APPENDIX 30 (REV.WRC-15)*

Provisions for all services and associated Plans and List¹ 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) (WRC-03)

(See Articles 9 and 11) (WRC-03)

TABLE OF CONTENTS

		Page
Article 1	General definitions	3
Article 2	Frequency bands	4
Article 2A	Use of the guardbands	4
Article 3	Execution of the provisions and associated Plans	5
Article 4	Procedures for modifications to the Region 2 Plan or for additional uses in Regions 1 and 3	6
Article 5	Notification, examination and recording in the Master International Frequency Register of frequency assignments to space stations in the broadcasting-satellite service	18
Article 6	Coordination, notification and recording in the Master International Frequency Register of frequency assignments to terrestrial stations or to earth stations in the fixed-satellite service (Earth-to-space) affecting frequency assignments to broadcasting-satellite stations in the 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)	23
Article 7	Coordination, notification and recording in the Master International Frequency Register of frequency assignments to stations in the fixed-satellite service (space-to-Earth) in the 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), and to stations in the broadcasting-satellite service in the band 12.5-12.7 GHz (in Region 3) when frequency assignments to broadcasting-satellite stations in the 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 are involved	24
	in region 5 are involved	27

Note by the Secretariat: Reference to an Article with the number in roman is referring to an Article in this Appendix.

^{*} The expression "frequency assignment to a space station", wherever it appears in this Appendix, shall be understood to refer to a frequency assignment associated with a given orbital position. See also Annex 7 for the orbital limitations. (WRC-2000)

¹ The Regions 1 and 3 List of additional uses is annexed to the Master International Frequency Register (see Resolution **542 (WRC-2000)****). (WRC-03)

^{**} Note by the Secretariat: This Resolution was abrogated by WRC-03.

Article 8	Miscellaneous provisions relating to the procedures
Article 9	(SUP - WRC-03)
Article 10	The Plan for the broadcasting-satellite service in the frequency band 12.2-12.7 GHz in Region 2
Article 11	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
Article 12	Relationship to Resolution 507 (REV.WRC-03)*
Article 13	Interference
Article 14	Period of validity of the provisions and associated Plans
ANNEXES	
Annex 1	Limits for determining whether a service of an administration is affected by a proposed modification to the Region 2 Plan or by a proposed new or modified assignment in the Regions 1 and 3 List or when it is necessary under this Appendix to seek the agreement of any other administration
Annex 2	Basic characteristics to be furnished in notices relating to space stations in the broadcasting-satellite service
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 in these bands by a terrestrial station, or by a transmitting earth station in the fixed-satellite service in the band 12.5-12.7 GHz
Annex 4	Need for coordination of a transmitting space station in the fixed-satellite service or in the broadcasting-satellite service where this service is not subject to a Plan: in Region 2 (11.7-12.2 GHz) with respect to the Plan, the List or proposed new or modified assignments in the List for Regions 1 and 3; in Region 1 (12.5-12.7 GHz) and in Region 3 (12.2-12.7 GHz) with respect to the Plan or proposed modifications to the Plan in Region 2; in Region 3 (12.2-12.5 GHz) with respect to the Plan, List or proposed new or modified assignments in the List for Region 1
Annex 5	Technical data used in establishing the provisions and associated Plans and the Regions 1 and 3 List, which should be used for their application
Annex 6	Criteria for sharing between services
Annex 7	Orbital position limitations

^{*} Note by the Secretariat: This Resolution was revised by WRC-12 and WRC-15.

ARTICLE 1 (REV.WRC-03)

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) (WARC-77).
- 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 (Geneva, 1983) (RARC Sat-R2).
- 1.3 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.
- 1.3A 1997 Conference: World Radiocommunication Conference (Geneva, 1997), called in short WRC-97.
- 1.3B 2000 Conference: World Radiocommunication Conference (Istanbul, 2000), called in short WRC-2000.
- 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.
- 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.
- 1.6 Frequency assignment in conformity with the Plan:
- any frequency assignment which appears in the Regions 1 and 3 Plan; or
- any frequency assignment which appears in the Region 2 Plan or for which the procedure of Article 4 has been successfully applied.
- 1.7 Additional use in Regions 1 and 3: For the application of the provisions of this Appendix, additional uses in Regions 1 and 3 are:
- use of assignments with characteristics different from those appearing in the Regions 1 and 3 Plan and which are capable of causing more interference than the corresponding entries in the Plan;
- use of assignments in addition to those appearing in the Plan.

- 1.8 Regions 1 and 3 List of additional uses (hereafter called in short the "List"): The List of assignments for additional uses in Regions 1 and 3 as established by WRC-2000 (see Resolution **542** (WRC-2000)*), as updated following the successful application of the procedure of § 4.1 of Article 4. (WRC-03)
- 1.9 Frequency assignment in conformity with the List: Any frequency assignment which appears in the List as updated following successful application of § 4.1 of Article 4. (WRC-03)
- 1.10 The broadcasting-satellite service subject to one of the Plans: The broadcasting-satellite service subject to one of the Plans referred to in this Appendix is the broadcasting-satellite service in the 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. (WRC-03)

ARTICLE 2 (WRC-03)

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.
- 2.2 (SUP WRC-03)

ARTICLE 2A (REV.WRC-15)

Use of the guardbands

- 2A.1 The use of the guardbands defined in § 3.9 of Annex 5 to provide space operation functions in accordance with No. **1.23** in support of the operation of geostationary-satellite networks in the broadcasting-satellite service (BSS) is not subject to the application of Section I of Article **9**.
- 2A.1.1 Coordination between assignments intended to provide the space operation functions and assignments of the BSS subject to a Plan shall be effected using the provisions of Article 7.
- 2A.1.2 Coordination among assignments intended to provide the space operation functions and services not subject to a Plan shall be effected using the provisions of Nos. 9.7, 9.17, 9.18 and the associated provisions of Section II of Article 9, or § 4.1.1 *d*) or 4.2.3 *d*) of Article 4, as appropriate.

^{*} Note by the Secretariat: This Resolution was abrogated by WRC-03.

- 2A.1.3 Coordination of modifications to the Region 2 Plan or assignments to be included in the Regions 1 and 3 List with assignments intended to provide these functions shall be effected using § 4.1.1 *e*) or 4.2.3 *e*), as appropriate, of Article 4.
- 2A.1.4 Requests for the coordination referred to in §2A.1.1, 2A.1.2 and 2A.1.3 shall be sent by the requesting administration to the Bureau, together with the appropriate information listed in Appendix 4.
- 2A.2 Any assignment intended to provide these functions in support of a geostationary-satellite network in the BSS shall be notified under Article 11 and brought into use within the following time-limits 1bis: (WRC-15)
- 2A.2.1 *a)* for the case where the associated BSS assignments are contained in one of the initial Plans (Region 2 Plans incorporated in the Radio Regulations at WARC Orb-85 and the Regions 1 and 3 Plan adopted at WRC-2000), within the regulatory time-limit referred to in § 4.1.3 or § 4.2.6 of Article 4 from the date of receipt by the Bureau of the complete Appendix 4 data for those assignments intended to provide the space operation functions;
- 2A.2.2 b) for the case where the associated BSS assignments have been submitted under § 4.1.3 or § 4.2.6 of Article 4 for entry in the Regions 1 and 3 List or a modification to the Region 2 Plan, within the regulatory time-limit referred to in § 4.1.3 or § 4.2.6 of Article 4 for those associated BSS assignments;
- 2A.2.3 c) for the case where the associated BSS assignments have already been brought into use in accordance with the Radio Regulations, within the regulatory time-limit referred to in § 4.1.3 and § 4.2.6 of Article 4 from the date of receipt by the Bureau of the complete Appendix 4 data for those assignments intended to provide the space operation functions.
- 2A.3 Section II of Article **23** does not apply to assignments in the guardbands intended to provide the above-mentioned functions.

ARTICLE 3 (WRC-2000)

Execution of the provisions and associated Plans

- 3.1 The Member States in Regions 1, 2 and 3 shall adopt, for their broadcasting-satellite space stations² 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 Member States 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 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.

¹bis The time-limit is established at the time when the request is received under § 2A.1.4. (WRC-15)

Such stations may also be used for transmissions in the fixed-satellite service (space-to-Earth) in accordance with No. 5.492.

3.3 The Regions 1 and 3 Plan is based on national coverage from the geostationary-satellite orbit. The associated procedures contained in this Appendix are intended to promote long-term flexibility of the Plan and to avoid monopolization of the planned bands and orbit by a country or a group of countries.

ARTICLE 4 (REV.WRC-15)

Procedures for modifications to the Region 2 Plan or for additional uses in Regions 1 and 3³

4.1 Provisions applicable to Regions 1 and 3

- 4.1.1 An administration proposing to include a new or modified assignment in the List shall seek the agreement of those administrations whose services are considered to be affected, i.e. administrations:
- a) of Regions 1 and 3 having a frequency assignment to a space station in the broadcasting-satellite service which is included in the Regions 1 and 3 Plan with a necessary bandwidth, any portion of which falls within the necessary bandwidth of the proposed assignment;
 or
- b) of Regions 1 and 3 having a frequency assignment included in the List or for which complete Appendix 4 information has been received by the Radiocommunication Bureau in accordance with the provisions of § 4.1.3, and any portion of which falls within the necessary bandwidth of the proposed assignment; or
- c) of Region 2 having a frequency assignment to a space station in the broadcasting-satellite service which is in conformity with the Region 2 Plan, or in respect of which proposed modifications to that Plan have been received by the Bureau in accordance with the provisions of § 4.2.6 with a necessary bandwidth, any portion of which falls within the necessary bandwidth of the proposed assignment; or
- d) having no frequency assignment in the broadcasting-satellite service with a necessary bandwidth, any portion of which falls within the necessary bandwidth of the proposed assignment, but in whose territory the power flux-density value exceeds the prescribed limit as a result of the proposed assignment, 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 proposed assignment exceeds the prescribed limit as a result of the proposed assignment; or
- e) 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 International Frequency Register (Master Register) or for which complete coordination information has been received by the Bureau for coordination under No. 9.7, or under § 7.1 of Article 7.

³ The provisions of Resolution 49 (Rev.WRC-15) apply. (WRC-15)

- 4.1.2 The services of an administration are considered to be affected when the limits shown in Annex 1 are exceeded.
- 4.1.3 An administration, or one⁴ acting on behalf of a group of named administrations, intending to include a new or modified assignment in the List shall send to the Bureau, not earlier than eight years but preferably not later than two years before the date on which the assignment is to be brought into use, the relevant information listed in Appendix 4. An assignment in the List shall lapse if it is not brought into use within eight years after the date of receipt by the Bureau of the relevant complete information⁵. A proposed new or modified assignment not included in the List within eight years after the date of receipt by the Bureau of the relevant complete information shall also lapse⁵. (WRC-07)
- 4.1.3*bis* The regulatory time-limit for bringing into use of an assignment in the List may be extended once by not more than three years due to launch failure in the following cases:
- the destruction of the satellite intended to bring the assignment into use;
- the destruction of the satellite launched to replace an already operating satellite which is intended to be relocated to bring another assignment into use; or
- the satellite is launched, but fails to reach its assigned orbital location.

For this extension to be granted, the launch failure must have occurred at least five years after the date of receipt of the complete Appendix 4 data. In no case shall the period of the extension of the regulatory time-limit exceed the difference in time between the three-year period and the period remaining from the date of the launch failure to the end of the regulatory time-limit. In order to take advantage of this extension, the administration shall have, within one month of the launch failure or one month after 5 July 2003, whichever comes later, notified the Bureau in writing of such failure, and shall also provide the following information to the Bureau before the end of the regulatory time-limit of § 4.1.3:

- date of launch failure;
- due diligence information as required in Resolutions 49 (Rev.WRC-15) for the assignment with respect to the satellite that suffered the launch failure, if that information has not already been provided.
- If, 11 months after the request for extension, the administration has not provided to the Bureau updated Resolution 49 (Rev.WRC-15) information, the Bureau shall promptly send a reminder to the notifying administration. If, within one year of the request for extension, the administration has not provided to the Bureau updated Resolution 49 (Rev.WRC-15) information for the new satellite under procurement, the related frequency assignments shall lapse. (WRC-15)

⁴ Whenever, under this provision, an administration acts on behalf of a group of named administrations, all members of that group retain the right to respond in respect of their own networks or systems. (WRC-03)

⁵ The provisions of Resolution **533 (Rev.WRC-2000)*** apply. (WRC-03)

^{*} Note by the Secretariat: This Resolution was abrogated by WRC-12.

⁶ For a launch failure which occurred before 5 July 2003, the maximum extension of three years shall apply as from 5 July 2003. (WRC-03)

- 4.1.4 If the information received by the Bureau under § 4.1.3 is found to be incomplete, the Bureau shall immediately seek from the administration concerned any clarification required and information not provided.
- 4.1.5 The Bureau shall determine, on the basis of Annex 1, the administrations whose frequency assignments are considered to be affected. The Bureau shall publish⁷, in a Special Section of its International Frequency Information Circular (BR IFIC), the complete information received under § 4.1.3, together with the names of the affected administrations, the corresponding fixed-satellite service networks, the corresponding broadcasting-satellite service assignments and terrestrial stations, as appropriate. The Bureau shall immediately send a telegram/fax to the administration proposing the assignment, drawing its attention to the information contained in the relevant BR IFIC. (WRC-07)
- 4.1.6 The Bureau shall send a telegram/fax to the administrations listed in the Special Section of the BR IFIC, drawing their attention to the information it contains. (WRC-07)
- 4.1.7 An administration which considers that it should have been identified in the publication referred to under § 4.1.5 above shall, within four months of the date of publication of its relevant BR IFIC, and giving the technical reasons for so doing, request the Bureau to include its name in the publication. The Bureau shall study this information on the basis of Annex 1 and shall inform both administrations of its conclusions. Should the Bureau agree to the administration's request, it shall publish an addendum to the publication under § 4.1.5.
- 4.1.7bis Except as provided under § 4.1.18 to 4.1.20, any inclusion of a new or modified frequency assignment in the Regions 1 and 3 List 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. (WRC-03)
- 4.1.8 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 Bureau of such requests.
- 4.1.9 Comments from administrations identified in the publication referred to under § 4.1.5 above shall be sent to the Bureau and to the administration proposing the modification. (WRC-15)
- 4.1.10 An administration that has not notified its agreement either to the administration seeking agreement or to the Bureau within a period of four months following the date of the BR IFIC referred to in § 4.1.5 shall be deemed to have not agreed to the proposed assignment unless the provisions of § 4.1.10a to 4.1.10d and § 4.1.21 are applied. This time-limit may be extended:
- for an administration that has requested additional information under § 4.1.8, by up to three months; or
- for an administration that has requested the assistance of the Bureau under § 4.1.21, by up to three months following the date at which the Bureau communicated the result of its action. (WRC-15)

The payments are not received in accordance with the provisions of Council Decision 482, as amended, on the implementation of cost recovery for satellite network filings, the Bureau shall cancel the publication, after informing the administration concerned. The Bureau shall inform all administrations of such action and that the network specified in the publication in question no longer has to be taken into consideration by the Bureau and other administrations. The Bureau shall send a reminder to the notifying administration not later than two months prior to the deadline for the payment in accordance with the above-mentioned Council Decision 482 unless the payment has already been received. (WRC-07)

- 4.1.10*bis* Thirty days prior to the expiry of the same four-month period, the Bureau shall dispatch a reminder telegram or fax to an administration which has not made its comments under § 4.1.10, bringing the matter to its attention. (WRC-03)
- 4.1.10ter (SUP WRC-15)
- 4.1.10a After the same time period as specified in § 4.1.10, the notifying administration may, pursuant to § 4.1.21, request the Bureau to assist in respect of an administration which has not replied within this time period. (WRC-15)
- 4.1.10b The Bureau, acting under § 4.1.10a, shall send a reminder to the administration which has not replied, together with the results of its previously published compatibility analysis, containing the change in the values referred to in paragraph 1b of Annex 1 to Appendix 30, requesting a decision. (WRC-15)
- 4.1.10c Fifteen days before the expiry of the 30-day period referred to in § 4.1.10d, the Bureau shall send a reminder to the above-mentioned administration drawing its attention to the consequence of no reply. (WRC-15)
- 4.1.10d If no decision is communicated to the Bureau within 30 days after the date of dispatch of the reminder under § 4.1.10b, it shall be deemed that the administration which has not given a decision has agreed to the proposed assignment. (WRC-15)
- 4.1.11 If, in seeking agreement, an administration modifies its initial proposal, it shall again apply the provisions of § 4.1 and the subsequent procedure in cases where:
- the assignments of any other administration received by the Bureau in accordance with § 4.1.3 or § 4.2.6, or § 2A.1.4 of Article 2A, or § 7.1 of Article 7, or No. **9.7** before this modified proposal is received under § 4.1.12;
- the assignments of any other administration contained in the Plans or the Lists; or
- the terrestrial services of any other administration,

are considered as being affected and receive more interference as a result of the modifications than that produced by the initial proposal. (WRC-15)

- 4.1.12 If agreement has been reached with the administrations identified in the publication referred to under § 4.1.5 above, the administration proposing the new or modified assignment may continue with the appropriate procedure in Article 5, and shall so inform the Bureau, indicating the final characteristics of the frequency assignment together with the names of the administrations with which agreement has been reached. (WRC-15)
- 4.1.12*bis* In application of § 4.1.12, an administration may indicate the changes to the information communicated to the Bureau under § 4.1.3 and published under § 4.1.5. (WRC-03)
- 4.1.13 The agreement of the administrations affected may also be obtained in accordance with this Article, for a specified period. When this specific period of agreement expires for an assignment in the List, the assignment in question shall be maintained in the List until the end of the period referred to in § 4.1.3 above. After that date this assignment shall lapse unless the agreement of the administrations affected is renewed. (WRC-03)

- 4.1.14 Where the proposed assignment involves developing countries, administrations shall seek all practicable solutions conducive to the economical development of the broadcasting-satellite systems of these countries.
- 4.1.15 The Bureau shall publish⁸ in a Special Section of its BR IFIC the information received under § 4.1.12, together with the names of any administrations with which the provisions of this Article have been successfully applied. The frequency assignment concerned shall be included in the List. (WRC-03)
- 4.1.16 In case of disagreement on the part of an administration whose agreement has been sought, the requesting administration 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.
- 4.1.17 If no agreement is reached between the administrations concerned, the Bureau shall carry out any study that may be requested by either one of these administrations; the Bureau 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.
- 4.1.18 If, in spite of the application of § 4.1.16 and 4.1.17, there is still continuing disagreement and the assignment which was the basis of the disagreement is not an assignment in the Regions 1 and 3 Plan, or in the Region 2 Plan or for which the procedure of § 4.2 has been initiated, and if the notifying administration insists that the proposed assignment be included in the Regions 1 and 3 List, the Bureau shall provisionally enter the assignment in the Regions 1 and 3 List with an indication of those administrations whose assignments were the basis of the disagreement; however, the entry shall be changed from provisional to definitive recording in the List only if the Bureau is informed that the new assignment in the Regions 1 and 3 List has been in use, together with the assignment which was the basis for the disagreement, for at least four months without any complaint of harmful interference being made. (WRC-03)
- 4.1.18bis When requesting the application of § 4.1.18, the notifying administration shall undertake to meet the requirements of § 4.1.20 and provide to the administration in respect of which § 4.1.18 is applied, with a copy to the Bureau, a description of the steps by which it undertakes to meet these requirements. Once an assignment is entered in the List provisionally under the provisions of § 4.1.18, the calculation of the equivalent protection margin (EPM)⁹ of an assignment in the Regions 1 and 3 List or for which the procedure of Article 4 has been initiated and which was the basis for the disagreement shall not take into account the interference produced by the assignment for which the provisions of § 4.1.18 have been applied. (WRC-03)
- 4.1.19 Should the assignments that were the basis of the disagreement not be brought into use within the period specified in No. **11.44** (for non-planned services), or in § 4.1 (for assignments in the List or having initiated the procedure under § 4.1), as appropriate, then the status of the assignment in the List shall be reviewed accordingly.

⁸ If the payments are not received in accordance with the provisions of Council Decision 482, as amended, on the implementation of cost recovery for satellite network filings, the Bureau shall cancel the publication, after informing the administration concerned. The Bureau shall inform all administrations of such action and that the network specified in the publication in question no longer has to be taken into consideration by the Bureau and other administrations. The Bureau shall send a reminder to the notifying administration not later than two months prior to the deadline for the payment in accordance with the above-mentioned Council Decision 482 unless the payment has already been received. (WRC-07)

⁹ For the definition of EPM, see § 3.4 of Annex 5. (WRC-03)

- 4.1.20 Should harmful interference be caused by an assignment included in the List under § 4.1.18 to any recorded assignment in the Master Register which was the basis of the disagreement, the administration using the frequency assignment included in the List under § 4.1.18 shall, upon receipt of advice thereof, immediately eliminate this harmful interference.
- 4.1.21 An administration may, at any stage in the procedure described, or before applying it, request the assistance of the Bureau.
- 4.1.22 The relevant provisions of Article 5 shall be applied when frequency assignments are notified to the Bureau.
- 4.1.23 When a frequency assignment included in the List is no longer required, the administration concerned shall immediately so inform the Bureau. The Bureau shall publish this information in a Special Section of its BR IFIC and delete the assignment from the List.
- 4.1.24 No assignment in the List shall have a period of operation exceeding 15 years, counted from the date of bringing into use, or 2 June 2000, whichever is later. Upon request by the responsible administration received by the Bureau at the latest three years before the expiry of this period, this period may be extended by up to 15 years, on condition that all the characteristics of the assignment remain unchanged.
- 4.1.25 Where an administration already having included in the List two assignments (not including those systems notified on behalf of a group of named administrations and included in the List by WRC-2000), in the same channel and covering the same service area, proposes to include in the List a new assignment in the same channel over this same service area, it shall apply the following in respect of another administration which has no assignment in the List in the same channel and which proposes to include in the List a new assignment:
- a) if the agreement of the former administration is required following the application of § 4.1 by the latter administration, in order to protect the new assignment proposed by the former administration from interference caused by the assignment proposed by the latter administration, both administrations shall make every possible effort to resolve the difficulties by means of mutually acceptable adjustments to their networks;
- b) in case of continuing disagreement, and if the former administration has not communicated to the Bureau the information specified in Annex 2 to Resolution 49 (Rev.WRC-15), this administration shall be deemed to have given its agreement to inclusion in the List of the assignment of the latter administration. (WRC-15)
- 4.1.26 The procedure of this Article may be applied by the administration of a new ITU Member State in order to include new assignments in the List. Upon completion of the procedure, the next World Radiocommunication Conference may be requested to consider, among the assignments included in the List after the successful completion of this procedure, the inclusion in the Plan of up to 10 channels (for Region 1) and up to 12 channels (for Region 3), over the national territory of the new Member State. (WRC-03)
- 4.1.27 When an administration has successfully applied this procedure and received all the agreements¹⁰ required to include in the List assignments over its national territory, at an orbital location and/or in channels different from those appearing in the Plan for its country, it may request the next world radiocommunication conference to consider the inclusion in the Plan of up to 10 (for Region 1) and up to 12 (for Region 3) of these assignments, in replacement of its assignments appearing in the Plan.

¹⁰ In such a case, § 4.1.18 does not apply.

- 4.1.27 bis Should the assignments mentioned in § 4.1.26 and 4.1.27 over the national territory of the administration not be brought into use within the regulatory time-limit mentioned in § 4.1.3, they would be retained in the List until the end of the world radiocommunication conference immediately following the successful completion of the procedure referred to in § 4.1.26 and 4.1.27 respectively, and thereafter they shall be removed from the List. (WRC-03)
- 4.1.28 The List, as updated, shall be published periodically by the Bureau.
- 4.1.29 New or modified assignments in the List shall be limited to digital modulation.

4.2 Provisions applicable to Region 2

- 4.2.1 When an administration intends to make a modification¹¹ to the Region 2 Plan, i.e.:
- a) to modify the characteristics of any of its frequency assignments to a space station in the broadcasting-satellite service which are shown in the Region 2 Plan, or for which the procedure in this Article has been successfully applied, whether or not the station has been brought into use; or
- to include in the Region 2 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 Bureau (see Article 5).

- 4.2.2 The term "frequency assignment in conformity with the Plan" used in this and the following Articles is defined in Article 1.
- 4.2.3 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:
- a) of Regions 1 and 3 having a frequency assignment to a space station in the broadcasting-satellite service which is in conformity with the Regions 1 and 3 Plan with a necessary bandwidth, any portion of which falls within the necessary bandwidth of the proposed assignment; or
- b) of Regions 1 and 3 having a frequency assignment included in the List or for which complete Appendix 4 information has been received by the Bureau in accordance with the provisions of § 4.1.3, and any portion of which falls within the necessary bandwidth of the proposed assignment; or
- c) 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 been received by the Bureau in accordance with the provisions of § 4.2.6; or

¹¹ For assignments using analogue modulation, the intention not to employ energy dispersal in accordance with § 3.18 of Annex 5 shall be treated as a modification and thus subject to the appropriate provisions of this Article.

- d) 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
- e) 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 for which complete coordination information has been received by the Bureau for coordination under No. 9.7 or under § 7.1 of Article 7; or
- f) 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 a necessary bandwidth, any portion of which falls within the necessary bandwidth of the proposed assignment, and:
 - which is recorded in the Master Register; or
 - for which complete coordination information has been received by the Bureau for coordination under No. 9.7¹² or under § 7.1 of Article 7;
- g) whose services are considered to be affected.
- 4.2.4 Not used.
- 4.2.5 The services of an administration are considered to be affected when the limits shown in Annex 1 are exceeded.
- 4.2.6 An administration, or one¹³ acting on behalf of a group of named administrations, intending to make a modification to the Region 2 Plan shall send to the Bureau, not earlier than eight years but preferably not later than two years before the date on which the assignment is to be brought into use, the relevant information listed in Appendix 4. Modifications to that Plan shall lapse if the assignment is not brought into use within eight years after the date of receipt by the Bureau of the relevant complete information¹⁴. A request for a modification that has not been included in that Plan within eight years after the date of receipt by the Bureau of the relevant complete information shall also lapse¹⁴. (WRC-07)

¹² Or under Resolution **33 (Rev.WRC-97)*** for assignments for which the API or the request for coordination has been received by the Bureau prior to 1 January 1999.

^{*} Note by the Secretariat: This Resolution was revised by WRC-03 and WRC-15.

¹³ Whenever, under this provision, an administration acts on behalf of a group of named administrations, all members of that group retain the right to respond in respect of their own networks or systems. (WRC-03)

¹⁴ The provisions of Resolution **533 (Rev.WRC-2000)**** apply. (WRC-03)

^{**} Note by the Secretariat: This Resolution was abrogated by WRC-12.

- 4.2.6bis The regulatory time-limit for bringing into use of an assignment in the Region 2 Plan obtained through application of § 4.2 may be extended once by not more than three years due to launch failure in the following cases:
- the destruction of the satellite intended to bring the assignment into use;
- the destruction of the satellite launched to replace an already operating satellite which is intended to be relocated to bring another assignment into use; or
- the satellite is launched, but fails to reach its assigned orbital location.

For this extension to be granted, the launch failure must have occurred at least five years after the date of receipt of the complete Appendix 4 data. In no case shall the period of the extension of the regulatory time-limit exceed the difference in time between the three-year period and the period remaining from the date of the launch failure to the end of the regulatory time-limit ¹⁵. In order to take advantage of this extension, the administration shall have, within one month of the launch failure or one month after 5 July 2003, whichever comes later, notified the Bureau in writing of such failure, and shall also provide the following information to the Bureau before the end of the regulatory time-limit of § 4.2.6:

- date of launch failure;
- due diligence information as required in Resolution 49 (Rev.WRC-15) for the assignment with respect to the satellite that suffered the launch failure, if that information has not already been provided.
- If, 11 months after the request for extension, the administration has not provided to the Bureau updated Resolution 49 (Rev.WRC-15) information, the Bureau shall promptly send a reminder to the notifying administration. If, within one year of the request for extension, the administration has not provided to the Bureau updated Resolution 49 (Rev.WRC-15) information for the new satellite under procurement, the related frequency assignments shall lapse. (WRC-15)
- 4.2.7 If the information received by the Bureau under § 4.2.6 is found to be incomplete, the Bureau shall immediately seek from the administration concerned any clarification required and information not provided.
- 4.2.8 The Bureau shall determine, on the basis of Annex 1, the administrations whose frequency assignments are considered to be affected within the meaning of § 4.2.3. The Bureau shall publish¹⁶, in a Special Section of its BR IFIC, the complete information received under § 4.2.6, together with the names of the affected administrations, the corresponding fixed-satellite service networks, the corresponding broadcasting-satellite service assignments and terrestrial stations, as appropriate. The Bureau shall immediately send a telegram/fax to the administration proposing the modification to the Region 2 Plan, drawing its attention to the information contained in the relevant BR IFIC. (WRC-07)

¹⁵ For a launch failure which occurred before 5 July 2003, the maximum extension of three years shall apply as from 5 July 2003. (WRC-03)

¹⁶ If the payments are not received in accordance with the provisions of Council Decision 482, as amended, on the implementation of cost recovery for satellite network filings, the Bureau shall cancel the publication, after informing the administration concerned. The Bureau shall inform all administrations of such action and that the network specified in the publication in question no longer has to be taken into consideration by the Bureau and other administrations. The Bureau shall send a reminder to the notifying administration not later than two months prior to the deadline for the payment in accordance with the above-mentioned Council Decision 482 unless the payment has already been received. (WRC-07)

- 4.2.9 The Bureau shall send a telegram/fax to the administrations listed in the Special Section of its BR IFIC, drawing their attention to the information it contains. (WRC-07)
- 4.2.10 An administration which considers that it should have been included in the publication referred to under § 4.2.8 above shall, within four months of the date of publication in the relevant BR IFIC, and giving the technical reasons for so doing, request the Bureau to include its name in the publication. The Bureau shall study this information on the basis of Annex 1 and shall inform both administrations of its conclusions. Should the Bureau agree to the administration's request, it shall publish an addendum to the publication under § 4.2.8. (WRC-07)
- 4.2.11 Except as provided under § 4.2.21A to 4.2.21D, any modification to a frequency assignment which is in conformity with the Region 2 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. (WRC-03)
- 4.2.12 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 Bureau of such requests.
- 4.2.13 Comments from administrations on the information published pursuant to § 4.2.8 should be sent either directly to the administration proposing the modification or through the Bureau. In any event, the Bureau shall be informed that comments have been made.
- 4.2.14 An administration that has not notified its comments either to the administration seeking agreement or to the Bureau within a period of four months following the date of the BR IFIC referred to in § 4.2.8 shall be deemed 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 § 4.2.12 or for an administration that has requested the assistance of the Bureau under § 4.2.22. In the latter case, the Bureau shall inform the administrations concerned of this request.
- 4.2.14bis Thirty days prior to the expiry of the same four-month period the Bureau shall dispatch a reminder telegram or fax to an administration which has not made its comments under § 4.2.14, bringing the matter to its attention. (WRC-03)
- 4.2.14ter After expiry of the deadline for comments in respect of the proposed assignment, the Bureau shall, according to its records, publish a Special Section, indicating the list of administrations whose agreements are required for completion of the Article 4 procedure. (WRC-03)
- 4.2.15 If, in seeking agreement, an administration modifies its initial proposal, it shall again apply the provisions of § 4.2 and the consequent procedure with respect to any other administration whose services might be affected as a result of modifications to the initial proposal.
- 4.2.16 If no comments have been received on the expiry of the periods specified in § 4.2.14, 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 so inform the Bureau, indicating the final characteristics of the frequency assignment together with the names of the administrations with which agreement has been reached
- $4.2.16 bis \quad \text{In application of § 4.2.16, an administration may indicate the changes to the information communicated to the Bureau under § 4.2.6 and published under § 4.2.8. $$ (WRC-03)$}$

- 4.2.17 The agreement of the administrations affected may also be obtained in accordance with this Article, for a specified period. When this specific period of agreement expires for an assignment in the Plan, the assignment in question shall be maintained in the Plan until the end of the period referred to in § 4.2.6 above. After that date this assignment in the Plan shall lapse unless the agreement of the administrations affected is renewed. (WRC-03)
- 4.2.18 When the proposed modification to the Region 2 Plan involves developing countries, administrations shall seek all practicable solutions conducive to the economical development of the broadcasting-satellite systems of these countries.
- 4.2.19 The Bureau shall publish 17 in a Special Section of its BR IFIC the information received under \S 4.2.16 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 Region 2 Plan and will be considered as a frequency assignment in conformity with the Plan. (WRC-03)
- 4.2.20 When an administration proposing to modify the characteristics of a frequency assignment or to make a new frequency assignment receives notice of disagreement on the part of 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.
- 4.2.21 If no agreement is reached between the administrations concerned, the Bureau shall carry out any study that may be requested by these administrations; the Bureau 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.
- 4.2.21A If, in spite of the application of § 4.2.20 and 4.2.21, there is still continuing disagreement and the assignment which was the basis of the disagreement is not an assignment in the Region 2 Plan, or in the Regions 1 and 3 Plan or List, or for which the procedure of § 4.1 or 4.2 has been initiated, and if the notifying administration insists that the proposed assignment be included in the Region 2 Plan, the Bureau shall provisionally enter the assignment in the Region 2 Plan with an indication of those administrations whose assignments were the basis of the disagreement; however, the entry shall be changed from provisional to definitive recording in the Region 2 Plan only if the Bureau is informed that the new assignment in the Region 2 Plan has been in use, together with the assignment which was the basis for the disagreement, for at least four months without any complaint of harmful interference being made. (WRC-03)
- 4.2.21B When requesting the application of § 4.2.21A, the notifying administration shall undertake to meet the requirements of § 4.2.21D and provide to the administration in respect of which § 4.2.21A has been applied, with a copy to the Bureau, a description of the steps by which it undertakes to meet these requirements. (WRC-03)

17 т

¹⁷ If the payments are not received in accordance with the provisions of Council Decision 482, as amended, on the implementation of cost recovery for satellite network filings, the Bureau shall cancel the publication, after informing the administration concerned. The Bureau shall inform all administrations of such action and that the network specified in the publication in question no longer has to be taken into consideration by the Bureau and other administrations. The Bureau shall send a reminder to the notifying administration not later than two months prior to the deadline for the payment in accordance with the above-mentioned Council Decision 482 unless the payment has already been received. (WRC-07)

- 4.2.21C Should the assignments that were the basis of the disagreement not be brought into use within the period specified in No. **11.44**, the status of the assignment in the Region 2 Plan shall be reviewed accordingly. (WRC-03)
- 4.2.21D Should harmful interference be caused by an assignment included in the Region 2 Plan under § 4.2.21A to any recorded assignment in the Master Register which was the basis of the disagreement, the administration using the frequency assignment included in the Region 2 Plan under § 4.2.21A shall, upon receipt of advice thereof, immediately eliminate this harmful interference. (WRC-03)
- 4.2.22 An administration may at any stage in the procedure described, or before applying it, request the assistance of the Bureau.
- 4.2.23 The relevant provisions of Article 5 shall be applied when frequency assignments are notified to the Bureau.

4.2.24 Cancellation of frequency assignments

When a frequency assignment in conformity with the Region 2 Plan is no longer required, whether or not as a result of a modification, the administration concerned shall immediately so inform the Bureau. The Bureau shall publish this information in a Special Section of its BR IFIC and delete the assignment from the Region 2 Plan.

4.2.25 Master copy of the Region 2 Plan

- 4.2.25.1 The Bureau 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 set out 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 set out in this Article.
- 4.2.25.2 An up-to-date version of the Region 2 Plan shall be published by the Secretary-General when justified by the circumstances.

ARTICLE 5 (REV.WRC-15)

Notification, examination and recording in the Master International Frequency Register of frequency assignments to space stations in the broadcasting-satellite service¹⁸ (WRC-07)

5.1 Notification

- 5.1.1 Whenever an administration ¹⁹ 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 Bureau. For this purpose, the notifying administration shall apply the following provisions. (WRC-03)
- 5.1.2 For any notification under § 5.1.1, an individual notice for each frequency assignment shall be drawn up as prescribed in Appendix 4, 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. (WRC-2000)
- 5.1.2bis In application of § 5.1.2, an administration may identify the characteristics of assignments in the Plans or the List as notification and send to the Bureau the changes thereto. (WRC-03)
- 5.1.3 Each notice must reach the Bureau 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 Bureau not later than three months before that date²⁰. (WRC-2000)
- 5.1.4 Any frequency assignment the notice of which reaches the Bureau 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 Appendix 4 shall be returned by the Bureau immediately by airmail to the notifying administration with the relevant reasons. (WRC-2000)

¹⁸ If the payments are not received in accordance with the provisions of Council Decision 482, as amended, on the implementation of cost recovery for satellite network filings, the Bureau shall cancel the publication specified in § 5.1.6 and the corresponding entries in the Master Register under § 5.2.2, 5.2.2.1, 5.2.2.2 or 5.2.6, as appropriate, and the corresponding entries included in the Plan on and after 3 June 2000 or in the List, as appropriate, after informing the administration concerned. The Bureau shall inform all administrations of such action. The Bureau shall send a reminder to the notifying administration not later than two months prior to the deadline for the payment in accordance with the above-mentioned Council Decision 482 unless the payment has already been received. See also Resolution 905 (WRC-07)*. (WRC-07)

^{*} Note by the Secretariat: This Resolution was abrogated by WRC-12.

¹⁹ A frequency assignment may be notified by one administration acting on behalf of a group of named administrations. Any further notice (modification or deletion) relating to that assignment shall, in the absence of information to the contrary, be regarded as having been submitted on behalf of the entire group. (WRC-03)

²⁰ Where appropriate, the notifying administration shall initiate the procedure for modifying the Plan concerned or for including assignments in the Regions 1 and 3 List in sufficient time to ensure that this limit is observed. For Region 2, see also Resolution 42 (Rev.WRC-03) and § B of Annex 7. (WRC-03)

- 5.1.6 Upon receipt of a complete notice, the Bureau shall include its particulars, with the date of receipt, in its BR IFIC, which shall contain the particulars of all such notices received since the publication of the previous Circular. (WRC-2000)
- 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 Bureau in order of receipt. The Bureau shall not postpone its finding unless it lacks sufficient data to reach a decision; moreover, the Bureau shall not act upon any notice which has a technical bearing on an earlier notice still under consideration by the Bureau until it has reached a finding with respect to such earlier notice.

5.2 Examination and recording

5.2.1 The Bureau shall examine each notice:

- a) with respect to its conformity with the Constitution, the Convention and the relevant provisions of the Radio Regulations (with the exception of those relating to $\S b$), c), d) and e) below);
- with respect to its conformity with the appropriate Regional Plan or the Regions 1 and 3
 List, as appropriate; or
- with respect to the coordination requirements specified in the Remarks column of Article 10 or Article 11; or
- d) with respect to its conformity with the appropriate Regional Plan or the Regions 1 and 3 List, however, having characteristics differing from those in the appropriate Regional Plan or in the Regions 1 and 3 List, 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 or in the Regions 1 and 3 List,
 - use of other modulating signals in accordance with the provisions of § 3.1.3 of Annex 5.
 - use of the assignment for transmission in the fixed-satellite service in accordance with No. 5.492.
 - in the case of Region 2, use of an orbital position under the conditions specified in § B of Annex 7,
 - in the case of the notification of Plan assignments, use of an e.i.r.p. which produces a pfd that exceeds the limit of -103.6 dB(W/(m² · 27 MHz)) given in Section 1 of Annex 1 to Appendix 30 on the territory of the notifying administration under the condition that the calculated pfd at test points of any Plan assignment, List assignment or proposed assignment submitted under Article 4 are equal to or below that of the original Plan assignments in the same channel of the administration applying this section; or
- e) with respect to its conformity with the provisions of Resolution 42 (Rev.WRC-03)*. (WRC-03)

^{*} Note by the Secretariat: This Resolution was revised by WRC-12 and WRC-15.

- 5.2.2 Where the Bureau reaches a favourable finding with respect to § 5.2.1 *a*), 5.2.1 *b*) and 5.2.1 *c*), the frequency assignment of an administration shall be recorded in the Master Register. The date of receipt of the notice by the Bureau shall be entered in the Master Register. 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 of receipt entered in the Master Register for such frequency assignments. (WRC-07)
- 5.2.2.1 Where the Bureau reaches a favourable finding with respect to § 5.2.1 *a*), 5.2.1 *c*) and 5.2.1 *d*), the frequency assignment shall be recorded in the Master Register. The date of receipt of the notice by the Bureau shall be entered in the Master Register. 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 of receipt entered in the Master Register for such frequency assignments. When recording these assignments, the Bureau shall indicate by an appropriate symbol the characteristics having a value different from that appearing in the appropriate regional Plan. (WRC-07)
- 5.2.2.2 In the case of Region 2, where the Bureau reaches a favourable finding with respect to § 5.2.1 a) and 5.2.1 c), but an unfavourable finding with respect to § 5.2.1 b) and 5.2.1 d), it shall examine the notice with respect to the successful application of the provisions of Resolution 42 (Rev.WRC-03)*. A frequency assignment for which the provisions of Resolution 42 (Rev.WRC-03)* 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 Bureau shall be entered in the Master Register. In relations between administrations all frequency assignments brought into use following the successful application of the provisions of Resolution 42 (Rev.WRC-03)* and recorded in the Master Register shall be considered to have the same status irrespective of the dates of receipt entered in the Master Register for such frequency assignments. (WRC-07)
- 5.2.2.3 In the case of Regions 1 and 3, when the Bureau reaches a favourable finding with respect to § 5.2.1 *a)* and 5.2.1 *c)* but an unfavourable finding with respect to § 5.2.1 *b)* and 5.2.1 *d)*, the notice shall be returned immediately by airmail to the notifying administration with the Bureau's reasons for this finding and with such suggestions as the Bureau may be able to offer with a view to a satisfactory solution of the problem. (WRC-2000)
- 5.2.3 Whenever a frequency assignment is recorded in the Master Register, the finding reached by the Bureau shall be indicated. (WRC-07)
- 5.2.4 Where the Bureau reaches an unfavourable finding with respect to:
- § 5.2.1 a), or
- § 5.2.1 c), or
- § 5.2.1 b) and 5.2.1 d) and, where applicable, § 5.2.1 e),

the notice shall be returned immediately by airmail to the notifying administration with the reasons of the Bureau for this finding and with such suggestions as the Bureau may be able to offer with a view to a satisfactory solution of the problem. (WRC-2000)

^{*} Note by the Secretariat: This Resolution was revised by WRC-12 and WRC-15.

- 5.2.5 Where the notifying administration resubmits the notice and the finding of the Bureau 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 Bureau'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. For Regions 1, 2 and 3, in the event that the Bureau 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 § 5.1.3 has received a favourable finding by the Bureau 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 Bureau has received confirmation that the frequency assignment has been brought into use, the Bureau shall remove the symbol in the Master Register.
- 5.2.9 The date of bringing into use notified by the administration concerned shall be recorded in the Master Register. (WRC-07)
- 5.2.10 Wherever the use of a frequency assignment to a space station recorded in the Master Register and emanating from the Regions 1 and 3 List is suspended for a period exceeding six months, the notifying administration shall inform the Bureau of the date on which such use was suspended. When the recorded assignment is brought back into use, the notifying administration shall so inform the Bureau, as soon as possible. On receipt of the information sent under this provision, the Bureau shall make that information available on the ITU website as soon as possible and shall publish it in the BR IFIC. The date on which the recorded assignment is brought back into use^{20bis} shall be no later than three years from the date on which the use of the frequency assignment was suspended, provided that the notifying administration informs the Bureau of the suspension within six months from the date on which the use was suspended. If the notifying administration informs the Bureau of the suspension more than six months after the date on which the use of the frequency assignment was suspended, this three-year time period shall be reduced. In this case, the amount by which the threeyear period shall be reduced shall be equal to the amount of time that has elapsed between the end of the six-month period and the date that the Bureau is informed of the suspension. If the notifying administration informs the Bureau of the suspension more than 21 months after the date on which the use of the frequency assignment was suspended, the frequency assignment shall be cancelled. (WRC-15)

²⁰bis The date of bringing back into use of a frequency assignment to a space station in the geostationary-satellite orbit shall be the commencement of the 90-day period defined below. A frequency assignment to a space station in the geostationary-satellite orbit shall be considered as having been brought back into use when a space station in the geostationary-satellite orbit with the capability of transmitting or receiving that frequency assignment has been deployed and maintained at the notified orbital position for a continuous period of 90 days. The notifying administration shall inform the Bureau within 30 days from the end of the 90-day period. Resolution 40 (WRC-15) shall apply. (WRC-15)

5.2.11 If a recorded frequency assignment stemming from the Regions 1 and 3 List is not brought back into use within the suspension period resulting from the application of § 5.2.10 above, the Bureau shall cancel the assignment from the Master Register and the assignment in the List, unless the assignment is one to which § 4.1.26 or § 4.1.27 is being applied. (WRC-15)

5.3 Cancellation of entries in the Master Register

- 5.3.1 Any notified frequency assignment to which the Article 4 procedures have been applied and which has been provisionally recorded under § 5.2.7 shall be brought into use no later than the end of the period provided under § 4.1.3, 4.1.3*bis*, 4.2.6 or 4.2.6*bis* of Article 4. Any other frequency assignment provisionally recorded under § 5.2.7 shall be brought into use by the date specified in the notice. Unless the Bureau has been informed by the notifying administration of the bringing into use of the assignment under § 5.2.8, it shall, no later than 15 days before the notified date of bringing into use or the end of the regulatory period established under § 4.1.3, 4.1.3*bis*, 4.2.6 or 4.2.6*bis* of Article 4, as appropriate, send a reminder requesting confirmation that the assignment has been brought into use within the regulatory period. If the Bureau does not receive that confirmation within 30 days following the notified date of bringing into use or the period provided under § 4.1.3, 4.1.3*bis*, 4.2.6 or 4.2.6*bis* of Article 4, as the case may be, it shall cancel the entry in the Master Register. (WRC-15)
- 5.3.2 If the use of any recorded frequency assignment is permanently discontinued, the notifying administration shall so inform the Bureau within three months, whereupon the entry shall be removed from the Master Register.

ARTICLE 6 (WRC-2000)

Coordination, notification and recording in the Master International Frequency Register of frequency assignments to terrestrial stations or to earth stations in the fixed-satellite service (Earth-to-space) affecting frequency assignments to broadcasting-satellite stations in the 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)²¹

- 6.1 The provisions of No. **9.19** and the associated provisions under Articles **9** and **11** are applicable in respect of frequency assignments to broadcasting-satellite stations in the 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:
- a) to transmitting terrestrial stations in the band 11.7-12.7 GHz in all Regions;
- b) to transmitting earth stations in the fixed-satellite service in the band 12.5-12.7 GHz (in Region 1).
- 6.2 In applying the procedures referred to in \S 6.1, the provisions of Appendix 5 are replaced by the following:
- 6.2.1 These procedures are to be applied in respect of administrations whose territory is included within the service area associated with:
- a) assignments in conformity with the appropriate Regional Plan in Appendix 30;
- b) assignments included in the Regions 1 and 3 List;
- c) assignments for which the procedure of Article 4 has been initiated, as from the date of receipt of the complete Appendix 4 information under § 4.1 or 4.2.
- 6.2.2 The criteria to be applied are those given in Annex 3.

²¹ These procedures do not replace the procedures prescribed for terrestrial stations in Articles 9 and 11.

ARTICLE 7 (REV.WRC-03)

Coordination, notification and recording in the Master International Frequency Register of frequency assignments to stations in the fixed-satellite service (space-to-Earth) in the 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), and to stations in the broadcasting-satellite service in the band 12.5-12.7 GHz (in Region 3) when frequency assignments to broadcasting-satellite stations in the 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 are involved²²

- 7.1 The provisions of No. **9.7**²³ and the associated provisions under Articles **9** and **11** are applicable in respect of frequency assignments to broadcasting-satellite stations in the 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:
- a) to transmitting space stations in the fixed-satellite service in the 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); and
- b) to transmitting space stations in the broadcasting-satellite service in the band 12.5-12.7 GHz (in Region 3).
- 7.2 In applying the procedures referred to in \S 7.1, the provisions of Appendix 5 are replaced by the following:
- 7.2.1 The frequency assignments to be taken into account are:
- a) the assignments in conformity with the appropriate Regional Plan in Appendix 30;
- b) the assignments included in the Regions 1 and 3 List;
- c) the assignments for which the procedure of Article 4 has been initiated, as from the date of receipt of the complete Appendix 4 information under § 4.1.3 or 4.2.6. (WRC-03)
- 7.2.2 The criteria to be applied are those given in Annex 4.

²² These provisions do not replace the procedures prescribed in Articles **9** and **11** when stations other than those in the broadcasting-satellite service subject to a Plan are involved. (WRC-03)

²³ The provisions of Resolution **33 (Rev.WRC-97)*** are applicable to space stations in the broadcasting-satellite service for which the advance publication information or the request for coordination has been received by the Bureau prior to 1 January 1999.

^{*} Note by the Secretariat: This Resolution was revised by WRC-03 and WRC-15.

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;
- 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 § 8.5, the administration shall provide the Board with the necessary information.

ARTICLE 9 (SUP - WRC-03)

^{*} Note by the Secretariat: WRC-97 did not review this Article. The subject matter is also dealt with in Articles 13 and 14, which were reviewed by WRC-97.

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	<i>Beam identification</i> (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	${\it Channel\ number}$ (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 $(1 = direct, 2 = indirect)^{24}$.
Col. 8	e.i.r.p. in the direction of maximum radiation, in dBW.
Col. 9	Remarks.
10.2	TEXT FOR NOTES IN REMARKS COLUMN OF THE PLAN
1	Fast roll-off space station transmitting antenna as defined in Annex 5 (item 3.13.3).
2 bandwidth	Television standard with 625 lines using greater video bandwidth and necessary of 27 MHz.
3	Not used
4 the beam a	This assignment may be utilized in the geographical area of Anguilla (AIA) (which is in rea).

²⁴ See Annex 5 (§ 3.2) of this Appendix.

- 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.
- 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 (Rev.WRC-03)* 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. (WRC-03)
- 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.
- 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.

^{*} Note by the Secretariat: This Resolution was revised by WRC-12 and WRC-15.

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 NO711B 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	pfd limit criteria
a	§ 3, Annex 1
b	§ 5 <i>b</i>), Annex 1
с	§ 5 c), Annex 1
d	§ 5 <i>d</i>), Annex 1

 $Note-Section \ 5 \ of \ Annex \ 1 \ was \ merged \ with \ Section \ 4 \ by \ WRC-2000. \ See \ also \ the \ Note \ to \ Table \ 3. \quad (WRC-2000)$

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 ex-IFRB Special Section AR11/C/766 to BR IFIC No. 1678 of 2 July 1985 does not exceed the limit 26.8 dBW.

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 ex-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 criteria 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/M RC/MTN/POR/SEN
ARGNORT5	2, 4, 6, 8, 10, 12, 14, 16, 18, 20	b	AFS/AGL/BOT/NMB/NOR/OCE/PTC/ TKL/COD/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/COD
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/S TP/TCD/TUN/COD
B CE412	For channels 1 to 20 All channels	c c	CYP/TUR ARS/EGY/ISR/SDN/URS
B CE511	For channels 1 to 20	b	CAF/CME/COG/GAB/GNE/NIG/NMB/ NOR/STP/COD
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

^{*} Note by the Secretariat: This Table was not modified by WRC-97. As such, the references to ETH, TCH, URS and YUG in this column refer to the countries or geographical areas described by these symbols when the Plan was established.

TABLE 3 (continued)

Beam name	Channels	Limit criteria ref. Table 2	Countries or geographical areas affected*
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	с	URS
CAN01303	All channels	c	URS
CAN01403	All channels	с	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
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	С	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/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

TABLE 3 (end)

Beam name	Channels	Limit criteria ref. Table 2	Countries or geographical areas affected*
MEX02SUR	All channels	С	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
SPMFRAN3	1, 5, 9, 13, 17	b	D/DNK/ISL/NOR/S
USAEH001	For channels 1 to 20	b	ALG/AUT/BEL/CVA/D/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	MHL URS
USAEH004	For channels 1 to 20 All channels For channels 20 to 32	b c d	WAK URS URS
USAWH101	All channels	с	URS
USAWH102	All channels	с	URS
VENAND03	21, 23, 25, 27, 29, 31	с	URS
VEN11VEN	2, 4, 6, 8, 10, 12, 14, 16, 18, 20 20, 22, 24, 26, 28, 30, 32	b c	AZR/CPV URS

Note – The administrations listed in Table 3 were identified on the basis of the criteria adopted at the Regional Administrative Conference for the Planning of the Broadcasting-satellite Service in Region 2 (Geneva, 1983) (RARC Sat-R2), as shown in Table 2. WRC-2000 and WRC-03 revised the criteria applicable to determine affected administrations. Therefore, the Bureau, when receiving a notification for an assignment in the Region 2 Plan, shall determine which countries are affected on the basis of the revised criteria adopted by WRC-03, which may lead to a different set of affected administration(s) from that currently contained in Table 3. (WRC-07)

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 to 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, KNA, 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	12 224.00	17	12 457.28
2	12 238.58	18	12 471.86
3	12 253.16	19	12 486.44
4	12 267.74	20	12 501.02
5	12 282.32	21	12 515.60
6	12 296.90	22	12 530.18
7	12 311.48	23	12 544.76
8	12 326.06	24	12 559.34
9	12 340.64	25	12 573.92
10	12 355.22	26	12 588.50
11	12 369.80	27	12 603.08
12	12 384.38	28	12 617.66
13	12 398.96	29	12 632.24
14	12 413.54	30	12 646.82
15	12 428.12	31	12 661.40
16	12 442.70	32	12 675.98

12 224.00 MHz (1)

										12 224.00 MH	12 (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	i	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 B NO811	-74.20	1	-60.70	-1.78	3.54	1.78	126	2 2	62.8	8 9/GR8	10
B NO811 B SU111	-74.20 -81.20	1	-68.76 -51.12	-4.71 -25.63	2.37	1.65 1.05	73 50	1	62.8 62.8	8 9/GR8 8 9/GR6	10
B SU112	-81.20 -45.20	1	-51.12 -50.75	-25.62	2.76	1.03	56	1	62.8	8 9/GR6 8 9/GR9	10
B SU211	-81.20	1	-30.73 -44.51	-16.95	3.22	1.36	60	1	62.5	8 9/GR9 8 9/GR6	10
B SU212	-45.20	i	-44.00	-16.87	3.20	1.96	58	1	61.3	8 9/GR9	10
BAHIFRB1	-87.20	1	-76.06	24.16	1.81	0.80	142	1	61.6	0 3/ 010	
BERBERMU	-96.20	l i	-64.77	32.32	0.80	0.80	90	2	56.8		
BERBER02	-31.00	1	-64.77	32.32	0.80	0.80	90	1	56.9	2	10
BOLAND01	-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 -84.00	52.42 52.39	3.10 2.84	2.05 2.29	152 172	1	60.4 60.3	9/GR13	10 10
CAN01405 CAN01504	-82.20 -91.20	1	-84.00 -72.66	52.39	3.57	1.67	156	1	60.3	9/GR14 9/GR13	10
CAN01504 CAN01505	-82.20	1	-72.66 -71.77	53.77	3.30	1.89	162	1	60.2	9/GR13 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	i	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 GRD00002	-31.00 -42.20	1	-59.90	-51.64 12.29	0.80	0.80 0.80	90 90	1	58.1 58.8	2	
HWA00002	-42.20 -166.20	1	-61.58 -165.79	23.42	4.20	0.80	160	1	58.8	9/GR1	10
HWA00002 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	10
MEX01SUR	-69.20	1	-94.84	19.82	3.05	2.09	4	i	62.2	i	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
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 USAEH001	-71.70 -61.70	1	-56.22 -85.19	-32.52	1.02 5.63	0.89 3.33	11 22	1	60.0 61.8	156	10
USAEH001 USAEH002	-61.70 -101.20	1	-85.19 -89.24	36.21 36.16	5.63	3.33	170	1	61.8	1 5 6 1 6 9/GR20	10
USAEH002 USAEH003	-101.20	1	-89.24 -90.14	36.11	5.55	3.76	161	1	62.0	1 6 9/GR20 1 6 9/GR21	10
USAEH003 USAEH004	-110.20	1	-90.14 -91.16	36.05	5.38	3.33	152	1	62.6	1 5 6	10
USAPSA02	-119.20	1	-117.80	40.58	4.03	0.82	132	1	63.2	9/GR1	10
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	

12 238.58 MHz (2)

										12 238.58 MI	1Z (2)
1	2	3	4			5		7	8	9	
ALS00002	-165.80	2	-149.63	58.52	3.81	1.23	171	2	59.7	9/GR1	10
ALS00002 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 2	-60.70	-1.78	3.54	1.78	126	1	62.8	8 9/GR8	10
B NO811	-73.80		-68.75	-4.71	2.37	1.65	73	1	62.8	8 9/GR8	10
B SE911 B SU111	-101.80 -80.80	2 2	-45.99	-19.09 -25.64	2.22 2.76	0.80 1.06	62 50	2 2	65.3 62.8	8 8 0/CB6	10 10
B SU112	-80.80 -44.80	2	-51.10 -50.76	-25.62	2.76	1.48	56	2	62.8	8 9/GR6 8 9/GR9	10
B SU211	-80.80	2	-44.51	-16.94	3.22	1.37	60	2	62.5	8 9/GR9 8 9/GR6	10
B SU212	-44.80	2	-43.99	-16.97	3.27	1.92	59	2	61.3	8 9/GR9	10
CAN01101	-137.80	2	-125.60	57.24	3.45	1.27	157	2	59.5	9/GR10	10
CAN01101 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	37 01110	
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	
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 2	-73.52	-55.52	3.65	1.31	39 141	2	59.6	9/GR16	
CRBBAH01 CRBBER01	-92.30 -92.30	2	-76.09 -64.76	24.13 32.13	1.83 0.80	0.80 0.80	90	1	61.7 56.7	9/GR18 9/GR18	
CRBBLZ01	-92.30 -92.30	2	-84.76 -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	10
CTR00201	-130.80	2	-84.33	9.67	0.82	0.80	119	2	65.6	3701110	
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 90	2	62.8 60.6	10	
PTRVIR01 PTRVIR02	-100.80 -109.80	2 2	-65.85 -65.85	18.12 18.12	0.80 0.80	0.80 0.80	90	2 2	61.1	1 6 9/GR20 1 6 9/GR21	
TCA00001	-115.80	2	-71.79	21.53	0.80	0.80	90	2	60.4	1 0 9/GK21	
USAEH001	-61.30	2	-85.16	36.21	5.63	3.32	22	2	61.8	156	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	156	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	

12 253.16 MHz (3)

1 2 ALS00002 -166.20 ALS00003 -775.20 ARGINSU4 -94.20 ARGINSU5 -55.20 ARGSUR04 -94.20 ARGSUR05 -55.20 ATGSIN01 -79.70 B CE311 -64.20 B CE312 -45.20 B CE412 -45.20 B CE412 -45.20 B NO611 -74.20	3 3 3 3	-149.66 -150.98	50.25	:	5	6	7	8	9	
ALS00003 -175.20 ARGINSU4 -94.20 ARGINSU5 -55.20 ARGSUR04 -94.20 ARGSUR05 -55.20 ATGSIN01 -79.70 B CE311 -64.20 B CE312 -45.20 B CE412 -45.20 B CE412 -45.20 B CE511 -64.20 B CE511 -64.20 B CE511 -64.20 B CE511 -64.20	3 3 3		50.25						8 9	
ALS00003 -175.20 ARGINSU4 -94.20 ARGINSU5 -55.20 ARGSUR04 -94.20 ARGSUR05 -55.20 ATGSIN01 -79.70 B CE311 -64.20 B CE312 -45.20 B CE412 -45.20 B CE412 -45.20 B CE511 -64.20 B CE511 -64.20 B CE511 -64.20 B CE511 -64.20	3 3 3			3.76	1.24	170	1	59.8	9/GR1	10
ARGINSU4 -94.20 ARGINSU5 -55.20 ARGSUR04 -94.20 ARGSUR05 -55.20 ATGSIN01 -79.70 B CE311 -64.20 B CE312 -45.20 B CE412 -45.20 B CE412 -45.20 B CE511 -64.20 B N0611 -74.20	3		58.37 58.53	3.77	1.11	167	1	60.0	9/GR1 9/GR2	10
ARGINSU5 -55.20 ARGSUR04 -94.20 ARGSUR05 -55.20 ATGSIN01 -79.70 B CE311 -64.20 B CE312 -45.20 B CE412 -45.20 B CE412 -45.20 B CE511 -64.20 B CE511 -64.20 B NO611 -74.20	3	-52.98	-59.81	3.40	0.80	19	1	59.9	9/GR3	10
ARGSUR05 -55.20 ATGSIN01 -79.70 B CE311 -64.20 B CE312 -45.20 B CE412 -45.20 B CE412 -45.20 B CE511 -64.20 B N0611 -74.20		-44.17	-59.91	3.77	0.80	13	1	59.3	9/GR4	10
ATGSIN01 -79.70 B CE311 -64.20 B CE312 -45.20 B CE411 -64.20 B CE412 -45.20 B CE511 -64.20 B NO611 -74.20	3	-65.04	-43.33	3.32	1.50	40	1	60.7	9/GR3	10
B CE311 -64.20 B CE312 -45.20 B CE411 -64.20 B CE412 -45.20 B CE511 -64.20 B NO611 -74.20	3	-63.68	-43.01	2.54	2.38	152	1	60.1	9/GR4	10
B CE312 -45.20 B CE411 -64.20 B CE412 -45.20 B CE511 -64.20 B N0611 -74.20	3	-61.79	17.07	0.80	0.80	90	1	58.4		
B CE411	3	-40.60	-6.07	3.04	2.06	174	1	61.6	8 9/GR7	10
B CE412 -45.20 B CE511 -64.20 B NO611 -74.20	3	-40.27	-6.06	3.44	2.09	174	1	61.0	8 9/GR9	10
B CE511 -64.20 B NO611 -74.20	3	-50.97 -50.71	-15.27 -15.30	3.86 3.57	1.38 1.56	49 52	1	62.6 62.7	8 9/GR7 8 9/GR9	10 10
B NO611 -74.20	3	-50.71 -53.10	-13.30 -2.90	2.44	2.13	104	1	63.1	8 9/GR9 8 9/GR7	10
	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		
BOLAND01 -115.20 BOL00001 -87.20	3	-65.04	-16.76	2.49	1.27	76 85	1	67.9	9/GR5	
BOL00001 -87.20 BRB00001 -92.70	3	-64.61 -59.85	-16.71 12.93	2.52 0.80	2.19 0.80	85 90	1 2	63.8 59.1	10	
CAN01101 -138.20	3	-125.63	57.24	3.45	1.27	157	1	59.5	9/GR10	10
CAN01101 138.20 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	J/GICIO	10
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 CAN01505 -82.20	3	-72.66 -71.77	53.77 53.79	3.57 3.30	1.67 1.89	156 162	1	60.2 60.1	9/GR13 9/GR14	10 10
CAN01303 -82.20 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	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 GRD00002 -42.20	3	-90.34 -61.58	-0.62 12.29	0.90 0.80	0.81 0.80	89 90	1	61.3 58.8	9/GR5	
GRD00002 -42.20 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
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 PRUAND02 -115.20	3	-58.66 -74.69	-23.32 -8.39	1.45 3.41	1.04 1.79	76 95	1	60.2 64.0	9/GR5	
PTRVIR01 -101.20	3	-/4.69 -65.85	-8.39 18.12	0.80	0.80	95	1	60.6	9/GR5 1 6 9/GR20	
PTRVIR02 -110.20	3	-65.86	18.12	0.80	0.80	90	1	61.0	1 6 9/GR20	
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	156	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	156	10
USAPSA02 -166.20	3	-117.80	40.58	4.03	0.82	135	1	63.3	9/GR1	
USAPSA03 -175.20 USAWH101 -148.20	3	-118.27 -109.65	40.12 38.13	3.62 5.53	0.80 1.95	136 142	1	65.0 62.1	9/GR2 10	
USAWH101 -148.20 USAWH102 -157.20	3	-109.65 -111.41	38.13	5.53	1.54	138	1	62.1	10	
VENAND03 -115.20	3	-67.04	6.91	2.37	1.43	111	1	67.3	9/GR5	
115.20	_	57.04	5.71	2.57	1.75		*	07.5	2,010	

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1	2	3	4		5		6	7	8	9	
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 B NO811	-73.80	4	-60.70	-1.78	3.54	1.78	126	1	62.8	8 9/GR8	10
B SE911	-73.80 -101.80	4	-68.75 -45.99	-4.71 -19.09	2.37 2.22	1.65 0.80	73 62	2	62.8 65.3	8 9/GR8 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	10
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
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 2	60.2	9/GR14	10 10
CAN01605 CAN01606	-81.80 -70.30	4	-61.54 -61.32	49.50 49.51	2.66 2.41	1.39 1.65	144 148	2	60.3 60.2	9/GR14 10	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	0.000.40	
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	10
GUFMGG02 HWA00002	-52.80 -165.80	4	-56.42 -165.79	8.47 23.32	4.16 4.20	0.81 0.80	123 160	2 2	62.7 58.8	2 7 9/GR1	10 10
HWA00002 HWA00003	-174.80	4	-166.10	23.42	4.25	0.80	159	2	58.8	9/GR1 9/GR2	10
JMC00005	-33.80	4	-77.27	18.12	0.80	0.80	90	2	60.6	9/GR2	10
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	156	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 USAPSA02	-118.80 -165.80	4	-91.16 -117.79	36.05 40.58	5.38 4.04	3.24 0.82	153 135	2 2	62.6 63.3	1 5 6 9/GR1	10
USAPSA02 USAPSA03	-163.80	4	-117.79	40.38	3.63	0.82	136	2	65.0	9/GR1 9/GR2	
USAWH101	-147.80	4	-109.70	38.13	5.52	1.96	142	2	62.1	10	
USAWH101 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	

12 282.32 MHz (5)

										12 282.32 MI	(E)
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	89/GR7	10
B CE312	-45.20	5	-40.27	-6.06	3.44	2.09	174	1	61.0	89/GR9	10
B CE411	-64.20	5	-50.97	-15.27	3.86	1.38	49	1	62.6	89/GR7	10
B CE412	-45.20	5	-50.71	-15.30	3.57	1.56	52	1	62.7	89/GR9	10
B CE511	-64.20	5	-53.10	-2.90	2.44	2.13	104	1	63.0	89/GR7	10
B NO611 B NO711	-74.20 -74.20	5 5	-59.60 -60.70	-11.62 -1.78	2.85	1.69	165 126	2 2	62.8 62.8	89/GR8	10 10
B NO811	-74.20 -74.20	5	-60.70 -68.76	-1.78 -4.71	3.54 2.37	1.78 1.65	73	2	62.8	89/GR8 89/GR8	10
B SU111	-81.20	5	-51.12	-4./1 -25.63	2.76	1.05	50	1	62.8	89/GR6	10
B SU112	-45.20	5	-50.75	-25.62	2.47	1.48	56	1	62.2	89/GR9	10
B SU211	-81.20	5	-44.51	-16.95	3.22	1.36	60	i	62.5	89/GR6	10
B SU212	-45.20	5	-44.00	-16.87	3.20	1.96	58	1	61.3	89/GR9	
BAHIFRB1	-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		
BERBER02	-31.00	5	-64.77	32.32	0.80	0.80	90	1	56.9	2	10
BOLAND01	-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 CAN01403	-91.20	5 5	-99.12	57.36	1.98	1.72	2 148	1	59.8	9/GR13	10
CAN01403 CAN01404	-129.20 -91.20	5	-89.75 -84.82	52.02 52.42	4.68 3.10	0.80 2.05	152	1	61.8 60.4	9/GR12 9/GR13	10
CAN01404 CAN01405	-82.20	5	-84.00	52.39	2.84	2.03	172	1	60.3	9/GR13	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	i	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 12	1	61.3	9/GR5 2	10
FLKANT01 FLKFALKS	-57.20 -31.00	5 5	-44.54 -59.90	-60.13 -51.64	3.54 0.80	0.80 0.80	90	1	59.3 58.1	2	10
GRD00002	-42.20	5	-61.58	12.29	0.80	0.80	90	1	58.8	2	
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	i	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
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	169/GR20	
PTRVIR02	-110.20	5	-65.86	18.12	0.80	0.80	90	1	61.0	169/GR21	10
SPMFRAN3 TRD00001	-53.20 -84.70	5 5	-67.24 -61.23	47.51 10.70	3.16 0.80	0.80 0.80	7 90	1	60.4 59.4	27	10
URG00001	-71.70	5	-56.22	-32.52	1.02	0.89	11	1	60.0		
USAEH001	-/1.70 -61.70	5	-85.19	36.21	5.63	3.33	22	1	61.8	156	10
USAEH001 USAEH002	-101.20	5	-89.24	36.16	5.67	3.76	170	1	61.7	169/GR20	10
USAEH003	-110.20	5	-90.14	36.11	5.55	3.55	161	1	62.0	169/GR21	10
USAEH004	-119.20	5	-91.16	36.05	5.38	3.24	152	1	62.6	156	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	

12 296.90 MHz (6)

										12 296.90 MH	12 (U)
1	2	3	4			5	6	7	8	9	
ALS00002	-165.80	6	-149.63	58.52	3.81	1.23	171	2	59.7	9/GR1	10
ALS00002 ALS00003	-174.80	6	-150.95	58.54	3.77	1.11	167	2	60.0	9/GR1 9/GR2	10
ARGNORT4	-93.80	6	-63.96	-30.01	3.86	1.99	48	2	65.6	10	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 B NO811	-73.80 -73.80	6	-60.70 -68.75	-1.78 -4.71	3.54	1.78	126 73	1	62.8 62.8	8 9/GR8 8 9/GR8	10
B SE911	-/3.80 -101.80	6	-68.75 -45.99	-4.71 -19.09	2.37 2.22	1.65 0.80	62	2	65.3	8 9/GR8 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	10
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	
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 3.30	1.67	157	2 2	60.2	9/GR13	10 10
CAN01505 CAN01605	-81.80 -81.80	6	-71.76 -61.54	53.76 49.50	2.66	1.89 1.39	162 144	2	60.1 60.3	9/GR14 9/GR14	10
CAN01605 CAN01606	-81.80 -70.30	6	-61.34 -61.32	49.50	2.66	1.65	144	2	60.3	9/GK14 10	10
CHLCONT4	-105.80	6	-69.59	-23.20	2.41	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 2	63.4		
HTI00002 HWA00002	-83.30 -165.80	6	-73.28 -165.79	18.96 23.32	0.82 4.20	0.80 0.80	11 160	2	60.9 58.8	9/GR1	10
HWA00002 HWA00003	-174.80	6	-165.79	23.42	4.25	0.80	159	2	58.8	9/GR1 9/GR2	10
MEX01NTE	-77.80	6	-105.80	25.99	2.88	2.07	155	2	60.5	1	10
MEX02NTE	-135.80	6	-107.36	26.32	3.80	1.57	149	2	61.2	i	10
MEX02SUR	-126.80	6	-96.39	19.88	3.19	1.87	158	2	62.5	i	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	156	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	156	10
USAPSA02	-165.80	6	-117.79	40.58	4.04	0.82	135	2 2	63.2	9/GR1	
USAPSA03 USAWH101	-174.80 -147.80	6	-118.20 -109.70	40.15 38.13	3.63 5.52	0.80 1.96	136 142	2 2	64.9 62.1	9/GR2 10	
USAWH101 USAWH102	-147.80 -156.80	6	-109.70 -111.40	38.13	5.52	1.96	142	2	62.1	10	
VCT00001	-79.30	6	-61.18	13.23	0.80	0.80	90	2	58.4	10	
VEN11VEN	-103.80	6	-66.79	6.90	2.50	1.77	122	2	65.1	10	
	103.00			0.70		,					

12 311.48 MHz (7)

										12 311.48 MI	12 (1)
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
ALS00002 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	0.010	
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 B CE412	-64.20 -45.20	7	-50.97 -50.71	-15.27 -15.30	3.86 3.57	1.38 1.56	49 52	1	62.6 62.7	8 9/GR7 8 9/GR9	10 10
B CE412 B CE511	-43.20 -64.20	7	-50.71 -53.10	-13.30 -2.90	2.44	2.13	104	1	63.1	8 9/GR9 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	0.000	
BOLAND01	-115.20	7	-65.04	-16.76	2.49	1.27	76	1	67.9	9/GR5	
BOL00001 BRB00001	-87.20 -92.70	7	-64.61 -59.85	-16.71 12.93	2.52 0.80	2.19 0.80	85 90	1 2	63.8 59.1	10	
CAN01101	-92.70 -138.20	7	-39.83 -125.63	57.24	3.45	1.27	157	1	59.1	9/GR10	10
CAN01101 CAN01201	-138.20	7	-123.63 -112.04	55.95	3.45	0.97	151	1	59.6	9/GR10 9/GR10	10
CAN01201	-72.70	7	-107.70	55.63	2.74	1.12	32	i	59.6	J/GICIO	10
CAN01203	-129.20	7	-111.48	55.61	3.08	1.15	151	i	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 CAN01606	-82.20 -70.70	7 7	-61.50 -61.30	49.55 49.55	2.65 2.40	1.40 1.65	143 148	1	60.3 60.2	9/GR14 10	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	i	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 MEX01NTE	-175.20 -78.20	7	-166.10 -105.81	23.42 26.01	4.25 2.89	0.80 2.08	159 155	1	58.8 60.5	9/GR2	10
MEX01NIE MEX01SUR	-69.20	7	-94.84	19.82	3.05	2.08	133	1	62.3	1	10
MEX02NTE	-136.20	7	-107.21	26.31	3.84	1.55	148	i	61.2	li	10
MEX02SUR	-127.20	7	-96.39	19.88	3.18	1.87	157	1	62.6	i	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	1.54	
USAEH001	-61.70	7	-85.19	36.21	5.63	3.33	22	1	61.8	156	10
USAEH002	-101.20 -110.20	7	-89.24 -90.14	36.16 36.11	5.67 5.55	3.76 3.55	170 161	1	61.7 62.1	1 6 9/GR20 1 6 9/GR21	10 10
USAEH003 USAEH004	-110.20 -119.20	7	-90.14 -91.16	36.11	5.38	3.55	151	1 1	62.1	1 6 9/GR21 1 5 6	10
USAEH004 USAPSA02	-119.20 -166.20	7	-91.16 -117.80	40.58	4.03	0.82	132	1	63.3	9/GR1	10
USAPSA03	-175.20	7	-117.80	40.12	3.62	0.82	136	1	65.0	9/GR1 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	

12 326.06 MHz (8)

										12 320.00 NII	(-)
1	2	3	4			5	6	7	8	9	
ALS00002	-165.80	8	-149.63	58.52	3.81	1.23	171	2	59.8	9/GR1	10
ALS00002	-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 2	62.3	8 9/GR9	10
B SU211	-80.80	8	-44.51	-16.94	3.22	1.37	60	2 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	10
CAN01101 CAN01201	-137.80 -137.80	8	-125.60 -111.92	57.24 55.89	3.45 3.33	1.27 0.98	157 151	2	59.5 59.6	9/GR10 9/GR10	10 10
CAN01201 CAN01202	-72.30	8	-111.92	55.62	2.75	1.11	32	2	59.6	9/GK10	10
CAN01202 CAN01203	-128.80	8	-111.43	55.56	3.07	1.11	151	2	59.5	9/GR12	10
CAN01203 CAN01303	-128.80	8	-102.39	57.12	3.54	0.92	154	2	60.1	9/GR12	10
CAN01303	-90.80	8	-99.00	57.33	1.96	1.73	1.54	2	59.8	9/GR12	10
CAN01403	-128.80	8	-89.70	52.02	4.67	0.80	148	2	61.8	9/GR12	10
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 90	1 2	61.1	9/GR18	
CYM00001 DOMIFRB2	-115.80 -83.30	8	-80.58 -70.51	19.57 18.79	0.80 0.98	0.80 0.80	167	2	59.6 61.1		
EQAC0001	-83.30 -94.80	8	-70.31 -78.31	-1.52	1.48	1.15	65	1	63.0	9/GR19	
EQAC0001 EQAG0001	-94.80 -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	0.83	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
HWA00002 HWA00003	-174.80	8	-166.10	23.42	4.25	0.80	159	2	58.8	9/GR1	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	1	
USAEH001	-61.30	8	-85.16	36.21	5.63	3.32	22	2	61.9	156	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	156	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 -103.80	8	-111.40 -66.70	38.57 6.90	5.51 2.50	1.55 1.77	138 122	2 2	63.2 65.2	10 10	
VEN11VEN	-103.80	6	-66.79	6.90	2.50	1.//	122	4	03.2	10	
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12 340.64 MHz (9)

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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 B NO611	-64.20 -74.20	9	-53.10 -59.60	-2.90 -11.62	2.44 2.85	2.13 1.69	104 165	1 2	63.0 62.8	8 9/GR7 8 9/GR8	10 10
B NO711	-74.20 -74.20	9	-59.60 -60.70	-11.62	3.54	1.78	126	2	62.8	8 9/GR8 8 9/GR8	10
B NO811	-74.20 -74.20	9	-68.76	-4.71	2.37	1.65	73	2	62.8	8 9/GR8	10
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	
BAHIFRB1	-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		
BERBER02	-31.00	9	-64.77	32.32	0.80	0.80	90	1	56.9	2	10
BOLAND01	-115.20	9	-65.04	-16.76	2.49	1.27	76	1	67.9	9/GR5	10
CAN01101	-138.20	9	-125.63	57.24	3.45	1.27	157	1	59.5	9/GR10	10
CAN01201 CAN01202	-138.20 -72.70	9	-112.04 -107.70	55.95 55.63	3.35 2.74	0.97 1.12	151 32	1	59.6 59.6	9/GR10	10
CAN01202 CAN01203	-129.20	9	-111.48	55.61	3.08	1.12	151	l i	59.5	9/GR12	10
CAN01203 CAN01303	-129.20	9	-102.42	57.12	3.54	0.91	154	i	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 CHLCONT5	-70.70 -106.20	9	-61.30 -72.23	49.55 -35.57	2.40 2.60	1.65 0.80	148 55	1	60.2 59.4	10 9/GR17	
CHLCON13 CHLPAC02	-106.20	9	-72.23 -80.06	-33.37 -30.06	1.36	0.80	69	1	59.4	9/GR17 9/GR17	
CLMAND01	-115.20	9	-74.72	5.93	3.85	1.63	114	l i	64.9	9/GR17 9/GR5	
CLMANDO1 CLM00001	-103.20	9	-74.50	5.87	3.98	1.96	118	i	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 -78.20	9	-166.10	23.42 26.01	4.25	0.80	159 155	1	58.8 60.5	9/GR2 1	10
MEX01NTE MEX01SUR	-/8.20 -69.20	9	-105.81 -94.84	19.82	2.89 3.05	2.08 2.09	155	1 1	62.2	1	10
MEX013CK MEX02NTE	-136.20	9	-107.21	26.31	3.84	1.55	148	1	61.2	i	10
MEX02SUR	-127.20	9	-96.39	19.88	3.18	1.87	157	Ιi	62.5	li	10
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 USAEH001	-71.70 -61.70	9	-56.22 -85.19	-32.52 36.21	1.02 5.63	0.89 3.33	11 22	1	60.0 61.8	156	10
USAEH001 USAEH002	-61.70 -101.20	9	-85.19 -89.24	36.21	5.63	3.33	170	1	61.8	1 6 9/GR20	10
USAEH002 USAEH003	-110.20	9	-90.14	36.10	5.55	3.55	161	1	62.0	1 6 9/GR20 1 6 9/GR21	10
USAEH004	-119.20	9	-91.16	36.05	5.38	3.24	152	1	62.6	156	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	
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12 355.22 MHz (10)

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1	2	3	4			5	6	7	8	9	
ALS00002	-165.80	10	-149.63	58.52	3.81	1.23	171	2	59.7	9/GR1	10
ALS00002 ALS00003	-174.80	10	-150.95	58.54	3.77	1.11	167	2	60.0	9/GR1	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 B NO611	-63.80 -73.80	10 10	-53.11	-2.98	2.42	2.15	107 165	2	63.1 62.8	8 9/GR7	10 10
B NO611 B NO711	-73.80 -73.80	10	-59.60 -60.70	-11.62 -1.78	2.86 3.54	1.69 1.78	126	1	62.8	8 9/GR8 8 9/GR8	10
B NO811	-73.80 -73.80	10	-68.75	-1.78 -4.71	2.37	1.65	73	li	62.8	8 9/GR8	10
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	10
CAN01403	-128.80 -90.80	10 10	-89.70 -84.78	52.02	4.67 3.09	0.80	148	2	61.8 60.4	9/GR12 9/GR13	10 10
CAN01404 CAN01405	-90.80 -81.80	10	-84.78 -84.02	52.41 52.34	2.82	2.06 2.30	153 172	2 2	60.4	9/GR13 9/GR14	10
CAN01403 CAN01504	-81.80	10	-84.02 -72.68	53.78	3.57	1.67	157	2	60.3	9/GR14 9/GR13	10
CAN01505	-81.80	10	-71.76	53.76	3.30	1.89	162	2	60.1	9/GR13	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 -94.80	10 10	-84.33 -78.31	9.67 -1.52	0.82 1.48	0.80 1.15	119 65	2	65.6 63.0	9/GR19	
EQAC0001 EQAG0001	-94.80 -94.80	10	-78.31 -90.36	-0.57	0.94	0.89	99	1	61.0	9/GR19 9/GR19	
GUY00302	-33.80	10	-59.07	4.77	1.43	0.85	91	2	63.5	9/GK19	
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 USAEH001	-115.80 -61.30	10 10	-71.79 -85.16	21.53 36.21	0.80 5.63	0.80 3.32	90 22	2 2	60.4 61.8	156	10
USAEH001 USAEH002	-61.30	10	-85.16 -89.28	36.21	5.65	3.32	170	2	61.8	1 6 9/GR20	10
USAEH002 USAEH003	-100.80	10	-90.12	36.11	5.55	3.56	161	2	62.1	1 6 9/GR20 1 6 9/GR21	10
USAEH004	-118.80	10	-91.16	36.05	5.38	3.24	153	2	62.6	156	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	

12 369.80 MHz (11)

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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 ATGSJN01	-55.20 -79.70	11 11	-63.68 -61.79	-43.01 17.07	2.54 0.80	2.38 0.80	152 90	1	60.1 58.4	9/GR4	10
B CE311	-64.20	11	-40.60	-6.07	3.04	2.06	174	1 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 2	62.9	8 9/GR8	10
B NO711 B NO811	-74.20 -74.20	11 11	-60.70 -68.76	-1.78 -4.71	3.54 2.37	1.78 1.65	126 73	2	62.8 62.8	8 9/GR8 8 9/GR8	10
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		
BOLAND01	-115.20	11	-65.04	-16.76	2.49	1.27	76	1	67.9	9/GR5	
BOL00001 BRB00001	-87.20 -92.70	11 11	-64.61 -59.85	-16.71 12.93	2.52 0.80	2.19 0.80	85 90	1 2	63.8 59.1	10	
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	î	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	10
CAN01403 CAN01404	-129.20 -91.20	11 11	-89.75 -84.82	52.02 52.42	4.68 3.10	0.80 2.05	148 152	1 1	61.8 60.4	9/GR12 9/GR13	10 10
CAN01404 CAN01405	-82.20	11	-84.00	52.39	2.84	2.03	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 CHLPAC02	-106.20 -106.20	11 11	-72.23 -80.06	-35.57 -30.06	2.60 1.36	0.80 0.80	55 69	1	59.4 59.2	9/GR17 9/GR17	
CLMAND01	-106.20	11	-74.72	5.93	3.85	1.63	114	1	65.0	9/GR1/ 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 GRLDNK01	-57.20 -53.20	11 11	-61.58 -44.89	12.29 66.56	0.80 2.70	0.80 0.82	90 173	1	58.5 60.0	2	10
GUY00201	-33.20 -84.70	11	-59.19	4.78	1.44	0.82	95	1	63.5	2	10
HWA00002	-166.20	11	-165.79	23.42	4.20	0.80	160	1	58.8	9/GR1	10
HWA00003	-175.20	11	-166.10	23.42	4.25	0.80	159	î	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 -106.20	11	-96.39	19.88 -27.53	3.18	1.87	157 90	1	62.6 56.2	1	10
PAQPAC01 PRG00002	-106.20 -99.20	11 11	-109.18 -58.66	-27.53 -23.32	0.80 1.45	0.80 1.04	76	1 1	60.2	9/GR17	
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	156	10
USAEH002	-101.20	11	-89.24	36.16	5.67	3.76	170	1	61.7	1 6 9/GR20	10
USAEH003 USAEH004	-110.20 -119.20	11 11	-90.14 -91.16	36.11 36.05	5.55 5.38	3.55 3.24	161 152	1	62.1 62.6	1 6 9/GR21 1 5 6	10 10
USAEH004 USAPSA02	-119.20 -166.20	11	-91.16 -117.80	40.58	4.03	0.82	132	1	63.3	9/GR1	10
USAPSA02 USAPSA03	-175.20	11	-117.80	40.12	3.62	0.82	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	

12 384.38 MHz (12)

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1	2	3	4			5	6	7	8	9	
ALS00002	-165.80	12	-149.63	58.52	3.81	1.23	171	2	59.8	9/GR1	10
ALS00002 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	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 2	62.3	8 9/GR9	10
B SU211 B SU212	-80.80	12	-44.51	-16.94	3.22	1.37	60	2	62.5	8 9/GR6	10
B SU212 CAN01101	-44.80 -137.80	12 12	-43.99	-16.97 57.24	3.27 3.45	1.92 1.27	59 157	2	61.3 59.5	8 9/GR9	10
CAN01101 CAN01201	-137.80 -137.80	12	-125.60 -111.92	55.89	3.45	0.98	157	2	59.5 59.6	9/GR10 9/GR10	10
CAN01201 CAN01202	-72.30	12	-111.92 -107.64	55.62	2.75	1.11	32	2	59.6	9/GK10	10
CAN01202 CAN01203	-128.80	12	-107.04	55.56	3.07	1.11	151	2	59.5	9/GR12	10
CAN01203 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	10
CAN01403	-128.80	12	-89.70	52.02	4.67	0.80	148	2	61.8	9/GR12	10
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 12	-88.61	17.26	0.80	0.80	90	1	58.7	9/GR18	10
CRBEC001 CRBJMC01	-92.30 -92.30	12	-60.07 -79.45	8.26 17.97	4.20 0.99	0.86 0.80	115 151	1	64.3 61.1	9/GR18 9/GR18	10
CYM00001	-115.80	12	-80.58	19.57	0.80	0.80	90	2	59.6	9/GK16	
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 2	60.6	1 6 9/GR20	
PTRVIR02	-109.80	12	-65.85	18.12	0.80	0.80	90		61.1	1 6 9/GR21	
SLVIFRB2	-107.30 -61.30	12 12	-88.91	13.59	0.80	0.80	90 22	1 2	61.7	156	10
USAEH001 USAEH002	-61.30 -100.80	12	-85.16 -89.28	36.21 36.16	5.63 5.65	3.32 3.78	170	2	61.9 61.7	1 5 6 1 6 9/GR20	10
USAEH002 USAEH003	-100.80	12	-89.28 -90.12	36.11	5.55	3.78	161	2	62.1	1 6 9/GR20 1 6 9/GR21	10
USAEH003 USAEH004	-109.80	12	-90.12 -91.16	36.05	5.38	3.24	153	2	62.1	1 5 9/GR21 1 5 6	10
USAPSA02	-118.80 -165.80	12	-91.16 -117.79	40.58	4.04	0.82	135	2	63.3	9/GR1	10
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	

12 398.96 MHz (13)

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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 B CE412	-64.20	13	-50.97	-15.27	3.86	1.38	49	1	62.6	8 9/GR7	10 10
B CE412 B CE511	-45.20 -64.20	13 13	-50.71 -53.10	-15.30 -2.90	3.57 2.44	1.56 2.13	52 104	1 1	62.7 63.0	8 9/GR9 8 9/GR7	10
B NO611	-74.20	13	-59.60	-11.62	2.44	1.69	165	2	62.8	8 9/GR / 8 9/GR 8	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	
BAHIFRB1	-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	_	
BERBER02	-31.00	13	-64.77	32.32	0.80	0.80	90	1	56.9	2	10
BOLAND01 CAN01101	-115.20	13 13	-65.04 -125.63	-16.76 57.24	2.49	1.27	76	1	67.9 59.5	9/GR5 9/GR10	10
CAN01101 CAN01201	-138.20 -138.20	13	-125.63 -112.04	55.95	3.45 3.35	1.27 0.97	157 151	1	59.5 59.6	9/GR10 9/GR10	10
CAN01201 CAN01202	-72.70	13	-107.70	55.63	2.74	1.12	32	li	59.6	9/GK10	10
CAN01202 CAN01203	-129.20	13	-111.48	55.61	3.08	1.12	151	i	59.5	9/GR12	10
CAN01303	-129.20	13	-102.42	57.12	3.54	0.91	154	i	60.0	9/GR12	10
CAN01304	-91.20	13	-99.12	57.36	1.98	1.72	2	i	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 59.2	9/GR17	
CHLPAC02 CLMAND01	-106.20 -115.20	13 13	-80.06 -74.72	-30.06 5.93	1.36 3.85	0.80 1.63	69 114	1 1	59.2 64.9	9/GR17 9/GR5	
CLMAND01 CLM00001	-113.20	13	-74.72 -74.50	5.87	3.98	1.03	114	l i	63.5	9/GK3 10	
EQACAND1	-115.20	13	-78.40	-1.61	1.37	0.95	75	i	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 PAQPAC01	-127.20 -106.20	13 13	-96.39 -109.18	19.88 -27.53	3.18 0.80	1.87 0.80	157 90	1	62.5 56.2	1 9/GR17	10
PRG00002	-99.20	13	-58.66	-27.33	1.45	1.04	76	l i	60.2	9/GK1/	
PRUAND02	-115.20	13	-74.69	-8.39	3.41	1.79	95	1 1	63.9	9/GR5	
PTRVIR01	-101.20	13	-65.85	18.12	0.80	0.80	90	li	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	156	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 -166.20	13	-91.16	36.05	5.38	3.24	152	1	62.6	156	10
USAPSA02 USAPSA03	-166.20 -175.20	13 13	-117.80 -118.27	40.58 40.12	4.03 3.62	0.82 0.80	135 136	1	63.2 65.0	9/GR1 9/GR2	
USAPSA03 USAWH101	-1/5.20 -148.20	13	-118.27 -109.65	38.13	5.53	1.95	142	1 1	62.1	9/GK2 10	
USAWH101 USAWH102	-148.20	13	-109.63	38.57	5.51	1.54	138	l i	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	i	58.3	4	

12 413.54 MHz (14)

									14	2 413.54 MHz	L (14)
1	2	3	4			5	6	7	8	9	
ALS00002	-165.80	14	-149.63	58.52	3.81	1.23	171	2	59.7	9/GR1	10
ALS00002 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 B NO811	-73.80 -73.80	14 14	-60.70 -68.75	-1.78 -4.71	3.54	1.78	126	1	62.8 62.8	8 9/GR8 8 9/GR8	10
B SE911	-/3.80 -101.80	14	-68.75 -45.99	-4.71 -19.09	2.37 2.22	1.65 0.80	73 62	2	65.3	8 9/GR8 8	10
B SU111	-80.80	14	-43.99 -51.10	-19.09 -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	10
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	10
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	
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 CAN01505	-90.80 -81.80	14 14	-72.68 -71.76	53.78 53.76	3.57 3.30	1.67 1.89	157 162	2 2	60.2 60.1	9/GR13 9/GR14	10 10
CAN01505 CAN01605	-81.80 -81.80	14	-/1./6 -61.54	49.50	2.66	1.39	144	2	60.1	9/GR14 9/GR14	10
CAN01603 CAN01606	-81.80 -70.30	14	-61.34 -61.32	49.51	2.41	1.65	144	2	60.2	9/GK14 10	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	0.000.40	
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 HNDIFRB2	-33.80 -107.30	14 14	-59.07 -86.23	4.77 15.16	1.43 1.14	0.85 0.85	91 8	2	63.5 63.4		
HTI00002	-83.30	14	-86.23 -73.28	18.96	0.82	0.83	11	2	60.9		
HWA00002	-165.80	14	-165.79	23.32	4.20	0.80	160	2	58.8	9/GR1	10
HWA00002 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	156	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 USAPSA02	-118.80 -165.80	14 14	−91.16 −117.79	36.05 40.58	5.38 4.04	3.24 0.82	153 135	2 2	62.6 63.2	1 5 6 9/GR1	10
USAPSA02 USAPSA03	-165.80 -174.80	14	-117.79 -118.20	40.58	3.63	0.82	136	2	64.9	9/GR1 9/GR2	
USAPSA03 USAWH101	-147.80	14	-118.20	38.13	5.52	1.96	142	2	62.1	9/GR2 10	
USAWH101 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	

12 428.12 MHz (15)

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	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 15	-40.60	-6.07	3.04	2.06	174 174	1	61.6	8 9/GR7	10
B CE312 B CE411	-45.20 -64.20	15	-40.27 -50.97	-6.06 -15.27	3.44 3.86	2.09 1.38	49	1	61.0 62.6	8 9/GR9 8 9/GR7	10 10
B CE411 B CE412	-45.20	15	-50.71	-15.30	3.57	1.56	52	1	62.7	8 9/GR7 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	o con -	
BOLAND01	-115.20	15	-65.04	-16.76	2.49	1.27	76	1	67.9	9/GR5	
BOL00001	-87.20	15 15	-64.61	-16.71	2.52	2.19	85 90	1 2	63.8 59.1	10	
BRB00001 CAN01101	-92.70 -138.20	15	-59.85 -125.63	12.93 57.24	0.80 3.45	0.80 1.27	157	1	59.1 59.5	9/GR10	10
CAN01101 CAN01201	-138.20	15	-123.63	55.95	3.45	0.97	151	1	59.6	9/GR10 9/GR10	10
CAN01201 CAN01202	-72.70	15	-107.70	55.63	2.74	1.12	32	1	59.6	3/GK10	10
CAN01202 CAN01203	-129.20	15	-111.48	55.61	3.08	1.12	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 CHLCONT5	-70.70 -106.20	15 15	-61.30 -72.23	49.55 -35.57	2.40 2.60	1.65 0.80	148 55	1	60.2 59.4	10 9/GR17	
CHLCON13 CHLPAC02	-106.20	15	-72.23 -80.06	-30.06	1.36	0.80	69	1	59.4	9/GR17 9/GR17	
CLMAND01	-115.20	15	-74.72	5.93	3.85	1.63	114	1	65.0	9/GR17 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	i	61.1	10	
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
HWA00003	-175.20	15	-166.10	23.42	4.25	0.80	159	1	58.8	9/GR2	10
MEX01NTE MEX01SUR	-78.20 -69.20	15 15	-105.81 -94.84	26.01 19.82	2.89 3.05	2.08 2.09	155 4	1	60.5 62.3	1	10
MEX01SUR MEX02NTE	-69.20 -136.20	15	-94.84 -107.21	26.31	3.84	1.55	148	1	61.2	1	10
MEX02NTE MEX02SUR	-130.20	15	-96.39	19.88	3.18	1.87	157	1	62.6	1 1	10
PAQPAC01	-106.20	15	-109.18	-27.53	0.80	0.80	90	1	56.2	9/GR17	10
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	156	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	156	10
USAPSA02	-166.20 -175.20	15	-117.80	40.58	4.03	0.82	135	1	63.3	9/GR1	
USAPSA03 USAWH101	-175.20 -148.20	15 15	-118.27 -109.65	40.12 38.13	3.62 5.53	0.80 1.95	136 142	1	65.0 62.1	9/GR2 10	
USAWH101 USAWH102	-148.20 -157.20	15	-109.65 -111.41	38.13	5.53	1.95	138	1	63.2	10	
VENAND03	-115.20	15	-67.04	6.91	2.37	1.43	111	1	67.3	9/GR5	
, 211111000	115.20	15	07.04	0.71	2.57	1.43	'''		07.5	7,010	

12 442.70 MHz (16)

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1	2	3	4			5	6	7	8	9	
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 60.70	-11.62	2.86	1.69	165	1	62.9	8 9/GR8	10 10
B NO711 B NO811	-73.80 -73.80	16 16	-60.70 -68.75	-1.78 -4.71	3.54 2.37	1.78 1.65	126 73	1	62.8 62.8	8 9/GR8 8 9/GR8	10
B SE911	-101.80	16	-45.99	-4.71 -19.09	2.22	0.80	62	2	65.3	8 9/GR8	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	10
CAN01403 CAN01404	-128.80 -90.80	16 16	-89.70 -84.78	52.02 52.41	4.67 3.09	0.80 2.06	148 153	2 2	61.8 60.4	9/GR12 9/GR13	10 10
CAN01404 CAN01405	-90.80 -81.80	16	-84.78 -84.02	52.34	2.82	2.30	172	2	60.4	9/GR13 9/GR14	10
CAN01403 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	10
CRBEC001 CRBJMC01	-92.30 -92.30	16 16	-60.07 -79.45	8.26 17.97	4.20 0.99	0.86 0.80	115 151	1	64.3 61.1	9/GR18 9/GR18	10
CYM00001	-92.30 -115.80	16	-79.43 -80.58	19.57	0.99	0.80	90	2	59.6	9/GK18	
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 -135.80	16 16	-105.80 -107.36	25.99	2.88	2.07	155 149	2 2	60.5	1	10
MEX02NTE MEX02SUR	-135.80 -126.80	16	-107.36 -96.39	26.32 19.88	3.80 3.19	1.57 1.87	158	2	61.2 62.5	1	10 10
PRU00004	-85.80	16	-74.19	-8.39	3.74	2.45	112	2	62.9	10	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	156	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	156	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 2	65.0	9/GR2	
USAWH101 USAWH102	-147.80 -156.80	16 16	-109.70 -111.40	38.13 38.57	5.52 5.51	1.96 1.55	142 138	2	62.1 63.2	10 10	
VEN11VEN	-103.80	16	-66.79	6.90	2.50	1.77	122	2	65.2	10	
	103.00		00.75	0.50		•.,,		~	05.2		

12 457.28 MHz (17)

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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 2	63.1	8 9/GR8	10
B NO711 B NO811	-74.20 -74.20	17 17	-60.70 -68.76	-1.78 -4.71	3.54 2.37	1.78 1.65	126 73	2	63.1 63.1	8 9/GR8 8 9/GR8	10
B SU111	-74.20 -81.20	17	-51.12	-4.71 -25.63	2.76	1.05	50	1	63.2	8 9/GR8 8 9/GR6	10
B SU112	-81.20 -45.20	17	-51.12 -50.75	-25.62	2.76	1.03	56	1	62.5	8 9/GR6 8 9/GR9	10
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	10
BERBERMU	-96.20	17	-64.77	32.32	0.80	0.80	90	2	57.0	0 7/010	
BERBER02	-31.00	17	-64.77	32.32	0.80	0.80	90	1	57.1	2	10
BOLAND01	-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 -82.20	17 17	-72.66	53.77	3.57	1.67	156 162	1	60.4	9/GR13	10
CAN01505 CAN01605	-82.20 -82.20	17	-71.77 -61.50	53.79 49.55	2.65	1.89 1.40	143	1	60.3 60.5	9/GR14 9/GR14	10 10
CAN01605 CAN01606	-82.20 -70.70	17	-61.30 -61.30	49.55	2.63	1.40	143	1	60.3	9/GK14 10	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	i	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		
KNA00001	-79.70	17	-62.46	17.44	0.80	0.80	90	1	58.6		
MEX01NTE MEX01SUR	-78.20 -69.20	17 17	-105.81 -94.84	26.01 19.82	2.89 3.05	2.08 2.09	155 4	1	60.7 62.5	1	10
MEX01SUR MEX02NTE	-136.20	17	-94.84 -107.21	26.31	3.84	1.55	148	1	61.4	1	10
MEX02NTE MEX02SUR	-127.20	17	-96.39	19.88	3.18	1.87	157	1	62.8	1	10
PAQPAC01	-106.20	17	-109.18	-27.53	0.80	0.80	90	1	56.4	9/GR17	10
PRG00002	-99.20	17	-58.66	-23.32	1.45	1.04	76	i	60.4), OICI /	
PRUAND02	-115.20	17	-74.69	-8.39	3.41	1.79	95	i	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	
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	156	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	156	10
USAPSA02	-166.20	17	-117.80	40.58	4.03	0.82	135	1	63.5	9/GR1	
USAPSA03 USAWH101	-175.20 -148.20	17 17	-118.27 -109.65	40.12 38.13	3.62 5.53	0.80 1.95	136 142	1	65.3 62.3	9/GR2 10	
USAWH101 USAWH102	-148.20 -157.20	17	-109.65 -111.41	38.13	5.53	1.54	138	1	63.5	10	
VENAND03	-137.20	17	-67.04	6.91	2.37	1.34	111	1	67.6	9/GR5	
LIMANDOS	113.20	17	07.04	0.71	2.37	1.73	111	1	07.0	7/GK3	

12 471.86 MHz (18)

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1	2	3	4			5	6	7	8	9	
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 2	63.0	8 9/GR9	10
B CE511 B NO611	-63.80 -73.80	18 18	-53.11 -59.60	-2.98 -11.62	2.42 2.86	2.15 1.69	107 165	1	63.4 63.1	8 9/GR7 8 9/GR8	10 10
B NO711	-73.80 -73.80	18	-59.60 -60.70	-11.62 -1.78	3.54	1.69	126	1	63.1	8 9/GR8 8 9/GR8	10
B NO811	-73.80 -73.80	18	-60.70 -68.75	-1.78 -4.71	2.37	1.65	73	1	63.1	8 9/GR8 8 9/GR8	10
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	
BLZ00001	-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 CAN01304	-128.80 -90.80	18 18	-102.39 -99.00	57.12 57.33	3.54 1.96	0.92 1.73	154 1	2 2	60.3 60.0	9/GR12 9/GR13	10
CAN01304 CAN01403	-128.80	18	-89.70	52.02	4.67	0.80	148	2	62.1	9/GR13 9/GR12	10
CAN01403 CAN01404	-90.80	18	-84.78	52.41	3.09	2.06	153	2	60.6	9/GR12 9/GR13	10
CAN01404 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 -92.30	18 18	-64.76	32.13	0.80 0.80	0.80	90 90	1	56.9	9/GR18	
CRBBLZ01 CRBEC001	-92.30 -92.30	18	-88.61 -60.07	17.26 8.26	4.20	0.80 0.86	115	1	58.9 64.6	9/GR18 9/GR18	10
CRBJMC01	-92.30 -92.30	18	-79.45	17.97	0.99	0.80	151	1	61.3	9/GR18	10
CTR00201	-130.80	18	-84.33	9.67	0.82	0.80	119	2	66.0	3/GK16	
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 NCG00003	-126.80 -107.30	18 18	-96.39 -84.99	19.88 12.90	3.19 1.05	1.87 1.01	158 176	2	62.8 63.6	1	10
PRU00004	-107.30 -85.80	18	-84.99 -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/GR20	
USAEH001	-61.30	18	-85.16	36.21	5.63	3.32	22	2	62.1	156	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	156	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 VEN11VEN	-156.80 -103.80	18 18	-111.40 -66.79	38.57 6.90	5.51 2.50	1.55 1.77	138 122	2 2	63.5 65.5	10 10	
A PULL A PUA	105.60	10	-00.79	0.50	2.30	1.//	122		05.5	10	

12 486.44 MHz (19)

										2 486.44 MH	L (1))
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
ALS00002 ALS00003	-175.20	19	-149.66	58.53	3.77	1.24	167	1	60.0	9/GR1 9/GR2	10
ARGINSU4	-94.20	19	-52.98	-59.81	3.40	0.80	19	1	60.1	9/GR3	10
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 B NO611	-64.20 -74.20	19 19	-53.10 -59.60	-2.90 -11.62	2.44 2.85	2.13 1.69	104 165	1 2	63.4 63.2	8 9/GR7 8 9/GR8	10 10
B NO711	-74.20 -74.20	19	-59.60 -60.70	-11.62	3.54	1.78	126	2	63.2	8 9/GR8 8 9/GR8	10
B NO811	-74.20	19	-68.76	-4.71	2.37	1.65	73	2	63.1	8 9/GR8	10
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		
BOLAND01	-115.20	19	-65.04	-16.76	2.49	1.27	76	1	68.1	9/GR5	
BOL00001	-87.20	19	-64.61	-16.71	2.52	2.19	85	1	64.2	10	
BRB00001	-92.70	19	-59.85	12.93	0.80	0.80	90	2	59.4	0/CD10	10
CAN01101 CAN01201	-138.20 -138.20	19 19	-125.63 -112.04	57.24 55.95	3.45 3.35	1.27 0.97	157 151	1	59.7 59.8	9/GR10	10 10
CAN01201 CAN01202	-72.70	19	-112.04	55.63	2.74	1.12	32	1	59.8	9/GR10	10
CAN01202 CAN01203	-129.20	19	-111.48	55.61	3.08	1.12	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 CAN01606	-82.20 -70.70	19 19	-61.50 -61.30	49.55 49.55	2.65 2.40	1.40 1.65	143 148	1	60.5 60.5	9/GR14 10	10
CANU1606 CHLCONT5	-106.20	19	-61.30 -72.23	-35.57	2.40	0.80	148 55	1	59.6	9/GR17	
CHLCON13 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 HWA00002	-84.70 -166.20	19 19	-59.19 -165.79	4.78 23.42	1.44 4.20	0.85 0.80	95 160	1	63.8 59.0	9/GR1	10
HWA00002 HWA00003	-175.20	19	-165.79	23.42	4.20	0.80	159	1	59.0	9/GR1 9/GR2	10
MEX01NTE	-78.20	19	-105.81	26.01	2.89	2.08	155	1	60.8	1	10
MEX01SUR	-69.20	19	-94.84	19.82	3.05	2.09	4	1	62.5	i	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	o con -	
PRUAND02	-115.20	19	-74.69	-8.39	3.41	1.79	95	1	64.3	9/GR5	
PTRVIR01	-101.20	19 19	-65.85	18.12	0.80	0.80	90 90	1	60.8	1 6 9/GR20	
PTRVIR02 URG00001	-110.20 -71.70	19	-65.86 -56.22	18.12 -32.52	0.80 1.02	0.80 0.89	90 11	1	61.3 60.2	1 6 9/GR21	
USAEH001	-61.70	19	-36.22 -85.19	36.21	5.63	3.33	22	1	62.1	156	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	156	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 0/CD5	
VENAND03	-115.20	19	-67.04	6.91	2.37	1.43	111	1	67.7	9/GR5	

12 501.02 MHz (20)

										12 501.02 M	112 (20)
1	2	3	4			5	6	7	8	9	
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 2	62.6	8 9/GR9	11
B SU211 B SU212	-80.80	20	-44.51	-16.94	3.22	1.37	60	2	62.8	8 9/GR6	10
B SU212 CAN01101	-44.80 -137.80	20 20	-43.99 -125.60	-16.97 57.24	3.27 3.45	1.92 1.27	59 157	2	61.6 59.7	8 9/GR9 9/GR10	12 10
CAN01101 CAN01201	-137.80	20	-123.60 -111.92	55.89	3.33	0.98	151	2	59.7	9/GR10 9/GR10	10
CAN01201 CAN01202	-72.30	20	-111.92 -107.64	55.62	2.75	1.11	32	2	59.8	9/GK10	10
CAN01202 CAN01203	-128.80	20	-107.04	55.56	3.07	1.11	151	2	59.7	9/GR12	10
CAN01203 CAN01303	-128.80	20	-102.39	57.12	3.54	0.92	154	2	60.3	9/GR12 9/GR12	10
CAN01303	-90.80	20	-99.00	57.33	1.96	1.73	1 1	2	60.0	9/GR12	10
CAN01403	-128.80	20	-89.70	52.02	4.67	0.80	148	2	62.1	9/GR12	10
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	2.5	10
GUFMGG02	-52.80	20 20	-56.42	8.47	4.16	0.81	123 160	2 2	63.0 59.0	2 7 9/GR1	10 10
HWA00002 HWA00003	-165.80 -174.80	20	-165.79 -166.10	23.32 23.42	4.20 4.25	0.80	159	2	59.0	9/GR1 9/GR2	10
MEX01NTE	-174.80 -77.80	20	-105.10	25.42	2.88	2.07	155	2	60.8	9/GR2 1	10
MEX01NTE MEX02NTE	-135.80	20	-103.80	26.32	3.80	1.57	149	2	61.5	1	10
MEX02NTE MEX02SUR	-126.80	20	-96.39	19.88	3.19	1.87	158	2	62.8	l i	10
PNRIFRB2	-121.00	20	-80.15	8.46	1.01	0.80	170	1	65.1	1	10
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	156	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	156	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
		1			l		l		1		

12 515.60 MHz (21)

										12 515.60 M	11L (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
ALS00002	-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 21	-40.27	-6.06	3.44	2.09	174	1	61.2	8 9/GR9	1011
B CE411 B CE412	-64.20 -45.20	21	-50.97 -50.71	-15.27 -15.30	3.86 3.57	1.38 1.56	49 52	1 1	62.9 63.0	8 9/GR7 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	1012
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	o con s	
BOLAND01	-115.20	21 21	-65.04	-16.76	2.49	1.27	76	1	68.0 59.7	9/GR5	10
CAN01101 CAN01201	-138.20 -138.20	21	-125.63 -112.04	57.24 55.95	3.45	1.27 0.97	157 151	1 1	59.7 59.8	9/GR10 9/GR10	10
CAN01201 CAN01202	-72.70	21	-107.70	55.63	2.74	1.12	32	1	59.8	9/GK10	10
CAN01202 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	i	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 21	-61.50	49.55	2.65	1.40	143	1 1	60.5	9/GR14	
CAN01606 CHLCONT5	-70.70 -106.20	21	-61.30 -72.23	49.55 -35.57	2.40 2.60	1.65 0.80	148 55	1	60.4 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		
KNA00001	-79.70	21	-62.46	17.44	0.80	0.80	90	1	58.6	١,	
MEX01NTE MEX01SUR	-78.20 -69.20	21 21	-105.81 -94.84	26.01 19.82	2.89 3.05	2.08 2.09	155 4	1 1	60.7 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	l i	10
PAOPAC01	-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		
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	
SPMFRAN3	-53.20	21	-67.24	47.51	3.16	0.80	7	1	60.6	2 7	
SURINAM2	-84.70	21 21	-55.69 56.22	4.35	1.00	0.80	86	1	63.5		
URG00001 USAEH001	-71.70 -61.70	21	-56.22 -85.19	-32.52 36.21	1.02 5.63	0.89 3.33	11 22	1	60.2 62.1	156	
USAEH001 USAEH002	-61.70 -101.20	21	-85.19 -89.24	36.21	5.67	3.33	170	1	62.1	1 6 9/GR20	10
USAEH002 USAEH003	-101.20	21	-89.24 -90.14	36.11	5.55	3.76	161	1	62.0	1 6 9/GR20 1 6 9/GR21	10
USAEH003 USAEH004	-110.20	21	-90.14 -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

12 530.18 MHz (22)

										12 530.18 M	HZ (22)
1	2	3	4		:	5	6	7	8	9	
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 B SU112	-80.80 -44.80	22 22	-51.10 -50.76	-25.64 -25.62	2.76	1.06	50 56	2 2	63.1 62.6	8 9/GR6 8 9/GR9	11
B SU211	-44.80 -80.80	22	-30.76 -44.51	-23.62 -16.94	2.47 3.22	1.48 1.37	60	2	62.8	8 9/GR9 8 9/GR6	11
B SU212	-80.80 -44.80	22	-44.31 -43.99	-16.94 -16.97	3.22	1.92	59	2	61.6	8 9/GR9	12
BLZ00001	-115.80	22	-88.68	17.27	0.80	0.80	90	2	59.2	6 9/GK9	12
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
CAN01201	-72.30	22	-107.64	55.62	2.75	1.11	32	2	59.8	J/GICIO	10
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
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	0.000.4	
CHLCONT4	-105.80	22	-69.59	-23.20	2.21	0.80	68	2	59.3	9/GR16	
CHLCONT6	-105.80 -92.30	22 22	-73.52 -76.09	-55.52 24.13	3.65 1.83	1.31 0.80	39 141	2	59.7	9/GR16 9/GR18	
CRBBAH01 CRBBER01	-92.30 -92.30	22	-/6.09 -64.76	32.13	0.80	0.80	90	1	61.9 56.9	9/GR18 9/GR18	
CRBBLZ01	-92.30 -92.30	22	-64.76 -88.61	17.26	0.80	0.80	90	1	58.9	9/GR18 9/GR18	
CRBEC001	-92.30 -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	3/GK16	
DMAIFRB1	-79.30	22	-61.30	15.35	0.80	0.80	90	2	58.7		
EOAC0001	-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	156	10
USAEH002	-100.80	22 22	-89.28 -90.12	36.16	5.65	3.78	170	2 2	62.0	1 6 9/GR20	10 10
USAEH003 USAEH004	-109.80 -118.80	22	-90.12 -91.16	36.11 36.05	5.55 5.38	3.56 3.24	161 153	2 2	62.3 62.9	1 6 9/GR21 1 5 6	10 10
USAPSA02	-118.80 -165.80	22	-91.16 -117.79	40.58	4.04	0.82	135	2 2	62.9	9/GR1	10
USAPSA02 USAPSA03	-163.80	22	-117.79	40.38	3.63	0.82	136	2	65.3	9/GR1 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	
		-						1 1		1	

12 544.76 MHz (23)

ALSO0002			-				_				12 544.76 IV	
ALSONOOS -175.20 23 -150.98 58.53 3.77 1.11 167 1 60.2 9.0R2 10 ARGINSUS -94.20 23 -45.94 -43.33 3.77 1.11 167 1 60.2 9.0R2 10 ARGINSUS -55.20 23 -44.17 -59.91 3.77 0.80 13 1 59.5 9.0R4 ARGSUROS -55.20 23 -65.04 -43.33 3.27 1.11 167 1 60.3 9.0R4 ARGSUROS -55.20 23 -65.04 -43.33 3.27 1.10 1 60.3 9.0R4 ARGSUROS -55.20 23 -65.04 -43.33 3.27 1.10 1 61.3 8.90R7 B CESII -40.20 23 -40.60 -60.73 30.4 2.06 174 1 61.3 8.90R7 B CESII -40.20 23 -40.60 -60.73 30.4 2.06 174 1 61.3 8.90R7 B CESII -40.20 23 -40.60 -60.73 30.4 2.00 174 1 61.3 8.90R7 B CESII -40.20 23 -40.60 -60.73 30.4 2.00 174 1 61.3 8.90R7 B NOSII -74.20 23 -50.71 -15.70 3.57 1.58 1.59 1.00 B NOSII -74.20 23 -50.70 -1.78 3.54 1.78 1.66 2 63.2 8.90R8 B NOSII -74.20 23 -65.04 -4.71 2.57 3.58 1.69 1.00 2.2 63.2 8.90R8 B SUILI -81.20 23 -50.75 -25.62 2.76 1.05 50 1 63.2 8.90R8 B SUILI -81.20 23 -40.60 -4.71 2.37 1.85 1.00 50 1 63.2 8.90R8 B SUILI -81.20 23 -44.00 -10.87 3.20 2.10 60 1 62.8 8.90R6 11 B SUZII -81.20 23 -44.00 -10.87 3.20 3.00 80 90 2 57.0 B BUGANDOI -87.20 23 -40.60 -6.87 3.20 3.00 80 90 2 57.0 BUGANDOI -87.20 23 -40.60 -6.87 3.20 3.00 80 90 2 57.0 BUGANDOI -87.20 23 -40.60 -6.87 3.20 3.00 80 90 2 57.0 BUGANDOI -87.20 23 -40.60 -6.87 3.20 -6.80 -6.70 -6.	1	2	3	4			5	6	7	8	9	1
ALSONOOS -175.20 23 -150.98 58.53 3.77 1.11 167 1 60.2 9.0R2 10 ARGINSUS -94.20 23 -45.94 -43.33 3.77 1.11 167 1 60.2 9.0R2 10 ARGINSUS -55.20 23 -44.17 -59.91 3.77 0.80 13 1 59.5 9.0R4 ARGSUROS -55.20 23 -65.04 -43.33 3.27 1.11 167 1 60.3 9.0R4 ARGSUROS -55.20 23 -65.04 -43.33 3.27 1.10 1 60.3 9.0R4 ARGSUROS -55.20 23 -65.04 -43.33 3.27 1.10 1 61.3 8.90R7 B CESII -40.20 23 -40.60 -60.73 30.4 2.06 174 1 61.3 8.90R7 B CESII -40.20 23 -40.60 -60.73 30.4 2.06 174 1 61.3 8.90R7 B CESII -40.20 23 -40.60 -60.73 30.4 2.00 174 1 61.3 8.90R7 B CESII -40.20 23 -40.60 -60.73 30.4 2.00 174 1 61.3 8.90R7 B NOSII -74.20 23 -50.71 -15.70 3.57 1.58 1.59 1.00 B NOSII -74.20 23 -50.70 -1.78 3.54 1.78 1.66 2 63.2 8.90R8 B NOSII -74.20 23 -65.04 -4.71 2.57 3.58 1.69 1.00 2.2 63.2 8.90R8 B SUILI -81.20 23 -50.75 -25.62 2.76 1.05 50 1 63.2 8.90R8 B SUILI -81.20 23 -40.60 -4.71 2.37 1.85 1.00 50 1 63.2 8.90R8 B SUILI -81.20 23 -44.00 -10.87 3.20 2.10 60 1 62.8 8.90R6 11 B SUZII -81.20 23 -44.00 -10.87 3.20 3.00 80 90 2 57.0 B BUGANDOI -87.20 23 -40.60 -6.87 3.20 3.00 80 90 2 57.0 BUGANDOI -87.20 23 -40.60 -6.87 3.20 3.00 80 90 2 57.0 BUGANDOI -87.20 23 -40.60 -6.87 3.20 3.00 80 90 2 57.0 BUGANDOI -87.20 23 -40.60 -6.87 3.20 -6.80 -6.70 -6.	ALS00002	-166.20	23	-149 66	58 37	3.76	1 24	170	1	60.0	9/GR1	10
ARGISURUS												
ARGSURIDA	ARGINSU4	-94.20	23	-52.98	-59.81	3.40	0.80	19	1	60.1	9/GR3	
ARGSUROS												
B CE311												
B CE411												
B CE411												10.11
B CESI												10 11
B CESI												10 12
B NOR11	B CE511	-64.20	23					104	1	63.4		
B NOS11												
B SUII1												
B SU2112												
B SU211												11
B SU212												11
BERBERMU												12
BOLDO001												
BRB000001		-115.20					1.27	76	1	68.1	9/GR5	
CANDIIOI											1	
CANDI201											0.000.40	
CANDI202												
CAND1203											9/GK10	10
CANDI303											9/GR12	10
CAND1304												
CAN01404 —91.20 23 —84.82 52.42 3.10 2.05 152 1 60.6 9/GR14 CAN01405 —82.20 23 —84.00 52.39 2.84 2.29 172 1 60.5 9/GR14 CAN01505 —82.20 23 —71.77 53.79 3.30 1.89 162 1 60.4 9/GR14 CAN01605 —82.20 23 —71.77 53.79 3.30 1.89 162 1 60.4 9/GR14 CAN01606 —70.70 23 —61.50 49.55 2.66 1.40 143 1 60.5 9/GR14 CHLCONTS —106.20 23 —72.23 —35.57 2.60 0.80 55 1 59.6 9/GR17 CHLPACO2 —106.20 23 —72.23 —35.57 2.60 0.80 55 1 59.6 9/GR17 CLMANDO1 —115.20 23 —74.72 5.93 3.85 1.63 <t< td=""><td></td><td>-91.20</td><td>23</td><td>-99.12</td><td></td><td>1.98</td><td></td><td></td><td>1</td><td>60.1</td><td></td><td></td></t<>		-91.20	23	-99.12		1.98			1	60.1		
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 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 2.66 1.40 143 1 60.5 9/GR14 CAN01606 -70.70 23 -61.30 49.55 2.66 1.40 143 1 60.5 9/GR14 CHLCONTS -106.20 23 -72.23 -35.57 2.60 0.80 55 1 59.6 9/GR17 CHLCONTS -106.20 23 -74.70 5.87 3.98 1.96 118 1 63.9 10 CLMO0001 -89.20 23 -74.50 5.87 3.98 1.96 118<												10
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 CAN01606 -82.20 23 -61.50 49.55 2.60 1.40 143 1 60.5 9/GR14 CAN01606 -70.70 23 -61.30 49.55 2.40 1.65 148 1 60.5 CHLCNOTS -106.20 23 -72.23 -35.57 2.60 0.80 55 1 59.6 9/GR17 CHMO01 -105.20 23 -74.72 5.93 3.85 1.63 114 1 65.4 9/GR5 CLMANDOI -115.20 23 -74.80 5.87 3.98 1.96 118 1 63.9 10 CUB00001 -82.20 23 -79.81 21.62 2.24 0.80 168 1												
CAN01505 -82.20 23 -71.77 53.79 3.30 1.89 162 1 60.4 9/GR14 CAN01606 -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 2.60 0.80 55 1 59.6 9/GR17 CHLCONTS -106.20 23 -72.23 -35.57 2.60 0.80 55 1 59.6 9/GR17 CHMODO1 -115.20 23 -74.72 5.93 3.85 1.63 114 1 65.4 9/GR5 10 CLMO0001 -80.20 23 -74.50 5.87 3.98 1.96 118 1 65.4 9/GR5 10 CLMO0001 -89.20 23 -74.50 5.87 3.98 1.96 118 1 66.4 9/GR5 10 CLMO0001 -89.20 23 -76.13 12.62												
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 9/GR17 CHLCONT5 -106.20 23 -80.06 -30.06 1.36 0.80 69 1 59.4 9/GR17 CHLAND01 -115.20 23 -74.72 5.87 3.85 1.63 114 1 65.4 9/GR17 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 EQACANDI -115.20 23 -79.81 21.62 2.24 0.80 168 1 61.3 EQAGANDI -115.20 23 -61.58 12.29 0.80 0.80 90 1 58.7												
CAND1606 -70.70 23 -61.30 49.55 2.40 1.65 148 1 60.5 CHLCONTS -106.20 23 -72.23 -35.57 2.60 0.80 55 1 59.6 9/GR17 CHLRAC02 -106.20 23 -72.23 -35.57 2.60 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 -80.20 23 -74.50 5.87 3.98 1.96 118 1 63.9 10 CLM00001 -89.20 23 -79.81 21.62 2.08 1.06 18 1 61.3 EQACANDI -115.20 23 -78.40 -1.61 1.37 0.95 75 1 64.4 9/GR5 GRLDN0059 -57.20 23 -61.58 12.29 0.80 80 19 1 58.7 <												
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/GR17 CLM00001 -80.20 23 -74.50 5.87 3.98 1.96 118 1 63.9 10 CUB00001 -80.20 23 -79.81 21.62 2.24 0.80 168 1 61.3 EQACANDI -115.20 23 -79.81 21.62 2.24 0.80 166 1 5.96 9/GR5 GRD00059 -57.20 23 -61.58 12.29 0.80 0.80 90 1 58.7 GRLDNK01 -53.20 23 -64.89 66.56 2.70 0.82 173 1 60.2											7/01014	
CLMAND01 -115.20 23 -74.72 5.93 3.85 1.63 114 1 65.4 9/GR5 10 CLM00001 -80.20 23 -74.50 5.87 3.98 1.96 118 1 63.9 10 CUB00001 -80.20 23 -79.81 21.62 2.24 0.80 168 1 61.3 EQACANDI -115.20 23 -79.84 -1.61 1.37 0.95 75 1 64.4 9/GR5 EQAGANDI -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 -165.79 23.42 4.25 0.80 159 1 5											9/GR17	
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 EQACANDI -115.20 23 -79.40 -1.61 1.37 0.95 75 1 64.4 9/GRS EQAGANDI -115.20 23 -90.34 -0.62 0.90 0.81 89 1 61.6 9/GRS 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 -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 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>1</td><td></td><td></td><td></td></t<>									1			
CUB00001 -89.20 23 -79.81 21.62 2.24 0.80 168 1 61.3 EQACANDI EQACANDI -115.20 23 -78.40 -1.61 1.37 0.95 75 1 64.4 9/GR5 EQAGANDI -115.20 23 -61.58 12.29 0.80 0.80 90 1 58.7 GRLDNK01 -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 -165.79 23.42 4.20 0.80 160 1 59.0 9/GR1 10 HWA00002 -166.20 23 -165.79 23.42 4.25 0.80 159 1 59.0 9/GR1 10 MEX0ISUR -8.20 23 -105.81 26.01 2.89 2.08 155												10
EQACANDI -115.20 23 -78.40 -1.61 1.37 0.95 75 1 64.4 9/GR5 EQAGANDI -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 GRLDN601 -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 1 HWA00002 -166.20 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 MEX02NTE -136.20 23 -107.21 26.31 3.84 1.55 148 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>10</td><td></td></td<>											10	
EÒAGAND1 -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 GILDNK01 -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 MEX02NTE -136.20 23 -107.21 26.31 3.84 1.55 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>0/CD5</td><td></td></t<>											0/CD5	
GRD00059 GRLDNK01 -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 HWA00002 -166.20 23 -165.79 23.42 4.25 0.80 160 1 59.0 9/GR1 10 MEX01NTE -78.20 23 -105.81 26.01 2.89 2.08 155 1 60.8 1 MEX01SUR -69.20 23 -94.84 19.82 3.05 2.09 4 1 62.5 1 MEX02NTE -137.20 23 -06.39 19.88 3.18 1.87 157 1 62.8 1												
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 1 HWA00002 -166.20 23 -165.79 23.42 4.25 0.80 150 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 MEX01SUR -69.20 23 -107.21 26.31 3.84 1.55 148 1 61.5 1 10 MEX02SUR -127.20 23 -61.73 16.75 0.80 0.80 90 1 58.9 4 PAQPAC01 -106.20 23 -61.73 16.75 0.80 </td <td></td> <td>3/GR3</td> <td></td>											3/GR3	
HWA00002			23		66.56			173	1		2	
HWA00003	GUY00201	-84.70	23	-59.19	4.78	1.44	0.85	95	1	63.8		
MEXOINTE MEXOINTE -78.20 23 -105.81 26.01 2.89 2.08 155 1 60.8 1 MEXOISUR -69.20 23 -94.84 1)8.2 3.05 2.09 4 1 62.5 1 MEXO2SUR -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 56.4 9/GR17 PAQPAC01 -106.20 23 -199.18 -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 PRUANDO2 -115.20 23 -58.66 -23.32 1.45 1.04 76 1 60.5 PTRVIR01 -10.20 23 -65.86 18.12 0.80 90 1 66.8												
MEXOISUR -69.20 23 -94.84 19.82 3.05 2.09 4 1 62.5 1 MEXOZNTE -136.20 23 -107.21 26.31 3.84 1.55 148 1 61.5 1 10 MEXOZSUR -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 -74.69 -8.39 3.41 1.79 95 1 64.3 9/GR5 PTRVIRO1 -101.20 23 -74.69 -8.39 3.41 1.79 95 1 64.3 9/GR5 PTRVIRO1 -101.20 23 -56.86 18.12 0.80 0.												10
MEXOZNTE -136.20 23 -107.21 26.31 3.84 1.55 148 1 61.5 1 10 MEXOZSUR -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 -65.86 18.12 0.80 0.80 90 1 60.8 16.9/GR20 PTRVIR02 -110.20 23 -56.22 -32.52 1.02 0.89												
MEX02SUR MSR00001 -127.20 23 -96.39 19.88 3.18 1.87 157 1 62.8 1 10 MSR00001 -79.70 23 -61.73 11.675 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 -65.86 18.12 0.80 0.80 90 1 66.8 16.9/GR20 PTRVIR02 -110.20 23 -65.86 18.12 0.80 0.80 90 1 61.3 16.9/GR20 USAEH001 -61.70 23 -85.19 36.21 5.63 33.33												10
MSR00001											1	
PRĞ00002 -99.20 23 -58.66 -23.32 1.45 1.04 76 1 60.5 PRUANDO2 PRUANDO2 -115.20 23 -74.69 -8.39 3.41 1.79 95 1 64.3 9/GR5 PTRVIR01 -101.20 23 -65.86 18.12 0.80 0.80 90 1 61.3 16 9/GR20 PTRVIR02 -110.20 23 -65.86 18.12 0.80 0.80 90 1 61.3 1 6 9/GR21 USAGH00001 -71.70 23 -56.22 -32.52 1.02 0.89 91 1 61.3 1 6 9/GR21 USAEH001 -61.70 23 -85.19 36.21 5.63 3.33 32 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 </td <td></td>												
PRÜAND02 -115.20 23 -74.69 -8.39 3.41 1.79 95 1 64.3 9/GRS PTRVIR01 -101.20 23 -65.85 18.12 0.80 0.80 90 1 60.8 1.69/GR20 PTRVIR02 -110.20 23 -65.86 18.12 0.80 0.80 90 1 61.3 1.69/GR20 PTRVIR02 -11.02 23 -56.22 -32.52 1.02 0.89 11 1 60.2 USAEH001 -61.70 23 -85.22 -32.52 1.02 0.89 11 1 60.2 USAEH002 -101.20 23 -89.24 36.16 5.67 3.76 170 1 62.0 1 69/GR20 10 USAEH003 -110.20 23 -90.14 36.11 5.55 3.55 161 1 62.4 1.69/GR21 10 USAPSA02 -166.20 23 -117.80 40.58 4.03 0.82									1		9/GR17	
PTRVIR01												
PTRVIR02 -110.20 23 -65.86 18.12 0.80 0.80 90 1 61.3 16 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 USAPSA02 -166.20 23 -91.16 36.05 5.38 3.24 152 1 62.9 15 6 10 USAPSA02 -166.20 23 -117.80 40.58 4.03 0.82 135 1 63.6 9/GR1 USAWH010 -148.20 23 -118.27 40.12												
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 USAPBA02 -166.20 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 USAWBA03 -175.20 23 -118.27 40.12 3.62 0.80 136 1 65.4 9/GR2 USAWH101 -148.20 23 -111.41 38.57												
USAEH001											1 0 9/GK21	
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/GR20 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											156	
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												10
USAPSA02							3.55				1 6 9/GR21	
USAWH101 -148.20 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												10
USAWH101												
USAWH102 -157.20 23 -111.41 38.57 5.51 1.54 138 1 63.5 10												
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1												10
		1.13.20		0,.01	0.51		5			07.7		

12 559.34 MHz (24)

										12 559.34 M	112 (24)
1	2	3	4		:	5	6	7	8	9	
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	1011
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	10
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 24	-125.60 -111.92	57.24	3.45	1.27	157	2 2	59.7	9/GR10	10 10
CAN01201 CAN01202	-137.80 -72.30	24	-111.92 -107.64	55.89 55.62	3.33 2.75	0.98 1.11	151 32	2 2	59.8 59.8	9/GR10	10
CAN01202 CAN01203	-128.80	24	-107.64	55.56	3.07	1.11	151	2	59.8 59.7	9/GR12	10
CAN01203 CAN01303	-128.80	24	-102.39	57.12	3.54	0.92	154	2	60.3	9/GR12 9/GR12	10
CAN01303 CAN01304	-90.80	24	-99.00	57.12	1.96	1.73	134	2	60.0	9/GR12 9/GR13	10
CAN01403	-128.80	24	-89.70	52.02	4.67	0.80	148	2	62.1	9/GR13	10
CAN01403	-90.80	24	-84.78	52.41	3.09	2.06	153	2	60.6	9/GR12	10
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	10
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 MEX02NTE	-77.80 -135.80	24 24	-105.80 -107.36	25.99 26.32	2.88 3.80	2.07	155 149	2 2	60.8	1 1	10
	-135.80	24	-107.36 -96.39	19.88	3.19	1.57 1.87	158	2	61.5 62.8	1	10
MEX02SUR PNRIFRB2	-120.80	24	-90.39 -80.15	8.46	1.01	0.80	170	1	65.1	1	10
PRU00004	-121.00 -85.80	24	-80.13 -74.19	-8.39	3.74	2.45	112	2	63.2		
PTRVIR01	-83.80	24	-/4.19 -65.85	-8.39 18.12	0.80	0.80	90	2	60.9	1 6 9/GR20	
PTRVIR02	-100.80	24	-65.85	18.12	0.80	0.80	90	2	61.4	1 6 9/GR20 1 6 9/GR21	
USAEH001	-61.30	24	-85.16	36.21	5.63	3.32	22	2	62.1	156	
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	156	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

12 573.92 MHz (25)

ALS00002							_				12 5/3.92 M	()
ALSON0003	1	2	3	4			5	6	7	8	9	
ALSON0003	AT \$00002	-166.20	25	-149.66	58 37	3.76	1.24	170	1	59.9	9/GR1	10
ARGINSU4												
ARGISRUS												10
ARGSUR04												
B CE311			25				1.50	40	1	60.9		
B CE412	ARGSUR05	-55.20		-63.68		2.54	2.38	152	1	60.2	9/GR4	
B CE411			25	-40.60	-6.07	3.04	2.06	174		61.9	8 9/GR7	
B CESI												10 11
B NG61												
B NO611												10 12
B NO711												
B NOSI												
B SUI11												
B SUL12												
B SU211												11
BERERMU			25						1			
BOLANDOI												12
CANDI101	BERBERMU	-96.20	25	-64.77	32.32	0.80	0.80	90		57.0		
CAN01201							1.27	76				
CANDI202												
CAND1203											9/GR10	10
CAN01303											o con : =	
CAN01304												
CAN01403												10
CAN01404								l				10
CAN01405												10
CAN01504												
CANO1605												
CAN01606	CAN01505	-82.20	25	-71.77			1.89	162	1	60.3		
CHLCONTS	CAN01605	-82.20	25	-61.50	49.55	2.65	1.40	143	1	60.5	9/GR14	
CHLPAC02	CAN01606											
CLMANDO1												
CLM00001												
EQACANDI -115.20 25 -78.40 -1.61 1.37 0.95 75 1 64.4 9/GR5 EQAGANDI -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 26.01 28.0 2.08 155 1 60.7 1 4 1 62.5 1 60.7 1 4 1 62.5 1 62.5 1 1 4 1 62.5 1 60.7 1 4 1 62.2 1 1 6 6.4 1 1												10
EÔAGANDI -115.20 25 -90.34 -0.62 0.90 0.81 89 1 61.5 9/GR5 HWA00002 -166.20 25 -166.79 23.42 4.20 0.80 160 1 59.0 9/GR1 10 HWA00002 -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 88.9 1 66.0 1 59.0 9/GR2 10 10 10 10 10 80 0.80 90 1 58.6 10 80 80 90 2 60.1 1 58.6 10 80 80 90 1 58.6 10 10 80 80 90 1 56.6 1 10 80 80 90 1 56.4 9/GR2 1 10 10 <td></td>												
HWA00002												
HWA00003												10
JMC00002												
KNA00001											7,0102	
MEXOINTE												
MEXO2NTE		-78.20	25	-105.81	26.01	2.89	2.08	155	1	60.7	1	
MEXO2SUR												
PAQPAC01												
PRÜ00002												10
PRUAND02											9/GR17	
PTRVIR01											0/CP5	
PTRVIR02												
SPMFRAN3												
SURINAM2												
URG00001											- '	
USAEH001 -61.70 25 -85.19 36.21 5.63 3.33 22 1 62.1 1 5 6 15 6 10 GR20 10 10 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 USAWBA03 -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 USAWH02 -157.20 25 -111.4												
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 USAWH02 -157.20 25 -111.41 38.57 5.51 1.54 138 1 63.5 10			25					22		62.1	156	
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	USAEH002							170				
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												
USAWH101 -148.20 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												10
USAWH101												
USAWH102 -157.20 25 -111.41 38.57 5.51 1.54 138 1 63.5 10												
VENANDOS -113.20 23 -07.04 0.91 2.37 1.43 111 1 67.6 9/GRS 10												10
	V ENAMDOS	-113.20	23	-07.04	0.91	2.37	1.43	111	'	07.0	3/GK3	10

12 588.50 MHz (26)

ALSOROUS ALS											12 588.50 MI	1Z (20)
ALSO0003	1	2	3	4		:	5	6	7	8	9	
ALSO0003	AT \$00002	-165.80	26	-149 63	58 52	3.81	1 23	171	2	59.9	9/GR1	10
ARGNORTH											,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
ARGNORTS											J. GIL2	
ATNBEAMI												
B CESI2		-52.80	26		14.87	1.83	0.80	39				
B CE411											8 9/GR7	
B CE511	B CE312	-44.80	26	-40.26	-6.06	3.44	2.09	174	2	61.2	8 9/GR9	10 11
B NO611	B CE411	-63.80	26	-50.97	-15.26	3.86	1.38	49	2	62.9	8 9/GR7	
B NO611		-44.80	26	-50.71		3.57	1.56			63.0	8 9/GR9	10 12
B NO7111									-			
B NSB11												
B SE911												
B SUI11												
B SU2112												
B SU211												
B SUZ12												11
BIZ200001												12
CANDI101											8 9/GR9	12
CANO1201											0/CB10	10
CAND1202												
CAND1203											9/GK10	10
CANDI303 -128.80 26 -102.39 57.12 3.54 0.92 154 2 60.3 9/GR12 10 CAN01304 -90.80 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 -71.76 53.76 3.30 1.89 162 2 60.3 9/GR14 CAN01605 -81.80 26 -61.54 49.51 2.41 1.65 148 2 60.5 9/GR14 CAN01606 -70.30 26 -61.52 49.51 2.41 1.65 148 2 60.4 CHLCONT6 -105.80 26 -73.52 -55.52 3.65 1.											0/GP12	10
CAND1304												
CANO1403												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 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 CHLCONT6 -105.80 26 -69.59 -23.20 2.21 0.80 68 2 59.3 9/GR16 CRBBAH01 -92.30 26 -76.09 24.13 1.83 0.80 141 1 61.9 9/GR18 CRBBAB101 -92.30 26 -64.76 32.13 0.80 0.80 90 1<												10
CAN01405												
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 CAN01606 -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 CHLCONT6 -105.80 26 -69.59 -23.20 2.21 0.80 68 2 59.3 9/GR16 CRBBR01 -92.30 26 -76.09 24.13 1.83 0.80 141 1 61.9 9/GR18 CRBBR01 -92.30 26 -64.76 32.13 0.80 0.80 90 1 58.9 9/GR18 CRBBL201 -92.30 26 -60.07 8.26 4.20 0.86 115 1												
CAN01505 -81.80 26 -71.76 53.76 3.30 1.89 162 2 60.3 9/GR14 CAN01606 -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 CHLCONT6 -105.80 26 -69.59 -23.20 2.21 0.80 68 2 59.3 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 CRBEC001 -92.30 26 -60.07 8.26 4.20 0.80 151 1 61.3 9/GR18 CRBIMC01 -92.30 26 -79.45 17.97 0.99 0.80 151 1 <td></td>												
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 -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 CRBBL201 -92.30 26 -88.61 17.26 0.80 0.80 90 1 58.9 9/GR18 CRBBL201 -92.30 26 -60.07 8.26 4.20 0.86 115 1 64.6 9/GR18 CRBJMC01 -92.30 26 -84.33 9.67 0.82 0.80 151 1 61.3 9/GR18 CRBJMC01 -91.30 26 -61.30 15.35 0.80 0.80 151 <td< td=""><td></td><td>-81.80</td><td>26</td><td>-71.76</td><td></td><td></td><td></td><td>162</td><td></td><td>60.3</td><td></td><td></td></td<>		-81.80	26	-71.76				162		60.3		
CHLCONT6 -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 CRBBL201 -92.30 26 -64.76 32.13 0.80 0.80 90 1 56.9 9/GR18 CRBBL201 -92.30 26 -60.07 8.26 4.20 0.80 90 1 56.9 9/GR18 CRBIMC01 -92.30 26 -79.45 17.97 0.99 0.80 151 1 61.3 9/GR18 CRBIMC01 -92.30 26 -79.45 17.97 0.99 0.80 151 1 61.3 9/GR18 CRBIMC01 -94.80 26 -78.31 -1.52 1.48 1.15 6	CAN01605	-81.80	26	-61.54	49.50	2.66	1.39	144	2	60.5	9/GR14	
CHLCONT6	CAN01606	-70.30	26	-61.32	49.51	2.41	1.65	148	2	60.4		
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 CRBEL201 -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 17.797 0.99 0.80 151 1 61.3 9/GR18 CTR00201 -130.80 26 -61.30 15.35 0.80 0.80 199 2 58.7 EQAC0001 -94.80 26 -78.31 -1.52 1.48 1.15 65 1 63.3 9/GR19 EQAC0001 -94.80 26 -78.31 -1.52 1.48 1.15 65 1	CHLCONT4	-105.80	26	-69.59	-23.20	2.21	0.80	68		59.3	9/GR16	
CRBBER01 -92.30 26 -64.76 32.13 0.80 0.80 90 1 56.9 9/GR18 CRBBLZ01 -92.30 26 -88.61 117.26 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 CRBIMC01 -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 DMAIFRBI -79.30 26 -61.30 15.35 0.80 0.80 190 2 58.7 EQAC0001 -94.80 26 -78.31 -1.52 1.48 1.15 65 1 63.3 9/GR19 HWA00002 -165.80 26 -165.79 23.32 4.20 0.80 160 2 59.0	CHLCONT6											
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 CRBIMC01 -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 DMAIFRBI -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 EQAC0001 -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												
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 0.80 199 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 -78.31 -1.52 1.48 1.15 65 1 63.3 9/GR19 HWA00002 -165.80 26 -96.36 -0.57 0.94 0.89 99 1 61.2 9/GR19 HWA00003 -174.80 26 -165.79 23.32 4.20 0.80 159 2 59.0 9/GR1 10 MEX01NTE -77.80 26 -105.80 25.99 2.88 2.07 155 </td <td></td>												
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 DMAIFRBI -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 HWA00003 -174.80 26 -166.10 23.42 4.25 0.80 159 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 MEXQINTE -77.80 26 -105.80 25.99 2.88 2.07 155												
CTR00201 -130.80 26 -84.33 9.67 0.82 0.80 119 2 66.0 DMAIFRBI EQAC0001 -94.80 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 EQAC0001 -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 -165.80 25.99 2.88 2.07 155 2 60.7 1 MEX01NTE -77.80 26 -107.36 26.32 3.80 1.57 149 2 61.4 1 10 MEX02NTE -126.80 26 -96.39 19.88 3.19 1.87												
DMAIFRBI											9/GR18	
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/GR1 10 MEXOINTE -77.80 26 -105.80 25.99 2.88 2.07 155 2 60.7 1 MEXO2SUR -126.80 26 -96.39 19.88 3.19 1.87 158 2 62.8 1 10 MCG00003 -107.30 26 -84.99 12.90 1.05 1.01 176 1 63.6 1 PTRVIR01 -100.80 26 -65.85 18.12												
EÒAG0001 -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/GR1 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 1 PTRV00004 -85.85 18.12 0.80 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>0/0710</td><td></td></td<>											0/0710	
HWA00002												
HWA00003												10
MEXOINTE -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 1 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/GR20 USAEH001 -61.30 26 -85.16 36.21 5.63 3.32												
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 1 PRU00004 -85.80 26 -74.19 -8.39 3.74 2.45 112 2 63.1 1 PTRVIR01 -109.80 26 -65.85 18.12 0.80 0.80 90 2 60.8 1.69/GR20 PTRVIR02 -109.80 26 -65.85 18.12 0.80 0.80 90 2 60.4 1.69/GR20 USAEH001 -61.30 26 -85.16 36.21 5.63 33.2 22 2 62.1 1.56 USAEH003 -109.80 26 -90.12 36.11 5.55												10
MEXO2SUR												10
NCG00003												
PRU00004												10
PTRVIR01												
PTRVIR02											1.6.9/GR20	
USAEH001												
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/GR20 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 USAWSA03 -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												
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												10
USAPSA02	USAEH003	-109.80	26	-90.12				161		62.3		10
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	USAEH004	-118.80	26	-91.16	36.05	5.38	3.24	153		62.9	156	10
USAWH101	USAPSA02	-165.80		-117.79	40.58	4.04	0.82			63.5		
USAWH102 -156.80 26 -111.40 38.57 5.51 1.55 138 2 63.5 10												
VENTIVEN -103.80 26 -66.79 6.90 2.50 1.77 122 2 65.5 10												
	VEN11VEN	-103.80	26	-66.79	6.90	2.50	1.77	122	2	65.5	10	

12 603.08 MHz (27)

ALSO0003	9 GR1 10 GR2 10 GR3 GR3 GR4 GR8 GR7 GGR7 GGR9 GGR7 GGR9 GGR7 GGR8 GGR8 GGR8
ALSO0003	GR2 10 GR3 GR4 GR3 GR4 GR7 GGR9 10 11 GGR7 GGR9 10 12 GGR7 GGR8 GGR8 GGR8 GGR8
ALSO0003	GR2 10 GR3 GR4 GR3 GR4 GR7 GGR9 10 11 GGR7 GGR9 10 12 GGR7 GGR8 GGR8 GGR8 GGR8
ARGINSU4	BR3 BR4 BR3 BR4 VGR7 VGR9 10 11 VGR7 VGR9 10 12 VGR8 VGR8 VGR8 VGR8
ARGSUR04	GR3 GR4 //GR7 //GR9 10 11 //GR7 //GR9 10 12 //GR7 //GR8 //GR8 //GR8
ARGSUR05	GR4 //GR7 //GR9 10 11 //GR7 //GR9 10 12 //GR7 //GR8 //GR8 //GR8
B CE311	//GR7 //GR9 10 11 //GR7 //GR9 10 12 //GR7 //GR8 //GR8
B CE312	//GR9 10 11 //GR7 //GR9 10 12 //GR7 //GR8 //GR8
B CE411	//GR7 //GR9 10 12 //GR7 //GR8 //GR8 //GR8
B CE412	/GR9 10 12 //GR7 //GR8 //GR8 //GR8
B N0611	//GR8 //GR8 //GR8
B NO711	/GR8 /GR8
B N0811	/GR8
B SU111	
B SU112	/GR6
B SU211	/GR9 11
BERBERMU	/GR6
BOLAND01	/GR9 12
BOL00001	
BRB00001	GR5
CAN01101 -138.20 27 -125.63 57.24 3.45 1.27 157 1 59.7 9/C CAN01201 -138.20 27 -112.04 55.95 3.35 0.97 151 1 59.8 9/C CAN01202 -72.70 27 -107.70 55.63 2.74 1.12 32 1 59.8 9/C CAN01203 -129.20 27 -111.48 55.61 3.08 1.15 151 1 59.7 9/C CAN01303 -129.20 27 -99.12 57.36 1.98 1.72 2 1 60.1 9/C CAN01403 -129.20 27 -89.75 52.02 4.68 0.80 148 1 62.1 9/C CAN01404 -91.20 27 -84.82 52.42 3.10 2.05 152 1 60.6 9/C CAN01504 -91.20 27 -84.82 52.42 3.17 1.56 1	
CAN01201	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/C CAN01303 -129,20 27 -99,12 57,36 1,98 1,72 2 1 60,1 9/C CAN01403 -129,20 27 -89,75 52,02 4,68 0.80 148 1 62,1 9/C CAN01404 -91,20 27 -84,82 52,42 3,10 2.05 152 1 60,6 9/C CAN01404 -91,20 27 -84,82 52,42 3,10 2.05 152 1 60,6 9/C CAN01504 -91,20 27 -72,60 53,77 3,57 1,67 156 1 60,4 9/C CAN01505 -82,20 27 -71,77 53,79 3,30 1,89 162 1	GR10 10
CAN01303 -129,20 27 -102,42 57,12 3.54 0.91 154 1 60.3 9/C CAN01304 -91,20 27 -99,12 57,36 1.98 1.72 2 1 60.1 9/C CAN01403 -129,20 27 -89,75 52,02 4,68 0.80 148 1 62.1 9/C CAN01404 -91,20 27 -84,82 52,42 3,10 2.05 152 1 60.6 9/C CAN01404 -91,20 27 -84,82 52,42 3,10 2.05 152 1 60.6 9/C CAN01504 -91,20 27 -72,66 53,77 3,57 1.67 156 1 60.4 9/C CAN01605 -82,20 27 -71,77 53,79 3,30 1.89 162 1 60.4 9/C CAN01606 -70,70 27 -61.50 49,55 2.65 1.40 143 <th< td=""><td>M(10 10</td></th<>	M(10 10
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CAN01403	GR12 10
CAN01404 -91,20 27 -84,82 52,42 3,10 2.05 152 1 60,6 9/C CAN01405 -82,20 27 -84,00 52,39 2.84 2.29 172 1 60,5 9/C CAN01504 -91,20 27 -72,66 53,77 3,57 1.67 156 1 60,4 9/C CAN01505 -82,20 27 -71,77 53,79 3,30 1.89 162 1 60,4 9/C CAN01606 -70,70 27 -61,50 49,55 2,65 1.40 143 1 60,5 9/C CHLCONT5 -106,20 27 -72,23 -35,57 2,60 0.80 55 1 59,6 9/C CLMAND01 -115,20 27 -74,72 5,93 3,85 1,63 114 1 65,4 9/C CLMAND01 -115,20 27 -74,50 5,87 3,98 1,96 118 <td< td=""><td>GR13</td></td<>	GR13
CAN01405 -82.20 27 -84.00 52.39 2.84 2.29 172 1 60.5 9/C CAN01504 -91.20 27 -72.66 53.77 3.57 1.67 156 1 60.4 9/C CAN01505 -82.20 27 -61.50 49.55 2.65 1.40 143 1 60.5 9/C CAN01606 -70.70 27 -61.30 49.55 2.65 1.40 143 1 60.5 9/C CHLCONT5 -106.20 27 -72.23 -35.57 2.60 0.80 55 1 59.6 9/C CHLCONT5 -106.20 27 -72.23 -35.57 2.60 0.80 55 1 59.6 9/C CHLARADOI -115.20 27 -74.72 5.93 3.85 1.63 114 1 65.4 9/C CLMO0001 -115.20 27 -74.50 5.87 3.98 1.96 118 <	GR12 10
CAN01504 -91.20 27 -72.66 53.77 3.57 1.67 156 1 60.4 9/C CAN01505 -82.20 27 -71.77 53.79 3.30 1.89 162 1 60.4 9/C CAN01605 -82.20 27 -61.50 49.55 2.65 1.40 143 1 60.5 9/C CAN01606 -70.70 27 -61.30 49.55 2.40 1.65 148 1 60.5 9/C CHLCONT5 -106.20 27 -72.23 -35.57 2.60 0.80 55 1 59.6 9/C CHLPAC02 -106.20 27 -72.23 -35.57 2.60 0.80 55 1 59.6 9/C CLMAND01 -115.20 27 -74.72 5.93 3.85 1.63 114 1 65.4 9/C CLM00001 -89.20 27 -74.50 5.87 3.98 1.96 118 <th< td=""><td>GR13</td></th<>	GR13
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CAN01606	3R13
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CLMAND01 -115.20 27 -74.72 5.93 3.85 1.63 114 1 65.4 9/C 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/C GRD00059 -57.20 27 -61.58 122.9 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/C <tr< td=""><td>GR17</td></tr<>	GR17
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/C EQAGAND1 -115.20 27 -90.34 -0.62 0.90 0.81 89 1 61.6 9/C 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 GV00201 -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/C	GR17 GR5 10
CUB00001 -89.20 27 -79.81 21.62 2.24 0.80 168 1 61.3 EQACANDI -115.20 27 -78.40 -1.61 1.37 0.95 75 1 64.4 9/C EQAGANDI -115.20 27 -90.34 -0.62 0.90 0.81 89 1 61.6 9/C 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 GV00201 -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/C HWA00003 -175.20 27 -166.10 23.42 4.25 0.80 159 1 59.0 9/C <td>JK5 10</td>	JK5 10
EQACAND1 -115.20 27 -78.40 -1.61 1.37 0.95 75 1 64.4 9/C EQAGAND1 -115.20 27 -90.34 -0.62 0.90 0.81 89 1 61.6 9/C 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/C HWA00003 -175.20 27 -166.10 23.42 4.25 0.80 159 1 59.0 9/C	
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/C HWA00003 -175.20 27 -166.10 23.42 4.25 0.80 159 1 59.0 9/C	GR5
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/C HWA00003 -175.20 27 -166.10 23.42 4.25 0.80 159 1 59.0 9/C	GR5
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/C HWA00003 -175.20 27 -166.10 23.42 4.25 0.80 159 1 59.0 9/C	
HWA00002 -166.20 27 -165.79 23.42 4.20 0.80 160 1 59.0 9/C HWA00003 -175.20 27 -166.10 23.42 4.25 0.80 159 1 59.0 9/C	
HWA00003 -175.20 27 -166.10 23.42 4.25 0.80 159 1 59.0 9/C	GR1 10
MEX01NTE -78.20 27 -105.81 26.01 2.89 2.08 155 1 60.8 1	IK2 10
MEXOISUR -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	2015
	GR17
	GR5
	9/GR20
	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	
	9/GR20 10
	9/GR21 10
	9/GR21 10 6 10
USAWH101 -148.20 27 -109.65 38.13 5.53 1.95 142 1 62.4 10	9/GR21 10 6 10 GR1
USAWH102 -157.20 27 -111.41 38.57 5.51 1.54 138 1 63.5 10	9/GR21 10 6 10
VENAND03 -115.20 27 -67.04 6.91 2.37 1.43 111 1 67.7 9/C	9/GR21 10 6 10 GR1 GR2

12 617.66 MHz (28)

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1	2	3	4			5	6	7	8	9	
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	1012
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
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 -92.30	28	-60.07 -79.45	8.26 17.97	4.20 0.99	0.86	115	1	64.6	9/GR18	
CRBJMC01	-92.30 -94.80	28 28	-79.45 -78.31	-1.52	1.48	0.80	151	1	61.4	9/GR18	
EQAC0001	,				0.94	1.15	65		63.3	9/GR19	
EQAG0001 GRD00003	-94.80 -79.30	28 28	-90.36 -61.62	-0.57 12.34	0.94	0.89 0.80	99 90	1 2	61.3 58.9	9/GR19	
	-79.30 -107.30	28	-90.50	15.64	1.03	0.80	84	1	61.4		
GTMIFRB2 GUFMGG02	-107.30 -52.80	28	-90.50 -56.42	8.47	4.16	0.80	123	2		27	
HWA00002	-32.80 -165.80	28	-36.42 -165.79	23.32	4.10	0.81	160	2	63.0 59.0	9/GR1	10
HWA00002 HWA00003	-174.80	28	-166.10	23.42	4.25	0.80	159	2	59.0	9/GR1 9/GR2	10
MEX01NTE	-77.80	28	-105.80	25.99	2.88	2.07	155	2	60.8	1 9/GK2	10
MEX01NTE MEX02NTE	-135.80	28	-107.36	26.32	3.80	1.57	149	2	61.5	1 1	10
MEX02NTE MEX02SUR	-135.80	28	-96.39	19.88	3.19	1.87	158	2	62.8	1	10
PNRIFRB2	-120.80	28	-80.15	8.46	1.01	0.80	170	1	65.1	1 *	10
PRU00004	-121.00 -85.80	28	-80.13 -74.19	-8.39	3.74	2.45	112	2	63.1	1	
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/GR20	
USAEH001	-61.30	28	-85.16	36.21	5.63	3.32	22	2	62.1	156	
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	156	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
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12 632.24 MHz (29)

ALS00002	10
ALSO0003	10
ALSO0003	
ARGINSU4	10
ARGSUR04	
ARGSUR05	
B CE311	
B CE312	
B CE411	
B CE412	1011
B CE511	10.10
B NO611	10 12
B NO711	
B NO811	
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 B SU211 -81.20 29 -44.51 -16.95 3.22 1.36 60 1 62.5 8 9/GR9 B SU212 -45.20 29 -44.51 -16.95 3.22 1.36 60 1 62.5 8 9/GR9 BERBERMU -96.20 29 -64.77 32.32 0.80 0.80 90 2 57.0 BOLANDIOI -118.20 29 -65.04 -16.76 2.49 1.27 76 1 68.0 9/GR5 CANO1201 -138.20 29 -125.63 57.24 3.45 1.27 157 1 59.7 9/GR10 CANO1202 -72.70 29 -107.70 55.63 <	
B SU112 -45.20 29 -50.75 -25.62 2.47 1.48 56 1 62.5 8 9/GR9 B SU211 -81.20 29 -44.51 -16.95 3.22 1.36 60 1 62.8 8 9/GR9 B SU212 -45.20 29 -44.00 -16.87 3.20 1.96 58 1 61.6 8 9/GR9 BERBERMU -96.20 29 -64.77 32.32 0.80 0.80 90 2 57.0 BOLANDOI -115.20 29 -65.04 -16.76 2.49 1.27 76 1 68.0 9/GR5 CANO1201 -138.20 29 -125.63 57.24 3.45 1.27 157 1 59.7 9/GR10 CANO1201 -138.20 29 -112.04 55.95 3.35 0.97 151 1 59.8 9/GR10 CANO1202 -72.70 29 -107.70 55.63 3.08	
B SU211	11
B SU212 -45.20 29 -44.00 -16.87 3.20 1.96 58 1 61.6 8 9/GR9 BERBERMU -96.20 29 -64.77 32.32 0.80 0.80 90 2 57.0 89/GR9 BOLANDOI -115.20 29 -65.04 -16.76 2.49 1.27 76 1 68.0 9/GR1 CANO1101 -138.20 29 -125.63 57.24 3.45 1.27 157 1 59.7 9/GR10 CAN01202 -72.70 29 -117.70 55.63 2.74 1.12 32 1 59.8 9/GR10 CAN01202 -72.70 29 -117.70 55.63 2.74 1.12 32 1 59.8 9/GR10 CAN01303 -129.20 29 -102.42 57.12 3.54 0.91 154 1 60.2 9/GR12 CAN01403 -129.20 29 -89.75 52.02 4.68 0.80	
BOLANDOI -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 CAN01201 -138.20 29 -112.04 55.95 3.35 0.97 151 1 59.8 9/GR10 CAN01202 -72.70 29 -107.70 55.63 2.74 1.12 32 1 59.8 CAN01203 -129.20 29 -107.40 55.61 3.08 1.15 151 1 59.7 9/GR12 CAN01303 -129.20 29 -102.42 57.12 3.54 0.91 154 1 60.2 9/GR12 CAN01304 -91.20 29 -89.75 52.02 4.68 0.80 148 1 62.1 9/GR13 CAN01404 -91.20 29 -84.82 52.42 3.10 2.05 152	12
CAN01101 -138.20 29 -125.63 57.24 3.45 1.27 157 1 59.7 9/GR10 CAN01201 -138.20 29 -112.04 55.95 3.35 0.97 151 1 59.8 9/GR10 CAN01202 -72.70 29 -107.70 55.63 2.74 1.12 32 1 59.8 9/GR10 CAN01203 -129.20 29 -111.48 55.61 3.08 1.15 151 1 59.7 9/GR12 CAN01303 -129.20 29 -91.02.42 57.12 3.54 0.91 154 1 60.2 9/GR12 CAN01303 -129.20 29 -89.75 52.02 4.68 0.80 148 1 62.1 9/GR12 CAN01403 -129.20 29 -89.75 52.02 4.68 0.80 148 1 62.1 9/GR12 CAN01404 -91.20 29 -84.00 52.39 2.84 2.29	
CAN01201 -138.20 29 -112.04 55.95 3.35 0.97 151 1 59.8 9/GR10 CAN01202 -72.70 29 -107.70 55.63 2.74 1.12 32 1 59.8 9/GR12 CAN01203 -129.20 29 -111.48 55.61 3.08 1.15 151 1 59.7 9/GR12 CAN01303 -129.20 29 -102.42 57.12 3.54 0.91 154 1 60.2 9/GR12 CAN01304 -91.20 29 -89.75 52.02 4.68 0.80 148 1 60.1 9/GR13 CAN01403 -129.20 29 -84.82 52.42 3.10 2.05 152 1 60.6 9/GR13 CAN01404 -91.20 29 -84.82 52.42 3.10 2.05 152 1 60.6 9/GR13 CAN01504 -91.20 29 -72.66 53.77 3.57 1.67	
CAN01202 -72.70 29 -107.70 55.63 2.74 1.12 32 1 59.8 CAN01203 -129.20 29 -102.42 57.12 3.54 0.91 154 1 59.7 9/GR12 CAN01303 -129.20 29 -99.12 57.36 1.98 1.72 2 1 60.0 9/GR12 CAN01403 -91.20 29 -89.75 52.02 4.68 0.80 148 1 62.1 9/GR12 CAN01404 -91.20 29 -84.82 52.42 3.10 2.05 152 1 60.6 9/GR12 CAN01404 -91.20 29 -84.82 52.42 3.10 2.05 152 1 60.6 9/GR12 CAN01405 -82.20 29 -72.66 53.77 3.57 1.67 156 1 60.5 9/GR14 CAN01505 -82.20 29 -71.77 53.79 3.30 1.89 162 1<	10
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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	
KNA00001	
MEXOINTE -78.20 29 -105.81 26.01 2.89 2.08 155 1 60.7 1 MEXOISUR -69.20 29 -94.84 19.82 3.05 2.09 4 1 62.5 1	
MEXO2NTE -136.20 29 -94.84 19.82 3.03 2.09 4 1 62.3 1 MEXO2NTE -136.20 29 -107.21 26.31 3.84 1.55 148 1 61.4 1	10
MEXOSUR -127.20 29 -96.39 19.88 3.18 1.87 157 1 62.8 1	10
PAOPAC01 -106.20 29 -109.18 -27.53 0.80 0.80 90 1 56.4 9/GR17	10
PRG00002 -99.20 29 -58.66 -23.32 1.45 1.04 76 1 60.4	
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	
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	
USAEH001 -61.70 29 -85.19 36.21 5.63 3.33 22 1 62.1 1.56	
USAEH002 -101.20 29 -89.24 36.16 5.67 3.76 170 1 62.0 1.69/GR20	
USAEH003 -110.20 29 -90.14 36.11 5.55 3.55 161 1 62.3 169/GR21	
USAEH004 -119.20 29 -91.16 36.05 5.38 3.24 152 1 62.9 156	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	
USAWH101	
VENAND03 -115.20 29 -67.04 6.91 2.37 1.43 111 1 67.6 9/GR5	10

12 646.82 MHz (30)

ALSO0002	Hz (30)
ALSON003	
ALSON0003	10
ARGNORTS	10
ATNBEAMI	
B CE311	
B CE411	
B CF411	
B CES11	10 11
B NOS11	
B NO611	10 12
B NO711	
B NoSI1 −73.80 30 −68.75 −4.71 2.37 1.65 73 1 63.1 89/GR8 B SE911 −101.80 30 −45.99 −19.09 22.2 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 SU211 −80.80 30 −44.51 −16.94 3.22 1.37 60 2 62.8 8 9/GR6 B SU212 −44.80 30 −44.51 −16.94 3.27 1.92 59 2 61.6 8 9/GR9 B BLZ00001 −117.80 30 −125.60 57.24 3.45 1.27 157 2 59.2 CAN01201 −137.80 30 −111.92 55.89 3.33 0.98 151 2 59.7 9/GR10 CAN01203 −12.80 30 −111.93	
B S SU111	
B SUII11 -80.80 30 -51.10 -25.64 2.76 1.06 50 2 63.1 8.9/GR6 B SUI21 -44.80 30 -50.76 -25.62 2.47 1.48 56 2 62.6 8.9/GR9 B SUI21 -44.80 30 -44.51 -16.94 3.22 1.37 60 2 62.8 8.9/GR9 B SUI212 -44.80 30 -43.99 -16.97 3.27 1.92 59 2 61.6 6.8 9/GR10 CAN01101 -137.80 30 -111.92 55.89 3.33 9.8 151 2 59,7 9/GR10 CAN01202 -72.30 30 -111.43 55.56 3.07 1.11 32 2 59,8 9/GR10 CAN01303 -128.80 30 -111.43 55.56 3.07 1.15 151 2 59,7 9/GR12 CAN01303 -128.80 30 <	
B SUI12	
B SU211	11
B SU212	11
BLZ00001	12
CAN01101	12
CAN01201	10
CAN01203	10
CAN01303 -128.80 30 -102.39 57.12 3.54 0.92 154 2 60.3 9/GR12 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/GR13 CAN01404 -90.80 30 -84.78 52.41 3.09 2.06 153 2 60.6 9/GR13 CAN01404 -90.80 30 -84.02 53.76 3.30 1.72 2 60.5 9/GR14 CAN01504 -90.80 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 60.3 9/GR14 CAN01606 -70.30 30 -61.52 49.51 2.41 1.65 148 <th< td=""><td></td></th<>	
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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 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 -61.52 49.51 2.41 1.65 148 2 60.3 9/GR14 CHLCONT6 -105.80 30 -69.59 -23.20 2.21 0.80 68 2 59.3 9/GR16 CRBBAH01 -92.30 30 -76.09 24.13 1.83 0.80 48 2 59.3 9/GR18 CRBBLZ01 -92.30 30 -64.76 32.13 0.80 0.80	
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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 CRBBL201 -92.30 30 -88.61 17.26 0.80 0.80 90 1 56.9 9/GR18 CRBEC001 -92.30 30 -60.07 8.26 4.20 0.86 115 1 64.6 9/GR18 CRBMC01 -92.30 30 -60.07 8.26 4.20 0.86 115 1 64.6 9/GR18 CRBMC01 -13.80 30 -79.45 17.97 0.99 0.80 151 1 61.3 9/GR18 CTR020201 -13.80 30 -84.33 9.67 0.89 0.80 90 2 58.7 EQAG0001 -94.80 30 -78.31 -1.52 1.48 1.15 65 1	
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 CRBIMC01 -92.30 30 -79.45 17.97 0.99 0.80 151 1 61.3 9/GR18 CRBIMC01 -92.30 30 -79.45 17.97 0.99 0.80 151 1 61.3 9/GR18 CTR00201 -130.80 30 -61.30 15.35 0.80 0.80 119 2 66.0 DMAIFRBI EQAC0001 -94.80 30 -78.31 -1.52 1.48 1.15 65 1 63.3 9/GR19 HWA00002 -165.80 30 -165.79 23.32 4.20 0.80 <td< td=""><td></td></td<>	
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CTR00201 -130.80 30 -84.33 9.67 0.82 0.80 119 2 66.0 DMAIRRBI -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 HWA00003 -174.80 30 -105.80 25.99 2.88 2.07 155 2 60.7 1 MEXOINTE -77.80 30 -105.80 25.99 2.88 2.07 155 2 60.7 1 MEXOSSUR -126.80 30 -96.39 19.88 3.19 1.87 158 2 62.8	
DMAIFRB1	
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 -166.10 23.42 4.25 0.80 160 2 59.0 9/GR1 HWA00003 -174.80 30 -166.10 23.42 4.25 0.80 159 2 59.0 9/GR2 MEXOINTE -135.80 30 -105.80 25.99 2.88 2.07 155 2 60.7 1 MEXOSINTE -135.80 30 -96.39 19.88 3.19 1.87 158 2 62.8 1 NCG00003 -107.30 30 -84.99 12.90 1.05 101 176 1 63.6 1 PRU00004 -85.80 30 -74.19 -8.39 3.74 2.45 112	
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 HWA00003 -174.80 30 -166.10 23.42 4.25 0.80 159 2 59.0 9/GR2 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 MEX02SUR -126.80 30 -96.39 19.88 3.19 1.87 158 2 62.8 1 NCG00003 -107.30 30 -84.99 12.90 1.05 1.01 176 1 63.6 1 PTRVIR01 -10.80 30 -74.19 -8.39 3.74 2.45 112	
HWA00002	
HWA00003	
MEXOINTE	10
MEXO2NTE	10
MEX02SUR	
NCG00003	10
PRU00004	10
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/GR20 USAEH001 -61.30 30 -85.16 36.21 5.63 3.32 22 2 62.1 1 5 6 USAEH002 -109.80 30 -89.28 36.16 5.65 3.78 170 2 62.0 1 6 9/GR20 USAEH003 -109.80 30 -90.12 36.11 5.55 3.56 161 2 62.3 1 6 9/GR21 USAEH004 -118.80 30 -91.16 36.05 5.38 3.24 153 2 62.9 1 5 6 USAPSA02 -165.80 30 -117.79 40.58 4.04 82 135 2 63.5 9/GR1 USAPSA03 -174.80 30 -118.20 40.15 3.63 0.80<	
PTRVIR02	
USAEH001 -61.30 30 -85.16 36.21 5.63 3.32 22 2 62.1 1 5 6 USAEH002 -109.80 30 -89.28 36.16 5.65 3.78 170 2 62.0 1 6 9/GR20 USAEH003 -109.80 30 -90.12 36.11 5.55 3.56 161 2 62.3 1 6 9/GR21 USAEH004 -118.80 30 -91.16 36.05 5.38 3.24 153 2 62.9 1 5 6 USAPSA02 -165.80 30 -91.16 36.05 5.38 3.24 153 2 62.9 1 5 6 USAPSA03 -174.80 30 -118.20 40.15 3.63 0.80 136 2 63.5 9/GR1	
USAEH002 -100.80 30 -89.28 36.16 5.65 3.78 170 2 62.0 1 6 9/GR20 USAEH003 -109.80 30 -90.12 36.11 5.55 3.56 161 2 62.3 1 6 9/GR21 USAEH004 -118.80 30 -91.16 36.05 5.38 3.24 153 2 62.9 1 5 6 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	
USAEH003 -109.80 30 -90.12 36.11 5.55 3.56 161 2 62.3 1 6 9/GR21 USAEH004 -118.80 30 -91.16 36.05 5.38 3.24 153 2 62.9 1 5 6 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	10
USAPSA02 -118.80 30 -91.16 36.05 5.38 3.24 153 2 62.9 1 5 6 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	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	10
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	

12 661.40 MHz (31)

										12 001.40 10	(- /
1	2	3	4			5	6	7	8	9	
				*0.45							
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		
BOLAND01	-115.20	31	-65.04	-16.76	2.49	1.27	76	1	68.1	9/GR5	
BOL00001	-87.20	31	-64.61	-16.71	2.52	2.19	85	1	64.2		
BRB00001	-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	o/cp:	4.0
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	
MEX01SUR	-69.20	31	-94.84	19.82	3.05	2.09	4	1	62.5	1	4.0
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	overn -	
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	l	
USAEH001	-61.70	31	-85.19	36.21	5.63	3.33	22	1	62.1	156	
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	156	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

12 675.98 MHz (32)

										12 675.98 MH	(C-)
1	2	3	4		:	5	6	7	8	9	
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	1011
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 32	-68.75	-4.71	2.37	1.65	73	1	63.2	8 9/GR8	
B SE911	-101.80		-45.99	-19.09	2.22	0.80	62	2	65.7	8 8 0/CP/	
B SU111	-80.80	32	-51.10	-25.64	2.76	1.06	50	2 2	63.2	8 9/GR6	
B SU112 B SU211	-44.80 -80.80	32 32	-50.76 -44.51	-25.62 -16.94	2.47 3.22	1.48 1.37	56 60	2	62.6 62.8	8 9/GR9 8 9/GR6	11
B SU211	-80.80 -44.80	32	-44.31 -43.99	-16.94 -16.97	3.22	1.92	59	2	61.6	8 9/GR6 8 9/GR9	12
CAN01101	-44.80 -137.80	32	-43.99 -125.60	57.24	3.45	1.92	157	2	59.7	9/GR10	10
CAN01101 CAN01201	-137.80	32	-123.60	55.89	3.33	0.98	151	2	59.7	9/GR10 9/GR10	10
CAN01201 CAN01202	-72.30	32	-111.92	55.62	2.75	1.11	32	2	59.8	2/GK10	10
CAN01202 CAN01203	-128.80	32	-107.04	55.56	3.07	1.11	151	2	59.7	9/GR12	10
CAN01203	-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	10
CAN01403	-128.80	32	-89.70	52.02	4.67	0.80	148	2	62.1	9/GR12	10
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 99	1	63.3	9/GR19	
EQAG0001 GRD00003	-94.80 -79.30	32 32	-90.36 -61.62	-0.57 12.34	0.94 0.80	0.89 0.80	99	1 2	61.3 58.9	9/GR19	
GTMIFRB2	-/9.30 -107.30	32	-90.50	15.64	1.03	0.80	84	1	61.4		
GUFMGG02	-107.30 -52.80	32	-56.42	8.47	4.16	0.80	123	2	63.0	2 7	
HWA00002	-32.80 -165.80	32	-36.42 -165.79	23.32	4.10	0.81	160	2	59.0	9/GR1	10
HWA00002	-174.80	32	-166.10	23.42	4.25	0.80	159	2	59.0	9/GR1 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	i	10
MEX02SUR	-126.80	32	-96.39	19.88	3.19	1.87	158	2	62.8	i	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	156	
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	156	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	10
VEN11VEN	-103.80	32	-66.79	6.90	2.50	1.77	122	2	65.6	9/GR22	10

ARTICLE 11 (REV.WRC-15)

Plan for the broadcasting-satellite service in the frequency bands 11.7-12.2 GHz in Region 3 and 11.7-12.5 GHz in Region 1

11.1 COLUMN HEADINGS OF THE PLAN

- Col. 1 Notifying administration symbol.
- Col. 2 Beam identification (Column 2, normally, contains the symbol designating the administration 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. 3 *Nominal orbital position*, in degrees and hundredths of a degree from the Greenwich meridian (negative values indicate longitudes which are west of the Greenwich meridian; positive values indicate longitudes which are east of the Greenwich meridian).
- Col. 4 Nominal intersection of the beam axis with the Earth (boresight or aim point in the case of a non-elliptical beam), longitude and latitude, in degrees and hundredths of a degree.
- Col. 5 Space station transmitting antenna characteristics (elliptical beams). This column contains three numerical values corresponding to the major axis, the minor axis and the major axis orientation respectively of the elliptical cross-section half-power beamwidth, in degrees and hundredths of a degree. Orientation of the ellipse is 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 anticlockwise from a line parallel to the equatorial plane to the major axis of the ellipse, to the nearest degree.
- Col. 6 Space station transmitting antenna pattern code.

The codes used for the antenna pattern of the transmitting space station (downlink) antenna are defined as follows:

MOD13FRTSS	Figure 13 in Annex 5 (Recommendation ITU-R BO.1445)
R13TSS	Figure 9 and § 3.13.3 in Annex 5
R123FR	Figure 11 and § 3.13.3 in Annex 5

In cases where the "Space station transmitting antenna pattern code" field is blank, the necessary antenna pattern data are provided by shaped beam data submitted by the administration. These data are stored in Column 7. A particular shaped beam is identified by the combination of Column 1, Column 7 and Column 13. In such cases the maximum cross-polar gain is given under Column 8 in the "Cross-polar gain" field.

In cases where the "Space station transmitting antenna pattern code" field contains a code which starts with "CB_" characters, it is a composite beam. Any composite beam consists of two or more elliptical beams. Each composite beam is described in the special composite beam file as having the same name plus a GXT extension (e.g. the description of the CB COMP BM1 composite beam is stored in the CB COMP BM1.GXT file).

- Col. 7 Space station transmitting antenna shaped (non-elliptical and non-composite) beam identification.
- Col. 8 Maximum space station transmitting antenna co-polar and cross-polar (in the case of shaped beam) isotropic gain (dBi).
- Col. 9 Earth station receiving antenna pattern code and maximum antenna co-polar gain (dBi).

The codes used for receiving earth station (downlink) antenna patterns are defined as follows:

R13RES	Figure 7 and § 3.7.2 in Annex 5
MODRES	Figure 7bis and § 3.7.2 in Annex 5 (Recommendation ITU-R BO.1213)

- Col. 10 Polarization (CL circular left, CR circular right, LE linear referenced to the equatorial plane) and polarization angle in degrees and hundredths of a degree (in the case of linear polarization only).
- Col. 11 *e.i.r.p.* in the direction of maximum radiation (dBW).
- Col. 12 Designation of emission.
- Col. 13 *Identity of the space station.*
- Col. 14 *Group code* (an identification code which indicates that all assignments with the same group identification code will be treated as a group).

Group code: if an assignment is part of the group:

- a) The equivalent protection margin to be used for the application of Article 4 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 aggregate carrier-to-interference ratio (C/I) produced by all emissions from that group shall not exceed the C/I ratio calculated on the basis of § a) above.

Col. 15 Assignment status.

The assignment status codes used for beams are defined as follows:

P	Assignment in the Plan which has not been brought into use and/or the date of bringing into use has not been confirmed to the Bureau. For this category of assignments, WRC-2000 protection ratios are applied (21 dB co-channel and 16 dB adjacent channel).
PE	Assignment in the Plan which is in conformity with Appendix 30, has been notified, brought into use and the date of bringing into use has been confirmed to the Bureau before 12 May 2000.
	For this category of assignments, WRC-97 protection ratios are applied (24 dB co-channel and 16 dB adjacent channel).

Col. 16 Remarks.

11.2 TEXT FOR NOTES IN THE REMARKS COLUMN OF THE PLAN (REV.WRC-15)

- 1 To be dedicated to the Islamic programme envisaged in WARC SAT-77 documents.
- Not used.
- Provisional beam. These assignments have been included in the Plan by WRC-97. These assignments are for exclusive use by Palestine, subject to the Israeli-Palestinian Interim Agreement of 28 September 1995, Resolution 741 of the Council notwithstanding and Resolution 99 (Minneapolis, 1998) of the Plenipotentiary Conference.
- 4 Assignment intended to ensure coverage of Algeria, Libya, Morocco, Mauritania and Tunisia, with the agreement of the countries concerned. If required, it may be used with the characteristics of the beam TUN15000.
- 5 This assignment shall be brought into use only when the limits referred to in Table 1 are not exceeded or with the agreement of the administrations identified in Table 2, whose networks/beams listed in this Table may be affected, with respect to (see also the Note to § 11.2):
- a) assignments in the Region 2 Plan on 12 May 2000; or
- b) assignments in the terrestrial services which are recorded in the Master Register with a favourable finding or received by the Bureau prior to 12 May 2000 for recording in the Master Register and which subsequently receive a favourable finding based on the Plan as it existed on 12 May 2000; or

- c) assignments in the fixed-satellite service which:
 - are recorded in the Master Register prior to 12 May 2000 with a favourable finding; or
 - have been coordinated under the provisions of No. 9.7 (or No. 1060) or § 7.2.1 of Article 7 prior to 12 May 2000; or
 - are in process of coordination under the provisions of No. 9.7 (or No. 1060) or § 7.2.1 of
 Article 7 prior to 31 July 2000 for which complete Appendix 4 data (or Appendix 3 data, as appropriate) have been received by the Bureau under the relevant provisions of
 Article 9 (or Article 11, as appropriate):
 - filings received by the Bureau prior to 12 May 2000 at 1700 h (Istanbul time) shall be taken into account in the pertinent compatibility analysis by applying the pfd criteria referred to in Table 1; or
 - filings received by the Bureau after 12 May 2000 at 1700 h (Istanbul time), but before 31 July 2000, shall be taken into account by applying the sharing criteria of -138 dB(W/(m² · 27 MHz)) or the pfd criteria referred to in Table 1, whichever is higher.
- This assignment shall not claim protection from interference caused by the assignments which pertain to networks/beams identified in Table 3 which are in conformity with the Region 2 Plan on 12 May 2000 (see also the Note to § 11.2).
- This assignment shall not claim protection from interference caused by assignments in the fixed-satellite service which pertain to networks/beams identified in Table 3 (see also the Note to § 11.2) and:
- a) either are recorded in the Master Register with a favourable finding prior to 12 May 2000;
- b) or for which complete Appendix 4 data (or Appendix 3 data, as appropriate) under the relevant provisions of Article 9 (or No. 1060, or § 7.2.1 of Article 7, as appropriate) have been received prior to 12 May 2000, which have been brought into use prior to 12 May 2000 and for which the complete due diligence information, in accordance with Annex 2 to Resolution 49 (Rev.WRC-15), has been received prior to 12 May 2000. (WRC-15)

This assignment shall not claim protection from the assignments of the administrations for terrestrial services identified in Table 4 which are recorded in the Master Register with a favourable finding, or received by the Bureau prior to 12 May 2000 for recording in the Master Register and which subsequently receive a favourable finding based on the Plan as it existed on 12 May 2000 (see also the Note to § 11.2).

9 (SUP - WRC-12)

TABLE 1

Symbol	Criteria
a	§ 3 of Annex 1 ¹
b	§ 4 of Annex 1 ¹
с	§ 6 of Annex 1 ¹

¹ These paragraphs and this Annex are contained in this Appendix as adopted by WRC-03.

NOTE – In cases where assignments from the WRC-97 Plan without remarks were included in the WRC-2000 Regions 1 and 3 Plan without change, or with conversion of modulation from analogue to digital, or a change from normal roll-off to fast roll-off antenna characteristics, the coordination status afforded by the WRC-97 Plan shall be preserved.

In cases where assignments from the WRC-97 Plan with remarks were included in the WRC-2000 Regions 1 and 3 Plan without change, or with conversion of modulation from analogue to digital, or a change from normal roll-off to fast roll-off antenna pattern, the compatibility will be reassessed using the revised criteria and methodology of WRC-2000 and the remarks of the WRC-97 Plan assignment will either be maintained or reduced on the basis of the results of this analysis.

In other cases the methodology described in Notes 5 to 8 shall be applied.

TABLE 2 (WRC-15)

Affected administrations and corresponding networks/beams identified based on Note 5 in § 11.2 of Article 11

Beam name	Channels	Ref. Table 1	Affected administrations*	Affected networks/beams*
ARS34000	40	ပ	CHN, G, J, KOR, MLA, THA, UAE, USA	AM-SAT A4, ASIASAT-AKX, ASIASAT-CKX, ASIASAT-EKX, EMARSAT-1G, JCSAT-3A, JCSAT-3B, KOREASAT-1, MEASAT-1, MEASAT-91.5E, N-SAT-110E, N-SAT-128, SJC-1, THAICOM-A2B, THAICOM-G1K
BEL01800	26, 28, 30, 32, 34, 36, 38, 40	0	PAK	PAKSAT-1
BFA10700	22, 24	o	ш	HISPASAT-1, HISPASAT-2C3 KU
CVA08300	1, 3, 5, 7, 9, 11	o	USA	INTELSAT7 359E, INTELSAT8 359E, INTELSAT10 359E
CYP08600	1, 3, 5, 7, 9, 11, 13	o	USA	INTELSAT7 359E, INTELSAT8 359E
FSM00000	1, 3, 5, 7, 9, 11, 13	o	USA	INTELSAT7 157E
GMB30200	1, 5, 9, 13, 17	0	USA	USASAT-26A
GNB30400	22, 24	o	я	HISPASAT-1, HISPASAT-2C3 KU
GRC10500	2, 4, 6, 8, 10, 12	o	USA	INTELSAT7 359E, INTELSAT8 359E, INTELSAT10 359E
GUI19200	2, 4, 6, 8, 10, 12, 14, 16, 18, 20	o	USA	USASAT-26A
IRL21100	1, 3, 5, 7, 9, 11, 13, 15, 17, 19	o	USA	USASAT-26A
ISL04900	27	в	GUY	GUY00302
ISL04900	29, 39	в	JMC	JMC00005
ISL04900	31, 33, 35, 37	B	GUY, JMC	GUY00302, JMC00005
ISL04900	23	c	B, USA	B-SAT I, USASAT-14L
KIR_100	1, 3, 5, 7, 9, 11, 13	c	USA	INTELSAT7 177E, USASAT-14K
KIR_100	17	c	USA	USASAT-14K
MLI_100	1, 3, 5, 7, 9, 11, 13	c	USA	INTELSAT7 342E, INTELSAT8 342E, INTELSAT8 340E
MNG24800	31, 35	С	CHN, THA	APSTAR-4, THAICOM-A2B, THAICOM-G1K
MOZ30700	2, 6, 10	С	USA	INTELSAT7 359E, INTELSAT8 359E, INTELSAT10 359E
NGR11500	2, 4, 6, 8, 10, 12, 14, 16, 18, 20	c	USA	USASAT-26A
NOR12000	1, 3, 5, 7, 9, 11, 13	c	USA	INTELSAT7 359E, INTELSAT8 359E, INTELSAT10 359E
POR_100	1, 3, 5, 7, 9, 11, 13, 15, 17, 19	c	USA	USASAT-26A
RUS-4	28, 29, 33, 37	c	G, KOR	AM-SAT A4, KOREASAT-1, KOREASAT-2
RUS-4	31, 35, 39	c	9	AM-SAT A4
SEN22200	23	c	USA	USASAT-26A
SOM31200	26, 28, 30, 32, 34, 36, 38, 40	o	PAK	PAKSAT-1
TGO22600	1, 3, 5, 7, 9, 11	o	USA	INTELSAT8 330.5E
TGO22600	13	c	E, USA	HISPASAT-1, HISPASAT-2C3 KU, INTELSAT8 330.5E
TGO22600	15, 17, 19	c	E	HISPASAT-1, HISPASAT-2C3 KU
TJK06900	26, 28, 30, 32, 34, 36, 38, 40	c	PAK	PAKSAT-1
TKM06800	26, 28, 30, 32, 34, 36, 38, 40	c	UAE	EMARSAT-1G
TON21500	2, 6, 10, 14, 18	c	USA	USASAT-14K
ZWE13500	1, 3, 5, 7, 9, 11, 13	c	USA	INTELSAT7 359E, INTELSAT8 359E

* Administrations and corresponding networks/beams whose assignment(s) may receive interference from the beam shown in the left-hand column.

TABLE 3 (WRC-15)

Affecting administrations and corresponding networks/beams identified based on Notes 6 and 7 in § 11.2 of Article 11

Note		
	administrations*	Affecting networks/beams*
	USA	USASAT-26A
	В	HISPASAT-1, HISPASAT-2C3 KU
	USA	INTELSAT7 359E
	USA	INTELSAT7 359E
9	JMC	JMC000005
9	GUY, JMC	GUY00302, JMC00005
9	GUY, JMC	GUY00302, JMC00005
	HOL	INTELSAT7 183E
7	USA	USASAT-26A
	В	HISPASAT-1, HISPASAT-2C3 KU
	USA	INTELSAT7 359E
7	USA	USASAT-26A
7	USA	USASAT-26A
9	GUY	GUY00302
9	JMC	JMC00005
9	GUY, JMC	GUY00302, JMC00005
7	USA	INTELSAT7 177E
7	J	SUPERBIRD-C
7	J, THA	THAICOM-A2B, SUPERBIRD-C
	USA	INTELSAT7 359E
	USA	USASAT-26A
7	USA	USASAT-26A
	USA	INTELSAT7 359E
7	USA	USASAT-26A
	ſ	JCSAT-IR, SUPERBIRD-C
	J, KOR	SUPERBIRD-C, KOREASAT-1, KOREASAT-2
	J, KOR	SUPERBIRD-C, KOREASAT-1, KOREASAT-2
	USA	USASAT-26A
	HOL	INTELSAT7 183E
7	USA	USASAT-26A
9	GUY	GUY00302
9	JMC	JMC00005
9	GUY, JMC	GUY00302, JMC00005
	Е	HISPASAT-2C3 KU
	E	HISPASAT-1, HISPASAT-2C3 KU
	USA	INTELSAT7 359E
		USA USA USA USA USA USA USA USA USA JAC USA

* Administrations and corresponding networks/beams whose assignment(s) may cause interference to the beam shown in the left-hand column.

TABLE 4 (WRC-07)

Affecting administrations and corresponding terrestrial stations identified based on Note 8 in § 11.2 of Article 11

Beam name	Channels	Affecting administrations*	Affecting terrestrial stations*
EGY02600	2	ISR	HERZILIYA
F 09300	24, 26	SUI	GENEVE STUDIO C VOGT
I 08200	38, 40	AUT	EHRWALD
JOR22400	2	ISR	HERZILIYA, JERUSALEM
RUS-4	25, 26, 27, 28, 29, 31, 33, 35, 37, 39	\mathbf{J}^1	

Administrations and corresponding terrestrial stations whose assignment(s) may cause interference to the beam shown in the left-hand column.

The identification of this administration is based on its typical terrestrial station assignments as recorded in the Master Register.

TABLE 5

Table showing correspondence between channel numbers and assigned frequencies

Channel No.	Assigned frequency (MHz)	Channel No.	Assigned frequency (MHz)
1	11 727.48	21	12 111.08
2	11 746.66	22	12 130.26
3	11 765.84	23	12 149.44
4	11 785.02	24	12 168.62
5	11 804.20	25	12 187.80
6	11 823.38	26	12 206.98
7	11 842.56	27	12 226.16
8	11 861.74	28	12 245.34
9	11 880.92	29	12 264.52
10	11 900.10	30	12 283.70
11	11 919.28	31	12 302.88
12	11 938.46	32	12 322.06
13	11 957.64	33	12 341.24
14	11 976.82	34	12 360.42
15	11 996.00	35	12 379.60
16	12 015.18	36	12 398.78
17	12 034.36	37	12 417.96
18	12 053.54	38	12 437.14
19	12 072.72	39	12 456.32
20	12 091.90	40	12 475.50

Note – Assigned frequency = 11708.30 + 19.18 n, where n is the channel number.

TABLE 6A (WRC-15)

Basic characteristics of the Regions 1 and 3 Plan (sorted by administration)

			_	_	_	_	_	_	_		_	_	_	_	_	_	1	_	_	_	_	_		_	_	_	_	_	_	_	_	П		_	_	_	_		_	\neg
16	Domento	Kellark						7			2																L	2	5.7											
15	States	Status	۵	۵	۵	۵	۵	Ь	<u>م</u>	۵	۵	ا ۵	2 0		۵	. a.	۵	۵	Ь	Ь	Ь	۵	۵	۵.	ا ۵	<u>م</u> د			۵	۵	۵	۵	Ь	Ь	<u>م</u>	۵	۵	۵	2	a.
14	Group	code								な	怼	8 8	9 8	8 8	3		31	31		32	32	32																		
13	Identity of the	space station																																						
12		of emission	58.4 27M0G7W	27M0G7W	59.1 27M0G7W	58.9 27M0G7W	54.5 27M0G7W	56.5 27M0G7W	58.9 27M0G7W	57.7 27M0G7W	59.2 27M0G7W	58.2 27M0G7W	58.9 Z/M0G/W	58 a 27M0G7W	59.4 27M0G7W	58.4 27M0G7W	58.5 27M0G7W	58.9 27M0G7W	58.8 27M0G7W	27M0G7W	58.9 27M0G7W	58.9 27M0G7W	58.9 27M0G7W	58.9 27M0G7W	59.1 27M0G7W	58.9 27M0G7W	58.4 Z/M0G/W	58.3 27M0G7W	57.0 27M0G7W	58.7 27M0G7W	54.5 27M0G7W	58.9 27M0G7W	58.9 27M0G7W	27M0G7W	58.9 27M0G7W	27M0G7W	58.9 27M0G7W	58.6 27M0G7W	59.3 Z/M0G/W	59.3 Z/M0G/W
11		d carr. b	58.4	29.1	59.1	58.9	54.5	56.5	58.9	57.7	59.2	58.2	28.9	58.0	59.4	58.4	58.5	58.9	58.8	59.3	58.9	58.9	58.9	58.9	59.1	58.9	50.4	58.3	57.0	58.7	54.5	58.9	58.9	58.7	58.9	57.5	58.9	58.6	29.3	28.3
10	Polarization	Angle													L												1		L											
	Pola	Type	딩	占	귕	귕	占	CL	S	ರ	딩	8	3 8	5 8	í c	占	兴	R	占	R	S	兴	8	딩	8	J 0	3 5	3 5	占	S	S	占	CF	J	占	兴	兴	ᇹ	J	ž
	ation na	Gain	35.50 CL	35.50	35.50 CL	35.50 CL	35.50 CL	35.50 CL	35.50 CR	35.50 CL	35.50	35.50 CR	35.50 CR	35.50	35.50	35.50 CL	35.50 CR	35.50 CR	35.50 CL	35.50 CR	35.50 CR	35.50 CR	35.50 CR	35.50 CL	35.50 CR	35.50	32.20	35.50 CL	35.50 CL	35.50 CR	35.50 CR	35.50 CL	35.50	35.50	35.50	35.50	35.50 CR	35.50	35.50 CL	35.50 CR
6	Earth station antenna	Code	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODKES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES						
	tion	Cross- polar	_	_	Ī	Ī	_	_		_										Ī	_		_	_			ĺ				_		_	Ī	Ī	Ī				1
*	Space station antenna gain	Co-polar	42.71	37.24	37.87	48.88	39.59	48.88	48.02	37.81	41.71	36.22	48.88	48.88	37.53	38.80	41.09	48.88	36.73	39.25	48.88	48.88	48.88	48.88	42.19	46.98	48.15	44.54	42.26	43.56	48.88	48.88	45.83	39.40	37.04	48.88	48.11	46.50	38.67	44.91
7	Shaped	beam																																						
9	Space station	antenna code	CB_TSS_AFGA	27.00 R13TSS	77.88 R13TSS	R13TSS	CB_TSS_ALGA	R13TSS	148.17 R13TSS	CB_TSS_ARSA	R13TSS	102.00 R13TSS	0.00 R131SS	R13TSS	05 00 R13TSS	161.00 R13TSS	47.00 R13TSS	R13TSS	36.00 R13TSS	R13TSS	R13TSS	R13TSS	CB_TSS_AUSA	CB_TSS_AUSB	151.78 MOD13FRTSS	58.14 R131SS	80.00 K13155	97.00 R13TSS	29.00 R13TSS	135.00 R13TSS	0.00 MOD13FRTSS	R13TSS	R13TSS	R13TSS	R13TSS	R13TSS	75.47 R13TSS	65.00 R13TSS	31.00 R131SS	9.45 R131SS
	ına	Orien- tation		27.00	77.88	61.32		0.00	148.17		143.00	102.00	00.00	8 0	105 00	161.00	147.00	0.00	136.00	187.00	0.00	0.00			151.78	158.14	90.00	97.00	29.00	135.00	0.00	00.06	11.47	36.00	91.58	0.00	175.47	165.00	31.00	9.45
s	Space station antenna characteristics	Minor O axis ta		1.68	1.88	09:0		09:0	09:0		0.70	2.17	09:0	0.00	174	1.52	1.02	09:0	1.63	1.43	09:0	09:0			0.92	0.60	0.60	0.68	1.14	0.84	09:0	09:0	09:0	1.50	1.66	09:0	09:0	09:0	.08	98.0
	Space str	Major N		3.13	2.42	09:0		0.60	0.73		2.68	3.06	0.60	0.00	2.82	2.41	2.12	09:0	3.62	2.31	09.0	09:0			1.82	0.93	0.7	3 4	1.45	1.46	09:0	09:0	1.21	2.13	3.33	09:0	0.72	40.	5.25	1.04
	ght	Lat.	33.86	-28.00	-12.45	41.23	27.60	42.50	39.95	23.76	24.80	-24.20	-12.19	-66.28	-18 40	-30.90	-38.10	-54.50	-21.70	-32.10	-31.52	-29.02	-38.37	-38.37	49.47	40.14	3.10	9.50	12.20	23.60	26.10	43.97	53.06	-22.20	18.67	4.40	27.05	43.00	6.30	12.34
4	Boresight	Long.	65.88	24.50	16.06	20.04	1.86	1.60	44.99	44.72	52.30	123.00	96.83	110.52	133.90	136.60	145.20	158.94	145.90	147.50	159.06	167.93	132.38	132.38	10.31	47.47	78.30	2.20	-1.50	90.30	20.50	18.22	27.91	23.30	96.97	114.70	90.44	25.00	21.00	104.82
3	Orbital	position	20.00	4.80	-24.80	62.00	-24.80	-37.00	22.80	17.00	17.00	152.00	152.00	152.00	152.00	152.00	164.00	164.00	164.00	164.00	164.00	164.00	152.00	164.00	-18.80	23.20	00.17	-19.20	-30.00	74.00	34.00	26.00	37.80	-0.80	104.00	74.00	86.00	-1.20	-13.20	86.00
2	Beam	identification	AFG100	AFS02100	AGL29500	ALB29600	ALG_100	AND34100	ARM06400	ARS100	ARS34000	AUS00400	AUS0040A	ALISONANC	AUSOUSO	AUS00600	AUS00700	AUS0070A	AUS00800	AUS00900	AUS0090A	AUS0090B	AUSA_100	AUSB_100	AUT01600	AZE06400	BDIZ/000	BEN23300	BFA10700	BGD22000	BHR25500	BIH14800	BLR06200	BOT29700	BRM29800	BRU33000	BTN03100	BUL02000	CAF25800	CBG29900
1	Admin.	symbol	AFG	AFS	AGL	ALB	ALG			ARS	ARS	AUS	AUS	S IA	AllS	AUS	AUS	AUS	AUS							KE.	2 2	EN EN	BFA	BGD	胀	BH	BLR	BOT	BRM	BRU	BTN	BUL	Š	CBG

			_	_	$\overline{}$	$\overline{}$	_	-	_	_	_	_	_	$\overline{}$	\neg	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
16	Domon																2,7		5, 7						c	ی د	>					80			•	æ						7	- 6	
15	Status	Suarus	۵	۵	Ь	Ь	<u>م</u>	ا ۵	۵ ۵	<u>.</u>	L a	_	۵	Ь	Ь	۵	۵	۵.	۵.	<u>م</u>	۵	۵	ا ۵	ا ۵	ء ۔	L 0		핊	밆	PE	밆	ا ۵	2	ا ۵	١,		١ ،	۱ .		<u>.</u> c			. a.	۵
14	Group	code																				37					01	10	10	10	01	12			2	.7				2	22	70		
13	Identity of the																											HISPASAT-1	HISPASAT-1	HISPASAT-1	HISPASAT-1													
12	Designation		27M0G7W	27M0G7W	27M0G7W	27M0G7W	58.5 27M0G7W	27M0G7W	27M0G7W	2/M0G/W	27M0G7W	27M0G7W	58.8 27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	56.5 27M0G7W	27M0G7W	27M0G7W	27M0G7W	58.8 27M0G7W	27M0G7W	57.5 27M0G7W	27M0G7W	54.5 Z7M0G7W	58.9 27M0G7W	57.6 33M0G7W	57.6 33M0G7W	27M0G7W	57.6 27M0F8W	27M0G7W	2/M0G/W	27M0G7W	Z/MUG/W	2/MUG/W	Z/MUG/W	Z/MUG/W	ZIMUGIW	27MUG/W	54.5 Z7M0G7W	27M0G7W	58.9 27M0G7W	58.0 27M0G7W
11		d-:	57.9	27.0	58.9	27.0	58.5	57.1	59.4	60.4	58.5	59.7	58.8	58.1	57.2	58.8	60.2	56.5	26.1	28.8	28.8	28.8	59.1	57.5	58.3	2 82	58.9	57.6	57.6	9'2'9	57.6	58.1	58.6	58.7	79.5	28.8	20.5	7.00	0.00	29.4	5 4	287	58.9	58.0
10	Polarization	Gain Type Angle																																								ļ		
	Pola	Type	占	꼾	SR	占	8	귕	J 5	3	3 6	光	ರ	CR	占	딩	兴	兴	兴	귕	g	೮	뚱	ರ :	J 5	5 8	<u> </u>	ರ	ರ	CL	占	귕	3	8	3 5	٤ او	5 5	5 5	3 5	5 5	3 5	3 8	: :	兴
6	Earth station antenna		35.50 CL	Н	Н	35.50	35.50 CR	+	35.50 CL	+	+	╁	Н	Н	\dashv	\dashv	\dashv	\dashv	\dashv	┪	\dashv	\dashv	\dashv	+	35.50 CL	+	+	\vdash	\vdash	Н	\dashv	\dashv	┪	\dashv	+	+	+	35.30	+	+	35.50	+	+	+
5	Earth stati antenna	Code	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODES	MODRES	5.50 MODRES	5.50 MODRES	MODRES	5.50 MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MOUNTES	MODRES	MODES	MODRES	MODRES	MODRES
	tion gain	Cross- polar																										5.50	5.50	5.50	5.50													
*	Space station antenna gain	Co-polar	38.69	38.07	47.08	48.88	40.01	39.51	44.74	43./1	38 15	38.36	40.67	47.86	47.56	41.67	47.50	40.92	48.88	42.64	42.64	42.64	42.19	48.88	48.88	43.40	44.79	39.80	39.80	39.80	39.80	38.42	42.44	47.81	30.52	40.39	46.88	45.30	32.30	18.74	44.24	44.16	35.38	43.23
7	Shaped	beam																								Ì		GOS	SOP	COP	COP					Ì						T	T	
9	Space station	antenna code	RISTES	35.44 R13TSS	2.88 MOD13FRTSS	MOD13FRTSS	CB_TSS_CHNA	CB_TSS_CHNC	CB_TSS_CHNE	CB_ISS_CHNF	RISTSS	CB TSS CODA	59.00 R13TSS	149.00 R13TSS	94.46 R13TSS	R13TSS	R13TSS	144.13 MOD13FRTSS	0.00 MOD13FRTSS	149.15 MOD13FRTSS	149.15 MOD13FRTSS	149.15 MOD13FRTSS	151.78 MOD13FRTSS	90.00 R13TSS	CB_TSS_DNKA	MODISTRISS	CB TSS E A					RISTES	4131SS	12.27 R13TSS	KISISS	KI3ISS	CB_ISS_F_A	4 00 R13155	RISISS	29.00 K13135	71.00 MODISPRISS	213TSS	167.00 R13TSS	R13TSS
	ına	Orien- tation	163.23 R13TSS	35.44 F	2.88	0.00				90			59.00	149.00 F	94.46 F	111.74 R13TSS	20.53 R13TSS	144.13	0.00	149.15	149.15	149.15	151.78	90.00	5	170 63 1	3					136.00 R13TSS	145.48 R131SS	12.27	1/4.00	128.34	00 00	40.00 K13155	9.4	29.00	16.70	155 22	167.00	142.00 R13TSS
5	ice station anter characteristics	Minor O axis ta			09.0	09:0	1	1	1		1.00	-	1.18	09:0	0.63	1.26	99:0	1.31	0.60					09:0		0.00	\perp			_			┙			6		0.72	t 0	0.00	0.70		1.57	
	Space station antenna characteristics	Major M	3.03	2.80	0.91	09:0			1	9	2.54		2.02	9.76	0.77	1.50	0.75	1.72	09:0	1.71	1.71	1.71	1.82	09:0	5	5.33	3			_		2.33	1.67	0.77	79.7	77.7	,	40.4	5.5	1 20	00.1	1.16	5.15	1.84
		Lat.	31.20	39.70	23.32	22.20	39.22	27.56	20.16	45.78	6.70	-3.40	-0.70	-12.10	16.09	7.19	42.09	41.09	35.12	46.78	46.78	46.78	49.47	11.68	59.62	63.67	34.15	39.00	39.00	39.00	39.00	26.80	14.98	58.60	0.30	45.41	-10.00	46.90	0.30	-14.00	64.45	-17.87	5.48	53.80
4	Boresight	Long. I	88.18	113.29	114.17	113.55	90.56	105.77	114.96	23.54	12.70	21.85			-24.12	-5.78	13.02	12.59	33.45	16.77	16.77	16.77	10.31	42.68	2.92	-15.16	-9.40	-4.00	-4.00	-4.00	-4.00	29.70	39.41	25.06	40.29	3.52	\perp	100.00			15.97	┸	151.90	-3.50
3	Orbital		Ш	134.00				- 1		1	-13.00	-19.20	-13.20	29.00			-1.20			-12.80	-12.80	-12.80	-18.80		-25.20	Ι.	-30.00				-30.00	-7.00	22.80	44.50	36.00	1.00		140.00	- 1		00.22		158.00	
2	Beam	identification	CHN15500	CHN15800	CHN19000	CHN20000	CHNA_100	CHNC_100	CHNE_100	CHNF_100	CME30000	COD 100	COG23500	COM20700	CPV30100	CTI23700	CVA08300	CVA08500	CYP08600	CZE14401	CZE14402	CZE14403	D 08700	00660ICQ	DNK 100	DINK 091X P	E 100	HISP33D1	HISP33D2	HISPA27D	HISPASA4	EGY02600	EKI09200	EST06100	EI HUSZUU	1 09300		NCL1000	1	WAL10200	FIN10300	t	0	
-	Admin.		Г	П	CHN	П	T	T	T	E 5	T	1		COM	П					٦	CZE			T	ě Š	T	Т	ш	ш			T	1	EST	T						T	Т	FSM	T

_				_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	-	_	_	_	Т			_	_	_	_	_	_	_	_	_	_	_			_	_	_	_
16	Domonico		5, 7	3																1	5,7,8				2,7			_	-	2		9										5,7
15	Stretme	Status	۵	Ь	Ь	۵	۵	FE	핊	띮	# a	. a.	۵	۵	Ь	Ь	۵	Д	۵	م ا	_ a	_	۵	۵	Ь	۵	ا ۵	_	L a	. a.	۵	Ь	Ь	Ь	<u>ـ</u>	Д	Д	Д	۵	م د	_ a	
14	Group	code						02	02	92	8 29	92	90	92	14	14	33	33	32	32	\$ 2	8	25														37			22	33	
13		space station						RST-1	RST-1	RST-1	RSI-1	RST-1	RST-1	RST-1	RST-2	RST-2	RST-3	RST-3	RST-5	RST-5	RUS-4																					
12	Designation		58.4 27M0G7W	27M0G7W	27M0G7W	27M0G7W	59.8 27M0G7W	27M0F8W	27M0F8W	27M0G7W	27M0G7W	27M0G7W	53.0 27M0G7W	27M0G7W	27M0G7W	55.0 27M0G7W	27M0G7W	27M0G7W	55.0 27M0G7W	55.0 27M0G7W	27M0G7W	55.6 27M0G7W	27M0G7W	59.4 27M0G7W	58.6 27M0G7W	58.9 27M0G7W	58.9 27M0G7W	58.6 2/M0G/W	27M0G7W	57.4 27M0G7W	58.9 27M0G7W	58.4 27M0G7W	56.4 27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	58.9 27M0G7W	27M0G7W	55.5 27M0G7W	27M0G7W	58.5 27M0G7W
11		err.p	58.4	58.9	54.5	58.9	29.8	53.0	53.0	53.0	53.0	53.0	53.0	53.0	25.0	55.0	55.0	22.0	22.0	22.0	28.9	55.6	61.1	59.4	58.6	28.9	28.9	38.6	58.5	57.4	58.9	58.4	56.4	59.1	59.3	59.3	59.3	58.9	57.9	55.5	58.0 4.00	58.5
10	Polarization	e Angle									1									1	-						1	-	-												-	H
		Gain Type	35.50 CR	35.50 CL	35.50 CL	35.50 CR	35.50 CL	35.50 CL	35.50 CR	35.50 CL	35.50 C.K.	35.50 CR	39.02 CL	39.02 CR	35.50 CL	35.50 CR	35.50 CL	35.50 CR	35.50 CL	35.50 CR	35.50 CL	35.50 CL	35.50 CL	35.50 CR	35.50 CL	35.50 CR	35.50 CL	35.50 CR	35.50 CK	35.50 CR	35.50 CR	35.50 CR	35.50 CR	35.50 CL	35.50 CL	35.50 CR	35.50 CR	35.50 CR	35.50 CL	35.50 CL	35.50 CL	35.50 CR
6	Earth station antenna	Code G	Н	Н	Н	\dashv	\dashv	\dashv	\dashv	+	MODRES 3	╆	+	Н	Н	Н	\dashv	\dashv	┪	+	MODRES	╆	\vdash	Н	Н	\dashv	\dashv	MODRES	+	+	Н	Н	Н	Н	\dashv	\dashv	+	\dashv	\dashv	+	MODRES	Н
	tion gain	Cross-	M	M	M	Σ	Σ	M	M	∑:	2 2	2	Σ	Σ	M	M	Σ	M	Σ.	Σ :	2 2	M	Σ	M	M	Σ	Σ:	Σ.	ΣΣ	W	Σ	M	M	M	Σ	Σ	M	Σ	≖	Σ:	2 2	Σ
∞	Space station antenna gain	Co-polar	47.17	48.88	48.88	45.15	48.47	37.70	37.70	37.70	37.70	37.70	37.70	37.70	37.70	37.70	37.70	37.70	37.70	37.70	35.11	44.36	41.44	40.26	42.63	40.44	42.81	48.88	46.25	37.46	47.07	47.20	48.56	42.19	45.64	45.64	45.64	48.88	48.88	43.19	36.23	46.19
7	Shaped	beam																																								
9	Space station	antenna code	CB_TSS_PORA	R13TSS	R13TSS	R13TSS	42.00 R13TSS	0.00 R13TSS	0.00 R13TSS	0.00 R13TSS	0.00 R131SS	0.00 R13TSS	0.00 R13TSS	0.00 R13TSS	0.00 R123FR	0.00 R123FR	0.00 R13TSS	0.00 R13TSS	0.00 R13TSS	0.00 R13TSS	56.81 R13155	14.00 R13TSS	R13TSS	CB_TSS_SDNA	139.00 R13TSS	27.51 R13TSS	118.59 R13TSS	90.00 R131SS	0.00 R131SS	65.48 R13TSS	145.16 R13TSS	114.00 R13TSS	153.51 R13TSS	151.78 MOD13FRTSS	149.15 MOD13FRTSS	149.15 MOD13FRTSS	149.15 MOD13FRTSS	90.00 R13TSS	90.00 R13TSS	73.16 MOD13FRTSS	74.00 MODTSFK155	109.54 R13TSS
	enna s	Orien- tation		90.00	90.00	9.52	42.00	0.00	0.00	0.00	00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	156.81	14.00	10.00		139.00	27.51	118.59	90.00	175 12	65.48	145.16	114.00	153.51	151.78	149.15	149.15	149.15	90.00	90.00	73.16	74.00 82.80	109.54
v	Space station antenna characteristics	Minor		09'0	09'0	0.73	0.60	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	20.7	0.98	1.00		1.04	1.04	1.08	090	0.00	1.51	09:0	0.68	09.0	0.92	0.89	0.89	0.89	09:0	09:0	0.91	20.88	0.60
	Space s	Major axis		09:0	09:0	1.17	99.0	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	4.25	107	2:00		1.46	2.43	1.35	0.60	0.00	3.31	0.91	0.78	0.65	1.82	1.71	1.71	1.71	09:0	09:0	1.47	3.22	1.12
	ight	Lat.	37.65	31.86	25.26	45.75	-2.10	53.00	53.00	53.00	53.00	53.00	53.00	53.00	63.00	63.00	62.00	62.00	26.00	26.00	24.30	61.00	61.50	13.53	13.80	-7.23	-8.40	-13.87	1.42	7.11	43.98	8.60	1.45	49.47	46.78	46.78	46.78	46.18	-26.44	34.02	15.47	8.61
4	Boresight	Long.	-15.92	34.99	51.38	25.12	30.00	38.00	38.00	38.00	38.00	38.00	38.00	38.00	65.00	65.00	97.00	97.00	128.00	158.00	128.73	16.20	17.00	30.24	-14.40	51.86	159.27	-1/1./0	103.86	45.16	20.50	-11.80	6.17	10.31	16.77	16.77	16.77	12.01	31.39	37.55	37.50	0.72
3		position	-37.00	-13.20	20.00	20.00	11.00	36.00	36.00	38.00	36.00	36.00	36.00	36.00	26.00	26.00	96.00	86.00	140.00	140.00	110.00	200	2.00	-7.00	-37.00	42.50	128.00	-178.00	-30.00	37.80	-7.00	-33.50	-7.00	-18.80	-12.80	-12.80	-12.80	33.80	4.80	11.00	1,00	-30.00
2	Beam	identification	POR_100	VYY00000	QAT24700	ROU13600	RRW31000	RSTREA11	RSTREA12	RSTRED11	RSTRSD11	RSTRSD12	RSTRSD13	RSTRSD14	RSTRSD21	RSTRSD22	RSTRSD31	RSTRSD32	RSTRSD51	RSTRSD52	RUS00401	\$ 13800	S 13900	SDN_100	SEN22200	SEY00000	SLM00000	SMC05/00	SNG15100	SOM31200	SRB14800	SRL25900	STP24100	SU14000	SVK14401	SVK14402	SVK14403	SVN14800	SWZ31300	SYR22900	SYR33900 TCD14300	TG022600
-	Admin.	symbol	POR	PSE	OAT	₽ S	RRW	RUS	RUS	RUS	S S	RUS	RUS	RUS	RUS	RUS	RUS	RUS	RUS	RUS	S S	s	S	SDN	SEN	SEY	SLM	SMC	SNG	SOM	SRB	SRL	STP	SUI	SVK	SVK	SVK	SVN	SWZ	SYR	ZY.	3 2

_			_		_	_	_	_	_	_	_		_	_	_	_	_	_	_	_	_	_	_	_	_	_
91	1	кешагк		2	2		2		4																	5.7
15	į	Summer	۵	Д.	۵	۵	Ь	Ь	Ь	Ь	Ь	۵.	۵	۵	۵	Ь	Ь	Ь	۵	۵	۵	۵	а	Ь	Ь	۵
14	Group	code						22	22	36																
13	Identity of the	space station																								
12	Designation	of emission	58.6 27M0G7W	58.8 27M0G7W	58.9 27M0G7W	58.9 27M0G7W	58.3 27M0G7W	57.3 27M0G7W	55.5 27M0G7W	58.8 27M0G7W	58.9 27M0G7W	58.7 27M0G7W	58.2 27M0G7W	58.2 27M0G7W	58.9 27M0G7W	58.3 27M0G7W	58.5 27M0G7W	57.4 27M0G7W	56.1 27M0G7W	58.6 27M0G7W	58.8 27M0G7W	58.4 27M0G7W	57.8 27M0G7W	54.9 27M0G7W	58.7 27M0G7W	59.2 27M0G7W
11		d-in-b	58.6	58.8	58.9	58.9	58.3	57.3	55.5	58.8	58.9	58.7	58.2	58.2	58.9	58.3	58.5	57.4	56.1	58.6	58.8	58.4	57.8	54.9	58.7	59.2
01	Polarization	Gain Type Angle																								
	Polar	Type	占	Ы	S	SR	CR	CR	CR	CF	CR	CR	SR	딩	SR	CF	CR	CF	CF	SR	S	SR	CF	CF	CR	S
	tation	Gain	35.50 CL	35.50 CL	35.50 CR	35.50 CR	35.50 CR	35.50 CR	35.50 CR	135.50 CL	35.50 CR	35.50 CR	35.50 CR	35.50 CL	35.50 CR	35.50 CL	35.50 CR	32.50 CL	35.50 CL	35.50 CR	35.50 CR	35.50 CR	35.50 CL	32.50 CL	35.50 CR	35.50 CR
6	Earth station antenna	Code	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES	MODRES
	ation gain	Cross- polar																								
*	Space station antenna gain	Co-polar	37.37	45.00	40.81	48.50	44.64	43.13	36.54	39.47	46.93	38.27	44.39	42.62	41.01	48.88	45.87	48.88	48.88	48.88	40.84	36.65	44.30	47.63	38.98	41.47
7	Shaped	beam																								
9	Space station	antenna code	93.77 R13TSS	155.31 R13TSS	166.64 R13TSS	13.92 R13TSS	71.33 R13TSS	135.00 MOD13FRTSS	179.18 MOD13FRTSS	0.79 R13TSS	137.58 R13TSS	129.00 R13TSS	3.72 R13TSS	68.73 R13TSS	177.78 R13TSS	0.00 R13TSS	76.00 R13TSS	0.00 R13TSS	CB_TSS_USAA	0.00 R13TSS	159.91 R13TSS	109.43 R13TSS	87.00 R13TSS	CB_TSS_YEMA	39.00 R13TSS	37.00 R13TSS
	tenna	Orien- tation	93.77	155.31	166.64	13.92	71.33	135.00	179.18	0.79	137.58	129.00	3.72	68.73	177.78	00.00	76.00	00.00		0.00	159.91	109.43	87.00		39.00	37.00
v	Space station antenna characteristics	Minor	1.82	0.73	1.02	09:0	09'0	0.72	1.81	0.99	09'0	1.72	0.85	1.02	96:0	09'0	09'0	09'0		09:0	0.89	1.76	99'0		1.48	1.36
	Space	Major axis	2.80	1.21	2.26	99.0	1.59	1.88	3.41	3.18	0.94	2.41	1.19	1.50	2.29	09'0	1.20	09'0		09:0	2.56	3.43	1.52		2.38	1.46
	ight	Lat.	12.88	38.41	38.83	-8.72	-18.19	33.50	31.75	39.09	-7.11	-6.20	24.34	1.04	48.22	13.10	16.90	7.00	-12.72	19.20	41.21	14.21	-16.40	14.64	-13.10	-18.80
4	Boresight	Long.	100.75	71.14	59.24	126.03	-175.23	9.50	2.10	34.95	177.61	34.60	53.85	32.20	31.74	144.50	145.90	-161.40	-170.51	166.50	63.80	106.84	168.00	48.05	27.50	29.60
3	Orbital	position	98.00	38.00	20.00	128.00	170.75	-25.20	-25.20	42.00	176.00	11.00	52.50	17.00	38.20	122.00	121.80	170.00	170.00	140.00	33.80	107.00	140.00	11.00	-0.80	-0.80
2	Beam	identification	THA14200	TJK06900	TKM06800	JLS00000	TON21500	TUN15000	TUN27200	TUR14500	TUV00000	TZA22500	UAE27400	UGA05100	UKR06300	GUM33100	MRA33200	PLM33200	USAA_100	WAK33400	UZB07100	VTN32500	VUT12800	YEM_100	ZMB31400	ZWE13500
-	Admin.	symbol	THA	ΤK	TKM	TLS	NOL	NOT	NOT	TUR	AU)	TZA	NAE	NGA	UKR	USA	USA	USA	NSA	NSA	UZB	ΝΤ	VUT	YEM	ZMB	ZWE

COLUMN HEADINGS IN TABLE 6B

- Col. 1 *Nominal orbital position*, in degrees and hundredths of a degree from the Greenwich meridian (negative values indicate longitudes which are west of the Greenwich meridian; positive values indicate longitudes which are east of the Greenwich meridian).
- Col. 2 Notifying administration symbol.
- Col. 3 Beam identification (Column 2, normally, contains the symbol designating the administration 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. 4 *Polarization* (CL circular left, CR circular right).
- Col. 5 Channel number/Indication of minimum equivalent protection margin (EPM) for a given assignment derived from the set of values for all test points belonging to the given beam (dB).

TABLE 6B

Minimum equivalent protection margin of assignments in the Regions 1 and 3 Plan (sorted by orbital position)

Channel number 17 14 19 20 21 22 22 24 25 26 27 28 29 30 31 22 33 34 35 36 37 38 34 40 18 16 16 16 16 16 16 16 16 16 16 16 16 16	1.5 1.5 1.5 1.5 1.5 1.5 59 59 59 59 59 59 59	-0.4 -0.4 -0.4 -0.4 -0.4 -0.4 -1.0 -1.0	1.3	1.3 1.3	0.0 0.0 0.0 0.0				-0.8	6:0-	5.2 4.7 5.2	
18 19 20 21 22 23 24 25 26 27 28 29 30 31 20 33 34 35 36 37 38 Minimum EPM Minimu	1.5 1.5 1.5 1.5 1.5 1.5 1.5 5.9 5.9 5.9 5.9 5.6 5.9 5.6	-0.4	1.3	1.3	0.0				9.0	6:0-	4.7	
18 19 20 21 22 23 24 25 28 27 28 29 30 31 32 33 34 35 36 37 Minimum EPAN	1.5 1.5 1.5 1.5 1.5 1.5 5.9 5.9 5.9 5.6 5.6	0.1-			0.0							
18 19 20 21 22 23 24 25 28 27 28 29 30 31 32 33 34 35 36 36 36 36 36 36 36 36 36 36 36 36 36	1.5 1.5 1.5 1.5 1.5 1.5 5.9 5.9 5.9 5.9 5.9 5.9	0.1-			0:0							L
18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 Minimum EPM 61	1.5 1.5 1.5 1.5 1.5 5.9 5.9 5.9 5.9 5.9	0.1-			0:0				9:0		5.2	1
Attitude 1 and 1 and 2 a	1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5	0.1-						L	악		5.2	H
18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 25 35 34 35 34 32 35 34 34 34 34 34 34 34 34 34 34 34 34 34	1.5 1.5 1.5 1.5 1.5 1.5 5.9 5.9 5.9 5.6 5.9 5.9 5.9 5.9 5.9 5.9 5.9 5.9 5.9 5.9		1.3	1.3		þ		⊢	1			H
Aliminum EPAN 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32	1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5		1.3	1.3	0.0	\vdash		1	80	6	l-	H
Channel number Minimum EPM 61 61 61 61 61 6 6 6 6 6 6 6 6 6 6 6 6	1.5 1.5 1.5 1.5 5.9 5.9 5.9 5.9		13	1.3	0.0		\vdash	⊢	9.0	6.0	4.7	H
S Channel number	1.5 1.5 1.5 1.5 5.9 5.9 5.9		13	-		\vdash		⊬	-0.8	⊬		┝
Channel number Minimum EPM 61 61 61 61 61 62 63 64 63 64 64 64 64 65 65 65 65 65 65 66 67 67 67 67 68 69 69 70 71 71 70 71 71 70	1.5 1.5 1.5 5.9 5.9 5.9	-0.4				H		⊬	٩	╁	52	┝
Channel number Minimum EPM 61 61 61 61 61 61 61 61 61 61 61 61 61 6	5.9 5.9 1.5	-1.0	Н	Н	0.0	⊢	┢	⊢	8.0	⊢	5.2	⊢
Channel number Minimum EPM 61 61 61 61 61 61 61 61 61 61 61 61 61 6	1.5 1.5 5.9	4.0 -1.0	1 1	Н	0.0	H	H	⊢	٩	╁	5.	⊢
18 19 20 21 22 23 24 25 26	5.9	7 7	1.3	1.3	ö	H	H	⊢	8:0	╁	5.2	⊢
Aminima EPM Minima EPM Minima EPM 18 19 20 21 22 23 24 25 Minima EPM 16 16 16 16 16 16 16 16 16 16 16 16 16 1	1.5			4	0.0	┢	H	⊢	7	╁	rč.	⊬
Aminimum EPM Minimum EPM 61 20 21 22 23 24 Minimum EPM 61 6 61 61 61 62 69 69 69 69 69 69 69 69 69 69 69 69 69	1.5	-	Н	Н	0	⊢	H	⊢	8.0-	╁	52	⊢
Channel number 18		+	\forall	Н		H	\vdash	\vdash	Ť	\vdash	5.	H
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14 14 16 16 16 17 17 17 17 17 17 17 17 17 17 17 17 17		_	Н	Н	0.0	⊣	H	⊬	-1.0	⊢	H	H
14 14 16 16 16 17 17 17 17 17 17 17 17 17 17 17 17 17	8.3		Н	Н	Н	H		⊢	7	⊢	1.1	┝
14 14 16 16 16 17 17 17 17 17 17 17 17 17 17 17 17 17	+	_	Н	Н	H	H	20	-	⊢	╀	┢	H
, , , , , , , , , , , , , , , , , , ,	+		Н	Н	Н	7.5	-1.5	-0.4	⊢	╀	L	3.6
1	+	+	Н	Н	H	Ļ.	ιú	4.0-	⊢	⊢	┡	<u> </u>
	+		Н	Н	H	7.5	-1.5	٩	⊢	⊢	┝	3.6
	+	-	Н	Н	Н	7.5	-1.5	-0.3	⊢	⊢	⊬	60
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11	+		Н	Н	Н	7.5	-1.5	4.0-	╁	\vdash	┢	3.6
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6 1.3 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1	\top			П	Н	7.5	-1.5	ا 4.	T	T	┢	3.6
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		37		П							0.0		1.4		9.6					5.1								-0.8								5.1		
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	Channel number	22	Minimum EPM	-0.7		L	\vdash	L	L	3.5	Н	L	_	9.4	_	Н	1.4	Н		Щ	0.4		Н	-0.9*	Н	L	-0.4*	_	Н	-0.9*	L	L	4.0	_	5.4	Ц	-12	1
w	nel n	21	E	Н		_	L	_	L	Ш	6.0	L	2.0	L	9.8	Н		Н		5.3			Н		Ш	L	Н	0.3	Н		L		L	_	L	5.0		ļ
	han	70	ļ įį	Н	Щ	2.7	\vdash	5.9	\vdash	Ц	Ц			H		9.0		Ц		Ц	Щ	Ц	Ц	Ц	Ц	L	Ц		Ц	Ц	L	L	L	5.9	H	Ц		-
	ا ا	19	ļ -	Ц	2.9		2.6	L	4.6	Ц	Ц	-02		Ц		Ц		0.7	0.0	Ц		Ц	Ц	Ц	1.1		Ц		Ц	Ц	L		L	_	Ц	Ц		1
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3		Beam Identifica-					BEN23300 C	COD_100					GNE30300 C		NMB02500 C		CAF25800 C		CAB26000		CME30000 C		CZE14402 C														SRB14800 C	Ī
-	-			ALG_100	CTI23700	LBY_100	BENZ	GOO	MLI_100	NIG11900	AUT01600	D 08700	GNE	LIE25300	NMB	SUI14000	CAF2	000	GAB2	YYY00000	CME	CZE14401	CZE1	CZE1	HNG10601	HNG	HNG	HRV14801	HRV1	HRV1	SVK14401	SVK14402	SVK14403	EGY02600	F 09300	"	SRB1	1
7		Admin. symbol		-24.80 ALG	CTI	-24.80 LBY	-19.20 BEN	-19.20 COD	-19.20 MLI	-19.20 NIG	-18.80 AUT	٥	-18.80 GNE	-18.80 LIE	-18.80 NMB	-18.80 SUI	-13.20 CAF	-13.20 COG	-13.20 GAB	-13.20 PSE	-13.00 CME	-12.80 CZE	-12.80 CZE	-12.80 CZE	-12.80 HNG	-12.80 HNG	-12.80 HNG	-12.80 HRV	-12.80 HRV	-12.80 HRV	-12.80 SVK	-12.80 SVK	-12.80 SVK	-7.00 EGY	ш	ш	-7.00 SRB	
-		Orbital Position		-24.80	-24.80 CTI	-24.80	-19.20	-19.20	-19.20	-19.20	-18.80	-18.80 D	-18.80	-18.80	-18.80	-18.80	-13.20	-13.20	-13.20	-13.20	-13.00	-12.80	-12.80	-12.80	-12.80	-12.80	-12.80	-12.80	-12.80	-12.80	-12.80	-12.80	-12.80	-7.00	-7.00 F	-7.00 F	-7.00	

This assignment shall only be used by the Administrations of Croatia, Czech Republic, Hungary and Stovakia on the basis of equal access subject to mutual agreement between them.

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Character Char																				Σ	Ī	um E	PM															
Colorado Colorado	0	CR	\dashv	6.1	Ш	5.6		5.6		5.6	4,7	9.6	5,6	9	5.6	-	5.6	Щ	5.6		4.9	П	П	П	П	H	Н	Ц	П		Н	Н	Ц		Н			
	_	CR						Ī						-								-	3.1		3.0	3	1	3.0		3.1	3	0.	3.1	3	0.0	3.1		2.2
Colorado Colorado	0	CL	Н	Ц	Ц					П	П	Н	Н	Н	H	H	\vdash	L				П	1.0	Ė	-0.4	1	9	-0.4		1.6	Т	0.4	1.6	_	0.4	1.6		-0.3
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Color 14 Color	8	SS	_	L	L						Г	\vdash	-	\vdash	_	_	L	L				Ė	9.0															
	00	R	1.4	L	0.0	L	9.0		9.0	Ĺ	9.0	0	ιť	2.2	2	2.2	~	2.2		1.5							L					H			H			
C1 C1 C1 C1 C2 C2 C2 C2	00	CL	_	-0.4		9.0		6.1		8.0	Ė	1.0	šo	6	9	77	0.9		-0.3		1.0											_			_			
	8	CL	L	2.8	L	3.8		2.8		3.8	,,,	8.5	3,5	88	2.8	~	3.8	L	2.8		3.6	T																
Color Colo	8	Cl.	L	Ĺ	L	L				Г	Г	H	H	\vdash	H	L	L	L					1.5	Ī	6.0	-	2	6:0		1.5	0	o;	1.5	0	6:	1.5		22
C1 C1 C1 C1 C2 C2 C2 C2	8	CL											H	H			L					Ť	3.8		2.8	3	6	2.8		3.9	2	ω,	3.9	2	80	3.9		3.3
Caracter Caracter	000	CL	4.4	L	2.0	L	7.0-		7.0-	Ė	-0.7	Ī	0.7	٩	9.0	Ÿ	9.	9.0	-	1.1												L			H			
Character Char	90	J.	_									-	_	_	_		_							Ė	9.0-			9.0										
Catalone Catalone	8	CR	H	L	Ц	L				П	П	Н	Н	Н	H	H	H	L				2.8	П	3.2		4.3	3.2	L	4.3	Ü	3.2	4.3		3.2	4.3		3.2	
Caracterian Caracterian	200	CR	5.5		2.6		2.6		2.6	Ë	5.6	2	9.	2.6	9	2.6	<u></u>	2.6		2.6																		
Cross Cros	00	CL	\vdash	Ц	L					П	П	Н	H	Н	H	H	H	L				4.5		9.6		5.6	5.6	L	5.2	-	5.2	52		5.2	5.2		5.2	
Character Char	200	CR	3.9		2.9		2.9		2.9		5.9	2	O.	3.1	-	3.1	L	3.1		2.9												_						
Caracterian Caracterian	300	CR	H	3.2	Ц	3.8		3.3		3.9	0	3.3	3.5	6	3.9	_	3.9		3.8		3.4					Н	Н					\vdash			Н			
C1 C1 C1 C2 C2 C3 C3 C3 C4 C4 C4 C5 C4 C5 C5 C5	300	CL	4.5		3.2		3.2		3.2		3.2	3	.2	3.4	4	3.4	_	3.4		3.2																		
CH CH CH CH CH CH CH CH	0	CL	Н	Ц	Ц						П	Н	H	Н	H	H	L					4.7		-0.4		2.3	9	4	2.3	_	9.0	4.5		9.0	4.5		9.0	
Cry Cry		CL	Н	Ц	Ц	Ц				П	Н	Н	Н	Н	Н	Н	H	Ц	Ц			П		П	П	Н	Н	Ц		8.7	Н	Н			Н			
C1 C1 C1 C1 C1 C1 C1 C1		CR											H	Н	\vdash	H						Ť	-3.6	Ė	-3.8	T	3.6	-3.8		-3.8	T	3.8	-3.8		3.8	-3.8		-2.6
C1 C1 C1 C1 C1 C1 C1 C1	8	CL	Н	Ц	Ц	Ц				П	Н	Н	Н	Н	Н	Н	\vdash	Ц					3.0		3.0	3	0	3.0		3.0	3	0:	3.0	3	0:	3.0		9.6
CR CR CR CR CR CR CR CR	100	CL		-1.0	Щ	-0.8		7.0-		7.0-		-0.7	9-	7.0	9	7.	9	7	-0.8		0.0																	
CR CR CR CR CR CR CR CR	300	CR	Н	Ц	Ц					П	П	Н	Н	Н	H	H	\vdash	L					5.4		5.4	2	4	5.4		5.4	2	4	5.4	2	.4	5.4		6.3
Caracacacacacacacacacacacacacacacacacaca	900	CR	6.0		9.0-		-0.1		9.1		1.0	ī	0.1	9	1.1	9	Ψ.	6.1		9.0-																		
C1 C1 C2 C2 C3 C3 C3 C4 C4 C5 C5 C5 C5 C5 C5	1000	rj O	\sqcup	10.2		102		10.2		10.2		10.2	10	75	10.	.2	10.3	2	10.2		5.7																	
C1 C1 C2 C3 C4 C4 C5 C5 C5 C5 C5 C5	006	CL	H	Ш							П	H	H	H	H	H	\vdash					Ť	-1.0	Ť	-1.0	_	0.1	-1.0		-1.0	_	1.0	-1.0		1.0	-1.0		-0.5
CR CR CR CR CR CR CR CR	900	CL												_																		_			_			1.4**
C1. 2.1 -0.3 -	200	CR	Н	Ц	Ш	Ц				П	Н	Н	Н	Н	Н	Н	Н	Ц				5.6	П	3.6	П	3.6	3.6	Ц	3.6		3.6	3.6		3.6	3.6		3.6	
C. T. C.	100	CL	2.1		-0.3		-0.3	Ī	-0.3		-0.3	ī	0.3	9	3.3	ġ	ε.	-0.3		-0.3																		
C. C. C. C. C. C. C. C. C. C. C. C. C. C	00	CL	Н	8.2		8.2		8.1		8.1	ω.	3.1	80	-	8.1	H	8.1		8.1		6.7																	
CL CR 98 88 88 88 88 88 88 88 88 88 88 88 88	100	CL												-	_	_	_					Ť	4.0-		4.0	Т	7.4	9.4		4.0	Т	0.4	-0.4		0.4	-0.4		0.0
CR 98 88 88 88 88 88 88 88 88 88 88 88 88	000	CL	\dashv	Ц	Ц	Ц				П	П	Н	Н	Н	Н	Н	Н	Ц					П	П	П	Н	Н	Ц			Н	\dashv			\dashv			5.0
C. C. C. C. C. C. C. C. C. C. C. C. C. C	4300	CR	8.6		8.8		8.8		8.8		8.8	80	ø.	3.8	80	8.8		8.8		8.8																		
	100	CL		Ц							П	Н	H	Н	H	H						3.6		4.0		4.0	4.0		4.0	Ì	4.0	4.0		4.0	4.0		4.0	

* See Note 1 of § 11.2.

Part Part			4		6	Г	_	Г	6	-	Г	4			Г		Г		12.7					П		П		4.2	П	4.2	_	4	П	3.6	Г	10.4	7.9	3,4	П	_
Application Application			\vdash		0	H	2.	_	4			e)	=	H	H	_	H		12		-	H		Н		Н	9.9	٢	9.9	1	6	ė	-	8	H	¥	7.	Ŕ	H	
Mathematical Mat				-	-	H	40	2.8	9.		ဗိ	80	9					9.6	1.1				8.8	Н		Н	ကို	-	గ	\dashv	4.5	4	5.0	5.		1.7	6.	0.	H	
Alice Alic			⊢—	1	-	H	0	∞.	-	H	6	-	1.0	Н	H		H	-5.	-		Н	Н	7.	Н		Н	\dashv	_	\dashv	\dashv	6	6	0.	ω.	\vdash	-	7	2	Н	_
Mathematical Mat			⊢—	1		H	4.	2	2	4.0	e	7:	7	Н	H	_	H	0	1.1		Н	H	6	Н	Н	Н	\dashv	4.3	\dashv	4.3	4	4.	2	ιú	\vdash	0.2	ω,	7.	Н	
Marina M			\vdash	1	Ė	H		8:3	2	Ė	3.2	-	ا ا	Т	H		H	3.5	_		Т	Г	3.8	Н	П	Н	-3.6	Ť	3.6	i	6.1	(0)	2.0	(0)	Н	Ė	7	Ė	Н	
Main and Main and			-	1	17	T	0.5	· ·	1.7	T	Ť	1.7	Ė	Т	Г		Г		11.0		Т	Г	_	П	П	П	Ť	П	Ť	\exists	Ì	3.4	_	3.5	Г	11.7	6.7	5.0	П	
Marina M			83	1	Г	Г		2.8	T	Г	3.3	Г	ė.	Г			Г	9.5	П			Г	9.2	П		П	П		T	٦	4.9	П	5.0			Г	Г	П	П	
Parish P			83	1	1.7	Г	0.5		2.1	Γ	T	8.	Г					Г	11.0			Г		П		П	П	4.3	T	4.3	T	3.4	П	3.5	Ī	10.2	7.8	1.7	П	
Adminipal Bentine			25		Г			2.8			3.3	Г	-0.1					9.5	П				8.8	П		П	-3.6		-3.6		4.9		5.0			Г	П	П		
Admining the partial and par			30		1.7		0.5		1.8			1.7							11.0													3.4		3.5		11.7	6.7	2.0		
Admining			29					2.8			3.3		9.1					9.5					9.2								4.9		5.0							
Adminipational planting planti			88		1.7		0.5	L	5.0	L	L	1.8							11.0					Ш		Ш	Ц	4.		4.3		3.4	Ш	3.5		10.2	7.8	1.7		
Administration			-		L	L		5.8	L	L	3.3	L	ė.					9.5	Ш				8.8	Ц		Ц	-3.6		-3.6		4.9		9.0		L	L	Ц	L	Ш	
Admit. Polit. Pol			_		1.7		0.5	L	1.9	L	L	1.7	L		L		L		11.0	Щ		L		Ц		Ц	Ц		_			3.4	Ц	3.5	L	11.7	7.9	5.0	Ц	
Admit. Polit. Pol			-		L	L		2.8	L	L	3.3	L	6.1					9.5	Ц				8.7	Ц		Ц	Ц		4	4	4.5		4.9		L	L	Ц	L	Ц	
Admit. Ream. Politation			_		1.7		0.5	L	1.2	L	L	1.8			L		L		11.0					Ц		Ц	Ц		_				Ц	L		3.3	1.2	2.2	Ц	2.1
Admin. Ream. Pollar.			23		L			5.8	L		3.3	L	ا					9.5	Ш				6.0	8.5		Ц	Ц						Ц			L	Ш	L		
Admin. Heurifica. Polar. Lypo. CR. C.		mber	22	EPM	1.7		0.5	L	9.5		L	1.7			L		L		11.0															L		3.3	9.0	2.5		2.0
Admin. Heurifica. Polar. Lypo. CR. C.	'n	el nu	-	1				2.3			3.6		9.0					11.2					6.0	8.8		Ш	Ц													
Admin. Heurifica. Polar. Lypo. CR. C.		ann	8		L	62**						L				-0.3					1.6					12.1												L	2.5	4.6
Admin. Jeannin. Jeannin. Pollar. Polla		ַ	19	2										1.4	-02		2.8			132		9,		6.0	-1.0										1.3					
Admin. Jennifica. Pollar. Poll						5.8										6'0-					9.0					11.8													1.6	3.5
Admin. symbol Fleam (specimal particular) Polarization (specimal			-		L			L				L		4.1	97		5.8			13.2		1.9		6.0	-1.0	Ш	Ц						Ц		1.3	L				
Admin. symbol Feam form Polarization from from from from from from from from					L	2.8		L							_	-0.9					0.5			Ш		11.8	Ц						Ц			L		Ш	1.6	3.5
Admin, Admin, Intensification from Foliar- Admin, Intensification from Foliar- ANA OMAY		-		L	L			L	L	L	L		4.1	9.5	_	2.8		Ш	13.2		1.9		6.0	-1.0	_	Ц		_	4	_		Ц		1.3	L		L			
Admin. symbol Evant total found Polarization from the			_		L	5.9		L			L				_	Ϋ́			Ш		0.5			Ш		11.8	Ц	_	_	4	_		Ш			L		Ш	1.6	3.5
Admin, Admin, Identifica- yambol tion Admin, Identifica- tion AMM OMAZZOO OR OMAZZOO OR OMAZZOO OR OMAZZOO OR OR OMAZZOO OR OR OMAZZOO OR OR OMAZZOO OR OR OR OR OR OR OMAZZOO OR OR OR OR OR OR OR OR OR					L			L	_		L	L		4.1	Ÿ	6	2.8		Ш	13.0		1.9		6.0	-1.0		Ц		_	4	_		Н		1.3			L		
Admin. Again. Hour from from Name Polarization			_	-	L	5.9		┞	_	H	┝	┞	L	_	-	-0	L		Н	3	0.5	H	Ш	Н	0	11.	Н	_	4	\dashv	\dashv	Щ	Н	L	L	L	L	H	1.6	3.5
Admin, Jenniffica- Polar- Jape Agmin, John Mariano CR			⊢	-	L	Ł		H		┝	┢	L		4.1	9	o;	2.8		Н	13.		1,9	Н	6.0	7	80	\dashv	_	-	\dashv	_	Н	Н		1.3	L	H	H	_	_
Admin, Symbol (1979) Admin, Identifica- Polura- Lauton (1979) MAMARIA MANGAROO CR CR SS SS SS SS SS SS SS SS SS SS SS SS SS			⊢	-	\vdash	5.6		H	┝	┝	┝	⊢	H	_	Ψ.	9	_		Н	4	0.5	_			0:	1	\dashv	_	\dashv	\dashv	\dashv	_	Н			H	H	Н	1.6	3.5
Admin, Judentifica- bation to a family symbol tion from the family of th			⊢—	-	H	6	H	H	-	┝	┢	┝	H	4.	9	8.	2.8		Н	13	- 2	==	\vdash	0.6	٦	80:	\dashv	-	+	\dashv	\dashv	_	Н	\vdash	77	┢	H	H		2
Admin, Symbol tion			⊢	1	\vdash	5.0		H	┝	┝	┝	⊢	H	-	0	9		H	Н	3.4	0.4	6	Н	6	0:	-1	\dashv	\dashv	\dashv	\dashv	\dashv	Н	Н	H		H	Н	Н	1,	3.5
Admin, symbol Beam from from from from from from from fro			├	1	H	6	H	Н	\vdash	H	╁	⊢	H	4	0	8.0	2	H	Н	10	-2		Н	0	Ť	8.1	\dashv	-	\dashv	\dashv	\dashv	Н	Н	H	+-	H	Н	Н	9	2
Admin, symbol tion to the follow of the foll			_		H	ιςi		Н		H	-	\vdash		-	0.	۲			Н	3.5	0	<u>б</u>	Н	6:	1.0	-	\dashv	-	+	\dashv	_	Н	Н		e.		Н	Н		eri
Admin. symbol Beam from from from from from from from fro			_	1	H	o;			H	H	┢	\vdash	H	4	0	8.0	2	\vdash	Н	1	-2	-		0	-	1.8	\dashv	_	\dashv	\dashv	\dashv		Н		-	H	Н	Н	9:	75
Admin. Seam Polar-			<u> </u>	1	H	-C2	T	Н		H	T	H		7	=	_	6.		Н	3.6	0	Qí.	Н	6:	1.0	_	H		7	7	7		Н		e,	H	Н	Н	-	e
Admin. symbol Beam from from from from from from from fro			7	1	H	6.5		Г	T	H	┢	Н		4	-	-0.8	~		Н	_	5.0	-	П	0	_	11.8	\forall		\dashv	┪			Н		_	Г	Н	Н	9.	3.5
Admin, Jean Polar- yambol tion to my per AAMA (MAZ200 CR ARM ARMOSOO CR FIN CROSSOO CR FIN FIN FIN 1000 CL ARM ARMOSOO CR FIN FIN FIN 1000 CL CR ARE AREORATO CR ARE CROSSOO CR CR ARE AREORATO CR CR ARE AREORATO CR CR CR CR CR CR CR CR CR CR			-	1	Г	4,		Г		T	T	Г	Т	5.3	4.1	Ė	3.1		Н	14.0		3.3		1.2	0.7	Ť	\exists			7	\exists	П	П		3.8	Т	П	П	Ť	(-)
Admin. Beam symbol Identification		Г			Г	T		Г			Т	Г			Ė		Ť		П			,,		Ė	_	П	П			7			П		.,		П	П	П	
Admin. Beam	4	1	rolarization	type	CR	5	CR	S.	5	당	S	S.	당	CR	당	CR	占	CR	CL	CL	CR	CR	CR	CL	CL	CL	CL	S	다	S	당	CR	CL	S	당	CR	CL	CL Cl	CL	CR
Admin. symbol OMA	3		seam ntifica-	non																																				
Admin. symbol OMA ARM ARM ARM ARM ARM ARM ARM ARM ARM A		Ι,	Ide		OMA1	QAT24	ARMO	ERI09	FIN 10	FIN10	MKD1	MLT14	AZE06	GE00	LTU06	LVA06	LUX11	COM2	MAU	MDG2	SVN1	UZB07	BHR2;	IRN10	MCO1	ETH06	RSTR.	RSTR	RSTR.	RSTR	RSTR.	RSTR.	RSTR.	RSTR	BLR06	SOM3	TJK06	BEL01	HOL2	PAK12
			ij Z					Г				Γ							П					П		П			7				П							
	7		Adm		MA	ΑT	RM	<u>~</u>	z	z	S	ī	Æ	EO	2	۸×	×	MO	IAU	DC	N	ZB	Ή	_≅	00	Į	SI	SI	SI	sn l	SI	SI	sn	SI	꿈	WO	¥		OL.	ΑK
Porting					.20 0	00.0	.80 A	.80 E	.80 Fi	.80 Fi	.80 M	.80 M	3.20 A.	3.20 G	3.20 L	3.20 L	3.20 Li	00.0	W 00:0	M 00.6	S.80 S	3.80 U.	.00 B	1.00 IF	.20 M	3.00 E	3.00 R	00.0 R	00.0 R	.00 R	3.00 R	3.00 R	3.00 R	3.00 R	.80 B	.80 S	3.00 T,	8.20 B	3.20 H	3.20 P.
	-		Orbit Positi		17	20	22	22	22	22	22	22	23	23	23	23	78	83	23	28	33	8	8	8	8	36	88	8	88	జ	8	38	98	8	37	37	88	8	38	88

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-	2	3	4																				w																		
		D	Polon																		ป็	Channel number	- E	nber																	_
Orbital Position	Admin. symbol	Deam Identifica-	rolar- ization	-	2	3	4	2	9	7	8	6	10 1	11 12	12 13	3 14	15	16	17	18	19	20	21	22	23	24	25	56	27	28 2	29 31	30 31	32	33	34	35	36 3	37 38	39	40	
			3																		Σ	Minimum EPM	m F	PM																	
38.20	38.20 UKR	UKR06300	CR		9.0		9.0	Ē	9.0	Ť	9.0	0	9.0	9.0		9.0	L	9.0		9.0		1.5						П	Н	Н	Н	Н				П	Н	Н		Н	
42.00	42.00 TUR	TUR14500	당		1.7		1.7	Г	1.7	ŕ	1.7	Ė	1.7	1.7	-	1.7	Ŀ	1.7	Ĺ	1.7		1.7						Г	H	H										H	_
42.50	42.50 SEY	SEY00000	S					Г		Г	Г	Т	\vdash	\vdash	_	_	L	L	Ĺ					12.3		13.0		13.1		13.1	13	13.1	13.1	_	13.1	Ť	13.1	13.1	_	14.4	4
44.50	44.50 EST	EST06100	R	9.9		5.6		9.6	Ë	9.6	Ť	5.6	ξ	5.6	5.6	L_	5.6	L	5.6		5.6							Г	H	H	H						H			H	_
20.00		AFG_100	당	-0.3		-0.5		-0.5	Ė	-0.5	Ė	-0.5	ĭ	-0.5	-0.5	5.	-0.5	2	-0.5		-0.5		3.0		2.2															┝	_
50.00	50.00 CLN	CLN21900	ر ت	8.0		0.5		0.5	Ĺ	9.0	Ĭ	0.5	ô	0.5	0.5	10	0.5	L	9.0		0.5		1.5		1.6			Г	Н	\vdash	H	H					\vdash			⊢	_
50.00	50.00 IRQ	IRQ25600	CL CL	4.2		3.6		3.6	Ĺ	3.6	Ť	3.6	છે	3.6	3.6	·~	3.6		3.6		3.6**							Г	Н	H	\vdash						H	L		⊢	_
20.00	50.00 KGZ	KGZ07000	S		0.5		0.5	Ť	9.0	Ĭ	9.0	0	0.5	0.5	10	0.5	_	0.5	Ĺ	0.5		1.0						Г	Н	\vdash	H	H					\vdash		L	⊢	_
50.00	50.00 MDA	MDA06300	CR						Г	Г	Г	T	H	\vdash	\vdash	H	L	L	Ĺ					0.7		0.7		4.1	-	4.1	1.4	-	1.4		1.4	Ť	1.4	1.4	L	1.4	_
50.00	50.00 MLD	MLD30600	CR	6.3		4.8		4.8	Ť	4.8	7	8.4	4	4.8	4.8	_	4.8		4.8		4.8		4.7		4.3			T	r	H	H	H					H	H		H	
50.00	50.00 NPL	NPL 12200	CR		3.1		3.1	Ė	3.1	Ť	3.1	3	3.1	3.1	L	3.1	L	3.1	Ĺ	3.1		3.2		2.2		3.4		Г	Н	H	H	H					H	L	L	⊢	_
20.00	50.00 POL	POL13200	당					Г					-	_	_									2.4		2.7		3.1	6	3.1	3.1	_	3.1		3.1	(.,	3.1	3.1		32	_
50.00	50.00 ROU	ROU13600	CR	4.9		3.9		3.9	Ĺ	3.9	Ť	3.9	3	3.9	3.9	Ļ	3.9	L	3.9		3.9							Г	H	H	H						H			H	_
50.00	50.00 TKM	TKM06800	CR							Г	Г	H	H	\vdash	\vdash			L	Ĺ					1:0		2.4		8.5	80	8.5	8.5	10	8.5		8.5		8.5	8.5		8.7	_
52.50	52.50 UAE	UAE27400	S					Г		Г	Г	Т	\vdash	\vdash	H	L	L	L	Ĺ				3.2		3.2		14.3		12.1	\$	12.1	15.1	-	12.1		12.1	\$	12.1	15.1**	:	_
55.80	55.80 IND	INDA_100	CR		2.6		2.6	Ť	5.6	.,,	5.6	2	5.6	2.6		5.6	L	5.6	Ĺ	5.6		3.2		3.9		6.4		Г	Н		H	H						H	L	H	
55.80		INDB_100	CL	2.7		2.1		2.1		2.1		2.1	2.	2.1	2.1	Ļ	2.1	L	2.1		2.1		3.2		3.2				Н	Н	Н	Н				П	Н	H		Н	
26.00		BIH14800	CL CL	5.9		5.9		5.9		5.9	Ť	5.9	5,	5.9	5.9	L	6.6	L	5.9		5.9							Г	H	H	H	H					H			H	
26.00	56.00 RUS	RSTRSD21	CL CL								Г			_	_												9.3	Ė	11.6	-11	11.6	11.6	9	11.6		11.6	-11	11.6	11.6	H	_
26.00	56.00 RUS	RSTRSD22	S					Г	Г	Г	Г	Г	\vdash	\vdash	H	H	L	L	Ĺ									3.5	6	3.5	3.5	10	3.5		3.5	.,	3.5	3.5	L	3.6	_
56.40	56.40 KAZ	KAZ06600	S	3.6		1.3		1.3		1.3	Ė	1.3	-	1.3	13	_	1.3		1.3		1.3																			H	_
62.00	62.00 ALB	ALB29600	CL CL					Г		Т				H	H									9.8		10.9		33.5	8	33.5	88	33.5	33.5	10	33.5		33.5	33.5	20	8.4	4
62.00	62.00 CHN	CHN15500	G.	2.7		1.5		1.5		1.5	Ė	1.5	-	1.5	1.5	l _{sc}	1.5		1.5		1.5		1.5		1.5			Г		H							H			H	_
62.00	62.00 CHN	CHNA_100	CR		1.9		1.9	П	1.9	Ħ	1.9	Ė	1.9	1.9	_	1.9	L	1.9		1.9		2.1		2.3		5.3		П	Н	Н	Н	Н				Н	Н	H		Н	$\overline{}$
68.00	68.00 IND	IND03700	CL		4.5		4.5	Ħ	4.5	Ť	4.5	4	4.5	4.5	H	4.5	Н	4.5		4.5		4.5		4.5		7.2		П	Н	Н	Н	Н				П	Н	H	Ш	Н	
68.00	68.00 IND	IND04700	CR	5.4		5.0		5.0		5.0	-/	5.0	Ď,	5.0	5.0		5.0		5.0		5.0		5.0		5.0			П		Н	_	_				П	Н				
00.89		INDD_100	CR	0.9		4.6		4.6		4.6	-	4.6	4,	4.6	4.6		4.6	L	4.6		4.6		4.6		4.6			П	_	Н	_	_					Н			H	
74.00	74.00 BGD	BGD22000	CR	12.1		11.0		11.0		11.0	Ė	11.0	-	11.0	11.0	0:	11.0	0	11.0		11.0		4.1		4.1					-	_	_					-			_	_
74.00		BRU33000	CR		5.1		5.1		5.1	-/	5.1	ις)	5.1	5.1	Ļ	5.1	Ц	5.1		5.1		4.8		4.5		6.9		П	Н	Н	Н	_				П	Н	H			
74.00	74.00 MNG	MNG24800	CR																				9.9		9.9		26.4	-	6.66	86	6.66	666	6	99.9		6.66	86	6.66	666		
80.20		INSA_100	CR	12.8		9.7		9.7	Ť	9.7	-	9.7	9.7	_	9.7	H	9.7	Ц	9.7		2.6		9.7		9.7			П	Н	Н	Н	Н	Ц			П	Н	Н	Ц	Н	_
86.00		BTN03100	CR	11.8		8.9		8.9		8.9	7	8.9	8,	8.9	8.9	L	8.9		8.9		8.9		8.9		8.9				Н	Н	Н	_						_		Н	
86.00		CBG29900	CR		9.7		9.7	-	9.7	J,	9.7	O)	9.7	9.7	H	9.7	Н	9.7		9.7		9.7		9.7		11.7		П	Н	Н	Н	\dashv	Ц			П	Н	Н	Ц	Н	_
86.00		RSTRSD31	당									\exists		-	_			_									5.5		6.66		6.99	6.66	6	99.9		99.9		6.99	666	\neg	_
86.00		RSTRSD32	S					T				\exists	\dashv	\dashv	4	_	4											6.66	ත	6.66	8	6:66	99.9		99.9		6.66	6.66	6	99.9	6
88.00	88.00 SNG	SNG15100	CL	2.3		1.3		1,3	\exists	1.3	Ħ	1.3		1.3	1.3	_	1.3	\dashv	1.3		1.3		1.3	.	1.3			\neg	\exists	\dashv	\dashv	\dashv	\dashv			\exists	\dashv	\dashv	\dashv	\dashv	\neg
**	See Note 1 of 8 11.2	, ,																																							

** See Note 1 of § 11.2.

		6		П	П	П	П	П	П	П																П			T		Τ	Τ	Π		Г	99.9	Г			П		Г
		39				П	П			П	П	T				666				П						П	П	T	T	T	Т	Т	Г	Г	666	Г	Г			П		
		88		Н	Н	Н	Н	Н	Н	H	\dashv	7	7	-	┪	0		Н	Н	Н	Н	Н	Н	Н	Н	Н	H	+	+	†	t	t	t	H	5	6.99	H			Н	Н	
		37		Н	Н	Н	Н	Н	Н	H	\dashv	7	7	-	┪	66.66	_	Н	Н	Н	Н	Н	Н	Н	Н	Н	H	+	\dashv	†	t	t	t	H	6.00	100	H			Н	Н	
		36		Н	Н	Н	Н	Н	Н	Н	\forall	+	\dashv	┪	\exists	6		Н	Н	Н	Н	Н	Н	Н	Н	Н	H	\dashv	+	†	$^{+}$	$^{+}$	t	t	6	6.66	H	Н		Н	Н	Н
		35		Н	Н	H	H	H	H	Н	\dashv	\dashv	\dashv	Ⅎ	\dashv	6.66	_	H	Н	Н	Н	Н	Н	Н	Н	Н	H	\dashv	\dashv	+	$^{+}$	$^{+}$	╁	t	6.66	6	H	Н		H	Н	_
		8		Н	Н	Н	Н	Н	Н	Н	\dashv	+	\dashv	\dashv	\dashv	ග	_	Н	Н	Н	Н	Н	Н	Н	Н	Н	Н	\dashv	\dashv	+	+	$^{+}$	╁	H	ත	6.66	H	H		Н	Н	_
		33		Н	Н	Н	Н	Н	Н	Н	\dashv	\dashv	\dashv	┥	\dashv	6.66		Н	Н	Н	Н	Н	Н	Н	Н	Н	Н	\dashv	\dashv	+	+	+	╁	Н	6.66	86	H	Н	H	Н	Н	_
		33		Н	Н	Н	Н	Н	Н	Н	\dashv	\dashv	+	-	\dashv	86	_	_	_	Н	_		Н	Н	Н	Н	Н	+	\dashv	+	+	+	+	\vdash	86	6.66	┢	_		Н		
		31		Н	Н	Н	Н	Н	Н	Н	\dashv	+	\dashv	-	\dashv	666		Н	Н	Н	Н	Н	Н	Н	Н	Н	Н	\dashv	\dashv	+	+	╁	╁	╁	666	86	H			Н	_	
		30		Н	Н	Н	Н	Н	Н	Н	\dashv	\dashv	\dashv	-	\dashv	36		Н	Н	Н	Н	_	Н	Н	Н	Н	Н	\dashv	\dashv	+	+	╁	╁	╁	66	Q;	H			Н	_	
		29		Н	Н	Н	Н	Н	Н	Н	\dashv	\dashv	\dashv	\dashv	\dashv	6.66	_	H	H	Н	Н	Н	Н	Н	Н	Н	Н	\dashv	+	+	+	╁	╁	╁	6.99	6.99	┝	_		H	Н	_
		-	ł	Н	Н	Н	Н	Н	Н	Н	\dashv	\dashv	\dashv	\dashv	\dashv	88	6	H	H	Н	Н	Н	Н	Н	Н	Н	Н	\dashv	\dashv	+	+	╀	╀	╀	8	6.	┝	H	H	Н	Н	H
		78		Н	Н	Н	Н	Н	Н	Н	\dashv	\dashv	\dashv	4	\dashv	6	6.66	H	H	Н	Н		Н	Н	Н	Н	Н	\dashv	\dashv	+	+	+	╀	╀	6	6.66	┝		L	H		H
		27		Н	H	Н	Н	Н	Н	Н	\dashv	4	\dashv	4	-	99.9	6	H	H	Н	Н	Н	Н	Н	Н	Н	Н	4	\dashv	+	+	╀	╀	╀	99.9	6	H	L	L	H	Н	H
		56	-	Н	Н	Н	Н	Н	Н	Н	\dashv	4	4	4	4	2	99.9	H	H	Н	H	H	Н	Н	Н	Н	\sqcup	4	\dashv	+	+	+	+	\vdash	- 80	6.66	L	L	\vdash	Н	Н	L
		52		_	H	H	H	Н	Н		\dashv	4	_	4	4	13.2	L	L	H	Н	H	H	Н	Н	Ц	Ц	H	4	4	+	+	+	+	L	15.8	L	L	L	-	H	Н	
		24		3.5**	Ц	9.9	4.7	Ц	Ц	4.9**	3.1	_ļ	╛	╝		Ц		L	4.9	Ц	Ц	Ц	2.4	9.8	-0.5		10.4		_		C 4	0 5		11.4	L	L	L	L	26.3	Ш	Ц	
		8		Ш	1.5			-0.2	9	Ш	Ц	ļ	13.9	13.8					L	Ш	3.5	0.0	Ш	Ш		11.7	Ц		٥. 4.	7.3	↓	1	14.0		L	L	14.0	4.3		5.7	16.9	16.3
	nber	22	PM	8.0		4.4	2.3			4.1	0.2								3.9				0.7	0.9	-1.8		9.2	10			# C	1 8		112					25.5			
s	Channel number	21	Minimum EPN		1.5			-0.2	-0.1				13.9	13.8							3.5	0.0				11.7	П		9.4	7.3	T	T	14.0	Г	Г	Г	14.0	4.3		П		
	ınne	20	Ĩ	8.0		4.4	2.3	П	П	4.1	0.2								3.9				0.7	0.9	-1.8	П	9.2	-1.0	T	\neg	4.0	7 8 7		11.2					25.4			
	Ch	19	Ξ	Ť	5.	Ė		-0.2	-0.1	Ť	Ť	7	13.9	13.8				П	Ť	П	3.5	0.0	Ť	Ť	Ė	11.7			-0.4	۳.		Ť	14.0	Т	T	T	14.0	4.3		5.7	16.9	16.3
		8		8.0	-	4.4	ε.	+	H	1.1	0.2	7	-	_	\dashv	Н		Н	3.9	Н	3	0	7.0	0.9	-1.8	F	9.2	-1.0	+	-	4 0.4	1 8	+	112	H	H	-	4	25.5	-C2	1	-
		4		0	1.5	4	2	-0.2	-0.1	4	0	+	13.9	13.8	\exists	Н		Н	3	Н	3.5	0.0	0	9	H	11.7	6		4.	7.3			14.0	-	H	H	14.0	4.3	2	Н	Н	Н
		16		8:0	-	4.4	2.3	H	H	4.1	0.2	+	-	_	\exists	Н		Н	3.9	Н	3	0	0.7	0.9	-1.8	-	9.5	-1.0	+		t c	1 8	_	11.2	H	H	-	4	25.4	Н	_	Н
		-5-		0	1.5	4	2	-0.2	1.0	4		12.6	13.9	13.8	12.4	Н	_	Н	3	Н	3.5	0.0	0	9	_	11.7	6		9. 4.	7.3	9 4	+	14.0	۲	H	┢	14.0	4.3	2	5.7	16.9	16.3
		4		8.0	-	4.4	3	Т	Т.	4.1	0.2	-	-	-	-	Н		Н	4.3	-	3	0	6.0	0.9	-1.8	-	9.3	-1.0	7		4 0.4	1 8	$\overline{}$	11.2	H	H	-	4	25.5	5	1	-
		5		0	1.5	4	2	-0.2	-0.1	4	-	6.5	9.9	5.9	9.6	Н		Н	4	-	3.5	0.3	0	9	1	11.9	6	-	9.4	7.3	0 4	-	14.0	-	H	H	14.0	4.3	2	Н	_	_
		12		8.0	-	4.4	ε,	Т.	_	4.1	0.2	9	9	5	ς.			5.3	-1.2	5.3	3	0	1.4	0.9	-1.8	-	9.3	-1.0	7		4.0	1 8 2	_	11.2	H	H	-	4	25.4	Н		
		=		0	1.5	4	2	-0.2	-0.1	4	0	_	4.0	3.3	3.1	Н		2	-	2	3.5	0.3	-	9	1	11.9	6	-	-0.4	7.3	0 -	-	14.0	-	┢	┢	14.0		2	5.7	16.9	16.3
		5		8.0		4.4	3	Ť	Ť	4.1	0.2	4.1	4	33	€	Н	_	5.0	-12	5.0	3.	0	1.3	0.9	-1.8	-	9.3	1.0	Ť		4 0	7.8		112	┢	┢		4.3	25.2	5.	16	=
		6		0	1.5	4	2	-0.2	-0.1	4	\neg	2	4.2	4	ω.	Н		2	1	5.	2	0.3	1.	9	'n	11.9	6		ا 4.	7.3	0 -	-	14.0	÷	┢	┝	14.0		73	Н	_	_
		-		8		4.4		۲	4	_	0.2	4.2	4.	3.4	3.3	Н	_	- 2	8.0-	2	3.5	0	1.3		-1.8	Ξ	<u>س</u>	-1.0	۲	_	4 0	1 8	-	112	┢	┝	2	4.3	25.1	Н	_	_
		-		8:0	1.5	4	2	-0.2	-0.1	4.1	0		~	-	-	Н	_	5.2	۲	5.2	2	4	1.	0.9	Ť	11.9	9.3	T	9 4:	_	j 4	F	14.0	Ξ	┢	┝	14.0		22	5.7	6.	16.3
		9		8	-	-	2.3	٩	٩	_	2	4.3	4.2	3.4	3.4	Н	_		8.0-	9.6	3.5	0.4	1.4	0	-1.8	Ξ	e	-1.0	٩	7.3	+ -	1 8	$\overline{}$	11.2	┝	Ͱ	12	4.3	25.2	.5.	16	16
		-2-		8:0	1.5	4.4	2,	-0.2	-0.1	4.1	0.2	_	2	2	-	Н	_	5.6	٩	5.	2	+		0.9	7	11.9	9.3		6. 4.		j 4	-	14.0	Ε	H	H	14.0	_	55	Н	_	
		4			-	_	_	٩	٩		-	4.3	4.2	3.5	3.4	Н	_	_	-0.8	_	3.5	0.4	_	_	-1.8	Ξ	_	-1.0	٩	7.3	+	1 ~	-	112	H	H	12	4.3	5	Н	_	
		8		0.8	1.5	4.4	2,	-02	-0.1	4.1	0.2	_	~		_	Н	_	5.7	٩	5.7		-	1.4	0.9	7	11.9	9.3	7	4.0-		4. 0	1 8	14.0	Ξ	┝	H	14.0	_	25.1	_	16.9	16.3
		-		_	-	H	_	٩	٩	\vdash	-	4.3	4.2	3.5	3.4	Н	_		∞.	_	3.5	0.4		_	æ	Ξ	H		٩	7.3	+	-	+	7	┝	┝	4	4.3	7	5.7	16	16
		1 2	-	0.8	H	4,4	2.3	_	H	4.1	0.2	_	<u>.</u>	_	Ţ	Н	_	5.6	-0.8	5.6	3	6	1.4	6.0	-1.8	13.3	9.4	-1.0	_		t c	1 8	15.5	112	\vdash	\vdash	16.0	-	252	Н	Н	
				Н	4.4	H	Н	1.8	2.1	Н	\dashv	6.3	6.2	5.5	5.4	Н	_	H	H	H	5.3	2.9	H	H	Н	13	Н	\dashv	2.1	9.8	+	+	15	\vdash	\vdash	\vdash	16	7.1	-	Н	Н	
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		E E		91.50 N	92.20 CHN	92.20 CHN	3.00 F	3.00 T	104.00 BRM	104.00 INS	NTV 00.701	109.85	109.85	110.00 J	110.00	110.00 RUS	0.00	116.00 KOR	116.00 KOR	116.00 KOR	121.80 USA	122.00 CHN	122.00 CHN	122.00 USA	122.20 LAO	3.00	128.00 TLS	00:	134.00 CHN	134.00 NRU	140.00	140.00	140.00 KRE	140.00 PLW	140.00 RUS	9.00.	140.00 USA	140.00 VUT	146.00 MHL	152.00 AUS	152.00 AUS	152.00 AUS
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		23		17.4				24.9		9.4	15.8							7.4		10.5	
	aper	72	PM			8.7			12.1			5.4					6.5		9.7		6.2
w		21	III E		Г			25.3	Г				7.2	13.0	15.7			7.4		10.5	П
	Channel number	70	Minimum EPM		9.1				12.1		Г			П			6.5		9.7		6.2
	ਹੈ	19	Ξ	17.4	-			24.9	Г	9.4	15.8			Г			_	7.4	-	10.5	Ť
		8		Ť	Г	8.7		.,	12.1	0,	Ť	5.4	Т	Г			6.5	-	6.7	Ť	6.2
		17			Г	_	Т	25.3	Ė		Т		7.2	13.0	15.7	Т	_	7.4		10.5	Ť
		16			9.1				12.1		Г		Ė	Г			6.5	Ė	9.7		6.2
		15		17.4				24.9		9.4	15.8			П			Ť	7.4		10.5	
		4			Г	8.7			12.1		П	5.4		П			6.5	Т	9.6		6.2
		5						23.8					3.6	1.1	1.7			7.4		10.5	П
		12			9.1				9.8		П			П		4.6	6.5		9.6		6.2
		11		17.4				23.5		4.8	7.7							7.4		10.5	
		10				4.3			12.1			5.4					6.5		9.6		6.2
		6					7.5	14.6					3.6	1.1	1.7			7.4		10.5	
		-			5.1				8.5							4.6	6.5		9.6		6.2
		7		17.4	Ĺ		Ĺ	23.5		8.4	7.7			Ĺ		Ĺ		7.4		10.5	
		9			L	4.3			12.1			5.4					6.9		9.6		6.2
		ις			L		7.5	14.6			L		3.6	7.1	7.7	L		7.4		10.5	Ш
		4			5.1		L	L	8.5		L			L		9.4	6.5		9.6		6.2
		က		17.4			L	23.5		8.4	7.7			L		L		7.4		10.5	Ц
		7			L	4.3		_	12.1		L	5.4		Ļ	01		6.5		9.6	L	6.2
	_	_		L	L	_	9.5	14.9	L		L	L	7.8	13.0	16.2	L	L	6.6	L	13.4	Ц
4		rolar- ization	ad in	CR	U U	U U	SR	S	U U	CR	CR	CF	CR	CR	CR	CF	CF	70	CR	70	CR
3	,	Beam Identifica-	000	AUS0040C	AUS00500	AUS00600	AUSA_100	FSM00000	NZL100	AUS00700	AUS0070A	AUS00800	AUS00900	AUS0090A	AUS0090B	AUSB_100	PLM33200	USAA_100	TON21500	KIR_100	TUV00000
2		Admin. symbol																			
		ital tion		152.00 AUS	152.00 AUS	152.00 AUS	152.00 AUS	158.00 FSM	158.00 NZL	164.00 AUS	164.00 AUS	164.00 AUS	164.00 AUS	164.00 AUS	164.00 AUS	164.00 AUS	170.00 USA	170.00 USA	170.75 TON	176.00 KIR	176.00 TUV
-		Orbital Position		15	15	15	1	15	15	16	16	16	16	16	16	16	17	17	17	11	11

(SUP - WRC-03)

ARTICLE 12

Relationship to Resolution 507 (REV.WRC-03)*

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** (Rev.WRC-03)*, which requires the stations in the broadcasting-satellite service to be established and operated in accordance with such agreements and associated Plans.

ARTICLE 13

Interference

13.1 The Member States 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

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 radiocommunication conference convened in accordance with the relevant provisions of the Constitution and Convention in force.

^{*} Note by the Secretariat: This Resolution was revised by WRC-12 and WRC-15.

ANNEX 1 (REV.WRC-15)

Limits for determining whether a service of an administration is affected by a proposed modification to the Region 2 Plan or by a proposed new or modified assignment in the Regions 1 and 3 List or when it is necessary under this Appendix to seek the agreement of any other administration²⁵

(See Article 4)

1 Limits for the interference into frequency assignments in conformity with the Regions 1 and 3 Plan or with the Regions 1 and 3 List or into new or modified assignments in the Regions 1 and 3 List

Under assumed free-space propagation conditions, the power flux-density of a proposed new or modified assignment in the List shall not exceed the value of $-103.6 \text{ dB}(\text{W}/(\text{m}^2 \cdot 27 \text{ MHz}))$.

With respect to § 4.1.1 a) or b) of Article 4, an administration in Region 1 or 3 is considered by the Bureau as being affected if the minimum orbital spacing between the wanted and interfering space stations, under worst-case station-keeping conditions, is less than 9° .

However, an administration in Region 1 or 3 is considered as not being affected if either of the following two conditions is met:

a) under assumed free-space propagation conditions, the power flux-density at any test point within the service area associated with any of its frequency assignments in the Plan or in the List or for which the procedure of Article 4 has been initiated, does not exceed the following values: (WRC-15)

$$\begin{array}{lll} -147 & dB(W/(m^2 \cdot 27 \text{ MHz})) & \text{for } 0^\circ & \leq \theta < 0.23^\circ \\ \\ -135.7 + 17.74 \log \theta & dB(W/(m^2 \cdot 27 \text{ MHz})) & \text{for } 0.23^\circ \leq \theta < 2.0^\circ \\ \\ -136.7 + 1.66 \ \theta^2 & dB(W/(m^2 \cdot 27 \text{ MHz})) & \text{for } 2.0^\circ & \leq \theta < 3.59^\circ \\ \\ -129.2 + 25 \log \theta & dB(W/(m^2 \cdot 27 \text{ MHz})) & \text{for } 3.59^\circ \leq \theta < 9^\circ \end{array}$$

where θ is the minimum geocentric orbital separation in degrees between the wanted and interfering space stations, taking into account the respective East-West station-keeping accuracies;

 $^{^{25}}$ With respect to this Annex, except for Section 2, the limits relate to the power flux-density which would be obtained assuming free-space propagation conditions.

With respect to Section 2 of this Annex, the limit specified relates to the overall equivalent protection margin calculated in accordance with § 2.2.4 of Annex 5.

^{26 (}SUP - WRC-15)

- b) the effect of the proposed new or modified assignments in the List is that the equivalent downlink protection margin²⁷ corresponding to a test point of its assignment in the Regions 1 and 3 Plan or List, or for which the procedure of Article 4 has been initiated, including cumulative effect of any previous modification to the List or any previous agreement, does not fall more than 0.45 dB below 0 dB or, if already negative, more than 0.45 dB below the value resulting from:
 - the Regions 1 and 3 Plan and List as established by WRC-2000; or
 - a proposed new or modified assignment to the List in accordance with this Appendix; or
 - a new entry in the Regions 1 and 3 List as a result of successful application of Article 4 procedures.

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. (WRC-03)

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

With respect to § 4.2.3 c) of Article 4, an administration in Region 2 is considered as being affected if the overall equivalent protection margin²⁸ 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; or
- any agreement reached in accordance with this Appendix. (WRC-03)

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 § 4.1.1 c) of Article 4, an administration in Region 2 is considered as being affected if the proposed new or modified assignment in the Regions 1 and 3 List would result in exceeding the following power flux-density values, at any test point in the service area of its overlapping frequency assignments:

²⁷ For the definition of the equivalent protection margin, see § 3.4 of Annex 5.

²⁸ For the definition of the overall equivalent protection margin, see § 1.11 of Annex 5.

$-147 dB(W/(m^2 \cdot 27 \text{ MHz}))$	for 0°	\leq θ $<$ 0.23°
$-135.7 + 17.74 \log \theta$ dB(W/(m ² · 27 MHz))	for 0.23°	$\leq \theta < 1.8^{\circ}$
$-134.0 + 0.89 \theta^2$ dB(W/(m ² · 27 MHz))	for 1.8°	$\leq \theta < 5.0^{\circ}$
$-129.2 + 25 \log \theta$ dB(W/(m ² · 27 MHz))	for 5.0°	$\leq \theta < 10.57^{\circ}$
-103.6 dB(W/(m ² · 27 MHz))	for 10.57°	$\theta \leq \theta$

where θ is the minimum geocentric orbital separation in degrees between the wanted and interfering space stations, taking into account the respective East-West station-keeping accuracies.

With respect to § 4.2.3 a), 4.2.3 b) or 4.2.3 f) of Article 4, as appropriate, an administration in Region 1 or 3 is considered as being affected if the proposed modification to the Region 2 Plan would result in exceeding the following power flux-density values, at any test point in the service area of its overlapping frequency assignments:

$-147 dB(W/(m^2 \cdot 27 \text{ MHz}))$	for 0°	$\leq \theta < 0.23^{\circ}$
$-135.7 + 17.74 \log \theta$ dB(W/(m ² · 27 MHz))	for 0.23°	$\leq \theta < 2.0^{\circ}$
$-136.7 + 1.66 \theta^2$ dB(W/(m ² · 27 MHz))	for 2.0°	$\leq \theta < 3.59^{\circ}$
$-129.2 + 25 \log \theta$ dB(W/(m ² · 27 MHz))	for 3.59°	$\leq \theta < 10.57^{\circ}$
-103.6 dB(W/(m ² · 27 MHz))	for 10.57°	$\theta \leq \theta$

where θ is the minimum geocentric orbital separation in degrees between the wanted and interfering space stations, taking into account the respective East-West station-keeping accuracies. (WRC-03)

4 Limits to the power flux-density to protect the terrestrial services of other administrations^{29, 30, 31}

With respect to § 4.1.1 *d*) of Article 4, an administration in Region 1, 2 or 3 is considered as being affected if the consequence of the proposed modified assignment in the Regions 1 and 3 List 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 Plan or List for Regions 1 and 3 as established by WRC-2000. The same administration is considered as not being affected if the value of the power flux-density anywhere in its territory does not exceed the limits expressed below.

With respect to § 4.2.3 *d*) of Article 4, an administration in Region 1, 2 or 3 is 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 of the 1985 Conference. The same administration is considered as not being affected if the value of the power flux-density anywhere in its territory does not exceed the limits expressed below.

²⁹ See § 3.18 of Annex 5.

³⁰ In the band 12.5-12.7 GHz in Region 1, these limits are applicable only to the territory of administrations mentioned in Nos. **5.494** and **5.496**.

³¹ See Resolution **34***.

^{*} Note by the Secretariat: This Resolution was revised by WRC-03 and WRC-15.

With respect to § 4.1.1 *d*) or § 4.2.3 *d*) of Article 4, an administration in Region 1, 2 or 3 is considered as being affected if the proposed new assignment in the Regions 1 and 3 List, or if the proposed new frequency assignment in the Region 2 Plan, would result in exceeding a power flux-density, for any angle of arrival, at any point on its territory, of:

where θ represents the angle of arrival. (WRC-03)

- 5 (Not used.)
- Limits to the change in the power flux-density of assignments in the Regions 1 and 3 Plan or List to protect the fixed-satellite service (space-to-Earth) in the frequency band 11.7-12.2 GHz³² in Region 2 or in the frequency band 12.2-12.5 GHz in Region 3, and of assignments in the Region 2 Plan to protect the fixed-satellite service (space-to-Earth) in the frequency band 12.5-12.7 GHz in Region 1 and in the frequency band 12.2-12.7 GHz in Region 3

With respect to § 4.1.1 *e*) of Article 4, an administration is considered as being affected if the proposed new or modified assignment in the Regions 1 and 3 List would result in an increase in the power flux-density over any portion of the service area of its overlapping frequency assignments in the fixed-satellite service in Region 2 or Region 3 of 0.25 dB or more above that resulting from the frequency assignments in the Plan or List for Regions 1 and 3 as established by WRC-2000.

With respect to § 4.2.3 *e*), an administration is considered as being affected if the proposed modification to the Region 2 Plan would result in an increase in the power flux-density over any portion of the service area of its overlapping frequency assignments in the fixed-satellite service in Region 1 or 3 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 of the 1985 Conference.

With respect to § 4.1.1 *e)* or 4.2.3 *e)* of Article 4, with the exception of cases covered by Note 1 below, an administration is considered as not being affected if the proposed new or modified assignment in the Regions 1 and 3 List, or if a proposed modification to the Region 2 Plan, gives a power flux-density anywhere over any portion of the service area of its overlapping frequency assignments in the fixed-satellite service in Region 1, 2 or 3 of less than:

³² Including assignments operating under No. **5.485**.

where θ is the minimum geocentric orbital separation in degrees between the wanted and interfering space stations, taking into account the respective East-West station-keeping accuracies.

NOTE 1 – With respect to § 4.1.1 *e*) of Article 4, an administration in Region 3 is considered as not being affected if the proposed new or modified assignment in the Regions 1 and 3 List in the orbital arc 105° E-129° E gives a power flux-density anywhere over any portion of the territory of the notifying administration within the service area of its overlapping frequency assignments in the fixed-satellite service in the orbital arc 110° E-124° E of less than:

-186.5 dB(W/(m ² · 40 kHz))	for 0°	$\leq \theta < 0.054^{\circ}$
$-164.0 + 17.74 \log \theta$ dB(W/(m ² · 40 kHz))	for 0.054°	° ≤ θ < 1.8°
$-162.3 + 0.89 \; \theta^2 dB(W/(m^2 \cdot 40 \; kHz))$	for 1.8°	$\leq \theta < 5.0^{\circ}$
$-157.5 + 25 \log \theta$ dB(W/(m ² · 40 kHz))	for 5.0°	$\leq \theta < 10.57^{\circ}$
$-131.9 \text{ dB(W/(m}^2 \cdot 40 \text{ kHz))}$	for 10.57	$0 \le \theta$

where θ is the minimum geocentric orbital separation in degrees between the wanted and interfering space stations, taking into account the respective East-West station-keeping accuracies.

The above set of formulas is only applied to networks:

- for which Appendix 4 information for coordination had been received by the Bureau prior to 30 March 2002; and
- which had been brought into use prior to 30 March 2002 and for which the date of bringing into use had been confirmed
 to the Bureau; and
- for which the complete due diligence information, in accordance with Annex 2 to Resolution 49 (Rev.WRC-15), had been received by the Bureau prior to 30 March 2002. (WRC-15)

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 § 4.2.3 *e*) of Article 4, an administration is considered as being affected if the proposed modification to the Region 2 Plan would result in:

- the value of $\Delta T/T$ of its overlapping frequency assignments in the fixed-satellite service in Region 1 resulting from the proposed modification is greater than the value of $\Delta T/T$ resulting from the assignment in the Region 2 Plan as of the date of entry into force of the Final Acts of the 1985 Conference; *and*
- the value of $\Delta T/T$ of its overlapping frequency assignments in the fixed-satellite service in Region 1 resulting from the proposed modification exceeds 6%,

using the method of Appendix 8 (Case II). (WRC-07)

ANNEX 2 (REV.WRC-03)

Basic characteristics to be furnished in notices relating to space stations in the broadcasting-satellite service

These data items are listed in Appendix 4.

ANNEX 3 (WRC-03)

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 in these bands by a terrestrial station, or by a transmitting earth station in the fixed-satellite service in the band 12.5-12.7 GHz

1 General

- 1.1 This Annex describes a method of calculating the interference potential from terrestrial transmitters or transmitting earth stations in the fixed-satellite service (FSS) to receiving earth stations in the broadcasting-satellite service (BSS).
- 1.2 The method is in two parts:
- a) the calculation of the maximum permissible interfering power flux-density at the edge of the BSS 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 or transmitting earth stations in the FSS of another administration
- 1.3 The interference potential of the terrestrial transmitters or the transmitting earth stations in the FSS must be considered case by case; the power flux-density produced by each terrestrial transmitter or each transmitting earth station F_p is compared to the limiting power flux-density F 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 F_p is lower than the value of the limiting power flux-density F at any point on the edge of the service area, the interference caused to the BSS by this transmitter is considered to be lower than the permissible value and no coordination is required between administrations before the terrestrial service station or the transmitting earth station is brought into use. Where this is not the case, coordination and more precise calculations derived from a mutually agreed basis are necessary.

Section 2 calculates the limit of power flux-density F at the edge of the service area.

Section 3 calculates the power flux-density produced by a terrestrial station or a transmitting earth station, F_p .

- 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 or the FSS 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 BSS;
- the type of reception in the BSS, 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 BSS;
- f) the propagation conditions between the terrestrial station or the transmitting earth station in the FSS operating in the opposite direction of transmission, and the BSS 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 BSS of an administration is given by the formula:

$$F = F_0 - R + D + P \tag{1}$$

where:

F: the maximum permissible interfering power flux-density (dB(W/m²)) within the necessary bandwidth of the broadcasting-satellite;

 F_0 : the wanted power flux-density (dB(W/m²)) at the edge of the service area;

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

 D: angular antenna 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:

For the Regions 1 and 3 Plan and List, Region 2 Plan and Article 4 submissions under § 4.1.3 and 4.2.6:

- a) $-108 \text{ dB}(\text{W/(m}^2 \cdot 27 \text{ MHz}))$ for service areas in Regions 1 and 3, and
- b) $-115 \text{ dB(W/(m}^2 \cdot 24 \text{ MHz))}$, as well as in $\text{dB(W/(m}^2 \cdot 27 \text{ MHz))}$ with respect to the cases mentioned in the footnote to § 3.8 of Annex 5 concerning necessary bandwidths in Region 2.

For the analogue BSS assignments in the Region 2 Plan:

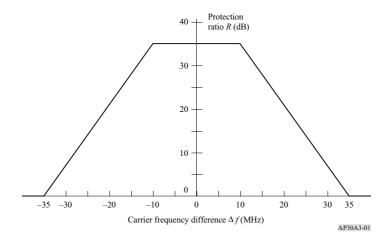
 $-107~dB(W/(m^2\cdot 24~MHz)),$ as well as in $dB(W/(m^2\cdot 27~MHz))$ with respect to the cases mentioned in the footnote to § 3.8 of Annex 5 concerning necessary bandwidths in Region 2.

2.3 Protection ratio (R)

- 2.3.1 For digital BSS assignments, the single entry protection ratio is equal to 30 dB.
- 2.3.2 For the analogue BSS assignments in the Region 2 Plan and for notified BSS assignments in Regions 1 and 3 Plan and List which are in conformity with the Plans and List of Appendix 30 and which have been brought into use and for which the date of bringing into use has been confirmed to the Bureau before 9 June 2003, the single entry protection ratio against all types of terrestrial transmissions, with the exception of amplitude-modulation multichannel television systems, is 35 dB for carrier frequency differences between the wanted and interfering signals of up to ± 10 MHz, decreasing linearly from 35 dB to 0 dB for carrier frequency differences between 10 MHz and 35 MHz, and is 0 dB for frequency differences in excess of 35 MHz (see Fig. 1). 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 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.
- 2.3.4 A signal from a terrestrial station or a transmitting earth station in the FSS should be considered only if its necessary bandwidth overlaps the necessary bandwidth of the BSS assignment.

FIGURE 1

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



2.4 Angular antenna discrimination (D)

2.4.1 For all Regions (digital)

The value of *D* to be assumed in equation (1) is derived from the following equations, which are based on Recommendation ITU-R BO.1213 (also found in Annex 5):

$$D = 0.0025((d/\lambda) \varphi)^{2} \qquad dB \qquad \text{for } 0^{\circ} \leq \varphi < \varphi_{m}$$

$$D = G_{max} - (29 - 25 \log(\varphi_{r})) dB \qquad \text{for } \varphi_{m} \leq \varphi < \varphi_{r} \qquad (2)$$

$$D = G_{max} - (29 - 25 \log(\varphi)) dB \qquad \text{for } \varphi_{r} \leq \varphi \leq 14.45^{\circ}$$

$$D = G_{max} \qquad dB \qquad \text{for } \varphi > 14.45^{\circ}$$

where:

φ: elevation angle (degrees) for the proposed or operational broadcasting-satellite system for the BSS area concerned

$$\varphi_m$$
: $(\lambda/d)((G_{max}-G_1)/(0.0025))^{0.5}$ (degrees)

 $G_1: 29-25 \log(\varphi_r)$ (dB)

 φ_r : 95(λ/d) (degrees)

 G_{max} : maximum gain of the antenna (dBi)

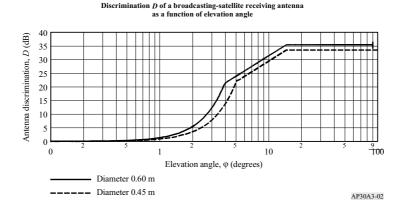
d: diameter of the antenna (m)

 λ : the wavelength (m).

NOTE 1 – 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.

For Regions 1 and 3, $G_{max} = 35.5$ dBi corresponding to a 0.6 m diameter antenna at 11.7 GHz and 65% efficiency. For Region 2, $G_{max} = 33.3$ dBi corresponding to a 0.45 m diameter antenna at 12.2 GHz and 65% efficiency. For a graphical depiction of this antenna discrimination see Fig. 2.

FIGURI



2.4.2 For the analogue BSS assignments in the Region 2 Plan

The discrimination 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 BSS area concerned.

NOTE 1 – 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.

NOTE 2 – For the graphical determination of D see Fig. 3. The unit for φ is degrees.

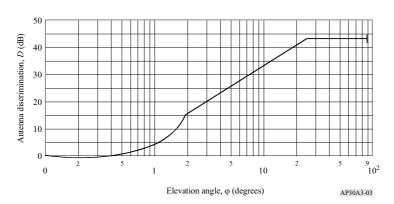
2.5 Polarization discrimination (P)

The value of *P* is equal to:

- a) 3 dB when the interfering service uses linear polarization and the BSS uses circular polarization or vice versa;
- b) 0 dB when the interfering service and the BSS both use circular or both use linear polarization.

FIGURE 3

Discrimination D of broadcasting-satellite receiving antenna as a function of elevation angle



Power flux-density produced by a terrestrial station or a transmitting earth station (F_D)

The power flux-density F_p (dB(W/m²)) produced at any point on the edge of the service area by the terrestrial station or the transmitting earth station is determined from the following formula:

$$F_p = E - A + 10 \log \left(4\pi/\lambda^2\right) \tag{4}$$

where:

E: equivalent isotropically radiated power (dBW) of the terrestrial station or the transmitting earth station in the direction of the point concerned on the edge of the service area

A: total path loss (dB)

λ: wavelength (m).

3.1 Evaluation of path loss A for a terrestrial station or a transmitting earth station at the edge of the service area of the broadcasting satellite

The following propagation model is to be used for determining the minimum path loss between the interfering terrestrial transmitter or transmitting earth station and the edge of the BSS service area.

3.2 Propagation model

3.2.1 Distance limits

3.2.1.1 Minimum distance limit

The minimum coordination distance is given as:

$$d_{min}(f) = 100 + \frac{(\beta_p - f)}{2} \tag{5}$$

where:

f: frequency (GHz)

 β_p : radiometeorological parameter, which reflects the relative incidence of clearsky anomalous propagation conditions.

The value of β_p is latitude dependent. The latitude to be used in determining the correct value for β_p is given by:

$$\zeta_r = \begin{cases}
|\zeta| - 1.8 & \text{for } |\zeta| > 1.8^{\circ} \\
0 & \text{for } |\zeta| \le 1.8^{\circ}
\end{cases}$$
(6)

where ζ is the earth station latitude (degrees).

 β_D is then determined using:

$$\beta_{p} = \begin{cases} 10^{(1.67 - 0.015\zeta_{r})} & \text{for } \zeta_{r} \leq 70^{\circ} \\ 4.17 & \text{for } \zeta_{r} > 70^{\circ} \end{cases}$$
 (7)

3.2.1.2 Maximum distance limit

The maximum distance, d_{max} , for paths comprising a single climatic zone must not exceed the value for that climatic zone given in the Table below. For mixed paths comprising multiple zones the overall maximum distance must not exceed the value in the Table below corresponding to the climatic zone in the mixed path having the largest value (e.g. for a mixed path comprising Zones A1 and A2, d_{max} is 500 km).

Climatic Zone ¹	Maximum distance, d _{max} ²
A1	500
A2	375
В	900
С	1 200

¹ For the definition see Appendix 7, § 1.5.1 and 1.5.3.2.

3.2.2 Ducting model

3.2.2.1 Distance-independent part of the loss (dB) for ducting

For BSS earth stations, no additional protection due to the earth station horizon elevation angle can be assumed, i.e. A_h , the total terrain shielding attenuation, is 0 dB. However, if the detailed information for the transmitting station is known, including any site-shielding-based mitigation techniques that are used, all these factors need to be included in the determination of the coordination distance.

Reduction in attenuation arising from direct coupling into over-sea ducts (dB):

$$A_c = \frac{-6}{1+d_c} \tag{8}$$

where d_c (km) is the distance from a land-based transmitting station to the coast in the direction being considered. d_c is zero in other circumstances.

Distance-independent part of the loss (dB) for ducting:

$$A_1 = 122.43 + 16.5 \log f + A_c \tag{9}$$

² As computed in § 2 of Appendix 7.

- 3.2.2.2 Distance-dependent part of the loss (dB) for ducting
- a) The specific attenuation (dB/km) due to dry air is given as:

$$\gamma_0 = \left(7.19 \times 10^{-3} + \frac{6.09}{f^2 + 0.227} + \frac{4.81}{(f - 57)^2 + 1.50}\right) f^2 \times 10^{-3}$$
 (10)

b) The specific attenuation due to water vapour is given as a function of ρ , the water vapour density in units of g/m^3 , by the following equation:

$$\gamma_w(\rho) = \left(0.050 + 0.0021\rho + \frac{3.6}{(f - 22.2)^2 + 8.5}\right) f^2 \rho \times 10^{-4}$$
 (11)

c) The specific attenuation (dB/km) due to water vapour for the ducting propagation model using a water vapour density of 7.5 g/m³ for paths over land in Zones A1 and A2 is given as:

$$\gamma_{wdl} = \gamma_w (7.5) \tag{12}$$

d) The specific attenuation (dB/km) due to water vapour for the ducting propagation model using a water vapour density of 10.0 g/m³ for paths over sea in Zones B and C is given as:

$$\gamma_{wds} = \gamma_w (10.0) \tag{13}$$

Note that the value of 10.0 g/m³ is used for both Zones B and C in view of the lack of data on the variability of water vapour density on a global basis, particularly the minimum values.

e) Specific attenuation due to gaseous absorption (dB/km):

$$\gamma_g = \gamma_0 + \gamma_{wdl} \left(\frac{d_t}{d_i} \right) + \gamma_{wds} \left(1 - \frac{d_t}{d_i} \right)$$
 (14)

where:

 d_t (km): aggregate land distance (Zone A1 + Zone A2) along the path;

d_i (km): path length considered, which lies within the range between a minimum calculation distance and a maximum calculation distance.

f) Values for zone-dependent parameters:

$$\tau = 1 - \exp\left(-\left(4.12 \times 10^{-4} (d_{lm})^{2.41}\right)\right) \tag{15}$$

where:

 d_{lm} (km): longest continuous inland distance (Zone A2) along the path considered.

$$\mu_1 = \left(\frac{-d_{tm}}{10^{-(0.496 + 0.354\tau)}}\right)^5$$
 (16)

where:

 d_{tm} (km): longest continuous land (i.e. inland + coastal) distance (Zone A1 + Zone A2) along the path considered.

 μ_1 is limited to $\mu_1 \leq 1$.

$$\sigma = -0.6 - 8.5 \times 10^{-9} d_i^{3.1} \tau \tag{17}$$

 σ is limited to $\sigma \ge -3.4$.

$$\mu_2 = \left(2.48 \times 10^{-4} d_i^2\right)^{\sigma} \tag{18}$$

 μ_2 is limited to $\mu_2 \le 1$.

$$\mu_{4} = \begin{cases} 10^{(-0.935 + 0.0176\zeta_{r}) \log \mu_{1}} & \text{for } \zeta_{r} \leq 70^{\circ} \\ 10^{0.3 \log \mu_{1}} & \text{for } \zeta_{r} \leq 70^{\circ} \end{cases}$$

$$(19)$$

g) Path-dependent incidence of ducting, β , and the related parameter, Γ_1 , that are used to calculate time dependency of the path loss are given as:

$$\beta = \beta_e \cdot \mu_1 \cdot \mu_2 \cdot \mu_4 \tag{20}$$

$$\Gamma_1 = \frac{1.076}{(2.0058 - \log \beta)^{1.012}} \exp\left(-\left(9.51 - 4.8 \log \beta + 0.198 (\log \beta)^2\right) \times 10^{-6} d_i^{1.13}\right)$$
(21)

h) Distance-dependent part of the loss (dB) for ducting:

$$L_5(p) = (\gamma_d + \gamma_g)d_i + (1.2 + 3.7 \times 10^{-3}d_i)\log\left(\frac{p}{\beta}\right) + 12\left(\frac{p}{\beta}\right)^{\Gamma_1} + C_{2i}$$
 (22)

where:

p: the maximum percentage of time for which the permissible interference power may be exceeded; p=0.3%

 γ_d : the frequency-dependent ducting specific attenuation (dB/km).

$$\gamma_d = 0.05 f^{1/3} \tag{23}$$

NOTE 1 – For coordination of terrestrial mobile transmitting stations, fixed stations and transmitting earth stations, the mitigation factor C_{2i} was set equal to zero.

i) Attenuation due to ducting:

$$A_{duct} = A_1 + L_5(p) \tag{24}$$

3.2.3 For the tropospheric scatter model

3.2.3.1 Distance-independent part of the loss (dB) for tropospheric scatter

$$A_2 = 187.36 + 10\varepsilon_h + L_f - 0.15N_0 - 10.1 \left(-\log\left(\frac{p}{50}\right) \right)^{0.7}$$
 (25)

where:

 ε_h : earth station horizon elevation angle (degrees)

 N_0 : path centre sea level surface refractivity given as:

$$N_0 = 330 + 62.6 e^{-\left(\frac{\zeta - 2}{32.7}\right)^2}$$
 (26)

 L_f : the frequency-dependent part of the loss (dB), given as:

$$L_f = 25\log(f) - 2.5\left(\log\left(\frac{f}{2}\right)\right)^2$$
 (27)

3.2.3.2 Distance-dependent part of the loss (dB) for tropospheric scatter

$$L_6(p) = 20 \log(d_i) + 5.73 \times 10^{-4} (112 - 15\cos(2\zeta))d_i + (\gamma_0 + \gamma_{wt})d_i + C_{2i}$$
(28)

Total attenuation due to tropospheric scatter:

$$A_{trop} = A_2 + L_6(p) \tag{29}$$

3.2.3.3 *Minimum path loss*

The minimum path loss, A_{min} , between the site of the interfering transmitter and the edge of the BSS service area is given by:

$$A_{min} = \min \left(A_{duct}, A_{trop} \right) \tag{30}$$

ANNEX 4 (REV.WRC-15)

Need for coordination of a transmitting space station in the fixed-satellite service or in the broadcasting-satellite service where this service is not subject to a Plan: in Region 2 (11.7-12.2 GHz) with respect to the Plan, the List or proposed new or modified assignments in the List for Regions 1 and 3; in Region 1 (12.5-12.7 GHz) and in Region 3 (12.2-12.7 GHz) with respect to the Plan or proposed modifications to the Plan in Region 2; in Region 3 (12.2-12.5 GHz) with respect to the Plan, List or proposed new or modified assignments in the List for Region 1

(See Article 7)

With respect to § 7.1 and 7.2 of Article 7, coordination of a transmitting space station in the fixed-satellite service (FSS) (space-to-Earth) of Region 2 or Region 3 is required when, under assumed free-space propagation conditions, the power flux-density over any portion of the service area of the overlapping frequency assignments in the BSS of an administration in Region 1 or Region 3 exceeds the following values: (WRC-07)

where θ is the minimum geocentric orbital separation in degrees between the wanted and interfering space stations, taking into account the respective East-West station-keeping accuracies.

In the case of an administration in Region 3 that has notified and brought into use its BSS Plan assignments before 9 June 2003, and whose notified assignments have been recorded in the Master Register with a favourable finding and for which the date of bringing into use has been confirmed to the Bureau, with respect to § 7.2.1 *a)* of Article 7, the conditions contained above are replaced by the following conditions:

under assumed free-space propagation conditions, the power flux-density at any test point
within the service area of the overlapping frequency assignments in the Plan does not
exceed the following values: (WRC-15)

where θ is the minimum geocentric orbital separation in degrees between the wanted and interfering space stations, taking into account the respective East-West station-keeping accuracies.

With respect to § 7.1 and 7.2 of Article 7, coordination of a transmitting space station in the FSS (space-to-Earth) in Region 1 or 3 or BSS not subject to a Plan in Region 3 is required when, under assumed free-space propagation conditions, the power flux-density over any portion of the service area of the overlapping frequency assignments in the BSS of an administration in Region 2 exceeds the following values:

where θ is the minimum geocentric orbital separation in degrees between the wanted and interfering space stations, taking into account the respective East-West station-keeping accuracies.

^{33 (}SUP - WRC-15)

ANNEX 5

Technical data used in establishing the provisions and associated Plans and the Regions 1 and 3 List, which should be used for their application³⁴ (Rev.WRC-03)

1 Definitions

1.1 Downlink 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 Downlink 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. 23.13, 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, circular, or shaped) with the surface of the Earth, and will be defined by a given value of power flux-density. For example, it would be the area delineated by the contour corresponding to the level specified in § 3.16 of this Annex. 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.

NOTE 3 – If coverage is provided by a steerable beam, the contour delineating the coverage area will depend on the pointing capability of the beam and will not necessarily cover the entire service area.

1.3 Downlink beam area

The area delineated by the intersection of the half-power beam of the satellite transmitting antenna with the surface of the Earth. The downlink beam area concept was generally used for planning purposes in conjunction with elliptical beams.

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 maximumdimension 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.

³⁴ In revising this Annex at WRC-97 and at WRC-2000, no changes have been made to the technical data applicable to the Region 2 Plan. However, for all three Regions, it should be noted that some of the parameters of networks proposed as modifications to the Region 2 Plan and the Regions 1 and 3 List may differ from the technical data presented herein. (WRC-2000)

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 § 1.6 to 1.11 are applicable to Region 2. (WRC-2000)

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 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, with respect to the reference channel.

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 downlinks. 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, respectively³⁵.

1.8 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.

1.9 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.

³⁵ 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. In Regions 1 and 3, three ratios are normally used, namely, co-channel and upper and lower adjacent channels. However, see the footnote to the definition of M_4 and M_5 in § 1.11 of this Annex.

1.10 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.

1.11 Overall equivalent protection margin³⁶

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

$$M = -10 \log \left(\sum_{i=1}^{5} 10^{\left(-M_{i}/10 \right)} \right)$$

where:

 M_1 : overall co-channel protection margin (dB) (as defined in § 1.8);

 M_2 , M_3 : overall adjacent channel protection margins for the upper and lower adjacent channels, respectively (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 (dB) (as defined in § 1.10)³⁷.

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. (WRC-2000)

2 Radio propagation factors

In Regions 1 and 3:

2.1 The propagation loss on the space-to-Earth path (used for computing downlink e.i.r.p. and as a guide in choosing orbital locations during the development of the Plan) is equal to the free-space path loss plus the atmospheric absorption and the rain attenuation exceeded for 1% of the worst month. Values of this attenuation can be calculated as a function of angle of elevation for the rain-climatic zones shown in Figs. 1 and 2 from Recommendation ITU-R P.837-1 by applying the method described in Recommendation ITU-R P.618-5

 $^{^{36}}$ For calculation of overall equivalent protection margin for Regions 1 and 3, as defined at WARC Orb-88, see alternative formula in § 1.12 to Annex 3 of Appendix 30A.

 $^{^{37}}$ M_4 and M_5 are applicable only for Region 2. (WRC-2000)

FIGURE 1

Rain-climatic zones for Regions 1 and 3 between longitudes 45° W and 105° E

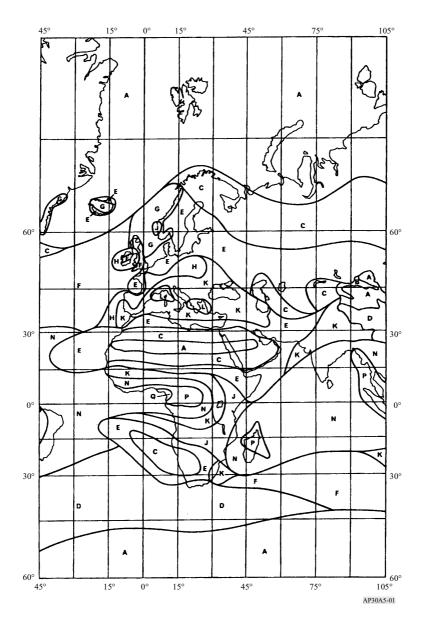
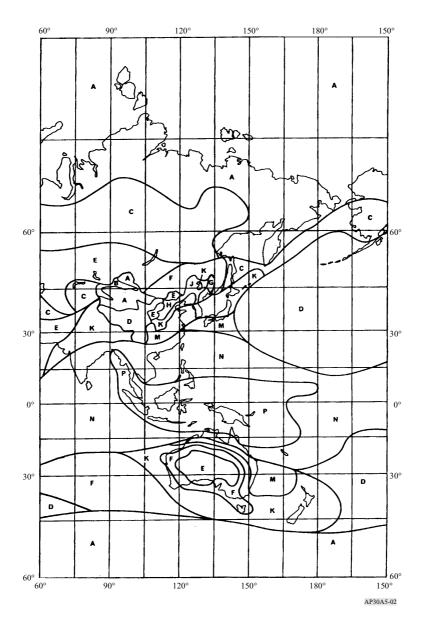


FIGURE 2

Rain-climatic zones for Regions 1 and 3 between longitudes 60° E and 150° W



In Region 2:

2.2 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.

2.2.1 Atmospheric absorption

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

$$A_a = \frac{92.20}{\cos \theta} [0.017F_o + 0.002\rho F_w]$$
 dB for $\theta < 5^\circ$

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:

$$A_a = \frac{0.042 + 0.003 \,\mathrm{p}}{\sin \theta} \qquad \qquad \mathrm{dB} \qquad \qquad \text{for } \theta \ge 5^\circ$$

where:

 θ : elevation angle (degrees),

ρ: surface water vapour concentration (g/m³), being

 $\rho = 10 \text{ g/m}^3$ for rain climatic zones A to K and

 $\rho = 20 \text{ g/m}^3$ for rain climatic zones M to P (see Fig. 3).

2.2.2 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:

$$A_p = 0.21 \,\gamma \,Lr \qquad \qquad \text{dB} \tag{31}$$

where:

L: slant path length through rain

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

r: rain path length reduction factor

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

 h_R : rain height (km)

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

where:

$$\begin{array}{lll} c \,=\, 0.6 & & \text{for} & |\,\,\zeta\,\,| \,\leq\, 20^{\circ} \\ \\ c \,=\, 0.6 + 0.02 \, (|\,\zeta\,\,| - 20) & & \text{for} & 20^{\circ} \,<\, |\,\,\zeta\,\,| \,\leq\, 40^{\circ} \\ \\ c \,=\, 1.0 & & \text{for} & |\,\,\zeta\,\,| \,>\, 40^{\circ} \end{array}$$

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

ζ: earth station latitude (degrees);

 θ : elevation angle (degrees);

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

R: rain intensity (mm/h) obtained from the table below for the rain climatic zones identified in Fig. 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 Fig. 3)

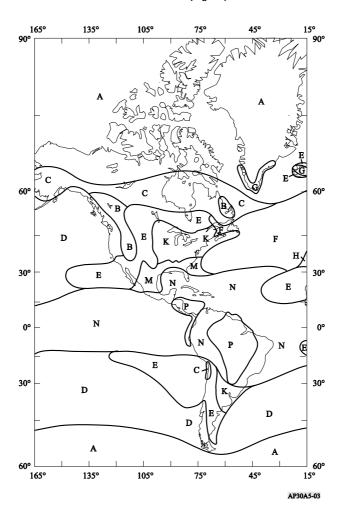
Rain climatic zone	A	В	С	D	E	F	G	K	M	N	P
Rainfall intensity (mm/h)	8	12	15	19	22	28	30	42	63	95	145

Figure 4 presents plots of rain attenuation, as calculated using equation (31), 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 Fig. 3.

2.2.3 Rain attenuation limit

In the analysis of the Plan for the broadcasting-satellite service in Region 2, a maximum downlink 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)



2.2.4 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
- rain-faded conditions corresponding to an attenuation value exceeded for 1% of the worst month.

2.3 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 (dB) exceeded for 99% of the worst month is obtained from:

$$XPD = 30 \log f - 40 \log (\cos \theta) - 20 \log A_p \qquad \text{for } 5^{\circ} \le \theta \le 60^{\circ}$$
 (32)

where A_p (dB) is the co-polar rain attenuation exceeded for 1% of the worst month (calculated in § 2.2), 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 (32).

FIGURE 4

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

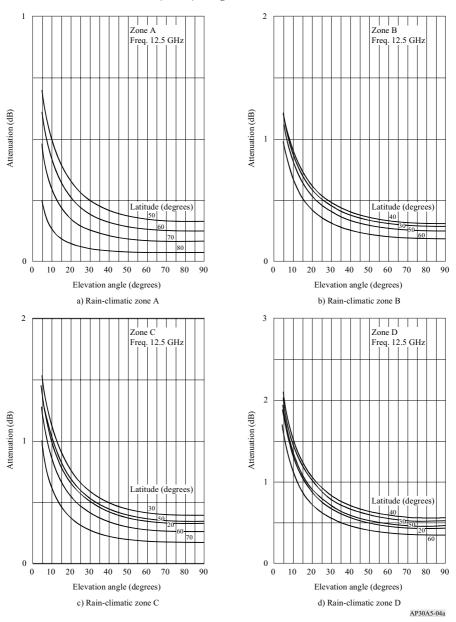


FIGURE 4 (continued)

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

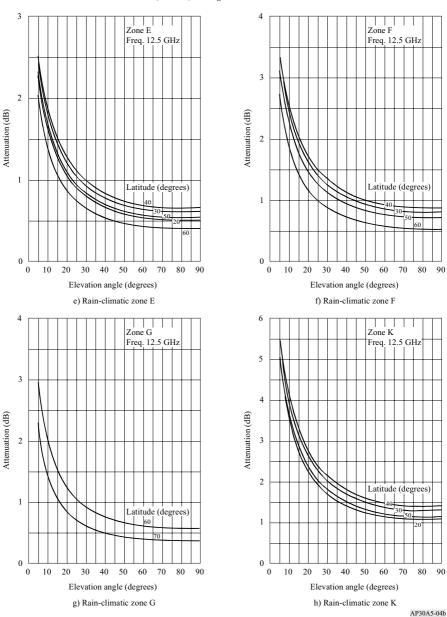
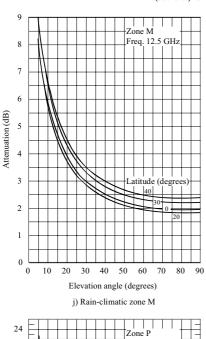
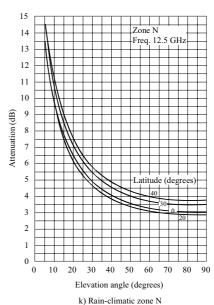
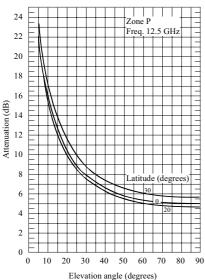


FIGURE 4 (continued)

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







l) Rain-climatic zone P

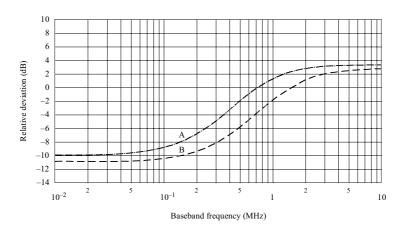
3 Basic technical characteristics

3.1 Type of modulation

3.1.1 At WARC-77 and during revision of the Regions 1 and 3 Plan at WRC-97, planning of the broadcasting-satellite service was based on the use of a signal consisting of a video signal with an associated carrier, frequency-modulated by a sound signal, both frequency-modulating a carrier in the 12 GHz band, with a pre-emphasis characteristic in accordance with Fig. 5 (from Recommendation ITU-R F.405-1*). The WRC-2000 Regions 1 and 3 Plan and the List are generally based on digital modulation of sound and television signals. (WRC-2000)

FIGURE 5

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



Curves A: 525-line system
B: 625-line system

AP30A5-05

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.

^{*} Note by the Secretariat: This Recommendation was suppressed by the Radiocommunication Assembly (Geneva, 2003).

3.1.3 Nevertheless, 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) are not precluded, provided that appropriate protection masks and calculation methods³⁸ are applied or if the use of such characteristics complies with the provisions of § 3.2 of Article 3.

3.2 Polarization

- 3.2.1 For the planning of the broadcasting-satellite service, circular polarization is generally used. However, for implementation of assignments in the Plan, linear polarization may also be used, subject to the successful application of the modification procedure of Article 4.
- 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.

3.2.4 Linear polarization is defined in Recommendation ITU-R BO.1212. This Recommendation should be used when analysing linearly polarized signals.

³⁸ Protection masks for verifying that this provision is met are not yet fully defined in existing ITU-R Recommendations. Recommendations for interference between analogue and digital signals are still under development. In absence of criteria to evaluate interference, the Bureau will use the worst-case approach as adopted by the Radio Regulations Board.

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 feeder-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 television signals

For developing the original 1977 broadcasting-satellite service Plan for Regions 1 and 3, the following protection ratios were used^{39, 40}:

- 31 dB for co-channel signals;
- 15 dB for adjacent channel signals.

For revising this Plan at WRC-97, the following aggregate downlink protection ratios were specified in Recommendation ITU-R BO.1297 for the purpose of calculating downlink equivalent protection margins^{40, 41, 42}:

- 24 dB for co-channel signals;
- 16 dB for adjacent channel signals.

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

where M_1 is the value (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:

<u>wanted power</u> sum of the co-channel interfering powers (dB) – co-channel protection ration (dB)

 M_2 and M_3 are the values (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.

³⁹ These protection ratio values were used for the assignments notified, which are in conformity with this Appendix, brought into use, and for which the date of bringing into use has been confirmed to the Bureau before 27 October 1997.

 $^{^{40}}$ The equivalent protection margin M is given in dB by the formula:

⁴¹ These protection ratio values were used for the assignments notified, which are in conformity with this Appendix, brought into use, and for which the date of bringing into use has been confirmed to the Bureau between 27 October 1997 and 12 May 2000. (WRC-2000)

⁴² These protection ratio values were used for protection of digital and analogue assignments from analogue emissions. (WRC-2000)

In revising the Regions 1 and 3 Plan at WRC-97, the following aggregate overall protection ratio values were used for calculating the overall co-channel and adjacent-channel protection margins as defined in § 1.8 and 1.9:

- 23 dB for co-channel signals;
- 15 dB for adjacent channel signals.

It was also specified that for the revision of the Regions 1 and 3 Plan, no overall co-channel single entry C/I should be lower than 28 dB.

However, for the assignments notified, which are in conformity with this Appendix, brought into use, and for which the date of bringing into use has been confirmed to the Bureau before 27 October 1997, the overall equivalent protection margins were calculated using a co-channel overall protection ratio of 30 dB and lower and upper overall adjacent channel protection ratios of 14 dB⁴³.

WRC-2000 adopted, for the protection of digital assignments from digital emissions, the following protection ratio values to be applied for calculation of downlink equivalent protection margins of the WRC-2000 Regions 1 and 3 Plan:

- 21 dB for co-channel signals;
- 16 dB for adjacent channel signals.

During planning at WRC-2000, these values were used for all assignments of the Regions 1 and 3 Plan and List except those for which WRC-2000 adopted different values used in the planning process⁴⁴.

Revision of the Regions 1 and 3 Plan at WRC-97 and planning at WRC-2000 were generally based on a set of reference parameters such as the average e.i.r.p., the reference earth station receiving antenna, all test points placed within the -3 dB contour, a bandwidth of 27 MHz and the predetermined value of C/N. The Regions 1 and 3 Plan as established by WRC-2000 is generally based on the use of digital modulation.

Protection masks and associated calculation methods for interference into broadcasting satellite systems involving digital emissions shall be in accordance with Recommendation ITU-R BO.1293-2 (Annexes 1 and 2⁴⁵).

In Region 2, the following protection ratios have been adopted for the purpose of calculating the overall equivalent protection margin⁴⁶:

- 28 dB for co-channel signals;
- 13.6 dB for adjacent-channel signals;
- 9.9 dB for second adjacent-channel signals.

 $^{^{43}}$ The overall protection margin calculation method used is based on the first formula in § 1.12 of Annex 3 to Appendix 30A.

⁴⁴ For analogue assignments, the protection ratios adopted by WRC-97 were used (24 dB co-channel and 16 dB adjacent channel). (WRC-2000)

⁴⁵ Annex 3 of this Recommendation may be applied only in compatibility analysis for bilateral coordination between administrations. (WRC-03)

⁴⁶ The definitions in § 1.7, 1.8, 1.9, 1.10 and 1.11 of this Annex apply to these calculations. (WRC-03)

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

In Region 2, an overall equivalent protection margin of 0 dB, or greater, indicates that the individual protection ratios have been met for the co-channel, the adjacent channels and the second adjacent channels. (WRC-03)

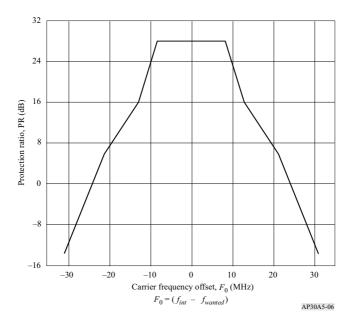
3.4.1 Adjacent channel protection ratio template for Region 2⁴⁷ (FMTV into FMTV)

The protection ratios for adjacent channels are derived from the template given in Fig. 6. The template is symmetrical and is given in terms of absolute levels for the *C/I* 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.

FIGURE 6

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



⁴⁷ See Annex 6 for the protection ratio template for interference between TV/FM signals in Regions 1 and 3.

The template is given by the following expressions:

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

where PR is the protection ratio (dB) and $|F_0|$ is the carrier spacing between the interfering and wanted signals (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.

However, in the Regions 1 and 3 Plan, for the implementation of assignments different frequency spacing may be used subject to the successful application of the modification procedure of Article 4, ITU-R Recommendations for protection masks should be used if available. In the absence of such Recommendations, the Bureau should apply the worst-case approach as adopted by the Radio Regulations Board.

3.5.2 Arrangement of channels in the same beam

Planning in Region 1 at the 1977 Conference was carried out by trying to restrict all the channels radiated within a single antenna beam within a frequency range of 400 MHz, in order to simplify receiver construction. Such a restriction was considered unnecessary for the revision of the Regions 1 and 3 Plan at WRC-97.

3.5.3 Spacing between assigned channel frequencies feeding a common antenna

In the 1977 Plan 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 was required to be greater than 40 MHz. This restriction was not imposed in the revision of the Plan.

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 for clear-sky conditions is:

for Regions 1 and 3:

The original 1977 broadcasting-satellite service Plan used values⁴⁸ of:

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 1997 revision of the Regions 1 and 3 Plan is based on a uniform value of the figure of merit G/T equal to 11 dB(K⁻¹).

These values were calculated from a formula which allows for pointing error, polarization effects and equipment ageing.

See also Report ITU-R BO.473-3 (Annex 1).

3.7 Receiving antennas

3.7.1 Half-power beamwidth of receiving antennas

In the development of the original 1977 broadcasting-satellite service Plan for Regions 1 and 3, the minimum receiving antenna diameter was such that the half-power beamwidth was 2° for individual reception and 1° for community reception.

In revising this Plan at WRC-97, the minimum receiving antenna diameter was such that the half-power beamwidth was 2.86° . (WRC-07)

For planning the broadcasting-satellite service in Region 2, the minimum receiving antenna diameter must be such that the half-power beamwidth φ_0 is 1.7°.

⁴⁸ These values are still used for assignments notified, which are in conformity with this Appendix, brought into use, and for which the date of bringing into use has been confirmed to the Bureau before 27 October 1997.

3.7.2 Receiving antenna reference patterns

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

- a) For Regions 1 and 3, the original 1977 Conference Plan was based on the antenna pattern⁴⁹ shown in Fig. 7 where the relative antenna gain (dB) is given by the curves 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.

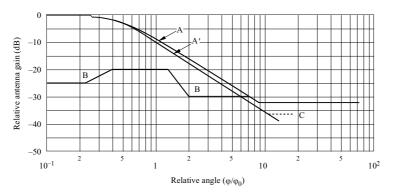
The WRC-97 revision of the Regions 1 and 3 broadcasting-satellite service Plan was based on the absolute gain (dBi) patterns for a 60 cm antenna given in Recommendation ITU-R BO.1213 as shown in Fig. 7bis.

- b) For Region 2, the relative antenna gain (dB) is given by the curves in Fig. 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.

⁴⁹ This antenna pattern is used in the broadcasting-satellite service Plan for Regions 1 and 3 for assignments notified, which are in conformity with this Appendix, brought into use, and for which the date of bringing into use has been confirmed to the Bureau before 27 October 1997.

FIGURE 7

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





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

0

$$\varphi \leq 0.25 \, \varphi_0$$

$$-12\left(\frac{\varphi}{\varphi_0}\right)^2$$

$$< \qquad \qquad \phi \leq 0.707 \; \phi_0$$

$$- \left\lceil 9.0 + 20 \log \left(\frac{\phi}{\phi_0} \right) \right\rceil$$

for
$$0.707 \, \phi_0$$

$$\varphi \leq 1.26 \, \varphi_0$$

$$-\left[8.5 + 25 \log \left(\frac{\varphi}{\varphi_0}\right)\right]$$

$$for \ \ 1.26 \ \phi_0$$

$$\phi\,\leq\,9.55\;\phi_0$$

-33

$$\varphi < 9.55 \, \varphi_0$$

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

0

$$\phi \leq 0.25 \, \phi_0$$

$$-12\left(\frac{\varphi}{\varphi_0}\right)^2$$

$$\phi~\leq~0.86~\phi_0$$

$$- \Bigg[10.5 + 25 \log \Bigg(\frac{\phi}{\phi_0} \Bigg) \Bigg]$$

for

 $\phi~>~0.86~\phi_0$

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)

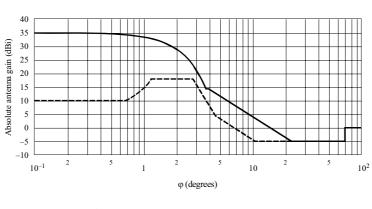
-30 until intersection with co-polar component curve; then co-polar component curve.

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 § 3.7.1.

FIGURE 7bis (WRC-03)

Reference receiving earth station antenna patterns used at WRC-97 for revising the Regions 1 and 3 broadcasting-satellite service Plan



Co-polar
Cross-polar

AP30A5-07b

Co-polar pattern:

$$G_{co}\left(\varphi\right) = G_{max} - 2.5 \times 10^{-3} \left(\frac{D}{\lambda} \varphi\right)^{2} \qquad \qquad \text{for } 0 \le \varphi < \varphi_{m}$$

where:

$$\varphi_m = \frac{\lambda}{D} \sqrt{\frac{G_{max} - G_1}{0.0025}}$$

 $G_{co}(\varphi) = G_1 = 29 - 25 \log \varphi_r$ for $\varphi_m \le \varphi < \varphi_r$

where:

$$\phi_r = 95 \, \frac{\lambda}{D}$$

$$G_{co} \, (\varphi) = 29 - 25 \log \varphi \qquad \qquad \text{for } \phi_r \leq \varphi < \phi_b$$

where:

$$\varphi_b = 10^{(34/25)}$$

$$G_{co}(\varphi) = -5 \text{ dBi}$$

for
$$\varphi_b$$
 $\leq \varphi < 70^{\circ}$

$$G_{co}(\varphi) = 0 \text{ dBi}$$

for
$$70^{\circ} \leq \varphi \leq 180^{\circ}$$

Cross-polar pattern:

$$G_{cross}(\varphi) = G_{max} - 25$$

for
$$0 \le \phi < 0.25 \phi_0$$

where:

$$\varphi_0 = 2\frac{\lambda}{D}\sqrt{\frac{3}{0.0025}} = 3 \text{ dB beamwidth}$$

$$G_{cross}(\varphi) = G_{max} - 25 + 8\left(\frac{\varphi - 0.25 \,\varphi_0}{0.19 \,\varphi_0}\right)$$
 for $0.25 \,\varphi_0 \leq \varphi < 0.44 \,\varphi_0$

for
$$0.25~\phi_0~\leq\phi \leq 0.44~\phi$$

$$G_{cross}(\varphi) = G_{max} - 17$$

for
$$0.44 \ \phi_0 \le \phi < \phi_0$$

$$G_{cross}(\varphi) = G_{max} - 17 + C \left| \frac{\varphi - \varphi_0}{\varphi_1 - \varphi_0} \right|$$

$$\quad \text{for} \qquad \phi_0 \ \le \ \phi \ < \ \phi_1$$

(WRC-07)

where:

wavelength corresponding to 12.1 GHz (m)

$$C = 21 - 25 \log \varphi_1 - (G_{max} - 17)$$

$$\varphi_1 = \frac{\varphi_0}{2} \sqrt{10.1875}$$

$$G_{cross}$$
 (φ) = 21 – 25 log φ

for
$$\phi_1 \leq \phi < \phi_2$$

where:

$$\varphi_2 = 10^{(26/25)}$$

$$G_{cross}(\omega) = -5 \text{ dBi}$$

$$for \qquad \phi_2 \ \leq \ \phi \ < \ 70^\circ$$

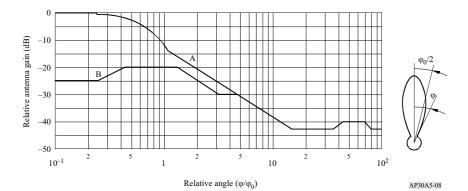
$$G_{cross}(\varphi) = 0 \text{ dBi}$$

for
$$70^{\circ} \le \phi < 180^{\circ}$$

The reference frequency used in calculations for this antenna pattern = 12.1 GHz.

For the 0.60 m antenna pattern, which was used as a reference receiving antenna in replanning the absolute gain of 35.5 dBi was applied. (WRC-03)

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	$\leq\phi\leq0.25\;\phi_0$
$-12 (\phi/\phi_0)^2$	for	$0.25\;\phi_0$	$<\phi\leq1.13\;\phi_0$
$-\{14 + 25 \log (\phi/\phi_0)\}\$	for	$1.13\;\phi_0$	$<\phi\leq14.7\;\phi_0$
-43.2	for	$14.7\;\phi_0$	$<\phi\leq35\phi_0$
$-\{85.2\ -\ 27.2\ log\ (\phi/\phi_0)\}$	for	$35\;\phi_0$	$<\phi\leq45.1\;\phi_0$
-40.2	for	45.1 φ ₀	$<\phi\leq70\;\phi_0$
$-\{-55.2 + 51.7 \log (\phi/\phi_0)\}$	for	$70\;\phi_0$	$<\phi\leq80\phi_0$
-43.2	for	$80\;\phi_0$	$<\phi\leq180^\circ$

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

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

NOTE 1 – For values of φ_0 see § 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

WARC-77 Regions 1 and 3 Plan and the WRC-97 revision of the Regions 1 and 3 Plan used the following:

- 625-line systems in Regions 1 and 3: 27 MHz;
- 525-line systems in Region 3: 27 MHz. (WRC-2000)

The planning at WRC-2000 was generally based on a necessary bandwidth of 27 MHz. (WRC-2000)

In Region 2, the Plan is based on a channel bandwidth of 24 MHz⁵⁰, but different bandwidths may be implemented in accordance with the provisions of this Appendix, provided that applicable ITU-R Recommendations are available. In the absence of such Recommendations, the Bureau will use the worst-case approach. (WRC-2000)

If different bandwidths and/or channel spacing are submitted, they will be treated in accordance with applicable ITU-R Recommendations for protection masks when available. In the absence of such Recommendations, the Bureau will use the worst-case approach. (WRC-2000)

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 chosen at the 1977 Conference to protect the services in adjacent frequency bands are shown in the Table below.

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

For Regions 1 and 3 at WARC-77, the guardbands were derived on the assumption of analogue emissions and 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. The degree of possible reduction also depends on improvements in technology and on the type of modulation. (WRC-2000)

-

⁵⁰ 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.

3.9.3 (SUP - WRC-97)

3.9.4 The guardbands at both the lower and upper edges may be used to provide space operation functions in accordance with No. **1.23** in support of the operation of geostationary-satellite networks in the broadcasting-satellite service. (WRC-03)

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 equal to or better than $\pm 0.1^{\circ}$ in the E-W directions. For such space stations, the maintenance of the tolerance $\pm 0.1^{\circ}$ in the N-S direction is recommended but is not a requirement.

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 § 2.1 for the Regions 1 and 3 Plan and to § 2.2.3 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, 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 was taken into account at the 1977 Conference. In the revision of the Regions 1 and 3 Plan at WRC-97, this influence was not considered to be a significant constraint on the choice of orbital position.

3.13 Transmitting antennas

3.13.1 Cross-section of transmitted beam

Planning in Regions 1, 2 and 3 has been generally based on the use of satellite transmitting antennas with beams of elliptical 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:

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

where:

a and b are the angles (degrees) subtended at the satellite by the major and minor axes of the elliptical cross-section of the beam; an antenna efficiency of 55% was assumed.

However, in implementing their assignments, administrations can choose beams other than elliptical, as described in Annex 2 to this Appendix, subject to successful application of the modification procedure of this Appendix.

3.13.2 Minimum beamwidth of transmitting antenna

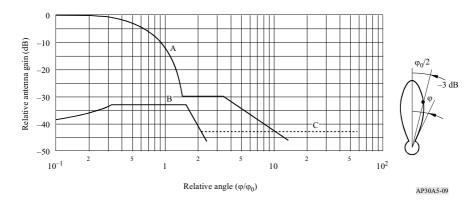
A minimum value of 0.6° for the half-power beamwidth of a transmitting antenna has been adopted for planning for Regions 1 and 3, and 0.8° for Region 2.

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 Fig. 9 for Regions 1 and 3, and in Fig. 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)

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

$$-30 \qquad \qquad \text{for } 1.58\,\varphi_0 \qquad < \qquad \phi \leq 3.16\,\varphi_0$$

$$-\left[17.5 = 25\,\log\left(\frac{\varphi}{\varphi_0}\right)\right] \qquad \qquad \text{for } \qquad \qquad \phi \geq 3.16\,\varphi_0$$

after intersection with Curve C: as Curve C

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

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

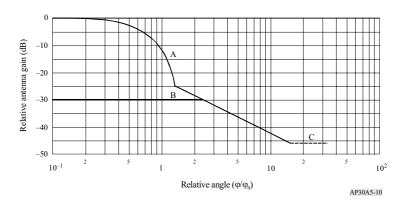
$$-33 \qquad \qquad \text{for } 0.33 \, \varphi_0 \quad < \qquad \phi \leq 1.67 \, \varphi_0$$

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

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)

$$-12 \left(\frac{\varphi}{\varphi_0}\right)^2 \hspace{1cm} \text{for} \hspace{1cm} 0 \hspace{1cm} \leq \hspace{1cm} (\phi/\varphi_0) \hspace{1cm} \leq \hspace{1cm} 1.45$$

$$-\left(22 + 20\log\left(\frac{\varphi}{\varphi_0}\right)\right) \qquad \text{for} \qquad (\varphi/\varphi_0) > 1.45$$

after intersection with Curve C: Curve C

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

$$-30$$
 for $0 \le (\phi/\phi_0) \le 2.51$

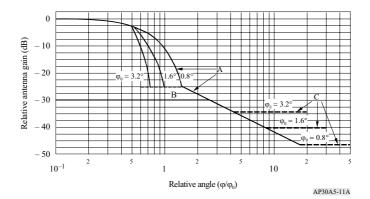
after intersection with co-polar pattern: co-polar pattern

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 Fig. 11A 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 assuming a "beamlet" half-power beamwidth of 0.8° . For Regions 1 and 3, the pattern shown in Fig. 11B, based on a "beamlet" beamwidth of 0.6° was used. Curves for three different values of ϕ_0 are shown as examples in Fig. 11A and in Fig. 11B.

FIGURE 11A

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



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

$$-12\left(\frac{\varphi}{\varphi_0}\right)^2 \qquad \qquad \text{for } 0 \le (\varphi/\varphi_0) \le 0.5$$

$$-12\left(\frac{\varphi}{\frac{\varphi_0}{\varphi_0}} - x\right)^2 \qquad \qquad \text{for } 0.5 < (\varphi/\varphi_0) \le \left(\frac{1.45}{\varphi_0}B_{min} + x\right)$$

$$-25.23 \qquad \qquad \text{for } \left(\frac{1.45}{\varphi_0}B_{min} + x\right) < (\varphi/\varphi_0) \le 1.45$$

$$-\left(22 + 20\log\left(\frac{\varphi}{\varphi_0}\right)\right) \qquad \qquad \text{for } (\varphi/\varphi_0) > 1.45$$

after intersection with Curve C: Curve C

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

$$-30$$
 for $0 \le (\phi/\phi_0) < 2.51$

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 Fig. 11A. 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 downlink service area in the direction of interest (degrees)

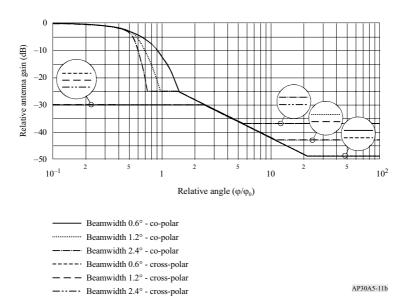
 $B_{min} = 0.8^{\circ}$ for Region 2 and $B_{min} = 0.6^{\circ}$ for Regions 1 and 3

$$x = 0.5 \left(1 - \frac{0.8}{\varphi_0} \right) \qquad \text{in Region 2}$$

$$x = 0.5 \left(1 - \frac{0.6}{\varphi_0} \right) \qquad \text{in Regions 1 and 3}$$

FIGURE 11B

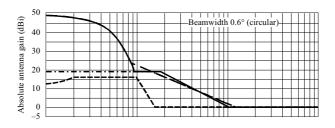
Fast roll-off antenna for Regions 1 and 3 Plan revision
(beamlet beamwidth of 0.6°)

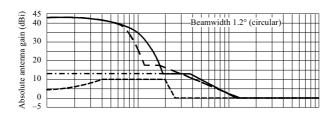


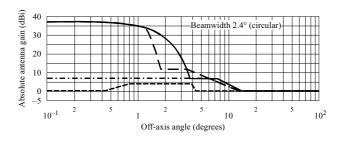
The difference in performance between the fast roll-off satellite transmitting antenna and the reference satellite transmitting antenna for Regions 1 and 3 is shown in Fig. 12.

FIGURE 12

Comparison between fast roll-off and Regions 1 and 3 reference satellite transmitting antennas







— Fast roll-off co-polar

Regions 1 and 3 transmitting co-polar

---- Fast roll-off cross-polar

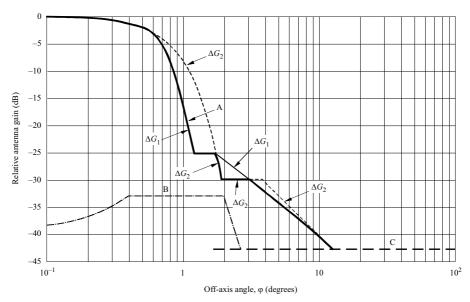
---- Regions 1 and 3 transmitting cross-polar

AP30A5-12

The improved fast roll-off satellite transmitting antenna pattern described in Recommendation ITU-R BO.1445 (see Fig. 13) has been used in the planning at WRC-2000. (WRC-2000)

FIGURE 13 (Rev.WRC-03)

Improved fast roll-off satellite transmitting antenna pattern for Regions 1 and 3



Regions 1 and 3 transmitting fast roll-off co-polar (Curve ΔG_1)

Improved fast roll-off co-polar (Curve A defined as ΔG below)

----- Regions 1 and 3 transmitting co-polar (Curve ΔG_2)

_____ Improved fast roll-off cross-polar (Regions 1 and 3 transmitting cross-polar) (Curve B)

Curve C (minus the on-axis gain)

Note 1 – The diagram gives the example curves in the case of a satellite antenna beamwidth of $\phi_0=1.2^\circ$ (circular).

AP30A5-13

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

$$\Delta G = \min(\Delta G_1, \Delta G_2)$$

where:

$$\Delta G_1 = -12(\phi/\phi_0)^2 \qquad \qquad \text{for } 0 \le (\phi/\phi_0) \le 0.5$$

$$\Delta G_{1} = -12 \left(\frac{\frac{\varphi}{\varphi_{0}} - x}{\frac{B_{min}}{\varphi_{0}}} \right)^{2}$$
 for $0.5 < (\varphi/\varphi_{0}) \le \left(\frac{1.45}{\varphi_{0}} B_{min} + x \right)$ (WRC-2000)

$$\Delta G_1 = -25.23 \qquad \qquad \text{for } \left(\frac{1.45}{\varphi_0}B_{min} + x\right) < (\varphi/\varphi_0) \le 1.45 \qquad (WRC-03)$$

$$\Delta G_1 = -\left(22 + 20\log(\varphi/\varphi_0)\right) \qquad \qquad \text{for } (\varphi/\varphi_0) > 1.45$$

$$\Delta G_1 = -\left(G_{on\ axis}\right) \qquad \qquad \text{after intersection with Curve C}$$

$$\Delta G_2 = -12(\varphi/\varphi_0)^2 \qquad \qquad \text{for } \qquad 0 \le \varphi \le 1.58\ \varphi_0$$

$$\Delta G_2 = -30 \qquad \qquad \qquad \text{for } \qquad 1.58\ \varphi_0 < \varphi \le 3.16\ \varphi_0$$

$$\Delta G_2 = -\left(17.5 + 25\log(\varphi/\varphi_0)\right) \qquad \qquad \text{for } \qquad \varphi > 3.16\ \varphi_0$$

$$\Delta G_3 = -\left(G_{on\ axis}\right) \qquad \qquad \text{after intersection with Curve C}$$

Curve B: cross-polar relative gain (dB):

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

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

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

$$-\left(G_{\text{Obs}qyis}\right) \qquad \qquad \text{after intersection with Curve C}$$

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 42.8 dBi)

where:

φ: off-axis angle (degrees)

 φ_0 : cross-sectional half-power beamwidth in the direction of interest (degrees)

 B_{min} : 0.6° for Regions 1 and 3

$$x = 0.5 \left(1 - \frac{B_{min}}{\varphi_0}\right) \tag{WRC-2000}$$

3.13.4 Composite beam

A composite beam represents a single beam (i.e. "simulated shaped beam") and is formed by combining two or more elliptical beams at a given orbital position. In general, composite beams were used at WRC-2000 for administrations which had more than one beam at a given orbital position in the WRC-97 Regions 1 and 3 Plan. (WRC-2000)

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 $\pm 1^{\circ}$; the limit on rotation is not necessary for beams of circular cross-section using circular polarization⁵¹.
- 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.

 $^{^{51}}$ In the original 1977 broadcasting-satellite service Plan for Regions 1 and 3, the angular rotation of a transmitting beam about its axis must not exceed a limit of $\pm 2^{\circ}$. This limit is still applied for assignments notified, which are in conformity with this Appendix, brought into use, and for which the date of bringing into use has been confirmed to the Bureau before 27 October 1997.

3.16 Power flux-density at edge of coverage area

The original 1977 broadcasting-satellite service Plan used the following values⁵² of the power flux-density at the edge of the coverage area exceeded for 99% of the worst month:

- -103 dB(W/m²) for individual reception in Regions 1 and 3;
- -107 dB(W/m²) 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 § 3.8.
- -111 dB(W/m²) for community reception in Regions 1 and 3.

The 1997 revision of the Regions 1 and 3 Plan was generally based on a uniform value of the power flux-density at the edge of coverage area equal to $-108 \text{ dB}(\text{W/m}^2)$. This corresponds to the general reduction in e.i.r.p. of 5 dB referenced to the average e.i.r.p. of 63.9 dBW in the 1977 broadcasting-satellite service Plan.

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: For frequency-modulated television signals, this reduction corresponds to a peak-to-peak deviation of 600 kHz. Digital modulation can achieve appropriate energy dispersal by proper implementation of digital modulation (e.g. by applying spectrum scrambling and/or interleaving).

3.19 Orbital separation limit for interference calculation

WRC-2000 has adopted the use of an orbital separation limit for interference calculation in Regions 1 and 3. Beyond this limit no interference was taken into account.

Initially, the values used for the orbital separation limit were 15° for co-polar and 9° for cross-polar emissions. At a later stage, the unique value of the orbital separation limit of 9° was adopted by WRC-2000. (WRC-2000)

⁵² These values are still used for assignments notified, which are in conformity with this Appendix, brought into use, and for which the date of bringing into use has been confirmed to the Bureau before 27 October 1997.

ANNEX 653 (WRC-03)

Criteria for sharing between services

Part A – Technical bases for the criteria for interregional sharing between space services in Annexes 1 and 4

The revised interregional sharing criteria in the bands governed by Appendix 30 are based nominally on the following assumptions.

1 Reference assumptions regarding earth station antenna patterns

1.1 For earth station antennas with diameters between 0.45 m and 2.40 m, the gain of the side lobes given by Recommendation ITU-R BO.1213 were used.

For the patterns of earth station antennas with diameters greater than 2.40 m, the gain of the side lobes given by Recommendation ITU-R S.580-5, with a $(29-25 \log \theta)$ side-lobe envelope, complemented by the main-lobe given in Annex 3 to Appendix **8**, were used. θ is the off-axis angle in degrees.

1.2 For the broadcasting-satellite service and fixed-satellite service earth stations, an antenna efficiency of 65% was used at a frequency of 11.7 GHz.

2 Antenna diameters and noise temperatures

The range of antenna diameters and associated noise temperatures considered for the protection of the fixed-satellite service and the broadcasting-satellite service on an interregional basis are given in the following table:

Receive earth station antenna diameter (m)	0.45 1	0.60	0.80	1.20	2.40	5 ²	8 ²	11 ²
Receive earth station noise temperature (K)	110	110	125	150	150	200	250	250
Total link noise temperature (K)	174	174	198	238	238	317	396	396

This antenna diameter applies in certain cases (see Annexes 1, 3 and 4).

² This antenna diameter does not apply for broadcasting-satellite service.

⁵³ Sections 1 and 2 are applicable when the services of Regions 1 or 3 are involved. Section 3 is applicable to all Regions.

The total link noise temperature was calculated from the receive earth station noise temperature (which includes the antenna temperature, the receive amplifier temperature and the noise increase resulting from feeder losses), and adding 2 dB to take account of all other sources of noise (uplink noise, geostationary-satellite orbit interference, cross polarization isolation and frequency reuse interference).

3 Protection criteria

The power flux-density masks developed in sections 1, 3 and 6 of Annex 1 and in Annex 4 have been determined by setting at 6% the allowable relative noise increase ($\Delta T/T$), for the earth station antenna characteristics given in the above Table.

The allowable interfering power flux-density was calculated by the following expression:

$$PFD_{all}(\theta) = 10 \log(\Delta T/T) + 10 \log(k T b_{rf}) + G_m - G_a(\varphi)$$

where:

 $PFD_{all}(\theta)$: allowable level of interfering power flux-density for an orbital separation of θ°

 $\Delta T/T$: allowable relative increase in receive link noise = 6%

k: Boltzmann's constant $(1.38 \times 10^{-23} \text{ J/K})$

T: receive link noise temperature (K) (see Table in section 2 above)

 b_{rf} : reference bandwidth (27 MHz in Regions 1 and 3; 24 MHz in Region 2)

 G_m : gain for a 1 m² effective aperture (dBi/m²)

 $G_q(\varphi)$: receive antenna gain for topocentric angle of φ (dBi)

φ: topocentric angle (degrees) between the interfering and the wanted satellite, as defined in Annex 1 of Appendix 8.

4 Power flux-density levels for fixed-satellite service and broadcastingsatellite service with specific antenna diameters

The table below contains power flux-density levels derived for fixed-satellite service and broadcasting-satellite service earth stations with specific antenna diameters for the characteristics defined in sections 1, 2 and 3 above. These levels were used to develop the power flux-density masks in sections 1, 3 and 6 of Annex 1 and in Annex 4 by taking the envelope of the individual pfd masks for the relevant antenna diameters.

Orbital separation between wanted and	Power flux-density level in dB(W/(m² · 27 MHz)) corresponding to different antenna diameters									
interfering space stations (degrees)	0.45 m ⁻¹	0.60 m	0.80 m	1.20 m	2.40 cm	5 m ²	8 m ²	11 m ²		
0°	-134.2	-136.7	-138.7	-141.4	-147.4	-152.5	-155.7	-158.4		
θ > 0°	For any value of the orbital separation θ between the wanted and interfering space stations, the applicable power flux-density should be relaxed from the value corresponding to 0° orbital separation by adding the off-axis antenna discrimination, as calculated under the assumptions in section 1 above									

¹ This antenna diameter applies to certain cases (see Annexes 1, 3 and 4).

Part B - Sharing criteria used in establishing the WARC SAT-77 Plan

1 Protection requirements for sharing between services in the 12 GHz

- 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, and for 99% of the worst month for the broadcasting service and the broadcasting-satellite service.
- 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.

² This antenna diameter does not apply for broadcasting satellite service.

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.

				Protection requirements ²		
Wanted service ¹	Wanted signal ¹	Interfering service ¹	Interfering signal ¹	Total acceptable ³	Single entry	
BSS	TV/FM	BSS, FSS, FS, BS	TV/FM	$C/I = 30 \text{ dB}^{-4}, 7$	$C/I = 35 \text{ dB}^{-4}$	
FSS	FDM/FM	BSS	TV/FM	$N = 500 \text{ pW0p}^{-8}$	N = 300 pW0p	
FSS	TV/FM	BSS, FSS	TV/FM	$C/I = 32 \text{ dB}^{-5}$	$C/I = 37 \text{ dB}^{-5}$	
FSS	4φ-PSK	BSS, FSS	TV/FM	C/I = 30 dB	C/I = 35 dB	
FSS	FDM/FM	FSS	FDM/FM	N = 1 000 pW0p	N = 400 pW0p	
FS	FDM/FM	BSS	TV/FM	N = 1 000 pW0p	-125 dB(W/(m ² · 4 kHz)) ⁶	
BS	TV/VSB	BSS	TV/FM	C/I = 50 dB	Not applicable	

BSS: broadcasting-satellite service FM: frequency modulation
FSS: fixed-satellite service FDM: frequency division multiplex
BS: broadcasting service 4φ-PSK: quadraphase shift keying
FS: fixed service VSB: vestigial sideband.

TV: television

- These limits include both up-link and down-link contributions.
- ³ Values (dB) are protection ratios for the sum of interfering signals. Values (pW0p) represent interference noise in the worst telephone channels caused by the sum of interfering signals.
- 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 Recommendation ITU-R S.483-3.
- 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 broadcasting-satellite service 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)⁵⁴;
- c) co-channel carriers (no carrier-frequency offset).

⁵⁴ Impairment grade on a 5-point scale as defined in Recommendation ITU-R BT.500-7.

1.7 If system design is based on conditions other than those of $\S(a)$ and b) above, the FM/TV protection ratio is given by:

$$R = 12.5 - 20 \log(D_v/12) - Q + 1.1 Q^2$$
 dB

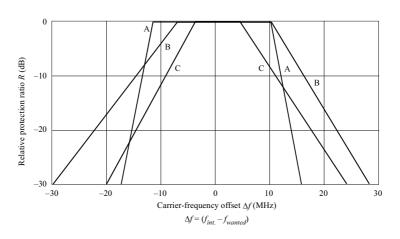
where:

 D_{ν} : nominal peak-to-peak frequency deviation (MHz);

Q: the impairment grade, concerning the interference only.

1.8 When carriers are offset in frequency, condition of $\S c$) does not apply and the adjacent channel protection ratios should be adjusted according to the frequency offset as shown in Fig. 1. For example, at a frequency offset of 20 MHz, the total acceptable ratio of protection against interference to an FM/TV signal from another FM/TV signal is 13 dB. The corresponding "single entry" value is 18 dB.

FIGURE 1
Reference case protection ratios relative to co-channel values



Curves A: TV/VSB-wanted, TV/FM interfering

B: TV/FM-wanted, TV/FM interfering

C: TV/FM-wanted, TV/VSB interfering

AP30A6-01

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 $100 \lambda (2.5 \text{ m})$ in the fixed-satellite service, the gain of the side-lobes is given by the expression $32-25 \log \theta$, where θ is the angle from the boresight (Recommendation ITU-R S.465-5). 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 100λ , 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:

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 IV of ex-CCIR Report 631* (Rev.76).

Reduction of spectral power flux-density relative
to a 4 kHz bandwidth

Peak-to-peak deviation (kHz)	Relative reduction (dB)
0	10
100	15.44
200	17.78
300	19.29
400	20.41
500	21.30
600	22.04
700	22.67
800	23.22
900	23.71
1 000	24.15

3.4 The value of energy dispersal for the broadcasting-satellite service has been determined such that the spectral power flux-density measured in a 4 kHz bandwidth is reduced by 22 dB relative to that measured in the entire bandwidth; this reduction corresponds to a peak-to-peak deviation of 600 kHz.

ANNEX 7 (REV.WRC-03)

Orbital position limitations

- A In applying the procedure of Article 4 for proposed modifications to the Region 2 Plan or for proposed new or modified assignments in the Regions 1 and 3 List, administrations should observe the following criteria:
- 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 37.2° 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.

^{*} Note by the Secretariat: See Report ITU-R BO.631.

The purpose of the following orbital position and e.i.r.p. limitations is to preserve access to the geostationary-satellite orbit by the Region 2 fixed-satellite service in the band 11.7-12.2 GHz. Within the orbital arc of the geostationary-satellite orbit between 37.2° W and 10° E, the orbital position associated with any proposed new or modified assignment in the Regions 1 and 3 List of additional uses shall lie within one of the portions of the orbital arc listed in Table 1. The e.i.r.p. of such assignments shall not exceed 56 dBW, except at the positions listed in Table 2.

TABLE 1

Allowable portions of the orbital arc between 37.2° W and 10° E for new or modified assignments in the Regions 1 and 3 Plan and List

Orbital	37.2° W	33.5°W	30° W	26° W	20° W	14° W	8° W		2° W	4° E	
position	to 36° W	to 32.5° W	to 29° W	to 24° W	to 18° W	to 12° W	to 6° W	4° W 1	to 0°	to 6° E	9° E ¹

Proposed new or modified assignments in the List which involve this orbital position shall not exceed the power flux-density limit -138 dB(W/(m² · 27 MHz)) at any point in Region 2.

TABLE 2

Nominal positions in the orbital arc between 37.2° W and 10° E at which the e.i.r.p. may exceed the limit of 56 dBW

Desition +0.2° 33.5° W 30° W 25 W 15 W 7 W 4° W 1 +0.2° +0.2°	1° W 5° E ±0.2° 9° E 1
---	------------------------

Proposed new or modified assignments in the List which involve this orbital position shall not exceed the power flux-density limit –138 dB(W/(m² · 27 MHz)) at any point in Region 2.

B The Region 2 Plan is based on the grouping of the space stations in nominal orbital positions of $\pm 0.2^{\circ}$ 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 § 4.13.1 of Annex 3 to Appendix 30A.)

APPENDIX 30A (REV.WRC-15)*

Provisions and associated Plans and List¹ for feeder links for the broadcastingsatellite service (11.7-12.5 GHz in Region 1, 12.2-12.7 GHz in Region 2 and 11.7-12.2 GHz in Region 3) in the frequency bands 14.5-14.8 GHz² and 17.3-18.1 GHz in Regions 1 and 3, and 17.3-17.8 GHz in Region 2 (WRC-03)

(See Articles 9 and 11) (WRC-03)

TABLE OF CONTENTS

		Page
Article 1	General definitions	3
Article 2	Frequency bands	4
Article 2A	Use of the guardbands	4
Article 3	Execution of the provisions and associated Plans	5
Article 4	Procedures for modifications to the Region 2 feeder-link Plan or for additional uses in Regions 1 and 3	6
Article 5	Coordination, notification, examination and recording in the Master International Frequency Register of frequency assignments to feeder-link transmitting earth stations and receiving space stations in the fixed-satellite service	18
Article 6	Coordination, notification and recording in the Master International Frequency Register of frequency assignments to receiving terrestrial stations in Regions 1 and 3 in the bands 14.5-14.8 GHz and 17.7-18.1 GHz, and in Region 2 in the band 17.7-17.8 GHz, when frequency assignments to feederlink transmitting earth stations for the broadcasting-satellite service in conformity with the Regions 1 and 3 feeder-link Plan or the Region 2 feeder-link Plan or the Reg	24
	link Plan are involved	4 4

Note by the Secretariat: Reference to an Article with the number in roman is referring to an Article in this Appendix.

^{*} The expression "frequency assignment to a space station", wherever it appears in this Appendix, shall be understood to refer to a frequency assignment associated with a given orbital position. (WRC-03)

¹ The Regions 1 and 3 feeder-link List of additional uses is annexed to the Master International Frequency Register (see Resolution **542 (WRC-2000)****). (WRC-03)

^{**} Note by the Secretariat: This Resolution was abrogated by WRC-03.

² This use of the band 14.5-14.8 GHz is reserved for countries outside Europe.

		Page
Article 7	Coordination, notification and recording in the Master International Frequency Register of frequency assignments to stations in the fixed-satellite service (space-to-Earth) in Region 1 in the band 17.3-18.1 GHz and in Regions 2 and 3 in the band 17.7-18.1 GHz, to stations in the fixed-satellite service (Earth-to-space) in Region 2 in the band 17.8-18.1 GHz and to stations in the broadcasting-satellite service in Region 2 in the band 17.3-17.8 GHz when frequency assignments to feeder links for broadcasting-satellite stations in the 17.3-18.1 GHz band in Regions 1 and 3 or in the band 17.3-17.8 GHz in Region 2 are involved	25
Article 8	Miscellaneous provisions relating to the procedures	28
Article 9	Plan for feeder links for the broadcasting-satellite service in the fixed-satellite service in the frequency band 17.3-17.8 GHz in Region 2	29
Article 9A	Plan for feeder links for the broadcasting-satellite service in the fixed-satellite service in the frequency bands 14.5-14.8 GHz and 17.3-18.1 GHz in Regions 1 and 3	65
Article 10	Interference	93
Article 11	Period of validity of the provisions and associated Plans	93
ANNEXES		
Annex 1	Limits for determining whether a service of an administration is considered to be affected by a proposed modification to the Region 2 feeder-link Plan or by a proposed new or modified assignment in the Regions 1 and 3 feeder-link List or when it is necessary under this Appendix to seek the agreement of any other administration	93
Annex 2	Basic characteristics to be furnished in notices relating to feeder-link stations in the fixed-satellite service operating in the frequency bands 14.5-14.8 GHz and 17.3-18.1 GHz	96
Annex 3	Technical data used in establishing the provisions and associated Plans and Regions 1 and 3 feeder-link List, which should be used for their application	96
Annex 4	Criteria for sharing between services	136

ARTICLE 1 (REV.WRC-03)

General definitions

- 1 For the purposes of this Appendix, the following terms shall have the meanings defined below:
- 1.1 Regions 1 and 3 feeder-link Plan: The Plan for feeder links in the frequency bands 14.5-14.8 GHz³ and 17.3-18.1 GHz for the broadcasting-satellite service in Regions 1 and 3 contained in this Appendix.
- 1.2 Region 2 feeder-link Plan: The Plan for feeder links in the frequency band 17.3-17.8 GHz for the broadcasting-satellite service in Region 2 contained in this Appendix, together with any modifications resulting from the successful application of the procedure of Article 4.
- 1.3 Frequency assignment in conformity with the Plan:
- any frequency assignment for a receiving space station or transmitting earth station which appears in the Regions 1 and 3 feeder-link Plan; or
- any frequency assignment for a receiving space station or transmitting earth station which appears in the Region 2 feeder-link Plan or for which the procedure of Article 4 has been successfully applied.
- 1.4 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 (Geneva, 1983) (RARC Sat-R2).
- 1.5 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.
- 1.6 *1988 Conference*: Second Session of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It (Geneva, 1988), called in short WARC Orb-88.
- 1.7 1997 Conference: World Radiocommunication Conference (Geneva, 1997), called in short WRC-97.
- 1.8 2000 Conference: World Radiocommunication Conference (Istanbul, 2000), called in short WRC-2000.

³ This use of the band 14.5-14.8 GHz is reserved for countries outside Europe.

- 1.9 Additional use in Regions 1 and 3: For the application of the provisions of this Appendix, additional uses in Regions 1 and 3 are:
- a) use of assignments with characteristics different from those appearing in the Regions 1 and 3 feeder-link Plan and which are capable of causing more interference than the corresponding entries in that Plan;
- b) use of assignments in addition to those appearing in the Regions 1 and 3 feeder-link Plan.
- 1.10 Regions 1 and 3 feeder-link List of additional uses (hereafter called in short the "feeder-link List"): The list of assignments for additional uses in Regions 1 and 3 as established by WRC-2000 (see Resolution **542** (WRC-2000)*), as updated following the successful application of the procedure of § 4.1 of Article 4. (WRC-03)
- 1.11 Frequency assignment in conformity with the feeder-link List: Any frequency assignment which appears in the feeder-link List as updated following successful application of § 4.1 of Article 4. (WRC-03)
- 1.12 Broadcasting-satellite service (BSS) feeder link subject to one of the Plans: The BSS feeder-link subject to one of the Plans referred to in this Appendix is the BSS feeder link in the frequency bands 14.5-14.8 GHz and 17.3-18.1 GHz in Regions 1 and 3 and 17.3-17.8 GHz in Region 2. (WRC-03)

ARTICLE 2 (WRC-03)

Frequency bands

- 2.1 The provisions of this Appendix apply to the feeder-links in the fixed-satellite service (Earth-to-space) in the frequency bands 14.5-14.8 GHz and 17.3-18.1 GHz for the broadcasting-satellite service in Regions 1 and 3, and 17.3-17.z8 GHz for the broadcasting-satellite service in Region 2 and to other services to which these bands are allocated in Regions 1, 2 and 3 so far as their relationship to the fixed-satellite service (Earth-to-space) in these bands is concerned.
- 2.2 (SUP WRC-03)

ARTICLE 2A (REV.WRC-15)

Use of the guardbands

2A.1 The use of the guardbands defined in § 3.1 and 4.1 of Annex 3 to provide space operation functions in accordance with No. **1.23** in support of the operation of geostationary-satellite networks for the broadcasting-satellite service (BSS) feeder link is not subject to the application of Section I of Article **9**.

^{*} Note by the Secretariat: This Resolution was abrogated by WRC-03.

- 2A.1.1 Coordination between assignments intended to provide the space operation functions and assignments of the BSS feeder link subject to a Plan shall be effected using the provisions of Article 7.
- 2A.1.2 Coordination among assignments intended to provide the space operation functions and services not subject to a Plan shall be effected using the provisions of Nos. 9.7, 9.17, 9.17A, 9.18, and the associated provisions of Section II of Article 9, as appropriate.
- 2A.1.3 Coordination of modifications to the Region 2 feeder-link Plan or assignments to be included in the Regions 1 and 3 feeder-link List, with assignments intended to provide these functions shall be effected using § 4.1.1 *d*) of Article 4.
- 2A.1.4 Requests for the coordination referred to in § 2A.1.1, 2A.1.2 and 2A.1.3 shall be sent by the requesting administration to the Bureau, together with the appropriate information listed in Appendix 4.
- 2A.2 Any assignment intended to provide these functions in support of a geostationary-satellite network for the BSS feeder link shall be notified under Article 11 and brought into use within the following time-limits^{3bis}: (WRC-15)
- 2A.2.1 *a)* for the case where the associated BSS feeder-link assignments are contained in one of the initial Plans (Region 2 Plans incorporated in the Radio Regulations at WARC Orb-85 and Regions 1 and 3 Plan adopted at WRC-2000), within the regulatory time-limit referred to in § 4.1.3 or 4.2.6 of Article 4 from the date of receipt by the Bureau of the complete Appendix 4 data for those assignments intended to provide the space operation functions;
- 2A.2.2 b) for the case where the associated BSS feeder-link assignments have been submitted under § 4.1.3 or § 4.2.6 of Article 4 for entry in the Regions 1 and 3 List or a modification to the Region 2 Plan, within the regulatory time-limit referred to in § 4.1.3 or § 4.2.6 of Article 4 for those associated BSS feeder-link assignments;
- 2A.2.3 c) for the case where the associated BSS feeder-link assignments have already been brought into use in accordance with the Radio Regulations, within the regulatory time-limit referred to in § 4.1.3 and § 4.2.6 of Article 4 from the date of receipt by the Bureau of the complete Appendix 4 data for those assignments intended to provide these space operation functions.

ARTICLE 3 (REV.WRC-03)

Execution of the provisions and associated Plans

3.1 The Member States in Regions 1, 2 and 3 shall adopt, for their feeder-link space and earth stations in the fixed-satellite service (Earth-to-space) in the frequency bands referred to in this Appendix, the characteristics specified in the appropriate Regional Plan and the associated provisions.

³bis The time-limit is established at the time when the request is received under § 2A.1.4. (WRC-15)

- 3.2 The Member States shall not change the characteristics specified in the Region 1 and 3 feeder-link Plan or in the Region 2 feeder-link Plan, or bring into use assignments to receiving space stations or transmitting earth 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.
- 3.3 The procedures for the use of interim systems in Region 2 for feeder links in the fixed-satellite service for the bands covered by this Appendix are given in Resolution 42 (Rev.WRC-03)*. (WRC-03)
- 3.4 The Regions 1 and 3 feeder-link Plan is based on national coverage from the geostationary-satellite orbit. The associated procedures contained in this Appendix are intended to promote long-term flexibility of the Plan and to avoid monopolization of the planned bands and orbit by a country or a group of countries.

ARTICLE 4 (REV.WRC-15)

Procedures for modifications to the Region 2 feeder-link Plan or for additional uses in Regions 1 and 3

4.1 Provisions applicable to Regions 1 and 3

- 4.1.1 An administration proposing to include a new or modified assignment in the feeder-link List shall seek the agreement of those administrations whose services are considered to be affected, i.e. administrations.^{4, 5}
- a) of Regions 1 and 3 having a feeder-link frequency assignment in the fixed-satellite service (Earth-to-space) to a space station in the broadcasting-satellite service which is included in the Regions 1 and 3 feeder-link Plan with a necessary bandwidth, any portion of which falls within the necessary bandwidth of the proposed assignment; or
- b) of Regions 1 and 3 having a feeder-link frequency assignment included in the feeder-link List or for which complete Appendix 4 information has been received by the Radiocommunication Bureau in accordance with the provisions of § 4.1.3, and any portion of which falls within the necessary bandwidth of the proposed assignment; or

^{*} Note by the Secretariat: This Resolution was revised by WRC-12 and WRC-15.

⁴ Agreement with administrations having a frequency assignment in the bands 14.5-14.8 GHz or 17.7-18.1 GHz to a terrestrial station, or having a frequency assignment in the band 17.7-18.1 GHz to an earth station in the fixed-satellite service (space-to-Earth), or having a frequency assignment in the band 17.3-17.8 GHz in the broadcasting-satellite service shall be sought under No. 9.17, No. 9.17A or No. 9.19, respectively.

⁵ Coordination under Nos. **9.17** or **9.17A** is not required for an earth station of an administration on the territory of which this earth station is located and for which the procedures of former § 4.2.1.2 and 4.2.1.3 of Appendix **30A** (WRC-97) have been successfully applied by that administration before 3 June 2000 in respect of terrestrial stations or earth stations operating in the opposite direction of transmission. (WRC-03)

- c) of Region 2 having a feeder-link frequency assignment in the fixed-satellite service (Earth-to-space) to a space station in the broadcasting-satellite service which is in conformity with the Region 2 feeder-link Plan, or in respect of which proposed modifications to that Plan have already been received by the Bureau in accordance with the provisions of § 4.2.6 with a necessary bandwidth, any portion of which falls within the necessary bandwidth of the proposed assignment; or
- having a feeder-link frequency assignment in the frequency band 17.8-18.1 GHz in Region 2 in the fixed-satellite service (Earth-to-space) to a space station in the broadcasting-satellite service, or a frequency assignment in the frequency band 14.5-14.75 GHz in countries listed in Resolution 163 (WRC-15) and in the frequency band 14.5-14.8 GHz in countries listed in Resolution 164 (WRC-15), in the fixed-satellite service (Earth-to-space) not subject to a Plan, which is recorded in the Master Register or which has been coordinated or is being coordinated under the provisions of No. 9.7, or under § 7.1 of Article 7, with a necessary bandwidth, any portion of which falls within the necessary bandwidth of the proposed assignment. (WRC-15)
- 4.1.2 The services of an administration are considered to be affected when the limits shown in Annex 1 are exceeded.
- 4.1.3 An administration, or one⁶ acting on behalf of a group of named administrations, intending to include a new or modified assignment in the feeder-link List shall send to the Bureau, not earlier than eight years but preferably not later than two years before the date on which the assignment is to be brought into use, the relevant information listed in Appendix 4. An assignment in the feeder-link List shall lapse if it is not brought into use within eight years after the date of receipt by the Bureau of the relevant complete information. A proposed new or modified assignment not included in the List within eight years after the date of receipt by the Bureau of the relevant complete information⁷ shall also lapse. (WRC-07)
- 4.1.3*bis* The regulatory time-limit for bringing into use an assignment in the List may be extended once by not more than three years due to launch failure in the following cases:
- the destruction of the satellite intended to bring the assignment into use; or
- the destruction of the satellite launched to replace an already operating satellite which is intended to be relocated to bring another assignment into use; or
- the satellite is launched, but fails to reach its assigned orbital location.

⁶ Whenever, under this provision, an administration acts on behalf of a group of named administrations, all members of that group retain the right to respond in respect of their own networds or systems. (WRC-03)

⁷ The provisions of Resolution **533 (Rev.WRC-2000)*** apply. (WRC-03)

^{*} Note by the Secretariat: This Resolution was abrogated by WRC-12.

For this extension to be granted, the launch failure must have occurred at least five years after the date of receipt of the complete Appendix 4 data. In no case shall the period of the extension of the regulatory time-limit exceed the difference in time between the three-year period and the period remaining from the date of the launch failure to the end of the regulatory time-limit. In order to take advantage of this extension, the administration shall have, within one month of the launch failure or one month after 5 July 2003, whichever comes later, notified the Bureau in writing of such failure, and shall also provide the following information to the Bureau before the end of the regulatory time-limit of § 4.1.3:

- date of launch failure;
- due diligence information as required in Resolution 49 (Rev.WRC-15) for the assignment with respect to the satellite that suffered the launch failure, if that information has not already been provided.
- If, 11 months after the request for extension, the administration has not provided to the Bureau updated Resolution **49** (**Rev.WRC-15**) information, the Bureau shall promptly send a reminder to the notifying administration. If, within one year of the request for extension, the administration has not provided to the Bureau updated Resolution **49** (**Rev.WRC-15**) information for the new satellite under procurement, the related frequency assignments shall lapse. (WRC-15)
- 4.1.4 If the information received by the Bureau under § 4.1.3 is found to be incomplete, the Bureau shall immediately seek from the administration concerned any clarification required and information not provided.
- 4.1.5 The Bureau shall determine, on the basis of Annex 1, the administrations whose frequency assignments are considered to be affected. The Bureau shall publish⁹, in a Special Section of its International Frequency Information Circular (BR IFIC), the complete information received under § 4.1.3, together with the names of the affected administrations, the corresponding fixed-satellite service networks, and the corresponding feeder-links to broadcasting-satellite service assignments, as appropriate. The Bureau shall immediately send a telegram/fax to the administration proposing the assignment, drawing its attention to the information contained in the relevant BR IFIC. (WRC-07)
- 4.1.6 The Bureau shall send a telegram/fax to the administrations listed in the Special Section of the BR IFIC, drawing their attention to the information it contains. (WRC-07)
- 4.1.7 An administration which considers that it should have been identified in the publication referred to under § 4.1.5 above shall, within four months of the date of publication of its relevant BR IFIC, and giving the technical reasons for so doing, request the Bureau to include its name in the publication. The Bureau shall study this information on the basis of Annex 1 and shall inform both administrations of its conclusions. Should the Bureau agree to the administration's request, it shall publish an addendum to the publication under § 4.1.5.

⁸ For a launch failure which occurred before 5 July 2003, the maximum extension of three years shall apply as from 5 July 2003. (WRC-03)

⁹ If the payments are not received in accordance with the provisions of Council Decision 482, as amended, on the implementation of cost recovery for satellite network filings, the Bureau shall cancel the publication, after informing the administration concerned. The Bureau shall inform all administrations of such action and that the network specified in the publication in question no longer has to be taken into consideration by the Bureau and other administrations. The Bureau shall send a reminder to the notifying administration not later than two months prior to the deadline for the payment in accordance with the above-mentioned Council Decision 482 unless the payment has already been received. (WRC-07)

- 4.1.7bis Except as provided under § 4.1.18 to 4.1.20, any inclusion of a new or modified frequency assignment in the Regions 1 and 3 List 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. (WRC-03)
- 4.1.8 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 Bureau of such requests.
- 4.1.9 Comments from administrations identified in the publication referred to under § 4.1.5 above shall be sent to the Bureau and to the administration proposing the modification. (WRC-15)
- 4.1.10 An administration that has not notified its agreement either to the administration seeking agreement or to the Bureau within a period of four months following the date of the BR IFIC referred to in § 4.1.5 shall be deemed to have not agreed to the proposed assignment unless the provisions of § 4.1.10a to 4.1.10d and § 4.1.21 are applied. This time-limit may be extended:
- for an administration that has requested additional information under § 4.1.8, by up to three months, or
- for an administration that has requested the assistance of the Bureau under § 4.1.21, by up to three months following the date at which the Bureau communicated the result of its action. (WRC-15)
- 4.1.10*bis* Thirty days prior to the expiry of the same four-month period, the Bureau shall dispatch a reminder telegram or fax to an administration which has not made its comments under § 4.1.10, bringing the matter to its attention. (WRC-03)
- 4.1.10ter (SUP WRC-15)
- 4.1.10a After the same time period as specified in § 4.1.10, the notifying administration may, pursuant to § 4.1.21, request the Bureau to assist in respect of an administration which has not replied within this time period. (WRC-15)
- 4.1.10b The Bureau, acting under § 4.1.10a, shall send a reminder to the administration which has not replied, together with the results of its previously published compatibility analysis, containing the change in the values referred to in paragraph 4 of Annex 1 to Appendix **30A**, requesting a decision. (WRC-15)
- 4.1.10c Fifteen days before the expiry of the 30-day period referred to in § 4.1.10d, the Bureau shall send a reminder to the above-mentioned administration drawing its attention to the consequence of no reply. (WRC-15)
- 4.1.10d If no decision is communicated to the Bureau within 30 days after the date of dispatch of the reminder under § 4.1.10b, it shall be deemed that the administration which has not given a decision has agreed to the proposed assignment. (WRC-15)
- 4.1.11 If, in seeking agreement, an administration modifies its initial proposal, it shall again apply the provisions of § 4.1 and the subsequent procedure in cases where:
- the assignments of any other administration received by the Bureau in accordance with § 4.1.3 or § 4.2.6, or § 2A.1.4 of Article 2A, or § 7.1 of Article 7, or No. 9.7 before this modified proposal is received under § 4.1.12; or
- the assignments of any other administration contained in the Plans or the Lists,

are considered as being affected and receive more interference as a result of the modifications than that produced by the initial proposal. (WRC-15)

- 4.1.12 If agreement has been reached with the administrations identified in the publication referred to under § 4.1.5 above, the administration proposing the new or modified assignment may continue with the appropriate procedure in Article 5 and shall inform the Bureau, indicating the final characteristics of the frequency assignment together with the names of the administrations with which agreement has been reached. (WRC-15)
- 4.1.12*bis* In application of § 4.1.12, an administration may indicate the changes to the information communicated to the Bureau under § 4.1.3 and published under § 4.1.5. (WRC-03)
- 4.1.13 The agreement of the administrations affected may also be obtained in accordance with this Article, for a specified period. When this specific period of agreement expires for an assignment in the List, the assignment in question shall be maintained in the List until the end of the period referred to in § 4.1.3 above. After that date this assignment shall lapse unless the agreement of the administrations affected is renewed. (WRC-03)
- 4.1.14 Where the proposed assignment involves developing countries, administrations shall seek all practicable solutions conducive to the economical development of the broadcasting-satellite systems of these countries.
- 4.1.15 The Bureau shall publish 10 in a Special Section of its BR IFIC the information received under \S 4.1.12, together with the names of any administrations with which the provisions of this Article have been successfully applied. The frequency assignment concerned shall be included in the feeder-link List. (WRC-03)
- 4.1.16 In case of disagreement on the part of an administration whose agreement has been sought, the requesting administration 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.
- 4.1.17 If no agreement is reached between the administrations concerned, the Bureau shall carry out any study that may be requested by either one of these administrations; the Bureau 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.

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¹⁰ If the payments are not received in accordance with the provisions of Council Decision 482, as amended, on the implementation of cost recovery for satellite network filings, the Bureau shall cancel the publication, after informing the administration concerned. The Bureau shall inform all administrations of such action and that the network specified in the publication in question no longer has to be taken into consideration by the Bureau and other administrations. The Bureau shall send a reminder to the notifying administration not later than two months prior to the deadline for the payment in accordance with the above-mentioned Council Decision 482 unless the payment has already been received. (WRC-07)

- 4.1.18 If, in spite of the application of § 4.1.16 and 4.1.17, there is still continuing disagreement and the assignment which was the basis of the disagreement is not an assignment in the Regions 1 and 3 Plan, or in the Region 2 Plan or for which the procedure of § 4.2 has been initiated, and if the notifying administration insists that the proposed assignment be included in the Regions 1 and 3 feeder-link List, the Bureau shall provisionally enter the assignment in the Regions 1 and 3 feeder-link List with an indication of those administrations whose assignments were the basis of the disagreement; however, the entry shall be changed from provisional to definitive recording in the feeder-link List only if the Bureau is informed that the new assignment in the Regions 1 and 3 feeder-link List has been in use, together with the assignment which was the basis for the disagreement, for at least four months without any complaint of harmful interference being made. (WRC-03)
- 4.1.18*bis* When requesting the application of § 4.1.18, the notifying administration shall undertake to meet the requirements of § 4.1.20 and provide to the administration in respect of which § 4.1.18 is applied, with a copy to the Bureau, a description of the steps by which it undertakes to meet these requirements. Once an assignment is entered in the feeder-link List provisionally under the provisions of § 4.1.18, the calculation of the equivalent protection margin (EPM)¹¹ of an assignment in the Regions 1 and 3 feeder-link List or for which the procedure of Article 4 has been initiated and which was the basis for the disagreement shall not take into account interference produced by the assignment for which the provisions of § 4.1.18 have been applied. (WRC-03)
- 4.1.19 Should the assignments that were the basis of the disagreement not be brought into use within the period specified in No. **11.44** (for non-planned services), or in § 4.1 (for assignments in the feeder-link List or having initiated the procedure under § 4.1), as appropriate, then the status of the assignment in the feeder-link List shall be reviewed accordingly. (WRC-03)
- 4.1.20 Should harmful interference be caused by an assignment included in the feeder-link List under § 4.1.18 to any recorded assignment in the Master Register which was the basis of the disagreement, the administration using the frequency assignment included in the feeder-link List under § 4.1.18 shall, upon receipt of advice thereof, immediately eliminate this harmful interference. (WRC-03)
- 4.1.21 An administration may, at any stage in the procedure described, or before applying it, request the assistance of the Bureau.
- 4.1.22 The relevant provisions of Article 5 shall be applied when frequency assignments are notified to the Bureau.
- 4.1.23 When a frequency assignment included in the feeder-link List is no longer required, the administration concerned shall immediately so inform the Bureau. The Bureau shall publish this information in a Special Section of its BR IFIC and delete the assignment from the feeder-link List. (WRC-03)

¹¹ For the definition of the EPM, see § 1.7 of Annex 3. (WRC-03)

- 4.1.24 No assignment in the feeder-link List shall have a period of operation exceeding 15 years, counted from the date of bringing into use, or 2 June 2000, whichever is later. Upon request by the responsible administration received by the Bureau at the latest three years before the expiry of this period, this period may be extended by up to 15 years, on condition that all the characteristics of the assignment remain unchanged. (WRC-03)
- 4.1.25 Where an administration already having included in the feeder-link List two assignments (not including those systems notified on behalf of a group of named administrations and included in the feeder-link List by WRC-2000) in the same channel and covering the same service area, proposes to include in the feeder-link List a new assignment in the same channel over this same service area, it shall apply the following in respect of another administration which has no assignment in the feeder-link List in the same channel and which proposes to include in the feeder-link List a new assignment:
- a) if the agreement of the former administration is required following the application of § 4.1 by the latter administration, in order to protect the new assignment proposed by the former administration from interference caused by the assignment proposed by the latter administration, both administrations shall make every possible effort to resolve the difficulties by means of mutually acceptable adjustments to their networks;
- b) in case of continuing disagreement, and if the former administration has not communicated to the Bureau the information specified in Annex 2 to Resolution 49 (Rev.WRC-15), this administration shall be deemed to have given its agreement to inclusion in the feeder-link List of the assignment of the latter administration. (WRC-15)
- 4.1.26 The procedure of this Article may be applied by the administration of a new ITU Member State in order to include new assignments in the feeder-link List. Upon completion of the procedure, the next world radiocommunication conference may be requested to consider, among the assignments included in the feeder-link List after the successful completion of this procedure, the inclusion in the Regions 1 and 3 feeder-link Plan of up to 10 channels (for Region 1) and up to 12 channels (for Region 3), over the national territory of the new Member State. (WRC-03)
- 4.1.27 When an administration has successfully applied this procedure and received all the agreements 12 required to include in the feeder-link List assignments over its national territory, at an orbital location and/or in channels different from those appearing in the Regions 1 and 3 feeder-link Plan for its country, it may request the next world radiocommunication conference to consider the inclusion in this Plan of up to 10 (for Region 1) and up to 12 (for Region 3) of these assignments, in replacement of its assignments appearing in this Plan. (WRC-03)
- 4.1.27 bis Should the assignments mentioned in § 4.1.26 and 4.1.27 over the national territory of the administration not be brought into use within the regulatory time-limit mentioned in § 4.1.3, they would be retained in the List until the end of the World Radiocommunication Conference following immediately after the successful completion of procedure referred to in § 4.1.26 and 4.1.27, respectively and thereafter they shall be removed from the List. (WRC-03)

¹² In such a case, § 4.1.18 does not apply.

- 4.1.28 The feeder-link List, as updated, shall be published periodically by the Bureau. (WRC-03)
- 4.1.29 New or modified assignments in the feeder-link List shall be limited to digital modulation. (WRC-03)

4.2 Provisions applicable to Region 2

- 4.2.1 When an administration intends to make a modification to the Region 2 feeder-link Plan, i.e.:
- a) to modify the characteristics of any of its frequency assignments in the fixed-satellite service which are shown in the Region 2 feeder-link Plan, or for which the procedure in this Article has been successfully applied, whether or not the station has been brought into use; or
- to include in the Region 2 feeder-link Plan a new frequency assignment in the fixedsatellite 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 Bureau (see Article 5 and Resolution 42 (Rev.WRC-03)*). (WRC-03)

- 4.2.2 An administration proposing a modification to the characteristics of a frequency assignment in conformity with the Region 2 feeder-link Plan, or the inclusion of a new frequency assignment in that Plan, shall seek the agreement of those administrations ^{13, 14, 15}:
- a) having an assignment for feeder-links in the fixed-satellite service (Earth-to-space) which is in conformity with the Regions 1 and 3 feeder-link Plan with the necessary bandwidth, any portion of which falls within the necessary bandwidth of the proposed assignment; or
- b) of Regions 1 and 3 having a feeder-link frequency assignment included in the feeder-link List or for which complete Appendix 4 information has been received by the Bureau in accordance with the provisions of § 4.1.3, and any portion of which falls within the necessary bandwidth of the proposed assignment; or
- c) 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 Region 2 feeder-link Plan or in respect of which proposed modifications to this Plan have been received by the Bureau in accordance with the provisions of § 4.2.6;
- d) which are considered affected. (WRC-03)

^{*} Note by the Secretariat: This Resolution was revised by WRC-12 and WRC-15.

¹³ Agreement with administrations having a frequency assignment in the bands 17.7-17.8 GHz to a terrestrial station or to an earth station in the fixed-satellite service (space-to-Earth) shall be sought under No. **9.17** or No. **9.17**A, respectively.

¹⁴ Coordination under No. **9.17** or **9.17A** is not required for an earth station of an administration on the territory of which this earth station is located and for which the procedures of former § 4.2.3.2 and 4.2.3.3 of Appendix **30A (WRC-97)** have been successfully applied by that administration before 3 June 2000 in respect of terrestrial stations or earth stations operating in the opposite direction of transmission. (WRC-03)

¹⁵ Agreement with administrations having a frequency assignment in the band 17.3-17.8 GHz to an earth station in the broadcasting-satellite service shall be sought under No. 9.19.

- 4.2.3 (Not used.)
- 4.2.4 The services of an administration are considered to be affected when the limits shown in Annex 1 are exceeded.
- 4.2.5 The agreement referred to in § 4.2.2 is not required when an administration proposes to bring into use, with characteristics appearing in the Region 2 feeder-link Plan, a fixed feeder-link earth station in the band 17.3-17.8 GHz or a transportable feeder-link earth station in the band 17.3-17.7 GHz. Administrations may communicate to the Bureau the characteristics of such earth stations for inclusion in this Plan.
- 4.2.6 An administration, or one¹⁶ acting on behalf of a group of named administrations, intending to make a modification to the Region 2 feeder-link Plan shall send to the Bureau, not earlier than eight years but preferably not later than two years before the date on which the assignment is to be brought into use, the relevant information listed in Appendix 4. Modifications to that Plan shall lapse if the assignment is not brought into use within eight years after the date of receipt by the Bureau of the relevant complete information¹⁷. A request for a modification that has not been included in that Plan within eight years after the date of receipt by the Bureau of the relevant complete information¹⁷ shall also lapse. (WRC-07)
- 4.2.6bis The regulatory time-limit for bringing into use of an assignment in the Region 2 Plan obtained through application of § 4.2 may be extended once by no more than three years due to launch failure in the following cases:
- the destruction of the satellite intended to bring the assignment into use; or
- the destruction of the satellite launched to replace an already operating satellite which is intended to be relocated to bring another assignment into use; or
- the satellite is launched, but fails to reach its assigned orbital location.

For this extension to be granted, the launch failure must have occurred at least five years after the date of receipt of the complete Appendix 4 data. In no case shall the period of the extension of the regulatory time-limit exceed the difference in time between the three-year period and the period remaining from the date of the launch failure to the end of the regulatory time-limit ¹⁸. In order to take advantage of this extension, the administration shall have, within one month of the launch failure or one month after 5 July 2003, whichever comes later, notified the Bureau in writing of such failure, and shall also provide the following information to the Bureau before the end of the regulatory time-limit of § 4.2.6:

- date of launch failure;
- due diligence information as required in Resolution 49 (Rev.WRC-15) for the assignment with respect to the satellite that suffered the launch failure, if that information has not already been provided.

¹⁶ Whenever, under this provision, an administration acts on behalf of a group of named administrations, all members of that group retain the right to respond in respect of their own networks or systems. (WRC-03)

¹⁷ The provisions of Resolution **533 (Rev.WRC-2000)*** apply. (WRC-03)

^{*} Note by the Secretariat: This Resolution was abrogated by WRC-12.

¹⁸ For a launch failure which occurred before 5 July 2003, the maximum extension of three years shall apply as from 5 July 2003. (WRC-03)

- If, 11 months after the request for extension, the administration has not provided to the Bureau updated Resolution **49** (**Rev.WRC-15**) information, the Bureau shall promptly send a reminder to the notifying administration. If, within one year of the request for extension, the administration has not provided to the Bureau updated Resolution **49** (**Rev.WRC-15**) information for the new satellite under procurement, the related frequency assignments shall lapse. (WRC-15)
- 4.2.7 If the information received by the Bureau under § 4.2.6 is found to be incomplete, the Bureau shall immediately seek from the administration concerned any clarification required and information not provided.
- 4.2.8 The Bureau shall determine, on the basis of Annex 1, the administrations whose frequency assignments are considered to be affected within the meaning of § 4.2.2. The Bureau shall publish¹⁹, in a Special Section of its BR IFIC, the complete information received under § 4.2.6, together with the names of the affected administrations, the corresponding fixed-satellite service networks, and the corresponding feeder links to broadcasting-satellite service assignments, as appropriate. The Bureau shall immediately send a telegram/fax to the administration proposing the modification to the Region 2 feeder-link Plan, drawing its attention to the information contained in the relevant BR IFIC. (WRC-07)
- 4.2.9 The Bureau shall send a telegram/fax to the administrations listed in the Special Section of its BR IFIC, drawing their attention to the information it contains. (WRC-07)
- 4.2.10 An administration which considers that it should have been included in the publication referred to under § 4.2.8 above shall, within four months of the date of publication in the relevant BR IFIC, and giving the technical reasons for so doing, request the Bureau to include its name in the publication. The Bureau shall study this information on the basis of Annex 1 and shall inform both administrations of its conclusions. Should the Bureau agree to the administration's request, it shall publish an addendum to the publication under § 4.2.8. (WRC-07)
- 4.2.11 Except as provided under § 4.2.21A to 4.2.21D, any modification to a frequency assignment which is in conformity with the Region 2 feeder-link 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 affected administrations. (WRC-03)
- 4.2.12 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 Bureau of such requests.
- 4.2.13 Comments from administrations on the information published pursuant to § 4.2.8 should be sent either directly to the administration proposing the modification or through the Bureau. In any event, the Bureau shall be informed that comments have been made.

¹⁹ If the payments are not received in accordance with the provisions of Council Decision 482, as amended, on the implementation of cost recovery for satellite network filings, the Bureau shall cancel the publication, after informing the administration concerned. The Bureau shall inform all administrations of such action and that the network specified in the publication in question no longer has to be taken into consideration by the Bureau and other administrations. The Bureau shall send a reminder to the notifying administration not later than two months prior to the deadline for the payment in accordance with the above-mentioned Council Decision 482 unless the payment has already been received. (WRC-07)

- 4.2.14 An administration which has not notified its comments either to the administration seeking agreement or to the Bureau within a period of four months following the date of the BR IFIC referred to in § 4.2.8 shall be deemed 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 § 4.2.12 or for an administration which has requested the assistance of the Bureau under § 4.2.22. In the latter case, the Bureau shall inform the administrations concerned of this request.
- 4.2.14*bis* Thirty days prior to the expiry of the same four-month period the Bureau shall dispatch a reminder telegram or fax to an administration which has not made its comments under § 4.2.14, bringing the matter to its attention. (WRC-03)
- 4.2.14ter After expiry of the deadline for comments in respect of the proposed assignment, the Bureau shall, according to its records, publish a Special Section, indicating the list of administrations whose agreements are required for completion of the procedure of Article 4. (WRC-03)
- 4.2.15 If, in seeking agreement, an administration modifies its initial proposal, it shall again apply the provisions of § 4.2 and the consequent procedure with respect to any other administration whose services might be affected as a result of modifications to the initial proposal.
- 4.2.16 If no comments have been received on the expiry of the periods specified in § 4.2.14, 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 so inform the Bureau, indicating the final characteristics of the frequency assignment together with the names of the administrations with which agreement has been reached.
- 4.2.16bis In application of § 4.2.16, an administration may indicate the changes to the information communicated to the Bureau under § 4.2.6 and published under § 4.2.8. (WRC-03)
- 4.2.17 The agreement of the administrations affected may also be obtained in accordance with this Article, for a specified period. When this specific period of agreement expires for an assignment in the Plan, the assignment in question shall be maintained in the Plan until the end of the period referred to in § 4.2.6 above. After that date this assignment in the Plan shall lapse unless the agreement of the administrations affected is renewed. (WRC-03)
- 4.2.18 When the proposed modification to the Region 2 feeder-link Plan involves developing countries, administrations shall seek all practicable solutions conducive to the economical development of the broadcasting-satellite systems of these countries.
- 4.2.19 The Bureau shall publish 20 in a Special Section of its BR IFIC the information received under \S 4.2.16 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 Region 2 feeder-link Plan and will be considered as a frequency assignment in conformity with that Plan. (WRC-03)

20

²⁰ If the payments are not received in accordance with the provisions of Council Decision 482, as amended, on the implementation of cost recovery for satellite network filings, the Bureau shall cancel the publication, after informing the administration concerned. The Bureau shall inform all administrations of such action and that the network specified in the publication in question no longer has to be taken into consideration by the Bureau and other administrations. The Bureau shall send a reminder to the notifying administration not later than two months prior to the deadline for the payment in accordance with the above-mentioned Council Decision 482 unless the payment has already been received. (WRC-07)

- 4.2.20 When an administration proposing to modify the characteristics of a frequency assignment or to make a new frequency assignment receives notice of disagreement on the part of 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.
- 4.2.21 If no agreement is reached between the administrations concerned, the Bureau shall carry out any study that may be requested by these administrations; the Bureau 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.
- 4.2.21A If, in spite of the application of § 4.2.20 and 4.2.21, there is still continuing disagreement and the assignment which was the basis of the disagreement is not an assignment in the Region 2 feeder-link Plan, or in the Regions 1 and 3 feeder-link Plan or List, or for which the procedure of § 4.1 or 4.2 has been initiated, and if the notifying administration insists that the proposed assignment be included in the Region 2 feeder-link Plan, the Bureau shall provisionally enter the assignment in the Region 2 feeder-link Plan with an indication of those administrations whose assignments were the basis of the disagreement; however, the entry shall be changed from provisional to definitive recording in the Region 2 feeder-link Plan only if the Bureau is informed that the new or modified assignment in the Region 2 feeder-link Plan has been in use, together with the assignment which was the basis for the disagreement, for at least four months without any complaint of harmful interference being made. (WRC-03)
- 4.2.21B When requesting the application of § 4.2.21A, the notifying administration shall undertake to meet the requirements of § 4.2.21D and provide to the administration in respect of which § 4.2.21A has been applied, with a copy to the Bureau, a description of the steps by which it undertakes to meet these requirements. (WRC-03)
- 4.2.21C Should the assignments that were the basis of the disagreement not be brought into use within the period specified in No. 11.44, the status of the assignment in the Region 2 feeder-link Plan shall be reviewed accordingly. (WRC-03)
- 4.2.21D Should harmful interference be caused by an assignment included in the Region 2 feeder-link Plan under § 4.2.21A to any recorded assignment in the Master Register which was the basis of the disagreement, the administration using the frequency assignment included in the Region 2 feeder-link Plan under § 4.2.21A shall, upon receipt of advice thereof, immediately eliminate this harmful interference. (WRC-03)
- 4.2.22 An administration may at any stage in the procedure described, or before applying it, request the assistance of the Bureau.
- 4.2.23 The relevant provisions of Article 5 shall be applied when frequency assignments are notified to the Bureau.

4.2.24 Cancellation of frequency assignments

When a frequency assignment in conformity with the Region 2 feeder-link Plan is no longer required, whether or not as a result of a modification, the administration concerned shall immediately so inform the Bureau. The Bureau shall publish this information in a Special Section of its BR IFIC and delete the assignment from the Region 2 feeder-link Plan.

4.2.25 Master copy of the Region 2 feeder-link Plan

- 4.2.25.1 The Bureau shall maintain an up-to-date master copy of the Region 2 feeder-link Plan, including the overall equivalent protection margins of each assignment, taking account of the application of the procedure set out in this Article. This master copy shall contain the overall equivalent protection margins derived from that Plan as established by the 1983 Conference and those derived from all modifications to that Plan as a result of the successful completion of the modification procedure set out in this Article.
- 4.2.25.2 An up-to-date version of the Region 2 feeder-link Plan shall be published by the Secretary-General when justified by the circumstances.

ARTICLE 5 (REV.WRC-15)

Coordination, notification, examination and recording in the Master International Frequency Register of frequency assignments to feeder-link transmitting earth stations and receiving space stations in the fixed-satellite service^{21, 22} (WRC-07)

5.1 Coordination and notification

- 5.1.1 When an administration wishes to determine whether it is possible to use, at a given location, an amount of power control which is in excess of that contained in column 12 of the Regions 1 and 3 feeder-link Plan, it shall request the Bureau to determine the amount of permissible power control (not to exceed 10 dB) from that given location using the procedure contained in § 3.11 of Annex 3.
- 5.1.2 Whenever an administration²³ intends to bring into use a frequency assignment to a transmitting earth station or receiving space station in the fixed-satellite service in the bands between 14.5 GHz and 14.8 GHz and between 17.3 GHz and 18.1 GHz in Regions 1 and 3, and between 17.3 GHz and 17.8 GHz in Region 2, it shall notify this frequency assignment to the Bureau. For this purpose, the notifying administration shall apply the following provisions. (WRC-03)

²¹ Notification of assignments to transmitting feeder-link earth stations included in the Region 2 feeder-link Plan after 2 June 2000, or included in the feeder-link List, following successful application of Article 4, shall be effected applying the provisions of Article 11 following completion of the procedure of Article 9. (WRC-03)

²² If the payments are not received in accordance with the provisions of Council Decision 482, as amended, on the implementation of cost recovery for satellite network filings, the Bureau shall cancel the publication specified in § 5.1.10 and the corresponding entries in the Master Register under § 5.2.2, 5.2.2.1 or 5.2.2.2, as appropriate, and the corresponding entries included in the Plan on and after 3 June 2000 or in the List, as appropriate, after informing the administration concerned. The Bureau shall inform all administrations of such action. The Bureau shall send a reminder to the notifying administration not later than two months prior to the deadline for the payment in accordance with the above-mentioned Council Decision 482 unless the payment has already been received. See also Resolution 905 (WRC-07)*. (WRC-07)

^{*} Note by the Secretariat: This Resolution was abrogated by WRC-12.

²³ A frequency assignment to a space station or typical earth station in the satellite network may be notified by one administration acting on behalf of a group of named administrations. Any further notice (modification or deletion) relating to that assignment shall, in the absence of information to the contrary, be regarded as having been submitted on behalf of the entire group. (WRC-03)

- 5.1.2bis Frequency assignments relating to a number of earth stations may be notified in the form of the characteristics of a typical earth station and the intended geographical area of operation. Individual notices of frequency assignments are however necessary in the case of earth stations whose coordination area includes all or part of the territory of another administration. (WRC-03)
- 5.1.3 Before an administration in Region 1 or 3 notifies to the Bureau or brings into use any frequency assignment to a specific transmitting feeder-link earth station in the bands 14.5-14.8 GHz and 17.7-18.1 GHz with an e.i.r.p. greater than the sum of the values specified in columns 11 and 12 of the Regions 1 and 3 feeder-link Plan, it shall effect coordination of this assignment with each administration whose territory lies wholly or partly within the coordination area of the planned earth station using the method detailed in Appendix 7. (WRC-03)
- 5.1.4 Before an administration in Region 1 or 3 notifies to the Bureau or brings into use any frequency assignment to a specific transmitting feeder-link earth station in the bands 14.5-14.8 GHz and 17.7-18.1 GHz, it shall effect coordination of this assignment with each administration whose territory lies wholly or partly within the coordination area of the planned earth station, using the method detailed in Appendix 7, in respect of notices concerning stations of the mobile and fixed services in the bands 14.5-14.8 GHz and 17.7-18.1 GHz and of the fixed-satellite service (space-to-Earth) in the band 17.7-18.1 GHz received by the Bureau prior to 3 June 2000 for recording in the International Master Frequency Register (Master Register) and subsequently recorded with a favourable finding²⁴. (WRC-03)
- 5.1.5 If an administration with which coordination is sought under § 5.1.4 does not respond within three months, the administration intending to bring into use a frequency assignment to a feeder-link earth station shall notify this frequency assignment in accordance with § 5.1.2 above.
- 5.1.6 For any notification under § 5.1.2, an individual notice for each frequency assignment shall be drawn up as prescribed in Appendix 4, 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.
- 5.1.6*bis* In application of § 5.1.2, an administration may identify the characteristics of assignments in the Plans or the List as notification and send to the Bureau the changes thereto. (WRC-03)
- 5.1.7 Each notice must reach the Bureau 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 Bureau not later than three months before that date.

²⁴ In cases where assignments from the WRC-97 Plans without Remarks were included in the WRC-2000 Regions 1 and 3 feeder-link Plan without change, or with conversion of modulation from analogue to digital, or a change from normal roll-off to fast roll-off antenna pattern, the coordination status afforded by the WRC-97 Plans shall be preserved.

In cases where assignments from the WRC-97 Plans with Remarks were included in the WRC-2000 Regions 1 and 3 feeder-link Plan without change, or with conversion of modulation from analogue to digital, or a change from normal roll-off to fast roll-off antenna pattern, the compatibility shall be reassessed using the revised criteria and methodology in force and the Remarks of the WRC-97 Plans assignment shall either be maintained or reduced on the basis of the results of this analysis. (WRC-03)

- 5.1.8 Any frequency assignment the notice of which reaches the Bureau after the applicable period specified in § 5.1.7 shall, where it is to be recorded, bear a remark in the Master Register to indicate that it is not in conformity with § 5.1.7.
- 5.1.9 Any notice made under § 5.1.2 which does not contain the characteristics specified in Appendix 4 shall be returned by the Bureau immediately by airmail to the notifying administration with the relevant reasons.
- 5.1.10 Upon receipt of a complete notice, the Bureau shall include its particulars, with the date of receipt, in its BR IFIC which shall contain the particulars of all such notices received since the publication of the previous Circular.
- 5.1.11 The Circular shall constitute the acknowledgements to the notifying administration of the receipt of a complete notice.
- 5.1.12 Complete notices shall be considered by the Bureau in order of receipt. The Bureau shall not postpone its finding unless it lacks sufficient data to reach a decision; moreover, the Bureau shall not act upon any notice which has a technical bearing on an earlier notice still under consideration by the Bureau until it has reached a finding with respect to such earlier notice.

5.2 Examination and recording

- 5.2.1 The Bureau 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), d), e) and f) below);
 and
- b) with respect to its conformity with the appropriate Regional feeder-link Plan or the Regions 1 and 3 feeder-link List, as appropriate; or (WRC-03)
- with respect to the coordination requirements specified in the Remarks column of Article 9 or Article 9A; or
- d) with respect to its conformity with the appropriate Regional feeder-link Plan or the Regions 1 and 3 feeder-link List, however, having characteristics differing from those in this Plan or in the Regions 1 and 3 feeder-link List 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 or in the Regions 1 and 3 feeder-link List,
 - use of other modulating signals in accordance with the provisions of § 3.1.3 to Annex 5 of Appendix 30,
 - in the case of Region 2, use of an orbital position under the conditions specified in § B of Annex 7 to Appendix 30,

- in the case of Regions 1 and 3, use of the assignment for transmissions in the fixed-satellite service (Earth-to-space) other than for feeder links to the broadcasting-satellite service provided that such transmissions do not cause more interference, or require more protection from interference, than the feeder-link transmissions operating in conformity with the Plan or the List, as appropriate; (WRC-03)
- e) for Region 2, with respect to its conformity with the provisions of Resolution 42 (Rev.WRC-03)*; (WRC-03)
- f) for Regions 1 and 3, with respect to its conformity with the provisions of § 5.1.3 and also its conformity with § 5.1.4 or 5.1.5 relating to coordination.
- 5.2.2 When the Bureau reaches a favourable finding with respect to § 5.2.1 *a*), 5.2.1 *b*), 5.2.1 *c*) and 5.2.1 *f*), the frequency assignment of an administration shall be recorded in the Master Register. The date of receipt of the notice by the Bureau shall be entered in the Master Register. In relations between administrations all frequency assignments brought into use in conformity with the feeder-link Plan and recorded in the Master Register shall be considered to have the same status irrespective of the dates of receipt entered in the Master Register for such frequency assignments. (WRC-07)
- 5.2.2.1 When the Bureau reaches a favourable finding with respect to § 5.2.1 a), 5.2.1 c), 5.2.1 d) and 5.2.1 f), the frequency assignment shall be recorded in the Master Register. The date of receipt of the notice by the Bureau shall be entered in the Master Register. In relations between administrations, all frequency assignments brought into use in conformity with the feeder-link Plan and recorded in the Master Register shall be considered to have the same status irrespective of the dates of receipt entered in the Master Register for such frequency assignments. When recording these assignments, the Bureau shall indicate by an appropriate symbol the characteristics having a value different from that appearing in that Plan. (WRC-07)
- 5.2.2.2 In the case of Region 2, when the Bureau reaches a favourable finding with respect to § 5.2.1 a) and 5.2.1 c) but an unfavourable finding with respect to § 5.2.1 b) and 5.2.1 d), it shall examine the notice with respect to the successful application of the provisions of Resolution 42 (Rev.WRC-03)*. A frequency assignment for which the provisions of Resolution 42 (Rev.WRC-03)* 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 Bureau shall be entered in the Master Register. In relations between administrations all frequency assignments brought into use following the successful application of the provisions of Resolution 42 (Rev.WRC-03)* and recorded in the Master Register shall be considered to have the same status irrespective of the dates of receipt entered in the Master Register for such frequency assignments. If the finding with respect to § 5.2.1 e), where applicable, is unfavourable, the notice shall be returned immediately by airmail to the notifying administration. (WRC-07)
- 5.2.2.3 In the case of Regions 1 and 3, when the Bureau reaches a favourable finding with respect to § 5.2.1 a) and 5.2.1 c) but an unfavourable finding with respect to § 5.2.1 b) and 5.2.1 d), the notice shall be returned immediately by airmail to the notifying administration with the Bureau's reasons for this finding and with such suggestions as the Bureau may be able to offer with a view to a satisfactory solution of the problem.

^{*} Note by the Secretariat: This Resolution was revised by WRC-12 and WRC-15.

- 5.2.2.4 In the case of Regions 1 and 3, when the Bureau reaches a favourable finding with respect to § 5.2.1 *a*), 5.2.1 *b*), 5.2.1 *c*) and 5.2.1 *d*) but an unfavourable finding with respect to § 5.2.1 *f*), the notice shall be returned immediately by airmail to the notifying administration with the Bureau's reasons for this finding and with such suggestions as the Bureau may be able to offer with a view to a satisfactory solution of the problem. If the unfavourable finding under § 5.2.1 *f*) is due to the coordination under § 5.1.3 only not being effected, the administration shall undertake only to bring this assignment into use with an e.i.r.p. level not greater than the sum of the values specified in columns 11 and 12 of the Regions 1 and 3 feeder-link Plan.
- 5.2.2.5 When an assignment is recorded as a result of a favourable finding with respect to § 5.2.1 f), a remark shall be included indicating that coordination has been effected.
- 5.2.3 Whenever a frequency assignment is recorded in the Master Register, the finding reached by the Bureau shall be indicated. (WRC-07)
- 5.2.4 When the Bureau reaches an unfavourable finding with respect to:
- § 5.2.1 a), or
- § 5.2.1 c), or
- § 5.2.1 b) and 5.2.1 d) and, where appropriate, § 5.2.1 e),

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

- 5.2.5 When the notifying administration resubmits the notice and the finding of the Bureau 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 Bureau'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 Bureau 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 Bureau has received confirmation that the frequency assignment has been brought into use, the Bureau shall remove the symbol in the Master Register.
- 5.2.9 The date of bringing into use notified by the administration concerned shall be recorded in the Master Register. (WRC-07)

- 5.2.10 Wherever the use of a frequency assignment to a space station recorded in the Master Register and emanating from the Regions 1 and 3 List is suspended for a period exceeding six months, the notifying administration shall inform the Bureau of the date on which such use was suspended. When the recorded assignment is brought back into use, the notifying administration shall so inform the Bureau, as soon as possible. On receipt of the information sent under this provision, the Bureau shall make that information available on the ITU website as soon as possible and shall publish it in the BR IFIC. The date on which the recorded assignment is brought back into use^{24bis} shall be no later than three years from the date on which the use of the frequency assignment was suspended, provided that the notifying administration informs the Bureau of the suspension within six months from the date on which the use was suspended. If the notifying administration informs the Bureau of the suspension more than six months after the date on which the use of the frequency assignment was suspended, this three-year time period shall be reduced. In this case, the amount by which the threeyear period shall be reduced shall be equal to the amount of time that has elapsed between the end of the six-month period and the date that the Bureau is informed of the suspension. If the notifying administration informs the Bureau of the suspension more than 21 months after the date on which the use of the frequency assignment was suspended, the frequency assignment shall be cancelled. (WRC-15)
- 5.2.11 If a recorded frequency assignment stemming from the Regions 1 and 3 List is not brought back into use within the suspension period resulting from the application of § 5.2.10 above, the Bureau shall cancel the assignment from the Master Register and the assignment in the List, unless the assignment is one to which § 4.1.26 or § 4.1.27 is being applied. (WRC-15)

5.3 Cancellation of entries in the Master Register

- 5.3.1 Any notified frequency assignment to which the Article 4 procedures have been applied and which has been provisionally recorded under § 5.2.7 shall be brought into use no later than the end of the period provided under § 4.1.3, 4.1.3*bis*, 4.2.6 or 4.2.6*bis* of Article 4. Any other frequency assignment provisionally recorded under § 5.2.7 shall be brought into use by the date specified in the notice. Unless the Bureau has been informed by the notifying administration of the bringing into use of the assignment under § 5.2.8, it shall, no later than 15 days before the notified date of bringing into use or the end of the regulatory period established under § 4.1.3, 4.1.3*bis*, 4.2.6 or 4.2.6*bis* of Article 4, as appropriate, send a reminder requesting confirmation that the assignment has been brought into use within the regulatory period. If the Bureau does not receive that confirmation within 30 days following the notified date of bringing into use or the period provided under § 4.1.3, 4.1.3*bis*, 4.2.6 or 4.2.6*bis* of Article 4, as the case may be, it shall cancel the entry in the Master Register. (WRC-15)
- 5.3.2 If the use of any recorded frequency assignment is permanently discontinued, the notifying administration shall so inform the Bureau within three months, whereupon the entry shall be removed from the Master Register.

^{24bis} The date of bringing back into use of a frequency assignment to a space station in the geostationary-satellite orbit shall be the commencement of the 90-day period defined below. A frequency assignment to a space station in the geostationary-satellite orbit shall be considered as having been brought back into use when a space station in the geostationary-satellite orbit with the capability of transmitting or receiving that frequency assignment has been deployed and maintained at the notified orbital position for a continuous period of 90 days. The notifying administration shall inform the Bureau within 30 days from the end of the 90-day period. Resolution 40 (WRC-15) shall apply. (WRC-15)

ARTICLE 6 (REV.WRC-15)

Coordination, notification and recording in the Master International Frequency Register of frequency assignments to receiving terrestrial stations in Regions 1 and 3 in the bands 14.5-14.8 GHz and 17.7-18.1 GHz, and in Region 2 in the band 17.7-17.8 GHz, when frequency assignments to feeder-link transmitting earth stations for the broadcasting-satellite service in conformity with the Regions 1 and 3 feeder-link Plan or the Region 2 feeder-link Plan²⁵ are involved²⁶

- Administrations planning to implement assignments for terrestrial stations in Regions 1 and 3 in the bands 14.5-14.8 GHz and 17.7-18.1 GHz, and in Region 2 in the band 17.7-17.8 GHz should evaluate the level of interference assessed on the basis of coordination contours calculated in accordance with Appendix 7²⁷, which might be caused by a feeder-link earth station located on the territory of another administration and included in the service area of an assignment to a broadcasting-satellite service feeder-link space station which is in conformity with the appropriate regional feeder-link Plan. Should the administration planning terrestrial stations find that interference may be caused by such a feeder-link earth station, it may request the administration responsible for the feeder-link earth station to indicate the geographical coordinates, the antenna characteristics and the horizon elevation angle around its existing and planned feeder-link earth stations.
- 6.2 In the case of Region 2, when the entry in the feeder-link Plan contains information on specific earth stations, this shall be used in the interference calculations referred to in § 6.1 above. Where such information is not contained in the Region 2 feeder-link Plan, an administration which receives a request under § 6.1 shall, within a period of four months, communicate the details of the feeder-link earth stations to the administration planning the terrestrial station, and to the Bureau in order to update this Plan.
- 6.3 In the case of Regions 1 and 3, an administration which receives a request under § 6.1 shall, within a period of four months, communicate the details of the feeder-link stations to the administration planning the terrestrial station, and to the Bureau for information.
- 6.4 If, at the end of the period of four months, the administration responsible for the terrestrial station does not receive a reply, it may request the assistance of the Bureau.

²⁵ Only assignments included in the Region 2 feeder-link Plan before 3 June 2000 shall be taken into account. (WRC-03)

 $^{^{26}}$ These procedures do not replace the procedures prescribed for terrestrial stations in Articles 9 and 11. (WRC-03)

²⁷ In the case of Regions 1 and 3, the feeder-link earth-station power to be taken into account is obtained by adding the values specified in Columns 11 and 12 of the feeder-link Plan.

- 6.5 If the administration responsible for the feeder-link earth station does not communicate to the Bureau, within a period of four months, the information requested under § 6.1, this administration shall only implement its feeder-link earth station provided it does not cause harmful interference to the terrestrial station under consideration.
- 6.6 If, as a result of the application of this Article, an agreement is reached with the administration responsible for the feeder-link earth station or no comments have been received, the administration responsible for the terrestrial station may notify this station under Article 11 for recording in the Master Register. A remark shall be included indicating either that an agreement has been reached or that no comments have been received.

ARTICLE 7 (REV.WRC-15)

Coordination, notification and recording in the Master International Frequency Register of frequency assignments to stations in the fixed-satellite service (space-to-Earth) in Region 1 in the frequency band 17.3-18.1 GHz and in Regions 2 and 3 in the frequency band 17.7-18.1 GHz, to stations in the fixed-satellite service (Earth-to-space) in Region 2 in the frequency band 17.8-18.1 GHz, to stations in the fixed-satellite service (Earth-to-space) in countries listed in Resolution 163 (WRC-15) in the frequency band 14.5-14.75 GHz and in countries listed in Resolution 164 (WRC-15) in the frequency band 14.5-14.8 GHz where those stations are not for feeder links for the broadcasting-satellite service, and to stations in the broadcasting-satellite service in Region 2 in the frequency band 17.3-17.8 GHz when frequency assignments to feeder links for broadcasting-satellite stations in the frequency bands 14.5-14.8 GHz and 17.3-18.1 GHz in Regions 1 and 3 or in the band 17.3-17.8 GHz in Region 2 are involved²⁸

Section I – Coordination of transmitting space or earth stations in the fixed-satellite service or transmitting space stations in the broadcasting-satellite service with assignments to broadcasting-satellite service feeder links

7.1 The provisions of No. **9.7**²⁹ and the associated provisions under Articles **9** and **11** are applicable to transmitting space stations in the fixed-satellite service in Region 1 in the frequency band 17.3-18.1 GHz, to transmitting space stations in the fixed-satellite service in Regions 2 and 3 in

²⁸ These provisions do not replace the procedures prescribed in Articles 9 and 11 when stations other than those for feeder links in the broadcasting-satellite service subject to a Plan are involved. (WRC-03)

²⁹ The provisions of Resolution **33 (Rev.WRC-97)*** are applicable to space stations in the broadcasting-satellite service for which the advance publication information or the request for coordination has been received by the Bureau prior to 1 January 1999.

^{*} Note by the Secretariat: This Resolution was revised by WRC-03 and WRC-15.

the frequency band 17.7-18.1 GHz, to transmitting earth stations in the fixed-satellite service in Region 2 in the frequency band 17.8-18.1 GHz, to transmitting earth stations in the fixed-satellite service in countries listed in Resolution 163 (WRC-15) in the frequency band 14.5-14.75 GHz and in countries listed in Resolution 164 (WRC-15) in the frequency band 14.5-14.8 GHz where those stations are not for feeder links for the broadcasting-satellite service, and to transmitting space stations in the broadcasting-satellite service in Region 2 in the frequency band 17.3-17.8 GHz. (WRC-15)

- 7.2 In applying the procedures referred to in \S 7.1, the provisions of Appendix 5 are replaced by the following:
- 7.2.1 The frequency assignments to be taken into account are:
- a) the assignments in conformity with the appropriate Regional feeder-link Plan in Appendix 30A;
- b) the assignments included in the Regions 1 and 3 feeder-link List;
- c) the assignments for which the procedure of Article 4 has been initiated as from the date of receipt of the complete Appendix 4 information under § 4.1.3 or 4.2.6. (WRC-03)
- 7.2.2 The criteria to be applied are those given in Annex 4.

7.2bis In applying the procedures referred to in § 7.1 for FSS frequency assignments in countries listed in Resolution **163** (WRC-15) in the frequency band 14.5-14.75 GHz and in countries listed in Resolution **164** (WRC-15) in the frequency band 14.5-14.8 GHz not for feeder links for the broadcasting-satellite service, the provision of No. **11.41** is replaced by the following provision. No. **11.41.2** continues to apply. (WRC-15)

7.2bis.1 If, after a notice is returned under No. 11.38, the notifying administration resubmits the notice and insists upon its reconsideration, and the assignment which was the basis of the unfavourable finding is neither an assignment in the Regions 1 and 3 Plan, nor an assignment of definitive recording in the Regions 1 and 3 feeder-link List or one for which the complete Appendix 4 information has been received under § 4.1.12 for the definitive recording by the date of submission pursuant to No. 9.30 of this notice, the Bureau shall enter the assignment in the Master Register with an indication of those administrations whose assignments were the basis of the unfavourable finding, provided that such resubmission is accompanied with a formal commitment indicating that, if unacceptable interference is caused to the Regions 1 and 3 recorded assignments which were the basis of the unfavourable finding, the notifying administration of the FSS shall immediately eliminate this unacceptable interference (see also No. 11.42). (WRC-15)

Section II – Coordination with assignments in conformity with the appropriate Regional feeder-link Plan in Appendix 30A

- 7.3 Administrations planning to implement assignments for receiving earth stations in all Regions in the band 17.7-18.1 GHz in the fixed-satellite service (space-to-Earth) or in the band 17.3-17.8 GHz in the broadcasting-satellite service should evaluate the level of interference, assessed on the basis of coordination contours calculated in accordance with Appendix 7, which might be caused by a feeder-link earth station located on the territory of another administration and included in the service area of an assignment to a broadcasting-satellite service feeder-link space station which is in conformity with the appropriate Regional feeder-link Plan. Should the administration planning receiving earth stations find that interference may be caused by such a feeder-link earth station, it may request the administration responsible for the feeder-link earth station to indicate the geographical coordinates, the antenna characteristics and the elevation angle of the horizon around its existing and planned feeder-link earth stations.
- 7.4 In the case of Region 2, when the entry in the feeder-link Plan contains information on specific earth stations this shall be used in the interference calculations mentioned in § 7.3 above. Where such information is not contained in this Plan an administration which receives a request under § 7.3 shall, within a period of four months, communicate the details of the feeder-link earth stations to the administration planning the receiving earth station, and to the Bureau in order to update this Plan.
- 7.5 In the case of Regions 1 and 3, an administration which receives a request under § 7.3 shall, within a period of four months, communicate the details of the feeder-link earth stations to the administration planning the receiving earth station, and to the Bureau for information.
- 7.6 If, at the end of the period of four months, the administration responsible for the fixed-satellite or broadcasting-satellite receiving earth station(s) does not receive a reply, it may request the assistance of the Bureau.
- 7.7 If the administration responsible for the feeder-link earth stations does not communicate to the Bureau, within a period of four months, the information requested under § 7.3, this administration shall only implement its feeder-link earth station provided it does not cause harmful interference to the fixed-satellite or broadcasting-satellite earth station(s) under consideration.
- 7.8 If, as a result of the application of this Article, an agreement is reached with the administration responsible for the feeder-link earth station or no comments have been received, and where the station is recorded in the Master Register in accordance with Article 11, the Bureau shall enter a remark indicating either that an agreement has been reached or that no comments have been received.

Section III - Coordination with assignments in the Regions 1 and 3 feeder-link List, or for which the procedure of Article 4 has been initiated

7.9 The provisions of No. **9.17A** and the associated provisions under Articles **9** and **11** and Appendix **5** are applicable to fixed-satellite service and broadcasting-satellite service receiving earth stations, in respect of frequency assignments to transmitting broadcasting-satellite service feeder-link earth stations, in the fixed-satellite service in the bands 17.3-18.1 GHz in Regions 1 and 3 and 17.3-17.8 GHz in Region 2 which correspond to assignments to receiving broadcasting-satellite service feeder-link space stations already included in the Regions 1 and 3 feeder-link List, or for which the procedure of Article 4 has been initiated, as from the date of receipt of the complete Appendix **4** information. (WRC-03)

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.

^{*} Note by the Secretariat: WRC-97 did not review this Article. The subject matter is also dealt with in Articles 13 and 14, which were reviewed by WRC-97.

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;
- 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 § 8.2.1, the administration shall furnish the Board with the necessary information.

ARTICLE 9 (REV.WRC-12)

Plan for feeder links for the broadcasting-satellite service 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 anticlockwise from a line parallel to the equatorial plane to the major axis of the ellipse to the nearest degree.
- Col. 7 Polarization $(1 = direct, 2 = indirect)^{30}$.
- Col. 8 Earth station *e.i.r.p.* in the direction of maximum radiation, in dBW.
- Col. 9 Remarks³¹.

³⁰ See Annex 3 (§ 4.8) to this Appendix.

³¹ The location of earth stations, together with the antenna characteristics and elevation angle of the horizon, are given as an annex to this Plan, and will be published when the Plan is republished in accordance with § 4.2.25.2 of Article 4.

9.2 TEXT FOR NOTES IN REMARKS COLUMN OF THE PLAN

- 1 Fast roll-off space station receiving antenna as defined in Annex 3 (§ 4.6.3).
- 2 Television standard with 625 lines using greater video bandwidth and necessary bandwidth of 27 MHz.
- 3 This assignment may cause interference to feeder-link assignments* of Spain, Guinea-Bissau and Portugal in the Regions 1 and 3 feeder-link Plan adopted at the 1988 Conference and shall only be brought into use if:
- a) the administrations of Spain, Guinea-Bissau and Portugal agree: or
- their feeder-link equivalent protection margins, as defined in § 1.7 of Annex 3, are positive.

The affected administrations shall be informed by the notifying administration of the required changes in characteristics before this assignment is brought into use.

- 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.
- 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.

^{*} Note by the Secretariat: Since the orbital positions of these countries were changed by WRC-97, this paragraph might need to be revised.

- 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.
- a) The overall equivalent protection margin to be used for the application of Article 4 and Resolution 42 (Rev.WRC-03)* 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. (WRC-03).
- b) If an administration notifies the same frequency in more than one beam of a group for use at the same time, the overall C/I produced by all emissions from that group shall not exceed the C/I calculated on the basis of $\S a$ 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 CRBEC001	16 channels
GR19	EQACO001 EQAGO001	16 channels
GR20	PTRVIR01 USAEHO02	32 channels
GR21	PTRVIR02 USAEHO03	32 channels
GR22	VEN02VEN VEN11VEN	4 channels

^{*} Note by the Secretariat: This Resolution was revised by WRC-12 and WRC-15.

AP30A-32

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 to 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, KNA, SUR, TCA, TRD, VCT and VRG to be so used if approved by them.

 ${\it TABLE~2}$ Table showing correspondence between channel numbers and assigned frequencies

Channel No.	Assigned frequency (MHz)	Channel No.	Assigned frequency (MHz)
1	17 324.00	17	17 557.28
2	17 338.58	18	17 571.86
3	17 353.16	19	17 586.44
4	17 367.74	20	17 601.02
5	17 382.32	21	17 615.60
6	17 396.90	22	17 630.18
7	17 411.48	23	17 644.76
8	17 426.06	24	17 659.34
9	17 440.64	25	17 673.92
10	17 455.22	26	17 688.50
11	17 469.80	27	17 703.08
12	17 484.38	28	17 717.66
13	17 498.96	29	17 732.24
14	17 513.54	30	17 746.82
15	17 528.12	31	17 761.40
16	17 542.70	32	17 775.98

17 324.00 MHz (1)

ALS00002	1	2	3	4			5	6	7	8	9
ALSON003	ALS00002	-166.20	1	-109.94	36.86	6.04	1.11	137	1	87.4	9/GR1
ARGINSUA											
B CE311	ARGINSU4	-94.20	1	-52.98		3.40	0.68	19	1	87.4	9/GR3
B CE412	ARGSUR04	-94.20	1	-65.04	-43.33	3.32	1.50	40	1	87.4	9/GR3
B CE411	B CE311	-64.20	1	-40.60	-6.07	3.04	2.06	174	1	87.4	8 9/GR7
B CES11											
B NOSI			1						!		
B NOS11											
B NOT11											
B NOSI											
B SUI11											
B SUI12											
B SU211			1 -								
B SUZ122											
BAHIFBRI											
BERBERMU											0 3/010
BERBEROZ -31.00			1 -								
BOLANDOI		,	1								2.3
CAN01201			1		-4.69	6.49		87	1	87.4	9/GR5
CAN01202									1		
CAN01203	CAN01201	-138.20	1	-114.60	51.08	7.28	1.10	160	1	87.4	9/GR10
CAN01303	CAN01202	-72.70	1	-81.34	50.02	7.96	2.55	5	1	87.4	
CAN01404	CAN01203	-129.20	1	-113.02	51.08	7.47	1.26	162	1	87.4	9/GR12
CAN01403			1								
CAN01404											
CAN01405											
CANOI504									!		
CANO1505											
CAN01605											
CAND1606 CHLCONT5 -70.70 1 -80.77 50.03 7.88 2.53 6 1 87.4 9/GR17 CHLCONT5 -106.20 1 -80.06 -30.06 1.36 0.68 55 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 9/GR5 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 FLKATKS -31.00 1 -59.90 -51.64 0.60 0.60 90 1 87.4 9/GR1 HWA00002 -46.20 1 -61.58 12.29 0.60 0.60 90 <td></td> <td></td> <td>1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>			1								
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CLMANDOI			!						!		
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FLKFALKS		-115.20	1	-71.37	-4.69	6.49		87	1	87.4	9/GR5
GRD00002	FLKANT01	-57.20	1	-44.54	-60.13	3.54	0.68		1	87.4	
HWA00002	FLKFALKS	-31.00	1	-59.90	-51.64	0.60	0.60	90	1	87.4	2 3
HWA00003											
MEXOINTE											
MEXOISUR											
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PTRVIR01											9/GR5
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USAWH102			l								9/GR2
VENAND03 -115.20 1 -71.37 -4.69 6.49 2.57 87 1 87.4 9/GR5											
											0/075
[VKG00001											
	v KG00001	-/9./0	1	-64.3 /	18.48	0.60	0.60	90	1	87.4	4

17 338.58 MHz (2)

1	2	3	4			5	6	7	8	9
ALS00002	-165.80	2	-109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
ALS00002 ALS00003	-174.80	2	-116.10	37.47	5.60	0.76	132	2	87.4	9/GR1 9/GR2
ARGNORT4	-93.80	2	-63.96	-30.01	3.86	1.99	48	2	87.4	, GRE
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 B SE911	-73.80 -101.80	2 2	-68.75 -45.99	-4.71 -19.09	2.37	1.65 0.79	73	1 2	87.4 87.4	8 9/GR8 8
B SE911	-101.80 -80.80	2	-45.99 -51.10	-19.09 -25.64	2.22	1.06	62 50	2	87.4 87.4	8 9/GR6
B SU112	-80.80 -44.80	2	-50.76	-25.62	2.76	1.06	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
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 CAN01606	-81.80 -70.30	2 2	-83.80 -80.64	50.22 50.02	8.35 7.88	2.57 2.52	2 6	2 2	87.4 87.4	9/GR14
CHLCONT4	-105.80	2	-69.59	-23.20	2.21	0.69	68	2	87.4 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 HWA00002	-83.30 -165.80	2 2	-73.28 -109.83	18.96 36.82	0.82 6.03	0.68 1.12	11 137	2 2	87.4 87.4	9/GR1
HWA00002 HWA00003	-165.80 -174.80	2	-109.83 -116.10	36.82	5.60	0.76	137	2	87.4 87.4	9/GR1 9/GR2
MEX01NTE	-77.80	2	-105.80	25.99	2.88	2.07	155	2	87.4	1 1
MEX01NTE 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	i
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	156
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	156
USAPSA02	-165.80	2	-109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
USAPSA03 USAWH101	-174.80 -147.80	2 2	-116.10 -111.01	37.47 40.67	5.60 4.38	0.76 2.15	132 162	2 2	87.4 87.4	9/GR2
USAWH101 USAWH102	-147.80 -156.80	2	-111.01 -113.01	40.67	3.74	1.79	162	2	87.4 87.4	
VCT00001	-79.30	2	-61.18	13.23	0.60	0.60	90	2	87.4 87.4	
VEN11VEN	-103.80	2	-66.79	6.90	2.50	1.77	122	2	87.4	
	105.00		00.75	0.70	2.50	1.,,		_	07	

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1	2	3	4			5	6	7	8	9
ALS00002	166.20	2	-109.94	26.06	6.04	1 1 1	127	,	07.4	9/GR1
ALS00002 ALS00003	-166.20 -175.20	3	-109.94 -116.23	36.86 37.50	5.60	1.11 0.75	137 132	1 1	87.4 87.4	9/GR1 9/GR2
ARGINSU4	-94.20	3	-52.98	-59.81	3.40	0.73	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 B NO611	-64.20 -74.20	3	-53.10 -59.60	-2.90 -11.62	2.44	2.13 1.69	104	1 2	87.4	8 9/GR7
B NO611 B NO711	-74.20 -74.20	3	-60.70	-11.62 -1.78	3.54	1.78	165 126	2	87.4 87.4	8 9/GR8 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	
BOLAND01	-115.20	3	-71.37	-4.69	6.49	2.57	87	1	87.4	9/GR5
BOL00001	-87.20	3	-64.61	-16.71	2.52	2.19	85	1	87.4	
BRB00001	-92.70	3	-59.85	12.93	0.60	0.60	90	2	87.4	0/0710
CAN01101	-138.20 -138.20	3	-114.60 -114.60	51.08	7.28 7.28	1.10 1.10	160	1	87.4	9/GR10
CAN01201 CAN01202	-138.20 -72.70	3	-114.60 -81.34	51.08 50.02	7.28	2.55	160 5	1	87.4 87.4	9/GR10
CAN01202 CAN01203	-129.20	3	-81.34 -113.02	51.08	7.47	1.26	162	1	87.4 87.4	9/GR12
CAN01203	-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	i	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	0/CD17
CHLCONT5	-106.20 -106.20	3	-72.23 -80.06	-35.57 -30.06	2.60 1.36	0.68 0.68	55 69	1	87.4 87.4	9/GR17 9/GR17
CHLPAC02 CLMAND01	-106.20	3	-80.06 -71.37	-30.06 -4.69	6.49	2.57	87	1	87.4 87.4	9/GR1/ 9/GR5
CLMAND01 CLM00001	-103.20	3	-74.50	5.87	3.98	1.96	118	1	87.4	9/GK3
CUB00001	-89.20	3	-79.81	21.62	2.24	0.68	168	i	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
MEX01NTE MEX01SUR	-78.20 -69.20	3	-105.81 -94.84	26.01 19.82	2.89 3.05	2.08 2.09	155 4	1 1	87.4 87.4	1
MEX01SUR MEX02NTE	-69.20 -136.20	3	-94.84 -107.21	26.31	3.84	1.55	148	1	87.4 87.4	1
MEX02NTE MEX02SUR	-136.20	3	-96.39	19.88	3.18	1.87	157	1	87.4 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	156
USAEH002 USAEH003	-101.20 -110.20	3	-93.94 -95.23	36.32 36.29	8.24 8.27	3.56 3.37	171 168	1 1	87.4 87.4	1 6 9/GR20 1 6 9/GR21
USAEH003 USAEH004	-110.20 -119.20	3	-95.23 -96.45	36.29	8.27	3.37	168	1	87.4 87.4	1 6 9/GR21 1 5 6
USAPSA02	-119.20	3	-96.43 -109.94	36.86	6.04	1.11	137	1	87.4 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
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1	2	3	4			5	6	7	8	9
ALS00002	-165.80	4	-109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
ALS00003 ARGNORT4	-174.80 -93.80	4	-116.10 -63.96	37.47	5.60	0.76 1.99	132 48	2 2	87.4 87.4	9/GR2
	-93.80 -54.80	4	-63.96 -62.85	-30.01 -29.80	3.86 3.24	2.89	48	2		
ARGNORT5 B CE311	-63.80	4	-62.83 -40.60	-29.80 -6.07	3.04	2.89	174	2	87.4 87.4	8 9/GR7
B CE311	-63.80 -44.80	4	-40.80 -40.26	-6.06	3.44	2.06	174	2	87.4	8 9/GR9
B CE312 B CE411	-63.80	4	-40.26 -50.97	-15.26	3.86	1.38	49	2	87.4	8 9/GR7
B CE411	-44.80	4	-50.71	-15.20	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), Gitto
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
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 1
MEX02SUR	-126.80		-96.39 74.10	19.88	3.19	1.87	158	2 2	87.4	1
PRU00004	-85.80	4	-74.19	-8.39	3.74	2.45	112 171	2 2	87.4	1.6.0/CB20
PTRVIR01 PTRVIR02	-100.80 -109.80	4	-93.85 -95.47	36.31 36.38	8.26 8.10	3.55 3.45	168	2	87.4 87.4	1 6 9/GR20 1 6 9/GR21
SLVIFRB2	-109.80 -107.30	4	-95.47 -88.91	13.59	0.60	0.60	90	1	87.4 87.4	1 0 9/GK21
USAEH001	-61.30	4	-88.91 -87.53	36.18	6.41	3.49	12	2	87.4	156
USAEH001 USAEH002	-100.80	4	-87.33 -93.85	36.18	8.26	3.49	171	2	87.4	1 6 9/GR20
USAEH002 USAEH003	-100.80	4	-95.47	36.38	8.10	3.45	168	2	87.4	1 6 9/GR20 1 6 9/GR21
USAEH003 USAEH004	-118.80	4	-95.47 -96.42	36.21	8.20	3.43	165	2	87.4	156
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/GR1 9/GR2
USAWH101	-147.80	4	-111.01	40.67	4.38	2.15	162	2	87.4	
USAWH101	-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	
1	1	'						_		

17 382.32 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
ALS00002 ALS00003	-166.20 -175.20	5	-109.94 -116.23		5.60	0.75	137	1	87.4 87.4	9/GR1 9/GR2
ARGINSU4	-1/3.20 -94.20	5	-52.98	37.50 -59.81	3.40	0.73	132	1 1	87.4 87.4	9/GR2 9/GR3
ARGSUR04	-94.20 -94.20	5	-52.98 -65.04	-43.33	3.40	1.50	40	1	87.4 87.4	9/GR3
B CE311	-64.20	5	-40.60	-6.07	3.04	2.06	174	1	87.4	89/GR7
B CE311	-45.20	5	-40.27	-6.06	3.44	2.09	174	1	87.4	89/GR9
B CE411	-64.20	5	-50.97	-15.27	3.86	1.38	49	i	87.4	89/GR7
B CE412	-45.20	5	-50.71	-15.30	3.57	1.56	52	1	87.4	89/GR9
B CE511	-64.20	5	-53.10	-2.90	2.44	2.13	104	1	87.4	89/GR7
B NO611	-74.20	5	-59.60	-11.62	2.85	1.69	165	2	87.4	89/GR8
B NO711	-74.20	5	-60.70	-1.78	3.54	1.78	126	2	87.4	89/GR8
B NO811	-74.20	5	-68.76	-4.71	2.37	1.65	73	2	87.4	89/GR8
B SU111	-81.20	5	-51.12	-25.63	2.76	1.05	50	1	87.4	89/GR6
B SU112	-45.20	5	-50.75	-25.62	2.47	1.48	56	1	87.4	89/GR9
B SU211	-81.20	5	-44.51	-16.95	3.22	1.36	60	1	87.4	89/GR6
B SU212	-45.20	5	-44.00	-16.87	3.20	1.96	58	1	87.4	89/GR9
BAHIFRB1	-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	
BERBER02	-31.00	5	-64.77	32.32	0.60	0.60	90	1	87.4	2 3
BOLAND01	-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	0/CD12
CAN01203 CAN01303	-129.20 -129.20	5 5	-113.02 -113.02	51.08 51.08	7.47 7.47	1.26 1.26	162 162	1	87.4 87.4	9/GR12 9/GR12
CAN01303 CAN01304	-129.20 -91.20	5	-86.71	50.48	8.58	2.54	178	1 1	87.4 87.4	9/GR12 9/GR13
CAN01304 CAN01403	-129.20	5	-113.02	51.08	7.47	1.26	162	1 1	87.4	9/GR13 9/GR12
CAN01404	-91.20	5	-86.71	50.48	8.58	2.54	178	1	87.4	9/GR12
CAN01405	-82.20	5	-84.11	50.40	8.31	2.58	1	i	87.4	9/GR14
CAN01504	-91.20	5	-86.71	50.48	8.58	2.54	178	l i	87.4	9/GR13
CAN01505	-82.20	5	-84.11	50.20	8.31	2.58	1	Ιi	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	0/CD1
HWA00002	-166.20	5	-109.94	36.86	6.04	1.11	137	1	87.4	9/GR1
HWA00003 MEX01NTE	-175.20 -78.20	5 5	-116.23 -105.81	37.50 26.01	5.60 2.89	0.75 2.08	132 155	1	87.4 87.4	9/GR2 1
MEXUINTE MEXOISUR	-/8.20 -69.20	5	-105.81 -94.84	19.82	3.05	2.08	155	1 1	87.4 87.4	1 1
MEX0130K MEX02NTE	-136.20	5	-107.21	26.31	3.84	1.55	148	1	87.4	1
MEX02NTE MEX02SUR	-127.20	5	-96.39	19.88	3.18	1.87	157	1	87.4	1
PAQPAC01	-106.20	5	-109.18	-27.53	0.60	0.60	90	li	87.4	9/GR17
PRG00002	-99.20	5	-58.66	-23.32	1.45	1.04	76	l i	87.4), GICI /
PRUAND02	-115.20	5	-71.37	-4.69	6.49	2.57	87	l i	87.4	9/GR5
PTRVIR01	-101.20	5	-93.94	36.32	8.24	3.56	171	i	87.4	169/GR20
PTRVIR02	-110.20	5	-95.23	36.29	8.27	3.37	168	1	87.4	169/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	156
USAEH002	-101.20	5	-93.94	36.32	8.24	3.56	171	1	87.4	169/GR20
USAEH003	-110.20	5	-95.23	36.29	8.27	3.37	168	1	87.4	169/GR21
USAEH004	-119.20	5	-96.45	36.21	8.20	3.12	165	1	87.4	156
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	0.000.5
VENAND03 VRG00001	-115.20	5	-71.37	-4.69	6.49	2.57	87	1	87.4	9/GR5
	-79.70	5	-64.37	18.48	0.60	0.60	90	1 1	87.4	4

17 396.90 MHz (6)

1	2	3	4			5	6	7	8	9
ALS00002	-165.80	6	-109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
	-163.80	6	-116.10	37.47	5.60	0.76	137	2	87.4	9/GR1 9/GR2
ALS00003 ARGNORT4	-1/4.80 -93.80		-63.96	-30.01	3.86	1.99	48	2	87.4 87.4	9/GR2
		6	-63.96 -62.85	-30.01 -29.80			48		87.4 87.4	
ARGNORT5	-54.80 -52.80	6			3.24	2.89	39	2 2		
ATNBEAM1 B CE311		6	-66.44	14.87	1.83	0.68			87.4	0.0/CD7
D CLUII	-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
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/GR20 1 6 9/GR21
TCA00001	-115.80	6	-71.79	21.53	0.60	0.60	90	2	87.4	- 0 5, 01.21
USAEH001	-61.30	6	-87.53	36.18	6.41	3.49	12	2	87.4	156
USAEH001 USAEH002	-100.80	6	-93.85	36.31	8.26	3.49	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/GR20 1 6 9/GR21
USAEH003 USAEH004	-118.80	6	-96.42	36.21	8.20	3.43	165	2	87.4	156
USAPSA02	-165.80	6	-109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
USAPSA02 USAPSA03	-163.80	6	-116.10	37.47	5.60	0.76	137	2	87.4	9/GR1 9/GR2
USAWH101	-1/4.80 -147.80							2		2/UKZ
		6	-111.01	40.67	4.38	2.15	162		87.4	
			-112.01	40.71	274	1.70	140	2	97.4	
USAWH102	-156.80	6	-113.01	40.71	3.74	1.79	149	2	87.4	
			-113.01 -61.18 -66.79	40.71 13.23 6.90	3.74 0.60 2.50	1.79 0.60 1.77	149 90 122	2 2 2	87.4 87.4 87.4	

17 411.48 MHz (7)

ALSO0002	1	2	3	4			5	6	7	8	9
ALSONOOS -175.20 7 -116.23 37.50 5.60 0.75 132 1 87.4 9/GR2 ARGINSUS -94.20 7 -44.17 -59.91 3.77 0.70 13 1 87.4 9/GR3 ARGINSUS -55.20 7 -44.17 -59.91 3.77 0.70 13 1 87.4 9/GR3 ARGINSUS -55.20 7 -66.64 -43.31 3.25 1.28 1.18 1.18 7.4 9/GR3 ARGINSUS -55.20 7 -66.68 -43.31 2.54 2.28 1.52 1 87.4 9/GR3 ARGINSUS -55.20 7 -66.68 -43.31 2.54 2.28 1.52 1 87.4 9/GR3 ARGINSUS -55.20 7 -66.70 -66.70 3.04 2.06 174 1 87.4 9/GR3 ARGINSUS -64.20 7 -40.67 -66.70 -60.60 3.04 2.06 174 1 87.4 8.0 B CES1 -44.20 7 -59.07 -15.27 3.6 1.28 1.2 1 87.4 8.0 B CES1 -46.20 7 -59.07 -15.27 3.6 1.28 1.2 1 87.4 8.0 B CES1 -64.20 7 -59.07 -11.52 2.85 1.09 1.65 2 87.4 8.9 B NOR1 -74.20 7 -60.70 -11.62 2.85 1.78 1.26 2 87.4 8.9 B NOR1 -74.20 7 -60.70 -1.18 3.54 1.78 1.26 2 87.4 8.9 B NOR1 -74.20 7 -59.05 -11.62 2.85 1.78 1.26 2 87.4 8.9 B NOR1 -74.20 7 -51.12 -25.63 2.76 1.05 50 1 87.4 8.9 B NOR1 -74.20 7 -51.12 -25.63 2.76 1.05 50 1 87.4 8.9 B NORI -74.20 7 -51.12 -25.63 2.76 1.05 50 1 87.4 8.9 B NORI -74.20 7 -50.73 -25.62 2.47 1.48 50 1 87.4 8.9 B NORI -74.20 7 -50.73 -25.62 2.47 1.48 50 1 87.4 8.9 B NORI -74.20 7 -60.70 -70.73 -25.62 2.47 1.48 50 1 87.4 8.9 B NORI -74.20 7 -60.70 -70.73 -25.62 2.47 1.48 50 1 87.4 8.9 B NORI -74.20 7 -60.70 -70.73 -25.62 2.47 1.48 50 1 87.4 8.9 B NORI -74.20 7 -60.70 -70.73 -25.62 2.47 1.48 50 1 87.4 8.9 B NORI -74.20 7 -60.70 -70.73 -25.62 2.47 1.48 50 1 87.4 8.9 B NORI -74.20 7 -60.70 -70.73 -25.62 2.47 1.48 50 1 87.4 8.9 B NORI -74.20 7 -60.70 -70	AT 200003	-166 20	7	-100.04	36.06	6.04	1 11	127	1	Q7 A	0/GP1
ARGINSUS 4 9-94-20 7 - 9-99.98 -99.98 3.40 0.68 19 1 87.4 9/GR3 ARGINSUG 5-55.20 7 - 44.17 -99.91 3.77 0.70 31 1 87.4 9/GR3 ARGSUR04 -94-20 7 -65.68 -43.31 3.32 1.50 40 11 87.4 9/GR3 ARGSUR05 -55.20 7 -61.68 -43.31 3.32 1.50 40 11 87.4 9/GR3 ARGSUR05 -79.70 7 -61.69 -70.70 1.70 0.60 0.60 90 1 87.4 B CES11 -64.20 7 -40.60 -6.07 3.04 2.06 17.4 1 87.4 89/GR3 B CES11 -64.20 7 -40.60 -6.07 3.04 2.06 17.4 1 87.4 89/GR3 B CES11 -64.20 7 -50.91 1.52 7 3.68 1.38 43 1 87.4 89/GR3 B CES11 -64.20 7 -50.91 1.52 7 3.68 1.38 43 1 87.4 89/GR3 B CES11 -64.20 7 -50.91 1.53 7 3.61 1.53 1.53 1.54 1 87.4 89/GR3 B CES11 -64.20 7 -59.00 -1.78 1.54 1.55											
ARGISURUS -55.20 7									- 1		
ARGSURGH -94.20 7 -65.94 -43.03 3.32 1.50 40 1.87.4 9GR3 ARGSURGH -55.20 7 -61.79 1.70 1.00											
ARGSURGS -55.20 77 -61.79 107 -79.70 -77 -70 -77 -70 -70 -70 -70 -70 -70 -											
ATCSINOI											
B CE312											7,0101
B CE411									1		8 9/GR7
B CE511									1		
B \ \text{SES11}	B CE411	-64.20	7	-50.97	-15.27	3.86	1.38	49	1	87.4	8 9/GR7
B NO611	B CE412	-45.20	7	-50.71	-15.30	3.57	1.56	52	1	87.4	8 9/GR9
B NOR11		-64.20		-53.10	-2.90	2.44	2.13	104		87.4	8 9/GR7
B NO811											
B SU1111											
B SU2112											
B SU211											
BSU212									- 1		
BERBERMU											
BOLANDOI											8 9/GR9
BOLDOOO											0/CD5
BRB00001											9/GR5
CANDI101											
CANDI201											0/GP10
CAND1202											
CAND1203)/GIC10
CAN01303											9/GR12
CAND1304											
CAN01404											
CAN01405	CAN01403	-129.20	7	-113.02	51.08	7.47	1.26	162	1	87.4	9/GR12
CAN01504	CAN01404	-91.20	7	-86.71	50.48	8.58	2.54	178	1	87.4	9/GR13
CAND1605	CAN01405	-82.20	7		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 9/GR17 CHLCONT5 -106.20 7 -80.06 -30.06 1.36 0.68 55 1 87.4 9/GR17 CHLROND1 -115.20 7 -80.06 -30.06 1.36 0.68 69 1 87.4 9/GR17 CLM00001 -103.20 7 -74.50 5.87 3.98 1.96 118 1 87.4 9/GR5 CUB00001 -89.20 7 -79.81 21.62 2.24 0.68 168 1 87.4 9/GR5 EQACAND1 -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						8.58	2.5.	178	1		
CAND1606								1			
CHLCONT5											9/GR14
CHLPAC02											
CLMANDOI											
CLM00001											
CUB00001 -89.20 7 -79.81 21.62 2.24 0.68 168 1 87.4 9/GR5 EQACANDI -115.20 7 -71.37 -4.69 6.49 2.57 87 1 87.4 9/GR5 EQAGANDI -115.20 7 -61.58 12.29 0.60 0.60 90 1 87.4 9/GR5 GRD00002 -42.20 7 -61.58 12.29 0.60 0.60 90 1 87.4 9/GR5 GRD00009 -57.20 7 -61.58 12.29 0.60 0.60 90 1 87.4 9/GR1 GRLDNK01 -53.20 7 -61.58 12.29 0.60 0.60 90 1 87.4 9/GR1 HWA00002 -166.20 7 -109.94 36.86 6.04 1.11 137 1 87.4 9/GR1 HWA0003 -175.20 7 -108.81 26.01 2.89 2.08 155											9/GR5
EQACANDI -115.20 7 -71.37 -4.69 6.49 2.57 87 1 87.4 9/GR5 EQAGANDI -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 GRD00009 -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 9/GR1 HWA00002 -166.20 7 -116.23 37.50 5.60 0.75 132 1 87.4 9/GR2 MEX0INTE -78.20 7 -105.81 26.01 2.89 2.08 155 1 87.4 1 MEX0SUR -69.20 7 -107.21 26.31 3.84 1.55 148 1 87.4 1<											
EÔAGAND1 -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 GRLD0NK01 -53.20 7 -44.89 66.56 2.70 0.82 173 1 87.4 9/GR1 HWA00002 -166.20 7 -109.94 36.86 6.04 1.11 137 1 87.4 9/GR2 HWA00003 -175.20 7 -116.23 37.50 5.60 0.75 132 1 87.4 9/GR2 MEX0INTE -78.20 7 -105.81 26.01 2.89 2.08 155 1 87.4 1 MEX0ISUR -69.20 7 -94.84 19.82 3.05 2.09 4 1 87.4 1 MEX02SUR -136.20 7 -107.21 26.31 3.84 1.55 148 1 8									- 1		0/GP5
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 MEX01SUR -69.20 7 -94.84 19.82 3.05 2.09 4 1 87.4 1 MEX02SUR -127.20 7 -94.84 19.82 3.05 2.09 4 1 87.4 1 PAQPAC01 -106.20 7 -109.18 -27.53 0.60 0.60 90 1 87.4 1											
GRD00059 GRLDNK01 -57.20 -53.20 7 7 7 -61.58 -44.89 12.29 66.56 0.60 2.70 0.82 0.82 173 1 137 1 87.4 1 137 87.4 2 1 87.4 2 9/GR1 HWA00002 HWA00003 HWA00											7,010
GRLDNK01									- 1		
HWA00002	GRLDNK01								1		2
MEXOINTE			7						1		9/GR1
MEXOISUR	HWA00003								1		9/GR2
MEX02NTE											-
MEXO2SUR									- 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 9/GR17 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 1 6 9/GR21 USAEH001 -71.70 7 -56.22 -32.52 1.02 0.89 11 1 87.4 1 5 6 USAEH002 -101.20 7 -95.23 36.29 8.27 3.37											
PRG00002											
PRUAND02									-		9/GR17
PTRVIRO1									-		0/CD5
PTRVIRO2				,							
SURINAM2 -84.70 7 -55.69 4.35 1.00 0.69 86 1 87.4 URG00001 -61.70 7 -56.62 -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 USAPH004 -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 USAWH010 -148.20 7 -111.02 40.68 4.36 2.15 162 1 87.4 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>											
URG00001											1 U 7/UK41
USAEH001											
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 9/GR2 USAWH102 -157.20 7 -113.07 40.74 3.72 1.78 149 1 87.4											156
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 -110.94 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 9/GR2 USAWH102 -157.20 7 -113.07 40.74 3.72 1.78 149 1 87.4 9/GR2											
USAEH004											
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											
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									1		
USAWH101			7					132	1	87.4	
									1		
VENAND03 -115.20 7 -71.37 -4.69 6.49 2.57 87 1 87.4 9/GR5											
	VENAND03	-115.20	7	-71.37	-4.69	6.49	2.57	87	1	87.4	9/GR5

17 426.06 MHz (8)

1	2	3	4			5	6	7	8	9
ALS00002	-165.80	8	-109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
ALS00002 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	3/GR2
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 B SU111	-101.80 -80.80	8	-45.99 -51.10	-19.09 -25.64	2.22	0.79 1.06	62 50	2 2	87.4 87.4	8 8 9/GR6
B SU111	-80.80 -44.80	8	-51.10 -50.76	-25.64 -25.62	2.76 2.47	1.48	56	2	87.4 87.4	8 9/GR6 8 9/GR9
B SU211	-80.80	8	-30.76 -44.51	-23.62 -16.94	3.22	1.48	60	2	87.4	8 9/GR9 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
CAN01101 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
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 -69.59	50.02 -23.20	7.88	2.52 0.69	6 68	2 2	87.4 87.4	9/GR16
CHLCONT4 CHLCONT6	-105.80 -105.80	8	-69.59 -73.52	-23.20 -55.52	3.65	1.31	39	2	87.4 87.4	9/GR16
CRBBAH01	-92.30	8	-75.32 -76.09	-33.32 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	i	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 JMC00005	-174.80 -33.80	8	-116.10	37.47 18.12	5.60 0.60	0.76 0.60	132 90	2 2	87.4 87.4	9/GR2
LCAIFRB1	-33.80 -79.30	8	-77.27 -61.15	13.90	0.60	0.60	90	2	87.4 87.4	
MEX01NTE	-77.80	8	-105.80	25.99	2.88	2.07	155	2	87.4	1
MEX01NTE MEX02NTE	-135.80	8	-107.36	26.32	3.80	1.57	149	2	87.4	1
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	156
USAEH002	-100.80	8	-93.85	36.31	8.26	3.55	71	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	156
USAPSA02	-165.80	8	-109.83	36.82	6.03	1.12	137	2 2	87.4	9/GR1
USAPSA03 USAWH101	-174.80 -147.80	8	-116.10 -111.01	37.47 40.67	5.60 4.38	0.76 2.15	132 162	2 2	87.4 87.4	9/GR2
USAWH101 USAWH102	-147.80 -156.80	8	-111.01 -113.01	40.67	3.74	1.79	162	2	87.4 87.4	
VEN11VEN	-103.80	8	-66.79	6.90	2.50	1.77	122	2	87.4	
	103.00		00.79	0.50		,				

17 440.64 MHz (9)

ALS00002	1	2	3	4			5	6	7	8	9
ALSON003	AT 500003	166.20	0	100.04	26.96	6.04	1.11	127	,	97.4	0/CP1
ARGISINJU											
ARCSUR04											
B CE311											
B CE411									1 -		
B CE411											
B NOBI									li		
B NO611	B CE412	-45.20	9	-50.71	-15.30	3.57	1.56	52	1	87.4	8 9/GR9
B NO711	B CE511	-64.20	9	-53.10	-2.90	2.44	2.13	104	1	87.4	8 9/GR7
B NOB11	B NO611	-74.20	9	-59.60	-11.62	2.85	1.69	165	2	87.4	8 9/GR8
B SUI11								126			
B SU112									2		
B SU211									٠ ١		
B SU212									1 -		
BAHIFRI											
BERERMU									1 -		8 9/GR9
BERERO2								1			
BOLANDOI			_					, ,			22
CANDIOID									1 -		
CAN01201											
CAND1202											
CAN01203									1 -)/GRIO
CANO1303								-			9/GR12
CANO1304											
CAN01403									i		
CANO1405	CAN01403	-129.20	9	-113.02	51.08		1.26	162	1	87.4	9/GR12
CAN01504	CAN01404	-91.20	9	-86.71	50.48	8.58	2.54	178	1	87.4	9/GR13
CAN01505	CAN01405	-82.20	9	-84.11	50.20	8.31	2.58	1	1	87.4	9/GR14
CAN01605	CAN01504	-91.20		-86.71	50.48	8.58	2.54	178	1	87.4	9/GR13
CAN01606								1	1		
CHILCONTS									1		9/GR14
CHLPAC02											
CLMANDOI											
CLM00001									٠.		
EQACANDI -115.20 9 -71.37 -4.69 6.49 2.57 87 1 87.4 9/GRS EQAGANDI -115.20 9 -71.37 -4.69 6.49 2.57 87 1 87.4 9/GRS FLKANTOI -57.20 9 -44.54 -60.13 3.54 0.68 12 1 87.4 2 FLKALKS -31.00 9 -59.90 -51.64 0.60 0.60 90 1 87.4 2 GRD00002 -466.20 9 -109.94 36.86 6.04 1.11 137 1 87.4 9/GRI HWA00003 -175.20 9 -116.23 37.50 5.60 0.75 132 1 87.4 9/GRI MEXOINTE -78.20 9 -105.81 26.01 2.89 2.08 155 1 87.4 1 MEXOISUR -69.20 9 -107.21 26.31 3.84 1.55 148 1									1 1		9/GR5
EQAGANDI											0/GP5
FIKANTOI									1 -		
FLKFALKS											
GRD0002									l i		23
HWA00002									Ιi		23
MEXOINTE			9					137	1		9/GR1
MEX01SUR			9						1		
MEX02NTE	MEX01NTE	-78.20	9	-105.81	26.01	2.89	2.08	155	1	87.4	1
MEXO2SUR	MEX01SUR	-69.20		-94.84	19.82	3.05	2.09	4	1		1
PAQPAC01	MEX02NTE	-136.20		-107.21		3.84	1.55	148	1		1
PRG00002											
PRUANDO2									1 -		9/GR17
PTRVIR01									-		0.000
PTRVIR02											
SPMFRAN3			_								
TRD00001									-		
URG00001								, ,			2 /
USAEH001									1 -		
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 USAWH02 -157.20 9 -113.07 40.74 3.72 1.78 149 1 87.4									1 -		156
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 9/GR2 USAWH102 -157.20 9 -113.07 40.74 3.72 1.78 149 1 87.4 9/GR2											
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											
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									1 -		
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									i		
USAWH101			9						1		
			9						1		
VENAND03 -115.20 9 -71.37 -4.69 6.49 2.57 87 1 87.4 9/GR5									1		
									٠.		
VRG00001 -79.70 9 -64.37 18.48 0.60 0.60 90 1 87.4 4	VRG00001	-79.70	9	-64.37	18.48	0.60	0.60	90	1	87.4	4

17 455.22 MHz (10)

1	2	3	4			5	6	7	8	9
ALS00002	-165.80	10	-109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
ALS00002	-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	7/012
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 B SE911	-73.80 -101.80	10 10	-68.75 -45.99	-4.71 -19.09	2.37	1.65 0.79	73 62	1 2	87.4 87.4	8 9/GR8 8
B SU111	-80.80	10	-43.99 -51.10	-19.09 -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
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 2	87.4	9/GR14
CAN01605 CAN01606	-81.80 -70.30	10 10	-83.80 -80.64	50.22 50.02	8.35 7.88	2.57 2.52	2 6	2	87.4 87.4	9/GR14
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 HWA00002	-83.30 -165.80	10 10	-73.28 -109.83	18.96 36.82	0.82 6.03	0.68 1.12	11 137	2 2	87.4 87.4	9/GR1
HWA00002 HWA00003	-174.80	10	-116.10	37.47	5.60	0.76	137	2	87.4	9/GR1 9/GR2
MEX01NTE	-77.80	10	-105.80	25.99	2.88	2.07	155	2	87.4	1 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	i
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	156
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	156
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 USAWH102	-147.80 -156.80	10 10	-111.01 -113.01	40.67 40.71	4.38 3.74	2.15 1.79	162 149	2 2	87.4 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	
. 2., , 2.,,	133.00		30.77	3.70	2.50	1.,,	***	~	07.7	

17 469.80 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
ALS00002	-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 B CE412	-64.20 -45.20	11 11	-50.97 -50.71	-15.27 -15.30	3.86 3.57	1.38 1.56	49 52	1 1	87.4 87.4	8 9/GR7 8 9/GR9
B CE511	-64.20	11	-50.71 -53.10	-13.30 -2.90	2.44	2.13	104	1	87.4 87.4	8 9/GR9 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	
BOLAND01	-115.20	11	-71.37	-4.69	6.49	2.57	87	1	87.4	9/GR5
BOL00001	-87.20	11	-64.61	-16.71	2.52	2.19	85	1	87.4	
BRB00001 CAN01101	-92.70 -138.20	11	-59.85 -114.60	12.93 51.08	0.60 7.28	0.60 1.10	90 160	2	87.4 87.4	0/CD10
CAN01101 CAN01201	-138.20 -138.20	11 11	-114.60 -114.60	51.08	7.28	1.10	160	1	87.4 87.4	9/GR10 9/GR10
CAN01201 CAN01202	-72.70	11	-81.34	50.02	7.96	2.55	5	1	87.4	9/GK10
CAN01202 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	0/CD17
CHLCONT5	-106.20 -106.20	11 11	-72.23 -80.06	-35.57 -30.06	2.60 1.36	0.68 0.68	55 69	1	87.4 87.4	9/GR17 9/GR17
CHLPAC02 CLMAND01	-115.20	11	-71.37	-4.69	6.49	2.57	87	1	87.4	9/GR17 9/GR5
CLM00001	-103.20	11	-74.50	5.87	3.98	1.96	118	1	87.4	J/GK3
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	0.000.4
HWA00002 HWA00003	-166.20 -175.20	11 11	-109.94 -116.23	36.86 37.50	6.04 5.60	1.11 0.75	137 132	1	87.4	9/GR1 9/GR2
MEX01NTE	-175.20 -78.20	11	-116.23 -105.81	26.01	2.89	2.08	152	1	87.4 87.4	9/GR2 1
MEX01NTE MEX01SUR	-/8.20 -69.20	11	-103.81 -94.84	19.82	3.05	2.08	133	1	87.4 87.4	1
MEX0130K 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	1.5.6
USAEH001	-61.70	11	-87.57	36.17	6.42	3.49	12	1	87.4	156
USAEH002	-101.20	11	-93.94 -95.23	36.32	8.24 8.27	3.56 3.37	171	1 1	87.4 87.4	1 6 9/GR20 1 6 9/GR21
USAEH003 USAEH004	-110.20 -119.20	11 11	-95.23 -96.45	36.29 36.21	8.27	3.37	168 165	1	87.4 87.4	1 6 9/GR21 1 5 6
USAPSA02	-119.20 -166.20	11	-96.45 -109.94	36.21	6.04	1.11	137	1	87.4 87.4	9/GR1
USAPSA02 USAPSA03	-175.20	11	-116.23	37.50	5.60	0.75	137	1	87.4	9/GR1 9/GR2
USAWH101	-148.20	11	-111.02	40.68	4.36	2.15	162	1	87.4), GRE
USAWH101	-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

17 484.38 MHz (12)

1	2	3	4			5	6	7	8	9
ALS00002	-165.80	12	-109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
ALS00002 ALS00003	-174.80	12	-109.83	37.47	5.60	0.76	137	2	87.4 87.4	9/GR1 9/GR2
ARGNORT4	-93.80	12	-63.96	-30.01	3.86	1.99	48	2	87.4	9/GK2
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 B SU211	-44.80 -80.80	12 12	-50.76 -44.51	-25.62 -16.94	2.47 3.22	1.48 1.37	56 60	2 2	87.4 87.4	8 9/GR9 8 9/GR6
B SU212	-80.80 -44.80	12	-44.31 -43.99	-16.94 -16.97	3.22	1.92	59	2	87.4 87.4	8 9/GR9
CAN01101	-137.80	12	-43.99 -114.10	50.92	7.22	1.92	160	2	87.4 87.4	9/GR10
CAN01101 CAN01201	-137.80	12	-114.10 -114.10	50.92	7.22	1.11	160	2	87.4 87.4	9/GR10 9/GR10
CAN01201 CAN01202	-72.30	12	-81.23	50.12	7.99	2.53	5	2	87.4	,, GR10
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	8.58	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
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 2	87.4	0/071/
CHLCONT4	-105.80	12 12	-69.59	-23.20	2.21 3.65	0.69	68 39	2 2	87.4	9/GR16
CHLCONT6 CRBBAH01	-105.80 -92.30	12	-73.52 -76.09	-55.52 24.13	1.83	1.31 0.68	141	1	87.4 87.4	9/GR16 9/GR18
CRBBER01	-92.30 -92.30	12	-64.76	32.13	0.60	0.60	90	1	87.4 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 12	-77.27	18.12	0.60	0.60	90 90	2 2	87.4	
LCAIFRB1 MEX01NTE	-79.30 -77.80	12	-61.15 -105.80	13.90 25.99	0.60 2.88	0.60 2.07	155	2	87.4 87.4	1
MEX01NTE MEX02NTE	-135.80	12	-103.80	26.32	3.80	1.57	149	2	87.4	1
MEX02NTE MEX02SUR	-135.80	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	156
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	156
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 12	-111.01	40.67	4.38	2.15 1.79	162	2 2	87.4	
USAWH102 VEN11VEN	-156.80 -103.80	12	-113.01 -66.79	40.71 6.90	3.74 2.50	1.79	149 122	2 2	87.4 87.4	
A THAIL A THA	-103.80	12	-00.79	0.50	2.50	1.//	122		07.4	

17 498.96 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 B CE411	-45.20	13 13	-40.27	-6.06	3.44	2.09	174	1 1	87.4	8 9/GR9
B CE411 B CE412	-64.20 -45.20	13	-50.97 -50.71	-15.27 -15.30	3.86 3.57	1.38 1.56	49 52	1	87.4 87.4	8 9/GR7 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 B SU211	-45.20	13 13	-50.75 -44.51	-25.62 -16.95	2.47	1.48	56	1	87.4	8 9/GR9
B SU211 B SU212	-81.20 -45.20	13	-44.51 -44.00	-16.95 -16.87	3.22 3.20	1.36 1.96	60 58	1 1	87.4 87.4	8 9/GR6 8 9/GR9
BAHIFRB1	-87.20	13	-76.06	24.16	1.81	0.70	142	1	87.4	8 9/GK9
BERBERMU	-96.20	13	-64.77	32.32	0.60	0.60	90	2	87.4	
BERBER02	-31.00	13	-64.77	32.32	0.60	0.60	90	1	87.4	23
BOLAND01	-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 CAN01203	-72.70 -129.20	13 13	-81.34 -113.02	50.02 51.08	7.96 7.47	2.55 1.26	5 162	1	87.4 87.4	9/GR12
CAN01203 CAN01303	-129.20	13	-113.02	51.08	7.47	1.26	162	1	87.4 87.4	9/GR12 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 -82.20	13 13	-84.11 -84.11	50.20	8.31	2.58 2.58	1	1 1	87.4	9/GR14
CAN01605 CAN01606	-82.20 -70.70	13	-84.11 -80.77	50.20 50.03	8.31 7.88	2.58	6	1	87.4 87.4	9/GR14
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 FLKANT01	-115.20 -57.20	13 13	-71.37 -44.54	-4.69 -60.13	6.49 3.54	2.57 0.68	87 12	1	87.4 87.4	9/GR5 2
FLKANTOI	-37.20 -31.00	13	-44.34 -59.90	-51.64	0.60	0.60	90	1	87.4	2 2 3
GRD00002	-42.20	13	-61.58	12.29	0.60	0.60	90	1	87.4	23
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 MEX02SUR	-136.20 -127.20	13 13	-107.21 -96.39	26.31 19.88	3.84	1.55 1.87	148 157	1 1	87.4 87.4	1
PAQPAC01	-127.20 -106.20	13	-96.39 -109.18	-27.53	0.60	0.60	90	1	87.4 87.4	9/GR17
PRG00002	-99.20	13	-58.66	-23.32	1.45	1.04	76	1	87.4)/GRI/
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 URG00001	-84.70 -71.70	13 13	-61.23 -56.22	10.70 -32.52	0.60 1.02	0.60 0.89	90 11	1	87.4 87.4	
USAEH001	-/1./0 -61.70	13	-56.22 -87.57	-32.52 36.17	6.42	3.49	11	1	87.4 87.4	156
USAEH001 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	156
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 -157.20	13 13	-111.02	40.68	4.36	2.15 1.78	162 149	1	87.4	
USAWH102 VENAND03	-157.20 -115.20	13	-113.07 -71.37	40.74 -4.69	3.72 6.49	2.57	149 87	1 1	87.4 87.4	9/GR5
VRG00001	-79.70	13	-64.37	18.48	0.60	0.60	90	1	87.4	4
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17 513.54 MHz (14)

1	2	3	4			5	6	7	8	9
ALS00002	-165.80	14	-109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
ALS00002 ALS00003	-174.80	14	-116.10	37.47	5.60	0.76	137	2	87.4	9/GR1 9/GR2
ARGNORT4	-93.80	14	-63.96	-30.01	3.86	1.99	48	2	87.4	3/GK2
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 B SU112	-80.80 -44.80	14 14	-51.10 -50.76	-25.64 -25.62	2.76 2.47	1.06 1.48	50 56	2 2	87.4	8 9/GR6 8 9/GR9
B SU211	-44.80 -80.80	14	-30.76 -44.51	-25.62 -16.94	3.22	1.48	60	2	87.4 87.4	8 9/GR9 8 9/GR6
B SU211	-80.80 -44.80	14	-44.31 -43.99	-16.94 -16.97	3.22	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
CAN01101	-137.80	14	-114.10	50.92	7.22	1.11	160	2	87.4	9/GR10
CAN01201	-72.30	14	-81.23	50.12	7.99	2.53	5	2	87.4)/GICIO
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
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 2	87.4	9/GR16
CHLCONT6 CRBBAH01	-105.80 -92.30	14 14	-73.52 -76.09	-55.52 24.13	3.65 1.83	1.31 0.68	39 141	1 1	87.4 87.4	9/GR16 9/GR18
CRBBER01	-92.30 -92.30	14	-/6.09 -64.76	32.13	0.60	0.60	90	1	87.4	9/GR18
CRBBLZ01	-92.30 -92.30	14	-88.61	17.26	0.64	0.64	90	i	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 2	87.4	1
MEX02SUR PRU00004	-126.80 -85.80	14 14	-96.39 -74.19	19.88 -8.39	3.19	1.87 2.45	158 112	2 2	87.4 87.4	1
PTRVIR01	-100.80	14	-74.19 -93.85	36.31	8.26	3.55	171	2	87.4	1 6 9/GR20
PTRVIR01 PTRVIR02	-100.80	14	-93.83 -95.47	36.31	8.26	3.33	168	2	87.4 87.4	1 6 9/GR20 1 6 9/GR21
TCA00001	-115.80	14	-71.79	21.53	0.60	0.60	90	2	87.4	1 0 9/GRZ1
USAEH001	-61.30	14	-87.53	36.18	6.41	3.49	12	2	87.4	156
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	156
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	
	-156.80 -79.30 -103.80	14 14 14	-113.01 -61.18 -66.79	40.71 13.23 6.90	3.74 0.60 2.50	1.79 0.60 1.77	90 122	2 2 2	87.4 87.4 87.4	

17 528.12 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
ALS00002	-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 B CE412	-64.20 -45.20	15 15	-50.97 -50.71	-15.27 -15.30	3.86 3.57	1.38 1.56	49 52	1	87.4 87.4	8 9/GR7 8 9/GR9
B CE511	-43.20 -64.20	15	-50.71 -53.10	-13.30 -2.90	2.44	2.13	104	1	87.4 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	
BOLAND01	-115.20	15	-71.37	-4.69	6.49	2.57	87	1	87.4	9/GR5
BOL00001	-87.20	15	-64.61	-16.71	2.52	2.19	85	1	87.4	
BRB00001 CAN01101	-92.70 -138.20	15 15	-59.85 -114.60	12.93 51.08	0.60 7.28	0.60 1.10	90 160	2	87.4 87.4	0/CD10
CAN01101 CAN01201	-138.20 -138.20	15	-114.60 -114.60	51.08	7.28	1.10	160	1 1	87.4 87.4	9/GR10 9/GR10
CAN01201 CAN01202	-72.70	15	-81.34	50.02	7.96	2.55	5	1	87.4	9/GK10
CAN01202 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	l i	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	0/CD17
CHLCONT5	-106.20 -106.20	15 15	-72.23 -80.06	-35.57 -30.06	2.60 1.36	0.68 0.68	55 69	1	87.4 87.4	9/GR17 9/GR17
CHLPAC02 CLMAND01	-106.20	15	-80.06 -71.37	-30.06 -4.69	6.49	2.57	87	1	87.4	9/GR1/ 9/GR5
CLM00001	-103.20	15	-74.50	5.87	3.98	1.96	118	i	87.4	9/GK3
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	o/cm1
HWA00002 HWA00003	-166.20 -175.20	15 15	-109.94 -116.23	36.86 37.50	6.04 5.60	1.11 0.75	137 132	1	87.4	9/GR1 9/GR2
MEX01NTE	-175.20 -78.20	15	-116.23 -105.81	26.01	2.89	2.08	152	1	87.4 87.4	9/GR2 1
MEX01NTE MEX01SUR	-/8.20 -69.20	15	-103.81 -94.84	19.82	3.05	2.08	155	1	87.4 87.4	1
MEX0130K 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	1.54
USAEH001	-61.70	15	-87.57	36.17	6.42	3.49	12	1	87.4	156
USAEH002	-101.20	15 15	-93.94 -95.23	36.32	8.24 8.27	3.56 3.37	171 168	1	87.4 87.4	1 6 9/GR20 1 6 9/GR21
USAEH003 USAEH004	-110.20 -119.20	15	-95.23 -96.45	36.29 36.21	8.27	3.37	168	1	87.4 87.4	1 6 9/GR21 1 5 6
USAPSA02	-119.20 -166.20	15	-96.45 -109.94	36.21	6.04	1.11	137	1	87.4 87.4	9/GR1
USAPSA02 USAPSA03	-175.20	15	-116.23	37.50	5.60	0.75	137	1	87.4	9/GR1 9/GR2
USAWH101	-148.20	15	-111.02	40.68	4.36	2.15	162	1	87.4	,, GR2
USAWH101	-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

17 542.70 MHz (16)

1	2	3	4			5	6	7	8	9
ALS00002	-165.80	16	-109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
ALS00002 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	3/GR2
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
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	0.000.4
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 -92.30	16	-64.76	32.13	0.60	0.60	90 90	1	87.4	9/GR18
CRBBLZ01 CRBEC001	-92.30 -92.30	16	-88.61 -60.07	17.26 8.26	0.64	0.64		1	87.4 87.4	9/GR18
CRBJMC01	-92.30 -92.30	16 16	-60.07 -79.45	17.97	4.20 0.99	0.86 0.68	115 151	1	87.4 87.4	9/GR18 9/GR18
CYM00001	-115.80	16	-80.58	19.57	0.60	0.60	90	2	87.4	9/GK16
DOMIFRB2	-83.30	16	-70.51	18.79	0.00	0.69	167	2	87.4	
EQAC0001	-83.30 -94.80	16	-78.31 -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	27
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	156
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	156
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 16	-113.01 -66.79	40.71 6.90	3.74	1.79 1.77	149 122	2 2	87.4 87.4	
VEN11VEN	-103.80				2.50					

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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
ALS00002 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	9/GR3
B CE312	-45.20	17	-40.27	-6.06	3.44	2.09	174	1	87.4	9/GR4
B CE411 B CE412	-64.20 -45.20	17 17	-50.97 -50.71	-15.27 -15.30	3.86 3.57	1.38 1.56	49 52	1	87.4 87.4	8 9/GR7 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 17	-64.77	32.32	0.60	0.60	90 90	2	87.4	2.2
BERBER02 BOLAND01	-31.00 -115.20	17	−64.77 −71.37	32.32 -4.69	6.49	0.60 2.57	90 87	1	87.4 87.4	2 3 9/GR5
CAN01101	-113.20	17	-125.63	57.24	3.45	1.27	157	1	87.4 87.4	9/GR10
CAN01101 CAN01201	-138.20	17	-112.04	55.95	3.35	0.97	151	1	87.4	9/GR10
CAN01201	-72.70	17	-107.70	55.63	2.74	1.12	32	1	87.4)/GRIO
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 CAN01605	-82.20 -82.20	17 17	−71.77 −61.50	53.79 49.55	3.30 2.65	1.89 1.40	162 143	1 1	87.4 87.4	9/GR14 9/GR14
CAN01605 CAN01606	-82.20 -70.70	17	-61.30 -61.30	49.55	2.40	1.65	143	1	87.4 87.4	9/GK14
CHLCONT5	-106.20	17	-72.23	-35.57	2.60	0.68	55	i	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	23
HWA00002 HWA00003	-166.20 -175.20	17 17	-165.79 -166.10	23.42 23.42	4.20 4.25	0.68 0.68	160 159	1	87.4 87.4	9/GR1 9/GR2
JMC00002	-92.70	17	-77.30	18.12	0.62	0.62	90	2	87.4	9/GK2
KNA00001	-79.70	17	-62.46	17.44	0.60	0.60	90	1	87.4	
MEX01NTE	-78.20	17	-105.81	26.01	2.89	2.08	155	1	87.4	1
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
PAQPAC01	-106.20	17	-109.18	-27.53	0.60	0.60	90	1	87.4	9/GR17
PRG00002	-99.20 -115.20	17	-58.66 -71.27	-23.32	1.45	1.04 2.57	76 97	1	87.4	0/GP5
PRUAND02 PTRVIR01	-115.20 -101.20	17 17	-71.37 -93.94	-4.69 36.32	6.49 8.24	3.56	87 171	1	87.4 87.4	9/GR5 1 6 9/GR20
PTRVIR01 PTRVIR02	-101.20	17	-93.94 -95.23	36.32	8.24	3.36	168	1	87.4 87.4	1 6 9/GR20 1 6 9/GR21
SPMFRAN3	-53.20	17	-93.23 -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	156
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	156
USAPSA02	-166.20	17	-109.94	36.86	6.04	1.11	137	1	87.4	9/GR1
USAPSA03 USAWH101	-175.20 -148.20	17 17	-116.23 -111.02	37.50 40.68	5.60 4.36	0.75 2.15	132 162	1	87.4 87.4	9/GR2
USAWH101 USAWH102	-148.20	17	-111.02 -113.07	40.68	3.72	1.78	149	1 1	87.4 87.4	
VENAND03	-115.20	17	-71.37	-4.69	6.49	2.57	87	1	87.4	9/GR5
	1.5.25		. 1.5 /			2.5 ,			- /	

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1	2	3	4			5	6	7	8	9
AT 000002	165.00	10	100.02	26.02	602	1.10	127	_	07.4	O/CD1
ALS00002 ALS00003	-165.80 -174.80	18 18	-109.83 -116.10	36.82	6.03	1.12	137	2 2	87.4	9/GR1 9/GR2
ARGNORT4	-1/4.80 -93.80	18	-63.96	37.47 -30.01	5.60 3.86	0.76 1.99	132 48	2	87.4 87.4	9/GR2
ARGNORT5	-54.80	18	-63.96 -62.85	-30.01 -29.80	3.24	2.89	46	2	87.4 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 B SE911	-73.80	18	-68.75	-4.71 -19.09	2.37	1.65	73	1 2	87.4	8 9/GR8
B SE911 B SU111	-101.80 -80.80	18 18	-45.99 -51.10	-19.09 -25.64	2.22 2.76	0.79 1.06	62 50	2	87.4 87.4	8 8 9/GR6
B SU112	-80.80 -44.80	18	-50.76	-25.64 -25.62	2.76	1.48	56	2	87.4 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
BLZ00001	-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
CAN01304 CAN01403	-90.80 -128.80	18 18	-99.00 -89.70	57.33 52.02	1.96 4.67	1.73 0.79	1 148	2 2	87.4 87.4	9/GR13 9/GR12
CAN01403 CAN01404	-128.80 -90.80	18	-89.70 -84.78	52.02 52.41	3.09	2.06	153	2	87.4 87.4	9/GR12 9/GR13
CAN01404 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 CRBBER01	-92.30 -92.30	18 18	-76.09 -64.76	24.13 32.13	1.83 0.60	0.68	141 90	1 1	87.4 87.4	9/GR18 9/GR18
CRBBLZ01	-92.30 -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 HWA00003	-165.80 -174.80	18 18	-165.79 -166.10	23.32 23.42	4.20 4.25	0.68	160 159	2 2	87.4 87.4	9/GR1 9/GR2
MEX01NTE	-174.80 -77.80	18	-105.10	25.42	2.88	2.07	155	2	87.4 87.4	9/GK2 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
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 2	87.4	156
USAEH002 USAEH003	-100.80 -109.80	18 18	-93.85 -95.47	36.31 36.38	8.26 8.10	3.55 3.45	171 168	2	87.4 87.4	1 6 9/GR20 1 6 9/GR21
USAEH003 USAEH004	-118.80	18	-95.47 -96.42	36.21	8.20	3.43	165	2	87.4 87.4	1 5 9/GK21 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	I .

17 586.44 MHz (19)

ALS00002	1	2	3	4			5	6	7	8	9
ALSON0003	AT \$00002	-166.20	19	-109 94	36.86	6.04	1.11	137	1	87.4	9/GR1
ARGINSU4											
ARGISNUS											
ARGSUR04			19						1		
B CE311	ARGSUR04	-94.20	19	-65.04	-43.33		1.50	40	1	87.4	9/GR3
B CE312	ARGSUR05	-55.20	19	-63.68	-43.01	2.54	2.38	152	1	87.4	9/GR4
B CE411											
B CE412											
B ROS11											
B NO611											
B NO711											
B NOS11											
B SUI11											
B SU112											
B SU211					-25.63						
B SU212											
BERBERMU											
BOLANDOI											0 5/010
BOLO0001											9/GR5
BRB00001											
CANO1101			19				0.60				
CAN01202 -72.70 19 -107.70 55.63 2.74 1.12 32 1 87.4 9/GR12 CAN01203 -129.20 19 -111.48 55.61 3.08 1.15 151 1 87.4 9/GR12 CAN01304 -19.20 19 -99.12 57.12 3.54 0.91 154 1 87.4 9/GR12 CAN01403 -129.20 19 -89.75 52.02 4.68 0.78 148 1 87.4 9/GR13 CAN01404 -91.20 19 -84.82 52.42 3.10 2.05 152 1 87.4 9/GR13 CAN01405 -82.20 19 -84.80 52.39 2.84 2.29 172 1 87.4 9/GR13 CAN01505 -82.20 19 -71.77 53.79 3.30 1.89 162 1 87.4 9/GR13 CAN01605 -82.20 19 -71.77 53.79 3.30 1.89 <	CAN01101	-138.20	19	-125.63	57.24	3.45	1.27	157	1	87.4	9/GR10
CAN01203	CAN01201	-138.20	19	-112.04	55.95	3.35	0.97	151	1	87.4	9/GR10
CAN01303					55.63		1.12		1		
CANO1304									1		
CAN01403											
CAND1404								_	1 -		
CAND1405 -82.20 19 -84.00 52.39 2.84 2.29 172 1 87.4 9/GR14 CAND1504 -91.20 19 -72.66 53.77 3.57 1.67 156 1 87.4 9/GR13 CAND1605 -82.20 19 -61.50 49.55 2.65 1.40 143 1 87.4 9/GR14 CAND1605 -82.20 19 -61.50 49.55 2.65 1.40 143 1 87.4 9/GR14 CAND1606 -70.70 19 -61.30 49.55 2.65 1.40 143 1 87.4 9/GR14 CHLCONT5 -106.20 19 -72.23 -35.57 2.60 0.68 69 1 87.4 9/GR14 CHLAD02 -106.20 19 -80.06 -30.06 1.36 0.68 69 1 87.4 9/GR17 CLMO0001 -105.20 19 -74.50 5.87 3.98 1.96 <th< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>											
CAN01504											
CANDISOS -82.20 19 -71.77 53.79 3.30 1.89 162 1 87.4 9/GR14 CANO1605 -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 2.65 1.40 143 1 87.4 9/GR14 CHLCONTS -106.20 19 -72.23 -35.57 2.60 0.68 55 1 87.4 9/GR17 CLMAND01 -115.20 19 -71.37 -4.69 6.49 2.57 87 1 87.4 9/GR17 CLMO0001 -103.20 19 -74.50 5.87 3.98 1.96 118 1 87.4 9/GR5 CUM00001 -80.20 19 -79.81 21.62 2.24 0.68 168 1 87.4 9/GR5 EQACAND1 -115.20 19 -71.37 -4.69 6.49 2.57											
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 CHLCONTS -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 CLM00001 -115.20 19 -74.50 5.87 3.98 1.96 118 1 87.4 9/GR5 CLM00001 -89.20 19 -74.50 5.87 3.98 1.96 118 1 87.4 9/GR5 CUB00001 -89.20 19 -74.50 5.87 3.98 1.96 118 1 87.4 9/GR5 EQAGAND1 -115.20 19 -71.37 -4.69 6.49 2.57 87 1									1 -		
CANDIGO6 -70.70 19 -61.30 49.55 2.40 1.65 148 1 87.4 CHLCONTS -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 -89.20 19 -74.50 5.87 3.98 1.96 118 1 87.4 9/GR5 EQACAND1 -115.20 19 -71.37 -4.69 6.49 2.57 87 1 87.4 9/GR5 GRAGAND1 -115.20 19 -71.37 -4.69 6.49 2.57 87 1 87.4 9/GR5 GRLDNG05 -57.20 19 -61.58 12.29 0.60 0.60 90 1											
CHLCONTS -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 -89.20 19 -74.50 5.87 3.98 1.96 118 1 87.4 9/GR5 CUM0001 -89.20 19 -77.37 -4.69 6.49 2.57 87 1 87.4 9/GR5 EQACAND1 -115.20 19 -71.37 -4.69 6.49 2.57 87 1 87.4 9/GR5 EQAGAND1 -115.20 19 -61.58 12.29 0.60 0.60 90 1 87.4 9/GR5 GRD00059 -57.20 19 -61.58 12.29 0.60 0.60 90 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>9/GK14</td>											9/GK14
CHLPAC02 -106.20 19 -80.06 -30.06 1.36 0.68 69 1 87.4 9/GR17 CLMAND01 -115.20 19 -74.50 5.87 3.98 1.96 118 1 87.4 9/GR5 CLM00001 -103.20 19 -74.50 5.87 3.98 1.96 118 1 87.4 9/GR5 CUB00001 -89.20 19 -79.81 21.62 2.24 0.68 168 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 9/GR5 GRLDN601 -53.20 19 -61.58 12.29 0.60 0.60 90 1 87.4 2 GUV00201 -84.70 19 -61.58 12.29 0.60 0.60 90											9/GR17
CLMAND01 -115.20 19 -71.37 -4.69 6.49 2.57 87 1 87.4 9/GR5 CLM00001 -89.20 19 -74.50 5.87 3.98 1.96 118 1 87.4 EQACAND1 -115.20 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 9/GR5 GRLDNK01 -53.20 19 -44.89 66.56 2.70 0.82 173 1 87.4 2 GUY00201 -84.70 19 -165.79 23.42 4.20 0.68 160 1 87.4											
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EQAGANDI GRDONKOI -115.20 19 -71.37 -4.69 6.49 2.57 87 1 87.4 9/GR5 GRDNKOI -53.20 19 -44.89 66.56 2.70 0.60 0.60 90 1 87.4 2 GUY00201 -84.70 19 -59.19 4.78 1.44 0.85 95 1 87.4 9/GR1 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 4.20 0.68 160 1 87.4 9/GR1 MEX01NTE -78.20 19 -105.81 26.01 2.89 2.08 155 1 87.4 1 MEX0ISUR -69.20 19 -94.84 19.82 3.05 2.09 4 1 87.4 1 MEX02SUR -127.20 19 -96.39 19.88 3.18 1.87	CUB00001	-89.20	19	-79.81	21.62	2.24	0.68	168	1	87.4	
GRD00059 GRLDNK01 -57.20 -53.20 19 19 -61.58 -44.89 12.29 66.56 0.60 2.70 0.82 0.82 173 173 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	EQACAND1	-115.20	19	-71.37	-4.69	6.49	2.57	87	1	87.4	9/GR5
GRLDNK01											9/GR5
GUY00201 -84.70 19 -59.19 4.78 1.44 0.85 95 1 87.4 9/GR1 HWA00003 -175.20 19 -166.10 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 MEX01SUR -69.20 19 -94.84 19.82 3.05 2.09 4 1 87.4 1 MEX02SUR -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 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>											
HWA00002											2
HWA00003											0/CD1
MEXOINTE									1 -		
MEXOISUR											
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 4 PRG00002 -99.20 19 -58.66 -23.32 1.45 1.04 76 1 87.4 9/GR1 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											
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PRG00002 -99.20 19 -58.66 -23.32 1.45 1.04 76 1 87.4 PRUAND02 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 16.9/GR20 PTRVIR02 -110.20 19 -95.23 36.29 8.27 3.37 168 1 87.4 16.9/GR20 USAGH001 -71.70 19 -56.22 -32.52 1.02 0.89 11 1 87.4 1 6.9/GR21 USAEH001 -61.70 19 -87.57 36.17 6.42 3.49 12 1 87.4 1.56 USAEH002 -101.20 19 -93.94 36.32 8.24 3.56 171 1 87.4 1.56									1 -		l .
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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 1 5 6 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											9/GR5
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			19	-93.94	36.32	8.24		171	1	87.4	1 6 9/GR20
USAEH001		-110.20	19	-95.23		8.27	3.37	168	1	87.4	1 6 9/GR21
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 36.31 8.20 3.12 165 1 87.4 15.6											
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											9/GR2
USAWH101											
VENAND03 -115.20 19 -113.07 40.74 3.72 1.78 149 1 87.4 9/GR5											9/GR 5
15.20 15 11.51 1.50 0.45 2.51 07 1 07.4 9/0R3	TENANDOS	113.20	1,7	/1.5/	7.07	0.47	2.31	0,	١ '	07.7	7,010

17 601.02 MHz (20)

1	2	3	4			5	6	7	8	9
ALS00002	-165.80	20	-109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
ALS00002 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	3/GRZ
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	0/CD12
CAN01203	-128.80	20 20	-111.43	55.56	3.07 3.54	1.15 0.92	151 154	2 2	87.4	9/GR12 9/GR12
CAN01303 CAN01304	-128.80 -90.80	20	-102.39 -99.00	57.12 57.33	1.96	1.73	134	2	87.4 87.4	9/GR12 9/GR13
CAN01304 CAN01403	-90.80 -128.80	20	-99.00 -89.70	52.02	4.67	0.79	148	2	87.4 87.4	9/GR13 9/GR12
CAN01403 CAN01404	-128.80 -90.80	20	-89.70 -84.78	52.02	3.09	2.06	153	2	87.4	9/GR12 9/GR13
CAN01404 CAN01405	-81.80	20	-84.02	52.34	2.82	2.30	172	2	87.4	9/GR13
CAN01504	-90.80	20	-72.68	53.78	3.57	1.67	157	2	87.4	9/GR14 9/GR13
CAN01504 CAN01505	-81.80	20	-72.08 -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), GICI I
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 MEX02NTE	-77.80 -135.80	20 20	-105.80 -107.36	25.99 26.32	2.88 3.80	2.07 1.57	155 149	2 2	87.4 87.4	1
MEX02NTE MEX02SUR	-133.80	20	-107.36 -96.39	19.88	3.19	1.87	158	2	87.4 87.4	1 1
PNRIFRB2	-120.80	20	-80.15	8.46	1.01	0.73	170	1	87.4	1
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
PTRVIR01	-100.80	20	-95.85 -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	156
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	156
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
	-103.80	20	-66.79	6.90	2.50	1.77	122	2	87.4	9/GR22

17 615.60 MHz (21)

1	2	3	4			5	6	7	8	9
AT C00002	166.20	21	100.04	26.96	6.04	1.11	127	1	97.4	0/CP1
ALS00002	-166.20 -175.20	21 21	-109.94	36.86	5.60	1.11 0.75	137 132	1	87.4 87.4	9/GR1 9/GR2
ALS00003 ARGINSU4	-1/5.20 -94.20	21	-116.23 -52.98	37.50 -59.81	3.40	0.75	132	1	87.4 87.4	9/GR2 9/GR3
ARGINSU4 ARGINSU5	-55.20	21	-32.98 -44.17	-59.81 -59.91	3.40	0.08	13	1	87.4 87.4	9/GR3 9/GR4
ARGINSUS ARGSUR04	-94.20	21	-65.04	-43.33	3.32	1.50	40	1	87.4	9/GR4 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	a con s
BOLAND01	-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	0/CB12
CAN01203 CAN01303	-129.20 -129.20	21 21	-111.48 -102.42	55.61 57.12	3.08 3.54	1.15 0.91	151 154	1	87.4 87.4	9/GR12 9/GR12
CAN01303 CAN01304	-129.20 -91.20	21	-102.42 -99.12	57.36	1.98	1.72	2	1	87.4 87.4	9/GR12 9/GR13
CAN01304 CAN01403	-129.20	21	-89.75	52.02	4.68	0.78	148	1	87.4	9/GR13
CAN01403 CAN01404	-91.20	21	-84.82	52.42	3.10	2.05	152	1	87.4	9/GR12 9/GR13
CAN01404	-82.20	21	-84.00	52.39	2.84	2.29	172	l î	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 KNA00001	-92.70 -79.70	21 21	-77.30 -62.46	18.12 17.44	0.62 0.60	0.62	90 90	2	87.4 87.4	
MEX01NTE	-79.70 -78.20	21	-62.46 -105.81	26.01	2.89	0.60 2.08	155	1	87.4 87.4	1
MEXOINTE MEXOISUR	-/8.20 -69.20	21	-105.81 -94.84	19.82	3.05	2.08	155	1	87.4 87.4	1
MEX01SUR MEX02NTE	-136.20	21	-107.21	26.31	3.84	1.55	148	1 1	87.4 87.4	1
MEX02NTE MEX02SUR	-127.20	21	-96.39	19.88	3.18	1.87	157	1	87.4	l i
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	
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
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	156
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 VENAND03	-157.20	21	-113.07	40.74	3.72	1.78	149	1	87.4	0/CD5
	-115.20	21	-71.37	-4.69	6.49	2.57	87	1	87.4	9/GR5

17 630.18 MHz (22)

1	2	3	4			5	6	7	8	9
ALS00002	-165.80	22	-109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
ALS00002 ALS00003	-174.80	22	-116.10	37.47	5.60	0.76	132	2	87.4	9/GR1 9/GR2
ARGNORT4	-93.80	22	-63.96	-30.01	3.86	1.99	48	2	87.4	7,012
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 B NO711	-73.80 -73.80	22 22	-59.60 -60.70	-11.62 -1.78	2.86 3.54	1.69 1.78	165 126	1	87.4 87.4	8 9/GR8 8 9/GR8
B NO811	-73.80 -73.80	22	-60.70 -68.75	-1.78 -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
BLZ00001	-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	0/07/12
CAN01203	-128.80	22	-111.43	55.56	3.07	1.15	151	2 2	87.4	9/GR12
CAN01303 CAN01304	-128.80 -90.80	22 22	-102.39 -99.00	57.12 57.33	3.54 1.96	0.92 1.73	154 1	2	87.4 87.4	9/GR12 9/GR13
CAN01304 CAN01403	-128.80	22	-89.70	52.02	4.67	0.79	148	2	87.4	9/GR13
CAN01403 CAN01404	-90.80	22	-84.78	52.41	3.09	2.06	153	2	87.4	9/GR13
CAN01404	-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 -92.30	22	-76.09	24.13	1.83	0.68	141 90	1	87.4	9/GR18
CRBBER01 CRBBLZ01	-92.30 -92.30	22 22	-64.76 -88.61	32.13 17.26	0.60 0.64	0.60 0.64	90	1	87.4 87.4	9/GR18 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	i	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 MEX02SUR	-135.80 -126.80	22 22	-107.36 -96.39	26.32 19.88	3.80	1.57 1.87	149 158	2 2	87.4 87.4	1 1
NCG00003	-126.80	22	-96.39 -84.99	12.90	1.05	1.01	176	1	87.4 87.4	1
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	156
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	156
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 2	87.4	
USAWH102 VEN11VEN	-156.80 -103.80	22 22	-113.01 -66.79	40.71 6.90	3.74 2.50	1.79 1.77	149 122	2 2	87.4 87.4	
APMILARM	-105.80	22	-00.79	0.50	2.50	1.//	122	-	07.4	

17 644.76 MHz (23)

1	2	3	4			5	6	7	8	9
AT 500003	166.20	23	-109.94	26.96	6.04	1.11	127	1	97.4	0/CB1
ALS00002 ALS00003	-166.20 -175.20	23	-109.94 -116.23	36.86	5.60	1.11 0.75	137 132	1	87.4 87.4	9/GR1 9/GR2
ARGINSU4	-173.20 -94.20	23	-52.98	37.50 -59.81	3.40	0.73	132	1	87.4	9/GR2 9/GR3
ARGINSU5	-55.20	23	-44.17	-59.91	3.77	0.70	13	i	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 2	87.4	8 9/GR8
B NO811	-74.20	23 23	-68.76	-4.71 -25.63	2.37	1.65	73	1	87.4	8 9/GR8
B SU111 B SU112	-81.20 -45.20	23	-51.12 -50.75	-25.63 -25.62	2.76 2.47	1.05 1.48	50 56	1	87.4 87.4	8 9/GR6 8 9/GR9
B SU211	- 4 3.20	23	-30.73 -44.51	-16.95	3.22	1.36	60	1	87.4	8 9/GR9 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	0 5/010
BOLAND01	-115.20	23	-71.37	-4.69	6.49	2.57	87	1	87.4	9/GR5
BOL00001	-87.20	23	-64.61	-16.71	2.52	2.19	85	1	87.4	
BRB00001	-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 CAN01405	-91.20 -82.20	23 23	-84.82 -84.00	52.42 52.39	3.10 2.84	2.05 2.29	152 172	1	87.4 87.4	9/GR13 9/GR14
CAN01403 CAN01504	-82.20 -91.20	23	-84.00 -72.66	53.77	3.57	1.67	156	1	87.4	9/GR14 9/GR13
CAN01505	-82.20	23	-72.00 -71.77	53.77	3.30	1.89	162	1	87.4	9/GR13
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), OKT
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 52.20	23	-61.58	12.29	0.60	0.60	90	1	87.4	
GRLDNK01 GUY00201	-53.20 -84.70	23 23	-44.89 -59.19	66.56 4.78	2.70 1.44	0.82 0.85	173 95	1 1	87.4 87.4	2
HWA00002	-84.70 -166.20	23	-165.79	23.42	4.20	0.83	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
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	0.000.5
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 URG00001	-110.20 -71.70	23 23	-95.23 -56.22	36.29 -32.52	8.27 1.02	3.37 0.89	168 11	1	87.4 87.4	1 6 9/GR21
USAEH001	-/1./0 -61.70	23	-36.22 -87.57	-32.52 36.17	6.42	3.49	11	1	87.4 87.4	156
USAEH001 USAEH002	-101.20	23	-93.94	36.32	8.24	3.49	171	1	87.4	1 6 9/GR20
USAEH002 USAEH003	-110.20	23	-95.23	36.29	8.27	3.37	168	1	87.4	1 6 9/GR20 1 6 9/GR21
USAEH004	-119.20	23	-96.45	36.21	8.20	3.12	165	1	87.4	156
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	1
VENAND03	-115.20	23	-71.37	-4.69	6.49	2.57	87	1	87.4	9/GR5

17 659.34 MHz (24)

1	2	3	4			5	6	7	8	9
ALS00002	-165.80	24	-109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
ALS00002 ALS00003	-174.80	24	-116.10	37.47	5.60	0.76	132	2	87.4	9/GR1 9/GR2
ARGNORT4	-93.80	24	-63.96	-30.01	3.86	1.99	48	2	87.4	7/01/2
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 B SU211	-44.80 -80.80	24 24	-50.76 -44.51	-25.62 -16.94	2.47 3.22	1.48	56	2 2	87.4 87.4	8 9/GR9 8 9/GR6
B SU211 B SU212	-80.80 -44.80	24	-44.31 -43.99	-16.94 -16.97	3.22	1.37 1.92	60 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
CAN01101 CAN01201	-137.80	24	-123.60	55.89	3.33	0.98	151	2	87.4	9/GR10 9/GR10
CAN01201	-72.30	24	-107.64	55.62	2.75	1.11	32	2	87.4)/GICTO
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
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	0.00016
CHLCONT4	-105.80	24	-69.59	-23.20	2.21	0.69	68 39	2 2	87.4	9/GR16
CHLCONT6	-105.80 -92.30	24 24	-73.52 -76.09	-55.52 24.13	3.65	1.31 0.68	141	1	87.4	9/GR16 9/GR18
CRBBAH01 CRBBER01	-92.30 -92.30	24	-/6.09 -64.76	32.13	1.83 0.60	0.60	90	1	87.4 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 24	-107.36	26.32	3.80	1.57	149	2 2	87.4	1 1
MEX02SUR PNRIFRB2	-126.80 -121.00	24	-96.39 -80.15	19.88 8.46	3.19 1.01	1.87 0.73	158 170	1	87.4 87.4	1
PRU00004	-85.80	24	-80.13 -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	156
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	156
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

17 673.92 MHz (25)

	2	3	4			5	6	7	8	9
AT 500002	166.20	25	100.04	26.96	6.04	1.11	127	1	97.4	0/CP1
ALS00002	-166.20 -175.20	25 25	-109.94 -116.22	36.86	6.04 5.60	1.11 0.75	137	1	87.4 87.4	9/GR1 9/GR2
ALS00003 ARGINSU4	-175.20 -94.20	25	-116.23 -52.98	37.50 -59.81	3.40	0.75	132 19	1	87.4 87.4	9/GR2 9/GR3
ARGINSU5	-55.20	25	-32.98 -44.17	-59.81 -59.91	3.40	0.08	13	1	87.4 87.4	9/GR3 9/GR4
ARGINSUS ARGSUR04	-94.20	25	-44.17 -65.04	-39.91 -43.33	3.77	1.50	40	1	87.4 87.4	9/GR4 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 B SU212	-81.20 -45.20	25 25	-44.51 -44.00	-16.95 -16.87	3.22 3.20	1.36	60	1 1	87.4	8 9/GR6
BERBERMU	-43.20 -96.20	25	-64.77	32.32	0.60	1.96 0.60	58 90	2	87.4 87.4	8 9/GR9
BOLAND01	-115.20	25	-64.77 -71.37	-4.69	6.49	2.57	90 87	1	87.4 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	i	87.4	9/GR10
CAN01202	-72.70	25	-107.70	55.63	2.74	1.12	32	1	87.4), GICIO
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	0/CD17
CHLCONT5 CHLPAC02	-106.20 -106.20	25 25	-72.23 -80.06	-35.57 -30.06	2.60 1.36	0.68 0.68	55 69	1	87.4 87.4	9/GR17 9/GR17
CLMAND01	-106.20	25	-80.06 -71.37	-30.06 -4.69	6.49	2.57	87	1	87.4 87.4	9/GR1 / 9/GR5
CLM00001	-103.20	25	-74.50	5.87	3.98	1.96	118	li	87.4	9/GK3
EQACAND1	-115.20	25	-71.37	-4.69	6.49	2.57	87	1	87.4	9/GR5
EOAGAND1	-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	
KNA00001	-79.70	25	-62.46	17.44	0.60	0.60	90	1	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 0/CB17
PAQPAC01 PRG00002	-106.20 -99.20	25 25	-109.18 -58.66	-27.53 -23.32	0.60 1.45	0.60 1.04	90 76	1	87.4 87.4	9/GR17
PRUAND02	-115.20	25	-38.66 -71.37	-23.32 -4.69	6.49	2.57	87	1	87.4 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
SPMFRAN3	-53.20	25	-67.24	47.51	3.16	0.79	7	1	87.4	27
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 25	-113.07 -71.27	40.74	3.72 6.49	1.78	149 87	1 1	87.4	0/GP5
VENAND03	-115.20	23	-71.37	-4.69	0.49	2.57	8/	1	87.4	9/GR5

17 688.50 MHz (26)

ALSO00002	1	2	3	4			5	6	7	8	9
ALSON003				•			-		<u> </u>	-	,
ARCNORT4											
ARGNORTS											9/GR2
ATMBEAMI											
B CE311											
B CE411											9 0/GP7
B CE412											
B CESII											
B NO6111											
B NO211	B CE511	-63.80	26	-53.11	-2.98	2.42	2.15	107	2	87.4	8 9/GR7
B NSB11	B NO611	-73.80	26	-59.60	-11.62	2.86	1.69	165	1	87.4	8 9/GR8
B SB911											
B SUI11											
B SU112											
B SU211											
B SUZI12											
BLZ00001											
CANOI101											0 2/ (18.7
CANO1201											9/GR10
CANDI202											
CANDI303											,, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
CAN01304	CAN01203	-128.80	26	-111.43	55.56	3.07	1.15	151	2	87.4	9/GR12
CAN01403	CAN01303	-128.80	26	-102.39	57.12	3.54	0.92	154		87.4	9/GR12
CAN01404											
CAN01504											
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 9/GR16 CHLCONT6 -105.80 26 -76.99 -23.20 2.21 0.69 68 2 87.4 9/GR16 CRBBA101 -92.30 26 -76.09 24.13 1.83 0.68 141 1 87.4 9/GR18 CRBBE01 -92.30 26 -64.76 32.13 0.60 0.60 90 1 87.4 9/GR18 CRBEC01 -92.30 26 -60.07 8.26 4.20 0.68 115											
CAN01605											
CAN01605											
CAN01606 -70.30 26 -61.32 49.51 2.41 1.65 148 2 87.4 9/GR16 CHLCONT6 -105.80 26 -69.59 -23.20 2.21 0.69 68 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 CRBEL201 -92.30 26 -64.76 32.13 0.60 0.60 90 1 87.4 9/GR18 CRBEC001 -92.30 26 -60.07 8.26 4.20 0.86 115 1 87.4 9/GR18 CRBLC01 -130.80 26 -79.45 17.97 0.99 0.68 151 1 87.4 9/GR18 CRBDC01 -31.80 26 -84.33 9.67 0.82 0.68 119<											
CHLCONT4											9/GK14
CHLCONT6											9/GR16
CRBBAH01											
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 CRBMC01 -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 DMAIFRBI -79.30 26 -61.30 15.35 0.60 0.60 90 2 87.4 EQAC0001 -94.80 26 -79.36 -0.57 0.94 0.89 99 1 87.4 9/GR19 EQAG0001 -94.80 26 -165.79 23.32 4.20 0.68 160 2 87.4 9/GR19 HWA00002 -174.80 26 -165.80 25.99 2.88 2.07 155 2 87.4	CRBBAH01	-92.30	26	-76.09	24.13	1.83	0.68	141	1	87.4	9/GR18
CRBEC001 -92.30 26 -60.07 8.26 4.20 0.86 115 1 87.4 9/GR18 CRBIMC01 -92.30 26 -79.45 17.97 0.99 0.68 151 1 87.4 9/GR18 CTR00201 -13.80 26 -84.33 9.67 0.82 0.68 119 2 87.4 DMAIFRBI -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 EQAC0001 -94.80 26 -78.31 -1.52 1.48 1.15 65 1 87.4 9/GR19 HWA00002 -165.80 26 -165.79 23.32 4.20 0.68 160 2 87.4 9/GR1 HWA00003 -77.80 26 -105.80 25.99 2.88 2.07 155 2 87.4	CRBBER01	-92.30	26	-64.76	32.13	0.60	0.60	90	1	87.4	9/GR18
CRBIMC01								90			
CTR00201 -130.80 26 -84.33 9.67 0.82 0.68 119 2 87.4 DMAIFRBI -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 HEX01NTE -77.80 26 -165.80 25.99 2.88 2.07 155 2 87.4 1 MEX02NTE -126.80 26 -107.36 26.32 3.80 1.57 149 2 87.4 1 NCG00003 -107.30 26 -84.99 12.90 1.05 1.01 176 1 87.4											
DMAIFRBI											9/GR18
EQAC0001 -94.80 26 -78.31 -1.52 1.48 1.15 65 1 87.4 9/GR19 EQAC0001 -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 MEXOINTE -77.80 26 -105.80 25.99 2.88 2.07 155 2 87.4 1 MEXOSUR -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 9/GR2 PTRVIR01 -100.80 26 -93.85 36.31 8.26 3.55 171											
EQAG0001											0/CB10
HWA00002											
HWA00003											
MEXOZNTE											
MEXO2SUR	MEX01NTE					2.88		155	2	87.4	
NCG00003	MEX02NTE	-135.80	26	-107.36	26.32	3.80	1.57	149		87.4	1
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/GR20 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<											1
PTRVIR01											
PTR VIRO2											1 < 0/0720
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 USAWSA03 -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 -111.01 40.71 3.74 1.79 149											
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/GR20 USAPH004 -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 9/GR2 USAWH102 -156.80 26 -113.01 40.71 3.74 1.79 149 2 87.4											
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 9/GR2 USAWH102 -156.80 26 -113.01 40.71 3.74 1.79 149 2 87.4 9/GR2											
USAEH004											
USAPSA02											
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											
USAWH102 -156.80 26 -113.01 40.71 3.74 1.79 149 2 87.4											
	USAWH101	-147.80	26	-111.01	40.67	4.38	2.15	162	2	87.4	
VEN11VEN -103.80 26 -66.79 6.90 2.50 1.77 122 2 87.4											
	VEN11VEN	-103.80	26	-66.79	6.90	2.50	1.77	122	2	87.4	

17 703.08 MHz (27)

1	2	3	4			5	6	7	8	9
1		3	4			3	0		0	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 ARGINSU5	-94.20 -55.20	27 27	-52.98 -44.17	-59.81 -59.91	3.40 3.77	0.68 0.70	19 13	1	87.4 87.4	9/GR3 9/GR4
ARGSUR04	-94.20	27	-65.04	-43.33	3.77	1.50	40	1	87.4	9/GR4 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	i	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 B SU112	-81.20	27	-51.12	-25.63	2.76	1.05	50 56	1	87.4	8 9/GR6
B SU112 B SU211	-45.20 -81.20	27 27	-50.75 -44.51	-25.62 -16.95	2.47 3.22	1.48 1.36	60	1	87.4 87.4	8 9/GR9 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	8 9/GK9
BOLAND01	-115.20	27	-71.37	-4.69	6.49	2.57	87	ī	87.4	9/GR5
BOL00001	-87.20	27	-64.61	-16.71	2.52	2.19	85	i	87.4), GIG
BRB00001	-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	5595	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 -91.20	27 27	-84.00 -72.66	52.39	2.84 3.57	2.29 1.67	172	1	87.4 87.4	9/GR14 9/GR13
CAN01504 CAN01505	-82.20	27	-72.66 -71.77	53.77 53.79	3.30	1.89	156 162	1 1	87.4 87.4	9/GR13
CAN01505 CAN01605	-82.20 -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)/ GIC14
CHLCONT5	-106.20	27	-72.23	-35.57	2.60	0.68	55	i	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 -59.19	66.56	2.70	0.82	173 95	1	87.4	2
GUY00201 HWA00002	-84.70 -166.20	27 27	-59.19 -165.79	4.78 23.42	1.44 4.20	0.85 0.68	160	1	87.4 87.4	9/GR1
HWA00002 HWA00003	-175.20	27	-166.10	23.42	4.25	0.68	159	1	87.4	9/GR1 9/GR2
MEX01NTE	-78.20	27	-105.81	26.01	2.89	2.08	155	1	87.4	1 1
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 -71.70	27 27	-95.23 -56.22	36.29	8.27	3.37	168	1	87.4	1 6 9/GR21
URG00001 USAEH001	-71.70 -61.70	27	-56.22 -87.57	-32.52 36.17	1.02 6.42	0.89 3.49	11 12	1 1	87.4 87.4	156
USAEH001 USAEH002	-61.70 -101.20	27	-87.57 -93.94	36.17	8.24	3.49	171	1	87.4 87.4	1 6 9/GR20
USAEH002 USAEH003	-101.20	27	-95.23	36.32	8.24	3.36	168	1	87.4	1 6 9/GR20 1 6 9/GR21
USAEH004	-119.20	27	-96.45	36.21	8.20	3.12	165	1	87.4	156
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

17 717.66 MHz (28)

1	2	3	4			5	6	7	8	9
ALS00002	-165.80	28	-109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
ALS00002 ALS00003	-174.80	28	-116.10	37.47	5.60	0.76	132	2	87.4	9/GR1 9/GR2
ARGNORT4	-93.80	28	-63.96	-30.01	3.86	1.99	48	2	87.4	J/GRZ
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 B NO811	-73.80 -73.80	28 28	-60.70 -68.75	-1.78 -4.71	3.54 2.37	1.78 1.65	126 73	1 1	87.4 87.4	8 9/GR8 8 9/GR8
B SE911	-101.80	28	-45.99	-4.71 -19.09	2.22	0.79	62	2	87.4	8 9/GK8
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 CAN01403	-90.80 -128.80	28 28	-99.00 -89.70	57.33 52.02	1.96 4.67	1.73 0.79	1 148	2 2	87.4 87.4	9/GR13 9/GR12
CAN01403 CAN01404	-90.80	28	-89.70 -84.78	52.02	3.09	2.06	153	2	87.4	9/GR12 9/GR13
CAN01404 CAN01405	-81.80	28	-84.02	52.34	2.82	2.30	172	2	87.4	9/GR13
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 -92.30	28 28	-76.09 -64.76	24.13 32.13	1.83 0.60	0.68	141 90	1	87.4 87.4	9/GR18
CRBBER01 CRBBLZ01	-92.30 -92.30	28	-64.76 -88.61	17.26	0.60	0.60 0.64	90	1 1	87.4 87.4	9/GR18 9/GR18
CRBEC001	-92.30 -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	i	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 MEX02NTE	-77.80 -135.80	28 28	-105.80 -107.36	25.99 26.32	2.88 3.80	2.07 1.57	155 149	2 2	87.4 87.4	1 1
MEX02NTE MEX02SUR	-133.80	28	-96.39	19.88	3.19	1.87	158	2	87.4	1
PNRIFRB2	-120.80	28	-80.15	8.46	1.01	0.73	170	1	87.4	1
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	156
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	156
USAPSA02	-165.80	28	-109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
USAPSA03 USAWH101	-174.80 -147.80	28 28	-116.10 -111.01	37.47 40.67	5.60 4.38	0.76 2.15	132 162	2 2	87.4 87.4	9/GR2
USAWH101 USAWH102	-147.80 -156.80	28	-111.01 -113.01	40.67	3.74	1.79	149	2	87.4 87.4	
VEN02VEN	-136.80	28	-66.79	6.90	2.50	1.79	122	2	87.4	9/GR22
VEN11VEN	-103.80	28	-66.79	6.90	2.50	1.77	122	2	87.4	9/GR22
	1				""			1	1	

17 732.24 MHz (29)

ALSO0002	1	2	3	4			5	6	7	8	9
ALSON003	A 1 C00002	166.20	20	100.04	26.06	6.04	1.11	127	,	07.4	a/CD1
ARGINSU4									1 -		
ARGISNUS											
ARCSUR04											
ARCSUROS											
B CE311											
B CE412											
B CE411											
B CESII											
B NOSI											
B NO611											
B NO711											
B NOSI											
B SUI11		-74.20	29					73	2		
B SU211	B SU111	-81.20	29	-51.12	-25.63		1.05	50	1	87.4	8 9/GR6
B SIZ12	B SU112	-45.20	29	-50.75	-25.62	2.47	1.48	56	1	87.4	8 9/GR9
BERBERMU	B SU211	-81.20	29	-44.51	-16.95	3.22	1.36	60	1	87.4	8 9/GR6
BOLANDOI	B SU212	-45.20	29	-44.00	-16.87	3.20	1.96	58	1	87.4	8 9/GR9
CANDIOI	BERBERMU	-96.20	29	-64.77	32.32	0.60	0.60	90	2	87.4	
CAND1201	BOLAND01	-115.20	29	-71.37	-4.69	6.49	2.57	87	1	87.4	9/GR5
CANDI202	CAN01101	-138.20	29	-125.63	57.24	3.45	1.27	157	1	87.4	9/GR10
CAN01203	CAN01201	-138.20	29	-112.04	55.95	3.35	0.97	151	1	87.4	9/GR10
CAN01303	CAN01202	-72.70	29	-107.70	55.63	2.74	1.12	32	1	87.4	
CAN01304	CAN01203	-129.20	29	-111.48	55.61	3.08	1.15	151	1	87.4	9/GR12
CAN01403	CAN01303	-129.20	29	-102.42	57.12	3.54	0.91	154	1	87.4	9/GR12
CAN01405	CAN01304		29	-99.12	57.36	1.98	1.72	2	1	87.4	
CAN01405	CAN01403	-129.20	29	-89.75	52.02	4.68	0.78	148	1	87.4	9/GR12
CAN01504											
CAN01605 -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 2.60 0.68 55 1 87.4 9/GR17 CHLCONT5 -106.20 29 -72.23 -35.57 2.60 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 -71.37 -4.69 6.49 2.57 87 1 87.4 9/GR5 EQACAND1 -115.20 29 -71.37 -4.69 6.49 2.57 87 1 87.4 9/GR5 HWA00002 -166.20 29 -76.37 23.42 4.20 0.68 16	CAN01405			-84.00	52.39		2.29	172	1	87.4	9/GR14
CAN01605											
CAN01606											
CHLCONT5											9/GR14
CHLPAC02											
CLMAND01											
CLM00001											
EQACANDI -115.20 29 -71.37 -4.69 6.49 2.57 87 1 87.4 9/GR5 EQAGANDI -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 KNA00001 -79.70 29 -62.46 17.44 0.60 0.60 90 1 87.4 1 MEX01SUR -78.20 29 -105.81 26.01 2.89 2.08 155 1 87.4 1 MEX02SUR -127.20 29 -96.39 19.88 3.18 1.87 157 1											9/GR5
EGAGANDI											0/CD5
HWA00002											
HWA00003											
JMC00002											
KNA00001											9/GK2
MEXOINTE											
MEXOISUR											1
MEXO2NTE											
MEXO2SUR											
PAQPAC01									1		1
PRG00002											9/GR17
PRUAND02											
PTRVIR01			29						1		9/GR5
SPMFRAN3	PTRVIR01	-101.20	29				3.56	171	1	87.4	1 6 9/GR20
SPMFRAN3	PTRVIR02	-110.20	29	-95.23	36.29	8.27	3.37	168	1	87.4	1 6 9/GR21
URG00001 -71.70 29 -56.22 -32.52 1.02 0.89 11 1 87.4 1 5 6 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 USAPSA02 -166.20 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 USAWBA03 -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	SPMFRAN3	-53.20	29	-67.24	47.51	3.16		7	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 USAWH010 -148.20 29 -111.02 40.68 4.36 2.15 162 1 87.4 USAWH02 -157.20 29 -113.07 40.74 3.72 1.78 149	SURINAM2	-84.70		-55.69		1.00	0.69	86	1	87.4	
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/GR20 USAPSH004 -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 USAWSA03 -175.20 29 -111.623 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 USAWH02 -157.20 29 -113.07 40.74 3.72 1.78 149 1 87.4										87.4	
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 USAWH02 -157.20 29 -113.07 40.74 3.72 1.78 149 1 87.4	USAEH001						3.49	12	1	87.4	156
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 USAWH010 -148.20 29 -111.02 40.68 4.36 2.15 162 1 87.4 USAWH02 -157.20 29 -113.07 40.74 3.72 1.78 149 1 87.4	USAEH002	-101.20							1		
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											
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 87.4 USAWH102 -157.20 29 -113.07 40.74 3.72 1.78 149 1 87.4											
USAWH101											
USAWH102 -157.20 29 -113.07 40.74 3.72 1.78 149 1 87.4											9/GR2
VENANDUS -115.20 29 -71.37 -4.69 6.49 2.57 87 1 87.4 9/GR5											0.000.5
	VENAND03	-115.20	29	-/1.37	-4.69	6.49	2.57	87	1	87.4	9/GR5

17 746.82 MHz (30)

1	2	3	4		:	5	6	7	8	9
ALS00002	-165.80	30	-109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
ALS00002 ALS00003	-174.80	30	-116.10	37.47	5.60	0.76	137	2	87.4	9/GR1 9/GR2
ARGNORT4	-93.80	30	-63.96	-30.01	3.86	1.99	48	2	87.4	J/GRZ
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 8 0/CP/
B SU111 B SU112	-80.80 -44.80	30	-51.10	-25.64 -25.62	2.76	1.06 1.48	50	2 2	87.4	8 9/GR6
B SU112 B SU211	-80.80	30 30	-50.76 -44.51	-23.62 -16.94	2.47 3.22	1.48	56 60	2	87.4 87.4	8 9/GR9 8 9/GR6
B SU212	-44.80	30	-43.99	-16.94	3.27	1.92	59	2	87.4	8 9/GR9
BLZ00001	-115.80	30	-43.99 -88.68	17.27	0.62	0.62	90	2	87.4 87.4	0 3/GK3
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) dies
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
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 2	87.4	9/GR14
CAN01606	-70.30 -105.80	30 30	-61.32 -69.59	49.51	2.41 2.21	1.65 0.69	148 68	2	87.4	0/CB16
CHLCONT4 CHLCONT6	-105.80	30	-73.52	-23.20 -55.52	3.65	1.31	39	2	87.4 87.4	9/GR16 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	i	87.4	9/GR18
CRBBLZ01	-92.30	30	-88.61	17.26	0.64	0.64	90	i	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 26.32	2.88	2.07	155 149	2 2	87.4	1
MEX02NTE	-135.80	30	-107.36 -96.39	19.88	3.80	1.57		2	87.4	1
MEX02SUR NCG00003	-126.80 -107.30	30 30	-96.39 -84.99	12.90	1.05	1.87 1.01	158 176	1	87.4 87.4	1
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	156
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	156
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	

17 761.40 MHz (31)

1	2	3	4			5	6	7	8	9
AT C00002	166.00	21	100.04	26.96	6.04	1 11	127	,	07.4	0/CP1
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 ARGINSU5	-94.20 -55.20	31 31	-52.98 -44.17	-59.81 -59.91	3.40 3.77	0.68 0.70	19 13	1 1	87.4 87.4	9/GR3 9/GR4
ARGSUR04	-94.20	31	-65.04	-43.33	3.32	1.50	40	1	87.4	9/GR4 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	0.000.5
BOLAND01	-115.20	31	-71.37	-4.69	6.49	2.57	87	1	87.4	9/GR5
BOL00001 BRB00001	-87.20 -92.70	31 31	-64.61 -59.85	-16.71 12.93	2.52 0.60	2.19 0.60	85 90	1 2	87.4 87.4	
CAN01101	-92.70 -138.20	31	-125.63	57.24	3.45	1.27	157	1	87.4	9/GR10
CAN01101 CAN01201	-138.20 -138.20	31	-125.63 -112.04	57.24 55.95	3.45	0.97	157	1	87.4 87.4	9/GR10 9/GR10
CAN01201 CAN01202	-72.70	31	-107.70	55.63	2.74	1.12	32	1	87.4	9/GK10
CAN01202	-129.20	31	-111.48	55.61	3.08	1.15	151	Ιi	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	i	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 CLM00001	-115.20	31 31	-71.37	-4.69	6.49	2.57	87 118	1	87.4	9/GR5
CUB00001	-103.20 -89.20	31	-74.50 -79.81	5.87 21.62	3.98 2.24	1.96 0.68	168	1 1	87.4 87.4	
EQACAND1	-89.20 -115.20	31	-79.81 -71.37	-4.69	6.49	2.57	87	1	87.4	9/GR5
EQACAND1 EQAGAND1	-115.20	31	-71.37 -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)/GIC
GRLDNK01	-53.20	31	-44.89	66.56	2.70	0.82	173	l î	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	i	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
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	a con s
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 URG00001	-110.20 -71.70	31 31	-95.23 -56.22	36.29 -32.52	8.27 1.02	3.37 0.89	168	1	87.4 87.4	1 6 9/GR21
USAEH001	-/1./0 -61.70	31	-56.22 -87.57	-32.52 36.17	6.42	3.49	11 12	1	87.4 87.4	156
USAEH001 USAEH002	-61.70 -101.20	31	-87.57 -93.94	36.17	8.24	3.49	171	1	87.4 87.4	1 6 9/GR20
USAEH002 USAEH003	-101.20 -110.20	31	-93.94 -95.23	36.32	8.24	3.36	168	1	87.4 87.4	1 6 9/GR20 1 6 9/GR21
USAEH003 USAEH004	-110.20	31	-95.25 -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	137	1	87.4	9/GR1 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

17 775.98 MHz (32)

1	2	3	4			5	6	7	8	9
ALS00002	-165.80	32	-109.83	36.82	6.03	1.12	137	2	87.4	9/GR1
ALS00002	-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 2	87.4	8 9/GR8
B SE911 B SU111	-101.80	32 32	-45.99	-19.09	2.22	0.79 1.06	62 50	2 2	87.4 87.4	8 0.0/CP/
B SU111	-80.80 -44.80	32	-51.10 -50.76	-25.64 -25.62	2.76 2.47	1.06	56 56	2	87.4 87.4	8 9/GR6 8 9/GR9
B SU211	-80.80	32	-30.76 -44.51	-23.62 -16.94	3.22	1.48	60	2	87.4	8 9/GR9 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
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	0/07/1/
CHLCONT4	-105.80	32	-69.59	-23.20	2.21	0.69	68 39	2 2	87.4	9/GR16
CHLCONT6	-105.80 -92.30	32 32	-73.52	-55.52	3.65	1.31	141	1	87.4	9/GR16
CRBBAH01 CRBBER01	-92.30 -92.30	32	-76.09 -64.76	24.13 32.13	1.83 0.60	0.68 0.60	90	1	87.4 87.4	9/GR18 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	i	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 PRU00004	-121.00 -85.80	32 32	-80.15 -74.19	8.46 -8.39	1.01 3.74	0.73 2.45	170 112	2	87.4 87.4	
PTRVIR01	-100.80	32	-93.85	36.31	8.26	3.55	171	2	87.4	1 6 9/GR20
PTRVIR02	-100.80	32	-95.47	36.38	8.10	3.45	168	2	87.4	1 6 9/GR20 1 6 9/GR21
USAEH001	-61.30	32	-93.47 -87.53	36.18	6.41	3.43	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	156
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 9A (REV.WRC-15)

Plan for feeder links for the broadcasting-satellite service in the fixed-satellite service in the frequency bands 14.5-14.8 GHz and 17.3-18.1 GHz in Regions 1 and 3

9A.1 COLUMN HEADINGS OF THE PLAN

- Col. 1 Notifying administration symbol.
- Col. 2 Beam identification (Column 2, normally, contains the symbol designating the administration 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. 3 *Nominal orbital position*, in degrees and hundredths of a degree from the Greenwich meridian (negative values indicate longitudes which are west of the Greenwich meridian; positive values indicate longitudes which are east of the Greenwich meridian).
- Col. 4 Nominal intersection of the beam axis with the Earth (boresight or aim point in the case of a non-elliptical beam), longitude and latitude, in degrees and hundredths of a degree.
- Col. 5 Space station receiving antenna characteristics (elliptical beams). This Column contains three numerical values corresponding to the major axis, the minor axis and the major axis orientation respectively of the elliptical cross-section half-power beam, in degrees and hundredths of a degree. 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 anticlockwise from a line parallel to the equatorial plane to the major axis of the ellipse, to the nearest degree.
- Col. 6 Space station receiving antenna pattern code.

The codes used for the antenna pattern of the receiving space station (feeder link) antenna are defined as follows:

R13RSS	Figure B (Curves A, B and C) and § 3.7.3 in Annex 3
R123FR	Figure C and § 3.7.3 in Annex 3
MODRSS	Figure B (Curves A', B' and C) and § 3.7.3 in Annex 3 (Recommendation ITU-R BO.1296)

In cases where the "Space station receiving antenna pattern code" field is blank, the necessary antenna pattern data are provided by shaped beam data submitted by the administration. These data are stored in Column 7. A particular shaped beam is identified by the combination of Column 1, Column 7 and Column 14. In such cases the maximum cross-polar gain is given in Column 8, Cross-polar gain field.

In cases where the "Space station receiving antenna pattern code" field contains a code which starts with "CB_" characters, it is a composite beam. Any composite beam consists of two or more elliptical beams. Each composite beam is described in the special composite beam file having the same name plus a GXT extension (e.g. the description of the CB COMP BM1 composite beam is stored in the CB COMP BM1.GXT file).

- Col. 7 Space station receiving antenna shaped (non-elliptical, non-composite) beam identification.
- Col. 8 Maximum space station receiving antenna co-polar and cross-polar (in the case of shaped beam) isotropic gain (dBi).
- Col. 9 Earth station transmitting antenna pattern code and maximum gain (dBi).

The codes used for transmitting earth station (feeder-link) antenna patterns are defined as follows:

R13TES	Figure A (Curves A and B) and § 3.5.3 in Annex 3
MODTES	Figure A (Curves A' and B') and § 3.5.3 in Annex 3 (Recommendation ITU-R BO.1295)

- Col. 10 Polarization (CL circular left, CR circular right, LE linear referenced to the equatorial plane) and polarization angle in degrees and hundredths of a degree (in the case of linear polarization only).
- Col. 11 *e.i.r.p.* in the direction of maximum radiation (dBW).
- Col. 12 Permitted increase in earth station e.i.r.p. (dB) for the purpose of power control (see § 3.11 of Annex 3). (WRC-15)
- Col. 13 Designation of emission.
- Col. 14 Identity of the space station.
- Col. 15 *Group code* (an identification code which indicates that all assignments with the same group identification code will be treated as a group).

Group code: if an assignment is part of the group:

- a) the equivalent protection margin to be used for the application of Article 4 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

^{32 (}SUP - WRC-15)

- 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 aggregate C/I ratio produced by all emissions from that group shall not exceed the C/I ratio calculated on the basis of § a) above.

Col. 16 Assignment status.

The assignment status codes used for beams are defined as follows:

P	Assignment in the Regions 1 and 3 feeder-link Plan which has not been brought into use and/or the date of bringing into use has not been confirmed to the Bureau.
	For this category of assignments, WRC-2000 protection ratios are applied (27 dB co-channel and 22 dB adjacent channel).
PE	Assignment in the Regions 1 and 3 feeder-link Plan, which is in conformity with Appendix 30A , has been notified, brought into use and the date of bringing into use has been confirmed to the Bureau before 12 May 2000.
	For this category of assignments, WRC-97 protection ratios are applied (30 dB co-channel and 22 dB adjacent channel).

Col. 17 Remarks.

9A.2 TEXT FOR NOTES IN THE REMARKS COLUMN OF THE REGIONS 1 AND 3 FEEDER-LINK PLAN (WRC-15)

- 1 (Not used.)
- 2 (Not used.)
- 3 (Not used.)
- 4 (Not used.)
- This assignment shall be brought into use only when the limits given in § 5 of Annex 1 are not exceeded, or with the agreement of the administrations identified in Table 1A, whose networks or beams listed in this Table may be affected with respect to assignments which are in conformity with the Region 2 feeder-link Plan on 12 May 2000 (see also Note to § 9A.2).
- This assignment shall not claim protection from interference caused by the assignments which pertain to networks or beams identified in Table 1B which are in conformity with the Region 2 feeder-link Plan on 12 May 2000 (see also Note to § 9A.2).

This assignment shall not claim protection from interference caused by the assignments which pertain to networks or beams identified in Table 1B which are recorded in the Master Register with a favourable finding prior to 12 May 2000 (see also Note to § 9A.2).

The methodology and criteria for this analysis shall be those contained in § 1 of Annex 4, modified to take into consideration the system noise temperature of the received space station to be 600 K and to apply a $\Delta T/T$ criterion of 6%.

8 Provisional beam. These assignments have been included in the Regions 1 and 3 feederlink Plan by WRC-97. These assignments are for exclusive use by Palestine, subject to the Israeli-Palestinian Interim Agreement of 28 September 1995, Resolution 741 of the Council notwithstanding and Resolution 99 (Minneapolis, 1998) of the Plenipotentiary Conference.

9 (Not used.)

10 (SUP - WRC-12)

NOTE – In cases where assignments from the WRC-97 Plans without Remarks were included in the WRC-2000 Regions 1 and 3 feeder-link Plan without change, or with conversion of modulation from analogue to digital, or a change from normal roll-off to fast roll-off antenna characteristics, the coordination status afforded by the WRC-97 Plans shall be preserved.

In cases where assignments from the WRC-97 Plans with Remarks were included in the WRC-2000 Regions 1 and 3 feeder-link Plan without change, or with conversion of modulation from analogue to digital, or a change from normal roll-off to fast roll-off antenna pattern, the compatibility will be reassessed using the revised criteria and methodology of WRC-2000 and the Remarks of the WRC-97 Plans assignment will either be maintained or reduced on the basis of the results of this analysis.

In other cases, the methodology described in Notes 5 to 7 shall be applied.

TABLE 1A (WRC-07)

Affected administrations and corresponding networks/beams identified based on Note 5 in § 9A.2 of Article 9A

		9	•
Beam name	Channels	Affected administrations	Affected networks/beams
CPV30100	2, 4, 8, 10, 12	GUY JMC	GUY00302, JMC00005
CPV30100	9	JMC	JMC00005
G 02700	2, 4, 8, 10, 12	GUY JMC	GUY00302, JMC00005
G 02700	9	JMC	JMC00005
LBR24400	1	KUÐ	GUY00302
LBR24400	3, 9, 13	JMC	JMC00005
LBR24400	5, 7, 11	GUY JMC	GUY00302, JMC00005

^{*} Administrations and corresponding networks or beams whose assignment(s) may receive interference from the beam shown in the left-hand column.

TABLE 1B (WRC-15)

Affecting administrations and corresponding networks/beams identified based on Notes 6 and 7 in § 9A.2 of Article 9A

Beam name	Channels	Note	Affecting administrations	Affecting networks/beams
CPV30100	2, 4, 8, 10, 12	9	GUY JMC	GUY00302, JMC00005
CPV30100	9	9	JMC	JMC00005
E100	1, 3, 5, 7, 9, 11, 13	9	9	BERBER02
G 02700	2, 4, 8, 10, 12	9	GUY JMC	GUY00302, JMC00005
G 02700	9	9	JMC	JMC00005
LBR24400	1	9	GUY	GUY00302
LBR24400	3, 9, 13	9	JMC	JMC00005
LBR24400	5, 7, 11	9	GUY JMC	GUY00302, JMC00005

^{*} Administrations and corresponding networks or beams whose assignment(s) may cause interference to the beam shown in the left-hand column.

TABLE 2A

Table showing correspondence between channel numbers and assigned frequencies for the feeder links in the frequency band 14.5-14.8 GHz

Channel No.	Assigned feeder-link frequency (MHz)
1	14 525.30
2	14 544.48
3	14 563.66
4	14 582.84
5	14 602.02
6	14 621.20
7	14 640.38
8	14 659.56
9	14 678.74
10	14 697.92
11	14717.10
12	14736.28
13	14 755.46
14	14774.64

Assigned frequency = 14506.12 + 19.18 n, where n is the channel number.

TABLE 2B

Table showing correspondence between channel numbers and assigned frequencies¹
for the feeder links in the frequency band 17.3-18.1 GHz

Channel No.	Assigned feeder-link frequency (MHz)	Channel No.	Assigned feeder-link frequency (MHz)
1	17 327.48	21	17711.08
2	17 346.66	22	17 730.26
3	17 365.84	23	17 749.44
4	17 385.02	24	17 768.62
5	17 404.20	25	17 787.80
6	17 423.38	26	17 806.98
7	17 442.56	27	17 826.16
8	17 461.74	28	17 845.34
9	17 480.92	29	17 864.52
10	17 500.10	30	17 883.70
11	17 519.28	31	17 902.88
12	17 538.46	32	17 922.06
13	17 557.64	33	17 941.24
14	17 576.82	34	17 960.42
15	17 596.00	35	17 979.60
16	17 615.18	36	17 998.78
17	17 634.36	37	18 017.96
18	17 653.54	38	18 037.14
19	17 672.72	39	18 056.32
20	17 691.90	40	18 075.50

Assigned frequency = 17308.3 + 19.18 n, where n is the channel number.

TABLE 3A1

Basic characteristics of the Regions 1 and 3 feeder-link Plan in the frequency band 14.5-14.8 GHz (sorted by administration)

Harman Power Pow		á																				
The control The control	17																					
The control of the	91	Status		۵	۵	۵	۵	а	۵	۵	۵	۵	۵	۵	Ь	۵	۵	а	۵	۵	۵	٥
Particular Par	15	Group	ano.	N4	4R	4R	4B	4B	41	4.1	4D	4D	4T	4T	40	40	4E	4E	4A	4A	40	ç
New column Real months R	14	Identity of the space	station																			i
Hearing Hear	13	Designation	or call solo	7M0G7W	27M0G7W	27M0G7W	7M0G7W	7M0G7W	7M0G7W	7M0G7W	7M0G7W	7M0G7W	7M0G7W	7M0G7W	7M0G7W	7M0G7W	7M0G7W	7M0G7W	7M0G7W	7M0G7W	7M0G7W	TAIL COURSE OF
New Column	12	Power	0.1100	2			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
New Column Province New State New	11	e.ir.p.		82.0	82.0	82.0	89.0	89.0	86.0	86.0	82.0	82.0	84.0	84.0	83.0	83.0	82.0	82.0	87.0	87.0	82.0	0
Hearm	0	zation	Angle																			
Heart Boresight Space station Heart Space station Heart Space station Stape Heart Space Heart	_	Polar	Type	당	CR	7	CR	ТО	CL	CR	70	CR	CL	CR	СГ	CR	ТО	CR	CL	CR	CR	ē
New Column Particle Processing Proce		ina ina			_								-								_	2
April Borna April Borna Space station Space statio	6	Ear stati anter	Code	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	011001
Heart Results		tation 1 gain	Cross- polar																			
Hearm Beam	8	Space st antenna	Co-polar	44.31	37.49	37.49	38.87	38.87	37.20	37.20	42.63	42.63	40.44	40.44	36.92	36.92	46.14	46.14	44.06	44.06	47.78	47.70
Hearm Beam Orbital Boresight Characteristics Orbital Boresight Characteristics Orbital	7	Shaped	Deall																			
Beam Crbinal Borevight Crbinal antenna	9	Space station	antenna cone	MODRSS	MODRSS	MODRSS	MODRSS	MODRSS	CB_RSS_SDNA	CB_RSS_SDNA	MODRSS	MODRSS	MODRSS	MODRSS	MODRSS	MODRSS	MODRSS	MODRSS	CB_RSS_USAC	CB_RSS_USAC	CB_RSS_YEMA	CD DOC VEMA
Beam		no ics	Orien- tation	163.00	14.00	14.00	168.32	168.32			139.00	139.00	27.51	27.51	62.04	62.04	108.43	108.43				Ì
11. Beam Orbital Boresight	S	nce stati, intenna 'acterist	Minor	l	2.16	2.16						1.04		40.1	1.68	1.68						
Berm Christal Buresign Particular		Sps s char	Major axis	1.72	2.30	2.30	3.13	3.13			1.46	1.46		2.43	3.37	3.37	1.13	1.13				
1 1 1 1 1 1 1 1 1 1		ight	Lat.	28.30	29.50	29.50	-6.65	-6.65			13.80	13.80		-7.23			8.57		16.35	16.35		44.75
2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	4	Bores	Long.	83.70	09.69	09.69	148.07	148.07	30.13	30.13	-14.40	-14.40	51.86	51.86	45.17	45.17	0.68	0.68	177.50	177.50	48.29	0001
	3	Orbital	nonsord	20.00	38.20	38.20	134.00	134.00	-7.00	-7.00	-37.00	-37.00	42.50	42.50	37.80	37.80	-30.00	-30.00	140.00	140.00	11.00	44.00
- in the last the las	2	Beam	incinii canon	NPL12202	AK12701	AK12702	NG13101	PNG13102	3DN_101	SDN_102	SEN22201	SEN22202	SEY00001	SEY00002	SOM31201	SOM31202	TG022601	TGO22602	JSAC_101	JSAC_102	YEM_101	400
	-	Admin.	TO TO TO TO TO TO TO TO TO TO TO TO TO T																			

TABLE 3A2 (WRC-15)

Basic characteristics of the Regions 1 and 3 feeder-link Plan in the frequency band 17.3-18.1 GHz (sorted by administration)

Lat. Ma Lat. Ma 34.30 34.30 34.30 44.37 47.37 47.37 23.40 23.40 23.40 23.40 12.19	Space station antenna characteristics djor Minor Orien-			•		6		2	_	=	12	13	41	15	91	11
Lat. axis 34.30 1.89 34.30 1.89 34.30 1.89 24.30 2.66 41.37 2.66 27.60 3.65 42.50 0.60 39.95 0.73 23.40 4.21 23.40 4.21 23.40 4.21 24.20 7.19 10.60	<u> </u>	Space station	Shaped	Space station antenna gain	tation 1 gain	Earth station antenna	rion a	Polarization			Power	Designation of		Group		
34.30 12.37 12.37 27.60 23.40 23.40 24.20 12.19		antenna code	beam	Co- polar	Cross-	Code	Gain	Type	Angle		control	emission	the space station	opoo	ration of the state of the stat	Kemarks
23,30 27,60 27,60 27,60 39,95 23,40 23,40 24,20 24,20	1.19 18.00	18.00 MODRSS		40.93		MODTES	57.00 C	7		84.0		27M0G7W		1/	۵	
72.7.60 27.60 42.50 39.95 23.40 23.40 -24.20 -12.19	1.19 18.00	18.00 MODRSS		40.93		MODTES	57.00 C	8		0.48		27M0G7W		1/	<u>a</u>	
27.60 27.60 42.50 39.95 23.40 23.40 23.40 -24.20 -12.19	1.75 77.43	77.43 MODRSS		37.77		MODTES	57.00 C	8		0.48		27M0G7W			4	
27.60 42.50 39.95 23.40 23.40 -24.20 -12.19	0.60 69.35	69.35 MODRSS		48.88		MODTES	57.00 C	귕		82.6		27M0G7W			<u>а</u>	
23.40 23.40 23.40 23.40 -24.20 -10.45	2.94 135.00	135.00 MODRSS		34.14		MODTES	57.00 C	귱		84.0		27M0G7W			Ь	
23.40 23.40 23.40 -24.20 -12.19	0.00 09.0	0.00 MODRSS		48.88		MODTES	57.00 CL	7.		83.0		27M0G7W			Ь	
23.40 23.40 -24.20 -12.19	0.60 148.17	148.17 MODRSS		48.02		MODTES	27.00 C	CR		84.0		27M0G7W			Ь	
23.40 -24.20 -12.19	2.48 145.00	145.00 MODRSS		34.26		MODTES	57.00 C	귱		84.0		27M0G7W		54	Ь	
-24.20 -12.19 -10.45	2.48 145.00	145.00 MODRSS		34.28		MODTES	57.00 C	CL.		84.0		27M0G7W		54	Ь	
-12.19	5.20 140.00	140.00 MODRSS		28.71		MODTES	57.00 C	CF		0.78		27M0G7W		30	Ь	
-10.45	0.00 0.00	0.00 MODRSS		48.88		MODTES	57.00 C	Cl.		0.78		27M0G7W		30	Ь	
	0.00 0.00	0.00 MODRSS		48.88		MODTES	57.00 C	Cl.		0.78		27M0G7W		30	Ь	
110.52 -66.28 0.60	0.60 0.00	0.00 MODRSS		48.88		MODTES	57.00 C	CL Cl		87.0		27M0G7W		30	Ь	
158.94 -54.50 0.60	0.60 0.00	0.00 MODRSS		48.88		MODTES	57.00 C	را ال		0'.28		27M0G7W		30	Ь	
159.06 -31.52 0.60	0.00 09.00	0.00 MODRSS		48.88		MODTES	57.00 C	占		87.0		27M0G7W		30	Д	
167.93 -29.02 0.60	0.00 0.00	0.00 MODRSS		48.88		MODTES	57.00 C	ر ان		0'.28		27M0G7W		30	а	
135.36 -23.95 6.89	4.83 141.15	141.15 R123FR		29.23		MODTES	57.00 C	CL		87.0		27M0G7W		30	Ь	
135.00 -24.20 7.19	5.20 140.00	140.00 MODRSS		28.71	_	MODTES	57.00 C	S		0.78		27M0G7W		41	Ь	
96.83 -12.19 0.60	0.00 0.00	0.00 MODRSS		48.88		MODTES	57.00 C	CR		0.78		27M0G7W		41	Ь	
105.69 -10.45 0.60	0.60 0.00	0.00 MODRSS		48.88		MODTES	57.00 C	CR		0.78		27M0G7W		41	Ь	
110.52 -66.28 0.60	0.00 0.00	0.00 MODRSS		48.88		MODTES	57.00 C	CR		0.78		27M0G7W		41	Ь	
158.94 -54.50 0.60	0.60 0.00	0.00 MODRSS		48.88		MODTES	57.00 C	CR		0.78		27M0G7W		41	Ь	
159.06 -31.52 0.60	0.00 0.00	0.00 MODRSS		48.88		MODTES	57.00 C	CR		0.78		27M0G7W		41	Ь	
167.93 -29.02 0.60	0.60 0.00	0.00 MODRSS		48.88		MODTES	57.00 C	CR		0.78		27M0G7W		41	Ь	
135.50 -24.20 7.19	5.20 140.00	140.00 MODRSS		28.71	_	MODTES	57.00 C	CR		0.78		27M0G7W			Ь	
96.83 -12.19 0.60	0.00 0.00	0.00 MODRSS		48.88		MODTES	57.00 C	S		0.78		27M0G7W		42	Ь	
105.69 -10.45 0.60	0.00 0.00	MODRSS		48.88		MODTES	57.00 C	CR		87.0		27M0G7W		42	Ь	
110.52 -66.28 0.60	0.00 0.00	MODRSS		48.88		MODTES	57.00 C	CR		0.78		27M0G7W			Ь	
-54.50		MODRSS		48.88		MODTES		8		87.0		27M0G7W			Д	
		0.00 MODRSS		48.88		MODTES	57.00 C	8		87.0		27M0G7W			а	
167.93 -29.02 0.60	0.00 0.00	0.00 MODRSS		48.88		MODTES	57.00 C	S		0.78		27M0G7W		42	Д	

			_		_	_	_									_		_					_										_		_	_			
17	Status Domosle	Kelliarks																																					
16			۵	۵	а	Ь	۵	Ь	Ь	Ь	۵	Ь	Ь	Ь	Ь	Ь	Ь	Ь	Ь	Ь	۵	Ь	Ь	Ь	Ь	۵	Д	۵	Ь	Ь	Ь	Д	۵	Ь	Ь	Ь	Ь	۵	Ь
15	Group	code	31	31	31	31	31	31	31	31	44	44	44	44	44	44	44	32	32	32	32	32	32	32	32	40	40	40	40	40	40	40	43	43	43	43	43	43	43
14	Identity of																																						
13	Designation of	emission	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W
12	Power																																						
11		durb.	0'.78	87.0	0.78	87.0	87.0	0.78	87.0	87.0	87.0	87.0	87.0	87.0	87.0	87.0	87.0	87.0	87.0	87.0	87.0	87.0	0.78	87.0	87.0	87.0	87.0	87.0	87.0	87.0	87.0	87.0	0'.28	87.0	87.0	87.0	87.0	87.0	87.0
10	Polarization	Angle																																					
	Pola	Type	兴	兴	兴	CR	뚱	CR	CR	R	占	CL Cl	CF	CL Cl	70	占	70	S	CR	SR	兴	CR	CR	S	R	占	占	占	占	占	CL Cl	占	占	70	CL	占	당	占	占
	ation na	Gain	57.00	57.00	27.00	57.00	27.00	57.00 CR	57.00 CR	57.00	57.00 CL	57.00	57.00 CL	57.00 CL	57.00 CL	57.00 CL	57.00	57.00 CR	57.00 CR	57.00 CR	57.00 CR	57.00 CR	57.00 CR	57.00 CR	57.00 CR	57.00 CL	57.00 CL	57.00 CL	57.00 CL	57.00	57.00 CL	57.00	57.00 CL	57.00	57.00	57.00	57.00	57.00 CL	57.00 CL
6	Earth station antenna	Code	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES
	tion gain	Cross- polar																																					
8	Space station antenna gain	Co- Co-	29.32	48.88	48.88	48.88	48.88	48.88	48.88	29.87	29.32	48.88	48.88	48.88	48.88	48.88	48.88	29.32	48.88	48.88	48.88	48.88	48.88	48.88	29.87	29.23	48.88	48.88	48.88	48.88	48.88	48.88	29.87	48.88	48.88	48.88	48.88	48.88	48.88
7	Shaped	beam																																					
9	Space station	antenna code	AODRSS	0.00 MODRSS	0.00 MODRSS	0.00 MODRSS	0.00 MODRSS	0.00 MODRSS	0.00 MODRSS	K123FR	AODRSS	0.00 MODRSS	0.00 MODRSS	0.00 MODRSS	0.00 MODRSS	0.00 MODRSS	0.00 MODRSS	132.00 MODRSS	0.00 MODRSS	0.00 MODRSS	0.00 MODRSS	0.00 MODRSS	0.00 MODRSS	0.00 MODRSS	1123FR	1123FR	0.00 MODRSS	0.00 MODRSS	0.00 MODRSS	0.00 MODRSS	0.00 MODRSS	0.00 MODRSS	3123FR	0.00 MODRSS	0.00 MODRSS	0.00 MODRSS	0.00 MODRSS	0.00 MODRSS	0.00 MODRSS
	nna	Orien- tation	132.00 MODRSS	0.00	0.00	0.00	0.00	0.00	0.00	134.19 R123FR	132.00 MODRSS	0.00	0.00	0.00	0.00	0.00	0.00	132.00 N	0.00	0.00	0.00	0.00	0.00	0.00	134.19 R123FR	141.15 R123FR	0.00	0.00	0.00	0.00	0.00	0.00	134.19 R123FR	0.00	0.00	0.00	0.00	0.00	0.00
2	Space station antenna characteristics	Minor C	4.48	09:0	09:0	09:0	09:0	09:0	0.60	4.20	4.48	0.60	0.60	0.60	09:0	09:0	09:0	4.48	09:0	09:0	0.60	0.60	09:0	0.60	4.20	4.83	0.60	0.60	09:0	0.60	0.60	09:0	4.20	09:0	0.60	0.60	0.60	0.60	0.60
	Space st char	Major M axis a	7.26	09:0	09:0	09:0	09:0	09:0	0.60	6.82	7.26	0.60	0.60	0.60	0.60	0.60	0.60	7.26	09:0	09:0	0.60	0.60	09:0	0.60	6.82	6.89	0.60	0.60	0.60	0.60	0.60	09:0	6.82	09:0	0.60	0.60	0.60	0.60	0.60
	=	Lat.	-23.90	-12.19	-10.45	-66.28	54.50	31.52	-29.02	-24.16	23.90	-12.19	10.45	96.28	54.50	-31.52	-29.02	23.90	12.19	10.45	96.28	54.50	31.52	-29.02	24.16	23.95	-12.19	-10.45	96.28	-54.50	-31.52	29.02	24.16	-12.19	-10.45	96.28	-54.50	-31.52	29.02
4	Boresigh	Long. 1	136.00 -2	96.83 -1	105.69 -1	110.52 -6	158.94 -54.50	159.06 -31.52	167.93	136.62 -2	136.00 -23.90	96.83	105.69 -10.45	110.52 -66.28	158.94 -54.50	159.06	167.93	136.00 -23.90	96.83 -12.19	105.69 -10.45	110.52 -66.28	158.94 -54.50	159.06 -31.52	167.93 -2	136.62 -24.16	135.36 -23.95	96.831	105.69 -	110.52 -66.28	158.94	159.06	167.93 -29.02	136.62 -24.16	96.83	105.69	110.52 -66.28	158.94	159.06	167.93 -29.02
3)rbita1	position	164.00	164.00	164.00	164.00	164.00	164.00	164.00	164.00	164.00	164.00	164.00	164.00	164.00	164.00	164.00	164.00	164.00	164.00	164.00	164.00	164.00	164.00	164.00	152.00	152.00	152.00			152.00	152.00	164.00	164.00	164.00	164.00	164.00	164.00	164.00
2	Beam		AUS00700	AUS00701	AUS00702	AUS00703	AUS00704	AUS00705	AUS00706	AUS0070A	AUS00800	AUS00801	AUS00802	AUS00803	AUS00804	AUS00805	AUS00806	AUS00900	AUS00901	AUS00902	AUS00903	AUS00904	AUS00905	AUS00906	AUS0090A	AUSA0000	AUSA0001	AUSA0002	AUSA0003	AUSA0004	AUSA0005	AUSA0006	AUSB0000	AUSB0001	AUSB0002	AUSB0003	AUSB0004	AUSB0005	AUSB0006
1	Admin.	symbol	AUS		AUS	AUS	AUS	AUS		П		AUS			AUS	AUS	AUS	AUS			AUS		AUS					AUS		AUS		AUS		AUS		AUS			AUS

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17	Domonto																														9,6								
16	Statin	Sign	۵	۵	۵	Ь	۵	۵	۵	۵	Ь	۵	Ь	۵	Ь	Ь	۵	Ь	Ь	Ь	۵	۵	۵	Д	۵	۵	۵	۵	۵	۵	۵	۵	Ь	۵	۵	۵	۵	۵	Ь
15	Group	code																		45	45	46	46	47	47													37	
41	Identity of																																						
13	Designation of	emission	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W
12	Power																																						
=		en r.p.	84.0	84.0	81.0	85.5	84.0	84.0	84.0	83.0	84.0	84.0	84.0	84.0	84.0	84.0	83.0	84.0	84.0	84.0	84.0	84.0	84.0	84.0	84.0	84.0	84.0	84.0	84.0	84.0	84.0	84.0	84.0	84.0	84.0	84.0	84.0	84.0	84.0
10	Polarization	Angle																																					
	Pola	Type	8	귱	겅	CR	귱	귕	兴	S	CR	ರ	CL	R	CR	S	占	CR	CR	CR	귕	귱	R	CR	占	귕	겅	ರ	8	8	占	兴	CR	8	겅	8	겅	귕	8
	ation na	Gain	57.00	57.00	27.00	57.00	57.00 CL	57.00	27.00	57.00 CR	57.00 CR	57.00 CL	57.00 CL	57.00 CR	57.00 CR	57.00	57.00 CL	57.00 CR	57.00 CR	57.00 CR	57.00 CL	57.00 CL	57.00 CR	57.00 CR	57.00 CL	57.00 CL	57.00 CL	57.00 CL	57.00 CR	57.00 CR	57.00	57.00	57.00 CR	57.00 CR	57.00	57.00 CR	27.00	57.00 CL	57.00 CR
6	Earth station antenna	Code	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES
	tion	Cross- polar	_	_	Ī	-	Ī	_		Ť	_					_	_	_		_	_	_	_	_	_	_	_	-	_	Ĩ	_	_	_	Ī	_	_	_	-	Ĩ
œ	Space station antenna gain	Co- Co-	42.19	46.98	48.15	44.44	44.54	42.26	43.56	48.88	48.88	45.96	39.40	37.02	48.88	48.11	46.50	38.67	44.22	32.90	32.90	31.39	31.39	31.44	31.44	48.88	45.95	38.36	40.67	47.86	47.56	41.73	47.48	47.48	48.88	42.64	42.64	42.64	42.19
7	Shaped	beam																																					
9	Space station	antenna code	AODRSS	158.14 MODRSS	80.00 MODRSS	0.00 MODRSS	97.00 MODRSS	29.00 MODRSS	MODRSS	0.00 MODRSS	90.00 MODRSS	9.68 MODRSS	36.00 MODRSS	91.63 MODRSS	0.00 MODRSS	AODRSS	165.00 MODRSS	31.00 MODRSS	32.89 MODRSS	143.00 MODRSS	143.00 MODRSS	10.74 MODRSS	10.74 MODRSS	148.00 MODRSS	AODRSS	0.00 MODRSS	106.00 MODRSS	CB_RSS_CODA	59.00 MODRSS	149.00 MODRSS	94.46 MODRSS	126.59 MODRSS	20.53 MODRSS	20.53 MODRSS	90.00 MODRSS	AODRSS	149.15 MODRSS	149.15 MODRSS	151.78 MODRSS
	enna	Orien- tation	151.78 MODRSS	158.14 N	80.00	0.00	97.00	29.00	135.00 MODRSS	0.00	90.00	9.68	36.00	91.63	0.00	175.47 MODRSS	165.00	31.00	32.89	143.00	143.00 N	10.74 N	10.74 N	148.00	148.00 MODRSS	0.00	106.00 N	Ü	59.00 N	149.00 N	94.46 N	126.59 N	20.53	20.53 N	90.00	149.15 MODRSS	149.15 N	149.15 N	151.78 N
2	Space station antenna characteristics	Minor axis	0.92	09:0	09:0	1.00	99:0	1.14	0.84	09:0	0.60	0.60	1.50	1.66	09:0	09:0	0.60	1.68	0.94	2.80	2.80	3.16	3.16	4.00	4.00	0.60	09:0		1.18	0.60	0.63	1.29	99.0	99:0	09:0	0.89	0.89	0.89	0.92
	Space s	Major N	1.82	0.93	0.71	1.00	1.44	1.45	1.46	09:0	09:0	1.17	2.13	3.33	09:0	0.72	1.04	2.25	1.12	5.10	5.10	6.40	6.40	2.00	5.00	09:0	1.18		2.02	92.0	0.77	1.45	0.75	0.75	09:0	1.71	1.71	1.71	1.82
	1	Lat.	49.47	40.14	-3.10	51.96	9.50	12.20	23.60	26.10	43.97	53.18	-22.20	18.68	4.40	27.05	43.00	6.30	12.79	33.50	33.50	34.27	34.27	33.70	33.70	22.20	7.70	-3.40	-0.70	-12.10	16.09	7.39	42.09	45.09	35.12	46.78	46.78	46.78	49.47
4	Boresight	Long. 1	10.31	47.47	29.90	5.12	2.20	-1.50	90.30	50.50	18.22	28.04	23.30 -:	. 26.96	114.70	90.44	25.00		104.89	101.90	_	113.21	113.21	108.10		113.55	- 1	21.85	14.60	44.10	-24.12		13.02		33.45				10.31
e e	Orbital		-18.80	23.20	11.00	38.20	-19.20	-30.00	74.00	34.00	56.00	37.80	-0.80	104.00	74.00	86.00	-120	-13.20	86.00	62.00	62.00	134.00	134.00	92.20	92.20	122.00	20.00	-19.20	-13.20	29.00	-33.50	-24.80	-120	-120	-120	-12.80	-12.80	-12.80	-18.80
2	Beam		AUT01600	AZE06400	BDI27000	BEL01800	BEN23300	BFA10700	BGD22000	BHR25500	BIH14800	BLR06200	BOT29700	BRM29800	BRU3300A	BTN03100	BUL02000	CAF25800	CBG29900	CHN15400	CHN15500	CHN15800	CHN15900	CHN16000	CHN16100	CHN20000							CVA08300	CVA08500					D 08700
-	Admin.		AUT						BGD B	П	BIH B		BOT B		BRU B		BULB			CHN		CHN		CHN				000					CVA				CZE C		

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17	Status	Nelliarks					9																			5,6													
16			۵	۵	۵	а	۵	出	낊	出	뿐	R	Æ	Ь	Ь	а	Ь	Д	Ь	Д	۵	Ь	Ь	Ь	Ь	Д	Д	۵	۵	Ь	Ь	Ь	Д	Ь	Ь	Ь	Д	۵	Ь
15	Group	code					10	01	10	10	10	10	10	12			21	12	7F	7F		52	52													37			
14	Identity of							HISPASAT-1	HISPASAT-1	HISPASAT-1	HISPASAT-1	HISPASAT-1	HISPASAT-1																										
13	Designation of	emission	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	33M0G7W	33M0G7W	27M0F8W	27M0F8W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W
12	Power									.,	.,,	.,	.,		.,		.,		.,			.,		,,								.,		.,	.,	.,			
=		enr.p.	0.48	79.5	0.48	84.0	84.0	82.5	83.5	82.5	83.5	82.5	83.5	84.0	84.0	84.0	84.0	84.0	84.0	84.0	84.0	84.0	84.0	84.0	84.0	84.0	94.0	0.48	83.0	84.0	84.0	84.0	85.0	84.0	84.0	84.0	85.5	0.40	84.0
10	Polarization	Angle																																					
	Pola	Type	궁	귕	8	CR	8	8	8	8	8	CR	S	S	CL	S.	CR	겅	CL	S.	占	CL	CL	CR	S.	兴	ರ	ರ	ರ	디	CR	8	8	CR	CL	CL	占	8	ر ا
	ation na	Gain	57.00	57.00	57.00	27.00	57.00 CR	55.00 CR	58.50 CR	22.00	58.50 CR	55.00 CR	58.50 CR	57.00	57.00 CL	57.00 CR	57.00	57.00 CL	57.00 CL	57.00 CR	57.00 CL	57.00 CL	57.00 CL	57.00 CR	57.00 CR	57.00 CR	57.00 CL	57.00 CL	57.00 CL	57.00 CL	57.00 CR	57.00	57.00 CR	57.00	57.00	57.00	57.00	57.00 CR	57.00 CL
6	Earth station antenna	Code	MODTES	MODTES	MODTES	MODTES	MODTES	18.70 R13TES	18.70 R13TES	18.70 MODTES	18.70 MODTES	18.70 R13TES	18.70 R13TES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES
	ntion gain	Cross- polar						18.70	18.70	18.70	18.70	18.70	18.70																										
æ	Space station antenna gain	Co- polar	48.88	48.88	44.05	44.86	44.79	43.00	43.00	43.00	43.00	43.00	43.00	38.42	42.44	48.42	40.27	48.88	45.80	47.97	32.58	41.53	41.53	44.16	35.38	43.23	42.40	46.23	47.69	47.12	48.34	42.37	42.29	42.64	42.64	42.64	44.44	42.64	42.64
7	Shaped	реаш						ECO	E00	E00	E00	E00	ECO																										
9	Space station	antenna code	90.00 MODRSS	CB_RSS_DNKA	MODRSS	168.57 MODRSS	CB_RSS_E_A							136.00 MODRSS	145.49 MODRSS	5.99 MODRSS	156.36 MODRSS	CB_RSS_F_A	CB_RSS_F_B	CB_RSS_F_C	4.00 MODRSS	11.59 MODRSS	11.59 MODRSS	155.22 MODRSS	167.00 MODRSS	142.00 MODRSS	64.00 MODRSS	161.21 MODRSS	4.00 MODRSS	172.00 MODRSS	10.00 MODRSS	152.55 MODRSS	147.00 MODRSS	149.15 MODRSS	149.15 MODRSS	149.15 MODRSS	0.00 MODRSS	149.15 MODRSS	149.15 MODRSS
	enna :s	Orien- tation	90.00		151.50	168.57								136.00	145.49	5.99	156.36)		4.00	11.59	11.59	155.22	167.00	142.00	64.00	161.21	4.00	172.00	10.00	152.55	147.00	149.15	149.15	149.15	0.00	149.15	149.15
2	Space station antenna characteristics	Minor	09:0		09:0	09:0								1.72	0.95	09:0	1.20				3.54	0.90	06:0	0.92	1.57	0.72	1.12	09:0	09:0	0.60	0.60	0.95	1.04	0.89	0.89	0.89	1.00	0.89	0.89
	Space s	Major A	0.60		1.83	1.52								2.33	1.67	0.67	2.18				4.34	2.18	2.18	1.16	5.15	1.84	1.43	1.11	0.79	0.00	99:0	1.70	1.58	1.71	1.71	1.71	1.00	1.71	1.71
	1	Lat.	11.68	61.83	61.72	63.79	34.15	39.90	39.90	39.90	39.90	39.90	39.90	26.80	14.98	59.18	45.37	13.43	-17.30	-17.65	-16.30	61.54	61.54	-17.87	5.48	53.80	-0.60	42.27	13.40	12.00	1.50	38.11	10.20	46.78	46.78	46.78	51.96	46.78	46.78
4	Boresight	Long.	42.68	5.28	14.34	-14.94	-9.40	-3.10	-3.10	-3.10	-3.10	-3.10	-3.10	29.70	39.41	25.40	3.30		174.50	174.65 -	-145.00 -16.30	17.61	17.61	179.62 -	151.90	- 1		43.35		-15.00	10.30	24.52	-11.00	16.77	16.77	16.77			16.77
3	Orbital		16.80	-25.20	-33.50	-33.50	-30.00	-30.00	-30.00	-30.00	-30.00	-30.00	-30.00	-7.00	22.80	44.50	-7.00	-7.00	140.00	140.00		22.80	22.80	-178.00	158.00	-33.50	-13.20	23.20	-37.20	-30.00	-18.80	-1.20	-37.00	-12.80	-12.80	-12.80	38.20	-12.80	-12.80
2	Beam		DJ 109900	DNK_100	DNK09000	DNK09100	E100	HISP27D4	HISP27D6	HISP33D4	HISP33D6	HISPASA4	HISPASA6	EGY02600	ERI09200	EST06100	F 09300	F100	F200	F300	OCE10100	FIN10300		FJI19300	FSM00000	G 02700	GAB26000	GE006400	GMB30200	GNB30400	GNE30300	GRC 10500	GUI19200	HNG10601	HNG10602	HNG10603	HOL21300	HRV14801	HRV14802
-	Admin.	symbol	ā	v		DNK	В	ш	ш	ш	В	Е	Е	,		EST	н	ш	F	н	ш		FIN		FSM					GNB				HNG		HNG			HRV

			_					_	_	_		_	,	_		_			_	_	_		_	_	_	_	_	_	_		_		_	_		_		_	
17	Domonic																																			9,6			
16	Stotus	STATE	۵	۵	۵	۵	۵	Ь	۵	Д	Ь	Ь	Ь	Ь	Д	Ь	Ь	Ь	Ь	Ь	뿐	Ь	Ь	띪	۵	۵	Д	۵	Ь	Ь	Ь	Ь	۵	۵	Ь	۵	Ь	۵	۵
15	Group	code	37			7E	7E	92	9 ₂	1Н	7Н			7D	7D						05	02	02	02						03	03								
41	Identity of																				BS-3N			BS-3M															
13	Designation of	emission	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0F8W	34M5G7W	34M5G7W	27M0F8W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	33M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W
12	Power																																						
=		durb.	0.48	0.48	84.0	0.48	84.0	84.0	84.0	84.0	84.0	84.0	84.0	84.0	84.0	84.0	83.0	83.0	84.0	84.0	87.0	87.0	0.78	87.0	85.0	84.0	84.0	84.0	84.0	89.0	89.0	87.0	83.0	84.0	84.0	84.0	84.0	84.0	84.0
10	Polarization	Angle																																					
	Pola	Type	귕	유	겅	8	귱	CR	귱	S	CL	CR	CR	ರ	S	R	占	겅	CR	CR	8	CR	CR	CR	占	귕	8	兴	디	당	S	T)	8	兴	CR	8	CL	귕	CL Cl
	ation na	Gain	57.00	57.00	22.00	57.00	57.00 CL	57.00 CR	22.00	57.00 CR	57.00 CL	57.00 CR	57.00 CR	57.00 CL	57.00 CR	57.00	57.00	57.00 CL	57.00 CR	57.00 CR	57.00 CR	57.00 CR	57.00 CR	57.00 CR	57.00 CL	57.00 CL	57.00 CR	57.00	57.00	57.00 CL	57.00	57.00	22.00	57.00 CR	57.00	57.00 CR	57.00	57.00 CL	57.00 CL
6	Earth station antenna	Code	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES
	ation gain	Cross- polar																																					
œ	Space station antenna gain	Co- polar	42.64	40.14	42.27	43.83	43.83	45.66	45.66	43.13	43.13	41.79	30.94	29.48	29.48	48.08	36.03	46.67	44.86	48.03	33.80	33.80	33.80	33.80	43.19	35.38	40.17	44.75	42.60	43.43	43.43	44.00	48.88	42.18	43.19	45.13	36.14	42.19	48.47
7	Shaped	beam																																					
9	Space station	antenna code	149.15 MODRSS	144.20 MODRSS	40.00 MODRSS	96.00 MODRSS	96.00 MODRSS	CB_RSS_INDA	CB_RSS_INDA	CB_RSS_INDB	CB_RSS_INDB	CB_RSS_INDD	160.00 MODRSS	170.00 MODRSS	170.00 MODRSS	157.56 MODRSS	149.00 MODRSS	MODRSS	168.57 MODRSS	110.02 MODRSS	68.00 MODRSS	68.00 MODRSS	68.00 MODRSS	68.00 MODRSS	73.16 MODRSS	177.45 MODRSS	99.68 MODRSS	5.05 MODRSS	CB_RSS_KIRA	168.00 MODRSS	168.00 MODRSS	18.89 MODRSS	90.00 MODRSS	123.99 MODRSS	73.16 MODRSS	133.00 MODRSS	130.00 MODRSS	151.78 MODRSS	36.00 MODRSS
	enna s	Orien- tation	149.15	144.20	40.00	96.00	96.00)		0))	160.00	170.00	170.00	157.56	149.00	177.00 MODRSS	168.57	110.02	68.00	68.00	68.00	68.00	73.16	177.45	89.68	5.05		168.00	168.00	18.89	90.00	123.99	73.16	133.00	130.00	151.78	36.00
ıc	Space station antenna characteristics	Minor	0.89	1.35	1.13	09:0	09:0	_		-		_	3.33	3.43	3.43	0.60	1.82	09:0	09:0	09:0	3.30	3.30	3.30	3.30	0.91	1.76	1.30	0.64		1.02	1.02	89.0	09:0	1.03	0.91	0.70	1.84	0.92	0.60
	Space :	Major N	1.71	1.99	1.46	1.92	1.92	_		H		_	6.73	9.14	9.14	0.72	3.82	1.00	1.52	0.73	3.52	3.52	3.52	3.52	1.47	4.58	2.06	1.47	_	1.24	1.24	1.63	09:0	1.87	1.47	1.22	3.68	1.82	99.0
	=	Lat.	46.78	40.74	25.50	11.10	11.10	14.72	14.72	23.73	23.73	29.16	-1.40	-1.70	-1.70	53.22	32.40	64.90	63.79	31.32	31.50	31.50	31.50	31.50	34.02	46.40	0.88	41.32	-0.56	36.00	36.00	40.32	29.12	18.17	34.02	09.9	26.30	49.47	-29.80
4	Boresight	Long.	16.77	12.67	93.00	93.30	93.30	76.16	76.16	83.67	83.67	74.37	113.60	115.20	115.20	-8.25	54.20	-19.00	-14.94	34.95		134.50	134.50	134.50		65.73		73.91	-170.31	127.50	127.50		47.48		37.55	-9.30	17.50	10.31	27.80 -29.80
8	Orbital		-12.80	9.00	00.89	00:89	00.89	25.80	25.80	25.80	55.80	00'89	80.20	104.00	104.00	-37.20	34.00	-33.50	-33.50	-4.00	109.85	109.85	110.00	110.00	11.00	56.40	-0.80	20.00	176.00	116.00	116.00	140.00	11.00	122.20	11.00	-33.50	-24.80	-18.80	4.80
2	Beam		HRV14803	1 08200	002E0GNI	IND04701	IND04702	INDA_101	INDA_102	101_8UN	INDB_102	10DD_100	INS02800	INS03501	INS03502	IRL21100	IRN10900	ISL04900	00090781	ISR11000	000BS-3N	J 10985	J 11100	J 1110E	JOR22400	KAZ06600	KEN24900	KGZ07000	KIR100	KOR11201	KOR11202	KRE28600	KWT11300	LAO28400	LBN27900	LBR24400	LBY28021	LIE25300	00908087
-	Admin.	symbol	HRV	_	QNI				QN		IND		INS		INS				ISI	ISR	_	ſ	٦	ſ					KIR		KOR		KWT						TS0

		•		_				г		$\overline{}$		\neg				_		\neg			_		П		\neg	_	_	_		_		_	\neg	_		\neg		_	
17	Bomorke																													80									
16	1		۵	۵	۵	Ь	۵	۵	Ъ	Ъ	Ь	Ь	Ь	۵	Ь	Ь	۵	Ь	Ь	Ь	۵	Ь	Ь	Ь	۵	۵	۵	۵	۵	۵	Ь	Д	Ь	뿐	Æ	뿐	出	۵	۵
15	Group	code		60																	90	90												90	90	90	90	90	02
41	Identity of																																	RST-1	RST-1	RST-1	RST-1	RST-1	RST-1
13	Designation of	emission	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W		27M0F8W				27M0G7W
12	Power																																						
111		4	0.48	0.48	84.0	84.0	81.0	0.48	84.0	84.0	84.0	84.0	84.0	87.0	84.0	86.9	80.0	86.0	84.0	84.0	0.40	84.0	84.0	84.0	85.0	84.0	84.0	84.0	84.0	80.5	84.0	84.0	81.0	84.0	84.0	84.0	84.0	84.0	84.0
91	Polarization	Angle																																					
	Polar	Type	유	당	R	CL	8	R	CL.	CR	CL	CR	CR	R	CR	CL.	R	CR	CR	CL	ಜ	CL.	CL.	CL.	CL.	디	R	8	R	겅	디	CL.	CR	R	CL	R	디	兴	겅
	rtion 1a	Gain	57.00	57.00	27.00	27.00	27.00	57.00 CR	27.00	27.00	57.00	57.00	57.00 CR	57.00 CR	57.00 CR	59.95	57.00	57.00 CR	57.00 CR	57.00	57.00 CR	57.00 CL	57.00 CL	57.00 CL	57.00	57.00	92.00	57.00 CR	57.00	57.00	57.00	57.00	57.00	57.00	57.00	57.00	57.00	57.00 CR	57.00 CL
6	Earth station antenna	Code	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	8.40 MODTES	8.40 MODTES	8.40 MODTES	8.40 MODTES	8.40 MODTES	8.40 MODTES
	i i	Cross- polar	_	~	~	۷.	_	_	-	_	4	~		~	-	_	_	~	4	-	_	~	-	~	_	-	~	-	_	_	_	~	_	8.40 N					
œ	Space station antenna gain	Co- Co-	47.92	48.88	47.92	41.42	48.88	48.88	41.32	41.75	48.88	41.75	48.88	41.11	48.88	39.07	36.57	37.55	44.10	38.47	42.02	42.02	48.88	48.88	41.62	36.60	45.53	45.59	47.17	48.88	48.88	45.15	48.47	38.40	38.40	38.40	38.40	38.40	38.40
7	Shaped									_																								COP	COP	COP	COP	COP	COP
9	Space station		CB_RSS_LTUA	MODRSS	CB_RSS_LVAA	CB_RSS_MAUA	MODRSS	90.00 MODRSS	67.00 MODRSS	157.42 MODRSS	90.00 MODRSS	CB_RSS_MLAA	MODRSS	CB_RSS_MLIA	0.00 MODRSS	169.27 MODRSS	50.00 MODRSS	CB_RSS_MTNA	92.69 MODRSS	100.58 MODRSS	177.31 MODRSS	177.31 MODRSS	0.00 MODRSS	CB_RSS_NZLA	100.00 MODRSS	99.00 MODRSS	55.41 MODRSS	16.12 MODRSS	CB_RSS_PORA	90.00 MODRSS	90.00 MODRSS	9.52 MODRSS	42.00 MODRSS						
	tenna	Orien- tation		00:06	_)	00:0	00:06	67.00	157.42	90.00	·	0.00	_	0.00	169.27	20.00	,	92.69	100.58	177.31	177.31	0.00	,	100.00	99.00	55.41	16.12	Ŭ	90.00	90.00	9.52	42.00						
ıc	Space station antenna characteristics	Minor		09:0			09:0	09:0	08:0	06:0	09:0		09:0		09:0	1.04	1.55		0.70	1.80	0.95	0.95	09:0		1.02	1.76	09:0	0.63		09:0	09:0	0.73	09:0						
	Space	Major		09:0			09:0	09:0	2.57	2.07	09:0		09:0		09:0	3.32	3.96		1.56	2.20	18.	1.84	09:0		1.88	3.46	1.30	1.22		09:0	09:0	1.17	99'0						
	真	Lat.	56.11	49.20	56.11	-15.88	43.70	46.99	-18.60	9.83	41.50	3.92	00.9	16.10	35.90	46.79	28.90	20.91	-13.25	16.97	61.58	61.58	-0.50	-24.30	21.00	11.10	5.51	52.18	37.65	31.86	25.35	45.75	-2.10	53.00	53.00	53.00	53.00		53.00
4	Boresight	Long.	24.52	5.21	24.52	58.61	7.40	28.45	46.20	167.64	21.53	108.07	73.10	-4.80	14.40	101.95	-8.90	-1124	33.79	7.63	16.70	16.70	167.00	-174.35			132.98			34.99	51.59	25.12	30.00		38.00	38.00	38.00	38.00	38.00
3	Orbital		23.20	28.20	23.20	29.00	34.20	20.00	29.00	146.00	22.80	91.50	50.00	-19.20	22.80	74.00	-25.20	-36.80	4.80	-37.20	-0.80	-0.80	134.00	158.00	17.20	98.00	140.00	20.00	-37.00	-13.20	20.00	20.00	11.00	36.00	36.00	36.00	36.00	36.00	36.00
2	Beam		LTU06100	LUX11400	LVA06100	MAU_100	MCO11600	MDA06300	MDG23600	00000HW	MKD14800	MLA100	0090EGTW	MLI_100	MLT14700	MNG24800	MRC20900	MTN_100	0080EIMW	NGR11500	NOR12000	NOR12100	0060ENNN	NZL100	OMA12300	PHL28500	PLW00000	POL13200	POR_100	YYY00001	QAT24700	ROU13600	RRW31000	RSTREA11	RSTREA12	RSTRED11	RSTRED12	RSTRSD11	RSTRSD12
-	Admin.	symbol	12	rnx	LVA	MAU	MCO	MDA	MDG		MKD		MLD	MLI		MNG	MRC	MTN		NGR				NZL		짼							RRW		RUS				RUS

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17	D Company																																						
16	3	Status	۵	۵	۵	Ь	Ь	Ь	Ъ	Ь	Ь	Ь	Ь	۵	Ь	Ь	۵	Ь	Ь	Ь	۵	۵	Ь	Ь	Ъ	Ъ	Ь	۵	Ь	۵	Ь	Ь	۵	۵	Ь	۵	۵	۵	Ь
15	Group	code	14	4	33	33	35	35	34	34	04	04												37			53	53							22	22	36		
14	Identity of		RST-2	RST-2	RST-3	RST-3	RST-5	RST-5	RUS-4	RUS-4																													
13	Designation of	emission	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W
12		control																																					
=		errip.	0.48	84.0	84.0	84.0	84.0	84.0	84.0	84.0	84.0	84.0	84.0	84.0	84.0	83.0	84.0	84.0	84.0	84.0	84.0	84.0	84.0	84.0	82.0	82.0	84.0	84.0	84.0	84.0	82.0	85.7	84.0	84.0	84.0	84.0	84.0	84.0	84.0
10	Polarization	Angle																																					
	Pola	Туре	8	귕	8	다	CR	ر ال	S	ر ال	CL	占	CR	占	CL	디	占	디	CR	CL	占	8	다	디	꼾	兴	占	占	CR	8	디	C	8	8	CR	K	겅	ಕ	8
	ation na	Gain	57.00	57.00	27.00	57.00	57.00 CR	27.00	57.00	57.00	57.00 CL	57.00 CL	57.00 CR	57.00 CL	57.00 CL	57.00	57.00 CL	57.00 CL	57.00 CR	57.00	57.00 CL	57.00 CR	57.00 CL	57.00 CL	57.00 CR	57.00 CR	57.00 CL	57.00 CL	57.00 CR	57.00 CR	57.00	57.00	22.00	57.00 CR	57.00	57.00	57.00	57.00 CR	57.00 CR
6	Earth station antenna	Code	MODTES	8.40 MODTES	8.40 MODTES	8.40 MODTES	8.40 MODTES	8.40 MODTES	8.40 MODTES	8.40 MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES
	tion gain	Cross- polar	8.40 N	8.40 N	8.40 N	8.40	8.40	8.40 N	8.40 N	8.40	1	_	1	_	1	_	_	_	1	-	_	_	-	_	_	_	_	_	_	_	_	1	_	_	-	_	_	_	_
æ	Space station antenna gain	Co- C	38.40	38.40	38.40	38.40	38.40	38.40	38.40	38.40	41.44	41.44	40.44	42.81	48.88	48.88	46.25	47.07	47.20	48.88	42.19	45.64	42.64	42.64	48.88	48.88	43.19	43.80	36.26	37.38	45.00	40.81	48.50	44.64	43.13	36.47	39.00	46.93	38.27
7	Shaped	beam	COP	COP	COP	COP	COP	COP	COP	COP																													
9	Space station	antenna code									10.00 MODRSS	10.00 MODRSS	27.51 MODRSS	118.59 MODRSS	90.00 MODRSS	0.00 MODRSS	175.12 MODRSS	145.16 MODRSS	114.00 MODRSS	0.00 MODRSS	151.78 MODRSS	149.15 MODRSS	149.15 MODRSS	149.15 MODRSS	90.00 MODRSS	90.00 MODRSS	73.16 MODRSS	74.00 MODRSS	83.26 MODRSS	93.77 MODRSS	155.31 MODRSS	166.64 MODRSS	13.92 MODRSS	71.33 MODRSS	135.00 MODRSS	175.00 MODRSS	0.03 MODRSS	137.58 MODRSS	129.00 MODRSS
	tenna	Orien- tation									10.00	10:00	27.51	118.59	90.00	0.00	175.12	145.16	114.00	0.00	151.78	149.15	149.15	149.15	90:00	90:00	73.16	74.00	83.26	93.77	155.31	166.64	13.92	71.33	135.00	175.00	0.03	137.58	129.00
2	Space station antenna characteristics	Minor									1.00	1.00	1.04	1.08	09:0	0.60	0.72	0.60	99'0	0.60	0.92	0.89	0.89	0.89	0.60	0.60	0.91	0.88	2.05	1.82	0.73	1.02	09:0	0.60	0.72	1.75	1.10	0.60	1.72
	Space	Major axis									2.00	2.00	2.43	1.35	09'0	09:0	0.92	0.91	0.78	0.60	1.82	1.71	1.71	1.71	09:0	0.60	1.47	1.32	3.21	2.80	1.21	2.26	99'0	1.59	1.88	3.59	3.19	95.0	2.41
	Į.	Lat.	63.00	63.00	62.00	62.00	56.00	26.00	51.52	51.52	61.50	61.50	-7.23	-8.40	-13.87	43.90	1.42	43.98	8.60	0.80	49.47	46.78	46.78	46.78	46.18	-26.44	34.02	34.20	15.52	12.88	38.41	38.83	-8.72	-18.19	33.50	32.00	38.99	-7.11	-6.20
4	Boresight	Long.	65.00	65.00	97.00	97.00	158.00	158.00	118.22	118.22	17.00	17.00	51.86		-171.70	12.50	103.86	20.50	-11.80	7.00	10.31	16.77	16.77	16.77		31.39	37.55	37.60	18.39	100.75	71.14		126.03	-175.23	9.50	2.50		177.61	34.60
3	Orbital	position	26.00	26.00	86.00	86.00	140.00	140.00	110.00	110.00	2.00	5.00	42.50	128.00	-178.00	-36.80	88.00	-7.00	-33.50	-7.00	-18.80	-12.80	-12.80	-12.80	33.80	4.80	11.00	11.00	17.00	98.00	38.00	20.00	128.00		-25.20	-25.20	42.00	176.00	11.00
2	Beam		RSTRSD21	RSTRSD22	RSTRSD31	RSTRSD32	RSTRSD51	RSTRSD52	RUS00401	RUS00402	S 13800	S 13900	SEY00000	SLM00000	SMO05700	SMR31100	SNG15100	SRB14800	SRL25900	STP24100	SUI14000	SVK14401	SVK14402	SVK14403	SVN14800	SWZ31300	SYR22900	SYR33900	TCD14300	THA14200	TJK06900	TKM06800	TLS00000	TON21500	TUN15000	TUN27200	TUR14500	TUV00000	TZA22500
-	Admin.	symbol	RUS	RUS		RUS			RUS	RUS	S				SMO					STP		SVK		SVK		SWZ			TCD		TJK		TLS						TZA

17	-	Кешагк															
16	,	Startus	۵	۵	_	۵	_	Ь	_	۵	_	Ь	۵	Ь	۵	_	۵
15	Group	code				22	22			7A	7A			78	78		
41	Identity of	the space station															
13	Designation of	emission	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W	27M0G7W
12	Power	control															
=		err.b.	0.48	0.48	0.48	0.78	0.78	91.0	0.78	0.78	0.78	82.0	0.48	84.0	0.48	0.48	85.0
10	Polarization	Angle															
	Pola	Type	뚱	8	8	8	귱	S.	귱	8	귱	S.	8	귕	8	8	ರ
	ation na	Gain	57.00	57.00 CR	57.00 CR	57.00 CR	57.00 CL	57.00 CR	57.00 CL	57.00 CR	57.00 CL	57.00 CR	57.00 CR	57.00 CL	57.00 CR	57.00 CR	57.00 CL
6	Earth station antenna	Code	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES	MODTES
	ation gain	Cross- polar															
æ	Space station antenna gain	Co- polar	44.31	42.62	41.01	43.61	43.61	43.61	39.35	39.35	39.35	40.84	36.64	44.30	44.30	38.98	41.47
7	Shaped	peam															П
9	Space station	antenna code	6.62 MODRSS	68.73 MODRSS	177.32 MODRSS	CB_RSS_GUMA	CB_RSS_GUMA	CB_RSS_MRAA	CB_RSS_PLMA	CB_RSS_USAA	CB_RSS_USAA	159.91 MODRSS	109.43 MODRSS	87.00 MODRSS	87.00 MODRSS	39.00 MODRSS	37.00 MODRSS
	tenna	Orien- tation	6.62	68.73	177.32							159.91	109.43	87.00	87.00	39.00	37.00
22	Space station antenna characteristics	Minor	0.84	1.02	0.95							0.89	1.76	99'0	99'0	1.48	1.36
	Space	Major	1.23	1.50	2:32							2.56	3.43	1.52	1.52	2.38	1.46
	ght	Lat.	24.37	1.04	48.19	13.21	13.21	13.21	19.50	19.50	19.50	41.21	14.21	-16.40	-16.40	-13.10	29.60 -18.80
4	Boresight	Long.	53.98	32.20	31.82	155.56	155.56	155.56	-145.55	-145.55	-145.55	63.80	106.84	168.00 -16.40	168.00	27.50	29.60
3	Orbital	position	52.50	17.00	38.20	122.00	122.00	121.80	170.00	170.00	170.00	33.80	107.00	140.00	140.00	-0.80	-0.80
2	Beam	identification	UAE27400	UGA05100	UKR06300	GUM33101	GUM33102	MRA33200	PLM33200	USAA_101	USAA_102	UZB07100	VTN32500	VUT12801	VUT 12802	ZMB31400	ZWE13500
_	Admin.	symbol	NAE	NGA	UKR	USA	USA	USA	USA	USA	USA	NZB	NTV	VUT	VUT	ZMB	ZWE

COLUMN HEADINGS OF TABLES 3B1 AND 3B2

- Col. 1 Nominal orbital position, in degrees and hundredths of a degree from the Greenwich meridian (negative values indicate longitudes which are west of the Greenwich meridian; positive values indicate longitudes which are east of the Greenwich meridian).
- Col. 2 Notifying administration symbol.
- Col. 3 Beam identification (Column 2, normally, contains the symbol designating the administration 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. 4 Polarization (CL circular left, CR circular right).
- Col. 5 Channel number/indication of minimum equivalent protection margin (EPM) for a given assignment derived from the set of values for all test points belonging to the given beam.

TABLE 3B1

Minimum equivalent protection margin in the Regions 1 and 3 feeder-link Plan in the frequency band 14.5-14.8 GHz (sorted by orbital position)

1	2	3	4							5						
		_							Chai	nel nu	mber					
Orbital position	Admin. symbol	Beam Identification	Polarization type	2	3	4	5	6	7	8	9	10	11	12	13	14
27.00	arn.	GEN 1999 O. I	- CT			1		inimun	n equiv	alent pi		n marg			20.6	
-37.00	SEN	SEN22201	CL				40.8		39.6		39.6		39.6		39.6	
-37.00	SEN	SEN22202	CR					39.6		39.6		39.6		39.6		40.7
-30.00	TGO	TGO22601	CL				15.0		14.1		14.1		14.1		14.1	
-30.00	TGO	TGO22602	CR					14.1		14.1		14.1		14.1		15.0
-25.00	GHA	GHA10801	CR				14.9		14.1		14.1		14.1		14.1	<u> </u>
-25.00	GHA	GHA10802	CL					14.1		14.1		14.1		14.1		14.9
-19.20	NIG	NIG11901	CR				6.4		4.2		4.2		4.2		4.2	
-19.20	NIG	NIG11902	CL					4.2		4.2		4.2		4.2		6.4
-18.80	NMB	NMB02501	CL				6.9		4.5		4.5		4.5		4.5	
-18.80	NMB	NMB02502	CR					4.5		4.5		4.5		4.5		6.9
-13.00	CME	CME30001	CL				17.2		16.3		16.3		16.3		16.3	
-13.00	CME	CME30002	CR					16.3		16.3		16.3		16.3		17.2
-7.00	SDN	SDN_101	CL				27.1		26.1		26.1		26.1		26.1	
-7.00	SDN	SDN_102	CR					26.1		26.1		26.1		26.1		27.1
-1.00	MOZ	MOZ30701	CL				16.6		15.7		15.7		15.7		15.7	
-1.00	MOZ	MOZ30702	CR					15.7		15.7		15.7		15.7		16.6
4.80	AFS	AFS02101	CL				11.9		11.0		11.0		11.0		11.0	
4.80	AFS	AFS02102	CR					11.0		11.0		11.0		11.0		11.9
11.00	YEM	YEM_101	CR				47.8		47.3		47.3		47.3		47.3	
11.00	YEM	YEM102	CL					47.3		47.3		47.3		47.3		47.8
34.00	IRN	IRN10901	CR		15.2		13.9		13.9		13.9		13.9		13.9	
34.00	IRN	IRN10902	CL			14.3		13.9		13.9		13.9		13.9		14.8
36.00	ETH	ETH09201	CL				2.3		1.4		1.4		1.4		1.4	
36.00	ETH	ETH09202	CR					1.4		1.4		1.4		1.4		2.3
37.80	SOM	SOM31201	CL				0.0		-0.3		-0.3		-0.3		-0.3	
37.80	SOM	SOM31202	CR					-0.3		-0.3		-0.3		-0.3		1.6
38.20	PAK	PAK12701	CR		14.2		3.2		0.9		0.9		0.9		0.9	
38.20	PAK	PAK12702	CL			4.2		0.9		0.9		0.9		0.9		3.3
42.50	SEY	SEY00001	CL				36.3		35.3		35.3		35.3		35.3	
42.50	SEY	SEY00002	CR					35.3		35.3		35.3		35.3		36.4
50.00	IRQ	IRQ25601	CL				-0.1		-0.1		-0.1		-0.1		-0.1	
50.00	IRQ	IRQ25602	CR				5.1	-0.1	5.1	-0.1	5.1	-0.1	3.1	-0.1	J.1	2.4
50.00	NPL	NPL12201	CR		38.2		3.9	5.1	1.2	5.1	1.2	5.1	1.2	J.1	1.2	
					36.2	16	3.9	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	2.0
50.00	NPL	NPL12202	CL		25.7	4.6	24.7	1.2	24.7	1.2	24.7	1.2	24.7	1.2	24.7	3.9
55.80	IND	INDA_101	CR		25.7	24.7	24.7	24.7	24.7	24.7	24.7	24.7	24.7	24.7	24.7	25.5
55.80	IND	INDA_102	CL			24.7		24.7		24.7		24.7		24.7		25.6

1	2	3	4							5						
									Char	nel nu	mber					
Orbital position	Admin. symbol	Beam Identification	Polarization type	2	3	4	5	6	7	8	9	10	11	12	13	14
							М	inimun	n equiv	alent pi	rotectio	n marg	in			
116.00	KOR	KO11201D	CL	7.5		7.5		7.5		7.5		7.5		7.5		
116.00	KOR	KOR11201	CL	7.5		7.5		7.5		7.5		7.5		7.5		
122.00	CHN	CHN19001	CL		47.7		47.7		47.7		47.7		47.7		50.7	
122.00	CHN	CHN19002	CR			42.0		42.0		42.0		42.0		42.0		999.9
134.00	PNG	PNG13101	CR		26.1		25.2		25.2		25.2		25.2		25.2	
134.00	PNG	PNG13102	CL			25.2		25.2		25.2		25.2		25.2		26.1
140.00	USA	USAC_101	CL		19.4		18.6		18.6		18.6		18.6		18.6	
140.00	USA	USAC_102	CR			18.6		18.6		18.6		18.6		18.6		19.4

TABLE 3B

Minimum equivalent protection margin in the Regions 1 and 3 feeder-link Plan in the frequency band 17.3-18.1 GHz (sorted by orbital position)

		_			_		_	_	_	6		_	_		_				_				о			_			Ι
		40		_		H	_	e e		13.3			2.0		_				_			_	14.9						
		39					3.2	10.3		-									14.1			17.1	L						
		38						_		10.6			0.3									_	12.0						
		37					3.2	10.3		_									2.8			13.7	L						
		36							L	10.6		L	0.3				=						12.0						
		35					3.2	10.2											1.8			11.4							
		34								10.6			0.3			5.1							12.0						
		33					32	10.2											1.8			11.4							
		32								10.6			0.3				Ξ						12.0						
		31					3.2	10.3											2.8			13.7							
		30								10.6			0.3										12.0						
		29					3.2	10.2											7.5			13.1							
		28								10.6			0.3			5.1							12.0						
		27					3.2	10.2											1.8			11.4							
		56								10.6			0.3							17			12.0						
		25	Tgin				3.2	102											-0.1			11.8							
		24	Minimum equivalent protection margin			6666				10.6			0.3							1.1			12.0						
	i i	23	ection	3.3	12.2	П	3.2	10.2											-0.1			11.8							
	Channel number	22	prot			999.9				10.6			0.3							17			12.0						
·c	lel i	21	alent	3.3	12.2		1.3	97											1.5			9.7							
	Char	20	quiv			999.9					1.5			12.0	11.6			4.2											
		19	III	3.3	12.2	6			-0.4			0:0			_						7.7			7.6					
		18	dinin		- 2	6666			4		0.8	-		10.6	14.3			6.4						_	_	_	_	L	_
		5 17	_	3.3	12.2	6.			-0.4			-0.1		9:	3			_	_		7.7	_	_	7.6	10.1	11.1	10.1	11.1	10.1
		91 2		3	.2	6.666		L	4		0.8			10.6	14.3			6.4	_		_			100					_
		14 15		3.3	12.2	6.666		\vdash	-0.4		8.0	0.0		9.01	14.3			6.4	_		7.7	_		7.6		_			_
		13 1		3.3	12.2	8		┝	4.0		0	ا 1.0		10	14			9	_		7.7	_	_	7.6	10.1	11.1	10.1	11.1	10.1
		12 1			=	6: 666			Υ		8.0	Υ		10.6	14.3			6.4			_			_	1(+	=	-	=
		=		3.3	12.2	86			-0.4		_	0.0		-	-			_			7.7			9.7					
		-01			Ť	6.666			Ė		8.0	Ė		10.6	14.3			6.4			Ė			Ė					
		6		3.3	12.2	6			4.0-			-0.1			Ė						7.7			9.7	10.1	11.1	10.1	11.1	10.1
		∞				6.666					8.0			10.6	14.3			6.4											
		7		3.3	12.2				9.9			0.0									7.7			7.6					
		9				999.9					8.0			10.6	14.3			6.4											
		s		3.3	12.2				٥. 4.			1.									7.7			7.6	10.1	11.1	10.1	11.1	10.1
		4				939.9					8.0			10.6	14.3			6.4											
		3		3.3	12.2				۵ 4.			0:0									7.7			7.6					
		2				999.9					0.8			10.6	14.3			6.4											
		اتيا		3.3	12.2				1.8			2.4									10.6			7.9	10.2	11.2	10.1	11.1	10.2
4		Polarization type		CR	ರ	70	TO	8	ರ	ರ	R	8	క	70	ъ	క	క	8	ъ	క	CR	8	ರ	క	CR	CR	CR	CR	R
3		Orbital Admin. Beam Position symbol Identification		FJI19300	SMO05700	OCE10100	GMB30200	IRL21100	NGR11500	AND34100	GUI19200	POR100	MTN100	SMR31100	CPV30100	DNK09000	DNK09100	G 02700	ISL04900	ISL05000	LBR24400	SRL25900	BFA10700	E100	HISP27D4	HISP27D6	HISP33D4	HISP33D6	HISPASA4
2		Admin. symbol		EI	SMO	Ь	GMB	RL	NGR	AND	eni	POR	NTM	SMR	CPV	DNK	DNK	9	TSI	ISI	LBR	SRL	BFA	Е	Е	Е	Е	Е	В
-		Orbital Position		-178.00	-178.00	-160.00	-37.20	-37.20	-37.20	-37.00	-37.00	-37.00	-36.80	-36.80	-33.50	-33.50	-33.50	-33.50	-33.50	-33.50	-33.50	-33.50	-30.00	-30.00	-30.00	-30.00	-30.00	-30.00	-30.00

_	_	_		_	_	_	_			_	_		_	_	_	_	_		_	_	_	_	_	_	_		_	_		_	_	_
		9						-0.2			0:0								14.7	2.5			11.7									Ш
		39										52		4.6			-0.2								10.1							
		38						4.0	-12		1.1								13.0	0.0			9.8							7.0-		
		37										5.3		4.6			-02			П				П	10.1							0.0
		36						4.0-			-1.0						Ė		13.0	0.0			8.6	П			-0.7					
		35						H	-		H	5.2		9.4			-0.2		-				-	Н	10.1		_	Н	0.0			
		-		_	_	H	H	4.	.2	H	1.1	2	H	6	H	_	Ť	_	13.0	0	H	H		Н	=	-	_	H	0	_	H	Н
		34		_		L		9.0	-1.2	L	٢	_	_	<u> </u>			2		13	0.0			9.8	H	_	_		H			L	
		33						_			_	5.3		9.6			97		_						10.1	0.0						
		32						-0.4			-1.0								13.0	0.0			9.8									
		31										5.5		9.4			-0.2								10.1							
		30						4.0			-1.0								13.0	0.0			8.6							-0.7		
		29										5.5		9.4			-0.2								10.1							0.0
		82						4.0			-1.0								13.0	0.0			9.8				7.0-					
		27						Ė				5.5		9.4			-0.2			Г				П	10.1			П	0.0			
		56				\vdash	H	-0.4			-1.0	H		Ë			Ė		13.0	0.0		H	8.6	Н	Ė			Н			\vdash	Н
		25 2	Ę.	_	-	\vdash	H	Ī	\vdash	\vdash	H	5.5	\vdash	9.4	H	_	-0.2	H	-	٦	\vdash	H	-5,	Н	10.1	0.0	_	Н		\vdash	\vdash	Н
		24 2	narg			Н	H	4.0	\vdash	\vdash	-1.0	4)	\vdash	39	H		ľ	Н	13.0	0.0	H	H	8.6	Н	÷	٦		+2.0−		\vdash	±2.0-	Н
		23 2	ion					Υ			1	5.5		9.4			-0.2		~	0			6	Н	10.1			٩			٩	
	Channel number	22 2	Minimum equivalent protection margin			\vdash	H	-0.4	\vdash	H	-1.0	2	\vdash	0	H		Ť		13.0	0.0		H	9.8	H	=			-0.7*		-	-0.7*	\vdash
w	l nu	21 2	nt pr	_	_	_		Ť	\vdash	_	ì	6.5	\vdash	4.4		_	6.0	_	-	0			- 6	H	9.8		_	٩			٩	8.0
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	2		dmin.		_		H		LBN				_	Н			_	_	_		-	_			-	_		GEO	_	_	_	H	H	MDG	SVN
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	_	23 2	tion	.4	H	1.9	ω	H	Н	H		H	Н	H		٥	-0.8	H	H	2			H	4.9		0.8	9.9	H	٥		28.6	15.0	-	H
	mpe	22	rotec	0.3		П	2.3		П				П			-12	Ė			19.9				Ť					0.4		-2	_	17.4	
w	nel nı	21	lent p			9.0							П				0.1							4.9		3.2	5.6				28.1	15.0		
	Channel number	20	quiva		6.7										4.4			0.3	7.9						0.4								11.7	
	Ĭ	16	nm ec			-02								9.0							13.8			8.0			5.2	4.5		-1.0		4.7		
		18	inim		9.9										1.9			9.0	7.9						-1.0								9.3	
		17	Z			-0.2								0.4							13.8			0.8	_		5.2	4.5		-1.0	Щ	4.7		
		91 9			6.6	2								_	1.9		_	9.0	7.9		8			_	-1.0				_	0	\dashv	_	9.3	
	ŀ	15				-0.2		_	H			_	H	0.4	1.9	_	_	2	6	_	13.8		_	0.8	0.		5.2	4.5	_	-1.0	\dashv	4.7	3	
	ŀ	13 14			9.9	-0.3		_	H			_	H	0.2	1.	_	_	0.5	7.9	_	13.8		_	8.0	-1.0		5.2	4.5	_	-1.0	Н	0.5	9.3	
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	İ	6				-0.3								0.2							13.8			6.0			5.3	4.5		-1.0				5.3
	ĺ	æ			6.6										1.9			0.5	7.9						-1.0									
		7				-0.2								0.4							13.8			6.0			5.3	4.5		-1.0				5.3
		9			9.9										1.9			0.5	7.9						-1.0									
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	ŀ	2 3			9.9	-0.2	H		Н	H		H	Н	0.4	1.9	Н	H	9.0	6.7	Н	13.8		\vdash	0.9	-1.0		5.3	4.5		-1.0	Н	-		5.3
	ŀ	7			.6	2.4	H		\vdash	H			\vdash	2.1	1.	\vdash	\vdash	0.	7.	\vdash	14.4		-	1.0	-		5.5	5.9		-0.2	\dashv	-		5.3
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4		Polarization type		S	CR	CL	æ	CR	TO	æ	CL	S	CF	70	CL	8	ъ	CR	CL	8	R	CL	R	CL	R	S	CR	R	CL	CL	R	CR	CL	R
3		Orbital Admin. Beam Position symbol Identification		UZB07100	BHR25500	IRN10900	MCO11600	RSTREA11	RSTREA12	RSTRED11	RSTRED12	RSTRSD11	RSTRSD12	BLR06200	TJK06900	BEL01800	HOL21300	UKR06300	TUR14500	SEY00000	EST06100	AFG24501	AFG24502	CLN21900	KGZ07000	MDA06300	MLD30600	POL13200	ROU13600	TKM06800	UAE27400	INDA_101	INDA_102	INDB_101
2		Admin.		NZB	BHR	IRN	MCO	RUS	RUS	RUS	RUS	RUS	RUS	BLR	TJK	BEL	HOL	UKR	TUR	SEY	EST	AFG	AFG	CLN	KGZ	MDA	MLD	POL	ROU	TKM	UAE	IND	IND	UND
-		Orbital Position		33.80	34.00	34.00	34.20	36.00	36.00	36.00	36.00	36.00	36.00	37.80	38.00	38.20	38.20	38.20	42.00	42.50	44.50	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	52.50	55.80	55.80	55.80

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		39		_	_	17.1	- 2		e				40.8	2			-	48.1			\vdash	6.666	6.	\dashv	_		Н	Н		_	37.0	_		
		38					17.2		46.3				L.	44.2								6	999.9								Ļ	42.1		
		37				17.1			_				40.8	_				48.1				999.9									37.0			
		36					17.2		46.3					44.2									6'666									42.1		
		35				17.1							40.8					48.1				6.666									37.0			
		34					17.2		46.3					44.2									6'666									42.1		
		33				17.1							40.8					48.1				999.9									37.0			
		32					17.2		46.3					442									6.666									42.1		
		31				17.1							40.8					48.1				6.666									37.0			
		30					17.2		46.3					44.2									66666				П	П			П	42.1		
		29				17.2	Г						40.8	Г				48.6			П	6.666					П	П		П	36.4	П		
		28				Ė	17.6		46.5				Ť					Ť				6	6.666				П				· ·			
		27				17.6	-		4									6.666				6.666	6											
		76				-	17.7		46.6								Н	86			=	86	6'666	Н	_			=			Н	=		
		25 2	.E	-	\vdash	11.0	:=	\vdash	4	\vdash	H	\vdash	\vdash	H	\vdash	\vdash	Н	15.8	\vdash	Н	Н	1.9	8	\vdash	-	\vdash	Н	Н	H	Н	Н	Н		
		24 2	Minimum equivalent protection margin	_	_	-	H	H	14.1	5.6		8.2	H	H			13.6	11			4.0	1	Н	\dashv	13.7		11.2	7.9		_	Н	Н	17.1	
		23 2	tion 1		_	H	H	_		-2	-0.5	-	_		3.0	6.0	1	8.1	14.5	9.6	4		_	13.0	-	6.9	-	7	5.3	13.8	Н	-	-	
	mber	22 2	otec	_					12.8	5.6	ī	5.2			69	0	11.3	8	-	4)	2.1		_	-	11.4	4	11.1	5.1	4)	1	Н		14.4	
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		17	Mir		12.3		Г	0.9		Ė	15.4				3.0	1.7	Ť		14.6	5.6			Т	13.0	Ť	4.9	Ť	Т	5.3	13.8	Н	Т		
		16								12.1	Ė	52					12.1		Ė		2.1			Ť	11.4		11.1	5.1		Ť			14.2	
		15			12.3			0.9			15.4				3.0	1.7			14.6	5.6				13.0		4.9			5.3	13.8	П			21.0
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		13			12.3			3.1			15.0				3.0	1.7			14.6	9.6				13.0		4.9			5.3	13.8				19.9
		12		-0.2						13.7		5.2					12.1				2.1				11.4		11.1	5.1					14.2	
		11			12.6			1.2			13.6				3.0	1.7			14.6	9.6				13.0		4.9			5.3	13.8				19.2
		10		7.3						13.5		52					12.1				2.1				11.4		11.1	5.1					14.2	
		6			12.6			12			13.6				3.0	1.7			14.6	5.6				13.0		4.9			5.3	13.8				19.2
		*		7.3						13.5		5.2					12.1				2.1				11.4		11.1	5.1					14.2	
		7			12.6			12			13.6				3.0	1.7			14.6	5.6				13.0		4.9			5.3	13.8				19.2
		9		7.3						13.5	L	52		L			12.1				2.1				11.4		11.1	5.1			Ц		14.2	
		s			12.6			12	_	L	13.6	_	_	L	3.0	1.7	Щ		14.6	5.6			Щ	13.0		4.9	Щ	Щ	5.3	13.8	Ц		_	19.2
		4		7.3	"					13.5	"	5.2		L		Щ	12.1		(C	Щ	2.1				11.4		11.1	5.1			Ц		142	_
		3		_	12.6	_		12	_	L-	13.6	<u> </u>	_	H	3.0	1.7	Ļ		14.6	5.6			Щ	13.0	Ţ	4.9	Ļ		5.3	13.8	Н		61	19.4
		1 2		7.3	13.0	_		3.2		13.5	14.5	5.2	_		0.0	7.	12.1		16.0	9.6	2.1			15.4	11.4	7.	111	5.1	-	15.4	H		14.2	21.6
Н					13	\vdash	H	e,	\vdash		14	-	\vdash	H	6,	4.7	Н		16	œί			\vdash	15	_	7.7	Н	\vdash	8.1	15	Н	\vdash		21
4		Polarization type		TO	CR	89	CL	Cl	C	SS	70	Cl	80	70	CR	8	CR	TO	S	8	CR	CR	70	CF	R	CR	70	CL	NO.	SO	70	S	8	CR
3		Orbital Admin. Beam Position symbol Identification		INDB_102	BIH14800	RSTRSD21	RSTRSD22	KAZ06600	ALB29600	CHN15400	CHN15500	IND03700	IND04701	IND04702	INDD_100	BGD22000	BRU3300A	MNG24800	INS02800	BTN03100	CBG29900	RSTRSD31	RSTRSD32	SNG15100	MLA100	CHN16000	CHN16100	PHL28500	THA14200	BRM29800	INS03501	INS 035 02	VTN32500	000BS-3N
2		Admin.		QN	BIH	RUS	RUS	KAZ	ALB	CHN	CHN	QN	QNI	QNI	ON	BGD	BRU	MNG	INS	NTB	CBG	RUS	RUS	SNG	MLA	CHN	CHN	PHL	THA	BRM	SNI	INS	NE^	-
-		Orbital Position		55.80	26.00	26.00	26.00	56.40	62.00	62.00	62.00	00:89	00:89	00.89	68.00	74.00	74.00	74.00	80.20	86.00	86.00	96.00	96.00	88.00	91.50	92.20	92.20	98.00	98.00	104.00	104.00	104.00	107.00	109.85

		40						Г		34.7			П	29.3		П				П	П					3.0		10.4						
		39 41		-		H	13.2	_	29.2	34	H	_	28.6	25		H	H	H		Н	H	H	H	Н	1.6	e,	8.9	10			H	H		H
		-		_	_	\vdash	13	\vdash	8	œ;	H	_	78	28.6	\vdash	Н	H	H	\vdash	Н	H	H	Н	Н	-		89	_	\vdash	Н	Н	\vdash		H
		38		_	_	L	2		2	31.8		_	9	28		Н	H			Н	H		\vdash	Н		1.6	_	8.9	_	_		-		L
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		36								31.8				28.6										Ц		1.6		8.9						
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		34								31.8				28.6												1.6		8.9						
		33					13.2		29.2				28.6												1.6		8.9							
		32								31.8				28.6												1.6		8.9						
		31					13.2		29.5				28.6												1.6		8.9							
		30								31.8				28.6												1.6		8.9						
		29					14.1		28.2				29.3												3.0		8.9							
		28						20.8																		7.3								
		27					6.666																		999.9									
		56						6666																		6666								
		25	rgin				292																		0.1									
		24	Minimum equivalent protection margin									15.9			1.6		22.6	3.6			11.2			7.9					41.8					
	er	23	ectio	21.4	21.3						0.2					13.4			2.0	17.6		6.7	12.2							-0.3	0.9	0.9	0.9	6.0
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ARTICLE 10

Interference

10.1 The Member States 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.

ARTICLE 11

Period of validity of the provisions and associated Plans

- 11.1 The provisions and associated Plans 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 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.

ANNEX 1

Limits for determining whether a service of an administration is considered to be affected by a proposed modification to the Region 2 feeder-link Plan or by a proposed new or modified assignment in the Regions 1 and 3 feeder-link List or when it is necessary under this Appendix to seek the agreement of any other administration (Rev.WRC-03)

- 1 (SUP WRC-2000)
- 2 (SUP WRC-2000)
- Limits to the change in the overall equivalent protection margin with respect to frequency assignments in conformity with the Region 2 feeder-link Plan³³ (WRC-2000)

With respect to the modification to the Region 2 feeder-link Plan and when it is necessary under this Appendix to seek the agreement of any other administration of Region 2, except in cases covered by Resolution 42 (Rev.WRC-03)*, an administration is considered as being affected if the overall

³³ With respect to § 3 the limit specified relates to the overall equivalent protection margin calculated in accordance with § 1.12 of Annex 3.

^{*} Note by the Secretariat: This Resolution was revised by WRC-12 and WRC-15.

AP30A-94

equivalent protection margin³⁴ corresponding to a test point of its entry in that 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 feeder-link Plan as established by the 1983 Conference; or
- a modification of the assignment in accordance with this Appendix; or
- a new entry in the feeder-link Plan under Article 4; or
- any agreement reached in accordance with this Appendix except for Resolution 42 (Rev.WRC-03)*. (WRC-03)
- 4 Limits to the interference into frequency assignments in conformity with the Regions 1 and 3 feeder-link Plan or with the Regions 1 and 3 feeder-link List or proposed new or modified assignments in the Regions 1 and 3 feeder-link List (WRC-03)

Under assumed free-space propagation conditions, the power flux-density of a proposed new or modified assignment in the feeder-link List shall not exceed the value of $-76 \text{ dB}(\text{W}/(\text{m}^2 \cdot 27 \text{ MHz}))$ at any point in the geostationary-satellite orbit, and the relative off-axis e.i.r.p. of the associated feeder-link antenna shall be in compliance with Fig. A (WRC-97 curves) of Annex 3. (WRC-03)

With respect to § 4.1.1 *a)* or *b)* of Article 4, an administration in Region 1 or 3 is considered by the Bureau as being affected if the minimum orbital spacing between the wanted and interfering space stations, under worst-case station-keeping conditions, is less than 9°. (WRC-03)

However, an administration is not considered as being affected if, under assumed free-space propagation conditions, the effect of the proposed new or modified assignments in the feeder-link List is that the feeder-link equivalent protection margin³⁵ corresponding to a test point of its assignment in the feeder-link Plan or the feeder-link List or for which the procedure of Article 4 has been initiated, including the cumulative effect of any previous modification to the feeder-link List or any previous agreement, does not fall more than 0.45 dB below 0 dB, or, if already negative, more than 0.45 dB below the value resulting from:

- the Regions 1 and 3 feeder-link Plan and List as established by WRC-2000; or
- a proposed new or modified assignment to the feeder-link List in accordance with this Appendix; or
- a new entry in the Regions 1 and 3 feeder-link List as a result of the successful application of Article 4 procedures. (WRC-03)

³⁴ For the definition of the overall equivalent protection margin, see § 1.11 of Annex 5 to Appendix 30.

^{*} Note by the Secretariat: This Resolution was revised by WRC-12 and WRC-15.

³⁵ For the definition of the equivalent protection margin, see § 1.7 of Annex 3.

For a proposed new or modified assignment to the feeder-link List, in the interference analysis, for each test point, the antenna characteristics described in § 3.5 of Annex 3 shall apply. (WRC-03)

5 Limits applicable to protect a frequency assignment in the bands 17.3-18.1 GHz (Regions 1 and 3) and 17.3-17.8 GHz (Region 2) to a receiving space station in the fixed-satellite service (Earth-to-space)

An administration in Region 1 or 3 is considered as being affected by a proposed modification in Region 2, with respect to § 4.2.2 *a*) or 4.2.2 *b*) of Article 4, or an administration in Region 2 is considered as being affected by a proposed new or modified assignment in the Regions 1 and 3 feeder-link List, with respect to § 4.1.1 *c*) of Article 4, when the power flux-density arriving at the receiving space station of a broadcasting-satellite feeder-link would cause an increase in the noise temperature of the feeder-link space station which exceeds the threshold value of $\Delta T/T$ corresponding to 6%, where $\Delta T/T$ is calculated in accordance with the method given in Appendix 8, except that the maximum power densities per hertz averaged over the worst 1 MHz are replaced by power densities per hertz averaged over the necessary bandwidth of the feeder-link carriers. (WRC-03)

Interim systems of Region 2 in accordance with Resolution **42** (**Rev.WRC-03**)* shall not be taken into consideration when applying the above paragraph to proposed new or modified assignments in the Regions 1 and 3 feeder-link List. However, the above paragraph shall be applied to Region 2 interim systems with respect to Regions 1 and 3 administrations, referred to in § 5.2 *b*) of Resolution **42** (**Rev.WRC-03**)*. (WRC-03)

Limits applicable to protect a frequency assignment in the band 17.8-18.1 GHz (Region 2) to a receiving feeder-link space station in the fixed-satellite service (Earth-to-space) or a frequency assignment in the frequency bands 14.5-14.75 GHz (in countries listed in Resolution 163 (WRC-15)) and 14.5-14.8 GHz (in countries listed in Resolution 164 (WRC-15)) to a receiving space station in the fixed-satellite service (Earth-to-space) not subject to a Plan (WRC-15)

With respect to § 4.1.1 d) of Article 4, an administration is considered affected by a proposed new or modified assignment in the Regions 1 and 3 feeder-link List when the power flux-density arriving at the receiving space station of a broadcasting-satellite feeder link in Region 2 or the receiving space station of the fixed-satellite service uplinks not subject to a Plan in all Regions of that administration would cause an increase in the noise temperature of the receiving uplink space station which exceeds the threshold value of $\Delta T/T$ corresponding to 6%, where $\Delta T/T$ is calculated in accordance with the method given in Appendix 8, except that the maximum power densities per hertz averaged over the worst 1 MHz are replaced by power densities per hertz averaged over the necessary bandwidth of the feeder-link carriers. (WRC-15)

^{*} Note by the Secretariat: This Resolution was revised by WRC-12 and WRC-15.

ANNEX 2 (REV.WRC-03)

Basic characteristics to be furnished in notices relating to feeder-link stations in the fixed-satellite service operating in the frequency bands 14.5-14.8 GHz and 17.3-18.1 GHz

These data are listed in Appendix 4.

ANNEX 3

Technical data used in establishing the provisions and associated Plans and Regions 1 and 3 feeder-link List, which should be used for their application³⁶ (Rev.WRC-03)

1 Definitions

1.1 Feeder link

The term feeder link, as defined in No. **1.115**, is further qualified to indicate a fixed-satellite service link in the frequency band 17.3-17.8 GHz in the Region 2 broadcasting-satellite service Plan and in the frequency bands 14.5-14.8 GHz for countries outside Europe, and 17.3-18.1 GHz in the Regions 1 and 3 Plan, from any earth station within the feeder-link service area to the associated space station in the broadcasting-satellite service.

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.

³⁶ In revising this Annex at WRC-97 and at WRC-2000, no changes were made to the technical data applicable to the Region 2 feeder-link Plan. However, for all three Regions it should be noted that some of the parameters of networks proposed as modifications to the Region 2 feeder-link Plan and the Regions 1 and 3 feeder-link Lists may differ from the technical data presented herein. (WRC-2000)

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 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, with respect to the reference channel.

1.7 Feeder-link equivalent protection margin for Regions 1 and 3³⁷ (WRC-2000)

The feeder-link equivalent protection margin (M_u) is given by the formula:

$$M_u = -10 \log \left(10^{-M_1/10} + 10^{-M_2/10} + 10^{-M_3/10} \right)$$
 dB

where:

 M_1 : is the value in dB of the protection margin for the same channel, i.e.:

$$M_1 = \begin{bmatrix} \frac{\text{wanted power}}{\text{sum of the co-channel}} \\ \text{interfering powers} \end{bmatrix} - \text{co-channel protection ratio}$$

³⁷ This quantity is used in the alternative formula for the overall equivalent protection margin given in § 1.12. However, in certain cases (e.g. when the channel spacing and/or bandwidth are different from the values given in § 3.5 and 3.8 of Annex 5 to Appendix 30) the Bureau will use the worst-case approach until a relevant ITU-R Recommendation is incorporated in this Annex by reference. (WRC-2000)

 M_2 and M_3 : are the values in dB of the protection margin for the upper and lower adjacent channels, respectively, i.e.:

$$M_2 = \begin{bmatrix} \frac{\text{wanted power}}{\text{sum of the upper adjacent}} - \text{adjacent channel protection ratio} \\ \text{channel interfering powers} \end{bmatrix}$$

$$M_3 = \begin{bmatrix} \frac{\text{wanted power}}{\text{sum of the lower adjacent}} \\ -\text{adjacent channel protection ratio} \end{bmatrix} - \text{adjacent channel protection ratio}$$

All powers are evaluated at the receiver input. All protection ratios are given in § 3.3.

1.8 Overall carrier-to-interference (C/I) ratio

The overall C/I 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 downlinks. The overall C/I ratio due to interference from the given channel is calculated as the reciprocal of the sum of the reciprocals of the feeder-link C/I ratio and the downlink C/I ratio referred to the satellite receiver input and earth station receiver input, respectively³⁸.

1.9 Overall co-channel protection margin

The overall co-channel protection margin in a given channel is the difference (dB) between the overall co-channel *C/I* ratio and the co-channel protection ratio.

1.10 Overall adjacent channel protection margin

The overall adjacent channel protection margin is the difference (dB) between the overall adjacent channel C/I ratio and the adjacent channel protection ratio.

1.11 Overall second adjacent channel protection margin

The overall second adjacent channel protection margin is the difference (dB) between the overall second adjacent channel C/I ratio and the second adjacent channel protection ratio.

³⁸ In Region 2, there are a total of five overall *C/I* ratios used in the analysis of the Plan, namely, co-channel, upper and lower adjacent channels and upper and lower second adjacent channels. In Regions 1 and 3, three ratios are used, namely, co-channel and upper and lower adjacent channels.

1.12 Overall equivalent protection margin

The overall equivalent protection margin M is given in dB by the expression³⁹:

$$M = -10 \log \left(\sum_{i=1}^{n} 10^{\left(-M_i/10\right)} \right)$$

where:

n: is generally equal to 3 for Regions 1 and 3, n is equal to 5 for Region 2

 M_1 : overall co-channel protection margin (dB) (as defined in § 1.9)

M₂, M₃: overall adjacent channel protection margins for the upper and lower adjacent channels, respectively (dB) (as defined in § 1.10)

M₄, M₅: overall second adjacent channel protection margins for the upper and lower second adjacent channels, respectively (dB) as defined in § 1.11).⁴⁰

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

The following alternative formula for overall equivalent protection margin was used at the 1988 Conference (WARC Orb-88) in developing the original feeder-link Plan for Regions 1 and 3. It may be used as a tool to assess the relative contributions of the feeder link and downlink to the overall equivalent protection margin defined above.

$$M = -10 \log \left(10^{-(M_u + R_{cu})/10} + 10^{-(M_d + R_{cd})/10} \right) - R_{co}$$

where:

 M_u : equivalent protection margin for the feeder link (as defined in § 1.7)

M_d: equivalent protection margin for the downlink (as defined in § 3.4, Annex 5 to Appendix 30

 R_{Cu} : co-channel feeder-link protection ratio

 R_{cd} : co-channel downlink protection ratio

 R_{co} : co-channel overall protection ratio.

The values of the protection ratios used for the 1988 feeder-link Plan were as follows:

$$R_{cu} = 40 \text{ dB}$$

 $R_{cd} = 31 \text{ dB}$

 $R_{co} = 30 \text{ dB}$

³⁹ This formula is also used to calculate the overall equivalent protection margin of the assignments notified, which are in conformity with this Appendix, brought into use, and for which the date of bringing into use has been confirmed to the Bureau before 27 October 1997.

 $^{^{40}}$ M_4 and M_5 are applicable only for Region 2. (WRC-2000)

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

The corresponding values for analysing the 1997 feeder-link Plan are:

$$R_{cu} = 30 \text{ dB}$$

$$R_{cd} = 24 \text{ dB}$$

$$R_{co} = 23 \text{ dB}$$

However, the latter values are restricted to the case of channels having the standard channel spacing and necessary bandwidth given in § 3.5 and 3.8, respectively, of Annex 5 to Appendix 30.

WRC-2000 generally applied the following protection ratio values for development of the WRC-2000 Regions 1 and 3 feeder-link Plan:

$$R_{cu} = 27 \text{ dB}$$

$$R_{cd} = 21 \text{ dB} \tag{WRC-2000}$$

These values were used for all assignments in WRC-2000 planning except those for which WRC-2000 adopted different values (see § 3.3). The planning at WRC-2000 was based on use of the equivalent protection margin criterion. (WRC-2000)

2 Radio propagation factors

The propagation loss on an Earth-to-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 in Region 2. In Regions 1 and 3, the atmospheric absorption loss is not included.

2.1 Atmospheric absorption

For Region 2 (see Fig. 2)

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

$$A_a = \frac{92.20}{\cos \theta} \left(0.020 F_o + 0.008 \rho F_w \right)$$
 dB for $\theta < 5^\circ$

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:

$$A_a = \frac{0.0478 + 0.0118\rho}{\sin \theta} \qquad \text{dB} \qquad \text{for } \theta \ge 5^\circ$$

where:

 θ : elevation angle (degrees)

ρ: surface water vapour concentration, g/m³, with

 $\rho = 10 \text{ g/m}^3$ for rain climatic zones A to K and

 $\rho = 20 \text{ g/m}^3$ for rain climatic zones M to P.

For Regions 1 and 3 (see Figs. 1 and 3 taken from Recommendation ITU-R P.837-1)

In the Regions 1 and 3 feeder-link Plan, the atmospheric absorption loss is not included for the calculation of margins.

2.2 Rain attenuation

The propagation model for feeder links using circularly polarized signals is based on the value of rain attenuation for 1% of the worst month.

Figures 1, 2 and 3 give the rain climatic zones for Regions 1, 2 and 3.

Figure 4 presents a 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.

For calculation, the following data are needed:

 $R_{0.01}$: point rainfall rate for the location exceeded for 0.01% of an average year (mm/h)

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

 θ : elevation angle (degrees)

f: frequency (GHz)

 ζ : latitude of earth station (degrees).

Mean frequencies will be used for calculations for the frequency bands, i.e. 17.7 GHz and 14.65 GHz for Regions 1 and 3, 17.5 GHz for Region 2.

The calculation procedure used for the Region 2 feeder-link Plan and for the original 1988 Regions 1 and 3 feeder-link Plan consists of the following seven steps:

Step 1: the mean zero-degree isotherm height h_F is:

$$h_F = 5.1 - 2.15 \log \left[1 + 10^{\frac{(|\zeta| - 27)}{25}} \right]$$
 km

Step 2: the rain height h_R is:

$$h_R = C \cdot h_F$$
 km

where:

$$C = 0.6$$
 for $0^{\circ} \le |\zeta| < 20^{\circ}$
 $C = 0.6 + 0.02 (|\zeta| - 20)$ for $20^{\circ} \le |\zeta| < 40^{\circ}$
 $C = 1$ for $|\zeta| \ge 40^{\circ}$

Step 3: the slant-path length, L_s , below the rain height is:

$$L_s = \frac{2(h_R - h_0)}{\left[\sin^2 \theta + 2\frac{(h_R - h_0)}{R_e}\right]^{1/2} + \sin \theta}$$
km

where R_e is the effective radius of the Earth (8 500 km).

Step 4: the horizontal projection, L_G , of the slant-path is:

$$L_G = L_s \cos \theta$$
 km

Step 5: the rain path reduction factor $r_{0.01}$, for 0.01% of the time is:

$$r_{0.01} = \frac{90}{90 + 4L_G}$$

Step 6: the specific attenuation γ_R is determined from:

$$\gamma_R = k(R_{0.01})^{\alpha}$$
 dB/km

where $R_{0.01}$ is given in Table 1 for each rain climatic zone. The frequency dependent coefficients k and α are given in Table 2 and the rain climatic zones are given in Figs. 1, 2 and 3 for Regions 1, 2 and 3.

TABLE 1

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

Rain climatic zone	A	В	C	D	E	F	G	Н	J	K	L	M	N	P	Q
Rainfall intensity (mm/h)	8	12	15	19	22	28	30	32	35	42	60	63	95	145	115

TABLE 2 Frequency dependent coefficients

Frequency (GHz)	k	α	
14.65	0.0327	1.149	For Regions 1 and 3
17.5	0.0521	1.114	For Region 2
17.7	0.0531	1.110	For Regions 1 and 3

Step 7: the attenuation exceeded for 1% of the worst month is:

$$A_{1\%} = 0.223 \, \gamma_R \, L_s \, r_{0.01}$$
 dB for Regions 1 and 3
 $A_{1\%} = 0.21 \, \gamma_R \, L_s \, r_{0.01}$ dB for Region 2.

For calculation of the permissible increase in e.i.r.p. to overcome rain fading (power control, see § 3.11.1) in the Regions 1 and 3 Plan revised by WRC-97, the same calculation procedure is used with the following changes to conform to Recommendation ITU-R P.618-5.

To calculate the rain height h_R . Steps 1 and 2 are replaced by:

$$h_R = \begin{cases} 5 - 0.075 \left(\zeta - 23\right) & \text{for} & \zeta > 23^{\circ} & \text{Northern Hemisphere} \\ 5 & \text{for} & 0^{\circ} \leq \zeta \leq 23^{\circ} & \text{Northern Hemisphere} \\ 5 & \text{for} & 0^{\circ} \geq \zeta \geq -21^{\circ} & \text{Southern Hemisphere} \\ 5 + 0.1 \left(\zeta + 21\right) & \text{for} & -71^{\circ} \leq \zeta < -21^{\circ} & \text{Southern Hemisphere} \\ 0 & \text{for} & \zeta < -71^{\circ} & \text{Southern Hemisphere} \end{cases}$$

Steps 3 and 4 remain the same. However, to calculate the rain path reduction factor $r_{0.01}$, for 0.01% of the time, the equation of Step 5 is replaced by:

$$r_{0.01} = \frac{1}{1 + L_G/L_0}$$

where:

$$L_0 = 35 \exp(-0.015 R_{0.01})$$

and $R_{0.01}$ is given in Table 1 for each rain climatic zone.

Step 6 remains the same except the frequency dependent coefficients k and α shall be obtained from Recommendation ITU-R P.838-3. (WRC-07)

Step 7 should be replaced as follows:

$$\frac{A_p}{A_{0.01}} = 0.12 p^{-(0.546 + 0.043 \log p)}$$

where:

$$p(\%) = 0.30 p_w(\%)^{1.15}$$
 (Recommendation ITU-R P.841)

p is the average annual time percentage of excess corresponding to desired worst-month time percentage of excess p_w .

2.3 Rain attenuation limit

In the analysis of the Plan for Region 2, 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 compensate for larger rain attenuation on the feeder link.

In the analysis of the Regions 1 and 3 Plan, no rain attenuation is included in the margins.

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 (dB) not exceeded for 1% of the worst month, is given by:

$$XPD = 30 \log f - 40 \log (\cos \theta) - V \log A_D$$
 for $5^{\circ} \le \theta \le 60^{\circ}$

where:

$$V = 20$$
 for 14.5-14.8 GHz

and

$$V = 23$$
 for 17.3-18.1 GHz

where:

 A_p : co-polar rain attenuation exceeded for 1% of the worst month

f: frequency (GHz)

 θ : elevation angle (degrees).

To calculate the depolarization value to be used for power control in the Regions 1 and 3 Plan, the following algorithm (Steps 1 to 8), which was obtained from Recommendation ITU-R P.618-5, shall be used.

To calculate long-term statistics of depolarization from rain attenuation statistics the following parameters are needed:

 A_p : rain attenuation (dB) exceeded for the required percentage of time, p, for the path in question, commonly called co-polar attenuation (CPA)

 τ : tilt angle of the linearly-polarized electric field vector with respect to the horizontal (for circular polarization use $\tau = 45^{\circ}$)

f: frequency (GHz)

 θ : path elevation angle (degrees).

The method described below to calculate XPD statistics from rain attenuation statistics for the same path is valid for 8 GHz \leq f \leq 35 GHz and θ \leq 60°.

Step 1: calculate the frequency-dependent term:

$$C_f = 30 \log f$$
 for $8 \text{ GHz } \le f \le 35 \text{ GHz}$

Step 2: calculate the rain attenuation dependent term:

$$C_A = V(f) \log A_p$$

where:

$$V(f) = 12.8 f^{0.19}$$
 for $8 \text{ GHz } \le f \le 20 \text{ GHz}$

$$V(f) = 22.6$$
 for 20 GHz < $f \le 35$ GHz

Step 3: calculate the polarization improvement factor:

$$C_{\tau} = -10 \log [1 - 0.484 (1 + \cos 4\tau)]$$

The improvement factor $C_{\tau} = 0$ for $\tau = 45^{\circ}$ and reaches a maximum value of 15 dB for $\tau = 0^{\circ}$ or 90° .

Step 4: calculate the elevation angle dependent term:

$$C_{\theta} = -40 \log (\cos \theta)$$
 for $\theta \le 60^{\circ}$

Step 5: calculate the canting angle dependent term:

$$C_{\sigma} = 0.0052 \, \sigma^2$$

 σ is the effective standard deviation of the raindrop canting angle distribution, expressed in degrees; σ takes the value 0°, 5°, 10° and 15° for 1%, 0.1%, 0.01% and 0.001% of the time, respectively.

Step 6: calculate rain XPD not exceeded for p% of the time:

$$XPD_{rain} = C_f - C_A + C_{\tau} + C_{\theta} + C_{\sigma}$$
 dB

Step 7: calculate the ice crystal dependent term:

$$C_{ice} = XPD_{rain} (0.3 + 0.1 \log p)/2$$
 dB

Step 8: calculate the XPD not exceeded for p% of the time, including the effects of ice:

$$XPD_p = XPD_{rain} - C_{ice}$$
 dB

For values of θ greater than 60° , use $\theta = 60^{\circ}$ in the above equations.

FIGURE 1

Rain-climatic zones for Regions 1 and 3 between longitudes 45° W and 105° E

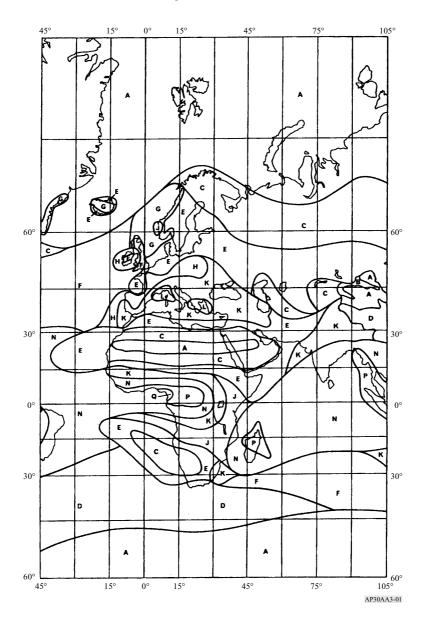


FIGURE 2
Rain-climatic zones (Region 2)

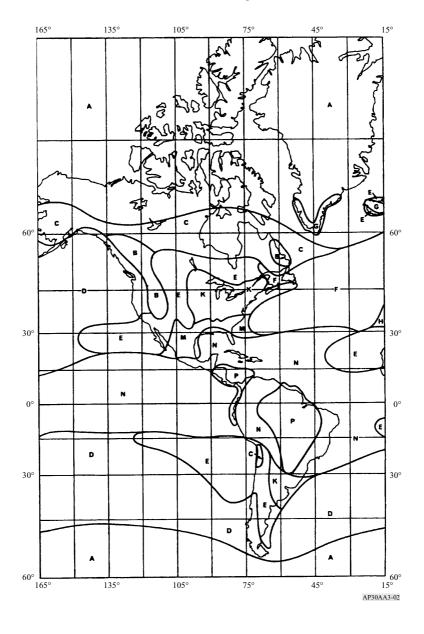


FIGURE 3

Rain-climatic zones for Regions 1 and 3 between longitudes 60° E and 150° W

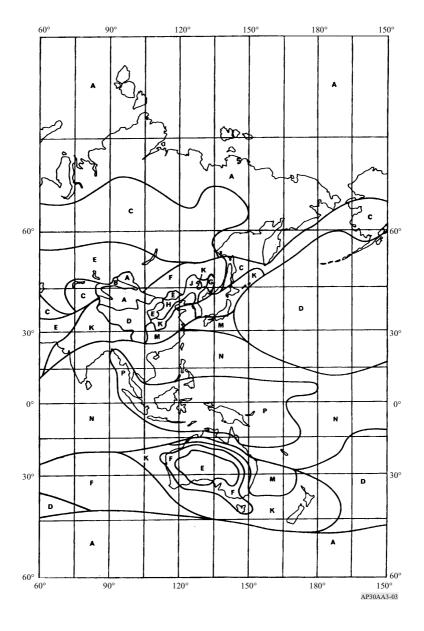


FIGURE 4

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

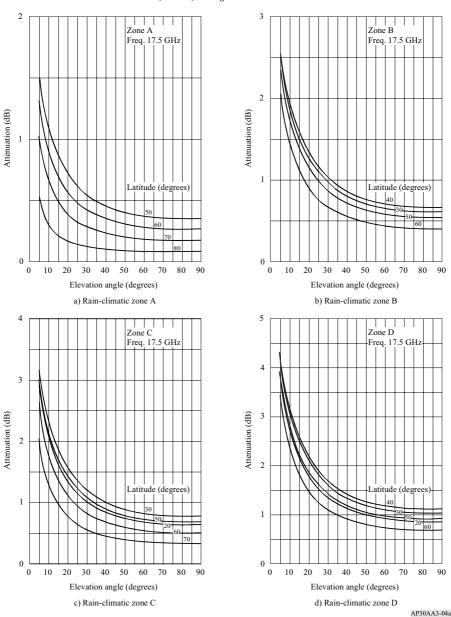


FIGURE 4 (continued)

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

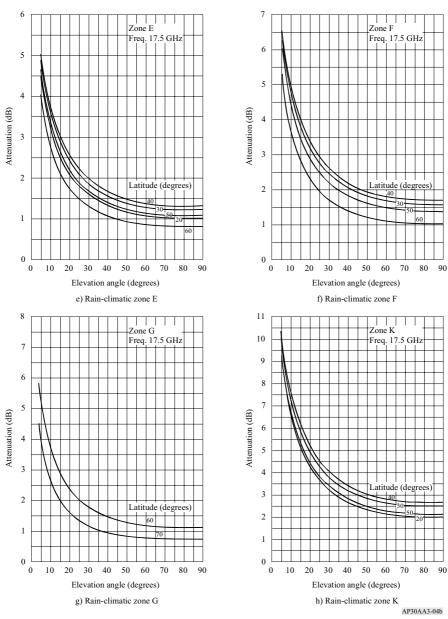
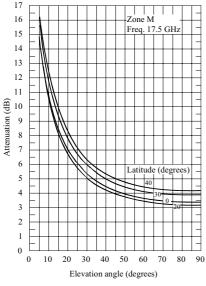
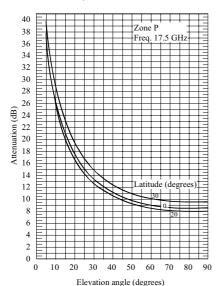


FIGURE 4 (continued)

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

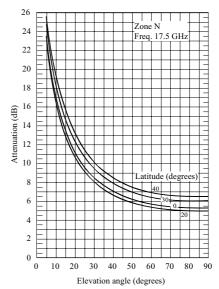


i) Rain-climatic zone M



k) Rain-climatic zone P

AP30AA3-04c



j) Rain-climatic zone N

- 729 -

2.5 Procedure for calculating the C/I ratio at a space station receiver input

In Region 2, the calculation of the feeder-link *C/I* 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 not exceeded for 99% of the worst month on the wanted feeder-link path. For the interfering feeder-link signal path, clear sky propagation (i.e., including atmospheric absorption only) is assumed.

In Regions 1 and 3, the calculation of the feeder-link *C/I* ratio at a space station receiver input used to obtain the feeder-link equivalent protection margin at a test point assumes free space conditions on the wanted feeder-link path and on the interfering feeder-link path.

3 Basic technical characteristics for Regions 1 and 3

3.1 Translation frequency and guardbands

a) 17 GHz feeder-links

The feeder-link Plan generally uses a frequency translation of 5.6 GHz between the 17 GHz feeder-link channels and the 12 GHz downlink 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 the value of frequency translation between the feeder-link frequency band (17.3-18.1 GHz in Regions 1 and 3) and the downlink frequency band (11.7-12.5 GHz in Region 1 and 11.7-12.2 GHz in Region 3), the guardbands specified in § 3.9 of Annex 5 to Appendix 30 for the downlink Plan result in corresponding guardband bandwidths of 11 MHz at the upper and 14 MHz at the lower feeder-link band edges. These feeder-link guardbands may be used to provide space operation functions in accordance with No. 1.23 in support of the operation of geostationary-satellite networks in the broadcasting-satellite service. (WRC-03)

b) 14 GHz feeder-links

As the maximum available bandwidth for the feeder-link band 14.5-14.8 GHz is only 300 MHz divided into fourteen 27 MHz channels, against 800 MHz (40 channels) and 500 MHz (24 channels) in the downlink Plan for Regions 1 and 3, respectively, several translation frequencies must be considered to allow any channel in the Plan to be used. Consequently, a particular feeder-link channel has been assigned to several broadcasting-satellite service Plan channels simultaneously.

Generally, the translation frequencies from the feeder-link channels are:

2 797.82 MHz to downlink broadcasting-satellite service channels 1 to 14;

2 529.30 MHz to downlink broadcasting-satellite service channels 15 to 28;

2 260.78 MHz to downlink broadcasting-satellite service channels 29 to 40.

The guardband bandwidths are 11.80 MHz at the lower band edge and 11.86 MHz at the upper band edge.

c) Frequency translation rules

Specific rules for selecting appropriate frequency translations are given in § 6.2.1.2.2 and 6.2.1.3.3 of the 1985 Conference (WARC Orb-85) Report to the 1988 Conference (WARC Orb-88). These rules permit the derivation of simple-to-use tables that define the channel translations that were avoided in revising the Regions 1 and 3 feeder-link Plan for both the 14 GHz and 17 GHz bands (see Tables 3 and 4).

TABLE 3

14.5-14.8 GHz/11.7-12.5 GHz channel translations that should be avoided (as far as possible) according to the 1985 Conference frequency translation rules

14 GHz feeder-link channel number	Downlink channel numbers to be avoided (as far as possible)								
1	7	8	9	19	20				
2	8	9	10	20	21				
3	9	10	11	21	22				
4	10	11	12	22	23				
5	11	12	13	23	24				
6	12	13	14	24	25				
7	13	14	15	25	26				
8	14	15	16	26	27				
9	15	16	17	27	28				
10	16	17	18	28	29				
11	17	18	19	29	30				
12	18	19	20	30	31				
13	19	20	21	31	32				
14	20	21	22	32	33				

17.3-18.1 GHz/11.7-12.5 GHz channel translations that should be avoided (as far as possible) according to the 1985 Conference frequency translation rules

		_	_		_	_	_		_		_		_				_	_				_	_	_			_			_	_	_	_			_	_	_		_
																																							30	3031
	Г																																					29	29	29
																																					28	28	28	28
																																				27	27	27	27	27
																																			56	56	56	56	26	56
																			40	40	40	40	40	40	40	40	40	40	40	40	40			25	25	25	25	25	25	25
	L																	39	39	39	39	39	39	39	39	39	39	39	39	39			24	24	24	24	24	24	24	24
	L																38	38	38	38	38	38	38	38	38	38	38	38	38			23	23	23	23	23	23	23	23	23
																37	37	37	37	37	37	37	37	37	37	37	37	37			22	22	22	22	22	22	22	22	22	22
															36	36	36	36	36	36	36	36	36	36	36	36	36			21	21	21	21	21	21	21	21	21	21	21
 ছ	L													35	35	35	35	35	35	35	35	35	35	35	35	35			20	20	20	20	20	20	20	20	20	20	\vdash	20
Downlink channel numbers to be avoided (as far as possible)													35	34	8	34	34	34	34	34	34	34	34	34	34			19	19	19	19	19	19	19	19	19	19	19	-	19
o pe a	L											33	33	33	33	33	33	33	33	33	33	33	33	33			18	18	18	18	18	18	18	18	18	18	18	18	18	18
hannel numbers to (as far as possible)											32	32	32	32	32	32	32	32	32	32	32	32	32			17	17	17	17	17	17	17	17	17	17	17	17	17	17	Ш
num as po										31	31	31	31	31	31	31	31	31	31	31	31	31			91	91	16	16	16	16	16	16	16	91	91	91	16	16		Ш
unnel s far	22	23	24	25	26	27	28	29	30	30	30	30	30	30	30	30	30	30	30	30	30			15	15	15	15	15	15	15	15	15	15	15	15	15	15			Ш
ık chz	21	22	23	24	25	56	27	⊢	29	29	59	29	29	29	59	59	29	29	29	29			14	14	14	14	14	14	14	14	14	14	14	14	14	14		Ц		
wnlin	20	21	22	23	24	25	26	\vdash	28	28	28	28	28	28	28	28	28	28	28			13	13	13	13	13	13	13	13	13	13	13	13	13	13			Ц		\vdash
°	19	20	21	22	23	24	25	⊢	27	27	27	27	27	27	27	27	27	27			12	12	12	12	12	12	12	12	12	12	12	12	12	12				Ц		\vdash
	18	19	20	21	22	23	24	Н	26	26	26	26	26	26	56	26	26			11	=	=	Ξ	=	11	11	=	11	11	11	=	=	=					Ц		\vdash
	17	Н	19	20	21	22	23	⊢	25	Н	25	Н	25	25	25	25			10	10	10	10	2	10	10	10	10	10	10	10	10	10						Ц		\vdash
	16	17	18	19	20	21	22	\vdash	24	\vdash	24	24	24	24	24			6	6	6	6	6	6	6	6	6	6	6	6	6	6							H		\vdash
	15	-	17	18	19	20	21	\vdash	-	-	23	23	23	23			8	∞	8	8	∞	∞	∞	∞	8	∞	∞	8	8	8								Н		H
	14	15	16	17	18	19	20	⊢	Н	22	_	Н	22			7	7	7	7	7	r~	7	7	7	7	7	7	7	7	_				_				Н		\vdash
	13	14	. 15	91	17	18	19	┢	21	21	21	21			9	9	9	9	9	9	9	9	9	9	9	9	9	9										H		
	12	13	14	15	91	17	18	⊢	20	20	20			5	S	5	5	5	5	5	S	S	'n	S	5	5	5	_	_	_			L	_			L	Н		\vdash
	=	12	13	14	. 15	16	17	18	19	19	_		4	4	4	4	4	4	4	4	4	4	4	4	4	4		_	_	_			L	_			L	Н		\vdash
	10	11	12	13	14	15	16	17	18			3	3	3	Э	3	3	3	3	3	æ	3	3	3	3													Н		H
	L			_							2	2	2	2	2	2	2	2	2	2	7	2	7	2				_	_	_			L	_				Н		\vdash
	H									-	_	_	_	-	-	1	1	_	1	1	_	_	_															H		\vdash
17 GHz feeder-link channel number	1	2	3	4	5	9	7	∞	6	10	11	12	13	14	15	16	17	18	61	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
<u> </u>																																					L	Ш		_

3.2 Carrier-to-noise ratio

§ 3.3 of Annex 5 to Appendix 30 provides guidance for planning and the basis for the evaluation of the carrier-to-noise (C/N) ratios of the feeder-link and downlink Plans.

As guidance for planning, the reduction in quality in the downlink due to thermal noise in the feederlink is taken as equivalent to a degradation in the downlink *C/N* ratio of approximately 0.5 dB not exceeded for 99% of the worst month.

For downlinks, as indicated in Appendix 30, the 1977 Conference (WARC SAT-77) adopted a C/N value of 14.5 dB for 99% of the worst month at the edge of the service area. The required feeder-link C/N is 24 dB for 99% of the worst month, at the edge of the service area, to produce an overall C/N performance of 14 dB.

3.3 Protection ratios

For planning in Regions 1 and 3 at the 1988 Conference (WARC Orb-88), the following protection ratios were applied for the purpose of calculating the feeder-link equivalent protection margins⁴¹:

- co-channel protection ratio = 40 dB;
- adjacent channel protection ratio = 21 dB.

The method for the calculation of the feeder-link equivalent protection margin is given in § 1.7.

For revising the Regions 1 and 3 feeder-link Plan at WRC-97, the corresponding values of aggregate protection ratio that were used to calculate the feeder-link equivalent protection margins which appear in the alternative formula for overall equivalent protection margin given in § 1.12 are specified in Recommendation ITU-R BO.1297, as follows^{42, 43}:

- co-channel protection ratio = 30 dB;
- adjacent channel protection ratio = 22 dB. (WRC-2000)

⁴¹ These protection ratio values were used for assignments notified, which are in conformity with this Appendix, brought into use, and for which the date of bringing into use has been confirmed to the Bureau before 27 October 1997.

⁴² These protection ratio values were used for assignments notified, which are in conformity with this Appendix, brought into use, and for which the date of bringing into use has been confirmed to the Bureau between 27 October 1997 and 12 May 2000. (WRC-2000)

⁴³ These protection ratio values were used for protection of digital and analogue assignments from analogue emissions. (WRC-2000)

AP30A-116

However, it should be noted that the revision of the Regions 1 and 3 feeder-link Plan by WRC-97 was based on "simultaneous planning of feeder links and downlinks with calculation of overall equivalent protection margins" (as defined in § 1.11 of Annex 5 to Appendix 30 and in § 1.12) using the following values of aggregate protection ratio:

- co-channel = 23 dB;
- adjacent channel = 15 dB. (WRC-03)

It was also specified that, for the revision of the Regions 1 and 3 feeder-link Plan, no overall co-channel single entry C/I ratio should be lower than 28 dB. (WRC-03)

Nevertheless, for assignments notified, which are in conformity with this Appendix, brought into use, and for which the date of bringing into use has been confirmed to the Bureau before 27 October 1997, the overall equivalent protection margins were calculated using a co-channel overall protection ratio of 30 dB and lower and upper overall adjacent channel protection ratios of 14 dB.

Revision of the Regions 1 and 3 feeder-link Plan at WRC-97 and planning at WRC-2000 were generally based on a set of reference parameters such as the average e.i.r.p., the reference earth station transmitting antenna, all test points placed within the -3 dB contour, a bandwidth of 27 MHz and the predetermined value of C/N. The Regions 1 and 3 feeder-link Plan as established by WRC-2000 is generally based on the use of digital modulation. (WRC-2000)

WRC-2000 adopted for the protection of digital assignments from digital emissions the following protection ratio values to be applied for calculation of feeder-link equivalent protection margins of the WRC-2000 Regions 1 and 3 feeder-link Plan:

- 27 dB for co-channel signals;
- 22 dB for adjacent channel signals. (WRC-2000)

During planning at WRC-2000, these values were used for all assignments of the Regions 1 and 3 feeder-link Plan and List, except those for which WRC-2000 adopted different values to be used in the planning process⁴⁴. (WRC-03)

Protection masks and associated calculation methods for interference into broadcasting-satellite systems involving digital emissions shall be in accordance with Recommendation ITU-R BO.1293-2 (Annexes 1 and 2⁴⁵). (WRC-03)

⁴⁴ For analogue assignments, the protection ratios of WRC-97 (30 dB co-channel, 22 dB adjacent channel) were used. (WRC-2000)

⁴⁵ Annex 3 of this Recommendation may be applied only in compatibility analysis for bilateral coordination between administrations. (WRC-03)

3.4 Feeder-link e.i.r.p.

The level of e.i.r.p. of each feeder link is specified in Article 9A.

The level of e.i.r.p. specified in the Plan can only be exceeded under certain conditions explained in § 3.11 of this Annex (see also Article 5, § 5.1.1).

3.5 Transmitting antenna

3.5.1 Antenna diameter

The feeder-link Plan is based on an antenna diameter of 5 m for the band 17.3-18.1 GHz and 6 m for the band 14.5-14.8 GHz.

For all antenna diameters including antennas smaller than 5 m for the 17.3-18.1 GHz band and 6 m for the 14.5-14.8 GHz band, the off-axis e.i.r.p. shall not exceed the limits indicated by Curve A in Fig. A of § 3.5.3 of this Annex for assignments notified, which are in conformity with this Appendix, brought into use, and for which the date of bringing into use has been confirmed to the Bureau before 27 October 1997 and by the Curve A' of Fig. A for other assignments.

3.5.2 On-axis gain

The on-axis gain for the 5 m antenna at 17.3-18.1 GHz and for the 6 m antenna at 14.5-14.8 GHz is taken as 57 dBi

3.5.3 Off-axis e.i.r.p. of transmitting antennas

The co-polar and cross-polar off-axis e.i.r.p. values used for the original 1988 feeder-link Plan in Regions 1 and 3 are shown by Curves A and B respectively in Fig. A^{46} .

The corresponding off-axis e.i.r.p. values used for planning at WRC-97 are shown by Curves A' and B' in Fig. A as specified in Recommendation ITU-R BO.1295.

3.5.4 Pointing accuracy

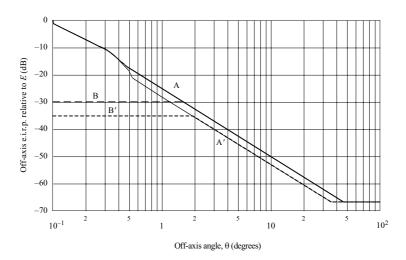
The Plan has been developed to accommodate a loss in gain of 1 dB due to earth station antenna mispointing.

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 the receiving beam about its axis must not exceed a limit of $\pm 1^{\circ}$; the limit on rotation is not necessary for beams of circular cross section using circular polarization.

⁴⁶ This antenna pattern is used in the revision of the Regions 1 and 3 Plan for assignments notified, which are in conformity with this Appendix, brought into use, and for which the date of bringing into use has been confirmed to the Bureau before 27 October 1997.

FIGURE A

Earth station e.i.r.p. at off-axis antenna angles



Curves A: WARC Orb-88 Regions 1 and 3 co-polar

A': WRC-97 co-polar

B: WARC Orb-88 Regions 1 and 3 cross-polar

B': WRC-97 cross-polar

AP30AA3-A

Co-polar component (dBW):

Curve A (WARC Orb-	88)				Curve A' (WRC-97)						
E	for	0°	≤ θ ≤			for	0°	≤	θ	≤	0.1°
$E - 21 - 20 \log \theta$	for	0.1°	< θ ≤	0.32°	$E - 21 - 20 \log \theta$	for	0.1°	<	θ	≤	0.32°
$E - 5.7 - 53.2 \theta^2$	for	0.32°	< θ ≤	0.44°	$E - 5.7 - 53.2 \theta^2$	for	0.32°	<	θ	≤	0.54°
$E - 25 - 25 \log \theta$	for	0.44°	< θ ≤	48°	$E - 28 - 25 \log \theta$	for	0.54°	<	θ	≤	36.31°
E - 67	for	48°	< θ		E - 67	for	36.31°	<	θ		

Cross-polar component (dBW): (WRC-03)

Curve B (WARC Orb-	,		Curve B' (WRC-97)					
		$0^{\circ} \leq \theta \leq 1.6^{\circ}$	E - 35	for				
$E - 25 - 25 \log \theta$	for	$1.6^{\circ} < \theta \leq 48^{\circ}$	$E - 28 - 25 \log \theta$	for	1.91°	< θ	\leq	36.31°
E-67	for	48° < θ	E - 67	for	36.31°	< θ		

where:

E: earth station e.i.r.p. on the antenna axis (dBW);

 θ : off-axis angle referred to the main lobe axis (degrees).

3.6 Transmitter power

The maximum transmitter power delivered to the input of the antenna of the feeder-link earth station per 27 MHz television channel shall be such as to ensure that the e.i.r.p. envelope in § 3.5.3 is not exceeded except under certain conditions specified in § 3.11.

3.7 Satellite receiving antenna

3.7.1 Cross-section of receiving antenna beam

Planning has generally 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 (shaped) beams as described in Annex 2.

For planning purposes at WRC-97, an antenna diameter of 5 m for the band 17.3-18.1 GHz and 6 m for the band 14.5-14.8 GHz were assumed.

The on-axis gain for the 5 m antenna at 17.3-18.1 GHz and for the 6 m antenna at 14.5-14.8 GHz is taken as 57 dBi.

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:

$$G_m = 27.843/ab$$

where:

a and b are the angles (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.

3.7.2 Minimum beamwidth

A minimum value of 0.6° for the half-power beamwidth of the receiving antenna has been used for planning.

3.7.3 Reference patterns

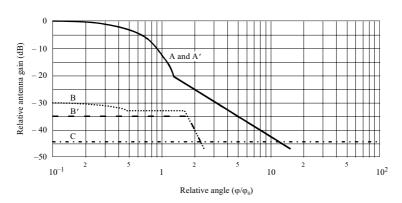
The reference patterns for the co-polar and cross-polar components of the satellite receiving antenna used for planning at the 1988 Conference (WARC Orb-88) are given by Curves A and B respectively in Fig. B⁴⁷.

⁴⁷ See footnote 46.

The corresponding curves used for replanning at WRC-97 are given by Curves A' and B' in Fig. B, as specified in Recommendation ITU-R BO.1296.

FIGURE B

Receiving space station circularly polarized antenna co-polar and cross-polar reference patterns for elliptical beams for planning in Regions 1 and 3



Curves A and A': WARC Orb-88 and WRC-97 co-polar

B: WARC Orb-88 cross-polar

B': WRC-97 cross-polar

C: Curve C (minus the on-axis gain)

AP30AA3-B

Co-polar relative gain (dB):

Curve A (WARC Orb-88) and Curve A' (WRC-97):

$$G = -12 (\varphi/\varphi_0)^2$$

for
$$0 \le \phi/\phi_0 < 1.3$$

$$G = -17.5 - 25 \log (\varphi/\varphi_0)$$
 for

$$\phi/\phi_0$$
 for $1.3 \le \phi/\phi_0$

After intersection with Curve C, as Curve C

Cross-polar relative gain (dB):

Curve B (WARC Orb-88)
$$G = -30 - 12 (\phi/\phi_0)^2 \qquad \text{for} \quad 0 \leq \phi/\phi_0 \leq 0.5 \\ G = -33 \qquad \text{for} \quad 0.5 \leq \phi/\phi_0 \leq 1.67$$

$$G = -40 - 40 \log \left(\frac{\phi}{\phi_0} - 1\right) \qquad \text{for} \quad 1.67 \leq \phi/\phi_0$$

$$After intersection with Curve C, as Curve C$$

$$Curve B' (WRC-97)$$

$$G = -35 \qquad \text{for} \quad 0 \leq \phi/\phi_0 < 1.75$$

$$G = -40 - 40 \log \left(\frac{\phi}{\phi_0} - 1\right) \qquad \text{for} \quad 1.75 \leq \phi/\phi_0$$

$$After intersection with Curve C, as Curve C$$

Curve C: minus the on-axis gain (Curve C in the above Figure illustrates the particular case of an antenna with an on-axis gain of 44.44 dBi)

where:

φ: off-axis angle (degrees)

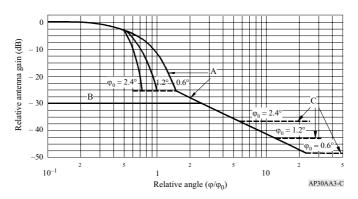
 φ_0 : cross-sectional half-power beamwidth in the direction of interest (degrees).

The relationship between the maximum gain of an antenna and the half-power beamwidth can be derived from the expression in § 3.7.1.

In some cases, to reduce co-polar interference, the pattern shown in Fig. C is used; this use is indicated in the Plan by note 1. This pattern is derived from an antenna producing an elliptical beam with fast roll-off in the main lobe assuming a "beamlet" beamwidth of 0.6° . Three curves for different values of φ_0 are shown as examples.

FIGURE C

Reference patterns for co-polar and cross-polar components for satellite receiving antennas with fast roll-off in the main beam for Regions 1 and 3



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

$$\begin{array}{lll} -12 \ (\phi/\phi_0)^2 & \text{for} & 0 & \leq \phi/\phi_0 \leq 0.5 \\ \\ -33.33 \ \phi_0{}^2 \left(\frac{\phi}{\phi_0} - x\right)^2 & \text{for} & 0.5 < \phi/\phi_0 \leq \frac{0.87}{\phi_0} + x \\ \\ -25.23 & \text{for} & \frac{0.87}{\phi_0} + x < \phi/\phi_0 \leq 1.45 \\ \\ -(22 + 20 \log \left(\phi/\phi_0\right)) & \text{for} & \phi/\phi_0 > 1.45 \end{array}$$

after intersection with Curve C, as Curve C.

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

$$-30$$
 for $0 \le \varphi/\varphi_0 < 2.51$

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 Fig. C. 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);

$$x = 0.5 \left(1 - \frac{0.6}{\varphi_0} \right)$$

3.7.4 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 $\pm 1^{\circ}$; this limit is not necessary for beams of circular cross-section using circular polarization.

3.7.5 Composite beam (WRC-2000)

A composite beam represents a single beam (i.e. "simulated shaped beam") and is formed by combining two or more elliptical beams at a given orbital position. In general, composite beams were used at WRC-2000 for administrations which had more than one beam at a given orbital position in the WRC-97 Regions 1 and 3 feeder-link Plan. (WRC-2000)

3.8 System noise temperature

The satellite system noise temperature values generally used in the Plan at the 1988 Conference (WARC Orb-88) are 1800 K for 17 GHz and 1500 K for 14 GHz⁴⁸. For revising the Regions 1 and 3 Plan at WRC-97 these values are 900 K for 17 GHz and 750 K for 14 GHz. A value of 600 K was used for the 17 GHz band in the revision of the Regions 1 and 3 Plan at WRC-2000. WRC-2000 did not change the value for the 14 GHz band. (WRC-03)

3.9 Polarization

In Regions 1 and 3, circular polarization was normally used for the purpose of planning the feeder-links

For the definitions of the terms "direct and indirect polarization", see § 3.2.3 of Annex 5 to Appendix **30**.

For the planning of the broadcasting-satellite service, circular polarization is generally used. However, for implementation of assignments in the Regions 1 and 3 Plan, linear polarization may also be used subject to successful application of the modification procedure of Article 4. Linear polarization is defined in Recommendation ITU-R BO.1212. This Recommendation should be used when analysing linearly polarized signals.

⁴⁸ These system temperature values are still used for assignments notified, which are in conformity with this Appendix, brought into use, and for which the date of bringing into use has been confirmed to the Bureau before 27 October 1997.

3.10 Automatic gain control

The downlink Plan was based on constant satellite output power. However, the feeder-link Plan does not take account of the effect of automatic gain control on board satellites. Up to 15 dB of automatic gain control is permitted, subject to no increase in interference to other satellite systems.

3.11 Power control

In Regions 1 and 3, a permitted increase which may be used to overcome rain fading for each assignment is included in the Plan.

In the calculation, in cases where satellites do not use common or adjacent channels cross-polarized to each other, the maximum permissible e.i.r.p. increase, which must not exceed 10 dB, corresponds to the amount of rain attenuation which occurs on the interfering feeder link.

3.11.1 Method for determination of the increase in e.i.r.p. during rain attenuation for an assignment over the Plan value

Condition to be observed

The increase in e.i.r.p. of the assignment studied must not entail an impairment of more than 0.5 dB of the feeder-link equivalent protection margin of any other assignment of any other administration.

Calculation method

- Step 1: compile a list of all assignments of other administrations (A, B, C, ...) in the same orbital position and positions within \pm 6° (or further if no station is found within 6° arc) liable to suffer interference from the assignment studied.
- Step 2: calculate the feeder-link equivalent protection margin of assignment A in free-space conditions, taking account of all interference sources affecting A at the worst test points, namely:
- for assignment A: the point corresponding to the minimum C/N ratio;
- for each interference source affecting A: the point corresponding to the maximum interference power affecting A.

AP30A-124

- Step 3: introduce for the assignment studied the rain attenuation for 0.1% of the worst month and the corresponding rain depolarization value.
- Step 4: recalculate the feeder-link equivalent protection margin of assignment A at the worst test points, namely:
- for assignment A: the test point used in Step 2 above;
- for the assignment studied: the test point corresponding to the maximum interference power affecting A.

At this stage, the e.i.r.p. of the assignment studied is that contained in the Plan.

- Step 5: increase the e.i.r.p. of the assignment studied by 0.1 dB and recalculate the equivalent uplink margin of A as in Step 4 above.
- Step 6: repeat the operation of Step 5 above until the equivalent uplink margin of assignment A is impaired by more than 0.5 dB in relation to the value found under Step 2 above, or until the e.i.r.p. increase exceeds 10 dB or the rain attenuation (see Step 3). Adopt the e.i.r.p. increase in the preceding iteration step.
- Step 7: repeat the operations in Step 2 to Step 6 above, considering the assignments B, C, . . .
- Step 8: adopt the smallest of the increases in e.i.r.p. found under Step 6 above for the various assignments A, B, C, . . .

3.11.2 Propagation model

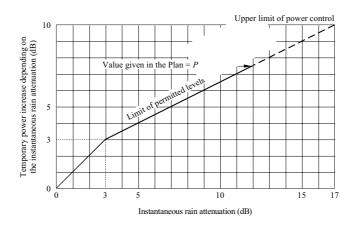
For the calculation of rain attenuation for 0.1% of the worst month, the model described in § 2.2 should be used. It shall be assumed that the 0.1% value is 3.3 times the 1% value (dB).

Rain depolarization shall be calculated on the basis of attenuation, using the method described in § 2.4.

3.11.3 Variation of power with rain attenuation

The instantaneous increase in power to overcome rain attenuation must not exceed the bounds given by the characteristics shown in Fig. 5.

FIGURE 5
Characteristic for up-link power control



P: value of permitted increase given in the Plan, or calculated by the BR, which varies for each assignment. The upper limit of this value is 10 dB.
AP30AA3-05

3.11.4 Procedures

An administration wishing to introduce power control may use a value not exceeding that given in Article 9A or it may request, where this is possible, the use of a higher value for a given earth station location. In this latter case, it shall request the Bureau to calculate the maximum permissible value for that site. The administration shall provide the Bureau with the coordinates of the station, the proposed antenna characteristics, including the off-axis co-polar and cross-polar characteristics, and the rain climatic zone.

The Bureau shall calculate the permissible increase in power using the method described in § 3.11.1.

The Bureau shall communicate the results of the calculations to the requesting administrations as well as to those administrations whose feeder-link equivalent protection margin is reduced.

In any case, the permitted increase in e.i.r.p. above that given in the Plan shall not exceed 10 dB.

In the event of modifications to the Plan, the Bureau shall recalculate the value of power control for the assignment subject to the modification and insert the appropriate value for that assignment in the Plan. A modification to the Plan shall not require the adjustment of the values of permissible power increase of other assignments in the Plan.

3.12 (SUP - WRC-97)

3.13 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 dB⁴⁹ relative to that calculated in the feeder-link Plan.

3.14 Amplitude-modulation to phase-modulation conversion

The degradation caused by AM to PM conversion was taken into account when calculating the carrier-to-noise ratio of the feeder link. A value of 2.0 dB was allowed.

3.15 Orbit positions

The Plan is generally based on the use of a regular spacing of 6° . The orbital positions are those given in the Plan. (WRC-03)

3.16 Satellite station-keeping

Space stations in the broadcasting-satellite service must be maintained in position with an accuracy equal to or better than $\pm 0.1^{\circ}$ in the E-W direction. For such space stations, the maintenance of the tolerance $\pm 0.1^{\circ}$ in the N-S direction is recommended but is not a requirement.

3.17 Orbital separation limit for interference calculation (WRC-2000)

WRC-2000 has adopted the use of an orbital separation limit for interference calculation in Regions 1 and 3. Beyond this limit no interference was taken into account. (WRC-2000)

Initially, the values used for the orbital separation limit were 15° for co-polar and 9° for cross-polar emissions. At a later stage, the unique value of the orbital separation limit of 9° was adopted by WRC-2000. (WRC-2000)

⁴⁹ This margin has to be shared between power control effects and depolarization compensation effects when both are involved (see § 3.11).

4 Basic technical characteristics for Region 2

4.1 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 downlink 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 downlink frequency band (12.2-12.7 GHz), the guard bands present in the downlink 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 to provide space operation functions in accordance with No. **1.23** in support of the operation of geostationary-satellite networks in the broadcasting-satellite service. (WRC-03)

4.2 Carrier-to-noise ratio

Section 3.3 of Annex 5 to Appendix 30 provides guidance for planning and the basis for the evaluation of the carrier-to-noise ratios of the feeder-link and downlink Plans.

As a guidance for planning, the reduction in quality in the downlink due to thermal noise in the feeder link is taken as equivalent to a degradation in the downlink carrier-to-noise ratio of approximately 0.5 dB not exceeded for 99% of the worst month.

4.3 Carrier-to-noise ratio

Section 3.4 of Annex 5 to Appendix **30** 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 downlink Plans are evaluated on the overall equivalent protection margin which includes the combined downlink and feeder-link contributions. Definitions given in § 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** 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 colocated 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.

4.4 Transmitting antenna

4.4.1 Antenna diameter

The feeder-link Plan is based on an antenna diameter of 5 m.

The minimum antenna diameter permitted in the Plan is 2.5 m. However, the feeder-link carrier-to-noise ratio and carrier-to-interference ratio resulting from the use of antennas with diameters smaller than 5 m would generally be less than those calculated in the Plan.

The use of antennas larger than 5 m, with corresponding values of on-axis e.i.r.p. higher than the planned value (indicated in \S 4.4.3) 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 m 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.

4.4.2 Transmitting antenna reference patterns (WRC-03)

The co-polar and cross-polar reference patterns of transmitting antennas used for planning in Region 2 are given in Fig. 6.

4.4.3 Antenna efficiency

The Plan is based on an antenna efficiency of 65%. The corresponding on-axis gain for an antenna having a 5 m 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.

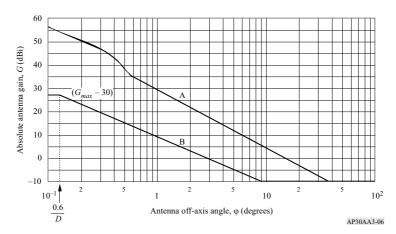
4.4.4 Pointing accuracy

The Plan has been developed to accommodate a loss in gain due to earth station antenna mispointing of 1 dB. Under no circumstances shall the Plan allow for a mis-pointing angle greater than 0.1°.

(WRC-03)

FIGURE 6

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



Curve A: co-polar component (dBi) $G_{co} = G_{max}$

$$G_{co} = 36 - 20 \log \varphi$$
 for $0.1^{\circ} \le \varphi < 0.32^{\circ}$ $G_{co} = 51.3 - 53.2 \varphi^2$ for $0.32^{\circ} \le \varphi < 0.54^{\circ}$ $G_{co} = \max (29 - 25 \log \varphi, -10)$ for $0.54^{\circ} \le \varphi \le 180^{\circ}$

for

 $0^{\circ} \leq \omega \leq 0.1^{\circ}$

Curve B: cross-polar component (dBi)

If $G_{co} > G_{max}$: $G_{co} = G_{max}$

$$G_{cross} = G_{max} - 30$$
 for $0^{\circ} \le \varphi < (0.6/D)^{\circ}$
$$G_{cross} = \max (9 - 20 \log \varphi, -10)$$
 for $(0.6/D)^{\circ} \le \varphi \le 180^{\circ}$
$$\text{If } G_{cross} > G_{max} - 30 : G_{cross} = G_{max} - 30$$
 (WRC-03)

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 (m) $(D \ge 2.5)$.

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 $(0.6/D)^{\circ}$, 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 2° , 2° 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 $(0.6/D)^{\circ}$ to 1° .

4.5 Transmit power

The maximum transmit power delivered to the input of the antenna of the feeder-link earth station is 1 000 W per 24 MHz television channel. This level of power can only be exceeded under certain conditions specified in § 4.10.

4.6 Receiving antenna

4.6.1 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

$$G_m$$
 (dB) = 44.44 - 10 log a - 10 log b

where:

a and b are the angles (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.

4.6.2 Minimum beamwidth

A minimum value of 0.6° for the half-power beamwidth of the receiving antenna has been agreed on for planning.

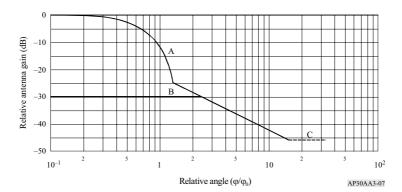
4.6.3 Receiving antenna reference patterns (WRC-03)

The reference patterns for the co-polar and cross-polar components of the satellite receiving antenna used in preparing the Plan are given in Fig. 7.

Where it was necessary to reduce interference, the pattern shown in Fig. 8 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 7

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
$$0 \le (\phi/\phi_0) \le 1.45$$

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

$$(\phi/\phi_0) > 1.45$$

after intersection with Curve C, as Curve C.

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

$$-30$$

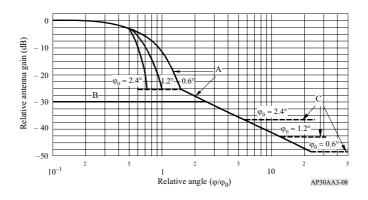
$$0 \le (\varphi/\varphi_0) \le 2.51$$

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 8

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)

after intersection with Curve C, as Curve C.

(WRC-03)

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

$$-30$$
 for $0 \le (\phi/\phi_0) \le 2.51$

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 Fig. 8. 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)

$$x = 0.5 \left(1 - \frac{0.6}{\varphi_0}\right)$$

4.6.4 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 $\pm 1^{\circ}$; this latter limit is not necessary for beams of circular cross-section using circular polarization.

4.7 System noise temperature

The Plan is based on a value of 1 500 K for the satellite system noise temperature. WRC-03 decided that for feeder-link assignments in the Plan which have not been subsequently modified through successful application of Article 4, a value of 600 K (instead of 1 500 K) is used in application of § 5 of Annex 1 and § 1 of Annex 4. For those assignments which have been subsequently modified, the noise temperature value provided in that modification is used. (WRC-03)

4.8 Polarization

- 4.8.1 In Region 2, for the purpose of planning the feeder links, circular polarization is used.
- 4.8.2 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.

4.9 Automatic gain control

- 4.9.1 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.
- 4.9.2 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.
- 4.9.3 The 15 dB limit of automatic gain control does not apply to satellites other than those specified in § 4.9.2 above.

4.10 Power control

The Plan has been developed without the use of power control.

The use of transmit power levels higher than those given in § 4.5 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 5.

Transmit radio frequency power (delivered to the input of the feeder-link earth station antenna) permitted in excess of 1 000 W as a function of elevation angle

TABLE 5

Elevation angle of feeder-link earth station antenna (degrees)	Transmit power permitted in excess of 1 000 W (dB)
0 to 40	0
40 to 50	2
50 to 60	3
60 to 90	5

4.11 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.

AP30A-134

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.

4.12 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.

4.13 Minimum separation between satellites

Figure 9 illustrates two adjacent clusters of satellites separated by 0.9° between the centres of the clusters. An 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.

4.13.1 Satellites of the same cluster

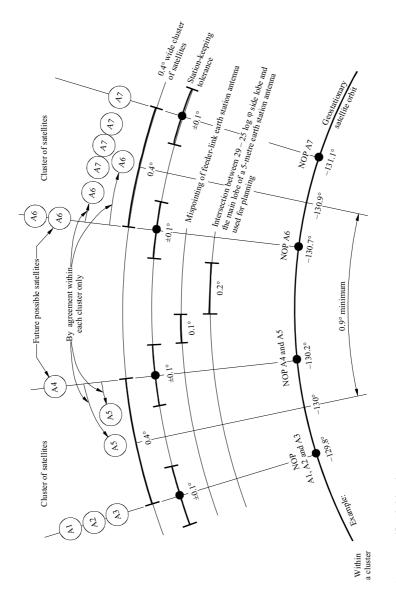
The Plan is based on an orbital separation of 0.4° between satellites having cross-polarized adjacent channels (i.e. satellites located at $+0.2^{\circ}$ and -0.2° from the centre of the cluster). However, satellites within a cluster may be located at any orbital position within the cluster, requiring only the agreement of the other administrations having satellites sharing the same cluster. Such orbital positioning of satellites within a cluster is illustrated in Fig. 9 by some of the satellites A5, A6 and A7.

The station-keeping tolerance of $\pm 0.1^{\circ}$ indicated in § 3.11 of Annex 5 to Appendix **30** must be applied to satellites located at any position within the 0.4° wide cluster.

4.13.2 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 § 4.4.1 without the need for an agreement (see § 4.13.1).

FIGURE 9 Exploded view of geostationary satellite orbit



Aŋ: specific Administration NOP 1: nominal orbital position, right-hand polarization NOP 2: nominal orbital position, left-hand polarization

ANNEX 4 (REV.WRC-15)

Criteria for sharing between services

Threshold values for determining when coordination is required between, on one hand, transmitting space stations in the fixed-satellite service or the broadcasting-satellite service and, on the other hand, a receiving space station in the feeder-link Plan or List or a proposed new or modified receiving space station in the List, in the frequency bands 17.3-18.1 GHz (Regions 1 and 3) and in the feeder-link Plan or a proposed modification to the Plan in the frequency band 17.3-17.8 GHz (Region 2) (WRC-03)

With respect to § 7.1, Article 7, coordination of a transmitting space station in the fixed-satellite service or in the broadcasting-satellite service with a receiving space station in a broadcasting-satellite service feeder link in the Regions 1 and 3 feeder-link Plan or List, or a proposed new or modified receiving space station in the List, or in the Region 2 feeder-link Plan or proposed modification to the Plan is required when the power flux-density arriving at the receiving space station of a broadcasting-satellite service feeder link of another administration would cause an increase in the noise temperature of the feeder-link space station which exceeds a threshold value of $\Delta T_s/T_s$ corresponding to 6%. $\Delta T_s/T_s$ is calculated in accordance with Case II of the method given in Appendix 8. (WRC-03)

Threshold values for determining when coordination is required between transmitting feeder-link earth stations in the fixed-satellite service in Region 2 and a receiving space station in the Regions 1 and 3 feeder-link Plan or List or a proposed new or modified receiving space station in the List, in the frequency band 17.8-18.1 GHz (WRC-03)

With respect to § 7.1, Article 7, coordination of a transmitting feeder-link earth station in the fixed-satellite service with a receiving space station in a broadcasting-satellite feeder link in the Regions 1 and 3 feeder-link Plan or List, or a proposed new or modified receiving space station in the List, is required when the power flux density arriving at the receiving space station of a broadcasting-satellite service feeder link of another administration would cause an increase in the noise temperature of the feeder-link space station which exceeds a threshold value of $\Delta T/T$ corresponding to 6%, where $\Delta T/T$ is calculated in accordance with the method given in Appendix 8, except that the maximum power densities per hertz averaged over the worst 1 MHz are replaced by power densities per hertz averaged over the necessary bandwidth of the feeder-link carriers. (WRC-03)

Threshold values for determining when coordination is required between transmitting earth stations in the fixed-satellite service in the frequency band 14.5-14.75 GHz (in countries listed in Resolution 163 (WRC-15)) and 14.5-14.8 GHz (in countries listed in Resolution 164 (WRC-15)) not for feeder links for the broadcasting-satellite service and a receiving space station subject to a Plan in the frequency band 14.5-14.8 GHz (WRC-15)

With respect to § 7.1, Article 7, coordination of a transmitting earth station in the fixed-satellite service with a receiving space station in a broadcasting-satellite feeder link in the Regions 1 and 3 feeder-link Plan or List, or a proposed new or modified receiving space station in the List, is required when the power flux-density arriving at the receiving space station of a broadcasting-satellite service feeder link of another administration exceeds the value of:

 $-197.0 - GRx dB(W/(m^2 \cdot Hz))$ with regard to the assignment in the Regions 1 and 3 feeder-link Plan or

-193.9 – GRx dB(W/(m²·Hz)), with regard to the assignment included in the feeder-link List or for which complete Appendix **4** information has been received by the Radiocommunication Bureau in accordance with the provisions of § 4.1.3,

where GRx is the relative receive antenna gain of the space station subject to a Plan at the location of the transmitting earth station in the fixed-satellite service not for feeder links for the broadcasting-satellite service. (WRC-15)