONAUTICAL RADIONAVIGATION	
117.975 — 136	AERONAUTICAL MOBILE (R) 501 591 592 593 594	
136 — 137	AERONAUTICAL MOBILE (R) Fixed Mobile except aeronautical mobile (R) 591 595	
137 — 138	SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) 596 597 598 599	

MOD **3573** 273A **591** Subject to agreement obtained under the procedure set forth in Article **14**, the band 117.975 — 137 MHz is also allocated to the aeronautical mobile-satellite (R) service on a secondary basis and on the condition that harmful interference is not caused to the aeronautical mobile (R) service.

ADD **3572A** **592** The bands 121.45 — 121.55 MHz and 242.95 — 243.05 MHz are also allocated to the mobile-satellite service for the reception on board satellites of emissions from emergency position-indicating radiobeacons transmitting at 121.5 MHz and 243 MHz.

NOC **3572** 273 **593** In the band 117.975 — 136 MHz, the frequency 121.5 MHz is the aeronautical emergency frequency and where required the frequency 123.1 MHz is the aeronautical frequency auxiliary to 121.5 MHz. Mobile stations of the maritime mobile service may communicate on these frequencies for safety purposes with stations of the aeronautical mobile service.

MOD **3574** 274 **594** *Additional allocation:* in Angola, Bulgaria, Hungary, Iran, Iraq, Japan, Mongolia, Mozambique, Papua New Guinea, Poland, the German Democratic Republic, Roumania, Czechoslovakia and the U.S.S.R., the band 132 — 136 MHz is also allocated to the aeronautical mobile (OR) service on a permitted basis.

ADD **3578A** **595** Until 1 January 1990, the band 136 — 137 MHz is also allocated to the space operation service (space-to-Earth), meteorological-satellite service (space-to-Earth) and the space research service (space-to-Earth) on a primary basis. The introduction of stations of the aeronautical mobile (R) service shall only occur after that date and shall be effected in accordance with internationally agreed plans for that service. After 1 January 1990, the band 136 — 137 MHz will also be allocated to the above-mentioned space radiocommunication services on a secondary basis (see Recommendation **404**).

MOD **3584** 281E **596** *Different category of service:* in Afghanistan, Saudi Arabia, Bahrain, Brunei, China, the United Arab Emirates, India, Indonesia, Iran, Iraq, Kuwait, Malaysia, Oman, Pakistan, Qatar, Singapore, Thailand, Yemen A.R. and Yemen (P.D.R. of), the allocation of the band 137 — 138 MHz to the fixed and mobile, except aeronautical mobile (R), services is on a primary basis (see No. **425**).

ADD **3584A** **597** *Different category of service:* in Israel, Jordan and Syria, the allocation of the band 137 — 138 MHz to the fixed and mobile, except aeronautical mobile, services is on a primary basis (see No. **425**).

MOD **3583** 281C **598** *Different category of service:* in Austria, Bulgaria, Egypt, Finland, Greece, Hungary, the Lebanon, Mongolia, Poland, the German Democratic Republic, Roumania, Czechoslovakia, the .U.S.S.R. and Yugoslavia, the allocation of the band 137 — 138 MHz to the aeronautical mobile (OR) service is on a primary basis (see No. **425**).

MOD **3580** 279A **599** *Additional allocation:* in Australia, the band 137 — 144 MHz is also allocated to the broadcasting service on a primary basis until that service can be accomodated within regional broadcasting allocations.

MHz
138 — 144

Allocation to Services		
Region 1	Region 2	Region 3
138 — 143.6 AERONAUTICAL MOBILE (OR) 600 601 602 604	**138 — 143.6** FIXED MOBILE / RADIOLOCATION / Space Research (space-to-Earth)	**138 — 143.6** FIXED MOBILE Space Research (space-to-Earth) 599 603
143.6 — 143.65 AERONAUTICAL MOBILE (OR) SPACE RESEARCH (space-to-Earth) 601 602 604	**143.6 — 143.65** FIXED MOBILE SPACE RESEARCH (space-to-Earth) / RADIOLOCATION /	**143.6 — 143.65** FIXED MOBILE SPACE RESEARCH (space-to-Earth) 599 603
143.65 — 144 AERONAUTICAL MOBILE (OR) 600 601 602 604	**143.65 — 144** FIXED MOBILE / RADIOLOCATION / Space Research (space-to-Earth)	**143.65 — 144** FIXED MOBILE Space Research (space-to-Earth) 599 603

MOD 3586 282A **600** *Additional allocation:* in the Federal Republic of Germany, Austria, Belgium, France, Israel, Italy, Liechtenstein, Luxembourg, the United Kingdom, Sweden, Switzerland and Czechoslovakia, the bands 138 — 143.6 MHz and 143.65 — 144 MHz are also allocated to the space research service (space-to-Earth) on a secondary basis.

ADD 3585A **601** *Additional allocation:* in the Federal Republic of Germany, Saudi Arabia, Austria, Bahrain, Belgium, Denmark, the United Arab Emirates, Spain, Finland, Greece, Ireland, Israel, Kenya, Kuwait, Liechtenstein, Luxembourg, Mali, Malta, Norway, the Netherlands, Qatar, the United Kingdom, Sweden, Switzerland, Somalia, Tanzania, Tunisia, Turkey and Yugoslavia, the band 138 — 144 MHz is also allocated to the maritime mobile and land mobile services on a primary basis.

MOD 3577 275 **602** *Alternative allocation:* in Angola, Botswana, Burundi, Cameroon, the Central African Republic, the Congo, Gabon, Gambia, Ghana, Guinea, Iraq, Jordan, Lesotho, Liberia, Libya, Malawi, Mozambique, Namibia, Nigeria, Oman, Rwanda, Sierra Leone, South Africa, Swaziland, Chad, Togo, Zaire, Zambia and Zimbabwe, the band 138 — 144 MHz is allocated to the fixed and mobile services on a primary basis.

MOD 3589 284 **603** *Additional allocation:* in China, the band 138 — 144 MHz is also allocated to the radiolocation service on a primary basis.

MOD 3587 283 **604** *Additional allocation:* in Ethiopia, Finland, Kenya, Malta, Somalia, Sudan, Tanzania, Yemen A.R. and Yugoslavia, the band 138 — 144 MHz is also allocated to the fixed service on a primary basis.

MHz
144 — 150.05

Allocation to Services		
Region 1	Region 2	Region 3
144 — 146	AMATEUR 510 AMATEUR-SATELLITE 605 606	
146 — 149.9 FIXED MOBILE except aeronautical mobile (R) 608	**146 — 148** AMATEUR 607	**146 — 148** AMATEUR FIXED MOBILE 607
	148 — 149.9 FIXED MOBILE 608	
149.9 — 150.05	RADIONAVIGATION-SATELLITE 609	

ADD **3589A** **605** *Additional allocation:* in Singapore, the band 144 — 145 MHz is also allocated to the fixed and mobile services on a primary basis. Such use is limited to systems in operation on or before 1 January 1980, which in any case shall cease by 31 December 1995.

ADD **3584AA** **606** *Additional allocation:* in China, the band 144 — 146 MHz is also allocated to the aeronautical mobile (OR) service on a secondary basis.

ADD **3598A** **607** *Alternative allocation:* in Afghanistan, Bangladesh, Cuba, Guyana and India, the band 146 — 148 MHz is allocated to the fixed and mobile services on a primary basis.

MOD **3591** **608** Subject to agreement obtained under the procedure set forth in Article **14**, the band 148 — 149.9 MHz may be used by the space operation service (Earth-to-space). The bandwidth of an individual transmission shall not exceed ± 25 kHz.
285A

NOC **3593** **609** Emissions of the radionavigation-satellite service in the bands 149.9 — 150.05 MHz and 399.9 — 400.05 MHz may also be used by receiving earth stations of the space research service.
285C

MHz
150.05 — 174

Allocation to Services		
Region 1	Region 2	Region 3
150.05 — 153 FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY 610 612	**150.05 — 156.7625** FIXED MOBILE	
153 — 154 FIXED MOBILE except aeronautical mobile (R) Meteorological Aids		
154 — 156.7625 FIXED MOBILE except aeronautical mobile (R) 613	611 613	
156.7625 — 156.8375	MARITIME MOBILE (distress and calling) 501 613	
156.8375 — 174 FIXED MOBILE except aeronautical mobile 613 614 615	**156.8375 — 174** FIXED MOBILE 613 616 617 618	

MOD **3531** **610** In making assignments to stations of other services to which the band 150.05 — 153 MHz is allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. **343** and **344** and Article **36**).
233B

ADD **3591A** **611** *Additional allocation:* in Australia and India, the band 150.05 — 153 MHz is also allocated to the radio astronomy service on a primary basis.

ADD **3531C** **612** *Additional allocation:* in Sweden and Switzerland the band 150.05 — 153 MHz is also allocated to the aeronautical mobile (OR) service on a secondary basis.

MOD **3595** **613** The frequency 156.8 MHz is the international distress, safety and calling frequency for the maritime mobile VHF radiotelephone service. The conditions for the use of this frequency are contained in Article **38**.
287

In the bands 156 — 156.7625 MHz, 156.8375 — 157.45 MHz, 160.6 — 160.975 MHz and 161.475 — 162.05 MHz, each administration shall give priority to the maritime mobile service on only such frequencies as are assigned to stations of the maritime mobile service by that administration (see Article **60**).

Any use of frequencies in these bands by stations of other services to which they are allocated should be avoided in areas where such use might cause harmful interference to the maritime mobile VHF radiocommunication service.

However, the frequency 156.8 MHz and the frequency bands in which priority is given to the maritime mobile service may be used for radiocommunications on inland waterways subject to agreement between interested and affected administrations and taking into account current frequency usage and existing agreements.

MOD **3596** **.614** *Alternative allocation:* in France and Monaco, the band 162 — 174 MHz is allocated to the broadcasting service on a primary basis until 1 January 1985.
288

ADD **3596A** **615** *Alternative allocation:* in Morocco, the band 162 — 174 MHz is allocated to the broadcasting service on a primary basis. The use of this band shall be subject to agreement with administrations having services, operating or planned, in accordance with the Table which are likely to be affected. Stations in existence on 1 Janunary 1981, with their technical characteristics as of that date, are not affected by such agreement.

ADD **3594A** **616** *Additional allocation:* in China, the band 163 — 167 MHz is also allocated to the space operation service (space-to-Earth) on a primary basis subject to agreement obtained under the procedure set forth in Article **14**).

ADD **3596B** **617** *Additional allocation:* in Afghanistan, China and Pakistan, the band 167 — 174 MHz is also allocated to the broadcasting service on a primary basis. The introduction of the broadcasting service into this band shall be subject to agreement with the neighbouring countries in Region 3 whose services are likely to be affected.

ADD **3596C** **618** *Additional allocation:* in Japan, the band 170 — 174 MHz is also allocated to the broadcasting service on a primary basis.

MHz
174 — 235

Allocation to Services		
Region 1	Region 2	Region 3
174 — 223 BROADCASTING 621 623 628 629	**174 — 216** BROADCASTING Fixed Mobile 620 **216 — 220** FIXED MARITIME MOBILE Radiolocation 627 **220 — 225** AMATEUR FIXED MOBILE Radiolocation 627	**174 — 223** FIXED MOBILE BROADCASTING 619 624 625 626 630
223 — 230 BROADCASTING Fixed Mobile 622 628 629 631 632 633 634 635	**225 — 235** FIXED MOBILE	**223 — 230** FIXED MOBILE BROADCASTING AERONAUTICAL RADIONAVIGATION Radiolocation 636 637
230 — 235 FIXED MOBILE 629 632 633 634 635 638 639		**230 — 235** FIXED MOBILE AERONAUTICAL RADIONAVIGATION 637

ADD **3601C** **619** *Additional allocation:* in China, the band 174 — 184 MHz is also allocated to the space research (space-to-Earth) and the space operation (space-to-Earth) services on a primary basis subject to agreement obtained under the procedure set forth in Article **14**. These services shall not cause harmful interference to, or claim protection from, existing or planned broadcasting stations.

ADD **3601B** **620** *Different category of service:* in Mexico, the allocation of the band 174 — 216 MHz to the fixed and mobile services is on a primary basis (see No. **425**).

ADD **3601A** **621** *Additional allocation:* in Austria, the Federal Republic of Germany, Belgium, Denmark, Finland, France, Italy, Liechtenstein, Monaco, Norway, the Netherlands, the United Kingdom, Sweden, Switzerland and Yemen (P.D.R. of), the band 174 — 223 MHz is also allocated to the land mobile service on a permitted basis. However, the stations of the land mobile service shall not cause harmful interference to, nor claim protection from, broadcasting stations, existing or planned, in countries other than those listed in this footnote.

ADD **3601AA** **622** *Different category of service:* in Austria, the Federal Republic of Germany, Belgium, Denmark, Spain, Finland, France, Israel, Italy, Liechtenstein, Luxembourg, Monaco, Norway, the Netherlands, Portugal, the United Kingdom, Sweden, Switzerland and Yemen (P.D.R. of), the band 223 — 230 MHz is allocated to the land mobile service on a permitted basis (see No. **425**). However, the stations of the land mobile service shall not cause harmful interference to, nor claim protection from, broadcasting stations, existing or planned, in countries other than those listed in this footnote.

MOD **3601** **623** *Additional allocation:* in the Congo, Ethiopia, Gambia, Guinea, Kenya, Libya, Malawi, Mali, Uganda, Senegal, Sierra Leone, Somalia, Tanzania and Zimbabwe, the band 174 — 223 MHz is also allocated to the fixed and mobile services on a secondary basis.
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ADD **3602A** **624** *Additional allocation:* in Bangladesh, India, Pakistan and the Philippines, the band 200 — 216 MHz is also allocated to the aeronautical radionavigation service on a primary basis.

ADD **3602B** **625** *Additional allocation:* in Australia and Papua New Guinea, the bands 204 — 208 MHz and 222 — 223 MHz are also allocated to the aeronautical radionavigation service on a primary basis.

ADD **3608AB** **626** *Additional allocation:* in China, India and Thailand, the band 216 — 223 MHz is also allocated to the aeronautical radionavigation service on a primary basis and to the radiolocation service on a secondary basis.

ADD **3608AA** **627** In Region 2, the band 216 — 225 MHz is allocated to the radiolocation service on a primary basis until 1 January 1990. On and after 1 January 1990, no new stations in that service may be authorized. Stations authorized prior to 1 January 1990 may continue to operate on a secondary basis.

ADD **3608A** **628** *Additional allocation:* in Somalia, the band 216 — 225 MHz is also allocated to the aeronautical radionavigation service on a primary basis, subject to not causing harmful interference to existing or planned broadcasting services in other countries.

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MOD **3608** **629** *Additional allocation:* in Oman, the United Kingdom and Turkey, the band
300 216 — 235 MHz is also allocated to the radiolocation service on a secondary basis.

ADD **3608AC** **630** *Additional allocation:* in Japan, the band 222 — 223 MHz is also allocated to the aeronautical radionavigation service on a primary basis and to the radiolocation service on a secondary basis.

ADD **3612D** **631** *Different category of service:* in Spain and Portugal, the band 223 — 230 MHz is allocated to the fixed service on a permitted basis (see No. **425**). Stations of this service shall not cause harmful interference to, or claim protection from, broadcasting stations of other countries, whether existing or planned, that operate in accordance with the Table.

ADD **3608B** **632** *Additional allocation:* in Saudi Arabia, Bahrain, the United Arab Emirates, Israel, Jordan, Oman, Qatar and Syria, the band 223 — 235 MHz is also allocated to the aeronautical radionavigation service on a permitted basis.

ADD **3608C** **633** *Additional allocation:* in Spain and Portugal, the band 223 — 235 MHz is also allocated to the aeronautical radionavigation service on a permitted basis until 1 January 1990, subject to not causing harmful interference to existing or planned broadcasting stations in other countries.

ADD **3608CA** **634** *Additional allocation:* in Sweden, the band 223 — 235 MHz is also allocated to the aeronautical radionavigation service on a permitted basis until 1 January 1990, subject to agreement obtained under the procedure set forth in Article **14**, and on condition that no harmful interference is caused to existing and planned broadcasting stations in other countries.

MOD **3612** **635** *Alternative allocation:* in Botswana, Lesotho, Namibia, South Africa, Swaziland
304 and Zambia, the bands 223 — 238 MHz and 246 — 254 MHz are allocated to the broadcasting service on a primary basis subject to agreement obtained under the procedure set forth in Article **14**.

ADD **3612A** **636** *Alternative allocation:* in New Zealand, Western Samoa and the Niue and Cook Islands, the band 225 — 230 MHz is allocated to the fixed, mobile and aeronautical radionavigation services on a primary basis.

ADD **3612B** **637** *Additional allocation:* in China, the band 225 — 235 MHz is also allocated to the radio astronomy service on a secondary basis.

ADD **3612C** **638** *Additional allocation:* in Nigeria, the band 230 — 235 MHz is also allocated to the aeronautical radionavigation service on a primary basis, subject to agreement obtained under the procedure set forth in Article **14**.

ADD **3612CA** **639** *Additional allocation:* in Yugoslavia, the band 230 — 235 MHz is also allocated to the aeronautical radionavigation service on a primary basis, until 1 January 1995. The use of this band by the aeronautical radionavigation service in Yugoslavia is restricted to the stations in operation by 1 January 1980.

(see page RR8-75)

MHz
235 — 335.4

Allocation to Services		
Region 1	Region 2	Region 3
235 — 267	FIXED MOBILE 501 592 635 640 641 642	
267 — 272	FIXED MOBILE Space Operation (space-to-Earth) 641 643	
272 — 273	SPACE OPERATION (space-to-Earth) FIXED MOBILE 641	
273 — 322	FIXED MOBILE 641	
322 — 328.6	FIXED MOBILE RADIO ASTRONOMY 644	
328.6 — 335.4	AERONAUTICAL RADIONAVIGATION 645	

MOD **3614** 305A **640** *Additional allocation:* in New Zealand, the band 235 — 239.5 MHz is also allocated to the aeronautical radionavigation service on a primary basis.

MOD **3618** 308A **641** Subject to agreement obtained under the procedure set forth in Article **14**, the bands 235 — 322 MHz and 335.4 — 399.9 MHz may be used by the mobile-satellite service, on condition that stations in this service do not cause harmful interference to those of other services operating or planned to be operated in accordance with the Table.

NOC **3619** 309 **642** The frequency 243 MHz is the frequency in this band for use by survival craft stations and equipment used for survival purposes.

MOD **3621** 309B **643** Subject to agreement obtained under the procedure set forth in Article **14**, the band 267 — 272 MHz may be used by administrations for space telemetry in their countries on a primary basis.

MOD **3622** 310 **644** In making assignments to stations of other services to which the band 322 — 328.6 MHz is allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. **343** and **344** and Article **36**).

NOC **3624** 311 **645** Limited to Instrument Landing Systems (glide path).

MHz
335.4 — 401

Allocation to Services		
Region 1	Region 2	Region 3
335.4 — 399.9	FIXED MOBILE 641	
399.9 — 400.05	RADIONAVIGATION-SATELLITE 609	
400.05 — 400.15	STANDARD FREQUENCY AND TIME SIGNAL-SATELLITE (400.1 MHz) 646 647	
400.15 — 401	METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Space Operation (space-to-Earth) 647	

MOD 3626 312B **646** Emissions shall be confined in a band of ± 25 kHz about the standard frequency 400.1 MHz.

MOD 3627 313 **647** *Additional allocation:* in Afghanistan, Saudi Arabia, Bahrain, Bulgaria, Colombia, Costa Rica, Cuba, Egypt, the United Arab Emirates, Ecuador, Hungary, Indonesia, Iran, Iraq, Israel, Kuwait, Liberia, Malaysia, Nigeria, Oman, Pakistan, the Philippines, Poland, Qatar, Syria, the German Democratic Republic, Roumania, Singapore, Somalia, Sri Lanka, Czechoslovakia, Thailand, the U.S.S.R. and Yugoslavia, the band 400.05 — 401 MHz is also allocated to the fixed and mobile services on a primary basis.

MHz
401 — 420
(see page RR8-79)

MHz
401 — 420

Allocation to Services		
Region 1	Region 2	Region 3
401 — 402	METEOROLOGICAL AIDS SPACE OPERATION (space-to-Earth) Earth Exploration-Satellite (Earth-to-space) Fixed Meteorological-Satellite (Earth-to-space) Mobile except aeronautical mobile	
402 — 403	METEOROLOGICAL AIDS Earth Exploration-Satellite (Earth-to-space) Fixed Meteorological-Satellite (Earth-to-space) Mobile except aeronautical mobile	
403 — 406	METEOROLOGICAL AIDS Fixed Mobile except aeronautical mobile 648	
406 — 406.1	MOBILE-SATELLITE (Earth-to-space) 649	
406.1 — 410	FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY 648 650	
410 — 420	FIXED MOBILE except aeronautical mobile	

ADD **3633A** **648** *Additional allocation:* in Canada, the bands 405.5 — 406 MHz and 406.1 — 410 MHz are also allocated to the mobile-satellite, except aeronautical mobile-satellite, service (Earth-to-space), on a primary basis, subject to agreement obtained under the procedure set forth in Article **14**.

NOC **3634** **649** The band 406 — 406.1 MHz is reserved solely for the use and development of low-power (not to exceed 5 W) emergency position-indicating radiobeacon (EPIRB) systems using space techniques.
317A

MOD **3531** **650** In making assignments to stations of other services to which the band 406.1 — 410 MHz is allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. **343** and **344** and Article **36**).
233B

MHz
420 — 470

Allocation to Services		
Region 1	Region 2	Region 3
420 — 430	FIXED MOBILE except aeronautical mobile Radiolocation 651 652 653	
430 — 440 AMATEUR RADIOLOCATION 653 654 655 656 657 658 659 661 662 663 664 665	**430 — 440** RADIOLOCATION Amateur 653 658 659 660 663 664	
440 — 450	FIXED MOBILE except aeronautical mobile Radiolocation 651 652 653 666 667 668	
450 — 460	FIXED MOBILE 653 668 669 670	
460 — 470	FIXED MOBILE Meteorological-Satellite (space-to-Earth) 669 670 671 672	

MOD **3640** 319 **651** *Different category of service:* in Australia, the United States, India, Japan and the United Kingdom, the allocation of the bands 420 — 430 MHz and 440 — 450 MHz to the radiolocation service is on a primary basis (see No. **425**).

ADD **3640A** **652** *Additional allocation:* in Australia, the United States, Jamaica and the Philippines, the bands 420 — 430 MHz and 440 — 450 MHz are also allocated to the amateur service on a secondary basis.

MOD **3636** 318 **653** *Additional allocation:* in China, India, the German Democratic Republic, the United Kingdom and the U.S.S.R., the band 420 — 460 MHz is also allocated to the aeronautical radionavigation service (radio altimeters) on a secondary basis.

ADD **3646D** **654** *Different category of service:* in France, the allocation of the band 430 — 434 MHz to the amateur service is on a secondary basis (see No. **424**).

ADD **3646A** **655** *Different category of service:* in Denmark, Libya, Norway and Sweden, the allocation of the bands 430 — 432 MHz and 438 — 440 MHz to the radiolocation service is on a secondary basis (see No. **424**).

MOD **3646** 322 **656** *Alternative allocation:* in Denmark, Norway and Sweden, the bands 430 — 432 MHz and 438 — 440 MHz are allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

ADD **3646B** **657** *Additional allocation:* in Finland, Libya and Yugoslavia, the bands 430 — 432 MHz and 438 — 440 MHz are also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

MOD **3643** 320 **658** *Additional allocation:* in Afghanistan, Algeria, Saudi Arabia, Bahrain, Bangladesh, Brunei, Burundi, Egypt, the United Arab Emirates, Ecuador, Ethiopia, Greece, Guinea, India, Indonesia, Iran, Iraq, Israel, Italy, Jordan, Kenya, Kuwait, the Lebanon, Liechtenstein, Libya, Malaysia, Malta, Nigeria, Oman, Pakistan, the Philippines, Qatar, Syria, Singapore, Somalia, Switzerland, Tanzania, Thailand and Togo, the band 430 — 440 MHz is also allocated to the fixed service on a primary basis and the bands 430 — 435 MHz and 438 — 440 MHz are also allocated to the mobile, except aeronautical mobile, service on a primary basis.

ADD **3646C** **659** *Additional allocation:* in Angola, Bulgaria, Cameroon, the Congo, Gabon, Hungary, Mali, Mongolia, Niger, Poland, the German Democratic Republic, Roumania, Rwanda, Chad, Czechoslovakia and the U.S.S.R., the band 430 — 440 MHz is also allocated to the fixed service on a primary basis.

ADD **3640B** **660** *Different category of service:* in Argentina, Colombia, Costa Rica, Cuba, Guyana, Honduras, Panama and Venezuela, the allocation of the band 430 — 440 MHz to the amateur service is on a primary basis (see No. **425**).

ADD **3645A** **661** In Region 1, except in the countries mentioned in No. **662**, the band 433.05 — 434.79 MHz (centre frequency 433.92 MHz) is designated for industrial, scientific and medical (ISM) applications. The use of this frequency band for ISM applications shall be subject to special authorization by the administration concerned, in agreement with other administrations whose radiocommunications services might be affected. In applying this provision, administrations shall have due regard to the latest relevant CCIR Recommendations.

MOD **3645** 321 **662** In the Federal Republic of Germany, Austria, Liechtenstein, Portugal, Switzerland and Yugoslavia, the band 433.05 — 434.79 MHz (centre frequency 433.92 MHz) is designated for industrial, scientific and medical (ISM) applications. Radiocommunication services of these countries operating within this band must accept harmful interference which may be caused by these applications. ISM equipment operating in this band is subject to the provisions of No. **1815**.

MOD **3642** 319B **663** *Additional allocation:* in Brazil, France and the French Overseas Departments in Region 2, and India, the band 433.75 — 434.25 MHz is also allocated to the space operation service (Earth-to-space) on a primary basis until 1 January 1990, subject to agreement obtained under the procedure set forth in Article **14**. After 1 January 1990, the band 433.75 — 434.25 MHz will be allocated in the same countries to the same service on a secondary basis.

MOD **3644** 320A **664** In the bands 435 — 438 MHz, 1 260 — 1 270 MHz, 2 400 — 2 450 MHz, 3 400 — 3 410 MHz (in Regions 2 and 3 only) and 5 650 — 5 670 MHz, the amateur-satellite service may operate subject to not causing harmful interference to other services operating in accordance with the Table (see No. **435**). Administrations authorizing such use shall ensure that any harmful interference caused by emissions from a station in the amateur-satellite service is immediately eliminated in accordance with the provisions of No. **2741**. The use of the bands 1 260 — 1 270 MHz and 5 650 — 5 670 MHz by the amateur-satellite service is limited to the Earth-to-space direction.

ADD **3646E** **665** *Additional allocation:* in Austria, the band 438 — 440 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

ADD **3640C** **666** *Additional allocation:* in Canada, New Zealand and Papua New Guinea, the band 440 — 450 MHz is also allocated to the amateur service on a secondary basis.

ADD **3640D** **667** *Different category of service:* in Canada, the allocation of the band 440 — 450 MHz to the radiolocation service is on a primary basis (see No. **425**).

MOD **3641** 319A **668** Subject to agreement obtained under the procedure set forth in Article **14**, the band 449.75 — 450.25 MHz may be used for the space operation service (Earth-to-space) and the space research service (Earth-to-space).

NOC **3638** 318B **669** In the maritime mobile service, the frequencies 457.525 MHz, 457.550 MHz, 457.575 MHz, 467.525 MHz, 467.550 MHz and 467.575 MHz may be used by on-board communication stations. The use of these frequencies in territorial waters may be subject to the national regulations of the administration concerned. The characteristics of the equipment used shall conform to those specified in Appendix **20**.

NOC **3639** 318C **670** In the territorial waters of Canada, the United States and the Philippines, the preferred frequencies for use by on-board communication stations shall be 457.525 MHz, 457.550 MHz, 457.575 MHz and 457.600 MHz paired, respectively, with 467.750 MHz, 467.775 MHz, 467.800 MHz and 467.825 MHz. The characteristics of the equipment used shall conform to those specified in Appendix **20**.

MOD **3650** 324B **671** Earth exploration-satellite service applications, other than the meteorological-satellite service, may also be used in the bands 460 — 470 MHz and 1 690 — 1 710 MHz for space-to-Earth transmissions subject to not causing harmful interference to stations operating in accordance with the Table.

MOD **3637** 318A **672** *Different category of service:* in Afghanistan, Bulgaria, China, Cuba, Hungary, Japan, Mongolia, Poland, Czechoslovakia and the U.S.S.R., the allocation of the band 460 — 470 MHz to the meteorological-satellite service (space-to-Earth) is on a primary basis (see No. **425**) and is subject to agreement obtained under the procedure set forth in Article **14**.

MHz
470 — 890

Allocation to Services		
Region 1	Region 2	Region 3
470 — 790 BROADCASTING 676 680 681 682 683 684 685 686 687 689 693 694	**470 — 512** BROADCASTING Fixed Mobile 674 675	**470 — 585** FIXED MOBILE BROADCASTING 673 677 679
	512 — 608 BROADCASTING 678	**585 — 610** FIXED MOBILE BROADCASTING RADIONAVIGATION 688 689 690
	608 — 614 RADIO ASTRONOMY Mobile-Satellite except aeronautical mobile-satellite (Earth-to-space)	
	614 — 806 BROADCASTING Fixed Mobile 675 692 693	**610 — 890** FIXED MOBILE BROADCASTING
790 — 862 FIXED BROADCASTING 694 695 696 697 698 699 702		
	806 — 890 FIXED MOBILE BROADCASTING	
862 — 890 FIXED MOBILE except aeronautical mobile BROADCASTING 703 699 704	700	677 688 689 690 691 693 701

ADD **3650C** **673** *Additional allocation:* in China, the band 470 — 485 MHz is also allocated to the space research (space-to-Earth) and the space operation (space-to-Earth) services on a primary basis subject to agreement obtained under the procedure set forth in Article **14**, subject to not causing harmful interference to existing and planned broadcasting stations.

ADD **3650BA** **674** *Different category of service:* in Mexico and Venezuela, the allocation of the band 470 — 512 MHz to the fixed and mobile services is on a primary basis (see No. **425**), subject to agreement obtained under the procedure set forth in Article **14**.

ADD **3650B** **675** *Different category of service:* in Chile, Colombia, Ecuador, the United States, Guyana and Jamaica, the allocation of the bands 470 — 512 MHz and 614 — 806 MHz to the fixed and mobile services is on a primary basis (see No. **425**), subject to agreement obtained under the procedure set forth in Article **14**.

ADD **3650A** **676** *Additional allocation:* in Burundi, Cameroon, the Congo, Ethiopia, Israel, Kenya, Libya, Senegal, Sudan, Syria, and Yemen (P.D.R. of), the band 470 — 582 MHz is also allocated to the fixed service on a secondary basis.

MOD **3668** **677** *Alternative allocation:* in Pakistan, the bands 470 — 582 MHz and 610 — 890 MHz are allocated to the broadcasting service on a primary basis.
339

ADD **3650E** **678** *Additional allocation:* in Costa Rica, El Salvador, Ecuador, the United States, Guatemala, Guyana, Honduras, Jamaica and Venezuela, the band 512 — 608 MHz is also allocated to the fixed and mobile services on a primary basis, subject to agreement obtained under the procedure set forth in Article **14**.

ADD **3650F** **679** *Additional allocation:* in India, the band 549.75 — 550.25 MHz is also allocated to the space operation service (space-to-Earth) on a secondary basis.

ADD **3651A** **680** *Additional allocation:* in the United Kingdom, the following bands are also allocated to the aeronautical radionavigation service on a primary basis: 582 — 590 MHz until 31 December 1987; 598 — 606 MHz until 31 December 1994. All new assignments to stations in the aeronautical radionavigation service in these bands are subject to the agreement of the Administrations of the following countries: the Federal Republic of Germany, Belgium, Denmark, Spain, France, Ireland, Luxembourg, Morocco, Norway and the Netherlands.

MOD **3653** **681** *Additional allocation:* in Belgium, the band 582 — 606 MHz is also allocated to the radionavigation service on a primary basis until 31 December 1984.
328

ADD **3653A** **682** *Additional allocation:* in France and Italy, the band 582 — 606 MHz is also allocated to the radionavigation service on a permitted basis until 1 January 1990.

ADD **3653AA** **683** *Additional allocation:* in Oman, the band 582 — 606 MHz is also allocated to the radionavigation service on a secondary basis.

MOD **3654** **684** *Additional allocation:* in Israel, Libya, Syria and Sudan, the band 582 — 790 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a secondary basis.
329

ADD **3653B** **685** *Additional allocation:* in Denmark and Kuwait, the band 590 — 598 MHz is also allocated to the aeronautical radionavigation service on a primary basis until 1 January 1995.

MOD **3651** **686** *Additional allocation:* in the United Kingdom, the band 590 — 598 MHz is also
325 allocated to the aeronautical radionavigation service on a primary basis. All new assignments to stations in the aeronautical radionavigation service, including those transferred from the adjacent bands, shall be subject to coordination with the Administrations of the following countries: the Federal Republic of Germany, Belgium, Denmark, Spain, France, Ireland, Luxembourg, Morocco, Norway and the Netherlands.

MOD **3657** **687** *Additional allocation:* in the African Broadcasting Area (see Nos. **400** to **403**), the
330A band 606 — 614 MHz is also allocated to the radio astronomy service on a permitted basis.

ADD **3660A** **688** *Additional allocation:* in China, the band 606 — 614 MHz is also allocated to the radio astronomy service on a primary basis.

MOD **3660** **689** In Region 1, except in the African Broadcasting Area (see Nos. **400** to **403**), and in
332 Region 3, the band 608 — 614 MHz is also allocated to the radio astronomy service on a secondary basis. In making assignments to stations of other services to which the band is allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. **343** and **344** and Article **36**).

MOD **3658** **690** *Additional allocation:* in India, the band 608 — 614 MHz is also allocated to the
330B radio astronomy service on a primary basis.

ADD **3657A** **691** *Additional allocation:* in New Zealand, the band 610 — 620 MHz is also allocated to the amateur service on a secondary basis.

ADD **3657B** **692** *Different category of service:* in Costa Rica, El Salvador and Honduras, the allocation of the band 614 — 806 MHz to the fixed service is on a primary basis (see No. **425**), subject to agreement obtained under the procedure set forth in Article **14**.

(MOD) **3661** **693** Within the frequency band 620 — 790 MHz, assignments may be made to television
332A stations using frequency modulation in the broadcasting-satellite service subject to agreement between the administrations concerned and those having services, operating in accordance with the Table, which may be affected (see Resolutions **33** and **507**). Such stations shall not produce a power flux-density in excess of the value —129 dB (W/m^2) for angles of arrival less than 20° (see Recommendation **705**) within the territories of other countries without the consent of the administrations of those countries.

MOD **3659** **694** *Additional allocation:* in Bulgaria, Hungary, Mongolia, Poland, the German
331 Democratic Republic, Roumania, Czechoslovakia and the U.S.S.R., the band 645 — 862 MHz is also allocated to the aeronautical radionavigation service on a permitted basis.

ADD **3662A** **695** *Alternative allocation:* in Spain and France, the band 790 — 830 MHz is allocated to the broadcasting service on a primary basis.

ADD **3661A** **696** *Alternative allocation:* in Greece, Italy, Morocco and Tunisia, the band 790 — 838 MHz is allocated to the broadcasting service on a primary basis.

ADD **3662B** **697** *Additional allocation:* in the Federal Republic of Germany, Denmark, Finland, Israel, Liechtenstein, Norway, the Netherlands, Sweden, Switzerland and Yugoslavia, the band 790 — 830 MHz, and in these same countries and in Spain and France, the band 830 — 862 MHz are also allocated to the mobile, except aeronautical mobile, service on a primary basis. However, stations of the mobile service in the countries mentioned in connection with each band referred to in this footnote shall not cause harmful interference to, or claim protection from, stations of services operating in accordance with the Table in countries other than those mentioned in connection with the band.

ADD **3662BA** **698** *Additional allocation:* in Austria, the band 790 — 862 MHz is also allocated to the mobile, except aeronautical mobile, service on a secondary basis.

ADD **3662CA** **699** *Additional allocation:* in Norway and Sweden, the bands 806 — 890 MHz and 942 — 960 MHz are also allocated to the mobile-satellite, except aeronautical mobile-satellite, service on a primary basis. The use of this service is limited to operation within national boundaries and subject to agreement obtained under the procedure set forth in Article **14**. This service shall not cause harmful interference to services operating in accordance with the Table.

ADD **3670B** **700** *Additional allocation:* in Region 2, the band 806 — 890 MHz is also allocated to the mobile-satellite, except aeronautical mobile-satellite, service on a primary basis. The use of this service is intended for operation within national boundaries and subject to agreement obtained under the procedure set forth in Article **14**.

ADD **3662C** **701** *Additional allocation:* in Region 3, the bands 806 — 890 MHz and 942 — 960 MHz are also allocated to the mobile-satellite, except aeronautical mobile-satellite, service on a primary basis. The use of this service is limited to operation within national boundaries and subject to agreement obtained under the procedure set forth in Article **14**. This service shall not cause harmful interference to services operating in accordance with the Table.

ADD **3662DA** **702** *Alternative allocation:* in Italy, the band 838 — 854 MHz is allocated to the broadcasting service on a primary basis as from 1 January 1995.

ADD **3662E** **703** In Region 1, in the band 862 — 960 MHz, stations of the broadcasting service shall be operated only in the African Broadcasting Area (see Nos. **400** to **403**) excluding Algeria, Egypt, Libya and Morocco. Such operations shall be in accordance with the Final Acts of the African VHF/UHF Broadcasting Conference, Geneva, 1963.

ADD **3659B** **704** *Additional allocation:* in Bulgaria, Hungary, Mongolia, Poland, the German Democratic Republic, Roumania, Czechoslovakia and the U.S.S.R., the band 862 — 960 MHz is also allocated to the aeronautical radionavigation service on a permitted basis until 1 January 1998. Up to this date, the aeronautical radionavigation service may use the band, subject to agreement obtained under the procedure set forth in Article **14**. After this date, the aeronautical radionavigation service may continue to operate on a secondary basis.

MHz
890 — 960

Allocation to Services		
Region 1	Region 2	Region 3
890 — 942 FIXED MOBILE except aeronautical mobile BROADCASTING 703 Radiolocation 704	**890 — 902** FIXED MOBILE except aeronautical mobile Radiolocation 705 **902 — 928** FIXED Amateur Mobile except aeronautical mobile Radiolocation 705 707 **928 — 942** FIXED MOBILE except aeronautical mobile Radiolocation 705	**890 — 942** FIXED MOBILE BROADCASTING Radiolocation 706
942 — 960 FIXED MOBILE except aeronautical mobile BROADCASTING 703 699 704	**942 — 960** FIXED Mobile 708	**942 — 960** FIXED MOBILE BROADCASTING 701

ADD **3669A** **705** *Different category of service:* in the United States, the allocation of the band 890 — 942 MHz to the radiolocation service is on a primary basis (see No. **425**) and subject to agreement obtained under the procedure set forth in Article **14**.

ADD **3669B** **706** *Different category of service:* in Australia, the allocation of the band 890 — 942 MHz to the radiolocation service is on a primary basis (see No. **425**).

MOD **3670** **707** In Region 2, the band 902 — 928 MHz (centre frequency 915 MHz) is designated for industrial, scientific and medical (ISM) applications. Radiocommunication services operating within this band must accept harmful interference which may be caused by these applications. ISM equipment operating in this band is subject to the provisions of No. **1815**.
340

ADD **3670A** **708** *Different category of service:* in the United States, the allocation of the bands 942 — 947 MHz and 952 — 960 MHz to the mobile service is on a primary basis (see No. **425**) and subject to agreement obtained under the procedure set forth in Article **14**.

MHz
960 — 1 215

Allocation to Services		
Region 1	Region 2	Region 3
960 — 1 215	AERONAUTICAL RADIONAVIGATION 709	

NOC **3671** **709** The band 960 — 1 215 MHz is reserved on a worldwide basis for the use and development of airborne electronic aids to air navigation and any directly associated ground-based facilities.
341

MHz
1 215 — 1 240

Allocation to Services		
Region 1	Region 2	Region 3
1 215 — 1 240	RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) 710 711 712 713	

ADD **3673A** **710** Use of the radionavigation-satellite service in the band 1 215 — 1 260 MHz shall be subject to the condition that no harmful interference is caused to the radionavigation service authorized under No. **712**.

MOD **3674** **711** *Additional allocation:* in Afghanistan, Angola, Saudi Arabia, Bahrain, Bangladesh, Cameroon, China, the United Arab Emirates, Ethiopia, Guinea, Guyana, India, Indonesia, Iran, Iraq, Israel, Japan, Jordan, Kuwait, the Lebanon, Libya, Malawi, Morocco, Mozambique, Nepal, Nigeria, Oman, Pakistan, the Philippines, Qatar, Syria, Somalia, Sudan, Sri Lanka, Chad, Thailand, Togo and Yemen (P.D.R. of), the band 1 215 — 1 300 MHz is also allocated to the fixed and mobile services on a primary basis.
344

MOD **3673** **712** *Additional allocation:* in Algeria, the Federal Republic of Germany, Austria, Bahrain, Belgium, Benin, Burundi, Cameroon, China, Denmark, the United Arab Emirates, France, Greece, India, Iran, Iraq, Kenya, Liechtenstein, Luxembourg, Mali, Mauritania, Norway, Oman, Pakistan, the Netherlands, Portugal, Qatar, Senegal, Somalia, Sudan, Sri Lanka, Sweden, Switzerland, Tanzania, Turkey and Yugoslavia, the band 1 215 — 1 300 MHz is also allocated to the radionavigation service on a primary basis.
343

ADD **3675A** **713** In the bands 1 215 — 1 300 MHz, 3 100 — 3 300 MHz, 5 250 — 5 350 MHz, 8 550 — 8 650 MHz, 9 500 — 9 800 MHz and 13.4 — 14.0 GHz, radiolocation stations installed on spacecraft may also be employed for the earth exploration-satellite and space research services on a secondary basis.

MHz
1 240 — 1 300

Allocation to Services		
Region 1	Region 2	Region 3
1 240 — 1 260	RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) 710 Amateur 711 712 713 714	
1 260 — 1 300	RADIOLOCATION Amateur 664 711 712 713 714	

ADD **3675B** **714** *Additional allocation:* in Canada and the United States, the bands 1 240 — 1 300 MHz and 1 350 — 1 370 MHz are also allocated to the aeronautical radionavigation service on a primary basis.

MHz
1 300 — 1 350

Allocation to Services		
Region 1	Region 2	Region 3
1 300 — 1 350	AERONAUTICAL RADIONAVIGATION 717 Radiolocation 715 716 718	

MOD **3678** 348 **715** *Additional allocation:* in Indonesia, the band 1 300 — 1 350 MHz is also allocated to the fixed and mobile services on a primary basis.

MOD **3677** 347 **716** *Alternative allocation:* in Ireland and the United Kingdom, the band 1 300 — 1 350 MHz is allocated to the radiolocation service on a primary basis.

MOD **3676** 346 **717** The use of the bands 1 300 — 1 350 MHz, 2 700 — 2 900 MHz and 9 000 — 9 200 MHz by the aeronautical radionavigation service is restricted to ground-based radars and to associated airborne transponders which transmit only on frequencies in these bands and only when actuated by radars operating in the same band.

MOD **3680** 349A **718** In making assignments to stations of other services, administrations are urged to take all practicable steps to protect the spectral line observations of the radio astronomy service from harmful interference in the band 1 330 — 1 400 MHz. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. **343** and **344** and Article **36**).

MHz
1 350 — 1 427

Allocation to Services		
Region 1	Region 2	Region 3
1 350 — 1 400 FIXED MOBILE RADIOLOCATION 718 719 720	**1 350 — 1 400** RADIOLOCATION 714 718 720	
1 400 — 1 427	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 721 722	

MOD **3679** 349 **719** In Bulgaria, Hungary, Mongolia, Poland, the German Democratic Republic, Roumania, Czechoslovakia and the U.S.S.R., the existing installations of the radionavigation service may continue to operate in the band 1 350 — 1 400 MHz.

ADD **3680D** **720** The bands 1 370 — 1 400 MHz, 2 640 — 2 655 MHz, 4 950 — 4 990 MHz and 15.20 — 15.35 GHz are also allocated to the space research (passive) and earth exploration-satellite (passive) services on a secondary basis.

ADD **3679B** **721** All emissions in the band 1 400 — 1 427 MHz are prohibited.

ADD **3679A** **722** In the bands 1 400 — 1 727 MHz, 101 — 120 GHz and 197 — 220 GHz, passive research is being conducted by some countries in a programme for the search for intentional emissions of extra-terrestrial origin.

MHz
1 427 — 1 525

Allocation to Services		
Region 1	Region 2	Region 3
1 427 — 1 429	SPACE OPERATION (Earth-to-space) FIXED MOBILE except aeronautical mobile 722	
1 429 — 1 525 FIXED MOBILE except aeronautical mobile 722	**1 429 — 1 525** FIXED MOBILE 723 722	

ADD **3680C** **723** In Region 2, in Australia and Papua New Guinea, the use of the band 1 435 — 1 535 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile service.

MHz
1 525 — 1 530

Allocation to Services		
Region 1	Region 2	Region 3
1 525 — 1 530 SPACE OPERATION (space-to-Earth) FIXED Earth Exploration-Satellite Mobile except aeronautical mobile 724 722 725	**1 525 — 1 530** SPACE OPERATION (space-to-Earth) Earth Exploration-Satellite Fixed Mobile 723 722	**1 525 — 1 530** SPACE OPERATION (space-to-Earth) FIXED Earth Exploration-Satellite Mobile 723 724 722

MOD **3683** 350C **724** *Different category of service:* in Afghanistan, Saudi Arabia, Bahrain, Bulgaria, Cameroon, Egypt, the United Arab Emirates, France, Hungary, Iran, Iraq, Israel, Kuwait, the Lebanon, Morocco, Mongolia, Oman, Poland, Qatar, Syria, the German Democratic Republic, Roumania, Czechoslovakia, the U.S.S.R., Yemen (P.D.R. of) and Yugoslavia, the allocation of the band 1 525 — 1 530 MHz to the mobile, except aeronautical mobile, service is on a primary basis (see No. **425**).

ADD **3683A** **725** *Additional allocation:* in the U.S.S.R, the band 1 525 — 1 530 MHz is also allocated to the aeronautical mobile service on a primary basis.

MHz
1 530 — 1 535

Allocation to Services		
Region 1	Region 2	Region 3
1 530 — 1 535	**1 530 — 1 535**	
SPACE OPERATION (space-to-Earth)	SPACE OPERATION (space-to-Earth)	
MARITIME MOBILE-SATELLITE (space-to-Earth)	MARITIME MOBILE-SATELLITE (space-to-Earth)	
Earth Exploration-Satellite	Earth Exploration-Satellite	
Fixed	Fixed	
Mobile except aeronautical mobile	Mobile 723	
722 726	722 726	

ADD **3695C** **726** The allocation to the maritime mobile-satellite service in the band 1 530 — 1 535 MHz shall be effective from 1 January 1990. Up to that date the allocation to the fixed service shall be on a primary basis in Regions 1 and 3.

MHz
1 535 — 1 559

Allocation to Services		
Region 1	Region 2	Region 3
1 535 — 1 544	MARITIME MOBILE-SATELLITE (space-to-Earth)	
	722 727	
1 544 — 1 545	MOBILE-SATELLITE (space-to-Earth)	
	722 727 728	
1 545 — 1 559	AERONAUTICAL MOBILE-SATELLITE (R) (space-to-Earth)	
	722 727 729 730	

MOD **3688** **727** *Additional allocation:* in Afghanistan, Saudi Arabia, Bahrain, Bangladesh, the
352D Congo, Egypt, the United Arab Emirates, Ethiopia, Iran, Iraq, Israel, Jordan, Kuwait, the Lebanon, Malta, Morocco, Niger, Oman, Pakistan, Qatar, Sudan, Sri Lanka, Syria, Somalia, Chad, Thailand, Togo, Yemen (P.D.R. of) and Zambia, the bands 1 540 — 1 645.5 MHz and 1 646.5 — 1 660 MHz are also allocated to the fixed service on a secondary basis.

ADD **3695A** **728** The use of the bands 1 544 — 1 545 MHz (space-to-Earth) and 1 645.5 — 1 646.5 MHz (Earth-to-space) by the mobile-satellite service is limited to distress and safety operations.

MOD **3691** **729** Transmissions in the band 1 545 — 1 559 MHz from terrestrial aeronautical stations directly to aircraft stations, or between aircraft stations, in the aeronautical
352G mobile (R) service are also authorized when such transmissions are used to extend or supplement the satellite-to-aircraft links.

MOD **3685** **730** *Additional allocation:* in the Federal Republic of Germany, Austria, Bulgaria,
352 Cameroon, Guinea, Hungary, Indonesia, Libya, Mali, Mongolia, Nigeria, Poland, the German Democratic Republic, Roumania, Senegal, Czechoslovakia and the U.S.S.R., the bands 1 550 — 1 645.5 MHz and 1 646.5 — 1 660 MHz are also allocated to the fixed service on a primary basis.

MHz
1 559 — 1 626.5

Allocation to Services		
Region 1	Region 2	Region 3
1 559 — 1 610	AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) 722 727 730 731	
1 610 — 1 626.5	AERONAUTICAL RADIONAVIGATION 722 727 730 732 733 734	

ADD **3695B** **731** *Alternative allocation:* in Sweden, the band 1 590 — 1 610 MHz is allocated to the aeronautical radionavigation service on a primary basis.

MOD **3686** 352A **732** The band 1 610 — 1 626.5 MHz is reserved on a worldwide basis for the use and development of airborne electronic aids to air navigation and any directly associated ground-based or satellite-borne facilities. Such satellite use is subject to agreement obtained under the procedure set forth in Article **14**.

MOD **3687** 352B **733** The bands 1 610 — 1 626.5 MHz, 5 000 — 5 250 MHz and 15.4 — 15.7 GHz are also allocated to the aeronautical mobile-satellite (R) service on a primary basis. Such use is subject to agreement obtained under the procedure set forth in Article **14**.

ADD **3695E** **734** The band 1 610.6 — 1 613.8 MHz is also allocated to the radio astronomy service on a secondary basis for spectral line observations. In making assignments to stations of other services to which the band is allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. **343** and **344** and Article **36**).

MHz
1 626.5 — 1 660.5

Allocation to Services		
Region 1	Region 2	Region 3
1 626.5 — 1 645.5	MARITIME MOBILE-SATELLITE (Earth-to-space) 722 727 730	
1 645.5 — 1 646.5	MOBILE-SATELLITE (Earth-to-space) 722 728	
1 646.5 — 1 660	AERONAUTICAL MOBILE-SATELLITE (R) (Earth-to-space) 722 727 730 735	
1 660 — 1 660.5	AERONAUTICAL MOBILE-SATELLITE (R) (Earth-to-space) RADIO ASTRONOMY 722 735 736	

MOD **3694** 352J **735** Transmissions in the band 1 646.5 — 1 660.5 MHz from aircraft stations in the aeronautical mobile (R) service directly to terrestrial aeronautical stations, or between aircraft stations, are also authorized when such transmissions are used to extend or supplement the aircraft-to-satellite links.

ADD **3696B** **736** In making assignments to stations of other services to which the band 1 660 — 1 670 MHz is allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. **343** and **344** and Article **36**).

MHz
1 660.5 — 1 670

Allocation to Services		
Region 1	Region 2	Region 3
1 660.5 — 1 668.4	RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile 722 736 737 738 739	
1 668.4 — 1 670	METEOROLOGICAL AIDS FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY 722 736	

MHz
1 670 — 1 690

Allocation to Services		
Region 1	Region 2	Region 3
1 670 — 1 690	METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 722	

ADD **3698A** **737** *Different category of service:* in Afghanistan, Saudi Arabia, Bahrain, Benin, Bulgaria, Cameroon, the Central African Republic, the Congo, Cuba, Egypt, the United Arab Emirates, Ethiopia, Hungary, India, Indonesia, Iran, Israel, Kenya, Kuwait, the Lebanon, Malaysia, Mongolia, Oman, Uganda, Pakistan, Poland, Qatar, Syria, the German Democratic Republic, Singapore, Somalia, Sri Lanka, Chad, Thailand, Czechoslovakia, Tunisia, the U.S.S.R., Yemen A.R., Yemen (P.D.R. of) and Yugoslavia, the allocation of the band 1 660.5 — 1 668.4 MHz to the fixed and the mobile, except aeronautical mobile, service is on a primary basis until 1 January 1990 (see No. **425**).

ADD **3696A** **738** *Additional allocation:* in Bangladesh, India, Indonesia, Nigeria, Pakistan, Sri Lanka and Thailand, the band 1 660.5 — 1 668.4 MHz is also allocated to the meteorological aids service on a secondary basis.

MOD **3696** **739** In view of the successful detection by radio astronomers of two hydroxyl spectral
353A lines in the region of 1 665 MHz and 1 667 MHz, administrations are urged to give all practicable protection in the band 1 660.5 — 1 668.4 MHz for future research in radio astronomy, particularly by eliminating air-to-ground transmissions in the meteorological aids service in the band 1 664.4 — 1 668.4 MHz as soon as practicable.

MHz
1 690 — 1 700

Allocation to Services		
Region 1	Region 2	Region 3
1 690 — 1 700	**1 690 — 1 700**	
METEOROLOGICAL AIDS	METEOROLOGICAL AIDS	
METEOROLOGICAL-SATELLITE (space-to-Earth)	METEOROLOGICAL-SATELLITE (space-to-Earth)	
Fixed		
Mobile except aeronautical mobile		
671 722 741	671 722 740 742	

ADD **3698B** **740** *Additional allocation:* in Afghanistan, Costa Rica, Cuba, India, Iran, Malaysia, Pakistan, Singapore, Sri Lanka and Thailand, the band 1 690 — 1 700 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

MOD **3698** 354A **741** *Different category of service:* in Saudi Arabia, Austria, Bahrain, Bulgaria, the Congo, Egypt, the United Arab Emirates, Ethiopia, Guinea, Hungary, Iraq, Israel, Jordan, Kenya, Kuwait, the Lebanon, Mauritania, Mongolia, Oman, Poland, Qatar, Syria, the German Democratic Republic, Roumania, Somalia, Tanzania, Czechoslovakia, the U.S.S.R., Yemen A.R., Yemen (P.D.R. of) and Yugoslavia, the allocation of the band 1 690 — 1 700 MHz to the fixed and mobile, except aeronautical mobile, service is on a primary basis (see No. **425**).

MOD **3700** 354C **742** *Additional allocation:* in Australia and Indonesia, the band 1 690 — 1 700 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a secondary basis.

MHz
1 700 — 1 710

Allocation to Services		
Region 1	Region 2	Region 3
1 700 — 1 710	**1 700 — 1 710**	
FIXED	FIXED	
METEOROLOGICAL-SATELLITE (space-to-Earth)	METEOROLOGICAL-SATELLITE (space-to-Earth)	
Mobile except aeronautical mobile	MOBILE except aeronautical mobile	
671 722	671 722 743	

ADD **3701B** **743** *Additional allocation:* in India, Indonesia, Japan and Thailand, the band 1 700 — 1 710 MHz is also allocated to the space research service (space-to-Earth) on a primary basis.

MHz
1 710 — 2 290

Allocation to Services		
Region 1	Region 2	Region 3
1 710 — 2 290	**1 710 — 2 290**	
FIXED	FIXED	
Mobile	MOBILE	
722 744 746 747 748 750	722 744 745 746 747 748 749 750	

MOD **3695** 352K **744** The band 1 718.8 — 1 722.2 MHz is also allocated to the radio astronomy service on a secondary basis for spectral line observations. In making assignments to stations of other services to which the band is allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. **343** and **344** and Article **36**).

MOD **3703** 356A **745** Subject to agreement obtained under the procedure set forth in Article **14** and having particular regard to tropospheric scatter systems, the band 1 750 — 1 850 MHz may also be used for space operation (Earth-to-space) and space research (Earth-to-space) services in Region 2, in Afghanistan, Australia, India, Indonesia, Japan and Thailand.

MOD **3704** 356AA **746** *Additional allocation:* in Bulgaria, Cuba, Hungary, Mali, Mongolia, Poland, the German Democratic Republic, Roumania, Czechoslovakia and the U.S.S.R., the band 1 770 — 1 790 MHz is also allocated to the meteorological-satellite service on a primary basis, subject to agreement obtained under the procedure set forth in Article **14**.

ADD **3707A** **747** Subject to agreement obtained under the procedure set forth in Article **14**, the band 2 025 — 2 110 MHz may also be used for Earth-to-space and space-to-space transmissions in the space research, space operation and earth exploration-satellite services. The services using space-to-space transmissions shall operate in accordance with the provisions of Nos. **2557** to **2560** and shall not cause harmful interference to the other space services.

ADD **3707B** **748** Subject to agreement obtained under the procedure set forth in Article **14**, the band 2 110 — 2 120 MHz may also be used for Earth-to-space transmissions in the space research (deep space) service.

ADD **3707D** **749** Subject to agreement obtained under the procedure set forth in Article **14**, the band 2 110 — 2 120 MHz may also be used in Japan for the space research (Earth-to-space) and space operation (Earth-to-space) services until 31 December 1990.

ADD **3707C** **750** Subject to agreement obtained under the procedure set forth in Article **14**, the band 2 200 — 2 290 MHz may also be used for space-to-Earth and space-to-space transmissions in the space research, space operations and earth exploration-satellite services. These services shall operate in accordance with the provisions of Nos. **2557** to **2560**; the space-to-space transmissions shall not cause harmful interference to the other space services.

MHz
2 290 — 2 450

Allocation to Services		
Region 1	Region 2	Region 3
2 290 — 2 300 FIXED SPACE RESEARCH (deep space) (space-to-Earth) Mobile except aeronautical mobile	**2 290 — 2 300** FIXED MOBILE except aeronautical mobile SPACE RESEARCH (deep space) (space-to-Earth)	
2 300 — 2 450 FIXED Amateur Mobile Radiolocation 664 752	**2 300 — 2 450** FIXED MOBILE RADIOLOCATION Amateur 664 751 752	

ADD **3680A** **751** In Australia, the United States and Papua New Guinea, the use of the band 2 310 — 2 390 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile services.

MOD **3709** 357 **752** The band 2 400 — 2 500 MHz (centre frequency 2 450 MHz) is designated for industrial, scientific and medical (ISM) applications. Radio services operating within this band must accept harmful interference which may be caused by these applications. ISM equipment operating in this band is subject to the provisions of No. **1815**.

MHz
2 450 — 2 500

Allocation to Services		
Region 1	Region 2	Region 3
2 450 — 2 500 FIXED MOBILE Radiolocation 752 753	**2 450 — 2 500** FIXED MOBILE RADIOLOCATION 752	

MOD **3713** 361 **753** In France, the band 2 450 — 2 550 MHz is allocated on a primary basis to the radiolocation service and on a secondary basis to the fixed and mobile services (see Nos. **424** and **425**). Such use is subject to agreement with the administrations having services, operating or planned to operate in accordance with the Table, which may be affected.

MHz
2 500 — 2 655

Allocation to Services		
Region 1	Region 2	Region 3
2 500 — 2 655	**2 500 — 2 655**	**2 500 — 2 535**
FIXED 762 763 764	FIXED 762 764	FIXED 762 764
MOBILE except aeronautical mobile	FIXED-SATELLITE (space-to-Earth) 761	FIXED-SATELLITE (space-to-Earth) 761
BROADCASTING-SATELLITE 757 760	MOBILE except aeronautical mobile	MOBILE except aeronautical mobile
	BROADCASTING-SATELLITE 757 760	BROADCASTING-SATELLITE 757 760
		754
		2 535 — 2 655
		FIXED 762 764
		MOBILE except aeronautical mobile
		BROADCASTING-SATELLITE 757 760
720 753 756 758 759	720 755	720

ADD **3723B** **754** Subject to agreement obtained under the procedure set forth in Article **14**, the band 2 500 — 2 535 MHz may also be used in Region 3 for the mobile-satellite (space-to-Earth), except aeronautical mobile-satellite, service for operation limited to within national boundaries.

MOD **3714** 361A **755** *Additional allocation:* in Canada, the band 2 500 — 2 550 MHz is also allocated to the radiolocation service on a primary basis.

MOD **3716** 362 **756** *Additional allocation:* in the United Kingdom, the band 2 500 — 2 600 MHz is also allocated to the radiolocation service on a secondary basis.

MOD **3715** 361B **757** The use of the band 2 500 — 2 690 MHz by the broadcasting-satellite service is limited to national and regional systems for community reception and such use shall be subject to agreement obtained under the procedure set forth in Article **14**. The power flux-density at the Earth's surface shall not exceed the values given in Nos. **2561** to **6564**.

MOD **3717** 363 **758** *Alternative allocation:* in the Federal Republic of Germany and Greece, the band 2 500 — 2 690 MHz is allocated to the fixed service on a primary basis.

MOD **3724** 364F **759** *Alternative allocation:* in Bulgaria and the U.S.S.R., the band 2 500 — 2 690 MHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

MOD **3726** 364H **760** In the design of systems in the broadcasting-satellite service in the bands between 2 500 MHz and 2 690 MHz, administrations are urged to take all necessary steps to protect the radio astronomy service in the band 2 690 — 2 700 MHz.

MOD **3723** 364E **761** The use of the bands 2 500 — 2 690 MHz in Region 2 and 2 500 — 2 535 MHz and 2 655 — 2 690 MHz in Region 3 by the fixed-satellite service is limited to national and regional systems; such use shall be subject to agreement obtained under the procedure set forth in Article **14**, giving particular attention to the broadcasting-satellite service in Region 1. In the direction space-to-Earth, the power flux-density at the Earth's surface shall not exceed the values given in Nos. **2561** to **2564**.

MOD **3722** 364D **762** Administrations shall make all practicable efforts to avoid developing new tropospheric scatter systems in the band 2 500 — 2 690 MHz.

MOD **3718** 364 **763** Subject to agreement obtained under the procedure set forth in Article **14**, the band 2 500 — 2 690 MHz may be used for tropospheric scatter systems in Region 1.

NOC **3721** 364C **764** When planning new tropospheric scatter radio-relay links in the band 2 500 — 2 690 MHz; all possible measures shall be taken to avoid directing the antennae of these links towards the geostationary-satellite orbit.

MHz
2 655 — 2 690

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

MOD **3725** 364G **765** In making assignments to stations of other services, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference in the band 2 655 — 2 690 MHz. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. **343** and **344** and Article **36**).

ADD **3723A** **766** Subject to agreement obtained under the procedure set forth in Article **14**, the band 2 655 — 2 690 MHz may also be used in Region 3 for the mobile-satellite (Earth-to-space), except aeronautical mobile-satellite, service for operation limited to within national boundaries.

MHz
2 690 — 2 700

Allocation to Services		
Region 1	Region 2	Region 3
2 690 — 2 700	EARTH EXPLORATION-SATELLITE (passive)	
	RADIO ASTRONOMY	
	SPACE RESEARCH (passive)	
	767 768 769	

ADD **3717A** **767** *Additional allocation:* in the Federal Republic of Germany and Austria, the band 2 690 — 2 695 MHz is also allocated to the fixed service on a primary basis. Such use is limited to equipment in operation by 1 January 1985.

ADD **3717B** **768** All emissions in the band 2 690 — 2 700 MHz are prohibited, except those provided for by Nos. **767** and **769**.

MOD **3719** 364A **769** *Additional allocation:* in Afghanistan, Saudi Arabia, Bahrain, Bulgaria, Cameroon, the Central African Republic, the Congo, the Ivory Coast, Cuba, Egypt, the United Arab Emirates, Ethiopia, Gabon, Guinea, Guinea-Bissau, Hungary, Iran, Iraq, Israel, the Lebanon, Malaysia, Malawi, Mali, Morocco, Mauritania, Mongolia, Nigeria, Oman, Pakistan, the Philippines, Poland, Qatar, Syria, the German Democratic Republic, Roumania, Singapore, Somalia, Sri Lanka, Czechoslovakia, Thailand, Tunisia, the U.S.S.R., Yemen A.R., Yemen (P.D.R. of), Yugoslavia, Zaire and Zambia, the band 2 690 — 2 700 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. Such use is limited to equipment in operation by 1 January 1985.

MHz
2 700 — 3 100

Allocation to Services		
Region 1	Region 2	Region 3
2 700 — 2 900	AERONAUTICAL RADIONAVIGATION 717 Radiolocation 770 771	
2 900 — 3 100	RADIONAVIGATION 773 774 775 Radiolocation 772	

NOC **3727** 366 **770** In the band 2 700 — 2 900 MHz, ground-based radars used for meteorological purposes are authorized to operate on a basis of equality with stations of the aeronautical radionavigation service.

ADD **3727A** **771** *Additional allocation:* in Canada, the band 2 850 — 2 900 MHz is also allocated to the maritime radionavigation service, on a primary basis, for use by shore-based radars.

ADD **3730A** **772** In the bands 2 900 — 3 100 MHz, 5 470 — 5 650 MHz and 9 200 — 9 300 MHz, the use of shipborne transponder systems shall be confined to the sub-bands 2 930 — 2 950 MHz, 5 470 — 5 480 MHz and 9 280 — 9 300 MHz.

NOC **3728** 367 **773** The use of the band 2 900 — 3 100 MHz by the aeronautical radionavigation service is limited to ground-based radars.

NOC **3729** 367A **774** In the bands 2 900 — 2 920 MHz and 9 300 — 9 320 MHz in the maritime radionavigation service, the use of shipborne radars other than those existing on 1 January 1976 is not permitted.

NOC **3730** 367B **775** In the bands 2 920 — 3 100 MHz and 9 320 — 9 500 MHz in the maritime radionavigation service, the use of fixed-frequency radar beacons (racons) on land or at sea is not permitted.

MHz
3 100 — 3 300

Allocation to Services		
Region 1	Region 2	Region 3
3 100 — 3 300	RADIOLOCATION 713 776 777 778	

MOD **3732** 369 **776** In the band 3 100 — 3 300 MHz, radar beacons (racons) and shipborne radars on merchant ships may operate within the band 3 100 — 3 266 MHz.

MOD **3731** 368 **777** *Additional allocation:* in Bulgaria, Canada, Cuba, Hungary, Mongolia, Poland, the German Democratic Republic, Roumania, Czechoslovakia and the U.S.S.R., the band 3 100 — 3 300 MHz is also allocated to the radionavigation service on a primary basis.

ADD **3732A** **778** In making assignments to stations of other services, administrations are urged to take all practicable steps to protect the spectral line observations of the radio astronomy service from harmful interference in the bands 3 260 — 3 267 MHz, 3 332 — 3 339 MHz, 3 345.8 — 3 352.5 MHz and 4 825 — 4 835 MHz. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. **343** and **344** and Article **36**).

MHz
3 300 — 3 400

Allocation to Services		
Region 1	Region 2	Region 3
3 300 — 3 400	**3 300 — 3 400**	**3 300 — 3 400**
RADIOLOCATION	RADIOLOCATION	RADIOLOCATION
	Amateur	Amateur
	Fixed	
	Mobile	
778 779 780	778 780	778 779

MOD 3739 376 **779** *Additional allocation:* in Afghanistan, Saudi Arabia, Bahrain, Bangladesh, China, the Congo, the United Arab Emirates, India, Indonesia, Iran, Iraq, Israel, Japan, Kuwait, the Lebanon, Libya, Malaysia, Oman, Pakistan, Qatar, Syria, Singapore, Sri Lanka and Thailand, the band 3 300 — 3 400 MHz is also allocated to the fixed and mobile services on a primary basis. The countries bordering the Mediterranean shall not claim protection for their fixed and mobile services from the radiolocation service.

MOD 3733 370 **780** *Additional allocation:* in Bulgaria, Cuba, Hungary, Mongolia, Poland, the German Democratic Republic, Roumania, Czechoslovakia and the U.S.S.R., the band 3 300 — 3 400 MHz is also allocated to the radionavigation service on a primary basis.

MHz
3 400 — 4 200
(see page RR8-117)

MHz
3 400 — 4 200

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

MOD **3738** **781** 375

Additional allocation: in the Federal Republic of Germany, Israel, Nigeria and the United Kingdom, the band 3 400 — 3 475 MHz is also allocated to the amateur service on a secondary basis.

ADD **3735A** **782**

Different category of service: in Austria, the allocation of the band 3 400 — 3 500 MHz to the radiolocation service is on a primary basis (see No. **425**), subject to the agreement of the Administrations of the following countries: Hungary, Italy, the German Democratic Republic, Czechoslovakia and Yugoslavia. Such use is limited to ground-based stations. However, this Administration is urged to cease operations by 1985. After this date this Administration shall take all practicable steps to protect the fixed-satellite service and coordination requirements shall not be imposed on the fixed-satellite service.

ADD **3739A** **783**

Different category of service: in Indonesia, Japan, Pakistan and Thailand, the allocation of the band 3 400 — 3 500 MHz to the mobile, except aeronautical mobile, service is on a primary basis (see No. **425**).

ADD **3736A** **784**

In Regions 2 and 3, in the band 3 400 — 3 600 MHz the radiolocation service is allocated on a primary basis. However, all administrations operating radiolocation systems in this band are urged to cease operations by 1985. Thereafter, administrations shall take all practicable steps to protect the fixed-satellite service and coordination requirements shall not be imposed on the fixed-satellite service.

MOD **3736** **785** 373

In Denmark, Norway and the United Kingdom, the fixed, radiolocation and fixed-satellite services operate on a basis of equality of rights in the band 3 400 — 3 600 MHz. However, these Administrations operating radiolocation systems in this band are urged to cease operations by 1985. After this date these Administrations shall take all practicable steps to protect the fixed-satellite service and coordination requirements shall not be imposed on the fixed-satellite service.

NOC **3741** **786** 378

In Japan, in the band 3 620 — 3 700 MHz, the radiolocation service is excluded.

ADD **3742A** **787**

Additional allocation: in New Zealand, the band 3 700 — 3 770 MHz is also allocated to the radiolocation service on a secondary basis.

MHz
4 200 — 4 400

Allocation to Services		
Region 1	Region 2	Region 3
4 200 — 4 400	AERONAUTICAL RADIONAVIGATION 789 788 790 791	

MOD **3748** 383 **788** *Additional allocation:* in the Federal Republic of Germany, Denmark, Norway and Sweden, the band 4 200 — 4 210 MHz is also allocated to the fixed service on a secondary basis.

ADD **3743A** **789** Use of the band 4 200 — 4 400 MHz by the aeronautical radionavigation service is reserved exclusively for radio altimeters installed on board aircraft and for the associated transponders on the ground. However, passive sensing in the earth exploration-satellite and space research services may be authorized in this band on a secondary basis (no protection is provided by the radio altimeters).

MOD **3744** 381 **790** *Additional allocation:* in China, Iran, Libya, the Philippines and Sri Lanka, the band 4 200 — 4 400 MHz is also allocated to the fixed service on a secondary basis.

MOD **3743** 379A **791** The standard frequency and time signal-satellite service may be authorized to use the frequency 4 202 MHz for space-to-Earth transmissions and the frequency 6 427 MHz for Earth-to-space transmissions. Such transmissions shall be confined within the limits of ± 2 MHz of these frequencies and shall be subject to agreement obtained under the procedure set forth in Article **14**.

MHz
4 400 — 4 990

Allocation to Services		
Region 1	Region 2	Region 3
4 400 — 4 500	FIXED MOBILE	
4 500 — 4 800	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE 792	
4 800 — 4 990	FIXED MOBILE 793 Radio Astronomy 720 778 794	

ADD **3748B** **792** *Alternative allocation:* in Belgium, Norway, the Netherlands and the United Kingdom, the band 4 500 — 4 800 MHz is allocated to the fixed and mobile services on a primary basis. Such use shall not impose power flux-density limitations on the fixed-satellite service greater than those given in No. **2566**.

ADD **3746A** **793** In the bands 4 825 — 4 835 MHz and 4 950 — 4 990 MHz, the allocation to the mobile service is restricted to the mobile, except aeronautical mobile, service.

ADD **3746B** **794** *Different category of service:* in Argentina, Australia and Canada, the allocation of the bands 4 825 — 4 835 MHz and 4 950 — 4 990 MHz to the radio astronomy service is on a primary basis (see No. **425**). In making assignments to stations of other services to which these bands are allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. **343** and **344** and Article **36**).

MHz
4 990 — 5 000

Allocation to Services		
Region 1	Region 2	Region 3
4 990 — 5 000	FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY Space Research (passive) 795	

ADD **3531L** **795** In making assignments to stations of other services to which the band 4 990 — 5 000 MHz is allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. **343** and **344** and Article **36**).

MHz
5 000 — 5 470

Allocation to Services		
Region 1	Region 2	Region 3
5 000 — 5 250	AERONAUTICAL RADIONAVIGATION 733 796 797	
5 250 — 5 255	RADIOLOCATION Space Research 713 798	
5 255 — 5 350	RADIOLOCATION 713 798	
5 350 — 5 460	AERONAUTICAL RADIONAVIGATION 799 Radiolocation	
5 460 — 5 470	RADIONAVIGATION 799 Radiolocation	

ADD **3750AA** **796** The band 5 000 — 5 250 MHz is to be used for the operation of the international standard system (microwave landing system) for precision approach and landing. The requirements of this system shall take precedence over other uses of this band.

MOD **3750** **797** The bands 5 000 — 5 250 MHz and 15.4 — 15.7 GHz are also allocated to the
383B fixed-satellite service and the inter-satellite service, for connection between one or more earth stations at specified fixed points on the Earth and space stations, when these services are used in conjunction with the aeronautical radionavigation and/or aeronautical mobile (R) service. Such use shall be subject to agreement obtained under the procedure set forth in Article **14**.

MOD **3751** **798** *Additional allocation:* in Austria, Bulgaria, Hungary, Libya, Mongolia, Poland,
384 the German Democratic Republic, Roumania, Czechoslovakia and the U.S.S.R., the band 5 250 — 5 350 MHz is also allocated to the radionavigation service on a primary basis.

NOC **3753** **799** The use of the band 5 350 — 5 470 MHz by the aeronautical radionavigation
385 service is limited to airborne radars and associated airborne beacons.

MHz
5 470 — 5 650

Allocation to Services		
Region 1	Region 2	Region 3
5 470 — 5 650	MARITIME RADIONAVIGATION 772 Radiolocation 800 801 802	

MOD **3754** 386 **800** *Additional allocation:* in Afghanistan, Austria, Bulgaria, Hungary, Iran, Mongolia, Poland, the German Democratic Republic, Roumania, Czechoslovakia and the U.S.S.R., the band 5 470 — 5 650 MHz is also allocated to the aeronautical radionavigation service on a primary basis.

ADD **3755A** **801** *Additional allocation:* in the United Kingdom, the band 5 470 — 5 850 MHz is also allocated to the land mobile service on a secondary basis. The power limits specified in Nos. **2502, 2505, 2506** and **2507** shall apply in the band 5 725 — 5 850 MHz.

NOC **3755** 387 **802** Between 5 600 MHz and 5 650 MHz, ground-based radars used for meteorological purposes are authorized to operate on a basis of equality with stations of the maritime radionavigation service.

MHz
5 650 — 5 725

Allocation to Services		
Region 1	Region 2	Region 3
5 650 — 5 725	RADIOLOCATION Amateur Space Research (deep space) 664 801 803 804 805	

MOD **3757** 389 **803** *Additional allocation:* in Afghanistan, Saudi Arabia, Bahrain, Bangladesh, Cameroon, the Central African Republic, China, the Congo, the Republic of Korea, Egypt, the United Arab Emirates, Gabon, Guinea, India, Indonesia, Iran, Iraq, Israel, Japan, Jordan, Kuwait, the Lebanon, Libya, Madagascar, Malaysia, Malawi, Malta, Niger, Nigeria, Pakistan, the Philippines, Qatar, Syria, Singapore, Sri Lanka, Tanzania, Chad, Thailand and Yemen (P.D.R. of), the band 5 650 — 5 850 MHz is also allocated to the fixed and mobile services on a primary basis.

MOD **3758** 389A **804** *Different category of service:* in Bulgaria, Cuba, Hungary, Mongolia, Poland, the German Democratic Republic, Czechoslovakia and the U.S.S.R., the allocation of the band 5 670 — 5 725 MHz to the space research service is on a primary basis (see No. **425**).

ADD **3758A** **805** *Additional allocation:* in Bulgaria, Cuba, Hungary, Mongolia, Poland, the German Democratic Republic, Czechoslovakia and the U.S.S.R., the band 5 670 — 5 850 MHz is also allocated to the fixed service on a primary basis.

MHz
5 725 — 5 925

Allocation to Services		
Region 1	Region 2	Region 3
5 725 — 5 850 FIXED-SATELLITE (Earth-to-space) RADIOLOCATION Amateur 801 803 805 806 807 808	**5 725 — 5 850** RADIOLOCATION Amateur 803 805 806 808	
5 850 — 5 925 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 806	**5 850 — 5 925** FIXED FIXED-SATELLITE (Earth-to-space) MOBILE Amateur Radiolocation 806	**5 850 — 5 925** FIXED FIXED-SATELLITE (Earth-to-space) MOBILE Radiolocation 806

MOD **3760** 391 **806** The band 5 725 — 5 875 MHz (centre frequency 5 800 MHz) is designated for industrial, scientific and medical (ISM) applications. Radiocommunication services operating within this band must accept harmful interference which may be caused by these applications. ISM equipment operating in this band is subject to the provisions of No. **1815**.

MOD **3756** 388 **807** *Additional allocation:* in the Federal Republic of Germany and in Cameroon, the band 5 755 — 5 850 MHz is also allocated to the fixed service on a primary basis.

ADD **3761C** **808** The band 5 830 — 5 850 MHz is also allocated to the amateur-satellite service (space-to-Earth) on a secondary basis.

MHz
5 925 — 7 250

Allocation to Services		
Region 1	Region 2	Region 3
5 925 — 7 075	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 791 809	
7 075 — 7 250	FIXED MOBILE 809 810 811	

ADD **3761B** **809** In the band 6 425 — 7 075 MHz, passive microwave sensor measurements are carried out over the oceans. In the band 7 075 — 7 250 MHz, passive microwave sensor measurements are carried out. Administrations should bear in mind the needs of the earth exploration-satellite (passive) and space research (passive) services in their future planning of this band.

ADD **3762A** **810** Subject to agreement obtained under the procedure set forth in Article **14**, in Region 2, the band 7 125 — 7 155 MHz may be used for Earth-to-space transmissions in the space operation service.

MOD **3763** 392B **811** Subject to agreement obtained under the procedure set forth in Article **14**, the band 7 145 — 7 235 MHz may be used for Earth-to-space transmissions in the space research service. The use of the band 7 145 — 7 190 MHz is restricted to deep space; no emissions to deep space shall be effected in the band 7 190 — 7 235 MHz.

MHz
7 250 — 7 550

Allocation to Services		
Region 1	Region 2	Region 3
7 250 — 7 300	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE 812	
7 300 — 7 450	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 812	
7 450 — 7 550	FIXED FIXED-SATELLITE (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile	

MHz
7 550 — 8 025

Allocation to Services		
Region 1	Region 2	Region 3
7 550 — 7 750	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile	
7 750 — 7 900	FIXED MOBILE except aeronautical mobile	
7 900 — 7 975	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 812	
7 975 — 8 025	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 812	

ADD **3764B** **812** The bands 7 250 — 7 375 MHz (space-to-Earth) and 7 900 — 8 025 MHz (Earth-to-space) may also be used by the mobile-satellite service. The use of these bands by this service shall be subject to agreement obtained under the precedure set forth in Article **14**.

MHz
8 025 — 8 175

Allocation to Services		
Region 1	Region 2	Region 3
8 025 — 8 175 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE Earth Exploration-Satellite (space-to-Earth) 813 815	**8 025 — 8 175** EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 814	**8 025 — 8 175** FIXED FIXED-SATELLITE (Earth-to-space) MOBILE Earth Exploration-Satellite (space-to-Earth) 813 815

ADD **3770B** **813** In the band 8 025 — 8 400 MHz, the power flux-density limits specified in No. **2570** shall apply in Regions 1 and 3 to the earth exploration-satellite service.

ADD **3762B** **814** In Region 2, aircraft stations are not permitted to transmit in the band 8 025 — 8 400 MHz.

ADD **3770A** **815** Subject to agreement obtained under the procedure set forth in Article **14**, the band 8 025 — 8 400 MHz may be used for the earth exploration-satellite service (space-to-Earth) in Bangladesh, Benin, Cameroon, China, the Central African Republic, the Ivory Coast, Egypt, France, Guinea, Upper Volta, India, Iran, Israel, Italy, Japan, Kenya, Libya, Mali, Niger, Pakistan, Senegal, Somalia, Sudan, Sweden, Tanzania, Zaire and Zambia, on a primary basis.

MHz
8 175 — 8 400

Allocation to Services		
Region 1	Region 2	Region 3
8 175 — 8 215 FIXED FIXED-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) MOBILE Earth Exploration-Satellite (space-to-Earth) 813 815	**8 175 — 8 215** EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) MOBILE 814	**8 175 — 8 215** FIXED FIXED-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) MOBILE Earth Exploration-Satellite (space-to-Earth) 813 815
8 215 — 8 400 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE Earth Exploration-Satellite (space-to-Earth) 813 815	**8 215 — 8 400** EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 814	**8 215 — 8 400** FIXED FIXED-SATELLITE (Earth-to-space) MOBILE Earth Exploration-Satellite (space-to-Earth) 813 815

MHz
8 400 — 8 500

Allocation to Services		
Region 1	Region 2	Region 3
8 400 — 8 500	FIXED MOBILE except aeronautical mobile SPACE RESEARCH (space-to-Earth) 816 817 818	

ADD 3771A **816** In the space research service, the use of the band 8 400 — 8 450 MHz is limited to deep space.

MOD 3771 394D **817** *Different category of service:* in Belgium, Israel, Luxembourg, Malaysia, Singapore and Sri Lanka, the allocation of the band 8 400 — 8 500 MHz to the space research service is on a secondary basis (see No. **424**).

NOC 3769 394A **818** *Alternative allocation:* in the United Kingdom, the band 8 400 — 8 500 MHz is allocated to the radiolocation and space research services on a primary basis.

MHz
8 500 — 8 850

Allocation to Services		
Region 1	Region 2	Region 3
8 500 — 8 750	RADIOLOCATION 713 819 820	
8 750 — 8 850	RADIOLOCATION AERONAUTICAL RADIONAVIGATION 821 822	

ADD 3772A **819** *Additional allocation:* in Saudi Arabia, Bahrain, Bangladesh, Burundi, Cameroon, China, the Congo, Costa Rica, Egypt, the United Arab Emirates, Gabon, Guinea, Guyana, Indonesia, Iran, Iraq, Israel, Jamaica, Kuwait, Libya, Malaysia, Mali, Morocco, Mauritania, Nepal, Niger, Nigeria, Oman, Pakistan, Qatar, Syria, Senegal, Singapore, Somalia, Sri Lanka, Tanzania, Chad, Thailand, Togo and Tunisia, the band 8 500 — 8 750 MHz is also allocated to the fixed and mobile services on a primary basis.

MOD 3772 395 **820** *Additional allocation:* in Bulgaria, Hungary, Mongolia, Poland, the German Democratic Republic, Roumania, Czechoslovakia and the U.S.S.R., the band 8 500 — 8 750 MHz is also allocated to the land mobile and radionavigation services on a primary basis.

NOC 3773 396 **821** The use of the band 8 750 — 8 850 MHz by the aeronautical radionavigation service is limited to airborne Doppler navigation aids on a centre frequency of 8 800 MHz.

MOD 3774 397 **822** *Additional allocation:* in Algeria, the Federal Republic of Germany, Bahrain, Belgium, China, the United Arab Emirates, France, Greece, Indonesia, Iran, Libya, the Netherlands, Qatar, Sudan and Thailand, the bands 8 825 — 8 850 MHz and 9 000 — 9 200 MHz are also allocated to the maritime radionavigation service, on a primary basis, for use by shore-based radars only.

MHz
8 850 — 9 300

Allocation to Services		
Region 1	Region 2	Region 3
8 850 — 9 000	RADIOLOCATION MARITIME RADIONAVIGATION 823 824	
9 000 — 9 200	AERONAUTICAL RADIONAVIGATION 717 Radiolocation 822	
9 200 — 9 300	RADIOLOCATION MARITIME RADIONAVIGATION 772 823 824	

MHz
9 300 — 10 000

Allocation to Services		
Region 1	Region 2	Region 3
9 300 — 9 500	RADIONAVIGATION 774 775 Radiolocation 825	
9 500 — 9 800	RADIOLOCATION RADIONAVIGATION 713	
9 800 — 10 000	RADIOLOCATION Fixed 826 827 828	

ADD 3774A **823** In the bands 8 850 — 9 000 MHz and 9 200 — 9 225 MHz, the maritime radionavigation service is limited to shore-based radars.

MOD 3775 398 **824** *Additional allocation:* in Austria, Bulgaria, Cuba, Hungary, Mongolia, Poland, the German Democratic Republic, Roumania, Czechoslovakia and the U.S.S.R., the bands 8 850 — 9 000 MHz and 9 200 — 9 300 MHz are also allocated to the radionavigation service on a primary basis.

MOD 3776 399 **825** The use of the band 9 300 — 9 500 MHz by the aeronautical radionavigation service is limited to airborne weather radars and ground-based radars. In addition, ground-based radar beacons in the aeronautical radionavigation service are permitted in the band 9 300 — 9 320 MHz on condition that harmful interference is not caused to the maritime radionavigation service. In the band 9 300 — 9 500 MHz, ground-based radars used for meteorological purposes have priority over other radiolocation devices.

MOD 3778 401 **826** *Different category of service:* in Afghanistan, Algeria, Saudi Arabia, Austria, Bahrain, Bangladesh, Cameroon, the Republic of Korea, Egypt, the United Arab Emirates, Ethiopia, Guyana, India, Indonesia, Iran, Iraq, Israel, Jamaica, Japan, Jordan, Kuwait, the Lebanon, Liberia, Malaysia, Nigeria, Pakistan, Qatar, Singapore, Somalia, Sudan, Sri Lanka, Sweden, Thailand, Trinidad and Tobago, and Yemen (P.D.R. of), the allocation of the band 9 800 — 10 000 MHz to the fixed service is on a primary basis (see No. **425**).

MOD 3777 400 **827** *Additional allocation:* in Bulgaria, Hungary, Mongolia, Poland, the German Democratic Republic, Roumania, Czechoslovakia and the U.S.S.R., the band 9 800 — 10 000 MHz is also allocated to the radionavigation service on a primary basis.

MOD 3779 401A **828** The band 9 975 — 10 025 MHz is also allocated to the meteorological-satellite service on a secondary basis for use by weather radars.

GHz
10 — 10.6

Allocation to Services		
Region 1	Region 2	Region 3
10 — 10.45 FIXED MOBILE RADIOLOCATION Amateur 828	**10 — 10.45** RADIOLOCATION Amateur 828 829	**10 — 10.45** FIXED MOBILE RADIOLOCATION Amateur 828
10.45 — 10.5	RADIOLOCATION Amateur Amateur-Satellite 830	
10.5 — 10.55 FIXED MOBILE Radiolocation	**10.5 — 10.55** FIXED MOBILE RADIOLOCATION	
10.55 — 10.6	FIXED MOBILE except aeronautical mobile Radiolocation	

MOD 3780
402

829 *Additional allocation:* in Costa Rica, Ecuador, Guatemala and Honduras, the band 10 — 10.45 GHz is also allocated to the fixed and mobile services on a primary basis.

ADD 3780A

830 *Additional allocation:* in the Federal Republic of Germany, Angola, China, Ecuador, Spain, Japan, Kenya, Morocco, Nigeria, Sweden, Tanzania and Thailand, the band 10.45 — 10.5 GHz is also allocated to the fixed and mobile services on a primary basis.

GHz
10.6 — 10.7
(see page RR8-137)

GHz
10.6 — 10.7

Allocation to Services		
Region 1	Region 2	Region 3
10.6 — 10.68	EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive) Radiolocation 831 832	
10.68 — 10.7	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 833 834	

ADD **3783B** **831** In the band 10.6 — 10.68 GHz, stations of the fixed and mobile, except aeronautical mobile, services shall be limited to a maximum equivalent isotropically radiated power of 40 dBW and the power delivered to the antenna shall not exceed −3 dBW. These limits may be exceeded subject to agreement obtained under the procedure set forth in Article **14**. However, in Afghanistan, Saudi Arabia, Bahrain, Bangladesh, China, the United Arab Emirates, Finland, India, Indonesia, Iran, Iraq, Japan, Kuwait, the Lebanon, Nigeria, Pakistan, the Philippines, Qatar, Syria and the U.S.S.R., the restrictions on the fixed and mobile, except aeronautical mobile, services are not applicable.

ADD **3531A** **832** In making assignments to stations of other services to which the band 10.6 — 10.68 GHz is allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. **343** and **344** and Article **36**).

ADD **3784B** **833** All emissions in the band 10.68 — 10.7 GHz are prohibited, except for those provided for by No. **834**.

MOD **3784** 405B **834** *Additional allocation:* in Saudi Arabia, Bahrain, Bulgaria, Cameroon, China, Colombia, the Republic of Korea, Costa Rica, Cuba, Egypt, the United Arab Emirates, Ecuador, Hungary, Iran, Iraq, Israel, Japan, Kuwait, the Lebanon, Mongolia, Pakistan, Poland, Qatar, the German Democratic Republic, Roumania, Czechoslovakia, the U.S.S.R. and Yugoslavia, the band 10.68 — 10.7 GHz is also allocated to the fixed and mobile, except aeronautical mobile, service on a primary basis. Such use is limited to equipment in operation by 1 January 1985.

GHz
10.7 — 11.7

Allocation to Services		
Region 1	Region 2	Region 3
10.7 — 11.7 FIXED FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 835 MOBILE except aeronautical mobile	**10.7 — 11.7** FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile	

ADD **3784A** **835** In Region 1, the use of the band 10.7 — 11.7 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links for the broadcasting-satellite service.

GHz
11.7 — 12.75

Allocation to Services		
Region 1	Region 2	Region 3
11.7 — 12.5 FIXED BROADCASTING BROADCASTING-SATELLITE Mobile except aeronautical mobile 838 840	**11.7 — 12.1** FIXED 837 FIXED-SATELLITE (space-to-Earth) Mobile except aeronautical mobile 836 839 840 **12.1 — 12.3** FIXED 837 FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE 839 840 841 842 843 844 **12.3 — 12.7** FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE 839 840 843 844 846 **12.7 — 12.75** FIXED FIXED-SATELLITE (Earth-to-space) MOBILE except aeronautical mobile 840	**11.7 — 12.2** FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE 838 840 **12.2 — 12.5** FIXED MOBILE except aeronautical mobile BROADCASTING 838 840 845 **12.5 — 12.75** FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile BROADCASTING-SATELLITE 847 840
12.5 — 12.75 FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 840 848 849 850		

ADD **3787A** **836** In Region 2, in the band 11.7 — 12.1 GHz, transponders on space stations in the fixed-satellite service may be used additionally for transmissions in the broadcasting-satellite service, provided that such transmissions do not have a maximum e.i.r.p. greater than 53 dBW per television channel and do not cause greater interference or require more protection from interference than the coordinated fixed-satellite service frequency assignments. With respect to the space services, this band shall be used principally for the fixed-satellite service. The upper limit of this band shall be modified in accordance with the decisions of the 1983 regional administrative radio conference for Region 2 (see No. **841**).

ADD **3787G** **837** *Different category of service:* in Canada, Mexico and the United States, the allocation of the band 11.7 — 12.2 GHz to the fixed service is on a secondary basis (see No. **424**).

MOD **3785** 405BA **838** In the band 11.7 — 12.5 GHz in Regions 1 and 3 the fixed, fixed-satellite, mobile, except aeronautical mobile, and broadcasting services, in accordance with their respective allocations, shall not cause harmful interference to broadcasting-satellite stations operating in accordance with the provisions of Appendix **30**.

MOD **3787** 405BC **839** The use of the band 11.7 — 12.7 GHz in Region 2 by the fixed-satellite and broadcasting-satellite services is limited to national and sub-regional systems and is subject to previous agreement between the administrations concerned and those having services, operating or planned to operate in accordance with the Table, which may be affected (see Articles **11, 13, 14** and Resolution **33**).

ADD **3785H** **840** For the use of the band 11.7 — 12.75 GHz in Regions 1, 2 and 3, see Resolutions **31, 34, 504, 700** and **701**.

ADD **3787B** **841** The 1983 regional administrative radio conference for Region 2 will divide the band 12.1 — 12.3 GHz into two sub-bands. It will allocate the lower sub-band to the fixed-satellite service and the upper sub-band to the broadcasting-satellite, broadcasting, mobile except aeronautical mobile, and fixed services, all services being on a primary basis.

ADD **3787C** **842** *Additional allocation:* the bands 12.1 — 12.3 GHz in Brazil and Peru, and 12.2 — 12.3 GHz in the United States, are also allocated to the fixed service on a primary basis.

ADD **3787E** **843** In the band 12.1 — 12.7 GHz, the Region 2 space services, existing or planned before the 1983 regional administrative radio conference for Region 2, shall not impose restrictions on the elaboration of the plan for the broadcasting-satellite service in Region 2 and shall be operated under the conditions set forth by that conference.

ADD **3787D** **844** In Region 2, in the band 12.1 — 12.7 GHz, existing and future terrestrial radiocommunication services shall not cause harmful interference to the space services operating in accordance with the broadcasting-satellite plan to be prepared at the 1983 regional administrative radio conference for Region 2, and shall not impose restrictions on the elaboration of such a plan. The lower limit of this band shall be modified in accordance with the decisions of that conference for Region 2 (see No. **841**).

ADD **3785B** **845** In Region 3, the band 12.2 — 12.5 GHz is also allocated to the fixed-satellite (space-to-Earth) service limited to national and sub-regional systems. The power flux-density limits in No. **2574** shall apply to this frequency band. The introduction of the service in relation to the broadcasting-satellite service in Region 1 shall follow the procedures specified in Article 7 of Appendix **30**, with the applicable frequency band extended to cover 12.2 — 12.5 GHz.

ADD **3787F** **846** In Region 2, in the band 12.3 — 12.7 GHz, assignments to stations of the broadcasting-satellite service made available in the plan to be established by the 1983 regional administrative radio conference for Region 2 may also be used for transmissions in the fixed-satellite service (space-to-Earth), provided that such transmissions do not cause more interference or require more protection from interference than the broadcasting-satellite service transmissions operating in accordance with that plan. With respect to the space services, this band shall be used principally for the broadcasting-satellite service. The lower limit of this band shall be modified in accordance with the decisions of that conference for Region 2 (see No. **841**).

ADD **3785A** **847** The broadcasting-satellite service in the band 12.5 — 12.75 GHz in Region 3 is limited to community reception with a power flux-density not exceeding −111 dB(W/m²) as defined in Annex 8 of Appendix **30**.

MOD **3788** 405BD **848** *Additional allocation:* in Algeria, Angola, Saudi Arabia, Bahrain, Cameroon, the Central African Republic, the Congo, the Ivory Coast, Egypt, the United Arab Emirates, Ethiopia, Gabon, Ghana, Guinea, Iraq, Israel, Jordan, Kenya, Kuwait, the Lebanon, Libya, Madagascar, Mali, Morocco, Mongolia, Niger, Nigeria, Qatar, Syria, Senegal, Somalia, Sudan, Chad, Togo, Yemen (P.D.R. of) and Zaire, the band 12.5 — 12.75 GHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

MOD **3789** 405BE **849** *Additional allocation:* in the Federal Republic of Germany, Belgium, Denmark, Spain, Finland, France, Greece, Liechtenstein, Luxembourg, Monaco, Norway, Uganda, the Netherlands, Portugal, Roumania, Sweden, Switzerland, Tanzania, Tunisia and Yugoslavia, the band 12.5 — 12.75 GHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a secondary basis.

ADD **3788A** **850** *Additional allocation:* in Austria, Bulgaria, Hungary, Poland, the German Democratic Republic, Czechoslovakia and the U.S.S.R., the band 12.5 — 12.75 GHz is also allocated to the fixed service and the mobile, except aeronautical mobile, service on a primary basis. However, stations in these services shall not cause harmful interference to fixed-satellite earth stations of countries in Region 1 other than those mentioned in this footnote. Coordination of these earth stations is not required with stations of the fixed and mobile services of the countries mentioned in this footnote. The power flux-density limit at the Earth's surface given in No. **2574** for the fixed-satellite service shall apply on the territory of the countries mentioned in this footnote.

GHz
12.75 — 13.25

Allocation to Services		
Region 1	Region 2	Region 3
12.75 — 13.25	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE Space Research (deep space) (space-to-Earth)	

GHz
13.25 — 14

Allocation to Services		
Region 1	Region 2	Region 3
13.25 — 13.4	AERONAUTICAL RADIONAVIGATION 851 852 853	
13.4 — 14	RADIOLOCATION Standard Frequency and Time Signal-Satellite (Earth-to-space) Space Research 713 853 854 855	

MOD **3791** 406 **851** The use of the band 13.25 — 13.4 GHz by the aeronautical radionavigation service is limited to Doppler navigation aids.

MOD **3793** 407A **852** Subject to agreement obtained under the procedure set forth in Article **14**, the band 13.25 — 13.4 GHz may also be used by the space research service (Earth-to-space) on a secondary basis.

ADD **3793A** **853** *Additional allocation:* in Bangladesh, India and Pakistan, the band 13.25 — 14 GHz is also allocated to the fixed service on a primary basis.

ADD **3794D** **854** *Additional allocation:* in Afghanistan, Algeria, Angola, Saudi Arabia, Bahrain, Cameroon, the Republic of Korea, Egypt, the United Arab Emirates, Finland, Gabon, Guinea, Indonesia, Iran, Iraq, Israel, Jordan, Kuwait, the Lebanon, Madagascar, Malaysia, Malawi, Mali, Malta, Morocco, Mauritania, Niger, Nigeria, Pakistan, Qatar, Syria, Senegal, Singapore, Sri Lanka, Sudan, Sweden, Chad, Thailand and Tunisia, the band 13.4 — 14 GHz is also allocated to the fixed and mobile services on a primary basis.

MOD **3798** 409 **855** *Additional allocation:* in Austria, Bulgaria, Hungary, Japan, Mongolia, Poland, the German Democratic Republic, Roumania, the United Kingdom, Czechoslovakia and the U.S.S.R., the band 13.4 — 14 GHz is also allocated to the radionavigation service on a primary basis.

GHz
14 — 14.25

Allocation to Services		
Region 1	Region 2	Region 3
14 — 14.25	FIXED-SATELLITE (Earth-to-space) 858 RADIONAVIGATION 856 Space Research 857 859	

MOD **3795** 408A **856** The use of the band 14 — 14.3 GHz by the radionavigation service shall be such as to provide sufficient protection to space stations of the fixed-satellite service (see Recommendation **708**).

ADD **3795C** **857** *Additional allocation:* in Afghanistan, Algeria, Angola, Saudi Arabia, Australia, Bahrain, Bangladesh, Botswana, Cameroon, China, the Republic of Korea, Egypt, the United Arab Emirates, Gabon, Guatemala, Guinea, India, Indonesia, Iran, Iraq, Israel, Japan, Kenya, Kuwait, Lesotho, the Lebanon, Malaysia, Malawi, Mali, Malta, Morocco, Mauritania, Niger, Pakistan, the Philippines, Qatar, Syria, Senegal, Singapore, Somalia, Sudan, Sri Lanka, Swaziland, Tanzania, Chad, Thailand and Yemen (P.D.R. of), the band 14 — 14.3 GHz is also allocated to the fixed service on a primary basis.

ADD **3793B** **858** The band 14 — 14.5 GHz may be used, within the fixed-satellite service (Earth-to-space), for feeder links for the broadcasting-satellite service, subject to coordination with other networks in the fixed-satellite service. Such use of feeder links is reserved for countries outside Europe and for Malta.

ADD **3794B** **859** The band 14 — 14.5 GHz is also allocated to the land mobile-satellite service (Earth-to-space) on a secondary basis.

GHz
14.25 — 14.3

Allocation to Services		
Region 1	Region 2	Region 3
14.25 — 14.3	FIXED-SATELLITE (Earth-to-space) 858 RADIONAVIGATION 856 Space Research 857 859 860 861	

ADD **3795B** **860** *Additional allocation:* in the Federal Republic of Germany, Austria, Belgium, Denmark, Spain, Finland, France, Greece, Ireland, Iceland, Italy, Jordan, Libya, Liechtenstein, Luxembourg, Norway, the Netherlands, Portugal, the United Kingdom, Sweden, Switzerland, Turkey and Yugoslavia, the band 14.25 — 14.3 GHz is also allocated to the fixed service on a primary basis.

ADD **3795D** **861** *Additional allocation:* in Japan, Pakistan, the United Kingdom and Thailand, the band 14.25 — 14.3 GHz is also allocated to the mobile, except aeronautical mobile, service on a primary basis.

GHz
14.3 — 14.5

Allocation to Services		
Region 1	Region 2	Region 3
14.3 — 14.4 FIXED FIXED-SATELLITE (Earth-to-space) 858 MOBILE except aeronautical mobile Radionavigation-Satellite 859	**14.3 — 14.4** FIXED-SATELLITE (Earth-to-space) 858 Radionavigation-Satellite 859	**14.3 — 14.4** FIXED FIXED-SATELLITE (Earth-to-space) 858 MOBILE except aeronautical mobile Radionavigation-Satellite 859
14.4 — 14.47	FIXED FIXED-SATELLITE (Earth-to-space) 858 MOBILE except aeronautical mobile Space Research (space-to-Earth) 859	
14.47 — 14.5	FIXED FIXED-SATELLITE (Earth-to-space) 858 MOBILE except aeronautical mobile Radio Astronomy 859 862	

MOD **3797** 408C **862** In making assignments to stations of other services to which the band 14.47 — 14.5 GHz is allocated, administrations are urged to take all practicable steps to protect spectral line observations of the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. **343** and **344** and Article **36**).

GHz
14.5 — 15.35

Allocation to Services		
Region 1	Region 2	Region 3
14.5 — 14.8	FIXED FIXED-SATELLITE (Earth-to-space) 863 MOBILE Space Research	
14.8 — 15.35	FIXED MOBILE Space Research 720	

ADD **3796A** **863** The use of the band 14.5 — 14.8 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links for the broadcasting-satellite service. This use is reserved for countries outside Europe and for Malta.

GHz
15.35 — 15.7

Allocation to Services		
Region 1	Region 2	Region 3
15.35 — 15.4	EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) RADIO ASTRONOMY 864 865	
15.4 — 15.7	AERONAUTICAL RADIONAVIGATION 733 797	

ADD **3799C** **864** All emissions in the band 15.35 — 15.4 GHz are prohibited, except those provided for by No. **865**.

MOD **3799** **409C** **865** *Additional allocation:* in Afghanistan, Saudi Arabia, Bahrain, Cameroon, Egypt, the United Arab Emirates, Guinea, Iran, Iraq, Israel, Kuwait, the Lebanon, Libya, Pakistan, Qatar, Syria, Somalia and Yugoslavia, the band 15.35 — 15.4 GHz is also allocated to the fixed and mobile services on a secondary basis.

GHz
15.7 — 17.7

Allocation to Services		
Region 1	Region 2	Region 3
15.7 — 16.6	RADIOLOCATION 866 867	
16.6 — 17.1	RADIOLOCATION Space Research (deep space) (Earth-to-space) 866 867	
17.1 — 17.2	RADIOLOCATION 866 867	
17.2 — 17.3	RADIOLOCATION Earth Exploration-Satellite (active) Space Research (active) 866 867	
17.3 — 17.7	FIXED-SATELLITE (Earth-to-space) 869 Radiolocation 868	

ADD **3794F** **866** *Additional allocation:* in Afghanistan, Algeria, Angola, Saudi Arabia, Austria, Bahrain, Bangladesh, Cameroon, Costa Rica, Egypt, El Salvador, the United Arab Emirates, Finland, Guatemala, India, Indonesia, Iran, Kuwait, Libya, Malaysia, Malawi, Malta, Morocco, Mozambique, Nepal, Nicaragua, Oman, Pakistan, Qatar, Singapore, Somalia, Sudan, Sri Lanka, Sweden, Tanzania, Chad, Thailand, Yemen (P.D.R. of) and Yugoslavia, the band 15.7 — 17.3 GHz is also allocated to the fixed and mobile services on a primary basis.

ADD **3794FA** **867** *Additional allocation:* in Israel, the band 15.7 — 17.3 GHz is also allocated to the fixed and mobile services on a primary basis. These services shall not claim protection from, or cause harmful interference to services operating in accordance with the Table in countries other than those included in No. **866**.

ADD **3794G** **868** *Additional allocation:* in Afghanistan, Algeria, the Federal Republic of Germany, Angola, Saudi Arabia, Austria, Bahrain, Bangladesh, Cameroon, Costa Rica, El Salvador, the United Arab Emirates, Finland, Guatemala, Honduras, India, Indonesia, Iran, Iraq, Israel, Japan, Kuwait, Libya, Nepal, Nicaragua, Pakistan, Qatar, Sudan, Sri Lanka, Sweden, Thailand and Yugoslavia, the band 17.3 — 17.7 GHz is also allocated to the fixed and mobile services on a secondary basis. The power limits given in Nos. **2505** and **2508** shall apply provisionally (see Resolution **101**).

ADD **3794H** **869** The use of the band 17.3 — 18.1 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links for the broadcasting-satellite service.

GHz
17.7 — 19.7

Allocation to Services		
Region 1	Region 2	Region 3
17.7 — 18.1	FIXED FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 869 MOBILE	
18.1 — 18.6	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE 870	
18.6 — 18.8 FIXED FIXED-SATELLITE (space-to-Earth) 872 MOBILE except aeronautical mobile Earth Exploration-Satellite (passive) Space Research (passive) 871	**18.6 — 18.8** EARTH EXPLORATION-SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) 872 MOBILE except aeronautical mobile SPACE RESEARCH (passive) 871	**18.6 — 18.8** FIXED FIXED-SATELLITE (space-to-Earth) 872 MOBILE except aeronautical mobile Earth Exploration-Satellite (passive) Space Research (passive) 871
18.8 — 19.7	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE	

ADD **3799A** **870** The band 18.1 — 18.3 GHz is also allocated to the meteorological-satellite service (space-to-Earth) on a primary basis. Its use is limited to geostationary satellites and shall be in accordance with the provisions of No. **2578**.

ADD **3800A** **871** In making assignments to stations in the fixed and mobile services, administrations are invited to take account of passive sensors in the earth-exploration satellite and space research services operating in the band 18.6 — 18.8 GHz. In this band, administrations should endeavour to limit as far as possible both the power delivered by the transmitter to the antenna and the e.i.r.p. in order to reduce the risk of interference to passive sensors to the minimum.

ADD **3800B** **872** In assigning frequencies to stations in the fixed-satellite service in the direction space-to-Earth, administrations are requested to limit as far as practicable the power flux-density at the Earth's surface in the band 18.6 — 18.8 GHz, in order to reduce the risk of interference to passive sensors in the earth exploration-satellite and space research services.

GHz
19.7 — 22

Allocation to Services		
Region 1	Region 2	Region 3
19.7 — 20.2	FIXED-SATELLITE (space-to-Earth) Mobile-Satellite (space-to-Earth) 873	
20.2 — 21.2	FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) Standard Frequency and Time Signal-Satellite (space-to-Earth) 873	
21.2 — 21.4	EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive)	
21.4 — 22	FIXED MOBILE	

ADD **3800M** **873** *Additional allocation:* in Afghanistan, Algeria, Angola, Saudi Arabia, Bahrain, Bangladesh, Brazil, Cameroon, China, the Congo, the Republic of Korea, Costa Rica, Egypt, the United Arab Emirates, Gabon, Guatemala, Guinea, India, Indonesia, Iran, Iraq, Israel, Japan, Kenya, Kuwait, Malaysia, Mali, Morocco, Mauritania, Nepal, Niger, Nigeria, Pakistan, the Philippines, Qatar, Syria, Singapore, Somalia, Sudan, Sri Lanka, Tanzania, Chad, Thailand, Togo, Tunisia and Zaire, the band 19.7 — 21.2 GHz is also allocated to the fixed and mobile services on a primary basis. This additional use shall not impose any limitation on the power flux-density of space stations in the fixed-satellite service.

GHz
22 — 22.5

Allocation to Services		
Region 1	Region 2	Region 3
22 — 22.21	FIXED MOBILE except aeronautical mobile 874	
22.21 — 22.5	EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive) 875 876	

ADD **3801A** **874** In making assignments to stations of other services, administrations are urged to take all practicable steps to protect the spectral line observations of the radio astronomy service in the band 22.01 — 22.21 GHz from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. **343** and **344** and Article **36**).

ADD **3801B** **875** In making assignments to stations of other services, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference in the band 22.21 — 22.5 GHz. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. **343** and **344** and Article **36**).

ADD **3801BA** **876** The use of the band 22.21 — 22.5 GHz by the earth exploration-satellite (passive) and space research (passive) services shall not impose constraints upon the fixed and mobile, except aeronautical mobile, services.

GHz
22.5 — 23.6

Allocation to Services		
Region 1	Region 2	Region 3
22.5 — 22.55 FIXED MOBILE	**22.5 — 22.55** FIXED MOBILE BROADCASTING-SATELLITE 877 878	
22.55 — 23 FIXED INTER-SATELLITE MOBILE 879	**22.55 — 23** FIXED INTER-SATELLITE MOBILE BROADCASTING-SATELLITE 877 878 879	
23 — 23.55	FIXED INTER-SATELLITE MOBILE 879	
23.55 — 23.6	FIXED MOBILE	

MOD **3802** 410B **877** In Regions 2 and 3, the broadcasting-satellite service is authorized in the band 22.5 — 23 GHz, subject to agreement obtained under the procedure set forth in Article **14**.

ADD **3801C** **878** *Additional allocation:* in Japan, the band 22.5 — 23 GHz is also allocated to the broadcasting service on a primary basis.

ADD **3801D** **879** In making assignments to stations of other services, administrations are urged to take all practicable steps to protect the spectral line observations of the radio astronomy service in the bands 22.81 — 22.86 GHz and 23.07 — 23.12 GHz from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. **343** and **344** and Article **36**).

GHz
23.6 — 24.25

Allocation to Services		
Region 1	Region 2	Region 3
23.6 — 24	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 880	
24 — 24.05	AMATEUR AMATEUR-SATELLITE 881	
24.05 — 24.25	RADIOLOCATION Amateur Earth Exploration-Satellite (active) 881	

ADD **3531B** **880** All emissions in the band 23.6 — 24 GHz are prohibited.

MOD **3803** 410C **881** The band 24 — 24.25 GHz (centre frequency 24.125 GHz) is designated for industrial, scientific and medical (ISM) applications. Radiocommunication services operating within this band must accept harmful interference which may be caused by these applications. ISM equipment operating in this band is subject to the provisions of No. **1815**.

GHz
24.25 — 27.5

Allocation to Services		
Region 1	Region 2	Region 3
24.25 — 25.25	RADIONAVIGATION	
25.25 — 27	FIXED MOBILE Earth Exploration-Satellite (space-to-space) Standard Frequency and Time Signal-Satellite (Earth-to-space)	
27 — 27.5 FIXED MOBILE Earth Exploration-Satellite (space-to-space)	**27 — 27.5** FIXED FIXED-SATELLITE (Earth-to-space) MOBILE Earth Exploration-Satellite (space-to-space)	

GHz
27.5 — 31

Allocation to Services		
Region 1	Region 2	Region 3
27.5 — 29.5	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE	
29.5 — 30	FIXED-SATELLITE (Earth-to-space) Mobile-Satellite (Earth-to-space) 882 883	
30 — 31	FIXED-SATELLITE (Earth-to-space) MOBILE-SATELLITE (Earth-to-space) Standard Frequency and Time Signal-Satellite (space-to-Earth) 883	

ADD **3805A** **882** The band 29.95 — 30 GHz may be used for space-to-space links in the earth exploration-satellite service for telemetry, tracking, and control purposes, on a secondary basis.

MOD **3800** 409E **883** *Additional allocation:* in Afghanistan, Saudi Arabia, Bahrain, Cameroon, China, the Republic of Korea, the United Arab Emirates, Ethiopia, India, Indonesia, Iran, Iraq, Israel, Japan, Kenya, Kuwait, the Lebanon, Malaysia, Mali, Morocco, Mauritania, Nepal, Pakistan, Qatar, Syria, Singapore, Somalia, Sudan, Sri Lanka, Chad and Thailand, the band 29.5 — 31 GHz is also allocated to the fixed and mobile services on a secondary basis. The power limits specified in Nos. **2505** and **2508** shall apply.

GHz
31 — 31.5

Allocation to Services		
Region 1	Region 2	Region 3
31 — 31.3	FIXED MOBILE Standard Frequency and Time Signal-Satellite (space-to-Earth) Space Research 884 885 886	
31.3 — 31.5	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 887	

GHz
31.5 — 31.8

Allocation to Services		
Region 1	Region 2	Region 3
31.5 — 31.8	**31.5 — 31.8**	**31.5 — 31.8**
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)
RADIO ASTRONOMY	RADIO ASTRONOMY	RADIO ASTRONOMY
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)	SPACE RESEARCH (passive)
Fixed		Fixed
Mobile except aeronautical mobile		Mobile except aeronautical mobile
888 889	888	888

ADD **3813A** **884** In the band 31 — 31.3 GHz the power flux-density limits specified in No. **2542** shall apply to the space research service.

MOD **3813** 412H **885** *Different category of service:* in Bulgaria, Cuba, Hungary, Mongolia, Poland, the German Democratic Republic, Czechoslovakia and the U.S.S.R., the allocation of the band 31 — 31.3 GHz to the space research service is on a primary basis (see No. **425**).

MOD **3814** 412I **886** In making assignments to stations of other services, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference in the band 31.2 — 31.3 GHz. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. **343** and **344** and Article **36**).

ADD **3531P** **887** All emissions in the band 31.3 — 31.5 GHz are prohibited.

ADD **3802A** **888** In Regions 1 and 3, in making assignments to stations of other services to which the band 31.5 — 31.8 GHz is allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. **343** and **344** and Article **36**).

In Region 2, all emissions in the band 31.5 — 31.8 GHz are prohibited.

ADD **3806A** **889** *Different category of service:* in Bulgaria, Egypt, Hungary, Mongolia, Poland, the German Democratic Republic, Roumania, Czechoslovakia and U.S.S.R., the allocation of the band 31.5 — 31.8 GHz to the fixed and mobile, except aeronautical mobile, services is on a primary basis (see No. **425**).

GHz
31.8 — 33

Allocation to Services		
Region 1	Region 2	Region 3
31.8 — 32	RADIONAVIGATION Space Research 890 891 892	
32 — 32.3	INTER-SATELLITE RADIONAVIGATION Space Research 890 891 892 893	
32.3 — 33	INTER-SATELLITE RADIONAVIGATION 892 893	

GHz
33 — 34.2

Allocation to Services		
Region 1	Region 2	Region 3
33 — 33.4	RADIONAVIGATION 892	
33.4 — 34.2	RADIOLOCATION 892 894	

ADD **3807E** **890** *Different category of service:* in Australia, Spain and the United States, the allocation of the band 31.8 — 32.3 GHz to the space research service (deep space) in the space-to-Earth direction is on a primary basis (see No. **425**). This use shall not impose power flux-density constraints on the inter-satellite service in the band 32 — 32.3 GHz.

MOD **3807** **891** *Different category of service:* in Bulgaria, Cuba, Hungary, Mongolia, Poland, the
412B German Democratic Republic, Czechoslovakia and the U.S.S.R., the allocation of the band 31.8 — 32.3 GHz to the space research service is on a primary basis (see No. **425**).

ADD **3807D** **892** Subject to agreement obtained under the procedure set forth in Article **14**, the band 31.8 — 33.8 GHz may also be used in Japan for space-to-Earth transmissions in the fixed-satellite service up to 31 December 1990.

ADD **3807A** **893** In designing systems for the inter-satellite and radionavigation services in the band 32 — 33 GHz, administrations shall take all necessary measures to prevent harmful interference between these two services, bearing in mind the safety aspects of the radionavigation service (see Recommendation **707**).

MOD **3794** **894** *Additional allocation:* in Afghanistan, Saudi Arabia, Bahrain, Bangladesh, Egypt,
408 the United Arab Emirates, Spain, Finland, Gabon, Guinea, Indonesia, Iran, Iraq, Israel, Kenya, Kuwait, the Lebanon, Libya, Malaysia, Malawi, Mali, Malta, Morocco, Mauritania, Nepal, Niger, Nigeria, Oman, Pakistan, the Philippines, Qatar, Syria, Senegal, Singapore, Somalia, Sudan, Sri Lanka, Sweden, Tanzania, Thailand, Togo, Tunisia, Yemen A.R. and Zaire, the band 33.4 — 36 GHz is also allocated to the fixed and mobile services on a primary basis.

GHz
34.2 — 36

Allocation to Services		
Region 1	Region 2	Region 3
34.2 — 35.2	RADIOLOCATION Space Research 895 896 894	
35.2 — 36	METEOROLOGICAL AIDS RADIOLOCATION 894 897	

ADD **3808A** **895** *Different category of service:* in Australia, Spain and the United States, the allocation of the band 34.2 — 34.7 GHz to the space research (deep space) (Earth-to-space) service is on primary basis (see No. **425**).

MOD **3808** 412C **896** *Different category of service:* in Bulgaria, Cuba, Hungary, Poland, Mongolia, the German Democratic Republic, Czechoslovakia and the U.S.S.R., the allocation of the band 34.2 — 35.2 GHz to the space research service is on a primary basis (see No. **425**).

ADD **3799B** **897** Radars located on spacecraft may be operated on a primary basis in the band 35.5 — 35.6 GHz.

GHz
36 — 40.5

Allocation to Services		
Region 1	Region 2	Region 3
36 — 37	EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive) 898	
37 — 37.5	FIXED MOBILE 899	
37.5 — 39.5	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE 899	
39.5 — 40.5	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)	

MOD **3761** 391A **898** In making assignments to stations of other services, administrations are urged to take all practicable steps to protect the spectral line observations of the radio astronomy service in the band 36.43 — 36.5 GHz from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. **343** and **344** and Article **36**).

ADD **3807C** **899** Subject to agreement obtained under the procedure set forth in Article **14**, the band 37 — 39 GHz may also be used in Japan for Earth-to-space transmissions in the fixed-satellite service up to 31 December 1990.

GHz
40.5 — 43.5

Allocation to Services		
Region 1	Region 2	Region 3
40.5 — 42.5	BROADCASTING-SATELLITE /BROADCASTING/ Fixed Mobile	
42.5 — 43.5	FIXED FIXED-SATELLITE (Earth-to-space) 901 MOBILE except aeronautical mobile RADIO ASTRONOMY 900	

ADD **3814A** **900** In making assignments to stations of other services to which the band 42.5 — 43.5 GHz is allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference, especially in the bands 42.77 — 42.87 GHz, 43.07 — 43.17 GHz, and 43.37 — 43.47 GHz, which are used for spectral line observations of silicon monoxide. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. **343** and **344** and Article **36**).

ADD **3814B** **901** The allocation of the spectrum for the fixed-satellite service in the bands 42.5 — 43.5 GHz and 47.2 — 50.2 GHz for Earth-to-space transmission is greater than that in the band 37.5 — 39.5 GHz for space-to-Earth transmission in order to accommodate feeder links to broadcasting satellites. Administrations are urged to take all practicable steps to reserve the band 47.2 — 49.2 GHz for feeder links for the broadcasting-satellite service operating in the band 40.5 — 42.5 GHz.

GHz
43.5 — 50.2

Allocation to Services		
Region 1	Region 2	Region 3
43.5 — 47	MOBILE 902 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 903	
47 — 47.2	AMATEUR AMATEUR-SATELLITE	
47.2 — 50.2	FIXED FIXED-SATELLITE (Earth-to-space) 901 MOBILE 905 904	

ADD **3814CA** **902** In the bands 43.5 — 47 GHz, 66 — 71 GHz, 95 — 100 GHz, 134 — 142 GHz, 190 — 200 GHz and 252 — 265 GHz, stations in the land mobile service may be operated subject to not causing harmful interference to the space radiocommunication services to which these bands are allocated (see No. **435**).

ADD **3814C** **903** In the bands 43.5 — 47 GHz, 66 — 71 GHz, 95 — 100 GHz, 134 — 142 GHz, 190 — 200 GHz and 252 — 265 GHz, satellite links connecting land stations at specified fixed points are also authorized when used in conjunction with the mobile-satellite service or the radionavigation-satellite service.

ADD **3814D** **904** The bands 48.94 — 49.04 GHz and 97.88 — 98.08 GHz are also allocated to the radio astronomy service on a primary basis for spectral line observations. In making assignments to stations of other services to which these bands are allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. **343** and **344** and Article **36**).

ADD **3814E** **905** In the band 48.94 — 49.04 GHz, all emissions from airborne stations are prohibited.

GHz
50.2 — 59

Allocation to Services		
Region 1	Region 2	Region 3
50.2 — 50.4	EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive)	
50.4 — 51.4	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE Mobile-Satellite (Earth-to-space)	
51.4 — 54.25	EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 906 907	
54.25 — 58.2	EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE MOBILE 909 SPACE RESEARCH (passive) 908	
58.2 — 59	EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 906 907	

ADD **3815A** **906** In the bands 51.4 — 54.25 GHz, 58.2 — 59 GHz, 64 — 65 GHz and 72.77 — 72.91 GHz, radio astronomy observations may be carried out under national arrangements. Administrations are urged to take all practicable steps to protect radio astronomy observations in these bands from harmful interference.

MOD **3815** **907** In the bands 51.4 — 54.25 GHz, 58.2 — 59 GHz, 64 — 65 GHz, 86 — 92 GHz, 105 — 116 GHz and 217 — 231 GHz, all emissions are prohibited.
412J

ADD **3815B** **908** *Additional allocation:* in the Federal Republic of Germany, Japan and the United Kingdom, the band 54.25 — 58.2 GHz is also allocated to the radiolocation service on a primary basis.

ADD **3815BA** **909** In the bands 54.25 — 58.2 GHz, 59 — 64 GHz, 116 — 134 GHz, 170 — 182 GHz and 185 — 190 GHz, stations in the aeronautical mobile service may be operated subject to not causing harmful interference to the inter-satellite service (see No. **435**).

GHz
59 — 66

Allocation to Services		
Region 1	Region 2	Region 3
59 — 64	FIXED INTER-SATELLITE MOBILE 909 RADIOLOCATION 910 911	
64 — 65	EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 906 907	
65 — 66	EARTH EXPLORATION-SATELLITE SPACE RESEARCH Fixed Mobile	

ADD **3815C** **910** In the bands 59 — 64 GHz and 126 — 134 GHz, airborne radars in the radiolocation service may be operated subject to not causing harmful interference to the inter-satellite service (see No. **435**).

ADD **3815D** **911** The band 61 — 61.5 GHz (centre frequency 61.25 GHz) is designated for industrial, scientific and medical (ISM) applications. The use of this frequency band for ISM applications shall be subject to special authorization by the administration concerned in agreement with other administrations whose radiocommunication services might be affected. In applying this provision administrations shall have due regard to the latest relevant CCIR Recommendations.

GHz
66 — 76

Allocation to Services		
Region 1	Region 2	Region 3
66 — 71	MOBILE 902 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 903	
71 — 74	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE MOBILE-SATELLITE (Earth-to-space) 906	
74 — 75.5	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE	
75.5 — 76	AMATEUR AMATEUR-SATELLITE	

GHz
76 — 86

Allocation to Services		
Region 1	Region 2	Region 3
76 — 81	RADIOLOCATION Amateur Amateur-Satellite 912	
81 — 84	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)	
84 — 86	FIXED MOBILE BROADCASTING BROADCASTING-SATELLITE 913	

ADD **3815E** **912** In the band 78 — 79 GHz radars located on space stations may be operated on a primary basis in the earth exploration-satellite service and in the space research service.

ADD **3815F** **913** In the band 84 — 86 GHz, stations in the fixed, mobile and broadcasting services shall not cause harmful interference to broadcasting-satellite stations operating in accordance with the decisions of the appropriate frequency assignment planning conference for the broadcasting-satellite service.

GHz
86 — 95

Allocation to Services		
Region 1	Region 2	Region 3
86 — 92	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 907	
92 — 95	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIOLOCATION 914	

ADD **3815G** **914** The band 93.07 — 93.27 GHz is also used by the radio astronomy service for spectral line observations. In making assignments to stations of the services to which this band is allocated, administrations are urged to take all practicable steps to protect radio astronomy observations from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. **343** and **344** and Article **36**).

GHz
95 — 116

Allocation to Services		
Region 1	Region 2	Region 3
95 — 100	MOBILE 902 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE Radiolocation 903 904	
100 — 102	EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive) 722	
102 — 105	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE 722	
105 — 116	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 722 907	

GHz
116 — 142
(see page RR8-175)

GHz
116 — 142

Allocation to Services		
Region 1	Region 2	Region 3
116 — 126	EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE MOBILE 909 SPACE RESEARCH (passive) 722 915 916	
126 — 134	FIXED INTER-SATELLITE MOBILE 909 RADIOLOCATION 910	
134 — 142	MOBILE 902 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE Radiolocation 903 917 918	

ADD **3816B** **915** The band 119.98 — 120.02 GHz is also allocated to the amateur service on a secondary basis.

ADD **3816A** **916** The band 122 — 123 GHz (centre frequency 122.5 GHz) is designated for industrial, scientific and medical (ISM) applications. The use of this frequency band for ISM applications shall be subject to special authorization by the administration concerned in agreement with other administrations whose radiocommunication services might be affected. In applying this provision administrations shall have due regard to the latest relevant CCIR Recommendations.

ADD **3816D** **917** In the band 140.69 — 140.98 GHz all emissions from airborne stations, and from space stations in the space-to-Earth direction, are prohibited.

ADD **3816C** **918** The bands 140.69 — 140.98 GHz, 144.68 — 144.98 GHz, 145.45 — 145.75 GHz and 146.82 — 147.12 GHz are also allocated to the radio astronomy service on a primary basis for spectral line observations. In making assignments to stations of other services to which the bands are allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. **343** and **344** and Article **36**).

GHz
142 — 151

Allocation to Services		
Region 1	Region 2	Region 3
142 — 144	AMATEUR AMATEUR-SATELLITE	
144 — 149	RADIOLOCATION Amateur Amateur-Satellite 918	
149 — 150	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE	
150 — 151	EARTH EXPLORATION-SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) MOBILE SPACE RESEARCH (passive) 919	

ADD **3816E** **919** The bands 150 — 151 GHz, 174.42 — 175.02 GHz, 177 — 177.4 GHz, 178.2 — 178.6 GHz, 181 — 181.46 GHz and 186.2 — 186.6 GHz are also allocated to the radio astronomy service on a secondary basis for spectral line observations. In making assignments to stations of other services to which these bands are allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. **343** and **344** and Article **36**).

GHz
151 — 182

Allocation to Services		
Region 1	Region 2	Region 3
151 — 164	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE	
164 — 168	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)	
168 — 170	FIXED MOBILE	
170 — 174.5	FIXED INTER-SATELLITE MOBILE 909 919	
174.5 — 176.5	EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE MOBILE 909 SPACE RESEARCH (passive) 919	
176.5 — 182	FIXED INTER-SATELLITE MOBILE 909 919	

GHz
182 — 217

Allocation to Services		
Region 1	Region 2	Region 3
182 — 185	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 920 921	
185 — 190	FIXED INTER-SATELLITE MOBILE 909 919	
190 — 200	MOBILE 902 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 722 903	
200 — 202	EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive) 722	
202 — 217	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 722	

ADD **3816F** **920** *Additional allocation:* in the United Kingdom, the band 182 — 185 GHz is also allocated to the fixed and mobile services on a primary basis.

ADD **3816G** **921** In the band 182 — 185 GHz all emissions are prohibited except for those under the provisions of No. **920**.

GHz
217 — 248
(see page RR8-181)

GHz
217 — 248

Allocation to Services		
Region 1	Region 2	Region 3
217 — 231	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 722 907	
231 — 235	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Radiolocation	
235 — 238	EARTH EXPLORATION-SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) MOBILE SPACE RESEARCH (passive)	
238 — 241	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Radiolocation	
241 — 248	RADIOLOCATION Amateur Amateur-Satellite 922	

ADD **3816H** **922** The band 244 — 246 GHz (centre frequency 245 GHz) is designated for industrial, scientific and medical (ISM) applications. The use of this frequency band for ISM applications shall be subject to special authorization by the administration concerned in agreement with other administrations whose radiocommunication services might be affected. In applying this provision administrations shall have due regard to the latest relevant CCIR Recommendations.

GHz
248 — 265

Allocation to Services		
Region 1	Region 2	Region 3
248 — 250	AMATEUR AMATEUR-SATELLITE	
250 — 252	EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 923	
252 — 265	MOBILE 902 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 903 923 924 925	

ADD **3816I** **923** The bands 250 — 251 GHz and 262.24 — 262.76 GHz are also allocated to the radio astronomy service on a primary basis for spectral line observations. In making assignments to stations of other services to which these bands are allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. **343** and **344** and Article **36**).

ADD **3816J** **924** The band 257.5 — 258 GHz is also allocated to the radio astronomy service on a secondary basis for spectral line observations. In making assignments to stations of other services to which the band is allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. **343** and **344** and Article **36**).

ADD **3816K** **925** In the Federal Republic of Germany, Argentina, Spain, Finland, France, India, Italy, the Netherlands and Sweden, the band 261 — 265 GHz is also allocated to the radio astronomy service on a primary basis. In making assignments to stations of other services to which the band is allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. **343** and **344** and Article **36**).

GHz
265 — 400

Allocation to Services		
Region 1	Region 2	Region 3
265 — 275	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY 926	
275 — 400	(Not allocated) 927	

ADD **3816L** **926** In making assignments to stations of other services to which the band 265 — 275 GHz is allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference, especially in the bands 265.64 — 266.16 GHz, 267.34 — 267.86 GHz and 271.74 — 272.26 GHz, which are used for spectral line observations. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. **343** and **344** and Article **36**).

ADD **3816M** **927** The frequency band 275 — 400 GHz may be used by administrations for experimentation with, and development of, various active and passive services. In this band a need has been identified for the following spectral line measurements for passive services:

Radio astronomy service: 278 — 280 GHz and 343 — 348 GHz;

Space research service (passive) and earth exploration-satellite service (passive): 275 — 277 GHz, 300 — 302 GHz, 324 — 326 GHz, 345 — 347 GHz, 363 — 365 GHz and 379 — 381 GHz.

Future research in this largely unexplored spectral region may yield additional spectral lines and continuum bands of interest to the passive services. Administrations are urged to take all practicable steps to protect these passive services from harmful interference until the next competent world administrative radio conference.

928 to **952** NOT allocated.

N8/6

ARTICLE 9

NOC

Special Rules for the Assignment and Use of Frequencies

ADD **3916A** **953** § 1. Members recognize that the safety aspects of radionavigation and other safety services require special measures to ensure their freedom from harmful interference; it is necessary therefore to take this factor into account in the assignment and use of frequencies.

MOD **3917** **954** § 2. (1) Members recognize that among frequencies which have long-distance propagation characteristics, those in the bands between 5 MHz and 30 MHz are particularly useful for long-distance communications; they agree to make every possible effort to reserve these bands for such communications. Whenever frequencies in these bands are used for short or medium-distance communications, the minimum power necessary shall be employed.
413

NOC **3918** **955** (2) To reduce requirements for frequencies in the bands between 5 MHz and 30 MHz and thus to prevent harmful interference to long-distance radiocommunications, administrations are encouraged to use, whenever practicable, any other possible means of communication.
414

MOD **3919** **956** § 3. (1) When special circumstances make it indispensable to do so, an administration may, as an exception to the normal methods of working authorized by these Regulations, have recourse to the special methods of working enumerated below, on the sole condition that the characteristics of the stations still conform to those inserted in the Master International Frequency Register:
415

957 *a)* a station in the fixed service or an earth station in the fixed-satellite service may, under the conditions defined in Nos. **420** to **423**, transmit to mobile stations on its normal frequencies;

958 *b)* a land station may communicate, under the conditions defined in Nos. **420** to **423**, with fixed stations in the fixed service or earth stations in the fixed-satellite service or other land stations of the same category.

NOC **3920** **959** (2) However, in circumstances involving the safety of life, or the safety of a ship or aircraft, a land station may communicate with fixed stations or land stations of another category.
416

NOC **3921** **960** § 4. Any administration may assign a frequency in a band allocated to the fixed service or allocated to the fixed-satellite service to a station authorized to transmit, unilaterally, from one specified fixed point to one or more specified fixed points provided that such transmissions are not intended to be received directly by the general public.
417

NOC **3922** **961** § 5. Any mobile station using an emission which satisfies the frequency tolerance applicable to the coast station with which it is communicating may transmit on the same frequency as the coast station on condition that the latter requests such transmission and that no harmful interference is caused to other stations.
418

NOC **3923** 419 **962** § 6. In certain cases provided for in Articles **38** and **59**, aircraft stations are authorized to use frequencies in the bands allocated to the maritime mobile service for the purpose of communicating with stations of that service (see No. **4148**).

MOD **3924** 419A **963** § 7. Aircraft earth stations are authorized to use frequencies in the bands allocated to the maritime mobile-satellite service for the purpose of communicating, via the stations of that service, with the public telegraph and telephone networks.

MOD **3925** 421 **964** § 8. Any emission capable of causing harmful interference to distress, alarm, urgency or safety communications on the international distress and emergency frequencies established for these purposes by these Regulations is prohibited. Supplementary distress frequencies available on less than a worldwide basis should be afforded adequate protection.

965 to **989** NOT allocated.

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NIV/III

CHAPTER IV

NOC

Coordination, Notification and Registration of Frequencies. International Frequency Registration Board

N9/8

ARTICLE 10

MOD

International Frequency Registration Board

ADD

Section I. Functions of the Board

NOC 3951 990 471 § 1. The constitution and the essential duties of the International Frequency Registration Board are defined in the Convention.

NOC 3952 991 472 § 2. The functions of the Board shall include:

MOD 3953 992 473 *a)* the processing of frequency assignment notices, including information about any associated orbital locations of geostationary satellites, received from administrations for recording in the Master International Frequency Register;

ADD 3953A 993 *b)* the processing of information received from administrations in application of the advance publication, coordination and other procedures of the Radio Regulations and the Final Acts of administrative radio conferences; and the provision of assistance to administrations in these matters, at their request;

NOC 3954 994 474 *c)* the processing and coordination of seasonal schedules of high frequency broadcasting with a view to accommodating requirements of all administrations for that service;

NOC 3955 995 475 *d)* the compilation, for publication in suitable form and at appropriate intervals by the Secretary-General, of frequency lists reflecting the data recorded in the Master International Frequency Register, as well as other material relating to the assignment and use of frequencies;

NOC 3956 996 476 *e)* the review of entries in the Master International Frequency Register with a view to amending or eliminating, as appropriate, those which do not reflect actual frequency usage, in agreement with the administrations which notified the assignments concerned;

NOC 3957 997 477 *f)* the study, on a long-term basis, of the usage of the radio frequency spectrum, with a view to making recommendations for its more effective use;

NOC **3958** **998**
478

g) the investigation, at the request of one or more of the interested administrations, of harmful interference and the formulation of recommendations with respect thereto;

NOC **3959** **999**
479

h) the provision of assistance to administrations in the field of radio spectrum utilization, in particular to those administrations in need of special assistance, and the recommendation to administrations, where appropriate, of adjustments in their frequency assignments in order to obtain a better use of the radio spectrum;

NOC **3960** **1000**
480

i) the collection of such results of monitoring observations as administrations and organizations may be able to supply, and the making of arrangements, through the Secretary-General, for their publication in suitable form;

ADD **3960A** **1001**

j) the development of Technical Standards [1] in accordance with Nos. **1454** and **1582** and of Rules of Procedure [1] for internal use by the Board in the exercise of its functions;

NOC **3961** **1002**
481

k) the formulation and reference to the CCIR of all general technical questions arising from the Board's examination of frequency assignments;

MOD **3962** **1003**
482

l) the technical assistance in the preparation for and organisation of radio conferences in consultation, as appropriate, with the other permanent organs of the Union, and with due regard for the pertinent directives of the Administrative Council in accordance with the Convention;

NOC **3963** **1004**
483

m) the participation in an advisory capacity, upon invitation by the organizations or countries concerned, in conferences and meetings where questions relating to the assignment and utilization of frequencies are discussed;

ADD **3963A** **1005**

n) the provision of assistance to administrations, at their request, in the training of senior staff in the fields of spectrum management and utilization, particularly for those countries in special need;

ADD **3963B** **1006**

o) the discharge of such other functions as are specified in the Radio Regulations and in the Final Acts of administrative radio conferences.

SUP **3964**
484

MOD **3965** **1007**
485

§ 3. The specialized secretariat of the IFRB shall work under the immediate direction of the Board to enable it to discharge its prescribed duties and functions.

SUP

ARTICLE N10/11

ADD **3960A.1** **1001.1**

[1] The Technical Standards and the Rules of Procedure of the IFRB shall be distributed to all Members of the Union and shall be open to comment from any administration. In the event of there being a disagreement which remains unresolved, the procedure to be followed is given in Resolution **35**.

ADD

Section II. Methods of Work of the Board

NOC **3991** 659 **1008** § 4. The Board shall meet as frequently as necessary to deal expeditiously with its work and, normally, at least once a week.

MOD **3992** 660 **1009** § 5. (1) In accordance with the Convention, the members of the Board shall elect from among their number a Chairman and a Vice-Chairman, each to hold office for a term of one year. Thereafter, the Vice-Chairman shall succeed annually to the Chairmanship and a new Vice-Chairman shall be elected.

NOC **3993** 661 **1010** (2) In the unavoidable absence of the Chairman and Vice-Chairman, the Board shall elect a temporary Chairman for the occasion from among its members.

NOC **3994** 662 **1011** § 6. (1) Each member of the Board, including the Chairman, shall have one vote. Voting by proxy or by correspondence is not allowed.

NOC **3995** 663 **1012** (2) The minutes shall indicate whether a decision was unanimous or by a majority.

NOC **3996** 664 **1013** (3) A quorum of the Board shall be one-half of the number of members of the Board. If, however, the verdict of such a quorum on a question coming before it is not unanimous, the question shall be referred for decision at a later meeting at which at least two-thirds of the total number of members of the Board are present. If these calculations result in a fraction, the fraction shall be rounded up to a whole number.

NOC **3997** 665 **1014** (4) The Board shall endeavour to reach its decisions by unanimous agreement. If the Board fails in that endeavour, it shall thereafter decide the problem on the basis of a two-thirds majority vote of the members present and voting for or against.

ADD **3997A** **1015** § 7. For its own guidance and for the efficient performance of its functions the Board may make such internal arrangements as it may consider necessary in accordance with the Convention and the Radio Regulations.

NOC **3998** 666 **1016** § 8. The documents of the Board, which shall comprise a complete record of its official actions and minutes of its meetings, shall be maintained by the Board in the working languages of the Union as defined in the Convention; for this purpose, as well as for the meetings of the Board, the necessary linguistic personnel, and such other facilities as may be required, shall be provided by the Secretary-General. A copy of all documents of the Board shall be available for public inspection at the offices of the Board.

1017 to **1040** NOT allocated.

N11 ARTICLE 11

MOD

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

MOD

Section I. Procedures for the Advance Publication of Information on Planned Satellite Networks [2]

NOC **4099** **1041** *Publication of Information*

MOD **4100** 639AA **1042** § 1. (1) An administration (or one acting on behalf of a group of named administrations) which intends to establish a satellite system shall, prior to the coordination procedure in accordance with No. **1060** where applicable, send to the International Frequency Registration Board, not earlier than five years and preferably not later than two years before the date of bringing into service each satellite network of the planned system, the information listed in Appendix **4**.

NOC **4101** 639AB **1043** (2) Any amendments to the information sent concerning a planned satellite system in accordance with No. **1042** shall also be sent to the Board as soon as they become available.

MOD **4102** 639AC **1044** (3) The Board shall publish the information sent under Nos. **1042** and **1043** in a special section of its weekly circular and shall also, when the weekly circular contains such information, so advise all administrations by circular telegram. The circular telegram shall include the frequency bands to be used and, in the case of a geostationary satellite, the orbital location of the space station.

ADD **4102A** **1045** (4) If the information is found to be incomplete, the Board shall publish it under No. **1044** and immediately seek, from the administration concerned, any clarification and information not provided. In such cases, the period of four months specified in No. **1047** shall count from the date of publication, under No. **1044**, of the complete information.

ADD **A.11.1** [1] For the coordination of frequency assignments to stations in the broadcasting-satellite service and other services in the frequency bands 11.7 - 12.2 GHz (in Regions 2 and 3) and 11.7 - 12.5 GHz (in Region 1), see also Article 15.

ADD **A.11.2** [2] These procedures may be applicable to stations on board satellite launching vehicles.

NOC **4103** **1046** *Comments on Published Information*

MOD **4104** 639AD **1047** § 2. If, after studying the information published under No. **1044**, any administration is of the opinion that interference which may be unacceptable may be caused to its existing or planned space radiocommunication services, it shall, within four months after the date of the weekly circular publishing the complete information listed in Appendix **4**, send its comments to the administration concerned. A copy of these comments shall also be sent to the Board. If no such comments are received from an administration within the period mentioned above, it may be assumed that that administration has no basic objections to the planned satellite network(s) of that system on which details have been published.

NOC **4105** **1048** *Resolution of Difficulties*

MOD **4106** 639AE **1049** § 3. (1) An administration receiving comments sent in accordance with No. **1047** shall endeavour to resolve any difficulties that may arise and shall provide any additional information that may be available.

NOC **4107** 639AF **1050** (2) In case of difficulties arising when any planned satellite network of a system is intended to use the geostationary-satellite orbit:

1051 *a)* the administration responsible for the planned system shall first explore all possible means of meeting its requirements, taking into account the characteristics of the geostationary-satellite networks of other systems, and without considering the possibility of adjustment to systems of other administrations. If no such means can be found, the administration concerned is then free to apply to other administrations concerned to solve these difficulties;

1052 *b)* an administration receiving a request under No. **1051** shall, in consultation with the requesting administration, explore all possible means of meeting the requirements of the requesting administration, for example, by relocating one or more of its own geostationary space stations involved, or by changing the emissions, frequency usage (including changes in frequency bands) or other technical or operational characteristics;

1053 *c)* if after following the procedure outlined in Nos. **1051** and **1052** there are unresolved difficulties, the administrations concerned shall together make every possible effort to resolve these difficulties by means of mutually acceptable adjustments, for example, to geostationary space station locations and to other characteristics of the systems involved in order to provide for the normal operation of both the planned and existing systems.

NOC **4108** 639AG **1054** (3) In their attempts to resolve the difficulties mentioned above administrations may seek the assistance of the Board.

NOC **4109** **1055** *Results of Advance Publication*

MOD **4110** 639AI **1056** § 4. An administration on behalf of which details of planned satellite networks have been published in accordance with the provisions of Nos. **1042** to **1044** shall, after the period of four months specified in No. **1047**, inform the Board whether or not comments provided for in No. **1047** have been received and of the progress made in resolving any difficulties. Additional information on the progress made in resolving any remaining difficulties shall be sent to the Board at intervals not exceeding six months prior to the commencement of coordination or the sending of the notices to the Board. The Board shall publish this information in a special section of its weekly circular and shall also, when the weekly circular contains such information, so inform all administrations by circular telegram.

NOC **4111** **1057** *Commencement of Coordination or Notification Procedures*

MOD **4112** 639AH **1058** § 5. In complying with the provisions of Nos. **1049** to **1054**, an administration responsible for a planned satellite system shall, if necessary, defer its commencement of the coordination procedure, or, where this is not applicable, the sending of its notices to the Board, by six months after the date of the weekly circular containing the information listed in Appendix **4** on the relevant satellite network. However, in respect of those administrations with which difficulties have been resolved or which have responded favourably, the coordination procedure, where applicable, may be commenced prior to the expiry of the six months mentioned above.

NOC

Section II. Coordination of Frequency Assignments to a Space Station on a Geostationary Satellite or an Earth Station Communicating with Such a Space Station in Relation to Stations of Other Geostationary-Satellite Networks

NOC **4113** **1059** *Requirement for Coordination*

MOD **4114** 639AJ **1060** § 6. (1) Before an administration (or, in the case of a space station, one acting on behalf of a group of named administrations) notifies to the Board or brings into use any frequency assignment to a space station on a geostationary satellite or to an earth station that is to communicate with a space station on a geostationary satellite, it shall, except in the cases described in Nos. **1066** to **1071**, effect coordination of the assignment with any other administration whose assignment, for a space station on a geostationary satellite or for an earth station that communicates with a space station on a geostationary satellite, might be affected.

ADD **4114A** **1061** (2) Frequency assignments to which the provisions of No. **1060** are applicable are those:

1062 *a)* in the same frequency band as the planned assignment and in conformity with No. **1503**; *and*

1063 *b)* either recorded in the Master Register, or coordinated under the provisions of this Section; *or*

1064 *c)* to be taken into account for coordination with effect from the date of receipt by the Board in accordance with No. **1074**, of the relevant information as annotated in Appendix **3**; *or*

1065 *d)* notified to the Board without any coordination in those cases where Nos. **1066** to **1071** apply.

MOD 4115 639AK 1066 (3) No coordination under No. **1060** is required:

1067 *a)* when the use of a new frequency assignment will cause, to any service of another administration, an increase in the noise temperature of any space station receiver or earth station receiver, or an increase in the equivalent satellite link noise temperature, as appropriate, calculated in accordance with the method given in Appendix **29**, which does not exceed the threshold value defined therein;

MOD 1068 *b)* when the interference resulting from a modification to a frequency assignment which has previously been coordinated will not exceed that value agreed during coordination;

ADD 1069 *c)* when an administration proposes to notify or bring into use a new earth station within a service area of an existing satellite network, provided that the new earth station would not cause interference of a level greater than that which would be caused by an earth station pertaining to the same satellite network and whose characteristics have been published, together with the information concerning the space station, in accordance with No. **1078**;

ADD 1070 *d)* when, for a new frequency assignment to a receiving station, the notifying administration states that it accepts the interference resulting from the frequency assignments referred to in Nos. **1061** to **1065**;

ADD 1071 *e)* between earth stations using frequency assignments in the same direction (either Earth-to-space or space-to-Earth).

NOC 4116 1072 *Coordination Data*

MOD 4117 639AJ 1073 § 7. (1) For the purpose of effecting coordination, the administration requesting coordination shall send to any other administration concerned under No. **1060** all the information listed in Appendix **3** required for the coordination. The request concerning coordination of a space station or an associated earth station may specify all or some of the frequency assignments expected to be used by that space station, but thereafter each assignment shall be dealt with individually.

MOD 4118 639AL 1074 (2) The administration requesting coordination shall at the same time send to the Board a copy of the request for coordination, with all the information listed in Appendix **3** required for coordination and the name(s) of the administration(s) with which coordination is sought. An administration believing that the provisions of Nos. **1066** to **1071** apply to its planned assignment may send to the Board the relevant information listed in Appendix **3**, either under this provision or in accordance with Nos. **1488** to **1491**. In the latter case, the Board shall immediately inform all administrations by circular telegram.

ADD **4118A** **1075** § 8. On receipt of the information referred to in No. **1074**, the Board shall:

ADD **4118B** **1076** *a)* immediately examine this information with respect to its conformity with No. **1503** and, as soon as possible, send a telegram to all administrations indicating the identity of the satellite network, its findings with respect to No. **1503** and the date of receipt of the information; this date shall be considered as the date from which the assignment will be taken into account for coordination;

ADD **4118C** **1077** *b)* examine the information received with a view to identifying those administrations whose services might be affected, in accordance with No. **1060**, and inform the administrations concerned by telegram;

ADD **4118D** **1078** *c)* publish in a special section of its weekly circular the information received under No. **1074** and the result of the examination under Nos. **1076** and **1077**, together with a reference to the weekly circular in which details of the satellite network were published in accordance with Section I of this Article. When the weekly circular contains such information, the Board shall so inform all administrations by circular telegram.

NOC **4119** **1079** *Requests for Inclusion in Coordination Procedure*

MOD **4120** **1080** § 9. An administration believing that it should have been included in the
639AM coordination procedure under No. **1060** shall have the right to request that it be brought into the coordination procedure. Such a request shall be sent to the administration initiating the coordination procedure, with a copy to the Board, as soon as possible.

NOC **4121** **1081** *Acknowledgement of Receipt of Coordination Data*

MOD **4122** **1082** § 10. An administration with which coordination is sought under No. **1060**
639AO shall acknowledge receipt of the coordination data immediately by telegram. If no acknowledgement is received within thirty days after the date of the weekly circular publishing the information under No. **1078**, the administration seeking coordination shall dispatch a telegram requesting acknowledgement, to which the receiving administration shall reply within a further period of fifteen days.

NOC **4123** **1083** *Examination of Coordination Data and Agreement Between Administrations*

MOD **4124** **1084** § 11. (1) On receipt of the coordination data, an administration shall promptly
639AO examine the matter with regard to interference [1] which would be caused to the service rendered by its stations in respect of which coordination is sought under

MOD **4124.1** **1084.1**
639AO.1

[1] The calculation methods and the criteria to be employed in evaluating the interference should be based on relevant CCIR Recommendations agreed by the administrations concerned either as a result of Resolution **703** or otherwise. In the event of disagreement on a CCIR Recommendation or in the absence of such Recommendations, the methods and criteria shall be agreed between the administrations concerned. Such agreements shall be concluded without prejudice to other administrations.

No. **1060** or caused by these stations. In so doing, it shall have regard to the proposed date of bringing into use of the assignment for which coordination was requested. It shall then, within four months from the date of the relevant weekly circular, notify the administration requesting coordination of its agreement. If, however, the administration with which coordination is sought does not agree, it shall, within the same period, send to the administration seeking coordination the technical details upon which its disagreement is based, including those relevant characteristics contained in Appendix 3 which have not previously been notified to the Board, and make such suggestions as it is able to offer with a view to a satisfactory solution of the problem. A copy of these comments shall also be sent to the Board.

MOD **4125** **1085** (2) Either the administration seeking coordination or an administration with
639AT which coordination is sought may request additional information which it may require to assess the interference to the services concerned.

ADD **4125A** **1086** *Results of Coordination*

ADD **4125B** **1087** § 12. An administration which has initiated a coordination procedure under the provisions of Nos. **1060** to **1074** shall communicate to the Board, on expiry of the period of four months following the date of the relevant weekly circular mentioned in No. **1078**, the names of the administrations with which an agreement has been reached and any changes in the characteristics of its frequency assignment. It shall also inform the Board of the progress made in effecting coordination with the other administrations or of any difficulties. Such a communication shall be made to the Board every six months after the above-mentioned period. The Board shall publish this information in a special section of its weekly circular and, when the weekly circular contains information on changes in the characteristics published, it shall so inform all administrations by circular telegram.

MOD **4126** **1088** *Requests to the IFRB for Assistance in Effecting Coordination*

MOD **4127** **1089** § 13. (1) An administration seeking coordination may request the Board to endea-
639AS vour to effect coordination in those cases where:

1090 *a)* an administration with which coordination is sought under No. **1060** fails to acknowledge receipt, under No. **1082**, within forty-five days after the date of the weekly circular publishing the information relating to the request for coordination;

1091 *b)* an administration has acknowledged receipt under No. **1082**, but fails to give a decision within four months from the date of the relevant weekly circular;

1092 *c)* there is disagreement between the administration seeking coordination and an administration with which coordination is sought as to the acceptable interference; *or*

1093 *d)* coordination between administrations is not possible for any other reason.

1094 (2) In so doing, the administration shall furnish the necessary information to enable the Board to endeavour to effect such coordination.

NOC **4128** **1095** *Action to Be Taken by the IFRB*

NOC **4129** 639AU **1096** § 14. (1) Where the Board receives a request under No. **1090**, it shall forthwith send a telegram to the administration concerned requesting immediate acknowledgement.

NOC **4130** 639AV **1097** (2) Where the Board receives an acknowledgement following its action under No. **1096**, or where the Board receives a request under No. **1091**, it shall forthwith send a telegram to the administration concerned requesting an early decision in the matter.

MOD **4131** 639AW **1098** (3) Where the Board receives a request under No. **1093**, it shall endeavour to effect coordination in accordance with the provisions of No. **1060**. The Board shall also act in accordance with Nos. **1075** to **1078**. Where the Board receives no acknowledgement to its request for coordination within the periods specified in No. **1082** it shall act in accordance with No. **1096**.

MOD **4132** 639AY **1099** (4) Where necessary, as part of the procedure under Nos. **1089** to **1094**, the Board shall assess the interference. In any case, the Board shall inform the administrations concerned of the results obtained.

MOD **4133** 639AT **1100** (5) The Board may request additional information which it may require to assess the interference to the services concerned.

(MOD) **4134** 639AX **1101** (6) Where an administration fails to reply within thirty days of dispatch of the Board's telegram requesting an acknowledgement sent under No. **1096**, or fails to give a decision in the matter within thirty days of dispatch of the Board's telegram of request under No. **1097**, it shall be deemed that the administration with which coordination was sought has undertaken:

1102 *a)* that no complaint will be made in respect of any harmful interference which may be caused to the services rendered by its space radiocommunication stations by the use of the assignment for which coordination was requested;

1103 *b)* that its space radiocommunication stations will not cause harmful interference to the use of the assignment for which coordination was requested.

NOC **4135** **1104** *Notification of Frequency Assignments in the Event of Continuing Disagreement*

MOD **4136** 639AZ **1105** § 15. In the event of continuing disagreement between an administration seeking to effect coordination and one with which coordination has been sought, the administration seeking coordination shall, except in the cases where the assistance of the Board has been requested, defer the submission of its notice concerning the proposed assignment by six months from the date of publication of the request for coordination under No. **1078**, taking into consideration the provisions of No. **1496**.

NOC

Section III. Coordination of Frequency Assignments to an Earth Station in Relation to Terrestrial Stations

NOC **4137** **1106** *Requirement for Coordination*

MOD **4138** 639AN **1107** § 16. (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 space and terrestrial radiocommunication services in the frequency spectrum above 1 GHz, it shall, except in the cases described in Nos. **1108** to **1111**, effect coordination of the assignment with each administration whose territory lies wholly or partly within the coordination area [1] of the planned earth station. The request for coordination concerning an earth station may specify all or some of the frequency assignments of the associated space station, but thereafter each assignment shall be dealt with individually.

MOD **4139** 639AR **1108** (2) No coordination under No. **1107** is required when an administration proposes:

1109 *a)* to bring into use an earth station the coordination area of which does not include any of the territory of any other country;

1110 *b)* to change the characteristics of an existing assignment in such a way as not to increase the interference to or from the terrestrial radiocommunication stations of other administrations;

1111 *c)* to operate a mobile earth station. However, if the coordination area associated with the operation of such a mobile earth station, in a frequency band referred to in No. **1107**, includes any of the territory of another country, the operation of such a station shall be subject to agreement on coordination between the administrations concerned. This agreement shall apply to the characteristics of the mobile earth station(s), or to the characteristics of a typical mobile earth station, and shall apply to a specified service area. Unless otherwise stipulated in the agreement, it shall apply to any mobile earth stations in the specified service area provided that interference caused by them shall not be greater than that caused by a typical earth station for which the technical characteristics appear in the notice and have been or are being submitted in accordance with No. **1494**.

MOD **4138.1** 639AN.1 **1107.1** [1] Appendix **28**, which shall be used for the calculation of the coordination area, contains criteria relating only to coordination between earth stations and stations in the fixed or mobile services. The criteria relating to other terrestrial radiocommunication services should be based on relevant CCIR Recommendations agreed by the administrations concerned either as a result of Resolution **703** or otherwise.

In the event of disagreement on a CCIR Recommendation or in the absence of such Recommendations, the methods and criteria shall be agreed between the administrations concerned. Such agreements shall be concluded without prejudice to other administrations.

SUP **4138.2** 639AN.2

NOC **4140** **1112** *Coordination Data*

MOD **4141** **1113** § 17. For the purpose of effecting coordination, the administration requesting
639AN coordination shall send to each administration concerned under No. **1107** a copy of diagrams drawn to an appropriate scale indicating for both transmission and reception the location of the earth station and its associate coordination areas, or the coordination area related to the service area in which it is intended to operate the mobile earth station, and the data on which the diagrams are based, including all pertinent information concerning the proposed frequency assignment as listed in Appendix **3**, and an indication of the approximate date on which it is planned to begin operations. A copy of this information with the date of dispatch of the request for coordination shall also be sent for the information of the Board.

NOC **4142** **1114** *Acknowledgement of Receipt of Coordination Data*

MOD **4143** **1115** § 18. An administration with which coordination is sought under No. **1107**
639AP shall acknowledge receipt of the coordination data immediately by telegram. If no acknowledgement is received within thirty days of dispatch of the coordination data, the administration seeking coordination shall dispatch a telegram requesting acknowledgement, to which the receiving administration shall reply within a further period of fifteen days.

NOC **4144** **1116** *Examination of Coordination Data and Agreement Between Administrations*

MOD **4145** **1117** § 19. (1) On receipt of the coordination data an administration shall, having
639AP regard to the proposed date of bringing into use of the assignment for which coordination was requested, promptly examine the matter with regard both to:

1118 *a)* interference [1] which would be caused to the service rendered by its terrestrial radiocommunication stations operating in accordance with the Convention and these Regulations, or to be so operated prior to the planned date of bringing the earth station assignment into service, or within the next three years, whichever is the longer; *and to*

1119 *b)* interference [1] which would be caused to reception at the earth station by the service rendered by its terrestrial radiocommunication stations operating in accordance with the Convention and these Regulations, or to be so operated prior to the planned date of bringing the earth station assignment into service, or within the next three years, whichever is the longer.

SUP **4141.2**
639AN.2

MOD **4145.1** **1118.1** [1] The calculation methods and the criteria to be employed in evaluating the interference
639AP.1 **1119.1** should be based upon relevant CCIR Recommendations agreed by the administrations concerned either as a result of Resolution **703** or otherwise. In the event of disagreement on a CCIR Recommendation or in the absence of such Recommendations, the methods and criteria shall be agreed between the administrations concerned. Such agreements shall be concluded without prejudice to other administrations.

1120 (2) The periods referred to in Nos. **1118** and **1119** may be extended by agreement between the administrations concerned in order to take planned terrestrial networks into account.

ADD **4145A** 1121 (3) The administration with which coordination is sought shall, within four months from dispatch of the coordination data:

1122 *a)* notify the administration requesting coordination of its agreement with a copy to the Board, indicating, where appropriate, the part of the allocated frequency band containing the coordinated frequency assignments; *or*

1123 *b)* send to that administration a request for inclusion in coordination of the terrestrial radiocommunication stations mentioned in Nos. **1118** and **1119**; *or*

1124 *c)* notify that administration of its disagreement.

1125 (4) In the cases mentioned in Nos. **1123** and **1124**, the administration with which coordination is sought shall send to the administration requesting coordination a copy of a diagram drawn to an appropriate scale indicating the location of those terrestrial radiocommunication stations which are or will be within the coordination area 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.

MOD **4146** 639AQ 1126 (5) When the administration with which coordination is sought sends to the administration seeking coordination the information required in the case of No. **1124**, a copy thereof shall also be sent to the Board. The Board shall consider as notifications in accordance with Section I of Article **12** only that information relating to existing terrestrial radiocommunication stations or to those to be brought into use within the next three months.

ADD **4146A** 1127 (6) When an agreement on coordination is reached, as a consequence of Nos. **1121** to **1125**, the administration responsible for the terrestrial stations may send to the Board the information concerning those terrestrial stations covered by the agreement which are intended to be notified in accordance with Section I of Article **12**. The Board shall consider as notifications in accordance with that Section only that information relating to existing terrestrial radiocommunication stations or to those to be brought into use within the next three years.

MOD **4147** 639AT 1128 (7) The administration seeking coordination or an administration with which coordination is sought may request additional information which they may require to assess the interference to the services concerned.

MOD **4148** 1129 *Requests to the IFRB for Assistance in Effecting Coordination*

MOD **4149** 639AS 1130 § 20. (1) An administration seeking coordination may request the Board to endeavour to effect coordination in those cases where:

1131 *a)* an administration with which coordination is sought under No. **1107** fails to acknowledge receipt, under No. **1115**, within forty-five days of dispatch of the coordination data;

1132 *b)* an administration has acknowledged receipt under No. **1115**, but fails to give a decision within four months from dispatch of the coordination data under No. **1113**;

1133 *c)* there is disagreement between the administration seeking coordination and an administration with which coordination is sought as to the acceptable interference; *or*

1134 *d)* coordination between administrations is not possible for any other reason.

1135 (2) In so doing, the administration shall furnish the necessary information to enable the Board to endeavour to effect such coordination.

NOC 4150 1136 *Action to Be Taken by the IFRB*

(MOD) 4151 639AU 1137 § 21. (1) Where the Board receives a request under No. **1131**, it shall forthwith send a telegram to the administration concerned requesting immediate acknowledgement.

(MOD) 4152 639AV 1138 (2) Where the Board receives an acknowledgement following its action under No. **1137**, or where the Board receives a request under No. **1132**, it shall forthwith send a telegram to the administration concerned requesting an early decision in the matter.

(MOD) 4153 639AW 1139 (3) Where the Board receives a request under No. **1134**, it shall endeavour to effect coordination in accordance with the provisions of No. **1107**. Where the Board receives no acknowledgement to its request for coordination within the periods specified in No. **1115** it shall act in accordance with No. **1137**.

MOD 4154 639AY 1140 (4) Where necessary, as part of the procedure under Nos. **1130** to **1135**, the Board shall assess the interference. In any case, the Board shall inform the administrations concerned of the results obtained.

MOD 4155 639AT 1141 (5) The Board may request additional information which it may require to assess the interference to the services concerned.

NOC 4156 639AX 1142 (6) Where an administration fails to reply within thirty days of dispatch of the Board's telegram requesting an acknowledgement sent under No. **1137**, or fails to give a decision in the matter within thirty days of dispatch of the Board's telegram of request under No. **1138**, it shall be deemed that the administration with which coordination was sought has undertaken:

1143 *a)* that no complaint will be made in respect of any harmful interference which may be caused to the services rendered by its terrestrial stations by the use of the assignment for which coordination was requested;

1144 *b)* that its terrestrial stations will not cause harmful interference to the use of the assignment for which coordination was requested.

NOC 4157 1145 *Notification of Frequency Assignments in the Event of Continuing Disagreement*

MOD 4158 639AZ 1146 § 22. In the event of continuing disagreement between an administration seeking to effect coordination and one with which coordination has been sought, the administration seeking coordination shall, except in the cases where the assistance of the Board has been requested, defer the submission of its notice concerning the proposed assignment by six months from the date of the request for coordination, taking into consideration the provisions of No. **1496**.

NOC **Section IV. Coordination of Frequency Assignments to a Terrestrial Station for Transmission in Relation to an Earth Station**

NOC 4159 1147 *Requirement for Coordination*

MOD 4160 492A 1148 § 23. (1) Before an administration notifies to the Board, or brings into use any frequency assignment to a terrestrial station within the coordination area [1] of an earth station, in a band above 1 GHz allocated with equal rights to terrestrial radiocommunication services and space radiocommunication services (space-to-Earth), excepting the broadcasting-satellite service, it shall, except in cases described in Nos. **1155** to **1158**, effect coordination of the proposed assignment with the administration responsible for the earth station with respect of the frequency assignments which are:

1149 *a)* in conformity with No. **1503**; *and*

1150 *b)* are either coordinated under No. **1107**; *or*

1151 *c)* to be taken into account for coordination with effect from the date of communication of the information referred to in No. **1107**; *or*

1152 *d)* recorded in the Master Register with a favourable finding with respect to No. **1505**; *or*

1153 *e)* recorded in the Master Register with an unfavourable finding with respect to No. **1505** and a favourable finding with respect to No. **1509**; *or*

1154 *f)* recorded in the Master Register with an unfavourable finding with respect to Nos. **1505** and **1509**, the notifying administration having stated that it has accepted the interference resulting from the existing terrestrial stations located within the coordination area of the earth station on the date of its recording.

MOD 4160.1 492A.1 1148.1 [1] Appendix **28**, which shall be used for the calculation of the coordination area, contains criteria relating only to coordination between earth stations and stations in the fixed or mobile services. The criteria relating to other terrestrial radiocommunication services should be based on relevant CCIR Recommendations agreed by the administrations concerned either as a result of Resolution **703** or otherwise.

In the event of disagreement on a CCIR Recommendation or in the absence of such Recommendations, the methods and criteria shall be agreed between the administrations concerned. Such agreements shall be concluded without prejudice to other administrations.

MOD 4161 1155 (2) No coordination under Nos. **1148** to **1154** is required when an administration proposes:
492C

1156 *a)* to bring into use a terrestrial station which is located, in relation to an earth station, outside the coordination area;

1157 *b)* to change the characteristics of an existing assignment in such a way as not to increase the interference to the earth stations of other administrations;

ADD 1158 *c)* to bring into use a terrestrial station within the coordination area of an earth station, provided that the proposed terrestrial station assignment is outside any part of a frequency band coordinated under No. **1122** for reception by that earth station.

NOC 4162 1159 *Coordination Data*

MOD 4163 1160 § 24. For the purpose of effecting coordination, the administration requesting coordination shall send to any other administration concerned under Nos. **1148** to **1154**, by the fastest possible means, a copy of a diagram drawn to an appropriate scale indicating the location of the terrestrial station and all other pertinent details of the proposed frequency assignment, and the approximate date on which it is planned to bring the station into use. The request for coordination may specify all or some of the frequency assignments expected to be used within the next three years by stations of a terrestrial network wholly or partly within the coordination area of the earth station. This period may be extended by agreement between the administrations concerned. Thereafter each assignment shall be dealt with individually.
492A

NOC 4164 1161 *Acknowledgement of Receipt of Coordination Data*

MOD 4165 1162 § 25. An administration with which coordination is sought under Nos. **1148** to **1154** shall acknowledge receipt of the coordination data immediately by telegram. If no acknowledgement is received within thirty days of dispatch, the administration seeking coordination may dispatch a telegram requesting acknowledgement of receipt of the coordination data, to which the receiving administration shall reply within a further period of fifteen days.
492B

NOC 4166 1163 *Examination of Coordination Data and Agreement Between Administrations*

MOD 4167 1164 § 26. (1) On receipt of the coordination data, the administration with which coordination is sought shall promptly examine the matter with regard to interference [1] which would be caused to the services rendered by its earth stations covered by Nos. **1148** to **1154**, which are operating, or are to be operated, within the next three years.
492B

MOD 4167.1 1164.1 [1] The calculation methods and the criteria to be employed in evaluating the interference should be based on relevant CCIR Recommendations agreed by the administrations concerned either as a result of Resolution **703** or otherwise. In the event of disagreement on a CCIR Recommendation or in the absence of such Recommendations, the methods and criteria shall be agreed between the administrations concerned. Such agreements shall be concluded without prejudice to other administrations.
492B.1

1165 (2) In so doing, the administration may take into account any frequency assignment communicated to it for use more than three years in advance.

1166 (3) The administration with which coordination is sought shall, within an overall period of four months [1] from dispatch of the coordination data, either notify the administration requesting coordination 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.

MOD 4168 492E 1167 § 27. Either the administration seeking coordination or the administration with which coordination is sought may request additional information which it may require to assess the interference to the services concerned.

MOD 4169 1168 *Requests to the IFRB for Assistance in Effecting Coordination*

MOD 4170 492D 1169 § 28. (1) An administration seeking coordination may request the Board to endeavour to effect coordination, in those cases where:

1170 *a)* an administration with which coordination is sought under Nos. **1148** to **1154** fails to acknowledge receipt under No. **1162** within thirty days of dispatch of the coordination data;

1171 *b)* an administration has acknowledged receipt under No. **1162** but fails to give a decision within four months of dispatch of the coordination data;

1172 *c)* there is disagreement between the administration seeking coordination and an administration with which coordination is sought as to the acceptable interference; *or*

1173 *d)* coordination between administrations is not possible for any other reason.

1174 (2) In so doing, the administration shall furnish the necessary information to enable the Board to endeavour to effect such coordination.

NOC 4171 1175 *Action to Be Taken by the IFRB*

NOC 4172 492F 1176 § 29. (1) Where the Board receives a request under No. **1170**, it shall forthwith send a telegram to the administration concerned requesting immediate acknowledgement.

NOC 4173 492FA 1177 (2) Where the Board receives an acknowledgement following its action under No. **1176**, or where the Board receives a request under No. **1171**, it shall forthwith send a telegram to the administration concerned requesting an early decision in the matter.

ADD 4167.2 1166.1 [1] This period may be extended with the agreement of the administration which requested the coordination.

NOC **4174** **1178** (3) Where the Board receives a request under No. **1173**, it shall endeavour
492FB to effect coordination in accordance with the provisions of Nos. **1148** to **1154**. Where the Board receives no acknowledgement of its request for coordination within the period specified in No. **1162**, it shall act in accordance with No. **1176**.

MOD **4175** **1179** (4) Where necessary, as part of the procedure under Nos. **1169** to **1174**, the
492G Board shall assess the interference. In any case, the Board shall inform the administrations concerned of the results obtained.

MOD **4176** **1180** (5) The Board may request additional information which it may require to
492E assess the interference to the services concerned.

NOC **4177** **1181** (6) Where an administration fails to reply within thirty days of dispatch of
492FC the Board's telegram sent under No. **1176** requesting an acknowledgement, or fails to give a decision in the matter within two months of dispatch of the Board's telegram of request sent under No. **1177**, it shall be deemed that the administration with which coordination was sought has undertaken that no complaint will be made in respect of any harmful interference which may be caused by the terrestrial station being coordinated to the service rendered by its earth station.

NOC **4178** **1182** *Notification of Frequency Assignments in the Event of Continuing Disagreement*

MOD **4179** **1183** § 30. In the event of continuing disagreement between an administration
492GA seeking to effect coordination and one with which coordination has been sought, the administration seeking coordination shall, except in the cases where the assistance of the Board has been requested, defer the submission of its notice concerning the proposed assignment by six months from the date of the request for coordination, taking into consideration the provisions of Nos. **1230** and **1496**.

ADD **Section V. Special Assistance by the IFRB**

ADD **4179A** **1184** § 31. (1) If it is requested by an administration, particularly by an administration of a country in need of special assistance, the Board, using such means at its disposal as are appropriate in the circumstances, shall render the following assistance:

1185 *a)* computation of the increases in noise temperatures in accordance with No. **1066**;

1186 *b)* preparation of diagrams showing the coordination areas as in No. **1113**;

1187 *c)* any other assistance of a technical nature for completion of the procedures in this Article.

ADD **4179B** **1188** (2) In making a request to the Board under Nos. **1184** to **1187**, the administration shall furnish the Board with the necessary information.

1189 to **1213** NOT allocated.

N12/9

ARTICLE 12

Notification and Recording in the Master International Frequency Register of Frequency Assignments [1] to Terrestrial Radiocommunication Stations [2, 3]

Section I. Notification of Frequency Assignments

MOD 4280 486 1214 § 1. (1) Any frequency assignment [4] to a fixed, land, broadcasting [5], radionavigation land, radiolocation land or a standard frequency and time signal station, or to a ground-based station in the meteorological aids service, shall be notified to the International Frequency Registration Board:

1215 *a)* if the use of the frequency concerned is capable of causing harmful interference to any service of another administration [6]; *or*

1216 *b)* if the frequency is to be used for international radiocommunication; *or*

1217 *c)* if it is desired to obtain international recognition of the use of the frequency [6].

NOC A.12.1 [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 the *Master Register*).

NOC A.12.2 [2] For the notification and recording in the Master International Frequency Register of frequency assignments to radio astronomy and space radiocommunication stations, see Article **13**.

ADD A.12.3 [3] For the notification and recording in frequency assignments to terrestrial stations in the frequency bands 11.7 - 12.2 GHz (in Regions 2 and 3) and 11.7 - 12.5 GHz (in Region 1), so far as their relationship to the broadcasting-satellite service in these bands is concerned, see also Article **15**.

(MOD) 4280.1 486.1 1214.1 [4] In the case where a frequency is used by numerous stations under the jurisdiction of the same administration, see Appendix 1 (Section F, II, Column 5a, paragraphs 3 and 4).

NOC 4280.2 486.2 1214.2 [5] With respect to assignments to broadcasting stations in the bands allocated exclusively to the broadcasting service between 5 950 kHz and 26 100 kHz, see Article **17**.

NOC 4280.3 486.3 1215.1 1217.1 [6] The attention of administrations is specifically drawn to the application of the provisions of Nos. **1215** and **1217** in those cases where they make a frequency assignment to a terrestrial station, located within the coordination area of an earth station (see Nos. **1148** to **1154**), in a band which terrestrial radiocommunication services share with equal rights with space radiocommunication services in the frequency spectrum above 1 GHz.

ADD **4280A** **1218** (2) Similar notice [1] shall be given when an administration desires to request the assistance of the Board in selecting a frequency assignment to a station of the fixed service in any of the bands allocated exclusively, or on a shared basis, to that service between 3 000 kHz and 27 500 kHz, or when an administration wishes to use for the same type of station a predetermined frequency assignment; in the latter case, the administration shall indicate the reasons on which the request is based together with the possible modifications which could be made to the characteristics of its assignment, and the Board will take account of this information when searching for a satisfactory solution. For this purpose an individual notice shall be drawn up as specified in Section D of Appendix **1**. It is recommended that the notifying administration should provide the additional information called for in that Appendix, together with such further information as it may consider appropriate. The procedure to be followed is given in Nos. **1275** to **1304**.

NOC **4281** **1219** (3) Similar notice shall be given for any frequency to be used for the
487 reception of mobile stations by a particular land station in each case where one or more of the conditions specified in Nos. **1214** to **1217** are applicable.

MOD **4282** **1220** (4) Specific frequencies listed in the Preface to the International Frequency
488 List which are prescribed by these Regulations for common use by stations of a given service (for example, international distress frequencies 500 kHz and 2 182 kHz, frequencies of ship radiotelegraph stations operating in their exclusive high frequency bands, etc.), shall not be notified to the Board.

MOD **4283** **1221** § 2. (1) For any notification under Nos. **1214** to **1217** or **1219** an individual
489 notice for each frequency assignment shall be drawn up as prescribed in Sections A or B of Appendix **1**, which specify the basic characteristics to be furnished, according to the case. It is recommended that the notifying administration should also supply the additional information called for in that Appendix, together with such further information as it may consider appropriate.

ADD **4283A** **1222** (2) Notices concerning assignments to stations of the fixed service in the bands allocated to that service between 3 000 kHz and 27 500 kHz that are submitted under Nos. **1214** to **1217** or **1218** shall also indicate the class of operation of the assignment, with the use of the following symbols:

Symbol A – assignment for regular operational use which is not provided by another satisfactory means of telecommunication; *or*

Symbol B – assignment for use as a standby to some other means of telecommunication; *or*

Symbol C – assignment for occasional use on a reserve basis and not requiring internationally recognized protection from harmful interference.

ADD **4280A.1** **1218.1** [1] See Resolution **103**.

MOD **4284** 490 **1223** (3) When stations of the same service, such as the land mobile service, use a band of frequencies above 28 000 kHz in a specific area or areas, an individual notice should be drawn up, as prescribed in Section C of Appendix **1**, which specifies the basic characteristics to be furnished, for each frequency on which there are assignments within the band; however, the particulars should relate only to a typical station. This does not apply:

1224 *a)* to broadcasting stations;

1225 *b)* to other terrestrial stations to which the provisions of Sub-Section IIE of this Article apply;

1226 *c)* to other stations of the fixed or mobile service which operate in the frequency bands listed in Table II of Appendix **28** with equivalent isotropically radiated power exceeding the corresponding values listed in the table;

1227 *d)* to the terrestrial stations in the frequency bands listed in Nos. **2509**, **2510** and **2511**.

MOD **4285** 491 **1228** § 3. (1) Whenever practicable, each notice under Nos. **1214** to **1217**, **1219** or **1223** to **1227** should reach the Board before the date on which the assignment is brought into use. It must reach the Board not earlier than three months 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.

ADD **4285A** **1229** (2) A notice under No. **1218** must reach the Board not earlier than one year before the date on which the requested frequency is to be brought into use.

ADD **4285B** **1230** (3) A notice concerning a frequency assignment to one of the terrestrial stations mentioned in Sub-Section IIE of this Article must reach the Board not earlier than three years and not later than three months before the date on which the assignment is to be brought into use.

MOD **4286** 492 **1231** (4) Except for cases covered by Nos. **1218** and **1229** any frequency assignment the notice of which reaches the Board more than thirty days after the notified date of bringing into use, or in the case of a terrestrial station mentioned in Sub-Section IIE of this Article, any frequency assignment the notice of which reaches the Board less than three months before it is brought into use, shall, where it is to be recorded, bear a remark in the Master Register to indicate that it is not in conformity with No. **1228** or **1230**. However, such a remark will not be made in the Master Register against an assignment to a terrestrial station which has not been notified under Nos. **1214** to **1217** but which is required to be notified after its entry into use as a result of coordination for or notification of an earth station assignment.

SUP **4287** 492GB

(MOD) **4288** 493 **1232** § 4. Whatever the means of communication, including telegraph, by which a notice is sent to the Board, it shall be considered complete if it contains at least those appropriate basic characteristics specified in Appendix **1**.

SUP **4289** 494

NOC **4290** 495 **1233** § 5. When a service or regional agreement has been concluded, the Board shall be informed of the details of this agreement.

NOC

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

MOD **4291** 496 **1234** § 6. Any notice submitted under Nos. **1214** to **1217**, **1219** or **1223** to **1227** which does not contain at least those basic characteristics specified in Appendix **1** shall be returned by the Board, by airmail, to the notifying administration with the reasons therefor, unless the information not provided is immediately forthcoming in response to an enquiry of the Board. The Board shall advise the administration by telegram when a notice is returned under this provision.

MOD **4292** 497 **1235** § 7. On receipt of a complete notice, the Board shall include the particulars thereof, with the date of receipt, in a weekly circular to be published within a period of forty days after receipt of the notice and sent by airmail to all administrations. When the Board is not in a position to comply with this time-limit, it shall, as soon as possible, so inform the administrations concerned giving the reasons therefor.

MOD **4293** 498 **1236** § 8. The circular shall contain the full particulars of all such notices received since the publication of the previous circular and shall constitute the acknowledgement to each notifying administration of the receipt of the complete notice.

ADD **4293A** **1237** § 9. For the purpose of Nos. **1235** and **1236**, notices submitted under No. **1218** in the form of a request for assistance of the Board shall be grouped together and specially identified.

MOD **4294** 499 **1238** § 10. Complete notices shall be considered by the Board in the order of their receipt; however, notices submitted under No. **1218** shall be treated immediately on receipt. The Board may 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 an earlier notice.

NOC

Sub-Section IIA. Procedure to Be Followed in Cases Not Covered by Sub-Sections IIB to IIE of this Article

MOD **4295** **1239** § 11. (1) Except for notices referred to in No. **1218** which are dealt with in
500 Nos. **1275** to **1304** the Board shall examine each notice with respect to:

MOD **4296** **1240** *a)* its conformity with the Convention, the Table of Frequency Allocations and the other provisions of the Radio Regulations with the exception of those provisions relating to the probability of harmful interference which are the subject of Nos. **1241** and **1242**;
501

(MOD) **4297** **1241** *b)* the probability of harmful interference to the service rendered by a station for which a frequency assignment already recorded in the Master Register:
502

1) bears a date in Column 2a (see No. **1416**); *or*

2) is in conformity with the provisions of No. **1240** and bears a date in Column 2b (see No. **1417**), but has not, in fact, caused harmful interference to any frequency assignment with a date in Column 2a or to any assignment in conformity with No. **1240** with an earlier date in Column 2b;

NOC **4298** **1242** *c)* the probability of harmful interference to the service rendered by a station for which a frequency assignment already recorded in the Master Register:
503

1) is in conformity with the provisions of No. **1240** and was recorded in the Master Register with a date in Column 2d as a result of a favourable finding with respect to No. **1242**; *or*

2) is in conformity with the provisions of No. **1240** and was recorded in the Master Register with a date in Column 2d after an unfavourable finding with respect to No. **1242**, but has not, in fact, caused harmful interference to any frequency assignment previously recorded in the Master Register and which is in conformity with No. **1240**.

ADD **4298A** **1243** (2) In conducting the examination under No. **1241** or **1242**, the Board shall apply protection criteria for class of operation A higher than for class of operation B [1]. The Board shall disregard the probability of interference to frequency assignments of class of operation C.

SUP **4298.1**
503.1

ADD **4298A.1** **1243.1** [1] The different protection criteria to be applied by the Board for classes of operation A and B shall be published in the Technical Standards of the Board (see No. **1001**).

MOD **4299** **1244** (3) When the notice relates to a frequency above 28 000 kHz, the Board
504 shall only make the examination specified in No. **1242** at the request of an administration directly concerned or affected when coordination has not been possible between the administrations involved.

NOC **4300** **1245** (4) Where appropriate, the Board shall also examine the notice with respect
505 to its conformity with a regional or service agreement. The procedure to be followed in connection with frequency assignments made pursuant to such an agreement shall be as specified in Nos. **1240** and **1241** or **1242** except that the Board shall not consider the question of the probability of harmful interference among the parties to such agreement. Similarly, the Board shall not consider the probability of harmful interference to the assignments of any administration with which coordination has been effected.

MOD **4301** **1246** § 12. Depending upon the findings of the Board subsequent to the examina-
506 tion prescribed in Nos. **1240** and **1241** or **1242**, and the result of the action undertaken by the Board pursuant to Nos. **1275** to **1278** and **1279**, further action shall be as follows:

NOC **4302** **1247** § 13. (1) *Finding Favourable with Respect to No.* **1240** *in Cases Where the*
507 *Provisions of No.* **1241** *or* **1242** *Are Not Applicable (see No.* **1248***).*

NOC **4303** **1248** (2) The assignment shall be recorded in the Master Register. The date to be
508 entered in the appropriate part of Column 2 according to the relevant provisions of Section III of this Article shall be the date of receipt of the notice by the Board.

NOC **4304** **1249** § 14. (1) *Finding Favourable with Respect to Nos.* **1240** *and* **1241** *or* **1242**.
509

NOC **4305** **1250** (2) The assignment shall be recorded in the Master Register. The date to be
510 entered in the appropriate part of Column 2 according to the relevant provisions of Section III of this Article shall be the date of receipt of the notice by the Board.

NOC **4306** **1251** (3) However, should the examination show that the probability of harmful
511 interference for certain hours, seasons, or periods of solar activity is slightly greater than is considered desirable, a remark shall be included in the Master Register to show that there exists a slight probability of harmful interference and hence precautions must be taken in the use of the assignment to avoid harmful interference to assignments already recorded in the Master Register.

NOC **4307** **1252** § 15. (1) *Finding Favourable with Respect to No.* **1240** *but Unfavourable with*
512 *Respect to No.* **1241** *or* **1242**.

MOD **4308** **1253** (2) The notice shall be returned immediately by airmail to the notifying
513 administration with the reasons of the Board for this finding and with such suggestions as the Board is able to offer with a view to a satisfactory solution of the problem in respect of those administrations it has identified.

NOC **4309** **1254** (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. **1241** or **1242**, the assignment shall be recorded in the Master Register. The date to be entered in the appropriate part of Column 2 according to the relevant provisions of Section III of this Article shall be the date of receipt by the Board of the original notice. The date of receipt by the Board of the resubmitted notice shall be indicated in the Remarks Column.
514

MOD **4310** **1255** (4) The notifying administration may resubmit the notice either unchanged, or with modifications which decrease the probability of harmful interference. In cases where there are no modifications or the modifications do not permit the application of No. **1254** and the Board's finding remains unchanged, should the notifying administration insist on reconsideration of its notice and state that it has brought its assignment into use, the Board shall:
515

ADD **4310A** **1256** *a)* publish the information contained in the notice received under No. **1255** in the weekly circular indicating all the administrations which are likely to be affected;

ADD **4310B** **1257** *b)* simultaneously send a telegram to each of the administrations referred to in No. **1256** advising them of the notice and requesting them to inform the Board:

1258 1) if the recorded assignment is still in use and, if so, whether it is being used with the notified basic characteristics;

1259 2) of any harmful interference that occurs within a period of two months from the date of publication of the weekly circular referred to in No. **1256**;

ADD **4310BA** **1260** *c)* take appropriate action in conformity with Nos. **1964** to **1966**, if the assignment which is the basis of the unfavourable finding had been submitted under No. **1218**;

ADD **4310C** **1261** *d)* record the assignment in the Master Register if, on expiry of the period referred to in No. **1259**, the Board has received no information that harmful interference has occurred; the date to be entered in the appropriate part of Column 2 according to the relevant provision of Section III of this Article shall be the date of receipt by the Board of the original notice;

ADD **4310D** **1262** *e)* immediately return the notice to the notifying administration informing it of the reported interference and shall make such suggestions as it is able to offer for the elimination of the interference, if the Board receives information that harmful interference has occurred during the two months mentioned in No. **1259**.

ADD **4310E** **1263** (5) If the Board receives information that harmful interference has occurred after the recording of an assignment under the provisions of No. **1261**, the Board shall investigate the matter and, where appropriate, shall enter a special remark against such an assignment to show that it will not be taken into account when acting on any later notice.

MOD 4311 516 **1264** (6) If, as a result of the information received under Nos. **1257** to **1259**, the Board is able to reach a favourable finding with respect to No. **1241** or **1242** with regard to any assignment recorded under the provisions of Nos. **1255** and **1261**, the appropriate changes shall be made in respect of the entry of that assignment in the Master Register. If the finding remains unfavourable, the Board shall enter suitable remarks in the Master Register for the entry or entries concerned which describe the situation as found by the Board.

SUP 4312 517

MOD 4313 518 **1265** (7) Should the notifying administration resubmit the notice with modifications which increase the probability of harmful interference, and should the Board's finding remain unchanged, the resubmitted notice shall be treated under No. **1253**.

NOC 4314 519 **1266** § 16. (1) *Finding Unfavourable with Respect to No.* **1240** *in Cases Where the Provisions of No.* **1241** *or* **1242** *Are Not Applicable (see No.* **1244**).

MOD 4315 520 **1267** (2) Where the notice includes a specific reference to the fact that the station will be operated in accordance with the provisions of No. **342** of these Regulations, the assignment shall be recorded in the Master Register subject to the provisions of No. **1419** or **1420**. The date to be entered in the appropriate part of Column 2 according to the relevant provisions of Section III of this Article shall be the date of receipt by the Board of the notice.

(MOD) 4316 521 **1268** (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. **342** of these Regulations, 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 is able to offer with a view to the satisfactory solution of the problem.

SUP 4317 522

NOC 4318 523 **1269** § 17. (1) *Finding Unfavourable with Respect to No.* **1240** *in Cases Where the Provisions of No.* **1241** *or* **1242** *Are Applicable.*

NOC 4319 524 **1270** (2) Where the notice includes a specific reference to the fact that the station will be operated in accordance with the provisions of No. **342** of these Regulations, it shall be examined immediately with respect to No. **1241** or **1242**, and the provisions of No. **1271** or **1272** shall be applied, as appropriate.

MOD 4320 525 **1271** (3) If the finding is favourable with respect to No. **1241** or **1242**, the assignment shall be recorded in the Master Register subject to the provisions of No. **1419**. The date to be entered in the appropriate part of Column 2 according to the relevant provisions of Section III of this Article shall be the date of receipt by the Board of the notice.

MOD **4321** **1272** (4) If the finding is unfavourable with respect to No. **1241** or **1242**, the
526 notice shall be returned immediately by airmail to the notifying administration. Should the administration insist on reconsideration of the notice, the frequency assignment shall be recorded, for information only, with an appropriate remark referring to No. **1419**.

MOD **4322** **1273** (5) Where the notice does not include a specific reference to the fact that the
527 station will be operated in accordance with the provisions of No. **342** of these Regulations, 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 is able to offer with a view to a satisfactory solution of the problem.

SUP **4323**
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SUP **4324**
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SUP **4325**
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SUP **4326**
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ADD **4326Bis** **1274** § 18. *Procedure to Be Followed in Respect of Notices under No.* **1218**.

ADD **4326A** **1275** (1) In the case of a notice under No. **1218** relating to the selection of a frequency assignment for regular operational use (class of operation A), the Board shall, as quickly as possible, select an appropriate frequency which shall:

1276 *a)* be capable of providing the service required;

1277 *b)* be in conformity with Nos. **1240** and **1241** or **1242** as appropriate to ensure a favourable finding;

1278 *c)* be free from harmful interference from any assignment recorded in the Master Register which is itself in conformity with No. **1240**.

ADD **4326AA** **1279** (2) In the case of a notice submitted under No. **1218** relating to a predetermined frequency, the notifying administration may request the Board, in addition to the examination under Nos. **1240** and **1241** or **1242**, to examine the notice to assess the probability of harmful interference to the assignment from assignments recorded in the Master Register. The Board shall advise the notifying administration of the results of the examination and where necessary shall make suggestions to avoid any possible harmful interference to the assignment.

ADD **4326B** **1280** (3) In the case of difficulty in applying the provisions of Nos. **1275** to **1278** and **1279**, the procedure given below shall be followed:

ADD **4326BA** **1281** *a)* the Board shall first seek access to one of the least loaded parts of an appropriate band, without considering the possibility of adjustment to any existing recorded assignment;

ADD **4326BB** **1282**

b) if necessary the Board shall consult the administration having sent a notice under No. **1218** as to the possibility of modifying the characteristics of the required assignment;

ADD **4326BC** **1283**

c) should action under Nos. **1281** and **1282** fail, and should the requesting administration find the selected frequency acceptable, the Board shall consider whether the required assignment could be found by suppressing or downgrading an existing recorded assignment. The enquiries to be made in such an event are those described in Section VII of this Article;

ADD **4326BD** **1284**

d) should action under No. **1283** fail, the Board shall then seek alternative means of finding the required assignment in such a way as to involve the minimum necessary modification of the characteristics of any existing recorded assignment;

ADD **4326BE** **1285**

e) for the purposes of the action envisaged under No. **1284** the Board shall concentrate its enquiries upon the older recorded assignments for which the Board believes there to be satisfactory alternative means of telecommunications;

ADD **4326BF** **1286**

f) the Board, having identified in such a case the minimum modification to the characteristics of an existing recorded assignment that would be needed to accommodate a new assignment requested under No. **1218**, shall invoke the relevant provisions of the Convention and shall seek the assistance of the appropriate administration to agree to make, at the appropriate stage, that modification to its recorded assignment;

ADD **4326BG** **1287**

g) should action under No. **1286** fail, the Board shall bring to the attention of the administration concerned the fact that in such a case there is then an obligation to reduce the assigned bandwidth, if operationally feasible, or to move the assigned frequency by an amount not exceeding the assigned bandwidth of the recorded frequency assignment, on the condition that no harmful interference is caused to adjacent frequency assignments;

ADD **4326BH** **1288**

h) the administration concerned shall then either:

1289

1) give its agreement to effect the necessary modification to its existing recorded assignment together with the date upon which this will be effected; *or*

1290

2) give any reasons why such a modification cannot be made;

ADD **4326BI** **1291**

i) in the event of such a case remaining unresolved within three months of the request for an assignment being made under No. **1218**, the Board shall publish a report on the matter for the information of all Members of the Union;

ADD **4326BJ** **1292**

j) the Board shall, when appropriate during this procedure, consult the administration requesting an assignment under No. **1218** as to the acceptability of the selected frequency;

ADD **4326BK** **1293**

k) if, in application of this paragraph, an administration agrees to a change in the basic characteristics of its frequency assignment, that change shall be recorded in the Master Register without change in the original date or dates.

ADD **4326C** **1294** (4) Administrations are urged to afford all possible assistance through their monitoring stations to help the Board in the successful discharge of its duties under this sub-section.

ADD **4326D** **1295** § 19. (1) *Result of the Action of the Board under Nos.* **1275** *to* **1278** *Relating to a Request for Assistance under No.* **1218**.

ADD **4326E** **1296** (2) Having selected a frequency under Nos. **1275** to **1278** the Board shall forthwith submit the selected frequency by telegram for the approval of the notifying administration, and shall make a provisional entry in the Master Register in accordance with No. **1311**. The date of receipt of the request to the Board under No. **1218** shall be entered in the appropriate part of Column 2.

ADD **4326F** **1297** (3) The notifying administration, on receipt of the telegram mentioned in No. **1296**, shall promptly examine the matter and in the event of non-acceptance of the selected frequency shall notify the Board thereof and shall give its reasons for such rejection.

ADD **4326G** **1298** (4) In the circumstances mentioned in No. **1297**, the Board shall cancel that entry and inform the administration concerned accordingly. In such a case, if the notifying administration so requests, the Board shall make a further attempt to select an acceptable frequency but the request shall be regarded as a new notice under No. **1218**.

ADD **4326H** **1299** (5) The notifying administration, on accepting a frequency selected by the Board, shall, as soon as possible, inform the Board thereof.

ADD **4326I** **1300** (6) If the Board receives no reply within two months to its telegram, sent under No. **1296**, seeking approval for the selected frequency, the provisional entry shall be cancelled and the Board shall inform the other administrations accordingly.

ADD **4326J** **1301** § 20. (1) *Result of the Action of the Board under No.* **1280** *Relating to a Request for Assistance under No.* **1218**.

ADD **4326K** **1302** (2) Having selected a frequency under No. **1280**, and if the necessary modifications to the previously recorded assignment are accepted in accordance with No. **1289**, the Board shall treat the selected assignment in accordance with No. **1295**.

ADD **4326L** **1303** (3) Having selected a frequency under No. **1280**, if the necessary modification to this previously recorded assignment cannot be made as the result of acting under No. **1290** and if the selected frequency is still acceptable to the requesting administration, the Board shall make an entry in the Master Register in the name of the requesting administration. The date of receipt of the request sent to the Board under No. **1218** shall be entered in the appropriate part of Column 2.

ADD **4326M** **1304** (4) Any harmful interference which results from the simultaneous use of both assignments shall be the subject of consultations between the administrations concerned.

NOC **4327** **1305** § 21. (1) *Change in the Basic Characteristics of Assignments Already Recorded in the Master Register.*
532

MOD **4328** **1306** (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 2c, 3, 4a and 11 of the Master Register), shall be examined by the Board according to Nos. **1240** and **1241**, **1242** or **1244**, as appropriate, and the provisions of Nos. **1247** to **1273** inclusive applied. Where the change should be recorded, the assignment shall be amended according to the notice.
533

NOC **4329** **1307** (3) However, in the case of a change in the basic characteristics of an assignment (except a change of the assigned frequency which exceeds half of the frequency band originally assigned, as defined in No. **141**) which is in conformity with No. **1240**, should the Board reach a favourable finding with respect to No. **1241** or **1242**, 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 the appropriate part of Column 2. In addition, the date of receipt by the Board of the notice relating to the change shall be entered in the Remarks Column.
534

ADD **4329A** **1308** (4) The projected date of bringing into use of a frequency assignment may be extended on request of the notifying administration by three months. In the case where the administration states that, due to exceptional circumstances, it needs a further extension of this period, such extension may be provided but it shall in no case exceed six months from the original projected date of bringing into use.

MOD **4330** **1309** § 22. *In applying the provisions of the whole of Sub-Sections IIA to IIC*, any resubmitted notice which is received by the Board more than six months after the date of its return by the Board shall be considered as a new notice.
535

NOC **4331** **1310** § 23. (1) *Recording of Frequency Assignments Notified Before Being Brought into Use.*
536

NOC **4332** **1311** (2) If a frequency assignment notified in advance of bringing into use has received favourable findings by the Board with respect to Nos. **1240** and **1241** or **1242**, it shall be entered provisionally in the Master Register with a special symbol in the Remarks Column indicating the provisional nature of that entry.
537

MOD **4333** **1312** (3) Within thirty days (see No. **1228**) after the date of bringing into use, either as originally notified or as modified in application of No. **1308**, the notifying administration shall confirm that the frequency assignment has been brought into use. When the Board is informed that the assignment has been brought into use, the special symbol shall be deleted from the Remarks Column.
538

MOD 4334 1313 (4) If the Board does not receive this confirmation within the period
539 referred to in No. **1312**, the entry concerned shall be cancelled. The Board shall consult the administration concerned before taking such action.

MOD 4335 1314 (5) The provisions of Nos. **1311** to **1313** do not apply to frequency assign-
540 ments which are in conformity with the Allotment Plans appearing in Appendices **25 Mar2**, **26**, **27** * and **27 Aer2** * to these Regulations; such frequency assignments shall be entered in the Master Register on receipt of the notice by the Board.

NOC **Sub-Section IIB. Procedure to Be Followed for Coast Radiotelephone Stations Operating in the Bands Allocated Exclusively to the Maritime Mobile Service Between 4 000 kHz and 23 000 kHz**

NOC 4336 1315 § 24. (1) *Examination of Notices Concerning Frequency Assignments to Coast*
541 *Radiotelephone Stations in the Bands Allocated Exclusively to the Maritime Mobile Service Between 4 000 kHz and 23 000 kHz for Coast Radiotelephone Stations (see No.* **1239***).*

NOC 4337 1316 (2) The Board shall examine each notice covered by No. **1315**:
542

NOC 4338 1317 *a)* with respect to the provisions of No. **1240** and in particular those of
542A No. **4373**;

NOC 4339 1318 *b)* in order to determine whether the notified assignment is in conformity with an allotment in the Allotment Plan contained in Appendix **25 Mar2** to these Regulations.
542B

NOC 4340 1319 (3) Any frequency assignment for which the finding is favourable with
543 respect to Nos. **1317** and **1318** shall be recorded in the Master Register (see also No. **1314**). The date to be entered in Column 2a shall be that determined according to the relevant provisions of Section III of this Article.

NOC 4341 1320 (4) Any frequency assignment for which the finding is unfavourable with
543A respect to No. **1317** shall be examined with respect to Nos. **1267** and **1268**. The date to be entered in Column 2b shall be determined according to the relevant provisions of Section III of this Article.

NOC 4342 1321 (5) In the case of a notice which has received a favourable finding with
545 respect to No. **1317** but unfavourable with respect to No. **1318**, the Board shall examine this notice with respect to the probability of harmful interference to the service rendered by a radiotelephone coast station for which a frequency assignment:

1322 *a)* is in conformity with an allotment in the Allotment Plan and is already recorded in the Master Register or may be so recorded in the future; *or*

SUP 4336.1
541.1

* *Note by the General Secretariat:* See No. **5189** and Resolution **400**.

1323 *b)* was recorded in the Master Register on a frequency specified in Appendix **16**, as a result of a favourable finding with respect to Nos. **1321** to **1324**; *or*

1324 *c)* was recorded in the Master Register on a frequency specified in Appendix **16**, after an unfavourable finding with respect to Nos. **1321** to **1324**, but has not, in fact, caused harmful interference to any frequency assignment to a coast radiotelephone station previously recorded in the Master Register.

NOC 4343 546 1325 (6) According to the finding of the Board with respect to Nos. **1321** to **1324**, further action shall be in accordance with the provisions of Nos. **1249** to **1265** inclusive, or Nos. **1305** to **1307** inclusive, as appropriate, it being understood that in those provisions Nos. **1321** to **1324** shall be read for No. **1241**.

NOC 4344 547 1326 § 25. (1) *Examination of Notices Concerning Frequencies Used for Reception by Coast Radiotelephone Stations in the Bands Allocated Exclusively to the Maritime Mobile Service Between 4 000 kHz and 23 000 kHz for Ship Radiotelephone Stations (see Nos.* **1219** *and* **1239**).

NOC 4345 548 1327 (2) The Board shall examine each notice covered by No. **1326**:

NOC 4346 548A 1328 *a)* with respect to the provisions of No. **1240** and in particular those of No. **4374**;

NOC 4347 548B 1329 *b)* in order to determine whether the notified assignment corresponds to a frequency associated, according to Appendix **16**, with a frequency allotted to the notifying administration in the Allotment Plan contained in Appendix **25 Mar2** to these Regulations.

(MOD) 4348 549 1330 (3) Any frequency assignment for reception by a coast radiotelephone station for which the finding is favourable with respect to Nos. **1328** and **1329** shall be recorded in the Master Register. The date to be entered in Column 2a shall be that determined according to the relevant provisions of Section III of this Article.

NOC 4349 549A 1331 (4) Any frequency assignment for reception by a coast radiotelephone station for which the finding is unfavourable with respect to No. **1328** shall be examined with respect to Nos. **1267** and **1268**. The date to be entered in Column 2b shall be that determined according to the relevant provisions of Section III of this Article.

(MOD) 4350 551 1332 (5) Any assignment of a frequency for reception by a coast radiotelephone station which has received a favourable finding with respect to No. **1328** but unfavourable with respect to No. **1329** shall be recorded in the Master Register. The date to be entered in Column 2b shall be that determined according to the relevant provisions of Section III of this Article.

SUP 4344.1 547.1

NOC

Sub-Section IIC. Procedure to Be Followed for Aeronautical Stations Operating in the Bands Allocated Exclusively to the Aeronautical Mobile Services Between 2 850 kHz and 22 000 kHz

NOC 4351 552 1333 § 26. (1) *Examination of Notices Concerning Frequency Assignments to Aeronautical Stations in the Aeronautical Mobile (R) Service in the Bands Allocated Exclusively to that Service Between 2 850 kHz and 22 000 kHz (see No.* **1239***).*

NOC 4352 553 1334 (2) The Board shall examine each notice covered by No. **1333** to determine whether:

NOC 4352A 553A 1335 *a)* the notice is in conformity with the provisions of No. **1240**;

NOC 4353 554 1336 *b)* the frequency corresponds to one of the frequencies specified in Column 1 of the Allotment Plan for the aeronautical mobile (R) service contained in Appendix **27 Aer2** * (Part II, Section II, Article 2), or the assignment is the result of a permissive change from one class of emission to another and the necessary bandwidth is within the channelling arrangement provided for in Appendix **27 Aer2** *;

NOC 4354 555 1337 *c)* the limitations of use set forth in Column 3 of the Plan have been appropriately observed;

NOC 4355 556 1338 *d)* the notice is in conformity with the technical principles of the Plan set forth in Appendix **27 Aer2** *;

NOC 4356 557 1339 *e)* the area of use is within the boundaries of the Areas as set forth in Column 2 of the Plan.

NOC 4356A 557A 1340 (3) A notice which is not in conformity with the provisions of No. **1335** shall be examined with respect to Nos. **1267** and **1268**. The date to be entered in Column 2b shall be determined in accordance with the relevant provisions of Section III of this Article.

NOC 4357 558 1341 (4) In the case of a notice in conformity with the provisions of Nos. **1335** to **1338**, but not with those of No. **1339**, the Board shall examine whether the protection specified in Appendix **27 Aer2** * (Part I, Section IIA, paragraph 5) is afforded to the allotments in the Plan. In doing so, the Board shall assume that the frequency will be used in accordance with the "Sharing conditions between areas" specified in Appendix **27 Aer2** * (Part I, Section IIB, paragraph 4).

NOC 4358 560 1342 (5) All frequency assignments referred to in No. **1333** shall be recorded in the Master Register according to the findings reached by the Board. The date to be entered in Column 2a or 2b shall be that determined according to the relevant provisions of Section III of this Article.

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* *Note by the General Secretariat:* See No. **5189** and Resolution **400**.

NOC 4359 561 **1343** § 27. (1) *Examination of Notices Concerning Frequency Assignments to Aeronautical Stations in the Aeronautical Mobile (OR) Service in the Bands Allocated Exclusively to that Service Between 3 025 kHz and 18 030 kHz (see No.* **1239***).*

NOC 4360 562 **1344** (2) The Board shall examine each notice covered by No. **1343** to determine whether:

NOC 4361 563 **1345** *a)* the assignment is in conformity with the primary allotments in the Allotment Plan for the aeronautical mobile (OR) service and the conditions specified in Appendix **26** (Parts III and IV);

NOC 4362 564 **1346** *b)* the assignment is in conformity with or satisfies the requirements for secondary allotments in the Allotment Plan for the aeronautical mobile (OR) service and the conditions specified in Appendix **26** (Part III, Section II, paragraph 4, sub-paragraph *d)*, and Part IV). In applying these provisions, the Board shall assume that the frequency will be used on a day-time basis;

NOC 4363 565 **1347** *c)* the assignment is the result of a permitted change from one class of emission to another, its occupied bandwidth is within the channelling arrangement provided for in Appendix **26** (Part III, Section II, paragraphs 1 and 2), and it meets all the conditions for a primary or secondary allotment in the Plan, except that the assigned frequency does not correspond numerically with one of the frequencies specified therein.

NOC 4364 566 **1348** (3) The technical criteria to be employed by the Board in its examination of these notices shall be those in Appendix **26** (Part III).

NOC 4365 567 **1349** (4) All frequency assignments referred to in No. **1343** shall be recorded in the Master Register according to the findings reached by the Board. The date to be entered in Column 2a or 2b shall be that determined according to the relevant provisions of Section III of this Article.

NOC

Sub-Section IID. Procedure to Be Followed for Broadcasting Stations Operating in the Bands Allocated Exclusively to the Broadcasting Service Between 5 950 kHz and 26 100 kHz

MOD 4366 568 **1350** § 28. Frequency assignments to broadcasting stations in the bands allocated exclusively to the broadcasting service between 5 950 kHz and 26 100 kHz shall be dealt with in accordance with the provisions of Article **17** and shall be included only in the annual list referred to in No. **1769**, which shall be considered as a supplement to the International Frequency List.

SUP 4367 569

SUP 4368 570

NOC

Sub-Section IIE. Procedure to Be Followed in Cases Where Terrestrial Stations Are in the Same Frequency Band as an Existing Earth Station or One for Which Coordination Has Been Effected or Initiated and Are Within its Coordination Area

NOC **4369** 570AA **1351** § 29. The Board shall examine each notice:

MOD **4370** 570AB **1352** *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 provisions relating to the coordination procedure and the probability of harmful interference which are the subject of Nos. **1353** and **1354**;

NOC **4371** 570AC **1353** *b)* with respect to its conformity with the provisions of Nos. **1148** to **1154** relating to coordination of the use of the frequency assignment with the other administrations concerned;

NOC **4372** 570AD **1354** *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. **1503** 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. **1240** or **1352**, as appropriate, previously recorded in the Master Register.

NOC **4373** 570AE **1355** § 30. Depending on the findings of the Board subsequent to the examination prescribed in Nos. **1352**, **1353** and **1354**, further action shall be as follows:

NOC **4374** 570AF **1356** § 31. (1) *Finding Unfavourable with Respect to No.* **1352**.

MOD **4375** 570AG **1357** (2) Where the notice includes a specific reference to the fact that the station will be operated in accordance with the provisions of No. **342**, and the finding is favourable with respect to No. **1353** or **1354**, as appropriate, the assignment shall be recorded in the Master Register subject to the provisions of No. **1420**. The date of receipt by the Board of the notice shall be entered in Column 2d.

SUP **4376** 570AGA

MOD **4377** 570AGB **1358** (3) If the finding is unfavourable with respect to No. **1353** or **1354**, as appropriate, the notice shall be returned immediately by airmail to the notifying administration with the reasons of the Board for this finding. Should the notifying administration insist on reconsideration of the notice, the assignment shall be recorded in the Master Register with the understanding that the provisions of No. **1420** shall be applied. The date of receipt by the Board of the original notice shall be entered in Column 2d.

SUP **4378** 570AGC

MOD **4379** **1359** (4) 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. **342**, 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 is able to offer with a view to a satisfactory solution of the problem.
570AH

SUP **4380**
570AI

MOD **4381** **1360** (5) If the notifying administration resubmits the notice with a specific reference to the fact that the station will be operated in accordance with the provisions of No. **342**, it shall be treated as a new notice.
570AJ

SUP **4382**
570AK

NOC **4383** **1361** § 32. (1) *Finding Favourable with Respect to No.* **1352.**
570AL

NOC **4384** **1362** (2) Where the Board finds that the coordination procedure mentioned in No. **1353** 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.
570AM

MOD **4385** **1363** (3) Where the Board finds that the coordination procedure mentioned in No. **1353** has not been applied, and:
570AN

ADD **4385A** **1364** *a)* if the notifying administration requests the Board to effect the required coordination, the Board shall take the appropriate action; if the Board's efforts toward securing agreement are successful, it shall so inform the administrations concerned and shall treat the notice in accordance with No. **1362**;

ADD **4385B** **1365** *b)* if the Board's efforts toward securing agreement in application of Nos. **1364** or **1169** to **1174** are unsuccessful, or if, when notifying the assignment, the administration states that it has been unsuccessful and does not request the Board to effect the required coordination, the Board shall examine the notice with respect to the provisions of No. **1354**. At the same time, the Board shall so inform the administrations concerned;

MOD **4386** **1366** *c)* if the notifying administration does not request the Board to effect the required coordination, 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 is able to offer with a view to a satisfactory solution of the problem.
570AO

NOC **4387** **1367** (4) Where the notifying administration resubmits the notice and the Board finds that the coordination procedure mentioned in No. **1353** 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.
570AP

MOD **4388** **1368** (5) Where the notifying administration resubmits the notice with a request
570AQ that the Board effect the required coordination, it shall be treated in accordance with the provisions of Nos. **1363**, **1364** or **1365**. However, in any subsequent recording of the assignment in the Master Register, the date of receipt by the Board of the resubmitted notice shall be entered in the Remarks Column.

SUP **4389**
570AR

NOC **4390** **1369** § 33. (1) *Finding Favourable with Respect to Nos.* **1352** *and* **1354**.
570AS

NOC **4391** **1370** (2) The assignment shall be recorded in the Master Register. The date of
570AT receipt by the Board of the notice shall be entered in Column 2d.

NOC **4392** **1371** § 34. (1) *Finding Favourable with Respect to No.* **1352** *but Unfavourable with*
570AU *Respect to No.* **1354**.

MOD **4393** **1372** (2) The notice shall be returned immediately by airmail to the notifying
570AV administration with the reasons of the Board for this finding and with such suggestions as the Board is able to offer with a view to a satisfactory solution of the problem.

NOC **4394** **1373** (3) Should the notifying administration resubmit the notice with modifica-
570AW tions which result, after re-examination, in a favourable finding by the Board with respect to No. **1354**, 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.

MOD **4395** **1374** (4) Should the notifying administration resubmit the notice, either
570AX unchanged, or with modifications which decrease the probability of harmful interference, but not sufficiently to permit the provisions of No. **1373** to be applied, and should that administration insist on 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 four months, counting from the date when both are in service, 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 **4395A** **1375** (5) An administration may request the Board to make a provisional entry for that assignment in the Master Register when it is unable to inform the Board about the interference mentioned in No. **1374** because the assignment liable to suffer interference has not yet been brought into service. The Board shall then enter that assignment with a special symbol in the Remarks Column to indicate its provisional character.

NOC **4396** **1376** § 35. (1) *Changes in the Basic Characteristics of Assignments Already Recorded*
570AZ *in the Master Register.*

MOD **4397** **1377** (2) A notice of a change in the basic characteristics of an assignment notified under No. **1221** and already recorded, as specified in Appendix **1**, Section A or B (except those entered in Columns 2c, 3 and 4a of the Master Register), or a notice under No. **1221** concerning an assignment already recorded under Nos. **1223** to **1227** (Appendix **1**, Section C), shall be examined by the Board according to Nos. **1352** and **1353** and, where appropriate, No. **1354**, and the provisions of Nos. **1356** to **1374** inclusive applied. Where the change should be recorded, the original assignment shall be amended according to the notice.
570BA

NOC **4398** **1378** (3) However, in the case of a change in the basic characteristics of an assignment which is in conformity with No. **1352**, should the Board reach a favourable finding with respect to No. **1353**, and, where its provisions are applicable, with respect to No. **1354**, 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.
570BB

ADD **4398A** **1379** (4) The projected date of bringing into use of a frequency assignment may be extended on request of the notifying administration by three months. In the case where the administration states that, due to exceptional circumstances, it needs a further extension of this period, such extension may be provided but it shall in no case exceed six months from the original projected date of bringing into use.

NOC **4399** **1380** § 36. In applying the provisions 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.
570BC

NOC **4400** **1381** § 37. (1) *Recording of Frequency Assignments Notified Before Being Brought into Use.*
570BD

NOC **4401** **1382** (2) If a frequency assignment notified in advance of bringing into use has received a favourable finding by the Board with respect to Nos. **1352** and **1353** and, where appropriate, with respect to No. **1354**, it shall be entered provisionally in the Master Register with a special symbol in the Remarks Column indicating the provisional nature of that entry.
570BE

MOD **4402** **1383** (3) Within thirty days after the date of bringing into use, either as originally notified (see No. **1230**) or as modified in application of No. **1379**, the notifying administration shall confirm that the frequency assignment has been brought into use. When the Board is informed that the assignment has been brought into use, the special symbol shall be deleted from the Remarks Column.
570BF

ADD **4402A** **1384** (4) If the Board does not receive this confirmation within the period referred to in No. **1383**, the entry concerned shall be cancelled. The Board shall consult the administration concerned before taking such action.
570BH

MOD **4403** **1385** (5) If, on the expiry of the period specified in No. **1374**, the Board is informed that there has been no complaint of harmful interference, it shall delete the symbol entered in application of No. **1375**.
570BG

SUP **4404**

NOC **Section III. Recording of Dates and Findings in the Master Register**

MOD **4405** 571 **1386** § 38. 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 the appropriate column. In addition, the reasons for reaching an unfavourable finding shall be inserted in the Remarks Column.

MOD **4406** 572 **1387** § 39. 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. **1388** to **1413** for frequency assignments referred to in Sub-Sections IIA to IIC.

NOC **4407** 573 **1388** § 40. (1) *Frequency Bands*:

9 - 2 850 kHz
3 155 - 3 400 kHz
3 500 - 3 900 kHz in Region 1
3 500 - 4 000 kHz in Region 2
3 500 - 3 950 kHz in Region 3
4 219.4 - 4 349.4 kHz
6 325.4 - 6 493.9 kHz
8 435.4 - 8 704.4 kHz
12 652.3 - 13 070.8 kHz
16 859.4 - 17 196.9 kHz
22 310.5 - 22 561 kHz

MOD **4408** 574 **1389** (2) For any assignment to which the provisions of Nos. **1250**, **1251** or **1254** apply, the relevant date shall be entered in Column 2a of the Master Register; however, for class of operation B assignments to stations of the fixed service, the relevant date shall be entered in Column 2b.

(MOD) **4409** 575 **1390** (3) For any assignment to which the provisions of Nos. **1255**, **1265**, **1267**, **1271** or **1272** apply, the relevant date shall be entered in Column 2b of the Master Register.

SUP **4410** 576

NOC **4411** 577 **1391** § 41. (1) *Frequency Bands Allocated Exclusively to the Maritime Mobile Service Between 4 000 kHz and 23 000 kHz for Coast Radiotelephone Stations.*

NOC **4412** 578 **1392** (2) If the finding is favourable with respect to Nos. **1317** and **1318**, the date of 7 June 1974 shall be entered in Column 2a.

NOC **4413** 580 **1393** (3) For all other cases referred to in No. **1315**, the relevant date shall be entered in Column 2b (see Nos. **1250**, **1254**, **1255**, **1261**, **1265**, **1306** and **1307**).

SUP **4411.1** 577.1

NOC **4414** **1394** (4) For assignments to stations other than radiotelephone coast stations, the
581 relevant date shall be entered in Column 2b (see Nos. **1271** and **1272**).

NOC **4415** **1395** § 42. (1) *Frequency Bands Allocated Exclusively to the Maritime Mobile Service*
582 *Between 4 000 kHz and 23 000 kHz for Ship Radiotelephone Stations.*

NOC **4416** **1396** (2) If the finding is favourable with respect to Nos. **1328** and **1329**, the date
583 of 7 June 1974 shall be entered in Column 2a.

NOC **4417** **1397** (3) In all other cases covered by No. **1326**, the date of receipt of the notice
585 by the Board shall be entered in Column 2b.

(MOD) **4418** **1398** (4) For assignments other than assignments of frequencies for reception by
586 radiotelephone coast stations, the relevant date shall be entered in Column 2b (see Nos. **1271** and **1272**).

NOC **4419** **1399** § 43. (1) *Frequency Bands Allocated Exclusively to the Maritime Mobile Service*
587 *Between 4 000 kHz and 25 110 kHz for Radiotelegraph Ship Stations (see No.* **1220***).*

(MOD) **4420** **1400** (2) For assignments to stations other than radiotelegraph ship stations, the
588 relevant date shall be entered in Column 2b (see Nos. **1271** and **1272**).

NOC **4421** **1401** § 44. (1) *Frequency Bands Allocated Exclusively to the Aeronautical Mobile (R)*
589 *Service Between 2 850 kHz and 22 000 kHz.*

MOD **4422** **1402** (2) If the finding is favourable with respect to Nos. **1336** to **1339**, the date
590 of 5 March 1978 shall be entered in Column 2a.

MOD **4423** **1403** (3) If the finding is favourable with respect to No. **1341**, the date of
591 5 March 1978 shall be entered in Column 2b.

MOD **4424** **1404** (4) In all other cases covered by No. **1333**, the date of 6 March 1978 shall
592 be entered in Column 2b by the Board.

(MOD) **4425** **1405** (5) For assignments to stations other than aeronautical stations in the
593 aeronautical mobile (R) service, the relevant date shall be entered in Column 2b (see Nos. **1271** and **1272**).

NOC **4426** **1406** § 45. (1) *Frequency Bands Allocated Exclusively to the Aeronautical Mobile (OR)*
594 *Service Between 3 025 kHz and 18 030 kHz.*

SUP **4415.1**
582.1

NOC **4427** 595 **1407** (2) If the finding is favourable with respect to No. **1345**, the date of 3 December 1951 shall be entered in Column 2a.

NOC **4428** 596 **1408** (3) If the finding is favourable with respect to No. **1346**, the date of 3 December 1951 shall be entered in Column 2b.

NOC **4429** 597 **1409** (4) If the provisions of No. **1347** are found to be applicable, the date of 3 December 1951 shall be entered in Column 2a for a primary allotment, or in Column 2b for a secondary allotment.

NOC **4430** 598 **1410** (5) In all other cases covered by No. **1343**, the date of receipt of the notice by the Board shall be entered in Column 2b.

(MOD) **4431** 599 **1411** (6) For assignments to stations other than aeronautical stations in the aeronautical mobile (OR) service, the relevant date shall be entered in Column 2b (see Nos. **1271** and **1272**).

SUP **4432** 600

SUP **4433** 601

SUP **4434** 602

NOC **4435** 603 **1412** § 46. (1) *Frequency Bands Between 3 950 kHz (4 000 kHz in Region 2) and 28 000 kHz Other than Those Allocated Exclusively to the Aeronautical Mobile Service, Maritime Mobile Service, Broadcasting Service or Amateur Service, and Frequency Bands above 28 000 kHz.*

NOC **4436** 604 **1413** (2) For any frequency assignment which is to be recorded under the provisions of Section II of this Article, the relevant date shall be entered in Column 2d of the Master Register.

NOC **4437** 605 **1414** § 47. *Date to Be Entered in Column 2c.*

MOD **4438** 606 **1415** The date to be entered in Column 2c shall be the date of bringing into use notified by the administration concerned (see Nos. **1228** to **1231**).

NOC **Section IV. Categories of Frequency Assignments**

MOD **4439** 607 **1416** § 48. (1) Any frequency assignment which bears a date in Column 2a of the Master Register shall have the right to international protection from harmful interference; so shall class of operation A assignments to stations of the fixed service in the appropriate bands between 3 000 kHz and 27 500 kHz recorded with a date in Column 2d as a result of a favourable finding with respect to Nos. **1240** and **1242**, in particular those resulting from the application of No. **1218**.

NOC **4440** **1417** (2) Any frequency assignment which bears a date in Column 2b is recorded
608 in the Master Register in order that administrations may take into account the fact that the frequency assignment concerned is in use. This recording shall not give the right to international protection to the frequency assignment concerned, except as provided for in No. **1241**, sub-paragraph 2).

NOC **4441** **1418** (3) For frequency assignments having dates in two parts of Column 2, the
609 date in Column 2c is given for information only.

SUP **4442**
610

MOD **4443** **1419** (4) If harmful interference to the reception of any station whose assignment
611 is in accordance with No. **1240** or **1352** is actually caused by the use of a frequency assignment which is not in conformity with No. **1240** or **1352**, the station using the latter frequency assignment shall, on receipt of advice thereof, immediately eliminate this harmful interference.

MOD **4444** **1420** (5) If harmful interference to the reception of any station whose assignment
611A is in accordance with No. **1503** is actually caused by the use of a frequency assignment which is not in conformity with No. **1240** or **1352**, the station using the latter frequency assignment shall, on receipt of advice thereof, immediately eliminate this harmful interference.

NOC

Section V. Review of Findings

NOC **4445** **1421** § 49. (1) The review of a finding by the Board may be undertaken:
612

a) at the request of the notifying administration;

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

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

(MOD) **4446** **1422** (2) The Board, in the light of all the data at its disposal, shall review the
613 matter, taking into account No. **1240** or **1352** and Nos. **1241**, **1242**, **1353** or **1354**, as appropriate, and shall render an appropriate finding, informing the notifying administration prior either to the publication of its finding or to any recording action.

NOC **4447** **1423** § 50. If a review of an unfavourable finding has been requested by the
614 notifying administration on the grounds of special assistance to meet an urgent and essential need, in a case where harmful interference has been experienced, the Board shall consult immediately the administrations concerned and shall make such suggestions as will facilitate the operation of the assignment of the administration which asked for special assistance; such amendments as result from this consultation shall be made to the Master Register.

NOC **4448** **1424** § 51. (1) After actual use for a reasonable period of an assignment which has
615 been entered in the Master Register on the insistence of the notifying administration, following an unfavourable finding with respect to Nos. **1241**, **1242** or **1354**, 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.

NOC **4449** **1425** (2) If the finding of the Board is then favourable, it shall enter in the
616 Master Register the changes that are required so that the entry shall appear in the future as if the original finding had been favourable.

NOC **4450** **1426** (3) If the finding with regard to the probability of harmful interference
617 remains unfavourable, no change shall be made in the original entry.

SUP **4451**
618

ADD **4451A** **1427** § 52. (1) In the event of a deletion or modification of any recorded frequency assignment which had been the cause of an unfavourable finding and had led a later assignment to be recorded under No. **1255**, the Board shall review, and, where appropriate, modify that unfavourable finding with respect to No. **1241** or **1242**.

ADD **4451B** **1428** (2) To provide a basis for the review of an entry in the Master Register made in accordance with No. **1255**, the Board shall, when examining the relevant notice, determine the date on which the review is to be made. If by that date no complaint of harmful interference has been received by the administration concerned, the Board shall automatically reverse the original unfavourable finding with respect to No. **1241** or **1242**.

MOD

Section VI. Maintenance of the Master Register

ADD **4451C** **1429** § 53. *Modification, Cancellation and Review of Entries in the Master Register.*

NOC **4452** **1430** § 54. In case of permanent discontinuance of the use of any recorded
619 frequency assignment, the notifying administration shall inform the Board within three months of such discontinuance, whereupon the entry shall be removed from the Master Register.

NOC **4453** **1431** § 55. Whenever it appears to the Board from the information available that a
620 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.

(MOD) **4454** **1432** § 56. If, in connection with an enquiry by the Board under No. **1264** or **1431**,
621 the notifying administration has failed to supply the Board within three months with the necessary or pertinent information, the Board shall disregard the assignment concerned when acting on any later notice, until such time as it has been

informed that the assignment is being used as notified, or until it has received the information required. The Board shall make suitable entries in the Remarks Column of the Master Register to indicate the situation, and in particular the period when the assignment was not taken into account by the Board.

SUP **4455**
622

ADD **4454A** **1433** § 57. (1) *Periodic Examination of the Master Register.*

ADD **4454B** **1434** (2) The Board shall institute a long-term programme of periodic reviews of each section of the Master Register with the aim of improving and maintaining its accuracy.

ADD **4454C** **1435** (3) For the purpose of the reviews mentioned in No. **1434**, the Board shall send to each administration, for revision and return, a national extract of the Master Register relating to the particular section under review. The Board shall at the same time draw the attention of administrations to any assignment to a station in the fixed service in frequency bands between 3 000 kHz and 27 500 kHz for which other means of telecommunication are believed to be available.

ADD **4454D** **1436** (4) Administrations shall, having regard to the need to improve and maintain the accuracy of the Master Register, cooperate in these periodic reviews by notifying the deletion of any unused assignment and, where appropriate, the modification of other entries.

ADD **4454E** **1437** (5) The Board shall include in its annual report to administrations a section relating to the work done under the provisions of the present paragraph 57, the results achieved, and the programme for the following year.

NOC **Section VII. Studies and Recommendations**

(MOD) **4456**
623 **1438** § 58. (1) If it is requested by any administration, particularly by an administration of a country in need of special assistance, the Board, using such means at its disposal as are appropriate in the circumstances, shall conduct a study of the following problems of frequency utilization:

NOC **4457**
624 **1439** *a)* in cases arising under No. **1252** as to a possible alternative frequency assignment to avoid probable harmful interference;

NOC **4458**
625 **1440** *b)* in cases where a need arises for additional frequency assignments within a specified portion of the radio spectrum;

NOC **4459**
626 **1441** *c)* in cases where, due to harmful interference, two or more frequencies of the same order of magnitude are being used alternately to maintain communication on a circuit requiring only one frequency of that order;

NOC **4460**
627 **1442** *d)* in cases of alleged contravention or non-observance of these Regulations, or of harmful interference.

(MOD) **4461** 628 **1443** (2) The Board shall thereupon prepare and forward to the administrations concerned a report containing its finding and recommendations for the solution of the problem.

ADD **4461A** **1444** (3) On receiving the Board's recommendations for the solution of the problem, an administration shall promptly acknowledge the receipt by telegram and shall subsequently indicate the action it intends to take. In cases when the Board's suggestions or recommendations are unacceptable to the administrations concerned, further efforts should be made by the Board to find an acceptable solution to the problem.

NOC **4462** 629 **1445** § 59. If the Board finds, in particular following a request from an administration of a country in need of special assistance, that a change in the basic characteristics, including a change of frequency within a specific frequency range, of one or more assignments in conformity with the provisions of No. **1240** will:

NOC **4463** 630 **1446** *a)* accommodate a new assignment; *or*

NOC **4464** 631 **1447** *b)* facilitate the solution of a problem of harmful interference; *or*

NOC **4465** 632 **1448** *c)* otherwise facilitate the more effective use of a particular portion of the radio spectrum; *and*

NOC **4466** 633 **1449** if such change is acceptable to the administration or administrations concerned, the change in basic characteristics shall be recorded in the Master Register without change in the original date or dates.

NOC **4467** 634 **1450** § 60. 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 thirty 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.

NOC

Section VIII. Miscellaneous Provisions

NOC **4468** 635 **1451** § 61. The provisions of Sections V, VI (excepting No. **1430**) and VII of this Article shall not be applied to frequency assignments in conformity with the Allotment Plans contained in Appendices **25 Mar2**, **26**, **27** * and **27 Aer2** * to these Regulations.

MOD **4469** 635A **1452** § 62. (1) If it is requested by any administration, particularly by an administration of a country in need of special assistance, the Board using such means at its disposal as are appropriate in the circumstances, shall render the following assistance:

a) verification of the diagram showing the coordination area referred to in No. **1113**;

b) computation of the interference, as referred to in Nos. **1164** to **1166**;

c) any other assistance of a technical nature for completion of the procedures in this Article.

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* *Note by the General Secretariat:* See No. **5189** and Resolution **400**.

NOC **4470** **1453** (2) In making a request to the Board under No. **1452**, the administration
635B shall furnish the Board with the necessary information.

MOD **4471** **1454** § 63. The Technical Standards of the Board shall be based on the relevant
636 provisions of these Regulations and the Appendices thereto, the decisions of administrative conferences of the Union, as appropriate, the Recommendations of the CCIR, the state of the radio art and the development of new transmission techniques, account being taken of exceptional propagation conditions which may prevail in certain regions (for example, particularly pronounced ducting).

MOD **4472** **1455** § 64. (1) The Board shall inform all administrations of its findings and reasons
637 therefor, together with all changes made to the Master Register, through its weekly circular. Such information shall be published within forty-five days of the date of publication of the complete notice in the weekly circular referred to in No. **1235**. When the Board is not in a position to comply with the time-limit referred to above it shall, as soon as possible, so inform the administration concerned giving the reasons therefor.

ADD **4472A** **1456** (2) The weekly circular of the IFRB shall be published in the working languages of the Union as defined in the Convention. In carrying out the various procedures stipulated in the Radio Regulations, the Board shall use the weekly circular as a means of communicating with administrations to the maximum extent practicable.

NOC **4473** **1457** § 65. The Board shall inform administrations, at appropriate intervals, of the
638 cases of special assistance which were studied under Nos. **1423** and **1438** to **1450** inclusive of these Regulations.

MOD **4474** **1458** § 66. In case a Member avails itself of the provisions of Article 50 of the
639 Convention, the Board shall, on request, make its records available for such proceedings as are prescribed in the Convention for the settlement of international disputes.

1459 to **1487** NOT allocated.

MOD N13/9A

ARTICLE 13

Notification and Recording in the Master International Frequency Register of Frequency Assignments [1] to Radio Astronomy and Space Radiocommunication Stations Except Stations in the Broadcasting-Satellite Service [2]

NOC

Section I. Notification of Frequency Assignments

MOD 4575 639BA 1488 § 1. (1) Any frequency assignment to be used for transmission or reception by an earth or space station shall be notified to the Board:

1489 *a)* if the use of the frequency concerned is capable of causing harmful interference to any service of another administration; *or*

1490 *b)* if the frequency is to be used for international radiocommunications; *or*

1491 *c)* if it is desired to obtain international recognition of the use of the frequency.

SUP 4576 639BB

MOD 4577 639BC 1492 (2) Any frequency or frequency band to be used for reception by a particular radio astronomy station may be notified if it is desired that such data should be included in the Master Register.

ADD 4577A 1493 (3) When the Board receives from one administration a notice containing a modification or deletion of a space station assignment already recorded in the Master Register on behalf of a group of administrations, it shall be assumed, in the absence of information to the contrary, that the notice of modification or deletion is submitted on behalf of all the administrations which were associated with the original notification.

MOD 4578 639BD 1494 (4) A notice submitted in accordance with Nos. **1488** to **1491** and relating to a frequency assignment to mobile earth stations in a satellite system shall include the technical characteristics either of each mobile earth station, or of a typical mobile earth station, and an indication of the service area within which these stations are to be operated.

NOC A.13.1 [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 A.13.2 [2] For notification and recording of frequency assignments to stations in the broadcasting-satellite service and other services in the frequency bands 11.7 - 12.2 GHz (in Regions 2 and 3) and 11.7 - 12.5 GHz (in Region 1), see also Article **15**.

MOD 4579 639BE 1495 § 2. For any notification under Nos. **1488** to **1492** or **1494**, a notice for each frequency assignment shall be drawn up as prescribed in Appendix **3**, the various sections of which specify 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.

(MOD) 4580 639BF 1496 § 3. (1) For a frequency assignment to an earth or space station, each notice shall be submitted in order to reach the Board not earlier than three years before the date on which the assignment is to be brought into use. The notice shall reach the Board in any case not later than three months [1] 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 it shall in any case reach the Board not later than thirty days after the date it is actually brought into use.

NOC 4581 639BG 1497 (2) Any frequency assignment to an earth or space station, the notice of which reaches the Board after the applicable period specified in No. **1496**, shall, where it is to be recorded, bear a mark in the Master Register to indicate that it is not in conformity with No. **1496**.

NOC

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

MOD 4582 639BH 1498 § 4. Any notice which does not contain at least those basic characteristics specified in Appendix **3** shall be returned by the Board, by airmail, to the notifying administration with the reasons therefor, unless the information not provided is immediately forthcoming in response to an enquiry from the Board. The Board shall advise the administration by telegram when a notice is returned under this provision.

MOD 4583 639BI 1499 § 5. On receipt of a complete notice, the Board shall include the particulars thereof, including diagrams, with the date of receipt, in the weekly circular referred to in No. **1235** to be published within a period of forty days after receipt of the notice. When the Board is not in a position to comply with this time-limit, it shall, as soon as possible, so inform the administrations concerned giving the reasons therefor.

MOD 4584 639BJ 1500 § 6. The circular shall contain the full particulars of all such notices received by the Board since the publication of the previous circular and shall constitute the acknowledgement to each notifying administration of the receipt of the complete notice.

NOC 4580.1 639BF.1 1496.1 [1] The notifying administration shall take this limit into account when deciding, where appropriate, to initiate the coordination procedure(s).

MOD 4585 639BK **1501** § 7. Complete notices shall be considered by the Board in the order of their receipt, taking into account the time-limit referred to in No. **1583**. 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.

NOC 4586 639BL **1502** § 8. The Board shall examine each notice:

MOD 4587 639BM **1503** *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 coordination procedures and the probability of harmful interference which are the subject of the following sub-paragraphs;

MOD 4588 639BN **1504** *b)* with respect to its conformity with the provisions relating to the coordination of the use of the frequency assignment with the other administrations concerned, vis-à-vis space radiocommunication stations in cases where the provisions of Nos. **1060** or **1066** to **1071** are applicable;

MOD 4589 639BO **1505** *c)* with respect to its conformity with the provisions relating to the coordination of the use of the frequency assignment with the other administrations concerned, vis-à-vis terrestrial radiocommunication stations in cases where the provisions of No. **1107** are applicable;

MOD 4590 639BP **1506** *d)* with respect to the probability of harmful interference, when the coordination under No. **1060** has not been successfully effected; this examination [1] shall take into account the frequency assignments for transmission or reception already recorded in the Master Register:

1507 1) in application of Nos. **1526**, **1531**, **1534** or **1543**, *or*

1508 2) in application of No. **1544**, if that frequency assignment has not in fact caused harmful interference to any other previously recorded frequency assignment which is in conformity with No. **1503**;

MOD 4591 639BQ **1509** *e)* with respect to the probability of harmful interference, when the coordination under No. **1107** has not been successfully effected; this examination shall take into account the frequency assignments for transmission or reception already recorded in the Master Register:

1510 1) in application of No. **1248**, *or*

1511 2) in application of Nos. **1362**, **1367**, **1370**, or **1373**, *or*

ADD 4590.1 **1506.1** [1] The examination of such a notice with respect to any other frequency assignment published under No. **1078** but not yet notified shall be deferred until both assignments have been notified; the Board shall then examine them in the order of their publication under No. **1078**.

1512 3) in application of No. **1374** if that assignment has not in fact caused harmful interference to any other previously recorded frequency assignment which is in conformity with No. **1503**.

SUP **4592**
639BR

NOC **4593** **1513** § 9. When, following an examination of a notice with respect to Nos. **1506** to **1508**, the Board reaches an unfavourable finding based upon the probability of harmful interference to a recorded assignment for a space station which the Board has reason to believe may not be in regular use, for example, as a consequence of No. **1569**, the Board shall forthwith consult the administration responsible for the registered assignment. If it is established, after such consultation and on the basis of the information available, that the recorded assignment has not been in use for two years, it shall not be taken into account for the purposes of the examination in progress or any other further examination under Nos. **1506** to **1508** conducted before the date on which the assignment is brought back into use. Before the assignment is brought back into use, it shall be subject to further coordination in accordance with the provisions of No. **1060** or further examination by the Board with respect to Nos. **1506** to **1508**, as appropriate. The date on which the assignment is brought back into use shall then be entered in the Master Register.
639BS

MOD **4594** **1514** § 10. Depending upon the findings of the Board subsequent to the examination prescribed in Nos. **1503**, **1504**, **1505**, **1506** to **1508** and **1509** to **1512**, as appropriate, further action shall be as follows:
639BT

MOD **4595** **1515** § 11. (1) *Finding Favourable with Respect to No.* **1503** *in Cases Where the Provisions of Nos.* **1504** *and* **1505** *Are Not Applicable (space station on board a non-geostationary satellite).*
639BU

NOC **4596** **1516** (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.
639BV

ADD **4596A** **1517** § 12. (1) *Finding Unfavourable with Respect to No.* **1503** *in Cases Where the Provisions of Nos.* **1504** *and* **1505** *Are Not Applicable (space station on board a non-geostationary satellite).*

ADD **4596B** **1518** (2) Where the notice includes a specific reference to the fact that the station will be operated in accordance with the provisions of No. **342**, 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 **4596C** **1519** (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. **342**, it shall be returned immediately by airmail to the notifying administration with the reasons of the Board for this finding together with such suggestions as the Board is able to offer with a view to a satisfactory solution of the problem.

MOD **4597** **1520** § 13. (1) *Finding Unfavourable with Respect to No.* **1503** *in Cases Where the Provisions of Nos.* **1504** *and* **1505** *Are Applicable.*
639BW

MOD **4598** **1521** (2) Where the notice includes a specific reference to the fact that the station
639BX will be operated in accordance with the provisions of No. **342**, and the finding is favourable with respect to Nos. **1504**, **1505**, **1506** to **1508** and **1509** to **1512**, as appropriate, 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.

MOD **4599** **1522** (3) Where the notice includes a specific reference to the fact that the station
639BY will be operated in accordance with the provisions of No. **342** and the finding is unfavourable with respect to Nos. **1504**, **1505**, **1506** to **1508** or **1509** to **1512**, as appropriate, the notice shall be returned immediately by airmail to the notifying administration with the reasons of the Board for this finding. Should the administration insist upon reconsideration of the notice, the assignment shall be recorded in the Master Register with the understanding that the provisions of No. **1560** shall be applied. The date of receipt by the Board of the original notice shall be entered in Column 2d.

SUP **4600**
639BZ

MOD **4601** **1523** (4) Where the notice does not include a specific reference to the fact that the
639CA station will be operated in accordance with the provisions of No. **342**, it shall be returned immediately by airmail to the notifying administration with the reasons of the Board for this finding together with such suggestions as the Board is able to offer with a view to a satisfactory solution of the problem.

NOC **4602** **1524** (5) If the notifying administration resubmits the notice unchanged, it shall
639CB be treated in accordance with the provisions of No. **1523**. If it is resubmitted with a specific reference to the fact that the station will be operated in accordance with the provisions of No. **342**, it shall be treated in accordance with the provisions of No. **1521** or **1522**, as appropriate. If it is resubmitted with modifications which, after re-examination, result in a favourable finding by the Board with respect to No. **1503**, it shall be treated as a new notice.

NOC **4603** **1525** § 14. (1) *Finding Favourable with Respect to No.* **1503** *in Cases Where the*
639CC *Provisions of No.* **1504** *or* **1505** *Are Applicable.*

NOC **4604** **1526** (2) Where the Board finds that the coordination procedures mentioned in
639CD No. **1504** or **1505** have been successfully completed with all administrations whose space or terrestrial radiocommunication 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.

MOD **4605** **1527** (3) Where the Board finds that either of the coordination procedures
639CE mentioned in Nos. **1504** and **1505** has not been applied and:

ADD **4605A** **1528** *a)* if the notifying administration requests the Board to effect the coordination, the Board shall take appropriate action; if the Board's efforts toward securing agreement are successful, it shall so inform the administrations concerned and shall treat the notice in accordance with No. **1526**;

ADD **4605B** **1529** *b)* if the Board's efforts toward securing agreement in application of Nos. **1528** or **1089** to **1094** or **1130** to **1135** are unsuccessful, or if, when notifying the assignment, the administration states that it has

been unsuccessful and does not request the Board to effect the required coordination, the Board shall examine the notice with respect to the provisions of Nos. **1506** to **1508** and **1509** to **1512**, as appropriate. At the same time, the Board shall so inform the administrations concerned;

MOD **4606** **1530** *c)* if the notifying administration does not request the Board to effect the required coordination, the notice shall be returned immediately by airmail to the notifying administration with the reasons of the Board for this action together with such suggestions as the Board is able to offer with a view to a satisfactory solution of the problem.
639CF

(MOD) **4607** **1531** (4) Where the notifying administration resubmits the notice and the Board finds that the coordination procedures mentioned in Nos. **1504** and **1505** have been successfully completed with all administrations whose space or terrestrial radiocommunication 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.
639CG

MOD **4608** **1532** (5) Where the notifying administration resubmits the notice with a request that the Board effect the required coordination under No. **1060** or **1107**, it shall be treated in accordance with the provisions of Nos. **1527** and either **1528** or **1529**. 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.
639CH

SUP **4609**
639CI

MOD **4610** **1533** § 15. (1) *Finding Favourable with Respect to Nos.* **1503**, **1506** *to* **1508**, *and* **1509** *to* **1512** *as Appropriate.*
639CJ

NOC **4611** **1534** (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.
639CK

MOD **4612** **1535** (3) However, should the examination show that the interference and the percentage of time during which it is likely to occur have values slightly greater than those used for assessing the probability of harmful interference (extreme propagation conditions, abnormal atmospheric humidity, etc.), a remark shall be included in the Master Register to show that there may be a slight risk of harmful interference and hence additional precautions must be taken in the use of the assignment to avoid harmful interference to assignments already recorded in the Master Register.
639CL

ADD **4612A** **1536** (4) In addition to the examination of a frequency assignment to an earth station under Nos. **1509** to **1512**, if there is continuing disagreement, the Board shall examine that frequency assignment with respect to the probability of harmful interference caused to, or caused by, those terrestrial stations for which assignments have been communicated to the Board in application of No. **1126** and are to be brought into use in the next three years.

ADD **4612B** **1537** (5) Following the examination under No. **1536**, the Board shall, where appropriate:

1538 *a)* inform the administrations concerned of any unfavourable findings;

1539 *b)* enter a remark indicating such an unfavourable finding against the assignment to the earth station recorded in the Master Register;

1540 *c)* record the assignments to terrestrial stations in the Master Register with a remark indicating any unfavourable finding; the date of receipt of the information communicated under No. **1126** shall be entered in Column 2d.

MOD **4613** 639CM **1541** § 16. (1) *Finding Favourable with Respect to No.* **1503** *but Unfavourable with Respect to Nos.* **1506** *to* **1508** *or* **1509** *to* **1512**, *as Appropriate.*

MOD **4614** 639CN **1542** (2) The notice shall be returned immediately by airmail to the notifying administration with the reasons of the Board for this finding together with such suggestions as the Board is able to offer with a view to a satisfactory solution of the problem.

MOD **4615** 639CO **1543** (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 Nos. **1506** to **1508** or **1509** to **1512**, as appropriate, 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.

MOD **4616** 639CP **1544** (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. **1543** 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 Board is informed that the new assignment has been in use together with the frequency assignment to the station which was the basis for the unfavourable finding, for at least four months without any complaint of harmful interference having been received, provided that the earlier assignment has been brought into use within the additional period mentioned in No. **1550**. 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.

NOC **4617** 639CQ **1545** § 17. (1) *Notices Relating to Radio Astronomy Stations.*

MOD **4618** 639CR **1546** (2) A notice relating to a radio astronomy station shall be examined by the Board with respect to No. **1503** only. 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.

NOC **4619** **1547** § 18. (1) *Change in the Basic Characteristics of Assignments Already Recorded in the Master Register.*
639CS

MOD **4620** **1548** (2) A notice of a change in the basic characteristics of an assignment already recorded, as specified in Appendix **3** (except the name of the station or the name of the locality in which it is situated or the date of bringing into use), shall be examined by the Board according to No. **1503**, and, where appropriate, Nos. **1504**, **1505**, **1506** to **1508** and **1509** to **1512**, and the provisions of Nos. **1515** to **1546** inclusive shall apply. Where the change should be recorded, the recorded assignment shall be amended according to the notice.
639CT

MOD **4621** **1549** (3) However, in the case of a change in the characteristics of an assignment which is in conformity with No. **1503**, should the Board reach a favourable finding with respect to Nos. **1504**, **1505**, **1506** to **1508** and **1509** to **1512**, where appropriate, or find that the changes do 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.
639CU

ADD **4621A** **1550** (4) The projected date of bringing into use of a frequency assignment may be extended on request of the notifying administration by four months. In the case where the administration states that, due to exceptional circumstances, it needs a further extension of this period, such extension may be provided but it shall in no case exceed eighteen months from the original projected date of bringing into use.

NOC **4622** **1551** § 19. In applying the provisions 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.
639CV

NOC **4623** **1552** § 20. (1) *Recording of Frequency Assignments Notified Before Being Brought into Use.*
639CW

MOD **4624** **1553** (2) If a frequency assignment notified in advance of bringing into use has received a favourable finding by the Board with respect to No. **1503** and, where appropriate, Nos. **1504**, **1505**, **1506** to **1508** and **1509** to **1512**, it shall be entered provisionally in the Master Register with a special symbol in the Remarks Column indicating the provisional nature of that entry.
639CX

MOD **4625** **1554** (3) Within thirty days after the date of bringing into use, either as originally notified or as modified in application of No. **1550**, the notifying administration shall confirm that the frequency assignment has been brought into use. When the Board is informed that the assignment has been brought into use, the special symbol shall be deleted from the Remarks Column.
639CY

ADD **4625A** **1555** (4) If the Board does not receive this confirmation within the period referred to in No. **1554**, the entry concerned shall be cancelled. The Board shall consult the administration concerned before taking such action.

MOD **4626** **1556** (5) In the circumstances described in Nos. **1522** and **1544**, and as long as an assignment which received an unfavourable finding cannot be resubmitted with a statement relating to operation without interference, the notifying administration may ask the Board to enter the assignment provisionally in the Master Register, in
639CZ

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. **1544**, the information relating to the absence of complaint of harmful interference.

SUP **4627**
639DA

NOC **Section III. Recording of Findings in the Master Register**

NOC **4628** **1557** § 21. 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 the appropriate column. In addition, a remark indicating the reasons for any unfavourable finding shall be inserted in the Remarks Column.
639DB

NOC **Section IV. Categories of Frequency Assignments**

NOC **4629** **1558** § 22. (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.
639DC

MOD **4630** **1559** (2) If harmful interference is actually caused to the reception of any space radiocommunication station whose frequency assignment has been recorded in the Master Register as a result of a favourable finding with respect to Nos. **1503**, **1504**, **1505**, **1506** to **1508** and **1509** to **1512**, as appropriate, by the use of a frequency assignment to a space radiocommunication station subsequently recorded in the Master Register in accordance with the provisions of No. **1544**, the station using the latter frequency assignment must, upon receipt of advice thereof, immediately eliminate this harmful interference.
639DD

NOC **4631** **1560** (3) If harmful interference to the reception of any station whose assignment is in accordance with Nos. **1240**, **1352** or **1503**, as appropriate, is actually caused by the use of a frequency assignment which is not in conformity with No. **1503**, the station using the latter frequency assignment must, upon receipt of advice thereof, immediately eliminate this harmful interference.
639DE

NOC **Section V. Review of Findings**

NOC **4632** **1561** § 23. (1) The review of a finding by the Board may be undertaken:
639DF

1562 *a)* at the request of the notifying administration;

1563 *b)* at the request of any other administration interested in the question, but only on the grounds of actual harmful interference;

1564 *c)* on the initiative of the Board itself when it considers this is justified.

MOD **4633** **1565** (2) The Board, in the light of all the data at its disposal, shall review the matter, taking into account No. **1503** and, where appropriate, Nos. **1504**, **1505**, **1506** to **1508** and **1509** to **1512**, and shall render an appropriate finding, informing the notifying administration prior either to the publication of its finding or to any recording action.
639DG

MOD **4634** **1566** § 24. (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 Nos. **1506** to **1508** or **1509** to **1512**, this administration may request the Board to review the finding. Thereupon, the Board shall review the matter, having first consulted the administrations concerned.
639DH

NOC **4635** **1567** (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.
639DI

NOC **4636** **1568** (3) If the finding with regard to the probability of harmful interference remains unfavourable, no change shall be made in the original entry.
639DJ

NOC

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

ADD **4636A** **1569** § 25. The Board shall, at intervals not exceeding two years, request confirmation from the notifying administration that its assignment has been and will continue to be in regular use in accordance with its recorded characteristics.

NOC **4637** **1570** § 26. (1) Where the use of a recorded assignment to a space station is suspended for a period of eighteen months, the notifying administration shall, within this eighteen-month period, inform the Board of the date on which such use was suspended and of the date on which the assignment is to be brought back into regular use.
639DK

NOC **4638** **1571** (2) Whenever it appears to the Board, whether or not as a result of action under No. **1570**, that a recorded assignment to a space station has not been in regular use for more than eighteen months, the Board shall inquire of the notifying administration as to when the assignment is to be brought back into regular use.
639DL

NOC **4639** **1572** (3) If no reply is received within six months of action by the Board under No. **1571**, or if the reply does not confirm that the assignment to a space station is to be brought back into regular use within this six-month limit, a mark shall be applied against the entry in the Master Register. Thereafter, the assignment shall be treated in accordance with No. **1513** as one which has been established as having been out of regular use for two years.
639DM

MOD **4640** **1573** § 27. In case of permanent discontinuance of the use of any recorded frequency assignment, the notifying administration shall inform the Board within three months of such discontinuance, whereupon the entry shall be removed from the Master Register.
639DN

MOD **4641** **1574** § 28. 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, or retain the basic characteristics of the entry.
639DO

MOD **4642** **1575** § 29. If, in connection with an inquiry by the Board under No. **1574**, the notifying administration has failed to supply the Board within three months from the date of the enquiry with the necessary or pertinent information, the Board shall make suitable entries in the Remarks Column of the Master Register to indicate the situation.
639DP

NOC **Section VII. Studies and Recommendations**

NOC **4643** **1576** § 30. (1) If it is requested by any administration, 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.
639DQ

MOD **4644** **1577** (2) The Board shall thereupon prepare and forward to the administrations concerned a report containing its findings and recommendations for the solution of the problem.
639DR

ADD **4644A** **1578** (3) On receiving the Board's recommendations for the solution of the problem, an administration shall promptly acknowledge the receipt by telegram and shall subsequently indicate the action it intends to take. In cases when the Board's suggestions or recommendations are unacceptable to the administrations concerned, further efforts should be made by the Board to find an acceptable solution to the problem.

MOD **4645** **1579** § 31. 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 four months, 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.
639DS

NOC **Section VIII. Miscellaneous Provisions**

MOD **4646** **1580** § 32. (1) If it is requested by any administration, particularly by an administration of a country in need of special assistance, the Board, using such means at its disposal as are appropriate in the circumstances, shall render any assistance of a technical nature in the application of the provisions of this Article.
639DT

NOC **4647** **1581** (2) In making a request to the Board under No. **1580**, the administration shall furnish the Board with the necessary information.
639DU

MOD **4648** **1582** § 33. The Technical Standards of the Board shall be based on the relevant provisions of these Regulations and the Appendices thereto, the decisions of administrative conferences of the Union, as appropriate, the Recommendations of the CCIR, the state of the radio art and the development of new transmission techniques, account being taken of exceptional propagation conditions which may prevail in certain regions (for example, particularly pronounced ducting).
639DV

MOD **4649** **1583** § 34. The Board shall inform all administrations of its findings and reasons therefor, together with all changes made to the Master Register, through its weekly circular. Such information shall be published within forty-five days of the date of publication of the complete notice in the weekly circular referred to in No. **1235**. When the Board is not in a position to comply with the time-limit referred to above it shall, as soon as possible, so inform the administration concerned giving the reasons therefor.
639DW

MOD **4650** **1584** § 35. In case a Member avails itself of the provisions of Article 50 of the Convention, the Board shall, on request, make its records available for such proceedings as are prescribed in the Convention for the settlement of international disputes.
639DX

1585 to **1609** NOT allocated.

ADD N13A

ARTICLE 14

Supplementary Procedure to Be Applied in Cases Where a Footnote in the Table of Frequency Allocations Requires an Agreement with an Administration

ADD 4730 1610 § 1. (1) Before an administration notifies to the Board a frequency assignment in accordance with any footnote in the Table of Frequency Allocations which makes reference to this Article, it shall obtain the agreement of any other administration whose services may be affected. In the case of a footnote concerning a space radiocommunication service, this procedure may be initiated before or at the same time as the application of the provisions of Article **11**.

ADD 4731 1611 (2) The administration seeking such an agreement shall, sufficiently early before the planned date of putting the assignment into service, send to the Board:

ADD 4732 1612 *a)* for terrestrial radiocommunication services, the basic characteristics of the planned assignment listed in the appropriate section of Appendix **1**;

ADD 4733 1613 *b)* for space radiocommunication services, the characteristics of the planned assignment listed in Appendix **4**, or Appendix **3** when the latter are available [1].

ADD 4734 1614 (3) The administration seeking agreement may, when sending its information to the Board, also identify those other administrations that are believed to have services which may be affected.

ADD 4735 1615 § 2. (1) The Board shall publish the information sent under Nos. **1611** to **1614** in a special section of its weekly circular [2] and shall also, when the weekly circular contains such information, so advise administrations by circular telegram.

ADD 4736 1616 (2) The Board shall endeavour to identify administrations whose services may be affected, and shall include the names of those administrations it is able to identify in the special section of its weekly circular and in the circular telegram mentioned under No. **1615**.

ADD 4737 1617 § 3. (1) Any administration, upon receipt of this information and believing that the planned assignment may affect its services operating in accordance with the Table of Frequency Allocations or planned to be so operated, shall, within four months of the date of the relevant weekly circular, so inform the administration requesting agreement and the Board.

ADD 4733.1 1613.1 [1] The information in Appendix **3** or **4** submitted to the Board under Article **11** may also be used for the purpose of this procedure.

ADD 4735.1 1615.1 [2] In the case of a space radiocommunication service, the administration submitting the information listed in Appendix **3** or **4** in accordance with the provisions of Article **11** may also ask the Board to apply this information in pursuance of this procedure and the Board shall indicate in the appropriate special section of its weekly circular that agreement under this Article is also sought.

ADD **4738** **1618** (2) Any administration not having commented within the period specified in No. **1617** shall be regarded as unaffected by the planned assignment.

ADD **4739** **1619** (3) Any administration responding under No. **1617** to a request for agreement shall, if possible at the same time, give at least the relevant basic characteristics of its stations whose services may be affected, and shall make such suggestions as it may be able to offer with a view to a satisfactory solution of the problem. A copy of all this information shall simultaneously be sent to the Board.

ADD **4740** **1620** § 4. The administration requesting agreement under Nos. **1611** to **1613** and the administration responding under No. **1617** shall together [1] make every possible effort to resolve the problem before the date of bringing into use of the planned assignment.

ADD **4741** **1621** § 5. Either administration may request from the other additional information which may be required to resolve the problem. A copy of such a request and of any information given in response shall be sent to the Board.

ADD **4742** **1622** § 6. Either administration may request the assistance of the Board in an attempt to resolve the problem.

ADD **4743** **1623** § 7. Following resolution of the problem, the administration which sought agreement shall inform the Board to that effect.

ADD **4744** **1624** § 8. An administration having sought agreement under Nos. **1611** to **1613** and having received no response under No. **1617** from any administration shall inform the Board thereof and shall then be regarded as having successfully completed the procedure of this Article.

ADD **4745** **1625** § 9. An administration having sought agreement under Nos. **1611** to **1613**, having received one or more responses under No. **1617** and having informed the Board under No. **1623** of the resolution of the problem, shall be regarded as having obtained agreement in accordance with the relevant footnote in the Table of Frequency Allocations.

ADD **4746** **1626** § 10. The Board, following receipt of advice under No. **1624** or **1625** as to the completion of this procedure, shall publish this information in the appropriate special section of the weekly circular.

ADD **4740.1** **1620.1** [1] In the absence of appropriate CCIR Recommendations or IFRB Technical Standards, the technical criteria to be used in such a case shall be agreed between the administrations concerned.

ADD **4747** **1627** § 11. An administration seeking agreement or an administration with which agreement is sought or any other administration whose services might be affected may request the assistance of the Board in applying any of the steps of this procedure, particularly in:

ADD **4748** **1628** *a)* identifying administrations whose services might be affected;

ADD **4749** **1629** *b)* evaluating the levels of interference;

ADD **4750** **1630** *c)* defining, with the agreement of the administrations concerned, the technical criteria to be used [1].

1631 to **1655** NOT allocated.

ADD **4750.1** **1630.1** [1] In the absence of appropriate CCIR Recommendations or IFRB Technical Standards, the technical criteria to be used in such a case shall be agreed between the administrations concerned.

ADD **N13B** ARTICLE 15

ADD **Coordination, Notification and Recording of Frequency Assignments to Stations of the Broadcasting-Satellite Service in the Frequency Bands 11.7 - 12.2 GHz (in Regions 2 and 3) and 11.7 - 12.5 GHz (in Region 1) and to the Other Services to Which These Bands Are Allocated, so Far as Their Relationship to the Broadcasting-Satellite Service in These Bands Is Concerned**

ADD **4750A** **1656** The provisions and associated Plan for the broadcasting-satellite service in the frequency bands 11.7 - 12.2 GHz (in Regions 2 and 3) and 11.7 - 12.5 GHz (in Region 1) adopted by the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977, as contained in Appendix **30** shall apply to the assignment and use of frequencies by stations of the broadcasting-satellite service in these bands and to the stations of other services to which these bands are allocated so far as their relationship to the broadcasting-satellite service in these bands is concerned.

1657 to **1681** NOT allocated.

N14/9B

ARTICLE 16

Procedure for Bringing Up to Date the Frequency Allotment [1] Plan for Coast Radiotelephone Stations Operating in the Exclusive Maritime Mobile Bands Between 4 000 kHz and 23 000 kHz

(Appendix **25 Mar2**)

4751 639DY **1682** § 1. (1) Before notifying to the International Frequency Registration Board or bringing into use at any coast radiotelephone station a frequency assignment not covered by an allotment in the Frequency Allotment Plan contained in Appendix **25 Mar2**, an administration which

1683 *a)* intends to establish a coast radiotelephone station and has no allotment in the Plan, *or*

1684 *b)* intends to expand its coast radiotelephone service and requires an additional allotment,

shall send the information listed in Appendix **5** to the Board not earlier than two years in the case of No. **1683**, or not earlier than six months in the case of No. **1684**, before the projected date of bringing into service of the planned coast radiotelephone service but in any case not later than three months before that date.

(MOD) 4752 639DZ **1685** (2) The Board shall publish the information sent under Nos. **1682** to **1684** in a special section of the IFRB weekly circular together with such apparent incompatibilities between the proposed allotment which is the subject of the publication and any other existing or proposed allotments which the Board can identify. The Board shall also indicate any information of a technical nature and make such suggestions as it may be able to offer with a view to avoiding these incompatibilities.

4753 639EA **1686** (3) If it is requested by any administration, particularly by an administration of a country in need of special assistance, and if the circumstances appear to warrant, the Board, using such means at its disposal as are appropriate in the circumstances, shall render the following assistance:

1687 *a)* indication of a suitable channel or channels for the service projected by the administration before that administration submits the information for publication;

1688 *b)* carry out the procedure for which provision is made in No. **1690**;

1689 *c)* any other assistance of a technical nature for completion of the procedure in the present Article.

4754 639EB **1690** § 2. (1) At the same time as sending the information listed in Appendix **5** to the Board for publication, an administration shall seek the agreement of the administrations having an allotment in the same channel as the proposed allotment. A copy of the relevant correspondence shall be sent to the Board.

A.16.1 [1] See No. **18**.

(MOD) 4755 639EC 1691 (2) Any administration which, upon examining the information published by the Board, considers that its existing services or services planned within the time-limits mentioned in Nos. **1682** to **1684** would be affected, shall have the right to be brought into the procedure undertaken pursuant to No. **1690**.

4756 639ED 1692 § 3. (1) An administration which receives a request under No. **1690** shall acknowledge receipt thereof immediately by telegram. If no acknowledgement is received within thirty days after the date of the IFRB weekly circular containing the information published under No. **1685**, the administration seeking agreement shall dispatch a telegram requesting acknowledgement, to which the receiving administration shall reply within a further period of fifteen days.

(MOD) 4757 639EE 1693 (2) Upon receipt of the request under No. **1690**, an administration shall, having regard to the proposed date of bringing into use of the assignment(s) corresponding to the allotment for which agreement was requested, promptly examine the matter with regard to harmful interference which would be caused to the services rendered by its coast station(s):

1694 *a)* using a frequency assignment corresponding to an allotment appearing in the Plan; *or*

1695 *b)* to be brought into service in conformity with an allotment appearing in the Plan within the time-limit prescribed in No. **1720**; *or*

1696 *c)* to be brought into service within the time-limit prescribed in No. **1720**, in conformity with a proposed allotment for which the information has been submitted to the Board under Nos. **1682** to **1684** for publication under No. **1685**.

(MOD) 4758 639EF 1697 (3) Any administration which receives a request under No. **1690** and which considers that the proposed use of a channel will not cause harmful interference to the services rendered by its coast stations as outlined in Nos. **1693** to **1696** shall, as soon as possible and not later than two months from the date of the relevant IFRB weekly circular, notify its agreement to the administration seeking agreement.

(MOD) 4759 639EG 1698 (4) Any administration which receives a request under No. **1690** and which considers that the proposed use of a channel may cause harmful interference to the services rendered by its coast stations as outlined in Nos. **1693** to **1696** shall inform the administration concerned of the reasons for its disagreement as soon as possible and not later than two months from the date of the relevant IFRB weekly circular and shall furnish any information and suggestions with a view to reaching a satisfactory solution of the problem. The administration seeking agreement shall try, as far as possible, to adjust its requirements according to the comments received.

4760 639EH 1699 (5) In a case where the administration seeking agreement has no allotment in the band concerned, the administration(s) with which agreement is sought shall, in consultation with the requesting administration, explore all means of meeting the requirement of the requesting administration.

(MOD) 4761 639EI 1700 § 4. (1) An administration seeking agreement may request the Board to endeavour to obtain such agreement in those cases where:

1701 *a)* an administration to which a request has been sent under No. **1690** fails to acknowledge receipt of the request within forty-five days from the date of the IFRB weekly circular containing the pertinent information;

1702 *b)* an administration has acknowledged receipt under No. **1692** but fails to give a decision within two months from the date of the IFRB weekly circular containing the pertinent information;

1703 *c)* there is disagreement between the administration seeking agreement and an administration with which agreement is sought as to the sharing possibilities;

1704 *d)* it is not possible to reach agreement for any other reason.

4762 639EJ 1705 (2) Either the administration seeking agreement or an administration with which agreement is sought, or the Board, may request additional information which it may require in studying any problem relating to this agreement.

4763 639EK 1706 (3) Where the Board receives a request under No. **1701**, it shall forthwith send a telegram to the administration concerned requesting immediate acknowledgement.

4764 639EL 1707 (4) Where the Board receives an acknowledgement following its action under No. **1706**, or where the Board receives a request under No. **1702**, it shall forthwith send a telegram to the administration concerned requesting an early decision in the matter.

4765 639EM 1708 (5) Where the Board receives a request under No. **1704**, it shall endeavour to obtain agreement to which reference is made in No. **1690**. Where the Board receives from an administration no acknowledgement to the request it made under the terms of No. **1690** for agreement within the period specified in No. **1692**, it shall act, in so far as this administration is concerned, in accordance with No. **1706**.

4766 639EN 1709 (6) Where an administration fails to reply within fifteen days of the Board's telegram requesting an acknowledgement sent under No. **1706**, or fails to give a decision in the matter within thirty days of dispatch of the Board's telegram of request under No. **1707**, it shall be deemed that the administration with which agreement was sought has undertaken, once the projected allotment is included in the Plan:

1710 *a)* that no complaint will be made in respect of any harmful interference which may be caused to the services rendered by its coast radiotelephone stations by the use of assignments in accordance with the allotment for which agreement was requested; *and*

1711 *b)* that its existing or projected coast radiotelephone stations will not cause harmful interference to the use of assignments in conformity with the allotment for which agreement was requested.

1712 (7) The Board shall enter a remark in the Remarks Column of the Master Register for each assignment covered by the allotment in question, indicating that this assignment does not benefit from the provisions of No. **1416** of the present Regulations with respect to assignments of the administration seeking the agreement.

(MOD) **4767** 639EO **1713** (8) The Board shall examine the proposed allotment with respect to the probability of harmful interference which it may receive from an allotment in the Plan of the administration which failed to reply or which indicated disagreement without supplying the reasons; if the finding is favourable and where the application of the present procedure with respect to the other administrations concerned permits, the Board shall enter the proposed allotment in the Plan.

(MOD) **4768** 639EP **1714** (9) In the event of an unfavourable finding resulting, the Board shall inform the administration concerned of the result of the examination; if the administration insists, and where the application of the present procedure with respect to the other administrations concerned permits, the Board shall enter the proposed allotment in the Plan.

4769 639EQ **1715** (10) Where the Board receives a request under No. **1703**, it shall assess the sharing possibilities and it shall inform the administrations concerned of the results obtained.

(MOD) **4770** 639ER **1716** (11) In the case of continuing disagreement, the Board shall examine the proposed allotment from the point of view of harmful interference which may be caused to the services rendered by the stations of the administration having declared its disagreement. In the case where the Board's finding is favourable and where the application of the present procedure with respect to the other administrations concerned permits, it shall enter the proposed allotment in the Plan.

4771 639ES **1717** (12) If, after the examination under No. **1716**, the Board reaches an unfavourable finding, it shall then examine the proposed allotment from the point of view of harmful interference which may be caused to the services on all the various channels in the band. Should the Board reach an unfavourable finding in each case, it shall determine the channel which is the least affected and, if so requested by the administration seeking agreement, it shall enter the proposed allotment in this channel in the Plan.

(MOD) **4772** 639ET **1718** § 5. An administration seeking agreement for a proposed allotment shall inform the Board of the results of its consultations with the administrations concerned. When the Board finds that the procedure prescribed in this Article has been applied with respect to each administration concerned, the Board shall publish its finding in a special section of the IFRB weekly circular and, as the case may be, bring the Plan up to date.

(MOD) **4773** 639EU **1719** § 6. Notwithstanding the above provisions and if the circumstances justify, an administration may, in exceptional circumstances, notify to the Board for provisional entry in the Master Register an assignment which is not covered by an allotment in the Plan. That administration shall, however, begin forthwith the procedure prescribed in this Article.

4774 **1720** § 7. When, within twelve months from the date of the inclusion of the
639EV allotment in the Plan, the Board does not receive a notice of a first frequency assignment corresponding to this allotment, or where the first notified frequency assignment has not been brought into use within the time-limits prescribed in the present Regulations, before proceeding with the deletion of the allotment from the Plan, it shall consult with the administration concerned on the appropriateness of such a deletion and of publishing this information in connection with bringing the Plan up to date. However, in the case where the Board, in the light of a request from the administration concerned, finds that exceptional circumstances warrant an extension of this period, the extension shall in no case exceed six months, except in the case of an administration which has no coast station in service in which case the period may be extended to eighteen months.

(MOD) **4775** **1721** § 8. Any administration in whose name an allotment is shown in the Plan,
639EW and which has a need to replace this allotment by another allotment in the same frequency band with a view to improving its service, shall apply the procedure described in this Article. When that administration arrives at a positive result in applying this procedure, the Board, at its request, shall replace the existing allotment in the Plan by the proposed allotment.

4776 **1722** § 9. The Board shall maintain an up-to-date master copy of the Plan
639EX resulting from the application of this procedure. It shall prepare in a suitable form, for publication by the Secretary-General, the whole or part of the revised version of the Plan as and when the circumstances justify and in any case once annually.

1723
to NOT allocated.
1747

Procedure for the Bands Allocated Exclusively to the Broadcasting Service Between 5 950 kHz and 26 100 kHz

Section I. Submission of Seasonal High Frequency Broadcasting Schedules

(MOD) **4877** **1748** 640 § 1. Periodically, administrations shall submit to the International Frequency Registration Board the projected seasonal schedules of their broadcasting stations in the bands allocated exclusively to the broadcasting service between 5 950 kHz and 26 100 kHz. These schedules shall cover each of the following seasonal propagation periods and shall be implemented at 0100 UTC on the first Sunday of the period concerned:

March Schedule	– March and April
May Schedule	– May, June, July and August
September Schedule	– September and October
November Schedule	– November, December, January and February.

4878 **1749** 641 § 2. The first schedules became effective on 4 September 1960 for the September-October period 1960. The closure dates for the receipt of schedules are set by the Board in order to permit the advance period to be reduced gradually to the minimum found practicable by the Board. Those assignments in a schedule the characteristics of which are not expected to change may be submitted up to a limit of one year in advance. Each such assignment shall be confirmed by the closing date for the submission of the schedules for the respective seasonal periods. The Board shall take appropriate steps to send reminders to administrations in carrying out this procedure.

4879 **1750** 642 § 3. Two or more administrations may submit coordinated schedules containing their agreed projected frequency usage.

4880 **1751** 643 § 4. The frequencies shown in the schedules shall be frequencies that actually will be used for that particular seasonal period and their number should be the minimum necessary to provide satisfactory reception of the particular programme in each of the areas for which it is intended. Each administration should prepare its schedule from season to season by using to the maximum extent practicable the same frequencies in each band as were used in previous schedules.

4881 **1752** 644 § 5. The schedules shall be submitted in the form prescribed in Appendix **2**, which specifies the data to be furnished for each assignment.

4882 **1753** 645 § 6. The frequencies included in the schedules shall be in conformity with No. **1240** of these Regulations. To the extent practicable, the frequencies selected should correspond to listings in the Master International Frequency Register. Those administrations not having suitable listings in the Master Register may suggest any frequency considered appropriate, or may, if they so desire, indicate only the frequency band.

Section II. Preliminary Examination and Preparation of Tentative High Frequency Broadcasting Schedule

(MOD) **4883** 646 **1754** § 7. (1) On receipt of the seasonal schedules, including confirmation in appropriate cases of the continuing validity of assignments included in preceding schedules, the Board shall incorporate the proposed frequency usage of all administrations into a combined schedule and make the appropriate preliminary examination required to prepare the Tentative High Frequency Broadcasting Schedule (hereafter called the *Tentative Schedule*) for the particular seasonal period. This Tentative Schedule shall include:

1755 *a)* all specific frequency assignments in cases where no alternatives were given by the administration concerned;

1756 *b)* the selections made by the Board in cases where alternatives were given by the administration concerned;

1757 *c)* frequencies suggested by the Board in respect of all services for which no specific frequency was included in the submitted schedule, such suggestions to be made with due overall consideration for No. **1759**, for compatibility within the Tentative Schedule, and for possible changes to the projected frequency usage which might be desirable to achieve more equitable satisfaction of administrations' requirements;

1758 *d)* such apparent incompatibilities between frequency assignments which the Board can indicate within the time available.

(MOD) **4884** 647 **1759** (2) At the request of administrations, particularly those of countries in need of special assistance and which have no suitable listings in the Master Register, the Board shall give special consideration to the requirements of those administrations in preparing the Tentative Schedule.

4885 648 **1760** (3) The Board shall begin the work outlined in Nos. **1754** to **1758** early enough for the Tentative Schedule to be issued to administrations not later than two months before the date when the particular seasonal period begins.

Section III. Technical Examination and Revision of the Tentative Schedule

(MOD) **4886** 649 **1761** § 8. (1) The Board shall continue its technical examination of the Tentative Schedule with a view not only to identifying further incompatibilities between frequency assignments which become apparent in the technical examination and correcting them where possible, but also to improving the technical aspects of the Tentative Schedule by amendments to be agreed upon in consultation with the administrations concerned.

4887 650 **1762** (2) In preparing its recommendations to administrations, the Board shall take into account monitoring observations and all other available data. However, when actual frequency usage is apparently not in conformity with the assignments in a submitted schedule, the Board shall seek from the administration concerned confirmation of this information.

4888 651 **1763** (3) Administrations, having considered the Tentative Schedule together with such recommendations as may have been furnished by the Board, should notify, as soon as possible, preferably before the date of commencement of the seasonal period concerned, any amendments to the Tentative Schedule which are intended for implementation.

4889 652 **1764** (4) Changes in the assignments of broadcasting stations which are implemented after the date on which the seasonal period begins shall be notified to the Board as soon as they can be forecast.

(MOD) **4890** 653 **1765** (5) For changes notified in accordance with Nos. **1763** and **1764**, the Board shall apply the same procedure as that specified in Nos. **1759**, **1761** and **1762**. Such revisions to the Tentative Schedule as result from the application of the procedure in this Section shall be published in the IFRB weekly circulars in order that administrations can keep up to date their copies of the Tentative Schedule.

Section IV. Publication of the High Frequency Broadcasting Schedule

4891 654 **1766** § 9. After the end of each seasonal period, the Board shall publish the High Frequency Broadcasting Schedule, which shall reflect the Tentative Schedule as amended by all the changes notified to the Board since the publication of the Tentative Schedule. This High Frequency Broadcasting Schedule shall indicate by appropriate symbols:

1767 *a)* those assignments which administrations found in practice to be unsatisfactory and so notified to the Board;

1768 *b)* those assignments not included in the Tentative Schedule which were taken into account by the Board in the examination under Section III of this Article.

Section V. Annual High Frequency Broadcasting Frequency List

4892 655 **1769** § 10. A High Frequency Broadcasting Frequency List shall be published at the end of the first year of implementation of the procedure prescribed in this Article, including all frequency assignments which appear in the High Frequency Broadcasting Schedules for the year concerned. This list shall be issued as a supplement to the International Frequency List, and in the same general format. It shall also include symbols to indicate those assignments which were notified to the Board as being unsatisfactory in practice, as well as symbols to indicate the seasonal periods during which each assignment was used. A recapitulative list shall be issued annually thereafter.

Section VI. Miscellaneous Provisions

4893 656 **1770** § 11. The technical standards used by the Board when applying the provisions of this Article should be based, not only on the factors listed in No. **1454**, but also on past experience in broadcasting planning and on the experience gained by the Board in the application of the provisions of this Article.

4894 657 **1771** § 12. With a view to the ultimate evolution of compatible technical plans for the frequency bands concerned, the Board shall take all necessary steps to carry out engineering studies on a long-term basis. For this purpose, the Board shall use all information made available to it on frequency usage in the application of the procedure prescribed in this Article. The Board shall also keep administrations informed of the progress and results of such studies at regular intervals.

4895 658 **1772** § 13. In applying the provisions of Article **22** of these Regulations, problems of harmful interference which may arise in frequency usage in the bands concerned shall be resolved by administrations by exercising the utmost goodwill and mutual cooperation and by giving due consideration to all the relevant technical and operational factors involved.

1773 to **1797** NOT allocated.

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CHAPTER V

NOC

Measures Against Interference. Tests

N16

ARTICLE 18

NOC

Interference

NOC 4996 (676) 1798 § 1. Administrations shall cooperate in the detection and elimination of harmful interference, employing where appropriate the facilities described in Article **20** and the procedures detailed in Article **22**.

NOC

Section I. General Interference

MOD 4997 (693) 1799 § 2. All stations are forbidden to carry out:

1800 *a)* unnecessary transmissions;

1801 *b)* the transmission of superfluous signals and correspondence;

1802 *c)* the transmission of false or misleading signals;

1803 *d)* the transmission of signals without identification (except as provided for in Article **25**).

NOC 4998 (694) 1804 § 3. All stations shall radiate only as much power as is necessary to ensure a satisfactory service.

MOD 4999 (695) 1805 § 4. In order to avoid interference:

1806 *a)* locations of transmitting stations and, where the nature of the service permits, locations of receiving stations shall be selected with particular care;

1807 *b)* radiation in and reception from unnecessary directions shall be minimized by taking the maximum practical advantage of the properties of directional antennae whenever the nature of the service permits;

1808 *c)* the choice and use of transmitters and receivers shall be in accordance with the provisions of Article **5**;

1809 *d)* the conditions specified under No. **2612** shall be fulfilled.

ADD 4999A 1810 § 5. Special consideration shall be given to avoiding interference on distress and safety frequencies and those related to distress and safety identified in Article **38**.

SUP 4997.1 (693.1)

MOD **5000** **1811** § 6. The class of emission to be employed by a station should be such as to
696 achieve minimum interference and to assure efficient spectrum utilization. In general this requires that in selecting the class of emission to meet these objectives every effort shall be made to minimize the bandwidth occupied, taking into account the operational and technical considerations of the service to be performed.

ADD **5000A** **1812** § 7. The out-of-band emissions of transmitting stations should not cause harmful interference to services which operate in adjacent bands in accordance with these Regulations and which use receivers in conformity with Nos. **301**, **309**, **310**, **311** and relevant CCIR Recommendations.

NOC **5001** **1813** § 8. If, while complying with the provisions of Article **5**, a station causes
697 harmful interference through its spurious emissions, special measures shall be taken to eliminate such interference.

MOD

Section II. Interference from Electrical Apparatus and Installations of any Kind Except Equipment Used for Industrial, Scientific and Medical Applications

MOD **5002** **1814** § 9. Administrations shall take all practicable and necessary steps to ensure
698 that the operation of electrical apparatus or installations of any kind, including power and telecommunication distribution networks, but excluding equipment used for industrial, scientific and medical applications, does not cause harmful interference to a radiocommunication service and, in particular, to a radionavigation or any other safety service operating in accordance with the provisions of these Regulations [1].

ADD

Section III. Interference from Equipment Used for Industrial, Scientific and Medical Applications

ADD **5002A** **1815** § 10. Administrations shall take all practicable and necessary steps to ensure that radiation from equipment used for industrial, scientific and medical applications is minimal and that, outside the bands designated for use by this equipment, radiation from such equipment is at a level that does not cause harmful interference to a radiocommunication service and, in particular, to a radionavigation or any other safety service operating in accordance with the provisions of these Regulations [1].

MOD

Section IV. Special Cases of Interference

MOD **5003** **1816** § 11. Administrations authorizing the use of frequencies below 9 kHz shall
699 ensure that no harmful interference is caused thereby to the services to which the bands above 9 kHz are allocated.

1817 to **1841** NOT allocated.

ADD **5002.1** **1814.1**

ADD **5002A.1** **1815.1**

[1] In this matter, administrations should be guided by the latest relevant CCIR Recommendations.

N17

ARTICLE 19

NOC

Tests

NOC **5029** 700 **1842** § 1. (1) Before authorizing tests and experiments in any station, each administration, in order to avoid harmful interference, shall prescribe the taking of all possible precautions such as the choice of frequency and of time and the reduction or, in all cases where this is possible, the suppression of radiation. Any harmful interference resulting from tests and experiments shall be eliminated with the least possible delay.

MOD **5030** 701 **1843** (2) For the identification of transmissions made during tests, adjustments or experiments, see Article **25**.

ADD **5030A** **1844** (3) In the aeronautical radionavigation service, it is undesirable, for safety reasons, to transmit the normal identification during emissions conducted to check or adjust equipment already in service. Unidentified emissions should however be restricted to a minimum.

NOC **5031** 702 **1845** (4) Signals for testing and adjustment shall be chosen in such a manner that no confusion will arise with a signal, abbreviation, etc., having a special meaning defined by these Regulations or by the International Code of Signals.

NOC **5032** 703 **1846** (5) For testing stations in the mobile service see Nos. **3766**, **3767** and **5058** to **5060**.

1847 to **1871** NOT allocated.

N18

ARTICLE 20

NOC

International Monitoring

MOD **5058** 678 **1872** § 1. To assist to the extent practicable in the implementation of these Regulations, in particular to help ensure efficient and economical use of the radio frequency spectrum and to help in the prompt elimination of harmful interference, administrations agree to continue the development of monitoring facilities and, to the extent practicable, to cooperate in the continued development of the international monitoring system.

MOD **5059** 679 **1873** § 2. The international monitoring system comprises only those monitoring stations which have been so nominated by administrations in the information sent to the Secretary-General in accordance with No. **1879**. These stations may be operated by an administration or, in accordance with an authorization granted by the appropriate administration, by a public or private enterprise, by a common monitoring service established by two or more countries, or by an international organization.

MOD **5060** 680 **1874** § 3. Administrations will, as far as they consider practicable, conduct such monitoring of both a general and a specific nature as may be required of them by the International Frequency Registration Board or by other administrations. In requesting monitoring observations, the Board and administrations should take into account the monitoring facilities set forth in the List of International Monitoring Stations (List VIII, see Article **26**), and should clearly specify both the purpose for which the observations are requested and the parameters of the requested monitoring work (including appropriate schedules). The results of such monitoring forwarded to other administrations may also be sent to the Board, if appropriate.

NOC **5061** 681 **1875** § 4. Each administration or common monitoring service established by two or more countries, or international organizations participating in the international monitoring system, shall designate a centralizing office to which all requests for monitoring information shall be addressed and through which monitoring information will be forwarded to the Board or to centralizing offices of other administrations.

NOC **5062** 682 **1876** § 5. Administrations agree that monitoring requests from international organizations not participating in the international monitoring system should be coordinated by the Board and, if appropriate, forwarded by it to administrations.

NOC **5063** 683 **1877** § 6. However, these provisions shall not affect private monitoring arrangements made for special purposes by administrations, international organizations, or public or private enterprises.

NOC **5064** 684 **1878** § 7. The technical standards recommended by the CCIR to be observed by monitoring stations shall be recognized by the Board as the optimum practicable technical standards for monitoring stations participating in the international

monitoring system. However, to meet some needs for monitoring data, stations observing lower technical standards may participate in the international monitoring system at the discretion of their administrations.

MOD **5065** 685 **1879** § 8. Administrations having determined whether the monitoring stations meet adequate technical standards, shall notify to the Secretary-General pertinent information on the centralizing office and on the stations they wish to have included in List VIII, clearly identifying those stations which may participate in the international monitoring system (see Article **26** and Appendix **9**).

NOC **5066** 686 **1880** § 9. (1) Results of measurements forwarded to the Board or other administrations shall indicate the estimated accuracy obtained at the time the measurements were made.

NOC **5067** 687 **1881** (2) Where the results supplied by any monitoring station appear to be doubtful or insufficient for its purposes, the Board shall advise the administration or international organization concerned giving the appropriate details.

NOC **5068** 688 **1882** § 10. When rapid action is required, communications between the Board and centralizing offices should be transmitted by the most expeditious means available.

MOD **5069** 689 **1883** § 11. Administrations shall make every effort to arrange for monitoring observations (see Appendix **21**) to be submitted to the Board as soon as possible.

NOC **5070** 690 **1884** § 12. Centralizing offices may request the help of other centralizing offices in order to implement the provisions of this Article and of Article **22**.

MOD **5071** 691 **1885** § 13. The Board shall record the results supplied by the monitoring stations participating in the international monitoring system, and shall prepare periodically, for publication by the Secretary-General, summaries of the useful monitoring data received by it including a list of the stations contributing the data.

ADD **5071A** **1886** § 14. When an administration, in supplying monitoring observations from one of its monitoring stations taking part in the international monitoring system, states to the Board that a clearly identified emission is not in conformity with these Regulations, the Board shall draw the attention of the administration concerned to those observations.

SUP **5072** 692 (included in **5071**)

1887 to **1914** NOT allocated.

N19/16 ARTICLE 21

Reports of Infringements

NOC **5098** **1915** § 1. Infringements of the Convention or Radio Regulations shall be reported
719 to their respective administrations by the control organization, stations or inspectors detecting them. For this purpose they shall use forms similar to the specimen given in Appendix **22.**

NOC **5099** **1916** § 2. Representations relating to any serious infringement committed by a
720 station shall be made to the administration of the country having jurisdiction over the station, by the administrations which detect it.

(MOD) **5100** **1917** § 3. If an administration has information of an infringement of the Conven-
721 tion or Radio Regulations, committed by a station over which it may exercise authority, it shall ascertain the facts, fix the responsibility and take the necessary action.

1918 to **1942** NOT allocated.

N20/15

ARTICLE 22

NOC

Procedure in a Case of Harmful Interference

(MOD) **5126** 704 **1943** § 1. It is essential that Members exercise the utmost goodwill and mutual assistance in the application of the provisions of Article 35 of the Convention and of this Article to the settlement of problems of harmful interference.

(MOD) **5127** 705 **1944** § 2. In the settlement of these problems, due consideration shall be given to all factors involved, including the relevant technical and operating factors, such as: adjustment of frequencies, characteristics of transmitting and receiving antennae, time sharing, change of channels within multichannel transmissions.

(MOD) **5128** 706 **1945** § 3. When a case of such harmful interference is reported by a receiving station, it shall give to the transmitting station whose service is being interfered with all possible information which will assist in determining the source and characteristics of the interference.

MOD **5129** 707 **1946** § 4. Where practicable, and subject to agreement by administrations concerned, the case of harmful interference may be dealt with directly by their specially designated monitoring stations or by direct coordination between their operating organizations.

ADD **5129A** **1947** § 5. For the purpose of this Article, the term "administration" may include the centralizing office designated by the administration, in accordance with No. **1875**.

MOD **5130** 708 **1948** § 6. If a case of harmful interference so justifies, the administration having jurisdiction over the receiving station experiencing the interference shall inform the administration having jurisdiction over the transmitting station whose service is being interfered with, giving all possible information.

MOD **5131** 709 **1949** § 7. If further observations and measurements are necessary to determine the source and characteristics of and to establish the responsibility for the harmful interference, the administration having jurisdiction over the transmitting station whose service is being interfered with may seek the cooperation of other administrations, particularly of the administration having jurisdiction over the receiving station experiencing the interference, or of other organizations.

MOD **5132** 710 **1950** § 8. Having determined the source and characteristics of the harmful interference, the administration having jurisdiction over the transmitting station whose service is being interfered with shall inform the administration having jurisdiction over the interfering station, giving all useful information in order that this administration may take such steps as may be necessary to eliminate the interference.

MOD **5133** 711 **1951** § 9. When a safety service suffers harmful interference the administration having jurisdiction over the receiving station experiencing the interference may also approach directly the administration having jurisdiction over the interfering station. The same procedure may also be followed in other cases with the prior approval of the administration having jurisdiction over the transmitting station whose service is being interfered with.

ADD **5133A** **1952** § 10. An administration receiving a communication to the effect that one of its stations is causing harmful interference to a safety service shall promptly investigate the matter and take any necessary remedial action.

MOD **5134** **1953** § 11. When the service rendered by an earth station suffers harmful interference, the administration having jurisdiction over the receiving station experiencing such interference may also approach directly the administration having jurisdiction over the interfering station.
711A

ADD **5134A** **1954** § 12. On being informed that a station over which it has jurisdiction is believed to have been the cause of harmful interference, an administration shall, as soon as possible, acknowledge receipt of that information by telegram. Such acknowledgement shall not constitute an acceptance of responsibility.

MOD **5135** **1955** § 13. When cases of harmful interference occur as a result of emissions from space stations, the administrations having jurisdiction over these interfering stations shall, upon request from the administration having jurisdiction over the station experiencing the interference, furnish current ephemeral data necessary to allow determination of the positions of the space stations when not otherwise known.
711B

MOD **5136** **1956** § 14. In cases of harmful interference where rapid action is required, communications between administrations shall be transmitted by the quickest means available and, subject to prior authorisation by the administrations concerned in such cases, information may be exchanged directly between specially designated stations of the international monitoring system.
712

ADD **5136A** **1957** § 15. Recognizing that transmissions on the distress and safety frequencies (see Article **38**) require absolute international protection and that the elimination of harmful interference to such transmissions is imperative, administrations undertake to act immediately when their attention is drawn to any such harmful interference.

MOD **5137** **1958** § 16. Full particulars relating to harmful interference shall, whenever possible, be given in the form indicated in Appendix **23**.
713

MOD **5138** **1959** § 17. If the harmful interference persists in spite of the action taken in accordance with the procedures outlined above, the administration having jurisdiction over the transmitting station whose service is being interfered with may address to the administration having jurisdiction over the interfering station a report of irregularity or infraction in accordance with the provisions of Article **21**.
714

MOD **5139** **1960** § 18. If there is a specialized international organization for a particular service, reports of irregularities and of infractions relating to harmful interference caused or suffered by stations in this service may be addressed to such organization at the same time as to the administration concerned.
715

NOC **5140** **1961** § 19. (1) If it is considered necessary, and particularly if the steps taken in accordance with the procedures described above have not produced satisfactory results, the administration concerned shall forward details of the case to the International Frequency Registration Board for its information.
716

(MOD) **5141** 717 **1962** (2) In such a case, the administration concerned may also request the Board to act in accordance with the provisions of Sections VII and VIII of Article **12** and Sections VII and VIII of Article **13**; but it shall then supply the Board with the full facts of the case, including all the technical and operational details and copies of the correspondence.

SUP **5142** 718

ADD **5143** **1963** § 20. (1) In the case where an administration has difficulty in identifying a source of harmful interference and urgently wishes to seek the assistance of the Board, in a case affecting an assignment selected by the Board in response to a request under No. **1218**, it shall promptly inform the Board.

ADD **5144** **1964** (2) On receipt of this information, the Board shall immediately request the cooperation of appropriate administrations or specially designated stations of the international monitoring system that may be able to help in identifying the source of harmful interference.

ADD **5145** **1965** (3) The Board shall consolidate all reports received in response to requests under No. **1964** and, using such other information as it has available, shall promptly attempt to identify the source of harmful interference.

ADD **5146** **1966** (4) The Board shall thereafter forward its conclusions and recommendations by telegram to the administration reporting the case of harmful interference. These shall also be forwarded by telegram to the administration believed to be responsible for the source of harmful interference, together with a request for prompt action.

1967 to **1991** NOT allocated.

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CHAPTER VI

NOC

Administrative Provisions for Stations

N21/17

ARTICLE 23

NOC

Secrecy

MOD **5193** 722 **1992** In the application of the appropriate provisions of the Convention, administrations bind themselves to take the necessary measures to prohibit and prevent:

NOC **5194** 723 **1993** *a)* the unauthorized interception of radiocommunications not intended for the general use of the public;

NOC **5195** 724 **1994** *b)* the divulgence of the contents, simple disclosure of the existence, publication or any use whatever, without authorization of information of any nature whatever obtained by the interception of the radiocommunications mentioned in No. **1993**.

1995 to **2019** NOT allocated.

N22/18

ARTICLE 24

NOC

Licences

MOD **5221** 725 **2020** § 1. (1) No transmitting station may be established or operated by a private person or by any enterprise without a licence issued in an appropriate form and in conformity with the provisions of these Regulations by the government of the country to which the station in question is subject. (However, see Nos. **2021**, **2027** and **2030**).

MOD **5222** 726 **2021** (2) However, the government of a country may conclude with the government of one or more neighbouring countries a special agreement concerning one or several stations of its broadcasting service or of its land mobile services, operating on frequencies above 41 MHz, situated in the territory of a neighbouring country and intended to improve national coverage. This agreement, which shall be compatible with the provisions of the present Regulations as well as of those regional agreements to which the countries concerned are signatories, may allow exceptions to the provisions of No. **2020** and shall be communicated to the Secretary-General in order that it may be brought to the notice of administrations for their information.

NOC **5223** 727 **2022** (3) Mobile stations which are registered in a territory or group of territories which does not have full responsibility for its international relations may be considered, in so far as the issue of licences is concerned, as subject to the authority of that territory or group of territories.

MOD **5224** 728 **2023** § 2. The holder of a licence is required to preserve the secrecy of telecommunications, as provided in the relevant provisions of the Convention. Moreover, the licence shall mention, specifically or by reference, that if the station includes a receiver, the interception of radiocommunication correspondence, other than that which the station is authorized to receive, is forbidden, and that in the case where such correspondence is involuntarily received, it shall not be reproduced, nor communicated to third parties, nor used for any purpose, and even its existence shall not be disclosed.

MOD **5225** 729 **2024** § 3. To facilitate the verification of licences issued to mobile stations, there shall be added, when necessary, to the text written in the national language, a translation of the text in one of the working languages of the Union.

MOD **5226** 730 **2025** § 4. (1) The government which issues a licence to a mobile station shall mention therein in clear form the particulars of the station, including its name, call sign and, where appropriate, the public correspondence category, as well as the general characteristics of the installation.

MOD **5227** 731 **2026** (2) For land mobile stations, including stations consisting only of one or more receivers, a clause shall be included in the licence, specifically or by reference, under which the operation of these stations shall be forbidden in countries other than the country in which the licence is issued, except as may be provided by special agreement between the governments of the countries concerned.

NOC **5228** 732 **2027** § 5. (1) In the case of a new registration of a ship or aircraft in circumstances where delay is likely to occur in the issue of a licence by the country in which it will be registered, the administration of the country from which the mobile station wishes to make its voyage or flight may, at the request of the operating company, issue a certificate to the effect that the station complies with these Regulations. This certificate, drawn up in a form determined by the issuing administration, shall give the particulars mentioned in No. **2025** and shall be valid only for the voyage or flight to the country in which the registration of the ship or aircraft will be effected, or for a period of three months, whichever is the lesser.

ADD **5228A** (became **5230A**)

NOC **5229** 733 **2028** (2) The administration issuing the certificate shall inform the administration responsible for issuing the licence of the action taken.

NOC **5230** 734 **2029** (3) The holder of the certificate shall comply with the provisions of these Regulations applicable to licence holders.

ADD **5230A** **2030** § 6. In the case of hire, lease or interchange of aircraft, the administration having authority over the aircraft operator receiving an aircraft under such an arrangement may, by agreement with the administration of the country in which the aircraft is registered, issue a licence in conformity with that specified in No. **2025** as a temporary substitute for the original licence.

2031 to **2054** NOT allocated.

N23

ARTICLE 25

Identification of Stations

Section I. General Provisions

ADD **5330** **2055** § 1. All transmissions shall be capable of being identified either by identification signals or by other means [1].

MOD **5331** **2056** § 2. (1) All transmissions with false or misleading identification are prohibited.
735

ADD **5331A** **2057** (2) Where practicable and in appropriate services, identification signals should be automatically transmitted in accordance with relevant CCIR Recommendations.

ADD **5331B** **2058** (3) All transmissions in the following services should, except as provided in Nos. **2066** to **2068**, carry identification signals:

2059 *a)* amateur service;

2060 *b)* broadcasting service;

2061 *c)* fixed service in the bands below 28 000 kHz;

2062 *d)* mobile service;

2063 *e)* standard frequency and time signal service.

ADD **5331C** **2064** (4) All operational transmissions by radiobeacons shall carry identification signals. However, it is recognized that, for radiobeacons and for certain other radionavigation services that normally carry identification signals, during periods of malfunction or other non-operational service the deliberate removal of identification signals is an agreed means of warning users that the transmissions cannot safely be used for navigational purposes.

ADD **5331D** **2065** (5) When identification signals are transmitted they shall comply with the provisions of this Article.

MOD **5332** **2066** (6) However, the requirements for certain transmissions to carry identification signals need not apply to:
736

2067 *a)* survival craft stations when transmitting distress signals automatically;

2068 *b)* emergency position-indicating radiobeacons.

ADD **5330.1** **2055.1** [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.

SUP **5331.1**
735.1

MOD 5333 737 **2069** § 3. In transmissions carrying identification signals a station shall be identified by a call sign, by a maritime mobile service identity in accordance with Appendix **43** [1] or by other recognized means of identification which may be one or more of the following: name of station, location of station, operating agency, official registration mark, flight identification number, selective call number or signal, selective call identification number or signal, characteristic signal, characteristic of emission or other clearly distinguishing features readily recognized internationally.

SUP **5334**

MOD **5335** 738 **2070** § 4. For transmissions carrying identification signals, in order that stations may be readily identified, each station shall transmit its identification as frequently as practicable during the course of transmissions, including those made for tests, adjustments or experiments. During such transmissions, however, identification signals shall be transmitted at least hourly, preferably within the period from five minutes before to five minutes after the hour (UTC) unless to do so would cause unreasonable interruption of traffic, in which case identification shall be given at the beginning and end of transmissions.

ADD **5335A** **2071** § 5. Identification signals shall wherever practicable be in one of the following forms:

2072 *a)* speech, using simple amplitude or frequency modulation;

2073 *b)* international Morse code transmitted at manual speed;

2074 *c)* a telegraph code compatible with conventional printing equipment;

2075 *d)* any other form recommended by the CCIR.

MOD **5336** 739 **2076** § 6. To the extent possible the identification signal should be transmitted in accordance with relevant CCIR Recommendations.

ADD **5336A** **2077** § 7. Administrations should ensure that wherever practicable superimposed identification methods be employed in accordance with CCIR Recommendations.

SUP **5337**

NOC **5338** 741 **2078** § 8. When a number of stations work simultaneously in a common circuit, either as relay stations, or in parallel on different frequencies, each station shall, as far as practicable, transmit its own identification or those of all the stations concerned.

ADD **5338A** **2079** § 9. Administrations shall ensure, except in the cases mentioned in Nos. **2066** to **2068**, that all transmissions not carrying identification signals can be identified by other means when they are capable of causing harmful interference to the services of another administration operating in accordance with these Regulations.

ADD **5333.1** **2069.1** [1] For the application of Appendix **43**, see Resolution **313**.

ADD **5338B** **2080** § 10. Administrations shall, having regard to the provisions of these Regulations relating to the notification of assignments for recording in the Master Register, adopt their own measures to ensure compliance with the provisions of No. **2079**.

(MOD) **5339** **2081** § 11. Each Member reserves the right to establish its own measures for
742 identifying its stations used for national defence. However, it shall use, as far as possible, call signs recognizable as such, and containing the distinctive characters of its nationality.

NOC

Section II. Allocation of International Series, and Assignment of Call Signs

(MOD) **5340** **2082** § 12. (1) All stations open to the international public correspondence service, all
743 amateur stations, and other stations which are capable of causing harmful interference beyond the boundaries of the country to which they belong, shall have call signs from the international series allocated to each country as given in the Table of Allocation of International Call Sign Series in Appendix **42**.

ADD **5340A** **2083** (2) All ship stations and ship earth stations with respect to which the provisions of Chapter **XI** apply and all coast stations or coast earth stations capable of communicating with such ships shall have assigned to them maritime mobile service identities in accordance with Appendix **43** [1].

MOD **5341** **2084** (3) It is not compulsory to assign call signs from the international series to
744 stations identified by maritime mobile service identities or which are easily identified by other means (see No. **2069**) and whose signals of identification or characteristics of emission are published in international documents.

NOC **5342** **2085** § 13. Should the available call sign series in Appendix **42** be exhausted, new
748 call sign series may be allocated according to the principles set out in Resolution **13** relating to the formation of call signs and the allocation of new international series.

NOC **5343** **2086** § 14. Between administrative radio conferences, the Secretary-General is auth-
749 orized to deal with questions relating to changes in the allocation of series of call signs, on a provisional basis, and subject to confirmation by the following conference (see also No. **2085**).

ADD **5343A** **2087** § 15. The Secretary-General shall, for the maritime mobile service identification system, be responsible for allocating nationality identification digits series to countries not included in the Table of Nationality Identification Digits (see Appendix **43** [1]).

ADD **5340A.1** **2083.1**
5343A.1 **2087.1**

[1] For the application of Appendix **43**, see Resolution **313**.

MOD **5344** **2088** § 16. The Secretary-General shall be responsible for supplying series of selective call numbers or signals (see Nos. **2143** to **2146**) at the request of the administrations concerned.
749A

(MOD) **5345** **2089** § 17. (1) Each country shall choose the call signs and, if the selective calling system used is in accordance with Appendix **39**, the ship station selective call number and the coast station identification numbers of its stations from the international series allocated or supplied to it; and shall, in accordance with Article **26**, notify this information to the Secretary-General together with the information which is to appear in Lists I, II, IV, V, VI and VIIIA. These notifications do not include call signs assigned to amateur and experimental stations.
750

ADD **5345A** **2090** (2) Each country shall choose the maritime mobile service identities of its stations from the nationality identification digits series allocated to it and notify this information to the Secretary-General for inclusion in the relevant lists, as provided for in Article **26**.

MOD **5346** **2091** (3) The Secretary-General shall ensure that the same call sign, the same maritime mobile service identity, the same selective call number or the same identification number is not assigned more than once and that call signs which might be confused with distress signals, or with other signals of the same nature, are not assigned.
751

NOC **5347** **2092** § 18. (1) When a fixed station uses more than one frequency in the international service, each frequency may be identified by a separate call sign used solely for this frequency.
752

NOC **5348** **2093** (2) When a broadcasting station uses more than one frequency in the international service, each frequency may be identified by a separate call sign used solely for this frequency or by some other appropriate means, such as announcing the name of the place and frequency used.
753

NOC **5349** **2094** (3) When a land station uses more than one frequency, each frequency may, if desired, be identified by a separate call sign.
754

NOC **5350** **2095** (4) Where practicable, coast stations should use a common call sign for each frequency series [1].
755

NOC

Section III. Formation of Call Signs

NOC **5351** **2096** § 19. (1) The twenty-six letters of the alphabet, as well as digits in the cases specified below, may be used to form call signs. Accented letters are excluded.
756

NOC **5350.1** **2095.1** [1] By "frequency series" is meant a group of frequencies each of which belongs to one of the different bands between 4 000 kHz and 27 500 kHz that are allocated exclusively to the maritime mobile service.
755.1

NOC **5352** 757 **2097** (2) However, the following combinations shall not be used as call signs:

NOC **5353** 758 **2098** *a)* combinations which might be confused with distress signals or with other signals of a similar nature;

NOC **5354** 759 **2099** *b)* combinations reserved for the abbreviations to be used in the radiocommunication services (see Appendices **13** and **14**);

(MOD) **5355** 761 **2100** *c)* for amateur stations, combinations commencing with a digit when the second character is the letter O or the letter I.

MOD **5356** 762 **2101** § 20. Call signs in the international series are formed as indicated in Nos. **2102** to **2122**. The first two characters shall be two letters or a letter followed by a digit or a digit followed by a letter. The first two characters or in certain cases the first character of a call sign constitute the nationality identification [1].

NOC **5357** **2102** *Land and fixed stations*

SUP **5358** 763

MOD **5359** 764 **2103** § 21. (1)
– two characters and one letter, *or*
– two characters and one letter followed by not more than three digits (other than the digits 0 and 1 in cases where they immediately follow a letter).

2104 (2) However, it is recommended that, as far as possible, the call signs of fixed stations consist of:
– two characters and one letter followed by two digits (other than the digits 0 and 1 in cases where they immediately follow a letter).

NOC **5360** **2105** *Ship stations*

MOD **5361** 765 **2106** § 22. (1)
– two characters and two letters, *or*
– two characters, two letters and one digit (other than the digits 0 or 1).

MOD **5362** 766 **2107** (2) However, ship stations employing only radiotelephony may also use a call sign consisting of:
– two characters (provided that the second is a letter) followed by four digits (other than the digits 0 or 1 in cases where they immediately follow a letter), *or*
– two characters and one letter followed by four digits (other than the digits 0 or 1 in cases where they immediately follow a letter).

ADD **5356.1** **2101.1** [1] For call sign series beginning with B, F, G, I, K, M, N, R and W, only the first character is required for nationality identification. In the cases of half series, the first three characters are required for nationality identification.

NOC **5363** **2108** *Aircraft stations*

MOD **5364** **2109** § 23. – two characters and three letters.
767

NOC **5365** **2110** *Ship's survival craft stations*

NOC **5366** **2111** § 24. – the call sign of the parent ship followed by two digits (other than
768 the digits 0 or 1 in cases where they immediately follow a letter).

NOC **5367** **2112** *Emergency position-indicating radiobeacon stations*

NOC **5368** **2113** § 25. – the Morse letter B and/or the call sign of the parent ship to which
768A the radiobeacon belongs.

NOC **5369** **2114** *Aircraft survival craft stations*

NOC **5370** **2115** § 26. – the complete call sign of the parent aircraft (see No. **2109**), followed
769 by a single digit other than 0 or 1.

NOC **5371** **2116** *Land mobile stations*

SUP **5372**
770

MOD **5373** **2117** § 27. – two characters (provided that the second is a letter) followed by four
771 digits (other than the digits 0 or 1 in cases where they immediately follow a letter), *or*

– two characters and one or two letters followed by four digits (other than the digits 0 or 1 in cases where they immediately follow a letter).

NOC **5374** **2118** *Amateur and experimental stations*

MOD **5375** **2119** § 28. (1) – one character (see No. **2101.1**) and a single digit (other than 0 or 1),
772 followed by a group of not more than three letters, *or*

– two characters and a single digit (other than 0 or 1), followed by a group of not more than three letters.

NOC **5376** **2120** (2) However, the prohibition of the use of the digits 0 and 1 does not apply
773 to amateur stations.

NOC **5377** **2121** *Stations in the space service*

MOD **5378** **2122** § 29. When call signs for stations in the space service are employed, it is
773A recommended that they consist of:

– two characters followed by two or three digits (other than the digits 0 and 1 in cases where they immediately follow a letter).

NOC **Section IV. Identification of Stations Using Radiotelephony**

NOC **5379** **2123** § 30. Stations using radiotelephony shall be identified as indicated in Nos. **2124** to **2133**.
774

(MOD) **5380** **2124** § 31. (1) *Coast stations*
775

– a call sign (see No. **2103**); *or*

– the geographical name of the place as it appears in the List of Coast Stations, followed preferably by the word RADIO or by any other appropriate indication.

NOC **5381** **2125** (2) *Ship stations*
776

– a call sign (see Nos. **2106** and **2107**); *or*

– the official name of the ship preceded, if necessary, by the name of the owner on condition that there is no possible confusion with distress, urgency and safety signals; *or*

– its selective call number or signal.

NOC **5382** **2126** (3) *Ship's survival craft stations*
777

– a call sign (see No. **2111**); *or*

– a signal of identification consisting of the name of the parent ship followed by two digits.

NOC **5383** **2127** (4) *Emergency position-indicating radiobeacon stations*
777A

When speech transmission is used (see No. **3265**):

– the name and/or the call sign of the parent ship to which the radiobeacon belongs.

NOC **5384** **2128** § 32. (1) *Aeronautical stations*
778

– the name of the airport or geographical name of the place followed, if necessary, by a suitable word indicating the function of the station.

NOC **5385** **2129** (2) *Aircraft stations*
779

– a call sign (see No. **2109**), which may be preceded by a word designating the owner or the type of aircraft; *or*

– a combination of characters corresponding to the official registration mark assigned to the aircraft; *or*

– a word designating the airline, followed by the flight identification number.

NOC **5386** 780 **2130** (3) In the exclusive aeronautical mobile frequency bands, aircraft stations using radiotelephony may use other methods of identification, after special agreement between governments, and on condition that they are internationally known.

NOC **5387** 781 **2131** (4) *Aircraft survival craft stations*

– a call sign (see No. **2115**).

(MOD) **5388** 782 **2132** § 33. (1) *Base stations*

– a call sign (see No. **2103**); *or*

– the geographical name of the place followed, if necessary, by any other appropriate indication.

(MOD) **5389** 783 **2133** (2) *Land mobile stations*

– a call sign (see No. **2117**); *or*

– the identity of the vehicle or any other appropriate indication.

NOC **Section V. Selective Call Numbers in the Maritime Mobile Service**

NOC **5390** 783A **2134** §34. When stations of the maritime mobile service use selective calling devices in accordance with Appendices **38** and **39**, their call numbers shall be assigned by the responsible administrations in accordance with the provisions below.

NOC **5391** **2135** *Formation of ship station selective call numbers and coast station identification numbers*

NOC **5392** 783B **2136** § 35. (1) The ten digits from 0 to 9 inclusive shall be used to form selective call numbers.

NOC **5393** 783C **2137** (2) However, combinations of numbers commencing with the digits 00 (zero, zero) shall not be used when forming the identification numbers for coast stations.

NOC **5394** 783D **2138** (3) Ship station selective call numbers and coast station identification numbers in the series are formed as indicated in Nos. **2139**, **2140** and **2141**.

NOC **5395** 783E **2139** (4) *Coast station identification numbers*

– four digits (see No. **2137**).

NOC **5396** **2140** (5) *Ship station selective call numbers*
783F

– five digits.

NOC **5397** **2141** (6) *Predetermined groups of ship stations*
783G

– five digits consisting of:

– the same digit repeated five times; *or*

– two different digits repeated alternately.

NOC **5398** **2142** *Assignment of ship station selective call numbers and coast station identification numbers*

MOD **5399** **2143** § 36. (1) In cases where selective call numbers for ship stations and identification numbers for coast stations are required for use in the maritime mobile service and the selective calling system is in accordance with Appendix **39**, the selective call numbers and identification numbers shall be supplied by the Secretary-General on request. Upon notification by an administration of the introduction of selective calling for use in the maritime mobile service:
783H

2144 *a)* selective call numbers for ships will be supplied as required in blocks of 100 (one hundred);

2145 *b)* coast station identification numbers will be supplied in blocks of 10 (ten) to meet actual requirements;

2146 *c)* selective call numbers for selective calling of predetermined groups of ship stations in accordance with No. **2141** will be supplied as required as single numbers.

NOC **5400** **2147** (2) Each administration shall choose the selective call numbers to be assigned to its ship stations from the blocks of the series supplied to it.
783I

NOC **5401** **2148** (3) Each administration shall choose the coast station identification numbers to be assigned to its coast stations from the blocks of the series supplied to it.
783J

ADD **Section VI. Maritime Mobile Service Identities in the Maritime Mobile Service and the Maritime Mobile-Satellite Service**

ADD **5401A** **2149** § 37. When a station in the maritime mobile service or the maritime mobile-satellite service is required to use maritime mobile service identities, the responsible administration shall assign the identity to the station in accordance with the provisions described in Appendix **43** and Resolution **313** and taking into consideration relevant CCIR and CCITT Recommendations.

MOD

Section VII. Special Provisions

NOC **5402** 784 **2150** § 38. (1) In the aeronautical mobile service, after communication has been established by means of the complete call sign, the aircraft station may use, if confusion is unlikely to arise, an abbreviated call sign or identification consisting of:

MOD **5403** 785 **2151** *a)* in radiotelegraphy, the first character and last two letters of the complete call sign (see No. **2109**);

MOD **5404** 786 **2152** *b)* in radiotelephony:

– the first character of the complete call sign; *or*

– the abbreviation of the name of the owner of the aircraft (company or individual); *or*

– the type of aircraft;

followed by the last two letters of the complete call sign (see No. **2109**) or by the last two characters of the registration mark.

NOC **5405** 787 **2153** (2) The provisions of Nos. **2150**, **2151** and **2152** may be amplified or modified by agreement between administrations concerned.

NOC **5406** 788 **2154** § 39. The distinguishing signals allotted to ships for visual and aural signalling shall, in general, agree with the call signs of ship stations.

2155 to **2179** NOT allocated.

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NVII

CHAPTER VII

N24/20

ARTICLE 26

NOC

Service Documents

ADD

Section I. Titles, Contents and Publication of Service Documents

MOD 5507 789 2180 § 1. The following documents shall be published by the Secretary-General. As circumstances warrant and in response to individual requests by administrations, the published information shall also be available in computer printed form, machine readable form, film, microfiche or by other appropriate means.

MOD 5508 790 2181 § 2. *List I. The International Frequency List.*

2182 (1) This list shall be based on information prepared by the IFRB and shall contain:

MOD 5509 791 2183 *a)* particulars of frequency assignments recorded in the Master International Frequency Register;

MOD 5510 792 2184 *b)* the frequencies (e.g. 500 kHz or 2 182 kHz) prescribed by these Regulations for common use by certain services;

MOD 5511 793 2185 *c)* the allotments in the Allotment Plans included in Appendices **25 Mar2** (see No. **4212**), **26**, **27** * and **27 Aer2** *.

NOC 5512 794 2186 (2) An indication of the use of the frequencies and allotments in Nos. **2184** and **2185** shall be included in the entries concerned.

NOC 5513 795 2187 (3) Frequency assignments in the International Frequency List shall be arranged in numerical ascending order of the frequencies assigned.

NOC 5514 796 2188 (4) The International Frequency List above 28 MHz shall be in four separate parts as follows:

NOC 5515 797 2189 *a)* frequency assignments in bands between 28 MHz and 50 MHz, excluding broadcasting stations;

MOD 5516 798 2190 *b)* frequency assignments [1] to broadcasting stations in Region 1 in the bands above 50 MHz, and frequency assignments [1] to broadcasting stations in Region 1 in the bands between 28 MHz and 50 MHz;

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* *Note by the General Secretariat:* See No. **5189** and Resolution **400**.

NOC 5516.1 798.1 2190.1 [1] In the case of television broadcasting stations in Region 1, separate entries shall be inserted in List I for the carrier frequencies of the vision and sound channels.

MOD **5517** **2191** *c)* frequency assignments in Region 2 in the bands above 50 MHz;
799

MOD **5518** **2192** *d)* frequency assignments in Region 3 in the bands above 50 MHz, and frequency assignments to broadcasting stations in Region 3 in the bands between 28 MHz and 50 MHz.
800

ADD **5518A** **2193** (5) New editions of the International Frequency List shall be published at intervals to be determined by the Secretary-General, but not exceeding two years. This list shall be kept up to date by quarterly recapitulative supplements published in the same form as the list itself. New or modified entries made in the Master International Frequency Register after the publication of the latest recapitulative supplement and which appear in a new recapitulative supplement or in a new edition of the list shall be indicated therein in an appropriate manner.

ADD **5518B** **2194** (6) The recapitulative supplements shall be divided into two sections as follows:

ADD **5518C** **2195** *a)* Section A shall contain new entries and modifications of entries already listed in the International Frequency List;

ADD **5518D** **2196** *b)* Section B shall contain entries in the International Frequency List which have been deleted in their entirety.

(MOD) **5519** **2197** § 3. *List II. List of Fixed Stations Operating International Circuits.*
801

2198 (1) This list shall contain the particulars of the fixed stations operating international circuits, the frequencies of which appear in List I.

ADD **5519A** **2199** (2) List II shall be republished at intervals to be determined by the Secretary-General. The list shall be kept up to date by the publication of recapitulative supplements at intervals of three months.

MOD **5520** **2200** § 4. *List III.* (Spare)
802

SUP **5521**
803

SUP **5522**
804

NOC **5523** **2201** § 5. *List IV. List of Coast Stations.*
805

2202 (1) There are annexed to this list a table and a chart showing the zones and hours of service of ships of the second and third categories (see Appendix **12**) and a table of inland telegraph rates, limitrophic rates, etc. This list shall also contain an annex giving any details of maritime mobile-satellite systems which may be forwarded to the Secretary-General by participating administrations.

ADD 5223A 2203 (2) List IV shall be republished every two years and kept up to date by recapitulative supplements issued every six months.

(MOD) 5524 806 2204 § 6. *List V. List of Ship Stations.*

2205 (1) This list shall contain particulars of:

2206 *a)* ship stations fitted with radiotelegraph installations;

2207 *b)* ship stations fitted with radiotelegraph and radiotelephone installations;

2208 *c)* ship stations which are fitted with radiotelephone installations only and which communicate with stations of the maritime mobile service other than those of their own nationality or stations on ships which make international voyages;

2209 *d)* ship stations fitted with mobile earth stations.

2210 (2) This list shall contain a table and a chart showing the zones and hours of service of ships of the second and third categories (see Appendix **12**) and an annex giving details of maritime mobile-satellite systems which may be forwarded to the Secretary-General by participating administrations.

ADD 5524A 2211 (3) List V shall be republished each year. It shall be kept up to date by means of a quarterly supplement in addition to a half-yearly recapitulative supplement.

MOD 5525 807 2212 § 7. *List VI. List of Radiodetermination and Special Service Stations.*

2213 (1) This list shall contain particulars of radio direction-finding stations and radiobeacon stations of the maritime radionavigation service, including radiobeacon stations of the aeronautical radionavigation service reliable for maritime navigation, and the particulars of radiodetermination-satellite systems available for maritime use, ocean-station vessels, direction-finder calibration stations as well as stations transmitting standard frequency and time signals, regular meteorological bulletins, notices to navigators, medical advice, epidemiological bulletins and ursigrams. In this list, each class of station shall occupy a special section.

ADD 5525A 2214 (2) List VI shall be republished at intervals to be determined by the Secretary-General. It shall be kept up to date by recapitulative supplements to be published every six months.

MOD 5526 808 2215 § 8. *List VII. Alphabetical List of Call Signs Assigned from the International Series to Stations Included in Lists I, II, IV, V, VI and VIII A.*

This list shall be published in two volumes:

MOD 5527 809 2216 (1) *List VII A. Alphabetical List of Call Signs and/or Numerical Table of Identities of Stations Used by the Maritime Mobile Service and Maritime Mobile-Satellite Service (Coast, Coast Earth, Ship, Ship Earth, Radiodetermination and*

Special Service Stations), Ship and Ship Earth Stations Maritime Mobile Service Identities and Selective Call Numbers or Signals, and Coast and Coast Earth Stations Maritime Mobile Service Identities and Identification Numbers or Signals.

2217 *a)* This list shall be preceded by the Table of Allocation of International Call Sign Series and the Table of Nationality Identification Digits Series given in Appendices **42** and **43** and a table of signals characterizing the emissions of radiobeacons used in the maritime mobile service.

ADD **5527A** **2218** *b)* List VII A shall be republished every two years and kept up to date by recapitulative supplements every three months.

(MOD) **5528** 810 **2219** (2) *List VII B. Alphabetical List of Call Signs of Stations Other than Amateur Stations, Experimental Stations and Stations of the Maritime Mobile Service.*

2220 *a)* This list shall be preceded by the Table of Allocation of International Call Sign Series given in Appendix **42** and by a table indicating the form of call signs assigned by each administration to its amateur and experimental stations.

ADD **5528A** **2221** *b)* List VII B shall be republished at intervals determined by the Secretary-General, and kept up to date by recapitulative supplements issued every three months.

NOC **5529** 811 **2222** § 9. *List VIII. List of International Monitoring Stations.*

2223 (1) This list shall contain, in tabulated form, particulars of monitoring stations participating in international monitoring.

ADD **5529A** **2224** (2) List VIII shall be published at intervals to be determined by the Secretary-General. It shall be kept up to date by the publication of recapitulative supplements at intervals to be determined by the Secretary-General.

(MOD) **5530** 811A **2225** § 10. *List VIII A. List of Stations in the Space Radiocommunication Services and in the Radio Astronomy Service.*

2226 (1) This list shall contain particulars of earth and space stations and of radio astronomy stations. The Board shall prepare and keep up to date the contents of this list grouped in such a way as to permit administrations to more easily identify all stations pertaining to a given satellite network. Furthermore, the Board shall introduce the necessary improvements in the presentation of the list without in any way altering the basic data specified in the present Regulations. However, mobile earth stations of the maritime mobile-satellite service shall not be listed. Instead, a general reference to the List of Ship Stations shall be included in List VIII A.

ADD **5530A** **2227** (2) List VIII A shall be republished at intervals to be determined by the Secretary-General. It shall be kept up to date by recapitulative supplements published every six months.

MOD **5531** 812 **2228** § 11. *Map of Coast Stations Which Are Open to Public Correspondence or Which Participate in the Port Operations Service.*

The Map shall be republished in a form and at intervals to be determined by the Secretary-General.

NOC **5532** 813 **2229** § 12. *Chart in Colours Showing Frequency Allocations* as specified in Article **8**.

SUP **5533** 814

ADD **5533A** 814A **2230** § 13. *Manual for Use by the Maritime Mobile and Maritime Mobile-Satellite Services.*

2231 (1) This Manual shall contain the relevant extracts from:

2232 *a)* the International Telecommunication Convention in force;

2233 *b)* the Radio Regulations in force;

2234 *c)* the Telegraph Regulations in force, the current "Instructions for the Operation of the International Public Telegram Service" and CCITT Resolutions and Recommendations;

2235 *d)* the Telephone Regulations in force and the current "Instructions for the International Telephone Service" and CCITT Resolutions and Recommendations.

ADD **5533B** 814B **2236** (2) The Manual should be revised as needed, especially after administrative conferences and Plenary Assemblies of the CCITT and/or the CCIR. New editions shall be published at intervals to be determined by the Secretary-General.

ADD **Section II. Preparation and Amendment of Service Documents**

MOD **5534** 815 **2237** § 14. (1) The Secretary-General shall publish the amendments to the documents listed in Section I of this Article. Administrations shall take all appropriate measures to notify the Secretary-General immediately as changes in operational information contained in Lists IV, V and VI are made, in view of the importance of this information particulary with regard to safety. At least once a month, administrations shall inform the Secretary-General, 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 and VIII A, he shall use the data provided by the International Frequency Registration Board obtained from the information received in application of the provisions of Articles **11**, **12**, **13** and **17**. He shall make the requisite amendments to List VII by using the data he has received for Lists I, II, IV, V, VI and VIII A. Lists IV and VI shall be coordinated with the information appearing in List I. The Secretary-General shall refer any discrepancies to the administrations concerned.

NOC **5535** **2238** (2) For permanent changes affecting the operation of radiodetermination
816 stations (List VI), see No. **2833**.

5536 (becomes **5518A**)
817

5537 (becomes **5518B**)
818

5538 (becomes **5518C**)
819

5539 (becomes **5518D**)
820

5540 (becomes **5519A**)
821

SUP **5541**
822

SUP **5542**
823

5543 (becomes **5523A**)
824

5544 (becomes **5524A**)
825

5545 (becomes **5525A**)
826

5546 (becomes **5527A**)
827

5547 (becomes **5528A**)
828

5548 (becomes **5529A**)
829

5549 (becomes **5530A**)
829A

SUP **5550**
830

MOD **5551** **2239** § 15. (1) The forms in which Lists II, IV, V, VI, VIII and VIII A are to be
831 prepared are given in Appendix **9**. Information concerning the use of these documents and of List I 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 symbol being notified by the Secretary-General to administrations.

MOD **5552** **2240** (2) In the service documents, the names of coast, aeronautical,
832 radio direction-finding and radiobeacon stations are followed by the words:

NOC **5553** **2241** *a)* RADIO for coast stations;
833

ADD **5553A** **2242** *b)* AERADIO for aeronautical stations;

NOC **5554** 834 **2243** *c)* GONIO for maritime radio direction-finding stations;

NOC **5555** 835 **2244** *d)* PHARE for maritime radiobeacon stations;

NOC **5556** 836 **2245** *e)* AEROPHARE for aeronautical radiobeacon stations.

NOC **5557** 837 **2246** § 16. For the purpose of the service documents, a country shall be understood to mean the territory within the limits of which the station is located; a territory which does not have full responsibility for its international relations shall also be considered as a country for this purpose.

2247 to **2500** NOT allocated.

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PART B

NVIII

CHAPTER VIII

Provisions Relating to Groups of Services and to Specific Services and Stations *

N25

ARTICLE 27

NOC

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

NOC

Section I. Choice of Sites and Frequencies

(MOD) **6001** 470A **2501** § 1. Sites and frequencies for terrestrial stations, operating in frequency bands shared with equal rights between terrestrial radiocommunication and space radiocommunication services, shall be selected having regard to the relevant CCIR Recommendations with respect to geographical separation from earth stations.

MOD **6002** 470AA **2502** § 2. (1) As far as practicable, sites for transmitting [1] stations, in the fixed or mobile service, employing maximum values of equivalent isotropically radiated power (e.i.r.p.) exceeding +35 dBW in the frequency bands between 1 GHz and 10 GHz, should be selected so that the direction of maximum radiation of any antenna will be at least 2° away from the geostationary-satellite orbit, taking into account the effect of atmospheric refraction [2].

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* For provisions governing the mobile services and the special services related to safety, see:

Special Services Related to Safety:	Chapter **IX**
Aeronautical Mobile Service:	Chapter **X**
Maritime Mobile Service:	Chapter **XI**
Maritime Mobile-Satellite Service:	Chapter **XI**
Land Mobile Service:	Chapter **XII**

NOC **6002.1** 470AA.1 **2502.1** [1] For their own protection receiving stations in the fixed or mobile service operating in bands shared with space radiocommunication services (space-to-Earth) should also avoid directing their antennae towards the geostationary-satellite orbit if their sensitivity is sufficiently high that interference from space station transmissions may be significant.

NOC **6002.2** 470AA.2 **2502.2** [2] Information on this subject is given in the most recent version of CCIR Report No. 393.

MOD **6003** **2503** (2) As far as practicable, sites for transmitting [1] stations, in the fixed or mobile service, employing maximum values of equivalent isotropically radiated power (e.i.r.p.) exceeding +45 dBW in the frequency bands between 10 GHz and 15 GHz, should be selected so that the direction of maximum radiation of any antenna will be at least 1.5° away from the geostationary-satellite orbit, taking into account the effect of atmospheric refraction [2].
470AB

MOD **6004** **2504** (3) In the frequency bands above 15 GHz there shall be no restriction [3] as to the direction of maximum radiation for stations in the fixed or mobile service.
470AC

Section II. Power Limits

MOD **6005** **2505** § 3. (1) The maximum equivalent isotropically radiated power (e.i.r.p.) of a station in the fixed or mobile service shall not exceed +55 dBW.
470B

MOD **6006** **2506** (2) Where compliance with No. **2502** is impracticable the maximum equivalent isotropically radiated power (e.i.r.p.) of a station in the fixed or mobile service shall not exceed:
470BA

+47 dBW in any direction within 0.5° of the geostationary-satellite orbit; *or*

+47 dBW to +55 dBW, on a linear decibel scale (8 dB per degree), in any direction between 0.5° and 1.5° of the geostationary-satellite orbit, taking into account the effect of atmospheric refraction [4].

NOC **6007** **2507** (3) The power delivered by a transmitter to the antenna of a station in the fixed or mobile service in frequency bands between 1 GHz and 10 GHz shall not exceed +13 dBW.
470C

NOC **6008** **2508** (4) The power delivered by a transmitter to the antenna of a station in the fixed or mobile service in frequency bands above 10 GHz shall not exceed +10 dBW.
470CA

NOC **6003.1** **2503.1** [1] For their own protection receiving stations in the fixed or mobile service operating in bands shared with space radiocommunication services (space-to-Earth) should also avoid directing their antennae towards the geostationary-satellite orbit if their sensitivity is sufficiently high that interference from space station transmissions may be significant.
470AB.1

NOC **6003.2** **2503.2** [2] Information on this subject is given in the most recent version of CCIR Report No. 393.
470AB.2

ADD **6004.1** **2504.1** [3] The provisions of No. **2504** shall apply until such time as the CCIR has made a Recommendation as to the need for restrictions in frequency bands specified in No. **2511**, at which time all systems introduced after 1 January 1982 should as far as practicable meet any such restriction.

MOD **6006.1** **2506.1** [4] See No. **2503.2**.
470BA.1

MOD 6009 2509 (5) The limits given in Nos. **2502**, **2505**, **2506** and **2507** apply in the following frequency bands allocated to the fixed-satellite service, the meteorological-satellite service and the mobile-satellite service for reception by space stations, where these bands are shared with equal rights with the fixed or mobile service:
470D

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

MOD 6010 2510 (6) The limits given in Nos. **2503**, **2505** and **2508** apply in the following frequency bands allocated to the fixed-satellite service for reception by space stations, where these bands are shared with equal rights with the fixed or mobile service:
470DA

10.7 - 11.7 GHz [1, 2]	(for Region 1)
12.5 - 12.75 GHz [1]	(for countries mentioned in Nos. **848** and **850**)
12.7 - 12.75 GHz [1]	(for Region 2)
12.75 - 13.25 GHz	
14.0 - 14.25 GHz	(for countries mentioned in No. **857**)
14.25 - 14.3 GHz	(for countries mentioned in Nos. **857**, **860** and **861**)
14.3 - 14.4 GHz [1]	(for Regions 1 and 3)
14.4 - 14.5 GHz	
14.5 - 14.8 GHz [2]	

MOD 6011 2511 (7) The limits given in Nos. **2505** and **2508** apply in the following frequency bands allocated to the fixed-satellite service for reception by space stations, where these bands are shared with equal rights with the fixed or mobile service:
470DB

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

2512 to 2538 NOT allocated.

ADD 6009.1 2509.1
ADD 6010.1 2510.1

[1] The equality of right to operate when a band of frequencies is allocated in different Regions to different services of the same category is established in No. **346**. Therefore any limits concerning inter-Regional interference which may appear in CCIR Recommendations should, as far as practicable, be observed by administrations.

ADD 6010.2 2510.2
ADD 6011.1 2511.1

[2] The application of the limits in this frequency band is provisional (see Resolution **101**).

ADD 6011.2 2511.2

[3] See No. **2509.1**.

N26

ARTICLE 28

NOC

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

NOC

Section I. Choice of Sites and Frequencies

(MOD) **6037** 470E **2539** § 1. Sites and frequencies for earth stations, operating in frequency bands shared with equal rights between terrestrial radiocommunication and space radiocommunication services, shall be selected having regard to the relevant CCIR Recommendations with respect to geographical separation from terrestrial stations.

NOC

Section II. Power Limits

NOC **6038** 470F **2540** § 2. (1) Earth stations.

(MOD) **6039** 470G **2541** (2) The equivalent isotropically radiated power (e.i.r.p.) transmitted in any direction towards the horizon by an earth station operating in frequency bands between 1 GHz and 15 GHz shall not exceed the following limits except as provided in No. **2544** or **2546**:

$+40$ dBW in any 4 kHz band for $\theta \leqslant 0°$

$+40 + 3\theta$ dBW in any 4 kHz band for $0° < \theta \leqslant 5°$

where θ is the angle of elevation of the horizon viewed from the centre of radiation of the antenna of the earth station and measured in degrees as positive above the horizontal plane and negative below it.

(MOD) **6040** 470GA **2542** (3) The equivalent isotropically radiated power (e.i.r.p.) transmitted in any direction towards the horizon by an earth station operating in frequency bands above 15 GHz shall not exceed the following limits except as provided in No. **2545** or **2546**:

$+64$ dBW in any 1 MHz band for $\theta \leqslant 0°$

$+64 + 3\theta$ dBW in any 1 MHz band for $0° < \theta \leqslant 5°$

where θ is as defined in No. **2541**.

(MOD) **6041** 470GB **2543** (4) For angles of elevation of the horizon greater than 5° there shall be no restriction as to the equivalent isotropically radiated power (e.i.r.p.) transmitted by an earth station towards the horizon.

(MOD) **6042** 470GC **2544** (5) As an exception to the limits given in No. **2541**, the equivalent isotropically radiated power (e.i.r.p.) towards the horizon for an earth station in the space research service (deep space) shall not exceed $+55$ dBW in any 4 kHz band.

(MOD) **6043** **2545** (6) As an exception to the limits given in No. **2542**, the equivalent isotropically radiated power (e.i.r.p.) towards the horizon for an earth station in the space research service (deep-space) shall not exceed +79 dBW in any 1 MHz band.
470GD

NOC **6044** **2546** (7) The limits given in Nos. **2541**, **2542**, **2544** and **2545**, as applicable, may be exceeded by not more than 10 dB. However, when the resulting coordination area extends into the territory of another country, such increase shall be subject to agreement by the administration of that country.
470H

MOD **6045** **2547** (8) The limits given in No. **2541** apply in the following frequency bands allocated to the fixed-satellite service, the earth exploration-satellite service, and in particular the meteorological-satellite service, the mobile-satellite service and the space research service for transmission by earth stations where these bands are shared with equal rights with the fixed or mobile service:
470J

5 670 - 5 725	MHz	(for the countries mentioned in No. **804** with respect to the countries mentioned in Nos. **803** and **805**)
5 725 - 5 755	MHz [1]	(for Region 1 with respect to the countries mentioned in Nos. **803** and **805**)
5 755 - 5 850	MHz [1]	(for Region 1 with respect to the countries mentioned in Nos. **803**, **805** and **807**)
5 850 - 7 075	MHz	
7 900 - 8 400	MHz	
10.7 - 11.7	GHz [1]	(for Region 1)
12.5 - 12.75	GHz [1]	(for Region 1 with respect to the countries mentioned in No. **848**)
12.7 - 12.75	GHz [1]	(for Region 2)
12.75 - 13.25	GHz	
14.0 - 14.25	GHz	(with respect to the countries mentioned in No. **857**)
14.25 - 14.3	GHz	(with respect to the countries mentioned in Nos. **857**, **860** and **861**)
14.3 - 14.4	GHz [1]	(for Regions 1 and 3)
14.4 - 14.8	GHz	

MOD **6046** **2548** (9) The limits given in No. **2542** apply in the following frequency bands allocated to the fixed-satellite service, the earth exploration-satellite service, the mobile-satellite service and the space research service for transmission by earth stations where shared with equal rights with the fixed or mobile service:
470JA

17.7 - 18.1 GHz	
27.0 - 27.5 GHz [1]	(for Regions 2 and 3)
27.5 - 29.5 GHz	
31.0 - 31.3 GHz	(for the countries mentioned in No. **885**)
34.2 - 35.2 GHz	(for the countries mentioned in Nos. **895** and **896** with respect to the countries mentioned in No. **894**)

ADD **6045.1** **2547.1**

ADD **6046.1** **2548.1**

[1] The equality of right to operate when a band of frequencies is allocated in different Regions to different services of the same category is established in No. **346**. Therefore any limits concerning inter-Regional interference which may appear in CCIR Recommendations should, as far as practicable, be observed by administrations.

NOC

Section III. Minimum Angle of Elevation

NOC **6047** **2549** § 3. (1) Earth stations.
470K

MOD **6048** **2550** (2) Earth station antennae shall not be employed for transmission at elevation angles of less than 3° measured from the horizontal plane to the direction of maximum radiation, except when agreed to by administrations concerned and those whose services may be affected. In case of reception by an earth station, the above value shall be used for coordination purposes if the operating angle of elevation is less than that value.
470L

NOC **6049** **2551** (3) As an exception to No. **2550**, earth station antennae in the space research service (near Earth) shall not be employed for transmission at elevation angles of less than 5°, and earth station antennae in the space research service (deep space) shall not be employed for transmission at elevation angles of less than 10°, both angles being those measured from the horizontal plane to the direction of maximum radiation. In the case of reception by an earth station, the above values shall be used for coordination purposes if the operating angle of elevation is less than those values.
470LA

NOC

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

MOD **6050** **2552** § 4. (1) Power flux-density limits between 1 670 MHz and 1 700 MHz.
470N

MOD **6051** **2553** *a)* The power flux-density at the Earth's surface produced by emissions from a space station, including emissions from a reflecting satellite, for all conditions and for all methods of modulation, shall not exceed -133 dB(W/m^2) in any 1.5 MHz band. This limit relates to the power flux-density which would be obtained under assumed free-space propagation conditions.
470NA

(MOD) **6052** **2554** *b)* The limit given in No. **2553** applies in the frequency band listed in No. **2555** which is allocated to the earth exploration-satellite service and in particular the meteorological-satellite service for transmission by space stations where this band is shared with equal rights with the meteorological aids service.
470NB

MOD **6053** **2555** 1 670 - 1 700 MHz
470NC

MOD **6054** **2556** (2) Power flux-density limits between 1 525 MHz and 2 500 MHz.
470ND

MOD **6055** **2557** *a)* The power flux-density at the Earth's surface produced by emissions from a space station, including emissions from a reflecting satellite, for all conditions and for all methods of modulation, shall not exceed the following values:
470NE

-154 dB(W/m^2) in any 4 kHz band for angles of arrival between 0 and 5 degrees above the horizontal plane;

$-154 + 0.5(\delta - 5)$ dB(W/m^2) in any 4 kHz band for angles of arrival δ (in degrees) between 5 and 25 degrees above the horizontal plane;

-144 dB(W/m^2) in any 4 kHz band for angles of arrival between 25 and 90 degrees above the horizontal plane.

These limits relate to the power flux-density which would be obtained under assumed free-space propagation conditions.

MOD 6056 2558 470NF *b)* The limits given in No. **2557** apply in the frequency bands listed in No. **2559** which are allocated to the following space radiocommunication services:

– meteorological-satellite service (space-to-Earth)

– space research service (space-to-Earth)

– space operation service (space-to-Earth)

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

MOD 6057 2559 470NG

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

NOC 6058 2560 470NGA *c)* The power flux-density values given in No. **2557** are derived on the basis of protecting the fixed service using line-of-sight techniques. Where a fixed service using tropospheric scatter operates in the bands listed in No. **2559** and where there is insufficient frequency separation, there must be sufficient angular separation between the direction to the space station and the direction of maximum radiation of the antenna of the receiving station of the fixed service using tropospheric scatter to ensure that the interference power at the receiver input of the station of the fixed service does not exceed -168 dBW in any 4 kHz band.

NOC 6059 2561 470NH (3) Power flux-density limits between 2 500 MHz and 2 690 MHz.

MOD 6060 2562 470NI *a)* The power flux-density at the Earth's surface produced by emissions from a space station in the broadcasting-satellite service or the fixed-satellite service for all conditions and for all methods of modulation shall not exceed the following values:

-152 dB(W/m^2) in any 4 kHz band for angles of arrival between 0 and 5 degrees above the horizontal plane;

ADD 6057.1 2559.1 [1] The equality of right to operate when a band of frequencies is allocated in different Regions to different services of the same category is established in No. **346**. Therefore any limits concerning inter-Regional interference which may appear in CCIR Recommendations should, as far as practicable, be observed by administrations.

$-152 + 0.75(\delta - 5)$ dB(W/m^2) in any 4 kHz band for angles of arrival δ (in degrees) between 5 and 25 degrees above the horizontal plane;

-137 dB(W/m^2) in any 4 kHz band for angles of arrival between 25 and 90 degrees above the horizontal plane.

These limits relate to the power flux-density which would be obtained under assumed free-space propagation conditions.

MOD **6061** 470NJ **2563** *b)* The limits given in No. **2562** apply in the frequency band:

2 500 - 2 690 MHz

which is shared by the broadcasting-satellite service or the fixed-satellite service with the fixed or mobile service.

NOC **6062** 470NK **2564** *c)* The power flux-density values given in No. **2562** are derived on the basis of protecting the fixed service using line-of-sight techniques. Where a fixed service using tropospheric scatter operates in the band mentioned in No. **2563** and where there is insufficient frequency separation, there must be sufficient angular separation between the direction to the space station and the direction of maximum radiation of the antenna of the receiving station of the fixed service using tropospheric scatter to ensure that the interference power at the receiver input of the station of the fixed service does not exceed -168 dBW in any 4 kHz band.

NOC **6063** 470NL **2565** (4) Power flux-density limits between 3 400 MHz and 7 750 MHz.

MOD **6064** 470NM **2566** *a)* The power flux-density at the Earth's surface produced by emissions from a space station, including emissions from a reflecting satellite, for all conditions and for all methods of modulation, shall not exceed the following values:

-152 dB(W/m^2) in any 4 kHz band for angles of arrival between 0 and 5 degrees above the horizontal plane;

$-152 + 0.5(\delta - 5)$ dB(W/m^2) in any 4 kHz band for angles of arrival δ (in degrees) between 5 and 25 degrees above the horizontal plane;

-142 dB(W/m^2) in any 4 kHz band for angles of arrival between 25 and 90 degrees above the horizontal plane.

These limits relate to the power flux-density which would be obtained under assumed free-space propagation conditions.

MOD **6065** 470NN **2567** *b)* The limits given in No. **2566** apply in the frequency bands listed in No. **2568** which are allocated to the following space radiocommunication services:

– fixed-satellite service (space-to-Earth)

– meteorological-satellite service (space-to-Earth)

– mobile-satellite service

– space research service

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

NOC **6066** **2568** 3 400 - 4 200 MHz
470NO 4 500 - 4 800 MHz
5 670 - 5 725 MHz (on the territory of countries mentioned in Nos. **803** and **805**)
7 250 - 7 750 MHz

NOC **6067** **2569** (5) Power flux-density limits between 8 025 MHz and 11.7 GHz.
470NP

MOD **6068** **2570** *a)* The power flux-density at the Earth's surface produced by emissions
470NQ from a space station, including emissions from a reflecting satellite, for all conditions and for all methods of modulation, shall not exceed the following values:

-150 dB(W/m^2) in any 4 kHz band for angles of arrival between 0 and 5 degrees above the horizontal plane;

$-150 + 0.5(\delta - 5)$ dB(W/m^2) in any 4 kHz band for angles of arrival δ (in degrees) between 5 and 25 degrees above the horizontal plane;

-140 dB(W/m^2) in any 4 kHz band for angles of arrival between 25 and 90 degrees above the horizontal plane.

These limits relate to the power flux-density which would be obtained under assumed free-space propagation conditions.

MOD **6069** **2571** *b)* The limits given in No. **2570** apply in the frequency bands listed in
470NR No. **2572** which are allocated to the following space radiocommunication services:

– earth exploration-satellite service (space-to-Earth)

– space research service (space-to-Earth)

– fixed-satellite service (space-to-Earth)

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

MOD **6070** **2572** 8 025 - 8 500 MHz
470NS 10.7 - 11.7 GHz

NOC **6071** **2573** (6) Power flux-density limits between 12.2 GHz and 12.75 GHz.
470NT

MOD **6072** **2574** *a)* The power flux-density at the Earth's surface produced by emissions
470NU from a space station, including emissions from a reflecting satellite, for all conditions and for all methods of modulation, shall not exceed the following values:

-148 dB(W/m^2) in any 4 kHz band for angles of arrival between 0 and 5 degrees above the horizontal plane;

$-148 + 0.5(\delta - 5)$ dB(W/m^2) in any 4 kHz band for angles of arrival δ (in degrees) between 5 and 25 degrees above the horizontal plane;

– 138 dB(W/m^2) in any 4 kHz band for angles of arrival between 25 and 90 degrees above the horizontal plane.

These limits relate to the power flux-density which would be obtained under assumed free-space propagation conditions.

(MOD) **6073** 470NV **2575** *b)* The limits given in No. **2574** apply in the frequency bands indicated in No. **2576** which are allocated to the fixed-satellite service for transmission by space stations where these bands are shared with equal rights with the fixed or mobile service.

MOD **6074** 470NW **2576** 12.2 - 12.5 GHz [1] (for Region 3)
12.5 - 12.75 GHz [2] (for Region 3 and for Region 1 on the territory of countries mentioned in Nos. **848** and **850**).

MOD **6075** 470NX **2577** (7) Power flux-density limits between 17.7 GHz and 19.7 GHz.

MOD **6076** 470NY **2578** *a)* The power flux-density at the Earth's surface produced by emissions from a space station, including emissions from a reflecting satellite, for all conditions and for all methods of modulation, shall not exceed the following values:

– 115 dB(W/m^2) in any 1 MHz band for angles of arrival between 0 and 5 degrees above the horizontal plane;

– 115 + 0.5(δ – 5) dB(W/m^2) in any 1 MHz band for angles of arrival δ (in degrees) between 5 and 25 degrees above the horizontal plane;

– 105 dB(W/m^2) in any 1 MHz band for angles of arrival between 25 and 90 degrees above the horizontal plane.

These limits relate to the power flux-density which would be obtained under assumed free-space propagation conditions.

MOD **6077** 470NZ **2579** *b)* The limits given in No. **2578** apply in the frequency band listed in No. **2580** which is allocated to the following space radiocommunication services:

– fixed-satellite service (space-to-Earth)

– earth exploration-satellite including meteorological-satellite service (space-to-Earth)

ADD **6074.1** **2576.1** [1] The equality of right to operate when a band of frequencies is allocated in different Regions to different services of the same category is established in No. **346**. Therefore any limits concerning inter-Regional interference which may appear in CCIR Recommendations should, as far as practicable, be observed by administrations.

ADD **6074.2** **2576.2** [2] See No. **2576.1** and Resolutions **31**, **34** and **700**.

for transmission by space stations where this band is shared with equal rights with the fixed or mobile service.

MOD **6078** **2580** 17.7 - 19.7 GHz [1]
470NZA

SUP **6079**
(becomes
6079E)

ADD **6079A** **2581** (8) Power flux-density limits between 31.0 GHz and 40.5 GHz.

ADD **6079B** **2582** *a)* The power flux-density at the Earth's surface produced by emissions from a space station, including emissions from a reflecting satellite, for all conditions and for all methods of modulation, shall not exceed the values given in No. **2578** [2].

ADD **6079C** **2583** *b)* The limits given in No. **2582** apply in the frequency bands given in No. **2584** which are allocated to the fixed-satellite service, the mobile-satellite service and the space research service for transmission by space stations where these bands are shared with equal rights with the fixed or mobile services.

ADD **6079D** **2584** 31.0 - 31.3 GHz
34.2 - 35.2 GHz (for space-to-Earth transmissions under Nos. **895** and **896** on the territory of countries mentioned in No. **894**)
37.5 - 40.5 GHz

(MOD) **6079E** **2585** (9) The limits given in Nos. **2553**, **2557**, **2562**, **2566**, **2570**, **2574**, **2578**, **2582** and **2582.1** may be exceeded on the territory of any country the administration of which has so agreed.
470NZB

2586
to NOT allocated.
2611

ADD **6078.1** **2580.1** [1] The equality of right to operate when a band of frequencies is allocated in different Regions to different services of the same category is established in No. **346**. Therefore any limits concerning inter-Regional interference which may appear in CCIR Recommendations should, as far as practicable, be observed by administrations.

ADD **6079B.1** **2582.1** [2] The provisions of No. **2582** shall apply until such time as the CCIR has made a Recommendation as to the values of power flux-density limits which should apply in the frequency band specified in No. **2584**, at which time all systems shall meet those power flux-density limits recommended by the CCIR and endorsed by a competent world administrative radio conference.

N27

ARTICLE 29

NOC

Special Rules Relating to Space Radiocommunication Services

NOC

Section I. Cessation of Emissions

NOC 6105 2612 § 1. Space stations shall be fitted with devices to ensure immediate cessation
470V of their radio emissions by telecommand, whenever such cessation is required under the provisions of these Regulations.

MOD

Section II. Control of Interference to Geostationary-Satellite Systems

MOD 6106 2613 § 2. Non-geostationary space stations shall cease or reduce to a negligible
470VA level their emissions, and their associated earth stations shall not transmit to them, whenever there is insufficient angular separation between non-geostationary satellites and geostationary satellites, and whenever there is unacceptable interference [1] to geostationary-satellite space systems in the fixed-satellite service operating in accordance with these Regulations.

ADD 6106A 2614 § 3. In the frequency band 29.95 - 30 GHz space stations in the earth exploration-satellite service on board geostationary satellites and operating with space stations in the same service on board non-geostationary satellites shall have the following restriction:

Whenever the emissions from the geostationary satellites are directed towards the geostationary-satellite orbit and cause unacceptable interference [1] to any geostationary-satellite space system in the fixed-satellite service, these emissions shall be reduced to a level at or less than accepted interference [1].

ADD 6106.1 2613.1
ADD 6106A.1 2614.1

[1] The level of accepted interference shall be fixed by agreement between the administrations concerned, using the relevant CCIR Recommendations as a guide.

NOC

Section III. Station Keeping of Space Stations [1]

MOD 6107 470VB 2615 § 4. (1) Space stations on board geostationary satellites which use any frequency band allocated to the fixed-satellite service or the broadcasting-satellite service [2]:

MOD 6108 470VC 2616 *a)* shall have the capability of maintaining their positions within ± 0.1 degree of the longitude of their nominal positions;

MOD 6109 470VD 2617 *b)* shall maintain their positions within ± 0.1 degree of longitude of their nominal positions; *but*

ADD 6109A 2618 *c)* experimental stations on board geostationary satellites need not comply with No. **2616** nor No. **2617**, but shall maintain their positions within ± 0.5 degree of longitude of their nominal positions;

MOD 6110 470VE 2619 *d)* however, space stations need not comply with No. **2617** nor No. **2618** as appropriate as long as the satellite network to which the space station belongs does not cause unacceptable interference [3] to any other satellite network whose space station complies with the limits given in Nos. **2617** and **2618**.

ADD 6110A 2620 (2) Space stations on board geostationary satellites which do not use any frequency band allocated to the fixed-satellite service or the broadcasting-satellite service:

ADD 6110B 2621 *a)* shall have the capability of maintaining their positions within ± 0.5 degree of the longitude of their nominal positions;

ADD 6110C 2622 *b)* shall maintain their positions within ± 0.5 degree of longitude of their nominal positions; *but*

ADD 6110D 2623 *c)* need not comply with No. **2622** as long as the satellite network to which the space station belongs does not cause unacceptable interference [3] to any other satellite network whose space station complies with the limits given in No. **2622**.

ADD 6110E 2624 (3) Space stations [4] on board geostationary satellites which are put into service prior to 1 January 1987, with the advance publication information for the network having been published before 1 January 1982, are exempted from the provisions of Nos. **2615** to **2623** inclusive; however they

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(MOD) A.N27 S.III A.29 S.III.1 [1] In the case of space stations on board geosynchronous satellites with orbits having an angle of inclination greater than 5 degrees the positional tolerance shall relate to the nodal point.

ADD 6107.1 2615.1 [2] Space stations in the broadcasting-satellite service on geostationary satellites operating in the band 11.7 - 12.7 GHz are exempted from these provisions but shall maintain their positions in accordance with Appendix **30**.

MOD 6110.1 470VE.1 2619.1

ADD 6110D.1 2623.1

[3] The level of accepted interference shall be fixed by agreement between the administrations concerned, using the relevant CCIR Recommendations as a guide.

ADD 6110E.1 2624.1 [4] See No. **2615.1**.

ADD **6110F** **2625** *a)* shall have the capability of maintaining their positions within ± 1 degree of the longitude of their nominal positions, but efforts should be made to achieve a capability of maintaining their positions at least within ± 0.5 degree of the longitude of their nominal positions;

ADD **6110G** **2626** *b)* shall maintain their positions within ± 1 degree of longitude of their nominal positions; *but*

ADD **6110H** **2627** *c)* need not comply with No. **2626** as long as the satellite network to which the space station belongs does not cause unacceptable interference [1] to any other satellite network whose space station complies with the limits given in No. **2626**.

NOC

Section IV. Pointing Accuracy of Antennae on Geostationary Satellites

MOD **6111** **2628** § 5. (1) The pointing direction of maximum radiation of any earthward beam of
470VF antennae on geostationary satellites [2] shall be capable of being maintained within:

a) 10 % of the half power beamwidth relative to the nominal pointing direction, *or*

b) 0.3 degree relative to the nominal pointing direction,

whichever is greater. This provision applies only when such a beam is intended for less than global coverage.

2629 (2) In the event that the beam is not rotationally symmetrical about the axis of maximum radiation, the tolerance in any plane containing this axis shall be related to the half power beamwidth in that plane.

2630 (3) This accuracy shall be maintained only if it is required to avoid unacceptable interference [3] to other systems.

NOC

Section V. Power Flux-Density at the Geostationary-Satellite Orbit

NOC **6112** **2631** § 6. In the frequency band 8 025 MHz - 8 400 MHz, which the earth exploration-satellite service using non-geostationary satellites shares with the fixed-satellite
470VG service (Earth-to-space) or the meteorological-satellite service (Earth-to-space), the maximum power flux-density produced at the geostationary-satellite orbit by any earth exploration-satellite service space station shall not exceed -174 dB(W/m^2) in any 4 kHz band.

ADD **6110H.1** **2627.1** [1] The level of accepted interference shall be fixed by agreement between the administrations concerned, using the relevant CCIR Recommendations as a guide.

ADD **6111.1** **2628.1** [2] Transmitting antennae of space stations in the broadcasting-satellite service operating in the band 11.7 - 12.7 GHz are not subject to these provisions but shall maintain their pointing accuracy in accordance with paragraph 3.14.1 of Annex 8 to Appendix **30**.

MOD **6111.2** **2630.1** [3] See No. **2627.1**.
470VF.1

ADD **Section VI. Radio Astronomy in the Shielded Zone of the Moon**

ADD 6113 2632 § 7. (1) In the shielded zone of the Moon [1] emissions causing harmful interference to radio astronomy observations [2] and to other users of passive services shall be prohibited in the entire frequency spectrum except in the following bands:

2633 *a)* the frequency bands allocated to the space research service using active sensors;

2634 *b)* the frequency bands allocated to the space operation service, the earth exploration-satellite service using active sensors, and the radiolocation service using stations on spaceborne platforms, which are required for the support of space research, as well as for radiocommunications and space research transmissions within the lunar shielded zone.

ADD 6114 2635 (2) In frequency bands in which emissions are not prohibited by Nos. **2632** to **2634**, radio astronomy observations and passive space research in the shielded zone of the Moon may be protected from harmful interference by agreement between administrations concerned.

ADD **Section VII. Earth Station Off-Axis Power Limitations**

ADD 6115 2636 § 8. The level of equivalent isotropically radiated power (e.i.r.p.) emitted by an earth station at angles in the direction of the geostationary-satellite orbit off the main-beam axis has a significant impact on interference caused to other geostationary-satellite networks. Enhanced utilization of the geostationary-satellite orbit and easier coordination would be attained by minimizing such off-axis radiation and administrations are encouraged to achieve the lowest values practicable bearing in mind the latest CCIR Recommendations. Minimizing such levels is particularly important in intensively used up-link bands.

2637 to 2663 NOT allocated.

ADD 6113.1 2632.1 [1] The shielded zone of the Moon comprises the area of the Moon's surface and an adjacent volume of space which are shielded from emissions originating within a distance of 100 000 km from the centre of the Earth.

ADD 6113.2 2636.2 [2] The level of harmful interference is determined by agreement between the administrations concerned, with the guidance of the relevant CCIR Recommendations.

N28/7

ARTICLE 30

NOC

Broadcasting Service and Broadcasting-Satellite Service

Section I. Broadcasting Service

NOC 6213 2664 *A. General*

NOC 6214 422 2665 § 1. (1) The establishment and use of broadcasting stations (sound broadcasting and television broadcasting stations) on board ships, aircraft or any other floating or airborne objects outside national territories is prohibited.

NOC 6215 423 2666 (2) In principle, except in the frequency band 3 900 - 4 000 kHz, broadcasting stations using frequencies below 5 060 kHz or above 41 MHz shall not employ power exceeding that necessary to maintain economically an effective national service of good quality within the frontiers of the country concerned.

NOC 6216 2667 *B. Broadcasting in the Tropical Zone*

NOC 6217 424 2668 § 2. (1) In these Regulations, the expression "broadcasting in the Tropical Zone" indicates a type of broadcasting for internal national use in countries in the zone defined in Nos. **406** to **411**, where it may be shown that because of the difficulty of high atmospheric noise level and propagation it is not possible to provide economically a more satisfactory service by using low, medium, or very high frequencies.

NOC 6218 425 2669 (2) The use by the broadcasting service of the bands listed below is restricted to the Tropical Zone:

2 300 - 2 498 kHz (Region 1)
2 300 - 2 495 kHz (Regions 2 and 3)
3 200 - 3 400 kHz (all Regions)
4 750 - 4 995 kHz (all Regions)
5 005 - 5 060 kHz (all Regions)

ADD 6218A 2670 (3) The carrier power of the transmitters operating in this service in the bands listed in No. **2669** shall not exceed 50 kW.

NOC 6219 426 2671 (4) Within the Tropical Zone, the broadcasting service has priority over the other services with which it shares the bands listed in No. **2669**.

NOC 6220 427 2672 (5) However, in that part of Libya north of parallel 30° North the broadcasting service in the bands listed in No. **2669** has equal rights to operate with other services in the Tropical Zone with which it shares these bands.

NOC 6221 428 2673 (6) The broadcasting service operating inside the Tropical Zone, and other services operating outside this zone, are subject to the provisions of No. **346**.

NOC

Section II. Broadcasting-Satellite Service

NOC 6222 428A **2674** § 3. In devising the characteristics of a space station in the broadcasting-satellite service, all technical means available shall be used to reduce, to the maximum extent practicable, the radiation over the territory of other countries unless an agreement has been previously reached with such countries.

2675 to **2699** NOT allocated.

N29

ARTICLE 31

NOC

Fixed Service

NOC

Section I. General

MOD 6323 465 **2700** § 1. (1) Administrations are urged to discontinue, in the fixed service, the use of double-sideband radiotelephone (class A3E) transmissions.

NOC 6324 466 **2701** (2) Class F3E or G3E emissions are prohibited in the fixed service in the bands below 30 MHz.

NOC

Section II. Frequencies for the International Exchange of Police Information

NOC 6325 467 **2702** § 2. (1) The frequencies necessary for the international exchange of information to assist in the apprehension of criminals shall be selected from the bands allocated to the fixed service, if necessary by special agreement concluded between the administrations concerned under the provision for special arrangements in Article 31 of the Convention.

NOC 6326 468 **2703** (2) To obtain economy in the use of frequencies, the International Frequency Registration Board should be consulted by the administrations concerned whenever such agreements are under discussion on a regional or worldwide basis.

NOC

Section III. Frequencies for the International Exchange of Synoptic Meteorological Information

NOC 6327 469 **2704** § 3. (1) The frequencies necessary for the international exchange of synoptic meteorological information shall be selected from the bands allocated to the fixed service, if necessary by special agreement concluded between the administrations concerned under the provision for special arrangements in Article 31 of the Convention.

NOC 6328 470 **2705** (2) To obtain economy in the use of frequencies, the International Frequency Registration Board should be consulted by the administrations concerned whenever such agreements are under discussion on a regional or worldwide basis.

2706 to 2730 NOT allocated.

N30/41

ARTICLE 32

MOD

Amateur Service and Amateur-Satellite Service

MOD

Section I. Amateur Service

MOD 6354 2731 1560 § 1. Radiocommunications between amateur stations of different countries shall be forbidden if the administration of one of the countries concerned has notified that it objects to such radiocommunications.

MOD 6355 2732 1561 § 2. (1) When transmissions between amateur stations of different countries are permitted, they shall be made in plain language and shall be limited to messages of a technical nature relating to tests and to remarks of a personal character for which, by reason of their unimportance, recourse to the public telecommunications service is not justified.

ADD 6355A 2733 (2) It is absolutely forbidden for amateur stations to be used for transmitting international communications on behalf of third parties.

NOC 6356 2734 1562 (3) The preceding provisions may be modified by special arrangements between the administrations of the countries concerned.

MOD 6357 2735 1563 § 3. (1) Any person seeking a licence to operate the apparatus of an amateur station shall prove that he is able to send correctly by hand and to receive correctly by ear, texts in Morse code signals. The administrations concerned may, however, waive this requirement in the case of stations making use exclusively of frequencies above 30 MHz.

MOD 6358 2736 1564 (2) Administrations shall take such measures as they judge necessary to verify the operational and technical qualifications of any person wishing to operate the apparatus of an amateur station.

MOD 6359 2737 1565 § 4. The maximum power of amateur stations shall be fixed by the administrations concerned, having regard to the technical qualifications of the operators and to the conditions under which these stations are to operate.

MOD 6360 2738 1566 § 5. (1) All the general rules of the Convention and of these Regulations shall apply to amateur stations. In particular, the emitted frequency shall be as stable and as free from spurious emissions as the state of technical development for such stations permits.

MOD 6361 2739 1567 (2) During the course of their transmissions, amateur stations shall transmit their call sign at short intervals.

MOD

Section II. Amateur-Satellite Service

ADD **6361A** **2740** § 6. The provisions of Section I of this Article shall apply equally, as appropriate, to the amateur-satellite service.

(MOD) **6362** 1567A **2741** § 7. Space stations in the amateur-satellite service operating in bands shared with other services shall be fitted with appropriate devices for controlling emissions in the event that harmful interference is reported in accordance with the procedure laid down in Article **22**. Administrations authorizing such space stations shall inform the IFRB and shall ensure that sufficient earth command stations are established before launch to guarantee that any harmful interference which might be reported can be terminated by the authorizing administration (see No. **2612**).

2742 to **2766** NOT allocated.

N31

ARTICLE 33

MOD

Standard Frequency and Time Signal Service

MOD 6389 1623 2767 § 1. (1) To facilitate more efficient use of the radio frequency spectrum and to assist other technical and scientific activities, administrations providing or intending to provide a standard frequency and time signal service shall coordinate, in accordance with the provisions in this Article, the establishment and operation of such a service on a worldwide basis. Attention should be given to the extension of this service to those areas of the world not adequately served.

NOC 6390 1624 2768 (2) To this end, each administration shall take steps to coordinate, with the assistance of the International Frequency Registration Board, any new standard frequency or time signal transmission or any change in existing transmissions in the standard frequency bands. For this purpose, administrations shall exchange between themselves, and furnish to the Board, all relevant information. On this matter the Board shall consult the Director of the CCIR who shall also continue to seek the advice and cooperation of the International Time Bureau (BIH), the International Scientific Radio Union (URSI) and other international organizations having a direct and substantial interest in the subject.

NOC 6391 1625 2769 (3) In so far as is practicable, a new frequency assignment in the standard frequency bands should not be made or notified to the Board until appropriate coordination has been completed.

NOC 6392 1626 2770 § 2. Administrations shall cooperate in reducing interference in the standard frequency bands in accordance with CCIR Recommendations.

NOC 6393 1627 2771 § 3. Administrations which provide this service shall cooperate through the CCIR in the collation and distribution of the results of the measurements of standard frequencies and time signals, as well as details concerning adjustments to the frequencies and time signals.

NOC 6394 1628 2772 § 4. In selecting the technical characteristics of standard frequency and time signal transmissions, administrations shall be guided by the relevant CCIR Recommendations.

2773 to 2797 NOT allocated.

N32/42 ARTICLE 34

NOC **Experimental Stations**

NOC **6420** 1568 **2798** § 1. (1) An experimental station may enter into communication with an experimental station of another country only after it has been authorized to do so by its administration. Each administration shall notify other administrations concerned when such authorizations are issued.

NOC **6421** 1569 **2799** (2) The administrations concerned determine by special arrangement the conditions under which communications may be established.

NOC **6422** 1570 **2800** § 2. (1) In experimental stations any person operating radiotelegraph apparatus, either on his own account or for another, shall have proved his ability to transmit by hand and to receive by ear, texts in Morse code signals.

MOD **6423** 1571 **2801** (2) Administrations shall take such measures as they judge necessary to verify the operational and technical qualifications of any person wishing to operate the apparatus of an experimental station.

MOD **6424** 1572 **2802** § 3. The administrations concerned shall fix the maximum power of experimental stations, having regard to the purpose for which their establishment has been authorized and the conditions under which they are to operate.

MOD **6425** 1573 **2803** § 4. (1) All the general rules of the Convention and of these Regulations shall apply to experimental stations. In particular, experimental stations shall comply with the technical conditions imposed upon transmitters operating in the same frequency bands, except where the technical principles of the experiments prevent this. In such a case, the administration which authorizes the operation of these stations may grant a dispensation in an appropriate form.

MOD **6426** 1574 **2804** (2) During the course of their transmissions, experimental stations shall transmit, at short intervals, their call sign or any other recognized form of identification (see Article **25**).

NOC **6427** 1575 **2805** § 5. Where there is no risk of an experimental station causing harmful interference to a service of another country, the administration concerned may, if considered desirable, adopt different provisions from those contained in this Article.

2806 to **2830** NOT allocated.

NOC N33

ARTICLE 35

NOC

Radiodetermination Service and Radiodetermination-Satellite Service

NOC

Section I. General Provisions

NOC 6453 1576 **2831** § 1. Administrations which have established a radiodetermination service shall take the necessary steps to ensure the effectiveness and regularity of that service; however they accept no responsibility for the consequences that might arise from the use of inaccurate information furnished, defective working, or failure of their stations.

MOD 6454 1577 **2832** § 2. In the case of doubtful or unreliable observations, the station taking the bearing or fixing the position shall, whenever possible, notify the station to which this information is given of any such doubt or unreliability.

NOC 6455 1578 **2833** § 3. Administrations shall notify to the Secretary-General the characteristics of each radiodetermination station providing an international service of value to the maritime mobile service and, if considered necessary, for each station or group of stations, the sectors in which the information furnished is normally reliable. This information is published in the List of Radiodetermination and Special Service Stations, and the Secretary-General shall be notified of any change of a permanent nature.

NOC 6456 1579 **2834** § 4. The method of identification of radiodetermination stations shall be so chosen as to avoid any doubt as to their identity.

NOC 6457 1580 **2835** § 5. Signals sent by radiodetermination stations shall be such as to permit accurate and precise measurements.

NOC 6458 1581 **2836** § 6. Any information concerning modification or irregularity of working of a radiodetermination station shall be notified without delay in the following manner:

NOC 6459 1582 **2837** *a)* land stations of countries operating a radiodetermination service shall send out daily, if necessary, notices of modifications or irregularities in working until such time as normal working is restored or, if a permanent alteration has been made, until such time as it can reasonably be taken that all navigators interested have been warned;

NOC 6460 1583 **2838** *b)* permanent alterations or irregularities of long duration shall be published as soon as possible in the relevant notices to navigators.

SUP 6461 1584

MOD

Section II. Provisions for the Radiodetermination-Satellite Service

SUP **6462**
1584A

ADD **6462A** **2839** § 7. (1) The provisions of Nos. **2831** to **2838** excluding No. **2832** shall be applied to the maritime radionavigation-satellite service.

ADD **6462B** **2840** (2) The provisions of Nos. **2831** to **2838** excluding Nos. **2832** and **2833** shall be applied to the aeronautical radionavigation-satellite service.

NOC

Section III. Radio Direction-Finding Stations

NOC **6463** **2841** § 8. (1) In the maritime radionavigation service, the radiotelegraph frequency
1585 normally used for radio direction-finding is 410 kHz. All direction-finding stations of the maritime radionavigation service using radiotelegraphy shall be able to use this frequency. They shall, in addition, be able to take bearings on 500 kHz, especially for locating stations sending signals of distress, alarm and urgency.

NOC **6464** **2842** (2) Where a radio direction-finding service is provided in the authorized
1586 bands between 1 605 kHz and 2 850 kHz, the radio direction-finding stations should be able to take bearings on the radiotelephone distress and calling frequency 2 182 kHz.

NOC **6465** **2843** § 9. The procedure to be followed by radio direction-finding stations is given
1587 in Appendix **41**.

NOC **6466** **2844** § 10. In the absence of prior arrangements, an aircraft station which calls a
1588 radio direction-finding station for a bearing shall use for this purpose a frequency on which the station called normally keeps watch.

NOC **6467** **2845** § 11. In the aeronautical radionavigation service, the procedure contemplated
1589 for radio direction-finding in this Section is applicable, except where special procedures are in force as a result of arrangements concluded between the administrations concerned.

NOC

Section IV. Radiobeacon Stations

NOC **6468** **2846**

A. General

NOC **6469** **2847** § 12. When an administration thinks it desirable in the interests of navigation
1590 to organize a service of radiobeacon stations, it may use for this purpose:

NOC **6470** **2848**
1591

a) radiobeacons properly so-called, established on land or on ships permanently moored or, exceptionally, on ships navigating in a restricted area, the limits of which are known and published. The emissions of these radiobeacons may have either directional or non-directional patterns;

NOC **6471** **2849** *b)* fixed stations, coast stations or aeronautical stations designated to
1592 function as radiobeacons, at the request of mobile stations.

NOC **6472** **2850** § 13. (1) Radiobeacons properly so-called shall use the frequency bands which are
1593 available to them under Chapter **III**.

NOC **6473** **2851** (2) Other stations notified as radiobeacons shall use for this purpose their
1594 normal working frequency and their normal class of emission.

NOC **6474** **2852** (3) The power radiated by each radiobeacon properly so-called shall be
1595 adjusted to the value necessary to produce the stipulated field strength at the limit of the range required (see Nos. **2855** and **2860**).

NOC **6475** **2853** *B. Aeronautical Radiobeacons*

MOD **6476** **2854** § 14. (1) The assignment of frequencies to aeronautical radiobeacons operating in
433 the bands between 160 kHz and 435 kHz shall be based on a protection ratio against interference of at least 15 dB for each beacon throughout its service area.

MOD **6477** **2855** (2) The radiated power should be kept to the minimum value necessary to
434 give the desired field strength at the service range.

NOC **6478** **2856** (3) The daylight service range of radiobeacons referred to in No. **2854** shall
435 be based on the following field strengths:

NOC **6479** **2857** (4) *Regions 1 and 2*
436

– 70 microvolts per metre for radiobeacons north of 30° N;

– 120 microvolts per metre for radiobeacons between 30° N and 30° S;

– 70 microvolts per metre for radiobeacons south of 30° S.

NOC **6480** **2858** (5) *Region 3*
437

– 70 microvolts per metre for radiobeacons north of 40° N;

– 120 microvolts per metre for radiobeacons between 40° N and 50° S;

– 70 microvolts per metre for radiobeacons south of 50° S.

NOC **6481** **2859** *C. Maritime Radiobeacons*

(MOD) **6482** **2860** § 15. (1) The protection ratio required for maritime radiobeacons operating in the
458 bands between 283.5 kHz and 335 kHz is based on the radiated power being kept to the value necessary to give the desired field strength at the service range.

NOC **6483** 459 **2861** (2) The daylight service range of the radiobeacons referred to in No. **2860** shall be based on the following field strengths:

NOC **6484** 460 **2862** (3) *Region 1*

- 50 microvolts per metre for radiobeacons north of 43° N;
- 75 microvolts per metre for radiobeacons between 43° N and 30° N;
- 100 microvolts per metre for radiobeacons between 30° N and 30° S;
- 75 microvolts per metre for radiobeacons between 30° S and 43° S;
- 50 microvolts per metre for radiobeacons south of 43° S.

NOC **6485** 461 **2863** (4) *Region 2*

- 50 microvolts per metre for radiobeacons north of 40° N;
- 75 microvolts per metre for radiobeacons between 40° N and 31° N;
- 100 microvolts per metre for radiobeacons between 31° N and 30° S;
- 75 microvolts per metre for radiobeacons between 30° S and 43° S;
- 50 microvolts per metre for radiobeacons south of 43° S.

NOC **6486** 462 **2864** (5) *Region 3*

- 75 microvolts per metre for radiobeacons north of 40° N;
- 100 microvolts per metre for radiobeacons between 40° N and 50° S;
- 75 microvolts per metre for radiobeacons south of 50° S.

NOC **6487** 463 **2865** (6) In Region 1, for maritime radiobeacons in these bands, the assignment of frequencies is based on a separation of 2.3 kHz between adjacent frequencies used for class A2A emissions.

NOC **6488** 464 **2866** (7) In Region 1, for maritime radiobeacons, the depth of modulation should be at least 70%.

2867 to **2891** NOT allocated.

ADD N33A

ARTICLE 36

Radio Astronomy Service

ADD

Section I. General Provisions

ADD 6579 2892 § 1. Administrations shall cooperate in protecting the radio astronomy service from interference, bearing in mind:

2893 *a)* the exceptionally high sensitivity of radio astronomy stations;

2894 *b)* the frequent need for long periods of observation without harmful interference; *and*

2895 *c)* that the small number of radio astronomy stations in each country and their known locations often make it practicable to give special consideration to the avoidance of interference.

ADD 6580 2896 § 2. The locations of the radio astronomy stations to be protected and their frequencies of observation shall be notified to the IFRB in accordance with No. **1492** and published by the Secretary-General in accordance with No. **2237** for communication to Members.

ADD

Section II. Measures to Be Taken in the Radio Astronomy Service

ADD 6581 2897 § 3. The locations of radio astronomy stations shall be selected with due regard to the possibility of harmful interference to these stations.

ADD 6582 2898 § 4. All practicable technical means shall be adopted at radio astronomy stations to reduce their susceptibility to interference. The development of improved techniques for reducing susceptibility to interference shall be pursued, including participation in cooperative studies through the CCIR.

ADD

Section III. Protection of the Radio Astronomy Service

ADD 6583 2899 § 5. The status of the radio astronomy service in the various frequency bands is specified in the Table of Frequency Allocations, Article **8**. Administrations shall provide protection from interference to stations in the radio astronomy service in accordance with the status of this service in those bands (see also Nos. **344**, **2632** to **2634** and **2635**).

ADD 6584 2900 § 6. In providing protection from interference to the radio astronomy service on a permanent or temporary basis, administrations shall use appropriate means such as geographical separation, site shielding, antenna directivity and the use of time-sharing and the minimum practicable transmitter power.

ADD **6585** **2901** § 7. In bands adjacent to those in which observations are carried out in the radio astronomy service, operating in accordance with these Regulations, administrations are urged, when assigning frequencies to stations of other services, to take all practicable steps to protect the radio astronomy service from harmful interference in accordance with No. **343**. In addition to the measures referred to in No. **2900**, technical means for minimizing the power radiated at frequencies within the band used for radio astronomy should be given special consideration (see also No. **344**).

ADD **6586** **2902** § 8. When assigning frequencies to stations in other bands, administrations are urged, as far as practicable, to take into consideration the need to avoid spurious emissions which could cause harmful interference to the radio astronomy service operating in accordance with these Regulations (see also No. **344**).

ADD **6587** **2903** § 9. In applying the measures outlined in this Section, administrations are urged to bear in mind that the radio astronomy service is extremely susceptible to interference from space and airborne transmitters.

ADD **6588** **2904** § 10. Administrations shall take note of the relevant CCIR Recommendations with the aim of limiting interference to the radio astronomy service from other services.

2905 to **2929** NOT allocated.

NIX

CHAPTER IX

NOC

Distress and Safety Communications

N34

ARTICLE 37

NOC

General Provisions

MOD **6589** **2930** § 1. The procedure specified in this Chapter is obligatory in the maritime
1380 mobile service and for communications between aircraft stations and stations of the maritime mobile service. The provisions of this Chapter are also applicable to the aeronautical mobile service except in the case of special arrangements between the governments concerned.

MOD **6590** **2931** § 2. The procedure specified in this Chapter is obligatory in the maritime
1380A mobile-satellite service and for communications between stations on board aircraft and stations of the maritime mobile-satellite service, where this service or stations of this service are specifically mentioned. Nos. **3086**, **3090**, **3095**, **3096**, **3097**, **3098**, **3200**, **3203** and **3223** are also applicable.

NOC **6591** **2932** § 3. (1) No provision of these Regulations prevents the use by a mobile station
1381 or ship earth station in distress of any means at its disposal to attract attention, make known its position, and obtain help.

NOC **6592** **2933** (2) No provision of these Regulations prevents the use by stations on board
1381A aircraft or ships engaged in search and rescue operations, in exceptional circumstances, of any means at their disposal to assist a mobile station in distress.

(MOD) **6593** **2934** (3) No provision of these Regulations prevents the use by a land station, in
1382 exceptional circumstances, of any means at its disposal to assist a mobile station in distress (see also No. **959**).

NOC **6594** **2935** § 4. In cases of distress, urgency or safety, transmissions:
1384

NOC **6595** **2936** *a)* by radiotelegraphy, shall not in general exceed a speed of sixteen
1385 words a minute;

NOC **6596** **2937** *b)* by radiotelephony, shall be made slowly and distinctly, each word
1386 being clearly pronounced to facilitate transcription.

NOC **6597** **2938** § 5. The abbreviations and signals of Appendix **14** and the Phonetic
1386A Alphabet and Figure Code in Appendix **24** should be used where applicable and, where language difficulties exist, the use of the International Code of Signals also is recommended.

NOC **6598** 965 **2939** § 6. (1) The International Convention for the Safety of Life at Sea prescribes which ships and which of their survival craft shall be fitted with radio equipment and which ships shall carry portable radio equipment for use in survival craft. It also prescribes the requirements which shall be complied with by such installations.

NOC **6599** 966 **2940** (2) The Annexes to the Convention on International Civil Aviation state which aircraft should be fitted with radio equipment and which aircraft should carry portable radio equipment for use in survival craft. They state also the requirements which should be complied with by such installations.

NOC **6600** 967 **2941** § 7. The applicable provisions of the present Regulations shall, however, be observed in the use of all such installations.

NOC **6601** 968 **2942** § 8. Mobile stations of the maritime mobile service may communicate, for safety purposes, with stations of the aeronautical mobile service.

(MOD) **6602** 992 **2943** § 9. Any aircraft required by national or international regulations to communicate for distress, urgency or safety purposes with stations of the maritime mobile service shall be capable of transmitting preferably class A2A or H2A and receiving preferably class A2A and H2A emissions on the carrier frequency 500 kHz or, on the carrier frequency 2 182 kHz, transmitting class A3E or H3E and receiving class A3E and H3E emissions, or on the frequency 156.8 MHz transmitting and receiving class G3E emissions.

2944 to **2968** NOT allocated.

N35

ARTICLE 38

NOC

Frequencies for Distress and Safety

NOC

Section I. Availability of Frequencies

NOC 6629 2969

A. 500 kHz

MOD 6630 2970
1107

§ 1. (1) The frequency 500 kHz is the international distress frequency for radiotelegraphy (see also No. **472**); it shall be used for this purpose by ship, aircraft and survival craft stations using frequencies in the bands between 405 kHz and 535 kHz when requesting assistance from the maritime services. It shall be used for the distress call and distress traffic, for the urgency signal and urgency messages, for the safety signal and, outside regions of heavy traffic, for short safety messages. When practicable, safety messages shall be transmitted on the working frequency after a preliminary announcement on 500 kHz (see also No. **4236**).

NOC 6631 2971
1108

(2) However, ship and aircraft stations which cannot transmit on 500 kHz should use any other available frequency on which attention might be attracted.

NOC 6632 2972

B. 2 182 kHz

MOD 6633 2973
1323

§ 2. (1) The frequency 2 182 kHz[1] is the international distress frequency for radiotelephony (see also Nos. **500** and **501**); it shall be used for this purpose by ship, aircraft and survival craft stations and by emergency position-indicating radiobeacons using frequencies in the authorized bands between 1 605 kHz and 4 000 kHz when requesting assistance from the maritime services. It is used for the distress call and distress traffic, for signals of emergency position-indicating radiobeacons, for the urgency signal and urgency messages and for the safety signal. Safety messages shall be transmitted, where practicable, on a working frequency after a preliminary announcement on 2 182 kHz. The class of emission to be used for radiotelephony on the frequency 2 182 kHz shall be A3E or H3E (see No. **4127**). The class of emission to be used by emergency position-indicating radiobeacons shall be as specified in Appendix **37** (see also No. **3265**).

NOC 6633.1 2973.1
1323.1

[1] Where administrations provide at their coast stations a watch on 2 182 kHz for receiving class R3E and J3E emissions as well as class A3E and H3E emissions, ship stations beyond the A3E or H3E communication range of such coast stations may call them for safety purposes using class R3E or J3E emissions. This procedure shall only be used when calling by the use of class A3E and H3E emissions has not been successful.

MOD **6634** **2974** (2) In the zone of Regions 1 and 2 south of latitude 15° N, including Mexico, and in the zone of Region 3 south of latitude 25° N, if a distress message on the carrier frequency 2 182 kHz has not been acknowledged, the radiotelephone alarm signal, whenever possible followed by the distress call and message, may be transmitted again on a carrier frequency of 4 125 kHz or 6 215.5 kHz, as appropriate (see Nos. **2982**, **2986** and **3054**).
1323A

MOD **6635** **2975** (3) However, ship and aircraft stations which cannot transmit on the carrier frequency 2 182 kHz or, in accordance with No. **2974**, on the carrier frequencies 4 125 kHz or 6 215.5 kHz, should use any other available frequency on which attention might be attracted.
1324

NOC **6636** **2976** (4) Selective calling under the provisions of Article **62** may be used on the carrier frequency 2 182 kHz in the shore-to-ship, ship-to-shore and ship-to-ship directions and on this frequency shall be confined to distress and urgency and to vital navigational warnings. In no circumstances shall such selective calling be used in place of the procedures given in Nos. **3101**, **3102**, **3116**, **3117** and **3270**.
1325A

NOC **6637** **2977** (5) Any coast station using the carrier frequency 2 182 kHz for distress purposes shall be able to transmit the radiotelephone alarm signal described in No. **3270** (see also Nos. **3277**, **3278** and **3279**).
1326

NOC **6638** **2978** (6) Any coast station authorized to send navigational warnings should be able to transmit the navigational warning signal described in Nos. **3284**, **3285** and **3286**.
1326AA

NOC **6639** **2979** *C. 3 023 kHz*

MOD **6640** **2980** § 3. The aeronautical carrier (reference) frequency 3 023 kHz may be used for intercommunication between mobile stations when they are engaged in coordinated search and rescue operations, and for communication between these stations and participating land stations, in accordance with the provisions of Appendices **27** * and **27 Aer2** * (see also Nos. **501** and **505**).
1326C

SUP **6641**
969A

MOD **6642** **2981** *D. 4 125 kHz*

MOD **6643** **2982** § 4. In the zone of Regions 1 and 2 south of latitude 15° N, including Mexico, and in the zone of Region 3 south of latitude 25° N, the carrier frequency 4 125 kHz is designated to supplement the carrier frequency of 2 182 kHz for distress and safety purposes and for call and reply (see also No. **520**). Stations using the frequency 4 125 kHz may continue to use class H3E emission until 1 January 1984.
1351E

SUP **6644**
1351I

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* *Note by the General Secretariat:* See No. **5189** and Resolution **400**.

NOC **6645** **2983** *E. 5 680 kHz*

MOD **6646** 1353B **2984** § 5. The aeronautical carrier (reference) frequency 5 680 kHz may be used for intercommunication between mobile stations when they are engaged in coordinated search and rescue operations, and for communication between these stations and participating land stations, in accordance with the provisions of Appendices **27** * and **27 Aer2** * (see also Nos. **501** and **505**).

MOD **6647** **2985** *F. 6 215.5 kHz*

MOD **6648** 1351F **2986** § 6. In the zone of Region 3 south of latitude 25° N, the carrier frequency 6 215.5 kHz is designated to supplement the carrier frequency 2 182 kHz for distress and safety purposes and for call and reply (see also No. **523**). Stations using the frequency 6 215.5 kHz may continue to use class H3E emission until 1 January 1984.

NOC **6649** **2987** *G. 8 364 kHz*

MOD **6650** 1179 **2988** § 7. The frequency 8 364 kHz is designated for use by survival craft stations if they are equipped to transmit on frequencies in the bands between 4 000 kHz and 27 500 kHz and if they desire to establish communications relating to search and rescue operations with stations of the maritime and aeronautical mobile services (see also No. **501**).

NOC **6651** **2989** *H. 121.5 MHz and 123.1 MHz*

NOC **6651A** 968 **2990** § 8. (1) Mobile stations of the maritime mobile service may communicate, for safety purposes, with stations of the aeronautical mobile service.

MOD **6652** 969 **2991** (2) For these purposes only, they may use the aeronautical emergency frequency 121.5 MHz and the aeronautical auxiliary frequency 123.1 MHz, using class A3E emissions for both frequencies (see also Nos. **501** and **593**). They shall then comply with any special arrangements between the governments concerned by which the aeronautical mobile service is regulated.

MOD **6653** **2992** *I. 156.3 MHz and 156.8 MHz*

MOD **6654** 953 **2993** § 9. The frequencies 156.3 MHz and 156.8 MHz may be used by aircraft stations for safety purposes only (see also note *h* of Appendix **18**).

SUP **6655**

MOD **6656** 1359 **2994** § 10. (1) The frequency 156.8 MHz is the international distress, safety and calling frequency for radiotelephony for stations of the maritime mobile service when they use frequencies in the authorized bands between 156 MHz and 174 MHz (see also Nos. **501** and **613**). It is used for the distress signal and call and distress traffic, for

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* *Note by the General Secretariat:* See No. **5189** and Resolution **400**.

the urgency signal, urgency traffic and for the safety signal (see also No. **2993**). Safety messages shall be transmitted where practicable on a working frequency after a preliminary announcement on 156.8 MHz. The class of emission to be used for radiotelephony on the frequency 156.8 MHz shall be G3E (see Appendix **19**).

NOC **6657** **2995** (2) However, ship stations which cannot transmit on 156.8 MHz should use
1359AA any other available frequency on which attention might be attracted.

MOD **6658** **2996** *J. 243 MHz*

(See Nos. **501** and **642**.)

MOD **6659** **2997** *K. 406 - 406.1 MHz Band*

(See No. **649**.)

ADD **6659A** **2998** *L. 1 544 - 1 545 MHz Band and*
1 645.5 - 1 646.5 MHz Band

(See No. **728**.)

NOC **6660** **2999** *M. Aircraft in Distress*

SUP **6661**
1208

MOD **6662** **3000** § 11. Any aircraft in distress shall transmit the distress call on the frequency
1321 on which watch is kept by the land or mobile stations capable of helping it. When the call is intended for stations in the maritime mobile service, the provisions of Nos. **2970** and **2971** or **2973** and **2975** or **2994** and **2995** shall be complied with.

NOC **6663** **3001** *N. Survival Craft Stations*

NOC **6664** **3002** § 12. Equipment provided for use in survival craft stations shall, if capable of
994 operating on any frequency:

NOC **6665** **3003** *a) in the bands between 405 kHz and 535 kHz*, be able to transmit
995 with a carrier frequency of 500 kHz using either class A2A and A2B * or H2A and H2B * emissions. If a receiver is provided for any of these bands, it shall be able to receive class A2A and H2A emissions on a carrier frequency of 500 kHz;

* This is to cater for the automatic reception of the radiotelegraph alarm signal.

NOC **6666** **3004** *b) in the bands between 1 605 kHz and 2 850 kHz*, be able to transmit with a carrier frequency of 2 182 kHz using class A3E or H3E emissions. If a receiver is provided for any of these bands, it shall be able to receive class A3E and H3E emissions on a carrier frequency of 2 182 kHz;
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NOC **6667** **3005** *c) in the bands between 4 000 kHz and 27 500 kHz*, be able to transmit with a carrier frequency of 8 364 kHz using class A2A or H2A emissions. If a receiver is provided for any of these bands, it shall be able to receive class A1A, A2A and H2A emissions throughout the band 8 341.75 - 8 728.5 kHz;
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MOD **6668** **3006** *d) in the bands between 118 MHz and 136 MHz*, be able to transmit on 121.5 MHz, preferably using amplitude modulated emission. If a receiver is provided for any of these bands, it shall be able to receive class A3E emissions on 121.5 MHz;
998

NOC **6669** **3007** *e) in the bands between 156 MHz and 174 MHz*, be able to transmit on 156.8 MHz using class G3E emission. If a receiver is provided for any of these bands it shall be able to receive class G3E emissions on 156.8 MHz;
998A

NOC **6670** **3008** *f) in the bands between 235 MHz and 328.6 MHz*, be able to transmit on the frequency 243 MHz.
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NOC

Section II. Protection of Distress Frequencies

NOC **6671** **3009**

A. General

NOC **6672** **3010** § 13. Any emission capable of causing harmful interference to distress, alarm, urgency or safety communications on the international distress frequencies 500 kHz or 2 182 kHz is prohibited (see Nos. **472**, **500**, **3018** and **3023**). Any emission causing harmful interference to distress, safety and calling communications on the frequency 156.8 MHz is prohibited (see Nos. **613**, **3033** and **4414**).
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MOD **6673** **3011** § 14. (1) Any signals sent for testing shall be kept to a minimum, particularly:
1295

3012 *a)* on the carrier frequency 2 182 kHz;

3013 *b)* on the frequency 156.8 MHz;

3014 *c)* in the zone of Regions 1 and 2 south of latitude 15° N, including Mexico, and in the zone of Region 3 south of latitude 25° N, on the carrier frequency 4 125 kHz;

3015 *d)* in the zone of Region 3 south of latitude 25° N also on the carrier frequency 6 215.5 kHz.

NOC **6674** **3016** (2) It is not permitted to send test transmissions of the radiotelephone alarm signal on the carrier frequency 2 182 kHz and the frequency 156.8 MHz, except where emergency equipment which can operate only on these frequencies is involved, in which case measures shall be taken to prevent radiation. Measures shall also be taken to prevent radiation from radiotelephone alarm tests carried out on frequencies other than 2 182 kHz and 156.8 MHz.
1295A

NOC **6675** **3017** *B. 500 kHz*

NOC **6676** **3018** § 15. (1) Apart from the transmissions authorized on 500 kHz, and taking account of No. **4226**, all transmissions on the frequencies included between 490 kHz and 510 kHz are forbidden (see No. **471** and Recommendation **200**).
1112

NOC **6677** **3019** (2) In order to facilitate the reception of distress calls, other transmissions on the frequency 500 kHz shall be reduced to a minimum, and in any case shall not exceed one minute.
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NOC **6678** **3020** (3) Before transmitting on 500 kHz, stations in the mobile service must listen on this frequency for a reasonable period to make sure that no distress traffic is being sent (see No. **3702** or **4713**).
1113A

NOC **6679** **3021** (4) The provisions of No. **3020** do not apply to stations in distress.
1113B

NOC **6680** **3022** *C. 2 182 kHz*

NOC **6681** **3023** § 16. (1) Except for transmissions authorized on the carrier frequency 2 182 kHz, all transmissions on the frequencies between 2 173.5 kHz and 2 190.5 kHz are forbidden.
1325

NOC **6682** **3024** (2) Before transmitting on the carrier frequency 2 182 kHz, a station in the mobile service should listen on this frequency for a reasonable period to make sure that no distress traffic is being sent (see No. **4915**).
1326A

NOC **6683** **3025** (3) The provisions of No. **3024** do not apply to stations in distress.
1326B

NOC **6684** **3026** (4) To facilitate the reception of distress calls, all transmissions on 2 182 kHz shall be kept to a minimum.
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NOC **6685** **3027** (5) To reduce unnecessary alarm signal emissions, tests of the radiotelephone alarm signal on the carrier frequency 2 182 kHz are prohibited (see No. **3016**).
1466B

(MOD) **6686** **3028** (6) As an exception such tests are permitted for radiotelephone emergency equipment which can operate only on the international distress frequency 2 182 kHz, in which case a suitable artificial antenna shall be employed.
1466C

MOD **6687** **3029** *D. 4 125 kHz and 6 215.5 kHz*

MOD **6688** **3030** § 17. (1) In the zone of Regions 1 and 2 south of latitude 15° N, including
1351G Mexico, and in the zone of Region 3 south of latitude 25° N, before transmitting on the carrier frequency 4 125 kHz or 6 215.5 kHz, a station shall listen on the frequency for a reasonable period to make sure that no distress traffic is being sent (see No. **4915**).

NOC **6689** **3031** (2) The provisions of No. **3030** do not apply to stations in distress.
1351H

NOC **6690** **3032** *E. 156.8 MHz*

NOC **6691** **3033** § 18. (1) All emissions in the band 156.725 - 156.875 MHz [1] capable of causing
1363 harmful interference to the authorized transmissions of stations of the maritime mobile service on 156.8 MHz are forbidden.

NOC **6692** **3034** (2) Before transmitting on the frequency 156.8 MHz, a station in the mobile
1363A service should listen on this frequency for a reasonable period to make sure that no distress traffic is being sent (see No. **4915**).

NOC **6693** **3035** (3) The provisions of No. **3034** do not apply to stations in distress.
1363B

NOC **6694** **3036** (4) To facilitate the reception of distress calls all transmissions on
1363C 156.8 MHz shall be kept to a minimum and shall not exceed one minute.

NOC **Section III. Watch on Distress Frequencies**

NOC **6695** **3037** *A. 500 kHz*

(MOD) **6696** **3038** § 19. (1) In order to increase the safety of life at sea and over the sea, all stations
1130 of the maritime mobile service normally keeping watch on frequencies in the authorized bands between 405 kHz and 535 kHz shall, during their hours of service, take the necessary measures to ensure watch on the international distress frequency 500 kHz for three minutes twice an hour beginning at *x* h 15 and *x* h 45 Coordinated Universal Time (UTC) by an operator using headphones or a loudspeaker.

NOC **6691.1** **3033.1** [1] After 1 January 1983 this band is reduced to 156.7625 - 156.8375 MHz (see Resolu-
1363.1 tion **308**).

MOD 6697 1131 3039 (2) During the periods mentioned above, except for the emissions provided for in this Chapter:

NOC 6698 1132 3040 *a)* transmissions shall cease in the bands between 485 kHz and 515 kHz;

NOC 6699 1133 3041 *b)* outside these bands, transmissions of stations of the mobile service may continue; stations of the maritime mobile service may listen to these transmissions on the express condition that they first ensure watch on the distress frequency as required by No. **3038**.

NOC 6700 1134 3042 § 20. (1) Stations of the maritime mobile service open to public correspondence and using frequencies in the authorized bands between 405 kHz and 535 kHz shall, during their hours of service, remain on watch on 500 kHz. This watch is obligatory only for class A2A and H2A emissions.

NOC 6701 1135 3043 (2) These stations, while observing the requirements of No. **3038**, are authorized to relinquish this watch only when they are engaged in communications on other frequencies.

NOC 6702 1136 3044 (3) When they are engaged in such communications:

3045 *a)* ship stations may maintain this watch on 500 kHz by means of an operator using headphones or a loudspeaker or by some appropriate means such as an automatic alarm receiver;

3046 *b)* coast stations may maintain this watch on 500 kHz by means of an operator using headphones or a loudspeaker; in the latter case an indication may be inserted in the List of Coast Stations.

NOC 6703 3047 *B. 2 182 kHz*

NOC 6704 1332 3048 § 21. (1) All coast stations which are open to public correspondence and which form an essential part of the coverage of the area for distress purposes shall, during their hours of service, maintain a watch on 2 182 kHz.

NOC 6705 1333 3049 (2) These stations shall maintain this watch by means of an operator using some aural method, such as headphones, split headphones or loudspeaker.

NOC 6706 1334 3050 (3) In addition, ship stations should keep the maximum watch practicable on the carrier frequency 2 182 kHz for receiving by any appropriate means the radiotelephone alarm signal described in No. **3270**, and the navigational warning signal described in Nos. **3284**, **3285** and **3286**, as well as distress, urgency and safety signals.

NOC 6707 1335 3051 § 22. Ship stations open to public correspondence should, as far as possible during their hours of service, keep watch on 2 182 kHz.

(MOD) **6708** **3052** § 23. In order to increase the safety of life at sea and over the sea, all stations
1335A of the maritime mobile service normally keeping watch on frequencies in the authorized bands between 1 605 kHz and 2 850 kHz shall, during their hours of service, and as far as possible, take steps to keep watch on the international distress carrier frequency 2 182 kHz for three minutes twice each hour beginning at *x* h 00 and *x* h 30 Coordinated Universal Time (UTC).

MOD **6709** **3053** *C. 4 125 kHz and 6 215.5 kHz*

MOD **6710** **3054** § 24. (1) In the zone of Regions 1 and 2 south of latitude 15° N, including
1354A Mexico, and in the zone of Region 3 south of latitude 25° N, all coast stations which are open to public correspondence and which form an essential part of the coverage of the area for distress purposes may, during their hours of service, maintain a watch on the carrier frequencies 4 125 kHz and/or 6 215.5 kHz, as appropriate (see Nos. **2982** and **2986**). Such watch should be indicated in the List of Coast Stations.

NOC **6711** **3055** (2) These stations should maintain this watch by means of an operator using
1354B some aural method, such as headphones, split headphones or loudspeaker.

NOC **6712** **3056** *D. 156.8 MHz*

NOC **6713** **3057** § 25. (1) A coast station providing an international maritime mobile radiotele-
1364 phone service in the band 156 - 174 MHz and which forms an essential part of the coverage of the area for distress purposes should, during its working hours in that band, maintain an efficient aural watch on 156.8 MHz (see Recommendation **306**).

NOC **6714** **3058** (2) Ship stations should, where practicable, maintain watch on 156.8 MHz
1367 when within the service area of a coast station providing international maritime mobile radiotelephone service in the band 156 - 174 MHz. Ship stations fitted only with VHF radiotelephone equipment operating in the authorized bands between 156 MHz and 174 MHz, should maintain watch on 156.8 MHz, when at sea.

NOC **6715** **3059** (3) Ship stations, when in communication with a port station may, on an
1367A exceptional basis and subject to the agreeement of the administration concerned, continue to maintain watch, on the appropriate port operations frequency only, provided that watch on 156.8 MHz is being maintained by the port station.

NOC **6716** **3060** (4) Ship stations, when in communication with a coast station in the ship
1367B movement service and subject to the agreement of the administrations concerned, may continue to maintain watch on the appropriate ship movement service frequency only, provided the watch on 156.8 MHz is being maintained by that coast station.

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to NOT allocated.
3085

NOC N36/36

ARTICLE 39

NOC

Distress Communications

NOC

Section I. General

NOC 6767 1394 3086 § 1. The distress call shall have absolute priority over all other transmissions. All stations which hear it shall immediately cease any transmission capable of interfering with the distress traffic and shall continue to listen on the frequency used for the emission of the distress call. This call shall not be addressed to a particular station and acknowledgement of receipt shall not be given before the distress message which follows it is sent.

NOC 6768 1383 3087 § 2. The distress call and message shall be sent only on the authority of the master or person responsible for the ship, aircraft or other vehicle carrying the mobile station or ship earth station.

NOC

Section II. Distress Signal

NOC 6769 1389 3088 § 3. (1) The radiotelegraph distress signal consists of the group · · · – – – · · ·, symbolized herein by $\overline{SOS}$, transmitted as a single signal in which the dashes are emphasized so as to be distinguished clearly from the dots.

NOC 6770 1390 3089 (2) The radiotelephone distress signal consists of the word MAYDAY pronounced as the French expression "m'aider".

NOC 6771 1391 3090 (3) These distress signals indicate that a ship, aircraft or other vehicle is threatened by grave and imminent danger and requests immediate assistance.

NOC

Section III. Distress Call

NOC 6772 1392 3091 § 4. (1) The distress call sent by radiotelegraphy consists of:

- the distress signal $\overline{SOS}$, sent three times;
- the word DE;
- the call sign of the mobile station in distress, sent three times.

NOC 6773 1393 3092 (2) The distress call sent by radiotelephony consists of:

- the distress signal MAYDAY, spoken three times;
- the words THIS IS (or DE spoken as DELTA ECHO in case of language difficulties);
- the call sign or other identification of the mobile station in distress, spoken three times.

NOC

Section IV. Distress Messages

NOC **6774** 1395 **3093** § 5. (1) The radiotelegraph distress message consists of:

– the distress signal SOS;

– the name, or other identification, of the mobile station in distress;

– particulars of its position;

– the nature of the distress and the kind of assistance desired;

– any other information which might facilitate the rescue.

NOC **6775** 1396 **3094** (2) The radiotelephone distress message consists of:

– the distress signal MAYDAY;

– the name, or other identification, of the mobile station in distress;

– particulars of its position;

– the nature of the distress and the kind of assistance desired;

– any other information which might facilitate the rescue.

NOC **6776** 1397 **3095** § 6. (1) As a general rule, a ship shall signal its position in latitude and longitude (Greenwich), using figures for the degrees and minutes, together with one of the words NORTH or SOUTH and one of the words EAST or WEST. In radiotelegraphy, the signal · – · – · – shall be used to separate the degrees from the minutes; however this shall not necessarily apply to the maritime mobile-satellite service. When practicable, the true bearing and distance in nautical miles from a known geographical position may be given.

NOC **6777** 1398 **3096** (2) As a general rule, and if time permits, an aircraft shall transmit in its distress message the following information:

– estimated position and time of the estimate;

– heading in degrees (state whether magnetic or true);

– indicated air speed;

– altitude;

– type of aircraft;

– nature of distress and type of assistance desired;

– any other information which might facilitate the rescue (including the intention of the person in command, such as forced alighting on the sea or crash landing).

NOC **6778** 1399 **3097** (3) As a general rule, an aircraft in flight shall signal its position either in radiotelephony or radiotelegraphy:

– by latitude and longitude (Greenwich) using figures for the degrees and minutes, together with one of the words NORTH or SOUTH and one of the words EAST or WEST; *or*

– by the name of the nearest place, and its approximate distance in relation thereto, together with one of the words NORTH, SOUTH, EAST or WEST, as the case may be, or when practicable, by words indicating intermediate directions.

NOC 6779 1400 **3098** (4) However, in radiotelegraphy, the words NORTH or SOUTH and EAST or WEST, indicated in Nos. **3095** and **3097**, may be replaced by the letters N or S and E or W.

NOC

Section V. Procedures

NOC **6780** **3099**

A. Radiotelegraphy

NOC **6781** 1401 **3100** § 7. (1) The radiotelegraph distress procedure shall consist of:

6782 1402 **3101** – the alarm signal; followed in order by:

6783 1403 **3102** – the distress call and an interval of two minutes;

6784 1404 **3103** – the distress call;

6785 1405 **3104** – the distress message;

6786 1406 **3105** – two dashes of ten to fifteen seconds' duration each;

6787 1407 **3106** – the call sign of the station in distress.

NOC **6788** 1408 **3107** (2) However, when time is vital, the second step of this procedure (No. **3102**) or even the first and second steps (Nos. **3101** and **3102**), may be omitted or shortened. These two steps of the distress procedure may also be omitted in circumstances where transmission of the alarm signal is considered unnecessary.

NOC **6789** 1409 **3108** § 8. (1) The distress message, preceded by the distress call, shall be repeated at intervals, especially during the periods of silence prescribed in No. **3038** for radiotelegraphy, until an answer is received.

NOC **6790** 1410 **3109** (2) The intervals shall, however, be sufficiently long to allow time for stations preparing to reply to start their sending apparatus.

NOC **6791** 1411 **3110** (3) The alarm signal may also be repeated, if necessary.

NOC **6792** 1412 **3111** § 9. The transmissions under Nos. **3105** and **3106**, which are to permit direction-finding stations to determine the position of the station in distress, may be repeated at frequent intervals if necessary.

NOC **6793** 1413 **3112** § 10. When the mobile station in distress receives no answer to a distress message sent on the distress frequency, the message may be repeated on any other available frequency on which attention might be attracted.

NOC **6794** 1414 **3113** § 11. Immediately before a crash landing or a forced landing (on land or sea) of an aircraft, as well as before total abandonment of a ship or an aircraft, the radio apparatus should be set for continuous emission, if considered necessary and circumstances permit.

NOC **6795** **3114** *B. Radiotelephony*

NOC **6796** 1415 **3115** § 12. The radiotelephone distress procedure shall consist of:

NOC **6797** 1416 **3116** – the alarm signal (whenever possible) followed by:

NOC **6798** 1417 **3117** – the distress call;

NOC **6799** 1418 **3118** – the distress message.

NOC **6800** 1419 **3119** § 13. After the transmission by radiotelephony of its distress message, the mobile station may be requested to transmit suitable signals followed by its call sign or other identification, to permit direction-finding stations to determine its position. This request may be repeated at frequent intervals if necessary.

NOC **6801** 1420 **3120** § 14. (1) The distress message, preceded by the distress call, shall be repeated at intervals, especially during the periods of silence prescribed in No. **3052** for radiotelephony, until an answer is received.

NOC **6802** 1421 **3121** (2) The intervals shall, however, be sufficiently long to allow time for stations preparing to reply to start their sending apparatus.

NOC **6803** 1422 **3122** (3) This repetition shall be preceded by the alarm signal whenever possible.

NOC **6804** 1423 **3123** § 15. When the mobile station in distress receives no answer to a distress message sent on the distress frequency, the message may be repeated on any other available frequency on which attention might be attracted.

NOC **6805** 1424 **3124** § 16. Immediately before a crash landing or a forced landing (on land or sea) of an aircraft, as well as before total abandonment of a ship or an aircraft, the radio apparatus should be set for continuous emission, if considered necessary and circumstances permit.

NOC **Section VI. Acknowledgement of Receipt of a Distress Message**

NOC **6806** 1425 **3125** § 17. (1) Stations of the mobile service which receive a distress message from a mobile station which is, beyond any possible doubt, in their vicinity, shall immediately acknowledge receipt.

NOC 6807 1426 3126 (2) However, in areas where reliable communications with one or more coast stations are practicable, ship stations should defer this acknowledgement for a short interval so that a coast station may acknowledge receipt.

NOC 6808 1427 3127 (3) Stations of the mobile service which receive a distress message from a mobile station which, beyond any possible doubt, is not in their vicinity, shall allow a short interval of time to elapse before acknowledging receipt of the message, in order to permit stations nearer to the mobile station in distress to acknowledge receipt without interference.

NOC 6809 1427A 3128 (4) However, stations in the maritime mobile service which receive a distress message from a mobile station which, beyond any possible doubt, is a long distance away, need not acknowledge receipt of messages except as specified in No. **3160**.

NOC 6810 1428 3129 § 18. The acknowledgement of receipt of a distress message shall be given in the following form:

NOC 6811 1429 3130 *a)* Radiotelegraphy:

- the distress signal $\overline{\text{SOS}}$;
- the call sign of the station sending the distress message, sent three times;
- the word DE;
- the call sign of the station acknowledging receipt, sent three times;
- the group RRR;
- the distress signal $\overline{\text{SOS}}$.

NOC 6812 1430 3131 *b)* Radiotelephony:

- the distress signal MAYDAY;
- the call sign or other identification of the station sending the distress message, spoken three times;
- the words THIS IS (or DE spoken as DELTA ECHO in case of language difficulties);
- the call sign or other identification of the station acknowledging receipt, spoken three times;
- the word RECEIVED (or RRR spoken as ROMEO ROMEO ROMEO in case of language difficulties);
- the distress signal MAYDAY.

NOC 6813 1431 3132 § 19. (1) Every mobile station which acknowledges receipt of a distress message shall, on the order of the master or person responsible for the ship, aircraft or other vehicle, transmit, as soon as possible, the following information in the order shown:

- its name;
- its position in the form prescribed in Nos. **3095**, **3097** and **3098**;

– the speed at which it is proceeding towards, and the approximate time it will take to reach, the mobile station in distress;

– additionally, if the position of the ship in distress appears doubtful, ship stations should also transmit, when available, the true bearing of the ship in distress preceded by the abbreviation QTE (for classification of bearings, see Appendix **41**).

NOC **6814** **3133** (2) Before transmitting the message specified in No. **3132**, the station shall
1432 ensure that it will not interfere with the emissions of other stations better situated to render immediate assistance to the station in distress.

NOC

Section VII. Distress Traffic

NOC **6815** **3134** § 20. Distress traffic consists of all messages relating to the immediate assis-
1433 tance required by the mobile station in distress.

NOC **6816** **3135** § 21. In distress traffic, the distress signal shall be sent before the call and at
1434 the beginning of the preamble of any radiotelegram.

MOD **6817** **3136** § 22. The control of distress traffic is the responsibility of the mobile station
1435 in distress or of the station which, by the application of the provisions of Section VIII of the present Article, has sent the distress message. These stations may, however, delegate the control of the distress traffic to another station.

NOC **6818** **3137** § 23. The station in distress or the station in control of distress traffic may
1436 impose silence either on all stations of the mobile service in the area or on any station which interferes with the distress traffic. It shall address these instructions "to all stations" (CQ) or to one station only, according to circumstances. In either case, it shall use:

NOC **6819** **3138** *a)* in radiotelegraphy, the abbreviation QRT, followed by the distress
1437 signal $\overline{\text{SOS}}$;

NOC **6820** **3139** *b)* in radiotelephony, the signal SEELONCE MAYDAY, pronounced
1438 as the French expression "silence, m'aider".

NOC **6821** **3140** § 24. If it is believed to be essential, any station of the mobile service near the
1439 ship, aircraft or other vehicle in distress may also impose silence. It shall use for this purpose:

NOC **6822** **3141** *a)* in radiotelegraphy, the abbreviation QRT, followed by the word
1440 DISTRESS and its own call sign;

NOC **6823** **3142** *b)* in radiotelephony, the word SEELONCE, pronounced as the French
1441 word "silence", followed by the word DISTRESS and its own call sign.

NOC **6824** **3143** § 25. (1) In radiotelegraphy, the use of the signal QRT $\overline{\text{SOS}}$ shall be reserved for
1442 the mobile station in distress and for the station controlling distress traffic.

NOC **6825** **3144** (2) In radiotelephony, the use of the signal SEELONCE MAYDAY shall be
1443 reserved for the mobile station in distress and for the station controlling distress traffic.

NOC **6826** **3145** § 26. (1) Any station of the mobile service which has knowledge of distress traffic
1444 and which cannot itself assist the station in distress shall nevertheless follow such traffic until it is evident that assistance is being provided.

NOC **6827** **3146** (2) Until they receive the message indicating that normal working may be
1445 resumed (see No. **3150**), all stations which are aware of the distress traffic, and which are not taking part in it, are forbidden to transmit on the frequencies on which the distress traffic is taking place.

NOC **6828** **3147** § 27. A station of the mobile service which, while following distress traffic, is
1446 able to continue its normal service, may do so when the distress traffic is well established and on condition that it observes the provisions of No. **3146** and does not interfere with the distress traffic.

NOC **6829** **3148** § 28. In cases of exceptional importance and provided that no interference or
1447 delay is caused to the handling of distress traffic, urgency and safety messages may be announced during a lull in the distress traffic, preferably by coast stations, on the distress frequencies. This announcement shall include an indication of the working frequency on which the urgency or safety message will be transmitted. In this case, the signals provided for in Nos. **3196**, **3197**, **3221** and **3222** should only be sent once (e.g. XXX DE ABC QSW . . .).

NOC **6830** **3149** § 29. A land station or an earth station in the maritime mobile-satellite service
1448 at a specified fixed point receiving a distress message shall, without delay, take the necessary action to advise the appropriate authorities responsible for providing for the operation of rescue facilities.

NOC **6831** **3150** § 30. (1) When distress traffic has ceased on a frequency which has been used for
1449 distress traffic, the station which has controlled this traffic shall transmit on that frequency a message addressed "to all stations" (CQ) indicating that normal working may be resumed.

NOC **6832** **3151** (2) When complete silence is no longer necessary on a frequency which is
1449A being used for distress traffic, the station controlling the traffic shall transmit on that frequency a message addressed "to all stations" (CQ) indicating that restricted working may be resumed.

NOC **6833** **3152** (3) *a)* In radiotelegraphy, the message referred to in No. **3150** consists of:
1450

– the distress signal $\overline{\text{SOS}}$;

– the call "to all stations" (CQ) sent three times;

– the word DE;

– the call sign of the station sending the message;

– the time of handing in of the message;

– the name and call sign of the mobile station which was in distress;

– the service abbreviation QUM.

3153 *b)* In radiotelegraphy, the message referred to in No. **3151** consists of:

– the distress signal $\overline{\text{SOS}}$;

– the call "to all stations" (CQ) sent three times;

– the word DE;

– the call sign of the station sending the message;

– the time of handing in of the message;

– the name and call sign of the mobile station which is in distress;

– the service abbreviation QUZ.

NOC 6834 1451 3154 (4) *a)* In radiotelephony, the message referred to in No. **3150** consists of:

– the distress signal MAYDAY;

– the call "Hello all stations" or CQ (spoken as CHARLIE QUEBEC) spoken three times;

– the words THIS IS (or DE spoken as DELTA ECHO in case of language difficulties);

– the call sign or other identification of the station sending the message;

– the time of handing in of the message;

– the name and call sign of the mobile station which was in distress;

– the words SEELONCE FEENEE pronounced as the French words "silence fini".

3155 *b)* In radiotelephony, the message referred to in No. **3151** consists of:

– the distress signal MAYDAY;

– the call "Hello all stations" or CQ (spoken as CHARLIE QUEBEC) spoken three times;

– the words THIS IS (or DE spoken as DELTA ECHO in case of language difficulties);

– the call sign or other identification of the station sending the message;

– the time of handing in of the message;

– the name and call sign of the mobile station which is in distress;

– the word PRU-DONCE pronounced as the French word "prudence".

NOC 6835 1451A 3156 § 31. When a station in distress has delegated control of distress working to another station, the person in charge of the station in distress should, when he considers silence no longer justified, immediately inform the controlling station, which will act in accordance with the provisions of No. **3150**.

NOC

Section VIII. Transmission of a Distress Message by a Station Not Itself in Distress

NOC 6836 1452 3157 § 32. A mobile station or a land station which learns that a mobile station is in distress shall transmit a distress message in any of the following cases:

NOC 6837 1453 3158 *a)* when the station in distress is not itself in a position to transmit the distress message;

NOC 6838 1454 3159 *b)* when the master or person responsible for the ship, aircraft or other vehicle not in distress, or the person responsible for the land station, considers that further help is necessary;

NOC 6839 1455 3160 *c)* when, although not in a position to render assistance, it has heard a distress message which has not been acknowledged.

NOC 6840 1456 3161 § 33. (1) The transmission of a distress message under the conditions prescribed in Nos. **3158** to **3160** shall be made on one or more of the international distress frequencies (500 kHz, 2 182 kHz, 156.8 MHz) or on any other frequency which may be used in case of distress (see Nos. **2970**, **2971**, **2973**, **2975**, **2994**, **2995** and **3000**).

NOC 6841 1457 3162 (2) This transmission of the distress message shall always be preceded by the call indicated below, which shall itself be preceded whenever possible by the radiotelegraph or radiotelephone alarm signal.

NOC 6842 1458 3163 (3) This call consists of:

NOC 6843 1459 3164 *a)* Radiotelegraphy:

– the signal $\overline{\text{DDD}}$ $\overline{\text{SOS}}$ $\overline{\text{SOS}}$ $\overline{\text{SOS}}$ $\overline{\text{DDD}}$;

– the word DE;

– the call sign of the transmitting station, sent three times.

6844 1460 3165 *b)* Radiotelephony:

– the signal MAYDAY RELAY pronounced as the French expression "m'aider relais", spoken three times;

– the words THIS IS (or DE spoken as DELTA ECHO in case of language difficulties);

– the call sign or other identification of the transmitting station, spoken three times.

NOC **6845** 1461 **3166** § 34. When the radiotelegraph alarm signal is used, an interval of two minutes shall be allowed, whenever this is considered necessary, before the transmission of the call mentioned in No. **3164**.

NOC **6846** 1462 **3167** § 35. When a station of the mobile service transmits a distress message under the conditions mentioned in No. **3160**, it shall take all necessary steps to notify the authorities who may be able to render assistance.

NOC **6847** 1462A **3168** § 36. A ship station should not acknowledge receipt of a distress message transmitted by a coast station under the conditions mentioned in Nos. **3157** to **3160** until the master or person responsible has confirmed that the ship station concerned is in a position to render assistance.

3169 to **3195** NOT allocated.

N37

ARTICLE 40

MOD

Urgency and Safety Transmissions, and Medical Transports

(MOD)

Section I. Urgency Signal and Messages

NOC 6873 1477 **3196** § 1. (1) In radiotelegraphy, the urgency signal consists of three repetitions of the group XXX, sent with the letters of each group and the successive groups clearly separated from each other. It shall be transmitted before the call.

NOC 6874 1478 **3197** (2) In radiotelephony, the urgency signal consists of three repetitions of the group of words PAN PAN, each word of the group pronounced as the French word "panne". The urgency signal shall be transmitted before the call.

NOC 6875 1479 **3198** § 2. (1) The urgency signal shall be sent only on the authority of the master or the person responsible for the ship, aircraft or other vehicle carrying the mobile station or mobile earth station in the maritime mobile-satellite service.

NOC 6876 1480 **3199** (2) The urgency signal may be transmitted by a land station or an earth station in the maritime mobile-satellite service at specified fixed points only with the approval of the responsible authority.

NOC 6877 1481 **3200** § 3. (1) The urgency signal indicates that the calling station has a very urgent message to transmit concerning the safety of a ship, aircraft or other vehicle, or the safety of a person.

NOC 6878 1482 **3201** (2) The urgency signal and the message following it shall be sent on one or more of the international distress frequencies (500 kHz, 2 182 kHz, 156.8 MHz), or on any other frequency which may be used in case of distress.

NOC 6879 1482A **3202** (3) However, in the maritime mobile service, the message shall be transmitted on a working frequency:

a) in the case of a long message or a medical call; *or*

b) in areas of heavy traffic in the case of the repetition of a message transmitted in accordance with the provision as laid down in No. **3201**.

An indication to this effect shall be given at the end of the call.

NOC 6880 1483 **3203** (4) The urgency signal shall have priority over all other communications, except distress. All stations which hear it shall take care not to interfere with the transmission of the message which follows the urgency signal.

NOC 6881 1483A **3204** (5) In the maritime mobile service, urgency messages may be addressed either to all stations or to a particular station.

NOC 6882 1484 **3205** § 4. Messages preceded by the urgency signal shall, as a general rule, be drawn up in plain language.

NOC **6883** **3206** § 5. (1) Mobile stations which hear the urgency signal shall continue to listen for
1485 at least three minutes. At the end of this period, if no urgency message has been heard, a land station should, if possible, be notified of the receipt of the urgency signal. Thereafter, normal working may be resumed.

NOC **6884** **3207** (2) However, land and mobile stations which are in communication on
1486 frequencies other than those used for the transmission of the urgency signal and of the call which follows it may continue their normal work without interruption provided the urgency message is not addressed "to all stations" (CQ).

(MOD) **6885** **3208** § 6. When the urgency signal has been sent before transmitting a message "to
1487 all stations" (CQ) which calls for action by the stations receiving the message, the station responsible for its transmission shall cancel it as soon as it knows that action is no longer necessary. This message of cancellation shall likewise be addressed "to all stations" (CQ).

ADD **Section II. Medical Transports**

ADD **6885A** **3209** § 7. The term "medical transports", as defined in the 1949 Geneva Conventions and Additional Protocols, refers to any means of transportation by land, water or air, whether military or civilian, permanent or temporary, assigned exclusively to medical transportation and under the control of a competent authority of a Party to a conflict.

ADD **6885B** **3210** § 8. For the purpose of announcing and identifying medical transports which are protected under the above-mentioned Conventions, a complete transmission of the urgency signals described in Nos. **3196** and **3197** shall be followed by the addition of the single group "YYY" in radiotelegraphy and by the addition of the single word MAY-DEE-CAL, pronounced as in French "médical", in radiotelephony.

ADD **6885C** **3211** § 9. The frequencies specified in No. **3201** may be used by medical transports for the purpose of self-identification and to establish communications. As soon as practicable, communications shall be transferred to an appropriate working frequency.

ADD **6885D** **3212** § 10. The use of the signals described in No. **3210** indicates that the message which follows concerns a protected medical transport. The message shall convey the following data:

3213 *a)* the call sign or other recognized means of identification of the medical transport;

3214 *b)* position of the medical transport;

3215 *c)* number and type of medical transports;

3216 *d)* intended route;

3217 *e)* estimated time en route and of departure and arrival, as appropriate;

3218 *f)* any other information, such as flight altitude, radio frequencies guarded, languages used and secondary surveillance radar modes and codes.

ADD **6885E** **3219** § 11. The provisions of Section I of this Article shall apply as appropriate to the use of the urgency signal by medical transports.

ADD **6885F** **3220** § 12. The use of radiocommunications for announcing and identifying medical transports is optional; however, if they are used, the provisions of these Regulations and particularly of this Section and of Articles **37** and **38** shall apply.

NOC **Section III. Safety Signal and Messages**

NOC **6886** 1488 **3221** § 13. (1) In radiotelegraphy, the safety signal consists of three repetitions of the group TTT, the individual letters of each group and the successive groups being clearly separated from each other. It shall be sent before the call.

NOC **6887** 1489 **3222** (2) In radiotelephony, the safety signal consists of the word "SÉCURITÉ" pronounced clearly as in French, spoken three times and transmitted before the call.

NOC **6888** 1490 **3223** § 14. (1) The safety signal indicates that the station is about to transmit a message containing an important navigational or important meteorological warning.

NOC **6889** 1491 **3224** (2) The safety signal and call shall be sent on one or more of the international distress frequencies (500 kHz, 2 182 kHz, 156.8 MHz) or on any other frequency which may be used in case of distress.

NOC **6890** 1492 **3225** (3) The safety message which follows the call should be sent on a working frequency. A suitable announcement to this effect shall be made at the end of the call.

NOC **6891** 1492A **3226** (4) In the maritime mobile service, safety messages shall generally be addressed to all stations. In some cases, however, they may be addressed to a particular station.

NOC **6892** 1493 **3227** § 15. (1) With the exception of messages transmitted at fixed times, the safety signal, when used in the maritime mobile service, shall be transmitted towards the end of the first available period of silence (see No. **3038** for radiotelegraphy and No. **3052** for radiotelephony); the message shall be transmitted immediately after the period of silence.

NOC **6893** 1494 **3228** (2) In the cases prescribed in Nos. **3328**, **3331** and **3335**, the safety signal and the message which follows it shall be transmitted as soon as possible, and shall be repeated at the end of the first period of silence which follows.

NOC **6894** 1495 **3229** § 16. All stations hearing the safety signal shall listen to the safety message until they are satisfied that the message is of no concern to them. They shall not make any transmission likely to interfere with the message.

3230 to **3254** NOT allocated.

N38

ARTICLE 41

NOC

Alarm and Warning Signals

NOC

Section I. Emergency Position-Indicating Radiobeacon Signals

SUP **6920**
1388A

NOC **6921** **3255** § 1. The emergency position-indicating radiobeacon signal consists of:
1476A

NOC **6922** **3256** *a)* for medium frequencies, i.e. 2 182 kHz [1]:
1476B

3257 1) a keyed emission modulated by a tone of 1 300 Hz, and having a ratio of the period of the emission to the period of silence equal to or greater than one, and an emission duration between one and five seconds; *or*

NOC **6923** **3258** 2) the radiotelephone alarm signal (see No. **3270**), followed by the Morse letter B and/or the call sign of the ship to which the radiobeacon belongs transmitted by keying a carrier modulated by a tone of either 1 300 Hz or 2 200 Hz;
1476C

(MOD) **6924** **3259** *b)* for very high frequencies, i.e. 121.5 MHz and 243 MHz, a signal whose characteristics shall be in accordance with those recommended by the organizations mentioned in Resolution **601**.
1476D

NOC **6925** **3260** § 2. (1) The essential purpose of the emergency position-indicating radiobeacon signals is to facilitate determining the position of survivors in search and rescue operations.
1476H

NOC **6926** **3261** (2) These signals shall indicate that one or more persons are in distress, may no longer be on board a ship or an aircraft, and that receiving facilities may not be available.
1476I

NOC **6927** **3262** (3) Any mobile service station receiving one of these signals, while no distress or urgent traffic is being passed, shall consider that the provisions of Nos. **3157** and **3158** are applicable.
1476J

NOC **6928** **3263** § 3. (1) Only the signal specified in No. **3257** shall be used by low power radiobeacons (Type L) and it shall be transmitted continuously.
1476E

NOC **6922.1** **3256.1** [1] In Japan, there are emergency position-indicating radiobeacons which transmit the distress signal and identification on frequencies between 2 089.5 kHz and 2 092.5 kHz using class A1A emissions.
1476B.1

NOC **6929** **3264** (2) High power radiobeacons (Type H) may transmit either of the signals
1476F specified in No. **3257** or **3258** with a keying cycle which consists of the keying signal for between thirty and fifty seconds followed by a period of silence of between thirty and sixty seconds.

NOC **6930** **3265** (3) However, the keying cycles in Nos. **3263** and **3264** may be interrupted
1476G for speech transmission if administrations so desire.

NOC **6931** **3266** § 4. (1) Equipment designed to transmit emergency position-indicating radio-
1476K beacon signals on the carrier frequency 2 182 kHz shall meet the requirements specified in Appendix **37**.

(MOD) **6932** **3267** (2) Equipment designed to transmit emergency position-indicating radio-
1476L beacon signals on the frequencies 121.5 MHz and 243 MHz shall comply with the recommendations and standards of the organizations mentioned in Resolution **601**.

NOC **Section II. Radiotelegraph and Radiotelephone Alarm Signals**

SUP **6933**
1387

NOC **6934** **3268** § 5. (1) The radiotelegraph alarm signal consists of a series of twelve dashes sent
1463 in one minute, the duration of each dash being four seconds and the duration of the interval between consecutive dashes one second. It may be transmitted by hand but its transmission by means of an automatic instrument is recommended.

NOC **6935** **3269** (2) Any ship station working in the bands between 405 kHz and 535 kHz
1464 which is not provided with an automatic apparatus for the transmission of the radiotelegraph alarm signal shall be permanently equipped with a clock, clearly marking the seconds, preferably by means of a sweep hand completing one revolution per minute. This clock shall be placed at a point sufficiently visible from the operator's table so that the operator may, by keeping it in view, easily and correctly time the different elements of the alarm signal.

SUP **6936**
1388

NOC **6937** **3270** § 6. (1) The radiotelephone alarm signal consists of two substantially sinusoidal
1465 audio frequency tones transmitted alternately. One tone shall have a frequency of 2 200 Hz and the other a frequency of 1 300 Hz, the duration of each tone being 250 milliseconds.

NOC **6938** **3271** (2) The radiotelephone alarm signal, when generated by automatic means,
1466 shall be sent continuously for a period of at least thirty seconds but not exceeding one minute; when generated by other means, the signal shall be sent as continuously as practicable over a period of approximately one minute.

NOC **6939** **3272** (3) The radiotelephone alarm signal transmitted by coast stations shall be
1466AA that described in Nos. **3270** and **3271**, which may be followed by a single tone of 1 300 Hz for 10 seconds.

SUP **6940**
1466A

SUP **6941**
1473A

NOC **6942** **3273** § 7. The purpose of these special signals is:
1467

NOC **6943** **3274** *a)* in radiotelegraphy, the actuation of automatic devices giving the
1468 alarm to attract the attention of the operator when there is no listening watch on the distress frequency;

NOC **6944** **3275** *b)* in radiotelephony, to attract the attention of the person on watch or
1469 to actuate automatic devices giving the alarm, or activating a silenced loudspeaker for the message which is to follow.

NOC **6945** **3276** § 8. (1) These signals shall only be used to announce:
1470

NOC **6946** **3277** *a)* that a distress call or message is about to follow; *or*
1471

NOC **6947** **3278** *b)* the transmission of an urgent cyclone warning, which should be
1472 preceded by the safety signal (see Nos. **3221** and **3222**). In this case they may only be used by coast stations duly authorized by their government; *or*

(MOD) **6948** **3279** *c)* the loss of a person or persons overboard. In this case they may
1473 only be used when the assistance of other ships is required and cannot be satisfactorily obtained by the use of the urgency signal alone, but the alarm signal shall not be repeated by other stations. The message shall be preceded by the urgency signal (see Nos. **3196** and **3197**).

NOC **6949** **3280** (2) In the cases referred to in Nos. **3278** and **3279**, an interval of two
1474 minutes should, if possible, separate the end of the radiotelegraph alarm signal and the beginning of the warning or the message.

NOC **6950** **3281** § 9. Automatic devices intended for the reception of the radiotelegraph and
1475 radiotelephone alarm signals shall meet the requirements specified in Appendix **36**.

NOC **6951** **3282** § 10. Before any such automatic device is approved for use on ships, the
1476 administration having jurisdiction over those ships shall be satisfied by practical tests made under operating conditions equivalent to those obtaining in practice (including interference, vibration, etc.), that the apparatus complies with the provisions of these Regulations.

NOC

Section III. All Ships Selective Call

NOC **6952** 1388AA **3283** § 11. The characteristics of the "all ships call" in the selective calling system, which is reserved for alarm purposes only, are given in Appendix **39**.

NOC

Section IV. Navigational Warning Signal

NOC **6953** 1476AA **3284** § 12. (1) The navigational warning signal consists of one substantially sinusoidal tone of the frequency 2 200 Hz, interrupted so that the durations of tone and space are 250 milliseconds each.

NOC **6954** 1476AB **3285** (2) The signal should be transmitted by coast stations continuously for a period of fifteen seconds before vital navigational warnings on radiotelephony in the medium frequency maritime bands.

(MOD) **6955** 1476AC **3286** (3) The purpose of the signal is to attract the attention of the person on watch using a loudspeaker or a filtered loudspeaker, or to actuate an automatic device to activate a silenced loudspeaker for the message which is to follow.

3287 to **3311** NOT allocated.

N39

ARTICLE 42

NOC

Special Services Relating to Safety

NOC

Section I. Meteorological Messages

NOC **6981** **3312** § 1. (1) Meteorological messages comprise:
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NOC **6982** **3313** *a)* messages addressed to meteorological services officially entrusted with weather forecasts, more specifically for the protection of maritime and air navigation;
1597

NOC **6983** **3314** *b)* messages from these meteorological services intended specially for:
1598

NOC **6984** **3315** – ship stations;
1599

NOC **6985** **3316** – protection of aircraft;
1600

NOC **6986** **3317** – the public.
1601

NOC **6987** **3318** (2) The information contained in these messages may be:
1602

NOC **6988** **3319** *a)* observations taken at fixed times;
1603

NOC **6989** **3320** *b)* warnings of dangerous phenomena;
1604

NOC **6990** **3321** *c)* forecasts and warnings;
1605

NOC **6991** **3322** *d)* statements of the general meteorological situation.
1606

NOC **6992** **3323** § 2. (1) The various national meteorological services mutually agree to prepare common transmission programmes so as to use the transmitters best situated to serve the regions concerned.
1607

MOD **6993** **3324** (2) The meteorological observations contained in the classes mentioned in Nos. **3313** to **3316** should be drawn up in an international meteorological code, whether they are transmitted by or intended for mobile stations.
1608

MOD **6994** **3325** § 3. For observation messages intended for an official meteorological service, use shall be made of the frequencies made available for meteorological purposes, in conformity with regional agreements made by the services concerned for the use of these frequencies.
1609

NOC **6995** **3326** § 4. (1) Meteorological messages specially intended for all ship stations shall in principle be sent in accordance with a definite timetable, and, as far as possible, at times when they can be received by ship stations with only one operator. In radiotelegraphy the transmission speed shall not exceed sixteen words a minute.
1610

NOC **6996** **3327** (2) During the transmission "to all stations" of meteorological messages intended for stations of the maritime mobile service, all stations of this service whose transmission might interfere with the reception of these messages shall keep silent in order to permit all stations which desire to do so to receive these messages.
1611

MOD **6997** **3328** (3) Meteorological warning messages for the maritime mobile service shall
1612 be transmitted without delay. They shall be repeated at the end of the first silence period which follows their receipt (see Nos. **3038** and **3052**) as well as during the next appropriate broadcast as indicated in the List of Radiodetermination and Special Service Stations. They shall be preceded by the safety signal and sent on the appropriate frequencies (see No. **3224**).

NOC **6998** **3329** (4) In addition to the regular information services contemplated in the
1613 preceding sub-paragraphs, administrations shall take the necessary steps to ensure that certain stations shall, upon request, communicate meteorological messages to stations in the maritime mobile service.

NOC **6999** **3330** (5) The provisions of Nos. **3326** to **3329** are applicable to the aeronautical
1614 mobile service, in so far as they are not contrary to more detailed special agreements which ensure at least equal protection to air navigation.

NOC **7000** **3331** § 5. (1) Messages originating in mobile stations and containing information
1615 concerning the presence of cyclones shall be transmitted, with the least possible delay, to other mobile stations in the vicinity and to the appropriate authorities at the first point of the coast with which contact can be established. Their transmission shall be preceded by the safety signal.

NOC **7001** **3332** (2) Any mobile station may, for its own use, listen to messages containing
1616 meteorological observations sent out by other mobile stations, even those which are addressed to a national meteorological service.

NOC **7002** **3333** (3) Stations of the mobile services which transmit meteorological observa-
1617 tions addressed to a national meteorological service are not required to repeat them to other stations. However, the exchange between mobile stations, on request, of information relating to the state of the weather is authorized.

NOC

Section II. Notices to Mariners

NOC **7003** **3334** § 6. The provisions of Nos. **3326** to **3330** shall apply to notices to mariners.
1618

NOC **7004** **3335** § 7. Messages containing information concerning the presence of dangerous
1619 ice, dangerous wrecks, or any other imminent danger to marine navigation, shall be transmitted as soon as possible to other ship stations in the vicinity, and to the appropriate authorities at the first point of the coast with which contact can be established. These transmissions shall be preceded by the safety signal.

NOC **7005** **3336** § 8. When thought desirable, and provided the sender agrees, administrations
1620 may authorize their land stations to communicate information concerning maritime damage or casualties or information of general interest to navigation to the marine information agencies approved by them and subject to the conditions fixed by them.

NOC

Section III. Medical Advice

NOC **7006** 1621 **3337** § 9. Mobile stations requiring medical advice may obtain it through any of the land stations shown as providing this service in the List of Radiodetermination and Special Service Stations.

NOC **7007** 1622 **3338** § 10. Radiotelegrams and radiotelephone calls concerning medical advice may be preceded by the appropriate urgency signal (see Nos. **3198** to **3208**).

3339 to **3363** NOT allocated.

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CHAPTER X

NOC

Aeronautical Mobile Service

N40/22

ARTICLE 43

MOD

Authority of the Person Responsible for the Mobile Stations in the Aeronautical Mobile Service

MOD 7108 845 3364 § 1. The service of a mobile station is placed under the supreme authority of the person responsible for the aircraft or other vehicle carrying the mobile station.

NOC 7109 846 3365 § 2. The person holding this authority shall require that each operator comply with these Regulations and that the mobile station for which the operator is responsible is used, at all times, in accordance with these Regulations.

MOD 7110 847 3366 § 3. The person responsible, as well as all the persons who may have knowledge of the text or even of the existence of a radiotelegram, or of any information whatever obtained by means of the radiocommunication service, are placed under the obligation of observing and ensuring the secrecy of correspondence.

3367 to 3391 NOT allocated.

N41

ARTICLE 44

NOC

Operators' Certificates for Aircraft Stations

NOC

Section I. General Provisions

MOD 7136 848 3392 § 1. (1) The service of every aircraft radiotelegraph station shall be performed by an operator holding a certificate issued or recognized by the government to which the station is subject.

MOD 7137 849 3393 (2) The service of every aircraft radiotelephone station shall be controlled by an operator holding a certificate issued or recognized by the government to which the station is subject. Provided the station is so controlled, other persons besides the holder of the certificate may use the radiotelephone equipment.

MOD 7138 850 3394 (3) The service of automatic communication devices [1] installed in an aircraft station shall be controlled by an operator holding a certificate issued or recognized by the government to which the station is subject. Provided the devices are so controlled, they may be used by other persons. If such devices require for their basic function the use of Morse code signals specified in the Instructions for the Operation of the International Public Telegram Service, the service shall be performed by an operator holding a radiotelegraph operator's certificate. However, this latter requirement does not apply to automatic devices which may use Morse code signals solely for identification purposes.

NOC 7139 851 3395 (4) Nevertheless, in the service of radiotelephone stations operating solely on frequencies above 30 MHz, each government shall decide for itself whether a certificate is necessary and, if so, shall define the conditions for obtaining it.

MOD 7140 852 3396 (5) The provisions of No. **3395** shall not, however, apply to any aircraft station working on frequencies assigned for international use.

MOD 7141 853 3397 § 2. (1) In the case of complete unavailability of the operator in the course of a flight, and solely as a temporary measure, the person responsible for the station may authorize an operator holding a certificate issued by the government of another Member of the Union to perform the radiocommunication service.

MOD 7142 854 3398 (2) When it is necessary to employ a person without a certificate or an operator not holding an adequate certificate as a temporary operator, his performance as such must be limited solely to signals of distress, urgency and safety, messages relating thereto, messages relating directly to the safety of life and essential messages relating to the navigation and safe movement of the aircraft. Persons employed in these cases are bound by the provisions of No. **3402** regarding the secrecy of correspondence.

NOC 7138.1 850.1 3394.1 [1] The term "automatic communication devices" is intended to include such equipment as teleprinters, data transfer systems, etc.

NOC 7143 855 3399 (3) In all cases, such temporary operators must be replaced as soon as possible by operators holding the certificate prescribed in paragraph 1 of this Article.

NOC 7144 856 3400 § 3. (1) Each administration shall take the necessary steps to prevent, to the maximum extent possible, the fraudulent use of certificates. For this purpose, such certificates shall bear the holder's signature and shall be authenticated by the issuing administration. Administrations may employ, if they wish, other means of identification such as photographs, fingerprints, etc.

NOC 7145 857 3401 (2) To facilitate verification of certificates, these may carry, if necessary, in addition to the text in the national language, a translation of this text in a working language of the Union.

NOC 7146 858 3402 § 4. Each administration shall take the necessary steps to place operators under the obligation to preserve the secrecy of correspondence as provided for in No. **2023**.

NOC **Section II. Classes and Categories of Certificates**

NOC 7147 859 3403 § 5. (1) There are two classes of certificates, as well as a special certificate, for radiotelegraph operators [1].

(MOD) 7148 860 3404 (2) There are two categories of radiotelephone operator's certificates, general and restricted [1].

NOC 7149 861 3405 § 6. (1) The holder of a first- or second-class radiotelegraph operator's certificate may carry out the radiotelegraph or radiotelephone service of any aircraft station.

NOC 7150 862 3406 (2) The holder of a radiotelephone operator's general certificate may carry out the radiotelephone service of any aircraft station.

NOC 7151 863 3407 (3) The holder of a radiotelephone operator's restricted certificate may carry out the radiotelephone service of any aircraft station, when working on frequencies of the maritime mobile service, provided that:

3408 *a)* the peak envelope power of the transmitter does not exceed 200 watts; *or*

3409 *b)* the operation of the transmitter requires only the use of simple external switching devices, excluding all manual adjustment of frequency determining elements, with the stability of the frequencies maintained by the transmitter itself within the limits of tolerance specified by Appendix **7**, and the peak envelope power of the transmitter does not exceed 1 kilowatt.

NOC 7147.1 859.1 3403.1

(MOD) 7148.1 860.1 3404.1

[1] As regards the employment of operators holding the different certificates, see Article **45**.

NOC 7152 3410 (4) The holder of a radiotelephone operator's restricted certificate may carry out the radiotelephone service of any aircraft station operating on frequencies allocated exclusively to the aeronautical mobile service, provided that the operation of the transmitter requires only the use of simple external switching devices, excluding all manual adjustment of frequency determining elements, and that the stability of the frequencies is maintained by the transmitter itself within the limits of tolerance specified by Appendix 7.
864

NOC 7153 3411 (5) The radiotelephone service of aircraft stations for which only a restricted radiotelephone operator's certificate is required may be carried out by an operator holding a radiotelegraph operator's special certificate.
865

NOC 7154 3412 § 7. Exceptionally, the second-class radiotelegraph operator's certificate as well as the radiotelegraph operator's special certificate may be limited exclusively to the radiotelegraph service. In such cases the certificate shall be suitably endorsed.
866

NOC

Section III. Conditions for the Issue of Operators' Certificates

NOC 7155 3413

A. General

NOC 7156 3414 § 8. (1) The conditions to be imposed for obtaining the various certificates are contained in the following paragraphs and represent the minimum requirements.
867

NOC 7157 3415 (2) Each administration is free to fix the number of examinations necessary to obtain each certificate.
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MOD 7158 3416 § 9. (1) The administration which issues a certificate may, before authorizing an operator to carry out the service on board aircraft, require the fulfilment of other conditions (for example: experience with automatic communication devices; further technical and professional knowledge relating particularly to navigation; physical fitness; the completion as an operator of a certain number of flying hours, etc.).
869

NOC 7159 3417 (2) Administrations should take whatever steps they consider necessary to ensure the continued proficiency of operators after prolonged absences from operational duties.
870

NOC 7160 3418

B. First-Class Radiotelegraph Operator's Certificate

NOC 7161 3419 § 10. The first-class certificate is issued to candidates who have given proof of the technical and professional knowledge and qualifications enumerated below:
871

NOC 7162 3420 *a)* knowledge both of the general principles of electricity and of the theory of radio, knowledge of the adjustment and practical working of various types of radiotelegraph and radiotelephone apparatus used in the mobile service, including apparatus used for radio
872

direction-finding and the taking of direction-finding bearings, as well as a general knowledge of the principles of operation of other apparatus generally used for radionavigation;

NOC **7163** 873 **3421** *b)* theoretical and practical knowledge of the operation and maintenance of apparatus, such as motor-generators, storage batteries, etc., used in the operation and adjustment of the radiotelegraph, radiotelephone and radio direction-finding apparatus mentioned in No. **3420**;

MOD **7164** 874 **3422** *c)* practical knowledge necessary to repair, with the means available on board, damage which may occur to the radiotelegraph, radiotelephone and radio direction-finding apparatus during a flight;

NOC **7165** 875 **3423** *d)* ability to send correctly by hand and to receive correctly by ear, in the Morse code, code groups (mixed letters, figures and punctuation marks) at a speed of twenty groups a minute, and a plain language text at a speed of twenty-five words a minute. Each code group shall comprise five characters, each figure or punctuation mark counting as two characters. The average word of the text in plain language shall contain five characters. The duration of each test of sending and of receiving shall be, as a rule, five minutes;

NOC **7166** 876 **3424** *e)* ability to send correctly and to receive correctly by radiotelephone;

NOC **7167** 877 **3425** *f)* detailed knowledge of the Regulations applying to radiocommunications, knowledge of the documents relating to charges for radiocommunications, knowledge of the provisions of the Convention for the Safety of Life at Sea which relate to radio, and, in the case of air navigation, knowledge of the special provisions governing the aeronautical fixed, mobile, and radionavigation services. In the latter case, the certificate states that the holder has successfully passed the tests relating to these special provisions;

NOC **7168** 878 **3426** *g)* a sufficient knowledge of world geography, especially the principal shipping and air routes and the most important telecommunication routes;

NOC **7169** 879 **3427** *h)* sufficient knowledge of one of the working languages of the Union. Candidates should be able to express themselves satisfactorily in that language, both orally and in writing. Each administration shall decide for itself the language or languages required.

NOC **7170** **3428** *C. Second-Class Radiotelegraph Operator's Certificate*

NOC **7171** 880 **3429** § 11. The second-class certificate is issued to candidates who have given proof of the technical and professional knowledge and qualifications enumerated below:

NOC **7172** 881 **3430** *a)* elementary theoretical and practical knowledge of electricity and of radio, knowledge of the adjustment and practical working of the various types of radiotelegraph and radiotelephone apparatus used in the mobile service, including apparatus used for radio direction-

finding and the taking of direction-finding bearings, as well as elementary knowledge of the principles of operation of other apparatus in general use for radionavigation;

NOC **7173** **3431** *b)* elementary theoretical and practical knowledge of the operation and
882 maintenance of apparatus, such as motor-generators, storage batteries, etc., used in the operation and adjustment of the radiotelegraph, radiotelephone and radio direction-finding apparatus mentioned in No. **3430**;

MOD **7174** **3432** *c)* practical knowledge sufficient for effecting repairs in the case of
883 minor damage which may occur to the radiotelegraph, radiotelephone and radio direction-finding apparatus during a flight;

NOC **7175** **3433** *d)* ability to send correctly by hand and to receive correctly by ear, in
884 the Morse code, code groups (mixed letters, figures and punctuation marks) at a speed of sixteen groups a minute, and a plain language text at a speed of twenty words a minute. Each code group shall comprise five characters, each figure or punctuation mark counting as two characters. The average word of the text in plain language shall contain five characters. The duration of each test of sending and of receiving shall, as a rule, be five minutes;

NOC **7176** **3434** *e)* ability to send correctly and to receive correctly by radiotelephone,
885 except in the case provided for in No. **3412**;

NOC **7177** **3435** *f)* knowledge of the Regulations applying to radiocommunications,
886 knowledge of the documents relating to charges for radiocommunications, knowledge of the provisions of the Convention for the Safety of Life at Sea which relate to radio, and, in the case of air navigation, knowledge of the special provisions governing the aeronautical fixed, mobile, and radionavigation services. In the latter case, the certificate states that the holder has successfully passed the tests relating to these special provisions;

NOC **7178** **3436** *g)* a sufficient knowledge of world geography, especially the principal
887 shipping and air routes and the most important telecommunication routes;

NOC **7179** **3437** *h)* if necessary, an elementary knowledge of one of the working
888 languages of the Union. Candidates should be able to express themselves satisfactorily in that language, both orally and in writing. Each administration shall decide for itself the language or languages required.

NOC **7180** **3438** *D. Radiotelegraph Operator's Special Certificate*

NOC **7181** **3439** § 12. (1) The radiotelegraph operator's special certificate is issued to candidates
889 who have given proof of the knowledge and professional qualifications enumerated below:

NOC **7182** **3440** *a)* ability to send correctly by hand and receive correctly by ear, in the
890 Morse code, code groups (mixed letters, figures, and punctuation marks) at a speed of sixteen groups a minute, and a plain language text at a speed of twenty words a minute. Each code group shall

comprise five characters, each figure or punctuation mark counting as two characters. The average word of the text in plain language shall contain five characters;

NOC **7183** 891 **3441** *b)* knowledge of the practical operation and adjustment of radiotelegraph apparatus;

NOC **7184** 892 **3442** *c)* knowledge of the Regulations applying to radiotelegraph communications and specifically of that part of those Regulations relating to safety of life at sea.

NOC **7185** 893 **3443** (2) Each administration concerned shall fix the other conditions for obtaining this certificate. However, except as provided for in No. **3412**, the conditions specified in Nos. **3450**, **3451**, **3452** and **3453** or **3454**, as the case may be, shall be satisfied.

(MOD) **7186** **3444** *E. Radiotelephone Operators' Certificates*

MOD **7187** 894 **3445** § 13. The radiotelephone operator's general certificate is issued to candidates who have given proof of the knowledge and professional qualifications enumerated below (see also Nos. **3405** and **3406**):

NOC **7188** 895 **3446** *a)* a knowledge of the elementary principles of radiotelephony;

NOC **7189** 896 **3447** *b)* detailed knowledge of the practical operation and adjustment of radiotelephone apparatus;

NOC **7190** 897 **3448** *c)* ability to send correctly and to receive correctly by telephone;

NOC **7191** 898 **3449** *d)* detailed knowledge of the Regulations applying to radiotelephone communications and specifically of that part of those Regulations relating to the safety of life.

NOC **7192** 899 **3450** § 14. (1) The radiotelephone operator's restricted certificate is issued to candidates who have given proof of the knowledge and professional qualifications enumerated below:

NOC **7193** 900 **3451** *a)* practical knowledge of radiotelephone operation and procedure;

NOC **7194** 901 **3452** *b)* ability to send correctly and to receive correctly by telephone;

NOC **7195** 902 **3453** *c)* general knowledge of the Regulations applying to radiotelephone communications and specifically of that part of those Regulations relating to the safety of life.

MOD **7196** 903 **3454** (2) For aircraft radiotelephone stations operating on frequencies allocated exclusively to the aeronautical mobile service, each administration may itself fix these conditions for obtaining a radiotelephone operator's restricted certificate, provided that the operation of the transmitter requires only the use of simple external switching devices, excluding all manual adjustment of frequency determining elements, and that the stability of the frequencies is maintained by the transmitter itself within the limits of tolerance specified in Appendix 7. However, in

fixing the conditions, administrations shall ensure that the operator has an adequate knowledge of radiotelephone operation and procedure particularly as far as distress, urgency and safety are concerned. This in no way contravenes the provisions of No. **3457**.

NOC **7197** 904 **3455** (3) Administrations in Region 1 do not issue certificates under No. **3454**.

NOC **7198** 905 **3456** § 15. A radiotelephone operator's certificate shall show whether it is a general certificate or a restricted certificate and, in the latter case, if it has been issued in conformity with the provisions of No. **3454**.

NOC **7199** 906 **3457** § 16. In order to meet special needs, special agreements between administrations may fix the conditions to be fulfilled in order to obtain a radiotelephone operator's certificate intended to be used in radiotelephone stations complying with certain technical conditions and certain operating conditions. These agreements, if made, shall be on the condition that harmful interference to international services shall not result therefrom. These conditions and agreements shall be mentioned in the certificates issued to such operators.

3458 to **3482** NOT allocated.

N42

ARTICLE 45

MOD

Personnel of Aeronautical Stations

SUP

Section I.

MOD **7225** **3483** Administrations shall ensure that the staff on duty in aeronautical
948 stations shall be adequately qualified to operate the stations efficiently.

SUP

Section II.

SUP **7226**
912

SUP **7227**
913

SUP **7228**
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SUP **7229**
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3484
to NOT allocated.
3508

SUP **7229.1**
920.1

N43/21 ARTICLE 46

MOD **Inspection of Aircraft Stations**

MOD **7255** 838 **3509** § 1. (1) The governments or appropriate administrations of countries which an aircraft station visits may require the production of the licence for examination. The operator of the station, or the person responsible for the station, shall facilitate this examination. The licence shall be kept in such a way that it can be produced upon request. As far as possible, the licence, or a copy certified by the authority which has issued it, should be permanently exhibited in the station.

MOD **7256** 839 **3510** (2) The inspectors shall have in their possession an identity card or badge, issued by the competent authority, which they shall show on request of the person responsible for the aircraft.

NOC **7257** 840 **3511** (3) When the licence cannot be produced or when manifest irregularities are observed, governments or administrations may inspect the radio installations in order to satisfy themselves that these conform to the conditions imposed by these Regulations.

NOC **7258** 841 **3512** (4) In addition, inspectors have the right to require the production of the operators' certificates, but proof of professional knowledge may not be demanded.

MOD **7259** 842 **3513** § 2. (1) When a government or an administration has found it necessary to adopt the course indicated in No. **3511**, or when the operators' certificates cannot be produced, the government or administration to which the aircraft station is subject shall be so informed without delay. In addition, the procedure specified in Article **21** is followed when necessary.

MOD **7260** 843 **3514** (2) Before leaving, the inspector shall report the result of his inspection to the person responsible for the aircraft. If any breach of the conditions imposed by these Regulations is observed, the inspector shall make this report in writing.

MOD **7261** 844 **3515** § 3. Members undertake not to impose upon foreign aircraft stations which are temporarily within their territorial limits, or which make a temporary stay in their territory, technical and operating conditions more severe than those contemplated in these Regulations. This undertaking in no way affects arrangements which are made under international agreements relating to air navigation, and which are therefore not covered by these Regulations.

3516 to **3540** NOT allocated.

N44

ARTICLE 47

NOC

Working Hours of Stations in the Aeronautical Mobile Service

NOC

Section I. General

MOD 7287 921 **3541** § 1. In order to permit the application of the following rules on the subject of hours of watch, every station of the aeronautical mobile service shall have an accurate clock correctly regulated to Coordinated Universal Time (UTC).

NOC

Section II. Aeronautical Stations

NOC **7288** 928 **3542** § 2. The service of an aeronautical station shall be continuous throughout the period during which it bears responsibility for the radiocommunication service to aircraft in flight.

NOC

Section III. Aircraft Stations

NOC **7289** 947 **3543** § 3. For the international public correspondence service, aircraft stations constitute a single category. The duration of the service of such stations is not fixed by these Regulations.

3544 to **3568** NOT allocated.

N45

ARTICLE 48

NOC

Working Conditions in the Aeronautical Mobile Service

NOC

Section I. General

(MOD) 7315 949 **3569** § 1. Except as otherwise provided in these Regulations, the aeronautical mobile service may be regulated by special agreements between governments concerned under the provision for special arrangements in Article 31 of the Convention (Malaga-Torremolinos, 1973).

MOD 7316 950 **3570** § 2. In the absence of special agreements, the provisions of these Regulations concerning the exchanging of and accounting for public correspondence shall be applicable to stations in the aeronautical mobile service (see also No. **3633**).

NOC

Section II. Communication with Stations in the Maritime Mobile Service and in the Maritime Mobile-Satellite Service

MOD 7317 951 **3571** § 3. Stations on board aircraft may communicate with stations of the maritime mobile or maritime mobile-satellite services. They shall conform to those provisions of these Regulations which relate to these services (see Chapter **XI**, especially Article **59**, Section III).

3572 to **3596** NOT allocated.

N46

ARTICLE 49

NOC

Conditions to Be Observed by Mobile Stations in the Aeronautical Mobile Service

MOD 7343 955 **3597** § 1. Mobile stations shall be established in such a way as to conform to the provisions of Chapters **III** and **X** as regards frequencies and classes of emission.

NOC 7344 957 **3598** § 2. The frequencies of emission of mobile stations shall be checked as often as possible by the inspection service to which these stations are subject.

NOC 7345 958 **3599** § 3. The energy radiated by receiving apparatus shall be reduced to the lowest possible value and shall not cause harmful interference to other stations.

NOC 7346 959 **3600** § 4. Administrations shall take all practicable steps necessary to ensure that the operation of any electrical or electronic apparatus installed in mobile stations does not cause harmful interference to the essential radio services of stations which are operating in accordance with the provisions of these Regulations.

NOC 7347 960 **3601** § 5. (1) Changes of frequency in the sending and receiving apparatus of any mobile station shall be capable of being made as rapidly as possible.

NOC 7348 961 **3602** (2) Installations of any mobile station shall be capable, once communication is established, of changing from transmission to reception and vice versa in as short a time as possible.

MOD 7349 962 **3603** § 6. The operation of a broadcasting service (see No. **36**) by an aircraft station at sea and over the sea is prohibited (see also No. **2665**).

MOD 7350 963 **3604** § 7. Mobile stations other than survival craft stations shall be provided with the documents enumerated in the appropriate section of Appendix **11** (Section VI. Aircraft Stations).

3605 to **3629** NOT allocated.

N47

ARTICLE 50

NOC

Special Rules Relating to the Use of Frequencies in the Aeronautical Mobile Service

NOC 7376 429 **3630** § 1. Frequencies in any band allocated to the aeronautical mobile (R) service are reserved for communications between any aircraft and those aeronautical stations primarily concerned with the safety and regularity of flight along national or international civil air routes.

NOC 7377 430 **3631** § 2. Frequencies in any band allocated to the aeronautical mobile (OR) service are reserved for communications between any aircraft and aeronautical stations other than those primarily concerned with flight along national or international civil air routes.

MOD 7378 431 **3632** § 3. Frequencies in the bands allocated to the aeronautical mobile service between 2 850 kHz and 22 000 kHz (see Article **8**) shall be assigned in conformity with the provisions of Appendices **26**, **27** * and **27 Aer2** * and the other relevant provisions of these Regulations.

MOD 7379 432 **3633** § 4. Administrations shall not permit public correspondence in the frequency bands allocated exclusively to the aeronautical mobile service, unless permitted by special aeronautical regulations adopted by a conference of the Union to which all interested Members are invited. Such regulations shall recognize the absolute priority of safety and control messages.

MOD 7380 1162 **3634** § 5. In order to reduce interference, aircraft stations shall, within the means at their disposal, endeavour to select for calling the band with the most favourable propagational characteristics for effecting reliable communication. In the absence of more precise data, an aircraft station shall, before making a call, listen for the signals of the station with which it desires to communicate. The strength and intelligibility of such signals are useful as a guide to propagational conditions and indicate which is the preferable band for calling.

NOC 7381 1207 **3635** § 6. Governments may, by agreement, decide the frequencies to be used for call and reply in the aeronautical mobile service.

3636 to **3650** NOT allocated.

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* *Note by the General Secretariat:* See No. **5189** and Resolution **400**.

N48/37

ARTICLE 51

NOC

Order of Priority of Communications in the Aeronautical Mobile Service

MOD 7408 1496 3651 The order of priority for communications [1] in the aeronautical mobile service shall be as follows, except where impracticable in a fully automated system in which, nevertheless, category 1 shall receive priority:

1. Distress calls, distress messages, and distress traffic.
2. Communications preceded by the urgency signal.
3. Communications preceded by the safety signal.
4. Communications relating to radio direction-finding.
5. Communications relating to the navigation and safe movement of aircraft engaged in search and rescue operations.
6. Communications relating to the navigation, movements, and needs of aircraft and ships, and weather observation messages destined for an official meteorological service.
7. ETATPRIORITENATIONS – Radiotelegrams relating to the application of the United Nations Charter.
8. ETATPRIORITE – Government radiotelegrams with priority and Government calls for which priority has been expressly requested.
9. Service communications relating to the working of the telecommunication service or to communications previously exchanged.
10. Government communications other than those shown in 8 above, ordinary private communications, RCT [2] radiotelegrams and press radiotelegrams.

3652 to 3676 NOT allocated.

ADD 7408.1 3651.1 [1] The term *communications* as used in this Article includes radiotelegrams, radiotelephone calls and radiotelex calls.

ADD 7408.2 3651.2 [2] RCT (Red Cross Telegrams): Telegrams concerning persons protected in time of war by the Geneva Conventions of 12 August 1949.

N49

ARTICLE 52

NOC

General Radiotelegraph Procedure in the Aeronautical Mobile Service

NOC

Section I. General Provisions

MOD 7434 1000 3677 § 1. (1) The procedure detailed in this Article is obligatory, except in cases of distress, urgency or safety, to which the provisions of Chapter **IX** are applicable.

MOD 7435 1001 3678 (2) The procedure specified in Sections IV, V and VI of the present Article is applicable only in the absence of special arrangements to the contrary concluded between the governments concerned.

MOD 7436 1003 3679 § 2. The use of the Morse code signals specified in the Instructions for the Operation of the International Public Telegram Service shall be obligatory in the aeronautical mobile service. However, for radiocommunications of a special character, the use of other signals is not precluded.

MOD 7437 1004 3680 § 3. In order to facilitate radiocommunications, stations shall use the service abbreviations given in Appendix **13**.

NOC

Section II. Calls

NOC 7438 3681

A. General

NOC 7439 1063 3682 § 4. The provisions of this Article are not applicable to the aeronautical mobile service when special agreements exist between the governments concerned.

MOD 7440 1065 3683 § 5. (1) As a general rule, it rests with the aircraft station to establish communication with the aeronautical station. For this purpose, the aircraft station may call the aeronautical station only when it comes within the service area of the latter, that is to say, that area within which, by using an appropriate frequency, the aircraft station can be heard by the aeronautical station.

MOD 7441 1066 3684 (2) However, an aeronautical station having traffic for an aircraft station may call this station if it has reason to believe that the aircraft station is keeping watch and is within the service area of the aeronautical station.

MOD 7442 1076 3685 § 6. When an aeronautical station receives calls from several aircraft stations at practically the same time, it decides the order in which these stations may transmit their traffic. Its decision shall be based on the priority (see No. **3651**) of the radiotelegrams that aircraft stations have on hand and on the need for allowing each calling station to clear the greatest possible number of communications.

NOC **7443** **3686** § 7. (1) When a station called does not reply to a call sent three times at
1077 intervals of two minutes, the calling shall cease and shall not be renewed until after an interval of fifteen minutes.

NOC **7444** **3687** (2) Before renewing the call, the calling station shall ascertain that the
1079 station called is not in communication with another station.

MOD **7445** **3688** (3) If there is no reason to believe that harmful interference will be caused
1080 to other communications in progress, the provisions of No. **3686** are not applicable. In such cases the call, sent three times at intervals of two minutes, may be repeated after an interval of less than fifteen minutes but not less than three minutes.

MOD **7446** **3689** § 8. Aircraft stations shall not radiate a carrier wave between calls.
1081

MOD **7447** **3690** § 9. When the name and address of the administration or private operating
1082 agency controlling an aircraft station are not given in the appropriate list of stations or are no longer in agreement with the particulars given therein, it is the duty of the aircraft station to furnish as a matter of regular procedure, to the aeronautical station to which it transmits traffic, all the necessary information in this respect.

MOD **7448** **3691** § 10. (1) The aeronautical station may, by means of the abbreviation TR, ask the
1083 aircraft station to furnish it with the following information:

MOD **7449** **3692** *a)* position and, whenever possible, heading and speed;
1084

MOD **7450** **3693** *b)* next destination.
1085

MOD **7451** **3694** (2) The information referred to in Nos. **3691** to **3693**, preceded by the
1086 abbreviation TR, should be furnished by aircraft stations, whenever this seems appropriate, without prior request from the aeronautical station. The provision of this information is authorized only by the person responsible for the aircraft.

NOC **7452** **3695** *B. Calls to Several Stations*

NOC **7453** **3696** § 11. Two types of calling signal "to all stations" are recognized:
1088

MOD **7454** **3697** *a)* call CQ followed by the letter K (see No. **3699**);
1089

NOC **7455** **3698** *b)* call CQ not followed by the letter K (see No. **3700**).
1090

NOC **7456** **3699** § 12. Stations desiring to enter into communication with stations of the mobile
1091 service without, however, knowing the names of any such stations within their service area may use the enquiry signal CQ in place of the call sign of the station called in the calling formula, the call being followed by the letter K (general call to all stations in the mobile service with request for reply).

NOC **7457** **3700** § 13. The call CQ not followed by the letter K (general call to all stations
1093 without request for reply) is used before the transmission of information of any kind intended to be read or used by anyone who can intercept it.

NOC 7458 1094 3701 § 14. The call CP followed by two or more call signs or by a code word (call to certain receiving stations without request for reply) is used only for the transmission of information of any nature intended to be read or used by the persons authorized.

NOC

Section III. Preliminary Operations

NOC 7459 1007 3702 § 15. (1) Before transmitting, a station shall take precautions to ensure that its emissions will not interfere with transmissions already in progress; if such interference is likely, the station shall await an appropriate break in the communications in progress. This obligation does not apply to stations where unattended operation is possible through automatic means (see No. **3394**) on frequencies dedicated to narrow-band direct-printing.

NOC 7460 1008 3703 (2) If, these precautions having been taken, the emissions of the station should, nevertheless, interfere with a transmission already in progress, the following rules shall be applied:

MOD 7461 1009 3704 *a)* the aircraft station whose emission causes interference to the communication of a mobile station with a land station shall cease sending at the first request of the land station;

MOD 7462 1010 3705 *b)* the aircraft station whose emission causes interference to communications already in progress between mobile stations shall cease sending at the first request of one of the other stations;

NOC 7463 1011 3706 *c)* the station which requests this cessation shall indicate the approximate waiting time imposed on the station whose emission it suspends.

NOC

Section IV. Method of Calling, Reply to Calls and Signals Preparatory to Traffic

NOC 7464 3707 *A. Method of Calling*

NOC 7465 1012 3708 § 16. (1) The call consists of:

– the call sign of the station called, not more than three times;

– the word DE;

– the call sign of the calling station, not more than three times.

NOC 7466 1013 3709 (2) However, in the bands between 4 000 kHz and 27 500 kHz, when the conditions of establishing contact are difficult, the call signs may be transmitted more than three times, but not more than ten times each. In this case, the call signs of the called and the calling station shall be transmitted in alternate sequence up to a total of twenty call signs altogether (e.g. ABC ABC de WXYZ WXYZ... *or* ABC ABC ABC de WXYZ WXYZ WXYZ...). This call may be sent three times at intervals of two minutes; thereafter it shall not be repeated until an interval of fifteen minutes has elapsed.

NOC 7467 1014 3710 § 17. For making the call and for transmitting preparatory signals, the calling station shall use a frequency on which the station called keeps watch.

NOC 7468 3711 *B. Indication of the Frequency to Be Used for Traffic*

MOD 7469 1016 3712 § 18. (1) The call, as described in Nos. **3708** and **3709**, shall be followed by the service abbreviation indicating the working frequency and, if useful, the class of emission which the calling station proposes to use for the transmission of its traffic.

MOD 7470 1017 3713 (2) When, as an exception to this rule, the call is not followed by an indication of the frequency to be used for the traffic, this indicates:

MOD 7471 1018 3714 *a)* where the calling station is an aeronautical station, that it proposes to use for traffic its normal working frequency shown in the appropriate document;

MOD 7472 1019 3715 *b)* where the calling station is an aircraft station, that the frequency to be used for traffic is to be chosen by the station called from the frequencies on which the calling station can transmit.

NOC 7473 3716 *C. Indication of Priority, of the Reason for the Call, and of Transmission of Radiotelegrams in Series*

MOD 7474 1020 3717 § 19. (1) When the calling station has more than one radiotelegram to transmit to the station called, the above-mentioned preparatory signals shall be followed by the service abbreviation and the figure giving the number of such radiotelegrams.

NOC 7475 1021 3718 (2) Moreover, when the calling station wishes to send its radiotelegrams in series, it shall indicate this by adding the service abbreviation for requesting the consent of the station called.

NOC 7476 3719 *D. Form of Reply to Calls*

MOD 7477 1022 3720 § 20. The reply to calls consists of:

– the call sign of the calling station, not more than three times;

– the word DE;

– the call sign of the station called, once only.

NOC 7478 3721 *E. Frequency for Reply*

NOC 7479 1023 3722 § 21. Except as otherwise provided in these Regulations, for transmitting the reply to calls and to preparatory signals, the station called shall use the frequency on which the calling station keeps watch, unless the calling station has specified a frequency for the reply.

NOC **7480** **3723** *F. Agreement on the Frequency to Be Used for Traffic*

NOC **7481** 1027 **3724** § 22. (1) If the station called is in agreement with the calling station, it shall transmit:

NOC **7482** 1028 **3725** *a)* the reply to the call;

NOC **7483** 1029 **3726** *b)* the service abbreviation indicating that from that moment onwards it will listen on the working frequency announced by the calling station;

NOC **7484** 1030 **3727** *c)* if necessary, the indications referred to in No. **3736**;

MOD **7485** 1031 **3728** *d)* if useful, the service abbreviation and figure indicating the strength and/or intelligibility of the signals received (see Appendix **13**);

NOC **7486** 1032 **3729** *e)* the letter K if the station called is ready to receive the traffic of the calling station.

NOC **7487** 1033 **3730** (2) If the station called is not in agreement with the calling station on the working frequency to be used, it shall transmit:

NOC **7488** 1034 **3731** *a)* the reply to the call;

NOC **7489** 1035 **3732** *b)* the service abbreviation indicating the working frequency to be used by the calling station and, if necessary, the class of emission;

NOC **7490** 1036 **3733** *c)* if necessary, the indications specified in No. **3736**.

NOC **7491** 1037 **3734** (3) When agreement is reached regarding the working frequency which the calling station shall use for its traffic, the station called shall transmit the letter K after the indications contained in its reply.

NOC **7492** **3735** *G. Reply to the Request for Transmission by Series*

NOC **7493** 1038 **3736** § 23. The station called, in replying to a calling station which has proposed to transmit its radiotelegrams by series (see No. **3718**), shall indicate, by means of the service abbreviation, its acceptance or refusal. In the former case it shall specify, if necessary, the number of radiotelegrams which it is ready to receive in one series.

NOC **7494** **3737** *H. Difficulties in Reception*

NOC **7495** 1039 **3738** § 24. (1) If the station called is unable to accept traffic immediately, it shall reply to the call as indicated in Nos. **3724** to **3729**, but it shall replace the letter K by the signal · – · · · (wait), followed by a number indicating in minutes the probable duration of the waiting time. If the probable duration exceeds ten minutes (five minutes in the case of an aircraft station communicating with a station of the maritime mobile service), the reason for the delay shall be given.

NOC **7496** 1040 **3739** (2) When a station receives a call without being certain that such a call is intended for it, it shall not reply until the call has been repeated and understood. When, on the other hand, a station receives a call which is intended for it but is uncertain of the call sign of the calling station, it shall reply immediately using the service abbreviation in place of the call sign of this latter station.

NOC

Section V. Forwarding (Routing) of Traffic

NOC 7497 3740

A. Traffic Frequency

MOD 7498 1041 3741 § 25. (1) As a general rule, a station of the aeronautical mobile service shall transmit its traffic on one of its working frequencies in that band in which the call has been made.

MOD 7499 1043 3742 (2) The use of frequencies reserved for calling shall be forbidden for traffic, except distress traffic (see Chapter **IX**).

NOC 7500 1044 3743 (3) If the transmission of a radiotelegram is to take place on a frequency and/or with a class of emission other than those used for the call, the transmission of the radiotelegram shall be preceded by:

– the call sign of the station called, not more than twice;

– the word DE;

– the call sign of the calling station, once only.

NOC 7501 1045 3744 (4) If the transmission is to be made on the same frequency and with the same class of emission as the call, the transmission of the radiotelegram shall be preceded, if necessary, by:

– the call sign of the station called;

– the word DE;

– the call sign of the calling station.

NOC 7502 3745

B. Numbering in Daily Series

MOD 7503 1046 3746 § 26. (1) As a general rule, radiotelegrams in the public correspondence service transmitted by aircraft stations shall be numbered in a daily series; number 1 shall be given to the first radiotelegram sent each day to each separate station.

NOC 7504 1047 3747 (2) A series of numbers which has begun in radiotelegraphy should be continued in radiotelephony and vice versa.

NOC 7505 3748

C. Long Radiotelegrams

NOC 7506 1048 3749 § 27. (1) In cases where both stations are able to change from sending to receiving without manual switching, the transmitting station may continue to send until completion of the message or until the receiving station breaks in on the transmission with the service abbreviation BK. Before commencing, both stations normally agree on such a method of working by means of the abbreviation QSK.

NOC 7507 1049 3750 (2) If this method of working cannot be employed, long radiotelegrams, whether in plain language or in secret language, shall, as a general rule, be transmitted in sections, each section containing fifty words in the case of plain language and twenty words or groups if secret language is used.

NOC **7508** **3751** (3) At the end of each section the signal · · – – · · (?) meaning "Have
1050 you received the radiotelegram correctly up to this point?" shall be transmitted. If the section has been correctly received, the receiving station shall reply by sending the letter K and the transmission of the radiotelegram shall be continued.

NOC **7509** **3752** *D. Suspension of Traffic*

MOD **7510** **3753** § 28. When an aircraft station transmits on a working frequency of an
1051 aeronautical station and causes interference to the transmission of such an aeronautical station, it shall suspend working at the first request of the latter.

NOC **Section VI. End of Traffic and Work**

NOC **7511** **3754** *A. Signal for the End of Transmission*

NOC **7512** **3755** § 29. (1) The transmission of a radiotelegram shall be terminated by the signal
1052 · – · – · (end of transmission), followed by the letter K.

NOC **7513** **3756** (2) In the case of transmission by series, the end of each radiotelegram shall
1053 be indicated by the signal · – · – · (end of transmission) and the end of the series by the letter K.

NOC **7514** **3757** *B. Acknowledgement of Receipt*

NOC **7515** **3758** § 30. (1) The acknowledgement of receipt of a radiotelegram or a series of
1054 radiotelegrams shall be given by the receiving station in the following manner:

– the call sign of the sending station;

– the word DE;

– the call sign of the receiving station;

– the letter R followed by the number of the radiotelegram; *or*

– the letter R followed by the number of the last radiotelegram of a series.

MOD **7516** **3759** (2) The acknowledgement of receipt shall be transmitted by the receiving
1055 station on the traffic frequency (see No. **3741**).

NOC **7517** **3760** *C. End of Work*

NOC **7518** **3761** § 31. (1) The end of work between two stations shall be indicated by each of them
1056 by means of the signal · · · – · – (end of work).

NOC **7519** **3762** (2) The signal · · · – · – (end of work) shall also be used:
1057

– when the transmission of radiotelegrams of general information, meteorological information and general safety notices is finished; *and*

– when transmission is ended in long-distance radiocommunication services with deferred acknowledgement of receipt or without acknowledgement of receipt.

NOC

Section VII. Control of Working

NOC **7520** 1058 **3763** § 32. The provisions of this Section are not applicable in cases of distress, urgency or safety (see No. **3677**).

MOD **7521** 1059 **3764** § 33. In communication between aeronautical stations and aircraft stations the aircraft station shall comply with the instructions given by the aeronautical station in all questions relating to the order and time of transmission, to the choice of frequency and class of emission, and to the duration and suspension of work.

MOD **7522** 1060 **3765** § 34. In communication between aircraft stations the station called shall control the working in the manner indicated in No. **3764**. However, if an aeronautical station finds it necessary to intervene, these stations shall comply with the instructions given by the aeronautical station.

NOC

Section VIII. Tests

MOD **7523** 1061 **3766** § 35. When it is necessary for an aircraft station to send signals for testing or adjustment which are liable to interfere with the working of neighbouring coast or aeronautical stations, the consent of these stations shall be obtained before such signals are sent.

MOD **7524** 1062 **3767** § 36. When it is necessary for a station in the aeronautical mobile service to send test signals, either for the adjustment of a transmitter before making a call or for the adjustment of a receiver, such signals shall not be continued for more than ten seconds and shall be composed of a series of VVV followed by the call sign of the station emitting the test signals.

3768 to **3792** NOT allocated.

N50

ARTICLE 53

NOC

Radiotelephone Procedure in the Aeronautical Mobile Service – Calls

NOC 7550 1296 3793 § 1. The provisions of this Article are not applicable to the aeronautical mobile service when special agreements exist between the governments concerned.

MOD 7551 1298 3794 § 2. (1) As a general rule, it rests with the aircraft station to establish communication with the aeronautical station. For this purpose the aircraft station may call the aeronautical station only when it comes within the service area of the latter, that is to say, that area within which, by using an appropriate frequency, the aircraft station can be heard by the aeronautical station.

MOD 7552 1299 3795 (2) However, an aeronautical station having traffic for an aircraft station may call this station if it has reason to believe that the aircraft station is keeping watch and is within the service area of the aeronautical station.

MOD 7553 1307 3796 § 3. When an aeronautical station receives calls from several aircraft stations at practically the same time, it decides the order in which these stations may transmit their traffic. Its decision shall be based on the priority (see No. **3651**) of the radiotelegrams or radiotelephone calls that aircraft stations have on hand and on the need for allowing each calling station to clear the greatest possible number of communications.

NOC 7554 1308 3797 § 4. (1) When a station called does not reply to a call sent three times at intervals of two minutes, the calling shall cease and shall not be renewed until after an interval of fifteen minutes.

NOC 7555 1310 3798 (2) Before renewing the call, the calling station shall ascertain that the station called is not in communication with another station.

MOD 7556 1311 3799 (3) If there is no reason to believe that harmful interference will be caused to other communications in progress, the provisions of No. **3797** are not applicable. In such cases the call, sent three times at intervals of two minutes, may be repeated after an interval of less than fifteen minutes but not less than three minutes.

MOD 7557 1312 3800 § 5. Aircraft stations shall not radiate a carrier wave between calls.

MOD 7558 1313 3801 § 6. When the name and address of the administration or private operating agency controlling an aircraft station are not given in the appropriate list of stations or are no longer in agreement with the particulars given therein, it is the duty of the aircraft station to furnish as a matter of regular procedure, to the aeronautical station to which it transmits traffic, all the necessary information in this respect.

MOD 7559 1314 **3802** § 7. (1) The aeronautical station may, by means of the abbreviation TR (spoken as TANGO ROMEO), ask the aircraft station to furnish it with the following information:

MOD 7560 1315 **3803** *a)* position and, whenever possible, heading and speed;

MOD 7561 1316 **3804** *b)* next destination.

MOD 7562 1317 **3805** (2) The information referred to in Nos. **3802** to **3804**, preceded by the abbreviation TR, should be furnished by aircraft stations, whenever this seems appropriate, without prior request from the aeronautical station. The provision of this information is authorized only by the person responsible for the aircraft.

3806 to **3830** NOT allocated.

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CHAPTER XI

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Maritime Mobile Service and Maritime Mobile-Satellite Service

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ARTICLE 54

NOC

Authority of the Master

MOD 7663 845 **3831** § 1. The service of a ship station is placed under the supreme authority of the master or of the person responsible for the ship or other vessel carrying the station.

MOD 7664 846 **3832** § 2. The person holding this authority shall require that each operator comply with these Regulations and that the ship station for which the operator is responsible is used, at all times, in accordance with these Regulations.

NOC 7665 847 **3833** § 3. The master or the person responsible, as well as all persons who may have knowledge of the text or even of the existence of a radiotelegram, or of any information whatever obtained by means of the radiocommunication service, are placed under the obligation of observing and ensuring the secrecy of correspondence.

MOD 7666 847A **3834** § 4. The provisions of Nos. **3831**, **3832** and **3833** shall also apply to personnel of ship earth stations.

3835 to **3859** NOT allocated.

N52

ARTICLE 55

MOD

Operators' Certificates for Ship Stations and Ship Earth Stations

NOC

Section I. General Provisions

MOD 7692 848 **3860** § 1. (1) The service of every ship radiotelegraph station shall be performed by an operator holding a certificate issued or recognized by the government to which the station is subject.

MOD 7693 849 **3861** (2) The service of every ship radiotelephone station shall be controlled by an operator holding a certificate issued or recognized by the government to which the station is subject. Provided the station is so controlled, other persons besides the holder of the certificate may use the radiotelephone equipment.

MOD 7694 849A **3862** (3) The service of every ship earth station shall be controlled by a person holding a certificate issued or recognized by the government to which the station is subject. Provided the station is so controlled, other persons besides the holder of the certificate may use the equipment.

MOD 7695 850 **3863** (4) The service of automatic communication devices [1] installed in a ship station shall be controlled by an operator holding a certificate issued or recognized by the government to which the station is subject. Provided the devices are so controlled, they may be used by other persons. If such devices require for their basic function the use of Morse code signals specified in the Instructions for the Operation of the International Public Telegram Service, the service shall be performed by an operator holding a radiotelegraph operator's certificate. However, this latter requirement does not apply to automatic devices which may use Morse code signals solely for identification purposes.

NOC 7696 851 **3864** (5) Nevertheless, in the service of radiotelephone stations operating solely on frequencies above 30 MHz, each government shall decide for itself whether a certificate is necessary and, if so, shall define the conditions for obtaining it.

MOD 7697 852 **3865** (6) The provisions of No. **3864** shall not, however, apply to any ship station working on frequencies assigned for international use.

MOD 7698 853 **3866** § 2. (1) In the case of complete unavailability of the operator in the course of a sea passage and solely as a temporary measure, the master or the person responsible for the station may authorize an operator holding a certificate issued by the government of another Member to perform the radiocommunication service.

NOC 7695.1 850.1 **3863.1** [1] The term "automatic communication devices" is intended to include such equipment as teleprinters, data transfer systems, etc.

MOD 7699 3867 (2) When it is necessary to employ a person without a certificate or an
854 operator not holding an adequate certificate as a temporary operator, his performance as such must be limited solely to signals of distress, urgency and safety, messages relating thereto, messages relating directly to the safety of life and urgent messages relating to the movement of the ship. Persons employed in these cases are bound by the provisions of No. **3877** regarding the secrecy of correspondence.

NOC 7700 3868 (3) In all cases, such temporary operators must be replaced as soon as
855 possible by operators holding the certificate prescribed in paragraph 1 of this Article.

NOC 7701 3869 § 3. (1) Each administration shall take the necessary steps to prevent, to the
856 maximum extent possible, the fraudulent use of certificates. For this purpose, such certificates shall bear the holder's signature and shall be authenticated by the issuing administration. Administrations may employ, if they wish, other means of identification such as photographs, fingerprints, etc.

MOD 7702 3870 (2) In the maritime mobile service the certificates issued after 1 January
856A 1978 shall bear the photograph of the holder and the holder's date of birth.

NOC 7703 3871 (3) To facilitate verification of certificates, these may carry, if necessary, in
857 addition to the text in the national language, a translation of this text in a working language of the Union.

MOD 7704 3872 (4) In the maritime mobile service all certificates not in one of the working
857A languages of the Union and issued after 1 January 1978 shall carry at least the following information in one of these working languages:

3873 *a)* the name and date of birth of the holder;

3874 *b)* the title of the certificate and its date of issue;

3875 *c)* if applicable, the number and period of validity of the certificate;

3876 *d)* the issuing administration.

NOC 7705 3877 § 4. Each administration shall take the necessary steps to place operators
858 under the obligation to preserve the secrecy of correspondence as provided for in No. **2023**.

NOC

Section II. Categories of Certificates for Ship Station Operators

NOC 7706 3878 § 5. (1) There are four categories of certificates for radiotelegraph operators [1],
866A namely:

3879 *a)* the radiocommunication operator's general certificate;

3880 *b)* the first-class radiotelegraph operator's certificate;

3881 *c)* the second-class radiotelegraph operator's certificate;

3882 *d)* the radiotelegraph operator's special certificate.

NOC 7706.1 3878.1 [1] As regards the employment of operators holding the different certificates, see
866A.1 Article **56**.

NOC 7707 866B 3883 (2) There are two categories of radiotelephone operators'[1] certificates, general and restricted.

NOC 7708 866C 3884 § 6. (1) The holder of a radiocommunication operator's general certificate, or of a first-class or second-class radiotelegraph operator's certificate, may carry out the radiotelegraph or radiotelephone service of any ship station.

NOC 7709 866D 3885 (2) The holder of a radiotelephone operator's general certificate may carry out the radiotelephone service of any ship station.

NOC 7710 866E 3886 (3) The holder of a radiotelephone operator's restricted certificate may carry out the radiotelephone service of any ship station, provided that the operation of the transmitter requires only the use of simple external controls, and excludes all manual adjustment of frequency determining elements, with the stability of the frequencies maintained by the transmitter itself within the limits of tolerance specified by Appendix 7, and the peak envelope power of the transmitter does not exceed 1.5 kilowatt.

NOC 7711 866F 3887 (4) The radiotelephone operator's restricted certificate may be limited exclusively to one or more of the maritime mobile frequency bands. In such cases the certificate shall be suitably endorsed.

NOC 7712 866G 3888 (5) The radiotelegraph service of ships for which a radiotelegraph installation is not made compulsory by international agreements, as well as the radiotelephone service of ship stations for which only a radiotelephone operator's restricted certificate is required, may be carried out by the holder of a radiotelegraph operator's special certificate.

NOC 7713 866H 3889 (6) However, where the conditions specified in No. **3934** are satisfied, the radiotelegraph service of ships for which a radiotelegraph installation is not made compulsory by international agreements, as well as the radiotelephone service of any ship station, may be carried out by the holder of a radiotelegraph operator's special certificate.

NOC 7714 866I 3890 § 7. Exceptionally, the second-class radiotelegraph operator's certificate as well as the radiotelegraph operator's special certificate may be limited exclusively to the radiotelegraph service. In such cases the certificate shall be suitably endorsed.

NOC

Section III. Conditions for the Issue of Operators' Certificates

NOC 7715 3891

A. General

NOC 7716 867 3892 § 8. (1) The conditions to be imposed for obtaining the various certificates are contained in the following paragraphs and represent the minimum requirements.

NOC 7707.1 866B.1 3883.1 [1] As regards the employment of operators holding the different certificates, see Article **56**.

NOC 7717 868 **3893** (2) Each administration is free to fix the number of examinations necessary to obtain each certificate.

MOD 7718 869 **3894** § 9. (1) The administration which issues a certificate may, before authorizing an operator to carry out the service on board a ship, require the fulfilment of other conditions (for example: experience with automatic communication devices; further technical and professional knowledge relating particularly to navigation; physical fitness, etc.).

NOC 7719 870 **3895** (2) Administrations should take whatever steps they consider necessary to ensure the continued proficiency of operators after prolonged absences from operational duties.

NOC 7720 870A **3896** (3) However, with respect to the maritime mobile service, administrations should also take whatever steps they consider necessary to ensure the continued proficiency of operators while in service.

NOC 7721 **3897** *B. Radiocommunication Operator's General Certificate for the Maritime Mobile Service*

NOC 7722 870B **3898** § 10. The radiocommunication operator's general certificate for the maritime mobile service is issued to candidates who have given proof of the technical and professional knowledge and qualifications enumerated below:

NOC 7723 870C **3899** *a)* knowledge of the principles of electricity and the theory of radio and of electronics sufficient to meet the requirements specified in Nos. **3900**, **3901** and **3902**;

NOC 7724 870D **3900** *b)* theoretical knowledge of modern radiocommunication equipment, including marine radiotelegraph and radiotelephone transmitters and receivers, marine antenna systems, automatic alarm devices, radio equipment for lifeboats and other survival craft, direction-finding equipment, together with all auxiliary items including power supply (such as motors, alternators, generators, inverters, rectifiers and accumulators), as well as a general knowledge of the principles of other apparatus generally used for radionavigation, with particular reference to maintaining the equipment in service;

NOC 7725 870E **3901** *c)* practical knowledge of the operation, adjustment and maintenance of the apparatus mentioned in No. **3900**, including the taking of direction-finding bearings and knowledge of the principles of the calibration of radio direction-finding apparatus;

NOC 7726 870F **3902** *d)* practical knowledge necessary for the location and remedying (using appropriate testing equipment and tools) of faults in the apparatus mentioned in No. **3900** which may occur during a voyage;

NOC 7727 870G **3903** *e)* ability to send correctly by hand and to receive correctly by ear, in the Morse code, code groups (mixed letters, figures and punctuation marks) at a speed of sixteen groups a minute, and a plain language text at a speed of twenty words a minute. Each code group shall comprise five characters, each figure or punctuation mark counting

as two characters. The average word of the text in plain language shall contain five characters. The duration of each test of sending and receiving shall be, as a rule, five minutes;

NOC 7728 870H **3904** *f)* ability to send correctly and to receive correctly by radiotelephone;

NOC 7729 8701 **3905** *g)* knowledge of the Regulations applying to radiocommunications, knowledge of the documents relating to charges for radiocommunications and knowledge of the provisions of the Convention for the Safety of Life at Sea which relate to radio;

NOC 7730 870J **3906** *h)* a sufficient knowledge of world geography, especially the principal shipping routes and the most important telecommunication routes;

NOC 7731 870K **3907** *i)* knowledge of one of the working languages of the Union. Candidates should be able to express themselves satisfactorily in that language, both orally and in writing. Each administration shall decide for itself the language or languages required.

NOC 7732 **3908** *C. First-Class Radiotelegraph Operator's Certificate*

NOC 7733 871 **3909** § 11. The first-class certificate is issued to candidates who have given proof of the technical and professional knowledge and qualifications enumerated below:

NOC 7734 872 **3910** *a)* knowledge both of the general principles of electricity and of the theory of radio, knowledge of the adjustment and practical working of various types of radiotelegraph and radiotelephone apparatus used in the mobile service, including apparatus used for radio direction-finding and the taking of direction-finding bearings, as well as a general knowledge of the principles of operation of other apparatus generally used for radionavigation;

NOC 7735 873 **3911** *b)* theoretical and practical knowledge of the operation and maintenance of apparatus, such as motor-generators, storage batteries, etc., used in the operation and adjustment of the radiotelegraph, radiotelephone and radio direction-finding apparatus mentioned in No. **3910**;

NOC 7736 874 **3912** *c)* practical knowledge necessary to repair, with the means available on board, damage which may occur to the radiotelegraph, radiotelephone and radio direction-finding apparatus during a voyage;

NOC 7737 875 **3913** *d)* ability to send correctly by hand and to receive correctly by ear, in the Morse code, code groups (mixed letters, figures and punctuation marks), at a speed of twenty groups a minute, and a plain language text at a speed of twenty-five words a minute. Each code group shall comprise five characters, each figure or punctuation mark counting as two characters. The average word of the text in plain language shall contain five characters. The duration of each test of sending and of receiving shall be, as a rule, five minutes;

NOC **7738** 876 **3914** *e)* ability to send correctly and to receive correctly by radiotelephone;

MOD **7739** 877 **3915** *f)* detailed knowledge of the Regulations applying to radiocommunications, knowledge of the documents relating to charges for radiocommunications and knowledge of the provisions of the Convention for the Safety of Life at Sea which relate to radio;

NOC **7740** 878 **3916** *g)* a sufficient knowledge of world geography, especially the principal shipping and air routes and the most important telecommunication routes;

NOC **7741** 879 **3917** *h)* sufficient knowledge of one of the working languages of the Union. Candidates should be able to express themselves satisfactorily in that language, both orally and in writing. Each administration shall decide for itself the language or languages required.

NOC **7742** **3918** *D. Second-Class Radiotelegraph Operator's Certificate*

NOC **7743** 880 **3919** § 12. The second-class certificate is issued to candidates who have given proof of the technical and professional knowledge and qualifications enumerated below:

NOC **7744** 881 **3920** *a)* elementary theoretical and practical knowledge of electricity and of radio, knowledge of the adjustment and practical working of the various types of radiotelegraph and radiotelephone apparatus used in the mobile service, including apparatus used for radio direction-finding and the taking of direction-finding bearings, as well as elementary knowledge of the principles of operation of other apparatus in general use for radionavigation;

NOC **7745** 882 **3921** *b)* elementary theoretical and practical knowledge of the operation and maintenance of apparatus, such as motor-generators, storage batteries, etc., used in the operation and adjustment of the radiotelegraph, radiotelephone and radio direction-finding apparatus mentioned in No. **3920**;

NOC **7746** 883 **3922** *c)* practical knowledge sufficient for effecting repairs in the case of minor damage which may occur to the radiotelegraph, radiotelephone and radio direction-finding apparatus during a voyage;

NOC **7747** 884 **3923** *d)* ability to send correctly by hand and to receive correctly by ear, in the Morse code, code groups (mixed letters, figures and punctuation marks) at a speed of sixteen groups a minute, and a plain language text at a speed of twenty words a minute. Each code group shall comprise five characters, each figure or punctuation mark counting as two characters. The average word of the text in plain language shall contain five characters. The duration of each test of sending and of receiving shall, as a rule, be five minutes;

MOD **7748** 885 **3924** *e)* ability to send correctly and to receive correctly by radiotelephone, except in the case provided for in No. **3890**;

MOD 7749 886 3925 *f)* knowledge of the Regulations applying to radiocommunications, knowledge of the documents relating to charges for radiocommunications and knowledge of the provisions of the Convention for the Safety of Life at Sea which relate to radio;

NOC 7750 887 3926 *g)* a sufficient knowledge of world geography, especially the principal shipping and air routes and the most important telecommunication routes;

NOC 7751 888 3927 *h)* if necessary, an elementary knowledge of one of the working languages of the Union. Candidates should be able to express themselves satisfactorily in that language, both orally and in writing. Each administration shall decide for itself the language or languages required.

NOC 7752 3928 *E. Radiotelegraph Operator's Special Certificate*

NOC 7753 889 3929 § 13. (1) The radiotelegraph operator's special certificate is issued to candidates who have given proof of the knowledge and professional qualifications enumerated below:

NOC 7754 890 3930 *a)* ability to send correctly by hand and receive correctly by ear, in the Morse code, code groups (mixed letters, figures, and punctuation marks) at a speed of sixteen groups a minute, and a plain language text at a speed of twenty words a minute. Each code group shall comprise five characters, each figure or punctuation mark counting as two characters. The average word of the text in plain language shall contain five characters;

NOC 7755 891 3931 *b)* knowledge of the practical operation and adjustment of radiotelegraph apparatus;

NOC 7756 892 3932 *c)* knowledge of the Regulations applying to radiotelegraph communications and specifically of that part of those Regulations relating to safety of life at sea.

MOD 7757 893 3933 (2) Each administration concerned shall fix the other conditions for obtaining this certificate. However, the conditions specified in Nos. **3941**, **3942**, **3943** and **3944** or **3945**, as the case may be, shall be satisfied.

NOC 7758 893A 3934 (3) In the maritime mobile service each administration concerned shall fix the other conditions for obtaining this certificate. However, except as provided for in No. **3890**, the conditions specified in Nos. **3936**, **3937**, **3938**, **3939** and **3940** shall be satisfied for such a certificate issued to ship station operators after 1 January 1976.

NOC 7759 3935 *F. Radiotelephone Operators' Certificates*

MOD 7760 894 3936 § 14. The radiotelephone operator's general certificate is issued to candidates who have given proof of the knowledge and professional qualifications enumerated below (see also Nos. **3884**, **3885**, **3888** and **3889**):

NOC 7761 895 3937 *a)* a knowledge of the elementary principles of radiotelephony;

NOC 7762 3938 *b)* detailed knowledge of the practical operation and adjustment of radiotelephone apparatus;
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NOC 7763 3939 *c)* ability to send correctly and to receive correctly by radiotelephone;
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NOC 7764 3940 *d)* detailed knowledge of the Regulations applying to radiotelephone communications and specifically of that part of those Regulations relating to the safety of life.
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NOC 7765 3941 § 15. (1) The restricted radiotelephone operator's certificate is issued to candidates who have given proof of the knowledge and professional qualifications enumerated below:
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NOC 7766 3942 *a)* practical knowledge of radiotelephone operation and procedure;
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NOC 7767 3943 *b)* ability to send correctly and to receive correctly by telephone;
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NOC 7768 3944 *c)* general knowledge of the Regulations applying to radiotelephone communications and specifically of that part of those Regulations relating to the safety of life.
902

MOD 7769 3945 (2) For ship radiotelephone stations where the peak envelope power of the transmitter does not exceed 400 watts, each administration may itself fix these conditions for obtaining a restricted radiotelephone operator's certificate, provided that the operation of the transmitter requires only the use of simple external switching devices, excluding all manual adjustment of frequency determining elements, and that the stability of the frequencies is maintained by the transmitter itself within the limits of tolerance specified in Appendix **7**. However, in fixing the conditions, administrations shall ensure that the operator has an adequate knowledge of radiotelephone operation and procedure particularly as far as distress, urgency and safety are concerned. This in no way contravenes the provisions of No. **3949**.
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NOC 7770 3946 (3) Administrations in Region 1 do not issue certificates under No. **3945**.
904

NOC 7771 3947 § 16. A radiotelephone operator's certificate shall show whether it is a general certificate or a restricted certificate and, in the latter case, if it has been issued in conformity with the provisions of No. **3945**.
905

MOD 7772 3948 § 17. In the maritime mobile service a radiotelephone operator's restricted certificate shall show whether it is also limited as provided for in No. **3887**.
905A

NOC 7773 3949 § 18. In order to meet special needs, special agreements between administrations may fix the conditions to be fulfilled in order to obtain a radiotelephone operator's certificate, intended to be used in radiotelephone stations complying with certain technical conditions and certain operating conditions. These agreements, if made, shall be on the condition that harmful interference to international services shall not result therefrom. These conditions and agreements shall be mentioned in the certificates issued to such operators.
906

NOC

Section IV. Qualifying Service

NOC 7774 907 **3950** § 19. (1) The holder of a radiocommunication operator's general certificate or a first- or second-class radiotelegraph operator's certificate is authorized to embark as chief operator of a ship station of the fourth category (see No. **4056**).

NOC 7775 907A **3951** (2) However, before becoming chief or sole operator of a ship station of the fourth category (see No. **4056**) which is required by international agreements to carry a radiotelegraph operator, the holder of a radiocommunication operator's general certificate or a first- or second-class radiotelegraph operator's certificate shall have had adequate experience as operator on board ship at sea.

NOC 7776 908 **3952** (3) Before becoming chief operator of a ship station of the second or third category (see Nos. **4054** and **4055**), the holder of a radiocommunication operator's general certificate or a first- or second-class radiotelegraph operator's certificate shall have had, as operator on board ship or in a coast station, at least six months' experience of which at least three months shall have been on board ship.

NOC 7777 909 **3953** (4) Before becoming chief operator of a ship station of the first category (see No. **4053**), the holder of a radiocommunication operator's general certificate or a first-class radiotelegraph operator's certificate shall have had, as operator on board ship or in a coast station, at least one year's experience of which at least six months shall have been on board ship.

3954 to **3978** NOT allocated.

N53

ARTICLE 56

NOC

Personnel of Stations in the Maritime Mobile Service

NOC

Section I. Personnel of Coast Stations

MOD 7803 948 **3979** § 1. Administrations shall ensure that the staff on duty in coast stations shall be adequately qualified to operate the stations efficiently.

NOC

Section II. Class and Minimum Number of Operators for Stations on Board Ships

MOD 7804 912 **3980** § 2. In the public correspondence service, each government shall take the necessary steps to ensure that stations on board ships of its own nationality have personnel adequate to perform efficient service.

MOD 7805 913 **3981** § 3. The personnel of ship stations in the public correspondence service shall, having regard to the provisions of Article **55**, include at least:

NOC 7806 914 **3982** *a)* ship stations of the first category, except in the case provided for in No. **3986**: a chief operator holding a radiocommunication operator's general certificate or a first-class radiotelegraph operator's certificate;

NOC 7807 915 **3983** *b)* ship stations of the second and third categories, except in the case provided for in No. **3986**: a chief operator holding a radiocommunication operator's general certificate or a first- or second-class radiotelegraph operator's certificate;

NOC 7808 916 **3984** *c)* ship stations of the fourth category, except in the cases provided for in Nos. **3985** and **3986**: one operator holding a radiocommunication operator's general certificate or a first- or second-class radiotelegraph operator's certificate;

NOC 7809 917 **3985** *d)* ship stations in which a radiotelegraph installation is provided but not prescribed by international agreements: one operator holding a radiocommunication operator's general certificate or a first- or second-class radiotelegraph operator's certificate, or a radiotelegraph operator's special certificate;

(MOD) 7810 918 **3986** *e)* ship stations equipped with a radiotelephone installation only: one operator holding either a radiotelephone operator's certificate or a radiotelegraph operator's certificate.

3987 to **4011** NOT allocated.

N54/21

ARTICLE 57

MOD

Inspection of Ship Stations and Ship Earth Stations

MOD 7836 838 **4012** § 1. (1) The governments or appropriate administrations of countries which a ship station or ship earth station visits may require the production of the licence for examination. The operator of the station, or the person responsible for the station, shall facilitate this examination. The licence shall be kept in such a way that it can be produced upon request. As far as possible, the licence, or a copy certified by the authority which has issued it, should be permanently exhibited in the station.

MOD 7837 839 **4013** (2) The inspectors shall have in their possession an identity card or badge, issued by the competent authority, which they shall show on request of the master or person responsible for the ship or other vessel carrying the ship station or the ship earth station.

NOC 7838 840 **4014** (3) When the licence cannot be produced or when manifest irregularities are observed, governments or administrations may inspect the radio installations in order to satisfy themselves that these conform to the conditions imposed by these Regulations.

NOC 7839 841 **4015** (4) In addition, inspectors have the right to require the production of the operators' certificates, but proof of professional knowledge may not be demanded.

MOD 7840 842 **4016** § 2. (1) When a government or an administration has found it necessary to adopt the course indicated in No. **4014**, or when the operators' certificates cannot be produced, the government or administration to which the ship station or ship earth station is subject shall be so informed without delay. In addition, the procedure specified in Article **21** is followed when necessary.

MOD 7841 843 **4017** (2) Before leaving, the inspector shall report the result of his inspection to the master, or the person responsible for the ship or other vessel carrying the ship station or ship earth station. If any breach of the conditions imposed by these Regulations is observed, the inspector shall make this report in writing.

MOD 7842 844 **4018** § 3. Members of the Union undertake not to impose upon foreign ship stations or upon foreign ship earth stations which are temporarily within their territorial waters or which make a temporary stay in their territory technical and operating conditions more severe than those contemplated in these Regulations. This undertaking in no way affects arrangements which are made under international agreements relating to maritime navigation, and which are therefore not covered by these Regulations.

4019 to **4043** NOT allocated.

N55

ARTICLE 58

NOC

Working Hours of Stations in the Maritime Mobile Service

NOC

Section I. General

(MOD) 7866 921 4044 § 1. In order to permit the application of the following rules on the subject of hours of watch, every station of the maritime mobile service shall have an accurate clock correctly regulated to Coordinated Universal Time (UTC).

(MOD) 7867 922 4045 § 2. Coordinated Universal Time (UTC), reckoned from 0000 to 2359 hours beginning at midnight, shall be used for all entries in the radiocommunication service log and in all similar documents of ships compulsorily equipped with radiocommunication apparatus in compliance with an international agreement; this same provision will apply, as far as possible, to other ships.

NOC

Section II. Coast Stations

NOC 7868 923 4046 § 3. (1) The service of coast stations is, as far as possible, continuous (day and night). Certain coast stations, however, may have a service of limited duration. Each administration or recognized private operating agency duly authorized to that effect fixes the hours of service for coast stations under its jurisdiction.

NOC 7869 924 4047 (2) These hours of service shall be notified to the Secretary-General who shall publish them in the List of Coast Stations.

NOC 7870 925 4048 § 4. Coast stations whose service is not continuous shall not close before:

NOC 7871 926 4049 *a)* finishing all operations resulting from a distress call or from an urgency or safety signal;

MOD 7872 927 4050 *b)* exchanging all traffic originating in or destined for ship stations which are situated within their service area and have indicated their presence before the actual cessation of work;

NOC 7873 927A 4051 *c)* making a general call to all stations announcing the closing down of the service and advising the time of reopening, if other than their normal hours of service.

NOC

Section III. Ship Stations

NOC 7874 929 4052 § 5. (1) For the international public correspondence service, ship stations are divided into four categories:

NOC 7875 930 4053 *a)* stations of the first category: these stations maintain a continuous service;

NOC 7876 931 **4054** *b)* stations of the second category: these stations maintain a service for 16 hours a day;

NOC 7877 931A **4055** *c)* stations of the third category: these stations maintain a service for 8 hours a day;

NOC 7878 932 **4056** *d)* stations of the fourth category: these stations maintain a service the duration of which is either shorter than that of stations of the third category, or is not fixed by these Regulations.

NOC 7879 933 **4057** (2) Each administration shall itself determine the rules under which ship stations subject to it are to be placed in one of the above four categories.

NOC 7880 934 **4058** § 6. (1) Ship stations of the second category shall maintain the following hours of service:

0000 - 0400
0800 - 1200
1600 - 1800
2000 - 2200 } ship's time or zone time,

and, additionally, four hours of service at times to be decided by the administration, master or responsible person, to meet the essential communication needs of the ship, having regard to propagation conditions and traffic requirements.

NOC 7881 934A **4059** (2) Ship stations of the third category shall maintain the following hours of service:

0800 - 1200 ship's time or zone time,

two continuous hours of service between 1800 and 2200 hours, ship's time or zone time, at times decided by the administration, master or responsible person and, additionally, two hours of service at times decided by the administration, master or responsible person, to meet the essential communication needs of the ship, having regard to propagation conditions and traffic requirements.

NOC 7882 934B **4060** (3) Each administration will determine whether ship's time observed by its ships is to be zone time as shown in Appendix **12** (see Nos. **4058** and **4059**).

NOC 7883 935 **4061** (4) In case of short voyages, these stations shall provide service during the hours fixed by the administrations to which they are subject.

NOC 7884 935A **4062** § 7. Ship stations of the fourth category are encouraged to provide service from 0830 to 0930 hours, ship's time or zone time.

NOC **7885** 939 **4063** § 8. (1) Ship stations whose service is not continuous shall not close before:

NOC **7886** 940 **4064** *a)* finishing all operations resulting from a distress call or from an urgency or safety signal;

MOD **7887** 941 **4065** *b)* exchanging, so far as practicable, all traffic originating in or destined for coast stations situated within their service area and for ship stations which, being within their service area, have indicated their presence before the actual cessation of work.

NOC **7888** 942 **4066** (2) Any ship station not having fixed working hours shall inform the coast stations with which it is in communication of the time of closing and the time of reopening its service.

MOD **7889** 943 **4067** § 9. (1) Any ship station arriving in port, and whose service is therefore about to close, shall:

NOC **7890** 944 **4068** *a)* notify accordingly the nearest coast station and, if appropriate, the other coast stations with which it generally communicates;

NOC **7891** 945 **4069** *b)* not close until after the disposal of traffic on hand, unless this conflicts with the regulations in force in the country of the port of call.

NOC **7892** 946 **4070** (2) On departure from port the ship station shall notify the coast station or stations concerned that its service is reopening as soon as such reopening is permitted by the regulations in force in the country of the port of departure. However, a ship station not having hours of service fixed by these Regulations may defer such notification until the station first reopens its service after departure from port.

4071 to **4095** NOT allocated.

N56

ARTICLE 59

NOC

Conditions to Be Observed in the Maritime Mobile Service and in the Maritime Mobile-Satellite Service

NOC

Section I. Maritime Mobile Service

NOC **7918** **4096**

A. General

MOD **7919** 955 **4097** § 1. Ship stations shall be established in such a way as to conform to the provisions of Chapters **III** and **XI** as regards frequencies and classes of emission.

MOD **7920** 957 **4098** § 2. The frequencies of emission of ship stations shall be checked as often as possible by the inspection service to which these stations are subject.

NOC **7921** 958 **4099** § 3. The energy radiated by receiving apparatus shall be reduced to the lowest possible value and shall not cause harmful interference to other stations.

MOD **7922** 959 **4100** § 4. Administrations shall take all practicable steps necessary to ensure that the operation of any electrical or electronic apparatus installed in ship stations does not cause harmful interference to the essential radio services of stations which are operating in accordance with the provisions of these Regulations.

MOD **7923** 960 **4101** § 5. (1) Changes of frequency in the sending and receiving apparatus of any ship station shall be capable of being made as rapidly as possible.

MOD **7924** 961 **4102** (2) Installations of any ship station shall be capable, once communication is established, of changing from transmission to reception and vice versa in as short a time as possible.

MOD **7925** 962 **4103** § 6. The operation of a broadcasting service (see No. **36**) by a ship station at sea is prohibited. (See also No. **2665**.)

MOD **7926** 963 **4104** § 7. Ship stations other than survival craft stations shall be provided with the documents enumerated in the appropriate section of Appendix **11**.

NOC **7927** 964 **4105** § 8. When any ship station transmitter itself cannot be controlled in such a way that its frequency satisfies the tolerance specified in Appendix **7**, the ship station shall be provided with a device, having a precision equal to at least one-half of this tolerance, for measuring the frequency of the emission.

NOC **7928** **4106**

B. Ship Stations Using Radiotelegraphy

NOC **7929** 970 **4107** § 9. Ship stations equipped with radiotelegraph apparatus intended to be used for normal traffic by Morse telegraphy shall be provided with devices permitting changeover from transmission to reception and vice versa without manual switching. In addition these stations should be able to listen on the reception frequency during the course of periods of transmission.

NOC **4108** B1. Bands Between 405 kHz and 535 kHz

NOC **7930** 972 **4109** § 10. Transmitters used in ship stations working in the authorized bands between 405 kHz and 535 kHz shall be provided with devices readily permitting a material reduction of power.

NOC **7931** 973 **4110** § 11. All ship stations equipped with radiotelegraph apparatus to work in the authorized bands between 405 kHz and 535 kHz shall be able to:

NOC **7932** 974 **4111** *a)* send either class A2A and A2B* or H2A and H2B* emissions and receive class A2A, A2B*, H2A and H2B* emissions with a carrier frequency of 500 kHz;

NOC **7933** 975 **4112** *b)* send, in addition, class A1A and either A2A or H2A emissions on at least two working frequencies;

NOC **7934** 976 **4113** *c)* receive, in addition, class A1A, A2A and H2A emissions on all the other frequencies necessary for their service.

NOC **7935** 977 **4114** § 12. The provisions of Nos. **4112** and **4113** do not apply to apparatus provided solely for distress, urgency and safety purposes.

NOC **4115** B2. Bands Between 1 605 kHz and 2 850 kHz

NOC **7936** 978 **4116** § 13. In Region 2, any radiotelegraph station installed on board a ship which uses frequencies in the band 2 089.5 - 2 092.5 kHz for call and reply shall be provided with at least one other frequency in the authorized bands between 1 605 kHz and 2 850 kHz.

NOC **4117** B3. Bands Between 4 000 kHz and 27 500 kHz

NOC **7937** 979 **4118** § 14. In ship stations, all apparatus using class A1A emissions on frequencies in the authorized bands between 4 000 kHz and 27 500 kHz shall satisfy the following conditions:

NOC **7938** 980 **4119** *a)* in each of the bands necessary to carry on the station's service, it shall have at least two working frequencies in addition to one in the calling band (see No. **4306**);

NOC **7939** 981 **4120** *b)* changes of frequency in transmitting apparatus shall be effected as quickly as practicable, but within fifteen seconds in any event;

NOC **7940** 982 **4121** *c)* in the matter of frequency changing, receiving apparatus shall be capable of a performance equal to that of the transmitting apparatus.

NOC **7941** **4122** *C. Ship Stations Using Narrow-Band Direct-Printing Telegraphy*

NOC **7942** 999G **4123** § 15. The characteristics of the narrow-band direct-printing equipment shall be in accordance with Appendix **38**.

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* This is to cater for the automatic reception of the radiotelegraph alarm signal.

NOC **7943** **4124** *D. Ship Stations Using Radiotelephony*

NOC **4125** D1. Bands Between 1 605 kHz and 4 000 kHz

NOC **7944** 983 **4126** § 16. All ship stations equipped with radiotelephony apparatus to work in the authorized bands between 1 605 kHz and 2 850 kHz shall be able to:

NOC **7945** 984 **4127** *a)* send class A3E or H3E emissions on a carrier frequency of 2 182 kHz and receive class A3E and H3E emissions on a carrier frequency of 2 182 kHz. However, after 1 January 1982, it is no longer authorized to send class A3E emissions on a carrier frequency of 2 182 kHz, except for such apparatus as is referred to in No. **4130**;

NOC **7946** 985 **4128** *b)* send, in addition:

1) class A3E, *or*
2) class H3E, R3E and J3E [1]

emissions on at least two working frequencies [2]. However, after 1 January 1982, class A3E and H3E emissions are no longer authorized on working frequencies;

7947 986 **4129** *c)* receive, in addition:

1) class A3E and H3E, *or*
2) class A3E, H3E, R3E and J3E

emissions on all other frequencies necessary for their service. However, after 1 January 1982, the ability to receive class A3E and H3E emissions is no longer required.

NOC **7948** 987 **4130** § 17. The provisions of Nos. **4128** and **4129** do not apply to apparatus provided solely for distress, urgency and safety purposes.

NOC **4131** D2. Bands Between 4 000 kHz and 23 000 kHz

MOD **7949** 987A **4132** § 18. In the zone of Regions 1 and 2 south of latitude 15° N, including Mexico, and in the zone of Region 3 south of latitude 25° N, all ship stations equipped with radiotelephony to work in the authorized bands between 4 000 kHz and 23 000 kHz should be able to send and receive on the carrier frequencies 4 125 kHz and 6 215.5 kHz (see Nos. **2982** and **2986**).

NOC **7946.1** 985.1 **4128.1** [1] Up to 1 January 1982 administrations may, in certain areas, reduce this requirement to class H3E and J3E emissions on working frequencies.

NOC **7946.2** 985.2 **4128.2** [2] In certain areas, administrations may reduce this requirement to one working frequency.

NOC 4133 D3. Bands Between 156 MHz and 174 MHz

NOC 7950 988 4134 § 19. All ship stations equipped with radiotelephony to work in the authorized bands between 156 MHz and 174 MHz (see No. **613** and Appendix **18**) shall be able to send and receive class G3E emissions (see Resolution **308**) on:

NOC 7951 989 4135 *a)* the distress, safety and calling frequency 156.8 MHz;

NOC 7952 990 4136 *b)* the primary intership frequency 156.3 MHz;

NOC 7953 991 4137 *c)* all the frequencies necessary for their service.

MOD **Section II. Conditions to Be Observed by Ship Earth Stations**

MOD 7954 1379AA 4138 § 20. Ship earth stations shall be so established as to conform to the provisions of Chapter **III** as regards frequencies.

MOD 7955 1379AB 4139 § 21. The frequencies of emissions of ship earth stations shall be checked as often as practicable by the inspection service to which these stations are subject.

NOC 7956 1379AC 4140 § 22. The energy radiated by receiving apparatus shall be reduced to the lowest practicable value and shall not cause harmful interference to other stations.

MOD 7957 1379AD 4141 § 23. Administrations shall take all practicable steps necessary to ensure that the operation of any electrical or electronic apparatus installed in ship earth stations does not cause harmful interference to the essential radio services of stations which are operating in accordance with the provisions of these Regulations.

NOC **Section III. Aircraft Communicating with Stations of the Maritime Mobile Service and the Maritime Mobile-Satellite Service**

NOC 7958 4142 *A. General Provisions*

NOC 7959 951 4143 § 24. (1) Stations on board aircraft may communicate with stations of the maritime mobile or maritime mobile-satellite services. They shall conform to those provisions of these Regulations which relate to these services.

MOD 7959A 952 4144 (2) For this purpose stations on board aircraft should use the frequencies allocated to the maritime mobile or maritime mobile-satellite services.

MOD **7960** **4145** (3) Stations on board aircraft when handling public correspondence with
954 stations of the maritime mobile service or of the maritime mobile-satellite service shall comply with all the provisions applicable to the handling of public correspondence in the maritime mobile or maritime mobile-satellite services (see particularly Articles **61**, **62**, **63**, **65** and **66**).

SUP **7961**
(becomes
7959A)

SUP **7962**
993

SUP **7963**
1002

SUP **7964**
1064

MOD **7965** **4146** § 25. In the case of a communication between a station of the maritime
1078 mobile service and an aircraft station, calling may be renewed after an interval of five minutes, notwithstanding No. **4735**.

SUP **7966**
1106

SUP **7967**
1159

SUP **7968**
1210

SUP **7969**
1232

SUP **7970**
1297

SUP **7971**
1320

NOC **7972** **4147** *B. Provisions Relating to the Use of Frequencies Between 156 MHz and 174 MHz*

MOD **7973** **4148** § 26. (1) Having regard to interference which may be caused by aircraft stations
952 at high altitudes, frequencies in the maritime mobile bands above 30 MHz shall not be used by aircraft stations, with the exception of those frequencies between 156 MHz and 174 MHz specified in Appendix **18** which may be used provided that the following conditions are observed:

NOC **7974** **4149** *a)* the altitude of aircraft stations shall not exceed 300 metres
952A (1 000 feet), except for reconnaissance aircraft participating in ice-breaking operations, where an altitude of 450 metres (1 500 feet) is allowed;

NOC **7975** 952B **4150** *b)* the mean power of aircraft station transmitters shall not exceed five watts; however, a power of one watt or less shall be used to the maximum extent possible;

NOC **7976** 952C **4151** *c)* aircraft stations shall use the channels designated for this purpose in Appendix **18**;

NOC **7977** 952D **4152** *d)* except as provided in No. **4150**, aircraft station transmitters shall comply with the technical characteristics given in Appendix **19**;

NOC **7978** 952E **4153** *e)* the communications of an aircraft station shall be brief and limited to operations in which stations of the maritime mobile service are primarily involved and where direct communication between the aircraft and the ship or coast station is required.

NOC **7979** 953 **4154** (2) The frequencies 156.3 MHz and 156.8 MHz may be used by aircraft stations for safety purposes only.

4155 to **4179** NOT allocated.

N57

ARTICLE 60

NOC

Special Rules Relating to the Use of Frequencies in the Maritime Mobile Service

NOC

Section I. General Provisions

NOC **8031** **4180** *A. Single-Sideband Radiotelegraph Transmissions*

MOD **8032** 437A **4181** § 1. Stations employing single-sideband radiotelegraph transmissions shall use upper-sideband emissions. The frequencies specified in these Regulations for class H2A and H2B* emissions such as 410 kHz, 425 kHz, 454 kHz, 468 kHz, 480 kHz, 500 kHz, 512 kHz and 8 364 kHz shall be used as carrier frequencies.

NOC **8033** **4182** *B. Bands Between 405 kHz and 535 kHz*

MOD **8034** 438 **4183** § 2. Except as provided in No. **961**, ship stations authorized to work in the bands between 415 kHz and 535 kHz shall transmit on the frequencies indicated in this Article (see No. **4237**).

NOC **8035** 438A **4184** § 3. As a general rule, the minimum separation between adjacent frequencies used respectively by coast stations and by ship stations is 4 kHz.

NOC **8036** 439 **4185** § 4. In the band 405 - 415 kHz in Region 1, no frequency is assigned to coast stations, in order to protect the frequency 410 kHz which is designated for the maritime radionavigation service (radio direction-finding).

NOC **8037** 440 **4186** § 5. In the African Area of Region 1, in the bands 415 - 490 kHz and 510 - 525 kHz the separation between adjacent frequencies assigned to coast stations is, as a general rule, 3 kHz. However, in order that the frequencies may coincide with those used in the European Area in these bands, this spacing is reduced in certain cases.

NOC **8038** **4187** *C. Bands Between 1 605 kHz and 4 000 kHz*

MOD **8039** 442 **4188** § 6. (1) In Region 1, frequencies assigned to stations operating in the bands between 1 606.5 kHz and 3 800 kHz (see Article **8**) should, whenever possible, be in accordance with the following subdivision:

- 1 606.5 - 1 625 kHz: Radiotelegraphy exclusively.
- 1 625 - 1 670 kHz: Low power radiotelephony.
- 1 670 - 1 950 kHz: Coast stations.
- 1 950 - 2 053 kHz: Ship stations working to coast stations.

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* This is to cater for the automatic reception of the radiotelegraph alarm signal.

– 2 053 - 2 065 kHz: Intership working.
– 2 065 - 2 170 kHz: Ship stations working to coast stations.
– 2 170 - 2 173.5 kHz: Coast stations calling ship stations (including selective calling) and, exceptionally, coast stations transmitting safety messages.
– *2 173.5 - 2 190.5 kHz: Guardband for the distress and calling frequency 2 182 kHz.*
– 2 190.5 - 2 194 kHz: Ship stations calling coast stations.
– 2 194 - 2 440 kHz: Intership working.
– 2 440 - 2 578 kHz: Ship stations working to coast stations.
– 2 578 - 2 850 kHz: Coast stations.
– 3 155 - 3 340 kHz: Ship stations working to coast stations.
– 3 340 - 3 400 kHz: Intership working.
– 3 500 - 3 600 kHz: Intership working.
– 3 600 - 3 800 kHz: Coast stations.

MOD **8040** **4189** (2) In these bands, in Region 1, the frequencies are spaced, as far as possible, by:
443

– 7 kHz when two adjacent frequencies are used for double-sideband radiotelephony;

– 3 kHz when two adjacent frequencies are used for radiotelegraphy;

– 5 kHz when one frequency is used for double-sideband radiotelephony and the adjacent frequency is used for radiotelegraphy.

NOC **8041** **4190** (3) However, in the case of the intership bands, in Region 1, the spacing is reduced to 5 kHz for adjacent frequencies used for double-sideband radiotelephony.
444

NOC **8042** **4191** (4) When these bands are used for single-sideband radiotelephony, a station operating in the lower half of a double-sideband channel shall use upper-sideband emission with the carrier frequency located 3 kHz below the centre frequency of that channel.
444A

NOC **8043** **4192** (5) However, in the case of the intership bands, the carrier frequency of a station operating in the lower half of the double-sideband channel is located only 2.5 kHz below the centre frequency of that channel.
444B

NOC **8044** **4193** § 7. In Regions 2 and 3, the carrier frequencies 2 635 kHz (assigned frequency 2 636.4 kHz) and 2 638 kHz (assigned frequency 2 639.4 kHz) are used as single-sideband intership radiotelephony working frequencies in addition to the frequencies prescribed for common use in certain services. The carrier frequency 2 635 kHz should be used with class R3E and J3E emissions only. The carrier frequency 2 638 kHz may be used with class A3E, H3E, R3E and J3E emissions. However, after 1 January 1982, class A3E and H3E emissions are no longer authorized. In Region 3 these frequencies are protected by a guardband between 2 634 kHz and 2 642 kHz.
445

MOD **8045** **4194** § 8. The assigned frequency of a single-sideband radiotelephone channel shall
445A be 1 400 Hz higher than the carrier frequency.

NOC **8046** **4195** *D. Bands Between 4 000 kHz and 27 500 kHz*

NOC **8047** **4196** § 9. (1) The bands exclusively allocated to the maritime mobile service between
446 4 000 kHz and 27 500 kHz (see Article **8**) are subdivided into the following categories:

MOD **8048** **4197** *a) Ship stations,* telephony, duplex operation (two-frequency channels)
447

4 063 - 4 143.6 kHz
6 200 - 6 218.6 kHz
8 195 - 8 291.1 kHz
12 330 - 12 429.2 kHz
16 460 - 16 587.1 kHz
22 000 - 22 124 kHz

MOD **8049** **4198** *b) Coast stations,* telephony, duplex operation (two-frequency chan-
448 nels)

4 357.4 - 4 438 kHz
6 506.4 - 6 525 kHz
8 718.9 - 8 815 kHz
13 100.8 - 13 200 kHz
17 232.9 - 17 360 kHz
22 596 - 22 720 kHz

MOD **8050** **4199** *c) Ship stations and coast stations,* telephony, simplex operation
449 (single-frequency channels) and intership cross-band operation (two frequencies)

4 143.6 - 4 146.6 kHz
6 218.6 - 6 224.6 kHz
8 291.1 - 8 297.3 kHz
12 429.2 - 12 439.5 kHz
16 587.1 - 16 596.4 kHz
22 124 - 22 139.5 kHz

NOC **8051** **4200** *d) Ship stations,* wide-band telegraphy, facsimile and special transmis-
451 sion systems

4 146.6 - 4 162.5 kHz
4 166 - 4 170 kHz
6 224.6 - 6 244.5 kHz
6 248 - 6 256 kHz
8 300 - 8 328 kHz
8 331.5 - 8 343.5 kHz
12 439.5 - 12 479.5 kHz
12 483 - 12 491 kHz
16 596.4 - 16 636.5 kHz
16 640 - 16 660 kHz
22 139.5 - 22 160.5 kHz
22 164 - 22 192 kHz

MOD **8052** **4201** *e)* *Ship stations,* oceanographic data transmission (see note *c)* in 451A Appendix **31**)

4 162.5 - 4 166 kHz
6 244.5 - 6 248 kHz
8 328 - 8 331.5 kHz
12 479.5 - 12 483 kHz
16 636.5 - 16 640 kHz
22 160.5 - 22 164 kHz

NOC **8053** **4202** *f)* *Ship stations,* narrow-band direct-printing telegraph and data transmission systems, at speeds not exceeding 100 bauds (frequencies 451B paired with those in No. **4207**)

4 170 - 4 177.25 kHz
6 256 - 6 267.75 kHz
8 343.5 - 8 357.25 kHz
12 491 - 12 519.75 kHz
16 660 - 16 694.75 kHz
22 192 - 22 225.75 kHz

NOC **8054** **4203** *g)* *Ship stations,* narrow-band direct-printing telegraph and data transmission systems, at speeds not exceeding 100 bauds (non-paired 451C frequencies)

4 177.25 - 4 179.75 kHz
6 267.75 - 6 269.75 kHz
8 297.3 - 8 300 kHz
8 357.25 - 8 357.75 kHz
12 519.75 - 12 526.75 kHz
16 694.75 - 16 705.8 kHz
22 225.75 - 22 227 kHz
25 076 - 25 090.1 kHz

NOC **8055** **4204** *h)* *Ship stations,* A1A Morse telegraphy, calling
452

4 179.75 - 4 187.2 kHz
6 269.75 - 6 280.8 kHz
8 359.75 - 8 374.4 kHz
12 539.6 - 12 561.6 kHz
16 719.8 - 16 748.8 kHz
22 227 - 22 247 kHz
25 070 - 25 076 kHz

NOC **8056** **4205** *i)* *Ship stations,* digital selective calling
452A

4 187.2 - 4 188 kHz
6 280.8 - 6 282 kHz
8 374.4 - 8 376 kHz
12 561.6 - 12 564 kHz
16 748.8 - 16 752 kHz
22 247 - 22 250 kHz

NOC **8057** **4206** *j) Ship stations,* A1A Morse telegraphy, working
452B

4 188 - 4 219.4 kHz
6 282 - 6 325.4 kHz
8 357.75 - 8 359.75 kHz
8 376 - 8 435.4 kHz
12 526.75 - 12 539.6 kHz
12 564 - 12 652.3 kHz
16 705.8 - 16 719.8 kHz
16 752 - 16 859.4 kHz
22 250 - 22 310.5 kHz
25 090.1 - 25 110 kHz

NOC **8058** **4207** *k) Coast stations,* narrow-band direct-printing telegraph and data transmission systems, at speeds not exceeding 100 bauds (frequencies paired with those in No. **4202**)
452C

4 349.4 - 4 356.75 kHz
6 493.9 - 6 505.75 kHz
8 704.4 - 8 718.25 kHz
13 070.8 - 13 099.75 kHz
17 196.9 - 17 231.75 kHz
22 561 - 22 594.75 kHz

NOC **8059** **4208** *l) Coast stations,* digital selective calling
452D

4 356.75 - 4 357.4 kHz
6 505.75 - 6 506.4 kHz
8 718.25 - 8 718.9 kHz
13 099.75 - 13 100.8 kHz
17 231.75 - 17 232.9 kHz
22 594.75 - 22 596 kHz

NOC **8060** **4209** *m) Coast stations,* wide-band and A1A Morse telegraphy, facsimile, special and data transmission systems and direct-printing telegraph systems
453

4 219.4 - 4 349.4 kHz
6 325.4 - 6 493.9 kHz
8 435.4 - 8 704.4 kHz
12 652.3 - 13 070.8 kHz
16 859.4 - 17 196.9 kHz
22 310.5 - 22 561 kHz

NOC **8061** **4210** (2) Frequencies in the bands 25 010 - 25 070 kHz, 25 110 - 25 600 kHz and 26 100 - 27 500 kHz may be assigned to coast stations.
453A

MOD **8062** **4211** § 10. (1) Appendix **16** shows the radiotelephone channels in the frequency bands listed in Nos. **4197**, **4198** and **4199**.
456

MOD **8063** **4212** (2) The Frequency Allotment Plan for coast radiotelephone stations in the high frequency bands is contained in Appendix **25 Mar2**.
457

NOC **8064** **4213** *E. Bands Between 156 MHz and 174 MHz*

NOC **8065** **4214** § 11. The ship movement service should be operated only on frequencies allocated to the maritime mobile service in the band 156 - 174 MHz.
457A

NOC **Section II. Use of Frequencies for Radiotelegraphy**

NOC **8066** **4215** *A. General*

NOC **8067** 1094A **4216** § 12. Whenever the class of emission A2A, A2B*, H2A or H2B** is mentioned in the present Regulations for use in the maritime mobile service, the type of transmission shall, except for selective calling purposes, be telegraphy by on-off keying of the modulated emission, to the exclusion of on-off keying of the modulating audio frequencies only.

NOC **8068** **4217** *B. Bands Between 405 kHz and 535 kHz*

NOC B1. Call and Reply

MOD **8069** 1107 **4218** § 13. (1) The frequency 500 kHz is the international distress frequency for radiotelegraphy (see No. **2970** for details of its use for distress, safety and urgency purposes).

NOC **8070** 1109 **4219** (2) In addition, 500 kHz may be used only:

NOC **8071** 1110 **4220** *a)* for call and reply (see Nos. **4225** and **4229**);

NOC **8072** 1111 **4221** *b)* by coast stations to announce the transmission of their traffic lists under the conditions provided for in Nos. **4727**, **4728** and **4729**.

NOC **8073** 1113 **4222** (3) In order to facilitate the reception of distress calls, other transmissions on the frequency 500 kHz shall be reduced to a minimum, and in any case shall not exceed one minute.

MOD **8074** 1113A **4223** (4) Before transmitting on 500 kHz, stations must listen on this frequency for a reasonable period to make sure that no distress traffic is being sent (see No. **4713**).

NOC **8075** 1113B **4224** (5) The provisions of No. **4223** do not apply to stations in distress.

NOC **8076** 1114 **4225** § 14. (1) The general calling frequency which, except as provided under No. **4849**, shall be used by any ship station or coast station engaged in radiotelegraphy in the authorized bands between 405 kHz and 535 kHz, and by aircraft desiring to enter into communication with a station of the maritime mobile service using frequencies in these bands, is the frequency 500 kHz.

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* This is to cater for the automatic reception of the radiotelegraph alarm signal.

** This is to cater for the automatic reception of the radiotelegraph alarm signal and for selective calling.

NOC **8077** **4226** (2) However, in order to reduce interference in regions of heavy traffic, 1115 administrations may consider the requirements of No. **4225** as satisfied when the calling frequencies assigned to coast stations open to public correspondence are not separated by more than 3 kHz from the general calling frequency 500 kHz.

NOC **8078** **4227** § 15. (1) A ship station calling a coast station shall, wherever possible and 1115A particularly in regions of heavy traffic, indicate to the coast station that it is ready to receive on the working frequency of that station.

NOC **8079** **4228** (2) The ship station should make sure beforehand that this frequency is not 1115B already being used by the coast station.

NOC **8080** **4229** § 16. (1) The frequency for replying to a call sent on the general calling frequency 1116 (see No. **4225**) shall be as follows:

– either 500 kHz,

– or the frequency specified by the calling station (see Nos. **4227** and **4769**).

NOC **8081** **4230** (2) In regions of heavy traffic, coast stations may answer calls made by ship 1117 stations of their own nationality in accordance with special arrangements made by the administration concerned (see No. **4769**).

NOC **8082** **4231** § 17. Selective calling under the provisions of Article **62** may be carried out 1117A on the frequency 500 kHz in the shore-to-ship, ship-to-shore and ship-to-ship directions.

NOC B2. Traffic

NOC **8083** **4232** § 18. (1) Coast stations working in the authorized bands between 405 kHz and 1118 535 kHz shall be able to use at least one frequency in addition to 500 kHz. One of these additional frequencies, which is printed in heavy type in the List of Coast Stations, is the normal working frequency of the station.

MOD **8084** **4233** (2) In addition to their normal working frequency, coast stations may use, 1119 in the authorized bands, additional frequencies which are shown in ordinary type in the List of Coast Stations. The band 405 - 415 kHz, however, is assigned to radio direction-finding; it may not be used by the maritime mobile service except on the conditions fixed by Chapter **III**.

NOC **8085** **4234** (3) The working frequencies of coast stations shall be chosen so as to avoid 1120 interference with neighbouring stations.

NOC **8086** **4235** (4) In regions of heavy traffic, coast stations and ship stations should use 1121 class A1A emission on their working frequencies.

NOC **8087** **4236** § 19. As an exception to the provisions of Nos. **2970**, **4219**, **4220** and **4221** and 1122 on condition that signals of distress, urgency and safety, and calls and replies are not interfered with, 500 kHz may be used outside regions of heavy traffic for direction-finding but with discretion.

NOC **8088** **4237** § 20. (1) Ship stations operating in the authorized bands between 405 kHz and 535 kHz shall use working frequencies chosen from the following: 425 kHz, 454 kHz, 468 kHz, 480 kHz and 512 kHz, except as permitted by No. **961**.
1123

NOC **8089** **4238** (2) Coast stations are prohibited from transmitting on the working frequencies designated for the use of ship stations on a worldwide basis.
1124

NOC **8090** **4239** (3) The frequency 512 kHz may be used by ship stations as a supplementary calling frequency when 500 kHz is being used for distress.
1125

NOC **8091** **4240** (4) During these periods coast stations may:
1126

NOC **8092** **4241** *a)* use 512 kHz as a supplementary frequency for call and reply; *or*
1127

NOC **8093** **4242** *b)* make use of other arrangements for call and reply which shall have been specified in the List of Coast Stations.
1128

NOC **8094** **4243** (5) When 500 kHz is in use for distress, ship stations shall not use 512 kHz as a working frequency in those areas where it is in use as a supplementary calling frequency.
1129

NOC **8095** **4244** *C. Bands Between 1 605 kHz and 4 000 kHz*

NOC C1. Region 2

NOC **8096** **4245** § 21. In Region 2, the frequencies in the band 2 068.5 - 2 078.5 kHz are assigned to ship stations using wide-band telegraphy, facsimile and special transmission systems. The provisions of No. **4254** are applicable.
1138

NOC C2. Additional Provisions Applicable in Region 3 Areas North of the Equator Only

MOD **8097** **4246** § 22. (1) The band 2 089.5 - 2 092.5 kHz is the calling and safety band for radiotelegraphy in those parts of the bands between 1 605 kHz and 2 850 kHz in which radiotelegraphy is authorized.
1139

NOC **8098** **4247** (2) Frequencies in the band 2 089.5 - 2 092.5 kHz may be used for calls, replies and safety. These frequencies may also be used for messages preceded by the urgency or safety signals.
1140

NOC **8099** **4248** (3) Each coast station using the calling band 2 089.5 - 2 092.5 kHz shall, as far as possible, maintain watch on this band during its working hours.
1141

MOD **8100** **4249** (4) Coast stations which use frequencies in the band 2 089.5 - 2 092.5 kHz for calling shall be able to use at least one other frequency in those parts of the bands between 1 605 kHz and 2 850 kHz in which radiotelegraphy is authorized.
1142

NOC **8101** **4250** (5) One of these frequencies is printed in heavy type in the List of Coast
1143 Stations to indicate that it is the normal working frequency of the station. Supplementary frequencies, if any, are shown in ordinary type.

NOC **8102** **4251** (6) Working frequencies of coast stations shall be chosen in such a manner
1144 as to avoid interference with other stations.

NOC **8103** **4252** *D. Bands Between 4 000 kHz and 27 500 kHz*

NOC D1. General

MOD **8104** **4253** § 23. (1) Ship radiotelegraph stations equipped to operate in the bands specified
1145 in Nos. **4204** and **4206** shall employ only class A1A Morse telegraphy emissions at speeds not exceeding 40 bauds. Survival craft stations may use class A2A or H2A emissions in these bands (see Nos. **3002** and **3005**).

MOD **8105** **4254** (2) Ship stations equipped for wide-band telegraphy, facsimile and special
1146 transmission systems may, in the frequency bands reserved for such use, employ any class of emission provided that such emissions can be contained within the wide-band channels indicated in Appendix **31**. However, A1A Morse telegraphy and telephony are excluded, except for circuit alignment purposes.

NOC **8106** **4255** (3) Except as provided for in No. **4376.1**, coast radiotelegraph stations
1147 operating in the maritime mobile exclusive bands between 4 000 kHz and 27 500 kHz shall not use Type 2 emissions (see No. **4216**).

NOC **8107** **4256** (4) Coast radiotelegraph stations employing single-channel class A1A
1148 or F1B emissions and operating in the maritime mobile exclusive bands between 4 000 kHz and 27 500 kHz shall at no time use a mean power in excess of the following:

Band	*Maximum mean power*
4 MHz	5 kW
6 MHz	5 kW
8 MHz	10 kW
12 MHz	15 kW
16 MHz	15 kW
22 MHz	15 kW

NOC **8108** **4257** (5) Coast radiotelegraph stations employing multichannel telegraph emis-
1148A sions and operating in the maritime mobile exclusive bands between 4 000 kHz and 27 500 kHz shall at no time use a mean power in excess of 2.5 kW per 500 Hz bandwidth.

MOD **8109** **4258** § 24. Nos. **4200** to **4209** and the corresponding columns of Appendix **31** show
1149 those parts of the bands between 4 000 kHz and 27 500 kHz exclusively allocated to the maritime mobile service which are to be used by coast stations and ship stations for radiotelegraphy.

NOC D2. Call and Reply

MOD **8110** 1160 **4259** § 25. (1) In order to establish communication with a coast station, each ship station shall use an appropriate calling frequency in one of the bands listed in No. **4204**.

MOD **8111** 1161 **4260** (2) Frequencies in the A1A Morse telegraphy calling bands are assigned to each ship station in accordance with the provisions of Nos. **4277** to **4285**.

MOD **8112** 1162 **4261** § 26. In order to reduce interference, ship stations shall, within the means at their disposal, endeavour to select for calling the band with the most favourable propagation characteristics for effecting reliable communication. In the absence of more precise data, a ship station shall, before making a call, listen for the signals of the station with which it desires to communicate. The strength and intelligibility of such signals are useful as a guide to propagation conditions and indicate which is the preferable band for calling.

NOC **8113** 1162A **4262** § 27. In order to reduce interference on the common calling channels, they shall be used only when a ship cannot use a calling frequency within the group indicated as a coast station receiving channel of the station with which it desires to communicate or when the coast station has indicated that it is keeping watch only on the common calling channels.

MOD **8114** 1163 **4263** § 28. (1) The calling frequency to be used by a coast station, in each of the bands for which it is equipped, is its normal working frequency as shown in heavy type in the List of Coast Stations (see Nos. **4207** and **4209**).

NOC **8115** 1164 **4264** (2) So far as is practicable, a coast station shall transmit its calls at specified times in the form of traffic lists on the frequency or frequencies indicated in the List of Coast Stations (see Nos. **4722** and **4726**).

SUP **8116** 1164A

MOD **8117** 1164B **4265** § 29. The exclusive digital selective calling frequencies within the bands indicated in No. **4208** (see No. **4684**) may be assigned to any coast station for use in accordance with No. **4681**.

MOD **8118** 1165 **4266** § 30. Unless the calling station specifies otherwise, the frequency for reply to a call is as follows:

MOD **8119** 1166 **4267** *a)* for a ship station, one of its assigned calling frequencies in the same band, with due regard to No. **4262**;

NOC **8120** 1167 **4268** *b)* for a coast station, its normal working frequency in the same band as that used by the calling station.

NOC **8121** **4269** § 31. Administrations shall indicate, in respect of each coast station, in which
1168 of the ship calling bands and on which coast station receiving channels that coast station keeps watch and, as far as possible, the approximate hours of watchkeeping in Coordinated Universal Time (UTC). This information shall be published in the List of Coast Stations.

NOC **8122** **4270** § 32. Exceptionally, a coast station may indicate that it is keeping watch on
1168A calling frequencies other than those specified as its own receiving frequencies.

NOC **8123** **4271** § 33. In order to reduce interference on calling frequencies, a coast station
1168B shall take adequate steps to ensure, under normal conditions, the prompt receipt of calls (see No. **4755**).

NOC D3. Traffic

MOD **8124** **4272** § 34. (1) A ship station after establishing communication on a calling frequency
1169 (see No. **4259**) shall change to a working frequency for the transmission of traffic. The use of frequencies in the calling bands for any purpose other than calling shall be prohibited.

MOD **8125** **4273** (2) Working frequencies shall be assigned to ship stations in accordance
1170 with the provisions of Nos. **4288** to **4306** inclusive.

NOC **8126** **4274** § 35. (1) A coast station shall transmit its traffic on its normal working frequency
1171 or on other working frequencies assigned to it.

NOC **8127** **4275** (2) Countries which share a channel in one of the exclusive maritime mobile
1172 bands between 4 000 kHz and 27 500 kHz should give special consideration to the countries among them which have no other channel in the same band and should endeavour to use their primary channel to the greatest extent possible, in order to permit the latter countries to satisfy their minimum communication requirements.

SUP **8128**
1173

SUP **8129**
1173A

SUP **8130**
1173B

MOD **8131** **4276** *E. Assignment of Frequencies to Ship Stations*

NOC E1. Calling Frequencies of Ship Stations

SUP **8132**
1174

MOD **8133** **4277** § 36. Each calling band between 4 000 kHz and 23 000 kHz indicated in
1176A No. **4204** is divided into four groups of channels and two common channels. The 25 MHz band is divided into three channels of which one is a common channel (see Appendix **34**).

NOC **8134** **4278** § 37. (1) Coast stations shall, when providing international service as published in
1176B the List of Coast Stations, keep watch on the common calling channels in each band throughout their hours of service in the bands concerned, and on the appropriate group channel or channels during busy periods. The times during which watch will be kept on the group channel or channels shall be published for each country in the List of Coast Stations.

NOC **8135** **4279** (2) If necessary, an indication of the channels on which watch is kept may
1176C be included in the coast station transmissions.

NOC **8136** **4280** § 38. In the bands between 4 000 kHz and 23 000 kHz, the administration to
1177 which a ship station is subject shall assign to it at least two calling frequencies in each band in which the station is equipped to transmit [1]. One of the calling frequencies in each band shall be within one of the common coast station receiving channels contained in Appendix **34**; another in each band shall be selected from within the other channels in Appendix **34**, taking account of the receiving channel or channels of the coast station with which the ship station most frequently communicates. In the 25 MHz band, administrations shall assign to ship stations under their control a frequency within the common channel. Another calling frequency in this band shall be selected from within Channel A or B of Appendix **34**, taking account of the receiving channel of the coast station with which the ship station most frequently communicates.

NOC **8137** **4281** § 39. A ship station should, wherever possible, be assigned additional calling
1177A frequencies (see No. **4262**).

NOC **8138** **4282** § 40. If it is not intended to maintain watch on all the receiving channels
1177B within a group, the administration concerned, in order to ensure an even distribution of calls, shall determine the channel or channels on which watch will be maintained, but only after coordination as far as possible with administrations sharing the same group (see Resolution **312**).

NOC **8139** **4283** § 41. Administrations which assign to their ships frequencies in two or more
1177C calling channels within their group shall take the necessary steps to distribute such assignments uniformly throughout the channels taken into use.

NOC **8140** **4284** § 42. In order to ensure an even distribution of calls on the common calling
1177D channels, administrations should, as far as practicable, assign frequencies in each of the two channels to an equal number of their ships.

NOC **8141** **4285** § 43. Administrations shall ensure, as far as possible, that ship stations under
1177E their jurisdiction are capable of keeping their transmission within the limits of the assigned channels (see Appendix **7**).

NOC **8136.1** **4280.1** [1] Up to 1 January 1980 ship stations whose transmitters are capable of using only three
1177.1 frequencies in each of the bands between 4 000 kHz and 23 000 kHz may, exceptionally, be assigned a single calling frequency in each of the frequency bands in which they can transmit. This exception may be made only if the administration concerned considers that the assignment of a minimum of two working frequencies in each band is necessary for the ship's service.

SUP **8142**
1179A

MOD **8143** **4286** § 44. The exclusive digital selective calling frequencies within the bands indicated in No. **4205** (see No. **4683**) may be assigned to any ship station for use in accordance with No. **4681**.
1179B

MOD E2. Working Frequencies of Ship Stations

NOC **4287** *a) Channel Spacing and Assignment of Frequencies*

MOD **8144** **4288** § 45. In all bands, the working frequencies for ship stations equipped to use wide-band telegraphy, facsimile and special transmission systems are spaced 4 kHz apart. The frequencies assignable are shown in Appendix **31**.
1180

MOD **8145** **4289** § 46. In all bands, the frequencies assignable for oceanographic data transmissions are spaced 0.3 kHz apart. The frequencies assignable are shown in Appendix **31**.
1180A

MOD **8146** **4290** § 47. In all bands, the working frequencies for ship stations using narrow-band direct-printing telegraph and data transmission systems, at speeds not exceeding 100 bauds, including those paired with the working frequencies assignable to coast stations (see No. **4207**), are spaced 0.5 kHz apart. The frequencies assignable to ship stations which are paired with those used by coast stations are shown in Appendix **32** (see also No. **4202**). The frequencies assignable to ship stations which are not paired with those used by coast stations are shown in Appendix **33** (see also No. **4203**).
1180B

MOD **8147** **4291** § 48. In all bands, except the 6 MHz band, the working frequencies for ship stations using A1A Morse telegraphy, at speeds not exceeding 40 bauds, are spaced 0.5 kHz apart; in the 6 MHz band they are spaced 0.75 kHz apart (see also Note *e)* to Appendix **31**). The extreme frequencies assignable in each of these bands are shown in Appendix **31**.
1182

8148 **4292** § 49. In the 4, 6, 8, 12 and 16 MHz bands, certain frequencies are harmonically related as shown in Appendix **35**.
1183

NOC **4293** *b) Working Frequencies for Ship Stations Using Wide-Band Telegraphy, Facsimile and Special Transmission Systems*

SUP **8149**
1188

MOD **8150** **4294** § 50. (1) Each administration shall assign to each ship station under its jurisdiction and employing wide-band telegraphy, facsimile and special transmission systems one or more series of the working frequencies reserved for this purpose and shown in Appendix **31**. The total number of series assigned to each ship shall be determined by traffic requirements.
1189

NOC **8151** **4295** (2) When ship stations employing wide-band telegraphy, facsimile and
1190 special transmission systems are assigned less than the total number of working frequencies in a band, the administration concerned shall assign working frequencies to such ships in accordance with an orderly system of rotation that will ensure approximately the same number of assignments on any one working frequency.

MOD **8152** **4296** (3) However, within the limits of the bands given in No. **4200**, administra-
1191 tions may, to meet the needs of specific systems, assign frequencies in a different manner from that shown in Appendix **31**. Nevertheless administrations shall take into account, as far as possible, the provisions of Appendix **31** concerning channelling and 4 kHz spacing.

NOC **4297** *c) Working Frequencies for Oceanographic Data Stations*

SUP **8153**
1191A

MOD **8154** **4298** § 51. The frequency bands in No. **4201** may also be used by buoy stations for
1191B oceanographic data transmission and by stations interrogating these buoys.

MOD **8155** **4299** § 52. Each administration may assign to each station under its jurisdiction of
1191C a type specified in Nos. **4201** and **4298** one or more of the assignable frequencies designated in Appendix **31**.

NOC **4300** *d) Working Frequencies (paired with those in No.* **4207**) *for Ship Stations Using Narrow-Band Direct-Printing Telegraph and Data Transmission Systems, at Speeds Not Exceeding 100 Bauds*

SUP **8156**
1191D

NOC **8157** **4301** § 53. The frequency pairs assignable to coast stations and ship stations using
1191DA narrow-band direct-printing telegraph and data transmission systems are indicated in Appendix **32**.

NOC **8158** **4302** § 54. When assigning frequencies listed in Appendix **32** for narrow-band
1191E direct-printing telegraph and data transmission systems, administrations shall apply the procedure described in Resolution **300**.

NOC **4303** *e) Working Frequencies (non-paired) for Ship Stations Using Narrow-Band Direct-Printing Telegraph and Data Transmission Systems, at Speeds Not Exceeding 100 Bauds*

SUP **8159**
1191F

NOC **8160** **4304** § 55. When assigning frequencies listed in Appendix **33** for narrow-band
1191G direct-printing telegraph and data transmission systems, administrations shall take due account of the information entries in the Master Register resulting from the notification procedure contained in Resolution **301**.

NOC 4305 *f) Working Frequencies for Ship Stations Using A1A Morse Telegraphy*

SUP **8161** 1196

NOC **8162** 1200 **4306** § 56. Each administration shall assign to each ship station under its jurisdiction a sufficient number of working frequencies, in any of the 4, 6, 8, 12, 16, 22 and 25 MHz bands, to meet the traffic needs of the ship. In each band used, preferably not less than two working frequencies should be assigned to each ship. Administrations shall ensure a uniform distribution of assignments throughout the bands.

MOD **8163** 1200A **4307** § 57. For the exclusive purpose of communication with stations of the maritime mobile service, an aircraft station may be assigned one or more working frequencies in the bands shown in No. **4206**. These frequencies shall be assigned in accordance with the same principles of uniform distribution as for ship stations.

NOC 4308 *g) Abbreviations for the Indication of Working Frequencies*

NOC **8164** 1203 **4309** § 58. In the bands between 4 000 kHz and 27 500 kHz the following abbreviations may be used to designate a working frequency:

NOC **8165** 1204 **4310** *a)* if the frequency expressed in kHz has no decimal value, the last three figures shall be transmitted;

NOC **8166** 1204A **4311** *b)* if the frequency expressed in kHz has a decimal value, the last three figures before the decimal point and the first decimal figure shall be transmitted.

NOC

Section III. Use of Frequencies for Narrow-Band Direct-Printing Telegraphy

NOC **8167** 4312 *A. General*

NOC **8168** 999H **4313** § 59. Frequencies assigned to coast stations shall be indicated in the List of Coast Stations (List IV). This List shall also indicate any other useful information concerning the service performed by each coast station.

NOC **8169** 4314 *B. Bands Between 405 kHz and 535 kHz*

NOC **8170** 999I **4315** § 60. (1) All ship stations equipped with narrow-band direct-printing telegraph apparatus to work in the authorized bands between 405 kHz and 535 kHz shall be able to send and receive class F1B emissions on at least two working frequencies (see No. **4237**) [1].

NOC **8170.1** 9991.1 **4315.1** [1] In the European Maritime Area usage of these class F1B emissions is subject to special arrangements between interested and affected administrations.

NOC **8171** **4316** (2) Narrow-band direct-printing telegraphy is forbidden in the band 490 - 510 kHz.
999J

NOC **8172** **4317** *C. Bands Between 1 605 kHz and 4 000 kHz*

NOC **8173** **4318** § 61. (1) All ship stations equipped with narrow-band direct-printing telegraph apparatus to work in the authorized bands between 1 605 kHz and 4 000 kHz shall be able to send and receive class F1B emissions on at least two working frequencies.
999K

NOC **8174** **4319** (2) Narrow-band direct-printing telegraphy is forbidden in the band 2 170 - 2 194 kHz.
999L

NOC **8175** **4320** *D. Bands Between 4 000 kHz and 27 500 kHz*

NOC **8176** **4321** § 62. All ship stations equipped with narrow-band direct-printing telegraph apparatus to work in the authorized bands between 4 000 kHz and 27 500 kHz shall be able to send and receive class F1B emissions on at least two frequencies in each band as required by their service. The assignable frequencies are indicated in Appendices **32** and **33**.
999M

NOC **8177** **4322** *E. Bands Between 156 MHz and 174 MHz*

NOC **8178** **4323** § 63. All ship stations equipped with narrow-band direct-printing telegraph apparatus may work in the authorized bands between 156 MHz and 174 MHz and shall conform to the provisions of Appendix **18**.
999N

NOC **Section IV. Use of Frequencies for Radiotelephony**

NOC **8179** **4324** *A. General*

SUP **8180**
1319

NOC **8181** **4325** § 64. Except with regard to the provisions of Article **12** concerning notification and recording of frequencies, when designating frequencies for single-sideband radiotelephony the carrier frequency is always to be designated. The assigned frequency is to be determined in accordance with No. **4194**.
1321A

MOD **8182** **4326** § 65. Coast stations shall not occupy idle radiotelephone channels by emitting identification signals, such as those generated by call slips or tapes. Exceptionally, a coast station, when requested by a ship station for the purpose of establishing a radiotelephone call, may emit a receiver tuning signal of not more than 10 seconds' duration.
1321B

NOC **8183** **4327** § 66. The frequencies of transmission (and reception when these frequencies
1322 are in pairs as in the case of duplex radiotelephony) assigned to each coast station shall be indicated in the List of Coast Stations. This List shall also indicate any other useful information concerning the service performed by each coast station.

NOC **8184** **4328** § 67. Single-sideband apparatus in radiotelephone stations of the maritime
1322A mobile service operating in the bands between 1 605 kHz and 4 000 kHz allocated to this service and in the bands allocated exclusively to this service between 4 000 kHz and 23 000 kHz shall satisfy the technical and operational conditions specified in Appendix **17** and Resolution **307**.

NOC **8185** **4329** § 68. When linked compressor and expander systems are used they shall
1322AA conform to the characteristics specified in Appendix **40**, paragraph *a)*.

NOC **8186** **4330** § 69. Single-sideband radio equipment used in conjunction with linked
1322AB compressor and expander systems shall conform to the characteristics specified in Appendix **17** and should also conform to Appendix **40**, paragraph *b)*.

NOC **8187** **4331** *B. Bands Between 1 605 kHz and 4 000 kHz*

NOC B1. Mode of Operation of Stations

MOD **8188** **4332** § 70. (1) Except in the cases specified in Nos. **2973**, **4127** and **4342**, the classes of
1322B emission to be used in the bands between 1 605 kHz and 4 000 kHz shall be:

4333 *a)* A3E; *or*

4334 *b)* H3E, R3E and J3E.

4335 However, unless otherwise specified in the present Regulations (see Nos. **2973**, **3004**, **4127**, **4342** and **4354**):

4336 – class A3E emissions shall not be used by coast stations; *and*

4337 – after 1 January 1982, class H3E emissions for coast stations and class A3E and H3E emissions for ship stations shall no longer be authorized.

NOC **8189** **4338** (2) The peak envelope power of coast radiotelephone stations operating in
1322BA the authorized bands allocated between 1 605 kHz and 4 000 kHz shall not exceed:

4339 – 5 kW for coast stations located north of latitude 32° N;

4340 – 10 kW for coast stations located south of latitude 32° N.

NOC **8190** **4341** (3) The normal mode of operation for each coast station shall be indicated
1322C in the List of Coast Stations.

NOC **8191** **4342** (4) Transmissions in the bands 2 170 - 2 173.5 kHz and 2 190.5 - 2 194 kHz
1322D with the carrier frequency 2 170.5 kHz and the carrier frequency 2 191 kHz respectively are limited to class R3E and J3E emissions and are limited to a peak

envelope power of 400 watts. However, on the frequency 2 170.5 kHz and with the same power limit, coast stations may also use class H2B emissions when using the selective calling system defined in Appendix **39** and, exceptionally, in Regions 1 and 3 and in Greenland, may also use class H3E emissions for safety messages.

NOC

B2. Call and Reply

MOD **8192** **4343** § 71. (1) The frequency 2 182 kHz [1] is the international distress frequency for
1323 radiotelephony (see No. **2973** for details of use for distress, urgency, safety and emergency position-indicating radiobeacon (EPIRB) purposes). The class of emission to be used for radiotelephony on the frequency 2 182 kHz shall be A3E or H3E (see No. **4127**).

NOC **8193** **4344** (2) The frequency 2 182 kHz may also be used:
1327

NOC **8194** **4345** *a)* for call and reply in accordance with the provisions of Article **65**;
1328

NOC **8195** **4346** *b)* by coast stations to announce the transmission, on another frequency, of traffic lists (see Nos. **4925** to **4929**).
1329

SUP **8196**
1329A

NOC **8197** **4347** (3) In addition, an administration may assign to its stations other frequencies for call and reply.
1330

NOC **8198** **4348** § 72. To facilitate the reception of distress calls, all transmissions on 2 182 kHz shall be kept to a minimum.
1331

NOC **8199** **4349** § 73. Ship stations open to public correspondence should, as far as possible during their hours of service, keep watch on 2 182 kHz.
1335

MOD **8200** **4350** § 74. (1) Before transmitting on the carrier frequency 2 182 kHz, a station shall
1326A listen on this frequency for a reasonable period to make sure that no distress traffic is being sent (see No. **4915**).

NOC **8201** **4351** (2) The provisions of No. **4350** do not apply to stations in distress.
1326B

SUP **8191.1**
1322D.2

NOC **8192.1** **4343.1** [1] Where administrations provide at their coast stations a watch on 2 182 kHz for
1323.1 receiving class R3E and J3E emissions as well as class A3E and H3E emissions, ship stations beyond the A3E or H3E communication range of such coast stations may call them for safety purposes using class R3E or J3E emissions. This procedure shall only be used when calling by the use of class A3E and H3E emissions has not been successful.

NOC

B3. Traffic

NOC **8202** **4352** § 75. (1) Coast stations which use 2 182 kHz for calling shall be able to use at
1336 least one other frequency in the authorized bands between 1 605 kHz and 2 850 kHz.

MOD **8203** **4353** (2) Coast stations authorized to use radiotelephony on one or more frequencies
1336A other than 2 182 kHz in the authorized bands between 1 605 kHz and 2 850 kHz shall be capable of transmitting on those frequencies class A3E emissions or class H3E, R3E and J3E emissions. However, after 1 January 1982, class H3E emissions shall no longer be authorized, except on the frequency 2 182 kHz (see also No. **4342**).

NOC **8204** **4354** (3) Coast stations open to the public correspondence service on one or more
1337 frequencies between 1 605 kHz and 2 850 kHz shall also be capable of transmitting class H3E emissions with a carrier frequency of 2 182 kHz, and of receiving class A3E and H3E emissions with a carrier frequency of 2 182 kHz.

NOC **8205** **4355** (4) One of the frequencies which coast stations are required to be able to
1338 use (see No. **4352**) is printed in heavy type in the List of Coast Stations to indicate that it is the normal working frequency of the stations. Supplementary frequencies, if assigned, are shown in ordinary type.

NOC **8206** **4356** (5) Working frequencies of coast stations shall be chosen in such a manner
1339 as to avoid interference with other stations.

NOC

B4. Additional Provisions Applying to Region 1

SUP **8207**
1340

MOD **8208** **4357** § 76. The peak envelope power of ship radiotelephone stations operating in
1341 the authorized bands between 1 605 kHz and 2 850 kHz shall not exceed 400 watts.

NOC **8209** **4358** § 77. (1) All stations on ships making international voyages should be able to use:
1343

NOC **8210** **4359** *a)* the following ship-to-shore working frequencies, if required by their
1344 service:

4360 – carrier frequency 2 046 kHz (assigned frequency 2 047.4 kHz) and carrier frequency 2 049 kHz (assigned frequency 2 050.4 kHz) for class R3E and J3E emissions;

4361 – carrier frequency 2 049 kHz also for class A3E and H3E emissions until 1 January 1982;

NOC **8211** **4362** *b)* the following intership frequencies, if required by their service:
1345

4363 – carrier frequency 2 053 kHz (assigned frequency 2 054.4 kHz) and carrier frequency 2 056 kHz (assigned frequency 2 057.4 kHz) for class R3E and J3E emissions;

4364 – carrier frequency 2 056 kHz also for class A3E and H3E emissions until 1 January 1982.

4365 These frequencies may be used as additional ship-to-shore frequencies.

NOC **8212** 1346 **4366** (2) These frequencies shall not be used for working between stations of the same nationality.

NOC **8213** 1348 **4367** § 78. (1) Ships frequently exchanging correspondence with a coast station of a nationality other than their own may use the same frequencies as ships of the nationality of the coast station where mutually agreed by the administrations concerned.

NOC **8214** 1348A **4368** (2) In exceptional circumstances, if frequency usage according to Nos. **4358** to **4365** or No. **4367** is not possible, a ship station may use one of its own assigned national ship-to-shore frequencies for communication with a coast station of another nationality, under the express condition that the coast station as well as the ship station take precautions (see No. **4915**) to ensure that the use of such a frequency will not cause harmful interference to the service for which the frequency in question is authorized.

NOC B5. Additional Provisions Applying to Regions 2 and 3

NOC **8215** 1351 **4369** § 79. All stations on ships making international voyages should, if required by their service, be able to use the intership carrier frequencies:

2 635 kHz (assigned frequency 2 636.4 kHz)
2 638 kHz (assigned frequency 2 639.4 kHz).

The conditions of use of these frequencies are specified in No. **4193**.

NOC **8216** **4370** *C. Bands Between 4 000 kHz and 23 000 kHz*

NOC C1. Mode of Operation of Stations

MOD **8217** 1351A **4371** § 80. (1) The classes of emission to be used for radiotelephony in the bands between 4 000 kHz and 23 000 kHz are H3E [1], R3E and J3E.

NOC **8218** 1351B **4372** (2) The normal mode of operation of each coast station is indicated in the List of Coast Stations.

SUP **8217.1** 1351A.1

MOD **8217.2** 1351A.2 **4371.1** [1] For the use of class H3E emissions see Nos. **2982** and **2986**.

MOD **8219** **4373**
1351C

(3) Coast radiotelephone stations employing class H3E [1], R3E or J3E emissions in the bands between 4 000 kHz and 23 000 kHz shall use the minimum power necessary to cover their service area and shall at no time use a peak envelope power in excess of 10 kW per channel.

MOD **8220** **4374**
1351D

(4) Ship radiotelephone stations employing class H3E [1], R3E or J3E emissions in the bands between 4 000 kHz and 23 000 kHz shall at no time use a peak envelope power in excess of 1.5 kW per channel.

NOC

C2. Call and Reply

MOD **8221** **4375**
1352

§ 81. (1) Ship stations may use the following carrier frequencies for calling in radiotelephony:

4 125 kHz [2, 3]
6 215.5 kHz [4]
8 257 kHz
12 392 kHz
16 522 kHz
22 062 kHz

MOD **8219.1** **4373.1**
1351C.1

MOD **8220.1** **4374.1**
1351D.1

[1] For the use of class H3E emissions see Nos. **2982** and **2986**.

MOD **8221.1** **4375.1**
1352.1

[2] In the United States and Canada, the carrier frequency 4 125 kHz is also authorized for common use by coast and ship stations for single-sideband radiotelephony on a simplex basis, provided the peak envelope power of such stations does not exceed 1 kW (see also No. **4376.2**).

MOD **8221.2** **4375.2**
1352.2

[3] In the zone of Regions 1 and 2 south of latitude 15° N, including Mexico, and in the zone of Region 3 south of latitude 25° N, the carrier frequency 4 125 kHz is also authorized for common use by coast and ship stations for single-sideband radiotelephony on a simplex basis for call, reply and safety purposes, provided the peak envelope power of such coast stations does not exceed 1 kW. In these zones the use of the carrier frequency 4 125 kHz for working purposes is not permitted (see also Nos. **2982**, **3030** and **4375.1**).

MOD **8221.3** **4375.3**
1352.3

[4] In the zone of Region 3 south of latitude 25° N, the carrier frequency 6 215.5 kHz is also authorized for common use by coast and ship stations for single-sideband radiotelephony on a simplex basis for call, reply and safety purposes, provided the peak envelope power of such coast stations does not exceed 1 kW. In this zone the use of the carrier frequency 6 215.5 kHz for working purposes is not permitted (see also No. **2986**).

MOD **8222** **4376** (2) Coast stations may use the following carrier frequencies for calling in radiotelephony [1]:
1352A

4 419.4 kHz [2]
6 521.9 kHz [2]
8 780.9 kHz
13 162.8 kHz
17 294.9 kHz
22 658 kHz

MOD **8223** **4377** § 82. Ship and coast stations using digital selective calling in accordance with No. **4681** may use the frequencies specified in Nos. **4683** and **4684** respectively.
1352AA

NOC **8224** **4378** § 83. The hours of service of coast stations open to public correspondence and the frequency or frequencies on which watch is maintained shall be indicated in the List of Coast Stations.
1354

MOD **8225** **4379** § 84. (1) In the zone of Regions 1 and 2 south of latitude 15° N, including Mexico, and in the zone of Region 3 south of latitude 25° N, before transmitting on the carrier frequency 4 125 kHz or 6 215.5 kHz a station shall listen on the frequency for a reasonable period to make sure that no distress traffic is being sent (see No. **4915**).
1351G

NOC **8226** **4380** (2) The provisions of No. **4379** do not apply to stations in distress.
1351H

NOC C3. Traffic

MOD **8227** **4381** § 85. (1) For the conduct of duplex telephony, the transmitting frequencies of the coast stations and of the corresponding ship stations shall be associated in pairs, as indicated in Appendix **16**, except temporarily in cases where working conditions prohibit the use of paired frequencies in order to meet operational needs.
1355

MOD **8228** **4382** (2) The frequencies to be used for the conduct of simplex radiotelephony are shown in Appendix **16**, Section B. In these cases, the peak envelope power of the coast station transmitter shall not exceed 1 kW.
1356

MOD **8229** **4383** (3) The frequencies indicated in Appendix **16** for ship station transmissions may be used by ships of any category according to traffic requirements.
1357

NOC **8222.1** **4376.1** [1] These frequencies may also be used by coast stations with class H2B emission, when using the selective calling system defined in Appendix **39**.
1352A.1

MOD **8222.2** **4376.2** [2] In Regions 2 and 3, the carrier frequencies 4 419.4 kHz and 6 521.9 kHz are also authorized for common use by coast and ship stations for single-sideband radiotelephony on a simplex basis, provided the peak envelope power of such stations does not exceed 1 kW. The use of 6 521.9 kHz for this purpose should be limited to daytime use (see also No. **4375.1**).
1352A.2

MOD **8230** **4384** (4) The technical characteristics of transmitters used for radiotelephony in
1358 the bands between 4 000 kHz and 23 000 kHz are specified in Appendix **17**.

NOC **8231** **4385** *D. Bands Between 156 MHz and 174 MHz*

NOC D1. Call and Reply

MOD **8232** **4386** § 86. (1) The frequency 156.8 MHz is the international distress, safety and calling
1359 frequency for radiotelephony when using frequencies in the authorized bands between 156 MHz and 174 MHz (see No. **2994** for details of use). The class of emission to be used for radiotelephony on the frequency 156.8 MHz shall be G3E (see Appendix **19**).

MOD **8233** **4387** (2) The frequency 156.8 MHz may also be used:
1359A

4388 *a)* by coast and ship stations for call and reply in accordance with the provisions of Articles **62** and **65**;

4389 *b)* by coast stations to announce the transmission on another frequency of traffic lists and important maritime information (see Nos. **4925** to **4929**).

NOC **8234** **4390** (3) The frequency 156.8 MHz may be used by ship stations and coast
1359B stations for selective calling.

NOC **8235** **4391** (4) Any one of the channels designated in Appendix **18** for public correspondence may be used as a calling channel if an administration so desires. Such use
1361 shall be indicated in the List of Coast Stations.

MOD **8236** **4392** (5) Ship and coast stations in the public correspondence service may use a
1362 working frequency, for calling purposes, as provided in Articles **62** and **65**.

NOC **8237** **4393** (6) All emissions in the band 156.725 - 156.875 MHz [1] capable of causing
1363 harmful interference to the authorized transmissions of stations of the maritime mobile service on 156.8 MHz are forbidden.

NOC **8238** **4394** (7) To facilitate the reception of distress calls all transmissions on
1363C 156.8 MHz shall be kept to a minimum and shall not exceed one minute.

MOD **8239** **4395** (8) Before transmitting on the frequency 156.8 MHz, a station should listen
1363A on this frequency for a reasonable period to make sure that no distress traffic is being sent (see No. **4915**).

NOC **8240** **4396** (9) The provisions of No. **4395** do not apply to stations in distress.
1363B

NOC **8237.1** **4393.1** [1] After 1 January 1983 this band is reduced to 156.7625 - 156.8375 MHz (see Reso-
1363.1 lution **308**).

NOC

D2. Watch

MOD **8241** 1365 **4397** § 87. (1) In addition to the watch referred to in No. **3057**, a coast station open to the international public correspondence service should, during its hours of service, maintain watch on its receiving frequency or frequencies indicated in the List of Coast Stations.

NOC **8242** 1366 **4398** (2) The method of watch on a working frequency shall be no less efficient than watch by an operator.

NOC **8243** 1367 **4399** (3) Ship stations should, where practicable, maintain watch on 156.8 MHz when within the service area of a coast station providing international maritime mobile radiotelephone service in the band 156 - 174 MHz. Ship stations fitted only with VHF radiotelephone equipment operating in the authorized bands between 156 MHz and 174 MHz should maintain watch on 156.8 MHz when at sea.

NOC **8244** 1367A **4400** (4) Ship stations, when in communication with a port station, may, on an exceptional basis and subject to the agreement of the administration concerned, continue to maintain watch on the appropriate port operations frequency only, provided that watch on 156.8 MHz is being maintained by the port station.

NOC **8245** 1367B **4401** (5) Ship stations, when in communication with a coast station in the ship movement service and subject to the agreement of the administration concerned, may continue to maintain watch on the appropriate ship movement service frequency only, provided the watch on 156.8 MHz is being maintained by that coast station.

NOC **8246** 1368 **4402** § 88. A coast station in the port operations service in an area where 156.8 MHz is being used for distress, urgency or safety shall, during its working hours, keep an additional watch on 156.6 MHz or other port operations frequency indicated in heavy type in the List of Coast Stations.

NOC **8247** 1368A **4403** § 89. A coast station in the ship movement service in an area where 156.8 MHz is being used for distress, urgency and safety shall, during its working hours, keep an additional watch on the ship movement frequencies indicated in heavy type in the List of Coast Stations.

NOC

D3. Traffic

NOC **8248** 1369 **4404** § 90. (1) Where practicable, coast stations open to the international public correspondence service shall be capable of working with ship stations equipped for duplex or semi-duplex operation.

NOC **8249** 1370 **4405** (2) The method of working (single-frequency or two-frequency) specified in Appendix **18** for each channel should be used in the international services (see Resolution **308**).

NOC **8250** 1371 **4406** § 91. Communications in the port operations service shall be restricted to those relating to operational handling, the movement and the safety of ships and, in emergency, to the safety of persons. Messages of a public correspondence nature shall be excluded from this service.

NOC **8251** 1371A **4407** § 92. Communications in the ship movement service shall be restricted to those relating to the movement of ships. Messages of a public correspondence nature shall be excluded from this service.

NOC **8252** 1372 **4408** § 93. (1) Coast stations which use 156.8 MHz for calling shall be able to use at least one other authorized channel in the international maritime mobile radiotelephone service in the band 156 - 174 MHz.

NOC **8253** 1373 **4409** (2) In the band 156 - 174 MHz administrations shall, where practicable, assign frequencies to coast and ship stations in accordance with the Table of Transmitting Frequencies given in Appendix **18** for such international services as administrations consider necessary (see Resolution **308**).

MOD **8254** 1373A **4410** (3) The normal sequence in which channels should be put into use in the band 156 - 174 MHz is indicated by the figures in the relevant columns of Appendix **18**.

NOC **8255** 1373B **4411** (4) Administrations should, as far as possible, arrange to ensure that ship stations fitted with the channels corresponding to the figures in a circle in Appendix **18** can obtain a reasonably adequate use of available services.

NOC **8256** 1374 **4412** (5) In assigning frequencies to their coast stations, administrations should collaborate in cases where harmful interference might occur.

NOC **8257** 1375 **4413** (6) Channels are designated by numbers in the Table of Transmitting Frequencies given in Appendix **18** (see Resolution **308**).

NOC **8258** 1376 **4414** § 94. (1) In assigning frequencies to stations of authorized services, other than maritime mobile, administrations shall avoid the possibility of interference to international maritime services in the bands between 156 MHz and 174 MHz.

NOC **8259** 1377 **4415** (2) The use of channels for maritime mobile purposes other than those indicated in the Table of Transmitting Frequencies given in Appendix **18** shall not cause harmful interference to services which operate in accordance with that table and shall not prejudice the future development of such services (see Resolution **308**).

NOC **8260** 1379 **4416** § 95. The carrier power of ship station transmitters shall not exceed 25 watts for equipment brought into service after 1 January 1970.

4417 to **4440** NOT allocated.

N58/37A

ARTICLE 61

NOC

Order of Priority of Communications in the Maritime Mobile Service and in the Maritime Mobile-Satellite Service

MOD 8361 1496A 4441 The order of priority for communications [1] in the maritime mobile service and the maritime mobile-satellite service shall be as follows, except where impracticable in a fully automated system in which, nevertheless, category 1 shall receive priority:

1. Distress calls, distress messages, and distress traffic.
2. Communications preceded by the urgency signal.
3. Communications preceded by the safety signal.
4. Communications relating to radio direction-finding.
5. Communications relating to the navigation and safe movement of aircraft engaged in search and rescue operations.
6. Communications relating to the navigation, movements and needs of ships and aircraft, and weather observation messages destined for an official meteorological service.
7. ETATPRIORITENATIONS – Radiotelegrams relating to the application of the United Nations Charter.
8. ETATPRIORITE – Government radiotelegrams with priority and Government calls for which priority has been expressly requested.
9. Service communications relating to the working of the telecommunication service or to communications previously exchanged.
10. Government communications other than those shown in 8 above, ordinary private communications, RCT [2] radiotelegrams and press radiotelegrams.

4442 to 4664 NOT allocated.

ADD 8361.1 4441.1 [1] The term *communications* as used in this Article includes radiotelegrams, radiotelephone calls and radiotelex calls.

ADD 8361.2 4441.2 [2] RCT (Red Cross Telegrams): Telegrams concerning persons protected in time of war by the Geneva Conventions of 12 August 1949.

N59

ARTICLE 62

NOC

Selective Calling Procedure in the Maritime Mobile Service

NOC

Section I. General

MOD 8387 4665 § 1. (1) Selective calling may be carried out on appropriate radiotelephone working frequencies in the shore-to-ship, ship-to-shore and ship-to-ship directions in the band 1 605 - 4 000 kHz.
1235B

MOD 8388 4666 (2) Selective calling may be carried out on 156.8 MHz and on appropriate radiotelephone working frequencies in the shore-to-ship, ship-to-shore and ship-to-ship directions.
1239A

NOC

Section II. Sequential Single-Frequency Code System

NOC 8389 4667 *A. General*

NOC 8390 4668 § 2. The characteristics of the sequential single-frequency code international selective calling system shall be in accordance with Appendix **39**.
999A

SUP 8391
1013AA

NOC 8392 4669 *B. Method of Calling*

NOC 8393 4670 § 3. (1) The call shall consist of:
999B

4671 *a)* the selective call number or identification number or signal of the station called, followed by

b) the selective call number or identification number or signal of the station calling.

4672 However, in the case of a coast station calling on VHF, the number of the channel to be used for the reply and for traffic may replace the identification number or signal of the coast station.

The call shall be transmitted twice.

NOC 8394 4673 (2) When a station called does not reply, the call should not normally be repeated until after an interval of at least five minutes and should not then normally be renewed until after a further interval of fifteen minutes.
999C

NOC **8395** **4674** (3) The use of an "all ships call" shall be confined to distress and urgency in the MF and HF bands and the announcement of vital navigational warnings in those bands; additionally it may be used for safety purposes in the VHF band. This call may only be used to supplement, if required, the distress procedure specified in Nos. **3101**, **3102**, **3116** and **3117** and shall in no circumstances be used in place of such procedures, in particular the alarm signals mentioned in Nos. **3268** and **3270**.
999CA

NOC **8396** **4675** *C. Reply to Calls*

(MOD) **8397** **4676** § 4. The reply to calls shall be made in accordance with the provisions of:
999D

4677 *a)* Nos. **4767** and **4769** when using radiotelegraphy;

4678 *b)* Nos. **4982** to **5002** when using radiotelephony.

NOC **8398** **4679** *D. Frequencies to Be Used*

MOD **8399** **4680** § 5. Selective calls should be sent on one or more of the following calling carrier frequencies:
999E

500 kHz
2 170.5 kHz [1]
4 125 kHz
4 419.4 kHz
6 521.9 kHz
8 780.9 kHz
13 162.8 kHz
17 294.9 kHz
22 658 kHz
156.8 MHz [2]

NOC **Section III. Digital Selective Calling System**

NOC **8400** **4681** § 6. A digital selective calling system may be used if it is in full conformity with the relevant CCIR Recommendations in which all operational, technical and compatibility aspects which might be involved have been taken into account.
999F

SUP **8401**
1013AB

MOD **8399.1** **4680.1** [1] This frequency has replaced 2 182 kHz for selective calling except as provided in No. **2976**.
999E.1

NOC **8399.2** **4680.2** [2] Selective calling on this frequency should normally be only in the direction coast station to ship or intership. Selective calls from ship to coast stations should whenever possible be sent on other frequencies of Appendix **18**, as appropriate.
999E.2

MOD **8402** (ex **8739**) 1238B **4682** § 7. The frequencies assignable to ship and coast stations for digital selective calling are as follows:

MOD **8403** (ex **8740**) 1238C **4683** *a) Ship stations*

4 187.6 kHz
6 281.4 kHz
8 375.2 kHz
12 562.3 kHz
12 562.8 kHz
16 749.9 kHz
16 750.4 kHz
22 248 kHz
22 248.5 kHz

MOD **8404** (ex **8741**) 1238D **4684** *b) Coast stations*

4 357 kHz
6 506 kHz
8 718.5 kHz
13 100 kHz
13 100.5 kHz
17 232 kHz
17 232.5 kHz
22 595 kHz
22 595.5 kHz

4685 to **4709** NOT allocated.

N60

ARTICLE 63

NOC

General Radiotelegraph Procedure in the Maritime Mobile Service

NOC

Section I. General Provisions

MOD 8423 1000 4710 § 1. The procedure detailed in this Article is obligatory, except in cases of distress, urgency or safety, to which the provisions of Chapter **IX** are applicable.

MOD 8424 1003 4711 § 2. The use of the Morse code signals specified in the Instructions for the Operation of the International Public Telegram Service shall be obligatory. However, for radiocommunications of a special character, the use of other signals is not precluded.

MOD 8425 1005 4712 § 3. The service abbreviations given in Appendix **14** are to be used.

NOC

Section II. Preliminary Operations

NOC 8426 1007 4713 § 4. (1) Before transmitting, a station shall take precautions to ensure that its emissions will not interfere with transmissions already in progress; if such interference is likely, the station shall await an appropriate break in the communications in progress. This obligation does not apply to stations where unattended operation is possible through automatic means (see No. **3863**) on frequencies dedicated to narrow-band direct-printing.

NOC 8427 1008 4714 (2) If, these precautions having been taken, the emissions of the station should, nevertheless, interfere with a transmission already in progress, the following rules shall be applied:

MOD 8428 1009 4715 *a)* the ship station whose emission causes interference to the communication of a mobile station with a coast station shall cease sending at the first request of the coast station;

MOD 8429 1010 4716 *b)* the ship station whose emission causes interference to communications already in progress between mobile stations shall cease sending at the first request of one of the other stations;

NOC 8430 1011 4717 *c)* the station which requests this cessation shall indicate the approximate waiting time imposed on the station whose emission it suspends.

NOC

Section III. Calls by Radiotelegraphy

NOC 8431 4718

A. General

MOD 8432 1064A 4719 § 5. The provisions of this Section are not applicable to the maritime mobile-satellite service.

MOD **8433** 1065 **4720** § 6. (1) As a general rule, it rests with the ship station to establish communication with the coast station. For this purpose, the ship station may call the coast station only when it comes within the service area of the latter, that is to say, that area within which, by using an appropriate frequency, the ship station can be heard by the coast station.

MOD **8434** 1066 **4721** (2) However, a coast station having traffic for a ship station may call this station if it has reason to believe that the ship station is keeping watch and is within the service area of the coast station.

MOD **8435** 1067 **4722** § 7. (1) In addition, each coast station shall, so far as practicable, transmit its calls in the form of "traffic lists" consisting of the call signs in alphabetical order of all ship stations for which it has traffic on hand. These calls are made at specified times fixed by agreement between the administrations concerned and at intervals of at least two hours and not more than four hours during the working hours of the coast station.

NOC **8436** 1067A **4723** (2) In the bands between 4 000 kHz and 27 500 kHz, however, traffic lists may be transmitted at intervals of not less than one hour.

NOC **8437** 1068 **4724** (3) Continuous or frequently repeated emissions of its call sign or of the enquiry signal CQ by a coast station should be avoided (see Nos. **1799** to **1803**).

MOD **8438** 1068A **4725** (4) However, in the bands between 4 000 kHz and 27 500 kHz, a coast station may transmit its call sign at intervals, using type A1A transmission, to enable ship stations to select the calling band with the most favourable propagation characteristics for reliable communication (see No. **4261**).

NOC **8439** 1069 **4726** (5) Coast stations shall transmit their traffic lists on their normal working frequencies in the appropriate bands. This transmission shall be preceded by a general call to all stations (CQ).

NOC **8440** 1070 **4727** (6) The call to all stations announcing the traffic list may be sent on a calling frequency in the following form:

– CQ, not more than three times;

– the word DE;

– the call sign of the calling station, not more than three times;

– QSW followed by the indication of the working frequency or frequencies on which the traffic list is about to be sent.

In no case may this preamble be repeated.

NOC **8441** 1071 **4728** (7) The provisions of No. **4727**:

NOC **8442** 1071A **4729** *a)* are obligatory when 500 kHz is used;

NOC **8443** 1072 **4730** *b)* do not apply when frequencies in the bands between 4 000 kHz and 27 500 kHz are used.

NOC **8444** **4731** (8) The hours at which coast stations transmit their traffic lists and the
1073 frequencies and classes of emission which they use for this purpose shall be stated in the List of Coast Stations.

MOD **8445** **4732** (9) Ship stations should, as far as possible, listen to the traffic lists trans-
1074 mitted by coast stations. On hearing their call sign in such a list they shall reply as soon as they can do so.

MOD **8446** **4733** (10) When the traffic cannot be sent immediately, the coast station shall
1075 inform each ship station concerned of the probable time at which working can begin, and also, if necessary, the frequency and class of emission which will be used.

MOD **8447** **4734** § 8. When a coast station receives calls from several ship stations at practi-
1076 cally the same time, it decides the order in which these stations may transmit their traffic. Its decision shall be based on the priority (see No. **4441**) of the radiotelegrams that ship stations have on hand and on the need for allowing each calling station to clear the greatest possible number of communications.

NOC **8448** **4735** § 9. (1) When a station called does not reply to a call sent three times at
1077 intervals of two minutes, the calling shall cease and shall not be renewed until after an interval of fifteen minutes.

ADD **8448A** **4736** (2) In the case of a communication between a station of the maritime
1078 mobile service and an aircraft station, calling may be renewed after an interval of five minutes, notwithstanding No. **4735**.

NOC **8449** **4737** (3) Before renewing the call, the calling station shall ascertain that the
1079 station called is not in communication with another station.

NOC **8450** **4738** (4) If there is no reason to believe that harmful interference will be caused
1080 to other communications in progress, the provisions of Nos. **4146** and **4735** are not applicable. In such cases the call, sent three times at intervals of two minutes, may be repeated after an interval of less than fifteen minutes but not less than three minutes.

MOD **8451** **4739** § 10. Ship stations shall not radiate a carrier wave between calls.
1081

MOD **8452** **4740** § 11. When the name and address of the administration or private operating
1082 agency controlling a ship station are not given in the appropriate list of stations or are no longer in agreement with the particulars given therein, it is the duty of the ship station to furnish as a matter of regular procedure, to the coast station to which it transmits traffic, all the necessary information in this respect.

MOD **8453** **4741** § 12. (1) The coast station may, by means of the abbreviation TR, ask the ship
1083 station to furnish it with the following information:

NOC **8454** **4742** *a)* position and, whenever possible, course and speed;
1084

NOC **8455** **4743** *b)* next port of call.
1085

MOD **8456** **4744** (2) The information referred to in Nos. **4741** to **4743**, preceded by the
1086 abbreviation TR, should be furnished by ship stations whenever this seems appropriate, without prior request from the coast station. The provision of this information is authorized only by the master or person responsible for the ship or other vessel carrying the ship station.

NOC **8457** **4745** *B. Calls to Several Stations*

MOD **8458** **4746** § 13. The provisions of this Section are not applicable to the maritime
1087A mobile-satellite service.

NOC **8459** **4747** § 14. Two types of calling signal "to all stations" are recognized:
1088

NOC **8460** **4748** *a)* call CQ followed by the letter K (see Nos. **4750** and **4751**);
1089

NOC **8461** **4749** *b)* call CQ not followed by the letter K (see No. **4752**).
1090

MOD **8462** **4750** § 15. Stations desiring to enter into communication with stations of the
1091 maritime mobile service without, however, knowing the names of any such stations within their service area may use the enquiry signal CQ in place of the call sign of the station called in the calling formula, the call being followed by the letter K (general call to all stations in the maritime mobile service with request for reply).

MOD **8463** **4751** § 16. In regions where traffic is congested, the use of the call CQ followed by
1092 the letter K is forbidden. As an exception it may be used with signals denoting urgency.

NOC **8464** **4752** § 17. The call CQ not followed by the letter K (general call to all stations
1093 without request for reply) is used before the transmission of information of any kind intended to be read or used by anyone who can intercept it.

NOC **8465** **4753** § 18. The call CP followed by two or more call signs or by a code word (call
1094 to certain receiving stations without request for reply) is used only for the transmission of information of any nature intended to be read or used by the persons authorized.

NOC

Section IV. Method of Calling, Reply to Calls and Signals Preparatory to Traffic

NOC **8466** **4754** *A. Method of Calling – Morse Telegraphy*

SUP **8467**
1013A

NOC **8468** **4755** § 19. (1) The call consists of:
1013B

– the call sign of the station called, not more than twice;

– the word DE;

– the call sign of the calling station, not more than twice;

– the information required by No. **4761** and, as appropriate, by Nos. **4764** and **4765**;

– the letter K.

NOC **8469** **4756** (2) For normal calling, when the requirements of No. **4261** have been met,
1013C the call specified in No. **4755** may be transmitted twice at an interval of not less than one minute; thereafter it shall not be repeated until after an interval of three minutes.

NOC **8470** **4757** *B. Frequency to Be Used for Calling and for Preparatory Signals*

NOC **8471** **4758** § 20. (1) For making the call and for transmitting preparatory signals, the calling
1014 station shall use a frequency on which the station called keeps watch.

MOD **8472** **4759** (2) A ship station calling a coast station in any of the frequency bands
1015 between 4 000 kHz and 27 500 kHz shall use a frequency in the calling band specially reserved for this purpose.

NOC **8473** **4760** *C. Indication of the Frequency to Be Used for Traffic*

MOD **8474** **4761** § 21. (1) The call, as described in No. **4755**, shall contain the service abbreviation
1016A indicating the working frequency and, if useful, the class of emission which the calling station proposes to use for the transmission of its traffic.

MOD **8475** **4762** (2) When the call by a coast station does not contain an indication of the
1019A frequency to be used for the traffic, this indicates that the coast station proposes to use for traffic its normal working frequency shown in the List of Coast Stations.

NOC **8476** **4763** *D. Indication of Priority, of the Reason for the Call, and of Transmission of Radiotelegrams in Series*

MOD **8477** **4764** § 22. (1) The calling station shall transmit the service abbreviation after the
1020A above-mentioned preparatory signals to indicate a priority message other than a distress, urgency or safety message (see No. **4441**) and to indicate the reason for the call.

NOC **8478** **4765** (2) Moreover, when the calling station wishes to send its radiotelegrams in
1021 series, it shall indicate this by adding the service abbreviation for requesting the consent of the station called.

NOC **8479** **4766** *E. Form of Reply to Calls*

MOD **8480** 1022A **4767** § 23. The reply to calls consists of:

– the call sign of the calling station, not more than twice;

– the word DE;

– the call sign of the station called, once only.

NOC **8481** **4768** *F. Frequency for Reply*

NOC **8482** 1023 **4769** § 24. Except as otherwise provided in these Regulations, for transmitting the reply to calls and to preparatory signals, the station called shall use the frequency on which the calling station keeps watch, unless the calling station has specified a frequency for the reply.

NOC **8483** **4770** *G. Agreement on the Frequency to Be Used for Traffic*

NOC **8484** 1027 **4771** § 25. (1) If the station called is in agreement with the calling station, it shall transmit:

NOC **8485** 1028 **4772** *a)* the reply to the call;

NOC **8486** 1029 **4773** *b)* the service abbreviation indicating that from that moment onwards it will listen on the working frequency announced by the calling station;

NOC **8487** 1030 **4774** *c)* if necessary, the indications referred to in No. **4783**;

MOD **8488** 1031 **4775** *d)* if useful, the service abbreviation and figure indicating the strength and/or intelligibility of the signals received (see Appendix **14**);

NOC **8489** 1032 **4776** *e)* the letter K if the station called is ready to receive the traffic of the calling station.

NOC **8490** 1033 **4777** (2) If the station called is not in agreement with the calling station on the working frequency to be used, it shall transmit:

NOC **8491** 1034 **4778** *a)* the reply to the call;

NOC **8492** 1035 **4779** *b)* the service abbreviation indicating the working frequency to be used by the calling station and, if necessary, the class of emission;

NOC **8493** 1036 **4780** *c)* if necessary, the indications specified in No. **4783**.

NOC **8494** 1037 **4781** (3) When agreement is reached regarding the working frequency which the calling station shall use for its traffic, the station called shall transmit the letter K after the indications contained in its reply.

NOC **8495** **4782**

H. Reply to the Request for Transmission by Series

NOC **8496** 1038 **4783** § 26. The station called, in replying to a calling station which has proposed to transmit its radiotelegrams by series (see No. **4765**), shall indicate, by means of the service abbreviation, its acceptance or refusal. In the former case it shall specify, if necessary, the number of radiotelegrams which it is ready to receive in one series.

NOC **8497** **4784**

I. Difficulties in Reception

NOC **8498** 1039 **4785** § 27. (1) If the station called is unable to accept traffic immediately, it shall reply to the call as indicated in Nos. **4771** to **4776**, but it shall replace the letter K by the signal · – · · · (wait), followed by a number indicating in minutes the probable duration of the waiting time. If the probable duration exceeds ten minutes (five minutes in the case of an aircraft station communicating with a station of the maritime mobile service), the reason for the delay shall be given.

NOC **8499** 1040 **4786** (2) When a station receives a call without being certain that such a call is intended for it, it shall not reply until the call has been repeated and understood. When, on the other hand, a station receives a call which is intended for it but is uncertain of the call sign of the calling station, it shall reply immediately using the service abbreviation in place of the call sign of this latter station.

NOC

Section V. Forwarding (Routing) of Traffic

NOC **8500** **4787**

A. Traffic Frequency

MOD **8501** 1041 **4788** § 28. (1) As a general rule, a station of the maritime mobile service shall transmit its traffic on one of its working frequencies in that band in which the call has been made.

NOC **8502** 1042 **4789** (2) In addition to its normal working frequency, printed in heavy type in the List of Coast Stations, a coast station may use one or more supplementary frequencies in the same band, in accordance with the provisions of Article **60**.

MOD **8503** 1043 **4790** (3) The use of frequencies reserved for calling shall be forbidden for traffic, except distress traffic (see Chapter **IX**).

NOC **8504** 1044 **4791** (4) If the transmission of a radiotelegram is to take place on a frequency and/or with a class of emission other than those used for the call, the transmission of the radiotelegram shall be preceded by:

– the call sign of the station called, not more than twice;

– the word DE;

– the call sign of the calling station, once only.

NOC **8505** **4792** (5) If the transmission is to be made on the same frequency and with the
1045 same class of emission as the call, the transmission of the radiotelegram shall be preceded, if necessary, by:

– the call sign of the station called;

– the word DE;

– the call sign of the calling station.

NOC **8506** **4793** *B. Numbering in Daily Series*

MOD **8507** **4794** § 29. (1) As a general rule, radiotelegrams of all kinds transmitted by ship
1046 stations shall be numbered in a daily series; number 1 shall be given to the first radiotelegram sent each day to each separate station.

NOC **8508** **4795** (2) A series of numbers which has begun in radiotelegraphy should be
1047 continued in radiotelephony and vice versa.

NOC **8509** **4796** *C. Long Radiotelegrams*

NOC **8510** **4797** § 30. (1) In cases where both stations are able to change from sending to
1048 receiving without manual switching, the transmitting station may continue to send until completion of the message or until the receiving station breaks in on the transmission with the service abbreviation BK. Before commencing, both stations normally agree on such a method of working by means of the abbreviation QSK.

NOC **8511** **4798** (2) If this method of working cannot be employed, long radiotelegrams,
1049 whether in plain language or in secret language, shall, as a general rule, be transmitted in sections, each section containing fifty words in the case of plain language and twenty words or groups if secret language is used.

NOC **8512** **4799** (3) At the end of each section the signal · · – – · · (?) meaning "Have
1050 you received the radiotelegram correctly up to this point?" shall be transmitted. If the section has been correctly received, the receiving station shall reply by sending the letter K and the transmission of the radiotelegram shall be continued.

NOC **8513** **4800** *D. Suspension of Traffic*

MOD **8514** **4801** § 31. When a ship station transmits on a working frequency of a coast station
1051 and causes interference with the transmission of such a coast station, it shall suspend working at the first request of the latter.

NOC **Section VI. End of Traffic and Work**

NOC **8515** **4802** *A. Signal for the End of Transmission*

NOC **8516** **4803** § 32. (1) The transmission of a radiotelegram shall be terminated by the
1052 signal · – · – · (end of transmission), followed by the letter K.

NOC **8517** 1053 **4804** (2) In the case of transmission by series, the end of each radiotelegram shall be indicated by the signal · – · – · (end of transmission) and the end of the series by the letter K.

NOC **8518** **4805** *B. Acknowledgement of Receipt*

NOC **8519** 1054 **4806** § 33. (1) The acknowledgement of receipt of a radiotelegram or a series of radiotelegrams shall be given by the receiving station in the following manner:

– the call sign of the sending station;

– the word DE;

– the call sign of the receiving station;

– the letter R followed by the number of the radiotelegram; *or*

– the letter R followed by the number of the last radiotelegram of a series.

NOC **8520** 1055 **4807** (2) The acknowledgement of receipt shall be transmitted by the receiving station on the traffic frequency (see Nos. **4788** and **4789**).

NOC **8521** **4808** *C. End of Work*

NOC **8522** 1056 **4809** § 34. (1) The end of work between two stations shall be indicated by each of them by means of the signal · · · – · – (end of work).

NOC **8523** 1057 **4810** (2) The signal · · · – · – (end of work) shall also be used:

– when the transmission of radiotelegrams of general information, meteorological information and general safety notices is finished;

– when transmission is ended in long-distance radiocommunication services with deferred acknowledgement of receipt or without acknowledgement of receipt.

NOC **Section VII. Control of Working**

NOC **8524** 1058 **4811** § 35. The provisions of this Section are not applicable in cases of distress, urgency or safety (see No. **4710**).

MOD **8525** 1059 **4812** § 36. In communications between coast stations and ship stations, the ship station shall comply with the instructions given by the coast station, in all questions relating to the order and time of transmission, to the choice of frequency and class of emission, and to the duration and suspension of work.

MOD **8526** 1060 **4813** § 37. In communications between ship stations, the station called shall control the working in the manner indicated in No. **4812**. However, if a coast station finds it necessary to intervene, these stations shall comply with the instructions given by the coast station.

NOC

Section VIII. Tests

MOD **8527** 1061 **4814** § 38. When it is necessary for a ship station to send signals for testing or adjustment which are liable to interfere with the working of neighbouring coast stations, the consent of these stations shall be obtained before such signals are sent.

MOD **8528** 1062 **4815** § 39. When it is necessary for a station in the maritime mobile service to make test signals, either for the adjustment of a transmitter before making a call or for the adjustment of a receiver, such signals shall not be continued for more than ten seconds and shall be composed of a series of VVV followed by the call sign of the station emitting the test signals.

4816 to **4840** NOT allocated.

N61

ARTICLE 64

NOC

General Procedures for Narrow-Band Direct-Printing Telegraphy in the Maritime Mobile Service [1]

NOC

Section I. General

MOD **8580** **4841** § 1. Stations using narrow-band direct-printing telegraphy shall comply with
1062AA the provisions of Articles **59** and **60**.

NOC **8581** **4842** § 2. The procedures specified in the present Article should be employed
1062AB except in cases of distress, urgency or safety.

NOC **8582** **4843** § 3. (1) The traffic may be exchanged with or without the use of error-correcting
1062AC equipment.

NOC **8583** **4844** (2) For communication between two stations the ARQ mode should be used
1062AD when available.

NOC **8584** **4845** (3) For transmissions from one coast or ship station to two or more other
1062AE stations the forward-error-correcting mode should be used when available.

NOC **8585** **4846** § 4. The services provided by each station open to public correspondence
1062AF shall be indicated in the List of Coast Stations and in the List of Ship Stations, together with information on charging.

MOD **8586** **4847** § 5. Where transmission over the telecommunication channels open to public
1062AG correspondence (excluding the telecommunication channels of the mobile service and of the mobile-satellite service and its feeder links) is involved, the provisions of the Telegraph Regulations and the relevant CCITT Recommendations should be taken into account.

NOC

Section II. Procedures for Manual Operation

NOC **8587** **4848**

A. General

MOD **8588** **4849** § 6. When using direct-printing telegraphy or similar systems in any of the
1015A frequency bands allocated to the maritime mobile service, the call may, by prior arrangement, be made on a working frequency available for such systems.

NOC **A.N61** **A.64** [1] Reference may also be made to the relevant CCIR Recommendations.

NOC **8589** **4850** *B. Ship to Coast Station*

NOC **8590** **4851** § 7. (1) The operator of the ship station establishes communication with the
1062AH coast station by A1A Morse telegraphy, telephony or by other means using normal calling procedures. The operator then requests direct-printing communication, exchanges information regarding the frequencies to be used and, when applicable, gives the ship station the direct-printing selective call number assigned in accordance with Appendix **38**.

NOC **8591** **4852** (2) The operator of the coast station then establishes direct-printing commu-
1062AI nication on the frequency agreed, using the appropriate identification of the ship.

NOC **8592** **4853** § 8. (1) Alternatively the operator of the ship station, using the direct-printing
1062AJ equipment, calls the coast station on a predetermined coast station receive frequency using the identification of the coast station assigned in accordance with Appendix **38**.

NOC **8593** **4854** (2) The operator of the coast station then establishes direct-printing commu-
1062AK nication on the corresponding coast station transmit frequency.

NOC **8594** **4855** *C. Coast Station to Ship*

NOC **8595** **4856** § 9. (1) The operator of the coast station calls the ship station by A1A Morse
1062AL telegraphy, telephony or other means, using normal calling procedures.

NOC **8596** **4857** (2) The operator of the ship station then applies the procedures of No. **4851**
1062AM or **4853**.

NOC **8597** **4858** *D. Intership*

NOC **8598** **4859** § 10. (1) The operator of the calling ship station establishes communication with
1062AN the called ship station by A1A Morse telegraphy, telephony or by other means, using normal calling procedures. The operator then requests direct-printing communication, exchanges information regarding the frequencies to be used and, when applicable, gives the direct-printing selective call number of the calling ship station assigned in accordance with Appendix **38**.

NOC **8599** **4860** (2) The operator of the called ship station then establishes direct-printing
1062AO communication on the frequency agreed, using the appropriate identification of the calling ship.

NOC **Section III. Procedures for Automatic Operation**

NOC **8600** **4861** *A. Ship to Coast Station*

NOC **8601** **4862** § 11. (1) The ship station calls the coast station on a predetermined coast station
1062AP receive frequency, using the direct-printing equipment and the identification signal of the coast station assigned in accordance with Appendix **38**.

NOC **8602** **4863** (2) The coast station's direct-printing equipment detects the call and the
1062AQ coast station responds directly on the corresponding coast station transmit frequency, either automatically or under manual control.

NOC **8603** **4864** *B. Coast Station to Ship*

NOC **8604** **4865** § 12. (1) The coast station calls the ship on a predetermined coast station transmit
1062AR frequency, using the direct-printing equipment and the ship station direct-printing selective call number assigned in accordance with Appendix **38**.

NOC **8605** **4866** (2) The ship station's direct-printing equipment tuned to receive the prede-
1062AS termined coast station transmit frequency detects the call, whereupon the reply is given in one of the following ways:

NOC **8606** **4867** *a)* the ship station replies either immediately on the corresponding
1062AT coast station receive frequency or at a later stage, using the procedure of No. **4853**; *or*

NOC **8607** **4868** *b)* the ship station's transmitter is automatically started on the corres-
1062AU ponding coast station receive frequency and the direct-printing equipment responds by sending appropriate signals to indicate readiness to receive traffic automatically.

NOC **Section IV. Message Format**

NOC **8608** **4869** § 13. Where the appropriate facilities are provided by the coast station, traffic
1062AV may be exchanged with the telex network:

NOC **8609** **4870** *a)* in a conversational mode where the stations concerned are
1062AW connected directly, either automatically or under manual control; *or*

NOC **8610** **4871** *b)* in a store-and-forward mode where traffic is stored at the coast
1062AX station until the circuit to the called station can be set up, either automatically or under manual control.

NOC **8611** **4872** § 14. In the shore-to-ship direction, the message format should conform to
1062AY normal telex network practice.

NOC **8612** **4873** § 15. In the ship-to-shore direction, the message format should conform to
1062AZ normal telex network practice with the addition of a preamble as follows:

NOC **8613** **4874** *a)* in the conversational mode the preamble shall consist of the characters
1062BA DIRTLXyz+ transmitted in sequence and preceded by at least one carriage return and a line feed, where "y" is the telex destination code in accordance with relevant CCITT Recommendations, "z" is the land subscriber's telex number and "+" indicates end of sequence;

NOC **8614** **4875** *b)* in the store-and-forward mode the preamble shall consist of the characters
1062BB TLXyz+ transmitted in sequence and preceded by at least one carriage return and a line feed, where "y" is the telex destination code in accordance with relevant CCITT Recommendations, "z" is the land subscriber's telex number and "+" indicates end of sequence.

NOC

Section V. Procedures for Operation in the Forward-Error-Correcting Mode

NOC **8615** **4876** § 16. Messages in the forward-error-correcting mode may be sent, by prior
1062BC arrangement, from a coast station or a ship station to one or more ship stations in the following cases:

NOC **8616** **4877** *a)* where a receiving ship station is not able to use its transmitter or is
1062BD not permitted to do so;

NOC **8617** **4878** *b)* where the message is intended for more than one ship;
1062BE

NOC **8618** **4879** *c)* where unattended reception of a message in the forward-error-
1062BF correcting mode is necessary and automatic acknowledgement is not required.

NOC **8619** **4880** § 17. All messages in the forward-error-correcting mode should be preceded
1062BG by at least one carriage return and a line feed signal.

NOC **8620** **4881** § 18. Ship stations may acknowledge the reception of messages in the
1062BH forward-error-correcting mode by A1A Morse telegraphy, telephony or by other means.

4882
to NOT allocated.
4902

N62

ARTICLE 65

NOC

General Radiotelephone Procedure in the Maritime Mobile Service

NOC

Section I. General Provisions

MOD 8671 1209 4903 § 1. The procedure detailed in this Article is applicable to radiotelephone stations, except in cases of distress, urgency or safety, to which the provisions of Chapter **IX** are applicable.

NOC 8672 1211 4904 § 2. (1) The service of ship radiotelephone stations shall be performed by an operator satisfying the conditions specified in Article **55**.

NOC 8673 1212 4905 (2) For the call signs or other means of identification for coast or ship radiotelephone stations see Article **25**.

NOC 8674 1213 4906 § 3. The radiotelephone public correspondence service provided on ships should, if possible, be operated on a duplex basis.

NOC 8675 1214 4907 § 4. (1) Devices providing for the emission of a signal to indicate that a call is in progress on a channel may be used in this service on a non-interference basis to the service provided by coast stations.

NOC 8676 1214A 4908 (2) The use of devices for continuous or repetitive calling or identification is not permitted.

NOC 8677 1214B 4909 (3) A station may not transmit identical information simultaneously on two or more frequencies when communicating with only one other station.

NOC 8678 1214C 4910 (4) A station shall not emit any carrier wave between calls.

MOD 8679 1215 4911 (5) Radiotelephone stations should, as far as possible, be equipped with devices for instantaneous switching from transmission to reception and vice versa. This equipment is necessary for all stations participating in communication between ships and subscribers of the land telephone system.

MOD 8680 1216 4912 § 5. (1) Stations equipped for radiotelephony may transmit and receive radiotelegrams by means of radiotelephony. Coast stations providing such service and open for public correspondence shall be indicated in the List of Coast Stations.

NOC 8681 1216A 4913 (2) To facilitate radiocommunications the service abbreviations given in Appendix **14** may be used.

NOC 8682 1216B 4914 (3) When it is necessary to spell out certain expressions, difficult words, service abbreviations, figures, etc., the phonetic spelling tables in Appendix **24** shall be used.

NOC

Section II. Preliminary Operations

NOC **8683** 1217 **4915** § 6. (1) Before transmitting, a station shall take precautions to ensure that its emissions will not interfere with transmissions already in progress; if such interference is likely, the station shall await an appropriate break in the working.

NOC **8684** 1218 **4916** (2) If, these precautions having been taken, the emissions of the station should nevertheless interfere with a transmission already in progress, the following rules shall be applied:

MOD **8685** 1219 **4917** *a)* the ship station whose emission causes interference to the communication of a mobile station with a coast station shall cease sending at the first request of the coast station;

MOD **8686** 1220 **4918** *b)* the ship station whose emission causes interference to communications already in progress between mobile stations shall cease sending at the first request of one of the other stations;

NOC **8687** 1221 **4919** *c)* the station which requests this cessation shall indicate the approximate waiting time imposed on the station whose emission it suspends.

NOC

Section III. Calls by Radiotelephony

MOD **8688** 1297A **4920** § 7. (1) The provisions of this Section relating to the intervals between calls are not applicable to a station operating under conditions involving distress, urgency or safety.

MOD **8689** 1297B **4921** (2) The provisions of this Section are not applicable to the maritime mobile-satellite service.

MOD **8690** 1298 **4922** § 8. (1) As a general rule, it rests with the ship station to establish communication with the coast station. For this purpose the ship station may call the coast station only when it comes within the service area of the latter, that is to say, that area within which, by using an appropriate frequency, the ship station can be heard by the coast station.

MOD **8691** 1299 **4923** (2) However, a coast station having traffic for a ship station may call this station if it has reason to believe that the ship station is keeping watch and is within the service area of the coast station.

MOD **8692** 1300 **4924** § 9. (1) In addition, each coast station shall, so far as practicable, transmit its calls in the form of "traffic lists" consisting of the call signs or other identification in alphabetical order of all ship stations for which it has traffic on hand. These calls shall be made at specified times fixed by agreement between the administrations concerned and at intervals of not less than two hours and not more than four hours during the working hours of the coast station.

NOC **8693** 1301 **4925** (2) Coast stations shall transmit their traffic lists on their normal working frequencies in the appropriate bands. The transmission shall be preceded by a general call to all stations.

NOC **8694** **4926** (3) The general call to all stations announcing the traffic lists may be sent
1302 on a calling frequency in the following form:

– "Hello all ships" or CQ (spoken as CHARLIE QUEBEC) not more than three times;

– the words THIS IS (or DE spoken as DELTA ECHO in case of language difficulties);

– "... Radio" not more than three times;

– "Listen for my traffic list on ... kHz".

In no case may this preamble be repeated.

NOC **8695** **4927** (4) However, in the bands between 156 MHz and 174 MHz when the
1302A conditions for establishing contact are good, the call described in No. **4926** may be replaced by:

– "Hello all ships" or CQ (spoken as CHARLIE QUEBEC), once;

– the words THIS IS (or DE spoken as DELTA ECHO in case of language difficulties);

– "... Radio", twice;

– "Listen for my traffic list on channel ...".

In no case may this preamble be repeated.

NOC **8696** **4928** (5) The provisions of No. **4926** are obligatory when 2 182 kHz or
1303 156.8 MHz is used.

NOC **8697** **4929** (6) The hours at which coast stations transmit their traffic lists and the
1304 frequencies and classes of emission which they use for this purpose shall be stated in the List of Coast Stations.

MOD **8698** **4930** (7) Ship stations should as far as possible listen to the traffic lists trans-
1305 mitted by coast stations. On hearing their call sign or other identification in such a list they must reply as soon as they can do so.

MOD **8699** **4931** (8) When the traffic cannot be sent immediately, the coast station shall
1306 inform each ship station concerned of the probable time at which working can begin, and also, if necessary, the frequency and class of emission which will be used.

MOD **8700** **4932** § 10. When a coast station receives calls from several ship stations at practi-
1307 cally the same time, it decides the order in which these stations may transmit their traffic. Its decision shall be based on the priority (see No. **4441**) of the radiotelegrams or radiotelephone calls that the ship stations have on hand and on the need for allowing each calling station to clear the greatest possible number of communications.

MOD **8701** **4933** § 11. (1) When a station called does not reply to a call sent three times at
1308 intervals of two minutes, the calling shall cease.

MOD **8702** **4934** (2) However, when a station called does not reply, the call may be repeated
1308A at three-minute intervals.

MOD **8703** **4935** (3) In areas where reliable VHF communication with a called coast station
1308B is practicable, the calling ship station may repeat the call as soon as it is ascertained that traffic has been terminated at the coast station.

NOC **8704** **4936** (4) In the case of a communication between a station of the maritime
1309 mobile service and an aircraft station, calling may be renewed after an interval of five minutes.

NOC **8705** **4937** (5) Before renewing the call, the calling station shall ascertain that the
1310 station called is not in communication with another station.

MOD **8706** **4938** (6) If there is no reason to believe that harmful interference will be caused
1311 to other communications in progress, the provisions of No. **4936** are not applicable. In such cases the call, sent three times at intervals of two minutes, may be repeated after an interval of not less than three minutes.

MOD **8707** **4939** (7) However, before renewing the call, the calling station shall ascertain that
1311A further calling is unlikely to cause interference to other communications in progress and that the station called is not in communication with another station.

MOD **8708** **4940** (8) Ship stations shall not radiate a carrier wave between calls.
1312

MOD **8709** **4941** § 12. When the name and address of the administration or private operating
1313 agency controlling a ship station are not given in the appropriate list of stations or are no longer in agreement with the particulars given therein, it is the duty of the ship station to furnish as a matter of regular procedure, to the coast station to which it transmits traffic, all the necessary information in this respect.

MOD **8710** **4942** § 13. (1) The coast station may, by means of the abbreviation TR (spoken as
1314 TANGO ROMEO), ask the ship station to furnish it with the following information:

NOC **8711** **4943** *a)* position and, whenever possible, course and speed;
1315

NOC **8712** **4944** *b)* next port of call.
1316

MOD **8713** **4945** (2) The information referred to in Nos. **4942** to **4944**, preceded by the
1317 abbreviation TR, should be furnished by ship stations, whenever this seems appropriate, without prior request from the coast station. The provision of this information is authorized only by the master or the person responsible for the ship.

NOC

Section IV. Method of Calling, Reply to Calls and Signals Preparatory to Traffic

NOC **8714** **4946** *A. Method of Calling*

NOC **8715** **4947** § 14. (1) The call consists of:
1222

– the call sign or other identification of the station called, not more than three times;

– the words THIS IS (or DE spoken as DELTA ECHO in case of language difficulties);

– the call sign or other identification of the calling station, not more than three times.

NOC 8716 1222A 4948 (2) However, in the bands between 156 MHz and 174 MHz when the conditions for establishing contact are good, the call described in No. **4947** may be replaced by:

– the call sign of the station called, once;

– the words THIS IS (or DE spoken as DELTA ECHO in case of language difficulties);

– the call sign or other identification of the calling station, twice.

NOC 8717 1222B 4949 (3) When calling a VHF coast station operating on more than one channel, a ship station calling on a working channel should include the number of that channel in the call.

NOC 8718 1223 4950 (4) When contact is established, the call sign or other identification may thereafter be transmitted once only.

NOC 8719 1224 4951 (5) When the coast station is fitted with equipment for selective calling and the ship station is fitted with equipment for receiving selective calls, the coast station shall call the ship by transmitting the appropriate code signals. The ship station shall call the coast station by speech in the manner given in No. **4947** (see also Article **62**).

NOC 8720 1224A 4952 § 15. Calls for internal communications on board ship when in territorial waters shall consist of:

NOC 8721 1224B 4953 *a)* From the master station:

– the name of the ship followed by a single letter (ALFA, BRAVO, CHARLIE, etc.) indicating the sub-station not more than three times;

– the words THIS IS;

– the name of the ship followed by the word CONTROL;

NOC 8722 1224C 4954 *b)* From the sub-station:

– the name of the ship followed by the word CONTROL not more than three times;

– the words THIS IS;

– the name of the ship followed by a single letter (ALFA, BRAVO, CHARLIE, etc.) indicating the sub-station.

NOC 8723 4955 *B. Frequency to Be Used for Calling and for Preparatory Signals*

NOC 4956 B1. Bands Between 1 605 kHz and 4 000 kHz

NOC 8724 1225 4957 § 16. (1) A radiotelephone ship station calling a coast station should use for the call, in order of preference:

NOC 8725 1226 4958 *a)* a working frequency on which the coast station is keeping watch;

NOC **8726** 1227 **4959** *b)* the carrier frequency 2 182 kHz;

NOC **8727** 1227A **4960** *c)* in Regions 1 and 3 and in Greenland, the carrier frequency 2 191 kHz (assigned frequency 2 192.4 kHz) when a carrier frequency of 2 182 kHz is being used for distress.

NOC **8728** 1229 **4961** (2) A radiotelephone ship station calling another ship station should use for the call:

NOC **8729** 1230 **4962** *a)* the carrier frequency 2 182 kHz;

NOC **8730** 1231 **4963** *b)* an intership frequency, whenever and wherever traffic density is high and prior arrangements can be made.

NOC **8731** 1233 **4964** (3) Subject to the provisions of No. **4967**, coast stations shall, in accordance with the requirements of their own country, call ship stations of their own nationality either on a working frequency or, when calls to individual ships are made, on the carrier frequency 2 182 kHz.

NOC **8732** 1234 **4965** (4) However, a ship station which keeps watch simultaneously on the carrier frequency 2 182 kHz and a working frequency should be called on the working frequency.

NOC **8733** 1235 **4966** (5) As a general rule, coast stations should call radiotelephone ship stations of another nationality on the carrier frequency 2 182 kHz.

NOC **8734** 1235A **4967** (6) Coast stations may call ship stations equipped to receive selective calls in accordance with the provisions of Article **62**.

NOC **4968** B2. Bands Between 4 000 kHz and 23 000 kHz

MOD **8735** 1236 **4969** § 17. (1) A ship station calling a coast station by radiotelephony shall use either one of the calling frequencies mentioned in No. **4375** or the working frequency associated with that of the coast station, in accordance with Appendix **16**, Section A.

MOD **8736** 1237 **4970** (2) A coast station calling a ship station by radiotelephony shall use one of the calling frequencies mentioned in No. **4376**, one of its working frequencies shown in the List of Coast Stations, or the carrier frequency 4 125 kHz or 6 215.5 kHz, in accordance with the provisions of Nos. **4375.2** and **4375.3**.

NOC **8737** 1238 **4971** (3) The preliminary operations for the establishment of radiotelephone communications may also be carried out by radiotelegraphy using the procedure appropriate to radiotelegraphy (see Nos. **4758** and **4759**).

MOD **8738** **4972** (4) The provisions of Nos. **4969** and **4970** do not apply to communications between ship stations and coast stations using the simplex frequencies specified in Appendix **16**, Section B.
1238A

SUP **8739** to **8741**

(become **8402** to **8404**)

NOC **4973** B3. Bands Between 156 MHz and 174 MHz

MOD **8742** **4974** § 18. (1) In the bands between 156 MHz and 174 MHz, intership and coast station to ship calling should, as a general rule, be made on 156.8 MHz. However, coast station to ship calling may be conducted on a working channel or on a two-frequency calling channel which has been implemented in accordance with No. **4391**. Except for distress, urgency or safety communications, when 156.8 MHz should be used, ship to coast station calling should, whenever possible, be made on a working channel or on a two-frequency calling channel which has been implemented in accordance with No. **4391**. Ships wishing to participate in a port operations service or ship movement service should call on a port operations or ship movement working frequency, indicated in heavy type in the List of Coast Stations.
1239

NOC **8743** **4975** (2) When 156.8 MHz is being used for distress, urgency or safety communications, a ship station desiring to participate in the port operations service may establish contact on 156.6 MHz, or another port operations frequency indicated in heavy type in the List of Coast Stations.
1240

NOC **4976** B4. Procedure for Calling a Station Providing Pilot Service

NOC **8744** **4977** § 19. A radiotelephone ship station calling a station providing pilot service should use for the call, in order of preference:
1240A

NOC **8745** **4978** *a)* an appropriate channel in the bands between 156 MHz and 174 MHz;
1240B

NOC **8746** **4979** *b)* a working frequency in the bands between 1 605 kHz and 4 000 kHz;
1240C

NOC **8747** **4980** *c)* the carrier frequency 2 182 kHz, and then only to determine the working frequency to be used.
1240D

NOC **8748** **4981** *C. Form of Reply to Calls*

NOC **8749** 1241 **4982** § 20. The reply to calls consists of:

– the call sign or other identification of the calling station, not more than three times;

– the words THIS IS (or DE spoken as DELTA ECHO in case of language difficulties);

– the call sign or other identification of the station called, not more than three times.

NOC **8750** **4983** *D. Frequency for Reply*

NOC **4984** D1. Bands Between 1 605 kHz and 4 000 kHz

NOC **8751** 1242 **4985** § 21. (1) When a ship station is called on the carrier frequency 2 182 kHz, it should reply on the same carrier frequency unless another frequency is indicated by the calling station.

NOC **8752** 1242A **4986** (2) When a ship station is called by selective calling, it shall reply on a frequency on which the coast station keeps watch.

NOC **8753** 1243 **4987** (3) When a ship station is called on a working frequency by a coast station of the same nationality, it shall reply on the working frequency normally associated with the frequency used by the coast station for the call.

NOC **8754** 1244 **4988** (4) When calling a coast station or another ship station, a ship station shall indicate the frequency on which a reply is required if this frequency is not the normal one associated with the frequency used for the call.

NOC **8755** 1245 **4989** (5) A ship station which frequently exchanges traffic with a coast station of another nationality may use the same procedure for reply as ships of the nationality of the coast station, where this has been agreed by the administrations concerned.

NOC **8756** 1246 **4990** (6) As a general rule a coast station shall reply:

NOC **8757** 1247 **4991** *a)* on the carrier frequency 2 182 kHz to calls made on the carrier frequency 2 182 kHz, unless another frequency is indicated by the calling station;

NOC **8758** 1248 **4992** *b)* on a working frequency to calls made on a working frequency;

NOC **8759** 1248A **4993** *c)* on a working frequency to calls made in Regions 1 and 3 and in Greenland on the carrier frequency 2 191 kHz (assigned frequency 2 192.4 kHz).

NOC **4994** D2. Bands Between 4 000 kHz and 23 000 kHz

MOD **8760** 1249 **4995** § 22. (1) A ship station called by a coast station shall reply either on one of the calling frequencies mentioned in No. **4375** or on the working frequency associated with that of the coast station, in accordance with Appendix **16**, Section A.

NOC **8761** **4996** (2) A coast station called by a ship station shall reply on one of the calling
1250 frequencies mentioned in No. **4376**, or on one of its working frequencies shown in the List of Coast Stations.

MOD **8762** **4997** (3) In the zone of Regions 1 and 2 south of latitude 15° N, including
1250A Mexico, and in the zone of Region 3 south of latitude 25° N, when a station is called on the carrier frequency 4 125 kHz it should reply on the same frequency unless another frequency is indicated by the calling station.

MOD **8763** **4998** (4) In the zone of Region 3 south of latitude 25° N, when a station is called
1251 on the carrier frequency 6 215.5 kHz it should reply on the same frequency unless another frequency is indicated by the calling station.

MOD **8764** **4999** (5) The provisions of Nos. **4995** and **4996** do not apply to communication
1251A between ship stations and coast stations using the simplex frequencies specified in Appendix **16**, Section B.

NOC **5000** D3. Bands Between 156 MHz and 174 MHz

NOC **8765** **5001** § 23. (1) When a station is called on 156.8 MHz it should reply on the same
1252 frequency unless another frequency is indicated by the calling station.

NOC **8766** **5002** (2) When a coast station open to public correspondence calls a ship station
1253 either by speech or by selective calling, using a two-frequency channel, the ship station shall reply by speech on the frequency associated with that of the coast station; conversely, a coast station shall reply to a call from a ship station on the frequency associated with that of the ship station.

NOC **8767** **5003** *E. Indication of the Frequency to Be Used for Traffic*

NOC **5004** E1. Bands Between 1 605 kHz and 4 000 kHz

NOC **8768** **5005** § 24. If contact is established on the carrier frequency 2 182 kHz, coast and
1254 ship stations shall transfer to working frequencies for the exchange of traffic.

NOC **5006** E2. Bands Between 4 000 kHz and 23 000 kHz

NOC **8769** **5007** § 25. After a ship station has established contact with a coast station, or
1255 another ship station, on the calling frequency of the band chosen, traffic shall be exchanged on their respective working frequencies.

NOC **5008** E3. Bands Between 156 MHz and 174 MHz

NOC **8770** 1256 **5009** § 26. (1) Whenever contact has been established between a coast station in the public correspondence service and a ship station either on 156.8 MHz or on a two-frequency calling channel (see No. **4392**), the stations shall transfer to one of their normal pairs of working frequencies for the exchange of traffic. The calling station should indicate the channel to which it is proposed to transfer by reference to the frequency in MHz or, preferably, to its channel designator.

NOC **8771** 1257 **5010** (2) When contact on 156.8 MHz has been established between a coast station in the port operations service and a ship station, the ship station should indicate the particular service required (such as navigational information, docking instructions, etc.) and the coast station shall then indicate the channel to be used for the exchange of traffic by reference to the frequency in MHz, or, preferably, to its channel designator.

NOC **8772** 1257A **5011** (3) When contact on 156.8 MHz has been established between a coast station in the ship movement service and a ship station, the coast station shall then indicate the channel to be used for the exchange of traffic by reference to the frequency in MHz or, preferably, to its channel designator.

NOC **8773** 1258 **5012** (4) A ship station, when it has established contact with another ship station on 156.8 MHz, should indicate the intership channel to which it is proposed to transfer for the exchange of traffic by reference to the frequency in MHz or, preferably, to its channel designator.

NOC **8774** 1258A **5013** (5) However, a brief exchange of traffic not to exceed one minute concerning the safety of navigation need not be transmitted on a working frequency when it is important that all ships within range receive the transmission.

NOC **8775** 1258B **5014** (6) Stations hearing a transmission concerning the safety of navigation shall listen to the message until they are satisfied that the message is of no concern to them. They shall not make any transmission likely to interfere with the message.

NOC **8776** **5015** *F. Agreement on the Frequency to Be Used for Traffic*

NOC **8777** 1259 **5016** § 27. (1) If the station called is in agreement with the calling station, it shall transmit:

NOC **8778** 1260 **5017** *a)* an indication that from that moment onwards it will listen on the working frequency or channel announced by the calling station;

NOC **8779** 1261 **5018** *b)* an indication that it is ready to receive the traffic of the calling station.

NOC **8780** 1262 **5019** (2) If the station called is not in agreement with the calling station on the working frequency or channel to be used, it shall transmit an indication of the working frequency or channel proposed.

NOC **8781** 1263 **5020** (3) For communications between a coast station and a ship station, the coast station shall finally decide the frequency or channel to be used.

NOC **8782** 1264 **5021** (4) When agreement is reached regarding the working frequency or channel which the calling station shall use for its traffic, the station called shall indicate that it is ready to receive the traffic.

NOC **8783** **5022** *G. Indication of Traffic*

NOC **8784** 1265 **5023** § 28. When the calling station wishes to exchange more than one radiotelephone call, or to transmit one or more radiotelegrams, it should indicate this when contact is established with the station called.

NOC **8785** **5024** *H. Difficulties in Reception*

NOC **8786** 1266 **5025** § 29. (1) If the station called is unable to accept traffic immediately, it should reply to the call as indicated in No. **4982** followed by "Wait ... minutes" (or AS spoken as ALFA SIERRA ... (minutes) in case of language difficulties), indicating the probable duration of waiting time in minutes. If the probable duration exceeds ten minutes the reason for the delay shall be given. Alternatively the station called may indicate, by any appropriate means, that it is not ready to receive traffic immediately.

NOC **8787** 1267 **5026** (2) When a station receives a call without being certain that such a call is intended for it, it shall not reply until the call has been repeated and understood.

NOC **8788** 1268 **5027** (3) When a station receives a call which is intended for it, but is uncertain of the identification of the calling station, it shall reply immediately asking for a repetition of the call sign or other identification of the calling station.

NOC **Section V. Forwarding (Routing) of Traffic**

NOC **8789** **5028** *A. Traffic Frequency*

MOD **8790** 1269 **5029** § 30. (1) Every station should transmit its traffic (radiotelephone calls or radiotelegrams) on one of its working frequencies in the band in which the call has been made.

NOC **8791** 1270 **5030** (2) In addition to its normal working frequency, printed in heavy type in the List of Coast Stations, a coast station may use one or more supplementary frequencies in the same band, in accordance with the provisions of Article **60**.

MOD **8792** 1271 **5031** (3) The use of frequencies reserved for calling shall be forbidden for traffic, except distress traffic (see Chapter **IX**).

NOC **8793** 1272 **5032** (4) After contact has been established on the frequency to be used for traffic, the transmission of a radiotelegram or radiotelephone call shall be preceded by:

NOC **8794** 1273 **5033** – the call sign or other identification of the station called;

5034 – the words THIS IS (or DE spoken as DELTA ECHO in case of language difficulties);

5035 – the call sign or other identification of the calling station.

NOC **8795** 1274 **5036** (5) The call sign or other identification need not be sent more than once.

NOC **8796** **5037** *B. Establishment of Radiotelephone Calls and Transmission of Radiotelegrams*

NOC **5038** B1. Establishment of Radiotelephone Calls

MOD **8797** 1275 **5039** § 31. (1) In setting up a radiotelephone call, the coast station should establish connection with the telephone network as quickly as possible. In the meantime, the ship station shall maintain watch on the appropriate working frequency as indicated by the coast station.

MOD **8798** 1276 **5040** (2) However, if the connection cannot be quickly established, the coast station shall inform the ship station accordingly. The latter station shall then either:

NOC **8799** 1277 **5041** *a)* maintain watch on the appropriate frequency until an effective circuit can be established; *or*

NOC **8800** 1278 **5042** *b)* contact the coast station later at a mutually agreed time.

NOC **8801** 1279 **5043** (3) When a radiotelephone call has been completed, the procedure indicated in No. **5054** shall be applied unless further calls are on hand at either station.

NOC **5044** B2. Transmission of Radiotelegrams

NOC **8802** 1280 **5045** § 32. (1) The transmission of a radiotelegram should be made as follows:

– radiotelegram begins: from ... (name of ship or aircraft);

– number ... (serial number of radiotelegram);

– number of words ... ;

– date ... ;

– time ... (time radiotelegram was handed in aboard ship or aircraft);

– service indicators (if any);

– address ... ;

– text . . . ;

– signature . . . (if any);

– radiotelegram ends, over.

MOD **8803** **5046** (2) As a general rule, radiotelegrams of all kinds transmitted by ship
1281 stations shall be numbered in a daily series; number 1 shall be given to the first radiotelegram sent each day to each separate station.

NOC **8804** **5047** (3) A series of numbers which has begun in radiotelegraphy should be
1282 continued in radiotelephony and vice versa.

NOC **8805** **5048** (4) Each radiotelegram should be transmitted once only by the sending
1283 station. However, it may, when necessary, be repeated in full or in part by the receiving or the sending station.

NOC **8806** **5049** (5) In transmitting groups of figures, each figure shall be spoken separately
1285 and the transmission of each group or series of groups shall be preceded by the words "in figures".

NOC **8807** **5050** (6) Numbers written in letters shall be spoken as they are written, their
1286 transmission being preceded by the words "in letters".

NOC **5051** B3. Acknowledgement of Receipt

NOC **8808** **5052** § 33. (1) The acknowledgement of receipt of a radiotelegram or a series of
1287 radiotelegrams shall be given by the receiving station in the following manner:

– the call sign or other identification of the sending station;

– the words THIS IS (or DE spoken as DELTA ECHO in case of language difficulties);

– the call sign or other identification of the receiving station;

– "Your No. . . . received, over" (or R spoken as ROMEO . . . (number), K spoken as KILO in case of language difficulties); *or*

– "Your No. . . . to No. . . . received, over" (or R spoken as ROMEO . . . (numbers), K spoken as KILO in case of language difficulties).

NOC **8809** **5053** (2) The radiotelegram, or series of radiotelegrams, shall not be considered as
1288 cleared until this acknowledgement has been received.

NOC **8810** **5054** (3) The end of work between two stations shall be indicated by each of them
1289 by means of the word "Out" (or $\overline{VA}$ spoken as VICTOR ALFA in case of language difficulties).

NOC

Section VI. Duration and Control of Working

MOD **8811** 1290 **5055** § 34. (1) Calling, and signals preparatory to traffic, shall not exceed one minute when made on the carrier frequency 2 182 kHz or on 156.8 MHz, except in cases of distress, urgency or safety to which the provisions of Chapter **IX** apply.

MOD **8812** 1291 **5056** (2) In communications between coast stations and ship stations, the ship station shall comply with the instructions given by the coast station in all questions relating to the order and time of transmission, to the choice of frequency, and to the duration and suspension of work.

MOD **8813** 1292 **5057** (3) In communications between ship stations, the station called controls the working in the manner indicated in No. **5056**. However, if a coast station finds it necessary to intervene, the ship stations shall comply with the instructions given by the coast station.

NOC

Section VII. Tests

MOD **8814** 1293 **5058** § 35. When it is necessary for a ship station to send signals for testing or adjustments which are liable to interfere with the working of neighbouring coast stations, the consent of these stations shall be obtained before such signals are sent.

NOC **8815** 1294 **5059** § 36. (1) When it is necessary for a station to make test signals, either for the adjustment of a transmitter before making a call or for the adjustment of a receiver, such signals shall not be continued for more than ten seconds, and shall include the call sign or other identification of the station emitting the test signals. This call sign or other identification shall be spoken slowly and distinctly.

MOD **8816** 1295 **5060** (2) Any signals sent for testing shall be kept to a minimum, particularly:

- on the carrier frequency 2 182 kHz;
- on the frequency 156.8 MHz;
- in the zone of Regions 1 and 2 south of latitude 15° N, including Mexico, and in the zone of Region 3 south of latitude 25° N, on the carrier frequency 4 125 kHz;
- in the zone of Region 3 south of latitude 25° N also on the carrier frequency 6 215.5 kHz.

NOC **8817** 1295A **5061** (3) It is not permitted to send test transmissions of the radiotelephone alarm signal on the carrier frequency 2 182 kHz and the frequency 156.8 MHz, except where emergency equipment which can operate only on these frequencies is involved, in which case measures shall be taken to prevent radiation. Measures shall also be taken to prevent radiation from radiotelephone alarm tests carried out on frequencies other than 2 182 kHz and 156.8 MHz.

5062 to **5084** NOT allocated.

ADD N62A

ARTICLE 66

Public Correspondence in the Maritime Mobile Service and the Maritime Mobile-Satellite Service [1]

Section I. General

8900 **5085** § 1. The provisions of the Telegraph Regulations and the Telephone Regulations, taking into account CCITT Recommendations, shall apply to radiocommunications in so far as the relevant provisions of these Regulations do not provide otherwise.

Section II. Accounting Authority

8901 **5086** § 2. Charges for radiocommunications from ship to shore shall in principle, and subject to national law and practice, be collected from the maritime mobile station licensee:

8902 **5087** *a)* by the administration that has issued the licence; *or*

8903 **5088** *b)* by a recognized private operating agency; *or*

8904 **5089** *c)* by any other entity or entities designated for this purpose by the administration referred to in No. **5087**.

8905 **5090** § 3. The administration or the recognized private operating agency or the designated entity (or entities) is referred to in this Article as the "accounting authority".

8906 **5091** § 4. The name(s) and address(es) of the accounting authority(ies) shall be notified to the Secretary-General of the ITU for inclusion in the List of Ship Stations; the number of such names and addresses shall be limited as far as possible, taking into account CCITT Recommendations.

Section III. Accounting

8907 **5092** § 5. The exchange and verification of accounts shall be carried out in accordance with the Telegraph Regulations and the Telephone Regulations, taking into account CCITT Recommendations.

8908 **5093** § 6. The accounts shall be sent as promptly as possible but in any case before the end of the third month following that to which they relate.

8909 **5094** § 7. In principle, an account shall be considered as accepted without the need for specific notification of acceptance to the administration (or recognized private operating agency) that sent it.

8910 **5095** § 8. However, any accounting authority shall have the right to question the contents of an account for a period of six months after dispatch of the account.

A.N62A A.66

[1] See Resolution **201**.

8911 **5096** § 9. All radiomaritime accounts shall be paid by the accounting authority without delay and in any case within six months after dispatch of the account.

8912 **5097** § 10. If international radiomaritime accounts remain unpaid after six months, the administration that has licensed the mobile station shall, on request, take all possible steps, within the limits of applicable national law, to ensure settlement of the accounts from the licensee.

8913 **5098** § 11. In the case referred to in No. **5095**, if the account is seriously delayed in transit, the receiving accounting authority should at once notify the originating administration (or recognized private operating agency) that queries and payment may be delayed. The delay shall, however, not exceed three months from the date of receipt of the account.

8914 **5099** § 12. The debtor accounting authority may refuse the settlement and adjustment of accounts presented more than eighteen months after the date of handing in of the radiotelegrams, or the date of establishment of the radiotelephone calls or radiotelex calls to which the accounts relate.

Section IV. Payment of Balances

8915 **5100** § 13. Payment of balances shall be carried out in accordance with the Telegraph Regulations and the Telephone Regulations, taking into account any relevant CCITT Recommendations.

Section V. Archives

8916 **5101** § 14. The originals of radiotelegrams and documents relating to radiotelegrams, radiotelephone calls and radiotelex calls shall be held by the administrations (or recognized private operating agencies) with all necessary precautions from the point of view of secrecy, until the settlement of the relative account and, in any case, for at least six months counting from the month in which the accounts were sent. Administrations (or recognized private operating agencies) may preserve the information by any other means, e.g. magnetic or electronic records.

8917 **5102** § 15. However, should an administration (or recognized private operating agency) deem it desirable to destroy the originals of radiotelegrams or any other documents or records mentioned in No. **5101** before the above-mentioned period, and hence not be in a position to carry out an inquiry in respect of the services for which it is responsible, such administration (or recognized private operating agency) shall bear all the consequences both as regards refund of charges and any difference in the accounts in question that might otherwise have been observed.

5103 to **5127** NOT allocated.

NXII

CHAPTER XII

NOC

Land Mobile Service

SUP

ARTICLE N63

Authority of the Master or Person Responsible for the Mobile Stations in the Land Mobile Service

SUP **8918** 845 to **8920** 847

SUP

ARTICLE N64/21

Inspection of Mobile Stations in the Land Mobile Service

SUP **8946** 838 to **8952** 844

N65

ARTICLE 67

NOC

Conditions to Be Observed by Mobile Stations in the Land Mobile Service

MOD **8978** 955 **5128** § 1. Land mobile stations shall be established in such a way as to conform to the provisions of Chapter **III** as regards frequencies and classes of emission.

MOD **8979** 957 **5129** § 2. The frequencies of emission of land mobile stations shall be checked as often as possible by the inspection service to which these stations are subject.

NOC **8980** 958 **5130** § 3. The energy radiated by receiving apparatus shall be reduced to the lowest possible value and shall not cause harmful interference to other stations.

MOD **8981** 959 **5131** § 4. Administrations shall take all practicable steps necessary to ensure that the operation of any electrical or electronic apparatus installed in land mobile stations does not cause harmful interference to the essential radio services of stations which are operating in accordance with the provisions of these Regulations.

MOD **8982** 960 **5132** § 5. (1) Changes of frequency in the sending and receiving apparatus of any land mobile station shall be capable of being made as rapidly as possible.

MOD **8983** 961 **5133** (2) Installations of any land mobile station shall be capable, once communication is established, of changing from transmission to reception and vice versa in as short a time as possible.

5134 to **5158** NOT allocated.

SUP

ARTICLE N66/37

Order of Priority of Communications in the Land Mobile Service

SUP **9009**
1496

SUP

ARTICLE N67

General Radiotelegraph Procedure in the Land Mobile Service – Calls

SUP **9035**
1065
to
9052
1094

N68 ARTICLE 68

NOC

General Radiotelephone Procedure in the Land Mobile Service – Calls

MOD **9078** 1298 **5159** § 1. (1) A land mobile station may call the land station only when it comes within the service area of the latter, that is to say, that area within which, by using an appropriate frequency, the land mobile station can be heard by the land station.

MOD **9079** 1299 **5160** (2) A land station having traffic for a land mobile station may call this station if it has reason to believe that the land mobile station is keeping watch and is within the service area of the land station.

SUP **9080** 1307

SUP **9081** 1308

SUP **9082** 1310

SUP **9083** 1311

MOD **9084** 1312 **5161** § 2. Land mobile stations shall not radiate a carrier wave between calls.

SUP **9085** 1313

SUP **9086** 1314

SUP **9087** 1315

SUP **9088** 1316

SUP **9089** 1317

5162 to **5186** NOT allocated.

SUP

CHAPTER NXIII (Art. 69 to Art. 72)

Radiotelegrams, Radiotelephone Calls and Radiotelex Calls

SUP (in its entirety)

SUP

ADDITIONAL RADIO REGULATIONS

SUP (in its entirety)

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NXIV

CHAPTER XIII

N73

ARTICLE 69

Entry into Force of the Radio Regulations

MOD 9357 1629 5187 § 1. These Regulations, which are annexed to the International Telecommunication Convention, shall enter into force on 1 January 1982, except as specified in Nos. **5188** and **5189**.

ADD 9357A 5188 § 2. Article **25** and Appendix **43** – but not Appendices **42** and **44** related to this Article – and Article **66** of these Regulations shall enter into force on 1 January 1981.

ADD 9357B 5189 § 3. The Frequency Allotment Plan for the Aeronautical Mobile (R) Service and the directly related provisions contained in Appendix **27 Aer2*** of these Regulations shall enter into force at 0001 hours UTC on 1 February 1983.

ADD 9357C 5190 § 4. On the date of entry into force of Article **25** and Article **66** of these Regulations, as specified in No. **5188** (1 January 1981), the provisions of the following Articles of the Radio Regulations, Geneva, 1959, as amended:

a) Article 19 – with the exception of provisions 745 to 747 thereof and the Appendices related thereto – and

b) Articles 38, 39, 40 and 40A – including the related Appendices 21, 21A and 22 – as well as the Additional Radio Regulations

shall be abrogated and replaced respectively by the provisions of Articles **25** and **66** of these Regulations.

MOD 9358 1630 5191 § 5. On the date specified in No. **5187** (1 January 1982) all the other provisions of the Radio Regulations, Geneva, 1959, as partially revised by the:

a) Extraordinary Administrative Radio Conference to Allocate Frequency Bands for Space Radiocommunication Purposes, Geneva, 1963,

b) Extraordinary Administrative Radio Conference for the Preparation of a Revised Allotment Plan for the Aeronautical Mobile (R) Service, Geneva, 1966,

c) World Administrative Radio Conference to Deal with Matters Relating to the Maritime Mobile Service, Geneva, 1967,

d) World Administrative Radio Conference for Space Telecommunications, Geneva, 1971,

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* *Note by the General Secretariat:* See No. **1314** and Resolution **400**.

e) World Maritime Administrative Radio Conference, Geneva, 1974, and the

f) World Administrative Radio Conference on the Aeronautical Mobile (R) Service, Geneva, 1978,

shall be abrogated and replaced by the provisions of these Regulations.

ADD **9358A** **5192** § 6. In accordance with the request by the World Administrative Radio Conference for the Planning of the Broadcasting-Satellite Service in Frequency Bands 11.7 - 12.2 GHz (in Regions 2 and 3) and 11.7 - 12.5 GHz (in Region 1), Geneva, 1977, the provisions and associated Plan adopted by that Conference are, in the appropriate form and without affecting their content and integrity, included in these Regulations as Appendix **30** and form an integral part of these Regulations.

MOD **AP1**

APPENDIX 1

(See Article **12**)

Introduction

This Appendix contains six sections and one annex:

Section A – Basic Characteristics to Be Furnished for Notification under Nos. **1214** to **1217** of the Radio Regulations

Section B – Basic Characteristics to Be Furnished for Notification under No. **1219** of the Radio Regulations

Section C – Basic Characteristics to Be Furnished for Notification under Nos. **1223** to **1227** of the Radio Regulations

Section D – Information to Be Furnished for Notification under No. **1218** of the Radio Regulations

Section E – Form of Notice

Section F – General Instructions

I. General Notes

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

Annex: Map of Geographical Zones for Broadcasting

(MOD)

Section A. Basic Characteristics to Be Furnished for Notification under Nos. 1214 to 1217 of the Radio Regulations

Column 1 Assigned frequency.

Column 2c Date of bringing into use.

Column 3 Call sign (identification).

This is not a basic characteristic for stations referred to in No. **2055.1**.

Column 4a Name of the transmitting station.

Column 4b Country or geographical area in which the transmitting station is located.

Column 4c Longitude and latitude of the transmitter site.

Column 5a Name of the receiving station.

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

Column 5b Country or geographical area in which the receiving station is located.

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

Column 5c Longitude and latitude of the site of the receiving station.

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

Column 5d Locality or area(s) of the receiving stations.

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

Columns 5e and 5f to be used only if the area is not adequately defined in Column 5d.

Column 5e Longitude and latitude of the centre of the circular receiving area.

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

To be used only if the area is not adequately defined in Column 5d.

Column 5f Nominal radius (km) of the circular receiving area.

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

To be used only if the area is not adequately defined in Column 5d.

Column 6 Class of station and nature of service.

Column 7a Class of emisssion, necessary bandwidth and description of transmission.

Column 7b Class of operation of the assignment.

This is a basic characteristic only for the assignments to stations of the fixed service in the frequency bands allocated to this service between 3 000 kHz and 27 500 kHz.

Column 8 Power (dBW).

Column 9a Azimuth of maximum radiation.

Column 9b Elevation angle of maximum directivity.

This is a basic characteristic only for stations in the bands above 1 GHz allocated on a shared basis to the space radiocommunication and terrestrial radiocommunication services and shall be provided to an accuracy of one tenth of a degree [1].

Column 9c Angular width of radiation main lobe.

This is not a basic characteristic if the Column 9j data are supplied.

[1] These data shall be provided to an accuracy of one tenth of a degree only if the station is within the coordination area of an earth station or if the direction of the maximum radiation is within three degrees of the geostationary-satellite orbit.

Column 9d Polarization.

This is a basic characteristic only for stations in the bands above 1 GHz allocated on a shared basis to the space radiocommunication and terrestrial radiocommunication services and for broadcasting stations in the VHF/UHF bands in the African and European Broadcasting Areas.

Column 9e Height of antenna (metres) for a simple vertical antenna.

This is a basic characteristic for broadcasting stations in the LF/MF bands in Region 1 and MF bands in Region 3.

Column 9f Maximum effective height of the antenna.

This is a basic characteristic for broadcasting stations in the VHF/UHF bands in the African and European Broadcasting Areas and is defined in the Final Acts of the relevant conferences.

This is a basic characteristic for terrestrial stations operating in the bands above 1 GHz that are shared between space and terrestrial services and shall be indicated in metres above mean sea level.

Column 9g Maximum antenna gain (isotropic, relative to a short vertical antenna or relative to a half-wave dipole, as appropriate).

This is not a basic characteristic if the effective radiated power or the e.i.r.p. is notified in Column 8 or if the Column 9j data are supplied.

Column 9h Azimuths defining the sectors of limited radiation in degrees (clockwise) from True North.

This is a basic characteristic for broadcasting stations in the LF/MF bands in Region 1 and MF bands in Region 3.

Column 9i Maximum agreed radiation in the sectors.

This is a basic characteristic for broadcasting stations in the LF/MF bands in Region 1 and MF bands in Region 3.

Column 9j Type of antenna (see CCIR Book "Antenna Diagrams").

This is not a basic characteristic if the Columns 9c and 9g data are supplied.

Column 10b Regular hours (UTC) of operation of the frequency assignment.

Column 11 Coordination with other administrations.

This is a basic characteristic for the bands and services concerned.

Supplementary information:

a) in any case where there are one or more *reference frequencies* in a particular transmission (e.g. in the case of the frequency of the reduced carrier in an independent or single-sideband emission, or the frequencies of the sound and vision carriers in a television emission), such reference frequencies shall be supplied;

b) any coordination required by Nos. **1148** to **1154**;

c) the name of any administration with which an agreement has been effected to exceed the limits prescribed in these Regulations and the contents of such agreement.

Section B. Basic Characteristics to Be Furnished for Notification under No. 1219 of the Radio Regulations

Column 1 Assigned frequency.

Column 2c Date of bringing into use.

Column 4a Name of the transmitting station: indicate the letter "M" (for Mobile).

Column 4b Country or geographical area in which the transmitting mobile stations are located.

Column 4c The geographical coordinates (longitude and latitude in degrees and minutes) of the centre of the circular transmitting area.

Column 4d The nominal radius (km) of the circular transmitting area.

Column 4e Indicate a standard defined area using the symbols contained in standard references, e.g. MWARA, RDARA, geographical zones, etc. (see also the Preface to the International Frequency List).

Column 5a Name of the receiving land station.

Column 5b Country or geographical area in which the receiving station is located.

Column 5c The geographical coordinates (longitude and latitude in degrees and minutes) of the site of the receiving station.

Column 6 Class of mobile stations and nature of service.

Column 7a Class of emission of mobile stations and necessary bandwidth and description of transmission.

Column 8 Power (dBW).

Column 10b Regular hours (UTC) of operation of the frequency assignment.

Supplementary information:

a) any coordination required by Nos. **1148** to **1154**;

b) the name of any administration with which an agreement has been effected to exceed the limits prescribed in these Regulations and the contents of such agreement.

Section C. Basic Characteristics to Be Furnished for Notification under Nos. 1223 to 1227 of the Radio Regulations

Column 1 Assigned frequency.

Column 2c Date of bringing into use.

Column 4b Country or geographical area in which the transmitting station is located.

For the remainder of Column 4 complete either 4e alone, or 4c and 4d.

Column 4c The geographical coordinates (longitude and latitude in degrees and minutes) of the centre of the circular transmitting area.

Column 4d The nominal radius (km) of the circular transmitting area.

Column 4e Indicate a standard defined area using the symbols appearing in the Preface to the International Frequency List.

Column 6 Class of station and nature of service.

Column 7a Class of emission, necessary bandwidth and description of transmission.

Column 8 Power (dBW).

Column 10b Regular hours (UTC) of operation of the frequency assignment.

Supplementary information:

the name of any administration with which an agreement has been effected to exceed the limits prescribed in these Regulations and the contents of such agreement.

Section D. Information to Be Furnished for Notification under No. 1218 of the Radio Regulations

1. *General instructions*

a) The assistance of the IFRB concerns the selection of a frequency or frequencies for assignment to a station in the fixed service in frequency bands between 3 000 kHz and 27 500 kHz allocated to that service.

b) The administration shall give:

- a general description of the problems experienced;
- the necessary technical information and any other information that could guide the subsequent search by the IFRB.

c) The instructions appearing in Section F may also be relevant.

2. *Information to be furnished by the administration*

Column 1 Frequency.

1. If the request concerns the selection of a frequency or a set of frequencies for a radio circuit, leave this column blank or indicate the preferred band.
2. If the request concerns a predetermined frequency, indicate that frequency.

Column 2c Date of bringing into use.

Indicate the proposed date of bringing the frequency assignments into use.

Column 3 Call sign (identification).

Column 4 Particulars of the transmitting station.

Column 4a Indicate the name of the locality by which the transmitting station is known or in which it is situated.

Column 4b Indicate the country or geographical area in which the station is located. Symbols from the Preface to the International Frequency List should be used.

Column 4c Indicate the geographical coordinates (longitude and latitude in degrees and minutes) of the transmitter site.

Column 5 Particulars of the receiving station.

Column 5a Name of the receiving station. Indicate the name of the locality by which the receiving station is known or in which it is situated. Provided that, for a given area, the reception area is well defined and sufficiently small to make it easy to forecast the conditions of use of the frequency from the propagation point of view, it is necessary to notify only sufficient stations to define the reception area.

Column 5b Country or geographical area in which the receiving station is located.

Column 5c Indicate the geographical coordinates (longitude and latitude in degrees and minutes) of the site of the receiving station.

Column 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**.

Column 7a Class of emission, necessary bandwidth and description of transmission.

Indicate, for each locality or area of reception shown in Column 5a, the class of emission, necessary bandwidth and description of transmission, in accordance with Article **4** and Appendix **6**.

Column 8 Power (dBW).

1. The power supplied to the antenna transmission line shall be notified as follows, according to the class of emission and shall be provided in dBW:

   a) mean power (PY) for the amplitude modulated emissions using unkeyed full carrier and for all frequency modulated emissions (see No. **152**);

   b) peak envelope power (PX) for all classes of emission other than those referred to in *a)* (see No. **151**);

   c) leave blank when the power is to be calculated by the IFRB.

2. The power normally used to each locality or area of reception shown in Column 5a shall be indicated.

Column 9 Transmitting antenna characteristics (give as much information as is available).

Column 9a Azimuth of maximum radiation.

1. If a directive transmitting antenna is used, indicate the azimuth of maximum radiation of the transmitting antenna in degrees (clockwise) from True North.

2. If a transmitting antenna with non-directional characteristics is used, insert "ND".

Columns 9c and 9g If the radiation characteristics of the antenna concerned differ from those recommended by the CCIR, Columns 9c and 9g should be completed. Where the radiation characteristics are to be found in the CCIR Book "Antenna Diagrams", indicate an appropriate reference in Column 9j.

Column 9c Angular width of radiation main lobe.

The total angle measured horizontally in a plane containing the direction of maximum radiation, in degrees, within which the power radiated in any direction does not fall more than 3 dB below the power radiated in the direction of maximum radiation, should be indicated.

Column 9g Antenna gain.

The relative gain of the antenna in the direction of maximum radiation for the assigned frequency should be indicated (see No. **154**).

Column 9j Type of antenna (see CCIR Book "Antenna Diagrams").

Indicate the appropriate reference from the CCIR Book "Antenna Diagrams". See Columns 9c and 9g above.

Column 10 Hours of operation.

Column 10a Maximum hours (UTC) of operation of the circuit to each locality or area.

As complementary information, indicate by the letter "I" any part of the period during which the operation of the circuit is intermittent.

Column 10b Regular hours (UTC) of operation of the frequency assignment.

Indicate the time as Coordinated Universal Time (UTC) by a group of four figures (0000 to 2359). Otherwise indicate the hours of operation as day service (HJ), night service (HN), or transition period service (HT).

Column 11 Coordination with other administrations.

If applicable indicate the country or geographical area with which the relevant coordination has been successfully completed.

Column 12a Operating administration or company.

Column 12b Postal and telegraphic addresses of the administration responsible for the station.

Supplementary information:

if available, provide any receiving antenna data.

MOD

Section E. Form of Notice

The Board shall develop and keep up to date a form of notice to meet fully the statutory provisions of this Appendix and related decisions of future conferences.

Section F. General Instructions

1. A separate notice 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 a frequency assignment is used by a station to perform different services, a separate notice shall be submitted for each type of service (e.g. FA, FB, FC, FX, etc.).

3. Frequencies prescribed by these Regulations for common use, as specified in the Preface to the International Frequency List, should not be notified (see No. **1220**).

4. Separate entries, in Columns 5a to 10, should be made for the various characteristics when they do not apply to the assignment as a whole, for instance when the class of emission or the power differ according to the localities or areas of reception.

5. For television broadcasting stations in Region 1, separate notices shall be submitted for the sound and vision channels. In such cases, the notice shall relate to the sound and vision carrier frequencies.

NOC

I. General Notes

(a) The name of the notifying administration should be indicated.

(b) Indicate in this box by the letter "X" when the notice reflects:

- the first use of a frequency by a station; *or*
- the first use of an additional frequency by a station.

(c) Indicate in this box by the letter "X" when the notice reflects a change in the characteristics of a frequency assignment recorded in the Master Register.

(1) In the case where existing particulars (including the frequency) are changed, the new characteristics in the appropriate place should be underlined; the original characteristics which have been changed should be shown in brackets underneath or at the side.

(2) In the case where the change is an addition to existing particulars, the additional characteristics should be shown in the appropriate place and should be underlined.

(3) In the case where the change is a cancellation of a particular characteristic or characteristics, this should be shown in the appropriate place by a dash and, underneath or at the side, the characteristics which have been cancelled should be shown in brackets.

(d) Indicate in this box by the letter "X" when the notice reflects a deletion of an assignment, in all of its notified characteristics.

(e) The serial number of the notice and the date on which the notice is sent to the Board shall be shown here.

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

Column 1 Assigned frequency.

1. Indicate the assigned frequencies [1, 2, 3] as defined in Article **1**: in kHz up to 28 000 kHz inclusive, in MHz above 28 000 kHz to 10 500 MHz inclusive, and in GHz above 10 500 MHz.

2. *This information is a basic characteristic.*

Column 2c Date of bringing into use.

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

2. Whenever the assignment is changed in any of its basic characteristics as defined in this Appendix, except in the case of a change in Columns 3, 4a, 10a or 11, the date to be indicated shall be that of the latest change (actual or foreseen, as appropriate).

3. *This information is a basic characteristic.*

[1] For television broadcasting stations in Region 1, the frequencies to be notified are those of the sound and vision carriers.

[2] For radiotelephone stations in the maritime mobile service, see No. **4194**.

[3] For stations in the aeronautical mobile (R) service, see Appendix **27 Aer2** revised paragraph 27/72.

Column 3 Call sign (identification).

1. Indicate the call sign or other identification used in accordance with Article **25**.

2. *This information is a basic characteristic, except for stations referred to in Nos.* **1224** *to* **1227** *and* **2055.1** *or when the frequency assignment is used for reception in the circumstances described in No.* **1219**.

Column 4 Particulars of the transmitting station.

When the frequency assignment is used in the circumstances described in Nos. **1214** *to* **1217**, *the basic characteristics to be provided in Column 4 are as follows:*

Column 4a Indicate the name of the locality by which the transmitting station is known or in which it is situated.

Column 4b Indicate the country or geographical area in which the station is located. Symbols from the Preface to the International Frequency List shall be used.

Column 4c Indicate the geographical coordinates (longitude and latitude in degrees and minutes) of the transmitter site. For frequency assignments above 1 GHz in the bands shared between terrestrial radiocommunication and space radiocommunication services, indicate the geographical coordinates (longitude and latitude in degrees, minutes and seconds with an accuracy of one tenth of a minute [1] or, as an alternative, indicate the longitude and latitude in degrees and minutes and, in Column 9a, the azimuth of maximum radiation of the antenna to an accuracy of one tenth of a degree).

[1] The seconds with an accuracy of one tenth of a minute need only be notified if the station is within the coordination area of an earth station.

When the frequency assignment is used for reception in the circumstances described in No. **1219**, *the basic characteristics to be provided in Column 4 are as follows:*

Column 4a Name of the transmitting station: indicate the letter "M" (for Mobile).

Column 4b Indicate the country or geographical area in which the transmitting mobile stations are located. If the stations are not located within a country, indicate the country responsible. Symbols from the Preface to the Interational Frequency List shall be used.

Column 4c Indicate the geographical coordinates (longitude and latitude in degrees and minutes) of the centre of the circular transmitting area.

Column 4d Indicate the nominal radius (km) of the circular transmitting area.

Column 4e Indicate a standard defined area using the symbols contained in standard references, e.g. MWARA, RDARA, geographical zones, etc. (see also the Preface to the International Frequency List).

When the frequency assignment is used in the circumstances described in Nos. **1223** *to* **1227**, *the basic characteristics to be provided in Column 4 are as follows:*

Column 4b Indicate the country or geographical area in which the station is located. Symbols from the Preface to the International Frequency List shall be used.

For the remainder of Column 4 complete either 4e alone, or 4c and 4d.

Column 4c Indicate the geographical coordinates (longitude and latitude in degrees and minutes) of the centre of the circular transmitting area.

Column 4d Indicate the nominal radius (km) of the circular transmitting area.

Column 4e Indicate a standard defined area using the symbols appearing in the Preface to the International Frequency List.

Column 5 Particulars of the receiving station.

When the frequency assignment is used in the circumstances described in Nos. **1214** *to* **1217**, *the basic characteristics to be provided in Column 5 are as follows:*

Column 5a Name of the receiving station. Indicate the name of the locality by which the receiving station is known or in which it is situated.

1. Provided that, in the fixed service, the reception area is well defined and sufficiently small to make it easy to forecast the conditions of use of the frequency from the propagation point of view, it is necessary to notify only sufficient stations to define the reception area.

2. However, for broadcasting, land, radionavigation land, radiolocation land and standard frequency and time signal stations, and for ground-based stations in the meteorological aids service, it is not necessary to indicate any information in this column.

3. In the case of a network composed of stations intercommunicating on the same frequency, the symbol ZN shall be entered in Column 5a. When the same frequency is used for two or more networks of the same administration, each network should be identified by a separate letter following the network symbol ZN, e.g. ZN-A, ZN-B, etc.

4. In the case of a network, as well as in the case where a frequency is used in a specific area by numerous stations under the jurisdiction of the same administration, it is necessary to notify only sufficient stations to define the area of operation, provided that that area is well defined and sufficiently small to make it easy to forecast the conditions of the use of the frequency from the propagation point of view.

Column 5b Country or geographical area in which the receiving station is located. Symbols from the Preface to the International Frequency List shall be used.

However, for broadcasting, land, radionavigation land and standard frequency and time signal stations, and for ground-based stations in the meteorological aids service, it is not necessary to indicate any information in this column.

Column 5c Indicate the geographical coordinates (longitude and latitude in degrees and minutes) of the site of the receiving station.

However, for broadcasting, land, radiolocation land or standard frequency and time signal stations, or for ground-based stations in the meteorological aids service, it is not necessary to indicate any information in this column.

Column 5d Locality or area(s) of the receiving station(s).

1. For broadcasting stations, the area of reception shall be indicated. Each area should be expressed either:

   – as interior (INTR);

   – or the symbol designating a country or countries or geographical area(s) (Preface to the International Frequency List);

   – or one of the geographical zones appearing on the map annexed to this Appendix. If the area of reception cannot be defined in the above manner, Columns 5e and 5f shall be completed.

   This is not a basic characteristic for broadcasting stations in the LF/MF or VHF/UHF bands unless specified in a relevant regional agreement.

2. For land, radionavigation land, radiolocation land, standard frequency and time signal stations, and for ground-based stations in the meteorological aids service, indicate an area only if it is standardly described. If the area of reception is not standardly defined, describe the area in Columns 5e and 5f.

Column 5e Longitude and latitude of the centre of the circular receiving area.

1. Indicate the geographical coordinates (in degrees and minutes).

2. This column is not to be used if the area of reception is adequately defined in Column 5d. If Column 5e is used, a corresponding entry must be made in Column 5f.

Column 5f Nominal radius of the circular receiving area.

1. Indicate the radius (km) of the circular receiving area.

2. This column is not to be used if the area of reception is adequately defined in Column 5d. If Column 5f is used, a corresponding entry is required in Column 5e.

When the frequency assignment is used in the circumstances described in No. **1219**, *the basic characteristics to be provided in Column 5 are as follows:*

Column 5a Name of the receiving station. Indicate the name of the locality by which the receiving station is known or in which it is situated.

Column 5b Country or geographical area in which the receiving station is located. Symbols from the Preface to the International Frequency List shall be used.

Column 5c Indicate the geographical coordinates (longitude and latitude in degrees and minutes) of the site of the receiving station.

When the frequency assignment is used in the circumstances described in Nos. **1223** to **1227**, no entry is required in Column 5.

Column 6 Class of station and nature of service.

1. Indicate the class of station and nature of service performed, using the symbols shown in Appendix **10**.
2. When the frequency assignment is used for reception in the circumstances described in No. **1219**, the class of station and nature of service applicable to the mobile stations should be indicated.
3. *This information is a basic characteristic.*

Column 7 Class of emission and class of operation.

Column 7a Class of emission, necessary bandwidth and description of transmission.

1. Indicate, for each locality or area of reception shown in Column 5a, the class of emission, necessary bandwidth and description of transmission, in accordance with Article **4** and Appendix **6**.

2. When the frequency assignment is used for reception in the circumstances described in No. **1219**, the particulars to be indicated are those applicable to the mobile stations.
3. *This information is a basic characteristic.*

Column 7b Class of operation of the assignment.

This is a basic characteristic. For assignments to stations of the fixed service in the frequency bands allocated to this service between 3 000 kHz and 27 500 kHz, indicate the class of operation of the assignment by the symbols A, B or C, as follows:

Symbol A – Assignment for regular operational use which is not provided by another satisfactory means of telecommunication.

Symbol B – Assignment for use as a standby to some other means of telecommunication.

Symbol C – Assignment for occasional use on a reserve basis and not requiring internationally recognized protection from harmful interference.

Column 8 Power (dBW).

1. The power supplied to the antenna transmission line shall be notified as follows, according to the class of emission and shall be provided in dBW:

   a) carrier power (PZ) for A3E sound broadcasting (see No. **153**);

b) mean power (PY) for other amplitude modulated emissions using unkeyed full carrier, and for all frequency modulated emissions (see No. **152**);

c) peak envelope power (PX) for all classes of emission other than those referred to in *a)* or *b)*, including C3F television (vision) (see No. **151**).

2. In the bands above 28 000 kHz which are not allocated on a shared basis to the space radiocommunication and terrestrial radiocommunication services, except for notices referred to in Nos. **1223** to **1227**, the effective radiated power shall be notified (see No. **156**).

3. In the bands above 1 GHz allocated on a shared basis to the space radiocommunication and terrestrial radiocommunication services, the equivalent isotropically radiated power (e.i.r.p.) shall be notified (see No. **155**).

4. The appropriate symbol PZ, PY or PX shall follow the indication of the value of the power. In cases where the effective radiated power is notified, this symbol shall be followed by the letter "e". In cases where the e.i.r.p. is notified, this symbol shall be followed by the letter "i".

5. The power normally used to each locality or area of reception shall be indicated.

6. When the frequency assignment is used for reception in the circumstances described in No. **1219**, 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.

7. *This information is a basic characteristic.*

Column 9 Transmitting antenna characteristics.

Column 9a Azimuth of maximum radiation.

1. If a directive transmitting antenna is used, indicate the azimuth of maximum radiation of the transmitting antenna in degrees (clockwise) from True North.

2. If a transmitting antenna with non-directional characteristics is used, insert "ND" in this column.

3. For frequency assignments above 1 GHz in the bands shared between terrestrial radiocommunication and space radiocommunication services, the azimuth shall be provided to an accuracy of one tenth of a degree [1] in those cases where the required accuracy in the geographical coordinates (to a tenth of a minute [2]) has not been specified in Column 4c.

4. *This information is a basic characteristic, except for stations referred to in Nos.* **1223** *to* **1227**, *or when the frequency assignment is used for reception in the circumstances described in No.* **1219**.

Column 9b Elevation angle of maximum directivity.

This is a basic characteristic only for stations in the bands above 1 GHz allocated on a shared basis to the space radiocommunication and terrestrial radiocommunication services and shall be provided to an accuracy of one tenth of a degree [1].

[1] These data shall be provided to an accuracy of one tenth of a degree only if the station is within the coordination area of an earth station or if the direction of the maximum radiation is within three degrees of the geostationary-satellite orbit.

[2] The seconds with an accuracy of one tenth of a minute need only be notified if the station is within the coordination area of an earth station.

Columns 9c and 9g If the radiation characteristics of the antenna concerned differ from those recommended by the CCIR, Columns 9c and 9g should be completed. Where the radiation characteristics are to be found in the CCIR Book "Antenna Diagrams", indicate an appropriate reference in Column 9j.

Column 9c Angular width of radiation main lobe.

The total angle measured horizontally in a plane containing the direction of maximum radiation, in degrees, within which the power radiated in any direction does not fall more than 3 dB below the power radiated in the direction of maximum radiation, should be indicated.

Column 9d Polarization.

This is a basic characteristic for stations in the bands above 1 GHz allocated on a shared basis to the space radiocommunication and terrestrial radiocommunication services and for broadcasting stations in the VHF/UHF bands in the African and European Broadcasting Areas.

Column 9e Height of antenna (metres) for a simple vertical antenna.

This is a basic characteristic for broadcasting stations in the LF/MF bands in Region 1 and MF bands in Region 3.

Column 9f Maximum effective height of the antenna.

This is a basic characteristic for broadcasting stations in the VHF/UHF bands in the African and European Broadcasting Areas and is defined in the Final Acts of the relevant conferences.

This is a basic characteristic for terrestrial stations operating in the bands above 1 GHz that are shared between space radiocommunication and terrestrial radiocommunication services and shall be indicated in metres above mean sea level.

Column 9g Maximum antenna gain (isotropic, relative to a short vertical antenna or relative to a half-wave dipole, as appropriate).

1. The relative gain of the antenna in the direction of maximum radiation for the assigned frequency should be indicated (see No. **154**).

2. *This is not a basic characteristic if the effective radiated power or the e.i.r.p. is notified in Column 8.*

Column 9h Azimuths defining the sectors of limited radiation in degrees (clockwise) from True North.

1. Indicate the azimuths defining the sectors of limited radiation in degrees (clockwise) from True North.

2. *This is a basic characteristic for broadcasting stations in the LF/MF bands in Region 1 and MF bands in Region 3.*

Column 9i Maximum agreed radiation in the sectors.

1. Indicate the maximum agreed radiation in the sector, in dB relative to a cymomotive force (c.m.f.) of 300 V or an effective monopole radiated power (e.m.r.p.) of 1 kW,

determined from the nominal power of the transmitter and the theoretical gain of the antenna without allowing for miscellaneous losses.

2. *This is a basic characteristic for broadcasting stations in the LF/MF bands in Region 1 and MF bands in Region 3.*

Column 9j Type of antenna (see CCIR Book "Antenna Diagrams").

Indicate the appropriate reference from the CCIR Book "Antenna Diagrams". See Columns 9c and 9g above.

Column 10 Hours of operation.

Column 10a Maximum hours (UTC) of operation of the circuit to each locality or area.

1. When the frequency assignment is used for reception in the circumstances described in No. **1219**, the maximum hours of operation are those relating to the mobile stations.

2. As complementary information, indicate by the letter "I" any part of the period during which the operation of the circuit is intermittent.

3. *This information is not a basic characteristic.*

Column 10b Regular hours (UTC) of operation of the frequency assignment.

1. If known, indicate the regular hours of operation of the frequency assignment in UTC. Otherwise indicate the hours of operation as day service (HJ), night service (HN), or transition period service (HT).

2. *This is a basic characteristic.*

Column 11 Coordination with other administrations.

1. Identify the country or geographical area with which coordination has been successfully completed and indicate the provision (No. of the Radio Regulations, regional agreement, or other arrangement) requiring such coordination.

2. *This is a basic characteristic for the bands and services concerned.*

Column 12a Operating administration or company *.

This information is not a basic characteristic, but it is recommended it be supplied in cases where the same agency operates in more than one country.

Column 12b Postal and telegraphic addresses of the administration responsible for the station *.

1. The addresses required are those to which communication should be sent on urgent matters regarding interference, quality of emissions and questions referring to the technical operation of the circuit (see Article **22**).

2. *This information is not a basic characteristic.*

Supplementary Information

Any supplementary information supplied by the administration should be indicated within the frame provided on the notice.

1. If the assignment is made in application of a regional or service agreement, the relevant agreement shall be indicated in the appropriate place; otherwise, insert the indication "Nil".

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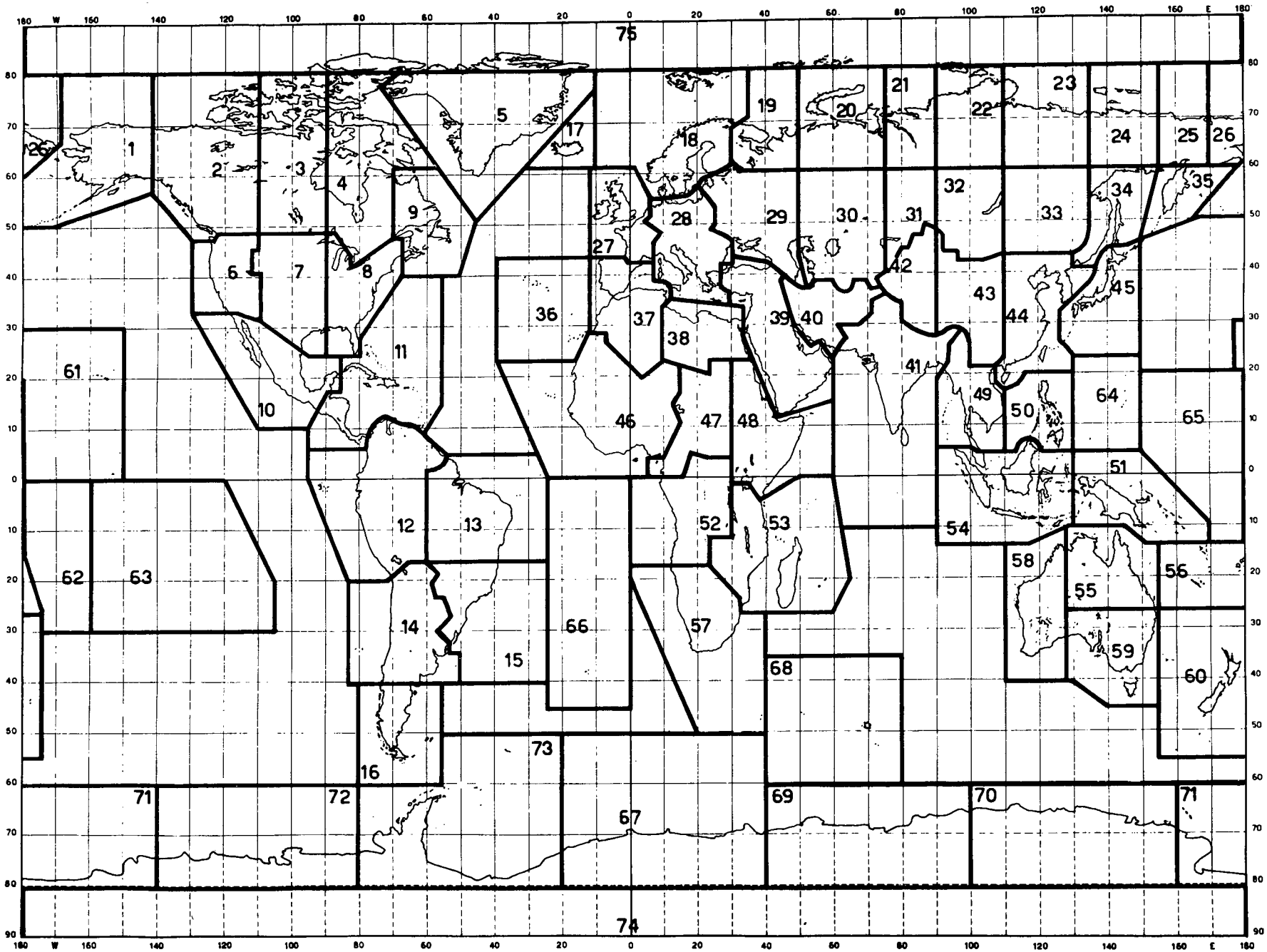
* Where this information already appears in the Preface to the International Frequency List, the appropriate reference number or letter may be used.

2. Indicate after the symbol COORD/---- the name of any administration with which coordination has been effected for the use of the frequency; if no coordination has been effected, the indication "Nil" should be inserted. In the case of a notification under Nos. **1223** to **1227** in a frequency band above 28 000 kHz, the area or areas of the actual use to which the coordination refers should be indicated.

3. In any case where there are one or more reference frequencies in a particular transmission (e.g. in the case of the frequency of the reduced carrier in an independent or single-sideband emission, or the frequencies of the sound and vision carriers in a television emission), such reference frequencies shall be supplied. In the case of television broadcasting stations in Region 1, each notice shall include, as supplementary information, both the frequency of the other carrier and the assigned frequency.

4. Any other information which the administration considers to be relevant should be indicated, such as, for example, an indication that the assignment concerned would be operating in accordance with No. **342** of these Regulations, or information concerning the use of the notified frequency if such use is restricted or if the frequency is not used during all the time which is possible according to propagation conditions.

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 terrestrial radiocommunication services referred to in Nos.* **1148** *to* **1154**, *the name of any administration with which coordination of the use of the frequency has been sought and the name of any administration with which such coordination has been effected are basic characteristics.*



GEOGRAPHICAL ZONES FOR BROADCASTING

NOC **AP2**

APPENDIX 2
(See Article 17)

Section A. Form of Notice

BC

Form of Notice *

For Use when Submitting to the International Frequency Registration Board
a Seasonal High Frequency Broadcasting Schedule
or a Change thereto
(see Article 17)

(a) Notifying administration

(b) Assignment for the particular season

(c) Change of characteristics of an assignment for the season

(d) Deletion of an assignment for the season

(e) Notice No.: _____
Date : _____

6 Class of station

Season: MARCH MAY SEPT. NOV.
Year :
Other date:

1a Assigned frequency: ..... kHz
1b Alternative frequency: ..... kHz
1c Frequency band: ..... MHz
2c Date of putting into use in the particular season
3 Call sign (Identification)
4a Name of transmitting station
4b Country
4c Longitude and latitude of the transmitter site

Zone(s) or area(s) of reception	Class of emission and necessary bandwidth	Power (kW)	Transmitting antenna characteristics				Hours of operation (UTC)	Other frequencies simultaneously utilized for same programme to the same area(s)	Supplementary information
			Azimuth of max. radiation	Angular width of radiation main lobe	Antenna gain in dB	Angle of elevation	Type of antenna			
5a	7	8	9a	9b	9c	9d	9e	10	11	

12b _____ Name and postal address } of administration (Article 22)
_____ Telegraphic address }
COORD/ _____
Other information: _____

* The actual size of the notice is a matter for individual administrations.

Section B. General Instructions

1. A separate notice shall be sent to the IFRB for notifying:
   - — each frequency assignment to be put into use for a particular season ;
   - — any change in the characteristics of a frequency assignment in the High Frequency Broadcasting Schedule, for the season ;
   - — any deletion of a frequency assignment in the High Frequency Broadcasting Schedule, for the season.

2. Separate entries, in Columns 5a and 8 to 11, should be made for the various characteristics when they do not apply to the assignment as a whole, for instance when the power, antenna characteristics or hours of operation differ according to the zones or areas of reception.

I. General Notes

(a) The name of the notifying administration should be indicated.

(b) Indicate in this box by the letter " X " when the notice reflects the first frequency usage by a station in a particular season.

(c) Indicate in this box by the letter " X " when the notice reflects a change in the characteristics of a frequency assignment in the High Frequency Broadcasting Schedule, for the season.

1) In the case where existing particulars are changed, the new characteristics in the appropriate place should be underlined ; the original characteristics which have been changed should be shown in brackets underneath or at the side.

2) In the case where the change is an addition to existing particulars, the additional characteristics should be shown in the appropriate place and should be underlined.

3) In the case where the change is a cancellation of a particular characteristic or characteristics, this should be shown in the appropriate place by a dash and, underneath or at the side, the characteristics which have been cancelled should be shown in brackets.

(d) Indicate in this box by the letter "X" when the notice reflects a deletion of an assignment, in all of its notified characteristics, for the season.

(e) The serial number of the notice and the date on which the notice is sent to the Board shall be shown here.

II. Notes Concerning Information to Be Entered in the Specific Columns of the Notice

Column 1 Frequency

1a Indicate the assigned frequency as defined in Article **1**, in kHz;

1b indicate any suggested alternative frequency or frequencies in kHz, or

1c the desired band in MHz, if a specific frequency is not given under 1a and 1b above.

Column 2c Date of putting into use, in the particular season

1. If the assignment is to be brought into use on the implementation date of the seasonal schedule, indicate the last two digits of the year in the box(es) of the season(s) for which the assignment is to be used.

2. If the assignment is to be brought into use or changed by any date other than the implementation date of the particular seasonal schedule, this date shall be entered in the space provided.

Column 3 Call sign (Identification)
Indicate the call sign or other station identification used in accordance with Article **25**.

Column 4 Name and location of transmitting station

4a Indicate the name of the locality by which the transmitting station is known or in which it is situated.

4b Indicate the country in which the station is located. Symbols from the Preface to the International Frequency List should be used.

4c Indicate the geographical co-ordinates (in degrees and minutes) of the transmitter site.

Column 5a Zone(s) or area(s) of reception

1. Indicate in this column the zone(s) of reception as shown in the map annexed to Appendix **1**.

2. If the reception area is smaller than an entire zone, it should be indicated as a country or part of a country using symbols from the Preface to the International Frequency List, as far as possible.

3. Indicate, as supplementary information, the maximum service range (in km) when this is considered necessary.

Column 7 Class of emission and necessary bandwidth

Indicate the class of emission and necessary bandwidth in accordance with Article **4** and Appendix **6**.

Column 8 Power (in kW)

Indicate the carrier power supplied to the transmission line.

Transmitting Antenna Characteristics

Column 9a Azimuth of maximum radiation

1. If a directive transmitting antenna is used, indicate the azimuth of maximum radiation of the transmitting antenna in degrees (clockwise) from True North.

2. If a transmitting antenna with non-directional characteristics is used, insert " ND " in this column.

Column 9b Angular width of radiation main lobe

The total angle in the horizontal plane, in degrees, within which the power radiated in any direction does not fall more than 6 dB below the power radiated in the direction of maximum radiation, should be indicated.

Column 9c Antenna gain (dB)

The relative gain of the antenna in the direction of maximum radiation for the assigned frequency should be indicated.

Column 9d Angle of elevation

The angle of the direction of maximum radiation in the vertical plane in degrees should be indicated.

Column 9e Type of antenna

The nomenclature of the CCIR book of "Antenna Diagrams" should be used wherever it is applicable as shown in a list at the end of this instruction (see III of this Section).

Column 10 Hours of operation (UTC)

Column 11 Other frequencies simultaneously used for the same programme to the same area(s)

1. If the notified frequency is the only frequency used for the particular schedule, the indication " Nil " shall be inserted in this column.

2. In other cases, the other frequencies simultaneously used for the same programme to the same area shall be indicated.

Column 12b Postal and telegraphic address of administration responsible for the station*

The addresses required are those to which communication should be sent on urgent matters regarding interference, quality of emissions, and questions referring to the technical operation (see Article **22**).

Supplementary Information

Any other information supplied by the administration should be indicated in the space provided.

1. Indicate after the symbol COORD/--- the name of any administration with which coordination has been effected for the use of the frequency; if no coordination has been effected, the indication " Nil " should be inserted.

2. Any other information which the administration considers to be relevant should be indicated, such as, for example, the maximum service range when this is less than 2 000 kms; or information concerning the use of the notified frequency if such use is restricted; or if the frequency is not used during all the hours indicated in Column 10, or on certain days of the week only; or if synchronizing techniques are used.

III. Symbols for Type of Antenna

HOR	Horizontal non-directive antenna
VER	Vertical non-directive antenna

* Where this information already appears in the Preface to the International Frequency List, the appropriate reference number or letter may be used.

DP — Dipole
H — Horizontal
V — Vertical
R — With reflector

(Example: DPHR means: Horizontal dipole with reflector)

H — Horizontal dipole curtain antenna
R — With reflector curtain
S — Slewed antenna
/.. — Number of half wave elements in each row
/.. — Number of half wave elements in each stack (one above the other)
/.. — Height above ground in full wavelengths of the bottom row of elements
S.. — Angle of slew, if any

(Example: HRS/4/3/2S15 means: Horizontal array with reflector curtain, 4 half wave elements in each row, 3 stacks of dipoles, bottom element 2 wavelengths above the ground, slewed with an angle of 15 degrees)

RHO — Rhombic antenna
/.. — Length of one side of the rhombus, in wavelengths
/.. — Height of rhombus above ground, in wavelengths
/.. — One half of the interior side angle of rhombus

(Example: RHO/2.5/0.4/65 means: Rhombic antenna, length of one side 2.5 wavelengths, height above ground 0.4 wavelengths, one half of the interior side angle 65 degrees)

TRO — Tropical broadcasting antenna
/.. — Number of rows
/.. — Height above the ground in wavelengths

(Example: TRO/4/0.2 means: Tropical BC antenna with 4 rows (and 4 dipoles in each row) in a height of 0.2 wavelengths above the ground)

MOD AP1A

APPENDIX 3

Notices Relating to Space Radiocommunications and Radio Astronomy Stations

(See Articles **11** and **13**)

Section A. General Instructions

1. A separate notice shall be sent to the International Frequency Registration Board for notifying:

- each new frequency assignment to an earth station for transmitting or to be received or a space station for transmitting or to be received;
- 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 Nos. **1488** to **1491** for frequency assignments to an earth or space station for transmitting or for frequency assignments to be used for reception by an earth or space station, separate notices shall be submitted to the Board for each assignment. In each of these cases where the basic characteristics are identical, with the exception of the frequency, a single notice may be submitted covering all basic characteristics and listing the assigned frequencies. In the case of a reflecting 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, a separate notice shall be submitted to the Board for each space station for transmitting or receiving assignments:

- when it is aboard a geostationary satellite;
- when it is aboard a non-geostationary satellite except when a number of satellites have the same radio frequency characteristics and orbital characteristics (excluding the ascending node position); in the latter case, one notice covering all such space stations may be submitted to the Board.

4. The following basic information shall 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 network in which the earth or space station will operate, including in the case of a geostationary satellite its orbital position;

d) whether the notice reflects:

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

2) 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);

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

e) reference to the IFRB weekly circular providing the advance publication information required in accordance with No. **1042**;

f) basic characteristics as outlined in Section B, C, D, E, or F as appropriate;

g) any other information which the administration considers to be relevant, e.g., any factors taken into account when applying Appendix **28** for determination of the coordination area and also any indication that the assignment concerned would be operating in accordance with No. **342**, 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 (frequencies)

Indicate the assigned frequency (frequencies), as defined in Article **1** (see No. **142**), in kHz up to 28 000 kHz inclusive, in MHz above 28 000 kHz to 10 500 MHz inclusive and in GHz above 10 500 MHz.

Item 2 Assigned frequency band

Indicate the bandwidth of the assigned frequency band in kHz (see No. **141**).

Item 3 Date of bringing into use

a) In the case of a new assignment, indicate the date (actual or foreseen, as appropriate) of bringing 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 *Item 4 a)*), the date to be given shall be that of the latest change (actual or foreseen, as appropriate).

Item 4 Identity and location of the transmitting 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 or geographical area in which the station is located. Symbols from the Preface to the International Frequency List should be used.

c) Indicate the geographical coordinates of the transmitter site (longitude and latitude in degrees and minutes). Indicate also the seconds [1] with an accuracy of one-tenth of a minute.

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 reflecting satellite, the identity of the satellite and the location of the associated receiving earth station(s). In the case of a geostationary satellite, indicate also its orbital position.

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**.

[1] This information need only be furnished if the coordination area of the earth station overlaps the territory of another administration.

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

In accordance with Article **4** and Appendix **6**:

a) indicate the class of emission;

b)[1] indicate the carrier frequency or frequencies of the emission(s);

c)[1] indicate, for each carrier, the class of emission, necessary bandwidth and description of transmission;

d)[1] indicate for the carrier having the smallest bandwidth of assignments in the system the class of emission, necessary bandwidth and a description of the transmission.

Item 8 Power characteristics of the transmission

a)[1] Indicate for each carrier the peak envelope power (dBW) supplied to the input of the antenna.

b) Indicate the total peak envelope power (dBW) and the maximum power density per Hz (dB(W/Hz))[2] supplied to the input of the antenna averaged over the worst 4 kHz band for carriers below 15 GHz, or averaged over the worst 1 MHz band for carriers above 15 GHz.

c)[1] Indicate for each carrier the minimum value of the peak envelope power supplied to the input of the antenna.

[1] This information need only be furnished when such information has been used as a basis to effect coordination with another administration.

[2] The most recent version of CCIR Report 792 should be used to the extent applicable in calculating the maximum power density per Hz.

Item 9 Transmitting antenna characteristics

a) Indicate the isotropic or absolute gain (dB) of the antenna in the direction of maximum radiation (see No. **154**).

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

c) Either attach the measured radiation diagram of the antenna (taking as a reference the direction of maximum radiation) or indicate the reference radiation diagram to be used for coordination.

d) Indicate graphically the horizon elevation angle for each azimuth around the earth station.

e) Indicate in degrees from the horizontal plane the planned minimum operating angle of elevation of the antenna in the direction of maximum radiation.

f) Indicate in degrees, clockwise from True North, the planned range of operating azimuthal angles for the direction of maximum radiation.

g)[1] Indicate the type of polarization of the transmitted wave in the direction of maximum radiation; also indicate the direction in the case of circular polarization and the plane in the case of linear polarization. (See Nos. **148** and **149**.)

h) Indicate the altitude (metres) of the antenna above mean sea level.

[1] This information need only be furnished when such information has been used as a basis to effect coordination with another administration.

Item 10[1] Modulation characteristics

For each carrier, according to the nature of the signal modulating the carrier and the type of modulation, indicate the following characteristics:

a) carrier frequency modulated by a frequency-division multi-channel telephony baseband (FDM/FM) or by a signal that can be represented by a multi-channel telephony baseband: indicate the lowest and highest frequencies of the baseband and the r.m.s. frequency deviation of the test tone as a function of baseband frequency;

b) carrier frequency modulated by a television signal: indicate the standard of the television signal (including, where appropriate, the standard used for colour), the frequency deviation for the reference frequency of the pre-emphasis characteristic and the pre-emphasis characteristic itself. Also indicate, where applicable, the characteristics of the multiplexing of the video signal with the sound signal(s) or other signals;

c) carrier phase-shift modulated by a pulse code modulation signal (PCM/PSK): indicate the bit rate and the number of phases;

d) amplitude modulated carrier (including single-sideband): indicate as precisely as possible the nature of the modulating signal and the kind of amplitude modulation used;

[1] This information need only be furnished when such information has been used as a basis to effect coordination with another administration.

e) for all other types of modulation, provide such particulars as may be useful for an interference study;

f) for any type of modulation as applicable, indicate the characteristics of energy dispersal, such as the peak-to-peak frequency deviation (MHz) and the sweep frequency (kHz) of the energy dispersal wave form.

Item 11 Regular hours of operation

Indicate, in UTC, the regular hours of operation on the frequency of each carrier.

Item 12 Coordination

Give the name of any administration with which the use of this frequency has been successfully coordinated in accordance with Nos. **1060** and **1107** and, if appropriate, the name of any administration with which coordination has been sought but not effected.

Item 13 Agreements

Give, if appropriate, the name of any administration with which agreement has been effected to exceed the limits prescribed in these Regulations, and the contents of such agreement.

Item 14 Operating administration or company

Give the name of the operating administration or company and the postal and telegraphic addresses of the administration to which communications should be sent on urgent matters regarding interference, quality of emissions and questions referring to the technical operation of stations (see Article **22**).

Section C. Basic Characteristics to Be Furnished in Notices Relating to Frequencies to Be Received by Earth Stations

Item 1 Assigned frequency (or frequencies)

Indicate the assigned frequency (frequencies), as defined in Article **1** (see No. **142**), of the emission to be received, in kHz up to 28 000 kHz inclusive, in MHz above 28 000 kHz to 10 500 MHz inclusive and in GHz above 10 500 MHz.

Item 2 Assigned frequency band

Indicate the bandwidth of the assigned frequency band in kHz (see No. **141**).

Item 3 Date of bringing 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 4 a)*), the date to be given shall be that of the latest change (actual or foreseen, as appropriate).

Item 4 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 or geographical area in which the station is located. Symbols from the Preface to the International Frequency List should be used.

c) Indicate the geographical coordinates of the receiver site (longitude and latitude in degrees and minutes). Indicate also the seconds [1] with an accuracy of one-tenth of a minute.

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

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 reflecting satellite, the identity of the satellite and the associated transmitting earth station(s). In the case of a geostationary satellite, indicate also its orbital position.

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 to be received

In accordance with Article **4** and Appendix **6**:

a) indicate the class of emission of the transmission to be received;

[1] This information need only be furnished if the coordination area of the earth station overlaps the territory of another administration.

b)[1] indicate the carrier frequency or frequencies of the transmission to be received;

c)[1] indicate, for each carrier to be received, the class of emission, necessary bandwidth and description of the transmission.

Item 8 Earth station receiving antenna characteristics

a) Indicate the isotropic or absolute gain (dB) of the antenna in the direction of maximum radiation (see No. **154**).

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

c) Either attach the measured radiation diagram of the antenna (taking as a reference the direction of maximum radiation) or indicate the reference radiation diagram to be used for coordination.

d) Indicate graphically the horizon elevation angle for each azimuth around the earth station.

e) Indicate in degrees from the horizontal plane the planned minimum operating angle of elevation of the antenna in the direction of maximum radiation.

f) Indicate in degrees, clockwise, from True North, the planned range of operating azimuthal angles for the direction of maximum radiation.

g) Indicate the altitude (metres) of the antenna above mean sea level.

[1] This information need only be furnished when such information has been used as a basis to effect coordination with another administration.

h)[1] Indicate the type of polarization of the antenna. In the case of circular polarization, indicate the direction of polarization (see Nos. **148** and **149**). In the case of linear polarization, indicate the plane of polarization. Indicate also if consent is given to the general use of this information in the determination of the need for coordination with other satellite networks according to Appendix **29**.

Item 9 Noise temperature, link noise temperature and transmission gain

a) Indicate, in kelvins, the lowest total receiving system noise temperature referred to the output of the receiving antenna of the earth station under "quiet sky conditions". This value shall be indicated for the nominal value of the angle of elevation when the associated transmitting station is aboard a geostationary satellite and, in other cases, for the minimum value of angle of elevation.

b) When simple frequency-changing transponders are used on the associated space station, indicate the lowest equivalent satellite link noise temperatures under the conditions of *Item 9 a)* for each assignment (see No. **168**).

c) Indicate the value of transmission gain associated with each equivalent satellite link noise temperature given in *Item 9 b)*. The transmission gain is evaluated from the output of the receiving antenna of the space station to the output of the receiving antenna of the earth station.

Item 10 Regular hours of reception

Indicate, in UTC, the regular hours of reception on the frequency of each carrier.

[1] This information need only be furnished when such information has been used as a basis to effect coordination with another administration.

Item 11 Coordination

Give the name of any administration with which the use of this frequency has been successfully coordinated in accordance with Nos. **1060** and **1107** and, if appropriate, the name of any administration with which coordination has been sought but not effected.

Item 12 Agreements

Give also, if appropriate, the name of any administration with which agreement has been effected to exceed the limits prescribed in these Regulations, and the contents of such agreement.

Item 13 Operating administration or company

Give the name of the operating administration or company and the postal and telegraphic addresses of the administration to which communications should be sent on urgent matters regarding interference and questions referring to the technical operation of stations (see Article **22**).

Section D. Basic Characteristics to Be Furnished in Notices Relating to Frequencies Used by Space Stations for Transmitting

Item 1 Assigned frequency (frequencies)

Indicate the assigned frequency (frequencies), as defined in Article **1** (see No. **142**), in kHz up to 28 000 kHz inclusive, in MHz above 28 000 kHz to 10 500 MHz inclusive and in GHz above 10 500 MHz. At least one separate assignment notice should be made out for each antenna radiation beam.

Item 2 Assigned frequency band

Indicate the bandwidth of the assigned frequency band in kHz (see No. **141**).

Item 3 Date of bringing into use [1]

a) In the case of a new assignment, indicate the date (actual or foreseen, as appropriate) of bringing 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 *Item 4*), the date to be given shall be that of the latest change (actual or foreseen, as appropriate).

Item 4 Identity of the space station(s)

Indicate the identity of the space station(s).

Item 5 Orbital information

a) In the case of a space station aboard a geostationary satellite indicate the nominal geographical longitude on the geostationary-satellite orbit and the planned longitudinal tolerance and inclination excursion. Indicate also in the case where a geostationary satellite is intended to communicate with an earth station:

1) the arc of the geostationary-satellite orbit over which the space station is visible, at a minimum angle of elevation of 10° at the Earth's surface, from its associated earth stations or service areas; *and*

[1] See also Resolution **4**.

2) the arc of the geostationary-satellite orbit within which the space station could provide the required service to its associated earth stations or service areas; *and*

3) in the event that the arc defined in paragraph 2) above is less than the arc defined in paragraph 1) above, provide the reasons therefor.

Note: The arcs specified in 1) and 2) will be indicated by the geographical longitude of the extremes of these arcs on the geostationary-satellite orbit.

b) In the case of space station(s) aboard non-geostationary satellite(s), indicate the angle of inclination of the orbit, the period, the altitudes in kilometres of the apogee and perigee of the space station(s) and the number of satellites used.

Item 6 Service area or receiving station(s)

a) In the case where the associated receiving stations are earth stations, indicate the service area or areas on the Earth or the name of the locality and country or geographical area in which each receiving station is located.

b) In the case where the associated receiving stations are space stations, identify each station by reference to the notification thereof or in any other appropriate manner.

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

In accordance with Article **4** and Appendix **6**:

a) indicate the class of emission of the transmission;

b)[1] indicate the carrier frequency or frequencies of the transmission;

c)[1] indicate, for each carrier, the class of emission, necessary bandwidth and description of transmission;

d)[1] indicate, for the carrier having the smallest bandwidth of assignments in the system, the class of emission, necessary bandwidth and a description of the transmission.

Item 9 Power characteristics of the transmission

a)[1] Indicate for each carrier the peak envelope power (dBW) supplied to the input of the antenna.

b) Indicate the total peak envelope power (dBW) and the maximum power density per Hz (dB(W/Hz))[2] at the input of the antenna, averaged over the worst 4 kHz band for carriers below 15 GHz or averaged over the worst 1 MHz band for carriers above 15 GHz.

c)[1] Indicate for each carrier the minimum value of the peak envelope power supplied to the input of the antenna.

[1] This information need only be furnished when such information has been used as a basis to effect coordination with another administration.

[2] The most recent version of CCIR Report 792 should be used to the extent applicable in calculating the maximum power density per Hz.

Item 10 Space station transmitting antenna characteristics

For each service area or antenna radiation beam:

a) in the case of a space station aboard a geostationary satellite that is intended to communicate with an earth station, indicate the maximum gain of the space station transmitting antenna and the gain contours plotted on a map of the Earth's surface, preferably in a radial projection from the satellite on to a plane perpendicular to the axis from the centre of the Earth to the satellite. The isotropic or absolute gain at each contour which corresponds to a gain of 2, 4, 6, 10 and 20 dB and at 10 dB intervals thereafter, as necessary, below the maximum gain, shall be indicated. Whenever possible the gain contours of the space station transmitting antenna should also be provided in the form of a numerical equation or in tabular form;

b) in the case of a space station aboard a geostationary satellite in which the antenna radiation beam is directed towards another satellite, or in the case of a space station aboard a non-geostationary satellite, indicate the isotropic or absolute gain of the space station transmitting antenna in the direction of maximum radiation and the antenna radiation pattern, taking the gain in the direction of maximum radiation as a reference;

c)[1] indicate the type of polarization of the radiation emitted by the antenna. In the case of circular polarization, indicate the direction of polarization

[1] This information need only be furnished when such information has been used as a basis to effect coordination with another administration.

(see Nos. **148** and **149**). In the case of linear polarization, indicate the angle (in degrees) measured anticlockwise in a plane normal to the beam axis from the equatorial plane to the electric vector of the wave as seen from the satellite;

d) for a geostationary satellite, indicate the pointing accuracy of the antenna;

e) in the case of a space station aboard a geostationary satellite operating in a band allocated in the Earth-to-space direction and in the space-to-Earth direction, also indicate the gain of the space station transmitting antenna in the direction of those parts of the geostationary-satellite orbit which are not obstructed by the Earth, by means of a diagram showing estimated antenna gain versus orbit longitude.

Item 11[1] Modulation characteristics

For each carrier, according to the nature of the signal modulating the carrier and the type of modulation, indicate the following characteristics:

a) carrier frequency modulated by a frequency-division multi-channel telephony baseband (FDM/FM) or by a signal that can be represented by a multi-channel telephony baseband: indicate the lowest and highest frequencies of the baseband and the r.m.s. frequency deviation of the test tone as a function of baseband frequency;

[1] This information need only be furnished when such information has been used as a basis to effect coordination with another administration.

b) carrier frequency modulated by a television signal: indicate the standard of the television signal (including, where appropriate, the standard used for colour), the frequency deviation for the reference frequency of the pre-emphasis characteristic and the pre-emphasis characteristic itself. Also indicate, where applicable, the characteristics of the multiplexing of the video signal with the sound signal(s) or other signal(s);

c) carrier phase-shift modulated by a pulse code modulation signal (PCM/PSK): indicate the bit rate and the number of phases;

d) amplitude modulated carrier (including single-sideband): indicate as precisely as possible the nature of the modulating signal and the kind of amplitude modulation used;

e) for all other types of modulation, provide such particulars as may be useful for an interference study;

f) for any type of modulation as applicable, indicate the characteristics of energy dispersal.

Item 12 Regular hours of operation

Indicate in UTC the regular hours of operation on the frequency of each carrier.

Item 13 Coordination

Give the name of any administration or group of administrations with which the use of the satellite network to which the space station belongs has been successfully coordinated in accordance with No. **1060**.

Item 14 Agreements

Give also, if appropriate, the name of any administration with which agreement has been effected to exceed the limits prescribed in these Regulations and the contents of such agreement.

Item 15 Operating administration or company

Give the name of the operating administration or company and the postal and telegraphic addresses of the administration to which communications should be sent on urgent matters regarding interference, quality of emissions and questions referring to the technical operation of stations (see Article **22**).

Section E. Basic Characteristics to Be Furnished in Notices Relating to Frequencies to Be Received by Space Stations

Item 1 Assigned frequency (or frequencies)

Indicate the assigned frequency (frequencies), as defined in Article **1** (see No. **142**), in kHz up to 28 000 kHz inclusive, in MHz above 28 000 kHz to 10 500 MHz inclusive and in GHz above 10 500 MHz. At least one separate assignment notice should be made out for each antenna radiation beam.

Item 2 Assigned frequency band

Indicate the bandwidth of the assigned frequency band in kHz (see No. **141**).

Item 3 Date of bringing into use [1]

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 4*), the date to be given shall be that of the latest change (actual or foreseen, as appropriate).

Item 4 Identity of the receiving space station(s)

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

Item 5 Orbital information

a) In the case of a space station aboard a geostationary satellite, indicate the planned nominal geographical longitude on the geostationary-satellite orbit and the planned longitudinal tolerance and inclination excursion. Indicate also in the case where a geostationary satellite is intended to communicate with an earth station:

1) the arc of the geostationary-satellite orbit over which the space station is visible, at a minimum angle of elevation of 10° at the Earth's surface, from its associated earth stations or service areas; *and*

2) the arc of the geostationary-satellite orbit within which the space station could provide the required service to its associated earth stations or service areas; *and*

[1] See also Resolution **4**.

3) in the event that the arc defined in paragraph 2) above is less than the arc defined in paragraph 1) above, provide the reasons therefor.

Note: The arcs specified in 1) and 2) will be indicated by the geographical longitude of the extremes of these arcs on the geostationary-satellite orbit.

b) In the case of space station(s) aboard non-geostationary satellite(s), indicate the angle of inclination of the orbit, the period, the altitudes in kilometres of the apogee and perigee of the space station(s) and the number of satellites used.

Item 6 Associated transmitting earth station(s) or space station(s)

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

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 the transmission(s) to be received

In accordance with Article **4** and Appendix **6**:

a) indicate the class of emission of the transmission(s) to be received;

b) [1] indicate the carrier frequency or frequencies of the transmission(s) to be received;

[1] This information need only be furnished when such information has been used as a basis to effect coordination with another administration.

c)[1] indicate, for each carrier to be received, the class of emission, necessary bandwidth and description of the transmission(s) to be received.

Item 9 Space station receiving antenna characteristics

For each receiving beam:

a) in the case of a space station aboard a geostationary satellite that is intended to communicate with an earth station, indicate the maximum gain of the space station receiving antenna and the gain contours plotted on a map of the Earth's surface, preferably in a radial projection from the satellite on to a plane perpendicular to the axis from the centre of the Earth to the satellite. The isotropic or absolute gain at each contour which corresponds to a gain of 2, 4, 6, 10 and 20 dB and at 10 dB intervals thereafter, as necessary, below the maximum gain, shall be indicated. Whenever possible the gain contours of the space station receiving antenna should also be provided in the form of a numerical equation or in tabular form;

b) in the case of a space station aboard a geostationary satellite in which the antenna radiation beam is directed towards another satellite, or in the case of a space station aboard a non-geostationary satellite, indicate the isotropic or absolute gain of the space station receiving antenna in the direction of maximum radiation and indicate the antenna radiation pattern, taking the gain in the direction of maximum radiation as a reference;

[1] This information need only be furnished when such information has been used as a basis to effect coordination with another administration.

c)[1] indicate the type of polarization of the antenna. In the case of circular polarization, indicate the direction of polarization (see Nos. **148** and **149**). In the case of linear polarization, indicate the angle (in degrees) measured anticlockwise in a plane normal to the beam axis from the equatorial plane to the electric vector of the wave as seen from the satellite. Indicate also if consent is given to the general use of this information in the determination of the need for coordination with other satellite networks according to Appendix **29**;

d) indicate, for a geostationary satellite, the pointing accuracy of the antenna;

e) in the case of a space station aboard a geostationary satellite operating in a band allocated in the Earth-to-space direction and in the space-to-Earth direction, also indicate the gain of the space station receiving antenna in the direction of those parts of the geostationary-satellite orbit which are not obstructed by the Earth by means of a diagram showing estimated antenna gain versus orbit longitude.

Item 10 Noise temperature

Indicate, in kelvins, the total receiving system noise temperature referred to the output of the receiving antenna of the space station.

[1] This information need only be furnished when such information has been used as a basis to effect coordination with another administration.

Item 11 Regular hours of reception

Indicate, in UTC, the regular hours of reception on the frequency of each carrier.

Item 12 Coordination

Give the name of any administration or group of administrations with which the use of the satellite network to which the space station belongs has been successfully coordinated in accordance with No. **1060**.

Item 13 Agreements

Give also, if appropriate, the name of any administration with which agreement has been effected to exceed the limits prescribed in these Regulations and the contents of such agreement.

Item 14 Operating administration or company

Give the name of the operating administration or company and the postal and telegraphic addresses of the administration to which communications should be sent on urgent matters regarding interference and questions referring to the technical operation of stations (see Article **22**).

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 kHz up to 28 000 kHz inclusive, in MHz above 28 000 kHz to 10 500 MHz inclusive and in GHz above 10 500 MHz.

Item 2 Date of bringing 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 or geographical area in which the station is located. Symbols from the Preface to the International Frequency List should be used.

d) Indicate the geographical coordinates of the station site (longitude and latitude in degrees and minutes).

Item 4 Bandwidth

Indicate the width of the frequency band (in kHz) 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 Regular hours of reception

Indicate in UTC the regular hours of reception on the observed frequency.

Item 7 Noise temperature

Indicate, in kelvins, the over-all receiving system noise temperature referred to the output of the receiving antenna.

Item 8 Class of observations

Indicate the class of observations to be taken on the frequency band shown in *Item 4*. 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 communications should be sent on urgent matters regarding interference and questions referring to the technical operation of stations (see Article **22**).

Section G. Forms of Notice (earth station)

The Board shall develop and keep up to date forms of notice to meet fully the statutory provisions of this Appendix and related decisions of future conferences.

Section H. Forms of Notice (space station)

The Board shall develop and keep up to date forms of notice to meet fully the statutory provisions of this Appendix and related decisions of future conferences.

ANNEX TO APPENDIX 3

Minimum Information Required for Coordination in Accordance with Nos. 1060 and 1107

General Information

a) For coordination in accordance with No. **1060**:

- for the coordination of (an) assignment(s) to a space station, the information to be provided in Section B or C of Appendix **3** shall be either the characteristics of the actual cooperating earth station of the network, if known, or the characteristics of a typical earth station;
- for the coordination of (an) assignment(s) to an earth station, supply *Items 4 c)* and *4 e)*, Section A of Appendix **3** if there is no change in the basic characteristics of the assignment(s) to the space station to accomodate the earth station(s). Otherwise, coordination of the frequency assignment(s) to the space station will be required.

b) For coordination in accordance with No. **1107**, only the items indicated in Columns 9 and 10 of the table are required.

c) An "X" in a column of the table indicates that the information is required.

Appendix 3 information — Type of coordination required

Titles of the columns

1. Assignments to transmitting earth station with simple frequency-changing transponder on board the satellite in accordance with No. **1060**.

2. Same as 1 in cases requiring independent treatment of the up-link and down-link (e.g. telemetry and telecommand).

3. Assignments to receiving earth station with simple frequency-changing transponder on board the satellite in accordance with No. **1060**.

4. Same as 3 in cases requiring independent treatment of the up-link and down-link (e.g. telemetry and telecommand).

5. Assignments to transmitting space station with simple frequency-changing transponder on board the satellite in accordance with No. **1060**.

6. Same as 5 in cases requiring independent treatment of the up-link and down-link (e.g. telemetry and telecommand).

7. Assignments to receiving space station with simple frequency-changing transponder on board the satellite in accordance with No. **1060**.

8. Same as 7 in cases requiring independent treatment of the up-link and down-link (e.g. telemetry and telecommand).

9. Assignments to transmitting earth station in accordance with No. **1107**.

10. Assignments to receiving earth station in accordance with No. **1107**.

	1	2	3	4	5	6	7	8	9	10	
Section B Item No.											Section B Item No.
1 + 2	X	X			X				X		1 + 2
3a + 3b									X		3a + 3b
4a + 4b + 4c	X	X			X				X		4a + 4b + 4c
5	X	X			X						5
7a + 8b* + 9a + 9c	X	X			X				X		7a + 8b* + 9a + 9c
9d + 9e + 9f									X		9d + 9e + 8f
Section C Item No.											Section C Item No.
1 + 2			X	X			X			X	1 + 2
3a + 3b										X	3a + 3b
4a + 4b + 4c			X	X			X			X	4a + 4b + 4c
5			X	X			X				5
7a + 8a + 8c			X	X			X			X	7a + 8a + 8c
8d + 8e + 8f										X	8d + 8e + 8f
9a				X						X	9a
9b + 9c			X				X			X	9b + 9c
Section D Item No.											Section D Item No.
1 + 2 + 4 + 5a + 5a1 + 5a2 + 5a3 + 6a + 6b + 8a + 9b* + 10a + 10b** + 10d + 10e**	X				X	X					1 + 2 + 4 + 5a + 5a1 + 5a2 + 5a3 + 6a + 6b + 8a + 9b* + 10a + 10b** + 10d + 10e**
Section E Item No.											Section E Item No.
1 + 2 + 4 + 5a + 5a1 + 5a2 + 5a3 + 6 + 8a + 9a + 9b** + 9d + 9e**			X				X	X			1 + 2 + 4 + 5a + 5a1 + 5a2 + 5a3 + 6 + 8a + 9a + 9b** + 9d + 9e**
10			X					X			10

* Power density only. ** May not always pertain.

MOD **AP1B**

APPENDIX 4

Advance Publication Information to Be Furnished for a Satellite Network

(See Article **11**)

Section A. General Instructions

Item 1 Information shall be provided separately for each satellite network.

Item 2 Information to be furnished for each satellite network shall include general characteristics (Section B), and, as applicable, characteristics in the Earth-to-space direction (Section C), characteristics in the space-to-Earth direction (Section D), and characteristics for space-to-space relay (Section E). In addition, the administration, or one acting on behalf of a group of named administrations submitting the advance information, may provide, as supplementary information, data for interference calculations for the purpose of inter-network coordination (Section F).

Section B. General Characteristics to Be Furnished for a Satellite Network

Item 1 Identity of the satellite network

Clearly identify the satellite network and, if applicable, identify the satellite system of which it will form a part.

Item 2 Date of bringing into use [1]

Indicate the date by which the satellite network is expected to be brought initially into use.

Item 3 Administration or group of administrations submitting the advance information

Give the name of the administration or the names of the administrations in the group submitting the advance information on the satellite network and the postal and telegraphic addresses of the administration(s) to which any communication should be sent.

Item 4 Orbital information relating to the space station(s)

a) In the case of a space station aboard a geostationary satellite, give the planned nominal geographical longitude on the geostationary-satellite orbit and the planned longitudinal tolerance and inclination excursion. Indicate also:

1) the arc of the geostationary-satellite orbit over which the space station is visible, at a minimum angle of elevation of 10° at the Earth's surface, from its associated earth stations or service areas;

2) the arc of the geostationary-satellite orbit within which the space station could provide the required service to its associated earth stations or service areas; *and*

[1] See also Resolution **4**.

3) in the event that the arc defined in paragraph 2) above is less than the arc defined in paragraph 1) above, provide the reasons therefor.

Note: The arcs specified in 1) and 2) will be indicated by the geographical longitude of the extremes of these arcs on the geostationary-satellite orbit.

b) In the case of space station(s) aboard non-geostationary satellite(s), indicate the angle of inclination of the orbit, the period, the altitudes in kilometres of the apogee and perigee of the space station(s) and the number of satellites used having the same characteristics.

Section C. Characteristics of the Satellite Network in the Earth-to-Space Direction

Item 1 Earth-to-space service area(s)

Indicate the service area(s) on the Earth associated with each receiving antenna of the space station.

Item 2 Class of stations and nature of service

For each Earth-to-space service area, indicate the class of the stations in the satellite network and the nature of the service to be performed, using the symbols shown in Appendix **10**.

Item 3 Frequency range

For each Earth-to-space service area, indicate the frequency range within which the carriers will be located.

Item 4 Power characteristics of the transmitted wave

a) For each Earth-to-space service area indicate the maximum spectral power density (dB(W/Hz)) [1] to be delivered to the antenna of the transmitting earth stations (the bandwidth over which this is averaged depends on the nature of the service concerned) for each size of transmitting earth station antenna and, if available, the total peak envelope power (dBW) and the necessary bandwidth of this emission.

b) If available, indicate, for each Earth-to-space service area, the actual radiation pattern (relative to isotropic) of the transmitting earth station antenna having the highest off-beam equivalent isotropically radiated spectral power density for each size of transmitting earth station antenna.

c) If available, for television carriers and for each Earth-to-space service area, indicate the peak envelope power to be delivered to the input of the earth station transmitting antenna.

d) If available, indicate the minimum carrier power delivered to the antenna of the earth station for narrow-band carriers.

Item 5 Characteristics of space station receiving antennae

For each Earth-to-space service area:

a) in the case of a space station aboard a geostationary satellite, indicate the maximum gain of the space station receiving antenna and the gain contours plotted on a map of the Earth's surface

[1] The most recent version of CCIR Report 792 should be used to the extent applicable in calculating the maximum power density per Hz.

preferably using a radial projection from the satellite in a plane perpendicular to the axis from the centre of the Earth to the satellite. The isotropic or absolute gain at each contour which corresponds to a gain of 2, 4, 6, 10 and 20 dB and at 10 dB intervals thereafter, as necessary, below the maximum gain, shall be indicated. Whenever possible the estimated gain contours of the space station receiving antenna should also be provided in the form of a numerical equation or in a tabular form;

b) in the case of a space station aboard a non-geostationary satellite, indicate the isotropic or absolute gain of the space station receiving antenna in the direction of maximum radiation and indicate the antenna radiation pattern, taking the gain in the direction of maximum radiation as a reference;

c) if available, for each space station receiving antenna, indicate the type of polarization of the antenna. In the case of circular polarization, indicate the direction of polarization (see Nos. **148** and **149**);

d) in the case of a space station aboard a geostationary satellite operating in a band allocated in the Earth-to-space direction and in the space-to-Earth direction, also indicate the estimated gain of the space station receiving antenna in the direction of those parts of the geostationary-satellite orbit which are not obstructed by the Earth by means of a diagram showing estimated antenna gain versus orbit longitude.

Item 6 Noise temperature of the receiving space station

For each Earth-to-space service area, when other than a simple frequency-changing transponder is used aboard the space station, indicate the lowest total receiving system noise temperature referred to the output of the receiving antenna.

Item 7 Necessary bandwidth

If available, in the case of narrow-band carriers, indicate the necessary bandwidth.

Item 8 Modulation characteristics

If available, in the case of television carriers, indicate the characteristics of energy dispersal such as the peak-to-peak frequency deviation (MHz) and the sweep frequency (kHz) of the energy dispersal waveform.

Section D. Characteristics of the Satellite Network in the Space-to-Earth Direction

Item 1 Space-to-Earth service area(s)

Indicate the service area(s) on the Earth associated with each transmitting antenna of the space station.

Item 2 Class of stations and nature of service

For each space-to-Earth service area, indicate the class of the stations in the satellite network and the nature of the service to be performed, using the symbols shown in Appendix **10**.

Item 3 Frequency range

For each space-to-Earth service area, indicate the frequency range within which the carriers will be located.

Item 4 Power characteristics of the transmission

a) For each space-to-Earth service area, indicate the maximum spectral power density (dB(W/Hz)) [1] to be delivered to the transmitting antenna of the space station (the bandwidth over which this is averaged depends on the nature of the service concerned) and, if available, the total peak envelope power (dBW) and the necessary bandwidth of this emission.

b) If available, for narrow-band carriers and for television carriers, indicate the peak envelope power to be delivered to the input of the space station transmitting antenna.

c) If available, indicate the minimum carrier power delivered to the antenna of the space station for narrow-band carriers.

Item 5 Characteristics of space station transmitting antennae

For each space-to-Earth service area:

a) in the case of a space station aboard a geostationary satellite, indicate the maximum gain of the space station transmitting antenna and the gain contours plotted on a map of the Earth's surface, preferably in a radial projection from the satellite in a plane perpendicular to the axis from the centre of the Earth to the satellite. The isotropic or absolute gain at each contour which corresponds to a gain of 2, 4, 6, 10 and 20 dB and at 10 dB intervals thereafter as necessary, below the maximum gain,

[1] The most recent version of CCIR Report 792 should be used to the extent applicable in calculating the maximum power density per Hz.

shall be indicated. Whenever possible, the estimated gain contours of the space station transmitting antenna should also be provided in the form of a numerical equation or in tabular form;

b) in the case of a space station aboard a non-geostationary satellite, indicate the isotropic or absolute gain of the space station transmitting antenna in the direction of maximum radiation and indicate the antenna radiation pattern, taking the gain in the direction of maximum radiation as a reference;

c) if available, for each space station transmitting antenna, indicate the type of polarization of the antenna. In the case of circular polarization, indicate the direction of polarization (see Nos. **148** and **149**);

d) in the case of a space station aboard a geostationary satellite operating in a band allocated in the Earth-to-space direction and in the space-to-Earth direction, also indicate the estimated gain of the space station transmitting antenna in the direction of those parts of the geostationary-satellite orbit which are not obstructed by the Earth by means of a diagram showing estimated antenna gain versus orbit longitude.

Item 6 Characteristics of receiving earth stations

a) For each space-to-Earth service area, when other than a simple frequency-changing transponder is used aboard the space station, indicate the lowest total receiving system noise temperature on the earth stations referred to the output of the receiving antenna.

For each space-to-Earth service area and for each projected usage [1] when simple frequency-changing transponders are used on the space station, indicate:

1) the lowest equivalent satellite link noise temperature and the associated value of transmission gain; *and*

2) the values of transmission gain and associated equivalent link noise temperature that correspond to the highest ratio of transmission gain to equivalent satellite link noise temperature. The transmission gain is evaluated from the output of the receiving antenna of the space station to the output of the receiving antenna of the earth station. For each projected usage, indicate also the receiving antenna(e) of the space station to which each simple frequency-changing transponder will be connected.

b) If available, indicate for each space-to-Earth service area the actual radiation pattern (relative to isotropic) of the receiving earth station for each size of receiving earth station antenna having the highest off beam level. When simple frequency-changing transponders are used on the space station, indicate also, if available, the pattern associated with each equivalent satellite link noise temperature indicated above.

Item 7 Necessary bandwidth

If available, in the case of narrow-band carriers, indicate the necessary bandwidth.

[1] A different usage will be considered to take place when different types of carriers are employed (different by virtue of maximum power spectral density), or when different types of receiving earth stations are employed (different by virtue of receiving antenna gain).

Item 8 Modulation characteristics

If available, in the case of television carriers, indicate the characteristics of energy dispersal such as the peak-to-peak frequency deviation (MHz) and the sweep frequency (kHz) of the energy dispersal waveform.

Section E. Characteristics to Be Furnished for Space-to-Space Relays

Where the satellite network is connected to one or more satellite networks by means of space-to-space relay, indicate the following:

a) identity or identities of the other satellite network(s) to which the satellite network is connected;

b) transmit and receive frequency bands;

c) classes of emission;

d) nominal equivalent isotropically radiated power(s) (e.i.r.p.) on the beam axis.

Section F. Supplementary Information (if available)

Item 1 General

Supplementary information may be provided by an administration or one acting on behalf of a group of named administrations who so desire. This information may be used for interference calculations associated with the advance publication process. The information may consist of part or all of the data contained in the following items which are not exhaustive but provide an indication of the type of information which may be supplied.

Item 2 Earth-to-space direction

For each Earth-to-space service area, the following information may be provided:

a) class of emission, necessary bandwidth and modulation characteristics (including energy dispersal if employed) for each type of carrier transmitted;

b) earth station e.i.r.p. for each type of carrier associated with each type and diameter of earth station antenna;

c) technical description and system parameters of telecommand (except for coding data).

Item 3 Space-to-Earth direction

For each space-to-Earth service area, the following information may be provided:

a) class of emission, necessary bandwidth and modulation characteristics (including energy dispersal if employed) for each type of carrier;

b) satellite transmitter power to be delivered to the satellite transmitting antenna for each type of carrier;

c) technical description and system parameters of beacon and space telemetry emissions (except for coding data).

Item 4 Any other information which may be useful

NOC **AP1C**

APPENDIX 5

Information to Be Supplied in Accordance with Nos. 1682 to 1684

(See Article **16**)

☐ Initial allotment ☐ Additional allotment ☐ Replacement allotment (No. **1721**)

1. Country or area of allotment .....

2. 2.1 Proposed frequency { Carrier ..... kHz / Assigned ..... kHz

   2.2 Alternative proposed frequency { Carrier ..... kHz / Assigned ..... kHz

   2.3 Frequency to be replaced (No. **1721**) { Carrier ..... kHz / Assigned ..... kHz

3. 3.1 Main service area .....

   3.2 Maximum length of circuit in kilometres .....

4. Nature of service (e.g. CP, CO, CV or OT) .....

5. Class of emission .....

6. Peak envelope power in kW .....

7. Transmitting antenna characteristics (for details see Appendix **1**):

   7.1 In the case of a non-directional antenna, insert the symbol "ND" .....

   7.2 In the case of a directional antenna, indicate:

   a) the azimuth of maximum radiation .....

   b) the angular width of main lobe .....

   c) relative gain of the antenna in dB .....

8. Planned scheduled hours of operation of the proposed frequency ..... to ..... hrs (UTC)

9. Indicate, if possible:

   a) the estimated peak hours of traffic ..... to ..... hrs (UTC)

   b) the estimated daily volume of traffic in minutes .....

10. Planned date of first use of channel .... (month) (year)

MOD AP5

APPENDIX 6

Additional Characteristics for the Classification of Emissions; Determination of Necessary Bandwidths Including Examples for their Calculation and Associated Examples for the Designation of Emissions

(See Article 4)

PART A

Additional Characteristics for the Classification of Emissions

Article 4 of these Regulations describes the basic characteristics, with three symbols, for the classification of emissions. For a more complete description of an emission, two optional additional characteristics should be added.

The optional additional characteristics (see also Recommendation 62) are:

Fourth symbol – Details of signal(s)

Fifth symbol – Nature of multiplexing

Where the fourth or the fifth symbol is not used this should be indicated by a dash where each symbol would otherwise appear.

1. *Fourth symbol* – Details of signal(s)

1.1 Two-condition code with elements of differing numbers and/or durations A

1.2 Two-condition code with elements of the same number and duration without error-correction B

1.3 Two-condition code with elements of the same number and duration with error-correction C

1.4 Four-condition code in which each condition represents a signal element (of one or more bits) D

1.5 Multi-condition code in which each condition represents a signal element (of one or more bits) E

1.6 Multi-condition code in which each condition or combination of conditions represents a character F

1.7 Sound of broadcasting quality (monophonic) G

1.8 Sound of broadcasting quality (stereophonic or quadraphonic) H

1.9 Sound of commercial quality (excluding categories given in sub-paragraphs 1.10 and 1.11) J

1.10 Sound of commercial quality with the use of frequency inversion or band-splitting K

1.11 Sound of commercial quality with separate frequency-modulated signals to control the level of demodulated signal L

1.12 Monochrome M

1.13 Colour N

1.14 Combination of the above W

1.15 Cases not otherwise covered X

2. *Fifth symbol* – Nature of multiplexing

2.1 None N

2.2 Code-division multiplex * C

2.3 Frequency-division multiplex F

* This includes bandwidth expansion techniques.

2.4 Time-division multiplex	T
2.5 Combination of frequency-division multiplex and time-division multiplex	W
2.6 Other types of multiplexing	X

PART B

Determination of Necessary Bandwidths Including Examples for their Calculation and Associated Examples for the Designation of Emissions

For the full designation of an emission, the necessary bandwidth, indicated in four characters, shall be added just before the classification symbols. When used, the necessary bandwidth shall be determined by one of the following methods:

1) use of the formulae included in the following table which also gives examples of necessary bandwidths and designation of corresponding emissions;

2) computation in accordance with CCIR Recommendations [1];

3) measurement, in cases not covered by 1) or 2) above.

However, the necessary bandwidth so determined is not the only characteristic of an emission to be considered in evaluating the interference that may be caused by that emission.

[1] See also Recommendation **63**.

In the formulation of the table, the following terms have been employed:

B_n = Necessary bandwidth in hertz

B = Modulation rate in bauds

N = Maximum possible number of black plus white elements to be transmitted per second, in facsimile

M = Maximum modulation frequency in hertz

C = Sub-carrier frequency in hertz

D = Peak deviation, i.e., half the difference between the maximum and minimum values of the instantaneous frequency. The instantaneous frequency in hertz is the time rate of change in phase in radians divided by 2π

t = Pulse duration in seconds at half-amplitude

t_r = Pulse rise time in seconds between 10% and 90% amplitude

K = An overall numerical factor which varies according to the emission and which depends upon the allowable signal distortion

N_c = Number of baseband channels in radio systems employing multi-channel multiplexing

f_p = Continuity pilot sub-carrier frequency (Hz) (continuous signal utilized to verify performance of frequency-division multiplex systems).

Description of Emission	Necessary Bandwidth		Designation of Emission
	Formula	Sample Calculation	
I. NO MODULATING SIGNAL			
Continuous wave emission	—	—	NONE
II. AMPLITUDE MODULATION			
1. Signal with Quantized or Digital Information			
Continuous wave telegraphy, Morse code	$B_n = BK$ $K = 5$ for fading circuits $K = 3$ for non-fading circuits	25 words per minute ; $B = 20$, $K = 5$ Bandwidth : 100 Hz	100HA1AAN
Telegraphy by on-off keying of a tone modulated carrier, Morse code	$B_n = BK + 2M$ $K = 5$ for fading circuits $K = 3$ for non-fading circuits	25 words per minute ; $B = 20$, $M = 1\,000$ $K = 5$ Bandwidth : 2 100 Hz = 2.1 kHz	2K10A2AAN
Selective calling signal using sequential single frequency code, single-sideband full carrier	$B_n = M$	Maximum code frequency is : 2 110 Hz $M = 2\,110$ Bandwidth : 2 110 Hz = 2.11 kHz	2K11H2BFN
Direct-printing telegraphy using a frequency shifted modulating sub-carrier, with error-correction, single-sideband, suppressed carrier (single channel)	$B_n = 2M + 2DK$ $M = \frac{B}{2}$	$B = 50$ $D = 35$ Hz (70 Hz shift) $K = 1.2$ Bandwidth : 134 Hz	134HJ2BCN
Telegraphy, multi-channel with voice frequency, error-correction, some channels are time-division multiplexed, single-sideband, reduced carrier	$B_n =$ highest central frequency $+ M + DK$ $M = \frac{B}{2}$	15 channels ; highest central frequency is : 2 805 Hz $B = 100$ $D = 42.5$ Hz (85 Hz shift) $K = 0.7$ Bandwidth : 2 885 Hz = 2.885 kHz	2K89R7BCW
2. Telephony (Commercial Quality)			
Telephony, double-sideband (single channel)	$B_n = 2M$	$M = 3\,000$ Bandwidth : 6 000 Hz = 6 kHz	6K00A3EJN
Telephony, single-sideband, full carrier (single channel)	$B_n = M$	$M = 3\,000$ Bandwidth : 3 000 Hz = 3 kHz	3K00H3EJN
Telephony, single-sideband, suppressed carrier (single channel)	$B_n = M -$ lowest modulation frequency	$M = 3\,000$ lowest modulation frequency is 300 Hz Bandwidth : 2 700 Hz = 2.7 kHz	2K70J3EJN
Telephony with separate frequency modulated signal to control the level of de-modulated speech signal, single-sideband, reduced carrier, (Lincompex) (single channel)	$B_n = M$	Maximum control frequency is 2 990 Hz $M = 2\,990$ Bandwidth : 2 990 Hz = 2.99 kHz	2K99R3ELN

Description of Emission	Necessary Bandwidth		Designation of Emission
	Formula	Sample Calculation	
Telephony with privacy, single-sideband, suppressed carrier (two or more channels)	B_n = $N_c M$ – lowest modulation frequency in the lowest channel	N_c = 2 M = 3 000 lowest modulation frequency is 250 Hz Bandwidth : 5 750 Hz = 5.75 kHz	5K75J8EKF
Telephony, independent sideband (two or more channels)	B_n = sum of M for each sideband	two channels M = 3 000 Bandwidth : 6 000 Hz = 6 kHz	6K00B8EJN
3. Sound Broadcasting			
Sound broadcasting double-sideband	B_n = 2M M may vary between 4 000 and 10 000 depending on the quality desired	Speech and music, M = 4 000 Bandwidth: 8 000 Hz = 8 kHz	8K00A3EGN
Sound broadcasting, single-sideband, reduced carrier (single channel)	B_n = M M may vary between 4 000 and 10 000 depending on the quality desired	Speech and music, M = 4 000 Bandwidth: 4 000 Hz = 4 kHz	4K00R3EGN
Sound broadcasting, single-sideband, suppressed carrier	B_n = M – lowest modulation frequency	Speech and music, M = 4 500 lowest modulation frequency = 50 Hz; Bandwidth: 4 450 Hz =4.45 kHz	4K45J3EGN

Description of Emission	Necessary Bandwidth		Designation of Emission
	Formula	Sample Calculation	
	4. Television		
Television, vision and sound	Refer to relevant CCIR documents for the bandwidths of the commonly used television systems	Number of lines = 625; Nominal video bandwidth: 5 MHz Sound carrier relative to video carrier = 5.5 MHz; Total vision bandwidth: 6.25 MHz; FM sound bandwidth including guardbands: 750 kHz RF channel bandwidth: 7 MHz	6M25C3F-- 750KF3EGN
5. Facsimile			
Analogue facsimile by sub-carrier frequency modulation of a single-sideband emission with reduced carrier, monochrome	B_n = $C + \frac{N}{2} + DK$ K = 1.1 (typically)	N = 1 100 corresponding to an index of cooperation of 352 and a cycler ratation speed of 60 rpm. Index of cooperation is the product of the drum diameter and number of lines per unit of length. C = 1 900 D = 400 Hz Bandwidth: 2 890 Hz = 2.89 kHz	2K89R3CMN
Analogue facsimile; frequency modulation of an audio frequency sub-carrier which modulates the main carrier, single-sideband suppressed carrier	B_n = 2M + 2DK M = $\frac{N}{2}$ K = 1.1 (typically)	N = 1 100 D = 400 Hz Bandwidth: 1 980 Hz = 1.98 kHz	1K98J3C--

Description of Emission	Necessary Bandwidth		Designation of Emission
	Formula	Sample Calculation	
6. Composite Emissions			
Double-sideband, television relay	$B_n = 2C + 2M + 2D$	Video limited to 5 MHz, audio on 6.5 MHz frequency modulated sub-carrier, sub-carrier deviation = 50 kHz: $C = 6.5 \times 10^6$ $D = 50 \times 10^3$ Hz $M = 15\,000$ Bandwidth: 13.13×10^6 Hz = 13.13 MHz	13M1A8W--
Double-sideband radio-relay system, frequency division multiplex	$B_n = 2M$	10 voice channels occupying baseband between 1 kHz and 164 kHz; $M = 164\,000$ Bandwidth: 328 000 Hz = 328 kHz	328KA8E--
Double-sideband emission of VOR with voice (VOR = VHF omnidirectional radio range)	$B_n = 2C_{max} + 2M + 2DK$ $K = 1$ (typically)	The main carrier is modulated by: — a 30 Hz sub-carrier — a carrier resulting from a 9 960 Hz tone frequency modulated by a 30 Hz tone — a telephone channel — a 1 020 Hz keyed tone for continual Morse identification $C_{max} = 9\,960$ $M = 30$ $D = 480$ Hz Bandwidth: 20 940 Hz = 20.94 kHz	20K9A9WWF
Independent sidebands; several telegraph channels with error-correction together with several telephone channels with privacy; frequency division multiplex	B_n = sum of M for each sideband	Normally composite systems are operated in accordance with standardized channel arrangements (e.g. CCIR-Rec. 348-2). 3 telephone channels and 15 telegraphy channels require the bandwidth 12 000 Hz = 12 kHz	12K0B9WWF
III-A. FREQUENCY MODULATION			
1. Signal with Quantized or Digital Information			
Telegraphy without error-correction (single channel)	$B_n = 2M + 2DK$ $M = \frac{B}{2}$ $K = 1.2$ (typically)	$B = 100$ $D = 85$ Hz (170 Hz shift) Bandwidth: 304 Hz	304HF1BBN
Telegraphy, narrow-band direct-printing with error-correction (single channel)	$B_n = 2M + 2DK$ $M = \frac{B}{2}$ $K = 1.2$ (typically)	$B = 100$ $D = 85$ Hz (170 Hz shift) Bandwidth: 304 Hz	304HF1BCN
Selective calling signal	$B_n = 2M + 2DK$ $M = \frac{B}{2}$ $K = 1.2$ (typically)	$B = 100$ $D = 85$ Hz (170 Hz shift) Bandwidth: 304 Hz	304HF1BCN
Four-frequency duplex telegraphy	$B_n = 2M + 2DK$ B = Modulation rate in bauds of the faster channel. If the channels are synchronized: $M = \frac{B}{2}$ (otherwise $M = 2B$) $K = 1.1$ (typically)	Spacing between adjacent frequencies = 400 Hz; Synchronized channels $B = 100$ $M = 50$ $D = 600$ Hz Bandwidth: 1 420 Hz = 1.42 kHz	1K42F7BDX

Description of Emission	Necessary Bandwidth		Designation of Emission
	Formula	Sample Calculation	
2. Telephony (Commercial Quality)			
Commercial telephony	$B_n = 2M + 2DK$ $K = 1$ (typically, but under certain conditions a higher value may be necessary)	For an average case of commercial telephony, $D = 5\,000$ Hz $M = 3\,000$ Bandwidth: 16 000 Hz = 16 kHz	16K0F3EJN
3. Sound Broadcasting			
Sound broadcasting	$B_n = 2M + 2DK$ $K = 1$ (typically)	Monaural $D = 75\,000$ Hz $M = 15\,000$ Bandwidth: 180 000 Hz = 180 kHz	180KF3EGN
4. Facsimile			
Facsimile by direct frequency modulation of the carrier; black and white	$B_n = 2M + 2DK$ $M = \frac{N}{2}$ $K = 1.1$ (typically)	$N = 1\,100$ elements/sec; $D = 400$ Hz Bandwidth: 1 980 Hz = 1.98 kHz	1K98F1C--
Analogue facsimile	$B_n = 2M + 2DK$ $M = \frac{N}{2}$ $K = 1.1$ (typically)	$N = 1\,100$ elements/sec; $D = 400$ Hz Bandwidth: 1 980 Hz = 1.98 kHz	1K98F3C--

Description of Emission	Necessary Bandwidth		Designation of Emission
	Formula	Sample Calculation	
5. Composite Emissions (see Table III-B)			
Radio-relay system, frequency division multiplex	$B_n = 2f_p + 2DK$ $K = 1$ (typically)	60 telephone channels occupying baseband between 60 kHz and 300 kHz; rms per-channel deviation: 200 kHz; continuity pilot at 331 kHz produces 100 kHz rms deviation of main carrier. $D = 200 \times 10^3 \times 3.76 \times 2.02 = 1.52 \times 10^6$ Hz; $f_p = 0.331 \times 10^6$ Hz; Bandwidth: 3.702×10^6 Hz = 3.702 MHz	3M70F8EJF
Radio-relay system; frequency division multiplex	$B_n = 2M + 2DK$ $K = 1$ (typically)	960 telephone channels occupying baseband between 60 kHz and 4 028 kHz; rms per-channel deviation: 200 kHz; continuity pilot at 4 715 kHz produces 140 kHz rms deviation of main carrier. $D = 200 \times 10^3 \times 3.76 \times 5.5 = 4.13 \times 10^6$ Hz; $M = 4.028 \times 10^6$; $f_p = 4.715 \times 10^6$; $(2M + 2DK) > 2f_p$ Bandwidth: 16.32×10^6 Hz = 16.32 MHz	16M3F8EJF

Description of Emission	Necessary Bandwidth		Designation of Emission
	Formula	Sample Calculation	
Radio-relay system; frequency division multiplex	$B_n = 2f_p$	600 telephone channels occupying baseband between 60 kHz and 2 540 kHz; rms per-channel deviation: 200 kHz; continuity pilot at 8 500 kHz produces 140 kHz rms deviation of main carrier. $D = 200 \times 10^3 \times 3.76 \times 4.36 = 3.28 \times 10^6$ Hz; $M = 2.54 \times 10^6$; $K = 1$; $f_p = 8.5 \times 10^6$; $(2M + 2DK) < 2f_p$ Bandwidth: 17×10^6 Hz = 17 MHz	17M0F8EJF
Stereophonic sound broadcasting with multiplexed subsidiary telephony sub-carrier	$B_n = 2M + 2DK$ $K = 1$ (typically)	Pilot tone system; $M = 75\,000$ $D = 75\,000$ Hz Bandwidth: 300 000 Hz = 300 kHz	300KF8EHF

III-B. MULTIPLYING FACTORS FOR USE IN COMPUTING D, PEAK FREQUENCY DEVIATION, IN FM FREQUENCY DIVISION MULTIPLEX (FM/FDM) MULTI-CHANNEL EMISSIONS

For FM/FDM systems the necessary bandwidth is:

$$B_n = 2M + 2DK$$

The value of D, or peak frequency deviation, in these formulae for B_n is calculated by multiplying the rms value of per-channel deviation by the appropriate "Multiplying factor" shown below.

In the case where a continuity pilot of frequency f_p exists above the maximum modulation frequency, M, the general formula becomes:

$$B_n = 2f_p + 2DK$$

In the case where the modulation index of the main carrier produced by the pilot is less than 0.25, and the rms frequency deviation of the main carrier produced by the pilot is less than or equal to 70% of the rms value of per-channel deviation, the general formula becomes either

$$B_n = 2f_p \quad \text{or} \quad B_n = 2M + 2DK$$

whichever is greater.

Number of telephone channels N_c	Multiplying factor[1]	
	(peak factor) x antilog	$\left[\frac{\text{value in dB above modulation reference level}}{20}\right]$
$3 < N_c < 12$	4.47 x antilog	$\left[\frac{\text{a value in dB specified by the equipment manufacturer or station licensee, subject to administration approval}}{20}\right]$
$12 \leqslant N_c < 60$	3.76 x antilog	$\left[\frac{2.6 + 2 \log N_c}{20}\right]$

[1] In the above chart, the multipliers 3.76 and 4.47 correspond to peak factors of 11.5 dB and 13.0 dB, respectively.

Number of telephone channels N_c	Multiplying factor[1]	
	(peak factor) x antilog	$\left[\frac{\text{value in dB above modulation reference level}}{20}\right]$
$60 \leqslant N_c < 240$	3.76 x antilog	$\left[\frac{-1 + 4 \log N_c}{20}\right]$
$N_c \geqslant 240$	3.76 x antilog	$\left[\frac{-15 + 10 \log N_c}{20}\right]$

[1] In the above chart, the multiplier 3.76 corresponds to a peak factor of 11.5 dB.

Description of Emission	Necessary Bandwidth		Designation of Emission
	Formula	Sample Calculation	
IV. PULSE MODULATION			
1. Radar			
Unmodulated pulse emission	$B_n = \frac{2K}{t}$ K depends upon the ratio of pulse duration to pulse rise time. Its value usually falls between 1 and 10 and in many cases it does not need to exceed 6	Primary Radar Range resolution: 150 m K = 1.5 (triangular pulse where $t \simeq t_r$, only components down to 27 dB from the strongest are considered) Then $t = \frac{2 \text{ (range resolution)}}{\text{velocity of light}}$ $= \frac{2 \times 150}{3 \times 10^8}$ $= 1 \times 10^{-6}$ seconds Bandwidth: 3×10^6 Hz = 3 MHz	3M00P0NAN
2. Composite Emissions			
Radio-relay system	$B_n = \frac{2K}{t}$ K = 1.6	Pulse position modulated by 36 voice channel baseband; pulse width at half amplitude = 0.4 μs. Bandwidth: 8×10^6 Hz = 8 MHz (Bandwidth independent of the number of voice channels)	8M00M7EJT

MOD **AP3** APPENDIX 7

Table of Transmitter Frequency Tolerances
(See Article **5**)

§ 1. Frequency tolerance is defined in Article **1** and is expressed in parts in 10^6, unless otherwise indicated.

§ 2. The power shown for the various categories of stations is the peak envelope power for single-sideband transmitters and the mean power for all other transmitters, unless otherwise indicated. The term "power of a radio transmitter" is defined in Article **1**.

§ 3. For technical and operational reasons, certain categories of stations may need more stringent tolerances than those shown in the table.

Frequency Bands (lower limit exclusive, upper limit inclusive) and Categories of Stations	Tolerances applicable until 1 January 1990 to transmitters in use and to those to be installed before 2 January 1985	Tolerances applicable to new transmitters installed after 1 January 1985 and to all transmitters after 1 January 1990
1	2	3
Band: **9 kHz to 535 kHz**		
1. *Fixed Stations:*		
— 9 kHz to 50 kHz	1 000	100
— 50 kHz to 535 kHz	200	50
2. *Land Stations:*		
a) Coast Stations:		100 *1)*
— power 200 W or less	500 *2)*	
— power above 200 W	200 *2)*	
b) Aeronautical Stations	100	100

1	2	3
3. *Mobile Stations:*		
a) Ship Stations	1 000 *3)*	200 *4)*
b) Ship's Emergency Transmitters	5 000	500 *5)*
c) Survival Craft Stations	5 000	500
d) Aircraft Stations	500	100
4. *Radiodetermination Stations*	100	100
5. *Broadcasting Stations*	10 Hz	10 Hz
Band: **535 kHz to 1 606.5 kHz (1 605 kHz in Region 2)**		
Broadcasting Stations	10 Hz *6)*	10 Hz *6)*
Band: **1 606.5 (1 605 in Region 2) kHz to 4 000 kHz**		
1. *Fixed Stations:*		
— power 200 W or less	100	100 *7) 8)*
— power above 200 W	50	50 *7) 8)*
2. *Land Stations:*		
— power 200 W or less	100 *2) 9) 10)*	100 *1) 7) 10)*
— power above 200 W	50 *2) 9) 10)*	50 *1) 7) 10)*
3. *Mobile Stations:*		
a) Ship Stations	200 *3) 11)*	40 Hz *12)*
b) Survival Craft Stations	300	100
c) Emergency Position-Indicating Radiobeacons	300	100
d) Aircraft Stations	100 *10)*	100 *10)*
e) Land Mobile Stations	200	50 *13)*
4. *Radiodetermination Stations:*		
— power 200 W or less	100	20 *14)*
— power above 200 W	50	10 *14)*
5. *Broadcasting Stations*	20	10 Hz *15)*

1	2	3
Band: **4 MHz to 29.7 MHz**		
1. *Fixed Stations:*		
— power 500 W or less	50	
— power above 500 W	15	
a) Single-sideband and independent-sideband emissions:		
— power 500 W or less		50 Hz
— power above 500 W		20 Hz
b) Class F1B emissions		10 Hz
c) Other classes of emission:		
— power 500 W or less		20
— power above 500 W		10
2. *Land Stations:*		
a) Coast Stations:		20 Hz *1) 16)*
— power 500 W or less	50 *2) 9)*	
— power above 500 W and less than or equal to 5 kW	30 *2) 9)*	
— power above 5 kW	15 *2) 9)*	
b) Aeronautical Stations:		
— power 500 W or less	100 *10)*	100 *10)*
— power above 500 W	50 *10)*	50 *10)*
c) Base Stations:		20 *7)*
— power 500 W or less	100	
— power above 500 W	50	
3. *Mobile Stations:*		
a) Ship Stations:		
1) Class A1A emissions	50 *17) 18)*	10
2) Emissions other than Class A1A	50 *3) 11)*	50 Hz *4) 19)*
b) Survival Craft Stations	200	50
c) Aircraft Stations	100 *10)*	100 *10)*
d) Land Mobile Stations	200	40 *20)*
4. *Broadcasting Stations*	15	10 Hz *15) 21)*
5. *Space Stations*		20
6. *Earth Stations*		20
Band: **29.7 MHz to 100 MHz**		
1. *Fixed Stations:*		
— power 200 W or less	50	
— power above 200 W	30	
— power 50 W or less		30
— power above 50 W		20
2. *Land Stations:*		20
— power 15 W or less	50	
— power above 15 W	20	
3. *Mobile Stations:*		20 *22)*
— power 5 W or less	100	
— power above 5 W	50	
4. *Radiotermination Stations*	200	50
5. *Broadcasting Stations (other than television):*		2 000 Hz *23)*
— power 50 W or less	50	
— power above 50 W	20	

1	2	3
6. *Broadcasting Stations (television sound and vision):*		500 Hz *24) 25)*
— power 50 W or less	100	
— power above 50 W	1 000 Hz	
7. *Space Stations*		20
8. *Earth Stations*		20
Band: **100 MHz to 470 MHz**		
1. *Fixed Stations:*		
— power 50 W or less	50	20 *26)*
— power above 50 W	20	10
2. *Land Stations:*		
a) Coast Stations	20 *27)*	10
b) Aeronautical Stations	50	20 *28)*
c) Base Stations:		
— power 5 W or less	50	
— power above 5 W	20	
— in the band 100 - 235 MHz		15 *29)*
— in the band 235 - 401 MHz		7 *29)*
— in the band 401 - 470 MHz		5 *29)*
3. *Mobile Stations:*		
a) Ship Stations and Survival Craft Stations:		
— in the band 156 - 174 MHz	20 *27)*	10
— outside the band 156 - 174 MHz	50 *30) 31)*	50 *31)*
b) Aircraft Stations	50	30 *28)*
c) Land Mobile Stations:		
— power 5 W or less	50	
— power above 5 W	20	

1	2	3
— in the band 100 - 235 MHz		15 *29)*
— in the band 235 - 401 MHz		7 *29) 32)*
— in the band 401 - 470 MHz		5 *29) 32)*
4. *Radiodetermination Stations*	50 *30) 33)*	50 *33)*
5. *Broadcasting Stations (other than television)*	20	2 000 Hz *23)*
6. *Broadcasting Stations (television sound and vision):*		500 Hz *24) 25)*
— power 100 W or less	100	
— power above 100 W	1 000 Hz	
7. *Space Stations*		20
8. *Earth Stations*		20
Band: **470 MHz to 2 450 MHz**		
1. *Fixed Stations:*		
— power 100 W or less	300 *34)*	100
— power above 100 W	100 *35)*	50
2. *Land Stations*	300	20 *36)*
3. *Mobile Stations*	300	20 *36)*
4. *Radiodetermination Stations*	500 *33)*	500 *33)*
5. *Broadcasting Stations (other than television)*	100	100
6. *Broadcasting Stations (television sound and vision)* in the band 470 MHz to 960 MHz:		500 Hz *24) 25)*
— power 100 W or less	100	
— power above 100 W	1 000 Hz	
7. *Space Stations*		20
8. *Earth Stations*		20

1	2	3
Band: **2 450 MHz to 10 500 MHz**		
1. *Fixed Stations:*		
— power 100 W or less	300 *34)*	200
— power above 100 W	100 *35)*	50
2. *Land Stations*	300	100
3. *Mobile Stations*	300	100
4. *Radiodetermination Stations*	2 000 *33)*	1 250 *33)*
5. *Space Stations*		50
6. *Earth Stations*		50
Band: **10.5 GHz to 40 GHz**		
1. *Fixed Stations*	500	300
2. *Radiodetermination Stations*	7 500 *33)*	5 000 *33)*
3. *Broadcasting Stations*		100
4. *Space Stations*		100
5. *Earth Stations*		100

Notes in the Table of Transmitter Frequency Tolerances

SUP Existing notes *a)* to *r)*

1) For coast station transmitters used for direct-printing telegraphy or for data transmission, the tolerance is 15 Hz.

2) For coast station transmitters used for direct-printing telegraphy and for data transmission the tolerance is 15 Hz. This tolerance is applicable to equipment installed after 1 January 1976 and to all equipment after 1 January 1985. For equipment installed before 2 January 1976 the tolerance is 40 Hz.

3) For ship station transmitters used for direct-printing telegraphy or for data transmission, the tolerance is 40 Hz. This tolerance is applicable to equipment installed after 1 January 1976 and to all equipment after 1 January 1985. For equipment installed before 2 January 1976 the tolerance is 100 Hz (with a maximum deviation of 40 Hz for short periods of the order of 15 minutes).

4) For ship station transmitters used for direct-printing telegraphy or for data transmission, the tolerance is 40 Hz.

5) If the emergency transmitter is used as the reserve transmitter for the main transmitter, the tolerance for ship station transmitters applies.

6) In countries covered by the North American Regional Broadcasting Agreement (NARBA) the tolerance of 20 Hz may continue to be applied.

7) For single-sideband radiotelephone transmitters the tolerance is:

— in the bands 1 606.5 (1 605 Region 2) - 4 000 kHz and 4 - 29.7 MHz for peak envelope powers of 200 W or less and 500 W or less, respectively, 50 Hz;

— in the bands 1 606.5 (1 605 Region 2) - 4 000 kHz and 4 - 29.7 MHz for peak envelope powers above 200 W and 500 W, respectively, 20 Hz.

8) For radiotelegraphy transmitters with frequency shift keying the tolerance is 10 Hz.

9) For coast station single-sideband radiotelephone transmitters the tolerance is 20 Hz.

10) For single-sideband transmitters operating in the frequency bands 1 606.5 (1 605 Region 2) - 4 000 kHz and 4 - 29.7 MHz which are allocated exclusively to the aeronautical mobile (R) service, the tolerance on the carrier (reference) frequency is :

a) for all aeronautical stations, 10 Hz;

b) for all aircraft stations operating on international services, 20 Hz;

c) for aircraft stations operating exclusively on national services, 50 Hz*.

11) For ship station single-sideband radiotelephone transmitters the tolerance is:

a) in the band 1 606.5 (1 605 Region 2) - 4 000 kHz:

— 100 Hz for transmitters in use or to be installed before 2 January 1982;

— 50 Hz for transmitters installed after 1 January 1982, but before 1 January 1985;

b) in the band 4 000 - 23 000 kHz:

— 100 Hz for transmitters in use before 2 January 1978;

— 50 Hz for transmitters installed after 1 January 1978.

(See also Appendix **17**.)

12) For A1A emissions the tolerance is 50 parts in 10^6.

* *Note:* In order to achieve maximum intelligibility, it is suggested that administrations encourage the reduction of this tolerance to 20 Hz.

13) For transmitters used for single-sideband radiotelephony or for frequency shift keying radiotelegraphy the tolerance is 40 Hz.

14) For radiobeacon transmitters in the band 1 606.5 (1 605 Region 2) - 1 800 kHz the tolerance is 50 parts in 10^6.

15) For A3E transmitters with carrier power of 10 kW or less the tolerance is 20 parts in 10^6 and 15 parts in 10^6 in the bands 1 606.5 (1 605 Region 2) - 4 000 kHz and 4 - 29.7 MHz respectively.

16) For A1A emissions the tolerance is 10 parts in 10^6.

17) In the A1A Morse working frequency bands, a frequency tolerance of 200 parts in 10^6 may be applicable to existing transmitters, provided that the emissions are contained within the band in question.

18) In the A1A Morse calling frequency bands frequency tolerances of 40 parts in 10^6 in the bands between 4 MHz and 23 MHz and of 30 parts in 10^6 in the 25 MHz band are recommended as far as possible.

19) For ship station transmitters in the band 26 175 - 27 500 kHz, on board small craft, with a carrier power not exceeding 5 W operating in or near coastal waters and utilizing A3E or F3E and G3E emissions, the frequency tolerance is 40 parts in 10^6.

20) The tolerance is 50 Hz for single-sideband radiotelephone transmitters, except for those transmitters operating in the band 26 175 - 27 500 kHz, and not exceeding a peak envelope power of 15 W, for which the basic tolerance of 40 parts in 10^6 applies.

21) It is suggested that administrations avoid carrier frequency differences of a few hertz, which cause degradations similar to periodic fading. This could be avoided if the frequency tolerance were 0.1 Hz, a tolerance which would also be suitable for single-sideband emissions.

22) For non-vehicular mounted portable equipment with a transmitter mean power not exceeding 5 W, the tolerance is 40 parts in 10^6.

23) For transmitters of a mean power of 50 W or less operating at frequencies below 108 MHz a tolerance of 3 000 Hz applies.

24) In the case of television stations of:

— 50 W (vision peak envelope power) or less in the band 29.7 - 100 MHz;

— 100 W (vision peak envelope power) or less in the band 100 - 960 MHz

and which receive their input from other television stations or which serve small isolated communities, it may not, for operational reasons, be possible to maintain this tolerance. For such stations, the tolerance is 2 000 Hz.

For stations of 1 W (vision peak envelope power) or less this tolerance may be relaxed further to:

— 5 kHz in the band 100 - 470 MHz;

— 10 kHz in the band 470 - 960 MHz.

25) For transmitters for system M (NTSC) the tolerance is 1 000 Hz. However, for low power transmitters using this system note *24)* applies.

26) For multi-hop radio-relay systems employing direct frequency conversion the tolerance is 30 parts in 10^6.

27) For coast and ship station transmitters in the band 156 - 174 MHz put into service after 1 January 1973 a tolerance of 10 parts in 10^6 shall apply. This tolerance is applicable to all transmitters, including survival craft stations, after 1 January 1983.

28) For a channel spacing of 50 kHz the tolerance is 50 parts in 10^6.

29) These tolerances apply to channel spacings equal to or greater than 20 kHz.

30) This tolerance is not applicable to survival craft stations operating on the frequency 243 MHz.

31) For transmitters used by on-board communication stations a tolerance of 5 parts in 10^6 shall apply.

32) For non-vehicular mounted portable equipment with a transmitter mean power not exceeding 5 W the tolerance is 15 parts in 10^6.

33) Where specific frequencies are not assigned to radar stations, the bandwidth occupied by the emissions of such stations shall be maintained wholly within the band allocated to the service and the indicated tolerance does not apply.

34) For transmitters using time-division multiplex the tolerance of 300 may be increased to 500.

35) This tolerance applies only to such emissions for which the necessary bandwidth does not exceed 3 000 kHz; for larger bandwidth emissions a tolerance of 300 applies.

36) In applying this tolerance administrations should be guided by the latest relevant CCIR Recommendations.

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APPENDIX 8

Table of Maximum Permitted Spurious Emission Power Levels

(See Article 5)

1. The following table indicates the maximum permitted levels of spurious emissions, in terms of the mean power level of any spurious component supplied by a transmitter to the antenna transmission line.

2. Spurious emission from any part of the installation other than the antenna and its transmission line shall not have an effect greater than would occur if this antenna system were supplied with the maximum permitted power at that spurious emission frequency.

3. These levels shall not, however, apply to emergency position-indicating radiobeacon (EPIRB) stations, emergency locator transmitters, ships' emergency transmitters, lifeboat transmitters, survival craft stations or maritime transmitters when used in emergency situations.

4. For technical or operational reasons, specific services may demand more stringent levels than those specified in the table. The levels applied to these services shall be those agreed upon by the appropriate world administrative radio conference. More stringent levels may also be fixed by specific agreement between the administrations concerned.

5. For radiodetermination stations, until acceptable methods of measurement exist, the lowest practicable power of spurious emission should be achieved.

6. (transferred to Column A of the table)

Frequency Band Containing the Assignment (lower limit exclusive, upper limit inclusive)	For any spurious component the attenuation (mean power within the necessary bandwidth relative to the mean power of the spurious component concerned) shall be at least that specified in Columns A and B below and the absolute mean power levels given shall not be exceeded (Note 1)	
	A	B
	Levels applicable until 1 January 1994 to transmitters now in use and to those installed before 2 January 1985	Levels applicable to transmitters installed after 1 January 1985 and to all transmitters after 1 January 1994
9 kHz to 30 MHz	40 decibels 50 milliwatts (Notes 2, 3, 4)	40 decibels 50 milliwatts (Notes 4, 7, 8)
30 MHz to 235 MHz		
— mean power above 25 watts	60 decibels 1 milliwatt (Note 5)	60 decibels 1 milliwatt (Note 9)
— mean power 25 watts or less	40 decibels 25 microwatts (Notes 5, 6)	40 decibels 25 microwatts

(continued)

(continued)

235 MHz to 960 MHz	No level is specified for transmitters operating on assigned frequencies above 235 MHz. For these transmitters the power of spurious emissions shall be as low as practicable.	
— mean power above 25 watts		60 decibels 20 milliwatts (Notes 10, 11)
— mean power 25 watts or less		40 decibels 25 microwatts (Notes 10, 11)
960 MHz to 17.7 GHz		
— mean power above 10 watts		50 decibels 100 milliwatts (Notes 10, 11, 12, 13)
— mean power 10 watts or less		100 microwatts (Notes 10, 11, 12, 13)
Above 17.7 GHz		Due to the diverse nature of technologies employed by services operating above 17.7 GHz, further study by the CCIR is required prior to the specification of levels. To the extent possible, the values to be observed should be those shown in appropriate CCIR Recommendations. Until suitable Recommendations have been adopted, the lowest possible values achievable shall be employed (see Recommendation **66**).

Notes in the Table of Maximum Permitted Spurious Emission Power Levels

1) When checking compliance with the provisions of the table, it shall be verified that the bandwidth of the measuring equipment is sufficiently wide to accept all significant components of the spurious emission concerned.

2) For transmitters of mean power exceeding 50 kilowatts and which operate below 30 MHz over a frequency range approaching an octave or more, a reduction below 50 milliwatts is not mandatory, but a minimum attenuation of 60 decibels shall be provided and every effort should be made to comply with the level of 50 milliwatts.

3) For hand-portable equipment of mean power less than 5 watts which operates below 30 MHz, the attenuation shall be at least 30 decibels, but every effort should be made to attain 40 decibels attenuation.

4) For mobile transmitters which operate below 30 MHz any spurious component shall have an attenuation of at least 40 decibels without exceeding the value of 200 milliwatts, but every effort should be made to comply with the level of 50 milliwatts wherever practicable.

5) For frequency modulated maritime mobile radiotelephone equipment which operates above 30 MHz, the mean power of any spurious emission falling in any other international maritime mobile channel, due to products of modulation, shall not exceed a level of 10 microwatts and the mean power of any other spurious emission on any discrete frequency within the international maritime mobile band shall not exceed a level of 2.5 microwatts. Where, exceptionally, transmitters of mean power above 20 watts are employed, these levels may be increased in proportion to the mean power of the transmitter.

6) For transmitters having a mean power of less than 100 milliwatts, it is not mandatory to comply with an attenuation of 40 decibels provided that the mean power level does not exceed 10 microwatts.

7) For transmitters of a mean power exceeding 50 kilowatts which can operate on two or more frequencies covering a frequency range approaching an octave or more, whilst a reduction below 50 milliwatts is not mandatory, a minimum attenuation of 60 decibels shall be provided.

8) For hand-portable equipment of mean power less than 5 watts, the attenuation shall be 30 decibels, but every practicable effort should be made to attain 40 decibels attenuation.

9) Administrations may adopt a level of 10 milliwatts provided that harmful interference is not caused.

10) Where several transmitters feed a common antenna or closely spaced antennae on neighbouring frequencies, every practicable effort should be made to comply with the levels specified.

11) Since these levels may not provide adequate protection for receiving stations in the radio astronomy and space services, more stringent levels might be considered in each individual case in the light of the geographical position of the stations concerned.

12) These levels are not applicable to systems using digital modulation techniques, but may be used as a guide. Values for these systems may be provided by the relevant CCIR Recommendations, when available (see Recommendation **66**).

13) These levels are not applicable to stations in the space services, but the levels of their spurious emissions should be reduced to the lowest possible values compatible with the technical and economic constraints to which the equipment is subject. Values for these systems may be provided by the relevant CCIR Recommendation, when available (see Recommendation **66**).

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APPENDIX 9

Service Documents [1]

(See Articles 10, 12, 13, 17 and 26)

List I. International Frequency List

The IFRB shall establish and keep up to date the column headings of the International Frequency List to meet fully the statutory provisions of Appendices 1 and 3 and related decisions of future conferences. Furthermore, the IFRB shall introduce the necessary improvements in the presentation of the list, without in any way altering the basic data specified in the Radio Regulations.

SUP (The table of column headings of the International Frequency List on page AP9-1 of the RR)

List II. List of Fixed Stations Operating International Circuits

Names of countries arranged in alphabetical order of abbreviations.
Names of stations in alphabetical order.

Name of the transmitting station	Call sign (identification)	Assigned frequency (kHz or MHz)	Locality(ies) or area(s) with which communication is established	Remarks
1	2	3	4	5

ADD [1] The format of these documents may be modified as the situation requires.

SUP **List III A. List of Broadcasting Stations Operating in Bands Below 5 950 kHz**

SUP **List III B. List of Broadcasting Stations Operating in Bands Between 5 950 kHz and 26 100 kHz**

List IV. List of Coast Stations

Part I. Tables of general or specific interest

Part II. Alphabetical index of coast stations

Name of the station	See Part III page	Name of the station	See Part III page	Name of the station	See Part III page

Part III. Particulars of coast stations

Names of countries arranged in alphabetical order of abbreviations.
Names of stations in alphabetical order.

Name of the station[1]	Call sign[2,3]	Emission				Service		Charges[9,10]	Geographical coordinates of the transmitting antenna (longitude and latitude in degrees, minutes and seconds)	Remarks[11,12]
		Frequencies kHz or MHz		Class	Power (kW)[6]	Nature[7,8]	Hours of service (UTC)			
1	2	3a[4]	3b[5]	4	5	6	7	8	9	10

[1] Indicate for each country the coast station or coast stations to which radiotelegrams intended for high-frequency transmission to ship stations should be sent.

[2] Indicate if maritime mobile service identity is provided.

[3] The call sign of the station shall be followed, where appropriate, by the maritime mobile service identity or the identification number or the selective calling signal, in brackets, that the station uses.

[4] Transmitting frequencies. The normal working frequency is printed in heavy type.

[5] Watch and/or receiving frequencies or channels.

[6] In the case of directive antennae, indicate under the power, the azimuth of the direction or directions of maximum gain, in degrees, beginning from True North clockwise.

[7] Indicate if selective calling is provided and, if so, the system employed.

[8] Indicate if narrow-band direct-printing telegraphy is provided.

[9] The land-line telegraph charge of the country to which the coast station is subject and the charge applied by this country to telegrams destined for adjacent countries are given in Part IV of this List.

[10] If the accounts for charges are settled by a private enterprise, the name and address of such private enterprise should, if necessary, be stated.

[11] Indicate if radar service is provided.

[12] The List should contain information concerning the times of transmission of traffic lists, and the hours of watchkeeping of the coast station on the various frequencies,etc. Coast or coast earth stations open to public correspondence and providing service for transmission and reception of radiotelegrams by radiotelephony shall be indicated in the List of Coast Stations.

Part IV. Inland telegraph rates, limitrophic rates, etc.

List V. List of Ship Stations

Particulars of ship stations

The information concerning these stations shall be published as shown below:

Name of ship	Call sign	Country	Auxiliary installations	Class of ship	Nature of service	Hours of service	Telegraph transmission frequency bands	Telephone transmission frequency bands	Ship charge per word for radiotelegrams	Ship charge for a radiotelephone call of three minutes	Remarks
1	2	3	4	5	6	7	8	9	10	11	12

Column 1 The stations shall be arranged in alphabetical order of the names of the ships, irrespective of nationality. In the case of duplication of names, the name of the ship shall be followed by the call sign (separated from the name by a fraction bar).

Column 2 Call sign. This column also contains the maritime mobile service identity or the selective call number or signal, where appropriate.

Column 3 Country having jurisdiction over the station (indicated by the appropriate symbol).

Column 4 Auxiliary installations, including information concerning:

a) number of lifeboats fitted with radio apparatus, and

b) types and number of emergency position-indicating radiobeacons (optional), the operating frequency being indicated by one of the following letters:

A = 2 182 kHz
B = 121.5 MHz
C = 243 MHz

A figure following the letter indicates the number of radiobeacons. The letter "X" signifies that the number of radiobeacons has not been communicated.

Columns 5 to 7 In the form of service symbols (see Appendix **10**). In addition, the list of the symbols used in Column 5 to designate the class of ship is given in the Preface to the List.

Columns 8 and 9 Indication of the frequency bands and classes of emission by means of the following symbols:

Radiotelegraphy	*Radiotelephony*
W = 110 - 150 kHz	T = 1 605 - 4 000 kHz
X = 405 - 535 kHz	U = 4 000 - 27 500 kHz
Y = 1 605 - 3 800 kHz	V = 156 - 174 MHz
Z = 4 000 - 27 500 kHz	

These symbols should, if necessary, be followed by references to brief notes and indications of the frequencies for which the transmitters are adjusted, which shall appear at the end of the List.

Column 10 Basic ship charge per word for radiotelegrams [1].

Column 11 Minimum charge for a radiotelephone call of three minutes [1]. The information in Columns 10 and 11 shall be followed by a note reference to indicate the administration or private enterprise to which the accounts should be sent. In case of a change of address of the operating authority, a second note reference after the charge should give the new address and the date from which the change will take effect.

Column 12 When two or more ship stations of the same nationality bear the same name, or if the accounts for charges should be sent direct to the owner of the ship, the name of the shipping line or the firm to which the ship belongs shall be given in this column.

In addition, if there is no room in the appropriate column, further information relating to Columns 1 to 11 may be given in Column 12 by means of a note reference. This column may comprise several lines.

Indicate if maritime mobile service identity is provided.

Indicate if selective calling is provided and, if so, the system employed.

Indicate if narrow-band direct-printing telegraphy is provided.

[1] These charges are fixed or approved by each administration.

List VI. List of Radiodetermination and Special Service Stations

(For navigational purposes, this List should be used with caution. See Article 35 of the Radio Regulations.)

Part A. Alphabetical index of stations.

Name of the station	Call sign	Nature of the service	See part B, page
1	2	3	4

Part B. Particulars of stations.

1. *Direction-finding stations*

Names of the countries arranged in alphabetical order of abbreviations.
Names of the stations in alphabetical order.

Name of the station	Geographical co-ordinates (longitude and latitude in degrees, minutes and seconds) of: *a)* the receiving antenna of the direction-finding station *b)* the transmitting antenna of the direction-finding station *c)* the transmitting antenna of the station mentioned in Column 8	Call sign	Frequencies (kHz or MHz) and classes of emission: For calling the direction-finding station	For transmitting to the direction-finding station the signals necessary for taking bearings	For the transmission of the bearings by the direction-finding station	Power (kW)	Name and call sign of the station with which communication should be established if the direction-finding station is not equipped with a transmitter	Charges	Remarks *a)* sectors in which bearings are normally accurate and references to national or international publications other than the present list; *b)* hours of service (UTC), etc.
1	2	3	4	5	6	7	8	9	10

2. *Radiobeacon stations*

Names of the countries arranged in alphabetical order of abbreviations.
Names of the stations in alphabetical order.

Name of the station	Geographical coordinates of the transmitting antenna of the radiobeacon (longitude and latitude in degrees, minutes and seconds)	Characteristic signal of the radiobeacon	Call sign of the radiobeacon (if any)	Emission: Frequency (kHz or MHz)	Emission: Class	Emission: Frequency of modulation (if any) (Hz)	Normal range in nautical miles	Name and call sign of the station to which requests for the emission of beacon signals may be addressed	Frequency to be used to call the station indicated in Column 9 (kHz or MHz)	Remarks *a)* sectors normally reliable and references to national or international publications other than this list; *b)* hours of service (UTC); *c)* description of the emission; *d)* charges, etc.
1	2	3	4	5	6	7	8	9	10	11

3. *Ocean-station vessels*

Ocean Regions in alphabetical order.
Names of stations in alphabetical order.

Name of the station	Geographical position assigned to the station	Call sign of the station vessel	Frequency for calling the station (kHz or MHz)	Radiobeacon					Direction-finding			Remarks
				Characteristic signal	Transmitting frequency (kHz or MHz)	Class of emission	Frequency of modulation (if any) (Hz)	Normal range in nautical miles	Frequency for transmitting to the station the signals necessary for taking bearings (kHz or MHz)	Frequency for the transmission by the station of the bearings (kHz or MHz)	Power of the transmitter (kW)	*a)* references to national or international publications other than this list; *b)* hours of service (UTC); *c)* description of the radiobeacon emission.
1	2	3	4	5	6	7	8	9	10	11	12	13

4. *Direction-finder calibration stations*

Names of the countries arranged in alphabetical order of abbreviations.
Names of the stations in alphabetical order.

Name of the station	Geographical coordinates of the transmitting antenna of the radiobeacon (longitude and latitude in degrees, minutes and seconds)	Characteristic signal	Call sign of the radiobeacon (if any)	Emission			Normal range in nautical miles	Name and call sign of the station to which requests may be addressed	Frequency to be used to call the station mentioned in Column 9 (kHz or MHz)	Remarks
				Frequency (kHz or MHz)	Class	Frequency of modulation (if any) (Hz)				*a)* sectors normally reliable and references to national or international publications other than this list; *b)* hours of service (UTC); *c)* description of the emission; *d)* charges, etc.
1	2	3	4	5	6	7	8	9	10	11

5. *Stations transmitting standard frequency and time signals*

Names of the countries arranged in alphabetical order of abbreviations.
Names of the stations in alphabetical order.

Name of the station	Call sign	Frequencies (kHz or MHz)	Class of emission	Times of emission (UTC)	Method [1]
1	2	3	4	5	6

[1] General instructions concerning time signals.

SUP

6. *Stations transmitting standard frequencies*

7. *Stations transmitting regular meteorological bulletins*

Names of the countries arranged in alphabetical order of abbreviations.
Names of the stations in alphabetical order.

Name of the station	Call sign	Frequencies (kHz or MHz)	Class of emission	Times of emission (UTC)	Remarks [1]
1	2	3	4	5	6

[1] General instructions concerning meteorological bulletins including code used.

8. *Stations transmitting notices to navigators*

Names of the countries arranged in alphabetical order of abbreviations.
Names of the stations in alphabetical order.

Name of the station	Call sign	Frequencies (kHz or MHz)	Class of emission	Times of emission (UTC)	Remarks
1	2	3	4	5	6

9. *Stations transmitting medical advice*

Names of the countries arranged in alphabetical order of abbreviations.
Names of the stations in alphabetical order.

Name of the station	Call sign	Frequencies (kHz or MHz)	Class of emission	Hours of service (UTC)	Remarks
1	2	3	4	5	6

10. *Stations transmitting epidemiological bulletins*

Names of the countries arranged in alphabetical order of abbreviations.
Names of the stations in alphabetical order.

Name of the station	Call sign	Frequencies (kHz or MHz)	Class of emission	Times of emission (UTC)	Remarks
1	2	3	4	5	6

11. *Stations transmitting Ursigrams*

Names of the countries arranged in alphabetical order of abbreviations.
Names of the stations in alphabetical order.

Name of the station	Call sign	Frequencies (kHz or MHz)	Class of emission	Times of emission (UTC)	Remarks and nature of information
1	2	3	4	5	6

12. *Fixed earth stations in the maritime radionavigation-satellite service*

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

Name by which station is known	Geographical coordinates (in degrees and minutes) of the transmitter site	Transmission of radio-navigation information			Reception of radio-navigation information		Identity of associated space station(s)	Operating administration or company	Remarks
		Frequency (MHz or GHz)	Class of emission, necessary bandwidth and description of transmission	Power (kW)	Frequency (MHz or GHz)	Class of emission, necessary bandwidth and description of transmission			Special methods of modulation, charges, etc.
1	2	3a	3b	3c	4a	4b	5	6	7

13. *Space stations in the maritime radionavigation-satellite service*

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 of radionavigation information to ships			Reception of radio-navigation information from ships		Service area or areas on the Earth	Name of locality and country in which the associated fixed earth station(s) is (are) located	Operating administration or company	Remarks
	Frequency (MHz or GHz)	Class of emission, necessary bandwidth and description of transmission	Power (W)	Frequency (MHz or GHz)	Class of emission, necessary bandwidth and description of transmission				Orbital information, special channelling arrangements, special modulation methods, charges, etc.
1	2a	2b	2c	3a	3b	4	5	6	7

Note : The Secretary-General, if he considers it necessary, may introduce in this list additional sections to cover new systems that may be developed and used.

List VIII. List of International Monitoring Stations

(See Article 20)

Note: Throughout this List those stations nominated by administrations, which may participate in the international monitoring system, are marked (IMS).

Part I. Centralizing offices

Names of countries arranged in alphabetical order of abbreviations.

– National centralizing office (postal and telegraphic address, telephone number, any other information)

Part II. Monitoring of emissions from stations of terrestrial radiocommunication services

A. Particulars of monitoring stations carrying out frequency measurements

Names of countries arranged in alphabetical order of abbreviations.

Names of stations in alphabetical order.

– Name and geographical coordinates of the station (longitude and latitude in degrees and minutes)

– Hours of service (UTC)

– Ranges of measurable frequencies (kHz, MHz or GHz)

– Accuracy of measurements [1]

– Remarks

[1] Indicate the maximum attainable accuracy for each frequency range.

B. Particulars of monitoring stations carrying out field strength or power flux-density measurements

Names of countries arranged in alphabetical order of abbreviations.

Names of stations in alphabetical order.

– Name and geographical coordinates of the station (longitude and latitude in degrees and minutes)

– Hours of service (UTC)

– Ranges of frequencies (kHz, MHz or GHz)

– Maximum and minimum values of measurable field strengths or power flux-densities

– Accuracy of measurements in dB [1]

– Remarks

C. Particulars of monitoring stations carrying out direction-finding measurements

Names of countries arranged in alphabetical order of abbreviations.

Names of stations in alphabetical order.

– Name and geographical coordinates of the station (longitude and latitude in degrees, minutes and seconds)

– Hours of service (UTC)

– Ranges of frequencies (kHz, MHz or GHz)

– Type of antennae in use

– Remarks

[1] Indicate the maximum attainable accuracy for each frequency range.

D. Particulars of monitoring stations carrying out bandwidth measurements

Names of countries arranged in alphabetical order of abbreviations.

Names of stations in alphabetical order.

- Name and geographical coordinates of the station (longitude and latitude in degrees and minutes)
- Hours of service (UTC)
- Ranges of frequencies (kHz, MHz or GHz)
- Method(s) of measurement [1]
- Resolution at −60 dB (if appropriate)
- Remarks

E. Particulars of monitoring stations carrying out automatic spectrum occupancy surveys

Names of countries arranged in alphabetical order of abbreviation.

Names of stations in alphabetical order.

- Name and geographical coordinates of the station (longitude and latitude in degrees and minutes)
- Hours of service (UTC)
- Ranges of frequencies (kHz, MHz or GHz)
- Method(s) employed
- Remarks

[1] See the relevant CCIR Recommendations and Reports.

Part III. Monitoring of emissions from stations of space radiocommunication services

Particulars of monitoring stations carrying out measurements related to stations in the space radiocommunication services.

Names of countries arranged in alphabetical order of symbols.

Names of stations in alphabetical order.

- Name and geographical coordinates of the station (longitude and latitude in degrees, minutes and seconds)
- Hours of service (UTC)
- Information on antennae in use (e.g. diameter or gain as a function of frequency; slew rate, if applicable; etc.)
- Range of azimuth and elevation angles
- Maximum attainable accuracy in determining orbital positions of space stations
- Information on system polarization
- System noise temperature
- Ranges of frequencies with the maximum attainable accuracy of frequency measurement for each frequency range
- Ranges of frequencies in which field strength or power flux-density measurements can be performed
- Minimum value of measurable field strength or power flux-density with indication of attainable accuracy of measurement

- Information available for bandwidth measurements [1]
- Information available for spectrum occupancy measurements
- Information available for orbit occupancy measurements
- Remarks

List VIII A. List of Space Radiocommunication Stations and Radio Astronomy Stations

The Board shall prepare and keep up to date the contents of this List grouped in such a way as to permit administrations to more easily identify all stations pertaining to a given satellite network. Furthermore, the Board shall introduce the necessary improvements in the presentation of the List without in any way altering the basic data specified in the Radio Regulations.

SUP

Radiocommunication Statistics

[1] See the relevant CCIR Recommendations and Reports.

MOD **AP10** APPENDIX 10

Service Document Symbols

(See Article **26** and Appendix **9**)

■ Station classified as situated in a region of heavy traffic (see Article **60**) (“TI”)[1]

○ By day (“HJ”)[1]

● By night (“HN”)[1]

[ ] A ship which carries lifeboats fitted with radio apparatus; a number inside the square brackets shows the number of such lifeboats (“S”)[1]

Δ (SUP)

AL Aeronautical radionavigation land station

AM Aeronautical radionavigation mobile station

AT Amateur station

AX Aeronautical fixed station

BC Broadcasting station, sound

BT Broadcasting station, television

C Continuous operation during hours shown

CA Cargo ship

CO Station open to official correspondence exclusively

CP Station open to public correspondence

CR Station open to limited public correspondence

CV Station open exclusively to correspondence of a private agency

D30° Directive antenna having maximum radiation in the direction of 30° (expressed in degrees from True North, from 0 to 360 clockwise)

DR Directive antenna provided with a reflector

EA Space station in the amateur-satellite service

EB Space station in the broadcasting-satellite service (sound broadcasting)

EC Space station in the fixed-satellite service

ED Space telecommand space station

EG Space station in the maritime mobile-satellite service

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

EV Space station in the broadcasting-satellite service (television)

EX Experimental station

FA Aeronautical station

FB Base station

FC Coast station

FE (SUP)

FL Land station

FP Port station

FR Receiving station only, connected with the general network of telecommunication channels

FS Land station established solely for the safety of life

FX Fixed station

[1] The symbol shown in parentheses may be used in notifications and service documents.

GMT	Greenwich Mean Time
GS	Station on board a warship or a military or naval aircraft
H	Scheduled operation
H8	8-hour service provided by a ship station of the third category
H16	16-hour service provided by a ship station of the second category
H24	Continuous throughout the twenty-four hours
HJ	Day service
HN	Night service
HT	Transition period service
HX	Intermittent throughout the twenty-four hours, or station having no specific working hours
I	Intermittent operation during the time indicated
LR	Radiolocation land station
MA	Aircraft station
ME	Space station
ML	Land mobile station
MO	Mobile station
MR	Radiolocation mobile station
MS	Ship station
ND	Non-directional antenna
NL	Maritime radionavigation land station
OD	Oceanographic data station
OE	Oceanographic data interrogating station
OT	Station open exclusively to operational traffic of the service concerned
PA	Passenger ship
RA	Radio astronomy station
RC	Non-directional radiobeacon
RD	Directional radiobeacon
RG	Radio direction-finding station
RM	Maritime radionavigation mobile station
RT	Revolving radiobeacon
SM	Meteorological aids station
SS	Standard frequency and time signal station
TA	Space operation earth station in the amateur-satellite service
TC	Earth station in the fixed-satellite service
TD	Space telecommand earth station
TE	Transmitting earth station
TF	Fixed earth station in the radiodetermination-satellite service
TG	Mobile earth station in the maritime mobile-satellite service
TH	Earth station in the space research service
TI	Earth station in the maritime mobile-satellite service at a specified fixed point
TK	Space tracking earth station
TL	Mobile earth station in the radiodetermination-satellite service
TM	Earth station in the meteorological-satellite service
TN	Earth station in the radionavigation-satellite service
TP	Receiving earth station
TR	Space telemetering earth station
TS	Television, sound channel
TT	Earth station in the space operation service
TV	Television, vision channel
UTC	Coordinated Universal Time

(The symbols may be modified as the situation requires.)

MOD **AP11** APPENDIX 11

Documents with Which Ship and Aircraft Stations Shall Be Provided

(See Articles **24**, **26**, **44**, **46**, **49**, **55**, **57**, **59** and Appendix **9**)

Section I. Ship Stations for Which a Radiotelegraph Installation Is Required by International Agreement

These stations shall be provided with:

1. the licence prescribed by Article **24**;
2. certificates of the operator or operators;
3. the log (diary of the radio service) in which the following are recorded as they occur, together with the time of their occurrence;
   a) all communications relating to distress traffic in full;
   b) urgency and safety communications;
   c) observance of watch on the international distress frequency during silence periods;
   d) communications exchanged between the ship station and land or mobile stations;
   e) service incidents of all kinds;
   f) if the ship's rules permit, the position of the ship at least once a day;
   g) the opening and closing of each period of service;
4. the Alphabetical List of Call Signs of Stations used in the Maritime Mobile Service;
5. the List of Coast Stations;

6. the List of Ship Stations (the carriage of the supplement is optional);
7. the List of Radiodetermination and Special Service Stations;
8. the Manual for Use by the Maritime Mobile and Maritime Mobile-Satellite Services;
9. telegraph tariffs of the countries for which the station most frequently accepts radiotelegrams.

SUP 10.

Section II. Other Ship Radiotelegraph Stations

These stations shall be provided with the documents mentioned in items 1 to 6, 8 and 9 of Section I.

Section III. Ship Stations for Which a Radiotelephone Installation Is Required by International Agreement

These stations shall be provided with:

1. the licence prescribed by Article **24**;
2. certificates of the operator or operators;
3. the log (diary of the radio service) in which the following are recorded as they occur, together with the time of their occurrence:
   a) a summary of all communications relating to distress, urgency and safety traffic;
   b) a summary of communications exchanged between the ship station and land or mobile stations;

c) a reference to important service incidents;

d) if the ship's rules permit, the position of the ship at least once a day;

4. a list of coast stations with which communications are likely to be conducted, showing watchkeeping hours, frequencies and charges;

5. the provisions of the Radio Regulations and of the CCITT Resolutions and Recommendations applicable to the maritime mobile radiotelephone service, or the Manual for Use by the Maritime Mobile and Maritime Mobile-Satellite Services.

Section IV. Other Ship Radiotelephone Stations

These stations shall be provided with:

1. the documents mentioned in items 1 and 2 of Section III;

2. the documents mentioned in items 3, 4 and 5 of Section III, in accordance with the requirements of the administrations concerned.

Section V. Ship Stations Equipped with Multiple Installations

These stations shall be provided with:

1. for each installation, if necessary, the documents mentioned in items 1 to 3 of Section I, or in items 1, 2 and 3 of Section III;

2. for only one installation, the other documents mentioned in Sections I or III, as appropriate.

Section VI. Aircraft Stations

These stations shall be provided with:

1. the documents mentioned in items 1 and 2 of Section I;

2. the log (diary of the radio service) as defined in item 3 of Section I, unless administrations have adopted other arrangements for recording all information which the log should contain;

3. the documents containing official information relating to stations which the aircraft station may use for the execution of its service.

NOC **AP12** APPENDIX 12

Hours of Service for Ship Stations of the Second and Third Categories

(See Articles **26** and **58**)

Section I. Table

Hours of Service Ship's Time or Zone Time (See Nos. **4058** and **4059**)	
16 hours (H16)	8 hours (H8)
from to 0000 - 0400 h 0800 - 1200 h 1600 - 1800 h 2000 - 2200 h plus 4 hours (see No. **4058**)	from to 0800 - 1200 h 1800 - 2200 h [a] plus 2 hours (see No. **4059**)

[a] Two continuous hours of service between 1800 and 2200 hours, ship's time or zone time, at times decided by the administration, master or responsible person.

Section II. Diagram and Map

Note a: This diagram indicates the *fixed* and *elected* hours of service maintained by ships of the second and third categories in terms of zone time. (The hours of service shown exclude those which are determined by the administration, master, or responsible person.)

The *fixed* hours of watch are shown thus:

I) for ships of the second category:

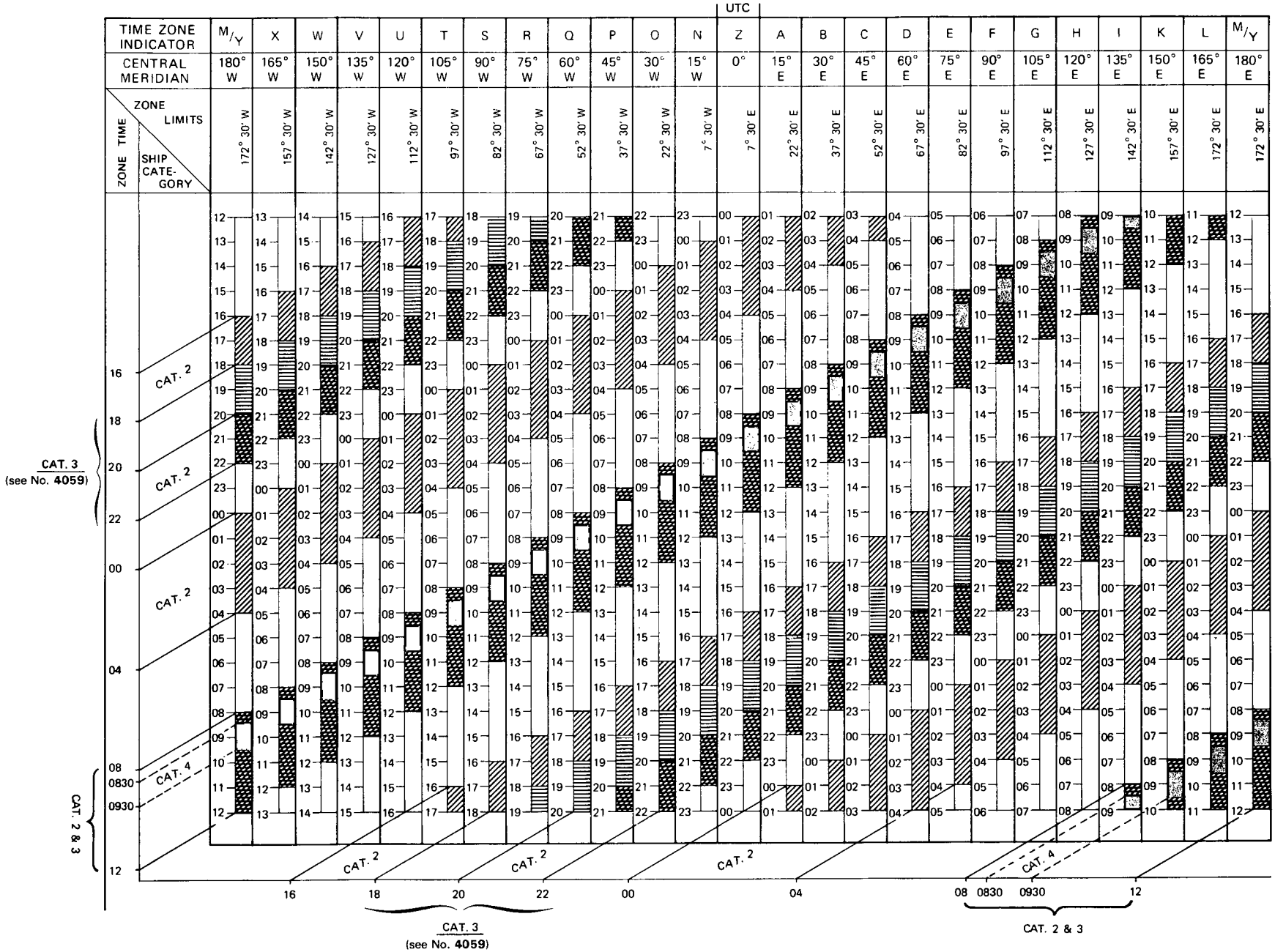
II) for ships of the second and third categories:

III) for ships of the third category, period over which two continuous hours of service may be elected:

Note b: Also shown (in black) is the specific service period 0830 – 0930 that ships of the fourth category are encouraged to provide (see No. **4062**).

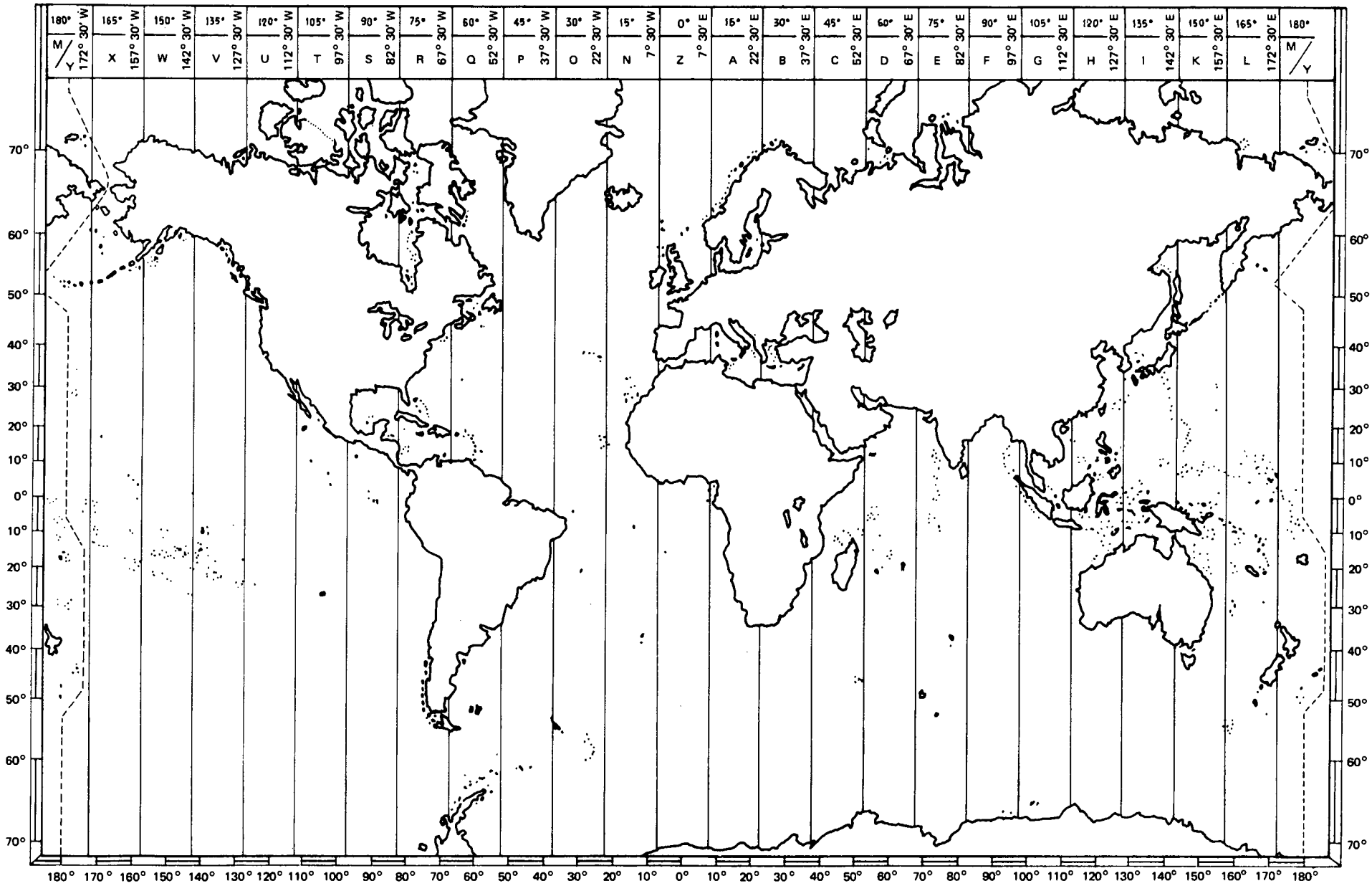
GRAPH

TIME ZONES AND HOURS OF SERVICE OF SHIP STATIONS



MAP

TIME ZONES



NOC **AP13** APPENDIX 13

Miscellaneous Abbreviations and Signals to Be Used in Radiotelegraphy Communications Except in the Maritime Mobile Service

(See Article **52**)

SECTION I. Q CODE

Introduction

1. The series of groups QRA to QUZ, listed in this Appendix, are for use by all services.

2. The QAA to QNZ series are reserved for the aeronautical service and the QOA to QQZ series are reserved for the maritime services. These series are not listed in these Regulations*.

3. Certain Q code abbreviations may be given an affirmative or negative sense by sending YES or NO respectively, immediately following the abbreviation.

4. The meanings assigned to Q code abbreviations may be amplified or completed by the addition of appropriate other groups, call signs, place names, figures, numbers, etc. It is optional to fill in the blanks shown in parentheses. Any data which is filled in where blanks appear shall be sent in the same order as shown in the text of the following tables.

5. Q code abbreviations are given the form of a question when followed by a question mark. When an abbreviation is used as a question and is followed by additional or complementary information, the question mark should follow this information.

6. Q code abbreviations with numbered alternative significations shall be followed by the appropriate figure to indicate the exact meaning intended. This figure shall be sent immediately following the abbreviation.

7. All times shall be given in Coordinated Universal Time (UTC) unless otherwise indicated in the question or reply.

* *Note by the General Secretariat:* Series QOA to QQZ are now shown in Appendix **14**.

Abbreviations Available for All Services

A. List of Abbreviations in Alphabetical Order

Abbreviation	Question	Answer or Advice
QRA	What is the name of your station?	The name of my station is . . .
QRB	How far approximately are you from my station?	The approximate distance between our stations is. . . . nautical miles (*or* kilometres)
QRC	By what private enterprise (*or* State Administration) are the accounts for charges for your station settled?	The accounts for charges of my station are settled by the private enterprise . . . (*or* State Administration).
QRD	Where are you bound for and where are you from?	I am bound for . . . from . . .
QRE	What is your estimated time of arrival at . . . (*or* over . . .) *(place)*?	My estimated time of arrival at . . . (*or* over . . .) *(place)* is . . . hours.
QRF	Are you returning to . . . *(place)*?	I am returning to . . . *(place)*. *or* Return to . . . *(place)*.
QRG	Will you tell me my exact frequency (*or* that of . . .)?	Your exact frequency (*or* that of . . .) is . . . kHz (*or* MHz).
QRH	Does my frequency vary?	Your frequency varies.
QRI	How is the tone of my transmission?	The tone of your transmission is . . . 1. good 2. variable 3. bad.
QRJ	How many radiotelephone calls have you to book?	I have . . . radiotelephone calls to book.

Abbreviation	Question	Answer or Advice
QRK	What is the intelligibility of my signals (*or* those of . . .)?	The intelligibility of your signals (*or* those of . . .) is . . . 1. bad 2. poor 3. fair 4. good 5. excellent.
QRL	Are you busy?	I am busy (*or* I am busy with . . .). Please do not interfere.
QRM	Are you being interfered with?	I am being interfered with (1. nil 2. slightly 3. moderately 4. severely 5. extremely).
QRN	Are you troubled by static?	I am troubled by static (1. nil 2. slightly 3. moderately 4. severely 5. extremely).
QRO	Shall I increase transmitter power?	Increase transmitter power.
QRP	Shall I decrease transmitter power?	Decrease transmitter power.
QRQ	Shall I send faster?	Send faster (. . . words per minute).
QRR	Are you ready for automatic operation?	I am ready for automatic operation. Send at . . . words per minute.
QRS	Shall I send more slowly?	Send more slowly (. . . words per minute).
QRT	Shall I stop sending?	Stop sending.
QRU	Have you anything for me?	I have nothing for you.
QRV	Are you ready?	I am ready.
QRW	Shall I inform . . . that you are calling him on . . . kHz (*or* MHz)?	Please inform . . . that I am calling him on . . . kHz (*or* MHz).
QRX	When will you call me again?	I will call you again at . . . hours (on . . . kHz (*or* MHz)).
QRY	What is my turn? *(Relates to communication)*	Your turn is Number . . . *(or according to any other indication).* *(Relates to communication).*
QRZ	Who is calling me?	You are being called by . . . (on . . kHz (*or* MHz)).
QSA	What is the strength of my signals (*or* those of . . .)?	The strength of your signals (*or* those of . . .) is . . . 1. scarcely perceptible 2. weak 3. fairly good 4. good 5. very good.
QSB	Are my signals fading?	Your signals are fading.
QSC	Are you a cargo vessel?	I am a cargo vessel.
QSD	Is my keying defective?	Your keying is defective.
QSE	What is the estimated drift of the survival craft?	The estimated drift of the survival craft is . . . *(figures and units)*

Abbreviation	Question	Answer or Advice
QSF	Have you effected rescue?	I have effected rescue and am proceeding to ... base (with ... persons injured requiring ambulance).
QSG	Shall I send ... telegrams at a time?	Send ... telegrams at a time.
QSH	Are you able to home on your D/F equipment?	I am able to home on my D/F equipment (on station ...).
QSI		I have been unable to break in on your transmission. *or* Will you inform ... *(call sign)* that I have been unable to break in on his transmission (on ... kHz (*or* MHz)).
QSJ	What is the charge to be collected to ... including your internal charge?	The charge to be collected to ... including my internal charge is ... francs.
QSK	Can you hear me between your signals and if so can I break in on your transmission?	I can hear you between my signals; break in on my transmission.
QSL	Can you acknowledge receipt?	I am acknowledging receipt.
QSM	Shall I repeat the last telegram which I sent you (*or* some previous telegram)?	Repeat the last telegram which you sent me (*or* telegram(s) number(s) ...).
QSN	Did you hear me (*or* ... *(call sign)*) on ... kHz (*or* MHz)?	I did hear you (*or* ... *(call sign)*) on ... kHz (*or* MHz).
QSO	Can you communicate with ... direct (*or* by relay)?	I can communicate with ... direct (*or* by relay through ...).

Abbreviation	Question	Answer or Advice
QSP	Will you relay to ... free of charge?	I will relay to ... free of charge.
QSQ	Have you a doctor on board (*or* is... *(name of person)* on board)?	I have a doctor on board (*or* ... *(name of person)* is on board).
QSR	Shall I repeat the call on the calling frequency?	Repeat your call on the calling frequency; did not hear you (*or* have interference).
QSS	What working frequency will you use?	I will use the working frequency ... kHz *(normally only the last three figures of the frequency need be given)*.
QSU	Shall I send or reply on this frequency (*or* on ... kHz (*or* MHz)) (with emissions of class ...)?	Send or reply on this frequency (*or* on ... kHz (*or* MHz)) (with emissions of class ...).
QSV	Shall I send a series of V's on this frequency (*or* ... kHz (*or* MHz)?	Send a series of V's on this frequency (*or* ... kHz (*or* MHz).
QSW	Will you send on this frequency (*or* on ... kHz (*or* MHz)) (with emissions of class ...)?	I am going to send on this frequency (*or* on ... kHz (*or* MHz)) (with emissions of class ...).
QSX	Will you listen to ... *(call sign (s))* on ... kHz (*or* MHz)?	I am listening to ... *(call sign (s))* on ... kHz (*or* MHz)).
QSY	Shall I change to transmission on another frequency?	Change to transmission on another frequency (*or* on ... kHz (*or* MHz)).
QSZ	Shall I send each word or group more than once?	Send each word or group twice (*or* ... times).
QTA	Shall I cancel telegram number ...?	Cancel telegram number ...
QTB	Do you agree with my counting of words?	I do not agree with your counting of words; I will repeat the first letter or digit of each word or group.

Abbreviation	Question	Answer or Advice
QTC	How many telegrams have you to send?	I have ... telegrams for you (*or* for ...).
QTD	What has the rescue vessel or rescue aircraft recovered?	... *(identification)* has recovered... 1. ... *(number)* survivors 2. wreckage 3. ... *(number)* bodies.
QTE	What is my TRUE bearing from you? *or* What is my TRUE bearing from ... *(call sign)*? *or* What is the TRUE bearing of ... *(call sign)* from .. *(call sign)*?	Your TRUE bearing from me is ... degrees at ... hours. *or* Your TRUE bearing from ... *(call sign)* was ... degrees at ... hours. *or* The TRUE bearing of ... *(call sign)* from ... *(call sign)* was ... degrees at ... hours.
QTF	Will you give me the position of my station according to the bearings taken by the D/F stations which you control?	The position of your station according to the bearings taken by the D/F stations which I control was ... latitude ... longitude *(or other indication of position)*, class ... at ... hours.
QTG	Will you send two dashes of ten seconds each followed by your call sign (repeated ... times) (on ... kHz (*or* MHz))? *or* Will you request ... to send two dashes of ten seconds followed by his call sign (repeated ... times) on ... kHz (*or* MHz)?	I am going to send two dashes of ten seconds each followed by my call sign (repeated ... times) (on ... kHz (*or* MHz)). *or* I have requested ... to send two dashes of ten seconds followed by his call sign (repeated ... times) on ... kHz (*or* MHz).

Abbreviation	Question	Answer or Advice
QTH	What is your position in latitude and longitude *(or according to any other indication)*?	My position is ... latitude ... longitude *(or according to any other indication)*.
QTI	What is your TRUE track?	My TRUE track is ... degrees.
QTJ	What is your speed?	My speed is ... knots (*or* ... kilometres per hour *or* ... statute miles per hour).
	(Requests the speed of a ship or aircraft through the water or air respectively.)	*(Indicates the speed of a ship or aircraft through the water or air respectively.)*
QTK	What is the speed of your aircraft in relation to the surface of the earth?	The speed of my aircraft in relation to the surface of the earth is ... knots (*or* ... kilometres per hour *or* ... statute miles per hour).
QTL	What is your TRUE heading?	My TRUE heading is ... degrees.
QTM	What is your MAGNETIC heading?	My MAGNETIC heading is ... degrees.
QTN	At what time did you depart from ... *(place)*?	I departed from ... *(place)* at ... hours.
QTO	Have you left dock (*or* port)? *or* Are you airborne?	I have left dock (*or* port). *or* I am airborne.
QTP	Are you going to enter dock (*or* port)? *or* Are you going to alight (*or* land)?	I am going to enter dock (*or* port). *or* I am going to alight (*or* land).
QTQ	Can you communicate with my station by means of the International Code of Signals?	I am going to communicate with your station by means of the International Code of Signals.
QTR	What is the correct time?	The correct time is ... hours.

Abbreviation	Question	Answer or Advice
QTS	Will you send your call sign for tuning purposes or so that your frequency can be measured now (*or* at ... hours) on ... kHz (*or* MHz)?	I will send my call sign for tuning purposes or so that my frequency may be measured now (*or* at ... hours) on ... kHz (*or* MHz).
QTT		The identification signal which follows is superimposed on another transmission.
QTU	What are the hours during which your station is open?	My station is open from ... to ... hours.
QTV	Shall I stand guard for you on the frequency of ... kHz (*or* MHz) (from ... to ... hours)?	Stand guard for me on the frequency of ... kHz (*or* MHz) (from ... to .. hours).
QTW	What is the condition of survivors?	Survivors are in ... condition and urgently need ...
QTX	Will you keep your station open for further communication with me until further notice (*or* until ... hours)?	I will keep my station open for further communication with you until further notice (*or* until ... hours).
QTY	Are you proceeding to the position of incident and if so when do you expect to arrive ?	I am proceeding to the position of incident and expect to arrive at ... hours (on ... *date*).
QTZ	Are you continuing the search?	I am continuing the search for ... (aircraft, ship, survival craft, survivors or wreckage).
QUA	Have you news of ... *(call sign)* ?	Here is news of ... *(call sign)*.
QUB	Can you give me in the following order information concerning: the direction in degrees TRUE and speed of the surface wind; visibility; present weather; and amount, type and height of base of cloud above surface elevation at ... *(place of observation)* ?	Here is the information requested : ... *(The units used for speed and distances should be indicated.)*

Abbreviation	Question	Answer or Advice
QUC	What is the number *(or other indication)* of the last message you received from me (*or* from ... *(call sign)*)?	The number *(or other indication)* of the last message I received from you (*or* from ... *(call sign)*) is ...
QUD	Have you received the urgency signal sent by ... *(call sign of mobile station)* ?	I have received the urgency signal sent by ... *(call sign of mobile station)* at ... hours.
QUE	Can you use telephony in ... *(language)*, with interpreter if necessary; if so, on what frequencies?	I can use telephony in ... *(language)* on ... kHz (*or* MHz).
QUF	Have you received the distress signal sent by ... *(call sign of mobile station)* ?	I have received the distress signal sent by ... *(call sign of mobile station)* at ... hours.
QUG	Will you be forced to alight (*or* land)?	I am forced to alight (*or* land) immediately. *or* I shall be forced to alight (*or* land) at ... *(position or place)* at ... hours.
QUH	Will you give me the present barometric pressure at sea level?	The present barometric pressure at sea level is ... *(units)*.
QUI	Are your navigation lights working?	My navigation lights are working.
QUJ	Will you indicate the TRUE track to reach you (*or* ...)?	The TRUE track to reach me (*or*...) is ... degrees at ... hours.
QUK	Can you tell me the condition of the sea observed at ... *(place or coordinates)*?	The sea at ... *(place or coordinates)* is ...

Abbreviation	Question	Answer or Advice
QUL	Can you tell me the swell observed at ... *(place or coordinates)* ?	The swell at ... *(place or coordinates)* is ...
QUM	May I resume normal working?	Normal working may be resumed.
QUN	Will vessels in my immediate vicinity ... *or* (in the vicinity of ... latitude ... longitude) *or* (in the vicinity of ...) please indicate their position, TRUE course and speed?	My position, TRUE course and speed are ...
QUO	Shall I search for ... 1. aircraft 2. ship 3. survival craft in the vicinity of ... latitude ... longitude *(or according to any other indication)* ?	Please search for ... 1. aircraft 2. ship 3. survival craft in the vicinity of ... latitude ... longitude *(or according to any other indication)*.
QUP	Will you indicate your position by ... 1. searchlight 2. black smoke trail 3. pyrotechnic lights?	My position is indicated by ... 1. searchlight 2. black smoke trail 3. pyrotechnic lights.
QUQ	Shall I train my searchlight nearly vertical on a cloud, occulting if possible and, if your aircraft is seen, deflect the beam up wind and on the water (*or* land) to facilitate your landing?	Please train your searchlight on a cloud, occulting if possible and, if my aircraft is seen or heard, deflect the beam up wind and on the water (*or* land) to facilitate my landing.
QUR	Have survivors ... 1. received survival equipment 2. been picked up by rescue vessel 3. been reached by ground rescue party?	Survivors ... 1. are in possession of survival equipment dropped by ... 2. have been picked up by rescue vessel 3. have been reached by ground rescue party.
QUS	Have you sighted survivors or wreckage? If so, in what position?	Have sighted ... 1. survivors in water 2. survivors on rafts 3. wreckage in position ... latitude ... longitude *(or according to any other indication)*.
QUT	Is position of incident marked?	Position of incident is marked by... 1. flame or smoke float 2. sea marker 3. sea marker dye 4. ... *(specify other marking)*.
QUU	Shall I home ship or aircraft to my position?	Home ship or aircraft ... *(call sign)* ... 1. to your position by transmitting your call sign and long dashes on ... kHz (*or* MHz) 2. by transmitting on ... kHz (*or* MHz) TRUE track to reach you.
QUW	Are you in the search area designated as ... *(designator or latitude and longitude)* ?	I am in the ... *(designation)* search area.
QUY	Is position of survival craft marked?	Position of survival craft was marked at ... hours by... 1. flame or smoke float 2. sea marker 3. sea marker dye 4. ... *(specify other marking)*.

B. Lists of Signals According to the Nature of Questions, Answer or Advice

Abbreviation	Question	Answer or Advice
	Name	
QRA	What is the name of your station ?	The name of my station is . . .
	Route	
QRD	Where are you bound for and where are you from ?	I am bound for . . . from . . .
	Position	
QRB	How far approximately are you from my station ?	The approximate distance between our stations is . . . nautical miles (*or* kilometres).
QTH	What is your position in latitude and longitude *(or according to any other indication)* ?	My position is . . .. latitude . . . longitude *(or according to any other indication)*.
QTN	At what time did you depart from . . . *(place)* ?	I departed from . . . *(place)* at . . . hours.
	Quality of Signals	
QRI	How is the tone of my transmission?	The tone of your transmission is . . . 1. good 2. variable 3. bad.
QRK	What is the intelligibility of my signals (*or* those of . . .) ?	The intelligibility of your signals (*or* those of . . .) is . . . 1. bad 2. poor 3. fair 4. good 5. excellent.
	Strength of Signals	
QRO	Shall I increase transmitter power ?	Increase transmitter power.
QRP	Shall I decrease transmitter power ?	Decrease transmitter power.
QSA	What is the strength of my signals (*or* those of . . .) ?	The strength of your signals (*or* those of . . .) is . . . 1. scarcely perceptible 2. weak 3. fairly good 4. good 5. very good.
QSB	Are my signals fading ?	Your signals are fading.
	Keying	
QRQ	Shall I send faster ?	Send faster (. . . words per minute).
QRR	Are you ready for automatic operation ?	I am ready for automatic operation. Send at . . . words per minute.
QRS	Shall I send more slowly ?	Send more slowly (. . . . words per minute).
QSD	Is my keying defective ?	Your keying is defective.
	Interference	
QRM	Are you being interfered with ?	I am being interfered with (1. nil 2. slightly 3. moderately 4. severely 5. extremely).

Abbreviation	Question	Answer or Advice
QRN	Are you troubled by static ?	I am troubled by static (1. nil 2. slightly 3. moderately 4. severely 5. extremely).
	Adjustment of Frequency	
QRG	Will you tell me my exact frequency (*or* that of . . .) ?	Your exact frequency (*or* that of . . .) is . . . kHz (*or* MHz).
QRH	Does my frequency vary ?	Your frequency varies.
QTS	Will you send your call sign for tuning purposes or so that your frequency can be measured now (*or* at . . . hours) on . . . kHz (*or* MHz) ?	I will send my call sign for tuning purposes or so that my frequency may be measured now (*or* at . . . hours) on . . . kHz (*or* MHz).
	Choice of Frequency and/or Class of Emission	
QSN	Did you hear me (*or* . . . *(call sign)*) on . . . kHz (*or* MHz)?	I did hear you (*or* . . . *(call sign)*) on . . . kHz (*or* MHz).
QSS	What working frequency will you use?	I will use the working frequency . . . kHz *(normally only the last three figures of the frequency need be given)*.
QSU	Shall I send or reply on this frequency (*or* on . . . kHz (*or* MHz)) (with emissions of class . . .)?	Send or reply on this frequency (*or* on . . . kHz (*or* MHz)) (with emissions of class . . .).
QSV	Shall I send a series of V's on this frequency (*or* . . . kHz (*or* MHz))?	Send a series of V's on this frequency (*or* . . . kHz (*or* MHz)).

Abbreviation	Question	Answer or Advice
QSW	Will you send on this frequency (*or* on . . . kHz (*or* MHz)) (with emissions of class . . .)?	I am going to send on this frequency (*or* on . . . kHz (*or* MHz)) (with emissions of class . . .).
QSX	Will you listen to . . . *(call sign(s))* on . . . kHz (*or* MHz)?	I am listening to . . . *(call sign(s))* on . . . kHz (*or* MHz).
	Change of Frequency	
QSY	Shall I change to transmission on another frequency?	Change to transmission on another frequency (*or* on . . . kHz (*or* MHz)).
	Establishing Communication	
QRL	Are you busy?	I am busy (*or* I am busy with . . .). Please do not interfere.
QRV	Are you ready?	I am ready.
QRX	When will you call me again?	I will call you again at . . . hours (on . . . kHz (*or* MHz)).
QRY	What is my turn? *(Relates to communication.)*	Your turn is Number . . . *(or according to any other indication)*. *(Relates to communication.)*
QRZ	Who is calling me?	You are being called by . . . (on . . . kHz (*or* MHz)).
QSC	Are you a cargo vessel?	I am a cargo vessel.
QSR	Shall I repeat the call on the calling frequency?	Repeat your call on the calling frequency; did not hear you (*or* have interference).
QTQ	Can you communicate with my station by means of the International Code of Signals?	I am going to communicate with your station by means of the International Code of Signals.

Abbreviation	Question	Answer or Advice
QUE	Can you use telephony in ... *(language)*, with interpreter if necessary; if so, on what frequencies?	I can use telephony in ... *(language)* on ... kHz (*or* MHz).
	Time	
QTR	What is the correct time?	The correct time is ... hours.
QTU	What are the hours during which your station is open?	My station is open from ... to ... hours.
	Charges	
QRC	By what private enterprise (*or* State Administration) are the accounts for charges for your station settled?	The accounts for charges of my station are settled by the private enterprise ... (*or* State Administration).
QSJ	What is the charge to be collected to ... including your internal charge?	The charge to be collected to ... including my internal charge is ... francs.
	Transit	
QRW	Shall I inform ... that you are calling him on ... kHz (*or* MHz)?	Please inform ... that I am calling him on ... kHz (*or* MHz).
QSO	Can you communicate with ... direct (*or* by relay)?	I can communicate with ... direct (*or* by relay through ...).
QSP	Will you relay to ... free of charge?	I will relay to ... free of charge.
QSQ	Have you a doctor on board (*or* is... *(name of person)* on board)?	I have a doctor on board (*or* ... *(name of person)* is on board).
QUA	Have you news of ... *(call sign)*?	Here is news of ... *(call sign)*.

Abbreviation	Question	Answer or Advice
QUC	What is the number *(or other indication)* of the last message you received from me (*or* from ... *(call sign)*)?	The number *(or other indication)* of the last message I received from you (*or* from ... *(call sign)*) is ...
	Exchange of Correspondence	
QRJ	How many radiotelephone calls have you to book?	I have ... radiotelephone calls to book.
QRU	Have you anything for me?	I have nothing for you.
QSG	Shall I send ... telegrams at a time?	Send ... telegrams at a time.
QSI		I have been unable to break in on your transmission. *or* Will you inform ... *(call sign)* that I have been unable to break in on his transmission (on ... kHz (*or* MHz)).
QSK	Can you hear me between your signals and if so can I break in on your transmission?	I can hear you between my signals; break in on my transmission.
QSL	Can you acknowledge receipt?	I am acknowledging receipt.
QSM	Shall I repeat the last telegram which I sent you (*or* some previous telegram)?	Repeat the last telegram which you sent me (*or* telegram(s) number(s) ...).
QSZ	Shall I send each word or group more than once?	Send each word or group twice (*or* ... times).
QTA	Shall I cancel telegram number ...?	Cancel telegram number ...

Abbreviation	Question	Answer or Advice
QTB	Do you agree with my counting of words?	I do not agree with your counting of words; I will repeat the first letter or digit of each word or group.
QTC	How many telegrams have you to send?	I have ... telegrams for you (*or* for ...).
QTV	Shall I stand guard for you on the frequency of ... kHz (*or* MHz) (from ... to ... hours)?	Stand guard for me on the frequency of ... kHz (*or* MHz) (from ... to ... hours).
QTX	Will you keep your station open for further communication with me until further notice (*or* until ... hours)?	I will keep my station open for further communication with you until further notice (*or* until ... hours).
	Movement	
QRE	What is your estimated time of arrival at ... (*or* over) ...) *(place)*?	My estimated time of arrival at ... (*or* over ...) *(place)* is ... hours.
QRF	Are you returning to ... *(place)*?	I am returning to ... *(place)*. *or* Return to ... *(place)*.
QSH	Are you able to home on your D/F equipment?	I am able to home on my D/F equipment (on station ...).
QTI	What is your TRUE track?	My TRUE track is ... degrees.
QTJ	What is your speed? *(Requests the speed of a ship or aircraft through the water or air respectively.)*	My speed is ... knots (*or* ... kilometres per hour *or* ... statute miles per hour). *(Indicates the speed of a ship or aircraft through the water or air respectively.)*

Abbreviation	Question	Answer or Advice
QTK	What is the speed of your aircraft in relation to the surface of the earth?	The speed of my aircraft in relation to the surface of the earth is ... knots (*or* ... kilometres per hour *or* ... statute miles per hour).
QTL	What is your TRUE heading?	My TRUE heading is ... degrees.
QTM	What is your MAGNETIC heading?	My MAGNETIC heading is ... degrees.
QTN	At what time did you depart from ... *(place)*?	I departed from ... *(place)* at ... hours.
QTO	Have you left dock (*or* port)? *or* Are you airborne?	I have left dock (*or* port). *or* I am airborne.
QTP	Are you going to enter dock (*or* port)? *or* Are you going to alight (*or* land)?	I am going to enter dock (*or* port) *or* I am going to alight (*or* land).
QUG	Will you be forced to alight (*or* land)?	I am forced to alight (*or* land) immediately. *or* I shall be forced to alight (*or* land) at ... *(position or place)* at ... hours.
QUJ	Will you indicate the TRUE track to reach you (*or* ...)?	The TRUE track to reach me (*or* ...) is ... degrees at ... hours.
QUN	Will vessels in my immediate vicinity ... *or* (in the vicinity of ... latitude ... longitude) *or* (in the vicinity of ...) please indicate their position, TRUE course and speed?	My position, TRUE course and speed are ...

Abbreviation	Question	Answer or Advice
	Meteorology	
QUB	Can you give me in the following order information concerning: the direction in degrees TRUE and speed of the surface wind; visibility; present weather; and amount, type and height of base of cloud above surface elevation at ... *(place of observation)*?	Here is the information requested ... *(The units used for speed and distances should be indicated.)*
QUH	Will you give me the present barometric pressure at sea level?	The present barometric pressure at sea level is ... *(units)*.
QUK	Can you tell me the condition of the sea observed at ... *(place or coordinates)*?	The sea at... *(place or coordinates)* is ...
QUL	Can you tell me the swell observed at ... *(place or coordinates)*	The swell at ... *(place or coordinates)* is ...
	Radio Direction-Finding	
QTE	What is my TRUE bearing from you? *or* What is my TRUE bearing from ... *(call sign)*? *or* What is the TRUE bearing of ... *(call sign)* from .. *(call sign)*?	Your TRUE bearing from me is ... degrees at ... hours. *or* Your TRUE bearing from ... *(call sign)* was ... degrees at ... hours. *or* The TRUE bearing of ... *(call sign)* from ... *(call sign)* was ... degrees at ... hours.
QTF	Will you give me the position of my station according to the bearings taken by the D/F stations which you control?	The position of your station according to the bearings taken by the D/F stations which I control was ... latitude ... longitude *(or other indication of position)*, class ... at ... hours.
QTG	Will you send two dashes of ten seconds each followed by your call sign (repeated ... times) (on ... kHz (*or* MHz))? *or* Will you request ... to send two dashes of ten seconds followed by his call sign (repeated ... times) on ... kHz (*or* MHz)?	I am going to send two dashes of ten seconds each followed by my call sign (repeated ... times) (on ... kHz (*or* MHz)). *or* I have requested ... to send two dashes of ten seconds followed by his call sign (repeated ... times) on ... kHz (*or* MHz).
	Suspension of Work	
QRT	Shall I stop sending?	Stop sending.
QUM	May I resume normal working?	Normal working may be resumed.
	Urgency	
QUD	Have you received the urgency signal sent by ... *(call sign of mobile station)*?	I have received the urgency signal sent by ... *(call sign of mobile station)* at ... hours.
QUG	Will you be forced to alight (*or* land)?	I am forced to alight (*or* land) immediately. *or* I shall be forced to alight (*or* land) at ... *(position or place)* at ... hours.
	Distress	
QUF	Have you received the distress signal sent by ... *(call sign of mobile station)*?	I have received the distress signal sent by ... *(call sign of mobile station)* at ... hours.
QUM	May I resume normal working?	Normal working may be resumed.
	Search and Rescue	
QSE	What is the estimated drift of the survival craft?	The estimated drift of the survival craft is ... *(figures and units)*.

Abbreviation	Question	Answer or Advice
QSF	Have you effected rescue?	I have effected rescue and am proceeding to . . . base (with . . . persons injured requiring ambulance).
QTD	What has the rescue vessel or rescue aircraft recovered?	. . . *(identification)* has recovered . . . 1. . . . *(number)* survivors 2. wreckage 3. . . . *(number)* bodies.
QTW	What is the condition of survivors?	Survivors are in . . . condition and urgently need . . .
QTY	Are you proceeding to the position of incident and if so when do you expect to arrive?	I am proceeding to the position of incident and expect to arrive at . . . hours (on . . . date).
QTZ	Are you continuing the search?	I am continuing the search for . . . (aircraft, ship, survival craft, survivors or wreckage).
QUI	Are your navigation lights working?	My navigation lights are working.
QUN	Will vessels in my immediate vicinity . . . *or* (in the vicinity of . . . latitude longitude . . .) *or* (in the vicinity of . . .) please indicate their position, TRUE course and speed?	My position, TRUE course and speed are . . .
QUO	Shall I search for . . . 1. aircraft 2. ship 3. survival craft in the vicinity of . . . latitude . . . longitude *(or according to any other indication)*?	Please search for . . . 1. aircraft 2. ship 3. survival craft in the vicinity of . . . latitude . . . longitude *(or according to any other indication)*.

Abbreviation	Question	Answer or Advice
QUP	Will you indicate your position by . . . 1. searchlight 2. black smoke trail 3. pyrotechnic lights?	My position is indicated by . . . 1. searchlight 2. black smoke trail 3. pyrotechnic lights.
QUQ	Shall I train my searchlight nearly vertical on a cloud, occulting if possible and, if your aircraft is seen, deflect the beam up wind and on the water (*or* land) to facilitate your landing?	Please train your searchlight on a cloud, occulting if possible and, if my aircraft is seen or heard, deflect the beam up wind and on the water (*or* land) to facilitate my landing.
QUR	Have survivors . . . 1. received survival equipment 2. been picked up by rescue vessel 3. been reached by ground rescue party?	Survivors . . . 1. are in possession of survival equipment dropped by . . . 2. have been picked up by rescue vessel 3. have been reached by ground rescue party.
QUS	Have you sighted survivors or wreckage? If so, in what position?	Have sighted . . . 1. survivors in water 2. survivors on rafts 3. wreckage in position . . . latitude . . . longitude *(or according to any other indication)*.
QUT	Is position of incident marked?	Position of incident is marked by... 1. flame or smoke float 2. sea marker 3. sea marker dye 4. . . . *(specify other marking)*.

Abbreviation	Question	Answer or Advice
QUU	Shall I home ship or aircraft to my position?	Home ship or aircraft ... *(call sign)* ... 1. to your position by transmitting your call sign and long dashes on ... kHz (*or* MHz) 2. by transmitting on ... kHz (*or* MHz) TRUE track to reach you.
QUW	Are you in the search area designated as ... *(designator or latitude and longitude)*?	I am in the ... *(designation)* search area.
QUY	Is position of survival craft marked?	Position of survival craft was marked at ... hours by ... 1. flame or smoke float 2. sea marker 3. sea marker dye 4. ... *(specify other marking)*.
	Identification	
QTT		The identification signal which follows is superimposed on another transmission.

SECTION II. MISCELLANEOUS ABBREVIATIONS AND SIGNALS

Abbreviation or Signal	Definition
AA	All after ... *(used after a question mark to request a repetition)*.
AB	All before ... *(used after a question mark to request a repetition)*.
ADS	Address *(used after a question mark to request a repetition)*.
$\overline{\text{AR}}$	End of transmission *(.—.—. to be sent as one signal)*.
$\overline{\text{AS}}$	Waiting period *(.—... to be sent as one signal)*.
BK	Signal used to interrupt a transmission in progress.
BN	All between ... and ... *(used after a question mark to request a repetition)*.
BQ	A reply to an RQ.
CFM	Confirm (*or* I confirm).
CL	I am closing my station.
COL	Collate (*or* I collate).
CP	General call to two or more specified stations *(see Article* **52***)*.
CQ	General call to all stations *(see Article* **52***)*.
CS	Call sign *(used to request a call sign)*.
$\overline{\text{DDD}}$	Used to identify the transmission of the distress message by a station not itself in distress *(see No.* **3164***)*.
DE	From *(used to precede the call sign of the calling station)*.
DF	Your bearing at ... hours was ... degrees, in the doubtful sector of this station, with a possible error of ... degrees.
DO	Bearing doubtful. Ask for another bearing later (*or* at ... hours).
E	East (Cardinal).
ER	Here ...
ETA	Estimated time of arrival.
ITP	The punctuation counts.
K	Invitation to transmit.
KMH	Kilometers per hour.
KTS	Nautical miles per hour *(Knots)*.
MIN	Minute (*or* Minutes).

Abbreviation or Signal	Definition
MPH	Statute miles per hour.
MSG	Prefix indicating a message to or from the master of a ship concerning its operation or navigation.
N	North (Cardinal).
NIL	I have nothing to send to you.
NO	No *(Negative)*.
NW	Now.
OK	We agree (*or* It is correct).
OL	Ocean Letter.
P	Prefix indicating a private radiotelegram.
PBL	Preamble *(used after a question mark to request a repetition)*.
R	Received.
REF	Reference to . . . (*or* Refer to . . .).
RPT	Repeat (*or* I repeat) (*or* Repeat . . .).
RQ	Indication of a request.
S	South (Cardinal).
SIG	Signature *(used after a question mark to request a repetition)*.
SLT	Radiomaritime Letter.
$\overline{\text{SOS}}$	Distress Signal *(. . . — — — . . . to be sent as one signal)*.
SS	Indicator preceding the name of a ship station.
SVC	Prefix indicating a service telegram.
SYS	Refer to your service telegram.
TFC	Traffic.
TR	Used by a land station to request the position and next port of call of a mobile station *(see No. 3691)*; used also as a prefix to the reply.
TTT	This group when sent three times constitutes the safety signal *(see No. 3221)*.
TU	Thank you.
TXT	Text *(used after a question mark to request a repetition)*.
$\overline{\text{VA}}$	End of work *(. . . — . — to be sent as one signal)*.
W	West (Cardinal).

Abbreviation or Signal	Definition
WA	Word after . . . *(used after a question mark to request a repetition)*.
WB	Word before . . . *(used after a question mark to request a repetition)*.
WD	Word(s) *or* Group(s).
XQ	Prefix used to indicate an operating communication in the fixed service.
XXX	This group when sent three times constitutes the urgency signal *(see No. 3196)*.
YES	Yes *(Affirmative)*.

NOC **AP13A** APPENDIX 14

Miscellaneous Abbreviations and Signals to Be Used for Radiocommunications in the Maritime Mobile Service

(See Articles **37, 63** and **65**)

SECTION I. Q CODE

Introduction

1. The series of groups listed in this Appendix range from QOA to QUZ.

2. The QOA to QQZ series are reserved for the maritime mobile service.

3. Certain Q code abbreviations may be given an affirmative or negative sense by sending, immediately following the abbreviation, the letter C or the letters NO (in radiotelephony spoken as : CHARLIE or NO).

4. The meanings assigned to Q code abbreviations may be amplified or completed by the appropriate addition of other groups, call signs, place names, figures, numbers, etc. It is optional to fill in the blanks shown in parentheses. Any data which is filled in where blanks appear shall be sent in the same order as shown in the text of the following tables.

5. Q code abbreviations are given the form of a question when followed by a question mark in radiotelegraphy and RQ (ROMEO QUEBEC) in radiotelephony. When an abbreviation is used as a question and is followed by additional or complementary information, the question mark (or RQ) should follow this information.

6. Q code abbreviations with numbered alternative significations shall be followed by the appropriate figure to indicate the exact meaning intended. This figure shall be sent immediately following the abbreviation.

7. All times shall be given in Coordinated Universal Time (UTC) unless otherwise indicated in the question or reply.

8. An asterisk * following a Q code abbreviation means that this signal has a meaning similar to a signal appearing in the International Code of Signals.

Abbreviations Available for the Maritime Mobile Service

A. List of Abbreviations in Alphabetical Order

Abbreviation	Question	Answer or Advice
QOA	Can you communicate by radiotelegraphy (500 kHz)?	I can communicate by radiotelegraphy (500 kHz).
QOB	Can you communicate by radiotelephony (2 182 kHz)?	I can communicate by radiotelephony (2 182 kHz).
QOC	Can you communicate by radiotelephony (channel 16 - frequency 156·80 MHz)?	I can communicate by radiotelephony (channel 16 - frequency 156·80 MHz).
QOD	Can you communicate with me in... 0. Dutch 5. Italian 1. English 6. Japanese 2. French 7. Norwegian 3. German 8. Russian 4. Greek 9. Spanish?	I can communicate with you in... 0. Dutch 5. Italian 1. English 6. Japanese 2. French 7. Norwegian 3. German 8. Russian 4. Greek 9. Spanish.
QOE	Have you received the safety signal sent by... *(name and/or call sign)*?	I have received the safety signal sent by... *(name and/or call sign)*.
QOF	What is the commercial quality of my signals?	The quality of your signals is... 1. not commercial 2. marginally commercial 3. commercial.
QOG	How many tapes have you to send?	I have... tapes to send.
QOH	Shall I send a phasing signal for... seconds?	Send a phasing signal for... seconds.
QOI	Shall I send my tape?	Send your tape.
QOJ	Will you listen on... kHz (*or* MHz) for signals of emergency position-indicating radiobeacons?	I am listening on... kHz (*or* MHz) for signals of emergency position-indicating radiobeacons.
QOK	Have you received the signals of an emergency position-indicating radiobeacon on... kHz (*or* MHz)?	I have received the signals of an emergency position-indicating radiobeacon on... kHz (*or* MHz).
QOL	Is your vessel fitted for reception of selective calls? If so, what is your selective call number or signal?	My vessel is fitted for the reception of selective calls. My selective call number or signal is ...
QOM	On what frequencies can your vessel be reached by a selective call?	My vessel can be reached by a selective call on the following frequency/ies ... (periods of time to be added if necessary).
QOT	Do you hear my call; what is the approximate delay in minutes before we may exchange traffic?	I hear your call; the approximate delay is ... minutes.
QRA	What is the name of your vessel (*or* station)?	The name of my vessel (*or* station) is...
QRB	How far approximately are you from my station?	The approximate distance between our stations is... nautical miles (*or* kilometres).
QRC	By what private enterprise (*or* State Administration) are the accounts for charges for your station settled?	The accounts for charges of my station are settled by the private enterprise... (*or* State Administration).
QRD	Where are you bound for and where are you from?	I am bound for... from...
QRE	What is your estimated time of arrival at... (*or* over...) *(place)*?	My estimated time of arrival at... (*or* over...) *(place)* is... hours.
QRF	Are you returning to... *(place)*?	I am returning to... *(place)*. *or* Return to... *(place)*.

Abbreviation	Question	Answer or Advice
QRG	Will you tell me my exact frequency (*or* that of...)?	Your exact frequency (*or* that of...) is... kHz (*or* MHz).
QRH	Does my frequency vary?	Your frequency varies.
QRI	How is the tone of my transmission?	The tone of your transmission is... 1. good 2. variable 3. bad.
QRJ	How many radiotelephone calls have you to book?	I have... radiotelephone calls to book.
QRK	What is the intelligibility of my signals (*or* those of... *(name and/or call sign)*)?	The intelligibility of your signals (*or* those of... *(name and/or call sign)*) is... 1. bad. 2. poor 3. fair 4. good 5. excellent.
QRL	Are you busy?	I am busy (*or* I am busy with... *(name and/or call sign)*). Please do not interfere.
QRM	Is my transmission being interfered with?	Your transmission is being interfered with... 1. nil 2. slightly 3. moderately 4. severely 5. extremely.

Abbreviation	Question	Answer or Advice
QRN	Are you troubled by static?	I am troubled by static... 1. nil 2. slightly 3. moderately 4. severely 5. extremely
QRO	Shall I increase transmitter power?	Increase transmitter power.
QRP	Shall I decrease transmitter power?	Decrease transmitter power.
QRQ	Shall I send faster?	Send faster (... words per minute).
QRR	Are you ready for automatic operation?	I am ready for automatic operation. Send at... words per minute.
QRS	Shall I send more slowly?	Send more slowly (... words per minute).
QRT	Shall I stop sending?	Stop sending.
QRU	Have you anything for me?	I have nothing for you.
QRV	Are you ready?	I am ready.
QRW	Shall I inform... that you are calling him on... kHz (*or* MHz)?	Please inform... that I am calling him on... kHz (*or* MHz).
QRX	When will you call me again?	I will call you again at... hours (on... kHz (*or* MHz)).
QRY	What is my turn? *(Relates to communication)*	Your turn is Number... *(or according to any other indication). (Relates to communication).*
QRZ	Who is calling me?	You are being called by... (on ... kHz (*or* MHz)).

Abbreviation	Question	Answer or Advice
QSA	What is the strength of my signals (*or* those of... *(name and/or call sign)*)?	The strength of your signals (*or* those of... *(name and/or call sign)*) is... 1. scarcely perceptible 2. weak 3. fairly good 4. good 5. very good.
QSB	Are my signals fading?	Your signals are fading.
QSC	Are you a low traffic ship station?	I am a low traffic ship station.
QSD	Are my signals mutilated?	Your signals are mutilated.
QSE*	What is the estimated drift of the survival craft?	The estimated drift of the survival craft is... *(figures and units)*.
QSF*	Have you effected rescue?	I have effected rescue and am proceeding to... base (with... persons injured requiring ambulance).
QSG	Shall I send... telegrams at a time?	Send... telegrams at a time.
QSH	Are you able to home with your direction-finding equipment?	I am able to home with my direction-finding equipment (on... *(name and/or call sign)*).
QSI		I have been unable to break in on your transmission. *or* Will you inform... *(name and/or call sign)* that I have been unable to break in on his transmission (on... kHz (*or* MHz)).

Abbreviation	Question	Answer or Advice
QSJ	What is the charge to be collected to... including your internal charge?	The charge to be collected to... including my internal charge is... francs.
QSK	Can you hear me between your signals and if so may I break in on your transmission?	I can hear you between my signals; break in on my transmission.
QSL	Can you acknowledge receipt?	I am acknowledging receipt.
QSM	Shall I repeat the last telegram which I sent you (*or* some previous telegram)?	Repeat the last telegram which you sent me (*or* telegram(s) number(s)...).
QSN	Did you hear me (*or*... *(name and/or call sign)*) on... kHz (*or* MHz)?	I did hear you (*or*... *(name and/or call sign)*) on... kHz (*or* MHz).
QSO	Can you communicate with... *(name and/or call sign)* direct (*or* by relay)?	I can communicate with... *(name and/or call sign)* direct (*or* by relay through...).
QSP	Will you relay to... *(name and/or call sign)* free of charge?	I will relay to... *(name and/or call sign)* free of charge.
QSQ	Have you a doctor on board (*or* is... *(name of person)* on board)?	I have a doctor on board (*or*... *(name of person)* is on board).
QSR	Shall I repeat the call on the calling frequency?	Repeat your call on the calling frequency; did not hear you (*or* have interference).
QSS	What working frequency will you use?	I will use the working frequency ... kHz (*or* MHz) (*in the high frequency bands normally only the last three figures of the frequency need be given*).
QSU	Shall I send or reply on this frequency (*or* on... kHz (*or* MHz)) (with emissions of class...)?	Send or reply on this frequency (*or* on... kHz (*or* MHz)) (with emissions of class...).

Abbreviation	Question	Answer or Advice
QSV	Shall I send a series of V's (*or* signs) for adjustment on this frequency (*or* on... kHz (*or* MHz))?	Send a series of V's (*or* signs) for adjustment on this frequency (*or* on... kHz (*or* MHz)).
QSW	Will you send on this frequency (*or* on... kHz (*or* MHz)) (with emissions of class...)?	I am going to send on this frequency (*or* on... kHz (*or* MHz)) (with emissions of class...).
QSX	Will you listen to ... *(name and/or call sign(s))* on ... kHz *(or* MHz*)*, or in the bands .../channels ...?	I am listening to ... *(name and/or call sign(s))* on ... kHz *(or* MHz*)*, or in the bands .../channels ...
QSY	Shall I change to transmission on another frequency?	Change to transmission on another frequency (*or* on ... kHz (*or* MHz)).
QSZ	Shall I send each word or group more than once?	Send each word or group twice (*or*... times).
QTA	Shall I cancel telegram (*or* message) number...?	Cancel telegram (*or* message) number...
QTB	Do you agree with my counting of words?	I do not agree with your counting of words; I will repeat the first letter or digit of each word or group.
QTC	How many telegrams have you to send?	I have... telegrams for you (*or* for... *(name and/or call sign)*).
QTD*	What has the rescue vessel or rescue aircraft recovered?	... *(identification)* has recovered... 1. ... *(number)* survivors 2. wreckage 3. ... *(number)* bodies.

Abbreviation	Question	Answer or Advice
QTE	What is my TRUE bearing from you? *or* What is my TRUE bearing from... *(name and/or call sign)*? *or* What is the TRUE bearing of... *(name and/or call sign)* from... *(name and/or call sign)*?	Your TRUE bearing from me is... degrees at... hours. *or* Your TRUE bearing from... *(name and/or call sign)* was... degrees at... hours. *or* The TRUE bearing of... *(name and/or call sign)* from... *(name and/or call sign)* was... degrees at... hours.
QTF	Will you give me my position according to the bearings taken by the direction-finding stations which you control?	Your position according to the bearings taken by the direction-finding stations which I control was... latitude... longitude *(or other indication of position)*, class... at... hours.
QTG	Will you send two dashes of ten seconds each (*or* carrier) followed by your call sign (*or* name) (repeated... times) on... kHz (*or* MHz)? *or* Will you request... *(name and/or call sign)* to send two dashes of ten seconds each (*or* carrier) followed by his call sign (and/*or* name) (repeated... times) on... kHz (*or* MHz)?	I am going to send two dashes of ten seconds each (*or* carrier) followed by my call sign (*or* name) (repeated... times) on... kHz (*or* MHz). *or* I have requested... *(name and/or call sign)* to send two dashes of ten seconds each (*or* carrier) followed by his call sign (and/*or* name) (repeated... times) on... kHz (*or* MHz).

Abbreviation	Question	Answer or Advice
QTH	What is your position in latitude and longitude *(or according to any other indication)*?	My position is... latitude... longitude *(or according to any other indication)*.
QTI*	What is your TRUE course?	My TRUE course is... degrees.
QTJ*	What is your speed? *(Requests the speed of a ship or aircraft through the water or air respectively)*.	My speed is... knots (*or* kilometres per hour *or*... statute miles per hour). *(Indicates the speed of a ship or aircraft through the water or air respectively)*.
QTK*	What is the speed of your aircraft in relation to the surface of the earth?	The speed of my aircraft in relation to the surface of the earth is... knots (*or*... kilometres per hour *or*... statute miles per hour).
QTL*	What is your TRUE heading?	My TRUE heading is... degrees.
QTM*	What is your MAGNETIC heading?	My MAGNETIC heading is... degrees.
QTN	At what time did you depart from ... *(place)*?	I departed from... *(place)* at... hours.
QTO	Have you left dock (*or* port)? *or* Are you airborne?	I have left dock (*or* port). *or* I am airborne.
QTP	Are you going to enter dock (*or* port)? *or* Are you going to alight (*or* land)?	I am going to enter dock (*or* port). *or* I am going to alight (*or* land).
QTQ	Can you communicate with my station by means of the International Code of Signals (INTERCO)?	I am going to communicate with your station by means of the International Code of Signals (INTERCO).
QTR	What is the correct time?	The correct time is... hours.
QTS	Will you send your call sign *(and/or* name*)* for... seconds?	I will send my call sign *(and/or* name*)* for... seconds.
QTT		The identification signal which follows is superimposed on another transmission.
QTU	What are the hours during which your station is open?	My station is open from... to... hours.
QTV	Shall I stand guard for you on the frequency of... kHz (*or* MHz) (from... to... hours)?	Stand guard for me on the frequency of... kHz (*or* MHz) (from ... to... hours).
QTW*	What is the condition of survivors?	Survivors are in... condition and urgently need...
QTX	Will you keep your station open for further communication with me until further notice (*or* until ...hours)?	I will keep my station open for further communication with you until further notice (*or* until... hours).
QTY*	Are you proceeding to the position of incident and if so when do you expect to arrive?	I am proceeding to the position of incident and expect to arrive at... hours (on... *date*).
QTZ*	Are you continuing the search?	I am continuing the search for... (aircraft, ship, survival craft, survivors or wreckage).
QUA	Have you news of... *(name and/or call sign)*?	Here is news of... *(name and/or call sign)*.
QUB*	Can you give me in the following order information concerning: the direction in degrees TRUE and speed of the surface wind; visibility; present weather; and amount, type and height of base of cloud above surface elevation at... *(place of observation)*?	Here is the information requested: ... *(The units used for speed and distances should be indicated)*.

Abbreviation	Question	Answer or Advice
QUC	What is the number *(or other indication)* of the last message you received from me (*or* from... *(name and/or call sign)*?	The number *(or other indication)* of the last message I received from you (*or* from... *(name and/or call sign)*) is...
QUD	Have you received the urgency signal sent by... *(name and/or call sign)*?	I have received the urgency signal sent by... *(name and/or call sign)* at... hours.
QUE	Can you speak in... *(language)*, with interpreter if necessary; if so, on what frequencies?	I can speak in... *(language)* on ... kHz (*or* MHz).
QUF	Have you received the distress signal sent by... *(name and/or call sign)*?	I have received the distress signal sent by... *(name and/or call sign)* at... hours.
QUH*	Will you give me the present barometric pressure at sea level?	The present barometric pressure at sea level is... *(units)*.
QUM	May I resume normal working?	Normal working may be resumed.
QUN	1. *When directed to all stations:* Will vessels in my immediate vicinity... *or* (in the vicinity of... latitude... longitude) *or* (in the vicinity of...) please indicate their position, TRUE course and speed? 2. *When directed to a single station:* Please indicate your position, TRUE course and speed?	My position, TRUE course and speed are...
QUO*	Shall I search for... 1. aircraft 2. ship 3. survival craft in the vicinity of... latitude... longitude *(or according to any other indication)*?	Please search for... 1. aircraft 2. ship 3. survival craft in the vicinity of... latitude... longitude *(or according to any other indication)*.

Abbreviation	Question	Answer or Advice
QUP*	Will you indicate your position by... 1. searchlight 2. black smoke trail 3. pyrotechnic lights?	My position is indicated by... 1. searchlight 2. black smoke trail 3. pyrotechnic lights.
QUR*	Have survivors... 1. received survival equipment 2. been picked up by rescue vessel 3. been reached by ground rescue party?	Survivors... 1. are in possession of survival equipment dropped by... 2. have been picked up by rescue vessel 3. have been reached by ground rescue party.
QUS*	Have you sighted survivors or wreckage? If so, in what position?	Have sighted... 1. survivors in water 2. survivors on rafts 3. wreckage in position... latitude... longitude *(or according to any other indication)*.
QUT*	Is position of incident marked?	Position of incident is marked by... 1. flame or smoke float 2. sea marker 3. sea marker dye 4. ... *(specify other marking)*.
QUU*	Shall I home ship or aircraft to my position?	Home ship or aircraft... *(name and/or call sign)*... 1. to your position by sending your call sign and long dashes on... kHz (*or* MHz) 2. by sending on... kHz (*or* MHz) TRUE track to reach you.
QUW*	Are you in the search area designated as... *(designator or latitude and longitude)*?	I am in the... *(designation)* search area.
QUX	Do you have any navigational warnings or gale warnings in force?	I have the following navigational warning(s) or gale warning(s) in force:

Abbre-viation	Question	Answer or Advice
QUY*	Is position of survival craft marked?	Position of survival craft was marked at... hours by... 1. flame or smoke float 2. sea marker 3. sea marker dye 4. ... *(specify other marking)*.
QUZ	May I resume restricted working?	Distress phase still in force, restricted working may be resumed.

B. List of Signals according to the Nature of Questions, Answer or Advice

Abbre-viation	Question	Answer or Advice
	Name	
QRA	What is the name of your vessel (*or* station)?	The name of my vessel (*or* station) is...
	Route	
QRD	Where are you bound for and where are you from?	I am bound for... from...
	Position	
QRB	How far approximately are you from my station?	The approximate distance between our stations is... nautical miles (*or* kilometres).
QTH	What is your position in latitude and longitude *(or according to any other indication)*?	My position is... latitude... longitude *(or according to any other indication)*.
QTN	At what time did you depart from ... *(place)*?	I departed from... *(place)* at... hours.
	Quality of Signals	
QOF	What is the commercial quality of my signals?	The quality of your signals is... 1. not commercial 2. marginally commercial 3. commercial.
QRI	How is the tone of my transmission?	The tone of your transmission is... 1. good 2. variable 3. bad.
QRK	What is the intelligibility of my signals (*or* those of... *(name and/or call sign)*)?	The intelligibility of your signals (*or* those of... *(name and/or call sign)*) is... 1. bad 2. poor 3. fair 4. good 5. excellent.

Abbreviation	Question	Answer or Advice
	Strength of Signals	
QRO	Shall I increase transmitter power?	Increase transmitter power.
QRP	Shall I decrease transmitter power?	Decrease transmitter power.
QSA	What is the strength of my signals (*or* those of... *(name and/or call sign)*)?	The strength of your signals (*or* those of... *(name and/or call sign)*) is... 1. scarcely perceptible 2. weak 3. fairly good 4. good 5. very good.
QSB	Are my signals fading?	Your signals are fading.
	Keying	
QRQ	Shall I send faster?	Send faster (... words per minute).
QRR	Are you ready for automatic operation?	I am ready for automatic operation. Send at... words per minute.
QRS	Shall I send more slowly?	Send more slowly (... words per minute).
QSD	Are my signals mutilated?	Your signals are mutilated.
	Interference	
QRM	Is my transmission being interfered with?	Your transmission is being interfered with... 1. nil 2. slightly 3. moderately 4. severely 5. extremely.
	Interference (cont.)	
QRN	Are you troubled by static?	I am troubled by static... 1. nil 2. slightly 3. moderately 4. severely 5. extremely.
	Adjustment of Frequency	
QRG	Will you tell me my exact frequency (*or* that of...)?	Your exact frequency (*or* that of...) is... kHz (*or* MHz).
QRH	Does my frequency vary?	Your frequency varies.
QTS	Will you send your call sign (and/*or* name) for... seconds?	I will send my call sign (and/*or* name) for... seconds.
	Choice of Frequency and / or Class of Emission	
QSN	Did you hear me (*or*... *(name and/or call sign)*) on...kHz (*or* MHz)?	I did hear you (*or*... *(name and/or call sign)*) on...kHz (*or* MHz).
QSS	What working frequency will you use?	I will use the working frequency ...kHz (*or* MHz) *(in the high frequency bands normally only the last three figures of the frequency need be given)*.
QSU	Shall I send *or* reply on this frequency (*or* on...kHz (*or* MHz)) (with emissions of class...)?	Send or reply on this frequency (*or* on...kHz (*or* MHz)) (with emissions of class...).
QSV	Shall I send a series of V's (*or* signs) for adjustment on this frequency (*or*...kHz (*or* MHz))?	Send a series of V's (*or* signs) for adjustment on this frequency (*or*...kHz (*or* MHz)).

Abbreviation	Question	Answer or Advice
	Choice of Frequency and/or Class of Emission (cont.)	
QSW	Will you send on this frequency (*or* on... kHz (*or* MHz)) (with emissions of class...)?	I am going to send on this frequency (*or* on... kHz (*or* MHz)) (with emissions of class...).
QSX	Will you listen to ... *(name and/or call sign(s))* on ... kHz *(or* MHz*)*, or in the bands .../channels ...?	I am listening to ... *(name and/or call sign(s))* on ... kHz *(or* MHz*)*, or in the bands .../channels ...
	Change of Frequency	
QSY	Shall I change to transmission on another frequency?	Change to transmission on another frequency (*or* on ... kHz (*or* MHz)).
	Establishing Communication	
QOA	Can you communicate by radiotelegraphy (500 kHz)?	I can communicate by radiotelegraphy (500 kHz).
QOB	Can you communicate by radiotelephony (2 182 kHz)?	I can communicate by radiotelephony (2 182 kHz).
QOC	Can you communicate by radiotelephony (channel 16-frequency 156·80 MHz)?	I can communicate by radiotelephony (channel 16-frequency 156·80MHz).
QOD	Can you communicate with me in... 0. Dutch 5. Italian 1. English 6. Japanese 2. French 7. Norwegian 3. German 8. Russian 4. Greek 9. Spanish?	I can communicate with you in... 0. Dutch 5. Italian 1. English 6. Japanese 2. French 7. Norwegian 3. German 8. Russian 4. Greek 9. Spanish.
QOT	Do you hear my call; what is the approximate delay in minutes before we may exchange traffic?	I hear your call; the approximate delay is ... minutes.

Abbreviation	Question	Answer or Advice
	Establishing Communication (cont.)	
QRL	Are you busy?	I am busy (*or* I am busy with... *(name and/or call sign)*). Please do not interfere.
QRV	Are you ready?	I am ready.
QRX	When will you call me again?	I will call you again at... hours (on...kHz (*or* MHz)).
QRY	What is my turn? *(Relates to communication)*	Your turn is Number... *(or according to any other indication). (Relates to communication)*
QRZ	Who is calling me?	You are being called by... (on .... kHz (*or* MHz)).
QSC	Are you a low traffic ship station?	I am a low traffic ship station.
QSR	Shall I repeat the call on the calling frequency?	Repeat your call on the calling frequency; did not hear you (*or* have interference).
QTQ	Can you communicate with my station by means of the International Code of Signals (INTERCO)?	I am going to communicate with your station by means of the International Code of Signals (INTERCO).
QUE	Can you speak in... *(language)*, with interpreter if necessary; if so, on what frequencies?	I can speak in... *(language)* on...kHz (*or* MHz).
	Selective Calls	
QOL	Is your vessel fitted for reception of selective calls? If so, what is your selective call number or signal?	My vessel is fitted for the reception of selective calls. My selective call number or signal is ...

Abbreviation	Question	Answer or Advice
	Selective calls (cont.)	
QOM	On what frequencies can your vessel be reached by a selective call?	My vessel can be reached by a selective call on the following frequency/ies . . . (periods of time to be added if necessary).
	Time	
QTR	What is the correct time?	The correct time is... hours.
QTU	What are the hours during which your station is open?	My station is open from... to... hours.
	Charges	
QRC	By what private enterprise (*or* State Administration) are the accounts for charges for your station settled?	The accounts for charges of my station are settled by the private enterprise... (*or* State Administration).
QSJ	What is the charge to be collected to... including your internal charge?	The charge to be collected to... including my internal charge is... francs.
	Transit	
QRW	Shall I inform... that you are calling him on... kHz (*or* MHz)?	Please inform... that I am calling him on... kHz (*or* MHz).
QSO	Can you communicate with... *(name and/or call sign)* direct (*or* by relay)?	I can communicate with... *(name and/or call sign)* direct (*or* by relay through...).
QSP	Will you relay to... *(name and/or call sign)* free of charge?	I will relay to... *(name and/or call sign)* free of charge.
QSQ	Have you a doctor on board (*or* is... *(name of person)* on board)?	I have a doctor on board (*or*... *(name of person)* is on board).
QUA	Have you news of... *(name and/or call sign)*?	Here is news of... *(name and/or call sign)*.

Abbreviation	Question	Answer or Advice
	Transit (cont.)	
QUC	What is the number *(or other indication)* of the last message you received from me (*or* from... *(name and/or call sign)*)?	The number *(or other indication)* of the last message I received from you (*or* from... *(name and/or call sign)*) is...
	Exchange of Correspondence	
QOG	How many tapes have you to send?	I have... tapes to send.
QOH	Shall I send a phasing signal for... seconds?	Send a phasing signal for... seconds.
QOI	Shall I send my tape?	Send your tape.
QRJ	How many radiotelephone calls have you to book?	I have... radiotelephone calls to book.
QRU	Have you anything for me?	I have nothing for you.
QSG	Shall I send... telegrams at a time?	Send... telegrams at a time.
QSI		I have been unable to break in on your transmission. *or* Will you inform... *(name and/or call sign)* that I have been unable to break in on his transmission (on... kHz (*or* MHz)).
QSK	Can you hear me between your signals and if so may I break in on your transmission?	I can hear you between my signals; break in on my transmission.
QSL	Can you acknowledge receipt?	I am acknowledging receipt.
QSM	Shall I repeat the last telegram which I sent you (*or* some previous telegram)?	Repeat the last telegram which you sent me (*or* telegram(s) number(s)...).

Abbreviation	Question	Answer or Advice
	Exchange of Correspondence (cont.)	
QSZ	Shall I send each word or group more than once?	Send each word or group twice (*or*... times).
QTA	Shall I cancel telegram (*or* message) number...?	Cancel telegram (*or* message) number...
QTB	Do you agree with my counting of words?	I do not agree with your counting of words; I will repeat the first letter or digit of each word or group.
QTC	How many telegrams have you to send?	I have... telegrams for you (*or* for... *(name and/or call sign)*).
QTV	Shall I stand guard for you on the frequency of...kHz (*or* MHz) (from... to... hours)?	Stand guard for me on the frequency of...kHz (*or* MHz) (from ... to... hours).
QTX	Will you keep your station open for further communication with me until further notice (*or* until ...hours)?	I will keep my station open for further communication with you until further notice (*or* until... hours).
	Movement	
QRE	What is your estimated time of arrival at...(*or* over...) *(place)*?	My estimated time of arrival at... (*or* over...) *(place)* is... hours.
QRF	Are you returning to... *(place)*?	I am returning to... *(place)*. *or* Return to... *(place)*.
QSH	Are you able to home with your direction-finding equipment?	I am able to home with my direction-finding equipment (on... *(name and/or call sign)*).
QTI*	What is your TRUE course?	My TRUE course is... degrees.

Abbreviation	Question	Answer or Advice
	Movement (cont.)	
QTJ*	What is your speed? *(Requests the speed of a ship or aircraft through the water or air respectively.)*	My speed is... knots (*or*... kilometres per hour *or*... statute miles per hour). *(Indicates the speed of a ship or aircraft through the water or air respectively.)*
QTK*	What is the speed of your aircraft in relation to the surface of the earth?	The speed of my aircraft in relation to the surface of the earth is... knots (*or*... kilometres per hour *or*... statute miles per hour).
QTL*	What is your TRUE heading?	My TRUE heading is... degrees.
QTM*	What is your MAGNETIC heading?	My MAGNETIC heading is... degrees.
QTN	At what time did you depart from ... *(place)*?	I departed from... *(place)* at... hours.
QTO	Have you left dock (*or* port)? *or* Are you airborne?	I have left dock (*or* port). *or* I am airborne.
QTP	Are you going to enter dock (*or* port)? *or* Are you going to alight (*or* land)?	I am going to enter dock (*or* port). *or* I am going to alight (*or* land).
QUN	1. *When directed to all stations:* Will vessels in my immediate vicinity... *or* (in the vicinity of... latitude... longitude) *or* (in the vicinity of...) please indicate their position, TRUE course and speed? 2. *When directed to a single station:* Please indicate your position, TRUE course and speed?	My position, TRUE course and speed are...

Abbreviation	Question	Answer or Advice
	Meteorology	
QUB*	Can you give me in the following order information concerning: the direction in degrees TRUE and speed of the surface wind; visibility; present weather; and amount, type and height of base of cloud above surface elevation at... *(place of observation)*?	Here is the information requested: ... *(The units used for speed and distances should be indicated).*
QUH*	Will you give me the present barometric pressure at sea level?	The present barometric pressure at sea level is... *(units).*
QUX	Do you have any navigational warnings or gale warnings in force?	I have the following navigational warning(s) or gale warning(s) in force:
	Radio Direction-Finding	
QTE	What is my TRUE bearing from you?	Your TRUE bearing from me is... degrees at... hours.
	or	*or*
	What is my TRUE bearing from... *(name and/or call sign)*?	Your TRUE bearing from... *(name and/or call sign)* was... degrees at... hours.
	or	*or*
	What is the TRUE bearing of... *(name and/or call sign)* from... *(name and/or call sign)*?	The TRUE bearing of... *(name and/or call sign)* from... *(name and/or call sign)* was... degrees at... hours.
QTF	Will you give me my position according to the bearings taken by the direction-finding stations which you control?	Your position according to the bearings taken by the direction-finding stations which I control was... latitude... longitude *(or other indication of position)*, class... at... hours.

Abbreviation	Question	Answer or Advice
	Radio Direction-Finding (cont.)	
QTG	Will you send two dashes of ten seconds each (*or* carrier) followed by your call sign (*or* name) (repeated... times) (on.. kHz (*or* MHz))?	I am going to send two dashes of ten seconds each (*or* carrier) followed by my call sign (*or* name) (repeated... times) (on... kHz (*or* MHz)).
	or	*or*
	Will you request... *(name and/or call sign)* to send two dashes of ten seconds each (*or* carrier) followed by his call sign (and/*or* name) (repeated... times) on... kHz (*or* MHz)?	I have requested... *(name and/or call sign)* to send two dashes of ten seconds each (*or* carrier) followed by his call sign (and/*or* name) (repeated... times) on... kHz (*or* MHz).
	Suspension of Work	
QRT	Shall I stop sending?	Stop sending.
QUM	May I resume normal working?	Normal working may be resumed.
QUZ	May I resume restricted working?	Distress phase still in force, restricted working may be resumed.
	Safety	
QOE	Have you received the safety signal sent by... *(name and/or call sign)*?	I have received the safety signal sent by... *(name and/or call sign).*
QUX	Do you have any navigational warnings or gale warnings in force?	I have the following navigational warning(s) or gale warning(s) in force:
	Urgency	
QUD	Have you received the urgency signal sent by... *(name and/or call sign)*?	I have received the urgency signal sent by... *(name and/or call sign)* at... hours.

Abbreviation	Question	Answer or Advice
	Distress	
QOJ	Will you listen on...kHz (*or* MHz) for signals of emergency position-indicating radiobeacons?	I am listening on...kHz (*or* MHz) for signals of emergency position-indicating radiobeacons.
QOK	Have you received the signals of an emergency position-indicating radiobeacon on...kHz (*or* MHz)?	I have received the signals of an emergency position-indicating radiobeacon on... kHz (*or* MHz)
QUF	Have you received the distress signal sent by... *(name and/or call sign)*?	I have received the distress signal sent by... *(name and/or call sign)* at... hours.
QUM	May I resume normal working?	Normal working may be resumed.
QUZ	May I resume restricted working?	Distress phase still in force, restricted working may be resumed.
	Search and Rescue	
QSE*	What is the estimated drift of the survival craft?	The estimated drift of the survival craft is... *(figures and units)*.
QSF*	Have you effected rescue?	I have effected rescue and am proceeding to... base (with... persons injured requiring ambulance).
QTD*	What has the rescue vessel or rescue aircraft recovered?	...*(identification)* has recovered... 1. ... *(number)* survivors 2. wreckage 3. ... *(number)* bodies.
QTW*	What is the condition of survivors?	Survivors are in... condition and urgently need...
QTY*	Are you proceeding to the position of incident and if so when do you expect to arrive?	I am proceeding to the position of incident and expect to arrive at... hours (on... *date*).

Abbreviation	Question	Answer or Advice
	Search and Rescue (cont.)	
QTZ*	Are you continuing the search?	I am continuing the search for... (aircraft, ship, survival craft, survivors or wreckage).
QUN	1. *When directed to all stations:* Will vessels in my immediate vicinity... *or* (in the vicinity of... latitude... longitude *or* (in the vicinity of...) please indicate their position, TRUE course and speed? 2. *When directed to a single station:* Please indicate your position, TRUE course and speed?	My position, TRUE course and speed are...
QUO*	Shall I search for... 1. aircraft 2. ship 3. survival craft in the vicinity of... latitude... longitude *(or according to any other indication)*?	Please search for... 1. aircraft 2. ship 3. survival craft in the vicinity of... latitude... longitude *(or according to any other indication)*.
QUP*	Will you indicate your position by... 1. searchlight 2. black smoke trail 3. pyrotechnic lights?	My position is indicated by... 1. searchlight 2. black smoke trail 3. pyrotechnic lights.
QUR*	Have survivors... 1. received survival equipment 2. been picked up by rescue vessel 3. been reached by ground rescue party?	Survivors... 1. are in possession of survival equipment dropped by... 2. have been picked up by rescue vessel 3. have been reached by ground rescue party.

Abbreviation	Question	Answer or Advice
	Search and Rescue (cont.)	
QUS*	Have you sighted survivors or wreckage? If so, in what position?	Have sighted... 1. survivors in water 2. survivors on rafts 3. wreckage in position... latitude... longitude *(or according to any other indication)*.
QUT*	Is position of incident marked?	Position of incident is marked by... 1. flame or smoke float 2. sea marker 3. sea marker dye 4. ... *(specify other marking)*.
QUU*	Shall I home ship or aircraft to my position?	Home ship or aircraft... *(name and/or call sign)*... 1. to your position by sending your call sign and long dashes on... kHz (*or* MHz) 2. by sending on... kHz (*or* MHz) TRUE track to reach you.
QUW*	Are you in the search area designated as... *(designator or latitude and longitude)*?	I am in the... *(designation)* search area.
QUY*	Is position of survival craft marked?	Position of survival craft was marked at... hours by... 1. flame or smoke float 2. sea marker 3. sea marker dye 4. ... *(specify other marking)*.
QUZ	May I resume restricted working?	Distress phase still in force, restricted working may be resumed.
	Identification	
QTT		The identification signal which follows is superimposed on another transmission.

SECTION II. MISCELLANEOUS ABBREVIATIONS AND SIGNALS

Abbreviation or Signal	Definition
AA	All after... *(used after a question mark in radiotelegraphy or after RQ in radiotelephony (in case of language difficulties) or after RPT, to request a repetition)*.
AB	All before... *(used after a question mark in radiotelegraphy or after RQ in radiotelephony (in case of language difficulties) or after RPT, to request a repetition)*.
ADS	Address *(used after a question mark in radiotelegraphy or after RQ in radiotelephony (in case of language difficulties) or after RPT, to request a repetition)*.
$\overline{\text{AR}}$	End of transmission.
$\overline{\text{AS}}$	Waiting period.
BK	Signal used to interrupt a transmission in progress.
BN	All between... and... *(used after a question mark in radiotelegraphy or after RQ in radiotelephony (in case of language difficulties) or after RPT, to request a repetition)*.
BQ	A reply to an RQ.
$\overline{\text{BT}}$	Signal to mark the separation between different parts of the same transmission.
C	Yes *or* "The significance of the previous group should be read in the affirmative".
CFM	Confirm (*or* I confirm).
CL	I am closing my station.
COL	Collate (*or* I collate).
CORRECTION	Cancel my last word *or* group. The correct word *or* group follows *(used in radiotelephony, spoken as KOR-REK-SHUN)*.

Note: When used in radiotelegraphy a bar over the letters composing a signal denotes that the letters are to be sent as one signal.

Abbreviation or Signal	Definition
CP	General call to two or more specified stations *(see Article 63).*
CQ	General call to all stations.
CS	Call sign *(used to request a call sign).*
DE	"from..." *(used to precede the name or other identification of the calling station).*
DF	Your bearing at... hours was... degrees, in the doubtful sector of this station, with a possible error of... degrees.
DO	Bearing doubtful. Ask for another bearing later (*or* at... hours).
E	East (Cardinal point) *(see No.* **3098***).*
ETA	Estimated time of arrival.
INTERCO	International Code of Signals groups follow *(used in radiotelephony, spoken as IN-TER-CO).*
K	Invitation to transmit.
$\overline{KA}$	Starting signal.
KTS	Nautical miles per hour *(Knots).*
MIN	Minute (*or* Minutes).
MSG	Prefix indicating a message to or from the master of a ship concerning its operation or navigation.
N	North (Cardinal point) *(see No.* **3098***).*
NIL	I have nothing to send to you.
NO	No *(Negative).*
NW	Now.
NX	Notice to Mariners (*or* Notice to Mariners follows).
OK	We agree (*or* It is correct).
OL	Ocean Letter.
P	Prefix indicating a private radiotelegram.
PBL	Preamble *(used after a question mark in radiotelegraphy or after RQ in radiotelephony (in case of language difficulties) or after RPT, to request a repetition).*
PSE	Please.
R	Received.
REF	Reference to... (*or* Refer to...).
RPT	Repeat (*or* I repeat) (*or* Repeat...).

Abbreviation or Signal	Definition
RQ	Indication of a request.
S	South (Cardinal point) *(see No.* **3098***).*
SIG	Signature *(used after a question mark in radiotelegraphy or after RQ in radiotelephony (in case of language difficulties) or after RPT, to request a repetition).*
SLT	Radiomaritime Letter.
SVC	Prefix indicating a service telegram.
SYS	Refer to your service telegram.
TFC	Traffic.
TR	Used by a land station to request the position and next port of call of a mobile station *(see Nos.* **4741** *and* **4942***);* used also as a prefix to the reply.
TU	Thank you.
TXT	Text *(used after a question mark in radiotelegraphy or after RQ in radiotelephony (in case of language difficulties) or after RPT, to request a repetition).*
$\overline{VA}$	End of work.
W	West (Cardinal point) *(see No.* **3098***).*
WA	Word after... *(used after a question mark in radiotelegraphy or after RQ in radiotelephony (in case of language difficulties) or after RPT, to request a repetition).*
WB	Word before... *(used after a question mark in radiotelegraphy or after RQ in radiotelephony (in case of language difficulties) or after RPT, to request a repetition).*
WD	Word(s) *or* Group(s).
WX	Weather report (*or* Weather report follows).
XQ	Prefix used to indicate the transmission of a service note.
YZ	The words which follow are in plain language.

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APPENDIX 15

SINPO and SINPFEMO Codes

(See CCIR Recommendation No. 251)

SINPO signal reporting code

Rating scale	S	I	N	P	O
	Signal strength	Degrading effect of			Overall rating
		Interference	Noise	Propagation disturbance	
5	Excellent	Nil	Nil	Nil	Excellent
4	Good	Slight	Slight	Slight	Good
3	Fair	Moderate	Moderate	Moderate	Fair
2	Poor	Severe	Severe	Severe	Poor
1	Barely audible	Extreme	Extreme	Extreme	Unusable

SINPFEMO signal reporting code

Rating scale	S	I	N	P	F	E	M	O
	Signal strength	Degrading effect of			Frequency of fading	Modulation		Overall rating
		Interference	Noise	Propagation disturbance		Quality	Depth	
5	Excellent	Nil	Nil	Nil	Nil	Excellent	Maximum	Excellent
4	Good	Slight	Slight	Slight	Slow	Good	Good	Good
3	Fair	Moderate	Moderate	Moderate	Moderate	Fair	Fair	Fair
2	Poor	Severe	Severe	Severe	Fast	Poor	Poor or Nil	Poor
1	Barely audible	Extreme	Extreme	Extreme	Very fast	Very poor	Continuously overmodulated	Unusable

Special remarks :

a) A signal report shall consist of the code word SINPO or SINPFEMO followed by a group of five or eight numerals, rating, respectively, the five or eight characteristics of the particular signal code.

b) The letter X shall be used instead of a numeral for characteristics not rated.

c) Although the code word SINPFEMO is intended for radiotelephony, it may be used for radiotelegraphy.

d) The overall rating for radiotelegraphy shall be as indicated in Tables I and II, below.

TABLE I

Overall rating	Mechanized Operations
5. Excellent	4-channel time-division multiplex
4. Good	2-channel time-division multiplex
3. Fair	Marginal single start-stop printer
2. Poor	BK's, XQ's and call signs readable
1. Unusable	Unreadable

TABLE II

Overall rating	Morse Operation
5. Excellent	High speed
4. Good	100 wpm
3. Fair	50 wpm
2. Poor	BK's, XQ's and call signs readable
1. Unusable	Unreadable

e) The overall rating for telephony shall be as indicated in Table III.

TABLE III

Overall rating	Operating Condition	Quality
5. Excellent	Signal quality unaffected	Commercial
4. Good	Signal quality slightly affected	Commercial
3. Fair	Signal quality seriously affected. Channel usable by operators or by experienced subscribers	Marginally commercial
2. Poor	Channel just usable by operators	Not commercial
1. Unusable	Channel unusable by operators	Not commercial

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APPENDIX 16

Channelling of the Maritime Mobile Radiotelephone Bands Between 4 000 and 23 000 kHz

(See Article **60**, Section IV)

1. Radiotelephone channelling arrangements for the frequencies to be used by coast and ship stations in the bands allocated to the maritime mobile service are indicated in two sections as follows:

Section A – Table of single-sideband transmitting frequencies for duplex (two-frequency) operation (in kHz);

Section B – Table of single-sideband transmitting frequencies for simplex (single-frequency) operation and for intership cross-band (two-frequency) operation (in kHz).

2. The technical characteristics for single-sideband transmitters are specified in Appendix **17**.

3. One or more series of frequencies from Section A (with the exception of those frequencies mentioned in paragraph 5 below) may be assigned to each coast station, which uses these frequencies associated in pairs (see No. **4381**); each pair consists of a transmitting and a receiving frequency. The series shall be selected with due regard to the areas served and so as to avoid, as far as possible, harmful interference between the services of different coast stations.

4. The frequencies in Section B are provided for worldwide common use by ships of all categories, according to traffic requirements, for ship transmissions to coast stations and for intership communication. They are also authorized for worldwide common use for transmissions by coast stations (simplex operation) provided the peak envelope power does not exceed 1 kW. (See Recommendation **304**.)

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

- Channel No. 421 in the 4 MHz band;
- Channel No. 606 in the 6 MHz band;
- Channel No. 821 in the 8 MHz band;
- Channel No. 1221 in the 12 MHz band;
- Channel No. 1621 in the 16 MHz band;
- Channel No. 2221 in the 22 MHz band.

The remaining frequencies in Sections A and B are working frequencies.

6. *a)* Stations using single-sideband emissions shall operate only on the carrier frequencies shown in Sections A and B in conformity with the technical characteristics specified in Appendix **17**. The upper sideband mode shall always be employed.

b) Stations employing thesingle-sideband mode shall use only class R3E and J3E emissions. However, administrations should endeavour, as far as possible, to restrict to class J3E emissions the use of the Channels Nos. 401, 601, 801, 1201, 1601 and 2201.

7. If an administration authorizes the use of frequencies other than those indicated in Sections A and B, its radiotelephone service shall not cause harmful interference to radiotelephone stations of the maritime mobile service which use frequencies in accordance with the following Tables.

SECTION A

Table of Single-Sideband Transmitting Frequencies for Duplex (Two-Frequency) Operation (in kHz)

Channel No.	4 MHz Band				Channel No.	6 MHz Band				Channel No.	8 MHz Band				Channel No.	12 MHz Band				Channel No.	16 MHz Band				Channel No.	22 MHz Band			
	Coast stations		Ship stations			Coast stations		Ship stations			Coast stations		Ship stations			Coast stations		Ship stations			Coast stations		Ship stations			Coast stations		Ship stations	
	Carrier frequency	Assigned frequency	Carrier frequency	Assigned frequency		Carrier frequency	Assigned frequency	Carrier frequency	Assigned frequency		Carrier frequency	Assigned frequency	Carrier frequency	Assigned frequency		Carrier frequency	Assigned frequency	Carrier frequency	Assigned frequency		Carrier frequency	Assigned frequency	Carrier frequency	Assigned frequency		Carrier frequency	Assigned frequency	Carrier frequency	Assigned frequency
401	4 357·4	4 358·8	4 063	4 064·4	601	6 506·4	6 507·8	6 200	6 201·4	801	8 718·9	8 720·3	8 195	8 196·4	1201	13 100·8	13 102·2	12 330	12 331·4	1601	17 232·9	17 234·3	16 460	16 461·4	2201	22 596	22 597·4	22 000	22 001·4
402	4 360·5	4 361·9	4 066·1	4 067·5	602	6 509·5	6 510·9	6 203·1	6 204·5	802	8 722	8 723·4	8 198·1	8 199·5	1202	13 103·9	13 105·3	12 333·1	12 334·5	1602	17 236	17 237·4	16 463·1	16 464·5	2202	22 599·1	22 600·5	22 003·1	22 004·5
403	4 363·6	4 365	4 069·2	4 070·6	603	6 512·6	6 514	6 206·2	6 207·6	803	8 725·1	8 726·5	8 201·2	8 202·6	1203	13 107	13 108·4	12 336·2	12 337·6	1603	17 239·1	17 240·5	16 466·2	16 467·6	2203	22 602·2	22 603·6	22 006·2	22 007·6
404	4 366·7	4 368·1	4 072·3	4 073·7	604	6 515·7	6 517·1	6 209·3	6 210·7	804	8 728·2	8 729·6	8 204·3	8 205·7	1204	13 110·1	13 111·5	12 339·3	12 340·7	1604	17 242·2	17 243·6	16 469·3	16 470·7	2204	22 605·3	22 606·7	22 009·3	22 010·7
405	4 369·8	4 371·2	4 075·4	4 076·8	605	6 518·8	6 520·2	6 212·4	6 213·8	805	8 731·3	8 732·7	8 207·4	8 208·8	1205	13 113·2	13 114·6	12 342·4	12 343·8	1605	17 245·3	17 246·7	16 472·4	16 473·8	2205	22 608·4	22 609·8	22 012·4	22 013·8
406	4 372·9	4 374·3	4 078·5	4 079·9	606	6 521·9*	6 523·3*	6 215·5*[2]	6 216·9*	806	8 734·4	8 735·8	8 210·5	8 211·9	1206	13 116·3	13 117·7	12 345·5	12 346·9	1606	17 248·4	17 249·8	16 475·5	16 476·9	2206	22 611·5	22 612·9	22 015·5	22 016·9
407	4 376	4 377·4	4 081·6	4 083						807	8 737·5	8 738·9	8 213·6	8 215	1207	13 119·4	13 120·8	12 348·6	12 350	1607	17 251·5	17 252·9	16 478·6	16 480	2207	22 614·6	22 616	22 018·6	22 020
408	4 379·1	4 380·5	4 084·7	4 086·1						808	8 740·6	8 742	8 216·7	8 218·1	1208	13 122·5	13 123·9	12 351·7	12 353·1	1608	17 254·6	17 256	16 481·7	16 483·1	2208	22 617·7	22 619·1	22 021·7	22 023·1
409	4 382·2	4 383·6	4 087·8	4 089·2						809	8 743·7	8 745·1	8 219·8	8 221·2	1209	13 125·6	13 127	12 354·8	12 356·2	1609	17 257·7	17 259·1	16 484·8	16 486·2	2209	22 620·8	22 622·2	22 024·8	22 026·2
410	4 385·3	4 386·7	4 090·9	4 092·3						810	8 746·8	8 748·2	8 222·9	8 224·3	1210	13 128·7	13 130·1	12 357·9	12 359·3	1610	17 260·8	17 262·2	16 487·9	16 489·3	2210	22 623·9	22 625·3	22 027·9	22 029·3
411	4 388·4	4 389·8	4 094	4 095·4						811	8 749·9	8 751·3	8 226	8 227·4	1211	13 131·8	13 133·2	12 361	12 362·4	1611	17 263·9	17 265·3	16 491	16 492·4	2211	22 627	22 628·4	22 031	22 032·4
412	4 391·5	4 392·9	4 097·1	4 098·5						812	8 753	8 754·4	8 229·1	8 230·5	1212	13 134·9	13 136·3	12 364·1	12 365·5	1612	17 267	17 268·4	16 494·1	16 495·5	2212	22 630·1	22 631·5	22 034·1	22 035·5
413	4 394·6	4 396	4 100·2	4 101·6						813	8 756·1	8 757·5	8 232·2	8 233·6	1213	13 138	13 139·4	12 367·2	12 368·6	1613	17 270·1	17 271·5	16 497·2	16 498·6	2213	22 633·2	22 634·6	22 037·2	22 038·6
414	4 397·7	4 399·1	4 103·3	4 104·7						814	8 759·2	8 760·6	8 235·3	8 236·7	1214	13 141·1	13 142·5	12 370·3	12 371·7	1614	17 273·2	17 274·6	16 500·3	16 501·7	2214	22 636·3	22 637·7	22 040·3	22 041·7
415	4 400·8	4 402·2	4 106·4	4 107·8						815	8 762·3	8 763·7	8 238·4	8 239·8	1215	13 144·2	13 145·6	12 373·4	12 374·8	1615	17 276·3	17 277·7	16 503·4	16 504·8	2215	22 639·4	22 640·8	22 043·4	22 044·8
416	4 403·9	4 405·3	4 109·5	4 110·9						816	8 765·4	8 766·8	8 241·5	8 242·9	1216	13 147·3	13 148·7	12 376·5	12 377·9	1616	17 279·4	17 280·8	16 506·5	16 507·9	2216	22 642·5	22 643·9	22 046·5	22 047·9
417	4 407	4 408·4	4 112·6	4 114						817	8 768·5	8 769·9	4 244·6	8 246	1217	13 150·4	13 151·8	12 379·6	12 381	1617	17 282·5	17 283·9	16 509·6	16 511	2217	22 645·6	22 647	22 049·6	22 051
418	4 410·1	4 411·5	4 115·7	4 117·1						818	8 771·6	8 773	8 247·7	8 249·1	1218	13 153·5	13 154·9	12 382·7	12 384·1	1618	17 285·6	17 287	16 512·7	16 514·1	2218	22 648·7	22 650·1	22 052·7	22 054·1
419	4 413·2	4 414·6	4 118·8	4 120·2						819	8 774·7	8 776·1	8 250·8	8 252·2	1219	13 156·6	13 158	12 385·8	12 387·2	1619	17 288·7	17 290·1	16 515·8	16 517·2	2219	22 651·8	22 653·2	22 055·8	22 057·2
420	4 416·3	4 417·7	4 121·9	4 123·3						820	8 777·8	8 779·2	8 253·9	8 255·3	1220	13 159·7	13 161·1	12 388·9	12 390·3	1620	17 291·8	17 293·2	16 518·9	16 520·3	2220	22 654·9	22 656·3	22 058·9	22 060·3
421	4 419·4*	4 420·8*	4 125 *[1]	4 126·4*						821	8 780·9*	8 782·3*	8 257 *	8 258·4*	1221	13 162·8*	13 164·2*	12 392 *	12 393·4*	1621	17 294·9*	17 296·3*	16 522 *	16 523·4*	2221	22 658 *	22 659·4*	22 062 *	22 063·4*
422	4 422·5	4 423·9	4 128·1	4 129·5						822	8 784	8 785·4	8 260·1	8 261·5	1222	13 165·9	13 167·3	12 395·1	12 396·5	1622	17 298	17 299·4	16 525·1	16 526·5	2222	22 661·1	22 662·5	22 065·1	22 066·5
423	4 425·6	4 427	4 131·2	4 132·6						823	8 787·1	8 788·5	8 263·2	8 264·6	1223	13 169	13 170·4	12 398·2	12 399·6	1623	17 301·1	17 302·5	16 528·2	16 529·6	2223	22 664·2	22 665·6	22 068·2	22 069·6
424	4 428·7	4 430·1	4 134·3	4 135·7						824	8 790·2	8 791·6	8 266·3	8 267·7	1224	13 172·1	13 173·5	12 401·3	12 402·7	1624	17 304·2	17 305·6	16 531·3	16 532·7	2224	22 667·3	22 668·7	22 071·3	22 072·7
425	4 431·8	4 433·2	4 137·4	4 138·8						825	8 793·3	8 794·7	8 269·4	8 270·8	1225	13 175·2	13 176·6	12 404·4	12 405·8	1625	17 307·3	17 308·7	16 534·4	16 535·8	2225	22 670·4	22 671·8	22 074·4	22 075·8
426	4 434·9	4 436·3	4 140·5	4 141·9						826	8 796·4	8 797·8	8 272·5	8 273·9	1226	13 178·3	13 179·7	12 407·5	12 408·9	1626	17 310·4	17 311·8	16 537·5	16 538·9	2226	22 673·5	22 674·9	22 077·5	22 078·9
										827	8 799·5	8 800·9	8 275·6	8 277	1227	13 181·4	13 182·8	12 410·6	12 412	1627	17 313·5	17 314·9	16 540·6	16 542	2227	22 676·6	22 678	22 080·6	22 082
										828	8 802·6	8 804	8 278·7	8 280·1	1228	13 184·5	13 185·9	12 413·7	12 415·1	1628	17 316·6	17 318	16 543·7	16 545·1	2228	22 679·7	22 681·1	22 083·7	22 085·1
										829	8 805·7	8 807·1	8 281·8	8 283·2	1229	13 187·6	13 189	12 416·8	12 418·2	1629	17 319·7	17 321·1	16 546·8	16 548·2	2229	22 682·8	22 684·2	22 086·8	22 088·2
										830	8 808·8	8 810·2	8 284·9	8 286·3	1230	13 190·7	13 192·1	12 419·9	12 421·3	1630	17 322·8	17 324·2	16 549·9	16 551·3	2230	22 685·9	22 687·3	22 089·9	22 091·3
										831	8 811·9	8 813·3	8 288	8 289·4	1231	13 193·8	13 195·2	12 423	12 424·4	1631	17 325·9	17 327·3	16 553	16 554·4	2231	22 689	22 690·4	22 093	22 094·4
															1232	13 196·9	13 198·3	12 426·1	12 427·5	1632	17 329	17 330·4	16 556·1	16 557·5	2232	22 692·1	22 693·5	22 096·1	22 097·5
																				1633	17 332·1	17 333·5	16 559·2	16 560·6	2233	22 695·2	22 696·6	22 099·2	22 100·6
																				1634	17 335·2	17 336·6	16 562·3	16 563·7	2234	22 698·3	22 699·7	22 102·3	22 103·7
																				1635	17 338·3	17 339·7	16 565·4	16 566·8	2235	22 701·4	22 702·8	22 105·4	22 106·8
																				1636	17 341·4	17 342·8	16 568·5	16 569·9	2236	22 704·5	22 705·9	22 108·5	22 109·9
																				1637	17 344·5	17 345·9	16 571·6	16 573	2237	22 707·6	22 709	22 111·6	22 113
																				1638	17 347·6	17 349	16 574·7	16 576·1	2238	22 710·7	22 712·1	22 114·7	22 116·1
																				1639	17 350·7	17 352·1	16 577·8	16 579·2	2239	22 713·8	22 715·2	22 117·8	22 119·2
																				1640	17 353·8	17 355·2	16 580·9	16 582·3	2240	22 716·9	22 718·3	22 120·9	22 122·3
																				1641	17 356·9	17 358·3	16 584	16 585·4					

* The frequencies followed by an asterisk are calling frequencies (see Nos. **4375** and **4376**).

[1] For the conditions of use of the carrier frequency 4 125 kHz, see Nos. **2982, 3030, 3031, 4379** and **4380**.

[2] For the conditions of use of the carrier frequency 6 215.5 kHz, see No. **2986**.

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SECTION B

Table of Single-Sideband Transmitting Frequencies for Simplex (Single-Frequency) Operation and for Intership Cross-Band (Two-Frequency) Operation (in kHz)

(See paragraph 4 of this Appendix)

4 MHz Band		6 MHz Band		8 MHz Band		12 MHz Band		16 MHz Band		22 MHz Band	
Carrier frequency	Assigned frequency	Carrier frequency	Assigned frequency	Carrier frequency	Assigned frequency	Carrier frequency	Assigned frequency	Carrier frequency	Assigned frequency	Carrier frequency	Assigned frequency
4 143·6	4 145	6 218·6 6 221·6	6 220 6 223	8 291·1 8 294·2	8 292·5 8 295·6	12 429·2 12 432·3 12 435·4	12 430·6 12 433·7 12 436·8	16 587·1 16 590·2 16 593·3	16 588·5 16 591·6 16 594·7	22 124 22 127·1 22 130·2 22 133·3 22 136·4	22 125·4 22 128·5 22 131·6 22 134·7 22 137·8

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APPENDIX 17

Technical Characteristics of Single-Sideband Transmitters Used in the Maritime Mobile Service for Radiotelephony in the Bands Between 1 606.5 (1 605 Region 2) kHz and 4 000 kHz and Between 4 000 kHz and 23 000 kHz

(See Article **60**, Section IV)

1. Power of the carrier:

a) for class R3E emissions the power of the carrier shall be:

Bands between 1 606.5 (1 605 Region 2) kHz and 4 000 kHz

– for coast station transmitters until 1 January 1982 and for ship station transmitters in use or to be installed before 2 January 1982: 16 ± 2 dB below the peak envelope power;

– for coast station transmitters after 1 January 1982 and for ship station transmitters installed after 1 January 1982: 18 ± 2 dB below the peak envelope power;

Bands between 4 000 kHz and 23 000 kHz

– for ship station transmitters installed before 2 January 1978: 16 ± 2 dB below the peak envelope power;

– for coast station transmitters after 1 January 1978 and for ship station transmitters installed after 1 January 1978: 18 ± 2 dB below the peak envelope power;

b) for class J3E emissions the power of the carrier shall be at least 40 dB below the peak envelope power.

2. Coast and ship stations shall use only the upper sideband.

3. The transmitter audio-frequency band shall be 350 Hz to 2 700 Hz with a permitted amplitude variation of 6 dB.

4. The carrier frequencies shall be maintained within the following tolerances:

a) coast stations: ± 20 Hz;

b) ship stations:

Bands between 1 606.5 (1 605 Region 2) kHz and 4 000 kHz

– tolerance applicable to transmitters in use or to be installed before 2 January 1982: ± 100 Hz; the short-term limits (of the order of 15 minutes) shall be ± 40 Hz;

– tolerance applicable to transmitters installed after 1 January 1982 but before 2 January 1985: ± 50 Hz;

– tolerance applicable to transmitters installed after 1 January 1985 and to all transmitters after 1 January 1990: ± 40 Hz;

Bands between 4 000 kHz and 23 000 kHz

– tolerance applicable to transmitters installed before 2 January 1978: ± 100 Hz; the short-term limits (of the order of 15 minutes) shall be ± 40 Hz;

– tolerance applicable to transmitters installed after 1 January 1978 and to all transmitters after 1 January 1990: ± 50 Hz.

5. The unwanted frequency modulation of the carrier shall be sufficiently low to prevent harmful distortion.

6. When class H3E, R3E or J3E emissions are used, the power of any unwanted emission supplied to the antenna transmission line on any discrete frequency shall, when the transmitter is driven to full peak envelope power, be in accordance with the following table:

a) Transmitters in use or installed before 2 January 1982 [1]:

Separation Δ in kHz between the frequency of the unwanted emission [2] and the assigned frequency [3]	Minimum attenuation below peak envelope power
$1.6 < \Delta \leqslant 4.8$	28 dB
$4.8 < \Delta \leqslant 8$	38 dB
$8 < \Delta$	43 dB without exceeding the power of 50 mW

Transmitters using reduced carrier or suppressed carrier emission may, as far as concerns out-of-band emissions [4] and those spurious emissions [5] which are a result of the modulation process but do not fall in the spectrum of out-of-band emissions [4], be tested for compliance with this regulation by means of a two-tone-audio input signal with a frequency separation between the tones such that all intermodulation products occur at frequencies at least 1.6 kHz removed from the assigned frequency.

For notes, see page AP17-4.

b) Transmitters installed after 1 January 1982 [1]:

Separation Δ in kHz between the frequency of the unwanted emission [2] and the assigned frequency [3]	Minimum attenuation below peak envelope power
$1.5 < \Delta \leqslant 4.5$	31 dB
$4.5 < \Delta \leqslant 7.5$	38 dB
$7.5 < \Delta$	43 dB without exceeding the power of 50 mW

Transmitters using reduced carrier or suppressed carrier emission may, as far as concerns out-of-band emissions [4] and those spurious emissions [5] which are a result of the modulation process but do not fall in the spectrum of out-of-band emissions [4], be tested for compliance with this regulation by means of a two-tone-audio input signal with a frequency separation between the tones such that all intermodulation products occur at frequencies at least 1.5 kHz removed from the assigned frequency.

[1] All administrations recognize the need to reduce the level of unwanted emissions and will therefore endeavour to ensure that the new requirements will be met by all newly designed transmitters under their jurisdiction as soon as practicable before 2 January 1982.

[2] *Unwanted emission:* See Article **1**, No. **140**.

[3] The assigned frequency is 1 400 Hz higher than the carrier frequency (see No. **4194**).

[4] *Out-of-band emission:* See Article **1**, No. **138**.

[5] *Spurious emission:* See Article **1**, No. **139**.

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APPENDIX 18

Table of Transmitting Frequencies in the Band 156 – 174 MHz for Stations in the Maritime Mobile Service

(See No. **613** and Articles **59** and **60**)

Note 1: For assistance in understanding the Table, see notes *a)* to *q)* below.

Note 2: Channels 01 to 28, except 15 and 17, correspond to the channels of Appendix **18** to the Radio Regulations, Geneva, 1959, and channels 15, 17, and 60 to 88 correspond to those additional channels made available for assignment in accordance with the provisions of Appendix 18 Mar to the Radio Regulations, Geneva, 1967 (see Resolution **308**).

Note 3: Channel designators 60 to 88 were chosen for the additional channels in order to separate them clearly from the original channels.

Channel designators	Notes	Transmitting frequencies (MHz)		Inter-ship	Port operations		Ship movement		Public correspondence
		Ship stations	Coast stations		Single frequency	Two frequency	Single frequency	Two frequency	
60	*j)*	156·025	160·625			17		9	25
01	*i)*	156·050	160·650			10		15	8
61		156·075	160·675			23		3	19
02		156·100	160·700			8		17	10
62		156·125	160·725			20		6	22
03	*i)*	156·150	160·750			9		16	9
63	*i)*	156·175	160·775			18		8	24
04		156·200	160·800			11		14	7
64		156·225	160·825			22		4	20
05		156·250	160·850			6		19	12
65		156·275	160·875			21		5	21
06	*h)*	156·300		1					
66		156·325	160·925			19		7	23
07		156·350	160·950			7		18	11
67	*n)*	156·375	156·375	10	10		9		
08		156·400		2					
68	*p)*	156·425	156·425		6		2		
09	*o)*	156·450	156·450	5	5		12		
69	*p)*	156·475	156·475	9	11		4		
10	*n)*	156·500	156·500	3	9		10		
70	*o)*	156·525		6					
11	*p)*	156·550	156·550		3		1		
71	*p)*	156·575	156·575		7		6		
12	*p)*	156·600	156·600		1		3		
72	*o)*	156·625		7					
13	*p)*	156·650	156·650	4	4		5		
73	*n)*	156·675	156·675	8	12		11		
14	*p)*	156·700	156·700		2		7		
74	*p)*	156·725	156·725		8		8		
15	*g) l)*	156·750	156·750	12	14				
75	*m)*		Guard-band 156·7625 – 156·7875 MHz						

Channel designators	Notes	Transmitting frequencies (MHz)		Intership	Port operations		Ship movement		Public correspondence
		Ship stations	Coast stations		Single frequency	Two frequency	Single frequency	Two frequency	
16		156·800	156·800 DISTRESS SAFETY AND CALLING						
76	*m)*		Guard band 156·8125 156·8375 MHz						
17	*g) l)*	156·850	156·850	13	13				
77		156·875		11					
18	*f)*	156·900	161·500			3		22	
78		156·925	161·525			12		13	27
19	*f)*	156·950	161·550			4		21	
79	*f) p)*	156·975	161·575			14		1	
20	*f)*	157·000	161·600			1		23	
80	*f) p)*	157·025	161·625			16		2	
21	*f) i)*	157·050	156·050 or 161·650			5		20	
81		157·075	161·675			15		10	28
22	*f)*	157·100	161·700			2		24	
82		157·125	161·725			13		11	26
23	*i)*	157·150	156·150 or 161·750						5
83	*i)*	157·175	156·175 or 161·775						16
24		157·200	161·800						4
84		157·225	161·825			24		12	13
25		157·250	161·850						3
85		157·275	161·875						17
26		157·300	161·900						1
86	*q)*	157·325	161·925						15
27		157·350	161·950						2
87		157·375	161·975						14
28		157·400	162·000						6
88	*j)*	157·425	162·025						18

NOTES REFERRING TO THE TABLE

a) The figures in the column headed "Intership" indicate the normal sequence in which channels should be taken into use by mobile stations.

b) The figures in the columns headed "Port operations", "Ship movement" and "Public correspondence" indicate the normal sequence in which channels should be taken into use by each coast station. However, in some cases, it may be necessary to omit channels in order to avoid harmful interference between the services of neighbouring coast stations.

c) Administrations may designate frequencies in the intership, port operations and ship movement services for use by light aircraft and helicopters to communicate with ships or participating coast stations in predominantly maritime support operations under the conditions specified in Nos. **4144, 4148, 4149, 4150, 4151, 4152** and **4153**. However, the use of the channels which are shared with public correspondence shall be subject to prior agreement between interested and affected administrations.

d) The channels of the present Appendix, with the exception of 06, 15, 16, 17, 75 and 76, may also be used for high-speed data and facsimile transmissions, subject to special arrangement between interested and affected administrations.

e) Except in the United States of America, the channels of Appendix **18**, preferably two adjacent channels from the series 87, 28, 88, with the exception of 06, 15, 16, 17, 75 and 76, may be used for narrow-band direct-printing telegraphy and data transmission, subject to special arrangement between interested and affected administrations.

f) The two-frequency channels for port operations (18, 19, 20, 21, 22, 79 and 80) may be used for public correspondence, subject to special arrangement between interested and affected administrations.

g) Until 1 January 1983, the effective radiated power of ship stations on channels 15 and 17 shall not exceed 1 W.

h) The frequency 156·300 MHz (channel 06) (see Nos. **2993** and **4154**) may also be used for communication between ship stations and aircraft stations engaged in coordinated search and rescue operations. Ship stations shall avoid harmful interference to such communications on channel 06 as well as to communications between aircraft stations, ice-breakers and assisted ships during ice seasons.

i) In France and in Belgium, the frequencies 156·050, 156·150 and 156·175 MHz are used as ship station frequencies in channels 01, 03 and 63 respectively and as coast station frequencies in channels 21, 23 and 83 respectively when the latter are used in the special semiduplex public correspondence systems employed with 1 MHz separation between transmitting and receiving frequencies. These special provisions will cease to be used not later than 1 January 1983.

j) Channels 60 and 88 can be used subject to special arrangements between interested and affected administrations.

k) The frequencies in this Table may also be used for radiocommunications on inland waterways in accordance with the conditions specified in No. **613**.

l) Channels 15 and 17 may also be used for on-board communications provided the effective radiated power does not exceed 1 W, and subject to the national regulations of the administration concerned when these channels are used in its territorial waters. (However, see Recommendation **305**).

m) This guardband will apply after 1 January 1983 (see Nos. **3033**, **3033.1**, **4393** and **4393.1**).

n) Within the European Maritime area and in Canada these frequencies (channels 10, 67, 73) may also be used, if so required, by the individual administrations concerned, for communication between ship stations, aircraft stations and participating land stations engaged in coordinated search and rescue and anti-pollution operations in local areas, under the conditions specified in Nos. **4144**, **4148**, **4149**, **4150**, **4151**, **4152** and **4153**.

o) The preferred first three frequencies for the purpose indicated in Note *c)* are 156·450 MHz (channel 09), 156·525 MHz (channel 70) and 156·625 MHz (channel 72).

p) These channels (68, 69, 11, 71, 12, 13, 14, 74, 79, 80) are the preferred channels for the ship movement service. They may, however, be assigned to the port operations service until required for the ship movement service if this should prove to be necessary in any specific area.

q) This channel (86) may be used as a calling channel if such a channel is required in an automatic radiotelephone system when such a system is recommended by the CCIR.

NOC **AP19** APPENDIX 19

Technical Characteristics for Transmitters and Receivers Used in the Maritime Mobile Service in the Band 156 — 174 MHz

(See Articles **59** and **60**, Appendix **18** and Resolution **308**)

1. Only frequency modulation with a pre-emphasis of 6 dB/octave (phase modulation) shall be used.

2. The frequency deviation corresponding to 100% modulation shall approach ±5 kHz as nearly as practicable. In no event shall the frequency deviation exceed ±5 kHz.

3. The frequency tolerance for coast and ship stations shall be 10 parts in 10^6 (see note *27)* to Appendix **7**).

4. When transmitting on any of the frequencies designated in the Table in Appendix **18**, the emission of each station shall be vertically polarized at the source.

5. The audio-frequency band shall be limited to 3 000 Hz.

6. It shall be possible to reduce, readily, the mean power of a ship station transmitter to 1 W or less.

NOC **AP19A**

APPENDIX 20

Characteristics of Equipment Used for On-Board Communication in the 450 — 470 MHz Bands

(See Nos. **669** and **670**)

1. The equipment should be fitted with sufficient channels for satisfactory operation in the area of intended use.

2. The effective radiated power shall be limited to the minimum required for satisfactory operation, but shall in no case exceed 2 W. Wherever practicable the equipment should be fitted with a suitable device to reduce readily the output power by at least 10 dB.

3. In the case of equipment installed at a fixed point on the ship, the height of its antenna shall not be more than 3·5 metres above the level of the bridge.

4. Only frequency modulation with a pre-emphasis of 6 dB/octave (phase modulation) shall be used.

5. The frequency deviation shall not exceed ±5 kHz.

6. The frequency tolerance shall be 5 parts in 10^6.

7. The audio-frequency band shall be limited to 3 000 Hz.

8. Control, telemetry and other non-voice signals shall be coded in such a manner as to minimize the possibility of false response to interfering signals.

9. If the use of a repeater station is required on board a ship, the following frequency pairs shall be used (see also No. **670**):

457·525 MHz and 467·525 MHz

457·550 MHz and 467·550 MHz

457·575 MHz and 467·575 MHz

MOD AP6

APPENDIX 21

Reports of International Monitoring of Emissions

(See Article **20**)

Section I. Reports Concerning Stations in the Terrestrial Radiocommunication Services

1. Reports of measurements of frequency should contain as much as necessary of the following information:

a) identification of the monitoring station (administration or organization, and location);

b) date of measurement;

c) time of measurement (UTC);

d) call sign or other means of identification, or both, of the station monitored;

e) class of emission [1];

f) assigned frequency or reference frequency;

g) frequency tolerance;

h) measured frequency;

i) accuracy of measurement;

j) departure from assigned or reference frequency;

[1] The class of emission shall contain the basic characteristics listed in Article **4** and, if possible, the additional characteristics listed in Appendix **6**. If any characteristic cannot be determined, indicate the unknown symbol with a dash. However, if a station is not able to identify unambiguously whether the modulation is frequency or phase modulation, indicate frequency modulation (F).

k) additional information (e.g. period covered by measurement, drift of measured frequency during that period, quality of received signal and conditions of reception);

l) remarks.

2. Reports of measurements of field strength or power flux-density should contain as much as necessary of the following information:

a) identification of the monitoring station (administration or organization, and location);

b) date of measurement;

c) time of measurement (UTC);

d) call sign or other means of identification, or both, of the station monitored;

e) class of emission [1];

f) assigned frequency;

g) value of measured field strength or power flux-density;

h) estimated accuracy of measurement;

i) value of the measured component of polarization;

j) other elements or characteristics of the measurement;

k) remarks.

3. Reports of observations of spectrum occupancy should as far as practicable be made in the form recommended by the IFRB and contain if possible the following information:

a) identification of the monitoring station (administration or organization, and location);

b) date of measurement;

[1] See page AP21-1.

c) time of measurement (UTC);

d) call sign or other means of identification, or both, of the station monitored;

e) class of emission [1];

f) class of station and nature of service;

g) measured frequency;

h) period during which the emission was heard or recorded;

i) value of measured field strength or power flux-density or signal strength according to the QSA scale;

j) occupied bandwidth (indicate whether measured or estimated, or indicate the necessary bandwidth notified to the IFRB);

k) information as to the locality or area in which reception is intended;

l) remarks.

4. In providing these data, the symbols contained in the Radio Regulations or in the Preface to the International Frequency List should be used as far as possible.

Section II. Reports Concerning Stations in the Space Radiocommunication Services

1. Reports of measurements of frequency should contain as much as necessary of the following information:

a) identification of the monitoring station (administration or organization, and location);

b) date of measurement;

c) time of measurement (UTC);

[1] See page AP21-1.

d) call sign or other means of identification, or both, of the station monitored;

e) class of emission [1];

f) assigned frequency or reference frequency;

g) frequency tolerance;

h) measured frequency;

i) accuracy of measurement;

j) departure from assigned or reference frequency;

k) additional information (e.g. period covered by measurement, drift of measured frequency during that period, quality of received signal and conditions of reception);

l) remarks.

2. Reports of measurements of field strength or power flux-density should contain as much as necessary of the following information:

a) identification of the monitoring station (administration or organization, and location);

b) date of measurement;

c) time of measurement (UTC);

d) call sign or other means of identification, or both, of the station monitored;

e) class of emission [1];

f) assigned frequency;

g) value of measured field strength or power flux-density;

[1] See page AP21-1.

h) estimated accuracy of measurement;

i) value of the measured component of polarization;

j) other elements or characteristics of the measurement;

k) remarks.

3. Reports of observations of spectrum occupancy should as far as practicable be made in the form recommended by the IFRB and contain if possible the following information:

3.1 Reports of observations concerning emissions of space stations:

a) identification of the monitoring station (administration or organization, and location);

b) date of measurement;

c) time of measurement (UTC);

d) call sign or other means of identification, or both, of the station monitored;

e) class of emission [1];

f) class of station and nature of service;

g) measured frequency;

h) period during which the emission was observed or recorded;

i) value of measured field strength or power flux-density or signal strength according to the QSA scale;

j) occupied bandwidth (indicate whether measured or estimated, or indicate the necessary bandwidth notified to the IFRB);

k) observed polarization;

l) information on orbit;

[1] See page AP21-1.

m) information as to the locality or area in which reception is intended, if known;

n) remarks.

3.2 Reports of observations concerning emissions of earth stations:

a) identification of the monitoring station (administration or organization, and location);

b) date of measurement;

c) time of measurement (UTC);

d) call sign or other means of identification, or both, of the station monitored;

e) class of emission [1];

f) class of station and nature of service;

g) measured frequency;

h) period during which the emission was observed or recorded;

i) value of measured field strength or power flux-density or signal strength according to the QSA scale;

j) occupied bandwidth (indicate whether measured or estimated, or indicate the necessary bandwidth notified to the IFRB);

k) information as to the orbital position where reception is intended;

l) remarks.

4. In providing these data, the symbols contained in the Radio Regulations or in the Preface to the International Frequency List should be used as far as possible.

[1] See page AP21-1.

MOD AP7

APPENDIX 22

Report of an Irregularity or of an Infringement of the Convention or the Radio Regulations [1]

(See Articles **21** and **22**)

Particulars concerning the station infringing the Regulations:

1. Name [1] if known (in BLOCK letters) . . . . . .
2. Call sign or other identification (in BLOCK letters) . . . . . .
3. Nationality, if known . . . . . .
4. Frequency used (kHz, MHz, GHz or THz) . . . . . .
5. Class of emission [2] . . . . . .
6. Class of station and nature of service, if known . . . . . .
7. Location [3, 4, 5] . . . . . .

Particulars concerning the station, the centralizing office or inspection service reporting the irregularity or infringement:

8. Name (in BLOCK letters) . . . . . .
9. Call sign or other identification (in BLOCK letters) . . . . . .
10. Nationality . . . . . .
11. Location [3, 4] . . . . . .

Particulars of the irregularity or infringement:

12. Name [6] of the station (in BLOCK letters) in communication with the station committing the irregularity or infringement . . . . . .
13. Call sign or other identification (in BLOCK letters) of the station in communication with the station committing the irregularity or infringement . . . . . .
14. Date and time [7] . . . . . .
15. Nature of the irregularity or infringement [8] . . . . . .
16. Extracts from ship log or other information supporting the report . . . . . .

Particulars concerning the transmitting station interfered with [9]:

17. Name of the station (in BLOCK letters) . . . . . .
18. Call sign or other identification (in BLOCK letters) . . . . . .
19. Frequency assigned (kHz, MHz, GHz or THz) . . . . . .
20. Frequency measured at the time of the interference . . . . . .
21. Class of emission [2] and bandwidth (indicate whether measured or estimated, or indicate the necessary bandwidth notified to the IFRB) . . . . . .
22. Receiving location [3, 4] (in BLOCK letters) where the interference was experienced . . . . . .

23. Certificate:
I certify that the foregoing report represents, to the best of my knowledge, a complete and accurate account of what took place.

Signatures [10] . . . . . Date: . . . . . .

. . . .

Instructions for filling in this form

[1] Each report shall refer to only one station (see note 6). If it is forwarded as a letter, it shall be in duplicate, and whenever practicable should be typewritten. It may also be forwarded as a telegram.

[2] The class of emission shall contain the basic characteristics listed in Article **4** and, if possible, the additional characteristics listed in Appendix **6**. If any characteristic cannot be determined, indicate the unknown symbol with a dash. However, if a station is not able to identify unambiguously whether the modulation is frequency or phase modulation, indicate frequency modulation (F).

[3] In the case of land, fixed, or earth stations, the position shall be expressed in latitude and longitude (Greenwich). If the position cannot be furnished, the area of operation should be indicated.

[4] In the case of ship or aircraft stations, the position shall be expressed either in latitude and longitude (Greenwich) or by a true bearing in degrees and distance in nautical miles, or in kilometres, from some well known place. If the position cannot be furnished, the area of operation should be indicated.

[5] Where space stations are concerned, information shall be furnished on the orbit.

[6] If both communicating stations infringe the Regulations, a separate report shall be made for each of these stations.

[7] The time must be expressed as Coordinated Universal Time (UTC) by a group of four figures (0000 to 2359). If the infringement is prolonged or repeated, the dates and times shall be shown.

[8] A separate report is required for each irregularity or infringement, unless they are repeated within a short time.

[9] This information is to be given only in case of a complaint about interference.

[10] This report shall be signed by the operator who has reported the infringement and countersigned by the Master of the ship or person responsible for the aircraft, or the officer in charge of the station in the case of an infringement reported by a station of the mobile service. When the report originates from a centralizing office or from an inspection service, it shall be signed by the head of that office or service and countersigned by an official of the administration sending it.

For use of the administration only

1. Company controlling the installation of the station against which complaint is made . . . . . .

2. Name of the operator of the station held responsible for the irregularity or infringement of the Regulations . . . . . .

3. Action taken . . . . . .

MOD **AP8**

APPENDIX 23

Report of Harmful Interference

(See Article **22**)

Particulars concerning the station causing the interference:

a. Name, call sign or other means of identification . . . . . .

b. Frequency measured . . . . . Date: . . . . . .

Time (UTC): . . . . . .

c. Class of emission [1] . . . . . .

d. Bandwidth (indicate whether measured or estimated) . . . . . .

e. Measured field strength or power flux-density [2] . . . . . .

Date: . . . . . .

Time (UTC): . . . . . .

f. Observed polarization . . . . . .

g. Class of station and nature of service . . . . . .

h. Location/position/area/bearing (QTE) . . . . . .

i. Location of the facility which made the above measurements . . . . . .

Particulars concerning the transmitting station interfered with:

j. Name, call sign or other means of identification . . . . . .

k. Frequency assigned . . . . . .

[1] The class of emission shall contain the basic characteristics listed in Article **4** and, if possible, the additional characteristics listed in Appendix **6**. If any characteristic cannot be determined, indicate the unknown symbol with a dash. However, if a station is not able to identify unambiguously whether the modulation is frequency or phase modulation, indicate frequency modulation (F).

[2] When measurements are not available, signal strengths according to the QSA scale should be provided.

l. Frequency measured . . . . . Date: . . . . . .

Time (UTC): . . . . . .

m. Class of emission [1] . . . . . .

n. Bandwidth (indicate whether measured or estimated, or indicate the necessary bandwidth notified to the IFRB) . . . . . .

o. Location/position/area . . . . . .

p. Location of the facility which made the above measurements . . . . . .

Particulars furnished by the receiving station experiencing the interference:

q. Name of station . . . . . .

r. Location/position/area . . . . . .

s. Dates and times (UTC) of occurrence of harmful interference . . . . . .

t. Bearings (QTE) or other particulars . . . . . .

u. Nature of interference . . . . . .

v. Field strength or power flux-density of the wanted emission at the receiving station experiencing the interference [2] . . . . . .

Date: . . . . . .

Time (UTC): . . . . . .

w. Polarization of the receiving antenna or observed polarization . . . . . .

x. Action requested . . . . . .

Note: For convenience and brevity, telegraphic reports shall be in the format above, using the letters in the order listed in lieu of the explanatory titles, but only those letters for which information is provided should be used. However, sufficient information shall be provided to the administration receiving the report, so that an appropriate investigation can be conducted.

For notes, see page AP23-1.

NOC **AP16**

APPENDIX 24

Phonetic Alphabet and Figure Code

(See Articles **37** and **65**)

1. When it is necessary to spell out call signs, service abbreviations and words, the following letter spelling table shall be used:

Letter to be transmitted	Word to be used	Spoken as *
A	Alfa	AL FAH
B	Bravo	BRAH VOH
C	Charlie	CHAR LEE or SHAR LEE
D	Delta	DELL TAH
E	Echo	ECK OH
F	Foxtrot	FOKS TROT
G	Golf	GOLF
H	Hotel	HOH TELL
I	India	IN DEE AH
J	Juliett	JEW LEE ETT
K	Kilo	KEY LOH
L	Lima	LEE MAH

* The syllables to be emphasized are underlined.

Letter to be transmitted	Word to be used	Spoken as *
M	Mike	MIKE
N	November	NO VEM BER
O	Oscar	OSS CAH
P	Papa	PAH PAH
Q	Quebec	KEH BECK
R	Romeo	ROW ME OH
S	Sierra	SEE AIR RAH
T	Tango	TANG GO
U	Uniform	YOU NEE FORM or OO NEE FORM
V	Victor	VIK TAH
W	Whiskey	WISS KEY
X	X-ray	ECKS RAY
Y	Yankee	YANG KEY
Z	Zulu	ZOO LOO

2. When it is necessary to spell out figures or marks, the following table shall be used:

Figure or mark to be transmitted	Code word to be used	Spoken as **
0	NADAZERO	NAH-DAH-ZAY-ROH
1	UNAONE	OO-NAH-WUN
2	BISSOTWO	BEES-SOH-TOO
3	TERRATHREE	TAY-RAH-TREE
4	KARTEFOUR	KAR-TAY-FOWER
5	PANTAFIVE	PAN-TAH-FIVE
6	SOXISIX	SOK-SEE-SIX

* The syllables to be emphasized are underlined.

** Each syllable should be equally emphasized.

Figure or mark to be transmitted	Code word to be used	Spoken as *
7	SETTESEVEN	SAY-TAY-SEVEN
8	OKTOEIGHT	OK-TOH-AIT
9	NOVENINE	NO-VAY-NINER
Decimal point	DECIMAL	DAY-SEE-MAL
Full stop	STOP	STOP

3. However, stations of the same country, when communicating between themselves, may use any other table recognized by their administration.

* Each syllable should be equally emphasized.

NOC **AP25 Mar2** APPENDIX 25 Mar2

Frequency Allotment Plan for Coast Radiotelephone Stations Operating in the Exclusive Maritime Mobile Bands Between 4 000 and 23 000 kHz

(See Nos. **4198** and **4212** of the Radio Regulations and Appendix **16**)

Note by the General Secretariat: This appendix is not published in the present Final Acts.

NOC **AP26**

APPENDIX 26

Aer

Frequency Allotment Plan for the Aeronautical Mobile Service and Related Information

This Appendix to the Radio Regulations (Geneva, 1959) was published as a separate booklet. As far as the Aeronautical Mobile (R) Service is concerned, a revised Plan was adopted in 1966 by the Aeronautical Conference: it is contained in Appendix **27**. *However, the Plan adopted in 1959 for the Aeronautical Mobile (OR) Service remains in force, so that for this service reference should be made to Appendix* **26**. *Copies of Appendix* **26** *(1959 edition) are obtainable from the General Secretariat of the ITU.*

NOC **AP27**

APPENDIX 27 *

Aer

MOD **Frequency Allotment Plan for the Aeronautical Mobile (R) Service and Related Information between 2 850 kHz and 17 970 kHz**

This Appendix is published as a separate booklet. It contains provisions relating exclusively to the Aeronautical Mobile (R) Service, which have replaced the provisions relating to this service that are contained in Appendix **26**. *Reference should therefore be made exclusively to Appendix* **27** *as far as the Aeronautical Mobile (R) Service is concerned.*

* Up to 31.1.1983 at 2359 UTC, then replaced by the Appendix **27 Aer2**.

MOD **AP27 Aer2** *

APPENDIX 27 Aer2 *

Frequency Allotment Plan for the Aeronautical Mobile (R) Service and Related Information Between 2 850 kHz and 22 000 kHz

* See Annex to Resolution **404**.

MOD **AP28** APPENDIX 28

Method for the Determination of the Coordination Area Around an Earth Station in Frequency Bands Between 1 GHz and 40 GHz Shared Between Space and Terrestrial Radiocommunication Services

1. *Objectives*

The coordination area (see No. **165**) is determined by calculating, in all directions of azimuth from the earth station, the coordination distances (see No. **167**) and drawing to scale on an appropriate map the coordination contour (see No. **166**).

It must be emphasized that the presence or installation of a terrestrial station within the coordination area of an earth station would not necessarily preclude the successful operation of either the earth station or that terrestrial station, since the method is based on the most unfavourable case assumptions as regards interference.

For the determination of the coordination area two cases may have to be considered:

1) for the earth station when it is transmitting (and hence capable of interfering with terrestrial stations);

2) for the earth station when it is receiving (and hence capable of being interfered with by terrestrial stations).

Where an earth station is intended to transmit a variety of classes of emissions, the earth station parameters to be used in the determination of the coordination contour shall be those which lead to the greatest coordination distances, for each earth station antenna beam and in each allocated frequency band which the earth station proposes to share with the terrestrial services.

Where an earth station is intended to receive a variety of classes of emissions, the earth station parameters to be used in the determination of the coordination contour shall be those which lead to the greatest coordination distances, for each earth station antenna beam and in each allocated

frequency band which the earth station proposes to share with the terrestrial services, except in the case where the administration responsible for the earth station determines that a smaller coordination contour would adequately protect all the transmissions intended to be received by the earth station. When the determination of such a smaller coordination contour is based on a departure from the procedure of this Appendix, the notifying administration shall indicate, in detail, the nature of such departure.

If subsequently an administration decides to protect its receiving earth station through notification of a coordination contour which is greater than the one it had notified under a departure from the method of this Appendix, it must recoordinate the earth station. Any resulting greater protection shall be effective from the date of publication of the notice in Part II of the IFRB weekly circular.

This Appendix provides methods which are suitable for either graphical or computer determination of the coordination area.

It is suggested to draw, together with the coordination contour, auxiliary contours based on less unfavourable assumptions than those chosen for the determination of the coordination contour. These auxiliary contours may be used during subsequent negotiations between the administrations concerned with a view to eliminating from the discussions (without the need for more precise calculations) the case of certain existing or planned stations located within the coordination area. The determination and use of these auxiliary contours is explained in Annex I to this Appendix.

2. *General considerations*

2.1 *Concept of minimum permissible transmission loss*

The determination of coordination distance, as the distance from an earth station beyond which interference from or to a terrestrial station may be considered to be negligible, is based on the premise that the attenuation of an unwanted signal is a monotonically increasing function of distance.

The amount of attenuation required between an interfering transmitter and an interfered-with receiver is given by the minimum permissible transmission loss (dB) for p% of the time, a value which must be exceeded by the predicted transmission loss for (100 − p)% of the time.

$$L(p) = P_{t'} - P_r(p) \qquad (1)$$

where:

$P_{t'}$ * : maximum available transmitting power level (dBW) in the reference bandwidth at the input to the antenna of an interfering station;

$P_r(p)$: permissible level of an interfering emission (dBW) in the reference bandwidth, to be exceeded for no more than p% of the time at the output of the receiving antenna of an interfered-with station, where the interfering emission originates from a single source.

$P_{t'}$ and $P_r(p)$ are defined for the same radio frequency bandwidth (reference bandwidth) and $L(p)$ and $P_r(p)$ for the same percentage of the time, dictated by the performance criteria of the interfered-with system.

For the small percentages of the time which are of interest here, it is necessary to distinguish between two significantly different attenuation mechanisms:

- attenuation of signals subject to tropospheric propagation via near-great circle paths; mode (1) see § 3;

- attenuation of signals subject to scatter due to hydrometeors; mode (2) see § 4.

* Primes refer to the parameters associated with the interfering station.

2.2 *Concept of minimum permissible basic transmission loss*

In the case of propagation mode (1) the transmission loss is defined in terms of separable parameters, viz.: a basic transmission loss, (i.e. attenuation between isotropic antennae) and the effective antenna gains at either end of an interference path. The minimum permissible basic transmission loss may then be expressed as:

$$L_b(p) = P_{t'} + G_{t'} + G_r - P_r(p) \qquad (2)$$

where:

$L_b(p)$: minimum permissible basic transmission loss (dB) for p% of the time; this value must be exceeded by the predicted basic transmission loss for (100 − p)% of the time;

$G_{t'}$: gain (dB relative to isotropic) of the transmitting antenna of the interfering station. If the interfering station is an earth station, this is the antenna gain towards the physical horizon on the azimuth considered; in the case of a terrestrial station, the maximum antenna gain is to be used;

G_r : gain (dB relative to isotropic) of the receiving antenna of the interfered-with station. If the interfered-with station is an earth station, this is the gain towards the physical horizon on the azimuth considered; in the case of a terrestrial station, the maximum antenna gain is to be used.

Annex II provides numerical and graphical methods to determine the angle between the earth station antenna main beam and the physical horizon, and also the horizon antenna gain, as functions of azimuth angle.

When considering non-geostationary satellites, $G_{t'}$ or G_r (whichever pertains to the earth station antenna) is variable with time. In such cases,

an equivalent time-invariant earth station antenna gain is to be used *. This equivalent gain is either 10 dB less than the maximum horizon antenna gain or is that value of horizon antenna gain exceeded for no more than 10% of the time (if available), whichever is the greater.

2.3 *Derivation and tabulation of interference parameters*

2.3.1 *Permissible level of the interfering emission*

The permissible level of the interfering emission (dBW) in the reference bandwidth, to be exceeded for no more than p% of the time at the output of the receiving antenna of a station subject to interference, from each source of interference, is given by the general formula below:

$$P_r(p) = 10 \log (kT_eB) + J + M(p) - W \quad (3)$$

where:

$$M(p) \equiv M(p_0/n) = M_0(p_0) \quad (4)$$

with:

k: Boltzmann's constant, 1.38×10^{-23} J/K;

T_e: thermal noise temperature of the receiving system (K), at the output of the receiving antenna (see *Note 1*);

B: reference bandwidth (Hz) (bandwidth, of the interfered-with system, over which the power of the interfering emission can be averaged);

* This equivalent antenna gain is not to be used when the earth station antenna points in the same direction for appreciable periods of time (e.g. when working to space probes or to satellites which are almost geostationary).

J: ratio (dB) of the permissible long term (20% of the time) interfering emission power to the thermal noise power of the receiving system, referred to the output terminals of the receiving antenna (see *Note 2*);

p_0: percentage of the time during which the interference from all sources may exceed the permissible value;

n: number of expected entries of interference, assumed to be uncorrelated;

p: percentage of the time during which the interference from one source may exceed the permissible value; since the entries of interference are not likely to occur simultaneously: $p = p_0/n$;

$M_0(p_0)$: ratio (dB) between the permissible powers of the interfering emission, during p_0% and 20% of the time, respectively, for all entries of interference (see *Note 3*);

$M(p)$: ratio (dB) between the permissible powers of the interfering emission during p% of the time for one entry of interference, and during 20% of the time for all entries of interference;

W: equivalence factor (dB) relating interference from interfering emissions to that caused by the introduction of additional thermal noise of equal power in the reference bandwidth. It is positive when the interfering emissions would cause more degradation than thermal noise (see *Note 4*).

Tables I and II list values for the above parameters.

In certain cases, an administration may have reason to believe that, for its specific earth station, a departure from the values associated with the earth station, as listed in Table II, may be justified. Attention is drawn

to the fact that for specific systems the bandwidths B or, as for instance in the case of demand assignment systems, the percentages of the time p and p_0 may have to be changed from the values given in Table II. For further information see § 2.3.2.

Note 1: The noise temperature, in kelvins, of the receiving system, referred to the output terminals of the receiving antenna, may be determined from:

$$T_e = T_a + (e - 1)\,290 + eT_r \qquad (5a)$$

where:

T_a : noise temperature (K) contributed by the receiving antenna;

e : numerical loss in the transmission line (e.g. a waveguide) between antenna and receiver front end;

T_r : noise temperature (K) of the receiver front end, including all successive stages, referred to the front end input.

For radio-relay receivers and where the waveguide loss of a receiving earth station is not known, a value of $e = 1.0$ is to be used.

Note 2: The factor J (dB) is defined as the ratio of total permissible long term (20% of the time) power of interfering emissions in the system, to the long term thermal radio frequency noise power in a single receiver. In the computation of this factor, the interfering emission is considered to have a flat power spectral density, its actual spectrum shape being taken into account by the factor W (see below). For example, in a 50-hop terrestrial hypothetical reference circuit, the total allowable additive interference power is 1 000 pW0p (CCIR Recommendation 357-3) and the mean thermal noise power in a single hop may be assumed to be 25 pW0p. Therefore, since in a frequency-division multiplex/frequency modulation (FDM/FM) system the ratio of a flat interfering noise power to the thermal noise power in the same reference band is the same before and after demodulation, J is given by the ratio 1 000/25 expressed in dB, i.e. $J = 16$ dB. In a fixed-satellite service system, the total allowable interference power is also 1 000 pW0p (CCIR Recommendation 356-4), but the thermal noise contribution of the down-link is not likely to exceed 7 000 pW0p, hence $J \geq -8.5$ dB.

In digital systems interference is measured and prescribed in terms of the bit error rate or its permissible increase. While the bit error rate increase is additive in a reference circuit comprising tandem links, the radio frequency power of interfering emissions giving rise to such bit error rate increase is not additive, because bit error rate is not a linear function of the level of the radio frequency power of interfering emissions. Thus, it may be necessary to protect each receiver individually. For digital radio-relay systems operating above 10 GHz, and for all digital satellite systems, the long term interference power may be of the same order of magnitude as the long term thermal noise, hence $J = 0$ dB. For digital radio-relay systems operating below 10 GHz, long term interference power should not decrease the receiver fade margin by more than 1 dB. Thus the long term interference power should be about 6 dB below the thermal noise power and hence $J = -6$ dB.

Note 3: $M_0(p_0)$ (dB) is the "interference margin" between the short term (p_0%) and the long term (20%) allowable powers of an interfering emission.

For analogue radio-relay and fixed-satellite systems in bands between 1 GHz and 15 GHz, this is equal to the ratio (dB) between 50 000 and 1 000 pW0p (17 dB).

In the case of digital systems, system performance at frequencies above 10 GHz can, in most areas of the world, usefully be defined as the percentage of the time p_0 for which the wanted signal is allowed to drop below its operating threshold, defined by a given bit error rate. During non-faded operation of the system, the desired signal will exceed its threshold level by some margin M_s which depends on the rain climate in which the station operates. The greater this margin, the greater the enhancement of the interfering emission which would degrade the system to threshold performance. As a first order estimate it may be assumed that, for small percentages of the time (of the order of 0.001% to 0.003%), the level of interfering emissions may be allowed to equal the thermal noise which exists at the demodulator input during faded conditions. Thus, M_0 in Tables I and II may, for digital systems operating above 10 GHz, be assumed to be equal to the fade margin M_s of the system. For digital radio-relay systems

operating below 10 GHz it is assumed that the short term power of an interfering emission can be allowed to exceed the long term power of the interfering emission by an amount equal to the fade margin of the system minus J, i.e. 41 dB, where $J = -6$ dB.

Note 4: The factor W (dB) is the ratio of radio frequency thermal noise power to the power of an interfering emission in the reference bandwidth when both produce the same interference after demodulation (e.g. in a FDM/FM system it would be expressed for equal voice channel performance; in a digital system it would be expressed for equal bit error probabilities). For FM signals, it is defined as follows:

$$W = 10 \log \left\{ \frac{\text{Interference power in the receiving system after demodulation}}{\text{Thermal noise power in the receiving system after demodulation}} \times \frac{\text{Thermal noise power at the output of the receiving antenna in the reference bandwidth}}{\text{Power of the interfering emission at the radio frequency in the reference bandwidth, at the output of the receiving antenna}} \right\} \quad (5b)$$

The factor W depends on the characteristics of the wanted and the interfering signals. To avoid the need for considering a wide range of characteristics, upper limit values were determined for the factor W. When the wanted signal uses frequency modulation with r.m.s. modulation indices which are greater than unity, W is not higher than 4 dB. In such cases, a conservative figure of 4 dB will be used for the factor W in (3), regardless of the characteristics of the interfering signal. For low-index FDM/FM systems a very small reference bandwidth (4 kHz) implies values of W not greater than 0 dB. In such cases, a conservative figure of 0 dB will be used for W in (3), regardless of the characteristics of the interfering signal.

When the wanted signal is digital, W is usually equal to or less than 0 dB, regardless of the characteristics of the interfering signal.

2.3.2 *Coordination parameters for very narrow-band transmissions (receiving earth station)*

2.3.2.1 *General*

In the case of an earth station which receives both broad-band and very narrow-band transmissions (e.g. single channel per carrier (SCPC) transmissions) it may be desirable to draw two separate coordination contours: one for the narrow-band transmissions and one for broad-band transmissions, giving the specific sections of frequency bands used for very narrow-band transmissions.

2.3.2.2 *Pre-assigned narrow-band transmissions*

For such transmissions, it is appropriate to change the value of the reference bandwidth to the value of the bandwidth occupied by one such narrow-band transmission.

2.3.2.3 *Demand-assigned narrow-band transmissions*

For such transmissions, in addition, it may be appropriate to take into account the reduced probability that a particular frequency channel will be suffering interference at the time when it is actually selected for use at an earth station.

Administrations shall furnish all relevant technical data used in the determination of the coordination contour(s) for such transmissions.

3. *Determination of coordination distance for propagation mode (1) – Great circle propagation mechanisms*

3.1 *Radio-climatic zones*

In the calculation of coordination distance for propagation mode (1), the world is divided into three basic radio-climatic zones termed Zones A, B and C. These Zones are defined as follows:

Zone A: Entirely land.

Zone B: Seas, oceans and substantial bodies of inland water (as a criterion of a substantial body of water, one which can encompass a circle of diameter 100 km) at latitudes greater than 23°30′ N or S, but excepting the Black Sea and the Mediterranean.

Zone C: Seas, oceans and substantial bodies of inland water (as a criterion of a substantial body of water, one which can encompass a circle of diameter 100 km) at latitudes less than 23°30′ N or S, and the Black Sea and the Mediterranean.

3.2 *Calculation of coordination distance for paths within a single radio-climatic zone*

3.2.1 *General*

Equation (2) provides the value of minimum permissible basic transmission loss $L_b(p)$ for p% of the time. From this minimum permissible basic transmission loss, the coordination distance in each radio-climatic zone is derived using either of two alternative methods. The first method, described in § 3.2.2, is a numerical method comprising several mathematical equations, and is intended principally for use with the aid of a computer. The second method is a graphical method and is described in § 3.2.3.

Where the distance derived in § 3.2.2 or § 3.2.3 lies entirely within the boundary of the radio-climatic zone appropriate to the earth station, that distance is taken as the actual coordination distance for propagation mode (1). If the distance extends beyond the boundary of one radio-climatic zone, the overall coordination distance is obtained using the method given in § 3.3.

3.2.2 *Numerical method*

The minimum permissible basic transmission loss is related to coordination distance by the following expression:

$$L_b(p) = A_0 + \beta d_1 + A_h \qquad (6)$$

in which:

$A_0 = 120 + 20 \log f$ (dB)

β: rate of attenuation (dB/km)

d_1: coordination distance for propagation mode (1) (km)

A_h: horizon angle correction (dB)

f: frequency (GHz)

A_h is given by:

$$A_h = 20 \log (1 + 4.5\, f^{1/2}\varepsilon) + f^{1/2}\varepsilon \quad \text{for } \varepsilon > 0° \qquad (7a)\ *$$

$$A_h = 8\,\varepsilon \quad \text{for } -0.5° \leqslant \varepsilon \leqslant 0° \qquad (7b)$$

$$A_h = -4 \quad \text{for } \varepsilon \leqslant -0.5° \qquad (7c)$$

in which ε = horizon angle ** (degrees)

From equation (6) the coordination distance d_1 may be found as follows:

$$d_1 = (L_b(p) - A_0 - A_h)/\beta \qquad (8)$$

The value of β depends on the radio-climatic zone and the percentage of time p, and is the sum of three components:

$$\beta = \beta_z + \beta_v + \beta_o \qquad (9)$$

* Equation (7a) and thus Fig. 1 should be used with caution at frequencies higher than about 20 GHz or for horizon angles above 5° until further studies have been completed by the CCIR in accordance with Resolution **60**.

** Horizon angle is defined here as the angle viewed from the centre of the earth station antenna, between the horizontal plane and a ray that grazes the visible physical horizon in the direction concerned.

in which:

β_z: rate of attenuation (dB/km) due to all effects except atmospheric gases

β_v: rate of attenuation (dB/km) due to atmospheric water vapour

β_o: rate of attenuation (dB/km) due to oxygen

β_z depends on the radio-climatic zone, frequency and the percentage of time as follows:

for Zone A,

$$\beta_{zA} = 0.154\,(1 + 3.05 \log f)^{0.4}\,(0.9028 + 0.0486 \log p)^2 \qquad (10)$$

for Zones B and C,

$$\beta_{zB} = \beta_{zC} = (0.272 + 0.047 \log p)^2 \qquad (11)$$

β_v depends on the frequency and the density of water vapour in the air as follows (β_v may be neglected when $f < 15$ GHz):

$$\beta_v = 3.5 \times 10^{-4} \rho \left[\frac{1}{\left(1 - \frac{22.3}{f}\right)^2 + \frac{9}{f^2}} + \frac{1}{\left(1 + \frac{22.3}{f}\right)^2} \right] + 3 \times 10^{-6} \rho f^2 \qquad (12)$$

where ρ is the water vapour density (g/m^3), and depends on the radio-climatic zone. The following values are to be used:

Zone A, $\rho = 1$ g/m^3
Zone B, $\rho = 2$ g/m^3
Zone C, $\rho = 5$ g/m^3

β_o depends on the frequency as follows:

$$\beta_o = 68 \times 10^{-4} \times f^2 \left\{ \frac{1}{(60 - f)^2} + \frac{1}{(60 + f)^2} + \frac{1}{(f^2 + 0.36)} \right\} \qquad (13)$$

Thus the coordination distance in Zone A is derived for the appropriate frequency, percentage of time and horizon angle using equations (7), (8), (9), (10), (12) and (13). Similarly, the coordination distance in Zone B or C is derived using equations (7), (8), (9), (11), (12) and (13).

3.2.3 *Graphical method*

The equations given in § 3.2.2 have been converted into graphical form, to provide a second method of obtaining coordination distance for propagation mode (1). It is emphasized that the procedure described in this Section is an alternative to that described in § 3.2.2. and each administration should use the method which is considered most convenient.

The minimum permissible basic transmission loss $L_b(p)$ is obtained from equation (2). The "coordination loss", L_1, is obtained from the minimum permissible basic transmission loss by subtraction of the horizon angle correction A_h:

$$L_1 = L_b(p) - A_h \qquad (14)$$

Values for the horizon angle correction are obtained from Fig. 1 for the appropriate frequency and horizon angle *.

The coordination distance in each radio-climatic zone is to be obtained as follows. Taking Zone A first, the coordination distance for 0.01% of the time, $d_A(0.01)$ is obtained with the appropriate value of coordination loss L_1 and frequency from Fig. 2. The Zone A coordination distance for p% of the time is then obtained by multiplying the distance for 0.01% of the time by the factor Δp_A given in Fig. 3.

$$d_A = d_A(0.01) \times \Delta p_A \qquad (15)$$

In a similar manner, the coordination distance in Zone B is obtained using values for $d_B(0.01)$ and Δp_{BC} obtained from Figs. 4 and 3 respectively. The coordination distance in Zone C is obtained using values for $d_C(0.01)$ and Δp_{BC} obtained from Figs. 5 and 3 respectively.

* Horizon angle is defined here as the angle viewed from the centre of the earth station antenna, between the horizontal plane and a ray that grazes the visible physical horizon in the direction concerned.

3.3 *Mixed paths*

If the distance being calculated extends through more than one radio-climatic zone (mixed path), the prediction is made as follows:

Designating the successive path sections in different zones by use of the suffixes i, j, k . . ., it follows that:

$$L_b(p) - A_0 - A_h = \beta_i \, d_i \tag{16}$$

where β_i is the rate of attenuation in the first zone (i).

Now, in the direction considered, if the value d_i is greater than the distance D_i in the first zone (i), it follows that:

$$L_b(p) - A_0 - A_h - \beta_i \, D_i = \beta_j \, d_j \tag{17}$$

and so d_j is found. If the value d_j is greater than the distance D_j of the path in the second zone (j), it can then be stated that:

$$L_b(p) - A_0 - A_h - \beta_i \, D_i - \beta_j \, D_j = \beta_k \, d_k \tag{18}$$

from which d_k may be found. This method may be extended as necessary, and in the case given the total distance d_1 may now be expressed as:

$$d_1 = D_i + D_j + d_k \quad \text{km} \tag{19}$$

Annex III provides examples for the graphical application of this procedure.

3.4 *Maximum coordination distance for propagation mode (1)*

In the process of determining the coordination distance for propagation mode (1), if values result which exceed the appropriate value given in Fig. 6 or in Table III, the coordination distance for propagation mode (1) shall be the value given in Fig. 6 or in Table III. In the case of mixed paths, the values to be considered are those given for Zones B or C, as appropriate. In the case of mixed paths with more than one segment in Zone A, the total distance in Zone A shall not exceed the value given in Fig. 6 or in Table III for Zone A.

4. *Determination of the coordination contour for propagation mode (2) — Scattering from hydrometeors*

The determination of the coordination contour for scattering from hydrometeors (rain-scatter) is predicated on a path geometry which is substantially different from that of the great circle propagation mechanisms. As a first approximation, energy is scattered isotropically by rain, so that interference may result for large scattering angles, and for beam intersections away from the great circle path.

4.1 *Normalized transmission loss L_2 (0.01)*

To determine the coordination contour associated with rain-scatter it is necessary to calculate a "normalized transmission loss", given by:

$$L_2(0.01) = P_{t'} + \Delta G - P_r(p) - F(p,f) \tag{20}$$

where:

ΔG: difference (dB) between the maximum gain of terrestrial station antennae in the frequency band under investigation and the value of 42 dB. When the earth station is a transmitting station, the values shown in Table I should be used; when it is a receiving station, the values shown in Table II should be used.

$F(p,f)$: correction (dB) to relate the effective percentage of the time p to 0.01% in the frequency band under consideration (see Fig. 7).

All other parameters have been defined in § 2. For terrestrial stations, values of $P_{t'}$ are listed in Table II.

4.2 *Rain-climatic zones*

The world has been divided into five basic rain-climatic zones numbered 1 to 5 as shown in Fig. 8. The climatic characteristics of these zones for 0.01% of the time are given in Table IV.

4.3 *Calculation of the rain-scatter distance d_r*

4.3.1 *Numerical method*

The normalized transmission loss is composed of six terms:

$$L_2(0.01) = A_1 - A_2 + A_3 - A_4 - A_5 + A_6 \quad (21)$$

in which

$$A_1 = 157 + 20 \log d_r - 20 \log f \text{ (dB)} \quad (22)$$

where d_r is the rain-scatter distance (km).

$$A_2 = 26 + 14 \log R - 5.88 \times 10^{-5} (d_r - 40)^2 \text{ (dB)} \quad (23)$$

where R is the surface rainfall rate in mm/h (Table IV). The horizon distance of the terrestrial station is taken to be 40 km.

$$A_3 = 0.005 (f - 10)^{1.7} R^{0.4} \text{ (dB)} \quad \text{for } 10 < f < 40 \text{ GHz} \quad (24a)$$

$$= 0 \text{ (dB)} \quad \text{for } f \leqslant 10 \text{ GHz} \quad (24b)$$

$$A_4 = 10 \log \left[\frac{2.17}{\gamma \cdot D} \left(1 - 10^{-(\gamma \cdot D)/5}\right)\right] \text{ (dB)} \quad \text{for } f > 5 \text{ GHz} \quad (25a)$$

$$= 0 \text{ (dB)} \quad \text{for } f \leqslant 5 \text{ GHz} \quad (25b)$$

where D is the diameter of the rain cell in km (Table IV)

and

$$\gamma = 0.008 R (f - 5) \quad \text{for } f > 5 \text{ GHz} \quad (26a)$$

$$= 0 \quad \text{for } f \leqslant 5 \text{ GHz} \quad (26b)$$

$$A_5 = 10 \log D \text{ (dB)} \quad (27)$$

$$A_6 = d_o \beta_o + d_v \beta_v \quad (28)$$

where

$$d_o = 0.7 d_r + 32 \text{ km} \quad \text{for } d_r < 340 \text{ km} \quad (29a)$$

$$= 270 \text{ km} \quad \text{for } d_r \geqslant 340 \text{ km} \quad (29b)$$

$$d_v = 0.7 d_r + 32 \text{ km} \quad \text{for } d_r < 240 \text{ km} \quad (30a)$$

$$= 200 \text{ km} \quad \text{for } d_r \geqslant 240 \text{ km} \quad (30b)$$

β_v is given in (12), where ρ is to be replaced by ρ_m (Table IV).

β_o is given in (13).

Thus, for a given rain-climatic zone the parameters in Table IV are used to calculate the rain-scatter distance d_r by an iterative process.

4.3.2 *Graphical method*

The equations of § 4.3.1 have been converted into graphical form to give an alternative method of determining rain-scatter distance d_r.

To obtain the rain-scatter distance for rain-climatic Zone 1, the normalized transmission loss, obtained by solving equation (20), is used together with the appropriate frequency in Fig. 9 to yield the rain-scatter distance d_r.

Figs. 10 to 13 show corresponding curves for rain-climatic Zones 2 to 5. In all cases, the rain climate to be chosen is that which corresponds to the location of the earth station.

4.4 *Maximum rain-scatter distances*

In the process of determining the rain-scatter distance for propagation mode (2), if values result which exceed the appropriate value given in Table V, the rain-scatter distance d_r for propagation mode (2) shall be the value given in that Table.

4.5 *Construction of the rain-scatter coordination contour*

Due to the peculiar geometry associated with rain-scatter propagation, the location of the centre of the rain-scatter coordination contour does not coincide with the location of the earth station. The distance by which these locations are separated is designated Δd.

The rain-scatter distance d_r, together with the elevation angle ε_s of the main beam of the earth station antenna, are used to determine Δd using the equation:

$$\Delta d = 5.88 \times 10^{-5} (d_r - 40)^2 \cot \varepsilon_s \quad \text{(km)} \qquad (31)$$

Alternatively, Δd may be determined from Fig. 14.

The distance Δd is measured on a map of appropriate scale from the earth station location along the azimuth of the main beam of the earth station antenna; a circle of radius d_r is drawn around the point so reached. The circle is the rain-scatter coordination contour.

The rain-scatter coordination distance, to be labelled d_2, is the distance from the earth station site to the rain-scatter coordination contour on the azimuth under consideration.

4.6 *Absence of mixed path effects*

As the only significant rain-scatter is that occurring in the general area of the earth station, the question of a mixed path does not arise. The rain-climatic zone relevant to the earth station is applied, together with the appropriate maximum rain-scatter distance from Table V.

5. *Minimum value of coordination distance*

If the method for determining d_1, the coordination distance for propagation mode (1), leads to a result less than 100 km, d_1 shall be taken as equal to 100 km. Similarly, if the method for determining the rain-scatter distance d_r leads to a result less than 100 km, d_r shall be taken as equal to 100 km.

6. *Coordination distance*

On any azimuth, the greater of the coordination distances d_1 or d_2 is the coordination distance to be used for the coordination procedure.

An example of a coordination contour is shown in Fig. 15.

7. *Mobile (except aeronautical mobile) earth stations*

For the purpose of establishing whether prior agreement with another administration under the provisions of Nos. **1108** to **1111** is required, it is necessary to determine the coordination area which would encompass all coordination areas determined for each location within the service area within which operation of the mobile earth stations is proposed.

The preceding method may be used for this purpose by determining the appropriate individual coordination contours for a sufficiently large number of locations within and on the periphery of the proposed service area and by determining from those a composite coordination area which contains all possible individual coordination areas.

8. *Revision of propagation data*

The material contained in sections 3, 4 and 6 and in Annex III of this Appendix is based, directly or indirectly, on propagation data compiled, interpreted and documented in CCIR Reports and Recommendations. Knowledge regarding propagation is subject to change as new data becomes available, and such change may require or strongly suggest corresponding amendments to the propagation-related material in this Appendix.

Resolution **60** provides for the mechanism by which an updating of the propagation-related elements of this Appendix is to be implemented.

TABLE I

Parameters Required for the Determination of Coordination Distance for a Transmitting Earth Station

Space Radiocommunication Service Designation		Space Operation	Fixed-Satellite Mobile-Satellite	Fixed-Satellite	Space Research	Fixed-Satellite Mobile-Satellite Meteorological-Satellite	Fixed-Satellite (5)	Fixed-Satellite	Fixed-Satellite (5)	Fixed-Satellite (5)	Fixed-Satellite
Frequency Bands (GHz)		1.427–1.429	2.655–2.690	5.725–7.075	7.145–7.235	7.900–8.400	10.7–11.7	12.5–14.5	14.5–14.8	17.7–18.1	27–37.5
Modulation at Terrestrial Station (1)		A	A	A	A	A	A	A	A	N	N
Interference Parameters and Criteria	p_0 (%)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.003	0.003
	n	2	1	2	2	2	2	2	2	1	1
	p (%)	0.005	0.01	0.005	0.005	0.005	0.005	0.005	0.005	0.003	0.003
	J (dB)	16	9	16	16	16	16	16	16	0	0
	M_0 (p_0) (dB)	17	17	17	17	17	17	17	17	30	30
	W (dB)	0	0	0	0	0	0	0	0	0	0
Terrestrial Station Parameters	B (Hz)	4×10^3	4×10^3	4×10^3	4×10^3	4×10^3	4×10^3	4×10^3	4×10^3	1×10^6	1×10^6
	G_r (dB) (2)	35	52(3)	45	47	47	50	50	50	50	50
	ΔG (dB)	–7	10(3)	3	5	5	8	8	8	8	8
	T_r (K)	750	500(3)	750	750	750	1500	1500	1500	3200	3200
Auxiliary Parameters	S (dBW) (4)	166	192	176	178	178	178	178	178	154	154
	P_r (p) (dBW) in B	–131	–140	–131	–131	–131	–128	–128	–128	–104	–104

(1) A = analogue modulation; N = digital modulation.
(2) Feeder losses are not included.
(3) In these bands the parameters for the terrestrial station associated with transhorizon systems have been used.
(4) For a definition of the parameter S see Annex I.
(5) The parameters associated with these columns are for feeder links to broadcasting satellites and are provisional pending further study by the CCIR: see Resolution 101.

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TABLE II

Parameters Required for the Determination of Coordination Distance for a Receiving Earth Station

Space Radiocommunication Service Designation		Space Operation (1)	Meteorological-Satellite (1)	Meteorological-Satellite	Space Research		Fixed-Satellite		Fixed-Satellite		Fixed-Satellite		Fixed-Satellite Meteorological-Satellite Mobile-Satellite		Earth Exploration-Satellite	Space Research		Fixed-Satellite		Meteorological-Satellite	Fixed-Satellite	Mobile-Satellite
					Near Earth	Deep Space; Manned										Near Earth	Deep Space					
Frequency Bands (GHz)		1.525–1.535	1.670–1.700	1.700–1.790	1.700–1.710 2.290–2.300		2.500–2.690		3.400–4.200		4.500–4.800		7.250–7.750		8.025–8.400	8.400–8.500		10.7–12.75		17.7–40.0		
Modulation at Earth Station (2)					–	–	A	N	A	N	A	N	A	N	–	–	–	A	N		N	
Interference Parameters and Criteria	p_0 (%)				0.1	0.001	0.03	0.003	0.03	0.003	0.03	0.003	0.03	0.003	1.0	0.1	0.001	0.03	0.003		0.003	
	n				2	1	3	3	3	3	3	3	3	3		2	1	2	1		1	
	p (%)				0.05	0.001	0.01	0.001	0.01	0.001	0.01	0.001	0.01	0.001		0.05	0.001	0.015	0.003		0.003	
	J (dB)				–	–	–8	0	–8	0	–8	0	–8	0		–	–	–8	0		0	
	$M_0(p_0)$ (dB)				–	–	17	5	17	5 (3)	17	5 (3)	17	5 (3)		–	–	17	5 (3)		5 (3)	
	W (dB)				–	–	4	0	4	0	4	0	4	0		–	–	4	0		0	
Terrestrial Station Parameters	E (dBW) in B (8)	55	55	92 (6)	62(4)(6)	62(4)(6)	92 (6)	92 (6)	55	55	92 (6)	92 (6)	55	55	55	25 (4)	25 (4)	55	55		35 (5)	
	P_t (dBW) in B	13	13	40 (6)	10(4)(6)	10(4)(6)	40 (6)	40 (6)	13	13	40 (6)	40 (6)	13	13	13	–17(4)	–17(4)	10	10		–10(5)	
	ΔG (dB)	0	0	10 (6)	10 (6)	10 (6)	10 (6)	10 (6)	0	0	10 (6)	10 (6)	0	0	0	0	0	3	3		3	
Reference Bandwidth (7)	B (Hz)			10^6	1	1	10^6	10^6	10^6	10^6	10^6	10^6	10^6	10^6	10^6	1	1	10^6	10^6		10^6	
Permissible Interference Power	P_r (p) (dBW) in B				–220	–222	–	–	–	–	–	–	–	–	–154	–220	–220	–	–		–	

(1) Parameters associated with these services may vary over a rather wide range. Further study is required before representative values become available.
(2) A = analogue modulation; N = digital modulation.
(3) See note (3) in Section 2. M_0 (p_0) may assume values between 5 and 40 dB, depending on frequency, rain-climatic zone and system design.
(4) These values are estimated for 1 Hz bandwidth and are 30 dB below the total power assumed for emission.
(5) These values assume a radio frequency bandwidth of no less than 100 MHz, and are 20 dB below total power assumed per emission.
(6) In these bands, the parameters for the terrestrial stations associated with transhorizon systems have been used. If an administration believes that transhorizon systems do not need to be considered the line-of-sight radio-relay parameters associated with the frequency band 3 400 – 4 200 MHz may be used to determine the coordination area in accordance with paragraph 2.3.1.
(7) In certain systems in the fixed-satellite service it may be desirable to choose a greater reference bandwidth B when the system requirements indicate that this may be done. However, a greater bandwidth will result in smaller coordination distances and a later decision to reduce the reference bandwidth may require recoordination of the earth station. For narrow-band transmissions the reference bandwidth B should be assumed to be equal to the bandwidth occupied.
(8) For the definition of E, see Annex I.

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TABLE III

Maximum Coordination Distance for Propagation Mode (1)

	Percentage of Time			
	$p = 0.001$	$p = 0.01$	$p = 0.1$	$p = 1$
Zone A	375	350	300	200
Zone B	1 050	1 000	900	700
Zone C	1 400	1 350	1 200	950

TABLE IV

Characteristic Values of Parameters for the Five Rain-Climatic Zones (0.01 % of the time)

Parameter	Rain-Climatic Zone					Unit
	1	2	3	4	5	
Surface Rainfall Rate (R)	75	55	37	26	14	mm/h
Rain Cell Diameter (D)	2.5	2.8	3	3	4.5	km
Water Vapour Density (ρ_m)	10	5	2	2	2	g/m³

TABLE V

Maximum Rain-Scatter Distances (km)

Rain-Climatic Zone	Percentage of Time		
	$0.001 \leqslant p < 0.01$	$0.01 \leqslant p < 0.1$	$p = 0.1$
1	540	470	390
2	470	390	330
3, 4 and 5	390	330	270

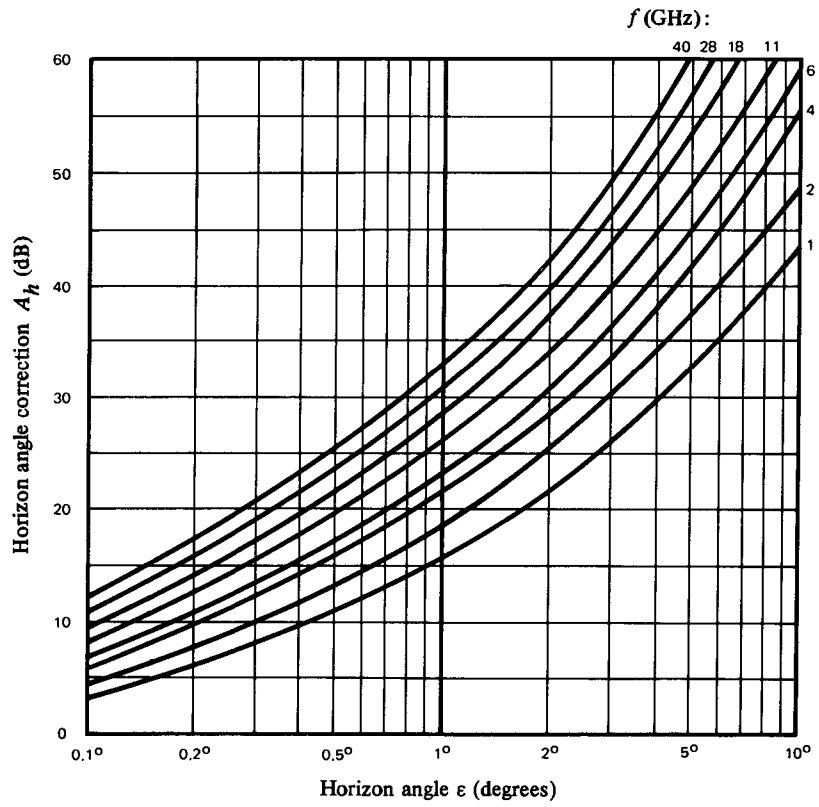

FIGURE 1

Horizon angle correction A_h as a function of horizon angle and frequency

AP28-27

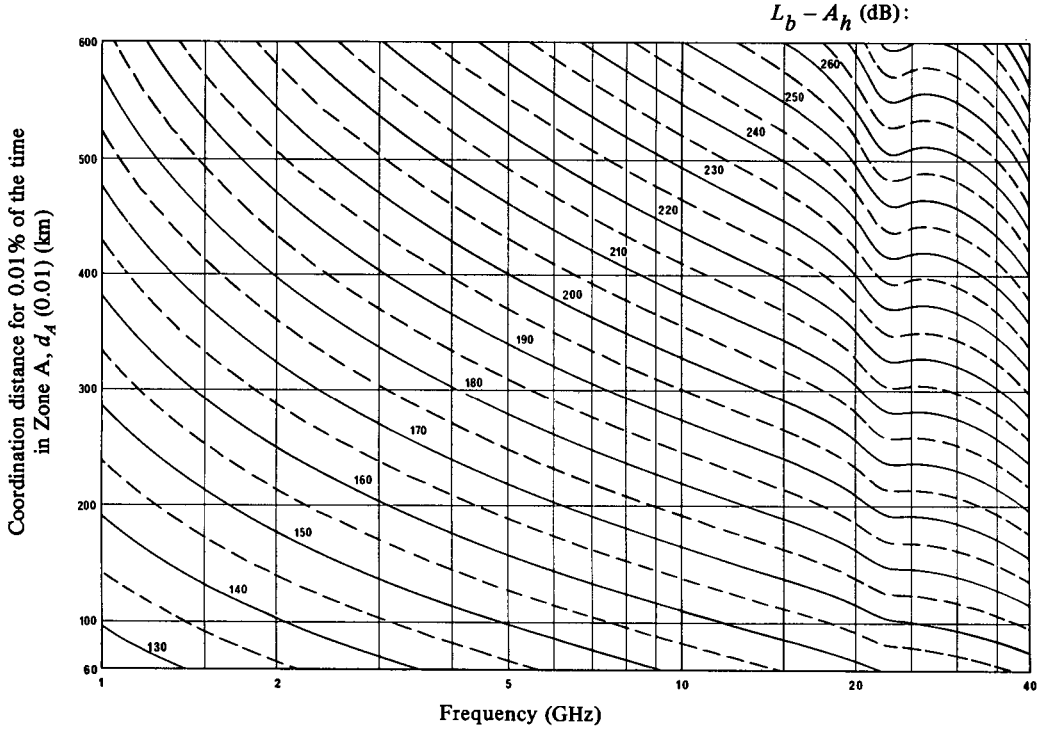

FIGURE 2

Coordination distance d_A (0.01) for 0.01% of the time due to propagation mode (1) as a function of frequency and coordination loss in Zone A

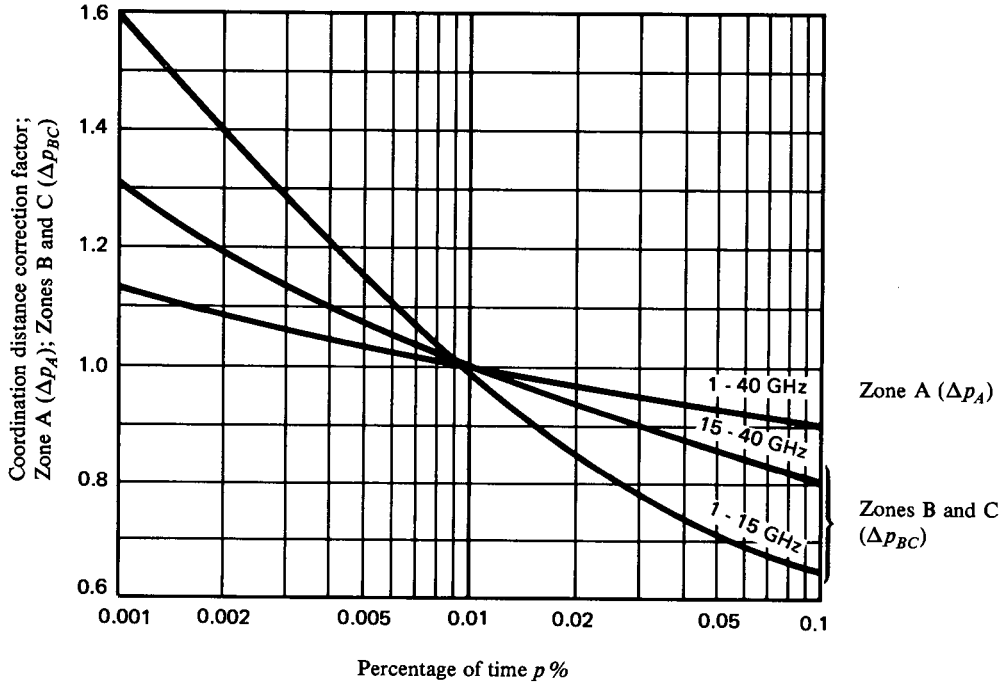

FIGURE 3

Coordination distance correction factor for propagation mode (1) for percentages of time other than 0.01

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AP28-29

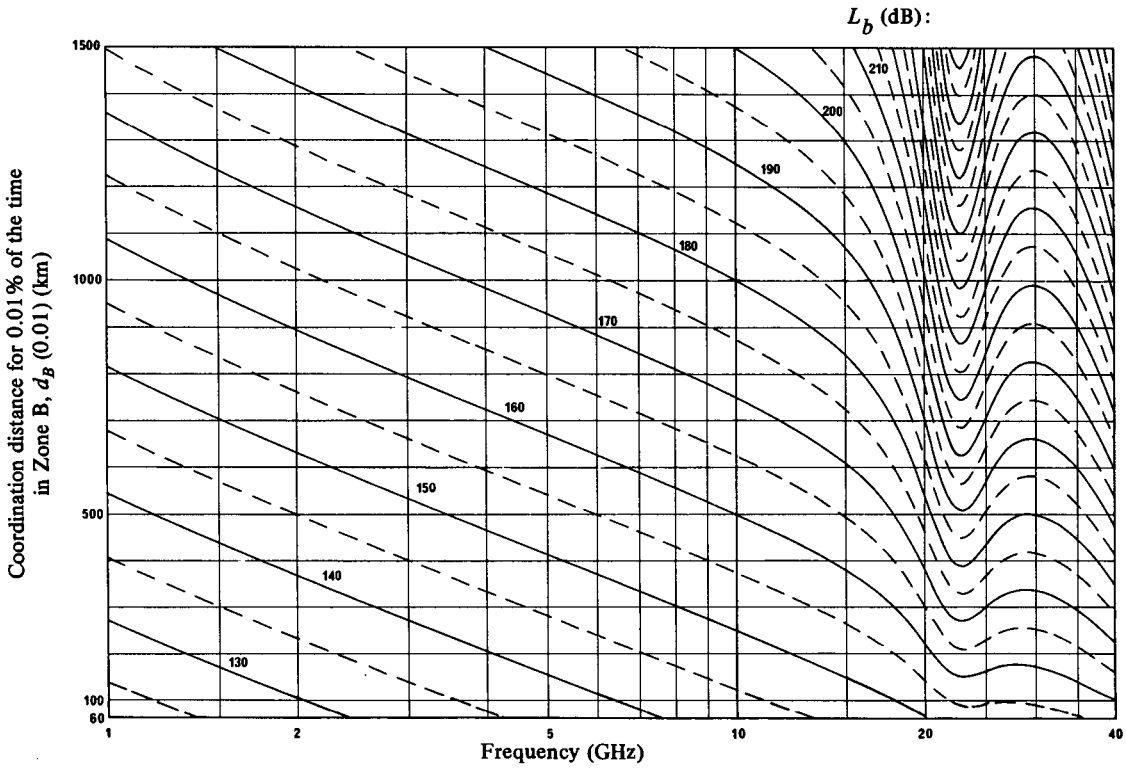


FIGURE 4

Coordination distance d_B (0.01) for 0.01% of the time due to propagation mode (1) as a function of frequency and coordination loss in Zone B

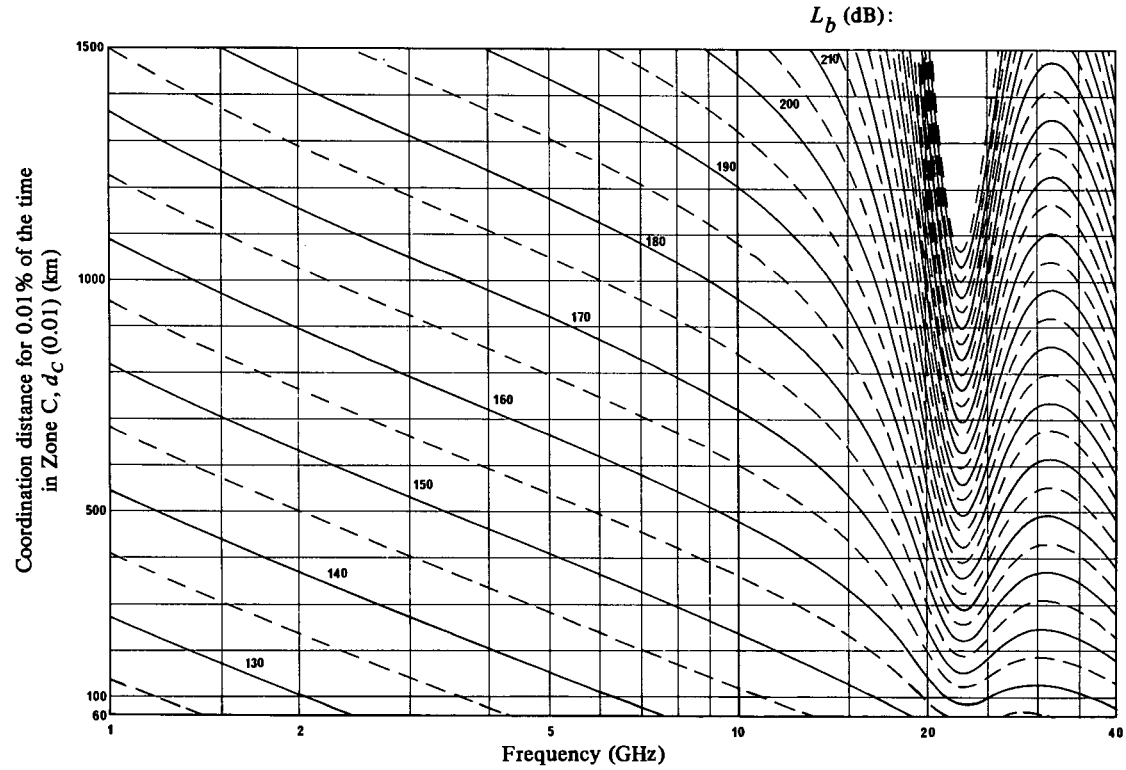


FIGURE 5

Coordination distance d_C (0.01) for 0.01% of the time due to propagation mode (1) as a function of frequency and coordination loss in Zone C

AP28-30

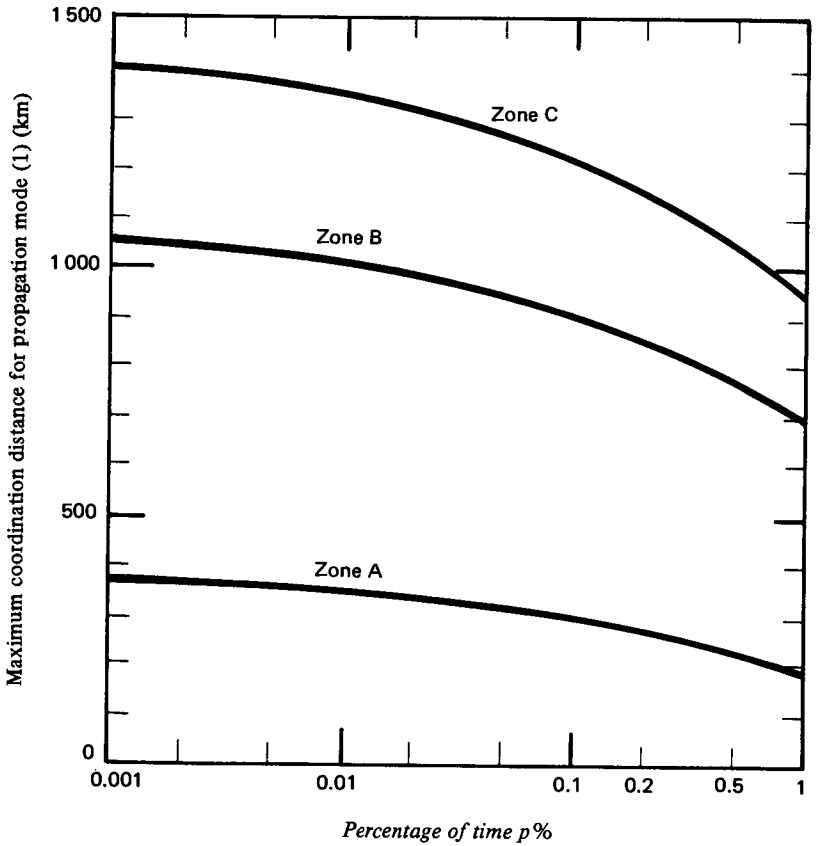


FIGURE 6

Maximum coordination distance for propagation mode (1) as a function of percentage of time

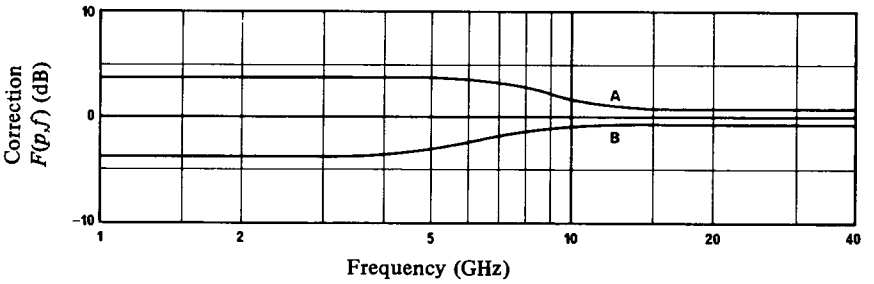


FIGURE 7

Correction for conversion from 0.01% of the time for all rain-climatic zones

Conversion to 0.1% (Curve A)
Conversion to 0.001% (Curve B)

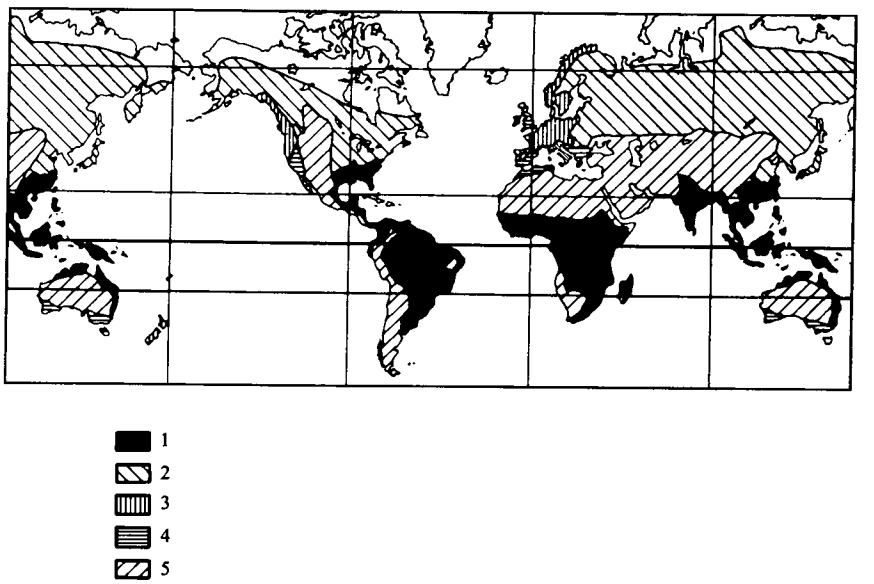


FIGURE 8

Regions corresponding to the five rain-climatic zones
(see §4.2)

AP28-33

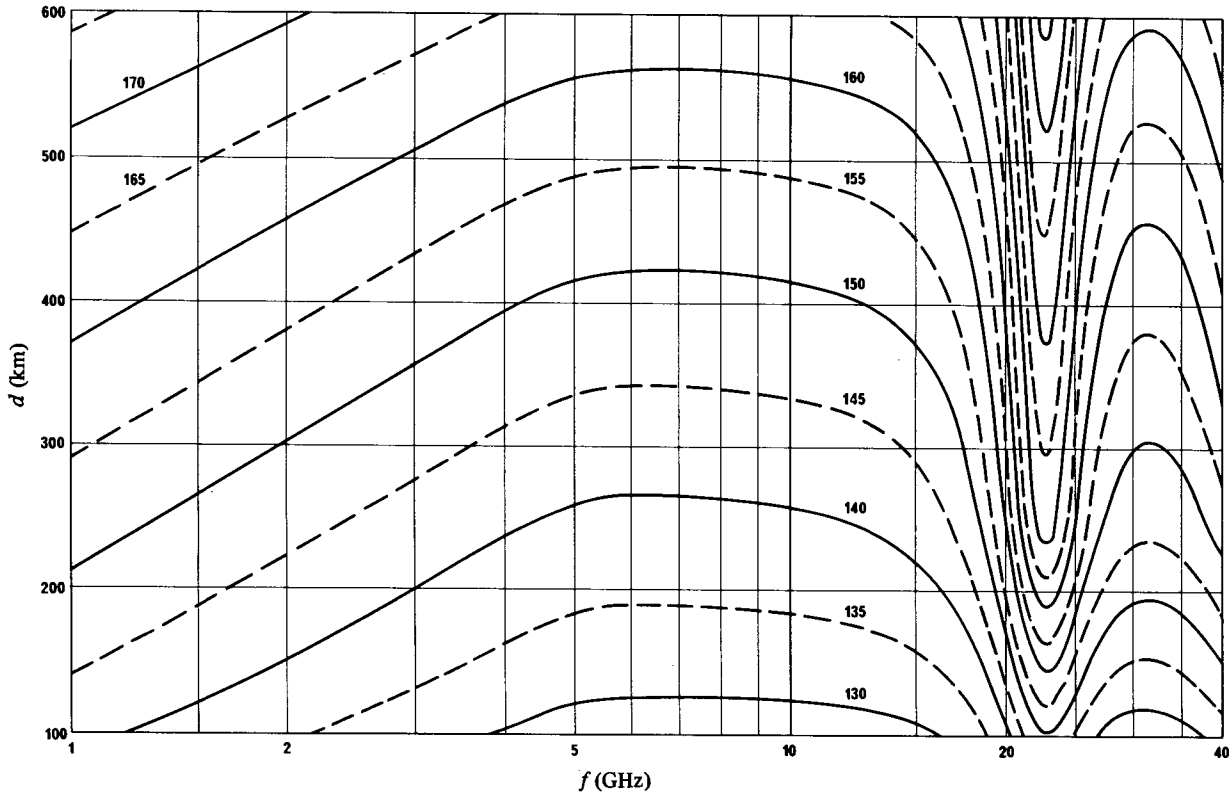
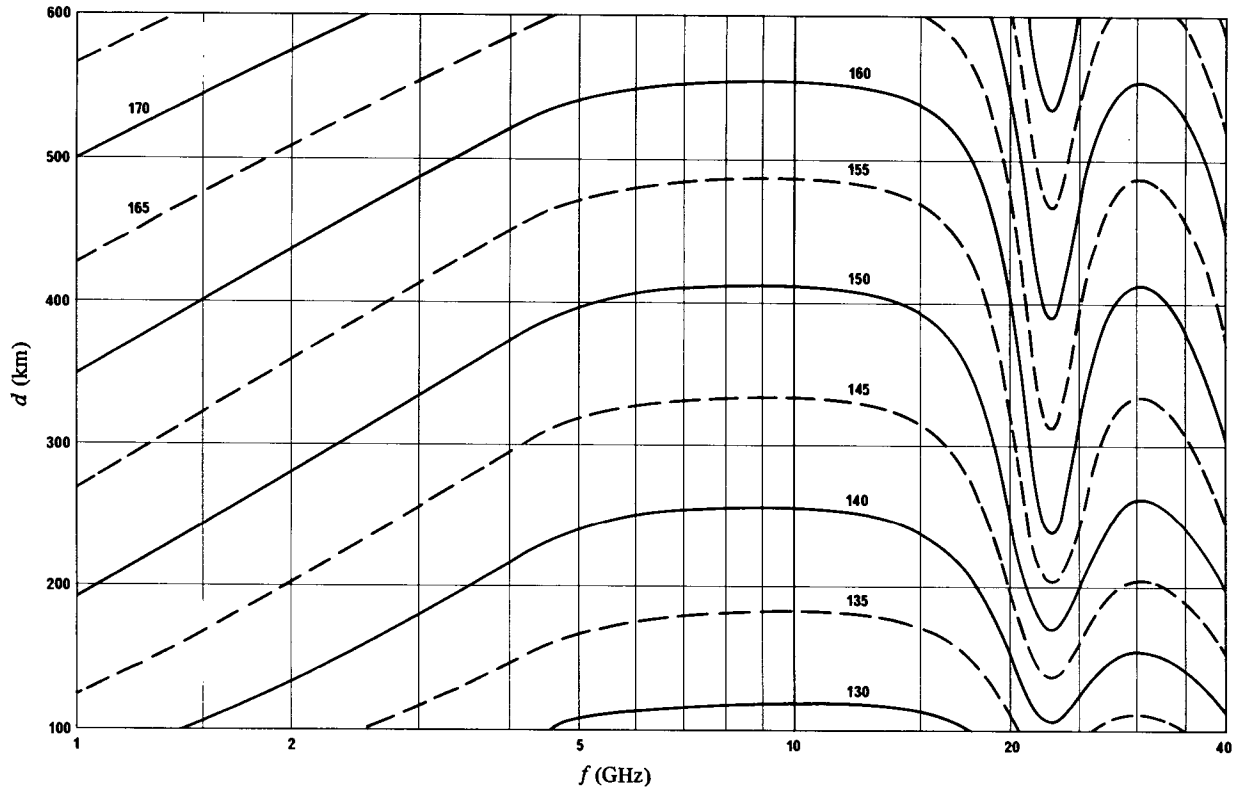


FIGURE 9

Rain-scatter distance as a function of frequency for 0.01% of the time – Rain-Climatic Zone 1

Contours have transmission loss values shown in dB



AP28-34

FIGURE 10

Rain-scatter distance as a function of frequency for 0.01% of the time – Rain-Climatic Zone 2

Contours have transmission loss values shown in dB

AP28-35

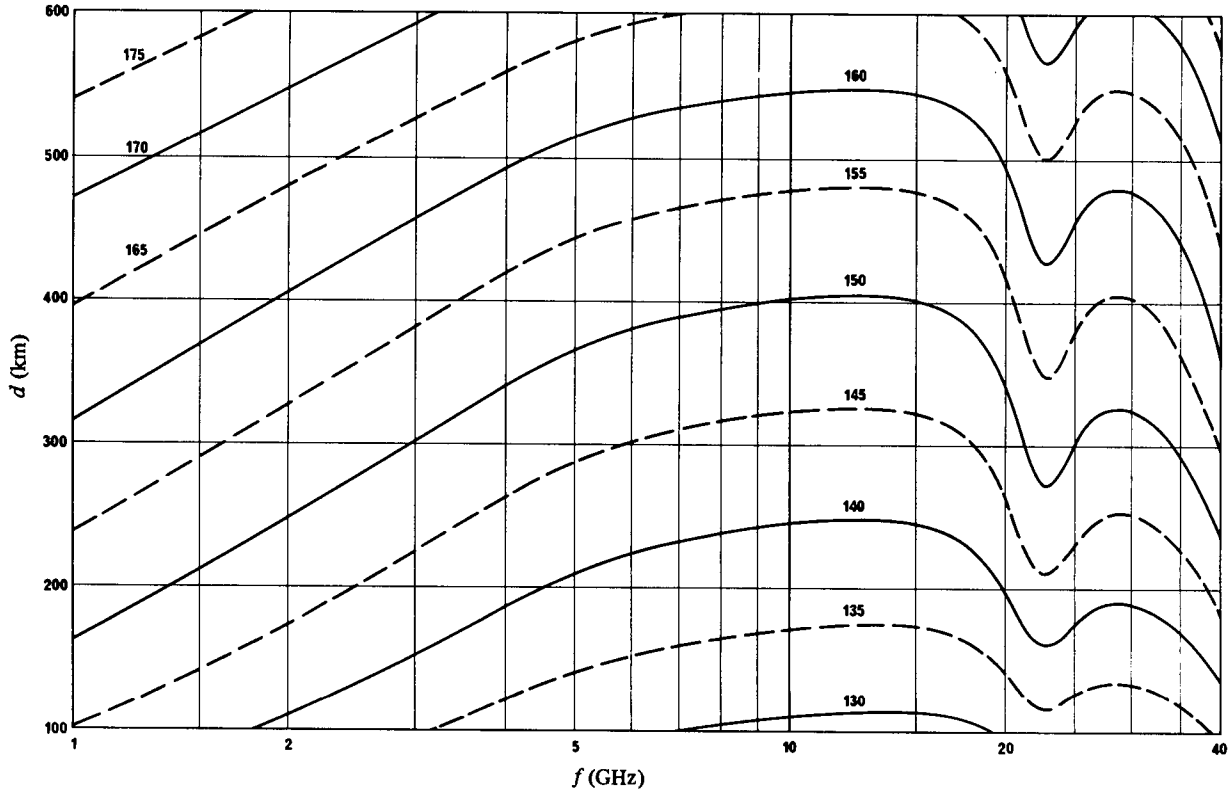
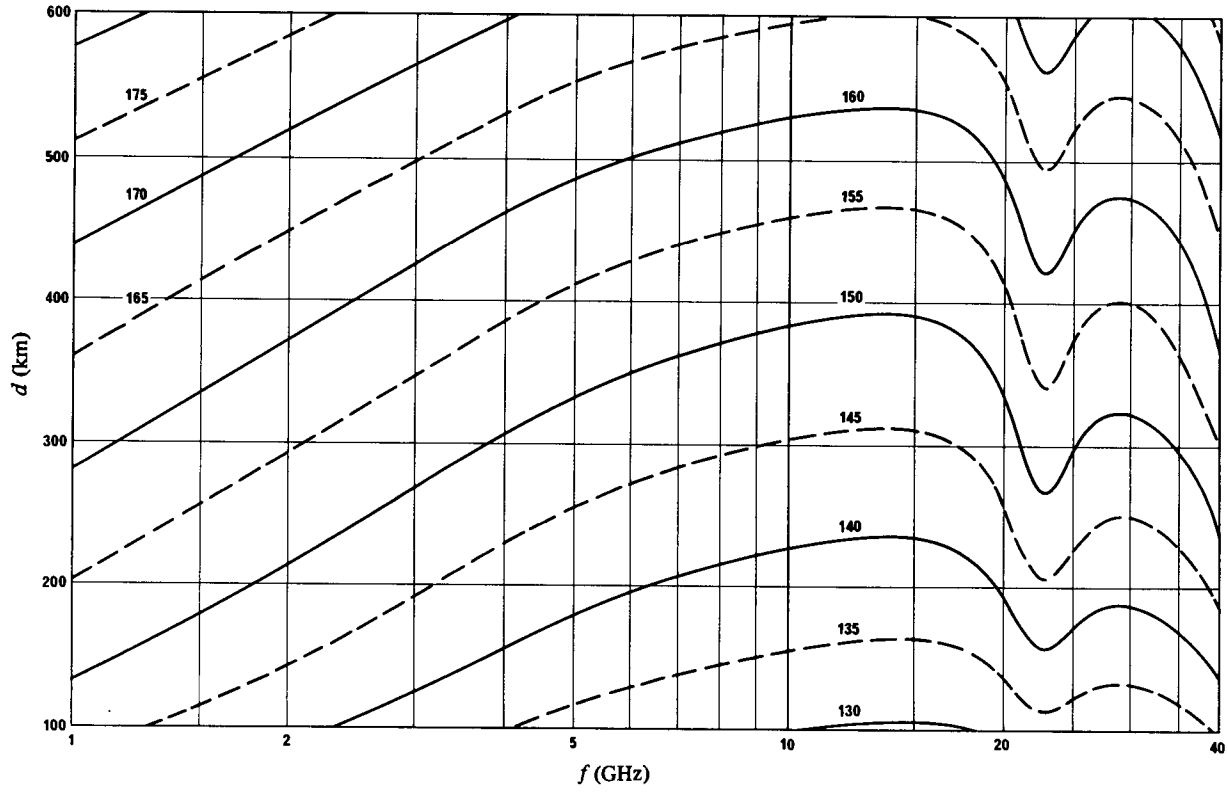


FIGURE 11

Rain-scatter distance as a function of frequency for 0.01% of the time – Rain-Climatic Zone 3

Contours have transmission loss values shown in dB



AP28-36

FIGURE 12

Rain-scatter distance as a function of frequency for 0.01% of the time – Rain-Climatic Zone 4

Contours have transmission loss values shown in dB

AP28-37

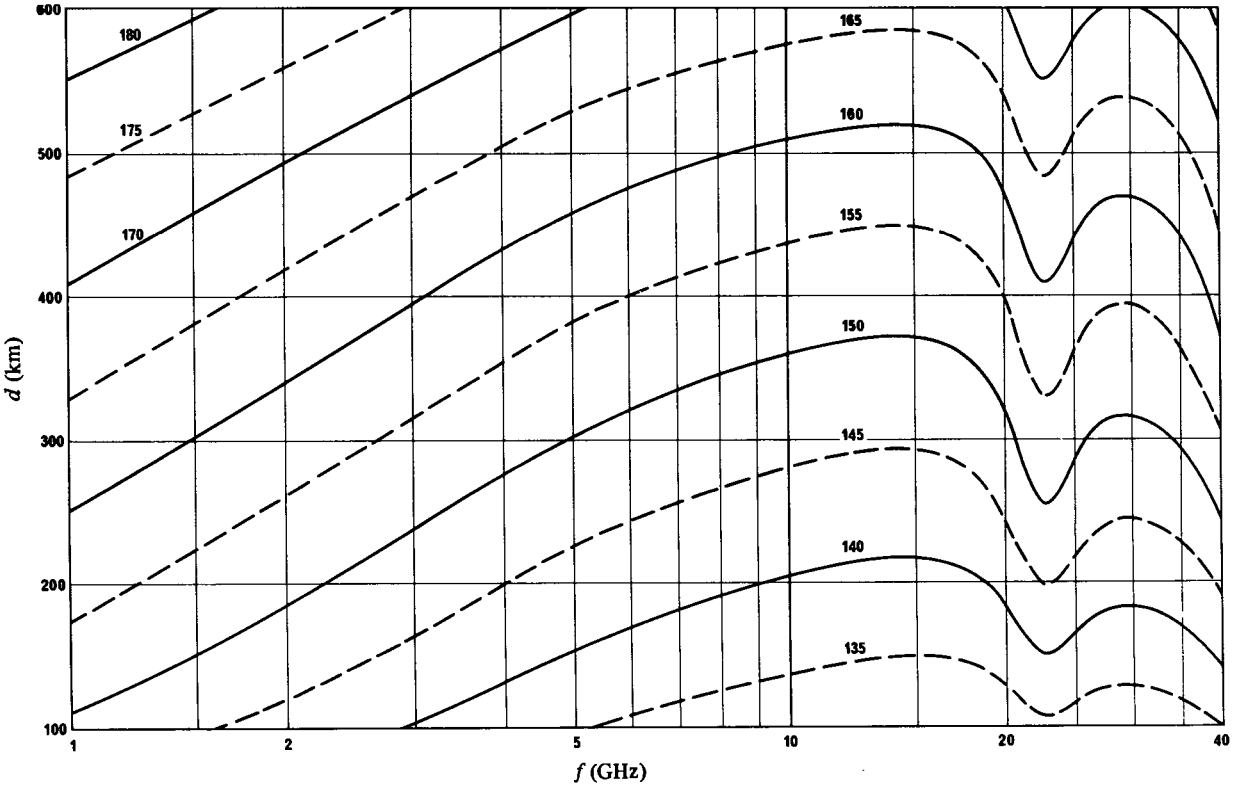


FIGURE 13

Rain-scatter distance as a function of frequency for 0.01% of the time – Rain-Climatic Zone 5

Contours have transmission loss values shown in dB

AP28-38

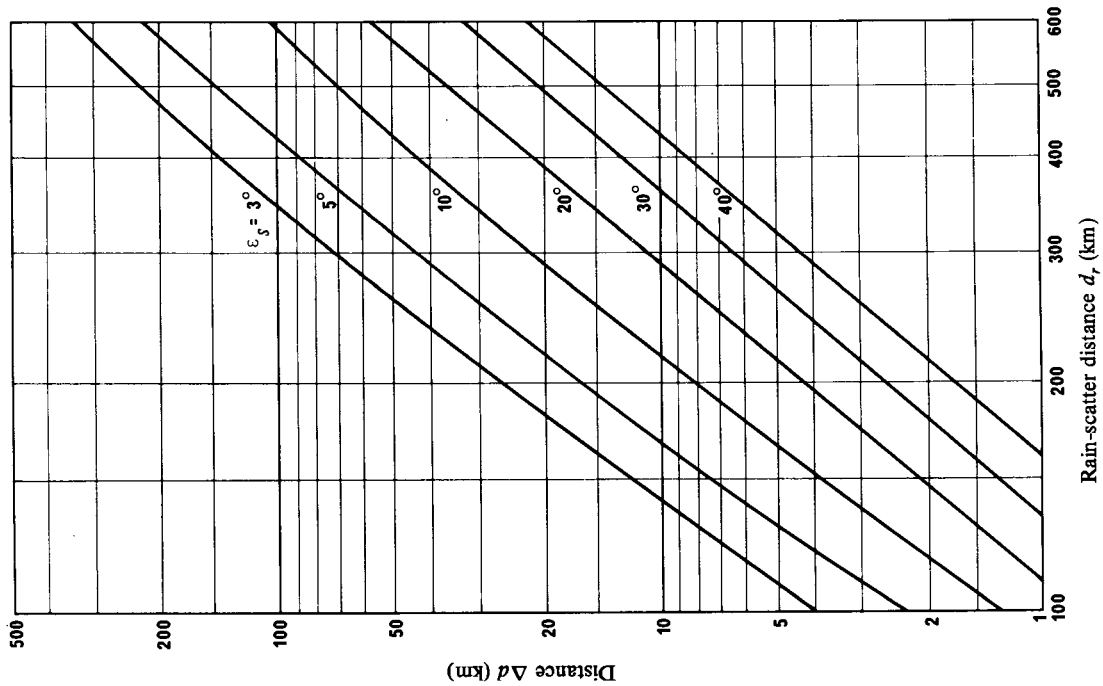


FIGURE 14

Distance Δd as a function of rain-scatter distance d_r and earth station antenna main beam elevation angle ε_s

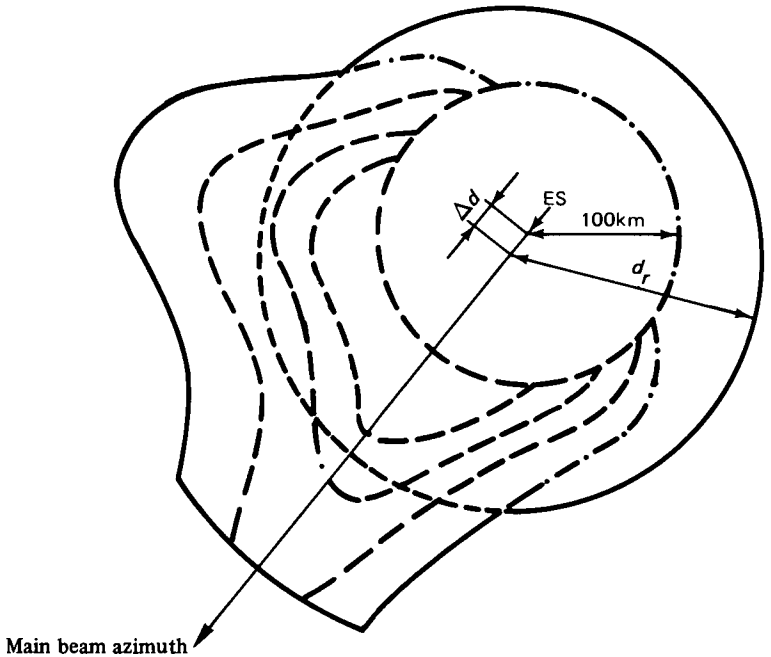


FIGURE 15

Example of a coordination contour

ES: Earth station

——— Coordination contour

—·—·—·— Contour for propagation mode (1)

- - - - - - Contour for propagation mode (2)

— — — — Auxiliary contours for propagation mode (1)

Note: If by using the auxiliary contours it is seen that a terrestrial station can be eliminated with respect to propagation mode (1) then:

- if that terrestrial station is outside the contour for propagation mode (2) it may be eliminated from any further consideration;
- if that terrestrial station is within the contour for propagation mode (2) it must still be considered, but for this mode only.

ANNEX I

Determination and Use of Auxiliary Contours

1. *Introduction*

For great circle propagation mechanisms mode (1) auxiliary contours are of great value in eliminating certain existing or planned terrestrial stations falling within the coordination area without recourse to precise and arduous calculations. The work of both the earth station administration and the affected administrations is therefore eased during subsequent negotiations if these auxiliary contours are supplied.

2. *Determination of the auxiliary contours*

Two types of contours may be determined, depending on whether the earth station is used for transmission or reception.

2.1 *Transmitting earth station*

From equation (2) one may isolate the terms $G_r - P_r(p)$ and define an interference sensitivity factor S (dBW) of the interfered-with terrestrial stations:

$$S = G_r - P_r(p) \qquad (32)$$

Table I shows values of this factor for various types of terrestrial stations.

The coordination contour is associated with a (maximum) sensitivity factor S and labelled with its value.

The auxiliary contours are determined in the same way as the corresponding coordination contour for propagation mode (1), but using terrestrial station interference sensitivity factor S values (dBW) which are 5, 10, 15, 20 dB, etc. lower than the value (given in Table I) corresponding to the coordination contour.

2.2 *Receiving earth station*

From equation (2) one may, likewise, isolate the terms $P_{t'} + G_{t'}$ and define the equivalent isotropically radiated power E (dBW) of the interfering terrestrial stations:

$$E = P_{t'} + G_{t'} \tag{33}$$

values for which are listed in Table II.

The coordination contour is associated with a maximum value for E and labelled with this value.

The auxiliary contours are determined in the same way as the corresponding coordination contour, for propagation mode (1), but using terrestrial station e.i.r.p. values E (dBW) which are 5, 10, 15, 20 dB, etc. lower than the value (given in Table II) corresponding to the coordination contour.

3. *Use of auxiliary contours*

The auxiliary contours, the coordination contour for great circle propagation mode (1) and the coordination contour for rain-scatter mode (2) are all plotted on the same diagram for a given shared band. An illustrative example is given in Fig. 15.

For each terrestrial station situated within the coordination area, a two stage procedure may be applied, one for the great circle propagation mechanism and the other for scattering from hydrometeors.

3.1 *Great circle propagation mechanisms mode (1)*

If a transmitting terrestrial station is outside the coordination area corresponding to mode (1), it need not be considered further with respect to mode (1).

For each transmitting terrestrial station situated within the coordination area corresponding to mode (1), the e.i.r.p. value in the direction of the earth station is determined. If this value is less than the value

associated with the nearest contour defining an area outside of which the station is situated, the station may be considered not to cause more than a permissible level of interference and therefore may be eliminated from further consideration with respect to mode (1).

For each receiving terrestrial station, the analogous procedure may be applied using the interference sensitivity factor instead of the e.i.r.p. value.

3.2 *Elimination of a terrestrial station and rain-scatter propagation mechanism mode (2)*

Terrestrial stations eliminated by the above procedure from further consideration with regard to propagation mode (1) need, nevertheless, be further considered with regard to propagation mode (2) when they lie within the rain-scatter coordination area.

ANNEX II

Antenna Gain in the Direction of the Earth Station Horizon for Geostationary Satellites

1. *General*

The gain component of the earth station antenna in the direction of the physical horizon around an earth station is a function of the angular separation φ between the antenna main beam axis and the horizon direction under consideration. Therefore, knowledge of the angle φ is required for each azimuth.

The elevation ε_s and azimuth α_s of geostationary satellites as seen from an earth station at a latitude ζ are uniquely related. Fig. II-1 shows the possible location arcs of geostationary satellites in a rectangular elevation/azimuth plot, each arc corresponding to an earth station latitude.

Specific relative satellite longitudes may not be known beforehand, but even when they are, the possibility of the addition of a new satellite or the repositioning of an existing one suggests that all or a portion of the applicable arc be considered to hold satellites.

2. *Graphical method for the determination of $\varphi(\alpha)$*

With the correct arc or segment of arc chosen and suitably marked in Fig. II-1, the horizon profile $\varepsilon(\alpha)$ is added to the plot of Fig. II-1, as shown in Fig. II-2, where an example is given for an earth station located at 45° N latitude for a satellite expected to be located somewhere between relative longitudes of 10° E and 45° W.

For each point on the local horizon $\varepsilon(\alpha)$ the smallest distance to the arc is determined and measured on the elevation scale. The example of Fig. II-2 shows the determination of the off-beam angle φ at an azimuth α (= 210°) with a horizontal elevation ε (= 4°). The measurement of φ yields a value of 26°.

When this is done for all azimuths (in suitable increments, e.g. 5°), a relationship $\varphi(\alpha)$ results.

3. *Numerical method for the determination of $\varphi(\alpha)$*

For this purpose the following equations may be used:

$$\psi = \arccos(\cos\zeta \cdot \cos\delta) \tag{34}$$

$$\alpha'_s = \arccos(\tan\zeta \cdot \cot\psi) \tag{35}$$

$\alpha_s = \alpha'_s + 180°$ for earth stations located in the northern hemisphere and satellites located west of the earth station (36a)

$\alpha_s = 180° - \alpha'_s$ for earth stations located in the northern hemisphere and satellites located east of the earth station (36b)

$\alpha_s = 360° - \alpha'_s$ for earth stations located in the southern hemisphere and satellites located west of the earth station (36c)

$\alpha_s = \alpha'_s$ for earth stations located in the southern hemisphere and satellites located east of the earth station (36d)

$$\varepsilon_s = \arctan\left(\frac{K - \cos\psi}{\sin\psi}\right) - \psi \tag{37}$$

$$\varphi(\alpha) = \arccos[\cos\varepsilon \cdot \cos\varepsilon_s \cdot \cos(\alpha - \alpha_s) + \sin\varepsilon \cdot \sin\varepsilon_s] \tag{38}$$

where:

ζ: latitude of the earth station

δ: difference in longitude between the satellite and the earth station

ψ: great circle arc between the earth station and the sub-satellite point

α_s: satellite azimuth as seen from the earth station

ε_s: satellite elevation angle as seen from the earth station

α: azimuth of the pertinent direction

ε: elevation angle of the horizon in the pertinent azimuth α

$\varphi(\alpha)$: angle between the main beam axis and the horizon direction corresponding to the pertinent azimuth α

K: orbit radius/earth radius, assumed to be 6.62

All arcs mentioned above are in degrees.

4. *Determination of antenna gain*

The relationship $\varphi(\alpha)$ may be used to derive a function for the horizon antenna gain, G (dB) as a function of the azimuth α, by using the actual earth station antenna pattern, or a formula giving a good approximation. For example, in cases where the ratio between the antenna diameter and the wavelength is not less than 100, the following equation should be used:

$$G(\varphi) = G_{max} - 2.5 \times 10^{-3} \left(\frac{D}{\lambda}\varphi\right)^2 \quad \text{for } 0 < \varphi < \varphi_m \qquad (39a)$$

$$G(\varphi) = G_1 \quad \text{for } \varphi_m \leqslant \varphi < \varphi_r \qquad (39b)$$

$$G(\varphi) = 32 - 25 \log \varphi \quad \text{for } \varphi_r \leqslant \varphi < 48^\circ \qquad (39c)$$

$$G(\varphi) = -10 \quad \text{for } 48^\circ \leqslant \varphi \leqslant 180^\circ \qquad (39d)$$

where: D = antenna diameter, λ = wavelength } expressed in the same unit

G_1 = gain of the first sidelobe = $2 + 15 \log \frac{D}{\lambda}$

$$\varphi_m = \frac{20\lambda}{D} \sqrt{G_{max} - G_1} \text{ (degrees)}$$

$$\varphi_r = 15.85 \left(\frac{D}{\lambda}\right)^{-0.6} \text{ (degrees)}$$

When it is not possible, for antennae with $\frac{D}{\lambda}$ of less than 100, to use the above reference antenna pattern and when neither measured data nor a relevant CCIR Recommendation accepted by the administrations concerned can be used instead, administrations may use the reference diagram as described below:

$$G(\varphi) = G_{max} - 2.5 \times 10^{-3} \left(\frac{D}{\lambda}\varphi\right)^2 \quad \text{for } 0 < \varphi < \varphi_m \qquad (40a)$$

$$G(\varphi) = G_1 \quad \text{for } \varphi_m \leqslant \varphi < 100\frac{\lambda}{D} \qquad (40b)$$

$$G(\varphi) = 52 - 10 \log \frac{D}{\lambda} - 25 \log \varphi \quad \text{for } 100\frac{\lambda}{D} \leqslant \varphi < 48^\circ \qquad (40c)$$

$$G(\varphi) = 10 - 10 \log \frac{D}{\lambda} \quad \text{for } 48^\circ \leqslant \varphi \leqslant 180^\circ \qquad (40d)$$

where: D = antenna diameter, λ = wavelength } expressed in the same unit

G_1 = gain of the first sidelobe = $2 + 15 \log \frac{D}{\lambda}$

$$\varphi_m = \frac{20\lambda}{D} \sqrt{G_{max} - G_1} \text{ (degrees)}$$

The above patterns may be modified as appropriate to achieve a better representation of the actual antenna pattern.

In cases where $\frac{D}{\lambda}$ is not given, it may be estimated from the expression $20 \log \frac{D}{\lambda} \approx G_{max} - 7.7$, where G_{max} is the main lobe antenna gain in dB.

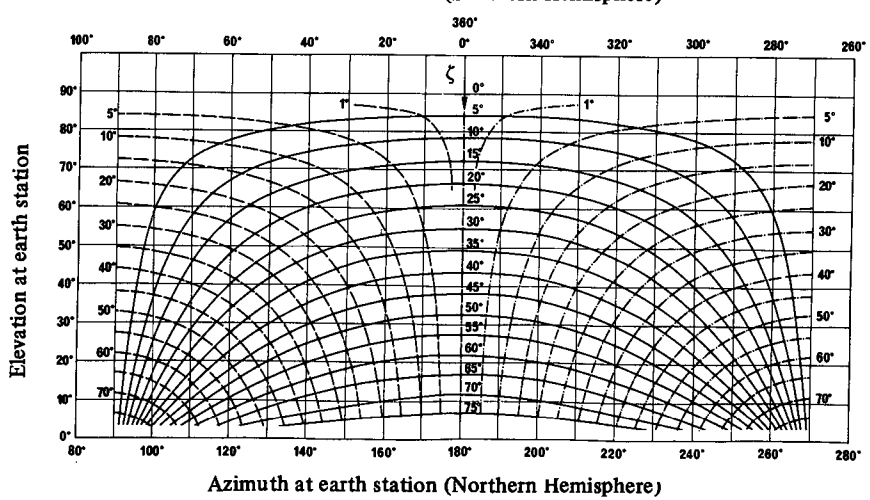


FIGURE II-1

Position arcs of geostationary satellites

——— Arc of geostationary-satellite orbit visible from earth station at terrestrial latitude ζ

Difference in longitude between earth station and the sub-satellite point:

------- Satellite longitude E of earth station longitude

-·-·-·- Satellite longitude W of earth station longitude

—··—··— Satellite longitude equal to the earth station longitude

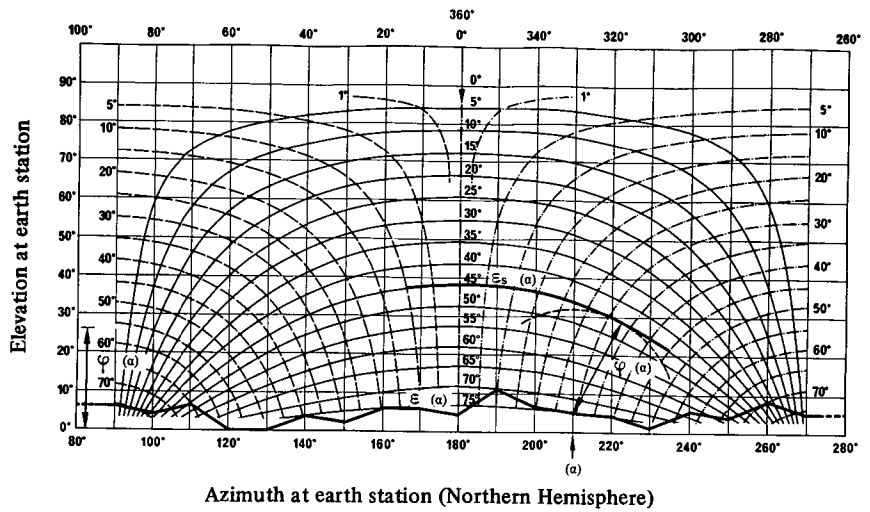


FIGURE II-2

Example of derivation of φ

——— Arc of geostationary-satellite orbit visible from earth station at terrestrial latitude ζ

·——· Horizon profile ε(α)

Difference in longitude between earth station and the sub-satellite point:

- - - - - - - Satellite longitude E of earth station longitude

·—·—·—· Satellite longitude W of earth station longitude

·——·——· Satellite longitude equal to the earth station longitude

ANNEX III

Graphical Method for the Determination of Coordination Distance for Mixed Paths

1. *Two zones*

The procedure to be followed in the case of a mixed path involving two zones is illustrated by the example shown in Fig. III-1(a). The earth

station is situated in Zone A at a distance of 75 km from Zone B. The graphical presentation described below is particularly useful where more than one boundary between zones may be involved, as in this example.

In the example given below, the coordination loss is assumed to be 180 dB, the frequency 20 GHz, and the percentage of time 0.01%. The procedure is as follows:

1.1 determine the distance entirely in Zone A that would give the coordination loss. Mark this distance (in this case it is 160 km) from the origin along the abscissa axis of linear graph paper as indicated by the point A (Fig. III-1(b));

1.2 determine the distance entirely in Zone B that would give the same coordination loss. Mark this distance (in this case it is 530 km) from the origin along the ordinate axis of the chart as indicated by the point B;

1.3 draw a straight line between points A and B representing these distances from the origin;

1.4 starting from the origin, the distance of 75 km from the earth station to Zone B is set off along the abscissa axis of the chart as indicated by the point A_1;

1.5 starting from point A_1 the Zone B path length of 150 km is then set off parallel to the ordinate axis of the chart as indicated by the point B_1;

1.6 the further distance in the next Zone A region is then measured parallel to the abscissa axis from the point B_1 to the point of intersection of the mixed path curve as indicated by X. In Fig. III-1(b), this distance is 40 km;

1.7 the coordination distance is the sum of distances $0A_1$, A_1B_1 and B_1X and is equal to:

$$75 + 150 + 40 = 265 \text{ km}$$

2. *Three zones*

In some special cases, the mixed path involves all three radio-climatic Zones A, B and C. A solution to this problem can be found in adding a third dimension to the procedure to be followed for mixed paths

involving only two zones. Theoretically, it means that the third coordinate has to be determined for a point having coordinates corresponding to the known distances in the first two zones and lying in a plane defined by three points on the axes X, Y and Z, corresponding to distances in Zones A, B and C, respectively, that would give the required basic transmission loss.

In practice, the procedure can be reduced to a simple graphical method shown in Fig. III-2(a) assuming for example a coordination loss (L_1) of 180 dB at a frequency of 20 GHz. It is required to find the coordination distance from the earth station in the direction given in Fig. III-2(a). Here an earth station is situated in Zone A at a distance of 75 km in a given azimuthal direction from Zone B. In the same azimuthal direction Zone B is 150 km long and followed by an unknown portion in Zone C (Fig. III-2(a)).

In this case, the procedure to be applied should be as follows (Fig. III-2(b)):

2.1 repeat the same procedure as for mixed paths involving only two zones, given in steps 1.1 to 1.5 above, and continue as follows:

2.2 from the point B_1 draw a line parallel to the line AB to intersect the abscissa axis as indicated by the point D;

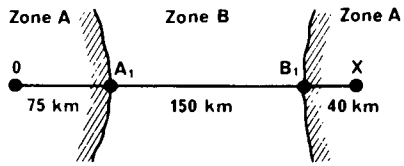
2.3 determine the distance, entirely in Zone C, that would give the coordination loss. Mark this distance (in this case it is 350 km) from the origin along the ordinate axis of the chart as indicated by the length 0C. Draw a straight line between points C and A;

2.4 at the point D draw a line parallel to the ordinate axis to intersect the line CA as indicated by X;

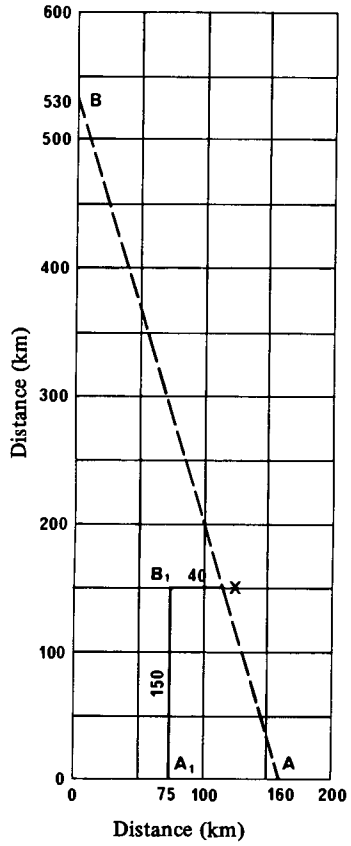
2.5 the distance between the points D and X, which is the unknown distance in Zone C, is found to be 85 km;

2.6 the coordination distance is then the sum of the distances $0A_1$, A_1B_1, and DX and in this example is equal to:

$$75 + 150 + 85 = 310 \text{ km}$$



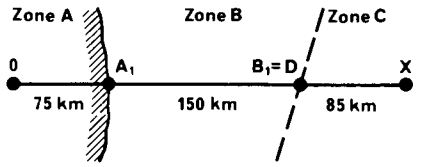
(a)



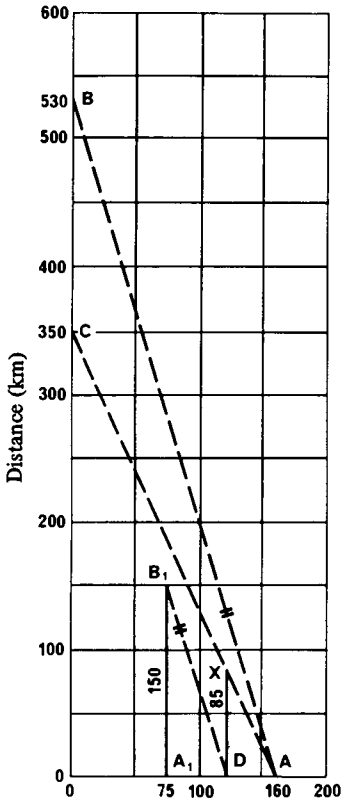
(b)

FIGURE III-1

Example of determination of coordination distance for mixed paths involving Zones A and B



(a)



Distance (km)

(b)

FIGURE III-2

Example of determination of coordination distance for mixed paths including Zones A, B and C

MOD AP29 APPENDIX 29

Method of Calculation for Determining if Coordination is Required Between Geostationary-Satellite Networks Sharing the Same Frequency Bands

1. *Introduction*

The method of calculation for determining if coordination is required under provision No. **1060** is based on the concept that the noise temperature of a system subject to interference increases as the level of the interfering emission increases. It can, therefore, be applied irrespective of the modulation characteristics of these satellite networks, and of the precise frequencies used.

In this method, the apparent increase in the equivalent satellite link noise temperature resulting from an interfering emission of a given system is calculated (see § 2 below) and the ratio of this increase to the equivalent satellite link noise temperature, expressed as a percentage, is compared to a threshold value (see § 3 below).

2. *Calculation of the apparent increase in equivalent noise temperature of the satellite link subject to an interfering emission*

Two possible cases are considered:

Case I: wanted and interfering networks share one or more frequency bands, each in the same direction of transmission;

Case II: wanted and interfering networks share one or more frequency bands, each in opposite directions of transmission (bidirectional use).

These two cases cover all relative satellite positions from closely-spaced to near-antipodal positions.

2.1 *Parameters*

Let A be a satellite link of network R associated with satellite S and A′ be a satellite link of network R′ associated with satellite S′. The symbols relating to satellite link A′ bear primes, those relating to satellite link A do not bear primes.

The parameters are defined as follows (for satellite link A):

T: the equivalent satellite link noise temperature, referred to the output of the receiving antenna of the earth station (K);

T_s: the receiving system noise temperature of the space station, referred to the output of the receiving antenna of the space station (K);

T_e: the receiving system noise temperature of the earth station, referred to the output of the receiving antenna of the earth station (K);

ΔT_s: apparent increase in the receiving system noise temperature of the satellite S, caused by an interfering emission, referred to the output of the receiving antenna of this satellite (K);

ΔT_e: apparent increase in the receiving system noise temperature of the earth station e_R, caused by an interfering emission, referred to the output of the receiving antenna of this station (K);

p_s: maximum power density per Hz delivered to the antenna of satellite S (averaged over the worst 4 kHz band for a carrier frequency below 15 GHz or over the worst 1 MHz band above 15 GHz) (W/Hz);

$g_3(\eta)$: transmitting antenna gain of satellite S in the direction η (numerical power ratio);

η_A : direction, from satellite S, of the receiving earth station e_R of satellite link A;

$\eta_{e'}$: direction, from satellite S, of the receiving earth station e'_R of satellite link A';

Note: The product $p_s g_3(\eta_{e'})$ is the maximum e.i.r.p. per Hz of satellite S in the direction of the receiving earth station e'_R of satellite link A';

$\eta_{s'}$: direction, from satellite S, of satellite S';

p_e : maximum power density per Hz delivered to the antenna of the transmitting earth station e_T (averaged over the worst 4 kHz band for a carrier frequency below 15 GHz or over the worst 1 MHz band above 15 GHz) (W/Hz);

$g_2(\delta)$: receiving antenna gain of satellite S in the direction δ (numerical power ratio);

δ_A : direction, from satellite S, of the transmitting earth station e_T of satellite link A;

$\delta_{e'}$: direction, from satellite S, of the transmitting earth station e'_T of satellite link A';

$\delta_{s'}$: direction, from satellite S, of satellite S';

θ_t : topocentric angular separation in degrees between the two satellites [1], taking the longitudinal station-keeping tolerances into account;

Note: Only the topocentric angle θ_t should be used in dealing with Case I;

[1] A method for calculation of the topocentric angular separation is given in Annex I.

θ_g : geocentric angular separation in degrees between the two satellites, taking the longitudinal station-keeping tolerances into account;

Note: Only the geocentric angle θ_g should be used in dealing with Case II;

$g_1(\theta_t)$: transmitting antenna gain of the earth station e_T in the direction of satellite S' (numerical power ratio);

$g_4(\theta_t)$: receiving antenna gain of the earth station e_R in the direction of satellite S' (numerical power ratio);

k : Boltzmann's constant (1.38×10^{-23} J/K);

l_d : free-space transmission loss [1] on the down-link (numerical power ratio), evaluated from satellite S to the receiving earth station e_R for satellite link A;

Note: The free-space transmission loss on any down-link evaluated from the satellites S or S' to the receiving earth stations e_R or e'_R is considered to be equal to l_d;

l_u : free-space transmission loss [1] on the up-link (numerical power ratio), evaluated from the earth station e_T, to satellite S for satellite link A;

Note: The free-space loss on any up-link evaluated from the earth stations e_T or e'_T to the satellite S or S' is considered to be equal to l_u;

l_s : free-space transmission loss [1] on the inter-satellite link (numerical power ratio), evaluated from satellite S' to satellite S;

[1] A method for calculation of the free-space transmission loss is given in Annex II.

γ : transmission gain of a specific satellite link subject to interference evaluated from the output of the receiving antenna of satellite S to the output of the receiving antenna of the earth station e_R (numerical power ratio, usually less than 1).

2.2 *General method*

In the following equations, the frequency to be used for the calculation of l_d, l_u, and l_s is the average frequency of the band common to both networks in the direction considered. If, in a given direction, there is no overlap of the assigned frequency bands of the two networks, the corresponding value (ΔT_s or ΔT_e) is taken to be equal to zero. For cases where the Appendix 3 data have not been published, the assigned frequency band for that network shall be considered as being the frequency range as provided for in Appendix 4.

2.2.1 *Case I – Wanted and interfering networks sharing the same frequency band in the same direction of transmission*

The gains $g_1(\theta_t)$ and $g_4(\theta_t)$ are those of the earth stations concerned. When neither measured data nor a relevant CCIR Recommendation accepted by the administrations concerned are available the radiation patterns set out in Annex III should be used.

2.2.1.1 *Simple frequency-changing transponder on board the satellite*

The parameters ΔT_s and ΔT_e are given by the following equations:

$$\Delta T_s = \frac{p'_e\, g'_1(\theta_t)\, g_2(\delta_{e'})}{k l_u} \qquad (1)$$

$$\Delta T_e = \frac{p'_s\, g'_3(\eta_e)\, g_4(\theta_t)}{k l_d} \qquad (2)$$

The symbol ΔT will be used to denote the apparent increase in the equivalent noise temperature for the entire satellite link referred to the output of the receiving antenna of the receiving earth station e_R due to the interfering emission from link A'.

This increase is the result of the interfering emissions entering at both the satellite and the earth station receiver of link A and can accordingly be expressed as:

$$\Delta T = \gamma \Delta T_s + \Delta T_e \qquad (3)$$

Hence,

$$\Delta T = \gamma \frac{p'_e\, g'_1(\theta_t)\, g_2(\delta_{e'})}{k l_u} + \frac{p'_s\, g'_3(\eta_e)\, g_4(\theta_t)}{k l_d} \qquad (4)$$

An example calculation for the application of the method of this Appendix in Case I is given in Annex IV.

In the same way, the increase $\Delta T'$ in the equivalent noise temperature for the entire satellite link, referred to the output of the receiving antenna of the receiving earth station e'_R, under the effect of the interference caused by satellite link A, is given by the following equations:

$$\Delta T'_{s'} = \frac{p_e\, g_1(\theta_t)\, g'_2(\delta_e)}{k l_u} \qquad (5)$$

$$\Delta T'_{e'} = \frac{p_s\, g_3(\eta_{e'})\, g'_4(\theta_t)}{k l_d} \qquad (6)$$

$$\Delta T' = \gamma' \frac{p_e\, g_1(\theta_t)\, g'_2(\delta_e)}{k l_u} + \frac{p_s\, g_3(\eta_{e'})\, g'_4(\theta_t)}{k l_d} \qquad (7)$$

2.2.1.2 *Cases requiring independent treatment of the up-link and the down-link*

If there is a change of modulation in the satellite or if the transmission originates on board the satellite, then the apparent increase in the noise temperature must be related to the total receiving system noise temperature of the specific link being examined (the space station or the earth station, whichever is applicable). In this case, the equivalent noise temperature of the entire satellite link and the transmission gain are not used and equations (1) and (2) above are used separately as required (see § 2.3).

2.2.2 *Case II – Wanted and interfering networks sharing the same frequency band in opposite directions of transmission (bidirectional use)*

The calculation method below only applies to interfering emissions between satellites.

Interference between earth stations using the same frequency band in opposite directions of transmission (bidirectional use) is to be dealt with by coordination procedures analogous to those used for coordination between earth and terrestrial stations.

All the equations relating to Case II shall use the geocentric angle θ_g.

2.2.2.1 *Simple frequency-changing transponder on board the satellite*

The noise temperature increase ΔT_s referred to the output of the receiving antenna of the satellite of link A is given by:

$$\Delta T_s = \frac{p'_s\, g'_3\,(\eta_s)\, g_2\,(\delta_{s'})}{k l_s} \qquad (8)$$

The apparent increase in equivalent link noise temperature is then given by:

$$\Delta T = \gamma \Delta T_s \qquad (9)$$

The increase $\Delta T'$ in the equivalent noise temperature of the link A' caused by interfering emissions from the satellite associated with the link A is given by:

$$\Delta T' = \gamma' \Delta T'_s = \frac{\gamma' p_s\, g_3\,(\eta_{s'})\, g'_2\,(\delta_s)}{k l_s} \qquad (10)$$

2.2.2.2 *Cases requiring independent treatment of the up-link and down-link*

In this case equation (8) is used directly with T_s to obtain the percentage increase. The increase $\Delta T'_s$ in the noise temperature of link A' caused by interfering emissions from the satellite associated with link A is obtained in a similar manner.

2.2.3 *Consideration of polarization isolation*

The polarization isolation factor described in this paragraph shall be considered only if the administration responsible for each network has consented to such a course and has notified its polarization or published it for coordination under No. **1060**. In this case, the apparent increase in the equivalent satellite link noise temperature shall be determined by the following expressions:

Case I $$\Delta T = \frac{\gamma \Delta T_s}{Y_u} + \frac{\Delta T_e}{Y_d}$$

Case II $$\Delta T = \frac{\gamma \Delta T_s}{Y_{ss}}$$

where the values of ΔT_s and ΔT_e are those given in § 2.2.1 and § 2.2.2 and the values of the factors of polarization isolation Y_u, Y_d and Y_{ss} are those given in the table below.

Polarization		Factor of polarization isolation (numerical ratio) Y
network R	network R′	
LHC	RHC	4
LHC	L	1.4
RHC	L	1.4
LHC	LHC	1
RHC	RHC	1
L	L	1

where LHC = left-hand circular (anti-clockwise)
RHC = right-hand circular (clockwise)
L = linear

2.3 *Determination of the satellite links to be considered in calculating the increase in equivalent satellite link noise temperature (Case I only)*

The greatest increase in equivalent satellite link noise temperature caused to any link of another satellite network, existing or planned, by interfering emissions of the proposed satellite network must be determined.

The most unfavourably sited transmitting earth station of the interfering satellite network should be determined for each satellite receiving antenna of the network subject to interference by superimposing the "Earth-to-space" service areas of the interfering network on the space station receiving antenna gain contours plotted on a map of the Earth's surface. The most unfavourably sited transmitting earth station is the one in the direction of which the satellite receiving antenna gain of the network subject to interference is the greatest.

The most unfavourably sited receiving earth station of the network subject to interference should be determined in an analogous manner for each "space-to-Earth" service area of that network. The most unfavourably sited receiving earth station is the one in the direction of which the satellite transmitting antenna gain of the interfering network is the greatest.

2.4 *Use of information furnished under Appendix* **4**

When an administration elects to use information furnished under Appendix **4** with the calculation procedures of sections 2.2.1.1 and 2.2.2.1 in order to formulate comments to the advance publication of a new network, the calculations need to be made for both sets of values of γ and T furnished. The greater of the two values of $\Delta T/T$ resulting from these calculations is the one to be used.

3. *Comparison between calculated percentage increase in noise temperature and the threshold value*

3.1 *Simple frequency-changing transponder on board the satellite*

The calculated values of the $\frac{\Delta T}{T}$ and $\frac{\Delta T'}{T'}$, expressed as percentages, shall be compared with the threshold value of 4%.

- If the calculated value of $\frac{\Delta T}{T}$, expressed as a percentage, due to any interfering emission from satellite link A′ to satellite link A, is no greater than the threshold value, coordination is not required with respect to interference from link A′ to link A.

- If the calculated value of $\frac{\Delta T}{T}$, expressed as a percentage, is greater than the threshold value, coordination is required.

The comparison of $\frac{\Delta T'}{T'}$ with the threshold value, expressed as a percentage, shall be carried out in a similar manner.

3.2 *Cases requiring independent treatment of the up-link and the down-link*

a) In the case of interference into only one link, the up-link or the down-link, the value $\Delta T_e/T_e$ or $\Delta T_s/T_s$, expressed as a percentage, shall be compared with the threshold value of 4%.

b) In the case of interference into both the up-link and the down-link, between which there is a change of modulation on board the satellite, the values of $\Delta T_e/T_e$ and $\Delta T_s/T_s$, expressed as a percentage, shall each be compared with the threshold value of 4%.

When none of the calculated values due to any interfering emission from satellite link A′ to satellite link A is greater than the threshold value, coordination is not required with respect to interference from link A′ to link A.

When at least one of the calculated values exceeds the threshold value, coordination is required.

The comparison of $\frac{\Delta T_{e'}}{T_{e'}}$ or $\frac{\Delta T_{s'}}{T_{s'}}$, expressed as a percentage, with the threshold value shall be carried out in a similar manner.

4. *Consideration of narrow-band carriers*

The method of calculation described in this Appendix may underestimate the interference from slow swept TV carriers into certain narrow-band (single channel per carrier – SCPC) carriers.

In order to facilitate coordination between the satellite systems and to reduce the number of administrations involved in this procedure, the administrations whose SCPC assignments are either recorded in the Master Register or are under coordination may inform an administration notifying its new assignment of the radio frequency channels used in their systems for SCPC transmission, so that the notifying administration may be able to avoid using these channels for FM-TV transmissions.

Conversely, administrations introducing new systems using SCPC transmissions may seek appropriate information from other administrations on their FM-TV transmissions.

ANNEX I

Calculation of the Topocentric Angular Separation Between Two Geostationary Satellites

The topocentric angular separation θ_t between two geostationary satellites from a given earth station can be determined by using the equation:

$$\theta_t = \arccos\left(\frac{d_1^2 + d_2^2 - \left(84\,332 \sin\frac{\theta_g}{2}\right)^2}{2\,d_1 \cdot d_2}\right)$$

- 600 -

where d_1 and d_2 are the distances, in km, from the earth station to the two satellites respectively, and evaluated as d by the method described in Annex II, and θ_g is as defined in § 2.1.

ANNEX II

Calculation of the Free-Space Transmission Loss

The free-space transmission loss L can be determined by using the following equation:

$$L = 20\,(\log f + \log d) + 32.45 \quad \text{(dB)}$$

where:

f: frequency (MHz);

d: distance (km).

a) The distance d between an earth station and a geostationary satellite is given by the equation:

$$d = 42\,644\sqrt{1 - 0.2954\cos\psi} \quad \text{(km)}$$

where:

$$\cos\psi = \cos\zeta \times \cos\beta$$

where:

ζ: latitude of the earth station;

β: difference in longitude between the satellite and the earth station.

Note: If $\cos\psi < 0.151$ the satellite is below the horizontal plane.

b) The distance d_s between two geostationary satellites is determined as follows:

$$d_s = 84\,332\sin\frac{\theta_g}{2} \quad \text{(km)}$$

θ_g: geocentric angular separation as defined in § 2.1.

ANNEX III

Radiation Pattern for Earth Station Antennae to Be Used When They Are Not Published

When neither measured data nor relevant CCIR Recommendations accepted by the administrations concerned are available then administrations should use the reference patterns as described below (dB):

a) for values of $\frac{D}{\lambda} \geqslant 100$* (maximum gain $\geqslant$ 48 dB approx.)

$$G(\varphi) = G_{max} - 2.5 \times 10^{-3}\left(\frac{D}{\lambda}\varphi\right)^2 \quad \text{for } 0 < \varphi < \varphi_m$$

$$G(\varphi) = G_1 \quad \text{for } \varphi_m \leqslant \varphi < \varphi_r$$

$$G(\varphi) = 32 - 25\log\varphi \quad \text{for } \varphi_r \leqslant \varphi < 48^\circ$$

$$G(\varphi) = -10 \quad \text{for } 48^\circ \leqslant \varphi \leqslant 180^\circ$$

where D = antenna diameter, λ = wavelength } expressed in the same unit

φ = off-axis angle of the antenna, in degrees, equal to θ_t or θ_g as applicable

G_1 = gain of the first sidelobe = $2 + 15\log\frac{D}{\lambda}$

$$\varphi_m = \frac{20\lambda}{D}\sqrt{G_{max} - G_1} \text{ (degrees)}$$

$$\varphi_r = 15.85\left(\frac{D}{\lambda}\right)^{-0,6} \text{ (degrees)}$$

b) for values of $\frac{D}{\lambda} < 100$* (maximum gain < 48 dB approx.)

$$G(\varphi) = G_{max} - 2.5 \times 10^{-3}\left(\frac{D}{\lambda}\varphi\right)^2 \quad \text{for } 0 < \varphi < \varphi_m$$

$$G(\varphi) = G_1 \quad \text{for } \varphi_m \leqslant \varphi < 100\frac{\lambda}{D}$$

$$G(\varphi) = 52 - 10\log\frac{D}{\lambda} - 25\log\varphi \quad \text{for } 100\frac{\lambda}{D} \leqslant \varphi < 48^\circ$$

$$G(\varphi) = 10 - 10\log\frac{D}{\lambda} \quad \text{for } 48^\circ \leqslant \varphi \leqslant 180^\circ$$

The above patterns may be modified as appropriate to achieve a better representation of the actual antenna pattern.

* In cases where $\frac{D}{\lambda}$ is not given, it may be estimated from the expression $20\log\frac{D}{\lambda} \approx G_{max} - 7.7$, where G_{max} is the main lobe antenna gain in dB.

ANNEX IV

Example of an Application of Appendix 29

1. *General*

In this example of Case I (see § 2.2.1), two identical satellite networks each with a simple frequency-changing transponder and a global coverage antenna are assumed.

All topocentric angles θ_t are assumed to be equal to 5°.

For this angular separation and for an earth station antenna with $\frac{D}{\lambda}$ greater than 100, the reference radiation pattern $(32 - 25 \log \theta_t)$ gives a gain of 14.5 dB in the direction of the satellite of the other network.

The input data are furnished in § 2 below and are expressed in dB values except for the parameters T and θ_t. In § 3 the calculations are performed in dB.

It may be noted that since both satellites use global beams there is practically no antenna discrimination between wanted and unwanted signals at the satellite, and that this constitutes a worst case.

2. *Input data*

The values of the network parameters given in the table below are derived from those published in accordance with Appendix 3 or 4.

	Symbol*	Value	Unit
Up-link at 6 175 MHz	P'_e	− 37	dB (W/Hz)
	$G'_1(\theta_t)$	14.5	dB
	$G_2(\delta_{e'})$	15.5	dB
	L_u	200	dB
Down-link at 3 950 MHz	P'_s	− 57	dB (W/Hz)
	$G'_3(\eta_e)$	15.5	dB
	$G_4(\theta_t)$	14.5	dB
	L_d	196	dB
	$10 \log \Upsilon$	− 15	dB
	T	105	K
	θ_t	5	degrees

3. *Calculation of* $\frac{\Delta T}{T}$

From equation (1)

$$10 \log \Delta T_s = P'_e + G'_1(\theta_t) + G_2(\delta_{e'}) + 228.6 - L_u$$
$$= -37 + 14.5 + 15.5 + 228.6 - 200 = 21.6 \text{ dBK}$$

Therefore,

$$\Delta T_s = 145 \text{ K}$$

From equation (2)

$$10 \log \Delta T_e = P'_s + G'_3(\eta_e) + G_4(\theta_t) + 228.6 - L_d$$
$$= -57 + 15.5 + 14.5 + 228.6 - 196 = 5.6 \text{ dBK}$$

* All capital symbols, except T, refer to parameters given in logarithmic units.

Therefore,

$\Delta T_e = 3.6$ K

From equation (3)

$\Delta T = \gamma \Delta T_s + \Delta T_e$

$= 0.032 \times 145 + 3.6 = 8.2$ K

Thus

$$\frac{\Delta T}{T} \times 100 = \frac{8.2 \times 100}{105} = 7.8\%$$

4. *Conclusion*

In the example shown, the percentage increase in equivalent satellite link noise temperature is 7.8%. Since it exceeds the threshold value of 4%, coordination between the two networks is required.

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ADD **AP29A**

APPENDIX 30

Provisions for All Services and Associated Plan for the Broadcasting-Satellite Service in Frequency Bands 11.7 - 12.2 GHz (in Regions 2 and 3) and 11.7 - 12.5 GHz (in Region 1) [1]

(See Article **15**)

[1] The provisions and associated Plan contained in this Appendix entered into force on 1 January 1979 in accordance with Article 15 of the Final Acts of the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977.

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ANNEXES

* This Article is not reproduced in this Appendix; see the footnote to the title of this Appendix.

Provisions for All Services and Associated Plan for the Broadcasting-Satellite Service in Frequency Bands 11.7 - 12.2 GHz (in Regions 2 and 3) and 11.7 - 12.5 GHz (in Region 1)

ARTICLE 1

General Definitions

For the purposes of this Appendix the following terms shall have the meanings defined below:

Conference: World Administrative Radio Conference for the Planning of the Broadcasting-Satellite Service in Frequency Bands 11.7 - 12.2 GHz (in Regions 2 and 3) and 11.7 - 12.5 GHz (in Region 1), called in short World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977;

Plan: The Plan for Regions 1 and 3 and its annexes;

Frequency assignment in accordance with the Plan: Any frequency assignment which appears in the Plan or for which the procedure of Article 4 of this Appendix has been successfully applied.

ARTICLE 2

Frequency Bands

2.1 The provisions of this Appendix apply to the broadcasting-satellite service in the frequency bands between 11.7 GHz and 12.5 GHz in Region 1 and between 11.7 GHz and 12.2 GHz in Regions 2 and 3 and to the other services to which these bands are allocated, so far as their relationship to the broadcasting-satellite service in these bands is concerned.

ARTICLE 3

Execution of the Provisions and the Associated Plan

3.1 The Members of the Union in Regions 1 and 3 shall adopt, for their broadcasting-satellite space stations operating in the frequency bands referred to in this Appendix, the characteristics specified in the Plan for those Regions.

3.2 The Members of the Union in Region 2 shall apply the interim provisions contained in Article 12 of this Appendix. These provisions will govern the broadcasting-satellite service in Region 2 until detailed plans for Region 2, drawn up by a future regional administrative radio conference, have entered into force.

3.3 The Members of the Union shall not change the characteristics specified in the Plan, or establish new broadcasting-satellite space stations or stations in the other services to which these frequency bands are allocated, except as provided for in the Radio Regulations and the appropriate Articles and Annexes of this Appendix.

ARTICLE 4

Procedure for Modifications to the Plan

4.1 When an administration intends to make a modification [1] to the Plan, i.e. either:

- to modify the characteristics of any of its frequency assignments to a space station [2] in the broadcasting-satellite service which are shown in the Plan, or for which the procedure in this Article has been successfully applied, whether or not the station has been brought into use, or
- to include in the Plan a new frequency assignment to a space station in the broadcasting-satellite service, or
- to cancel a frequency assignment to a space station in the broadcasting-satellite service,

the following procedure shall be applied before any notification of the frequency assignment is made to the International Frequency Registration Board (see Article 5 of this Appendix).

4.2 The term "frequency assignment in accordance with the Plan" used in this and the following articles is defined in Article 1.

4.3 *Proposed modifications to a frequency assignment in accordance with the Plan or the inclusion in the Plan of a new frequency assignment*

4.3.1 An administration proposing a modification to the characteristics of a frequency assignment in accordance with the Plan or the inclusion of a new frequency assignment in the Plan shall seek the agreement of those administrations:

4.3.1.1 having a frequency assignment to a space station in the broadcasting-satellite service in the same channel or an adjacent channel, which is in accordance with the Plan or in respect of which modifications to the Plan have been published by the Board in accordance with the provision of this Article; or

4.3.1.2 having a frequency assignment to a space station in the broadcasting-satellite service in Region 2 with the necessary bandwidth, any portion of which falls within the necessary bandwidth of the proposed assignment and which is recorded in the Master Register; or

- which has been coordinated or is being coordinated under the provisions of Resolution 33 [3]; or
- which appears in a Region 2 plan [4] to be adopted at a future regional administrative radio conference, taking account of modifications which may be introduced subsequently in accordance with the final acts of that conference; or

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[1] The intention not to employ energy dispersal consistent with section 3.18 of Annex 8 shall be treated as a modification and thus subject to the appropriate provisions of this Article.

[2] The expression "frequency assignment to a space station", wherever it appears in this Article, shall be understood to refer to a frequency assignment associated with a given orbital position. See Annex 10 for the orbital position limitations.

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

[4] The Region 2 plan to be adopted at a future regional administrative radio conference shall not degrade the protection afforded to the frequency assignments in the Plan below the limits specified in this Appendix.

4.3.1.3 having no frequency assignment in the broadcasting-satellite service in the channel concerned but in whose territory the power flux-density value exceeds the prescribed limit as a result of the proposed modification; or

4.3.1.4 having a frequency assignment in the band 11.7 - 12.2 GHz to a space station in the fixed-satellite service which is recorded in the Master Register or which has been coordinated or is being coordinated under the provisions of No. **1060** of the Radio Regulations; or those of paragraph 7.2.1 of this Appendix which are considered to be affected.

A frequency assignment is considered to be affected when the limits shown in Annex 1 are exceeded.

4.3.2 An administration intending to modify characteristics in the Plan shall send to the Board, not earlier than five years but not later than eighteen months before the date on which the assignment is to be brought into use, the relevant information listed in Annex 2. If the assignment is not brought into use by that date, the modification shall lapse.

4.3.2.1 Where as a result of the intended modification the limits defined in Annex 1 are not exceeded, this fact shall be indicated when submitting to the Board the information required by 4.3.2. The Board shall then publish this information in a special section of its weekly circular.

4.3.2.2 In all other cases the administration shall notify the Board of the names of the administrations whose agreement it considers should be sought in order to arrive at the agreement referred to in 4.3.1 as well as of those with which agreement has already been reached.

4.3.3 The Board shall determine on the basis of Annex 1 the administrations whose frequency assignments are considered to be affected within the meaning of 4.3.1. The Board shall include the names of those administrations with the information received under 4.3.2.2 and shall publish the complete information in a special section of its weekly circular. The Board shall immediately send the results of its calculations to the administration proposing the modification to the Plan.

4.3.4 The Board shall send a telegram to the administrations listed in the special section of the weekly circular drawing their attention to the information it contains and shall send them the results of its calculations.

4.3.5 An administration which feels that it should have been included in the list of administrations whose services are considered to be affected may, giving the technical reasons for so doing, request the Board to include its name. The Board shall study this request on the basis of Annex 1 and shall send a copy of the request with an appropriate recommendation to the administration proposing the modification to the Plan.

4.3.6 Any modification to a frequency assignment which is in accordance with the Plan or any inclusion in the Plan of a new frequency assignment which would have the effect of exceeding the limits specified in Annex 1 shall be subject to the agreement of all affected administrations.

4.3.7 The administration seeking agreement or the administration with which agreement is sought may request any additional technical information it considers necessary. The administrations shall inform the Board of such requests.

4.3.8 Comments from administrations on the information published pursuant to 4.3.3 should be sent either directly to the administration proposing the modification or through the Board. In any event the Board shall be informed that comments have been made.

4.3.9 An administration which has not notified its comments either to the administration seeking agreement or to the Board within a period of one hundred and twenty days following the date of the weekly circular referred to in 4.3.2.1 or 4.3.3 shall be understood to have agreed to the proposed modification. This time-limit may be extended by eighty days for an administration which has requested additional information under 4.3.7 or for an administration which has requested the assistance of the Board under 4.3.17. In the latter case the Board shall inform the administrations concerned of this request.

4.3.10 If, in seeking agreement, an administration modifies its initial proposal, it shall again apply the provisions of 4.3.2 and the consequent procedure with respect to any other administration whose services might be affected as a result of modifications to the initial proposal.

4.3.11 If no comments have been received on the expiry of the periods specified in 4.3.9, or if agreement has been reached with the administrations which have made comments and with which agreement is necessary, the administration proposing the modification may continue with the appropriate procedure in Article 5 and shall inform the Board, indicating the final characteristics of the frequency assignment together with the names of the administrations with which agreement has been reached.

4.3.12 The agreement of the administrations affected may also be obtained in accordance with this Article, for a specified period.

4.3.13 When the proposed modification to the Plan involves developing countries, administrations shall seek all practicable solutions conducive to the economical development of the broadcasting-satellite systems of these countries.

4.3.14 The Board shall publish in a special section of its weekly circular the information received under 4.3.11 together with the names of any administrations with which the provisions of this Article have been successfully applied. The frequency assignment concerned shall enjoy the same status as those appearing in the Plan and will be considered as a frequency assignment in accordance with the Plan.

4.3.15 When an administration proposing to modify the characteristics of a frequency assignment or to make a new frequency assignment receives notice of disagreement from an administration whose agreement it has sought, it should first endeavour to solve the problem by exploring all possible means of meeting its requirement. If the problem still cannot be solved by such means, the administration whose agreement has been sought should endeavour to overcome the difficulties as far as possible, and shall state the technical reasons for any disagreement if the administration seeking the agreement requests it to do so.

4.3.16 If no agreement is reached between the administrations concerned, the Board shall carry out any study that may be requested by these administrations; the Board shall inform them of the result of the study and shall make such recommendations as it may be able to offer for the solution of the problem.

4.3.17 An administration may at any stage in the procedure described, or before applying it, request the assistance of the Board, particularly in seeking the agreement of another administration.

4.3.18 The relevant provisions of Article 5 of this Appendix shall be applied when frequency assignments are notified to the Board.

4.4 *Cancellation of frequency assignments*

When a frequency assignment in accordance with the Plan is released, whether or not as a result of a modification, the administration concerned shall immediately so inform the Board. The Board shall publish this information in a special section of its weekly circular.

4.5 *Master copy of the Plan*

4.5.1 The Board shall maintain an up-to-date master copy of the Plan taking account of the application of the procedure specified in this Article. The Board shall prepare a document listing the amendments to be made to the Plan as a result of modifications made in accordance with the procedure in this Article.

4.5.2 The Secretary-General shall be informed by the Board of modifications made to the Plan and shall publish an up-to-date version of the Plan in an appropriate form when justified by the circumstances.

ARTICLE 5

Notification, Examination and Recording in the Master Register of Frequency Assignments to Space Stations in the Broadcasting-Satellite Service in Regions 1 and 3

5.1 *Notification*

5.1.1 Whenever an administration intends to bring into use a frequency assignment to a space station in the broadcasting satellite service, it shall notify this frequency assignment to the Board. For this purpose, the notifying administration shall apply the following provisions.

5.1.2 For any notification under 5.1.1, an individual notice for each frequency assignment shall be drawn up as prescribed in Annex 2, the various sections of which specify the basic characteristics to be provided as appropriate. It is recommended that the notifying administration should also apply any other data it may consider useful.

5.1.3 Each notice must reach the Board not earlier than three years before the date on which the frequency assignment is to be brought into use. In any case, the notice must reach the Board not later than ninety days before that date [1].

5.1.4 Any frequency assignment the notice of which reaches the Board after the applicable period specified in 5.1.3 shall, where it is to be recorded, bear a remark in the Master Register to indicate that it is not in conformity with 5.1.3.

5.1.5 Any notice made under 5.1.1 which does not contain the characteristics specified in Annex 2 shall be returned by the Board immediately by airmail to the notifying administration with the relevant reasons.

5.1.6 Upon receipt of a complete notice, the Board shall include its particulars, with the date of receipt, in its weekly circular which shall contain the particulars of all such notices received since the publication of the previous circular.

5.1.7 The circular shall constitute the acknowledgement to the notifying administration of the receipt of a complete notice.

5.1.8 Complete notices shall be considered by the Board in order of receipt. The Board shall not postpone its finding unless it lacks sufficient data to reach a decision; 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.

5.2 *Examination and recording*

5.2.1 The Board shall examine each notice:

a) with respect to its conformity with the Convention and the relevant provisions of the Radio Regulations and Annex 1 of this Appendix (with the exception of those relating to conformity with the Plan);

b) with respect to its conformity with the Plan.

[1] Where appropriate, the notifying administration shall initiate the procedure for modifying the Plan in sufficient time to ensure that this limit is observed.

5.2.2 Where the Board reaches a favourable finding with respect to 5.2.1, the frequency assignment of an administration shall be recorded in the Master Register. The date of receipt by the Board of the notice shall be entered in Column 2d. In relations between administrations all frequency assignments brought into use in conformity with the Plan and recorded in the Master Register shall be considered to have the same status irrespective of the dates entered in Column 2d for such frequency assignments.

5.2.3 Whenever a frequency assignment is recorded in the Master Register, the finding reached by the Board shall be indicated by a symbol in Column 13a.

5.2.4 Where the Board reaches an unfavourable finding with respect to 5.2.1, 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 a satisfactory solution of the problem.

5.2.5 Where the notifying administration resubmits the notice and the finding of the Board becomes favourable with respect to 5.2.1, the notice shall be treated as in 5.2.2.

5.2.6 If the notifying administration resubmits the notice without modification and insists on its reconsideration, and if the Board's finding with respect to 5.2.1 remains unfavourable, the notice is returned to the notifying administration in accordance with 5.2.4. In this case, the notifying administration undertakes not to bring into use the frequency assignment until the condition specified in 5.2.5 is fulfilled. The agreement of the administrations affected can also be obtained in accordance with Article 4 for a specified period. In that event the Board shall be notified of the agreement and the frequency assignment shall be recorded in the Master Register with a note indicating that the frequency assignment is valid only for the period specified. The notifying administration using the frequency assignment over a specified period shall not subsequently invoke this fact to justify the continued use of the frequency beyond the period specified unless it obtains the agreement of the administration(s) concerned.

5.2.7 If a frequency assignment notified in advance of bringing into use has received in conformity with 5.1.3 a favourable finding by the Board with respect to the provisions of paragraph 5.2.1, it shall be entered provisionally in the Master Register with a special symbol in the Remarks Column indicating the provisional nature of that entry.

5.2.8 When the Board has received confirmation that the frequency assignment has been brought into use, the Board shall remove the symbol in the Master Register.

5.2.9 The date in Column 2c shall be the date of bringing into use notified by the administration concerned. It is given for information only.

5.3 *Cancellation of entries in the Master Register*

5.3.1 If an administration has not confirmed the bringing into use of a frequency assignment under 5.2.8, the Board will make inquiries of the administration not earlier than six months after the expiry of the period specified in 5.1.3. On receipt of the relevant information, the Board will either modify the date of coming into use or cancel the entry.

5.3.2 If the use of any recorded frequency assignment is permanently discontinued, the notifying administration shall so inform the Board within ninety days, whereupon the entry shall be removed from the Master Register.

ARTICLE 6

Coordination, Notification and Recording in the Master International Frequency Register of Frequency Assignments to Terrestrial Stations affecting Broadcasting-Satellite Frequency Assignments in the Bands 11.7 - 12.2 GHz (in Regions 2 and 3) and 11.7 - 12.5 GHz (in Region 1) [1, 2]

Section I. Coordination Procedure to Be Applied

6.1.1 Before an administration notifies to the Board a frequency assignment to a terrestrial transmitting station, it shall initiate coordination with any other administration having a frequency assignment to a broadcasting-satellite station in conformity with the Plan if

- the necessary bandwidths of the two transmissions overlap; and
- the power flux-density which would be produced by the proposed terrestrial transmitting station exceeds the value derived in accordance with Annex 3 at one or more points on the edge of the service area which is within the coverage area of the broadcasting-satellite station of that administration.

6.1.2 For the purpose of effecting coordination, the administration responsible for the terrestrial station shall send to the administrations concerned, by the fastest possible means, a copy of a diagram drawn to an appropriate scale indicating the location of the terrestrial station and all other data of the proposed frequency assignment and the approximate date on which it is planned to bring the station into use.

6.1.3 An administration with which coordination is sought shall acknowledge receipt of the coordination data immediately by telegram. If no acknowledgement is received within fifteen days of dispatch, the administration seeking coordination may dispatch a telegram requesting acknowledgement of receipt of the coordination data, to which the receiving administration shall reply. Upon receipt of the coordination data an administration with which coordination is sought shall promptly examine the matter with regard to interference [3] which would be caused to its frequency assignments in conformity with the Plan and shall, within an overall period of sixty days from dispatch of the coordination data, either notify the administration requesting coordination 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.

6.1.4 No coordination is required when an administration proposes to change the characteristics of an existing assignment in such a way as not to increase the level of interference to the service to be rendered by the broadcasting-satellite stations of other administrations, in conformity with the Plan.

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[1] These procedures do not involve any dispensation from the procedures prescribed for terrestrial stations in Article **12** of the Radio Regulations where stations other than those of the broadcasting-satellite service are involved.

[2] The procedures for coordination, notification and recording of assignments to terrestrial stations affecting broadcasting-satellite stations in Region 2 are contained in Article **12** of the Radio Regulations, except that the need for the coordination referred to in Nos. **1148** to **1154** of the Radio Regulations shall be determined on the basis of Annex 3.

[3] The criteria to be employed in evaluating interference levels shall be based on the relevant CCIR Recommendations or, in the absence of such Recommendations, shall be agreed between the administrations concerned.

6.1.5 An administration seeking coordination may request the Board to endeavour to effect coordination where:

a) an administration with which coordination is sought fails to acknowledge receipt under paragraph 6.1.3 within thirty days of dispatch of the coordination data;

b) an administration which has acknowledged receipt under paragraph 6.1.3 fails to give a decision within ninety days of dispatch of the coordination data;

c) the administration seeking coordination and an administration with which coordination is sought disagree on the acceptable level of interference; or

d) coordination 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 endeavour to effect such coordination.

6.1.6 Either the administration seeking coordination or an administration with which coordination is sought, or the Board, may request any additional information which they may require to assess the level of interference to the services concerned.

6.1.7 Where the Board receives a request under paragraph 6.1.5 *a)*, it shall forthwith send a telegram to the administration concerned requesting immediate acknowledgement.

6.1.8 Where the Board receives an acknowledgement following its action under paragraph 6.1.7 or where the Board receives a request under paragraph 6.1.5 *b)*, it shall forthwith send a telegram to the administration concerned requesting an early decision in the matter.

6.1.9 Where the Board receives a request under paragraph 6.1.5 *d)*, it shall endeavour to effect coordination in accordance with the provisions of paragraph 6.1.2. Where the Board receives no acknowledgement of its request for coordination within the period specified in paragraph 6.1.3, it shall act in accordance with paragraph 6.1.7.

6.1.10 Where an administration fails to reply within thirty days of dispatch of the Board's telegram sent under paragraph 6.1.7 requesting an acknowledgement or fails to give a decision on the matter within sixty days of dispatch of the Board's telegram of request sent under paragraph 6.1.8, the administration with which coordination was sought shall be considered to have undertaken that no complaint will be made in respect of any harmful interference which may be caused by the terrestrial station being coordinated to the service rendered or to be rendered by its satellite-broadcasting station.

6.1.11 Where necessary, as part of the procedure under paragraph 6.1.5, the Board shall assess the level of interference. In any case, the Board shall inform the administrations concerned of the results obtained.

6.1.12 In the event of continuing disagreement between one administration seeking to effect coordination and one with which coordination has been sought, the administrations concerned may explore the possibility of reaching an agreement on the use of the proposed frequency assignment for a specified period.

Section II. Notification Procedure for Frequency Assignments

6.2.1 Any frequency assignment to a fixed, land or broadcasting station shall be notified to the International Frequency Registration Board if the use of the frequency concerned is capable of causing harmful interference to the service rendered or to be rendered by a broadcasting-satellite station of any other administration, or if it is desired to obtain international recognition of the use of the frequency [1].

[1] The attention of administrations is specifically drawn to the provisions of Section I of this Article.

6.2.2 For this notification, an individual notice for each frequency assignment shall be drawn up as prescribed in Section A of Appendix **1** to the Radio Regulations, which specifies the basic characteristics to be furnished as required. It is recommended that the notifying administration should also supply the additional data called for in that Appendix, together with such further data as it may consider appropriate.

6.2.3 Whenever practicable, each notice should reach the Board before the date on which the assignment is brought into use. The notice made in accordance with paragraph 6.2.2 must reach the Board not earlier than three years and not later than ninety days before the date on which the assignment is to be brought into use.

6.2.4 Any frequency assignment, the notice of which reaches the Board less than ninety days before it is brought into use, shall, where it is to be recorded, bear a remark in the Master Register to indicate that it is not in conformity with paragraph 6.2.3.

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

6.3.1 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 the appropriate basic characteristics specified in Section A of Appendix **1** to the Radio Regulations.

6.3.2 Complete notices shall be considered by the Board in the order of their receipt.

6.3.3 Any notice which is incomplete shall be returned by the Board immediately, by airmail, to the notifying administration with the reasons therefor.

6.3.4 Upon receipt of a complete notice, the Board shall include the particulars thereof, with the date of receipt, in its weekly circular; this circular shall contain the particulars of all such notices received since publication of the previous circular.

6.3.5 The circular shall constitute the acknowledgement to the notifying administration of the receipt of a complete notice.

6.3.6 Complete notices shall be considered by the Board in the order specified in paragraph 6.3.2. The Board cannot postpone the formulation of a finding unless it lacks sufficient data to reach a decision; 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.

6.3.7 The Board shall examine each notice:

6.3.8 *a)* with respect to its conformity with the Convention, the relevant provisions of the Radio Regulations and the provisions of this Appendix (with the exception of those relating to the coordination procedure and the probability of harmful interference);

6.3.9 *b)* with respect to its conformity with the provisions of paragraph 6.1.1 relating to coordination of the use of the frequency assignment with the other administrations concerned;

6.3.10 *c)* where appropriate, with respect to the probability of harmful interference to a broadcasting-satellite station whose frequency assignment is in accordance with the Plan.

6.3.11 Depending upon the findings of the Board subsequent to the examination prescribed in paragraphs 6.3.8, 6.3.9 and 6.3.10, further action shall be as follows:

6.3.12 *Finding unfavourable with respect to paragraph 6.3.8*

6.3.13 Where the notice includes a specific reference to the fact that the station will be operated in accordance with the provisions of No. **342** of the Radio Regulations, it shall be examined immediately with respect to paragraphs 6.3.9 and 6.3.10.

6.3.14 If the finding is favourable with respect to paragraph 6.3.9 or 6.3.10, as appropriate, 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.

6.3.15 If the finding is unfavourable with respect to paragraph 6.3.9 or 6.3.10, as appropriate, the notice shall be returned immediately by airmail to the notifying administration with the reasons of the Board for this finding. In those circumstances the notifying administration shall undertake not to bring into use the frequency assignment until the condition specified in paragraph 6.3.14 can be fulfilled. But the administrations concerned may explore the possibility of reaching an agreement on the use of the proposed frequency assignment for a specified period.

6.3.16 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. **342** of the Radio Regulations, 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.

6.3.17 If the notifying administration resubmits the notice unchanged, it shall be treated in accordance with the provisions of paragraph 6.3.16.

6.3.18 If the notifying administration resubmits the notice with a specific reference to the fact that the station will be operated in accordance with the provisions of No. **342** of the Radio Regulations, it shall be treated in accordance with the provisions of paragraphs 6.3.13 and 6.3.14 or 6.3.15, as appropriate.

6.3.19 If the notifying administration resubmits the notice with modifications which, after re-examination, result in a favourable finding by the Board with respect to paragraph 6.3.8, the notice shall be treated under the provisions of paragraphs 6.3.20 to 6.3.32. 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.

6.3.20 *Finding favourable with respect to paragraph 6.3.8*

6.3.21 Where the Board finds that the coordination procedure mentioned in paragraph 6.3.9 has been successfully completed with all administrations whose broadcasting-satellite 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.

6.3.22 Where the Board finds that the coordination procedure mentioned in paragraph 6.3.9 has not been applied, and the notifying administration requests the Board to effect the required coordination, 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 paragraph 6.3.21. If the Board's efforts are unsuccessful, the notice shall be examined by the Board with respect to the provisions of paragraph 6.3.10.

6.3.23 Where the Board finds that the coordination procedure mentioned in paragraph 6.3.9 has not been applied and the notifying administration does not request the Board to effect the required coordination, 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.

6.3.24 Where the notifying administration resubmits the notice and the Board finds that the coordination procedure mentioned in paragraph 6.3.9 has been successfully completed with all administrations whose broadcasting-satellite 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.

6.3.25 Where the notifying administration resubmits the notice with a request that the Board effect the required coordination, it shall be treated in accordance with the provisions of paragraph 6.3.22. 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.

6.3.26 Where the notifying administration resubmits the notice and states it has been unsuccessful in effecting the coordination, it shall be examined by the Board with respect to the provisions of paragraph 6.3.10. 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.

6.3.27 *Finding favourable with respect to paragraphs 6.3.8 and 6.3.10*

6.3.28 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.

6.3.29 *Finding favourable with respect to paragraph 6.3.8 but unfavourable with respect to paragraph 6.3.10*

6.3.30 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.

6.3.31 Should the notifying administration resubmit the notice with modifications which result, after re-examination, in a favourable finding by the Board with respect to paragraph 6.3.10, 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.

6.3.32 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 paragraph 6.3.31 to be applied and should that administration insist upon reconsideration of the notice but the Board's finding remain unchanged, the notification shall again be returned to the notifying administration in accordance with paragraph 6.3.30. In those circumstances, the notifying administration shall undertake not to bring into use the proposed frequency assignment until the condition specified in paragraph 6.3.31 can be fulfilled. But the administrations concerned may explore the possibility of reaching an agreement on the use of the frequency assignment for a specified period. In that event the Board shall be notified of the agreement and the frequency assignment shall be recorded in the Master Register with a note indicating that the assignment is valid only for the specified period. The notifying administration using the frequency assignment during a specified period shall not subsequently use this circumstance to justify continued use of the frequency beyond the period specified if it does not obtain the agreement of the administration or the administrations concerned.

6.3.33 *Change in the basic characteristics of assignments already recorded in the Master Register*

6.3.34 A notice of a change in the basic characteristics of an assignment already recorded, as specified in Appendix **1** to the Radio Regulations (except those entered in Columns 3 and 4a of the Master Register), shall be examined by the Board in accordance with paragraphs 6.3.8 and 6.3.9 and, where appropriate, paragraph 6.3.10 and paragraphs 6.3.12 to 6.3.32 inclusive applied. Where the change should be recorded, the original assignment shall be amended according to the notice.

6.3.35 However, in the case of a change in the basic characteristics of an assignment which is in conformity with paragraph 6.3.8, should the Board reach a favourable finding with respect to paragraph 6.3.9 and, if applicable, paragraph 6.3.10, 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.

6.3.36 In applying the provisions 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.

6.3.37 *Recording of frequency assignments notified before being brought into use*

6.3.38 If a frequency assignment notified in advance of bringing into use has received a favourable finding by the Board with respect to paragraphs 6.3.8 and 6.3.9, and, where appropriate, 6.3.10, it shall be entered provisionally in the Master Register with a special symbol in the Remarks Column indicating the provisional nature of that entry.

6.3.39 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 bringing into use, the special symbol shall be deleted from the Remarks Column. If, in the light of a request from the notifying administration received before the end of the thirty-day period, the Board finds that exceptional circumstances warrant an extension of this period, the extension shall in no case exceed one hundred and fifty days.

6.3.40 If use by a terrestrial station of an assignment which is not in conformity with the foregoing causes harmful interference to the reception of emissions from a space station in the broadcasting-satellite service using an assignment in conformity with the Plan, the administration having jurisdiction over the terrestrial station shall, on being advised, take immediate measures to eliminate the interference.

ARTICLE 7

Preliminary Procedures, Notification and Recording in the Master International Frequency Register of Frequency Assignments to Stations in the Fixed-Satellite Service in the Frequency Band 11.7 - 12.2 GHz (in Region 2) When Frequency Assignments to Broadcasting-Satellite Stations in Accordance with the Plan Are Involved [1]

Section I. Procedure for the Advance Publication of Information on Planned Fixed-Satellite Systems

7.1.1 An administration which intends to establish a fixed-satellite system shall, prior to the procedure in accordance with paragraph 7.2.1 where applicable, send to the International Frequency Registration Board, not earlier than five years before the date of bringing into service each satellite network of the planned system, the information listed in Appendix **4** to the Radio Regulations.

7.1.2 Any amendments to the information concerning a planned satellite system sent in accordance with paragraph 7.1.1 shall also be sent to the Board as soon as they become available.

7.1.3 The Board shall publish the information sent under paragraphs 7.1.1 and 7.1.2 in a special section of its weekly circular and shall also, when the weekly circular contains such information, so advise all administrations by circular telegram.

[1] These provisions do not replace the procedures prescribed in Articles **11** and **13** of the Radio Regulations when stations other than those of the broadcasting-satellite service having frequency assignments in conformity with the Plan are involved.

7.1.4 If, after studying the information published under paragraph 7.1.3, any administration is of the opinion that interference, which may be unacceptable, may be caused to its frequency assignments in conformity with the Plan, it shall within ninety days after the date of the weekly circular publishing the information listed in Appendix **4** to the Radio Regulations, send its comments to the administration concerned. A copy of these comments shall also be sent to the Board. If no such comments are received from an administration within the period mentioned above, it may be assumed that that administration has no basic objections to the planned fixed-satellite network(s) of that system of which details have been published.

7.1.5 An administration receiving comments sent in accordance with paragraph 7.1.4 shall endeavour to resolve any difficulties that may arise without considering the possibility of adjustment to broadcasting-satellite stations of other administrations. If no such means can be found, the administration concerned is then free to apply to other administrations concerned in order to solve these difficulties, provided that any modifications which may result to the Plan are in accordance with Article 4.

7.1.6 In their attempts to resolve the difficulties mentioned above, administrations may seek the assistance of the Board.

7.1.7 In complying with the provisions of paragraphs 7.1.5 and 7.1.6, an administration responsible for a planned fixed-satellite system shall, if necessary, defer its commencement of the coordination procedure of paragraph 7.2.1 or, where this is not applicable, the sending of its notices to the Board until one hundred and fifty days after the date of the weekly circular containing the information listed in Appendix **4** to the Radio Regulations on the relevant satellite network. However, in respect of those administrations with which difficulties have been resolved or which have responded favourably, the coordination procedure, where applicable, may be commenced prior to the expiry of the one hundred and fifty days mentioned above.

7.1.8 An administration, on behalf of which details of planned fixed-satellite networks in its system have been published in accordance with the provisions of paragraphs 7.1.1 to 7.1.3, shall periodically inform the Board whether or not comments have been received and of the progress made with other administrations in resolving any difficulties. The Board shall publish this information in a special section of its weekly circular and shall also, when the weekly circular contains such information, so inform all administrations by circular telegram.

Section II. Coordination Procedures to Be Applied in Appropriate Cases

7.2.1 Before an administration notifies to the Board or brings into use any frequency assignment to a space station in the fixed-satellite service, it shall seek the agreement of any other administration having a frequency assignment in conformity with the Plan, if

- any portion of the necessary bandwidth proposed for the space station in the fixed-satellite service falls within the necessary bandwidth associated with the frequency assignment to the broadcasting-satellite station, and

- the power flux-density which would be produced by the proposed fixed-satellite assignment exceeds the value specified in Annex 4.

For this purpose, the administration seeking agreement shall send to any other such administration the information listed in Appendix **3** to the Radio Regulations.

7.2.2 No additional agreement is necessary when an administration proposes to change the characteristics of an existing assignment in such a way as will, in respect of the broadcasting-satellite service of another administration, meet the requirements of paragraph 7.2.1 above, or when this assignment has previously been the subject of an agreement and when the change will not cause any increase in the interference potential specified in that agreement.

7.2.3 An administration seeking coordination under paragraph 7.2.1 shall at the same time send to the Board a copy of the request for coordination together with the information listed in Appendix 3 to the Radio Regulations and the name(s) of the administration(s) whose agreement is sought. The Board shall determine on the basis of Annex 4 which frequency assignments in conformity with the Plan are considered to be affected. The Board shall include the names of those administrations with the information received from the administration seeking coordination and shall publish this information in a special section of its weekly circular, together with a reference to the weekly circular in which details of the satellite system were published in accordance with Section I of this Article. When the weekly circular contains such information, the Board shall so inform all administrations by circular telegram.

7.2.4 An administration believing that it should have been included in the procedure under paragraph 7.2.1 shall have the right to request that it be brought into the procedure.

7.2.5 An administration whose agreement is sought under paragraph 7.2.1 shall acknowledge receipt of the coordination data immediately by telegram. If no acknowledgement is received within thirty days after the date of the weekly circular publishing the information under paragraph 7.2.3, the administration seeking coordination shall dispatch a telegram requesting acknowledgement, to which the receiving administration shall reply within a further period of thirty days. Upon receipt of the coordination data, an administration shall, having regard to the proposed date of bringing into use of the assignment for which agreement was requested, promptly examine the matter with regard to interference [1] which would be caused to the service rendered by its stations in respect of which agreement is sought under paragraph 7.2.1, and shall, within ninety days from the date of the relevant weekly circular, notify its agreement to the requesting administration. If the administration with which coordination is sought does not agree, it shall, within the same period, send to the administration seeking coordination the technical details upon which its disagreement is based, 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 comments shall also be sent to the Board.

7.2.6 An administration seeking coordination may request the Board to endeavour to effect coordination in those cases where:

a) an administration whose agreement is sought under paragraph 7.2.1 fails to acknowledge receipt, under paragraph 7.2.5, within sixty days after the date of the weekly circular publishing the information relating to the request for coordination;

b) an administration has acknowledged receipt under paragraph 7.2.5, but fails to give a decision within ninety days from the date of the relevant weekly circular;

c) there is disagreement between the administration seeking coordination and an administration whose agreement is sought as to the acceptable level of interference;

d) agreement 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 endeavour to effect such coordination.

7.2.7 Either the administration seeking coordination or an administration whose agreement is sought, or the Board, may request additional information which they may require to assess the level of interference to the services concerned.

7.2.8 Where the Board receives a request under paragraph 7.2.6 *a)*, it shall forthwith send a telegram to the administration whose agreement is sought requesting immediate acknowledgement.

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[1] The criteria to be employed in evaluating interference levels shall be based upon the technical information contained in this Appendix or upon relevant CCIR Recommendations and shall be agreed between the administrations concerned.

7.2.9 Where the Board receives an acknowledgement following its action under paragraph 7.2.8, or where the Board receives a request under paragraph 7.2.6 *b)*, it shall forthwith send a telegram to the administration whose agreement is sought requesting an early decision in the matter.

7.2.10 Where the Board receives a request under paragraph 7.2.6 *d)*, it shall endeavour to effect coordination in accordance with the provisions of paragraph 7.2.1. The Board shall also, where appropriate, act in accordance with paragraph 7.2.3. Where the Board receives no acknowledgement to its request for coordination within the periods specified in paragraph 7.2.5, it shall act in accordance with paragraph 7.2.8.

7.2.11 Where an administration fails to reply within thirty days of dispatch of the Board's telegram requesting an acknowledgement sent under paragraph 7.2.8, or fails to give a decision in the matter within thirty days of dispatch of the Board's telegram of request under paragraph 7.2.9, it shall be deemed that the administration whose agreement was sought has undertaken:

a) that no complaint will be made in respect of any harmful interference which may be caused to the services rendered by its broadcasting-satellite stations by the use of the assignment for which coordination was requested;

b) that its broadcasting-satellite stations will not cause harmful interference to the use of the assignment for which coordination was requested.

7.2.12 Where necessary, as part of the procedure under paragraph 7.2.6, the Board shall assess the level of interference. In any case, the Board shall inform the administrations concerned of the results obtained.

7.2.13 In the event of continuing disagreement between one administration seeking to effect coordination and one whose agreement has been sought, provided that the assistance of the Board has been requested, the administration seeking coordination may, after one hundred and fifty days from the date of the request for coordination, taking into consideration the provisions of paragraph 7.3.4, send its notice concerning the proposed assignment to the Board. In those circumstances the notifying administration shall undertake not to bring the frequency assignment into use until the condition in paragraph 7.4.11.2 can be fulfilled. But the administrations concerned may explore the possibility of reaching an agreement on the use of the proposed frequency assignment for a specified period.

Section III. Notification of Frequency Assignments

7.3.1 Any frequency assignment to a space station in the fixed satellite service shall be notified to the Board:

a) If the use of the frequency concerned is capable of causing harmful interference to a frequency assignment of another administration which is in accordance with the Plan [1];

b) If it is desired to obtain international recognition of the use of the frequency.

7.3.2 Similar notice shall be given for any frequency to be used for reception by an earth station where one or more of the conditions specified in paragraph 7.3.1 are applicable.

7.3.3 For any notification under paragraph 7.3.1 or 7.3.2, an individual notice for each frequency assignment shall be drawn up as prescribed in Appendix **3** to the Radio Regulations, the various Sections of which specify the basic characteristics to be furnished according to the case. The notifying administration shall furnish such further data as it considers appropriate.

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[1] The attention of administrations is specifically drawn to the application of paragraph 7.2.1 above.

7.3.4 Each notice must reach the Board not earlier than three years before the date on which the assignment is to be brought into use. The notice must reach the Board in any case not later than ninety days [1] before this date.

7.3.5 Any frequency assignment to an earth or space station, the notice of which reaches the Board after the applicable period specified in paragraph 7.3.4, shall, where it is to be recorded, bear a mark in the Master Register to indicate that it is not in conformity with paragraph 7.3.4.

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

7.4.1 Any notice which does not contain at least those basic characteristics specified in Appendix 3 to the Radio Regulations shall be returned by the Board immediately, by airmail, to the notifying administration with the reasons therefor.

7.4.2 Upon receipt of a complete notice, the Board shall include the particulars thereof, with the date of receipt, in its weekly circular which shall contain the particulars of all such notices received since the publication of the previous circular.

7.4.3 The circular shall constitute the acknowledgement to the notifying administration of the receipt of a complete notice.

7.4.4 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.

7.4.5 The Board shall examine each notice:

7.4.5.1 with respect to its conformity with the Convention, the relevant provisions of the Radio Regulations and the provisions of this Appendix (with the exception of those relating to the coordination procedures and the probability of harmful interference);

7.4.5.2 where appropriate, with respect to its conformity with the provisions of paragraph 7.2.1, relating to the coordination of the use of the frequency assignment with the other administrations concerned having a frequency assignment in conformity with the Plan;

7.4.5.3 where appropriate, with respect to the probability of harmful interference to the service rendered or to be rendered by a broadcasting-satellite station whose frequency assignment is in conformity with the Plan.

7.4.6 Depending upon the findings of the Board subsequent to the examination prescribed in paragraphs 7.4.5.1, 7.4.5.2 and 7.4.5.3, as appropriate, further action shall be as follows:

7.4.7 *Finding favourable with respect to paragraph 7.4.5.1 in cases where the provisions of paragraph 7.4.5.2 are not applicable*

7.4.7.1 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.

[1] The notifying administration shall take this limit into account when deciding, where appropriate, to initiate the coordination procedure(s).

7.4.8 *Finding unfavourable with respect to paragraph 7.4.5.1*

7.4.8.1 Where the notice includes a specific reference to the fact that the station will be operated in accordance with the provisions of No. **342** of the Radio Regulations and the finding is favourable with respect to paragraphs 7.4.5.2 and 7.4.5.3, as appropriate, 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.

7.4.8.2 Where the notice includes a specific reference to the fact that the station will be operated in accordance with the provisions of No. **342** of the Radio Regulations and the finding is unfavourable with respect to paragraph 7.4.5.2 or 7.4.5.3, as appropriate, the notice shall be returned immediately by airmail to the notifying administration with the reasons of the Board for this finding. In those circumstances the notifying administration shall undertake not to bring into use the frequency assignment until the condition in paragraph 7.4.8.1 can be fulfilled. The agreement of the administrations affected can also be obtained in accordance with this Article for a specified period. In that event the Board shall be notified of the agreement and the frequency assignment shall be recorded in the Master Register with a note indicating that the frequency assignment is valid only for the period specified. The notifying administration using the frequency assignment over a specified period shall not subsequently use this circumstance to justify continued use of the frequency beyond the period specified if it does not obtain the agreement of the administration(s) concerned. The date of receipt by the Board of the original notice shall be entered in Column 2d.

7.4.8.3 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. **342** of the Radio Regulations, 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.

7.4.8.4 If the notifying administration resubmits the notice unchanged, it shall be treated in accordance with the provisions of paragraph 7.4.8.3. If it is resubmitted with a specific reference to the fact that the station will be operated in accordance with the provisions of No. **342** of the Radio Regulations, it shall be treated in accordance with the provisions of paragraph 7.4.8.1 or 7.4.8.2, as appropriate. If it is resubmitted with modifications which, after re-examination, result in a favourable finding by the Board with respect to paragraph 7.4.5.1, it shall be treated as a new notice.

7.4.9 *Finding favourable with respect to paragraph 7.4.5.1 in cases where the provisions of paragraph 7.4.5.2 are applicable*

7.4.9.1 Where the Board finds that the coordination procedures mentioned in paragraph 7.4.5.2 have been successfully completed with all administrations whose frequency assignments in accordance with the Plan may be affected, the frequency assignment shall be recorded in the Master Register. The date of receipt by the Board of the notice shall be entered in Column 2d.

7.4.9.2 Where the Board finds that the coordination procedure mentioned in paragraph 7.4.5.2 has not been applied, and the notifying administration requests the Board to effect the required coordination, the Board shall take appropriate action 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 paragraph 7.4.9.1. If the Board's efforts are unsuccessful, the notice shall be examined by the Board with respect to the provisions of paragraph 7.4.5.3.

7.4.9.3 Where the Board finds that the coordination procedure mentioned in paragraph 7.4.5.2 has not been applied, and the notifying administration does not request the Board to effect the required coordination, 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.

7.4.9.4 Where the notifying administration resubmits the notice and the Board finds that the coordination procedure mentioned in paragraph 7.4.5.2 has been successfully completed with all administrations whose frequency assignments in conformity with the Plan may be affected, the frequency 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.

7.4.9.5 Where the notifying administration resubmits the notice with a request that the Board effect the required coordination under paragraph 7.2.1, it shall be treated in accordance with the provisions of paragraph 7.4.9.2. 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.

7.4.9.6 Where the notifying administration resubmits the notice and states it has been unsuccessful in effecting the coordination, the Board shall inform the administrations concerned thereof. The notice shall be examined by the Board with respect to the provisions of paragraph 7.4.5.3. 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.

7.4.10 *Finding favourable with respect to paragraphs 7.4.5.1 and 7.4.5.3*

7.4.10.1 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.

7.4.11 *Finding favourable with respect to paragraph 7.4.5.1, but unfavourable with respect to paragraph 7.4.5.3*

7.4.11.1 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.

7.4.11.2 Should the notifying administration resubmit the notice with modifications which result, after re-examination, in a favourable finding by the Board with respect to paragraph 7.4.5.3, 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.

7.4.11.3 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 paragraph 7.4.11.2 to be applied, and should that administration insist upon reconsideration of the notice, but should the Board's finding remain unchanged, the notification shall again be returned to the notifying administration in accordance with paragraph 7.4.11.1. In those circumstances, the notifying administration shall undertake not to bring into use the proposed frequency assignment until the condition in paragraph 7.4.11.2 can be fulfilled. The agreement of the administrations affected can also be obtained in accordance with this Article for a specified period. In that event the Board shall be notified of the agreement and the frequency assignment shall be recorded in the Master Register with a note in the Remarks Column indicating that the assignment is valid only for the specified period. The notifying administration using the frequency assignment over a specified period shall not subsequently use this circumstance to justify continued use of the frequency beyond the period specified, if it does not obtain the agreement of the administration(s) concerned. The date of receipt by the Board of the original notice shall be entered in Column 2d.

7.4.12 *Change in the basic characteristics of assignments already recorded in the Master Register*

7.4.12.1 A notice of a change in the basic characteristics of an assignment in the fixed-satellite service already recorded, as specified in Appendix **3** to the Radio Regulations (except the name of the station or the name of the locality in which it is situated), shall be examined by the Board according to paragraph 7.4.5.1 and, where appropriate, paragraphs 7.4.5.2 and 7.4.5.3, and the provisions of paragraphs 7.4.7 to 7.4.11.3 inclusive shall apply. Where the change should be recorded, the original assignment shall be amended accordingly.

7.4.12.2 However, in the case of a change in the characteristics of an assignment which is in conformity with paragraph 7.4.5.1, should the Board reach a favourable finding with respect to paragraphs 7.4.5.2 and 7.4.5.3, where appropriate, or find that the changes do not increase the probability of harmful interference to frequency assignments in accordance with the Plan, 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.

7.4.12.3 In applying the provisions 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.

7.4.13 *Recording of frequency assignments in the fixed-satellite service notified before being brought into use*

7.4.13.1 If a frequency assignment notified in advance of bringing into use has received a favourable finding by the Board with respect to paragraph 7.4.5.1 and, where appropriate, paragraphs 7.4.5.2 and 7.4.5.3, it shall be entered provisionally in the Master Register with a special symbol in the Remarks Column indicating the provisional nature of that entry.

7.4.13.2 If, within 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.

7.4.13.3 If the Board does not receive this confirmation within the period referred to in paragraph 7.4.13.2, the entry concerned shall be cancelled. The Board shall advise the administration concerned before taking such action.

Section V. Recording of Findings in the Master Register

7.5 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 unfavourable finding shall be inserted in the Remarks Column.

Section VI. Categories of Frequency Assignments

7.6.1 The date in Column 2c shall be the date of putting into use notified by the administration concerned. It is given for information only.

7.6.2 If harmful interference is actually caused to the reception of any broadcasting-satellite station whose frequency assignment is in accordance with the Plan, by the use of a frequency assignment to a space radiocommunication station subsequently recorded in the Master Register in accordance with the provisions of paragraph 7.4.11.3, the station using the latter frequency assignment must, upon receipt of advice thereof, immediately eliminate this harmful interference.

7.6.3 If harmful interference to the reception of any broadcasting-satellite station whose frequency assignment is in accordance with the Plan, is actually caused by the use of a frequency assignment which is not in conformity with paragraph 7.4.5.1, the station using the latter frequency assignment must, upon receipt of advice thereof, immediately eliminate this harmful interference.

Section VII. Review of Findings

7.7.1 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.

7.7.2 The Board, in the light of all the data at its disposal shall review the matter, taking into account paragraph 7.4.5.1 and, where appropriate, paragraphs 7.4.5.2 and 7.4.5.3, and shall render an appropriate finding, informing the notifying administration prior either to the promulgation of its finding or to any recording action.

7.7.3 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.

7.7.4 If the finding with regard to the probability of harmful interference remains unfavourable, no change shall be made in the original entry.

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

7.8.1 Where the use of a recorded assignment to a station in the fixed-satellite service is suspended for a period of eighteen months, the notifying administration shall, within this eighteen-month period, inform the Board of the date on which such use was suspended and of the date on which the assignment is to be brought back into regular use.

7.8.2 Whenever it appears to the Board, whether or not as a result of action under paragraph 7.8.1, that a recorded assignment to a space station in the fixed-satellite service has not been in regular use for more than eighteen months, the Board shall inquire of the notifying administration as to when the assignment is to be brought back into regular use.

7.8.3 If no reply is received within six months of action by the Board under paragraph 7.8.2, or if the reply does not confirm that the assignment to a space station in the fixed-satellite service is to be brought back into regular use within this six-month limit, a symbol should be entered against the entry in the Master Register.

7.8.4 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.

7.8.5 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.

7.8.6 If, in connection with an inquiry by the Board under paragraph 7.8.5 the notifying administration as failed to supply the Board within forty-five 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.

ARTICLE 8

Miscellaneous Provisions Relating to the Procedures

8.1 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 provisions or of harmful interference.

8.2 The Board shall thereupon prepare and forward to the administration concerned a report containing its findings and recommendations for the solution of the problem.

8.3 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.

8.4 If it is requested by any administration, particularly by an administration of a country in need of special assistance, and if the circumstances appear to warrant, the Board, using such means at its disposal as are appropriate in the circumstances, shall render the following assistance:

a) computation necessary in the application of Annexes 1, 3 and 4;

b) any other assistance of a technical nature for completion of the procedures in this Appendix.

ARTICLE 9

Power Flux-Density Limits Between 11.7 GHz and 12.2 GHz to Protect Terrestrial Services in Regions 1 and 3 from Interference from Region 2 Broadcasting-Satellite Space Stations

9.1 The power-flux density at the Earth's surface in Regions 1 and 3, produced by emissions from a space station in the broadcasting-satellite service in Region 2 for all conditions and for all methods of modulation shall not exceed the values given in Annex 5 on the territory of any country unless the administration of that country so agrees.

ARTICLE 10

Power Flux-Density Limits Between 11.7 GHz and 12.2 GHz to Protect Space Services in Region 2 from Interference from Broadcasting-Satellite Space Stations of Regions 1 and 3

10.1 Broadcasting-satellite space stations of Regions 1 and 3 shall employ transmitting antennae whose side-lobe characteristics fall within the reference antenna pattern given in Figure 6 of Annex 8. Therefore, the power flux-density falling on the territory of any administration of Region 2 in the band 11.7 - 12.2 GHz prior to any modifications to the Plan shall not exceed, under all conditions and methods of modulation, the values produced by broadcasting-satellite stations operating in accordance with the Plan on the date of its entry into force and using the technical characteristics specified in the Plan. The power flux-density values shall be calculated using the method described in Annex 11.

10.2 In particular, the power flux-densities at a reference test point (longitude 35° W, latitude 8° S) prior to any modifications to the Plan shall not exceed the values shown in Annex 11.

ARTICLE 11

The Plan for the Broadcasting-Satellite Service in the Frequency Bands 11.7 - 12.2 GHz in Region 3 and 11.7 - 12.5 GHz in Region 1

11.1 COLUMN HEADINGS OF THE PLAN

Col. 1. *Country symbol and IFRB Serial Number* (Column 1 contains the symbol designating the country or the geographical area taken from Table No. 1 of the Preface to the International Frequency List).

Col. 2. *Nominal orbital position*, in degrees.

Col. 3. *Channel number* (see Table showing channel numbers and corresponding assigned frequencies).

Col. 4. *Boresight* geographical coordinates, in degrees and tenths of a degree.

Col. 5. *Antenna beamwidth.* This column contains two figures corresponding to the major axis and the minor axis respectively of the elliptical cross-section half-power beam, in degrees and tenths of a degree.

Col. 6. *Orientation of the ellipse* determined as follows: in a plane normal to the beam axis, the direction of a major axis of the ellipse is specified as the angle measured anti-clockwise from a line parallel to the equatorial plane to the major axis of the ellipse to the nearest degree.

Col. 7. *Polarization* (1 = direct, 2 = indirect) [1].

Col. 8. *E.i.r.p.* in the direction of maximum radiation in dBW.

Col. 9. *Remarks.*

11.2 NOTES RELATING TO THE PLAN

1. The ΔG of this assignment is ... dB.

2. To be dedicated to the Islamic programme envisaged in the Conference [2] documents.

3. This assignment results from a common requirement of the Administrations of Denmark and Iceland. The service area includes the Faeroe Islands and Iceland. The assignment may after consultations between the two Administrations, be used by either of them.

4. IFB – IFRB. This assignment has been included in the Plan by the Conference.

5. Assignment intended to ensure coverage of Algeria, Libya, Morocco, Mauritania and Tunisia, with the agreement of the countries concerned. If required, this assignment may be used with the characteristics of the beam TUN 150.

6. Assignments appearing in the Plan for Somalia should be coordinated with each country concerned and in particular with Ethiopia.

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[1] See Annex 8, paragraph 3.2.3.

[2] The World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977.

11.3 TABLE SHOWING CORRESPONDENCE BETWEEN CHANNEL NUMBERS AND ASSIGNED FREQUENCIES

Channel No.	Assigned frequency (MHz)	Channel No.	Assigned frequency (MHz)
1	11 727.48	21	12 111.08
2	11 746.66	22	12 130.26
3	11 765.84	23	12 149.44
4	11 785.02	24	12 168.62
5	11 804.20	25	12 187.80
6	11 823.38	26	12 206.98
7	11 842.56	27	12 226.16
8	11 861.74	28	12 245.34
9	11 880.92	29	12 264.52
10	11 900.10	30	12 283.70
11	11 919.28	31	12 302.88
12	11 938.46	32	12 322.06
13	11 957.64	33	12 341.24
14	11 976.82	34	12 360.42
15	11 996.00	35	12 379.60
16	12 015.18	36	12 398.78
17	12 034.36	37	12 417.96
18	12 053.54	38	12 437.14
19	12 072.72	39	12 456.32
20	12 091.90	40	12 475.50

11 727,48 MHz (1)

1		2	3	4		5		6	7	8	9
AFG	246A	50.0	1	64.5	33.1	1.44	1.40	21	1	63.4	
AUS	005A	98.0	1	133.5	−18.8	2.70	1.40	76	2	64.3	
CAR	338A	122.0	1	149.5	8.0	5.36	0.77	178	1	62.5	
CHN	155A	62.0	1	88.3	31.5	3.38	1.45	162	2	62.9	
CHN	162A	92.0	1	115.9	21.0	2.74	2.42	23	2	63.9	
CHN	163A	80.0	1	116.0	39.2	1.20	0.80	132	1	64.4	
CME	300A	−13.0	1	12.7	6.2	2.54	1.68	87	1	63.4	
F	093A	−19.0	1	2.6	45.9	2.50	0.98	160	1	63.8	
FJI	193A	152.0	1	179.4	−17.9	1.04	0.98	67	1	63.7	
GUI	192A	−37.0	1	−11.0	10.2	1.58	1.04	147	2	63.4	
IND	039A	56.0	1	72.7	11.2	1.26	0.60	107	1	63.1	
IND	044A	68.0	1	79.5	22.3	2.19	1.42	146	1	63.3	
INS	035A	104.0	1	124.3	−3.2	3.34	1.94	82	1	63.2	
J	111A	110.0	1	134.5	31.5	3.52	3.30	68	1	63.2	
LBY	280A	−25.0	1	21.4	26.0	2.50	1.04	119	2	63.5	
MDG	236A	29.0	1	46.6	−18.8	2.72	1.14	65	2	63.3	
NZL	055A	158.0	1	172.3	−39.7	2.88	1.56	47	1	63.3	
PLM	337A	170.0	1	−161.4	7.0	0.60	0.60	0	1	62.4	
POL	132A	−1.0	1	19.3	51.8	1.46	0.64	162	2	64.1	
QAT	247A	17.0	1	51.1	25.3	0.60	0.60	0	1	61.8	1/1.6
SMA	335A	170.0	1	−170.1	−14.2	0.60	0.60	0	2	61.1	1/0.9
SMR	311A	−37.0	1	12.6	43.7	0.60	0.60	0	1	62.4	1/0.8
SWZ	313A	−1.0	1	31.5	−26.5	0.62	0.60	66	1	62.8	1/1.7
THA	142A	74.0	1	100.7	13.2	2.82	1.54	106	2	63.6	
TUR	145A	5.0	1	34.4	38.9	2.68	1.04	168	1	63.7	
URS	064A	23.0	1	45.6	40.8	2.16	0.60	163	2	63.9	
URS	067A	44.0	1	62.4	58.5	3.20	1.52	169	1	66.3	
WAK	334A	140.0	1	166.5	19.2	0.60	0.60	0	1	63.6	
YMS	267A	11.0	1	48.8	15.2	1.76	1.54	176	2	62.8	

11 746,66 MHz (2)

ALG	251A	−25.0	2	4.2	33.2	2.45	1.25	172	1	63.4	
ARS	275A	17.0	2	48.3	24.6	3.84	1.20	138	2	62.7	
AUS	006A	98.0	2	135.4	−30.3	2.00	1.40	44	1	63.2	
AUS	008A	128.0	2	145.9	−21.5	2.90	2.00	120	2	63.7	
BOT	297A	−1.0	2	23.3	−22.2	2.13	1.50	36	2	63.7	
CHN	154A	62.0	2	83.9	40.5	2.75	2.05	177	1	63.2	
CHN	161A	92.0	2	118.1	31.1	2.49	1.69	117	1	64.4	
CKH	052A	158.0	2	−161.0	−19.8	1.02	0.64	132	2	64.6	
CLN	219A	50.0	2	80.6	7.7	1.18	0.60	106	1	63.6	
D	087A	−19.0	2	9.6	49.9	1.62	0.72	147	2	65.5	
FNL	103A	5.0	2	22.5	64.5	1.38	0.76	171	2	67.7	
GNP	304A	−31.0	2	−15.0	12.0	0.90	0.60	172	2	63.1	
GUM	331A	122.0	2	144.5	13.1	0.60	0.60	0	2	63.3	
IND	037A	68.0	2	93.0	25.5	1.46	1.13	40	2	63.9	
IND	045A	56.0	2	76.2	19.5	1.58	1.58	21	2	63.5	
INS	028A	80.0	2	101.5	0.0	3.00	1.20	133	2	63.3	
IRL	211A	−31.0	2	−8.2	53.2	0.84	0.60	162	1	64.2	
KOR	112A	110.0	2	127.5	36.0	1.24	1.02	168	2	63.6	
LAO	284A	74.0	2	103.7	18.1	2.16	0.78	133	1	63.8	
MAU	242A	29.0	2	59.8	−18.9	1.62	1.24	55	1	64.0	
MLA	228A	86.0	2	114.1	3.9	2.34	1.12	45	1	63.6	
MLI	327A	−37.0	2	−2.0	19.0	2.66	1.26	127	1	63.2	
MRL	333A	146.0	2	166.7	7.9	1.50	1.50	177	1	63.3	
NCL	100A	140.0	2	166.0	−21.0	1.14	0.72	146	1	63.7	
PAK	127A	38.0	2	69.6	29.5	2.30	2.16	14	1	63.9	
PNG	131A	110.0	2	147.7	−6.3	2.50	2.18	169	1	64.4	
ROU	136A	−1.0	2	25.0	45.7	1.38	0.66	155	1	63.8	
TCD	143A	−13.0	2	18.1	15.5	3.40	1.72	107	2	64.0	
TGO	226A	−25.0	2	0.8	8.6	1.52	0.60	105	2	63.4	
WAL	102A	140.0	2	−176.8	−14.0	0.74	0.60	29	1	64.4	
YEM	266A	11.0	2	44.3	15.1	1.14	0.70	109	1	62.6	
ZAI	323A	−19.0	2	21.3	−6.8	2.80	1.52	149	1	64.6	

11 765,84 MHz (3)

1		2	3	4		5		6	7	8	9
AFG	245A	50.0	3	70.2	35.5	1.32	1.13	53	1	62.8	
AUS	004A	98.0	3	121.8	−24.9	3.60	1.90	54	2	63.0	
AUS	009A	128.0	3	147.2	−32.0	2.10	1.40	15	1	64.1	
AZR	134A	−31.0	3	−23.4	36.1	2.56	0.70	158	2	63.0	
BEN	233A	−19.0	3	2.2	9.5	1.44	0.68	97	2	63.3	
CHN	157A	62.0	3	102.3	27.8	2.56	1.58	127	2	65.1	
CHN	160A	92.0	3	122.8	45.3	2.50	1.45	150	2	65.1	
COM	207A	29.0	3	44.1	−12.1	0.76	0.60	149	2	63.1	
GAB	260A	−13.0	3	11.8	−0.6	1.43	1.12	64	1	63.3	
GMB	302A	−37.0	3	−15.1	13.4	0.79	0.60	4	2	63.3	
GRC	105A	5.0	3	24.7	38.2	1.78	0.98	156	1	63.3	
IND	043A	56.0	3	77.8	11.1	1.36	1.28	172	1	63.3	
IND	047A	68.0	3	93.3	11.1	1.92	0.60	96	1	63.4	
INS	036A	104.0	3	135.2	−3.8	2.46	2.00	147	1	63.8	
IRN	109A	34.0	3	54.2	32.4	3.82	1.82	149	2	62.8	
J	111B	110.0	3	134.5	31.5	3.52	3.30	68	1	64.2	
LBN	279A	11.0	3	35.8	33.9	0.60	0.60	0	2	61.6	1/1.8
LBR	244A	−31.0	3	−9.3	6.6	1.22	0.70	133	1	63.2	
LBY	321A	−25.0	3	13.1	27.2	2.36	1.12	129	2	63.0	
LIE	253A	−37.0	3	9.5	47.1	0.60	0.60	0	1	62.4	1/0.7
LUX	114A	−19.0	3	6.0	49.8	0.60	0.60	0	1	62.9	1/2.0
MRA	332A	122.0	3	145.9	16.9	1.20	0.60	76	1	63.5	
NHB	128A	140.0	3	168.0	−16.4	1.52	0.68	87	2	62.8	
NRU	309A	134.0	3	167.0	−0.5	0.60	0.60	0	2	62.5	
POR	133A	−31.0	3	−8.0	39.6	0.92	0.60	112	2	63.4	
SMO	057A	158.0	3	-172.3	−13.7	0.60	0.60	0	1	63.6	
SNG	151A	74.0	3	103.8	1.3	0.60	0.60	0	2	63.5	
SOM	312A	23.0	3	45.0	6.4	3.26	1.54	71	1	62.3	
TCH	144A	−1.0	3	17.3	49.3	1.47	0.60	170	2	63.8	
UGA	051A	11.0	3	32.3	1.2	1.46	1.12	60	1	63.2	
URS	061A	23.0	3	24.7	56.6	0.88	0.64	12	2	65.0	
URS	073A	44.0	3	54.3	63.5	1.58	0.66	3	1	66.9	
VTN	325A	86.0	3	105.3	16.1	3.03	1.40	116	2	63.4	
ZMB	314A	−1.0	3	27.5	−13.1	2.38	1.48	39	1	63.7	

11 785,02 MHz (4)

ALG	252A	−25.0	4	1.6	25.5	3.64	2.16	152	1	62.8	
AND	341A	−37.0	4	1.6	42.5	0.60	0.60	0	2	61.5	1/0.5
ARS	003A	17.0	4	41.1	23.8	3.52	1.68	134	2	62.7	
AUS	007A	128.0	4	145.0	−38.1	1.83	1.39	134	2	63.3	
AUT	016A	−19.0	4	12.2	47.5	1.14	0.63	166	2	64.1	
BUL	020A	−1.0	4	25.0	43.0	1.04	0.60	165	1	63.6	
CHN	156A	62.0	4	97.8	36.3	2.56	1.58	157	1	63.5	
CHN	161B	92.0	4	118.1	31.1	2.49	1.69	117	1	64.4	
CKN	053A	158.0	4	−163.0	−11.2	1.76	0.72	30	2	64.3	
CPV	301A	−31.0	4	−24.0	16.0	0.86	0.70	144	2	62.2	
EGY	026A	−7.0	4	29.7	26.8	2.33	1.72	136	2	63.1	
G	027A	−31.0	4	−3.5	53.8	1.84	0.72	142	1	65.0	
IND	040A	56.0	4	73.0	25.0	1.82	1.48	58	2	63.6	
IND	048A	68.0	4	86.2	25.0	1.56	0.90	120	2	63.7	
INS	028B	80.0	4	101.5	0.0	3.00	1.20	133	2	63.3	
KOR	112B	110.0	4	127.5	36.0	1.24	1.02	168	2	63.6	
LAO	284B	74.0	4	103.7	18.1	2.16	0.78	133	1	63.8	
MAU	243A	29.0	4	56.8	−13.9	1.56	1.38	65	1	63.7	
MLA	228B	86.0	4	114.1	3.9	2.34	1.12	45	1	63.6	
MLI	328A	−37.0	4	−7.6	13.2	1.74	1.24	171	1	63.7	
MLT	147A	−13.0	4	14.3	35.9	0.60	0.60	0	1	61.0	1/0.7
MOZ	307A	−1.0	4	34.0	−18.0	3.57	1.38	55	2	64.2	
OCE	101A	−160.0	4	−145.0	−16.3	4.34	3.54	4	2	63.5	
PAK	283A	38.0	4	74.7	33.9	1.34	1.13	160	1	64.3	
PNG	271A	128.0	4	148.0	−6.7	2.80	2.05	155	1	63.4	
RRW	310A	11.0	4	30.0	−2.1	0.66	0.60	42	2	64.8	
S	138A	5.0	4	16.2	61.0	1.04	0.98	14	2	67.1	
STP	241A	−13.0	4	7.0	0.8	0.60	0.60	0	2	61.4	1/1.3
TON	215A	170.0	4	−174.7	−18.0	1.41	0.68	85	1	63.3	
URS	060A	23.0	4	41.5	57.4	3.08	1.56	153	1	66.7	
ZAI	322A	−19.0	4	22.4	0.0	2.16	1.88	48	1	64.7	

11 804,20 MHz (5)

1		2	3	4		5		6	7	8	9
AFG	246B	50.0	5	64.5	33.1	1.44	1.40	21	1	63.4	
AUS	005B	98.0	5	133.5	−18.8	2.70	1.40	76	2	64.3	
CAR	338B	122.0	5	149.5	8.0	5.36	0.77	178	1	62.5	
CHN	155B	62.0	5	88.3	31.5	3.38	1.45	162	2	62.9	
CHN	162B	92.0	5	115.9	21.0	2.74	2.42	23	2	64.0	
CHN	164A	80.0	5	112.2	37.4	1.06	0.76	111	1	64.2	
CME	300B	−13.0	5	12.7	6.2	2.54	1.68	87	1	63.5	
F	093B	−19.0	5	2.6	45.9	2.50	0.98	160	1	63.8	
FJI	193B	152.0	5	179.4	−17.9	1.04	0.98	67	1	63.7	
GUI	192B	−37.0	5	−11.0	10.2	1.58	1.04	147	2	63.5	
IND	039B	56.0	5	72.7	11.2	1.26	0.60	107	1	63.1	
IND	044B	68.0	5	79.5	22.3	2.19	1.42	146	1	63.4	
INS	035B	104.0	5	124.3	−3.2	3.34	1.94	82	1	63.2	
J	111C	110.0	5	134.5	31.5	3.52	3.30	68	1	64.2	
LBY	280B	−25.0	5	21.4	26.0	2.50	1.04	119	2	63.5	
MDG	236B	29.0	5	46.6	−18.8	2.72	1.14	65	2	63.4	
NZL	055B	158.0	5	172.3	−39.7	2.88	1.56	47	1	63.4	
PLM	337B	170.0	5	−161.4	7.0	0.60	0.60	0	1	62.4	
POL	132B	−1.0	5	19.3	51.8	1.46	0.64	162	2	64.2	
QAT	247B	17.0	5	51.1	25.3	0.60	0.60	0	1	61.8	1/1.6
SMA	335B	170.0	5	−170.1	−14.2	0.60	0.60	0	2	61.2	1/0.9
SMR	311B	−37.0	5	12.6	43.7	0.60	0.60	0	1	62.5	1/0.8
SWZ	313B	−1.0	5	31.5	−26.5	0.62	0.60	66	1	62.8	1/1.7
THA	142B	74.0	5	100.7	13.2	2.82	1.54	106	2	63.7	
TUR	145B	5.0	5	34.4	38.9	2.68	1.04	168	1	63.8	
URS	064B	23.0	5	45.6	40.8	2.16	0.60	163	2	63.9	
URS	067B	44.0	5	62.4	58.5	3.20	1.52	169	1	66.4	
WAK	334B	140.0	5	166.5	19.2	0.60	0.60	0	1	63.6	
YMS	267B	11.0	5	48.8	15.2	1.76	1.54	176	2	62.9	

11 823,38 MHz (6)

ALG	251B	−25.0	6	4.2	33.2	2.45	1.25	172	1	63.4	
ARS	275B	17.0	6	48.3	24.6	3.84	1.20	138	2	62.8	
AUS	006B	98.0	6	135.4	−30.3	2.00	1.40	44	1	63.3	
AUS	008B	128.0	6	145.9	−21.5	2.90	2.00	120	2	63.7	
BOT	297B	−1.0	6	23.3	−22.2	2.13	1.50	36	2	63.8	
CHN	154B	62.0	6	83.9	40.5	2.75	2.05	177	1	63.3	
CHN	161C	92.0	6	118.1	31.1	2.49	1.69	117	1	64.5	
CKH	052B	158.0	6	−161.0	−19.8	1.02	0.64	132	2	64.6	
CLN	219B	50.0	6	80.6	7.7	1.18	0.60	106	1	63.6	
D	087B	−19.0	6	9.6	49.9	1.62	0.72	147	2	65.6	
FNL	103B	5.0	6	22.5	64.5	1.38	0.76	171	2	67.8	
GNP	304B	−31.0	6	−15.0	12.0	0.90	0.60	172	2	63.2	
GUM	331B	122.0	6	144.5	13.1	0.60	0.60	0	2	63.4	
IND	037B	68.0	6	93.0	25.5	1.46	1.13	40	2	64.0	
IND	045B	56.0	6	76.2	19.5	1.58	1.58	21	2	63.6	
INS	028C	80.0	6	101.5	0.0	3.00	1.20	133	2	63.3	
IRL	211B	−31.0	6	−8.2	53.2	0.84	0.60	162	1	64.3	
KOR	112C	110.0	6	127.5	36.0	1.24	1.02	168	2	63.6	
LAO	284C	74.0	6	103.7	18.1	2.16	0.78	133	1	63.8	
MAU	242B	29.0	6	59.8	−18.9	1.62	1.24	55	1	64.0	
MLA	228C	86.0	6	114.1	3.9	2.34	1.12	45	1	63.6	
MLI	327B	−37.0	6	−2.0	19.0	2.66	1.26	127	1	63.2	
MRL	333B	146.0	6	166.7	7.9	1.50	1.50	177	1	63.3	
NCL	100B	140.0	6	166.0	−21.0	1.14	0.72	146	1	63.8	
PAK	127B	38.0	6	69.6	29.5	2.30	2.16	14	1	64.0	
PNG	131B	110.0	6	147.7	−6.3	2.50	2.18	169	1	64.4	
ROU	136B	−1.0	6	25.0	45.7	1.38	0.66	155	1	63.9	
TCD	143B	−13.0	6	18.1	15.5	3.40	1.72	107	2	64.0	
TGO	226B	−25.0	6	0.8	8.6	1.52	0.60	105	2	63.4	
WAL	102B	140.0	6	−176.8	−14.0	0.74	0.60	29	1	64.4	
YEM	266B	11.0	6	44.3	15.1	1.14	0.70	109	1	62.7	
ZAI	323B	−19.0	6	21.3	−6.8	2.80	1.52	149	1	64.7	

11 842,56 MHz (7)

1		2	3	4		5		6	7	8	9
AFG	245B	50.0	7	70.2	35.5	1.32	1.13	53	1	62.9	
AUS	004B	98.0	7	121.8	−24.9	3.60	1.90	54	2	63.1	
AUS	009B	128.0	7	147.2	−32.0	2.10	1.40	15	1	64.1	
AZR	134B	−31.0	7	−23.4	36.1	2.56	0.70	158	2	63.1	
BEN	233B	−19.0	7	2.2	9.5	1.44	0.68	97	2	63.3	
CHN	157B	62.0	7	102.3	27.8	2.56	1.58	127	2	65.1	
CHN	160B	92.0	7	122.8	45.3	2.50	1.45	150	2	65.1	
COM	207B	29.0	7	44.1	−12.1	0.76	0.60	149	2	63.1	
GAB	260B	−13.0	7	11.8	−0.6	1.43	1.12	64	1	63.4	
GMB	302B	−37.0	7	−15.1	13.4	0.79	0.60	4	2	63.4	
GRC	105B	5.0	7	24.7	38.2	1.78	0.98	156	1	63.4	
IND	043B	56.0	7	77.8	11.1	1.36	1.28	172	1	63.4	
IND	047B	68.0	7	93.3	11.1	1.92	0.60	96	1	63.5	
INS	036B	104.0	7	135.2	−3.8	2.46	2.00	147	1	63.8	
IRN	109B	34.0	7	54.2	32.4	3.82	1.82	149	2	62.8	
J	111D	110.0	7	134.5	31.5	3.52	3.30	68	1	64.2	
LBN	279B	11.0	7	35.8	33.9	0.60	0.60	0	2	61.7	1/1.8
LBR	244B	−31.0	7	−9.3	6.6	1.22	0.70	133	1	63.3	
LBY	321B	−25.0	7	13.1	27.2	2.36	1.12	129	2	63.1	
LIE	253B	−37.0	7	9.5	47.1	0.60	0.60	0	1	62.5	1/0.7
LUX	114B	−19.0	7	6.0	49.8	0.60	0.60	0	1	63.0	1/2.0
MRA	332B	122.0	7	145.9	16.9	1.20	0.60	76	1	63.5	
NHB	128B	140.0	7	168.0	−16.4	1.52	0.68	87	2	62.9	
NRU	309B	134.0	7	167.0	−0.5	0.60	0.60	0	2	62.6	
POR	133B	−31.0	7	−8.0	39.6	0.92	0.60	112	2	63.4	
SMO	057B	158.0	7	−172.3	−13.7	0.60	0.60	0	1	63.7	
SNG	151B	74.0	7	103.8	1.3	0.60	0.60	0	2	63.6	
SOM	312B	23.0	7	45.0	6.4	3.26	1.54	71	1	62.4	
TCH	144B	−1.0	7	17.3	49.3	1.47	0.60	170	2	63.9	
UGA	051B	11.0	7	32.3	1.2	1.46	1.12	60	1	63.3	
URS	061B	23.0	7	24.7	56.6	0.88	0.64	12	2	65.1	
URS	072A	44.0	7	70.1	61.5	2.38	0.66	173	1	67.1	
VTN	325B	86.0	7	105.3	16.1	3.03	1.40	116	2	63.5	
ZMB	314B	−1.0	7	27.5	−13.1	2.38	1.48	39	1	63.8	

11 861,74 MHz (8)

ALG	252B	−25.0	8	1.6	25.5	3.64	2.16	152	1	62.8	
AND	341B	−37.0	8	1.6	42.5	0.60	0.60	0	2	61.5	1/0.5
ARS	003B	17.0	8	41.1	23.8	3.52	1.68	134	2	62.8	
AUS	007B	128.0	8	145.0	−38.1	1.83	1.39	134	2	63.4	
AUT	016B	−19.0	8	12.2	47.5	1.14	0.63	166	2	64.2	
BUL	020B	−1.0	8	25.0	43.0	1.04	0.60	165	1	63.7	
CHN	156B	62.0	8	97.8	36.3	2.56	1.58	157	1	63.5	
CHN	173A	92.0	8	115.7	27.4	1.14	0.94	99	1	64.0	
CKN	053B	158.0	8	−163.0	−11.2	1.76	0.72	30	2	64.3	
CPV	301B	−31.0	8	−24.0	16.0	0.86	0.70	144	2	62.2	
EGY	026B	−7.0	8	29.7	26.8	2.33	1.72	136	2	63.2	
G	027B	−31.0	8	−3.5	53.8	1.84	0.72	142	1	65.1	
IND	040B	56.0	8	73.0	25.0	1.82	1.48	58	2	63.7	
IND	048B	68.0	8	86.2	25.0	1.56	0.90	120	2	63.7	
INS	028D	80.0	8	101.5	0.0	3.00	1.20	133	2	63.4	
KOR	112D	110.0	8	127.5	36.0	1.24	1.02	168	2	63.7	
LAO	284D	74.0	8	103.7	18.1	2.16	0.78	133	1	63.8	
MAU	243B	29.0	8	56.8	−13.9	1.56	1.38	65	1	63.8	
MLA	228D	86.0	8	114.1	3.9	2.34	1.12	45	1	63.7	
MLI	328B	−37.0	8	−7.6	13.2	1.74	1.24	171	1	63.8	
MLT	147B	−13.0	8	14.3	35.9	0.60	0.60	0	1	61.0	1/0.7
MOZ	307B	−1.0	8	34.0	−18.0	3.57	1.38	55	2	64.2	
OCE	101B	−160.0	8	−145.0	−16.3	4.34	3.54	4	2	63.6	
PAK	283B	38.0	8	74.7	33.9	1.34	1.13	160	1	64.3	
PNG	271B	128.0	8	148.0	−6.7	2.80	2.05	155	1	63.4	
RRW	310B	11.0	8	30.0	−2.1	0.66	0.60	42	2	64.9	
S	138B	5.0	8	16.2	61.0	1.04	0.98	14	2	67.1	
STP	241B	−13.0	8	7.0	0.8	0.60	0.60	0	2	61.5	1/1.3
TON	215B	170.0	8	−174.7	−18.0	1.41	0.68	85	1	63.3	
URS	060B	23.0	8	41.5	57.4	3.08	1.56	153	1	66.8	
ZAI	322B	−19.0	8	22.4	0.0	2.16	1.88	48	1	64.8	

11 880,92 MHz (9)

1		2	3	4		5		6	7	8	9
AFG	246C	50.0	9	64.5	33.1	1.44	1.40	21	1	63.4	
AUS	005C	98.0	9	133.5	–18.8	2.70	1.40	76	2	64.4	
CAR	338C	122.0	9	149.5	8.0	5.36	0.77	178	1	62.6	
CHN	155C	62.0	9	88.3	31.5	3.38	1.45	162	2	63.0	
CHN	162C	92.0	9	115.9	21.0	2.74	2.42	23	2	64.0	
CHN	165A	80.0	9	111.4	41.8	1.58	1.20	15	1	63.6	
CME	300C	–13.0	9	12.7	6.2	2.54	1.68	87	1	63.5	
F	093C	–19.0	9	2.6	45.9	2.50	0.98	160	1	63.9	
FJI	193C	152.0	9	179.4	–17.9	1.04	0.98	67	1	63.8	
GUI	192C	–37.0	9	–11.0	10.2	1.58	1.04	147	2	63.5	
IND	039C	56.0	9	72.7	11.2	1.26	0.60	107	1	63.2	
IND	044C	68.0	9	79.5	22.3	2.19	1.42	146	1	63.5	
INS	035C	104.0	9	124.3	–3.2	3.34	1.94	82	1	63.3	
J	111E	110.0	9	134.5	31.5	3.52	3.30	68	1	64.3	
LBY	280C	–25.0	9	21.4	26.0	2.50	1.04	119	2	63.6	
MDG	236C	29.0	9	46.6	–18.8	2.72	1.14	65	2	63.4	
NZL	055C	158.0	9	172.3	–39.7	2.88	1.56	47	1	63.4	
PLM	337C	170.0	9	–161.4	7.0	0.60	0.60	0	1	62.5	
POL	132C	–1.0	9	19.3	51.8	1.46	0.64	162	2	64.2	
QAT	247C	17.0	9	51.1	25.3	0.60	0.60	0	1	61.9	1/1.6
SMA	335C	170.0	9	–170.1	–14.2	0.60	0.60	0	2	61.3	1/0.9
SMR	311C	–37.0	9	12.6	43.7	0.60	0.60	0	1	62.5	1/0.8
SWZ	313C	–1.0	9	31.5	–26.5	0.62	0.60	66	1	62.9	1/1.7
THA	142C	74.0	9	100.7	13.2	2.82	1.54	106	2	63.7	
TUR	145C	5.0	9	34.4	38.9	2.68	1.04	168	1	63.8	
URS	064C	23.0	9	45.6	40.8	2.16	0.60	163	2	64.0	
URS	067C	44.0	9	62.4	58.5	3.20	1.52	169	1	66.4	
WAK	334C	140.0	9	166.5	19.2	0.60	0.60	0	1	63.7	
YMS	267C	11.0	9	48.8	15.2	1.76	1.54	176	2	62.9	

11 900,10 MHz (10)

ALG	251C	–25.0	10	4.2	33.2	2.45	1.25	172	1	63.5	
ARS	275C	17.0	10	48.3	24.6	3.84	1.20	138	2	62.9	
AUS	006C	98.0	10	135.4	–30.3	2.00	1.40	44	1	63.3	
AUS	008C	128.0	10	145.9	–21.5	2.90	2.00	120	2	63.8	
BOT	297C	–1.0	10	23.3	–22.2	2.13	1.50	36	2	63.9	
CHN	154C	62.0	10	83.9	40.5	2.75	2.05	177	1	63.3	
CHN	171A	92.0	10	117.2	32.0	1.20	0.74	126	1	64.2	
CHN	187A	80.0	10	106.6	26.7	1.14	0.94	179	2	64.0	
CKH	052C	158.0	10	–161.0	–19.8	1.02	0.64	132	2	64.7	
CLN	219C	50.0	10	80.6	7.7	1.18	0.60	106	1	63.7	
D	087C	–19.0	10	9.6	49.9	1.62	0.72	147	2	65.6	
FNL	103C	5.0	10	22.5	64.5	1.38	0.76	171	2	67.9	
GNP	304C	–31.0	10	–15.0	12.0	0.90	0.60	172	2	63.2	
GUM	331C	122.0	10	144.5	13.1	0.60	0.60	0	2	63.4	
IND	037C	68.0	10	93.0	25.5	1.46	1.13	40	2	64.0	
IND	045C	56.0	10	76.2	19.5	1.58	1.58	21	2	63.6	
IRL	211C	–31.0	10	–8.2	53.2	0.84	0.60	162	1	64.4	
KOR	112E	110.0	10	127.5	36.0	1.24	1.02	168	2	63.7	
LAO	284E	74.0	10	103.7	18.1	2.16	0.78	133	1	63.9	
MAU	242C	29.0	10	59.8	–18.9	1.62	1.24	55	1	64.1	
MLI	327C	–37.0	10	–2.0	19.0	2.66	1.26	127	1	63.2	
MRL	333C	146.0	10	166.7	7.9	1.50	1.50	177	1	63.4	
NCL	100C	140.0	10	166.0	–21.0	1.14	0.72	146	1	63.8	
PAK	127C	38.0	10	69.6	29.5	2.30	2.16	14	1	64.0	
PNG	131C	110.0	10	147.7	–6.3	2.50	2.18	169	1	64.5	
ROU	136C	–1.0	10	25.0	45.7	1.38	0.66	155	1	63.9	
TCD	143C	–13.0	10	18.1	15.5	3.40	1.72	107	2	64.1	
TGO	226C	–25.0	10	0.8	8.6	1.52	0.60	105	2	63.5	
WAL	102C	140.0	10	–176.8	–14.0	0.74	0.60	29	1	64.5	
YEM	266C	11.0	10	44.3	15.1	1.14	0.70	109	1	62.7	
ZAI	323C	–19.0	10	21.3	–6.8	2.80	1.52	149	1	64.7	

11 919,28 MHz (11)

1		2	3	4		5		6	7	8	9
AFG	245C	50.0	11	70.2	35.5	1.32	1.13	53	1	62.9	
AUS	004C	98.0	11	121.8	−24.9	3.60	1.90	54	2	63.1	
AUS	009C	128.0	11	147.2	−32.0	2.10	1.40	15	1	64.2	
AZR	134C	−31.0	11	−23.4	36.1	2.56	0.70	158	2	63.1	
BEN	233C	−19.0	11	2.2	9.5	1.44	0.68	97	2	63.4	
CHN	157C	62.0	11	102.3	27.8	2.56	1.58	127	2	65.2	
CHN	160C	92.0	11	122.8	45.3	2.50	1.45	150	2	65.2	
COM	207C	29.0	11	44.1	−12.1	0.76	0.60	149	2	63.2	
GAB	260C	−13.0	11	11.8	−0.6	1.43	1.12	64	1	63.4	
GMB	302C	−37.0	11	−15.1	13.4	0.79	0.60	4	2	63.4	
GRC	105C	5.0	11	24.7	38.2	1.78	0.98	156	1	63.4	
IND	043C	56.0	11	77.8	11.1	1.36	1.28	172	1	63.5	
IND	047C	68.0	11	93.3	11.1	1.92	0.60	96	1	63.5	
INS	036C	104.0	11	135.2	−3.8	2.46	2.00	147	1	63.9	
IRN	109C	34.0	11	54.2	32.4	3.82	1.82	149	2	62.9	
J	111F	110.0	11	134.5	31.5	3.52	3.30	68	1	64.3	
LBN	279C	11.0	11	35.8	33.9	0.60	0.60	0	2	61.7	1/1.8
LBR	244C	−31.0	11	−9.3	6.6	1.22	0.70	133	1	63.3	
LBY	321C	−25.0	11	13.1	27.2	2.36	1.12	129	2	63.1	
LIE	253C	−37.0	11	9.5	47.1	0.60	0.60	0	1	62.5	1/0.7
LUX	114C	−19.0	11	6.0	49.8	0.60	0.60	0	1	63.0	1/2.0
MRA	332C	122.0	11	145.9	16.9	1.20	0.60	76	1	63.6	
NHB	128C	140.0	11	168.0	−16.4	1.52	0.68	87	2	63.0	
NRU	309C	134.0	11	167.0	−0.5	0.60	0.60	0	2	62.6	
POR	133C	−31.0	11	−8.0	39.6	0.92	0.60	112	2	63.5	
SMO	057C	158.0	11	−172.3	−13.7	0.60	0.60	0	1	63.8	
SNG	151C	74.0	11	103.8	1.3	0.60	0.60	0	2	63.7	
SOM	312C	23.0	11	45.0	6.4	3.26	1.54	71	1	62.4	
TCH	144C	−1.0	11	17.3	49.3	1.47	0.60	170	2	63.9	
UGA	051C	11.0	11	32.3	1.2	1.46	1.12	60	1	63.3	
URS	061C	23.0	11	24.7	56.6	0.88	0.64	12	2	65.1	
VTN	325C	86.0	11	105.3	16.1	3.03	1.40	116	2	63.5	
ZMB	314C	−1.0	11	27.5	−13.1	2.38	1.48	39	1	63.8	

11 938,46 MHz (12)

ALG	252C	−25.0	12	1.6	25.5	3.64	2.16	152	1	62.9	
AND	341C	−37.0	12	1.6	42.5	0.60	0.60	0	2	61.6	1/0.5
ARS	003C	17.0	12	41.1	23.8	3.52	1.68	134	2	62.8	
AUS	007C	128.0	12	145.0	−38.1	1.83	1.39	134	2	63.4	
AUT	016C	−19.0	12	12.2	47.5	1.14	0.63	166	2	64.2	
BRU	330A	74.0	12	114.7	4.4	0.60	0.60	0	1	62.5	1/1.3
BUL	020C	−1.0	12	25.0	43.0	1.04	0.60	165	1	63.8	
CHN	156C	62.0	12	97.8	36.3	2.56	1.58	157	1	63.6	
CHN	170A	92.0	12	119.5	33.0	1.34	0.64	155	1	64.4	
CHN	178A	80.0	12	111.5	27.4	1.22	0.86	130	2	64.4	
CKN	053C	158.0	12	−163.0	−11.2	1.76	0.72	30	2	64.4	
CPV	301C	−31.0	12	−24.0	16.0	0.86	0.70	144	2	62.3	
DNK	089A	5.0	12	12.3	57.1	1.20	0.60	177	2	64.3	
EGY	026C	−7.0	12	29.7	26.8	2.33	1.72	136	2	63.2	
G	027C	−31.0	12	−3.5	53.8	1.84	0.72	142	1	65.1	
IND	040C	56.0	12	73.0	25.0	1.82	1.48	58	2	63.8	
IND	048C	68.0	12	86.2	25.0	1.56	0.90	120	2	63.8	
KOR	112F	110.0	12	127.5	36.0	1.24	1.02	168	2	63.7	
MAU	243C	29.0	12	56.8	−13.9	1.56	1.38	65	1	63.8	
MLD	306A	44.0	12	73.1	6.0	0.96	0.60	90	1	63.7	
MLI	328C	−37.0	12	−7.6	13.2	1.74	1.24	171	1	63.8	
MLT	147C	−13.0	12	14.3	35.9	0.60	0.60	0	1	61.1	1/0.7
MOZ	307C	−1.0	12	34.0	−18.0	3.57	1.38	55	2	64.3	
OCE	101C	−160.0	12	−145.0	−16.3	4.34	3.54	4	2	63.6	
PAK	210A	38.0	12	72.1	30.8	1.16	0.72	90	1	63.5	
PNG	271C	128.0	12	148.0	−6.7	2.80	2.05	155	1	63.5	
RRW	310C	11.0	12	30.0	−2.1	0.66	0.60	42	2	64.9	
STP	241C	−13.0	12	7.0	0.8	0.60	0.60	0	2	61.5	1/1.3
TON	215C	170.0	12	−174.7	−18.0	1.41	0.68	85	1	63.4	
URS	060C	23.0	12	41.5	57.4	3.08	1.56	153	1	66.9	
URS	069A	44.0	12	70.8	38.5	1.36	0.74	161	2	64.1	
ZAI	322C	−19.0	12	22.4	0.0	2.16	1.88	48	1	64.8	

11 957,64 MHz (13)

1		2	3	4		5		6	7	8	9
AFG	246D	50.0	13	64.5	33.1	1.44	1.40	21	1	63.4	
AUS	005D	98.0	13	133.5	−18.8	2.70	1.40	76	2	64.4	
CAR	338D	122.0	13	149.5	8.0	5.36	0.77	178	1	62.6	
CHN	155D	62.0	13	88.3	31.5	3.38	1.45	162	2	63.0	
CHN	180A	92.0	13	113.7	12.9	3.76	2.18	72	2	63.6	
CME	300D	−13.0	13	12.7	6.2	2.54	1.68	87	1	63.6	
F	093D	−19.0	13	2.6	45.9	2.50	0.98	160	1	64.0	
GUI	192D	−37.0	13	−11.0	10.2	1.58	1.04	147	2	63.6	
IND	039D	56.0	13	72.7	11.2	1.26	0.60	107	1	63.3	
IND	044D	68.0	13	79.5	22.3	2.19	1.42	146	1	63.5	
INS	035D	104.0	13	124.3	−3.2	3.34	1.94	82	1	63.4	
J	111G	110.0	13	134.5	31.5	3.52	3.30	68	1	64.3	
LBY	280D	−25.0	13	21.4	26.0	2.50	1.04	119	2	63.6	
MDG	236D	29.0	13	46.6	−18.8	2.72	1.14	65	2	63.5	
NZL	055D	158.0	13	172.3	−39.7	2.88	1.56	47	1	63.5	
NZL	287A	128.0	13	173.0	−41.0	3.30	1.28	48	1	64.8	
PLM	337D	170.0	13	−161.4	7.0	0.60	0.60	0	1	62.6	
POL	132D	−1.0	13	19.3	51.8	1.46	0.64	162	2	64.3	
QAT	247D	17.0	13	51.1	25.3	0.60	0.60	0	1	62.0	1/1.6
SMA	335D	170.0	13	−170.1	−14.2	0.60	0.60	0	2	61.3	1/0.9
SMR	311D	−37.0	13	12.6	43.7	0.60	0.60	0	1	62.6	1/0.8
SWZ	313D	−1.0	13	31.5	−26.5	0.62	0.60	66	1	63.0	1/1.7
THA	142D	74.0	13	100.7	13.2	2.82	1.54	106	2	63.8	
TUR	145D	5.0	13	34.4	38.9	2.68	1.04	168	1	63.9	
URS	064D	23.0	13	45.6	40.8	2.16	0.60	163	2	64.1	
URS	067D	44.0	13	62.4	58.5	3.20	1.52	169	1	66.5	
WAK	334D	140.0	13	166.5	19.2	0.60	0.60	0	1	63.7	
YMS	267D	11.0	13	48.8	15.2	1.76	1.54	176	2	63.0	

11 976,82 MHz (14)

ALG	251D	−25.0	14	4.2	33.2	2.45	1.25	172	1	63.6	
ARS	275D	17.0	14	48.3	24.6	3.84	1.20	138	2	63.0	
AUS	006D	98.0	14	135.4	−30.3	2.00	1.40	44	1	63.4	
AUS	008D	128.0	14	145.9	−21.5	2.90	2.00	120	2	63.9	
BOT	297D	−1.0	14	23.3	−22.2	2.13	1.50	36	2	63.9	
BRU	330B	74.0	14	114.7	4.4	0.60	0.60	0	1	62.6	1/1.3
CHN	154D	62.0	14	83.9	40.5	2.75	2.05	177	1	63.4	
CHN	172A	92.0	14	120.4	29.1	0.96	0.84	123	1	64.3	
CHN	181A	80.0	14	108.5	23.8	1.41	1.08	153	2	64.1	
CKH	052D	158.0	14	−161.0	−19.8	1.02	0.64	132	2	64.8	
CLN	219D	50.0	14	80.6	7.7	1.18	0.60	106	1	63.8	
D	087D	−19.0	14	9.6	49.9	1.62	0.72	147	2	65.7	
GNP	304D	−31.0	14	−15.0	12.0	0.90	0.60	172	2	63.3	
GUM	331D	122.0	14	144.5	13.1	0.60	0.60	0	2	63.5	
IND	037D	68.0	14	93.0	25.5	1.46	1.13	40	2	64.1	
IND	045D	56.0	14	76.2	19.5	1.58	1.58	21	2	63.7	
IRL	211D	−31.0	14	−8.2	53.2	0.84	0.60	162	1	64.4	
KRE	286A	110.0	14	127.0	39.1	1.30	1.10	31	2	64.0	
MAU	242D	29.0	14	59.8	−18.9	1.62	1.24	55	1	64.1	
MLI	327D	−37.0	14	−2.0	19.0	2.66	1.26	127	1	63.2	
MRL	333D	146.0	14	166.7	7.9	1.50	1.50	177	1	63.5	
NCL	100D	140.0	14	166.0	−21.0	1.14	0.72	146	1	63.9	
NOR	120A	5.0	14	13.1	64.1	1.84	0.88	10	2	65.0	
PAK	210B	38.0	14	72.1	30.8	1.16	0.72	90	1	63.6	
PNG	131D	110.0	14	147.7	−6.3	2.50	2.18	169	1	64.6	
ROU	136D	−1.0	14	25.0	45.7	1.38	0.66	155	1	64.0	
TCD	143D	−13.0	14	18.1	15.5	3.40	1.72	107	2	64.1	
TGO	226D	−25.0	14	0.8	8.6	1.52	0.60	105	2	63.5	
WAL	102D	140.0	14	−176.8	−14.0	0.74	0.60	29	1	64.6	
YEM	266D	11.0	14	44.3	15.1	1.14	0.70	109	1	62.8	
ZAI	323D	−19.0	14	21.3	−6.8	2.80	1.52	149	1	64.8	

11 996,00 MHz (15)

1		2	3	4		5		6	7	8	9
AFG	245D	50.0	15	70.2	35.5	1.32	1.13	53	1	63.0	
AUS	004D	98.0	15	121.8	−24.9	3.60	1.90	54	2	63.2	
AUS	009D	128.0	15	147.2	−32.0	2.10	1.40	15	1	64.2	
AZR	134D	−31.0	15	−23.4	36.1	2.56	0.70	158	2	63.2	
BEN	233D	−19.0	15	2.2	9.5	1.44	0.68	97	2	63.4	
BGD	220A	74.0	15	90.3	23.6	1.46	0.84	135	1	63.7	
CHN	158A	80.0	15	111.8	38.0	2.60	1.74	124	1	64.9	
CHN	174A	92.0	15	118.1	25.9	1.02	0.84	82	2	64.1	
COM	207D	29.0	15	44.1	−12.1	0.76	0.60	149	2	63.3	
GAB	260D	−13.0	15	11.8	−0.6	1.43	1.12	64	1	63.5	
GMB	302D	−37.0	15	−15.1	13.4	0.79	0.60	4	2	63.5	
GRC	105D	5.0	15	24.7	38.2	1.78	0.98	156	1	63.5	
IND	043D	56.0	15	77.8	11.1	1.36	1.28	172	1	63.5	
IND	047D	68.0	15	93.3	11.1	1.92	0.60	96	1	63.6	
INS	036D	104.0	15	135.2	−3.8	2.46	2.00	147	1	63.9	
IRN	109D	34.0	15	54.2	32.4	3.82	1.82	149	2	63.0	
J	111H	110.0	15	134.5	31.5	3.52	3.30	68	1	64.4	
LBN	279D	11.0	15	35.8	33.9	0.60	0.60	0	2	61.8	1/1.8
LBR	244D	−31.0	15	−9.3	6.6	1.22	0.70	133	1	63.4	
LBY	321D	−25.0	15	13.1	27.2	2.36	1.12	129	2	63.2	
LIE	253D	−37.0	15	9.5	47.1	0.60	0.60	0	1	62.6	1/0.7
LUX	114D	−19.0	15	6.0	49.8	0.60	0.60	0	1	63.1	1/2.0
MRA	332D	122.0	15	145.9	16.9	1.20	0.60	76	1	63.6	
NHB	128D	140.0	15	168.0	−16.4	1.52	0.68	87	2	63.0	
NRU	309D	134.0	15	167.0	−0.5	0.60	0.60	0	2	62.7	
POR	133D	−31.0	15	−8.0	39.6	0.92	0.60	112	2	63.6	
SMO	057D	158.0	15	−172.3	−13.7	0.60	0.60	0	1	63.8	
SNG	151D	74.0	15	103.8	1.3	0.60	0.60	0	2	63.7	
SOM	312D	23.0	15	45.0	6.4	3.26	1.54	71	1	62.5	
TCH	144D	−1.0	15	17.3	49.3	1.47	0.60	170	2	64.0	
UGA	051D	11.0	15	32.3	1.2	1.46	1.12	60	1	63.4	
URS	061D	23.0	15	24.7	56.6	0.88	0.64	12	2	65.2	
VTN	325D	86.0	15	105.3	16.1	3.03	1.40	116	2	63.6	
ZMB	314D	−1.0	15	27.5	−13.1	2.38	1.48	39	1	63.9	

12 015,18 MHz (16)

ALG	252D	−25.0	16	1.6	25.5	3.64	2.16	152	1	63.0	
AND	341D	−37.0	16	1.6	42.5	0.60	0.60	0	2	61.6	1/0.5
ARS	003D	17.0	16	41.1	23.8	3.52	1.68	134	2	62.8	
AUS	007D	128.0	16	145.0	−38.1	1.83	1.39	134	2	63.5	
AUT	016D	−19.0	16	12.2	47.5	1.14	0.63	166	2	64.3	
BUL	020D	−1.0	16	25.0	43.0	1.04	0.60	165	1	63.8	
CHN	169A	92.0	16	118.5	36.4	1.16	0.76	11	1	64.7	
CHN	186A	62.0	16	102.5	30.2	1.91	1.23	147	2	65.5	
CKN	053D	158.0	16	−163.0	−11.2	1.76	0.72	30	2	64.5	
CPV	301D	−31.0	16	−24.0	16.0	0.86	0.70	144	2	62.4	
DNK	089B	5.0	16	12.3	57.1	1.20	0.60	177	2	64.4	
EGY	026D	−7.0	16	29.7	26.8	2.33	1.72	136	2	63.3	
G	027D	−31.0	16	−3.5	53.8	1.84	0.72	142	1	65.2	
IND	040D	56.0	16	73.0	25.0	1.82	1.48	58	2	63.8	
IND	048D	68.0	16	86.2	25.0	1.56	0.90	120	2	65.5	
KRE	286B	110.0	16	127.0	39.1	1.30	1.10	31	2	64.0	
MAU	243D	29.0	16	56.8	−13.9	1.56	1.38	65	1	63.9	
MLA	227A	86.0	16	102.1	4.1	1.62	0.82	135	1	63.2	2
MLD	306B	44.0	16	73.1	6.0	0.96	0.60	90	1	63.7	
MLI	328D	−37.0	16	−7.6	13.2	1.74	1.24	171	1	63.9	
MLT	147D	−13.0	16	14.3	35.9	0.60	0.60	0	1	61.2	1/0.7
MOZ	307D	−1.0	16	34.0	−18.0	3.57	1.38	55	2	64.4	
OCE	101D	−160.0	16	−145.0	−16.3	4.34	3.54	4	2	63.7	
PHL	285A	98.0	16	121.3	11.1	3.46	1.76	99	2	63.7	
RRW	310D	11.0	16	30.0	−2.1	0.66	0.60	42	2	65.0	
STP	241D	−13.0	16	7.0	0.8	0.60	0.60	0	2	61.6	1/1.3
TON	215D	170.0	16	−174.7	−18.0	1.41	0.68	85	1	63.5	
URS	060D	23.0	16	41.5	57.4	3.08	1.56	153	1	66.9	
URS	069B	44.0	16	70.8	38.5	1.36	0.74	161	2	64.1	
ZAI	322D	−19.0	16	22.4	0.0	2.16	1.88	48	1	64.9	

12 034,36 MHz (17)

1		2	3	4		5		6	7	8	9
AUS	005E	98.0	17	133.5	−18.8	2.70	1.40	76	2	64.5	
BRM	298A	74.0	17	97.1	19.1	3.58	1.48	104	2	63.9	
CAR	338E	122.0	17	149.5	8.0	5.36	0.77	178	1	62.7	
CHN	167A	92.0	17	124.3	43.7	1.98	0.72	156	2	64.7	
CHN	182A	80.0	17	108.7	35.1	1.42	0.88	109	1	64.2	
CME	300E	−13.0	17	12.7	6.2	2.54	1.68	87	1	63.6	
F	093E	−19.0	17	2.6	45.9	2.50	0.98	160	1	64.0	
GUI	192E	−37.0	17	−11.0	10.2	1.58	1.04	147	2	63.7	
IND	038A	56.0	17	75.9	33.4	1.52	1.08	33	1	64.3	
IND	046A	68.0	17	84.7	20.5	1.60	0.86	30	1	63.6	
INS	032A	80.0	17	112.3	−0.3	2.66	2.32	109	2	64.0	
LBY	280E	−25.0	17	21.4	26.0	2.50	1.04	119	2	63.7	
MDG	236E	29.0	17	46.6	−18.8	2.72	1.14	65	2	63.5	
NPL	122A	50.0	17	83.7	28.3	1.72	0.60	163	2	64.6	
NZL	287B	128.0	17	173.0	−41.0	3.30	1.28	48	1	64.8	
PLM	337E	170.0	17	−161.4	7.0	0.60	0.60	0	1	62.6	
POL	132E	−1.0	17	19.3	51.8	1.46	0.64	162	2	64.3	
QAT	247E	17.0	17	51.1	25.3	0.60	0.60	0	1	62.0	1/1.6 2
SMA	335E	170.0	17	−170.1	−14.2	0.60	0.60	0	2	61.4	1/0.9
SMR	311E	−37.0	17	12.6	43.7	0.60	0.60	0	1	62.7	1/0.8
SWZ	313E	−1.0	17	31.5	−26.5	0.62	0.60	66	1	63.0	1/1.7
TUR	145E	5.0	17	34.4	38.9	2.68	1.04	168	1	63.9	
URS	064E	23.0	17	45.6	40.8	2.16	0.60	163	2	64.1	
WAK	334E	140.0	17	166.5	19.2	0.60	0.60	0	1	63.8	
YMS	267E	11.0	17	48.8	15.2	1.76	1.54	176	2	63.0	

12 053,54 MHz (18)

ALG	251E	−25.0	18	4.2	33.2	2.45	1.25	172	1	63.6	
ARS	275E	17.0	18	48.3	24.6	3.84	1.20	138	2	63.0	
AUS	006E	98.0	18	135.4	−30.3	2.00	1.40	44	1	63.4	
AUS	008E	128.0	18	145.9	−21.5	2.90	2.00	120	2	63.9	
BGD	220B	74.0	18	90.3	23.6	1.46	0.84	135	1	63.7	
BOT	297E	−1.0	18	23.3	−22.2	2.13	1.50	36	2	64.0	
CBG	299A	68.0	18	105.0	12.7	1.01	0.90	110	1	64.3	
CHN	159A	80.0	18	109.4	27.3	2.14	1.72	107	2	64.5	
CHN	185A	62.0	18	95.7	35.4	2.10	1.14	156	1	63.4	
D	087E	−19.0	18	9.6	49.9	1.62	0.72	147	2	65.7	
GNP	304E	−31.0	18	−15.0	12.0	0.90	0.60	172	2	63.3	
GUM	331E	122.0	18	144.5	13.1	0.60	0.60	0	2	63.5	
IND	041A	56.0	18	78.4	16.0	2.08	1.38	35	2	63.8	
IND	042A	68.0	18	79.3	27.7	2.14	1.16	147	2	63.8	
INS	030A	80.0	18	112.3	−8.1	3.14	1.46	169	1	64.2	
IRL	211E	−31.0	18	−8.2	53.2	0.84	0.60	162	1	64.5	
KRE	286C	110.0	18	127.0	39.1	1.30	1.10	31	2	64.0	
MAU	242E	29.0	18	59.8	−18.9	1.62	1.24	55	1	64.2	
MLA	227B	86.0	18	102.1	4.1	1.62	0.82	135	1	63.3	
MLI	327E	−37.0	18	−2.0	19.0	2.66	1.26	127	1	63.2	
MRL	333E	146.0	18	166.7	7.9	1.50	1.50	177	1	63.5	
NOR	120B	5.0	18	13.1	64.1	1.84	0.88	10	2	65.0	
PAK	281A	38.0	18	65.2	27.9	1.52	1.42	28	1	63.0	
PHL	285B	98.0	18	121.3	11.1	3.46	1.76	99	2	63.7	
ROU	136E	−1.0	18	25.0	45.7	1.38	0.66	155	1	64.0	
TCD	143E	−13.0	18	18.1	15.5	3.40	1.72	107	2	64.2	
TGO	226E	−25.0	18	0.8	8.6	1.52	0.60	105	2	63.6	
URS	070A	44.0	18	73.9	41.0	1.34	0.84	5	2	64.5	
YEM	266E	11.0	18	44.3	15.1	1.14	0.70	109	1	62.8	
ZAI	323E	−19.0	18	21.3	−6.8	2.80	1.52	149	1	64.9	

12 072,72 MHz (19)

1		2	3	4		5		6	7	8	9
AUS	004E	98.0	19	121.8	−24.9	3.60	1.90	54	2	63.2	
AUS	009E	128.0	19	147.2	−32.0	2.10	1.40	15	1	64.3	
AZR	134E	−31.0	19	−23.4	36.1	2.56	0.70	158	2	63.2	
BEN	233E	−19.0	19	2.2	9.5	1.44	0.68	97	2	63.5	
BRM	298B	74.0	19	97.1	19.1	3.58	1.48	104	2	63.9	
CHN	158B	80.0	19	111.8	38.0	2.60	1.74	124	1	64.9	
CHN	179A	92.0	19	112.2	21.9	1.84	1.22	37	2	63.8	
GAB	260E	−13.0	19	11.8	−0.6	1.43	1.12	64	1	63.6	
GMB	302E	−37.0	19	−15.1	13.4	0.79	0.60	4	2	63.5	
GRC	105E	5.0	19	24.7	38.2	1.78	0.98	156	1	63.5	
IND	038B	56.0	19	75.9	33.4	1.52	1.08	33	1	64.3	
IND	046B	68.0	19	84.7	20.5	1.60	0.86	30	1	63.6	
INS	032B	80.0	19	112.3	−0.3	2.66	2.32	109	2	64.1	
INS	036E	104.0	19	135.2	−3.8	2.46	2.00	147	1	64.0	2
IRN	109E	34.0	19	54.2	32.4	3.82	1.82	149	2	63.0	
LBN	279E	11.0	19	35.8	33.9	0.60	0.60	0	2	61.8	1/1.8
LBY	321E	−25.0	19	13.1	27.2	2.36	1.12	129	2	63.3	
LIE	253E	−37.0	19	9.5	47.1	0.60	0.60	0	1	62.6	1/0.7
LUX	114E	−19.0	19	6.0	49.8	0.60	0.60	0	1	63.1	1/2.0
MRA	332E	122.0	19	145.9	16.9	1.20	0.60	76	1	63.7	
NIU	054A	158.0	19	−169.8	−19.0	0.60	0.60	0	2	64.1	
NPL	122B	50.0	19	83.7	28.3	1.72	0.60	163	2	64.6	
POR	133E	−31.0	19	−8.0	39.6	0.92	0.60	112	2	63.6	
SOM	312E	23.0	19	45.0	6.4	3.26	1.54	71	1	62.6	
TCH	144E	−1.0	19	17.3	49.3	1.47	0.60	170	2	64.0	
UGA	051E	11.0	19	32.3	1.2	1.46	1.12	60	1	63.4	
URS	061E	23.0	19	24.7	56.6	0.88	0.64	12	2	65.2	
URS	077A	110.0	19	112.7	57.3	2.67	1.75	2	1	64.1	
ZMB	314E	−1.0	19	27.5	−13.1	2.38	1.48	39	1	63.9	

12 091,90 MHz (20)

ALG	252E	−25.0	20	1.6	25.5	3.64	2.16	152	1	63.0	
AND	341E	−37.0	20	1.6	42.5	0.60	0.60	0	2	61.7	1/0.5
ARS	003E	17.0	20	41.1	23.8	3.52	1.68	134	2	62.9	
AUS	007E	128.0	20	145.0	−38.1	1.83	1.39	134	2	63.5	
AUT	016E	−19.0	20	12.2	47.5	1.14	0.63	166	2	64.3	
BGD	220C	74.0	20	90.3	23.6	1.46	0.84	135	1	63.7	
BUL	020E	−1.0	20	25.0	43.0	1.04	0.60	165	1	63.9	
CBG	299B	68.0	20	105.0	12.7	1.01	0.90	110	1	64.3	
CHN	159B	80.0	20	109.4	27.3	2.14	1.72	107	2	64.6	
CHN	184A	62.0	20	101.0	37.9	2.78	0.82	144	1	63.7	
CPV	301E	−31.0	20	−24.0	16.0	0.86	0.70	144	2	62.4	
DNK	089C	5.0	20	12.3	57.1	1.20	0.60	177	2	64.4	
EGY	026E	−7.0	20	29.7	26.8	2.33	1.72	136	2	63.3	
G	027E	−31.0	20	−3.5	53.8	1.84	0.72	142	1	65.2	
IND	041B	56.0	20	78.4	16.0	2.08	1.38	35	2	63.8	
IND	042B	68.0	20	79.3	27.7	2.14	1.16	147	2	63.8	
INS	030B	80.0	20	112.3	−8.1	3.14	1.46	169	1	64.2	
KRE	286D	110.0	20	127.0	39.1	1.30	1.10	31	2	64.0	
MLA	227C	86.0	20	102.1	4.1	1.62	0.82	135	1	63.3	
MLI	328E	−37.0	20	−7.6	13.2	1.74	1.24	171	1	63.9	
MOZ	307E	−1.0	20	34.0	−18.0	3.57	1.38	55	2	64.4	
PAK	282A	38.0	20	68.5	25.8	1.32	0.62	133	1	63.3	
PHL	285C	98.0	20	121.3	11.1	3.46	1.76	99	2	63.7	
RRW	310E	11.0	20	30.0	−2.1	0.66	0.60	42	2	65.0	
STP	241E	−13.0	20	7.0	0.8	0.60	0.60	0	2	61.7	1/1.3
TKL	058A	158.0	20	−171.8	−8.9	0.70	0.60	35	1	63.8	
URS	065A	23.0	20	32.4	63.1	1.18	0.60	175	1	66.6	
URS	066A	44.0	20	64.3	44.6	4.56	2.48	169	2	65.4	
URS	079A	140.0	20	138.0	53.6	3.16	2.12	62	2	67.7	
ZAI	322E	−19.0	20	22.4	0.0	2.16	1.88	48	1	64.9	

12 111,08 MHz (21)

1		2	3	4		5		6	7	8	9
AFI	099A	23.0	21	42.5	11.6	0.60	0.60	0	1	62.5	
AUS	005F	98.0	21	133.5	–18.8	2.70	1.40	76	2	64.5	
BEL	018A	–19.0	21	4.6	50.6	0.82	0.60	167	1	64.2	
BLR	062A	23.0	21	27.8	52.6	1.08	0.72	1	2	64.8	
BRM	298C	74.0	21	97.1	19.1	3.58	1.48	104	2	63.9	
CHN	175A	92.0	21	121.4	23.8	1.14	0.82	64	2	64.3	
CHN	176A	80.0	21	113.7	33.9	1.20	0.80	141	1	64.3	
CYP	086A	5.0	21	33.3	35.1	0.60	0.60	0	1	63.6	
DDR	216A	–1.0	21	12.6	52.1	0.83	0.63	172	2	64.2	
HVO	107A	–31.0	21	–1.5	12.2	1.45	1.14	29	1	64.0	
IFB	021A	5.0	21	24.5	–28.0	3.13	1.68	27	2	64.1	4
IND	038C	56.0	21	75.9	33.4	1.52	1.08	33	1	64.4	
IND	046C	68.0	21	84.7	20.5	1.60	0.86	30	1	63.7	
INS	032C	80.0	21	112.3	–0.3	2.66	2.32	109	2	64.1	
ISL	049A	–31.0	21	–19.0	64.9	1.00	0.60	177	2	65.8	
KEN	249A	11.0	21	37.9	1.1	2.29	1.56	94	1	63.7	
MCO	116A	–37.0	21	7.4	43.7	0.60	0.60	0	1	62.4	1/0.5
MRC	209A	–25.0	21	–9.0	29.2	2.72	1.47	43	2	63.3	
NPL	122C	50.0	21	83.7	28.3	1.72	0.60	163	2	64.6	
NZL	287C	128.0	21	173.0	–41.0	3.30	1.28	48	1	64.9	
SEN	222A	–37.0	21	–14.4	13.8	1.46	1.04	139	2	63.6	
UAE	274A	17.0	21	53.6	24.2	0.98	0.80	162	1	63.2	2
YUG	148A	–7.0	21	18.4	43.7	1.68	0.66	154	1	65.2	

12 130,26 MHz (22)

ALB	296A	–7.0	22	19.8	41.3	0.68	0.60	146	2	63.8	
AUS	006F	98.0	22	135.4	–30.3	2.00	1.40	44	1	63.5	
AUS	008F	128.0	22	145.9	–21.5	2.90	2.00	120	2	64.0	
BDI	270A	11.0	22	29.9	–3.1	0.71	0.60	80	2	63.4	
BGD	220D	74.0	22	90.3	23.6	1.46	0.84	135	1	63.8	
CBG	299C	68.0	22	105.0	12.7	1.01	0.90	110	1	64.3	
CHN	159C	80.0	22	109.4	27.3	2.14	1.72	107	2	64.6	
CHN	168A	92.0	22	124.8	48.1	2.68	0.92	157	2	65.4	
CHN	183A	62.0	22	104.8	39.0	1.48	0.60	142	1	63.8	
COG	235A	–13.0	22	14.6	–0.7	2.02	1.18	59	2	63.8	
CTI	237A	–31.0	22	–5.6	7.5	1.60	1.22	108	2	63.7	
ETH	092A	23.0	22	39.7	9.1	3.50	2.40	124	2	63.4	
FNL	104A	5.0	22	17.0	61.5	2.00	1.00	10	2	67.7	
HNG	106A	–1.0	22	19.5	47.2	0.92	0.60	176	1	64.0	
IFB	135A	–1.0	22	29.6	–18.8	1.46	1.36	37	2	64.2	4
IND	041C	56.0	22	78.4	16.0	2.08	1.38	35	2	63.8	
IND	042C	68.0	22	79.3	27.7	2.14	1.16	147	2	63.8	
INS	030C	80.0	22	112.3	–8.1	3.14	1.46	169	1	64.2	
KRE	286E	110.0	22	127.0	39.1	1.30	1.10	31	2	64.1	
KWT	113A	17.0	22	47.6	29.2	0.68	0.60	145	2	63.1	
MLA	227D	86.0	22	102.1	4.1	1.62	0.82	135	1	63.3	
MTN	223A	–37.0	22	–12.2	18.5	2.62	1.87	150	1	62.8	
NIG	119A	–19.0	22	7.8	9.4	2.16	2.02	45	1	63.9	
PAK	281B	38.0	22	65.2	27.9	1.52	1.42	28	1	63.1	
PHL	285D	98.0	22	121.3	11.1	3.46	1.76	99	2	63.7	
REU	097A	29.0	22	55.6	–19.2	1.56	0.78	96	1	63.9	
SDN	231A	–7.0	22	28.9	12.7	2.26	1.96	159	1	63.5	
SUI	140A	–19.0	22	8.2	46.6	0.98	0.70	171	2	64.1	
SYR	229A	11.0	22	38.3	34.9	1.04	0.90	7	1	63.2	
TUN	150A	–25.0	22	9.5	33.5	1.88	0.72	135	1	63.8	
URS	070B	44.0	22	73.9	41.0	1.34	0.84	5	2	64.6	
URS	081A	140.0	22	168.5	65.5	1.96	0.60	168	1	68.1	

12 149,44 MHz (23)

1		2	3	4		5		6	7	8	9
AGL	295A	−13.0	23	16.5	−12.0	3.09	2.26	84	1	64.1	
ARS	340A	17.0	23	52.3	24.8	2.68	0.70	143	1	63.2	
AUS	004F	98.0	23	121.8	−24.9	3.60	1.90	54	2	63.3	
AUS	009F	128.0	23	147.2	−32.0	2.10	1.40	15	1	64.3	
BRM	298D	74.0	23	97.1	19.1	3.58	1.48	104	2	64.0	
CHN	158C	80.0	23	111.8	38.0	2.60	1.74	124	1	65.0	
CNR	130A	−31.0	23	−15.7	28.4	1.54	0.60	5	2	62.8	
CVA	085A	−37.0	23	10.8	41.5	2.00	0.60	138	1	63.6	1/1.5
E	129A	−31.0	23	−3.1	39.9	2.10	1.14	154	2	63.9	
GHA	108A	−25.0	23	−1.2	7.9	1.48	1.06	102	1	63.6	
GNE	303A	−19.0	23	10.3	1.5	0.68	0.60	10	2	63.8	
HOL	213A	−19.0	23	5.4	52.0	0.76	0.60	171	1	64.4	
IND	038D	56.0	23	75.9	33.4	1.52	1.08	33	1	64.4	
IND	046D	68.0	23	84.7	20.5	1.60	0.86	30	1	63.7	
INS	032D	80.0	23	112.3	−0.3	2.66	2.32	109	2	64.1	
ISL	050A	5.0	23	−19.5	61.0	2.20	0.80	4	1	66.3	3
JOR	224A	11.0	23	35.8	31.4	0.84	0.78	114	2	63.1	
NIU	054B	158.0	23	−169.8	−19.0	0.60	0.60	0	2	64.1	
SDN	230A	−7.0	23	29.2	7.5	2.34	1.12	148	2	64.4	
SRL	259A	−31.0	23	−11.8	8.6	0.78	0.68	114	1	63.4	
TGK	225A	11.0	23	34.6	−6.2	2.41	1.72	129	1	63.7	
URS	061F	23.0	23	24.7	56.6	0.88	0.64	12	2	65.3	
URS	064F	23.0	23	45.6	40.8	2.16	0.60	163	1	64.2	
URS	077B	110.0	23	112.7	57.3	2.67	1.75	2	1	66.1	
YUG	149A	−7.0	23	18.4	43.7	1.68	0.66	154	1	65.2	

12 168,62 MHz (24)

AUS	007F	128.0	24	145.0	−38.1	1.83	1.39	134	2	63.6	
BGD	220E	74.0	24	90.3	23.6	1.46	0.84	135	1	63.8	
CAF	258A	−13.0	24	21.0	6.3	2.25	1.68	31	2	64.3	
CBG	299D	68.0	24	105.0	12.7	1.01	0.90	110	1	64.3	
CHN	166A	92.0	24	121.1	41.7	1.52	0.78	154	2	64.5	
CHN	177A	80.0	24	111.8	30.8	1.42	0.82	160	2	64.7	
CHN	188A	62.0	24	101.5	25.1	1.86	1.08	132	2	65.0	
DNK	090A	5.0	24	17.0	61.5	2.00	1.00	10	2	67.5	
I	082A	−19.0	24	12.3	41.3	2.38	0.98	137	2	64.1	
IND	041D	56.0	24	78.4	16.0	2.08	1.38	35	2	63.9	
IND	042D	68.0	24	79.3	27.7	2.14	1.16	147	2	63.9	
INS	030D	80.0	24	112.3	−8.1	3.14	1.46	169	1	64.3	
IRQ	256A	11.0	24	43.6	32.8	1.88	0.96	143	1	63.3	2
LSO	305A	5.0	24	27.8	−29.8	0.66	0.60	36	1	64.2	
MLA	227E	86.0	24	102.1	4.1	1.62	0.82	135	1	63.4	
MTN	288A	−37.0	24	−7.8	23.4	1.63	1.10	141	1	63.0	
MWI	308A	−1.0	24	34.1	−13.0	1.54	0.60	87	2	64.2	
MYT	098A	29.0	24	45.1	−12.8	0.60	0.60	0	1	63.4	
NGR	115A	−25.0	24	8.3	16.8	2.54	2.08	44	2	64.5	
OMA	123A	17.0	24	55.6	21.0	1.88	1.02	100	2	63.3	
PAK	282B	38.0	24	68.5	25.8	1.32	0.62	133	1	63.4	
PHL	285E	98.0	24	121.3	11.1	3.46	1.76	99	2	63.8	
SDN	232A	−7.0	24	30.4	19.0	2.44	1.52	176	1	63.3	
TKL	058B	158.0	24	−171.8	−8.9	0.70	0.60	35	1	63.9	
URS	066B	44.0	24	64.3	44.6	4.56	2.48	169	2	65.4	
URS	079B	140.0	24	138.0	53.6	3.16	2.12	62	2	67.8	

12 187,80 MHz (25)

1		2	3	4		5		6	7	8	9
AFI	099B	23.0	25	42.5	11.6	0.60	0.60	0	1	62.6	
BEL	018B	–19.0	25	4.6	50.6	0.82	0.60	167	1	64.1	
BLR	062B	23.0	25	27.8	52.6	1.08	0.72	1	2	64.9	
CYP	086B	5.0	25	33.3	35.1	0.60	0.60	0	1	63.6	
DDR	216B	–1.0	25	12.6	52.1	0.83	0.63	172	2	64.3	
HVO	107B	–31.0	25	–1.5	12.2	1.45	1.14	29	1	64.0	
IFB	021B	5.0	25	24.5	–28.0	3.13	1.68	27	2	64.1	4
ISL	049B	–31.0	25	–19.0	64.9	1.00	0.60	177	2	65.9	
ISR	110A	–13.0	25	34.9	31.4	0.94	0.60	117	2	63.8	
KEN	249B	11.0	25	37.9	1.1	2.29	1.56	94	1	63.8	
MCO	116B	–37.0	25	7.4	43.7	0.60	0.60	0	1	62.5	1/0.5
MNG	248A	74.0	25	102.2	46.6	3.60	1.13	169	1	64.1	
MRC	209B	–25.0	25	–9.0	29.2	2.72	1.47	43	2	63.3	
NMB	025A	–19.0	25	17.5	–21.6	2.66	1.90	48	2	64.7	
SEN	222B	–37.0	25	–14.4	13.8	1.46	1.04	139	2	63.7	
UAE	274B	17.0	25	53.6	24.2	0.98	0.80	162	1	63.2	
URS	078A	110.0	25	108.2	53.4	2.16	0.78	10	1	65.0	
YUG	148B	–7.0	25	18.4	43.7	1.68	0.66	154	1	65.3	

12 206,98 MHz (26)

ALB	296B	–7.0	26	19.8	41.3	0.68	0.60	146	2	63.8	
BDI	270B	11.0	26	29.9	–3.1	0.71	0.60	80	2	63.4	
COG	235B	–13.0	26	14.6	–0.7	2.02	1.18	59	2	63.8	
CTI	237B	–31.0	26	–5.6	7.5	1.60	1.22	108	2	63.7	
ETH	092B	23.0	26	39.7	9.1	3.50	2.40	124	2	63.5	
FNL	104B	5.0	26	17.0	61.5	2.00	1.00	10	2	67.5	
HNG	106B	–1.0	26	19.5	47.2	0.92	0.60	176	1	64.0	
IFB	135B	–1.0	26	29.6	–18.8	1.46	1.36	37	2	64.2	4
KWT	113B	17.0	26	47.6	29.2	0.68	0.60	145	2	63.1	
MTN	223B	–37.0	26	–12.2	18.5	2.62	1.87	150	1	62.9	
NIG	119B	–19.0	26	7.8	9.4	2.16	2.02	45	1	63.9	
REU	097B	29.0	26	55.6	–19.2	1.56	0.78	96	1	64.0	
SDN	231B	–7.0	26	28.9	12.7	2.26	1.96	159	1	63.5	
SUI	140B	–19.0	26	8.2	46.6	0.98	0.70	171	2	64.1	
SYR	229B	11.0	26	38.3	34.9	1.04	0.90	7	1	63.3	
TUN	150B	–25.0	26	9.5	33.5	1.88	0.72	135	1	63.9	
URS	068A	44.0	26	59.0	38.8	2.24	1.00	164	2	64.0	
URS	074A	74.0	26	88.8	57.6	3.08	1.68	162	2	67.9	
URS	080A	140.0	26	155.3	55.4	2.90	2.36	35	1	67.9	

12 226,16 MHz (27)

AGL	295B	–13.0	27	16.5	–12.0	3.09	2.26	84	1	64.2	
BHR	255A	17.0	27	50.5	26.1	0.60	0.60	0	1	60.8	1/0.7
CNR	130B	–31.0	27	–15.7	28.4	1.54	0.60	5	2	62.8	
CVA	083A	–37.0	27	12.4	41.8	0.60	0.60	0	1	65.2	
DNK	091A	5.0	27	–19.5	61.0	2.20	0.80	4	1	66.2	3
E	129B	–31.0	27	–3.1	39.9	2.10	1.14	154	2	64.0	
GHA	108B	–25.0	27	–1.2	7.9	1.48	1.06	102	1	63.7	
GNE	303B	–19.0	27	10.3	1.5	0.68	0.60	10	2	63.8	
HOL	213B	–19.0	27	5.4	52.0	0.76	0.60	171	1	64.5	
JOR	224B	11.0	27	35.8	31.4	0.84	0.78	114	2	63.1	
SDN	230B	–7.0	27	29.2	7.5	2.34	1.12	148	2	64.5	
SRL	259B	–31.0	27	–11.8	8.6	0.78	0.68	114	1	63.5	
TGK	225B	11.0	27	34.6	–6.2	2.41	1.72	129	1	63.8	
URS	059A	23.0	27	36.0	47.0	3.70	1.43	153	2	65.2	
URS	077C	110.0	27	112.7	57.3	2.67	1.75	2	1	67.2	
YUG	149B	–7.0	27	18.4	43.7	1.68	0.66	154	1	65.3	

12 245,34 MHz (28)

1		2	3	4		5		6	7	8	9
CAF	258B	−13.0	28	21.0	6.3	2.25	1.68	31	2	64.3	
I	082B	−19.0	28	12.3	41.3	2.38	0.98	137	2	64.2	
IRQ	256B	11.0	28	43.6	32.8	1.88	0.96	143	1	63.4	
LSO	305B	5.0	28	27.8	−29.8	0.66	0.60	36	1	64.2	
MTN	288B	−37.0	28	−7.8	23.4	1.63	1.10	141	1	63.0	
MWI	308B	−1.0	28	34.1	−13.0	1.54	0.60	87	2	64.3	
MYT	098B	29.0	28	45.1	−12.8	0.60	0.60	0	1	63.5	
NGR	115B	−25.0	28	8.3	16.8	2.54	2.08	44	2	64.5	
NOR	121A	5.0	28	17.0	61.5	2.00	1.00	10	2	66.8	
OMA	123B	17.0	28	55.6	21.0	1.88	1.02	100	2	63.3	
SDN	232B	−7.0	28	30.4	19.0	2.44	1.52	176	1	63.3	
URS	066C	44.0	28	64.3	44.6	4.56	2.48	169	2	65.5	
URS	076A	74.0	28	98.0	63.2	1.84	0.69	170	2	68.1	
URS	079C	140.0	28	138.0	53.6	3.16	2.12	62	2	67.8	

12 264,52 MHz (29)

AFI	099C	23.0	29	42.5	11.6	0.60	0.60	0	1	62.6	
BEL	018C	−19.0	29	4.6	50.6	0.82	0.60	167	1	63.5	
CYP	086C	5.0	29	33.3	35.1	0.60	0.60	0	1	63.7	
DDR	216C	−1.0	29	12.6	52.1	0.83	0.63	172	2	64.3	
HVO	107C	−31.0	29	−1.5	12.2	1.45	1.14	29	1	64.1	
IFB	021C	5.0	29	24.5	−28.0	3.13	1.68	27	2	64.2	4
ISL	049C	−31.0	29	−19.0	64.9	1.00	0.60	177	2	65.9	
ISR	110B	−13.0	29	34.9	31.4	0.94	0.60	117	2	63.9	
KEN	249C	11.0	29	37.9	1.1	2.29	1.56	94	1	63.8	
MCO	116C	−37.0	29	7.4	43.7	0.60	0.60	0	1	62.5	1/0.5
MNG	248B	74.0	29	102.2	46.6	3.60	1.13	169	1	64.2	
MRC	209C	−25.0	29	−9.0	29.2	2.72	1.47	43	2	63.4	
NMB	025B	−19.0	29	17.5	−21.6	2.66	1.90	48	2	64.8	
SEN	222C	−37.0	29	−14.4	13.8	1.46	1.04	139	2	63.7	
UAE	274C	17.0	29	53.6	24.2	0.98	0.80	162	1	63.3	
UKR	063A	23.0	29	31.2	48.4	2.32	0.96	172	2	64.6	
YUG	148C	−7.0	29	18.4	43.7	1.68	0.66	154	1	65.3	

12 283,70 MHz (30)

ALB	296C	−7.0	30	19.8	41.3	0.68	0.60	146	2	63.9	
BDI	270C	11.0	30	29.9	−3.1	0.71	0.60	80	2	63.5	
COG	235C	−13.0	30	14.6	−0.7	2.02	1.18	59	2	63.9	
CTI	237C	−31.0	30	−5.6	7.5	1.60	1.22	108	2	63.8	
ETH	092C	23.0	30	39.7	9.1	3.50	2.40	124	2	63.6	
HNG	106C	−1.0	30	19.5	47.2	0.92	0.60	176	1	64.1	
IFB	135C	−1.0	30	29.6	−18.8	1.46	1.36	37	2	64.3	4
KWT	113C	17.0	30	47.6	29.2	0.68	0.60	145	2	63.2	
MTN	223C	−37.0	30	−12.2	18.5	2.62	1.87	150	1	62.9	
NIG	119C	−19.0	30	7.8	9.4	2.16	2.02	45	1	64.0	
REU	097C	29.0	30	55.6	−19.2	1.56	0.78	96	1	64.1	
S	139A	5.0	30	17.0	61.5	2.00	1.00	10	2	67.1	
SDN	231C	−7.0	30	28.9	12.7	2.26	1.96	159	1	63.6	
SUI	140C	−19.0	30	8.2	46.6	0.98	0.70	171	2	64.2	
SYR	229C	11.0	30	38.3	34.9	1.04	0.90	7	1	63.3	
TUN	150C	−25.0	30	9.5	33.5	1.88	0.72	135	1	63.9	
URS	068B	44.0	30	59.0	38.8	2.24	1.00	164	2	64.1	
URS	074B	74.0	30	88.8	57.6	3.08	1.68	162	2	68.0	
URS	080B	140.0	30	155.3	55.4	2.90	2.36	35	1	67.9	

12 302,88 MHz (31)

1		2	3	4		5		6	7	8	9
AGL	295C	–13.0	31	16.5	–12.0	3.09	2.26	84	1	64.2	
BHR	255B	17.0	31	50.5	26.1	0.60	0.60	0	1	60.9	1/0.7
CNR	130C	–31.0	31	–15.7	28.4	1.54	0.60	5	2	62.9	
CVA	083B	–37.0	31	12.4	41.8	0.60	0.60	0	1	65.3	
E	129C	–31.0	31	–3.1	39.9	2.10	1.14	154	2	64.0	
GHA	108C	–25.0	31	–1.2	7.9	1.48	1.06	102	1	63.7	
GNE	303C	–19.0	31	10.3	1.5	0.68	0.60	10	2	63.9	
HOL	213C	–19.0	31	5.4	52.0	0.76	0.60	171	1	64.6	
ISL	050B	5.0	31	–19.5	61.0	2.20	0.80	4	1	66.4	3
JOR	224C	11.0	31	35.8	31.4	0.84	0.78	114	2	63.2	
SDN	230C	–7.0	31	29.2	7.5	2.34	1.12	148	2	64.5	
SRL	259C	–31.0	31	–11.8	8.6	0.78	0.68	114	1	63.6	
TGK	225C	11.0	31	34.6	–6.2	2.41	1.72	129	1	63.8	
URS	059B	23.0	31	36.0	47.0	3.70	1.43	153	2	65.2	
URS	077D	110.0	31	112.7	57.3	2.67	1.75	2	1	67.2	
YUG	149C	–7.0	31	18.4	43.7	1.68	0.66	154	1	65.4	

12 322,06 MHz (32)

CAF	258C	–13.0	32	21.0	6.3	2.25	1.68	31	2	64.4	
I	082C	–19.0	32	12.3	41.3	2.38	0.98	137	2	64.2	
IRQ	256C	11.0	32	43.6	32.8	1.88	0.96	143	1	63.4	
LSO	305C	5.0	32	27.8	–29.8	0.66	0.60	36	1	64.3	
MTN	288C	–37.0	32	–7.8	23.4	1.63	1.10	141	1	63.1	
MWI	308C	–1.0	32	34.1	–13.0	1.54	0.60	87	2	64.4	
MYT	098C	29.0	32	45.1	–12.8	0.60	0.60	0	1	63.5	
NGR	115C	–25.0	32	8.3	16.8	2.54	2.08	44	2	64.6	
NOR	121B	5.0	32	17.0	61.5	2.00	1.00	10	2	66.9	
OMA	123C	17.0	32	55.6	21.0	1.88	1.02	100	2	63.4	
SDN	232C	–7.0	32	30.4	19.0	2.44	1.52	176	1	63.4	
URS	066D	44.0	32	64.3	44.6	4.56	2.48	169	2	65.5	
URS	075A	74.0	32	94.0	51.7	1.52	0.60	172	2	65.1	
URS	079D	140.0	32	138.0	53.6	3.16	2.12	62	2	67.9	

12 341,24 MHz (33)

AFI	099D	23.0	33	42.5	11.6	0.60	0.60	0	1	62.7	
BEL	018D	–19.0	33	4.6	50.6	0.82	0.60	167	1	63.9	
CYP	086D	5.0	33	33.3	35.1	0.60	0.60	0	1	63.7	
DDR	216D	–1.0	33	12.6	52.1	0.83	0.63	172	2	64.4	
HVO	107D	–31.0	33	–1.5	12.2	1.45	1.14	29	1	64.1	
IFB	021D	5.0	33	24.5	–28.0	3.13	1.68	27	2	64.2	4
ISL	049D	–31.0	33	–19.0	64.9	1.00	0.60	177	2	66.0	
ISR	110C	–13.0	33	34.9	31.4	0.94	0.60	117	2	63.9	
KEN	249D	11.0	33	37.9	1.1	2.29	1.56	94	1	63.9	
MCO	116D	–37.0	33	7.4	43.7	0.60	0.60	0	1	62.6	1/0.5
MNG	248C	74.0	33	102.2	46.6	3.60	1.13	169	1	64.2	
MRC	209D	–25.0	33	–9.0	29.2	2.72	1.47	43	2	63.4	
NMB	025C	–19.0	33	17.5	–21.6	2.66	1.90	48	2	64.8	
SEN	222D	–37.0	33	–14.4	13.8	1.46	1.04	139	2	63.8	
UAE	274D	17.0	33	53.6	24.2	0.98	0.80	162	1	63.3	
UKR	063B	23.0	33	31.2	48.4	2.32	0.96	172	2	64.7	
YUG	148D	–7.0	33	18.4	43.7	1.68	0.66	154	1	65.4	

12 360,42 MHz (34)

1		2	3	4		5		6	7	8	9
ALB	296D	−7.0	34	19.8	41.3	0.68	0.60	146	2	63.9	
BDI	270D	11.0	34	29.9	−3.1	0.71	0.60	80	2	63.5	
COG	235D	−13.0	34	14.6	−0.7	2.02	1.18	59	2	63.9	
CTI	237D	−31.0	34	−5.6	7.5	1.60	1.22	108	2	63.9	
ETH	092D	23.0	34	39.7	9.1	3.50	2.40	124	2	63.6	
HNG	106D	−1.0	34	19.5	47.2	0.92	0.60	176	1	64.1	
IFB	135D	−1.0	34	29.6	−18.8	1.46	1.36	37	2	64.3	4
KWT	113D	17.0	34	47.6	29.2	0.68	0.60	145	2	63.2	
MTN	223D	−37.0	34	−12.2	18.5	2.62	1.87	150	1	63.0	
NIG	119D	−19.0	34	7.8	9.4	2.16	2.02	45	1	64.1	
REU	097D	29.0	34	55.6	−19.2	1.56	0.78	96	1	64.1	
S	138C	5.0	34	16.2	61.0	1.04	0.98	14	2	67.4	
SDN	231D	−7.0	34	28.9	12.7	2.26	1.96	159	1	63.6	
SUI	140D	−19.0	34	8.2	46.6	0.98	0.70	171	2	64.3	
SYR	229D	11.0	34	38.3	34.9	1.04	0.90	7	1	63.4	
TUN	150D	−25.0	34	9.5	33.5	1.88	0.72	135	1	64.0	
URS	071A	44.0	34	63.1	42.0	2.64	0.84	170	2	64.4	
URS	074C	74.0	34	88.8	57.6	3.08	1.68	162	2	68.0	
URS	080C	140.0	34	155.3	55.4	2.90	2.36	35	1	68.0	

12 379,60 MHz (35)

AGL	295D	−13.0	35	16.5	−12.0	3.09	2.26	84	1	64.3	
BHR	255C	17.0	35	50.5	26.1	0.60	0.60	0	1	61.0	1/0.7
CNR	130D	−31.0	35	−15.7	28.4	1.54	0.60	5	2	63.0	
CVA	083C	−37.0	35	12.4	41.8	0.60	0.60	0	1	65.3	
DNK	091B	5.0	35	−19.5	61.0	2.20	0.80	4	1	66.3	3
E	129D	−31.0	35	−3.1	39.9	2.10	1.14	154	2	64.1	
GHA	108D	−25.0	35	−1.2	7.9	1.48	1.06	102	1	63.8	
GNE	303D	−19.0	35	10.3	1.5	0.68	0.60	10	2	63.9	
HOL	213D	−19.0	35	5.4	52.0	0.76	0.60	171	1	64.6	
JOR	224D	11.0	35	35.8	31.4	0.84	0.78	114	2	63.2	
SDN	230D	−7.0	35	29.2	7.5	2.34	1.12	148	2	64.6	
SRL	259D	−31.0	35	−11.8	8.6	0.78	0.68	114	1	63.6	
TGK	225D	11.0	35	34.6	−6.2	2.41	1.72	129	1	63.9	
URS	059C	23.0	35	36.0	47.0	3.70	1.43	153	2	65.3	
URS	077E	110.0	35	112.7	57.3	2.67	1.75	2	1	67.3	
YUG	149D	−7.0	35	18.4	43.7	1.68	0.66	154	1	65.4	

12 398,78 MHz (36)

CAF	258D	−13.0	36	21.0	6.3	2.25	1.68	31	2	64.4	
DNK	090B	5.0	36	17.0	61.5	2.00	1.00	10	2	68.2	
I	082D	−19.0	36	12.3	41.3	2.38	0.98	137	2	64.3	
IRQ	256D	11.0	36	43.6	32.8	1.88	0.96	143	1	63.5	
LSO	305D	5.0	36	27.8	−29.8	0.66	0.60	36	1	64.3	
MTN	288D	−37.0	36	−7.8	23.4	1.63	1.10	141	1	63.1	
MWI	308D	−1.0	36	34.1	−13.0	1.54	0.60	87	2	64.4	
MYT	098D	29.0	36	45.1	−12.8	0.60	0.60	0	1	63.6	
NGR	115D	−25.0	36	8.3	16.8	2.54	2.08	44	2	64.7	
OMA	123D	17.0	36	55.6	21.0	1.88	1.02	100	2	63.4	
SDN	232D	−7.0	36	30.4	19.0	2.44	1.52	176	1	63.4	
URS	066E	44.0	36	64.3	44.6	4.56	2.48	169	2	65.6	
URS	079E	140.0	36	138.0	53.6	3.16	2.12	62	2	68.0	

12 417,96 MHz (37)

1		2	3	4		5		6	7	8	9
AFI	099E	23.0	37	42.5	11.6	0.60	0.60	0	1	62.7	
BEL	018E	–19.0	37	4.6	50.6	0.82	0.60	167	1	64.4	
CYP	086E	5.0	37	33.3	35.1	0.60	0.60	0	1	63.8	
DDR	216E	–1.0	37	12.6	52.1	0.83	0.63	172	2	64.4	
HVO	107E	–31.0	37	–1.5	12.2	1.45	1.14	29	1	64.2	
IFB	021E	5.0	37	24.5	–28.0	3.13	1.68	27	2	64.3	4
ISL	049E	–31.0	37	–19.0	64.9	1.00	0.60	177	2	66.0	
ISR	110D	–13.0	37	34.9	31.4	0.94	0.60	117	2	64.0	
KEN	249E	11.0	37	37.9	1.1	2.29	1.56	94	1	63.9	
MCO	116E	–37.0	37	7.4	43.7	0.60	0.60	0	1	62.6	1/0.5
MNG	248D	74.0	37	102.2	46.6	3.60	1.13	169	1	64.3	
MRC	209E	–25.0	37	–9.0	29.2	2.72	1.47	43	2	63.5	
NMB	025D	–19.0	37	17.5	–21.6	2.66	1.90	48	2	64.9	
SEN	222E	–37.0	37	–14.4	13.8	1.46	1.04	139	2	63.9	
UAE	274E	17.0	37	53.6	24.2	0.98	0.80	162	1	63.4	
UKR	063C	23.0	37	31.2	48.4	2.32	0.96	172	2	64.7	
YUG	148E	–7.0	37	18.4	43.7	1.68	0.66	154	1	65.4	

12 437,14 MHz (38)

ALB	296E	–7.0	38	19.8	41.3	0.68	0.60	146	2	64.0	
BDI	270E	11.0	38	29.9	–3.1	0.71	0.60	80	2	63.6	
COG	235E	–13.0	38	14.6	–0.7	2.02	1.18	59	2	64.0	
CTI	237E	–31.0	38	–5.6	7.5	1.60	1.22	108	2	63.9	
ETH	092E	23.0	38	39.7	9.1	3.50	2.40	124	2	63.7	
HNG	106E	–1.0	38	19.5	47.2	0.92	0.60	176	1	64.2	
IFB	135E	–1.0	38	29.6	–18.8	1.46	1.36	37	2	64.4	4
KWT	113E	17.0	38	47.6	29.2	0.68	0.60	145	2	63.3	
MTN	223E	–37.0	38	–12.2	18.5	2.62	1.87	150	1	63.0	
NIG	119E	–19.0	38	7.8	9.4	2.16	2.02	45	1	64.1	
NOR	120C	5.0	38	13.1	64.1	1.84	0.88	10	2	67.0	
REU	097E	29.0	38	55.6	–19.2	1.56	0.78	96	1	64.2	
SDN	231E	–7.0	38	28.9	12.7	2.26	1.96	159	1	63.7	
SUI	140E	–19.0	38	8.2	46.6	0.98	0.70	171	2	64.3	
SYR	339A	11.0	38	37.6	34.2	1.32	0.88	74	1	63.4	2
TUN	272A	–25.0	38	2.5	32.0	3.59	1.75	175	1	61.9	5
URS	071B	44.0	38	63.1	42.0	2.64	0.84	170	2	64.5	
URS	074D	74.0	38	88.8	57.6	3.08	1.68	162	2	68.1	
URS	080D	140.0	38	155.3	55.4	2.90	2.36	35	1	68.1	

12 456,32 MHz (39)

AGL	295E	–13.0	39	16.5	–12.0	3.09	2.26	84	1	64.4	
BHR	255D	17.0	39	50.5	26.1	0.60	0.60	0	1	61.0	1/0.7
CNR	130E	–31.0	39	–15.7	28.4	1.54	0.60	5	2	63.0	
CVA	083D	–37.0	39	12.4	41.8	0.60	0.60	0	1	65.4	
E	129E	–31.0	39	–3.1	39.9	2.10	1.14	154	2	64.2	
GHA	108E	–25.0	39	–1.2	7.9	1.48	1.06	102	1	63.8	
GNE	303E	–19.0	39	10.3	1.5	0.68	0.60	10	2	64.0	
HOL	213E	–19.0	39	5.4	52.0	0.76	0.60	171	1	64.7	
ISL	050C	5.0	39	–19.5	61.0	2.20	0.80	4	1	66.5	3
JOR	224E	11.0	39	35.8	31.4	0.84	0.78	114	2	63.3	
MNG	248E	74.0	39	102.2	46.6	3.60	1.13	169	1	64.3	
SDN	230E	–7.0	39	29.2	7.5	2.34	1.12	148	2	64.6	
SRL	259E	–31.0	39	–11.8	8.6	0.78	0.68	114	1	63.7	
TGK	225E	11.0	39	34.6	–6.2	2.41	1.72	129	1	63.9	
URS	059D	23.0	39	36.0	47.0	3.70	1.43	153	2	65.3	
URS	077F	110.0	39	112.7	57.3	2.67	1.75	2	1	67.4	
YUG	149E	–7.0	39	18.4	43.7	1.68	0.66	154	1	65.5	

12 475,50 MHz (40)

1		2	3	4		5		6	7	8	9
CAF	258E	−13.0	40	21.0	6.3	2.25	1.68	31	2	64.5	
I	082E	−19.0	40	12.3	41.3	2.38	0.98	137	2	64.3	
IRQ	256E	11.0	40	43.6	32.8	1.88	0.96	143	1	63.5	
LSO	305E	5.0	40	27.8	−29.8	0.66	0.60	36	1	64.4	
MTN	288E	−37.0	40	−7.8	23.4	1.63	1.10	141	1	63.2	
MWI	308E	−1.0	40	34.1	−13.0	1.54	0.60	87	2	64.5	
MYT	098E	29.0	40	45.1	−12.8	0.60	0.60	0	1	63.6	
NGR	115E	−25.0	40	8.3	16.8	2.54	2.08	44	2	64.7	
OMA	123E	17.0	40	55.6	21.0	1.88	1.02	100	2	63.5	
S	139B	5.0	40	17.0	61.5	2.00	1.00	10	2	68.2	
SDN	232E	−7.0	40	30.4	19.0	2.44	1.52	176	1	63.5	
URS	066F	44.0	40	64.3	44.6	4.56	2.48	169	2	65.6	
URS	079F	140.0	40	138.0	53.6	3.16	2.12	62	2	68.0	

ARTICLE 12

Provisions Governing the Broadcasting-Satellite Service in Region 2 Pending the Establishment of a Detailed Plan

12.1 In accordance with the principles set forth in Annex 6, the following interim provisions shall apply pending the establishment of a detailed plan for the broadcasting-satellite service for Region 2 in the frequency band 11.7 - 12.2 GHz under the terms of paragraphs 12.9 to 12.12 below.

12.2 Space stations in the broadcasting-satellite service shall be located in the following portions of the orbit:

- 75° W to 100° W longitude (however, for service to Canada, the USA and Mexico, the relevant portion shall be only between 75° W and 95° W longitude);
- 140° W to 170° W longitude.

12.2.1 Space stations in the broadcasting-satellite service may also be located in the remaining portions of the orbit, in which case they shall be operated in accordance with the provisions of Nos. **420** to **423** of the Radio Regulations. As an exception, it is accepted that, for Greenland, a position in the geostationary-satellite orbit between 55° W and 60° W may be used for the broadcasting-satellite service as a primary service. The administrations concerned should make every effort to allow for the sharing of this portion of the orbital arc by a broadcasting satellite for Greenland and space stations in the fixed-satellite service of other administrations in Region 2.

12.3 Space stations in the fixed-satellite service shall be located in portions of the orbit other than those referred to in paragraph 12.2 above. Such space stations may also be located in the portions of the orbit referred to in paragraph 12.2 above; they shall then be operated in accordance with the provisions of Nos. **420** to **423** of the Radio Regulations.

12.3.1 Space stations in the broadcasting-satellite service located in the portions of the orbit referred to in paragraph 12.2 and space stations in the fixed-satellite service located in the remaining portions of the orbit shall be operated in such a way that no unacceptable interference is caused by stations of one service to stations of other services. The level of unacceptable interference shall be determined by agreement between the administrations concerned, taking the latest CCIR Recommendations and Annexes 8 and 9 of this Appendix as a guide. Notwithstanding the above, broadcasting-satellite space stations may be located up to the edge of the portion of the orbit referred to in paragraph 12.2, provided that such stations are operated in accordance with the relevant technical characteristics for Region 2 outlined in Annex 8.

12.4 Prior to the regional administrative radio conference, referred to in paragraph 12.9 below, systems in the broadcasting-satellite service shall be regarded as experimental and shall be operated in accordance with the sharing criteria and technical characteristics contained in Annexes 8 and 9.

12.5 Administrations may implement systems which utilize values for the technical characteristics different from the values in Annex 8 of this Appendix provided that such action does not result in interference to operational or planned systems of other administrations in excess of that determined in accordance with Annex 9.

12.6 Systems in the fixed-satellite service shall be introduced in accordance with the relevant provisions of the Radio Regulations, particularly with those of Articles **11** and **13** and, where appropriate, with the provisions of Article 7 of this Appendix.

12.7 Space systems in the frequency band 11.7 - 12.2 GHz shall use, to the maximum extent technically and economically practicable, available techniques in order to make the most efficient use of the geostationary orbit and the frequency spectrum. Examples of such techniques are described in Annex 7.

12.8 The provisions of Resolution **33** [1] shall continue to apply to the broadcasting-satellite service in the frequency band 11.7 - 12.2 GHz in Region 2 until such time as a detailed plan may be adopted for the broadcasting-satellite service.

12.9 A regional administrative radio conference is to be held not later than 1982 for the purpose of carrying out detailed planning for the broadcasting-satellite and fixed-satellite services, in accordance with the following terms.

12.9.1 The said regional administrative radio conference shall draw up a detailed plan for the orbit/spectrum resource available for the broadcasting-satellite service in the 11.7 - 12.2 GHz band. The plan shall provide for the detailed assignment of the orbital positions and frequency channels available, ensuring that the broadcasting-satellite service requirements submitted by the various administrations are met in an equitable manner satisfactory to all the countries concerned. It should be laid down as a matter of principle that each administration in the Region should be guaranteed a minimum number of channels (4) for the operation of the broadcasting-satellite service. Above this minimum, the special characteristics of the countries (size, time zones, language differences, etc.) shall be taken into account.

12.9.2 Planning shall be based on individual reception, but each administration may use the reception system which best meets its requirements, namely, individual or community reception, or both. Account shall also be taken of the decisions of the 1977 and 1979 World Administrative Radio Conferences and of the latest CCIR Recommendations in the case of parameters covered by its studies and research.

12.9.3 When planning the broadcasting-satellite service, it shall be borne in mind that systems should be designed with a view to reducing to a minimum technical differences and incompatibilities with the systems of other Regions.

12.9.4 The conference shall also take into account the need to make equitable provision for the requirements of the fixed-satellite service to which this frequency band is also allocated in Region 2.

12.10 All administrations in Region 2 shall submit their broadcasting-satellite service requirements to the IFRB not later than one year before the start of the regional administrative radio conference responsible for planning this service in Region 2. Each administration may update these requirements as it considers necessary. "Requirements" are understood to include the number and boundaries of service areas and the number of channels requested for each of them. Six months before the deadline for submitting requirements, the IFRB shall remind administrations of the need to submit them by means of a circular letter and/or telegram.

12.11 No systems existing or planned prior to the implementation of any detailed plan such as that referred to above shall cause interference to any systems operating in accordance with such a plan.

12.12 Existing or previously planned broadcasting-satellite systems will not necessarily be taken into account in the establishment of the detailed plan for the broadcasting-satellite service in the 11.7 - 12.2 GHz band in Region 2. Consequently, the installation or planning of such systems by an administration prior to the establishment of the said plan shall not confer upon that system any rights or recognition.

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

ARTICLE 13

Relationship to Resolution 507 [1]

13.1 The provisions and associated Plan of this Appendix shall be regarded as including a world agreement and associated Plan for Regions 1 and 3 in accordance with *resolves* 1 of Resolution **507**, which requires the stations in the broadcasting-satellite service to be established and operated in accordance with such agreements and associated plans.

ARTICLE 14

Interference

14.1 The Members of the Union shall endeavour to agree on the action required to reduce harmful interference which might be caused by the application of these provisions and the associated Plan.

ARTICLE 15 [2]

Entry into Force of the Final Acts of the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977

ARTICLE 16

Period of Validity of the Provisions and Associated Plan

16.1 The provisions and associated Plan have been prepared in order to meet the requirements of the broadcasting-satellite service in the bands concerned for a period of at least fifteen years from 1 January 1979.

16.2 In any event, the provisions and associated Plan shall remain in force until their revision by a competent administrative radio conference convened in accordance with the relevant provisions of the Convention in force.

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[1] Replaces Resolution No. **Spa2** – 2 of the World Administrative Radio Conference for Space Telecommunications, Geneva, 1971.

[2] This Article is not reproduced in this Appendix; see the footnote to the title of this Appendix.

ANNEX 1

Limits for Determining Whether a Service of an Administration is Considered to Be Affected by a Proposed Modification to the Plan (Article 4, paragraph 4.3.1) [1]

1. *Limits on the change in the wanted-to-interfering signal ratio with respect to frequency assignments in accordance with the Plan*

With respect to paragraph 4.3.1.1, an administration shall be considered as being affected if the effect of the proposed modification to the Plan would result in the wanted-to-interfering signal ratio at any point within the service area associated with any of its frequency assignments in the Plan falling below either 30 dB or the value resulting from the frequency assignments in the Plan at the date of entry into force of the Final Acts [2], whichever is the lower.

Note: In performing the calculation, the effect at the receiver input of all the co-channel and adjacent-channel signals is expressed in terms of one equivalent co-channel interfering signal. This value is usually expressed in decibels.

2. *Limits on the change in the power flux-density to protect the broadcasting-satellite service in the band 11.7 - 12.2 GHz in Region 2*

With respect to paragraph 4.3.1.2, an administration in Region 2 shall be considered as being affected if the proposed modification to the Plan would result in exceeding the following power flux-densities at any point in the service area affected:

-147 dB(W/m^2/27 MHz)	$0° \leqslant \theta < 0.48°$
$-139 + 25 \log \theta$ dB(W/m^2/27 MHz)	$0.48° \leqslant \theta < 27.25°$
-103 dB(W/m^2/27 MHz)	$\theta \geqslant 27.25°$

where θ is the difference in degrees between the longitudes of the broadcasting-satellite space station in Region 1 or 3 and the broadcasting-satellite space station affected in Region 2.

3. *Limits on the change in the power flux-density to protect the terrestrial services of other administrations*

With respect to paragraph 4.3.1.3, an administration in Region 1 or 3 shall be considered as being affected if the consequence of the proposed modification to the Plan is to increase the power flux-density arriving on any part of the territory of that administration by more than 0.25 dB over that resulting from the frequency assignments in the Plan at the time of entry into force of the Final Acts [2].

The same administration shall be considered as not being affected if the value of the power flux-density anywhere in its territory does not exceed the limits expressed in Annex 5.

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[1] The limits specified in this Annex relate to the power flux-densities which would be obtained assuming free space propagation conditions.

[2] Final Acts of the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977, which entered into force on 1 January 1979.

An administration in Region 2 shall be considered as being affected if the proposed modification to the Plan would result in exceeding a power flux-density, for any angle of arrival, at any point on its territories, of -125 dB(W/m^2/4 kHz) when the broadcasting-satellite station uses circular polarization and -128 dB(W/m^2/4 kHz) when the broadcasting-satellite station uses linear polarization.

4. *Limits on the change in the power flux-density to protect the fixed-satellite service in the band 11.7 - 12.2 GHz in Region 2*

With respect to paragraph 4.3.1.4, an administration in Region 2 shall be considered as being affected if the proposed modification to the Plan would result in an increase in the power flux-density on its territory of 0.25 dB or more above that resulting from the frequency assignments in the Plan at the time of entry into force of the Final Acts [1].

However, where an assignment in the Plan or its subsequent modification gives a power flux-density of less than -138 dB(W/m^2/27 MHz) anywhere in the territory of an administration of Region 2, that administration shall be considered as not affected.

ANNEX 2

Basic Characteristics to Be Furnished in Notices Relating to Space Stations in the Broadcasting-Satellite Service

1. Country and IFRB number.
2. Nominal orbital position (in degrees from the Greenwich meridian).
3. Assigned frequency or channel number.
4. Date of bringing into use.
5. Identity of the space station.
6. Service area (if necessary, the service area may be defined by a number of "test points").
7. Geographical coordinates of the intersection of the antenna beam axis with the Earth.
8. Rain-climatic zone.
9. Class of station.
10. Class of emission and necessary bandwidth.
11. Power supplied to the antenna (dBW).
12. Antenna characteristics:
    - gain of the antenna referred to an isotropic radiator;
    - shape of the beam (elliptical or circular);
        - major axis (degrees) at -3 dB points;
        - minor axis (degrees) at -3 dB points;

[1] Final Acts of the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977, which entered into force on 1 January 1979.

- orientation of the ellipse;
- ΔG (difference between the maximum gain and the gain in the direction of the point in the serv area at which the power flux-density is at a minimum);
- pointing accuracy;
- type of polarization;
- sense of polarization;
- radiation pattern and cross-polar characteristics.

13. Station keeping accuracy.

14. Modulation characteristics:
- type of modulation;
- pre-emphasis characteristics;
- TV system;
- sound broadcasting characteristics;
- frequency deviation;
- composition of the baseband;
- type of multiplexing of the video and sound signals;
- energy dispersal characteristics.

15. Minimum angle of elevation in the service area.

16. Type of reception (individual or community).

17. Hours of operation (UTC).

18. Coordination.

19. Agreements.

20. Other information.

21. Operating administration or company.

ANNEX 3

Method for Determining the Limiting Interfering Power Flux-Density at the Edge of a Broadcasting-Satellite Service Area in the Band 11.7 - 12.2 GHz (in Regions 2 and 3) and 11.7 - 12.5 GHz (in Region 1) and for Predicting the Power Flux-Density Produced There by a Terrestrial Station

1. *General*

1.1 This Annex describes a method of assessing the interference potential from terrestrial transmitters to broadcasting-satellite receivers in the band 11.7 - 12.2 GHz (12.5 GHz in Region 1).

1.2 The method is in two parts:

a) the calculation of the maximum permissible interfering power flux-density at the edge of the broadcasting-satellite service area concerned;

b) the calculation of the likely power flux-density produced at any point on the edge of the service area by the terrestrial transmitter of another administration.

1.3 The interference potential of the terrestrial transmitters must be considered case by case; the power flux-density produced by each terrestrial transmitter is compared to the limiting power flux-density at any point on the edge of the service area of a broadcasting-satellite station of another administration. If, for a given transmitter, the value of the power flux-density produced is lower than the value of the limiting power flux-density at any point on the edge of the service area, the interference caused to the broadcasting-satellite service by this transmitter is considered to be lower than the permissible value and no coordination is required between administrations before the terrestrial service is brought into use. Where this is not the case, coordination and further, more precise calculations derived from a mutually agreed basis are necessary.

1.4 It is emphasized that, should the calculation described in this Annex indicate that the maximum permissible power flux-density is exceeded, it does not necessarily preclude the introduction of the terrestrial service since the calculations are necessarily based on worst-case assumptions for:

a) the nature of the terrain of the interference path;

b) the off-beam discrimination of the broadcasting-satellite receiving installations;

c) the necessary protection ratios for the broadcasting-satellite service;

d) the type of reception in the broadcasting-satellite service, i.e., assuming individual reception, this being more critical than community reception for the angles of elevation concerned;

e) the value of power flux-density to be protected in the broadcasting-satellite service;

f) the propagation conditions between the terrestrial station and the broadcasting-satellite service area.

2. *Limit of power flux-density*

2.1 *General*

The limiting power flux-density not to be exceeded at the edge of the service area in order to protect the broadcasting-satellite service of an administration is given by the formula:

$$F = F_o - R + D + P \qquad (1)$$

where

F = the maximum permissible interfering power flux-density ($dB(W/m^2)$) in the broadcasting-satellite necessary bandwidth;

F_o = the wanted power flux-density ($dB(W/m^2)$) at the edge of the service area;

R = the protection ratio (dB) between the wanted and interfering signals;

D = angular discrimination (dB) provided by the radiation pattern of the satellite broadcasting receiver antenna;

P = polarization discrimination (dB) between the wanted and interfering signals.

2.2 *Wanted power flux-density (F_o)*

The value of F_o is equal to:

a) -103 $dB(W/m^2)$ for service areas in Regions 1 and 3;

b) -105 $dB(W/m^2)$ for service areas in Region 2.

2.3 *Protection ratio (R)*

2.3.1 The single entry protection ratio against all types of terrestrial transmissions, with the exception of amplitude-modulation multichannel television systems, is 35 dB for carrier frequency differences between the wanted and interfering signals of up to ± 10 MHz, decreasing linearly from 35 dB to 0 dB for carrier frequency differences between 10 MHz and 35 MHz, and is 0 dB for frequency differences in excess of 35 MHz (see Fig. 1).

2.3.2 The carrier frequency difference should be determined by reference to the frequency assignments in the broadcasting-satellite Plan or, in the case of assignments not contained within a plan, by reference to the description of the characteristics of the proposed or operational system. For amplitude-modulation multichannel television systems which produce peaks of high power flux-density spread over a wide range of their necessary bandwidth, the protection ratio R is 35 dB and is independent of the carrier frequency difference.

2.3.3 A signal from a terrestrial station should be considered only if its necessary bandwidth overlaps the necessary bandwidth of the broadcasting-satellite assignment.

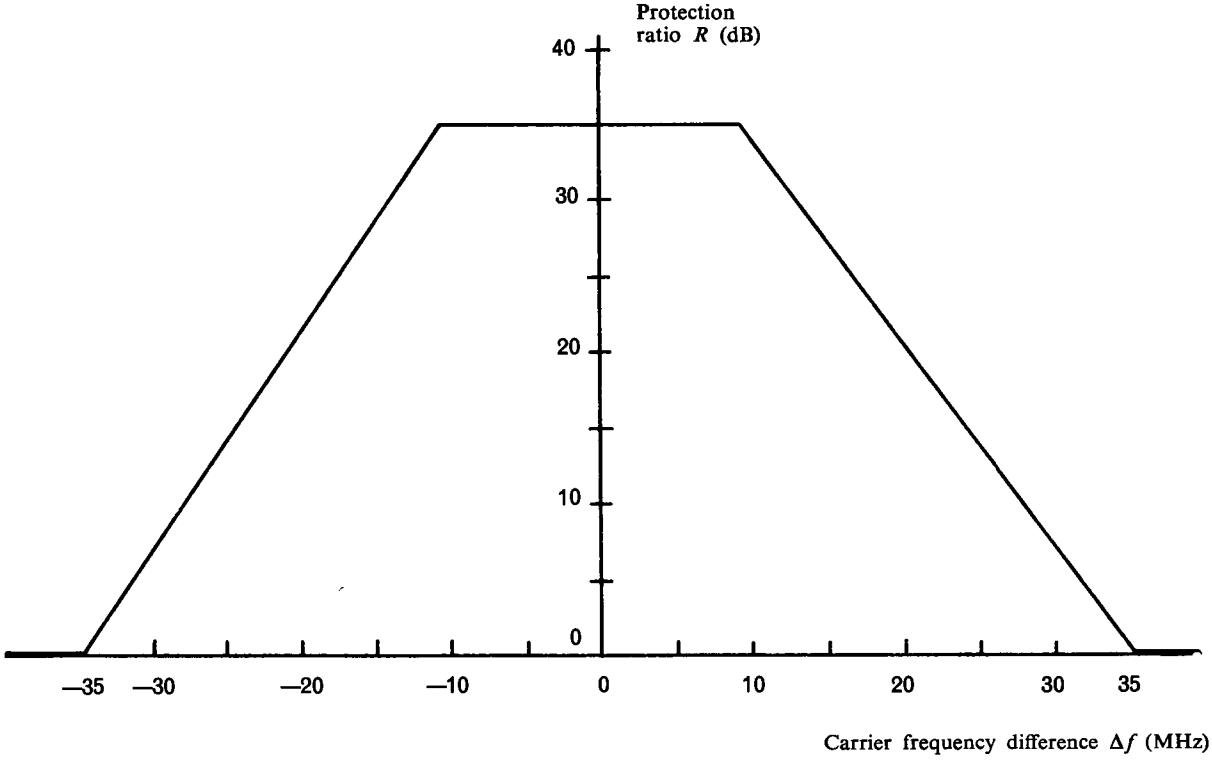

FIGURE 1

Protection ratio R (dB) for a broadcasting-satellite signal against a single entry of interference from a terrestrial service (except for AM multichannel TV systems)

2.4 *Angular discrimination (D)*

2.4.1 *Broadcasting-satellite service areas in Regions 1 and 3*

Where the angle of elevation φ selected for the proposed or operational broadcasting-satellite system for the broadcasting-satellite service area concerned is equal to or greater than 19°, the value of D to be assumed in expression (1) is 33 dB. When φ is less than 19°, D should be derived from the expression (2.a) below.

Note: If more than one value of φ is specified for a particular service area, the appropriate value of φ should be used for each section of the edge of the service area under consideration.

$$\begin{aligned} &D = 0 \text{ for } 0 \leqslant \varphi \leqslant 0.5° \\ &D = 3\ \varphi^2 \text{ for } 0.5° < \varphi \leqslant 1.41° \\ &D = 3 + 20 \log_{10} \varphi \text{ for } 1.41° < \varphi \leqslant 2.52° \\ &D = 1 + 25 \log_{10} \varphi \text{ for } 2.52° < \varphi \leqslant 19° \end{aligned} \qquad (2.a)$$

Note: For the graphical determination of D see Fig. 2.

2.4.2 *Broadcasting-satellite service areas in Region 2*

Where the angle of elevation φ selected for the proposed or operational broadcasting-satellite system for the broadcasting-satellite service area concerned is equal to or greater than 27°, the value of D to be assumed in expression (1) is 38 dB. When φ is less than 27°, D should be derived from the expression (2.b) below.

Note: If more than one value of φ is specified for a particular service area, the appropriate value of φ should be used for each section of the edge of the service area under consideration.

$$\begin{aligned} &D = 0 \text{ for } 0 \leqslant \varphi \leqslant 0.45° \\ &D = 3.7\ \varphi^2 \text{ for } 0.45° < \varphi \leqslant 1.27° \\ &D = 3.9 + 20 \log_{10} \varphi \text{ for } 1.27° < \varphi \leqslant 2.27° \\ &D = 2.1 + 25 \log_{10} \varphi \text{ for } 2.27° < \varphi \leqslant 27° \end{aligned} \qquad (2.b)$$

Note: For the graphical determination of D see Fig. 2.

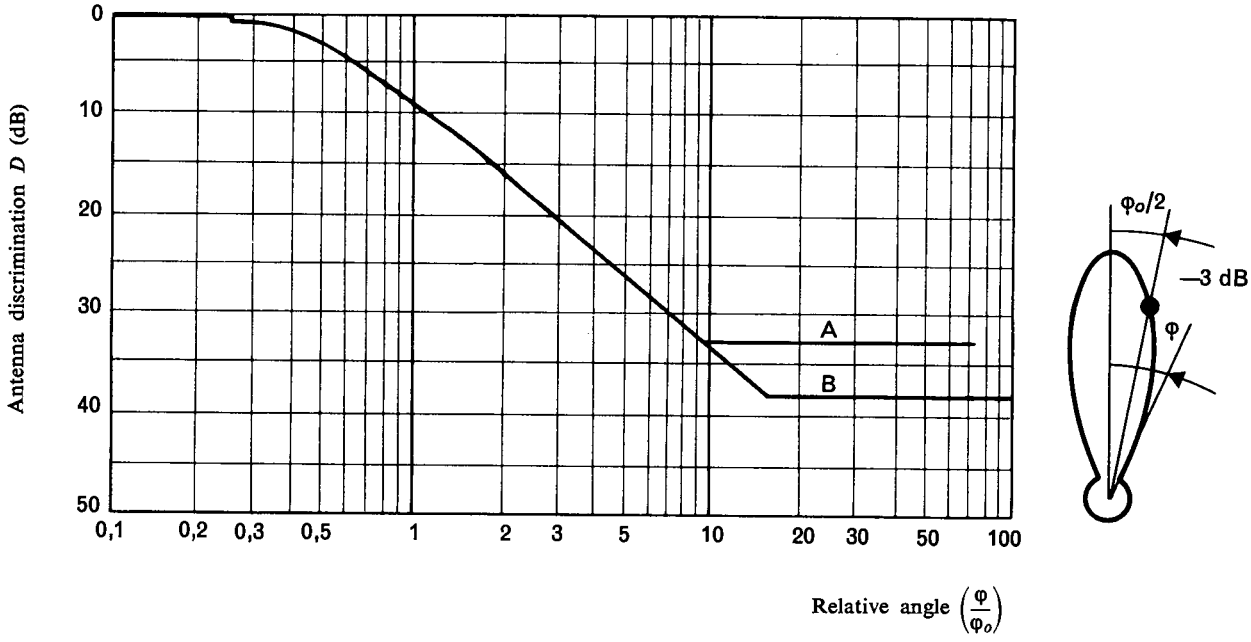

FIGURE 2

Discrimination D (dB) of broadcasting-satellite receiver antenna as a function of satellite elevation angle

For service areas in Regions 1 and 3, $\varphi_o = 2°$ and Curve A applies.

For service areas in Region 2, $\varphi_o = 1.8°$ and Curve B applies.

2.5 *Polarization discrimination (P)*

The value of P is equal to:

a) 3 dB when the interfering terrestrial service uses linear polarization and the broadcasting-satellite service uses circular polarization or vice versa;

b) 0 dB when the interfering terrestrial service and the broadcasting-satellite service both use circular or both use linear polarization.

3. *Power flux-density produced by a terrestrial station (F_p)*

The power flux-density F_p (in dB(W/m^2)) produced at any point on the edge of the service area by the terrestrial station is determined from the following formula:

$$F_p = E - A + 43 \tag{3}$$

where

E = the equivalent isotropically radiated power (dBW) of the terrestrial station in the direction of the point on the edge of the service area concerned;

A = the total path loss in dB.

3.1 *Evaluation of path loss A for a terrestrial station at a distance greater than 100 km from the edge of the service area of the broadcasting satellite*

For path lengths greater than 100 km, A is given by:

$$A = 137.6 + 0.2324\, d_t + 0.0814\, d_m \tag{4}$$

where d_t and d_m are the overland and oversea path lengths respectively, in km.

3.2 *Evaluation of path loss A for a terrestrial station at a distance equal to or less than 100 km from the edge of the service area of the broadcasting satellite*

For path lengths equal to or less than 100 km, A is calculated using equations (4) and (5) and the lower value obtained is substituted in formula (3) to calculate the power flux-density produced at the point on the edge of the service area:

$$A = 109.5 + 20 \log (d_t + d_m) \tag{5}$$

The variation in A for different path lengths and percentage of oversea path is shown in Fig. 3.

3.3 *Distance beyond which the method need not be applied*

The method need not be applied and coordination is unnecessary when the distance between the terrestrial station and the service area of the broadcasting satellite is greater than:

a) 400 km in the case of all overland paths, or

b) 1 200 km in the case of all oversea or mixed paths.

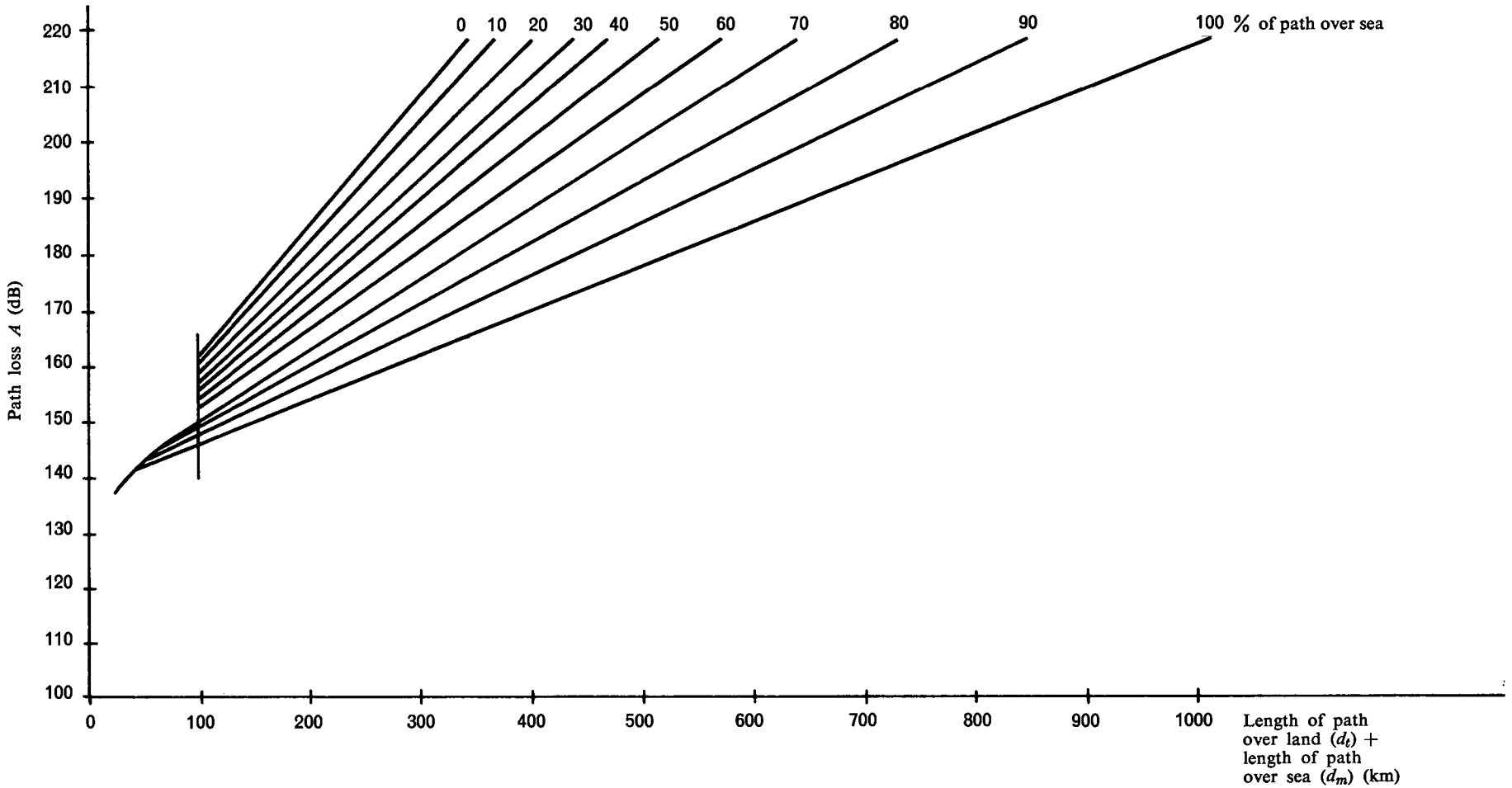

FIGURE 3

Total path loss A (dB) versus total path length ($d_t + d_m$)(km)and percentage of oversea path

ANNEX 4

Need for Coordination of a Fixed-Satellite Space Station or a Broadcasting-Satellite Space Station in Region 2 with Respect to the Plan (Article 7)

With respect to paragraph 7.2.1, coordination of a space station in the fixed-satellite service or the broadcasting-satellite service of Region 2 is required when, under assumed free space propagation conditions, the power flux-density on the territory of an administration in Region 1 or Region 3 exceeds the value derived from the following expressions:

-147 dB(W/m^2/27 MHz) for $0 \leqslant \theta < 0.44°$
$-138 + 25 \log \theta$ dB(W/m^2/27 MHz) for $0.44° \leqslant \theta < 19.1°$
-106 dB(W/m^2/27 MHz) for $19.1° \leqslant \theta$

θ = the difference in degrees between the longitude of the interfering broadcasting-satellite or fixed-satellite space station in Region 2 and the longitude of the affected broadcasting-satellite space station in Regions 1 and 3.

ANNEX 5

Power Flux-Density Limits Between 11.7 GHz and 12.2 GHz to Protect the Terrestrial Services in Regions 1 and 3 from Interference from Region 2 Broadcasting-Satellite Space Stations (Article 9)

The power flux-density limits are as follows:

1) for all the territories of administrations in Regions 1 and 3:

-125 dB(W/m^2/4 kHz)	for broadcasting-satellite space stations using circular polarization;
-128 dB(W/m^2/4 kHz)	for broadcasting-satellite space stations using linear polarization;

for all angles of arrival; and

2) for territories of administrations in Region 3 and those in the western part of Region 1, west of longitude 30° E:

-132 dB(W/m^2/5 MHz)	for angles of arrival between 0° and 10° above the horizontal plane;
$-132 + 4.2(\gamma - 10)$ dB(W/m^2/5 MHz)	for angles of arrival γ (in degrees) between 10° and 15° above the horizontal plane;
-111 dB(W/m^2/5 MHz)	for angles of arrival between 15° and 90° above the horizontal plane.

ANNEX 6

Planning Principles in Region 2

The following principles have been applied in drawing up the provisions governing the introduction of space services in the frequency band 11.7 - 12.2 GHz in Region 2:

1. *Equality for allocated services in Region 2*

Under Article **8** of the Radio Regulations, the 11.7 - 12.2 GHz band is allocated to the broadcasting-satellite, fixed-satellite and terrestrial services on an equal, primary basis. Each administration in Region 2 has the right to decide for itself which of these services are to be implemented within its own territory.

2. *Equal rights for services in the various Regions*

In accordance with No. **346** of the Radio Regulations, the principle of equal rights for different services in the same category to operate in all the Regions is recognized, provided that no harmful interference is caused to services in the other Regions.

3. *Recognition of national requirements*

All administrations in Region 2 shall take into consideration the national requirements which have been presented or will be presented in the future.

4. *Equitable rights of access to the geostationary orbit/spectrum resource*

Subject to the provisions of the Convention, the Radio Regulations and the resolutions in force, it is recognized that all administrations have the right of access to the geostationary orbit spectrum resource in order to fulfil their requirements.

5. *Flexible planning approach* [1]

The plan adopted for Region 2 must be sufficiently flexible to allow for future technical developments, the identification of future requirements, changes in existing or stated requirements, requirements by administrations not represented at the Conference [2], further information on propagation data and various system design approaches. The plan may be modified only by a competent administrative radio conference.

6. *Efficient use of the geostationary orbit and the spectrum*

The plan for Region 2 shall use, to the maximum extent technically and economically practicable, the techniques available so as to make the most efficient use of the geostationary orbit and the frequency spectrum to fulfil the requirements both of the Region as a whole and of the individual administrations.

7. *Consultations among administrations*

Administrations planning to bring into operation systems in the 11.7 - 12.2 GHz band shall consult all the other administrations affected or concerned.

8. *Reception*

The plan for Region 2 shall have as a basis individual reception, although each administration may choose the reception system that it finds most suited to its requirements, namely, individual or community reception, or both.

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[1] Paragraph 5 does not imply recognition of systems existing prior to the implementation of the plan.

[2] The World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977.

ANNEX 7

Use of the Spectrum/Orbit Resource

Since the equal sharing of the spectrum/orbit resource between the broadcasting-satellite service and the fixed-satellite service in Region 2 is inherently difficult and may impose some restrictions on both services, it is important that the technical parameters be chosen, and the techniques for efficient use of the spectrum/orbit resource be applied in such a way that both space services will benefit as much as possible.

The following techniques are among those identified as leading to a more efficient use of the spectrum/orbit resource and should therefore be applied to the maximum extent technically and economically practicable consistent with the capability of systems to fulfil the requirements for which they were designed.

1. *Clustering*

Extensive analyses have shown that orbit utilization is improved when satellites are grouped according to the sensitivity to interference and the potential for generating interference of the system of which they are a part. In most cases, this means that space stations of similar characteristics should be grouped in the same part of the orbit.

2. *Cross-polarization*

The proper use of cross-polarization can significantly improve the use of the spectrum/orbit resource by providing additional isolation between potentially interfering systems.

3. *Crossed-beam geometry*

The principle of crossed-beam geometry is that adjacent satellites should not serve adjacent service areas. In that way, discrimination from both the satellite and the earth station antennae can be used to achieve maximum isolation between systems.

4. *Paired service areas*

The principle of crossed-beam geometry can be extended: if service areas are far enough apart, then the satellite antenna discrimination alone may be sufficient to permit satellites serving these widely separated service area to be co-located in the orbit, leading to practical doubling of the orbit capacity.

5. *Frequency interleaving*

The mutual interference between channels in different systems is usually a maximum when the two carrier frequencies coincide. When channelling design is such that frequencies are interleaved, or, more generally, such that coincidence of carrier frequencies is avoided, mutual interference can in many cases be greatly reduced.

6. *Minimum space station spacings*

It is obvious that, for maximum orbit utilization, space stations should be placed as close to each other as is consistent with keeping the mutual interference to acceptable levels.

7. *Space station antenna discrimination*

The discrimination in the side-lobes of the space station antenna determines how much isolation exists between beams serving non-overlapping or non-adjacent service areas. To achieve maximum isolation, every effort should be made to improve the discrimination by technological advances in antenna design.

8. *Earth station antenna discrimination*

The side-lobe discrimination of the earth station antenna determines how much isolation is obtained from satellite spacing. To achieve maximum isolation, every effort should be made to improve the discrimination by taking advantage of technological advances in antenna design.

9. *Minimizing e.i.r.p. differences*

The interference caused by relatively high-power space stations (space stations in the broadcasting-satellite service or certain types of space stations in the fixed-satellite service) to the earth station receivers of relatively low-power satellite systems is directly proportional to the difference between their e.i.r.p. Sharing among such systems is greatly facilitated if this difference is kept as small as is consistent with the requirements.

10. *Realistic quality and reliability objectives*

The quality and reliability objectives have a significant effect on the use of the spectrum/orbit resource. If the objectives are set unnecessarily high, the capacity of the orbit is reduced. Quality and reliability objectives should be set no higher than absolutely necessary.

ANNEX 8

Technical Data Used in Establishing the Provisions and Associated Plan and Which Should Be Used for their Application

1. DEFINITIONS

1.1 *Service area*

The area on the surface of the Earth in which the administration responsible for the service has the right to demand that the agreed protection conditions be provided.

Note: In the definition of service area, it is made clear that within the service area the agreed protection conditions can be demanded. This is the area where there should be at least the wanted power flux-density and protection against interference based on the agreed protection ratio for the agreed percentage of time.

1.2 *Coverage area*

The area on the surface of the Earth delineated by a contour of a constant given value of power flux-density which would permit the wanted quality of reception in the absence of interference.

Note 1: In accordance with the provisions of No. **2674** of the Radio Regulations, the coverage area must be the smallest area which encompasses the service area.

Note 2: The coverage area, which will normally encompass the entire service area, will result from the intersection of the antenna beam (elliptical or circular) with the surface of the Earth, and will be defined by a given value of power flux-density. For example, in the case of a Region 1 or 3 country with a service planned for individual reception, it would be the area delineated by the contour corresponding to a level of -103 dB(W/m^2) for 99% of the worst month. There will usually be an area outside the service area but within the coverage area in which the power flux-density will be at least equivalent to the minimum specified value; however, protection against interference will not be provided in this area.

1.3 *Beam area*

The area delineated by the intersection of the half-power beam of the satellite transmitting antenna with the surface of the Earth.

Note: The beam area is simply that area on the Earth's surface corresponding to the -3 dB points on the satellite antenna radiation pattern. In many cases the beam area would almost coincide with the coverage area, the discrepancy being accounted for by the permanent difference in path lengths from the satellite throughout the beam area, and also by the permanent variations, if any, in propagation factors across the area. However, for a service area where the maximum dimension as seen from the satellite position is less than 0.6° (the agreed minimum practicable satellite antenna half-power beamwidth), there could be a significant difference between the beam area and the coverage area.

1.4 *Nominal orbital position*

The longitude of a position in the geostationary-satellite orbit associated with a frequency assignment to a space station in a space radiocommunication service. The position is given in degrees from the Greenwich meridian.

2. RADIO PROPAGATION FACTORS

2.1 The propagation loss on the space-to-Earth path is equal to the free space path loss plus the attenuation exceeded for not more than 1% of the worst month, the latter being given in Fig. 1 for the five rain-climatic zones shown in Fig. 2.

2.2 In using the curves of Fig. 1, the difference between clear weather attenuation and the attenuation for 99% of the worst month should be limited to a maximum of 2 dB by appropriate choice of angle of elevation.

2.3 In planning the broadcasting-satellite service, for emissions applying circular polarization, the level of the depolarized component relative to the level of the co-polar component should be taken as:

for rain-climatic zones 1 and 2: -27 dB;
for rain-climatic zones 3, 4 and 5: -30 dB.

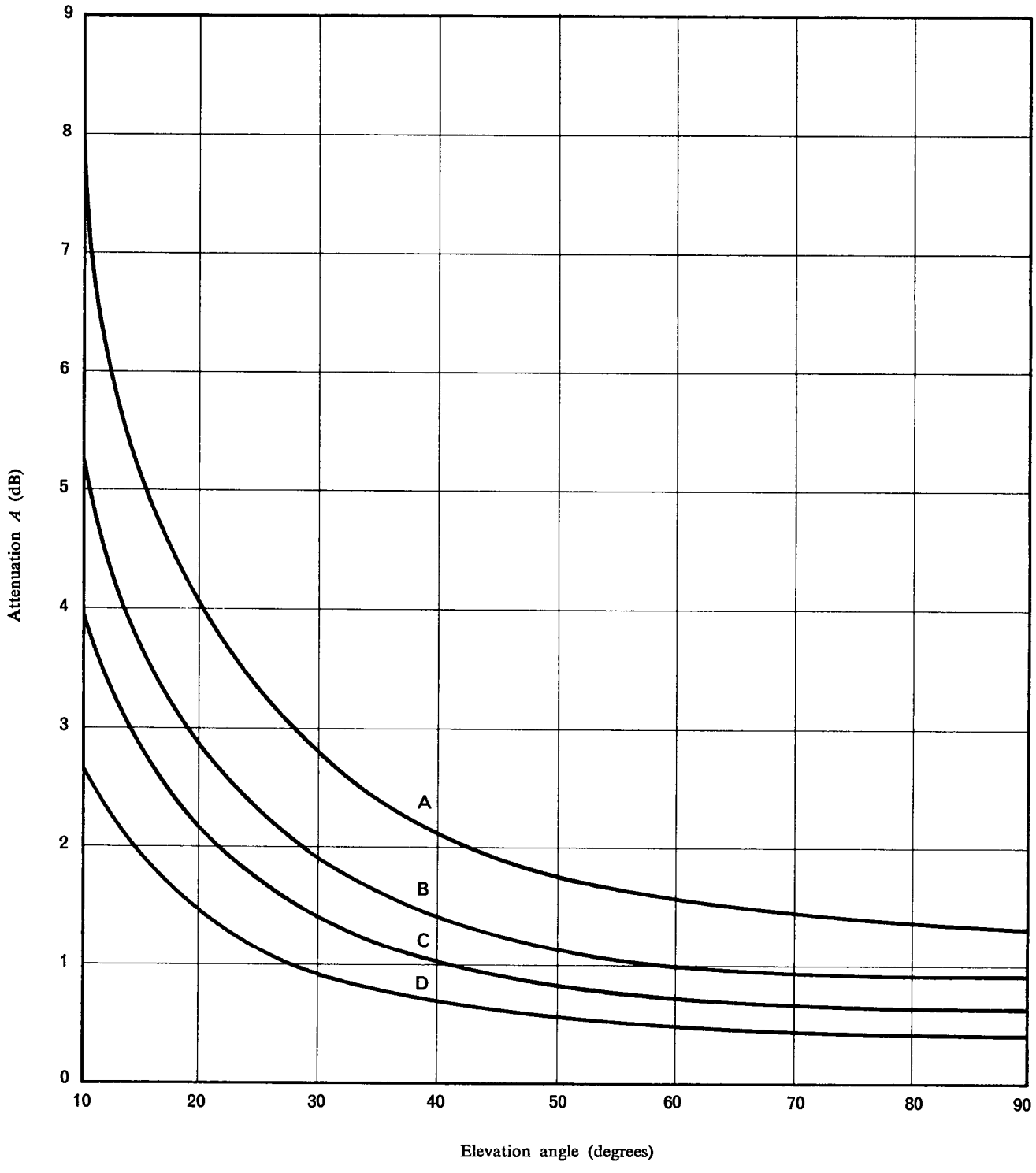

FIGURE 1

Predicted attenuation values exceeded for not more than 1% of the worst month (0.25% of the time) at 12 GHz in the rain-climatic zones indicated in Figure 2.

A: Rain-climatic zone 1 C: Rain-climatic zones 3 and 4

B: Rain-climatic zone 2 D: Rain-climatic zone 5

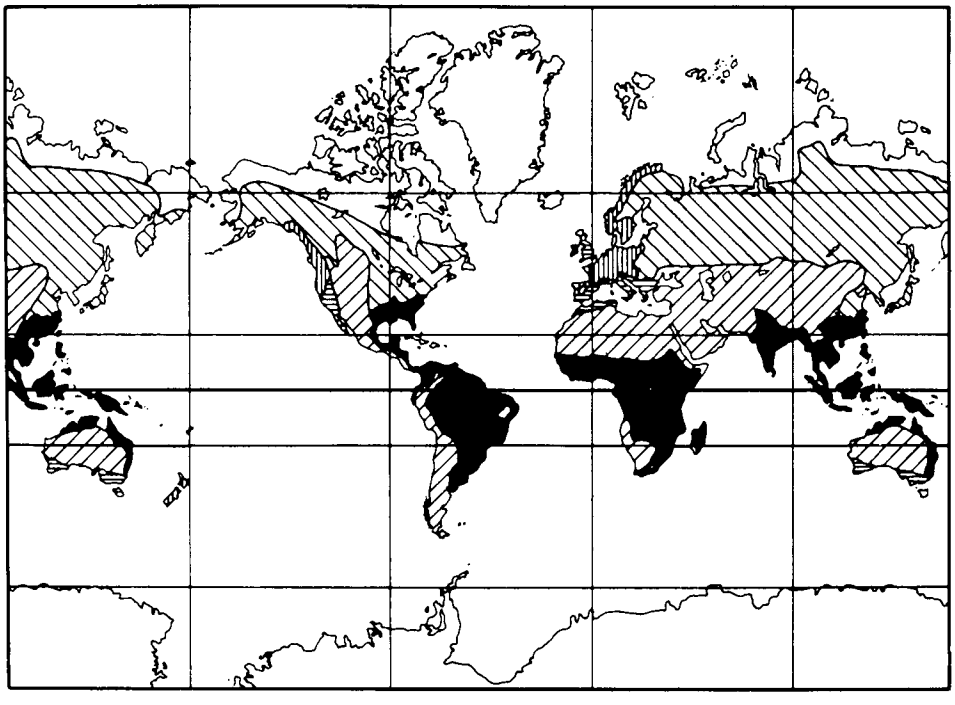

FIGURE 2

Rain-climatic zones

It should be noted that extensive measurements of attenuation due to rainfall have not been carried out in the tropical countries, especially in the African region.

3. BASIC TECHNICAL CHARACTERISTICS

3.1 *Type of modulation*

Planning of the broadcasting-satellite service is based on the use of a signal consisting of a video signal with an associated carrier, frequency-modulated by a sound signal, both frequency-modulating a carrier in the 12 GHz band, with a pre-emphasis characteristic in accordance with Fig. 3 (from CCIR Recommendation 405).

This does not preclude the use of other modulating signals having different characteristics (e.g. modulation with sound channels frequency-multiplexed within the bandwidth of a television channel, digital modulation of sound and television signals, or other pre-emphasis characteristics), provided that the use of such characteristics does not cause greater interference than that caused by the system considered in the Plan.

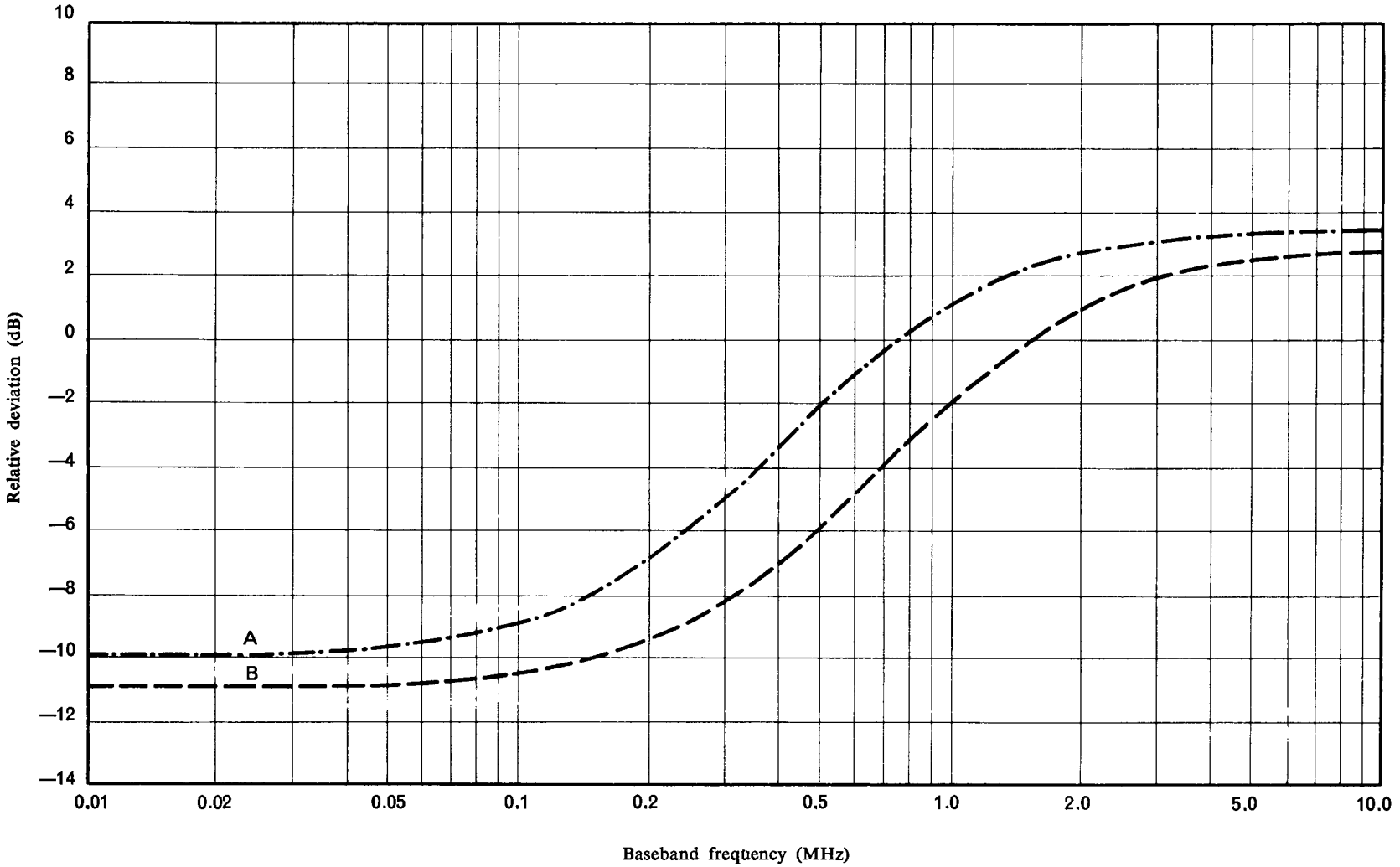

FIGURE 3

Pre-emphasis characteristic for television on 525- and 625-line systems

Curve A: 525-line system

Curve B: 625-line system

3.2 *Polarization*

3.2.1 For the planning of the broadcasting-satellite service, circular polarization shall be used in Regions 1, 2 and 3 [1].

3.2.2 If possible, the polarization of different beams intended to serve the same area should be the same.

3.2.3 The terms "direct" and "indirect" used in the Plan to indicate the direction of rotation of circularly-polarized waves correspond to right-hand (clockwise) and left-hand (anti-clockwise) polarization respectively according to the following definitions:

Direct polarization (right-hand or clockwise polarization)

An elliptically or circularly-polarized wave, in which the electric field-intensity vector, observed in any *fixed plane*, normal to the direction of propagation, whilst looking in (i.e., not against) the direction of propagation, rotates *with time* in a *right-hand* or clockwise direction.

Note: For circularly-polarized plane waves, the ends of the electric vectors drawn from any points along a straight line normal to the plane of the wave front form, *at any instant*, a *left-hand* helix.

Indirect polarization (left-hand or anti-clockwise polarization)

An elliptically or circularly-polarized wave, in which the electric field-intensity vector, observed in any *fixed plane*, normal to the direction of propagation, whilst looking in (i.e., not against) the direction of propagation, rotates *with time* in a *left-hand* or anti-clockwise direction.

Note: For circularly-polarized plane waves, the ends of the electric vectors drawn from any points along a straight line normal to the plane of the wave front form, *at any instant*, a *right-hand* helix.

3.3 *Carrier-to-noise ratio*

For the purpose of planning the broadcasting-satellite service, the carrier-to-noise ratio is equal to 14 dB for 99% of the worst month.

The reduction in quality in the down-link due to thermal noise in the up-link is taken as equivalent to a degradation in the down-link carrier-to-noise ratio not exceeding 0.5 dB for 99% of the worst month.

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[1] The Administration of the United States of America expressed concern regarding the adoption of circular polarization for Region 2 and indicated that the very probable adoption of linear polarization by the fixed-satellite service would preclude the use of cross-polarization to facilitate sharing between the two space services and would affect orbit and spectrum utilization within the Region.

The Administration of Iran expressed a reservation regarding the adoption of circular polarization for planning the broadcasting-satellite service in Region 3 and stated its intention to use linear polarization.

3.4 *Protection ratio between two FM television signals*

For planning in Regions 1 and 3 the following protection ratios have been adopted for the purpose of calculating equivalent protection margins [1]:

– 31 dB for co-channel signals;
– 15 dB for adjacent-channel signals.

3.5 *Channel spacing*

3.5.1 *Channel spacing in the Plan*

The spacing between the assigned frequencies of two adjacent channels is 19.18 MHz. The Plan gives the assigned frequencies for each channel.

3.5.2 *Grouping of channels in the same beam*

Planning in Region 1 has been carried out by trying to group all the channels radiated within a single antenna beam within a frequency range of 400 MHz, in order to simplify receiver construction.

3.5.3 *Spacing between channels feeding a common antenna*

Owing to technical difficulties in the output circuit of a satellite transmitter, spacing between the assigned frequencies of two channels feeding a common antenna must be greater than 40 MHz.

3.6 *Figure of merit (G/T) of a receiving installation in the broadcasting-satellite service*

In planning the broadcasting-satellite service, the value of the figure of merit (G/T) used is:

6 dB/K for individual reception;
14 dB/K for community reception.

The values are calculated from the following formula which allows for pointing error, polarization effects, and ageing:

$$G/T = \frac{\alpha\,\beta\,G_r}{\alpha\,T_a + (1-\alpha)\,T_0 + (n-1)\,T_0}$$

[1] The equivalent protection margin M is given in dB by the formula

$$M = -10 \log \left[10^{-M_1/10} + 10^{-M_2/10} + 10^{-M_3/10} \right]$$

where M_1 is the value in dB of the protection margin for the same channel. This is defined in the following expression where the powers are evaluated at the receiver input:

$$\frac{\text{wanted power}}{\text{sum of the co-channel interfering powers}}\ (\text{dB}) - \text{co-channel protection ratio (dB)}$$

M_2 and M_3 are the values in dB of the upper and lower adjacent-channel protection margins.

The definition of the adjacent-channel protection margin is similar to that for the co-channel case except that the adjacent-channel protection ratio and the sum of the interfering powers due to transmissions in the adjacent channel are considered.

where

α : the total coupling losses, expressed as a power ratio;

β : the total losses due to the pointing error, polarization effects and ageing, expressed as a power ratio;

G_r : the effective gain of the receiving antenna, expressed as a power ratio and taking account of the method of feeding and the efficiency;

T_a : the effective temperature of the antenna;

T_0 : the reference temperature = 290 K;

n : the overall noise factor of the receiver, expressed as a power ratio.

See also CCIR Report 473-1 (Annex 1).

3.7 *Receiving antenna*

3.7.1 *Minimum diameter of receiving antenna*

For planning the broadcasting-satellite service the minimum diameter of receiving antenna considered is such that the half-power beamwidth, φ_o, is:

a) for individual reception: 2° in Regions 1 and 3, 1.8° in Region 2;

b) for community reception: 1° in all Regions.

3.7.2 *Receiving antenna reference patterns*

The co-polar and cross-polar reference patterns of receiving antennae are given in Figs. 4 and 5.

a) The relative antenna gain (dB) is given by the curves in Fig. 4 for:

- individual reception in Regions 1 and 3:
  - Curve A for the co-polar component;
  - Curve B for the cross-polar component;
- community reception:
  - in all Regions, Curve A′ up to the intersection with Curve C, then Curve C, for the co-polar component;
  - in Regions 1 and 3, Curve B for the cross-polar component.

b) For Region 2, the relative antenna gain (dB) is given by the curves in Fig. 5 for:

- individual reception, for which use should be made of:
  - Curve A for the co-polar component;
  - Curve B for the cross-polar component;
- community reception for which Curve B should be used for the cross-polar component (the co-polar component being given in Fig. 4).

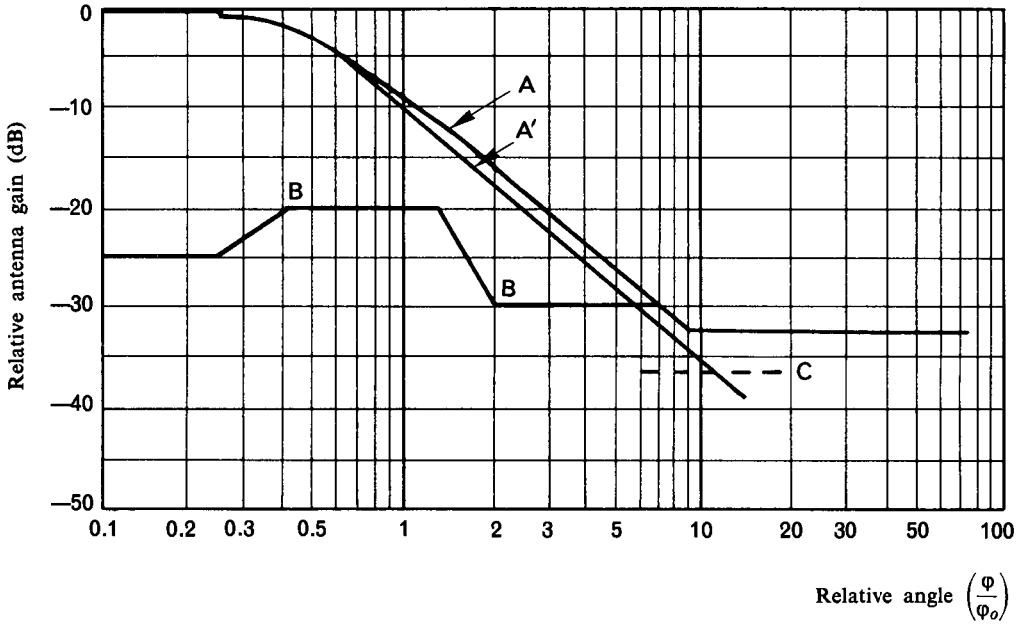


FIGURE 4

Co-polar and cross-polar reference patterns for receiving antennae

Curve A: Co-polar component for individual reception without side-lobe suppression

0	for $0 \leqslant \varphi \leqslant 0.25\,\varphi_o$
$-12\left(\frac{\varphi}{\varphi_o}\right)^2$	for $0.25\,\varphi_o < \varphi \leqslant 0.707\,\varphi_o$
$-\left[9.0 + 20\log_{10}\left(\frac{\varphi}{\varphi_o}\right)\right]$	for $0.707\,\varphi_o < \varphi \leqslant 1.26\,\varphi_o$
$-\left[8.5 + 25\log_{10}\left(\frac{\varphi}{\varphi_o}\right)\right]$	for $1.26\,\varphi_o < \varphi \leqslant 9.55\,\varphi_o$
-33	for $9.55\,\varphi_o < \varphi$

Curve A': Co-polar component for community reception without side-lobe suppression

0	for $0 \leqslant \varphi \leqslant 0.25\,\varphi_o$
$-12\left(\frac{\varphi}{\varphi_o}\right)^2$	for $0.25\,\varphi_o < \varphi \leqslant 0.86\,\varphi_o$
$-\left[10.5 + 25\log_{10}\left(\frac{\varphi}{\varphi_o}\right)\right]$	for $0.86\,\varphi_o < \varphi$ up to intersection with Curve C (then Curve C)

Curve B: Cross-polar component for both types of reception

-25	for $0 \leqslant \varphi \leqslant 0.25\,\varphi_o$
$-\left(30 + 40\log_{10}\left\lvert\frac{\varphi}{\varphi_o} - 1\right\rvert\right)$	for $0.25\,\varphi_o < \varphi \leqslant 0.44\,\varphi_o$

-20 for $0.44\,\varphi_o < \varphi \leqslant 1.4\,\varphi_o$

$-\left(30 + 25\log_{10}\left|\frac{\varphi}{\varphi_o} - 1\right|\right)$ for $1.4\,\varphi_o < \varphi \leqslant 2\,\varphi_o$

-30 until intersection with co-polar component curve; then as for co-polar component

Curve C: Minus the on-axis gain

Note: for values of φ_o see 3.7.1.

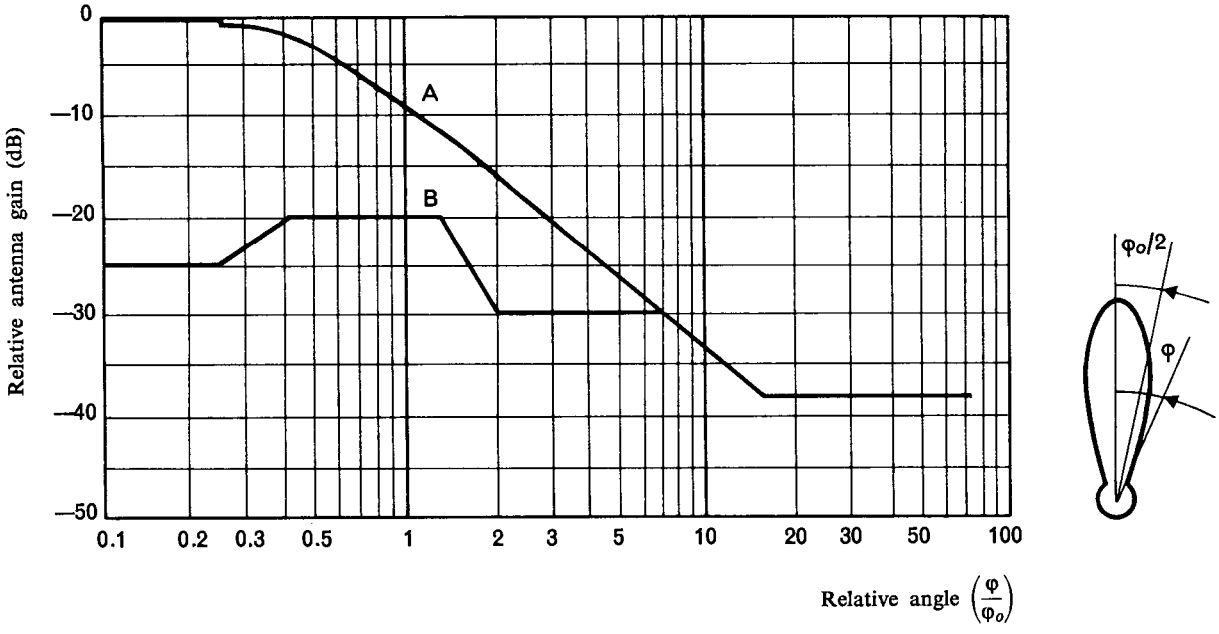


FIGURE 5

Reference patterns for co-polar and cross-polar components for receiving antennae for individual reception in Region 2

Curve A: Co-polar component without side-lobe suppression

0 for $0 \leqslant \varphi \leqslant 0.25\,\varphi_o$

$-12\left(\frac{\varphi}{\varphi_o}\right)^2$ for $0.25\,\varphi_o < \varphi \leqslant 0.707\,\varphi_o$

$-\left[9.0 + 20\log_{10}\left(\frac{\varphi}{\varphi_o}\right)\right]$ for $0.707\,\varphi_o < \varphi \leqslant 1.26\,\varphi_o$

$-\left[8.5 + 25\log_{10}\left(\frac{\varphi}{\varphi_o}\right)\right]$ for $1.26\,\varphi_o < \varphi \leqslant 15.14\,\varphi_o$

-38 dB for $\varphi > 15.14\,\varphi_o$

Curve B: Cross-polar component

-25 for $0 \leqslant \varphi \leqslant 0.25\,\varphi_o$

$-\left(30 + 40 \log_{10} \left| \frac{\varphi}{\varphi_o} - 1 \right| \right)$ for $0.25\,\varphi_o < \varphi \leqslant 0.44\,\varphi_o$

-20 for $0.44\,\varphi_o < \varphi \leqslant 1.4\,\varphi_o$

$-\left(30 + 25 \log_{10} \left| \frac{\varphi}{\varphi_o} - 1 \right| \right)$ for $1.4\,\varphi_o < \varphi \leqslant 2\,\varphi_o$

– 30 until intersection with co-polar component curve; then as for co-polar component

Note: for values of φ_o see 3.7.1.

3.8 *Necessary bandwidth*

The necessary bandwidths considered are as follows for:

- 625-line systems: 27 MHz;
- 525-line systems in Region 3: 27 MHz;
- 525-line system M of Region 2: 18 MHz and 23 MHz.

3.9 *Guardbands*

3.9.1 A guardband is defined as the portion of the frequency spectrum between the edge of the allocated band and the edge of the necessary bandwidth of the emission in the nearest channel.

3.9.2 For the planning of the broadcasting-satellite service, the guardbands necessary to protect the services in adjacent frequency bands are shown in the table below.

Regions	Guardband at the lower edge of the band (11.7 GHz)	Guardband at the upper edge of the band (12.2/12.5 GHz)
1	14 MHz	11 MHz
2	12 MHz	9 MHz
3	14 MHz	11 MHz

These guardbands assume maximum beam centre e.i.r.p. values of 67 dBW for Regions 1 and 3 and 63 dBW for Region 2 (values relating to individual reception), and a filter roll off of 2 dB/MHz. If smaller e.i.r.p. values are assumed, the guardbands can be reduced in width by 0.5 MHz for each decibel decrease in e.i.r.p.

3.9.3 Since developments in technology or the choice of lower e.i.r.p. values than those given above are likely to permit a reduction in the necessary guardbands, it is recommended that, for purposes other than *a priori* planning at this Conference [1], the latest CCIR Recommendations concerning spurious emissions from broadcasting satellites should be followed.

[1] The World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977.

3.10 *Orbital spacing*

The Plan for Regions 1 and 3 has been based generally on nominal orbital positions spaced uniformly at intervals of 6°.

3.11 *Satellite station keeping*

Space stations in the broadcasting-satellite service must be maintained in position with an accuracy of better than ± 0.1° in both the N-S and E-W directions. (These tolerances lead to a maximum excursion of ± 0.14° from the nominal satellite position.)

3.12 *Elevation angle of receiving antennae*

The Plan has been based on the consideration of a minimum angle of elevation of 20° to minimize the required e.i.r.p. of the satellite and to reduce the effects of shadowing and the possibility of interference from terrestrial services. However, for areas situated in latitudes above about 60°, the angle of elevation is of necessity less than 20°. Attention is also directed to Section 2.2.

For mountainous areas where an angle of 20° may not suffice, an angle of at least 30° has been provided where possible to provide an acceptable service. An angle of elevation of at least 40° has been considered for service areas subject to high precipitation (e.g., rain-climatic zone 1).

Some dry, non-mountainous areas may be given an acceptable service at angles of elevation less than 20°.

In areas with small angles of elevation, the shadowing effect of tall buildings may have to be taken into account.

In choosing a satellite position designed to give the maximum angle of elevation at the ground, the influence of such a position on the eclipse period has been borne in mind.

3.13 *Transmitting antenna*

3.13.1 *Cross-section of transmitted beam*

Planning has been based on the use of transmitting antennae with beams of elliptical or circular cross-section.

If the cross-section of the transmitted beam is elliptical, the effective beamwidth φ_o is a function of the angle of rotation q between the plane containing the satellite and the major axis of the beam cross-section and the plane in which the beamwidth is required.

The relationship between the maximum gain of an antenna and the half-power beamwidth can be derived from the expression:

$$G_m = 27\,843/ab$$

or

$$G_m(\text{dB}) = 44.44 - 10 \log_{10} a - 10 \log_{10} b$$

where:

a and b are the angles (in degrees) subtended at the satellite by the major and minor axes of the elliptical cross-section of the beam.

An antenna efficiency of 55% is assumed.

3.13.2 *Minimum beamwidth of transmitting antenna*

A minimum value of 0.6° for the half-power beamwidth of a transmitting antenna has been agreed on for planning.

3.13.3 *Transmitting antenna reference patterns*

The reference patterns for the co-polar and cross-polar components of satellite transmitting antennae used in preparing the Plan are given in Fig. 6.

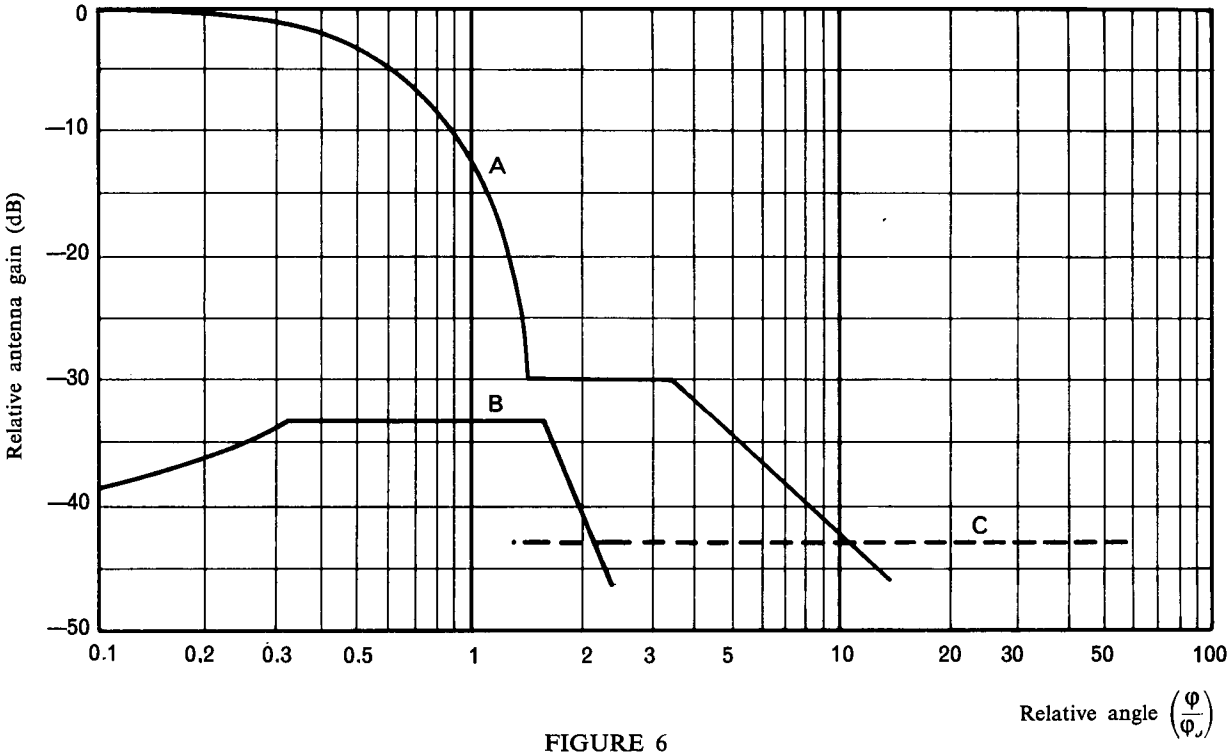
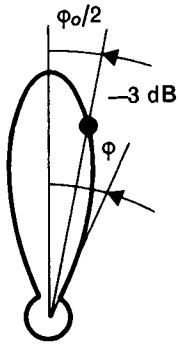


FIGURE 6

Reference patterns for co-polar and cross-polar components for satellite transmitting antennae



Curve A: Co-polar component

$-12\left(\frac{\varphi}{\varphi_o}\right)^2$ for $0 \leqslant \varphi \leqslant 1.58\,\varphi_o$

-30 for $1.58\,\varphi_o < \varphi \leqslant 3.16\,\varphi_o$

$-\left[17.5 + 25\log_{10}\left(\frac{\varphi}{\varphi_o}\right)\right]$ for $3.16\,\varphi_o < \varphi$

after intersection with curve C: as curve C

Curve B: Cross-polar component

$$-\left(40 + 40 \log_{10} \left| \frac{\varphi}{\varphi_o} - 1 \right| \right) \text{ for } 0 \leqslant \varphi \leqslant 0.33\, \varphi_o$$

$$-33 \quad \text{for } 0.33\, \varphi_o < \varphi \leqslant 1.67\, \varphi_o$$

$$-\left(40 + 40 \log_{10} \left| \frac{\varphi}{\varphi_o} - 1 \right| \right) \text{ for } 1.67\, \varphi_o < \varphi$$

after intersection with curve C: as curve C

Curve C: Minus the on-axis gain.

3.14 *Pointing accuracy of satellite antennae*

3.14.1 The deviation of the antenna beam from its nominal pointing direction must not exceed a limit of 0.1° in any direction. Moreover, the angular rotation of a transmitting beam about its axis must not exceed a limit of ± 2°; this latter limit is not necessary for beams of circular cross-section using circular polarization.

3.14.2 The following factors contribute to the total variation in the area on the surface of the Earth illuminated by the satellite beam:

- variations in satellite station-keeping;
- the variations caused by the pointing tolerances, which become more significant for coverage areas with low angles of elevation;
- the effect of the yaw error increases as the beam ellipse lengthens.

3.14.3 The effect of these possible variations should be assessed on a case-by-case basis, since their total effect on the area covered will vary as the geometry of the satellite beam varies, and it would not be reasonable to indicate a single value of shift in the area covered for all situations.

3.14.4 If linear polarization is used for an emission, yaw error makes a significant contribution to increasing the transmitted cross-polarized component; this increases the interference with other carriers which were originally cross-polarized with the emission in question.

3.15 *Limitation of output power in the satellite transmitter*

The output power of a space station in the broadcasting-satellite service must not rise by more than 0.25 dB relative to its nominal value throughout the life of the satellite.

3.16 *Power flux-density at edge of coverage area*

The value of the power flux-density at the edge of the coverage area for 99% of the worst month is:

-103 dB(W/m^2) for individual reception in Regions 1 and 3;

-105 dB(W/m^2) for individual reception in Region 2;

-111 dB(W/m^2) for community reception in all Regions.

3.17 *Difference between the e.i.r.p. directed towards the edge of the coverage area and that on the axis of the beam*

For planning, the absolute value of the difference between the e.i.r.p. directed towards the edge of the coverage area and that on the axis of the beam should preferably be 3 dB.

If the beam area is larger than the coverage area, the value will be less than 3 dB.

3.18 *Use of energy dispersal*

For planning, an energy dispersal value has been adopted which reduces by 22 dB the spectral power flux-density measured in a 4 kHz bandwidth in relation to that measured in the entire bandwidth; this reduction corresponds to a peak-to-peak deviation of 600 kHz.

ANNEX 9

Criteria for Sharing Between Services

1. *Protection requirements for sharing between services in the 12 GHz band*

1.1 The establishment of sharing criteria for the different services using the 12 GHz band should be based on the protection requirements listed in the table below:

Wanted service [1]	Wanted signal [1]	Interfering service [1]	Interfering signal [1]	Protection requirements [2]	
				Total acceptable [3]	Single entry
BSS	TV/FM	BSS, FSS, FS, BS	TV/FM	C/I = 30 dB [4,7]	C/I = 35 dB [4]
FSS	FDM/FM	BSS	TV/FM	N = 500 pW0p [8]	N = 300 pW0p
FSS	TV/FM	BSS, FSS	TV/FM	C/I = 32 dB [5]	C/I = 37 dB [5]
FSS	4φ-PSK	BSS, FSS	TV/FM	C/I = 30 dB	C/I = 35 dB
FSS	FDM/FM	FSS	FDM/FM	N = 1000 pW0p	N = 400 pW0p
FS	FDM/FM	BSS	TV/FM	N = 1000 pW0p	−125 dB (W/m²/4 kHz) [6]
BS	TV/VSB	BSS	TV/FM	C/I = 50 dB	not applicable

Notes: [1] BSS = broadcasting-satellite service
FSS = fixed-satellite service
BS = broadcasting service
FS = fixed service
TV = television
FM = frequency modulation
FDM = frequency division multiplex
4φ-PSK = four-level phase shift keying
VSB = vestigial sideband

[2] These limits include both up-link and down-link contributions. They are expressed:
- in dB for carrier-to-interference ratio;
- in pW0p for noise;
- in dB(W/m²/4 kHz) for power flux-density in a 4 kHz band.

[3] Values in dB are protection ratios for the sum of interfering signals.
Values in pW0p represent interference noise in the worst telephone channels caused by the sum of interfering signals.

[4] For BSS satellites located at the interfaces of Regions 1/3 and Region 2, the C/I ratios should be 1 dB higher.

[5] See CCIR Recommendation 483.

[6] This value may be suitably modified for tropical regions to take account of rain attenuation. Allowance may also be made for polarization discrimination.

[7] C/I = ratio of carrier-to-interfering signal

[8] N = noise power

1.2 The values given as "total acceptable" are those necessary to protect the wanted signal. The "single entry" values are those which should be used as a guide for determining sharing criteria. The total interference from all sources must be calculated, since satisfying the "single entry" criteria for each source may not guarantee that the total interference meets the above protection requirements. A "single entry" is defined as the aggregate of emissions from any one station entering any receiver in the wanted service within the channel to be protected.

1.3 The term C/I refers to the ratio of the wanted-to-interfering power at the interfered-with ground station. The value given shall be exceeded for all but 20% of the worst month for the fixed-satellite service (FSS), and for all but 1% of the worst month for the broadcasting service (BS) and the broadcasting-satellite service (BSS).

1.4 The term N refers to the post-demodulation noise power at a point of 0 dBm0 relative test tone level in any voice channel of an FDM/FM telephony system. The value given shall not be exceeded for more than 20% of the worst month.

1.5 The specified values of protection ratio (i.e., the carrier-to-interference power ratio corresponding to a specified picture quality) are applicable, for planning purposes, to television signals of any of the several television standards.

1.6 For BSS systems with FM/TV as the wanted signal, the protection ratios are given for particular reference conditions, the most important of which are:

a) frequency deviation of the wanted signal (12 MHz peak-to-peak);

b) quality of the wanted service (grade 4.5) [1];

c) co-channel carriers (no carrier-frequency offset).

1.7 If system design is based on conditions other than *a)* and *b)* above, the FM/TV protection ratio is given by:

$$R = 12.5 - 20 \log (D_v/12) - Q + 1.1\, Q^2 \text{ (dB)}$$

where

D_v = nominal peak-to-peak frequency deviation (MHz);

Q = the impairment grade, concerning the interference only.

1.8 When carriers are offset in frequency, condition *c)* does not apply and the adjacent channel protection ratios should be adjusted according to the frequency offset as shown in Fig. 1. For example, at a frequency offset of 20 MHz, the total acceptable ratio of protection against interference to an FM/TV signal from another FM/TV signal is 13 dB. The corresponding "single entry" value is 18 dB.

[1] Impairment grade on a 5-point scale as defined in CCIR Recommendation 500.

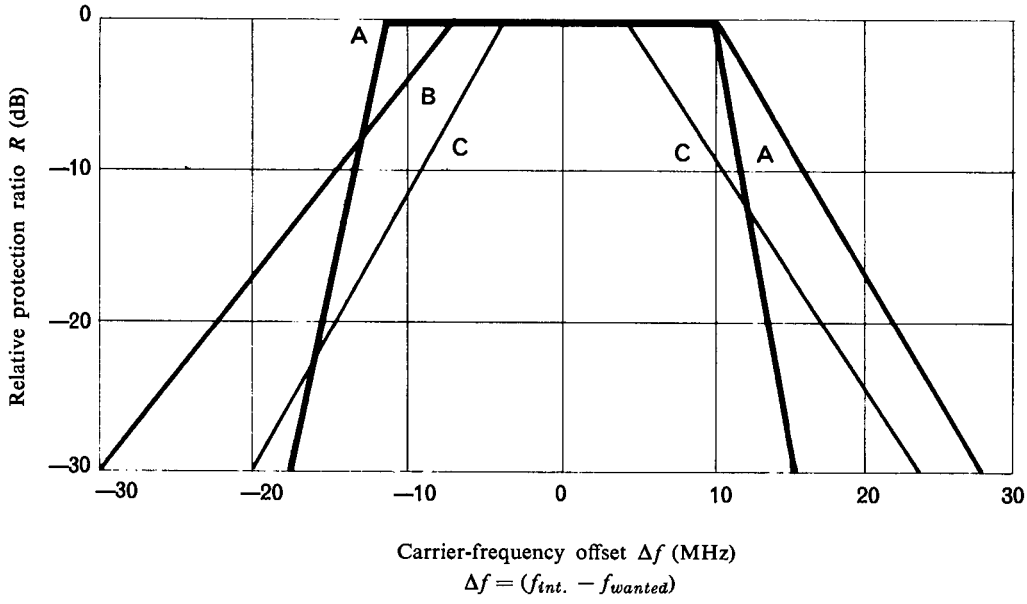


FIGURE 1

Reference case protection ratios relative to co-channel values

Curve A: TV/VSB-wanted, TV/FM interfering

Curve B: TV/FM-wanted, TV/FM interfering

Curve C: TV/FM-wanted, TV/VSB interfering

2. *Reference antenna diameter for a fixed-satellite earth station to be used in calculating interference from space stations in the broadcasting-satellite service*

2.1 For antennae larger than 100 λ (2.5 m) in the fixed-satellite service, the gain of the side-lobes is given by the equation $32-25 \log \theta$, where θ is the angle from the boresight (CCIR Recommendation 465). The side-lobe gain is independent of antenna diameter.

2.2 However, in the case of transmitting earth stations, the level of interference radiated into the up-link of other satellite systems would be inversely proportional to the square of the antenna diameter. In this case, the interference decreases with increasing antenna diameter. Since the 11.7 - 12.2 GHz band is only assigned in the space-to-Earth direction in the fixed-satellite service, this point is not of direct concern to the broadcasting-satellite service.

2.3 Hence it does not appear appropriate, for antenna diameters greater than 100 λ, to specify a minimum antenna diameter for receiving earth stations in the fixed-satellite service sharing the band 11.7 - 12.2 GHz. It may be useful to consider a 4.5 m antenna having an efficiency of 60% and an on-axis gain of 53 dB as typical for the purpose of planning the sharing of this band; however, it should be noted that administrations in Region 2 are considering the use of antennae 3 m to 10 m in diameter.

3. *Use of energy dispersal in the broadcasting-satellite service*

3.1 Artificial energy dispersal is useful in promoting sharing between the broadcasting-satellite service and the other services to which the band is also allocated.

3.2 Such energy dispersal is achieved by the addition at baseband of a triangular waveform to the video signal to form a composite baseband which, in turn, is used to frequency-modulate the up-link carrier. The frequency of the triangular waveform is usually synchronized at a sub-multiple of the television frame frequency. Typical frequencies range from 12.5 Hz to 30 Hz.

3.3 The table below gives the relative reduction in spectral power flux-density in a 4 kHz bandwidth as a function of the peak-to-peak deviation due to the energy dispersal signal. This table is based on the following equation:

$$\left.\begin{array}{l}\text{Relative reduction (in dB)}\\ \text{in a 4 kHz band}\end{array}\right\} = 10 \log \frac{\Delta F_{pp} + \delta f_{rms}}{4}$$

where

ΔF_{pp} = peak-to-peak deviation due to the energy dispersal signal (kHz);

δf_{rms} = rms deviation due to "natural" energy dispersal (kHz).

In compiling the table below, a value of 40 kHz has been assumed for δf_{rms}, on the basis of the value of 10 dB for "natural" dispersion given in Table 4 of CCIR draft Report 631 (Rev. 76).

Reduction of spectral power flux-density relative to a 4 kHz bandwidth

Peak-to-peak deviation (kHz)	Relative reduction (dB)
0	10
100	15.44
200	17.78
300	19.29
400	20.41
500	21.30
600	22.04
700	22.67
800	23.22
900	23.71
1 000	24.15

3.4 The value of energy dispersal for the broadcasting-satellite service has been determined such that the spectral power flux-density measured in a 4 kHz bandwidth is reduced by 22 dB relative to that measured in the entire bandwidth; this reduction corresponds to a peak-to-peak deviation of 600 kHz.

ANNEX 10

Orbital Position Limitations

In applying the procedure of Article 4 for modifications to the Plan, administrations shall observe the following criteria:

1) No broadcasting-satellite serving an area in Region 1 and using a frequency in the band 11.7 - 12.2 GHz shall occupy a nominal orbital position further west than 37° W or further east than 146° E.

2) Any new orbital position in the Plan in the range of orbital arc between 37° W or 10° E associated with a new assignment, or resulting from a modification of an assignment in the Plan, shall be coincident with, or within 1° to the east of, a nominal orbital position in the Plan at the date of entry into force of the Final Acts [1].

[1] Final Acts of the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977, which entered into force on 1 January 1979.

In the event of a modification to an assignment in the Plan, the use of a new nominal orbital position not coincident with any nominal orbital position in the Plan at the date of entry into force of the Final Acts [1] shall be associated with an 8 dB reduction in the e.i.r.p. compared to that appearing in the Plan for the assignment before modification.

ANNEX 11

Method of Calculating the Power Flux-Density Produced in the Territories of Region 2 by Space Stations in the Broadcasting-Satellite Service in Regions 1 and 3

Method of calculation

1. The power flux-density produced, under conditions of free space propagation, at a given point P on the surface of the Earth, by a satellite in the geostationary orbit, can be calculated from the following data:

1.1 nominal orbital position;

1.2 e.i.r.p., dBW;

1.3 characteristics of the antenna beam at half-power points (i.e. the major and minor axes together with the orientation of the corresponding ellipse);

1.4 geographical coordinates of the boresight (B);

1.5 geographical coordinates of the point P.

2. The values relevant to items 1.1 to 1.4 are indicated in the Plan. The point P can be chosen with reference to the objective of calculation. For the calculations which follow, the coordinates of point P have been taken as 35° W and 8° S.

3. To obtain the power flux-density [dB(W/m^2)] produced at P, calculate:

- the distance, d (metres), between the satellite and the point P;
- the spreading attenuation, A for the distance d:

$$A = 10\log \frac{1}{4\pi d^2}$$

- the angle φ, as seen from the satellite, between points B and P;
- φ_o, the half-power beamwidth, in the direction of P (in the case of a circular beam φ_o will be independent of direction);
- the relative antenna gain, δG in dB, for the calculated values of φ and φ_o using the reference pattern for the co-polar component of the satellite transmitting antenna.

Then apply the expression*:

$$\text{pfd [dB(W/m}^2\text{)]} = \text{e.i.r.p.} + \delta G + A$$

to obtain the power flux-density produced at P.

Results

The power flux-densities produced at the coordinates 35° W, 8° S from broadcasting space stations of Regions 1 and 3, to which orbital positions from 37° W to 5° E and channels 1 to 25 have been assigned in the Plan, are given in the following table.

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[1] Final Acts of the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977, which entered into force on 1 January 1979.

* *Note:* In this expression, e.i.r.p. refers to boresight. The relative antenna gain δG is with respect to boresight antenna gain, therefore δG is negative.

Densité surfacique de puissance (DSP) produite dans la Région 2, au point: longitude = 35° Ouest, latitude = 8° Sud

Power flux-density (PFD) produced in Region 2 at a point having: longitude = 35° W, latitude = 8° S

Densidad de flujo de potencia (DFP) producida en la Región 2 en el punto correspondiente a las siguientes coordenadas: longitud = 35° Oeste, latitud = 8° Sur

Position nominale sur l'orbite Nominal orbital position Posición orbital nominal −37,0			Position nominale sur l'orbite Nominal orbital position Posición orbital nominal −31,0			Position nominale sur l'orbite Nominal orbital position Posición orbital nominal −25,0			Position nominale sur l'orbite Nominal orbital position Posición orbital nominal −19,0		
Nº IFRB IFRB No. N.º de la IFRB	Canaux Nos Channel Nos. N.os de los canales	DSP PFD DFP dB(W/m²)	Nº IFRB IFRB No. N.º de la IFRB	Canaux Nos Channel Nos. N.os de los canales	DSP PFD DFP dB(W/m²)	Nº IFRB IFRB No. N.º de la IFRB	Canaux Nos Channel Nos. N.os de los canales	DSP PFD DFP dB(W/m²)	Nº IFRB IFRB No. N.º de la IFRB	Canaux Nos Channel Nos. N.os de los canales	DSP PFD DFP dB(W/m²)
AND 341	4 8 12 16 20	−146,35	AZR 134	3 7 11 15 19	−140,72	ALG 251	2 6 10 14 18	−135,17	AUT 016	4 8 12 16 20	−143,67
CVA 085	23	−141,92	CNR 130	23	−140,93	ALG 252	4 8 12 16 20	−130,26	BEL 018	21 25	−144,97
GMB 302	3 7 11 15 19	−137,17	CPV 301	4 8 12 16 20	−137,14	GHA 108	23	−134,45	BEN 233	3 7 11 15 19	−140,20
GUI 192	1 5 9 13 17	−132,98	CTI 237	22	−132,20	LBY 280	1 5 9 13 17	−138,64	D 087	2 6 10 14 18	−140,17
LIE 253	3 7 11 15 19	−146,00	E 129	23	−137,48	LBY 321	3 7 11 15 19	−139,00	F 093	1 5 9 13 17	−138,67
MCO 116	21 25	−145,75	G 027	4 8 12 16 20	−140,02	MRC 209	21 25	−128,74	GNE 303	23	−141,30
MLI 327	2 6 10 14 18	−132,79	GNP 304	2 6 10 14 18	−137,07	NGR 115	24	−127,77	HOL 213	23	−144,77
MLI 328	4 8 12 16 20	−131,06	HVO 107	21 25	−131,90	TGO 226	2 6 10 14 18	−141,45	I 082	24	−138,57
MTN 223	22	−129,20	IRL 211	2 6 10 14 18	−144,38	TUN 150	22	−141,14	LUX 114	3 7 11 15 19	−145,56
MTN 288	24	−135,68	ISL 049	21 25	−142,72				NIG 119	22	−129,39
SEN 222	21 25	−133,19	LBR 244	3 7 11 15	−137,10				NMB 025	25	−130,13
SMR 311	1 5 9 13 17	−145,92	POR 133	3 7 11 15 19	−142,35				SUI 140	22	−143,10
			SRL 259	23	−136,72				ZAI 322	4 8 12 16 20	−130,94
									ZAI 323	2 6 10 14 18	−130,05

Position nominale sur l'orbite Nominal orbital position Posición orbital nominal −13,0			Position nominale sur l'orbite Nominal orbital position Posición orbital nominal −7,0			Position nominale sur l'orbite Nominal orbital position Posición orbital nominal −1,0			Position nominale sur l'orbite Nominal orbital position Posición orbital nominal +5,0		
Nº IFRB IFRB No. N.º de la IFRB	Canaux Nos Channel Nos. N.os de los canales	DSP PFD DFP dB(W/m²)	Nº IFRB IFRB No. N.º de la IFRB	Canaux Nos Channel Nos. N.os de los canales	DSP PFD DFP dB(W/m²)	Nº IFRB IFRB No. N.º de la IFRB	Canaux Nos Channel Nos. N.os de los canales	DSP PFD DFP dB(W/m²)	Nº IFRB IFRB No. N.º de la IFRB	Canaux Nos Channel Nos. N.os de los canales	DSP PFD DFP dB(W/m²)
AGL 295	23	−129,57	ALB 296	22	−146,49	BOT 297	2 6 10 14 18	−134,49	CYP 086	21 25	−147,47
CAF 258	24	−130,81	EGY 026	4 8 12 16 20	−136,59	BUL 020	4 8 12 16 20	−144,97	DNK 089	12 16 20	−143,42
CME 300	1 5 9 13 17	−132,87	SDN 231	22	−133,37	DDR 216	21 25	−145,17	DNK 090	24	−135,20
COG 235	22	−134,83	SDN 230	23	−136,84	HNG 106	22	−145,07	FNL 103	2 6 10	−138,17
GAB 260	3 7 11 15 19	−136,65	SDN 232	24	−134,23	IFB 135	22	−136,51	FNL 104	22	−135,20
ISR 110	25	−145,02	YUG 148	21 25	−140,79	MOZ 307	4 8 12 16 20	−135,37	GRC 105	3 7 11 15 20	−140,87
MLT 147	4 8 12 16	−148,55	YUG 149	23	−140,79	MWI 308	24	−142,67	IFB 021	21 25	−132,06
STP 241	4 8 12 16 20	−144,70				POL 132	1 5 9 13 17	−142,67	ISL 050	23	−137,87
TCD 143	2 6 10 14 18	−133,89				ROU 136	2 6 10 14 18	−143,17	LSO 305	24	−145,06
						SWZ 313	1 5 9 13 17	−147,30	NOR 120	14 18	−139,42
						TCH 144	3 7 11 15 19	−143,27	S 138	4 8	−138,94
						ZMB 314	3 7 11 15 19	−134,29	TUR 145	1 5 9 13 17	−138,47

NOC **AP15 Mar2** APPENDIX 31

Table of Frequencies to be Used in the Bands Between 4 and 27·5 MHz Allocated Exclusively to the Maritime Mobile Service

(See Article **60**)

In the table, where appropriate, the assignable frequencies in a given band for each usage are:

- indicated by the lowest and highest frequency, in heavy type, assigned in that band;
- regularly spaced, the number of assignable frequencies and the spacing in kHz being indicated in italics.

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Table of Frequencies to be Used in the Bands Between 4 and 27·5 MHz Allocated Exclusively to the Maritime Mobile Service

(kHz)

Bands (MHz)	Limits	Frequencies assignable to ship stations for telephony, duplex operation	Limits	Frequencies assignable to ship and coast stations for telephony, simplex operation	Limits	Frequencies (non-paired) assignable to ship stations for narrow-band direct-printing telegraph and data transmission systems, at speeds not exceeding 100 bauds	Limits	Frequencies assignable to ship stations for wide-band telegraphy, facsimile and special transmission systems	Limits	Frequencies assignable to ship stations for oceanographic data transmission	Limits	Frequencies assignable to ship stations for wide-band telegraphy, facsimile and special transmission systems	Limits	Frequencies (paired) assignable to ship stations for narrow-band direct-printing telegraph and data transmission systems, at speeds not exceeding 100 bauds	Limits	Frequencies (non-paired) assignable to ship stations for narrow-band direct-printing telegraph and data transmission systems, at speeds not exceeding 100 bauds	Limits
		*a)**		*a)*		*b)*				*c)*				*d)*		*b)*	
4	4 063	**4 064·4** - - - **4 141·9** *26 frequencies spaced 3·1*	4 143·6	**4 145** *1 frequency*	4 146·6		4 146·6	**4 148·6** - - - **4 160·6** *4 frequencies spaced 4*	4 162·5	**4 162·9** - - - **4 165·6** *10 frequencies spaced 0·3*	4 166	**4 168** *1 frequency*	4 170	**4 170·5** - - - **4 177** *14 frequencies spaced 0·5*	4 177·25	**4 177·5** - - - **4 179·5** *5 frequencies spaced 0·5*	4 179·75
6	6 200	**6 201·4** - - - **6 216·9** *6 frequencies spaced 3·1*	6 218·6	**6 220** and **6 223** *2 frequencies spaced 3*	6 224·6		6 224·6	**6 226·6** - - - **6 242·6** *5 frequencies spaced 4*	6 244·5	**6 244·9** - - - **6 247·6** *10 frequencies spaced 0·3*	6 248	**6 250 and 6 254** *2 frequencies spaced 4*	6 256	**6 256·5** - - - **6 267·5** *23 frequencies spaced 0·5*	6 267·75	**6 268** - - - **6 269·5** *4 frequencies spaced 0·5*	6 269·75
8	8 195	**8 196·4** - - - **8 289·4** *31 frequencies spaced 3·1*	8 291·1	**8 292·5** and **8 295·6** *2 frequencies spaced 3.1*	8 297·3	**8 297·6** - - - **8 299·6** *5 frequencies spaced 0·5*	8 300	**8 302** - - - **8 326** *7 frequencies spaced 4*	8 328	**8 328·4** - - - **8 331·1** *10 frequencies spaced 0·3*	8 331·5	**8 333·5** - - - **8 341·5** *3 frequencies spaced 4*	8 343·5	**8 344** - - - **8 357** *27 frequencies spaced 0·5*	8 357·25	**8 357·5** *1 frequency*	8 357·75
12	12 330	**12 331·4** - - - **12 427·5** *32 frequencies spaced 3·1*	12 429·2	**12 430·6** - - - **12 436·8** *3 frequencies spaced 3·1*	12 439·5		12 439·5	**12 441·5** - - - **12 477·5** *10 frequencies spaced 4*	12 479·5	**12 479·9** - - - **12 482·6** *10 frequencies spaced 0·3*	12 483	**12 485** and **12 489** *2 frequencies spaced 4*	12 491	**12 491·5** - - - **12 519·5** *57 frequencies spaced 0·5*	12 519·75	**12 520** - - - **12 526·5** *14 frequencies spaced 0·5*	12 526·75
16	16 460	**16 461·4** - - - **16 585·4** *41 frequencies spaced 3·1*	16 587·1	**16 588·5** - - - **16 594·7** *3 frequencies spaced 3·1*	16 596·4		16 596·4	**16 598·4** - - - **16 634·4** *10 frequencies spaced 4*	16 636·5	**16 636·9** - - - **16 639·6** *10 frequencies spaced 0·3*	16 640	**16 642** - - - **16 658** *5 frequencies spaced 4*	16 660	**16 660·5** - - - **16 694·5** *69 frequencies spaced 0·5*	16 694·75	**16 695** - - - **16 705·5** *22 frequencies spaced 0·5*	16 705·8
22	22 000	**22 001·4** - - - **22 122·3** *40 frequencies spaced 3·1*	22 124	**22 125·4** - - - **22 137·8** *5 frequencies spaced 3·1*	22 139·5		22 139·5	**22 142** - - - **22 158** *5 frequencies spaced 4*	22 160·5	**22 160·9** - - - **22 163·6** *10 frequencies spaced 0·3*	22 164	**22 166** - - - **22 190** *7 frequencies spaced 4*	22 192	**22 192·5** - - - **22 225·5** *67 frequencies spaced 0·5*	22 225·75	**22 226** and **22 226·5** *2 frequencies spaced 0·5*	22 227

* For notes *a)* to *h)*, see page AP31-7.

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Table of Frequencies to Be Used in the Bands Between 4 and 27.5 MHz Allocated Exclusively to the Maritime Mobile Service

(kHz)
(concluded)

Bands (MHz)	Limits	Working frequencies assignable to ship stations for A1A or A1B Morse telegraphy	Limits	Calling frequencies assignable to ship stations for A1A or A1B Morse telegraphy	Limits	Frequencies assignable to ship stations for digital selective calling	Limits	Working frequencies assignable to ship stations for A1A or A1B Morse telegraphy	Limits	Frequencies assignable to coast stations for wide-band and A1A or A1B Morse telegraphy, facsimile, special and data transmission systems and direct-printing telegraphy systems	Limits	Frequencies (paired) assignable to coast stations, narrow-band direct-printing telegraph and data transmission systems, at speeds not exceeding 100 bauds	Limits	Frequencies assignable to coast stations for digital selective calling	Limits	Frequencies assignable to coast stations for telephony, duplex operation	Limits
		e) *		*g) h)*				*e) f)*				*d)*				*a)*	
4	4 179·75		4 179·75		4 187·2	**4 187·6** *1 frequency*	4 188	**4 188·5** - - - **4 219** *62 frequencies spaced 0·5*	4 219·4		4 349·4	**4 350** - - - **4 356·5** *14 frequencies spaced 0·5*	4 356·75	**4 357** *1 frequency*	4 357·4	**4 358·8** - - - **4 436·3** *26 frequencies spaced 3·1*	4 438
6	6 269·75		6 269·75		6 280·8	**6 281·4** *1 frequency*	6 282	**6 282·75** - - - **6 324·75** *57 frequencies spaced 0·75*	6 325·4		6 493·9	**6 494·5** - - - **6 505·5** *23 frequencies spaced 0·5*	6 505·75	**6 506** *1 frequency*	6 506·4	**6 507·8** - - - **6 523·3** *6 frequencies spaced 3·1*	6 525
8	8 357·75	**8 358·5** - - - **8 359·5** *3 frequencies spaced 0·5*	8 359·75		8 374·4	**8 375·2** *1 frequency*	8 376	**8 377** - - - **8 435** *117 frequencies spaced 0·5*	8 435·4		8 704·4	**8 705** - - - **8 718** *27 frequencies spaced 0·5*	8 718·25	**8 718·5** *1 frequency*	8 718·9	**8 720·3** - - - **8 813·3** *31 frequencies spaced 3·1*	8 815
12	12 526·75	**12 528** - - - **12 538·5** *22 frequencies spaced 0·5*	12 539·6		12 561·6	**12 562·3** and **12 562·8** *2 frequencies spaced 0·5*	12 564	**12 565·5** - - - **12 651** *172 frequencies spaced 0·5*	12 652·3		13 070·8	**13 071·5** - - - **13 099·5** *57 frequencies spaced 0·5*	13 099·75	**13 100** and **13 100·5** *2 frequencies spaced 0·5*	13 100·8	**13 102·2** - - - **13 198·3** *32 frequencies spaced 3·1*	13 200
16	16 705·8	**16 707** - - - **16 719** *25 frequencies spaced 0·5*	16 719·8		16 748·8	**16 749·9** and **16 750·4** *2 frequencies spaced 0·5*	16 752	**16 754** - - - **16 858** *209 frequencies spaced 0·5*	16 859·4		17 196·9	**17 197·5** - - - **17 231·5** *69 frequencies spaced 0·5*	17 231·75	**17 232** and **17 232·5** *2 frequencies spaced 0·5*	17 232·9	**17 234·3** - - - **17 358·3** *41 frequencies spaced 3·1*	17 360
22	22 227		22 227		22 247	**22 248** and **22 248·5** *2 frequencies spaced 0·5*	22 250	**22 250·5** - - - **22 309** *118 frequencies spaced 0·5*	22 310·5		22 561	**22 561·5** - - - **22 594·5** *67 frequencies spaced 0·5*	22 594·75	**22 595** and **22 595·5** *2 frequencies spaced 0·5*	22 596	**22 597·4** - - - **22 718·3** *40 frequencies spaced 3·1*	22 720

* For notes *a)* to *h)*, see page AP31-7.

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Table of Frequencies assignable to Ship Stations in the 25 MHz Band

(kHz)

Limit	Calling frequencies assignable to ship stations for A1A or A1B Morse telegraphy	Limit	Frequencies (non-paired) assignable to ship stations for narrow-band direct-printing telegraph and data transmission systems, at speeds not exceeding 100 bauds	Limit	Working frequencies assignable to ship stations for A1A or A1B Morse telegraphy	Limit
	g)		*b)*		*e)*	
25 070		25 076	**25 076·3- - -25 089·8** *28 frequencies spaced 0·5*	25 090·1	**25 091·5- - -25 108·5** *35 frequencies spaced 0·5*	25 110

a) See Appendix **16**.

b) See Appendix **33**.

c) The frequency bands may also be used by buoy stations for oceanographic data transmission and by stations interrogating these buoys, in accordance with the conditions set forth in Resolution **314**.

d) See Appendix **32**.

e) In the frequency bands to be used by ship stations for A1A Morse telegraphy working, at speeds not exceeding 40 bauds, administrations may assign additional frequencies interleaved between the extreme assignable frequencies. Any frequencies so assigned shall be multiples of 100 Hz. Administrations shall ensure a uniform distribution of such assignments within the bands and avoid, as far as possible, assigning the two frequencies at ± 100 Hz from each of the harmonically related frequencies indicated in the first line of each series in Appendix **35**.

f) See Appendix **35**.

g) See Appendix **34**.

h) For the conditions of use of 8 364 kHz, see No. **2988**.

NOC **AP15A** APPENDIX 32

Channelling of the Maritime Mobile Bands Between 4 000 and 23 000 kHz Used for Narrow-Band Direct-Printing Telegraphy and Data Systems (Frequencies Paired)

(See Article **60** and Resolution **300**)

Each coast station which uses paired frequencies is assigned one or more frequency pairs from the following series; each pair consists of a transmitting and a receiving frequency.

Table of Frequencies for Two-Frequency Operation by Coast Stations
(kHz)

Series No.	4 MHz Band		6 MHz Band		8 MHz Band	
	Transmit	Receive	Transmit	Receive	Transmit	Receive
1	4 350	4 170·5	6 494·5	6 256·5	8 705	8 344
2	4 350·5	4 171	6 495	6 257	8 705·5	8 344·5
3	4 351	4 171·5	6 495·5	6 257·5	8 706	8 345
4	4 351·5	4 172	6 496	6 258	8 706·5	8 345·5
5	4 352	4 172·5	6 496·5	6 258·5	8 707	8 346
6	4 352·5	4 173	6 497	6 259	8 707·5	8 346·5
7	4 353	4 173·5	6 497·5	6 259·5	8 708	8 347
8	4 353·5	4 174	6 498	6 260	8 708·5	8 347·5
9	4 354	4 174·5	6 498·5	6 260·5	8 709	8 348
10	4 354·5	4 175	6 499	6 261	8 709·5	8 348·5
11	4 355	4 175·5	6 499·5	6 261·5	8 710	8 349
12	4 355·5	4 176	6 500	6 262	8 710·5	8 349·5
13	4 356	4 176·5	6 500·5	6 262·5	8 711	8 350
14	4 356·5	4 177	6 501	6 263	8 711·5	8 350·5
15			6 501·5	6 263·5	8 712	8 351
16			6 502	6 264	8 712·5	8 351·5
17			6 502·5	6 264·5	8 713	8 352
18			6 503	6 265	8 713·5	8 352·5
19			6 503·5	6 265·5	8 714	8 353
20			6 504	6 266	8 714·5	8 353·5
21			6 504·5	6 266·5	8 715	8 354
22			6 505	6 267	8 715·5	8 354·5
23			6 505·5	6 267·5	8 716	8 355
24					8 716·5	8 355·5
25					8 717	8 356
26					8 717·5	8 356·5
27					8 718	8 357

Table of Frequencies for Two-Frequency Operation by Coast Stations
(kHz)

Series No.	12 MHz Band		16 MHz Band		22 MHz Band	
	Transmit	Receive	Transmit	Receive	Transmit	Receive
1	13 071·5	12 491·5	17 197·5	16 660·5	22 561·5	22 192·5
2	13 072	12 492	17 198	16 661	22 562	22 193
3	13 072·5	12 492·5	17 198·5	16 661·5	22 562·5	22 193·5
4	13 073	12 493	17 199	16 662	22 563	22 194
5	13 073·5	12 493·5	17 199·5	16 662·5	22 563·5	22 194·5
6	13 074	12 494	17 200	16 663	22 564	22 195
7	13 074·5	12 494·5	17 200·5	16 663·5	22 564·5	22 195·5
8	13 075	12 495	17 201	16 664	22 565	22 196
9	13 075·5	12 495·5	17 201·5	16 664.5	22 565·5	22 196·5
10	13 076	12 496	17 202	16 665	22 566	22 197
11	13 076·5	12 496·5	17 202·5	16 665·5	22 566·5	22 197·5
12	13 077	12 497	17 203	16 666	22 567	22 198
13	13 077·5	12 497·5	17 203·5	16 666·5	22 567·5	22 198·5
14	13 078	12 498	17 204	16 667	22 568	22 199
15	13 078·5	12 498·5	17 204·5	16 667·5	22 568·5	22 199·5
16	13 079	12 499	17 205	16 668	22 569	22 200
17	13 079·5	12 499·5	17 205·5	16 668·5	22 569·5	22 200·5
18	13 080	12 500	17 206	16 669	22 570	22 201
19	13 080·5	12 500·5	17 206·5	16 669·5	22 570·5	22 201·5
20	13 081	12 501	17 207	16 670	22 571	22 202
21	13 081·5	12 501·5	17 207·5	16 670·5	22 571·5	22 202·5
22	13 082	12 502	17 208	16 671	22 572	22 203
23	13 082·5	12 502·5	17 208·5	16 671·5	22 572·5	22 203·5
24	13 083	12 503	17 209	16 672	22 573	22 204
25	13 083·5	12 503·5	17 209·5	16 672·5	22 573·5	22 204·5
26	13 084	12 504	17 210	16 673	22 574	22 205
27	13 084·5	12 504·5	17 210·5	16 673·5	22 574·5	22 205·5

Table of Frequencies for Two-Frequency Operation by Coast Stations
(kHz)

Series No.	12 MHz Band		16 MHz Band		22 MHz Band	
	Transmit	Receive	Transmit	Receive	Transmit	Receive
28	13 085	12 505	17 211	16 674	22 575	22 206
29	13 085·5	12 505·5	17 211·5	16 674·5	22 575·5	22 206·5
30	13 086	12 506	17 212	16 675	22 576	22 207
31	13 086·5	12 506·5	17 212·5	16 675·5	22 576·5	22 207·5
32	13 087	12 507	17 213	16 676	22 577	22 208
33	13 087·5	12 507·5	17 213·5	16 676·5	22 577·5	22 208·5
34	13 088	12 508	17 214	16 677	22 578	22 209
35	13 088·5	12 508·5	17 214·5	16 677·5	22 578·5	22 209·5
36	13 089	12 509	17 215	16 678	22 579	22 210
37	13 089·5	12 509·5	17 215·5	16 678·5	22 579·5	22 210·5
38	13 090	12 510	17 216	16 679	22 580	22 211
39	13 090·5	12 510·5	17 216·5	16 679·5	22 580·5	22 211·5
40	13 091	12 511	17 217	16 680	22 581	22 212
41	13 091·5	12 511·5	17 217·5	16 680·5	22 581·5	22 212·5
42	13 092	12 512	17 218	16 681	22 582	22 213
43	13 092·5	12 512·5	17 218·5	16 681·5	22 582·5	22 213·5
44	13 093	12 513	17 219	16 682	22 583	22 214
45	13 093·5	12 513·5	17 219·5	16 682·5	22 583·5	22 214·5
46	13 094	12 514	17 220	16 683	22 584	22 215
47	13 094·5	12 514·5	17 220·5	16 683·5	22 584·5	22 215·5
48	13 095	12 515	17 221	16 684	22 585	22 216
49	13 095·5	12 515·5	17 221·5	16 684·5	22 585·5	22 216·5
50	13 096	12 516	17 222	16 685	22 586	22 217
51	13 096·5	12 516·5	17 222·5	16 685·5	22 586·5	22 217·5
52	13 097	12 517	17 223	16 686	22 587	22 218
53	13 097·5	12 517·5	17 223·5	16 686·5	22 587·5	22 218·5
54	13 098	12 518	17 224	16 687	22 588	22 219
55	13 098·5	12 518·5	17 224·5	16 687·5	22 588·5	22 219·5

Table of Frequencies for Two-Frequency Operation by Coast Stations

(kHz)

Series No.	12 MHz Band		16 MHz Band		22 MHz Band	
	Transmit	Receive	Transmit	Receive	Transmit	Receive
56	13 099	12 519	17 225	16 688	22 589	22 220
57	13 099·5	12 519·5	17 225·5	16 688·5	22 589·5	22 220·5
58			17 226	16 689	22 590	22 221
59			17 226·5	16 689·5	22 590·5	22 221·5
60			17 227	16 690	22 591	22 222
61			17 227·5	16 690·5	22 591·5	22 222·5
62			17 228	16 691	22 592	22 223
63			17 228·5	16 691·5	22 592·5	22 223·5
64			17 229	16 692	22 593	22 224
65			17 229·5	16 692·5	22 593·5	22 224·5
66			17 230	16 693	22 594	22 225
67			17 230·5	16 693·5	22 594·5	22 225·5
68			17 231	16 694		
69			17 231·5	16 694·5		

NOC **AP15B** APPENDIX 33

Channelling of the Maritime Mobile Bands Between 4 000 and 27 500 kHz Used for Narrow-Band Direct-Printing Telegraphy and Data Transmission (Non-Paired)

(See Article **60** and Resolution **301**)

One or more frequencies are assigned to each ship station as transmitting frequencies.

Table of Ship Station Transmitting Frequencies

(kHz)

	Frequency Bands						
	4 MHz	6 MHz	8 MHz	12 MHz	16 MHz	22 MHz	25 MHz
1	4 177·5	6 268	8 297·6	12 520	16 695	22 226	25 076·3
2	4 178	6 268·5	8 298·1	12 520·5	16 695·5	22 226·5	25 076·8
3	4 178·5	6 269	8 298·6	12 521	16 696		25 077·3
4	4 179	6 269·5	8 299·1	12 521·5	16 696·5		25 077·8
5	4 179·5		8 299·6	12 522	16 697		25 078·3
6			8 357·5	12 522·5	16 697·5		25 078·8
7				12 523	16 698		25 079·3
8				12 523·5	16 698·5		25 079·8
9				12 524	16 699		25 080·3
10				12 524·5	16 699·5		25 080·8
11				12 525	16 700		25 081·3
12				12 525·5	16 700·5		25 081·8
13				12 526	16 701		25 082·3
14				12 526·5	16 701·5		25 082·8
15					16 702		25 083·3
16					16 702·5		25 083·8
17					16 703		25 084·3
18					16 703·5		25 084·8
19					16 704		25 085·3
20					16 704·5		25 085·8
21					16 705		25 086·3
22					16 705·5		25 086·8
23							25 087·3
24							25 087·8
25							25 088·3
26							25 088·8
27							25 089·3
28							25 089·8

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APPENDIX 34

Table of Calling Frequencies Assignable to Ship Stations for A1A Morse Telegraphy at Speeds Not Exceeding 40 Bauds

(See Article **60** and Resolution **312**)

(kHz)

Group	Channel series	4 MHz Band (Ch. width 0·4) *a)*	6 MHz Band (Ch. width 0·6) *a)*	8 MHz Band (Ch. width 0·8) *a)*	12 MHz Band (Ch. width 1·2) *a)*	16 MHz Band (Ch. width 1·6) *a)*	Channel series (22 MHz)	22 MHz Band (Ch. width 2·0) *b)*	25 MHz Band (Ch. width 2·0) *b)*
I	1	4 180 - 4 180·4	6 270 - 6 270·6	8 360 - 8 360·8	12 540 - 12 541·2	16 720 - 16 721·6			Channel A
	2	4 180·4 - 4 180·8	6 270·6 - 6 271·2	8 360·8 - 8 361·6	12 541·2 - 12 542·4	16 721·6 - 16 723·2	1	22 227 - 22 229	
	3	4 180·8 - 4 181·2	6 271·2 - 6 271·8	8 361·6 - 8 362·4	12 542·4 - 12 543·6	16 723·2 - 16 724·8	2	22 229 - 22 231	25 070 - 25 072
	4	4 181·2 - 4 181·6	6 271·8 - 6 272·4	8 362·4 - 8 363·2	12 543·6 - 12 544·8	16 724·8 - 16 726·4			Groups I and II
Common Ch.	5	4 181·6 - 4 182	6 272·4 - 6 273	8 363·2 - 8 364	12 544·8 - 12 546	16 726·4 - 16 728	3	22 231 - 22 233	Common Channel C
Common Ch.	6	4 182 - 4 182·4	6 273 - 6 273·6	8 364 - 8 364·8	12 546 - 12 547·2	16 728 - 16 729·6	4	22 233 - 22 235	25 072 - 25 074
II	7	4 182·4 - 4 182·8	6 273·6 - 6 274·2	8 364·8 - 8 365·6	12 547·2 - 12 548·4	16 729·6 - 16 731·2			Channel A
	8	4 182·8 - 4 183·2	6 274·2 - 6 274·8	8 365·6 - 8 366·4	12 548·4 - 12 549·6	16 731·2 - 16 732·8	5	22 235 - 22 237	
	9	4 183·2 - 4 183·6	6 274·8 - 6 275·4	8 366·4 - 8 367·2	12 549·6 - 12 550·8	16 732·8 - 16 734·4	6	22 237 - 22 239	25 070 - 25 072
	10	4 183·6 - 4 184	6 275·4 - 6 276	8 367·2 - 8 368	12 550·8 - 12 552	16 734·4 - 16 736			Groups I and II
III	11	4 184 - 4 184·4	6 276 - 6 276·6	8 368 - 8 368·8	12 552 - 12 553·2	16 736 - 16 737·6			
	12	4 184·4 - 4 184·8	6 276·6 - 6 277·2	8 368·8 - 8 369·6	12 553·2 - 12 554·4	16 737·6 - 16 739·2	7	22 239 - 22 241	
	13	4 184·8 - 4 185·2	6 277·2 - 6 277·8	8 369·6 - 8 370·4	12 554·4 - 12 555·6	16 739·2 - 16 740·8	8	22 241 - 22 243	Channel B
	14	4 185·2 - 4 185·6	6 277·8 - 6 278·4	8 370·4 - 8 371·2	12 555·6 - 12 556·8	16 740·8 - 16 742·4			
IV	15	4 185·6 - 4 186	6 278·4 - 6 279	8 371·2 - 8 372	12 556·8 - 12 558	16 742·4 - 16 744			25 074 - 25 076
	16	4 186 - 4 186·4	6 279 - 6 279·6	8 372 - 8 372·8	12 558 - 12 559·2	16 744 - 16 745·6	9	22 243 - 22 245	
	17	4 186·4 - 4 186·8	6 279·6 - 6 280·2	8 372·8 - 8 373·6	12 559·2 - 12 560·4	16 745·6 - 16 747·2	10	22 245 - 22 247	Groups III and IV
	18	4 186·8 - 4 187·2	6 280·2 - 6 280·8	8 373·6 - 8 374·4	12 560·4 - 12 561·6	16 747·2 - 16 748·8			

a) Administrations should assign the centre frequency within each channel of the appropriate group and/or common channel to ship stations equipped only with crystal-controlled oscillators and using harmonic relationships for A1A Morse telegraphy calling. However, administrations may subdivide each appropriate group channel and common channels into specific calling frequencies commencing 100 Hz from the lower end of the channel and ending 100 Hz from the upper end (see examples below) and assign these discrete frequencies to ships with synthesized transmitters. Administrations shall avoid, as far as possible, assigning the two frequencies at ± 100 Hz from each of the harmonically related centre frequencies in this Appendix.

Examples of subdivision of channels (centre frequencies in italics)

4/1/a	4 180·1	6/1/a	6 270·1	8/1/a	8 360·1	12/1/a	12 540·1	16/1/a	16 720·1
4/1/b	*4 180·2*	6/1/b	6 270·2	8/1/b	8 360·2	12/1/b	12 540·2	16/1/b	16 720·2
4/1/c	4 180·3	6/1/c	*6 270·3*	8/1/c	8 360·3	12/1/c	12 540·3	16/1/c	16 720·3
		6/1/d	6 270·4	8/1/d	*8 360·4*	12/1/d	12 540·4	16/1/d	16 720·4
		6/1/e	6 270·5	8/1/e	8 360·5	12/1/e	12 540·5	16/1/e	16 720·5
				8/1/f	8 360·6	12/1/f	*12 540·6*	16/1/f	16 720·6
				8/1/g	8 360·7	12/1/g	12 540·7	16/1/g	16 720·7
						12/1/h	12 540·8	16/1/h	*16 720·8*
						12/1/i	12 540·9	16/1/i	16 720·9
						12/1/j	12 541·0	16/1/j	16 721·0
						12/1/k	12 541·1	16/1/k	16 721·1
								16/1/l	16 721·2
								16/1/m	16 721·3
								16/1/n	16 721·4
								16/1/o	16 721·5

b) In the 22 MHz and 25 MHz bands the channels are not harmonically related to those in the 4 to 16 MHz bands. However, the principle of subdivision of channels into specific calling frequencies commencing 100 Hz from the lower end of the channel and ending 100 Hz from the upper end applies.

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APPENDIX 35

Table of Working Frequencies, in kHz, Assignable to Ship Stations for A1A Morse Telegraphy at Speeds Not Exceeding 40 Bauds

(See also Note *e)* to Appendix 31)

Note: The first line in each series up to and including series No. 53 indicates the harmonically related assignable frequencies in the 4, 6, 8, 12 and 16 MHz bands. The other frequencies are not necessarily harmonically related.

(kHz)

Series No.	Bands				
	4 MHz	6 MHz	8 MHz	12 MHz	16 MHz
1.	4 188·5	6 282·75	8 377	12 565·5	16 754
a)				12 566	16 754·5
b)			8 377·5		16 755
c)				12 566·5	16 755·5
2.	4 189	6 283·5	8 378	12 567	16 756
a)				12 567·5	16 756·5
b)			8 378·5		16 757
c)				12 568	16 757·5
3.	4 189·5	6 284·25	8 379	12 568·5	16 758
a)				12 569	16 758·5
b)			8 379·5		16 759
c)				12 569·5	16 759·5
4.	4 190	6 285	8 380	12 570	16 760
a)				12 570·5	16 760·5
b)			8 380·5		16 761
c)				12 571	16 761·5
5.	4 190·5	6 285·75	8 381	12 571·5	16 762
a)				12 572	16 762·5
b)			8 381·5		16 763
c)				12 572·5	16 763·5
6.	4 191	6 286·5	8 382	12 573	16 764
a)				12 573·5	16 764·5
b)			8 382·5		16 765
c)				12 574	16 765·5
7.	4 191·5	6 287·25	8 383	12 574·5	16 766
a)				12 575	16 766·5
b)			8 383·5		16 767
c)				12 575·5	16 767·5
8.	4 192	6 288	8 384	12 576	16 768
a)				12 576·5	16 768·5
b)			8 384·5		16 769
c)				12 577	16 769·5
9.	4 192·5	6 288·75	8 385	12 577·5	16 770
a)				12 578	16 770·5
b)			8 385·5		16 771
c)				12 578·5	16 771·5
10.	4 193	6 289·5	8 386	12 579	16 772
a)				12 579·5	16 772·5
b)			8 386·5		16 773
c)				12 580	16 773·5

(kHz)

Series No.	Bands				
	4 MHz	6 MHz	8 MHz	12 MHz	16 MHz
11.	4 193·5	6 290·25	8 387	12 580·5	16 774
a)				12 581	16 774·5
b)			8 387·5		16 775
c)				12 581·5	16 775·5
12.	4 194	6 291	8 388	12 582	16 776
a)				12 582·5	16 776·5
b)			8 388·5		16 777
c)				12 583	16 777·5
13.	4 194·5	6 291·75	8 389	12 583·5	16 778
a)				12 584	16 778·5
b)			8 389·5		16 779
c)				12 584·5	16 779·5
14.	4 195	6 292·5	8 390	12 585	16 780
a)				12 585·5	16 780·5
b)			8 390·5		16 781
c)				12 586	16 781·5
15.	4 195·5	6 293·25	8 391	12 586·5	16 782
a)				12 587	16 782·5
b)			8 391·5		16 783
c)				12 587·5	16 783·5
16.	4 196	6 294	8 392	12 588	16 784
a)				12 588·5	16 784·5
b)			8 392·5		16 785
c)				12 589	16 785·5
17.	4 196·5	6 294·75	8 393	12 589·5	16 786
a)				12 590	16 786·5
b)			8 393·5		16 787
c)				12 590·5	16 787·5
18.	4 197	6 295·5	8 394	12 591	16 788
a)				12 591·5	16 788·5
b)			8 394·5		16 789
c)				12 592	16 789·5
19.	4 197·5	6 296·25	8 395	12 592·5	16 790
a)				12 593	16 790·5
b)			8 395·5		16 791
c)				12 593·5	16 791·5
20.	4 198	6 297	8 396	12 594	16 792
a)				12 594·5	16 792·5
b)			8 396·5		16 793
c)				12 595	16 793·5

(kHz)

Series No.	Bands				
	4 MHz	6 MHz	8 MHz	12 MHz	16 MHz
21.	4 198·5	6 297·75	8 397	12 595·5	16 794
a)				12 596	16 794·5
b)			8 397·5		16 795
c)				12 596·5	16 795·5
22.	4 199	6 298·5	8 398	12 597	16 796
a)				12 597·5	16 796·5
b)			8 398·5		16 797
c)				12 598	16 797·5
23.	4 199·5	6 299·25	8 399	12 598·5	16 798
a)				12 599	16 798·5
b)			8 399·5		16 799
c)				12 599·5	16 799·5
24.	4 200	6 300	8 400	12 600	16 800
a)				12 600·5	16 800·5
b)			8 400·5		16 801
c)				12 601	16 801·5
25.	4 200·5	6 300·75	8 401	12 601·5	16 802
a)				12 602	16 802·5
b)			8 401·5		16 803
c)				12 602·5	16 803·5
26.	4 201	6 301·5	8 402	12 603	16 804
a)				12 603·5	16 804·5
b)			8 402·5		16 805
c)				12 604	16 805·5
27.	4 201·5	6 302·25	8 403	12 604·5	16 806
a)				12 605	16 806·5
b)			8 403·5		16 807
c)				12 605·5	16 807·5
28.	4 202	6 303	8 404	12 606	16 808
a)				12 606·5	16 808·5
b)			8 404·5		16 809
c)				12 607	16 809·5
29.	4 202·5	6 303·75	8 405	12 607·5	16 810
a)				12 608	16 810·5
b)			8 405·5		16 811
c)				12 608·5	16 811·5
30.	4 203	6 304·5	8 406	12 609	16 812
a)				12 609·5	16 812·5
b)			8 406·5		16 813
c)				12 610	16 813·5

(kHz)

Series No.	Bands				
	4 MHz	6 MHz	8 MHz	12 MHz	16 MHz
31.	4 203·5	6 305·25	8 407	12 610·5	16 814
a)				12 611	16 814·5
b)			8 407·5		16 815
c)				12 611·5	16 815·5
32.	4 204	6 306	8 408	12 612	16 816
a)				12 612·5	16 816·5
b)			8 408·5		16 817
c)				12 613	16 817·5
33.	4 204·5	6 306·75	8 409	12 613·5	16 818
a)				12 614	16 818·5
b)			8 409·5		16 819
c)				12 614·5	16 819·5
34.	4 205	6 307·5	8 410	12 615	16 820
a)				12 615·5	16 820·5
b)			8 410·5		16 821
c)				12 616	16 821·5
35.	4 205·5	6 308·25	8 411	12 616·5	16 822
a)				12 617	16 822·5
b)			8 411·5		16 823
c)				12 617·5	16 823·5
36.	4 206	6 309	8 412	12 618	16 824
a)				12 618·5	16 824·5
b)			8 412·5		16 825
c)				12 619	16 825·5
37.	4 206·5	6 309·75	8 413	12 619·5	16 826
a)				12 620	16 826·5
b)			8 413·5		16 827
c)				12 620·5	16 827·5
38.	4 207	6 310·5	8 414	12 621	16 828
a)				12 621·5	16 828·5
b)			8 414·5		16 829
c)				12 622	16 829·5
39.	4 207·5	6 311·25	8 415	12 622·5	16 830
a)				12 623	16 830·5
b)			8 415·5		16 831
c)				12 623·5	16 831·5
40.	4 208	6 312	8 416	12 624	16 832
a)				12 624·5	16 832·5
b)			8 416·5		16 833
c)				12 625	16 833·5

(kHz)

Series No.	Bands				
	4 MHz	6 MHz	8 MHz	12 MHz	16 MHz
41.	4 208·5	6 312·75	8 417	12 625·5	16 834
a)				12 626	16 834·5
b)			8 417·5		16 835
c)				12 626·5	16 835·5
42.	4 209	6 313·5	8 418	12 627	16 836
a)				12 627·5	16 836·5
b)			8 418·5		16 837
c)				12 628	16 837·5
43.	4 209·5	6 314·25	8 419	12 628·5	16 838
a)				12 629	16 838·5
b)			8 419·5		16 839
c)				12 629·5	16 839·5
44.	4 210	6 315	8 420	12 630	16 840
a)				12 630·5	16 840·5
b)			8 420·5		16 841
c)				12 631	16 841·5
45.	4 210·5	6 315·75	8 421	12 631·5	16 842
a)				12 632	16 842·5
b)			8 421·5		16 843
c)				12 632·5	16 843·5
46.	4 211	6 316·5	8 422	12 633	16 844
a)				12 633·5	16 844·5
b)			8 422·5		16 845
c)				12 634	16 845·5
47.	4 211·5	6 317·25	8 423	12 634·5	16 846
a)				12 635	16 846·5
b)			8 423·5		16 847
c)				12 635·5	16 847·5
48.	4 212	6 318	8 424	12 636	16 848
a)				12 636·5	16 848·5
b)			8 424·5		16 849
c)				12 637	16 849·5
49.	4 212·5	6 318·75	8 425	12 637·5	16 850
a)				12 638	16 850·5
b)			8 425·5		16 851
c)				12 638·5	16 851·5
50.	4 213	6 319·5	8 426	12 639	16 852
a)				12 639·5	16 852·5
b)			8 426·5		16 853
c)				12 640	16 853·5

(kHz)

Series No.	Bands				
	4 MHz	6 MHz	8 MHz	12 MHz	16 MHz
51.	4 213·5	6 320·25	8 427	12 640·5	16 854
a)				12 641	16 854·5
b)			8 427·5		16 855
c)				12 641·5	16 855·5
52.	4 214	6 321	8 428	12 642	16 856
a)				12 642·5	16 856·5
b)			8 428·5		16 857
c)				12 643	16 857·5
53.	4 214·5	6 321·75	8 429	12 643·5	*16 858* *
a)				12 644	
b)			8 429·5		
c)				12 644·5	
54.	4 215	6 322·5	8 430	12 645	
a)				12 645·5	
b)			8 430·5		
c)				12 646	
55.	4 215·5	6 323·25	8 431	12 646·5	
a)				12 647	
b)			8 431·5		
c)				12 647·5	
56.	4 216	6 324	8 432	12 648	
a)				12 648·5	
b)			8 432·5		
c)				12 649	
57.	4 216·5	*6 324·75* *	8 433	12 649·5	
a)				12 650	
b)			8 433·5		
c)				12 650·5	
58.	4 217		8 434	*12 651* *	
a)					
b)			8 434·5		
59.	4 217·5		*8 435* *		
60.	4 218				
61.	4 218·5				
62.	*4 219* *				

* This is the highest assignable frequency within the band.

NOC **AP20**

APPENDIX 36

Automatic Receiving Equipment for Radiotelegraph and Radiotelephone Alarm Signals

(See Section II of Article **41**)

1. The automatic devices intended for the reception of the radiotelegraph alarm signal shall fulfil the following conditions:

a) the equipment shall respond to the alarm signal transmitted by the telegraphic emissions of at least class A2B and H2B (see No. **4216**);

b) the equipment shall respond to the alarm signal through interference (provided it is not continuous) caused by atmospherics and powerful signals other than the alarm signal, preferably without any manual adjustment being required during any period of watch maintained by the apparatus;

c) the equipment shall not be actuated by atmospherics or by strong signals other than the alarm signal;

d) the equipment shall possess a minimum sensitivity such that with negligible atmospheric interference, it is capable of being operated by the alarm signal transmitted by the emergency transmitter of a ship station at any distance from this station up to the normal range fixed for this transmitter by the International Convention for the Safety of Life at Sea, and preferably at greater distances;

e) the equipment shall give warning of any fault which would prevent the apparatus from performing its normal functions during watch hours.

2. The automatic devices intended for the reception of the radiotelephone alarm signal shall fulfil the following conditions:

a) the equipment shall respond to the alarm signal through intermittent interference caused by atmospherics and powerful signals other than the alarm signal, preferably without any manual adjustment being required during any period of watch maintained by the equipment;

b) the equipment shall not be actuated by atmospherics or by strong signals other than the alarm signal;

c) the equipment shall be effective beyond the range at which speech transmission is satisfactory and it should, as far as practicable, give warning of faults that would prevent the apparatus from performing its normal function during watch hours.

NOC **AP20A**

APPENDIX 37

Technical Characteristics of Emergency Position-Indicating Radiobeacons Operating on the Carrier Frequency 2 182 kHz

(See Section I of Article **41**)

Emergency position-indicating radiobeacons shall fulfil the following conditions:

a) the power radiated by low-power radiobeacons (Type L) shall be of a value necessary to produce at a distance of 30 nautical miles at sea level a field strength equal to or less than 10 microvolts per metre, with an initial field strength of at least 2.5 microvolts per metre;

b) the power radiated by high-power radiobeacons (Type H) shall be of a value necessary to produce at a distance of 30 nautical miles at sea level a field strength greater than 10 microvolts per metre;

c) after a period of 48 hours' continuous operation the radiated power shall not be less than 20 per cent of the initial power;

d) the radiobeacons shall be capable of class A2A (or A2B) or H2A (or H2B) emissions, with a depth of modulation between 30 and 90 per cent;

e) the audio-frequency tolerance of emissions used for emergency position-indicating radiobeacons (Nos. **3256** and **3258**) are:

± 20 Hz for the frequency of 1 300 Hz
± 35 Hz for the frequency of 2 200 Hz

f) equipment shall be designed to comply with relevant CCIR Recommendations.

NOC **AP20B** APPENDIX 38

Narrow-Band Direct-Printing Telegraph Equipment

(See Articles **59, 60, 63** and **64**)

The equipment for narrow-band direct-printing telegraph systems in the maritime mobile service shall fulfil the following conditions:

a) the equipment shall accept signals conforming to International Telegraph Alphabet Code No. 2 at a modulation rate of 50 bauds and shall provide similar signals at its output suitable for extension to the public telegraph network;

b) the modulation rate over the radio path shall not exceed 100 bauds;

c) class F1B emissions shall be used, with a frequency shift of 170 Hz (*Note 1*);

Note 1: When frequency-shift keying is effected by applying audio signals to the input of a single-sideband transmitter particular care should be taken to suppress adequately the residual carrier of the single-sideband modulation process. In addition a suitable choice of the centre audio frequency will minimize the possibility of the residual carrier causing interference to nearby channels. For this reason some administrations have chosen 1 700 Hz as the centre frequency.

d) the frequency tolerance of the transmitted signal shall be ± 40 Hz for ship stations, and shall be ±15 Hz for coast stations (*Note 1, Note 2* and *Note 3*);

e) the higher of the emitted frequencies shall correspond to "space" (start), and the lower of the emitted frequencies shall correspond to "mark" (stop) in accordance with the relevant CCIR Recommendation;

f) where an error control system is employed the apparatus should be provided with a simple device to by-pass the error control system to permit transmission and reception over the radio path of uncorrected signals conforming with *a)* above;

g) when an error-detecting and correcting system is used for direct-printing telegraphy in the maritime mobile service, a 7-unit ARQ system or a 7-unit forward acting error-correcting and indicating time diversity system, using the same code, shall be employed. Remaining technical characteristics of the error-detecting and correcting equipment should be in accordance with the relevant CCIR Recommendations;

Note 1: For operational purposes the associated receiving equipment should conform to the frequency stability of the transmitters.

Note 2: These tolerances shall apply to equipment installed after 1 January 1976 and to all equipment after 1 January 1985. For equipment installed before 2 January 1976 the tolerance is 100 Hz for ship station transmitters (with a maximum deviation of 40 Hz for short periods of the order of 15 minutes) and for coast station transmitters the tolerance is 40 Hz.

Note 3: Stricter tolerances may be desirable, depending on the method of operation of the service and the equipment employed.

h) if a station is equipped with a selective calling system in accordance with the provisions of Appendix **39** and with a direct-printing system in accordance with the provisions of the present Appendix and uses a two block call signal, that station shall be assigned the same identification or selective call number in accordance with Nos. **2088** and **2143** to **2146** for both systems;

i) a station, equipped with a direct-printing system in accordance with the provisions of the present Appendix and using a two block call signal, which has not already been assigned a number in accordance with Nos. **2088** and **2143** to **2146**, should be assigned such a number for the direct-printing system;

j) conversion from the numerical identification to the 28-bit (4-character) pattern shall be performed according to the relevant CCIR Recommendations.

NOC **AP20C**

APPENDIX 39

Selective Calling System for Use in the International Maritime Mobile Service

(See Articles **25, 62, 63** and **65** and Appendix **9**)

1. Where there is a need to fulfil immediate requirements for selective calling, the system to be used shall have the following characteristics:

1.1 the selective call signal shall consist of five figures representing the code number assigned to a ship for selective calling;

1.2 the audio-frequency signal applied to the input of the coast station transmitter shall consist of consecutive audio-frequency pulses conforming to the following:

1.2.1 the audio frequencies used to identify the figures of the code number assigned to a ship shall conform to the following series:

Figure	1	2	3	4	5	6	7	8	9	0	Figure repetition
Audio frequency (Hz)	1124	1197	1275	1358	1446	1540	1640	1747	1860	1981	2110

For example, the series of audio-frequency pulses corresponding to the selective call 12133 would be 1124-1197-1124-1275-2110 Hz, and the series corresponding to the code number 22222 would be 1197-2110-1197-2110-1197 Hz;

1.2.2 if the series of numbers represented by the use of only two frequencies, chosen from those in paragraph 1.2.1, are reserved for calling predetermined groups of ships, then 100 different groups of numbers are available for allocation, according to the needs of administrations;

1.2.3 the waveforms of the audio-frequency generators shall be substantially sinusoidal, not exceeding 2% total harmonic distortion;

1.2.4 the audio-frequency pulses shall be transmitted sequentially;

1.2.5 the difference between the maximum amplitude of any audio-frequency pulses shall not exceed 1 dB;

1.2.6 the duration of each audio-frequency pulse, measured between the half-amplitude points, shall be 100 ms ± 10 ms;

1.2.7 the time interval between consecutive pulses, measured between the half-amplitude points, shall be 3 ms ± 2 ms;

1.2.8 the rise and the decay time of each audio-frequency pulse, measured between the 10% and 90% amplitude points, shall be 1·5 ms ± 1 ms;

1.2.9 the frequency tolerance of the audio frequencies given in paragraph 1.2.1 shall be ± 4 Hz;

1.2.10 the selective call signal (the selective call number assigned to the ship station) shall be transmitted twice with an interval of 900 ms ± 100 ms between the end of the first signal and the beginning of the second signal (Figure 1);

1.2.11 the interval between calls from a coast station to different ships shall be at least 1 second (Figure 1).

2. The additional information following the selective call signal shall be transmitted as follows:

2.1 to identify the calling coast station, four figures shall be transmitted;

2.2 to identify the VHF channel on which a reply is required, two "zeros" followed by two "figures" should be transmitted (see Appendix **18**);

2.3 the characteristics of the signals shall conform to paragraphs 1.2.1 and 1.2.3 to 1.2.9 inclusive;

2.4 the composition of the signal shall be as shown in the diagram (Figure 2), the tolerance on the 350 ms interval being ± 30 ms.

3. A special "all ships call" signal to actuate the receiving selectors on all ships, regardless of their individual code number, shall consist of a continuous sequential transmission of the eleven audio-frequencies given in paragraph 1.2.1. The parameters of the audio-frequency pulses shall be in accordance with paragraphs 1.2.3, 1.2.4, 1.2.5 and 1.2.9. The duration of each audio-frequency pulse, measured between the half-amplitude points, shall be 17 ms ±1 ms and the interval between consecutive pulses, measured between half-amplitude points, shall not exceed 1 ms. The total duration of this "all ships call" signal should be at least five seconds.

4. Receiving selectors on ships should operate reliably in any radio conditions acceptable for satisfactory communication.

5. The receiving selector shall be designed to accept the signals as defined in paragraph 1. However, bearing in mind that coast stations may transmit additional signals (e.g. coast station identification), it is important that the reset time of the decoder should be 250 ms ± 40 ms.

6. The receiving selector should be so designed, constructed and maintained that it is resistant to atmospherics and other unwanted signals including selective calling signals other than that for which the decoder has been set up.

7. The receiving selector shall include an audible or visual means of indicating the receipt of a call and, if required, an additional facility allowing the determination of the identity of the calling station or the VHF channel on which to reply according to the needs of administrations.

8. The indicating means shall be actuated on correct reception of the calling signal, no matter whether the correct registration has occurred on the first, or the second, or both parts of the calling signal transmitted by the coast stations.

9. The indicating means shall remain actuated until reset manually.

10. The receiving selector equipment should be as simple as is practicable, be capable of reliable operation over long periods with a minimum of maintenance, and could, with advantage, include facilities for self-testing.

AP39-5

FIGURE 1

Composition of Selective Call Signals without Additional Information

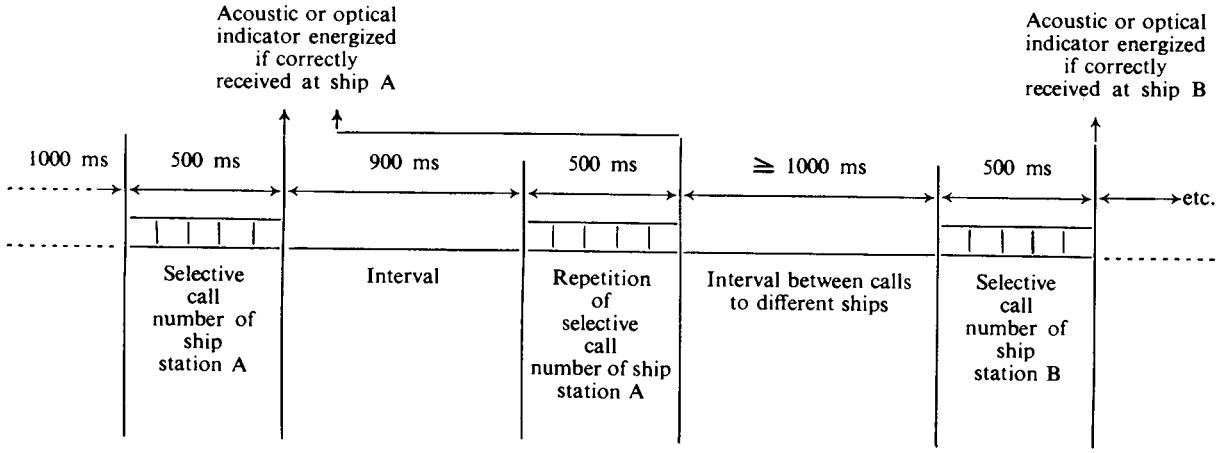
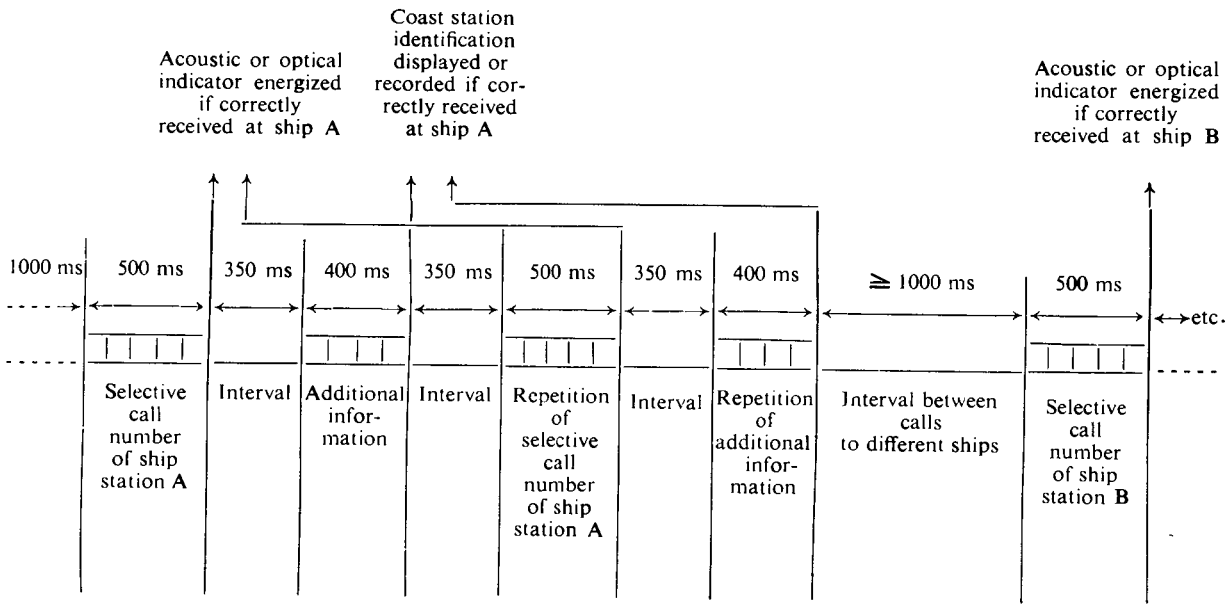


FIGURE 2

Composition of Selective Call Signals with Additional Information



AP39-6

NOC **AP20D**

APPENDIX 40

Linked Compressor and Expander Systems

(See Section IV of Article **60** and Appendix **17**)

When linked compressor and expander systems are used in the international maritime mobile radiotelephone service:

a) the characteristics of the linked compressor and expander equipment shall be in accordance with relevant CCIR Recommendations;

b) for optimum performance the characteristics of SSB radio equipment used in conjunction with compressor and expander systems shall be in accordance with Appendix **17** and should, in addition, meet the following requirements:

1. the short-term frequency stability (of the order of 15 minutes) of coast station transmitters should be within ±2 Hz;

2. the short-term frequency stability (of the order of 15 minutes) of ship station transmitters should be within ±5 Hz;

3. to ensure sufficient overall gain stability of the system, for the duration of a call, facilities should be provided in coast station receivers to keep the end-to-end frequency error within ±2 Hz; similarly, facilities should be provided in ship station receivers to keep the end-to-end frequency error within ±5 Hz;

4. the maximum permissible amplitude variation in the transmitter over the 350 – 2 700 Hz audio frequency band should be 6 dB and the differential delay should not exceed 3 ms. The receiver should have at least the same standards of performance in these respects;

5. if the pilot carrier of a class R3E emission is not used to provide a continuous signal for controlling the frequency and gain of the receiver, for example where a class J3E emission is used, the initial tuning procedure will require the provision, for a brief period, of a suitable reference tone (e.g. 1 000 Hz ±1 Hz) at a level of the order of −10 dBm0 ±0·5 dB;

6. where it is desired to use speech inverters or other types of privacy equipment, it should be borne in mind that the upper audio frequency of the speech channel is 2 380 Hz.

NOC **AP23**

APPENDIX 41

Procedure for Obtaining Radio Direction-Finding Bearings and Positions

(See Article **35**)

Section I. General Instructions

§ 1. Stations of the aeronautical mobile service shall use such special procedures as may be in force as a result of agreements concluded between administrations. However, if they have need to participate in direction-finding operations with stations of the maritime mobile service, the provisions of this Appendix shall be applicable.

§ 2. Before calling one or more radio direction-finding stations for the purpose of asking for a bearing or position, a mobile station shall ascertain from the List of Radiodetermination and Special Service Stations :

a) the call signs of the stations to be called to obtain the desired bearings or position ;

b) the frequency on which the radio direction-finding stations keep watch, and the frequency or frequencies on which they take bearings ;

c) the radio direction-finding stations which, being linked by special circuits, can be grouped operationally with the radio direction-finding station to be called.

§ 3. The procedure to be followed by the mobile station depends on varying circumstances. Generally, the following shall be taken into account :

a) if the radio direction-finding stations do not keep watch on the same frequency (whether it be the frequency on which bearings are taken or another frequency), a separate request for the bearings shall be made to each station or group of stations using a given frequency;

b) if all the radio direction-finding stations concerned keep watch on the same frequency, and if they are able to take bearings on a common frequency (which may be different from the listening frequency), the mobile station shall call all of them at the same time, in order that all these stations may take simultaneous bearings on the same transmission;

c) if several radio direction-finding stations are grouped by means of special circuits, only one of them, the radio direction-finding control station, shall be called even if all are furnished with transmitting apparatus. In that case, however, the mobile station shall, if appropriate, specify in the call, by means of call signs, the radio direction-finding stations from which it wishes to obtain bearings.

§ 4. The List of Radiodetermination and Special Service Stations contains information relating to :

a) the type of signal and class of emission to be used for obtaining the bearings ;

b) the duration of the transmission to be made by the mobile station ;

c) the time used by the radio direction-finding station in question, if different from Coordinated Universal Time (UTC).

Section II. Rules of Procedure

§ 5. The following rules of procedure applicable to radiotelegraphy and radiotelephony are based on the use of radiotelegraphy. When used for radiotelephony, appropriate phrases may replace the service abbreviations.

To obtain a bearing

§ 6. (1) The mobile station shall call the radio direction-finding station or the radio direction-finding control station on the listening frequency indicated in the List of Radiodetermination and Special Service Stations. Depending on the type of information desired, the calling station shall transmit the appropriate service abbreviation followed, if the radio direction-finding station is a mobile station, by the service abbreviation QTH? It shall indicate, if necessary, the frequency on which it is going to transmit to enable its bearing to be taken, and then await instructions.

(2) The radio direction-finding station called shall request the calling station, by means of the appropriate service abbreviation, to transmit for the bearing. If necessary, it shall indicate the frequency to be used for this purpose and the number of times the transmission is to be repeated.

(3) After having changed, if necessary, to its new transmitting frequency, the calling station shall transmit two dashes of approximately ten seconds each, followed by its call sign. It shall repeat this signal as often as the radio direction-finding station requires.

(4) The radio direction-finding station shall determine the direction and, if possible, the sense of the bearing, and its classification (see paragraph 7).

(5) If the radio direction-finding station is not satisfied with the operation, it shall request the calling station to repeat the transmission described in (3).

(6) The radio direction-finding station shall transmit the information to the calling station in the following order :

a) the appropriate service abbreviation ;

b) three digits indicating the true bearing in degrees from the radio direction-finding station ;

c) class of bearing ;

d) time of observation ;

e) if the radio direction-finding station is mobile, its own position in latitude and longitude, preceded by the service abbreviation QTH.

(7) As soon as the calling station has received the result of the observation, it shall repeat the message, if this is considered necessary to obtain confirmation. The radio direction-finding station then shall confirm that the repetition is correct or, if necessary, correct it by repeating the message. When the radio direction-finding station is sure that the calling station has received the message correctly, it shall transmit the signal "end of work". The calling station shall repeat this signal to indicate that the operation is finished.

(8) In the absence of information to the contrary, the calling station may assume that the sense of the bearing was determined. If the radio direction-finding station has not determined the sense, it shall indicate this in the information transmitted, or report the bearing and its reciprocal.

Classification of bearings

§ 7. To estimate the accuracy and determine the corresponding class of a bearing :

a) an operator should generally, and particularly in the maritime mobile radio direction-finding service on frequencies below 3 000 kHz, use the observational characteristics of bearings shown in the following table;

b) the operators at a radio direction-finding station, when facilities and time permit, may take into account the probability of error in the bearing. A bearing is considered as belonging to a particular class if there is a probability of less than one in twenty that the bearing error would exceed the numerical values specified for that class shown in the following table. This probability should be determinated from an analysis of the five components that make up the total variance of the bearing (instrumental, site, propagation, random-sampling and observational components).

To obtain a position determined by two or more radio direction-finding stations organized as a group

§ 8. (1) If the calling station wishes to be informed of its position by a group of radio direction-finding stations, it shall call the control station as is indicated in § 6. (1) above, and request its position by means of the appropriate service abbreviation.

(2) The control station shall reply to the call and, when the radio direction-finding stations are ready, request, by means of the appropriate service abbreviation, that the calling station transmit. When the position has been determined, the control station shall transmit to the calling station :

a) the appropriate service abbreviation ;

b) the position, in latitude and longitude or, if appropriate, in relation to a known geographical position ;

c) the class of position as defined in the following sub-paragraph ;

d) the time of observation.

(3) According to its estimate of the accuracy of the observations, the control station shall classify the position in one of the four following classes :

Class A : positions which the operator may reasonably expect to be accurate to within 5 nautical miles ;

Class B : positions which the operator may reasonably expect to be accurate to within 20 nautical miles ;

Class C : positions which the operator may reasonably expect to be accurate to within 50 nautical miles ;

Class D : positions which the operator may not expect to be accurate to within 50 nautical miles.

(4) However, for frequencies above 3 000 kHz, where the distance limits specified in the preceding sub-paragraph may not be appropriate, the control station may classify the position in accordance with current CCIR Recommendations.

To obtain simultaneous bearings from two or more radio direction-finding stations organized as a group

§ 9. On a request for bearings, the control station of a group of radio direction-finding stations shall proceed as indicated in § 8 above. It then shall transmit the bearings observed by each station of the group, each bearing being preceded by the call sign of the station which observed it.

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TABLE

Classification of Bearings

Class	Bearing Error (Degrees)	Observational Characteristics					
		Signal Strength	Bearing Indication	Fading	Interference	Bearing Swing (Degrees)	Duration of Observation
A	± 2	very good or good	definite (sharp null)	negligible	negligible	less than 3	adequate
B	± 5	fairly good	blurred	slight	slight	more than 3 less than 5	short
C	± 10	weak	severely blurred	severe	strong	more than 5 less than 10	very short
D	more than ± 10	scarcely perceptible	ill-defined	very severe	very strong	more than 10	inadequate

MOD AP C

APPENDIX 42

TABLE OF ALLOCATION OF INTERNATIONAL CALL SIGN SERIES[1]

(See Article 25)

SUP AP C/1 745
SUP AP C/2 746
SUP AP C/3 747

Call Sign Series	Allocated to
AAA-ALZ	United States of America
AMA-AOZ	Spain
APA-ASZ	Pakistan (Islamic Republic of)
ATA-AWZ	India (Republic of)
AXA-AXZ	Australia
AYA-AZZ	Argentine Republic
A2A-A2Z	Botswana (Republic of)
A3A-A3Z	Tonga (Kingdom of)
A4A-A4Z	Oman (Sultanate of)
A5A-A5Z	Bhutan (Kingdom of)
A6A-A6Z	United Arab Emirates
A7A-A7Z	Qatar (State of)
A8A-A8Z	Liberia (Republic of)
A9A-A9Z	Bahrain (State of)
BAA-BZZ	China (People's Republic of)
CAA-CEZ	Chile
CFA-CKZ	Canada
CLA-CMZ	Cuba
CNA-CNZ	Morocco (Kingdom of)
COA-COZ	Cuba
CPA-CPZ	Bolivia (Republic of)
CQA-CUZ	Portugal
CVA-CXZ	Uruguay (Oriental Republic of)
CYA-CZZ	Canada
C2A-C2Z	Nauru (Republic of)
C3A-C3Z	Andorra (Principality of)
C4A-C4Z	Cyprus (Republic of)
C5A-C5Z	Gambia (Republic of the)
C6A-C6Z	Bahamas (Commonwealth of the)
*C7A-C7Z	World Meteorological Organization
C8A-C9Z	Mozambique (People's Republic of)
DAA-DRZ	Germany (Federal Republic of)
DSA-DTZ	Republic of Korea
DUA-DZZ	Philippines (Republic of the)
D2A-D3Z	Angola (People's Republic of)
D4A-D4Z	Cape Verde (Republic of)
D5A-D5Z	Liberia (Republic of)
D6A-D6Z	Comoros (Federal and Islamic Republic of the)
D7A-D9Z	Republic of Korea
EAA-EHZ	Spain
EIA-EJZ	Ireland
EKA-EKZ	Union of Soviet Socialist Republics
ELA-ELZ	Liberia (Republic of)
EMA-EOZ	Union of Soviet Socialist Republics
EPA-EQZ	Iran (Islamic Republic of)
ERA-ESZ	Union of Soviet Socialist Republics
ETA-ETZ	Ethiopia
EUA-EWZ	Byelorussian Soviet Socialist Republic
EXA-EZZ	Union of Soviet Socialist Republics
FAA-FZZ	France
GAA-GZZ	United Kingdom of Great Britain and Northern Ireland
HAA-HAZ	Hungarian People's Republic
HBA-HBZ	Switzerland (Confederation of)
HCA-HDZ	Ecuador
HEA-HEZ	Switzerland (Confederation of)
HFA-HFZ	Poland (People's Republic of)
HGA-HGZ	Hungarian People's Republic
HHA-HHZ	Haiti (Republic of)
HIA-HIZ	Dominican Republic
HJA-HKZ	Colombia (Republic of)
HLA-HLZ	Republic of Korea[2]
HMA-HMZ	Democratic People's Republic of Korea[2]
HNA-HNZ	Iraq (Republic of)
HOA-HPZ	Panama (Republic of)
HQA-HRZ	Honduras (Republic of)
HSA-HSZ	Thailand
HTA-HTZ	Nicaragua
HUA-HUZ	El Salvador (Republic of)
HVA-HVZ	Vatican City State
HWA-HYZ	France
HZA-HZZ	Saudi Arabia (Kingdom of)
H2A-H2Z	Cyprus (Republic of)
H3A-H3Z	Panama (Republic of)
H4A-H4Z	Solomon Islands
H6A-H7Z	Nicaragua
H8A-H9Z	Panama (Republic of)
IAA-IZZ	Italy

[1] The series of call signs preceded by an asterisk are allocated to international organizations.

[2] The two administrations concerned undertake to change their existing use of HLA - HLZ and HMA - HMZ call sign series to conform with the 1979 Table of Allocations as soon as practicable, in order to clarify their operational arrangements for other administrations. In this regard, the Administration of the Republic of Korea will take action to change the existing call signs registered with the ITU in the HMA - HMZ series as changes occur in the use of call signs in this series. The above-mentioned actions shall, in any case, be completed by 1 January 1984.

Call Sign Series	Allocated to
JAA-JSZ	Japan
JTA-JVZ	Mongolian People's Republic
JWA-JXZ	Norway
JYA-JYZ	Jordan (Hashemite Kingdom of)
JZA-JZZ	Indonesia (Republic of)
J2A-J2Z	Djibouti (Republic of)
J3A-J3Z	Grenada
J4A-J4Z	Greece
J5A-J5Z	Guinea-Bissau (Republic of)
J6A-J6Z	Saint Lucia
J7A-J7Z	Dominica
KAA-KZZ	United States of America
LAA-LNZ	Norway
LOA-LWZ	Argentine Republic
LXA-LXZ	Luxembourg
LYA-LYZ	Union of Soviet Socialist Republics
LZA-LZZ	Bulgaria (People's Republic of)
L2A-L9Z	Argentine Republic
MAA-MZZ	United Kingdom of Great Britain and Northern Ireland
NAA-NZZ	United States of America
OAA-OCZ	Peru
ODA-ODZ	Lebanon
OEA-OEZ	Austria
OFA-OJZ	Finland
OKA-OMZ	Czechoslovak Socialist Republic
ONA-OTZ	Belgium
OUA-OZZ	Denmark
PAA-PIZ	Netherlands (Kingdom of the)
PJA-PJZ	Netherlands Antilles
PKA-POZ	Indonesia (Republic of)
PPA-PYZ	Brazil (Federative Republic of)
PZA-PZZ	Suriname (Republic of)
P2A-P2Z	Papua New Guinea
P3A-P3Z	Cyprus (Republic of)
P4A-P4Z	Netherlands Antilles
P5A-P9Z	Democratic People's Republic of Korea
QAA-QZZ	(Service abbreviations)
RAA-RZZ	Union of the Soviet Socialist Republics
SAA-SMZ	Sweden
SNA-SRZ	Poland (People's Republic of)
SSA-SSM	Egypt (Arab Republic of)
SSN-STZ	Sudan (Democratic Republic of the)
SUA-SUZ	Egypt (Arab Republic of)
SVA-SZZ	Greece
S2A-S3Z	Bangladesh (People's Republic of)
S6A-S6Z	Singapore (Republic of)
S7A-S7Z	Seychelles (Republic of)
S9A-S9Z	Sao Tome and Principe (Democratic Republic of)
TAA-TCZ	Turkey
TDA-TDZ	Guatemala (Republic of)
TEA-TEZ	Costa Rica
TFA-TFZ	Iceland
TGA-TGZ	Guatemala (Republic of)
THA-THZ	France
TIA-TIZ	Costa Rica
TJA-TJZ	Cameroon (United Republic of)
TKA-TKZ	France
TLA-TLZ	Central African Republic
TMA-TMZ	France
TNA-TNZ	Congo (People's Republic of the)
TOA-TQZ	France
TRA-TRZ	Gabon Republic
TSA-TSZ	Tunisia
TTA-TTZ	Chad (Republic of the)
TUA-TUZ	Ivory Coast (Republic of the)
TVA-TXZ	France
TYA-TYZ	Benin (People's Republic of)
TZA-TZZ	Mali (Republic of)
T2A-T2Z	Tuvalu
T3A-T3Z	Kiribati Republic
T4A-T4Z	Cuba
T5A-T5Z	Somali Democratic Republic
T6A-T6Z	Afghanistan (Democratic Republic of)
UAA-UQZ	Union of Soviet Socialist Republics
URA-UTZ	Ukrainian Soviet Socialist Republic
UUA-UZZ	Union of Soviet Socialist Republics
VAA-VGZ	Canada
VHA-VNZ	Australia
VOA-VOZ	Canada
VPA-VSZ	United Kingdom of Great Britain and Northern Ireland
VTA-VWZ	India (Republic of)
VXA-VYZ	Canada
VZA-VZZ	Australia
WAA-WZZ	United States of America
XAA-XIZ	Mexico
XJA-XOZ	Canada
XPA-XPZ	Denmark
XQA-XRZ	Chile
XSA-XSZ	China (People's Republic of)
XTA-XTZ	Upper Volta (Republic of)
XUA-XUZ	Democratic Kampuchea
XVA-XVZ	Viet Nam (Socialist Republic of)
XWA-XWZ	Lao People's Democratic Republic
XXA-XXZ	Portugal
XYA-XZZ	Burma (Socialist Republic of the Union of)
YAA-YAZ	Afghanistan (Democratic Republic of)
YBA-YHZ	Indonesia (Republic of)
YIA-YIZ	Iraq (Republic of)
YJA-YJZ	New Hebrides
YKA-YKZ	Syrian Arab Republic
YLA-YLZ	Union of Soviet Socialist Republics
YMA-YMZ	Turkey
YNA-YNZ	Nicaragua
YOA-YRZ	Roumania (Socialist Republic of)

Call Sign Series	Allocated to
YSA-YSZ	El Salvador (Republic of)
YTA-YUZ	Yugoslavia (Socialist Federal Republic of)
YVA-YYZ	Venezuela (Republic of)
YZA-YZZ	Yugoslavia (Socialist Federal Republic of)
Y2A-Y9Z	German Democratic Republic
ZAA-ZAZ	Albania (Socialist People's Republic of)
ZBA-ZJZ	United Kingdom of Great Britain and Northern Ireland
ZKA-ZMZ	New Zealand
ZNA-ZOZ	United Kingdom of Great Britain and Northern Ireland
ZPA-ZPZ	Paraguay (Republic of)
ZQA-ZQZ	United Kingdom of Great Britain and Northern Ireland
ZRA-ZUZ	South Africa (Republic of)
ZVA-ZZZ	Brazil (Federative Republic of)
2AA-2ZZ	United Kingdom of Great Britain and Northern Ireland
3AA-3AZ	Monaco
3BA-3BZ	Mauritius
3CA-3CZ	Equatorial Guinea (Republic of)
3DA-3DM	Swaziland (Kingdom of)
3DN-3DZ	Fiji
3EA-3FZ	Panama (Republic of)
3GA-3GZ	Chile
3HA-3UZ	China (People's Republic of)
3VA-3VZ	Tunisia
3WA-3WZ	Viet Nam (Socialist Republic of)
3XA-3XZ	Guinea (Revolutionary People's Republic of)
3YA-3YZ	Norway
3ZA-3ZZ	Poland (People's Republic of)
4AA-4CZ	Mexico
4DA-4IZ	Philippines (Republic of the)
4JA-4LZ	Union of Soviet Socialist Republics
4MA-4MZ	Venezuela (Republic of)
4NA-4OZ	Yugoslavia (Socialist Federal Republic of)
4PA-4SZ	Sri Lanka (Democratic Socialist Republic of)
4TA-4TZ	Peru
*4UA-4UZ	United Nations Organization
4VA-4VZ	Haiti (Republic of)
4WA-4WZ	Yemen Arab Republic
4XA-4XZ	Israel (State of)
*4YA-4YZ	International Civil Aviation Organization
4ZA-4ZZ	Israel (State of)
5AA-5AZ	Libya (Socialist People's Libyan Arab Jamahiriya)
5BA-5BZ	Cyprus (Republic of)
5CA-5GZ	Morocco (Kingdom of)
5HA-5IZ	Tanzania (United Republic of)
5JA-5KZ	Colombia (Republic of)
5LA-5MZ	Liberia (Republic of)
5NA-5OZ	Nigeria (Federal Republic of)
5PA-5QZ	Denmark
5RA-5SZ	Madagascar (Democratic Republic of)
5TA-5TZ	Mauritania (Islamic Republic of)
5UA-5UZ	Niger (Republic of the)
5VA-5VZ	Togolese Republic
5WA-5WZ	Western Samoa
5XA-5XZ	Uganda (Republic of)
5YA-5ZZ	Kenya (Republic of)
6AA-6BZ	Egypt (Arab Republic of)
6CA-6CZ	Syrian Arab Republic
6DA-6JZ	Mexico
6KA-6NZ	Republic of Korea
6OA-6OZ	Somali Democratic Republic
6PA-6SZ	Pakistan (Islamic Republic of)
6TA-6UZ	Sudan (Democratic Republic of the)
6VA-6WZ	Senegal (Republic of the)
6XA-6XZ	Madagascar (Democratic Republic of)
6YA-6YZ	Jamaica
6ZA-6ZZ	Liberia (Republic of)
7AA-7IZ	Indonesia (Republic of)
7JA-7NZ	Japan
7OA-7OZ	Yemen (People's Democratic Republic of)
7PA-7PZ	Lesotho (Kingdom of)
7QA-7QZ	Malawi (Republic of)
7RA-7RZ	Algeria (Algerian Democratic and Popular Republic)
7SA-7SZ	Sweden
7TA-7YZ	Algeria (Algerian Democratic and Popular Republic)
7ZA-7ZZ	Saudi Arabia (Kingdom of)
8AA-8IZ	Indonesia (Republic of)
8JA-8NZ	Japan
8OA-8OZ	Botswana (Republic of)
8PA-8PZ	Barbados
8QA-8QZ	Maldives (Republic of)
8RA-8RZ	Guyana
8SA-8SZ	Sweden
8TA-8YZ	India (Republic of)
8ZA-8ZZ	Saudi Arabia (Kingdom of)
9AA-9AZ	San Marino (Republic of)
9BA-9DZ	Iran (Islamic Republic of)
9EA-9FZ	Ethiopia
9GA-9GZ	Ghana
9HA-9HZ	Malta (Republic of)
9IA-9JZ	Zambia (Republic of)
9KA-9KZ	Kuwait (State of)
9LA-9LZ	Sierra Leone
9MA-9MZ	Malaysia
9NA-9NZ	Nepal
9OA-9TZ	Zaire (Republic of)
9UA-9UZ	Burundi (Republic of)
9VA-9VZ	Singapore (Republic of)
9WA-9WZ	Malaysia
9XA-9XZ	Rwanda (Republic of)
9YA-9ZZ	Trinidad and Tobago

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APPENDIX 43

Maritime Mobile Service Identities

1. *General*

1.1 Maritime mobile service identities are formed of a series of nine digits which are transmitted over the radio path in order to uniquely identify ship stations, ship earth stations, coast stations, coast earth stations and group calls.

1.2 Ship station identities shall be in accordance with relevant CCIR and CCITT Recommendations.

1.3 These identities are formed in such a way that the identity or part thereof can be used by telephone and telex subscribers connected to the general telecommunications network to call ships automatically in the shore-to-ship direction.

1.4 There are three kinds of maritime mobile service identities:

i) ship station identities,

ii) group call identities,

iii) coast station identities.

1.5 The nationality or flag of a station is given by a three-digit group, the Nationality Identification Digits (NID).

2. *Nationality Identification Digits (NID)*

Table I gives the Nationality Identification Digits (NID) allocated to each country. In accordance with Radio Regulation No. **2087** the

Secretary-General is authorized to allocate Nationality Identification Digits to countries not included in this table [1].

3. *Ship Station Identities*

The 9 digit code constituting a ship station identity is formed as follows:

N I D X X X X X X
1 2 3 4 5 6 7 8 9

wherein

N I D
1 2 3

represent the Nationality Identification Digits and X is any figure from 0 to 9.

4. *Group Call Identities*

Group call identities for calling simultaneously more than one ship are formed as follows:

0 N I D X X X X X
1 2 3 4 5 6 7 8 9

where the first figure is zero and X is any figure from 0 to 9.

The particular NID reflects only the country allocating the group call identity and so does not prevent group calls to fleets containing more than one ship nationality.

[1] Details of National Identification Digits (NID) allocations have to be worked out by the Secretary-General in close cooperation with the CCIR and CCITT in accordance with Resolution **313** and the provisions of this Appendix. Until such time as this information becomes available for final decision by the next competent conference, provisional allocations of NIDs may be issued by the Secretary-General. These allocations will therefore be subject to review and/or revision by the above-mentioned conference.

5. *Coast Station Identities*

Coast station identities are formed as follows:

0 0 N I D X X X X
1 2 3 4 5 6 7 8 9

where the first two figures are zeros and X is any figure from 0 to 9.

The NID reflects the country in which the coast station or coast earth station is located.

TABLE I

NATIONALITY IDENTIFICATION DIGITS[1]

Country	Digits

[1] Details of National Identification Digits (NID) allocations have to be worked out by the Secretary-General in close cooperation with the CCIR and CCITT in accordance with Resolution **313** and the provisions of this Appendix. Until such time as this information becomes available for final decision by the next competent conference, provisional allocations of NIDs may be issued by the Secretary-General. These allocations will therefore be subject to review and/or revision by the above-mentioned conference.

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APPENDIX 44

SHIP STATION SELECTIVE CALL NUMBERS AND COAST STATION IDENTIFICATION NUMBERS

PART I. TABLE OF BLOCKS OF SELECTIVE CALL NUMBERS FOR SHIP STATIONS AND SELECTIVE CALL NUMBERS FOR GROUPS OF SHIP STATIONS SUPPLIED TO ADMINISTRATIONS

Blocks*) of selective call numbers for ship stations and selective call numbers for groups of ship stations	Supplied to
00000*)	Argentine Republic
00001—00499	Argentine Republic
00900—00999	Saudi Arabia (Kingdom of)
01010*)	Australia
01100—01199	Australia
01800—01899	Singapore (Republic of)
01900—01999	Seychelles (Republic of)
02020*)	Argentine Republic
03200—03299	Canada
04040*)	Canada
05200—05399	Cyprus (Republic of)
05900—05999	Bulgaria (People's Republic of)
06300—07069	Denmark
07070*)	Denmark
07071—07999	Denmark
08080*)	Denmark
08400—08499	Spain
10400—11110	United States of America
11111*)	United States of America
11112—11399	United States of America
14000—14140	Finland
14141*)	Finland
14142—14199	Finland
14700—15150	France
15151*)	France
15152—16099	France
16161*)	France
16700—17170	Greece
17171*)	Greece
17172—17699	Greece

*) The numbers formed by the same digit repeated five times, or by two different digits repeated alternately, are reserved for calling predetermined groups of ship stations, and are to be considered as not included in the blocks of call numbers for ship stations supplied to administrations.

18181*)	China (People's Republic of)
19000—19099	Chile
19191*)	China (People's Republic of)
19400—19499	Ghana
19700—20199	China (People's Republic of)
20202*)	China (People's Republic of)
20300—20799	Italy
21212*)	Italy
22222*)	Italy
22300—22399	Iraq (Republic of)
22400—22599	Kuwait (State of)
22700—22899	Iraq (Republic of)
23500—23999	India (Republic of)
24300—25199	Liberia (Republic of)
26000—26261	Sweden
26262*)	Sweden
26263—26999	Sweden
31900—31999	Malta (Republic of)
32000—32099	Cuba
32400—33332	Norway
33333*)	Norway
33334—34342	Norway
34343*)	Norway
34344—34499	Norway
36000—36099	Ireland
36200—36299	Luxembourg
36400—37372	Netherlands (Kingdom of the)
37373*)	Netherlands (Kingdom of the)
37374—38382	Netherlands (Kingdom of the)
38383*)	Netherlands (Kingdom of the)
38384—38399	Netherlands (Kingdom of the)
38400—39392	Germany (Federal Republic of)
39393*)	Germany (Federal Republic of)
39394—40403	Germany (Federal Republic of)
40404*)	Germany (Federal Republic of)
40405—41413	Germany (Federal Republic of)
41414*)	Germany (Federal Republic of)
41415—41499	Germany (Federal Republic of)
41900—42199	Panama (Republic of)
42424*)	Panama (Republic of)
43000—43433	Poland (People's Republic of)
43434*)	Poland (People's Republic of)
43435—43499	Poland (People's Republic of)
43500—44099	Sweden
44444*)	Panama (Republic of)

*) The numbers formed by the same digit repeated five times, or by two different digits repeated alternately, are reserved for calling predetermined groups of ship stations, and are to be considered as not included in the blocks of call numbers for ship stations supplied to administrations.

45500—46463	United Kingdom of Great Britain and Northern Ireland
46464*)	United Kingdom of Great Britain and Northern Ireland
46465—46899	United Kingdom of Great Britain and Northern Ireland
47474*)	United Kingdom of Great Britain and Northern Ireland
50400—50499	United Kingdom of Great Britain and Northern Ireland
50500—50504	Israel (State of)
50505*)	Israel (State of)
50506—50699	Israel (State of)
51100—51499	Switzerland (Confederation of)
52600—53534	Union of Soviet Socialist Republics
53535*)	Union of Soviet Socialist Republics
53536—54544	Union of Soviet Socialist Republics
54546—55554	Union of Soviet Socialist Republics
55556—56099	Union of Soviet Socialist Republics
56200—56299	Malaysia
56800—57099	Yugoslavia (Socialist Federal Republic of)
57800—57899	Venezuela (Republic of)
58100—58199	Algeria (Algerian Democratic and Popular Republic)
58200—58299	Austria
59400—59499	Libya (Socialist People's Libyan Arab Jamahiriya)
59700—59899	New Zealand
59900—59999	Monaco
60100—60599	German Democratic Republic
61000—61099	Netherlands Antilles
61100—61199	United Kingdom of Great Britain and Northern Ireland
61500—61599	Bahamas (Commonwealth of the)
62000—62099	Jordan (Hashemite Kingdom of)
63000—63099	Qatar (State of)
63200—63299	Bahrain (State of)
63400—63499	United Arab Emirates
64600—64645	South Africa (Republic of)
64646*)	South Africa (Republic of)
64647—64799	South Africa (Republic of)
65700—65799	Turkey
66000—66665	Union of Soviet Socialist Republics
66667—67675	Union of Soviet Socialist Republics
67677—68685	Union of Soviet Socialist Republics
68686*)	Union of Soviet Socialist Republics
68687—69695	Union of Soviet Socialist Republics
69697—70706	Union of Soviet Socialist Republics
70707*)	Union of Soviet Socialist Republics
70708—71716	Union of Soviet Socialist Republics
71717*)	Union of Soviet Socialist Republics
71718—72499	Union of Soviet Socialist Republics

*) The numbers formed by the same digit repeated five times, or by two different digits repeated alternately, are reserved for calling predetermined groups of ship stations, and are to be considered as not included in the blocks of call numbers for ship stations supplied to administrations.

72500—72726	Belgium
72727*)	Belgium
72728—73736	Belgium
73737*)	Belgium
73738—73999	Belgium
74700—74746	Sierra Leone
74747*)	Sierra Leone
74748—74799	Sierra Leone
75500—75756	Iceland
75758—75999	Iceland
77500—77699	Yemen (People's Democratic Republic of)
77700—77776	Mexico
77777*)	Mexico
77778—77799	Mexico
78000—78199	Egypt (Arab Republic of)
78700—78786	Mexico
78787*)	Mexico
78788—78799	Mexico
79000—79099	Oman (Sultanate of)
79200—79399	Syrian Arab Republic
82828*)	Malta (Republic of)
83838*)	Malta (Republic of)
84848*)	Netherlands (Kingdom of the)
86868*)	Italy
87878*)	Italy
88888*)	Italy
89898*)	Italy
90909*)	Italy
91919*)	Italy
92929*)	Italy
93939*)	Italy
94949*)	Israel (State of)
95959*)	Israel (State of)
96969*)	Israel (State of)
97979*)	German Democratic Republic
98989*)	German Democratic Republic

*) The numbers formed by the same digit repeated five times, or by two different digits repeated alternately, are reserved for calling predetermined groups of ship stations, and are to be considered as not included in the blocks of call numbers for ship stations supplied to administrations.

PART II. TABLE OF BLOCKS OF COAST STATION IDENTIFICATION NUMBERS SUPPLIED TO ADMINISTRATIONS

Blocks of identification numbers	Supplied to
0100—0119	Argentine Republic
0270—0279	Algeria (Algerian Democratic and Popular Republic)
0330—0339	Australia
0480—0489	Belgium
0580—0589	Canada
0810—0819	Bulgaria (People's Republic of)
0830—0899	Denmark
0990—1089	Spain
1090—1109	United States of America
1590—1609	Finland
1630—1669	France
1780—1789	Greece
1860—1889	Chile
1920—1929	Ghana
1980—1989	Ireland
2010—2019	China (People's Republic of)
2070—2109	Italy
2130—2149	Iraq (Republic of)
2180—2189	Kuwait (State of)
2280—2289	Libya (Socialist People's Libyan Arab Jamahiriya)
2300—2339	India (Republic of)
2480—2489	Malta (Republic of)
2500—2509	Monaco
2510—2519	Cuba
2550—2599	Norway
2740—2749	Iceland
2770—2779	Netherlands (Kingdom of the)
2830—2849	Germany (Federal Republic of)
2930—2949	Poland (People's Republic of)
2950—2959	Sweden
3200—3259	United Kingdom of Great Britain and Northern Ireland
3450—3459	Israel (State of)
3500—3509	Switzerland (Confederation of)
3620—3769	Union of Soviet Socialist Republics
3800—3809	Malaysia
3850—3859	Yugoslavia (Socialist Federal Republic of)
3910—3919	Venezuela (Republic of)
4330—4349	South Africa (Republic of)
4360—4369	Turkey
4400—4599	Union of Soviet Socialist Republics
4600—4619	German Democratic Republic

4620—4629	Singapore (Republic of)
4630—4639	United Kingdom of Great Britain and Northern Ireland
4640—4649	Sierra Leone
4650—4659	Bahrain (State of)
4660—4669	Seychelles (Republic of)
4690—4699	Qatar (State of)
4710—4719	United Arab Emirates
4810—4819	Yemen (People's Democratic Republic of)
4820—4829	Egypt (Arab Republic of)
4830—4839	Saudi Arabia (Kingdom of)
4900—4939	Mexico
4980—4999	Syrian Arab Republic
5010—5019	Oman (Sultanate of)

FINAL PROTOCOL

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FINAL PROTOCOL

At the time of signing the Final Acts of the World Administrative Radio Conference, Geneva, 1979, the undersigned delegates take note of the following statements made by signatory delegations :

No. 1

For the Republic of Honduras :

The Republic of Honduras, through its delegation at the World Administrative Radio Conference, Geneva, 1979, wishes to make the following reservations :

1. Its Government reserves the right to take such steps as it may deem necessary to protect its interests in the event of other Members failing to comply with the provisions of the Radio Regulations, their Annexes or appended Protocols.

2. It further declares that its Government maintains the right to formulate any reservation whatever until such time as the Final Acts of the present World Administrative Radio Conference, Geneva, 1979, are ratified.

No. 2

For the Republic of Guatemala :

The delegation of the Republic of Guatemala :

a) reserves its Government's rights with regard to the acceptance and total or partial ratification of the Final Acts and their application within the territorial limits recognized by the Constitution of the Republic;

b) does not accept the reservations made by other countries if they prove detrimental to the national interests as a result of a final appraisal which the Government of the Republic of Guatemala will formulate at the time of acceptance and ratification of the Final Acts of the Conference.

No. 3

For the Republic of the Chad :

In signing the Final Acts of the World Administrative Radio Conference, Geneva, 1979, the delegation of the Republic of the Chad declares that, with reference to the protection of its telecommunication interests, the sovereignty of its State may in no way be affected by the provisions adopted by this Conference or by the reservations made by other countries Members of the Union.

It therefore reserves its Government's right to take such steps as it may consider necessary to protect its telecommunication services.

No. 4

For the Algerian Democratic and Popular Republic, the Kingdom of Saudi Arabia, the State of Bahrain, the People's Republic of Bangladesh, the United Arab Emirates, the Islamic Republic of Iran, the Republic of Iraq, the Hashemite Kingdom of Jordan, the State of Kuwait, Lebanon, Libya (Socialist People's Libyan Arab Jamahiriya), the Kingdom of Morocco, the Sultanate of Oman, the Islamic Republic of Pakistan, the State of Qatar, the Syrian Arab Republic, the Somali Democratic Republic, the Democratic Republic of the Sudan, Tunisia and the People's Democratic Republic of Yemen :

The above-mentioned delegations declare that the signature and possible subsequent approval by their respective Governments of the Final Acts of the World Administrative Radio Conference, Geneva, 1979, do not, in any way, imply the recognition of Israel.

No. 5

For Belgium :

The Belgian Administration plans to bring into service shortly a network of broadcasting stations in the band 100 — 104 MHz.

It strongly urges the administrations concerned to consider immediately the action required to render this project possible.

No. 6

For the People's Republic of Benin :

The delegation of the People's Republic of Benin reserves the right of its Government to take all the necessary steps to safeguard its interests should reservations entered by other delegations compromise the proper functioning of its telecommunication services.

No. 7

For Chile :

The delegation of Chile, bearing in mind the agreements of the World Administrative Radio Conference, Geneva, 1979, concerning the frequency assignments in the Master International Frequency Register, the provisions of Article 4, paragraph 2 of the Antarctic Treaty signed at Washington on 1 December 1959, and the contents of No. VIII of the Final Protocol of the International Telecommunication Convention, Malaga-Torremolinos, 1973, states that its Government reserves the right to assign and recognize the frequencies which it considers necessary for present and future radiocommunication services operating within the Chilean Antarctic territory, over which it exercises sovereignty.

No. 8

For Cuba :

The delegation of Cuba, acting as the representative on behalf of its Government, states that it does not recognize the legal or moral worth of the signature of the Final Acts by the representation of the Pol Pot regime at the World Administrative Radio Conference, Geneva, 1979, for the following reasons :

The genocidal Pol Pot regime does not represent the legitimate interests of the people of Kampuchea, nor does it exercise any authority over that country.

Registration of the Pol Pot regime at this Conference is a mere formality representing purely political interests, as witnessed by its failure to participate in the activities and discussions of the Conference. Exercising no authority or jurisdiction over the territory of the country, it is unable to regulate telecommunication operations there.

The delegation of Cuba considers that, in the absence of the legitimate representation of the people of Kampuchea, the People's Revolutionary Council, no signature representing Kampuchea should appear in the Final Acts of the Conference.

No. 9

For Cuba :

Signature and acceptance of the Final Acts of the World Administrative Radio Conference, Geneva, 1979, by the Government of the Republic of Cuba does not in any way signify recognition of notification, registration and use of frequencies by the Government of the United States of America in the Cuban territory of the Province of Guantánamo which is being occupied illegally and against the wishes of the Cuban people.

The use of radio frequencies by the Government of the United States in the territory which it has usurped in Guantánamo, Cuba, constitutes an impediment to the communication services of Cuba and to the exercise of our country's sovereignty over the radio frequency spectrum, which is a limited resource.

The Government of Cuba reserves the right to take all the necessary steps to safeguard its legitimate interests.

No. 10

For the Islamic Republic of Iran :

This Conference has been unable to make adequate provision for the needs of the HF broadcasting service in the revised allocations, particularly in the 6 MHz and 7 MHz bands. Unless authority is given to the proposed HF Broadcasting Conference, by its agenda, for it to make use of some parts of the spectrum allocated to the fixed service, that Conference will not be able to plan all frequency bands to enable countries to sustain their broadcasting services in the case of varying propagation conditions throughout the solar cycle. In the absence of an adequate plan, this Administration reserves its right to take the necessary steps to use the portions of the bands 5 850 — 5 950 kHz and 7 300 — 7 400 kHz also for broadcasting services in accordance with the needs of this Administration.

No. 11

For the Democratic Republic of Afghanistan :

The delegation of the Democratic Republic of Afghanistan reserves the right for its Government to continue the use of fixed and mobile services in the exclusive maritime mobile bands below 10 MHz. These bands will be utilized for domestic requirements in a manner which will not cause harmful interference to the maritime mobile service.

No. 12

For the Islamic Republic of Mauritania :

The delegation of the Islamic Republic of Mauritania states that the signing of the Final Acts of the World Administrative Radio Conference, Geneva, 1979, or any subsequent ratification of these Final Acts by its Government in no way implies any recognition of the State of Israel.

No. 13

For the Islamic Republic of Pakistan :

considering that :

a) a High Frequency Broadcasting Plan is considered to be a pre-requisite to law and order in the HF spectrum;

b) all past efforts to prepare a plan have failed repeatedly due to inadequate allocations to the broadcasting service in the HF spectrum, particularly the lower bands;

c) no expansions of the important broadcasting bands of 6 MHz and 7 MHz have been approved by this Conference;

d) the footnote No. 531 attached with the expanded portions of the broadcasting bands is too rigid, and does not allow flexibility to the next World Administrative Radio Conference;

e) the period of transfer of the displaced assignments in the expanded portions of the broadcasting bands is too long;

f) a total power of 12.5 megawatts of broadcasting by only a few countries has already spilled over from the 6 MHz and 7 MHz broadcasting bands into the adjacent fixed services bands;

g) such out of band broadcasting will multiply, for reasons of equity if the proposed World Administrative Radio Conference fails to produce an acceptable HF Broadcasting Plan, due to inadequacy of the allocations;

h) there will be no further opportunity to correct this shortcoming in the allocations for a very long time;

the delegation of the Government of Pakistan to this World Administrative Radio Conference of the International Telecommunication Union is unable to accept the allocations made in the table of frequencies from 5 830 kHz to 5 950 kHz and 7 300 kHz to 7 500 kHz, as well as the footnote No. 531 along with its associated implications. It, therefore, reserves the right of its Government to take all appropriate action to protect its interests.

The delegation, however, assures full cooperation and participation of its Administration in the preparation of the high frequency broadcasting plan, as per decision of this Conference. It also assures further that the above reservation will cease to be effective, as soon as an acceptable high frequency broadcasting plan has been prepared and brought into effect.

This delegation further reserves the right on accepting the implications that might arise through the non-adherence by any other Member of the Union to the provisions of these Final Acts and the Radio Regulations. In such a situation, Pakistan reserves the right to take all appropriate action to protect its interests.

No. 14

For Greece and the Socialist Federal Republic of Yugoslavia :

The present Conference has adopted for Region 1 different allocations than those for Regions 2 and 3 in the band 415 — 495 kHz. The two services to which this band is allocated, namely aeronautical radionavigation and maritime mobile, are both extremely important safety services. The above delegations consider therefore that this decision will lead to serious problems hazarding the safeguard of human life.

In order to avoid any future impact, the above delegations proposed in all the stages of this Conference such solutions as to guarantee the absolute protection of these services and especially the aeronautical radionavigation service. Since these solutions have not been adopted by this Conference, these delegations declare that their Administrations cannot undertake any responsibility for possible implications from the use of this band as it has been decided due to the international character of both services.

Moreover, the above delegations declare that they reserve the right of their Administrations to change frequency assignments to their coast stations in the band 415 — 435 kHz until the date of coming into force of a revised Copenhagen Plan, which will provide for replacement frequencies within the band 435 — 495 kHz, whenever this will be.

No. 15

For the Oriental Republic of Uruguay :

The delegation of the Oriental Republic of Uruguay declares that, in view of the reduction in the widths of the frequency bands allocated to the fixed service between 4 MHz and 27.5 MHz and the fact that no procedure for the re-assignment of frequencies has been laid down which would guarantee continued operation of its radio stations as a result of the use by the broadcasting and maritime mobile services of the portions of the band withdrawn from the fixed service, its Government reserves the right to adopt the necessary measures to continue making appropriate use of its fixed service frequencies entered in the Master International Frequency Register — which render services of fundamental importance to the country — until such time as new alternative frequencies are provided enabling its radiocommunication services to operate properly.

The delegation of the Oriental Republic of Uruguay doubts whether it will be possible to re-assign the channels to be transferred in the reduced fixed service bands, and in particular in certain areas or sub-regions in which the spectrum is already congested, despite the reduction in the technical characteristics of its circuits.

It also reserves its Government's right to adopt any measures it sees fit to protect its interests in the event of the alternative frequencies of another administration causing harm to its radiocommunication system.

No. 16

For Japan :

The interference caused by certain broadcasting stations in Region 1 operating in the LF band are endangering the operation of the aeronautical radiobeacon stations in Japan. This interference will considerably increase when new LF broadcasting transmitters are brought into use or changes to the characteristics of existing assignments to LF broadcasting stations are made.

As mentioned explicitly in the noting of the Resolution No. 7 of the Regional Administrative LF/MF Broadcasting Conference, Geneva, 1975, and in the paragraph 4.4.4.1 of the Report of the Special Preparatory Meeting of CCIR, Geneva, 1978, the use of the LF band by broadcasting stations in Region 1 could adversely affect the stations of other radiocommunication services to which this band is allocated in other regions and particularly stations in the aeronautical radionavigation service involving the safety of human life.

However, this Conference has not solved the above-mentioned problem concerning the use of the FL band. Moreover, this Conference has adopted the Resolution relating to the modification of carrier frequencies of LF broadcasting stations in Region 1, without giving due consideration to the possibility of additional interference to the aeronautical radiobeacon stations in Region 3.

The delegation of Japan therefore reserves the right of its Government to take any necessary measures, including the rearrangement of its frequency assignments in the band between 130 kHz and 526.5 kHz in disregard of the allocation in the Radio Regulations in the event that broadcasting stations in Region 1 cause grave hindrance to LF aeronautical radiobeacon stations in Japan in the frequency band between 190 kHz and 285 kHz.

No. 17

For the Federal Republic of Nigeria :

In signing the Final Acts of the World Administrative Radio Conference, Geneva, 1979, the delegation of the Federal Republic of Nigeria reserves for its Government the right to take such actions as it may consider necessary to safeguard its interests should reservations or wrongful interpretations of the Final Acts by other countries or organizations threaten or endanger the telecommunication services of the Federal Republic of Nigeria.

In particular the decision taken by this Conference in relation to the feeder links for BSS in the band 14.0 — 14.8 GHz is not acceptable to us for the following reasons :

a) The World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977, produced a plan for down-links in the band 11.7 — 12.5 GHz of 800 MHz bandwidth.

b) The bandwidth which has been allocated exclusively to BSS feeder links in our preferred frequency band (14.5 — 15.3 GHz) is only 300 MHz from 14.5 — 14.8 GHz which is accepted by the Conference. This will not be enough because of the large number of administrations per orbital position.

No. 18

For the Republic of Zaire :

In signing the Final Acts of the World Administrative Radio Conference, Geneva, 1979, the delegation of the Republic of Zaire reserves its Government's right to take such steps as it may consider necessary to protect its radiocommunication services should Members of the Union fail to observe the provisions of the Radio Regulations, or should the reservations made by the delegations of other countries be detrimental to the satisfactory operation of Zaire's radio services.

No. 19

For Canada :

a) Mobile satellites operating in the UHF band

In developing its mobile-satellite systems under Radio Regulation No. 641, Canada agrees that such systems should be coordinated and notified according to Articles 11, 13 and 14. However, once such satellites are placed in operation, Canada considers that these systems operate with a primary status for the duration of their operational life.

b) HF broadcasting

Canada considers that the problem of severe congestion of the bands allocated to the broadcasting service at HF below 9 MHz was not resolved by this Conference. A proposal by Canada for the addition of 100 kHz of spectrum between 7 300 kHz and 7 400 kHz for this service on a world-wide basis, which would have helped to solve the problem, was rejected at the Conference by a narrow margin. For this reason, Canada reserves its right, in signing these Final Acts, to satisfy certain of its broadcasting requirements in the band segment 7 300 — 7 400 kHz. Insofar as possible, Canada, of course, will respect the rights of administrations operating in accordance with the Final Acts of this Conference.

No. 20

For the People's Republic of China :

At the time of signing the Final Acts of the World Administrative Radio Conference, Geneva, 1979, the delegation of the People's Republic of China, on behalf of the Chinese Government, states the following :

The Chinese delegation takes note of the decision taken by the present Conference on the convening of a World Administrative Radio Conference for the planning of the HF bands allocated to the broadcasting service and believes that it is an effective measure to solve the problem of congestion in the HF broadcasting bands and out-of-band transmissions. However, owing to historical reasons, the Chinese Administration reserves the right to continue to use those frequencies which it uses for broadcasting at present in the band 5 060 — 27 500 kHz until the establishment and implementation of the proposed HF broadcasting plan.

No. 21

For Chile :

The delegation of Chile to the World Administrative Radio Conference, Geneva, 1979, hereby declares, concerning such obligations as may arise out of the revised Radio Regulations, particularly with regard to the transfer of the existing allocations from the fixed service to other services in the HF band, that it take all the steps necessary to ensure the application of the new Regulations.

Notwithstanding the above, it reserves its Government's right to take such measures as it may consider necessary to keep in service within its national territory fixed links which it may be impossible, on technical, economic or other grounds, to transfer within the time limits established at this Conference.

No. 22

For the Republic of India :

Upon signing the Final Acts of the World Administrative Radio Conference, Geneva, 1979, the delegation of the Republic of India does not accept any implications resulting from any reservations that might be made by any other administration in respect of the provisions in the Final Acts. The delegation of the Republic of India reserves the right of its Government to take such action as might be necessary to safeguard its interests should any administration fail to observe any of the provisions of the Radio Regulations as revised by this Conference.

No. 23

For Mexico :

In signing the Final Acts of the World Administrative Radio Conference, Geneva, 1979, the delegation of Mexico expresses the intention of its Administration to comply with the provisions of the Radio Regulations adopted by this Conference; nevertheless, it declares that its Government reserves the right to take such steps as it may consider appropriate to safeguard its interests should any Member of the Union fail to fulfil the provisions of those Regulations.

The delegation of Mexico further declares that its Administration will do all in its power to transfer its stations in the fixed and land mobile services at present registered according to the current Table of Frequency Allocations, to adapt their operation to the new Table within the prescribed time limits. However, if as a result of the Conference's decisions to reduce the bands for these services or to limit their operation in the HF bands, the said stations are unable to continue operating efficiently on their assigned frequencies or on their replacement frequencies, if any, the Government of Mexico reserves the right to take such steps as it may consider appropriate to ensure the satisfactory operation of such stations.

No. 24

For the Republic of the Ivory Coast :

The delegation of the Republic of the Ivory Coast reserves its Government's right to take such steps as it may consider necessary to ensure the protection and satisfactory operation of its telecommunication services should other Members of the Union fail to observe the provisions laid down in the Radio Regulations (World Administrative Radio Conference, Geneva, 1979).

No. 25

For the Islamic Republic of Iran :

The delegation of Iran declares that with respect to allocations in the band 150 — 285 kHz of the Table of Frequency Allocations approved by the World Administrative Radio Conference, Geneva, 1979 :

a) existing LF high power radio broadcasting stations in Region 1 already cause harmful interference to aeronautical radionavigation ;

b) changes in the power or frequency of LF broadcasting transmitters or bringing into use of new assignments in LF band (150 — 285 kHz) will increase this interference and consequently make the present utilization of aeronautical radionavigation much more difficult in Iran ;

c) the Administration of the Islamic Republic of Iran therefore reserves for its country the right to take necessary measures to ensure the protection of the aeronautical radionavigation service ;

d) it also reserves its right to use the portion 160 — 190 kHz of the band 150 — 285 kHz also for the LF broadcasting service in accordance with the needs of the country.

No. 26

For the Republic of Venezuela :

In signing the Final Acts of the World Administrative Radio Conference, Geneva, 1979, the delegation of Venezuela states the intention of its Administration to comply with the provisions of the revised Radio Regulations. However, the Government of Venezuela reserves the right to take any measures it may consider necessary to safeguard its interests, particularly with respect to the fixed and mobile services below 9 975 kHz, and also in the event that any Member of the Union should fail to comply with the provisions of the Radio Regulations, Geneva, 1979, or that the reservations made by other countries should jeopardize its planned or existing telecommunication services.

No. 27

For the Vatican City State, Italy, Portugal and Turkey :

In the view of the above-mentioned Administrations, this Conference has not made adequate provisions for the needs of the HF broadcasting service, particularly in the bands of 6 MHz and 7 MHz. This fact will not permit the Conference foreseen in Resolution 508 to plan all frequency bands allocated to HF broadcasting and will not enable countries to sustain their HF broadcasting services in the phase of varying propagation conditions throughout the solar cycle.

Therefore the above-mentioned Administrations reserve their right to take the necessary steps to meet the needs of their HF broadcasting services.

No. 28

For France, the Principality of Liechtenstein and the Confederation of Switzerland :

On signing the Final Acts of the World Administrative Radio Conference, Geneva, 1979, the delegations of the above-mentioned countries declare that they reserve their right to take any steps they may consider appropriate to safeguard their interests if the reservations entered or any other measures adopted should have the effect to compromising the satisfactory operation of their radiocommunication services or if any Members should fail to comply with the current provisions of the Radio Regulations, and particularly if they should establish or operate, or allow to be established or operated, on their territory, without prior coordination, stations of the broadcasting service which are not in conformity with the provisions of No. 2666 of the Radio Regulations.

No. 29

For the Federative Republic of Brazil :

This Conference has adopted Resolution 4, on the period of validity of frequency assignments to space stations using the geostationary-satellite orbit. In this connection, the delegation of the Federative Republic of Brazil wishes to make the following comments :

a) the adoption of the experimental procedures set forth in that Resolution is not necessary at this Conference, in view of the existing regulatory provisions of Article 13;

b) the period designated for its experimental application, namely from 1 July 1980 until the next World Space Radiocommunication Conference, is inconsistent with the much longer period which would be required for its full application, in order to have significant data produced to allow for the evaluation of its usefulness;

c) the procedures adopted by that Resolution very easily allow for a permanent priority and appropriation of frequency assignments and orbital positions by any individual country or groups of countries, which is against the principles set forth by Article 33 of the International Telecommunication Convention of the ITU, Malaga-Torremolinos, 1973, and by the Resolutions 2 and 3 that were adopted by the World Administrative Radio Conference, Geneva, 1979.

Therefore, in signing the Final Acts of this Conference, the delegation of the Federative Republic of Brazil reserves the rights for its Government with regard to the application of Resolution 4 by any individual country or groups of countries, whenever such application is considered to be in contradiction with the provisions of Articles 11 and 13, as adopted by the World Administrative Radio Conference, Geneva, 1979.

No. 30

For the State of Israel :

The delegation of Israel declares that its signature to this Agreement and its eventual approval by its Administration shall only be valid and binding in relation to administrations which apply the provisions of the Convention in their relations with Israel.

Israel considers itself, for all intents and purposes, included also in footnotes 621 (174 — 223 MHz) and 866 (15.7 — 17.3 GHz) — despite the baseless objections of only a very few delegations.

While supporting the idea of planning of the broadcasting service HF bands, as embodied in Resolution 508 of this Conference, the delegation of Israel notes :

a) that the HF bands allocated by this Conference to the broadcasting service are insufficient for providing an adequate basis for such planning;

b) that no steps have been taken by this Conference against "jamming" — while it is a well known fact that certain Members of the Union deliberately cause such harmful interference to the broadcasting services;

c) that this practice of jamming renders unusable over 50% of the spectrum allocated to the broadcasting service, is totally incompatible with the very concept of planning, and is a flagrant violation of the letter and spirit of both the ITU Convention and Radio Regulations.

In these circumstances, Israel reserves the right to take any action necessary to adequately maintain and protect its broadcasting services. In so doing however, Israel will endeavour, as far as practicable, to respect the rights of administrations which operate in conformity with the Convention and the Final Acts of this Conference.

No. 31

For Turkey :

The delegation of Turkey to the World Administrative Radio Conference, Geneva, 1979, formally declares that the Government of Turkey does not, by signature of these Final Acts on its behalf, accept any obligations in respect of the additional allocation (footnote 694) of the frequency band 645 — 862 MHz to the aeronautical radionavigation service on a permitted basis to ensure protection of the aeronautical radionavigation service from its existing or planned broadcasting stations operating in accordance with the Table of Frequency Allocations in the area east of 40° East.

No. 32

For the Federal Republic of Germany, Belgium, Denmark, the United States of America, Greece, Iceland, Italy, Luxembourg, Norway, the Kingdom of the Netherlands, Portugal, the United Kingdom of Great Britain and Northern Ireland and Turkey :

The above-mentioned Administrations reserve their right to operate systems in the mobile-satellite service in the frequency range 235 — 399.9 MHz under the provisions of the relevant footnote to the Table of Frequency Allocations, subject only to coordination as prescribed in Article 14. The additional provision of this footnote imposes a condition of non-interference which could lead to a request to cease operation of a previously coordinated satellite system in the case where an administration, despite having agreed to such a satellite system, puts into service or merely plans a system that might receive harmful interference. Such a condition is unacceptable to the above Administrations.

No. 33

For Austria, Denmark, Spain, Finland, France, the Principality of Liechtenstein, Norway, Portugal, Sweden and the Confederation of Switzerland :

In signing the Final Acts of the Conference, the delegations of Austria, Denmark, Spain, Finland, France, Liechtenstein, Norway, Portugal, Sweden and Switzerland wish to make the following statement :

The World Administrative Radio Conference, Geneva, 1979, has denied the insertion of a provision into the Radio Regulations which would have allocated in some countries of Region 1 and Region 2 the frequency band 862 — 960 MHz also to the aeronautical mobile service. The proposed provision clearly restricted this service to the operation of a few channels within this band in a public radio-telephone system and subject to agreement under procedure set forth in Article 14.

The proposed provision was intended to make way for the possible integration of some aircraft stations in a ground-based integrated public radio-telephone network and to protect at the same time the other services operating in accordance with the Frequency Allocation Table.

There are urgent requirements for public mobile telephone facilities in many countries and these requirements are expected to grow even more rapidly with the improvement of the conventional public telephone networks.

The above-mentioned delegations, noting with great concern that international recognition has been denied to such an allocation, reserve the right of their Administrations to use a limited number of frequencies within the frequency band 862 — 960 MHz for communication with aircraft in a public mobile telephone network under the conditions described.

Steps will be taken to ensure that services operating according to the Frequency Allocation Table in other countries shall suffer no harmful interference from the services mentioned above.

No. 34

For the Byelorussian Soviet Socialist Republic, the Ukrainian Soviet Socialist Republic and the Union of Soviet Socialist Republics :

In the Table of Frequency Allocations, revised by the World Administrative Radio Conference, Geneva, 1979, additional frequency bands are allocated for the broadcasting service in the HF band at the expense of the bands used by the fixed service.

Taking into account that in the U.S.S.R. the stations of the fixed service have been operating in these frequency bands for a long period of time, the delegations of the Byelorussian Soviet Socialist Republic, the Ukrainian Soviet Socialist Republic and the Union of Soviet Socialist Republics are authorized to declare, that in the U.S.S.R. frequency bands additionally allocated in the HF band to the broadcasting service on the exclusive basis will be also used by the fixed service.

No. 35

For the Federal Republic of Germany :

The delegation of the Federal Republic of Germany, in signing the Final Acts of this Conference, declares that the revised allocation of HF frequency spectrum to the fixed, broadcasting and maritime services has not adequately met the requirements of the respective services of the Federal Republic of Germany, as contained in the relevant documents submitted to the World Administrative Radio Conference, Geneva, 1979.

A successful transfer of those services as well as an internationally agreed HF broadcasting plan enabling, in the bands allocated to the broadcasting service, the necessary inclusion of all out-of-band transmissions and meeting the requirements of the HF broadcasting service of the Federal Republic of Germany are the preconditions for solving existing problems.

The Federal Republic of Germany therefore reserves the right, with regard to the HF frequency spectrum, to take the necessary measures to meet the minimum requirements of the country's respective services.

No. 36

For the Kingdom of Saudi Arabia, the Republic of Cyprus, Spain, the United States of America, Greece, the United Kingdom of Great Britain and Northern Ireland, the Democratic Socialist Republic of Sri Lanka and the Republic of Zambia :

In the view of the above-mentioned Administrations this Conference has failed to make adequate provision for the needs of the HF broadcasting service in the revised allocations, particularly at 6 MHz and 7 MHz. Unless authority is given to the proposed HF Broadcasting Conference, by its agenda, for it to make use of some parts of the spectrum allocated to the fixed service, that Conference will not be able to plan all frequency bands to enable countries to sustain their broadcasting services in the face of varying propagation conditions throughout the solar cycle. In the absence of an adequate plan, the above-mentioned Administrations reserve their right to take the necessary steps to meet the needs of their HF broadcasting services.

No. 37

For the Republic of Korea :

The delegation of the Republic of Korea, on behalf of its Government reserves the right of its Government to take such action as it may consider necessary to safeguard its interests should any Members fail to comply with the requirements of the Radio Regulations (Geneva, 1979) or its Annexes attached thereto, or should reservations by other countries jeopardize its telecommunication services.

No. 38

For the United States of America :

The delegation of the United States of America formally declares that the United States of America does not, by signature of these Final Acts on its behalf, accept certain decisions taken by this Conference in regard to the Table of Frequency Allocations and the associated footnotes, and therefore, the United States of America :

1. In view of the fact that this Conference has failed to provide adequate allocations for the HF broadcasting service, particularly at 6 MHz and 7 MHz, reserves on this matter as indicated in statement No. 36 made jointly with the delegations of Saudi Arabia, Cyprus, Spain, Greece, the United Kingdom, Sri Lanka and Zambia;

2. Reserves the right to operate stations in the mobile-satellite service in the frequency range 235 to 399.9 MHz as indicated in statement No. 32 made jointly with the delegations of the Federal Republic of Germany, Belgium, Denmark, Greece, Iceland, Italy, Luxembourg, Norway, the Netherlands, Portugal, the United Kingdom and Turkey;

3. In the operation of stations in the radiolocation service on a primary basis in the bands 430 — 440 MHz, 5 650 — 5 850 MHz, 8 500 — 8 750 MHz, 8 850 — 9 000 MHz, 9 200 — 9 300 MHz, 9 500 — 9 800 MHz, 10 000 — 10 500 MHz, 13.4 — 14 GHz, 15.7 — 17.3 GHz and 33.4 — 36 GHz, cannot guarantee protection to or coordination with other services;

4. Reserves the right to operate stations of the fixed, mobile and radiolocation services on a primary basis in bands as specified in the footnotes pertinent to frequency bands 470 — 806 MHz and 890 —·960 MHz, without the condition specified in these footnotes that make such operations subject to agreement under Artcle 14. The United States will coordinate its usage of such services with neighbouring administrations which are affected;

5. In view of the fact that the Conference failed to provide adequate allocations for the HF maritime mobile service, particularly below 12 MHz, states its intention to satisfy maritime mobile requirements in the several HF bands below 10 MHz allocated to the mobile service on a primary basis.

No. 39

For the United States of America :

The Administration of the United States of America, calling attention to the fact that some of its broadcasting in the high frequency bands allocated to the broadcasting service are subject to willful harmful interference by administrations that are signatory to these Final Acts, and that such interference is incompatible with the rational and equitable use of these bands, declares that for as long as this interference exists, it reserves the right with respect to such interference to take necessary and appropriate actions to protect its broadcasting interests. In so doing, however, it intends to respect the rights, to the extent practicable, of administrations operating in accordance with these Final Acts.

No. 40

For the Republic of Colombia, the People's Republic of the Congo, Ecuador, the Gabon Republic, the Republic of Kenya, the Republic of Uganda, the Somali Democratic Republic and the Republic of Zaire :

The delegations of the above-mentioned countries confirm in its entirety Reservation No. 51 made at the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977, and uphold its content with respect to the World Administrative Radio Conference, Geneva, 1979.

These delegations likewise affirm that the World Administrative Radio Conference, Geneva, 1979, is not competent to discuss or decide territorial questions or matters relating to the sovereignty of States.

Moreover, the above-mentioned delegations, affirming once more that, in the view of the equatorial countries, the segments of geostationary orbit which are located above their respective territories are intended to bring genuine benefits to their peoples, to the international community and particularly to the developing countries, at the same time state their opposition to the continued application of the first-come-first-served principle which serves the interests of a handful of countries which are the sole beneficiaries of this limited natural resource, to the detriment of the other members of the international community and especially the developing countries.

Lastly, the delegations of the above-mentioned countries officially declare that they do not accept and accordingly are under no circumstances bound, through the signature of the Final Acts of the World Administrative Radio Conference, Geneva, 1979, by the resolutions, recommendations, agreements or decisions of this Conference regarding the positioning of geostationary satellites in the segments of the geostationary orbit which correspond to the territories over which these countries exercise sovereign rights.

No. 41

For the Republic of Colombia :

The delegation of Colombia to the World Administrative Radio Conference, Geneva, 1979, reserves the right of its Government to take any measures it may consider necessary in connection with its obligations under the Radio Regulations as revised by this Conference, in particular with respect to the transfer of frequency assignments to stations of the fixed service in those parts of the HF bands which have been allocated to other services.

It also reserves the right to continue using within its national territory those fixed links which are operating in accordance with the existing Radio Regulations and which, for reasons of technical and economic feasibility and others, cannot be transferred within the periods established by this Conference.

No. 42

For the Republic of Indonesia :

The delegation of the Republic of Indonesia to the World Administrative Radio Conference at Geneva, 1979 :

a) reserves the right of its Government to take any action and preservation measures to safeguard its interests should the Final Acts drawn up in this Conference be in contravention with the Constitution, Laws and Rights of the Republic of Indonesia which exist or may result from any principles on international law and those laid down in the Bogota Declaration of 3 December 1976 by Equatorial countries. In this regard the Government of the Republic of Indonesia will recognize the legitimate interests of other countries with a view to enhancing international cooperation in the peaceful uses of space for the benefit of mankind;

b) further reserves the right of its Government to take any action and preservation measures to safeguard its interests should Members of the Union fail to comply with the requirements in the Final Acts of the Conference or should reservations by other Members jeopardize its rights under the Final Acts.

No. 43

For Austria :

In signing the Final Acts of the Conference, the delegation of Austria wishes to make the following statement :

Austria does not agree with the allocations of the HF bands 5 850 kHz — 5 950 kHz and 7 300 kHz — 7 400 kHz to the fixed and mobile services, because there are no additional allocations to the broadcasting service in the 6 MHz and 7 MHz bands.

As a consequence, in the view of the Austrian Administration the proposed HF Broadcasting Conference will not be in a position to plan all frequency bands to enable countries to sustain their broadcasting services in the face of varying propagation conditions throughout the Solar cycle.

The Austrian delegation therefore reserves the right of its Administration to take necessary action to safeguard the interests of its HF broadcasting services. In doing so, the Austrian Administration will take into account the interests of the services of other countries to the greatest extent possible.

No. 44

For the People's Republic of Angola :

The delegation of the People's Republic of Angola, reserves its Government's right to take any steps it may consider necessary to safeguard the interests of its telecommunications should any Members fail to comply with the provisions of the Radio Regulations or should the reservations made by other countries jeopardize the satisfactory operation of its telecommunication services.

No. 45

For the Argentine Republic :

A. The delegation of the Republic of Argentina hereby reserves its Government's right to take such steps as it may consider appropriate to ensure the proper operation of its telecommunication services should its interests be affected by the decisions of this Conference, particularly as a result of the application of the procedure for releasing parts of the HF band in the fixed service between 4 000 and 27 500 kHz and the transfer of stations of that service from those parts to other bands.

It further states that should the reservations made by other countries prove detrimental to its telecommunication services, the Republic of Argentina reserves the right to take such measures as may be necessary to protect its own services.

B. The delegation of the Republic of Argentina hereby declares its Government does not recognize the frequency assignments which might be made directly or indirectly for any services, in any part of the radio spectrum, for the Falkland, South Georgia and South Sandwich Islands and Argentinian Antarctica between longitudes 25° and 74° W and south of latitude 60° S, over which territories the Republic of Argentina exercises sovereign rights, if such assignments are made on behalf of another State or of other States. Moreover, the Republic of Argentina reserves the right to use as its own any radio frequencies assigned in the circumstances described.

C. The delegation of the Republic of Argentina hereby declares on behalf of its Government that the illegality of the United Kingdom occupation of the Falkland, South Georgia and South Sandwich Islands has been recognized by the United Nations which, in Resolutions 2065 (XX), 3160 (XXVIII) and 31/49, called for the acceleration of negotiations between both Governments in order to terminate the colonial situation.

No. 46

For the People's Democratic Republic of Yemen :

In signing the Final Acts of the World Administrative Radio Conference, Geneva, 1979, the delegation of the People's Democratic Republic of Yemen, while reaffirming its support for the international cooperation in the field of telecommunications, reserves the right of its Government to take any action that it deems necessary to safeguard its interests should any country fail in any way to comply with the provisions of the Final Acts of the aforesaid Conference, or should reservations by other countries jeopardize its telecommunication services.

No. 47

For the Republic of Iraq and the Syrian Arab Republic :

The Administrations of the above-mentioned countries confirm that according to Resolution 1 the IFRB should not accept any notification of a frequency assignment for stations located in an occupied territory which are submitted by the administration of the occupier.

No. 48

For Ireland and the United Kingdom of Great Britain and Northern Ireland :

As it was not possible to obtain the inclusion of Ireland in the footnote 621 at this Conference, the above-named delegations state that their Administrations will comply with the Radio Regulations as though Ireland had been included in that footnote.

No. 49

For the United Republic of Tanzania :

The Government of the United Republic of Tanzania reserves the right to take any action that it deems necessary to safeguard its interests in the event of Members failing in any way to comply with the provisions of the Radio Regulations, World Administrative Radio Conference Geneva, 1979, or should reservations by other countries jeopardize the operation of its radiocommunication services.

No. 50

For the People's Republic of Mozambique :

The delegation of the People's Republic of Mozambique reserves the right of its Government to take all necessary measures to safeguard its interests, should any country fail to comply with the provisions of the Radio Regulations drawn up by the World Administrative Radio Conference, Geneva, 1979, or should the reservations made by any country tend to jeorpardize the efficient operation of its telecommunication services.

No. 51

For the Republic of Zambia :

In signing the Final Acts of the World Administrative Radio Conference, Geneva, 1979, the delegation of the Republic of Zambia, reserves the right of its Government to take any action it considers necessary to safeguard its telecommunications interests should any Member of ITU fail in any way to comply with the provisions of the Radio Regulations.

No. 52

For the Republic of the Niger :

In the light of the reservations already made, the delegation of Niger to the World Administrative Radio Conference, Geneva, 1979, reserves the right of its Government to take any necessary measures to safeguard its radiocommunication interests in the event of failure to comply with the provisions of the Final Acts of the World Administrative Radio Conference, Geneva, 1979, and the Radio Regulations resulting from this Conference.

No. 53

For the People's Republic of the Congo :

In signing the Final Acts of the World Administrative Radio Conference, Geneva, 1979, the delegation of the Congo notes with misgivings the reservations made by other delegations in connection with the use and application of the Radio Regulations.

The delegation of the People's Republic of the Congo therefore reserves the right of its Government to take any necessary measures to safeguard its interests should the signatory countries of the Final Acts fail to comply with the provisions of the Radio Regulations or should the reservations made by the delegations of other countries jeopardize the satisfactory operation of its radiocommunication services.

No. 54

For the Revolutionary People's Republic of Guinea :

In signing the Final Acts of the World Administrative Radio Conference, Geneva, 1979, the delegation of the People's Revolutionary Republic of Guinea notes with misgivings the reservations made by certain Members, particularly with respect to the Table of Frequency Allocations and to compliance with the provisions of the Radio Regulations.

It therefore reserves the right of its Government to take any measures it may consider necessary to safeguard its telecommunication interests.

No. 55

For the Democratic Socialist Republic of Sri Lanka :

In signing the Final Acts of the World Administrative Radio Conference, Geneva, 1979, the delegation of the Democratic Socialist Republic of Sri Lanka has noted that several administrations have made reservations regarding various provisions of the Final Acts of the Conference for the revision of the Radio Regulations.

The delegation of the Democratic Socialist Republic of Sri Lanka therefore reserves the right of its Government as may be deemed necessary to safeguard its interests should these reservations seriously affect the telecommunication services of the Democratic Socialist Republic of Sri Lanka.

No. 56

For the Central African Republic :

The delegation of the Central African Republic to the World Administrative Radio Conference, Geneva, 1979, notes with misgivings certain of the reservations already made with respect to the application of the provisions of the Radio Regulations, particularly the Table of Frequency Allocations. It therefore reserves the right of its Government to take any measures it may consider necessary to protect its telecommunication services and to approve the new Radio Regulations.

No. 57

For Ghana :

In signing the Final Acts of the World Administrative Radio Conference, Geneva, 1979, the Ghana delegation has noted various reservations submitted by other countries and has great concern with the frequency allocations and the new footnotes.

The Ghana delegation reserves, on behalf of its Government, the right to protect its telecommunication interests and it accepts no consequences of any reservations made by any other Government which might lead to an increase in its share in defraying the expenses of the Union.

No. 58

For the Socialist Republic of Roumania :

In signing the Final Acts of the World Administrative Radio Conference, Geneva, 1979, the delegation of the Socialist Republic of Roumania has noted with concern the reservations made by other countries, with particular reference to the allocations made in the Table of Frequency Allocations, and also with respect to the application of the Radio Regulations.

The delegation of Socialist Republic of Roumania therefore reserves the right of its Government to take such steps as may be deemed necessary to safeguard its interests, should these reservations jeopardize its telecommunication services.

No. 59

For the Republic of Liberia :

In signing the Final Acts of the World Administrative Radio Conference, Geneva, 1979, the delegation of the Republic of Liberia has noted with concern the reservations made by other countries, with particular reference to the allocations made in the Table of Frequency Allocations, and also with respect to the application of the Radio Regulations.

The delegation of the Republic of Liberia therefore reserves the right of its Government to take such steps as may be deemed necessary to safeguard its interests, should these reservations jeopardize its telecommunications services.

No. 60

For Thailand :

In signing the Final Acts of the World Administrative Radio Conference, Geneva, 1979, the delegation of Thailand, on behalf of its Government declares that :

a) by observing that many countries reserve their right to use the portions of the band 5 850 — 5 950 kHz and 7 300 — 7 400 kHz for broadcasting services;

b) does not accept the reservations made by the other countries regarding the utilization of the portions of the band 5 850 — 5 950 kHz and 7 300 — 7 400 kHz for broadcasting services and reserves the right to take any strong measures as it may consider necessary to protect its telecommunication services;

c) reserves the right to operate stations in the mobile, except aeronautical mobile, service on a primary basis in the band 435 — 438 MHz and shall take necessary steps to ensure that services operating according to the Frequency Allocation Table in other countries shall suffer no harmful interference from the service mentioned.

No. 61

For the United Republic of Cameroon :

In signing the Final Acts of the World Administrative Radio Conference, Geneva, 1979, the delegation of the United Republic of Cameroon notes with considerable concern the reservations made by other countries with respect to the Table of Frequency Allocations and to the application of the Radio Regulations.

The delegation of the United Republic of Cameroon therefore reserves the right of its Government to take any measures it may consider necessary to safeguard its interests should any of the above-mentioned reservations jeopardize its telecommunication services.

No. 62

For Mauritius :

In signing the Final Acts of the World Administrative Radio Conference, Geneva, 1979, the delegation of Mauritius has noted with concern the reservations made by other delegations, with particular reference to the allocations made in the Table of Frequency Allocations and also with respect to the application of the Radio Regulations.

In consequence, the delegation of Mauritius reserves the right of its Government to take any action it considers necessary to safeguard its broadcasting and other telecommunications services interests should these reservations jeopardize in any way these services.

No. 63

For the Republic of Singapore :

In signing the Final Acts of the World Administrative Radio Conference, Geneva, 1979, and after having noted the reservations deposited by other delegations, in particular with respect to the Frequency Allocations Table, the delegation of the Republic of Singapore reserves for its Government, the right to take any action it deems necessary to safeguard its interests should any Member fail in any way to comply with the provisions of the Radio Regulations drawn up by the aforesaid Conference, or should the above-mentioned reservations jeopardize the operation of its telecommunication services.

No. 64

For the Republic of the Philippines :

The delegation of the Republic of the Philippines after noting the reservations made by certain delegations, particularly, on the utilization of the frequency spectrum, reserves for its Government the right to take such action as may be necessary to safeguard its interests should certain Members fail to comply with the provisions of the Final Acts of this Conference or its Annexes or the Protocol attached thereto or against any consequences of reservations made by other countries which might have adverse effect to the interest of the Philippines.

No. 65

For Costa Rica :

In signing the Final Acts of the World Administrative Radio Conference, Geneva, 1979, the delegation of Costa Rica declares that its Administration will endeavour to comply with the provisions of the Radio Regulations approved at this Conference; nevertheless, in view of the reservations made by some countries, it reserves its Government's right :

a) To take the necessary steps to protect the radiocommunication services in Costa Rica, should they be affected by the failure of other countries Members of the Union to comply with the Regulations or the Annexes and Protocols thereto;

b) Not to accept those reservations made by various countries which leave the fixed and mobile services unprotected, since these services are of great importance in Costa Rica, particularly in the UHF bands, and must be protected against all manner of interference.

No. 66

For Ecuador :

In signing the Final Acts of the World Administrative Radio Conference, Geneva, 1979, the delegation of Ecuador declares that its Administration will endeavour to comply with all the provisions of the Regulations approved at this Conference; nevertheless, in view of the reservations made by other countries, it reserves its Government's right :

1. To take such steps as it considers necessary to protect the telecommunication services of Ecuador should they be affected through the failure of other countries Members of the Union to comply with the provisions of the Regulations and the Annexes thereto;

2. Not to accept the reservations made by other countries if they prove detrimental to the national interests of Ecuador;

3. To continue to use some of the existing assignments of the fixed and mobile service in the HF bands whenever it proves impossible, for technical, economic or other reasons, to transfer them within the time limits allowed by this Conference.

No. 67

For the Republic of Upper Volta :

In signing the Final Acts of the World Administrative Radio Conference, Geneva, 1979, the delegation of the Republic of Upper Volta notes with misgivings the reservations made by some countries concerning certain provisions of the Radio Regulations.

It therefore reserves its Government's right to take such steps as it considers necessary to safeguard its interests should they be jeopardized.

No. 68

For the Hashemite Kingdom of Jordan, Lebanon and the Syrian Arab Republic :

The above-mentioned delegations to the World Administrative Radio Conference, Geneva, 1979, solemnly declare themselves bound by the provisions adopted by this Conference in conformity with the provisions of the International Telecommunication Convention.

Accordingly they reject any statements or actions which are not in conformity with the decisions taken by this Conference.

In particular, they declare the statement appearing in reservation No. 30, referring to footnotes concerning 174 — 223 MHz and 15.7 — 17.3 GHz bands as unacceptable because it is contrary to the decisions taken by the Conference in full recognition of technical bases of the objections made by the delegation of the Hashemite Kingdom of Jordan against the inclusion of Israel in the concerned footnotes.

No. 69

For the Republic of Kenya :

In view of reservations entered by certain countries to operate some services in contravention of the provisions of the Radio Regulations drawn up by the World Administrative Radio Conference, Geneva, 1979, the delegation of the Republic of Kenya reserves the right of its Government to take necessary steps as it may deem fit to protect her telecommunication services in the event of other Members failing to comply with the provisions of the Radio Regulations, as revised by this Conference, in particular reservations Nos. 13, 32, 33, 36, 38 and 43 as contained in the Final Protocol.

No. 70

For the Islamic Republic of Iran :

The delegation of the Islamic Republic of Iran declares that its Administration does not accept any implication resulting from any reservation that has been made by any other administration, or group of administrations, in respect of or relating to the provisions in the Final Acts. The delegation of the Islamic Republic of Iran reserves for its country the right of its Government to take such action as it might deem necessary to safeguard its interests in case any other administration, particularly in consequence of any of the statements numbered 11, 32, 34 and 38 under the Final Protocol, disregards or contravenes any of the provisions of the Radio Regulations as revised by this Conference, and especially if such action proves prejudicial to the needs or interests of the Islamic Republic of Iran.

No. 71

For the Republic of Mali :

After noting the reservations made by other delegations, particularly those relating to the Table of Frequency Allocations, the delegation of the Republic of Mali reserves its Government's right to take such steps as it may consider necessary to safeguard its interests should those reservations or failure to comply with the provisions of the Radio Regulations prove detrimental to the satisfactory operation of its radio services.

No. 72

For the United States of America :

With reference to statement No. 9 by the Government of the Republic of Cuba, the Government of the United States of America notes that the United States presence in Guantanamo is by virtue of a treaty in force; the United States reserves the right to meet its radiocommunication requirements there as heretofore.

No. 73

For Belgium, France, Luxembourg, the Kingdom of the Netherlands and the Confederation of Switzerland :

The delegations of the above-mentioned countries, taking note of the reservations made by several delegations in connection with the insufficient allocations made to the broadcasting service in the lower part of the HF band and the steps which the corresponding administrations accordingly propose to take, declare that their Administrations reserve the right to take any necessary measures both to ensure the satisfactory operation of the services to which this part of the spectrum is allocated and to allow an equitable use of the HF band by their broadcasting services.

No. 74

For the Algerian Democratic and Popular Republic, the Kingdom of Saudi Arabia, the State of Bahrain, the United Arab Emirates, the Republic of Iraq, the Hashemite Kingdom of Jordan, the State of Kuwait, Lebanon, Libya (Socialist People's Libyan Arab Jamahiriya), the Kingdom of Morocco, the Sultanate of Oman, the State of Qatar, the Syrian Arab Republic, the Somali Democratic Republic, the Democratic Republic of the Sudan and the People's Democratic Republic of Yemen :

After having noted the reservations already deposited, the delegations of the above-mentioned countries reserve their Governments' rights to take such action as they may deem necessary to protect their interests, should any Member fail in any way to observe the provisions of the Final Acts of the World Administrative Radio Conference, Geneva, 1979, or should the reservations made by such Member jeopardize their telecommunications interests.

No. 75

For the Federal Republic of Germany, Australia, Austria, Belgium, Canada, Denmark, the United States of America, Finland, France, Greece, Ireland, Italy, Japan, the Principality of Liechtenstein, Luxembourg, Norway, New Zealand, Papua New Guinea, the Kingdom of the Netherlands, Portugal, the United Kingdom of Great Britain and Northern Ireland, Sweden and the Confederation of Switzerland :

The above-mentioned delegations, referring to the reservations made by the Republic of Colombia, the People's Republic of the Congo, the Republic of Ecuador, the Gabon Republic, the Republic of Kenya, the Republic of Uganda, the Somali Democratic Republic and the Republic of Zaire in statement No. 40 and by the Republic of Indonesia in statement No. 42, consider that, in as much as these statements refer to the Bogota Declaration of 3 December 1976 by equatorial countries and to the claims of those countries to exercise sovereign rights over segments of the geostationary-satellite orbit, the claims in question cannot be recognized by this Conference, and that the decisions of this Conference regarding the assignment and use of frequencies and orbital positions in the geostationary orbit are fully in accordance with the International Telecommunication Convention (Malaga-Torremolinos, 1973) by which this Conference is bound.

The above-mentioned delegations also wish to state that Resolution 3, in referring to the "relevant technical aspects concerning the special geographical situation of particular countries", does not imply a recognition of claims to any preferential rights to the geostationary orbit.

No. 76

For the United Kingdom of Great Britain and Northern Ireland :

With reference to the reservation in statement No. 45 by the Republic of Argentina, the Government of the United Kingdom of Great Britain and Northern Ireland have no doubt as to United Kingdom sovereignty over the Falkland Islands, the Falkland Island Dependencies, and the British Antarctic Territory. In this context attention is drawn to Article IV of the Antarctic Treaty, to which both the United Kingdom and Argentina are parties, which freezes territorial claims in Antarctica.

The United Kingdom Government therefore do not accept the declaration of the Argentine Republic claiming to contest United Kingdom sovereignty over the above-mentioned territories. Furthermore the United Kingdom is entitled to have frequencies assigned to it for radio services to be operated from these territories and would regard any use by the Argentine Republic of such frequencies which caused harmful interference to these assignments as a breach of the Convention and the Radio Regulations. The United Kingdom does not accept the assertion in the last paragraph of the Argentine declaration that the "Illegality of the occupation of the Falkland, South Georgia and South Sandwich Islands by the United Kingdom has been recognized by the United Nations Organization". United Nations Resolutions have simply called for the settlement of the dispute by negotiation between the two Governments.

No. 77

For the United Kingdom of Great Britain and Northern Ireland :

With reference to the reservation in statement No. 2 by the Republic of Guatemala, the Government of the United Kingdom of Great Britain and Northern Ireland have no doubt as to the sovereignty of the United Kingdom over Belize and wish formally to reserve their rights on this question.

No. 78

For the United Kingdom of Great Britian and Northern Ireland :

The delegation of the United Kingdom of Great Britain and Northern Ireland does not accept reservation No. 7 by Chile in so far as it disputes the sovereignty of Her Majesty's Government in the United Kingdom over the British Antarctic Territory. The delegation note the reference to Article 4 of the Antarctic Treaty which freezes territorial claims in Antarctica.

No. 79

For the Republic of Colombia, the People's Republic of the Congo, Ecuador, the Gabon Republic, the Republic of Kenya, the Republic of Uganda, the Somali Democratic Republic and the Republic of Zaire :

The delegations of the above-mentioned countries wish to state that preambular paragraph *e)* and the second part of operative paragraph 3.2 of Resolution 3 adopted by the World Administrative Radio Conference, Geneva, 1979, refer also to the special geographical situation of the equatorial countries in relation to the geostationary orbit, as emerged from the discussions of the ad hoc Working Group and the Committee concerned.

On this understanding, the above-mentioned delegations accepted the terms of that Resolution, which deals with the use of the geostationary orbit, bearing in mind, as was inevitable, the implications of the special geographical situation of the countries located on the Earth's equator.

Hence any planning or regulation aimed at achieving the rational use of the geostationary orbit through equitable access to it by all countries must take into consideration the position adopted in that connection by the equatorial countries.

No. 80

For Papua New Guinea :

In signing the Final Acts of the World Administrative Radio Conference, Geneva, 1979, and in the light of reservations already deposited the delegation of Papua New Guinea reserves for its Government the right to take such measures as it sees fit, to safeguard its radiocommunications interests, if other countries fail to observe the provisions adopted by the Conference and in so doing cause harmful interference to radiocommunications systems under the jurisdiction of the Government of Papua New Guinea.

No. 81

For Japan :

With regard to the reservations made by the Chilean delegation and the Argentine delegation concerning the frequency assignments in Antarctica, the delegation of Japan wishes to reaffirm the position of the Japanese Government concerning Article 4 of the Antarctic Treaty.

No. 82

For the Somali Democratic Republic :

The delegation of the Somali Democratic Republic at the World Administrative Radio Conference, Geneva, 1979, hereby declares that its Government will never accept any measures or circumstances resulting from reservations already deposited by other administrations and which may, henceforth, jeopardize the interests of the telecommunications services of Somalia.

No. 83

For Cuba :

If, as a result of Reservations Nos. 36 and 38 of the Final Protocol to the World Administrative Radio Conference, Geneva, 1979, relating to the use of the broadcasting service in bands allocated to services other than the broadcasting service in the region of 6 MHz and 7 MHz, these new bands cannot be properly used by the services to which they are allocated, the Administration of the Republic of Cuba reserves the right to use them in the manner best suited to its interests.

(The signatures follow)

(The signatures following the Final Protocol are the same as those shown on pages 4 to 10)

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RESOLUTIONS

Note by the Secretary-General

In accordance with the decisions of the Conference the Resolutions have been arranged in order and numbered along the lines of the grouping and numbering system below. In addition, in doing so, it was apparent that some Resolutions in one group have direct relationship to Resolutions in other groups, and this has been reflected to facilitate consultation.

	Numbers
RESOLUTIONS OF GENERAL APPLICATION	1 - 99
- Principles, general procedures and cooperation	1 - 20
Also refer : Nos. 35, 36, 37	
- Specific procedures	30 - 39
Also refer : Nos. 1, 6, 7, 8, 9 Nos. 100, 101, 102 Nos. 200, 201, 202 Nos. 502, 503, 504, 506, 507 Nos. 700, 701	
- Technical matters	60 - 69
FIXED SERVICE / FIXED-SATELLITE SERVICE	100 - 199
Also refer : Nos. 8, 9 Nos. 31, 32, 33, 34 Nos. 502, 503, 504, 506, 507 Nos. 700, 701	
MOBILE SERVICE / MOBILE-SATELLITE SERVICE	200 - 299
Also refer : No. 38 Nos. 305, 315	
MARITIME MOBILE SERVICE / MARITIME MOBILE-SATELLITE SERVICE	300 - 399
Also refer : Nos. 200, 201	
AERONAUTICAL MOBILE SERVICE / AERONAUTICAL MOBILE-SATELLITE SERVICE	400 - 499
BROADCASTING SERVICE / BROADCASTING-SATELLITE SERVICE	500 - 599
Also refer : Nos. 31, 32, 33, 34 Nos. 100, 101, 102 Nos. 700, 701	
OTHER SERVICES	600 - 699
RELATING TO MORE THAN ONE SERVICE	700 - 799
Also refer : Nos. 31, 32, 33, 34 Nos. 100, 101, 102 Nos. 502, 503, 504, 506, 507	

In this context see also the Analytical Index (Part A) prepared by the General Secretariat.

CA

RESOLUTION No. 1

Relating to Notification of Frequency Assignments [1]

The World Administrative Radio Conference, Geneva, 1979,

referring to

- the Preamble of the Convention*,
- Article 31 of the Convention* (Special Arrangements),
- Article 7 of the Radio Regulations (Special Agreements),
- Article 12 of the Radio Regulations (Notification and Recording in the Master International Frequency Register of Frequency Assignments to Terrestrial Radiocommunication Stations),
- Article 13 of the Radio Regulations (Notification and Recording in the Master International Frequency Register of Frequency Assignments to Radio Astronomy and Space Radiocommunication Stations Except Stations in the Broadcasting-Satellite Service),
- Article 17 of the Radio Regulations (Procedure for the Bands Allocated Exclusively to the Broadcasting Service Between 5 950 kHz and 26 100 kHz);

resolves

that, unless specifically stipulated otherwise by special arrangements communicated to the Union by administrations, any notification of a frequency assignment to a station shall be made by the administration of the country on whose territory the station is located.

AY

RESOLUTION No. 2

Relating to the Equitable Use, by All Countries, with Equal Rights, of the Geostationary-Satellite Orbit and of Frequency Bands for Space Radiocommunication Services [2]

The World Administrative Radio Conference, Geneva, 1979,

considering

that all countries have equal rights in the use of both the radio frequencies allocated to various space radiocommunication services and the geostationary-satellite orbit for these services;

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[1] Replaces Resolution No. 5 of the Administrative Radio Conference, Geneva, 1959.

* International Telecommunication Convention (Malaga-Torremolinos, 1973).

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

taking into account

that the radio frequency spectrum and the geostationary-satellite orbit are limited natural resources and should be most effectively and economically used;

having in mind

that the use of the allocated frequency bands and fixed positions in the geostationary-satellite orbit by individual countries or groups of countries can start at various dates depending on the requirements and readiness of technical facilities of countries;

resolves

1. that the registration with the IFRB of frequency assignments for space radiocommunication services and their use should not provide any permanent priority for any individual country or groups of countries and should not create an obstacle to the establishment of space systems by other countries;

2. that, accordingly, a country or a group of countries having registered with the IFRB frequencies for their space radiocommunication services should take all practicable measures to realize the possibility of the use of new space systems by other countries or groups of countries so desiring;

3. that the provisions contained in paragraphs 1 and 2 of this Resolution should be taken into account by the administrations and the permanent organs of the Union.

BP

RESOLUTION No. 3

Relating to the Use of the Geostationary-Satellite Orbit and to the Planning of Space Services Utilizing It

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the geostationary-satellite orbit and the radio frequency spectrum are limited natural resources and are utilized by space services;

b) that there is a need for equitable access to, and efficient and economical use of, these resources by all countries as provided for in Article 33 of the International Telecommunication Convention (Malaga-Torremolinos, 1973) and Resolution **2**;

c) that the utilization of radio frequencies and the geostationary-satellite orbit by individual countries and groups of countries can take place at various points in time, based on their requirements and the availability of the resources at their disposal;

d) that there are growing requirements all over the world for orbital position and frequency assignments for the space services;

e) that in the use of the geostationary-satellite orbit for space services, attention should be given to the relevant technical aspects concerning the special geographical situation of particular countries;

resolves

1. that a world space administrative radio conference shall be convened not later than 1984 to guarantee in practice for all countries equitable access to the geostationary-satellite orbit and the frequency bands allocated to space services;

2. that this conference shall be held in two sessions;

3. that the first session shall:

3.1 decide which space services and frequency bands should be planned;

3.2 establish the principles, technical parameters and criteria for the planning, including those for orbit and frequency assignments of the space services and frequency bands identified as per paragraph 3.1, taking into account the relevant technical aspects concerning the special geographical situation of particular countries; and provide guidelines for associated regulatory procedures;

3.3 establish guidelines for regulatory procedures in respect of services and frequency bands not covered by paragraph 3.2;

3.4 consider other possible approaches that could meet the objective of *resolves* 1;

4. that the second session shall be held not sooner than twelve months and not later than eighteen months after the first session and implement the decisions taken at the first session;

invites

1. *the CCIR* to carry out preparatory studies and provide the first session of the conference with technical information concerning principles, criteria and technical parameters including those required for planning space services;

2. *the IFRB* to prepare a report on the operation of the procedures of Articles **11** and **13** including information about difficulties which may be reported to the IFRB by administrations in gaining access to suitable orbital locations and frequencies, and to circulate this report to administrations at least one year before the first session of the conference;

3. *the IFRB* to carry out technical preparations for the conference in accordance with the provisions of the Radio Regulations;

4. *the administrations* to examine all aspects of the matter with a view to submitting proposals to the conference, and to cooperate actively in the above-mentioned work of the CCIR and IFRB;

5. *the Administrative Council* to take all necessary steps for the convening of the conference in accordance with this Resolution.

BY

RESOLUTION No. 4

Relating to the Period of Validity of Frequency Assignments to Space Stations Using the Geostationary-Satellite Orbit

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that rational and efficient use must be made of the frequency spectrum and the geostationary-satellite orbit and that account should be taken of the provisions of Resolution **2** relating to the use by all countries, with equal rights, of frequency bands for space radiocommunication services;

b) that limiting the period of validity of frequency assignments to space stations using the geostationary-satellite orbit is a concept which could promote the attainment of these objectives;

c) that amortizing the considerable investments made in connection with the development of space radiocommunications is a particularly heavy burden for all administrations and that these investments should be spread over a predetermined period;

d) that efforts should be made to encourage administrations in a position to do so to develop techniques designed to improve the utilization of the frequency spectrum and the geostationary-satellite orbit with a view to increasing the total radiocommunication facilities available to the world community;

e) that a world space administrative radio conference is due to meet around 1984 to deal with the use of the geostationary-satellite orbit and the planning of the space services using this orbit;

f) that it would be advantageous to introduce an experimental procedure to gain experience from application of the new concept of notifying the period of validity of an assignment in space radiocommunications, but that it is not desirable to impose on administrations a statutory period identical in all cases but that on the contrary administrations should be left to propose the period of validity themselves in the light of their requirements and of the common interest;

resolves

1. that, as from 1 July 1980 until the world space administrative radio conference (see Resolution 3), frequency assignments to space radiocommunication stations located on the geostationary-satellite orbit shall be dealt with as follows:

1.1 a frequency assignment to a space station [1] on a geostationary satellite shall be deemed definitively discontinued after the expiry of the period of operation shown on the assignment notice, reckoned from the date on which the assignment was brought into service. This period shall be limited to that for which the satellite network was designed. The Board shall then invite the notifying administration to take steps to cancel the assignment. If the Board receives no reply within three months following the expiry of the period of operation, it shall insert a symbol in the Remarks Column of the Master Register to indicate that the assignment is not in conformity with this Resolution;

1.2 if a notifying administration which wishes to extend the period of operation originally shown on the assignment notice of a frequency assignment of an existing space station [1] informs the Board accordingly more than three years before the expiry of the period in question and if all other basic characteristics of that assignment remain unchanged, the Board shall amend as requested the period of operation originally recorded in the Master Register and publish that information in a special section of the weekly circular;

1.3 if, at least three years before the expiry of the period of operation recorded in the Master Register of a frequency assignment to an existing space station [1], an administration initiates the coordination procedure specified in No. **1060** to bring into service a new space station using the same assigned frequency and the same orbital position but with different technical characteristics, and if the Board finds after the notification that the new assignment conforms with the provisions of No. **1503** and does not increase, in relation to the preceding assignment, the probability of interference to the detriment of a frequency assignment recorded in the Master Register or involved in the coordination procedure, the new assignment shall be given a favourable finding and shall be entered in the Master Register;

1.4 a notifying administration which wishes to modify a basic characteristic of a frequency assignment of a space station [1] recorded in the Master Register shall initiate, in any case other than those covered by paragraphs 1.2 and 1.3, the appropriate modification procedure in accordance with the provisions of Nos. **1547** to **1551**;

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[1] The expression "space station" may apply to more than one satellite provided that only one satellite is in operation at any particular moment and that the stations installed on board successive satellites have identical basic characteristics.

2. that, for the application of the provisions of paragraph 1.1 above, the information concerning the period of validity of frequency assignments to space stations shall be notified in addition to that contained in Appendices 3 and 4 to the Radio Regulations;

3. that the application of this Resolution shall not prejudge in any way the decisions of the space administrative radio conference referred to in Resolution 3;

invites

the world space administrative radio conference provided for in Resolution 3 to take cognizance of the initial results of the application of this Resolution.

CG

RESOLUTION No. 5

Relating to Technical Cooperation with the Developing Countries in the Study of Propagation in Tropical Areas

The World Administrative Radio Conference, Geneva, 1979,

having noted

that the assistance provided for the developing countries by the Union in cooperation with other United Nations specialized agencies, such as the United Nations Development Programme (UNDP), in the field of telecommunication augurs well for the future;

being aware

a) of the fact that the developing countries, particularly those in tropical areas, require adequate knowledge of radio wave propagation in their territories in order to make rational and economical use of the radio spectrum;

b) of the importance of propagation in radiocommunications;

c) of the importance of the work of the CCIs for the development of telecommunications in general and radiocommunications in particular;

considering

a) the need for the developing countries themselves to study telecommunications in general and propagation in particular in their territories, this being the best means of enabling them to acquire telecommunication techniques and to plan their systems effectively and in conformity with the special conditions in the tropical areas;

b) the scarcity of resources available in these countries;

resolves to invite the Secretary-General

1. to offer the assistance of the Union to developing countries in the tropical areas which endeavour to carry out national propagation studies in order to improve and develop their radiocommunications;

2. to assist these countries, if necessary with the collaboration of international and regional organizations such as the African Postal and Telecommunications Union (APTU), the Panafrican Telecommunication Union (PATU) and the Union of National Radio and Television Organizations of Africa (URTNA) which may be

concerned, in carrying out national propagation measurement programmes, including collecting appropriate meteorological data, on the basis of CCIR Recommendations, Questions and Study Programmes in order to improve the use of the radio spectrum;

3. to arrange funds and resources for this purpose from the UNDP or other sources in order to enable the Union to provide the countries concerned with adequate and effective technical assistance for the purpose of this Resolution;

urges administrations

to submit the results of these propagation measurements to the CCIR for consideration in its studies;

invites the Administrative Council

to follow the progress made in carrying out programmes of propagation measurements and the results achieved, and to take any action that it considers necessary.

BW

RESOLUTION No. 6

Relating to the Preparation of a Handbook to Explain and Illustrate the Procedures of the Radio Regulations

The World Administrative Radio Conference, Geneva, 1979,

considering

a) the complexity of the regulatory procedures specified in Chapter IV of the Radio Regulations;

b) the need of many administrations for a handbook to give their staff a better understanding of these procedures to help in their application;

c) the possible use of diagrams, flow charts and other graphical aids to the understanding of complex procedures;

recognizing

1. that the World Administrative Radio Conference, Geneva, 1979, has insufficient time to develop explanatory material and diagrams for inclusion in or attachment to the Final Acts;

2. that a special effort will be required to develop a handbook to meet adequately the need referred to in *b)*;

3. that it would be advantageous if the format of such a handbook were compatible with that of the Radio Regulations;

resolves

that the IFRB should, as soon as possible after the World Administrative Radio Conference, Geneva, 1979, prepare a handbook incorporating appropriate graphical material, including flow charts, to help the staff of administrations to apply the regulatory procedures of Chapter IV of the Radio Regulations;

instructs the Secretary-General

1. to publish the handbook prepared by the IFRB;

2. to insert the flow charts, when available, in an appropriate manner in published editions of the Radio Regulations, clearly marked to the effect that they are an aid to understanding and that they do not form part of the Radio Regulations.

AD

RESOLUTION No. 7

Relating to the Development of National Radio Frequency Management

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the Radio Regulations contain, inter alia, procedures for the coordination, notification and registration of frequencies which specify the rights and obligations of Member countries;

b) that the application of the above-mentioned procedures necessitates an appropriate radio frequency management unit in each Member country;

c) that the existence of such a unit helps Member countries to safeguard their rights and to discharge their obligations under the Radio Regulations;

d) that the application of the Radio Regulations through the agency of such units is in the interest of the international community as a whole;

noting

that such a unit requires an adequate number of suitably qualified staff;

noting further

that the administrations of many developing countries need to create or to strengthen such a unit, appropriate to their administrative structure, with responsibility for the application of the Radio Regulations at the national and international levels;

recommends

that the administrations of such countries take appropriate action;

resolves

1. that meetings shall be organized between representatives of the IFRB, the CCIR and the personnel involved in frequency management matters from administrations of developing and developed countries;

2. that such meetings shall be aimed at designing standard structures suitable for administrations of developing countries and include discussions concerning the establishment and operation of radio frequency management units;

3. that such meetings should also identify the particular needs of developing countries in establishing such units, and the means required to meet those needs;

recommends

that developing countries when planning the use of funds, particularly those received from international sources, make provision for participation in these meetings as well as for the introduction and development of such units;

invites the Administrative Council

to take the necessary measures for the organization of such meetings;

instructs the Secretary-General

1. to circulate this Resolution to all Members of the Union, drawing their attention to its importance;

2. to circulate the results of such meetings, particularly to the developing countries;

3. to inform the developing countries of the types of assistance the ITU can provide in setting up the desired structure;

draws the attention of the next Plenipotentiary Conference to

1. the particular problems identified in this Resolution;

2. the need for prompt and effective action to resolve them;

3. the need to take all practicable measures to ensure that resources are made available for this purpose.

CV

RESOLUTION No. 8

Relating to Implementation of the Changes in Allocations in the Bands Between 4 000 kHz and 27 500 kHz

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that parts of frequency bands between 4 000 kHz and 27 500 kHz that were previously allocated on an exclusive or shared basis to the fixed service have been re-allocated to other services;

b) that existing fixed and mobile assignments must be removed progressively from those re-allocated bands to make way for other services;

c) that the assignments to be removed, termed "displaced assignments", must be re-accommodated in other frequency bands;

recognizing

the difficulties facing administrations and the IFRB during the period of transition from the previous allocations to those made by this Conference;

resolves

1. that the transitional procedure in Annex A to this Resolution shall be used for the purpose of ensuring an orderly and equitable implementation of the changeover from the previous allocations to those made by this Conference;

2. that the provisions of No. **1242** and the associated provisions of Article **12** concerning the examination and recording in the Master Register of assignments in the bands between 4 000 kHz and 27 500 kHz allocated on an exclusive or shared basis to the fixed service shall be suspended from 1 January 1982 to 30 June 1984;

3. that the interim procedure in Annex B to this Resolution shall be used for the purpose of dealing with any urgent new frequency assignments in the relevant bands during the period of suspension of the provisions of Article **12** as specified in *resolves* 2;

4. that the review procedure in Annex C to this Resolution shall be used for the purpose of examining any urgent new assignments notified during the period of suspension of the provisions of Article **12** as specified in *resolves* 2;

5. that a special transfer procedure, described in Resolution **404**, shall apply to stations in the aeronautical fixed service operating in the band 21 924 - 22 000 kHz (band allocated by this Conference exclusively to the aeronautical mobile (R) service) and shall be terminated on 1 February 1983;

invites administrations

1. when seeking re-accommodation for their mobile assignments in the bands between 4 000 kHz and 27 500 kHz re-allocated to other services, to make every effort to find replacement assignments in the bands allocated exclusively to the mobile service concerned;

2. to cooperate by not submitting notices for assignments in the relevant bands during the period of suspension of the provisions of Article **12** as specified in *resolves* 2, except for urgent new assignments to be dealt with under the interim procedure;

requests the IFRB

not to examine any notices in the relevant bands under Article **12** during the period of suspension of the provisions of that Article as specified in *resolves* 2, other than those notices requesting deletions of existing assignments.

ANNEX A TO RESOLUTION No. 8

Transitional Procedure for the Selection and Approval of Replacement Assignments

PART I – PREPARATORY PHASE

Section I. Preparation and Publication by the IFRB of Consolidated Proposals for Replacement Assignments

1. For the purpose of this Resolution, the term "displaced assignment" means a frequency assignment to a station in the fixed service in the parts of the bands re-allocated from the fixed service to other services for which a replacement assignment shall be found in accordance with this Resolution.

2. The Board, as soon as possible after completion of the procedure annexed to Resolution **9**, shall prepare consolidated proposals for replacements for all displaced assignments listed in the Provisional Section of the Master Register in the bands between 4 000 kHz and 27 500 kHz which the World Administrative Radio Conference, Geneva, 1979, has re-allocated from the fixed service to other services.

3. The displaced assignment shall be treated in the order of the revised date recorded in Column 2d as indicated in Resolution **9**. Furthermore, all displaced assignments which have the same revised date shall be treated in the following order:

1) assignments for national use;

2) assignments for international use.

In the application of this provision, the displaced assignments shall be processed in batches without any priority being applied to the assignments of any administration.

4. The displaced assignments of class of operation C shall not be treated until all displaced assignments of class of operation A or B have been satisfied.

5. Displaced assignments of class of operation C shall be as far as possible evenly distributed throughout the bands that continue to be allocated to the fixed service.

6. The Board, in complying with the provisions of this Section, shall for the purposes of protecting existing recorded assignments employ only the Master Register reconstructed in accordance with the procedure annexed to Resolution **9**.

7. The Board, on 1 July 1983, shall send to each administration a document listing all the assignments concerning that administration, identifying those that were recorded in the Provisional Section of the Master Register, and those proposed as replacements.

Section II. Examination and Approval of Proposed Assignments

8. Each administration, upon receipt of the document specified in paragraph 7, shall acknowledge receipt and shall then examine the proposed replacement assignments contained therein with regard to their acceptability, following which the administration shall advise the Board as soon as possible:

- of its agreement; or
- which of the proposed assignments it finds unacceptable.

In the latter case, the administration shall inform the Board, as quickly as possible, of its reasons therefor.

9. The Board shall examine the responses under paragraph 8 and shall try, preferably by applying small adjustments, to satisfy the administration concerned with respect to the proposed assignments it found unacceptable. The Board shall do so in the following way:

- the Board shall collect all responses received under paragraph 8 within six months after 1 July 1983, and then process them together and without any priority being applied to the reply of any administration; and then
- the Board shall collect all responses received under paragraph 8 in the period from six months to nine months after 1 July 1983, and then process this second batch in the same manner as described above for the first batch.

10. The procedure described in this Section shall terminate on 1 July 1984.

Section III. Subsequent Action by the Board

11. The Board, on termination of the procedure prescribed by Sections I and II of this Annex, shall insert in the Master Register all replacement assignments that have been agreed by administrations, with annotations to indicate:

- that they shall have the same common status as the undisplaced assignments as provided for in Resolution **9**; and
- their provisional nature in accordance with No. **1311**.

12. The Board shall, for all assignments mentioned in paragraph 11, insert in Column 2d of the Master Register the appropriate date according to paragraph 6.3 of the Annex to Resolution **9**.

13. The Board shall then publish, in recapitulatory supplements to the International Frequency List, all replacement assignments made in accordance with the procedure prescribed in Part I of this Annex.

14. The Board, on publication of the supplements prescribed in paragraph 13, shall inform by telegram any administration having outstanding displaced assignments of class of operation A which have not been satisfied.

Section IV. Implementation of Article 12

15. As from 1 July 1984, the provisions of Article **12** shall apply to frequency bands allocated to the fixed service between 4 000 kHz and 27 500 kHz.

16. Following that date, an administration, having been informed by the Board under paragraph 14 that certain of its displaced assignments have not been replaced under this transitional procedure, shall be free to select new assignments taking into account the assignments recorded in the Master Register under paragraph 11, and shall submit new notices to the Board in accordance with Article **12**.

PART II – TRANSFER PHASE

Section V. Subsequent Action by Administrations

17. An administration, having received and accepted replacements for its recorded assignments that were displaced by decisions of the World Administrative Radio Conference, Geneva, 1979, shall effect the changeover from the old to the new assignment not later than:

– 1 July 1989 for frequency bands above 10 MHz; and

– 1 July 1994 for frequency bands below 10 MHz.

18. An administration shall promptly inform the Board of the date on which the changeover from an old to a replacement assignment takes place. The Board shall remove from that replacement assignment the special symbol placed in accordance with No. **1311** (see paragraph 11) in the Master Register, thus indicating that it has been implemented, and shall enter the date of the changeover in Column 2c. The date in Column 2c, originally recorded with the displaced assignment, shall be entered in the Remarks Column.

19.1 An administration, having effected the change to a replacement assignment of class of operation A, and having experienced harmful interference or having received a complaint of harmful interference involving another class of operation A assignment:

a) shall make every effort with any other administration concerned to resolve the problem, and, if unsuccessful,

b) may select and submit to the Board an alternative replacement assignment [1].

19.2 An administration, having effected the change to a replacement assignment of class of operation B, and having experienced harmful interference for this class of operation, may select and submit to the Board an alternative replacement assignment [1].

20. Following a favourable finding by the Board on the replacement assignment selected under paragraph 19.1 *b)* or 19.2, the administration shall be entitled to have inserted in Column 2d of the Master Register, against that assignment, the common date 1 January 1982 for class of operation A and 2 January 1982 for class of operation B.

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[1] On request from an administration, the Board shall assist in the application of provision 19.1 *b)* or 19.2.

Section VI. Relevance of Dates in the Master Register

21. The relevance of the dates related to displaced assignments is referred to in the Annex to Resolution **9** and Article **12**.

ANNEX B TO RESOLUTION No. 8

Interim Procedure Concerning Notices Relating to Assignments in the Bands Between 4 000 kHz and 27 500 kHz Allocated on an Exclusive or Shared Basis to the Fixed Service

1. During the period between 1 January 1982 and 30 June 1984, an administration, having an urgent requirement which cannot possibly be delayed until the end of that period, may notify a new assignment in the bands between 4 000 kHz and 27 500 kHz allocated on an exclusive or shared basis to the fixed service. Such notices shall contain the information listed in the appropriate section of Appendix **1**.

2. An administration submitting a notice in accordance with paragraph 1 above shall be deemed to accept that its assignment:

a) shall be of an interim nature; and

b) shall be subject to the review procedure contained in Annex C to this Resolution and shall then be modified if necessary to conform to the results of that review; and

c) shall not cause harmful interference to any assignments recorded in the Master Register that are entitled to protection.

3. The Board, upon receipt of a complete notice under paragraph 1, shall examine it with respect to No. **1240** and shall return to the notifying administration any notice not complying with that provision together with the reasons for this action.

4. Notices in conformity with No. **1240** shall be included in a special section of the weekly circular, where they shall be annotated to show that they are subject to both the interim and review procedures contained in this Annex and Annex C to this Resolution respectively. Assignments notified under No. **1218** shall additionally be annotated to that effect.

5. The Board shall compile and maintain a Special List of all notices dealt with under paragraph 4.

ANNEX C TO RESOLUTION No. 8

Review Procedure Concerning Notices Relating to Assignments for Stations of the Fixed Service in the Bands Between 4 000 kHz and 27 500 kHz

1. The Board, commencing on 1 July 1984, shall examine under the appropriate provisions of Article **12** all interim assignments contained in the Special List compiled in accordance with Annex B to this Resolution with a view to recording them in the Master Register.

2. For the purposes of this examination, interim assignments shall be processed without priority being given to the assignments of any administration; however, assignments notified under No. **1218** shall be treated first.

3. All interim assignments shall be examined by the Board with respect to the probability of harmful interference from or to assignments entered in the Master Register on a provisional basis as a result of the application of Annex A to this Resolution. Depending on the findings of the Board subsequent to this examination, further action shall be as follows:

4. *Favourable finding with respect to paragraph 3 above*

4.1 The interim assignments notified under No. **1218** shall be recorded in the Master Register, and the date 1 July 1984 shall be entered in Column 2d.

4.2 The other interim assignments shall be examined under No. **1242** with respect to frequency assignments recorded in the Master Register at the date of commencement of the interim procedure described in Annex B to the present Resolution. Depending on the findings of the Board, the appropriate provisions of Article **12** shall be applied. When such assignments are to be recorded, the date 1 July 1984 shall be entered in Column 2d.

5. *Unfavourable findings with respect to paragraph 3 above*

The Board shall, having regard to the class of operation of assignments and the contents of the reconstructed Master Register, propose suitable replacement assignments and enter them on a provisional basis with the date of 1 July 1984 in Column 2d.

6. The Board shall, upon completion of this review, compile a Temporary List of recorded and proposed replacement assignments and publish it as an Annex to its weekly circular. A copy of this List, together with a national extract thereof, shall be sent to each administration having interim assignments in the Special List mentioned in paragraph 1 of this Annex.

7. An administration, upon receipt of the List mentioned in paragraph 6, shall consider the proposed replacements for its interim assignments and shall, within five months of the date of publication of the Temporary List, inform the Board whether the proposed assignments are acceptable. If the proposed assignments are not acceptable, the administration shall give the reasons therefor.

8. Upon acceptance of a proposed assignment, the administration shall indicate the latest date of bringing into use. This date shall be within one year of the publication of the Temporary List.

9. The Board shall examine the replies under paragraph 7 and shall try, if necessary by applying small adjustments, to satisfy the administration concerned with respect to the proposed assignments it found unacceptable and propose alternative frequencies. Simultaneously, the Board shall replace the appropriate provisional entry by the new proposed frequency.

10. If, on 1 July 1985, provisional entries made under paragraphs 5 or 9 have not been accepted by the administrations concerned, the Board shall replace these entries by the corresponding interim assignments appropriately annotated. As from that date neither the Special List nor the Temporary List shall be taken into consideration.

11. An administration, having an interim assignment for which no acceptable replacement assignment has been found, shall be free to select a new replacement and shall forward a new notice under the provisions of Article **12**. Upon request from an administration, the Board shall assist in the application of this provision.

CT

RESOLUTION No. 9

Relating to the Revision of Entries in the Master International Frequency Register in the Bands Allocated to the Fixed Service Between 3 000 kHz and 27 500 kHz

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that there is a need to improve the accuracy and reliability of the Master International Frequency Register, particularly in the bands allocated on an exclusive or shared basis to the fixed service between 3 000 kHz and 27 500 kHz;

b) that previous initiatives of the IFRB have shown that, with the cooperation of administrations, substantial improvements can be made in the accuracy and reliability of the Master Register;

recognizing

a) that only a vigorous and cooperative worldwide attack on this problem will lead to a solution;

b) that a procedure involving the mutual cooperation of all administrations and the IFRB is required for the purpose of revising parts of the Master Register;

recognizing also

a) that a significant proportion of assignments for the fixed service is intended for purposes other than regular operational use;

b) that the identification of the class of operation of such assignments in the Master Register would facilitate international frequency management of the fixed service in this part of the spectrum and should be made a standard feature of the Master Register;

c) that the identification of the hours of regular operation would further facilitate the management of this service;

d) that both the class and the hours of regular operation of assignments should be introduced in any procedure intended for revision of parts of the Master Register;

e) that upon completion such action would provide a firm foundation for the transitional arrangements required to provide replacements for assignments to stations in the fixed service displaced by decisions of the World Administrative Radio Conference, Geneva, 1979;

resolves

to adopt the procedure in the Annex to this Resolution for the purpose of revising the parts of the Master Register relating to the bands allocated to the fixed service between 3 000 kHz and 27 500 kHz;

further resolves

that this Resolution shall enter into force on 1 January 1980;

invites administrations and the IFRB

to participate fully and promptly in this procedure.

ANNEX TO RESOLUTION No. 9

Procedure for Reviewing Entries in the Master Register in Frequency Bands Allocated to the Fixed Service Between 3 000 kHz and 27 500 kHz

1. The Board shall extract from the Master Register and shall, as soon as possible after 1 January 1980, forward to each administration an individual National List [1] of all assignments [2] recorded in the Master Register on behalf of that administration or for which notices have been received prior to that date in the bands allocated exclusively or on a shared basis to the fixed service between 3 000 kHz and 27 500 kHz. The Board shall at the same time draw the attention of the administration to any assignments for which another means of telecommunication is believed to be available.

2. Each administration, upon receiving the List mentioned in paragraph 1 above, shall so inform the Board by telegram. An administration not receiving its National List by 1 April 1980 shall promptly inform the Board, which shall forthwith send to that administration a further copy of the National List. The Board shall ensure that every administration has received the National List pertaining to its own assignments.

3. Each administration, after having acknowledged receipt of its National List, shall examine the List and shall:

a) delete from it any of the entries no longer required;

b) classify the remaining entries of the fixed service with the use of the following symbols:

Symbol A – assignment for regular operational use which is not provided by another satisfactory means of telecommunication; or

Symbol B – assignment for use as a standby to some other means of telecommunication; or

Symbol C – assignment for occasional use on a reserve basis and not requiring internationally recognized protection from harmful interference;

c) indicate the regular hours of operation of the frequency assignment in UTC; otherwise indicate the hours of operation as day service (HJ), night service (HN), or transition period service (HT).

4. An administration, after having completed the actions described in paragraphs 2 and 3 above, shall return its annotated National List to the Board as quickly as possible and in any event not later than 31 March 1981.

5. The Board shall send to each administration an acknowledgement of receipt of its annotated National List, and shall, in cases of special difficulty or at the request of administrations, give such help and advice as the circumstances may warrant.

6. On 1 October 1981, the Board shall publish a provisional section of the Master Register relating solely to the assignments in the bands allocated to the fixed service between 3 000 kHz and 27 500 kHz. This section shall contain all assignments shown in National Lists as annotated by administrations and those shown in the National Lists which have not been returned to the Board, excluding those assignments with an unfavourable finding with respect to No. **1240**, without reference to No. **342**. The assignments in this provisional section shall be annotated as follows:

6.1 all assignments shall bear a symbol indicating a reference to this Resolution;

6.2 the dates entered in Columns 2a, 2b or 2d or the symbol entered in Column 2d and the findings shown in the appropriate part of Column 13 shall be amended as shown in the attached table;

6.3 frequency assignments to fixed service stations in the parts of bands re-allocated to other services shall bear a symbol indicating that they are assignments for which replacement assignments shall be found in accordance with Resolution **8**, retaining the date and status afforded in the attached table.

7. Before applying paragraphs I.2 and II.2 of the attached table to assignments of countries having a small number of assignments, the Board shall consult the administration whose assignment caused the unfavourable

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[1] The Board shall determine by prior enquiries the number of copies of the National List to be sent to each administration. The National List shall be prepared in the format of the International Frequency List but the form in which the List is forwarded may, at the request of individual administrations and with the agreement of the Board, be varied to suit different circumstances.

[2] For the purposes of this procedure, assignments to stations of the aeronautical fixed service shall be treated as if they were stations of the fixed service within the band(s) concerned.

finding in order to ensure that no actual interference has occurred since the registration of the recorded assignment. If the administration replies that no actual interference has occurred, the Board shall enter the symbol corresponding to class of operation A for the assignment and amend the unfavourable finding. Otherwise, it shall apply the provisions of No. **1218** in order to find another frequency and shall proceed to replace the frequency in consultation with the administration concerned.

8. As soon as possible after 1 January 1982, the Board shall:

8.1 publish a supplement to the provisional section of the Master Register containing those assignments for which notices were received between 1 January 1980 and 31 December 1981 and recorded in the Master Register;

8.2 send to administrations a copy of their National List;

8.3 incorporate in the Master Register the provisional section mentioned in paragraph 6 including the assignments mentioned in paragraph 8.1 above in replacement of the corresponding entries in the frequency bands concerned.

9. Following completion of the action described above, the Board shall publish a report showing the results obtained from the operation of this procedure.

TABLE

	Column 13a	Column 2	Column 13c
I. *Frequency bands below 3 900 kHz (Region 1) — 3 950 kHz (Region 3) — 4 000 kHz (Region 2)*			
I.1 *Lists returned to the Board:*			
— A class of operation assignments	Delete any symbols indicating the finding under No. **1241**	Replace the date in 2a or 2b by 1.1.82 in 2a	RES **9** SUP RR 515
— B or C class of operation assignments	idem	Replace the date in 2a or 2b by 2.1.82 in 2b	RES **9** SUP RR 515
— entries under No. **342** of the Radio Regulations	(MOD)	Replace the date by 5.1.82 in 2b	RES **9**
I.2 *Lists not returned to the Board:*			
— assignments entered with a date in 2a	NOC	Replace the date by 3.1.82 in 2a	RES **9**
— assignments entered with a date in 2b	NOC	Replace the date by 4.1.82 in 2b	RES **9**
— entries under No. **342** of the Radio Regulations	(MOD)	Replace the date by 5.1.82 in 2b	RES **9**
II. *Frequency bands above 3 900 kHz (Region 1) — 3 950 kHz (Region 3) — 4 000 kHz (Region 2)*			
II.1 *Lists returned to the Board:*			
— A class of operation assignments	Delete any symbols indicating the finding under No. **1242**	Replace the date or the symbol in 2d by 1.1.82	RES **9** SUP RR 515
— B or C class of operation assignments	idem	Replace the date or the symbol in 2d by 2.1.82	RES **9** SUP RR 515
— entries under No. **342** of the Radio Regulations	NOC	Replace the date or the symbol in 2d by 5.1.82	RES **9**
II.2 *Lists not returned to the Board:*			
— finding favourable under No. **1240**	NOC	Replace the date or the symbol in 2d by 3.1.82	RES **9**
— entries under No. **342** of the Radio Regulations	NOC	Replace the date or the symbol in 2d by 5.1.82	RES **9**

AF

RESOLUTION No. 10

Relating to the Use of Radiotelegraph and Radiotelephone Links by the Red Cross, Red Crescent, and Red Lion and Sun Organizations

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the worldwide relief work of the Red Cross, Red Crescent, and Red Lion and Sun Organizations is of increasing importance and often indispensable;

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

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

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

e) that for international relief work of the Red Cross, it is necessary that the national Red Cross, Red Crescent, and Red Lion and Sun Organizations be able to communicate with each other as well as with the International Committee of the Red Cross and the League of Red Cross Societies;

decides to urge administrations

1. to take account of the possible needs of the Red Cross, Red Crescent, and Red Lion and Sun Organizations for communication by radio when normal communication facilities are interrupted or not available;

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

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

CY

RESOLUTION No. 11

Relating to the Use of Radiocommunications for Ensuring the Safety of Ships and Aircraft of States Not Parties to an Armed Conflict [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that international law recognizes the rights of States not parties to an armed conflict, hereinafter referred to as neutral States, to safely conduct normal commerce without risk of harm from parties to an armed conflict;

[1] Replaces Recommendation No. **Mar2** – 17 of the World Maritime Administrative Radio Conference, Geneva, 1974.

b) that in the vicinity of armed conflict the ships and aircraft of neutral States encounter considerable risk;

c) that for the safety of human life it is desirable to be able to identify and determine the position of these ships and aircraft in such circumstances;

d) that radiocommunication offers a rapid means of identifying and locating such ships and aircraft prior to their entering areas of armed conflict and during their passage through the areas;

taking into account

a) that the World Maritime Administrative Radio Conference, Geneva, 1974, adopted a Recommendation concerning medical transports as well as the safety of ships and aircraft of States not parties to an armed conflict;

b) that the World Administrative Radio Conference, Geneva, 1979, fully treated the subject of medical transports within the Radio Regulations by adding a new Section II to Article **40**, but that this Conference did not make provisions for the safety of ships and aircraft of neutral States;

resolves to invite administrations

1. to bear in mind the requirements for identification and location of and communications with ships and aircraft of neutral States, including the possible use of aeronautical secondary surveillance radar and maritime radar transponders;

2. to consider the need for, and to formulate as appropriate, an acceptable procedure to be followed in order to assist in ensuring the safety of ships and aircraft of neutral States in times of armed conflict, referring to the Annex as one possible procedure;

invites the Administrative Council

to consider placing this matter on the agenda of the next competent world administrative radio conference;

requests the Secretary-General

to communicate the contents of this Resolution to IMCO and ICAO for such actions as they may consider appropriate.

ANNEX TO RESOLUTION No. 11

Possible Procedure for the Identification and Location of Ships and Aircraft of Neutral States

For the purpose of announcing and identifying ships and aircraft of States not parties to an armed conflict, referred to below as neutral transports, a complete transmission of the urgency signals described in Nos. **3196** and **3197** is followed by the addition of the single group "NNN" in radiotelegraphy and by the addition of the single word NEUTRAL, pronounced as in French "neutral", in radiotelephony.

The frequencies specified in No. **3201** may be used by neutral transports for self-identification and for establishing communications. As soon as practicable, communications shall be transferred to an appropriate working frequency.

The use of the signal as described in the first paragraph indicates that the message which follows concerns a neutral transport. The message shall convey the following data:

a) call sign or other recognized means of identification of the neutral transport;

b) position of the neutral transport;

c) number and type of neutral transports;

d) intended route;

e) estimated time en route and of departure and arrival, as appropriate;

f) any other information, such as flight altitude, radio frequencies guarded, languages and secondary surveillance radar modes and codes.

The provisions of Section I of Article **40** shall apply as appropriate to the use of the urgency signal by neutral transports.

The identification and location of neutral ships may be effected by means of appropriate standard maritime radar transponders.

The identification and location of neutral aircraft may be effected by the use of the secondary surveillance radar (SSR) system specified in Annex 10 to the Chicago Convention on International Civil Aviation dated 7 December 1944, which is periodically brought up to date. The SSR mode and code reserved for the exclusive use of neutral aircraft must be defined by the parties to the conflict or by one of the parties to the conflict, acting by common agreement or individually, in accordance with procedures to be recommended by the International Civil Aviation Organization.

The use of radiocommunications for announcing and identifying neutral transports is optional; however, if they are used, the provisions of the Radio Regulations and particularly those of Articles **37** and **38** apply.

DC

RESOLUTION No. 12

Relating to the New Rules for the Formation of Call Signs

The World Administrative Radio Conference, Geneva, 1979,

noting

a) that many countries, especially developing countries, have an urgent need for new call signs;

b) that the Radio Regulations (Geneva, 1979) contain new rules for the formation of call signs in Article **25**;

c) that under Article **69** of the Regulations, these rules will enter into force on 1 January 1981;

urges administrations concerned

to make use of the new rules for the formation of call signs contained in Article **25** of the Regulations as soon as required and even before the date established for their entry into force;

instructs the Secretary-General

to publish the information received from administrations on the use of the new rules for the formation of call signs.

DE

RESOLUTION No. 13

Relating to the Formation of Call Signs and the Allocation of New International Series [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) the recommendation of the International Radio Conference, Atlantic City, 1947, relating to the formation of call signs;

b) the increasing demand for call signs justified by the increased number of Members of the Union and by the increased requirements of countries which are already Members;

c) the information supplied by the Secretary-General regarding allocations of call signs since 1947 and the possibilities of the current system of forming call signs;

believing

that call signs already in use should, as far as possible, not be changed;

noting

a) that the former call sign series formed of three letters, or a figure and two letters, having been exhausted, a new series has been introduced formed of a letter, a figure and a letter; but in no case may the figure be 0 or 1;

b) that the method mentioned in *noting a)* is not applicable to series beginning with one of the following letters: B, F, G, I, K, M, N, R, U, W;

c) that a proposal has been submitted to this Conference for the formation of new call sign series by replacing the third character, which is a letter, by a digit;

d) however, that this would require consequential changes in Section III of Article **25**;

resolves

1. that the Secretary-General shall continue to urge administrations:

1.1 to make the maximum use of the possibilities of the series at present allocated, to avoid, as far as possible, further requests;

1.2 to review the call-sign assignments they have already made from their present allocations, with a view to releasing any series and place them at the disposal of the Union;

2. that the Secretary-General shall, upon request, furnish advice to administrations on the means of effecting the greatest economy, which should be the rule, in the use of a series of call signs;

3. that if, nevertheless, before the next competent world administrative radio conference, it appears that all the possibilities of the present system of forming call signs will be exhausted, the Secretary-General shall:

3.1 explore the possibilitity of forming new series on the basis of the proposal mentioned in *noting c)* ;

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[1] Replaces Resolution No. 8 of the Administrative Radio Conference, Geneva, 1959.

3.2 issue a circular-letter;

3.2.1 explaining the position;

3.2.2 urging the administrations to send in their proposals for possible solutions;

4. that, from the information thus submitted, the Secretary-General shall prepare a report, together with his comments and suggestions, for submission to the next competent world administrative radio conference.

DG

RESOLUTION No. 14

Relating to the Transfer of Technology

The World Administrative Radio Conference, Geneva, 1979,

considering

a) the terms of the Resolution relating to International Economic Development and Cooperation (No. 3362.S-VII) adopted by the United Nations General Assembly at its Seventh Extraordinary Session, and the terms of Section III of this Resolution, which emphasizes the role of science and technology in development;

b) the terms of General Assembly Resolution 32/160, which proclaims a Transport and Communications Decade in Africa in the period 1978-1987, during which a World Communications Year is scheduled to be proclaimed;

c) the decisions of the General Assembly relating to the preparation of an international development strategy during the Third United Nations Development Decade, i.e. in the 1980s (Resolution 33/193);

noting

that at the recent United Nations Conference on Science and Technology for Development (Vienna, August 1979), the governments adopted a Declaration relating to a Programme of Action aimed at accelerating the application of science and technology for development;

aware

of the importance of the application of science and technology in telecommunications for the purposes of developing the services and attaining social, economic and cultural objectives;

also aware

of the important role of the ITU as the United Nations specialized agency responsible for undertaking activities leading to the attainment of the objectives set forth in the International Telecommunication Convention;

resolves to urge

1. the governments of the Member countries, particularly those of the developing countries, and their administrations, to take steps to establish national telecommunication development policies to strengthen their

technical cooperation activities in order to achieve the efficient transfer of telecommunication technology, with a view to improving telecommunication services of all types, especially in the field of radiocommunications;

2. administrations to participate to the maximum extent practicable in the Study Groups of the International Consultative Committees of the Union, which are important forums for the transfer of information on the progress and application of telecommunication technology;

resolves to instruct the Secretary-General

1. to strengthen further those technical cooperation activities geared to the planning, setting up, maintenance and operation of telecommunication systems and to the training of staff for such purposes, with a view to accelerating the transfer and satisfactory application of technology in favour of development, having regard to the specific requirements of each country;

2. to seek, at the international level, the resources required to accelerate these technical cooperation programmes, particularly funds which could be allocated under the Vienna Programme of Action;

3. to bring the present Resolution to the notice of all the Member countries of the Union and the competent bodies of the United Nations;

invites the Administrative Council

to keep abreast of the progress made in the attainment of the objectives set forth in this Resolution and to report on such progress, as appropriate, to the next Plenipotentiary Conference.

CZ

RESOLUTION No. 15

Relating to International Cooperation and Technical Assistance in the Field of Space Radiocommunications [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that a large number of 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 are subject to the Convention and Regulations and that they permit participation of all countries including, in particular, the developing countries, in space communication systems;

[1] Replaces Resolution No. **Spa** 4 of the Extraordinary Administrative Radio Conference, Geneva, 1963.

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.

CX

RESOLUTION No. 16

Relating to the Role of Telecommunications in Integrated Rural Development

The World Administrative Radio Conference, Geneva, 1979,

recalling

Resolution 3362 (S-VII) of the seventh special session of the United Nations General Assembly which, inter alia, requested Member States to promote integrated rural development in the developing countries;

recalling further

the importance placed on rural development by various inter-governmental conferences during the Second United Nations Development Decade, which recognized the need for the intensification of development efforts aimed at satisfying the aspirations of the rural communities and accelerating the development of infrastructure in the rural areas;

the ITU Administrative Council Resolutions No. 779 (Implementation of the International Development Strategy for the Second United Nations Development Decade) and No. 800 (Telecommunications, an important factor of economic and social development: role of the ITU in this domain), and the importance of telecommunications for social and economic development, as well as the various projects and studies undertaken by the Union to meet these objectives;

convinced

of the importance of telecommunications as an essential element of infrastructure for the rural areas;

recognizing

a) that most developing countries are still lacking adequate telecommunication resources;

b) that many rural areas of the world do not currently enjoy the benefits of telecommunication technology;

c) that many populations within individual countries live in isolation from each other due to geographical barriers such as oceans, mountains, forests and deserts;

d) that the provision of modern telecommunications and, in particular, radiocommunications, including satellite technology, can serve to overcome those difficulties and to integrate rural communities in the development process;

e) that many developing countries are unable to provide entirely from their own resources such modern telecommunications;

noting

the proven possibilities of modern telecommunication technology as a means of bringing to the rural areas, education, health care and other welfare services of importance for social development;

noting further

the significant supporting role of an adequate rural telecommunication network in stimulating growth in agricultural activities and in other sectors important for economic and social progress;

urges Member governments

to strengthen their technical cooperation efforts for the realization of accelerated telecommunication development to serve the rural communities, bearing in mind the existing inadequacies in the resources of various developing countries;

urges also administrations

to participate actively in the studies carried out by the Autonomous Working Groups (GAS 3 and GAS 5) of the CCITT/CCIR in regard to rural telecommunications development;

requests the Secretary-General

1. to continue to give special attention to the Union's technical assistance activities for the detailed planning, operation and maintenance of the rural telecommunication infrastructure and application of appropriate technology;

2. to bring this Resolution to the attention of the appropriate United Nations bodies;

3. to continue to cooperate with the specialized agencies and organizations of the United Nations system in the field of integrated rural development;

invites the Administrative Council

to consider this Resolution, to monitor its implementation and to report on progress in the Annual Report on the activities of the Union.

DF

RESOLUTION No. 17

Relating to the Determination, on the Basis of the Agenda, of the Possible Committee Structure to Be Set Up at an Administrative Radio Conference

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that some administrations, owing to lack of personnel, have difficulty in staffing their delegations at administrative radio conferences so as to be able to send at least one delegate to attend each of the committees;

b) that at present it is difficult for administrations to predict beforehand the number and names of the committees to be set up at conferences, and the subjects to be allocated to each committee;

c) that the Secretary-General might usefully prepare a draft structure for future conferences sufficiently in advance, in the light of relevant former conferences;

recognizing

a) that the organization of the work of each administrative radio conference can be determined only by the conference itself, in the light of its agenda and of the proposals and other documents submitted to it;

b) that nevertheless the organization of previous conferences can often be a helpful guide to the organization of a new conference, and that information about the organization of the work of previous conferences could therefore be of assistance to administrations in their preparations for conferences;

resolves

1. that, when the Administrative Council has established the agenda of an administrative radio conference, the Secretary-General shall send to administrations, together with a copy of the resolution containing the agenda, an invitation to give their opinion on the structure of the conference in the light of the agenda;

2. that, on receipt of replies from administrations, the Secretary-General, in consultation with the IFRB and the Director of the CCIR and guided by the experience of earlier conferences of a similar character, shall draw up a draft conference structure showing which of the articles, appendices, resolutions, recommendations and other topics contained in the agenda might be considered by each committee;

3. that the Secretary-General shall bring this draft document to the attention of the Administrative Council and shall send it as an information paper to all administrations.

CU

RESOLUTION No. 30

Relating to the Review of Entries in the Master International Frequency Register at the Request of Previous Conferences

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the Extraordinary Administrative Radio Conference, Geneva, 1951, adopted an International Frequency List which included entries not in conformity with the Table of Frequency Allocations, Atlantic City, 1947;

b) that the Administrative Radio Conference, Geneva, 1959, introduced the concept of primary and secondary services thus modifying the Table of Frequency Allocations, Atlantic City, 1947, resulting in the loss of priority for certain entries in the International Frequency List;

c) that the Administrative Radio Conference, Geneva, 1959, in the establishment of the Master International Frequency Register gave special consideration and treatment to the transfer of these entries from the Master Radio Frequency Record in accordance with the provisions of Resolution No. 4, Geneva, 1959;

d) that, in the period between 1 January 1952 and 31 March 1953, assignments were included in the above List without examination with a symbol in Column 2d and that the Board takes these assignments into account in the examination of any assignment notice;

further considering

e) that administrations were urged to take the required action; and

f) that this Conference was invited to reconsider the situation;

resolves

1. that the Board shall examine, for their conformity with the new Table of Frequency Allocations, the frequency assignments to which Resolution No. 4 of the Radio Conference, Geneva, 1959, was applied and shall correct its findings accordingly with effect from the date of the entry into force of the Final Acts of this Conference. Where a finding has been modified in application of this Resolution, an appropriate remark shall be entered in the Remarks Column;

2. that the assignments with a symbol in Column 2d and not covered by Resolution 9 shall be examined with a view to the replacement of this symbol by the date of 1 April 1953;

3. that the Board shall inform the administrations concerned of any action taken with regard to these recorded assignments.

CI

RESOLUTION No. 31

Relating to the Application of Certain Provisions of the Final Acts of the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977, to Take into Account Changes Made by the World Administrative Radio Conference, Geneva, 1979, to the Table of Frequency Allocations for Region 2 in the Band 11.7 - 12.7 GHz

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the World Administrative Radio Conference for Space Telecommunications, Geneva, 1971, allocated the frequency band 11.7 - 12.2 GHz in Region 2 to the fixed-satellite, broadcasting-satellite, fixed, mobile except aeronautical mobile, and broadcasting services;

b) that the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977, established provisions and an associated Plan for the broadcasting-satellite service in the band 11.7 - 12.5 GHz in Region 1 and in the band 11.7 - 12.2 GHz in Region 3;

c) that that Conference also established inter-regional sharing criteria based on the frequency allocations prevailing at that time;

d) that the frequency allocations to the fixed-satellite and broadcasting-satellite services in the 12 GHz band in Region 2 have been expanded and modified by this Conference;

e) that this Conference has also decided to incorporate the provisions and associated Plan adopted by the 1977 Conference into the Radio Regulations as Appendix **30**.

recognizing

a) that these modifications to the Table of Frequency Allocations do not introduce in principle new inter-regional sharing situations apart from that identified in *b)* below;

b) that the provisions of Appendix **30** can be applied directly as indicated above to all sharing situations other than that between the fixed-satellite service in Regions 1 and 3 and the broadcasting-satellite service in Region 2 in the frequency band 12.2 - 12.7 GHz;

c) that the single case referred to in *recognizing b)* above is dealt with in Resolution **700**;

resolves

1. that the provisions of Article 4 and Annex 1 of Appendix **30** relating to the modification to the Plan for the broadcasting-satellite service in Regions 1 and 3, shall also be applied with respect to the protection of the broadcasting-satellite service in the band 12.2 - 12.5 GHz, and to the fixed-satellite service in the band 12.2 - 12.3 GHz allocated in Region 2;

2. that the provisions of Article 6 and Annex 3 of Appendix **30** relating to the procedure for the coordination and notification of frequency assignments to terrestrial stations affecting broadcasting-satellite frequency assignments, shall also be applied in the band 12.2 - 12.7 GHz with respect to the broadcasting-satellite service in Region 2;

3. that the provisions of Article 7 and Annex 4 of Appendix **30** and Resolution **503**, which relate to the preliminary procedures, and the coordination, notification and recording of frequency assignments to stations in the fixed-satellite and broadcasting-satellite services respectively, in Region 2, shall also be applied to the band 12.2 - 12.3 GHz as allocated to the fixed-satellite service, and to the band 12.2 - 12.5 GHz as allocated to the broadcasting-satellite service in Region 2;

4. that the provisions of Article 9 and Annex 5 of Appendix **30**, which specify power flux-density limits between 11.7 - 12.2 GHz to protect terrestrial services in Regions 1 and 3 from Region 2 broadcasting-satellite space stations, shall also be applied to the band 12.2 - 12.5 GHz;

5. that until the final decisions are made by the 1983 regional administrative radio conference for Region 2, in the band 12.5 - 12.7 GHz,

a) Article 9 and the limits in Annex 5 paragraph (1) of Appendix **30** shall be applied to the operation of Region 2 space stations in the broadcasting-satellite service, and

b) the power flux-density limits specified in No. **2574** shall be applied to the operation of Region 2 space stations in the fixed-satellite service with respect to the countries mentioned in Nos. **848** and **850** and in Region 3;

requests the CCIR

1. to study urgently the question of appropriate protection for terrestrial services in each affected Region in the band 12.2 - 12.7 GHz, in the context of efficient planning of the broadcasting-satellite service in Region 2, as referred to in *resolves* 4 and 5 above;

2. to prepare a special report on the subject in time for its consideration by appropriate preparatory meetings and as a guideline for the work of the said regional conference.

AI

RESOLUTION No. 32

Relating to the Use of Frequency Assignments to Terrestrial and Space Radiocommunication Stations in the Band 11.7 - 12.2 GHz in Region 3 and in the Band 11.7 - 12.5 GHz in Region 1 [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977, adopted Resolution No. **Sat** – 2;

b) that No. **838** of the Radio Regulations provides that in the band 11.7 - 12.2 GHz in Region 3 and in the band 11.7 - 12.5 GHz in Region 1, existing and future fixed, mobile and broadcasting services shall not cause harmful interference to broadcasting-satellite stations operating in accordance with the decisions of that Conference;

c) that the decisions of that Conference included a Plan for stations in the broadcasting-satellite service;

d) that the coordination procedures described in Resolution **33** are to be applied only until the entry into force of plans pursuant to Resolution **507**;

[1] Replaces Resolution No. **Sat** – 2 of the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977.

resolves

1. that all administrations using or intending to use frequency assignments to terrestrial stations in the bands covered by the Plan shall decide, as soon as possible, whether or not these assignments will affect frequency assignments in accordance with the Plan (if necessary, with the assistance of the IFRB);

2. that administrations may continue to use frequency assignments which are not in accordance with the Plan, provided that agreement is reached with the administration whose broadcasting-satellite stations are affected;

3. that the administrations seeking agreement shall inform the IFRB of the terms of the agreement reached;

4. that, upon receipt of such information, the IFRB shall insert a symbol in the Remarks Column of the Master Register indicating the duration specified in the agreement. The duration specified shall also be published in a special section of its weekly circular;

5. that Resolution No. **Sat** – 2 is abrogated and superseded by this Resolution;

invites the IFRB

to assist administrations in implementing the provisions of this Resolution.

BO

RESOLUTION No. 33

Relating to the Bringing into Use of Space Stations in the Broadcasting-Satellite Service, Prior to the Entry into Force of Agreements and Associated Plans for the Broadcasting-Satellite Service [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

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

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

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

d) that the procedures specified in Article 11 of the Radio Regulations contain no provisions for coordination between space stations in the broadcasting-satellite service and terrestrial stations and between space stations in that service and space systems of other administrations;

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

resolves

1. that, except in those cases where agreements and associated plans for the broadcasting-satellite service have been established and have entered into force, the following procedure shall be applied:

Section A: Coordination Procedure Between Space Stations in the Broadcasting-Satellite Service and Terrestrial Stations

2.1 Before an administration notifies to the IFRB or brings into use any frequency assignment to a space station in the broadcasting-satellite service in a frequency band where this frequency band is allocated, with equal rights, to the broadcasting-satellite service and to a terrestrial radiocommunication service, either in the same Region or sub-Region or in different Regions or sub-Regions, it shall coordinate the use of this assignment with any other administration whose terrestrial radiocommunication services may be affected. For this purpose, it shall inform the Board of all the technical characteristics of the station, as listed in the relevant sections of Appendix **3** to the Radio Regulations, which are necessary to assess the risk of interference to a terrestrial radiocommunication service [1].

2.2 The Board shall publish this information in a special section of its weekly circular and shall also, when the weekly circular contains such information, so advise all administrations by circular telegram.

2.3 Any administration which considers that its terrestrial radiocommunication services may be affected shall forward its comments to the administration seeking coordination and, in any case, to the Board. These comments must be forwarded within four months from the date of the relevant IFRB weekly circular. It shall be deemed that any administration which has not forwarded comments within that period considers that its terrestrial radiocommunication services are unlikely to be affected.

2.4 Any administration which has forwarded comments on the projected station shall either give its agreement, with a copy to the Board, or, if this is not possible, send to the administration seeking coordination all the data on which its comments are based as well as any suggestions it may be able to offer with a view to a satisfactory solution of the problem.

2.5 The administration which plans to bring into use a space station in the broadcasting-satellite service as well as any other administration which believes that its terrestrial radiocommunication services are likely to be affected by the station in question may request the assistance of the Board at any time during the coordination procedure.

2.6 In the event of continuing disagreement between an administration seeking to effect coordination and one with which coordination has been sought, the administration seeking coordination shall, except in the cases where the assistance of the Board has been requested, defer the submission of its notice concerning the proposed assignment by six months from the date of publication of the information according to paragraph 2.2.

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

3. An administration intending to bring into use a space station in the broadcasting-satellite service shall, for the purpose of coordination with space systems of other administrations, apply the following provisions of Article **11** of the Radio Regulations:

3.1 Nos. **1041** to **1058** inclusive.

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[1] The calculation methods and the interference criteria to be employed in evaluating the interference should be based upon relevant CCIR Recommendations agreed by the administrations concerned either as a result of Resolution **703** or otherwise. In the event of disagreement on a CCIR Recommendation or in the absence of such Recommendations, the methods and criteria shall be agreed between the administrations concerned. Such agreements shall be concluded without prejudice to other administrations.

3.2.1 Nos. **1060** to **1065** [1].

3.2.2 No coordination under paragraph 3.2.1 is required when an administration proposes to change the characteristics of an existing assignment in such a way as not to increase the probability of harmful interference to stations in the space radiocommunication service of other administrations.

3.2.3 Nos. **1074** to **1105** inclusive.

Section C: Notification, Examination and Recording in the Master Register of Assignments to Space Stations in the Broadcasting-Satellite Service Dealt With under this Resolution

4.1 Any frequency assignment [2] to a space station in the broadcasting-satellite service shall be notified to the Board. The notifying administration shall apply for this purpose the provisions of Nos. **1495** to **1497**.

4.2 Notices made under paragraph 4.1 shall initially be treated in accordance with No. **1498**.

5.1 The Board shall examine each notice with respect to:

5.2 *a)* 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 coordination procedures and to the probability of harmful interference, which are the subject of the paragraphs 5.3, 5.4, and 5.5;

5.3 *b)* its conformity, where applicable, with the provisions of paragraph 2.1 of Section A above, relating to coordination of the use of the frequency assignment with the other administrations concerned;

5.4 *c)* its conformity, where applicable, with the provisions of paragraph 3.2.1 of Section B above, relating to coordination of the use of the frequency assignment with the other administrations concerned;

5.5 *d)* where appropriate, the probability of harmful interference to the service rendered by a station in a space or terrestrial radiocommunication service for which a frequency assignment has already been recorded in the Master Register in conformity with the provisions of No. **1240** or **1503** as appropriate, if that assignment has not, in fact, caused harmful interference to the service rendered by a station for which an assignment has been previously recorded in the Master Register and which itself is in conformity with No. **1240** or **1503** as appropriate.

6.1 Depending upon the findings of the Board subsequent to the examination prescribed in paragraphs 5.2, 5.3, 5.4 and 5.5, further action shall be as follows:

6.2 Where the Board reaches an unfavourable finding with respect to paragraph 5.2 the notice shall be returned immediately by airmail to the notifying administration with the reasons of the Board for this finding together with such suggestions as the Board is able to offer with a view to a satisfactory solution of the problem.

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[1] The calculation methods and the interference criteria to be employed in evaluating the interference should be based upon relevant CCIR Recommendations agreed by the administrations concerned either as a result of Resolution **703** or otherwise. In the event of disagreement on a CCIR Recommendation or in the absence of such Recommendations, the methods and criteria shall be agreed between the administrations concerned. Such agreement shall be concluded without prejudice to other administrations.

[2] The expression *frequency assignment*, wherever it appears in this Resolution, shall be understood to refer either to a new frequency assignment or to a change in an assignment already recorded in the Master International Frequency Register (hereinafter called the *Master Register*).

6.3 Where the Board reaches a favourable finding with respect to paragraph 5.2, or where it reaches the same finding after resubmission of the notice, it shall examine the notice with respect to the provisions of paragraphs 5.3 and 5.4.

6.4 Where the Board finds that the coordination procedures mentioned in paragraphs 5.3 and 5.4 have been successfully completed with all administrations whose 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 of the Master Register with an entry in the Remarks Column indicating that such recording does not prejudge in any way the decisions to be included in the agreements and associated plans referred to in Resolution **507**.

6.5 Where the Board finds that the coordination procedures mentioned in paragraph 5.3 or 5.4 have not, as appropriate, been applied or have been unsuccessfully applied, the notice shall be returned immediately by airmail to the notifying administration with the reason for its return together with such suggestions as the Board is able to offer with a view to a satisfactory solution of the problem.

6.6 Where the notifying administration resubmits the notice and states that it has been unsuccessful in endeavouring to effect the coordination, the notice shall be examined by the Board with respect to paragraph 5.5.

6.7 Where the notifying administration resubmits the notice and the Board finds that the coordination procedures have been successfully completed with all administrations whose services may be affected, the assignment shall be treated as indicated in paragraph 6.4.

6.8 Where the Board reaches a favourable finding with respect to paragraph 5.5, the assignment shall be recorded in the Master Register. The appropriate symbol indicating the finding by the Board shall indicate that the coordination procedures, as appropriate, referred to in paragraph 2.1 or 3.2.1 were not successfully completed. The date of receipt by the Board of the notice shall be entered in Column 2d of the Master Register, with the remark mentioned in paragraph 6.4.

6.9 Where the Board reaches an unfavourable finding with respect to paragraph 5.5, the notice shall be returned immediately by airmail to the notifying administration with the reasons for the Board's finding together with such suggestions as the Board is able to offer with a view to a satisfactory solution of the problem.

6.10 If the administration resubmits the notice unchanged with the insistence that it be reconsidered, but should the Board's unfavourable finding under paragraph 5.5 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 four months 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 of the Master Register, with the remark mentioned in paragraph 6.4. An appropriate remark shall be placed in Column 13 to indicate that the assignment is not in conformity with the provisions of paragraphs 5.3, 5.4 or 5.5, as appropriate. In the event that the administration concerned receives no complaint of harmful interference concerning the operation of the station in question for a period of one year from the commencement of operation, the Board shall review its finding.

6.11 If harmful interference is actually caused to the reception of any space station in the broadcasting-satellite service whose frequency assignment has been recorded in the Master Register as a result of a favourable finding with respect to paragraphs 5.2, 5.3, 5.4 and 5.5 of this Resolution, as appropriate, by the use of a frequency assignment to a space station which has been subsequently recorded in the Master Register in accordance with the provisions of paragraph 6.10 of this Resolution or of No. **1544**, the station using the latter frequency assignment must, upon receipt of advice thereof, immediately eliminate this harmful interference.

6.12 If harmful interference is actually caused to the reception of any space radiocommunication station using an assignment recorded in the Master Register as a result of a favourable finding with respect to Nos. **1503** to **1512**, as appropriate, by the use of an assignment to a space station in the broadcasting-satellite service which has been subsequently recorded in the Master Register in accordance with the provisions of paragraph 6.10 of this Resolution, the station using the latter assignment must, on receipt of advice thereof, immediately eliminate this harmful interference.

6.13 If harmful interference is actually caused to the reception of any terrestrial station using an assignment recorded in the Master Register as a result of a favourable finding with respect to No. **1240**, by the use of an assignment to a space station in the broadcasting-satellite service which has been subsequently recorded in the Master Register in accordance with the provisions of paragraph 6.10 of this Resolution, the station, using the latter assignment must, on receipt of advice thereof, immediately eliminate this harmful interference.

6.14 If harmful interference to the reception of any station whose assignment is in accordance with paragraph 5.2 of this Resolution, is actually caused by the use of a frequency assignment which is not in conformity with Nos. **1240**, **1352** or **1503**, the station using the latter frequency assignment must, upon receipt of advice thereof, immediately eliminate this harmful interference.

CL

RESOLUTION No. 34

Relating to the Establishment of the Broadcasting-Satellite Service in Region 3 in the 12.5 - 12.75 GHz Frequency Band and to Sharing with Space and Terrestrial Services in Regions 1, 2 and 3

The World Administrative Radio Conference, Geneva, 1979,

considering

that this Conference has allocated the band 12.5 - 12.75 GHz to the broadcasting-satellite service for community reception in Region 3;

recognizing

that under Resolution **507** the Administrative Council may wish to empower a future competent administrative radio conference to establish a plan for the broadcasting-satellite service in the band 12.5 - 12.75 GHz in Region 3;

resolves

1. that, until such time as a plan may be established for the broadcasting-satellite service in the band 12.5 - 12.75 GHz in Region 3, the provisions of Resolution **33** together with Article **11** shall continue to apply to the coordination between stations in the broadcasting-satellite service in Region 3 and:

   1) space stations in the broadcasting-satellite and fixed-satellite services in Regions 1, 2 and 3;

   2) terrestrial stations in Regions 1, 2 and 3;

2. that the CCIR shall study urgently the technical provisions which may be appropriate for the sharing between stations in the broadcasting-satellite service in Region 3 and:

   1) space stations in the broadcasting-satellite and fixed-satellite services in Regions 1 and 2;

   2) terrestrial stations in Regions 1 and 2;

3. that, until such time as technical provisions are developed by the CCIR and accepted by administrations concerned under Resolution **703**, the sharing between space stations in the broadcasting-satellite service in Region 3 and terrestrial services in Regions 1, 2 and 3 shall be based on the following criteria as appropriate:

1) the power flux-density at the Earth's surface, produced by emissions from a space station in the broadcasting-satellite service in Region 3 for all conditions and for all methods of modulation shall not exceed the limits given in Annex 5 of Appendix **30**; noting that sub-paragraph 2) shall only apply with respect to protection of the broadcasting service;

2) in addition to 1), the provisions of No. **2574** shall apply in the countries mentioned in Nos. **848** and **850**;

3) the limits given in 1) and 2) above may be exceeded on the territory of any country provided the administration of that country has so agreed.

AA

RESOLUTION No. 35

Relating to a Procedure for Resolving a Disagreement over the Technical Standards or Rules of Procedure of the International Frequency Registration Board

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that, in accordance with No. **1001.1**, the Technical Standards and Rules of Procedure of the IFRB shall be distributed to all Members of the Union and shall be open to comment from administrations;

b) that an administration may disagree with the substantive contents of these documents;

c) that, in the event of such a disagreement remaining unresolved, there should be a procedure for the resolution of that disagreement;

recognizing

a) that, with respect to the Technical Standards, the CCIR could provide the best source of professional advice;

b) that, with respect to the Rules of Procedure, a world administrative radio conference could provide the best source of interpretation of the Radio Regulations;

resolves

1. that, in the event of an unresolved disagreement over the substantive contents of the Technical Standards of the IFRB, the Board, in agreement with the administration concerned, shall refer the question to the CCIR for international study and the development of a Recommendation thereon by the next Plenary Assembly of the CCIR;

2. that, in the event of the CCIR not having formulated a Recommendation thereon, or in the event of an unresolved disagreement over the substantive contents of the Rules of Procedure of the IFRB, in either case the matter may be referred to the Administrative Council for inclusion in the agenda of the next world administrative radio conference;

3. that, pending resolution of the matter, the Board shall continue to use the particular Technical Standard or Rule of Procedure in dispute but that, following resolution of the matter by a CCIR Recommendation or by a decision of a world administrative radio conference, the Board shall promptly take the consequential action including a review of all relevant findings.

AK

RESOLUTION No. 36

Relating to the Preparation of Explanatory Information by the International Frequency Registration Board on the Application of the New Method for Designating Emissions in Notification Procedures and the Consequential Revision of the Master International Frequency Register

The World Administrative Radio Conference, Geneva, 1979,

having adopted

Article **4** and Appendix **6** containing a new system for the designation of emissions;

considering

a) that such designations are fundamental to the notification procedures detailed in the Radio Regulations;

b) that it is essential for this new system of designating emissions to be applied not only to new frequency assignments but also to existing entries in the Master Register;

c) that certain new designations are more detailed than the former designations;

d) that the IFRB does not have the means to replace automatically all former designations by the new designations;

noting

a) that some administrations may have difficulties in implementing the new method of designating emissions when it first comes into use;

b) that these administrations need explanatory information well in advance of the entry into force of the Final Acts of this Conference;

resolves

1. that the IFRB shall prepare explanatory information on the application of the new method of designation, including examples, in the context of the notification procedures specified in the Radio Regulations and shall make this information available to administrations as early as possible and not later than 1 October 1980;

2. that the IFRB shall proceed with the conversion of the data appearing in the Master Register in consultation with, and on the basis of information provided by, administrations;

3. that, if the Board does not receive from administrations within a reasonable time the information required in the application of *resolves* 2, it shall convert the data appearing in the Master Register as accurately as possible and insert in the Remarks Column a remark referring to the fact that the conversion was made under the terms of this paragraph;

4. that, from the date of entry into force of the present revision of the Radio Regulations, only the designations of emissions contained in Article **4** shall be used in the coordination and notification procedures. If however the Board receives, after this date, information or notifications containing the old type of designation, the Board shall not consider them incomplete for this reason alone. The Board shall, when practicable, modify the designation and, if clarification is required, shall consult the administrations concerned.

BX RESOLUTION No. 37

Relating to the Introduction and Development of Computer Assistance in Radio Frequency Management Within Administrations

The World Administrative Radio Conference, Geneva, 1979,

considering

a) Resolution 7 relating to the development of national radio frequency management;

b) Resolution **6** relating to the preparation of a handbook to explain and illustrate certain provisions of the Radio Regulations;

c) Recommendation **31** to the CCIR relating to the preparation of a handbook on computer-aided techniques in radio frequency management;

considering also

d) the potential value of computer aids in many aspects of radio frequency management;

e) the need for further assistance to administrations, particularly in developing countries, in introducing and developing computer facilities or in optimizing the use of their existing computer facilities as aids to radio frequency management;

resolves that the Secretary-General

shall promptly initiate a review of these problems to ensure that the following actions shall be taken in the most effective manner:

1. the holding of regional seminars particularly directed to education in this field, bearing in mind the national requirements of administrations;

2. the use of all educational resources available to the Union to provide further training in this field appropriate to the national requirements of administrations;

3. the making of appropriate arrangements, within the existing framework of the ITU, for aiding administrations in the identification of special problems in this field and helping to provide solutions, by the best possible application of computer technology;

invites the Administrative Council

to consider the recommendations of the Secretary-General and to find the necessary resources.

BR

RESOLUTION No. 38

Relating to the Reassignment of Frequencies of Stations in the Fixed and Mobile Services in the Bands Allocated to the Radiolocation and Amateur Services in Region 1

(1 625 - 1 635 kHz; 1 800 - 1 810 kHz; 1 810 - 1 850 kHz and 2 160 - 2 170 kHz)

The World Administrative Radio Conference, Geneva, 1979,

considering

that this Conference has adopted modifications to the allocation of the frequency bands between 1 606.5 kHz and 2 850 kHz;

noting

a) that the implementation of the revised Table of Frequency Allocations presents difficulties in particular for stations in the maritime mobile service in Region 1 in the bands 1 625 - 1 635 kHz, 1 800 - 1 810 kHz and 2 160 - 2 170 kHz which are being made available for radiolocation services and in the band 1 810 - 1 850 kHz which is being made available to the amateur service;

b) that this Conference has recommended the convening of a general mobile administrative radio conference not later than 1982;

emphasizing

the need for frequency assignment plans to be drawn up for Region 1 for the band 1 606.5 - 2 850 kHz in order to implement the provisions in Nos. **486** and **492** of the Radio Regulations;

invites the general mobile administrative radio conference

mentioned above to give priority to the adoption of a new assignment plan for Region 1 for the band 1 606.5 - 2 850 kHz for the maritime mobile service;

resolves

1. that in Region 1, except for the countries and frequency bands mentioned [1] in Nos. **485**, **490**, **491**, **493** and **499**, on the date of implementation of a frequency assignment plan for the maritime mobile service to be contained in the Final Acts of the competent conference, all operations of stations of the fixed and mobile services shall be terminated in the bands 1 625 - 1 635 kHz, 1 800 - 1 810 kHz, 1 810 - 1 850 kHz and 2 160 - 2 170 kHz;

2. that replacement frequencies for stations of the maritime mobile service shall be provided in the frequency assignment plan mentioned above, together with the arrangements for their implementation;

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[1] No. **485**, bands 1 625 - 1 635 kHz, 1 800 - 1 810 kHz and 2 160 - 2 170 kHz
No. **490**, band 1 810 - 1 830 kHz
No. **491**, band 1 810 - 1 830 kHz
No. **493**, band 1 810 - 1 850 kHz
No. **499**, band 2 160 - 2 170 kHz

3. that administrations having assignments to stations of the fixed, land mobile or aeronautical mobile (OR) services in the bands concerned shall choose and notify to the IFRB appropriate replacement assignments; and where the finding of the Board is favourable with respect to Nos. **1240** and **1241**, each such replacement assignment shall have the same date and status as that which it replaced, as far as the assignments of the countries in Region 1 are concerned;

4. that the protection afforded to stations of the fixed and mobile services by Nos. **486** and **492** shall continue to apply until such time as satisfactory replacement assignments have been found and implemented in accordance with this Resolution;

5. that, after the date of implementation of the frequency assignment plan for the maritime mobile service contained in the Final Acts of the competent conference, the continued use of frequency assignments that have not been transferred in accordance with *resolves* 3 shall be only on the basis of No. **342**.

AJ

RESOLUTION No. 60

Relating to Information on the Propagation of Radio Waves Used in the Determination of the Coordination Area

(See Appendix **28**)

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that Appendix **28** to the Radio Regulations provides a method for the determination of the coordination area which incorporates certain material concerned with radio wave propagation;

b) that the propagation information contained in Appendix **28** is based directly or indirectly on propagation data given in the texts of the CCIR;

c) that CCIR studies of radio wave propagation are continuing, and therefore the conclusions of these studies are subject to change and may in future show the need to revise those sections of Appendix **28** which incorporate the propagation information;

d) that no radio wave propagation measurements have been carried out in some parts of the world;

recognizing

a) that a period of several years is generally required to accumulate sufficient data to form reliable conclusions concerning radio wave propagation;

b) that for administrative reasons it is desirable that the propagation information used for the determination of the coordination area should not be revised too frequently and, in any case, should be revised only if the effect of such revision on the size of the coordination area is significant;

c) that in Appendix **28** the coordination area is determined without the need for detailed knowledge of the propagation characteristics of individual paths, and it is desirable that this approach be maintained;

invites the CCIR

to continue to study propagation data concerned with the determination of the coordination area, and to maintain the relevant CCIR texts in a format which would permit direct insertion into Appendix **28** in place of the existing Sections 3, 4, 6 or Annex III;

resolves

1. that each Plenary Assembly of the CCIR should come to a conclusion as to whether, according to the propagation information given in the most recent CCIR Recommendations, any revision of Sections 3, 4, 6 or Annex III of Appendix **28** to the Radio Regulations is warranted;

2. that when a Plenary Assembly of the CCIR has come to the conclusion that a revision of Sections 3, 4, 6 or Annex III of Appendix **28** is warranted, the Director of the CCIR shall so inform the Secretary-General of the ITU and send him the proposed amendments to Appendix **28**;

requests

1. that the Administrative Council then place, as an extraordinary item, on the agenda of the next world administrative radio conference, the consideration of the conclusion of the CCIR;

2. that, if the said world administrative radio conference decides that the propagation information used in Appendix **28** is to be revised, the Secretary-General, in consultation with the IFRB, incorporate the amendments agreed at the said conference in a document which contains the new text of Sections 3, 4, 6 or Annex III of Appendix **28** in a form suitable for direct substitution in the version of Appendix **28** then in force, and send this document to all administrations;

decides

that from a date established by the said conference, the revised text shall form the basis of all subsequent determinations of the coordination area using Appendix **28**.

BK RESOLUTION No. 61

Relating to the Division of the World into Climatic Zones for the Purpose of Calculation of Propagation Parameters

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the propagation of radio waves, particularly at frequencies greater than 1 GHz, is significantly influenced by rain, as well as by sand and dust storms;

b) that measured values of rainfall intensity and more particularly short-term rain intensity statistics are not available for certain geographical regions;

c) that very little information exists on the occurrence and effects of sand and dust storms;

d) that for the purpose of evaluating propagation characteristics, the CCIR has divided the world into five rain-climatic zones, broadly corresponding to the characteristics of the rainfall and this division is no longer adequate;

e) that the present division of the world into such a limited number of rain-climatic zones is likely to be insufficiently precise to give a correct evaluation of attenuation and scattering by rain in some parts of the world;

f) that the effects of dust and sand storms have not been adequately examined and evaluated, either in terms of their severity or in terms of their temporal variations;

g) that the CCIR has some studies in progress on the effects of rain, as well as of dust and sand storms;

requests the CCIR

1. to expedite and expand the studies on the effects of rain and to give greater emphasis to the studies of sand and dust storms;

2. to advise on the nature of the studies required in geographical regions for which little information exists;

3. in the light of new data becoming available, to give particular attention to the revision of the current classification of the world into climatic zones;

resolves to urge administrations

1. to encourage and undertake, as a matter of urgency, measurements in their countries of the rates of precipitation of rain and of the spatial and temporal variations of this precipitation including its cellular structure;

2. to encourage and undertake, also as a matter of urgency, measurements of the influence of sand and dust storms on propagation;

3. to communicate the results of such measurements to the CCIR to enable the development of a better and more comprehensive description of the phenomena which apply and an improved classification of dust and sand storms and rainfall climates for application to radiocommunication problems.

AM

RESOLUTION No. 62

Relating to the Experimental Use of Radio Waves by Ionospheric Research Satellites [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that research into the Earth's ionosphere is very important in the study of the relationship between the Sun and the Earth and also for the effective use of radio wave transmission via the ionosphere;

b) that successful research has been conducted with satellites such as Alouette 1 and 2, ISIS 1 and 2 and ISS in which top-side sounding equipment is installed;

c) that similar ionospheric research satellites will be used for further research into the ionosphere and beyond;

d) that top-side sounding equipment is operated mostly in a frequency-sweeping pulse mode;

e) that these types of satellite are usually operated intermittently during a limited period each day according to the orbital characteristics;

f) that operation of the sounder can be accurately commanded at will by the earth station concerned;

[1] Replaces Resolution No. **Spa2** – 4 of the World Administrative Radio Conference for Space Telecommunications, Geneva, 1971.

resolves

that administrations may continue to permit the emissions of radio waves from ionospheric research satellites in orbit above the ionosphere in the MF and HF bands provided that suitable means are available for controlling emissions from these satellites as required by No. **2612** of the Radio Regulations to prevent harmful interference to other services.

AG

RESOLUTION No. 63

Relating to the Protection of Radiocommunication Services Against Interference Caused by Radiation from Industrial, Scientific and Medical (ISM) Equipment

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that ISM equipment generates and uses locally radio frequency energy, whereby outward radiation cannot always be avoided;

b) that there is an increasing amount of ISM equipment working on various frequencies throughout the spectrum;

c) that in some cases a considerable part of the energy may be radiated by ISM equipment outside its working frequency;

d) that some radio services, especially those using low field strengths, may suffer interference caused by radiation from ISM equipment, a risk which is unacceptable particularly in the case of radionavigation or other safety services;

e) that, in order to limit the risks of interference to specified parts of the spectrum:

i) the preceding Radio Conferences of Atlantic City, 1947, and Geneva, 1959, have designated some frequency bands within which the radiocommunication services must accept harmful interference produced by ISM equipment;

ii) this Conference has accepted an increase in the number of bands to be designated for ISM equipment, but only on the condition that limits of radiation from such equipment be specified within the bands newly designated for worldwide use and outside all the bands designated for ISM equipment;

resolves

that, to ensure that radiocommunication services are adequately protected, studies are urgently required on the limits to be imposed on the radiation from ISM equipment in the entire radio spectrum, particularly in the newly designated bands;

invites the CCIR

1. to continue, in collaboration with the CISPR and the IEC, its studies relating to radiation from ISM equipment in the entire radio spectrum in order to ensure adequate protection of radiocommunication services;

2. to specify as soon as possible, in the form of Recommendations, the limits to be imposed on radiation from ISM equipment inside and outside the bands designated for their use in the Radio Regulations.

Priority should be given to the studies which would permit the formulation of a Recommendation relating to the frequency bands, newly designated for use by ISM equipment by this Conference, which are listed below:

6 765	-	6 795	kHz
433.05	-	434.79	MHz
61	-	61.5	GHz
122	-	123	GHz
244	-	246	GHz

invites the next competent world administrative radio conference

to resolve the problem of interference from ISM equipment to radiocommunication services taking into account the CCIR Recommendations.

CF

RESOLUTION No. 64

Relating to CCIR Study of Lightning Protection of Radio Equipment

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that there are areas in the world where, although the required protective devices against lightning have been installed, equipments constantly deteriorate, often very seriously, following discharges produced during electrical or violent storms;

b) that due to circumstances such as climatic conditions, man-made environmental pollution, etc., studies have not led to conclusive results;

c) the lack of material means and of experience among technicians confronted with this phenomenon;

considering further

No. 72 of the International Telecommunication Convention (Malaga-Torremolinos, 1973);

invites the CCIR

1. to study this phenomenon, in consultation with the CCITT and to formulate a Recommendation in this matter;

2. to include in the study of this phenomenon, in order to facilitate the application of such protection techniques and, to the extent possible, statistics on lightning with respect to climatic zones of occurrence, frequency of occurrence and magnitude of lightning as measured in terms of induced currents or voltages and their related time constants;

and invites administrations

to submit to the CCIR technical data and results of studies in this matter.

AH

RESOLUTION No. 65

Relating to the Circulation of Current Information on CCIR Recommendations Referred To in the Radio Regulations

The World Administrative Radio Conference, Geneva, 1979,

noting

a) that reference is made in the Radio Regulations to specific CCIR Recommendations as well as to "relevant CCIR Recommendations";

b) that Resolution **703** provides for consultation on the applicability of those CCIR Recommendations relating to the technical criteria for sharing frequency bands between space radiocommunication and terrestrial radiocommunication services or between space radiocommunication services;

c) that the CCIR Recommendations may be revised by CCIR Plenary Assemblies, with consequent changes of reference numbers;

considering

a) that a correct application of the Radio Regulations requires the identification by administrations of the relevant CCIR Recommendations to be taken into account;

b) that information on the up-dating of these Recommendations is of the utmost importance;

invites the CCIR

1. to identify and list those provisions of the Radio Regulations containing a reference to a specific CCIR Recommendation or to a "relevant CCIR Recommendation" together with the reference numbers and titles of those Recommendations;

2. to instruct the Director of the CCIR to provide the Secretary-General with the information required to up-date the list;

requests the Secretary-General

to communicate to all administrations the list of those Recommendations as well as any subsequent up-dating thereof.

AE

RESOLUTION No. 66

Relating to the Division of the World into Regions for the Purposes of Allocating Frequency Bands

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the present division of the world into Regions 1, 2 and 3 for the purposes of allocating frequency bands was made in 1947 and the technical bases for this division were not clearly defined;

b) that since 1947 considerable advances in radiocommunication techniques have been made and many new countries have emerged;

being aware

that this division of the world into three Regions as presently constituted, may not be appropriate to meet the requirements of all countries on an equitable basis;

recognizing

that it is not possible to carry out the required revision of the existing Regional division during this Conference;

resolves

that this division should be reviewed in the light of the major developments in radio technology and increase in the membership of the Union with countries at different stages of development;

requests the CCIR

to undertake a study of the technical and operational bases for the possible revision of the division of the world for the purposes of allocating the frequency bands, based on all relevant factors such as radio propagation, climatic conditions, natural geographical configuration of the world, state of economic and technical development, which would permit improvement in the efficient utilization of the radio frequency spectrum by all Member countries of the Union;

urges all Members of the Union

to participate actively in the above study by contributing to its work;

further requests the CCIR

to complete and submit this study not later than its XVIth Plenary Assembly, and in any case to prepare a report for consideration by the next Plenary Assembly;

invites the Administrative Council

to follow the conduct of the study and to furnish advice to the Plenipotentiary Conference with a view to this matter being suitably resolved at one of the future world administrative radio conferences of the Union.

BJ

RESOLUTION No. 67

Relating to Improvements in the Design and Use of Radio Equipment

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the radio frequency spectrum is a scarce natural resource which has value only when used;

b) that efficient utilization of the spectrum can be limited by the characteristics of both transmitting and receiving equipment;

c) that operational aspects of radio systems can also limit the efficient utilization of the spectrum;

d) that continuing advances in electronics and allied fields are enabling the production of more spectrum-efficient radiocommunication systems;

resolves

that administrations should encourage improvements in the design and construction of radio equipment and in the mode of operation of systems in order to improve the utilization of the radio frequency spectrum.

CD

RESOLUTION No. 68

Relating to the Redefinition of Certain Terms Contained in Annex 2 to the International Telecommunication Convention (Malaga-Torremolinos, 1973) and Applicable to the Radio Regulations

The World Administrative Radio Conference, Geneva, 1979,

having considered and adopted

the terms and definitions contained in Article 1 of the Radio Regulations (Geneva, 1979) which includes a number of terms already defined in Annex 2 ("Definition of Certain Terms Used in the Convention and in the Regulations of the International Telecommunication Union") to the International Telecommunication Convention (Malaga-Torremolinos, 1973);

believing

that some of the terms as defined in Annex 2 to the Convention which are of importance to the Radio Regulations, i.e. "harmful interference", "telegraphy" and "telephony", and associated terms, should be reviewed and made more precise and better adapted to current technology;

recognizing however

that, in view of Article 51, in particular No. 167, of the International Telecommunication Convention (Malaga-Torremolinos, 1973), only a Plenipotentiary Conference of the International Telecommunication Union is competent to amend the terms and their definitions contained in Annex 2 to that Convention;

recommends

that the Plenipotentiary Conference of the International Telecommunication Union, Nairobi, 1982, re-examine the definition in Annex 2 to the International Telecommunication Convention of the terms "harmful interference", "telegraphy", "telephony" and associated terms, taking into account the terms and definitions adopted for the purposes of the Radio Regulations by the World Administrative Radio Conference, Geneva, 1979, together with any proposals submitted by the CCIR and CCITT under Resolution No. 44 of the Plenipotentiary Conference, Malaga-Torremolinos, 1973;

instructs the Secretary-General

1. to bring this matter to the attention of that Plenipotentiary Conference;

2. to indicate in the published text of the Radio Regulations, by means of notes, those definitions which are not in alignment with Annex 2 to the Convention, drawing attention to the fact that the corresponding definitions in that Annex shall prevail over those in the Radio Regulations to the extent that there are differences between them;

3. to amend or delete these notes in the light of any relevant decisions of the Plenipotentiary Conference.

BD

RESOLUTION No. 100

Relating to the Coordination, Notification and Recording in the Master International Frequency Register of Assignments to Stations in the Fixed-Satellite Service with Respect to Stations in the Broadcasting-Satellite Service in Region 2 [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

that the Radio Regulations contain no provisions governing the coordination, notification or recording in the Master International Frequency Register of frequency assignments to stations in the fixed-satellite service in the band 12.1 - 12.3 GHz with respect to stations in the broadcasting-satellite service in Region 2;

resolves

that the provisions of Articles **11** and **13** of the Radio Regulations shall be applied in such cases until the matter is considered by a competent administrative radio conference.

BQ

RESOLUTION No. 101

Concerning the Drawing Up of Agreements and of the Associated Plans for Feeder Links to Space Stations in the Broadcasting-Satellite Service Operating in the 12 GHz Band under the Plan Adopted by the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977, for Regions 1 and 3

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the geostationary-satellite orbit and the frequency bands allocated to the fixed-satellite service should be utilized as efficiently as possible;

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[1] Replaces Resolution No. **Sat** – 6 of the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977.

b) that the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977, prepared and adopted the provisions and associated Plan for the assignment of frequency channels and orbital positions in the band 11.7 - 12.5 GHz for Region 1 and 11.7 - 12.2 GHz for Region 3, contained in Appendix **30**;

c) that the feeder links to broadcasting satellites are part of the fixed-satellite service and that the use of the frequency bands for these feeder links is currently governed by Articles **11** and **13** of the Radio Regulations;

d) that the presence of a large number of broadcasting satellites operating in geostationary orbit positions determined by the above plans will cause considerable difficulties in the coordination of the use of frequency bands for feeder links for the transmission of programmes with systems of the fixed-satellite service;

e) that the existing sharing criteria in Article **27** have not been specifically determined for feeder links for the broadcasting-satellite service in bands in which the use of the fixed-satellite service is exclusively reserved for these feeder links;

noting

a) that this Conference has identified certain frequency bands as available for the feeder links to broadcasting satellites (see the Table of Frequency Allocations and associated footnotes, Nos. **835**, **858**, **863** and **869**).

b) that the choice of bands for feeder links to broadcasting satellites shall be left to the administrations concerned;

resolves

1. that the feeder links to broadcasting satellites operating in the bands 11.7 - 12.5 GHz in Region 1 and 11.7 - 12.2 GHz in Region 3 shall be organized and operated in the bands 10.7 - 11.7 GHz, 14.5 - 14.8 GHz (limited to countries outside Europe and to Malta) and 17.3 - 18.1 GHz for Region 1 and 14.5 - 14.8 GHz and 17.3 - 18.1 GHz for Region 3 in accordance with agreements and the associated plans adopted at an administrative radio conference in which all the administrations concerned and any administrations whose services may be affected may participate; however, administrations may also use feeder links to broadcasting satellites in the band 14.0 - 14.5 GHz (limited to countries outside Europe and to Malta) or in other frequency bands allocated to the fixed-satellite service (Earth-to-space), subject to coordination with other networks in the fixed-satellite service;

2. that, pending the entry into force of such agreements and relevant plans, the administrations and the IFRB shall apply the procedures prescribed in Articles **11** and **13** and in Resolution **102** for feeder links to broadcasting satellites operating in the bands mentioned in *resolves* 1;

3. that until the Final Acts of the proposed administrative radio conference come into force the criteria given in Article **27** for sharing between terrestrial services and the fixed-satellite service shall also be applicable with regard to the feeder links for the broadcasting-satellite service in the bands mentioned above;

invites the Administrative Council

to study the question of convening an administrative radio conference in order to determine the appropriate date, the place of meeting and the agenda for such a conference;

invites the CCIR

1. to study the most appropriate technical characteristics for feeder links for the broadcasting-satellite service and the method of planning the assignment of frequency channels for the feeder links in the bands which have been allocated by the World Administrative Radio Conference, Geneva, 1979, (also see Recommendation **101**);

2. to study and to determine, as a matter of urgency, suitable criteria applicable to sharing between the fixed and mobile services and feeder links to broadcasting satellites.

CS

RESOLUTION No. 102

Relating to Coordination among Administrations of the Technical Characteristics of Feeder Links to Space Stations in the Broadcasting-Satellite Service in the Band 11.7 - 12.5 GHz (Region 1) and 11.7 - 12.2 GHz (Region 3) During the Period Between the Entry into Force of the Final Acts of the World Administrative Radio Conference, Geneva, 1979, and the Entry into Force of the Final Acts of a Future Conference on the Planning of Feeder Links to Such Space Stations

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that before a conference is convened to draw up a plan for feeder links, any administration wishing to use a feeder link to a space station in the broadcasting-satellite service should be able to determine the technical characteristics of the link by agreement with all administrations sharing the same orbital position for such stations as given in the Plan contained in the Final Acts of the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977, (Appendix **30**), taking into account the relevant CCIR Recommendations;

b) that any administration wishing to bring into use a space station in the broadcasting-satellite service in accordance with Appendix **30**, and to use to that effect a frequency assignment for the feeder link, shall apply the advance publication and coordination procedures described in Article **11** for this feeder link;

resolves

1. that when publishing the advance information under No. **1044**, the IFRB shall also indicate the administrations on behalf of which a frequency assignment is recorded in Appendix **30** for the same orbital position;

2. that the agreement or comments of the administrations mentioned in paragraph 1 above shall be communicated to the administration seeking coordination within four months of the date of the advance publication;

3. that a pre-coordination agreement among administrations sharing the same orbital position in the Plan may be concluded, if necessary with the assistance of the Board, during a meeting to which those administrations shall be invited and in which they may take part if they so wish;

4. that the result of this pre-coordination agreement shall be published as a complement to the normal coordination procedures carried out under Article **11** and that the conference which will be responsible for the planning of feeder links shall be informed of all pre-coordination agreements made in pursuance of this Resolution without prejudging in any way the decisions to be taken by that conference.

BZ

RESOLUTION No. 103

Relating to Improvements in Assistance to Developing Countries in Securing Access to the HF Bands for their Fixed Services and in Ensuring Protection of their Assignments from Harmful Interference

The World Administrative Radio Conference, Geneva, 1979,

noting

the other resolutions, adopted at this Conference, relating to the special needs of developing countries;

considering

a) that in many cases the developing countries have a need of assistance of a highly specialized nature and that this assistance must often be obtained at short notice, particularly in relation to the fixed service and the use of the HF bands;

b) that the technical knowledge and experience of most value to the developing countries in this field is obtainable from or through the International Frequency Registration Board;

considering also

c) that the resources of the IFRB are limited;

resolves

1. that the provisions of the Radio Regulations Nos. **1218**, **1260**, **1275** to **1304**, **1416** and **1963** to **1966** are intended essentially for use by the administrations of developing countries;

2. that the administrations of developed countries should make the minimum possible use of these provisions;

3. that the administrations of developing countries should make the maximum possible use of these provisions.

AN

RESOLUTION No. 200 *

Relating to the Use of Class R3E and J3E Emissions for Distress and Safety Purposes on the Carrier Frequency 2 182 kHz [1]

The World Administrative Radio Conference, Geneva, 1979,

noting

a) that the Radio Regulations require the use on the carrier frequency 2 182 kHz of:

– class A3E or H3E emissions by ship, aircraft and survival craft stations;

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* *Note by the General Secretariat:* See also Resolution **305**.

[1] Replaces Resolution No. **Mar2** – 20 of the World Maritime Administrative Radio Conference, Geneva, 1974.

– class H3E emissions by coast stations;

– the classes of emission, specified in Appendix 37, by emergency position-indicating radiobeacons;

b) that the main object of these provisions is to maintain reliable distress and safety communications by using proven techniques;

noting also

a) the Final Report of the Panel of Experts (Geneva, 1963);

b) the relevant CCIR studies concerning single-sideband techniques (see CCIR Question 26-1/8, Recommendations 488, 543 and 544 and Report 744);

recognizing

that the use of class R3E and J3E emissions on the carrier frequency 2 182 kHz would provide the operational advantages, inherent in single-sideband techniques, which are already being obtained on other frequencies;

recognizing, however,

that the CCIR recommends that class R3E emissions should not be used for distress and safety purposes (see CCIR Recommendation 543);

considering

a) that a large number of equipments employing class A3E and H3E emissions will still be in use for distress and safety purposes on 1 January 1982;

b) that single-sideband equipment must be designed to work with closer frequency tolerances and higher technical standards than those necessary for double-sideband equipment;

c) that equipment designed for safety purposes, particularly survival craft equipment, should:

– be capable of reliable operation in varying environments, and after long periods of storage;

– be easy to operate by an inexperienced person in all circumstances;

– be relatively low priced;

d) that the requirement for direction-finding and homing must be satisfied;

e) that the need to transmit and receive the two-tone radiotelephone alarm signal, including signals from emergency position-indicating radiobeacons, must also be satisfied, taking into account the frequency tolerances in Appendix 37 and the relevant CCIR Recommendations;

resolves

1. that continuation of the study of the use of class R3E and J3E emissions for distress and safety purposes is required;

2. that this study should be completed in time for a decision on the date for the final conversion to class R3E and J3E emissions on the carrier frequency 2 182 kHz to be made by the next competent world administrative radio conference;

requests the CCIR

to continue its studies on the above-mentioned subject as a matter of urgency and, if possible, to issue Recommendations sufficiently in advance of the above-mentioned conference;

requests the Secretary-General

to communicate this Resolution to the Inter-Governmental Maritime Consultative Organization;

invites the Inter-Governmental Maritime Consultative Organization

to consider the matter as part of the study currently being undertaken of the maritime distress and safety system.

AB

RESOLUTION No. 201

Relating to Operational Provisions, Charging and Accounting for Public Correspondence in the Mobile Services

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the CCITT, in accordance with a request by the World Maritime Administrative Radio Conference, Geneva, 1974, has prepared two Recommendations relating to the operational provisions for the maritime mobile service, and charging, accounting, and refunds in the maritime mobile service;

b) that this Conference has accepted the overall conclusions and most of the detailed conclusions of the report of the CCITT studies carried out in accordance with the pertinent Resolutions of the World Maritime Administrative Radio Conference, Geneva, 1974, which have now been abrogated;

c) that as a consequence, the Additional Radio Regulations and certain provisions of the Radio Regulations relating to the operation of, and charging and accounting for, public correspondence in the mobile services have been replaced by provisions governing the general application of the CCITT Recommendations;

d) that a number of the provisions which have been replaced referred to mobile services other than the maritime mobile service and the maritime mobile-satellite service;

e) that the provisions contained in the two above-mentioned CCITT Recommendations relating to public correspondence apply at present only to the maritime mobile service and the maritime mobile-satellite service;

f) further, that in any revision of the relevant CCITT Recommendations full account needs also to be taken of maritime interests, ensuring adequate time for administrations to consult these interests;

recognizing

a) that there is at present no specific provision for international public correspondence in any mobile service other than the maritime mobile service and the maritime mobile-satellite service;

b) that international public correspondence might nevertheless be extended in the future to mobile services other than the maritime mobile service and the maritime mobile-satellite service;

invites the CCITT

to undertake, if the need arises, studies on the operational provisions, charging and accounting for international public correspondence in the mobile services other than the maritime mobile service and the maritime mobile-satellite service, seeking to harmonize to the maximum extent possible all such provisions for the mobile services in question;

further invites the CCITT

in continuance of its work relating to the maritime mobile service and the maritime mobile-satellite service to take particular account of maritime interests therein;

resolves

that in the case of a new international public correspondence service being established in a mobile service other than the maritime mobile service or the maritime mobile-satellite service, the new service should conform as far as practicable in its operational provisions, charging and accounting with the existing provisions of the Telephone Regulations, the Telegraph Regulations and the Radio Regulations and with the relevant CCITT Recommendations, until such time as any necessary revision could be made.

DH RESOLUTION No. 202

Relating to the Convening of a World Administrative Radio Conference for the Mobile Services

The World Administrative Radio Conference, Geneva, 1979,

noting

Resolution No. 814 of the Administrative Council;

considering

a) that the agenda of this Conference provided for partial revision of the Radio Regulations and that complete revision would require an appropriate conference to be convened to revise the substance of the remaining articles, particularly those related to the mobile services;

b) that, as a consequence of the decisions made by this Conference, and to harmonize some provisions for the aeronautical, maritime and land mobile services, particularly to improve the provisions related to distress and safety, and as a result of technological improvements and the introduction of new systems, there is a need to revise a number of provisions concerning the mobile services;

c) that there are new demands upon the mobile services;

d) that this Conference has made various Recommendations which envisage the holding of a conference to deal with provisions for the mobile services;

e) that where changes have been made by this Conference to the frequency allocations to mobile services it may be necessary for consequential changes to be made to channelling plans and other subdivisions of those frequency bands for the services concerned;

noting further

that the Final Acts of the World Administrative Radio Conference on the Aeronautical Mobile (R) Service, Geneva, 1978, provide for a Frequency Allotment Plan for that service which is currently in the process of implementation and should not therefore be altered in the near future;

resolves to invite the Administrative Council

to take the necessary steps to arrange a world administrative radio conference for the mobile services to revise the provisions of the Radio Regulations which relate specifically to these services;

invites

1. the CCIR to prepare the technical and operational bases for the conference;

2. the IFRB to give its technical assistance for the preparation and the organisation of the conference.

AZ

RESOLUTION No. 300

Relating to the Use and Notification of Paired Frequencies Reserved for Narrow-Band Direct-Printing Telegraph and Data Transmission Systems in the HF Bands Allocated to the Maritime Mobile Service [1]

(See Appendix **32**)

The World Administrative Radio Conference, Geneva, 1979,

considering

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

b) that the number of paired frequencies in each band is limited;

c) that a future competent conference may provide for wider bands for narrow-band direct-printing than those available at present;

d) that for this reason the World Maritime Administrative Radio Conference, Geneva, 1974, considered it inopportune to draw up a plan at that time but that such a plan might later be rendered necessary by the congested state of channels;

e) that, however, interim measures have to be taken by administrations and by the IFRB to provide for the orderly introduction of these new paired frequencies;

[1] Replaces Resolution No. **Mar2** – 7 of the World Maritime Administrative Radio Conference, Geneva, 1974.

resolves

1. that paired frequencies in the HF bands reserved for narrow-band direct-printing telegraphy between coast stations and ship stations shall be used by these stations, and shall be notified and recorded in the Master International Frequency Register, in the following manner:

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

1.2 to achieve efficient frequency usage each administration shall choose the pairs of frequencies to be assigned to coast stations according to its requirements, with the assistance of the IFRB;

1.3 the assignments thus selected and brought into service shall be notified to the IFRB on notices as shown in Appendix **1** to the Radio Regulations and administrations shall supply the basic characteristics listed in Section A or B of that Appendix, as appropriate. If the assignments conform to the Table of Frequency Allocations, to the related provisions of the Radio Regulations and to this Resolution, the Board shall enter them for information in Part 1A of its weekly circular and in the Master Register. No date will be entered in Column 2 of the Master Register and no finding resulting from a technical examination of compatibility with an existing assignment will be issued. However, the date of receipt of the notice by the Board will be entered in Part 1A of the weekly circular and in the Remarks Column of the Master Register. A reference to this Resolution shall also be entered in the Remarks Column;

1.4 any notice not in conformity with the above-mentioned provisions of the Radio Regulations or with this Resolution shall be returned to the notifying administration by the IFRB, together with any suggestion which the Board may be able to submit in this respect;

1.5 should difficulties arise between countries using the same channel, the matter shall be settled by mutual arrangements between the administrations concerned;

2. that a future competent conference be invited to examine any difficulties which may have arisen in the application of this Resolution and to take a decision, if necessary, on the status to be given to the above-mentioned assignments or on the conditions for drawing up a plan for the bands and systems in question. The entries in the Master Register under this Resolution shall in no way prejudge any decisions which may be taken by the aforementioned conference;

3. that this Resolution shall apply to assignments of paired frequencies for narrow-band direct-printing telegraphy as shown in 1.1 above, notwithstanding any other provisions of the Radio Regulations and existing resolutions of administrative radio conferences that may conflict with this Resolution.

BA

RESOLUTION No. 301

Relating to the Notification of Non-Paired Ship Station Frequencies Used for Narrow-Band Direct-Printing Telegraph and Data Transmission Systems [1]

(See Appendix 33)

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that certain sections of the HF bands allocated to the maritime mobile service are reserved for narrow-band direct-printing telegraph and data transmission systems operating on a non-paired frequency basis;

[1] Replaces Resolution No. **Mar2** – 8 of the World Maritime Administrative Radio Conference, Geneva, 1974.

b) the World Maritime Administrative Radio Conference, Geneva, 1974, was not in a position to decide the extent to which it was necessary to regulate the orderly use of frequencies for the transmission by ship stations of non-paired direct-printing telegraph signals or on what basis this might be done;

c) that these questions should be considered by a subsequent competent conference;

d) that the existing provisions of the Radio Regulations do not provide administrations with appropriate guidance for the period between the coming into force of the Final Acts of the World Maritime Administrative Radio Conference, Geneva, 1974, and the coming into force of those of the conference mentioned in *c)* above;

resolves

1. that, during the period referred to in *d)* above, any administration operating or bringing into operation non-paired narrow-band direct-printing telegraph or data transmission systems for ships, shall notify to the IFRB, for recording in the Master International Frequency Register, the frequencies on which ship stations participating in the service will be required to transmit;

2. that these notices concerning frequencies used for reception by coast stations shall not be subject to technical examination by the Board, and that the assignments notified shall be recorded in the Master Register for information only, bearing no date in Column 2, but with a suitable remark in the Remarks Column merely referring to this Resolution;

3. that these entries in the Master Register shall not prejudge any decisions which may be taken by the conference referred to in *c)* above.

AX

RESOLUTION No. 302

Relating to the Manner in which the IFRB Shall Treat Notifications Dealing with Frequency Assignments to Oceanographic Stations [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that this Conference has adopted Resolution **314** concerning the establishment of a coordinated worldwide system for the collection of data relating to oceanography; and

b) that the IFRB requires instructions regarding the notification and registration in the Master International Frequency Register of assignments to oceanographic stations;

resolves

that the IFRB be instructed to accept for registration in the Master International Frequency Register only such notifications, submitted by administrations in accordance with Nos. **1214** to **1217** and **1219**, as pertain to transmitting and receiving oceanographic stations which are land based and which are in conformity with Resolution **314**. Such notifications shall be treated by the Board in accordance with No. **1245** of the Regulations. These entries in the Master Register shall not prejudice any decisions to be taken by the next administrative radio conference competent to deal with the maritime mobile service.

[1] Replaces Resolution No. **Mar** 19 of the World Administrative Radio Conference, Geneva, 1967.

AV

RESOLUTION No. 303

Relating to Inter-Ship Frequencies in the Bands Between 1 605 kHz and 3 600 kHz in Region 1 [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the Master International Frequency Register contains among the initial entries the frequency assignments adopted by the Extraordinary Administrative Radio Conference, Geneva, 1951, made to specific countries for inter-ship communications in the bands between 1 605 kHz and 3 600 kHz in Region 1;

b) that provisions should be made for the notification and recording of the use of these frequencies for inter-ship communications by administrations of other countries in Region 1;

resolves

1. that the use of the frequencies referred to in *a)* above by other administrations should be coordinated with the administrations concerned, and subsequently notified to the International Frequency Registration Board;

2. that upon such notification the Board shall record these new assignments in the Master International Frequency Register, without any date in Columns 2a or 2b, but with an appropriate note in the Remarks Column followed by the date of receipt of the notice by the Board;

invites administrations

to review the recorded areas of operation of the frequency assignments concerned, with a view to improving sharing possibilities;

requests the IFRB

to make, where necessary, such suggestions to the administrations concerned as it may be able to offer with a view to achieving the purpose referred to in the immediately preceding paragraph.

AS

RESOLUTION No. 304

Relating to the Implementation of the New Channelling Arrangement for A1A Morse Radiotelegraphy in the Bands Allocated to the Maritime Mobile Service Between 4 000 kHz and 27 500 kHz [2]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that Recommendation No. **Mar** 7 of the World Administrative Radio Conference, Geneva, 1967, requested administrations to study the problems relating to the future use of harmonic relationships in ships' radio equipment;

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[1] Replaces Resolution No. 15 of the Administrative Radio Conference, Geneva, 1959.

[2] Replaces Resolution No. **Mar2** – 4 of the World Maritime Administrative Radio Conference, Geneva, 1974.

b) that the World Maritime Administrative Radio Conference, Geneva, 1974, provided, for use by ship stations, calling and working frequencies for A1A Morse telegraphy which are not harmonically related;

c) that it is desirable to implement the new channelling arrangement as soon as possible;

recognizing

a) that there is a need to provide an amortization period for radio equipment dependent upon the harmonic relationship of calling and working frequencies;

b) that developments and advances in technique, and in frequency synthesizers in particular, have led to more stable and reliable radio equipment;

resolves

1. that ship stations dependent upon harmonically related calling and working frequency assignments made prior to 1 January 1976 may continue to use such of their assignments as are within the ship calling and working bands for A1A Morse telegraphy shown in Appendix **31**;

2. that, as soon as possible, ships should utilize equipment which is capable of operating in accordance with the new channelling arrangement contained in Appendix **35** for the frequencies required for their service;

3. that equipments installed after 1 January 1976 shall be capable of operating in accordance with the new channelling arrangement contained in Appendix **35** for the frequencies required for their service.

AO

RESOLUTION No. 305 *

Relating to the Use of Class R3E and J3E Emissions on the Carrier Frequencies 4 125 kHz and 6 215.5 kHz Used to Supplement the Carrier Frequency 2 182 kHz for Distress and Safety Purposes [1]

The World Administrative Radio Conference, Geneva, 1979,

noting

a) that the Radio Regulations permit, until 1 January 1984, the use, on the carrier frequencies 4 125 kHz and 6 215.5 kHz, of class H3E emissions by coast, ship and aircraft stations (see No. **2982** and **2986**);

b) that the main object of these provisions is to maintain reliable distress and safety communications using proven techniques;

noting also

a) the Final Report of the Panel of Experts (Geneva, 1963);

b) relevant CCIR studies concerning single-sideband techniques (see CCIR Question 26-1/8, Recommendations 488, 543 and 544 and Report 744);

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* *Note by the General Secretariat:* See also Resolution **200**.

[1] Replaces Resolution No. **Mar2** – 21 of the World Maritime Administrative Radio Conference, Geneva, 1974.

recognizing

that the use of class R3E and J3E emissions on the carrier frequencies 4 125 kHz and 6 215.5 kHz would provide the operational advantages, inherent in single-sideband techniques, which are already being obtained on other frequencies;

recognizing, however,

that the CCIR recommends that class R3E emissions should not be used for distress and safety purposes (see CCIR Recommendation 543);

considering

a) that a large number of equipments employing class H3E emissions are still in use for distress and safety purposes;

b) that equipment employing class R3E and J3E emissions must be designed to work with closer frequency tolerances and higher technical standards than those necessary for equipment employing class H3E emissions and envelope detection in the receiver;

c) that equipment designed for safety purposes should, in all circumstances, be capable of reliable operation and be easy to operate by an inexperienced person;

resolves

that no further study of the use of class R3E and J3E emissions for distress and safety purposes on the carrier frequencies 4 125 kHz and 6 215.5 kHz is required (see CCIR Recommendations 543 and 544);

requests the Secretary-General

to communicate this Resolution to the Inter-Governmental Maritime Consultative Organization;

invites

1. the Inter-Governmental Maritime Consultative Organization to consider the matter as part of the study currently being undertaken of the maritime distress and safety system;

2. the next competent world administrative radio conference to consider this matter further.

AW

RESOLUTION No. 306

Relating to the Use of Single-Sideband Technique in the Radiotelephone Maritime Mobile Service Bands Between 1 605 kHz and 4 000 kHz [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) Recommendation No. 28 of the Administrative Radio Conference, Geneva, 1959;

[1] Replaces Resolution No. **Mar** 5 of the World Administrative Radio Conference, Geneva, 1967.

b) that the World Administrative Radio Conference, Geneva, 1967, decided to require the use of single-sideband techniques, except in certain circumstances;

c) the desirability of replacing double-sideband emissions by single-sideband emissions as early as possible in the maritime mobile service bands between 1 605 kHz and 4 000 kHz;

resolves

that, unless otherwise specified in the Final Acts of this Conference, radiotelephone stations in the maritime mobile service operating in the bands between 1 605 kHz and 4 000 kHz shall comply with the following conditions:

1. new installations of double-sideband equipment in ship stations shall not be permitted, except in the cases covered by Nos. **2973**, **4127** and **4130** of the Radio Regulations;

2. until 1 January 1982, coast and ship stations equipped for single-sideband operation shall also be equipped to transmit class H3E emissions compatible with reception by double-sideband equipment. On the carrier frequency 2 182 kHz this requirement with respect to class H3E emissions will continue beyond 1 January 1982;

3. with the following exceptions, as from 1 January 1982, the use of class R3E and J3E emissions only shall be authorized:

- class A3E and H3E emissions for ship, survival craft and aircraft stations transmitting with a carrier frequency of 2 182 kHz;
- class H3E emissions for coast stations transmitting with a carrier frequency of 2 182 kHz;
- in Regions 1, 3 and in Greenland, in exceptional circumstances, class H3E emissions for coast stations sending safety messages on the carrier frequency 2 170.5 kHz;
- classes of emission H2B, R2B and J2B for coast stations for selective calling on the carrier frequency 2 170.5 kHz;
- the class of emission specified in Appendix **37** to the Radio Regulations for emergency position-indicating radiobeacons (see also No. **3265** of the Radio Regulations);

4. as from 1 January 1982, ship and aircraft stations required to employ single-sideband operation on the working frequencies of the maritime mobile service shall use only class H3E emissions on the carrier frequency 2 182 kHz.

AQ

RESOLUTION No. 307

Relating to the Conversion to Single-Sideband Technique of Stations of the Radiotelephone Maritime Mobile Service Operating in the Bands Between 1 605 kHz and 4 000 kHz [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that radiotelephone stations in the maritime mobile service operating with double-sideband emissions in the bands between 1 605 kHz and 4 000 kHz use a bandwidth of the order 6 kHz;

[1] Replaces Resolution No. **Mar** 4 of the World Administrative Radio Conference, Geneva, 1967.

b) that these stations will have to use single-sideband operation in future;

c) that, during the period of conversion to single-sideband operation, every precaution must be taken to avoid harmful interference between stations operating with double-sideband emissions and those operating with single-sideband emissions;

resolves

1. that the transition to single-sideband operation in the stations referred to in *considering a)* above shall be made in accordance with the following provisions:

1.1 the carrier frequency of the single-sideband channel in the upper part of the previous double-sideband channel shall be the same as the carrier frequency of that channel;

1.2 the carrier frequency of the single-sideband channel in the lower part of the previous double-sideband channel shall be 3 kHz lower than the carrier frequency of the previous double-sideband channel when the latter has a carrier frequency at least of 6 kHz above that of the lower adjacent double-sideband radiotelephone channel;

1.3 in Region 1, the carrier frequency of the single-sideband channel in the lower part of the previous double-sideband channel for intership communication shall be 2.5 kHz below the carrier frequency of the previous double-sideband channel when the latter has a carrier frequency 5 kHz above that of the lower adjacent double-sideband radiotelephone channel;

2. that class H3E emissions shall not be used on single-sideband channels in the lower part of previous double-sideband channels.

BB RESOLUTION No. 308

Relating to the Channel Spacing of Frequencies Allocated to the Maritime Mobile Service in the Band 156 - 174 MHz [1]

(See Appendix **18** and Article **60**)

The World Administrative Radio Conference, Geneva, 1979,

considering

a) the expanding use of the maritime mobile frequencies in the VHF bands between 156 MHz and 174 MHz;

b) the increasing demand for VHF channels for port operations;

c) the increasing demand for VHF channels for public correspondence in the maritime mobile service;

d) the need for VHF channels for the ship movement service;

e) the need to provide VHF channels for uses other than radiotelephony, such as facsimile and narrow-band direct-printing telegraphy;

[1] Replaces Resolution No. **Mar2** – 14 of the World Maritime Administrative Radio Conference, Geneva, 1974.

f) the need to provide VHF channels for communication between helicopters or light aircraft and ships in connection with anti-pollution, search and rescue, ice breaking and the operation of ships;

noting

that, in consequence of the revisions of the Radio Regulations (Geneva, 1959) made by the World Administrative Radio Conference, Geneva, 1967, and the World Maritime Administrative Radio Conference, Geneva, 1974:

a) the channel spacing for the maritime mobile VHF radiotelephone service is being reduced from 50 kHz to 25 kHz;

b) additional channels were obtained by interleaving the 25 kHz channels midway between the 50 kHz channels of Appendix 18 to the Radio Regulations (Geneva, 1959) and were numbered from 60 to 88;

c) the 25 kHz channels should be allocated on an international basis;

d) the transition from a channel spacing of 50 kHz to that of 25 kHz was scheduled as follows:

1.	date by which modification of transmitters to a maximum deviation of ±5 kHz and of receivers to increase the audio gain, where necessary, could commence	1 January 1972
2.	date by which the modifications specified in paragraph *d)* 1. shall have been completed for all existing equipments	1 January 1973
3.	date up to which coast stations should have maintained capability to receive transmissions with a maximum deviation of ±15 kHz and after which the modification of coast station receivers should have taken place to meet the selectivity requirements for a channel spacing of 25 kHz	1 January 1973
4.	date by which all new equipments shall have conformed to 25 kHz standards	1 January 1973
5.	date by which all equipments shall conform to 25 kHz standards and all interleaved channels may be generally introduced	1 January 1983

resolves

1. that administrations may, in areas where this is found to be necessary, authorize the use of channels 60 to 88, excluding channels 75 and 76 which were designated as guardbands for channel 16;

2. that the technical characteristics of equipment for 25 kHz channel spacing in the maritime mobile VHF service shall be in accordance with Appendix **19**;

3. that, by 1 January 1983, all equipments shall conform to 25 kHz standards; thereafter, all interleaved channels may be generally introduced.

AT

RESOLUTION No. 309

Relating to the Unauthorized Use of Frequencies in the Bands Allocated to the Maritime Mobile Service [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that monitoring observations of the use of frequencies in the band 2 170 - 2 194 kHz and the bands allocated exclusively to the maritime mobile service between 4 063 kHz and 25 110 kHz show that a number of frequencies in these bands are still being used by stations of services other than the maritime mobile service, notably by high-powered broadcasting stations, some of which are operating in contravention of No. **2665** of the Radio Regulations;

b) that these stations are causing harmful interference to the maritime mobile service and that a considerable number of emissions, the sources of which could not be positively identified, were observed in these bands;

c) that radio is the sole means of communication of the maritime mobile service;

considering in particular

d) that it is of paramount importance that the distress and safety channels be kept free from harmful interference, since they are essential for the protection of the safety of life and property;

resolves

to urge administrations to

1. ensure that stations of services other than the maritime mobile service abstain from using frequencies in distress and safety channels and their guardbands and in the bands allocated exclusively to that service, except under the conditions expressly specified in Nos. **342**, **518**, **519**, **522**, or **956** to **958** of the Radio Regulations;

2. continue to make every effort to identify and locate the source of any unauthorized emission capable of endangering human life and property, and to communicate their findings to the IFRB;

3. participate in the monitoring programmes that the IFRB may organize pursuant to the present Resolution;

4. request their governments to enact such legislation as is necessary to prevent stations located off their coasts operating in contravention of No. **2665** of the Radio Regulations;

to request the IFRB to

1. continue to organize monitoring programmes, at regular intervals, in the distress and safety channels and their guardbands, and, in the bands allocated exclusively to the maritime mobile service between 4 063 kHz and 26 175 kHz, with a view to identifying the stations of other services operating in these bands;

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[1] Replaces Resolution No. **Mar2** – 15 of the World Maritime Administrative Radio Conference, Geneva, 1974.

2. take the necessary steps with a view to the elimination of the emissions of stations of other services operating in these bands, which cause or are likely to cause harmful interference to the maritime mobile service;

3. seek, as appropriate, the cooperation of administrations in identifying the sources of those emissions by all available means, and in securing the cessation of those emissions.

CN

RESOLUTION No. 310

Relating to Frequency Provisions for Development and Future Implementation of Ship Movement Telemetry, Telecommand and Data Exchange Systems

The World Administrative Radio Conference, Geneva, 1979,

considering

a) the need to specify radio frequencies which may be used by the maritime mobile service on a worldwide basis for ship movement requirements using digital automated data exchange, telemetry and telecommand techniques;

b) the developments now in progress in different portions of the frequency spectrum which will require common frequency bands in the future for efficient frequency utilization;

c) the importance of these short range systems in the safe and efficient operations of ships;

d) the advantages to port authorities for safe and efficient port management and operations;

noting

a) the findings of the Special Preparatory Meeting of the CCIR that frequencies in the region of 10 GHz appeared satisfactory for short range automated systems of this nature;

b) that further operational and technical information is needed in deciding the most effective frequency utilization and sharing criteria;

resolves

1. that the next competent world administrative radio conference shall review possible frequency provisions in the light of additional studies;

2. that the CCIR shall examine and advise on bandwidths and data formats in coordination with administrations developing and testing these digital transmission systems;

requests the Secretary-General

to refer this Resolution to the Inter-Governmental Maritime Consultative Organization (IMCO) inviting it to define the operational requirement for data exchange with ships using digital transmission techniques, and to make appropriate recommendations to assist administrations in preparation for a future conference.

DB

RESOLUTION No. 311

Relating to the Introduction of a Digital Selective Calling System to Meet the Requirements of the Maritime Mobile Service [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that there is an urgent need for a single digital selective calling system to provide for the worldwide requirements of the maritime mobile service;

b) that the Inter-Governmental Maritime Consultative Organization (IMCO) [2] indicated to the World Maritime Administrative Radio Conference, Geneva, 1974, as well as to the CCIR, its requirements for a general purpose selective calling system capable of facilitating the transmission and reception of all communications;

c) that Articles **25**, **60**, **62** and **65** of the Radio Regulations provide for the use of such a system;

d) that the studies, in response to CCIR Question 9-3/8, concerning the operational and technical characteristics of such a system, are in an advanced stage;

e) that in the Radio Regulations, the technical provisions relating to systems are mainly based upon the Recommendations of the CCIR;

f) that Plenary Assemblies of the CCIR are held triennially whereas administrative radio conferences, which are empowered to modify the Radio Regulations making substantial use of the Recommendations of the CCIR are held less frequently and less regularly;

is of the opinion

a) that the Plenary Assemblies of the CCIR are likely to make appropriate Recommendations as to the operational and technical characteristics of a single digital selective calling system;

b) that administrations should be afforded the opportunity to take advantage of the current CCIR Recommendations on selective calling systems for the maritime mobile service;

therefore resolves that

1. the CCIR be invited, in response to Question 9-3/8, to complete its studies and establish as soon as possible Recommendations for the operational and technical characteristics of a digital selective calling system;

2. each Plenary Assembly of the CCIR should arrange for the Secretary-General of the ITU to be informed of those Recommendations of the CCIR which effect the operational and technical criteria relating to the introduction of a single digital selective calling system for the maritime mobile service;

3. following the distribution to administrations of the relevant CCIR texts, the Secretary-General shall write to administrations asking them to indicate within four months which of the CCIR Recommendations, or which specific operational and technical criteria defined in the Recommendations referred to in 1 above, they agree to use in applying the pertinent provisions of the Radio Regulations;

4. after this period the Secretary-General shall distribute to administrations a summary of the replies received.

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[1] Replaces Resolution No. **Mar2** – 19 of the World Maritime Administrative Radio Conference, Geneva, 1974.

[2] IMCO Resolution No. A.420 (XI).

DA

RESOLUTION No. 312

Relating to the Introduction of New Calling Procedures for HF A1A Morse Telegraphy [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that there is a need for more effective utilization of the radio frequency spectrum and of the time of operational personnel on board ships;

b) that it is desirable to improve the effectiveness of calling in the HF A1A Morse telegraphy bands;

c) that the World Maritime Administrative Radio Conference, Geneva, 1974 adopted a new calling procedure for the HF A1A Morse telegraphy bands (Article **63** and Appendix **34**);

d) that the effectiveness of the new calling procedure requires agreement between administrations with respect to the groups specified in Appendix **34** in accordance with a planned distribution of coast stations on a regional and traffic basis;

e) that the administrations at the 1974 Conference agreed to the Distribution Plan of Coast Stations (annexed to this Resolution) arranged by countries and areas into four groups to ensure a better distribution of calls;

invites

administrations which are providing an international public correspondence service to indicate for publication in the List of Coast Stations, the periods of service during which watch will be maintained on the common and, if necessary, the group channel or channels;

invites further

administrations which wish to enter into a group in the Distribution Plan, or administrations included in the Plan wishing to make a modification in the Plan, to coordinate as far as possible their proposed changes with other interested and affected administrations which are designated in the group concerned. An administration which has decided to enter into a group or change from a designated group in the Distribution Plan shall inform the Secretary-General of its decision and it shall be published in the Annex to the List of Coast Stations;

instructs the Secretary-General

1. to circulate this Resolution to all administrations which are responsible for coast stations in countries or areas designated in the Distribution Plan in order to obtain their agreement to the Plan or an adjustment of the Plan to meet their needs;

2. in the light of the foregoing consultation with the administrations concerned, to update the Distribution Plan which is annexed to the List of Coast Stations;

3. that, in advance of the publication of any revision of the Distribution Plan in the List of Coast Stations, any variation in the Plan should be notified through the Operational Bulletin.

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[1] Replaces Resolution No. **Mar2** – 5 of the World Maritime Administrative Radio Conference, Geneva, 1974.

ANNEX TO RESOLUTION No. 312

Distribution Plan for Group Channels
HF A1A Morse Coast Stations by Countries and Areas

Group 1

Azores
Angola (People's Republic of)
Bahamas (Commonwealth of the)
Bahrain (State of)
Bangladesh (People's Republic of)
Bermuda
Brazil (Federative Republic of)
Canada (West Coast and Western Arctic)
Chile
Ivory Coast (Republic of the)
Djibouti (Republic of)
Ecuador
Spain (Canary Islands)
United States of America (East Coast)
Ethiopia
France
India (Republic of) (West)
Ireland
Israel (State of)
Kenya (Republic of)
Liberia (Republic of)
Madagascar (Democratic Republic of)
Martinique (French Department of)
Mauritius
New Caledonia and Dependencies
New Hebrides
Oman (Sultanate of)
Philippines (Republic of the)
French Polynesia
Puerto Rico
Reunion (French Department of)
Roumania (Socialist Republic of)
United Kingdom of Great Britain and Northern Ireland
Sao Tome and Principe (Democratic Republic of)
Singapore (Republic of)
Switzerland (Confederation of)
Union of Soviet Socialist Republics (Ukraine and South Asia)

Group 2

Algeria (Algerian Democratic and Popular Republic)
Netherlands Antilles
Saudi Arabia (Kingdom of) (West)
Barbados
Belgium
Benin (People's Republic of)
Cameroon (United Republic of)
Cape Verde (Republic of)
Christmas Islands (Indian Ocean)
Cyprus (Republic of)
Colombia (Republic of)
Congo (People's Republic of the)
Cook Islands
Costa Rica
Cuba
Dominican Republic
Egypt (Arab Republic of)
United States of America (Gulf Coast)
Falkland Islands and Dependencies (Malvinas)
France
Gabon Republic
Gambia (Republic of the)
Greece
Hongkong
Hungarian People's Republic
Italy
Democratic Kampuchea
Lebanon
Martinique (French Department of)
Mexico
New Caledonia and Dependencies
New Hebrides
Panama (Republic of)
Paraguay (Republic of)
Netherlands (Kingdom of the)
Peru
Poland (People's Republic of)
French Polynesia
Republic of Korea
Reunion (French Department of)
United Kingdom of Great Britain and Northern Ireland (22 MHz only)
Sudan (Democratic Republic of the)
Sri Lanka (Democratic Socialist Republic of)
Czechoslovak Socialist Republic
Thailand
Union of Soviet Socialist Republics (North West and Far East)
Yemen Arab Republic

ANNEX TO RESOLUTION No. 312 *(cont.)*

Group 3

Alaska (State of)
Argentine Republic
Burma (Socialist Republic of the Union of)
Canada (East Coast and Eastern Arctic)
China (People's Republic of)
Denmark
United States of America (West Coast)
Finland
Ghana
Guam
Guinea-Bissau (Republic of)
Guinea (Revolutionary People's Republic of)
Guyana
Hawaii (State of)
Iran (Islamic Republic of)
Iceland
Jamaica
Libya (Socialist People's Libyan Arab Jamahiriya)
Madeira
Mariana Islands
Morocco (Kingdom of)
Mozambique (People's Republic of)
Nauru (Republic of)
Nigeria (Federal Republic of)
Norway
Pakistan (Islamic Republic of)
German Democratic Republic
Sweden
Trinidad and Tobago
Turkey
Union of Soviet Socialist Republics (Far East and European Area)
Venezuela (Republic of)
Yugoslavia (Socialist Federal Republic of)

Group 4

Albania (Socialist People's Republic of)
Germany (Federal Republic of)
Saudi Arabia (Kingdom of) (East)
Australia
Bulgaria (People's Republic of)
China (People's Republic of) (Province of Taiwan)
Spain (except the Canary Islands)
Fiji
Equatorial Guinea (Republic of)
India (Republic of) (East)
Indonesia (Republic of)
Iraq (Republic of)
Japan
Jordan (Hashemite Kingdom of)
Kuwait (State of)
Malaysia
Malta (Republic of)
Mauritania (Islamic Republic of)
New Zealand
Papua New Guinea
Pitcairn Island
Portugal
Syrian Arab Republic
Solomon Islands
American Samoa
Senegal (Republic of the)
Seychelles (Republic of)
Sierra Leone
South Africa (Republic of)
Suriname (Republic of)
Togolese Republic
Tunisia
Union of Soviet Socialist Republics (European Area and Arctic)
Uruguay (Oriental Republic of)
Viet Nam (Socialist Republic of)
Yemen (People's Democratic Republic of)
Zaire (Republic of)

DD

RESOLUTION No. 313

Relating to the Introduction of a New System for Identifying Stations in the Maritime Mobile and Maritime Mobile-Satellite Services (Maritime Mobile Service Identities)

The World Administrative Radio Conference, Geneva, 1979,

considering

a) the need for an identity unique to each ship for safety and telecommunication purposes;

b) the need for this identity to be usable in automatic systems;

c) that, in the interest of having a common address format for automatic systems, identities assigned to ship stations, ship earth stations, coast stations, coast earth stations and those used for group calls should be of a similar nature when transmitted over the radio path;

considering further

a) that it is highly desirable that the code which forms the ship station identity or part thereof can be used by subscribers to the public switched networks for calling ships automatically;

b) that the public switched networks in some countries have limitations, with respect to the maximum number of digits that may be dialled or keyed to indicate ship station identity;

c) that a CCITT Recommendation [1] describes a ship station identification method which provides for this contingency;

d) that whatever restrictions may be required should, in the interests of the development of automatic shore-to-ship operations, be as few as possible;

noting

that the CCIR is studying the implementation of the new system of identities for stations in the maritime mobile and maritime mobile-satellite service;

resolves

that, for those administrations which use this form of identification for stations in the maritime mobile service and the maritime mobile-satellite service, the allocation of identities shall be made in accordance with the provisions of Appendix **43** pending the appropriate decisions of the next competent world administrative radio conference;

invites administrations

to continue to participate in the studies of the CCIR and CCITT in this matter;

requests the Secretary-General

to prepare the Table of National Identification Digits (NID), in close collaboration with the CCIR and CCITT, and to present this Table for consideration to the next competent world administrative radio conference for inclusion in Appendix **43**.

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[1] CCITT Recommendation E.210/F.120.

AR

RESOLUTION No. 314

Relating to the Establishment of a Coordinated Worldwide System for the Collection of Data Relating to Oceanography [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) the expressed desire for the establishment of a coordinated worldwide system for the collection of data relating to oceanography;

b) that in each of the six high frequency bands allocated exclusively to the maritime mobile service, the World Administrative Radio Conference, Geneva, 1967, designated a frequency band for use in the collection of data relating to oceanography in accordance with Appendix **31** to the Radio Regulations;

c) that use of these frequencies with maximum effectiveness is dependent upon cooperation and coordination among administrations;

d) that certain administrations expressed the desire that a coordinated worldwide system for the transmission of data relating to oceanography be established on the basis of a coordinated plan in the bands allocated by this Conference;

e) that, however, certain other administrations wish to use in the near future stations for the collection of data relating to oceanography within the framework of decisions taken on this matter by this Conference;

f) that, consequently, a coordinated programme for the collection of data relating to oceanography should be established using the frequency bands referred to in *b)* above;

g) that the Intergovernmental Oceanographic Commission (IOC) and the World Meteorological Organization (WMO) have been in consultation since 1962 with respect to cooperative efforts in the collection of data relating to oceanography (e.g. the WMO/IOC Panel of Experts on Coordination of Requirements, Geneva, 19-21 July, 1967);

resolves

1. that the IOC and WMO be invited to develop jointly, in consultation with the IFRB, and in consultation with administrations of the Members, as appropriate, a coordinated plan designed to meet existing and future requirements of all interested Members, for use by stations in the collection of data relating to oceanography in a worldwide system, within the framework of provisions made by this Conference for such a system; this plan to include the geographical distribution of oceanographic stations, their system of operation, the deployment of frequencies in the system and the manner in which oceanographic information is to be transmitted;

2. that administrations be encouraged to assign frequencies in conformity with the plan and the recommendations of IOC and WMO for the portion of the worldwide system over which they have jurisdiction;

3. that the IOC and WMO be invited further to assume jointly the responsibility, in consultation with the IFRB, for keeping such a plan current, in the light of changing requirements for data relating to oceanography;

4. that the plan developed under points 1 and 3 above shall be considered at the next administrative radio conference competent to deal with matters relating to the maritime mobile service, to determine what changes, if any, appear necessary to improve its effectiveness.

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[1] Replaces Resolution No. **Mar** 20 of the World Administrative Radio Conference, Geneva, 1967.

AC

RESOLUTION No. 315

Relating to the Eventual Abolition of Mobile Station Charges for Public Correspondence in the Maritime Mobile Service

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the VIth Plenary Assembly of the CCITT, Geneva, 1976, adopted a draft Recommendation relating to charging, accounting and refunds in the maritime mobile service with the exception of the points relating, inter alia, to mobile station charges for public correspondence in the maritime mobile service;

b) that the above draft Recommendation was subsequently amended, in the light of the decision of the VIth Plenary Assembly of the CCITT, Geneva, 1976, regarding mobile station charges and that this draft Recommendation has been approved by letter ballot;

c) that the amended Recommendation includes the following provisions [1]:

"Mobile station charges may be applied in the radiotelegram, radiotelephone, and radiotelex services, in the MF and HF bands. They shall not be applied in any of the VHF services, nor in any of the mobile-satellite services, nor in any service with automatic operation; however, mobile station charges may also be applied for radiotelegrams transmitted via VHF."

"Mobile station charges shall be abolished for traffic exchanged after 2359 hours GMT 31 December, 1987.";

resolves

to adopt this recommended date for the abolition of mobile station charges for public correspondence in the maritime mobile service.

CE

RESOLUTION No. 316

Relating to Technical Cooperation with the Developing Countries in Maritime Telecommunications [2]

The World Administrative Radio Conference, Geneva, 1979,

noting

that, in the field of maritime telecommunications, the assistance provided by the Union to developing countries, in collaboration with other organizations, in particular the Inter-Governmental Maritime Consultative Organization (IMCO), has been promising;

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[1] See CCITT Recommendation D.90/F.111 (paragraphs B12 and B13).

[2] Replaces Resolution No. **Mar2** – 18 of the World Maritime Administrative Radio Conference, Geneva, 1974.

conscious of

a) the need for the developing countries to increase their own shipping activities and attract foreign maritime traffic in order to develop their trade;

b) the important role that telecommunications play in maritime activities throughout the world, from the economic and safety aspects;

c) the possibility of providing adequate safety and improved economy in shipping activities by a relatively modest investment in the installation and operation of maritime telecommunication facilities;

considering

a) that in many developing countries there is a need to increase the efficiency of the services for:

- safety of navigation and safety of life at sea;
- commercially viable port operations;
- public correspondence for passengers and crews;

b) that in this regard the Union's technical cooperation activities could be extended to render very valuable assistance to these countries;

resolves

to request the Secretary-General

1. to offer the assistance of the Union to developing countries endeavouring to improve their maritime telecommunications, particularly by providing technical advice in the establishment, operation and maintenance of equipment and by assisting in training staff;

2. in this context, to seek the collaboration of IMCO, the United Nations Conference for Trade and Development (UNCTAD) and other specialized agencies of the United Nations, as appropriate;

3. to continue to give special attention to seeking the aid of the United Nations Development Programme and other sources of financial support, to enable the Union to render sufficient and effective technical assistance in the field of maritime telecommunications, when necessary in collaboration with other specialized agencies concerned;

to urge Member countries

to give priority in supporting, to the extent of their capabilities and their technical advancement, the Union's technical cooperation with developing countries in the field of maritime telecommunications by facilitating the recruitment of experts for missions to work in developing countries, by receiving students from developing countries who have been awarded a fellowship by the Union, by providing lecturers to seminars arranged by the Union and, upon request, by giving technical advice to the Union;

to invite the developing countries

to include maritime telecommunications projects as needed in their country programmes for external technical assistance and to support inter-country projects in this field.

BH

RESOLUTION No. 400

Relating to the Treatment of Notices Concerning Frequency Assignments to Aeronautical Stations in the Bands Allocated Exclusively to the Aeronautical Mobile (R) Service Between 2 850 kHz and 22 000 kHz [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the Final Acts of the World Administrative Radio Conference on the Aeronautical Mobile (R) Service, Geneva, 1978, entered into force on 1 September 1979;

b) that the new Frequency Allotment Plan contained in Appendix **27 Aer2** will enter into force at 0001 hours UTC on 1 February 1983;

c) that some administrations may wish to implement certain provisions of the new Frequency Allotment Plan in advance of the latter date when this may be done without causing harmful interference to stations operating in accordance with the present Frequency Allotment Plan;

d) that it will therefore be necessary to provide an interim procedure to facilitate transition from the existing Frequency Allotment Plan to the new Frequency Allotment Plan;

resolves

1. that during the interim period between the date of entry into force of those Final Acts and the date of entry into force of the new Frequency Allotment Plan:

1.1 the provisions of Nos. **1334** to **1341** of the Radio Regulations shall continue to be applied in the examination of notices concerning frequency assignments to aeronautical stations in the aeronautical mobile (R) service in the allotments of the existing Plan;

1.2 all such assignments shall be recorded in the Master International Frequency Register in accordance with the findings reached by the IFRB;

1.3 frequency assignments in a channel of the new Plan shall be examined by the IFRB in order to determine whether the protection specified in Appendix **27 Aer2** (Part I, Section IIA, paragraph 5) is afforded to the allotments in the existing Plan. In so doing the Board shall assume that the frequency will be used in accordance with the sharing conditions between areas specified in Appendix **27 Aer2** (Part I, Section IIB, paragraph 4);

1.4 all such assignments mentioned in paragraph 1.3 having received a favourable finding shall be recorded in the Master International Frequency Register;

1.5 the date to be entered in Column 2a or 2b of the Master International Frequency Register shall be as follows:

a) if the finding is favourable with respect to Nos. **1336** to **1339**, the date of 29 April 1966 shall be entered in Column 2a;

b) if the finding is favourable with respect to No. **1341**, the date of 29 April 1966 shall be entered in Column 2b;

c) for all other assignments (including those which may be in conformity with the new Frequency Allotment Plan but not in conformity with the present Frequency Allotment Plan) the date of receipt of the notice by the IFRB shall be entered in Column 2b;

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[1] Replaces Resolution No. **Aer2** – 4 of the World Administrative Radio Conference on the Aeronautical Mobile (R) Service, Geneva, 1978.

1.6 any assignment which is in accordance with the new Frequency Allotment Plan shall be so indicated by the insertion by the IFRB of an appropriate symbol in the Remarks Column of the Master International Frequency Register;

2. that on the date of the entry into force of the new Frequency Allotment Plan, the IFRB shall examine those frequency assignments to aeronautical stations in the aeronautical mobile (R) service in the bands allocated exclusively to that service between 2 850 kHz and 22 000 kHz which are contained in the Master International Frequency Register from the point of view of their conformity with the new Frequency Allotment Plan, following the relevant parts of the procedure described in Nos. **1334** to **1341** of the Radio Regulations and shall record against them in the Master International Frequency Register a date in Column 2a or 2b as follows:

2.1 assignments with double-sideband emissions (A3E) already appearing in the Master Register on the date of the entry into force of the new Frequency Allotment Plan shall retain the date recorded in Column 2a or 2b, as appropriate, until 1 February 1983. A date in Column 2a for a frequency assignment using double-sideband emissions (A3E) shall be transferred to Column 2b on 2 February 1983. On 1 January 1987 the IFRB shall review the entries and, in consultation with the administrations concerned, cancel those entries which are no longer in use, retaining the others for information only, without a date in Column 2b;

2.2 assignments found favourable with respect to Nos. **1335** to **1339** shall have the date of 5 March 1978 entered in Column 2a;

2.3 assignments found favourable with respect to Nos. **1335** and **1341** shall have the date of 5 March 1978 entered in Column 2b;

2.4 all other assignments shall have the date of 6 March 1978 entered in Column 2b;

3. that, on the date of the entry into force of the new Frequency Allotment Plan, the allotments contained therein shall replace in the Master International Frequency Register the allotments appearing in the existing Frequency Allotment Plan;

invites administrations

to notify to the IFRB as soon as possible the cancellation of frequency assignments released as a consequence of bringing into use the allotments in the new Plan.

BI RESOLUTION No. 401

Relating to the Implementation of the Frequency Allotment Plan in the Bands Allocated Exclusively to the Aeronautical Mobile (R) Service Between 2 850 kHz and 22 000 kHz [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the bands allocated exclusively to the aeronautical mobile (R) service between 2 850 kHz and 22 000 kHz by the Administrative Radio Conference, Geneva, 1959, were modified by the Extraordinary Administrative Radio Conference, Geneva, 1966;

[1] Replaces Resolution No. **Aer2** – 5 of the World Administrative Radio Conference on the Aeronautical Mobile (R) Service, Geneva, 1978.

b) that the Extraordinary Administrative Radio Conference, Geneva, 1966, established procedures to be followed by administrations relating to the implementation of the modifications;

c) that the necessary arrangements were made for the IFRB to carry out these procedures;

recognizing

a) that the aeronautical mobile (R) service is primarily a safety service;

b) that the World Administrative Radio Conference on the Aeronautical Mobile (R) Service, Geneva, 1978, further modified the said bands to provide for single-sideband techniques;

c) that there is a need for all administrations to implement the modifications made by that Conference with a view to avoiding any harmful interference to the services rendered by stations operating in accordance with the Radio Regulations;

resolves

1. that, not later than three months before the entry into force of the new Plan, administrations shall notify the IFRB of the modifications necessary to bring the assignments existing in the Master Register into conformity with this Plan;

2. that the assignments existing in the Master Register on 1 February 1983 which are not in conformity with the decisions of the World Administrative Radio Conference on the Aeronautical Mobile (R) Service, Geneva, 1978, on that date shall be treated as follows:

2.1 within thirty days from 1 February 1983, the IFRB will send relevant extracts from the Master Register to the administrations concerned advising them that, in accordance with the terms of the present Resolution, the assignments in question are to be transferred to the appropriate frequencies within a period of six months after the dispatch of the extracts;

2.2 if an administration fails to notify the IFRB of the transfer within the prescribed period, the original entry will be retained in the Master Register without a date in Column 2 and with a suitable remark in the Remarks Column. The administrations will be advised of this action;

3. that, if an administration so desires, the IFRB will provide it with all necessary assistance. In so doing, the IFRB will apply the provisions of Nos. **1445** to **1449** of the Radio Regulations.

BG

RESOLUTION No. 402

Relating to the Implementation of the New Arrangement Applicable to Bands Allocated Exclusively to the Aeronautical Mobile (R) Service Between 2 850 kHz and 22 000 kHz [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the use of each of the frequency bands between 2 850 kHz and 22 000 kHz allocated exclusively to the aeronautical mobile (R) service by the Administrative Radio Conference, Geneva, 1959, was modified by the Extraordinary Administrative Radio Conference, Geneva, 1966;

[1] Replaces Resolution No. **Aer2** – 3 of the World Administrative Radio Conference on the Aeronautical Mobile (R) Service, Geneva, 1978.

b) that the 1966 Conference resolved that administrations shall effect, as soon as possible, a progressive conversion of their radiocommunications in the aeronautical mobile (R) service from double-sideband to single-sideband operation, in consequence of which the use of the above bands has been further modified by the World Administrative Radio Conference on the Aeronautical Mobile (R) Service, Geneva, 1978, to provide single-sideband techniques;

c) that a considerable number of frequency assignments of both aircraft and aeronautical stations will be transferred from existing frequencies to the new frequencies and channels designated by that Conference;

d) that changes in frequency assignments should be made as soon as possible so that the advantages of the new channels designated by that Conference may be realized at the earliest opportunity;

e) that the transfer of assignments should be made with the least possible disruption of the service rendered by each station;

f) that the transfer of assignments should be made so as to avoid harmful interference between the stations involved during the implementation period;

g) that the Final Acts of the World Administrative Radio Conference on the Aeronautical Mobile (R) Service, Geneva, 1978, entered into force on 1 September 1979;

h) that the new Frequency Allotment Plan contained in Appendix **27 Aer2** will enter into force on 1 February 1983;

recognizing

a) that the aeronautical mobile (R) service is primarily a safety service;

b) that some frequencies have been allotted for worldwide use;

c) that the implementation of the decisions made by the World Administrative Radio Conference on the Aeronautical Mobile (R) Service, Geneva, 1978, relating to the new arrangement of the frequency bands allocated to the aeronautical mobile (R) service between 2 850 kHz and 22 000 kHz should follow an orderly procedure for the transfer of existing services from the old to the new assignments;

resolves

1. that between the entry into force of the Final Acts of the World Administrative Radio Conference on the Aeronautical Mobile (R) Service, Geneva, 1978, on 1 September 1979 and the entry into force of the new Frequency Allotment Plan contained in Appendix **27 Aer2** on 1 February 1983, channel utilization for any new single-sideband operation shall be in accordance with the following provisions:

1.1 the carrier (reference) frequency of the single-sideband channel in the upper half of the previous double-sideband channel shall be the same as the carrier (reference) frequency of that channel;

1.2 the carrier (reference) frequency of the single-sideband channel in the lower half of the previous double-sideband channel shall be 3 kHz lower than the carrier (reference) frequency of that channel;

1.3 that, prior to 1 February 1983, aeronautical and aircraft stations fitted with single-sideband equipment may employ either half of the previous double-sideband channel (the single-sideband carrier (reference) frequency being that in paragraphs 1.1 and 1.2 above);

1.4 channels in the new Plan may be used by any administration provided that no harmful interference occurs to users of channels in the present Plan. For the operational use of the channels concerned administrations should take into account the provisions of No. 27/20 of Appendix **27 Aer2** to the Radio Regulations;

2. that on 1 February 1983, the frequencies appearing in Appendix **27** to the Radio Regulations shall be replaced by the frequencies appearing in Appendix **27 Aer2** (Part II, Section II, Article 2);

3. that it is necessary for administrations to take all appropriate measures with a view to converting to single-sideband operation as soon as possible by not permitting the installation of new double-sideband equipment as from 1 April 1981. Aircraft and aeronautical stations shall be capable of single-sideband operation at the earliest possible date; furthermore, they shall discontinue double-sideband emissions as early as possible, and, in any event, not later than 1 February 1983;

4. that, until 1 February 1983, aeronautical and aircraft stations equipped for single-sideband operation shall also be equipped to transmit class H3E emissions where required to be compatible with reception by double-sideband equipment;

5. that, unless otherwise specified in the Final Acts of the World Administrative Radio Conference on the Aeronautical Mobile (R) Service, Geneva, 1978, the use of classes of emission H2B, J3E, J2B, J2D and J9X only shall be authorized as of 1 February 1983. Double-sideband operations may, however, be continued for domestic use until 1 February 1987 provided this operation is conducted in accordance with Nos. **299** and **307** of the Radio Regulations and that no harmful interference is caused to the international aeronautical mobile (R) service operating in the single-sideband mode. Administrations requiring such an extension of the period of full implementation of single-sideband operations are, nevertheless, urged to cease double-sideband operations as soon as possible.

CB

RESOLUTION No. 403

Relating to the Use of Frequencies 3 023 kHz and 5 680 kHz Common to the Aeronautical Mobile (R) and (OR) Services [1]

The World Administrative Radio Conference, Geneva,1979,

having noted

that some anomalies appeared to exist in the conditions prescribed in Appendix **26** to the Radio Regulations (Geneva, 1959) for the use of the frequencies 3 023.5 kHz and 5 680 kHz, as contained in Article 2 of the Frequency Allotment Plan, Column 3, clauses 2*a)* and 2*b)* and that steps have been taken to remove these anomalies;

considering

a) that the coordination of search and rescue operations at the scene of a disaster would be improved if the use of the frequencies 3 023 (previously 3 023.5) kHz and 5 680 kHz, in such operations, were extended to include communications between mobile stations and participating land stations;

b) that it would be in the general interests of the aeronautical mobile service if the same provisions relating to the use of the frequencies 3 023 (previously 3 023.5) kHz and 5 680 kHz were applied to operations both in the aeronautical mobile (R) service and the aeronautical mobile (OR) service;

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[1] Replaces Resolution No. **Aer2** – 1 of the World Administrative Radio Conference on the Aeronautical Mobile (R) Service, Geneva, 1978.

resolves

to invite administrations to apply in the aeronautical mobile (OR) service, as from the date of the coming into force of the Frequency Allotment Plan adopted by the World Administrative Radio Conference on the Aeronautical Mobile (R) Service, Geneva, 1978, the provisions governing the use of the frequencies 3 023 kHz and 5 680 kHz specified in Appendix **27 Aer2** (Part II, Section II, Article 3).

BT RESOLUTION No. 404

Relating to the Implementation of the New Arrangement of Bands Allocated Exclusively to the Aeronautical Mobile (R) Service Between 21 924 kHz and 22 000 kHz

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that Recommendation No. **Aer2** – 5 of the World Administrative Radio Conference on the Aeronautical Mobile (R) Service, Geneva, 1978, recommended administrations to study the problems relating to the future use of the band 21 924 - 22 000 kHz;

b) that the present Conference has allocated this band exclusively to the aeronautical mobile (R) service;

resolves

that there is a need to add a further frequency band to Appendix **27 Aer2**, to provide worldwide frequencies suitable for long-range communications and to reduce congestion in the bands currently used;

instructs the Secretary-General

to publish the new Appendix **27 Aer2** adopted by the World Administrative Radio Conference on the Aeronautical Mobile (R) Service, Geneva, 1978, including a Plan for the band 21 924 - 22 000 kHz as indicated in the Annex to this Resolution;

recognizing

that harmful interference is liable to occur in the aeronautical mobile (R) service in this band unless, on 1 February 1983, the existing assignments in the band 21 924 - 22 000 kHz are transferred either to the new frequencies for the aeronautical mobile (R) service or to other bands more suitable for frequency assignments to stations in the aeronautical fixed service;

resolves

1. that the implementation of the decisions made by this Conference relating to this band allocated to the aeronautical mobile (R) service shall follow the orderly procedure defined below for the transfer of the existing services from the old to the new assignments;

2. that the assignments referred to in the foregoing paragraph shall be dealt with as follows:

2.1 the IFRB shall send relevant extracts from the Master Register to the administrations concerned, within thirty days from 1 February 1982, advising them that, in accordance with the terms of this Resolution, the assignments concerned are to be transferred to the appropriate bands within a period of six months after the dispatch of the extracts;

2.2 if an administration does not notify the transfer within the prescribed period, the original entry shall be retained in the Master Register without a date in Column 2 and with a suitable remark in the Remarks Column. The administration concerned shall be advised of this action;

3. that, if an administration so desires, the IFRB shall give it all necessary assistance. In so doing, the IFRB shall apply the provisions of Nos. **1445** to **1449** of the Radio Regulations.

ANNEX TO RESOLUTION No. 404

Outline of Changes to Be Made to Appendix 27 Aer2 to the Radio Regulations

A. APPENDIX 27 **Aer2**

Table of Contents — *Part II. In the title, replace* 17 970 kHz *by* 22 000 kHz.

No. **27/10** — *Replace* 17 970 kHz *by* 22 000 kHz.

No. **27/16** — *Add the following new frequencies to the Table of Frequencies;*

kHz	
21 924 - 22 000	
21 925	21 964
21 928	21 967
21 931	21 970
21 934	21 973
21 937	21 976
21 940	21 979
21 943	21 982
21 946	21 985
21 949	21 988
21 952	21 991
21 955	21 994
21 958	21 997
21 961	———
	25 channels

No. **27/31A** — *In the title preceding the number* **27/31A**, *replace* 13 MHz and 18 MHz *by* between 13 MHz and 22 MHz;
in the text, replace 13 MHz and 18 MHz *by* 13 MHz, 18 MHz and 22 MHz.

No. **27/31B** — *In the second line, replace* 18 MHz band *by* the 18 MHz and 22 MHz bands;
in the fourth line, after 18 MHz *add* and 22 MHz.

Part II *In the title replace* 17 970 kHz *by* 22 000 kHz.

No. **27/189** *Add a new column for the new 22 MHz band to the Table as follows:*

Areas	Band (MHz) 22 kHz
W I	21 940 21 946 21 952 21 958 21 967 21 973 21 979 21 988 21 997
W II	21 964 21 985
W III	21 949 21 970
W IV	21 955 21 976 21 991
W V	21 943 21 961 21 982 21 994

Immediately after No. **27/207**, *add a new Table for the new 22 MHz band as follows:*

ADD **27/207A** bande/*band*/banda **21 924 — 22 000** **22 MHz**

1	2				3
21 940	W	MONDIALE	WORLDWIDE	MUNDIAL	C100/I
21 943	W	MONDIALE	WORLDWIDE	MUNDIAL	C100/V
21 946	W	MONDIALE	WORLDWIDE	MUNDIAL	C100/I
21 949	W	MONDIALE	WORLDWIDE	MUNDIAL	C100/III
21 952	W	MONDIALE	WORLDWIDE	MUNDIAL	C100/I
21 955	W	MONDIALE	WORLDWIDE	MUNDIAL	C100/IV
21 958	W	MONDIALE	WORLDWIDE	MUNDIAL	C100/I
21 961	W	MONDIALE	WORLDWIDE	MUNDIAL	C100/V
21 964	W	MONDIALE	WORLDWIDE	MUNDIAL	C100/II
21 967	W	MONDIALE	WORLDWIDE	MUNDIAL	C100/I
21 970	W	MONDIALE	WORLDWIDE	MUNDIAL	C100/III
21 973	W	MONDIALE	WORLDWIDE	MUNDIAL	C100/I
21 976	W	MONDIALE	WORLDWIDE	MUNDIAL	C100/IV
21 979	W	MONDIALE	WORLDWIDE	MUNDIAL	C100/I
21 982	W	MONDIALE	WORLDWIDE	MUNDIAL	C100/V
21 985	W	MONDIALE	WORLDWIDE	MUNDIAL	C100/II
21 988	W	MONDIALE	WORLDWIDE	MUNDIAL	C100/I
21 991	W	MONDIALE	WORLDWIDE	MUNDIAL	C100/IV
21 994	W	MONDIALE	WORLDWIDE	MUNDIAL	C100/V
21 997	W	MONDIALE	WORLDWIDE	MUNDIAL	C100/I

CC

RESOLUTION No. 405

Relating to the Use of Frequencies of the Aeronautical Mobile (R) Service [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the World Administrative Radio Conference on the Aeronautical Mobile (R) Service, Geneva, 1978, adopted and developed a new Frequency Allotment Plan for the use of HF channels for the aeronautical mobile (R) service (Appendix **27 Aer2** to the Radio Regulations);

b) that air operations are subject to continuous changes;

c) that these changes require attention by the administrations concerned; but

d) that, in seeking to satisfy new communication requirements, no decision should be taken that will prevent or handicap the coordinated utilization of those high frequency aeronautical mobile (R) band allotments as prescribed in the Plan;

e) that the families of frequencies allotted to the Major World Air Route Areas (MWARAs), Regional and Domestic Air Route Areas (RDARAs) and Sub-Areas and VOLMET areas have been chosen considering propagation conditions which allow for the selection of the most suitable frequencies for the distances involved;

f) that specific steps should be taken to ensure that the correct order of frequency is used;

g) that it is essential to distribute the communication traffic load as uniformly as possible over the frequencies available;

h) that frequencies have been allotted for worldwide use;

resolves

that administrations, individually or in collaboration, take the necessary steps:

1. to make as great a use as possible of higher frequencies in order to lessen the load on the HF aeronautical mobile (R) bands;

2. to make as great a use as possible of antennae of appropriate directivity and efficiency in order to minimize the possibilities of mutual interference within an area or between areas;

3. to coordinate the use of families of frequencies necessary for a given route segment in accordance with the technical principles in Appendix **27 Aer2** and in the light of the propagation data available, to ensure that the most appropriate frequencies are used with an aircraft at a given distance from the aeronautical station providing service over the route segment concerned;

4. to improve operating techniques and procedures and to use equipment which will make it possible to attain the highest possible efficiency in handling air-ground HF communications;

5. to collect precise data on the operation of their HF communication systems, particularly data having a bearing on technical and operating standards, so as to facilitate re-examination of the Plan;

6. to establish, through regional arrangements, the best method of providing the communications required for any new long-distance international or regional air operation which is not or cannot be accommodated within the system of MWARA and RDARA, in such a manner as not to cause harmful interference to the utilization of frequencies as prescribed in the Plan.

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[1] Replaces Resolution No. **Aer2 – 7** of the World Administrative Radio Conference on the Aeronautical Mobile (R) Service, Geneva, 1978.

BL

RESOLUTION No. 406

Relating to the Use of Frequency Bands, Higher than the HF Bands, in the Aeronautical Mobile (R) Service and the Aeronautical Mobile-Satellite (R) Service for Communication and for Meteorological Broadcasts [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that from an aeronautical viewpoint, higher frequency bands can provide a more reliable and more interference-free communication system than HF;

b) that from a technical and operational viewpoint, the use of VHF by aviation has progressed significantly;

c) that the future possibility of communications utilizing satellite technology is now recognized;

d) that, owing to the ever increasing development of aeronautical telecommunications in all areas of the world, there is an increasing demand for frequencies for communication with and for meteorological broadcasts to aircraft in flight;

resolves

that administrations, taking into account the relevant economic and technical factors, consider to the maximum extent possible meeting their requirements for communication and for meteorological broadcasts by frequencies in frequency bands, higher than the HF bands, which are allocated to the aeronautical mobile (R) service and the aeronautical mobile-satellite (R) service.

BF

RESOLUTION No. 407

Relating to the Unauthorized Use of Frequencies in the Bands Allocated to the Aeronautical Mobile (R) Service [2]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that monitoring observations of the use of the frequencies in the bands between 2 850 kHz and 22 000 kHz allocated exclusively to the aeronautical mobile (R) service show that a number of frequencies in these bands are still being used by stations of services other than the aeronautical mobile (R) service, notably by high-powered broadcasting stations, some of which are operating in contravention of No. **2665** of the Radio Regulations;

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[1] Replaces Resolution No. **Aer2** – 6 of the World Administrative Radio Conference on the Aeronautical Mobile (R) Service, Geneva, 1978.

[2] Replaces Resolution No. **Aer2** – 2 of the World Administrative Radio Conference on the Aeronautical Mobile (R) Service, Geneva, 1978.

b) that these stations are causing harmful interference to the aeronautical mobile (R) service and that a considerable number of emissions, the sources of which could not be positively identified, have been observed in these bands;

c) that radio is the sole means of communication available to the aeronautical mobile (R) service and that this service is a safety service;

considering, in particular

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

resolves

to urge administrations to

1. ensure that stations of services other than the aeronautical mobile (R) service refrain from using frequencies allocated to this service other than under the conditions specified in Nos. **342** and **956** of the Radio Regulations;

2. *a)* make every effort to identify and locate the source of any unauthorized emission capable of causing harmful interference to the aeronautical mobile (R) service, thereby endangering this safety service;

b) and communicate their findings to the IFRB;

3. participate in the monitoring programmes that the IFRB may organize pursuant to this Resolution;

4. request their governments to enact such legislation as is necessary to prevent stations located on board aircraft operating in contravention of No. **2665** of the Radio Regulations;

to request the IFRB to

1. continue to organize monitoring programmes in the bands exclusively allocated to the aeronautical mobile (R) service with a view to eliminating the emissions of the stations of other services operating in these bands which cause, or are likely to cause, harmful interference to the aeronautical mobile (R) service;

2. take steps to eliminate the emissions of stations of other services operating in these bands which cause, or are likely to cause, harmful interference to the aeronautical mobile (R) service;

3. seek, as appropriate, the cooperation of administrations in identifying the sources of those emissions by all available means, and in securing the cessation of those emissions.

BS

RESOLUTION No. 500

Relating to the Modification of Carrier Frequencies of LF Broadcasting Stations in Region 1

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that it would be advantageous, both technically and economically, to reduce interference in domestic broadcasting receivers caused by combination frequencies;

b) that such interference is considerably reduced when the nominal values of the carrier frequencies of broadcasting stations are multiples of the channel separation;

c) that the nominal values of the carrier frequencies of stations listed in the LF Broadcasting Plan for Region 1 (Geneva, 1975) are not multiples of the channel separation (9 kHz);

d) that, in order to avoid interference between the stations in question, it is necessary that the modifications of the carrier frequencies of LF broadcasting stations in Region 1 be carried out on the same date, at least for all stations sharing the same channel, without reducing thereby the spacing between adjacent carrier frequencies;

e) that modification of the carrier frequencies of LF broadcasting stations will, in certain cases, increase the interference caused to aeronautical radionavigation stations;

noting

that the aeronautical radionavigation service is a safety service;

resolves

1. that over the period 1 February 1986 to 1 February 1990 the nominal values of the carrier frequencies of all LF stations operating or planned in conformity with the LF/MF Broadcasting Agreement (Geneva, 1975) shall be reduced by 2 kHz, so that they become multiples of 9 kHz, the other characteristics of the stations remaining unchanged;

2. that, in order to ensure that all steps can be taken to avoid any additional interference to the aeronautical radionavigation service, the change of the frequencies of the broadcasting stations shall be made in groups of five channels beginning at the lowest assigned frequency;

3. that the changes shall be made in three steps, as follows:

Channels 1 to 5 on 1 February 1986	
Channels 6 to 10 on 1 February 1988	at 0100 UTC
Channels 11 to 15 on 1 February 1990	

4. that at the date of the first change (1 February 1986) the lower limit of the band allocated to the broadcasting service shall become 148.5 kHz and that after 1 February 1990 the allocation to the broadcasting service shall become 148.5 - 283.5 kHz;

5. that any modifications to the frequency assignment of an aeronautical radionavigation station resulting therefrom shall be notified to the Board and upon receiving a favourable finding with respect to Nos. **1240** and **1241** shall be entered in the Master Register without any change of date or status. If, however, the finding is unfavourable only with respect to No. **1241**, it shall be entered in the Master Register in accordance with the relevant provisions of Article **12** with no change in the original date;

further resolves

that administrations shall inform the IFRB at least two years in advance of making any foreseen modifications of the characteristics of their existing LF broadcasting stations or bringing into use any new stations;

requests the IFRB

to publish this information in a special section of its weekly circular;

requests the Secretary-General

to send this Resolution to the Secretary-General of ICAO.

BU

RESOLUTION No. 501

Relating to Examination by the IFRB of the Notices Referring to Stations in the Broadcasting Service in Region 2 in the Band 535 - 1 605 kHz During the Period Preceding the Entry into Force of the Final Acts of the Regional Administrative MF Broadcasting Conference (Region 2)

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that a Regional Administrative MF Broadcasting Conference (Region 2) will be convened, in two sessions, to draw up a plan for the broadcasting service in the band 535 - 1 605 kHz;

b) that the first session of that Conference will be held in March 1980, and the second session in November 1981;

c) that the relevant provisions of Article **12** have been modified by the present Conference;

d) that the Regional Administrative MF Broadcasting Conference (Region 2) should adopt provisions to be applied by the Board for notification and recording in the Master Register of frequency assignments included in the plan;

e) that it is therefore necessary to establish a procedure to be applied by the Board for the examination of notices referring to broadcasting stations in Region 2 in the band 535 - 1 605 kHz in the period between the entry into force of the Final Acts of the World Administrative Radio Conference, Geneva, 1979, and the entry into force of the Final Acts of the Regional Administrative MF Broadcasting Conference (Region 2);

resolves

that between the date of entry into force of the Final Acts of the World Administrative Radio Conference, Geneva, 1979, and the date of entry into force of the Final Acts of the Regional Administrative MF Broadcasting Conference (Region 2), the Board shall not examine, with respect to the provisions of No. **1241**, frequency assignment notices to a broadcasting station of Region 2 in the band 535 - 1 605 kHz and shall record them with no date in Column 2a or in Column 2b, the date in Column 2c being given for information only.

DJ

RESOLUTION No. 502

Relating to the Period Between the Entry into Force of the Final Acts of the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977, and the Date on Which the Provisions and Associated Plan, Adopted by that Conference, Are Annexed to the Radio Regulations [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the Final Acts of the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977, came into force on 1 January 1979;

b) that, in its Resolution No. **Sat** – 4, the 1977 Conference requested the 1979 World Administrative Radio Conference to annex to the Radio Regulations the provisions and associated Plan established by it;

c) that there will be an interim period between the date of entry into force of those Final Acts and the date on which the provisions and associated Plan are annexed to the Radio Regulations (Appendix **30**);

further considering

that the Final Acts of the 1977 Conference are regarded as including a World Agreement and associated Plan in accordance with Resolution No. **Spa2** – 2 of the World Administrative Radio Conference for Space Telecommunications, Geneva, 1971;

resolves

1. that both during this interim period and after the date on which they have been annexed to the Radio Regulations, the provisions and the associated Plan shall retain their integrity as a legal instrument;

2. that during this period the IFRB and the other appropriate organs of the Union shall be guided by the provisions of the Final Acts of the 1977 Conference and the Radio Regulations.

[1] Replaces Resolution No. **Sat** – 3 of the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977.

BC

RESOLUTION No. 503

Relating to the Coordination, Notification and Recording in the Master International Frequency Register of Frequency Assignments to Stations in the Broadcasting-Satellite Service in Region 2 [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that a plan will be established for the broadcasting-satellite service in Region 2 in accordance with Resolution **701**;

b) that in Region 2 the broadcasting-satellite service should be operated on the basis of the principles contained in Article 12 and Annexes 6 and 7 of Appendix **30** to the Radio Regulations;

c) that some of the provisions adopted by the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977, concerning the broadcasting-satellite service in Regions 1 and 3 may also be applied in Region 2 prior to the entry into force of the plan for that Region to be established pursuant to Resolution **701**;

d) that, in the interim period, the procedures described in Resolution **33** will continue to apply in Region 2;

resolves

1. that an administration intending to bring into use a space station in the broadcasting-satellite service in Region 2 shall, for the purpose of coordination with space systems of other administrations, apply the relevant provisions of Article **11** of the Radio Regulations, i.e. Nos. **1042** to **1056** inclusive;

2. that the relevant provisions of Resolution **33** shall apply to the coordination, notification and recording of stations in the broadcasting-satellite service in Region 2, wherever a station in the broadcasting-satellite service or the fixed-satellite service in Region 2 is involved;

2.1 that an administration notifying a frequency assignment to a space station in the broadcasting-satellite service in Region 2 under paragraph 4.1 of Resolution **33** shall also notify a typical receiving earth station;

3. that the coordination, notification and recording procedures for stations in the fixed-satellite service specified in Article 7 of Appendix **30** to the Radio Regulations shall also apply to stations in the broadcasting-satellite service in Region 2 with respect to stations in the broadcasting-satellite service for which a frequency assignment appears in the Plan whenever:

- any portion of the necessary bandwidth of the proposed frequency assignment in Region 2 falls within the necessary bandwidth of a frequency assignment in Region 1 or Region 3; and
- the power flux-density which would be produced by the proposed broadcasting-satellite frequency assignment in Region 2 exceeds the value specified in Annex 1 of Appendix **30**;

4. that Annex 2 of Appendix **30** shall be used in supplying the information referred to in Section B of Resolution **33** and Section **II** of Article 7 of Appendix **30**;

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[1] Replaces Resolution No. **Sat** – 5 of the World Broadcasting-Satellite Administrative Radio Conference. Geneva, 1977.

5. that an individual notice for each frequency assignment shall be drawn up as prescribed in Annex 2 of Appendix **30** for any frequency assignment notified under paragraph 4.1 of Resolution **33** or paragraph 2.1 of this Resolution or Section III of Article 7 of Appendix **30**.

CK RESOLUTION No. 504

Relating to the Final Acts of the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977, with Respect to Region 2

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977, adopted only interim provisions for Region 2;

b) that this Conference has adopted changes to the Table of Frequency Allocations for Region 2 that affect the conditions on which those interim provisions in the Final Acts of the 1977 Conference are based;

c) that this Conference has also decided to incorporate the provisions and associated Plan adopted by the 1977 Conference into the Radio Regulations as Appendix **30**;

d) that a regional administrative radio conference will be convened in 1983 to carry out planning for the broadcasting-satellite service in Region 2 in accordance with Resolution **701**;

resolves

1. that the provisions of Article 12 of Appendix **30** relating to arc segmentation in Region 2 are no longer applicable in the band 11.7 - 12.1 GHz and will not be applicable in the remainder of the band 11.7 - 12.2 GHz following the 1983 regional administrative radio conference;

2. that the remaining interim provisions relating solely to Region 2 in Appendix **30** shall continue to apply pending the decisions of the 1983 regional administrative radio conference after which time the Final Acts of the 1983 regional conference shall be regarded as superseding such interim provisions for Region 2 now contained in Appendix **30** subject to their formal adoption by the next competent world administrative radio conference.

CM RESOLUTION No. 505

Relating to the Broadcasting-Satellite Service (Sound) in the Frequency Range 0.5 GHz to 2 GHz

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that several administrations have made proposals concerning frequency band allocations for broadcasting-satellite service (sound) in the range 0.5 - 2 GHz;

b) that the frequency bands presently allocated to the broadcasting-satellite service do not provide the possibility of individual reception of sound programmes by portable receivers and receivers installed in automobiles;

c) that the introduction of the broadcasting-satellite service (sound) in the range 0.5 - 2 GHz is technically feasible and will afford the possibility of individual reception with portable and automobile receivers;

d) that simulated experiments have confirmed certain postulations made in theoretical studies, however, no working system has yet been demonstrated;

e) that further studies are necessary before the implementation of operational systems;

f) that CCIR has initiated studies concerning this service in accordance with Study Programme 34B/10;

g) that the appropriate frequency range for the service is limited at the lower end to 0.5 GHz (because of increasing man-made noise and transmit antenna size with decreasing frequency) and at the upper end to 2 GHz (because of decreasing effective area of the receive antenna with increasing frequency);

h) that because of the high power flux-density requirement, sharing with terrestrial services seems extremely difficult;

noting

a) that there are proposals by administrations for the frequency range 1 429 - 1 525 MHz;

b) that the radio astronomy service has an allocation in a lower neighbouring band and that for that reason the lower part of the band 1 429 - 1 525 MHz may not be considered for an allocation to the broadcasting-satellite service (sound);

c) that in the experimental phase a bandwidth of a few hundred kHz would suffice;

resolves

1. that administrations shall be encouraged to carry out experiments with a broadcasting-satellite service (sound) within the band 0.5 - 2 GHz, in appropriately placed narrow sub-bands, subject to agreement of administrations concerned. One area where such a sub-band may be placed is the band 1 429 - 1 525 MHz;

2. that the CCIR shall continue and expedite studies relating to the technical characteristics of a satellite sound-broadcasting system for individual reception by portable and automobile receivers, the feasibility of sharing with terrestrial services, and the appropriate sharing criteria;

3. that the next world administrative radio conference dealing with space radiocommunication services in general or with a specific space radiocommunication service shall be authorized to consider the results of various studies and to take appropriate decisions regarding the allocation of a suitable frequency band;

4. that the aforementioned conference shall also develop appropriate procedures for protection, and if necessary re-accommodation in other bands, of assignments of terrestrial services which may be affected.

AP

RESOLUTION No. 506

Relating to the Use, by Space Stations Operating in the 12 GHz Frequency Bands Allocated to the Broadcasting-Satellite Service, of the Geostationary-Satellite Orbit and No Other [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that a Plan designating frequency assignments in the above-mentioned frequency bands and positions in the geostationary-satellite orbit has been adopted by the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977, for Regions 1 and 3;

b) that a similar plan for Region 2 is expected to result from a regional administrative radio conference in 1983;

c) that the operation of space radiocommunication services in the frequency bands concerned in orbits other than the geostationary-satellite orbit would be incompatible with the plans referred to in *a)* and *b)* above;

resolves

that administrations shall ensure that their space stations in these frequency bands are operated in the geostationary-satellite orbit and no other.

AU

RESOLUTION No. 507

Relating to the Establishment of Agreements and Associated Plans for the Broadcasting-Satellite Service [2]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that it is important to make the best possible use of the geostationary-satellite orbit and of the frequency bands allocated to the broadcasting-satellite service;

b) that the great number of receiving installations using such directional antennae as could be set up for a broadcasting-satellite service may be an obstacle to changing the location of space stations in that service on the geostationary-satellite orbit, from the date of their bringing into use;

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[1] Replaces Resolution No. **Sat** – 7 of the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977.

[2] Replaces Resolution No. **Spa2** – 2 of the World Administrative Radio Conference for Space Telecommunications, Geneva, 1971.

c) that satellite broadcasts may create harmful interference over a large area of the Earth's surface;

d) that the other services with allocations in the same band need to use the band before the broadcasting-satellite service is set up;

resolves

1. that stations in the broadcasting-satellite service shall be established and operated in accordance with agreements and associated plans adopted by world or regional administrative conferences, as the case may be, in which all the administrations concerned and the administrations whose services are liable to be affected may participate;

2. that during the period before the entry into force of such agreements and associated plans the administrations and the IFRB shall apply the procedure contained in Resolution 33;

invites the Administrative Council

to keep under review the question of world administrative conferences, and/or regional administrative conferences, as required, with a view to fixing suitable dates, places and agenda.

DI RESOLUTION No. 508

Relating to the Convening of a World Administrative Radio Conference for the Planning of the HF Bands Allocated to the Broadcasting Service

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the existing situation in the HF bands allocated exclusively to the broadcasting service is not satisfactory;

b) that it is important to ensure that all countries are guaranteed free and equal rights to the use of these bands;

resolves

1. that the use of the exclusive and shared HF bands allocated to the broadcasting service (excluding those bands reserved for broadcasting in the Tropical Zone) should be the subject of planning by a world administrative radio conference;

2. that the planning be based on DSB (double-sideband) emissions. Consideration should also be given to the manner in which an SSB (single-sideband) system could be introduced progressively without impairing the DSB emissions;

3. that the conference referred to in paragraph 1 should be held in two sessions:

4. that the first session:

4.1 is to establish the technical parameters to be used for planning and the principles governing the use of the HF bands allocated to the broadcasting service and in particular:

4.1.1 the power appropriate to HF broadcasting in conjunction with the other relevant technical factors;

4.1.2 the needs of each country for national and international broadcasting;

4.1.3 the maximum number of frequencies to be used for the broadcasting of the same programme to the same zone;

4.1.4 a specification of an SSB system suitable for future use for HF broadcasting;

4.2 should also decide the planning principles to be used and the method of planning to be adopted by the second session;

5. that, at its second session, to be held not sooner than twelve months nor later than eighteen months after the first session, the conference:

5.1 should carry out the planning according to the principles and the method established at the first session;

5.2 should review and, where necessary, revise the relevant provisions of the Radio Regulations relating to broadcasting in the HF bands;

urges administrations,

until the conference is held, to use no greater transmitter power than that required for satisfactory reception and to ensure that the number of frequencies used is the minimum necessary;

draws the attention of the Administrative Council

to the urgency of this conference; and

invites the Administrative Council

to take all necessary steps for the convening of the conference, the first session of which shall be held as soon as possible after the next CCIR Plenary Assembly and with the least possible delay as defined in Article 58 (No. 303) of the Convention;

requests the IFRB

to carry out the necessary engineering studies and preparations, including those envisaged in No. 1771 of the Radio Regulations;

requests the CCIR

to accelerate the studies described in Recommendations **500** and **501**.

CQ

RESOLUTION No. 509

Relating to the Convening of a Regional Broadcasting Conference to Review and Revise the Provisions of the Final Acts of the African VHF/UHF Broadcasting Conference (Geneva, 1963)

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the last African VHF/UHF Plan was drawn up in Geneva in 1963 for Sound Broadcasting in Band II (87.5 - 100 MHz) and for Television Broadcasting in Band I (47 - 68 MHz), Band III (174 - 223 MHz), Band IV (470 - 582 MHz) and Band V (582 - 960 MHz);

b) that some of the African countries could not participate in the African VHF/UHF Broadcasting Conference, Geneva, 1963;

c) that many more sovereign African countries have emerged and will need to be included in a new plan;

noting

a) that for the band 87.5 - 108 MHz an FM sound-broadcasting planning conference is foreseen for Region 1 (see Resolution **510**);

b) the extension of the primary allocation to the broadcasting service (television) in Region 1 from 174 - 223 MHz to 174 - 230 MHz;

realizing

that there is a need to update the existing Plan;

resolves

that a regional conference be convened as soon as possible, preferably by 1984, to review and revise the provisions of the existing TV Broadcasting VHF/UHF Plan (Geneva, 1963) for the African Broadcasting Area, taking into account the assignments contained in the Stockholm Plan, 1961;

invites the Administrative Council

to take all necessary steps for convening the conference and to fix the date and agenda for the conference;

requests the CCIR

to carry out the necessary technical studies;

requests the IFRB

to carry out the preparations for the conference.

BM

RESOLUTION No. 510

Relating to the Convening of a Planning Conference for Sound Broadcasting in the Band 87.5 - 108 MHz for Region 1 and Certain Countries Concerned in Region 3

The World Administrative Radio Conference, Geneva, 1979,

considering

a) the extension of the primary allocation to the broadcasting service in Region 1 from 87.5 - 100 MHz to 87.5 - 108 MHz;

b) that in Region 1 the band 100 - 108 MHz is at present allocated to the mobile, except aeronautical mobile (R), service and in some countries also to the fixed service;

c) that several countries in Region 3 with land boundaries adjoining Region 1 also use this band for the broadcasting service;

d) that for those countries in Region 1 which use or intend to use the band 87.5 - 100 MHz for frequency-modulated sound broadcasting, there is a need to establish a new sound-broadcasting plan for the whole of the band 87.5 - 108 MHz;

e) that for other countries in Region 1 there is a need to establish a sound-broadcasting plan for the band 100 - 108 MHz;

f) that this new plan should in no way affect existing or planned assignments to television stations in the band 87.5 - 100 MHz made in accordance with the Regional Agreement, Stockholm, 1961;

g) that this new plan in the band 87.5 - 100 MHz should not result in the deterioration of the service areas of those existing sound-broadcasting stations operating in accordance with the Regional Agreement, Stockholm, 1961, which are situated in the coordination area with countries using this band for television in accordance with the Regional Agreement, Stockholm, 1961;

h) the requirement to introduce sound-broadcasting stations in the band 100 - 108 MHz in accordance with this plan at the earliest possible date;

i) that radio equipment used by aircraft for automatic landing purposes, which operates in the adjacent band 108 - 112 MHz, may be subject to harmful interference from nearby broadcasting stations operating in the band 87.5 - 108 MHz if the frequencies of the respective stations are not selected with care and that such interference can put human life at risk;

resolves

1. that a regional conference shall be convened before 31 December 1983 to draw up an agreement for Region 1 and the countries concerned in Region 3 and an associated plan for sound broadcasting in the band 87.5 - 108 MHz for Region 1 and for parts of Afghanistan and Iran which are contiguous with Region 1;

2. that this conference shall take place in two sessions:

   - the first session will establish the technical bases for the preparation of the plan, including mutual criteria for sharing between sound broadcasting and other services, including television broadcasting, operating within the band 87.5 - 108 MHz;
   - the second session, preferably to be separated from the first session by a period of more than six months, but not more than twelve months, will draw up the agreement and associated plan;

3. that countries concerned in Region 3 must be given the opportunity to participate in this conference;

requests the CCIR

to study, as a matter of urgency, the necessary technical bases required for planning and determining the protection criteria between sound-broadcasting stations and television-broadcasting stations and between sound-broadcasting stations and stations in the fixed and mobile, except aeronautical mobile (R), services;

invites the Administrative Council

to fix the dates and agenda for this conference;

calls upon administrations

to bear in mind the problems of compatibility with radionavigation systems operating in the adjacent band when planning the use of the band 87.5 - 108 MHz.

CO

RESOLUTION No. 600

Relating to the Use for the Radionavigation Service of the Frequency Bands 2 900 - 3 100 MHz, 5 470 - 5 650 MHz, 9 200 - 9 300 MHz, 9 300 - 9 500 MHz, and 9 500 - 9 800 MHz

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that this Conference has adopted provisions relating to the development of shipborne transponders in the maritime radionavigation service in frequency bands 2 930 - 2 950 MHz, 5 470 - 5 480 MHz and 9 280 - 9 300 MHz;

b) the growing demands already being made on the frequency allocations for the radionavigation service in the bands utilized for aeronautical and maritime radionavigation arising from:

i) the increasing number of shipborne radars which is reinforced by the demands being made for compulsory installation on an international basis;

ii) the increasing need for navigational aids and transponders working with primary radars;

iii) the need for the increasing utilization of this band by stations in the aeronautical radionavigation service noting that compulsory installation on board aircraft is also demanded on an international basis;

c) the increase in harmful interference occurring in the 9 300 - 9 500 MHz band due to these factors;

d) that these radar applications have important safety considerations;

noting

a) Recommendation **605**;

b) the conclusions of the Special Preparatory Meeting of the CCIR;

c) the need for additional operational and technical information in deciding the most effective frequency utilization;

resolves

1. that the next competent world administrative radio conference shall:

1.1 review footnotes to these radionavigation bands and make such changes as deemed appropriate in the light of additional studies;

1.2 prepare regulatory recommendations as appropriate;

2. that the CCIR shall continue to consider the technical factors and make Recommendations;

invites

1. the Administrative Council to ensure that radionavigation matters of concern to the mobile services are included in the agenda of the next competent mobile conference;

2. administrations to study the use of these bands by the radionavigation services, and to submit proposals for their efficient utilization;

requests the Secretary-General

to refer this Resolution to the IMCO and ICAO inviting their urgent consideration of the operational requirements for the maritime and aeronautical radionavigation services using these frequency bands, and to make appropriate recommendations to assist administrations in their preparation for the conference.

AL

RESOLUTION No. 601

Relating to the Recommendations and Standards for Emergency Position-Indicating Radiobeacons Operating on the Frequencies 121.5 MHz and 243 MHz [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that emergency position-indicating radiobeacons operating on the frequencies 121.5 MHz and 243 MHz are intended to facilitate search and rescue operations;

b) that the frequencies 121.5 MHz and 243 MHz are in common use by aircraft engaged in search and rescue operations;

c) that the International Civil Aviation Organization has established recommended signal characteristics and technical specifications for aircraft equipment operating on 121.5 MHz and/or 243 MHz;

resolves

that administrations authorizing the use of emergency position-indicating radiobeacons on 121.5 MHz and/or 243 MHz should ensure that such radiobeacons comply with the relevant recommendations and standards of the International Civil Aviation Organization and the International Radio Consultative Committee.

[1] Replaces Resolution No. **Mar** 7 of the World Administrative Radio Conference, Geneva, 1967.

BN

RESOLUTION No. 640

Relating to the International Use of Radiocommunications, in the Event of Natural Disasters, in Frequency Bands Allocated to the Amateur Service

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that in the event of natural disaster normal communication systems are frequently overloaded, damaged, or completely disrupted;

b) that rapid establishment of communication is essential to facilitate worldwide relief actions;

c) that the amateur bands are not bound by international plans or notification procedures, and are therefore well adapted for short-term use in emergency cases;

d) that international disaster communications would be facilitated by temporary use of certain frequency bands allocated to the amateur service;

e) that under those circumstances the stations of the amateur service, because of their widespread distribution and their demonstrated capacity in such cases, can assist in meeting essential communication needs;

f) the existence of national and regional amateur emergency networks using frequencies throughout the bands allocated to the amateur service;

g) that in the event of a natural disaster, direct communication between amateur stations and other stations might enable vital communications to be carried out until normal communications are restored;

recognizing

that the rights and responsibilities for communications in the event of a natural disaster rest with the administrations involved;

resolves

1. that the bands allocated to the amateur service which are specified in No. **510** may be used by administrations to meet the needs of international disaster communications;

2. that such use of these bands shall be only for communications in relation to relief operations in connection with natural disasters;

3. that the use of specified bands allocated to the amateur service by non-amateur stations for disaster communications shall be limited to the duration of the emergency and to the specific geographical areas as defined by the responsible authority of the affected country;

4. that disaster communications shall take place within the disaster area and between the disaster area and the permanent headquarters of the organization providing relief;

5. that such communications shall be carried out only with the consent of the administration of the country in which the disaster has occurred;

6. that relief communications provided from outside the country in which the disaster has occurred shall not replace existing national or international amateur emergency networks;

7. that close cooperation is desirable between amateur stations and the stations of other radio services which may find it necessary to use amateur frequencies in disaster communications;

8. that such international relief communications shall avoid, as far as practicable, interference to the amateur service networks;

invites administrations

1. to provide for the needs of international disaster communications;

2. to provide for the needs of emergency communications within their national regulations.

CR

RESOLUTION No. 641

Relating to the Use of the Frequency Band 7 000 - 7 100 kHz [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the sharing of frequency bands by amateur and broadcasting services is undesirable and should be avoided;

b) that it is desirable to have worldwide exclusive allocations for these services in Band 7;

c) that the band 7 000 - 7 100 kHz is allocated on a worldwide basis exclusively to the amateur service;

resolves

that the broadcasting service shall be prohibited from the band 7 000 - 7 100 kHz and that the broadcasting stations operating on frequencies in this band shall cease such operation.

BV

RESOLUTION No. 642

Relating to the Bringing into Use of Earth Stations in the Amateur-Satellite Service

The World Administrative Radio Conference, Geneva, 1979,

recognizing

that the procedures of Articles **11** and **13** are applicable to the amateur-satellite service;

recognizing further

a) that the characteristics of earth stations in the amateur-satellite service vary widely;

[1] Replaces Resolution No. 10 of the Administrative Radio Conference, Geneva, 1959.

b) that space stations in the amateur-satellite service are intended for multiple access by amateur earth stations in all countries;

c) that coordination among stations in the amateur and amateur-satellite services is accomplished without the need for formal procedures;

d) that the burden of terminating any harmful interference is placed upon the administration authorizing a space station in the amateur-satellite service pursuant to the provisions of No. **2741** of the Radio Regulations;

notes

that certain information specified in Appendices **3** and **4** cannot reasonably be provided for earth stations in the amateur-satellite service;

resolves

1. that when an administration (or one acting on behalf of a group of named administrations) intends to establish a satellite system in the amateur-satellite service and wishes to publish information with respect to earth stations in that system it may:

1.1 communicate to the IFRB all or part of the information listed in Appendix **3**; the IFRB shall publish such information in a special section of its weekly circular requesting comments to be communicated within a period of four months after the date of publication;

1.2 notify under Nos. **1488** to **1491** all or part of the information listed in Appendix **3**; the IFRB shall record it in a special list;

2. that this information shall include at least the characteristics of a typical amateur earth station in the amateur-satellite service having the facility to transmit signals to the space station to initiate, modify, or terminate the functions of the space station.

CJ

RESOLUTION No. 700

Relating to the Sharing Between the Fixed-Satellite Service in Regions 1 and 3 and the Broadcasting-Satellite Service in Region 2 in the Band 12.2 - 12.7 GHz

The World Administrative Radio Conference, Geneva, 1979,

recognizing

a) that an allocation has been made at this Conference to the broadcasting-satellite service in the band 12.1 - 12.7 GHz in Region 2;

b) that in the band 12.5 - 12.75 GHz in Regions 1 and 3 the allocation to the fixed-satellite service has been maintained and an additional allocation has been made in the band 12.2 - 12.5 GHz for Region 3;

c) that in drawing up the Broadcasting-Satellite Plan (Geneva, 1977) for Regions 1 and 3 due account was taken of the future operational needs of the fixed-satellite service in Region 2 and that, in observing these needs, it was necessary to impose constraints on the preparation of the Plan and the associated modification procedure;

resolves

1. that, prior to the coming into force of appropriate provisions and an associated plan to be prepared by the regional conference for the planning of the broadcasting-satellite service in Region 2, the provisions of Resolution **33** together with Article **11** shall continue to apply with respect to the coordination between space stations in the broadcasting-satellite service in Region 2 and space stations in the fixed-satellite service in Regions 1 and 3;

2. that in the drawing-up of a plan (and any associated modification procedure) for the broadcasting-satellite service in Region 2 the requirements for satisfactory future operation of the fixed-satellite service in Regions 1 and 3 shall be observed, and that, if constraints on the fixed-satellite service are considered necessary to ensure that no harmful interference is caused either to the fixed-satellite or the broadcasting-satellite services involved, they should not in any case be greater than those imposed on the fixed-satellite service in Region 2 by Appendix **30**;

3. that, in order that the regional conference shall have the necessary guidance for achieving *resolves* 2, the CCIR should study urgently the technical provisions required, taking into account existing and proposed fixed-satellite systems for operation in the 12.5 - 12.7 GHz band in Region 1 and the 12.2 - 12.7 GHz band in Region 3.

CH

RESOLUTION No. 701

Relating to the Convening of a Regional Administrative Radio Conference for the Detailed Planning of the Broadcasting-Satellite Service in the 12 GHz Band and Associated Feeder Links in Region 2 [1]

The World Administrative Radio Conference, Geneva, 1979,

noting

a) that the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977, adopted a Plan for the assignment of frequencies and orbital positions for the broadcasting-satellite service in the 12 GHz band for Regions 1 and 3;

b) that the 1977 Conference adopted interim provisions pending the establishment of a similar plan for Region 2;

c) that, following a consultation by the Administrative Council with Members of Region 2, it is envisaged that a Region 2 administrative radio conference for the broadcasting-satellite service will be convened in 1983;

d) that this Conference has adopted changes to the Table of Frequency Allocations that greatly affect the conditions on which the planning of the broadcasting-satellite service in the 12 GHz band by Region 2 will be based;

e) that this Conference has also decided to incorporate the provisions and associated Plan adopted by the 1977 Conference into the Radio Regulations as Appendix **30**;

considering

a) that Annexes 8 and 9 of Appendix **30** contain technical data and sharing criteria used in establishing the provisions and the associated Plan;

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[1] Replaces Resolutions No. **Sat** – 8 and No. **Sat** – 9 and Recommendation No. **Sat** – 8 of the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977.

b) that advantage should be taken of technological advances resulting from experiments carried out on broadcasting satellites since 1977;

c) that advantage should also be taken of recent studies by the CCIR;

d) that with respect to space services this Conference has allocated in Region 2 the band 12.3 - 12.7 GHz to the broadcasting-satellite service, and the band 12.1 - 12.3 GHz to the fixed-satellite service and the broadcasting-satellite service in accordance with the terms of No. **841** of the Radio Regulations;

e) that this Conference has identified the bands 14.5 - 14.8 GHz and 17.3 - 18.1 GHz for use as feeder link frequencies to broadcasting satellites;

f) that there are significant advantages in planning the feeder links together with the planning of 12 GHz broadcasting-satellite systems;

recognizing

a) that arc segmentation is no longer required in the band 11.7 - 12.1 GHz and will not be required in the band 12.1 - 12.3 GHz following the 1983 regional administrative radio conference;

b) that systems of the fixed-satellite service in the band 11.7 - 12.2 GHz shall not impose restrictions on the preparation of a Region 2 broadcasting-satellite plan, but that such systems developed by the time of the 1983 regional administrative radio conference, which are in accordance with the provisions of the Final Acts of the 1971 World Administrative Radio Conference for Space Telecommunications and the 1977 World Broadcasting-Satellite administrative radio conference, should be taken into account in the decisions of the 1983 regional administrative radio conference;

resolves

1. that the regional administrative radio conference (RARC) referred to in *noting c)* be held no later than 1983 to:

1.1 divide the band 12.1 - 12.3 GHz in two sub-bands and to allocate the lower sub-band to the fixed-satellite service and the upper sub-band to the broadcasting-satellite, broadcasting, mobile except aeronautical mobile, and fixed services, all services being on a primary basis (see No. **841**);

1.2 draw up a detailed frequency assignments and orbital positions plan for the broadcasting-satellite service for Region 2 in the band 12.3 - 12.7 GHz and in that portion of the band 12.1 - 12.3 GHz which it shall allocate to the broadcasting-satellite service;

1.3 plan feeder links in a part of the band 17.3 - 18.1 GHz, of a bandwidth equal to the total bandwidth allocated to the broadcasting-satellite service in the 12 GHz band. However, administrations may use broadcasting-satellite feeder links in frequency bands other than those planned, provided that such use does not necessitate any changes in the plan;

1.4 establish procedures to govern the use of the bands specified in paragraph 1.2 of this Resolution by the broadcasting-satellite service and, as necessary, procedures for the corresponding feeder links;

2. that planning shall take into account the pertinent provisions of Appendix **30**, in particular those contained in Annexes 4 and 5, as well as other decisions of this Conference. In considering Annexes 6, 7 and 8 account should also be taken of the latest CCIR Recommendations and technological advances;

3. that the plan shall provide for the detailed assignment of the orbital positions and frequency channels available, ensuring that the broadcasting-satellite service requirements submitted by the various administrations are met in an equitable manner satisfactory to all the countries concerned. It should be laid down as a matter of principle that each administration in the Region should be guaranteed a minimum number of channels (**4**) for the operation of the broadcasting-satellite service. Above this minimum, the special characteristics of the countries (size, time zones, language differences, etc.) shall be taken into account;

4. that all administrations in Region 2 shall submit their broadcasting-satellite service requirements to the IFRB not later than one year before the start of the regional administrative radio conference responsible for planning this service in Region 2. Each administration may update these requirements as it considers necessary. "Requirements" are understood to include the number and boundaries of service areas and the number of channels requested for each of them. Six months before the deadline for submitting requirements, the IFRB shall remind administrations of the need to submit them by means of a circular letter and/or telegram;

5. that planning shall be based on individual reception, but each administration may use the reception system which best meets its requirements (individual or community reception, or both);

6. that, in planning, it shall be borne in mind that systems should be designed with a view to reducing to a minimum technical differences and incompatibilities with the systems of other Regions;

7. that planning should respect the provisions of Resolutions **31** and **700**, concerning the matter of inter-regional sharing;

invites the Administrative Council

to make preparations for convening the said regional administrative radio conference using the provisions of this Resolution as a basis for the agenda of the conference;

invites the CCIR

to carry out the necessary studies with a view to presenting, at the appropriate time, the technical information likely to be required as a basis for the work of the regional conference (see also Recommendation **101**);

invites the IFRB

1. to request all administrations in Region 2 to submit their broadcasting-satellite service requirements in accordance with *resolves* 4 above;

2. to assemble the information submitted by administrations in a form permitting a comparative study thereof and to communicate it to the Secretary-General for publication and dispatch to administrations not later than nine months prior to the said regional administrative radio conference.

DK

RESOLUTION No. 702

Relating to the Convening of a Regional Administrative Radio Conference to Establish Criteria for the Shared Use of the VHF and UHF Bands Allocated to Fixed, Broadcasting and Mobile Services in Region 3

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that frequency allocations in the VHF and UHF bands have been substantially revised at this Conference, resulting in sharing mainly between the fixed, broadcasting and mobile services;

b) that the uncoordinated development of the services which share this spectrum throughout the Region may lead to unorderly and inefficient spectrum utilization;

c) that there are no well-established criteria for sharing the spectrum between these services to which these bands are allocated;

d) that within Region 3 there is no regional arrangement governing the establishment of broadcasting stations in these bands;

e) that it is not clear at this stage whether an assignment plan for Region 3 would be needed;

noting

the priority given by the World Administrative Radio Conference, 1979, to the convening of future administrative radio conferences;

resolves

1. that a regional administrative radio conference be convened at an appropriate time;

2. that this regional conference should establish the technical criteria for sharing between the fixed, broadcasting and mobile services to which the bands concerned are allocated;

3. that, after establishing the technical criteria, the conference should also decide upon the consequential action to be taken;

invites the Administrative Council

to make preparations for convening the said regional administrative radio conference using the provisions of this Resolution as a basis for the agenda of the conference;

invites the CCIR

to carry out the necessary studies with a view to presenting, at the appropriate time, the technical information likely to be required as a basis for the work of the regional conference;

invites administrations

to make appropriate contributions to the studies of the CCIR.

CW

RESOLUTION No. 703

Relating to the Calculation Methods and Interference Criteria Recommended by the CCIR for Sharing Frequency Bands Between Space Radiocommunication and Terrestrial Radiocommunication Services or Between Space Radiocommunication Services [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that, in frequency bands shared with equal rights by space radiocommunication and terrestrial radiocommunication services, it is necessary to impose certain technical limitations and coordination procedures on each of the sharing services for the purpose of limiting mutual interference;

[1] Replaces Resolution No. **Spa2** – 6 of the World Administrative Radio Conference for Space Telecommunications, Geneva, 1971.

b) that, in frequency bands shared by space stations located on geostationary satellites, it is necessary to impose coordination procedures for the purpose of limiting mutual interference;

c) that the calculation methods and interference criteria relating to coordination procedures referred to in paragraphs *a)* and *b)* above are based upon CCIR Recommendations;

d) that, in recognition of the successful sharing of the frequency bands by space radiocommunication and terrestrial radiocommunication services, and the continuing improvements in space technology, each CCIR Plenary Assembly subsequent to the Xth Plenary Assembly, Geneva, 1963, has improved upon some of the technical criteria recommended by the preceding Plenary Assembly;

e) that CCIR Plenary Assemblies are held triennially, whereas administrative radio conferences, which are competent to modify the Radio Regulations making substantial use of CCIR Recommendations, are in practice held less frequently and with much less regularity;

f) that the International Telecommunication Convention (Malaga-Torremolinos, 1973) recognizes the right of Members of the Union to make special agreements on telecommunication matters; however, such agreements shall not be in conflict with the terms of the Convention or of the Regulations annexed thereto, as far as harmful interference to the radio services of other countries is concerned;

is of the opinion

a) that subsequent Plenary Assemblies of the CCIR are likely to make further changes in the recommended calculation methods and interference criteria;

b) that administrations should receive advance information of the drafts of the relevant CCIR Recommendations;

c) that the administrations should whenever possible apply the current CCIR Recommendations on sharing criteria when planning systems for use in frequency bands shared with equal rights between space radiocommunication and terrestrial radiocommunication services, or between space radiocommunication services;

invites the CCIR

a) to request its Study Groups to prepare, at their final meetings before the Plenary Assembly, a provisional list identifying relevant parts of drafts of revised and new CCIR Recommendations affecting the calculation methods and the interference criteria, and also those specific sections of the Radio Regulations to which they are applicable, relating to sharing between space radiocommunication and terrestrial radiocommunication services, or between space radiocommunication services;

b) to request the Director of the CCIR to forward this list together with texts of these drafts of revised and new Recommendations to administrations and to the IFRB within thirty days following the final Study Group meetings;

resolves that

1. the IFRB shall immediately distribute the information mentioned in *invites b)* above to all administrations, so that it reaches them as soon as possible before the convening of the subsequent Plenary Assembly.

This should be accompanied by a notice indicating that the enclosed texts are subject to approval at the next CCIR Plenary Assembly;

2. *a)* each CCIR Plenary Assembly, having adopted any or all of the relevant Recommendations and approved the appropriate portions of the list mentioned in *invites a)* above, should arrange for the Secretary-General to be informed of the list and those Recommendations which affect the appropriate calculation methods and the interference criteria to be employed;

b) the Secretary-General shall forward this list and the appropriate texts to all administrations within thirty days, asking them to indicate within four months those CCIR Recommendations or specific technical criteria defined in the Recommendations referred to in paragraph 2.*a)* above to which they agree for use in the application of the pertinent provisions of the Radio Regulations;

3. the administrations which do not reply to the Secretary-General's consultation within four months shall be sent a telegram asking for their decision on the application of these Recommendations under the relevant provisions of the Radio Regulations. If no reply is received within thirty days from the date of dispatch of the telegram, it shall be concluded that the administration does not wish to express an opinion at that time;

4. should an administration, in its reply to the Secretary-General's consultation, indicate that a given CCIR Recommendation or technical criterion defined in those Recommendations is unacceptable, or should an administration not reply to the Secretary-General's consultation as in paragraph 3 above, the relevant calculation methods and the interference criteria defined in the Radio Regulations shall continue to apply with respect to cases involving that administration;

5. the Secretary-General shall publish, for the information of all administrations, a list prepared by the IFRB on the basis of the replies to the enquiry, of the CCIR Recommendations or of the relevant calculation methods and the interference criteria defined in those Recommendations, indicating the administrations to which each of those Recommendations or relevant technical criteria are acceptable or are not. This consolidated list shall also include the administrations mentioned in paragraph 3 above;

6. the IFRB shall take into account:

a) the applicability of the CCIR calculation methods and the interference criteria when making technical examinations with respect to cases involving only administrations to which such methods and criteria are acceptable;

b) the applicability of the calculation methods and the interference criteria defined in the Radio Regulations in accordance with the consolidated list referred to in paragraph 5 above, when making technical examinations with respect to cases involving the other administrations;

7. the Secretary-General of the ITU shall annually remind administrations which have not previously replied to communicate their decision in pursuance of paragraph 3 above;

8. if, at a later date, questions arise concerning the application of the relevant calculation methods and interference criteria to a case involving the administrations mentioned in paragraph 3 above, the IFRB shall enquire of the administrations concerned whether or not they would agree to the application of the methods and criteria defined in the relevant CCIR Recommendations referred to in paragraph 2 above;

9. the consolidated list published pursuant to paragraph 5 above shall be updated on the basis of the replies received in accordance with paragraphs 7 and 8 above.

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RECOMMENDATIONS

Note by the Secretary-General

In accordance with the decisions of the Conference the Recommendations have been arranged in order and numbered along the lines of the grouping and numbering system below. In addition, in doing so, it was apparent that some Recommendations in one group have direct relationship to Recommendations in other groups, and this has been reflected to facilitate consultation.

	Numbers
RECOMMENDATIONS OF GENERAL APPLICATION	1 - 99
- Principles, general procedures and cooperation	1 - 20
- Specific procedures	30 - 39
- Technical matters	60 - 69
Also refer : Nos. 8, 31 No. 100 No. 505 No. 711	
- Equipment / Terminology	70 - 79
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FIXED SERVICE / FIXED-SATELLITE SERVICE	100 - 199
Also refer : No. 12 Nos. 703, 706	
MOBILE SERVICE / MOBILE-SATELLITE SERVICE	200 - 299
Also refer : No. 12 Nos. 703, 706	
MARITIME MOBILE SERVICE / MARITIME MOBILE-SATELLITE SERVICE	300 - 399
Also refer : Nos. 7, 9 Nos. 200, 201, 202, 203, 204 No. 604	
AERONAUTICAL MOBILE SERVICE / AERONAUTICAL MOBILE-SATELLITE SERVICE	400 - 499
Also refer : Nos. 7, 9 Nos. 202, 204 No. 604 No. 709	
BROADCASTING SERVICE / BROADCASTING-SATELLITE SERVICE	500 - 599
Also refer : Nos. 9, 12 No. 101 Nos. 704, 705, 712	
OTHER SERVICES	600 - 699
Also refer : No. 12 Nos. 701, 703, 704, 707, 710	
RELATING TO MORE THAN ONE SERVICE	700 - 799
Also refer : Nos. 2, 3, 12, 61, 65	

In this context see also the Analytical Index (Part B) prepared by the General Secretariat.

XE

RECOMMENDATION No. 1

Relating to the Use of Space Radiocommunication Systems in the Event of Natural Disasters, Epidemics, Famines and Similar Emergencies [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that, in the case of natural disasters, epidemics, famines and similar emergencies, lives can be saved by prompt and effective relief;

b) that rapid and reliable telecommunications are essential for relief operations;

c) that, through damage or from other causes, the normal telecommunications facilities in disaster areas are often inadequate for relief operations and cannot be restored or supplemented quickly through local resources;

d) that use of space radiocommunication systems is one of the means by which rapid and reliable telecommunications could be provided for relief operations;

noting

a) that known planning of space radiocommunication systems makes no provision for specific frequencies or channels for emergency communications;

b) that in the absence of such planning it is not feasible to proceed with specifications for rapidly transportable, universally operable earth stations;

c) that CCIR Report 554-1 gives current results of studies of transportable earth stations for relief operations;

recommends

1. that administrations, individually or in collaboration, provide for the needs of possible relief operations in planning their space radiocommunication systems and identify for this purpose preferred radio-frequency channels and facilities which could quickly be made available for relief operations;

2. that administrations concerned waive the coordination procedures provided for in the Radio Regulations in the case of transportable earth stations used for relief operations;

invites the CCIR

to continue its study of the standard specifications and preferred frequencies for transportable earth stations and for compatible mobile and transportable fixed radiocommunications equipment for relief operations.

[1] Replaces Recommendation No. **Spa2** – 13 of the World Administrative Radio Conference for Space Telecommunications, Geneva, 1971.

ZI

RECOMMENDATION No. 2

Relating to the Examination by World Administrative Radio Conferences of the Situation with Regard to Occupation of the Frequency Spectrum in Space Radiocommunications [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the frequency bands available for space applications are limited in number and size;

b) that the possible positions for a satellite whose main purpose is to establish telecommunication links are limited in number and that certain positions are more favourable than others for certain links;

c) that all administrations should be enabled to establish the space links which they deem necessary;

d) that the scale and cost of space networks or systems are such that their operation and development must be hindered as little as possible;

e) that technology is steadily and rapidly evolving and that the best possible use should be made of resources in space radiocommunications;

f) that administrations should ensure that frequency assignments for space applications are utilized in the most efficient manner possible consistent with developing technology and that such assignments are relinquished when no longer in use;

g) that despite the provisions of Article **11** of the Radio Regulations and the principles adopted by the World Administrative Radio Conference for Space Telecommunications, Geneva, 1971, which provide for full consultation and coordination between administrations with a view to the optimum accommodation of all space systems, it is possible that as the use of frequencies and orbital positions increases, administrations may encounter undue difficulty in one or more frequency bands in meeting their requirements for space radiocommunication;

recommends

that the next appropriate world administrative radio conference be empowered to deal with the situation described in *considering g)*, if it arises;

invites the Administrative Council

in the event of such situations arising, to include in the agenda for the next appropriate world administrative radio conference specific provisions enabling it to examine all aspects of the use of the frequency band(s) concerned including, inter alia, the relevant frequency assignments recorded in the Master International Frequency Register and to find a solution to the problem.

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

XO

RECOMMENDATION No. 3

Relating to the Transmission of Electric Power by Radio Frequencies from a Spacecraft

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that it may become technically feasible in the future to convert some portions of the sun's radiation into electric power on board a spacecraft and to transmit that power to Earth by means of radio transmissions and that such power could augment the world's energy resources;

b) that the possibility of such high power radiation may adversely affect the propagation of radio waves for other services through the ionosphere;

recognizing

a) that it would be necessary to ensure that the radio transmission of electric power from space did not give rise to harmful interference to radiocommunication services;

b) that an assessment needs to be made of any likely ecological and biological effects of radio transmissions of power from space, including in particular to aircraft passing through antenna beams used for such transmissions;

noting

that the Special Preparatory Meeting report to the World Administrative Radio Conference, Geneva, 1979, recognized the technical possibility of a solar power satellite;

noting also

the provisions of Article **6** of the Radio Regulations referring to the obligations on administrations not to cause harmful interference to radiocommunication services operating in accordance with the Regulations;

recommends the CCIR

to undertake appropriate studies on all aspects of the effects of such radio transmissions of power from space on radiocommunication services and to make appropriate recommendations taking into account the ecological and biological implications;

invites the Secretary-General

to send this Recommendation to the Secretary-General of the United Nations.

YJ

RECOMMENDATION No. 4

Relating to the More Efficient Consolidation of National and International Radiocommunication Circuits Operating in the Bands Between 4 000 kHz and 27 500 kHz [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) the ever-increasing need for frequencies particularly in the bands between 4 000 kHz and 27 500 kHz;

b) the present structure of national and international radiocommunication networks in these bands;

c) the relatively light traffic load on some of the circuits of these networks;

d) the provisions of the International Telecommunication Convention (Malaga-Torremolinos, 1973) concerning the rational use of frequencies and spectrum space (Article 33);

and taking into account

a) the fact that the efficiency of a group of circuits is higher than that of the total number of single circuits;

b) that as a consequence the total number of frequencies needed may be reduced;

c) that in certain parts of the world there are areas and countries interconnected by several circuits, both radio and cable;

recommends

1. that, wherever possible, administrations should contribute to reducing the pressure on bands between 4 000 kHz and 27 500 kHz by a more efficient consolidation of lightly-loaded radio circuits;

2. that countries interconnected by telecommunication circuits should, whenever practicable, conclude special arrangements on the common use of existing international radio circuits, operating in the bands between 4 000 kHz and 27 500 kHz;

3. that, as a general rule, these arrangements should give to each participating country equal benefit with regard to operational and financial conditions;

4. that in planning new radio circuits or the extension of existing radio circuits, administrations should as far as possible take into account the principles stated in paragraphs 1 to 3 above.

[1] Replaces Recommendation No. 11 of the Administrative Radio Conference, Geneva, 1959.

YI

RECOMMENDATION No. 5

Relating to the Means of Reducing the Congestion in Band 7 (3 - 30 MHz) [1]

The World Administrative Radio Conference, Geneva, 1979,

recognizing

a) that there is an urgent need to reduce the pressure on Band 7 of the radio frequency spectrum;

b) that the utilization of modern developments in telecommunication techniques, particularly those involving the use of Band 8 and higher bands, coaxial cables, etc., can contribute to this reduction;

c) that the utilization of these improved and alternative techniques would entail considerable expenditure whereas the continued use of Band 7 techniques would be less expensive. and therefore some administrations would find it more difficult to introduce these new techniques than other administrations more favourably placed;

recommends

1. that all administrations take the necessary steps to reduce the pressure on Band 7 by adopting the new techniques to the maximum extent possible;

2. that the international organizations giving aid be requested to give special consideration to the supply of equipment to administrations which are not in a position to procure it themselves due to economic difficulties, for the purpose of enabling these administrations to change over to the alternative means of telecommunication, thus contributing towards greater economy in the use of Band 7.

XH

RECOMMENDATION No. 6

Relating to the Practical Needs of Countries in Need of Special Assistance [2]

The World Administrative Radio Conference, Geneva, 1979,

recommends

that all administrations should make special efforts to cooperate with the administrations of countries in need of special assistance by furnishing monitoring information and such technical assistance as may aid these countries in obtaining proper frequency assignments for their operations;

invites the IFRB

to provide administrations of countries in need of special assistance with the necessary information and technical data, including the detailed explanations of the Radio Regulations, which will permit these countries to choose and obtain proper frequency assignments for their operations.

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[1] Replaces Recommendation No. **10** of the Administrative Radio Conference, Geneva, 1959.

[2] Replaces Recommendation No. **35** of the Administrative Radio Conference, Geneva, 1959.

XK

RECOMMENDATION No. 7

Relating to the Adoption of Standard Forms for Ship Station Licences and Aircraft Station Licences [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the standardization of the licence forms issued to stations installed on board ships and aircraft making international voyages and flights would greatly facilitate the task of inspection of such stations;

b) that standard licence forms for ship stations and for aircraft stations would serve as a useful guide to those administrations desiring to improve their existing national licences;

c) that standard licence forms could be advantageously used by these administrations as the Form of Certification specified in No. **2027** of the Radio Regulations;

considering further

that the Administrative Radio Conference, Geneva, 1959, formulated:

a) a set of principles for the draft of a standard licence form (see Annex 1);

b) specimens of a ship station licence and of an aircraft station licence (see Annexes 2 and 3);

recommends

1. that administrations which find these forms practicable and acceptable should adopt them for international use;

2. that administrations should, as far as possible, endeavour to bring their national licence forms into line with these standard forms.

ANNEX 1 TO RECOMMENDATION No. 7

Principles for the Formulation of Standard Ship and Aircraft Station Licences

The Administrative Radio Conference, Geneva, 1959, considered that, in formulating standard ship and aircraft station licences, the following set of principles should be applied:

1. The licence should, as far as possible, be prepared in tabular form, and each line and column of the table clearly numbered or lettered.

2. The licence for ship stations and the licences for aircraft stations should be as similar as possible.

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[1] Replaces Recommendation No. **17** of the Administrative Radio Conference, Geneva, 1959.

3. The size of the licence should be international standard A4.

4. The licence should be designed in a form which facilitates its exhibition on board a ship or an aircraft.

5. The licence should be printed in Latin characters in the national language of the country which issues it. Those countries whose national language cannot be written in Latin characters should use their national language and, in addition, one working language of the Union.

6. The title "Ship Station Licence" or "Aircraft Station Licence" should appear at the top of the licence in the national language as well as in the three working languages of the Union.

These principles were used in formulating the two standard forms which are given in Annexes 2 and 3.

ANNEX 2 TO RECOMMENDATION No. 7

(Full Name of the Authority issuing the Licence, in the national language)

.....*

SHIP STATION LICENCE
LICENCE DE STATION DE NAVIRE
LICENCIA DE ESTACIÓN DE BARCO

No. .....

Period of validity .....

In accordance with *(Title of the National Regulation)* and with the Radio Regulations annexed to the International Telecommunication Convention now in force, this authorization is herewith issued for the installation and for the use of the radio equipment described below:

1	2	3	4
Name of Ship	Call Sign or other Identification	Owner of Ship	Public Correspondence Category

		a	b	c	d
	Equipment	Type	Power (watts)	Class of Emission	Frequency Bands or Assigned Frequencies
5	Transmitters				**
6	Ship's Emergency Transmitters				**
7	Survial Craft Transmitters				**
8	Other Equipment	*(Optional)*			

For the Issuing Authority:

.....
Place Date Authentication

* The words "Ship Station Licence" written in the national language, if this is not one of the three working languages of the Union.

** Specifically or by reference.

ANNEX 3 TO RECOMMENDATION No. 7

(Full Name of the Authority issuing the Licence, in the national language)

.....*

AIRCRAFT STATION LICENCE
LICENCE DE STATION D'AÉRONEF
LICENCIA DE ESTACIÓN DE AERONAVE

No. .....

Period of validity .....

In accordance with *(Title of the National Regulation)* and with the Radio Regulations annexed to the International Telecommunication Convention now in force, this authorization is herewith issued for the installation and for the use of the radio equipment described below:

1	2	3	4
Nationality and Registration Mark of the Aircraft	Call Sign or other Identification	Type of Aircraft	Owner of Aircraft

		a	b	c	d
	Equipment	Type	Power (watts)	Class of Emission	Frequency Bands or Assigned Frequencies
5	Transmitters				**
6	Survival Craft Transmitters *(when applicable)*				**
7	Other Equipment	*(Optional)*			

For the Issuing Authority:

.....
Place Date Authentication

* The words "Aircraft Station Licence" written in the national language, if this is not one of the three working languages of the Union.

** Specifically or by reference.

XN

RECOMMENDATION No. 8

Relating to Automatic Identification of Stations

The World Administrative Radio Conference, Geneva, 1979,

considering

a) Article **25** of the Radio Regulations which allows, where practicable, automatic identification of stations in appropriate services, and under certain circumstances;

b) that it is not always feasible or convenient to give manual identification;

c) that sources of harmful interference often remain unidentified for long periods, with consequential delay in measures that might be taken to minimize the interference;

d) that automatic identification procedures, where appropriate, may help overcome some of the disadvantages of manual identification;

e) that automatic transmission of a call sign or other signals may provide a means of identifying some stations for which identification is not always possible, e.g. radio relay and space systems;

f) the desirability of fostering a common automatic identification method to facilitate effective implementation of the provisions of Article **25**, as an alternative to the proliferation of many different systems and modulation techniques that might be used for this purpose;

recommends

that the CCIR study the matter of automatic identification of stations with a view to recommending technical characteristics and methods of implementing a common universal system, including standard modulation techniques, for application in accordance with Article **25**, with due consideration to the needs of the different services and types of stations.

ZG

RECOMMENDATION No. 9

Relating to the Measures to Be Taken to Prevent the Operation of Broadcasting Stations on Board Ships or Aircraft Outside National Territories [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the operation of broadcasting stations on board ships or aircraft outside national territories is in conflict with the provisions of Nos. **2665** and **3603** of the Radio Regulations;

[1] Replaces Recommendation No. **16** of the Administrative Radio Conference, Geneva, 1959.

b) that such operation is contrary to the orderly use of the radio frequency spectrum and may result in chaotic conditions;

c) that the operation of such broadcasting stations may take place outside the jurisdiction of Member countries, thereby making the direct application of national laws difficult;

d) that a particularly difficult legal situation arises when such broadcasting stations are operated on board ships or aircraft not duly registered in any country;

recommends

1. that administrations ask their governments to study possible means, direct or indirect, to prevent or suspend such operations, and where appropriate, take the necessary action;

2. that administrations inform the Secretary-General of the results of these studies and submit any other information which may be of general interest, so that the Secretary-General can inform Members accordingly.

XF

RECOMMENDATION No. 10

Relating to the Presentation of Draft Amendments to the Radio Regulations [1]

The World Administrative Radio Conference, Geneva, 1979,

having noted

a) that in the proposals submitted by some administrations a uniform method has been utilized for the presentation of modified texts (e.g. underlining of new texts, and crossing out of suppressed texts);

b) that this uniform method of presentation has proved itself to be very effective during the consideration of the proposed texts;

c) that if such a uniform method of presentation were followed in the different stages of preparing conference documents (sub-working groups, working groups) it would facilitate the work of delegations and may facilitate the work of the conference;

d) that the Secretary-General has taken steps to provide guidelines to administrations to assist them in the presentation of their proposals to administrative conferences in accordance with the provisions of the International Telecommunication Convention and in their coordinated presentation to conferences;

recommends

1. that administrations be invited to present their proposals in a uniform manner;

2. that guidelines be issued by the Secretary-General to facilitate this presentation and that they should also be applied for future conferences;

3. that a uniform presentation be used, through the different stages of preparing texts at least up to working group level, at forthcoming administrative radio conferences.

---

[1] Replaces Recommendation No. **Mar2** – 20 of the World Maritime Administrative Radio Conference, Geneva, 1974.

B

RECOMMENDATION No. 11

Relating to the Marginal Numbering of the Radio Regulations

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the Radio Regulations have a logical paragraph and sub-paragraph numbering system within each article and that consecutive marginal numbering is added to each provision mainly for ease of reference;

b) that this marginal numbering is extensively used by administrations and the permanent organs of the Union;

c) that blocks of spare marginal numbers have been made available at the end of each article of the revised Radio Regulations (Geneva, 1979) to facilitate the addition by world administrative radio conferences of new provisions and in particular of new articles;

recognizing

a) that familiarization with new marginal numbers requires considerable effort and that, therefore, possible changes of marginal numbers by a world administrative radio conference undertaking a partial revision of the Radio Regulations could cause difficulties;

b) the fact that revision of the marginal numbering system should only be necessary at a future world administrative radio conference convened to undertake a general revision of the Radio Regulations;

recommends

1. that a future world administrative radio conference undertaking a partial revision of the Radio Regulations should use the spare marginal numbers only when it is appropriate to insert additional provisions at the end of articles;

2. that where it is necessary to insert one or more additional provisions within an article, supplementary alpha references should be used as a suffix to existing marginal numbers;

3. that when an existing provision is suppressed, the marginal number should not be re-used.

XM

RECOMMENDATION No. 12

Relating to the Convening of Future Administrative Radio Conferences to Deal with Specific Services

The World Administrative Radio Conference, Geneva, 1979,

noting

a) that item 2.10 of its terms of reference calls on the Conference to propose to the Administrative Council and to the Plenipotentiary Conference a programme for the convening of future administrative radio conferences to deal with specific services;

b) that several Resolutions and Recommendations of this Conference call for, or refer to, the convening of such future conferences;

considering

a) that, in drawing up a programme of future world administrative radio conferences, account needs to be taken of other conferences involving Members of the Union, including regional and sub-regional conferences, the Plenipotentiary Conference, and the meetings of the CCIR;

b) that conferences need to be spaced out sufficiently to allow adequate time for preparation for each conference by administrations and by the permanent organs of the Union;

c) that a number of individual subjects raised in the Resolutions and Recommendations referred to in *noting b)* should be treated by a competent conference and that it will be for the Administrative Council to take the necessary action at the appropriate time for each matter concerned to be included in the agenda of such a conference;

recommends the Administrative Council and, as appropriate, the Plenipotentiary Conference

1. to include the following world administrative radio conferences in the programme of future conferences:

- world administrative radio conference for the mobile services (see Resolution **202**);
- world administrative radio conference for the planning of the HF bands allocated to the broadcasting service (see Resolution **508** and Recommendations **500** and **501**);
- world administrative radio conference on the use of the geostationary-satellite orbit and the planning of space services utilizing it (see Resolution **3**);

2. to include the following regional administrative radio conferences, some of which are already arranged, in the programme of future conferences:

- final session, Region 2, medium frequency broadcasting conference (already arranged for November 1981);
- Region 2 broadcasting-satellite planning conference (already arranged for the second quarter of 1983 – see Resolution **701**);
- planning conference for sound broadcasting in the band 87.5 - 108 MHz for Region 1 and certain countries concerned in Region 3 (see Resolution **510**);
- conference to draw up agreements and associated plans for feeder links to broadcasting satellites operating in the 12 GHz band in Regions 1 and 3 (see Resolution **101**);
- regional administrative radio conference to establish criteria for the shared use of the VHF and UHF bands allocated to fixed, broadcasting and mobile services in Region 3 (see Resolution **702**);
- conference to revise the Plan annexed to the Copenhagen Convention, 1948, for the European Maritime Area – Region 1 (see also Recommendation **300** on this subject);
- conference to review and revise the provisions of the Final Acts of the African VHF/UHF Broadcasting Conference, Geneva, 1963 (see Resolution **509**);
- planning conference for broadcasting in the band 1 605 - 1 705 kHz in Region 2 (see Recommendation **504**);

3. to take the necessary steps to convene each of these conferences as soon as practicable after the completion, in each case, of the necessary preparatory work, bearing in mind:

a) the timing of the conferences, as expressed in the Recommendations and Resolutions mentioned in *recommends* 1 and 2;

b) the need for the conferences to be adequately spaced so as to allow administrations and the permanent organs of the Union adequate time for preparation;

c) the programme of planned or foreseen conferences, other than administrative radio conferences, involving Members of the Union;

d) the resources which will need to be devoted by individual administrations and by the Union as a whole to the completion of this programme of conferences.

XP

RECOMMENDATION No. 13

Relating to a World Administrative Radio Conference to Carry Out a General or Partial Revision of the Radio Regulations

The World Administrative Radio Conference, Geneva, 1979,

considering

that it has drawn up a programme of specialized world administrative radio conferences for the coming decade;

considering

the very rapid development of telecommunication technology and the consequences of the application of that technology, particularly with regard to the efficient use of the radio spectrum;

considering

the need for a general or partial revision of the Radio Regulations to ensure the harmonious development of several services not covered by the specialized conferences scheduled by this Conference;

recommends to the Administrative Council

to consider, as from 1990, whether it is necessary to convene a world administrative radio conference to undertake a general or partial revision of the Radio Regulations.

D

RECOMMENDATION No. 30

Relating to International Monitoring [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) the desirability of achieving a more effective use of the radio spectrum in order to assist administrations to satisfy their frequency requirements, and, to that end, the desirability of taking steps to make the International Frequency List reflect more accurately the actual use being made of the radio spectrum;

b) the provisions of the Radio Regulations (Geneva, 1979), under which the International Frequency Registration Board shall review the entries in the Master International Frequency Register with a view to bringing them into conformity, to the maximum extent practicable, with the actual use being made of the radio spectrum;

c) that monitoring information should assist the Board in discharging that function;

recognizing

a) that an international monitoring system cannot be fully effective unless it covers all areas of the world;

b) that, at present, in certain areas of the world, monitoring facilities are either non-existent or insufficient to provide effective coverage;

invites the CCIR

in collaboration with the Board, to study and make technical recommendations concerning the additional facilities required to provide adequate coverage of the world with a view to implementing the Radio Regulations, more especially Articles **10**, **11**, **12**, **13**, **14**, and **20**; and

invites administrations

1. to make every effort to develop monitoring facilities as envisaged in Article **20** of the Radio Regulations bearing in mind the means which may be made available through the appropriate technical assistance organs of the United Nations;

2. to inform the Board of the extent to which they are prepared to cooperate in such monitoring programmes as may be requested by the Board.

YG

RECOMMENDATION No. 31

Relating to a Handbook for Computer-Aided Techniques in Radio Frequency Management

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that, due to the growing demands on the radio frequency spectrum, there is a need to improve spectrum utilization;

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[1] Replaces Recommendation No. 5 of the Administrative Radio Conference, Geneva, 1959.

b) that the solution of radio frequency management problems requires data storage, data retrieval, and analysis capabilities, and consequently is amenable to the application of computer methods;

c) that administrations are facing increasingly voluminous and complex tasks in radio frequency management;

d) that technological developments have made powerful computers and mini-computers available at reasonable cost;

e) that guidance is required by many administrations with respect to computer-aided techniques in radio frequency management;

f) that a certain degree of compatibility is desirable to facilitate coordination between administrations and the exchange of data with the IFRB;

g) that many administrations are interested in, and some are actively developing, computer systems for use in radio frequency management;

h) that the General Secretariat makes available computer resources and advice to all permanent organs of the Union and provides advice, as appropriate, to administrations;

recommends that the CCIR

1. prepare a handbook by 1982 describing the various aspects involved in applying computer-aided techniques to radio frequency management, discussing the approaches which have been made, providing guidelines for various levels of practical application and making recommendations for those aspects involving international cooperation;

2. periodically review and revise the handbook;

invites the General Secretariat and the IFRB

to participate in the preparation of this handbook.

Q RECOMMENDATION No. 60

Relating to the Technical Standards of the IFRB [1]

The World Administrative Radio Conference, Geneva, 1979,

recognizing

that the Technical Standards of the International Frequency Registration Board (IFRB) are in daily use in the technical examination of frequency assignment notices;

urges the CCIR

to expedite all phases of the programme of studies which will assist the IFRB in the further refinement of its Technical Standards; and

invites administrations

in their participation in the work of the CCIR and its Study Groups, to give special priority to those studies.

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[1] Replaces Recommendation No. **2** of the Administrative Radio Conference, Geneva, 1959.

ZB

RECOMMENDATION No. 61

Relating to Technical Standards for the Assessment of Harmful Interference in the Frequency Bands Above 28 MHz [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the definition of harmful interference (No. **163** of the Radio Regulations), being of a qualitative nature, leads to a purely subjective estimation of the nuisance;

b) that, for the accomplishment of its regulatory tasks, the IFRB has adopted in its Technical Standards, for the frequency bands below 28 MHz, values for the ratio between the wanted signal and the interfering signal, below which harmful interference may be expected;

c) that "harmful interference" implies a considerable degree, or probability, of interference;

d) that, as a consequence, it is desirable to determine the level of interference by which any emission, radiation or induction affects a radiocommunication service beyond specific limits established to ensure the quality and reliability of performance required by the nature of the service;

e) that the assessment of interference levels is related to various factors such as the nature of the services concerned, number of interference sources, percentages of time during which the interfering signal affects the wanted signal;

noting

a) that the IFRB has been considering the maximum allowable values of interference given in the pertinent CCIR Recommendations to be values which ensure a satisfactory service;

b) that, however, the IFRB does not possess data on the extent to which these recommended values and the associated percentages of time may be exceeded without affecting a service beyond the specific limits established to ensure the quality and reliability of performance required by the nature of the service;

invites the CCIR

to continue to study this subject and to recommend the technical criteria for the frequency bands above 28 MHz, allocated to space radiocommunication, radio astronomy, and the terrestrial radiocommunication services concerned, in order to enable the IFRB and administrations to apply such criteria for these bands.

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[1] Replaces Recommendation No. **Spa2** – 12 of the World Administrative Radio Conference for Space Telecommunications, Geneva, 1971.

K

RECOMMENDATION No. 62

Supplementing the Additional Characteristics for Classifying Emissions and Providing Additional Examples for the Full Designation of Emissions, Both as Given in Appendix 6 [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that this Conference has adopted in Article **4** a new method for designating emissions based on CCIR Recommendation 507;

b) that an essential part of this new method is the classification of emissions;

c) that the new method of classifying emissions distinguishes between basic characteristics (first, second and third symbol) the use of which is mandatory, and additional characteristics (fourth and fifth symbol) the use of which is optional;

d) that the full classification of emissions consists of all of these five symbols;

e) that the list of the additional characteristics given in Appendix **6**, Part A, may not be sufficiently complete to take account of future new technologies and may require relatively frequent supplementing;

f) that a CCIR Recommendation would provide a suitable means for such supplementing;

considering further

a) that a list of examples for the full designation of emissions is given in Appendix **6**, Part B;

b) that this list, however, is not exhaustive and that for this reason No. **265** of the Radio Regulations stipulates that further examples may appear in the latest CCIR Recommendations and that these examples may also be published in the Preface to the International Frequency List;

invites the CCIR

1. to continue its studies on the classification of emissions with a view to supplementing the list of additional characteristics in order to cater for new technologies without, however, changing those additional characteristics which have already been agreed upon and which are contained in Appendix **6**, Part A;

2. to provide examples for the full designation of emissions which are not contained in Appendix **6**, Part B, also taking account of the supplementing mentioned in paragraph 1 above;

requests the International Frequency Registration Board

to publish the supplementary additional characteristics and the additional examples mentioned in *invites* 1 and 2 above in the Preface to the International Frequency List as soon as they are available in relevant CCIR Recommendations;

and recommends

that administrations use the additional characteristics referred to in *invites* 1 above where appropriate.

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[1] Replaces Recommendation No. **8** of the Administrative Radio Conference, Geneva, 1959.

M

RECOMMENDATION No. 63

Relating to the Provision of Formulae and Examples for the Calculation of Necessary Bandwidths

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that Article **4** of the Radio Regulations requires that the necessary bandwidth be part of the full designation of emissions;

b) that Appendix **6**, Part B, gives a partial list of examples and formulae for the calculation of the necessary bandwidth of some typical emissions;

c) that sufficient information is not available for the determination of the K-factors used throughout the table of examples of the necessary bandwidth in Appendix **6**;

d) that, especially with regard to the efficient utilization of the radio frequency spectrum, monitoring and the notification of emissions, it is required that necessary bandwidths for the individual classes of emission be known;

e) that for reasons of simplification and international uniformity it is desirable that measurements for determining the necessary bandwidth be made as seldom as possible;

recommends that the CCIR

1. provide, from time to time, additional formulae for the determination of necessary bandwidth for common classes of emission, as well as examples to supplement those given in Appendix **6**, Part B;

2. study and provide values of supplementary K-factors required for the calculation of the necessary bandwidth for common classes of emission;

invites the IFRB

to publish examples of such calculations in the Preface to the International Frequency List.

R

RECOMMENDATION No. 64

Relating to Protection Ratios and Minimum Field Strengths Required [1]

The World Administrative Radio Conference, Geneva, 1979,

recognizing

that the available information on protection ratios and minimum field strengths required for each one of the services needs further refinement in order to permit the most efficient planning of the use of the radio frequency spectrum;

[1] Replaces Recommendation No. **3** of the Administrative Radio Conference, Geneva, 1959.

invites the CCIR

1. to continue to study the protection ratios which define the threshold of harmful interference for the several services;

2. to continue to study the signal-to-noise ratios and the minimum field strengths required for satisfactory reception of the different classes of emission in the several services;

3. to continue the study of fading allowances for the several services;

4. to give particular attention to those studies which will assist in the further refinement of the Technical Standards used by the IFRB.

ZM

RECOMMENDATION No. 65

Relating to the Technology for New Spectrum Sharing and Band Utilization Schemes

The World Administrative Radio Conference, Geneva, 1979,

recognizing

a) that advances in technology, particularly digital radio techniques and new encoding, modulation and access schemes, are making practicable new sharing schemes that offer economical as well as technological advantages for increasing the efficiency of spectrum sharing and band utilization;

b) that rapid advances are being made in the associated technology;

invites the CCIR

1. to carry out studies of the digital radio techniques and new encoding, modulation and access schemes; examples of areas for such studies are packet radiocommunication, spread-spectrum and multifunction techniques;

2. to develop new concepts in the use of a carrier on a time-sharing basis for different radiocommunication services, i.e. use of the same part of the spectrum by multiple services;

3. to submit Recommendations to appropriate future world administrative radio conferences relating to:

- the technical criteria and specifications of the most efficient spectrum sharing schemes for the various services;
- the technical and performance criteria for ensuring compatibility and interworking of systems;
- the criteria on which to base spectrum management for these new technology systems.

L RECOMMENDATION No. 66

Relating to Studies of the Maximum Permitted Levels of Spurious Emissions

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that Appendix **8** to the Radio Regulations specifies the maximum permitted levels of spurious emissions, in terms of the mean power level of any spurious component supplied by a transmitter to the antenna transmission line, for the frequency bands below 17.7 GHz;

b) that the principal objective of Appendix **8** is to specify the maximum permitted levels of spurious emissions that, while being achievable, provide protection against harmful interference;

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

d) that while Appendix **8** applies only to the mean power of the transmitter and the spurious emissions, there are a variety of emissions where the interpretation of the term "mean power" and its consequential measurement are difficult;

e) that whilst the CCIR is studying this problem, it has not yet furnished adequate Recommendations pertaining to Appendix **8** for frequency bands above 960 MHz;

f) that spurious emissions from transmitters operating in space stations may cause harmful interference, particularly in regard to intermodulation components from wide-band amplifiers which cannot be adjusted after launch;

g) that spurious emissions from earth stations also require particular study;

h) that no information is available from the CCIR regarding spurious emissions from stations employing digital modulation techniques in the frequency bands above 960 MHz;

noting

that in large metropolitan areas radio spectrum usage above 960 MHz is extensive and rapidly growing and that much of this growth in urban areas is now taking place above 10 GHz;

recommends that the CCIR

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

2. continue the study of spurious emission levels in all frequency bands, emphasizing the study of those frequency bands, services and modulation techniques not presently covered by Appendix **8**;

3. establish appropriate measurement techniques for spurious emissions, including the determination of reference levels for wide-band transmissions as well as the applicability of reference measurement bandwidths;

4. study the categorizing of emissions and spurious emissions in terms of "mean power" and develop appropriate Recommendations to facilitate the interpretation and measurement of "mean power" as it applies to the various classes of emissions.

YH

RECOMMENDATION No. 67

Relating to the Definitions of "Service Area" and "Coverage Area"

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the terms "service area" and "coverage area" are often used in the official texts of the ITU;

b) that these two terms are used with the same meaning or with different meanings according to the different services;

c) that there are no definitions of the terms "service area" and "coverage area" in Article **1** of the Radio Regulations;

noting

a) that the term "service area" is already used in the texts of the Appendices **1**, **3**, **4**, **5** and **25 Mar2** of the Radio Regulations;

b) that a definition of "service area" for broadcasting, based on the usable field strength, exists in CCIR Recommendation 499-1;

c) that a definition very similar to that of Recommendation 499-1 is given in Annex 2 to the Final Acts of the Regional Administrative LF/MF Broadcasting Conference (Regions 1 and 3), Geneva, 1975;

d) that a definition of "service area" for satellite broadcasting is given in Annex 8 to the Final Acts of the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977. This definition is of an administrative nature. It is accompanied by a technical note, in which reference is made to an appropriate power flux-density and protection against interference based on the agreed protection ratio;

e) that technical and administrative aspects are sometimes involved in the definition of "service area" and cannot easily be separated;

f) that a definition of "coverage area" for satellite broadcasting is given in the above-mentioned Annex 8, based on the value of a certain power flux-density which permits the wanted quality of reception in the absence of interference;

recognizing

that the existing definitions of "service area" and "coverage area" are related to the definitions of usable field strength or usable power flux-density, either in the presence or in the absence of interfering signals;

invites the CCIR

1. to specify a general definition for "coverage area";

2. to specify the technical basis for a general definition of "service area" which takes into account the present usage of this term throughout all official ITU texts in order to enable future administrative conferences to determine the administrative aspects of such a definition.

E

RECOMMENDATION No. 68

Relating to Studies and Prediction of Radio Propagation and Radio Noise [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the efficient utilization of radio frequencies depends upon the use of the most reliable technical data and standards, especially in those parts of the radio frequency spectrum which are most congested;

b) that the satisfaction of new frequency requirements and the development of radiocommunication services can be facilitated by improvements, where these are necessary, in the Technical Standards at present used by the IFRB;

c) that former Appendix A of the Radio Regulations, 1968 edition, entitled "Studies and Prediction of Radio Propagation and Radio Noise", recognized the importance of radio propagation and radio noise data as vital for the maximum utilization of radio frequencies and efficient planning of radiocommunication services;

d) that a principal objective of that Appendix had been the establishment and operation of worldwide systems of observation stations to obtain data on radio noise and on ionospheric, tropospheric and other phenomena affecting radio propagation;

e) that administrations provide, by the best means possible, for the study, coordination and rapid dissemination of such data and of the predictions relating to these data; and endeavour as well to promote further studies on radio propagation and radio noise through the medium of the CCIR;

f) that the CCIR has adopted programmes of studies covering many of these problems;

g) that no radio propagation or radio noise measurements have been carried out in some parts of the world;

requests the CCIR

1. to encourage and assist in initiating the study of radio propagation and radio noise in those areas where an adequate system of observation stations has not yet been established;

2. to continue the studies of radio propagation and radio noise and to take measures for the coordination of the results of these studies carried out in different countries;

3. to give particular attention to those studies which will assist in the further refinement of the Technical Standards used by the IFRB;

4. to report regularly on these matters, even if the studies have not been completed;

5. to continue regular consultation with other organizations undertaking studies of propagation and radio noise, such as the International Scientific Radio Union, in order to attain the maximum possible degree of coordination;

recommends that administrations

1. initiate the study of radio propagation and radio noise in those areas where an adequate system of observation stations has not yet been established, and communicate the results of their studies to the CCIR;

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[1] Replaces Recommendation No. 4 of the Administrative Radio Conference, Geneva, 1959.

2. continue to establish and to operate a worldwide system of observation stations to obtain data on radio noise and on ionospheric, tropospheric and other phenomena affecting radio propagation;

3. continue to provide, by the best means possible, for the study, coordination and rapid dissemination of such data and of the predictions relating to them;

4. take note, in formulating and carrying out their radio propagation and radio noise work, of the relevant CCIR Recommendations, Reports, Questions and Study Programmes, particularly regarding the conclusions so far reached, the planning of future studies and the recommended forms of presentation contained in these documents.

P

RECOMMENDATION No. 69

Relating to the Frequency Tolerances of Transmitters [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that Appendix 7 to the Radio Regulations specifies the frequency tolerances for transmitters;

b) that the principal objective of Appendix 7 has been the reduction of frequency space required per channel by means of the tightening of frequency tolerances, and that in many cases considerable improvement in spectrum utilization can continue to be obtained by further tightening of frequency tolerances;

c) that for some services, an improvement in frequency tolerance to the most stringent value possible in keeping with the state of the technique would be useful in order to increase the signal-to-noise ratio, improve intelligibility and reduce errors;

d) that in certain cases, a more stringent frequency tolerance would not in practice increase the number of available channels;

e) that in particular frequency bands, the frequency tolerances specified in Appendix 7 may already approach the minimum useful value for certain categories of station when using existing techniques and methods of operation;

f) that it will be of considerable assistance to administrations, in the future planning of services and provision of equipment, to know those frequency tolerances which can be considered to be the ultimate useful minimum value for stations when using existing techniques and methods of operation;

g) that in certain cases, the achievement of more stringent frequency tolerances is subject to economic limitations, which should be known and taken into account;

invites the CCIR

1. to continue its study of frequency tolerances with a view to the reduction of the frequency space required for a given channel;

2. to consider whether or not in certain cases it is possible to predict ultimate values of tolerances, which it would not be necessary to make more stringent under currently known conditions of operation, and to state what these tolerance values might be;

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[1] Replaces Recommendation No. 1 of the Administrative Radio Conference, Geneva, 1959.

3. to report upon the possibility of achieving such ultimate values of tolerances consistent with economic and design requirements and other practical considerations;

4. to indicate which, if any, of the tolerances specified in Appendix 7 have already attained these ultimate values.

S RECOMMENDATION No. 70

Relating to Studies of the Technical Characteristics of Equipment [1]

The World Administrative Radio Conference, Geneva, 1979,

recognizing

that the available technical information concerning the various types of apparatus used for the reception of the different classes of emission in the several services needs to be more complete and more precise in order to permit the most efficient planning of the use of the radio frequency spectrum;

invites the CCIR

1. to continue to study, and to make Recommendations for the bandwidth, selectivity, sensitivity and stability characteristics of various types of apparatus used for the reception of the different classes of emission in the several services;

2. to continue to study practical methods of achieving the recommended characteristics;

3. to study the minimum practicable spacing between adjacent channels for the different classes of emission for the several services in the various bands;

4. to study other desirable conditions to be fulfilled by the complete systems employed by the different services in order to determine the required technical performance of the equipment, including the station terminal apparatus and the antennae;

5. to study methods for determining whether the equipment satisfies the recommended requirements;

6. to give particular attention to those studies which will assist in the further refinement of the Technical Standards used by the IFRB.

ZN RECOMMENDATION No. 71

Relating to the Standardization of the Technical and Operational Characteristics of Radio Equipment

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that administrations are confronted with the necessity of allocating increasing resources to the regulation of radio equipment performance;

[1] Replaces Recommendation No. 6 of the Administrative Radio Conference, Geneva, 1959.

b) that administrations, and in particular those in developing countries, often have difficulty in providing such resources;

c) that it would be of advantage to apply, as far as practicable, any mutually agreed standards and associated type approvals;

d) that a number of international bodies including the CCIR, ICAO, IMCO, CISPR and the IEC already provide recommendations and standards for technical and operating characteristics applicable to equipment performance and its measurement;

e) that in this context the specific requirements of developing countries have not always been taken fully into account;

recommends

1. that administrations endeavour to cooperate with a view to establishing international performance specifications and associated measuring methods that could be used as models for domestic standards for radio equipment;

2. that such international performance specifications and associated measuring methods respond to widely representative conditions including specific requirements of developing countries;

3. that when such international performance specifications for radio equipment exist administrations, as far as practicable, adopt these specifications as a basis for their national standards;

4. that administrations consider as far as practicable mutual acceptance for the type approval of equipment which conforms to such performance specifications.

ZR

RECOMMENDATION No. 72

Relating to Terminology

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the discussions concerning certain technical terms and definitions in Article 1 have shown the existence of various problems which it has not been possible to settle in a fully satisfactory manner during this Conference;

b) that technological development and modes of expression may call for the addition, amendment or possibly the deletion of particular definitions;

invites the CCIR and the CCITT,

each in its own field, to examine the definitions of technical terms in Article 1 and to propose any amendments they deem useful;

instructs the Secretary-General

to send the proposals prepared by the two organs to the administrative conferences concerned for consideration within the framework of their terms of reference.

J

RECOMMENDATION No. 73

Relating to the Use of the Term "Channel" in the Radio Regulations

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the term "channel" has been used extensively in the Radio Regulations in the frequency allotment plans of Appendices **16**, **18**, **25 Mar2**, **26**, **27**, **27 Aer2**, **32**, 33 and **34**;

b) that the term "channel" has a different meaning in other provisions of the Radio Regulations and for the various radiocommunication services;

c) that there should not be any ambiguity in the meaning of the term "channel" in its usage throughout the Radio Regulations;

invites the CCIR

to define the term "channel" so that it may be used consistently and without confusion in the Radio Regulations in all working languages of the ITU.

ZO

RECOMMENDATION No. 74

Relating to the Use of the Rationalized "Système International d'Unités" (SI) [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that many difficulties associated with older systems of units are remedied by the SI system;

b) that the International Organization for Standardization has approved the SI system and recommends it for general adoption;

recognizing

a) that the SI system, already adopted by many international organizations, is recommended by the CCIR and the CCITT and widely used by the permanent organs of the Union;

b) that the SI system has the status of a national standard in many countries;

[1] Replaces Recommendation No. **9** of the Administrative Radio Conference, Geneva, 1959.

c) that, in countries where the SI system has not yet been adopted as the national standard, the SI system is also widely used by radio engineers, scientists and authors of radio publications;

d) that the use of the SI system is continuing to spread in all parts of the world;

recommends

that administrations should use the SI system in their relations with the Union and its organs.

YX

RECOMMENDATION No. 100

Relating to Preferred Frequency Bands for Systems Using Tropospheric Scatter

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the World Administrative Radio Conference for Space Telecommunications, Geneva, 1971, requested the CCIR to study the preferred frequency bands for tropospheric scatter systems and proposed that a future world administrative radio conference should consider this matter;

b) the technical and operational difficulties pointed out by the CCIR (Report of the Special Preparatory Meeting, Geneva, 1978) in the bands shared by tropospheric scatter systems, space systems and other terrestrial systems;

c) the additional allocation of frequency bands which this Conference has made for the space services in view of their increasing development;

d) that the IFRB requires administrations to supply specific information on systems using tropospheric scatter in order to verify compliance with certain provisions of the Radio Regulations (such as Nos. **763**, **2560** and **2564**);

recognizing nevertheless

that, to meet certain telecommunication requirements, administrations will wish to continue using tropospheric scatter systems;

noting

that the proliferation of such systems in all frequency bands and particularly in those shared with the space systems is bound to aggravate an already difficult situation;

recommends the CCIR

1. to continue studies, as a matter of urgency, of the frequency bands presenting more appropriate propagation features for systems using tropospheric scatter;

2. to continue studying the possibilities and criteria for sharing between systems using tropospheric scatter and other systems, particularly space systems;

3. to prepare, on the basis of these studies, and if possible before its next Plenary Assembly, a Recommendation concerning the specific frequency bands found preferable for such systems. The choice of these bands should take into account allocations to other services, particularly allocations to the space services;

recommends administrations

1. to collaborate with the CCIR, as a matter of urgency and within the limits of their possibilities, by sending it contributions relating to the aforementioned studies;

2. for the assignment of frequencies to new stations in systems using tropospheric scatter, to take into account the latest information prepared by the CCIR to ensure that systems established in the future use a limited number of certain frequency bands;

3. in frequency assignment notifications to the IFRB, to indicate expressly whether they relate to stations of tropospheric scatter systems;

invites the Administrative Council

to make the necessary arrangements for a future world administrative radio conference to consider the frequency bands of the fixed service which shall be used in preference by the new tropospheric scatter systems, taking into account the allocations to the space radiocommunication services and the relevant CCIR Recommendations.

ZE

RECOMMENDATION No. 101

Relating to Feeder Links for the Broadcasting-Satellite Service [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) the need for ample information on the characteristics of feeder links for planning the broadcasting-satellite service;

b) the studies being pursued by the CCIR under the appropriate Study Programme;

c) that the carrier-to-noise ratios for the feeder links to broadcasting satellites should be of the order of ten times greater than those for the down-links;

d) that, as regards feeder link interference between broadcasting satellites at different orbital positions, adequate up-link protection ratios (approximately 10 dB greater than those in the down-link) would appear to be readily achievable by antenna pattern discrimination in earth station transmitting antennae which would clearly have to be larger in diameter than the receiving antennae used in the down-links;

e) that, where planning is based on isolation parameters such as radiation patterns for space station transmitting antennae, carrier interleaving, or polarization discrimination in meeting the down-link carrier-to-interference requirements between service areas served from a single orbital position, the increased carrier-to-interference requirements in the up-links serving the satellite(s) at that same orbital position will have to use the same isolation parameters provided that this produces an improvement of about 10 dB in net isolation. The characteristics of the transmitting earth station will clearly not affect this isolation, apart from the purity of their on-beam polarization;

[1] Replaces Recommendation No. **Sat** – 5 of the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977.

f) that in the implementation of broadcasting-satellite systems, consideration must be given to all aspects of associated space operation service functions (tracking, telemetry, telecommand and ranging) in connection with the operation of broadcasting satellites;

invites the CCIR

1. to continue the study of those radiation characteristics of receiving antennae of space stations in the broadcasting-satellite service which, singly or in combination with other means of discrimination, would give the necessary protection ratios for the feeder links of systems in the broadcasting-satellite service for (a) satellite(s) occupying a given position in the geostationary-satellite orbit;

2. to continue the study of those polarization characteristics of receiving antennae of space stations in the broadcasting-satellite service which, singly or in combination with other means of discrimination, would give the necessary protection ratios for the feeder links of systems in the broadcasting-satellite service for (a) satellite(s) occupying a given position in the geostationary-satellite orbit;

3. to continue the study of the technical feeder link characteristics required to implement the Plan for this service;

4. to study the technical and design characteristics and requirements which affect the provision of "space operation service functions" of space stations in the broadcasting-satellite service;

5. to study the requirements for adjacent-channel isolation in feeder links for (a) satellite(s) in the broadcasting-satellite service occupying a given position in the geostationary-satellite orbit.

X

RECOMMENDATION No. 102

Relating to the Study of Modulation Methods for Radio-Relay Systems in Relation to Sharing with Fixed-Satellite Service Systems [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that Article **8** of the Radio Regulations permits the sharing of certain frequency bands by the fixed-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 Articles **27** and **28**;

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;

[1] Replaces Recommendation No. **Spa** 4 of the Extraordinary Administrative Radio Conference, Geneva, 1963.

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 fixed-satellite service systems are to be carried out under Study Programme 2D-1/4 of the CCIR;

recommends

that the CCIR should study especially, under the general framework of Question 2 - 3/4, 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 fixed-satellite service systems.

ZA

RECOMMENDATION No. 103

Relating to Carrier Energy Dispersal in Systems in the Fixed-Satellite Service [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that use of carrier energy dispersal techniques in systems in the fixed-satellite service can result in a substantial reduction of interference to stations of a terrestrial service operating in the same frequency bands;

b) that the use of such techniques can result in a substantial reduction in the level of interference between systems in the fixed-satellite service operating in the same frequency bands and in a corresponding increase of efficiency in the utilization of the geostationary-satellite orbit;

c) that such techniques are being regularly and successfully employed in systems in the fixed-satellite service without noticeable deterioration of the quality of operation;

recommends

1. that systems in the fixed-satellite service employing angle modulation by analogue signals should use carrier energy dispersal techniques as far as is practicable with a view to spreading energy at all times and in a manner consistent with the satisfactory operation of the systems;

2. that systems in the fixed-satellite service employing digital modulation should use carrier energy dispersal techniques when this becomes technically feasible and is practical.

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[1] Replaces Recommendation No. **Spa2** – 11 of the World Administrative Radio Conference for Space Telecommunications, Geneva, 1971.

ZZ

RECOMMENDATION No. 200

Relating to the Date of Entry into Force of the 10 kHz Guardband for the Frequency 500 kHz in the Mobile Service (Distress and Calling)

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the radio frequency spectrum should be used in the most efficient possible way;

b) that this Conference has adopted a guardband from 495 kHz to 505 kHz for the frequency 500 kHz, which is the international distress and calling frequency in radiotelegraphy in the mobile service;

recognizing

a) that an adequate amortization period should be allowed for the radio equipment currently in service;

b) that technical progress has led to the production of more stable and reliable equipment;

recommends

that the next competent world administrative radio conference decide on the date of entry into force of this new arrangement;

requests the Secretary-General

to forward this Recommendation to the Inter-Governmental Maritime Consultative Organization (IMCO) with a request to examine this subject as part of its study of the maritime distress and safety system and to submit to the above-mentioned conference a recommendation relating to the date of entry into force of the new guardband.

YS

RECOMMENDATION No. 201

Relating to Distress, Urgency and Safety Traffic [2]

The World Administrative Radio Conference, Geneva, 1979,

having noted

that the Inter-Governmental Maritime Consultative Organization (IMCO):

a) has adopted a Resolution [1] on the subject of the maritime distress system;

b) has under development a future global maritime distress and safety system, proposed improvements for the near future and the definition of requirements and proposed transitional measures for the distant future;

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[1] IMCO Resolution A.420 (XI).

[2] Replaces Recommendation No. **Mar2** – 16 of the World Maritime Administrative Radio Conference, Geneva, 1974.

further noting

that studies having a bearing upon distress and safety measures as part of a maritime-satellite radiocommunication system form the subject of CCIR Questions and Study Programmes;

considering

a) that the IMCO requirement for the possible future fitting of automatic distress alerting, followed by the automatic transmission of additional information concerning the distress case, is of particular importance;

b) that automatic distress alerting, followed by the automatic transmission of additional information concerning the distress case, should take place on one or more frequencies reserved for distress traffic;

c) that adequate frequencies must be made available for associated requirements for safety calling and communications;

d) that the transmission and the recorded reception of distress, urgency and safety messages should be able to take place without interruption and irrespective of human attendance;

recommends

1. that IMCO be invited to continue its studies with a view to early implementation of the future distress system;

2. that CCIR continue its studies to determine the role of maritime-satellite radiocommunications in a coordinated distress system as well as in safety applications;

3. that administrations consider, in the light of continuing technological developments, the need to reserve one or possibly more frequencies for distress purposes;

4. that administrations consider, in the light of advancing techniques, the introduction of more automated telecommunication systems for the dissemination of distress, urgency and safety messages on a continuous basis, to replace Morse telegraphy and possibly radiotelephony;

5. that administrations have as an objective the taking of a decision in this matter at the next competent world administrative radio conference.

F

RECOMMENDATION No. 202

Relating to the Improvement of Protection of Distress and Safety Frequencies, and Those Related to Distress and Safety, Against Harmful Interference

The World Administrative Radio Conference, Geneva, 1979,

considering

a) the importance of minimizing the danger of harmful interference to frequencies used for the safeguarding of human life;

b) the unanimous agreement by this Conference, in its consideration of Article **18** concerning interference, that improved protection against harmful interference should be given to distress and safety frequencies and those related to distress and safety;

c) that such improved protection could be achieved, inter alia, by including provisions in the Radio Regulations ensuring that all tests on these frequencies should be carried out on artificial antennae or with reduced power, wherever practicable;

d) that these provisions pertain to Article **38** concerning frequencies for distress and safety;

noting, however,

that this Conference is not competent to revise Article **38**;

invites administrations

to study this matter and to submit proposals for consideration by the next competent world administrative radio conference.

YA

RECOMMENDATION No. 203

Relating to the Future Use of the Band 2 170 - 2 194 kHz

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the frequency 2 182 kHz is the international distress frequency for radiotelephony;

b) that, except for transmissions authorized on the carrier frequency 2 182 kHz, all transmissions on the frequencies between 2 173.5 kHz and 2 190.5 kHz are forbidden;

c) that, in Region 1, the adjacent bands 2 170 - 2 173.5 kHz and 2 190.5 - 2 194 kHz are used, respectively, by coast stations calling ship stations (including selective calling), and by ship stations calling coast stations;

noting

a) that this Conference has amended the Table of Frequency Allocations in order to reduce the guardband around the frequency 2 182 kHz to ± 8.5 kHz and has allocated the bands 2 170 - 2 173.5 kHz and 2 190.5 - 2 194 kHz exclusively to the maritime mobile service on a worldwide basis;

b) that a need now exists to replan the entire band 2 170 - 2 194 kHz and to review the regulatory provisions, with particular reference to Articles **38** and **60**;

recommends

that the next competent world administrative radio conference be invited:

1. to examine the allocations within the band 2 170 - 2 194 kHz;

2. to review the relevant technical and operational parameters with a view to reducing further the guardband around the frequency 2 182 kHz;

3. to develop any necessary regulatory provisions;

4. to develop from these considerations plans for the implementation of any new arrangement;

5. to determine the date of coming into force of such plans and provisions;

requests the Secretary-General

to send a copy of this Recommendation to the Secretary-General of the Inter-Governmental Maritime Consultative Organization (IMCO) for study by the competent body and for making recommendations;

invites administrations

to study this matter and to submit proposals for consideration by the next competent world administrative radio conference.

C

RECOMMENDATION No. 204

Relating to the Application of Chapters NX, NXI and NXII of the Re-Arranged Radio Regulations [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the Radio Regulations provide the basic regulatory framework for all the mobile services and that the provisions of the Radio Regulations should correspond as closely as possible with the needs and operational realities of these services;

b) that this Conference has adopted the Re-Arrangement of the Radio Regulations as proposed by the Group of Experts, taking into account proposals made by a number of administrations for further refinement of the Re-Arrangement;

c) that the separation of the previous mobile service provisions into specific chapters dealing with individual mobile services has highlighted certain anomalies in relation to each of the mobile services, and particularly in their applicability to the aeronautical mobile service and the land mobile service;

d) that certain of these anomalies raise substantive operational issues with which this Conference is not competent to deal;

e) that the aeronautical mobile service is concerned with the communications to ensure safe and regular operation of aircraft;

f) that towards this objective the International Civil Aviation Organization has agreed upon standards and recommended practices adapted to the needs of aircraft operation which have been proven in practice and are well established in current use;

recommends

that the next competent world administrative radio conference revise Chapters NX, NXI and NXII [1] to bring them into accord with the current needs and practices of the services concerned;

instructs the Secretary-General

to communicate the text of this Recommendation to ICAO and IMCO and to request the attention of these organizations to a study of the material contained in Chapters NX and NXI [2], respectively, with a view to assisting administrations in their preparations for that conference.

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[1] Chapters **X**, **XI** and **XII** of the Radio Regulations (1979).

[2] Chapters **X** and **XI** of the Radio Regulations (1979).

YD RECOMMENDATION No. 300

Relating to Planning the Use of Frequencies by the Maritime Mobile Service in the Band 435 - 526.5 kHz in Region 1

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the allocations to the maritime mobile service in the 415 - 526.5 kHz band have been modified by this Conference;

b) that this Conference has adopted Recommendations **200** and **309** concerning this band;

c) that certain technical standards used in the maritime mobile service have been revised by this Conference;

d) that some of the technical standards upon which the Assignment Plan for European countries contained in the Final Acts of the European Maritime Conference, Copenhagen, 1948, was based, have become out-of-date;

e) that ships using frequencies within this band travel worldwide;

f) that some countries have already assigned frequencies for other services operating in this band that may place constraints on the planning for the maritime mobile service;

g) that there is consequently a need for detailed examination regarding the use and planning of this band which takes into account the latest technical developments and standards;

noting

that this Conference has recommended the convening of an administrative radio conference for the mobile services;

recommends to the Administrative Council

to ensure that the conference for mobile services is competent to take decisions regarding the planning and use of frequencies in this band in Region 1;

requests the CCIR

to undertake, as a matter of urgency, the study of the technical and operational aspects of these matters including the need for criteria for sharing with other services;

invites

1. the Secretary-General to send this Recommendation to the Inter-Governmental Maritime Consultative Organization (IMCO) with a request for the urgent consideration of the operational requirements for the maritime mobile service using this frequency band, and to make such recommendations as may be appropriate;

2. administrations of Region 1 to study this matter and to submit proposals for consideration by the conference for mobile services.

YE

RECOMMENDATION No. 301

Relating to Planning for the Use of Frequencies in the Bands Between 1 606.5 kHz and 3 400 kHz Allocated to the Maritime Mobile Service in Region 1

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the allocations to the maritime mobile service in the bands between 1 606.5 kHz and 3 400 kHz have been modified by this Conference;

b) that this Conference has adopted Recommendation **203** and Resolution **38** concerning these bands;

c) that it is desirable to achieve the most efficient use of these bands in the implementation of the revised Table of Frequency Allocations;

d) that ships using frequencies within these bands travel worldwide;

e) that existing plans are limited to regional use;

f) that there is consequently a need for detailed examination regarding the use and planning of these bands;

noting

that this Conference has recommended the convening of an administrative radio conference for the mobile services;

recommends to the Administrative Council

to ensure that the conference for mobile services is competent to take decisions regarding planning and use of frequencies in these bands in Region 1;

requests the CCIR

to undertake, as a matter of urgency, the study of the technical and operational aspects of these matters including the need for criteria for sharing with other services;

invites

1. the Secretary-General to send this Recommendation to the Inter-Governmental Maritime Consultative Organization (IMCO) with a request for the urgent consideration of the operational requirements for the maritime mobile service using these frequency bands, and to make such recommendations as may be appropriate;

2. administrations of Region 1 to study this matter and to submit proposals for consideration by the conference for mobile services.

YM

RECOMMENDATION No. 302

Relating to the Improved Use of the HF Radiotelephone Channels for Coast Stations in the Bands Allocated Exclusively to the Maritime Mobile Service [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that a large number of requests for HF radiotelephony allotments was submitted to the World Maritime Administrative Radio Conference, Geneva, 1974;

b) that the number of channels resulting from the revision of Appendix **16** is not sufficient to satisfy these requirements in optimum conditions;

c) that the resulting sharing patterns have been formed mainly by operational considerations;

d) that after the present Conference the optimal use of the HF radiotelephony channels in the bands allocated exclusively to the maritime mobile service will be of even greater importance;

e) that, on each channel, administrations should afford one another an equivalent quality of service;

f) that the efforts to develop technical means to facilitate the common use of frequencies by neighbouring coast stations of different administrations, or by a coast station operating on behalf of more than one administration, should be continued;

recommends administrations

1. to make every effort to reach mutually satisfactory operational arrangements, which may include:

   – different time-sharing arrangements;

   – differentiated hours of opening;

   – on a voluntary and regional basis, the use of HF radiotelephone channels in an order of overflow priority;

2. to employ every practicable means, which may include those mentioned above, to ensure that the best possible use is made of the HF coast radiotelephone channels in the bands allocated to the maritime mobile service;

invites administrations

1. when assigning frequencies in the HF bands to coast stations, to take into account the special rules contained in No. **954** and the provisions of No. **1804** of the Radio Regulations;

[1] Replaces Recommendation No. **Mar2** – 7 of the World Maritime Administrative Radio Conference, Geneva, 1974.

2. to ensure that coast stations:

- use the frequency band and the minimum power appropriate to the propagation conditions and the nature of the service;
- use directional antennae whenever possible;
- give appropriate instructions to ship stations in accordance with No. **5056** of the Radio Regulations;

requests the CCIR

to continue its study with a view to improving all technical and operational sharing criteria relating to the use of HF coast radiotelephone channels in the bands allocated exclusively to the maritime mobile service, including the choice of available channels by electronic or other means to facilitate multiple access to the channels.

XJ

RECOMMENDATION No. 303

Relating to the Use of the Carrier Frequencies 4 125 kHz and 6 215.5 kHz to Supplement the Carrier Frequency 2 182 kHz for Distress and Safety and for Call and Reply Purposes in the Zone of Regions 1 and 2 South of Latitude 15° North, but Including Mexico, and in the Zone of Region 3 South of Latitude 25° North [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that in some areas of the world it is not practicable to provide reliable coverage for distress and safety purposes on the international radiotelephony distress frequency 2 182 kHz, because of the great distances between coast stations keeping watch on this frequency;

b) that a large number of ships equipped only for radiotelephony make voyages in these areas during which they are often out of range of coast stations keeping watch on the carrier frequency 2 182 kHz;

c) that to overcome this problem many administrations in the above-mentioned zones have established watches at their coast stations for distress and safety and for call and reply purposes on the carrier frequencies 4 125 kHz and 6 215.5 kHz; and that these watches have proved to be effective supplements to those kept on 2 182 kHz;

d) that provision is made in the Radio Regulations for the carrier frequency 4 125 kHz to be used in the zone of Regions 1 and 2 south of latitude 15° North, including Mexico, and in the zone of Region 3 south of latitude 25° North and also for the carrier frequency 6 215.5 kHz to be used in the zone of Region 3 south of latitude 25° North as supplementary frequencies to 2 182 kHz for distress and safety and for call and reply purposes;

e) that it could be in the interests of ships equipped only for radiotelephony and operating in these zones to have facilities to send and receive on the carrier frequencies 4 125 kHz and 6 215.5 kHz when calls on 2 182 kHz might be ineffective;

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[1] Replaces Recommendation No. **Mar2** – 4 of the World Maritime Administrative Radio Conference, Geneva, 1974.

recommends

1. that administrations bring to the notice of the operators of ships under their jurisdiction which are equipped only for radiotelephony that certain land stations as indicated in the List of Coast Stations provide facilities for distress and safety and for call and reply purposes on the carrier frequency 4 125 kHz to supplement the carrier frequency 2 182 kHz in the zone of Regions 1 and 2 south of latitude 15° North, including Mexico, and in the zone of Region 3 south of latitude 25° North and also for the carrier frequency 6 215.5 kHz to be used in the zone of Region 3 south of latitude 25° North;

2. that administrations whose ships are equipped only for radiotelephony consider that, although it is not mandatory for ship and coast stations to provide facilities for sending and receiving on the carrier frequencies 4 125 kHz and 6 215.5 kHz, it may be essential for the safety of radiotelephony ships operating in the above-mentioned zones to have such facilities.

YP

RECOMMENDATION No. 304

Relating to the Frequencies in Appendix 16, Section B, of the Radio Regulations, Provided for Worldwide Use by Ships of All Categories and by Coast Stations [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the frequencies indicated in the table of single-sideband transmitting frequencies for simplex (single-frequency) operation and for intership cross-band (two-frequency) operation are not yet in worldwide use for communications between ship and coast stations;

b) that there is a worldwide need for ocean-going vessels to be able to communicate with coast stations of any administration;

recommends

that, as far as possible, administrations provide a service on these frequencies at their main coast radiotelephone stations and notify to the Secretary-General the particulars of these services for publication in the List of Coast Stations.

[1] Replaces Recommendation No. **Mar2** – 6 of the World Maritime Administrative Radio Conference, Geneva, 1974.

ZW RECOMMENDATION No. 305

Relating to the Use of Channels 15 and 17 of Appendix 18 by On-Board Communication Stations [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that channels 15 and 17 of Appendix **18** were provided by the World Administrative Radio Conference, Geneva, 1967, for use for internal operational communications on board ships within territorial waters and with an effective radiated power not in excess of 0.1 W, and that this power limit was raised to 1 watt by the World Maritime Administrative Radio Conference, Geneva, 1974;

b) that considerable use is made of these channels by a number of administrations;

c) that some administrations have not used these channels for on-board communication because of the shortage of VHF channels for other maritime mobile needs;

d) that, for the same reason, these administrations wish to have the use of these channels for on-board communication discontinued;

e) that the present Conference has retained the relevant provisions in the Table of Frequency Allocations;

noting

that the CCIR has adopted Recommendation 542 and Report 589-1;

recognizing

a) that several common channels for on-board communication are necessary internationally to meet world-wide requirements in the future;

b) that there may be a need for frequencies to provide for the use of repeater stations on large vessels, such as container ships, tankers, etc.;

c) that additional experience concerning the application and effectiveness of the UHF channels maintained for this purpose by the present Conference may be required;

recommends

1. that the next competent world administrative radio conference determine whether the use of channels 15 and 17 of Appendix **18** is still necessary for on-board communication and, if it is not, the date by which such use should cease;

2. that the same conference review the UHF channels being used for on-board communication stations to determine whether the number of channels and their location in the radio spectrum are satisfactory and meet the requirements of such stations;

3. that the same conference consider the need for additional allocations for use by on-board communication stations on a worldwide basis, including the territorial waters of all countries;

4. that due consideration be given by administrations to the technical standards and functioning of such stations to ensure their mutual compatibility in an effective international system of operation.

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[1] Replaces Recommendation No. **Mar2** – 11 of the World Maritime Administrative Radio Conference, Geneva, 1974.

YQ

RECOMMENDATION No. 306

Relating to the Establishment of a Watch by Coast Stations for Distress Purposes on the Frequency 156.8 MHz [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the frequency 156.8 MHz has been designated as the international distress frequency for stations in the maritime mobile service operating in the authorized bands between 156 MHz and 174 MHz;

b) that this frequency is most useful for short range communication and its use in distress situations will materially improve the safety of life at sea, particularly in areas of heavy traffic where an efficient listening watch can be maintained;

c) that many administrations already provide radio coverage of their coasts on frequencies in the band 156 - 174 MHz;

d) that, however, it would be impracticable or unnecessary for some administrations in their prevailing circumstances to provide sufficient coverage of their coasts in the band 156 - 174 MHz to enable an effective watch to be kept on 156.8 MHz for distress purposes;

recommends

that administrations, where they consider it necessary and practicable, take steps to establish a watch for distress purposes on the coasts of their countries on the frequency 156.8 MHz.

YL

RECOMMENDATION No. 307

On the Choice of a Frequency in the Maritime Mobile Bands Between 1 605 kHz and 3 800 kHz to Be Reserved for Safety Requirements [2]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that MF radiotelephony is of increasing usefulness for the safety of ships since:

i) the International Convention on Safety of Life at Sea (London, 1960) requires that cargo ships of 300 tons gross tonnage and upwards but less than 1 600 tons gross tonnage, unless fitted with a radiotelegraph station, shall be fitted with a radiotelephone station;

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[1] Replaces Recommendation No. **Mar2** – 10 of the World Maritime Administrative Radio Conference, Geneva, 1974.

[2] Replaces Recommendation No. **Mar2** – 2 of the World Maritime Administrative Radio Conference, Geneva, 1974.

ii) the Inter-Governmental Maritime Consultative Organization recommends [1] that ships compulsorily fitted with either a radiotelegraph (i.e. 1 600 tons gross tonnage and upwards) or a radiotelephone installation shall have in addition facilities for listening continuously, while at sea, on the radiotelephone distress frequency; that the fitting of radiotelegraph ships with a radiotelephone transmitter capable of operating in the 2 MHz band should be encouraged; and that each administration should consider introducing a national requirement that ships to which the Convention on Safety of Life at Sea (London, 1960) does not apply should be fitted with a radiotelephone distress frequency watch receiver;

b) that, notwithstanding, in many areas the watch on the MF radiotelephone distress frequency is very difficult because of the large number of routine traffic calls sent on that frequency;

c) that similar difficulties would occur even if watch and alarm systems more advanced than those used at present were adopted;

d) that in some areas MF radiotelephone traffic is constantly increasing;

requests the CCIR

to undertake, as a matter of urgency, the study of the technical and operational aspects of these matters;

recommends

that the next appropriate world administrative radio conference determine, in the light of the results of the work of the CCIR:

1. a frequency reserved for transmitting – to the exclusion of any routine traffic calls – distress calls and messages and, possibly, urgency signals and messages, safety signals and certain safety messages;

2. a frequency, different from the preceding, for voice or selective calling for routine traffic;

3. suitable guardbands for both these frequencies.

YO

RECOMMENDATION No. 308

Relating to the Designation of Common Frequencies in the Medium Frequency Bands for Use by Coast Radiotelephone Stations for Communicating with Ships of Other Nationalities [2]

The World Administrative Radio Conference, Geneva, 1979,

noting

a) that, on small ships fitted with single-sideband equipment, a crystal-controlled fixed frequency receiver is essential to facilitate correct tuning;

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[1] IMCO Resolution A.217 (VII).

[2] Replaces Recommendation No. **Mar** 5 of the World Administrative Radio Conference, Geneva, 1967.

b) that, if such ships make international voyages and communicate with coast stations of other nationalities, they need to be provided with a considerable number of additional crystals;

c) that, by reducing the number of receiver crystals required, the cost of single-sideband receivers can be kept to a satisfactory level;

considering

a) that international working frequencies should be assigned to all coast stations for working with ships of other nationalities, without precluding their use for national purposes;

b) that, according to the Master International Frequency Register, no frequencies appear to be available for common use by all coast stations for working with ships of other nationalities, either on a worldwide or on a regional basis;

recommends

1. that administrations study this question at the earliest opportunity with a view to formulating proposals for consideration by the next administrative radio conference competent to deal with the matter;

2. that, in the meantime, countries should explore the possibility of concluding regional, bilateral or multilateral arrangements to provide common frequencies for coast stations working with ship stations of other nationalities.

YB

RECOMMENDATION No. 309

Relating to the Designation of a Frequency in the Bands 435 - 495 kHz or 505 - 526.5 kHz (525 kHz in Region 2) on a Worldwide Basis for the Transmission by Coast Stations of Navigational and Meteorological Warnings to Ships, Using Narrow-Band Direct-Printing Telegraphy

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that for the purpose of improving the existing provisions of the present maritime distress and safety system the Inter-Governmental Maritime Consultative Organization (IMCO) has recommended [1] that administrations should introduce narrow-band direct-printing telegraphy broadcasts for the purpose of promulgating navigational and meteorological warnings to shipping;

b) that such transmissions would enhance the safety of life at sea;

c) that the CCIR has recommended [2] an automated direct-printing telegraph system for transmission of navigational and meteorological information to ships;

[1] See IMCO Resolution A.420 (XI).

[2] See CCIR Recommendation 540.

d) that in some countries in Europe, administrations are already providing such transmissions on an experimental basis, using the frequency 518 kHz;

e) that a number of administrations have proposed to this Conference that the frequency 518 kHz be designated on a worldwide basis for this purpose;

f) that this conference considers this to be a matter for the next competent world administrative radio conference;

g) that there is a continuing need for transmission of navigational and meteorological warnings to ships by means of normal Morse telegraphy;

recommends

that the next competent world administrative radio conference should consider this matter and take action as required to designate a suitable international frequency for the purpose of promulgating navigational and meteorological warnings to shipping using narrow-band direct-printing telegraphy, whilst maintaining provisions for the continuation of existing normal Morse telegraphy for promulgating such warnings;

invites administrations

to study this matter with a view to submitting appropriate proposals to the next competent world administrative radio conference;

requests the Secretary-General

to send this Recommendation to the Inter-Governmental Maritime Consultative Organization (IMCO) with a request to continue its study on this matter and to make such recommendations as may be desirable.

ZY

RECOMMENDATION No. 310

Relating to an Automated UHF Maritime Mobile Radiocommunication System

The World Administrative Radio Conference, Geneva, 1979,

recognizing

a) the continued growth of world population and the associate need for safe and efficient transportation of foodstuffs and other essential goods;

b) the need for a rapid and effective worldwide economic growth;

c) that the maritime fleets are increasingly engaged in trade and these fleets are growing substantially;

considering

a) that the international maritime mobile VHF band (Appendix **18**) has become congested in many areas of the world;

b) that the future requirements for additional UHF radio telephone channels for port operations, ship movements and public correspondence in the maritime mobile service have been estimated to be as many as 200 - 240 duplex channels in some congested areas;

c) that it is highly desirable for the UHF maritime and other international mobile public correspondence systems to become fully automated to ensure the efficient utilization of the channels and the economic operation of the services, to the benefit of the users;

d) that standardization is of great importance in the international mobile services;

e) that administrations may wish to use some or all of the channels designated for maritime use for other automated mobile services. Examples of such usage are joint or combined radiocommunications in ports, waterways and adjacent piers. In other areas where there is no need for mobile services, these channels could be used for other radio services;

noting

a) CCIR Report 587-1 on this subject in response to Question 23-2/8;

b) CCIR Decision 30 directing Interim Working Party 8/5 to study this subject further on the basis of Question 23-2/8, taking into account the results of studies in Report 587-1;

c) Inter-Governmental Maritime Consultative Organization (IMCO) COM Circular 73 stating short range telecommunications requirements for 10 MHz of bandwidth for automated international maritime services;

recommends

that the next competent world administrative radio conference:

1. designate suitable bands having sufficient spectrum for a maritime mobile radiocommunication system, including public correspondence, from those allocated on a worldwide basis to the mobile service.

2. identify the means for establishing, as required, regional assignment plans which take into account the worldwide needs of the maritime mobile service and allow for compatibility with other radio services;

invites the CCIR

1. to study, as a matter of urgency, bands which are preferred from operational and sharing aspects and to issue a Recommendation or a Report before the next competent world administrative radio conference;

2. to study, in consultation with the CCITT, the technical and operational aspects of an integrated and automated maritime and land mobile system;

request the Secretary-General

to communicate this Recommendation to the Inter-Governmental Maritime Consultative Organization (IMCO) for consideration and comments.

XL RECOMMENDATION No. 311

Relating to the Introduction of an Additional Tone After the Radiotelephone Alarm Signal Transmitted by Coast Stations [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that coast stations receive numerous radiotelephone alarm signals which cannot be identified because no voice announcement follows the alarm or because the announcement is unintelligible owing to low modulation or interference;

b) that coast stations have an obligation to take action to identify all alarm signals received and to alert search and rescue services for subsequent action;

c) that many radiotelephone alarm signals which precede the MAYDAY RELAY announcement are from coast stations at considerable distances from the receiving coast stations;

d) that it could be of considerable value if the radiotelephone alarm signal transmitted by coast stations were distinguishable from that transmitted by ship stations;

recognizing

a) that no characteristics introduced to distinguish the radiotelephone alarm signal transmitted by coast stations from that transmitted by ship stations should affect the normal reception of the radiotelephone alarm signal;

b) that proposals were made to the World Maritime Administrative Radio Conference, Geneva, 1974, to add a single tone following the radiotelephone alarm signal transmitted by coast stations, and that practical tests conducted in the North Sea area during that Conference indicated a 1 300 Hz tone for a period of 10 seconds to be suitable;

c) that the cost of the necessary changes to existing equipment on coast stations would probably be small;

recommends

that the radiotelephone alarm signal transmitted by coast stations be followed by a single tone of 1 300 Hz, for a period of 10 seconds (see No. **3272**).

[1] Replaces Recommendation No. **Mar2** – 5 of the World Maritime Administrative Radio Conference, Geneva, 1974.

YT

RECOMMENDATION No. 312

Relating to Studies of the Interconnection of Maritime Mobile Radiocommunication Systems with the International Telephone and Telegraph Networks [1]

The World Administrative Radio Conference, Geneva, 1979,

noting

a) that this Conference has adopted, and included in Article **62**, provisions for the use of a digital selective calling system;

b) that the CCIR has adopted Question 9-3/8 on the subject of a selective calling system for future operational requirements of the maritime mobile service;

c) that the operational and technical characteristics for a digital selective calling system are in an advanced state of study by the CCIR;

d) that the CCIR has adopted Question 23-2/8 relating to automated VHF maritime mobile telephone systems;

e) that the CCITT has under study the interconnection of the different international mobile telephone services – mainly of the maritime mobile and the maritime mobile-satellite services – and the international telephone network;

f) that the study of new Questions 7/I and 4/X relating to the interconnection of maritime satellite communication services with the international telex network is proposed to the CCITT;

considering

a) that it is desirable that there be interconnection of radiocommunication systems in the maritime mobile service with the international public telephone and telegraph networks to permit automatic routing of ship-shore traffic to and from national networks;

b) that such interconnection would greatly improve maritime radiocommunications;

urges the CCIR and the CCITT

to undertake all required studies relating to compatibility between the maritime mobile radiocommunication systems and the international telephone and telegraph systems, including various quality-of-service criteria, to permit the full interconnection of the maritime mobile services with the international telephone and telegraph networks; and

invites administrations

to give priority to these studies in their participation in the work of the CCIR and the CCITT.

[1] Replaces Recommendation No. **Mar2** – 19 of the World Maritime Administrative Radio Conference, Geneva, 1974.

YR

RECOMMENDATION No. 313

Relating to Temporary Provisions Covering the Technical and Operational Aspects of the Maritime Mobile-Satellite Service [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that a minimum number of provisions to introduce the maritime mobile-satellite service in an orderly manner has been adopted;

b) that administrations have, as yet, little or no experience in operating a maritime mobile-satellite service;

c) that, consequently, it is impossible at the present time to establish comprehensive regulatory provisions covering in detail the technical and operational aspects of such a service;

d) that, nevertheless, temporary administrative, technical and operational provisions may become necessary before the next competent administrative radio conference;

recommends

that, whilst gaining experience to provide a basis for the adoption of detailed regulations by the next appropriate administrative radio conference, administrations participating in the maritime mobile-satellite service should agree to temporary administrative, technical and operational provisions, notify them to the Secretary-General, and invite other administrations to adopt them, without prejudice.

ZK

RECOMMENDATION No. 400

Relating to the Transition from the Present to the New Frequency Allotment Plan in the Bands Allocated Exclusively to the Aeronautical Mobile (R) Service Between 2 850 kHz and 22 000 kHz [2]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the Final Acts of the World Administrative Radio Conference on the Aeronautical Mobile (R) Service, Geneva, 1978, entered into force on 1 September 1979;

b) that the new Frequency Allotment Plan contained in Appendix **27 Aer2** will enter into force at 0001 hours UTC on 1 February 1983;

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[1] Replaces Recommendation No. **Mar2** – 15 of the World Maritime Administrative Radio Conference, Geneva, 1974.

[2] Replaces Recommendation No. **Aer2** – 4 of the World Administrative Radio Conference on the Aeronautical Mobile (R) Service, Geneva, 1978.

c) that some administrations may wish to implement certain provisions of the new Frequency Allotment Plan in advance of the latter date when this may be done without causing harmful interference to stations working in accordance with the present Frequency Allotment Plan;

d) that, following the Extraordinary Administrative Radio Conference, Geneva, 1966, the International Civil Aviation Organization (ICAO), under the provisions of No. 27/20 of Appendix **27** and within the spirit and framework of Resolution No. **Aer** 6 of that Conference, developed a transition programme for the aeronautical mobile (R) service to convert the Frequency Allotment Plan in Appendix **26** to that in Appendix **27**;

e) that the ICAO transition programme was subsequently provided to the International Frequency Registration Board for distribution to ITU Member administrations;

f) that it will be useful again to adopt a programme to facilitate transition from the existing to the new Frequency Allotment Plan;

recommends

1. that the ICAO be invited to develop a transition programme, within the framework of Appendix **27 Aer2**, for the operational use by aeronautical stations of the frequencies contained in the Frequency Allotment Plan except for those Regional and Domestic Air Route Areas which are not involved in international operations;

2. that the ICAO be invited to forward the transition programme for the new Frequency Allotment Plan to the IFRB for distribution to administrations;

3. that administrations implement the provisions of the transition programme in coordination with ICAO and in conformity with the principles set forth in No. 27/20 of Appendix **27 Aer2**;

requests the Secretary-General

to bring this Recommendation to the attention of the International Civil Aviation Organization.

YN

RECOMMENDATION No. 401

Relating to the Efficient Use of Aeronautical Mobile (R) Worldwide Frequencies [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

that the World Administrative Radio Conference on the Aeronautical Mobile (R) Service, Geneva, 1978, allotted a limited number of worldwide frequencies for exercising control over regularity of flight and for safety of aircraft;

recommends to administrations

1. that the number of HF aeronautical stations on the worldwide channels should be kept to a minimum consistent with the economic and efficient use of frequencies;

2. that, if possible and practicable, one such station should serve aircraft operating agencies in adjacent countries and there should not normally be more than one station per country.

[1] Replaces Recommendation No. **Aer2** – 2 of the World Administrative Radio Conference on the Aeronautical Mobile (R) Service, Geneva, 1978.

ZJ

RECOMMENDATION No. 402

Relating to Cooperation in the Efficient Use of Worldwide Frequencies in the Aeronautical Mobile (R) Service [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) the need to make the most efficient use of worldwide frequencies in the aeronautical mobile (R) service;

b) that a Plan has been adopted for the allotment by areas of worldwide frequencies in the aeronautical mobile (R) service;

c) the desirability of coordination between administrations within the areas to which the Allotment Plan applies;

d) the right of an administration to select and notify to the IFRB for recording in the Master International Frequency Register any frequency assignment in a channel allotted to the area in which its country is located;

e) the role played by the IFRB in regulatory procedures under Article **12** of the Radio Regulations;

f) the role played by the International Civil Aviation Organization (ICAO) in the field of international aeronautical operations;

invites

1. administrations within a worldwide allotment area, as they consider it appropriate, and the ICAO, to seek the advice of the IFRB in determining the best choice of frequencies from a technical viewpoint in order to make the most efficient use of aeronautical mobile (R) worldwide frequencies;

2. administrations within a worldwide allotment area, as they consider it appropriate, to coordinate mutually the use of these frequencies from the viewpoint of aeronautical operations and, in this connection, to bear in mind the benefit that could be gained by obtaining the advice of ICAO in this process;

3. the IFRB to assist any administration or group of administrations in a worldwide allotment area wishing to coordinate their requirements for worldwide frequencies and to continue its cooperation with ICAO for this purpose;

requests the Secretary-General

to bring this Recommendation to the attention of the International Civil Aviation Organization.

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[1] Replaces Recommendation No. **Aer2** – 3 of the World Administrative Radio Conference on the Aeronautical Mobile (R) Service, Geneva, 1978.

V

RECOMMENDATION No. 403

Relating to the Development of Techniques which Would Help to Reduce Congestion in the High Frequency Bands Allocated to the Aeronautical Mobile (R) Service [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that several administrations are actively engaged in the development of communication techniques the wider use of which, in the aeronautical mobile (R) service, would help to reduce congestion in the high frequency bands allocated to that service; such developments include the use of higher frequencies with remotely controlled stations, directional antennae, space radiocommunication techniques and automatic data transmission;

b) that knowledge of these developments would be useful to other administrations in considering the application of these techniques to their aeronautical mobile (R) communication services;

c) that the International Civil Aviation Organization (ICAO) is actively engaged in coordinating the operational development of such techniques;

recommends

administrations engaged in the development of techniques which would help to reduce congestion in the HF bands to inform the IFRB periodically of the progress achieved;

instructs the IFRB

to circulate periodically the information so obtained to administrations and to the ICAO.

ZX

RECOMMENDATION No. 404

Relating to the Use of the Band 136 - 137 MHz by the Aeronautical Mobile (R) Service [2]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the Table of Frequency Allocations as modified by this Conference includes allocations to the aeronautical mobile (R) service on a primary basis, and to the fixed and mobile, except aeronautical mobile (R), services on a secondary basis, in the band 136 - 137 MHz;

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[1] Replaces Recommendation No. **Aer2** – 1 of the World Administrative Radio Conference on the Aeronautical Mobile (R) Service, Geneva, 1978.

[2] Replaces Recommendation No. **Spa** 7 of the Extraordinary Administrative Radio Conference, Geneva, 1963.

b) that provision is also made for allocations to the space operation service (space-to-Earth), the meteorological-satellite service (space-to-Earth) and the space research service (space-to-Earth) on a primary basis up to 1 January 1990, and thereafter on a secondary basis, and that the aeronautical mobile (R) service can be introduced on a primary basis only after 1 January 1990, in conformity with internationally approved plans for that service;

c) that on that date the aeronautical mobile (R) service may well be subject to interference harmful to the safety of air navigation and that it is of the utmost importance to protect this service against interference from stations in the fixed service, the mobile except aeronautical mobile (R) service, the space research service (space-to-Earth), the space operation service (space-to-Earth) and the meteorological-satellite service (space-to-Earth);

recommends

1. that administrations of all Regions operating, or intending to operate, stations in the fixed service, the mobile except aeronautical mobile (R) service, the space operation service (space-to-Earth), the meteorological-satellite service (space-to-Earth) and the space research service (space-to-Earth) in the band 136 - 137 MHz after 1 January 1990 take all possible steps to give the required protection to the aeronautical mobile (R) service and to cease operation of stations of the other services to which the band is allocated on a secondary basis as and when the stations of the aeronautical mobile (R) service come into operation;

2. that administrations notify the International Frequency Registration Board (IFRB) of their plans to bring into operation the aeronautical stations of the aeronautical mobile (R) service;

3. that administrations notify the IFRB, preferably in advance of the date when stations authorized to operate on a secondary basis will cease operations, referring specifically to this Recommendation;

and requests the IFRB

to publish this information every six months as from 1 January 1985.

Y

RECOMMENDATION No. 405

Relating to a Study of the Utilization of the Aeronautical Mobile-Satellite (R) Service [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) the continuing efforts of the aeronautical mobile (R) service to obtain improvements in communications commensurate with increases in the number, size and speed of aircraft;

b) the efforts of the International Telecommunication Union to reduce congestion in the bands between 4 MHz and 27.5 MHz;

c) the need to effect conservation in the use of the high frequency spectrum;

[1] Replaces Recommendation No. Aer 2 of the Extraordinary Administrative Radio Conference, Geneva, 1966.

noting

a) that successful application of space radiocommunication techniques to the communication needs of international civil aviation offers the possibility of substantially improving aeronautical mobile (R) service communications while avoiding congestion in the bands between 4 MHz and 27.5 MHz;

b) that tests have demonstrated the capability of effecting communication between aircraft and aeronautical stations by relay via a geostationary satellite;

c) that the state of the art in space radiocommunication techniques is rapidly advancing;

d) that the technical potential is such that space radiocommunication techniques could provide a capability for accommodating, in the near future, many of the aeronautical mobile (R) service communication requirements over major world air routes on all but the polar routes;

e) that before administrations will be willing to undertake a programme to implement space radiocommunication techniques they will need a comprehensive investigation into those techniques and a statement of the measures that need to be taken;

f) that the ability of administrations to undertake such a programme is intimately linked to the economic implications involved;

g) that the International Civil Aviation Organization (ICAO) is the international body primarily concerned with the establishment of standards and recommended practices governing radiocommunication systems and techniques used to support international civil aviation;

h) that the CCIR has studied the application of space radiocommunication techniques in the aeronautical mobile (R) service but these studies may need revision;

invites the CCIR

to continue its studies on the application of space radiocommunication techniques in the aeronautical mobile (R) service in cooperation with ICAO;

recommends

1. that administrations, bearing in mind the economic and operational aspects involved, should take account of the possibilities of satisfying the communication needs of the aeronautical mobile (R) service on major world air routes by the use of space radiocommunication techniques;

2. that administrations should give further study to these questions taking as a basis for their consideration the factors listed in the Annex hereto.

ANNEX TO RECOMMENDATION No. 405

(*Note:* The list of factors which follows is not claimed to be exhaustive nor is it intended to limit consideration of any other aspects pertinent to the use of space radiocommunication techniques by the aeronautical mobile (R) service.)

1. The technical parameters of the satellite and aircraft receiving and transmitting system, including:

   a) required received (carrier) power at the satellite (from the aircraft)

   b) required received (carrier) power at the aircraft (from the satellite)

   c) satellite effective radiated power (per channel)

   d) aircraft effective radiated power (per channel)

   e) type of emission which should be employed

   f) bandwidth of each channel

g) channelling arrangement

h) polarization requirements

i) need for omni-directional aircraft antennae; sea/ground reflections

j) required separation between transmit and receive frequencies at the satellite

k) requirement on the satellite for capability of aircraft to use each channel independently (multiple/random access)

l) requirements in relation to system reliability

m) other considerations.

2. The number and location of satellites, including:

a) in regard to provision of service, disposition of air routes and the number of flights over each air route

b) group of air routes which may be served via a common satellite

c) number of satellites needed to provide service to each group of air routes

d) location of each of the satellites

e) number of channels needed aboard each satellite

f) other considerations.

3. Technical performance requirements for aeronautical earth stations, including:

a) suitable transmitting and receiving antennae characteristics: gain, beamwidth, siting, etc.

b) minimum effective radiated power

c) development and utilization of low-cost earth station (terminal) facilities

d) need for a selective calling system (SELCAL)

e) other considerations.

4. Method of operation and location of aeronautical earth stations, including:

a) the method of operation: where multiple frequencies are provided on the satellite, the need, or absence of need, to continue the present practice of providing route separation by use of different/separate frequencies; that is:

- should all (R) frequencies on the satellite be available at all earth stations; *or*
- should the communication load be distributed between available frequencies, each of which is limited to a specific geographic area; *or*
- some other arrangement

b) as appropriate, to list (by frequency) each of the earth stations which should employ each satellite frequency

c) other considerations.

5. Provisions for handling aeronautical point-to-point communications:

a) technical system performance parameters of the terminal equipment

b) technical system performance parameters of the satellite equipment

c) requirement on the satellite for capability of terminals to have independent access to relay channels through the satellite (multiple/random access)

d) frequency bands to be used

e) required separation between transmit and receive frequencies on the satellite

f) development and utilization of low-cost terminal facilities

g) the entity or entities which should provide, own or operate the satellites and terminal facilities as well as the extent to which aeronautical point-to-point communications should be handled

h) other considerations.

6. Estimated costs of a satellite system to include: land-based, airborne and satellite-borne facilities.

7. Operational aspects of a satellite system, including all facilities mentioned in paragraph 6 above, particularly:

a) the environment within which the system must work

b) the evolutionary process of introducing the system.

YF

RECOMMENDATION No. 406

Relating to the Revision of the Frequency Allotment Plan for the Aeronautical Mobile (OR) Service [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the Frequency Allotment Plans for the aeronautical mobile service prepared by the International Administrative Aeronautical Radio Conference (IAARC), Geneva, 1949, and adopted by the Extraordinary Administrative Radio Conference, Geneva, 1951, were substantially adopted by the Administrative Radio Conference, Geneva, 1959, and included in the Radio Regulations;

b) that the Extraordinary Administrative Radio Conference responsible for revising the Allotment Plan for the Aeronautical Mobile (R) Service, Geneva, 1966, decided to include this Plan as Appendix **27**;

c) that the World Administrative Radio Conference on the Aeronautical Mobile (R) Service, Geneva, 1978, adopted technical principles for establishing the Frequency Allotment Plan for the Aeronautical Mobile (R) Service, in particular the use of the 3 kHz separation between carrier frequencies for certain classes of emission and powers which can be directly applied in establishing the allotment plan for the aeronautical mobile (OR) service;

d) that the Allotment Plan for the Aeronautical Mobile (OR) Service has not been revised since the Administrative Radio Conference, Geneva, 1959;

e) that, since 1959, many countries have become Members of ITU;

f) that this Conference has adopted Resolution **403** relating to the use of the frequencies 3 023 kHz and 5 680 kHz common to the aeronautical mobile (R) and (OR) services;

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[1] Replaces Resolution No. **13** of the Administrative Radio Conference, Geneva, 1959, and Recommendation No. **Aer2** – 8 of the World Administrative Radio Conference on the Aeronautical Mobile (R) Service, Geneva, 1978.

g) that the International Telecommunication Convention, (Malaga-Torremolinos, 1973) in Article 7, No. 44, provides that a world administrative radio conference may partially revise the Radio Regulations;

is of the opinion

that the Plan for the Aeronautical Mobile (OR) Service contained in Appendix **26** to the Radio Regulations will have to be reviewed and that administrations should urgently study the communication requirements of their national and international air operations in order to establish when, in the best interests of aviation, such a review shall be carried out;

recommends

that the Administrative Council should convene a world administrative radio conference to review Appendix **26** and the related provisions of the Radio Regulations.

XB

RECOMMENDATION No. 407

Relating to No.27/123
of Appendix 27 Aer2 – Sub-Area 5B [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) the discussions which took place on the proposed modification of No. 27/123 of Appendix **27 Aer2**;

b) that the interested administrations have agreed to continue consultations between themselves on the matter of Sub-Area 5B;

recommends

1. that consultations should be carried out by the interested administrations in order to arrive at a satisfactory solution;

2. that the administrations concerned report on the results of their consultations to the next competent world administrative radio conference in order to enable that conference to arrive at a definitive solution on No. 27/123.

[1] Replaces Recommendation No. **Aer2** – 7 of the World Administrative Radio Conference on the Aeronautical Mobile (R) Service, Geneva, 1978.

H

RECOMMENDATION No. 500

Relating to the Preparation of the Technical Information Necessary for the World Administrative Radio Conference for HF Broadcasting

The World Administrative Radio Conference, Geneva, 1979,

considering

that a considerable amount of technical information relating to HF broadcasting is already available in CCIR texts, nevertheless there are some subjects needing further studies and, in some cases, adaptation to make them suitable for use in planning;

noting in particular

a) that the CCIR has recommended a method of estimating field strength and transmission loss in Band 7 (HF) based on the best information available, and is developing a new computerized method which incorporates the special elements considered necessary for improving the accuracy of these estimations at medium and long distances and in equatorial and high latitude regions;

b) that there is insufficient information relating to propagation predictions in many equatorial areas;

c) that the use of directional antennae is essential for efficient use of the spectrum in Band 7 (HF) and that radiation in directions other than the desired direction may cause interference;

requests the CCIR

1. to complete its work in respect of the improved computerized prediction method (Recommendation 533) paying special attention to medium and long distance transequatorial paths and to high latitude regions;

2. to adapt the present method of propagation predictions in order to make it more suitable for use in planning broadcasting and to recommend suitable values of solar indices;

3. to make Recommendations where these do not already exist concerning appropriate protection ratios to be adopted, including cases where the unwanted signals are of a different type, and the appropriate values of channel spacing; and the minimum signal-to-noise ratio required for satisfactory reception;

4. to ensure that the CCIR Book of Antenna Diagrams includes all principal types of antennae in common use;

5. to prepare and present data on the practical performance of directional antennae in a form suitable for planning purposes;

invites administrations

to participate actively in these studies and to provide the CCIR with available data on the questions listed above and especially on field strength observations in Band 7 (HF) for comparison with predicted values.

I

RECOMMENDATION No. 501

Relating to Studies for the Introduction of Single-Sideband (SSB) Techniques in the HF Bands Allocated to the Broadcasting Service, in Preparation for the World Administrative Radio Conference for HF Broadcasting

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the use of SSB leads to a more efficient utilization of the spectrum;

b) that the introduction of these techniques for broadcasting in the HF bands creates both technical and economic problems;

requests the CCIR

to accelerate the appropriate studies regarding the introduction of SSB techniques for broadcasting in the HF bands and the specification of a suitable SSB system, paying particular attention to the economic problems associated with transmitters and receivers;

invites administrations

to provide the CCIR with information on this subject.

ZP

RECOMMENDATION No. 502

Relating to Specifications of Low-Cost Television Receivers

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the potential of the television medium as an instrument for national development is being increasingly recognized;

b) that direct reception of television broadcasting from satellites is demonstrated to be technically feasible and economically attractive;

c) that, within the limited resources available to them, many developing countries might wish to exploit the television medium to the maximum advantage;

d) that the availability of an efficient, low-cost television receiver would be an important factor in the setting up and expansion of television broadcast services in developing countries;

e) that the need for both monochrome and colour receiver sets can be foreseen for receiving terrestrial and satellite transmissions;

f) that the CCIR is already studying specifications for low-cost monochrome television receivers for home and community use, as well as the characteristics of a receiving system for a broadcasting-satellite service (television);

g) that general agreement on the performance of suitable television receivers would considerably assist TV receiver manufacturers to produce suitable receivers of the desired types and adequate standards of performance at the lowest possible cost;

h) that the design and production of television receivers has to take account of rapid advances in technology as well as obsolescence;

invites the CCIR

1. to draw up performance specifications for one or more types of low-cost television receivers as in *considering e)* above, suitable for quantity production;

2. to collaborate as necessary, with other international bodies working in this field, with a view to finalizing the specifications for such low-cost sets in the shortest possible time;

requests the Secretary-General

to send the results of this work, together with suggestions as to the action to be taken, to the Secretary-General of the United Nations, in particular for the attention of the Director of the United Nations Industrial Development Organization, as well as to the Director-General of UNESCO for information.

ZS

RECOMMENDATION No. 503

Relating to HF Broadcasting

The World Administrative Radio Conference, Geneva, 1979,

considering

a) the congestion of the HF broadcasting bands;

b) the extent of adjacent channel interference;

noting

the possibility of improving the situation by implementing pertinent CCIR Recommendations;

recommends that administrations

1. pay special attention to the provisions for "out-of-band spectrum" contained in CCIR Recommendation 328-4;

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

invites administrations

to take advantage, to the maximum extent practicable, of synchronized frequency transmitter operation, taking into account CCIR Recommendation 205-1;

invites the CCIR

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

YC

RECOMMENDATION No. 504

Relating to the Preparation of a Broadcasting Plan in the Band 1 605 - 1 705 kHz in Region 2

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the band 1 605 - 1 705 kHz has been allocated to the broadcasting service in Region 2 by this Conference;

b) that in accordance with No. **480**, the use of this band by the broadcasting service is subject to a broadcasting plan to be established by a regional administrative radio conference;

c) that, in the Table of Frequency Allocations in Region 2, the band 1 605 - 1 625 kHz is allocated exclusively to the broadcasting service, and the band 1 625 - 1 705 kHz is allocated to the broadcasting service on a shared basis with other services;

recognizing

the provisions of No. **346** of the Radio Regulations;

recommends

1. that a regional administrative radio conference be convened to establish a plan for the broadcasting service in the band 1 605 - 1 705 kHz in Region 2;

2. that such a conference be convened in 1985 at the latest;

3. that the exact dates of coming into force of the plan be decided at the said regional administrative radio conference. Nevertheless, the use of these bands by the broadcasting service should not commence before 1 July 1987 for the frequencies between 1 625 kHz and 1 665 kHz, and 1 July 1990 for the frequencies between 1 665 kHz and 1 705 kHz;

invites

1. the Administrative Council to take the necessary steps for the convening of a Region 2 administrative radio conference to plan the use of the band 1 605 - 1 705 kHz by the broadcasting service;

2. the CCIR to perform the necessary technical studies relating to the Region 2 broadcasting conference bearing in mind the allocations to other services in Regions 1 and 3 and the need for sharing criteria;

encourages administrations of Region 2

to promote the development and availability of receivers suitable for the broadcast band extended to 1 705 kHz.

ZL

RECOMMENDATION No. 505

Relating to Studies of Propagation at 12 GHz for the Broadcasting-Satellite Service [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the technical criteria adopted at the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977, which drew up an assignment plan for the broadcasting-satellite service in Regions 1 and 3, included a maximum margin of 2 dB, at an elevation angle of 45°, for rainfall attenuation;

b) that some studies have indicated that the necessary margin in the Tropical Zone could be higher than 2 dB;

c) that the Special Preparatory Meeting of the CCIR (Geneva, 1978) recognized that, for the application of the technique suggested in CCIR Report 721, the available rain rate data are likely to underestimate the attenuation which will occur in tropical regions;

d) that there is also a need for ample information on the various other propagation factors to be taken into account in the planning of the broadcasting-satellite service;

recommends that the CCIR

1. expedite the studies of the effects of rainfall attenuation in the tropical regions and specify, as early as possible, the attenuation values necessary for ensuring a satisfactory broadcasting-satellite service;

2. continue the studies of the effects of precipitation attenuation at low angles of incidence in all rain-climatic zones;

3. continue the studies of the effects of sand and dust storms;

4. examine the relationship between the propagation characteristics for 99% of the worst month and those for the year;

5. examine, for emissions using circular polarization, the level of the depolarized component relative to the polarized component;

requests that the Director of the CCIR

bring such values of rainfall attenuation as may be specified to the notice of all administrations.

[1] Replaces Recommendation No. Sat – 3 of the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977.

ZC

RECOMMENDATION No. 506

Relating to the Harmonics of the Fundamental Frequency of Broadcasting-Satellite Stations [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the frequency band 23.6 - 24 GHz is allocated to the radio astronomy service on a primary basis;

b) that the second harmonic of the fundamental frequency of broadcasting-satellite stations operating within the band 11.8 - 12 GHz may seriously disturb radio astronomy observations in the band 23.6 - 24 GHz if effective steps are not taken to reduce the level of this harmonic;

in view of

the provisions of No. **306** of the Radio Regulations;

recommends

that, when defining the characteristics of their space stations operating in the broadcasting-satellite service, particularly within the band 11.8 - 12 GHz, administrations take all necessary steps to reduce the level of the second harmonic below the values indicated in the relevant CCIR Recommendations.

ZF

RECOMMENDATION No. 507

Relating to Spurious Emissions in the Broadcasting-Satellite Service [2]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that space stations in the broadcasting-satellite service operating at high power levels are likely to cause interference to services in adjacent and in harmonically related frequency bands due to spurious emissions;

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[1] Replaces Recommendation No. **Sat** – 2 of the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977.

[2] Replaces Recommendation No. **Sat** – 6 of the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977.

b) that, in the planning of the broadcasting-satellite service, account must be taken of the need to reduce to acceptable levels the interference to:

- the services operating in the bands adjacent to the lower and upper edges of the 12 GHz band allocated to the broadcasting service;
- the radio astronomy service which has an allocation at 23.6 - 24 GHz;

c) the studies being pursued by the CCIR under the appropriate Study Programme;

invites the CCIR

to continue, as a matter of urgency, the study of the technical and operational aspects of spurious emissions from space stations in the broadcasting-satellite service.

ZD

RECOMMENDATION No. 508

Relating to Transmitting Antennae for the Broadcasting-Satellite Service [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) the need for ample information on transmitting antennae for the planning of the broadcasting-satellite service;

b) the studies being pursued by the CCIR under the appropriate Questions and Study Programmes;

invites the CCIR

1. to continue the study of reference patterns for the co-polar and cross-polar components of transmitting antennae for the broadcasting-satellite service for both individual and community reception, and in particular the practicable means of achieving various degrees of improved side-lobe suppression and the economic implication thereof;

2. to continue the study of the technical characteristics designed to achieve a pointing accuracy for transmitting antennae such that:

- the deviation of the antenna beam from its nominal direction of pointing shall not exceed 0.1°;
- the angle of rotation of the transmitting beam about its axis shall not exceed ± 2°.

[1] Replaces Recommendation No. **Sat** – 4 of the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977.

YZ

RECOMMENDATION No. 600

Relating to the Use of the Frequency Band 9 300 - 9 500 MHz [1, 2]

The World Administrative Radio Conference, Geneva, 1979,

noting

a) that there are in existence two main classes of airborne weather radar, using the bands 5 350 - 5 460 MHz and 9 300 - 9 500 MHz respectively;

b) that there is in existence a very considerable number of shipborne radars, the majority in the band 9 300 - 9 500 MHz;

c) that there are also ground-based radars of the maritime and aeronautical radionavigation services and of the meteorogical service in the band 9 300 - 9 500 MHz;

d) that the use of the band 5 350 - 5 460 MHz allocated on a primary basis exclusively to the aeronautical radionavigation service is limited to airborne radars;

e) that shipborne radars share only with land-based radars the use of the bands 2 900 - 3 100 MHz and 5 470 - 5 650 MHz which are allocated on a primary basis solely to the radionavigation service and the maritime radionavigation service, respectively;

f) that it has proved necessary to allocate the band 9 300 - 9 500 MHz on an equality basis to both the aeronautical and the maritime radionavigation services;

g) that in the band 9 300 - 9 320 MHz, the use of shipborne radars is no longer permitted with a view to facilitating development of fixed-frequency radar beacons in this band;

h) that in the band 9 320 - 9 500 MHz in the maritime radionavigation service, the use of fixed-frequency radar beacons on land or at sea is not permitted;

considering

a) that it is of the utmost importance to ensure that harmful interference is not caused to radionavigation services providing a safety of life function;

b) that the operating conditions of a safety of life service should be uniform throughout the world;

c) that an uncoordinated increase in the use of the band 9 300 - 9 500 MHz can only lead to an increase in the probability of harmful interference between the aeronautical and maritime radionavigation services;

recommends

1. that administrations, the International Civil Aviation Organization (ICAO) and the Inter-Governmental Maritime Consultative Organization (IMCO) study this matter at the earliest opportunity; and especially

2. that they determine whether, and to what extent, interference which is recognized to be technically possible between the two services becomes harmful in operational circumstances;

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[1] See also Resolution **600**.

[2] Replaces Recommendation No. **12** of the Administrative Radio Conference, Geneva, 1959.

3. that they investigate, in the event that it is established that there may be harmful interference between the two services, the possibility of reducing such interference by technical, operational and procedural means, including the principle that new equipments should always be of the highest technical standard;

invites

administrations, the International Civil Aviation Organization and the Inter-Governmental Maritime Consultative Organization to communicate to the Union the results of their studies together with their views and proposals resulting therefrom.

YK

RECOMMENDATION No. 601

Concerning the Matter of Providing a Suitable Frequency Allocation for a Collision Avoidance System in the Aeronautical Radionavigation Service [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) the ever-increasing speed of modern aircraft and taking into account that an adequate collision avoidance system providing a means of enhancing safety in the air has not been developed but is urgently required;

b) that if such a collision avoidance system, when developed, requires the use of radio frequencies, it should be accommodated in one of the frequency bands allocated to the aeronautical radionavigation service;

c) that it is impossible to forecast at this time whether the bands allocated to the aeronautical radionavigation service will prove to be suitable for such a system;

recommends

that administrations and the International Civil Aviation Organization (ICAO) pay especial attention to the progress being made in developing a suitable collision avoidance system, noting that if radio frequencies are required, and if the bands allocated to the aeronautical radionavigation service are not suitable for such a system, international consideration of this matter will be necessary.

[1] Replaces Recommendation No. **20** of the Administrative Radio Conference, Geneva, 1959.

XD

RECOMMENDATION No. 602

Relating to Maritime Radiobeacons

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that maritime radiobeacons in the European Maritime Area are governed by the "Regional Arrangement for Maritime Radiobeacons in the European Area of Region 1, Paris, 1951", hereinafter referred to as the "Paris Arrangement, 1951";

b) that the Paris Arrangement, 1951, is largely based on the geographical disposition of radiobeacons existing before 1939 and on the state of maritime navigation at that time;

c) that since the conclusion of the Paris Arrangement, 1951, the geographical disposition and certain characteristics of maritime radiobeacons have been changed by bilateral or multilateral agreements, particularly to take into account the changes which have occured in the habits and rules of maritime navigation in the area in question;

d) that the Paris Arrangement, 1951, is based essentially on the use of aural direction-finding receivers;

e) that for several years there has been a considerable increase in the number of automatic direction-finding receivers which depend solely on the radiobeacon carrier and which do not use modulation to separate radiobeacons operating on the same frequency;

f) that it is therefore desirable that, following a review of the technical operating characteristics of maritime radiobeacons to be conducted by a competent world administrative radio conference, a specialized conference should be convened under Article 32 of the International Telecommunication Convention (Malaga-Torremolinos, 1973), in order to revise the Paris Arrangement, 1951;

g) that this review should concern both the extent of the area covered by the Arrangement and the technical characteristics and field-strength value of the service range, the adjacent channel separation, the modulation depth and any other provision deemed necessary;

noting

- the existence in Chapter **VIII** of the Radio Regulations, (Article **35**, Section IV, paragraph C "Maritime Radiobeacons"), of provisions **2860** to **2866**;
- the existence in Chapter **III**, (Article **8**, Section 1), of No. **405** which defines the European Maritime Area;

recommends

1. that the administrations concerned examine the question of the limits of the area covered by the Arrangement and submit relevant proposals to the next competent world administrative radio conference;

2. that all administrations and the CCIR study as a matter of urgency the technical characteristics of maritime radiobeacons and submit their conclusions to the next competent world administrative radio conference;

invites the Administrative Council

to take the necessary steps to arrange for questions relating to maritime radiobeacon stations, which are of interest to the mobile services, to be included in the agenda of the next world administrative radio conference for the mobile services, in such a way that the conference could envisage a modification of the relevant articles of the Radio Regulations;

requests the Secretary-General

to communicate this Recommendation to Inter-Governmental Maritime Consultative Organization (IMCO) and International Association of Lighthouse Authorities (IALA).

ZH

RECOMMENDATION No. 603

Relating to Technical Provisions for Maritime Radiobeacons in the African Area [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

the need to facilitate the planning for new maritime radiobeacons in the band 283.5 - 315 kHz particularly in the neighbouring localities of the European and African Areas;

recommends

that the administrations of the countries of the African area adopt provisions similar to those contained in the "Regional Arrangement for Maritime Radiobeacons in the European Area of Region 1", Paris, 1951.

XI

RECOMMENDATION No. 604

Relating to the Future Use and Characteristics of Emergency Position-Indicating Radiobeacons [2]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that according to Article **39** of the Radio Regulations the essential purpose of the emergency position-indicating radiobeacon (EPIRB) signals is to facilitate determining the position of survivors in search and rescue operations;

b) that Inter-Governmental Maritime Consultative Organization (IMCO) Resolution A.91 (IV) provides that EPIRBs are intended primarily for homing; however, they may be used for alerting in appropriate circumstances;

c) that IMCO Resolution A.217 (VII) recommends that administrations require all ships and vessels, where appropriate, to be equipped with EPIRBs operating on the most appropriate radio frequencies;

d) that IMCO is considering compulsory fitting of EPIRBs on all passenger ships and cargo ships of 300 tons gross tonnage and upwards;

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[1] Replaces Recommendation No. **21** of the Administrative Radio Conference, Geneva, 1959.

[2] Replaces Recommendation No. **Mar2** – 12 of the World Maritime Administrative Radio Conference, Geneva, 1974.

considering in particular

that IMCO has stressed in Resolution A.279 (VIII) the urgent need for unification of the characteristics of EPIRBs;

recognizing

a) that there are provisions in the Radio Regulations for EPIRBs on the frequencies 2 182 kHz, 121.5 MHz and 243 MHz;

b) that the World Administrative Radio Conference for Space Telecommunications, Geneva, 1971, in the case of EPIRBs, reserved the frequency band 406 - 406.1 MHz for the mobile-satellite service solely for the use and development of low-power EPIRB systems using space techniques;

c) that IMCO Resolution A.91 (IV) recommends the carrier frequency 2 182 kHz as the first choice operational frequency for EPIRBs;

d) that the technical characteristics of EPIRBs operating on the carrier frequency 2 182 kHz are contained in Article **39** and Appendix **37** of the Radio Regulations and CCIR Recommendation 439;

e) that Resolution **601** resolved that EPIRBs operating on the frequencies 121.5 MHz and 243 MHz shall comply with the relevant CCIR Recommendations and the standards and recommended practices of the International Civil Aviation Organization (ICAO);

recommends

1. that, in view of their inter-relationship in this matter, IMCO and ICAO be invited, as a matter of urgency, to review their concepts for EPIRBs in regard to search and rescue operations and the safety of life at sea;

2. that the CCIR be requested, when IMCO and ICAO have stated their concepts, to study technical and operating questions for EPIRBs, including the preferred frequencies, in particular relation to the prime requirement for homing and the technical characteristics of such beacons with regard to the requirement for unification.

XA

RECOMMENDATION No. 605

Relating to Technical Characteristics and Frequencies for Shipborne Transponders [1, 2]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that merchant ships of the world are increasing in size and speed;

b) that every year a significant number of collisions occur involving merchant vessels with resultant loss of life and property and that collisions have a high potential for endangering the natural environment;

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[1] A receiver-transmitter which emits a signal automatically when it receives the proper interrogation.

[2] Replaces Recommendation No. **Mar2** – 14 of the World Maritime Administrative Radio Conference, Geneva, 1974.

c) that there is a need to correlate radar targets with vessels making VHF radiotelephone transmissions;

d) that studies and experiments have shown that shipborne transponders can enhance and supplement radar target images as compared with normal radar images;

e) that current studies and experimentation relating to shipborne transponders indicate that development of equipment can be expected in the near future which will offer adequate radar image enhancement and target identification and, possibly, data transfer capabilities;

f) that such shipborne transponders may require protection from interference;

g) that the selection of technical characteristics for these transponders should be coordinated with other users of the radio frequency spectrum whose operations might be affected;

requests the CCIR

to recommend, after consultation with appropriate international organizations, the most suitable order of frequencies and bandwidth required for this purpose, and the technical parameters to be met by such devices taking into account electromagnetic compatibility with other services having allocations in the same frequency band;

invites

administrations and the Inter-Governmental Maritime Consultative Organization (IMCO) to continue to evaluate the operational benefits which could result from the widespread use of transponders on ships and to consider whether there would be advantage in adopting an internationally approved system for future implementation;

recommends

that, pending further technical and operational developments and evaluation, administrations be prepared at the next competent world administrative radio conference to make the necessary provisions for the use of such devices.

ZT

RECOMMENDATION No. 620

Relating to the Meteorological Aids Service in the Band 27.5 - 28 MHz [1]

The World Administrative Radio Conference, Geneva, 1979,

recommends

that administrations whose stations in the meteorological aids service operate in the band 27.5 - 28 MHz should arrange, as soon as possible, for the transfer of these operations to higher frequency bands which are allocated to the meteorological aids service;

invites the World Meteorological Organization

to study this question and to proceed with such coordination among administrations as appears necessary.

[1] Replaces Recommendation No. 33 of the Administrative Radio Conference, Geneva, 1959.

XC RECOMMENDATION No. 700

Relating to the Utilization and Sharing of Frequency Bands Allocated to Space Radiocommunications [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

Resolutions 1721 (XVI) part D and 1802 (XVII) part IV para. 3 of the United Nations General Assembly 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 expressed in the report prepared for Members and Associate Members of the UNESCO in accordance with the decision of the 12th session of its General Conference in December 1962;

recognizing

that all Members of the International Telecommunication Union have an interest in and right to an equitable and rational use of frequency bands allocated to space radiocommunications;

recommends to the Members of the Union

that the utilization and exploitation of the frequency bands allocated to space radiocommunications be subject to international agreements based on principles of justice and equity permitting the use and sharing of these bands in the mutual interest of all nations.

YY RECOMMENDATION No. 701

Relating to the Use of the Frequency Band 1 330 - 1 400 MHz by the Radio Astronomy Service

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the observations of radiations from neutral hydrogen atoms within the band 1 330 - 1 400 MHz are of prime importance in understanding the structure of distant galaxies, and subsequently of the evolution of the universe;

[1] Replaces Recommendation No. **Spa** 10 of the Extraordinary Administration Radio Conference, Geneva, 1963.

b) that recognition has been given to the radio astronomy service in the band 1 330 - 1 400 MHz within the Table of Frequency Allocations;

c) that the radio astronomy service is devoted to the reception of extremely low-level electromagnetic radiations of extraterrestrial origin, and needs therefore to be protected from radiations of man-made origin, to the maximum degree practicable;

d) that the ability of the radio astronomy service to share frequency bands with other radio services is limited;

recommends

1. that administrations, when preparing for the next competent administrative radio conference, should consider the question of making provisions in the 1 330 - 1 400 MHz band to provide the radio astronomy service with increased protection from services that radiate;

2. that administrations when drawing up frequency assignment plans should bear in mind radio astronomy observations being carried out in the band 1 330 - 1 400 MHz.

YU

RECOMMENDATION No. 702

Relating to the Use of the Frequency Bands 1 400 - 1 727 MHz, 101 - 120 GHz and 197 - 220 GHz for Search for Intentional Emissions of Extraterrestrial Origin

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that it is of special importance to mankind to determine the existence of extraterrestrial civilizations;

b) that there is a maximum probability of detecting radiation from extraterrestrial civilizations in the frequency bands 1 400 - 1 727 MHz, 101 - 120 GHz and 197 - 220 GHz because these frequency bands contain the spectral lines of basic physical interest and are related to the universal phenomena;

c) that in the bands mentioned in *considering b)* there is a probability of detecting radiation, with a maximum signal-to-noise ratio, from extraterrestrial civilizations;

d) that recognition has been given to the search for extraterrestrial civilizations in the bands 1 400 - 1 727 MHz, 101 - 120 GHz and 197 - 220 GHz within the Table of Frequency Allocations;

e) that the attempt to recognize signals from extraterrestrial civilizations requires the reception of extremely low-level radiations and that such reception needs to be protected, to the maximum degree practicable, from radiations of man-made origin;

f) that, for receiving radiations from extraterrestrial civilizations, the possibilities of sharing frequency bands with active radio service are limited;

recommends

that, when preparing for the next competent administrative radio conference, administrations should consider the desirability of making provisions so as to provide a controlled environment suitable for the reception of extraterrestrial radiations in the 1 400 - 1 727 MHz, 101 - 120 GHz and 197 - 220 GHz bands;

invites

organizations concerned with the search for extraterrestrial civilizations to take into account the following:

1. the relevant provisions of the Radio Regulations;

2. the need to maintain close coordination with their national administrations on matters of frequency usage;

3. the need to select, for observations, locations for receiving facilities that are as remote as possible from sources of radio interference;

4. the appropriate Reports and Recommendations of the CCIR.

ZU

RECOMMENDATION No. 703

Relating to the Need to Cease Operations of the Fixed and Mobile Services in the Bands 149.9 - 150.05 MHz and 399.9 - 400.05 MHz Allocated to the Radionavigation-Satellite Service [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the frequency bands 149.9 - 150.05 MHz and 399.9 - 400.05 MHz have been allocated to the radionavigation-satellite service on an exclusive worldwide 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 CCIR 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 CCIR 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 paragraph 1 above, administrations be urged to cease operation of their fixed and mobile stations in the bands 149.9 - 150.05 MHz and 399.9 - 400.05 MHz as soon as practicable, with particular emphasis on those stations located in coastal areas.

[1] Replaces Recommendation No. Spa 8 of the Extraordinary Administrative Radio Conference, Geneva, 1963.

ZV

RECOMMENDATION No. 704

Relating to the Compatibility Between the Broadcasting Service in the Band 100 - 108 MHz and the Aeronautical Radionavigation Service in the Band 108 - 117.975 MHz

The World Administrative Radio Conference, Geneva, 1979,

considering

a) the increasing use of VHF broadcasting, with relatively high powers, in the band 100 - 108 MHz;

b) that the band 108 - 117.975 MHz is used on a worldwide basis for internationally agreed aeronautical radionavigation systems;

c) that the portion of the band 108 - 111.975 MHz is used for Instrument Landing Systems (ILS) which are used by aircraft for automatic landing purposes;

d) that the band 108 - 117.975 MHz is used for the VHF Omnidirectional Radio Range (VOR) system;

e) that interference problems between the broadcasting and aeronautical radionavigation services have occurred in parts of Regions 2 and 3;

recognizing

a) that intermodulation products from combinations of broadcasting transmissions may fall in the aeronautical radionavigation band 108 - 117.975 MHz;

b) that intermodulation products may be formed in the radionavigation receiver;

c) that high power broadcasting transmissions could result in blocking of the radionavigation receivers;

d) that the emissions of the aeronautical radionavigation service may cause interference to the broadcasting service;

requests the CCIR

1. to study, as a matter of urgency, the problem of interference between the two services;

2. to establish suitable criteria for the protection of both services;

invites

the International Civil Aviation Organization (ICAO) and other appropriate international organizations to study the problem, as a matter of urgency, and communicate the results of these studies to the CCIR;

recommends

that administrations, in assigning frequencies to the broadcasting service in the band 100 - 108 MHz and to the aeronautical radionavigation service in the band 108 - 117.975 MHz, should take note of the potential interference problems that could exist and apply appropriate protective measures.

T RECOMMENDATION No. 705

Relating to the Criteria to Be Applied for Frequency Sharing Between the Broadcasting-Satellite Service and the Terrestrial Broadcasting Service in the Band 620 - 790 MHz [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that, within the band 620 - 790 MHz, assignments may be made to television stations using frequency modulation in the broadcasting-satellite service;

b) that it is necessary to have a power flux-density limit which will provide adequate protection to the terrestrial broadcasting service;

taking into account

a) that the conclusions of the Special Joint Meeting of the CCIR (Geneva, 1971), indicated that the following power flux-density limits are necessary to protect the terrestrial broadcasting service:

$$\begin{array}{ll} -121 \text{ dB}(W/m^2) & \delta \leqslant 20^\circ \\ -121 + 0.4\,(\delta - 20) \text{ dB}(W/m^2) & 20^\circ < \delta \leqslant 60^\circ \\ -105 \text{ dB}(W/m^2) & 60^\circ < \delta \leqslant 90^\circ \end{array}$$

where δ is the angle of arrival above the horizontal plane (in degrees);

b) that additional tests carried out by one administration after the Special Joint Meeting of the CCIR, indicated that the following more conservative power flux-density limits may be necessary:

$$\begin{array}{ll} -130 \text{ dB}(W/m^2) & \delta \leqslant 20^\circ \\ -130 + 0.4\,(\delta - 20) \text{ dB}(W/m^2) & 20^\circ < \delta \leqslant 60^\circ \\ -114 \text{ dB}(W/m^2) & 60^\circ < \delta \leqslant 90^\circ \end{array}$$

where δ is the angle of arrival above the horizontal plane (in degrees);

c) that CCIR Report 631-1 gives the results of studies carried out up to 1978;

d) that additional information is required on the protection ratio for interference from an FM television signal into a VSB television signal for both the 625- and 525-line systems;

e) that with terrestrial television receiving systems using current technology, the minimum field strength to be protected may in some cases be less than the values included in CCIR Recommendation 417-2;

f) that account may have to be taken of ground reflections;

g) that energy dispersal techniques may reduce the required protection ratio and should be used if shown to be effective;

[1] Replaces Recommendation No. **Spa2** – 10 of the World Administrative Radio Conference for Space Telecommunications, Geneva, 1971.

recommends

1. that in view of the absence of sufficient information on tests under operational conditions and in order to provide sharing criteria, on a provisional basis, the maximum power flux-density produced at the surface of the Earth within the service area of a terrestrial broadcasting station (see CCIR Recommendation 417-2), by a space station in the broadcasting-satellite service in the band 620 - 790 MHz should not exceed:

$$\begin{array}{ll} -129 \text{ dB}(W/m^2) & \delta \leqslant 20^\circ \\ -129 + 0.4\,(\delta - 20) \text{ dB}(W/m^2) & 20^\circ < \delta \leqslant 60^\circ \\ -113 \text{ dB}(W/m^2) & 60^\circ < \delta \leqslant 90^\circ \end{array}$$

where δ is the angle of arrival above the horizontal plane (in degrees);

2. that these limits be not exceeded on the territory of a country except with the agreement of its administration;

3. that the transmission of unmodulated carriers should be avoided;

4. that the CCIR urgently study the sharing criteria to be applied to frequency sharing between the broadcasting-satellite service, and the terrestrial broadcasting service in the band 620 - 790 MHz and prepare a Recommendation on power flux-densities to be used in lieu of the above provisional limits;

5. that in its studies the CCIR consider in particular the following aspects:

5.1 the required protection ratio for both 525- and 625-line systems for interference from an FM television signal into a VSB television signal;

5.2 the minimum field strength to be protected for the terrestrial television service taking into account the current state of the art;

5.3 the effect of ground reflections;

5.4 the number of broadcasting satellites that may be visible from a terrestrial broadcasting receiver;

5.5 the effect of polarization discrimination;

5.6 the effect of antenna directivity;

6. that in its studies the CCIR should consider the advantages of energy dispersal techniques in the broadcasting-satellite service (television).

YW

RECOMMENDATION No. 706

Relating to Frequency Sharing by the Earth Exploration-Satellite Service (Passive Sensors) and the Space Research Service (Passive Sensors) with the Fixed, Mobile Except Aeronautical Mobile, and Fixed-Satellite Services in the Band 18.6 - 18.8 GHz

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that allocations have been made in various frequency bands to the earth exploration-satellite and space research services for the operation of passive sensors on board spacecraft;

b) that the allocations made in the band 18.6 - 18.8 GHz are shared with the fixed, mobile except aeronautical mobile and fixed-satellite services;

c) that application of the sharing criteria contained in CCIR Report 694 could restrict the development of the fixed, mobile except aeronautical mobile and fixed-satellite services;

invites the CCIR

1. to review the content of CCIR Report 694 by all the Study Groups concerned (particularly Study Groups 4 and 9);

2. to continue the studies which gave rise to Report 609-1, taking into account the requirements of the earth exploration-satellite service (passive sensors) and the space research service (passive sensors);

3. to study the minimum restrictions which could be applied to the fixed, mobile except aeronautical mobile, and fixed-satellite (space-to-Earth) services in order to ensure the satisfactory operation of passive sensors;

4. to study the maximum restrictions which might be tolerated by the fixed, mobile except aeronautical mobile, and fixed-satellite services without jeopardizing the operation of all the services likely to use this frequency band.

YV RECOMMENDATION No. 707

Relating to the Use of the Frequency Band 32 - 33 GHz Shared Between the Inter-Satellite Service and the Radionavigation Service

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the band 32 - 33 GHz is allocated to the inter-satellite service and the radionavigation service;

b) that there are safety aspects associated with the radionavigation service;

c) that footnote **893** has been incorporated into Article **8**;

recommends

that, as a matter of urgency, studies should be made of the sharing criteria for these two services in the frequency band listed above;

requests the CCIR

to carry out these studies;

recommends further

that a future competent world administrative radio conference review the CCIR Recommendations with a view to the inclusion of such sharing criteria in Article **28**.

ZQ

RECOMMENDATION No. 708

Relating to Frequency Bands Shared Between Space Radiocommunication Services and Between Space and Terrestrial Radiocommunication Services [1]

The World Administrative Radio Conference, Geneva, 1979,

recognizing

a) the value to the Conference of the material contained in the Report of the CCIR Special Preparatory Meeting (Geneva, 1978);

b) that further studies on a wide range of problems dealing with space radiocommunications form the subject of CCIR Questions and Study Programmes approved by the XIVth Plenary Assembly;

considering however

a) that certain CCIR Recommendations, listed below, call for further work and study:

Recommendation 355-2 "Frequency sharing between systems in the fixed-satellite service and terrestrial radio services in the same frequency bands"

Recommendation 465-1 "Reference earth station radiation pattern for use in coordination and interference assessment in the frequency range from 2 to about 10 GHz"

Recommendation 466-2 "Maximum permissible level of interference in a telephone channel of a geostationary satellite network in the fixed-satellite service employing frequency modulation with frequency-division multiplex, caused by other networks of this service";

b) that the deliberations of this Conference, particularly in relation to the provisions of Articles **27**, **28** and **29**, and of other relevant Articles of the Radio Regulations, have shown that further information is required to reply to the following current Questions and Study Programmes of the CCIR:

Question 1-2/4 "Antennae for systems in the fixed-satellite service"

Question 2-3/4 "Technical characteristics of systems in the fixed-satellite service"

Study Programme 2A-3/4 "Feasibility of frequency sharing between systems in the fixed-satellite service and terrestrial services"

Study Programme 2J-2/4 "Technical factors influencing the efficiency of use of the geostationary-satellite orbit by radiocommunication satellite networks sharing frequency bands allocated to the fixed-satellite service";

[1] Replaces Recommendation No. **Spa2** – 15 of the World Administrative Radio Conference for Space Telecommunications, Geneva, 1971.

c) that it would be useful to have specific numerical values of power flux-density from space stations of the broadcasting-satellite service which would permit differentiation between "individual reception" and "community reception" in the broadcasting-satellite service;

d) that frequency sharing between the radionavigation service and the fixed-satellite service (Earth-to-space) has been adopted in the frequency band 14.0 - 14.3 GHz;

recommends

1. that administrations, recognized private operating agencies, and other participants in the work of the CCIR, consider as a matter of priority, the submission of contributions on these subjects, so that draft Recommendations on them can be prepared at the meetings of the relevant Study Groups for consideration by the Plenary Assembly of the CCIR;

2. that the CCIR study or, as appropriate, continue to study:

2.1 the reference antenna patterns for earth station antennae, which may be appropriate for setting minimum standards of performance with a view to recommending specific patterns for this purpose, in order to improve utilization of the bands shared between the fixed-satellite service and terrestrial radiocommunication services, and of the bands shared by space radiocommunication services, and to improve the utilization of the geostationary-satellite orbit;

2.2 the reference antenna patterns for satellite antennae, which may be appropriate for setting minimum standards of performance, particularly outside the main beam, in order to improve the utilization of the geostationary-satellite orbit and to increase the possibilities for frequency re-use;

2.3 the reference cross-polarization antenna patterns which may be appropriate for setting minimum standards of performance and, in this connection, further study:

2.3.1 the portions of the spectrum within which linear-orthogonal or circular-orthogonal polarizations might be most appropriate;

2.3.2 the relative desirability, taking into account technical and orbit utilization factors, of using orthogonal polarizations within a single satellite as against with two satellites;

2.4 the necessary limitation of spurious emissions and the frequency tolerances to be observed in both the terrestrial and space radiocommunication services insofar as they may affect sharing of frequency bands;

2.5 the criteria of permissible interference for the various space radiocommunication services and terrestrial radiocommunication services sharing the frequency bands allocated by this Conference, in order to permit the determination of:

2.5.1 the coordination distance and the probability of interference between stations within that distance;

2.5.2 the necessary limits of power flux-density set up at the Earth's surface by space stations;

2.6 the maximum permissible level of interference into a geostationary-satellite link from any other single interfering geostationary-satellite network and from the aggregate of all other geostationary-satellite networks, particularly in the case of:

2.6.1 frequency-modulated telephony signals;

2.6.2 frequency-modulated television signals;

2.6.3 digitally-modulated signals;

and the most appropriate manner in which permissible interference should be specified in these and other cases;

2.7 the interference criteria applicable to frequency sharing between non-geostationary-satellite networks and geostationary-satellite networks;

2.8 the possibility of establishing a technical criterion for expressing the efficiency of use of the geostationary-satellite orbit;

2.9 the possibility of improving and simplifying the method of determining the coordination area as described in Appendix **28** to the Radio Regulations;

2.10 the conditions for frequency sharing in those bands allocated to the broadcasting-satellite service by this Conference with a view to issuing appropriate Recommendations as soon as possible so that administrations and the IFRB shall have the necessary technical data required to carry out examination procedures, in particular regarding Articles **11**, **12** and **13** of the Radio Regulations and those in Resolution **33**;

2.11 the power flux-densities required for individual and community reception in the broadcasting-satellite service, with a view to specifying numerical values which will differentiate between these types of reception;

2.12 the criteria for frequency sharing between the radionavigation service and the fixed-satellite service (Earth-to-space) in the frequency band 14.0 - 14.3 GHz.

O

RECOMMENDATION No. 709

Relating to Sharing Frequency Bands Between the Aeronautical Mobile Service and the Inter-Satellite Service

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the bands 54.25 - 58.2 GHz, 59 - 64 GHz, 116 - 134 GHz, 170 - 182 GHz and 185 - 190 GHz are allocated to the inter-satellite service and the mobile service;

b) that the foregoing bands are located in parts of the radio frequency spectrum close to peaks of atmospheric absorption;

c) that, nevertheless, the atmospheric absorption alone may not prevent harmful interference to stations of the inter-satellite service from stations on aircraft flying at high altitude;

d) that for this reason, aircraft stations in the aeronautical mobile service may be operated subject to not causing harmful interference to the inter-satellite service (see No. **909**, the text of which is reproduced below) [1];

recommends

that, as a matter of urgency, studies should be made of the sharing criteria for these two services in the frequency bands listed above;

requests the CCIR

to carry out these studies;

recommends further

that a future competent world administrative radio conference review the allocations of these bands, taking into account the results of the CCIR studies.

---

[1] **909** In the bands 54.25 - 58.2 GHz, 59 - 64 GHz, 116 - 134 GHz, 170 - 182 GHz and 185 - 190 GHz, stations in the aeronautical mobile service may be operated subject to not causing harmful interference to the inter-satellite service (see No. **435**).

N

RECOMMENDATION No. 710

Relating to the Use of Airborne Radars in the Frequency Bands Shared Between the Inter-Satellite Service and the Radiolocation Service

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that the bands 59 - 64 GHz and 126 - 134 GHz are allocated to the inter-satellite service and the radiolocation service;

b) that the foregoing bands are located in parts of the radio frequency spectrum close to peaks of atmospheric absorption;

c) that, nevertheless, the atmospheric absorption alone may not prevent harmful interference to stations of the inter-satellite service from radars operating on aircraft flying at high altitude;

d) that for this reason airborne radars in the radiolocation service may be operated subject to not causing harmful interference to the inter-satellite service (see No. **910**, the text of which is reproduced below) [1];

recommends

that, as a matter of urgency, studies should be made of the sharing criteria for these two services in the frequency bands listed above;

requests the CCIR

to carry out these studies;

recommends further

that a future competent world administrative radio conference review the allocations of these bands, taking into account the results of the CCIR studies.

Z

RECOMMENDATION No. 711

Relating to the Coordination of Earth Stations [2]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that under the terms of Article **11** of the Radio Regulations, frequency assignments to earth stations in certain bands shared with equal rights between terrestrial radiocommunication services and space radiocommunication services must be coordinated with a view to preventing mutual harmful interference;

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[1] **910** In the bands 59 - 64 GHz and 126 - 134 GHz, airborne radars in the radiolocation service may be operated subject to not causing harmful interference to the inter-satellite service (see No. **435**).

[2] Replaces Recommendation No. **Spa2** – 9 of the World Administrative Radio Conference for Space Telecommunications, Geneva, 1971.

b) that the calculation method described in Appendix **28** to the Radio Regulations applies solely to frequencies in the 1 - 40 GHz range;

c) that Tables I and II of this Appendix do not show numerical values for all the necessary parameters of certain space radiocommunication services and terrestrial radiocommunication services sharing frequency bands with equal rights;

invites the CCIR

to continue as a matter of urgency its study:

- of data not included in Tables I and II of Appendix **28** to the Radio Regulations, relating to the space radiocommunication services and terrestrial radiocommunication services sharing frequency bands with equal rights;
- of the formulation of calculation methods for determining the coordination area of earth stations at frequencies below 1 GHz and above 40 GHz;

recommends to administrations

that until the next competent world administrative radio conference they should use:

- any CCIR Recommendation, if applicable, for the values missing from Tables I and II of Appendix **28** to the Radio Regulations;
- the methods of determining the coordination area for frequencies below 1 GHz and above 40 GHz, which may be the subject of a CCIR Recommendation.

U

RECOMMENDATION No. 712

Relating to the Interdependence of Receiver Design, Channel Grouping and Sharing Criteria in the Broadcasting-Satellite Service [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that receiver design, channel grouping and sharing criteria are interrelated and have a considerable influence on the development of a plan for the broadcasting-satellite service;

b) that, so far, insufficient attention may have been given to these factors and to their influence on the implementation of such a plan;

invites the CCIR

to study the problem of the interdependence of receiver design, channel grouping and sharing criteria, together with the effects of these factors on the operation of the broadcasting-satellite service.

[1] Replaces Recommendation No. **Sat** – 7 of the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977.

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TABLES OF CONVERSION

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3004	7	3048	SUP	3104	123	3146	153
3005	6	3049	38	3105	124	3147	156
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3006A	133	3051	40	3107	49	3148	155
3007	111	3052	83	3108	54	3149	154
3008	115	3053	82	3109	51	3150	SUP
3009	SUP	3054	44	3110	SUP	3151	SUP
3010	112	3055	42	3111	39	3152	SUP
3011	113	3056	46	3112	41	3153	SUP
3012	114	3057	85	3113	45	3153C	148
3013	117	3058	84	3114	43	3153D	149
3014	118	3059	94	3115	27	3154	168
3015	122	3060	95	3115A	66	3155	167
3016	116	3061	96	3116	35	3156	166
3019	119	3062	97	3116A	79	3157	165
3019.1	119.1	3063	98	3117	31		
3020	120	3064	99	3118	73		
3020.1	120.1	3065	100	3118A	71		
3021	121	3066	101	3119	29		
3021.1	121.1	3067	102	3120	14		
3017	125	3068	13	3120A	15		
3018	126	3069	86	3121	55		
3018A	128	3070	87	3122	91		
3021A	134	3071	88	3123	169		
3021B	135	3072	26	3124	170		
3021C	136	3073	67	3125	171		
3021D	137	3074	65	3125.1	SUP		
3022	158	3075	62	3126	172		
3023	159	3076	34	3127	173		
3023A	16	3077	76	3127A	174		
3023B	17	3077A	77	3127B	175		
3023C	18	3078	78	3128	176		
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3024	9	3081	72	3131	179		
3025	8	3082	74	3132	180		
3025.1	SUP	3083	93	3133	181		
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3029	56	3087	28	3133D	138		
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3031	58	3089	69	3134	142		
3032	61	3090	104	3135	143		
3033	60	3091	105	3136	144		
3034	59	3092	106	3137	145		
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3415	392	3455	SUP	3492D	490	3518	541
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3416	393	3456	451	3492F	493	3518B	543
3417	394	3457	SUP	3493	497	3519	SUP
3418	395	3458	452	3493B	498	3520	SUP
3419	396	3459	450	3493C	496	3521	SUP
3420	397	3460	SUP	3493D	499	3521A	544
3421	398	3461	454	3494	500	3521B	545
3422	399	3461A	453	3495	501	3522	546
3422A	400	3462	SUP	3495A	502	3523	SUP
	401	3463	456	3496	503	3524	SUP
	402	3464	455	3496A	506	3525	SUP
	403	3465	SUP	3496AA	521	3526	SUP
3423	404	3466	457	3497	SUP	3527	SUP
3424	405	3466A	458	3497A	504	3528	SUP
3425	406	3467	SUP	3498	SUP	3529	SUP
	407	3468	SUP	3498A	507	3530	SUP
	408	3469	460	3499	495	3531	610
	409	3469A	462	3499A	510	3531	650
	410	3469AB	461	3499B	508	3531A	547
3426	411	3469AC	463	3500	505	3531A	832
3426A	412	3470	SUP	3500B	509	3531B	880
3427	413	3471	465	3500C	512	3531C	612
3428	414	3472	459	3500D	511	3531L	795
	415	3472A	464	3501	SUP	3531P	887
	416	3472B	466	3501A	513	3531X	568
	417	3473	467	3502	SUP	3532	SUP
	418	3474	SUP	3502A	514	3533	548
3429	419	3475	468	3502AA	515	3534	SUP
3430	420	3476	SUP	3502B	516	3535	SUP
	421	3477	SUP	3502C	517	3536	549
	422	3478	475	3503	518	3537	SUP
	423	3478A	476	3504	519	3538	551
3431	424	3479	470	3505	520	3538A	550
3432	425	3479A	469	3506	SUP	3538AB	552
3433	426	3479B	471	3507	522	3539	555
3434	427	3480	472	3508	523	3540	SUP
3435	428	3480A	474	3508A	524	3541	553
3436	429	3481	473	3508B	525	3541A	554
3437	430	3482	SUP	3508BA	526	3541B	559
3438	431	3483	478	3508C	527	3541C	561
3439	432	3484	477	3508D	528	3542	556
3440	433	3484A	479	3509	SUP	3543	SUP
3441	434	3484B	480	3509A	529	3543A	558
3442	435	3484C	481	3510	SUP	3543B	557
3443	436	3485	SUP	3510A	531	3543C	562
3444	437	3485A	483	3510B	530	3544	SUP
3445	438	3485B	485	3511	SUP	3545	560
3446	439	3486	SUP	3511A	532	3546	565
3446A	440	3487	SUP	3512	SUP	3547	SUP
3447	441	3488	488	3512A	533	3548	564
3448	442	3489	SUP	3513	534	3548A	575
3449	443	3490	484	3514	535	3548B	563
3450	SUP	3490A	487	3515	SUP	3548C	578
3451	444	3490B	486	3515A	536	3549	SUP
3451A	445	3491	SUP	3515B	537	3550	571
3452	448	3492	489	3515C	538	3550A	567
3452A	446	3492A	494	3516	SUP	3551	569

3552	570	3595	613	3636	653	3666	SUP
3553	566	3596	614	3637	672	3667	SUP
3553A	579	3596A	615	3638	669	3668	677
3554	SUP	3596C	618	3639	670	3669	SUP
3554A	574	3597	SUP	3640	651	3669A	705
3554B	573	3598	SUP	3640A	652	3669B	706
3555	SUP	3598A	607	3640B	660	3670	707
3556	SUP	3599	SUP	3640C	666	3670A	708
3557	SUP	3600	SUP	3640D	667	3670B	700
3558	572	3601	623	3641	668	3671	709
3558X	576	3601A	621	3642	663	3672	SUP
3559	SUP	3601AA	622	3643	658	3673	712
3560	577	3601B	620	3644	664	3673A	710
3561	SUP	3601C	619	3645	662	3674	711
3562	SUP	3602	SUP	3645A	661	3675	SUP
3563	581	3602A	624	3646	656	3675A	713
3564	582	3602B	625	3646A	655	3675B	714
3565	SUP	3603	SUP	3646B	657	3676	717
3566	580	3604	SUP	3646C	659	3677	716
3566A	586	3605	SUP	3646D	654	3678	715
3567	SUP	3606	SUP	3646E	665	3679	719
3568	SUP	3607	SUP	3647	SUP	3679A	722
3569	SUP	3608	629	3648	SUP	3679B	721
3569A	583	3608A	628	3649	SUP	3680	718
3570	SUP	3608AA	627	3650	671	3680A	751
3570A	584	3608AB	626	3650A	676	3680C	723
3570B	587	3608AC	630	3650B	675	3680D	720
3570C	589	3608B	632	3650BA	674	3681	SUP
3570CA	590	3608C	633	3650C	673	3682	SUP
3570D	588	3608CA	634	3650E	678	3683	724
3571	585	3609	SUP	3650F	679	3683A	725
3572	593	3610	SUP	3651	686	3684	SUP
3572A	592	3611	SUP	3651A	680	3685	730
3573	591	3612	635	3652	SUP	3686	732
3574	594	3612A	636	3653	681	3687	733
3575	SUP	3612B	637	3653A	682	3688	727
3576	SUP	3612C	638	3653AA	683	3689	SUP
3577	602	3612CA	639	3653B	685	3690	SUP
3578	SUP	3612D	631	3654	684	3691	729
3578A	595	3613	SUP	3655	SUP	3692	SUP
3579	SUP	3614	640	3656	SUP	3693	SUP
3580	599	3615	SUP	3656.1	SUP	3694	735
3581	SUP	3616	SUP	3657	687	3695	744
3582	SUP	3617	SUP	3657A	691	3695A	728
3583	598	3618	641	3657B	692	3695B	731
3584	596	3619	642	3658	690	3695C	726
3584A	597	3620	SUP	3659	694	3695E	734
3584AA	606	3621	643	3659B	704	3696	739
3585	SUP	3622	644	3660	689	3696A	738
3585A	601	3623	SUP	3660A	688	3696B	736
3586	600	3624	645	3661	693	3697	SUP
3587	604	3625	SUP	3661A	696	3698	741
3588	SUP	3626	646	3662	SUP	3698A	737
3589	603	3627	647	3662A	695	3698B	740
3589A	605	3628	SUP	3662B	697	3699	SUP
3590	SUP	3629	SUP	3662BA	698	3700	742
3591	608	3630	SUP	3662C	701	3701	SUP
3591A	611	3631	SUP	3662CA	699	3701B	743
3592	SUP	3632	SUP	3662DA	702	3702	SUP
3593	609	3633	SUP	3662E	703	3703	745
3594	SUP	3633A	648	3663	SUP	3704	746
3594A	616	3634	649	3664	SUP	3705	SUP
3594B	617	3635	SUP	3665	SUP	3706	SUP

3707	SUP
3707A	747
3707B	748
3707C	750
3707D	749
3708	SUP
3709	752
3710	SUP
3711	SUP
3712	SUP
3713	753
3714	755
3715	757
3716	756
3717	758
3717A	767
3717B	768
3718	763
3719	769
3720	SUP
3721	764
3722	762
3723	761
3723A	766
3723B	754
3724	759
3725	765
3726	760
3727	770
3727A	771
3728	773
3729	774
3730	775
3730A	772
3731	777
3732	776
3732A	778
3733	780
3734	SUP
3735	SUP
3735A	782
3736	785
3736A	784
3737	SUP
3738	781
3739	779
3739A	783
3740	SUP
3741	786
3742	SUP
3742A	787
3743	791
3743A	789
3744	790
3745	SUP
3746	SUP
3746A	793
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3748	788
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3749	SUP
3750	797
3750AA	796
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3752	SUP
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3754	800
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3755A	801
3756	807
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3758A	805
3759	SUP
3760	806
3761	898
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3764	SUP
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3766	SUP
3767	SUP
3768	SUP
3769	818
3770	SUP
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3774A	823
3775	824
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3778	826
3779	828
3780	829
3780A	830
3781	SUP
3782	SUP
3783	SUP
3783B	831
3784	834
3784A	835
3784B	833
3785	838
3785A	847
3785B	845
3785H	840
3786	SUP
3787	839
3787A	836
3787B	841
3787C	842
3787D	844
3787E	843
3787F	846
3787G	837
3788	848
3788A	850
3789	849
3790	SUP
3791	851
3792	SUP
3793	852
3793A	853
3793B	858
3794	894
3794B	859
3794D	854
3794F	866
3794FA	867
3794G	868
3794H	869
3795	856
3795B	860
3795C	857
3795D	861
3796	SUP
3796A	863
3797	862
3798	855
3799	865
3799A	870
3799B	897
3799C	864
3800	883
3800A	871
3800B	872
3800M	873
3801	SUP
3801A	874
3801B	875
3801BA	876
3801C	878
3801D	879
3802	877
3802A	888
3803	881
3804	SUP
3805	SUP
3805A	882
3806	SUP
3806A	889
3807	891
3807A	893
3807C	899
3807D	892
3807E	890
3808	896
3808A	895
3809	SUP
3810	SUP
3811	SUP
3812	SUP
3813	885
3813A	884
3814	886
3814A	900
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3814C	903
3814CA	902
3814D	904
3814E	905
3815	907
3815A	906
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3815BA	909
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3815D	911
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AK	36	BL	406	CM	505		
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AP	506	BQ	101	CR	641		
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AS	304	BT	404	CU	30		
AT	309	BU	501	CV	8		
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[1] Not used.

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[1)] Not used.

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ANALYTICAL INDEX

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ANALYTICAL INDEX

RESOLUTIONS AND RECOMMENDATIONS

This Analytical Index consists of two parts :

PART A - RESOLUTIONS and

PART B - RECOMMENDATIONS.

Each part contains two sections :

Section I - a list of the Resolutions/Recommendations in numerical order together with the corresponding subjects (key words) used in Section II. The subjects (main) in capital letters denote those under which the explanatory texts of the Resolutions/Recommendations are found. The subjects in small letters denote those under which there is a cross-reference to the main subject(s).

Section II - a grouping of the Resolutions/Recommendations under specific subjects (key words) in alphabetical order.

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RESOLUTIONS

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2.	GEOSTATIONARY-SATELLITE ORBIT SPACE SERVICES International Telecommunication Union (IFRB) Master International Frequency Register (MIFR)
3.	GEOSTATIONARY-SATELLITE ORBIT Administrative Conferences International Telecommunication Union (Administrative Council, CCIR, IFRB)
4.	GEOSTATIONARY-SATELLITE ORBIT Administrative Conferences International Telecommunication Union (Administrative Conferences, IFRB) Master International Frequency Register (MIFR) Radio Regulations
5.	PROPAGATION TECHNICAL COOPERATION International Organizations (APTU, PATU, URTNA) International Telecommunication Union (Administrative Conferences, Administrative Council, CCIR, Secretary-General)
6.	RADIO REGULATIONS Frequency Management International Telecommunication Union (IFRB, Secretary-General)
7.	FREQUENCY MANAGEMENT TECHNICAL COOPERATION Administrative Conferences International Telecommunication Union (Administrative Council, CCIR, IFRB, Plenipotentiary Conference, Secretary-General)
8.	ALLOCATION OF FREQUENCY BANDS FIXED SERVICE International Telecommunication Union (IFRB) Mobile Services Radio Regulations
9.	FIXED SERVICE International Telecommunication Union (IFRB) Master International Frequency Register (MIFR)
10.	RELIEF OPERATIONS/ORGANIZATIONS Allocation of frequency bands
11.	SHIPS/AIRCRAFT NOT PARTIES TO AN ARMED CONFLICT International Organizations (ICAO, IMCO) International Telecommunication Union (Administrative Conferences, Administrative Council, Secretary-General) Aeronautical Mobile (R) Service Maritime Mobile Service

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17.	ADMINISTRATIVE CONFERENCES International Telecommunication Union (Administrative Council, CCIR, IFRB, Secretary-General)
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34.	BROADCASTING-SATELLITE SERVICE International Telecommunication Union (CCIR) Radio Regulations Space Services Terrestrial Services
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62.	IONOSPHERE
63.	EQUIPMENT Administrative Conferences International Organizations (CISPR, IEC) International Telecommunication Union (Administrative Conferences, CCIR)
64.	EQUIPMENT International Telecommunication Union (CCIR, CCITT)
65.	RADIO REGULATIONS International Telecommunication Union (CCIR, Secretary-General)
66.	DIVISION OF THE WORLD ALLOCATION OF FREQUENCY BANDS International Telecommunication Union (Administrative Council, CCIR)
67.	EQUIPMENT
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304.	MARITIME MOBILE SERVICE Channel Arrangements International Telecommunication Union (Administrative Conferences)
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310.	MARITIME MOBILE SERVICE Administrative Conferences International Organizations (IMCO) International Telecommunication Union (Administrative Conferences, CCIR, Secretary-General)
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404.	AERONAUTICAL MOBILE (R) SERVICE International Telecommunication Union (Administrative Conferences, IFRB, Secretary-General) Master International Frequency Register (MIFR)
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*previously A3A and A3J

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