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FINAL ACTS

OF THE

EXTRAORDINARY ADMINISTRATIVE

RADIO CONFERENCE

FOR THE PREPARATION OF A REVISED ALLOTMENT

PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE

GENEVA, 1966

Published by the
International Telecommunication Union
GENEVA

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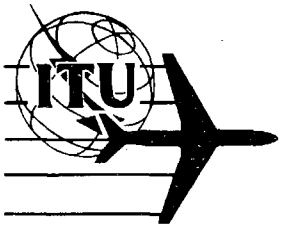

Published by the
International Telecommunication Union
GENEVA

ABBREVIATIONS

The following abbreviations are used in Annex 1 to indicate the nature of amendments made in the partial revision of the Radio Regulations.

Symbol	Meaning
MOD	Modification
SUP	Suppression
ADD	Addition
NOC	No change

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

(MOD)

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PARTIAL REVISION OF THE RADIO REGULATIONS, GENEVA, 1959

In pursuance of Resolution No. 13 of the Ordinary Administrative Radio Conference, Geneva, 1959, the Administrative Council of the Union at its 18th Session (1963) adopted Resolution No. 525 proposing that an Extraordinary Administrative Radio Conference should be convened in order to review the provisions of Appendix 26 to the Radio Regulations relating to the Aeronautical Mobile (R) Service and the associated provisions of the Radio Regulations. The proposal having been accepted by a majority of the Members of the Union, the first session of the Extraordinary Administrative Radio Conference was held in Geneva from 27th January to 20th February 1964.

During its 20th Session (1965), the Administrative Council adopted Resolution No. 563 by which it decided, with the prior agreement of the majority of the Members of the Union, that the second session of the Extraordinary Administrative Radio Conference should be held in Geneva from 14th March 1966 for a period of 8 weeks, with the following agenda:

" On the basis of the decisions taken by the preparatory session of the Conference and the preparatory work undertaken by the I.F.R.B., to review and, to the extent considered necessary, revise the Frequency Allotment Plan for the Aeronautical Mobile (R) Service contained in Appendix 26 to the Radio Regulations, and the Radio Regulations associated therewith."

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

The revised provisions of the Radio Regulations, Geneva, 1959, shall form an integral part of the Radio Regulations which are annexed to the International Telecommunication Convention. These revised provisions shall come into force on and from the first of July, 1967, except for the Frequency Allotment Plan for the Aeronautical Mobile (R) Service contained in Appendix 27 which shall come into force on and from 0001 hours G.M.T. on the tenth of April, 1970. The provisions of the Radio Regulations, Geneva, 1959, which are cancelled, superseded or modified by these revised provisions shall be abrogated on the dates of coming into force of the respective revised provisions.

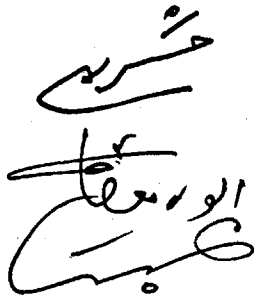
The delegates signing this revision of the Radio Regulations, Geneva, 1959, hereby declare that should an administration make reservations concerning the application of one or more of the revised provisions of the Radio Regulations, Geneva, 1959, no other administration shall be obliged to observe that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

In witness whereof the delegates of the Members of the Union represented at the Extraordinary Administrative Radio Conference, Geneva, 1966, have signed in the names of their respective countries this revision of the Radio Regulations, Geneva, 1959, in a single copy which will remain in the archives of the International Telecommunication Union and of which a certified copy will be delivered to each Member and Associate Member of the Union.

Members and Associate Members of the Union shall inform the Secretary-General of their approval of the revision of the Radio Regulations, Geneva, 1959, by the Extraordinary Administrative Radio Conference, Geneva, 1966. The Secretary-General will inform Members and Associate Members of the Union promptly regarding receipt of such notifications of approval.

Done at Geneva, 29th April, 1966.

POUR L'ALGERIE (REPUBLIQUE ALGERIENNE DEMOCRATIQUE ET POPULAIRE) :



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M. ABDELWAHAB

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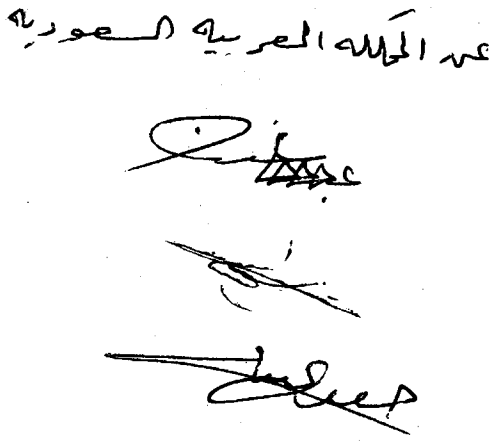

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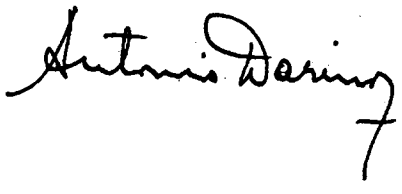

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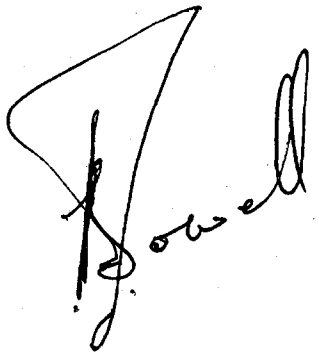

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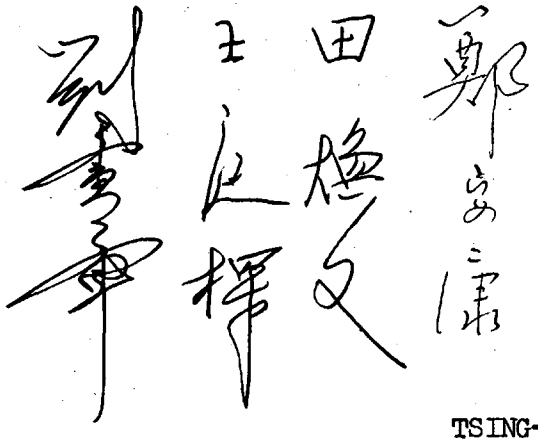

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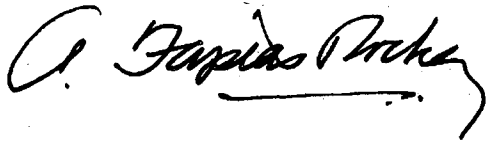

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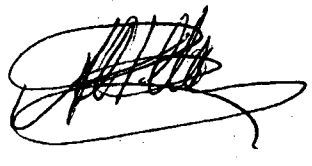

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M. ZAHRADNÍČEK

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POUR LA THAÏLANDE :

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T. RUBEN LEAL
N.V. ALCAZAR

POUR LA REPUBLIQUE SOCIALISTE FEDERATIVE DE YOUGOSLAVIE :

M. DAKIĆ

ANNEX 1

Partial Revision of Articles 7, 9 and 20 of the Radio Regulations and Appendix 1 thereto

ARTICLE 7

No. 431 shall be replaced by the following :

(MOD) **431** § 5. Frequencies in the bands allocated to the aeronautical mobile service between 2850 and 18 030 kc/s (see Article 5) shall be assigned in conformity with the provisions of Appendices 26 and 27 and the other relevant provisions of these Regulations.

ARTICLE 9

Nos. 540, 552-560, 589-593 and 635 shall be replaced by the following :

(MOD) **540** (5) The provisions of Nos. **537** to **539** do not apply to frequency assignments which are in conformity with the Allotment Plans appearing in Appendices 25, 26 and 27 to these Regulations; such frequency assignments shall be entered in the Master Register on receipt of the notice by the Board.

NOC **552** § 21. (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 2850 and 17 970 kc/s (see No.* **500**).

NOC **553** (2) The Board shall examine each notice covered by No. **552** to determine whether:

MOD **554** *a)* the frequency corresponds to one of the frequencies specified in Column 1 of the Allotment Plan for the Aeronautical Mobile (R) Service contained in Part II, Section II, Article 2 of Appendix 27, 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;

NOC **555** *b)* the limitations of use set forth in Column 3 of the Plan have been appropriately observed;

MOD **556** *c)* the notice is in conformity with the technical principles of the Plan set forth in Appendix 27;

MOD **557** *d)* the area of use is within the boundaries of the Areas as set forth in Column 2 of the Plan.

(MOD) **558** (3) In the case of a notice in conformity with the provisions of Nos. **554** to **556**, but not with those of No. **557**, the Board shall examine whether the protection specified in Appendix 27, 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, Part I, Section IIB, paragraph 4.

SUP **559**

(MOD) **560** (4) All frequency assignments referred to in No. **552** 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 **589** § 30. (1) *Frequency Bands allocated exclusively to the Aeronautical Mobile (R) Service between 2850 and 17 970 kc/s.*

MOD **590** (2) If the finding is favourable with respect to Nos. **554** to **557** the date of 29 April 1966 shall be entered in Column 2a..

MOD **591** (3) If the finding is favourable with respect to No. **558**, the date of 29 April 1966 shall be entered in Column 2b.

NOC **592** (4) In all other cases covered by No. **552**, the date of receipt of the notice by the Board shall be entered in Column 2b.

NOC **593** (5) For assignments to stations other than aeronautical stations in the Aeronautical Mobile (R) Service, the relevant date shall be entered in Column 2b (see Nos. **525, 526, 530** and **531**).

(MOD) **635** § 47. The provisions of Sections V, VI (excepting No. **619**) and VII of this Article shall not be applied to frequency assignments in conformity with the Allotment Plans contained in Appendices 25, 26 and 27 to these Regulations.

ARTICLE 20

No. 793 shall be replaced by the following :

NOC **Service Documents**

NOC **789** § 1. The following documents shall be published by the Secretary General.

NOC **790** (1) *List I. The International Frequency List.*

This list shall contain:

(MOD) **793** *c)* the allotments in the Allotment Plans included in Appendices 25, 26 and 27.

APPENDIX 1

Page 337, paragraph 3, shall be replaced by the following :

MOD 3. In any case where there are one or more reference frequencies in a particular transmission (e.g. in the case of (a) the frequency of the reduced carrier in an independent or single sideband emission, and (b) 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. For stations in the Aeronautical Mobile (R) Service using permitted emissions other than DSB, the reference frequency together with the appropriate centre frequency of the channel listed in the Allotment Plan in Appendix 27 shall be supplied as supplementary information.

NOC

APPENDICES TO THE RADIO REGULATIONS

Page 451 : The following shall be inserted after Appendix 26 :

ADD

APPENDIX 27

Frequency Allotment Plan for the Aeronautical Mobile (R) Service and Related Information

(This Appendix is published separately)

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ANNEX 2

The following new Appendix 27 (Geneva, 1966) shall be added to the Radio Regulations, Geneva, 1959, after Appendix 26 and shall replace the provisions of Appendix 26 relating to the Aeronautical Mobile (R) Service.

APPENDIX 27

to the Radio Regulations

Geneva, 1959

Frequency Allotment Plan for the Aeronautical Mobile (R) Service and Related Information

(See Article 7 of the Radio Regulations, Geneva, 1959)

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APPENDIX 27

to the Radio Regulations

Geneva, 1959

Frequency Allotment Plan for the Aeronautical Mobile (R) Service and Related Information

(See Article 7)

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PART I

General Provisions

Section I

Definitions

1. *Frequency Allotment Plan*

27/1 A plan which shows the frequencies to be used in particular areas without specifying the stations to which the frequencies are to be assigned.

27/2 2. The terms to express the different methods of frequency distribution as used in this Appendix have the following meanings:

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

27/3 3. *A Major World Air Route* is a long-distance route, made up of one or more segments, essentially international in character, extending through more than one country and requiring long-distance communication facilities.

27/4 4. *A Major World Air Route Area (MWARA)* is an area embracing a certain number of Major World Air Routes, which generally follow the same traffic pattern and are so related geographically that the same frequency families may logically be applied.

27/5 5. *Regional and Domestic Air Routes* are all those using the Aeronautical Mobile (R) Service not covered by the definition of a Major World Air Route in No. **27/3.**

27/6 6. *A Regional and Domestic Air Route Area (RDARA)* is an area embracing a certain number of the air routes defined in No. **27/5.**

27/7 7. *A VOLMET Allotment Area* is an area encompassing all points where an HF broadcast facility might be required to operate on a family of frequencies common to the area.

27/8 8. *A VOLMET Reception Area* is an area within which aircraft should be able to receive broadcasts from one or more stations in the associated VOLMET Allotment Area.

27/9 9. *A Family of Frequencies in the Aeronautical Mobile Service* is a group of frequencies selected from different aeronautical mobile bands and intended to permit communication at any time and over any distance between aircraft in flight and appropriate aeronautical stations.

Section II

Technical and Operational Principles used for the Establishment of the Plan of Allotment of Frequencies in the Aeronautical Mobile (R) Service

A. Determination of Channel Width

1. *Frequency Separation*

27/10 The frequency separations indicated in the following table are adequate to permit communications using the classes of emission referred to in Nos. **27/49-27/53.**

Band kc/s	Separation kc/s	Band kc/s	Separation kc/s
2850-3025	7	8815-8965	7
3400-3500	7	10 005-10 100	8
4650-4700	7	11 275-11 400	8
5450-5480 (Region 2)	7	13 260-13 360	8
5480-5680	7	17 900-17 970	8
6525-6685	7		

27/11 *a)* It is assumed that for radiotelephone emissions the modulating frequencies will be limited to 3000 cycles per second and that the occupied bandwidth of other authorized emissions will not exceed that of A3 emissions.

27/12 *b)* The use of channels, as derived from the above table (No. **27/10**), for the various classes of emissions will be subject to special arrangements by the administrations concerned in order to avoid the harmful interference which may result from the simultaneous use of the same channel for several classes of emission, no inherent priority being given to any particular class of emission.

27/13 *c)* It is recognized that two or more channels can be derived from each of the channels provided under this frequency separation plan.

27/14 *d)* The grouping of adjacent channels derived from the above table (No. **27/10**), to permit the satisfaction of particular requirements will be subject to special arrangements by the administrations concerned.

27/15 *e)* The arrangements contemplated in Nos. **27/12** and **27/14** should be made under the Articles of the International Telecommunication Convention and the Radio Regulations entitled " Special Agreements ".

2. *Frequencies to be Allotted*

27/16 The list of frequencies to be allotted in the bands allocated exclusively to the Aeronautical Mobile (R) Service, on the basis of the frequency separation provided for under No. **27/10**, will be found in the following table:

kc/s

2850-3025	4650-4700	6525-6685	10 005-10 100	17 900-17 970
2854 } 24 channels 2861 2868 2875 2882 2889 2896 2903 2910 2917 2924 2931 2938 2945 2952 2959 2966 2973 2980 2987 2994 3001 3008 3015 3023.5 (R) & (OR)	4654 } 7 channels 4661 4668 4675 4682 4689 4696	6526 ** } 23 channels 6533 6540 6547 6554 6561 6568 6575 6582 6589 6596 6603 6610 6617 6624 6631 6638 6645 6652 6659 6666 6673 6680	10 009 } 12 channels 10 017 10 025 10 033 10 041 10 049 10 057 10 065 10 073 10 081 10 089 10 093 **	17 909 } 8 channels 17 917 17 925 17 933 17 941 17 949 17 957 17 965
3400-3500	**5450-5480**	**8815-8965**	**11 275-11 400**	
3404 } 15 channels 3411 3418 3425 3432 3439 3446 3453 3460 3467 3474 3481 3488 3495 3499 *	*Region 2* 5454 } 4 channels 5461 5469 5477		11 279 } 15 channels 11 287 11 295 11 303 11 311 11 319 11 327 11 335 11 343 11 351 11 359 11 367 11 375 11 383 11 391	
	5480-5680		**13 260-13 360**	
	5484 } 28 channels 5491 5498 5505 5512 5519 5526 5533 5540 5547 5554 5561 5568 5575 5582 5589 5596 5603 5610 5617 5624 5631 5638 5645 5652 5659 5666 5673 5680 (R) & (OR)	8819 } 22 channels 8826 8833 8840 8847 8854 8861 8868 8875 8882 8889 8896 8903 8910 8917 8924 8931 8938 8945 8952 8959 8963 *	13 264 } 13 channels 13 272 13 280 13 288 13 296 13 304 13 312 13 320 13 328 13 336 13 344 13 352 13 356 **	

* Available for A1 emission only.

** Available for A1, A3A, A3H and A3J emissions only.

3. *Channels common to (R) and (OR) Services*

27/17 3.1 The channels common to the (R) and (OR) Services, centred at 3023.5 and 5680 kc/s are authorized for world-wide use as shown in Nos. **27/196** and **27/201**. Notwithstanding these provisions, the frequency 5680 kc/s may also be used at aeronautical stations for communication with aircraft stations when other frequencies of the aeronautical stations are either unavailable or unknown. However, this use shall be restricted to such areas and conditions that harmful interference cannot be caused to other authorized operations of stations in the aeronautical mobile service.

27/18 3.2 All stations using 3023.5 and 5680 kc/s for search and rescue purposes and employing single sideband (SSB) shall transmit a carrier at a level sufficient to permit reception on a double sideband (DSB) receiver and shall be able to receive DSB transmissions.

27/19 3.3 Subject to appropriate co-ordination, stations of the Aeronautical Mobile (R) Service using the common (R) and (OR) channel centred at 3023.5 kc/s may operate with their carrier frequency at 3023 kc/s.

27/20 4. The International Civil Aviation Organization (I.C.A.O.) co-ordinates communications of the Aeronautical Mobile (R) Service with international air operations for a large part of the world and this Organization should be consulted in appropriate cases, particularly in the operational use of the frequencies in the Plan.

5. *Adaptation of Allotment Procedure*

27/21 It is recognized that not all the sharing possibilities have been exhausted in the Allotment Plan contained in this Appendix. Therefore, in order to satisfy particular operational requirements which are not otherwise met by this Allotment Plan, Administrations may assign frequencies from the aeronautical mobile (R) bands in areas other than those to which they are allotted in this Plan. However, the use of the frequencies so assigned must not reduce the protection to the same frequencies in the areas where they are allotted by the Plan below that determined by the application of the procedure defined in Part I, Section II B of this Appendix.

27/22 6. When necessary to satisfy the needs of international air operations Administrations may adapt the allotment procedure for the assignment of aeronautical mobile (R) frequencies, which assignments shall then be the subject of prior agreement between Administrations affected.

27/23 7. Resort to the co-ordination described in No. **27/20** shall be made where appropriate and desirable for the efficient utilization of the frequencies in question.

B. Interference Range Contours

1. *Definition of Contours*

27/24 1.1 The transparencies associated with this Appendix show, for the frequencies stated, contours which indicate the minimum acceptable distance separating two aeronautical stations each having a mean effective radiated power of 1.0 kW (for emissions such as A1, F1, F2 and unmodulated emissions A3 and A3H) producing a protection ratio of 15 db of desired signal to interfering signal on the same frequency at an aircraft operating at the limit of the service range of the desired aeronautical station transmitter. This limit is generally assumed to be at the boundary of the area concerned, and the service range is not included in the contour.

27/25 1.2 Two types of transparencies are provided for use respectively with the Mercator projection world maps and the Gnomonic projection maps for the polar areas. The Mercator projection transparencies encompass the area between latitude 60° North and 60° South. The Gnomonic projection transparencies encompass the areas north of latitude 30° North and south of latitude 30° South. The Mercator projection overlaps the Gnomonic projection between latitudes 30°-60° North and 30°-60° South. This overlap is intended to provide continuity between transparencies of the two projections.

2. *Type of maps used*

27/26 The transparencies mentioned in Nos. **27/24** and **27/25**, can be used only on a world or polar map of the projection and scales given on each transparency and will not be suitable for use on any other projection or scale. The world and polar maps associated with this Appendix, depicting MWARA, RDARA and VOLMET areas, are to the correct scale so that the transparencies carrying the interference range contours can be directly used on these maps. The auroral zones are marked on the polar maps.

3. *Change of Scale of Projection*

27/27 3.1 Should any other scale or projection be desired, then new interference range contours can be drawn to fit the new scales or projections, by using the co-ordinates given in the tables shown below.

27/28 3.2 When new transparencies are constructed, the intersection of the vertical line of symmetry, i.e., the meridian of longitude and the horizontal line of latitude should be at 00° latitude for the 00° contour, 20°N for the 20° contour, 40°N for 40° contour, etc.

27/29 3.3 The co-ordinates shown in the tables under Nos. **27/39-27/48** are given with reference to the 180° meridian taken as the axis of symmetry for the construction of the contours.

4. *Sharing Conditions between Areas*

27/30 4.1 The transparencies are constructed on the basis of the following sharing conditions:

Areas	Bands between: Mc/s	Sharing conditions
MWARA or VOLMET area to MWARA or VOLMET area	3- 6.6 9-11.3 13-18	night propagation day propagation time separation *Note :* 6.6 Mc/s and 5.6 Mc/s sharing conditions are considered to be the same
MWARA or VOLMET area to RDARA	3 - 5.6 6.6-11.3 13 -18	night propagation day propagation time separation
RDARA to RDARA	3 - 4.7 5.6-11.3 13 -18	night propagation day propagation time separation

27/31 4.2 The additional " Day " contours included for 3 Mc/s, 3.5 Mc/s and 4.7 Mc/s are for determining daylight sharing possibilities.

5. *Method of Use*

27/32 5.1 Take the MWARA, RDARA or VOLMET area maps associated with this Appendix and select the transparency for the frequency order and sharing conditions under consideration.

27/33 5.2 The Gnomonic projections are applicable in the polar areas north of 60° North and south of 60° South; and the Mercator projections are applicable between 60° North and 60° South.

27/34 5.3 Place the centre of the transparency (i.e., the intersection of the axis of symmetry and the latitude line) over the boundary of the area or at the location of the transmitter. Note the latitude of this point and select the contour corresponding to this latitude.

27/35 5.4 A transmitter located at any point outside the contour will result, as defined in No. **27/24**, in a protection ratio of better than 15 db.

27/36 5.5 A transmitter located at any point inside the contour will result in a protection ratio of less than 15 db. However, if the transmitter is located inside the contour but the propagation path traverses an auroral zone, it is assumed that the signal attenuation within this zone will result in a protection ratio of better than 15 db.

27/37 5.6 For the Northern Hemisphere the Mercator projection transparencies should be used in their natural position as published, but for the Southern Hemisphere the transparencies should be inverted. This point should be carefully observed when following the boundaries of areas which involve the transition of the equator.

27/38 5.7 For either the north or south polar areas, the Gnomonic projection transparency should be positioned so that the north-south line (terminated with an arrow) is parallel to the meridian of longitude, with the arrow pointing towards the pole.

6. *Data for tracing interference contours*

27/39 3.0 & 3.5 Mc/s day **Data for plotting 700 km interference contours**

Latitude	00°		10°		20°		30°		40°	
Coordinates for plotting contours	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
	180,0	6,3	180,0	16,3	180,0	26,3	180,0	36,3	180,0	46,3
	178,9	6,2	178,9	16,2	178,8	26,2	178,6	36,2	178,4	46,2
	177,8	5,9	177,8	15,9	177,6	25,9	177,3	35,9	176,9	45,9
	176,8	5,5	176,7	15,4	176,5	25,4	176,1	35,4	175,5	45,4
	175,9	4,8	175,8	14,8	175,5	24,8	175,1	34,7	174,3	44,7
	175,2	4,0	175,0	14,0	174,7	24,0	174,2	33,9	173,3	43,9
	174,5	3,1	174,4	13,1	174,1	23,0	173,5	33,0	172,5	42,9
	174,1	2,2	173,9	12,1	173,6	22,0	173,0	32,0	172,0	41,9
	173,8	1,1	173,7	11,0	173,4	21,0	172,8	30,9	171,8	40,8
	173,7	0,0	173,6	9,9	173,3	19,9	172,7	29,8	171,8	39,7
	173,8	−1,1	173,7	8,8	173,4	18,8	172,9	28,7	172,0	38,6
	174,1	−2,2	174,0	7,8	173,8	17,7	173,3	27,7	172,5	37,6
	174,5	−3,1	174,5	6,8	174,3	16,8	173,9	26,7	173,2	36,6
	175,2	−4,0	175,2	5,9	175,0	15,9	174,6	25,8	174,1	35,8
	175,9	−4,8	175,9	5,2	175,8	15,1	175,5	25,1	175,1	35,1
	176,8	−5,5	176,8	4,5	176,8	14,5	176,5	24,5	176,2	34,5
	177,8	−5,9	177,8	4,1	177,8	14,1	177,6	24,1	177,4	34,0
	178,9	−6,2	178,9	3,8	178,9	13,8	178,8	23,8	178,7	33,8
	180,0	−6,3	180,0	3,7	180,0	13,7	180,0	23,7	180,0	33,7

Latitude	50°		60°		70°		80°		90°	
Coordinates for plotting contours	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
	180,0	56,3	180,0	66,3	180,0	76,3	180,0	86,3	All Longitudes	83,7
	178,0	56,2	177,3	66,2	175,4	76,2	163,9	86,1		83,7
	176,2	55,9	174,7	65,8	171,2	75,8	152,2	85,4		83,7
	174,5	55,3	172,5	65,3	167,7	75,1	145,2	84,5		83,7
	173,0	54,6	170,6	64,5	164,9	74,3	141,9	83,4		83,7
	171,8	53,8	169,1	63,6	162,9	73,4	140,8	82,4		83,7
	171,0	52,8	168,1	62,7	161,8	72,3	141,3	81,3		83,7
	170,4	51,8	167,5	61,6	161,3	71,2	142,8	80,2		83,7
	170,2	50,7	167,3	60,5	161,5	70,1	144,9	79,2		83,7
	170,3	49,6	167,5	59,4	162,1	69,1	147,6	78,2		83,7
	170,6	48,5	168,1	58,3	163,2	68,0	150,5	77,3		83,7
	171,2	47,5	169,0	57,4	164,6	67,1	153,8	76,5		83,7
	172,1	46,6	170,1	56,4	166,4	66,2	157,3	75,8		83,7
	173,1	45,7	171,4	55,6	168,3	65,5	160,8	75,2		83,7
	174,3	45,0	172,9	55,0	170,4	64,9	164,6	74,6		83,7
	175,6	44,5	174,6	54,4	172,7	64,4	168,4	74,2		83,7
	177,0	44,0	176,3	54,0	175,1	64,0	172,2	73,9		83,7
	178,5	43,8	178,2	53,8	177,5	63,8	176,1	73,8		83,7
	180,0	43,7	180,0	53,7	180,0	63,7	180,0	73,7		83,7

27/40 3.0 Mc/s night **Data for plotting 3500 km interference contours**

Latitude	00°		10°		20°		30°		40°	
Coordinates for plotting contours	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
	180,0	31,5	180,0	41,5	180,0	51,5	180,0	61,5	180,0	71,5
	173,9	31,0	173,1	40,9	171,7	50,8	169,3	60,7	164,3	70,4
	168,2	29,4	166,7	39,2	164,2	48,9	160,1	58,4	152,1	67,5
	163,0	26,9	161,1	36,4	158,0	45,8	153,0	54,9	144,2	63,5
	158,5	23,6	156,4	32,8	153,2	41,9	148,0	50,6	139,7	58,7
	154,9	19,6	152,9	28,6	149,8	37,4	144,9	45,8	137,5	53,6
	152,0	15,1	150,3	23,9	147,6	32,5	143,3	40,7	137,0	48,4
	150,1	10,3	148,7	18,9	146,4	27,4	142,9	35,5	137,6	43,2
	148,9	5,2	148,0	13,7	146,3	22,1	143,4	30,3	139,1	38,1
	148,5	0,0	148,1	8,5	146,9	17,0	144,7	25,2	141,3	33,2
	148,9	−5,2	149,0	3,4	148,3	11,9	146,7	20,9	144,1	28,6
	150,1	−10,3	150,6	−1,6	150,3	7,1	149,3	15,8	147,4	24,3
	152,0	−15,1	152,9	−6,3	153,1	2,6	152,5	11,5	151,1	20,4
	154,9	−19,6	156,0	−10,5	156,4	−1,4	156,2	7,8	155,3	16,9
	158,5	−23,6	159,7	−14,2	160,3	−4,8	160,3	4,6	159,8	14,0
	163,0	−26,9	164,1	−17,3	164,7	−7,7	164,8	2,0	164,5	11,6
	168,2	−29,4	169,1	−19,6	169,6	−9,8	169,7	0,1	169,5	9,9
	173,9	−31,0	174,4	−21,0	174,7	−11,1	174,8	−1,1	174,7	8,9
	180,0	−31,5	180,0	−21,5	180,0	−11,5	180,0	−1,5	180,0	8,5

Latitude	50°		60°		70°		80°		90°	
Coordinates for plotting contours	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
	180,0	81,5	0,	88,5	0,	78,5	0,	68,5	All Longitudes	58,5
	149,5	79,7	78,0	84,7	25,3	77,7	14,2	68,3		58,5
	133,9	75,6	90,4	79,7	46,5	75,7	28,0	67,7		58,5
	127,6	70,7	97,5	74,7	62,9	72,9	41,3	66,7		58,5
	125,7	65,6	103,3	69,8	75,9	69,7	53,8	65,4		58,5
	126,0	60,3	108,7	65,0	86,6	66,4	65,5	63,9		58,5
	127,6	55,2	113,9	60,3	95,8	62,9	76,4	62,3		58,5
	129,9	50,2	118,9	55,9	104,1	59,6	86,7	60,5		58,5
	132,9	45,4	124,1	51,6	111,9	56,3	96,5	58,8		58,5
	136,4	40,8	129,2	47,6	119,2	53,2	105,8	57,1		58,5
	140,2	36,5	134,5	43,9	126,2	50,4	114,8	55,5		58,5
	144,4	32,6	139,8	40,5	133,1	47,7	123,4	54,0		58,5
	148,8	29,0	145,3	37,4	139,9	45,4	131,9	52,6		58,5
	153,6	25,9	150,8	34,8	146,6	43,3	140,1	51,4		58,5
	158,5	23,3	156,5	32,6	153,3	41,6	148,2	50,4		58,5
	163,7	21,2	162,3	30,8	160,0	40,3	156,2	49,6		58,5
	169,1	19,7	168,1	29,5	166,6	39,3	164,2	49,0		58,5
	174,5	18,8	174,1	28,8	173,3	38,7	172,1	48,6		58,5
	180,0	18,5	180,0	28,5	180,0	38,5	180,0	48,5		58,5

27/41 3.5 Mc/s night **Data for plotting 4000 km interference contours**

Latitude	00°		10°		20°		30°		40°	
Coordinates for plotting contours	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
	180,0	36,0	180,0	46,0	180,0	56,0	180,0	66,0	180,0	76,0
	172,8	35,4	171,7	45,3	169,7	55,1	166,1	64,9	157,6	74,5
	166,0	33,5	164,0	43,2	160,6	52,7	154,7	62,0	142,8	70,6
	160,0	30,6	157,5	39,9	153,4	49,0	146,6	57,7	134,9	65,5
	155,0	26,8	152,3	35,7	148,1	44,4	141,5	52,6	131,2	59,9
	150,9	22,2	148,4	30,8	144,5	39,2	138,7	47,0	129,9	54,0
	147,8	17,1	145,7	25,5	142,3	33,6	137,4	41,2	130,2	48,2
	145,7	11,6	144,1	19,8	141,4	27,7	137,4	35,4	131,6	42,4
	144,4	5,9	143,4	13,9	141,4	21,9	138,3	29,5	133,8	36,7
	144,0	0,0	143,6	8,1	142,3	16,1	140,0	23,9	136,5	31,3
	144,4	−5,9	144,6	2,3	143,9	10,4	142,4	18,4	139,8	26,2
	145,7	−11,6	146,4	−3,3	146,3	5,0	145,4	13,3	143,6	21,5
	147,8	−17,1	149,0	−8,6	149,4	0,0	149,0	8,6	147,8	17,2
	150,9	−22,2	152,4	−13,4	153,1	−4,5	153,2	4,4	152,4	13,3
	155,0	−26,8	156,6	−17,6	157,5	−8,4	157,8	0,8	157,4	10,1
	160,0	−30,6	161,6	−21,2	162,5	−11,6	162,9	−2,1	162,8	7,5
	166,0	−33,5	167,3	−23,8	168,0	−14,0	168,4	−4,2	168,3	5,6
	172,8	−35,4	173,5	−25,4	173,9	−15,5	174,1	−5,6	174,1	4,4
	180,0	−36,0	180,0	−26,0	180,0	−16,0	180,0	−6,0	180,0	4,0

Latitude	50°		60°		70°		80°		90°	
Coordinates for plotting contours	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
	180,0	86,0	0,	84,0	0,	74,0	0,	64,0	All Longitudes	54,0
	126,9	82,7	46,5	81,9	20,9	73,4	13,4	63,8		54,0
	115,7	77,1	69,8	77,6	39,7	71,6	26,5	63,2		54,0
	113,9	71,3	83,0	72,8	55,5	69,1	39,2	62,3		54,0
	114,9	65,4	92,2	67,8	68,8	66,1	51,3	61,0		54,0
	117,1	59,6	99,7	62,8	80,1	62,8	62,8	59,6		54,0
	120,1	54,0	106,4	57,9	90,1	59,4	73,7	58,0		54,0
	123,5	48,5	112,6	53,2	99,0	56,0	84,1	56,3		54,0
	127,4	43,3	118,6	48,7	107,3	52,7	93,9	54,5		54,0
	131,5	38,3	124,5	44,5	115,2	49,5	103,4	52,8		54,0
	135,9	33,7	130,4	40,5	122,8	46,5	112,6	51,2		54,0
	140,7	29,4	136,3	36,9	130,1	43,7	121,5	49,6		54,0
	145,7	25,5	142,3	33,6	137,4	41,3	130,2	48,2		54,0
	150,9	22,1	148,4	30,8	144,5	39,1	138,7	47,0		54,0
	156,4	19,3	154,6	28,4	151,6	37,3	147,1	45,9		54,0
	162,1	17,0	160,8	26,5	158,7	35,9	155,4	45,1		54,0
	168,0	15,3	167,2	25,1	165,8	34,8	163,6	44,5		54,0
	174,0	14,3	173,6	24,3	172,9	34,2	171,8	44,1		54,0
	180,0	14,0	180,0	24,0	180,0	34,0	180,0	44,0		54,0

27/42 4.7 Mc/s day **Data for plotting 1200 km interference contours**

Latitude	00°		10°		20°		30°		40°	
Coordinates for plotting contours	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
	180,0	10,8	180,0	20,8	180,0	30,8	180,0	40,8	180,0	50,8
	178,1	10,6	178,0	20,6	177,8	30,6	177,5	40,6	177,1	50 6
	176,3	10,1	176,1	20,1	175,8	30,1	175,2	40,1	174,3	50,0
	174,6	9,3	174,3	19,3	173,8	29,2	173,1	39,2	171,8	49,1
	173,0	8,3	172,7	18,2	172,2	28,1	171,2	38,0	169,7	47,8
	171,7	6,9	171,4	16,8	170,3	26,7	169,7	36,5	168,0	46,4
	170,6	5,4	170,3	15,2	169,7	25,1	168,6	34,9	166,8	44,7
	169,8	3,7	169,6	13,5	168,9	23,3	167,9	33,1	166,1	42,9
	169,4	1,9	169,1	11,7	168,6	21,5	167,5	31,3	165,8	41,0
	169,2	0,0	169,0	9,8	168,5	19,6	167,6	29,4	166,0	39,2
	169,4	−1,9	169,3	8,0	168,8	17,8	168,0	27,6	166,6	37,3
	169,8	−3,7	169,8	6,2	169,4	16,0	168,7	25,8	167,5	35,6
	170,6	−5,4	170,6	4,5	170,4	14,4	169,8	24,2	168,7	34,0
	171,7	−6,9	171,7	3,0	171,5	12,9	171,0	22,8	170,2	32,6
	173,0	−8,3	173,1	1,7	172,9	11,6	172,6	21,5	171,9	31,4
	174,6	−9,3	174,6	0,6	174,5	10,6	174,3	20,5	173,8	30,5
	176,3	−10,1	176,3	−0,2	176,3	9,8	176,1	19,8	175,8	29,8
	178,1	−10,6	178,1	−0,6	178,1	9,4	178,0	19,3	177,9	29,3
	180,0	−10,8	180,0	−0,8	180,0	9,2	180,0	19,2	180,0	29,2

Latitude	50°		60°		70°		80°		90°	
Coordinates for plotting contours	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
	180,0	60,8	180,0	70,8	180,0	80,8	0,	89,2	All Longitudes	79,2
	176,2	60,6	174,4	70,6	168,7	80,5	71,1	88,0		79,2
	172,6	60,0	169,3	69,8	159,4	79,5	87,5	86,3		79,2
	169,5	59,0	165,0	68,7	152,9	78,1	96,6	84,6		79,2
	167,0	57,6	161,8	67,3	149,1	76,4	103,6	82,9		79,2
	165,1	56,1	159,6	65,6	147,2	74,6	109,9	81,2		79,2
	163,8	54,4	158,4	63,8	146,8	72,8	115,8	79,6		79,2
	163,2	52,5	158,0	62,0	147,4	70,9	121,4	78,1		79,2
	163,1	50,7	158,3	60,1	148,9	69,1	126,9	76,7		79,2
	163,5	48,8	159,1	58,3	150,8	67,4	132,3	75,3		79,2
	164,3	47,0	160,4	56,6	153,3	65,8	137,7	74,1		79,2
	165,5	45,3	162,1	54,9	156,0	64,3	143,0	73,0		79,2
	167,0	43,8	164,2	53,5	159,1	63,0	148,3	72,0		79,2
	168,3	42,5	166,4	52,2	162,3	61,9	153,6	71,2		79,2
	170,3	41,3	168,9	51,2	165,7	60,9	158,9	70,5		79,2
	172,9	40,4	171,6	50,3	169,1	60,2	164,2	69,9		79,2
	175,8	39,7	174,3	49,7	172,7	59,6	169,4	69,5		79,2
	177,6	39,3	177,1	49,3	176,3	59,3	174,7	69,3		79,2
	180,0	39,2	180,0	49,2	180,0	59,2	180,0	69,2		79,2

27/43 4.7 Mc/s night & 10.0 Mc/s day **Data for plotting 5500 km interference contours**

Latitude	00°		10°		20°		30°		40°	
Coordinates for plotting contours	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
	180,0	49,5	180,0	59,5	180,0	69,5	180,0	79,5	178,7	89,5
	168,5	48,5	165,5	58,2	159,6	67,8	144,9	76,7	97,0	82,4
	158,2	45,6	153,2	54,7	144,6	63,3	128,3	70,7	98,4	74,8
	149,7	41,2	144,1	49,6	135,4	57,2	121,5	63,5	101,0	67,2
	143,0	35,6	137,8	43,3	130,1	50,3	119,0	56,0	104,1	59,7
	138,1	29,3	133,6	36,5	127,3	43,0	118,6	48,4	107,5	52,4
	134,6	22,3	131,1	29,2	126,1	35,4	119,5	40,8	111,0	45,1
	132,3	15,1	129,8	21,6	126,1	27,8	121,2	33,4	114,8	38,1
	130,9	7,6	129,5	14,1	127,0	20,3	123,5	26,0	118,9	31,2
	130,5	0,0	130,1	6,5	128,7	12,8	126,5	18,9	123,2	24,7
	130,9	−7,6	131,5	−1,0	131,2	5,6	130,0	12,1	127,9	18,4
	132,3	−15,1	133,8	−8,2	134,4	−1,3	134,1	5,7	132,9	12,6
	134,6	−22,3	137,0	−15,2	138,3	−7,8	138,8	−0,3	138,4	7,3
	138,1	−29,3	141,2	−21,6	143,2	−13,7	144,2	−5,7	144,3	2,5
	143,0	−35,6	146,6	−27,4	148,9	−19,0	150,2	−10,4	150,7	−1,6
	149,7	−41,2	153,2	−32,4	155,5	−23,4	156,9	−14,2	157,6	−5,0
	158,2	−45,6	161,2	−36,2	163,1	−26,7	164,2	−17,1	164,8	−7,5
	168,5	−48,5	170,3	−38,7	171,3	−28,8	172,0	−18,9	172,3	−9,0
	180,0	−49,5	180,0	−39,5	180,0	−29,5	180,0	−19,5	180,0	−9,5

Latitude	50°		60°		70°		80°		90°	
Coordinates for plotting contours	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
	0,	80,5	0,	70,5	0,	60,5	0,	50,5		40,5
	40,2	78,2	22,2	69,5	15,3	60,0	11,9	50,3		40,5
	63,5	73,1	41,5	66,9	30,1	58,7	23,8	49,8		40,5
	77,1	67,0	57,1	63,1	43,8	56,7	35,4	48,9		40,5
	86,6	60,7	69,8	58,6	56,4	54,0	46,7	47,8		40,5
	94,2	54,3	80,4	53,8	67,8	51,0	57,7	46,4		40,5
	100,8	47,9	89,6	48,8	78,4	47,8	68,3	44,9		40,5
	107,0	41,7	97,9	43,8	88,2	44,4	78,7	43,2		40,5
	112,9	35,6	105,7	38,9	97,5	41,0	88,7	41,5		40,5
	118,8	29,8	113,1	34,2	106,3	37,6	98,4	39,8		40,5
	124,7	24,4	120,4	29,8	114,8	34,4	108,0	38,1		40,5
	130,8	19,3	127,6	25,6	123,1	31,4	117,3	36,5		40,5
	137,1	14,7	134,8	21,9	131,3	28,7	126,5	35,0		40,5
	143,7	10,6	142,1	18,5	139,5	26,3	135,6	33,7		40,5
	150,5	7,1	149,5	15,7	147,6	24,3	144,5	32,6		40,5
	157,6	4,3	157,0	13,5	155,7	22,6	153,5	31,7		40,5
	164,9	2,2	164,6	11,8	163,8	21,5	162,3	31,0		40,5
	172,4	0,9	172,3	10,8	171,9	20,7	171,2	30,6		40,5
	180,0	0,5	180,0	10,5	180,0	20,5	180,0	30,5		40,5

All Longitudes

27/44 5.6 Mc/s day **Data for plotting 1500 km interference contours**

Latitude	00°		10°		20°		30°		40°	
Coordinates for plotting contours	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
	180,0	13,5	180,0	23,5	180,0	33,5	180,0	43,5	180,0	53,5
	177,6	13,3	177,5	23,3	177,2	33,3	176,8	43,3	176,1	53,2
	175,3	12,7	175,0	22,6	174,6	32,6	173,8	42,5	172,5	52,5
	173,2	11,7	172,8	21,6	172,1	31,5	171,0	41,4	169,3	51,3
	171,2	10,3	170,8	20,2	170,0	30,0	168,7	39,9	166,6	49,6
	169,6	8,6	169,1	18,5	168,3	28,3	166,9	38,0	164,6	47,7
	168,3	6,7	167,8	16,5	167,0	26,2	165,5	36,0	163,2	45,6
	167,3	4,6	166,9	14,3	166,1	24,1	164,7	33,7	162,4	43,3
	166,7	2,3	166,4	12,1	165,7	21,8	164,4	31,4	162,3	41,0
	166,5	0,0	166,3	9,7	165,7	19,4	164,5	29,1	162,6	38,7
	166,7	−2,3	166,6	7,4	166,1	17,1	165,1	26,8	163,4	36,4
	167,3	−4,6	167,3	5,2	166,9	14,9	166,0	24,6	164,6	34,3
	168,3	−6,7	168,3	3,1	168,0	12,9	167,3	22,6	166,1	32,4
	169,6	−8,6	169,7	1,2	169,5	11,0	169,0	20,9	168,0	30,7
	171,2	−10,3	171,4	−0,4	171,2	9,5	170,8	19,3	170,1	29,2
	173,2	−11,7	173,3	−1,7	173,2	8,2	172,9	18,1	172,4	28,0
	175,3	−12,7	175,4	−2,7	175,4	7,3	175,2	17,2	174,8	27,2
	177,6	−13,3	177,7	−3,3	177,7	6,7	177,6	16,7	177,4	26,7
	180,0	−13,5	180,0	−3,5	180,0	6,5	180,0	16,5	180,0	26,5

Latitude	50°		60°		70°		80°		90°	
Coordinates for plotting contours	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
	180,0	63,5	180,0	73,5	180,0	83,5	0,	86,5	All Longitudes	76,5
	174,8	63,2	172,0	73,1	160,8	82,9	35,2	86,0		76,5
	170,1	62,4	164,9	72,1	147,7	81,4	59,4	84,7		76,5
	166,1	61,0	159,4	70,6	140,7	79,4	75,5	83,1		76,5
	162,9	59,3	155,6	68,7	137,6	77,1	87,2	81,4		76,5
	160,7	57,3	153,3	66,5	137,0	74,8	96,7	79,6		76,5
	159,3	55,1	152,3	64,2	137,8	72,5	104,9	77,9		76,5
	158,7	52,8	152,3	61,9	139,6	70,2	112,4	76,3		76,5
	158,8	50,4	153,0	59,6	142,0	68,1	119,3	74,7		76,5
	159,5	48,1	154,4	57,4	144,9	66,0	125,9	73,3		76,5
	160,7	46,0	156,2	55,3	148,2	64,1	132,2	71,9		76,5
	162,3	43,9	158,4	53,3	151,7	62,4	138,4	70,7		76,5
	164,2	42,1	161,0	51,6	155,4	60,9	144,5	69,6		76,5
	166,4	40,4	163,8	50,1	159,3	59,6	150,5	68,7		76,5
	168,9	39,0	166,8	48,8	163,3	58,5	156,5	67,9		76,5
	171,5	37,9	170,0	47,8	167,4	57,6	162,4	67,3		76,5
	174,3	37,1	173,3	47,1	171,6	57,0	168,3	66,9		76,5
	177,1	36,7	176,6	46,6	175,8	56,6	174,1	66,6		76,5
	180,0	36,5	180,0	46,5	180,0	56,5	180,0	66,5		76,5

27/45 5.6 & 6.6 Mc/s night **Data for plotting 6500 km interference contours**

Latitude	00°		10°		20°		30°		40°	
Coordinates for plotting contours	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
	180,0	58,5	180,0	68,5	180,0	78,5	180,0	88,5	0	81,5
	164,2	57,1	158,1	66,6	144,0	75,4	102,4	81,3	46,7	78,3
	150,8	53,2	142,2	61,6	126,6	68,7	100,1	72,8	68,5	71,7
	140,8	47,6	132,2	54,9	119,2	60,8	101,1	64,3	80,1	64,4
	133,6	40,8	126,2	47,2	116,0	52,4	102,9	55,8	88,0	56,7
	128,7	33,2	122,7	39,1	114,9	43,9	105,3	47,4	94,2	49,1
	125,3	25,2	120,8	30,7	115,1	35,4	108,0	39,1	99,7	41,5
	123,1	17,0	120,1	22,2	116,0	26,9	110,9	30,9	104,9	34,0
	121,9	8,5	120,2	13,7	117,7	18,5	114,3	22,9	110,0	26,7
	121,5	0,0	121,1	5,2	119,9	10,3	118,0	15,1	115,1	19,6
	121,9	−8,5	122,8	−3,2	122,8	2,3	122,1	7,6	120,5	12,9
	123,1	−17,0	125,2	−11,3	126,4	−5,5	126,8	0,5	126,3	6,5
	125,3	−25,2	128,6	−19,2	130,8	−12,8	132,0	−6,2	132,4	0,5
	128,7	−33,2	133,0	−26,7	136,1	−19,7	138,0	−12,3	139,0	−4,8
	133,6	−40,8	138,9	−33,5	142,5	−25,8	144,9	−17,7	146,2	−9,5
	140,8	−47,6	146,4	−39,5	150,2	−31,0	152,6	−22,2	154,0	−13,3
	150,8	−53,2	156,0	−44,3	159,1	−35,0	161,1	−25,6	162,3	−16,1
	164,2	−57,1	167,4	−47,4	169,2	−37,6	170,4	−27,8	171,0	−17,9
	180,0	−58,5	180,0	−48,5	180,0	−38,5	180,0	−28,5	180,0	−18,5

Latitude	50°		60°		70°		80°		90°	
Coordinates for plotting contours	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
	0	71,5	0	61,5	0	51,5	0	41,5	All Longitudes	31,5
	25,7	70,1	17,6	60,7	13,6	51,1	11,4	41,3		31,5
	46,4	66,2	34,0	58,6	26,9	49,9	22,7	40,8		31,5
	61,7	61,0	43,4	55,3	39,6	48,0	33,8	40,0		31,5
	73,3	55,1	61,0	51,2	51,6	45,6	44,8	38,9		31,5
	82,7	48,8	71,9	46,6	62,8	42,7	55,5	37,6		31,5
	90,7	42,4	81,7	41,7	73,8	39,6	66,0	36,1		31,5
	98,0	36,0	90,6	36,7	83,2	36,2	76,2	34,4		31,5
	104,8	29,7	99,0	31,8	92,7	32,8	86,2	32,7		31,5
	111,6	23,6	107,0	26,9	101,8	29,4	96,1	31,0		31,5
	115,1	17,8	114,9	22,2	110,7	26,1	105,7	29,3		31,5
	124,9	12,3	122,7	17,9	119,5	23,0	115,3	27,6		31,5
	131,8	7,3	130,5	13,8	128,1	20,2	124,7	26,1		31,5
	139,2	2,7	138,4	10,3	136,7	17,7	134,0	24,9		31,5
	146,8	−1,1	146,5	7,2	145,3	15,5	143,3	23,6		31,5
	154,7	−4,3	154,7	4,8	154,0	13,8	152,5	22,7		31,5
	162,9	−6,6	163,0	3,0	162,6	12,5	161,7	22,1		31,5
	171,4	−8,0	171,5	1,9	171,3	11,8	170,8	21,6		31,5
	180,0	−8,5	180,0	1,5	180,0	11,5	180,0	21,5		31,5

27/46 6.6 Mc/s day **Data for plotting 1900 km interference contours**

Latitude	00°		10°		20°		30°		40°	
Coordinates for plotting contours	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
	180,0	17,1	180,0	27,1	180,0	37,1	180,0	47,1	180,0	57,1
	176,9	16,8	176,7	26,8	176,3	36,8	175,7	46,8	174,7	56,7
	174,0	16,0	173,6	26,0	172,9	35,9	171,7	45,8	169,7	55,7
	171,3	14,8	170,7	24,6	169,7	34,5	168,1	44,3	165,5	54,0
	168,8	13,0	168,2	22,8	167,0	32,6	165,2	42,3	162,2	51,9
	166,7	10,9	166,1	20,6	164,9	30,3	162,9	39,9	159,8	49,4
	165,1	8,5	164,5	18,1	163,3	27,7	161,3	37,2	158,2	46,6
	163,9	5,8	163,3	15,4	162,3	24,9	160,4	34,4	157,5	43,7
	163,1	2,9	162,7	12,5	161,8	22,0	160,2	31,5	157,5	40,8
	162,9	0,0	162,7	9,6	161,9	19,1	160,4	28,5	158,1	37,9
	163,1	−2,9	163,1	6,6	162,4	16,2	161,3	25,7	159,3	35,1
	163,9	−5,8	163,9	3,8	163,5	13,4	162,5	23,0	160,9	32,5
	165,1	−8,5	165,2	1,2	165,0	10,9	164,2	20,5	162,9	30,1
	166,7	−10,9	167,0	−1,2	166,8	8,6	166,3	18,3	165,2	28,0
	168,8	−13,0	169,1	−3,2	169,0	6,6	168,6	16,4	167,8	26,2
	171,3	−14,8	171,5	−4,9	171,5	5,0	171,2	14,9	170,7	24,8
	174,0	−16,0	174,2	−6,1	174,2	3,9	174,1	13,8	173,7	23,7
	176,9	−16,8	177,1	−6,8	177,1	3,1	177,0	13,1	176,8	23,1
	180,0	−17,1	180,0	−7,1	180,0	2,9	180,0	12,9	180,0	22,9

Latitude	50°		60°		70°		80°		90°	
Coordinates for plotting contours	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
	180,0	67,1	180,0	77,1	180,0	87,1	0,	82,9	All Longitudes	72,9
	172,6	66,7	167,3	76,5	137,0	85,7	23,2	82,5		72,9
	166,0	65,5	157,1	75,0	123,8	83,1	43,5	81,6		72,9
	160,7	63,6	150,3	72,8	120,8	80,1	60,0	80,2		72,9
	156,8	61,3	146,2	70,1	121,4	77,2	73,5	78,6		72,9
	154,4	58,6	144,4	67,3	123,5	74,3	84,9	76,9		72,9
	153,1	55,8	144,0	64,3	126,5	71,5	94,8	75,2		72,9
	152,8	52,8	144,7	61,4	130,1	68,8	103,6	73,5		72,9
	153,3	49,9	146,3	58,6	133,9	66,3	111,8	71,8		72,9
	154,4	47,1	148,4	55,9	138,0	63,9	119,4	70,3		72,9
	156,1	44,4	151,0	53,3	142,3	61,7	126,8	68,8		72,9
	158,2	41,9	153,9	51,0	146,7	59,7	133,8	67,5		72,9
	160,7	39,6	157,2	49,0	151,3	58,0	140,7	66,3		72,9
	163,5	37,6	160,7	47,2	155,9	56,5	147,4	65,3		72,9
	166,5	36,0	164,3	45,7	160,7	55,2	154,0	64,4		72,9
	169,7	34,6	168,1	44,5	165,4	54,2	160,6	63,8		72,9
	173,1	33,7	172,0	43,6	170,3	53,5	167,1	63,3		72,9
	176,5	33,1	176,0	43,1	175,1	53,0	173,5	63,0		72,9
	180,0	32,9	180,0	42,9	180,0	52,9	180,0	62,9		72,9

27/47 9.0 Mc/s day **Data for plotting 3800 km interference contours**

Latitude	00°		10°		20°		30°		40°	
Coordinates for plotting contours	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
	180,0	34,2	180,0	44,2	180,0	54,2	180,0	64,2	180,0	74,2
	173,3	33,6	172,3	43,5	170,6	53,4	167,5	63,2	160,6	72,9
	166,9	31,9	165,1	41,6	162,1	51,2	157,0	60,6	146,8	69,4
	161,2	29,1	158,9	38,5	155,3	47,8	149,3	56,6	138,8	64,8
	156,4	25,5	154,0	34,6	150,2	43,4	144,2	51,9	134,6	59,5
	152,5	21,2	150,2	30,0	146,6	38,5	141,2	46,6	133,0	53,9
	149,5	16,3	147,6	24,9	144,4	33,2	139,8	41,1	132,9	48,3
	147,4	11,1	145,9	19,4	143,4	27,6	139,6	35,5	134,0	42,8
	146,2	5,6	145,2	13,9	143,3	22,0	140,3	29,9	135,9	37,3
	145,8	0,0	145,4	8,3	144,1	16,4	141,9	24,4	138,4	32,1
	146,2	−5,6	146,3	2,7	145,7	11,0	144,1	19,2	141,5	27,2
	147,4	−11,1	148,1	−2,6	147,9	5,9	147,0	14,3	145,1	22,6
	149,5	−16,3	150,6	−7,7	150,9	1,1	150,4	9,8	149,1	18,4
	152,5	−21,2	153,9	−12,3	154,5	−3,2	154,4	5,8	153,6	14,8
	156,4	−25,5	157,9	−16,3	158,7	−7,0	158,8	2,3	158,4	11,6
	161,2	−29,1	162,6	−19,6	163,4	−10,1	163,7	−0,5	163,5	9,1
	166,9	−31,9	168,0	−22,1	168,7	−12,3	168,9	−2,5	168,8	7,3
	173,3	−33,6	173,9	−23,7	174,2	−13,7	174,4	−3,8	174,4	6,2
	180,0	−34,2	180,0	−24,2	180,0	−14,2	180,0	−4,2	180,0	5,8

Latitude	50°		60°		70°		80°		90°	
Coordinates for plotting contours	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
	180,0	84,2	0,	85,8	0,	75,8	0,	65,8	All Longitudes	55,8
	137,8	81,6	56,0	83,2	22,4	75,1	13,7	65,6		55,8
	123,5	76,7	77,1	78,6	42,0	73,3	27,0	65,0		55,8
	119,5	71,2	88,4	73,7	58,2	70,7	39,9	64,0		55,8
	119,2	65,6	96,4	68,7	71,4	67,6	52,2	62,8		55,8
	120,6	60,0	103,2	63,8	82,5	64,3	63,8	61,3		55,8
	123,0	54,5	109,3	59,0	92,2	60,8	74,7	59,7		55,8
	126,0	49,2	115,1	54,3	101,0	57,5	85,1	58,0		55,8
	129,5	44,1	120,7	49,9	109,1	54,2	94,9	56,2		55,8
	133,4	39,3	126,3	45,7	116,7	51,0	104,3	54,5		55,8
	137,6	34,8	132,0	41,9	124,1	48,1	113,4	52,9		55,8
	142,1	30,7	137,7	38,3	131,3	45,4	122,2	51,4		55,8
	146,9	26,9	143,5	35,2	138,3	42,9	130,8	50,0		55,8
	152,0	23,7	149,3	32,4	145,3	40,8	139,2	48,7		55,8
	157,2	20,9	155,3	30,1	152,3	39,0	147,5	47,7		55,8
	162,7	18,7	161,4	28,2	159,2	37,6	155,7	46,9		55,8
	168,4	17,1	167,6	26,9	166,1	36,6	163,8	46,3		55,8
	174,2	16,1	173,3	26,1	173,1	36,0	171,9	45,9		55,8
	180,0	15,8	180,0	25,8	180,0	35,8	180,0	45,8		55,8

27/48 11.3 Mc/s day **Data for plotting 6000 km interference contours**

Latitude	00°		10°		20°		30°		40°	
Coordinates for plotting contours	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
	180,0	54,0	180,0	64,0	180,0	74,0	180,0	84,0	0	86,0
	166,6	52,8	162,3	62,5	153,3	71,8	128,2	79,7	66,2	81,2
	154,8	49,5	148,2	58,3	136,6	66,3	115,0	72,2	82,1	73,8
	145,5	44,5	138,5	52,4	127,7	59,3	111,4	64,2	90,0	66,1
	138,5	38,3	132,2	45,4	123,2	51,6	111,0	58,2	95,7	58,5
	133,5	31,3	128,2	37,9	121,1	43,6	111,9	48,1	100,6	50,9
	130,0	23,9	126,0	30,0	120,6	35,5	113,6	40,1	105,2	43,4
	127,7	16,1	124,9	22,0	121,1	27,5	116,0	32,2	109,7	36,1
	126,4	8,1	124,8	13,9	122,3	19,5	118,8	24,6	114,3	29,0
	126,0	0,0	125,6	5,9	124,3	11,6	122,2	17,1	119,1	22,2
	126,4	−8,1	127,1	−2,1	127,0	4,0	126,0	9,9	124,2	15,7
	127,7	−16,1	129,5	−9,8	130,4	−3,4	130,4	3,1	129,6	9,5
	130,0	−23,9	132,8	−17,2	134,6	−10,3	135,4	−3,2	135,4	3,9
	133,5	−31,3	137,2	−24,2	139,7	−16,7	141,1	−9,0	141,7	−1,2
	138,5	−38,3	142,9	−30,5	145,8	−22,4	147,6	−14,1	148,5	−5,6
	145,5	−44,5	150,0	−36,0	152,9	−27,2	154,8	−18,2	155,6	−9,1
	154,8	−49,5	158,7	−40,3	161,2	−30,9	162,7	−21,4	163,6	−11,8
	166,6	−52,8	163,9	−43,0	170,3	−33,2	171,2	−23,3	171,7	−13,4
	180,0	−54,0	180,0	−44,0	180,0	−34,0	180,0	−24,0	180,0	−14,0

Latitude	50°		60°		70°		80°		90°	
Coordinates for plotting contours	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
	0	76,0	0	66,0	0	56,0	0	46,0	All Longitudes	36,0
	31,1	74,2	19,5	65,1	14,4	55,6	11,6	45,8		36,0
	53,5	69,9	37,2	62,8	28,3	54,3	23,2	45,3		36,0
	68,6	64,2	52,3	59,2	41,5	52,4	34,5	44,5		36,0
	79,4	58,1	65,0	55,0	53,7	49,8	45,7	43,4		36,0
	88,1	51,7	75,8	50,3	65,1	46,9	56,5	42,0		36,0
	95,5	45,3	85,4	45,3	75,7	43,7	67,1	40,5		36,0
	102,3	38,9	94,1	40,3	85,6	40,3	77,4	38,3		36,0
	108,7	32,7	102,2	35,4	95,0	36,9	87,4	37,1		36,0
	115,0	26,3	110,0	30,6	104,0	33,5	97,2	35,4		36,0
	121,4	21,1	117,5	26,0	112,7	30,3	106,8	33,7		36,0
	127,8	15,8	125,1	21,8	121,2	27,2	116,2	32,1		36,0
	134,5	11,0	132,6	17,9	129,7	24,5	125,5	30,6		36,0
	141,4	6,7	140,2	14,4	138,1	22,0	134,7	29,2		36,0
	148,6	3,0	148,0	11,5	146,4	19,9	143,9	28,1		36,0
	156,1	−0,0	155,8	9,1	154,8	18,2	152,9	27,2		36,0
	163,9	−2,2	163,8	7,4	163,2	17,0	162,0	26,5		36,0
	171,0	−3,5	171,9	6,4	171,6	16,3	171,0	26,1		36,0
	180,0	−4,0	180,0	6,0	180,0	16,0	180,0	26,0		36,0

C. Classes of Emission and Power

1. *Classes of emission*

27/49 In the Aeronautical Mobile (R) Service the use of emissions such as those listed below is permissible provided that such use:

— complies with the provisions of Nos. **27/10-27/16** and Nos. **27/63-27/73** and;

— does not cause harmful interference to other users of the frequency.

27/50 1.1 *Telephony—Amplitude modulation:*

— double sideband (A3)

— single sideband, reduced carrier (A3A)

— single sideband, full carrier (A3H)

— single sideband, suppressed carrier (A3J)

— two independent sidebands (A3B)

1.2 *Telegraphy (including automatic data transmissions)*

27/51 1.2.1 *Amplitude modulation:*

— telegraphy without the use of a modulating audio frequency (by on-off keying) (A1)

— telegraphy by the on-off keying of an amplitude-modulating audio frequency or audio frequencies, or by the on-off keying of the modulated emission (A2)

— multichannel voice frequency telegraphy, single sideband, reduced carrier (A7A)

— multichannel voice frequency telegraphy, single sideband, full carrier (A7H)

— multichannel voice frequency telegraphy, single sideband, suppressed carrier (A7J)

27/52 1.2.2 *Frequency modulation:*

— telegraphy by frequency shift keying without the use of a modulating audio frequency, one of two frequencies being emitted at any instant (F1)

— telegraphy by the on-off keying of a frequency modulating audio frequency or by the on-off keying of a frequency-modulated emission (F2)

27/53 1.3 *Facsimile*

— with modulation of the main carrier either directly or by a frequency-modulated sub-carrier (A4)

2. *Power*

27/54 2.1 Unless otherwise specified in Part II of this Appendix, the peak envelope powers supplied to the antenna transmission line shall not exceed the maximum values indicated in the table below; the corresponding peak effective radiated powers being assumed to be equal to two-thirds of these values:

Class of emission	Stations	Maximum peak envelope power
A1 F1 F2	Aeronautical stations Aircraft stations	1.5 kW 75 W
A3 A3H (100 % modulated)	Aeronautical stations Aircraft stations	6 kW 300 W
Other emissions such as A2 A3A A3B A3J A4 A7A A7H A7J	Aeronautical stations Aircraft stations	6 kW 300 W

27/55 2.2 It is assumed that the maximum peak envelope powers specified above for aeronautical stations will produce the mean effective radiated power of 1 kW (for emissions such as A1, F1, F2 and unmodulated A3 and A3H emissions) used as a basis for the interference range contours.

27/56 2.3 In order to provide satisfactory communication with aircraft, aeronautical stations serving MWARAs or VOLMET areas may exceed the power limits specified in No. **27/54**. In each such case, the administration having jurisdiction over the aeronautical station shall ensure:

27/57 *a)* that when there is any possibility of harmful interference co-ordination is effected with the administrations concerned;

27/58 *b)* that harmful interference is not caused to stations using frequencies in accordance with the applicable provisions of the Allotment Plan;

27/59 *c)* that in other MWARAs, RDARAs or VOLMET areas allotted the same frequencies, the specified protection ratios within the boundaries of those areas shall be maintained;

27/60 *d)* that the directional characteristics of the antenna are such as to minimize radiation in unnecessary directions, particularly towards other MWARAs, RDARAs or VOLMET areas which have been allotted the same frequencies;

27/61 *e)* that, in accordance with the Radio Regulations, all details of the assignment(s), including the transmitting antenna characteristics shall be notified to the I.F.R.B.

27/62 2.4 It is recognized that the power employed by aircraft transmitters may, in practice, exceed the limits specified in No. **27/54**. However, the use of such increased power shall not cause harmful interference to stations using frequencies in accordance with the technical principles on which the Allotment Plan is based.

3. *Technical provisions relating to the use of single sideband emissions*

27/63 3.1 *Definitions of carrier modes :*

Carrier mode	Level N (db) of the carrier with respect to peak envelope power
Full carrier (A3H)	$0 \geqslant N \geqslant -6$
Reduced carrier (A3A)	$-6 > N \geqslant -26$
Suppressed carrier (A3J)	$-26 > N$

27/64 3.2 *Modes of operation :*

A transmitter equipped only for single sideband operation and operating in an environment including double sideband stations shall be capable of operation in at least both of the following modes:

— full carrier mode (A3H),

— suppressed carrier mode (A3J).

3.3 *Tolerance for levels of SSB emission outside the necessary bandwidth*

27/65 3.3.1 In a single sideband A3H, A3A or A3J transmission, the mean power of any emission supplied to the antenna transmission line of an aeronautical or aircraft station on any discrete frequency, shall be less than the mean power (P_m) of the transmitter in accordance with the following table:

27/66 3.3.2

Frequency separation Δ from the assigned frequency kc/s	Minimum attenuation below mean power (P_m) db
$2 \leqslant \Delta < 6$	25
$6 \leqslant \Delta < 10$	35
$10 \leqslant \Delta$	Aircraft stations: 40 Aeronautical stations: $43 + 10 \log_{10} P_m$ (watts)

3.4 *Channel utilization*

27/67 3.4.1 A station using single sideband emissions shall be considered to be operating in accordance with the Allotment Plan if the necessary bandwidth is confined within either the upper or the lower half of the channel provided for double sideband emissions.

27/68 3.4.2 Subject to the provisions of No. **27/12**, and to the following conditions, a station using single sideband emissions may operate either in the upper half or in the lower half of a double sideband channel designated by its centre frequency in the Allotment Plan:

27/69 *a)* when operating in the upper half of the channel, the station shall use upper sideband emissions with the carrier at the channel centre frequency listed in the Allotment Plan;

27/70 *b)* equipment capable of operating only on integral multiples of 1 kc/s shall be restricted to the upper halves of the channels listed in the Allotment Plan, when operated in channels having a width of 7 kc/s;

27/71 *c)* when operating in the lower half of the channel, the station shall use upper sideband emissions with the carrier at the following value below the channel centre frequency listed in the Allotment Plan:

Band	Carrier (reference) frequency relative to centre frequency of channel
2, 3, 4, 5, 6 and 8 Mc/s	3500 c/s below
10, 11, 13 and 17 Mc/s	4000 c/s below

4. *Assigned frequencies*

27/72 4.1 The assigned frequency for single sideband radiotelephone emissions shall be at a value 1500 cycles above the carrier (reference) frequency.

27/73 4.2 Stations employing double sideband emissions (A3) shall operate with assigned frequencies at the values listed in the Allotment Plan.

PART II

Plan for the Allotment of Frequencies for the Aeronautical Mobile (R) Service in the Exclusive Bands between 2850 and 17 970 kc/s

Section I

Description of the Boundaries of the MWARA, RDARA, Sub-RDARA and VOLMET Areas

27/74 1. The boundary descriptions which follow delineate the areas to which frequencies are allotted under the Frequency Allotment Plan.

27/75 2. These areas are shown graphically on the maps associated with this Appendix. If there is any difference between the areas as shown on the maps and as described, the written description is to be considered correct.

27/76 3. The mention of the name of a country or of a territory in the descriptions or on the maps, and the tracing of borders on the maps, do not imply, on the part of the I.T.U., any position with respect to the political status of such a country or territory, or official recognition of these borders.

27/77 4. In the description of the Major World Air Route Areas (MWARAs) all lines between points not otherwise specified are defined as great circles.

27/78 In the description of the Regional and Domestic Air Route Areas (RDARAs) and Sub-Areas all lines between points not otherwise specified are defined as straight lines on a Mercator Projection map.

27/79 In the description of the VOLMET areas all lines between points are defined as great circles.

ARTICLE 1

Description of the Boundaries of the Major World Air Route Areas (MWARAs)

27/80 *Major World Air Route Area—CARIBBEAN*
(MWARA-CAR)

From the point 20°N 120°W through the points 35°N 120°W, 35°N 85°W, 43°N 74°W 40°N 60°W, 00° 48°W, 00° 80°W, to the point 20°N 120°W.

27/81 *Note :* Only one family of frequencies allotted to this area is available for extension to the mid-point of the air route between Mexico City and Tahiti.

27/82 *Major World Air Route Area—CENTRAL EAST PACIFIC*
(MWARA-CEP)

From the point 50°N 122°W through the points 38°N 120°W, 32°N 117°W, 20°S 145°W, 20°S 152°W, 22°N 159°W, to the point 50°N 122°W.

27/83 *Major World Air Route Area—CENTRAL WEST PACIFIC*
(MWARA-CWP)

From the point 17°N 155°W through the points 10°N 160°E, 10°N 117°E, 23°N 114°E, 40°N 117°E, 25°N 155°W, to the point 17°N 155°W.

27/84 *Major World Air Route Area—EUROPE*
(MWARA-EU)
From the point 33°N 12°W through the points 54°N 12°W, 70°N 00°, 74°N 40°E, 40°N 40°E, 40°N 36°E, 29°N 35°30′E, 32°N 13°E, to the point 33°N 12°W.

27/85 *Major World Air Route Area—FAR EAST*
(MWARA-FE)
From the point 24°N 88°E through the points 35°N 132°E, 37°N 143°E, 35°N 143°E, 10°N 126°E, 07°S 106°E, to the point 24°N 88°E.

27/86 *Major World Air Route Area—MIDDLE EAST*
(MWARA-ME)
From the point 50°N 80°E through the points 31°N 80°E, 29°N 85°E, 08°N 75°E, 22°N 56°E, 16°N 42°E, 30°N 30°E, 51°N 30°E, 57°N 37°E, to the point 50°N 80°E.

27/87 *Major World Air Route Area—NORTH ATLANTIC*
(MWARA-NA)
From the North Pole through the points 49°N 100°W, 49°N 74°W, 39°N 78°W, 18°N 66°W, 05°N 55°W, 16°N 26°W, 32°N 08°W, 44°N 02°E, 60°N 20°E, to the North Pole.

27/88 *Note :* In order to clarify the frequency allotments in this MWARA, the area has been divided into three sectors designated NA-1, NA-2 and NA-3 for purposes of reference. A description of the NA-1, NA-2 and NA-3 sectors is given below.

27/89 *Sector—NORTH ATLANTIC-1* (NA-1)
From the point 49°N 74°W through the points 49°N 100°W, to the North Pole, to 60°N 20°E, 68°N 20°W, to the point 49°N 74°W.

27/90 *Note :* Only one family of frequencies, which is allotted to MWARA-NA and noted in the Frequency Allotment Plan as (NA-1), is available for use in this sector.

27/91 *Sector—NORTH ATLANTIC-2* (NA-2)
From the point 39°N 78°W through the points 49°N 74°W, 68°N 20°W, 60°N 20°E, 44°N 02°E, 35°N 26°W, to the point 39°N 78°W.

27/92 *Sector—NORTH ATLANTIC-3* (NA-3)
From the point 39°N 78°W through the points 35°N 26°W, 44°N 02°E, 32°N 08°W, 16°N 26°W, 05°N 55°W, 18°N 66°W, to the point 39°N 78°W.

27/93 *Note :* Only one family of frequencies, which is allotted to MWARA-NA and noted in the Frequency Allotment Plan as (NA-3) is available for use in this sector.

27/94 *Major World Air Route Area—NORTH PACIFIC*
(MWARA-NP)
From the point 50°N 166°E through the points 75°N 150°W, 75°N 90°W, 55°N 110°W, 46°N 122°W, 50°N 170°W, 33°N 138°E, 52°N 132°E, to the point 50°N 166°E.

27/95 *Major World Air Route Area—NORTH-SOUTH AFRICA-1*
(MWARA-NSA-1)
From the point 05°N 03°W through the points 37°N 03°W, 37°N 14°E, 00° 28°E, 11°S 28°E, 20°S 35°E, 31°S 35°E, 31°S 17°E, to the point 05°N 03°W.

27/96 *Major World Air Route Area—NORTH-SOUTH AFRICA-2*
(MWARA-NSA-2)
From the point 00° 24°E through the points 37°N 07°E, 37°N 36°E, 30°N 35°E, 10°N 52°E, 22°S 60°E, 30°S 34°E, 30°S 24°E, to the point 00° 24°E.

27/97 *Note :* Only one family of frequencies allotted to this area is available for extension through Cocos Islands to Western Australia.

27/98 *Major World Air Route Area—SOUTH ATLANTIC*
(MWARA-SA)

From the point 40°N 03°W through the points 05°N 03°W, 20°S 20°W, 22°30'S 42°W, 15°S 50°W, 00° 38°W, 40°N 15°W, to the point 40°N 03°W.

27/99 *Note :* Only one family of frequencies allotted to this area is available for extension to Buenos Aires.

27/100 *Major World Air Route Area—SOUTH AMERICA-1*
(MWARA-SAM-1)

From the point 36°S 73°W through the points 00° 93°W, 15°N 106°W, 15°N 75°W, 05°N 75°W, 20°S 50°W, 36°S 52°W, to the point 36°S 73°W.

27/101 *Major World Air Route Area—SOUTH AMERICA-2*
(MWARA-SAM-2)

From the point 34°S 74°W through the points 24°S 60°W, 02°N 79°W, 15°N 83°W, 15°N 60°W, 10°N 60°W, 05°S 30°W, 36°S 52°W, to the point 34°S 74°W.

27/102 *Major World Air Route Area—SOUTH EAST ASIA*
(MWARA-SEA)

From the point 29°N 85°E through the points 15°N 105°E, 00° 135°E, 00° 168°E, 35°S 150°E, 35°S 116°E, 08°N 75°E, to the point 29°N 85°E.

27/103 *Major World Air Route Area—SOUTH PACIFIC*
(MWARA-SP)

From the point 22°N 158°W through the points 22°N 156°W, 00° 120°W, 40°S 120°W, 50°S 170°W, 50°S 145°E, 38°S 145°E, 00° 167°E, 00° 175°W, to the point 22N° 158°W.

ARTICLE 2

Description of the Boundaries of the Regional and Domestic Air Route Areas (RDARAs)

27/104 *Regional and Domestic Air Route Area-1*
(RDARA-1)

From the North Pole along the 15°W meridian to the point 72°N 15°W, then through the points 40°N 50°W, 30°N 39°W, 30°N 10°W, 31°N 10°W, to the point 31°N 10°E. Then along the Libya-Tunisia border to the Mediterranean, thence along the coast of Libya and the U.A.R. to Alexandria. Thence to Cairo, and eastward along the Cairo parallel to intersect the 40°E meridian, and north along the 40°E meridian to the south coast of the Black Sea. Thence west along the Black Sea coast of Turkey to intersect the 30°E meridian, then along the 30°E meridian to the border of Roumania and the U.S.S.R., thence along the border between the U.S.S.R. and the following countries: Roumania, Hungary, Czechoslovakia and Poland. Thence along the U.S.S.R. Baltic Sea coast, to the border between Finland and the U.S.S.R. Then to the point 70°N 32°E, and along the 32°E meridian to the North Pole.

27/105 *Sub-Area 1A*

From the point 65°N 26°W, and through the points 40°N 50°W, 40°N 13°W, 60°N 13°W, 60°N 26°W, to the point 65°N 26°W.

27/106 *Sub-Area 1B*

From the North Pole along the 15°W meridian to the point 72°N 15°W, then through the points 65°N 26°W, 60°N 26°W, 60°N 13°W to the point 50°N 13°W; thence east along the territorial waters between the Channel Islands and French coastline, reaching the latter at the meridian 03°W. Thence following the north-east border of France, touching Belgium, Luxembourg and the Federal Republic of Germany. Thence along the border between Switzerland and the Federal Republic of Germany, and along the border between the latter and Austria. Thence along the border between Czechoslovakia and the Federal Republic of Germany, then along the line between the Federal Republic of Germany and Eastern Germany towards the Baltic Sea. Then west along the coastline of the Federal Republic of Germany to the border between the latter and Denmark. Along this border to the North Sea. Thence along the 55°N parallel to a point 55°N 04°E. Thence along the 04°E meridian to the North Pole.

27/107 *Sub-Area 1C*

From the North Pole along the meridian 04°E to the 55°N parallel. Thence east along the 55°N parallel and the border between Denmark and the Federal Republic of Germany to the Baltic Sea, then along the Baltic Sea coast of the Federal Republic of Germany to the line between the Federal Republic of Germany and Eastern Germany. Along this line touching the western borders of Czechoslovakia and Austria to the Swiss border. Thence eastward along the southern borders of Austria and Hungary, thence along the border between Hungary and Roumania, thence along the border between the U.S.S.R. and the following countries: Hungary, Czechoslovakia and Poland. Thence to the Baltic Sea along the U.S.S.R. Baltic Sea coast, to the border between Finland and the U.S.S.R. at 70°N 32°E, then along the 32°E meridian to the North Pole.

27/108 *Sub-Area 1D*

From the junction of the borders of the U.S.S.R., Hungary and Roumania, westward along the southern borders of Hungary and Austria to the border between Switzerland and Italy, and the border between France and Italy to the Mediterranean Sea. Thence to 43°N 10°E to 41°N 10°E to 41°N 07°E, thence along the 07°E meridian to the North African coast. Then along the North African coast including Tunis, Tripoli, Benghazi, to the coastal border between Libya and the U.A.R. Thence along the coast to Alexandria, then to Cairo, and along the Cairo parallel to the 40°E meridian. North along the 40°E meridian to the South Coast of the Black Sea. Thence west along the Black Sea coast of Turkey to intersect the 30°E meridian. Along the 30°E meridian to the border of Roumania and the U.S.S.R., thence along this border to the junction of the borders of the U.S.S.R., Hungary and Roumania.

27/109 *Sub-Area 1E*

From the point 50°N 13°W, and through the points 40°N 13°W, 40°N 50°W, 30°N 39°W, 30°N 10°W, 31°N 10°W to the point 31°N 10°E. Then along the Libya-Tunisian border to the Mediterranean, thence along the Tunisian coast to intersect the 10°E meridian. Thence to the point 43°N 10°E; thence to the border between Italy and France and between Italy and Switzerland, Switzerland and Austria, Switzerland and the Federal Republic of Germany, and between France and the Federal Republic of Germany, France and Luxembourg, and France and Belgium to the Channel coast. Thence west through the territorial waters between the Channel Islands and the French coast to the point 50°N 13°W.

27/110 *Regional and Domestic Air Route Area-2*
(RDARA-2)

From the North Pole along the 32°E meridian to the 70°N parallel. Then along the border between Finland and the U.S.S.R. to the Baltic coast. Along the territorial waters of the U.S.S.R. Baltic coast to the border between the U.S.S.R. and Poland. Thence along the border between the U.S.S.R. and the following countries: Poland, Czechoslovakia, Hungary and Roumania, to the Black Sea coast at the intersection of the 30°E meridian. Then along the 30°E meridian to the Black Sea coast of Turkey. Along the Black Sea coast of Turkey to the junction of the borders of Turkey and the U.S.S.R. Thence along this common border and the Iran-U.S.S.R. border to the Caspian Sea. Then along the Iran Caspian Sea coast and the southern border of the U.S.S.R. to the intersection of the Mongolia-China-U.S.S.R. borders at approximately 49°N 88°E. Then along the 88°E meridian to 55°N. Then along the 55°N parallel to 60°E, and along the 60°E meridian to the North Pole.

27/111 *Sub-Area 2A*

From the North Pole along the 32°E meridian to 70°N. Then along the border between Finland and the U.S.S.R. to the Baltic coast, and along the territorial waters of the U.S.S.R. Baltic coast to the point 55°N 20°E, and thence to Moscow. Then to 55°N 60°E, and along the 60°E meridian to the North Pole.

27/112 *Sub-Area 2B*

From the point 55°N 88°E and through the point 55°N 60°E to the point 47°N 53°E. Thence along the east coast of the Caspian Sea to the Iranian coast. Thence eastward along the southern border of the U.S.S.R. to the intersection of the Mongolia-China-U.S.S.R. borders at approximately 49°N 88°E; thence along the 88°E meridian to 55°N.

27/113 *Sub-Area 2C*

From the point 55°N 60°E, to Moscow, to 55°N 20°E. Thence south along the border between the U.S.S.R. and Poland. Thence along the border between the U.S.S.R. and the following countries: Poland, Czechoslovakia, Hungary and Roumania, to the Black Sea coast at the meridian 30°E. Along the meridian 30°E to the Black Sea coast of Turkey. Along this coastline to the junction of the borders of Turkey and the U.S.S.R. Thence along this common border and the Iran-U.S.S.R. border to the Caspian Sea, then along the south coast of the Caspian Sea and thence north along the East Caspian Sea coast and through the point 47°N 53°E to 55°N 60°E.

27/114 *Regional and Domestic Air Route Area-3*
(RDARA-3)

From the North Pole to the point 55°N 60°E, thence along the 55°N parallel to 88°E. Then along the 88°E meridian to the intersection of the Mongolia-China-U.S.S.R. borders at approximately 49°N 88°E. Then along the borders between Mongolia and China, and U.S.S.R. and China, to the coast. Between the territorial waters of U.S.S.R. and Japan to the point 43°N 147°E and through the point 50°N 164°E to 65°N 170°W. Then along the 170°W meridian to the North Pole.

27/115 *Sub-Area 3A*

From the North Pole along the 60°E meridian to 55°N. Then along the 55°N parallel to 88°E. Then through the point 60°N 88°E to 60°N 110°E, and along the 110°E meridian to the North Pole.

27/116 *Sub-Area 3B*

From the North Pole along the 110°E meridian to 60°N 110°E, and through the points 60°N 147°E, 43°N 147°E, 50°N 164°E, to 65°N 170°W. Then along the 170°W meridian to the North Pole.

27/117 *Sub-Area 3C*

From the point 60°N 88°E to the intersection of Mongolia-China-U.S.S.R. borders at approximately 49°N 88°E. Along the borders between Mongolia and China, and U.S.S.R. and China, to the coast. Between the territorial waters of U.S.S.R. and Japan to the point 43°N 147°E. Then through the point 60°N 147°E to the point 60°N 88°E.

27/118 *Regional and Domestic Air Route Area-4*
(RDARA-4)

From the point 30°N 39°W, and through the points 10°N 20°W, 05°S 20°W, to the point 05°S 12°E. Thence along the northern border of the Democratic Republic of the Congo, bypassing Cabinda Territory, to the border between the Republic of the Congo (Brazzaville), the Central African Republic and the Republic of the Sudan. Thence north along the western border of the Sudan. Along the western border of the U.A.R., northwards to the Mediterranean and along the Mediterranean and Atlantic coasts of North Africa to the point 30°N 10°W. West along the 30°N parallel to close the area at 30°N 39°W.

27/119 *Sub-Area 4A*

From the point 30°N 39°W to 21°N 31°W. Thence to Gao and to Zinder. From Zinder, along the northern border of Nigeria, to a point west of Fort-Lamy. Then along the Fort-Lamy parallel to 12°N 22°E. Thence north along the western border of the Sudan, and along the western border of the U.A.R. to the Mediterranean. Along the North African Mediterranean coast and Atlantic coast to a point 30°N 10°W. Thence along the 30°N parallel to close the sub-area at 30°N 39°W.

27/120 *Sub-Area 4B*

From the point 21°N 31°W through the points 10°N 20°W, 05°S 20°W, to 05°S 12°E. Thence along the southern border of the Republic of the Congo (Brazzaville) and the Central African Republic to the junction between the Democratic Republic of the Congo, the Sudan and the Central African Republic. Along the western border of the Sudan to the point 12°N 22°E. Thence along the Fort-Lamy parallel to the Nigerian border. Then west along this border to Zinder. From Zinder through Gao to close the sub-area at 21°N 31°W.

27/121 *Regional and Domestic Air Route Area-5*
(RDARA-5)

From the point 41°N 40°E to the point 37°N 40°E. Then along the border between Turkey and the Syrian Arab Republic to the Mediterranean coast. Thence to the common border of Libya and the U.A.R. on the North African coast excluding Cyprus. Southward along the western border of the U.A.R., and the Sudan to the border of Kenya. Thence east along the northern border of Kenya, and then south along the border between Kenya and Somaliland, to the East African coast at 02°S 41°E. Then through the point 02°S 73°E to 37°N 73°E. Then east along the border between Afghanistan and Pakistan, and west along the southern border of the U.S.S.R. to the Caspian Sea. Then along the northern border of Iran and Turkey to close the area at 41°N 40°E.

27/122 *Sub-Area 5A*

From the point 37°N 40°E, along the border between Turkey and the Syrian Arab Republic to the Mediterranean coast. Thence to the common border of Libya and the U.A.R. on the North African coast, excluding Cyprus. Southward, along the western border of the U.A.R. and east along the common border of the U.A.R. and the Sudan to 24°N 37°E. Then through the points 12°N 44°E, 13°N 52°E, to the point 26°N 52°E. Thence along the border between Iran and Iraq, and the border between Iraq and Turkey to 37°N 40°E.

27/123 *Sub-Area 5B*

From the point 41°N 40°E to 37°N 40°E. Thence east along the borders between Turkey and the Syrian Arab Republic, and Turkey and Iraq, and along the border between Iraq and Iran to the point 30°N 49°E. Thence along the middle of the Persian Gulf through the points 26°N 52°E and 24°N 60°E, to Bombay. Then to 37°N 73°E. Then east along the Afghanistan-Pakistan border and west along the southern border of the U.S.S.R. to the Caspian Sea. Then along the northern border of Iran and Turkey to close the sub-area at 41°N 40°E.

27/124 *Sub-Area 5C*

From the point 26°N 52°E, and through the points 13°N 52°E, 13°N 54°E, 02°S 54°E, 02°S 73°E, to Bombay. Then to 24°N 60°E. Then along the middle of the Persian Gulf to 26°N 52°E.

27/125 *Sub-Area 5D*

From the junction point of the U.A.R., Libya and the Sudan southward along the western border of Sudan to the border of Kenya. Thence along the northern border of Kenya. Then south along the border between Kenya and Somaliland to the east African coast, at the point 02°S 42°E. Then through the points 02°S 54°E, 13°N 54°E, 13°N 52°E to the point 12°N 44°E. Thence northwest along the middle of the Red Sea to 24°N 37°E. Thence along the southern border of the U.A.R. to close the sub-area.

27/126 *Regional and Domestic Air Route Area-6*
(RDARA-6)

From approximately 49°N 88°E, along the border between China and the U.S.S.R. and between Afghanistan and Pakistan, and Iran and Pakistan to the point 23°N 61°E. Thence to Bombay. Then along the 73°E meridian to the point 02°S 73°E, and through the points 02°S 92°E, 10°S 92°E, 10°S 141°E, 00° 141°E, 00° 160°E, 03°30′N 160°E, 03°30′N 170°W, 10°N 170°W, 50°N 164°E, to the point 43°N 147°E. Thence west between the territorial waters of Japan and the U.S.S.R. and along the north-eastern and northern border of China to approximately 49°N 88°E.

27/127 *Sub-Area 6A*

From the point 37°N 75°E, along the border between Pakistan and Afghanistan, and Iran and Pakistan to the point 23°N 61°E. Thence to Bombay. From Bombay to 24°N 80°E. Thence to Calcutta. Thence along the coast of Pakistan and Burma to reach the border between Burma and Thailand. North along this border and that between Burma and Laos. Thence along the border between China and Burma. Thence westward along the southern border of China to the point 37°N 75°E.

27/128 *Sub-Area 6B*

From approximately 49°N 88°E, along the common border between China and the U.S.S.R. to the point 37°N 75°E. Thence eastward along the southern border of China to the coast of the South China Sea. Thence along the south territorial waters of Hainan Island to the point 20°N 113°E, and through the points 20°N 176°W, 50°N 164°E, to 43°N 147°E. Thence west between the territorial waters of Japan and the U.S.S.R. and then along the border between China and the U.S.S.R. and along the border between China and Mongolia to approximately 49°N 88°E.

27/129 *Sub-Area 6C*

From the point 20°N 130°E through the point 04°N 130°E to 04°N 118°E. Thence along the southern borders of Sabah and Sarawak to the coast and then southward along the west coast of Borneo to the 110°E meridian. Thence along 110°E meridian to the point 10°S 110°E. Thence through the points 10°S 141°E, 00° 141°E, 00° 160°E, 03°30'N 160°E, 03°30'N 170°W, 10°N 170°W, 20°N 176°W to 20°N 130°E.

27/130 *Sub-Area 6D*

From the junction of the borders of China, India and Burma, south along the India-Burma and Pakistan-Burma borders to the Bay of Bengal. Along the coast of Burma to its southernmost point. Then to Weh Island (off the north coast of Sumatra). Then to the point 02°S 92°E, and through the point 10°S 92°E to 10°S 110°E. Then northward along the 110°E meridian, and thence along the boundary of Sub-Area 6C through the point 20°N 130°E to 20°N 113°E. Thence south around the Island of Hainan, and along the China-North Viet-Nam, China-Laos and China-Burma borders to close the sub-area at the junction of the borders of China, India and Burma.

27/131 *Sub-Area 6E*

From the point 20°N 73°E, and through the points 02°S 73°E, 02°S 92°E, through Weh Island (off the north coast of Sumatra) to 10°N 97°E. Thence along the coasts of Burma, Pakistan and India to Calcutta. Then through the points 24°N 80°E to 20°N 73°E.

27/132 *Sub-Area 6F*

From the junction of the China-India-Burma borders north-east to the 100°E meridian. North on this meridian to the northern boundary of Sub-Area 6B. Eastward along this boundary to 147°E thence through the points 20°N 130°E, 04°N 130°E. Then west along the boundary of Sub-Area 6D to the junction of the China-India-Burma borders.

27/133 *Regional and Domestic Air Route Area-7*
(RDARA-7)

From the South Pole along the 20°W meridian to 05°S. Then along the 05°S parallel to 12°E. Thence along the northern border of the Democratic Republic of the Congo, Cabinda Territory being included in this Area, along the border between Uganda and Sudan, and between Kenya and the following countries: Sudan, Ethiopia and Somalia to the point 02°S 42°E. Then to 02°S 60°E, and along the 60°E meridian to the South Pole.

27/134 *Sub-Area 7A*

From the South Pole along the 20°W meridian to 05°S. Then through the points 05°S 10°E, 40°S 10°E, to 40°S 60°E. Then along the 60°E meridian to the South Pole.

27/135 *Sub-Area 7B*

From the points 05°S 10°E to 05°S 12°E. Thence along the northern border of the Democratic Republic of the Congo, Cabinda Territory being included in this Area, to the junction of the borders of Uganda, Democratic Republic of the Congo and Sudan. Thence south along the eastern and southern border of the Democratic Republic of the Congo, including the Kingdom of Burundi and the Republic of Rwanda, and along the eastern and southern border of Angola to the coast of the South Atlantic. Thence to the point 17°S 10°E, and then to close the sub-area at 05°S 10°E.

27/136 *Sub-Area 7C*

From the junction of the borders of Uganda, Democratic Republic of the Congo and Sudan along the western border of Uganda and Tanzania, and then along the southern border of Tanzania to the coast. Thence through the points 11°S 41°E, 11°S 60°E, 02°S 60°E, to 02°S 41°E. Thence to the east coast of Africa. Then north along the eastern border of Kenya, then west along the northern borders of Kenya and Uganda to close the sub-area at the junction of the borders of the Democratic Republic of the Congo, Sudan and Uganda.

27/137 *Sub-Area 7D*

From the border of Tanzania and Mozambique on Lake Nyasa, south along the west border of Mozambique to the African East coast. Then through the points 27°S 33°E, 40°S 33°E, 40°S 60°E, 11°S 60°E, to 11°S 41°E. Thence along the northern border of Mozambique to Lake Nyasa.

27/138 *Sub-Area 7E*

From the point 17°S 10°E, and through the points 40°S 10°E, 40°S 33°E, to 27°S 33°E. Thence along the west border of Mozambique and the lower part of the western border of Tanzania as far as the northern point of Lake Nyasa. Thence along the border between Malawi and Tanzania and between Zambia and Tanzania and along the borders between the Democratic Republic of the Congo and Zambia, Angola and Zambia, and Angola and the Territory of South-West Africa to the coast at the point 17°S 10°E.

27/139 *Regional and Domestic Air Route Area-8*
(RDARA-8)

From the South Pole along the 60°E meridian to 02°S. Then through the point 02°S 92°E, 10°S 92°E to 10°S 110°E. Then along the 110°E meridian to the South Pole.

27/140 *Sub-Area 8A*

From the South Pole along the 60°E meridian to 02°S. Then through the points 02°S 92°E, 10°S 92°E, to 10°S 110°E. Then along the 110°E meridian to the South Pole.

27/141 *Regional and Domestic Air Route Area-9*
(RDARA-9)

From the South Pole along the 110°E meridian to 10°S. Then through the points 10°S 141°E, 00° 141°E, 00° 160°E, 03°30′N 160°E to 03°30′N 120°W. Then along the 120°W meridian to the South Pole.

27/142 *Sub-Area 9A*

From the point 10°S 110°E to the South Pole. Thence along the 139°E meridian to 24°S. Then through the points 24°S 131°E, 10°S 131°E to 10°S 110°E.

27/143 *Sub-Area 9B*

From the point 00° 141°E to the point 10°S 141°E thence to 10°S 131°E, 24°S 131°E, 24°S 139°E, 27°S 139°E, 27°S 170°W, 03°30′N 170°W, 03°30′N 160°E, 00° 160°E to the point 00° 141°E.

27/144 *Sub-Area 9C*

From the South Pole along the 170°W meridian to 03°30′N. Then through the point 03°30′N 120°W and along the 120°W meridian to the South Pole.

27/145 *Sub-Area 9D*

From the South Pole along the 139°E meridian to 27°S. Then through the point 27°S 170°W and along the 170°W meridian to the South Pole.

Regional and Domestic Air Route Area-10
(RDARA-10)

27/146 *Sub-Area 10A*

From the point 50°N 164°E to 66°N 169°W. Then along the 169°W meridian to the North Pole. Then along the 130°W meridian to 57°N. Thence through the points 57°N 150°W, 50°N 175°W, to close the sub-area at 50°N 164°E.

27/147 *Sub-Area 10B*

From the point 57°N 140°W, along the 140°W meridian to the North Pole. Then along the 91°W meridian to 48°N. Thence through the points 48°N 127°W, 57°N 139°W, to 57°N 140°W.

27/148 *Sub-Area 10C*

From the point 57°N 140°W, and through the points 60°N 140°W, 60°N 91°W, 48°N 91°W, 48°N 127°W, 57°N 139°W, to 57°N 140°W.

27/149 *Sub-Area 10D*

From the point 48°N 98°W, along the 98°W meridian to the North Pole. Then along the 45°W meridian to 69°N. Then through the points 61°N 70°W, 45°N 72°W, 41°N 81°W, 41°N 88°W, 48°N 91°W, to 48°N 98°W.

27/150 *Sub-Area 10E*

From the point 45°N 74°W, and through the point 61°N 72°W to 69°N 47°W. Then along the 47°W meridian to the North Pole. Then along the 15°W meridian to 72°N. Then through the points 40°N 50°W, 40°N 65°W, to close the sub-area at 45°N 74°W.

Regional and Domestic Air Route Area-11
(RDARA-11)

27/151 *Sub-Area 11A*

From the point 29°N 180°, along the I.T.U. boundary between Regions 2 and 3, to 50°N 164°E. Then through the points 50°N 150°W, 57°N 139°W, 50°N 127°W, 33°N 127°W, 33°N 153°W, 29°N 153°W, to close the sub-area at 29°N 180°.

27/152 *Sub-Area 11B*

From the point 50°N 127°W and through the points 33°N 127°W, 33°N 119°W, 25°N 98°W, 25°N 35°W, 40°N 50°W, 40°N 65°W, 46°N 67°W, then along the border between the United States and Canada to close the sub-area at 50°N 127°W.

Regional and Domestic Air Route Area-12
(RDARA-12)

27/153 *Sub-Area 12A*

From the point 03°30′N 170°W to the point 10°N 170°W, then along the I.T.U. boundary between Regions 2 and 3 to 29°N 180°, and thence to 29°N 153°W, 03°30′N 153°W, to close the sub-area at 03°30′N 170°W.

27/154 *Sub-Area 12B*

From the point 03°30′N 153°W to 33°N 153°W, through the points 33°N 120°W, 17°N 115°W, 14°N 93°W, 02°N 86°W, 02°N 93°W, 05°S 93°W, 05°S 120°W, 03°30′N 120°W, to close the sub-area at 03°30′N 153°W.

27/155 *Sub-Area 12C*

From the point 33°N 120°W, through the points 35°N 120°W, 32°N 104°W, 25°N 91°W, 23°N 83°W, 22°N 83°W, 13°N 90°W, 16°N 116°W, to close the sub-area at 33°N 120°W.

27/156 *Sub-Area 12D*

From the point 20°N 91°W, and through the points 26°N 91°W, 26°N 79°W, 27°N 79°W, 27°N 76.5°W, 26°N 73°W, 17°N 58°W, to 10°N 58°W. Thence through Balboa, Canal Zone, Swan Island, and Belize to close the sub-area at 20°N 91°W.

27/157 *Sub-Area 12E*

From the point 15°N 95°W and through 23°N 92°W, 23°N 85°W, 19°N 85°W, 09°N 77°W, 02°N 79°W. Thence to 01°N 75°W along the eastern and southern border of Ecuador to the point 04°S 81°W, and from there to 02°N 81°W and 02°N 86°W, 14°N 93°W to close the sub-area at 15°N 95°W.

27/158 *Sub-Area 12F*

From the point 04°S 93°W, and through the points 02°N 93°W, and 02°N 79°W, to Balboa, Canal Zone. Then to 13°N 77°W, and through the points 13°N 70°W, 08°N 70°W, 06°N 67°W, 01°N 66°W to 04°S 70°W. Then along the border between Colombia and Peru to the junction of the borders of Colombia, Peru and Ecuador. Then along the border between Peru and Ecuador through 04°S 81°W to close the sub-area at 04°S 93°W.

27/159 *Sub-Area 12G*

From the point 07°N 73°W, and through the points 14°N 73°W, 14°N 58°W, 01°N 58°W, 01°N 68°W, 05°N 69°W, to close the sub-area at 07°N 73°W.

27/160 *Sub-Area 12H*

From the point 10°S 70°W, and through the points 05°N 70°W, 05°N 61°10′W, 08°45′N 60°W, 08°N 58°W, 08°N 49°W, 02°N 47°W, 10°S 47°W, to close the sub-area at 10°S 70°W.

27/161 *Sub-Area 12I*

From the point 25°N 70°W, through the point 25°N 35°W and along the I.T.U. boundary between Regions 1 and 2, to 00° 20°W. Thence through the points 00° 44°W, 08°N 54°W, 08°N 58°W, 17°N 58°W, to close the sub-area at 25°N 70°W.

Regional and Domestic Air Route Area-13
(RDARA-13)

27/162 *Sub-Area 13A*

From the point 05°S 120°W and through the points 05°S 93°W, 04°S 82°W, 19°S 81°W, 57°S 81°W, to 57°S 90°W. Thence to the South Pole to close the sub-area at 05°S 120°W.

27/163 *Sub-Area 13B*

From the point 29°S 111°W, and through the points 24°S 111°W, 24°S 104°W, 29°S 104°W, to close the sub-area at 29°S 111°W.

27/164 *Sub-Area 13C*

From the point 15°50′S 47°50′W and through the points 20°30′S 55°W, 22°35′S 54°30′W, and along the border of Brazil with Paraguay, Bolivia, Peru, Colombia, Venezuela, British Guiana, Surinam and French Guiana to 05°N 50°W, 05°N 48°30′W, to close the sub-area at 15°50′S 47°50′W.

27/165 *Sub-Area 13D*

From the point 19°S 81°W, and through the points 04°S 82°W, 03°S 80°W, and along the border between Peru and Ecuador to 00° 75°W. Then along the border between Peru, Colombia and Brazil to 11°S 69°30′W. Thence along the border between Bolivia and Brazil and through the point 20°10′S 58°W, continuing along the border between Paraguay and Brazil to 25°50′S 54°30′W and thence following the border between Paraguay and Argentina to 22°30′S 62°30′W. Then along the border between Bolivia and Argentina and through the point 23°S 67°W along the border between Bolivia and Chile and through the point 17°30′S 69°30′W, following the border between Peru and Chile to close the sub-area at 19°S 81°W.

27/166 *Sub-Area 13E*

From the point 32°S 81°W and through the point 19°S 81°W, continuing along the border between Chile, Peru, Bolivia and Argentina, to the point of intersection with 32°S to close the sub-area at 32°S 81°W.

27/167 *Sub-Area 13F*

From the point 57°S 81°W and through the point 32°S 81°W to the intersection of 32°S with the frontier between Chile and Argentina, and through the points 52°S 67°W, 57°S 67°W, 57°S 40°W to the South Pole to close the sub-area at 57°S 81°W.

27/168 *Sub-Area 13G*

From the point 36°S 55°W to the intersection of 32°S with the border between Argentina and Chile, then north along the borders of Argentina with Bolivia, Paraguay, Brazil and Uruguay to close the sub-area at 36°S 55°W.

27/169 *Sub-Area 13H*

From the point 57°S 90°W and through the point 57°S 70°W to 52°S 70°W. Then along the border between Chile and Argentina to its intersection by 32°S and through the points 36°S 55°W, 57°S 55°W, 57°S 25°W to the South Pole to close the sub-area at 57°S 90°W.

27/170 *Sub-Area 13I*

From the point 40°S 50°W through the point 36°S 55°W and along the borders between Uruguay, Argentina and Brazil, then through the point 35°S 45°W to close the sub-area at 40°S 50°W.

27/171 *Sub-Area 13J*

From the point 15°50′S 47°50′W through the points 20°S 44°W, 22°55′S 43°10′W, 29°S 40°W, 35°S 45°W and thence along the borders of Brazil with Uruguay, Argentina and Paraguay to the point 22°35′S 55°40′W, then through the point 20°30′S 54°30′W to close the sub-area at the point 15°50′S 47°50′W.

27/172 *Sub-Area 13K*

From the point 15°50′S 47°50′W and through the points 20°S 44°W, 22°55′S 43°10′W, 29°S 40°W, 20°S 32°W, 00° 32°W, 05°N 48°30′W, to close the sub-area at 15°50′S 47°50′W.

27/173 *Sub-Area 13L*

From the point 00° 32°W through the points 00° 20°W, the South Pole, 57°S 55°W, 36°S 55°W, 40°S 50°W, 20°S 32°W, to close the sub-area at 00° 32°W.

ARTICLE 3

Description of the Boundaries of the VOLMET Allotment Areas and VOLMET Reception Areas

VOLMET area—AFRICA-INDIAN OCEAN
(AFI-MET)

27/174 The *AFI-MET allotment area* is defined by a line drawn from the point 37°N 03°W, through the points 37°N 36°E, 30°N 35°E, 10°N 52°E, 22°S 60°E, 30°S 34°E, 30°S 24°E, 12°N 20°W, 29°N 20°W, to the point 37°N 03°W.

27/175 The *AFI-MET reception area* is defined by a line drawn from the point 37°N 03°W, through the points 37°N 36°E, 30°N 35°E, 10°N 52°E, 22°S 60°E, 30°S 34°E, 30°S 24°E, 05°N 10°W, 10°S 40°W, 29°N 20°W, to the point 37°N 03°W.

VOLMET area—ATLANTIC
(AT-MET)

27/176 The *AT-MET allotment area* is defined by a line drawn from the point 41°N 78°W, through the points 51°N 55°W, 10°S 43°W, 37°S 59°W, to the point 41°N 78°W.

27/177 The *AT-MET reception area* is defined by a line drawn from the point 24°N 97°W, through the points 24°N 85°W, 75°N 85°W, 75°N 20°W, 10°S 20°W, 46°S 52°W, 46°S 80°W, to the point 24°N 97°W.

VOLMET area—EUROPE
(EU-MET)

27/178 The *EU-MET allotment area* is defined by a line drawn from the point 33°N 12°W, through the points 54°N 12°W, 70°N 00°, 74°N 40°E, 40°N 36°E, 29°N 35°30'E, 32°N 13°E, to the point 33°N 12°W.

27/179 The *EU-MET reception area* is defined by a line drawn from the point 15°N 20°W, through the points 40°N 50°W, 75°N 50°W, 75°N 45°E, 15°N 45°E, to the point 15°N 20°W.

VOLMET area—MIDDLE EAST
(ME-MET)

27/180 The *ME-MET allotment area* is defined by a line drawn from the point 50°N 80°E, through the points 29°N 80°E, 27°N 85°E, 16°N 78°E, 22°N 56°E, 16°N 42°E, 30°N 30°E, 51°N 30°E, 57°N 37°E, to the point 50°N 80°E.

27/181 The *ME-MET reception area* is defined by a line drawn from the point 50°N 80°E, through the points 29°N 80°E, 27°N 85°E, 16°N 78°E, 15°N 42°E, 20°N 20°E, 40°N 20°E, 51°N 30°E, 57°N 37°E, to the point 50°N 80°E.

VOLMET area—PACIFIC
(PAC-MET)

27/182 The *PAC-MET allotment area* is defined by a line drawn from the point 52°N 132°E, through the points 63°N 149°W, 38°N 120°W, 23°S 180°, 34°S 150°E, 22°N 112°E, to the point 52°N 132°E.

27/183 The *PAC-MET reception area* is defined by a line drawn from the point 60°N 100°E, through the points 80°N 160°W, 75°N 90°W, 60°N 85°W, 20°N 120°W, 40°S 120°W, 50°S 170°W, 50°S 145°E, 28°S 145°E, 03°S 129°E, 05°N 80°E, 40°N 80°E, to the point 60°N 100°E.

VOLMET area—SOUTH EAST ASIA
(SEA-MET)

27/184 The *SEA-MET allotment area* is defined by a line drawn from the point 29°N 86°E, through the points 15°N 105°E, 10°S 155°E, 35°S 155°E, 35°S 116°E, 08°N 75°E, 26°N 65°E, to the point 29°N 86°E.

27/185 The *SEA-MET reception area* is defined by a line drawn from the point 35°N 50°E, through the points 30°N 90°E, 10°N 180°, 40°S 180°, 48°S 170°E, 35°S 116°E, 08°N 75°E, 10°N 50°E, to the point 35°N 50°E.

Section II

Allotment of Frequencies to the Aeronautical Mobile (R) Service

ARTICLE 1

27/186 **Frequency Allotment Plan**

(by MWARAs, RDARAs, Sub-RDARAs and VOLMET Areas)

Notes :

27/187 *a)* * = For the exact nature of a restriction on the use of the frequency concerned, refer to: Column 3 of the Frequency Allotment Plan in numerical order of frequencies (Nos. **27/195-27/207**).

27/188 *b)* The following list does not include the world-wide common (R) and (OR) frequencies of 3023.5 and 5680 kc/s, or the world-wide frequencies of 3499, 6526, 8963, 10 093 and 13 356 kc/s. The allotment of these frequencies is shown in Article 2.

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Bands Mc/s		**3**	**3.5**	**4.7**	**5.6**	**6.6**	**9**	**10**	**11.3**	**13.3**	**18**
Areas		kc/s	kc/s	kc/s	kc/s	kc/s	kc/s	kc/s	kc/s	kc/s	kc/s
CAR		2952 2966			5484 5568	6540 6561	8840 8959	10 017	11 343 11 367	13 320	17 917
CEP			3467		5554 5603		8875 8931			13 336	17 925
CWP		2896		4675	5505	6631	8854		11 303	13 296	17 909
EU		2910	3467	4689	5554	6568 6582	8875 8931		11 303		17 941
FE		2868 2987			5624 5645		8840 8868			13 288 13 312	17 965
ME			3404 3446		5603	6624	8847	10 009		13 336	17 917
NA	NA-1	2868			5624		8910			13 328	17 941
	NA-2	2868 2931 2945 2987			5610 5624 5638 5673		8854 8889 8910 8945			13 288 13 328 13 352	17 941
	NA-3	2931			5610		8945			13 328	17 941
NP		2910			5589		8938			13 264	17 909
NSA-1			3411		5519		8826			13 304	17 949
NSA-2		2966	3481		5505	6540 6561	8959	10 025		13 280 13 336	17 925
SA		2875*	3432			6610 6680	8882	10 049		13 344	17 949
SAM-1		2889		4696		6666	8826		11 343		17 917
SAM-2		2910			5582		8847		11 327	13 320	17 917

Bands Mc/s	3	3.5	4.7	5.6	6.6	9	10	11.3	13.3	18
Areas	kc/s	kc/s	kc/s	kc/s	kc/s	kc/s	kc/s	kc/s	kc/s	kc/s
SEA	2987			5673		8868 8882			13 288*	17 965
SP	2945			5638		8847			13 304	17 949
1								11 359	13 296	
1B		3453*		5645*			10 065			
1C	2994	3453* 3474		5645* 5659	6533	8938	10 065			
1D	2896	3418*	4668	5568*	6631	8952	10 081			
1E	2861		4654*		6547		10 065			
2							10 033 10 041 10 057 10 089	11 287 11 319 11 335 11 351 11 367 11 383	13 320	17 957
2A	2875 2882 2903 2973 3008	3425 3439 3460 3495	4661 4696	5512 5568 5596 5666	6540 6561 6575 6589 6610	8840 8861 8868 8903 8917	10 017* 10 049			
2B	2854* 2868* 2875 2924 2938 2952 2980*	3425 3439 3460 3488	4654 4661 4668* 4696	5484 5498 5540 5596 5638* 5645* 5666	6533 6589 6603 6638 6645 6673	8861 8917				
2C	2882 2903 2917 2924 2938 2952 2959 2987* 3008	3418 3425 3439 3460 3474 3495	4654 4661 4675 4696	5491 5547 5582 5589 5596 5617 5631 5652* 5666	6554 6603 6617 6645 6652 6659 6666	8840 8861 8903 8917*	10 017*			
3							10 033 10 073 10 089	11 327 11 375 11 391*	13 272	17 941* 17 957
3A	2861 2875 2924	3411* 3432* 3439 3481	4661 4675*	5631 5659	6547 6589 6617 6631 6673 6680	8840 8861 8868* 8882* 8917 8959*				
3B	2854 2903 2931 2938 2959 2966	3404 3495	4661 4689*	5484 5533 5540 5575	6533 6589 6624 6659	8819* 8826* 8833* 8847* 8861 8875* 8882 8889 8896 8910 8931* 8945*	10 025			

Bands Mc/s	**3**	**3.5**	**4.7**	**5.6**	**6.6**	**9**	**10**	**11.3**	**13.3**	**18**
Areas	kc/s	kc/s	kc/s	kc/s	kc/s	kc/s	kc/s	kc/s	kc/s	kc/s
3C	2854 2882 2917 2994 3008	3425 3453 3474*	4654 4661 4682* 4696	5498 5526 5554* 5568	6603 6652 6666	8861 8896 8910 8945*	10 025			
4								11 375		17 933
4A	2854				6638	8896	10 081			
4B	2924				6589 6638	8924				
5								11 295		17 933
5A		3453		5526	6610	8896				
5B	2966		4682	5659	6547	8854 8896				
5C			4682	5659	6547	8896				
5D			4682	5659	6547 6645	8861				
6							10 049	11 311	13 328 13 352	
6A	2910 2931 2945	3411*		5512 5547 5568 5582		8889 8924 8938	10 065			
6B	2889 2952*	3418* 3460*		5491 5610* 5631*	6540 6575	8952				
6C	2924 3015	3439		5659	6554 6617	8819 8833 8945			13 320	
6D		3411 3474 3488 3495	4668 4689	5526 5533 5596 5652	6589 6617 6659	8826 8833 8861* 8875 8931 8959		11 359		
6E	2861 2931	3411* 3467		5547 5617	6533	8889 8917				
6F	2973 3001*	3481*			6568 6582 6673*		10 065 10 081		13 280	
7				5498			10 041	11 335		
7A	2868					8840			13 264	
7B	2868					8840			13 264	
7C	2868					8840			13 264	
7D	2868					8840			13 264	
7E	2917	3425	4675	5491	6603	8875				

Bands Mc/s	3	3.5	4.7	5.6	6.6	9	10	11.3	13.3	18
Areas	kc/s	kc/s	kc/s	kc/s	kc/s	kc/s	kc/s	kc/s	kc/s	kc/s
9								11 335 11 383		
9A		3404 3418 3453			6610 6638 6652	8938 8952		11 319		
9B	2861 2959 3008	3425 3446 3460		5498 5526 5666	6533 6540 6575 6645 6666	8889 8896 8910 8917 8924		11 319		17 933
9C	2861 2973	3425 3446 3460		5498 5526 5666	6533	8896 8910 8917 8924 8952 8959				17 933
9D	2917 2938 2973 3008	3467* 3481*	4661 4682	5498 5526	6561	8826 8840 8889 8931* 8952 8959		11 319		17 933
10							10 041 10 057	11 295 11 319 11 359 11 383	13 280	
10A	2861 2875* 2924 2987*	3411 3446 3481	4668 4696*	5454 5547 5631	6568 6617	8868 8917 8924				
10B	2896 2917 2973 3015	3418 3432 3453	4654 4682	5461 5469 5491 5526 5659	6596 6645	8896 8952		11 311		
10C	2854 2889	3474	4689*	5498 5512 5575	6533 6582 6624 6638 6673	8826		11 311		
10D	2903 3008	3425 3432 3439 3488 3495	4661 4675	5477 5540 5561 5596 5617 5645 5666	6554 6610 6659 6666 6680			11 311		
10E	2882 2924 2938	3460 3495	4675 4682	5454 5505* 5631	6631	8861 8903		11 311		
12								11 351		

Bands Mc/s	3	3.5	4.7	5.6	6.6	9	10	11.3	13.3	18
Areas	kc/s	kc/s	kc/s	kc/s	kc/s	kc/s	kc/s	kc/s	kc/s	kc/s
12C	2875	3404 3453 3460	4661 4689	5454 5533 5617 5666	6547 6589 6603 6652	8861	10 025 10 073 10 089			
12D	2861			5461	6575	8924				
12E	2959 3015	3425 3446		5575 5631	6533	8875 8938				
12F	2959 3015	3425 3446 3467		5491 5589 5631	6533 6673	8861* 8875 8938				
12G	2959 2980* 3015	3425 3446		5477 5512	6596					
12H	2959 3015	3425 3446		5589	6533					
13									13 280	17 957
13C	2854 2987	3474		5540 5617	6603 6652	8819		11 295		
13D	2868 2924	3411 3495		5454 5469	6617 6638	8910 8917	10 033 10 065			
13E	2917	3488	4654			8945				
13F	2917 2952	3439	4654	5666	6624	8861 8896 8945		11 359		
13G	2938 2980 2994 3008		4668	5491	6554 6645	8903 8952	10 025 10 041 10 081			
13H	2861 2966	3425		5477 5498 5547		8840 8938		11 287 11 319	13 312	
13I	2931			5659		8924				
13J	2882 2903 2973	3418	4675 4682	5461 5526	6547 6568 6582	8889 8931	10 009 10 057			
13K	2896 2945	3460 3481	4661	5505 5596	6631 6659	8833 8854	10 089			
AFI-MET		3488* 3495*			6575 6617*		10 073*	11 279		17 909*
AT-MET	3001			5652		8868			13 272	
EU-MET	2889* 2980			5533 5575		8833		11 391	13 312	
ME-MET	3001 3015			5561	6596	8819		11 343		
SEA-MET		3432			6680		10 017			
PAC-MET	2980			5519	6610*	8903		11 279*	13 344	

ARTICLE 2

Frequency Allotment Plan
(in numerical order of frequencies)

General Notes :

27/192 1. *Class of stations :* FA.

Classes of emission : see Nos. **27/49-27/53.**

Power : unless otherwise indicated in the Plan, the power values for aeronautical and aircraft stations are those shown in Nos. **27/54-27/62.**

Hours : H24 unless otherwise indicated.

27/193 2. A frequency allotted on a " day-time basis " may be used during the period one hour after sunrise to one hour before sunset when the same channel is alloted in the Plan to Major World Air Route Areas, Regional and Domestic Air Route Areas, Sub-Regional and Domestic Air Route Areas or VOLMET Areas which receive full protection during the twenty-four hours.

27/194 3. A " common channel " is a channel alloted in common to areas within interference distance of each other and its use is subject to agreement between the administrations concerned.

Frequency kc/s 1	Authorized area of use 2	Remarks 3
2854	RDARA: 2B, 3B, 3C, 4A, 10C, 13C	In 2B, use limited to North of 40° North and East of 60° East. Common channel to 2B, 3B and 3C.
2861	RDARA: 1E, 3A, 6E, 9B, 9C, 10A, 12D, 13H	Common channel to 9B and 9C.
2868	MWARA: FE, NA-1, NA-2 RDARA: 2B, 7A, 7B, 7C, 7D, 13D	Common channel to NA-1 and NA-2. In 2B, limited to use on a day-time basis. Common channel to 7A, 7B, 7C and 7D.
2875	MWARA: SA RDARA: 2A, 2B, 3A, 10A, 12C	In SA, use limited to South of 30° North. Common channel to 2A, 2B and 3A. In 10A, limited to use on a day-time basis.
2882	RDARA: 2A, 2C, 3C, 10E, 13J	Common channel to 2A, 2C and 3C.
2889	MWARA: SAM-1 RDARA: 6B, 10C VOLMET: EU-MET	In EU-MET, use limited to North of 50° North.
2896	MWARA: CWP RDARA: 1D, 10B, 13K	
2903	RDARA: 2A, 2C, 3B, 10D, 13J	Common channel to 2A, 2C and 3B.
2910	MWARA: EU, NP, SAM-2 RDARA: 6A	Common channel to EU and 6A.
2917	RDARA: 2C, 3C, 7E, 9D, 10B, 13E, 13F	Common channel to 2C and 3C. Common channel to 13E and 13F.
2924	RDARA: 2B, 2C, 3A, 4B, 6C, 10A, 10E, 13D	Common channel to 2B, 2C and 3A.
2931	MWARA: NA-2, NA-3 RDARA: 3B, 6A, 6E, 13I	Common channel to NA-2 and NA-3. Common channel to 6A and 6E.
2938	RDARA: 2B, 2C, 3B, 9D, 10E, 13G	Common channel to 2B, 2C and 3B.
2945	MWARA: NA-2, SP RDARA: 6A, 13K	
2952	MWARA: CAR RDARA: 2B, 2C, 6B, 13F	Common channel to 2B and 2C. In 6B, use limited to East of 125° East.
2959	RDARA: 2C, 3B, 9B, 12E, 12F, 12G, 12H	Common channel to 2C and 3B. Common channel to 12E, 12F, 12G and 12H.
2966	MWARA: CAR, NSA-2 RDARA: 3B, 5B, 13H	CAR: use extended to the mid-point of the air route between Mexico City and Tahiti.
2973	RDARA: 2A, 6F, 9C, 9D, 10B, 13J	Common channel to 9C and 9D.
2980	RDARA: 2B, 12G, 13G VOLMET: EU-MET, PAC-MET	In 2B, limited to use on a day-time basis. In 12G, power limited to 500 W mean power during night-time. In 12G, night-time protection 12 db.

	1	2	3
	2987	MWARA: FE, NA-2, SEA RDARA: 2C, 10A, 13C	Common channel to FE and SEA. In 2C, limited to use on a day-time basis. In 10A, use limited to East of 180°.
	2994	RDARA: 1C, 3C, 13G	
	3001	RDARA: 6F VOLMET: AT-MET, ME-MET	In 6F, use limited to East of 120° East.
	3008	RDARA: 2A, 2C, 3C, 9B, 9D, 10D, 13G	Common channel to 2A, 2C and 3C. Common channel to 9B and 9D.
	3015	RDARA: 6C, 10B, 12E, 12F, 12G, 12H VOLMET: ME-MET	Common channel to 12E, 12F, 12G and 12H.
27/196	**3023.5**	World-wide	Authorized for world-wide use; 1. aboard aircraft for: *a)* communications with approach and aerodrome control; *b)* communications with an aeronautical station when other frequencies of the station are either unavailable or unknown; 2. at aeronautical stations for aerodrome and approach control under the following conditions: *a)* with mean power limited to a value of not more than 20 watts in the antenna circuit; *b)* special attention must be given in each case to the type of antenna used in order to avoid harmful interference; *c)* the power of aeronautical stations which use this frequency in accordance with the above conditions, may be increased to the extent necessary to meet certain operational requirements subject to co-ordination between the Administrations directly concerned and those whose services may be adversely affected. 3. the specific application of this frequency for the above purposes may be decided at regional aeronautical conferences; 4. the use of this frequency is also authorized for intercommunication between mobile stations engaged in co-ordinated search and rescue operations including communication between these stations and participating land stations; 5. this channel may be used for A1 or A3 emission, in accordance with special arrangements. It shall not be subdivided.

1	2	3
3404	MWARA: ME RDARA: 3B, 9A, 12C	
3411	MWARA: NSA-1 RDARA: 3A, 6A, 6D, 6E, 10A, 13D	In 3A, limited to use on a day-time basis. In 6A, reduced to 250 W mean power during night-time operation. In 6E, use limited to West of 82°30' East and reduced to 250 W mean power during night-time operation.
3418	RDARA: 1D, 2C, 6B, 9A, 10B, 13J	In 1D, use limited to East of 21° East. In 6B, use limited to East of 120° East.
3425	RDARA: 2A, 2B, 2C, 3C, 7E, 9B, 9C, 10D, 12E, 12F, 12G, 12H, 13H	Common channel to 2A, 2B, 2C and 3C. Common channel to 9B and 9C. Common channel to 12E, 12F, 12G and 12H.
3432	MWARA: SA RDARA: 3A, 10B, 10D VOLMET: SEA-MET	SA: use extended on air route to Buenos Aires. In 3A, reduced to 250 W mean power during night-time operation.
3439	RDARA: 2A, 2B, 2C, 3A, 6C, 10D, 13F	Common channel to 2A, 2B, 2C and 3A.
3446	MWARA: ME RDARA: 9B, 9C, 10A, 12E, 12F, 12G, 12H	Common channel to 9B and 9C. Common channel to 12E, 12F, 12G and 12H.
3453	RDARA: 1B, 1C, 3C, 5A, 9A, 10B, 12C	Common channel for use only in the North Sea area of 1B and 1C.
3460	RDARA: 2A, 2B, 2C, 6B, 9B, 9C, 10E, 12C, 13K	Common channel to 2A, 2B and 2C. In 6B, use limited to East of 120° East. Common channel to 9B and 9C.
3467	MWARA: CEP, EU RDARA: 6E, 9D, 12F	In 9D, use limited to West of 160° East.
3474	RDARA: 1C, 2C, 3C, 6D, 10C, 13C	Common channel to 1C and 2C. In 3C, limited to use on a day-time basis.
3481	MWARA: NSA-2 RDARA: 3A, 6F, 9D, 10A, 13K	NSA-2: use extended to Western Australia and the Cocos Islands. Common channel to 6F and the extension of NSA-2. In 6F, use limited to South of 25° North and to 250 W mean power during night-time operation. In 9D, use limited to East of 160° East.
3488	RDARA: 2B, 6D, 10D, 13E VOLMET: AFI-MET	In AFI-MET, use limited to West of 10° East and South of 20° North.
3495	RDARA: 2A, 2C, 3B, 6D, 10D, 10E, 13D VOLMET: AFI-MET	Common channel to 2A and 2C. Common channel to 10D and 10E. In AFI-MET, use limited to South of the Equator.
3499	World-wide	A1 only.

27/198 **Band 4650–4700 kc/s**

1	2	3
4654	RDARA: 1E, 2B, 2C, 3C, 10B, 13E, 13F	In 1E, limited to use on a day-time basis. Common channel to 2B, 2C and 3C. Common channel to 13E and 13F.
4661	RDARA: 2A, 2B, 2C, 3A, 3B, 3C, 9D, 10D, 12C, 13K	Common channel to 2A, 2B, 2C, 3A, 3B and 3C.
4668	RDARA: 1D, 2B, 6D, 10A, 13G	In 2B, limited to use on a day-time basis.
4675	MWARA: CWP RDARA: 2C, 3A, 7E, 10D, 10E, 13J	In 3A, limited to use on a day-time basis. Common channel to 10D and 10E.
4682	RDARA: 3C, 5B, 5C, 5D, 9D, 10B, 10E, 13J	In 3C, limited to use on a day-time basis. Common channel to 5B, 5C and 5D.
4689	MWARA: EU RDARA: 3B, 6D, 10C, 12C	In 3B and 10C, limited to use on a day-time basis.
4696	MWARA: SAM-1 RDARA: 2A, 2B, 2C, 3C, 10A	Common channel to 2A, 2B, 2C and 3C. In 10A, limited to use on a day-time basis.

27/199 **Band 5450–5480 kc/s (Region 2)**

1	2	3
5454	RDARA: 10A, 10E, 12C, 13D	
5461	RDARA: 10B, 12D, 13J	
5469	RDARA: 10B, 13D	
5477	RDARA: 10D, 12G, 13H	

1	2	3
5484	MWARA: CAR RDARA: 2B, 3B	Common channel to 2B and 3B.
5491	RDARA: 2C, 6B, 7E, 10B, 12F, 13G	
5498	RDARA: 2B, 3C, 7, 9B, 9C, 9D, 10C, 13H	Common channel to 2B and 3C. Common channel to 9B, 9C and 9D.
5505	MWARA: CWP, NSA-2 RDARA: 10E, 13K	In 10E, use limited to East of 60° West and to 250 W mean power.
5512	RDARA: 2A, 6A, 10C, 12G	
5519	MWARA: NSA-1 VOLMET: PAC-MET	
5526	RDARA: 3C, 5A, 6D, 9B, 9C, 9D, 10B, 13J	Common channel to 9B, 9C and 9D.
5533	RDARA: 3B, 6D, 12C VOLMET: EU-MET	
5540	RDARA: 2B, 3B, 10D, 13C	Common channel to 2B and 3B.
5547	RDARA: 2C, 6A, 6E, 10A, 13H	Common channel to 6A and 6E.
5554	MWARA: CEP, EU RDARA: 3C	In 3C, limited to use on a day-time basis.
5561	RDARA: 10D VOLMET: ME-MET	
5568	MWARA: CAR RDARA: 1D, 2A, 3C, 6A	CAR: use extended to the mid-point of the air route between Mexico City and Tahiti. In 1D, limited to use on a day-time basis. Common channel to 2A and 3C.
5575	RDARA: 3B, 10C, 12E VOLMET: EU-MET	
5582	MWARA: SAM-2 RDARA: 2C, 6A	
5589	MWARA: NP RDARA: 2C, 12F, 12H	Common channel to 12F and 12H.
5596	RDARA: 2A, 2B, 2C, 6D, 10D, 13K	Common channel to 2A, 2B and 2C.
5603	MWARA: CEP, ME	

1	2	3
5610	MWARA: NA-2, NA-3 RDARA: 6B	Common channel to NA-2 and NA-3. In 6B, use limited to East of 100° East.
5617	RDARA: 2C, 6E, 10D, 12C, 13C	
5624	MWARA: FE, NA-1, NA-2	Common channel to NA-1 and NA-2.
5631	RDARA: 2C, 3A, 6B, 10A, 10E, 12E, 12F	Common channel to 2C and 3A. In 6B, use limited to East of 100° East and South of 40° North. Common channel to 12E and 12F.
5638	MWARA: NA-2, SP RDARA: 2B	In 2B, limited to use on a day-time basis.
5645	MWARA: FE RDARA: 1B, 1C, 2B, 10D	Common channel for use only in the North Sea area of 1B and 1C. In 2B, limited to use on a day-time basis.
5652	RDARA: 2C, 6D VOLMET: AT-MET	In 2C, limited to use on a day-time basis.
5659	RDARA: 1C, 3A, 5B, 5C, 5D, 6C, 10B, 13I	Common channel to 5B, 5C and 5D.
5666	RDARA: 2A, 2B, 2C, 9B, 9C, 10D, 12C, 13F	Common channel to 2A, 2B and 2C. Common channel to 9B and 9C.
5673	MWARA: NA-2, SEA	
5680	World-wide	Authorized for world-wide use, 1. aboard aircraft for: *a)* communications with approach and aerodrome control; *b)* communication with an aeronautical station when other frequencies of the station are either unavailable or unknown; 2. at aeronautical stations for aerodrome and approach control under the following conditions: *a)* with mean power limited to a value of not more than 20 watts in the antenna circuit; *b)* special attention must be given in each case to the type of antenna used in order to avoid harmful interference; *c)* the power of aeronautical stations which use this frequency in accordance with the above conditions may be increased to the extent necessary to meet certain operational requirements subject to co-ordination between the administrations directly concerned and those whose services may be adversely affected; 3. the specific application of this frequency for the above purposes may be decided at regional aeronautical conferences; 4. the use of this frequency is also authorized for intercommunication between mobile stations engaged in co-ordinated search and rescue operations including communication between these stations and participating land stations; 5. this channel may be used for A1 or A3 emission, in accordance with special arrangements. It shall not be subdivided.

27/201

1	2	3
6526	World-wide	A1, A3A, A3H and A3J only.
6533	RDARA: 1C, 2B, 3B, 6E, 9B, 9C, 10C, 12E, 12F, 12H	Common channel to 9B and 9C. Common channel to 12E, 12F and 12H.
6540	MWARA: CAR, NSA-2 RDARA: 2A, 6B, 9B	
6547	RDARA: 1E, 3A, 5B, 5C, 5D, 12C, 13J	Common channel to 5B, 5C and 5D.
6554	RDARA: 2C, 6C, 10D, 13G	
6561	MWARA: CAR, NSA-2 RDARA: 2A, 9D	CAR: use extended to the mid-point of the air route between Mexico City and Tahiti. NSA-2: use extended to Western Australia and the Cocos Islands.
6568	MWARA: EU RDARA: 6F, 10A, 13J	
6575	RDARA: 2A, 6B, 9B, 12D VOLMET: AFI-MET	
6582	MWARA: EU RDARA: 6F, 10C, 13J	
6589	RDARA: 2A, 2B, 3A, 3B, 4B, 6D, 12C	Common channel to 2A, 2B, 3A and 3B.
6596	RDARA: 10B, 12G VOLMET: ME-MET	
6603	RDARA: 2B, 2C, 3C, 7E, 12C, 13C	Common channel to 2B, 2C and 3C.
6610	MWARA: SA RDARA: 2A, 5A, 9A, 10D VOLMET: PAC-MET	In PAC-MET, use limited to North of 30° North and West of 160° East.
6617	RDARA: 2C, 3A, 6C, 6D, 10A, 13D VOLMET: AFI-MET	In AFI-MET, use limited to South of the Equator. Common channel to 2C and 3A. Common channel to 6C and 6D.
6624	MWARA: ME RDARA: 3B, 10C, 13F	
6631	MWARA: CWP RDARA: 1D, 3A, 10E, 13K	
6638	RDARA: 2B, 4A, 4B, 9A, 10C, 13D	Common channel to 4A and 4B.

1	2	3
6645	RDARA: 2B, 2C, 5D, 9B, 10B, 13G	Common channel to 2B and 2C.
6652	RDARA: 2C, 3C, 9A, 12C, 13C	Common channel to 2C and 3C.
6659	RDARA: 2C, 3B, 6D, 10D, 13K	
6666	MWARA: SAM-1 RDARA: 2C, 3C, 9B, 10D	Common channel to 2C and 3C.
6673	RDARA: 2B, 3A, 6F, 10C, 12F	Common channel to 2B and 3A. In 6F, use limited to East of 120° East and South of 43° North.
6680	MWARA: SA RDARA: 3A, 10D VOLMET: SEA-MET	SA: use extended on the air route to Buenos Aires.

1	2	3
8819	RDARA: 3B, 6C, 13C VOLMET: ME-MET	In 3B, use limited to East of 140° East.
8826	MWARA: NSA-1, SAM-1 RDARA: 3B, 6D, 9D, 10C	In 3B, use limited to East of 130° East.
8833	RDARA: 3B, 6C, 6D, 13K VOLMET: EU-MET	In 3B, use limited to North of 50° North. Common channel to 6C and 6D.
8840	MWARA: CAR, FE RDARA: 2A, 2C, 3A, 7A, 7B, 7C, 7D, 9D, 13H	CAR: use extended to the mid-point of the air route between Mexico City and Tahiti. Common channel to 2A, 2C and 3A. Common channel to 7A, 7B, 7C and 7D.
8847	MWARA: ME, SAM-2, SP RDARA: 3B	In 3B, use limited to East of 140° East.
8854	MWARA: CWP, NA-2 RDARA: 5B, 13K	
8861	RDARA: 2A, 2B, 2C, 3A, 3B, 3C, 5D, 6D, 10E, 12C, 12F, 13F	Common channel to 2A, 2B, 2C, 3A, 3B and 3C. In 6D, use limited to South of 10° North. In 12F, use limited to North of 04° North and to 300 W mean power.
8868	MWARA: FE, SEA RDARA: 2A, 3A, 10A VOLMET: AT-MET	Common channel to FE and SEA. Common channel to 2A and 3A. In 3A, use limited to North of 60° North.
8875	MWARA: CEP, EU RDARA: 3B, 6D, 7E, 12E, 12F	In 3B, use limited to East of 120° East. Common channel to 12E and 12F.
8882	MWARA: SA, SEA RDARA: 3A, 3B	SA: use extended on the air route to Buenos Aires. Use outside the SEA boundaries is authorized in India and Pakistan. In 3A, use limited to North of 60° North. Common channel to 3A and 3B.
8889	MWARA: NA-2 RDARA: 3B, 6A, 6E, 9B, 9D, 13J	Common channel to 6A and 6E. Common channel to 9B and 9D.
8896	RDARA: 3B, 3C, 4A, 5A, 5B, 5C, 9B, 9C, 10B, 13F	Common channel to 3B and 3C. Common channel to 4A, 5A, 5B and 5C. Common channel to 9B and 9C.
8903	RDARA: 2A, 2C, 10E, 13G VOLMET: PAC-MET	Common channel to 2A and 2C.
8910	MWARA: NA-1, NA-2 RDARA: 3B, 3C, 9B, 9C, 13D	Common channel to NA-1 and NA-2. Common channel to 3B and 3C. Common channel to 9B and 9C.

1	2	3
8917	RDARA: 2A, 2B, 2C, 3A, 6E, 9B, 9C, 10A, 13D	Common channel to 2A, 2B, 2C and 3A. In 2C, use limited to West of 40° East. Common channel to 9B and 9C.
8924	RDARA: 4B, 6A, 9B, 9C, 10A, 12D, 13I	Common channel to 9B and 9C.
8931	MWARA: CEP, EU RDARA: 3B, 6D, 9D, 13J	In 3B, use limited to West of 180°. In 9D, use limited to West of 160° East.
8938	MWARA: NP RDARA: 1C, 6A, 9A, 12E, 12F, 13H	Common channel to 12E and 12F.
8945	MWARA: NA-2, NA-3 RDARA: 3B, 3C, 6C, 13E, 13F	Common channel to NA-2 and NA-3. In 3B and 3C, use limited to North of 50° North. Common channel to 3B and 3C. Common channel to 13E and 13F.
8952	RDARA: 1D, 6B, 9A, 9C, 9D, 10B, 13G	Common channel to 9A, 9C and 9D.
8959	MWARA: CAR, NSA-2 RDARA: 3A, 6D, 9C, 9D	In 3A, use limited to East of 80° East. Common channel to 9C and 9D.
8963	World-wide	Al only.

1	2	3
10 009	MWARA: ME RDARA: 13J	
10 017	MWARA: CAR RDARA: 2A, 2C VOLMET: SEA-MET	CAR: use extended to the mid-point of the air route between Mexico City and Tahiti. Common channel to 2A and 2C with use of directional antennae to protect SEA-MET.
10 025	MWARA: NSA-2 RDARA: 3B, 3C, 12C, 13G	NSA-2: use extended to Western Australia and the Cocos Islands. Common channel to 3B and 3C.
10 033	RDARA: 2, 3, 13D	Common channel to 2 and 3.
10 041	RDARA: 2, 7, 10, 13G	
10 049	MWARA: SA RDARA: 2A, 6	SA: use extended on the air route to Buenos Aires.
10 057	RDARA: 2, 10, 13J	
10 065	RDARA: 1B, 1C, 1E, 6A, 6F, 13D	Common channel to 1B, 1C and 1E. Common channel to 6A and 6F.
10 073	RDARA: 3, 12C VOLMET: AFI-MET	In AFI-MET, use limited to South of the Equator.
10 081	RDARA: 1D, 4A, 6F, 13G	Common channel to 1D and 4A.
10 089	RDARA: 2, 3, 12C, 13K	Common channel to 2 and 3.
10 093	World-wide	A1, A3A, A3H and A3J only.

1	2	3
11 279	VOLMET: AFI-MET, PAC-MET	In PAC-MET, use limited to North of 30° North and West of 160° East.
11 287	RDARA: 2, 13H	
11 295	RDARA: 5, 10, 13C	
11 303	MWARA: CWP, EU	
11 311	RDARA: 6, 10B, 10C, 10D, 10E	Common channel to 10B, 10C, 10D and 10E.
11 319	RDARA: 2, 9A, 9B, 9D, 10, 13H	Common channel to 9A, 9B and 9D.
11 327	MWARA: SAM-2 RDARA: 3	
11 335	RDARA: 2, 7, 9	
11 343	MWARA: CAR, SAM-1 VOLMET: ME-MET	Common channel to CAR and SAM-1.
11 351	RDARA: 2, 12	
11 359	RDARA: 1, 6D, 10, 13F	
11 367	MWARA: CAR RDARA: 2	
11 375	RDARA: 3, 4	
11 383	RDARA: 2, 9, 10	
11 391	RDARA: 3 VOLMET: EU-MET	In 3, use limited to East of 90° East.

1	2	3
13 264	MWARA: NP RDARA: 7A, 7B, 7C, 7D	Common channel to 7A, 7B, 7C, 7D.
13 272	RDARA: 3 VOLMET: AT-MET	
13 280	MWARA: NSA-2 RDARA: 6F, 10, 13	
13 288	MWARA: FE, NA-2, SEA	Common channel to FE and SEA. Use outside the SEA boundaries is authorized in India and Pakistan, provided that adequate protection is ensured between 300° and 340° (clockwise) from True North.
13 296	MWARA: CWP RDARA: 1	
13 304	MWARA: NSA-1, SP	
13 312	MWARA: FE RDARA: 13H VOLMET: EU-MET	
13 320	MWARA: CAR, SAM-2 RDARA: 2, 6C	Common channel to CAR and SAM-2.
13 328	MWARA: NA-1, NA-2, NA-3 RDARA: 6	Common channel to NA-1, NA-2, NA-3.
13 336	MWARA: CEP, ME, NSA-2	NSA-2: use extended to Western Australia and the Cocos Islands. Common channel to ME and NSA-2.
13 344	MWARA: SA VOLMET: PAC-MET	
13 352	MWARA: NA-2 RDARA: 6	
13 356	World-wide	A1, A3A, A3H and A3J only.

1	2	3
17 909	MWARA: CWP, NP VOLMET: AFI-MET	Common channel to CWP and NP. In AFI-MET, use limited to South of the Equator.
17 917	MWARA: CAR, ME, SAM-1, SAM-2	Common channel to CAR, SAM-1 and SAM-2. CAR: use extended to the mid-point on the air route between Mexico City and Tahiti.
17 925	MWARA: CEP, NSA-2	NSA-2: use extended to Western Australia and the Cocos Islands.
17 933	RDARA: 4, 5, 9B, 9C, 9D	Common channel to 4 and 5. Common channel to 9B, 9C, 9D.
17 941	MWARA: EU, NA-1, NA-2, NA-3 RDARA: 3	Common channel to EU, NA-1, NA-2 and NA-3. In 3, use limited to East of 100° East.
17 949	MWARA: NSA-1, SA, SP	Common channel to NSA-1 and SA.
17 957	RDARA: 2, 3, 13	Common channel to 2 and 3.
17 965	MWARA: FE, SEA	Common channel to FE and SEA.

ADDITIONAL PROTOCOL

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ADDITIONAL PROTOCOL

At the time of signing the Final Acts of the Extraordinary Administrative Radio Conference, Geneva, 1966, the undersigned delegates take note of the fact that the following statements have been submitted by certain signatories:

ALGERIA (ALGERIAN DEMOCRATIC AND POPULAR REPUBLIC), DEMOCRATIC REPUBLIC OF THE CONGO, ETHIOPIA AND GHANA

The delegations of the above countries declare that their signature of the Final Acts of the Extraordinary Administrative Radio Conference for the preparation of a revised Allotment Plan for the Aeronautical Mobile (R) Service and the subsequent ratification of the Acts by their respective governments shall not in any way imply the recognition of the present Government of the Republic of South Africa by these States or entail any obligation towards that Government.

CHINA

In signing the Final Acts of the Extraordinary Administrative Radio Conference for the preparation of a revised Allotment Plan for the Aeronautical Mobile (R) Service, Geneva, 1966, the Delegation of the Republic of China declares, with reference to the declaration made by the Delegation of Indonesia, that the Government of the Republic of China rejects and considers as null and void any statements, declarations or reservations included in the Additional Protocol which are incompatible with or derogatory to its legitimate position as the Government of China.

UNITED STATES OF AMERICA

Signature of these Final Acts for and in the name of the United States of America constitutes, in accordance with its constitutional processes, signature also on behalf of all territories of the United States of America.

REPUBLIC OF INDONESIA

The Delegation of the Republic of Indonesia declares hereby, that the signature by said delegation is not to be construed as a recognition by the Republic of Indonesia towards the so-called " Federation of Malaysia ", " Republic of China " and of other countries not recognized by the Republic of Indonesia.

INDONESIA (REPUBLIC OF), THAILAND

With respect to the changes made by this Conference in the List of frequencies allotment, in the bands between 2850 and 17 970 kc/s for exclusive use by the Aeronautical Mobile (R) Service, the Delegations of the Republic of Indonesia and of Thailand, having regard to the probable existence of harmful interference on the new frequencies allotted, provisionally reserve the right to take all measures deemed necessary and to continue using the frequencies at present assigned to its aeronautical and aircraft stations, which have been operating or may operate in accordance with the provisions in Appendix 26 to the Radio Regulations, Geneva, 1959, to ensure safety and regularity of flight, over its respective territories, until such time as satisfactory service on the new frequencies can be achieved.

MALAYSIA

Upon signing the Final Acts of the Extraordinary Administrative Radio Conference for the preparation of a revised Allotment Plan for the Aeronautical Mobile (R) Service, the Delegation of the Government of Malaysia hereby reserves the right of the Government to take any action it deems necessary to safeguard its interests should Members or Associate Members in any way fail to comply with the Recommendations and/or the Final Acts of the Conference jeopardize its Aeronautical Mobile (R) Service.

REPUBLIC OF SINGAPORE

In signing the Final Acts of the Extraordinary Administrative Radio Conference for the Aeronautical Mobile (R) Service, Geneva, 1966, the Delegation of the Republic of Singapore reserves for its Government the right to take such action as it may consider necessary to safeguard its interests should any country fail in any way to comply with the requirements of the Final Acts of this Conference or should reservations by any country jeopardize the telecommunication services of the Republic of Singapore.

REPUBLIC OF SOUTH AFRICA AND TERRITORY OF SOUTH WEST AFRICA

In signing the Final Acts of the Extraordinary Administrative Radio Conference, for the preparation of a revised Allotment Plan for the Aeronautical Mobile (R) Service, the Delegation of the Republic of South Africa and Territory of South West Africa declares that it represents the legal Government of the Republic of South Africa and Territory of South West Africa and does not accept any reservations made by other delegations impinging upon the status of the Government of the Republic of South Africa and Territory of South West Africa. Furthermore, the delegation declares that its country reserves the right to take all necessary steps to protect its radio services in cases where any Member or Associate Member of the Union fails to comply with the provisions of the Radio Regulations as revised by the present Conference or where the reservations made by Members have a harmful effect on the telecommunication services of the Republic of South Africa and Territory of South West Africa.

(The signatures follow)

(*The signatures which follow the Additional Protocol are the same as those reproduced on pages 5-16 of this volume, with the exception of the delegations of the following countries who have not signed:* People's Republic of Bulgaria, Cuba, People's Republic of Poland, Socialist Republic of Roumania, Confederation of Switzerland, Czechoslovak Socialist Republic, Union of Soviet Socialist Republics)

RESOLUTIONS AND RECOMMENDATIONS

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RESOLUTION No. Aer.1

RELATING TO THE USE OF FREQUENCIES 3023.5 AND 5680 kc/s COMMON TO THE AERONAUTICAL MOBILE (R) AND (OR) SERVICES

The Extraordinary Administrative Radio Conference, Geneva, 1966,

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 3023.5 and 5680 kc/s, as contained in Article 2 of the Frequency Allotment Plan, Column 3, clauses 2 *a)* and 2 *b)* and having taken steps to remove these anomalies;

considering

1. that the coordination of search and rescue operations at the scene of a disaster would be improved if the use of the frequencies 3023.5 and 5680 kc/s, in such operations, was extended to include communication between mobile stations and participating land stations;

2. that it would be in the general interests of the aeronautical mobile service if the same provisions relating to the use of the frequencies 3023.5 and 5680 kc/s were applied to operations both in the aeronautical mobile (R) service and the aeronautical mobile (OR) service;

resolves

to invite administrations to apply in the aeronautical mobile (OR) service, as from the date of coming into force of the Final Acts of the Conference, the provisions governing the use of the frequencies 3023.5 and 5680 kc/s specified in Appendix 27 (Nos. **27/196** and **27/201**).

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RESOLUTION No. Aer.2

RELATING TO THE USE OF FREQUENCIES IN THE HF BANDS ALLOCATED EXCLUSIVELY TO THE AERONAUTICAL MOBILE (R) SERVICE

The Extraordinary Administrative Radio Conference, Geneva, 1966,

considering

a) that monitoring observations on the use of frequencies in the bands allocated exclusively to the aeronautical mobile (R) service between 2850 and 17 970 kc/s show that a number of frequencies in these bands are being used by stations of services other than the aeronautical mobile (R) service, thus causing harmful interference to aeronautical mobile (R) service communications on some international air routes; and that a considerable number of emissions, the sources of which could not be positively identified, were observed in these bands;

b) that the aeronautical mobile (R) service is a safety service, to which frequency bands are exclusively allocated in order to ensure the safety and regularity of flight along national or international civil air routes as defined in No. **429** of the Radio Regulations, Geneva, 1959;

c) that in order to protect the safety of life and property in the air, and to operate aeronautical transport services in a regular and effective manner, it is essential that the aeronautical mobile communication channels be kept free from harmful interference;

recognizing

that the aeronautical mobile (R) service is a safety service;

urges

administrations to abstain from the use of frequencies in the bands exclusively allocated to this service by stations of services other than the aeronautical mobile (R) service, except under the express conditions prescribed in No. **115** or No. **415** of the Radio Regulations, Geneva, 1959;

invites

the I.F.R.B. to continue to organize monitoring observations in the bands exclusively allocated to the aeronautical mobile (R) service with a view to eliminating the emissions of out-of-band stations which cause, or are likely to cause, harmful interference to the aeronautical mobile (R) service; and to seek the collaboration of administrations in identifying the source of such emission by all available means including the use of automatic recording equipment, direction finding and field strength measurements, and in securing the suppression of these emissions.

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RESOLUTION No. Aer.3

RELATING TO THE INTRODUCTION OF SINGLE SIDEBAND TECHNIQUES IN THE HF BANDS ALLOCATED TO THE AERONAUTICAL MOBILE (R) SERVICE

The Extraordinary Administrative Radio Conference, Geneva, 1966,

considering

a) that congestion should be avoided in the HF bands allocated to the aeronautical mobile (R) service;

b) that the great majority of stations now operating in the HF bands allocated to the aeronautical mobile (R) service are capable of operating only in the double sideband radiotelephony mode;

c) that, because of the preponderance of double sideband equipment in use, the Allotment Plan adopted by the Conference is one based on the assumption that all existing stations are capable of operating only in the double sideband radiotelephony mode, and

d) that recent advances in technology may make it possible to avoid congestion in the HF bands allocated to the aeronautical mobile (R) service through the use of VHF techniques and of space radiocommunication techniques;

recognizing

a) that, despite the recent advances in technology permitting the accommodation of the aeronautical mobile (R) service in bands other than HF bands, there are many areas of the world where the need for HF communication will continue into the foreseeable future, and in some areas this may be an increasing need;

b) that single sideband radiotelephony has demonstrated advantages over double sideband radiotelephony in many radio services in terms of radio spectrum economy and in reliability of communication, particularly under adverse atmospheric and propagation conditions;

c) that economic, technical and operational considerations make it impracticable to specify, at this time, any definitive date by which the use of double sideband radiotelephony must be discontinued in favour of single sideband radiotelephony;

d) that single sideband equipment of appropriate design can operate compatibly with double sideband systems, and would permit the introduction of SSB on an evolutionary basis;

e) that significant spectrum economy will be realized only when the ratio of SSB-to-DSB users is sufficiently large to make channel splitting practicable; and

f) the desirability of introducing single sideband equipment in the interest of improving the standard of communication and effecting spectrum economy;

resolves

1. that, taking into account economic, technical and operational considerations, administrations shall effect, as soon as possible, a progressive conversion of their HF radiotelephone services in the aero-

nautical mobile (R) service from double sideband to single sideband operation using, where necessary, single sideband equipment capable of working compatibly with double sideband systems;

2. that, notwithstanding the foregoing, administrations may continue to instal and operate equipment having characteristics similar to those of equipment in current use;

3. that the International Civil Aviation Organization be invited, as a matter of urgency and within the framework of the decisions taken by this Conference, to establish technical characteristics for system standards relative to single sideband equipment, in respect of application to international operations in the aeronautical mobile (R) service, and to advise the C.C.I.R. of any technical or operational problems on which they would like the assistance of the C.C.I.R.

RESOLUTION No. Aer.4

RELATING TO THE USE OF VHF FOR COMMUNICATION IN THE AERONAUTICAL MOBILE (R) SERVICE

The Extraordinary Administrative Radio Conference, Geneva, 1966,

considering

a) that from an aeronautical viewpoint, VHF can provide a more reliable and more noise-free communication system than HF;

b) that from a technical and operational viewpoint, the use of VHF by aviation has progressed appreciably;

c) that the use of VHF in its several modes could appreciably reduce the use of HF in the aeronautical mobile (R) service;

d) that, owing to development in the general telecommunication networks in many areas of the world, the possibilities of providing VHF coverage are rapidly increasing;

resolves

: that administrations, to the maximum extent practicable, should employ VHF to meet their requirements in the aeronautical mobile (R) service.

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RESOLUTION No. Aer.5

RELATING TO THE USE OF VHF FOR METEOROLOGICAL BROADCASTS IN THE AERONAUTICAL MOBILE (R) SERVICE

The Extraordinary Administrative Radio Conference, Geneva, 1966,

considering

a) that the number of channels available for the aeronautical mobile (R) service in the frequency bands between 2850 and 17 970 kc/s is limited;

b) that the need for frequencies for aeronautical mobile (R) service communications and for meteorological broadcasts to aircraft is increasing;

c) that the propagation characteristics of high frequencies make them essential for aviation communication requirements over long distances;

d) that in Recommendation No. 13 of the International Administrative Aeronautical Radio Conference, Geneva, 1949, and Resolution No. 14 of the Ordinary Administrative Radio Conference, Geneva, 1959, administrations were urged " to make as great a use as possible of very high frequencies in order to lessen the load on the high frequency (R) bands ";

e) that substantial technical progress has been made by aviation since 1949 in extending the operational range of VHF used for communications within the aeronautical mobile (R) service;

f) that this extension of the operational range of VHF could partially meet the increasing need for meteorological broadcasts to aircraft;

resolves

that administrations, to the maximum extent practicable, should employ VHF for meteorological broadcasts to aircraft.

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RESOLUTION No. Aer.6

RELATING TO THE TREATMENT OF NOTICES CONCERNING FREQUENCY ASSIGNMENTS TO AERONAUTICAL STATIONS IN THE AERONAUTICAL MOBILE (R) SERVICE IN THE BANDS ALLOCATED EXCLUSIVELY TO THAT SERVICE BETWEEN 2850 AND 17 970 kc/s

The Extraordinary Administrative Radio Conference, Geneva, 1966,

considering

a) that the Final Acts of this Conference will enter into force on 1st July, 1967, but

b) that the revised Frequency Allotment Plan contained in Appendix 27 will enter into force at 0001 hours G.M.T. on 10th April, 1970;

c) that some administrations may wish to implement certain provisions of the revised Frequency Allotment Plan in advance of the latter date where this may be done without causing harmful interference to stations working in accordance with the present Frequency Allotment Plan, Geneva, 1959;

d) that it will therefore be necessary to provide an interim procedure to facilitate transition from the present Frequency Allotment Plan to the revised Frequency Allotment Plan;

resolves

1. that during the period between the date of entry into force of the Final Acts and the date of entry into force of the revised Frequency Allotment Plan:

1.1 the provisions of Nos. **553** to **559** of the Radio Regulations, Geneva, 1959, shall continue to be applied in the examination of notices concerning frequency assignments to aeronautical stations in the aeronautical mobile (R) service in the bands allocated exclusively to that service between 2850 and 17 970 kc/s;

1.2 all such assignments shall be recorded in the Master International Frequency Register according to the findings reached by the I.F.R.B.;

1.3 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. **554** to **557**, the date of 3rd December 1951 shall be entered in Column 2a;

b) if the finding is favourable with respect to No. **558**, the date of 3rd December 1951 shall be entered in Column 2b;

c) for all other such assignments (including those which may be in conformity with the revised Frequency Allotment Plan but not in conformity with the present Frequency Allotment Plan) the date of receipt of the notice by the I.F.R.B. shall be entered in Column 2b;

1.4 any assignment which is in accordance with the revised Frequency Allotment Plan shall be so indicated by the insertion by the I.F.R.B. of an appropriate symbol in the Remarks Column of the Master International Frequency Register;

2. that on the date of coming into force of the revised Frequency Allotment Plan, the I.F.R.B. shall examine those frequency assignments to aeronautical stations in the aeronautical mobile (R) service in the bands allocated exclusively to that service between 2850 and 17 970 kc/s, which are contained in the Master International Frequency Register from the point of view of their conformity with the revised Frequency Allotment Plan following the relevant parts of the procedure described in Nos. **553** to **559** of the

Radio Regulations, Geneva, 1959, as modified by the Extraordinary Administrative Radio Conference, Geneva, 1966, and shall record against them in the Master International Frequency Register a date in Column 2a or 2b as follows:

2.1 assignments found favourable with respect to Nos. **554** to **557** shall have the date of 29th April 1966 entered in Column 2a;

2.2 assignments found favourable with respect to No. **558** shall have the date of 29th April 1966 entered in Column 2b;

2.3 all other assignments shall have the date of 30th April, 1966 entered in Column 2b;

3. that, on the date of entry into force of the revised Frequency Allotment Plan, the allotments therein shall replace in the Master International Frequency Register those allotments in the present Frequency Allotment Plan;

invites

administrations to notify to the I.F.R.B. as soon as possible the cancellation of frequency assignments released as a consequence of bringing into use the allotments in the revised Frequency Allotment Plan.

RECOMMENDATION No. Aer.1

RELATING TO THE DEVELOPMENT OF TECHNIQUES WHICH WOULD HELP TO REDUCE CONGESTION IN THE HIGH FREQUENCY BANDS ALLOCATED TO THE AERONAUTICAL MOBILE (R) SERVICE

The Extraordinary Administrative Radio Conference, Geneva, 1966,

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 remotely controlled VHF stations, high-powered VHF transmitters employing 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 (I.C.A.O.) is actively engaged in coordinating the operational use of such techniques;

invites

administrations engaged in such developments to inform the I.F.R.B. periodically of the progress achieved;

requests

the I.F.R.B. periodically to circulate the information so obtained to administrations and to I.C.A.O.

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RECOMMENDATION No. Aer.2

RELATING TO A STUDY OF THE UTILIZATION OF SPACE COMMUNICATION TECHNIQUES IN THE AERONAUTICAL MOBILE (R) SERVICE

The Extraordinary Administrative Radio Conference, Geneva, 1966,

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 and 27.5 Mc/s; and

c) the need to effect conservation in the use of the high frequency spectrum;

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 and 27.5 Mc/s;

b) that tests have demonstrated the capability of effecting communication between aircraft and aeronautical stations by relay via a stationary 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 (I.C.A.O.) is the international body primarily concerned with the establishment of standards and recommended practices governing communication systems and techniques used to support international civil aviation; and that Organization has included the subject of space radiocommunication techniques on the agenda of its Communications/Operations Divisional Meeting scheduled to convene in October 1966;

h) that the C.C.I.R. has a Study Group on Space Systems and Radioastronomy as well as a Study Group on Mobile Services and that close co-ordination of the work of the C.C.I.R. and I.C.A.O. in this field is desirable;

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; and

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. Aer.2

(*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 of aeronautical (R) 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 aeronautical (R) station (terminal) facilities.

   d) Need for a selective calling system (SELCAL).

   e) Other considerations.

4. Method of operation and location of aeronautical (R) 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 aeronautical (R) 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 aeronautical (R) 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.

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