INTERNATIONAL TELECOMMUNICATION UNION

FINAL ACTS

Adopted by the First Session of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It

Geneva, 1985 (ORB-85)

Geneva 1986

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ISBN 92-61-02611-7

NOTE

The following symbols have been used to indicate the nature of the revision in each case:

ADD = addition of a new provision

MOD = modification of an existing provision

NOC = provision unchanged

SUP = deletion of an existing provision

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RESOLUTIONS

FINAL ACTS

Adopted by the First Session of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It

Geneva, 1985 (WARC Orb-85)[1]

PREAMBLE

1. The First Session of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It (WARC Orb-85) convened at Geneva on 8 August 1985 in conformity with Article 54 of the International Telecommunication Convention, Resolutions Nos. 1 and 8 of the Plenipotentiary Conference, Nairobi, 1982, and Resolution No. 3 of the World Administrative Radio Conference, Geneva, 1979, as well as Resolution No. 895 of the Administrative Council.

2. The delegates of the following Members of the International Telecommunication Union:

People's Democratic Republic of Algeria, Federal Republic of Germany, People's Republic of Angola, Kingdom of Saudi Arabia, Argentine Republic, Australia, Austria, State of Bahrain, Belgium, Byelorussian Soviet Socialist Republic, Republic of Bolivia, Federative Republic of Brazil, Brunei Darussalam, People's Republic of Bulgaria, Burkina Faso, Republic of Cameroon, Canada, Chile, People's Republic of China, Vatican City State, Republic of Colombia, People's Republic of the Congo, Republic of Korea, Costa Rica, Republic of the Ivory Coast,

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[1] Abridged title: Final Acts WARC Orb-85.

Cuba, Denmark, Republic of Djibouti, Arab Republic of Egypt, United Arab Emirates, Ecuador, Spain, United States of America, Ethiopia, Finland, France, Gabonese Republic, Ghana, Greece, Republic of Guatemala, Republic of Guinea, Republic of Honduras, Hungarian People's Republic, Republic of India, Republic of Indonesia, Islamic Republic of Iran, Republic of Iraq, Ireland, State of Israel, Italy, Jamaica, Japan, Hashemite Kingdom of Jordan, Republic of Kenya, State of Kuwait, Lebanon, Republic of Liberia, Socialist People's Libyan Arab Jamahiriya, Luxembourg, Democratic Republic of Madagascar, Malaysia, Malawi, Republic of Mali, Republic of Malta, Kingdom of Morocco, Mexico, Monaco, Mongolian People's Republic, Nicaragua, Federal Republic of Nigeria, Norway, New Zealand, Sultanate of Oman, Islamic Republic of Pakistan, Republic of Panama, Papua New Guinea, Republic of Paraguay, Kingdom of the Netherlands, Peru, Republic of the Philippines, People's Republic of Poland, Portugal, State of Qatar, Syrian Arab Republic, German Democratic Republic, Democratic People's Republic of Korea, Ukrainian Soviet Socialist Republic, Socialist Republic of Romania, United Kingdom of Great Britain and Northern Ireland, Rwandese Republic, Republic of San Marino, Republic of Senegal, Republic of Singapore, Somali Democratic Republic, Democratic Socialist Republic of Sri Lanka, Sweden, Confederation of Switzerland, Republic of Suriname, United Republic of Tanzania, Republic of Chad, Czechoslovak Socialist Republic, Thailand, Togolese Republic, Kingdom of Tonga, Trinidad and Tobago, Tunisia, Turkey, Union of Soviet Socialist Republics, Eastern Republic of Uruguay, Republic of Venezuela, People's Democratic Republic of Yemen, Socialist Federal Republic of Yugoslavia,

have adopted

subject to the approval of the competent authorities of their respective countries, a partial revision of the Radio Regulations, as contained in the *Annex* and outlined below:

- the provisions and associated Plan for the broadcasting-satellite service in the frequency band 12.2 - 12.7 GHz in Region 2, as incorporated into Appendix **30 (Orb-85)** to the Radio Regulations;
- the provisions and associated Plan for the feeder links for the broadcasting-satellite service (12.2 - 12.7 GHz) in Region 2 in the frequency band 17.3 - 17.8 GHz, as incorporated into the Radio Regulations as Appendix **30A**;
- consequential modifications to certain Articles of the Radio Regulations and to Appendix **30** thereto;

have also adopted

Resolution **41 (Orb-85)** relating to the use of the provisions of Appendix **30 (Orb-85)** and Appendix **30A** contained in the Final Acts WARC Orb-85 prior to the

date of entry into force of those Final Acts, and a procedure relating to interim systems for Region 2, as contained in Resolution **42 (Orb-85)**, as well as other Resolutions;

have decided

that the above-mentioned partial revision of the Radio Regulations shall form an integral part of the Radio Regulations, and that the said partial revision shall enter into force on 30 October 1986, at 0001 hours UTC.

IN WITNESS WHEREOF, the delegates of the Members of the International Telecommunication Union mentioned below have, on behalf of their respective competent authorities, signed one copy of the present Final Acts in the Arabic, Chinese, English, French, Russian and Spanish languages. In case of dispute, the French text shall prevail. This copy shall remain deposited in the archives of the Union. The Secretary-General shall forward one certified true copy to each Member of the International Telecommunication Union.

Done at Geneva, 15 September 1985

For the People's Democratic Republic of Algeria:

N. BOUHIRED
M. MEHNI

On behalf of the Federal Republic of Germany:

HERBERT WIRZ

For the People's Republic of Angola:

JOÃO-PEDRO LUBANZA

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DE BLEEKER R.H.Y.

For the Byelorussian Soviet Socialist Republic:

IVAN GRITSOUK

For the Federative Republic of Brazil:

FRANCISCO SAVIO COUTO PINHEIRO

For Brunei Darussalam:

LIM KEE BENG

For the People's Republic of Bulgaria:

JANEV JANKO

For the Republic of Cameroon:

WILLIAM TALLAH
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For Canada:

W.H. MONTGOMERY
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For Chile:

ITALO MAZZEI HAASE

For the People's Republic of China:

ZHU GAO-FENG

For the Vatican City State:

P. EUGENIO MATIS
PIER VINCENZO GIUDICI

For the Republic of Colombia:

HECTOR CHARRY SAMPER

For the Republic of Korea:

KWANG-DONG KIM

For the Republic of the Ivory Coast:

CHARLES TIEMELE KOUANDE
JEAN-BAPTISTE YAO KOUAKOU
GEORGES LAMBIN

For Cuba:

CARLOS MARTINEZ ALBUERNE

For Denmark:

JARL RISUM

For the Republic of Djibouti:

HASSAN MOHAMED AHMED

For the Arab Republic of Egypt:

FAROUK IBRAHIM ALI
MAHMOUD MOHAMED KISHK
Dr WAFIK KAMIL
MAHMOUD M. SALEH EL-NEMR
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GALO LEORO
JOSÉ VIVANCO

For Spain:

PAZ FERNANDEZ FELGUEROSO
JAVIER NADAL ARIÑO
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DEAN BURCH
EDWARD R. JACOBS
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For Ethiopia:

BEKELE YADETTA

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K. TERÄSVUO
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JEAN-LOUIS BLANC
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JULES LEGNONGO

For Ghana:

SOLOMON ASHONG OKANG

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MAURICE-HABIB GHAZAL

For the Republic of Liberia:

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For the Socialist People's Libyan Arab Jamahiriya:

ABDALLA MOHAMED KAREDELY
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KRAISORN PORNSUTEE

For the Kingdom of Tonga:

LEMEKI MALU

For Tunisia:

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Dr DRASKO MARIN

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ANNEX

Partial Revision of the Radio Regulations and the Appendices Thereto

ARTICLE 8

GHz
11.7 – 12.75

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

MOD **836** Orb-85 In Region 2, in the band 11.7 – 12.2 GHz, transponders on space stations in the fixed-satellite service may be used additionally for transmissions in the broadcasting-satellite service, provided that such transmissions do not have a maximum e.i.r.p. greater than 53 dBW per television channel and do not cause greater interference or require more protection from interference than the coordinated fixed-satellite service frequency assignments. With respect to the space services, this band shall be used principally for the fixed-satellite service.

MOD **837** Orb-85 *Different category of service:* in Canada, Mexico and the United States, the allocation of the band 11.7 – 12.1 GHz to the fixed service is on a secondary basis (see No. **424**).

MOD **839** Orb-85 The use of the bands 11.7 – 12.2 GHz by the fixed-satellite service in Region 2 and 11.7 – 12.7 GHz by the broadcasting-satellite service in Region 2 is limited to national and sub-regional systems. The use of the band 11.7 – 12.2 GHz by the fixed-satellite service in Region 2 is subject to previous agreement between the administrations concerned and those having services, operating or planned to operate in accordance with the Table, which may be affected (see Articles **11, 13** and **14**). For the use of the band 12.2 – 12.7 GHz by the broadcasting-satellite service in Region 2, see Article **15**.

SUP **840** Orb-85

SUP **841** Orb-85

MOD **842** Orb-85 *Additional allocation:* the band 12.1 – 12.2 GHz in Brazil and Peru, is also allocated to the fixed service on a primary basis.

SUP **843** Orb-85

MOD **844** Orb-85 In Region 2, in the band 12.2 – 12.7 GHz, existing and future terrestrial radiocommunication services shall not cause harmful interference to the space services operating in conformity with the Broadcasting-Satellite Plan for Region 2 contained in Appendix **30 (Orb-85)**.

MOD **846** Orb-85 In Region 2, in the band 12.2 – 12.7 GHz, assignments to stations of the broadcasting-satellite service in the Plan for Region 2 contained in Appendix **30 (Orb-85)** may also be used for transmissions in the fixed-satellite service (space-to-Earth), provided that such transmissions do not cause more

interference or require more protection from interference than the broadcasting-satellite service transmissions operating in conformity with the Region 2 Plan. With respect to the space services, this band shall be used principally for the broadcasting-satellite service.

MOD **847** Orb-85 The broadcasting-satellite service in the band 12.5 – 12.75 GHz in Region 3 is limited to community reception with a power flux-density not exceeding -111 dB(W/m^2) as defined in Annex 5 of Appendix **30 (Orb-85)**. See also Resolution **34**.

MOD **869** Orb-85 The use of the band 17.3 – 18.1 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links for the broadcasting-satellite service. For the use of the band 17.3 – 17.8 GHz in Region 2 by the feeder links for the broadcasting-satellite service in the band 12.2 – 12.7 GHz, see Article **15A**.

ARTICLE 11

NOC

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

MOD **A.11.1** Orb-85 [1] For the coordination of frequency assignments to stations in the broadcasting-satellite service and other services in the frequency bands 11.7 – 12.2 GHz (in Region 3), 11.7 – 12.5 GHz (in Region 1) and 12.2 – 12.7 GHz (in Region 2), as well as the coordination of frequency assignments to feeder-link stations utilizing the fixed-satellite service (Earth-to-space) in the frequency band 17.3 – 17.8 GHz (in Region 2) and other services in these bands in Region 2, see also Article **15** and Article **15A** respectively.

ARTICLE 12

MOD **Orb-85**

Notification and Recording in the Master International Frequency Register of Frequency Assignments to[1] Terrestrial Radiocommunication Stations [2, 3, 4]

MOD **A.12.3** **Orb-85**

[3] For the notification and recording of frequency assignments to terrestrial stations in the frequency bands 11.7 – 12.2 GHz (in Region 3), 12.2 – 12.7 GHz (in Region 2) and 11.7 – 12.5 GHz (in Region 1), so far as their relationship to the broadcasting-satellite service in these bands is concerned, see also Article **15**.

ADD **A.12.4** **Orb-85**

[4] For the notification and recording of frequency assignments to terrestrial stations in the frequency band 17.7 – 17.8 GHz (in Region 2), so far as their relationship to the fixed-satellite service (Earth-to-space) in this band is concerned, see also Article **15A**.

ARTICLE 13

NOC

Notification and Recording in the Master International Frequency Register of Frequency Assignments[1] to Radio Astronomy and Space Radiocommunication Stations Except Stations in the Broadcasting-Satellite Service [2]

MOD **A.13.2** **Orb-85**

[2] For notification and recording of frequency assignments to stations in the broadcasting-satellite service and other services in the frequency bands 11.7 – 12.2 GHz (in Region 3), 11.7 – 12.5 GHz (in Region 1) and 12.2 – 12.7 GHz (in Region 2), as well as the notification and recording of frequency assignments to feeder-link stations in the fixed-satellite service (Earth-to-space) in the frequency band 17.3 – 17.8 GHz (in Region 2) and other services in these bands in Region 2, see also Article **15** and Article **15A** respectively.

ARTICLE 15

MOD **Orb-85** **Coordination, Notification and Recording of Frequency Assignments to Stations of the Broadcasting-Satellite Service in the Frequency Bands 11.7 – 12.2 GHz (in Region 3), 12.2 – 12.7 GHz (in Region 2) and 11.7 – 12.5 GHz (in Region 1) and to the Other Services to Which these Bands Are Allocated, so far as their Relationship to the Broadcasting-Satellite Service in these Bands is Concerned**

MOD **1656** **Orb-85** The provisions and associated Plans for the broadcasting-satellite service in the frequency bands 11.7 – 12.5 GHz (in Region 1), 12.2 – 12.7 GHz (in Region 2) and 11.7 – 12.2 GHz (in Region 3), as contained in Appendix **30 (Orb-85)** to the Radio Regulations, shall apply to the assignment and use of frequencies by stations of the broadcasting-satellite service in these bands and to the stations of other services to which these bands are allocated, so far as their relationship to the broadcasting-satellite service in these bands is concerned. For the broadcasting-satellite service in Region 2, Resolution **42 (Orb-85)** is also applicable.

ADD **Orb-85**

ARTICLE 15A

ADD **Orb-85**

Coordination, Notification and Recording of Frequency Assignments to Stations in the Fixed-Satellite Service (Earth-to-space) in the Frequency Band 17.3 - 17.8 GHz (in Region 2) Providing Feeder Links for the Broadcasting-Satellite Service and also to Stations of Other Services to Which this Band is Allocated in Region 2, so far as their Relationship to the Fixed-Satellite Service (Earth-to-space) in this Band is Concerned in Region 2

ADD **1668 Orb-85** The provisions and associated Plan for feeder links associated with the broadcasting-satellite service, utilizing the fixed-satellite service (Earth-to-space) in the frequency band 17.3 – 17.8 GHz (in Region 2), as contained in Appendix **30A**, shall apply to the assignment to and use by feeder links of frequencies in this band and to stations of other services to which this band is allocated in Region 2, so far as the relationship of these other services to the fixed-satellite service (Earth-to-space) in this band is concerned in Region 2. For feeder links in the fixed-satellite service for the broadcasting-satellite service in Region 2, Resolution **42 (Orb-85)** is also applicable.

ARTICLE 69

Entry into force of the Radio Regulations

MOD **5187** **Orb-85** § 1 These Regulations, which are annexed to the International Telecommunication Convention, shall enter into force on 1 January 1982, except as specified in Nos. **5188**, **5189** and **5193**.

ADD **5193** **Orb-85** § 7 The partial revision of the Radio Regulations contained in the Final Acts of WARC Orb-85 shall enter into force on 30 October 1986 at 0001 hours UTC.[1]

ADD **5193.1** **Orb-85** [1] For the provisional application of this partial revision, see Resolution **41 (Orb-85)**.

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MOD

APPENDIX 30 (Orb-85)

Orb-85

MOD

Provisions for All Services and Associated Plans for the Broadcasting-Satellite Service in the Frequency Bands 11.7 - 12.2 GHz (in Region 3), 11.7 - 12.5 GHz (in Region 1) and 12.2 - 12.7 GHz (in Region 2)

(See Article **15**)

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MOD

ARTICLE 1

General Definitions

1. For the purposes of this Appendix the following terms shall have the meanings defined below:

1.1 *1977 Conference:* World Administrative Radio Conference for the Planning of the Broadcasting-Satellite Service in the Frequency Bands 11.7 -12.2 GHz (in Regions 2 and 3) and 11.7 - 12.5 GHz (in Region 1), called in short World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977.

1.2 *1983 Conference:* Regional Administrative Radio Conference for the Planning in Region 2 of the Broadcasting-Satellite Service in the Frequency Band 12.2 - 12.7 GHz and Associated Feeder Links in the Frequency Band 17.3 - 17.8 GHz, called in short Regional Administrative Conference for the Planning of the Broadcasting-Satellite Service in Region 2 (RARC Sat-R2), Geneva, 1983.

1.3 *1985 Conference:* First Session of the Word Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It, Geneva, 1985, called in short WARC Orb-85.

1.4 *Regions 1 and 3 Plan:* The Plan for the Broadcasting-Satellite Service in the Frequency Bands 11.7 - 12.2 GHz in Region 3 and 11.7 - 12.5 GHz in Region 1 contained in this Appendix, together with any modifications resulting from the successful application of the procedures of Article 4 of this Appendix.

1.5 *Region 2 Plan:* The Plan for the Broadcasting-Satellite Service in the Frequency Band 12.2 - 12.7 GHz in Region 2 contained in this Appendix, together with any modifications resulting from the successful application of the procedures of Article 4 of this Appendix.

1.6 *Frequency assignment in conformity with the Plan:* Any frequency assignment which appears in the Regions 1 and 3 Plan or the Region 2 Plan or for which the procedure of Article 4 of this Appendix has been successfully applied.

MOD

ARTICLE 2

Frequency Bands

2.1 The provisions of this Appendix apply to the broadcasting-satellite service in the frequency bands between 11.7 GHz and 12.2 GHz in Region 3, between 11.7 GHz and 12.5 GHz in Region 1 and between 12.2 GHz and 12.7 GHz in Region 2 and to the other services to which these bands are allocated in Regions 1, 2 and 3, insofar as their relationship to the broadcasting-satellite service in these bands is concerned.

MOD

ARTICLE 3

Execution of the Provisions and Associated Plans

3.1 The Members of the Union in Regions 1, 2 and 3 shall adopt, for their broadcasting-satellite space stations[1] operating in the frequency bands referred to in this Appendix, the characteristics specified in the appropriate Regional Plan and the associated provisions.

3.2 The Members of the Union shall not change the characteristics specified in the Regions 1 and 3 Plan or in the Region 2 Plan, or bring into use assignments to broadcasting-satellite space stations or to stations in the

[1] In Region 2, such stations may also be used for transmissions in the fixed-satellite service (space-to-Earth) in accordance with No. **846** of the Radio Regulations.

other services to which these frequency bands are allocated, except as provided for in the Radio Regulations and the appropriate Articles and Annexes of this Appendix.

MOD

ARTICLE 4

Procedure for Modifications to the Plans

4.1 When an administration intends to make a modification[1] to one of the Regional Plans, i.e. either:

a) to modify the characteristics of any of its frequency assignments to a space station[2] in the broadcasting-satellite service which are shown in the appropriate Regional Plan, or for which the procedure in this Article has been successfully applied, whether or not the station has been brought into use; *or*

b) to include in the appropriate Regional Plan a new frequency assignment to a space station in the broadcasting-satellite service; *or*

c) to cancel a frequency assignment to a space station in the broadcasting-satellite service;

the following procedure shall be applied before any notification of the frequency assignment is made to the International Frequency Registration Board (see Article 5 of this Appendix);

---

[1] The intention not to employ energy dispersal in accordance with paragraph 3.18 of Annex 5 shall be treated as a modification and thus subject to the appropriate provisions of this Article.

[2] The expression "frequency assignment to a space station", wherever it appears in this Article, shall be understood to refer to a frequency assignment associated with a given orbital position. See also Annex 7 and Resolution **43 (Orb-85)** for the orbital limitations.

4.1.1 Before an administration proposes to include in the Region 2 Plan under the provisions of paragraph 4.1 *b)*, a new frequency assignment to a space station or to include in the Plan new frequency assignments to a space station whose orbital position is not designated in the Plan for this administration, all of the assignments to the service area involved should normally have been brought into service or have been notified to the Board in accordance with Article 5 of this Appendix. Should this not be the case, the administration concerned shall inform the Board of the reasons therefor.

4.2 The term "frequency assignment in conformity with the Plan" used in this and the following Articles is defined in Article 1.

4.3 *Proposed modifications to a frequency assignment in conformity with one of the Regional Plans or inclusion in that Plan of a new frequency assignment*

For Regions 1 and 3:

4.3.1 An administration proposing a modification to the characteristics of a frequency assignment in conformity with the Regions 1 and 3 Plan, or the inclusion of a new frequency assignment in that Plan, shall seek the agreement of those administrations:

4.3.1.1 of Regions 1 and 3 having a frequency assignment to a space station in the broadcasting-satellite service in the same or adjacent channel which is in conformity with the Regions 1 and 3 Plan, or in respect of which proposed modifications to that Plan have already been published by the Board in accordance with the provisions of paragraph 4.3.5.1 or 4.3.6 of this Article; *or*

4.3.1.2 of Region 2 having a frequency assignment to a space station in the broadcasting-satellite service with the necessary bandwidth, any portion of which falls within the necessary bandwidth of the proposed assignment, which is in conformity with the Region 2 Plan, or in respect of which proposed modifications to that Plan have already been published by the Board in accordance with the provisions of paragraph 4.3.5.1 or 4.3.6 of this Article; *or*

4.3.1.3 identified in accordance with *resolves* 2 of Resolution **43 (Orb-85)**; *or*

4.3.1.4 having no frequency assignment in the broadcasting-satellite service in the channel concerned but in whose territory the power flux-density value exceeds the prescribed limit as a result of the proposed modification or having an assignment whose associated service area does not cover the whole of the territory of the administration, and in whose territory outside that service area the power flux-density from the broadcasting-satellite space station subject to this modification exceeds the prescribed limit as a result of the proposed modification; *or*

4.3.1.5 having a frequency assignment in the band 11.7 - 12.2 GHz in Region 2 or 12.2 - 12.5 GHz in Region 3 to a space station in the fixed-satellite service which is recorded in the Master Register or which has been coordinated or is being coordinated under the provisions of No. **1060** of the Radio Regulations, or those of paragraph 7.2.1 of this Appendix;

4.3.1.6 whose services are considered to be affected.

4.3.2 The services of an administration are considered to be affected when the limits shown in Annex 1 are exceeded.

For Region 2:

4.3.3 An administration proposing a modification to the characteristics of a frequency assignment in conformity with the Region 2 Plan, or the inclusion of a new frequency assignment in that Plan, shall seek the agreement of those administrations:

4.3.3.1 of Region 2 having a frequency assignment in the Region 2 Plan to a space station in the broadcasting-satellite service in the same or adjacent channel which is in conformity with that Plan, or in respect of which proposed modifications to that Plan have already been published by the Board in accordance with the provisions of paragraph 4.3.5.1 or 4.3.6 of this Article; *or*

4.3.3.2 of Regions 1 and 3 having a frequency assignment to a space station in the broadcasting-satellite service with the necessary bandwidth, any portion of which falls within the necessary bandwidth of the proposed assignment, which is in conformity with the Regions 1 and 3 Plan, or in respect of which proposed modifications to that Plan have already been published by the Board in accordance with the provisions of paragraph 4.3.5.1 or 4.3.6 of this Article; *or*

4.3.3.3 identified in accordance with *resolves* 1 of Resolution **43 (Orb-85)**; *or*

4.3.3.4 having no frequency assignment in the broadcasting-satellite service in the channel concerned but in whose territory the power flux-density value exceeds the prescribed limit as a result of the proposed modification or having an assignment whose associated service area does not cover the whole of the territory of the administration, and in whose territory outside that service area the power flux-density from the broadcasting-satellite space station subject to this modification exceeds the prescribed limit as a result of the proposed modification; *or*

4.3.3.5 having a frequency assignment in the band 12.5 - 12.7 GHz in Region 1 or 12.2 - 12.7 GHz in Region 3 to a space station in the fixed-satellite service which is recorded in the Master Register or which has been coordinated or is being coordinated under the provisions of No. **1060** of the Radio Regulations or those of paragraph 7.2.1 of this Appendix; *or*

4.3.3.6 having a frequency assignment to a space station in the broadcasting-satellite service in the band 12.5 - 12.7 GHz in Region 3 with the necessary bandwidth, any portion of which falls within the necessary bandwidth of the proposed assignment and which

a) is recorded in the Master Register, *or*

b) has been coordinated or is being coordinated under the provisions of Resolution **33**, *or*

c) appears in a Region 3 Plan to be adopted at a future administrative radio conference, taking account of modifications to that Plan which may be introduced in accordance with the Final Acts of the Conference;

4.3.3.7 whose services are considered to be affected.

4.3.4 The services of an administration are considered to be affected when the limits shown in Annex 1 are exceeded.

For all Regions:

4.3.5 An administration intending to modify characteristics in one of the Regional Plans shall send to the Board, not earlier than five years but preferably not later than eighteen months before the date on which the

assignment is to be brought into use, the relevant information listed in Annex 2. Modifications to that Plan involving additions under paragraph 4.1 *b)* shall lapse if the assignment is not brought into use by that date.

4.3.5.1 Where as a result of the intended modification the limits defined in Annex 1 are not exceeded, this fact shall be indicated when submitting to the Board the information required by paragraph 4.3.5. The Board shall then publish this information in a special section of its weekly circular.

4.3.5.2 In all other cases the administration shall notify the Board of the names of the administrations whose agreement it considers should be sought in order to arrive at the agreement referred to in paragraph 4.3.1 or 4.3.3, as well as of those with which agreement has already been reached.

4.3.6 The Board shall determine on the basis of Annex 1 the administrations whose frequency assignments are considered to be affected within the meaning of paragraph 4.3.1 or 4.3.3. The Board shall include the names of those administrations with the information received under paragraph 4.3.5.2 and shall publish the complete information in a special section of its weekly circular. The Board shall immediately send the results of its calculations to the administration proposing the modification to the appropriate Regional Plan.

4.3.7 The Board shall send a telegram to the administrations listed in the special section of the weekly circular drawing their attention to the information it contains and shall send them the results of its calculations.

4.3.8 An administration which feels that it should have been included in the list of administrations whose services are considered to be affected may, giving the technical reasons for so doing, request the Board to include its name. The Board shall study this request on the basis of Annex 1 and shall send a copy of the request with an appropriate recommendation to the administration proposing the modification to the appropriate Regional Plan.

4.3.9 Any modification to a frequency assignment which is in conformity with the appropriate Regional Plan or any inclusion in that Plan of a new frequency assignment which would have the effect of exceeding the limits specified in Annex 1 shall be subject to the agreement of all administrations whose services are considered to be affected.

4.3.10 The administration seeking agreement or the administration with which agreement is sought may request any additional technical information it considers necessary. The administrations shall inform the Board of such requests.

4.3.11 Comments from administrations on the information published pursuant to paragraph 4.3.6 should be sent either directly to the administration proposing the modification or through the Board. In any event the Board shall be informed that comments have been made.

4.3.12 An administration that has not notified its comments either to the administration seeking agreement or to the Board within a period of four months following the date of the weekly circular referred to in paragraph 4.3.5.1 or 4.3.6 shall be understood to have agreed to the proposed assignment. This time limit may be extended by up to three months for an administration that has requested additional information under paragraph 4.3.10 or for an administration that has requested the assistance of the Board under paragraph 4.3.20. In the latter case the Board shall inform the administrations concerned of this request.

4.3.13 If, in seeking agreement, an administration modifies its initial proposal, it shall again apply the provisions of paragraph 4.3.5 and the consequent procedure with respect to any other administration whose services might be affected as a result of modifications to the initial proposal.

4.3.14 If no comments have been received on the expiry of the periods specified in paragraph 4.3.12, or if agreement has been reached with the administrations which have made comments and with which agreement is necessary, the administration proposing the modification may continue with the appropriate procedure in Article 5 and shall inform the Board, indicating the final characteristics of the frequency assignment together with the names of the administrations with which agreement has been reached.

4.3.15 The agreement of the administrations affected may also be obtained in accordance with this Article, for a specified period.

4.3.16 When the proposed modification to the appropriate Regional Plan involves developing countries, administrations shall seek all practicable solutions conducive to the economical development of the broadcasting-satellite systems of these countries.

4.3.17 The Board shall publish in a special section of its weekly circular the information received under paragraph 4.3.14 together with the names of any administrations with which the provisions of this Article have been successfully applied. The frequency assignment concerned shall enjoy the same status as those appearing in the appropriate Regional Plan and will be considered as a frequency assignment in conformity with the Plan.

4.3.18 When an administration proposing to modify the characteristics of a frequency assignment or to make a new frequency assignment receives notice of disagreement from an administration whose agreement it has sought, it should first endeavour to solve the problem by exploring all possible means of meeting its requirement. If the problem still cannot be solved by such means, the administration whose agreement has been sought should endeavour to overcome the difficulties as far as possible, and shall state the technical reasons for any disagreement if the administration seeking the agreement requests it to do so.

4.3.19 If no agreement is reached between the administrations concerned, the Board shall carry out any study that may be requested by these administrations; the Board shall inform them of the result of the study and shall make such recommendations as it may be able to offer for the solution of the problem.

4.3.20 An administration may at any stage in the procedure described, or before applying it, request the assistance of the Board, particularly in seeking the agreement of another administration.

4.3.21 The relevant provisions of Article 5 of this Appendix shall be applied when frequency assignments are notified to the Board.

4.4 *Cancellation of frequency assignments*

When a frequency assignment in conformity with one of the Regional Plans is no longer required, whether or not as a result of a modification, the administration concerned shall immediately so inform the Board. The Board shall publish this information in a special section of its weekly circular and delete the assignment from the appropriate Regional Plan.

4.5 *Master copy of the Plans*

4.5.1 *a)* The Board shall maintain an up-to-date master copy of the Regions 1 and 3 Plan taking account of the application of the procedure specified in this Article. The Board shall prepare a document listing the amendments to be made to the Plan as a result of modifications made in accordance with the procedure in this Article.

b) The Board shall maintain an up-to-date master copy of the Region 2 Plan, including the overall equivalent protection margins of each assignment, taking account of the application of the procedure specified in this Article. This master copy shall contain the overall equivalent protection margins derived from the Plan as established by the 1983 Conference and those derived from all modifications to the Plan as a result of the successful completion of the modification procedure described in this Article. The Board shall prepare a document listing the amendments to be made to the Plan as a result of modifications made in accordance with the procedure described in this Article.

4.5.2 The Secretary-General shall be informed by the Board of any modifications made to the Regional Plans and shall publish an up-to-date version of those Plans in an appropriate form when justified by the circumstances.

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ARTICLE 5

Notification, Examination and Recording in the Master Register of Frequency Assignments to Space Stations in the Broadcasting-Satellite Service

5.1 *Notification*

5.1.1 Whenever an administration intends to bring into use a frequency assignment to a space station in the broadcasting-satellite service, it shall

notify this frequency assignment to the Board. For this purpose, the notifying administration shall apply the following provisions.

5.1.2 For any notification under paragraph 5.1.1, an individual notice for each frequency assignment shall be drawn up as prescribed in Annex 2, the various sections of which specify the basic characteristics to be provided as appropriate. It is recommended that the notifying administration should also supply any other data it may consider useful.

5.1.3 Each notice must reach the Board not earlier than three years before the date on which the frequency assignment is to be brought into use. In any case, the notice must reach the Board not later than three months before that date[1].

5.1.4 Any frequency assignment the notice of which reaches the Board after the applicable period specified in paragraph 5.1.3 shall, where it is to be recorded, bear a remark in the Master Register to indicate that it is not in conformity with paragraph 5.1.3.

5.1.5 Any notice made under paragraph 5.1.1 which does not contain the characteristics specified in Annex 2 shall be returned by the Board immediately by airmail to the notifying administration with the relevant reasons.

5.1.6 Upon receipt of a complete notice, the Board shall include its particulars, with the date of receipt, in its weekly circular, which shall contain the particulars of all such notices received since the publication of the previous circular.

5.1.7 The circular shall constitute the acknowledgement to the notifying administration of the receipt of a complete notice.

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[1] Where appropriate, the notifying administration shall initiate the procedure for modifying the Plan concerned in sufficient time to ensure that this limit is observed. For Region 2, see also Resolution **42 (Orb-85)** and paragraph B of Annex 7.

5.1.8 Complete notices shall be considered by the Board in order of receipt. The Board shall not postpone its finding unless it lacks sufficient data to reach a decision; moreover, the Board shall not act upon any notice which has a technical bearing on an earlier notice still under consideration by the Board until it has reached a finding with respect to such earlier notice.

5.2 *Examination and recording*

5.2.1 The Board shall examine each notice:

a) with respect to its conformity with the Convention and the relevant provisions of the Radio Regulations (with the exception of those relating to *b), c)* and *d)* below);

b) with respect to its conformity with the appropriate Regional Plan; *or*

c) with respect to its conformity with the appropriate Regional Plan, however, having characteristics differing from those in the appropriate Regional Plan in one or more of the following aspects:

- use of a reduced e.i.r.p.,
- use of a reduced coverage area entirely situated within the coverage area appearing in the appropriate Regional Plan,
- use of other modulating signals in accordance with the provisions of paragraph 3.1.3 of Annex 5,
- use of the assignment for transmission in the fixed-satellite service in accordance with No. **846** of the Radio Regulations,
- use of an orbital position under the conditions specified in paragraph B of Annex 7; *or*

d) with respect to its conformity with the provisions of Resolution **42 (Orb-85)**.

5.2.2 Where the Board reaches a favourable finding with respect to paragraphs 5.2.1 *a)* and 5.2.1 *b)*, the frequency assignment of an administration shall be recorded in the Master Register. The date of receipt of the notice by the Board shall be entered in Column 2d. In relations between administrations, all frequency assignments brought into use in conformity with the appropriate Regional Plan and recorded in the Master Register shall be considered to have the same status irrespective of the dates entered in Column 2d for such frequency assignments.

5.2.2.1 Where the Board reaches a favourable finding with respect to paragraphs 5.2.1 *a)* and 5.2.1 *c)*, the frequency assignment shall be recorded in the Master Register. The date of receipt of the notice by the Board shall be entered in Column 2d. In relations between administrations, all frequency assignments brought into use in conformity with the appropriate Regional Plan and recorded in the Master Register shall be considered to have the same status irrespective of the dates entered in Column 2d for such frequency assignments. When recording these assignments, the Board shall indicate by an appropriate symbol the characteristics having a value different from that appearing in the appropriate Regional Plan.

5.2.2.2 Where the Board reaches a favourable finding with respect to paragraph 5.2.1 *a)* but an unfavourable finding with respect to paragraphs 5.2.1 *b)* and 5.2.1 *c)*, it shall examine the notice with respect to the successful application of the provisions of Resolution **42 (Orb-85)**. A frequency assignment for which the provisions of Resolution **42 (Orb-85)** have been successfully applied shall be recorded in the Master Register with an appropriate symbol to indicate its interim status. The date of receipt of the notice by the Board shall be entered in Column 2d. In relations between administrations all frequency assignments brought into use following the successful application of the provisions of Resolution **42 (Orb-85)** and recorded in the Master Register shall be considered to have the same status irrespective of the dates entered in Column 2d for such frequency assignments.

5.2.3 Whenever a frequency assignment is recorded in the Master Register, the finding reached by the Board shall be indicated by a symbol in Column 13a.

5.2.4 Where the Board reaches an unfavourable finding with respect to paragraphs 5.2.1 *a)*, 5.2.1 *b)* and 5.2.1 *c)*, the notice shall be returned immediately by airmail to the notifying administration with the reasons of the Board for this finding and with such suggestions as the Board may be able to offer with a view to a satisfactory solution of the problem.

5.2.5 Where the notifying administration resubmits the notice and the finding of the Board becomes favourable with respect to the appropriate parts of paragraph 5.2.1, the notice shall be treated as in paragraph 5.2.2, 5.2.2.1 or 5.2.2.2, as appropriate.

5.2.6 If the notifying administration resubmits the notice without modification and insists on its reconsideration, and if the Board's finding with respect to paragraph 5.2.1 remains unfavourable, the notice is returned to the notifying administration in accordance with paragraph 5.2.4. In this case, the notifying administration undertakes not to bring into use the frequency assignment until the condition specified in paragraph 5.2.5 is fulfilled. For Regions 1 and 3, in the event that the Board has been informed of agreement to modification of the Plan for a specified period of time in accordance with Article 4, the frequency assignment shall be recorded in the Master Register with a note indicating that the frequency assignment is valid only for the period specified. The notifying administration using the frequency assignment over a specified period shall not subsequently invoke this fact to justify the continued use of the frequency beyond the period specified unless it obtains the agreement of the administration(s) concerned.

5.2.7 If a frequency assignment notified in advance of bringing into use in conformity with paragraph 5.1.3 has received a favourable finding by the Board with respect to the provisions of paragraph 5.2.1, it shall be entered provisionally in the Master Register with a special symbol in the Remarks Column indicating the provisional nature of that entry.

5.2.8 When the Board has received confirmation that the frequency assignment has been brought into use, the Board shall remove the symbol in the Master Register.

5.2.9 The date in Column 2c shall be the date of bringing into use notified by the administration concerned. It is given for information only.

5.3 *Cancellation of entries in the Master Register*

5.3.1 If an administration has not confirmed the bringing into use of a frequency assignment under paragraph 5.2.8, the Board will make inquiries of the administration not earlier than six months after the expiry of the period specified in paragraph 5.1.3. On receipt of the relevant information, the Board will either modify the date of coming into use or cancel the entry.

5.3.2 If the use of any recorded frequency assignment is permanently discontinued, the notifying administration shall so inform the Board within three months, whereupon the entry shall be removed from the Master Register.

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ARTICLE 6

Coordination, Notification and Recording in the Master International Frequency Register of Frequency Assignments to Terrestrial Stations Affecting Broadcasting-Satellite Frequency Assignments in the Frequency Bands 11.7 - 12.2 GHz (in Region 3), 11.7 - 12.5 GHz (in Region 1) and 12.2 - 12.7 GHz (in Region 2)[1]

Section I. Coordination Procedure to Be Applied

6.1.1 Before notifying to the Board a frequency assignment to a terrestrial transmitting station, an administration shall initiate coordination with any other administration having a frequency assignment to a broadcasting-satellite station in conformity with the appropriate Regional Plan if:

– the necessary bandwidths of the two transmissions overlap; *and*

[1] These procedures do not replace the procedures prescribed for terrestrial stations in Articles **11** and **12** of the Radio Regulations.

– the power flux-density which would be produced by the proposed terrestrial transmitting station exceeds the value derived in accordance with Annex 3 at one or more points on the edge of the service area which is within the coverage area of the broadcasting-satellite station of that administration.

6.1.2 For the purpose of effecting coordination, the administration responsible for the terrestrial station shall send to the administrations concerned, by the fastest possible means, a diagram drawn to an appropriate scale indicating the location of the terrestrial station and all other data of the proposed frequency assignment and the approximate date on which it is planned to bring the station into use.

6.1.3 An administration with which coordination is sought shall acknowledge receipt of the coordination data immediately by telegram. If no acknowledgement is received within fifteen days of dispatch, the administration seeking coordination may dispatch a telegram requesting acknowledgement of receipt of the coordination data, to which the receiving administration shall reply. Upon receipt of the coordination data, an administration with which coordination is sought shall promptly examine the matter with regard to interference[1] which would be caused to its frequency assignments in conformity with the appropriate Regional Plan and shall, within an overall period of two months from dispatch of the coordination data, either notify the administration requesting coordination of its agreement to the proposed assignment or, if this is impossible, indicate the reasons therefor and make such suggestions as it may be able to offer with a view to a satisfactory solution of the problem.

[1] The criteria to be employed in evaluating interference levels shall be based on the relevant CCIR Recommendations or, in the absence of such Recommendations, shall be agreed between the administrations concerned.

6.1.4 No coordination is required when an administration proposes to change the characteristics of an existing assignment in such a way as not to increase the level of interference to the service to be rendered by the broadcasting-satellite stations of other administrations.

6.1.5 An administration seeking coordination may request the Board to endeavour to effect coordination where:

a) an administration with which coordination is sought fails to acknowledge receipt under paragraph 6.1.3 within one month of dispatch of the coordination data;

b) an administration which has acknowledged receipt under paragraph 6.1.3 fails to give a decision within three months of dispatch of the coordination data;

c) the administration seeking coordination and an administration with which coordination is sought disagree on the acceptable level of interference; *or*

d) coordination is impossible for any other reason.

In so doing, the administration concerned shall provide the Board with the necessary information to enable it to endeavour to effect such coordination.

6.1.6 Either the administration seeking coordination or an administration with which coordination is sought, or the Board, may request any additional information which they may require to assess the level of interference to the services concerned.

6.1.7 Where the Board receives a request under paragraph 6.1.5 *a)*, it shall forthwith send a telegram to the administration concerned requesting immediate acknowledgement.

6.1.8 Where the Board receives an acknowledgement following its action under paragraph 6.1.7 or receives a request under paragraph 6.1.5 *b)*, it shall forthwith send a telegram to the administration concerned requesting an early decision on the matter.

6.1.9 Where the Board receives a request under paragraph 6.1.5 *d)*, it shall endeavour to effect coordination in accordance with the provisions of paragraph 6.1.2. Where the Board receives no acknowledgement of its request for coordination within the period specified in paragraph 6.1.3, it shall act in accordance with paragraph 6.1.7.

6.1.10 Where an administration fails to reply within one month of dispatch of the Board's telegram sent under paragraph 6.1.7 requesting an acknowledgement or fails to give a decision on the matter within two months of dispatch of the Board's telegram of request sent under paragraph 6.1.8, the administration with which coordination was sought shall be considered to have undertaken that no complaint will be made in respect of any harmful interference which may be caused by the terrestrial station being coordinated to the service rendered or to be rendered by its satellite-broadcasting station.

6.1.11 Where necessary, as part of the procedure under paragraph 6.1.5, the Board shall assess the level of interference. In any case, the Board shall inform the administrations concerned of the results obtained.

6.1.12 In the event of continuing disagreement between one administration seeking to effect coordination and one with which coordination has been sought, the administrations concerned may explore the possibility of reaching an agreement on the use of the proposed frequency assignment for a specified period.

Section II. Notification Procedure for Frequency Assignments

6.2.1 Any frequency assignment to a fixed, land or broadcasting station shall be notified to the International Frequency Registration Board if the use of the frequency concerned is capable of causing harmful interference to the service rendered or to be rendered by a broadcasting-satellite station of any other administration, or if it is desired to obtain international recognition of the use of the frequency [1].

6.2.2 For this notification, an individual notice for each frequency assignment shall be drawn up as prescribed in Section A of Appendix **1** to the Radio Regulations, which specifies the basic characteristics to be furnished as required. It is recommended that the notifying administration should also supply the additional data called for in that Section, together with such further data as it may consider appropriate.

6.2.3 Whenever practicable, each notice should reach the Board before the date on which the assignment is brought into use. The notice made in accordance with paragraph 6.2.2 must reach the Board not earlier than three years and not later than three months before the date on which the assignment is to be brought into use.

6.2.4 Any frequency assignment, the notice of which reaches the Board less than three months before it is brought into use shall, where it is to be recorded, bear a remark in the Master Register to indicate that it is not in conformity with paragraph 6.2.3.

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[1] The attention of administrations is specifically drawn to the provisions of Section I of this Article.

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

6.3.1 Whatever the means of communication, including telegraph, by which a notice is transmitted to the Board, it shall be considered complete if it contains at least the appropriate basic characteristics specified in Section A of Appendix 1 to the Radio Regulations.

6.3.2 Complete notices shall be considered by the Board in the order of their receipt.

6.3.3 Any incomplete notice shall be returned by the Board immediately, by airmail, to the notifying administration with the reasons therefor.

6.3.4 Upon receipt of a complete notice, the Board shall include the particulars thereof, with the date of receipt, in its weekly circular; this circular shall contain the particulars of all such notices received since publication of the previous circular.

6.3.5 The circular shall constitute the Board's acknowledgement to the notifying administration of the receipt of a complete notice.

6.3.6 Complete notices shall be considered by the Board in the order specified in paragraph 6.3.2. The Board may not postpone the formulation of a finding unless it lacks sufficient data to reach a decision; moreover, the Board shall not act upon any notice which has a technical bearing on an earlier notice still under consideration by the Board until it has reached a finding with respect to such earlier notice.

6.3.7 The Board shall examine each notice:

6.3.8 – with respect to its conformity with the Convention, the relevant provisions of the Radio Regulations and the provisions of this Appendix (with the exception of those relating to the coordination procedure and the probability of harmful interference);

6.3.9 – with respect to its conformity with the provisions of paragraph 6.1.1 relating to coordination of the use of the frequency assignment with the other administrations concerned;

6.3.10 – where appropriate, with respect to the probability of harmful interference to a broadcasting-satellite station whose frequency assignment is in conformity with the appropriate Regional Plan.

6.3.11 Depending upon the findings of the Board subsequent to the examination prescribed in paragraphs 6.3.8, 6.3.9 and 6.3.10, further action shall be as follows:

6.3.12 *Finding unfavourable with respect to paragraph 6.3.8*

6.3.13 Where the notice includes a specific reference to the fact that the station will be operated in accordance with the provisions of No. **342** of the Radio Regulations, it shall be examined immediately with respect to paragraphs 6.3.9 and 6.3.10.

6.3.14 If the finding is favourable with respect to paragraph 6.3.9 or 6.3.10, as appropriate, the assignment shall be recorded in the Master Register. The date of receipt of the notice by the Board shall be entered in Column 2d.

6.3.15 If the finding is unfavourable with respect to paragraph 6.3.9 or 6.3.10, as appropriate, the notice shall be returned immediately by airmail to the notifying administration with the Board's reasons for this finding. In such case the notifying administration shall undertake not to bring into use the frequency assignment until the condition specified in paragraph 6.3.14 can be fulfilled. However, the administrations concerned may explore the possibility of reaching an agreement on the use of the proposed frequency assignment for a specified period.

6.3.16 Where the notice does not include a specific reference to the fact that the station will be operated in accordance with the provisions of No. **342** of the Radio Regulations, it shall be returned immediately by airmail to the notifying administration with the Board's reasons for this finding and with such suggestions as the Board may be able to offer with a view to a satisfactory solution of the problem.

6.3.17 If the notifying administration resubmits the notice unchanged, it shall be treated in accordance with the provisions of paragraph 6.3.16.

6.3.18 If the notifying administration resubmits the notice with a specific reference to the fact that the station will be operated in accordance with the provisions of No. **342** of the Radio Regulations, it shall be treated in accordance with the provisions of paragraphs 6.3.13 and 6.3.14 or 6.3.15, as appropriate.

6.3.19 If the notifying administration resubmits the notice with modifications which, after re-examination, result in a favourable finding by the Board with respect to paragraph 6.3.8, the notice shall be treated in accordance with the provisions of paragraphs 6.3.20 to 6.3.32. However, in any subsequent recording of the assignment, the date of receipt of the resubmitted notice by the Board shall be entered in Column 2d.

6.3.20 *Finding favourable with respect to paragraph 6.3.8*

6.3.21 Where the Board finds that the coordination procedure mentioned in paragraph 6.3.9 has been successfully applied with all administrations whose broadcasting-satellite services may be affected, the assignment shall be recorded in the Master Register. The date of receipt of the notice by the Board shall be entered in Column 2d.

6.3.22 Where the Board finds that the coordination procedure mentioned in paragraph 6.3.9 has not been applied, and the notifying administration requests the Board to effect the required coordination, the Board shall take the appropriate action and shall inform the administrations concerned of the results obtained. If the Board's efforts are successful, the notice shall be treated in accordance with the provisions of paragraph 6.3.21. If the Board's efforts are unsuccessful, the notice shall be examined by the Board with respect to the provisions of paragraph 6.3.10.

6.3.23 Where the Board finds that the coordination procedure mentioned in paragraph 6.3.9 has not been applied and the notifying administration does not request the Board to effect the required coordination, the notice shall be returned immediately by airmail to the notifying administration with the Board's reasons for this action and with such suggestions as the Board may be able to offer with a view to a satisfactory solution of the problem.

6.3.24 Where the notifying administration resubmits the notice and the Board finds that the coordination procedure mentioned in paragraph 6.3.9 has been successfully applied with all administrations whose broadcasting-satellite services may be affected, the assignment shall be recorded in the Master Register. The date of receipt of the original notice by the Board shall be entered in Column 2d. The date of the receipt of the resubmitted notice by the Board shall be entered in the Remarks Column.

6.3.25 Where the notifying administration resubmits the notice, requesting the Board to effect the required coordination, it shall be treated in accordance with the provisions of paragraph 6.3.22. However, in any subsequent recording of the assignment, the date of receipt of the resubmitted notice by the Board shall be entered in the Remarks Column.

6.3.26 Where the notifying administration resubmits the notice and states that it has been unsuccessful in its efforts to effect coordination, it shall be examined by the Board with respect to the provisions of paragraph 6.3.10. However, in any subsequent recording of the assignment, the date of receipt of the resubmitted notice by the Board shall be entered in the Remarks Column.

6.3.27 *Finding favourable with respect to paragraphs 6.3.8 and 6.3.10*

6.3.28 The assignment shall be recorded in the Master Register. The date of receipt by the Board of the notice shall be entered in Column 2d.

6.3.29 *Finding favourable with respect to paragraph 6.3.8 but unfavourable with respect to paragraph 6.3.10*

6.3.30 The notice shall be returned immediately by airmail to the notifying administration with the Board's reasons for this finding and with such suggestions as the Board may be able to offer with a view to a satisfactory solution of the problem.

6.3.31 Should the notifying administration resubmit the notice with modifications which result, after re-examination, in a favourable finding by the Board with respect to paragraph 6.3.10, the assignment shall be recorded in the Master Register. The date of receipt of the original notice by the Board shall be entered in Column 2d. The date of receipt of the resubmitted notice by the Board shall be indicated in the Remarks Column.

6.3.32 Should the notifying administration resubmit the notice, either unchanged or with modifications which reduce the probability of harmful interference, but insufficiently to permit the provisions of paragraph 6.3.31 to be applied and should that administration insist upon reconsideration of the notice but the Board's finding remain unchanged, the notification shall again be returned to the notifying administration in accordance with paragraph 6.3.30. In such case, the notifying administration shall undertake not to bring into use the proposed frequency assignment until the condition specified in paragraph 6.3.31 can be fulfilled. However, the administrations concerned may explore the possibility of reaching an agreement on the use of the frequency assignment for a specified period. In that event the Board shall be notified of the agreement and the frequency assignment shall be recorded in the Master Register with a note indicating that the assignment is valid only for the specified period. The notifying administration using the frequency assignment during a specified period shall not subsequently use this circumstance to justify continued use of the frequency beyond this period unless it obtains the agreement of the administration or administrations concerned.

6.3.33 *Change in the basic characteristics of assignments already recorded in the Master Register*

6.3.34 Any notice of a change in the basic characteristics of an assignment already recorded in the Master Register, as specified in Appendix **1** to the Radio Regulations (except those entered in Columns 2c, 3 and 4a of the Master Register), shall be examined by the Board in accordance with the provisions of paragraphs 6.3.8 and 6.3.9 and, where appropriate, paragraph 6.3.10 and the provisions of paragraphs 6.3.12 to 6.3.32 inclusive shall be applied. Where the change should be recorded, the original assignment shall be amended according to the notice.

6.3.35 However, in the event of a change in the basic characteristics of an assignment which is in conformity with paragraph 6.3.8, should the Board reach a favourable finding with respect to paragraph 6.3.9 and, if applicable, paragraph 6.3.10, or find that the change does not increase the probability of harmful interference to assignments already recorded, the amended assignment shall retain the original date in Column 2d. In addition, the date of receipt by the Board of the notice relating to the change shall be entered in the Remarks Column.

6.3.36 The planned date of bringing into use of a frequency assignment may be extended on request of the notifying administration by three months. Where the administration states that, due to exceptional circumstances, it needs a further extension of this period, such extension may be granted, but it shall in no case exceed six months from the original planned date of bringing into use.

6.3.37 In applying the provisions of this Section, any resubmitted notice which is received by the Board more than two years after the date of its return by the Board shall be considered as a new notice.

6.3.38 *Recording of frequency assignments notified before being brought into use*

6.3.39 If a frequency assignment notified prior to its bringing into use has received a favourable finding by the Board with respect to paragraphs 6.3.8 and 6.3.9, and, where appropriate, 6.3.10, it shall be entered provisionally in the Master Register with a special symbol in the Remarks Column indicating the provisional nature of that entry.

6.3.40 Within one month after the date of bringing into use, either as originally notified or as modified in application of paragraph 6.3.36, the notifying administration shall confirm that the frequency assignment has been brought into use. When the Board is informed that the assignment has been brought into use, the special symbol shall be deleted from the Remarks Column.

6.3.41 If the Board fails to receive this confirmation within the period referred to in paragraph 6.3.40, the entry concerned shall be cancelled. The Board shall consult the administration concerned before taking such action.

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ARTICLE 7

Procedures for Coordination, Notification and Recording in the Master International Frequency Register of Frequency Assignments to Stations in the Fixed-Satellite Service in the Frequency Bands 11.7 - 12.2 GHz (in Region 2), 12.2 - 12.7 GHz (in Region 3) and 12.5 - 12.7 GHz (in Region 1), When Frequency Assignments to Broadcasting-Satellite Stations in Conformity with the Regions 1 and 3 Plan, or the Region 2 Plan, Respectively, Are Involved[1]

Section I. Procedure for the Advance Publication of Information on Planned Fixed-Satellite Systems

Publication of Information

7.1.1 An administration which intends to establish a fixed-satellite system shall, prior to the procedure described in paragraph 7.2.1, where applicable, send to the International Frequency Registration Board, not earlier than five years and preferably not later than two years before the date of bringing into service each satellite network of the planned system, the information listed in Appendix **4** to the Radio Regulations.

7.1.2 Any amendments to the information concerning a planned satellite system sent in accordance with paragraph 7.1.1 shall also be sent to the Board as soon as they become available.

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[1] These provisions do not replace the procedures prescribed in Articles **11** and **13** of the Radio Regulations when stations other than those of the broadcasting-satellite service are involved.

7.1.3 The Board shall publish the information sent under paragraphs 7.1.1 and 7.1.2 in a special section of its weekly circular and shall also, when the weekly circular contains such information, so advise all administrations by circular telegram. The circular telegram shall include the frequency bands to be used and, in the case of a geostationary satellite, the orbital location of the space station.

7.1.3.1 If the information is found to be incomplete, the Board shall publish it under paragraph 7.1.3 and immediately seek, from the administration concerned, any clarification and information not provided. In such cases, the period of three months specified in paragraph 7.1.4 shall count from the date of publication, under paragraph 7.1.3, of the complete information.

Comments on Published Information

7.1.4 If, after studying the information published under paragraph 7.1.3, any administration is of the opinion that interference which may be unacceptable may be caused to its frequency assignments in conformity with the appropriate Regional Plan, it shall, within three months after the date of the weekly circular publishing the information listed in Appendix 4 to the Radio Regulations, send its comments to the administration concerned. A copy of these comments shall also be sent to the Board. If no such comments are received from an administration within the period mentioned above, it may be assumed that that administration has no basic objections to the planned fixed-satellite network(s) of that system of which details have been published.

Resolution of Difficulties

7.1.5 An administration receiving comments sent in accordance with paragraph 7.1.4 shall endeavour to resolve any difficulties that may arise without considering the possibility of adjustment to broadcasting-satellite stations of other administrations. If no such means can be found, the administration concerned is then free to apply to other administrations concerned in order to solve these difficulties, provided that any modifications which may result to the appropriate Regional Plan are in accordance with Article 4.

7.1.6 In their attempts to resolve the difficulties mentioned above, administrations may seek the assistance of the Board.

Results of Advance Publication

7.1.7 An administration, on behalf of which details of planned satellite networks have been published in accordance with the provisions of paragraphs 7.1.1 and 7.1.2 shall, after the period of three months specified in paragraph 7.1.4, inform the Board whether or not comments provided for in paragraph 7.1.4 have been received and of the progress made in resolving any remaining difficulties. Additional information on the progress made in resolving any remaining difficulties shall be sent to the Board at intervals not exceeding six months prior to the commencement of coordination or the sending in of notices to the Board. The Board shall publish this information in a special section of its weekly circular and shall also, when the weekly circular contains such information, so inform all administrations by circular telegram.

Commencement of Coordination or Notification Procedure

7.1.8 In complying with the provisions of paragraphs 7.1.5 and 7.1.6, an administration responsible for a planned fixed-satellite system shall, if necessary, defer its commencement of the coordination procedure of paragraph 7.2.1 or, where this is not applicable, the sending of its notices to the Board until five months after the date of the weekly circular containing the information listed in Appendix **4** to the Radio Regulations on the relevant satellite network. However, in respect of those administrations with which difficulties have been resolved or which have responded favourably, the coordination procedure, where applicable, may be commenced prior to the expiry of the five months mentioned above.

Section II. Coordination Procedures to Be Applied in Appropriate Cases

7.2.1 Before an administration notifies to the Board or brings into use any frequency assignment to a space station in the fixed-satellite service, it shall seek the agreement of any other administration having a frequency assignment in conformity with the appropriate Regional Plan, if:

a) any portion of the necessary bandwidth proposed for the space station in the fixed-satellite service falls within the necessary bandwidth associated with the frequency assignment to the broadcasting-satellite station; *and*

b) the power flux-density which would be produced by the proposed fixed-satellite assignment exceeds the value specified in Annex 4.

For this purpose, the administration seeking agreement shall send to any other such administration the information listed in Appendix **3** to the Radio Regulations.

7.2.2 No additional agreement is necessary when an administration proposes to change the characteristics of an existing assignment in such a way as will, in respect of the broadcasting-satellite service of another administration, meet the requirements of paragraph 7.2.1 above, or when this assignment has previously been the subject of an agreement and when the change will not cause any increase in the interference potential specified in that agreement.

7.2.3 An administration seeking coordination under paragraph 7.2.1 shall at the same time send to the Board a copy of the request for coordination together with the information listed in Appendix **3** to the Radio Regulations and the name(s) of the administration(s) whose agreement is sought. The Board shall determine on the basis of Annex 4 which frequency assignments in conformity with the appropriate Regional Plan are considered to be affected. The Board shall include the names of those administrations with the information received from the administration seeking coordination and shall publish this information in a special section of its weekly circular, together with a reference to the weekly circular in which details of the satellite system were published in accordance with Section I of this Article. When the weekly circular contains such information, the Board shall so inform all administrations by circular telegram.

7.2.4 An administration believing that it should have been included in the procedure under paragraph 7.2.1 shall have the right to request that it be brought into the procedure.

7.2.5 An administration whose agreement is sought under paragraph 7.2.1 shall acknowledge receipt of the coordination data immediately by telegram. If no acknowledgement is received within one month after the date of the weekly circular publishing the information under paragraph 7.2.3, the administration seeking coordination shall dispatch a telegram requesting acknowledgement, to which the receiving administration shall reply within a further period of one month. Upon receipt of the coordination data, an administration shall, having regard to the proposed date of bringing into use of the assignment for which agreement was requested, promptly examine the matter with regard to interference[1] which would be caused to the service rendered by its stations in respect of which agreement is sought under paragraph 7.2.1, and shall, within three months from the date of the relevant weekly circular, notify its agreement to the requesting administration. If the administration with which coordination is sought does not agree, it shall, within the same period, send to the administration seeking coordination the technical details upon which its disagreement is based, and make such suggestions as it may be able to offer with a view to a satisfactory solution of the problem. A copy of these comments shall also be sent to the Board.

7.2.6 An administration seeking coordination may request the Board to endeavour to effect coordination in those cases where:

a) an administration whose agreement is sought under paragraph 7.2.1 fails to acknowledge receipt, under paragraph 7.2.5, within two months after the date of the weekly circular publishing the information relating to the request for coordination;

b) an administration has acknowledged receipt under paragraph 7.2.5, but fails to give a decision within three months from the date of the relevant weekly circular;

[1] The criteria to be employed in evaluating interference levels shall be based upon the technical information contained in this Appendix or upon relevant CCIR Recommendations and shall be agreed between the administrations concerned.

c) there is disagreement between the administration seeking coordination and an administration whose agreement is sought as to the acceptable level of interference; *or*

d) agreement between administrations is not possible for any other reason.

In so doing, it shall furnish the Board with the necessary information to enable it to endeavour to effect such coordination.

7.2.7 Either the administration seeking coordination or an administration whose agreement is sought, or the Board, may request additional information which they may require to assess the level of interference to the services concerned.

7.2.8 Where the Board receives a request under paragraph 7.2.6 *a)*, it shall forthwith send a telegram to the administration whose agreement is sought requesting immediate acknowledgement.

7.2.9 Where the Board receives an acknowledgement following its action under paragraph 7.2.8, or where the Board receives a request under paragraph 7.2.6 *b)*, it shall forthwith send a telegram to the administration whose agreement is sought requesting an early decision on the matter.

7.2.10 Where the Board receives a request under paragraph 7.2.6 *d)*, it shall endeavour to effect coordination in accordance with the provisions of paragraph 7.2.1. The Board shall also, where appropriate, act in accordance with paragraph 7.2.3. Where the Board receives no acknowledgement to its request for coordination within the periods specified in paragraph 7.2.5, it shall act in accordance with paragraph 7.2.8.

7.2.11 Where an administration fails to reply within one month of dispatch of the Board's telegram requesting an acknowledgement sent under paragraph 7.2.8, or fails to give a decision on the matter within one month of dispatch of the Board's telegram of request under paragraph 7.2.9, it shall be deemed that the administration whose agreement was sought has undertaken:

a) that no complaint will be made in respect of any harmful interference which may be caused to the services rendered by its

broadcasting-satellite stations by the use of the assignment for which coordination was requested;

b) that its broadcasting-satellite stations will not cause harmful interference to the use of the assignment for which coordination was requested.

7.2.12 Where necessary, as part of the procedure under paragraph 7.2.6, the Board shall assess the level of interference. In any case, the Board shall inform the administrations concerned of the results obtained.

7.2.13 In the event of continuing disagreement between one administration seeking to effect coordination and one whose agreement has been sought, provided that the assistance of the Board has been requested, the administration seeking coordination may, after five months from the date of the request for coordination, taking into consideration the provisions of paragraph 7.3.4, send its notice concerning the proposed assignment to the Board. In those circumstances the notifying administration shall undertake not to bring the frequency assignment into use until the condition in paragraph 7.4.11.2 can be fulfilled. But the administrations concerned may explore the possibility of reaching an agreement on the use of the proposed frequency assignment for a specified period.

Section III. Notification of Frequency Assignments

7.3.1 Any frequency assignment to a space station in the fixed-satellite service shall be notified to the Board:

a) if the use of the frequency concerned is capable of causing harmful interference to a frequency assignment of another administration which is in conformity with the appropriate Regional Plan[1]; *or*

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

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[1] The attention of administrations is specifically drawn to the application of paragraph 7.2.1 above.

7.3.2 Similar notice shall be given for any frequency to be used for reception by an earth station where one or more of the conditions specified in paragraph 7.3.1 are applicable.

7.3.3 For any notification under paragraph 7.3.1 or 7.3.2, an individual notice for each frequency assignment shall be drawn up as prescribed in Appendix **3** to the Radio Regulations, the various Sections of which specify the basic characteristics to be furnished according to the case. The notifying administration shall furnish such further data as it considers appropriate.

7.3.4 Each notice must reach the Board not earlier than three years before the date on which the assignment is to be brought into use. The notice must reach the Board in any case not later than three months[1] before this date.

7.3.5 Any frequency assignment to an earth or space station, the notice of which reaches the Board after the applicable period specified in paragraph 7.3.4, shall, where it is to be recorded, bear a mark in the Master Register to indicate that it is not in conformity with paragraph 7.3.4.

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

7.4.1 Any notice which does not contain at least those basic characteristics specified in Appendix **3** to the Radio Regulations shall be returned by the Board immediately, by airmail, to the notifying administration with the reasons therefor.

7.4.2 Upon receipt of a complete notice, the Board shall include the particulars thereof, with the date of receipt, in its weekly circular which shall contain the particulars of all such notices received since the publication of the previous circular.

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[1] The notifying administration shall take this limit into account when deciding, where appropriate, to initiate the coordination procedure(s).

7.4.3 The circular shall constitute the acknowledgement to the notifying administration of the receipt of a complete notice.

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

7.4.5 The Board shall examine each notice:

7.4.5.1 with respect to its conformity with the Convention, the relevant provisions of the Radio Regulations and the provisions of this Appendix (with the exception of those relating to the coordination procedures and the probability of harmful interference);

7.4.5.2 where appropriate, with respect to its conformity with the provisions of paragraph 7.2.1, relating to the coordination of the use of the frequency assignment with the other administrations concerned having a frequency assignment in conformity with the appropriate Regional Plan;

7.4.5.3 where appropriate, with respect to the probability of harmful interference to the service rendered or to be rendered by a broadcasting-satellite station whose frequency assignment is in conformity with the appropriate Regional Plan.

7.4.6 Depending upon the findings of the Board subsequent to the examination prescribed in paragraphs 7.4.5.1, 7.4.5.2 and 7.4.5.3, as appropriate, further action shall be as follows:

7.4.7 *Finding favourable with respect to paragraph 7.4.5.1 in cases where the provisions of paragraph 7.4.5.2 are not applicable*

7.4.7.1 The assignment shall be recorded in the Master Register. The date of receipt by the Board of the notice shall be entered in Column 2d.

7.4.8 *Finding unfavourable with respect to paragraph 7.4.5.1*

7.4.8.1 Where the notice includes a specific reference to the fact that the station will be operated in accordance with the provisions of No. **342** of the Radio Regulations and the finding is favourable with respect to paragraphs 7.4.5.2 and 7.4.5.3, as appropriate, the assignment shall be recorded in the Master Register. The date of receipt of notice by the Board shall be entered in Column 2d.

7.4.8.2 Where the notice includes a specific reference to the fact that the station will be operated in accordance with the provisions of No. **342** of the Radio Regulations and the finding is unfavourable with respect to paragraph 7.4.5.2 or 7.4.5.3, as appropriate, the notice shall be returned immediately by airmail to the notifying administration with the reasons of the Board for this finding. In those circumstances the notifying administration shall undertake not to bring into use the frequency assignment until the condition in paragraph 7.4.8.1 can be fulfilled. The agreement of the administrations affected can also be obtained in accordance with this Article for a specified period. In that event the Board shall be notified of the agreement and the frequency assignment shall be recorded in the Master Register with a note indicating that the frequency assignment is valid only for the period specified. The notifying administration using the frequency assignment over a specified period shall not subsequently use this circumstance to justify continued use of the frequency beyond the period specified if it does not obtain the agreement of the administration(s) concerned. The date of receipt by the Board of the original notice shall be entered in Column 2d.

7.4.8.3 Where the notice does not include a specific reference to the fact that the station will be operated in accordance with the provisions of No. **342** of the Radio Regulations, it shall be returned immediately by airmail to the notifying administration with the reasons of the Board for this finding and with such suggestions as the Board may be able to offer with a view to the satisfactory solution of the problem.

7.4.8.4 If the notifying administration resubmits the notice unchanged, it shall be treated in accordance with the provisions of paragraph 7.4.8.3. If it is resubmitted with a specific reference to the fact that the station will be operated in accordance with the provisions of No. **342** of the Radio Regulations, it shall be treated in accordance with the provisions of

paragraph 7.4.8.1 or 7.4.8.2, as appropriate. If it is resubmitted with modifications which, after re-examination, result in a favourable finding by the Board with respect to paragraph 7.4.5.1, it shall be treated as a new notice.

7.4.9 *Finding favourable with respect to paragraph 7.4.5.1 in cases where the provisions of paragraph 7.4.5.2 are applicable*

7.4.9.1 Where the Board finds that the coordination procedures mentioned in paragraph 7.4.5.2 have been successfully completed with all administrations whose frequency assignments in conformity with the appropriate Regional Plan may be affected, the frequency assignment shall be recorded in the Master Register. The date of receipt by the Board of the notice shall be entered in Column 2d.

7.4.9.2 Where the Board finds that the coordination procedure mentioned in paragraph 7.4.5.2 has not been applied, and the notifying administration requests the Board to effect the required coordination, the Board shall take appropriate action and shall inform the administrations concerned of the results obtained. If the Board's efforts are successful, the notice shall be treated in accordance with paragraph 7.4.9.1. If the Board's efforts are unsuccessful, the notice shall be examined by the Board with respect to the provisions of paragraph 7.4.5.3.

7.4.9.3 Where the Board finds that the coordination procedure mentioned in paragraph 7.4.5.2 has not been applied, and the notifying administration does not request the Board to effect the required coordination, the notice shall be returned immediately by airmail to the notifying administration with the reasons of the Board for this action and with such suggestions as the Board may be able to offer with a view to the satisfactory solution of the problem.

7.4.9.4 Where the notifying administration resubmits the notice and the Board finds that the coordination procedure mentioned in paragraph 7.4.5.2 has been successfully completed with all administrations whose frequency assignments in conformity with the appropriate Regional Plan may be affected, the frequency assignment shall be recorded in the Master Register. The date of receipt of the original notice by the Board shall be entered in Column 2d. The date of receipt by the Board of the resubmitted notice shall be entered in the Remarks Column.

7.4.9.5 Where the notifying administration resubmits the notice with a request that the Board effect the required coordination under paragraph 7.2.1, it shall be treated in accordance with the provisions of paragraph 7.4.9.2. However, in any subsequent recording of the assignment, the date of receipt by the Board of the resubmitted notice shall be entered in the Remarks Column.

7.4.9.6 Where the notifying administration resubmits the notice and states it has been unsuccessful in effecting the coordination, the Board shall inform the administrations concerned thereof. The notice shall be examined by the Board with respect to the provisions of paragraph 7.4.5.3. However, in any subsequent recording of the assignment, the date of receipt by the Board of the resubmitted notice shall be entered in the Remarks Column.

7.4.10 *Finding favourable with respect to paragraphs 7.4.5.1 and 7.4.5.3*

7.4.10.1 The assignment shall be recorded in the Master Register. The date of receipt by the Board of the notice shall be entered in Column 2d.

7.4.11 *Finding favourable with respect to paragraph 7.4.5.1, but unfavourable with respect to paragraph 7.4.5.3*

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

7.4.11.2 Should the notifying administration resubmit the notice with modifications which result, after re-examination, in a favourable finding by the Board with respect to paragraph 7.4.5.3, the assignment shall be recorded in the Master Register. The date of receipt by the Board of the original notice shall be entered in Column 2d. The date of receipt by the Board of the resubmitted notice shall be indicated in the Remarks Column.

7.4.11.3 Should the notifying administration resubmit the notice, either unchanged, or with modifications which decrease the probability of harmful

interference, but not sufficiently to permit the provisions of paragraph 7.4.11.2 to be applied, and should that administration insist upon reconsideration of the notice, but should the Board's finding remain unchanged, the notification shall again be returned to the notifying administration in accordance with paragraph 7.4.11.1. In those circumstances, the notifying administration shall undertake not to bring into use the proposed frequency assignment until the condition in paragraph 7.4.11.2 can be fulfilled. The agreement of the administrations affected can also be obtained in accordance with this Article for a specified period. In that event the Board shall be notified of the agreement and the frequency assignment shall be recorded in the Master Register with a note in the Remarks Column indicating that the assignment is valid only for the specified period. The notifying administration using the frequency assignment over a specified period shall not subsequently use this circumstance to justify continued use of the frequency beyond the period specified if it does not obtain the agreement of the administration(s) concerned. The date of receipt by the Board of the original notice shall be entered in Column 2d.

7.4.12 *Change in the basic characteristics of assignments already recorded in the Master Register*

7.4.12.1 A notice of a change in the basic characteristics of an assignment in the fixed-satellite service already recorded, as specified in Appendix **3** to the Radio Regulations (except the name of the station or the name of the locality in which it is situated or the date of bringing into use), shall be examined by the Board in conformity with paragraph 7.4.5.1 and, where appropriate, paragraphs 7.4.5.2 and 7.4.5.3, and the provisions of paragraphs 7.4.7 to 7.4.11.3 inclusive shall apply. Where the change should be recorded, the original assignment shall be amended accordingly.

7.4.12.2 However, in the case of a change in the characteristics of an assignment which is in conformity with paragraph 7.4.5.1, should the Board reach a favourable finding with respect to paragraphs 7.4.5.2 and 7.4.5.3, where appropriate, or find that the changes do not increase the probability of harmful interference to frequency assignments in conformity with the

appropriate Regional Plan, the amended assignment shall retain the original date in Column 2d. The date of receipt of the notice by the Board relating to the change shall be entered in the Remarks Column.

7.4.12.3 The projected date of bringing into use of a frequency assignment may be extended by four months at the request of the notifying administration. If the administration states that, due to exceptional circumstances, it needs a further extension of this period, such extension may be provided but it shall in no case exceed eighteen months from the original projected date of bringing into use.

7.4.12.4 In applying the provisions of this Section IV, any resubmitted notice which is received by the Board more than two years after the date of its return by the Board shall be considered as a new notice.

7.4.13 *Recording of frequency assignments in the fixed-satellite service notified before being brought into use*

7.4.13.1 If a frequency assignment notified in advance of bringing into use has received a favourable finding by the Board with respect to paragraph 7.4.5.1 and, where appropriate, paragraphs 7.4.5.2 and 7.4.5.3, it shall be entered provisionally in the Master Register with a special symbol in the Remarks Column indicating the provisional nature of that entry.

7.4.13.2 Within one month after the date of bringing into use, either as originally notified or as modified in application of paragraph 7.4.12.3, the notifying administration shall confirm that the frequency assignment has been brought into use. When the Board is informed that the assignment has been brought into use, the special symbol shall be deleted from the Remarks Column.

7.4.13.3 If the Board does not receive this confirmation within the period referred to in paragraph 7.4.13.2, the entry concerned shall be cancelled. The Board shall advise the administration concerned before taking such action.

Section V. Recording of Findings in the Master Register

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

Section VI. Categories of Frequency Assignments

7.6.1 The date in Column 2c shall be the date of putting into use notified by the administration concerned. It is given for information only.

7.6.2 If harmful interference is actually caused to the reception of any broadcasting-satellite station whose frequency assignment is in conformity with the appropriate Regional Plan, by the use of a frequency assignment to a space radiocommunication station subsequently recorded in the Master Register in accordance with the provisions of paragraph 7.4.11.3, the station using the latter frequency assignment must, upon receipt of advice thereof, immediately eliminate this harmful interference.

7.6.3 If harmful interference to the reception of any broadcasting-satellite station whose frequency assignment is in conformity with the appropriate Regional Plan, is actually caused by the use of a frequency assignment which is not in conformity with paragraph 7.4.5.1, the station using the latter frequency assignment must, upon receipt of advice thereof, immediately eliminate this harmful interference.

Section VII. Review of Findings

7.7.1 The review of a finding by the Board may be undertaken:

a) at the request of the notifying administration;

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

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

7.7.2 The Board, in the light of all the data at its disposal, shall review the matter, taking into account paragraph 7.4.5.1 and, where appropriate, paragraphs 7.4.5.2 and 7.4.5.3, and shall render an appropriate finding, informing the notifying administration prior either to the promulgation of its finding or to any recording action.

7.7.3 If the finding of the Board is then favourable it shall enter in the Master Register the changes that are required so that the entry shall appear in the future as if the original finding had been favourable.

7.7.4 If the finding with regard to the probability of harmful interference remains unfavourable, no change shall be made in the original entry.

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

7.8 The Board shall at intervals not exceeding two years request confirmation from the notifying administration that its assignment has been and will continue to be in regular use in accordance with its recorded characteristics.

7.8.1 Where the use of a recorded assignment to a station in the fixed-satellite service is suspended for a period of eighteen months, the notifying administration shall, within this eighteen-month period, inform the Board of the date on which such use was suspended and of the date on which the assignment is to be brought back into regular use.

7.8.2 Whenever it appears to the Board, whether or not as a result of action under paragraph 7.8.1, that a recorded assignment to a space station in the fixed-satellite service has not been in regular use for more than eighteen months, the Board shall inquire of the notifying administration as to when the assignment is to be brought back into regular use.

7.8.3 If no reply is received within six months of action by the Board under paragraph 7.8.2, or if the reply does not confirm that the assignment to a space station in the fixed-satellite service is to be brought back into regular use within this six-month limit, a mark should be entered against the entry in the Master Register.

7.8.4 In case of permanent discontinuance of the use of any recorded frequency assignment, the notifying administration shall inform the Board within three months of such discontinuance, whereupon the entry shall be removed from the Master Register.

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

7.8.6 If, in connection with an inquiry by the Board under paragraph 7.8.5, the notifying administration has failed to supply the Board within three months with the necessary or pertinent information, the Board shall make suitable entries in the Remarks Column of the Master Register to indicate the situation.

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ARTICLE 8

Miscellaneous Provisions Relating to the Procedures

8.1 If so requested by any administration, the Board, using such means at its disposal as are appropriate in the circumstances, shall conduct a study of cases of alleged contravention or non-observance of these provisions or of harmful interference.

8.2 The Board shall thereupon prepare and forward to the administration or administrations concerned a report containing its findings and recommendations for the solution of the problem.

8.3 On receiving the Board's recommendations for the solution of the problem, an administration shall promptly acknowledge their receipt by telegram and shall indicate the action it intends to take. Where the Board's suggestions or recommendations are unacceptable to the administrations concerned, further efforts should be made by the Board to find an acceptable solution to the problem.

8.4 Where, as a result of a study, the Board submits to one or more administrations suggestions or recommendations for the solution of a problem, and where no reply has been received from one or more of these administrations within a period of three months, the Board shall consider that the suggestions or recommendations concerned are unacceptable to the administrations which did not answer. If it was the requesting administration which failed to answer within this period, the Board shall discontinue the study.

8.5 If so requested by any administration, particularly by an administration of a country in need of special assistance, the Board, using such means at its disposal as are appropriate in the circumstances, shall render the following assistance:

a) computation necessary in the application of Annexes 1, 3 and 4;

b) any other assistance of a technical nature for completion of the procedures in this Appendix.

8.6 In making a request to the Board under paragraph 8.5, the administration shall provide the Board with the necessary information.

MOD

ARTICLE 9

Power Flux-Density Limits Between 12.2 GHz and 12.7 GHz to Protect Terrestrial Services in Regions 1 and 3 from Interference from Region 2 Broadcasting-Satellite Space Stations

9.1 The power flux-density at the Earth's surface in Regions 1 and 3, produced by emissions from a space station in the broadcasting-satellite service in Region 2 for all conditions and for all methods of modulation shall not exceed the values given in Section 5 of Annex 1 on the territory of any country unless the administration of that country so agrees.

MOD

ARTICLE 10

The Plan for the Broadcasting-Satellite Service in the Frequency Band 12.2 - 12.7 GHz in Region 2

10.1 COLUMN HEADINGS OF THE PLAN

Col. 1 *Beam identification* (Column 1 contains the symbol designating the country or the geographical area taken from Table B.1 of the Preface to the International Frequency List followed by the symbol designating the service area).

Col. 2 *Nominal orbital position*, in degrees and hundredths of a degree.

Col. 3 *Channel number* (see Table 4 showing channel numbers and corresponding assigned frequencies).

Col. 4. *Boresight* geographical coordinates, in degrees and hundredths of a degree.

Col. 5. *Antenna beamwidth.* This column contains two figures corresponding to the major axis and the minor axis respectively of the elliptical cross-section half-power beam, in degrees and hundredths of a degree.

Col. 6. *Orientation of the ellipse* determined as follows: in a plane normal to the beam axis, the direction of a major axis of the ellipse is specified as the angle measured anti-clockwise from a line parallel to the equatorial plane to the major axis of the ellipse to the nearest degree.

Col. 7. *Polarization* (1 = direct, 2 = indirect).[1]

Col. 8. *E.i.r.p.* in the direction of maximum radiation, in dBW.

Col. 9. *Remarks.*

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[1] See Annex 5 (section 3.2) of this Appendix.

10.2 TEXT FOR SYMBOLS IN REMARKS COLUMN OF THE PLAN

1. Fast roll-off space station transmitting antenna as defined in Annex 5 (item 3.13.3).

2. Television standard with 625 lines using greater video bandwidth and necessary bandwidth of 27 MHz.

3. *Not used*

4. This assignment may be utilized in the geographical area of Anguilla (AIA) (which is in the beam area).

5. Feeder-link earth stations for this assignment may also be located in the territories of Puerto Rico and the United States Virgin Islands. Such operation shall not cause more interference nor require more protection than the assignment under the Plan.

6. Feeder-link earth stations for this assignment may also be located in the States of Alaska and Hawaii. Such operation shall not cause more interference nor require more protection than the assignment under the Plan.

7. The feeder-link earth station for this assignment may also be located at the point with geographical coordinates 3°31′ West, 48°46′ North. Such operation shall not cause more interference nor require more protection than the assignment under the Plan.

8. Feeder-link earth stations for this assignment may also be located at the points with the following geographical coordinates:

47°55′ West	15°47′ South	34°53′ West	08°04′ South
43°13′ West	22°55′ South	60°02′ West	03°06′ South
46°38′ West	23°33′ South	38°31′ West	12°56′ South
51°13′ West	30°02′ South	49°15′ West	16°40′ South

Such operation shall not cause more interference nor require more protection than the assignment under the Plan.

9/GR . . . This assignment is part of a group, the number of which follows the symbol. The group consists of the beams and has the number of channels assigned to it as indicated in Table 1 below.

a) The overall equivalent protection margin to be used for the application of Article 4 and Resolution **42 (Orb-85)** shall be calculated on the following basis:

– for the calculation of interference to assignments that are part of a group, only the interference contributions from assignments that are not part of the same group are to be included; *and*

– for the calculation of interference from assignments belonging to a group to assignments that are not part of that same group, only the worst interference contribution from that group shall be used on a test point to test point basis.

b) If an administration notifies the same frequency in more than one beam of a group for use at the same time, the aggregated C/I produced by all emissions from that group shall not exceed the C/I calculated on the basis of *a)* above.

10. This assignment shall be brought into use only when the limits given in Table 2 are not exceeded or with the agreement of the affected administration identified in Table 3.

These administrations shall be informed by the notifying administration of changes in characteristics before these beams are brought into use.

TABLE 1

Group	Beams in the group	Number of channels assigned to the group
GR1	ALS00002 HWA00002 USAPSA02	32 channels
GR2	ALS00003 HWA00003 USAPSA03	32 channels
GR3	ARGINSU4 ARGSUR04	16 channels
GR4	ARGINSU5 ARGSUR05	12 channels
GR5	BOLAND01 CLMAND01 EQACAND1 EQAGAND1 PRUAND02 VENAND03	16 channels
GR6	B SU111 B SU211	32 channels
GR7	B CE311 B CE411 B CE511	32 channels
GR8	B NO611 B NO711 B NO811	32 channels
GR9	B SU112 B SU212 B CE312 B CE412	32 channels
GR10	CAN01101 CAN01201	32 channels
GR11	*Not used*	
GR12	CAN01203 CAN01303 CAN01403	32 channels
GR13	CAN01304 CAN01404 CAN01504	32 channels
GR14	CAN01405 CAN01505 CAN01605	32 channels
GR15	*Not used*	
GR16	CHLCONT4 CHLCONT6	16 channels
GR17	CHLCONT5 PAQPAC01 CHLPAC02	16 channels
GR18	CRBBER01 CRBBLZ01 CRBJMC01 CRBBAH01 CRBECO01	16 channels
GR19	EQACOO01 EQAGOO01	16 channels
GR20	PTRVIR01 USAEHO02	32 channels
GR21	PTRVIR02 USAEHO03	32 channels
GR22	VEN02VEN VEN11VEN	4 channels

TABLE 2

APPLICABLE CRITERIA

Symbol	P.F.D. Limit Criteria
a	Paragraph 3, Annex 1
b	Paragraph 5 *b)*, Annex 1
c	Paragraph 5 *c)*, Annex 1
d	Paragraph 5 *d)*, Annex 1

11. This assignment shall be brought into use only when the e.i.r.p. in the direction of all points situated within the service area and within the −3 dB contour of the "Metropole" beam (space-to-Earth) in the VIDEOSAT-3 network as described in IFRB Special Section AR11/C/766 to Weekly Circular No. 1678 of 2 July 1985 does not exceed the limit 26.8 dBW.

12. This assignment shall be brought into use only when the e.i.r.p. in the direction of all points situated within the service area and within the −3 dB contour of the "Metropole" beam (space-to-Earth) in the VIDEOSAT-3 network as described in IFRB Special Section AR11/C/766 to Weekly Circular No. 1678 of 2 July 1985 does not exceed the limit 26.8 dBW, and when the e.i.r.p. in the direction of all points situated within the service area and also between the −3 dB and −6 dB contours of the same beam does not exceed the limit 29.5 dBW.

TABLE 3

Beam name	Channels	Limit Crit. Ref. Table 2	Countries or geographical areas affected
ALS00002	1, 4, 5, 6, 9, 10, 11, 14, 15, 16 All channels For channels 20 to 32	a c d	URS MNG/URS URS
ALS00003	1, 4, 5, 6, 9, 10, 11, 14, 15, 16 All channels For channels 20 to 32	a c d	URS URS URS
ARGINSU5	3, 7, 11, 15, 17, 19	b	NOR
ARGNORT4	2, 4, 6, 8, 10, 12, 14, 16, 18, 20	b	AOE/ASC/AZR/CPV/E/GMB/GNB/GUI/MRC/MTN/POR/SEN
ARGNORT5	2, 4, 6, 8, 10, 12, 14, 16, 18, 20	b	AFS/AGL/BOT/NMB/NOR/OCE/PTC/TKL/ZAI/ZMB/ZWE
ARGSUR04	1, 3, 5, 7, 9, 11, 13, 15, 17, 19	b	ASC
ARGSUR05	3, 7, 11, 15, 17, 19	b	NOR
B CE311	For channels 1 to 20	b	AGL/ALG/CAF/CME/COG/GAB/GNE/NGR/NIG/NMB/STP/TCD/ZAI
B CE312	For channels 1 to 20 For channels 1 to 20 All channels	b c c	AFS/BDI/BOT/LSO/RRW/TZA/UGA/ZMB/ZWE MOZ/MWI/TZA ETH/KEN/SDN
B CE411	For channels 1 to 20	b	AGL/ALG/CAF/CME/COG/CVA/E/GAB/GNE/I/LBY/MLT/NGR/NIG/SMR/STP/TCD/TUN/ZAI
B CE412	For channels 1 to 20 All channels	c c	CYP/TUR ARS/EGY/ISR/SDN/URS

TABLE 3 *(cont.)*

Beam name	Channels	Limit Crit. Ref. Table 2	Countries or geographical areas affected
B CE511	For channels 1 to 20	b	CAF/CME/COG/GAB/ GNE/NIG/NMB/NOR/ STP/ZAI
B NO611	For channels 1 to 20	b	BEN/GHA/TGO
B NO711	For channels 1 to 20	b	BEN
B SE911	2, 4, 6, 8, 10, 12, 14, 16, 18, 20	b	CPV
B SU111	For channels 1 to 20	b	BFA/CTI/GHA/GUI/ LBR/MTN/SHN/TRC
B SU211	For channels 1 to 20	b	ALG/BFA/CTI/GHA/ GUI/LBR/MLI/MRC/ MTN/SHN/TRC
BERBER02	1, 5, 17 5, 9, 13	a a	CNR/E ISL
BOL00001	3, 7, 11, 15, 19	b	ALG/AOE/ASC/E/ GMB/GNB/GUI/LBR/ MLI/MRC/MTN/POR/ SEN/SRL/TRC
CAN01101	All channels For channels 20 to 32	c d	URS URS
CAN01201	All channels	c	URS
CAN01203	All channels	c	URS
CAN01303	All channels	c	URS
CAN01403	All channels	c	URS
CAN01404	For channels 1 to 20	b	ISL/POR
CAN01405	For channels 1 to 20	b	F/G/IRL/ISL
CAN01504	For channels 1 to 20	b	AOE/AZR/E/ISL/MRC/ MTN/POR

TABLE 3 *(cont.)*

Beam name	Channels	Limit Crit. Ref. Table 2	Countries or geographical areas affected
CAN01505	For channels 1 to 20	b	ALG/E/F/G/IRL/ISL/ MRC/POR
CAN01605	For channels 1 to 20	b	E/F/G/IRL/ISL/MRC/ POR
CAN01606	For channels 1 to 20	b	BEL/F/G/HOL/IRL/ ISL/LUX/NOR
CLMAND01	21, 23, 25, 27, 29, 31	c	URS
CLM00001	1, 3, 5, 7, 9, 11, 13, 15, 17, 19 21, 23, 25, 27, 29, 31	b c	AZR/CPV URS
CRBEC001	2, 4, 6, 8, 10, 12, 14, 16, 18, 20	b	ASC/AZR/GMB/GNB/ GUI/ISL/MTN/SEN/ SRL
FLKANT01	1, 5, 9, 13	b	NOR
GRLDNK01	3, 7, 11, 15, 19	b	D/DDR/DNK/G/HOL/ ISL/NOR/POL/S/TCH
GUFMGG02	4, 8, 12, 16, 20	b	NOR
HWA00002	For channels 1 to 20 All channels	b c	CHN/KRE MNG/URS
HWA00003	For channels 1 to 20 All channels	b c	CHN MNG/URS
MEX02NTE	All channels	c	URS
MEX01SUR	1, 3, 5, 7, 9, 11, 13, 15, 17, 19	b	KIR
MEX02SUR	All channels	c	URS
PRU00004	2, 4, 6, 8, 10, 12, 14, 16, 18, 20	b	ALG/AOE/ASC/BFA/ CTI/E/G/GMB/GUI/ ISL/LBR/MLI/MRC/ MTN/POR/SEN/SHN/ SRL/TRC

TABLE 3 *(cont.)*

Beam name	Channels	Limit Crit. Ref. Table 2	Countries or geographical areas affected
SPMFRAN3	1, 5, 9, 13, 17	b	D/DDR/DNK/ISL/ NOR/S
USAEH001	For channels 1 to 20	b	ALG/AUT/BEL/CVA/D/ DDR/DNK/E/F/G/HOL/ I/ISL/LBY/LIE/LUX/ MCO/MLT/NGR/NIG/ NOR/OCE/SMR/SUI/ TCH/TUN/YUG
USAEH002	For channels 1 to 20 All channels	b c	AZR/CPV/HWL URS
USAEH003	For channels 1 to 20 All channels	b c	MRL URS
USAEH004	For channels 1 to 20 All channels For channels 20 to 32	b c d	WAK URS URS
USAWH101	All channels	c	URS
USAWH102	All channels	c	URS
VENAND03	21, 23, 25, 27, 29, 31	c	URS
VEN11VEN	2, 4, 6, 8, 10, 12, 14, 16, 18, 20 20, 22, 24, 26, 28, 30, 32	b c	AZR/CPV URS

Country symbols

1. For the explanation of symbols designating countries or geographical areas in Region 2, see the Preface to the International Frequency List.

2. One additional symbol, CRB, has been created for the purposes of the 1983 Conference only, to designate a geographical area in the Caribbean Area. The five Caribbean beams are identified as follows:

CRBBAH01, CRBBER01, CRBBLZ01, CRBEC001 and CRBJMC01

and are intended collectively to provide coverage for the following countries or geographical areas: AIA, ATG, BAH, BER, BLZ, BRB, CYM, DMA, GRD, GUY, JMC, LCA, MSR, SCN, SUR, TCA, TRD, VCT and VRG to be so used if approved by them.

TABLE 4

TABLE SHOWING CORRESPONDENCE BETWEEN CHANNEL NUMBERS AND ASSIGNED FREQUENCIES

Channel No.	Assigned frequency (MHz)	Channel No.	Assigned frequency (MHz)
1	12224.00	17	12457.28
2	12238.58	18	12471.86
3	12253.16	19	12486.44
4	12267.74	20	12501.02
5	12282.32	21	12515.60
6	12296.90	22	12530.18
7	12311.48	23	12544.76
8	12326.06	24	12559.34
9	12340.64	25	12573.92
10	12355.22	26	12588.50
11	12369.80	27	12603.08
12	12384.38	28	12617.66
13	12398.96	29	12632.24
14	12413.54	30	12646.82
15	12428.12	31	12661.40
16	12442.70	32	12675.98

12224,00 MHz (1)

1	2	3	4		5		6	7	8	9	
ALS00002	−166.20	1	−149.66	58.37	3.76	1.24	170	1	59.7	9/GR1	10
ALS00003	−175.20	1	−150.98	58.53	3.77	1.11	167	1	60.0	9/GR2	10
ARGINSU4	−94.20	1	−52.98	−59.81	3.40	0.80	19	1	59.9	9/GR3	
ARGSUR04	−94.20	1	−65.04	−43.33	3.32	1.50	40	1	60.7	9/GR3	10
B CE311	−64.20	1	−40.60	−6.07	3.04	2.06	174	1	61.6	8 9/GR7	10
B CE312	−45.20	1	−40.27	−6.06	3.44	2.09	174	1	61.0	8 9/GR9	10
B CE411	−64.20	1	−50.97	−15.27	3.86	1.38	49	1	62.6	8 9/GR7	10
B CE412	−45.20	1	−50.71	−15.30	3.57	1.56	52	1	62.7	8 9/GR9	10
B CE511	−64.20	1	−53.10	−2.90	2.44	2.13	104	1	63.0	8 9/GR7	10
B NO611	−74.20	1	−59.60	−11.62	2.85	1.69	165	2	62.8	8 9/GR8	10
B NO711	−74.20	1	−60.70	−1.78	3.54	1.78	126	2	62.8	8 9/GR8	10
B NO811	−74.20	1	−68.76	−4.71	2.37	1.65	73	2	62.8	8 9/GR8	
B SU111	−81.20	1	−51.12	−25.63	2.76	1.05	50	1	62.8	8 9/GR6	10
B SU112	−45.20	1	−50.75	−25.62	2.47	1.48	56	1	62.2	8 9/GR9	
B SU211	−81.20	1	−44.51	−16.95	3.22	1.36	60	1	62.5	8 9/GR6	10
B SU212	−45.20	1	−44.00	−16.87	3.20	1.96	58	1	61.3	8 9/GR9	
B AHIFRB1	−87.20	1	−76.06	24.16	1.81	0.80	142	1	61.6		
BERBERMU	−96.20	1	−64.77	32.32	0.80	0.80	90	2	56.8		
B ERBER02	−31.00	1	−64.77	32.32	0.80	0.80	90	1	56.9	2	10
B OLAND01	−115.20	1	−65.04	−16.76	2.49	1.27	76	1	67.9	9/GR5	
CAN01101	−138.20	1	−125.63	57.24	3.45	1.27	157	1	59.5	9/GR10	10
CAN01201	−138.20	1	−112.04	55.95	3.35	0.97	151	1	59.6	9/GR10	10
CAN01202	−72.70	1	−107.70	55.63	2.74	1.12	32	1	59.6		
CAN01203	−129.20	1	−111.48	55.61	3.08	1.15	151	1	59.5	9/GR12	10

CAN01303	−129.20	1	−102.42	57.12	3.54	0.91	154	1	60.0	9/GR12	10
CAN01304	−91.20	1	−99.12	57.36	1.98	1.72	2	1	59.8	9/GR13	
CAN01403	−129.20	1	−89.75	52.02	4.68	0.80	148	1	61.8	9/GR12	10
CAN01404	−91.20	1	−84.82	52.42	3.10	2.05	152	1	60.4	9/GR13	10
CAN01405	−82.20	1	−84.00	52.39	2.84	2.29	172	1	60.3	9/GR14	10
CAN01504	−91.20	1	−72.66	53.77	3.57	1.67	156	1	60.2	9/GR13	10
CAN01505	−82.20	1	−71.77	53.79	3.30	1.89	162	1	60.1	9/GR14	10
CAN01605	−82.20	1	−61.50	49.55	2.65	1.40	143	1	60.3	9/GR14	10
CAN01606	−70.70	1	−61.30	49.55	2.40	1.65	148	1	60.2	10	
CHLCONT5	−106.20	1	−72.23	−35.57	2.60	0.80	55	1	59.4	9/GR17	
CHLPAC02	−106.20	1	−80.06	−30.06	1.36	0.80	69	1	59.2	9/GR17	
CLMAND01	−115.20	1	−74.72	5.93	3.85	1.63	114	1	64.9	9/GR5	
CLM00001	−103.20	1	−74.50	5.87	3.98	1.96	118	1	63.5	10	
EQACAND1	−115.20	1	−78.40	−1.61	1.37	0.95	75	1	64.0	9/GR5	
EQAGAND1	−115.20	1	−90.34	−0.62	0.90	0.81	89	1	61.3	9/GR5	
FLKANT01	−57.20	1	−44.54	−60.13	3.54	0.80	12	1	59.3	2	10
FLKFALKS	−31.00	1	−59.90	−51.64	0.80	0.80	90	1	58.1	2	
GRD00002	−42.20	1	−61.58	12.29	0.80	0.80	90	1	58.8		
HWA00002	−166.20	1	−165.79	23.42	4.20	0.80	160	1	58.8	9/GR1	10
HWA00003	−175.20	1	−166.10	23.42	4.25	0.80	159	1	58.8	9/GR2	10
MEX01NTE	−78.20	1	−105.81	26.01	2.89	2.08	155	1	60.5	1	
MEX01SUR	−69.20	1	−94.84	19.82	3.05	2.09	4	1	62.2	1	10
MEX02NTE	−136.20	1	−107.21	26.31	3.84	1.55	148	1	61.2	1	10
MEX02SUR	−127.20	1	−96.39	19.88	3.18	1.87	157	1	62.5	1	10

12224,00 MHz (1)

1	2	3	4		5		6	7	8	9	
PAQPAC01	–106.20	1	–109.18	–27.53	0.80	0.80	90	1	56.2	9/GR17	
PRG00002	–99.20	1	–58.66	–23.32	1.45	1.04	76	1	60.2		
PRUAND02	–115.20	1	–74.69	–8.39	3.41	1.79	95	1	63.9	9/GR5	
PTRVIR01	–101.20	1	–65.85	18.12	0.80	0.80	90	1	60.5	1 6 9/GR20	
PTRVIR02	–110.20	1	–65.86	18.12	0.80	0.80	90	1	61.0	1 6 9/GR21	
SPMFRAN3	–53.20	1	–67.24	47.51	3.16	0.80	7	1	60.4	2 7	10
TRD00001	–84.70	1	–61.23	10.70	0.80	0.80	90	1	59.4		
URG00001	–71.70	1	–56.22	–32.52	1.02	0.89	11	1	60.0		
USAEH001	–61.70	1	–85.19	36.21	5.63	3.33	22	1	61.8	1 5 6	10
USAEH002	–101.20	1	–89.24	36.16	5.67	3.76	170	1	61.7	1 6 9/GR20	10
USAEH003	–110.20	1	–90.14	36.11	5.55	3.55	161	1	62.0	1 6 9/GR21	10
USAEH004	–119.20	1	–91.16	36.05	5.38	3.24	152	1	62.6	1 5 6	10
USAPSA02	–166.20	1	–117.80	40.58	4.03	0.82	135	1	63.2	9/GR1	
USAPSA03	–175.20	1	–118.27	40.12	3.62	0.80	136	1	65.0	9/GR2	
USAWH101	–148.20	1	–109.65	38.13	5.53	1.95	142	1	62.1	10	
USAWH102	–157.20	1	–111.41	38.57	5.51	1.54	138	1	63.2	10	
VENAND03	–115.20	1	–67.04	6.91	2.37	1.43	111	1	67.2	9/GR5	
VRG00001	–79.70	1	–64.37	18.48	0.80	0.80	90	1	58.3	4	

ALS00002	−165.80	2	−149.63	58.52	3.81	1.23	171	2	59.7	9/GR1	10
ALS00003	−174.80	2	−150.95	58.54	3.77	1.11	167	2	60.0	9/GR2	10
ARGNORT4	−93.80	2	−63.96	−30.01	3.86	1.99	48	2	65.6	10	
ARGNORT5	−54.80	2	−62.85	−29.80	3.24	2.89	47	2	63.5	10	
ATNBEAM1	−52.80	2	−66.44	14.87	1.83	0.80	39	2	61.0		
B CE311	−63.80	2	−40.60	−6.07	3.04	2.06	174	2	61.6	8 9/GR7	10
B CE312	−44.80	2	−40.26	−6.06	3.44	2.09	174	2	61.0	8 9/GR9	10
B CE411	−63.80	2	−50.97	−15.26	3.86	1.38	49	2	62.6	8 9/GR7	10
B CE412	−44.80	2	−50.71	−15.30	3.57	1.56	52	2	62.7	8 9/GR9	10
B CE511	−63.80	2	−53.11	−2.98	2.42	2.15	107	2	63.1	8 9/GR7	10
B NO611	−73.80	2	−59.60	−11.62	2.86	1.69	165	1	62.8	8 9/GR8	10
B NO711	−73.80	2	−60.70	−1.78	3.54	1.78	126	1	62.8	8 9/GR8	10
B NO811	−73.80	2	−68.75	−4.71	2.37	1.65	73	1	62.8	8 9/GR8	
B SE911	−101.80	2	−45.99	−19.09	2.22	0.80	62	2	65.3	8	10
B SU111	−80.80	2	−51.10	−25.64	2.76	1.06	50	2	62.8	8 9/GR6	10
B SU112	−44.80	2	−50.76	−25.62	2.47	1.48	56	2	62.3	8 9/GR9	
B SU211	−80.80	2	−44.51	−16.94	3.22	1.37	60	2	62.5	8 9/GR6	10
B SU212	−44.80	2	−43.99	−16.97	3.27	1.92	59	2	61.3	8 9/GR9	
CAN01101	−137.80	2	−125.60	57.24	3.45	1.27	157	2	59.5	9/GR10	10
CAN01201	−137.80	2	−111.92	55.89	3.33	0.98	151	2	59.6	9/GR10	10
CAN01202	−72.30	2	−107.64	55.62	2.75	1.11	32	2	59.6		
CAN01203	−128.80	2	−111.43	55.56	3.07	1.15	151	2	59.5	9/GR12	10
CAN01303	−128.80	2	−102.39	57.12	3.54	0.92	154	2	60.0	9/GR12	10
CAN01304	−90.80	2	−99.00	57.33	1.96	1.73	1	2	59.8	9/GR13	

12238,58 MHz (2)

1	2	3	4		5		6	7	8	9	
CAN01403	−128.80	2	−89.70	52.02	4.67	0.80	148	2	61.8	9/GR12	10
CAN01404	−90.80	2	−84.78	52.41	3.09	2.06	153	2	60.4	9/GR13	10
CAN01405	−81.80	2	−84.02	52.34	2.82	2.30	172	2	60.3	9/GR14	10
CAN01504	−90.80	2	−72.68	53.78	3.57	1.67	157	2	60.2	9/GR13	10
CAN01505	−81.80	2	−71.76	53.76	3.30	1.89	162	2	60.1	9/GR14	10
CAN01605	−81.80	2	−61.54	49.50	2.66	1.39	144	2	60.3	9/GR14	10
CAN01606	−70.30	2	−61.32	49.51	2.41	1.65	148	2	60.2	10	
CHLCONT4	−105.80	2	−69.59	−23.20	2.21	0.80	68	2	59.1	9/GR16	
CHLCONT6	−105.80	2	−73.52	−55.52	3.65	1.31	39	2	59.6	9/GR16	
CRBBAH01	−92.30	2	−76.09	24.13	1.83	0.80	141	1	61.7	9/GR18	
CRBBER01	−92.30	2	−64.76	32.13	0.80	0.80	90	1	56.7	9/GR18	
CRBBLZ01	−92.30	2	−88.61	17.26	0.80	0.80	90	1	58.6	9/GR18	
CRBEC001	−92.30	2	−60.07	8.26	4.20	0.86	115	1	64.2	9/GR18	10
CRBJMC01	−92.30	2	−79.45	17.97	0.99	0.80	151	1	61.1	9/GR18	
CTR00201	−130.80	2	−84.33	9.67	0.82	0.80	119	2	65.6		
EQAC0001	−94.80	2	−78.31	−1.52	1.48	1.15	65	1	63.0	9/GR19	
EQAG0001	−94.80	2	−90.36	−0.57	0.94	0.89	99	1	61.0	9/GR19	
GUY00302	−33.80	2	−59.07	4.77	1.43	0.85	91	2	63.5		
HNDIFRB2	−107.30	2	−86.23	15.16	1.14	0.85	8	1	63.4		
HTI00002	−83.30	2	−73.28	18.96	0.82	0.80	11	2	60.9		
HWA00002	−165.80	2	−165.79	23.32	4.20	0.80	160	2	58.8	9/GR1	10
HWA00003	−174.80	2	−166.10	23.42	4.25	0.80	159	2	58.8	9/GR2	10
MEX01NTE	−77.80	2	−105.80	25.99	2.88	2.07	155	2	60.5	1	
MEX02NTE	−135.80	2	−107.36	26.32	3.80	1.57	149	2	61.2	1	10

MEX02SUR	−126.80	2	−96.39	19.88	3.19	1.87	158	2	62.5	1	10
PRU00004	−85.80	2	−74.19	−8.39	3.74	2.45	112	2	62.8	10	
PTRVIR01	−100.80	2	−65.85	18.12	0.80	0.80	90	2	60.6	1 6 9/GR20	
PTRVIR02	−109.80	2	−65.85	18.12	0.80	0.80	90	2	61.1	1 6 9/GR21	
TCA00001	−115.80	2	−71.79	21.53	0.80	0.80	90	2	60.4		
USAEH001	−61.30	2	−85.16	36.21	5.63	3.32	22	2	61.8	1 5 6	10
USAEH002	−100.80	2	−89.28	36.16	5.65	3.78	170	2	61.7	1 6 9/GR20	10
USAEH003	−109.80	2	−90.12	36.11	5.55	3.56	161	2	62.1	1 6 9/GR21	10
USAEH004	−118.80	2	−91.16	36.05	5.38	3.24	153	2	62.6	1 5 6	10
USAPSA02	−165.80	2	−117.79	40.58	4.04	0.82	135	2	63.2	9/GR1	
USAPSA03	−174.80	2	−118.20	40.15	3.63	0.80	136	2	64.9	9/GR2	
USAWH101	−147.80	2	−109.70	38.13	5.52	1.96	142	2	62.1	10	
USAWH102	−156.80	2	−111.40	38.57	5.51	1.55	138	2	63.2	10	
VCT00001	−79.30	2	−61.18	13.23	0.80	0.80	90	2	58.4		
VEN11VEN	−103.80	2	−66.79	6.90	2.50	1.77	122	2	65.1	10	

12253,16 MHz (3)

1	2	3	4		5		6	7	8	9	
ALS00002	–166.20	3	–149.66	58.37	3.76	1.24	170	1	59.8	9/GR1	10
ALS00003	–175.20	3	–150.98	58.53	3.77	1.11	167	1	60.0	9/GR2	10
ARGINSU4	–94.20	3	–52.98	–59.81	3.40	0.80	19	1	59.9	9/GR3	
ARGINSU5	–55.20	3	–44.17	–59.91	3.77	0.80	13	1	59.3	9/GR4	10
ARGSUR04	–94.20	3	–65.04	–43.33	3.32	1.50	40	1	60.7	9/GR3	10
ARGSUR05	–55.20	3	–63.68	–43.01	2.54	2.38	152	1	60.1	9/GR4	10
ATGSJN01	–79.70	3	–61.79	17.07	0.80	0.80	90	1	58.4		
B CE311	–64.20	3	–40.60	–6.07	3.04	2.06	174	1	61.6	8 9/GR7	10
B CE312	–45.20	3	–40.27	–6.06	3.44	2.09	174	1	61.0	8 9/GR9	10
B CE411	–64.20	3	–50.97	–15.27	3.86	1.38	49	1	62.6	8 9/GR7	10
B CE412	–45.20	3	–50.71	–15.30	3.57	1.56	52	1	62.7	8 9/GR9	10
B CE511	–64.20	3	–53.10	–2.90	2.44	2.13	104	1	63.1	8 9/GR7	10
B NO611	–74.20	3	–59.60	–11.62	2.85	1.69	165	2	62.9	8 9/GR8	10
B NO711	–74.20	3	–60.70	–1.78	3.54	1.78	126	2	62.8	8 9/GR8	10
B NO811	–74.20	3	–68.76	–4.71	2.37	1.65	73	2	62.8	8 9/GR8	
B SU111	–81.20	3	–51.12	–25.63	2.76	1.05	50	1	62.9	8 9/GR6	10
B SU112	–45.20	3	–50.75	–25.62	2.47	1.48	56	1	62.3	8 9/GR9	
B SU211	–81.20	3	–44.51	–16.95	3.22	1.36	60	1	62.5	8 9/GR6	10
B SU212	–45.20	3	–44.00	–16.87	3.20	1.96	58	1	61.3	8 9/GR9	
BERBERMU	–96.20	3	–64.77	32.32	0.80	0.80	90	2	56.8		
B OLAND01	–115.20	3	–65.04	–16.76	2.49	1.27	76	1	67.9	9/GR5	
B OL00001	–87.20	3	–64.61	–16.71	2.52	2.19	85	1	63.8	10	
B RB00001	–92.70	3	–59.85	12.93	0.80	0.80	90	2	59.1		
CAN01101	–138.20	3	–125.63	57.24	3.45	1.27	157	1	59.5	9/GR10	10

CAN01201	−138.20	3	−112.04	55.95	3.35	0.97	151	1	59.6	9/GR10	10
CAN01202	−72.70	3	−107.70	55.63	2.74	1.12	32	1	59.6		
CAN01203	−129.20	3	−111.48	55.61	3.08	1.15	151	1	59.5	9/GR12	10
CAN01303	−129.20	3	−102.42	57.12	3.54	0.91	154	1	60.1	9/GR12	10
CAN01304	−91.20	3	−99.12	57.36	1.98	1.72	2	1	59.8	9/GR13	
CAN01403	−129.20	3	−89.75	52.02	4.68	0.80	148	1	61.8	9/GR12	10
CAN01404	−91.20	3	−84.82	52.42	3.10	2.05	152	1	60.4	9/GR13	10
CAN01405	−82.20	3	−84.00	52.39	2.84	2.29	172	1	60.3	9/GR14	10
CAN01504	−91.20	3	−72.66	53.77	3.57	1.67	156	1	60.2	9/GR13	10
CAN01505	−82.20	3	−71.77	53.79	3.30	1.89	162	1	60.1	9/GR14	10
CAN01605	−82.20	3	−61.50	49.55	2.65	1.40	143	1	60.3	9/GR14	10
CAN01606	−70.70	3	−61.30	49.55	2.40	1.65	148	1	60.2	10	
CHLCONT5	−106.20	3	−72.23	−35.57	2.60	0.80	55	1	59.4	9/GR17	
CHLPAC02	−106.20	3	−80.06	−30.06	1.36	0.80	69	1	59.2	9/GR17	
CLMAND01	−115.20	3	−74.72	5.93	3.85	1.63	114	1	65.0	9/GR5	
CLM00001	−103.20	3	−74.50	5.87	3.98	1.96	118	1	63.6	10	
CUB00001	−89.20	3	−79.81	21.62	2.24	0.80	168	1	61.1		
EQACAND1	−115.20	3	−78.40	−1.61	1.37	0.95	75	1	64.1	9/GR5	
EQAGAND1	−115.20	3	−90.34	−0.62	0.90	0.81	89	1	61.3	9/GR5	
GRD00002	−42.20	3	−61.58	12.29	0.80	0.80	90	1	58.8		
GRD00059	−57.20	3	−61.58	12.29	0.80	0.80	90	1	58.5		
GRLDNK01	−53.20	3	−44.89	66.56	2.70	0.82	173	1	60.0	2	10
HWA00002	−166.20	3	−165.79	23.42	4.20	0.80	160	1	58.8	9/GR1	10
HWA00003	−175.20	3	−166.10	23.42	4.25	0.80	159	1	58.8	9/GR2	10

12253,16 MHz (3)

1	2	3	4		5		6	7	8	9	
MEX01NTE	–78.20	3	–105.81	26.01	2.89	2.08	155	1	60.5	1	
MEX01SUR	–69.20	3	–94.84	19.82	3.05	2.09	4	1	62.3	1	10
MEX02NTE	–136.20	3	–107.21	26.31	3.84	1.55	148	1	61.2	1	10
MEX02SUR	–127.20	3	–96.39	19.88	3.18	1.87	157	1	62.6	1	10
PAQPAC01	–106.20	3	–109.18	–27.53	0.80	0.80	90	1	56.2	9/GR17	
PRG00002	–99.20	3	–58.66	–23.32	1.45	1.04	76	1	60.2		
PRUAND02	–115.20	3	–74.69	–8.39	3.41	1.79	95	1	64.0	9/GR5	
PTRVIR01	–101.20	3	–65.85	18.12	0.80	0.80	90	1	60.6	1 6 9/GR20	
PTRVIR02	–110.20	3	–65.86	18.12	0.80	0.80	90	1	61.0	1 6 9/GR21	
SURINAM2	–84.70	3	–55.69	4.35	1.00	0.80	86	1	63.2		
URG00001	–71.70	3	–56.22	–32.52	1.02	0.89	11	1	60.0		
USAEH001	–61.70	3	–85.19	36.21	5.63	3.33	22	1	61.8	1 5 6	10
USAEH002	–101.20	3	–89.24	36.16	5.67	3.76	170	1	61.7	1 6 9/GR20	10
USAEH003	–110.20	3	–90.14	36.11	5.55	3.55	161	1	62.1	1 6 9/GR21	10
USAEH004	–119.20	3	–91.16	36.05	5.38	3.24	152	1	62.6	1 5 6	10
USAPSA02	–166.20	3	–117.80	40.58	4.03	0.82	135	1	63.3	9/GR1	
USAPSA03	–175.20	3	–118.27	40.12	3.62	0.80	136	1	65.0	9/GR2	
USAWH101	–148.20	3	–109.65	38.13	5.53	1.95	142	1	62.1	10	
USAWH102	–157.20	3	–111.41	38.57	5.51	1.54	138	1	63.2	10	
VENAND03	–115.20	3	–67.04	6.91	2.37	1.43	111	1	67.3	9/GR5	

ALS00002	−165.80	4	−149.63	58.52	3.81	1.23	171	2	59.8	9/GR1	10
ALS00003	−174.80	4	−150.95	58.54	3.77	1.11	167	2	60.0	9/GR2	10
ARGNORT4	−93.80	4	−63.96	−30.01	3.86	1.99	48	2	65.7	10	
ARGNORT5	−54.80	4	−62.85	−29.80	3.24	2.89	47	2	63.5	10	
B CE311	−63.80	4	−40.60	−6.07	3.04	2.06	174	2	61.6	8 9/GR7	10
B CE312	−44.80	4	−40.26	−6.06	3.44	2.09	174	2	61.0	8 9/GR9	10
B CE411	−63.80	4	−50.97	−15.26	3.86	1.38	49	2	62.6	8 9/GR7	10
B CE412	−44.80	4	−50.71	−15.30	3.57	1.56	52	2	62.8	8 9/GR9	10
B CE511	−63.80	4	−53.11	−2.98	2.42	2.15	107	2	63.1	8 9/GR7	10
B NO611	−73.80	4	−59.60	−11.62	2.86	1.69	165	1	62.9	8 9/GR8	10
B NO711	−73.80	4	−60.70	−1.78	3.54	1.78	126	1	62.8	8 9/GR8	10
B NO811	−73.80	4	−68.75	−4.71	2.37	1.65	73	1	62.8	8 9/GR8	
B SE911	−101.80	4	−45.99	−19.09	2.22	0.80	62	2	65.3	8	10
B SU111	−80.80	4	−51.10	−25.64	2.76	1.06	50	2	62.9	8 9/GR6	10
B SU112	−44.80	4	−50.76	−25.62	2.47	1.48	56	2	62.3	8 9/GR9	
B SU211	−80.80	4	−44.51	−16.94	3.22	1.37	60	2	62.5	8 9/GR6	10
B SU212	−44.80	4	−43.99	−16.97	3.27	1.92	59	2	61.3	8 9/GR9	
CAN01101	−137.80	4	−125.60	57.24	3.45	1.27	157	2	59.5	9/GR10	10
CAN01201	−137.80	4	−111.92	55.89	3.33	0.98	151	2	59.6	9/GR10	10
CAN01202	−72.30	4	−107.64	55.62	2.75	1.11	32	2	59.6		
CAN01203	−128.80	4	−111.43	55.56	3.07	1.15	151	2	59.5	9/GR12	10
CAN01303	−128.80	4	−102.39	57.12	3.54	0.92	154	2	60.1	9/GR12	10
CAN01304	−90.80	4	−99.00	57.33	1.96	1.73	1	2	59.8	9/GR13	
CAN01403	−128.80	4	−89.70	52.02	4.67	0.80	148	2	61.8	9/GR12	10

12267,74 MHz (4)

1	2	3	4		5		6	7	8	9	
CAN01404	−90.80	4	−84.78	52.41	3.09	2.06	153	2	60.4	9/GR13	10
CAN01405	−81.80	4	−84.02	52.34	2.82	2.30	172	2	60.3	9/GR14	10
CAN01504	−90.80	4	−72.68	53.78	3.57	1.67	157	2	60.2	9/GR13	10
CAN01505	−81.80	4	−71.76	53.76	3.30	1.89	162	2	60.2	9/GR14	10
CAN01605	−81.80	4	−61.54	49.50	2.66	1.39	144	2	60.3	9/GR14	10
CAN01606	−70.30	4	−61.32	49.51	2.41	1.65	148	2	60.2	10	
CHLCONT4	−105.80	4	−69.59	−23.20	2.21	0.80	68	2	59.1	9/GR16	
CHLCONT6	−105.80	4	−73.52	−55.52	3.65	1.31	39	2	59.6	9/GR16	
CRBBAH01	−92.30	4	−76.09	24.13	1.83	0.80	141	1	61.7	9/GR18	
CRBBER01	−92.30	4	−64.76	32.13	0.80	0.80	90	1	56.8	9/GR18	
CRBBLZ01	−92.30	4	−88.61	17.26	0.80	0.80	90	1	58.7	9/GR18	
CRBEC001	−92.30	4	−60.07	8.26	4.20	0.86	115	1	64.3	9/GR18	10
CRBJMC01	−92.30	4	−79.45	17.97	0.99	0.80	151	1	61.1	9/GR18	
CYM00001	−115.80	4	−80.58	19.57	0.80	0.80	90	2	59.6		
DOMIFRB2	−83.30	4	−70.51	18.79	0.98	0.80	167	2	61.1		
EQAC0001	−94.80	4	−78.31	−1.52	1.48	1.15	65	1	63.0	9/GR19	
EQAG0001	−94.80	4	−90.36	−0.57	0.94	0.89	99	1	61.0	9/GR19	
GUFMGG02	−52.80	4	−56.42	8.47	4.16	0.81	123	2	62.7	2 7	10
HWA00002	−165.80	4	−165.79	23.32	4.20	0.80	160	2	58.8	9/GR1	10
HWA00003	−174.80	4	−166.10	23.42	4.25	0.80	159	2	58.8	9/GR2	10
JMC00005	−33.80	4	−77.27	18.12	0.80	0.80	90	2	60.6		
LCAIFRB1	−79.30	4	−61.15	13.90	0.80	0.80	90	2	58.4		
MEX01NTE	−77.80	4	−105.80	25.99	2.88	2.07	155	2	60.5	1	
MEX02NTE	−135.80	4	−107.36	26.32	3.80	1.57	149	2	61.2	1	10

MEX02SUR	−126.80	4	−96.39	19.88	3.19	1.87	158	2	62.5	1	10
PRU00004	−85.80	4	−74.19	−8.39	3.74	2.45	112	2	62.9	10	
PTRVIR01	−100.80	4	−65.85	18.12	0.80	0.80	90	2	60.6	1 6 9/GR20	
PTRVIR02	−109.80	4	−65.85	18.12	0.80	0.80	90	2	61.1	1 6 9/GR21	
SLVIFRB2	−107.30	4	−88.91	13.59	0.80	0.80	90	1	61.7		
USAEH001	−61.30	4	−85.16	36.21	5.63	3.32	22	2	61.9	1 5 6	10
USAEH002	−100.80	4	−89.28	36.16	5.65	3.78	170	2	61.7	1 6 9/GR20	10
USAEH003	−109.80	4	−90.12	36.11	5.55	3.56	161	2	62.1	1 6 9/GR21	10
USAEH004	−118.80	4	−91.16	36.05	5.38	3.24	153	2	62.6	1 5 6	10
USAPSA02	−165.80	4	−117.79	40.58	4.04	0.82	135	2	63.3	9/GR1	
USAPSA03	−174.80	4	−118.20	40.15	3.63	0.80	136	2	65.0	9/GR2	
USAWH101	−147.80	4	−109.70	38.13	5.52	1.96	142	2	62.1	10	
USAWH102	−156.80	4	−111.40	38.57	5.51	1.55	138	2	63.2	10	
VEN11VEN	−103.80	4	−66.79	6.90	2.50	1.77	122	2	65.2	10	

12282,32 MHz (5)

1	2	3	4		5		6	7	8	9	
ALS00002	−166.20	5	−149.66	58.37	3.76	1.24	170	1	59.7	9/GR1	10
ALS00003	−175.20	5	−150.98	58.53	3.77	1.11	167	1	60.0	9/GR2	10
ARGINSU4	−94.20	5	−52.98	−59.81	3.40	0.80	19	1	59.9	9/GR3	
ARGSUR04	−94.20	5	−65.04	−43.33	3.32	1.50	40	1	60.7	9/GR3	10
B CE311	−64.20	5	−40.60	−6.07	3.04	2.06	174	1	61.6	8 9/GR7	10
B CE312	−45.20	5	−40.27	−6.06	3.44	2.09	174	1	61.0	8 9/GR9	10
B CE411	−64.20	5	−50.97	−15.27	3.86	1.38	49	1	62.6	8 9/GR7	10
B CE412	−45.20	5	−50.71	−15.30	3.57	1.56	52	1	62.7	8 9/GR9	10
B CE511	−64.20	5	−53.10	−2.90	2.44	2.13	104	1	63.0	8 9/GR7	10
B NO611	−74.20	5	−59.60	−11.62	2.85	1.69	165	2	62.8	8 9/GR8	10
B NO711	−74.20	5	−60.70	−1.78	3.54	1.78	126	2	62.8	8 9/GR8	10
B NO811	−74.20	5	−68.76	−4.71	2.37	1.65	73	2	62.8	8 9/GR8	
B SU111	−81.20	5	−51.12	−25.63	2.76	1.05	50	1	62.8	8 9/GR6	10
B SU112	−45.20	5	−50.75	−25.62	2.47	1.48	56	1	62.2	8 9/GR9	
B SU211	−81.20	5	−44.51	−16.95	3.22	1.36	60	1	62.5	8 9/GR6	10
B SU212	−45.20	5	−44.00	−16.87	3.20	1.96	58	1	61.3	8 9/GR9	
B AHIFRB1	−87.20	5	−76.06	24.16	1.81	0.80	142	1	61.6		
BERBERMU	−96.20	5	−64.77	32.32	0.80	0.80	90	2	56.8		
B ERBER02	−31.00	5	−64.77	32.32	0.80	0.80	90	1	56.9	2	10
B OLAND01	−115.20	5	−65.04	−16.76	2.49	1.27	76	1	67.9	9/GR5	
CAN01101	−138.20	5	−125.63	57.24	3.45	1.27	157	1	59.5	9/GR10	10
CAN01201	−138.20	5	−112.04	55.95	3.35	0.97	151	1	59.6	9/GR10	10
CAN01202	−72.70	5	−107.70	55.63	2.74	1.12	32	1	59.6		
CAN01203	−129.20	5	−111.48	55.61	3.08	1.15	151	1	59.5	9/GR12	10

CAN01303	−129.20	5	−102.42	57.12	3.54	0.91	154	1	60.0	9/GR12	10
CAN01304	−91.20	5	−99.12	57.36	1.98	1.72	2	1	59.8	9/GR13	
CAN01403	−129.20	5	−89.75	52.02	4.68	0.80	148	1	61.8	9/GR12	10
CAN01404	−91.20	5	−84.82	52.42	3.10	2.05	152	1	60.4	9/GR13	10
CAN01405	−82.20	5	−84.00	52.39	2.84	2.29	172	1	60.3	9/GR14	10
CAN01504	−91.20	5	−72.66	53.77	3.57	1.67	156	1	60.2	9/GR13	10
CAN01505	−82.20	5	−71.77	53.79	3.30	1.89	162	1	60.1	9/GR14	10
CAN01605	−82.20	5	−61.50	49.55	2.65	1.40	143	1	60.3	9/GR14	10
CAN01606	−70.70	5	−61.30	49.55	2.40	1.65	148	1	60.2	10	
CHLCONT5	−106.20	5	−72.23	−35.57	2.60	0.80	55	1	59.4	9/GR17	
CHLPAC02	−106.20	5	−80.06	−30.06	1.36	0.80	69	1	59.2	9/GR17	
CLMAND01	−115.20	5	−74.72	5.93	3.85	1.63	114	1	64.9	9/GR5	
CLM00001	−103.20	5	−74.50	5.87	3.98	1.96	118	1	63.5	10	
EQACAND1	−115.20	5	−78.40	−1.61	1.37	0.95	75	1	64.0	9/GR5	
EQAGAND1	−115.20	5	−90.34	−0.62	0.90	0.81	89	1	61.3	9/GR5	
FLKANT01	−57.20	5	−44.54	−60.13	3.54	0.80	12	1	59.3	2	10
FLKFALKS	−31.00	5	−59.90	−51.64	0.80	0.80	90	1	58.1	2	
GRD00002	−42.20	5	−61.58	12.29	0.80	0.80	90	1	58.8		
HWA00002	−166.20	5	−165.79	23.42	4.20	0.80	160	1	58.8	9/GR1	10
HWA00003	−175.20	5	−166.10	23.42	4.25	0.80	159	1	58.8	9/GR2	10
MEX01NTE	−78.20	5	−105.81	26.01	2.89	2.08	155	1	60.5	1	
MEX01SUR	−69.20	5	−94.84	19.82	3.05	2.09	4	1	62.2	1	10
MEX02NTE	−136.20	5	−107.21	26.31	3.84	1.55	148	1	61.2	1	10
MEX02SUR	−127.20	5	−96.39	19.88	3.18	1.87	157	1	62.5	1	10

12282,32 MHz (5)

1	2	3	4		5		6	7	8	9	
PAQPAC01	–106.20	5	–109.18	–27.53	0.80	0.80	90	1	56.2	9/GR17	
PRG00002	–99.20	5	–58.66	–23.32	1.45	1.04	76	1	60.2		
PRUAND02	–115.20	5	–74.69	–8.39	3.41	1.79	95	1	63.9	9/GR5	
PTRVIR01	–101.20	5	–65.85	18.12	0.80	0.80	90	1	60.5	1 6 9/GR20	
PTRVIR02	–110.20	5	–65.86	18.12	0.80	0.80	90	1	61.0	1 6 9/GR21	
SPMFRAN3	–53.20	5	–67.24	47.51	3.16	0.80	7	1	60.4	2 7	10
TRD00001	–84.70	5	–61.23	10.70	0.80	0.80	90	1	59.4		
URG00001	–71.70	5	–56.22	–32.52	1.02	0.89	11	1	60.0		
USAEH001	–61.70	5	–85.19	36.21	5.63	3.33	22	1	61.8	1 5 6	10
USAEH002	–101.20	5	–89.24	36.16	5.67	3.76	170	1	61.7	1 6 9/GR20	10
USAEH003	–110.20	5	–90.14	36.11	5.55	3.55	161	1	62.0	1 6 9/GR21	10
USAEH004	–119.20	5	–91.16	36.05	5.38	3.24	152	1	62.6	1 5 6	10
USAPSA02	–166.20	5	–117.80	40.58	4.03	0.82	135	1	63.2	9/GR1	
USAPSA03	–175.20	5	–118.27	40.12	3.62	0.80	136	1	65.0	9/GR2	
USAWH101	–148.20	5	–109.65	38.13	5.53	1.95	142	1	62.1	10	
USAWH102	–157.20	5	–111.41	38.57	5.51	1.54	138	1	63.2	10	
VENAND03	–115.20	5	–67.04	6.91	2.37	1.43	111	1	67.2	9/GR5	
VRG00001	–79.70	5	–64.37	18.48	0.80	0.80	90	1	58.3	4	

ALS00002	−165.80	6	−149.63	58.52	3.81	1.23	171	2	59.7	9/GR1	10
ALS00003	−174.80	6	−150.95	58.54	3.77	1.11	167	2	60.0	9/GR2	10
ARGNORT4	−93.80	6	−63.96	−30.01	3.86	1.99	48	2	65.6	10	
ARGNORT5	−54.80	6	−62.85	−29.80	3.24	2.89	47	2	63.5	10	
ATNBEAM1	−52.80	6	−66.44	14.87	1.83	0.80	39	2	61.0		
B CE311	−63.80	6	−40.60	−6.07	3.04	2.06	174	2	61.6	8 9/GR7	10
B CE312	−44.80	6	−40.26	−6.06	3.44	2.09	174	2	61.0	8 9/GR9	10
B CE411	−63.80	6	−50.97	−15.26	3.86	1.38	49	2	62.6	8 9/GR7	10
B CE412	−44.80	6	−50.71	−15.30	3.57	1.56	52	2	62.7	8 9/GR9	10
B CE511	−63.80	6	−53.11	−2.98	2.42	2.15	107	2	63.1	8 9/GR7	10
B NO611	−73.80	6	−59.60	−11.62	2.86	1.69	165	1	62.8	8 9/GR8	10
B NO711	−73.80	6	−60.70	−1.78	3.54	1.78	126	1	62.8	8 9/GR8	10
B NO811	−73.80	6	−68.75	−4.71	2.37	1.65	73	1	62.8	8 9/GR8	
B SE911	−101.80	6	−45.99	−19.09	2.22	0.80	62	2	65.3	8	10
B SU111	−80.80	6	−51.10	−25.64	2.76	1.06	50	2	62.8	8 9/GR6	10
B SU112	−44.80	6	−50.76	−25.62	2.47	1.48	56	2	62.3	8 9/GR9	
B SU211	−80.80	6	−44.51	−16.94	3.22	1.37	60	2	62.5	8 9/GR6	10
B SU212	−44.80	6	−43.99	−16.97	3.27	1.92	59	2	61.3	8 9/GR9	
CAN01101	−137.80	6	−125.60	57.24	3.45	1.27	157	2	59.5	9/GR10	10
CAN01201	−137.80	6	−111.92	55.89	3.33	0.98	151	2	59.6	9/GR10	10
CAN01202	−72.30	6	−107.64	55.62	2.75	1.11	32	2	59.6		
CAN01203	−128.80	6	−111.43	55.56	3.07	1.15	151	2	59.5	9/GR12	10
CAN01303	−128.80	6	−102.39	57.12	3.54	0.92	154	2	60.0	9/GR12	10
CAN01304	−90.80	6	−99.00	57.33	1.96	1.73	1	2	59.8	9/GR13	

12296,90 MHz (6)

1	2	3	4		5		6	7	8	9	
CAN01403	−128.80	6	−89.70	52.02	4.67	0.80	148	2	61.8	9/GR12	10
CAN01404	−90.80	6	−84.78	52.41	3.09	2.06	153	2	60.4	9/GR13	10
CAN01405	−81.80	6	−84.02	52.34	2.82	2.30	172	2	60.3	9/GR14	10
CAN01504	−90.80	6	−72.68	53.78	3.57	1.67	157	2	60.2	9/GR13	10
CAN01505	−81.80	6	−71.76	53.76	3.30	1.89	162	2	60.1	9/GR14	10
CAN01605	−81.80	6	−61.54	49.50	2.66	1.39	144	2	60.3	9/GR14	10
CAN01606	−70.30	6	−61.32	49.51	2.41	1.65	148	2	60.2	10	
CHLCONT4	−105.80	6	−69.59	−23.20	2.21	0.80	68	2	59.1	9/GR16	
CHLCONT6	−105.80	6	−73.52	−55.52	3.65	1.31	39	2	59.6	9/GR16	
CRBBAH01	−92.30	6	−76.09	24.13	1.83	0.80	141	1	61.7	9/GR18	
CRBBER01	−92.30	6	−64.76	32.13	0.80	0.80	90	1	56.7	9/GR18	
CRBBLZ01	−92.30	6	−88.61	17.26	0.80	0.80	90	1	58.6	9/GR18	
CRBEC001	−92.30	6	−60.07	8.26	4.20	0.86	115	1	64.2	9/GR18	10
CRBJMC01	−92.30	6	−79.45	17.97	0.99	0.80	151	1	61.1	9/GR18	
CTR00201	−130.80	6	−84.33	9.67	0.82	0.80	119	2	65.6		
EQAC0001	−94.80	6	−78.31	−1.52	1.48	1.15	65	1	63.0	9/GR19	
EQAG0001	−94.80	6	−90.36	−0.57	0.94	0.89	99	1	61.0	9/GR19	
GUY00302	−33.80	6	−59.07	4.77	1.43	0.85	91	2	63.5		
HNDIFRB2	−107.30	6	−86.23	15.16	1.14	0.85	8	1	63.4		
HTI00002	−83.30	6	−73.28	18.96	0.82	0.80	11	2	60.9		
HWA00002	−165.80	6	−165.79	23.32	4.20	0.80	160	2	58.8	9/GR1	10
HWA00003	−174.80	6	−166.10	23.42	4.25	0.80	159	2	58.8	9/GR2	10
MEX01NTE	−77.80	6	−105.80	25.99	2.88	2.07	155	2	60.5	1	
MEX02NTE	−135.80	6	−107.36	26.32	3.80	1.57	149	2	61.2	1	10

MEX02SUR	−126.80	6	−96.39	19.88	3.19	1.87	158	2	62.5	1	10
PRU00004	−85.80	6	−74.19	−8.39	3.74	2.45	112	2	62.8	10	
PTRVIR01	−100.80	6	−65.85	18.12	0.80	0.80	90	2	60.6	1 6 9/GR20	
PTRVIR02	−109.80	6	−65.85	18.12	0.80	0.80	90	2	61.1	1 6 9/GR21	
TCA00001	−115.80	6	−71.79	21.53	0.80	0.80	90	2	60.4		
USAEH001	−61.30	6	−85.16	36.21	5.63	3.32	22	2	61.8	1 5 6	10
USAEH002	−100.80	6	−89.28	36.16	5.65	3.78	170	2	61.7	1 6 9/GR20	10
USAEH003	−109.80	6	−90.12	36.11	5.55	3.56	161	2	62.1	1 6 9/GR21	10
USAEH004	−118.80	6	−91.16	36.05	5.38	3.24	153	2	62.6	1 5 6	10
USAPSA02	−165.80	6	−117.79	40.58	4.04	0.82	135	2	63.2	9/GR1	
USAPSA03	−174.80	6	−118.20	40.15	3.63	0.80	136	2	64.9	9/GR2	
USAWH101	−147.80	6	−109.70	38.13	5.52	1.96	142	2	62.1	10	
USAWH102	−156.80	6	−111.40	38.57	5.51	1.55	138	2	63.2	10	
VCT00001	−79.30	6	−61.18	13.23	0.80	0.80	90	2	58.4		
VEN11VEN	−103.80	6	−66.79	6.90	2.50	1.77	122	2	65.1	10	

12311,48 MHz (7)

1	2	3	4		5		6	7	8	9	
ALS00002	−166.20	7	−149.66	58.37	3.76	1.24	170	1	59.8	9/GR1	10
ALS00003	−175.20	7	−150.98	58.53	3.77	1.11	167	1	60.0	9/GR2	10
ARGINSU4	−94.20	7	−52.98	−59.81	3.40	0.80	19	1	59.9	9/GR3	
ARGINSU5	−55.20	7	−44.17	−59.91	3.77	0.80	13	1	59.3	9/GR4	10
ARGSUR04	−94.20	7	−65.04	−43.33	3.32	1.50	40	1	60.7	9/GR3	10
ARGSUR05	−55.20	7	−63.68	−43.01	2.54	2.38	152	1	60.1	9/GR4	10
ATGSJN01	−79.70	7	−61.79	17.07	0.80	0.80	90	1	58.4		
B CE311	−64.20	7	−40.60	−6.07	3.04	2.06	174	1	61.6	8 9/GR7	10
B CE312	−45.20	7	−40.27	−6.06	3.44	2.09	174	1	61.0	8 9/GR9	10
B CE411	−64.20	7	−50.97	−15.27	3.86	1.38	49	1	62.6	8 9/GR7	10
B CE412	−45.20	7	−50.71	−15.30	3.57	1.56	52	1	62.7	8 9/GR9	10
B CE511	−64.20	7	−53.10	−2.90	2.44	2.13	104	1	63.1	8 9/GR7	10
B NO611	−74.20	7	−59.60	−11.62	2.85	1.69	165	2	62.9	8 9/GR8	10
B NO711	−74.20	7	−60.70	−1.78	3.54	1.78	126	2	62.8	8 9/GR8	10
B NO811	−74.20	7	−68.76	−4.71	2.37	1.65	73	2	62.8	8 9/GR8	
B SU111	−81.20	7	−51.12	−25.63	2.76	1.05	50	1	62.9	8 9/GR6	10
B SU112	−45.20	7	−50.75	−25.62	2.47	1.48	56	1	62.3	8 9/GR9	
B SU211	−81.20	7	−44.51	−16.95	3.22	1.36	60	1	62.5	8 9/GR6	10
B SU212	−45.20	7	−44.00	−16.87	3.20	1.96	58	1	61.3	8 9/GR9	
BERBERMU	−96.20	7	−64.77	32.32	0.80	0.80	90	2	56.8		
B OLAND01	−115.20	7	−65.04	−16.76	2.49	1.27	76	1	67.9	9/GR5	
B OL00001	−87.20	7	−64.61	−16.71	2.52	2.19	85	1	63.8	10	
B RB00001	−92.70	7	−59.85	12.93	0.80	0.80	90	2	59.1		
CAN01101	−138.20	7	−125.63	57.24	3.45	1.27	157	1	59.5	9/GR10	10

CAN01201	−138.20	7	−112.04	55.95	3.35	0.97	151	1	59.6	9/GR10	10
CAN01202	−72.70	7	−107.70	55.63	2.74	1.12	32	1	59.6		
CAN01203	−129.20	7	−111.48	55.61	3.08	1.15	151	1	59.5	9/GR12	10
CAN01303	−129.20	7	−102.42	57.12	3.54	0.91	154	1	60.1	9/GR12	10
CAN01304	−91.20	7	−99.12	57.36	1.98	1.72	2	1	59.8	9/GR13	
CAN01403	−129.20	7	−89.75	52.02	4.68	0.80	148	1	61.8	9/GR12	10
CAN01404	−91.20	7	−84.82	52.42	3.10	2.05	152	1	60.4	9/GR13	10
CAN01405	−82.20	7	−84.00	52.39	2.84	2.29	172	1	60.3	9/GR14	10
CAN01504	−91.20	7	−72.66	53.77	3.57	1.67	156	1	60.2	9/GR13	10
CAN01505	−82.20	7	−71.77	53.79	3.30	1.89	162	1	60.1	9/GR14	10
CAN01605	−82.20	7	−61.50	49.55	2.65	1.40	143	1	60.3	9/GR14	10
CAN01606	−70.70	7	−61.30	49.55	2.40	1.65	148	1	60.2	10	
CHLCONT5	−106.20	7	−72.23	−35.57	2.60	0.80	55	1	59.4	9/GR17	
CHLPAC02	−106.20	7	−80.06	−30.06	1.36	0.80	69	1	59.2	9/GR17	
CLMAND01	−115.20	7	−74.72	5.93	3.85	1.63	114	1	65.0	9/GR5	
CLM00001	−103.20	7	−74.50	5.87	3.98	1.96	118	1	63.6	10	
CUB00001	−89.20	7	−79.81	21.62	2.24	0.80	168	1	61.1		
EQACAND1	−115.20	7	−78.40	−1.61	1.37	0.95	75	1	64.1	9/GR5	
EQAGAND1	−115.20	7	−90.34	−0.62	0.90	0.81	89	1	61.3	9/GR5	
GRD00002	−42.20	7	−61.58	12.29	0.80	0.80	90	1	58.8		
GRD00059	−57.20	7	−61.58	12.29	0.80	0.80	90	1	58.5		
GRLDNK01	−53.20	7	−44.89	66.56	2.70	0.82	173	1	60.0	2	10
HWA00002	−166.20	7	−165.79	23.42	4.20	0.80	160	1	58.8	9/GR1	10
HWA00003	−175.20	7	−166.10	23.42	4.25	0.80	159	1	58.8	9/GR2	10

12311,48 MHz (7)

1	2	3	4		5		6	7	8	9	
MEX01NTE	−78.20	7	−105.81	26.01	2.89	2.08	155	1	60.5	1	
MEX01SUR	−69.20	7	−94.84	19.82	3.05	2.09	4	1	62.3	1	10
MEX02NTE	−136.20	7	−107.21	26.31	3.84	1.55	148	1	61.2	1	10
MEX02SUR	−127.20	7	−96.39	19.88	3.18	1.87	157	1	62.6	1	10
PAQPAC01	−106.20	7	−109.18	−27.53	0.80	0.80	90	1	56.2	9/GR17	
PRG00002	−99.20	7	−58.66	−23.32	1.45	1.04	76	1	60.2		
PRUAND02	−115.20	7	−74.69	−8.39	3.41	1.79	95	1	64.0	9/GR5	
PTRVIR01	−101.20	7	−65.85	18.12	0.80	0.80	90	1	60.6	1 6 9/GR20	
PTRVIR02	−110.20	7	−65.86	18.12	0.80	0.80	90	1	61.0	1 6 9/GR21	
SURINAM2	−84.70	7	−55.69	4.35	1.00	0.80	86	1	63.2		
URG00001	−71.70	7	−56.22	−32.52	1.02	0.89	11	1	60.0		
USAEH001	−61.70	7	−85.19	36.21	5.63	3.33	22	1	61.8	1 5 6	10
USAEH002	−101.20	7	−89.24	36.16	5.67	3.76	170	1	61.7	1 6 9/GR20	10
USAEH003	−110.20	7	−90.14	36.11	5.55	3.55	161	1	62.1	1 6 9/GR21	10
USAEH004	−119.20	7	−91.16	36.05	5.38	3.24	152	1	62.6	1 5 6	10
USAPSA02	−166.20	7	−117.80	40.58	4.03	0.82	135	1	63.3	9/GR1	
USAPSA03	−175.20	7	−118.27	40.12	3.62	0.80	136	1	65.0	9/GR2	
USAWH101	−148.20	7	−109.65	38.13	5.53	1.95	142	1	62.1	10	
USAWH102	−157.20	7	−111.41	38.57	5.51	1.54	138	1	63.2	10	
VENAND03	−115.20	7	−67.04	6.91	2.37	1.43	111	1	67.3	9/GR5	

ALS00002	−165.80	8	−149.63	58.52	3.81	1.23	171	2	59.8	9/GR1	10
ALS00003	−174.80	8	−150.95	58.54	3.77	1.11	167	2	60.0	9/GR2	10
ARGNORT4	−93.80	8	−63.96	−30.01	3.86	1.99	48	2	65.7	10	
ARGNORT5	−54.80	8	−62.85	−29.80	3.24	2.89	47	2	63.5	10	
B CE311	−63.80	8	−40.60	−6.07	3.04	2.06	174	2	61.6	8 9/GR7	10
B CE312	−44.80	8	−40.26	−6.06	3.44	2.09	174	2	61.0	8 9/GR9	10
B CE411	−63.80	8	−50.97	−15.26	3.86	1.38	49	2	62.6	8 9/GR7	10
B CE412	−44.80	8	−50.71	−15.30	3.57	1.56	52	2	62.8	8 9/GR9	10
B CE511	−63.80	8	−53.11	−2.98	2.42	2.15	107	2	63.1	8 9/GR7	10
B NO611	−73.80	8	−59.60	−11.62	2.86	1.69	165	1	62.9	8 9/GR8	10
B NO711	−73.80	8	−60.70	−1.78	3.54	1.78	126	1	62.8	8 9/GR8	10
B NO811	−73.80	8	−68.75	−4.71	2.37	1.65	73	1	62.8	8 9/GR8	
B SE911	−101.80	8	−45.99	−19.09	2.22	0.80	62	2	65.3	8	10
B SU111	−80.80	8	−51.10	−25.64	2.76	1.06	50	2	62.9	8 9/GR6	10
B SU112	−44.80	8	−50.76	−25.62	2.47	1.48	56	2	62.3	8 9/GR9	
B SU211	−80.80	8	−44.51	−16.94	3.22	1.37	60	2	62.5	8 9/GR6	10
B SU212	−44.80	8	−43.99	−16.97	3.27	1.92	59	2	61.3	8 9/GR9	
CAN01101	−137.80	8	−125.60	57.24	3.45	1.27	157	2	59.5	9/GR10	10
CAN01201	−137.80	8	−111.92	55.89	3.33	0.98	151	2	59.6	9/GR10	10
CAN01202	−72.30	8	−107.64	55.62	2.75	1.11	32	2	59.6		
CAN01203	−128.80	8	−111.43	55.56	3.07	1.15	151	2	59.5	9/GR12	10
CAN01303	−128.80	8	−102.39	57.12	3.54	0.92	154	2	60.1	9/GR12	10
CAN01304	−90.80	8	−99.00	57.33	1.96	1.73	1	2	59.8	9/GR13	
CAN01403	−128.80	8	−89.70	52.02	4.67	0.80	148	2	61.8	9/GR12	10

12326,06 MHz (8)

1	2	3	4		5		6	7	8	9	
CAN01404	−90.80	8	−84.78	52.41	3.09	2.06	153	2	60.4	9/GR13	10
CAN01405	−81.80	8	−84.02	52.34	2.82	2.30	172	2	60.3	9/GR14	10
CAN01504	−90.80	8	−72.68	53.78	3.57	1.67	157	2	60.2	9/GR13	10
CAN01505	−81.80	8	−71.76	53.76	3.30	1.89	162	2	60.2	9/GR14	10
CAN01605	−81.80	8	−61.54	49.50	2.66	1.39	144	2	60.3	9/GR14	10
CAN01606	−70.30	8	−61.32	49.51	2.41	1.65	148	2	60.2	10	
CHLCONT4	−105.80	8	−69.59	−23.20	2.21	0.80	68	2	59.1	9/GR16	
CHLCONT6	−105.80	8	−73.52	−55.52	3.65	1.31	39	2	59.6	9/GR16	
CRBBAH01	−92.30	8	−76.09	24.13	1.83	0.80	141	1	61.7	9/GR18	
CRBBER01	−92.30	8	−64.76	32.13	0.80	0.80	90	1	56.8	9/GR18	
CRBBLZ01	−92.30	8	−88.61	17.26	0.80	0.80	90	1	58.7	9/GR18	
CRBEC001	−92.30	8	−60.07	8.26	4.20	0.86	115	1	64.3	9/GR18	10
CRBJMC01	−92.30	8	−79.45	17.97	0.99	0.80	151	1	61.1	9/GR18	
CYM00001	−115.80	8	−80.58	19.57	0.80	0.80	90	2	59.6		
DOMIFRB2	−83.30	8	−70.51	18.79	0.98	0.80	167	2	61.1		
EQAC0001	−94.80	8	−78.31	−1.52	1.48	1.15	65	1	63.0	9/GR19	
EQAG0001	−94.80	8	−90.36	−0.57	0.94	0.89	99	1	61.0	9/GR19	
GUFMGG02	−52.80	8	−56.42	8.47	4.16	0.81	123	2	62.7	2 7	10
HWA00002	−165.80	8	−165.79	23.32	4.20	0.80	160	2	58.8	9/GR1	10
HWA00003	−174.80	8	−166.10	23.42	4.25	0.80	159	2	58.8	9/GR2	10
JMC00005	−33.80	8	−77.27	18.12	0.80	0.80	90	2	60.6		
LCAIFRB1	−79.30	8	−61.15	13.90	0.80	0.80	90	2	58.4		
MEX01NTE	−77.80	8	−105.80	25.99	2.88	2.07	155	2	60.5	1	
MEX02NTE	−135.80	8	−107.36	26.32	3.80	1.57	149	2	61.2	1	10

MEX02SUR	−126.80	8	−96.39	19.88	3.19	1.87	158	2	62.5	1	10
PRU00004	−85.80	8	−74.19	−8.39	3.74	2.45	112	2	62.9	10	
PTRVIR01	−100.80	8	−65.85	18.12	0.80	0.80	90	2	60.6	1 6 9/GR20	
PTRVIR02	−109.80	8	−65.85	18.12	0.80	0.80	90	2	61.1	1 6 9/GR21	
SLVIFRB2	−107.30	8	−88.91	13.59	0.80	0.80	90	1	61.7		
USAEH001	−61.30	8	−85.16	36.21	5.63	3.32	22	2	61.9	1 5 6	10
USAEH002	−100.80	8	−89.28	36.16	5.65	3.78	170	2	61.7	1 6 9/GR20	10
USAEH003	−109.80	8	−90.12	36.11	5.55	3.56	161	2	62.1	1 6 9/GR21	10
USAEH004	−118.80	8	−91.16	36.05	5.38	3.24	153	2	62.6	1 5 6	10
USAPSA02	−165.80	8	−117.79	40.58	4.04	0.82	135	2	63.3	9/GR1	
USAPSA03	−174.80	8	−118.20	40.15	3.63	0.80	136	2	65.0	9/GR2	
USAWH101	−147.80	8	−109.70	38.13	5.52	1.96	142	2	62.1	10	
USAWH102	−156.80	8	−111.40	38.57	5.51	1.55	138	2	63.2	10	
VEN11VEN	−103.80	8	−66.79	6.90	2.50	1.77	122	2	65.2	10	

12340,64 MHz (9)

1	2	3	4		5		6	7	8	9	
ALS00002	−166.20	9	−149.66	58.37	3.76	1.24	170	1	59.7	9/GR1	10
ALS00003	−175.20	9	−150.98	58.53	3.77	1.11	167	1	60.0	9/GR2	10
ARGINSU4	−94.20	9	−52.98	−59.81	3.40	0.80	19	1	59.9	9/GR3	
ARGSUR04	−94.20	9	−65.04	−43.33	3.32	1.50	40	1	60.7	9/GR3	10
B CE311	−64.20	9	−40.60	−6.07	3.04	2.06	174	1	61.6	8 9/GR7	10
B CE312	−45.20	9	−40.27	−6.06	3.44	2.09	174	1	61.0	8 9/GR9	10
B CE411	−64.20	9	−50.97	−15.27	3.86	1.38	49	1	62.6	8 9/GR7	10
B CE412	−45.20	9	−50.71	−15.30	3.57	1.56	52	1	62.7	8 9/GR9	10
B CE511	−64.20	9	−53.10	−2.90	2.44	2.13	104	1	63.0	8 9/GR7	10
B NO611	−74.20	9	−59.60	−11.62	2.85	1.69	165	2	62.8	8 9/GR8	10
B NO711	−74.20	9	−60.70	−1.78	3.54	1.78	126	2	62.8	8 9/GR8	10
B NO811	−74.20	9	−68.76	−4.71	2.37	1.65	73	2	62.8	8 9/GR8	
B SU111	−81.20	9	−51.12	−25.63	2.76	1.05	50	1	62.8	8 9/GR6	10
B SU112	−45.20	9	−50.75	−25.62	2.47	1.48	56	1	62.2	8 9/GR9	
B SU211	−81.20	9	−44.51	−16.95	3.22	1.36	60	1	62.5	8 9/GR6	10
B SU212	−45.20	9	−44.00	−16.87	3.20	1.96	58	1	61.3	8 9/GR9	
B AHIFRB1	−87.20	9	−76.06	24.16	1.81	0.80	142	1	61.6		
BERBERMU	−96.20	9	−64.77	32.32	0.80	0.80	90	2	56.8		
B ERBER02	−31.00	9	−64.77	32.32	0.80	0.80	90	1	56.9	2	10
B OLAND01	−115.20	9	−65.04	−16.76	2.49	1.27	76	1	67.9	9/GR5	
CAN01101	−138.20	9	−125.63	57.24	3.45	1.27	157	1	59.5	9/GR10	10
CAN01201	−138.20	9	−112.04	55.95	3.35	0.97	151	1	59.6	9/GR10	10
CAN01202	−72.70	9	−107.70	55.63	2.74	1.12	32	1	59.6		
CAN01203	−129.20	9	−111.48	55.61	3.08	1.15	151	1	59.5	9/GR12	10

CAN01303	−129.20	9	−102.42	57.12	3.54	0.91	154	1	60.0	9/GR12	10
CAN01304	−91.20	9	−99.12	57.36	1.98	1.72	2	1	59.8	9/GR13	
CAN01403	−129.20	9	−89.75	52.02	4.68	0.80	148	1	61.8	9/GR12	10
CAN01404	−91.20	9	−84.82	52.42	3.10	2.05	152	1	60.4	9/GR13	10
CAN01405	−82.20	9	−84.00	52.39	2.84	2.29	172	1	60.3	9/GR14	10
CAN01504	−91.20	9	−72.66	53.77	3.57	1.67	156	1	60.2	9/GR13	10
CAN01505	−82.20	9	−71.77	53.79	3.30	1.89	162	1	60.1	9/GR14	10
CAN01605	−82.20	9	−61.50	49.55	2.65	1.40	143	1	60.3	9/GR14	10
CAN01606	−70.70	9	−61.30	49.55	2.40	1.65	148	1	60.2	10	
CHLCONT5	−106.20	9	−72.23	−35.57	2.60	0.80	55	1	59.4	9/GR17	
CHLPAC02	−106.20	9	−80.06	−30.06	1.36	0.80	69	1	59.2	9/GR17	
CLMAND01	−115.20	9	−74.72	5.93	3.85	1.63	114	1	64.9	9/GR5	
CLM00001	−103.20	9	−74.50	5.87	3.98	1.96	118	1	63.5	10	
EQACAND1	−115.20	9	−78.40	−1.61	1.37	0.95	75	1	64.0	9/GR5	
EQAGAND1	−115.20	9	−90.34	−0.62	0.90	0.81	89	1	61.3	9/GR5	
FLKANT01	−57.20	9	−44.54	−60.13	3.54	0.80	12	1	59.3	2	10
FLKFALKS	−31.00	9	−59.90	−51.64	0.80	0.80	90	1	58.1	2	
GRD00002	−42.20	9	−61.58	12.29	0.80	0.80	90	1	58.8		
HWA00002	−166.20	9	−165.79	23.42	4.20	0.80	160	1	58.8	9/GR1	10
HWA00003	−175.20	9	−166.10	23.42	4.25	0.80	159	1	58.8	9/GR2	10
MEX01NTE	−78.20	9	−105.81	26.01	2.89	2.08	155	1	60.5	1	
MEX01SUR	−69.20	9	−94.84	19.82	3.05	2.09	4	1	62.2	1	10
MEX02NTE	−136.20	9	−107.21	26.31	3.84	1.55	148	1	61.2	1	10
MEX02SUR	−127.20	9	−96.39	19.88	3.18	1.87	157	1	62.5	1	10

12340,64 MHz (9)

1	2	3	4		5		6	7	8	9	
PAQPAC01	–106.20	9	–109.18	–27.53	0.80	0.80	90	1	56.2	9/GR17	
PRG00002	–99.20	9	–58.66	–23.32	1.45	1.04	76	1	60.2		
PRUAND02	–115.20	9	–74.69	–8.39	3.41	1.79	95	1	63.9	9/GR5	
PTRVIR01	–101.20	9	–65.85	18.12	0.80	0.80	90	1	60.5	1 6 9/GR20	
PTRVIR02	–110.20	9	–65.86	18.12	0.80	0.80	90	1	61.0	1 6 9/GR21	
SPMFRAN3	–53.20	9	–67.24	47.51	3.16	0.80	7	1	60.4	2 7	10
TRD00001	–84.70	9	–61.23	10.70	0.80	0.80	90	1	59.4		
URG00001	–71.70	9	–56.22	–32.52	1.02	0.89	11	1	60.0		
USAEH001	–61.70	9	–85.19	36.21	5.63	3.33	22	1	61.8	1 5 6	10
USAEH002	–101.20	9	–89.24	36.16	5.67	3.76	170	1	61.7	1 6 9/GR20	10
USAEH003	–110.20	9	–90.14	36.11	5.55	3.55	161	1	62.0	1 6 9/GR21	10
USAEH004	–119.20	9	–91.16	36.05	5.38	3.24	152	1	62.6	1 5 6	10
USAPSA02	–166.20	9	–117.80	40.58	4.03	0.82	135	1	63.2	9/GR1	
USAPSA03	–175.20	9	–118.27	40.12	3.62	0.80	136	1	65.0	9/GR2	
USAWH101	–148.20	9	–109.65	38.13	5.53	1.95	142	1	62.1	10	
USAWH102	–157.20	9	–111.41	38.57	5.51	1.54	138	1	63.2	10	
VENAND03	–115.20	9	–67.04	6.91	2.37	1.43	111	1	67.2	9/GR5	
VRG00001	–79.70	9	–64.37	18.48	0.80	0.80	90	1	58.3	4	

ALS00002	−165.80	10	−149.63	58.52	3.81	1.23	171	2	59.7	9/GR1	10
ALS00003	−174.80	10	−150.95	58.54	3.77	1.11	167	2	60.0	9/GR2	10
ARGNORT4	−93.80	10	−63.96	−30.01	3.86	1.99	48	2	65.6	10	
ARGNORT5	−54.80	10	−62.85	−29.80	3.24	2.89	47	2	63.5	10	
ATNBEAM1	−52.80	10	−66.44	14.87	1.83	0.80	39	2	61.0		
B CE311	−63.80	10	−40.60	−6.07	3.04	2.06	174	2	61.6	8 9/GR7	10
B CE312	−44.80	10	−40.26	−6.06	3.44	2.09	174	2	61.0	8 9/GR9	10
B CE411	−63.80	10	−50.97	−15.26	3.86	1.38	49	2	62.6	8 9/GR7	10
B CE412	−44.80	10	−50.71	−15.30	3.57	1.56	52	2	62.7	8 9/GR9	10
B CE511	−63.80	10	−53.11	−2.98	2.42	2.15	107	2	63.1	8 9/GR7	10
B NO611	−73.80	10	−59.60	−11.62	2.86	1.69	165	1	62.8	8 9/GR8	10
B NO711	−73.80	10	−60.70	−1.78	3.54	1.78	126	1	62.8	8 9/GR8	10
B NO811	−73.80	10	−68.75	−4.71	2.37	1.65	73	1	62.8	8 9/GR8	
B SE911	−101.80	10	−45.99	−19.09	2.22	0.80	62	2	65.3	8	10
B SU111	−80.80	10	−51.10	−25.64	2.76	1.06	50	2	62.8	8 9/GR6	10
B SU112	−44.80	10	−50.76	−25.62	2.47	1.48	56	2	62.3	8 9/GR9	
B SU211	−80.80	10	−44.51	−16.94	3.22	1.37	60	2	62.5	8 9/GR6	10
B SU212	−44.80	10	−43.99	−16.97	3.27	1.92	59	2	61.3	8 9/GR9	
CAN01101	−137.80	10	−125.60	57.24	3.45	1.27	157	2	59.5	9/GR10	10
CAN01201	−137.80	10	−111.92	55.89	3.33	0.98	151	2	59.6	9/GR10	10
CAN01202	−72.30	10	−107.64	55.62	2.75	1.11	32	2	59.6		
CAN01203	−128.80	10	−111.43	55.56	3.07	1.15	151	2	59.5	9/GR12	10
CAN01303	−128.80	10	−102.39	57.12	3.54	0.92	154	2	60.0	9/GR12	10
CAN01304	−90.80	10	−99.00	57.33	1.96	1.73	1	2	59.8	9/GR13	

12355,22 MHz (10)

1	2	3	4		5		6	7	8	9	
CAN01403	−128.80	10	−89.70	52.02	4.67	0.80	148	2	61.8	9/GR12	10
CAN01404	−90.80	10	−84.78	52.41	3.09	2.06	153	2	60.4	9/GR13	10
CAN01405	−81.80	10	−84.02	52.34	2.82	2.30	172	2	60.3	9/GR14	10
CAN01504	−90.80	10	−72.68	53.78	3.57	1.67	157	2	60.2	9/GR13	10
CAN01505	−81.80	10	−71.76	53.76	3.30	1.89	162	2	60.1	9/GR14	10
CAN01605	−81.80	10	−61.54	49.50	2.66	1.39	144	2	60.3	9/GR14	10
CAN01606	−70.30	10	−61.32	49.51	2.41	1.65	148	2	60.2	10	
CHLCONT4	−105.80	10	−69.59	−23.20	2.21	0.80	68	2	59.1	9/GR16	
CHLCONT6	−105.80	10	−73.52	−55.52	3.65	1.31	39	2	59.6	9/GR16	
CRBBAH01	−92.30	10	−76.09	24.13	1.83	0.80	141	1	61.7	9/GR18	
CRBBER01	−92.30	10	−64.76	32.13	0.80	0.80	90	1	56.7	9/GR18	
CRBBLZ01	−92.30	10	−88.61	17.26	0.80	0.80	90	1	58.6	9/GR18	
CRBEC001	−92.30	10	−60.07	8.26	4.20	0.86	115	1	64.2	9/GR18	10
CRBJMC01	−92.30	10	−79.45	17.97	0.99	0.80	151	1	61.1	9/GR18	
CTR00201	−130.80	10	−84.33	9.67	0.82	0.80	119	2	65.6		
EQAC0001	−94.80	10	−78.31	−1.52	1.48	1.15	65	1	63.0	9/GR19	
EQAG0001	−94.80	10	−90.36	−0.57	0.94	0.89	99	1	61.0	9/GR19	
GUY00302	−33.80	10	−59.07	4.77	1.43	0.85	91	2	63.5		
HNDIFRB2	−107.30	10	−86.23	15.16	1.14	0.85	8	1	63.4		
HTI00002	−83.30	10	−73.28	18.96	0.82	0.80	11	2	60.9		
HWA00002	−165.80	10	−165.79	23.32	4.20	0.80	160	2	58.8	9/GR1	10
HWA00003	−174.80	10	−166.10	23.42	4.25	0.80	159	2	58.8	9/GR2	10
MEX01NTE	−77.80	10	−105.80	25.99	2.88	2.07	155	2	60.5	1	
MEX02NTE	−135.80	10	−107.36	26.32	3.80	1.57	149	2	61.2	1	10

MEX02SUR	−126.80	10	−96.39	19.88	3.19	1.87	158	2	62.5	1	10
PRU00004	−85.80	10	−74.19	−8.39	3.74	2.45	112	2	62.8	10	
PTRVIR01	−100.80	10	−65.85	18.12	0.80	0.80	90	2	60.6	1 6 9/GR20	
PTRVIR02	−109.80	10	−65.85	18.12	0.80	0.80	90	2	61.1	1 6 9/GR21	
TCA00001	−115.80	10	−71.79	21.53	0.80	0.80	90	2	60.4		
USAEH001	−61.30	10	−85.16	36.21	5.63	3.32	22	2	61.8	1 5 6	10
USAEH002	−100.80	10	−89.28	36.16	5.65	3.78	170	2	61.7	1 6 9/GR20	10
USAEH003	−109.80	10	−90.12	36.11	5.55	3.56	161	2	62.1	1 6 9/GR21	10
USAEH004	−118.80	10	−91.16	36.05	5.38	3.24	153	2	62.6	1 5 6	10
USAPSA02	−165.80	10	−117.79	40.58	4.04	0.82	135	2	63.2	9/GR1	
USAPSA03	−174.80	10	−118.20	40.15	3.63	0.80	136	2	64.9	9/GR2	
USAWH101	−147.80	10	−109.70	38.13	5.52	1.96	142	2	62.1	10	
USAWH102	−156.80	10	−111.40	38.57	5.51	1.55	138	2	63.2	10	
VCT00001	−79.30	10	−61.18	13.23	0.80	0.80	90	2	58.4		
VEN11VEN	−103.80	10	−66.79	6.90	2.50	1.77	122	2	65.1	10	

12369,80 MHz (11)

1	2	3	4		5		6	7	8	9	
ALS00002	–166.20	11	–149.66	58.37	3.76	1.24	170	1	59.8	9/GR1	10
ALS00003	–175.20	11	–150.98	58.53	3.77	1.11	167	1	60.0	9/GR2	10
ARGINSU4	–94.20	11	–52.98	–59.81	3.40	0.80	19	1	59.9	9/GR3	
ARGINSU5	–55.20	11	–44.17	–59.91	3.77	0.80	13	1	59.3	9/GR4	10
ARGSUR04	–94.20	11	–65.04	–43.33	3.32	1.50	40	1	60.7	9/GR3	10
ARGSUR05	–55.20	11	–63.68	–43.01	2.54	2.38	152	1	60.1	9/GR4	10
ATGSJN01	–79.70	11	–61.79	17.07	0.80	0.80	90	1	58.4		
B CE311	–64.20	11	–40.60	–6.07	3.04	2.06	174	1	61.6	8 9/GR7	10
B CE312	–45.20	11	–40.27	–6.06	3.44	2.09	174	1	61.0	8 9/GR9	10
B CE411	–64.20	11	–50.97	–15.27	3.86	1.38	49	1	62.6	8 9/GR7	10
B CE412	–45.20	11	–50.71	–15.30	3.57	1.56	52	1	62.7	8 9/GR9	10
B CE511	–64.20	11	–53.10	–2.90	2.44	2.13	104	1	63.1	8 9/GR7	10
B NO611	–74.20	11	–59.60	–11.62	2.85	1.69	165	2	62.9	8 9/GR8	10
B NO711	–74.20	11	–60.70	–1.78	3.54	1.78	126	2	62.8	8 9/GR8	10
B NO811	–74.20	11	–68.76	–4.71	2.37	1.65	73	2	62.8	8 9/GR8	
B SU111	–81.20	11	–51.12	–25.63	2.76	1.05	50	1	62.9	8 9/GR6	10
B SU112	–45.20	11	–50.75	–25.62	2.47	1.48	56	1	62.3	8 9/GR9	
B SU211	–81.20	11	–44.51	–16.95	3.22	1.36	60	1	62.5	8 9/GR6	10
B SU212	–45.20	11	–44.00	–16.87	3.20	1.96	58	1	61.3	8 9/GR9	
BERBERMU	–96.20	11	–64.77	32.32	0.80	0.80	90	2	56.8		
B OLAND01	–115.20	11	–65.04	–16.76	2.49	1.27	76	1	67.9	9/GR5	
B OL00001	–87.20	11	–64.61	–16.71	2.52	2.19	85	1	63.8	10	
B RB00001	–92.70	11	–59.85	12.93	0.80	0.80	90	2	59.1		
CAN01101	–138.20	11	–125.63	57.24	3.45	1.27	157	1	59.5	9/GR10	10

CAN01201	−138.20	11	−112.04	55.95	3.35	0.97	151	1	59.6	9/GR10	10
CAN01202	−72.70	11	−107.70	55.63	2.74	1.12	32	1	59.6		
CAN01203	−129.20	11	−111.48	55.61	3.08	1.15	151	1	59.5	9/GR12	10
CAN01303	−129.20	11	−102.42	57.12	3.54	0.91	154	1	60.1	9/GR12	10
CAN01304	−91.20	11	−99.12	57.36	1.98	1.72	2	1	59.8	9/GR13	
CAN01403	−129.20	11	−89.75	52.02	4.68	0.80	148	1	61.8	9/GR12	10
CAN01404	−91.20	11	−84.82	52.42	3.10	2.05	152	1	60.4	9/GR13	10
CAN01405	−82.20	11	−84.00	52.39	2.84	2.29	172	1	60.3	9/GR14	10
CAN01504	−91.20	11	−72.66	53.77	3.57	1.67	156	1	60.2	9/GR13	10
CAN01505	−82.20	11	−71.77	53.79	3.30	1.89	162	1	60.1	9/GR14	10
CAN01605	−82.20	11	−61.50	49.55	2.65	1.40	143	1	60.3	9/GR14	10
CAN01606	−70.70	11	−61.30	49.55	2.40	1.65	148	1	60.2	10	
CHLCONT5	−106.20	11	−72.23	−35.57	2.60	0.80	55	1	59.4	9/GR17	
CHLPAC02	−106.20	11	−80.06	−30.06	1.36	0.80	69	1	59.2	9/GR17	
CLMAND01	−115.20	11	−74.72	5.93	3.85	1.63	114	1	65.0	9/GR5	
CLM00001	−103.20	11	−74.50	5.87	3.98	1.96	118	1	63.6	10	
CUB00001	−89.20	11	−79.81	21.62	2.24	0.80	168	1	61.1		
EQACAND1	−115.20	11	−78.40	−1.61	1.37	0.95	75	1	64.1	9/GR5	
EQAGAND1	−115.20	11	−90.34	−0.62	0.90	0.81	89	1	61.3	9/GR5	
GRD00002	−42.20	11	−61.58	12.29	0.80	0.80	90	1	58.8		
GRD00059	−57.20	11	−61.58	12.29	0.80	0.80	90	1	58.5		
GRLDNK01	−53.20	11	−44.89	66.56	2.70	0.82	173	1	60.0	2	10
GUY00201	−84.70	11	−59.19	4.78	1.44	0.85	95	1	63.5		
HWA00002	−166.20	11	−165.79	23.42	4.20	0.80	160	1	58.8	9/GR1	10

12369,80 MHz (11)

1	2	3	4		5		6	7	8	9	
HWA00003	−175.20	11	−166.10	23.42	4.25	0.80	159	1	58.8	9/GR2	10
MEX01NTE	−78.20	11	−105.81	26.01	2.89	2.08	155	1	60.5	1	
MEX01SUR	−69.20	11	−94.84	19.82	3.05	2.09	4	1	62.3	1	10
MEX02NTE	−136.20	11	−107.21	26.31	3.84	1.55	148	1	61.2	1	10
MEX02SUR	−127.20	11	−96.39	19.88	3.18	1.87	157	1	62.6	1	10
PAQPAC01	−106.20	11	−109.18	−27.53	0.80	0.80	90	1	56.2	9/GR17	
PRG00002	−99.20	11	−58.66	−23.32	1.45	1.04	76	1	60.2		
PRUAND02	−115.20	11	−74.69	−8.39	3.41	1.79	95	1	64.0	9/GR5	
PTRVIR01	−101.20	11	−65.85	18.12	0.80	0.80	90	1	60.6	1 6 9/GR20	
PTRVIR02	−110.20	11	−65.86	18.12	0.80	0.80	90	1	61.0	1 6 9/GR21	
URG00001	−71.70	11	−56.22	−32.52	1.02	0.89	11	1	60.0		
USAEH001	−61.70	11	−85.19	36.21	5.63	3.33	22	1	61.8	1 5 6	10
USAEH002	−101.20	11	−89.24	36.16	5.67	3.76	170	1	61.7	1 6 9/GR20	10
USAEH003	−110.20	11	−90.14	36.11	5.55	3.55	161	1	62.1	1 6 9/GR21	10
USAEH004	−119.20	11	−91.16	36.05	5.38	3.24	152	1	62.6	1 5 6	10
USAPSA02	−166.20	11	−117.80	40.58	4.03	0.82	135	1	63.3	9/GR1	
USAPSA03	−175.20	11	−118.27	40.12	3.62	0.80	136	1	65.0	9/GR2	
USAWH101	−148.20	11	−109.65	38.13	5.53	1.95	142	1	62.1	10	
USAWH102	−157.20	11	−111.41	38.57	5.51	1.54	138	1	63.2	10	
VENAND03	−115.20	11	−67.04	6.91	2.37	1.43	111	1	67.3	9/GR5	

ALS00002	−165.80	12	−149.63	58.52	3.81	1.23	171	2	59.8	9/GR1	10
ALS00003	−174.80	12	−150.95	58.54	3.77	1.11	167	2	60.0	9/GR2	10
ARGNORT4	−93.80	12	−63.96	−30.01	3.86	1.99	48	2	65.7	10	
ARGNORT5	−54.80	12	−62.85	−29.80	3.24	2.89	47	2	63.5	10	
B CE311	−63.80	12	−40.60	−6.07	3.04	2.06	174	2	61.6	8 9/GR7	10
B CE312	−44.80	12	−40.26	−6.06	3.44	2.09	174	2	61.0	8 9/GR9	10
B CE411	−63.80	12	−50.97	−15.26	3.86	1.38	49	2	62.6	8 9/GR7	10
B CE412	−44.80	12	−50.71	−15.30	3.57	1.56	52	2	62.8	8 9/GR9	10
B CE511	−63.80	12	−53.11	−2.98	2.42	2.15	107	2	63.1	8 9/GR7	10
B NO611	−73.80	12	−59.60	−11.62	2.86	1.69	165	1	62.9	8 9/GR8	10
B NO711	−73.80	12	−60.70	−1.78	3.54	1.78	126	1	62.8	8 9/GR8	10
B NO811	−73.80	12	−68.75	−4.71	2.37	1.65	73	1	62.8	8 9/GR8	
B SE911	−101.80	12	−45.99	−19.09	2.22	0.80	62	2	65.3	8	10
B SU111	−80.80	12	−51.10	−25.64	2.76	1.06	50	2	62.9	8 9/GR6	10
B SU112	−44.80	12	−50.76	−25.62	2.47	1.48	56	2	62.3	8 9/GR9	
B SU211	−80.80	12	−44.51	−16.94	3.22	1.37	60	2	62.5	8 9/GR6	10
B SU212	−44.80	12	−43.99	−16.97	3.27	1.92	59	2	61.3	8 9/GR9	
CAN01101	−137.80	12	−125.60	57.24	3.45	1.27	157	2	59.5	9/GR10	10
CAN01201	−137.80	12	−111.92	55.89	3.33	0.98	151	2	59.6	9/GR10	10
CAN01202	−72.30	12	−107.64	55.62	2.75	1.11	32	2	59.6		
CAN01203	−128.80	12	−111.43	55.56	3.07	1.15	151	2	59.5	9/GR12	10
CAN01303	−128.80	12	−102.39	57.12	3.54	0.92	154	2	60.1	9/GR12	10
CAN01304	−90.80	12	−99.00	57.33	1.96	1.73	1	2	59.8	9/GR13	
CAN01403	−128.80	12	−89.70	52.02	4.67	0.80	148	2	61.8	9/GR12	10

12384,38 MHz (12)

1	2	3	4		5		6	7	8	9	
CAN01404	−90.80	12	−84.78	52.41	3.09	2.06	153	2	60.4	9/GR13	10
CAN01405	−81.80	12	−84.02	52.34	2.82	2.30	172	2	60.3	9/GR14	10
CAN01504	−90.80	12	−72.68	53.78	3.57	1.67	157	2	60.2	9/GR13	10
CAN01505	−81.80	12	−71.76	53.76	3.30	1.89	162	2	60.2	9/GR14	10
CAN01605	−81.80	12	−61.54	49.50	2.66	1.39	144	2	60.3	9/GR14	10
CAN01606	−70.30	12	−61.32	49.51	2.41	1.65	148	2	60.2	10	
CHLCONT4	−105.80	12	−69.59	−23.20	2.21	0.80	68	2	59.1	9/GR16	
CHLCONT6	−105.80	12	−73.52	−55.52	3.65	1.31	39	2	59.6	9/GR16	
CRBBAH01	−92.30	12	−76.09	24.13	1.83	0.80	141	1	61.7	9/GR18	
CRBBER01	−92.30	12	−64.76	32.13	0.80	0.80	90	1	56.8	9/GR18	
CRBBLZ01	−92.30	12	−88.61	17.26	0.80	0.80	90	1	58.7	9/GR18	
CRBEC001	−92.30	12	−60.07	8.26	4.20	0.86	115	1	64.3	9/GR18	10
CRBJMC01	−92.30	12	−79.45	17.97	0.99	0.80	151	1	61.1	9/GR18	
CYM00001	−115.80	12	−80.58	19.57	0.80	0.80	90	2	59.6		
DOMIFRB2	−83.30	12	−70.51	18.79	0.98	0.80	167	2	61.1		
EQAC0001	−94.80	12	−78.31	−1.52	1.48	1.15	65	1	63.0	9/GR19	
EQAG0001	−94.80	12	−90.36	−0.57	0.94	0.89	99	1	61.0	9/GR19	
GUFMGG02	−52.80	12	−56.42	8.47	4.16	0.81	123	2	62.7	2 7	10
HWA00002	−165.80	12	−165.79	23.32	4.20	0.80	160	2	58.8	9/GR1	10
HWA00003	−174.80	12	−166.10	23.42	4.25	0.80	159	2	58.8	9/GR2	10
JMC00005	−33.80	12	−77.27	18.12	0.80	0.80	90	2	60.6		
LCAIFRB1	−79.30	12	−61.15	13.90	0.80	0.80	90	2	58.4		
MEX01NTE	−77.80	12	−105.80	25.99	2.88	2.07	155	2	60.5	1	
MEX02NTE	−135.80	12	−107.36	26.32	3.80	1.57	149	2	61.2	1	10

MEX02SUR	−126.80	12	−96.39	19.88	3.19	1.87	158	2	62.5	1	10
PRU00004	−85.80	12	−74.19	−8.39	3.74	2.45	112	2	62.9	10	
PTRVIR01	−100.80	12	−65.85	18.12	0.80	0.80	90	2	60.6	1 6 9/GR20	
PTRVIR02	−109.80	12	−65.85	18.12	0.80	0.80	90	2	61.1	1 6 9/GR21	
SLVIFRB2	−107.30	12	−88.91	13.59	0.80	0.80	90	1	61.7		
USAEH001	−61.30	12	−85.16	36.21	5.63	3.32	22	2	61.9	1 5 6	10
USAEH002	−100.80	12	−89.28	36.16	5.65	3.78	170	2	61.7	1 6 9/GR20	10
USAEH003	−109.80	12	−90.12	36.11	5.55	3.56	161	2	62.1	1 6 9/GR21	10
USAEH004	−118.80	12	−91.16	36.05	5.38	3.24	153	2	62.6	1 5 6	10
USAPSA02	−165.80	12	−117.79	40.58	4.04	0.82	135	2	63.3	9/GR1	
USAPSA03	−174.80	12	−118.20	40.15	3.63	0.80	136	2	65.0	9/GR2	
USAWH101	−147.80	12	−109.70	38.13	5.52	1.96	142	2	62.1	10	
USAWH102	−156.80	12	−111.40	38.57	5.51	1.55	138	2	63.2	10	
VEN11VEN	−103.80	12	−66.79	6.90	2.50	1.77	122	2	65.2	10	

12398,96 MHz (13)

1	2	3	4		5		6	7	8	9	
ALS00002	−166.20	13	−149.66	58.37	3.76	1.24	170	1	59.7	9/GR1	10
ALS00003	−175.20	13	−150.98	58.53	3.77	1.11	167	1	60.0	9/GR2	10
ARGINSU4	−94.20	13	−52.98	−59.81	3.40	0.80	19	1	59.9	9/GR3	
ARGSUR04	−94.20	13	−65.04	−43.33	3.32	1.50	40	1	60.7	9/GR3	10
B CE311	−64.20	13	−40.60	−6.07	3.04	2.06	174	1	61.6	8 9/GR7	10
B CE312	−45.20	13	−40.27	−6.06	3.44	2.09	174	1	61.0	8 9/GR9	10
B CE411	−64.20	13	−50.97	−15.27	3.86	1.38	49	1	62.6	8 9/GR7	10
B CE412	−45.20	13	−50.71	−15.30	3.57	1.56	52	1	62.7	8 9/GR9	10
B CE511	−64.20	13	−53.10	−2.90	2.44	2.13	104	1	63.0	8 9/GR7	10
B NO611	−74.20	13	−59.60	−11.62	2.85	1.69	165	2	62.8	8 9/GR8	10
B NO711	−74.20	13	−60.70	−1.78	3.54	1.78	126	2	62.8	8 9/GR8	10
B NO811	−74.20	13	−68.76	−4.71	2.37	1.65	73	2	62.8	8 9/GR8	
B SU111	−81.20	13	−51.12	−25.63	2.76	1.05	50	1	62.8	8 9/GR6	10
B SU112	−45.20	13	−50.75	−25.62	2.47	1.48	56	1	62.2	8 9/GR9	
B SU211	−81.20	13	−44.51	−16.95	3.22	1.36	60	1	62.5	8 9/GR6	10
B SU212	−45.20	13	−44.00	−16.87	3.20	1.96	58	1	61.3	8 9/GR9	
B AHIFRB1	−87.20	13	−76.06	24.16	1.81	0.80	142	1	61.6		
BERBERMU	−96.20	13	−64.77	32.32	0.80	0.80	90	2	56.8		
B ERBER02	−31.00	13	−64.77	32.32	0.80	0.80	90	1	56.9	2	10
B OLAND01	−115.20	13	−65.04	−16.76	2.49	1.27	76	1	67.9	9/GR5	
CAN01101	−138.20	13	−125.63	57.24	3.45	1.27	157	1	59.5	9/GR10	10
CAN01201	−138.20	13	−112.04	55.95	3.35	0.97	151	1	59.6	9/GR10	10
CAN01202	−72.70	13	−107.70	55.63	2.74	1.12	32	1	59.6		
CAN01203	−129.20	13	−111.48	55.61	3.08	1.15	151	1	59.5	9/GR12	10

CAN01303	−129.20	13	−102.42	57.12	3.54	0.91	154	1	60.0	9/GR12	10
CAN01304	−91.20	13	−99.12	57.36	1.98	1.72	2	1	59.8	9/GR13	
CAN01403	−129.20	13	−89.75	52.02	4.68	0.80	148	1	61.8	9/GR12	10
CAN01404	−91.20	13	−84.82	52.42	3.10	2.05	152	1	60.4	9/GR13	10
CAN01405	−82.20	13	−84.00	52.39	2.84	2.29	172	1	60.3	9/GR14	10
CAN01504	−91.20	13	−72.66	53.77	3.57	1.67	156	1	60.2	9/GR13	10
CAN01505	−82.20	13	−71.77	53.79	3.30	1.89	162	1	60.1	9/GR14	10
CAN01605	−82.20	13	−61.50	49.55	2.65	1.40	143	1	60.3	9/GR14	10
CAN01606	−70.70	13	−61.30	49.55	2.40	1.65	148	1	60.2	10	
CHLCONT5	−106.20	13	−72.23	−35.57	2.60	0.80	55	1	59.4	9/GR17	
CHLPAC02	−106.20	13	−80.06	−30.06	1.36	0.80	69	1	59.2	9/GR17	
CLMAND01	−115.20	13	−74.72	5.93	3.85	1.63	114	1	64.9	9/GR5	
CLM00001	−103.20	13	−74.50	5.87	3.98	1.96	118	1	63.5	10	
EQACAND1	−115.20	13	−78.40	−1.61	1.37	0.95	75	1	64.0	9/GR5	
EQAGAND1	−115.20	13	−90.34	−0.62	0.90	0.81	89	1	61.3	9/GR5	
FLKANT01	−57.20	13	−44.54	−60.13	3.54	0.80	12	1	59.3	2	10
FLKFALKS	−31.00	13	−59.90	−51.64	0.80	0.80	90	1	58.1	2	
GRD00002	−42.20	13	−61.58	12.29	0.80	0.80	90	1	58.8		
HWA00002	−166.20	13	−165.79	23.42	4.20	0.80	160	1	58.8	9/GR1	10
HWA00003	−175.20	13	−166.10	23.42	4.25	0.80	159	1	58.8	9/GR2	10
MEX01NTE	−78.20	13	−105.81	26.01	2.89	2.08	155	1	60.5	1	
MEX01SUR	−69.20	13	−94.84	19.82	3.05	2.09	4	1	62.2	1	10
MEX02NTE	−136.20	13	−107.21	26.31	3.84	1.55	148	1	61.2	1	10
MEX02SUR	−127.20	13	−96.39	19.88	3.18	1.87	157	1	62.5	1	10

12398,96 MHz (13)

1	2	3	4		5		6	7	8	9	
PAQPAC01	–106.20	13	–109.18	–27.53	0.80	0.80	90	1	56.2	9/GR17	
PRG00002	–99.20	13	–58.66	–23.32	1.45	1.04	76	1	60.2		
PRUAND02	–115.20	13	–74.69	–8.39	3.41	1.79	95	1	63.9	9/GR5	
PTRVIR01	–101.20	13	–65.85	18.12	0.80	0.80	90	1	60.5	1 6 9/GR20	
PTRVIR02	–110.20	13	–65.86	18.12	0.80	0.80	90	1	61.0	1 6 9/GR21	
SPMFRAN3	–53.20	13	–67.24	47.51	3.16	0.80	7	1	60.4	2 7	10
TRD00001	–84.70	13	–61.23	10.70	0.80	0.80	90	1	59.4		
URG00001	–71.70	13	–56.22	–32.52	1.02	0.89	11	1	60.0		
USAEH001	–61.70	13	–85.19	36.21	5.63	3.33	22	1	61.8	1 5 6	10
USAEH002	–101.20	13	–89.24	36.16	5.67	3.76	170	1	61.7	1 6 9/GR20	10
USAEH003	–110.20	13	–90.14	36.11	5.55	3.55	161	1	62.0	1 6 9/GR21	10
USAEH004	–119.20	13	–91.16	36.05	5.38	3.24	152	1	62.6	1 5 6	10
USAPSA02	–166.20	13	–117.80	40.58	4.03	0.82	135	1	63.2	9/GR1	
USAPSA03	–175.20	13	–118.27	40.12	3.62	0.80	136	1	65.0	9/GR2	
USAWH101	–148.20	13	–109.65	38.13	5.53	1.95	142	1	62.1	10	
USAWH102	–157.20	13	–111.41	38.57	5.51	1.54	138	1	63.2	10	
VENAND03	–115.20	13	–67.04	6.91	2.37	1.43	111	1	67.2	9/GR5	
VRG00001	–79.70	13	–64.37	18.48	0.80	0.80	90	1	58.3	4	

ALS00002	−165.80	14	−149.63	58.52	3.81	1.23	171	2	59.7	9/GR1	10
ALS00003	−174.80	14	−150.95	58.54	3.77	1.11	167	2	60.0	9/GR2	10
ARGNORT4	−93.80	14	−63.96	−30.01	3.86	1.99	48	2	65.6	10	
ARGNORT5	−54.80	14	−62.85	−29.80	3.24	2.89	47	2	63.5	10	
ATNBEAM1	−52.80	14	−66.44	14.87	1.83	0.80	39	2	61.0		
B CE311	−63.80	14	−40.60	−6.07	3.04	2.06	174	2	61.6	8 9/GR7	10
B CE312	−44.80	14	−40.26	−6.06	3.44	2.09	174	2	61.0	8 9/GR9	10
B CE411	−63.80	14	−50.97	−15.26	3.86	1.38	49	2	62.6	8 9/GR7	10
B CE412	−44.80	14	−50.71	−15.30	3.57	1.56	52	2	62.7	8 9/GR9	10
B CE511	−63.80	14	−53.11	−2.98	2.42	2.15	107	2	63.1	8 9/GR7	10
B NO611	−73.80	14	−59.60	−11.62	2.86	1.69	165	1	62.8	8 9/GR8	10
B NO711	−73.80	14	−60.70	−1.78	3.54	1.78	126	1	62.8	8 9/GR8	10
B NO811	−73.80	14	−68.75	−4.71	2.37	1.65	73	1	62.8	8 9/GR8	
B SE911	−101.80	14	−45.99	−19.09	2.22	0.80	62	2	65.3	8	10
B SU111	−80.80	14	−51.10	−25.64	2.76	1.06	50	2	62.8	8 9/GR6	10
B SU112	−44.80	14	−50.76	−25.62	2.47	1.48	56	2	62.3	8 9/GR9	
B SU211	−80.80	14	−44.51	−16.94	3.22	1.37	60	2	62.5	8 9/GR6	10
B SU212	−44.80	14	−43.99	−16.97	3.27	1.92	59	2	61.3	8 9/GR9	
CAN01101	−137.80	14	−125.60	57.24	3.45	1.27	157	2	59.5	9/GR10	10
CAN01201	−137.80	14	−111.92	55.89	3.33	0.98	151	2	59.6	9/GR10	10
CAN01202	−72.30	14	−107.64	55.62	2.75	1.11	32	2	59.6		
CAN01203	−128.80	14	−111.43	55.56	3.07	1.15	151	2	59.5	9/GR12	10
CAN01303	−128.80	14	−102.39	57.12	3.54	0.92	154	2	60.0	9/GR12	10
CAN01304	−90.80	14	−99.00	57.33	1.96	1.73	1	2	59.8	9/GR13	

12413,54 MHz (14)

1	2	3	4		5		6	7	8	9	
CAN01403	−128.80	14	−89.70	52.02	4.67	0.80	148	2	61.8	9/GR12	10
CAN01404	−90.80	14	−84.78	52.41	3.09	2.06	153	2	60.4	9/GR13	10
CAN01405	−81.80	14	−84.02	52.34	2.82	2.30	172	2	60.3	9/GR14	10
CAN01504	−90.80	14	−72.68	53.78	3.57	1.67	157	2	60.2	9/GR13	10
CAN01505	−81.80	14	−71.76	53.76	3.30	1.89	162	2	60.1	9/GR14	10
CAN01605	−81.80	14	−61.54	49.50	2.66	1.39	144	2	60.3	9/GR14	10
CAN01606	−70.30	14	−61.32	49.51	2.41	1.65	148	2	60.2	10	
CHLCONT4	−105.80	14	−69.59	−23.20	2.21	0.80	68	2	59.1	9/GR16	
CHLCONT6	−105.80	14	−73.52	−55.52	3.65	1.31	39	2	59.6	9/GR16	
CRBBAH01	−92.30	14	−76.09	24.13	1.83	0.80	141	1	61.7	9/GR18	
CRBBER01	−92.30	14	−64.76	32.13	0.80	0.80	90	1	56.7	9/GR18	
CRBBLZ01	−92.30	14	−88.61	17.26	0.80	0.80	90	1	58.6	9/GR18	
CRBEC001	−92.30	14	−60.07	8.26	4.20	0.86	115	1	64.2	9/GR18	10
CRBJMC01	−92.30	14	−79.45	17.97	0.99	0.80	151	1	61.1	9/GR18	
CTR00201	−130.80	14	−84.33	9.67	0.82	0.80	119	2	65.6		
EQAC0001	−94.80	14	−78.31	−1.52	1.48	1.15	65	1	63.0	9/GR19	
EQAG0001	−94.80	14	−90.36	−0.57	0.94	0.89	99	1	61.0	9/GR19	
GUY00302	−33.80	14	−59.07	4.77	1.43	0.85	91	2	63.5		
HNDIFRB2	−107.30	14	−86.23	15.16	1.14	0.85	8	1	63.4		
HTI00002	−83.30	14	−73.28	18.96	0.82	0.80	11	2	60.9		
HWA00002	−165.80	14	−165.79	23.32	4.20	0.80	160	2	58.8	9/GR1	10
HWA00003	−174.80	14	−166.10	23.42	4.25	0.80	159	2	58.8	9/GR2	10
MEX01NTE	−77.80	14	−105.80	25.99	2.88	2.07	155	2	60.5	1	
MEX02NTE	−135.80	14	−107.36	26.32	3.80	1.57	149	2	61.2	1	10

MEX02SUR	−126.80	14	−96.39	19.88	3.19	1.87	158	2	62.5	1	10
PRU00004	−85.80	14	−74.19	−8.39	3.74	2.45	112	2	62.8	10	
PTRVIR01	−100.80	14	−65.85	18.12	0.80	0.80	90	2	60.6	1 6 9/GR20	
PTRVIR02	−109.80	14	−65.85	18.12	0.80	0.80	90	2	61.1	1 6 9/GR21	
TCA00001	−115.80	14	−71.79	21.53	0.80	0.80	90	2	60.4		
USAEH001	−61.30	14	−85.16	36.21	5.63	3.32	22	2	61.8	1 5 6	10
USAEH002	−100.80	14	−89.28	36.16	5.65	3.78	170	2	61.7	1 6 9/GR20	10
USAEH003	−109.80	14	−90.12	36.11	5.55	3.56	161	2	62.1	1 6 9/GR21	10
USAEH004	−118.80	14	−91.16	36.05	5.38	3.24	153	2	62.6	1 5 6	10
USAPSA02	−165.80	14	−117.79	40.58	4.04	0.82	135	2	63.2	9/GR1	
USAPSA03	−174.80	14	−118.20	40.15	3.63	0.80	136	2	64.9	9/GR2	
USAWH101	−147.80	14	−109.70	38.13	5.52	1.96	142	2	62.1	10	
USAWH102	−156.80	14	−111.40	38.57	5.51	1.55	138	2	63.2	10	
VCT00001	−79.30	14	−61.18	13.23	0.80	0.80	90	2	58.4		
VEN11VEN	−103.80	14	−66.79	6.90	2.50	1.77	122	2	65.1	10	

12428,12 MHz (15)

1	2	3	4		5		6	7	8	9	
ALS00002	−166.20	15	−149.66	58.37	3.76	1.24	170	1	59.8	9/GR1	10
ALS00003	−175.20	15	−150.98	58.53	3.77	1.11	167	1	60.0	9/GR2	10
ARGINSU4	−94.20	15	−52.98	−59.81	3.40	0.80	19	1	59.9	9/GR3	
ARGINSU5	−55.20	15	−44.17	−59.91	3.77	0.80	13	1	59.3	9/GR4	10
ARGSUR04	−94.20	15	−65.04	−43.33	3.32	1.50	40	1	60.7	9/GR3	10
ARGSUR05	−55.20	15	−63.68	−43.01	2.54	2.38	152	1	60.1	9/GR4	10
ATGSJN01	−79.70	15	−61.79	17.07	0.80	0.80	90	1	58.4		
B CE311	−64.20	15	−40.60	−6.07	3.04	2.06	174	1	61.6	8 9/GR7	10
B CE312	−45.20	15	−40.27	−6.06	3.44	2.09	174	1	61.0	8 9/GR9	10
B CE411	−64.20	15	−50.97	−15.27	3.86	1.38	49	1	62.6	8 9/GR7	10
B CE412	−45.20	15	−50.71	−15.30	3.57	1.56	52	1	62.7	8 9/GR9	10
B CE511	−64.20	15	−53.10	−2.90	2.44	2.13	104	1	63.1	8 9/GR7	10
B NO611	−74.20	15	−59.60	−11.62	2.85	1.69	165	2	62.9	8 9/GR8	10
B NO711	−74.20	15	−60.70	−1.78	3.54	1.78	126	2	62.8	8 9/GR8	10
B NO811	−74.20	15	−68.76	−4.71	2.37	1.65	73	2	62.8	8 9/GR8	
B SU111	−81.20	15	−51.12	−25.63	2.76	1.05	50	1	62.9	8 9/GR6	10
B SU112	−45.20	15	−50.75	−25.62	2.47	1.48	56	1	62.3	8 9/GR9	
B SU211	−81.20	15	−44.51	−16.95	3.22	1.36	60	1	62.5	8 9/GR6	10
B SU212	−45.20	15	−44.00	−16.87	3.20	1.96	58	1	61.3	8 9/GR9	
BERBERMU	−96.20	15	−64.77	32.32	0.80	0.80	90	2	56.8		
B OLAND01	−115.20	15	−65.04	−16.76	2.49	1.27	76	1	67.9	9/GR5	
B OL00001	−87.20	15	−64.61	−16.71	2.52	2.19	85	1	63.8	10	
B RB00001	−92.70	15	−59.85	12.93	0.80	0.80	90	2	59.1		
CAN01101	−138.20	15	−125.63	57.24	3.45	1.27	157	1	59.5	9/GR10	10

CAN01201	−138.20	15	−112.04	55.95	3.35	0.97	151	1	59.6	9/GR10	10
CAN01202	−72.70	15	−107.70	55.63	2.74	1.12	32	1	59.6		
CAN01203	−129.20	15	−111.48	55.61	3.08	1.15	151	1	59.5	9/GR12	10
CAN01303	−129.20	15	−102.42	57.12	3.54	0.91	154	1	60.1	9/GR12	10
CAN01304	−91.20	15	−99.12	57.36	1.98	1.72	2	1	59.8	9/GR13	
CAN01403	−129.20	15	−89.75	52.02	4.68	0.80	148	1	61.8	9/GR12	10
CAN01404	−91.20	15	−84.82	52.42	3.10	2.05	152	1	60.4	9/GR13	10
CAN01405	−82.20	15	−84.00	52.39	2.84	2.29	172	1	60.3	9/GR14	10
CAN01504	−91.20	15	−72.66	53.77	3.57	1.67	156	1	60.2	9/GR13	10
CAN01505	−82.20	15	−71.77	53.79	3.30	1.89	162	1	60.1	9/GR14	10
CAN01605	−82.20	15	−61.50	49.55	2.65	1.40	143	1	60.3	9/GR14	10
CAN01606	−70.70	15	−61.30	49.55	2.40	1.65	148	1	60.2	10	
CHLCONT5	−106.20	15	−72.23	−35.57	2.60	0 80	55	1	59.4	9/GR17	
CHLPAC02	−106.20	15	−80.06	−30.06	1.36	0.80	69	1	59.2	9/GR17	
CLMAND01	−115.20	15	−74.72	5.93	3.85	1.63	114	1	65.0	9/GR5	
CLM00001	−103.20	15	−74.50	5.87	3.98	1.96	118	1	63.6	10	
CUB00001	−89.20	15	−79.81	21.62	2.24	0.80	168	1	61.1		
EQACAND1	−115.20	15	−78.40	−1.61	1.37	0.95	75	1	64.1	9/GR5	
EQAGAND1	−115.20	15	−90.34	−0.62	0.90	0.81	89	1	61.3	9/GR5	
GRD00002	−42.20	15	−61.58	12.29	0.80	0.80	90	1	58.8		
GRD00059	−57.20	15	−61.58	12.29	0.80	0.80	90	1	58.5		
GRLDNK01	−53.20	15	−44.89	66.56	2.70	0.82	173	1	60.0	2	10
GUY00201	−84.70	15	−59.19	4.78	1.44	0.85	95	1	63.5		
HWA00002	−166.20	15	−165.79	23.42	4.20	0.80	160	1	58.8	9/GR1	10

12428,12 MHz (15)

1	2	3	4		5		6	7	8	9	
HWA00003	–175.20	15	–166.10	23.42	4.25	0.80	159	1	58.8	9/GR2	10
MEX01NTE	–78.20	15	–105.81	26.01	2.89	2.08	155	1	60.5	1	
MEX01SUR	–69.20	15	–94.84	19.82	3.05	2.09	4	1	62.3	1	10
MEX02NTE	–136.20	15	–107.21	26.31	3.84	1.55	148	1	61.2	1	10
MEX02SUR	–127.20	15	–96.39	19.88	3.18	1.87	157	1	62.6	1	10
PAQPAC01	–106.20	15	–109.18	–27.53	0.80	0.80	90	1	56.2	9/GR17	
PRG00002	–99.20	15	–58.66	–23.32	1.45	1.04	76	1	60.2		
PRUAND02	–115.20	15	–74.69	–8.39	3.41	1.79	95	1	64.0	9/GR5	
PTRVIR01	–101.20	15	–65.85	18.12	0.80	0.80	90	1	60.6	1 6 9/GR20	
PTRVIR02	–110.20	15	–65.86	18.12	0.80	0.80	90	1	61.0	1 6 9/GR21	
URG00001	–71.70	15	–56.22	–32.52	1.02	0.89	11	1	60.0		
USAEH001	–61.70	15	–85.19	36.21	5.63	3.33	22	1	61.8	1 5 6	10
USAEH002	–101.20	15	–89.24	36.16	5.67	3.76	170	1	61.7	1 6 9/GR20	10
USAEH003	–110.20	15	–90.14	36.11	5.55	3.55	161	1	62.1	1 6 9/GR21	10
USAEH004	–119.20	15	–91.16	36.05	5.38	3.24	152	1	62.6	1 5 6	10
USAPSA02	–166.20	15	–117.80	40.58	4.03	0.82	135	1	63.3	9/GR1	
USAPSA03	–175.20	15	–118.27	40.12	3.62	0.80	136	1	65.0	9/GR2	
USAWH101	–148.20	15	–109.65	38.13	5.53	1.95	142	1	62.1	10	
USAWH102	–157.20	15	–111.41	38.57	5.51	1.54	138	1	63.2	10	
VENAND03	–115.20	15	–67.04	6.91	2.37	1.43	111	1	67.3	9/GR5	

ALS00002	−165.80	16	−149.63	58.52	3.81	1.23	171	2	59.8	9/GR1	10
ALS00003	−174.80	16	−150.95	58.54	3.77	1.11	167	2	60.0	9/GR2	10
ARGNORT4	−93.80	16	−63.96	−30.01	3.86	1.99	48	2	65.7	10	
ARGNORT5	−54.80	16	−62.85	−29.80	3.24	2.89	47	2	63.5	10	
B CE311	−63.80	16	−40.60	−6.07	3.04	2.06	174	2	61.6	8 9/GR7	10
B CE312	−44.80	16	−40.26	−6.06	3.44	2.09	174	2	61.0	8 9/GR9	10
B CE411	−63.80	16	−50.97	−15.26	3.86	1.38	49	2	62.6	8 9/GR7	10
B CE412	−44.80	16	−50.71	−15.30	3.57	1.56	52	2	62.8	8 9/GR9	10
B CE511	−63.80	16	−53.11	−2.98	2.42	2.15	107	2	63.1	8 9/GR7	10
B NO611	−73.80	16	−59.60	−11.62	2.86	1.69	165	1	62.9	8 9/GR8	10
B NO711	−73.80	16	−60.70	−1.78	3.54	1.78	126	1	62.8	8 9/GR8	10
B NO811	−73.80	16	−68.75	−4.71	2.37	1.65	73	1	62.8	8 9/GR8	
B SE911	−101.80	16	−45.99	−19.09	2.22	0.80	62	2	65.3	8	10
B SU111	−80.80	16	−51.10	−25.64	2.76	1.06	50	2	62.9	8 9/GR6	10
B SU112	−44.80	16	−50.76	−25.62	2.47	1.48	56	2	62.3	8 9/GR9	
B SU211	−80.80	16	−44.51	−16.94	3.22	1.37	60	2	62.5	8 9/GR6	10
B SU212	−44.80	16	−43.99	−16.97	3.27	1.92	59	2	61.3	8 9/GR9	
CAN01101	−137.80	16	−125.60	57.24	3.45	1.27	157	2	59.5	9/GR10	10
CAN01201	−137.80	16	−111.92	55.89	3.33	0.98	151	2	59.6	9/GR10	10
CAN01202	−72.30	16	−107.64	55.62	2.75	1.11	32	2	59.6		
CAN01203	−128.80	16	−111.43	55.56	3.07	1.15	151	2	59.5	9/GR12	10
CAN01303	−128.80	16	−102.39	57.12	3.54	0.92	154	2	60.1	9/GR12	10
CAN01304	−90.80	16	−99.00	57.33	1.96	1.73	1	2	59.8	9/GR13	
CAN01403	−128.80	16	−89.70	52.02	4.67	0.80	148	2	61.8	9/GR12	10

12442,70 MHz (16)

1	2	3	4		5		6	7	8	9	
CAN01404	−90.80	16	−84.78	52.41	3.09	2.06	153	2	60.4	9/GR13	10
CAN01405	−81.80	16	−84.02	52.34	2.82	2.30	172	2	60.3	9/GR14	10
CAN01504	−90.80	16	−72.68	53.78	3.57	1.67	157	2	60.2	9/GR13	10
CAN01505	−81.80	16	−71.76	53.76	3.30	1.89	162	2	60.2	9/GR14	10
CAN01605	−81.80	16	−61.54	49.50	2.66	1.39	144	2	60.3	9/GR14	10
CAN01606	−70.30	16	−61.32	49.51	2.41	1.65	148	2	60.2	10	
CHLCONT4	−105.80	16	−69.59	−23.20	2.21	0.80	68	2	59.1	9/GR16	
CHLCONT6	−105.80	16	−73.52	−55.52	3.65	1.31	39	2	59.6	9/GR16	
CRBBAH01	−92.30	16	−76.09	24.13	1.83	0.80	141	1	61.7	9/GR18	
CRBBER01	−92.30	16	−64.76	32.13	0.80	0.80	90	1	56.8	9/GR18	
CRBBLZ01	−92.30	16	−88.61	17.26	0.80	0.80	90	1	58.7	9/GR18	
CRBEC001	−92.30	16	−60.07	8.26	4.20	0.86	115	1	64.3	9/GR18	10
CRBJMC01	−92.30	16	−79.45	17.97	0.99	0.80	151	1	61.1	9/GR18	
CYM00001	−115.80	16	−80.58	19.57	0.80	0.80	90	2	59.6		
DOMIFRB2	−83.30	16	−70.51	18.79	0.98	0.80	167	2	61.1		
EQAC0001	−94.80	16	−78.31	−1.52	1.48	1.15	65	1	63.0	9/GR19	
EQAG0001	−94.80	16	−90.36	−0.57	0.94	0.89	99	1	61.0	9/GR19	
GUFMGG02	−52.80	16	−56.42	8.47	4.16	0.81	123	2	62.7	2 7	10
HWA00002	−165.80	16	−165.79	23.32	4.20	0.80	160	2	58.8	9/GR1	10
HWA00003	−174.80	16	−166.10	23.42	4.25	0.80	159	2	58.8	9/GR2	10
JMC00005	−33.80	16	−77.27	18.12	0.80	0.80	90	2	60.6		
LCAIFRB1	−79.30	16	−61.15	13.90	0.80	0.80	90	2	58.4		
MEX01NTE	−77.80	16	−105.80	25.99	2.88	2.07	155	2	60.5	1	
MEX02NTE	−135.80	16	−107.36	26.32	3.80	1.57	149	2	61.2	1	10

MEX02SUR	−126.80	16	−96.39	19.88	3.19	1.87	158	2	62.5	1	10
PRU00004	−85.80	16	−74.19	−8.39	3.74	2.45	112	2	62.9	10	
PTRVIR01	−100.80	16	−65.85	18.12	0.80	0.80	90	2	60.6	1 6 9/GR20	
PTRVIR02	−109.80	16	−65.85	18.12	0.80	0.80	90	2	61.1	1 6 9/GR21	
SLVIFRB2	−107.30	16	−88.91	13.59	0.80	0.80	90	1	61.7		
USAEH001	−61.30	16	−85.16	36.21	5.63	3.32	22	2	61.9	1 5 6	10
USAEH002	−100.80	16	−89.28	36.16	5.65	3.78	170	2	61.7	1 6 9/GR20	10
USAEH003	−109.80	16	−90.12	36.11	5.55	3.56	161	2	62.1	1 6 9/GR21	10
USAEH004	−118.80	16	−91.16	36.05	5.38	3.24	153	2	62.6	1 5 6	10
USAPSA02	−165.80	16	−117.79	40.58	4.04	0.82	135	2	63.3	9/GR1	
USAPSA03	−174.80	16	−118.20	40.15	3.63	0.80	136	2	65.0	9/GR2	
USAWH101	−147.80	16	−109.70	38.13	5.52	1.96	142	2	62.1	10	
USAWH102	−156.80	16	−111.40	38.57	5.51	1.55	138	2	63.2	10	
VEN11VEN	−103.80	16	−66.79	6.90	2.50	1.77	122	2	65.2	10	

12457,28 MHz (17)

1	2	3	4		5		6	7	8	9	
ALS00002	−166.20	17	−149.66	58.37	3.76	1.24	170	1	59.9	9/GR1	10
ALS00003	−175.20	17	−150.98	58.53	3.77	1.11	167	1	60.2	9/GR2	10
ARGINSU4	−94.20	17	−52.98	−59.81	3.40	0.80	19	1	60.1	9/GR3	
ARGINSU5	−55.20	17	−44.17	−59.91	3.77	0.80	13	1	59.5	9/GR4	10
ARGSUR04	−94.20	17	−65.04	−43.33	3.32	1.50	40	1	60.9	9/GR3	10
ARGSUR05	−55.20	17	−63.68	−43.01	2.54	2.38	152	1	60.2	9/GR4	10
B CE311	−64.20	17	−40.60	−6.07	3.04	2.06	174	1	61.9	8 9/GR7	10
B CE312	−45.20	17	−40.27	−6.06	3.44	2.09	174	1	61.2	8 9/GR9	10
B CE411	−64.20	17	−50.97	−15.27	3.86	1.38	49	1	62.9	8 9/GR7	10
B CE412	−45.20	17	−50.71	−15.30	3.57	1.56	52	1	63.0	8 9/GR9	10
B CE511	−64.20	17	−53.10	−2.90	2.44	2.13	104	1	63.4	8 9/GR7	10
B NO611	−74.20	17	−59.60	−11.62	2.85	1.69	165	2	63.1	8 9/GR8	10
B NO711	−74.20	17	−60.70	−1.78	3.54	1.78	126	2	63.1	8 9/GR8	10
B NO811	−74.20	17	−68.76	−4.71	2.37	1.65	73	2	63.1	8 9/GR8	
B SU111	−81.20	17	−51.12	−25.63	2.76	1.05	50	1	63.2	8 9/GR6	10
B SU112	−45.20	17	−50.75	−25.62	2.47	1.48	56	1	62.5	8 9/GR9	
B SU211	−81.20	17	−44.51	−16.95	3.22	1.36	60	1	62.8	8 9/GR6	10
B SU212	−45.20	17	−44.00	−16.87	3.20	1.96	58	1	61.6	8 9/GR9	
BERBERMU	−96.20	17	−64.77	32.32	0.80	0.80	90	2	57.0		
B ERBER02	−31.00	17	−64.77	32.32	0.80	0.80	90	1	57.1	2	10
B OLAND01	−115.20	17	−65.04	−16.76	2.49	1.27	76	1	68.0	9/GR5	
CAN01101	−138.20	17	−125.63	57.24	3.45	1.27	157	1	59.7	9/GR10	10
CAN01201	−138.20	17	−112.04	55.95	3.35	0.97	151	1	59.8	9/GR10	10
CAN01202	−72.70	17	−107.70	55.63	2.74	1.12	32	1	59.8		

CAN01203	−129.20	17	−111.48	55.61	3.08	1.15	151	1	59.7	9/GR12	10
CAN01303	−129.20	17	−102.42	57.12	3.54	0.91	154	1	60.2	9/GR12	10
CAN01304	−91.20	17	−99.12	57.36	1.98	1.72	2	1	60.0	9/GR13	
CAN01403	−129.20	17	−89.75	52.02	4.68	0.80	148	1	62.1	9/GR12	10
CAN01404	−91.20	17	−84.82	52.42	3.10	2.05	152	1	60.6	9/GR13	10
CAN01405	−82.20	17	−84.00	52.39	2.84	2.29	172	1	60.5	9/GR14	10
CAN01504	−91.20	17	−72.66	53.77	3.57	1.67	156	1	60.4	9/GR13	10
CAN01505	−82.20	17	−71.77	53.79	3.30	1.89	162	1	60.3	9/GR14	10
CAN01605	−82.20	17	−61.50	49.55	2.65	1.40	143	1	60.5	9/GR14	10
CAN01606	−70.70	17	−61.30	49.55	2.40	1.65	148	1	60.4	10	
CHLCONT5	−106.20	17	−72.23	−35.57	2.60	0.80	55	1	59.6	9/GR17	
CHLPAC02	−106.20	17	−80.06	−30.06	1.36	0.80	69	1	59.4	9/GR17	
CLMAND01	−115.20	17	−74.72	5.93	3.85	1.63	114	1	65.3	9/GR5	
CLM00001	−103.20	17	−74.50	5.87	3.98	1.96	118	1	63.9	10	
EQACAND1	−115.20	17	−78.40	−1.61	1.37	0.95	75	1	64.4	9/GR5	
EQAGAND1	−115.20	17	−90.34	−0.62	0.90	0.81	89	1	61.5	9/GR5	
FLKFALKS	−31.00	17	−59.90	−51.64	0.80	0.80	90	1	58.2	2	
HWA00002	−166.20	17	−165.79	23.42	4.20	0.80	160	1	59.0	9/GR1	10
HWA00003	−175.20	17	−166.10	23.42	4.25	0.80	159	1	58.9	9/GR2	10
JMC00002	−92.70	17	−77.30	18.12	0.80	0.80	90	2	60.1		
MEX01NTE	−78.20	17	−105.81	26.01	2.89	2.08	155	1	60.7	1	
MEX01SUR	−69.20	17	−94.84	19.82	3.05	2.09	4	1	62.5	1	10
MEX02NTE	−136.20	17	−107.21	26.31	3.84	1.55	148	1	61.4	1	10
MEX02SUR	−127.20	17	−96.39	19.88	3.18	1.87	157	1	62.8	1	10

12457,28 MHz (17)

1	2	3	4		5		6	7	8	9	
PAQPAC01	–106.20	17	–109.18	–27.53	0.80	0.80	90	1	56.4	9/GR17	
PRG00002	–99.20	17	–58.66	–23.32	1.45	1.04	76	1	60.4		
PRUAND02	–115.20	17	–74.69	–8.39	3.41	1.79	95	1	64.3	9/GR5	
PTRVIR01	–101.20	17	–65.85	18.12	0.80	0.80	90	1	60.8	1 6 9/GR20	
PTRVIR02	–110.20	17	–65.86	18.12	0.80	0.80	90	1	61.3	1 6 9/GR21	
SCN00001	–79.70	17	–62.46	17.44	0.80	0.80	90	1	58.6		
SPMFRAN3	–53.20	17	–67.24	47.51	3.16	0.80	7	1	60.6	2 7	10
SURINAM2	–84.70	17	–55.69	4.35	1.00	0.80	86	1	63.5		
URG00001	–71.70	17	–56.22	–32.52	1.02	0.89	11	1	60.2		
USAEH001	–61.70	17	–85.19	36.21	5.63	3.33	22	1	62.1	1 5 6	10
USAEH002	–101.20	17	–89.24	36.16	5.67	3.76	170	1	62.0	1 6 9/GR20	10
USAEH003	–110.20	17	–90.14	36.11	5.55	3.55	161	1	62.3	1 6 9/GR21	10
USAEH004	–119.20	17	–91.16	36.05	5.38	3.24	152	1	62.9	1 5 6	10
USAPSA02	–166.20	17	–117.80	40.58	4.03	0.82	135	1	63.5	9/GR1	
USAPSA03	–175.20	17	–118.27	40.12	3.62	0.80	136	1	65.3	9/GR2	
USAWH101	–148.20	17	–109.65	38.13	5.53	1.95	142	1	62.3	10	
USAWH102	–157.20	17	–111.41	38.57	5.51	1.54	138	1	63.5	10	
VENAND03	–115.20	17	–67.04	6.91	2.37	1.43	111	1	67.6	9/GR5	

ALS00002	−165.80	18	−149.63	58.52	3.81	1.23	171	2	59.9	9/GR1	10
ALS00003	−174.80	18	−150.95	58.54	3.77	1.11	167	2	60.2	9/GR2	10
ARGNORT4	−93.80	18	−63.96	−30.01	3.86	1.99	48	2	66.0	10	
ARGNORT5	−54.80	18	−62.85	−29.80	3.24	2.89	47	2	63.8	10	
ATNBEAM1	−52.80	18	−66.44	14.87	1.83	0.80	39	2	61.3		
B CE311	−63.80	18	−40.60	−6.07	3.04	2.06	174	2	61.9	8 9/GR7	10
B CE312	−44.80	18	−40.26	−6.06	3.44	2.09	174	2	61.2	8 9/GR9	10
B CE411	−63.80	18	−50.97	−15.26	3.86	1.38	49	2	62.9	8 9/GR7	10
B CE412	−44.80	18	−50.71	−15.30	3.57	1.56	52	2	63.0	8 9/GR9	10
B CE511	−63.80	18	−53.11	−2.98	2.42	2.15	107	2	63.4	8 9/GR7	10
B NO611	−73.80	18	−59.60	−11.62	2.86	1.69	165	1	63.1	8 9/GR8	10
B NO711	−73.80	18	−60.70	−1.78	3.54	1.78	126	1	63.1	8 9/GR8	10
B NO811	−73.80	18	−68.75	−4.71	2.37	1.65	73	1	63.1	8 9/GR8	
B SE911	−101.80	18	−45.99	−19.09	2.22	0.80	62	2	65.7	8	10
B SU111	−80.80	18	−51.10	−25.64	2.76	1.06	50	2	63.1	8 9/GR6	10
B SU112	−44.80	18	−50.76	−25.62	2.47	1.48	56	2	62.6	8 9/GR9	
B SU211	−80.80	18	−44.51	−16.94	3.22	1.37	60	2	62.8	8 9/GR6	10
B SU212	−44.80	18	−43.99	−16.97	3.27	1.92	59	2	61.6	8 9/GR9	
B LZ00001	−115.80	18	−88.68	17.27	0.80	0.80	90	2	59.2		
CAN01101	−137.80	18	−125.60	57.24	3.45	1.27	157	2	59.7	9/GR10	10
CAN01201	−137.80	18	−111.92	55.89	3.33	0.98	151	2	59.8	9/GR10	10
CAN01202	−72.30	18	−107.64	55.62	2.75	1.11	32	2	59.8		
CAN01203	−128.80	18	−111.43	55.56	3.07	1.15	151	2	59.7	9/GR12	10
CAN01303	−128.80	18	−102.39	57.12	3.54	0.92	154	2	60.3	9/GR12	10

12471,86 MHz (18)

1	2	3	4		5		6	7	8	9	
CAN01304	−90.80	18	−99.00	57.33	1.96	1.73	1	2	60.0	9/GR13	
CAN01403	−128.80	18	−89.70	52.02	4.67	0.80	148	2	62.1	9/GR12	10
CAN01404	−90.80	18	−84.78	52.41	3.09	2.06	153	2	60.6	9/GR13	10
CAN01405	−81.80	18	−84.02	52.34	2.82	2.30	172	2	60.5	9/GR14	10
CAN01504	−90.80	18	−72.68	53.78	3.57	1.67	157	2	60.4	9/GR13	10
CAN01505	−81.80	18	−71.76	53.76	3.30	1.89	162	2	60.3	9/GR14	10
CAN01605	−81.80	18	−61.54	49.50	2.66	1.39	144	2	60.5	9/GR14	10
CAN01606	−70.30	18	−61.32	49.51	2.41	1.65	148	2	60.4	10	
CHLCONT4	−105.80	18	−69.59	−23.20	2.21	0.80	68	2	59.3	9/GR16	
CHLCONT6	−105.80	18	−73.52	−55.52	3.65	1.31	39	2	59.7	9/GR16	
CRBBAH01	−92.30	18	−76.09	24.13	1.83	0.80	141	1	61.9	9/GR18	
CRBBER01	−92.30	18	−64.76	32.13	0.80	0.80	90	1	56.9	9/GR18	
CRBBLZ01	−92.30	18	−88.61	17.26	0.80	0.80	90	1	58.9	9/GR18	
CRBEC001	−92.30	18	−60.07	8.26	4.20	0.86	115	1	64.6	9/GR18	10
CRBJMC01	−92.30	18	−79.45	17.97	0.99	0.80	151	1	61.3	9/GR18	
CTR00201	−130.80	18	−84.33	9.67	0.82	0.80	119	2	66.0		
DMAIFRB1	−79.30	18	−61.30	15.35	0.80	0.80	90	2	58.7		
EQAC0001	−94.80	18	−78.31	−1.52	1.48	1.15	65	1	63.3	9/GR19	
EQAG0001	−94.80	18	−90.36	−0.57	0.94	0.89	99	1	61.2	9/GR19	
HWA00002	−165.80	18	−165.79	23.32	4.20	0.80	160	2	59.0	9/GR1	10
HWA00003	−174.80	18	−166.10	23.42	4.25	0.80	159	2	59.0	9/GR2	10
MEX01NTE	−77.80	18	−105.80	25.99	2.88	2.07	155	2	60.7	1	
MEX02NTE	−135.80	18	−107.36	26.32	3.80	1.57	149	2	61.4	1	10
MEX02SUR	−126.80	18	−96.39	19.88	3.19	1.87	158	2	62.8	1	10

NCG00003	−107.30	18	−84.99	12.90	1.05	1.01	176	1	63.6	
PRU00004	−85.80	18	−74.19	−8.39	3.74	2.45	112	2	63.1	10
PTRVIR01	−100.80	18	−65.85	18.12	0.80	0.80	90	2	60.8	1 6 9/GR20
PTRVIR02	−109.80	18	−65.85	18.12	0.80	0.80	90	2	61.4	1 6 9/GR21
USAEH001	−61.30	18	−85.16	36.21	5.63	3.32	22	2	62.1	1 5 6 10
USAEH002	−100.80	18	−89.28	36.16	5.65	3.78	170	2	62.0	1 6 9/GR20 10
USAEH003	−109.80	18	−90.12	36.11	5.55	3.56	161	2	62.3	1 6 9/GR21 10
USAEH004	−118.80	18	−91.16	36.05	5.38	3.24	153	2	62.9	1 5 6 10
USAPSA02	−165.80	18	−117.79	40.58	4.04	0.82	135	2	63.5	9/GR1
USAPSA03	−174.80	18	−118.20	40.15	3.63	0.80	136	2	65.3	9/GR2
USAWH101	−147.80	18	−109.70	38.13	5.52	1.96	142	2	62.3	10
USAWH102	−156.80	18	−111.40	38.57	5.51	1.55	138	2	63.5	10
VEN11VEN	−103.80	18	−66.79	6.90	2.50	1.77	122	2	65.5	10

12486,44 MHz (19)

1	2	3	4		5		6	7	8	9	
ALS00002	−166.20	19	−149.66	58.37	3.76	1.24	170	1	60.0	9/GR1	10
ALS00003	−175.20	19	−150.98	58.53	3.77	1.11	167	1	60.2	9/GR2	10
ARGINSU4	−94.20	19	−52.98	−59.81	3.40	0.80	19	1	60.1	9/GR3	
ARGINSU5	−55.20	19	−44.17	−59.91	3.77	0.80	13	1	59.5	9/GR4	10
ARGSUR04	−94.20	19	−65.04	−43.33	3.32	1.50	40	1	60.9	9/GR3	10
ARGSUR05	−55.20	19	−63.68	−43.01	2.54	2.38	152	1	60.3	9/GR4	10
B CE311	−64.20	19	−40.60	−6.07	3.04	2.06	174	1	61.9	8 9/GR7	10
B CE312	−45.20	19	−40.27	−6.06	3.44	2.09	174	1	61.3	8 9/GR9	10
B CE411	−64.20	19	−50.97	−15.27	3.86	1.38	49	1	62.9	8 9/GR7	10
B CE412	−45.20	19	−50.71	−15.30	3.57	1.56	52	1	63.1	8 9/GR9	10
B CE511	−64.20	19	−53.10	−2.90	2.44	2.13	104	1	63.4	8 9/GR7	10
B NO611	−74.20	19	−59.60	−11.62	2.85	1.69	165	2	63.2	8 9/GR8	10
B NO711	−74.20	19	−60.70	−1.78	3.54	1.78	126	2	63.2	8 9/GR8	10
B NO811	−74.20	19	−68.76	−4.71	2.37	1.65	73	2	63.1	8 9/GR8	
B SU111	−81.20	19	−51.12	−25.63	2.76	1.05	50	1	63.2	8 9/GR6	10
B SU112	−45.20	19	−50.75	−25.62	2.47	1.48	56	1	62.6	8 9/GR9	
B SU211	−81.20	19	−44.51	−16.95	3.22	1.36	60	1	62.8	8 9/GR6	10
B SU212	−45.20	19	−44.00	−16.87	3.20	1.96	58	1	61.6	8 9/GR9	
BERBERMU	−96.20	19	−64.77	32.32	0.80	0.80	90	2	57.0		
B OLAND01	−115.20	19	−65.04	−16.76	2.49	1.27	76	1	68.1	9/GR5	
B OL00001	−87.20	19	−64.61	−16.71	2.52	2.19	85	1	64.2	10	
B RB00001	−92.70	19	−59.85	12.93	0.80	0.80	90	2	59.4		
CAN01101	−138.20	19	−125.63	57.24	3.45	1.27	157	1	59.7	9/GR10	10
CAN01201	−138.20	19	−112.04	55.95	3.35	0.97	151	1	59.8	9/GR10	10

CAN01202	−72.70	19	−107.70	55.63	2.74	1.12	32	1	59.8		
CAN01203	−129.20	19	−111.48	55.61	3.08	1.15	151	1	59.7	9/GR12	10
CAN01303	−129.20	19	−102.42	57.12	3.54	0.91	154	1	60.3	9/GR12	10
CAN01304	−91.20	19	−99.12	57.36	1.98	1.72	2	1	60.1	9/GR13	
CAN01403	−129.20	19	−89.75	52.02	4.68	0.80	148	1	62.1	9/GR12	10
CAN01404	−91.20	19	−84.82	52.42	3.10	2.05	152	1	60.6	9/GR13	10
CAN01405	−82.20	19	−84.00	52.39	2.84	2.29	172	1	60.5	9/GR14	10
CAN01504	−91.20	19	−72.66	53.77	3.57	1.67	156	1	60.4	9/GR13	10
CAN01505	−82.20	19	−71.77	53.79	3.30	1.89	162	1	60.4	9/GR14	10
CAN01605	−82.20	19	−61.50	49.55	2.65	1.40	143	1	60.5	9/GR14	10
CAN01606	−70.70	19	−61.30	49.55	2.40	1.65	148	1	60.5	10	
CHLCONT5	−106.20	19	−72.23	−35.57	2.60	0.80	55	1	59.6	9/GR17	
CHLPAC02	−106.20	19	−80.06	−30.06	1.36	0.80	69	1	59.4	9/GR17	
CLMAND01	−115.20	19	−74.72	5.93	3.85	1.63	114	1	65.4	9/GR5	
CLM00001	−103.20	19	−74.50	5.87	3.98	1.96	118	1	63.9	10	
CUB00001	−89.20	19	−79.81	21.62	2.24	0.80	168	1	61.3		
EQACAND1	−115.20	19	−78.40	−1.61	1.37	0.95	75	1	64.4	9/GR5	
EQAGAND1	−115.20	19	−90.34	−0.62	0.90	0.81	89	1	61.6	9/GR5	
GRD00059	−57.20	19	−61.58	12.29	0.80	0.80	90	1	58.7		
GRLDNK01	−53.20	19	−44.89	66.56	2.70	0.82	173	1	60.2	2	10
GUY00201	−84.70	19	−59.19	4.78	1.44	0.85	95	1	63.8		
HWA00002	−166.20	19	−165.79	23.42	4.20	0.80	160	1	59.0	9/GR1	10
HWA00003	−175.20	19	−166.10	23.42	4.25	0.80	159	1	59.0	9/GR2	10
MEX01NTE	−78.20	19	−105.81	26.01	2.89	2.08	155	1	60.8	1	

12486,44 MHz (19)

1	2	3	4		5		6	7	8	9	
MEX01SUR	–69.20	19	–94.84	19.82	3.05	2.09	4	1	62.5	1	10
MEX02NTE	–136.20	19	–107.21	26.31	3.84	1.55	148	1	61.5	1	10
MEX02SUR	–127.20	19	–96.39	19.88	3.18	1.87	157	1	62.8	1	10
MSR00001	–79.70	19	–61.73	16.75	0.80	0.80	90	1	58.9	4	
PAQPAC01	–106.20	19	–109.18	–27.53	0.80	0.80	90	1	56.4	9/GR17	
PRG00002	–99.20	19	–58.66	–23.32	1.45	1.04	76	1	60.5		
PRUAND02	–115.20	19	–74.69	–8.39	3.41	1.79	95	1	64.3	9/GR5	
PTRVIR01	–101.20	19	–65.85	18.12	0.80	0.80	90	1	60.8	1 6 9/GR20	
PTRVIR02	–110.20	19	–65.86	18.12	0.80	0.80	90	1	61.3	1 6 9/GR21	
URG00001	–71.70	19	–56.22	–32.52	1.02	0.89	11	1	60.2		
USAEH001	–61.70	19	–85.19	36.21	5.63	3.33	22	1	62.1	1 5 6	10
USAEH002	–101.20	19	–89.24	36.16	5.67	3.76	170	1	62.0	1 6 9/GR20	10
USAEH003	–110.20	19	–90.14	36.11	5.55	3.55	161	1	62.4	1 6 9/GR21	10
USAEH004	–119.20	19	–91.16	36.05	5.38	3.24	152	1	62.9	1 5 6	10
USAPSA02	–166.20	19	–117.80	40.58	4.03	0.82	135	1	63.6	9/GR1	
USAPSA03	–175.20	19	–118.27	40.12	3.62	0.80	136	1	65.4	9/GR2	
USAWH101	–148.20	19	–109.65	38.13	5.53	1.95	142	1	62.4	10	
USAWH102	–157.20	19	–111.41	38.57	5.51	1.54	138	1	63.5	10	
VENAND03	–115.20	19	–67.04	6.91	2.37	1.43	111	1	67.7	9/GR5	

ALS00002	−165.80	20	−149.63	58.52	3.81	1.23	171	2	59.9	9/GR1	10	
ALS00003	−174.80	20	−150.95	58.54	3.77	1.11	167	2	60.2	9/GR2	10	
ARGNORT4	−93.80	20	−63.96	−30.01	3.86	1.99	48	2	66.1	10		
ARGNORT5	−54.80	20	−62.85	−29.80	3.24	2.89	47	2	63.9	10		
B CE311	−63.80	20	−40.60	−6.07	3.04	2.06	174	2	61.9	8 9/GR7	10	
B CE312	−44.80	20	−40.26	−6.06	3.44	2.09	174	2	61.3	8 9/GR9	10	11
B CE411	−63.80	20	−50.97	−15.26	3.86	1.38	49	2	62.9	8 9/GR7	10	
B CE412	−44.80	20	−50.71	−15.30	3.57	1.56	52	2	63.1	8 9/GR9	10	12
B CE511	−63.80	20	−53.11	−2.98	2.42	2.15	107	2	63.4	8 9/GR7	10	
B NO611	−73.80	20	−59.60	−11.62	2.86	1.69	165	1	63.2	8 9/GR8	10	
B NO711	−73.80	20	−60.70	−1.78	3.54	1.78	126	1	63.2	8 9/GR8	10	
B NO811	−73.80	20	−68.75	−4.71	2.37	1.65	73	1	63.2	8 9/GR8		
B SE911	−101.80	20	−45.99	−19.09	2.22	0.80	62	2	65.7	8	10	
B SU111	−80.80	20	−51.10	−25.64	2.76	1.06	50	2	63.2	8 9/GR6	10	
B SU112	−44.80	20	−50.76	−25.62	2.47	1.48	56	2	62.6	8 9/GR9	11	
B SU211	−80.80	20	−44.51	−16.94	3.22	1.37	60	2	62.8	8 9/GR6	10	
B SU212	−44.80	20	−43.99	−16.97	3.27	1.92	59	2	61.6	8 9/GR9	12	
CAN01101	−137.80	20	−125.60	57.24	3.45	1.27	157	2	59.7	9/GR10	10	
CAN01201	−137.80	20	−111.92	55.89	3.33	0.98	151	2	59.8	9/GR10	10	
CAN01202	−72.30	20	−107.64	55.62	2.75	1.11	32	2	59.8			
CAN01203	−128.80	20	−111.43	55.56	3.07	1.15	151	2	59.7	9/GR12	10	
CAN01303	−128.80	20	−102.39	57.12	3.54	0.92	154	2	60.3	9/GR12	10	
CAN01304	−90.80	20	−99.00	57.33	1.96	1.73	1	2	60.0	9/GR13		
CAN01403	−128.80	20	−89.70	52.02	4.67	0.80	148	2	62.1	9/GR12	10	

12501,02 MHz (20)

1	2	3	4		5		6	7	8	9	
CAN01404	−90.80	20	−84.78	52.41	3.09	2.06	153	2	60.6	9/GR13	10
CAN01405	−81.80	20	−84.02	52.34	2.82	2.30	172	2	60.5	9/GR14	10
CAN01504	−90.80	20	−72.68	53.78	3.57	1.67	157	2	60.4	9/GR13	10
CAN01505	−81.80	20	−71.76	53.76	3.30	1.89	162	2	60.4	9/GR14	10
CAN01605	−81.80	20	−61.54	49.50	2.66	1.39	144	2	60.5	9/GR14	10
CAN01606	−70.30	20	−61.32	49.51	2.41	1.65	148	2	60.5	10	
CHLCONT4	−105.80	20	−69.59	−23.20	2.21	0.80	68	2	59.3	9/GR16	
CHLCONT6	−105.80	20	−73.52	−55.52	3.65	1.31	39	2	59.8	9/GR16	
CRBBAH01	−92.30	20	−76.09	24.13	1.83	0.80	141	1	62.0	9/GR18	
CRBBER01	−92.30	20	−64.76	32.13	0.80	0.80	90	1	57.0	9/GR18	
CRBBLZ01	−92.30	20	−88.61	17.26	0.80	0.80	90	1	58.9	9/GR18	
CRBEC001	−92.30	20	−60.07	8.26	4.20	0.86	115	1	64.6	9/GR18	10
CRBJMC01	−92.30	20	−79.45	17.97	0.99	0.80	151	1	61.4	9/GR18	
EQAC0001	−94.80	20	−78.31	−1.52	1.48	1.15	65	1	63.3	9/GR19	
EQAG0001	−94.80	20	−90.36	−0.57	0.94	0.89	99	1	61.3	9/GR19	
GRD00003	−79.30	20	−61.62	12.34	0.80	0.80	90	2	58.9		
GTMIFRB2	−107.30	20	−90.50	15.64	1.03	0.80	84	1	61.4		
GUFMGG02	−52.80	20	−56.42	8.47	4.16	0.81	123	2	63.0	2 7	10
HWA00002	−165.80	20	−165.79	23.32	4.20	0.80	160	2	59.0	9/GR1	10
HWA00003	−174.80	20	−166.10	23.42	4.25	0.80	159	2	59.0	9/GR2	10
MEX01NTE	−77.80	20	−105.80	25.99	2.88	2.07	155	2	60.8	1	
MEX02NTE	−135.80	20	−107.36	26.32	3.80	1.57	149	2	61.5	1	10
MEX02SUR	−126.80	20	−96.39	19.88	3.19	1.87	158	2	62.8	1	10
PNRIFRB2	−121.00	20	−80.15	8.46	1.01	0.80	170	1	65.1		

PRU00004	−85.80	20	−74.19	−8.39	3.74	2.45	112	2	63.2	10	
PTRVIR01	−100.80	20	−65.85	18.12	0.80	0.80	90	2	60.9	1 6 9/GR20	
PTRVIR02	−109.80	20	−65.85	18.12	0.80	0.80	90	2	61.4	1 6 9/GR21	
USAEH001	−61.30	20	−85.16	36.21	5.63	3.32	22	2	62.1	1 5 6	10
USAEH002	−100.80	20	−89.28	36.16	5.65	3.78	170	2	62.0	1 6 9/GR20	10
USAEH003	−109.80	20	−90.12	36.11	5.55	3.56	161	2	62.4	1 6 9/GR21	10
USAEH004	−118.80	20	−91.16	36.05	5.38	3.24	153	2	62.9	1 5 6	10
USAPSA02	−165.80	20	−117.79	40.58	4.04	0.82	135	2	63.6	9/GR1	
USAPSA03	−174.80	20	−118.20	40.15	3.63	0.80	136	2	65.3	9/GR2	
USAWH101	−147.80	20	−109.70	38.13	5.52	1.96	142	2	62.4	10	
USAWH102	−156.80	20	−111.40	38.57	5.51	1.55	138	2	63.5	10	
VEN02VEN	−103.80	20	−63.50	15.50	0.80	0.80	90	2	60.1	9/GR22	
VEN11VEN	−103.80	20	−66.79	6.90	2.50	1.77	122	2	65.6	9/GR22	10

12515,60 MHz (21)

1	2	3	4		5		6	7	8	9		
ALS00002	−166.20	21	−149.66	58.37	3.76	1.24	170	1	59.9	9/GR1	10	
ALS00003	−175.20	21	−150.98	58.53	3.77	1.11	167	1	60.2	9/GR2	10	
ARGINSU4	−94.20	21	−52.98	−59.81	3.40	0.80	19	1	60.1	9/GR3		
ARGINSU5	−55.20	21	−44.17	−59.91	3.77	0.80	13	1	59.5	9/GR4		
ARGSUR04	−94.20	21	−65.04	−43.33	3.32	1.50	40	1	60.9	9/GR3		
ARGSUR05	−55.20	21	−63.68	−43.01	2.54	2.38	152	1	60.2	9/GR4		
B CE311	−64.20	21	−40.60	−6.07	3.04	2.06	174	1	61.9	8 9/GR7		
B CE312	−45.20	21	−40.27	−6.06	3.44	2.09	174	1	61.2	8 9/GR9	10	11
B CE411	−64.20	21	−50.97	−15.27	3.86	1.38	49	1	62.9	8 9/GR7		
B CE412	−45.20	21	−50.71	−15.30	3.57	1.56	52	1	63.0	8 9/GR9	10	12
B CE511	−64.20	21	−53.10	−2.90	2.44	2.13	104	1	63.4	8 9/GR7		
B NO611	−74.20	21	−59.60	−11.62	2.85	1.69	165	2	63.1	8 9/GR8		
B NO711	−74.20	21	−60.70	−1.78	3.54	1.78	126	2	63.1	8 9/GR8		
B NO811	−74.20	21	−68.76	−4.71	2.37	1.65	73	2	63.1	8 9/GR8		
B SU111	−81.20	21	−51.12	−25.63	2.76	1.05	50	1	63.2	8 9/GR6		
B SU112	−45.20	21	−50.75	−25.62	2.47	1.48	56	1	62.5	8 9/GR9	11	
B SU211	−81.20	21	−44.51	−16.95	3.22	1.36	60	1	62.8	8 9/GR6		
B SU212	−45.20	21	−44.00	−16.87	3.20	1.96	58	1	61.6	8 9/GR9	12	
BERBERMU	−96.20	21	−64.77	32.32	0.80	0.80	90	2	57.0			
B OLAND01	−115.20	21	−65.04	−16.76	2.49	1.27	76	1	68.0	9/GR5		
CAN01101	−138.20	21	−125.63	57.24	3.45	1.27	157	1	59.7	9/GR10	10	
CAN01201	−138.20	21	−112.04	55.95	3.35	0.97	151	1	59.8	9/GR10	10	
CAN01202	−72.70	21	−107.70	55.63	2.74	1.12	32	1	59.8			
CAN01203	−129.20	21	−111.48	55.61	3.08	1.15	151	1	59.7	9/GR12	10	

CAN01303	−129.20	21	−102.42	57.12	3.54	0.91	154	1	60.2	9/GR12	10
CAN01304	−91.20	21	−99.12	57.36	1.98	1.72	2	1	60.0	9/GR13	
CAN01403	−129.20	21	−89.75	52.02	4.68	0.80	148	1	62.1	9/GR12	10
CAN01404	−91.20	21	−84.82	52.42	3.10	2.05	152	1	60.6	9/GR13	
CAN01405	−82.20	21	−84.00	52.39	2.84	2.29	172	1	60.5	9/GR14	
CAN01504	−91.20	21	−72.66	53.77	3.57	1.67	156	1	60.4	9/GR13	
CAN01505	−82.20	21	−71.77	53.79	3.30	1.89	162	1	60.3	9/GR14	
CAN01605	−82.20	21	−61.50	49.55	2.65	1.40	143	1	60.5	9/GR14	
CAN01606	−70.70	21	−61.30	49.55	2.40	1.65	148	1	60.4		
CHLCONT5	−106.20	21	−72.23	−35.57	2.60	0.80	55	1	59.6	9/GR17	
CHLPAC02	−106.20	21	−80.06	−30.06	1.36	0.80	69	1	59.4	9/GR17	
CLMAND01	−115.20	21	−74.72	5.93	3.85	1.63	114	1	65.3	9/GR5	10
CLM00001	−103.20	21	−74.50	5.87	3.98	1.96	118	1	63.9	10	
EQACAND1	−115.20	21	−78.40	−1.61	1.37	0.95	75	1	64.4	9/GR5	
EQAGAND1	−115.20	21	−90.34	−0.62	0.90	0.81	89	1	61.5	9/GR5	
HWA00002	−166.20	21	−165.79	23.42	4.20	0.80	160	1	59.0	9/GR1	10
HWA00003	−175.20	21	−166.10	23.42	4.25	0.80	159	1	58.9	9/GR2	10
JMC00002	−92.70	21	−77.30	18.12	0.80	0.80	90	2	60.1		
MEX01NTE	−78.20	21	−105.81	26.01	2.89	2.08	155	1	60.7	1	
MEX01SUR	−69.20	21	−94.84	19.82	3.05	2.09	4	1	62.5	1	
MEX02NTE	−136.20	21	−107.21	26.31	3.84	1.55	148	1	61.4	1	10
MEX02SUR	−127.20	21	−96.39	19.88	3.18	1.87	157	1	62.8	1	10
PAQPAC01	−106.20	21	−109.18	−27.53	0.80	0.80	90	1	56.4	9/GR17	
PRG00002	−99.20	21	−58.66	−23.32	1.45	1.04	76	1	60.4		

12515,60 MHz (21)

1	2	3	4		5		6	7	8	9	
PRUAND02	–115.20	21	–74.69	–8.39	3.41	1.79	95	1	64.3	9/GR5	
PTRVIR01	–101.20	21	–65.85	18.12	0.80	0.80	90	1	60.8	1 6 9/GR20	
PTRVIR02	–110.20	21	–65.86	18.12	0.80	0.80	90	1	61.3	1 6 9/GR21	
SCN00001	–79.70	21	–62.46	17.44	0.80	0.80	90	1	58.6		
SPMFRAN3	–53.20	21	–67.24	47.51	3.16	0.80	7	1	60.6	2 7	
SURINAM2	–84.70	21	–55.69	4.35	1.00	0.80	86	1	63.5		
URG00001	–71.70	21	–56.22	–32.52	1.02	0.89	11	1	60.2		
USAEH001	–61.70	21	–85.19	36.21	5.63	3.33	22	1	62.1	1 5 6	
USAEH002	–101.20	21	–89.24	36.16	5.67	3.76	170	1	62.0	1 6 9/GR20	10
USAEH003	–110.20	21	–90.14	36.11	5.55	3.55	161	1	62.3	1 6 9/GR21	10
USAEH004	–119.20	21	–91.16	36.05	5.38	3.24	152	1	62.9	1 5 6	10
USAPSA02	–166.20	21	–117.80	40.58	4.03	0.82	135	1	63.5	9/GR1	
USAPSA03	–175.20	21	–118.27	40.12	3.62	0.80	136	1	65.3	9/GR2	
USAWH101	–148.20	21	–109.65	38.13	5.53	1.95	142	1	62.3	10	
USAWH102	–157.20	21	–111.41	38.57	5.51	1.54	138	1	63.5	10	
VENAND03	–115.20	21	–67.04	6.91	2.37	1.43	111	1	67.6	9/GR5	10

ALS00002	−165.80	22	−149.63	58.52	3.81	1.23	171	2	59.9	9/GR1	10	
ALS00003	−174.80	22	−150.95	58.54	3.77	1.11	167	2	60.2	9/GR2	10	
ARGNORT4	−93.80	22	−63.96	−30.01	3.86	1.99	48	2	66.0			
ARGNORT5	−54.80	22	−62.85	−29.80	3.24	2.89	47	2	63.8			
ATNBEAM1	−52.80	22	−66.44	14.87	1.83	0.80	39	2	61.3			
B CE311	−63.80	22	−40.60	−6.07	3.04	2.06	174	2	61.9	8 9/GR7		
B CE312	−44.80	22	−40.26	−6.06	3.44	2.09	174	2	61.2	8 9/GR9	10	11
B CE411	−63.80	22	−50.97	−15.26	3.86	1.38	49	2	62.9	8 9/GR7		
B CE412	−44.80	22	−50.71	−15.30	3.57	1.56	52	2	63.0	8 9/GR9	10	12
B CE511	−63.80	22	−53.11	−2.98	2.42	2.15	107	2	63.4	8 9/GR7		
B NO611	−73.80	22	−59.60	−11.62	2.86	1.69	165	1	63.1	8 9/GR8		
B NO711	−73.80	22	−60.70	−1.78	3.54	1.78	126	1	63.1	8 9/GR8		
B NO811	−73.80	22	−68.75	−4.71	2.37	1.65	73	1	63.1	8 9/GR8		
B SE911	−101.80	22	−45.99	−19.09	2.22	0.80	62	2	65.7	8		
B SU111	−80.80	22	−51.10	−25.64	2.76	1.06	50	2	63.1	8 9/GR6		
B SU112	−44.80	22	−50.76	−25.62	2.47	1.48	56	2	62.6	8 9/GR9	11	
B SU211	−80.80	22	−44.51	−16.94	3.22	1.37	60	2	62.8	8 9/GR6		
B SU212	−44.80	22	−43.99	−16.97	3.27	1.92	59	2	61.6	8 9/GR9	12	
B LZ00001	−115.80	22	−88.68	17.27	0.80	0.80	90	2	59.2			
CAN01101	−137.80	22	−125.60	57.24	3.45	1.27	157	2	59.7	9/GR10	10	
CAN01201	−137.80	22	−111.92	55.89	3.33	0.98	151	2	59.8	9/GR10	10	
CAN01202	−72.30	22	−107.64	55.62	2.75	1.11	32	2	59.8			
CAN01203	−128.80	22	−111.43	55.56	3.07	1.15	151	2	59.7	9/GR12	10	
CAN01303	−128.80	22	−102.39	57.12	3.54	0.92	154	2	60.3	9/GR12	10	

12530,18 MHz (22)

1	2	3	4		5		6	7	8	9	
CAN01304	−90.80	22	−99.00	57.33	1.96	1.73	1	2	60.0	9/GR13	
CAN01403	−128.80	22	−89.70	52.02	4.67	0.80	148	2	62.1	9/GR12	10
CAN01404	−90.80	22	−84.78	52.41	3.09	2.06	153	2	60.6	9/GR13	
CAN01405	−81.80	22	−84.02	52.34	2.82	2.30	172	2	60.5	9/GR14	
CAN01504	−90.80	22	−72.68	53.78	3.57	1.67	157	2	60.4	9/GR13	
CAN01505	−81.80	22	−71.76	53.76	3.30	1.89	162	2	60.3	9/GR14	
CAN01605	−81.80	22	−61.54	49.50	2.66	1.39	144	2	60.5	9/GR14	
CAN01606	−70.30	22	−61.32	49.51	2.41	1.65	148	2	60.4		
CHLCONT4	−105.80	22	−69.59	−23.20	2.21	0.80	68	2	59.3	9/GR16	
CHLCONT6	−105.80	22	−73.52	−55.52	3.65	1.31	39	2	59.7	9/GR16	
CRBBAH01	−92.30	22	−76.09	24.13	1.83	0.80	141	1	61.9	9/GR18	
CRBBER01	−92.30	22	−64.76	32.13	0.80	0.80	90	1	56.9	9/GR18	
CRBBLZ01	−92.30	22	−88.61	17.26	0.80	0.80	90	1	58.9	9/GR18	
CRBEC001	−92.30	22	−60.07	8.26	4.20	0.86	115	1	64.6	9/GR18	
CRBJMC01	−92.30	22	−79.45	17.97	0.99	0.80	151	1	61.3	9/GR18	
CTR00201	−130.80	22	−84.33	9.67	0.82	0.80	119	2	66.0		
DMAIFRB1	−79.30	22	−61.30	15.35	0.80	0.80	90	2	58.7		
EQAC0001	−94.80	22	−78.31	−1.52	1.48	1.15	65	1	63.3	9/GR19	
EQAG0001	−94.80	22	−90.36	−0.57	0.94	0.89	99	1	61.2	9/GR19	
HWA00002	−165.80	22	−165.79	23.32	4.20	0.80	160	2	59.0	9/GR1	10
HWA00003	−174.80	22	−166.10	23.42	4.25	0.80	159	2	59.0	9/GR2	10
MEX01NTE	−77.80	22	−105.80	25.99	2.88	2.07	155	2	60.7	1	
MEX02NTE	−135.80	22	−107.36	26.32	3.80	1.57	149	2	61.4	1	10
MEX02SUR	−126.80	22	−96.39	19.88	3.19	1.87	158	2	62.8	1	10

NCG00003	−107.30	22	−84.99	12.90	1.05	1.01	176	1	63.6	
PRU00004	−85.80	22	−74.19	−8.39	3.74	2.45	112	2	63.1	
PTRVIR01	−100.80	22	−65.85	18.12	0.80	0.80	90	2	60.8	1 6 9/GR20
PTRVIR02	−109.80	22	−65.85	18.12	0.80	0.80	90	2	61.4	1 6 9/GR21
USAEH001	−61.30	22	−85.16	36.21	5.63	3.32	22	2	62.1	1 5 6
USAEH002	−100.80	22	−89.28	36.16	5.65	3.78	170	2	62.0	1 6 9/GR20 10
USAEH003	−109.80	22	−90.12	36.11	5.55	3.56	161	2	62.3	1 6 9/GR21 10
USAEH004	−118.80	22	−91.16	36.05	5.38	3.24	153	2	62.9	1 5 6 10
USAPSA02	−165.80	22	−117.79	40.58	4.04	0.82	135	2	63.5	9/GR1
USAPSA03	−174.80	22	−118.20	40.15	3.63	0.80	136	2	65.3	9/GR2
USAWH101	−147.80	22	−109.70	38.13	5.52	1.96	142	2	62.3	10
USAWH102	−156.80	22	−111.40	38.57	5.51	1.55	138	2	63.5	10
VEN11VEN	−103.80	22	−66.79	6.90	2.50	1.77	122	2	65.5	10

12544,76 MHz (23)

1	2	3	4		5		6	7	8	9		
ALS00002	−166.20	23	−149.66	58.37	3.76	1.24	170	1	60.0	9/GR1	10	
ALS00003	−175.20	23	−150.98	58.53	3.77	1.11	167	1	60.2	9/GR2	10	
ARGINSU4	−94.20	23	−52.98	−59.81	3.40	0.80	19	1	60.1	9/GR3		
ARGINSU5	−55.20	23	−44.17	−59.91	3.77	0.80	13	1	59.5	9/GR4		
ARGSUR04	−94.20	23	−65.04	−43.33	3.32	1.50	40	1	60.9	9/GR3		
ARGSUR05	−55.20	23	−63.68	−43.01	2.54	2.38	152	1	60.3	9/GR4		
B CE311	−64.20	23	−40.60	−6.07	3.04	2.06	174	1	61.9	8 9/GR7		
B CE312	−45.20	23	−40.27	−6.06	3.44	2.09	174	1	61.3	8 9/GR9	10	11
B CE411	−64.20	23	−50.97	−15.27	3.86	1.38	49	1	62.9	8 9/GR7		
B CE412	−45.20	23	−50.71	−15.30	3.57	1.56	52	1	63.1	8 9/GR9	10	12
B CE511	−64.20	23	−53.10	−2.90	2.44	2.13	104	1	63.4	8 9/GR7		
B NO611	−74.20	23	−59.60	−11.62	2.85	1.69	165	2	63.2	8 9/GR8		
B NO711	−74.20	23	−60.70	−1.78	3.54	1.78	126	2	63.2	8 9/GR8		
B NO811	−74.20	23	−68.76	−4.71	2.37	1.65	73	2	63.1	8 9/GR8		
B SU111	−81.20	23	−51.12	−25.63	2.76	1.05	50	1	63.2	8 9/GR6		
B SU112	−45.20	23	−50.75	−25.62	2.47	1.48	56	1	62.6	8 9/GR9	11	
B SU211	−81.20	23	−44.51	−16.95	3.22	1.36	60	1	62.8	8 9/GR6		
B SU212	−45.20	23	−44.00	−16.87	3.20	1.96	58	1	61.6	8 9/GR9	12	
BERBERMU	−96.20	23	−64.77	32.32	0.80	0.80	90	2	57.0			
B OLAND01	−115.20	23	−65.04	−16.76	2.49	1.27	76	1	68.1	9/GR5		
B OL00001	−87.20	23	−64.61	−16.71	2.52	2.19	85	1	64.2			
B RB00001	−92.70	23	−59.85	12.93	0.80	0.80	90	2	59.4			
CAN01101	−138.20	23	−125.63	57.24	3.45	1.27	157	1	59.7	9/GR10	10	
CAN01201	−138.20	23	−112.04	55.95	3.35	0.97	151	1	59.8	9/GR10	10	

CAN01202	−72.70	23	−107.70	55.63	2.74	1.12	32	1	59.8		
CAN01203	−129.20	23	−111.48	55.61	3.08	1.15	151	1	59.7	9/GR12	10
CAN01303	−129.20	23	−102.42	57.12	3.54	0.91	154	1	60.3	9/GR12	10
CAN01304	−91.20	23	−99.12	57.36	1.98	1.72	2	1	60.1	9/GR13	
CAN01403	−129.20	23	−89.75	52.02	4.68	0.80	148	1	62.1	9/GR12	10
CAN01404	−91.20	23	−84.82	52.42	3.10	2.05	152	1	60.6	9/GR13	
CAN01405	−82.20	23	−84.00	52.39	2.84	2.29	172	1	60.5	9/GR14	
CAN01504	−91.20	23	−72.66	53.77	3.57	1.67	156	1	60.4	9/GR13	
CAN01505	−82.20	23	−71.77	53.79	3.30	1.89	162	1	60.4	9/GR14	
CAN01605	−82.20	23	−61.50	49.55	2.65	1.40	143	1	60.5	9/GR14	
CAN01606	−70.70	23	−61.30	49.55	2.40	1.65	148	1	60.5		
CHLCONT5	−106.20	23	−72.23	−35.57	2.60	0.80	55	1	59.6	9/GR17	
CHLPAC02	−106.20	23	−80.06	−30.06	1.36	0.80	69	1	59.4	9/GR17	
CLMAND01	−115.20	23	−74.72	5.93	3.85	1.63	114	1	65.4	9/GR5	10
CLM00001	−103.20	23	−74.50	5.87	3.98	1.96	118	1	63.9	10	
CUB00001	−89.20	23	−79.81	21.62	2.24	0.80	168	1	61.3		
EQACAND1	−115.20	23	−78.40	−1.61	1.37	0.95	75	1	64.4	9/GR5	
EQAGAND1	−115.20	23	−90.34	−0.62	0.90	0.81	89	1	61.6	9/GR5	
GRD00059	−57.20	23	−61.58	12.29	0.80	0.80	90	1	58.7		
GRLDNK01	−53.20	23	−44.89	66.56	2.70	0.82	173	1	60.2	2	
GUY00201	−84.70	23	−59.19	4.78	1.44	0.85	95	1	63.8		
HWA00002	−166.20	23	−165.79	23.42	4.20	0.80	160	1	59.0	9/GR1	10
HWA00003	−175.20	23	−166.10	23.42	4.25	0.80	159	1	59.0	9/GR2	10
MEX01NTE	−78.20	23	−105.81	26.01	2.89	2.08	155	1	60.8	1	

12544,76 MHz (23)

1	2	3	4		5		6	7	8	9	
MEX01SUR	–69.20	23	–94.84	19.82	3.05	2.09	4	1	62.5	1	
MEX02NTE	–136.20	23	–107.21	26.31	3.84	1.55	148	1	61.5	1	10
MEX02SUR	–127.20	23	–96.39	19.88	3.18	1.87	157	1	62.8	1	10
MSR00001	–79.70	23	–61.73	16.75	0.80	0.80	90	1	58.9	4	
PAQPAC01	–106.20	23	–109.18	–27.53	0.80	0.80	90	1	56.4	9/GR17	
PRG00002	–99.20	23	–58.66	–23.32	1.45	1.04	76	1	60.5		
PRUAND02	–115.20	23	–74.69	–8.39	3.41	1.79	95	1	64.3	9/GR5	
PTRVIR01	–101.20	23	–65.85	18.12	0.80	0.80	90	1	60.8	1 6 9/GR20	
PTRVIR02	–110.20	23	–65.86	18.12	0.80	0.80	90	1	61.3	1 6 9/GR21	
URG00001	–71.70	23	–56.22	–32.52	1.02	0.89	11	1	60.2		
USAEH001	–61.70	23	–85.19	36.21	5.63	3.33	22	1	62.1	1 5 6	
USAEH002	–101.20	23	–89.24	36.16	5.67	3.76	170	1	62.0	1 6 9/GR20	10
USAEH003	–110.20	23	–90.14	36.11	5.55	3.55	161	1	62.4	1 6 9/GR21	10
USAEH004	–119.20	23	–91.16	36.05	5.38	3.24	152	1	62.9	1 5 6	10
USAPSA02	–166.20	23	–117.80	40.58	4.03	0.82	135	1	63.6	9/GR1	
USAPSA03	–175.20	23	–118.27	40.12	3.62	0.80	136	1	65.4	9/GR2	
USAWH101	–148.20	23	–109.65	38.13	5.53	1.95	142	1	62.4	10	
USAWH102	–157.20	23	–111.41	38.57	5.51	1.54	138	1	63.5	10	
VENAND03	–115.20	23	–67.04	6.91	2.37	1.43	111	1	67.7	9/GR5	10

ALS00002	−165.80	24	−149.63	58.52	3.81	1.23	171	2	59.9	9/GR1	10
ALS00003	−174.80	24	−150.95	58.54	3.77	1.11	167	2	60.2	9/GR2	10
ARGNORT4	−93.80	24	−63.96	−30.01	3.86	1.99	48	2	66.1		
ARGNORT5	−54.80	24	−62.85	−29.80	3.24	2.89	47	2	63.9		
B CE311	−63.80	24	−40.60	−6.07	3.04	2.06	174	2	61.9	8 9/GR7	
B CE312	−44.80	24	−40.26	−6.06	3.44	2.09	174	2	61.3	8 9/GR9	10 11
B CE411	−63.80	24	−50.97	−15.26	3.86	1.38	49	2	62.9	8 9/GR7	
B CE412	−44.80	24	−50.71	−15.30	3.57	1.56	52	2	63.1	8 9/GR9	10 12
B CE511	−63.80	24	−53.11	−2.98	2.42	2.15	107	2	63.4	8 9/GR7	
B NO611	−73.80	24	−59.60	−11.62	2.86	1.69	165	1	63.2	8 9/GR8	
B NO711	−73.80	24	−60.70	−1.78	3.54	1.78	126	1	63.2	8 9/GR8	
B NO811	−73.80	24	−68.75	−4.71	2.37	1.65	73	1	63.2	8 9/GR8	
B SE911	−101.80	24	−45.99	−19.09	2.22	0.80	62	2	65.7	8	
B SU111	−80.80	24	−51.10	−25.64	2.76	1.06	50	2	63.2	8 9/GR6	
B SU112	−44.80	24	−50.76	−25.62	2.47	1.48	56	2	62.6	8 9/GR9	11
B SU211	−80.80	24	−44.51	−16.94	3.22	1.37	60	2	62.8	8 9/GR6	
B SU212	−44.80	24	−43.99	−16.97	3.27	1.92	59	2	61.6	8 9/GR9	12
CAN01101	−137.80	24	−125.60	57.24	3.45	1.27	157	2	59.7	9/GR10	10
CAN01201	−137.80	24	−111.92	55.89	3.33	0.98	151	2	59.8	9/GR10	10
CAN01202	−72.30	24	−107.64	55.62	2.75	1.11	32	2	59.8		
CAN01203	−128.80	24	−111.43	55.56	3.07	1.15	151	2	59.7	9/GR12	10
CAN01303	−128.80	24	−102.39	57.12	3.54	0.92	154	2	60.3	9/GR12	10
CAN01304	−90.80	24	−99.00	57.33	1.96	1.73	1	2	60.0	9/GR13	
CAN01403	−128.80	24	−89.70	52.02	4.67	0.80	148	2	62.1	9/GR12	10

12559,34 MHz (24)

1	2	3	4		5		6	7	8	9	
CAN01404	−90.80	24	−84.78	52.41	3.09	2.06	153	2	60.6	9/GR13	
CAN01405	−81.80	24	−84.02	52.34	2.82	2.30	172	2	60.5	9/GR14	
CAN01504	−90.80	24	−72.68	53.78	3.57	1.67	157	2	60.4	9/GR13	
CAN01505	−81.80	24	−71.76	53.76	3.30	1.89	162	2	60.4	9/GR14	
CAN01605	−81.80	24	−61.54	49.50	2.66	1.39	144	2	60.5	9/GR14	
CAN01606	−70.30	24	−61.32	49.51	2.41	1.65	148	2	60.5		
CHLCONT4	−105.80	24	−69.59	−23.20	2.21	0.80	68	2	59.3	9/GR16	
CHLCONT6	−105.80	24	−73.52	−55.52	3.65	1.31	39	2	59.8	9/GR16	
CRBBAH01	−92.30	24	−76.09	24.13	1.83	0.80	141	1	62.0	9/GR18	
CRBBER01	−92.30	24	−64.76	32.13	0.80	0.80	90	1	57.0	9/GR18	
CRBBLZ01	−92.30	24	−88.61	17.26	0.80	0.80	90	1	58.9	9/GR18	
CRBEC001	−92.30	24	−60.07	8.26	4.20	0.86	115	1	64.6	9/GR18	
CRBJMC01	−92.30	24	−79.45	17.97	0.99	0.80	151	1	61.4	9/GR18	
EQAC0001	−94.80	24	−78.31	−1.52	1.48	1.15	65	1	63.3	9/GR19	
EQAG0001	−94.80	24	−90.36	−0.57	0.94	0.89	99	1	61.3	9/GR19	
GRD00003	−79.30	24	−61.62	12.34	0.80	0.80	90	2	58.9		
GTMIFRB2	−107.30	24	−90.50	15.64	1.03	0.80	84	1	61.4		
GUFMGG02	−52.80	24	−56.42	8.47	4.16	0.81	123	2	63.0	2 7	
HWA00002	−165.80	24	−165.79	23.32	4.20	0.80	160	2	59.0	9/GR1	10
HWA00003	−174.80	24	−166.10	23.42	4.25	0.80	159	2	59.0	9/GR2	10
MEX01NTE	−77.80	24	−105.80	25.99	2.88	2.07	155	2	60.8	1	
MEX02NTE	−135.80	24	−107.36	26.32	3.80	1.57	149	2	61.5	1	10
MEX02SUR	−126.80	24	−96.39	19.88	3.19	1.87	158	2	62.8	1	10
PNRIFRB2	−121.00	24	−80.15	8.46	1.01	0.80	170	1	65.1		

PRU00004	−85.80	24	−74.19	−8.39	3.74	2.45	112	2	63.2		
PTRVIR01	−100.80	24	−65.85	18.12	0.80	0.80	90	2	60.9	1 6 9/GR20	
PTRVIR02	−109.80	24	−65.85	18.12	0.80	0.80	90	2	61.4	1 6 9/GR21	
USAEH001	−61.30	24	−85.16	36.21	5.63	3.32	22	2	62.1	1 5 6	
USAEH002	−100.80	24	−89.28	36.16	5.65	3.78	170	2	62.0	1 6 9/GR20	10
USAEH003	−109.80	24	−90.12	36.11	5.55	3.56	161	2	62.4	1 6 9/GR21	10
USAEH004	−118.80	24	−91.16	36.05	5.38	3.24	153	2	62.9	1 5 6	10
USAPSA02	−165.80	24	−117.79	40.58	4.04	0.82	135	2	63.6	9/GR1	
USAPSA03	−174.80	24	−118.20	40.15	3.63	0.80	136	2	65.3	9/GR2	
USAWH101	−147.80	24	−109.70	38.13	5.52	1.96	142	2	62.4	10	
USAWH102	−156.80	24	−111.40	38.57	5.51	1.55	138	2	63.5	10	
VEN02VEN	−103.80	24	−63.50	15.50	0.80	0.80	90	2	60.1	9/GR22	
VEN11VEN	−103.80	24	−66.79	6.90	2.50	1.77	122	2	65.6	9/GR22	10

12573,92 MHz (25)

1	2	3	4		5		6	7	8	9		
ALS00002	−166.20	25	−149.66	58.37	3.76	1.24	170	1	59.9	9/GR1	10	
ALS00003	−175.20	25	−150.98	58.53	3.77	1.11	167	1	60.2	9/GR2	10	
ARGINSU4	−94.20	25	−52.98	−59.81	3.40	0.80	19	1	60.1	9/GR3		
ARGINSU5	−55.20	25	−44.17	−59.91	3.77	0.80	13	1	59.5	9/GR4		
ARGSUR04	−94.20	25	−65.04	−43.33	3.32	1.50	40	1	60.9	9/GR3		
ARGSUR05	−55.20	25	−63.68	−43.01	2.54	2.38	152	1	60.2	9/GR4		
B CE311	−64.20	25	−40.60	−6.07	3.04	2.06	174	1	61.9	8 9/GR7		
B CE312	−45.20	25	−40.27	−6.06	3.44	2.09	174	1	61.2	8 9/GR9	10	11
B CE411	−64.20	25	−50.97	−15.27	3.86	1.38	49	1	62.9	8 9/GR7		
B CE412	−45.20	25	−50.71	−15.30	3.57	1.56	52	1	63.0	8 9/GR9	10	12
B CE511	−64.20	25	−53.10	−2.90	2.44	2.13	104	1	63.4	8 9/GR7		
B NO611	−74.20	25	−59.60	−11.62	2.85	1.69	165	2	63.1	8 9/GR8		
B NO711	−74.20	25	−60.70	−1.78	3.54	1.78	126	2	63.1	8 9/GR8		
B NO811	−74.20	25	−68.76	−4.71	2.37	1.65	73	2	63.1	8 9/GR8		
B SU111	−81.20	25	−51.12	−25.63	2.76	1.05	50	1	63.2	8 9/GR6		
B SU112	−45.20	25	−50.75	−25.62	2.47	1.48	56	1	62.5	8 9/GR9	11	
B SU211	−81.20	25	−44.51	−16.95	3.22	1.36	60	1	62.8	8 9/GR6		
B SU212	−45.20	25	−44.00	−16.87	3.20	1.96	58	1	61.6	8 9/GR9	12	
BERBERMU	−96.20	25	−64.77	32.32	0.80	0.80	90	2	57.0			
B OLAND01	−115.20	25	−65.04	−16.76	2.49	1.27	76	1	68.0	9/GR5		
CAN01101	−138.20	25	−125.63	57.24	3.45	1.27	157	1	59.7	9/GR10	10	
CAN01201	−138.20	25	−112.04	55.95	3.35	0.97	151	1	59.8	9/GR10	10	
CAN01202	−72.70	25	−107.70	55.63	2.74	1.12	32	1	59.8			
CAN01203	−129.20	25	−111.48	55.61	3.08	1.15	151	1	59.7	9/GR12	10	

CAN01303	−129.20	25	−102.42	57.12	3.54	0.91	154	1	60.2	9/GR12	10
CAN01304	−91.20	25	−99.12	57.36	1.98	1.72	2	1	60.0	9/GR13	
CAN01403	−129.20	25	−89.75	52.02	4.68	0.80	148	1	62.1	9/GR12	10
CAN01404	−91.20	25	−84.82	52.42	3.10	2.05	152	1	60.6	9/GR13	
CAN01405	−82.20	25	−84.00	52.39	2.84	2.29	172	1	60.5	9/GR14	
CAN01504	−91.20	25	−72.66	53.77	3.57	1.67	156	1	60.4	9/GR13	
CAN01505	−82.20	25	−71.77	53.79	3.30	1.89	162	1	60.3	9/GR14	
CAN01605	−82.20	25	−61.50	49.55	2.65	1.40	143	1	60.5	9/GR14	
CAN01606	−70.70	25	−61.30	49.55	2.40	1.65	148	1	60.4		
CHLCONT5	−106.20	25	−72.23	−35.57	2.60	0.80	55	1	59.6	9/GR17	
CHLPAC02	−106.20	25	−80.06	−30.06	1.36	0.80	69	1	59.4	9/GR17	
CLMAND01	−115.20	25	−74.72	5.93	3.85	1.63	114	1	65.3	9/GR5	10
CLM00001	−103.20	25	−74.50	5.87	3.98	1.96	118	1	63.9	10	
EQACAND1	−115.20	25	−78.40	−1.61	1.37	0.95	75	1	64.4	9/GR5	
EQAGAND1	−115.20	25	−90.34	−0.62	0.90	0.81	89	1	61.5	9/GR5	
HWA00002	−166.20	25	−165.79	23.42	4.20	0.80	160	1	59.0	9/GR1	10
HWA00003	−175.20	25	−166.10	23.42	4.25	0.80	159	1	58.9	9/GR2	10
JMC00002	−92.70	25	−77.30	18.12	0.80	0.80	90	2	60.1		
MEX01NTE	−78.20	25	−105.81	26.01	2.89	2.08	155	1	60.7	1	
MEX01SUR	−69.20	25	−94.84	19.82	3.05	2.09	4	1	62.5	1	
MEX02NTE	−136.20	25	−107.21	26.31	3.84	1.55	148	1	61.4	1	10
MEX02SUR	−127.20	25	−96.39	19.88	3.18	1.87	157	1	62.8	1	10
PAQPAC01	−106.20	25	−109.18	−27.53	0.80	0.80	90	1	56.4	9/GR17	
PRG00002	−99.20	25	−58.66	−23.32	1.45	1.04	76	1	60.4		

12573,92 MHz (25)

1	2	3	4		5		6	7	8	9	
PRUAND02	–115.20	25	–74.69	–8.39	3.41	1.79	95	1	64.3	9/GR5	
PTRVIR01	–101.20	25	–65.85	18.12	0.80	0.80	90	1	60.8	1 6 9/GR20	
PTRVIR02	–110.20	25	–65.86	18.12	0.80	0.80	90	1	61.3	1 6 9/GR21	
SCN00001	–79.70	25	–62.46	17.44	0.80	0.80	90	1	58.6		
SPMFRAN3	–53.20	25	–67.24	47.51	3.16	0.80	7	1	60.6	2 7	
SURINAM2	–84.70	25	–55.69	4.35	1.00	0.80	86	1	63.5		
URG00001	–71.70	25	–56.22	–32.52	1.02	0.89	11	1	60.2		
USAEH001	–61.70	25	–85.19	36.21	5.63	3.33	22	1	62.1	1 5 6	
USAEH002	–101.20	25	–89.24	36.16	5.67	3.76	170	1	62.0	1 6 9/GR20	10
USAEH003	–110.20	25	–90.14	36.11	5.55	3.55	161	1	62.3	1 6 9/GR21	10
USAEH004	–119.20	25	–91.16	36.05	5.38	3.24	152	1	62.9	1 5 6	10
USAPSA02	–166.20	25	–117.80	40.58	4.03	0.82	135	1	63.5	9/GR1	
USAPSA03	–175.20	25	–118.27	40.12	3.62	0.80	136	1	65.3	9/GR2	
USAWH101	–148.20	25	–109.65	38.13	5.53	1.95	142	1	62.3	10	
USAWH102	–157.20	25	–111.41	38.57	5.51	1.54	138	1	63.5	10	
VENAND03	–115.20	25	–67.04	6.91	2.37	1.43	111	1	67.6	9/GR5	10

ALS00002	−165.80	26	−149.63	58.52	3.81	1.23	171	2	59.9	9/GR1	10	
ALS00003	−174.80	26	−150.95	58.54	3.77	1.11	167	2	60.2	9/GR2	10	
ARGNORT4	−93.80	26	−63.96	−30.01	3.86	1.99	48	2	66.0			
ARGNORT5	−54.80	26	−62.85	−29.80	3.24	2.89	47	2	63.8			
ATNBEAM1	−52.80	26	−66.44	14.87	1.83	0.80	39	2	61.3			
B CE311	−63.80	26	−40.60	−6.07	3.04	2.06	174	2	61.9	8 9/GR7		
B CE312	−44.80	26	−40.26	−6.06	3.44	2.09	174	2	61.2	8 9/GR9	10	11
B CE411	−63.80	26	−50.97	−15.26	3.86	1.38	49	2	62.9	8 9/GR7		
B CE412	−44.80	26	−50.71	−15.30	3.57	1.56	52	2	63.0	8 9/GR9	10	12
B CE511	−63.80	26	−53.11	−2.98	2.42	2.15	107	2	63.4	8 9/GR7		
B NO611	−73.80	26	−59.60	−11.62	2.86	1.69	165	1	63.1	8 9/GR8		
B NO711	−73.80	26	−60.70	−1.78	3.54	1.78	126	1	63.1	8 9/GR8		
B NO811	−73.80	26	−68.75	−4.71	2.37	1.65	73	1	63.1	8 9/GR8		
B SE911	−101.80	26	−45.99	−19.09	2.22	0.80	62	2	65.7	8		
B SU111	−80.80	26	−51.10	−25.64	2.76	1.06	50	2	63.1	8 9/GR6		
B SU112	−44.80	26	−50.76	−25.62	2.47	1.48	56	2	62.6	8 9/GR9	11	
B SU211	−80.80	26	−44.51	−16.94	3.22	1.37	60	2	62.8	8 9/GR6		
B SU212	−44.80	26	−43.99	−16.97	3.27	1.92	59	2	61.6	8 9/GR9	12	
B LZ00001	−115.80	26	−88.68	17.27	0.80	0.80	90	2	59.2			
CAN01101	−137.80	26	−125.60	57.24	3.45	1.27	157	2	59.7	9/GR10	10	
CAN01201	−137.80	26	−111.92	55.89	3.33	0.98	151	2	59.8	9/GR10	10	
CAN01202	−72.30	26	−107.64	55.62	2.75	1.11	32	2	59.8			
CAN01203	−128.80	26	−111.43	55.56	3.07	1.15	151	2	59.7	9/GR12	10	
CAN01303	−128.80	26	−102.39	57.12	3.54	0.92	154	2	60.3	9/GR12	10	

12588,50 MHz (26)

1	2	3	4		5		6	7	8	9	
CAN01304	−90.80	26	−99.00	57.33	1.96	1.73	1	2	60.0	9/GR13	
CAN01403	−128.80	26	−89.70	52.02	4.67	0.80	148	2	62.1	9/GR12	10
CAN01404	−90.80	26	−84.78	52.41	3.09	2.06	153	2	60.6	9/GR13	
CAN01405	−81.80	26	−84.02	52.34	2.82	2.30	172	2	60.5	9/GR14	
CAN01504	−90.80	26	−72.68	53.78	3.57	1.67	157	2	60.4	9/GR13	
CAN01505	−81.80	26	−71.76	53.76	3.30	1.89	162	2	60.3	9/GR14	
CAN01605	−81.80	26	−61.54	49.50	2.66	1.39	144	2	60.5	9/GR14	
CAN01606	−70.30	26	−61.32	49.51	2.41	1.65	148	2	60.4		
CHLCONT4	−105.80	26	−69.59	−23.20	2.21	0.80	68	2	59.3	9/GR16	
CHLCONT6	−105.80	26	−73.52	−55.52	3.65	1.31	39	2	59.7	9/GR16	
CRBBAH01	−92.30	26	−76.09	24.13	1.83	0.80	141	1	61.9	9/GR18	
CRBBER01	−92.30	26	−64.76	32.13	0.80	0.80	90	1	56.9	9/GR18	
CRBBLZ01	−92.30	26	−88.61	17.26	0.80	0.80	90	1	58.9	9/GR18	
CRBEC001	−92.30	26	−60.07	8.26	4.20	0.86	115	1	64.6	9/GR18	
CRBJMC01	−92.30	26	−79.45	17.97	0.99	0.80	151	1	61.3	9/GR18	
CTR00201	−130.80	26	−84.33	9.67	0.82	0.80	119	2	66.0		
DMAIFRB1	−79.30	26	−61.30	15.35	0.80	0.80	90	2	58.7		
EQAC0001	−94.80	26	−78.31	−1.52	1.48	1.15	65	1	63.3	9/GR19	
EQAG0001	−94.80	26	−90.36	−0.57	0.94	0.89	99	1	61.2	9/GR19	
HWA00002	−165.80	26	−165.79	23.32	4.20	0.80	160	2	59.0	9/GR1	10
HWA00003	−174.80	26	−166.10	23.42	4.25	0.80	159	2	59.0	9/GR2	10
MEX01NTE	−77.80	26	−105.80	25.99	2.88	2.07	155	2	60.7	1	
MEX02NTE	−135.80	26	−107.36	26.32	3.80	1.57	149	2	61.4	1	10
MEX02SUR	−126.80	26	−96.39	19.88	3.19	1.87	158	2	62.8	1	10

NCG00003	−107.30	26	−84.99	12.90	1.05	1.01	176	1	63.6		
PRU00004	−85.80	26	−74.19	−8.39	3.74	2.45	112	2	63.1		
PTRVIR01	−100.80	26	−65.85	18.12	0.80	0.80	90	2	60.8	1 6 9/GR20	
PTRVIR02	−109.80	26	−65.85	18.12	0.80	0.80	90	2	61.4	1 6 9/GR21	
USAEH001	−61.30	26	−85.16	36.21	5.63	3.32	22	2	62.1	1 5 6	
USAEH002	−100.80	26	−89.28	36.16	5.65	3.78	170	2	62.0	1 6 9/GR20	10
USAEH003	−109.80	26	−90.12	36.11	5.55	3.56	161	2	62.3	1 6 9/GR21	10
USAEH004	−118.80	26	−91.16	36.05	5.38	3.24	153	2	62.9	1 5 6	10
USAPSA02	−165.80	26	−117.79	40.58	4.04	0.82	135	2	63.5	9/GR1	
USAPSA03	−174.80	26	−118.20	40.15	3.63	0.80	136	2	65.3	9/GR2	
USAWH101	−147.80	26	−109.70	38.13	5.52	1.96	142	2	62.3	10	
USAWH102	−156.80	26	−111.40	38.57	5.51	1.55	138	2	63.5	10	
VEN11VEN	−103.80	26	−66.79	6.90	2.50	1.77	122	2	65.5	10	

12603,08 MHz (27)

1	2	3	4		5		6	7	8	9		
ALS00002	−166.20	27	−149.66	58.37	3.76	1.24	170	1	60.0	9/GR1	10	
ALS00003	−175.20	27	−150.98	58.53	3.77	1.11	167	1	60.2	9/GR2	10	
ARGINSU4	−94.20	27	−52.98	−59.81	3.40	0.80	19	1	60.1	9/GR3		
ARGINSU5	−55.20	27	−44.17	−59.91	3.77	0.80	13	1	59.5	9/GR4		
ARGSUR04	−94.20	27	−65.04	−43.33	3.32	1.50	40	1	60.9	9/GR3		
ARGSUR05	−55.20	27	−63.68	−43.01	2.54	2.38	152	1	60.3	9/GR4		
B CE311	−64.20	27	−40.60	−6.07	3.04	2.06	174	1	61.9	8 9/GR7		
B CE312	−45.20	27	−40.27	−6.06	3.44	2.09	174	1	61.3	8 9/GR9	10	11
B CE411	−64.20	27	−50.97	−15.27	3.86	1.38	49	1	62.9	8 9/GR7		
B CE412	−45.20	27	−50.71	−15.30	3.57	1.56	52	1	63.1	8 9/GR9	10	12
B CE511	−64.20	27	−53.10	−2.90	2.44	2.13	104	1	63.4	8 9/GR7		
B NO611	−74.20	27	−59.60	−11.62	2.85	1.69	165	2	63.2	8 9/GR8		
B NO711	−74.20	27	−60.70	−1.78	3.54	1.78	126	2	63.2	8 9/GR8		
B NO811	−74.20	27	−68.76	−4.71	2.37	1.65	73	2	63.1	8 9/GR8		
B SU111	−81.20	27	−51.12	−25.63	2.76	1.05	50	1	63.2	8 9/GR6		
B SU112	−45.20	27	−50.75	−25.62	2.47	1.48	56	1	62.6	8 9/GR9	11	
B SU211	−81.20	27	−44.51	−16.95	3.22	1.36	60	1	62.8	8 9/GR6		
B SU212	−45.20	27	−44.00	−16.87	3.20	1.96	58	1	61.6	8 9/GR9	12	
BERBERMU	−96.20	27	−64.77	32.32	0.80	0.80	90	2	57.0			
B OLAND01	−115.20	27	−65.04	−16.76	2.49	1.27	76	1	68.1	9/GR5		
B OL00001	−87.20	27	−64.61	−16.71	2.52	2.19	85	1	64.2			
B RB00001	−92.70	27	−59.85	12.93	0.80	0.80	90	2	59.4			
CAN01101	−138.20	27	−125.63	57.24	3.45	1.27	157	1	59.7	9/GR10	10	
CAN01201	−138.20	27	−112.04	55.95	3.35	0.97	151	1	59.8	9/GR10	10	

CAN01202	−72.70	27	−107.70	55.63	2.74	1.12	32	1	59.8		
CAN01203	−129.20	27	−111.48	55.61	3.08	1.15	151	1	59.7	9/GR12	10
CAN01303	−129.20	27	−102.42	57.12	3.54	0.91	154	1	60.3	9/GR12	10
CAN01304	−91.20	27	−99.12	57.36	1.98	1.72	2	1	60.1	9/GR13	
CAN01403	−129.20	27	−89.75	52.02	4.68	0.80	148	1	62.1	9/GR12	10
CAN01404	−91.20	27	−84.82	52.42	3.10	2.05	152	1	60.6	9/GR13	
CAN01405	−82.20	27	−84.00	52.39	2.84	2.29	172	1	60.5	9/GR14	
CAN01504	−91.20	27	−72.66	53.77	3.57	1.67	156	1	60.4	9/GR13	
CAN01505	−82.20	27	−71.77	53.79	3.30	1.89	162	1	60.4	9/GR14	
CAN01605	−82.20	27	−61.50	49.55	2.65	1.40	143	1	60.5	9/GR14	
CAN01606	−70.70	27	−61.30	49.55	2.40	1.65	148	1	60.5		
CHLCONT5	−106.20	27	−72.23	−35.57	2.60	0.80	55	1	59.6	9/GR17	
CHLPAC02	−106.20	27	−80.06	−30.06	1.36	0.80	69	1	59.4	9/GR17	
CLMAND01	−115.20	27	−74.72	5.93	3.85	1.63	114	1	65.4	9/GR5	10
CLM00001	−103.20	27	−74.50	5.87	3.98	1.96	118	1	63.9	10	
CUB00001	−89.20	27	−79.81	21.62	2.24	0.80	168	1	61.3		
EQACAND1	−115.20	27	−78.40	−1.61	1.37	0.95	75	1	64.4	9/GR5	
EQAGAND1	−115.20	27	−90.34	−0.62	0.90	0.81	89	1	61.6	9/GR5	
GRD00059	−57.20	27	−61.58	12.29	0.80	0.80	90	1	58.7		
GRLDNK01	−53.20	27	−44.89	66.56	2.70	0.82	173	1	60.2	2	
GUY00201	−84.70	27	−59.19	4.78	1.44	0.85	95	1	63.8		
HWA00002	−166.20	27	−165.79	23.42	4.20	0.80	160	1	59.0	9/GR1	10
HWA00003	−175.20	27	−166.10	23.42	4.25	0.80	159	1	59.0	9/GR2	10
MEX01NTE	−78.20	27	−105.81	26.01	2.89	2.08	155	1	60.8	1	

12603,08 MHz (27)

1	2	3	4		5		6	7	8	9	
MEX01SUR	–69.20	27	–94.84	19.82	3.05	2.09	4	1	62.5	1	
MEX02NTE	–136.20	27	–107.21	26.31	3.84	1.55	148	1	61.5	1	10
MEX02SUR	–127.20	27	–96.39	19.88	3.18	1.87	157	1	62.8	1	10
MSR00001	–79.70	27	–61.73	16.75	0.80	0.80	90	1	58.9	4	
PAQPAC01	–106.20	27	–109.18	–27.53	0.80	0.80	90	1	56.4	9/GR17	
PRG00002	–99.20	27	–58.66	–23.32	1.45	1.04	76	1	60.5		
PRUAND02	–115.20	27	–74.69	–8.39	3.41	1.79	95	1	64.3	9/GR5	
PTRVIR01	–101.20	27	–65.85	18.12	0.80	0.80	90	1	60.8	1 6 9/GR20	
PTRVIR02	–110.20	27	–65.86	18.12	0.80	0.80	90	1	61.3	1 6 9/GR21	
URG00001	–71.70	27	–56.22	–32.52	1.02	0.89	11	1	60.2		
USAEH001	–61.70	27	–85.19	36.21	5.63	3.33	22	1	62.1	1 5 6	
USAEH002	–101.20	27	–89.24	36.16	5.67	3.76	170	1	62.0	1 6 9/GR20	10
USAEH003	–110.20	27	–90.14	36.11	5.55	3.55	161	1	62.4	1 6 9/GR21	10
USAEH004	–119.20	27	–91.16	36.05	5.38	3.24	152	1	62.9	1 5 6	10
USAPSA02	–166.20	27	–117.80	40.58	4.03	0.82	135	1	63.6	9/GR1	
USAPSA03	–175.20	27	–118.27	40.12	3.62	0.80	136	1	65.4	9/GR2	
USAWH101	–148.20	27	–109.65	38.13	5.53	1.95	142	1	62.4	10	
USAWH102	–157.20	27	–111.41	38.57	5.51	1.54	138	1	63.5	10	
VENAND03	–115.20	27	–67.04	6.91	2.37	1.43	111	1	67.7	9/GR5	10

ALS00002	−165.80	28	−149.63	58.52	3.81	1.23	171	2	59.9	9/GR1	10	
ALS00003	−174.80	28	−150.95	58.54	3.77	1.11	167	2	60.2	9/GR2	10	
ARGNORT4	−93.80	28	−63.96	−30.01	3.86	1.99	48	2	66.1			
ARGNORT5	−54.80	28	−62.85	−29.80	3.24	2.89	47	2	63.9			
B CE311	−63.80	28	−40.60	−6.07	3.04	2.06	174	2	61.9	8 9/GR7		
B CE312	−44.80	28	−40.26	−6.06	3.44	2.09	174	2	61.3	8 9/GR9	10	11
B CE411	−63.80	28	−50.97	−15.26	3.86	1.38	49	2	62.9	8 9/GR7		
B CE412	−44.80	28	−50.71	−15.30	3.57	1.56	52	2	63.1	8 9/GR9	10	12
B CE511	−63.80	28	−53.11	−2.98	2.42	2.15	107	2	63.4	8 9/GR7		
B NO611	−73.80	28	−59.60	−11.62	2.86	1.69	165	1	63.2	8 9/GR8		
B NO711	−73.80	28	−60.70	−1.78	3.54	1.78	126	1	63.2	8 9/GR8		
B NO811	−73.80	28	−68.75	−4.71	2.37	1.65	73	1	63.2	8 9/GR8		
B SE911	−101.80	28	−45.99	−19.09	2.22	0.80	62	2	65.7	8		
B SU111	−80.80	28	−51.10	−25.64	2.76	1.06	50	2	63.2	8 9/GR6		
B SU112	−44.80	28	−50.76	−25.62	2.47	1.48	56	2	62.6	8 9/GR9	11	
B SU211	−80.80	28	−44.51	−16.94	3.22	1.37	60	2	62.8	8 9/GR6		
B SU212	−44.80	28	−43.99	−16.97	3.27	1.92	59	2	61.6	8 9/GR9	12	
CAN01101	−137.80	28	−125.60	57.24	3.45	1.27	157	2	59.7	9/GR10	10	
CAN01201	−137.80	28	−111.92	55.89	3.33	0.98	151	2	59.8	9/GR10	10	
CAN01202	−72.30	28	−107.64	55.62	2.75	1.11	32	2	59.8			
CAN01203	−128.80	28	−111.43	55.56	3.07	1.15	151	2	59.7	9/GR12	10	
CAN01303	−128.80	28	−102.39	57.12	3.54	0.92	154	2	60.3	9/GR12	10	
CAN01304	−90.80	28	−99.00	57.33	1.96	1.73	1	2	60.0	9/GR13		
CAN01403	−128.80	28	−89.70	52.02	4.67	0.80	148	2	62.1	9/GR12	10	

12617,66 MHz (28)

1	2	3	4		5		6	7	8	9	
CAN01404	−90.80	28	−84.78	52.41	3.09	2.06	153	2	60.6	9/GR13	
CAN01405	−81.80	28	−84.02	52.34	2.82	2.30	172	2	60.5	9/GR14	
CAN01504	−90.80	28	−72.68	53.78	3.57	1.67	157	2	60.4	9/GR13	
CAN01505	−81.80	28	−71.76	53.76	3.30	1.89	162	2	60.4	9/GR14	
CAN01605	−81.80	28	−61.54	49.50	2.66	1.39	144	2	60.5	9/GR14	
CAN01606	−70.30	28	−61.32	49.51	2.41	1.65	148	2	60.5		
CHLCONT4	−105.80	28	−69.59	−23.20	2.21	0.80	68	2	59.3	9/GR16	
CHLCONT6	−105.80	28	−73.52	−55.52	3.65	1.31	39	2	59.8	9/GR16	
CRBBAH01	−92.30	28	−76.09	24.13	1.83	0.80	141	1	62.0	9/GR18	
CRBBER01	−92.30	28	−64.76	32.13	0.80	0.80	90	1	57.0	9/GR18	
CRBBLZ01	−92.30	28	−88.61	17.26	0.80	0.80	90	1	58.9	9/GR18	
CRBEC001	−92.30	28	−60.07	8.26	4.20	0.86	115	1	64.6	9/GR18	
CRBJMC01	−92.30	28	−79.45	17.97	0.99	0.80	151	1	61.4	9/GR18	
EQAC0001	−94.80	28	−78.31	−1.52	1.48	1.15	65	1	63.3	9/GR19	
EQAG0001	−94.80	28	−90.36	−0.57	0.94	0.89	99	1	61.3	9/GR19	
GRD00003	−79.30	28	−61.62	12.34	0.80	0.80	90	2	58.9		
GTMIFRB2	−107.30	28	−90.50	15.64	1.03	0.80	84	1	61.4		
GUFMGG02	−52.80	28	−56.42	8.47	4.16	0.81	123	2	63.0	2 7	
HWA00002	−165.80	28	−165.79	23.32	4.20	0.80	160	2	59.0	9/GR1	10
HWA00003	−174.80	28	−166.10	23.42	4.25	0.80	159	2	59.0	9/GR2	10
MEX01NTE	−77.80	28	−105.80	25.99	2.88	2.07	155	2	60.8	1	
MEX02NTE	−135.80	28	−107.36	26.32	3.80	1.57	149	2	61.5	1	10
MEX02SUR	−126.80	28	−96.39	19.88	3.19	1.87	158	2	62.8	1	10
PNRIFRB2	−121.00	28	−80.15	8.46	1.01	0.80	170	1	65.1		

PRU00004	−85.80	28	−74.19	−8.39	3.74	2.45	112	2	63.2		
PTRVIR01	−100.80	28	−65.85	18.12	0.80	0.80	90	2	60.9	1 6 9/GR20	
PTRVIR02	−109.80	28	−65.85	18.12	0.80	0.80	90	2	61.4	1 6 9/GR21	
USAEH001	−61.30	28	−85.16	36.21	5.63	3.32	22	2	62.1	1 5 6	
USAEH002	−100.80	28	−89.28	36.16	5.65	3.78	170	2	62.0	1 6 9/GR20	10
USAEH003	−109.80	28	−90.12	36.11	5.55	3.56	161	2	62.4	1 6 9/GR21	10
USAEH004	−118.80	28	−91.16	36.05	5.38	3.24	153	2	62.9	1 5 6	10
USAPSA02	−165.80	28	−117.79	40.58	4.04	0.82	135	2	63.6	9/GR1	
USAPSA03	−174.80	28	−118.20	40.15	3.63	0.80	136	2	65.3	9/GR2	
USAWH101	−147.80	28	−109.70	38.13	5.52	1.96	142	2	62.4	10	
USAWH102	−156.80	28	−111.40	38.57	5.51	1.55	138	2	63.5	10	
VEN02VEN	−103.80	28	−63.50	15.50	0.80	0.80	90	2	60.1	9/GR22	
VEN11VEN	−103.80	28	−66.79	6.90	2.50	1.77	122	2	65.6	9/GR22	10

12632,24 MHz (29)

1	2	3	4		5		6	7	8	9		
ALS00002	−166.20	29	−149.66	58.37	3.76	1.24	170	1	59.9	9/GR1	10	
ALS00003	−175.20	29	−150.98	58.53	3.77	1.11	167	1	60.2	9/GR2	10	
ARGINSU4	−94.20	29	−52.98	−59.81	3.40	0.80	19	1	60.1	9/GR3		
ARGINSU5	−55.20	29	−44.17	−59.91	3.77	0.80	13	1	59.5	9/GR4		
ARGSUR04	−94.20	29	−65.04	−43.33	3.32	1.50	40	1	60.9	9/GR3		
ARGSUR05	−55.20	29	−63.68	−43.01	2.54	2.38	152	1	60.2	9/GR4		
B CE311	−64.20	29	−40.60	−6.07	3.04	2.06	174	1	61.9	8 9/GR7		
B CE312	−45.20	29	−40.27	−6.06	3.44	2.09	174	1	61.2	8 9/GR9	10	11
B CE411	−64.20	29	−50.97	−15.27	3.86	1.38	49	1	62.9	8 9/GR7		
B CE412	−45.20	29	−50.71	−15.30	3.57	1.56	52	1	63.0	8 9/GR9	10	12
B CE511	−64.20	29	−53.10	−2.90	2.44	2.13	104	1	63.4	8 9/GR7		
B NO611	−74.20	29	−59.60	−11.62	2.85	1.69	165	2	63.1	8 9/GR8		
B NO711	−74.20	29	−60.70	−1.78	3.54	1.78	126	2	63.1	8 9/GR8		
B NO811	−74.20	29	−68.76	−4.71	2.37	1.65	73	2	63.1	8 9/GR8		
B SU111	−81.20	29	−51.12	−25.63	2.76	1.05	50	1	63.2	8 9/GR6		
B SU112	−45.20	29	−50.75	−25.62	2.47	1.48	56	1	62.5	8 9/GR9	11	
B SU211	−81.20	29	−44.51	−16.95	3.22	1.36	60	1	62.8	8 9/GR6		
B SU212	−45.20	29	−44.00	−16.87	3.20	1.96	58	1	61.6	8 9/GR9	12	
BERBERMU	−96.20	29	−64.77	32.32	0.80	0.80	90	2	57.0			
B OLAND01	−115.20	29	−65.04	−16.76	2.49	1.27	76	1	68.0	9/GR5		
CAN01101	−138.20	29	−125.63	57.24	3.45	1.27	157	1	59.7	9/GR10	10	
CAN01201	−138.20	29	−112.04	55.95	3.35	0.97	151	1	59.8	9/GR10	10	
CAN01202	−72.70	29	−107.70	55.63	2.74	1.12	32	1	59.8			
CAN01203	−129.20	29	−111.48	55.61	3.08	1.15	151	1	59.7	9/GR12	10	

CAN01303	−129.20	29	−102.42	57.12	3.54	0.91	154	1	60.2	9/GR12	10
CAN01304	−91.20	29	−99.12	57.36	1.98	1.72	2	1	60.0	9/GR13	
CAN01403	−129.20	29	−89.75	52.02	4.68	0.80	148	1	62.1	9/GR12	10
CAN01404	−91.20	29	−84.82	52.42	3.10	2.05	152	1	60.6	9/GR13	
CAN01405	−82.20	29	−84.00	52.39	2.84	2.29	172	1	60.5	9/GR14	
CAN01504	−91.20	29	−72.66	53.77	3.57	1.67	156	1	60.4	9/GR13	
CAN01505	−82.20	29	−71.77	53.79	3.30	1.89	162	1	60.3	9/GR14	
CAN01605	−82.20	29	−61.50	49.55	2.65	1.40	143	1	60.5	9/GR14	
CAN01606	−70.70	29	−61.30	49.55	2.40	1.65	148	1	60.4		
CHLCONT5	−106.20	29	−72.23	−35.57	2.60	0.80	55	1	59.6	9/GR17	
CHLPAC02	−106.20	29	−80.06	−30.06	1.36	0.80	69	1	59.4	9/GR17	
CLMAND01	−115.20	29	−74.72	5.93	3.85	1.63	114	1	65.3	9/GR5	10
CLM00001	−103.20	29	−74.50	5.87	3.98	1.96	118	1	63.9	10	
EQACAND1	−115.20	29	−78.40	−1.61	1.37	0.95	75	1	64.4	9/GR5	
EQAGAND1	−115.20	29	−90.34	−0.62	0.90	0.81	89	1	61.5	9/GR5	
HWA00002	−166.20	29	−165.79	23.42	4.20	0.80	160	1	59.0	9/GR1	10
HWA00003	−175.20	29	−166.10	23.42	4.25	0.80	159	1	58.9	9/GR2	10
JMC00002	−92.70	29	−77.30	18.12	0.80	0.80	90	2	60.1		
MEX01NTE	−78.20	29	−105.81	26.01	2.89	2.08	155	1	60.7	1	
MEX01SUR	−69.20	29	−94.84	19.82	3.05	2.09	4	1	62.5	1	
MEX02NTE	−136.20	29	−107.21	26.31	3.84	1.55	148	1	61.4	1	10
MEX02SUR	−127.20	29	−96.39	19.88	3.18	1.87	157	1	62.8	1	10
PAQPAC01	−106.20	29	−109.18	−27.53	0.80	0.80	90	1	56.4	9/GR17	
PRG00002	−99.20	29	−58.66	−23.32	1.45	1.04	76	1	60.4		

12632,24 MHz (29)

1	2	3	4		5		6	7	8	9	
PRUAND02	–115.20	29	–74.69	–8.39	3.41	1.79	95	1	64.3	9/GR5	
PTRVIR01	–101.20	29	–65.85	18.12	0.80	0.80	90	1	60.8	1 6 9/GR20	
PTRVIR02	–110.20	29	–65.86	18.12	0.80	0.80	90	1	61.3	1 6 9/GR21	
SCN00001	–79.70	29	–62.46	17.44	0.80	0.80	90	1	58.6		
SPMFRAN3	–53.20	29	–67.24	47.51	3.16	0.80	7	1	60.6	2 7	
SURINAM2	–84.70	29	–55.69	4.35	1.00	0.80	86	1	63.5		
URG00001	–71.70	29	–56.22	–32.52	1.02	0.89	11	1	60.2		
USAEH001	–61.70	29	–85.19	36.21	5.63	3.33	22	1	62.1	1 5 6	
USAEH002	–101.20	29	–89.24	36.16	5.67	3.76	170	1	62.0	1 6 9/GR20	10
USAEH003	–110.20	29	–90.14	36.11	5.55	3.55	161	1	62.3	1 6 9/GR21	10
USAEH004	–119.20	29	–91.16	36.05	5.38	3.24	152	1	62.9	1 5 6	10
USAPSA02	–166.20	29	–117.80	40.58	4.03	0.82	135	1	63.5	9/GR1	
USAPSA03	–175.20	29	–118.27	40.12	3.62	0.80	136	1	65.3	9/GR2	
USAWH101	–148.20	29	–109.65	38.13	5.53	1.95	142	1	62.3	10	
USAWH102	–157.20	29	–111.41	38.57	5.51	1.54	138	1	63.5	10	
VENAND03	–115.20	29	–67.04	6.91	2.37	1.43	111	1	67.6	9/GR5	10

ALS00002	−165.80	30	−149.63	58.52	3.81	1.23	171	2	59.9	9/GR1	10	
ALS00003	−174.80	30	−150.95	58.54	3.77	1.11	167	2	60.2	9/GR2	10	
ARGNORT4	−93.80	30	−63.96	−30.01	3.86	1.99	48	2	66.0			
ARGNORT5	−54.80	30	−62.85	−29.80	3.24	2.89	47	2	63.8			
ATNBEAM1	−52.80	30	−66.44	14.87	1.83	0.80	39	2	61.3			
B CE311	−63.80	30	−40.60	−6.07	3.04	2.06	174	2	61.9	8 9/GR7		
B CE312	−44.80	30	−40.26	−6.06	3.44	2.09	174	2	61.2	8 9/GR9	10	11
B CE411	−63.80	30	−50.97	−15.26	3.86	1.38	49	2	62.9	8 9/GR7		
B CE412	−44.80	30	−50.71	−15.30	3.57	1.56	52	2	63.0	8 9/GR9	10	12
B CE511	−63.80	30	−53.11	−2.98	2.42	2.15	107	2	63.4	8 9/GR7		
B NO611	−73.80	30	−59.60	−11.62	2.86	1.69	165	1	63.1	8 9/GR8		
B NO711	−73.80	30	−60.70	−1.78	3.54	1.78	126	1	63.1	8 9/GR8		
B NO811	−73.80	30	−68.75	−4.71	2.37	1.65	73	1	63.1	8 9/GR8		
B SE911	−101.80	30	−45.99	−19.09	2.22	0.80	62	2	65.7	8		
B SU111	−80.80	30	−51.10	−25.64	2.76	1.06	50	2	63.1	8 9/GR6		
B SU112	−44.80	30	−50.76	−25.62	2.47	1.48	56	2	62.6	8 9/GR9	11	
B SU211	−80.80	30	−44.51	−16.94	3.22	1.37	60	2	62.8	8 9/GR6		
B SU212	−44.80	30	−43.99	−16.97	3.27	1.92	59	2	61.6	8 9/GR9	12	
B LZ00001	−115.80	30	−88.68	17.27	0.80	0.80	90	2	59.2			
CAN01101	−137.80	30	−125.60	57.24	3.45	1.27	157	2	59.7	9/GR10	10	
CAN01201	−137.80	30	−111.92	55.89	3.33	0.98	151	2	59.8	9/GR10	10	
CAN01202	−72.30	30	−107.64	55.62	2.75	1.11	32	2	59.8			
CAN01203	−128.80	30	−111.43	55.56	3.07	1.15	151	2	59.7	9/GR12	10	
CAN01303	−128.80	30	−102.39	57.12	3.54	0.92	154	2	60.3	9/GR12	10	

12646,82 MHz (30)

1	2	3	4		5		6	7	8	9	
CAN01304	−90.80	30	−99.00	57.33	1.96	1.73	1	2	60.0	9/GR13	
CAN01403	−128.80	30	−89.70	52.02	4.67	0.80	148	2	62.1	9/GR12	10
CAN01404	−90.80	30	−84.78	52.41	3.09	2.06	153	2	60.6	9/GR13	
CAN01405	−81.80	30	−84.02	52.34	2.82	2.30	172	2	60.5	9/GR14	
CAN01504	−90.80	30	−72.68	53.78	3.57	1.67	157	2	60.4	9/GR13	
CAN01505	−81.80	30	−71.76	53.76	3.30	1.89	162	2	60.3	9/GR14	
CAN01605	−81.80	30	−61.54	49.50	2.66	1.39	144	2	60.5	9/GR14	
CAN01606	−70.30	30	−61.32	49.51	2.41	1.65	148	2	60.4		
CHLCONT4	−105.80	30	−69.59	−23.20	2.21	0.80	68	2	59.3	9/GR16	
CHLCONT6	−105.80	30	−73.52	−55.52	3.65	1.31	39	2	59.7	9/GR16	
CRBBAH01	−92.30	30	−76.09	24.13	1.83	0.80	141	1	61.9	9/GR18	
CRBBER01	−92.30	30	−64.76	32.13	0.80	0.80	90	1	56.9	9/GR18	
CRBBLZ01	−92.30	30	−88.61	17.26	0.80	0.80	90	1	58.9	9/GR18	
CRBEC001	−92.30	30	−60.07	8.26	4.20	0.86	115	1	64.6	9/GR18	
CRBJMC01	−92.30	30	−79.45	17.97	0.99	0.80	151	1	61.3	9/GR18	
CTR00201	−130.80	30	−84.33	9.67	0.82	0.80	119	2	66.0		
DMAIFRB1	−79.30	30	−61.30	15.35	0.80	0.80	90	2	58.7		
EQAC0001	−94.80	30	−78.31	−1.52	1.48	1.15	65	1	63.3	9/GR19	
EQAG0001	−94.80	30	−90.36	−0.57	0.94	0.89	99	1	61.2	9/GR19	
HWA00002	−165.80	30	−165.79	23.32	4.20	0.80	160	2	59.0	9/GR1	10
HWA00003	−174.80	30	−166.10	23.42	4.25	0.80	159	2	59.0	9/GR2	10
MEX01NTE	−77.80	30	−105.80	25.99	2.88	2.07	155	2	60.7	1	
MEX02NTE	−135.80	30	−107.36	26.32	3.80	1.57	149	2	61.4	1	10
MEX02SUR	−126.80	30	−96.39	19.88	3.19	1.87	158	2	62.8	1	10

NCG00003	−107.30	30	−84.99	12.90	1.05	1.01	176	1	63.6		
PRU00004	−85.80	30	−74.19	−8.39	3.74	2.45	112	2	63.1		
PTRVIR01	−100.80	30	−65.85	18.12	0.80	0.80	90	2	60.8	1 6 9/GR20	
PTRVIR02	−109.80	30	−65.85	18.12	0.80	0.80	90	2	61.4	1 6 9/GR21	
USAEH001	−61.30	30	−85.16	36.21	5.63	3.32	22	2	62.1	1 5 6	
USAEH002	−100.80	30	−89.28	36.16	5.65	3.78	170	2	62.0	1 6 9/GR20	10
USAEH003	−109.80	30	−90.12	36.11	5.55	3.56	161	2	62.3	1 6 9/GR21	10
USAEH004	−118.80	30	−91.16	36.05	5.38	3.24	153	2	62.9	1 5 6	10
USAPSA02	−165.80	30	−117.79	40.58	4.04	0.82	135	2	63.5	9/GR1	
USAPSA03	−174.80	30	−118.20	40.15	3.63	0.80	136	2	65.3	9/GR2	
USAWH101	−147.80	30	−109.70	38.13	5.52	1.96	142	2	62.3	10	
USAWH102	−156.80	30	−111.40	38.57	5.51	1.55	138	2	63.5	10	
VEN11VEN	−103.80	30	−66.79	6.90	2.50	1.77	122	2	65.5	10	

12661,40 MHz (31)

1	2	3	4		5		6	7	8	9		
ALS00002	−166.20	31	−149.66	58.37	3.76	1.24	170	1	60.0	9/GR1	10	
ALS00003	−175.20	31	−150.98	58.53	3.77	1.11	167	1	60.2	9/GR2	10	
ARGINSU4	−94.20	31	−52.98	−59.81	3.40	0.80	19	1	60.1	9/GR3		
ARGINSU5	−55.20	31	−44.17	−59.91	3.77	0.80	13	1	59.5	9/GR4		
ARGSUR04	−94.20	31	−65.04	−43.33	3.32	1.50	40	1	60.9	9/GR3		
ARGSUR05	−55.20	31	−63.68	−43.01	2.54	2.38	152	1	60.3	9/GR4		
B CE311	−64.20	31	−40.60	−6.07	3.04	2.06	174	1	61.9	8 9/GR7		
B CE312	−45.20	31	−40.27	−6.06	3.44	2.09	174	1	61.3	8 9/GR9	10	11
B CE411	−64.20	31	−50.97	−15.27	3.86	1.38	49	1	62.9	8 9/GR7		
B CE412	−45.20	31	−50.71	−15.30	3.57	1.56	52	1	63.1	8 9/GR9	10	12
B CE511	−64.20	31	−53.10	−2.90	2.44	2.13	104	1	63.4	8 9/GR7		
B NO611	−74.20	31	−59.60	−11.62	2.85	1.69	165	2	63.2	8 9/GR8		
B NO711	−74.20	31	−60.70	−1.78	3.54	1.78	126	2	63.2	8 9/GR8		
B NO811	−74.20	31	−68.76	−4.71	2.37	1.65	73	2	63.1	8 9/GR8		
B SU111	−81.20	31	−51.12	−25.63	2.76	1.05	50	1	63.2	8 9/GR6		
B SU112	−45.20	31	−50.75	−25.62	2.47	1.48	56	1	62.6	8 9/GR9	11	
B SU211	−81.20	31	−44.51	−16.95	3.22	1.36	60	1	62.8	8 9/GR6		
B SU212	−45.20	31	−44.00	−16.87	3.20	1.96	58	1	61.6	8 9/GR9	12	
BERBERMU	−96.20	31	−64.77	32.32	0.80	0.80	90	2	57.0			
B OLAND01	−115.20	31	−65.04	−16.76	2.49	1.27	76	1	68.1	9/GR5		
B OL00001	−87.20	31	−64.61	−16.71	2.52	2.19	85	1	64.2			
B RB00001	−92.70	31	−59.85	12.93	0.80	0.80	90	2	59.4			
CAN01101	−138.20	31	−125.63	57.24	3.45	1.27	157	1	59.7	9/GR10	10	
CAN01201	−138.20	31	−112.04	55.95	3.35	0.97	151	1	59.8	9/GR10	10	

CAN01202	−72.70	31	−107.70	55.63	2.74	1.12	32	1	59.8		
CAN01203	−129.20	31	−111.48	55.61	3.08	1.15	151	1	59.7	9/GR12	10
CAN01303	−129.20	31	−102.42	57.12	3.54	0.91	154	1	60.3	9/GR12	10
CAN01304	−91.20	31	−99.12	57.36	1.98	1.72	2	1	60.1	9/GR13	
CAN01403	−129.20	31	−89.75	52.02	4.68	0.80	148	1	62.1	9/GR12	10
CAN01404	−91.20	31	−84.82	52.42	3.10	2.05	152	1	60.6	9/GR13	
CAN01405	−82.20	31	−84.00	52.39	2.84	2.29	172	1	60.5	9/GR14	
CAN01504	−91.20	31	−72.66	53.77	3.57	1.67	156	1	60.4	9/GR13	
CAN01505	−82.20	31	−71.77	53.79	3.30	1.89	162	1	60.4	9/GR14	
CAN01605	−82.20	31	−61.50	49.55	2.65	1.40	143	1	60.5	9/GR14	
CAN01606	−70.70	31	−61.30	49.55	2.40	1.65	148	1	60.5		
CHLCONT5	−106.20	31	−72.23	−35.57	2.60	0.80	55	1	59.6	9/GR17	
CHLPAC02	−106.20	31	−80.06	−30.06	1.36	0.80	69	1	59.4	9/GR17	
CLMAND01	−115.20	31	−74.72	5.93	3.85	1.63	114	1	65.4	9/GR5	10
CLM00001	−103.20	31	−74.50	5.87	3.98	1.96	118	1	63.9	10	
CUB00001	−89.20	31	−79.81	21.62	2.24	0.80	168	1	61.3		
EQACAND1	−115.20	31	−78.40	−1.61	1.37	0.95	75	1	64.4	9/GR5	
EQAGAND1	−115.20	31	−90.34	−0.62	0.90	0.81	89	1	61.6	9/GR5	
GRD00059	−57.20	31	−61.58	12.29	0.80	0.80	90	1	58.7		
GRLDNK01	−53.20	31	−44.89	66.56	2.70	0.82	173	1	60.2	2	
GUY00201	−84.70	31	−59.19	4.78	1.44	0.85	95	1	63.8		
HWA00002	−166.20	31	−165.79	23.42	4.20	0.80	160	1	59.0	9/GR1	10
HWA00003	−175.20	31	−166.10	23.42	4.25	0.80	159	1	59.0	9/GR2	10
MEX01NTE	−78.20	31	−105.81	26.01	2.89	2.08	155	1	60.8	1	

12661,40 MHz (31)

1	2	3	4		5		6	7	8	9	
MEX01SUR	–69.20	31	–94.84	19.82	3.05	2.09	4	1	62.5	1	
MEX02NTE	–136.20	31	–107.21	26.31	3.84	1.55	148	1	61.5	1	10
MEX02SUR	–127.20	31	–96.39	19.88	3.18	1.87	157	1	62.8	1	10
MSR00001	–79.70	31	–61.73	16.75	0.80	0.80	90	1	58.9	4	
PAQPAC01	–106.20	31	–109.18	–27.53	0.80	0.80	90	1	56.4	9/GR17	
PRG00002	–99.20	31	–58.66	–23.32	1.45	1.04	76	1	60.5		
PRUAND02	–115.20	31	–74.69	–8.39	3.41	1.79	95	1	64.3	9/GR5	
PTRVIR01	–101.20	31	–65.85	18.12	0.80	0.80	90	1	60.8	1 6 9/GR20	
PTRVIR02	–110.20	31	–65.86	18.12	0.80	0.80	90	1	61.3	1 6 9/GR21	
URG00001	–71.70	31	–56.22	–32.52	1.02	0.89	11	1	60.2		
USAEH001	–61.70	31	–85.19	36.21	5.63	3.33	22	1	62.1	1 5 6	
USAEH002	–101.20	31	–89.24	36.16	5.67	3.76	170	1	62.0	1 6 9/GR20	10
USAEH003	–110.20	31	–90.14	36.11	5.55	3.55	161	1	62.4	1 6 9/GR21	10
USAEH004	–119.20	31	–91.16	36.05	5.38	3.24	152	1	62.9	1 5 6	10
USAPSA02	–166.20	31	–117.80	40.58	4.03	0.82	135	1	63.6	9/GR1	
USAPSA03	–175.20	31	–118.27	40.12	3.62	0.80	136	1	65.4	9/GR2	
USAWH101	–148.20	31	–109.65	38.13	5.53	1.95	142	1	62.4	10	
USAWH102	–157.20	31	–111.41	38.57	5.51	1.54	138	1	63.5	10	
VENAND03	–115.20	31	–67.04	6.91	2.37	1.43	111	1	67.7	9/GR5	10

ALS00002	−165.80	32	−149.63	58.52	3.81	1.23	171	2	59.9	9/GR1	10	
ALS00003	−174.80	32	−150.95	58.54	3.77	1.11	167	2	60.2	9/GR2	10	
ARGNORT4	−93.80	32	−63.96	−30.01	3.86	1.99	48	2	66.1			
ARGNORT5	−54.80	32	−62.85	−29.80	3.24	2.89	47	2	63.9			
B CE311	−63.80	32	−40.60	−6.07	3.04	2.06	174	2	61.9	8 9/GR7		
B CE312	−44.80	32	−40.26	−6.06	3.44	2.09	174	2	61.3	8 9/GR9	10	11
B CE411	−63.80	32	−50.97	−15.26	3.86	1.38	49	2	62.9	8 9/GR7		
B CE412	−44.80	32	−50.71	−15.30	3.57	1.56	52	2	63.1	8 9/GR9	10	12
B CE511	−63.80	32	−53.11	−2.98	2.42	2.15	107	2	63.4	8 9/GR7		
B NO611	−73.80	32	−59.60	−11.62	2.86	1.69	165	1	63.2	8 9/GR8		
B NO711	−73.80	32	−60.70	−1.78	3.54	1.78	126	1	63.2	8 9/GR8		
B NO811	−73.80	32	−68.75	−4.71	2.37	1.65	73	1	63.2	8 9/GR8		
B SE911	−101.80	32	−45.99	−19.09	2.22	0.80	62	2	65.7	8		
B SU111	−80.80	32	−51.10	−25.64	2.76	1.06	50	2	63.2	8 9/GR6		
B SU112	−44.80	32	−50.76	−25.62	2.47	1.48	56	2	62.6	8 9/GR9	11	
B SU211	−80.80	32	−44.51	−16.94	3.22	1.37	60	2	62.8	8 9/GR6		
B SU212	−44.80	32	−43.99	−16.97	3.27	1.92	59	2	61.6	8 9/GR9	12	
CAN01101	−137.80	32	−125.60	57.24	3.45	1.27	157	2	59.7	9/GR10	10	
CAN01201	−137.80	32	−111.92	55.89	3.33	0.98	151	2	59.8	9/GR10	10	
CAN01202	−72.30	32	−107.64	55.62	2.75	1.11	32	2	59.8			
CAN01203	−128.80	32	−111.43	55.56	3.07	1.15	151	2	59.7	9/GR12	10	
CAN01303	−128.80	32	−102.39	57.12	3.54	0.92	154	2	60.3	9/GR12	10	
CAN01304	−90.80	32	−99.00	57.33	1.96	1.73	1	2	60.0	9/GR13		
CAN01403	−128.80	32	−89.70	52.02	4.67	0.80	148	2	62.1	9/GR12	10	

12675,98 MHz (32)

1	2	3	4		5		6	7	8	9	
CAN01404	−90.80	32	−84.78	52.41	3.09	2.06	153	2	60.6	9/GR13	
CAN01405	−81.80	32	−84.02	52.34	2.82	2.30	172	2	60.5	9/GR14	
CAN01504	−90.80	32	−72.68	53.78	3.57	1.67	157	2	60.4	9/GR13	
CAN01505	−81.80	32	−71.76	53.76	3.30	1.89	162	2	60.4	9/GR14	
CAN01605	−81.80	32	−61.54	49.50	2.66	1.39	144	2	60.5	9/GR14	
CAN01606	−70.30	32	−61.32	49.51	2.41	1.65	148	2	60.5		
CHLCONT4	−105.80	32	−69.59	−23.20	2.21	0.80	68	2	59.3	9/GR16	
CHLCONT6	−105.80	32	−73.52	−55.52	3.65	1.31	39	2	59.8	9/GR16	
CRBBAH01	−92.30	32	−76.09	24.13	1.83	0.80	141	1	62.0	9/GR18	
CRBBER01	−92.30	32	−64.76	32.13	0.80	0.80	90	1	57.0	9/GR18	
CRBBLZ01	−92.30	32	−88.61	17.26	0.80	0.80	90	1	58.9	9/GR18	
CRBEC001	−92.30	32	−60.07	8.26	4.20	0.86	115	1	64.6	9/GR18	
CRBJMC01	−92.30	32	−79.45	17.97	0.99	0.80	151	1	61.4	9/GR18	
EQAC0001	−94.80	32	−78.31	−1.52	1.48	1.15	65	1	63.3	9/GR19	
EQAG0001	−94.80	32	−90.36	−0.57	0.94	0.89	99	1	61.3	9/GR19	
GRD00003	−79.30	32	−61.62	12.34	0.80	0.80	90	2	58.9		
GTMIFRB2	−107.30	32	−90.50	15.64	1.03	0.80	84	1	61.4		
GUFMGG02	−52.80	32	−56.42	8.47	4.16	0.81	123	2	63.0	2 7	
HWA00002	−165.80	32	−165.79	23.32	4.20	0.80	160	2	59.0	9/GR1	10
HWA00003	−174.80	32	−166.10	23.42	4.25	0.80	159	2	59.0	9/GR2	10
MEX01NTE	−77.80	32	−105.80	25.99	2.88	2.07	155	2	60.8	1	
MEX02NTE	−135.80	32	−107.36	26.32	3.80	1.57	149	2	61.5	1	10
MEX02SUR	−126.80	32	−96.39	19.88	3.19	1.87	158	2	62.8	1	10
PNRIFRB2	−121.00	32	−80.15	8.46	1.01	0.80	170	1	65.1		

PRU00004	−85.80	32	−74.19	−8.39	3.74	2.45	112	2	63.2		
PTRVIR01	−100.80	32	−65.85	18.12	0.80	0.80	90	2	60.9	1 6 9/GR20	
PTRVIR02	−109.80	32	−65.85	18.12	0.80	0.80	90	2	61.4	1 6 9/GR21	
USAEH001	−61.30	32	−85.16	36.21	5.63	3.32	22	2	62.1	1 5 6	
USAEH002	−100.80	32	−89.28	36.16	5.65	3.78	170	2	62.0	1 6 9/GR20	10
USAEH003	−109.80	32	−90.12	36.11	5.55	3.56	161	2	62.4	1 6 9/GR21	10
USAEH004	−118.80	32	−91.16	36.05	5.38	3.24	153	2	62.9	1 5 6	10
USAPSA02	−165.80	32	−117.79	40.58	4.04	0.82	135	2	63.6	9/GR1	
USAPSA03	−174.80	32	−118.20	40.15	3.63	0.80	136	2	65.3	9/GR2	
USAWH101	−147.80	32	−109.70	38.13	5.52	1.96	142	2	62.4	10	
USAWH102	−156.80	32	−111.40	38.57	5.51	1.55	138	2	63.5	10	
VEN02VEN	−103.80	32	−63.50	15.50	0.80	0.80	90	2	60.1	9/GR22	
VEN11VEN	−103.80	32	−66.79	6.90	2.50	1.77	122	2	65.6	9/GR22	10

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ARTICLE 11

The Plan for the Broadcasting-Satellite Service in the Frequency Bands 11.7 - 12.2 GHz in Region 3 and 11.7 - 12.5 GHz in Region 1

(§ 11.1 - footnote)

MOD

[1] See Annex 5, paragraph 3.2.3.

Note by the General Secretariat: Only the title of Article 11 and the footnote to 11.1 are reproduced in these Final Acts. The Article itself, which contains the Regions 1 and 3 Plan, was not considered by the Conference, but will be included in the 1986 updating of the Radio Regulations.

MOD

ARTICLE 12

Relationship to Resolution 507

12.1 The provisions and associated Plans for the broadcasting-satellite service in Regions 1 and 3 and in Region 2, of this Appendix, shall be regarded as including a world agreement and associated Plans for Regions 1, 2 and 3 in accordance with *resolves* 1 of Resolution **507**, which requires the stations in the broadcasting-satellite service to be established and operated in accordance with such agreements and associated plans.

MOD

ARTICLE 13

Interference

13.1 The Members of the Union shall endeavour to agree on the action required to reduce harmful interference which might be caused by the application of these provisions and the associated Plans.

MOD

ARTICLE 14

Period of Validity of the Provisions and Associated Plans

14.1 For Regions 1 and 3, the provisions and associated Plan have been prepared in order to meet the requirements of the broadcasting-satellite service in the bands concerned for a period of at least fifteen years from 1 January 1979.

14.2 For Region 2, the provisions and associated Plan have been prepared in order to meet the requirements of the broadcasting-satellite service in the bands concerned for a period extending until at least 1 January 1994.

14.3 In any event, the provisions and associated Plans shall remain in force until their revision by a competent administrative radio conference convened in accordance with the relevant provisions of the Convention in force.

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ARTICLE 15

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ARTICLE 16

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ANNEX 1

Limits for Determining Whether a Service of an Administration is Affected by a Proposed Modification to the Plans or When It is Necessary Under This Appendix to Seek the Agreement of Any Other Administration [1]

(See Article 4)

1. *Limits to the change in the wanted-to-interfering signal ratio with respect to frequency assignments in conformity with the Regions 1 and 3 Plan*

With respect to paragraph 4.3.1.1, an administration in Region 1 or 3 shall be considered as being affected if the effect of the proposed modification to the Regions 1 and 3 Plan would result in the wanted-to-interfering signal ratio at any point within the service area associated with any of its frequency assignments in that Plan falling below either 30 dB or the value resulting from the frequency assignments in the Plan at the date of entry into force of the Final Acts [2], whichever is the lower.

Note: In performing the calculation, the effect at the receiver input of all the co-channel and adjacent-channel signals is expressed in terms of one equivalent co-channel interfering signal. This value is usually expressed in decibels.

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[1] With respect to this Annex, except for section 2 and sub-section 8 *b)*, the limits relate to the power flux-density which would be obtained assuming free-space propagation conditions.

With respect to sub-section 8 *b)* of this Annex, the limits relate to the power flux-density which would be obtained assuming clear-sky propagation conditions using the method contained in Annex 5.

With respect to section 2 of this Annex, the limit specified relates to the overall equivalent protection margin calculated in accordance with section 2.4.4 of Annex 5.

[2] Final Acts of the 1977 Conference, which entered into force on 1 January 1979.

2. *Limits to the change in the overall equivalent protection margin with respect to frequency assignments in conformity with the Region 2 Plan*

With respect to paragraph 4.3.3.1, an administration in Region 2 shall be considered as being affected if the overall equivalent protection margin[1] corresponding to a test point of its entry in the Region 2 Plan, including the cumulative effect of any previous modification to that Plan or any previous agreement, falls more than 0.25 dB below 0 dB, or, if already negative, more than 0.25 dB below the value resulting from:

- the Region 2 Plan as established by the 1983 Conference; *or*
- a modification of the assignment in accordance with this Appendix; *or*
- a new entry in the Region 2 Plan under Article 4 of this Appendix; *or*
- any agreement reached in accordance with this Appendix.

3. *Limits to the change in the power flux-density to protect the broadcasting-satellite service in Regions 1 and 2 in the band 12.2 - 12.5 GHz and in Region 3 in the band 12.5 - 12.7 GHz*

With respect to paragraph 4.3.1.2, an administration in Region 2 shall be considered as being affected if the proposed modification to the Regions 1 and 3 Plan would result in exceeding the power flux-densities given below, at any point in the service area affected.

[1] For the definition of the overall equivalent protection margin, see section 1.14 of Annex 5 to this Appendix.

With respect to paragraph 4.3.3.2 or 4.3.3.6 as appropriate, an administration in Region 1 or 3 shall be considered as being affected if the proposed modification to the Region 2 Plan would result in exceeding the power flux-densities given below, at any point in the service area affected.

-147 dB(W/m^2/27 MHz)	for $0° \leqslant \theta < 0.44°$;
$-138 + 25 \log \theta$ dB(W/m^2/27 MHz)	for $0.44° \leqslant \theta < 19.1°$;
-106 dB(W/m^2/27 MHz)	for $\theta \geqslant 19.1°$;

where θ is:

– the difference in degrees between the longitudes of the broadcasting-satellite space station in Region 1 or 3 and the broadcasting-satellite space station affected in Region 2, *or*

– the difference in degrees between the longitudes of the broadcasting-satellite space station in Region 2 and the broadcasting-satellite space station affected in Region 1 or 3.

4. *Limits to the change in the power flux-density to protect the terrestrial services of administrations in Region 2*

With respect to paragraph 4.3.1.3, an administration in Region 2 shall be considered as being affected if the proposed modification to the Regions 1 and 3 Plan would result in exceeding a power flux-density, for any angle of arrival, at any point on its territories, of:

-125 dB(W/m^2/4 kHz)	when the broadcasting-satellite station uses circular polarization, *and,*
-128 dB(W/m^2/4 kHz)	when the broadcasting-satellite station uses linear polarization.

5. *Limits to the change in the power flux-density to protect the terrestrial services of administrations in Regions 1 and 3*[1]

With respect to paragraph 4.3.3.4, an administration in Region 1 or 3 shall be considered as being affected if the proposed modification to the Region 2 Plan would result in the following power flux-density limits being exceeded:

a) in the frequency band 12.2 - 12.7 GHz for all the territories of administrations in Regions 1[2] and 3 and for any arrival angle γ:

-125 dB(W/m^2/4 kHz)	for broadcasting-satellite space stations using circular polarization;
-128 dB(W/m^2/4 kHz)	for broadcasting-satellite space stations using linear polarization;

b) in the frequency band 12.2 - 12.5 GHz for territories of administrations in Region 3 and those in the western part of Region 1, west of longitude 30° E[3]:

-132 dB(W/m^2/5 MHz)	for $0° \leqslant \gamma < 10°$;
$-132 + 4.2\,(\gamma - 10)$ dB(W/m^2/5 MHz)	for $10° \leqslant \gamma < 15°$;
-111 dB(W/m^2/5 MHz)	for $15° \leqslant \gamma < 90°$;

[1] See section 3.18 of Annex 5

[2] In the band 12.5 - 12.7 GHz in Region 1, these limits are applicable only to the territory of administrations mentioned in Nos. **848** and **850** of the Radio Regulations.

[3] See Resolution **34**.

c) in the frequency band 12.2 – 12.7 GHz for territories of administrations in Region 1[1], east of longitude 30° E:

-134 dB(W/m^2/5 MHz) for $\gamma = 0°$;

$-134 + 4.6975\ \gamma^2$ dB(W/m^2/5 MHz) for $0° < \gamma \leqslant 0.8°$;

$-128.5 + 25 \log \gamma$ dB(W/m^2/5 MHz) for $\gamma > 0.8°$;

d) in the frequency band 12.5 – 12.7 GHz for all the territories of administrations of Regions 1[1] and 3:

-148 dB(W/m^2/4 kHz) for $\gamma = 0°$;

$-148 + 4.6975\ \gamma^2$ dB(W/m^2/4 kHz) for $0° < \gamma \leqslant 0.8°$;

$-142.5 + 25 \log \gamma$ dB(W/m^2/4 kHz) for $\gamma > 0.8°$,

where γ is the angle of arrival of the incident wave above the horizontal plane, in degrees.

6. *Limits to the change in the power flux-density of assignments in the Regions 1 and 3 Plan to protect the fixed-satellite service (space-to-Earth) in the band 11.7 - 12.2 GHz in Region 2, and of assignments in the Region 2 Plan to protect the fixed-satellite service (space-to-Earth) in the band 12.5 - 12.7 GHz in Region 1 and in the band 12.2 - 12.7 GHz in Region 3*

With respect to paragraph 4.3.1.5, an administration in Region 2 shall be considered as being affected if the proposed modification to the Regions 1 and 3 Plan would result in an increase in the power flux-density on its territory of 0.25 dB or more above that resulting from the frequency assignments in the Regions 1 and 3 Plan at the time of entry into force of the Final Acts[2].

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[1] In the band 12.5 - 12.7 GHz in Region 1, these limits are applicable only to the territory of administrations mentioned in Nos. **848** and **850** of the Radio Regulations.

[2] Final Acts of the 1977 Conference, which entered into force on 1 January 1979.

With respect to paragraph 4.3.3.5, an administration in Region 1 or 3 shall be considered as being affected if the proposed modification to the Region 2 Plan would result in an increase in the power flux-density on its territory of 0.25 dB or more above that resulting from the frequency assignments in the Region 2 Plan at the time of entry into force of the Final Acts[1].

However, where an assignment in the Regions 1 and 3 Plan or its subsequent modification gives a power flux-density of less than -138 dB(W/m^2/27 MHz) anywhere in the territory of an administration of Region 2, that administration shall be considered as not being affected; where an assignment in the Region 2 Plan or its subsequent modification gives a power flux-density of less than -160 dB(W/m^2/4 kHz) anywhere in the territory of an administration of Region 1 or 3, that administration shall be considered as not being affected.

7. *Limits to the change in equivalent noise temperature to protect the fixed-satellite service (Earth-to-space) in Region 1 from modifications to the Region 2 Plan in the band 12.5 - 12.7 GHz*

With respect to paragraph 4.3.3.5, an administration of Region 1 shall be considered as being affected if the proposed modification to the Region 2 Plan would result in:

- the $\Delta T/T$ resulting from the proposed modification is greater than the $\Delta T/T$ resulting from the assignment in the Region 2 Plan as of the date of entry into force of the Final Acts[1]; *and*
- the $\Delta T/T$ resulting from the proposed modification exceeds 4%,

using the method of Appendix **29** (Case II).

[1] Final Acts of the 1985 Conference.

8. *Limits to the change in the power flux-density to protect the terrestrial services of other administrations*

a) In Region 1 or 3:

With respect to paragraph 4.3.1.4, an administration in Region 1 or 3 shall be considered as being affected if the consequence of the proposed modification of an existing assignment in the Regions 1 and 3 Plan is to increase the power flux-density arriving on any part of the territory of that administration by more than 0.25 dB over that resulting from that frequency assignment in the Regions 1 and 3 Plan at the time of entry into force of the Final Acts[1]. The same administration shall be considered as not being affected if the value of the power flux-density anywhere in its territory does not exceed the limits expressed in section 5 of this Annex.

With respect to paragraph 4.3.1.4 in the case of an addition of a new assignment to the Regions 1 and 3 Plan, an administration in Region 1 or 3 is considered as being affected if the power flux-density on any part of its territory exceeds the limit expressed in section 5 of this Annex.

b) In Region 2:

With respect to paragraph 4.3.3.4, an administration in Region 2 shall be considered as being affected if the consequence of the proposed modification to an existing assignment in the Region 2 Plan is to increase the power flux-density arriving on any part of the territory of that administration by more than 0.25 dB over that resulting from that frequency assignment in the Region 2 Plan at the time of entry into force of the Final Acts[2]. The same administration shall be considered as not being affected if the value of the power flux-density anywhere in its territory does not exceed the following limit: -115 dB(W/m^2).

---

[1] Final Acts of the 1977 Conference, which entered into force on 1 January 1979.

[2] Final Acts of the 1985 Conference.

With respect to paragraph 4.3.3.4 in the case of an addition of a new assignment to the Region 2 Plan, an administration in Region 2 is considered as being affected if the power flux-density on any part of its territory exceeds -115 dB(W/m^2).

MOD

ANNEX 2

Basic Characteristics to Be Furnished in Notices[1] Relating to Space Stations in the Broadcasting-Satellite Service[2]

1. Country and IFRB number in the case of Regions 1 and 3; country and beam identification in the case of Region 2.
2. Nominal orbital position (in degrees from the Greenwich meridian) in the case of Regions 1 and 3; orbital position (xxx.xx degrees from the Greenwich meridian) in the case of Region 2.
3. Assigned frequency or channel number.
4. Date of bringing into use.
5. Identity of the space station.
6. Service area (if necessary, the service area may be defined by a number of "test points").

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[1] The Board shall develop and keep up-to-date forms of notice to meet fully the statutory provisions of this Annex.

[2] In Region 2, only those notices relating to frequency assignments for space stations used for telemetry and tracking purposes associated with the Region 2 Plan shall be furnished in accordance with Appendix **3** to the Radio Regulations.

7. Geographical coordinates of the intersection of the antenna beam axis with the Earth.

8. Rain-climatic zone(s)[1].

9. Class of station.

10. Class of emission and necessary bandwidth.

11. Power supplied to the antenna (dBW) in the case of Regions 1 and 3; and, in the case of Region 2, power supplied to the antenna (dBW) and the maximum power density per Hz (dB(W/Hz)), averaged over the worst 5 MHz, 40 kHz and 4 kHz, supplied to the antenna.

12. Antenna characteristics:

a) gain of the antenna in the direction of maximum radiation referred to an isotropic radiator (dBi);

b) shape of the beam (elliptical, circular, or other);

c) pointing accuracy;

d) type of polarization;

e) sense of polarization;

f) for circular beams indicate the following:

- half-power beamwidth in degrees;
- co-polar and cross-polar radiation patterns;

g) for elliptical beams indicate the following:

- co-polar and cross-polar radiation patterns;
- rotation accuracy;
- orientation;
- major axis (degrees) at the half-power beamwidth;
- minor axis (degrees) at the half-power beamwidth;

[1] As defined in Annex 5 to this Appendix.

h) for beams of other than circular or elliptical shape, indicate the following:

- co-polar and cross-polar gain contours plotted on a map of the Earth's surface, preferably in a radial projection from the satellite on to a plane perpendicular to the line from the centre of the Earth to the satellite. The isotropic or absolute gain shall be indicated at each contour which corresponds to a decrease in gain of 2, 4, 6, 10 and 20 dB and thereafter at 10 dB intervals down to a value of 0 dB relative to an isotropic radiator;
- wherever practicable, a numerical equation or table providing the necessary information to allow the gain contours to be plotted.

In the case of Regions 1 and 3:

i) ΔG (difference between the maximum gain and the gain in the direction of the point in the service area at which the power flux-density is at a minimum).

13. Station keeping accuracy.

14. Modulation characteristics:

a) type of modulation;

b) pre-emphasis characteristics;

c) TV standard;

d) sound broadcasting characteristics;

e) frequency deviation;

f) composition of the baseband;

g) type of multiplexing of the video and sound signals;

h) energy dispersal characteristics.

15. Minimum angle of elevation in the service area in the case of Regions 1 and 3.

16. Type of reception (individual or community) in the case of Regions 1 and 3.

17. Regular hours of operation (UTC).

18. Coordination.

19. Agreements.

20. Other information.

21. Operating administration or company.

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ANNEX 3

Method for Determining the Limiting Interfering Power Flux-Density at the Edge of a Broadcasting-Satellite Service Area in the Frequency Bands 11.7 - 12.2 GHz (in Region 3), 11.7 - 12.5 GHz (in Region 1) and 12.2 - 12.7 GHz (in Region 2) and for Calculating the Power Flux-Density Produced There by a Terrestrial Station

1. *General*

1.1 This Annex describes a method of calculating the interference potential from terrestrial transmitters to broadcasting-satellite receivers.

1.2 The method is in two parts:

a) the calculation of the maximum permissible interfering power flux-density at the edge of the broadcasting-satellite service area concerned;

b) the calculation of the likely power flux-density produced at any point on the edge of the service area by the terrestrial transmitter of another administration.

1.3 The interference potential of the terrestrial transmitters must be considered case by case; the power flux-density produced by each terrestrial transmitter is compared to the limiting power flux-density at any point on the edge of the service area of a broadcasting-satellite station of another administration. If, for a given transmitter, the value of the power flux-density produced is lower than the value of the limiting power flux-density at any point on the edge of the service area, the interference caused to the broadcasting-satellite service by this transmitter is considered to be lower than the permissible value and no coordination is required between administrations before the terrestrial service is brought into use. Where this is not the case, coordination and more precise calculations derived from a mutually agreed basis are necessary.

1.4 It is emphasized that, should the calculation described in this Annex indicate that the maximum permissible power flux-density is exceeded, it does not necessarily preclude the introduction of the terrestrial service since the calculations are necessarily based on worst-case assumptions for:

a) the nature of the terrain of the interference path;

b) the off-beam discrimination on the broadcasting-satellite receiving installations;

c) the necessary protection ratios for the broadcasting-satellite service;

d) the type of reception in the broadcasting-satellite service, i.e., assuming individual reception, this being more critical than community reception for the angles of elevation concerned;

e) the value of power flux-density to be protected in the broadcasting-satellite service;

f) the propagation conditions between the terrestrial station and the broadcasting-satellite service area.

2. *Limit of power flux-density*

2.1 *General*

The limiting power flux-density not to be exceeded at the edge of the service area in order to protect the broadcasting-satellite service of an administration is given by the formula:

$$F = F_0 - R + D + P \qquad (1)$$

where:

F = the maximum permissible interfering power flux-density (dB(W/m^2)) within the necessary bandwidth of the broadcasting-satellite;

F_0 = the wanted power flux-density (dB(W/m^2)) at the edge of the service area;

R = the protection ratio (dB) between the wanted and interfering signals;

D = angular discrimination (dB) provided by the radiation pattern of the broadcasting-satellite receiver antenna;

P = polarization discrimination (dB) between the wanted and interfering signals.

2.2 *Wanted power flux-density (F_0)*

The value of F_0 is equal to:

a) -103 dB(W/m^2) for service areas in Regions 1 and 3, *and*

b) -107 dB(W/m^2) for 24 MHz, as well as for 27 MHz with respect to the cases mentioned in the footnote to section 3.8 of Annex 5 for service areas in Region 2.

2.3 *Protection ratio (R)*

2.3.1 The single entry protection ratio against all types of terrestrial transmissions, with the exception of amplitude-modulation multichannel television systems, is 35 dB for carrier frequency differences between the wanted and interfering signals of up to ± 10 MHz, decreasing linearly from 35 dB to 0 dB for carrier frequency differences between 10 MHz and 35 MHz, and is 0 dB for frequency differences in excess of 35 MHz (see Figure 1).

2.3.2 The carrier frequency difference should be determined by reference to the frequency assignments in the broadcasting-satellite Plan or, in the case of assignments not contained within a plan, by reference to the characteristics of the proposed or operational system. For amplitude-modulation multichannel television systems which produce high peaks of power flux-density spread over a wide range of their necessary bandwidth, the protection ratio R is 35 dB and is independent of the carrier frequency difference.

2.3.3 A signal from a terrestrial station should be considered only if its necessary bandwidth overlaps the necessary bandwidth of the broadcasting-satellite assignment.

2.4 *Angular discrimination (D)*

Regions 1 and 3:

2.4.1 Where the angle of elevation φ selected for the proposed or operational broadcasting-satellite system for the broadcasting-satellite service area concerned is equal to or greater than 19°, the value of D to be assumed in expression (1) is 33 dB. When φ is less than 19°, D should be derived from the expression (2) below.

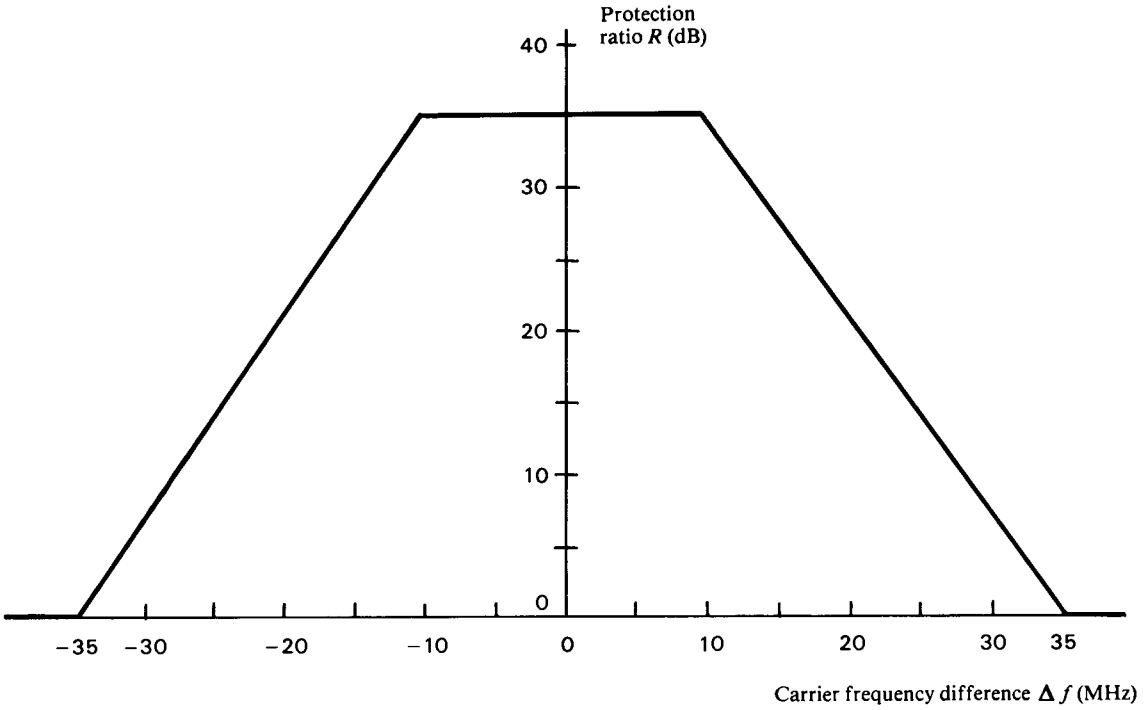

FIGURE 1

Protection ratio R (dB) for a broadcasting-satellite signal against a single entry of interference from a terrestrial service (except for AM multichannel TV system)

Note: If more than one value of φ is specified for a particular service area, the appropriate value of φ should be used for each section of the edge of the service area under consideration.

$$\begin{array}{lll} D = 0 & \text{for} & 0° \leqslant \varphi \leqslant 0.5° \\ D = 3\,\varphi^2 & \text{for} & 0.5° < \varphi \leqslant 1.41° \\ D = 3 + 20 \log \varphi & \text{for} & 1.41° < \varphi \leqslant 2.52° \\ D = 1 + 25 \log \varphi & \text{for} & 2.52° < \varphi \leqslant 19° \end{array} \qquad (2)$$

Note: For the graphical determination of D see Figure 2.

Region 2:

2.4.2 D should be derived from the expression (3) below where φ is the elevation angle for the proposed or operational broadcasting-satellite system for the broadcasting-satellite service area concerned.

Note: If more than one value of φ is specified for a particular service area, the appropriate value of φ should be used for each section of the edge of the service area under consideration.

$$\begin{array}{lll} D = 0 & \text{for} & 0° \leqslant \varphi \leqslant 0.43° \\ D = 4.15\varphi^2 & \text{for} & 0.43° < \varphi \leqslant 1.92° \\ D = 8.24 + 25 \log \varphi & \text{for} & 1.92° < \varphi \leqslant 25° \\ D = 43.2 & \text{for} & \varphi > 25° \end{array} \qquad (3)$$

Note: For the graphical determination of D see Figure 3.

2.5 *Polarization discrimination (P)*

The value of P is equal to:

a) 3 dB when the interfering terrestrial service uses linear polarization and the broadcasting-satellite service uses circular polarization or vice versa;

b) 0 dB when the interfering terrestrial service and the broadcasting-satellite service both use circular or both use linear polarization.

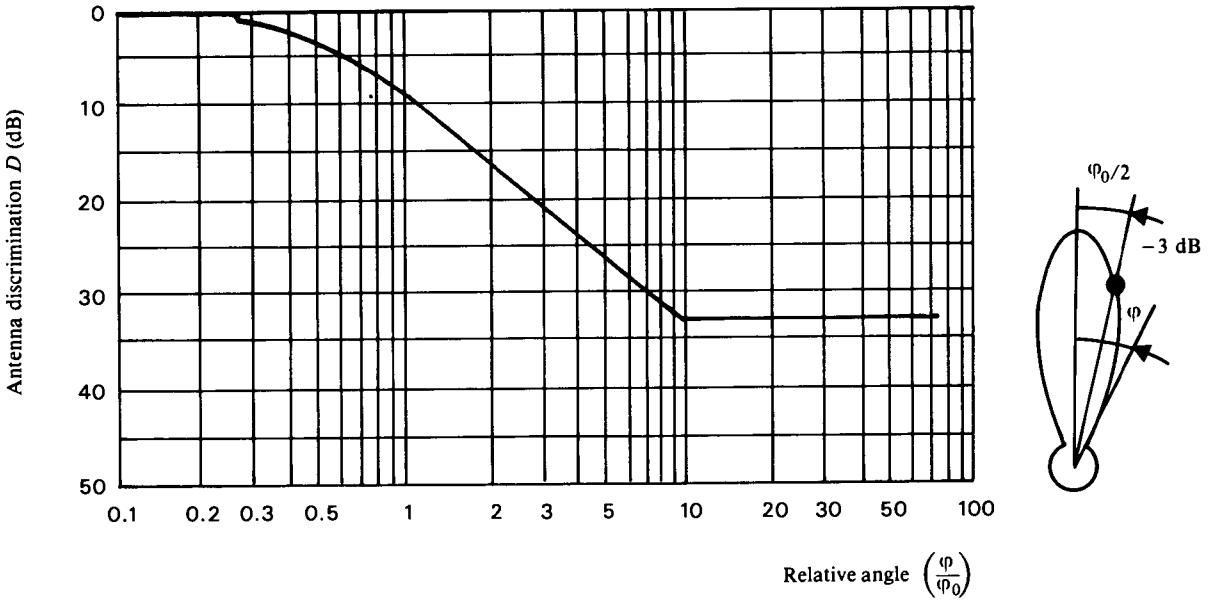

FIGURE 2

Discrimination D (dB) of broadcasting-satellite receiver antenna as a function of satellite elevation angle

For service areas in Regions 1 and 3, $\varphi_0 = 2°$.

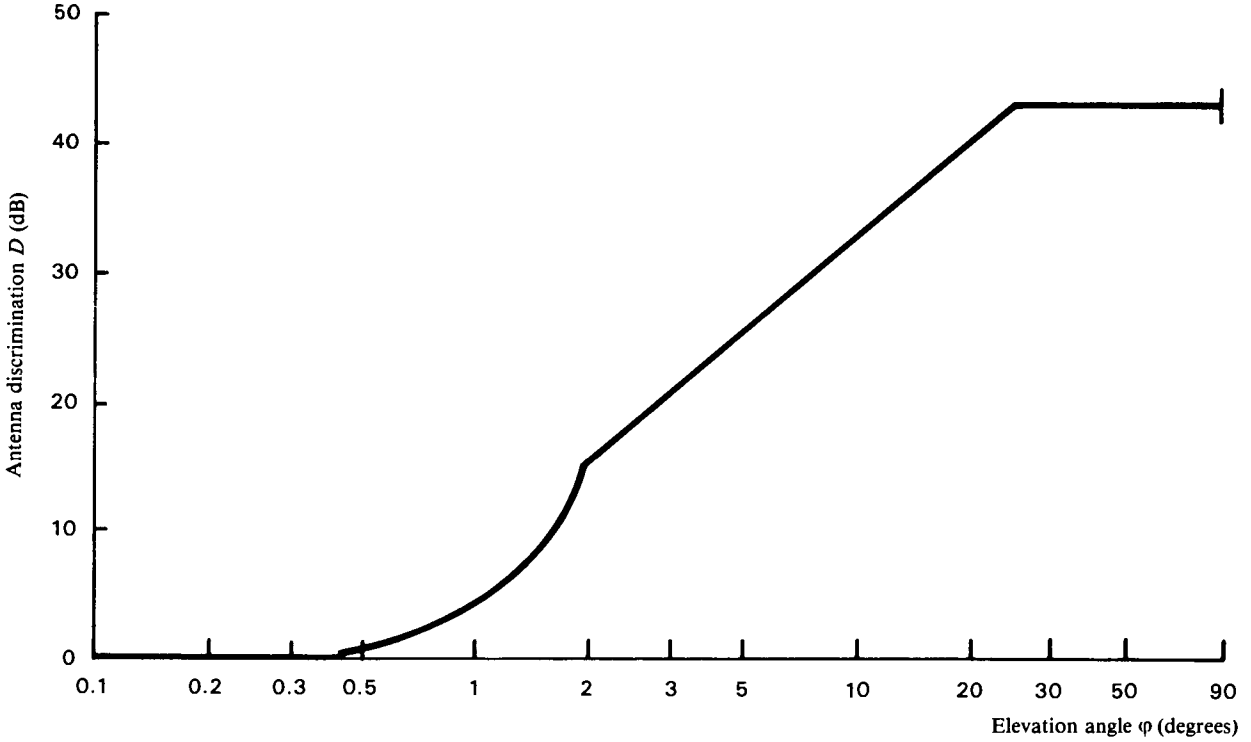

FIGURE 3

Discrimination D (dB) of broadcasting-satellite receiver antenna as a function of satellite elevation angle

3. *Power flux-density produced by a terrestrial station (F_p)*

The power flux-density F_p (dB(W/m^2)) produced at any point on the edge of the service area by the terrestrial station is determined from the following formula:

$$F_p = E - A + 43 \quad (4)$$

where:

E = the equivalent isotropically radiated power (dBW) of the terrestrial station in the direction of the point concerned on the edge of the service area;

A = the total path loss in dB.

3.1 *Evaluation of path loss A for a terrestrial station at a distance greater than 100 km from the edge of the service area of the broadcasting satellite*

For path lengths greater than 100 km, A is given by:

In the case of Regions 1 and 3:

$$A = 137.6 + 0.2324\ d_t + 0.0814\ d_m \quad (5)$$

In the case of Region 2:

$$A = 141.9 + 0.2867\ d_t + 0.1522\ d_m \quad (6)$$

where:

d_t and d_m are the overland and oversea path lengths respectively, in kilometres.

3.2 *Evaluation of path loss A for a terrestrial station at a distance equal to or less than 100 km from the edge of the service area of the broadcasting satellite*

In the case of Regions 1 and 3:

For path lengths equal to or less than 100 km, A is calculated using equations (5) and (7) and the lower value obtained is substituted in formula (4) to calculate the power flux-density produced at the point concerned on the edge of the service area:

$$A = 109.5 + 20 \log (d_t + d_m) \quad (7)$$

The variation in A for different path lengths and percentage of oversea path is shown in Figure 4.

In the case of Region 2:

For path lengths equal to or less than 100 km, A is calculated using equations (6) and (8) and the lower value obtained is substituted in formula (4) to calculate the power flux-density produced at the point concerned on the edge of the service area:

$$A = 114.4 + 20 \log (d_t + d_m) + 0.01 (d_t + d_m) \quad (8)$$

The variation in A for different path lengths and percentage of oversea path is shown in Figure 5.

3.3 *Distance beyond which the method need not be applied*

The method need not be applied and coordination is unnecessary when the distance between the terrestrial station and the service area of the broadcasting satellite is greater than:

a) 400 km in the case of all overland paths; *or*

b) 1200 km in the case of all oversea or mixed paths.

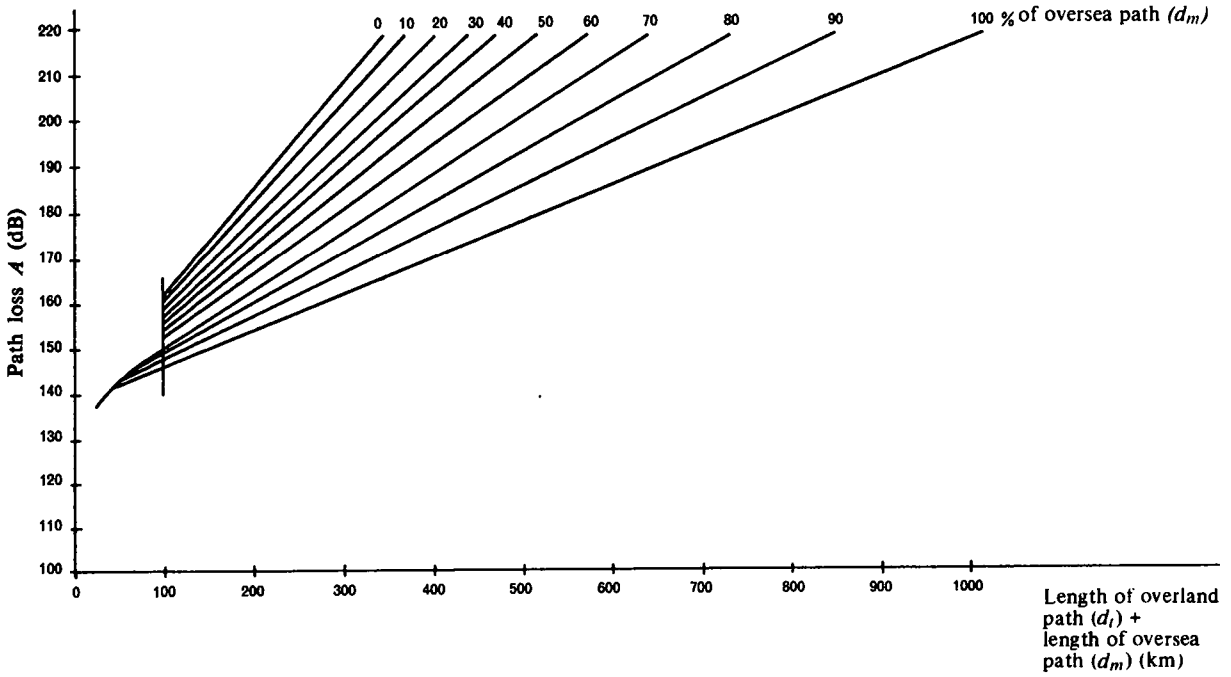

FIGURE 4

Total path loss A (dB) versus total path length (d_t + d_m) (km) and percentage of oversea path (Regions 1 and 3)

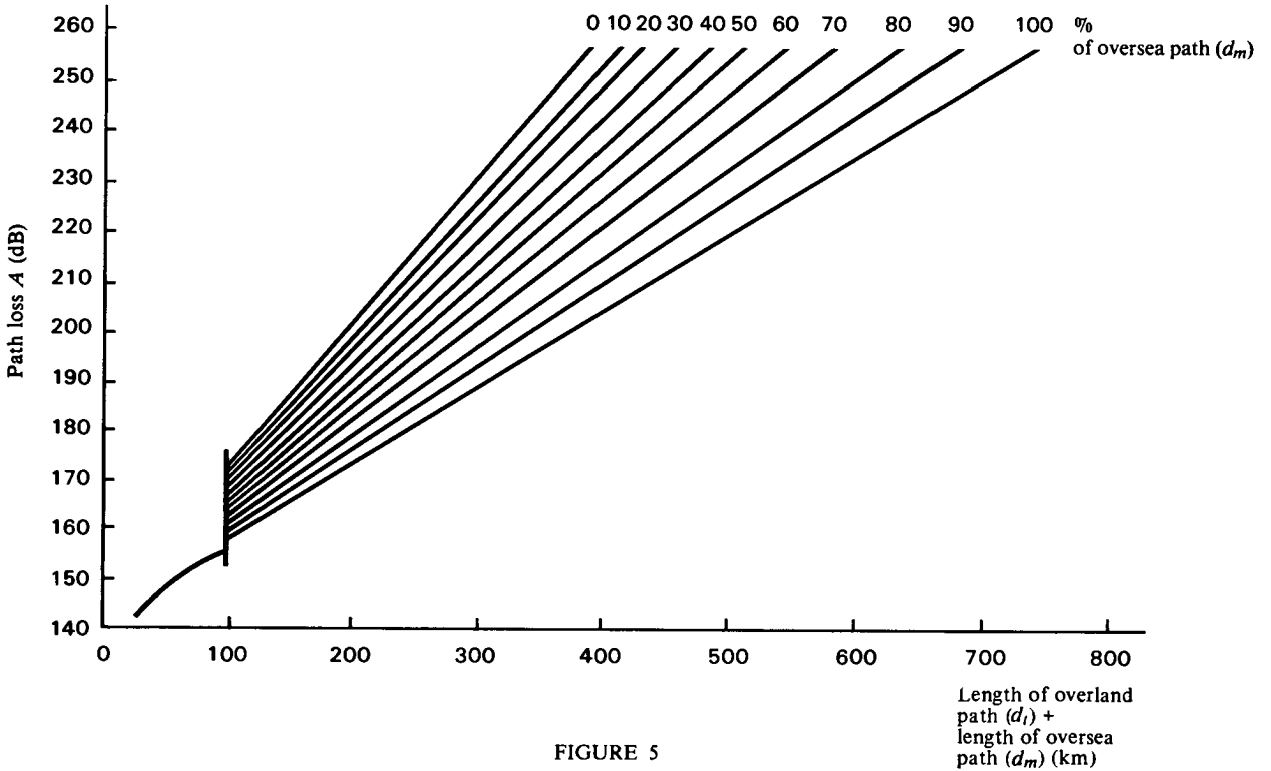

FIGURE 5

Total path A (dB) versus total path length (d_l + d_m) (km) and percentage of oversea path (Region 2)

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ANNEX 4

Need for Coordination of a Space Station in the Fixed-Satellite Service: in Region 2 (11.7 - 12.2 GHz) with Respect to the Regions 1 and 3 Plan, in Region 1 (12.5 - 12.7 GHz) and in Region 3 (12.2 - 12.7 GHz) with Respect to the Region 2 Plan

(See Article 7)

With respect to paragraph 7.2.1 of Article 7 of this Appendix, coordination of a space station in the fixed-satellite service of Region 2 is required when, under assumed free-space propagation conditions, the power flux-density on the territory of an administration in Region 1 or Region 3 exceeds the value derived from the expressions given below.

With respect to paragraph 7.2.1 of Article 7 of this Appendix, coordination of a space station in the fixed-satellite service in Region 1 or 3 is required when, under assumed free-space propagation conditions, the power flux-density on the territory of an administration in Region 2 exceeds the value derived from the same expressions:

-147 dB(W/m^2 /27 MHz)	for	$0° \leqslant \theta < 0.44°$
$-138 + 25 \log \theta$ dB(W/m^2 /27 MHz)	for	$0.44° \leqslant \theta < 19.1°$
-106 dB(W/m^2 /27 MHz)	for	$\theta \geqslant 19.1°$

where θ is:

- the difference in degrees between the longitude of the interfering fixed-satellite space station in Region 2 and the longitude of the affected broadcasting-satellite space station in Regions 1 and 3, *or*

- the difference in degrees between the longitude of the interfering fixed-satellite space station in Region 1 or 3 and the longitude of the affected broadcasting-satellite space station in Region 2.

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ANNEX 5

Technical Data Used in Establishing the Provisions and Associated Plans and Which Should Be Used for Their Application

1. DEFINITIONS

1.1 *Service area*

The area on the surface of the Earth in which the administration responsible for the service has the right to demand that the agreed protection conditions be provided.

Note: In the definition of service area, it is made clear that within the service area the agreed protection conditions can be demanded. This is the area where there should be at least the wanted power flux-density and protection against interference based on the agreed protection ratio for the agreed percentage of time.

1.2 *Coverage area*

The area on the surface of the Earth delineated by a contour of a constant given value of power flux-density which would permit the wanted quality of reception in the absence of interference.

Note 1: In accordance with the provisions of No. **2674** of the Radio Regulations, the coverage area must be the smallest area which encompasses the service area.

Note 2: The coverage area, which will normally encompass the entire service area, will result from the intersection of the antenna beam (elliptical or circular) with the surface of the Earth, and will be defined by a given value of power flux-density. For example, in the case of a country with a service

planned for individual reception, it would be the area delineated by the contour corresponding to a level of -103 dB(W/m^2) exceeded for 99% of the worst month in the case of Regions 1 and 3, and -107 dB(W/m^2) exceeded for 99% of the worst month in the case of Region 2. There will usually be an area outside the service area but within the coverage area in which the power flux-density will be at least equivalent to the minimum specified value; however, protection against interference will not be provided in this area.

1.3 *Beam area*

The area delineated by the intersection of the half-power beam of the satellite transmitting antenna with the surface of the Earth.

Note: The beam area is simply that area on the Earth's surface corresponding to the -3 dB points on the satellite antenna radiation pattern. In many cases the beam area would almost coincide with the coverage area, the discrepancy being accounted for by the permanent difference in path lengths from the satellite throughout the beam area, and also by the permanent variations, if any, in propagation factors across the area. However, for a service area where the maximum dimension as seen from the satellite position is less than 0.6° in Regions 1 and 3, and less than 0.8° in Region 2 (the agreed minimum practicable satellite antenna half-power beamwidths), there could be a significant difference between the beam area and the coverage area.

1.4 *Nominal orbital position*

The longitude of a position in the geostationary-satellite orbit associated with a frequency assignment to a space station in a space radiocommunication service. The position is given in degrees from the Greenwich meridian.

Note: Definitions in sections 1.5 to 1.14 are applicable to Region 2.

1.5 *Feeder link*

In the Region 2 broadcasting-satellite service Plan, the term "feeder link", as defined in No. **109** of the Radio Regulations, is further qualified to indicate a fixed-satellite service link in the frequency band 17.3 - 17.8 GHz from any earth station within the feeder-link service area to the associated space station in the broadcasting-satellite service.

1.6 *Feeder-link area*

The area delineated by the intersection of the half-power beam of the satellite receiving antenna with the surface of the Earth.

1.7 *Feeder-link service area*

The area on the surface of the Earth within the feeder-link beam area within which the administration responsible for the service has the right to locate transmitting earth stations for the purpose of providing feeder links to broadcasting-satellite space stations.

1.8 *Adjacent channel*

The RF channel in the broadcasting-satellite service frequency Plan, or in the associated feeder-link frequency Plan, which is situated immediately higher or lower in frequency with respect to the reference channel.

1.9 *Second adjacent channel*

The RF channel in the broadcasting-satellite service frequency Plan, or in the associated feeder-link frequency Plan, which is situated immediately beyond either of the adjacent channels, with respect to the reference channel.

1.10 *Overall carrier-to-interference ratio*

The overall carrier-to-interference ratio is the ratio of the wanted carrier power to the sum of all interfering RF powers in a given channel including both feeder links and down-links. The overall carrier-to-interference ratio due to interference from the given channel is calculated as the reciprocal of the sum of the reciprocals of the feeder link carrier-to-interference ratio and the down-link carrier-to-interference ratio referred to the satellite receiver input and earth station receiver input, respectively.[1]

1.11 *Overall co-channel protection margin*

The overall co-channel protection margin in a given channel is the difference in decibels between the overall co-channel carrier-to-interference ratio and the co-channel protection ratio.

1.12 *Overall adjacent channel protection margin*

The overall adjacent channel protection margin is the difference in decibels between the overall adjacent channel carrier-to-interference ratio and the adjacent channel protection ratio.

[1] There are a total of five overall carrier-to-interference ratios used in the analysis of the Plan for the broadcasting-satellite service in Region 2, namely, co-channel, upper and lower adjacent channels, and upper and lower second adjacent channels.

1.13 *Overall second adjacent channel protection margin*

The overall second adjacent channel protection margin is the difference in decibels between the overall second adjacent channel carrier-to-interference ratio and the second adjacent channel protection ratio.

1.14 *Overall equivalent protection margin*

The overall equivalent protection margin M is given in decibels by the expression:

$$M = -10 \log \left(\sum_{i=1}^{5} 10^{(-M_i/10)} \right) \qquad \text{(dB)}$$

where:

M_1 = overall co-channel protection margin, in dB (as defined in section 1.11 of this Annex);

M_2, M_3 = overall adjacent channel protection margins for the upper and lower adjacent channels respectively, in dB (as defined in section 1.12 of this Annex);

M_4, M_5[1] = overall second adjacent channel protection margins for the upper and lower second adjacent channels respectively, in dB (as defined in section 1.13 of this Annex).

[1] M_4 and M_5 are applicable only for Region 2.

The adjective "equivalent" indicates that the protection margins for all interference sources from the adjacent and second adjacent channels as well as co-channel interference sources have been included.

2. RADIO PROPAGATION FACTORS

In Regions 1 and 3:

2.1 The propagation loss on the space-to-Earth path is equal to the free space path loss plus the attenuation exceeded for 1% of the worst month, the latter being given in Figure 1 for the five rain-climatic zones shown in Figure 2.

2.2 In using the curves of Figure 1, the difference between clear weather attenuation and the attenuation exceeded for 1% of the worst month should be limited to a maximum of 2 dB by appropriate choice of angle of elevation.

2.3 In planning the broadcasting-satellite service, for emissions applying circular polarization, the level of the depolarized component relative to the level of the co-polar component should be taken as:

– 27 dB for rain-climatic zones 1 and 2;

– 30 dB for rain-climatic zones 3, 4 and 5.

In Region 2:

2.4 The propagation loss on a space-Earth path is equal to the free space path loss plus the atmospheric absorption loss plus the rain attenuation exceeded for 1% of the worst month.

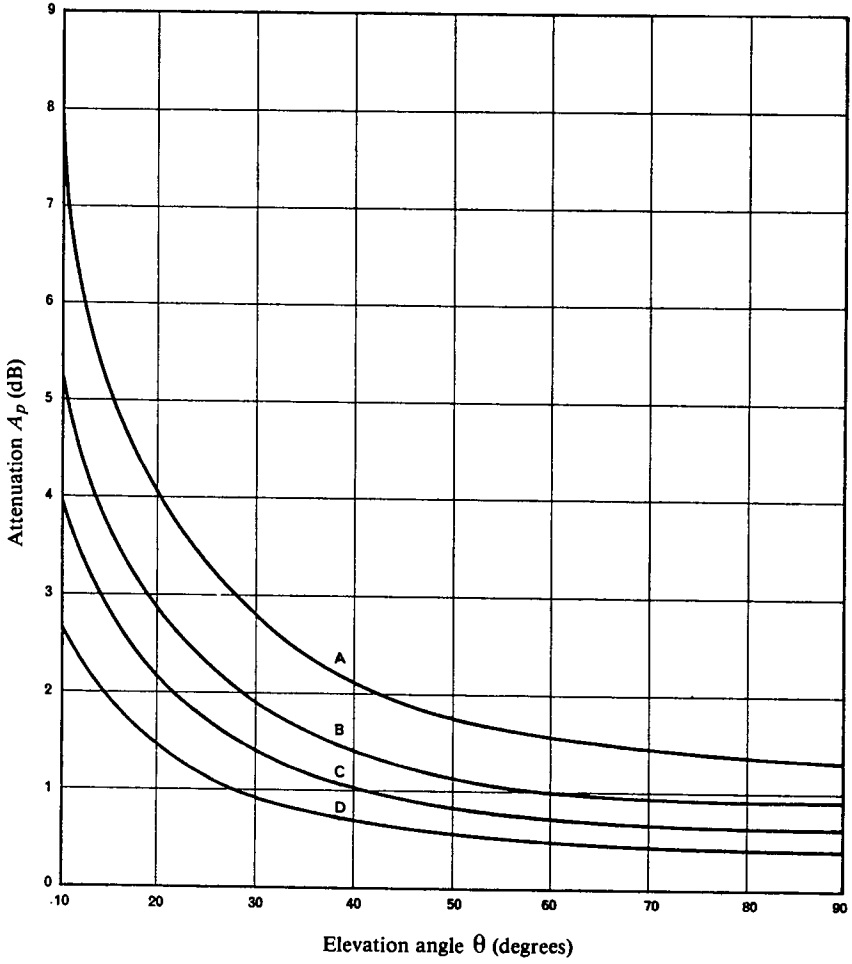


FIGURE 1

Predicted attenuation values exceeded for 1% of the worst month (0.25% of the time) at 12 GHz in the rain-climatic zones indicated in Figure 2 (for Regions 1 and 3)

A: Rain-climatic zone 1

B: Rain-climatic zone 2

C: Rain-climatic zones 3 and 4

D: Rain-climatic zone 5

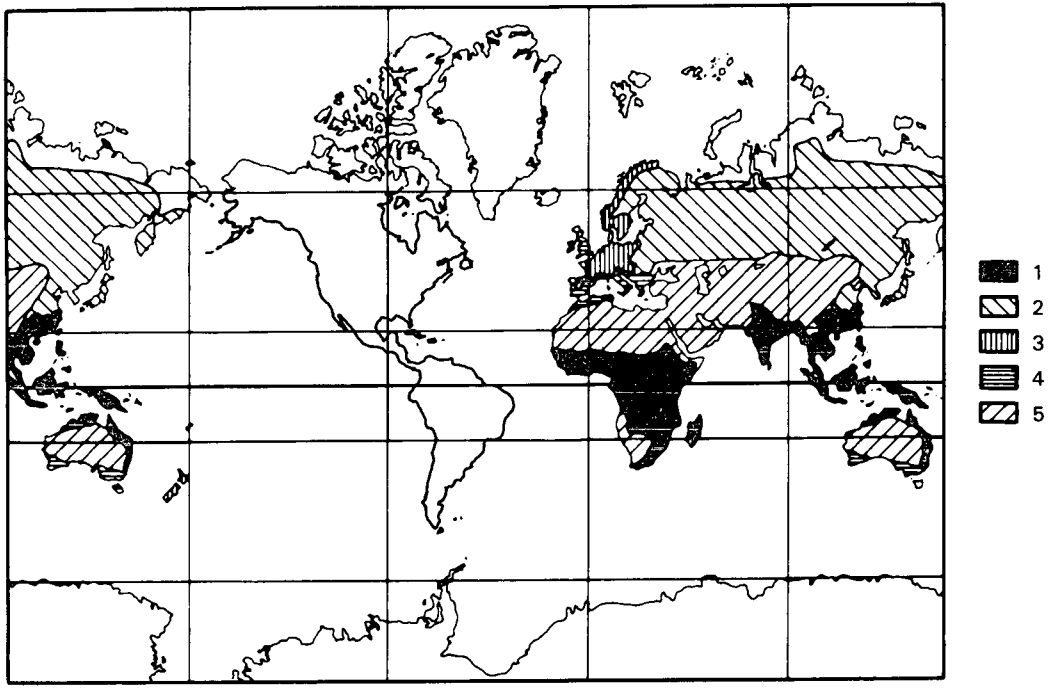


FIGURE 2

Rain-climatic zones in Regions 1 and 3

It should be noted that extensive measurements of attenuation due to rainfall have not been carried out in the tropical countries, especially in the African region.

2.4.1 *Atmospheric absorption*

The loss due to atmospheric absorption (i.e. clear sky attenuation) is given by:

$$A_a = \frac{92.20}{\cos\theta}\left[0.017F_o + 0.002\,\rho F_w\right] \quad \text{(dB)} \quad \text{for} \quad \theta < 5°$$

where:

$$F_o = \left[24.88\tan\theta + 0.339\sqrt{1416.77\tan^2\theta + 5.51}\right]^{-1}$$

$$F_w = \left[40.81\tan\theta + 0.339\sqrt{3811.66\tan^2\theta + 5.51}\right]^{-1}$$

and:

$$A_a = \frac{0.042 + 0.003\,\rho}{\sin\theta} \quad \text{(dB)} \quad \text{for} \quad \theta \geqslant 5°$$

where:

θ = elevation angle (degrees),

ρ = surface water vapour concentration, g/m^3, being

ρ = 10 g/m^3 for rain-climatic zones A to K and

ρ = 20 g/m^3 for rain-climatic zones M to P (see Figure 3).

2.4.2 *Rain attenuation*

The rain attenuation A_p of circularly polarized signals exceeded for 1% of the worst month at 12.5 GHz is given by:

$$A_p = 0.21\,\gamma\,Lr \quad \text{(dB)} \qquad (1)$$

where:

L is the slant path length through rain

$$= \frac{2(h_R - h_0)}{\left\{\sin^2\theta + 2\frac{(h_R - h_0)}{8500}\right\}^{1/2} + \sin\theta} \quad \text{(km)}$$

r is the rain path length reduction factor

$$= \frac{90}{90 + 4L\cos\theta}$$

h_R is the rain height (km)

$$= c\left\{5.1 - 2.15 \log\left(1 + 10^{(\zeta - 27)/25}\right)\right\} \quad \text{(km)}$$

$c = 0.6$ for $|\zeta| \leq 20°$

$c = 0.6 + 0.02(|\zeta| - 20)$ for $20° < |\zeta| \leq 40°$

$c = 1.0$ for $|\zeta| > 40°$

h_0 is the height (km) above mean sea level of the earth station;

ζ is the earth station latitude (degrees);

θ is the elevation angle (degrees);

γ is the specific rain attenuation $= 0.0202\ R^{1.198}$ dB/km;

R is the rain intensity (mm/h) obtained from the Table below for the rain climatic zones identified in Figure 3.

(*Note:* The method is based on R exceeded for 0.01% of an average year.)

Rainfall intensity (R) for the rain climatic zones (exceeded for 0.01% of an average year) (see Figure 3)

Rain climatic zone	A	B	C	D	E	F	G	K	M	N	P
Rainfall intensity (mm/h)	8	12	15	19	22	28	30	42	63	95	145

Figure 4 presents plots of rain attenuation, as calculated using equation (1), of circularly polarized signals exceeded for 1% of the worst month at 12.5 GHz, as a function of earth station latitude and elevation angle for each of the rain climatic zones shown in Figure 3.

2.4.3 *Rain attenuation limit*

In the analysis of the Plan for the broadcasting-satellite service in Region 2, a maximum down-link attenuation of 9 dB was agreed in order to limit the inhomogeneity of broadcasting-satellite power flux-density and to facilitate sharing during clear-sky conditions.

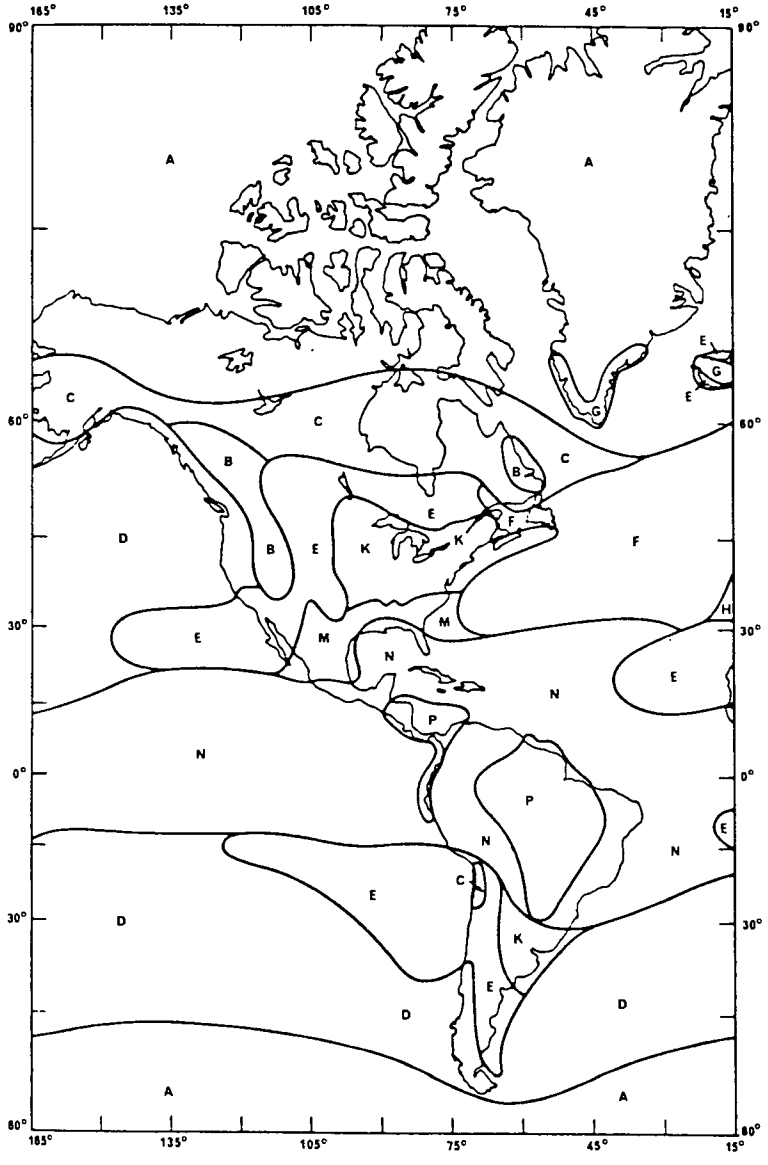


FIGURE 3

Rain-climatic zones (Region 2)

2.4.4 *Procedure for calculating the carrier-to-interference ratio at a test point*

The calculation of the down-link carrier-to-interference ratio (exceeded for 99% of the worst month) used to obtain the overall equivalent protection margin at a test point is the minimum value of the carrier-to-interference ratio obtained assuming:

i) clear-sky conditions (i.e. including atmospheric absorption); *or*

ii) rain-faded conditions corresponding to an attenuation value exceeded for 1% of the worst month.

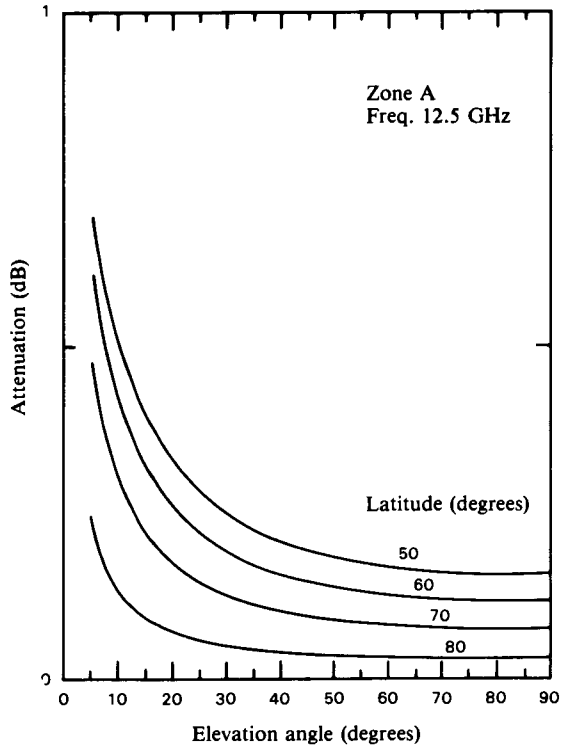
2.5 *Depolarization*

Rain and ice can cause depolarization of radio frequency signals. The level of the co-polar component relative to the depolarized component is given by the cross-polarization discrimination (XPD) ratio. For circularly polarized emissions, the XPD ratio, in dB, exceeded for 99% of the worst month is obtained from:

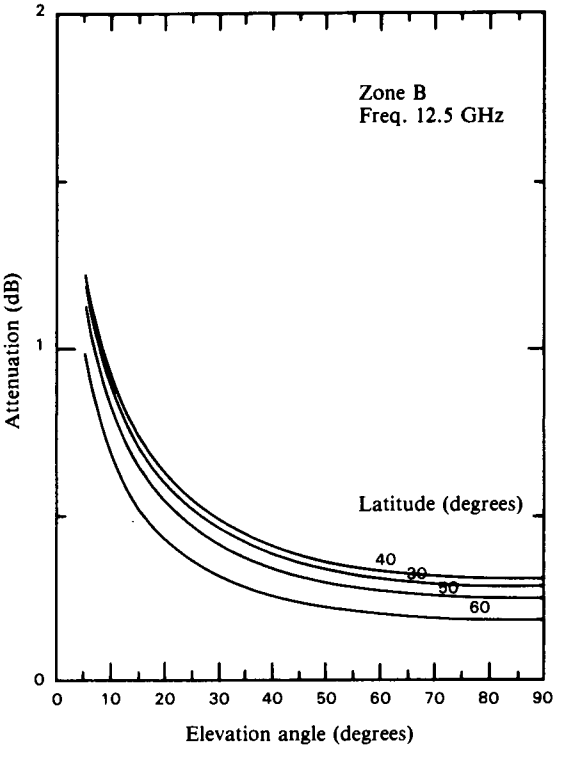
$$XPD = 30 \log f - 40 \log (\cos \theta) - 20 \log A_p \quad \text{(dB)} \quad (2)$$

$$\text{for} \quad 5^\circ \leqslant \theta \leqslant 60^\circ$$

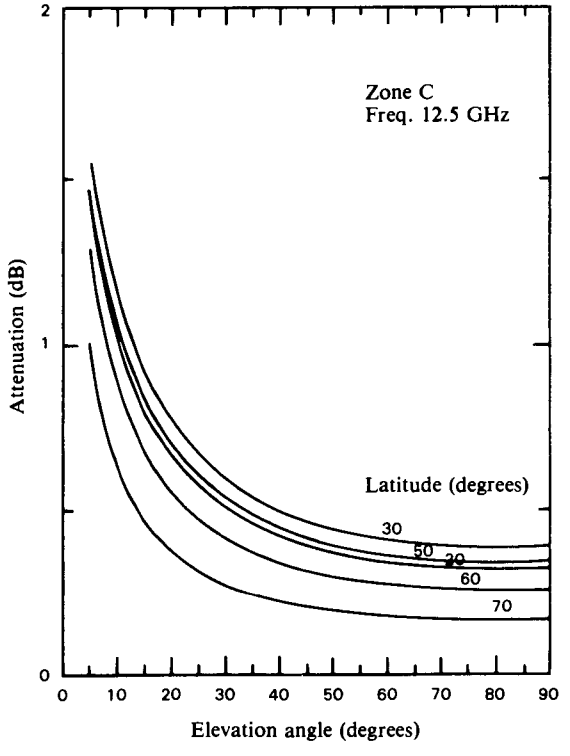
where A_p (dB) is the co-polar rain attenuation exceeded for 1% of the worst month (calculated in section 2.4), f is the frequency in GHz and θ is the elevation angle. For angles of θ greater than 60°, use $\theta = 60^\circ$ in equation (2).



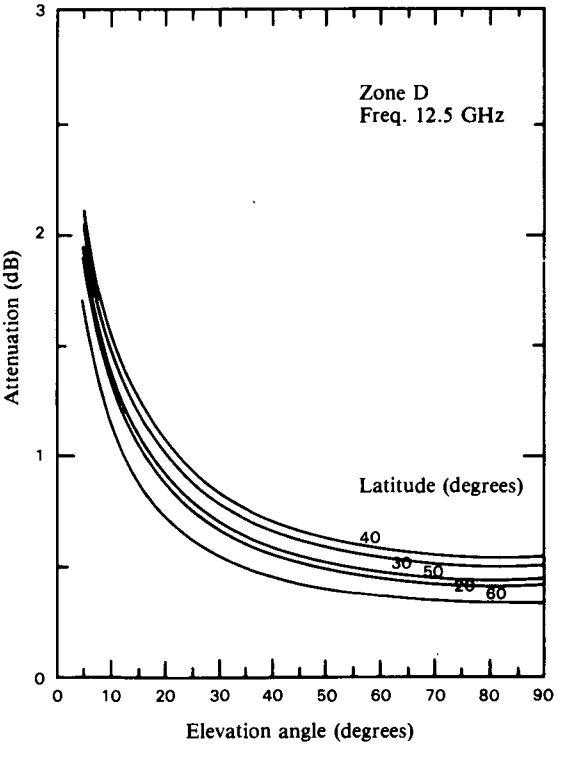
a) Rain climatic zone A



b) Rain climatic zone B



c) Rain climatic zone C



d) Rain climatic zone D

FIGURE 4

Rain attenuation values exceeded for 1% of the worst month (sea level) for Region 2 rain-climatic zones

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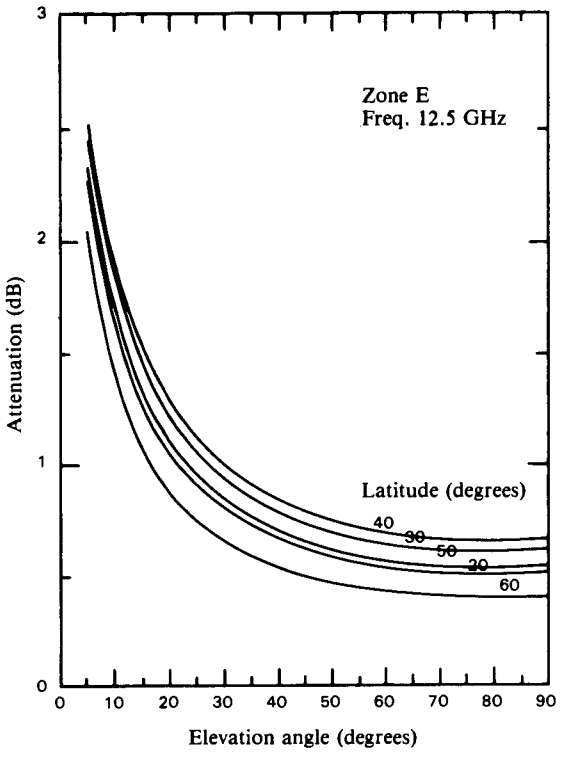
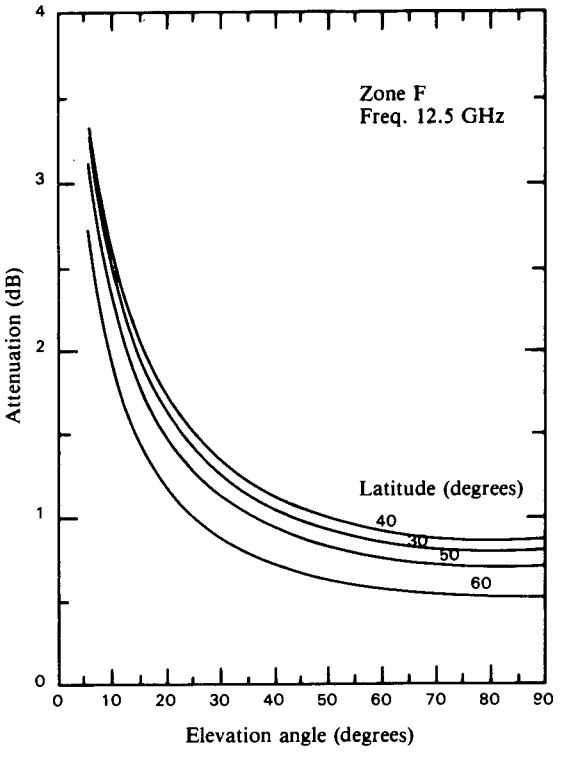
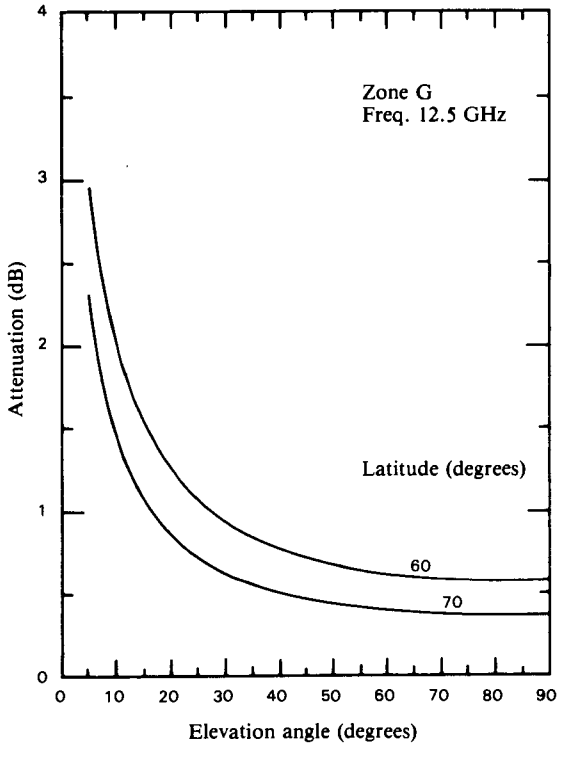


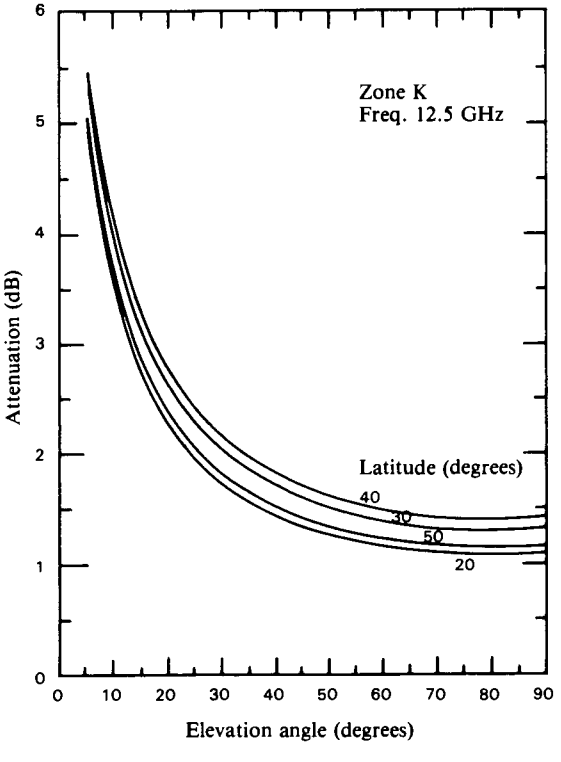
e) Rain climatic zone E



f) Rain climatic zone F



g) Rain climatic zone G



h) Rain climatic zone K

FIGURE 4 *(cont.)*

Rain attenuation values exceeded for 1% of the worst month (sea level) for Region 2 rain-climatic zones

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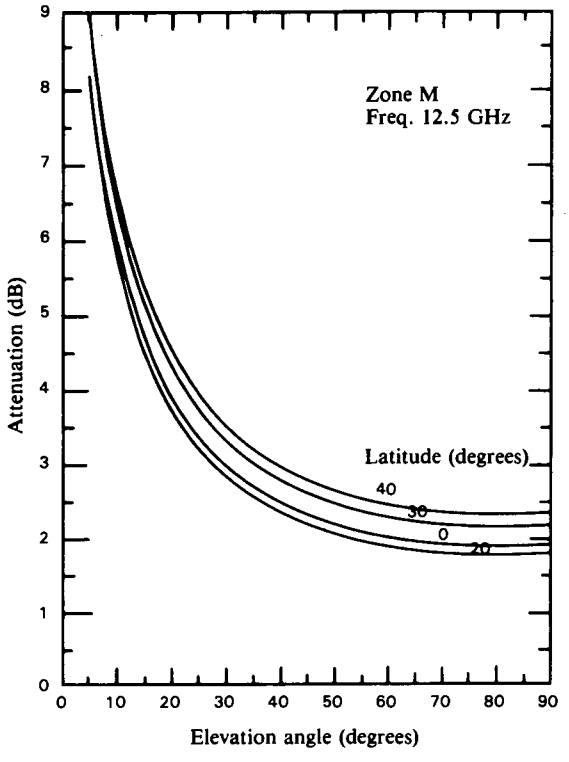
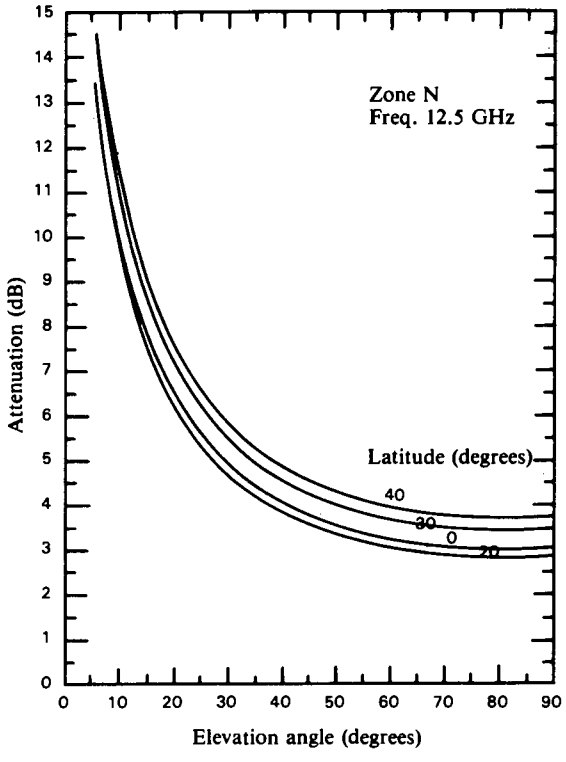
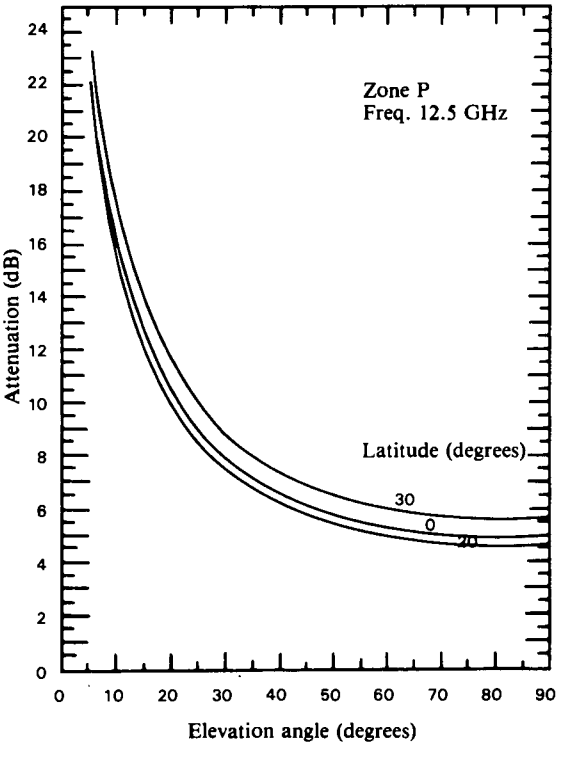


j) Rain climatic zone M



k) Rain climatic zone N



l) Rain climatic zone P

FIGURE 4 *(cont.)*

Rain attenuation values exceeded for 1% of the worst month (sea level) for Region 2 rain-climatic zones

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3. BASIC TECHNICAL CHARACTERISTICS

3.1 *Type of modulation*

3.1.1 In Regions 1 and 3, planning of the broadcasting-satellite service is based on the use of a signal consisting of a video signal with an associated carrier, frequency-modulated by a sound signal, both frequency-modulating a carrier in the 12 GHz band, with a pre-emphasis characteristic in accordance with Figure 5 (from CCIR Recommendation 405).

3.1.2 In Region 2, planning is based on the use of a frequency-modulated composite-coded colour television signal with two sound sub-carriers. However, in recognition of the need to provide for the use of new, enhanced television coding and modulation formats (e.g. time-compressed, multiplexed analogue video component signals and digitally-coded sound and data signals), values of the important technical characteristics have been chosen to take into consideration the implementation of these new formats within the provisions of the Plan.

3.1.3 Nevertheless, this does not preclude the use of other modulating signals having different characteristics (e.g. modulation with sound channels frequency-multiplexed within the bandwidth of a television channel, digital modulation of sound and television signals, or other pre-emphasis characteristics), provided that the use of such characteristics does not cause greater interference than that caused by the system considered in the appropriate Regional Plan or complies with the provisions of paragraph 3.2 of Article 3 of this Appendix.

3.2 *Polarization*

3.2.1 For the planning of the broadcasting-satellite service, circular polarization shall be used in Regions 1, 2 and 3.

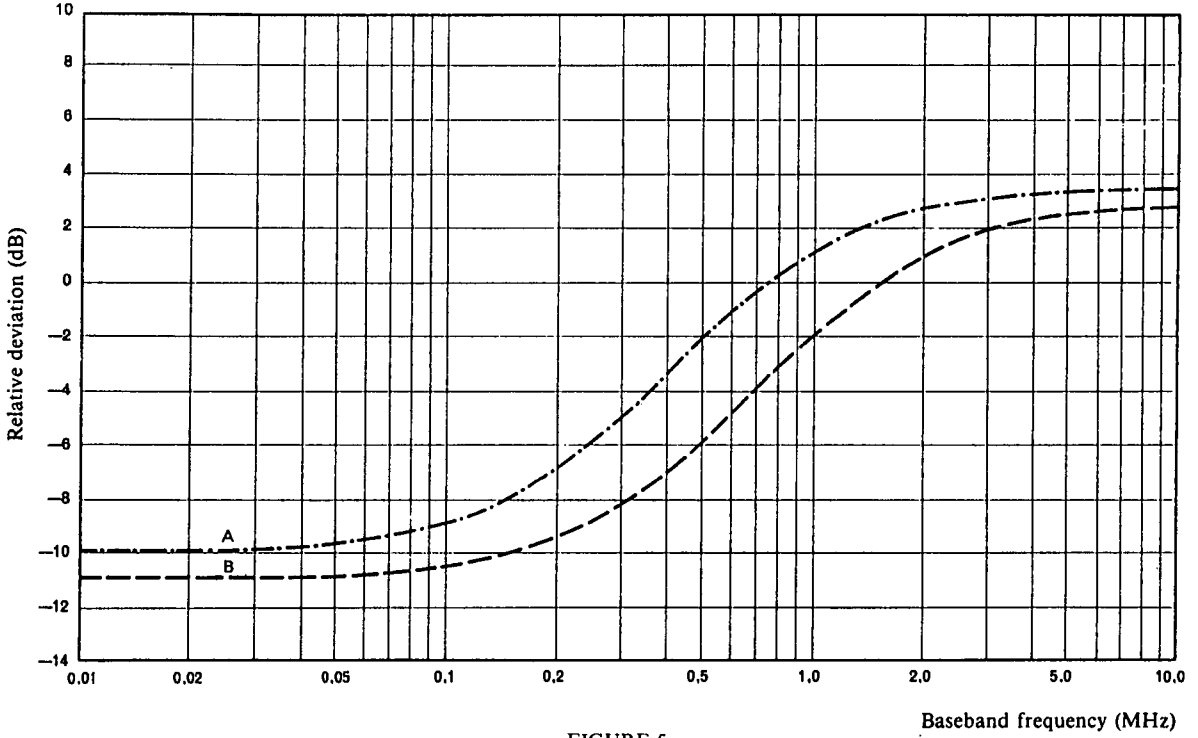

FIGURE 5

Pre-emphasis characteristic for television on 525- and 625-line systems

Curve A: 525-line system

Curve B: 625-line system

3.2.2 In Regions 1 and 3, the polarization of different beams intended to serve the same area should, if possible, be the same.

3.2.3 The terms "direct" and "indirect" used in the Plans to indicate the direction of rotation of circularly-polarized waves correspond to right-hand (clockwise) and left-hand (anti-clockwise) polarization respectively according to the following definitions:

Direct polarization (right-hand or clockwise polarization):

An elliptically or circularly-polarized electromagnetic wave, in which the electric field-intensity vector, observed in any *fixed plane*, normal to the direction of propagation, whilst looking in (i.e., not against) the direction of propagation, rotates *with time* in a *right-hand* or clockwise direction.

Note: For right-hand circularly-polarized plane waves, the ends of the electric vectors drawn from any points along a straight line normal to the plane of the wave front form, *at any instant*, a *left-hand* helix.

Indirect polarization (left-hand or anti-clockwise polarization):

An elliptically or circularly-polarized electromagnetic wave, in which the electric field-intensity vector, observed in any *fixed plane*, normal to the direction of propagation, whilst looking in (i.e., not against) the direction of propagation, rotates *with time* in a *left-hand* or anti-clockwise direction.

Note: For left-hand circularly-polarized plane waves, the ends of the electric vectors drawn from any points along a straight line normal to the plane of the wave front form, *at any instant*, a *right-hand* helix.

3.3 *Carrier-to-noise ratio*

For the purpose of planning the broadcasting-satellite service, the carrier-to-noise ratio is equal to or exceeds 14 dB for 99% of the worst month.

In Regions 1 and 3, the reduction in quality in the down-link due to thermal noise in the up-link is taken as equivalent to a degradation in the down-link carrier-to-noise ratio not exceeding 0.5 dB for 99% of the worst month. In Region 2, as a guide for planning, the reduction in quality in the down-link due to thermal noise in the feeder link is taken as equivalent to a degradation in the down-link carrier-to-noise ratio of approximately 0.5 dB not exceeded for 99% of the worst month, but the feeder-link and down-link Plans are evaluated on the basis of the overall carrier-to-noise ratio of 14 dB for the combined down-link and feeder-link contributions.

3.4 *Protection ratio between FM television signals*

For planning in Regions 1 and 3 the following protection ratios have been adopted for the purpose of calculating equivalent protection margins[1]:

31 dB for co-channel signals;

15 dB for adjacent channel signals.

---

[1] The equivalent protection margin M is given in dB by the formula

$$M = -10 \log (10^{-M_1/10} + 10^{-M_2/10} + 10^{-M_3/10})$$

where M_1 is the value in dB of the protection margin for the same channel. This is defined in the following expression where the powers are evaluated at the receiver input:

$$\frac{\text{wanted power}}{\text{sum of the co-channel interfering powers}}\ (\text{dB}) - \text{co-channel protection ratio (dB)}$$

M_2 and M_3 are the values in dB of the upper and lower adjacent-channel protection margins respectively.

The definition of the adjacent-channel protection margin is similar to that for the co-channel case except that the adjacent-channel protection ratio and the sum of the interfering powers due to emissions in the adjacent channel are considered.

In Region 2, the following protection ratios have been adopted for the purpose of calculating the overall equivalent protection margin [1]:

28 dB for co-channel signals;

13.6 dB for adjacent-channel signals;

−9.9 dB for second adjacent-channel signals.

In Region 2, as a guide for planning, the reduction in the overall carrier-to-interference ratio due to co-channel interference in the feeder link is taken as equivalent to a degradation in the down-link co-channel carrier-to-interference ratio of approximately 0.5 dB not exceeded for 99% of the worst month, but the feeder-link and down-link Plans are evaluated on the basis of the overall equivalent protection margin, which includes the combined down-link and feeder-link contributions.

In Region 2, an overall equivalent protection margin of zero decibels, or greater, indicates that the individual protection ratios have been met for the co-channel, the adjacent channels and the second adjacent channels.

3.4.1 *Adjacent channel protection ratio template for Region 2* [2] *(FMTV into FMTV)*

The protection ratios for adjacent channels are derived from the template given in Figure 6. The template is symmetrical and is given in terms of absolute levels for the carrier-to-interference ratios.

The template is obtained by joining the segment for adjacent channels to the horizontal extension of the co-channel protection ratio value. The adjacent channel protection ratio cannot be adjusted relative to the co-channel value.

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[1] The definitions in sections 1.10, 1.11, 1.12, 1.13 and 1.14 of this Annex apply to these calculations.

[2] See Annex 6 for the protection ratio template for Regions 1 and 3.

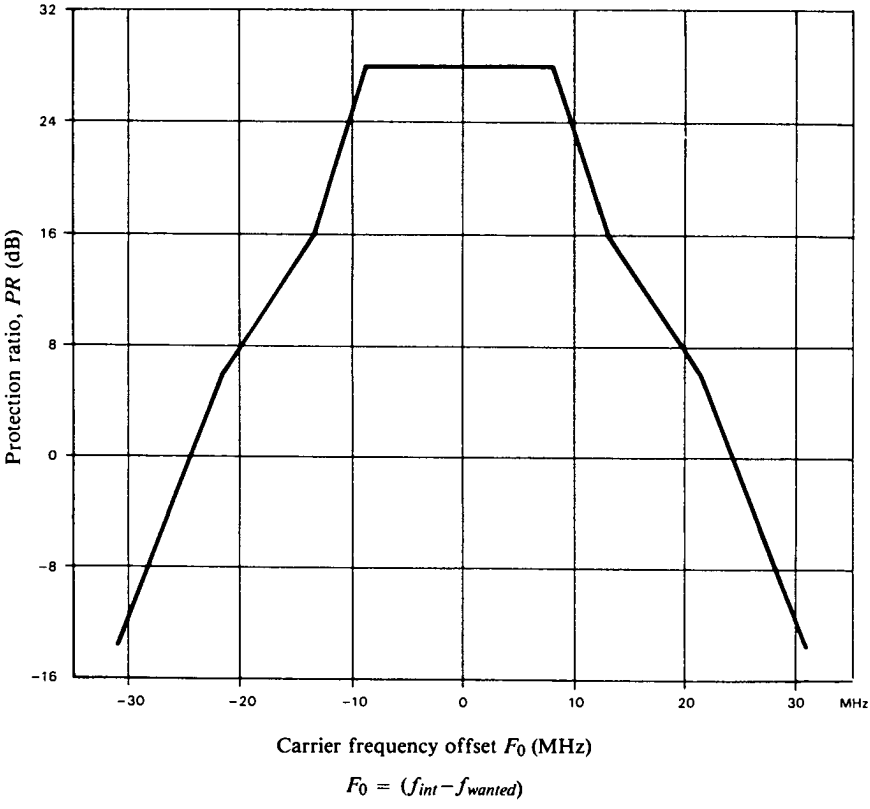


FIGURE 6

Protection ratio template (FMTV/FMTV), for planning of broadcasting-satellite systems in Region 2

The template is given by the following expressions:

$$PR = \begin{cases} 28 \text{ dB} & \text{for } |F_0| \leqslant 8.36 \text{ MHz} \\ -2.762\,|F_0| + 51.09 \text{ dB} & \text{for } 8.36 < |F_0| \leqslant 12.87 \text{ MHz} \\ -1.154\,|F_0| + 30.4 \text{ dB} & \text{for } 12.87 < |F_0| \leqslant 21.25 \text{ MHz} \\ -2.00\,|F_0| + 48.38 \text{ dB} & \text{for } |F_0| > 21.25 \text{ MHz} \end{cases}$$

where:

PR is the protection ratio in dB and $|F_0|$ is the carrier spacing between the interfering and wanted signals in MHz.

3.5 *Channel spacing*

3.5.1 *Channel spacing in the Plans*

In Regions 1 and 3, the spacing between the assigned frequencies of two adjacent channels is 19.18 MHz.

In Region 2, the spacing between the assigned frequencies of two adjacent channels is 14.58 MHz, which corresponds to 32 channels in the 500 MHz bandwidth allocated to the broadcasting-satellite service.

The Plans give the assigned frequencies for each channel.

3.5.2 *Grouping of channels in the same beam*

Planning in Region 1 has been carried out by trying to group all the channels radiated within a single antenna beam within a frequency range of 400 MHz, in order to simplify receiver construction.

3.5.3 *Spacing between assigned channel frequencies feeding a common antenna*

For Regions 1 and 3, owing to technical difficulties in the output circuit of a satellite transmitter, spacing between the assigned frequencies of two channels feeding a common antenna must be greater than 40 MHz.

3.6 *Figure of merit (G/T) of a receiving station in the broadcasting-satellite service*

In planning the broadcasting-satellite service, the value of the figure of merit G/T used is:

for Regions 1 and 3:

6 dB(K^{-1}) for individual reception;

14 dB(K^{-1}) for community reception, *and*

for Region 2:

10 dB(K^{-1}) for individual reception.

The values are calculated from the following formula which allows for pointing error, polarization effects and equipment ageing:

$$G/T = 10 \log \left(\frac{\alpha\beta G_r}{\alpha\ T_a + (1 - \alpha)\ T_0 + (n - 1)\ T_0} \right) \quad \text{dB}(K^{-1})$$

where:

α = the total coupling losses, expressed as a power ratio;

β = the total losses due to the pointing error, polarization effects and equipment ageing, expressed as a power ratio;

G_r = the effective gain of the receiving antenna, expressed as a power ratio and taking account of illumination method and efficiency;

T_a = the effective temperature of the antenna (K);

T_0 = the reference temperature = 290 K;

n = the overall noise factor of the receiver, expressed as a power ratio.

See also CCIR Report 473-3 (Annex 1).

3.7 *Receiving antennas*

3.7.1 *Minimum diameter of receiving antennas*

For planning the broadcasting-satellite service the minimum receiving antenna diameter must be such that the half-power beamwidth φ_0 is:

a) for individual reception: 2° in Regions 1 and 3, and 1.7° in Region 2;

b) for community reception: 1° in Regions 1 and 3.

3.7.2 *Receiving antenna reference patterns*

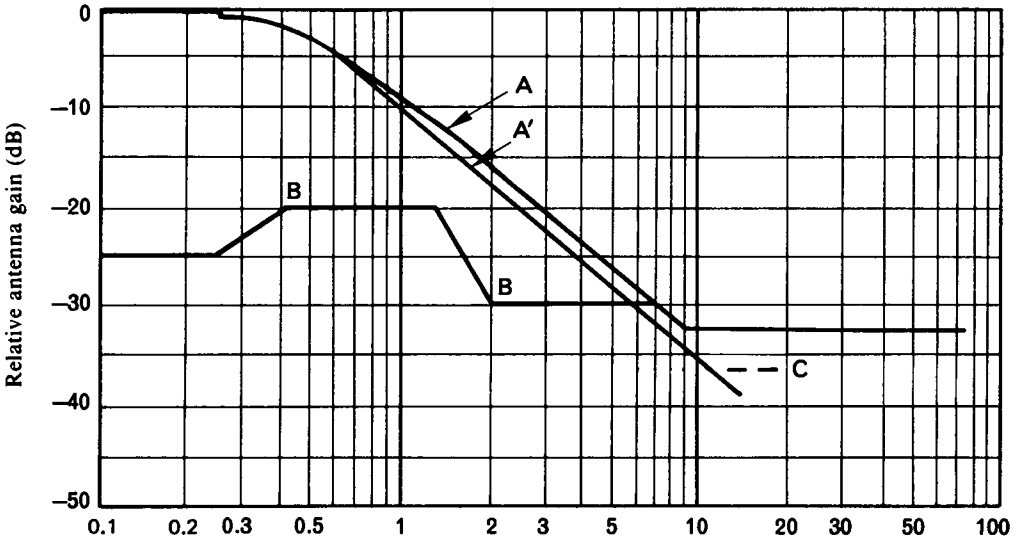
The co-polar and cross-polar receiving antenna reference patterns are given in Figures 7 and 8.

a) For Regions 1 and 3, the relative antenna gain (dB) is given by the curves in Figure 7 for:

- individual reception, for which use should be made of:
  - Curve A for the co-polar component;
  - Curve B for the cross-polar component;
- community reception, for which use should be made of:
  - Curve A′ up to the intersection with Curve C, then Curve C, for the co-polar component;
  - Curve B for the cross-polar component.

b) For Region 2, the relative antenna gain (dB) is given by the curves in Figure 8 for individual reception, for which use should be made of:

- Curve A for the co-polar component;
- Curve B for the cross-polar component.



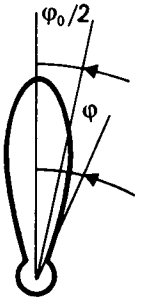


FIGURE 7

Co-polar and cross-polar receiving antenna reference patterns in Regions 1 and 3

Curve A: Co-polar component for individual reception without side-lobe suppression (dB relative to main beam gain)

0 for $0 \leqslant \varphi \leqslant 0.25\ \varphi_0$

$-12 \left(\frac{\varphi}{\varphi_0}\right)^2$ for $0.25\ \varphi_0 < \varphi \leqslant 0.707\ \varphi_0$

$-\left[9.0 + 20 \log \left(\frac{\varphi}{\varphi_0}\right)\right]$ for $0.707\ \varphi_0 < \varphi \leqslant 1.26\ \varphi_0$

$-\left[8.5 + 20 \log \left(\frac{\varphi}{\varphi_0}\right)\right]$ for $1.26\ \varphi_0 < \varphi \leqslant 9.55\ \varphi_0$

-33 for $\varphi > 9.55\ \varphi_0$

Curve A': Co-polar component for community reception without side-lobe suppression (dB relative to main beam gain)

0 for $0 \leqslant \varphi \leqslant 0.25\ \varphi_0$

$-12 \left(\frac{\varphi}{\varphi_0}\right)^2$ for $0.25\ \varphi_0 < \varphi \leqslant 0.86\ \varphi_0$

$-\left[10.5 + 25 \log \left(\frac{\varphi}{\varphi_0}\right)\right]$ for $\varphi > 0.86\ \varphi_0$ up to intersection with Curve C (then Curve C)

Curve B: Cross-polar component for both types of reception (dB relative to main beam gain)

-25 for $0 \leqslant \varphi \leqslant 0.25\ \varphi_0$

$-\left(30 + 40 \log \left|\frac{\varphi}{\varphi_0} - 1\right|\right)$ for $0.25\ \varphi_0 < \varphi \leqslant 0.44\ \varphi_0$

-20 for $0.44\ \varphi_0 < \varphi \leqslant 1.4\ \varphi_0$

$-\left(30 + 25 \log \left|\frac{\varphi}{\varphi_0} - 1\right|\right)$ for $1.4\ \varphi_0 < \varphi \leqslant 2\ \varphi_0$

-30 until intersection with co-polar component curve; then co-polar component curve.

Curve C: Minus the on-axis gain (Curve C in this figure illustrates the particular case of an antenna with an on-axis gain of 37 dBi).

Note: for values of φ_0 see section 3.7.1

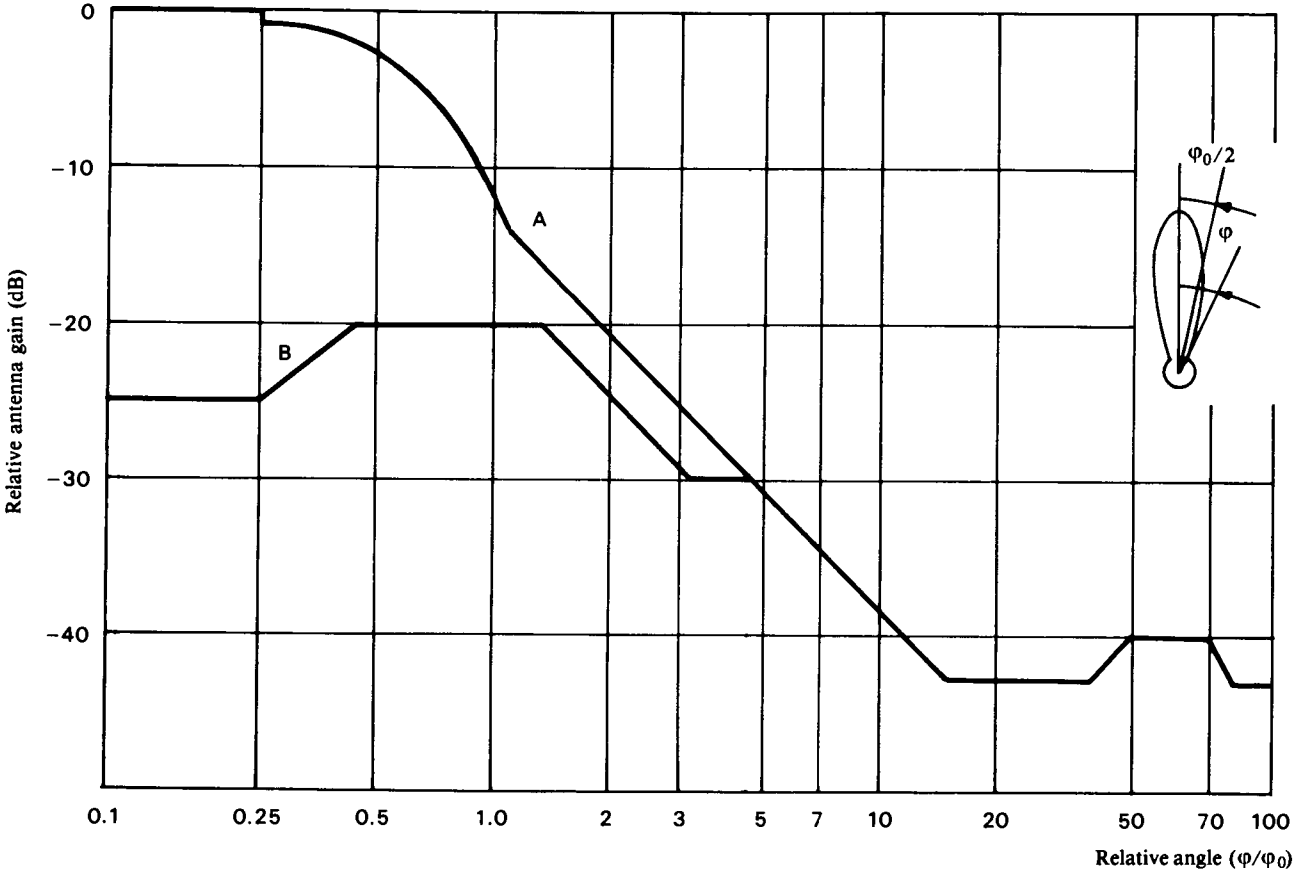


FIGURE 8

Reference patterns for co-polar and cross-polar components for receiving earth station antennas in Region 2

Curve A: Co-polar component without side-lobe suppression (dB relative to main beam gain)

0	for $0 \leqslant \varphi \leqslant 0.25\ \varphi_0$
$-12\ (\varphi/\varphi_0)^2$	for $0.25\ \varphi_0 < \varphi \leqslant 1.13\ \varphi_0$
$-\{14 + 25 \log(\varphi/\varphi_0)\}$	for $1.13\ \varphi_0 < \varphi \leqslant 14.7\ \varphi_0$
-43.2	for $14.7\ \varphi_0 < \varphi \leqslant 35\ \varphi_0$
$-\{85.2 - 27.2 \log(\varphi/\varphi_0)\}$	for $35\ \varphi_0 < \varphi \leqslant 45.1\ \varphi_0$
-40.2	for $45.1\ \varphi_0 < \varphi \leqslant 70\ \varphi_0$
$-\{-55.2 + 51.7 \log(\varphi/\varphi_0)\}$	for $70\ \varphi_0 < \varphi \leqslant 80\ \varphi_0$
-43.2	for $80\ \varphi_0 < \varphi \leqslant 180°$

Curve B: Cross-polar component (dB relative to main beam gain)

-25	for $0 \leqslant \varphi \leqslant 0.25\ \varphi_0$
$-\left(30 + 40 \log\left\lvert\frac{\varphi}{\varphi_0} - 1\right\rvert\right)$	for $0.25\ \varphi_0 < \varphi \leqslant 0.44\ \varphi_0$
-20	for $0.44\ \varphi_0 < \varphi \leqslant 1.28\ \varphi_0$
$-\left(17.3 + 25 \log\left\lvert\frac{\varphi}{\varphi_0}\right\rvert\right)$	for $1.28\ \varphi_0 < \varphi \leqslant 3.22\ \varphi_0$
-30 until intersection with co-polar component curve; then co-polar component curve.	

Note 1: For values of φ_0 see paragraph 3.7.1.

Note 2: In the angular range between 0.1 φ_0 and 1.13 φ_0 the co-polar and cross-polar gains must not exceed the reference patterns.

Note 3: At off-axis angles larger than 1.13 φ_0 and for 90% of all sidelobe peaks in each of the reference angular windows, the gain must not exceed the reference patterns. The reference angular windows are 1.13 φ_0 to 3 φ_0, 3 φ_0 to 6 φ_0, 6 φ_0 to 10 φ_0, 10 φ_0 to 20 φ_0, 20 φ_0 to 40 φ_0, 40 φ_0 to 75 φ_0 and 75 φ_0 to 180°.

3.8 *Necessary bandwidth*

The necessary bandwidths considered are as follows for:

– 625-line systems in Regions 1 and 3: 27 MHz;

– 525-line systems in Region 3: 27 MHz.

In Region 2, the Plan is based on a channel bandwidth of 24 MHz[1], but different bandwidths may be implemented in accordance with the provisions of this Appendix.

3.9 *Guardbands*

3.9.1 A guardband is defined as the portion of the frequency spectrum between the edge of the allocated band and the edge of the necessary bandwidth of the emission in the nearest channel.

3.9.2 For the planning of the broadcasting-satellite service, the guardbands necessary to protect the services in adjacent frequency bands are shown in the table below.

Regions	Guardband at the lower edge of the band	Guardband at the upper edge of the band
1	14 MHz	11 MHz
2	12 MHz	12 MHz
3	14 MHz	11 MHz

[1] For France, Denmark and some of the United Kingdom requirements which use 625-line standards with greater video bandwidth, the channels shown in the Plan have a necessary bandwidth of 27 MHz. This is indicated by an appropriate symbol in the Plan.

For Regions 1 and 3, the guardbands assume a maximum beam centre e.i.r.p. of 67 dBW (value relating to individual reception), and a filter roll-off of 2 dB/MHz. If smaller e.i.r.p. values are assumed, the guardbands can be reduced in width by 0.5 MHz for each decibel decrease in e.i.r.p.

3.9.3 Since developments in technology or the choice of lower e.i.r.p. values than those given above are likely to permit a reduction in the necessary guardbands, it is recommended for Regions 1 and 3 that, for purposes other than planning at the 1977 Conference, the latest CCIR Recommendations concerning spurious emissions from broadcasting satellites should be followed.

3.9.4 The guardbands at both the lower and upper edges may be used for transmissions in the space operation service.

3.10 *Orbital spacing*

The Plan for Regions 1 and 3 has been based generally on nominal orbital positions spaced uniformly at intervals of 6°. The Plan for Region 2 has been based on a non-uniform spacing.

3.11 *Satellite station-keeping*

Space stations in the broadcasting-satellite service must be maintained in position with an accuracy of better than ± 0.1° in both the N-S and the E-W directions. For such space stations, the maintenance of the tolerance in the N-S direction is recommended but is not a requirement for Region 2.

3.12 *Elevation angle of receiving antennas*

The Plans have been based on the desirability of a minimum angle of elevation of 20° to minimize the required e.i.r.p. of the satellite and to reduce the effects of shadowing and the possibility of interference from terrestrial services. However, for areas situated in latitudes above about 60°, the angle of elevation is of necessity less than 20°. Attention is also drawn to section 2.2 for the Regions 1 and 3 Plan and to section 2.4.3 for the Region 2 Plan.

For mountainous areas where an elevation angle of 20° may not suffice, an angle of at least 30° has been provided, where possible, to provide an acceptable service. An angle of elevation of at least 40° has been considered for service areas subject to high precipitation (e.g., in Regions 1 and 3, rain-climatic zone 1; in Region 2, rain-climatic zones M, N and P), but exceptions were made in some cases in Region 2.

Some dry, non-mountainous areas may be given an acceptable service at angles of elevation less than 20°.

In areas with small elevation angles, the shadowing effect of tall buildings may have to be taken into account.

In choosing a satellite position designed to give the maximum angle of elevation at the ground, the influence of such a position on the eclipse period has been borne in mind.

3.13 *Transmitting antennas*

3.13.1 *Cross-section of transmitted beam*

Planning in Regions 1, 2 and 3 has been based on the use of transmitting antennas with beams of elliptical or circular cross-section.

If the cross-section of the emitted beam is elliptical, the effective beamwidth φ_0 is a function of the angle of rotation between the plane containing the satellite and the major axis of the beam cross-section and the plane in which the beamwidth is required.

The relationship between the maximum gain of an antenna and the half-power beamwidth can be derived from the expression:

$$G_m = \frac{27\,843}{ab}$$

or

$$G_m\,(\text{dB}) = 44.44 - 10 \log a - 10 \log b$$

where:

a and b are the angles (in degrees) subtended at the satellite by the major and minor axes of the elliptical cross-section of the beam.

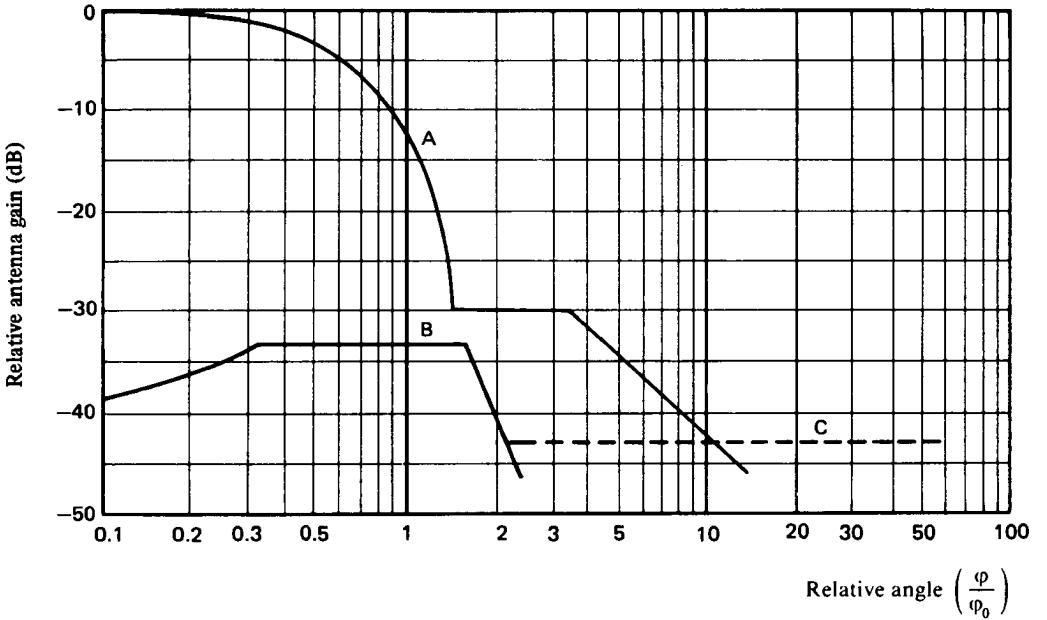
An antenna efficiency of 55% is assumed.

3.13.2 *Minimum beamwidth of transmitting antenna*

A minimum value of 0.6° for the half-power beamwidth of a transmitting antenna has been adopted for planning for Regions 1 and 3, and 0.8° for Region 2.

3.13.3 *Transmitting antenna reference patterns*

The reference patterns for the co-polar and cross-polar components of satellite transmitting antennas used in preparing the Plans are given in Figure 9 for Regions 1 and 3, and in Figure 10 for Region 2.



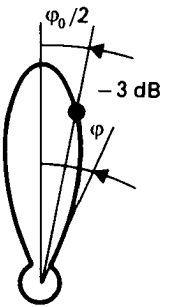


FIGURE 9

Reference patterns for co-polar and cross-polar components for satellite transmitting antennas in Regions 1 and 3

Curve A: Co-polar component (dB relative to main beam gain)

$$-12\left(\frac{\varphi}{\varphi_0}\right)^2 \qquad \text{for} \quad 0 \leqslant \varphi \leqslant 1.58\ \varphi_0$$

$$-30 \qquad \text{for} \quad 1.58\ \varphi_0 < \varphi \leqslant 3.16\ \varphi_0$$

$$-\left[17.5 + 25 \log\left(\frac{\varphi}{\varphi_0}\right)\right] \qquad \text{for} \quad \varphi > 3.16\ \varphi_0$$

after intersection with Curve C: as Curve C

Curve B: Cross-polar component (dB relative to main beam gain)

$$-\left(40 + 40 \log\left|\frac{\varphi}{\varphi_0} - 1\right|\right) \qquad \text{for} \quad 0 \leqslant \varphi \leqslant 0.33\ \varphi_0$$

$$-33 \qquad \text{for} \quad 0.33\ \varphi_0 < \varphi \leqslant 1.67\ \varphi_0$$

$$-\left(40 + 40 \log\left|\frac{\varphi}{\varphi_0} - 1\right|\right) \qquad \text{for} \quad \varphi > 1.67\ \varphi_0$$

after intersection with Curve C: as Curve C

Curve C: Minus the on-axis gain (Curve C in this figure illustrates the particular case of an antenna with an on-axis gain of 43 dBi).

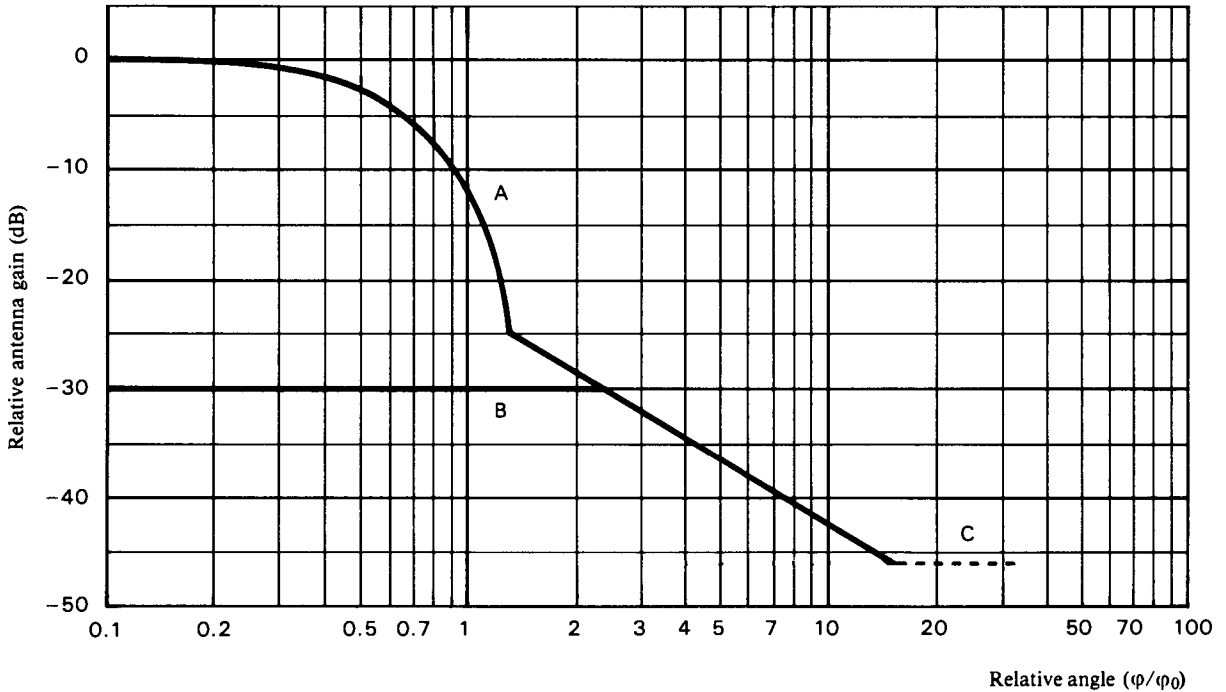


FIGURE 10

Reference patterns for co-polar and cross-polar components for satellite transmitting antennas in Region 2

Curve A: Co-polar component (dB relative to main beam gain)

$-12\ (\varphi/\varphi_0)^2$ for $0 \leqslant (\varphi/\varphi_0) \leqslant 1.45$

$-(22 + 20 \log (\varphi/\varphi_0))$ for $(\varphi/\varphi_0) > 1.45$

after intersection with curve C: Curve C

Curve B: Cross-polar component (dB relative to main beam gain)

-30 for $0 \leqslant (\varphi/\varphi_0) \leqslant 2.51$

after intersection with co-polar pattern: co-polar pattern

Curve C: Minus the on-axis gain (Curve C in this figure illustrates the particular case of an antenna with an on-axis gain of 46 dBi).

In Region 2, when it was necessary to reduce interference, the pattern shown in Figure 11 was used; this use is indicated in the Plan by an appropriate symbol. This pattern is derived from an antenna producing an elliptical beam with fast roll-off in the main lobe. Three curves for different values of φ_0 are shown as examples.

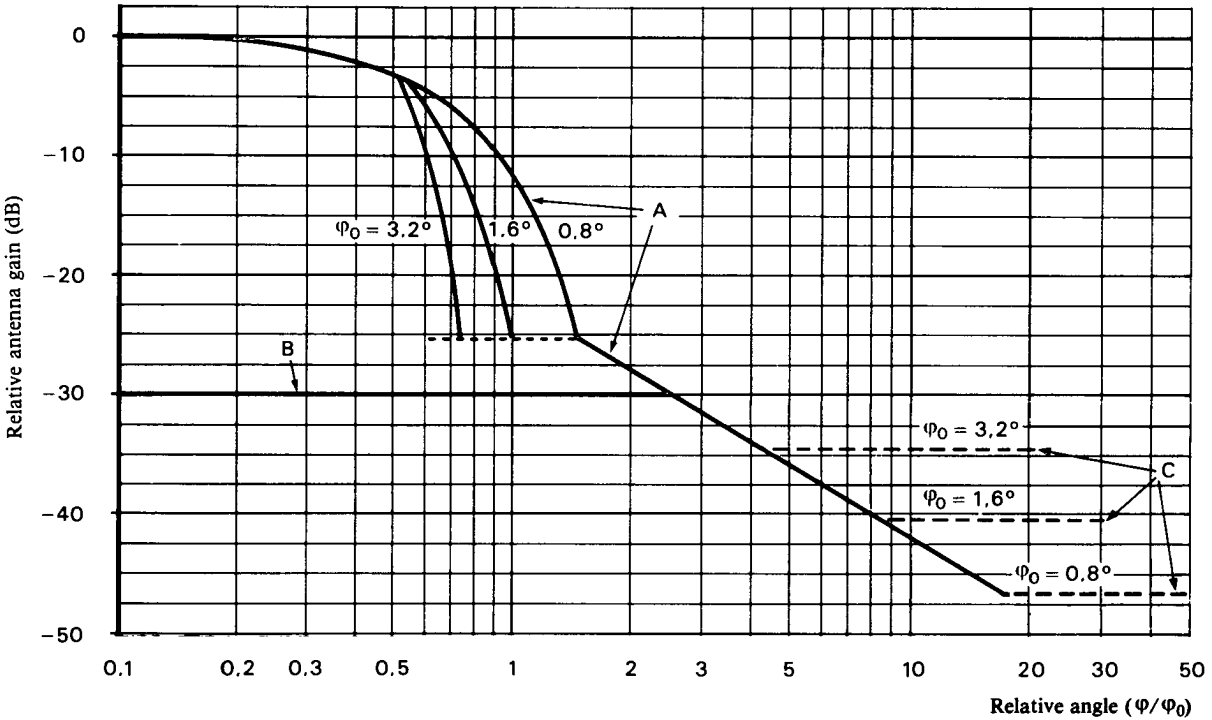


FIGURE 11

Reference patterns for co-polar and cross-polar components for satellite transmitting antennas with fast roll-off in the main beam for Region 2

Curve A: Co-polar component (dB relative to main beam gain)

$-12\ (\varphi/\varphi_0)^2$ for $0 \leqslant (\varphi/\varphi_0) \leqslant 0.5$

$-18.75\ \varphi_0^2\ (\varphi/\varphi_0 - x)^2$ for $0.5 < (\varphi/\varphi_0) \leqslant \left(\frac{1.16}{\varphi_0} + x\right)$

-25.23 for $\left(\frac{1.16}{\varphi_0} + x\right) < (\varphi/\varphi_0) \leqslant 1.45$

$-(22 + 20 \log (\varphi/\varphi_0))$ for $(\varphi/\varphi_0) > 1.45$

after intersection with curve C: Curve C

Curve B: Cross-polar component (dB relative to main beam gain)

-30 for $0 \leqslant (\varphi/\varphi_0) < 2.51$

after intersection with co-polar pattern: co-polar pattern

Curve C: Minus the on-axis gain (Curves A and C represent examples of three antennas having different values of φ_0 as labelled in Figure 11. The on-axis gains of these antennas are approximately 34, 40 and 46 dBi, respectively).

where:

φ = off-axis angle (degrees)

φ_0 = dimension of the minimum ellipse fitted around the down-link service area in the direction of interest (degrees)

$x = 0.5 \left(1 - \frac{0.8}{\varphi_0}\right)$.

3.14 *Satellite antenna pointing accuracy*

3.14.1 The deviation of the antenna beam from its nominal pointing direction must not exceed a limit of 0.1° in any direction. Moreover, the angular rotation of a transmitting beam about its axis must not exceed a limit of ± 2° for Regions 1 and 3, and ± 1° for Region 2; the limit on rotation is not necessary for beams of circular cross-section using circular polarization.

3.14.2 The following factors contribute to the total variation in the area on the surface of the Earth illuminated by the satellite beam:

- variations in satellite station-keeping;
- the variations caused by the pointing tolerances, which become more significant for coverage areas with low angles of elevation;
- the effect of the yaw error, which increases as the beam ellipse lengthens.

3.14.3 The effect of these possible variations should be assessed on a case-by-case basis, since their total effect on the area covered will vary with the geometry of the satellite beam, and it would not be reasonable to indicate a single value of shift in the area covered for all situations.

3.14.4 If linear polarization is used for an emission, yaw error makes a significant contribution to increasing the transmitted cross-polarized component; this increases the interference with other carriers which were originally cross-polarized with the emission in question.

3.15 *Limitation of output power in the satellite transmitter*

The output power of a space station transmitter in the broadcasting-satellite service must not rise by more than 0.25 dB relative to its nominal value throughout the life of the satellite.

3.16 *Power flux-density at edge of coverage area*

The value of the power flux-density at the edge of the coverage area exceeded for 99% of the worst month is:

– 103 dB(W/m^2) for individual reception in Regions 1 and 3;

– 107 dB(W/m^2) for individual reception in Region 2 for 24 MHz, as well as for 27 MHz with respect to the cases mentioned in the footnote to Section 3.8.

– 111 dB(W/m^2) for community reception in Regions 1 and 3.

3.17 *Difference between the e.i.r.p. directed towards the edge of the coverage area and that on the axis of the beam*

For planning, the absolute value of the difference between the e.i.r.p. directed towards the edge of the coverage area and that on the axis of the beam should preferably be 3 dB.

If the beam area is larger than the coverage area, the value will be less than 3 dB.

3.18 *Use of energy dispersal*

For planning, an energy dispersal value has been adopted which reduces by 22 dB the spectral power flux-density measured in a 4 kHz bandwidth in relation to that measured in the entire bandwidth; this reduction corresponds to a peak-to-peak deviation of 600 kHz.

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ANNEX 6[1]

Criteria for Sharing Between Services

1. *Protection requirements for sharing between services in the 12 GHz band*

1.1 The establishment of sharing criteria for the different services using the 12 GHz band should be based on the protection requirements listed in the table below.

1.2 The values given as "total acceptable" are those necessary to protect the wanted signal. The "single entry" values are those which should be used as a guide for determining sharing criteria. The total interference from all sources must be calculated, since satisfying the "single entry" criteria for each source may not guarantee that the total interference meets the above protection requirements. A "single entry" is defined as the aggregate of emissions from any one station entering any receiver in the wanted service within the channel to be protected.

1.3 The carrier-to-interference ratio (C/I) refers to the ratio of the wanted-to-interfering power at the affected ground station. The value given shall be exceeded for 80% of the worst month for the fixed-satellite service (FSS), and for 99% of the worst month for the broadcasting service (BS) and the broadcasting-satellite service (BSS).

1.4 The term N refers to the post-demodulation noise power at a point of 0 dBm0 relative test tone level in any voice channel of an FDM/FM telephony system. The value given shall not be exceeded for 80% of the worst month.

1.5 The specified values of protection ratio (i.e., the carrier-to-interference power ratio corresponding to a specified picture quality) are applicable, for planning purposes, to television signals of any of the several television standards.

---

[1] Sections 1 and 2 of this Annex are applicable when the services of Regions 1 or 3 are involved. Section 3 is applicable to all Regions.

Wanted service [1]	Wanted signal [1]	Interfering service [1]	Interfering signal [1]	Protection requirements [2]	
				Total acceptable [3]	Single entry
BSS	TV/FM	BSS, FSS, FS, BS	TV/FM	C/I = 30 dB [4,7]	C/I = 35 dB [4]
FSS	FDM/FM	BSS	TV/FM	N = 500 pW0p [8]	N = 300 pW0p
FSS	TV/FM	BSS, FSS	TV/FM	C/I = 32 dB [5]	C/I = 37 dB [5]
FSS	4φ-PSK	BSS, FSS	TV/FM	C/I = 30 dB	C/I = 35 dB
FSS	FDM/FM	FSS	FDM/FM	N = 1000 pW0p	N = 400 pW0p
FS	FDM/FM	BSS	TV/FM	N = 1000 pW0p	−125 dB(W/m^2/4 kHz) [6]
BS	TV/VSB	BSS	TV/FM	C/I = 50 dB	not applicable

Notes: [1] BSS = broadcasting-satellite service
FSS = fixed-satellite service
BS = broadcasting service
FS = fixed service
TV = television
FM = frequency modulation
FDM = frequency division multiplex
4φ-PSK = four-level phase shift keying
VSB = vestigial sideband.

[2] These limits include both up-link and down-link contributions.

[3] Values in dB are protection ratios for the sum of interfering signals. Values in pW0p represent interference noise in the worst telephone channels caused by the sum of interfering signals.

[4] For BSS satellites located at the interfaces of the Regions 1 and 3 Plan and the Region 2 Plan, the C/I ratios should be 1 dB higher.

[5] See CCIR Recommendation 483.

[6] This value may be suitably modified for tropical regions to take account of rain attenuation. Allowance may also be made for polarization discrimination.

[7] C/I = ratio of carrier-to-interfering signal.

[8] N = noise power.

1.6 For BSS systems with FM/TV as the wanted signal, the protection ratios are given for particular reference conditions, the most important of which are:

a) frequency deviation of the wanted signal (12 MHz peak-to-peak);

b) quality of the wanted service (grade 4.5)[1];

c) co-channel carriers (no carrier-frequency offset).

1.7 If system design is based on conditions other than *a)* and *b)* above, the FM/TV protection ratio is given by:

$$R = 12.5 - 20 \log (D_v/12) - Q + 1.1\ Q^2 \qquad \text{(dB)}$$

where:

D_v = nominal peak-to-peak frequency deviation (MHz);

Q = the impairment grade, concerning the interference only.

1.8 When carriers are offset in frequency, condition *c)* does not apply and the adjacent channel protection ratios should be adjusted according to the frequency offset as shown in Figure 1. For example, at a frequency offset of 20 MHz, the total acceptable ratio of protection against interference to an FM/TV signal from another FM/TV signal is 13 dB. The corresponding "single entry" value is 18 dB.

[1] Impairment grade on a 5-point scale as defined in CCIR Recommendation 500.

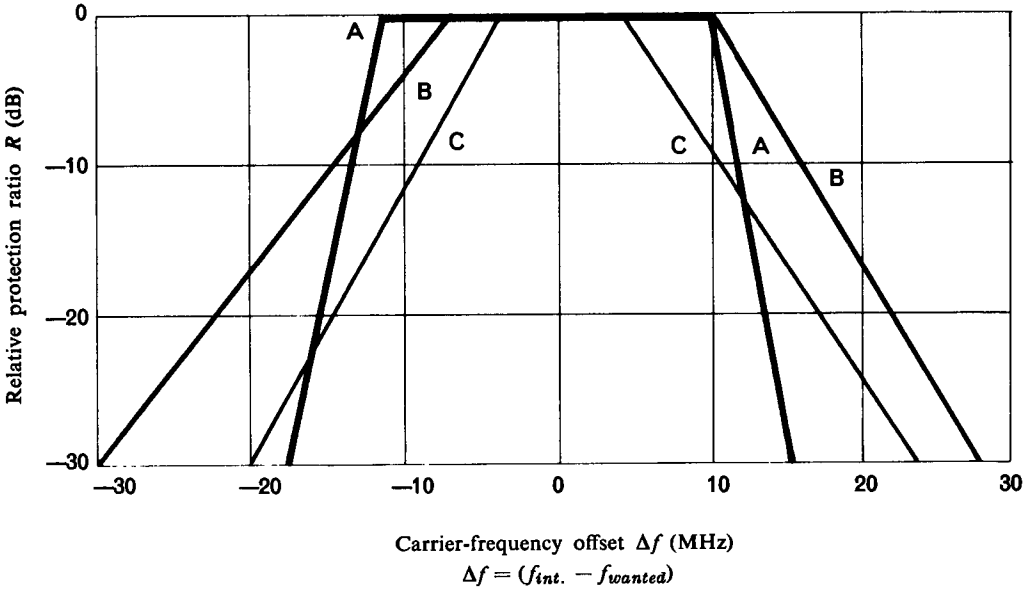

FIGURE 1

Reference case protection ratios relative to co-channel values

Curve A: TV/VSB-wanted, TV/FM interfering

Curve B: TV/FM-wanted, TV/FM interfering

Curve C: TV/FM-wanted, TV/VSB interfering

2. *Reference antenna diameter for a fixed-satellite earth station to be used in calculating interference from space stations in the broadcasting-satellite service*

2.1 For antennas larger than 100 λ (2.5 m) in the fixed-satellite service, the gain of the side-lobes is given by the equation $32 - 25 \log \theta$, where θ is the angle from the boresight (CCIR Recommendation 465). The side-lobe gain is independent of antenna diameter.

2.2 However, in the case of transmitting earth stations, the level of interference radiated into the up-link of other satellite systems would be inversely proportional to the square of the antenna diameter. In this case, the interference decreases with increasing antenna diameter. Since the 11.7 - 12.2 GHz band is only assigned in the space-to-Earth direction in the fixed-satellite service, this point is not of direct concern to the broadcasting-satellite service.

2.3 Hence it does not appear appropriate, for antenna diameters greater than 100 λ, to specify a minimum antenna diameter for receiving earth stations in the fixed-satellite service sharing the band 11.7 - 12.2 GHz. It may be useful to consider a 4.5 m antenna having an efficiency of 60% and an on-axis gain of 53 dB as typical for the purpose of planning the sharing of this band.

3. *Use of energy dispersal in the broadcasting-satellite service*

3.1 Artificial energy dispersal is useful in promoting sharing between the broadcasting-satellite service and the other services to which the band is also allocated.

3.2 Such energy dispersal is achieved by the addition at baseband of a triangular waveform to the video signal to form a composite baseband which, in turn, is used to frequency-modulate the up-link carrier. The frequency of the triangular waveform is usually synchronized at a sub-multiple of the television frame frequency. Typical frequencies range from 12.5 Hz to 30 Hz.

3.3 The table below gives the relative reduction in spectral power flux-density in a 4 kHz bandwidth as a function of the peak-to-peak deviation due to the energy dispersal signal. This table is based on the following equation:

$$\text{Relative reduction (dB) in a 4 kHz band} = 10 \log \frac{\Delta F_{pp} + \delta f_{rms}}{4}$$

where:

ΔF_{pp} = peak-to-peak deviation due to the energy dispersal signal (kHz);

δf_{rms} = rms deviation due to "natural" energy dispersal (kHz).

In compiling the table below, a value of 40 kHz has been assumed for δf_{rms}, on the basis of the value of 10 dB for "natural" dispersion given in Table 4 of CCIR draft Report 631 (Rev. 76).

Reduction of spectral power flux-density relative to a 4 kHz bandwidth

Peak-to-peak deviation (kHz)	Relative reduction (dB)
0	10
100	15.44
200	17.78
300	19.29
400	20.41
500	21.30
600	22.04
700	22.67
800	23.22
900	23.71
1000	24.15

3.4 The value of energy dispersal for the broadcasting-satellite service has been determined such that the spectral power flux-density measured in a 4 kHz bandwidth is reduced by 22 dB relative to that measured in the entire bandwidth; this reduction corresponds to a peak-to-peak deviation of 600 kHz.

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ANNEX 7

Orbital Position Limitations

A. In applying the procedure of Article 4 for modifications to the appropriate Regional Plan, administrations should observe the following criteria:

1) No broadcasting satellite serving an area in Region 1 and using a frequency in the band 11.7 - 12.2 GHz shall occupy a nominal orbital position further west than 37° W or further east than 146° E.

2) No broadcasting satellite serving an area in Region 2 that involves an orbital position different from that contained in the Region 2 Plan shall occupy a nominal orbital position:

a) further east than 54° W in the band 12.5 - 12.7 GHz; *or*

b) further east than 44° W in the band 12.2 - 12.5 GHz; *or*

c) further west than 175.2° W in the band 12.2 - 12.7 GHz.

However, modifications necessary to resolve possible incompatibilities during the incorporation of the Regions 1 and 3 feeder-link Plan into the Radio Regulations shall be permitted.

3) Any new orbital position in the Regions 1 and 3 Plan in the range of the orbital arc between 37° W and 10° E associated with a new assignment, or resulting from a modification of an assignment in the Plan, shall be coincident with, or within 1° to the east of, a nominal orbital position in the Region 1 and 3 Plan at the date of entry into force of the Final Acts[1].

In the event of a modification to an assignment in the Regions 1 and 3 Plan, the use of a new nominal orbital position not coincident with any nominal orbital position in the Plan at the date of entry into force of the Final Acts[1] shall involve an 8 dB reduction in the e.i.r.p. compared to that appearing in the Regions 1 and 3 Plan for the assignment before modification.

B. The Region 2 Plan is based on the grouping of the space stations in nominal orbital positions of $+0.2°$ and $-0.2°$ from the centre of the cluster of satellites. Administrations may locate those satellites within a cluster at any orbital position within that cluster, provided they obtain the agreement of administrations having assignments to space stations in the same cluster. (See Section 3.13.1 of Annex 3 to Appendix **30A** of the Radio Regulations.)

[1] Final Acts of the 1977 Conference, which entered into force on 1 January 1979.

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APPENDIX 30A

Orb-85

Provisions and Associated Plan for the Feeder Links for the Broadcasting-Satellite Service (12.2 - 12.7 GHz) in the Frequency Band 17.3 - 17.8 GHz in Region 2

(See Article **15A**)

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ARTICLE 1

General Definitions

1.1 *Region 2 Feeder-Link Plan:* The Plan for the feeder links for the broadcasting-satellite service in the frequency band 17.3 - 17.8 GHz in Region 2 contained in this Appendix together with any modifications resulting from the successful application of the procedure of Article 4 of this Appendix herein referred to as the Plan.

1.2 *Frequency assignment in conformity with the Region 2 Feeder-Link Plan:* Any frequency assignment for a receiving space station which appears in the Plan or for which the procedure of Article 4 of this Appendix has been successfully applied.

1.3 *1983 Conference:* Regional Administrative Radio Conference for the Planning in Region 2 of the Broadcasting-Satellite Service in the Frequency Band 12.2 - 12.7 GHz and Associated Feeder Links in the Frequency Band 17.3 - 17.8 GHz, called in short Regional Administrative Conference for the Planning of the Broadcasting-Satellite Service in Region 2 (RARC Sat-R2), Geneva, 1983.

1.4 *1985 Conference:* First Session of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It, Geneva, 1985, called in short WARC Orb-85.

ARTICLE 2

Frequency Band

2.1 The provisions of this Appendix apply to the feeder links in the fixed-satellite service (Earth-to-space) in the frequency band 17.3 - 17.8 GHz, for the broadcasting-satellite service in Region 2, and to other services to which this band is allocated in Region 2 so far as their relationship to the fixed-satellite service (Earth-to-space) in this band is concerned.

ARTICLE 3

Execution of the Provisions and Associated Plan

3.1 The Members of the Union in Region 2 shall adopt for their feeder-link space and earth stations in the fixed-satellite service (Earth-to-space) in the frequency band referred to in this Appendix, the characteristics specified in the Plan and its associated provisions.

3.2 Members of the Union in Region 2 shall not change the characteristics specified in the Plan, or bring into use assignments to feeder-link stations in the fixed-satellite service or to stations of the other services to which these frequency bands are allocated, except as provided for in the Radio Regulations and the appropriate Articles and Annexes of this Appendix.

ARTICLE 4

Procedure for Modifications to the Region 2 Plan (17.3 - 17.8 GHz)

4.1 When an administration intends to make a modification to the Plan, i.e. either:

a) to modify the characteristics of any of its frequency assignments in the fixed-satellite service which are shown in the Plan, or for which the procedure in this Article has been successfully applied, whether or not the station has been brought into use; *or*

b) to include in the Plan a new frequency assignment in the fixed-satellite service; *or*

c) to cancel a frequency assignment in the fixed-satellite service,

the following procedure shall be applied before any notification of the frequency assignment is made to the International Frequency Registration Board (see Article 5 of this Appendix and Resolution **42 (Orb-85)**).

4.1.1 Before an administration proposes to include in the Plan under the provisions of 4.1 *b)* a new frequency assignment for reception at a space station[1] or to include in the Plan a new frequency assignment for reception at a space station whose orbital position is not designated in the Plan to this administration, all of the assignments to the service areas involved should normally have been brought into service or have been notified to the Board in accordance with Article 5 of this Appendix. Should this not be the case, the administration concerned shall inform the Board of the reasons thereof.

[1] The expression "frequency assignment for reception to a space station", wherever it appears in this Article, shall be understood to refer to a frequency assignment associated with a given orbital position.

4.2 *Proposed modifications to a frequency assignment in conformity with the Plan or the inclusion in the Plan of a new frequency assignment*

4.2.1 An administration proposing a modification to the characteristics of a frequency assignment in conformity with the Plan or the inclusion of a new frequency assignment in the Plan shall seek the agreement of those administrations:

4.2.1.1 of Region 2 having a feeder-link frequency assignment in the fixed-satellite service (Earth-to-space) in the same channel or an adjacent channel, which appears in the Plan or in respect of which proposed modifications to the Plan have already been published by the Board in accordance with the provisions of sections 4.2.3.1 and 4.2.4 of this Article; *or*

4.2.1.2 having a frequency assignment in the band 17.7 - 17.8 GHz to an earth station in the fixed-satellite service (space-to-Earth) which is recorded in the Master Register or which has been coordinated or is being coordinated under the provisions of No. **1060** of the Radio Regulations and which is located within the coordination area of the feeder link fixed-satellite earth station;

4.2.1.3 having a frequency assignment in the band 17.7 - 17.8 GHz to a terrestrial station in use or intended to be brought into use within three years of the projected date of bringing the feeder link modification into use, and which is located within the coordination area of the feeder link fixed-satellite earth station;

4.2.1.4 having an assignment in the fixed-satellite service (Earth-to-space) in Regions 1 or 3 which

a) is recorded in the Master Register; *or*

b) has been coordinated or is being coordinated or has been notified under Articles **11** and **13** of the Radio Regulations; *or*

c) appears in a Region 1 and 3 feeder-link Plan to be adopted by a future Administrative Radio Conference, taking account of modifications which may be introduced subsequently, in accordance with the Final Acts of that conference; *or*

d) is identified in accordance with Resolution **43 (Orb-85)**.

4.2.1.5 which are considered affected.

4.2.1.6 The services of an administration are considered to be affected when the limits shown in Annex 1 to this Appendix are exceeded.

4.2.2 The agreement referred to in 4.2.1 is not required when an administration proposes to bring into use, with characteristics appearing in the Plan, a fixed earth station in the band 17.3 - 17.8 GHz or a transportable earth station in the band 17.3 - 17.7 GHz. Administrations may communicate to the Board the characteristics of such earth stations in order to include them in the Plan.

4.2.3 An administration intending to modify characteristics in the Plan shall send to the Board, not earlier than five years but preferably not later than eighteen months before the date on which the assignment is to be brought into use, the relevant information listed in Annex 2 to this Appendix.

4.2.3.1 Where as a result of the intended modification the limits defined in Annex 1 to this Appendix are not exceeded, this fact shall be indicated when submitting to the Board the information required by 4.2.3. The Board shall then publish this information in a special section of its weekly circular.

4.2.3.2 In all other cases the administration shall notify the Board of the names of the administrations whose agreement it considers should be sought in order to arrive at the agreement referred to in 4.2.1 as well as of those with which agreement has already been reached.

4.2.4 The Board shall determine on the basis of Annex 1 to this Appendix the administrations whose frequency assignments are considered to be affected within the meaning of 4.2.1. The Board shall include the names of those administrations with the information received under 4.2.3.2 and shall

publish the complete information in a special section of its weekly circular. The Board shall immediately send the results of its calculations to the administration proposing the modification to the Plan.

4.2.5 The Board shall send a telegram to the administrations listed in the special section of the weekly circular drawing their attention to the information it contains and shall send them the results of its calculations.

4.2.6 An administration which feels that it should have been included in the list of administrations whose services are considered to be affected may, giving the technical reasons for so doing, request the Board to include its name. The Board shall study this request on the basis of Annex 1 to this Appendix and shall send a copy of the request with an appropriate recommendation to the administration proposing the modification to the Plan.

4.2.7 Any modification to a frequency assignment which is in conformity with the Plan or any inclusion in the Plan of a new frequency assignment which would have the effect of exceeding the limits specified in Annex 1 to this Appendix shall be subject to the agreement of all affected administrations.

4.2.8 The administration seeking agreement or the administration with which agreement is sought may request any additional technical information it considers necessary. The administrations shall inform the Board of such requests.

4.2.9 Comments from administrations on the information published pursuant to 4.2.4 should be sent either directly to the administration proposing the modification or through the Board. In any event the Board shall be informed that comments have been made.

4.2.10 An administration which has not notified its comments either to the administration seeking agreement or to the Board, within a period of four months following the date of the weekly circular referred to in 4.2.3.1 or 4.2.4 shall be understood to have agreed to the proposed modification. This time-limit may be extended by up to three months for an administration which has requested additional information under 4.2.8 or for an

administration which has requested the assistance of the Board under 4.2.18. In the latter case the Board shall inform the administrations concerned of this request.

4.2.11 If, in seeking agreement, an administration modifies its initial proposal, it shall again apply the provisions of 4.2.3 and the consequent procedure with respect to any other administration whose services might be affected as a result of modifications to the initial proposal.

4.2.12 If no comments have been received on the expiry of the periods specified in 4.2.10, or if agreement has been reached with the administrations which have made comments and with which agreement is necessary, the administration proposing the modification may continue with the appropriate procedure in Article 5 of this Appendix and shall inform the Board, indicating the final characteristics of the frequency assignment together with the names of the administrations with which agreement has been reached.

4.2.13 The agreement of the administrations affected may also be obtained in accordance with this Article, for a specified period.

4.2.14 When the proposed modification to the Plan involves developing countries, administrations shall seek all practicable solutions conducive to the economical development of the broadcasting-satellite systems of these countries.

4.2.15 The Board shall publish in a special section of its weekly circular the information received under 4.2.12 together with the names of any administrations with which the provisions of this Article have been successfully applied. The frequency assignment concerned shall enjoy the same status as those appearing in the Plan and will be considered as a frequency assignment in conformity with the Plan.

4.2.16 When an administration proposing to modify the characteristics of a frequency assignment or to make a new frequency assignment receives notice of disagreement from an administration whose agreement it has sought, it should first endeavour to solve the problem by exploring all possible means of meeting its requirement. If the problem still cannot be

solved by such means, the administration whose agreement has been sought should endeavour to overcome the difficulties as far as possible, and shall state the technical reasons for any disagreement if the administration seeking the agreement requests it to do so.

4.2.17 If no agreement is reached between the administrations concerned, the Board shall carry out any study that may be requested by these administrations; the Board shall inform them of the result of the study and shall make such recommendations as it may be able to offer for the solution of the problem.

4.2.18 An administration may at any stage in the procedure described, or before applying it, request the assistance of the Board, particularly in seeking the agreement of another administration.

4.2.19 The relevant provisions of Article 5 of this Appendix shall be applied when frequency assignments are notified to the Board.

4.3 *Cancellation of frequency assignments*

When a frequency assignment in conformity with the Plan is no longer required, whether or not as a result of a modification, the administration concerned shall immediately so inform the Board. The Board shall publish this information in a special section of its weekly circular and delete the assignment from the Plan.

4.4 *Master copy of the Plan*

4.4.1 The Board shall maintain an up-to-date master copy of the Plan, including the overall equivalent protection margins of each assignment, taking account of the application of the procedure specified in this Article. This master copy shall contain the overall equivalent protection margins derived from the Plan as established by the 1983 Conference and those derived from all modifications to the Plan as a result of the successful completion of the modification procedure of this Article. The Board shall prepare a document listing the amendments to be made to the Plan as a result of modifications made in accordance with the procedure in this Article.

4.4.2 The Secretary-General shall be informed by the Board of modifications made to the Plan and shall publish an up-to-date version of the Plan in an appropriate form when justified by the circumstances.

ARTICLE 5

Notification, Examination and Recording in the Master Register of Frequency Assignments to Feeder-Link Transmitting Earth Stations and Receiving Space Stations in the Fixed-Satellite Service in the Band Between 17.3 and 17.8 GHz in Region 2

5.1 *Notification*

5.1.1 Whenever an administration intends to bring into use a frequency assignment to a transmitting earth station or receiving space station in the fixed-satellite service in the band between 17.3 and 17.8 GHz, it shall notify this frequency assignment to the Board. For this purpose, the notifying administration shall apply the following provisions.

5.1.2 For any notification under 5.1.1, an individual notice for each frequency assignment shall be drawn up as prescribed in Annex 2 to this Appendix, the various sections of which specify the basic characteristics to be provided as appropriate. It is recommended that the notifying administration should also supply any other data it may consider useful.

5.1.3 Each notice must reach the Board not earlier than three years before the date on which the frequency assignment is to be brought into use. In any case, the notice must reach the Board not later than three months before that date[1].

[1] Where appropriate, the notifying administration shall initiate the procedure of Article 4 of this Appendix for modifying the Plan in sufficient time to ensure that this limit is observed.

5.1.4 Any frequency assignment the notice of which reaches the Board after the applicable period specified in 5.1.3 shall, where it is to be recorded, bear a remark in the Master Register to indicate that it is not in conformity with 5.1.3.

5.1.5 Any notice made under 5.1.1 which does not contain the characteristics specified in Annex 2 to this Appendix shall be returned by the Board immediately by airmail to the notifying administration with the relevant reasons.

5.1.6 Upon receipt of a complete notice, the Board shall include its particulars, with the date of receipt, in its weekly circular which shall contain the particulars of all such notices received since the publication of the previous circular.

5.1.7 The circular shall constitute the acknowledgement to the notifying administration of the receipt of a complete notice.

5.1.8 Complete notices shall be considered by the Board in order of receipt. The Board shall not postpone its finding unless it lacks sufficient data to reach a decision; moreover, the Board shall not act upon any notice which has a technical bearing on an earlier notice still under consideration by the Board until it has reached a finding with respect to such earlier notice.

5.2 *Examination and recording*

5.2.1 The Board shall examine each notice:

a) with respect to its conformity with the Convention and the relevant provisions of the Radio Regulations (with the exception of those relating to *b)*, *c)*, and *d)* below); *and*

b) with respect to its conformity with the Plan; *or*

c) with respect to its conformity with the Plan, however having characteristics differing from those in the Plan in one or more of the following aspects:

- use of a reduced e.i.r.p.,
- use of a reduced coverage area entirely situated within the coverage area appearing in the Plan,
- use of other modulating signals in accordance with the provisions of 3.1.3 of Annex 5 of Appendix **30 (Orb-85)**,
- use of an orbital position under the conditions specified in paragraph B of Annex 7 of Appendix **30 (Orb-85)**,
- use of an antenna diameter greater than 5 metres without increasing the on-axis e.i.r.p.,
- use of an antenna diameter greater than 5 metres resulting in a greater on-axis e.i.r.p. if the orbital separation with any other space station is greater than 0.5° ; *or*

d) with respect to its conformity with the provisions of Resolution **42 (Orb-85)**.

5.2.2 Where the Board reaches a favourable finding with respect to 5.2.1 *a)* and 5.2.1 *b)*, the frequency assignment of an administration shall be recorded in the Master Register. The date of receipt of the notice by the Board shall be entered in Column 2d. In relations between administrations, all frequency assignments brought into use in conformity with the Plan and recorded in the Master Register shall be considered to have the same status irrespective of the dates entered in Column 2d for such frequency assignments.

5.2.2.1 Where the Board reaches a favourable finding with respect to 5.2.1 *a)* and 5.2.1 *c)* the frequency assignment shall be recorded in the Master Register. The date of receipt of the notice by the Board shall be entered in Column 2d. In relations between administrations, all frequency assignments brought into use in conformity with the Plan and recorded in

the Master Register shall be considered to have the same status irrespective of the dates entered in Column 2d for such frequency assignments. When recording these assignments, the Board shall indicate by an appropriate symbol the characteristics having a value different from that appearing in the Plan.

5.2.2.2 Where the Board reaches a favourable finding with respect to 5.2.1 *a)*, but an unfavourable finding with respect to 5.2.1. *b)* and 5.2.1 *c*), it shall examine the notice with respect to the successful application of the provisions of Resolution **42 (Orb-85)**. A frequency assignment for which the provisions of Resolution **42 (Orb-85)** have been successfully applied shall be recorded in the Master Register with an appropriate symbol to indicate its interim status. The date of receipt of the notice by the Board shall be entered in Column 2d. In relations between administrations all frequency assignments brought into use following the successful application of the provisions of Resolution **42 (Orb-85)** and recorded in the Master Register shall be considered to have the same status irrespective of the dates entered in Column 2d for such frequency assignments.

5.2.3 Whenever a frequency assignment is recorded in the Master Register, the finding reached by the Board shall be indicated by a symbol in Column 13a.

5.2.4 Where the Board reaches an unfavourable finding with respect to 5.2.1 *a)*, 5.2.1 *b)* and 5.2.1 *c)*, the notice shall be returned immediately by airmail to the notifying administration with the reasons of the Board for this finding and with such suggestions as the Board may be able to offer with a view to a satisfactory solution of the problem.

5.2.5 Where the notifying administration resubmits the notice and the finding of the Board becomes favourable with respect to the appropriate parts of 5.2.1, the notice shall be treated as in 5.2.2, 5.2.2.1 or 5.2.2.2 as appropriate.

5.2.6 If the notifying administration resubmits the notice without modification and insists on its reconsideration, and if the Board's finding with respect to 5.2.1 remains unfavourable, the notice is returned to the notifying administration in accordance with 5.2.4. In this case, the notifying administration undertakes not to bring into use the frequency assignment until the condition specified in 5.2.5 is fulfilled.

5.2.7 If a frequency assignment notified in advance of bringing into use in conformity with 5.1.3 has received a favourable finding by the Board with respect to the provisions of 5.2.1, it shall be entered provisionally in the Master Register with a special symbol in the Remarks Column indicating the provisional nature of that entry.

5.2.8 When the Board has received confirmation that the frequency assignment has been brought into use, the Board shall remove the symbol in the Master Register.

5.2.9 The date in Column 2c shall be the date of bringing into use notified by the administration concerned. It is given for information only.

5.3 *Cancellation of entries in the Master Register*

5.3.1 If an administration has not confirmed the bringing into use of a frequency assignment under 5.2.8, the Board will make inquiries of the administration not earlier than six months after the expiry of the period specified in 5.1.3. On receipt of the relevant information, the Board will either modify the date of coming into use or cancel the entry.

5.3.2 If the use of any recorded frequency assignment is permanently discontinued, the notifying administration shall so inform the Board within three months, whereupon the entry shall be removed from the Master Register.

ARTICLE 6

Procedure Concerning Notification and Recording in the Master Register of Frequency Assignments to Terrestrial Stations in Region 2 in the Band 17.7 - 17.8 GHz, when Frequency Assignments to Feeder-Link Earth Stations for the Broadcasting-Satellite Service in Conformity with the Region 2 Plan Are Involved

6.1 Administrations planning to implement assignments for terrestrial stations in the 17.7 - 17.8 GHz band should evaluate the level of interference which might be caused by the closest feeder-link earth station located on the border of the territory of another administration. In cases where the entry in the Plan contains information on specific earth stations, the level of interference shall be assessed on the basis of coordination contours calculated in accordance with Appendix **28** to the Radio Regulations. Should the administration concerned find that interference may be caused by the feeder-link earth stations to its planned terrestrial station, it may request the administration responsible for the feeder-link earth station to indicate the planned actual locations of the feeder-link earth stations.

6.2 An administration which receives a request under 6.1 shall, within a period of three months, indicate the actual locations of its feeder-link earth stations and communicate them to the Board in order to update the Plan.

6.3 If, at the end of a period of three months, the administration responsible for the terrestrial station does not receive a reply, it may request the assistance of the Board.

6.4 If the administration responsible for the feeder-link earth stations does not communicate to the Board, within a period of three months, the actual locations of its feeder-link earth stations, this administration may implement its feeder-link earth station provided it does not cause harmful interference to the terrestrial station under consideration.

ARTICLE 7

Procedure Concerning Notification and Recording in the Master Register of Frequency Assignments to Stations in the Fixed-Satellite Service (Space-to-Earth) in Region 2 in the Band 17.7 - 17.8 GHz, when Frequency Assignments to Feeder-Link Stations for the Broadcasting-Satellite Service Appearing in the Region 2 Plan Are Involved

7.1 The provisions of Articles **11** and **13** and Appendix **29** of the Radio Regulations are applicable to transmitting space stations in the fixed-satellite service of Region 2 in the band 17.7 - 17.8 GHz together with the provisions of Annex 4 to this Appendix, except that in relationship with feeder-link stations in Region 2, the threshold value mentioned in Appendix **29** to the Radio Regulations is replaced by those given in Annex 4 to this Appendix.

7.2 Administrations planning to implement assignments for receiving earth stations in the 17.7 - 17.8 GHz band in the fixed-satellite service (space-to-Earth) should evaluate the level of interference that might be caused by the closest feeder-link earth station located on the border of the territory of another administration. In cases where the entry in the Plan or the Master Register contains information on specific earth stations, the level of interference shall be assessed on the basis of coordination contours calculated in accordance with Annex 4 to this Appendix. Should this administration find that interference may be caused by the feeder-link earth stations to its planned fixed-satellite earth station, it may request the administration responsible for the feeder-link earth station to indicate the planned actual locations of the feeder-link earth stations.

7.3 An administration which receives a request under 7.2 shall, within a period of three months, indicate the actual locations of its earth stations and communicate it to the Board in order to update the Plan.

7.4 If, at the end of the period of three months, the administration responsible for the fixed-satellite receiving earth station does not receive a reply, it may request the assistance of the Board in this matter.

7.5 If the administration responsible for the feeder-link earth stations does not communicate to the Board, within a period of three months, the actual locations of its feeder-link earth stations, this administration may implement its feeder-link earth station provided it does not cause harmful interference to the fixed-satellite earth station under consideration.

ARTICLE 8

Miscellaneous Provisions Relating to the Procedures

Section I. Studies and Recommendations

8.1.1 If it is requested by any administration, the Board, using such means at its disposal as are appropriate in the circumstances, shall conduct a study of cases of alleged contravention or non-observance of these provisions, or of harmful interference.

8.1.2 The Board shall thereupon prepare and forward to the administrations concerned a report containing its findings and recommendations for the solution of the problem.

8.1.3 On receiving the Board's recommendations for the solution of the problem, an administration shall promptly acknowledge the receipt by telegram and shall subsequently indicate the action it intends to take. In cases when the Board's suggestions or recommendations are unacceptable to the administrations concerned, further efforts should be made by the Board to find an acceptable solution to the problem.

8.1.4 In a case where, as a result of a study, the Board submits to one or more administrations suggestions or recommendations for the solution of a problem, and where no answer has been received from one or more of these

administrations within a period of four months, the Board shall consider that the suggestions or recommendations concerned are unacceptable to the administrations which did not answer. If it was the requesting administration which failed to answer within this period, the Board shall close the study.

Section II. Miscellaneous Provisions

8.2.1 If it is requested by any administration, particularly by an administration of a country in need of special assistance, the Board, using such means at its disposal as are appropriate in the circumstances, shall render the following assistance:

a) computation necessary in the application of Annexes 1, 3 and 4 to this Appendix;

b) any other assistance of a technical nature for completion of the procedures in this Appendix.

8.2.2 In making a request to the Board under paragraph 8.2.1, the administration shall furnish the Board with the necessary information.

ARTICLE 9

The Plan for the Feeder Links in the Fixed-Satellite Service in the Frequency Band 17.3 - 17.8 GHz in Region 2

9.1 COLUMN HEADINGS OF THE PLAN

Col. 1 *Beam identification* (Column 1 contains the symbol designating the country or the geographical area taken from Table B1 of the Preface to the International Frequency List followed by the symbol designating the service area).

Col. 2 *Nominal orbital position*, in degrees and hundredths of a degree.

Col. 3 *Channel number* (see Table 2 showing channel numbers and corresponding assigned frequencies).

Col. 4 *Boresight* geographical coordinates, in degrees and hundredths of a degree.

Col. 5 *Antenna beamwidth.* This column contains two figures corresponding to the major axis and the minor axis respectively of the elliptical cross-section half-power beam, in degrees and hundredths of a degree.

Col. 6 *Orientation of the ellipse* determined as follows: in a plane normal to the beam axis, the direction of a major axis of the ellipse is specified as the angle measured anti-clockwise from a line parallel to the equatorial plane to the major axis of the ellipse to the nearest degree.

Col. 7 *Polarization* (1 = direct, 2 = indirect).[1]

Col. 8 Earth station *e.i.r.p.* in the direction of maximum radiation, in dBW.

Col. 9 *Location of earth station(s)* in the band 17.7 - 17.8 GHz.

9.1 Geographical coordinates.

9.2 Antenna characteristics.

9.3 Elevation angle of the horizon around the earth station using the band 17.7 - 17.8 GHz.

Col. 10 *Remarks.*

9.2 TEXT FOR SYMBOLS IN REMARKS COLUMN OF THE PLAN

1. Fast roll-off space station receiving antenna as defined in Annex 3 (Section 3.6.3) to this Appendix.

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[1] See Annex 3 (Section 3.8) to this Appendix.

2. Television standard with 625 lines using greater video bandwidth and necessary bandwidth of 27 MHz.

3. This assignment will be implemented only if it does not hinder the development and subsequent introduction of a feeder-link Plan for Region 1.

4. This assignment may be utilized in the geographical area of Anguilla (AIA) (which is in the beam area).

5. Feeder-link earth stations for this assignment may also be located in the territories of Puerto Rico and the United States Virgin Islands. Such operation shall not cause more interference nor require more protection than the assignment under the Plan.

6. Feeder-link earth stations for this assignment may also be located in the States of Alaska and Hawaii. Such operation shall not cause more interference nor require more protection than the assignment under the Plan.

7. The feeder-link earth station for this assignment may also be located at the point with geographical coordinates 3°31′ West, 48°46′ North. Such operation shall not cause more interference nor require more protection than the assignment under the Plan.

8. Feeder-link earth stations for this assignment may also be located at the points with the following geographical coordinates:

47°55′ West	15°47′ South	34°53′ West	08°04′ South
43°13′ West	22°55′ South	60°02′ West	03°06′ South
46°38′ West	23°33′ South	38°31′ West	12°56′ South
51°13′ West	30°02′ South	49°15′ West	16°40′ South

Such operation shall not cause more interference nor require more protection than the assignment under the Plan.

9/GR . . . This assignment is part of a group, the number of which follows the symbol. The group consists of the beams and has the number of channels assigned to it as indicated in the Table 1.

a) The overall equivalent protection margin to be used for the application of Article 4 and Resolution **42 (Orb-85)** shall be calculated on the following basis:

- for the calculation of interference to assignments that are part of a group, only the interference contributions from assignments that are not part of the same group are to be included; *and*
- for the calculation of interference from assignments belonging to a group to assignments that are not part of that same group, only the worst interference contribution from that group shall be used on a test point to test point basis.

b) If an administration notifies the same frequency in more than one beam of a group for use at the same time, the aggregated C/I produced by all emissions from that group shall not exceed the C/I calculated on the basis of *a)* above.

TABLE 1

Group	Beams in the group	Number of channels assigned to the group
GR1	ALS00002 HWA00002 USAPSA02	32 channels
GR2	ALS00003 HWA00003 USAPSA03	32 channels
GR3	ARGINSU4 ARGSUR04	16 channels
GR4	ARGINSU5 ARGSUR05	12 channels
GR5	BOLAND01 CLMAND01 EQACAND1 EQAGAND1 PRUAND02 VENAND03	16 channels
GR6	B SU111 B SU211	32 channels
GR7	B CE311 B CE411 B CE511	32 channels
GR8	B NO611 B NO711 B NO811	32 channels
GR9	B SU112 B SU212 B CE312 B CE412	32 channels
GR10	CAN01101 CAN01201	32 channels
GR11	*Not used*	
GR12	CAN01203 CAN01303 CAN01403	32 channels
GR13	CAN01304 CAN01404 CAN01504	32 channels
GR14	CAN01405 CAN01505 CAN01605	32 channels
GR15	*Not used*	
GR16	CHLCONT4 CHLCONT6	16 channels
GR17	CHLCONT5 PAQPAC01 CHLPAC02	16 channels
GR18	CRBBER01 CRBBLZ01 CRBJMC01 CRBBAH01 CRBECO01	16 channels
GR19	EQACOO01 EQAGOO01	16 channels
GR20	PTRVIR01 USAEHO02	32 channels
GR21	PTRVIR02 USAEHO03	32 channels
GR22	VEN02VEN VEN11VEN	4 channels

Country symbols

1. For the explanation of symbols designating countries or geographical areas in Region 2, see the Preface to the International Frequency List.

2. One additional symbol, CRB, has been created for the purposes of the 1983 Conference only, to designate a geographical area in the Caribbean Area. The five Caribbean beams are identified as follows:

CRBBAH01, CRBBER01, CRBBLZ01, CRBEC001 and CRBJMC01

and are intended collectively to provide coverage for the following countries or geographical areas: AIA, ATG, BAH, BER, BLZ, BRB, CYM, DMA, GRD, GUY, JMC, LCA, MSR, SCN, SUR, TCA, TRD, VCT and VRG to be so used if approved by them.

TABLE 2

TABLE SHOWING CORRESPONDENCE BETWEEN CHANNEL NUMBERS AND ASSIGNED FREQUENCIES

Channel No.	Assigned frequency (MHz)	Channel No.	Assigned frequency (MHz)
1	17324.00	17	17557.28
2	17338.58	18	17571.86
3	17353.16	19	17586.44
4	17367.74	20	17601.02
5	17382.32	21	17615.60
6	17396.90	22	17630.18
7	17411.48	23	17644.76
8	17426.06	24	17659.34
9	17440.64	25	17673.92
10	17455.22	26	17688.50
11	17469.80	27	17703.08
12	17484.38	28	17717.66
13	17498.96	29	17732.24
14	17513.54	30	17746.82
15	17528.12	31	17761.40
16	17542.70	32	17775.98

17324,00 MHz (1)

1	2	3	4		5		6	7	8	9
ALS00002	–166.20	1	–109.94	36.86	6.04	1.11	137	1	87.4	9/GR1
ALS00003	–175.20	1	–116.23	37.50	5.60	0.75	132	1	87.4	9/GR2
ARGINSU4	–94.20	1	–52.98	–59.81	3.40	0.68	19	1	87.4	9/GR3
ARGSUR04	–94.20	1	–65.04	–43.33	3.32	1.50	40	1	87.4	9/GR3
B CE311	–64.20	1	–40.60	–6.07	3.04	2.06	174	1	87.4	8 9/GR7
B CE312	–45.20	1	–40.27	–6.06	3.44	2.09	174	1	87.4	8 9/GR9
B CE411	–64.20	1	–50.97	–15.27	3.86	1.38	49	1	87.4	8 9/GR7
B CE412	–45.20	1	–50.71	–15.30	3.57	1.56	52	1	87.4	8 9/GR9
B CE511	–64.20	1	–53.10	–2.90	2.44	2.13	104	1	87.4	8 9/GR7
B NO611	–74.20	1	–59.60	–11.62	2.85	1.69	165	2	87.4	8 9/GR8
B NO711	–74.20	1	–60.70	–1.78	3.54	1.78	126	2	87.4	8 9/GR8
B NO811	–74.20	1	–68.76	–4.71	2.37	1.65	73	2	87.4	8 9/GR8
B SU111	–81.20	1	–51.12	–25.63	2.76	1.05	50	1	87.4	8 9/GR6
B SU112	–45.20	1	–50.75	–25.62	2.47	1.48	56	1	87.4	8 9/GR9
B SU211	–81.20	1	–44.51	–16.95	3.22	1.36	60	1	87.4	8 9/GR6
B SU212	–45.20	1	–44.00	–16.87	3.20	1.96	58	1	87.4	8 9/GR9
B AHIFRB1	–87.20	1	–76.06	24.16	1.81	0.70	142	1	87.4	
BERBERMU	–96.20	1	–64.77	32.32	0.60	0.60	90	2	87.4	
B ERBER02	–31.00	1	–64.77	32.32	0.60	0.60	90	1	87.4	2 3
B OLAND01	–115.20	1	–71.37	–4.69	6.49	2.57	87	1	87.4	9/GR5
CAN01101	–138.20	1	–114.60	51.08	7.28	1.10	160	1	87.4	9/GR10
CAN01201	–138.20	1	–114.60	51.08	7.28	1.10	160	1	87.4	9/GR10
CAN01202	–72.70	1	–81.34	50.02	7.96	2.55	5	1	87.4	
CAN01203	–129.20	1	–113.02	51.08	7.47	1.26	162	1	87.4	9/GR12

CAN01303	−129.20	1	−113.02	51.08	7.47	1.26	162	1	87.4	9/GR12
CAN01304	−91.20	1	−86.71	50.48	8.58	2.54	178	1	87.4	9/GR13
CAN01403	−129.20	1	−113.02	51.08	7.47	1.26	162	1	87.4	9/GR12
CAN01404	−91.20	1	−86.71	50.48	8.58	2.54	178	1	87.4	9/GR13
CAN01405	−82.20	1	−84.11	50.20	8.31	2.58	1	1	87.4	9/GR14
CAN01504	−91.20	1	−86.71	50.48	8.58	2.54	178	1	87.4	9/GR13
CAN01505	−82.20	1	−84.11	50.20	8.31	2.58	1	1	87.4	9/GR14
CAN01605	−82.20	1	−84.11	50.20	8.31	2.58	1	1	87.4	9/GR14
CAN01606	−70.70	1	−80.77	50.03	7.88	2.53	6	1	87.4	
CHLCONT5	−106.20	1	−72.23	−35.57	2.60	0.68	55	1	87.4	9/GR17
CHLPAC02	−106.20	1	−80.06	−30.06	1.36	0.68	69	1	87.4	9/GR17
CLMAND01	−115.20	1	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
CLM00001	−103.20	1	−74.50	5.87	3.98	1.96	118	1	87.4	
EQACAND1	−115.20	1	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
EQAGAND1	−115.20	1	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
FLKANT01	−57.20	1	−44.54	−60.13	3.54	0.68	12	1	87.4	2
FLKFALKS	−31.00	1	−59.90	−51.64	0.60	0.60	90	1	87.4	2 3
GRD00002	−42.20	1	−61.58	12.29	0.60	0.60	90	1	87.4	
HWA00002	−166.20	1	−109.94	36.86	6.04	1.11	137	1	87.4	9/GR1
HWA00003	−175.20	1	−116.23	37.50	5.60	0.75	132	1	87.4	9/GR2
MEX01NTE	−78.20	1	−105.81	26.01	2.89	2.08	155	1	87.4	1
MEX01SUR	−69.20	1	−94.84	19.82	3.05	2.09	4	1	87.4	1
MEX02NTE	−136.20	1	−107.21	26.31	3.84	1.55	148	1	87.4	1
MEX02SUR	−127.20	1	−96.39	19.88	3.18	1.87	157	1	87.4	1

17324,00 MHz (1)

1	2	3	4		5		6	7	8	9
PAQPAC01	–106.20	1	–109.18	–27.53	0.60	0.60	90	1	87.4	9/GR17
PRG00002	–99.20	1	–58.66	–23.32	1.45	1.04	76	1	87.4	
PRUAND02	–115.20	1	–71.37	–4.69	6.49	2.57	87	1	87.4	9/GR5
PTRVIR01	–101.20	1	–93.94	36.32	8.24	3.56	171	1	87.4	1 6 9/GR20
PTRVIR02	–110.20	1	–95.23	36.29	8.27	3.37	168	1	87.4	1 6 9/GR21
SPMFRAN3	–53.20	1	–67.24	47.51	3.16	0.79	7	1	87.4	2 7
TRD00001	–84.70	1	–61.23	10.70	0.60	0.60	90	1	87.4	
URG00001	–71.70	1	–56.22	–32.52	1.02	0.89	11	1	87.4	
USAEH001	–61.70	1	–87.57	36.17	6.42	3.49	12	1	87.4	1 5 6
USAEH002	–101.20	1	–93.94	36.32	8.24	3.56	171	1	87.4	1 6 9/GR20
USAEH003	–110.20	1	–95.23	36.29	8.27	3.37	168	1	87.4	1 6 9/GR21
USAEH004	–119.20	1	–96.45	36.21	8.20	3.12	165	1	87.4	1 5 6
USAPSA02	–166.20	1	–109.94	36.86	6.04	1.11	137	1	87.4	9/GR1
USAPSA03	–175.20	1	–116.23	37.50	5.60	0.75	132	1	87.4	9/GR2
USAWH101	–148.20	1	–111.02	40.68	4.36	2.15	162	1	87.4	
USAWH102	–157.20	1	–113.07	40.74	3.72	1.78	149	1	87.4	
VENAND03	–115.20	1	–71.37	–4.69	6.49	2.57	87	1	87.4	9/GR5
VRG00001	–79.70	1	–64.37	18.48	0.60	0.60	90	1	87.4	4

ALS00002	−165.80	2	−109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
ALS00003	−174.80	2	−116.10	37.47	5.60	0.76	132	2	87.4	9/GR2
ARGNORT4	−93.80	2	−63.96	−30.01	3.86	1.99	48	2	87.4	
ARGNORT5	−54.80	2	−62.85	−29.80	3.24	2.89	47	2	87.4	
ATNBEAM1	−52.80	2	−66.44	14.87	1.83	0.68	39	2	87.4	
B CE311	−63.80	2	−40.60	−6.07	3.04	2.06	174	2	87.4	8 9/GR7
B CE312	−44.80	2	−40.26	−6.06	3.44	2.09	174	2	87.4	8 9/GR9
B CE411	−63.80	2	−50.97	−15.26	3.86	1.38	49	2	87.4	8 9/GR7
B CE412	−44.80	2	−50.71	−15.30	3.57	1.56	52	2	87.4	8 9/GR9
B CE511	−63.80	2	−53.11	−2.98	2.42	2.15	107	2	87.4	8 9/GR7
B NO611	−73.80	2	−59.60	−11.62	2.86	1.69	165	1	87.4	8 9/GR8
B NO711	−73.80	2	−60.70	−1.78	3.54	1.78	126	1	87.4	8 9/GR8
B NO811	−73.80	2	−68.75	−4.71	2.37	1.65	73	1	87.4	8 9/GR8
B SE911	−101.80	2	−45.99	−19.09	2.22	0.79	62	2	87.4	8
B SU111	−80.80	2	−51.10	−25.64	2.76	1.06	50	2	87.4	8 9/GR6
B SU112	−44.80	2	−50.76	−25.62	2.47	1.48	56	2	87.4	8 9/GR9
B SU211	−80.80	2	−44.51	−16.94	3.22	1.37	60	2	87.4	8 9/GR6
B SU212	−44.80	2	−43.99	−16.97	3.27	1.92	59	2	87.4	8 9/GR9
CAN01101	−137.80	2	−114.10	50.92	7.22	1.11	160	2	87.4	9/GR10
CAN01201	−137.80	2	−114.10	50.92	7.22	1.11	160	2	87.4	9/GR10
CAN01202	−72.30	2	−81.23	50.12	7.99	2.53	5	2	87.4	
CAN01203	−128.80	2	−113.04	51.04	7.53	1.26	162	2	87.4	9/GR12
CAN01303	−128.80	2	−113.04	51.04	7.53	1.26	162	2	87.4	9/GR12
CAN01304	−90.80	2	−86.57	50.48	8.59	2.54	178	2	87.4	9/GR13

17338,58 MHz (2)

1	2	3	4		5		6	7	8	9
CAN01403	–128.80	2	–113.04	51.04	7.53	1.26	162	2	87.4	9/GR12
CAN01404	–90.80	2	–86.57	50.48	8.59	2.54	178	2	87.4	9/GR13
CAN01405	–81.80	2	–83.80	50.22	8.35	2.57	2	2	87.4	9/GR14
CAN01504	–90.80	2	–86.57	50.48	8.59	2.54	178	2	87.4	9/GR13
CAN01505	–81.80	2	–83.80	50.22	8.35	2.57	2	2	87.4	9/GR14
CAN01605	–81.80	2	–83.80	50.22	8.35	2.57	2	2	87.4	9/GR14
CAN01606	–70.30	2	–80.64	50.02	7.88	2.52	6	2	87.4	
CHLCONT4	–105.80	2	–69.59	–23.20	2.21	0.69	68	2	87.4	9/GR16
CHLCONT6	–105.80	2	–73.52	–55.52	3.65	1.31	39	2	87.4	9/GR16
CRBBAH01	–92.30	2	–76.09	24.13	1.83	0.68	141	1	87.4	9/GR18
CRBBER01	–92.30	2	–64.76	32.13	0.60	0.60	90	1	87.4	9/GR18
CRBBLZ01	–92.30	2	–88.61	17.26	0.64	0.64	90	1	87.4	9/GR18
CRBEC001	–92.30	2	–60.07	8.26	4.20	0.86	115	1	87.4	9/GR18
CRBJMC01	–92.30	2	–79.45	17.97	0.99	0.68	151	1	87.4	9/GR18
CTR00201	–130.80	2	–84.33	9.67	0.82	0.68	119	2	87.4	
EQAC0001	–94.80	2	–78.31	–1.52	1.48	1.15	65	1	87.4	9/GR19
EQAG0001	–94.80	2	–90.36	–0.57	0.94	0.89	99	1	87.4	9/GR19
GUY00302	–33.80	2	–59.07	4.77	1.43	0.85	91	2	87.4	
HNDIFRB2	–107.30	2	–86.23	15.16	1.14	0.85	8	1	87.4	
HTI00002	–83.30	2	–73.28	18.96	0.82	0.68	11	2	87.4	
HWA00002	–165.80	2	–109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
HWA00003	–174.80	2	–116.10	37.47	5.60	0.76	132	2	87.4	9/GR2
MEX01NTE	–77.80	2	–105.80	25.99	2.88	2.07	155	2	87.4	1
MEX02NTE	–135.80	2	–107.36	26.32	3.80	1.57	149	2	87.4	1

MEX02SUR	−126.80	2	−96.39	19.88	3.19	1.87	158	2	87.4	1
PRU00004	−85.80	2	−74.19	−8.39	3.74	2.45	112	2	87.4	
PTRVIR01	−100.80	2	−93.85	36.31	8.26	3.55	171	2	87.4	1 6 9/GR20
PTRVIR02	−109.80	2	−95.47	36.38	8.10	3.45	168	2	87.4	1 6 9/GR21
TCA00001	−115.80	2	−71.79	21.53	0.60	0.60	90	2	87.4	
USAEH001	−61.30	2	−87.53	36.18	6.41	3.49	12	2	87.4	1 5 6
USAEH002	−100.80	2	−93.85	36.31	8.26	3.55	171	2	87.4	1 6 9/GR20
USAEH003	−109.80	2	−95.47	36.38	8.10	3.45	168	2	87.4	1 6 9/GR21
USAEH004	−118.80	2	−96.42	36.21	8.20	3.12	165	2	87.4	1 5 6
USAPSA02	−165.80	2	−109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
USAPSA03	−174.80	2	−116.10	37.47	5.60	0.76	132	2	87.4	9/GR2
USAWH101	−147.80	2	−111.01	40.67	4.38	2.15	162	2	87.4	
USAWH102	−156.80	2	−113.01	40.71	3.74	1.79	149	2	87.4	
VCT00001	−79.30	2	−61.18	13.23	0.60	0.60	90	2	87.4	
VEN11VEN	−103.80	2	−66.79	6.90	2.50	1.77	122	2	87.4	

17353,16 MHz (3)

1	2	3	4		5		6	7	8	9
ALS00002	–166.20	3	–109.94	36.86	6.04	1.11	137	1	87.4	9/GR1
ALS00003	–175.20	3	–116.23	37.50	5.60	0.75	132	1	87.4	9/GR2
ARGINSU4	–94.20	3	–52.98	–59.81	3.40	0.68	19	1	87.4	9/GR3
ARGINSU5	–55.20	3	–44.17	–59.91	3.77	0.70	13	1	87.4	9/GR4
ARGSUR04	–94.20	3	–65.04	–43.33	3.32	1.50	40	1	87.4	9/GR3
ARGSUR05	–55.20	3	–63.68	–43.01	2.54	2.38	152	1	87.4	9/GR4
ATGSJN01	–79.70	3	–61.79	17.07	0.60	0.60	90	1	87.4	
B CE311	–64.20	3	–40.60	–6.07	3.04	2.06	174	1	87.4	8 9/GR7
B CE312	–45.20	3	–40.27	–6.06	3.44	2.09	174	1	87.4	8 9/GR9
B CE411	–64.20	3	–50.97	–15.27	3.86	1.38	49	1	87.4	8 9/GR7
B CE412	–45.20	3	–50.71	–15.30	3.57	1.56	52	1	87.4	8 9/GR9
B CE511	–64.20	3	–53.10	–2.90	2.44	2.13	104	1	87.4	8 9/GR7
B NO611	–74.20	3	–59.60	–11.62	2.85	1.69	165	2	87.4	8 9/GR8
B NO711	–74.20	3	–60.70	–1.78	3.54	1.78	126	2	87.4	8 9/GR8
B NO811	–74.20	3	–68.76	–4.71	2.37	1.65	73	2	87.4	8 9/GR8
B SU111	–81.20	3	–51.12	–25.63	2.76	1.05	50	1	87.4	8 9/GR6
B SU112	–45.20	3	–50.75	–25.62	2.47	1.48	56	1	87.4	8 9/GR9
B SU211	–81.20	3	–44.51	–16.95	3.22	1.36	60	1	87.4	8 9/GR6
B SU212	–45.20	3	–44.00	–16.87	3.20	1.96	58	1	87.4	8 9/GR9
BERBERMU	–96.20	3	–64.77	32.32	0.60	0.60	90	2	87.4	
B OLAND01	–115.20	3	–71.37	–4.69	6.49	2.57	87	1	87.4	9/GR5
B OL00001	–87.20	3	–64.61	–16.71	2.52	2.19	85	1	87.4	
B RB00001	–92.70	3	–59.85	12.93	0.60	0.60	90	2	87.4	
CAN01101	–138.20	3	–114.60	51.08	7.28	1.10	160	1	87.4	9/GR10

CAN01201	−138.20	3	−114.60	51.08	7.28	1.10	160	1	87.4	9/GR10
CAN01202	−72.70	3	−81.34	50.02	7.96	2.55	5	1	87.4	
CAN01203	−129.20	3	−113.02	51.08	7.47	1.26	162	1	87.4	9/GR12
CAN01303	−129.20	3	−113.02	51.08	7.47	1.26	162	1	87.4	9/GR12
CAN01304	−91.20	3	−86.71	50.48	8.58	2.54	178	1	87.4	9/GR13
CAN01403	−129.20	3	−113.02	51.08	7.47	1.26	162	1	87.4	9/GR12
CAN01404	−91.20	3	−86.71	50.48	8.58	2.54	178	1	87.4	9/GR13
CAN01405	−82.20	3	−84.11	50.20	8.31	2.58	1	1	87.4	9/GR14
CAN01504	−91.20	3	−86.71	50.48	8.58	2.54	178	1	87.4	9/GR13
CAN01505	−82.20	3	−84.11	50.20	8.31	2.58	1	1	87.4	9/GR14
CAN01605	−82.20	3	−84.11	50.20	8.31	2.58	1	1	87.4	9/GR14
CAN01606	−70.70	3	−80.77	50.03	7.88	2.53	6	1	87.4	
CHLCONT5	−106.20	3	−72.23	−35.57	2.60	0.68	55	1	87.4	9/GR17
CHLPAC02	−106.20	3	−80.06	−30.06	1.36	0.68	69	1	87.4	9/GR17
CLMAND01	−115.20	3	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
CLM00001	−103.20	3	−74.50	5.87	3.98	1.96	118	1	87.4	
CUB00001	−89.20	3	−79.81	21.62	2.24	0.68	168	1	87.4	
EQACAND1	−115.20	3	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
EQAGAND1	−115.20	3	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
GRD00002	−42.20	3	−61.58	12.29	0.60	0.60	90	1	87.4	
GRD00059	−57.20	3	−61.58	12.29	0.60	0.60	90	1	87.4	
GRLDNK01	−53.20	3	−44.89	66.56	2.70	0.82	173	1	87.4	2
HWA00002	−166.20	3	−109.94	36.86	6.04	1.11	137	1	87.4	9/GR1
HWA00003	−175.20	3	−116.23	37.50	5.60	0.75	132	1	87.4	9/GR2

17353,16 MHz (3)

1	2	3	4		5		6	7	8	9
MEX01NTE	–78.20	3	–105.81	26.01	2.89	2.08	155	1	87.4	1
MEX01SUR	–69.20	3	–94.84	19.82	3.05	2.09	4	1	87.4	1
MEX02NTE	–136.20	3	–107.21	26.31	3.84	1.55	148	1	87.4	1
MEX02SUR	–127.20	3	–96.39	19.88	3.18	1.87	157	1	87.4	1
PAQPAC01	–106.20	3	–109.18	–27.53	0.60	0.60	90	1	87.4	9/GR17
PRG00002	–99.20	3	–58.66	–23.32	1.45	1.04	76	1	87.4	
PRUAND02	–115.20	3	–71.37	–4.69	6.49	2.57	87	1	87.4	9/GR5
PTRVIR01	–101.20	3	–93.94	36.32	8.24	3.56	171	1	87.4	1 6 9/GR20
PTRVIR02	–110.20	3	–95.23	36.29	8.27	3.37	168	1	87.4	1 6 9/GR21
SURINAM2	–84.70	3	–55.69	4.35	1.00	0.69	86	1	87.4	
URG00001	–71.70	3	–56.22	–32.52	1.02	0.89	11	1	87.4	
USAEH001	–61.70	3	–87.57	36.17	6.42	3.49	12	1	87.4	1 5 6
USAEH002	–101.20	3	–93.94	36.32	8.24	3.56	171	1	87.4	1 6 9/GR20
USAEH003	–110.20	3	–95.23	36.29	8.27	3.37	168	1	87.4	1 6 9/GR21
USAEH004	–119.20	3	–96.45	36.21	8.20	3.12	165	1	87.4	1 5 6
USAPSA02	–166.20	3	–109.94	36.86	6.04	1.11	137	1	87.4	9/GR1
USAPSA03	–175.20	3	–116.23	37.50	5.60	0.75	132	1	87.4	9/GR2
USAWH101	–148.20	3	–111.02	40.68	4.36	2.15	162	1	87.4	
USAWH102	–157.20	3	–113.07	40.74	3.72	1.78	149	1	87.4	
VENAND03	–115.20	3	–71.37	–4.69	6.49	2.57	87	1	87.4	9/GR5

ALS00002	−165.80	4	−109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
ALS00003	−174.80	4	−116.10	37.47	5.60	0.76	132	2	87.4	9/GR2
ARGNORT4	−93.80	4	−63.96	−30.01	3.86	1.99	48	2	87.4	
ARGNORT5	−54.80	4	−62.85	−29.80	3.24	2.89	47	2	87.4	
B CE311	−63.80	4	−40.60	−6.07	3.04	2.06	174	2	87.4	8 9/GR7
B CE312	−44.80	4	−40.26	−6.06	3.44	2.09	174	2	87.4	8 9/GR9
B CE411	−63.80	4	−50.97	−15.26	3.86	1.38	49	2	87.4	8 9/GR7
B CE412	−44.80	4	−50.71	−15.30	3.57	1.56	52	2	87.4	8 9/GR9
B CE511	−63.80	4	−53.11	−2.98	2.42	2.15	107	2	87.4	8 9/GR7
B NO611	−73.80	4	−59.60	−11.62	2.86	1.69	165	1	87.4	8 9/GR8
B NO711	−73.80	4	−60.70	−1.78	3.54	1.78	126	1	87.4	8 9/GR8
B NO811	−73.80	4	−68.75	−4.71	2.37	1.65	73	1	87.4	8 9/GR8
B SE911	−101.80	4	−45.99	−19.09	2.22	0.79	62	2	87.4	8
B SU111	−80.80	4	−51.10	−25.64	2.76	1.06	50	2	87.4	8 9/GR6
B SU112	−44.80	4	−50.76	−25.62	2.47	1.48	56	2	87.4	8 9/GR9
B SU211	−80.80	4	−44.51	−16.94	3.22	1.37	60	2	87.4	8 9/GR6
B SU212	−44.80	4	−43.99	−16.97	3.27	1.92	59	2	87.4	8 9/GR9
CAN01101	−137.80	4	−114.10	50.92	7.22	1.11	160	2	87.4	9/GR10
CAN01201	−137.80	4	−114.10	50.92	7.22	1.11	160	2	87.4	9/GR10
CAN01202	−72.30	4	−81.23	50.12	7.99	2.53	5	2	87.4	
CAN01203	−128.80	4	−113.04	51.04	7.53	1.26	162	2	87.4	9/GR12
CAN01303	−128.80	4	−113.04	51.04	7.53	1.26	162	2	87.4	9/GR12
CAN01304	−90.80	4	−86.57	50.48	8.59	2.54	178	2	87.4	9/GR13
CAN01403	−128.80	4	−113.04	51.04	7.53	1.26	162	2	87.4	9/GR12

17367,74 MHz (4)

1	2	3	4		5		6	7	8	9
CAN01404	−90.80	4	−86.57	50.48	8.59	2.54	178	2	87.4	9/GR13
CAN01405	−81.80	4	−83.80	50.22	8.35	2.57	2	2	87.4	9/GR14
CAN01504	−90.80	4	−86.57	50.48	8.59	2.54	178	2	87.4	9/GR13
CAN01505	−81.80	4	−83.80	50.22	8.35	2.57	2	2	87.4	9/GR14
CAN01605	−81.80	4	−83.80	50.22	8.35	2.57	2	2	87.4	9/GR14
CAN01606	−70.30	4	−80.64	50.02	7.88	2.52	6	2	87.4	
CHLCONT4	−105.80	4	−69.59	−23.20	2.21	0.69	68	2	87.4	9/GR16
CHLCONT6	−105.80	4	−73.52	−55.52	3.65	1.31	39	2	87.4	9/GR16
CRBBAH01	−92.30	4	−76.09	24.13	1.83	0.68	141	1	87.4	9/GR18
CRBBER01	−92.30	4	−64.76	32.13	0.60	0.60	90	1	87.4	9/GR18
CRBBLZ01	−92.30	4	−88.61	17.26	0.64	0.64	90	1	87.4	9/GR18
CRBEC001	−92.30	4	−60.07	8.26	4.20	0.86	115	1	87.4	9/GR18
CRBJMC01	−92.30	4	−79.45	17.97	0.99	0.68	151	1	87.4	9/GR18
CYM00001	−115.80	4	−80.58	19.57	0.60	0.60	90	2	87.4	
DOMIFRB2	−83.30	4	−70.51	18.79	0.98	0.69	167	2	87.4	
EQAC0001	−94.80	4	−78.31	−1.52	1.48	1.15	65	1	87.4	9/GR19
EQAG0001	−94.80	4	−90.36	−0.57	0.94	0.89	99	1	87.4	9/GR19
GUFMGG02	−52.80	4	−56.42	8.47	4.16	0.81	123	2	87.4	2 7
HWA00002	−165.80	4	−109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
HWA00003	−174.80	4	−116.10	37.47	5.60	0.76	132	2	87.4	9/GR2
JMC00005	−33.80	4	−77.27	18.12	0.60	0.60	90	2	87.4	
LCAIFRB1	−79.30	4	−61.15	13.90	0.60	0.60	90	2	87.4	
MEX01NTE	−77.80	4	−105.80	25.99	2.88	2.07	155	2	87.4	1
MEX02NTE	−135.80	4	−107.36	26.32	3.80	1.57	149	2	87.4	1

17367,74 MHz (4)

MEX02SUR	–126.80	4	–96.39	19.88	3.19	1.87	158	2	87.4	1
PRU00004	–85.80	4	–74.19	–8.39	3.74	2.45	112	2	87.4	
PTRVIR01	–100.80	4	–93.85	36.31	8.26	3.55	171	2	87.4	1 6 9/GR20
PTRVIR02	–109.80	4	–95.47	36.38	8.10	3.45	168	2	87.4	1 6 9/GR21
SLVIFRB2	–107.30	4	–88.91	13.59	0.60	0.60	90	1	87.4	
USAEH001	–61.30	4	–87.53	36.18	6.41	3.49	12	2	87.4	1 5 6
USAEH002	–100.80	4	–93.85	36.31	8.26	3.55	171	2	87.4	1 6 9/GR20
USAEH003	–109.80	4	–95.47	36.38	8.10	3.45	168	2	87.4	1 6 9/GR21
USAEH004	–118.80	4	–96.42	36.21	8.20	3.12	165	2	87.4	1 5 6
USAPSA02	–165.80	4	–109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
USAPSA03	–174.80	4	–116.10	37.47	5.60	0.76	132	2	87.4	9/GR2
USAWH101	–147.80	4	–111.01	40.67	4.38	2.15	162	2	87.4	
USAWH102	–156.80	4	–113.01	40.71	3.74	1.79	149	2	87.4	
VEN11VEN	–103.80	4	–66.79	6.90	2.50	1.77	122	2	87.4	

17382,32 MHz (5)

1	2	3	4		5		6	7	8	9
ALS00002	–166.20	5	–109.94	36.86	6.04	1.11	137	1	87.4	9/GR1
ALS00003	–175.20	5	–116.23	37.50	5.60	0.75	132	1	87.4	9/GR2
ARGINSU4	–94.20	5	–52.98	–59.81	3.40	0.68	19	1	87.4	9/GR3
ARGSUR04	–94.20	5	–65.04	–43.33	3.32	1.50	40	1	87.4	9/GR3
B CE311	–64.20	5	–40.60	–6.07	3.04	2.06	174	1	87.4	8 9/GR7
B CE312	–45.20	5	–40.27	–6.06	3.44	2.09	174	1	87.4	8 9/GR9
B CE411	–64.20	5	–50.97	–15.27	3.86	1.38	49	1	87.4	8 9/GR7
B CE412	–45.20	5	–50.71	–15.30	3.57	1.56	52	1	87.4	8 9/GR9
B CE511	–64.20	5	–53.10	–2.90	2.44	2.13	104	1	87.4	8 9/GR7
B NO611	–74.20	5	–59.60	–11.62	2.85	1.69	165	2	87.4	8 9/GR8
B NO711	–74.20	5	–60.70	–1.78	3.54	1.78	126	2	87.4	8 9/GR8
B NO811	–74.20	5	–68.76	–4.71	2.37	1.65	73	2	87.4	8 9/GR8
B SU111	–81.20	5	–51.12	–25.63	2.76	1.05	50	1	87.4	8 9/GR6
B SU112	–45.20	5	–50.75	–25.62	2.47	1.48	56	1	87.4	8 9/GR9
B SU211	–81.20	5	–44.51	–16.95	3.22	1.36	60	1	87.4	8 9/GR6
B SU212	–45.20	5	–44.00	–16.87	3.20	1.96	58	1	87.4	8 9/GR9
B AHIFRB1	–87.20	5	–76.06	24.16	1.81	0.70	142	1	87.4	
BERBERMU	–96.20	5	–64.77	32.32	0.60	0.60	90	2	87.4	
B ERBER02	–31.00	5	–64.77	32.32	0.60	0.60	90	1	87.4	2 3
B OLAND01	–115.20	5	–71.37	–4.69	6.49	2.57	87	1	87.4	9/GR5
CAN01101	–138.20	5	–114.60	51.08	7.28	1.10	160	1	87.4	9/GR10
CAN01201	–138.20	5	–114.60	51.08	7.28	1.10	160	1	87.4	9/GR10
CAN01202	–72.70	5	–81.34	50.02	7.96	2.55	5	1	87.4	
CAN01203	–129.20	5	–113.02	51.08	7.47	1.26	162	1	87.4	9/GR12

CAN01303	−129.20	5	−113.02	51.08	7.47	1.26	162	1	87.4	9/GR12
CAN01304	−91.20	5	−86.71	50.48	8.58	2.54	178	1	87.4	9/GR13
CAN01403	−129.20	5	−113.02	51.08	7.47	1.26	162	1	87.4	9/GR12
CAN01404	−91.20	5	−86.71	50.48	8.58	2.54	178	1	87.4	9/GR13
CAN01405	−82.20	5	−84.11	50.20	8.31	2.58	1	1	87.4	9/GR14
CAN01504	−91.20	5	−86.71	50.48	8.58	2.54	178	1	87.4	9/GR13
CAN01505	−82.20	5	−84.11	50.20	8.31	2.58	1	1	87.4	9/GR14
CAN01605	−82.20	5	−84.11	50.20	8.31	2.58	1	1	87.4	9/GR14
CAN01606	−70.70	5	−80.77	50.03	7.88	2.53	6	1	87.4	
CHLCONT5	−106.20	5	−72.23	−35.57	2.60	0.68	55	1	87.4	9/GR17
CHLPAC02	−106.20	5	−80.06	−30.06	1.36	0.68	69	1	87.4	9/GR17
CLMAND01	−115.20	5	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
CLM00001	−103.20	5	−74.50	5.87	3.98	1.96	118	1	87.4	
EQACAND1	−115.20	5	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
EQAGAND1	−115.20	5	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
FLKANT01	−57.20	5	−44.54	−60.13	3.54	0.68	12	1	87.4	2
FLKFALKS	−31.00	5	−59.90	−51.64	0.60	0.60	90	1	87.4	2 3
GRD00002	−42.20	5	−61.58	12.29	0.60	0.60	90	1	87.4	
HWA00002	−166.20	5	−109.94	36.86	6.04	1.11	137	1	87.4	9/GR1
HWA00003	−175.20	5	−116.23	37.50	5.60	0.75	132	1	87.4	9/GR2
MEX01NTE	−78.20	5	−105.81	26.01	2.89	2.08	155	1	87.4	1
MEX01SUR	−69.20	5	−94.84	19.82	3.05	2.09	4	1	87.4	1
MEX02NTE	−136.20	5	−107.21	26.31	3.84	1.55	148	1	87.4	1
MEX02SUR	−127.20	5	−96.39	19.88	3.18	1.87	157	1	87.4	1

17382,32 MHz (5)

1	2	3	4		5		6	7	8	9
PAQPAC01	– 106.20	5	– 109.18	– 27.53	0.60	0.60	90	1	87.4	9/GR17
PRG00002	– 99.20	5	– 58.66	– 23.32	1.45	1.04	76	1	87.4	
PRUAND02	– 115.20	5	– 71.37	– 4.69	6.49	2.57	87	1	87.4	9/GR5
PTRVIR01	– 101.20	5	– 93.94	36.32	8.24	3.56	171	1	87.4	1 6 9/GR20
PTRVIR02	– 110.20	5	– 95.23	36.29	8.27	3.37	168	1	87.4	1 6 9/GR21
SPMFRAN3	– 53.20	5	– 67.24	47.51	3.16	0.79	7	1	87.4	2 7
TRD00001	– 84.70	5	– 61.23	10.70	0.60	0.60	90	1	87.4	
URG00001	– 71.70	5	– 56.22	– 32.52	1.02	0.89	11	1	87.4	
USAEH001	– 61.70	5	– 87.57	36.17	6.42	3.49	12	1	87.4	1 5 6
USAEH002	– 101.20	5	– 93.94	36.32	8.24	3.56	171	1	87.4	1 6 9/GR20
USAEH003	– 110.20	5	– 95.23	36.29	8.27	3.37	168	1	87.4	1 6 9/GR21
USAEH004	– 119.20	5	– 96.45	36.21	8.20	3.12	165	1	87.4	1 5 6
USAPSA02	– 166.20	5	– 109.94	36.86	6.04	1.11	137	1	87.4	9/GR1
USAPSA03	– 175.20	5	– 116.23	37.50	5.60	0.75	132	1	87.4	9/GR2
USAWH101	– 148.20	5	– 111.02	40.68	4.36	2.15	162	1	87.4	
USAWH102	– 157.20	5	– 113.07	40.74	3.72	1.78	149	1	87.4	
VENAND03	– 115.20	5	– 71.37	– 4.69	6.49	2.57	87	1	87.4	9/GR5
VRG00001	– 79.70	5	– 64.37	18.48	0.60	0.60	90	1	87.4	4

ALS00002	−165.80	6	−109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
ALS00003	−174.80	6	−116.10	37.47	5.60	0.76	132	2	87.4	9/GR2
ARGNORT4	−93.80	6	−63.96	−30.01	3.86	1.99	48	2	87.4	
ARGNORT5	−54.80	6	−62.85	−29.80	3.24	2.89	47	2	87.4	
ATNBEAM1	−52.80	6	−66.44	14.87	1.83	0.68	39	2	87.4	
B CE311	−63.80	6	−40.60	−6.07	3.04	2.06	174	2	87.4	8 9/GR7
B CE312	−44.80	6	−40.26	−6.06	3.44	2.09	174	2	87.4	8 9/GR9
B CE411	−63.80	6	−50.97	−15.26	3.86	1.38	49	2	87.4	8 9/GR7
B CE412	−44.80	6	−50.71	−15.30	3.57	1.56	52	2	87.4	8 9/GR9
B CE511	−63.80	6	−53.11	−2.98	2.42	2.15	107	2	87.4	8 9/GR7
B NO611	−73.80	6	−59.60	−11.62	2.86	1.69	165	1	87.4	8 9/GR8
B NO711	−73.80	6	−60.70	−1.78	3.54	1.78	126	1	87.4	8 9/GR8
B NO811	−73.80	6	−68.75	−4.71	2.37	1.65	73	1	87.4	8 9/GR8
B SE911	−101.80	6	−45.99	−19.09	2.22	0.79	62	2	87.4	8
B SU111	−80.80	6	−51.10	−25.64	2.76	1.06	50	2	87.4	8 9/GR6
B SU112	−44.80	6	−50.76	−25.62	2.47	1.48	56	2	87.4	8 9/GR9
B SU211	−80.80	6	−44.51	−16.94	3.22	1.37	60	2	87.4	8 9/GR6
B SU212	−44.80	6	−43.99	−16.97	3.27	1.92	59	2	87.4	8 9/GR9
CAN01101	−137.80	6	−114.10	50.92	7.22	1.11	160	2	87.4	9/GR10
CAN01201	−137.80	6	−114.10	50.92	7.22	1.11	160	2	87.4	9/GR10
CAN01202	−72.30	6	−81.23	50.12	7.99	2.53	5	2	87.4	
CAN01203	−128.80	6	−113.04	51.04	7.53	1.26	162	2	87.4	9/GR12
CAN01303	−128.80	6	−113.04	51.04	7.53	1.26	162	2	87.4	9/GR12
CAN01304	−90.80	6	−86.57	50.48	8.59	2.54	178	2	87.4	9/GR13

17396,90 MHz (6)

1	2	3	4		5		6	7	8	9
CAN01403	–128.80	6	–113.04	51.04	7.53	1.26	162	2	87.4	9/GR12
CAN01404	–90.80	6	–86.57	50.48	8.59	2.54	178	2	87.4	9/GR13
CAN01405	–81.80	6	–83.80	50.22	8.35	2.57	2	2	87.4	9/GR14
CAN01504	–90.80	6	–86.57	50.48	8.59	2.54	178	2	87.4	9/GR13
CAN01505	–81.80	6	–83.80	50.22	8.35	2.57	2	2	87.4	9/GR14
CAN01605	–81.80	6	–83.80	50.22	8.35	2.57	2	2	87.4	9/GR14
CAN01606	–70.30	6	–80.64	50.02	7.88	2.52	6	2	87.4	
CHLCONT4	–105.80	6	–69.59	–23.20	2.21	0.69	68	2	87.4	9/GR16
CHLCONT6	–105.80	6	–73.52	–55.52	3.65	1.31	39	2	87.4	9/GR16
CRBBAH01	–92.30	6	–76.09	24.13	1.83	0.68	141	1	87.4	9/GR18
CRBBER01	–92.30	6	–64.76	32.13	0.60	0.60	90	1	87.4	9/GR18
CRBBLZ01	–92.30	6	–88.61	17.26	0.64	0.64	90	1	87.4	9/GR18
CRBEC001	–92.30	6	–60.07	8.26	4.20	0.86	115	1	87.4	9/GR18
CRBJMC01	–92.30	6	–79.45	17.97	0.99	0.68	151	1	87.4	9/GR18
CTR00201	–130.80	6	–84.33	9.67	0.82	0.68	119	2	87.4	
EQAC0001	–94.80	6	–78.31	–1.52	1.48	1.15	65	1	87.4	9/GR19
EQAG0001	–94.80	6	–90.36	–0.57	0.94	0.89	99	1	87.4	9/GR19
GUY00302	–33.80	6	–59.07	4.77	1.43	0.85	91	2	87.4	
HNDIFRB2	–107.30	6	–86.23	15.16	1.14	0.85	8	1	87.4	
HTI00002	–83.30	6	–73.28	18.96	0.82	0.68	11	2	87.4	
HWA00002	–165.80	6	–109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
HWA00003	–174.80	6	–116.10	37.47	5.60	0.76	132	2	87.4	9/GR2
MEX01NTE	–77.80	6	–105.80	25.99	2.88	2.07	155	2	87.4	1
MEX02NTE	–135.80	6	–107.36	26.32	3.80	1.57	149	2	87.4	1

MEX02SUR	−126.80	6	−96.39	19.88	3.19	1.87	158	2	87.4	1
PRU00004	−85.80	6	−74.19	−8.39	3.74	2.45	112	2	87.4	
PTRVIR01	−100.80	6	−93.85	36.31	8.26	3.55	171	2	87.4	1 6 9/GR20
PTRVIR02	−109.80	6	−95.47	36.38	8.10	3.45	168	2	87.4	1 6 9/GR21
TCA00001	−115.80	6	−71.79	21.53	0.60	0.60	90	2	87.4	
USAEH001	−61.30	6	−87.53	36.18	6.41	3.49	12	2	87.4	1 5 6
USAEH002	−100.80	6	−93.85	36.31	8.26	3.55	171	2	87.4	1 6 9/GR20
USAEH003	−109.80	6	−95.47	36.38	8.10	3.45	168	2	87.4	1 6 9/GR21
USAEH004	−118.80	6	−96.42	36.21	8.20	3.12	165	2	87.4	1 5 6
USAPSA02	−165.80	6	−109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
USAPSA03	−174.80	6	−116.10	37.47	5.60	0.76	132	2	87.4	9/GR2
USAWH101	−147.80	6	−111.01	40.67	4.38	2.15	162	2	87.4	
USAWH102	−156.80	6	−113.01	40.71	3.74	1.79	149	2	87.4	
VCT00001	−79.30	6	−61.18	13.23	0.60	0.60	90	2	87.4	
VEN11VEN	−103.80	6	−66.79	6.90	2.50	1.77	122	2	87.4	

17411,48 MHz (7)

1	2	3	4		5		6	7	8	9
ALS00002	–166.20	7	–109.94	36.86	6.04	1.11	137	1	87.4	9/GR1
ALS00003	–175.20	7	–116.23	37.50	5.60	0.75	132	1	87.4	9/GR2
ARGINSU4	–94.20	7	–52.98	–59.81	3.40	0.68	19	1	87.4	9/GR3
ARGINSU5	–55.20	7	–44.17	–59.91	3.77	0.70	13	1	87.4	9/GR4
ARGSUR04	–94.20	7	–65.04	–43.33	3.32	1.50	40	1	87.4	9/GR3
ARGSUR05	–55.20	7	–63.68	–43.01	2.54	2.38	152	1	87.4	9/GR4
ATGSJN01	–79.70	7	–61.79	17.07	0.60	0.60	90	1	87.4	
B CE311	–64.20	7	–40.60	–6.07	3.04	2.06	174	1	87.4	8 9/GR7
B CE312	–45.20	7	–40.27	–6.06	3.44	2.09	174	1	87.4	8 9/GR9
B CE411	–64.20	7	–50.97	–15.27	3.86	1.38	49	1	87.4	8 9/GR7
B CE412	–45.20	7	–50.71	–15.30	3.57	1.56	52	1	87.4	8 9/GR9
B CE511	–64.20	7	–53.10	–2.90	2.44	2.13	104	1	87.4	8 9/GR7
B NO611	–74.20	7	–59.60	–11.62	2.85	1.69	165	2	87.4	8 9/GR8
B NO711	–74.20	7	–60.70	–1.78	3.54	1.78	126	2	87.4	8 9/GR8
B NO811	–74.20	7	–68.76	–4.71	2.37	1.65	73	2	87.4	8 9/GR8
B SU111	–81.20	7	–51.12	–25.63	2.76	1.05	50	1	87.4	8 9/GR6
B SU112	–45.20	7	–50.75	–25.62	2.47	1.48	56	1	87.4	8 9/GR9
B SU211	–81.20	7	–44.51	–16.95	3.22	1.36	60	1	87.4	8 9/GR6
B SU212	–45.20	7	–44.00	–16.87	3.20	1.96	58	1	87.4	8 9/GR9
BERBERMU	–96.20	7	–64.77	32.32	0.60	0.60	90	2	87.4	
B OLAND01	–115.20	7	–71.37	–4.69	6.49	2.57	87	1	87.4	9/GR5
B OL00001	–87.20	7	–64.61	–16.71	2.52	2.19	85	1	87.4	
B RB00001	–92.70	7	–59.85	12.93	0.60	0.60	90	2	87.4	
CAN01101	–138.20	7	–114.60	51.08	7.28	1.10	160	1	87.4	9/GR10

CAN01201	−138.20	7	−114.60	51.08	7.28	1.10	160	1	87.4	9/GR10
CAN01202	−72.70	7	−81.34	50.02	7.96	2.55	5	1	87.4	
CAN01203	−129.20	7	−113.02	51.08	7.47	1.26	162	1	87.4	9/GR12
CAN01303	−129.20	7	−113.02	51.08	7.47	1.26	162	1	87.4	9/GR12
CAN01304	−91.20	7	−86.71	50.48	8.58	2.54	178	1	87.4	9/GR13
CAN01403	−129.20	7	−113.02	51.08	7.47	1.26	162	1	87.4	9/GR12
CAN01404	−91.20	7	−86.71	50.48	8.58	2.54	178	1	87.4	9/GR13
CAN01405	−82.20	7	−84.11	50.20	8.31	2.58	1	1	87.4	9/GR14
CAN01504	−91.20	7	−86.71	50.48	8.58	2.54	178	1	87.4	9/GR13
CAN01505	−82.20	7	−84.11	50.20	8.31	2.58	1	1	87.4	9/GR14
CAN01605	−82.20	7	−84.11	50.20	8.31	2.58	1	1	87.4	9/GR14
CAN01606	−70.70	7	−80.77	50.03	7.88	2.53	6	1	87.4	
CHLCONT5	−106.20	7	−72.23	−35.57	2.60	0.68	55	1	87.4	9/GR17
CHLPAC02	−106.20	7	−80.06	−30.06	1.36	0.68	69	1	87.4	9/GR17
CLMAND01	−115.20	7	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
CLM00001	−103.20	7	−74.50	5.87	3.98	1.96	118	1	87.4	
CUB00001	−89.20	7	−79.81	21.62	2.24	0.68	168	1	87.4	
EQACAND1	−115.20	7	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
EQAGAND1	−115.20	7	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
GRD00002	−42.20	7	−61.58	12.29	0.60	0.60	90	1	87.4	
GRD00059	−57.20	7	−61.58	12.29	0.60	0.60	90	1	87.4	
GRLDNK01	−53.20	7	−44.89	66.56	2.70	0.82	173	1	87.4	2
HWA00002	−166.20	7	−109.94	36.86	6.04	1.11	137	1	87.4	9/GR1
HWA00003	−175.20	7	−116.23	37.50	5.60	0.75	132	1	87.4	9/GR2

17411,48 MHz (7)

1	2	3	4		5		6	7	8	9
MEX01NTE	–78.20	7	–105.81	26.01	2.89	2.08	155	1	87.4	1
MEX01SUR	–69.20	7	–94.84	19.82	3.05	2.09	4	1	87.4	1
MEX02NTE	–136.20	7	–107.21	26.31	3.84	1.55	148	1	87.4	1
MEX02SUR	–127.20	7	–96.39	19.88	3.18	1.87	157	1	87.4	1
PAQPAC01	–106.20	7	–109.18	–27.53	0.60	0.60	90	1	87.4	9/GR17
PRG00002	–99.20	7	–58.66	–23.32	1.45	1.04	76	1	87.4	
PRUAND02	–115.20	7	–71.37	–4.69	6.49	2.57	87	1	87.4	9/GR5
PTRVIR01	–101.20	7	–93.94	36.32	8.24	3.56	171	1	87.4	1 6 9/GR20
PTRVIR02	–110.20	7	–95.23	36.29	8.27	3.37	168	1	87.4	1 6 9/GR21
SURINAM2	–84.70	7	–55.69	4.35	1.00	0.69	86	1	87.4	
URG00001	–71.70	7	–56.22	–32.52	1.02	0.89	11	1	87.4	
USAEH001	–61.70	7	–87.57	36.17	6.42	3.49	12	1	87.4	1 5 6
USAEH002	–101.20	7	–93.94	36.32	8.24	3.56	171	1	87.4	1 6 9/GR20
USAEH003	–110.20	7	–95.23	36.29	8.27	3.37	168	1	87.4	1 6 9/GR21
USAEH004	–119.20	7	–96.45	36.21	8.20	3.12	165	1	87.4	1 5 6
USAPSA02	–166.20	7	–109.94	36.86	6.04	1.11	137	1	87.4	9/GR1
USAPSA03	–175.20	7	–116.23	37.50	5.60	0.75	132	1	87.4	9/GR2
USAWH101	–148.20	7	–111.02	40.68	4.36	2.15	162	1	87.4	
USAWH102	–157.20	7	–113.07	40.74	3.72	1.78	149	1	87.4	
VENAND03	–115.20	7	–71.37	–4.69	6.49	2.57	87	1	87.4	9/GR5

ALS00002	−165.80	8	−109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
ALS00003	−174.80	8	−116.10	37.47	5.60	0.76	132	2	87.4	9/GR2
ARGNORT4	−93.80	8	−63.96	−30.01	3.86	1.99	48	2	87.4	
ARGNORT5	−54.80	8	−62.85	−29.80	3.24	2.89	47	2	87.4	
B CE311	−63.80	8	−40.60	−6.07	3.04	2.06	174	2	87.4	8 9/GR7
B CE312	−44.80	8	−40.26	−6.06	3.44	2.09	174	2	87.4	8 9/GR9
B CE411	−63.80	8	−50.97	−15.26	3.86	1.38	49	2	87.4	8 9/GR7
B CE412	−44.80	8	−50.71	−15.30	3.57	1.56	52	2	87.4	8 9/GR9
B CE511	−63.80	8	−53.11	−2.98	2.42	2.15	107	2	87.4	8 9/GR7
B NO611	−73.80	8	−59.60	−11.62	2.86	1.69	165	1	87.4	8 9/GR8
B NO711	−73.80	8	−60.70	−1.78	3.54	1.78	126	1	87.4	8 9/GR8
B NO811	−73.80	8	−68.75	−4.71	2.37	1.65	73	1	87.4	8 9/GR8
B SE911	−101.80	8	−45.99	−19.09	2.22	0.79	62	2	87.4	8
B SU111	−80.80	8	−51.10	−25.64	2.76	1.06	50	2	87.4	8 9/GR6
B SU112	−44.80	8	−50.76	−25.62	2.47	1.48	56	2	87.4	8 9/GR9
B SU211	−80.80	8	−44.51	−16.94	3.22	1.37	60	2	87.4	8 9/GR6
B SU212	−44.80	8	−43.99	−16.97	3.27	1.92	59	2	87.4	8 9/GR9
CAN01101	−137.80	8	−114.10	50.92	7.22	1.11	160	2	87.4	9/GR10
CAN01201	−137.80	8	−114.10	50.92	7.22	1.11	160	2	87.4	9/GR10
CAN01202	−72.30	8	−81.23	50.12	7.99	2.53	5	2	87.4	
CAN01203	−128.80	8	−113.04	51.04	7.53	1.26	162	2	87.4	9/GR12
CAN01303	−128.80	8	−113.04	51.04	7.53	1.26	162	2	87.4	9/GR12
CAN01304	−90.80	8	−86.57	50.48	8.59	2.54	178	2	87.4	9/GR13
CAN01403	−128.80	8	−113.04	51.04	7.53	1.26	162	2	87.4	9/GR12

17426,06 MHz (8)

1	2	3	4		5		6	7	8	9
CAN01404	−90.80	8	−86.57	50.48	8.59	2.54	178	2	87.4	9/GR13
CAN01405	−81.80	8	−83.80	50.22	8.35	2.57	2	2	87.4	9/GR14
CAN01504	−90.80	8	−86.57	50.48	8.59	2.54	178	2	87.4	9/GR13
CAN01505	−81.80	8	−83.80	50.22	8.35	2.57	2	2	87.4	9/GR14
CAN01605	−81.80	8	−83.80	50.22	8.35	2.57	2	2	87.4	9/GR14
CAN01606	−70.30	8	−80.64	50.02	7.88	2.52	6	2	87.4	
CHLCONT4	−105.80	8	−69.59	−23.20	2.21	0.69	68	2	87.4	9/GR16
CHLCONT6	−105.80	8	−73.52	−55.52	3.65	1.31	39	2	87.4	9/GR16
CRBBAH01	−92.30	8	−76.09	24.13	1.83	0.68	141	1	87.4	9/GR18
CRBBER01	−92.30	8	−64.76	32.13	0.60	0.60	90	1	87.4	9/GR18
CRBBLZ01	−92.30	8	−88.61	17.26	0.64	0.64	90	1	87.4	9/GR18
CRBEC001	−92.30	8	−60.07	8.26	4.20	0.86	115	1	87.4	9/GR18
CRBJMC01	−92.30	8	−79.45	17.97	0.99	0.68	151	1	87.4	9/GR18
CYM00001	−115.80	8	−80.58	19.57	0.60	0.60	90	2	87.4	
DOMIFRB2	−83.30	8	−70.51	18.79	0.98	0.69	167	2	87.4	
EQAC0001	−94.80	8	−78.31	−1.52	1.48	1.15	65	1	87.4	9/GR19
EQAG0001	−94.80	8	−90.36	−0.57	0.94	0.89	99	1	87.4	9/GR19
GUFMGG02	−52.80	8	−56.42	8.47	4.16	0.81	123	2	87.4	2 7
HWA00002	−165.80	8	−109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
HWA00003	−174.80	8	−116.10	37.47	5.60	0.76	132	2	87.4	9/GR2
JMC00005	−33.80	8	−77.27	18.12	0.60	0.60	90	2	87.4	
LCAIFRB1	−79.30	8	−61.15	13.90	0.60	0.60	90	2	87.4	
MEX01NTE	−77.80	8	−105.80	25.99	2.88	2.07	155	2	87.4	1
MEX02NTE	−135.80	8	−107.36	26.32	3.80	1.57	149	2	87.4	1

17426,06 MHz (8)

MEX02SUR	−126.80	8	−96.39	19.88	3.19	1.87	158	2	87.4	1
PRU00004	−85.80	8	−74.19	−8.39	3.74	2.45	112	2	87.4	
PTRVIR01	−100.80	8	−93.85	36.31	8.26	3.55	171	2	87.4	1 6 9/GR20
PTRVIR02	−109.80	8	−95.47	36.38	8.10	3.45	168	2	87.4	1 6 9/GR21
SLVIFRB2	−107.30	8	−88.91	13.59	0.60	0.60	90	1	87.4	
USAEH001	−61.30	8	−87.53	36.18	6.41	3.49	12	2	87.4	1 5 6
USAEH002	−100.80	8	−93.85	36.31	8.26	3.55	171	2	87.4	1 6 9/GR20
USAEH003	−109.80	8	−95.47	36.38	8.10	3.45	168	2	87.4	1 6 9/GR21
USAEH004	−118.80	8	−96.42	36.21	8.20	3.12	165	2	87.4	1 5 6
USAPSA02	−165.80	8	−109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
USAPSA03	−174.80	8	−116.10	37.47	5.60	0.76	132	2	87.4	9/GR2
USAWH101	−147.80	8	−111.01	40.67	4.38	2.15	162	2	87.4	
USAWH102	−156.80	8	−113.01	40.71	3.74	1.79	149	2	87.4	
VEN11VEN	−103.80	8	−66.79	6.90	2.50	1.77	122	2	87.4	

17440,64 MHz (9)

1	2	3	4		5		6	7	8	9
ALS00002	–166.20	9	–109.94	36.86	6.04	1.11	137	1	87.4	9/GR1
ALS00003	–175.20	9	–116.23	37.50	5.60	0.75	132	1	87.4	9/GR2
ARGINSU4	–94.20	9	–52.98	–59.81	3.40	0.68	19	1	87.4	9/GR3
ARGSUR04	–94.20	9	–65.04	–43.33	3.32	1.50	40	1	87.4	9/GR3
B CE311	–64.20	9	–40.60	–6.07	3.04	2.06	174	1	87.4	8 9/GR7
B CE312	–45.20	9	–40.27	–6.06	3.44	2.09	174	1	87.4	8 9/GR9
B CE411	–64.20	9	–50.97	–15.27	3.86	1.38	49	1	87.4	8 9/GR7
B CE412	–45.20	9	–50.71	–15.30	3.57	1.56	52	1	87.4	8 9/GR9
B CE511	–64.20	9	–53.10	–2.90	2.44	2.13	104	1	87.4	8 9/GR7
B NO611	–74.20	9	–59.60	–11.62	2.85	1.69	165	2	87.4	8 9/GR8
B NO711	–74.20	9	–60.70	–1.78	3.54	1.78	126	2	87.4	8 9/GR8
B NO811	–74.20	9	–68.76	–4.71	2.37	1.65	73	2	87.4	8 9/GR8
B SU111	–81.20	9	–51.12	–25.63	2.76	1.05	50	1	87.4	8 9/GR6
B SU112	–45.20	9	–50.75	–25.62	2.47	1.48	56	1	87.4	8 9/GR9
B SU211	–81.20	9	–44.51	–16.95	3.22	1.36	60	1	87.4	8 9/GR6
B SU212	–45.20	9	–44.00	–16.87	3.20	1.96	58	1	87.4	8 9/GR9
B AHIFRB1	–87.20	9	–76.06	24.16	1.81	0.70	142	1	87.4	
BERBERMU	–96.20	9	–64.77	32.32	0.60	0.60	90	2	87.4	
B ERBER02	–31.00	9	–64.77	32.32	0.60	0.60	90	1	87.4	2 3
B OLAND01	–115.20	9	–71.37	–4.69	6.49	2.57	87	1	87.4	9/GR5
CAN01101	–138.20	9	–114.60	51.08	7.28	1.10	160	1	87.4	9/GR10
CAN01201	–138.20	9	–114.60	51.08	7.28	1.10	160	1	87.4	9/GR10
CAN01202	–72.70	9	–81.34	50.02	7.96	2.55	5	1	87.4	
CAN01203	–129.20	9	–113.02	51.08	7.47	1.26	162	1	87.4	9/GR12

CAN01303	−129.20	9	−113.02	51.08	7.47	1.26	162	1	87.4	9/GR12
CAN01304	−91.20	9	−86.71	50.48	8.58	2.54	178	1	87.4	9/GR13
CAN01403	−129.20	9	−113.02	51.08	7.47	1.26	162	1	87.4	9/GR12
CAN01404	−91.20	9	−86.71	50.48	8.58	2.54	178	1	87.4	9/GR13
CAN01405	−82.20	9	−84.11	50.20	8.31	2.58	1	1	87.4	9/GR14
CAN01504	−91.20	9	−86.71	50.48	8.58	2.54	178	1	87.4	9/GR13
CAN01505	−82.20	9	−84.11	50.20	8.31	2.58	1	1	87.4	9/GR14
CAN01605	−82.20	9	−84.11	50.20	8.31	2.58	1	1	87.4	9/GR14
CAN01606	−70.70	9	−80.77	50.03	7.88	2.53	6	1	87.4	
CHLCONT5	−106.20	9	−72.23	−35.57	2.60	0.68	55	1	87.4	9/GR17
CHLPAC02	−106.20	9	−80.06	−30.06	1.36	0.68	69	1	87.4	9/GR17
CLMAND01	−115.20	9	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
CLM00001	−103.20	9	−74.50	5.87	3.98	1.96	118	1	87.4	
EQACAND1	−115.20	9	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
EQAGAND1	−115.20	9	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
FLKANT01	−57.20	9	−44.54	−60.13	3.54	0.68	12	1	87.4	2
FLKFALKS	−31.00	9	−59.90	−51.64	0.60	0.60	90	1	87.4	2 3
GRD00002	−42.20	9	−61.58	12.29	0.60	0.60	90	1	87.4	
HWA00002	−166.20	9	−109.94	36.86	6.04	1.11	137	1	87.4	9/GR1
HWA00003	−175.20	9	−116.23	37.50	5.60	0.75	132	1	87.4	9/GR2
MEX01NTE	−78.20	9	−105.81	26.01	2.89	2.08	155	1	87.4	1
MEX01SUR	−69.20	9	−94.84	19.82	3.05	2.09	4	1	87.4	1
MEX02NTE	−136.20	9	−107.21	26.31	3.84	1.55	148	1	87.4	1
MEX02SUR	−127.20	9	−96.39	19.88	3.18	1.87	157	1	87.4	1

17440,64 MHz (9)

1	2	3	4		5		6	7	8	9
PAQPAC01	–106.20	9	–109.18	–27.53	0.60	0.60	90	1	87.4	9/GR17
PRG00002	–99.20	9	–58.66	–23.32	1.45	1.04	76	1	87.4	
PRUAND02	–115.20	9	–71.37	–4.69	6.49	2.57	87	1	87.4	9/GR5
PTRVIR01	–101.20	9	–93.94	36.32	8.24	3.56	171	1	87.4	1 6 9/GR20
PTRVIR02	–110.20	9	–95.23	36.29	8.27	3.37	168	1	87.4	1 6 9/GR21
SPMFRAN3	–53.20	9	–67.24	47.51	3.16	0.79	7	1	87.4	2 7
TRD00001	–84.70	9	–61.23	10.70	0.60	0.60	90	1	87.4	
URG00001	–71.70	9	–56.22	–32.52	1.02	0.89	11	1	87.4	
USAEH001	–61.70	9	–87.57	36.17	6.42	3.49	12	1	87.4	1 5 6
USAEH002	–101.20	9	–93.94	36.32	8.24	3.56	171	1	87.4	1 6 9/GR20
USAEH003	–110.20	9	–95.23	36.29	8.27	3.37	168	1	87.4	1 6 9/GR21
USAEH004	–119.20	9	–96.45	36.21	8.20	3.12	165	1	87.4	1 5 6
USAPSA02	–166.20	9	–109.94	36.86	6.04	1.11	137	1	87.4	9/GR1
USAPSA03	–175.20	9	–116.23	37.50	5.60	0.75	132	1	87.4	9/GR2
USAWH101	–148.20	9	–111.02	40.68	4.36	2.15	162	1	87.4	
USAWH102	–157.20	9	–113.07	40.74	3.72	1.78	149	1	87.4	
VENAND03	–115.20	9	–71.37	–4.69	6.49	2.57	87	1	87.4	9/GR5
VRG00001	–79.70	9	–64.37	18.48	0.60	0.60	90	1	87.4	4

ALS00002	−165.80	10	−109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
ALS00003	−174.80	10	−116.10	37.47	5.60	0.76	132	2	87.4	9/GR2
ARGNORT4	−93.80	10	−63.96	−30.01	3.86	1.99	48	2	87.4	
ARGNORT5	−54.80	10	−62.85	−29.80	3.24	2.89	47	2	87.4	
ATNBEAM1	−52.80	10	−66.44	14.87	1.83	0.68	39	2	87.4	
B CE311	−63.80	10	−40.60	−6.07	3.04	2.06	174	2	87.4	8 9/GR7
B CE312	−44.80	10	−40.26	−6.06	3.44	2.09	174	2	87.4	8 9/GR9
B CE411	−63.80	10	−50.97	−15.26	3.86	1.38	49	2	87.4	8 9/GR7
B CE412	−44.80	10	−50.71	−15.30	3.57	1.56	52	2	87.4	8 9/GR9
B CE511	−63.80	10	−53.11	−2.98	2.42	2.15	107	2	87.4	8 9/GR7
B NO611	−73.80	10	−59.60	−11.62	2.86	1.69	165	1	87.4	8 9/GR8
B NO711	−73.80	10	−60.70	−1.78	3.54	1.78	126	1	87.4	8 9/GR8
B NO811	−73.80	10	−68.75	−4.71	2.37	1.65	73	1	87.4	8 9/GR8
B SE911	−101.80	10	−45.99	−19.09	2.22	0.79	62	2	87.4	8
B SU111	−80.80	10	−51.10	−25.64	2.76	1.06	50	2	87.4	8 9/GR6
B SU112	−44.80	10	−50.76	−25.62	2.47	1.48	56	2	87.4	8 9/GR9
B SU211	−80.80	10	−44.51	−16.94	3.22	1.37	60	2	87 4	8 9/GR6
B SU212	−44.80	10	−43.99	−16.97	3.27	1.92	59	2	87.4	8 9/GR9
CAN01101	−137.80	10	−114.10	50.92	7.22	1.11	160	2	87.4	9/GR10
CAN01201	−137.80	10	−114.10	50.92	7.22	1.11	160	2	87.4	9/GR10
CAN01202	−72.30	10	−81.23	50.12	7.99	2.53	5	2	87.4	
CAN01203	−128.80	10	−113.04	51.04	7.53	1.26	162	2	87.4	9/GR12
CAN01303	−128.80	10	−113.04	51.04	7.53	1.26	162	2	87.4	9/GR12
CAN01304	−90.80	10	−86.57	50.48	8.59	2.54	178	2	87.4	9/GR13

17455,22 MHz (10)

1	2	3	4		5		6	7	8	9
CAN01403	–128.80	10	–113.04	51.04	7.53	1.26	162	2	87.4	9/GR12
CAN01404	–90.80	10	–86.57	50.48	8.59	2.54	178	2	87.4	9/GR13
CAN01405	–81.80	10	–83.80	50.22	8.35	2.57	2	2	87.4	9/GR14
CAN01504	–90.80	10	–86.57	50.48	8.59	2.54	178	2	87.4	9/GR13
CAN01505	–81.80	10	–83.80	50.22	8.35	2.57	2	2	87.4	9/GR14
CAN01605	–81.80	10	–83.80	50.22	8.35	2.57	2	2	87.4	9/GR14
CAN01606	–70.30	10	–80.64	50.02	7.88	2.52	6	2	87.4	
CHLCONT4	–105.80	10	–69.59	–23.20	2.21	0.69	68	2	87.4	9/GR16
CHLCONT6	–105.80	10	–73.52	–55.52	3.65	1.31	39	2	87.4	9/GR16
CRBBAH01	–92.30	10	–76.09	24.13	1.83	0.68	141	1	87.4	9/GR18
CRBBER01	–92.30	10	–64.76	32.13	0.60	0.60	90	1	87.4	9/GR18
CRBBLZ01	–92.30	10	–88.61	17.26	0.64	0.64	90	1	87.4	9/GR18
CRBEC001	–92.30	10	–60.07	8.26	4.20	0.86	115	1	87.4	9/GR18
CRBJMC01	–92.30	10	–79.45	17.97	0.99	0.68	151	1	87.4	9/GR18
CTR00201	–130.80	10	–84.33	9.67	0.82	0.68	119	2	87.4	
EQAC0001	–94.80	10	–78.31	–1.52	1.48	1.15	65	1	87.4	9/GR19
EQAG0001	–94.80	10	–90.36	–0.57	0.94	0.89	99	1	87.4	9/GR19
GUY00302	–33.80	10	–59.07	4.77	1.43	0.85	91	2	87.4	
HNDIFRB2	–107.30	10	–86.23	15.16	1.14	0.85	8	1	87.4	
HTI00002	–83.30	10	–73.28	18.96	0.82	0.68	11	2	87.4	
HWA00002	–165.80	10	–109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
HWA00003	–174.80	10	–116.10	37.47	5.60	0.76	132	2	87.4	9/GR2
MEX01NTE	–77.80	10	–105.80	25.99	2.88	2.07	155	2	87.4	1
MEX02NTE	–135.80	10	–107.36	26.32	3.80	1.57	149	2	87.4	1

MEX02SUR	−126.80	10	−96.39	19.88	3.19	1.87	158	2	87.4	1
PRU00004	−85.80	10	−74.19	−8.39	3.74	2.45	112	2	87.4	
PTRVIR01	−100.80	10	−93.85	36.31	8.26	3.55	171	2	87.4	1 6 9/GR20
PTRVIR02	−109.80	10	−95.47	36.38	8.10	3.45	168	2	87.4	1 6 9/GR21
TCA00001	−115.80	10	−71.79	21.53	0.60	0.60	90	2	87.4	
USAEH001	−61.30	10	−87.53	36.18	6.41	3.49	12	2	87.4	1 5 6
USAEH002	−100.80	10	−93.85	36.31	8.26	3.55	171	2	87.4	1 6 9/GR20
USAEH003	−109.80	10	−95.47	36.38	8.10	3.45	168	2	87.4	1 6 9/GR21
USAEH004	−118.80	10	−96.42	36.21	8.20	3.12	165	2	87.4	1 5 6
USAPSA02	−165.80	10	−109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
USAPSA03	−174.80	10	−116.10	37.47	5.60	0.76	132	2	87.4	9/GR2
USAWH101	−147.80	10	−111.01	40.67	4.38	2.15	162	2	87.4	
USAWH102	−156.80	10	−113.01	40.71	3.74	1.79	149	2	87.4	
VCT00001	−79.30	10	−61.18	13.23	0.60	0.60	90	2	87.4	
VEN11VEN	−103.80	10	−66.79	6.90	2.50	1.77	122	2	87.4	

17469,80 MHz (11)

1	2	3	4		5		6	7	8	9
ALS00002	–166.20	11	–109.94	36.86	6.04	1.11	137	1	87.4	9/GR1
ALS00003	–175.20	11	–116.23	37.50	5.60	0.75	132	1	87.4	9/GR2
ARGINSU4	–94.20	11	–52.98	–59.81	3.40	0.68	19	1	87.4	9/GR3
ARGINSU5	–55.20	11	–44.17	–59.91	3.77	0.70	13	1	87.4	9/GR4
ARGSUR04	–94.20	11	–65.04	–43.33	3.32	1.50	40	1	87.4	9/GR3
ARGSUR05	–55.20	11	–63.68	–43.01	2.54	2.38	152	1	87.4	9/GR4
ATGSJN01	–79.70	11	–61.79	17.07	0.60	0.60	90	1	87.4	
B CE311	–64.20	11	–40.60	–6.07	3.04	2.06	174	1	87.4	8 9/GR7
B CE312	–45.20	11	–40.27	–6.06	3.44	2.09	174	1	87.4	8 9/GR9
B CE411	–64.20	11	–50.97	–15.27	3.86	1.38	49	1	87.4	8 9/GR7
B CE412	–45.20	11	–50.71	–15.30	3.57	1.56	52	1	87.4	8 9/GR9
B CE511	–64.20	11	–53.10	–2.90	2.44	2.13	104	1	87.4	8 9/GR7
B NO611	–74.20	11	–59.60	–11.62	2.85	1.69	165	2	87.4	8 9/GR8
B NO711	–74.20	11	–60.70	–1.78	3.54	1.78	126	2	87.4	8 9/GR8
B NO811	–74.20	11	–68.76	–4.71	2.37	1.65	73	2	87.4	8 9/GR8
B SU111	–81.20	11	–51.12	–25.63	2.76	1.05	50	1	87.4	8 9/GR6
B SU112	–45.20	11	–50.75	–25.62	2.47	1.48	56	1	87.4	8 9/GR9
B SU211	–81.20	11	–44.51	–16.95	3.22	1.36	60	1	87.4	8 9/GR6
B SU212	–45.20	11	–44.00	–16.87	3.20	1.96	58	1	87.4	8 9/GR9
BERBERMU	–96.20	11	–64.77	32.32	0.60	0.60	90	2	87.4	
B OLAND01	–115.20	11	–71.37	–4.69	6.49	2.57	87	1	87.4	9/GR5
B OL00001	–87.20	11	–64.61	–16.71	2.52	2.19	85	1	87.4	
B RB00001	–92.70	11	–59.85	12.93	0.60	0.60	90	2	87.4	
CAN01101	–138.20	11	–114.60	51.08	7.28	1.10	160	1	87.4	9/GR10

CAN01201	−138.20	11	−114.60	51.08	7.28	1.10	160	1	87.4	9/GR10
CAN01202	−72.70	11	−81.34	50.02	7.96	2.55	5	1	87.4	
CAN01203	−129.20	11	−113.02	51.08	7.47	1.26	162	1	87.4	9/GR12
CAN01303	−129.20	11	−113.02	51.08	7.47	1.26	162	1	87.4	9/GR12
CAN01304	−91.20	11	−86.71	50.48	8.58	2.54	178	1	87.4	9/GR13
CAN01403	−129.20	11	−113.02	51.08	7.47	1.26	162	1	87.4	9/GR12
CAN01404	−91.20	11	−86.71	50.48	8.58	2.54	178	1	87.4	9/GR13
CAN01405	−82.20	11	−84.11	50.20	8.31	2.58	1	1	87.4	9/GR14
CAN01504	−91.20	11	−86.71	50.48	8.58	2.54	178	1	87.4	9/GR13
CAN01505	−82.20	11	−84.11	50.20	8.31	2.58	1	1	87.4	9/GR14
CAN01605	−82.20	11	−84.11	50.20	8.31	2.58	1	1	87.4	9/GR14
CAN01606	−70.70	11	−80.77	50.03	7.88	2.53	6	1	87.4	
CHLCONT5	−106.20	11	−72.23	−35.57	2.60	0.68	55	1	87.4	9/GR17
CHLPAC02	−106.20	11	−80.06	−30.06	1.36	0.68	69	1	87.4	9/GR17
CLMAND01	−115.20	11	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
CLM00001	−103.20	11	−74.50	5.87	3.98	1.96	118	1	87.4	
CUB00001	−89.20	11	−79.81	21.62	2.24	0.68	168	1	87.4	
EQACAND1	−115.20	11	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
EQAGAND1	−115.20	11	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
GRD00002	−42.20	11	−61.58	12.29	0.60	0.60	90	1	87.4	
GRD00059	−57.20	11	−61.58	12.29	0.60	0.60	90	1	87.4	
GRLDNK01	−53.20	11	−44.89	66.56	2.70	0.82	173	1	87.4	2
GUY00201	−84.70	11	−59.19	4.78	1.44	0.85	95	1	87.4	
HWA00002	−166.20	11	−109.94	36.86	6.04	1.11	137	1	87.4	9/GR1

17469,80 MHz (11)

1	2	3	4		5		6	7	8	9
HWA00003	–175.20	11	–116.23	37.50	5.60	0.75	132	1	87.4	9/GR2
MEX01NTE	–78.20	11	–105.81	26.01	2.89	2.08	155	1	87.4	1
MEX01SUR	–69.20	11	–94.84	19.82	3.05	2.09	4	1	87.4	1
MEX02NTE	–136.20	11	–107.21	26.31	3.84	1.55	148	1	87.4	1
MEX02SUR	–127.20	11	–96.39	19.88	3.18	1.87	157	1	87.4	1
PAQPAC01	–106.20	11	–109.18	–27.53	0.60	0.60	90	1	87.4	9/GR17
PRG00002	–99.20	11	–58.66	–23.32	1.45	1.04	76	1	87.4	
PRUAND02	–115.20	11	–71.37	–4.69	6.49	2.57	87	1	87.4	9/GR5
PTRVIR01	–101.20	11	–93.94	36.32	8.24	3.56	171	1	87.4	1 6 9/GR20
PTRVIR02	–110.20	11	–95.23	36.29	8.27	3.37	168	1	87.4	1 6 9/GR21
URG00001	–71.70	11	–56.22	–32.52	1.02	0.89	11	1	87.4	
USAEH001	–61.70	11	–87.57	36.17	6.42	3.49	12	1	87.4	1 5 6
USAEH002	–101.20	11	–93.94	36.32	8.24	3.56	171	1	87.4	1 6 9/GR20
USAEH003	–110.20	11	–95.23	36.29	8.27	3.37	168	1	87.4	1 6 9/GR21
USAEH004	–119.20	11	–96.45	36.21	8.20	3.12	165	1	87.4	1 5 6
USAPSA02	–166.20	11	–109.94	36.86	6.04	1.11	137	1	87.4	9/GR1
USAPSA03	–175.20	11	–116.23	37.50	5.60	0.75	132	1	87.4	9/GR2
USAWH101	–148.20	11	–111.02	40.68	4.36	2.15	162	1	87.4	
USAWH102	–157.20	11	–113.07	40.74	3.72	1.78	149	1	87.4	
VENAND03	–115.20	11	–71.37	–4.69	6.49	2.57	87	1	87.4	9/GR5

ALS00002	−165.80	12	−109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
ALS00003	−174.80	12	−116.10	37.47	5.60	0.76	132	2	87.4	9/GR2
ARGNORT4	−93.80	12	−63.96	−30.01	3.86	1.99	48	2	87.4	
ARGNORT5	−54.80	12	−62.85	−29.80	3.24	2.89	47	2	87.4	
B CE311	−63.80	12	−40.60	−6.07	3.04	2.06	174	2	87.4	8 9/GR7
B CE312	−44.80	12	−40.26	−6.06	3.44	2.09	174	2	87.4	8 9/GR9
B CE411	−63.80	12	−50.97	−15.26	3.86	1.38	49	2	87.4	8 9/GR7
B CE412	−44.80	12	−50.71	−15.30	3.57	1.56	52	2	87.4	8 9/GR9
B CE511	−63.80	12	−53.11	−2.98	2.42	2.15	107	2	87.4	8 9/GR7
B NO611	−73.80	12	−59.60	−11.62	2.86	1.69	165	1	87.4	8 9/GR8
B NO711	−73.80	12	−60.70	−1.78	3.54	1.78	126	1	87.4	8 9/GR8
B NO811	−73.80	12	−68.75	−4.71	2.37	1.65	73	1	87.4	8 9/GR8
B SE911	−101.80	12	−45.99	−19.09	2.22	0.79	62	2	87.4	8
B SU111	−80.80	12	−51.10	−25.64	2.76	1.06	50	2	87.4	8 9/GR6
B SU112	−44.80	12	−50.76	−25.62	2.47	1.48	56	2	87.4	8 9/GR9
B SU211	−80.80	12	−44.51	−16.94	3.22	1.37	60	2	87.4	8 9/GR6
B SU212	−44.80	12	−43.99	−16.97	3.27	1.92	59	2	87.4	8 9/GR9
CAN01101	−137.80	12	−114.10	50.92	7.22	1.11	160	2	87.4	9/GR10
CAN01201	−137.80	12	−114.10	50.92	7.22	1.11	160	2	87.4	9/GR10
CAN01202	−72.30	12	−81.23	50.12	7.99	2.53	5	2	87.4	
CAN01203	−128.80	12	−113.04	51.04	7.53	1.26	162	2	87.4	9/GR12
CAN01303	−128.80	12	−113.04	51.04	7.53	1.26	162	2	87.4	9/GR12
CAN01304	−90.80	12	−86.57	50.48	8.59	2.54	178	2	87.4	9/GR13
CAN01403	−128.80	12	−113.04	51.04	7.53	1.26	162	2	87.4	9/GR12

17484,38 MHz (12)

1	2	3	4		5		6	7	8	9
CAN01404	−90.80	12	−86.57	50.48	8.59	2.54	178	2	87.4	9/GR13
CAN01405	−81.80	12	−83.80	50.22	8.35	2.57	2	2	87.4	9/GR14
CAN01504	−90.80	12	−86.57	50.48	8.59	2.54	178	2	87.4	9/GR13
CAN01505	−81.80	12	−83.80	50.22	8.35	2.57	2	2	87.4	9/GR14
CAN01605	−81.80	12	−83.80	50.22	8.35	2.57	2	2	87.4	9/GR14
CAN01606	−70.30	12	−80.64	50.02	7.88	2.52	6	2	87.4	
CHLCONT4	−105.80	12	−69.59	−23.20	2.21	0.69	68	2	87.4	9/GR16
CHLCONT6	−105.80	12	−73.52	−55.52	3.65	1.31	39	2	87.4	9/GR16
CRBBAH01	−92.30	12	−76.09	24.13	1.83	0.68	141	1	87.4	9/GR18
CRBBER01	−92.30	12	−64.76	32.13	0.60	0.60	90	1	87.4	9/GR18
CRBBLZ01	−92.30	12	−88.61	17.26	0.64	0.64	90	1	87.4	9/GR18
CRBEC001	−92.30	12	−60.07	8.26	4.20	0.86	115	1	87.4	9/GR18
CRBJMC01	−92.30	12	−79.45	17.97	0.99	0.68	151	1	87.4	9/GR18
CYM00001	−115.80	12	−80.58	19.57	0.60	0.60	90	2	87.4	
DOMIFRB2	−83.30	12	−70.51	18.79	0.98	0.69	167	2	87.4	
EQAC0001	−94.80	12	−78.31	−1.52	1.48	1.15	65	1	87.4	9/GR19
EQAG0001	−94.80	12	−90.36	−0.57	0.94	0.89	99	1	87.4	9/GR19
GUFMGG02	−52.80	12	−56.42	8.47	4.16	0.81	123	2	87.4	2 7
HWA00002	−165.80	12	−109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
HWA00003	−174.80	12	−116.10	37.47	5.60	0.76	132	2	87.4	9/GR2
JMC00005	−33.80	12	−77.27	18.12	0.60	0.60	90	2	87.4	
LCAIFRB1	−79.30	12	−61.15	13.90	0.60	0.60	90	2	87.4	
MEX01NTE	−77.80	12	−105.80	25.99	2.88	2.07	155	2	87.4	1
MEX02NTE	−135.80	12	−107.36	26.32	3.80	1.57	149	2	87.4	1

MEX02SUR	−126.80	12	−96.39	19.88	3.19	1.87	158	2	87.4	1
PRU00004	−85.80	12	−74.19	−8.39	3.74	2.45	112	2	87.4	
PTRVIR01	−100.80	12	−93.85	36.31	8.26	3.55	171	2	87.4	1 6 9/GR20
PTRVIR02	−109.80	12	−95.47	36.38	8.10	3.45	168	2	87.4	1 6 9/GR21
SLVIFRB2	−107.30	12	−88.91	13.59	0.60	0.60	90	1	87.4	
USAEH001	−61.30	12	−87.53	36.18	6.41	3.49	12	2	87.4	1 5 6
USAEH002	−100.80	12	−93.85	36.31	8.26	3.55	171	2	87.4	1 6 9/GR20
USAEH003	−109.80	12	−95.47	36.38	8.10	3.45	168	2	87.4	1 6 9/GR21
USAEH004	−118.80	12	−96.42	36.21	8.20	3.12	165	2	87.4	1 5 6
USAPSA02	−165.80	12	−109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
USAPSA03	−174.80	12	−116.10	37.47	5.60	0.76	132	2	87.4	9/GR2
USAWH101	−147.80	12	−111.01	40.67	4.38	2.15	162	2	87.4	
USAWH102	−156.80	12	−113.01	40.71	3.74	1.79	149	2	87.4	
VEN11VEN	−103.80	12	−66.79	6.90	2.50	1.77	122	2	87.4	

17498,96 MHz (13)

1	2	3	4		5		6	7	8	9
ALS00002	–166.20	13	–109.94	36.86	6.04	1.11	137	1	87.4	9/GR1
ALS00003	–175.20	13	–116.23	37.50	5.60	0.75	132	1	87.4	9/GR2
ARGINSU4	–94.20	13	–52.98	–59.81	3.40	0.68	19	1	87.4	9/GR3
ARGSUR04	–94.20	13	–65.04	–43.33	3.32	1.50	40	1	87.4	9/GR3
B CE311	–64.20	13	–40.60	–6.07	3.04	2.06	174	1	87.4	8 9/GR7
B CE312	–45.20	13	–40.27	–6.06	3.44	2.09	174	1	87.4	8 9/GR9
B CE411	–64.20	13	–50.97	–15.27	3.86	1.38	49	1	87.4	8 9/GR7
B CE412	–45.20	13	–50.71	–15.30	3.57	1.56	52	1	87.4	8 9/GR9
B CE511	–64.20	13	–53.10	–2.90	2.44	2.13	104	1	87.4	8 9/GR7
B NO611	–74.20	13	–59.60	–11.62	2.85	1.69	165	2	87.4	8 9/GR8
B NO711	–74.20	13	–60.70	–1.78	3.54	1.78	126	2	87.4	8 9/GR8
B NO811	–74.20	13	–68.76	–4.71	2.37	1.65	73	2	87.4	8 9/GR8
B SU111	–81.20	13	–51.12	–25.63	2.76	1.05	50	1	87.4	8 9/GR6
B SU112	–45.20	13	–50.75	–25.62	2.47	1.48	56	1	87.4	8 9/GR9
B SU211	–81.20	13	–44.51	–16.95	3.22	1.36	60	1	87.4	8 9/GR6
B SU212	–45.20	13	–44.00	–16.87	3.20	1.96	58	1	87.4	8 9/GR9
B AHIFRB1	–87.20	13	–76.06	24.16	1.81	0.70	142	1	87.4	
BERBERMU	–96.20	13	–64.77	32.32	0.60	0.60	90	2	87.4	
B ERBER02	–31.00	13	–64.77	32.32	0.60	0.60	90	1	87.4	2 3
B OLAND01	–115.20	13	–71.37	–4.69	6.49	2.57	87	1	87.4	9/GR5
CAN01101	–138.20	13	–114.60	51.08	7.28	1.10	160	1	87.4	9/GR10
CAN01201	–138.20	13	–114.60	51.08	7.28	1.10	160	1	87.4	9/GR10
CAN01202	–72.70	13	–81.34	50.02	7.96	2.55	5	1	87.4	
CAN01203	–129.20	13	–113.02	51.08	7.47	1.26	162	1	87.4	9/GR12

CAN01303	−129.20	13	−113.02	51.08	7.47	1.26	162	1	87.4	9/GR12
CAN01304	−91.20	13	−86.71	50.48	8.58	2.54	178	1	87.4	9/GR13
CAN01403	−129.20	13	−113.02	51.08	7.47	1.26	162	1	87.4	9/GR12
CAN01404	−91.20	13	−86.71	50.48	8.58	2.54	178	1	87.4	9/GR13
CAN01405	−82.20	13	−84.11	50.20	8.31	2.58	1	1	87.4	9/GR14
CAN01504	−91.20	13	−86.71	50.48	8.58	2.54	178	1	87.4	9/GR13
CAN01505	−82.20	13	−84.11	50.20	8.31	2.58	1	1	87.4	9/GR14
CAN01605	−82.20	13	−84.11	50.20	8.31	2.58	1	1	87.4	9/GR14
CAN01606	−70.70	13	−80.77	50.03	7.88	2.53	6	1	87.4	
CHLCONT5	−106.20	13	−72.23	−35.57	2.60	0.68	55	1	87.4	9/GR17
CHLPAC02	−106.20	13	−80.06	−30.06	1.36	0.68	69	1	87.4	9/GR17
CLMAND01	−115.20	13	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
CLM00001	−103.20	13	−74.50	5.87	3.98	1.96	118	1	87.4	
EQACAND1	−115.20	13	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
EQAGAND1	−115.20	13	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
FLKANT01	−57.20	13	−44.54	−60.13	3.54	0.68	12	1	87.4	2
FLKFALKS	−31.00	13	−59.90	−51.64	0.60	0.60	90	1	87.4	2 3
GRD00002	−42.20	13	−61.58	12.29	0.60	0.60	90	1	87.4	
HWA00002	−166.20	13	−109.94	36.86	6.04	1.11	137	1	87.4	9/GR1
HWA00003	−175.20	13	−116.23	37.50	5.60	0.75	132	1	87.4	9/GR2
MEX01NTE	−78.20	13	−105.81	26.01	2.89	2.08	155	1	87.4	1
MEX01SUR	−69.20	13	−94.84	19.82	3.05	2.09	4	1	87.4	1
MEX02NTE	−136.20	13	−107.21	26.31	3.84	1.55	148	1	87.4	1
MEX02SUR	−127.20	13	−96.39	19.88	3.18	1.87	157	1	87.4	1

17498,96 MHz (13)

1	2	3	4		5		6	7	8	9
PAQPAC01	–106.20	13	–109.18	–27.53	0.60	0.60	90	1	87.4	9/GR17
PRG00002	–99.20	13	–58.66	–23.32	1.45	1.04	76	1	87.4	
PRUAND02	–115.20	13	–71.37	–4.69	6.49	2.57	87	1	87.4	9/GR5
PTRVIR01	–101.20	13	–93.94	36.32	8.24	3.56	171	1	87.4	1 6 9/GR20
PTRVIR02	–110.20	13	–95.23	36.29	8.27	3.37	168	1	87.4	1 6 9/GR21
SPMFRAN3	–53.20	13	–67.24	47.51	3.16	0.79	7	1	87.4	2 7
TRD00001	–84.70	13	–61.23	10.70	0.60	0.60	90	1	87.4	
URG00001	–71.70	13	–56.22	–32.52	1.02	0.89	11	1	87.4	
USAEH001	–61.70	13	–87.57	36.17	6.42	3.49	12	1	87.4	1 5 6
USAEH002	–101.20	13	–93.94	36.32	8.24	3.56	171	1	87.4	1 6 9/GR20
USAEH003	–110.20	13	–95.23	36.29	8.27	3.37	168	1	87.4	1 6 9/GR21
USAEH004	–119.20	13	–96.45	36.21	8.20	3.12	165	1	87.4	1 5 6
USAPSA02	–166.20	13	–109.94	36.86	6.04	1.11	137	1	87.4	9/GR1
USAPSA03	–175.20	13	–116.23	37.50	5.60	0.75	132	1	87.4	9/GR2
USAWH101	–148.20	13	–111.02	40.68	4.36	2.15	162	1	87.4	
USAWH102	–157.20	13	–113.07	40.74	3.72	1.78	149	1	87.4	
VENAND03	–115.20	13	–71.37	–4.69	6.49	2.57	87	1	87.4	9/GR5
VRG00001	–79.70	13	–64.37	18.48	0.60	0.60	90	1	87.4	4

ALS00002	−165.80	14	−109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
ALS00003	−174.80	14	−116.10	37.47	5.60	0.76	132	2	87.4	9/GR2
ARGNORT4	−93.80	14	−63.96	−30.01	3.86	1.99	48	2	87.4	
ARGNORT5	−54.80	14	−62.85	−29.80	3.24	2.89	47	2	87.4	
ATNBEAM1	−52.80	14	−66.44	14.87	1.83	0.68	39	2	87.4	
B CE311	−63.80	14	−40.60	−6.07	3.04	2.06	174	2	87.4	8 9/GR7
B CE312	−44.80	14	−40.26	−6.06	3.44	2.09	174	2	87.4	8 9/GR9
B CE411	−63.80	14	−50.97	−15.26	3.86	1.38	49	2	87.4	8 9/GR7
B CE412	−44.80	14	−50.71	−15.30	3.57	1.56	52	2	87.4	8 9/GR9
B CE511	−63.80	14	−53.11	−2.98	2.42	2.15	107	2	87.4	8 9/GR7
B NO611	−73.80	14	−59.60	−11.62	2.86	1.69	165	1	87.4	8 9/GR8
B NO711	−73.80	14	−60.70	−1.78	3.54	1.78	126	1	87.4	8 9/GR8
B NO811	−73.80	14	−68.75	−4.71	2.37	1.65	73	1	87.4	8 9/GR8
B SE911	−101.80	14	−45.99	−19.09	2.22	0.79	62	2	87.4	8
B SU111	−80.80	14	−51.10	−25.64	2.76	1.06	50	2	87.4	8 9/GR6
B SU112	−44.80	14	−50.76	−25.62	2.47	1.48	56	2	87.4	8 9/GR9
B SU211	−80.80	14	−44.51	−16.94	3.22	1.37	60	2	87.4	8 9/GR6
B SU212	−44.80	14	−43.99	−16.97	3.27	1.92	59	2	87.4	8 9/GR9
CAN01101	−137.80	14	−114.10	50.92	7.22	1.11	160	2	87.4	9/GR10
CAN01201	−137.80	14	−114.10	50.92	7.22	1.11	160	2	87.4	9/GR10
CAN01202	−72.30	14	−81.23	50.12	7.99	2.53	5	2	87.4	
CAN01203	−128.80	14	−113.04	51.04	7.53	1.26	162	2	87.4	9/GR12
CAN01303	−128.80	14	−113.04	51.04	7.53	1.26	162	2	87.4	9/GR12
CAN01304	−90.80	14	−86.57	50.48	8.59	2.54	178	2	87.4	9/GR13

17513,54 MHz (14)

1	2	3	4		5		6	7	8	9
CAN01403	−128.80	14	−113.04	51.04	7.53	1.26	162	2	87.4	9/GR12
CAN01404	−90.80	14	−86.57	50.48	8.59	2.54	178	2	87.4	9/GR13
CAN01405	−81.80	14	−83.80	50.22	8.35	2.57	2	2	87.4	9/GR14
CAN01504	−90.80	14	−86.57	50.48	8.59	2.54	178	2	87.4	9/GR13
CAN01505	−81.80	14	−83.80	50.22	8.35	2.57	2	2	87.4	9/GR14
CAN01605	−81.80	14	−83.80	50.22	8.35	2.57	2	2	87.4	9/GR14
CAN01606	−70.30	14	−80.64	50.02	7.88	2.52	6	2	87.4	
CHLCONT4	−105.80	14	−69.59	−23.20	2.21	0.69	68	2	87.4	9/GR16
CHLCONT6	−105.80	14	−73.52	−55.52	3.65	1.31	39	2	87.4	9/GR16
CRBBAH01	−92.30	14	−76.09	24.13	1.83	0.68	141	1	87.4	9/GR18
CRBBER01	−92.30	14	−64.76	32.13	0.60	0.60	90	1	87.4	9/GR18
CRBBLZ01	−92.30	14	−88.61	17.26	0.64	0.64	90	1	87.4	9/GR18
CRBEC001	−92.30	14	−60.07	8.26	4.20	0.86	115	1	87.4	9/GR18
CRBJMC01	−92.30	14	−79.45	17.97	0.99	0.68	151	1	87.4	9/GR18
CTR00201	−130.80	14	−84.33	9.67	0.82	0.68	119	2	87.4	
EQAC0001	−94.80	14	−78.31	−1.52	1.48	1.15	65	1	87.4	9/GR19
EQAG0001	−94.80	14	−90.36	−0.57	0.94	0.89	99	1	87.4	9/GR19
GUY00302	−33.80	14	−59.07	4.77	1.43	0.85	91	2	87.4	
HNDIFRB2	−107.30	14	−86.23	15.16	1.14	0.85	8	1	87.4	
HTI00002	−83.30	14	−73.28	18.96	0.82	0.68	11	2	87.4	
HWA00002	−165.80	14	−109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
HWA00003	−174.80	14	−116.10	37.47	5.60	0.76	132	2	87.4	9/GR2
MEX01NTE	−77.80	14	−105.80	25.99	2.88	2.07	155	2	87.4	1
MEX02NTE	−135.80	14	−107.36	26.32	3.80	1.57	149	2	87.4	1

17513,54 MHz (14)

MEX02SUR	–126.80	14	–96.39	19.88	3.19	1.87	158	2	87.4	1
PRU00004	–85.80	14	–74.19	–8.39	3.74	2.45	112	2	87.4	
PTRVIR01	–100.80	14	–93.85	36.31	8.26	3.55	171	2	87.4	1 6 9/GR20
PTRVIR02	–109.80	14	–95.47	36.38	8.10	3.45	168	2	87.4	1 6 9/GR21
TCA00001	–115.80	14	–71.79	21.53	0.60	0.60	90	2	87.4	
USAEH001	–61.30	14	–87.53	36.18	6.41	3.49	12	2	87.4	1 5 6
USAEH002	–100.80	14	–93.85	36.31	8.26	3.55	171	2	87.4	1 6 9/GR20
USAEH003	–109.80	14	–95.47	36.38	8.10	3.45	168	2	87.4	1 6 9/GR21
USAEH004	–118.80	14	–96.42	36.21	8.20	3.12	165	2	87.4	1 5 6
USAPSA02	–165.80	14	–109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
USAPSA03	–174.80	14	–116.10	37.47	5.60	0.76	132	2	87.4	9/GR2
USAWH101	–147.80	14	–111.01	40.67	4.38	2.15	162	2	87.4	
USAWH102	–156.80	14	–113.01	40.71	3.74	1.79	149	2	87.4	
VCT00001	–79.30	14	–61.18	13.23	0.60	0.60	90	2	87.4	
VEN11VEN	–103.80	14	–66.79	6.90	2.50	1.77	122	2	87.4	

17528,12 MHz (15)

1	2	3	4		5		6	7	8	9
ALS00002	–166.20	15	–109.94	36.86	6.04	1.11	137	1	87.4	9/GR1
ALS00003	–175.20	15	–116.23	37.50	5.60	0.75	132	1	87.4	9/GR2
ARGINSU4	–94.20	15	–52.98	–59.81	3.40	0.68	19	1	87.4	9/GR3
ARGINSU5	–55.20	15	–44.17	–59.91	3.77	0.70	13	1	87.4	9/GR4
ARGSUR04	–94.20	15	–65.04	–43.33	3.32	1.50	40	1	87.4	9/GR3
ARGSUR05	–55.20	15	–63.68	–43.01	2.54	2.38	152	1	87.4	9/GR4
ATGSJN01	–79.70	15	–61.79	17.07	0.60	0.60	90	1	87.4	
B CE311	–64.20	15	–40.60	–6.07	3.04	2.06	174	1	87.4	8 9/GR7
B CE312	–45.20	15	–40.27	–6.06	3.44	2.09	174	1	87.4	8 9/GR9
B CE411	–64.20	15	–50.97	–15.27	3.86	1.38	49	1	87.4	8 9/GR7
B CE412	–45.20	15	–50.71	–15.30	3.57	1.56	52	1	87.4	8 9/GR9
B CE511	–64.20	15	–53.10	–2.90	2.44	2.13	104	1	87.4	8 9/GR7
B NO611	–74.20	15	–59.60	–11.62	2.85	1.69	165	2	87.4	8 9/GR8
B NO711	–74.20	15	–60.70	–1.78	3.54	1.78	126	2	87.4	8 9/GR8
B NO811	–74.20	15	–68.76	–4.71	2.37	1.65	73	2	87.4	8 9/GR8
B SU111	–81.20	15	–51.12	–25.63	2.76	1.05	50	1	87.4	8 9/GR6
B SU112	–45.20	15	–50.75	–25.62	2.47	1.48	56	1	87.4	8 9/GR9
B SU211	–81.20	15	–44.51	–16.95	3.22	1.36	60	1	87.4	8 9/GR6
B SU212	–45.20	15	–44.00	–16.87	3.20	1.96	58	1	87.4	8 9/GR9
BERBERMU	–96.20	15	–64.77	32.32	0.60	0.60	90	2	87.4	
B OLAND01	–115.20	15	–71.37	–4.69	6.49	2.57	87	1	87.4	9/GR5
B OL00001	–87.20	15	–64.61	–16.71	2.52	2.19	85	1	87.4	
B RB00001	–92.70	15	–59.85	12.93	0.60	0.60	90	2	87.4	
CAN01101	–138.20	15	–114.60	51.08	7.28	1.10	160	1	87.4	9/GR10

CAN01201	−138.20	15	−114.60	51.08	7.28	1.10	160	1	87.4	9/GR10
CAN01202	−72.70	15	−81.34	50.02	7.96	2.55	5	1	87.4	
CAN01203	−129.20	15	−113.02	51.08	7.47	1.26	162	1	87.4	9/GR12
CAN01303	−129.20	15	−113.02	51.08	7.47	1.26	162	1	87.4	9/GR12
CAN01304	−91.20	15	−86.71	50.48	8.58	2.54	178	1	87.4	9/GR13
CAN01403	−129.20	15	−113.02	51.08	7.47	1.26	162	1	87.4	9/GR12
CAN01404	−91.20	15	−86.71	50.48	8.58	2.54	178	1	87.4	9/GR13
CAN01405	−82.20	15	−84.11	50.20	8.31	2.58	1	1	87.4	9/GR14
CAN01504	−91.20	15	−86.71	50.48	8.58	2.54	178	1	87.4	9/GR13
CAN01505	−82.20	15	−84.11	50.20	8.31	2.58	1	1	87.4	9/GR14
CAN01605	−82.20	15	−84.11	50.20	8.31	2.58	1	1	87.4	9/GR14
CAN01606	−70.70	15	−80.77	50.03	7.88	2.53	6	1	87.4	
CHLCONT5	−106.20	15	−72.23	−35.57	2.60	0.68	55	1	87.4	9/GR17
CHLPAC02	−106.20	15	−80.06	−30.06	1.36	0.68	69	1	87.4	9/GR17
CLMAND01	−115.20	15	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
CLM00001	−103.20	15	−74.50	5.87	3.98	1.96	118	1	87.4	
CUB00001	−89.20	15	−79.81	21.62	2.24	0.68	168	1	87.4	
EQACAND1	−115.20	15	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
EQAGAND1	−115.20	15	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
GRD00002	−42.20	15	−61.58	12.29	0.60	0.60	90	1	87.4	
GRD00059	−57.20	15	−61.58	12.29	0.60	0.60	90	1	87.4	
GRLDNK01	−53.20	15	−44.89	66.56	2.70	0.82	173	1	87.4	2
GUY00201	−84.70	15	−59.19	4.78	1.44	0.85	95	1	87.4	
HWA00002	−166.20	15	−109.94	36.86	6.04	1.11	137	1	87.4	9/GR1

17528,12 MHz (15)

1	2	3	4		5		6	7	8	9
HWA00003	–175.20	15	–116.23	37.50	5.60	0.75	132	1	87.4	9/GR2
MEX01NTE	–78.20	15	–105.81	26.01	2.89	2.08	155	1	87.4	1
MEX01SUR	–69.20	15	–94.84	19.82	3.05	2.09	4	1	87.4	1
MEX02NTE	–136.20	15	–107.21	26.31	3.84	1.55	148	1	87.4	1
MEX02SUR	–127.20	15	–96.39	19.88	3.18	1.87	157	1	87.4	1
PAQPAC01	–106.20	15	–109.18	–27.53	0.60	0.60	90	1	87.4	9/GR17
PRG00002	–99.20	15	–58.66	–23.32	1.45	1.04	76	1	87.4	
PRUAND02	–115.20	15	–71.37	–4.69	6.49	2.57	87	1	87.4	9/GR5
PTRVIR01	–101.20	15	–93.94	36.32	8.24	3.56	171	1	87.4	1 6 9/GR20
PTRVIR02	–110.20	15	–95.23	36.29	8.27	3.37	168	1	87.4	1 6 9/GR21
URG00001	–71.70	15	–56.22	–32.52	1.02	0.89	11	1	87.4	
USAEH001	–61.70	15	–87.57	36.17	6.42	3.49	12	1	87.4	1 5 6
USAEH002	–101.20	15	–93.94	36.32	8.24	3.56	171	1	87.4	1 6 9/GR20
USAEH003	–110.20	15	–95.23	36.29	8.27	3.37	168	1	87.4	1 6 9/GR21
USAEH004	–119.20	15	–96.45	36.21	8.20	3.12	165	1	87.4	1 5 6
USAPSA02	–166.20	15	–109.94	36.86	6.04	1.11	137	1	87.4	9/GR1
USAPSA03	–175.20	15	–116.23	37.50	5.60	0.75	132	1	87.4	9/GR2
USAWH101	–148.20	15	–111.02	40.68	4.36	2.15	162	1	87.4	
USAWH102	–157.20	15	–113.07	40.74	3.72	1.78	149	1	87.4	
VENAND03	–115.20	15	–71.37	–4.69	6.49	2.57	87	1	87.4	9/GR5

ALS00002	−165.80	16	−109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
ALS00003	−174.80	16	−116.10	37.47	5.60	0.76	132	2	87.4	9/GR2
ARGNORT4	−93.80	16	−63.96	−30.01	3.86	1.99	48	2	87.4	
ARGNORT5	−54.80	16	−62.85	−29.80	3.24	2.89	47	2	87.4	
B CE311	−63.80	16	−40.60	−6.07	3.04	2.06	174	2	87.4	8 9/GR7
B CE312	−44.80	16	−40.26	−6.06	3.44	2.09	174	2	87.4	8 9/GR9
B CE411	−63.80	16	−50.97	−15.26	3.86	1.38	49	2	87.4	8 9/GR7
B CE412	−44.80	16	−50.71	−15.30	3.57	1.56	52	2	87.4	8 9/GR9
B CE511	−63.80	16	−53.11	−2.98	2.42	2.15	107	2	87.4	8 9/GR7
B NO611	−73.80	16	−59.60	−11.62	2.86	1.69	165	1	87.4	8 9/GR8
B NO711	−73.80	16	−60.70	−1.78	3.54	1.78	126	1	87.4	8 9/GR8
B NO811	−73.80	16	−68.75	−4.71	2.37	1.65	73	1	87.4	8 9/GR8
B SE911	−101.80	16	−45.99	−19.09	2.22	0.79	62	2	87.4	8
B SU111	−80.80	16	−51.10	−25.64	2.76	1.06	50	2	87.4	8 9/GR6
B SU112	−44.80	16	−50.76	−25.62	2.47	1.48	56	2	87.4	8 9/GR9
B SU211	−80.80	16	−44.51	−16.94	3.22	1.37	60	2	87.4	8 9/GR6
B SU212	−44.80	16	−43.99	−16.97	3.27	1.92	59	2	87.4	8 9/GR9
CAN01101	−137.80	16	−114.10	50.92	7.22	1.11	160	2	87.4	9/GR10
CAN01201	−137.80	16	−114.10	50.92	7.22	1.11	160	2	87.4	9/GR10
CAN01202	−72.30	16	−81.23	50.12	7.99	2.53	5	2	87.4	
CAN01203	−128.80	16	−113.04	51.04	7.53	1.26	162	2	87.4	9/GR12
CAN01303	−128.80	16	−113.04	51.04	7.53	1.26	162	2	87.4	9/GR12
CAN01304	−90.80	16	−86.57	50.48	8.59	2.54	178	2	87.4	9/GR13
CAN01403	−128.80	16	−113.04	51.04	7.53	1.26	162	2	87.4	9/GR12

17542,70 MHz (16)

1	2	3	4		5		6	7	8	9
CAN01404	–90.80	16	–86.57	50.48	8.59	2.54	178	2	87.4	9/GR13
CAN01405	–81.80	16	–83.80	50.22	8.35	2.57	2	2	87.4	9/GR14
CAN01504	–90.80	16	–86.57	50.48	8.59	2.54	178	2	87.4	9/GR13
CAN01505	–81.80	16	–83.80	50.22	8.35	2.57	2	2	87.4	9/GR14
CAN01605	–81.80	16	–83.80	50.22	8.35	2.57	2	2	87.4	9/GR14
CAN01606	–70.30	16	–80.64	50.02	7.88	2.52	6	2	87.4	
CHLCONT4	–105.80	16	–69.59	–23.20	2.21	0.69	68	2	87.4	9/GR16
CHLCONT6	–105.80	16	–73.52	–55.52	3.65	1.31	39	2	87.4	9/GR16
CRBBAH01	–92.30	16	–76.09	24.13	1.83	0.68	141	1	87.4	9/GR18
CRBBER01	–92.30	16	–64.76	32.13	0.60	0.60	90	1	87.4	9/GR18
CRBBLZ01	–92.30	16	–88.61	17.26	0.64	0.64	90	1	87.4	9/GR18
CRBEC001	–92.30	16	–60.07	8.26	4.20	0.86	115	1	87.4	9/GR18
CRBJMC01	–92.30	16	–79.45	17.97	0.99	0.68	151	1	87.4	9/GR18
CYM00001	–115.80	16	–80.58	19.57	0.60	0.60	90	2	87.4	
DOMIFRB2	–83.30	16	–70.51	18.79	0.98	0.69	167	2	87.4	
EQAC0001	–94.80	16	–78.31	–1.52	1.48	1.15	65	1	87.4	9/GR19
EQAG0001	–94.80	16	–90.36	–0.57	0.94	0.89	99	1	87.4	9/GR19
GUFMGG02	–52.80	16	–56.42	8.47	4.16	0.81	123	2	87.4	2 7
HWA00002	–165.80	16	–109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
HWA00003	–174.80	16	–116.10	37.47	5.60	0.76	132	2	87.4	9/GR2
JMC00005	–33.80	16	–77.27	18.12	0.60	0.60	90	2	87.4	
LCAIFRB1	–79.30	16	–61.15	13.90	0.60	0.60	90	2	87.4	
MEX01NTE	–77.80	16	–105.80	25.99	2.88	2.07	155	2	87.4	1
MEX02NTE	–135.80	16	–107.36	26.32	3.80	1.57	149	2	87.4	1

MEX02SUR	−126.80	16	−96.39	19.88	3.19	1.87	158	2	87.4	1
PRU00004	−85.80	16	−74.19	−8.39	3.74	2.45	112	2	87.4	
PTRVIR01	−100.80	16	−93.85	36.31	8.26	3.55	171	2	87.4	1 6 9/GR20
PTRVIR02	−109.80	16	−95.47	36.38	8.10	3.45	168	2	87.4	1 6 9/GR21
SLVIFRB2	−107.30	16	−88.91	13.59	0.60	0.60	90	1	87.4	
USAEH001	−61.30	16	−87.53	36.18	6.41	3.49	12	2	87.4	1 5 6
USAEH002	−100.80	16	−93.85	36.31	8.26	3.55	171	2	87.4	1 6 9/GR20
USAEH003	−109.80	16	−95.47	36.38	8.10	3.45	168	2	87.4	1 6 9/GR21
USAEH004	−118.80	16	−96.42	36.21	8.20	3.12	165	2	87.4	1 5 6
USAPSA02	−165.80	16	−109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
USAPSA03	−174.80	16	−116.10	37.47	5.60	0.76	132	2	87.4	9/GR2
USAWH101	−147.80	16	−111.01	40.67	4.38	2.15	162	2	87.4	
USAWH102	−156.80	16	−113.01	40.71	3.74	1.79	149	2	87.4	
VEN11VEN	−103.80	16	−66.79	6.90	2.50	1.77	122	2	87.4	

17557,28 MHz (17)

1	2	3	4		5		6	7	8	9
ALS00002	-166.20	17	-109.94	36.86	6.04	1.11	137	1	87.4	9/GR1
ALS00003	-175.20	17	-116.23	37.50	5.60	0.75	132	1	87.4	9/GR2
ARGINSU4	-94.20	17	-52.98	-59.81	3.40	0.68	19	1	87.4	9/GR3
ARGINSU5	-55.20	17	-44.17	-59.91	3.77	0.70	13	1	87.4	9/GR4
ARGSUR04	-94.20	17	-65.04	-43.33	3.32	1.50	40	1	87.4	9/GR3
ARGSUR05	-55.20	17	-63.68	-43.01	2.54	2.38	152	1	87.4	9/GR4
B CE311	-64.20	17	-40.60	-6.07	3.04	2.06	174	1	87.4	8 9/GR7
B CE312	-45.20	17	-40.27	-6.06	3.44	2.09	174	1	87.4	8 9/GR9
B CE411	-64.20	17	-50.97	-15.27	3.86	1.38	49	1	87.4	8 9/GR7
B CE412	-45.20	17	-50.71	-15.30	3.57	1.56	52	1	87.4	8 9/GR9
B CE511	-64.20	17	-53.10	-2.90	2.44	2.13	104	1	87.4	8 9/GR7
B NO611	-74.20	17	-59.60	-11.62	2.85	1.69	165	2	87.4	8 9/GR8
B NO711	-74.20	17	-60.70	-1.78	3.54	1.78	126	2	87.4	8 9/GR8
B NO811	-74.20	17	-68.76	-4.71	2.37	1.65	73	2	87.4	8 9/GR8
B SU111	-81.20	17	-51.12	-25.63	2.76	1.05	50	1	87.4	8 9/GR6
B SU112	-45.20	17	-50.75	-25.62	2.47	1.48	56	1	87.4	8 9/GR9
B SU211	-81.20	17	-44.51	-16.95	3.22	1.36	60	1	87.4	8 9/GR6
B SU212	-45.20	17	-44.00	-16.87	3.20	1.96	58	1	87.4	8 9/GR9
BERBERMU	-96.20	17	-64.77	32.32	0.60	0.60	90	2	87.4	
B ERBER02	-31.00	17	-64.77	32.32	0.60	0.60	90	1	87.4	2 3
B OLAND01	-115.20	17	-71.37	-4.69	6.49	2.57	87	1	87.4	9/GR5
CAN01101	-138.20	17	-125.63	57.24	3.45	1.27	157	1	87.4	9/GR10
CAN01201	-138.20	17	-112.04	55.95	3.35	0.97	151	1	87.4	9/GR10
CAN01202	-72.70	17	-107.70	55.63	2.74	1.12	32	1	87.4	

CAN01203	−129.20	17	−111.48	55.61	3.08	1.15	151	1	87.4	9/GR12
CAN01303	−129.20	17	−102.42	57.12	3.54	0.91	154	1	87.4	9/GR12
CAN01304	−91.20	17	−99.12	57.36	1.98	1.72	2	1	87.4	9/GR13
CAN01403	−129.20	17	−89.75	52.02	4.68	0.78	148	1	87.4	9/GR12
CAN01404	−91.20	17	−84.82	52.42	3.10	2.05	152	1	87.4	9/GR13
CAN01405	−82.20	17	−84.00	52.39	2.84	2.29	172	1	87.4	9/GR14
CAN01504	−91.20	17	−72.66	53.77	3.57	1.67	156	1	87.4	9/GR13
CAN01505	−82.20	17	−71.77	53.79	3.30	1.89	162	1	87.4	9/GR14
CAN01605	−82.20	17	−61.50	49.55	2.65	1.40	143	1	87.4	9/GR14
CAN01606	−70.70	17	−61.30	49.55	2.40	1.65	148	1	87.4	
CHLCONT5	−106.20	17	−72.23	−35.57	2.60	0.68	55	1	87.4	9/GR17
CHLPAC02	−106.20	17	−80.06	−30.06	1.36	0.68	69	1	87.4	9/GR17
CLMAND01	−115.20	17	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
CLM00001	−103.20	17	−74.50	5.87	3.98	1.96	118	1	87.4	
EQACAND1	−115.20	17	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
EQAGAND1	−115.20	17	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
FLKFALKS	−31.00	17	−59.90	−51.64	0.60	0.60	90	1	87.4	2 3
HWA00002	−166.20	17	−165.79	23.42	4.20	0.68	160	1	87.4	9/GR1
HWA00003	−175.20	17	−166.10	23.42	4.25	0.68	159	1	87.4	9/GR2
JMC00002	−92.70	17	−77.30	18.12	0.62	0.62	90	2	87.4	
$8a1	−78.20	17	−105.81	26.01	2.89	2.08	155	1	87.4	1
MEX01NTE										
MEX01SUR	−69.20	17	−94.84	19.82	3.05	2.09	4	1	87.4	1
MEX02NTE	−136.20	17	−107.21	26.31	3.84	1.55	148	1	87.4	1
MEX02SUR	−127.20	17	−96.39	19.88	3.18	1.87	157	1	87.4	1

17557,28 MHz (17)

1	2	3	4		5		6	7	8	9
PAQPAC01	–106.20	17	–109.18	–27.53	0.60	0.60	90	1	87.4	9/GR17
PRG00002	–99.20	17	–58.66	–23.32	1.45	1.04	76	1	87.4	
PRUAND02	–115.20	17	–71.37	–4.69	6.49	2.57	87	1	87.4	9/GR5
PTRVIR01	–101.20	17	–93.94	36.32	8.24	3.56	171	1	87.4	1 6 9/GR20
PTRVIR02	–110.20	17	–95.23	36.29	8.27	3.37	168	1	87.4	1 6 9/GR21
SCN00001	–79.70	17	–62.46	17.44	0.60	0.60	90	1	87.4	
SPMFRAN3	–53.20	17	–67.24	47.51	3.16	0.79	7	1	87.4	2 7
SURINAM2	–84.70	17	–55.69	4.35	1.00	0.69	86	1	87.4	
URG00001	–71.70	17	–56.22	–32.52	1.02	0.89	11	1	87.4	
USAEH001	–61.70	17	–87.57	36.17	6.42	3.49	12	1	87.4	1 5 6
USAEH002	–101.20	17	–93.94	36.32	8.24	3.56	171	1	87.4	1 6 9/GR20
USAEH003	–110.20	17	–95.23	36.29	8.27	3.37	168	1	87.4	1 6 9/GR21
USAEH004	–119.20	17	–96.45	36.21	8.20	3.12	165	1	87.4	1 5 6
USAPSA02	–166.20	17	–109.94	36.86	6.04	1.11	137	1	87.4	9/GR1
USAPSA03	–175.20	17	–116.23	37.50	5.60	0.75	132	1	87.4	9/GR2
USAWH101	–148.20	17	–111.02	40.68	4.36	2.15	162	1	87.4	
USAWH102	–157.20	17	–113.07	40.74	3.72	1.78	149	1	87.4	
VENAND03	–115.20	17	–71.37	–4.69	6.49	2.57	87	1	87.4	9/GR5

ALS00002	−165.80	18	−109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
ALS00003	−174.80	18	−116.10	37.47	5.60	0.76	132	2	87.4	9/GR2
ARGNORT4	−93.80	18	−63.96	−30.01	3.86	1.99	48	2	87.4	
ARGNORT5	−54.80	18	−62.85	−29.80	3.24	2.89	47	2	87.4	
ATNBEAM1	−52.80	18	−66.44	14.87	1.83	0.68	39	2	87.4	
B CE311	−63.80	18	−40.60	−6.07	3.04	2.06	174	2	87.4	8 9/GR7
B CE312	−44.80	18	−40.26	−6.06	3.44	2.09	174	2	87.4	8 9/GR9
B CE411	−63.80	18	−50.97	−15.26	3.86	1.38	49	2	87.4	8 9/GR7
B CE412	−44.80	18	−50.71	−15.30	3.57	1.56	52	2	87.4	8 9/GR9
B CE511	−63.80	18	−53.11	−2.98	2.42	2.15	107	2	87.4	8 9/GR7
B NO611	−73.80	18	−59.60	−11.62	2.86	1.69	165	1	87.4	8 9/GR8
B NO711	−73.80	18	−60.70	−1.78	3.54	1.78	126	1	87.4	8 9/GR8
B NO811	−73.80	18	−68.75	−4.71	2.37	1.65	73	1	87.4	8 9/GR8
B SE911	−101.80	18	−45.99	−19.09	2.22	0.79	62	2	87.4	8
B SU111	−80.80	18	−51.10	−25.64	2.76	1.06	50	2	87.4	8 9/GR6
B SU112	−44.80	18	−50.76	−25.62	2.47	1.48	56	2	87.4	8 9/GR9
B SU211	−80.80	18	−44.51	−16.94	3.22	1.37	60	2	87.4	8 9/GR6
B SU212	−44.80	18	−43.99	−16.97	3.27	1.92	59	2	87.4	8 9/GR9
B LZ00001	−115.80	18	−88.68	17.27	0.62	0.62	90	2	87.4	
CAN01101	−137.80	18	−125.60	57.24	3.45	1.27	157	2	87.4	9/GR10
CAN01201	−137.80	18	−111.92	55.89	3.33	0.98	151	2	87.4	9/GR10
CAN01202	−72.30	18	−107.64	55.62	2.75	1.11	32	2	87.4	
CAN01203	−128.80	18	−111.43	55.56	3.07	1.15	151	2	87.4	9/GR12
CAN01303	−128.80	18	−102.39	57.12	3.54	0.92	154	2	87.4	9/GR12

17571,86 MHz (18)

1	2	3	4		5		6	7	8	9
CAN01304	−90.80	18	−99.00	57.33	1.96	1.73	1	2	87.4	9/GR13
CAN01403	−128.80	18	−89.70	52.02	4.67	0.79	148	2	87.4	9/GR12
CAN01404	−90.80	18	−84.78	52.41	3.09	2.06	153	2	87.4	9/GR13
CAN01405	−81.80	18	−84.02	52.34	2.82	2.30	172	2	87.4	9/GR14
CAN01504	−90.80	18	−72.68	53.78	3.57	1.67	157	2	87.4	9/GR13
CAN01505	−81.80	18	−71.76	53.76	3.30	1.89	162	2	87.4	9/GR14
CAN01605	−81.80	18	−61.54	49.50	2.66	1.39	144	2	87.4	9/GR14
CAN01606	−70.30	18	−61.32	49.51	2.41	1.65	148	2	87.4	
CHLCONT4	−105.80	18	−69.59	−23.20	2.21	0.69	68	2	87.4	9/GR16
CHLCONT6	−105.80	18	−73.52	−55.52	3.65	1.31	39	2	87.4	9/GR16
CRBBAH01	−92.30	18	−76.09	24.13	1.83	0.68	141	1	87.4	9/GR18
CRBBER01	−92.30	18	−64.76	32.13	0.60	0.60	90	1	87.4	9/GR18
CRBBLZ01	−92.30	18	−88.61	17.26	0.64	0.64	90	1	87.4	9/GR18
CRBEC001	−92.30	18	−60.07	8.26	4.20	0.86	115	1	87.4	9/GR18
CRBJMC01	−92.30	18	−79.45	17.97	0.99	0.68	151	1	87.4	9/GR18
CTR00201	−130.80	18	−84.33	9.67	0.82	0.68	119	2	87.4	
DMAIFRB1	−79.30	18	−61.30	15.35	0.60	0.60	90	2	87.4	
EQAC0001	−94.80	18	−78.31	−1.52	1.48	1.15	65	1	87.4	9/GR19
EQAG0001	−94.80	18	−90.36	−0.57	0.94	0.89	99	1	87.4	9/GR19
HWA00002	−165.80	18	−165.79	23.32	4.20	0.68	160	2	87.4	9/GR1
HWA00003	−174.80	18	−166.10	23.42	4.25	0.68	159	2	87.4	9/GR2
MEX01NTE	−77.80	18	−105.80	25.99	2.88	2.07	155	2	87.4	1
MEX02NTE	−135.80	18	−107.36	26.32	3.80	1.57	149	2	87.4	1
MEX02SUR	−126.80	18	−96.39	19.88	3.19	1.87	158	2	87.4	1

17571,86 MHz (18)

NCG00003	−107.30	18	−84.99	12.90	1.05	1.01	176	1	87.4	
PRU00004	−85.80	18	−74.19	−8.39	3.74	2.45	112	2	87.4	
PTRVIR01	−100.80	18	−93.85	36.31	8.26	3.55	171	2	87.4	1 6 9/GR20
PTRVIR02	−109.80	18	−95.47	36.38	8.10	3.45	168	2	87.4	1 6 9/GR21
USAEH001	−61.30	18	−87.53	36.18	6.41	3.49	12	2	87.4	1 5 6
USAEH002	−100.80	18	−93.85	36.31	8.26	3.55	171	2	87.4	1 6 9/GR20
USAEH003	−109.80	18	−95.47	36.38	8.10	3.45	168	2	87.4	1 6 9/GR21
USAEH004	−118.80	18	−96.42	36.21	8.20	3.12	165	2	87.4	1 5 6
USAPSA02	−165.80	18	−109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
USAPSA03	−174.80	18	−116.10	37.47	5.60	0.76	132	2	87.4	9/GR2
USAWH101	−147.80	18	−111.01	40.67	4.38	2.15	162	2	87.4	
USAWH102	−156.80	18	−113.01	40.71	3.74	1.79	149	2	87.4	
VEN11VEN	−103.80	18	−66.79	6.90	2.50	1.77	122	2	87.4	

17586,44 MHz (19)

1	2	3	4		5		6	7	8	9
ALS00002	–166.20	19	–109.94	36.86	6.04	1.11	137	1	87.4	9/GR1
ALS00003	–175.20	19	–116.23	37.50	5.60	0.75	132	1	87.4	9/GR2
ARGINSU4	–94.20	19	–52.98	–59.81	3.40	0.68	19	1	87.4	9/GR3
ARGINSU5	–55.20	19	–44.17	–59.91	3.77	0.70	13	1	87.4	9/GR4
ARGSUR04	–94.20	19	–65.04	–43.33	3.32	1.50	40	1	87.4	9/GR3
ARGSUR05	–55.20	19	–63.68	–43.01	2.54	2.38	152	1	87.4	9/GR4
B CE311	–64.20	19	–40.60	–6.07	3.04	2.06	174	1	87.4	8 9/GR7
B CE312	–45.20	19	–40.27	–6.06	3.44	2.09	174	1	87.4	8 9/GR9
B CE411	–64.20	19	–50.97	–15.27	3.86	1.38	49	1	87.4	8 9/GR7
B CE412	–45.20	19	–50.71	–15.30	3.57	1.56	52	1	87.4	8 9/GR9
B CE511	–64.20	19	–53.10	–2.90	2.44	2.13	104	1	87.4	8 9/GR7
B NO611	–74.20	19	–59.60	–11.62	2.85	1.69	165	2	87.4	8 9/GR8
B NO711	–74.20	19	–60.70	–1.78	3.54	1.78	126	2	87.4	8 9/GR8
B NO811	–74.20	19	–68.76	–4.71	2.37	1.65	73	2	87.4	8 9/GR8
B SU111	–81.20	19	–51.12	–25.63	2.76	1.05	50	1	87.4	8 9/GR6
B SU112	–45.20	19	–50.75	–25.62	2.47	1.48	56	1	87.4	8 9/GR9
B SU211	–81.20	19	–44.51	–16.95	3.22	1.36	60	1	87.4	8 9/GR6
B SU212	–45.20	19	–44.00	–16.87	3.20	1.96	58	1	87.4	8 9/GR9
BERBERMU	–96.20	19	–64.77	32.32	0.60	0.60	90	2	87.4	
B OLAND01	–115.20	19	–71.37	–4.69	6.49	2.57	87	1	87.4	9/GR5
B OL00001	–87.20	19	–64.61	–16.71	2.52	2.19	85	1	87.4	
B RB00001	–92.70	19	–59.85	12.93	0.60	0.60	90	2	87.4	
CAN01101	–138.20	19	–125.63	57.24	3.45	1.27	157	1	87.4	9/GR10
CAN01201	–138.20	19	–112.04	55.95	3.35	0.97	151	1	87.4	9/GR10

CAN01202	−72.70	19	−107.70	55.63	2.74	1.12	32	1	87.4	
CAN01203	−129.20	19	−111.48	55.61	3.08	1.15	151	1	87.4	9/GR12
CAN01303	−129.20	19	−102.42	57.12	3.54	0.91	154	1	87.4	9/GR12
CAN01304	−91.20	19	−99.12	57.36	1.98	1.72	2	1	87.4	9/GR13
CAN01403	−129.20	19	−89.75	52.02	4.68	0.78	148	1	87.4	9/GR12
CAN01404	−91.20	19	−84.82	52.42	3.10	2.05	152	1	87.4	9/GR13
CAN01405	−82.20	19	−84.00	52.39	2.84	2.29	172	1	87.4	9/GR14
CAN01504	−91.20	19	−72.66	53.77	3.57	1.67	156	1	87.4	9/GR13
CAN01505	−82.20	19	−71.77	53.79	3.30	1.89	162	1	87.4	9/GR14
CAN01605	−82.20	19	−61.50	49.55	2.65	1.40	143	1	87.4	9/GR14
CAN01606	−70.70	19	−61.30	49.55	2.40	1.65	148	1	87.4	
CHLCONT5	−106.20	19	−72.23	−35.57	2.60	0.68	55	1	87.4	9/GR17
CHLPAC02	−106.20	19	−80.06	−30.06	1.36	0.68	69	1	87.4	9/GR17
CLMAND01	−115.20	19	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
CLM00001	−103.20	19	−74.50	5.87	3.98	1.96	118	1	87.4	
CUB00001	−89.20	19	−79.81	21.62	2.24	0.68	168	1	87.4	
EQACAND1	−115.20	19	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
EQAGAND1	−115.20	19	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
GRD00059	−57.20	19	−61.58	12.29	0.60	0.60	90	1	87.4	
GRLDNK01	−53.20	19	−44.89	66.56	2.70	0.82	173	1	87.4	2
GUY00201	−84.70	19	−59.19	4.78	1.44	0.85	95	1	87.4	
HWA00002	−166.20	19	−165.79	23.42	4.20	0.68	160	1	87.4	9/GR1
HWA00003	−175.20	19	−166.10	23.42	4.25	0.68	159	1	87.4	9/GR2
MEX01NTE	−78.20	19	−105.81	26.01	2.89	2.08	155	1	87.4	1

17586,44 MHz (19)

1	2	3	4		5		6	7	8	9
MEX01SUR	–69.20	19	–94.84	19.82	3.05	2.09	4	1	87.4	1
MEX02NTE	–136.20	19	–107.21	26.31	3.84	1.55	148	1	87.4	1
MEX02SUR	–127.20	19	–96.39	19.88	3.18	1.87	157	1	87.4	1
MSR00001	–79.70	19	–61.73	16.75	0.60	0.60	90	1	87.4	4
PAQPAC01	–106.20	19	–109.18	–27.53	0.60	0.60	90	1	87.4	9/GR17
PRG00002	–99.20	19	–58.66	–23.32	1.45	1.04	76	1	87.4	
PRUAND02	–115.20	19	–71.37	–4.69	6.49	2.57	87	1	87.4	9/GR5
PTRVIR01	–101.20	19	–93.94	36.32	8.24	3.56	171	1	87.4	1 6 9/GR20
PTRVIR02	–110.20	19	–95.23	36.29	8.27	3.37	168	1	87.4	1 6 9/GR21
URG00001	–71.70	19	–56.22	–32.52	1.02	0.89	11	1	87.4	
USAEH001	–61.70	19	–87.57	36.17	6.42	3.49	12	1	87.4	1 5 6
USAEH002	–101.20	19	–93.94	36.32	8.24	3.56	171	1	87.4	1 6 9/GR20
USAEH003	–110.20	19	–95.23	36.29	8.27	3.37	168	1	87.4	1 6 9/GR21
USAEH004	–119.20	19	–96.45	36.21	8.20	3.12	165	1	87.4	1 5 6
USAPSA02	–166.20	19	–109.94	36.86	6.04	1.11	137	1	87.4	9/GR1
USAPSA03	–175.20	19	–116.23	37.50	5.60	0.75	132	1	87.4	9/GR2
USAWH101	–148.20	19	–111.02	40.68	4.36	2.15	162	1	87.4	
USAWH102	–157.20	19	–113.07	40.74	3.72	1.78	149	1	87.4	
VENAND03	–115.20	19	–71.37	–4.69	6.49	2.57	87	1	87.4	9/GR5

ALS00002	−165.80	20	−109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
ALS00003	−174.80	20	−116.10	37.47	5.60	0.76	132	2	87.4	9/GR2
ARGNORT4	−93.80	20	−63.96	−30.01	3.86	1.99	48	2	87.4	
ARGNORT5	−54.80	20	−62.85	−29.80	3.24	2.89	47	2	87.4	
B CE311	−63.80	20	−40.60	−6.07	3.04	2.06	174	2	87.4	8 9/GR7
B CE312	−44.80	20	−40.26	−6.06	3.44	2.09	174	2	87.4	8 9/GR9
B CE411	−63.80	20	−50.97	−15.26	3.86	1.38	49	2	87.4	8 9/GR7
B CE412	−44.80	20	−50.71	−15.30	3.57	1.56	52	2	87.4	8 9/GR9
B CE511	−63.80	20	−53.11	−2.98	2.42	2.15	107	2	87.4	8 9/GR7
B NO611	−73.80	20	−59.60	−11.62	2.86	1.69	165	1	87.4	8 9/GR8
B NO711	−73.80	20	−60.70	−1.78	3.54	1.78	126	1	87.4	8 9/GR8
B NO811	−73.80	20	−68.75	−4.71	2.37	1.65	73	1	87.4	8 9/GR8
B SE911	−101.80	20	−45.99	−19.09	2.22	0.79	62	2	87.4	8
B SU111	−80.80	20	−51.10	−25.64	2.76	1.06	50	2	87.4	8 9/GR6
B SU112	−44.80	20	−50.76	−25.62	2.47	1.48	56	2	87.4	8 9/GR9
B SU211	−80.80	20	−44.51	−16.94	3.22	1.37	60	2	87.4	8 9/GR6
B SU212	−44.80	20	−43.99	−16.97	3.27	1.92	59	2	87.4	8 9/GR9
CAN01101	−137.80	20	−125.60	57.24	3.45	1.27	157	2	87.4	9/GR10
CAN01201	−137.80	20	−111.92	55.89	3.33	0.98	151	2	87.4	9/GR10
CAN01202	−72.30	20	−107.64	55.62	2.75	1.11	32	2	87.4	
CAN01203	−128.80	20	−111.43	55.56	3.07	1.15	151	2	87.4	9/GR12
CAN01303	−128.80	20	−102.39	57.12	3.54	0.92	154	2	87.4	9/GR12
CAN01304	−90.80	20	−99.00	57.33	1.96	1.73	1	2	87.4	9/GR13
CAN01403	−128.80	20	−89.70	52.02	4.67	0.79	148	2	87.4	9/GR12

17601,02 MHz (20)

1	2	3	4		5		6	7	8	9
CAN01404	−90.80	20	−84.78	52.41	3.09	2.06	153	2	87.4	9/GR13
CAN01405	−81.80	20	−84.02	52.34	2.82	2.30	172	2	87.4	9/GR14
CAN01504	−90.80	20	−72.68	53.78	3.57	1.67	157	2	87.4	9/GR13
CAN01505	−81.80	20	−71.76	53.76	3.30	1.89	162	2	87.4	9/GR14
CAN01605	−81.80	20	−61.54	49.50	2.66	1.39	144	2	87.4	9/GR14
CAN01606	−70.30	20	−61.32	49.51	2.41	1.65	148	2	87.4	
CHLCONT4	−105.80	20	−69.59	−23.20	2.21	0.69	68	2	87.4	9/GR16
CHLCONT6	−105.80	20	−73.52	−55.52	3.65	1.31	39	2	87.4	9/GR16
CRBBAH01	−92.30	20	−76.09	24.13	1.83	0.68	141	1	87.4	9/GR18
CRBBER01	−92.30	20	−64.76	32.13	0.60	0.60	90	1	87.4	9/GR18
CRBBLZ01	−92.30	20	−88.61	17.26	0.64	0.64	90	1	87.4	9/GR18
CRBEC001	−92.30	20	−60.07	8.26	4.20	0.86	115	1	87.4	9/GR18
CRBJMC01	−92.30	20	−79.45	17.97	0.99	0.68	151	1	87.4	9/GR18
EQAC0001	−94.80	20	−78.31	−1.52	1.48	1.15	65	1	87.4	9/GR19
EQAG0001	−94.80	20	−90.36	−0.57	0.94	0.89	99	1	87.4	9/GR19
GRD00003	−79.30	20	−61.62	12.34	0.60	0.60	90	2	87.4	
GTMIFRB2	−107.30	20	−90.50	15.64	1.03	0.74	84	1	87.4	
GUFMGG02	−52.80	20	−56.42	8.47	4.16	0.81	123	2	87.4	2 7
HWA00002	−165.80	20	−165.79	23.32	4.20	0.68	160	2	87.4	9/GR1
HWA00003	−174.80	20	−166.10	23.42	4.25	0.68	159	2	87.4	9/GR2
MEX01NTE	−77.80	20	−105.80	25.99	2.88	2.07	155	2	87.4	1
MEX02NTE	−135.80	20	−107.36	26.32	3.80	1.57	149	2	87.4	1
MEX02SUR	−126.80	20	−96.39	19.88	3.19	1.87	158	2	87.4	1
PNRIFRB2	−121.00	20	−80.15	8.46	1.01	0.73	170	1	87.4	

PRU00004	−85.80	20	−74.19	−8.39	3.74	2.45	112	2	87.4	
PTRVIR01	−100.80	20	−93.85	36.31	8.26	3.55	171	2	87.4	1 6 9/GR20
PTRVIR02	−109.80	20	−95.47	36.38	8.10	3.45	168	2	87.4	1 6 9/GR21
USAEH001	−61.30	20	−87.53	36.18	6.41	3.49	12	2	87.4	1 5 6
USAEH002	−100.80	20	−93.85	36.31	8.26	3.55	171	2	87.4	1 6 9/GR20
USAEH003	−109.80	20	−95.47	36.38	8.10	3.45	168	2	87.4	1 6 9/GR21
USAEH004	−118.80	20	−96.42	36.21	8.20	3.12	165	2	87.4	1 5 6
USAPSA02	−165.80	20	−109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
USAPSA03	−174.80	20	−116.10	37.47	5.60	0.76	132	2	87.4	9/GR2
USAWH101	−147.80	20	−111.01	40.67	4.38	2.15	162	2	87.4	
USAWH102	−156.80	20	−113.01	40.71	3.74	1.79	149	2	87.4	
VEN02VEN	−103.80	20	−66.79	6.90	2.50	1.77	122	2	87.4	9/GR22
VEN11VEN	−103.80	20	−66.79	6.90	2.50	1.77	122	2	87.4	9/GR22

17615,60 MHz (21)

1	2	3	4		5		6	7	8	9
ALS00002	–166.20	21	–109.94	36.86	6.04	1.11	137	1	87.4	9/GR1
ALS00003	–175.20	21	–116.23	37.50	5.60	0.75	132	1	87.4	9/GR2
ARGINSU4	–94.20	21	–52.98	–59.81	3.40	0.68	19	1	87.4	9/GR3
ARGINSU5	–55.20	21	–44.17	–59.91	3.77	0.70	13	1	87.4	9/GR4
ARGSUR04	–94.20	21	–65.04	–43.33	3.32	1.50	40	1	87.4	9/GR3
ARGSUR05	–55.20	21	–63.68	–43.01	2.54	2.38	152	1	87.4	9/GR4
B CE311	–64.20	21	–40.60	–6.07	3.04	2.06	174	1	87.4	8 9/GR7
B CE312	–45.20	21	–40.27	–6.06	3.44	2.09	174	1	87.4	8 9/GR9
B CE411	–64.20	21	–50.97	–15.27	3.86	1.38	49	1	87.4	8 9/GR7
B CE412	–45.20	21	–50.71	–15.30	3.57	1.56	52	1	87.4	8 9/GR9
B CE511	–64.20	21	–53.10	–2.90	2.44	2.13	104	1	87.4	8 9/GR7
B NO611	–74.20	21	–59.60	–11.62	2.85	1.69	165	2	87.4	8 9/GR8
B NO711	–74.20	21	–60.70	–1.78	3.54	1.78	126	2	87.4	8 9/GR8
B NO811	–74.20	21	–68.76	–4.71	2.37	1.65	73	2	87.4	8 9/GR8
B SU111	–81.20	21	–51.12	–25.63	2.76	1.05	50	1	87.4	8 9/GR6
B SU112	–45.20	21	–50.75	–25.62	2.47	1.48	56	1	87.4	8 9/GR9
B SU211	–81.20	21	–44.51	–16.95	3.22	1.36	60	1	87.4	8 9/GR6
B SU212	–45.20	21	–44.00	–16.87	3.20	1.96	58	1	87.4	8 9/GR9
BERBERMU	–96.20	21	–64.77	32.32	0.60	0.60	90	2	87.4	
B OLAND01	–115.20	21	–71.37	–4.69	6.49	2.57	87	1	87.4	9/GR5
CAN01101	–138.20	21	–125.63	57.24	3.45	1.27	157	1	87.4	9/GR10
CAN01201	–138.20	21	–112.04	55.95	3.35	0.97	151	1	87.4	9/GR10
CAN01202	–72.70	21	–107.70	55.63	2.74	1.12	32	1	87.4	
CAN01203	–129.20	21	–111.48	55.61	3.08	1.15	151	1	87.4	9/GR12

CAN01303	−129.20	21	−102.42	57.12	3.54	0.91	154	1	87.4	9/GR12
CAN01304	−91.20	21	−99.12	57.36	1.98	1.72	2	1	87.4	9/GR13
CAN01403	−129.20	21	−89.75	52.02	4.68	0.78	148	1	87.4	9/GR12
CAN01404	−91.20	21	−84.82	52.42	3.10	2.05	152	1	87.4	9/GR13
CAN01405	−82.20	21	−84.00	52.39	2.84	2.29	172	1	87.4	9/GR14
CAN01504	−91.20	21	−72.66	53.77	3.57	1.67	156	1	87.4	9/GR13
CAN01505	−82.20	21	−71.77	53.79	3.30	1.89	162	1	87.4	9/GR14
CAN01605	−82.20	21	−61.50	49.55	2.65	1.40	143	1	87.4	9/GR14
CAN01606	−70.70	21	−61.30	49.55	2.40	1.65	148	1	87.4	
CHLCONT5	−106.20	21	−72.23	−35.57	2.60	0.68	55	1	87.4	9/GR17
CHLPAC02	−106.20	21	−80.06	−30.06	1.36	0.68	69	1	87.4	9/GR17
CLMAND01	−115.20	21	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
CLM00001	−103.20	21	−74.50	5.87	3.98	1.96	118	1	87.4	
EQACAND1	−115.20	21	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
EQAGAND1	−115.20	21	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
HWA00002	−166.20	21	−165.79	23.42	4.20	0.68	160	1	87.4	9/GR1
HWA00003	−175.20	21	−166.10	23.42	4.25	0.68	159	1	87.4	9/GR2
JMC00002	−92.70	21	−77.30	18.12	0.62	0.62	90	2	87.4	
MEX01NTE	−78.20	21	−105.81	26.01	2.89	2.08	155	1	87.4	1
MEX01SUR	−69.20	21	−94.84	19.82	3.05	2.09	4	1	87.4	1
MEX02NTE	−136.20	21	−107.21	26.31	3.84	1.55	148	1	87.4	1
MEX02SUR	−127.20	21	−96.39	19.88	3.18	1.87	157	1	87.4	1
PAQPAC01	−106.20	21	−109.18	−27.53	0.60	0.60	90	1	87.4	9/GR17
PRG00002	−99.20	21	−58.66	−23.32	1.45	1.04	76	1	87.4	

17615,60 MHz (21)

1	2	3	4		5		6	7	8	9
PRUAND02	–115.20	21	–71.37	–4.69	6.49	2.57	87	1	87.4	9/GR5
PTRVIR01	–101.20	21	–93.94	36.32	8.24	3.56	171	1	87.4	1 6 9/GR20
PTRVIR02	–110.20	21	–95.23	36.29	8.27	3.37	168	1	87.4	1 6 9/GR21
SCN00001	–79.70	21	–62.46	17.44	0.60	0.60	90	1	87.4	
SPMFRAN3	–53.20	21	–67.24	47.51	3.16	0.79	7	1	87.4	2 7
SURINAM2	–84.70	21	–55.69	4.35	1.00	0.69	86	1	87.4	
URG00001	–71.70	21	–56.22	–32.52	1.02	0.89	11	1	87.4	
USAEH001	–61.70	21	–87.57	36.17	6.42	3.49	12	1	87.4	1 5 6
USAEH002	–101.20	21	–93.94	36.32	8.24	3.56	171	1	87.4	1 6 9/GR20
USAEH003	–110.20	21	–95.23	36.29	8.27	3.37	168	1	87.4	1 6 9/GR21
USAEH004	–119.20	21	–96.45	36.21	8.20	3.12	165	1	87.4	1 5 6
USAPSA02	–166.20	21	–109.94	36.86	6.04	1.11	137	1	87.4	9/GR1
USAPSA03	–175.20	21	–116.23	37.50	5.60	0.75	132	1	87.4	9/GR2
USAWH101	–148.20	21	–111.02	40.68	4.36	2.15	162	1	87.4	
USAWH102	–157.20	21	–113.07	40.74	3.72	1.78	149	1	87.4	
VENAND03	–115.20	21	–71.37	–4.69	6.49	2.57	87	1	87.4	9/GR5

17630,18 MHz (22)

ALS00002	−165.80	22	−109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
ALS00003	−174.80	22	−116.10	37.47	5.60	0.76	132	2	87.4	9/GR2
ARGNORT4	−93.80	22	−63.96	−30.01	3.86	1.99	48	2	87.4	
ARGNORT5	−54.80	22	−62.85	−29.80	3.24	2.89	47	2	87.4	
ATNBEAM1	−52.80	22	−66.44	14.87	1.83	0.68	39	2	87.4	
B CE311	−63.80	22	−40.60	−6.07	3.04	2.06	174	2	87.4	8 9/GR7
B CE312	−44.80	22	−40.26	−6.06	3.44	2.09	174	2	87.4	8 9/GR9
B CE411	−63.80	22	−50.97	−15.26	3.86	1.38	49	2	87.4	8 9/GR7
B CE412	−44.80	22	−50.71	−15.30	3.57	1.56	52	2	87.4	8 9/GR9
B CE511	−63.80	22	−53.11	−2.98	2.42	2.15	107	2	87.4	8 9/GR7
B NO611	−73.80	22	−59.60	−11.62	2.86	1.69	165	1	87.4	8 9/GR8
B NO711	−73.80	22	−60.70	−1.78	3.54	1.78	126	1	87.4	8 9/GR8
B NO811	−73.80	22	−68.75	−4.71	2.37	1.65	73	1	87.4	8 9/GR8
B SE911	−101.80	22	−45.99	−19.09	2.22	0.79	62	2	87.4	8
B SU111	−80.80	22	−51.10	−25.64	2.76	1.06	50	2	87.4	8 9/GR6
B SU112	−44.80	22	−50.76	−25.62	2.47	1.48	56	2	87.4	8 9/GR9
B SU211	−80.80	22	−44.51	−16.94	3.22	1.37	60	2	87.4	8 9/GR6
B SU212	−44.80	22	−43.99	−16.97	3.27	1.92	59	2	87.4	8 9/GR9
B LZ00001	−115.80	22	−88.68	17.27	0.62	0.62	90	2	87.4	
CAN01101	−137.80	22	−125.60	57.24	3.45	1.27	157	2	87.4	9/GR10
CAN01201	−137.80	22	−111.92	55.89	3.33	0.98	151	2	87.4	9/GR10
CAN01202	−72.30	22	−107.64	55.62	2.75	1.11	32	2	87.4	
CAN01203	−128.80	22	−111.43	55.56	3.07	1.15	151	2	87.4	9/GR12
CAN01303	−128.80	22	−102.39	57.12	3.54	0.92	154	2	87.4	9/GR12

17630,18 MHz (22)

NCG00003	–107.30	22	–84.99	12.90	1.05	1.01	176	1	87.4	
PRU00004	–85.80	22	–74.19	–8.39	3.74	2.45	112	2	87.4	
PTRVIR01	–100.80	22	–93.85	36.31	8.26	3.55	171	2	87.4	1 6 9/GR20
PTRVIR02	–109.80	22	–95.47	36.38	8.10	3.45	168	2	87.4	1 6 9/GR21
USAEH001	–61.30	22	–87.53	36.18	6.41	3.49	12	2	87.4	1 5 6
USAEH002	–100.80	22	–93.85	36.31	8.26	3.55	171	2	87.4	1 6 9/GR20
USAEH003	–109.80	22	–95.47	36.38	8.10	3.45	168	2	87.4	1 6 9/GR21
USAEH004	–118.80	22	–96.42	36.21	8.20	3.12	165	2	87.4	1 5 6
USAPSA02	–165.80	22	–109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
USAPSA03	–174.80	22	–116.10	37.47	5.60	0.76	132	2	87.4	9/GR2
USAWH101	–147.80	22	–111.01	40.67	4.38	2.15	162	2	87.4	
USAWH102	–156.80	22	–113.01	40.71	3.74	1.79	149	2	87.4	
VEN11VEN	–103.80	22	–66.79	6.90	2.50	1.77	122	2	87.4	

1	2	3	4		5		6	7	8	9
CAN01304	−90.80	22	−99.00	57.33	1.96	1.73	1	2	87.4	9/GR13
CAN01403	−128.80	22	−89.70	52.02	4.67	0.79	148	2	87.4	9/GR12
CAN01404	−90.80	22	−84.78	52.41	3.09	2.06	153	2	87.4	9/GR13
CAN01405	−81.80	22	−84.02	52.34	2.82	2.30	172	2	87.4	9/GR14
CAN01504	−90.80	22	−72.68	53.78	3.57	1.67	157	2	87.4	9/GR13
CAN01505	−81.80	22	−71.76	53.76	3.30	1.89	162	2	87.4	9/GR14
CAN01605	−81.80	22	−61.54	49.50	2.66	1.39	144	2	87.4	9/GR14
CAN01606	−70.30	22	−61.32	49.51	2.41	1.65	148	2	87.4	
CHLCONT4	−105.80	22	−69.59	−23.20	2.21	0.69	68	2	87.4	9/GR16
CHLCONT6	−105.80	22	−73.52	−55.52	3.65	1.31	39	2	87.4	9/GR16
CRBBAH01	−92.30	22	−76.09	24.13	1.83	0.68	141	1	87.4	9/GR18
CRBBER01	−92.30	22	−64.76	32.13	0.60	0.60	90	1	87.4	9/GR18
CRBBLZ01	−92.30	22	−88.61	17.26	0.64	0.64	90	1	87.4	9/GR18
CRBEC001	−92.30	22	−60.07	8.26	4.20	0.86	115	1	87.4	9/GR18
CRBJMC01	−92.30	22	−79.45	17.97	0.99	0.68	151	1	87.4	9/GR18
CTR00201	−130.80	22	−84.33	9.67	0.82	0.68	119	2	87.4	
DMAIFRB1	−79.30	22	−61.30	15.35	0.60	0.60	90	2	87.4	
EQAC0001	−94.80	22	−78.31	−1.52	1.48	1.15	65	1	87.4	9/GR19
EQAG0001	−94.80	22	−90.36	−0.57	0.94	0.89	99	1	87.4	9/GR19
HWA00002	−165.80	22	−165.79	23.32	4.20	0.68	160	2	87.4	9/GR1
HWA00003	−174.80	22	−166.10	23.42	4.25	0.68	159	2	87.4	9/GR2
MEX01NTE	−77.80	22	−105.80	25.99	2.88	2.07	155	2	87.4	1
MEX02NTE	−135.80	22	−107.36	26.32	3.80	1.57	149	2	87.4	1
MEX02SUR	−126.80	22	−96.39	19.88	3.19	1.87	158	2	87.4	1

17644,76 MHz (23)

1	2	3	4		5		6	7	8	9
ALS00002	–166.20	23	–109.94	36.86	6.04	1.11	137	1	87.4	9/GR1
ALS00003	–175.20	23	–116.23	37.50	5.60	0.75	132	1	87.4	9/GR2
ARGINSU4	–94.20	23	–52.98	–59.81	3.40	0.68	19	1	87.4	9/GR3
ARGINSU5	–55.20	23	–44.17	–59.91	3.77	0.70	13	1	87.4	9/GR4
ARGSUR04	–94.20	23	–65.04	–43.33	3.32	1.50	40	1	87.4	9/GR3
ARGSUR05	–55.20	23	–63.68	–43.01	2.54	2.38	152	1	87.4	9/GR4
B CE311	–64.20	23	–40.60	–6.07	3.04	2.06	174	1	87.4	8 9/GR7
B CE312	–45.20	23	–40.27	–6.06	3.44	2.09	174	1	87.4	8 9/GR9
B CE411	–64.20	23	–50.97	–15.27	3.86	1.38	49	1	87.4	8 9/GR7
B CE412	–45.20	23	–50.71	–15.30	3.57	1.56	52	1	87.4	8 9/GR9
B CE511	–64.20	23	–53.10	–2.90	2.44	2.13	104	1	87.4	8 9/GR7
B NO611	–74.20	23	–59.60	–11.62	2.85	1.69	165	2	87.4	8 9/GR8
B NO711	–74.20	23	–60.70	–1.78	3.54	1.78	126	2	87.4	8 9/GR8
B NO811	–74.20	23	–68.76	–4.71	2.37	1.65	73	2	87.4	8 9/GR8
B SU111	–81.20	23	–51.12	–25.63	2.76	1.05	50	1	87.4	8 9/GR6
B SU112	–45.20	23	–50.75	–25.62	2.47	1.48	56	1	87.4	8 9/GR9
B SU211	–81.20	23	–44.51	–16.95	3.22	1.36	60	1	87.4	8 9/GR6
B SU212	–45.20	23	–44.00	–16.87	3.20	1.96	58	1	87.4	8 9/GR9
BERBERMU	–96.20	23	–64.77	32.32	0.60	0.60	90	2	87.4	
B OLAND01	–115.20	23	–71.37	–4.69	6.49	2.57	87	1	87.4	9/GR5
B OL00001	–87.20	23	–64.61	–16.71	2.52	2.19	85	1	87.4	
B RB00001	–92.70	23	–59.85	12.93	0.60	0.60	90	2	87.4	
CAN01101	–138.20	23	–125.63	57.24	3.45	1.27	157	1	87.4	9/GR10
CAN01201	–138.20	23	–112.04	55.95	3.35	0.97	151	1	87.4	9/GR10

CAN01202	−72.70	23	−107.70	55.63	2.74	1.12	32	1	87.4	
CAN01203	−129.20	23	−111.48	55.61	3.08	1.15	151	1	87.4	9/GR12
CAN01303	−129.20	23	−102.42	57.12	3.54	0.91	154	1	87.4	9/GR12
CAN01304	−91.20	23	−99.12	57.36	1.98	1.72	2	1	87.4	9/GR13
CAN01403	−129.20	23	−89.75	52.02	4.68	0.78	148	1	87.4	9/GR12
CAN01404	−91.20	23	−84.82	52.42	3.10	2.05	152	1	87.4	9/GR13
CAN01405	−82.20	23	−84.00	52.39	2.84	2.29	172	1	87.4	9/GR14
CAN01504	−91.20	23	−72.66	53.77	3.57	1.67	156	1	87.4	9/GR13
CAN01505	−82.20	23	−71.77	53.79	3.30	1.89	162	1	87.4	9/GR14
CAN01605	−82.20	23	−61.50	49.55	2.65	1.40	143	1	87.4	9/GR14
CAN01606	−70.70	23	−61.30	49.55	2.40	1.65	148	1	87.4	
CHLCONT5	−106.20	23	−72.23	−35.57	2.60	0.68	55	1	87.4	9/GR17
CHLPAC02	−106.20	23	−80.06	−30.06	1.36	0.68	69	1	87.4	9/GR17
CLMAND01	−115.20	23	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
CLM00001	−103.20	23	−74.50	5.87	3.98	1.96	118	1	87.4	
CUB00001	−89.20	23	−79.81	21.62	2.24	0.68	168	1	87.4	
EQACAND1	−115.20	23	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
EQAGAND1	−115.20	23	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
GRD00059	−57.20	23	−61.58	12.29	0.60	0.60	90	1	87.4	
GRLDNK01	−53.20	23	−44.89	66.56	2.70	0.82	173	1	87.4	2
GUY00201	−84.70	23	−59.19	4.78	1.44	0.85	95	1	87.4	
HWA00002	−166.20	23	−165.79	23.42	4.20	0.68	160	1	87.4	9/GR1
HWA00003	−175.20	23	−166.10	23.42	4.25	0.68	159	1	87.4	9/GR2
MEX01NTE	−78.20	23	−105.81	26.01	2.89	2.08	155	1	87.4	1

17644,76 MHz (23)

1	2	3	4		5		6	7	8	9
MEX01SUR	–69.20	23	–94.84	19.82	3.05	2.09	4	1	87.4	1
MEX02NTE	–136.20	23	–107.21	26.31	3.84	1.55	148	1	87.4	1
MEX02SUR	–127.20	23	–96.39	19.88	3.18	1.87	157	1	87.4	1
MSR00001	–79.70	23	–61.73	16.75	0.60	0.60	90	1	87.4	4
PAQPAC01	–106.20	23	–109.18	–27.53	0.60	0.60	90	1	87.4	9/GR17
PRG00002	–99.20	23	–58.66	–23.32	1.45	1.04	76	1	87.4	
PRUAND02	–115.20	23	–71.37	–4.69	6.49	2.57	87	1	87.4	9/GR5
PTRVIR01	–101.20	23	–93.94	36.32	8.24	3.56	171	1	87.4	1 6 9/GR20
PTRVIR02	–110.20	23	–95.23	36.29	8.27	3.37	168	1	87.4	1 6 9/GR21
URG00001	–71.70	23	–56.22	–32.52	1.02	0.89	11	1	87.4	
USAEH001	–61.70	23	–87.57	36.17	6.42	3.49	12	1	87.4	1 5 6
USAEH002	–101.20	23	–93.94	36.32	8.24	3.56	171	1	87.4	1 6 9/GR20
USAEH003	–110.20	23	–95.23	36.29	8.27	3.37	168	1	87.4	1 6 9/GR21
USAEH004	–119.20	23	–96.45	36.21	8.20	3.12	165	1	87.4	1 5 6
USAPSA02	–166.20	23	–109.94	36.86	6.04	1.11	137	1	87.4	9/GR1
USAPSA03	–175.20	23	–116.23	37.50	5.60	0.75	132	1	87.4	9/GR2
USAWH101	–148.20	23	–111.02	40.68	4.36	2.15	162	1	87.4	
USAWH102	–157.20	23	–113.07	40.74	3.72	1.78	149	1	87.4	
VENAND03	–115.20	23	–71.37	–4.69	6.49	2.57	87	1	87.4	9/GR5

ALS00002	−165.80	24	−109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
ALS00003	−174.80	24	−116.10	37.47	5.60	0.76	132	2	87.4	9/GR2
ARGNORT4	−93.80	24	−63.96	−30.01	3.86	1.99	48	2	87.4	
ARGNORT5	−54.80	24	−62.85	−29.80	3.24	2.89	47	2	87.4	
B CE311	−63.80	24	−40.60	−6.07	3.04	2.06	174	2	87.4	8 9/GR7
B CE312	−44.80	24	−40.26	−6.06	3.44	2.09	174	2	87.4	8 9/GR9
B CE411	−63.80	24	−50.97	−15.26	3.86	1.38	49	2	87.4	8 9/GR7
B CE412	−44.80	24	−50.71	−15.30	3.57	1.56	52	2	87.4	8 9/GR9
B CE511	−63.80	24	−53.11	−2.98	2.42	2.15	107	2	87.4	8 9/GR7
B NO611	−73.80	24	−59.60	−11.62	2.86	1.69	165	1	87.4	8 9/GR8
B NO711	−73.80	24	−60.70	−1.78	3.54	1.78	126	1	87.4	8 9/GR8
B NO811	−73.80	24	−68.75	−4.71	2.37	1.65	73	1	87.4	8 9/GR8
B SE911	−101.80	24	−45.99	−19.09	2.22	0.79	62	2	87.4	8
B SU111	−80.80	24	−51.10	−25.64	2.76	1.06	50	2	87.4	8 9/GR6
B SU112	−44.80	24	−50.76	−25.62	2.47	1.48	56	2	87.4	8 9/GR9
B SU211	−80.80	24	−44.51	−16.94	3.22	1.37	60	2	87.4	8 9/GR6
B SU212	−44.80	24	−43.99	−16.97	3.27	1.92	59	2	87.4	8 9/GR9
CAN01101	−137.80	24	−125.60	57.24	3.45	1.27	157	2	87.4	9/GR10
CAN01201	−137.80	24	−111.92	55.89	3.33	0.98	151	2	87.4	9/GR10
CAN01202	−72.30	24	−107.64	55.62	2.75	1.11	32	2	87.4	
CAN01203	−128.80	24	−111.43	55.56	3.07	1.15	151	2	87.4	9/GR12
CAN01303	−128.80	24	−102.39	57.12	3.54	0.92	154	2	87.4	9/GR12
CAN01304	−90.80	24	−99.00	57.33	1.96	1.73	1	2	87.4	9/GR13
CAN01403	−128.80	24	−89.70	52.02	4.67	0.79	148	2	87.4	9/GR12

17659,34 MHz (24)

1	2	3	4		5		6	7	8	9
CAN01404	–90.80	24	–84.78	52.41	3.09	2.06	153	2	87.4	9/GR13
CAN01405	–81.80	24	–84.02	52.34	2.82	2.30	172	2	87.4	9/GR14
CAN01504	–90.80	24	–72.68	53.78	3.57	1.67	157	2	87.4	9/GR13
CAN01505	–81.80	24	–71.76	53.76	3.30	1.89	162	2	87.4	9/GR14
CAN01605	–81.80	24	–61.54	49.50	2.66	1.39	144	2	87.4	9/GR14
CAN01606	–70.30	24	–61.32	49.51	2.41	1.65	148	2	87.4	
CHLCONT4	–105.80	24	–69.59	–23.20	2.21	0.69	68	2	87.4	9/GR16
CHLCONT6	–105.80	24	–73.52	–55.52	3.65	1.31	39	2	87.4	9/GR16
CRBBAH01	–92.30	24	–76.09	24.13	1.83	0.68	141	1	87.4	9/GR18
CRBBER01	–92.30	24	–64.76	32.13	0.60	0.60	90	1	87.4	9/GR18
CRBBLZ01	–92.30	24	–88.61	17.26	0.64	0.64	90	1	87.4	9/GR18
CRBEC001	–92.30	24	–60.07	8.26	4.20	0.86	115	1	87.4	9/GR18
CRBJMC01	–92.30	24	–79.45	17.97	0.99	0.68	151	1	87.4	9/GR18
EQAC0001	–94.80	24	–78.31	–1.52	1.48	1.15	65	1	87.4	9/GR19
EQAG0001	–94.80	24	–90.36	–0.57	0.94	0.89	99	1	87.4	9/GR19
GRD00003	–79.30	24	–61.62	12.34	0.60	0.60	90	2	87.4	
GTMIFRB2	–107.30	24	–90.50	15.64	1.03	0.74	84	1	87.4	
GUFMGG02	–52.80	24	–56.42	8.47	4.16	0.81	123	2	87.4	2 7
HWA00002	–165.80	24	–165.79	23.32	4.20	0.68	160	2	87.4	9/GR1
HWA00003	–174.80	24	–166.10	23.42	4.25	0.68	159	2	87.4	9/GR2
MEX01NTE	–77.80	24	–105.80	25.99	2.88	2.07	155	2	87.4	1
MEX02NTE	–135.80	24	–107.36	26.32	3.80	1.57	149	2	87.4	1
MEX02SUR	–126.80	24	–96.39	19.88	3.19	1.87	158	2	87.4	1
PNRIFRB2	–121.00	24	–80.15	8.46	1.01	0.73	170	1	87.4	

PRU00004	−85.80	24	−74.19	−8.39	3.74	2.45	112	2	87.4	
PTRVIR01	−100.80	24	−93.85	36.31	8.26	3.55	171	2	87.4	1 6 9/GR20
PTRVIR02	−109.80	24	−95.47	36.38	8.10	3.45	168	2	87.4	1 6 9/GR21
USAEH001	−61.30	24	−87.53	36.18	6.41	3.49	12	2	87.4	1 5 6
USAEH002	−100.80	24	−93.85	36.31	8.26	3.55	171	2	87.4	1 6 9/GR20
USAEH003	−109.80	24	−95.47	36.38	8.10	3.45	168	2	87.4	1 6 9/GR21
USAEH004	−118.80	24	−96.42	36.21	8.20	3.12	165	2	87.4	1 5 6
USAPSA02	−165.80	24	−109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
USAPSA03	−174.80	24	−116.10	37.47	5.60	0.76	132	2	87.4	9/GR2
USAWH101	−147.80	24	−111.01	40.67	4.38	2.15	162	2	87.4	
USAWH102	−156.80	24	−113.01	40.71	3.74	1.79	149	2	87.4	
VEN02VEN	−103.80	24	−66.79	6.90	2.50	1.77	122	2	87.4	9/GR22
VEN11VEN	−103.80	24	−66.79	6.90	2.50	1.77	122	2	87.4	9/GR22

17673,92 MHz (25)

1	2	3	4		5		6	7	8	9
ALS00002	–166.20	25	–109.94	36.86	6.04	1.11	137	1	87.4	9/GR1
ALS00003	–175.20	25	–116.23	37.50	5.60	0.75	132	1	87.4	9/GR2
ARGINSU4	–94.20	25	–52.98	–59.81	3.40	0.68	19	1	87.4	9/GR3
ARGINSU5	–55.20	25	–44.17	–59.91	3.77	0.70	13	1	87.4	9/GR4
ARGSUR04	–94.20	25	–65.04	–43.33	3.32	1.50	40	1	87.4	9/GR3
ARGSUR05	–55.20	25	–63.68	–43.01	2.54	2.38	152	1	87.4	9/GR4
B CE311	–64.20	25	–40.60	–6.07	3.04	2.06	174	1	87.4	8 9/GR7
B CE312	–45.20	25	–40.27	–6.06	3.44	2.09	174	1	87.4	8 9/GR9
B CE411	–64.20	25	–50.97	–15.27	3.86	1.38	49	1	87.4	8 9/GR7
B CE412	–45.20	25	–50.71	–15.30	3.57	1.56	52	1	87.4	8 9/GR9
B CE511	–64.20	25	–53.10	–2.90	2.44	2.13	104	1	87.4	8 9/GR7
B NO611	–74.20	25	–59.60	–11.62	2.85	1.69	165	2	87.4	8 9/GR8
B NO711	–74.20	25	–60.70	–1.78	3.54	1.78	126	2	87.4	8 9/GR8
B NO811	–74.20	25	–68.76	–4.71	2.37	1.65	73	2	87.4	8 9/GR8
B SU111	–81.20	25	–51.12	–25.63	2.76	1.05	50	1	87.4	8 9/GR6
B SU112	–45.20	25	–50.75	–25.62	2.47	1.48	56	1	87.4	8 9/GR9
B SU211	–81.20	25	–44.51	–16.95	3.22	1.36	60	1	87.4	8 9/GR6
B SU212	–45.20	25	–44.00	–16.87	3.20	1.96	58	1	87.4	8 9/GR9
BERBERMU	–96.20	25	–64.77	32.32	0.60	0.60	90	2	87.4	
B OLAND01	–115.20	25	–71.37	–4.69	6.49	2.57	87	1	87.4	9/GR5
CAN01101	–138.20	25	–125.63	57.24	3.45	1.27	157	1	87.4	9/GR10
CAN01201	–138.20	25	–112.04	55.95	3.35	0.97	151	1	87.4	9/GR10
CAN01202	–72.70	25	–107.70	55.63	2.74	1.12	32	1	87.4	
CAN01203	–129.20	25	–111.48	55.61	3.08	1.15	151	1	87.4	9/GR12

CAN01303	−129.20	25	−102.42	57.12	3.54	0.91	154	1	87.4	9/GR12
CAN01304	−91.20	25	−99.12	57.36	1.98	1.72	2	1	87.4	9/GR13
CAN01403	−129.20	25	−89.75	52.02	4.68	0.78	148	1	87.4	9/GR12
CAN01404	−91.20	25	−84.82	52.42	3.10	2.05	152	1	87.4	9/GR13
CAN01405	−82.20	25	−84.00	52.39	2.84	2.29	172	1	87.4	9/GR14
CAN01504	−91.20	25	−72.66	53.77	3.57	1.67	156	1	87.4	9/GR13
CAN01505	−82.20	25	−71.77	53.79	3.30	1.89	162	1	87.4	9/GR14
CAN01605	−82.20	25	−61.50	49.55	2.65	1.40	143	1	87.4	9/GR14
CAN01606	−70.70	25	−61.30	49.55	2.40	1.65	148	1	87.4	
CHLCONT5	−106.20	25	−72.23	−35.57	2.60	0.68	55	1	87.4	9/GR17
CHLPAC02	−106.20	25	−80.06	−30.06	1.36	0.68	69	1	87.4	9/GR17
CLMAND01	−115.20	25	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
CLM00001	−103.20	25	−74.50	5.87	3.98	1.96	118	1	87.4	
EQACAND1	−115.20	25	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
EQAGAND1	−115.20	25	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
HWA00002	−166.20	25	−165.79	23.42	4.20	0.68	160	1	87.4	9/GR1
HWA00003	−175.20	25	−166.10	23.42	4.25	0.68	159	1	87.4	9/GR2
JMC00002	−92.70	25	−77.30	18.12	0.62	0.62	90	2	87.4	
MEX01NTE	−78.20	25	−105.81	26.01	2.89	2.08	155	1	87.4	1
MEX01SUR	−69.20	25	−94.84	19.82	3.05	2.09	4	1	87.4	1
MEX02NTE	−136.20	25	−107.21	26.31	3.84	1.55	148	1	87.4	1
MEX02SUR	−127.20	25	−96.39	19.88	3.18	1.87	157	1	87.4	1
PAQPAC01	−106.20	25	−109.18	−27.53	0.60	0.60	90	1	87.4	9/GR17
PRG00002	−99.20	25	−58.66	−23.32	1.45	1.04	76	1	87.4	

17673,92 MHz (25)

1	2	3	4		5		6	7	8	9
PRUAND02	–115.20	25	–71.37	–4.69	6.49	2.57	87	1	87.4	9/GR5
PTRVIR01	–101.20	25	–93.94	36.32	8.24	3.56	171	1	87.4	1 6 9/GR20
PTRVIR02	–110.20	25	–95.23	36.29	8.27	3.37	168	1	87.4	1 6 9/GR21
SCN00001	–79.70	25	–62.46	17.44	0.60	0.60	90	1	87.4	
SPMFRAN3	–53.20	25	–67.24	47.51	3.16	0.79	7	1	87.4	2 7
SURINAM2	–84.70	25	–55.69	4.35	1.00	0.69	86	1	87.4	
URG00001	–71.70	25	–56.22	–32.52	1.02	0.89	11	1	87.4	
USAEH001	–61.70	25	–87.57	36.17	6.42	3.49	12	1	87.4	1 5 6
USAEH002	–101.20	25	–93.94	36.32	8.24	3.56	171	1	87.4	1 6 9/GR20
USAEH003	–110.20	25	–95.23	36.29	8.27	3.37	168	1	87.4	1 6 9/GR21
USAEH004	–119.20	25	–96.45	36.21	8.20	3.12	165	1	87.4	1 5 6
USAPSA02	–166.20	25	–109.94	36.86	6.04	1.11	137	1	87.4	9/GR1
USAPSA03	–175.20	25	–116.23	37.50	5.60	0.75	132	1	87.4	9/GR2
USAWH101	–148.20	25	–111.02	40.68	4.36	2.15	162	1	87.4	
USAWH102	–157.20	25	–113.07	40.74	3.72	1.78	149	1	87.4	
VENAND03	–115.20	25	–71.37	–4.69	6.49	2.57	87	1	87.4	9/GR5

ALS00002	−165.80	26	−109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
ALS00003	−174.80	26	−116.10	37.47	5.60	0.76	132	2	87.4	9/GR2
ARGNORT4	−93.80	26	−63.96	−30.01	3.86	1.99	48	2	87.4	
ARGNORT5	−54.80	26	−62.85	−29.80	3.24	2.89	47	2	87.4	
ATNBEAM1	−52.80	26	−66.44	14.87	1.83	0.68	39	2	87.4	
B CE311	−63.80	26	−40.60	−6.07	3.04	2.06	174	2	87.4	8 9/GR7
B CE312	−44.80	26	−40.26	−6.06	3.44	2.09	174	2	87.4	8 9/GR9
B CE411	−63.80	26	−50.97	−15.26	3.86	1.38	49	2	87.4	8 9/GR7
B CE412	−44.80	26	−50.71	−15.30	3.57	1.56	52	2	87.4	8 9/GR9
B CE511	−63.80	26	−53.11	−2.98	2.42	2.15	107	2	87.4	8 9/GR7
B NO611	−73.80	26	−59.60	−11.62	2.86	1.69	165	1	87.4	8 9/GR8
B NO711	−73.80	26	−60.70	−1.78	3.54	1.78	126	1	87.4	8 9/GR8
B NO811	−73.80	26	−68.75	−4.71	2.37	1.65	73	1	87.4	8 9/GR8
B SE911	−101.80	26	−45.99	−19.09	2.22	0.79	62	2	87.4	8
B SU111	−80.80	26	−51.10	−25.64	2.76	1.06	50	2	87.4	8 9/GR6
B SU112	−44.80	26	−50.76	−25.62	2.47	1.48	56	2	87.4	8 9/GR9
B SU211	−80.80	26	−44.51	−16.94	3.22	1.37	60	2	87.4	8 9/GR6
B SU212	−44.80	26	−43.99	−16.97	3.27	1.92	59	2	87.4	8 9/GR9
B LZ00001	−115.80	26	−88.68	17.27	0.62	0.62	90	2	87.4	
CAN01101	−137.80	26	−125.60	57.24	3.45	1.27	157	2	87.4	9/GR10
CAN01201	−137.80	26	−111.92	55.89	3.33	0.98	151	2	87.4	9/GR10
CAN01202	−72.30	26	−107.64	55.62	2.75	1.11	32	2	87.4	
CAN01203	−128.80	26	−111.43	55.56	3.07	1.15	151	2	87.4	9/GR12
CAN01303	−128.80	26	−102.39	57.12	3.54	0.92	154	2	87.4	9/GR12

17688,50 MHz (26)

1	2	3	4		5		6	7	8	9
CAN01304	–90.80	26	–99.00	57.33	1.96	1.73	1	2	87.4	9/GR13
CAN01403	–128.80	26	–89.70	52.02	4.67	0.79	148	2	87.4	9/GR12
CAN01404	–90.80	26	–84.78	52.41	3.09	2.06	153	2	87.4	9/GR13
CAN01405	–81.80	26	–84.02	52.34	2.82	2.30	172	2	87.4	9/GR14
CAN01504	–90.80	26	–72.68	53.78	3.57	1.67	157	2	87.4	9/GR13
CAN01505	–81.80	26	–71.76	53.76	3.30	1.89	162	2	87.4	9/GR14
CAN01605	–81.80	26	–61.54	49.50	2.66	1.39	144	2	87.4	9/GR14
CAN01606	–70.30	26	–61.32	49.51	2.41	1.65	148	2	87.4	
CHLCONT4	–105.80	26	–69.59	–23.20	2.21	0.69	68	2	87.4	9/GR16
CHLCONT6	–105.80	26	–73.52	–55.52	3.65	1.31	39	2	87.4	9/GR16
CRBBAH01	–92.30	26	–76.09	24.13	1.83	0.68	141	1	87.4	9/GR18
CRBBER01	–92.30	26	–64.76	32.13	0.60	0.60	90	1	87.4	9/GR18
CRBBLZ01	–92.30	26	–88.61	17.26	0.64	0.64	90	1	87.4	9/GR18
CRBEC001	–92.30	26	–60.07	8.26	4.20	0.86	115	1	87.4	9/GR18
CRBJMC01	–92.30	26	–79.45	17.97	0.99	0.68	151	1	87.4	9/GR18
CTR00201	–130.80	26	–84.33	9.67	0.82	0.68	119	2	87.4	
DMAIFRB1	–79.30	26	–61.30	15.35	0.60	0.60	90	2	87.4	
EQAC0001	–94.80	26	–78.31	–1.52	1.48	1.15	65	1	87.4	9/GR19
EQAG0001	–94.80	26	–90.36	–0.57	0.94	0.89	99	1	87.4	9/GR19
HWA00002	–165.80	26	–165.79	23.32	4.20	0.68	160	2	87.4	9/GR1
HWA00003	–174.80	26	–166.10	23.42	4.25	0.68	159	2	87.4	9/GR2
MEX01NTE	–77.80	26	–105.80	25.99	2.88	2.07	155	2	87.4	1
MEX02NTE	–135.80	26	–107.36	26.32	3.80	1.57	149	2	87.4	1
MEX02SUR	–126.80	26	–96.39	19.88	3.19	1.87	158	2	87.4	1

NCG00003	−107.30	26	−84.99	12.90	1.05	1.01	176	1	87.4	
PRU00004	−85.80	26	−74.19	−8.39	3.74	2.45	112	2	87.4	
PTRVIR01	−100.80	26	−93.85	36.31	8.26	3.55	171	2	87.4	1 6 9/GR20
PTRVIR02	−109.80	26	−95.47	36.38	8.10	3.45	168	2	87.4	1 6 9/GR21
USAEH001	−61.30	26	−87.53	36.18	6.41	3.49	12	2	87.4	1 5 6
USAEH002	−100.80	26	−93.85	36.31	8.26	3.55	171	2	87.4	1 6 9/GR20
USAEH003	−109.80	26	−95.47	36.38	8.10	3.45	168	2	87.4	1 6 9/GR21
USAEH004	−118.80	26	−96.42	36.21	8.20	3.12	165	2	87.4	1 5 6
USAPSA02	−165.80	26	−109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
USAPSA03	−174.80	26	−116.10	37.47	5.60	0.76	132	2	87.4	9/GR2
USAWH101	−147.80	26	−111.01	40.67	4.38	2.15	162	2	87.4	
USAWH102	−156.80	26	−113.01	40.71	3.74	1.79	149	2	87.4	
VEN11VEN	−103.80	26	−66.79	6.90	2.50	1.77	122	2	87.4	

17703,08 MHz (27)

1	2	3	4		5		6	7	8	9
ALS00002	–166.20	27	–109.94	36.86	6.04	1.11	137	1	87.4	9/GR1
ALS00003	–175.20	27	–116.23	37.50	5.60	0.75	132	1	87.4	9/GR2
ARGINSU4	–94.20	27	–52.98	–59.81	3.40	0.68	19	1	87.4	9/GR3
ARGINSU5	–55.20	27	–44.17	–59.91	3.77	0.70	13	1	87.4	9/GR4
ARGSUR04	–94.20	27	–65.04	–43.33	3.32	1.50	40	1	87.4	9/GR3
ARGSUR05	–55.20	27	–63.68	–43.01	2.54	2.38	152	1	87.4	9/GR4
B CE311	–64.20	27	–40.60	–6.07	3.04	2.06	174	1	87.4	8 9/GR7
B CE312	–45.20	27	–40.27	–6.06	3.44	2.09	174	1	87.4	8 9/GR9
B CE411	–64.20	27	–50.97	–15.27	3.86	1.38	49	1	87.4	8 9/GR7
B CE412	–45.20	27	–50.71	–15.30	3.57	1.56	52	1	87.4	8 9/GR9
B CE511	–64.20	27	–53.10	–2.90	2.44	2.13	104	1	87.4	8 9/GR7
B NO611	–74.20	27	–59.60	–11.62	2.85	1.69	165	2	87.4	8 9/GR8
B NO711	–74.20	27	–60.70	–1.78	3.54	1.78	126	2	87.4	8 9/GR8
B NO811	–74.20	27	–68.76	–4.71	2.37	1.65	73	2	87.4	8 9/GR8
B SU111	–81.20	27	–51.12	–25.63	2.76	1.05	50	1	87.4	8 9/GR6
B SU112	–45.20	27	–50.75	–25.62	2.47	1.48	56	1	87.4	8 9/GR9
B SU211	–81.20	27	–44.51	–16.95	3.22	1.36	60	1	87.4	8 9/GR6
B SU212	–45.20	27	–44.00	–16.87	3.20	1.96	58	1	87.4	8 9/GR9
BERBERMU	–96.20	27	–64.77	32.32	0.60	0.60	90	2	87.4	
B OLAND01	–115.20	27	–71.37	–4.69	6.49	2.57	87	1	87.4	9/GR5
B OL00001	–87.20	27	–64.61	–16.71	2.52	2.19	85	1	87.4	
B RB00001	–92.70	27	–59.85	12.93	0.60	0.60	90	2	87.4	
CAN01101	–138.20	27	–125.63	57.24	3.45	1.27	157	1	87.4	9/GR10
CAN01201	–138.20	27	–112.04	55.95	3.35	0.97	151	1	87.4	9/GR10

CAN01202	−72.70	27	−107.70	55.63	2.74	1.12	32	1	87.4	
CAN01203	−129.20	27	−111.48	55.61	3.08	1.15	151	1	87.4	9/GR12
CAN01303	−129.20	27	−102.42	57.12	3.54	0.91	154	1	87.4	9/GR12
CAN01304	−91.20	27	−99.12	57.36	1.98	1.72	2	1	87.4	9/GR13
CAN01403	−129.20	27	−89.75	52.02	4.68	0.78	148	1	87.4	9/GR12
CAN01404	−91.20	27	−84.82	52.42	3.10	2.05	152	1	87.4	9/GR13
CAN01405	−82.20	27	−84.00	52.39	2.84	2.29	172	1	87.4	9/GR14
CAN01504	−91.20	27	−72.66	53.77	3.57	1.67	156	1	87.4	9/GR13
CAN01505	−82.20	27	−71.77	53.79	3.30	1.89	162	1	87.4	9/GR14
CAN01605	−82.20	27	−61.50	49.55	2.65	1.40	143	1	87.4	9/GR14
CAN01606	−70.70	27	−61.30	49.55	2.40	1.65	148	1	87.4	
CHLCONT5	−106.20	27	−72.23	−35.57	2.60	0.68	55	1	87.4	9/GR17
CHLPAC02	−106.20	27	−80.06	−30.06	1.36	0.68	69	1	87.4	9/GR17
CLMAND01	−115.20	27	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
CLM00001	−103.20	27	−74.50	5.87	3.98	1.96	118	1	87.4	
CUB00001	−89.20	27	−79.81	21.62	2.24	0.68	168	1	87.4	
EQACAND1	−115.20	27	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
EQAGAND1	−115.20	27	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
GRD00059	−57.20	27	−61.58	12.29	0.60	0.60	90	1	87.4	
GRLDNK01	−53.20	27	−44.89	66.56	2.70	0.82	173	1	87.4	2
GUY00201	−84.70	27	−59.19	4.78	1.44	0.85	95	1	87.4	
HWA00002	−166.20	27	−165.79	23.42	4.20	0.68	160	1	87.4	9/GR1
HWA00003	−175.20	27	−166.10	23.42	4.25	0.68	159	1	87.4	9/GR2
MEX01NTE	−78.20	27	−105.81	26.01	2.89	2.08	155	1	87.4	1

17703,08 MHz (27)

1	2	3	4		5		6	7	8	9
MEX01SUR	–69.20	27	–94.84	19.82	3.05	2.09	4	1	87.4	1
MEX02NTE	–136.20	27	–107.21	26.31	3.84	1.55	148	1	87.4	1
MEX02SUR	–127.20	27	–96.39	19.88	3.18	1.87	157	1	87.4	1
MSR00001	–79.70	27	–61.73	16.75	0.60	0.60	90	1	87.4	4
PAQPAC01	–106.20	27	–109.18	–27.53	0.60	0.60	90	1	87.4	9/GR17
PRG00002	–99.20	27	–58.66	–23.32	1.45	1.04	76	1	87.4	
PRUAND02	–115.20	27	–71.37	–4.69	6.49	2.57	87	1	87.4	9/GR5
PTRVIR01	–101.20	27	–93.94	36.32	8.24	3.56	171	1	87.4	1 6 9/GR20
PTRVIR02	–110.20	27	–95.23	36.29	8.27	3.37	168	1	87.4	1 6 9/GR21
URG00001	–71.70	27	–56.22	–32.52	1.02	0.89	11	1	87.4	
USAEH001	–61.70	27	–87.57	36.17	6.42	3.49	12	1	87.4	1 5 6
USAEH002	–101.20	27	–93.94	36.32	8.24	3.56	171	1	87.4	1 6 9/GR20
USAEH003	–110.20	27	–95.23	36.29	8.27	3.37	168	1	87.4	1 6 9/GR21
USAEH004	–119.20	27	–96.45	36.21	8.20	3.12	165	1	87.4	1 5 6
USAPSA02	–166.20	27	–109.94	36.86	6.04	1.11	137	1	87.4	9/GR1
USAPSA03	–175.20	27	–116.23	37.50	5.60	0.75	132	1	87.4	9/GR2
USAWH101	–148.20	27	–111.02	40.68	4.36	2.15	162	1	87.4	
USAWH102	–157.20	27	–113.07	40.74	3.72	1.78	149	1	87.4	
VENAND03	–115.20	27	–71.37	–4.69	6.49	2.57	87	1	87.4	9/GR5

ALS00002	−165.80	28	−109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
ALS00003	−174.80	28	−116.10	37.47	5.60	0.76	132	2	87.4	9/GR2
ARGNORT4	−93.80	28	−63.96	−30.01	3.86	1.99	48	2	87.4	
ARGNORT5	−54.80	28	−62.85	−29.80	3.24	2.89	47	2	87.4	
B CE311	−63.80	28	−40.60	−6.07	3.04	2.06	174	2	87.4	8 9/GR7
B CE312	−44.80	28	−40.26	−6.06	3.44	2.09	174	2	87.4	8 9/GR9
B CE411	−63.80	28	−50.97	−15.26	3.86	1.38	49	2	87.4	8 9/GR7
B CE412	−44.80	28	−50.71	−15.30	3.57	1.56	52	2	87.4	8 9/GR9
B CE511	−63.80	28	−53.11	−2.98	2.42	2.15	107	2	87.4	8 9/GR7
B NO611	−73.80	28	−59.60	−11.62	2.86	1.69	165	1	87.4	8 9/GR8
B NO711	−73.80	28	−60.70	−1.78	3.54	1.78	126	1	87.4	8 9/GR8
B NO811	−73.80	28	−68.75	−4.71	2.37	1.65	73	1	87.4	8 9/GR8
B SE911	−101.80	28	−45.99	−19.09	2.22	0.79	62	2	87.4	8
B SU111	−80.80	28	−51.10	−25.64	2.76	1.06	50	2	87.4	8 9/GR6
B SU112	−44.80	28	−50.76	−25.62	2.47	1.48	56	2	87.4	8 9/GR9
B SU211	−80.80	28	−44.51	−16.94	3.22	1.37	60	2	87.4	8 9/GR6
B SU212	−44.80	28	−43.99	−16.97	3.27	1.92	59	2	87.4	8 9/GR9
CAN01101	−137.80	28	−125.60	57.24	3.45	1.27	157	2	87.4	9/GR10
CAN01201	−137.80	28	−111.92	55.89	3.33	0.98	151	2	87.4	9/GR10
CAN01202	−72.30	28	−107.64	55.62	2.75	1.11	32	2	87.4	
CAN01203	−128.80	28	−111.43	55.56	3.07	1.15	151	2	87.4	9/GR12
CAN01303	−128.80	28	−102.39	57.12	3.54	0.92	154	2	87.4	9/GR12
CAN01304	−90.80	28	−99.00	57.33	1.96	1.73	1	2	87.4	9/GR13
CAN01403	−128.80	28	−89.70	52.02	4.67	0.79	148	2	87.4	9/GR12

17717,66 MHz (28)

1	2	3	4		5		6	7	8	9
CAN01404	–90.80	28	–84.78	52.41	3.09	2.06	153	2	87.4	9/GR13
CAN01405	–81.80	28	–84.02	52.34	2.82	2.30	172	2	87.4	9/GR14
CAN01504	–90.80	28	–72.68	53.78	3.57	1.67	157	2	87.4	9/GR13
CAN01505	–81.80	28	–71.76	53.76	3.30	1.89	162	2	87.4	9/GR14
CAN01605	–81.80	28	–61.54	49.50	2.66	1.39	144	2	87.4	9/GR14
CAN01606	–70.30	28	–61.32	49.51	2.41	1.65	148	2	87.4	
CHLCONT4	–105.80	28	–69.59	–23.20	2.21	0.69	68	2	87.4	9/GR16
CHLCONT6	–105.80	28	–73.52	–55.52	3.65	1.31	39	2	87.4	9/GR16
CRBBAH01	–92.30	28	–76.09	24.13	1.83	0.68	141	1	87.4	9/GR18
CRBBER01	–92.30	28	–64.76	32.13	0.60	0.60	90	1	87.4	9/GR18
CRBBLZ01	–92.30	28	–88.61	17.26	0.64	0.64	90	1	87.4	9/GR18
CRBEC001	–92.30	28	–60.07	8.26	4.20	0.86	115	1	87.4	9/GR18
CRBJMC01	–92.30	28	–79.45	17.97	0.99	0.68	151	1	87.4	9/GR18
EQAC0001	–94.80	28	–78.31	–1.52	1.48	1.15	65	1	87.4	9/GR19
EQAG0001	–94.80	28	–90.36	–0.57	0.94	0.89	99	1	87.4	9/GR19
GRD00003	–79.30	28	–61.62	12.34	0.60	0.60	90	2	87.4	
GTMIFRB2	–107.30	28	–90.50	15.64	1.03	0.74	84	1	87.4	
GUFMGG02	–52.80	28	–56.42	8.47	4.16	0.81	123	2	87.4	2 7
HWA00002	–165.80	28	–165.79	23.32	4.20	0.68	160	2	87.4	9/GR1
HWA00003	–174.80	28	–166.10	23.42	4.25	0.68	159	2	87.4	9/GR2
MEX01NTE	–77.80	28	–105.80	25.99	2.88	2.07	155	2	87.4	1
MEX02NTE	–135.80	28	–107.36	26.32	3.80	1.57	149	2	87.4	1
MEX02SUR	–126.80	28	–96.39	19.88	3.19	1.87	158	2	87.4	1
PNRIFRB2	–121.00	28	–80.15	8.46	1.01	0.73	170	1	87.4	

PRU00004	−85.80	28	−74.19	−8.39	3.74	2.45	112	2	87.4	
PTRVIR01	−100.80	28	−93.85	36.31	8.26	3.55	171	2	87.4	1 6 9/GR20
PTRVIR02	−109.80	28	−95.47	36.38	8.10	3.45	168	2	87.4	1 6 9/GR21
USAEH001	−61.30	28	−87.53	36.18	6.41	3.49	12	2	87.4	1 5 6
USAEH002	−100.80	28	−93.85	36.31	8.26	3.55	171	2	87.4	1 6 9/GR20
USAEH003	−109.80	28	−95.47	36.38	8.10	3.45	168	2	87.4	1 6 9/GR21
USAEH004	−118.80	28	−96.42	36.21	8.20	3.12	165	2	87.4	1 5 6
USAPSA02	−165.80	28	−109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
USAPSA03	−174.80	28	−116.10	37.47	5.60	0.76	132	2	87.4	9/GR2
USAWH101	−147.80	28	−111.01	40.67	4.38	2.15	162	2	87.4	
USAWH102	−156.80	28	−113.01	40.71	3.74	1.79	149	2	87.4	
VEN02VEN	−103.80	28	−66.79	6.90	2.50	1.77	122	2	87.4	9/GR22
VEN11VEN	−103.80	28	−66.79	6.90	2.50	1.77	122	2	87.4	9/GR22

17732,24 MHz (29)

1	2	3	4		5		6	7	8	9
ALS00002	–166.20	29	–109.94	36.86	6.04	1.11	137	1	87.4	9/GR1
ALS00003	–175.20	29	–116.23	37.50	5.60	0.75	132	1	87.4	9/GR2
ARGINSU4	–94.20	29	–52.98	–59.81	3.40	0.68	19	1	87.4	9/GR3
ARGINSU5	–55.20	29	–44.17	–59.91	3.77	0.70	13	1	87.4	9/GR4
ARGSUR04	–94.20	29	–65.04	–43.33	3.32	1.50	40	1	87.4	9/GR3
ARGSUR05	–55.20	29	–63.68	–43.01	2.54	2.38	152	1	87.4	9/GR4
B CE311	–64.20	29	–40.60	–6.07	3.04	2.06	174	1	87.4	8 9/GR7
B CE312	–45.20	29	–40.27	–6.06	3.44	2.09	174	1	87.4	8 9/GR9
B CE411	–64.20	29	–50.97	–15.27	3.86	1.38	49	1	87.4	8 9/GR7
B CE412	–45.20	29	–50.71	–15.30	3.57	1.56	52	1	87.4	8 9/GR9
B CE511	–64.20	29	–53.10	–2.90	2.44	2.13	104	1	87.4	8 9/GR7
B NO611	–74.20	29	–59.60	–11.62	2.85	1.69	165	2	87.4	8 9/GR8
B NO711	–74.20	29	–60.70	–1.78	3.54	1.78	126	2	87.4	8 9/GR8
B NO811	–74.20	29	–68.76	–4.71	2.37	1.65	73	2	87.4	8 9/GR8
B SU111	–81.20	29	–51.12	–25.63	2.76	1.05	50	1	87.4	8 9/GR6
B SU112	–45.20	29	–50.75	–25.62	2.47	1.48	56	1	87.4	8 9/GR9
B SU211	–81.20	29	–44.51	–16.95	3.22	1.36	60	1	87.4	8 9/GR6
B SU212	–45.20	29	–44.00	–16.87	3.20	1.96	58	1	87.4	8 9/GR9
BERBERMU	–96.20	29	–64.77	32.32	0.60	0.60	90	2	87.4	
B OLAND01	–115.20	29	–71.37	–4.69	6.49	2.57	87	1	87.4	9/GR5
CAN01101	–138.20	29	–125.63	57.24	3.45	1.27	157	1	87.4	9/GR10
CAN01201	–138.20	29	–112.04	55.95	3.35	0.97	151	1	87.4	9/GR10
CAN01202	–72.70	29	–107.70	55.63	2.74	1.12	32	1	87.4	
CAN01203	–129.20	29	–111.48	55.61	3.08	1.15	151	1	87.4	9/GR12

CAN01303	−129.20	29	−102.42	57.12	3.54	0.91	154	1	87.4	9/GR12
CAN01304	−91.20	29	−99.12	57.36	1.98	1.72	2	1	87.4	9/GR13
CAN01403	−129.20	29	−89.75	52.02	4.68	0.78	148	1	87.4	9/GR12
CAN01404	−91.20	29	−84.82	52.42	3.10	2.05	152	1	87.4	9/GR13
CAN01405	−82.20	29	−84.00	52.39	2.84	2.29	172	1	87.4	9/GR14
CAN01504	−91.20	29	−72.66	53.77	3.57	1.67	156	1	87.4	9/GR13
CAN01505	−82.20	29	−71.77	53.79	3.30	1.89	162	1	87.4	9/GR14
CAN01605	−82.20	29	−61.50	49.55	2.65	1.40	143	1	87.4	9/GR14
CAN01606	−70.70	29	−61.30	49.55	2.40	1.65	148	1	87.4	
CHLCONT5	−106.20	29	−72.23	−35.57	2.60	0.68	55	1	87.4	9/GR17
CHLPAC02	−106.20	29	−80.06	−30.06	1.36	0.68	69	1	87.4	9/GR17
CLMAND01	−115.20	29	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
CLM00001	−103.20	29	−74.50	5.87	3.98	1.96	118	1	87.4	
EQACAND1	−115.20	29	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
EQAGAND1	−115.20	29	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
HWA00002	−166.20	29	−165.79	23.42	4.20	0.68	160	1	87.4	9/GR1
HWA00003	−175.20	29	−166.10	23.42	4.25	0.68	159	1	87.4	9/GR2
JMC00002	−92.70	29	−77.30	18.12	0.62	0.62	90	2	87.4	
MEX01NTE	−78.20	29	−105.81	26.01	2.89	2.08	155	1	87.4	1
MEX01SUR	−69.20	29	−94.84	19.82	3.05	2.09	4	1	87.4	1
MEX02NTE	−136.20	29	−107.21	26.31	3.84	1.55	148	1	87.4	1
MEX02SUR	−127.20	29	−96.39	19.88	3.18	1.87	157	1	87.4	1
PAQPAC01	−106.20	29	−109.18	−27.53	0.60	0.60	90	1	87.4	9/GR17
PRG00002	−99.20	29	−58.66	−23.32	1.45	1.04	76	1	87.4	

17732,24 MHz (29)

1	2	3	4		5		6	7	8	9
PRUAND02	–115.20	29	–71.37	–4.69	6.49	2.57	87	1	87.4	9/GR5
PTRVIR01	–101.20	29	–93.94	36.32	8.24	3.56	171	1	87.4	1 6 9/GR20
PTRVIR02	–110.20	29	–95.23	36.29	8.27	3.37	168	1	87.4	1 6 9/GR21
SCN00001	–79.70	29	–62.46	17.44	0.60	0.60	90	1	87.4	
SPMFRAN3	–53.20	29	–67.24	47.51	3.16	0.79	7	1	87.4	2 7
SURINAM2	–84.70	29	–55.69	4.35	1.00	0.69	86	1	87.4	
URG00001	–71.70	29	–56.22	–32.52	1.02	0.89	11	1	87.4	
USAEH001	–61.70	29	–87.57	36.17	6.42	3.49	12	1	87.4	1 5 6
USAEH002	–101.20	29	–93.94	36.32	8.24	3.56	171	1	87.4	1 6 9/GR20
USAEH003	–110.20	29	–95.23	36.29	8.27	3.37	168	1	87.4	1 6 9/GR21
USAEH004	–119.20	29	–96.45	36.21	8.20	3.12	165	1	87.4	1 5 6
USAPSA02	–166.20	29	–109.94	36.86	6.04	1.11	137	1	87.4	9/GR1
USAPSA03	–175.20	29	–116.23	37.50	5.60	0.75	132	1	87.4	9/GR2
USAWH101	–148.20	29	–111.02	40.68	4.36	2.15	162	1	87.4	
USAWH102	–157.20	29	–113.07	40.74	3.72	1.78	149	1	87.4	
VENAND03	–115.20	29	–71.37	–4.69	6.49	2.57	87	1	87.4	9/GR5

ALS00002	−165.80	30	−109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
ALS00003	−174.80	30	−116.10	37.47	5.60	0.76	132	2	87.4	9/GR2
ARGNORT4	−93.80	30	−63.96	−30.01	3.86	1.99	48	2	87.4	
ARGNORT5	−54.80	30	−62.85	−29.80	3.24	2.89	47	2	87.4	
ATNBEAM1	−52.80	30	−66.44	14.87	1.83	0.68	39	2	87.4	
B CE311	−63.80	30	−40.60	−6.07	3.04	2.06	174	2	87.4	8 9/GR7
B CE312	−44.80	30	−40.26	−6.06	3.44	2.09	174	2	87.4	8 9/GR9
B CE411	−63.80	30	−50.97	−15.26	3.86	1.38	49	2	87.4	8 9/GR7
B CE412	−44.80	30	−50.71	−15.30	3.57	1.56	52	2	87.4	8 9/GR9
B CE511	−63.80	30	−53.11	−2.98	2.42	2.15	107	2	87.4	8 9/GR7
B NO611	−73.80	30	−59.60	−11.62	2.86	1.69	165	1	87.4	8 9/GR8
B NO711	−73.80	30	−60.70	−1.78	3.54	1.78	126	1	87.4	8 9/GR8
B NO811	−73.80	30	−68.75	−4.71	2.37	1.65	73	1	87.4	8 9/GR8
B SE911	−101.80	30	−45.99	−19.09	2.22	0.79	62	2	87.4	8
B SU111	−80.80	30	−51.10	−25.64	2.76	1.06	50	2	87.4	8 9/GR6
B SU112	−44.80	30	−50.76	−25.62	2.47	1.48	56	2	87.4	8 9/GR9
B SU211	−80.80	30	−44.51	−16.94	3.22	1.37	60	2	87.4	8 9/GR6
B SU212	−44.80	30	−43.99	−16.97	3.27	1.92	59	2	87.4	8 9/GR9
B LZ00001	−115.80	30	−88.68	17.27	0.62	0.62	90	2	87.4	
CAN01101	−137.80	30	−125.60	57.24	3.45	1.27	157	2	87.4	9/GR10
CAN01201	−137.80	30	−111.92	55.89	3.33	0.98	151	2	87.4	9/GR10
CAN01202	−72.30	30	−107.64	55.62	2.75	1.11	32	2	87.4	
CAN01203	−128.80	30	−111.43	55.56	3.07	1.15	151	2	87.4	9/GR12
CAN01303	−128.80	30	−102.39	57.12	3.54	0.92	154	2	87.4	9/GR12

17746,82 MHz (30)

1	2	3	4		5		6	7	8	9
CAN01304	– 90.80	30	– 99.00	57.33	1.96	1.73	1	2	87.4	9/GR13
CAN01403	– 128.80	30	– 89.70	52.02	4.67	0.79	148	2	87.4	9/GR12
CAN01404	– 90.80	30	– 84.78	52.41	3.09	2.06	153	2	87.4	9/GR13
CAN01405	– 81.80	30	– 84.02	52.34	2.82	2.30	172	2	87.4	9/GR14
CAN01504	– 90.80	30	– 72.68	53.78	3.57	1.67	157	2	87.4	9/GR13
CAN01505	– 81.80	30	– 71.76	53.76	3.30	1.89	162	2	87.4	9/GR14
CAN01605	– 81.80	30	– 61.54	49.50	2.66	1.39	144	2	87.4	9/GR14
CAN01606	– 70.30	30	– 61.32	49.51	2.41	1.65	148	2	87.4	
CHLCONT4	– 105.80	30	– 69.59	– 23.20	2.21	0.69	68	2	87.4	9/GR16
CHLCONT6	– 105.80	30	– 73.52	– 55.52	3.65	1.31	39	2	87.4	9/GR16
CRBBAH01	– 92.30	30	– 76.09	24.13	1.83	0.68	141	1	87.4	9/GR18
CRBBER01	– 92.30	30	– 64.76	32.13	0.60	0.60	90	1	87.4	9/GR18
CRBBLZ01	– 92.30	30	– 88.61	17.26	0.64	0.64	90	1	87.4	9/GR18
CRBEC001	– 92.30	30	– 60.07	8.26	4.20	0.86	115	1	87.4	9/GR18
CRBJMC01	– 92.30	30	– 79.45	17.97	0.99	0.68	151	1	87.4	9/GR18
CTR00201	– 130.80	30	– 84.33	9.67	0.82	0.68	119	2	87.4	
DMAIFRB1	– 79.30	30	– 61.30	15.35	0.60	0.60	90	2	87.4	
EQAC0001	– 94.80	30	– 78.31	– 1.52	1.48	1.15	65	1	87.4	9/GR19
EQAG0001	– 94.80	30	– 90.36	– 0.57	0.94	0.89	99	1	87.4	9/GR19
HWA00002	– 165.80	30	– 165.79	23.32	4.20	0.68	160	2	87.4	9/GR1
HWA00003	– 174.80	30	– 166.10	23.42	4.25	0.68	159	2	87.4	9/GR2
MEX01NTE	– 77.80	30	– 105.80	25.99	2.88	2.07	155	2	87.4	1
MEX02NTE	– 135.80	30	– 107.36	26.32	3.80	1.57	149	2	87.4	1
MEX02SUR	– 126.80	30	– 96.39	19.88	3.19	1.87	158	2	87.4	1

NCG00003	−107.30	30	−84.99	12.90	1.05	1.01	176	1	87.4	
PRU00004	−85.80	30	−74.19	−8.39	3.74	2.45	112	2	87.4	
PTRVIR01	−100.80	30	−93.85	36.31	8.26	3.55	171	2	87.4	1 6 9/GR20
PTRVIR02	−109.80	30	−95.47	36.38	8.10	3.45	168	2	87.4	1 6 9/GR21
USAEH001	−61.30	30	−87.53	36.18	6.41	3.49	12	2	87.4	1 5 6
USAEH002	−100.80	30	−93.85	36.31	8.26	3.55	171	2	87.4	1 6 9/GR20
USAEH003	−109.80	30	−95.47	36.38	8.10	3.45	168	2	87.4	1 6 9/GR21
USAEH004	−118.80	30	−96.42	36.21	8.20	3.12	165	2	87.4	1 5 6
USAPSA02	−165.80	30	−109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
USAPSA03	−174.80	30	−116.10	37.47	5.60	0.76	132	2	87.4	9/GR2
USAWH101	−147.80	30	−111.01	40.67	4.38	2.15	162	2	87.4	
USAWH102	−156.80	30	−113.01	40.71	3.74	1.79	149	2	87.4	
VEN11VEN	−103.80	30	−66.79	6.90	2.50	1.77	122	2	87.4	

17761,40 MHz (31)

1	2	3	4		5		6	7	8	9
ALS00002	–166.20	31	–109.94	36.86	6.04	1.11	137	1	87.4	9/GR1
ALS00003	–175.20	31	–116.23	37.50	5.60	0.75	132	1	87.4	9/GR2
ARGINSU4	–94.20	31	–52.98	–59.81	3.40	0.68	19	1	87.4	9/GR3
ARGINSU5	–55.20	31	–44.17	–59.91	3.77	0.70	13	1	87.4	9/GR4
ARGSUR04	–94.20	31	–65.04	–43.33	3.32	1.50	40	1	87.4	9/GR3
ARGSUR05	–55.20	31	–63.68	–43.01	2.54	2.38	152	1	87.4	9/GR4
B CE311	–64.20	31	–40.60	–6.07	3.04	2.06	174	1	87.4	8 9/GR7
B CE312	–45.20	31	–40.27	–6.06	3.44	2.09	174	1	87.4	8 9/GR9
B CE411	–64.20	31	–50.97	–15.27	3.86	1.38	49	1	87.4	8 9/GR7
B CE412	–45.20	31	–50.71	–15.30	3.57	1.56	52	1	87.4	8 9/GR9
B CE511	–64.20	31	–53.10	–2.90	2.44	2.13	104	1	87.4	8 9/GR7
B NO611	–74.20	31	–59.60	–11.62	2.85	1.69	165	2	87.4	8 9/GR8
B NO711	–74.20	31	–60.70	–1.78	3.54	1.78	126	2	87.4	8 9/GR8
B NO811	–74.20	31	–68.76	–4.71	2.37	1.65	73	2	87.4	8 9/GR8
B SU111	–81.20	31	–51.12	–25.63	2.76	1.05	50	1	87.4	8 9/GR6
B SU112	–45.20	31	–50.75	–25.62	2.47	1.48	56	1	87.4	8 9/GR9
B SU211	–81.20	31	–44.51	–16.95	3.22	1.36	60	1	87.4	8 9/GR6
B SU212	–45.20	31	–44.00	–16.87	3.20	1.96	58	1	87.4	8 9/GR9
BERBERMU	–96.20	31	–64.77	32.32	0.60	0.60	90	2	87.4	
B OLAND01	–115.20	31	–71.37	–4.69	6.49	2.57	87	1	87.4	9/GR5
B OL00001	–87.20	31	–64.61	–16.71	2.52	2.19	85	1	87.4	
B RB00001	–92.70	31	–59.85	12.93	0.60	0.60	90	2	87.4	
CAN01101	–138.20	31	–125.63	57.24	3.45	1.27	157	1	87.4	9/GR10
CAN01201	–138.20	31	–112.04	55.95	3.35	0.97	151	1	87.4	9/GR10

CAN01202	−72.70	31	−107.70	55.63	2.74	1.12	32	1	87.4	
CAN01203	−129.20	31	−111.48	55.61	3.08	1.15	151	1	87.4	9/GR12
CAN01303	−129.20	31	−102.42	57.12	3.54	0.91	154	1	87.4	9/GR12
CAN01304	−91.20	31	−99.12	57.36	1.98	1.72	2	1	87.4	9/GR13
CAN01403	−129.20	31	−89.75	52.02	4.68	0.78	148	1	87.4	9/GR12
CAN01404	−91.20	31	−84.82	52.42	3.10	2.05	152	1	87.4	9/GR13
CAN01405	−82.20	31	−84.00	52.39	2.84	2.29	172	1	87.4	9/GR14
CAN01504	−91.20	31	−72.66	53.77	3.57	1.67	156	1	87.4	9/GR13
CAN01505	−82.20	31	−71.77	53.79	3.30	1.89	162	1	87.4	9/GR14
CAN01605	−82.20	31	−61.50	49.55	2.65	1.40	143	1	87.4	9/GR14
CAN01606	−70.70	31	−61.30	49.55	2.40	1.65	148	1	87.4	
CHLCONT5	−106.20	31	−72.23	−35.57	2.60	0.68	55	1	87.4	9/GR17
CHLPAC02	−106.20	31	−80.06	−30.06	1.36	0.68	69	1	87.4	9/GR17
CLMAND01	−115.20	31	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
CLM00001	−103.20	31	−74.50	5.87	3.98	1.96	118	1	87.4	
CUB00001	−89.20	31	−79.81	21.62	2.24	0.68	168	1	87.4	
EQACAND1	−115.20	31	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
EQAGAND1	−115.20	31	−71.37	−4.69	6.49	2.57	87	1	87.4	9/GR5
GRD00059	−57.20	31	−61.58	12.29	0.60	0.60	90	1	87.4	
GRLDNK01	−53.20	31	−44.89	66.56	2.70	0.82	173	1	87.4	2
GUY00201	−84.70	31	−59.19	4.78	1.44	0.85	95	1	87.4	
HWA00002	−166.20	31	−165.79	23.42	4.20	0.68	160	1	87.4	9/GR1
HWA00003	−175.20	31	−166.10	23.42	4.25	0.68	159	1	87.4	9/GR2
MEX01NTE	−78.20	31	−105.81	26.01	2.89	2.08	155	1	87.4	1

17761,40 MHz (31)

1	2	3	4		5		6	7	8	9
MEX01SUR	–69.20	31	–94.84	19.82	3.05	2.09	4	1	87.4	1
MEX02NTE	–136.20	31	–107.21	26.31	3.84	1.55	148	1	87.4	1
MEX02SUR	–127.20	31	–96.39	19.88	3.18	1.87	157	1	87.4	1
MSR00001	–79.70	31	–61.73	16.75	0.60	0.60	90	1	87.4	4
PAQPAC01	–106.20	31	–109.18	–27.53	0.60	0.60	90	1	87.4	9/GR17
PRG00002	–99.20	31	–58.66	–23.32	1.45	1.04	76	1	87.4	
PRUAND02	–115.20	31	–71.37	–4.69	6.49	2.57	87	1	87.4	9/GR5
PTRVIR01	–101.20	31	–93.94	36.32	8.24	3.56	171	1	87.4	1 6 9/GR20
PTRVIR02	–110.20	31	–95.23	36.29	8.27	3.37	168	1	87.4	1 6 9/GR21
URG00001	–71.70	31	–56.22	–32.52	1.02	0.89	11	1	87.4	
USAEH001	–61.70	31	–87.57	36.17	6.42	3.49	12	1	87.4	1 5 6
USAEH002	–101.20	31	–93.94	36.32	8.24	3.56	171	1	87.4	1 6 9/GR20
USAEH003	–110.20	31	–95.23	36.29	8.27	3.37	168	1	87.4	1 6 9/GR21
USAEH004	–119.20	31	–96.45	36.21	8.20	3.12	165	1	87.4	1 5 6
USAPSA02	–166.20	31	–109.94	36.86	6.04	1.11	137	1	87.4	9/GR1
USAPSA03	–175.20	31	–116.23	37.50	5.60	0.75	132	1	87.4	9/GR2
USAWH101	–148.20	31	–111.02	40.68	4.36	2.15	162	1	87.4	
USAWH102	–157.20	31	–113.07	40.74	3.72	1.78	149	1	87.4	
VENAND03	–115.20	31	–71.37	–4.69	6.49	2.57	87	1	87.4	9/GR5

ALS00002	−165.80	32	−109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
ALS00003	−174.80	32	−116.10	37.47	5.60	0.76	132	2	87.4	9/GR2
ARGNORT4	−93.80	32	−63.96	−30.01	3.86	1.99	48	2	87.4	
ARGNORT5	−54.80	32	−62.85	−29.80	3.24	2.89	47	2	87.4	
B CE311	−63.80	32	−40.60	−6.07	3.04	2.06	174	2	87.4	8 9/GR7
B CE312	−44.80	32	−40.26	−6.06	3.44	2.09	174	2	87.4	8 9/GR9
B CE411	−63.80	32	−50.97	−15.26	3.86	1.38	49	2	87.4	8 9/GR7
B CE412	−44.80	32	−50.71	−15.30	3.57	1.56	52	2	87.4	8 9/GR9
B CE511	−63.80	32	−53.11	−2.98	2.42	2.15	107	2	87.4	8 9/GR7
B NO611	−73.80	32	−59.60	−11.62	2.86	1.69	165	1	87.4	8 9/GR8
B NO711	−73.80	32	−60.70	−1.78	3.54	1.78	126	1	87.4	8 9/GR8
B NO811	−73.80	32	−68.75	−4.71	2.37	1.65	73	1	87.4	8 9/GR8
B SE911	−101.80	32	−45.99	−19.09	2.22	0.79	62	2	87.4	8
B SU111	−80.80	32	−51.10	−25.64	2.76	1.06	50	2	87.4	8 9/GR6
B SU112	−44.80	32	−50.76	−25.62	2.47	1.48	56	2	87.4	8 9/GR9
B SU211	−80.80	32	−44.51	−16.94	3.22	1.37	60	2	87.4	8 9/GR6
B SU212	−44.80	32	−43.99	−16.97	3.27	1.92	59	2	87.4	8 9/GR9
CAN01101	−137.80	32	−125.60	57.24	3.45	1.27	157	2	87.4	9/GR10
CAN01201	−137.80	32	−111.92	55.89	3.33	0.98	151	2	87.4	9/GR10
CAN01202	−72.30	32	−107.64	55.62	2.75	1.11	32	2	87.4	
CAN01203	−128.80	32	−111.43	55.56	3.07	1.15	151	2	87.4	9/GR12
CAN01303	−128.80	32	−102.39	57.12	3.54	0.92	154	2	87.4	9/GR12
CAN01304	−90.80	32	−99.00	57.33	1.96	1.73	1	2	87.4	9/GR13
CAN01403	−128.80	32	−89.70	52.02	4.67	0.79	148	2	87.4	9/GR12

17775,98 MHz (32)

1	2	3	4		5		6	7	8	9
CAN01404	–90.80	32	–84.78	52.41	3.09	2.06	153	2	87.4	9/GR13
CAN01405	–81.80	32	–84.02	52.34	2.82	2.30	172	2	87.4	9/GR14
CAN01504	–90.80	32	–72.68	53.78	3.57	1.67	157	2	87.4	9/GR13
CAN01505	–81.80	32	–71.76	53.76	3.30	1.89	162	2	87.4	9/GR14
CAN01605	–81.80	32	–61.54	49.50	2.66	1.39	144	2	87.4	9/GR14
CAN01606	–70.30	32	–61.32	49.51	2.41	1.65	148	2	87.4	
CHLCONT4	–105.80	32	–69.59	–23.20	2.21	0.69	68	2	87.4	9/GR16
CHLCONT6	–105.80	32	–73.52	–55.52	3.65	1.31	39	2	87.4	9/GR16
CRBBAH01	–92.30	32	–76.09	24.13	1.83	0.68	141	1	87.4	9/GR18
CRBBER01	–92.30	32	–64.76	32.13	0.60	0.60	90	1	87.4	9/GR18
CRBBLZ01	–92.30	32	–88.61	17.26	0.64	0.64	90	1	87.4	9/GR18
CRBEC001	–92.30	32	–60.07	8.26	4.20	0.86	115	1	87.4	9/GR18
CRBJMC01	–92.30	32	–79.45	17.97	0.99	0.68	151	1	87.4	9/GR18
EQAC0001	–94.80	32	–78.31	–1.52	1.48	1.15	65	1	87.4	9/GR19
EQAG0001	–94.80	32	–90.36	–0.57	0.94	0.89	99	1	87.4	9/GR19
GRD00003	–79.30	32	–61.62	12.34	0.60	0.60	90	2	87.4	
GTMIFRB2	–107.30	32	–90.50	15.64	1.03	0.74	84	1	87.4	
GUFMGG02	–52.80	32	–56.42	8.47	4.16	0.81	123	2	87.4	2 7
HWA00002	–165.80	32	–165.79	23.32	4.20	0.68	160	2	87.4	9/GR1
HWA00003	–174.80	32	–166.10	23.42	4.25	0.68	159	2	87.4	9/GR2
MEX01NTE	–77.80	32	–105.80	25.99	2.88	2.07	155	2	87.4	1
MEX02NTE	–135.80	32	–107.36	26.32	3.80	1.57	149	2	87.4	1
MEX02SUR	–126.80	32	–96.39	19.88	3.19	1.87	158	2	87.4	1
PNRIFRB2	–121.00	32	–80.15	8.46	1.01	0.73	170	1	87.4	

PRU00004	−85.80	32	−74.19	−8.39	3.74	2.45	112	2	87.4	
PTRVIR01	−100.80	32	−93.85	36.31	8.26	3.55	171	2	87.4	1 6 9/GR20
PTRVIR02	−109.80	32	−95.47	36.38	8.10	3.45	168	2	87.4	1 6 9/GR21
USAEH001	−61.30	32	−87.53	36.18	6.41	3.49	12	2	87.4	1 5 6
USAEH002	−100.80	32	−93.85	36.31	8.26	3.55	171	2	87.4	1 6 9/GR20
USAEH003	−109.80	32	−95.47	36.38	8.10	3.45	168	2	87.4	1 6 9/GR21
USAEH004	−118.80	32	−96.42	36.21	8.20	3.12	165	2	87.4	1 5 6
USAPSA02	−165.80	32	−109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
USAPSA03	−174.80	32	−116.10	37.47	5.60	0.76	132	2	87.4	9/GR2
USAWH101	−147.80	32	−111.01	40.67	4.38	2.15	162	2	87.4	
USAWH102	−156.80	32	−113.01	40.71	3.74	1.79	149	2	87.4	
VEN02VEN	−103.80	32	−66.79	6.90	2.50	1.77	122	2	87.4	9/GR22
VEN11VEN	−103.80	32	−66.79	6.90	2.50	1.77	122	2	87.4	9/GR22

ARTICLE 10

Interference

10.1 The Members of the Union in Region 2 shall endeavour to agree on the action required to reduce harmful interference which might be caused by the application of these provisions and the associated Plan.

ARTICLE 11

Period of Validity of the Provisions and Associated Plan

11.1 For Region 2, the provisions and associated Plan have been prepared in order to meet the requirements for feeder links for the broadcasting-satellite service in the bands concerned for a period extending until at least 1 January 1994.

11.2 In any event, the provisions and associated Plan shall remain in force until their revision by a competent administrative radio conference convened in accordance with the relevant provisions of the Convention in force.

ANNEX 1

Limits for Determining Whether a Service of an Administration Is Considered to Be Affected by a Proposed Modification to the Plan or When It Is Necessary Under This Appendix to Seek the Agreement of Any Other Administration [1]

1. *Limits applicable to protect a frequency assignment in the band 17.7 - 17.8 GHz to an earth station in the fixed-satellite service (space-to-Earth)*

An administration shall be considered as being affected if, upon application of the procedures of Section 3 of Annex 4 to this Appendix, that administration is included in the coordination area of the frequency assignment to a transmitting feeder-link earth station.

For this purpose, the parameters of the transmitting feeder-link earth station, as may be modified from those parameters given in Annex 3 to this Appendix, shall be used.

2. *Limits applicable to protect a terrestrial station in the band 17.7 - 17.8 GHz*

An administration shall be considered as being affected if, upon application of the procedures of Appendix **28** to the Radio Regulations, that administration is included in the coordination area of the frequency assignment to a transmitting feeder-link earth station.

For this purpose, the parameters of the transmitting feeder-link earth station, as may be modified from those parameters given in Annex 3 to this Appendix, shall be used.

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[1] Except for Section 3, the limits specified in this Annex relate to the power flux-densities which would be obtained assuming free space propagation conditions.

3. *Limits to the change in the overall equivalent protection margin with respect to frequency assignments in conformity with the Plan*[1]

With respect to the modification to the Plan and when it is necessary under this Appendix to seek the agreement of any other administration, except in cases covered by Resolution **42 (Orb-85)**, an administration shall be considered as being affected if the overall equivalent protection margin[2] corresponding to a test point of its entry in the Plan, including the cumulative effect of any previous modification to the Plan or any previous agreement, falls more than 0.25 dB below 0 dB, or, if already negative, more than 0.25 dB below the value resulting from:

- the Plan as established by the 1983 Conference; *or*
- a modification of the assignment in accordance with this Appendix; *or*
- a new entry in the Plan under Article 4 of this Appendix; *or*
- any agreement reached in accordance with this Appendix except for Resolution **42 (Orb-85)**.

[1] With respect to Section 3 the limit specified relates to the overall equivalent protection margin calculated in accordance with Section 2.5 of Annex 3 to this Appendix.

[2] For the definition of the overall equivalent protection margin, see Section 1.14 of Annex 5 to Appendix **30 (Orb-85)**.

ANNEX 2

Basic Characteristics to be Furnished in Notices[1] Relating to Feeder-Link Stations in the Fixed-Satellite Service Operating in the Frequency Band 17.3 - 17.8 GHz in Region 2[2]

1. The following information is required in notices relating to transmitting earth stations.

1.1 Country and beam identification.

1.2 Assigned frequency or channel number.

1.3 Assigned frequency band.

1.4 Date of bringing into use.

1.5 Identity of the transmitting feeder-link station.

1.6 Geographical coordinates of a feeder-link earth station transmitting in the band 17.7 - 17.8 GHz.

1.7 Feeder-link service area for a feeder-link earth station transmitting in the band 17.3 - 17.7 GHz identified by a set of geographical coordinates of the polygon points of the feeder-link service area.

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[1] The Board shall develop and keep up-to-date forms of notice to meet fully the statutory provisions of this Annex and related decisions of the 1983 Conference. The Board is further invited to consider the feasibility of a single notice for feeder-link earth stations operating within more than one feeder-link service area.

[2] Only those notices relating to frequency assignments for space stations and earth stations used for telecommand and tracking purposes associated with the Plan shall be furnished in accordance with Appendix **3**.

1.8 Identity of the space station with which communication is to be established.

1.9 Rain-climatic zone[1].

1.10 Class of emission, necessary bandwidth and description of transmission.

1.11 Power characteristics of the transmission:

a) The following information is required for each assigned frequency:

- transmit power (dBW) supplied to the input of the antenna;
- maximum power density per Hz (dB (W/Hz)), averaged over the worst 1 MHz band, supplied to the antenna.

b) Additional information required if power control is used (see Section 3.10 of Annex 3 to this Appendix):

- mode of control;
- range, expressed in dB, above the transmit power used in *a)* above.

c) Additional information required if site diversity is used (see Section 3.11 of Annex 3 to this Appendix):

- identity of other earth station with which diversity operation is to be employed.

d) Additional information required if depolarization compensation is used (see Section 3.12 of Annex 3 to this Appendix):

- characteristics.

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[1] This information as defined in Appendix **28** is required for frequency assignments in the band 17.7 - 17.8 GHz.

1.12 Transmitting antenna characteristics:

a) antenna diameter (metres);

b) gain of the antenna in the direction of maximum radiation referred to an isotropic radiator (dBi);

c) beamwidth in degrees between the half-power points (describe in detail if not symmetrical);

d) the measured radiation diagram of the antenna (taking as a reference the direction of maximum radiation), or the reference radiation diagram to be used for coordination;

e) type of polarization;

f) sense of polarization;

g) the horizon elevation angle in degrees and the antenna gain in the direction of the horizon for each azimuth[1] around the earth station[2];

h) altitude of the antenna above mean sea level in metres[2];

i) minimum elevation angle in degrees[2].

1.13 Modulation characteristics:

a) type of modulation;

b) pre-emphasis characteristics;

c) TV system;

d) sound-broadcasting characteristics;

e) frequency deviation;

f) composition of the baseband;

g) type of multiplexing of the video and sound signals;

h) energy dispersal characteristics.

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[1] Every five degrees, in tabular or graphical form.

[2] This information is required for frequency assignments in the band 17.7 - 17.8 GHz.

1.14 Regular hours of operation (UTC).

1.15 Coordination.

1.16 Agreements.

1.17 Other information.

1.18 Operating administration or company.

2. The following information is required in notices relating to receiving space stations:

2.1 Country and beam identification.

2.2 Orbital position (xxx.xx degrees from the Greenwich meridian).

2.3 Assigned frequency or channel number.

2.4 Assigned frequency band.

2.5 Date of bringing into use.

2.6 Identity of the space station.

2.7 Class of station.

2.8 Class of emission and necessary bandwidth of the transmission to be received.

2.9 Antenna characteristics:

a) gain of the antenna in the direction of maximum radiation referred to an isotropic radiator (dBi);

b) shape of the beam (circular, elliptical or other);

c) pointing accuracy;

d) type of polarization;

e) sense of polarization;

f) for circular beams, indicate the following:

- half-power beamwidth (degrees);
- co-polar and cross-polar radiation patterns;
- nominal intersection of the antenna beam axis with the Earth;

g) for elliptical beams, indicate the following:

- co-polar and cross-polar radiation patterns;
- rotation accuracy;
- orientation;
- major axis (degrees) at the half-power beamwidth;
- minor axis (degrees) at the half-power beamwidth;
- nominal intersection of the antenna beam axis with the Earth;

h) for beams of other than circular or elliptical shape, indicate the following:

- co-polar and cross-polar gain contours plotted on a map of the Earth's surface, preferably in a radial projection from the satellite onto a plane perpendicular to the axis from the centre of the Earth to the satellite. The isotropic or absolute gain shall be indicated at each contour which corresponds to a decrease in gain of 2, 4, 6, 10 and 20 dB and thereafter at 10 dB intervals down to a value of 0 dB relative to an isotropic radiator;

- wherever practicable, a numerical equation or table providing the necessary information to allow the gain contours to be plotted;

i) for an assignment in the band 17.7 - 17.8 GHz, the gain in the direction of those parts of the geostationary-satellite orbit which are not obstructed by the Earth. Use a diagram showing estimated gain versus orbit longitude.

2.10 Receiver system noise temperature referred to the output of the antenna.

2.11 Station-keeping accuracy.

2.12 Modulation characteristics:

a) type of modulation;

b) pre-emphasis characteristics;

c) TV system;

d) sound-broadcasting characteristics;

e) frequency deviation;

f) composition of the baseband;

g) type of multiplexing of the video and sound signals;

h) energy dispersal characteristics.

2.13 Regular hours of operation (UTC).

2.14 Coordination.

2.15 Agreements.

2.16 Other information.

2.17 Operating administration or company.

2.18 Range of automatic gain control[1].

ANNEX 3

Technical Data Used in Establishing the Provisions and Associated Plan and Which Should Be Used for their Application

1. DEFINITIONS

1.1 *Feeder link*

In the Region 2 broadcasting-satellite service Plan, the term feeder link, as defined in No. **109** of the Radio Regulations is further qualified to indicate a fixed-satellite service link in the frequency band 17.3 - 17.8 GHz from any earth station within the feeder-link service area to the associated space station in the broadcasting-satellite service.

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[1] See Section 3.9 of Annex 3 to this Appendix.

1.2 *Feeder-link beam area*

The area delineated by the intersection of the half-power beam of the satellite receiving antenna with the surface of the Earth.

1.3 *Feeder-link service area*

The area on the surface of the Earth within the feeder-link beam area within which the administration responsible for the service has the right to locate transmitting earth stations for the purpose of providing feeder links to broadcasting-satellite space stations.

1.4 *Nominal orbital position*

The longitude of a position in the geostationary-satellite orbit associated with a frequency assignment to a space station in a space radiocommunication service. The position is given in degrees from the Greenwich meridian.

1.5 *Adjacent channel*

The RF channel in the broadcasting-satellite service frequency Plan, or in the associated feeder-link frequency Plan, which is situated immediately higher or lower in frequency with respect to the RF reference channel.

1.6 *Second adjacent channel*

The RF channel in the broadcasting-satellite service frequency Plan, or in the associated feeder-link frequency Plan, which is situated immediately beyond either of the adjacent channels.

1.7 *Overall carrier-to-interference ratio*

The overall carrier-to-interference ratio is the ratio of the wanted carrier power to the sum of all interfering RF powers in a given channel including both feeder links and down-links. The overall carrier-to-interference ratio due to interference from the given channel is calculated as the reciprocal of the sum of the reciprocals of the feeder-link carrier-to-interference ratio and the down-link carrier-to-interference ratio referred to the satellite receiver input and earth station receiver input, respectively[1].

1.8 *Overall co-channel protection margin*

The overall co-channel protection margin in a given channel is the difference in dB between the overall co-channel carrier-to-interference ratio and the co-channel protection ratio.

1.9 *Overall adjacent channel protection margin*

The overall adjacent channel protection margin is the difference, in dB, between the overall adjacent channel carrier-to-interference ratio and the adjacent channel protection ratio.

1.10 *Overall second adjacent channel protection margin*

The overall second adjacent channel protection margin is the difference in dB between the overall second adjacent channel carrier-to-interference ratio and the second adjacent channel protection ratio.

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[1] There are a total of five overall carrier-to-interference ratios used in the analysis of the Plan, namely, co-channel, upper and lower adjacent channels, and upper and lower second adjacent channels.

1.11 *Overall equivalent protection margin*

The overall equivalent protection margin M is given in dB by the expression:

$$M = -10 \log \left(\sum_{i=1}^{5} 10^{(-M_i/10)} \right) \quad \text{(dB)}$$

where:

M_1 = overall co-channel protection margin, in dB (as defined in 1.8),

M_2, M_3 = overall adjacent channel protection margins for the upper and lower adjacent channels respectively, in dB (as defined in 1.9),

M_4, M_5 = overall second adjacent channel protection margins for the upper and lower second adjacent channels respectively, in dB (as defined in 1.10).

The adjective "equivalent" indicates that the protection margins for all interference sources from the adjacent and second adjacent channels as well as co-channel interference sources have been included.

2. RADIO PROPAGATION FACTORS

The propagation loss on an earth-space path is equal to the free-space path loss plus the atmospheric absorption loss plus the rain attenuation exceeded for 1% of the worst month.

2.1 *Atmospheric absorption*

The loss due to atmospheric absorption (i.e. clear sky attenuation) is given by:

$$A_a = \frac{92.20}{\cos\theta}\left(0.020F_o + 0.008\,\rho F_w\right) \qquad \text{(dB)} \qquad \text{for } \theta < 5°$$

where:

$$F_o = \left\{24.88\tan\theta + 0.339\sqrt{1416.77\tan^2\theta + 5.51}\right\}^{-1}$$

$$F_w = \left\{40.01\tan\theta + 0.339\sqrt{3663.79\tan^2\theta + 5.51}\right\}^{-1}$$

and:

$$A_a = \frac{0.0478 + 0.0118\,\rho}{\sin\theta} \qquad \text{(dB)} \qquad \text{for } \theta \geqslant 5°$$

where:

θ = the elevation angle (degrees),

ρ = the surface water vapour concentration, g/m^3, with
ρ = 10 g/m^3 for rain-climatic zones A to K and
ρ = 20 g/m^3 for rain-climatic zones M to P (see Figure 1).

2.2 *Rain attenuation*

For circularly polarized signals, the rain attenuation A_p exceeded for 1% of the worst month at 17.5 GHz is calculated using the method outlined in Section 2.4.2 of Annex 5, Appendix **30 (Orb-85)** by substituting the relation:

$$\gamma = 0.0521\,R^{1.114} \qquad \text{(dB/km)}$$

for the one given in that Section.

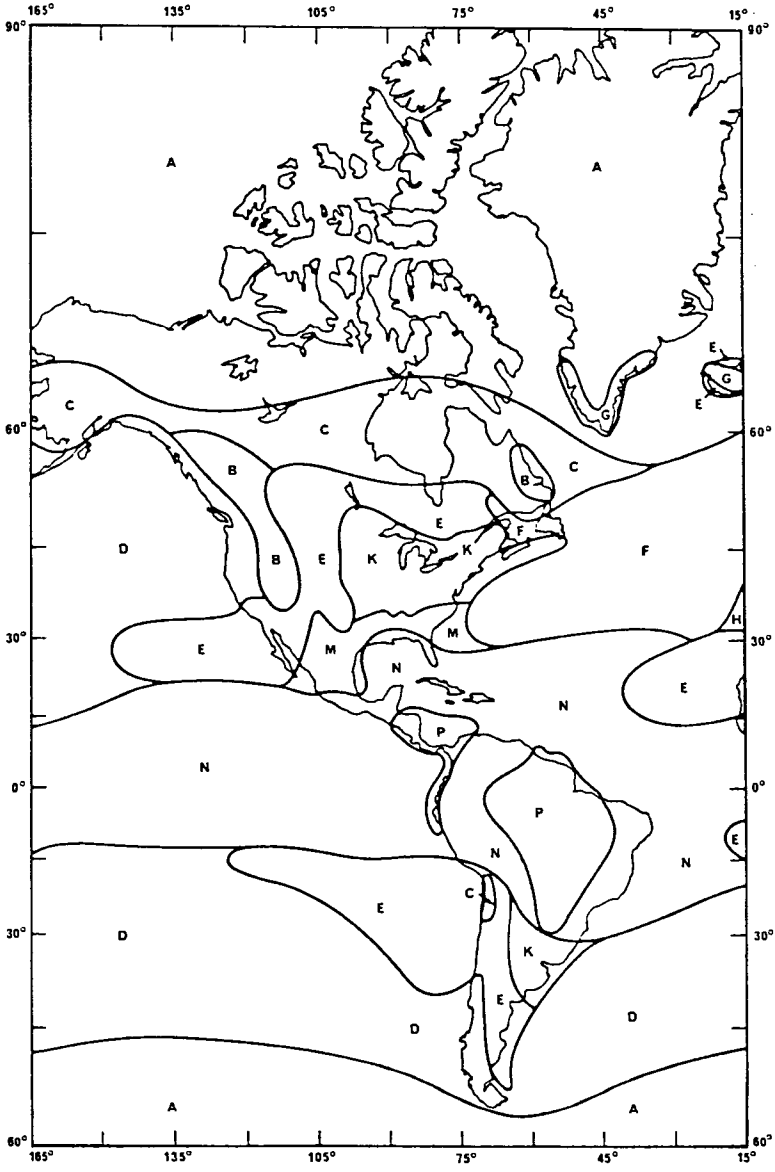


FIGURE 1

Rain climatic zones (Region 2)

Figure 2 presents plot of rain attenuation of circularly polarized signals exceeded for 1% of the worst month at 17.5 GHz, as a function of earth station latitude and elevation angle for each of the rain-climatic zones in Region 2.

2.3 *Rain attenuation limit*

In the analysis of the Plan, a maximum rain attenuation on the feeder link of 13 dB was considered assuming that other means would be used at the implementation stage to protect for larger rain attenuation on the feeder links.

2.4 *Depolarization*

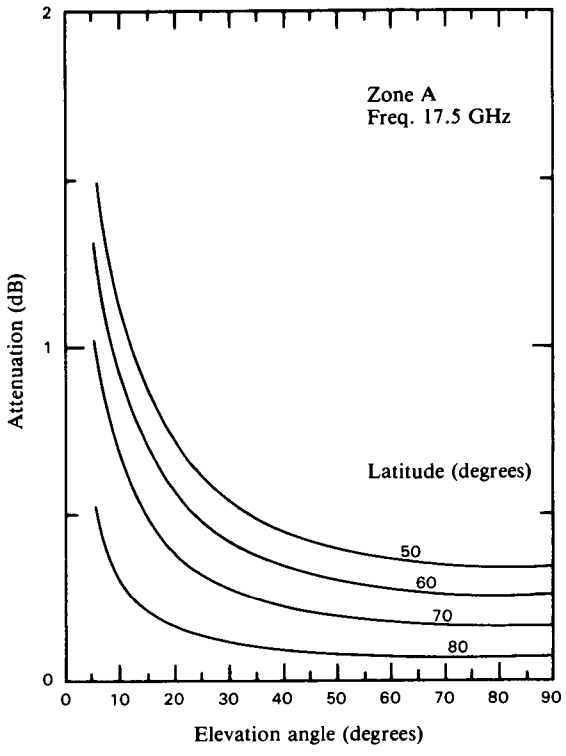
Rain and ice can cause depolarization of radio frequency signals. The level of the co-polar component relative to the depolarized component is given by the cross-polarization discrimination (XPD) ratio. For the feeder link, the XPD ratio, in dB, exceeded for 99% of the worst month is given by:

$$XPD = 30 \log f - 40 \log (\cos \theta) - 23 \log A_p \quad \text{(dB)} \quad \text{for } 5^\circ \leqslant \theta \leqslant 60^\circ$$

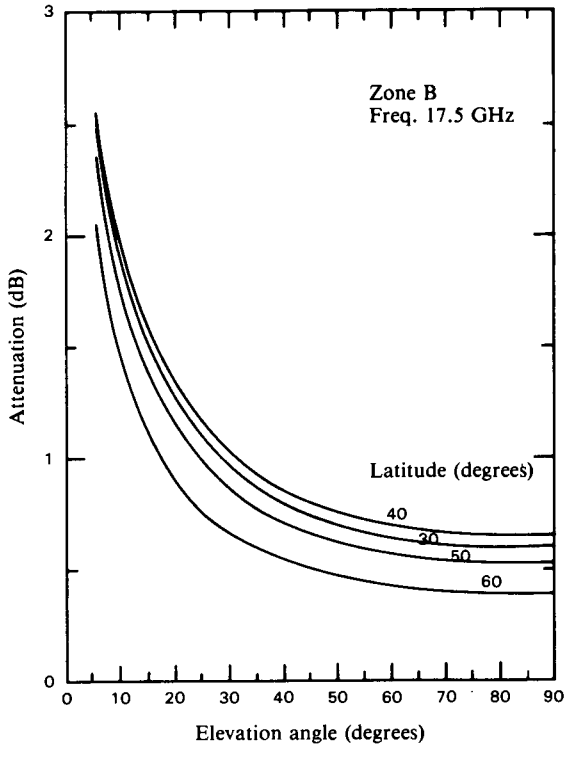
where A_p (dB) is the co-polar rain attenuation exceeded for 1% of the worst month, f is the frequency in GHz and θ is the elevation angle. For values of θ greater than 60°, use $\theta = 60^\circ$ in the previous equation.

2.5 *Procedure for calculating the carrier-to-interference ratio at a space station receiver input*

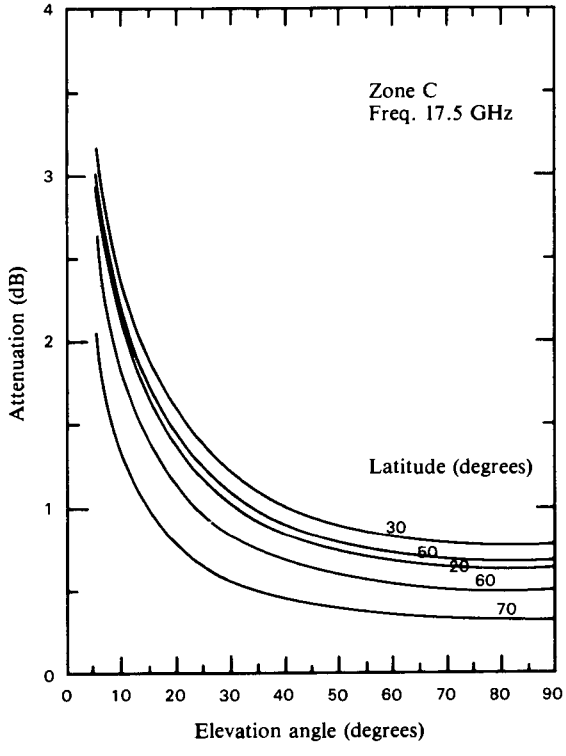
The calculation of the feeder-link carrier-to-interference ratio (exceeded for 99% of the worst month) at a space station receiver input used to obtain the overall equivalent protection margin at a test point assumes a rain attenuation value exceeded for 1% of the worst month on the wanted feeder-link path.



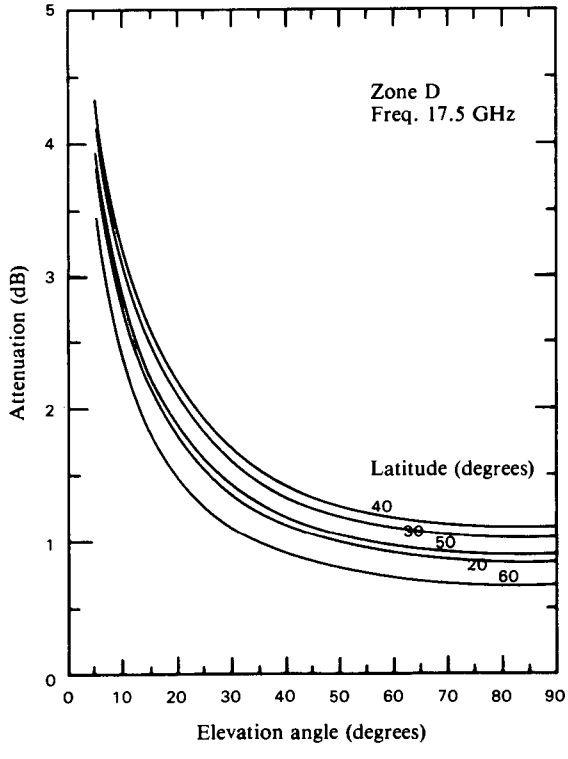
a) Rain climatic zone A



b) Rain climatic zone B



c) Rain climatic zone C



d) Rain climatic zone D

FIGURE 2

Rain attenuation values exceeded for 1% of the worst month (sea level) for Region 2 rain climatic zones

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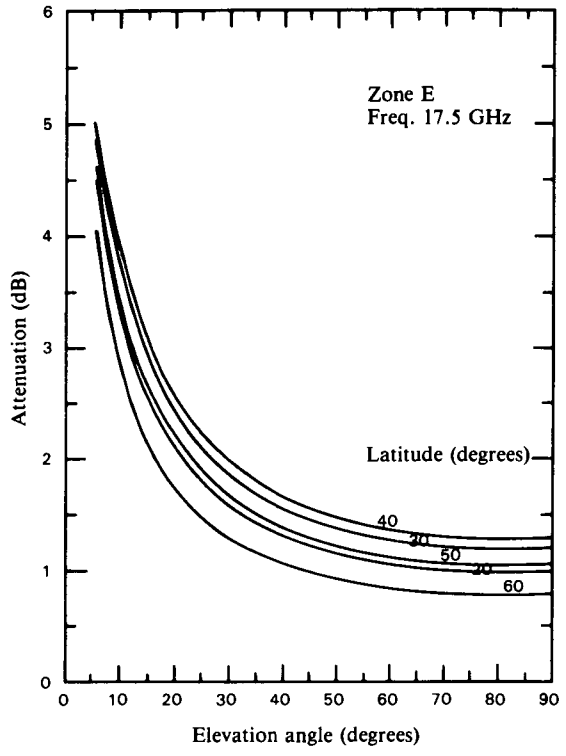
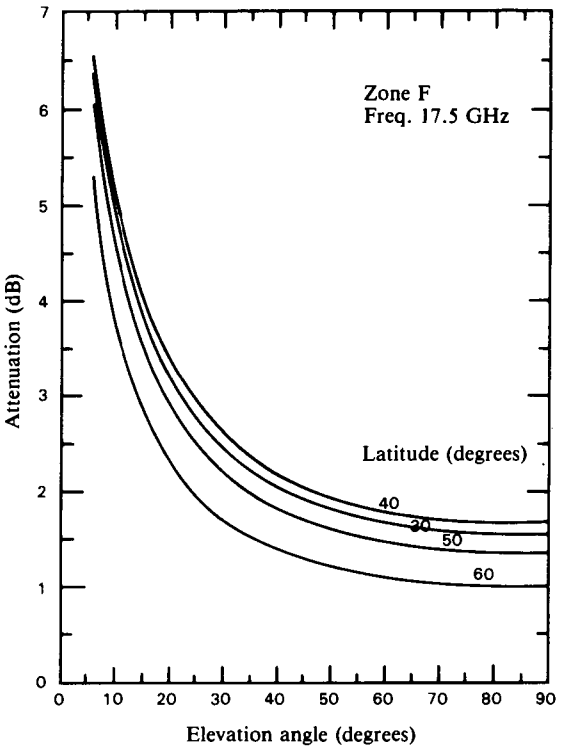
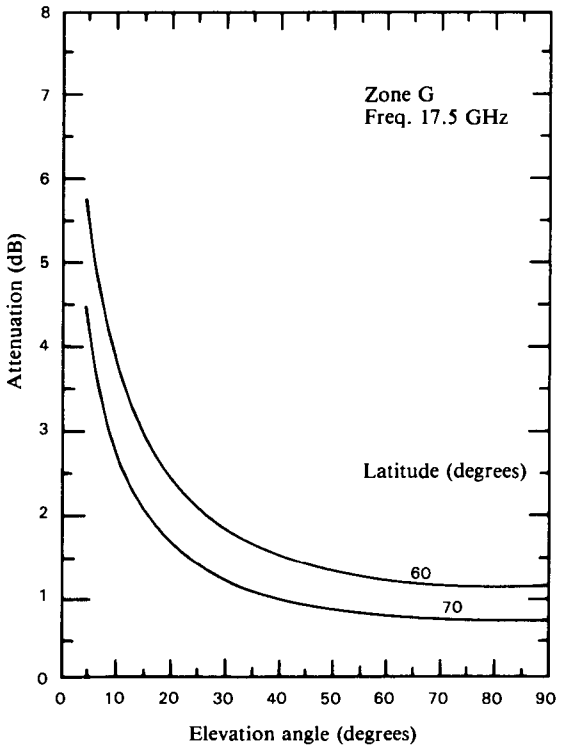


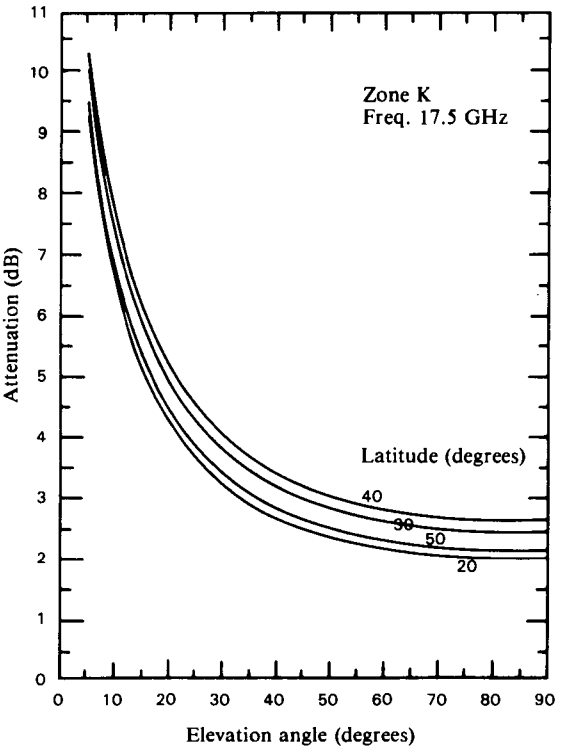
e) Rain climatic zone E



f) Rain climatic zone F



g) Rain climatic zone G



h) Rain climatic zone K

FIGURE 2 *(cont.)*

Rain attenuation values exceeded for 1% of the worst month (sea level) for Region 2 rain climatic zones

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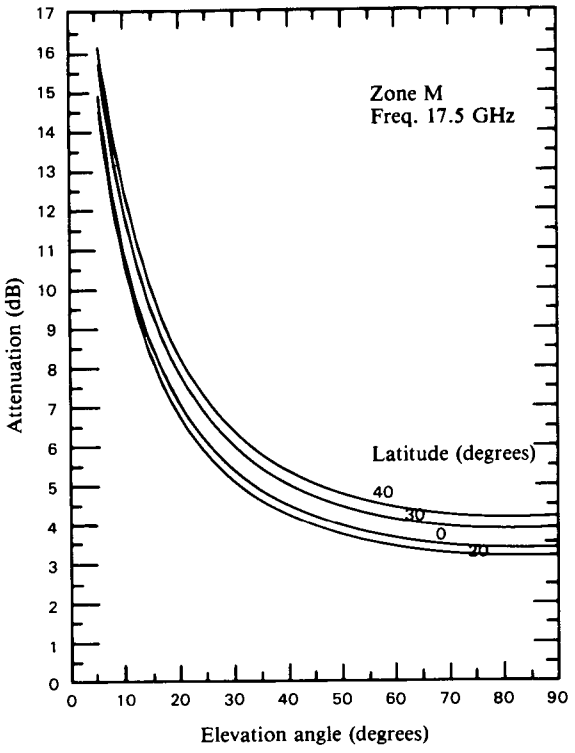
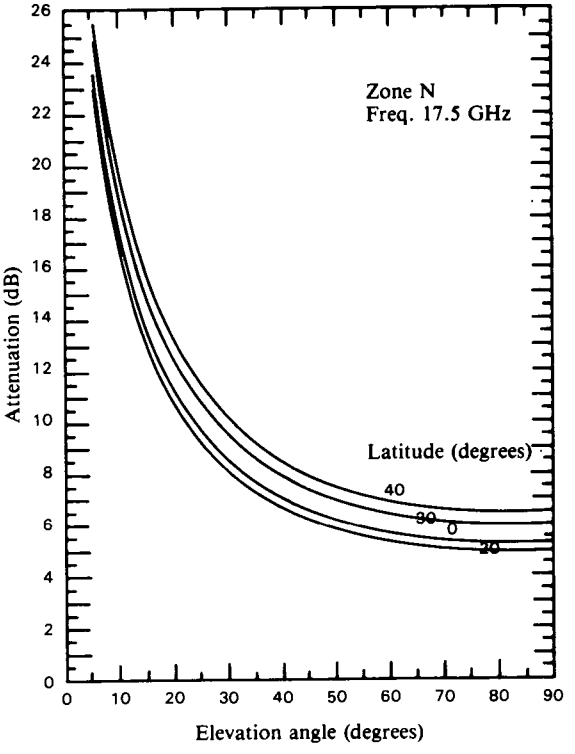
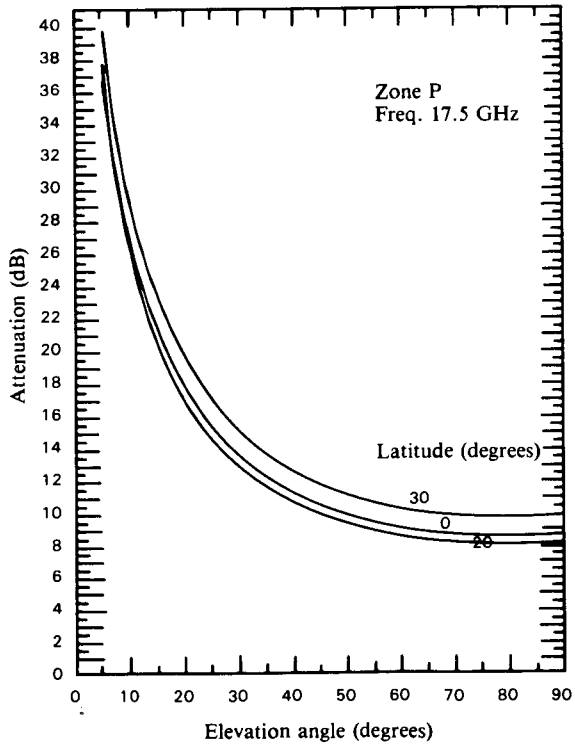


i) Rain climatic zone M



j) Rain climatic zone N



k) Rain climatic zone P

FIGURE 2 *(cont.)*

Rain attenuation values exceeded for 1% of the worst month (sea level) for Region 2 rain climatic zones

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For the interfering feeder-link signal path, clear sky propagation (i.e. including atmospheric absorption only) is assumed.

3. BASIC TECHNICAL CHARACTERISTICS

3.1 *Translation frequency and guard bands*

The feeder-link Plan is based on the use of a single frequency translation of 5.1 GHz between the 17 GHz feeder-link channels and the 12 GHz down-link channels. Other values of the translation frequency may be used, provided that the corresponding channels have been assigned to the space station of the administration concerned.

With a single value frequency translation between the feeder-link frequency band (17.3 - 17.8 GHz) and the down-link frequency band (12.2 - 12.7 GHz), the guard bands present in the down-link Plan result in corresponding bandwidths of 12 MHz at the upper and lower feeder-link band edges. These feeder-link guard bands may be used for transmissions in the space operation service.

3.2 *Carrier-to-noise ratio*

Section 3.3 of Annex 5 to Appendix **30 (Orb-85)** provides guidance for planning and the basis for the evaluation of the carrier-to-noise ratios of the feeder-link and down-link Plans.

As a guidance for planning, the reduction in quality in the down-link due to thermal noise in the feeder link is taken as equivalent to a degradation in the down-link carrier-to-noise ratio of approximately 0.5 dB not exceeded for 99% of the worst month.

3.3 *Carrier-to-noise ratio*

Section 3.4 of Annex 5 to Appendix **30 (Orb-85)** provides guidance for planning for the contribution of the feeder-link co-channel interference to the overall co-channel carrier-to-interference ratio. However, the feeder-link and down-link Plans are evaluated on the overall equivalent protection margin which includes the combined down-link and feeder link contributions. Definitions 1.7, 1.8, 1.9, 1.10 and 1.11 of this Annex and the protection ratios given in Section 3.4 of Annex 5 to Appendix **30 (Orb-85)** are used in the analysis of the Plans.

For the adjacent channels, the Plan is based on an orbital separation of 0.4° between nominally co-located satellites having cross-polarized adjacent channel assignments.

For the second adjacent channels, the Plan is based on a 10 dB improvement on the feeder-link carrier-to-interference ratio due to the satellite receive filtering.

3.4 *Transmitting antenna*

3.4.1 *Antenna diameter*

The feeder-link Plan is based on an antenna diameter of 5 metres.

The minimum antenna diameter permitted in the Plan is 2.5 metres. However, the feeder-link carrier-to-noise ratio and carrier-to-interference ratio resulting from the use of antennas with diameters smaller than 5 metres would generally be less than those calculated in the Plan.

The use of antennas larger than 5 metres, with corresponding values of on-axis e.i.r.p. higher than the planned value (indicated in Section 3.4.3) but without augmented off-axis e.i.r.p., is permitted if the orbital separation between the assigned orbital location of the administration and the assigned orbital location of any other administration is greater than 0.5°.

Antennas with diameters larger than 5 metres can also be implemented if the above orbital separation is less than 0.5° and if the e.i.r.p. of the desired feeder-link earth station does not exceed the planned value of e.i.r.p.

If the above orbital separation is less than 0.5° and if the e.i.r.p. of the desired feeder-link earth station exceeds the planned value, agreement between administrations is required.

3.4.2 *Reference patterns of transmitting antennas*

The co-polar and cross-polar reference patterns of transmitting antennas used for planning in Region 2 are given in Figure 3.

3.4.3 *Antenna efficiency*

The Plan is based on an antenna efficiency of 65%. The corresponding on-axis gain for an antenna having a 5-metre diameter is 57.4 dBi at 17.55 GHz, and the corresponding value of e.i.r.p. used for planning purposes is 87.4 dBW.

3.4.4 *Pointing accuracy*

The Plan has been developed to accommodate a loss in gain due to earth station antenna mis-pointing of 1 dB. Under no circumstances shall the Plan allow for a mis-pointing angle greater than 0.1°.

3.5 *Transmit power*

The maximum transmit power delivered to the input of the antenna of the feeder-link earth station is 1000 watts per 24 MHz television channel. This level of power can only be exceeded under certain conditions specified in Section 3.10 of this Annex.

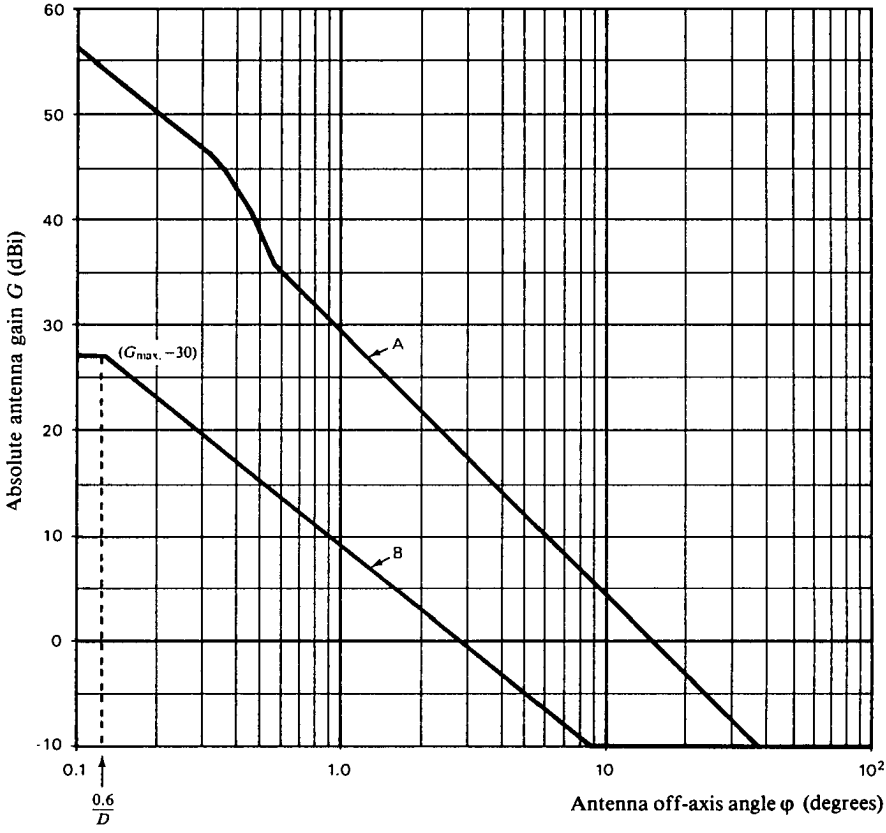


FIGURE 3

Reference patterns for co-polar and cross-polar components for transmitting antennas for Region 2

Curve A: Co-polar component (dBi)

$36 - 20 \log \varphi$	for	$0.1° \leqslant \varphi < 0.32°$
$51.3 - 53.2\ \varphi^2$	for	$0.32° \leqslant \varphi < 0.54°$
$29 - 25 \log \varphi$	for	$0.54° \leqslant \varphi < 36°$
-10	for	$\varphi \geqslant 36°$

Curve B: Cross-polar component (dBi)

$G_{max} - 30$	for	$\varphi < \left(\frac{0.6}{D}\right)°$
$9 - 20 \log \varphi$	for	$\left(\frac{0.6}{D}\right)° \leqslant \varphi < 8.7°$
-10	for	$\varphi \geqslant 8.7°$

where:

φ = off-axis angle referred to the main-lobe axis (degrees);

G_{max} = on-axis co-polar gain of the antenna (dBi);

D = diameter of the antenna in metres ($D \geqslant 2.5$).

Note 1: In the angular range between 0.1° and 0.54°, the co-polar gain must not exceed the reference pattern.

Note 2: In the angular range between 0° and $(0.6/D)°$, the cross polar gain must not exceed the reference pattern.

Note 3: At the larger off-axis angles and for 90% of all side-lobe peaks in each of the reference angular windows, the gain must not exceed the reference pattern. The reference angular windows are 0.54° to 1°, 1° to 2°, 2° to 4°, 4° to 7°, 7° to 10°, 10° to 20°, 20° to 40°, 40° to 70°, 70° to 100° and 100° to 180°. The first reference angular window for evaluating the cross-polar component should be $(0.6/D)°$ to 1°.

3.6 *Receiving antenna*

3.6.1 *Cross-section of receiving antenna beam*

Planning has been based on beams of elliptical or circular cross-section. When the assignments are implemented, or when the Plan is modified, administrations may use non-elliptical or shaped beams.

If the cross-section of the receiving antenna beam is elliptical, the effective beamwidth φ_0 is a function of the angle of rotation q between the plane containing the satellite and the major axis of the beam cross-section and the plane in which the beamwidth is required.

The relationship between the maximum gain of an antenna and the half-power beamwidth can be derived from the expression:

$$G_m = 27\,843/ab$$

or

$$G_m(\text{dB}) = 44.44 - 10 \log a - 10 \log b$$

where:

a and b are the angles (in degrees) subtended at the satellite by the major and minor axes of the elliptical cross-section of the beam.

An antenna efficiency of 55% is assumed.

3.6.2 *Minimum beamwidth*

A minimum value of 0.6° for the half-power beamwidth of the receiving antenna has been agreed on for planning.

3.6.3 *Reference patterns*

The reference patterns for the co-polar and cross-polar components of the satellite receiving antenna used in preparing the Plan are given in Figure 4.

Where it was necessary to reduce interference, the pattern shown in Figure 5 was used; this use will be indicated in the Plan by an appropriate symbol. This pattern is derived from an antenna producing an elliptical beam with fast roll-off in the main lobe. Three curves for different values of φ_0 are shown as examples.

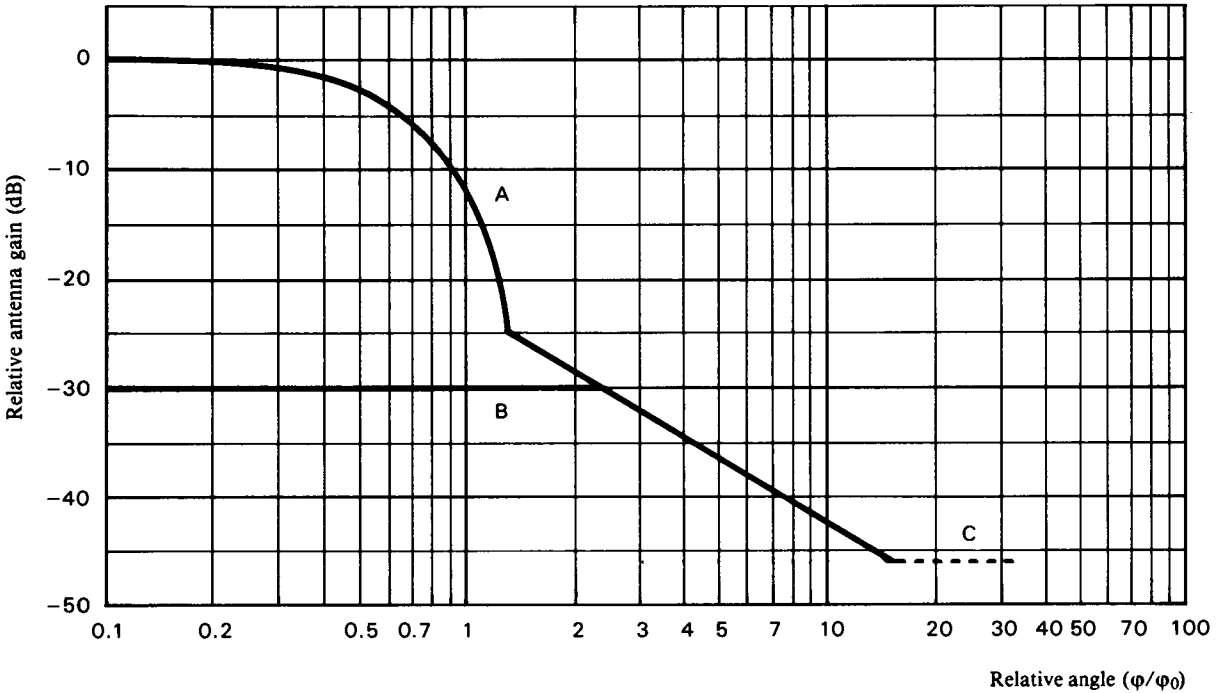


FIGURE 4

Reference patterns for co-polar and cross-polar components for satellite receiving antenna in Region 2

Curve A: Co-polar component (dB relative to main beam gain)

$-12\ (\varphi/\varphi_0)^2$ for $0 \leqslant (\varphi/\varphi_0) \leqslant 1.45$

$-(22 + 20 \log (\varphi/\varphi_0))$ for $(\varphi/\varphi_0) > 1.45$

after intersection with Curve C: as Curve C

Curve B: Cross-polar component (dB relative to main beam gain)

-30 for $0 \leqslant (\varphi/\varphi_0) \leqslant 2.51$

after intersection with Curve A: as Curve A

Curve C: Minus the on-axis gain (Curve C in this figure illustrates the particular case of an antenna with an on-axis gain of 46 dBi)

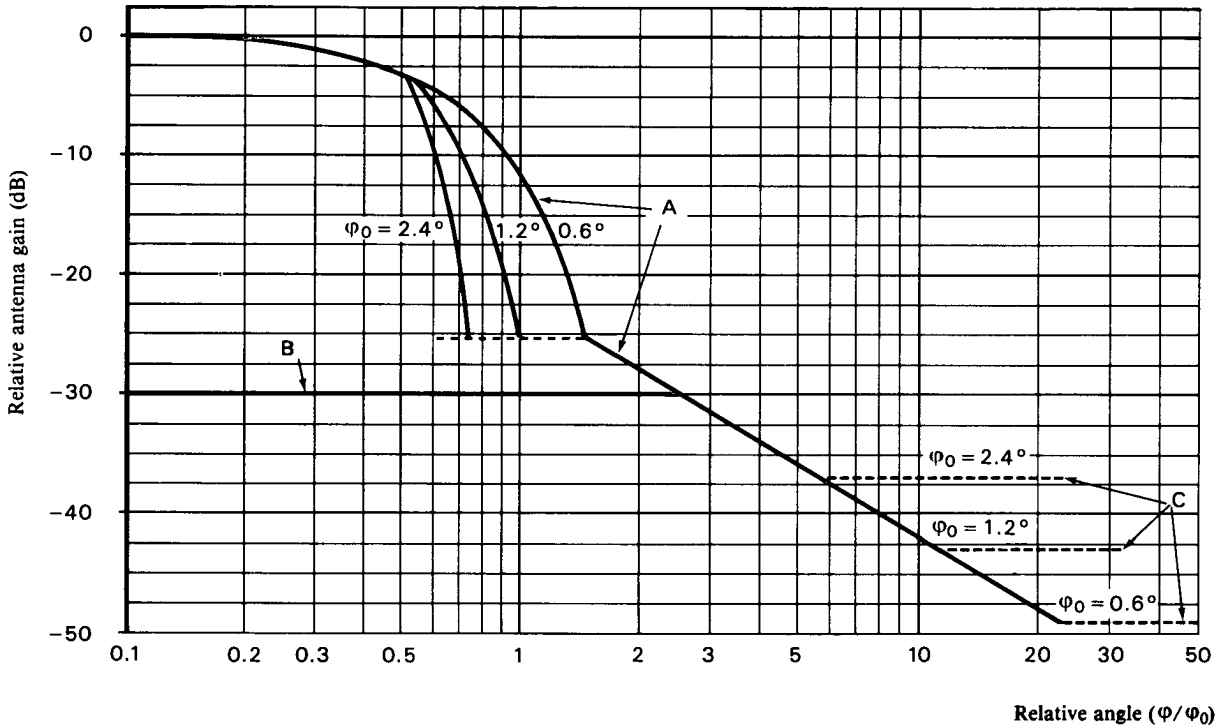


FIGURE 5

Reference patterns for co-polar and cross-polar components for satellite receiving antennas with fast roll-off in the main beam for Region 2

Curve A: Co-polar component (dB relative to main beam gain)

$-12\ (\varphi/\varphi_0)^2$ for $0 \leqslant \varphi/\varphi_0 \leqslant 0.5$

$-33.33\ \varphi_0^2\ (\varphi/\varphi_0 - x)^2$ for $0.5 < \varphi/\varphi_0 \leqslant \dfrac{0.87}{\varphi_0} + x$

-25.23 for $\dfrac{0.87}{\varphi_0} + x < \varphi/\varphi_0 \leqslant 1.413$

$-\left(22 + 20 \log (\varphi/\varphi_0)\right)$ for $\dfrac{\varphi}{\varphi_0} > 1.413$

after intersection with Curve C: as Curve C

Curve B: Cross-polar component (dB relative to main beam gain)

-30 for $0 \leqslant \varphi/\varphi_0 < 2.51$

after intersection with Curve A: as Curve A

Curve C: Minus the on-axis gain (Curves A and C represent examples for three antennas having different values of φ_0 as labelled in Figure 5. The on-axis gains of these antennas are 37, 43 and 49 dBi, respectively).

where:

φ = off-axis angle (degrees)

φ_0 = dimension of the minimum ellipse fitted around the feeder link service area in the direction of interest (degrees)

$x = 0.5 \left(1 - \dfrac{0.6}{\varphi_0}\right)$.

3.6.4 *Pointing accuracy*

The deviation of the receiving antenna beam from its nominal pointing direction must not exceed 0.1° in any direction. Moreover, the angular rotation of the receiving beam about its axis must not exceed ± 1°; this latter limit is not necessary for beams of circular cross-section using circular polarization.

3.7 *System noise temperature*

The Plan is based on a value of 1500 K for the satellite system noise temperature.

3.8 *Polarization*

3.8.1 In Region 2, for the purpose of planning the feeder links, circular polarization is used.

3.8.2 In the cases where there are polarization constraints, use of polarization other than circular is permitted only upon agreement of administrations that may be affected.

3.9 *Automatic gain control*

3.9.1 The Plan is based on the use of automatic gain control on board satellites to maintain a constant signal level at the satellite transponder output.

3.9.2 The dynamic range of automatic gain control is limited to 15 dB when satellites are located within 0.4° of each other and operate on cross-polarized adjacent channels serving common or adjacent feeder-link service areas.

3.9.3 The 15 dB limit of automatic gain control does not apply to satellites other than those specified in paragraph 3.9.2 above.

3.10 *Power control*

The Plan has been developed without the use of power control.

The use of transmit power levels higher than those given in Section 3.5 is permitted only when rain attenuation exceeds 5 dB at 17 GHz. In such cases, the transmit power may be increased by the amount that the instantaneous rain attenuation exceeds 5 dB at 17 GHz up to the limit given in Table I.

TABLE I

Transmit radio frequency power (delivered to the imput of the feeder-link earth station antenna) permitted in excess of 1000 watts as a function of elevation angle

Elevation angle of feeder-link earth station antenna (degrees)	Transmit power permitted in excess of 1000 watts (dB)
0 to 40	0
40 to 50	2
50 to 60	3
60 to 90	5

3.11 *Site diversity*

Site diversity refers to the alternate use during rain of two or more transmitting earth stations which may be separated by sufficient distance to ensure uncorrelated rainfall conditions.

The use of site diversity is permitted and is considered to be an effective technique for maintaining high carrier-to-noise ratio and carrier-to-interference ratio during periods of moderate to severe rain attenuation. However, the Plan is not based on the use of site diversity.

3.12 *Depolarization compensation*

The Plan is developed without the use of depolarization compensation. Depolarization compensation is permitted only to the extent that interference to other satellites does not increase by more than 0.5 dB relative to that calculated in the feeder-link Plan.

3.13 *Minimum separation between satellites*

Figure 6 illustrates two adjacent clusters of satellites separated by 0.9° between the centres of the clusters. $A\eta$ identifies a satellite of administration η. A cluster is formed by two or more satellites separated by 0.4° and located at two nominal orbital positions as specified in the Plan; one position for right-hand polarized channels and the other position for left-hand polarized channels.

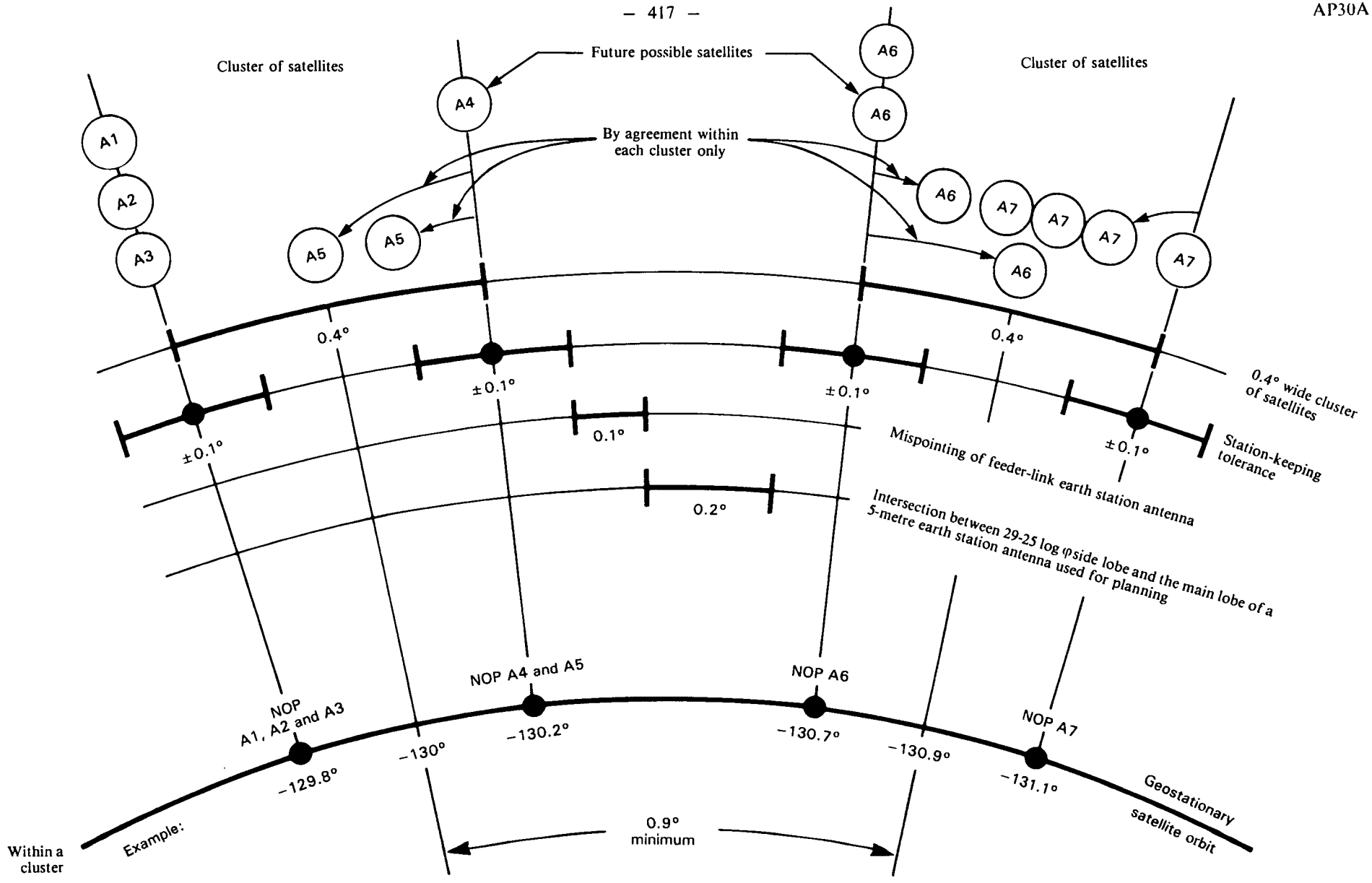
3.13.1 *Satellites of the same cluster*

The Plan is based on an orbital separation of 0.4° between satellites having cross-polarized adjacent channels (i.e. satellites located at $+0.2°$ and $-0.2°$ from the centre of the cluster). However, satellites within a cluster may be located at any orbital position within the cluster, requiring only the agreement of the other administrations having satellites sharing the same cluster. Such orbital positioning of satellites within a cluster is illustrated in Figure 6 by some of the satellites A5, A6 and A7.

The station-keeping tolerance of $\pm$ 0.1° indicated in Section 3.11 of Annex 5 to Appendix **30 (Orb-85)** must be applied to satellites located at any position within the 0.4° wide cluster.

3.13.2 *Satellites of different clusters*

In the Plan, the orbital separation between the centres of adjacent clusters of satellites is at least 0.9°. The value of 0.9° is also the minimum orbital separation to provide flexibility in the implementation of feeder links indicated in Section 3.4.1 of this Annex without the need for an agreement (see Section 3.13.1 of this Annex).



An: Specific Administration
NOP 1: Nominal orbital position, right hand polarization
NOP 2: Nominal orbital position, left hand polarization

FIGURE 6

Exploded view of geostationary satellite orbit

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ANNEX 4

Criteria for Sharing Between Services in Region 2

1. *Threshold values for determining when coordination is required between a transmitting space station in the fixed-satellite service and a receiving space station in the feeder-link Plan in the frequency band 17.7 - 17.8 GHz*

With respect to paragraph 7.1, Article 7 of this Appendix, coordination of a transmitting space station in the fixed-satellite service with a broadcasting-satellite in the Region 2 Plan is required, for inter-satellite geocentric angular separations less than 10° or greater than 150°, when the power flux-density arriving at the receiving space station of a broadcasting-satellite feeder-link station of another administration would cause an increase in the noise temperature of the feeder-link space station which, calculated in accordance with the method given in Appendix **29**, exceeds a threshold value of $\Delta T/T$ corresponding to 10%. The above provision does not apply when the geocentric angular separation, between a transmitting space station in the fixed-satellite service and a receiving space station in the feeder-link Plan, exceeds 150° of arc and the free-space power flux-density of the transmitting space station in the fixed-satellite service does not exceed a value of -123 dB(W/m^2/24 MHz) on the Earth's surface at the equatorial Earth limb.

2. *Not used.*

3. *Method for the determination of the coordination area around a feeder-link transmitting earth station of the Region 2 Plan with respect to receiving earth stations in the fixed-satellite service in Region 2 in the frequency band 17.7 - 17.8 GHz*

3.1 *Introduction*

In the frequency band 17.7 - 17.8 GHz, which is allocated to the fixed-satellite service, in both the Earth-to-space direction (for broadcasting-

satellite service feeder links only), and the space-to-Earth direction, emissions from transmitting feeder-link earth stations may cause interference at receiving earth stations in the fixed-satellite service.

Electromagnetic coupling of an emission originating at a feeder-link earth station into a receiving earth station may occur through two propagation mechanisms or "modes":

Propagation mode (1): coupling along a great circle tropospheric interference horizon path;

Propagation mode (2): coupling through scatter from hydrometeors.

The determination of whether emissions from a feeder-link earth station may cause unacceptable interference in a receiving earth station is by means of coordination contours drawn around a feeder-link earth station on a map. When a receiving earth station is located within either or both coordination contours, i.e., within the coordination area, there is a possibility of unacceptable interference.

The procedure for the determination of the coordination area for a feeder-link earth station in relation to a receiving earth station in the fixed-satellite service is similar to that described in Appendix **28** but differs from it in the details described below.

3.2 *Determination of the coordination contour for propagation mode (1)*

The distance at which a signal of power $P_{t'}$ (dBW) applied to the antenna terminals of a feeder-link earth station will produce a received power $P_r(p)$ at the antenna terminals of a receiving earth station, for propagation mode (1), is given by:

$$d_1 = (P_{t'} + G_{t'} + G_r - P_r(p) - A_0 - A_h)/\beta \quad \text{(km)} \qquad (1)$$

as derived from equations (2) and (8) of Appendix **28**,

where:

$P_{t'}$ = maximum RF power (dBW) in any 1 MHz band applied to the antenna terminals of a feeder-link earth station;

$G_{t'}$ = gain (dB) of the feeder-link earth station antenna towards the physical horizon on the azimuth to the receiving earth station;

G_r = gain (dB) of the receiving earth station antenna towards the physical horizon on the azimuth to the feeder-link earth station;

$P_r(p)$ = permissible interfering RF power (dBW) in any 1 MHz band to be exceeded for no more than p% of the time at the antenna terminals of the receiving earth station;

A_0 = constant equal to 145.0 dB;

A_h = sum (dB) of available site shielding at the feeder-link earth station, $A_{ht'}$, and at the receiving earth station, A_{hr}, on the respective azimuth towards the other earth station (both in dB);

β = rate of attenuation along the interference path (dB/km), a function of the radio-climatic zone and of p as used in $P_r(p)$ above.

To determine the coordination contour for propagation mode (1) for a feeder-link earth station, equation (1) is solved for all azimuths around the earth station site (in suitable increments; e.g., every 5°), and the resulting distances plotted for all azimuths on a map of suitable scale from the earth station site. The connection of the so marked distance points constitutes the coordination contour for the feeder-link earth station.

3.3 *Determination of parameters used in equation (1)*

The parameters used in equation (1) are determined as follows:

3.3.1 *Determination of $G_{t'}$ and G_r*

The determination of $G_{t'}$ follows the procedure set forth in Annex II to Appendix **28** using the notified feeder-link earth station antenna pattern.

For the receiving earth station, a minimum main beam elevation angle of 5° is assumed for which the reference antenna radiation diagram of paragraph 4 of Annex II to Appendix **28** yields, in the absence of site shielding, a horizon antenna gain of $G_r = 14.5$ dB.

3.3.2 *Determination of $A_{ht'}$ and A_{hr}*

The calculation of $A_{ht'}$ requires the determination of the horizon elevation angle θ (degrees) for all azimuths around a feeder-link earth station site. With these horizon elevation angles and the frequency of $f = 17.75$ GHz, $A_{ht'}$ is then calculated for each azimuth from equation (7a) of Appendix **28** for $\theta > 0°$, and it should be taken as equal to 0 dB for $\theta < 0°$.

For the fixed-satellite receiving earth station, the assumption must be made that no site shielding is available; hence, $A_{hr} = 0$ dB.

3.3.3 *Determination of $P_r(p)$ and p*

The maximum permissible interfering RF power in any 1 MHz band is taken, under nominal conditions, to be limited to 15% of the total noise received at an earth station, or about 20% of the thermal noise of the receiving system. This corresponds to a value of -7 dB for the parameter J of Appendix **28**. For percentages of time of less than 0.003%, a permissible increase in the interference by 5 dB is assumed (parameter $M(p)$ of Appendix **28**). Considering further that the band 17.7 - 17.8 GHz is also

shared with terrestrial services, the assumption is made that up to three equivalent entries of interference may be present which, however, produce their maximum interference during periods uncorrelated in time, thus allowing each to produce the maximum permissible value of interfering RF power during $p = 0.001\%$ of the time.

Therefore, according to equation (3) of Appendix **28**:

$$P_r(p) = 10 \log(kTB) - 2 \qquad \text{(dB(W/MHz))} \qquad (2)$$

which, with

k = Boltzmann's constant,

B = 1 MHz, and

T = receiving system noise temperature, assumed to be 200 K

yields:

$$P_r(p) = -147.6 \text{ (dB(W/MHz))},$$

with $p = 0.001\%$ of the time.

3.3.4 *Determination of* β

The rates of attenuation for a percentage of time of 0.001%, for the three radio-climatic zones as defined in paragraph 3.1 of Appendix **28** at 17.75 GHz, are the following:

Zone A: $\beta_A = 0.198$ dB/km

Zone B: $\beta_B = 0.06$ dB/km

Zone C: $\beta_C = 0.074$ dB/km

3.3.5 *Graphical method*

Figure 1 provides curves by means of which d_1 may be determined when only a single radio-climatic zone is involved. The three curves shown are for the three radio-climatic zones as defined in Appendix **28**. The abscissa is given in terms of the parameter P as defined below:

$$P = P_{t'} + G_{t'} + G_r - P_r(p) - A_0 - A_h \qquad \text{(dB)}$$

3.4 *Mixed zone contours*

When the solution of equation (1) yields a distance d_1, which, on the azimuth under consideration, produces a point which lies in a different radio-climatic zone from that in which the feeder-link earth station is located, it is necessary to determine a mixed-zone coordination distance for that azimuth. Thus, if the feeder-link earth station is located in a radio-climatic zone identified by the suffix "a" and the solution of equation (1) produces a distance which ends in another radio-climatic zone, identified by the suffix "b" (a and b referring to any one of the zones A, B or C, with $a \neq b$), the coordination distance is calculated from:

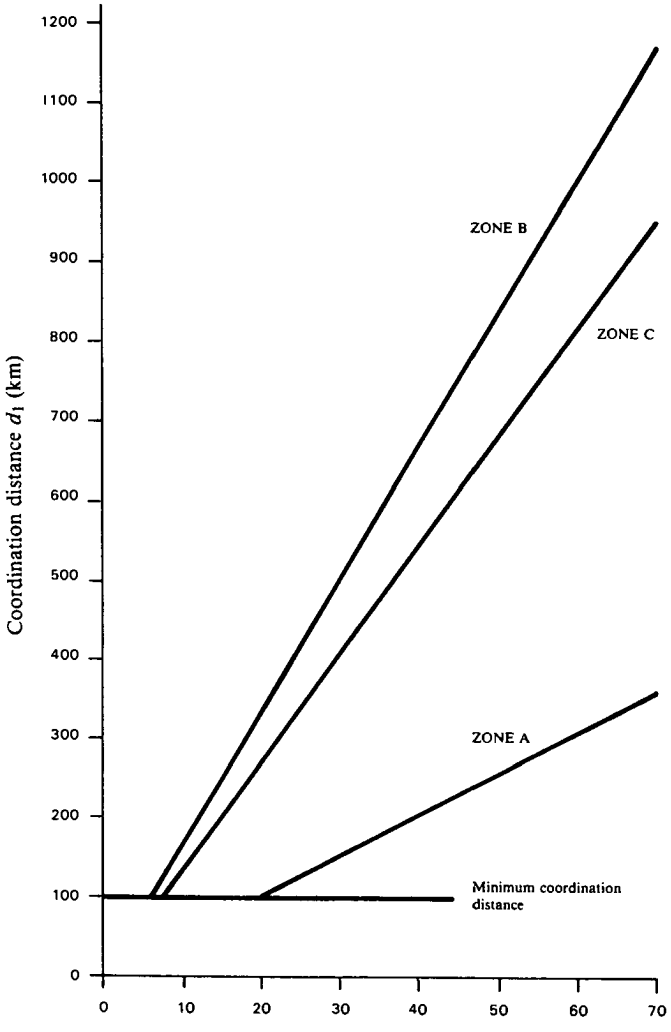
$$d_1 = \frac{P - d_a\beta_a}{\beta_b} + d_a \qquad \text{(km)} \qquad (3)$$

where d_a is the distance (km) from the feeder-link earth station site to the boundary between the two climatic zones.

For the rare case where more than two radio-climatic zones are involved, the applicable equation would be:

$$d_1 = \frac{P - d_a\beta_a - d_b\beta_b}{\beta_c} + d_a + d_b \qquad \text{(km)} \qquad (4)$$

where the subscript "c" denotes the zone farthest away from the feeder-link earth station site within which the coordination distance ends.



$$P = P_{t'} + G_{t'} + G_r - P_r(p) - A_0 - A_h \text{ (dB)}$$

FIGURE 1

Coordination distance as a function of parameter P. Propagation mode(1); 17.75 GHz; p = 0.001% of the time

3.5 *Determination of the coordination contour for propagation mode (2)*

In the case of scattering from hydrometeors, the high main beam e.i.r.p. from a transmitting feeder-link earth station antenna and the expected high sensitivity of a fixed-satellite service receiving earth station suggest that interference from a feeder-link earth station into a fixed-satellite earth station may be unacceptable only when either earth station can see the main beam of the other, below the maximum altitudes from which significant hydrometeor scatter reflectivity prevails.

Accordingly, to avoid such mutual visibility conditions, the rain scatter distance d_r is to be that distance at which the receiving earth station's horizon intersects the maximum expected rain scatter altitude h_s[1].

3.5.1 *Rain scatter distance d_r*

For an assumed horizon elevation angle of zero degree at the fixed-satellite receiving earth station, d_r is given by:

$$d_r = 130 \sqrt{h_s} \quad \text{(km)} \tag{5}$$

in a 4/3 earth radius reference atmosphere, with

$$h_s = 5.1 - 2.15 \log \left(1 + 10^{(\varphi - 27)/25}\right) \quad \text{(km)} \tag{6}$$

where φ is the latitude (North or South) of the feeder-link earth station site (degrees).

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[1] The maximum scatter height h_s is similar to the maximum rain height h_R of Section 2.4.2 of Annex 5, Appendix **30 (Orb-85)**, used in the calculation of effective path-length for the determination of rain attenuation, except that the factor "c" of Section 2.4.2 of Annex 5, Appendix **30 (Orb-85)**, is omitted.

The rain scatter distance d_r so calculated yields the rain scatter coordination contour for the feeder-link earth station by the procedure described in paragraph 4.5 of Appendix **28**.

3.5.2 *Graphical method*

Figure 2 provides a curve by means of which the rain scatter distance d_r may be read directly for a given feeder-link earth station latitude ζ.

3.6 *Minimum coordination distance*

The minimum coordination distance for a feeder-link earth station shall be 100 km.

3.7 *Coordination area*

The coordination area for a feeder-link earth station is the total area contained within the combined coordination contours for propagation modes (1) and (2).

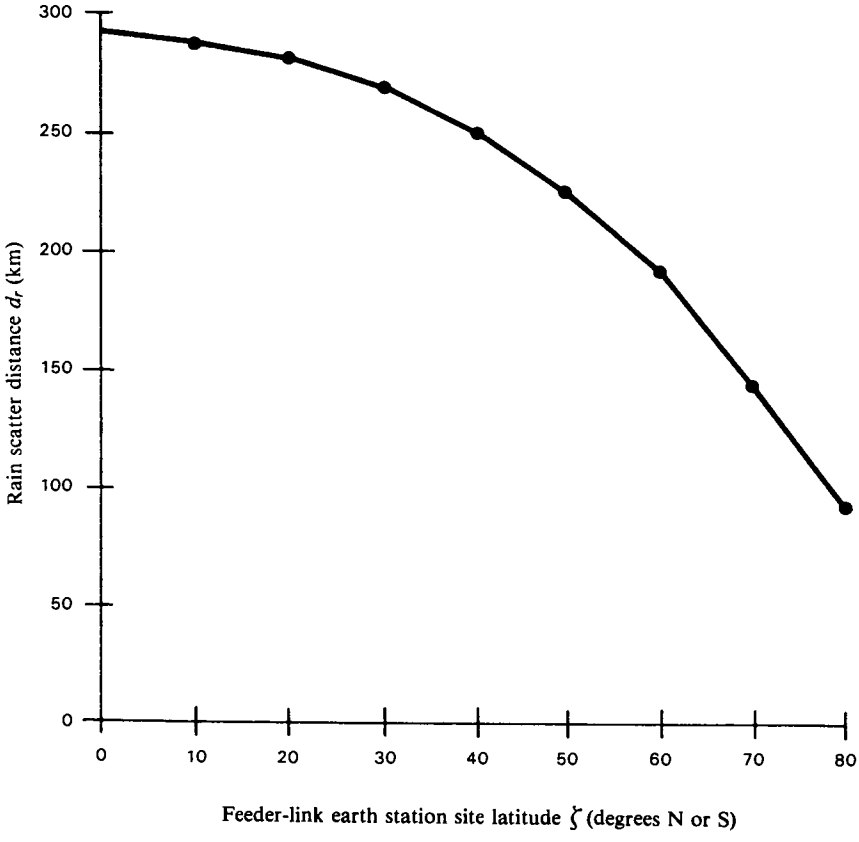

FIGURE 2

Rain scatter distance d_r as a function of feeder-link earth station site latitude ζ

FINAL PROTOCOL*

At the time of signing the Final Acts of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It (Geneva, 1985), the undersigning delegates take note of the statements made by the following delegations:

No. 1

Original: English

For Papua New Guinea:

The Delegation of Papua New Guinea reserves for its Government the right to take such action as it may consider necessary to safeguard its interests should certain Members fail in any way to comply with the requirements of the International Telecommunication Convention (Nairobi, 1982) or its Annexes or the Protocols attached thereto, or these Final Acts, or should reservations by other countries jeopardize the telecommunication services of Papua New Guinea.

No. 2

Original: Spanish

For the Republic of Guatemala:

In signing the Final Acts of the First Session of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It (Geneva, 1985), the Delegation of the Republic of Guatemala reserves the right of its Government to take such steps as it may deem necessary, in accordance with its domestic legislation and international law, to protect its national interests should they be affected by decisions taken at this Conference, by reservations entered by other administrations or by failure on the part of other administrations to comply with the provisions of the Final Acts and the annexes thereto approved by this Conference.

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* *Note by the General Secretariat:* The texts of the Final Protocol are shown in the chronological order of their deposit. In the Table of Contents these texts are grouped in the alphabetical order of country names.

No. 3

Original: French

For Portugal:

The Portuguese Delegation hereby states that it reserves its Government's right to take any measures it might consider necessary to protect its interests if Members of the Union were to fail, in any way, to comply with the provisions contained in the Final Acts of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of the Space Services Utilizing It (Geneva, 1985) (WARC Orb-85) or if reservations by other countries were to jeopardize the operation of its radiocommunication services.

No. 4

Original: English

For Brunei Darussalam:

The Delegation of Brunei Darussalam hereby:

1. reserves for its Government the right to take such action as it may deem necessary to safeguard its interests should any Members fail in any way to comply with the Final Acts of this Conference, or should reservations by other countries jeopardize its telecommunication services;

2. declares that the signature, and possible subsequent approval by the Government of Brunei Darussalam of the Final Acts of this Conference is not valid with respect to Israel, and in no way implies its recognition.

No. 5

Original: English

For the Republic of Kenya:

The Delegation of the Republic of Kenya on behalf of its Government reserves the right to take any measures it deems necessary to protect its interests if other countries or administrations fail to observe the provisions contained in the Final Acts and the annexes thereto, as adopted by this Conference.

No. 6

Original: Spanish

For the Republic of Honduras:

In signing the Final Acts of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of the Space Services Utilizing It, the Delegation of the Republic of Honduras reserves for its Government the right to take whatever action it considers necessary to safeguard its interests in the event that other countries, administrations or organizations should fail to comply with the provisions of these Final Acts or the annexes thereto, approved by this Conference.

Likewise recognizing the importance of the proper use of the orbit/spectrum resource for national development, it declares that:

1. Honduras should be guaranteed access to at least one orbital position and an adequate frequency bandwidth should be allotted to meet its fundamental communication requirements in the fixed-satellite service.

2. It is anxious that the Second Session of this Conference, WARC Orb(2), should take a decision on the content of Resolution No. 2 adopted by the Regional Administrative Conference for the Planning of the Broadcasting-Satellite Service in Region 2 (Sat-83), as expressed in Resolution **42 (Orb-85)** of WARC Orb-85.

3. Account should be taken of the existence of telecommunication systems using a satellite common to several administrations.

Such systems should be adequately planned, without restrictions on their operation, since this constitutes for the developing countries the only available means of utilizing the orbit/spectrum resource.

4. The CCIR should recommend more appropriate parameters for the broadcasting-satellite service (sound), taking account of the fact that this is at present impossible in the suggested band 0.5 to 2.0 GHz owing to the high cost of providing protection to existing systems and incompatibility with those allocated to this band.

No. 7

Original: Spanish

For Mexico:

Mexico reiterates the declaration set out in Nos. 18 and 19 of the Final Protocol to the Final Acts of the Regional Administrative Conference for the Planning of the Broadcasting-Satellite Service in the band 12.2 - 12.7 GHz and of the associated feeder links in the band 17.3 - 17.8 GHz in Region 2 (Geneva, 1983), relating respectively to power-flux density inside the coverage area and the negative protection margins appearing in the Plans.

No. 8

Original: English

For the Republic of Singapore:

The Delegation of the Republic of Singapore reserves for its Government the right to take such action as it may deem necessary to safeguard its interests should any Member fail in any way to comply with the Final Acts of this Conference, or should reservations by other countries jeopardize its telecommunication services.

No. 9

Original: English

For Malaysia:

The Delegation of Malaysia hereby:

1. reserves for its Government the right to take such action as it may deem necessary to safeguard its interests should any Member fail in any way to comply with the Final Acts of this Conference, or should reservations by any country jeopardize its telecommunication services;

2. declares that the signature, and possible subsequent approval by the Government of Malaysia of the Final Acts of this Conference, is not valid with respect to the Member appearing under the name of Israel, and in no way implies its recognition.

No. 10

Original: English

For the United Kingdom of Great Britain and Northern Ireland:

In the 1983 Region 2 Broadcasting-Satellite Conference the United Kingdom of Great Britain and Northern Ireland by declaration numbered 27 made reservations concerning the Plans considered and dealt with by that Conference. The United Kingdom of Great Britain and Northern Ireland reiterates and endorses that declaration and those reservations in respect of the same Plans as they have been considered and dealt with by this Conference.

No. 11

Original: English

For the People's Democratic Republic of Algeria, the Kingdom of Saudi Arabia, the State of Bahrain, the Islamic Republic of Iran, the Republic of Iraq, the Hashemite Kingdom of Jordan, the State of Kuwait, the Socialist People's Libyan Arab Jamahiriya, the Kingdom of Morocco, the Sultanate of Oman, the Islamic Republic of Pakistan, the State of Qatar, the Syrian Arab Republic, Tunisia, the People's Democratic Republic of Yemen:

The Delegations of the above-mentioned countries to the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of the Space Services Utilizing It, First Session, (Geneva, 1985), declare that the signature and possible approval by their respective Governments or competent authorities of the Final Acts of this Conference are not valid with respect to the Zionist Entity appearing in Annex 1 of the Convention under the name of the so-called Israel and in no way whatsoever imply its recognition.

No. 12

Original: English

For the Republic of Indonesia:

The Delegation of the Republic of Indonesia to the First Session of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It, (Geneva, 1985) (WARC Orb-85):

1. reserves the rights of its Government to take any action and preservation measures to safeguard its interests should the Final Acts drawn up in this Conference be in contravention with the Constitution, Laws and Rights of the Republic of Indonesia which exist and may result from any principles on International law and those laid down in the Bogota Declaration of 3 December 1976 by Equatorial Countries. In this regard the Government of the Republic of Indonesia will recognize the interests of other countries with a view to enhancing international cooperation in the peaceful uses of space for the benefit of mankind;

2. further reserves the rights of its Government to take any action and preservation measures to safeguard its interests should Members of the Union fail to comply with the requirements in the Final Acts of the Conference or should reservations by other Members jeopardize its rights under the Final Acts.

No. 13

Original: Spanish

For Nicaragua:

The Delegation of the Republic of Nicaragua reserves for its Government the right to take any action it may deem necessary consistent with its internal legal system and international law to safeguard its national interests, should reservations by representatives of other States affect its telecommunication services.

Similarly, the Delegation of Nicaragua expresses its reservation should the application or interpretation of any provision of the Convention infringe its full rights of sovereignty.

No. 14

Original: English

For Jamaica:

In signing the Final Acts of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of the Space Services Utilizing It (Geneva, 1985), the Delegation of Jamaica, reserves for its Government, the right to take whatever action it deems necessary to safeguard its interests, should these interests be jeopardized by the failure of other countries or administrations or agencies to observe the provisions contained in the Final Acts and the annexes thereto, as adopted by this Conference.

No. 15

Original: French

For the People's Republic of Angola:

In view of the reservations expressed by several countries concerning certain decisions adopted by this Conference, the Delegation of the People's Republic of Angola reserves for its Government the right to take any action it may deem necessary in the event that the interests of its telecommunication services should be threatened.

No. 16

Original: English

For Thailand:

The Delegation of Thailand reserves the right of its Government to take any action that it deems necessary to safeguard its interests should any country fail, in any way, to comply with the Final Acts of this Conference, or should reservations made by any country jeopardize its telecommunication services.

No. 17

Original: Spanish

For the Republic of Bolivia:

In signing the Final Acts of the First Session of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It, Geneva, 1985 (WARC Orb-85), the Delegation of Bolivia reserves for its Government the right to take any action it may deem necessary, in keeping with its internal legal system and international law, to safeguard its national interests in the event that the reservations expressed by representatives of other States might affect Bolivian telecommunication services or the full exercise of its sovereign rights, or in the event that the application or interpretation of any of the resolutions, agreements or recommendations of the Conference should so require.

No. 18

Original: English

For Ghana:

In signing the Final Acts of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It (WARC Orb-85), Geneva, 1985, the Delegation of Ghana reserves for its Government the right to take any measures it considers necessary to protect its interest should the non-compliance of and the reservations to the Final Acts, or its annexes thereto, by other Members of the International Telecommunication Union, jeopardize the efficient operation of its telecommunication services.

No. 19

Original: Spanish

For the Republic of Colombia:

In signing the Final Acts of the First Session of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of the Space Services Utilizing It, Geneva, 1985 (WARC Orb-85), the Delegation of Colombia declares that Colombia does not consider itself bound by the acts, agreements or resolutions of this Conference if they imply the assignment to other countries of orbital positions in the Colombian geostationary orbital segment, which require the prior express authorization of Colombia in accordance with its rights as stated at the XXXth United Nations General Assembly in 1975 and spelled out in the Declarations of Bogota (1976) and Quito (1982) and in the Draft Principles for the Use of the Geostationary Orbit submitted to the Committee on Outer Space in conjunction with Ecuador, Indonesia and Kenya (Document A/AC.105/C.2/L.47 of 29 March 1984).

The Delegation of Colombia reserves the right of its Government to adopt such measures as it considers necessary in accordance with its internal legal system and international law to safeguard its national interests in the event that reservations entered by representatives of other States may affect its telecommunication services or encroach upon its full sovereign rights, or that the application or interpretation of any of the resolutions or agreements of the Conference make it necessary to do so.

No. 20

Original: Spanish

For Ecuador:

In signing the Final Acts of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It (Geneva, 1985), the Delegation of Ecuador reiterates the content of the Declarations of Bogota (1976) and Quito (1982) and of the Draft Principles for the Use of the Geostationary Orbit submitted to the Committee on Outer Space of the United Nations General Assembly in conjunction with Colombia, Indonesia and Kenya (Document A/AC.105/C.2/L.47 of 29 March 1984), as well as its claims to rights over the segments of the geostationary orbit which correspond to its own mainland and offshore territory.

By virtue of the above, Ecuador does not consider itself bound by its signature of the Final Acts, or by the resolutions, agreements or decisions of this Conference concerning the assignment of orbital positions to other countries in the segments of the geostationary orbit corresponding to its territory, which would require its prior express agreement.

Furthermore, the Government of Ecuador reserves the right to adopt such measures as it considers appropriate to safeguard its interests in accordance with its own legislation and with international law, should any of the declarations by other States affect its telecommunication services or the exercise of its sovereign rights.

No. 21

Original: Spanish

For the Republic of Colombia and Ecuador:

The Delegations of Colombia and Ecuador jointly and expressly reserve their rights over the geostationary orbit and reiterate what they have stated in their national reservations, respectively Nos. 19 and 20.

They also ratify Reservation No. 5 expressed at the Regional Administrative Conference for the Planning of the Broadcasting-Satellite Service in Region 2 (Sat-83) (Geneva, 1983) and reiterate its content with respect to the World Administrative Radio Conference of the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It (Geneva, 1985).

No. 22

Original: French

For France:

The French Delegation reserves for its Government the right to take any action it may deem necessary to safeguard its interests should any Members fail in any way to comply with the provisions of the Convention and the Regulations annexed thereto, or should reservations by other administrations jeopardize the operation of its radiocommunication services.

No. 23

Original: English

For the United States of America:

The United States of America believes that planning of broadcasting-satellite service based upon an edge-of-coverage area power flux-density of – 107 dBW per square meter for 99 percent of the worst month places significant constraints upon the development of this service, including the introduction of advanced television services such as High Definition Television (HDTV), and development of lowest possible cost consumer terminals. At the 1983 Broadcasting-Satellite Planning Conference, the United States entered a reservation expressing its concern over the adoption of the specific power flux-density value used for planning. Considering that this Conference does not have the competence to modify the specific entries within the Region 2 Plan, the Administration of the United States believes it appropriate to restate its reservation made in 1983. The United States of America reserves the right to adjust the e.i.r.p. of its assignments specified within the Plan so as to produce a power flux-density of – 105 dBW per square meter at the edge of coverage area for 99 percent of the worst month. In the application of this power level, the United States will take all practical measures to minimize the impact of such operation on the systems of other Region 2 administrations operating in accordance with assignments in the Plan. Additionally, the United States will observe the inter-Regional sharing criteria that have been adopted at this present Conference.

At the 1983 Broadcasting-Satellite Planning Conference, the United States of America entered a reservation expressing its concern over the failure of the 1983 Conference to consider its request that either sense of polarization be allowed for any given frequency assignment in the Plan. Considering that this Conference does not have the competence to modify the specific entries within the Region 2 Plans, the United States believes it appropriate to re-state its reservation made in 1983. The United States has a need to be able to operate its broadcasting-satellite down-link and feeder-link channel assignment using either sense of polarization (i.e., either "direct" or "indirect" polarization). Therefore, the United States of America reserves the right to operate its assignment within the Region 2 Plans using either sense of polarization. When implementing assignments using a sense of polarization opposite to that specified in the Plans, the United States will take all practicable measures to minimize the impact of such operation on the systems of other Region 2 administrations operating in accordance with assignments in the Plans. Additionally, the United States will observe all of the inter-Regional sharing criteria that have been adopted at this present Conference.

No. 24

Original: English

For the Republic of Malta:

In signing the Final Acts of the First Session of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It (Geneva, 1985), the Delegation of Malta declares that it reserves its Government's right to take whatever action it considers necessary to safeguard its interests should any country or countries fail to observe the provisions of the Final Acts and the annexes thereto or should the reservations made by other countries prove prejudicial to the proper functioning of Malta's telecommunication and broadcasting services.

The Delegation further reserves its Government's rights to take any action required to ensure by whatever means the integrity of its national territory in the face of any form of external interference to its services.

No. 25

Original: Spanish

For Cuba:

In signing the Final Acts, the delegation of the Republic of Cuba to the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It (First Session) wishes, on behalf of its Administration: to denounce the use, yet again, by the Government of the United States, of the radio spectrum as a medium of aggression infringing the sovereignty of other countries, as evidenced by the bringing into service in May of this year of an anti-Cuban transmitter in the medium-wave broadcasting bands, as it did in 1960, 1961 and 1962 with Radio Swan, Radio America and the Voice of the United States of America.

In beginning these transmissions, announced as part of the political platform of the Reagan Administration under the so-called Santa Fé programme, the Government of the United States even went so far as to use a name which embodies the purest and noblest ideals of the Cuban nation, José Marti, thereby contracting the provisions of the International Telecommunication Convention (Nairobi, 1982) and the Radio Regulations, in the same way as it violated the NARBA Agreement in the Caribbean area in the 1960s.

Following constructive bilateral talks held in Buenos Aires, Havana, Washington and Costa Rica, the fact that these broadcast were recently launched in such a peculiar, devious and – except for a single, terse, hypocritical, self-justifying message transmitted twelve hours beforehand – unexpected manner, has no possible explanation other than the clear intention of replying – clumsily – to the cogent and irrefutable statements by the Cuban Government concerning the critical economic situation of Latin America and the third world, the immoral and unpayable external debt and the merciless economic pillage to which the unjust system of international relations has subjected these countries.

In view of this situation, the Government of the Republic of Cuba issued a declaration in response to this fresh act of senseless, blind and sterile policy on the part of the United States Government, reserving the right to make medium-wave radio broadcasts to the United States in order to state clearly the Cuban viewpoint on the problems of that country and its international policy.

No. 26

Original: Russian

For the Byelorussian Soviet Socialist Republic, the Ukrainian Soviet Socialist Republic and the Union of Soviet Socialist Republics:

In signing the Final Acts of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It (Geneva, 1985), the Delegations of the above-mentioned countries hereby state that they reserve their Government's right to take any measures necessary to protect their interests if they are affected by decisions taken by the Conference.

No. 27

Original: English

For the Federal Republic of Nigeria:

After having noted the declarations already deposited, and in signing the Final Acts of the First Session of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It (Geneva, 1985), the Delegation of Nigeria reserves for its Government, the right to take any such action it may consider to be in its best interest should certain Members of the Union fail to comply with the requirements of the 1982 Nairobi Convention of the ITU, its Annexes, or the Protocols attached thereto, or these Final Acts or should the actions and declarations by some countries threaten the effectiveness of its telecommunication services.

No. 28

Original: English

For the State of Kuwait:

After having noted the declarations already deposited, the Kuwaiti Delegation hereby states that it reserves its Government's right to take any measures it might consider necessary to protect its interests if Members of the Union were to fail, in any way, to comply with the provisions contained in the Final Acts of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It (Geneva, 1985) (WARC Orb-85) or if declarations by other countries were to jeopardize the operation of its radiocommunication services.

No. 29

Original: English

For the Kingdom of Saudi Arabia:

After having noted the declarations already deposited, the Kingdom of Saudi Arabia Delegation hereby states that it reserves its Government's right to take any measures it might consider necessary to protect its interests if Members of the Union were to fail, in any way, to comply with the provisions contained in the Final Acts of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It (Geneva, 1985) (WARC Orb-85) or if declarations by other countries were to jeopardize the operation of its radiocommunication services.

No. 30

Original: French

For the Republic of Senegal:

After noting the declarations already entered, the Delegation of Senegal reserves its Government's right to take any measures it sees fit in order to safeguard its interests should some countries Members of the ITU fail to comply with the provisions of the International Telecommunication Convention (Nairobi, 1982) or with the annexes or Protocols to these Final Acts or if declarations by other countries were to threaten the proper operation of telecommunication services in the Republic of Senegal.

No. 31

Original: French

For the Gabonese Republic:

After noting the declarations already entered, the Gabonese Delegation to the First Session of the WARC Orb-85 reserves its Government's right to take any measures it considers necessary to protect its interests if the use by any country of the planning method adopted and of the associated frequency bands were to threaten its development.

No. 32

Original: English

For the Democratic Socialist Republic of Sri Lanka:

After having noted the declarations already deposited, the Delegation of the Democratic Socialist Republic of Sri Lanka reserves for its Government the right to take such action as it may consider necessary to safeguard its interests should any Member fail in any way to comply with the Final Acts of this Conference, or should declarations by other countries jeopardize the telecommunication services of Sri Lanka.

No. 33

Original: Spanish

For the Republic of Venezuela:

After noting the declarations already entered, the Delegation of the Republic of Venezuela reserves its Government's right to take the measures necessary to protect its interests should they be affected by the failure of other Members of the International Telecommunication Union to comply with the provisions contained in the Final Acts of the First Session of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It (WARC Orb-85), or by the declarations made by other Members.

No. 34

Original: Spanish

For Cuba:

Having noted the statements made, the Delegation of the Republic of Cuba, in signing the Final Acts of the First Session of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It (Geneva, 1985), reserves its Government's right to adopt whatever measures it may consider necessary to ensure the normal operation of its telecommunication services should other countries fail to comply with the provisions adopted by this Conference or with the associated Plan or with the provision in No. **2674** of the Radio Regulations.

No. 35

Original: Spanish

For Mexico:

Having noted the declarations entered by a number of countries with respect to the decisions adopted by this Conference, the Delegation of Mexico reserves its Government's right to take whatever measures it may consider necessary to safeguard its interests should other Members fail to respect the provisions of the Final Acts or should the declarations entered by them threaten its telecommunication services.

No. 36

Original: English

For the United States of America:

The United States of America, noting the statement entered by the Administration of Cuba, recalls its rights to broadcast to Cuba on appropriate frequencies free of jamming or other wrongful interference and reserves its rights with respect to existing interference and any future interference by Cuba with United States broadcasting.

No. 37

Original: English

For the State of Israel:

The declarations made by certain delegations in No. 11 of the Final Protocol, being in flagrant contradiction to the principles and purposes of the International Telecommunication Union, and therefore void of any legal validity, the Government of Israel wishes to put on record that it rejects these declarations outright and will proceed on the assumption that they can have no validity as to rights and duties of any Member State of the International Telecommunication Union. In any case, the Government of Israel will avail itself of its rights to safeguard its interests should the Governments of these delegations in any way violate any of the provisions of the Final Acts of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It (Geneva, 1985).

The delegation of Israel further notes that declaration No. 11 does not refer to the State of Israel by its full and correct name. As such it is totally inadmissible and must be repudiated as a violation of recognized rules of international behaviour.

No. 38

Original: English

For the Arab Republic of Egypt:

After having noted the declarations already deposited, the Delegation of Egypt reserves the right for its Government to take such action as it may deem necessary to safeguard its interests should any administration fail in any way to comply the provisions of the Final Acts of this Conference and the annexes thereto, or should declarations by other administrations harm its National or International Telecommunication or Radio and Television Broadcasting Services.

No. 39

Original: French

For the Republic of the Ivory Coast:

Having noted the statements made, the Delegation of the Republic of the Ivory Coast, in signing the Final Acts of the First Session of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It (Geneva, 1985), reserves its Government's right to adopt whatever decisions it may consider necessary to safeguard its interests should failure on the part of other Members of the International Telecommunication Union to respect these Final Acts and their annexes, or declarations entered by them, threaten the proper operation of its telecommunication services.

No. 40

Original: French

For the Confederation of Switzerland:

After noting the statements made, the Swiss Delegation reserves its Government's right to take whatever measures it considers necessary in order to ensure the proper operation of Swiss radiocommunication services if such operation were to be threatened by declarations by other administrations or should some Members fail to comply with the provisions of the Convention or the Regulations annexed thereto.

No. 41

Original: English

For the Republic of India:

In signing the Final Acts of the First Session of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It (WARC Orb-85) and after having noted the declarations already deposited, the delegation of the Republic of India reserves for its Government the right to take such action as may be considered necessary to safeguard its interests should any administration fail to comply with the provisions of the Final Acts including those which will form a part of the Radio Regulations.

No. 42

Original: French

For the Socialist Republic of Romania:

Having noted the declarations entered by a number of countries with respect to certain decisions reached by this Conference, the Romanian Delegation reserves its Government's right to take whatever measures it may consider necessary should the proper operation of its telecommunication services be threatened.

No. 43

Original: Spanish

For the Argentine Republic:

The Argentine Republic states that it does not accept statement No. 10 by the United Kingdom of Great Britain and Northern Ireland. The Argentine Republic repeats and reaffirms in this connection statement No. 17 made at the Regional Administrative Conference for the Planning of the Broadcasting-Satellite Service in Region 2 (Sat-83), the terms of which are to be regarded as reiterated in relation to the Plans approved by this Conference.

No. 44

Original: English

For the Federal Republic of Germany, Australia, Austria, Belgium, Canada, Denmark, the United States of America, Finland, France, Greece, Italy, Japan, Luxembourg, Norway, New Zealand, the Netherlands, Papua New Guinea, Portugal, the United Kingdom of Great Britain and Northern Ireland, Sweden, Switzerland:

The above-mentioned Delegations, referring to the declarations made by the Republic of Indonesia, the Republic of Colombia, and Ecuador, consider that, inasmuch as these statements refer to the Bogota Declaration of 3 December 1976 by equatorial countries and to the claims of those countries to exercise sovereign rights over segments of the geostationary-satellite orbit, the claims in question cannot be recognized by this Conference. Further, the above-mentioned Delegations wish to reaffirm the declarations made on behalf of their administrations in this regard when signing the Final Acts of the World Administrative Radio Conference (Geneva, 1979) and the International Telecommunication Convention (Nairobi, 1982) by which the Conference is bound.

The above-mentioned Delegations also wish to state that reference in Article 33 to the "geographical situation of particular countries" does not imply a recognition of claim to any preferential rights to the geostationary orbit.

No. 45

Original: Spanish

For Peru:

Having noted the statement made, the Delegation of the Republic of Peru reserves its Government's right to take whatever measures may be necessary to safeguard its interests should these be threatened by failure on the part of other Members of the International Telecommunication Union to comply with the provisions contained in the Final Acts of the First Session of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It (WARC Orb-85) or by the reservations entered by other Members, in accordance with its domestic legislation and the principle of international law.

No. 46

Original: French

For the Republic of Mali:

Having noted the statements made, the Delegation of the Republic of Mali reserves its Government's right to take whatever measures it may consider necessary to safeguard its interests should some countries fail in any way whatever to comply with the provisions contained in the Final Acts of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It, or should declarations entered by other administrations threaten the proper operation of its radiocommunication services.

No. 47

Original: English

For Ethiopia:

In signing the Final Acts of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It (WARC Orb-85), and after having noted the declarations already deposited, the Delegation of Socialist Ethiopia reserves the right for its Government to take any measure it may deem necessary to protect its telecommunication services should any Members fail to comply with these Final Acts.

No. 48

Original: English

For the Somali Democratic Republic:

After having noted the declarations already deposited, the Delegation of the Somali Democratic Republic reserves for its Government the right to take any measures it deems necessary to protect its interests if other countries or administrations fail to observe the provisions contained in the Final Acts and the annexes hereto, as adopted by this Conference.

No. 49

Original: English

For the Federative Republic of Brazil:

In signing these Final Acts, *Ad Referendum* of its National Congress, and after having noted the declarations already deposited, the Delegation of Brazil reaffirms statement No. 24 made at the time of signing the Final Acts of the Regional Administrative Conference for the Planning of the Broadcasting-Satellite Service in Region 2 (Geneva, 1983) and reserves for its Government the right to adopt such measures as it deems necessary to safeguard its interests, should other Members of the Union fail to comply with the provisions adopted by this Conference.

No. 50

Original: French

For the Republic of Cameroon:

The Cameroonian Delegation to WARC Orb-85 has taken note of the declarations by other delegations and declares that the Republic of Cameroon, while attaching particular importance to its international commitments, reserves the right of its Government to take any action it may deem necessary should the application of declarations by other administrations jeopardize the proper operation of its telecommunication services.

No. 51

Original: French

For Luxembourg:

Having taken note of the declarations already deposited and in signing the Final Acts of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It (Geneva, 1985), the Luxembourg Delegation reserves for its Government the right to take any action it may deem necessary, in keeping with its legislation and international law, to safeguard its sovereign interests should one or more countries fail to comply with the provisions of the Final Acts or the annexes thereto, should the reservations expressed by other countries jeopardize the proper operation of the telecommunication or radio services of Luxembourg or should the application or interpretation of certain of the resolutions, agreements or recommendations adopted by the Conference so require.

No. 52

Original: Russian

For the Byelorussian Soviet Socialist Republic, the People's Republic of Bulgaria, the Hungarian People's Republic, the People's Republic of Poland, the German Democratic Republic, the Ukrainian Soviet Socialist Republic, the Union of Soviet Socialist Republics and the Czechoslovak Socialist Republic:

The Delegations of the above countries declare that they do not recognize the claims made in the declarations by the Republic of Indonesia, the Republic of Colombia and Ecuador concerning the extension of state sovereignty to segments of the geostationary-satellite orbit, since they conflict with the generally recognized international legal status of outer space.

No. 53

Original: English

For the United Republic of Tanzania:

After having noted the declarations already deposited, and in signing the Final Acts of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It (Geneva, 1985), the Delegation of the United Republic of Tanzania on behalf of its Government reserves the right to take any measures it deems necessary to protect its interests if certain Members of the Union or administrations fail in any way to observe the provisions contained in the Final Acts and the annexes thereto, as adopted by this Conference.

No. 54

Original: English

For the Socialist People's Libyan Arab Jamahiriya:

After having noted the declarations already deposited, and upon signing the Final Acts of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It (First Session), the Delegation of the Socialist People's Libyan Arab Jamahiriya states, on behalf of its Administration, that it reserves the Jamahiriya right to take any measures it deems necessary to safeguard its Radio and TV broadcasting interests if they are affected by any decision taken by this Conference.

No. 55

Original: English

For the Republic of Liberia:

The delegation of the Republic of Liberia reserves for its Government the right to take any action it may deem necessary to safeguard its interests, should any Member Administration fail in an any way to comply with the annexes and provisions contained in the Final Acts as adopted by the First Session of the World Administrative Radio Conference (Orb-85).

No. 56

Original: French

For the Republic of Guinea:

The Delegation of the Republic of Guinea to the First Session of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It, having taken note of the declarations already deposited, reserves for its Government the right to take any action it may deem necessary to safeguard its interests should any Member fail to comply with the Final Acts of the present Conference or should the declarations expressed by any administration jeopardize the proper operation of its telecommunication services.

No. 57

Original: English

For the Islamic Republic of Pakistan:

After having noted the declarations already deposited, the Pakistan Delegation reserves for its Government the right to take any action it may deem necessary to safeguard its interests should any Member fail in any way to comply with the provisions of the Convention and Regulations annexed thereto or should reservations or interpretation of any of the resolutions or recommendations expressed by other administrations jeopardize the efficient operation and equitable access to the orbit/spectrum resources.

(The signatures follow)

(The signatures following the Final Protocol are the same as those shown on pages 4 to 17.)

RESOLUTION No. 40 (Orb-85)

Relating to the Recording in the Master International Frequency Register to the Assignments for Region 2 Contained in Appendix 30(Orb-85) and Appendix 30A

The World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It (First Session – Geneva, 1985),

considering

that the provisions and associated Plans adopted by the Regional Administrative Conference for the Planning of the Broadcasting-Satellite Service in Region 2, Geneva, 1983 with the appropriate modifications have been incorporated in the Radio Regulations in Appendix **30(Orb-85)** and Appendix **30A**;

resolves

that, on the date of signature of the Final Acts of First Session of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It, Geneva, 1985, the frequency assignments in the Plans will be entered in the Master Register. The date of signature of these Final Acts will be entered, together with an appropriate symbol, in Column 13c opposite these assignments.

RESOLUTION No. 41 (Orb-85)

Relating to the Provisional Application of the Partial Revision of the Radio Regulations as Contained in the Final Acts of the WARC Orb-85 Prior to its Entry into Force

The World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It (First Session – Geneva, 1985),

considering

a) that the present session has decided to incoporate in the Radio Regulations the provisions and associated Plans for the broadcasting-satellite service in the band 12.2 - 12.7 GHz and the fixed-satellite service for feeder links in the band 17.3 - 17.8 GHz in Region 2;

b) that during the period preceding the date of entry into force od the partial revision of the Radio Regulations, as contained in the Final Acts of the First Session of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It (WARC Orb-85), administrations of countries of Region 2 may wish to bring into use assignments appearing in the Region 2 Plans or to modify them or to bring them into use as an interim system;

c) that there is a need to apply the interregional sharing criteria developed by this session for all Regions;

further considering

that there is a need for procedures to be applied by all administrations and the IFRB during the interim period referred to in *b)* above;

resolves

1. that during the period preceding the date of entry into force of the partial revision of the Radio Regulations, as contained in the Final Acts of the WARC Orb-85, administrations and the IFRB shall apply the said partial revision on a provisional basis;

2. that on the date of entry into force of the partial revision of the Radio Regulations, as contained in the Final Acts of the WARC Orb-85, the IFRB shall publish the modifications to the Plans introduced in application of *resolves* 1 above, in a Special Section of its weekly circular in order to enter them into the appropriate Regional Plan.

RESOLUTION No. 42 (Orb-85)

Relating to The Provisional Application for Region 2 of Resolution No. 2 (Sat-R2)

The World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It (First Session – Geneva, 1985),

considering

a) that the 1983 Conference adopted Resolution No. **2 (Sat-R2)** with the intention of enabling the administrations of Region 2 to implement the assignments in the Plans of that Conference according to a phased approach and with due regard for the protection of the services of other administrations;

b) that assignments in conformity with Resolution No. **2 (Sat-R2)** may be implemented only if they are in conformity with the Convention and with the relevant provisions of the Radio Regulations;

c) that conformity with Resolution No. **2 (Sat-R2)** requires the agreement of all affected administrations;

d) that those affected administrations are to be determined in accordance with the limits in Annex 1 to Appendix **30(Orb-85)** and Annex 1 to Appendix **30A**;

e) that Resolution **43(Orb-85)** also contains provisions concerning systems operating in accordance with Resolution No. **2 (Sat-R2)**;

f) that the question of the long-term application of the provisions of Resolution No. **2 (Sat-R2)** should be studied further;

resolves

1. that the IFRB shall apply the provisions of the annex to Resolution No. **2 (Sat-R2)** and shall examine the notifications of the administrations of Region 2, as appropriate, for conformity with that Resolution on a provisional basis until the subject is reviewed by the Second Session of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It (WARC Orb(2)) and a definitive decision is taken on the matter;

2. that in the application of the annex to Resolution No. **2(Sat-R2)**, the references to annexes to Part I and Part II shall be replaced by references to the appropriate annexes to Appendix **30(Orb-85)** and Appendix **30A** respectively;

invites the Administrative Council

to place on the agenda of WARC Orb(2) an item calling for the review of the possibility of the long-term applicability of Resolution No. **2(Sat-R2)**, and for a definitive decision to be taken on this matter.

RESOLUTION No. 43(Orb-85)

Relating to Orbital Position Limitations for the Broadcasting-Satellite Service in Regions 1 and 2 in the Band 12.2 - 12.5 GHz and for the Fixed-Satellite Service (Feeder-Link Stations) in Region 2 for the Band 17.3 - 17.8 GHz

The World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It (First Session – Geneva, 1985),

considering

a) that there is currently no feeder-link plan for the broadcasting-satellite service in Region 1, operating in the band 11.7 - 12.5 GHz, and that in the absence of such a plan, the usual approach to sharing cannot be applied;

b) that the 1983 Conference adopted Plans for Region 2 for the Broadcasting-Satellite Service in the band 12.2 - 12.7 GHz and their associated feeder links in the band 17.3 - 17.8 GHz;

c) that this session has recommended in a draft agenda for the second session the planning of the feeder links for the Regions 1 and 3 Broadcasting-Satellite Service at Second Session of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It (WARC Orb(2)), including the band 17.3 -18.1 GHz;

d) that some interaction is possible between the Region 2 Feeder-Link Plan and the Feeder-Link Plan to be established for Regions 1 and 3 at WARC Orb(2);

e) that there is a need to ensure that any modifications to the Plan for the Regions 1 and 3 Broadcasting-Satellite Service and the Region 2 Broadcasting-Satellite Service and Feeder-Link Plans will not hamper the development of the Regions 1 and 3 Feeder-Link Plan before its incorporation into the Radio Regulations;

resolves

1. that until the incorporation of the Regions 1 and 3 Feeder-Link Plan into the Radio Regulations, any administration seeking to modify the Region 2 Plans or to introduce an interim system operating in accordance with Resolution No. **42 (Orb-85)** and involving an orbital position further east than 47°W shall obtain the agreement of all administrations having orbital assignments in the Regions 1 and 3 Plan within plus or minus ten degrees of the proposed orbital position;

2. that until the incorporation of the Regions 1 and 3 Feeder-Link Plan into the Radio Regulations, any administration seeking a modification to the Regions 1 and 3 Plan for the Broadcasting-Satellite Service in the band 12.2 to 12.5 GHz involving an orbital position further west than 28°W shall obtain the agreement of all administrations having orbital assignments in the Region 2 Plans within plus or minus ten degrees of the proposed orbital position;

3. that when the Regions 1 and 3 Feeder-Link Plan is considered for incorporation into the Radio Regulations and recording in the Master International Frequency Register at WARC Orb(2), it will have the same status as the Region 2 Feeder-Link Plan and that the Feeder-Link Plans shall be modified as required to make them compatible.

Printed in Switzerland

ISBN 92-61-02611-7