DEPARTMENT OF FOREIGN AFFAIRS AND TRADE
CANBERRA

INTERNATIONAL TELECOMMUNICATION UNION WORLD RADIOCOMMUNICATION CONFERENCE (WRC 2003), INCORPORATING PARTIAL REVISION OF THE RADIO REGULATIONS OF 5 DECEMBER 1979

(Geneva, 4 July 2003)

Not yet in force
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Preamble

The World Radiocommunication Conference (Istanbul, 2000) resolved, by Resolution **800 (WRC-2000)**, to recommend to the ITU Council that a World Radiocommunication Conference be held in 2003 for a period of four weeks.

At its 2000 session, the Council resolved, by its Resolution 1156, that the Conference be convened in Geneva from 9 June to 4 July 2003, and established its agenda. The agenda, dates and place were approved by the required majority of the Member States of the Union.

The World Radiocommunication Conference (WRC-03) met in Geneva for the stipulated period and worked on the basis of the agenda approved by the Council. It adopted a revision of the Radio Regulations and Appendices thereto, as contained in these Final Acts.

In accordance with its agenda, the Conference also took other decisions that it considered necessary or appropriate, including the review and revision of existing Resolutions and Recommendations and the adoption of various new Resolutions and Recommendations as contained in these Final Acts.

The majority of the provisions revised by the World Radiocommunication Conference (Geneva, 2003), as contained in the revision of the Radio Regulations referred to in this Preamble, shall enter into force as from 1 January 2005; the remaining provisions shall apply as from the dates indicated in the Resolutions listed in Article **59** of the revised Radio Regulations.

The delegates signing the revision of the Radio Regulations contained in these Final Acts, which is subject to approval by their competent authorities, declare that, should a Member State of the Union make reservations concerning the application of one or more of the provisions of the revised Radio Regulations, no other Member State shall be obliged to observe that provision or those provisions in its relations with that particular Member State.

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IN WITNESS WHEREOF, the delegates of the Member States of the International Telecommunication Union named below have, on behalf of their respective competent authorities, signed one copy of these Final Acts. In case of dispute, the French text shall prevail. This copy shall remain deposited in the archives of the Union. The Secretary-General shall forward one certified true copy to each Member State of the International Telecommunication Union.

Done at Geneva, 4 July 2003

ARTICLES

ARTICLE 1

Terms and definitions

MOD

1.14 *Coordinated Universal Time (UTC):* Time scale, based on the second (SI), as defined in Recommendation ITU-R TF.460-6. (WRC-03)

ADD

1.146A *out-of-band domain* (of an emission)*:* The frequency range, immediately outside the necessary bandwidth but excluding the *spurious domain*, in which *out-of-band emissions* generally predominate. *Out-of-band emissions*, defined based on their source, occur in the out-of-band domain and, to a lesser extent, in the *spurious domain*. *Spurious emissions* likewise may occur in the out-of-band domain as well as in the *spurious domain*. (WRC-03)

ADD

1.146B *spurious domain* (of an emission): The frequency range beyond the *out-of-band domain* in which *spurious emissions* generally predominate. (WRC-03)

MOD

1.189 *geostationary satellite:* A *geosynchronous satellite* whose circular and direct *orbit* lies in the plane of the Earth's equator and which thus remains fixed relative to the Earth; by extension, a *geosynchronous satellite* which remains approximately fixed relative to the Earth. (WRC-03)

ARTICLE 3

Technical characteristics of stations

MOD

3.6 Transmitting stations shall conform to the maximum permitted power levels for spurious emissions or for unwanted emissions in the spurious domain specified in Appendix **3**. (WRC-03)

MOD

3.7 Transmitting stations shall conform to the maximum permitted power levels for out-of-band emissions, or unwanted emissions in the out-of-band domain, specified for certain services and classes of emission in the present Regulations. In the absence of such specified maximum permitted power levels transmitting stations should, to the maximum extent possible, satisfy the requirements relating to the limitation of the out-of-band emissions, or unwanted emissions in the out-of-band domain, specified in the most recent ITU-R Recommendations (see Resolution **27 (Rev.WRC-03)**). (WRC-03)

ARTICLE 4

Assignment and use of frequencies

Section I – General rules

MOD

4.8 Where, in adjacent Regions or sub-Regions, a band of frequencies is allocated to different services of the same category (see Sections I and II of Article **5**), the basic principle is the equality of right to operate. Accordingly, the stations of each service in one Region or sub-Region must operate so as not to cause harmful interference to any service of the same or higher category in the other Regions or sub-Regions. (WRC-03)

ARTICLE 5

Frequency allocations

Section IV – Table of Frequency Allocations
(See No. **2.1**)

MOD

5.56 The stations of services to which the bands 14-19.95 kHz and 20.05-70 kHz and in Region 1 also the bands 72-84 kHz and 86-90 kHz are allocated may transmit standard frequency and time signals. Such stations shall be afforded protection from harmful interference. In Armenia, Azerbaijan, Belarus, Bulgaria, the Russian Federation, Georgia, Kazakhstan, Mongolia, Kyrgyzstan, Slovakia, the Czech Rep., Tajikistan and Turkmenistan, the frequencies 25 kHz and 50 kHz will be used for this purpose under the same conditions. (WRC-03)

MOD

5.68 *Alternative allocation:* in Angola, Burundi, Congo (Rep. of the), Malawi, Dem. Rep. of the Congo, Rwanda and South Africa, the band 160-200 kHz is allocated to the fixed service on a primary basis. (WRC-03)

MOD

5.70 *Alternative allocation:* in Angola, Botswana, Burundi, Cameroon, the Central African Rep., Congo (Rep. of the), Ethiopia, Lesotho, Madagascar, Malawi, Mozambique, Namibia, Nigeria, Oman, Dem. Rep. of the Congo, Rwanda, South Africa, Swaziland, Tanzania, Chad, Zambia and Zimbabwe, the band 200-283.5 kHz is allocated to the aeronautical radionavigation service on a primary basis. (WRC-03)

MOD

5.87 *Additional allocation:* in Angola, Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland and Zimbabwe, the band 526.5-535 kHz is also allocated to the mobile service on a secondary basis. (WRC-03)

MOD

5.96 In Germany, Armenia, Austria, Azerbaijan, Belarus, Denmark, Estonia, the Russian Federation, Finland, Georgia, Hungary, Ireland, Iceland, Israel, Kazakhstan, Latvia, Liechtenstein, Lithuania, Malta, Moldova, Norway, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Rep., the United Kingdom, Sweden, Switzerland, Tajikistan, Turkmenistan and Ukraine, administrations may allocate up to 200 kHz to their amateur service in the bands 1 715-1 800 kHz and 1 850-2 000 kHz. However, when allocating the bands within this range to their amateur service, administrations shall, after prior consultation with administrations of neighbouring countries, take such steps as may be necessary to prevent harmful interference from their amateur service to the fixed and mobile services of other countries. The mean power of any amateur station shall not exceed 10 W. (WRC-03)

MOD

5.98 *Alternative allocation:* in Angola, Armenia, Azerbaijan, Belarus, Belgium, Bulgaria, Cameroon, Congo (Rep. of the), Denmark, Egypt, Eritrea, Spain, Ethiopia, the Russian Federation, Georgia, Greece, Italy, Kazakhstan, Lebanon, Lithuania, Moldova, Syrian Arab Republic, Kyrgyzstan, Somalia, Tajikistan, Tunisia, Turkmenistan, Turkey and Ukraine, the band 1 810-1 830 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-03)

MOD

5.99 *Additional allocation:* in Saudi Arabia, Austria, Bosnia and Herzegovina, Iraq, Libyan Arab Jamahiriya, Uzbekistan, Slovakia, Romania, Serbia and Montenegro. Slovenia, Chad, and Togo, the band 1 810-1 830 kHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-03)

MOD

5.107 *Additional allocation:* in Saudi Arabia, Eritrea, Ethiopia, Iraq, Lesotho, Libyan Arab Jamahiriya, Somalia and Swaziland, the band 2 160-2 170 kHz is also allocated to the fixed and mobile, except aeronautical mobile (R), services on a primary basis. The mean power of stations in these services shall not exceed 50 W. (WRC-03)

MOD

5.112 *Alternative allocation:* in Bosnia and Herzegovina, Denmark, Malta, Serbia and Montenegro. and Sri Lanka, the band 2 194-2 300 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-03)

MOD

5.114 *Alternative allocation:* in Bosnia and Herzegovina, Denmark, Iraq, Malta, and Serbia and Montenegro, the band 2 502-2 625 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-03)

MOD

5.117 *Alternative allocation:* in Bosnia and Herzegovina, Côte d'Ivoire, Denmark, Egypt, Liberia, Malta, Serbia and Montenegro, Sri Lanka and Togo, the band 3 155-3 200 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-03)

MOD

5.118 *Additional allocation:* in the United States, Mexico, Peru and Uruguay, the band 3 230-3 400 kHz is also allocated to the radiolocation service on a secondary basis. (WRC-03)

MOD

6 765-8 100 kHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
6 765-7 000	FIXED MOBILE except aeronautical mobile (R) 5.138 5.138A 5.139	
7 000-7 100	AMATEUR AMATEUR-SATELLITE 5.140 5.141 5.141A	
7 100-7 200	AMATEUR 5.141A 5.141B 5.141C 5.142	
7 200-7 300 BROADCASTING	**7 200-7 300** AMATEUR 5.142	**7 200-7 300** BROADCASTING
7 300-7 400	BROADCASTING 5.134 5.143 5.143A 5.143B 5.143C 5.143D	
7 400-7 450 BROADCASTING 5.143B 5.143C	**7 400-7 450** FIXED MOBILE except aeronautical mobile (R)	**7 400-7 450** BROADCASTING 5.143A 5.143C
7 450-8 100	FIXED MOBILE except aeronautical mobile (R) 5.143E 5.144	

MOD

5.134 The use of the bands 5 900-5 950 kHz, 7 300-7 350 kHz, 9 400-9 500 kHz, 11 600-11 650 kHz, 12 050-12 100 kHz, 13 570-13 600 kHz, 13 800-13 870 kHz, 15 600-15 800 kHz, 17 480-17 550 kHz and 18 900-19 020 kHz by the broadcasting service as from 1 April 2007 is subject to the application of the procedure of Article **12**. Administrations are urged to use these bands to facilitate the introduction of digitally modulated emissions in accordance with the provisions of Resolution **517 (Rev.WRC-03)**. (WRC-03)

ADD

5.138A Until 29 March 2009, the band 6 765-7 000 kHz is allocated to the fixed service on a primary basis and to the land mobile service on a secondary basis. After this date, this band is allocated to the fixed and the mobile except aeronautical mobile (R) services on a primary basis. (WRC-03)

MOD

5.139 *Different category of service:* until 29 March 2009, in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Kazakhstan, Latvia, Lithuania, Moldova, Mongolia, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the allocation of the band 6 765-7 000 kHz to the land mobile service is on a primary basis (see No. **5.33**). (WRC-03)

MOD

5.140 *Additional allocation:* in Angola, Iraq, Kenya, Rwanda, Somalia and Togo, the band 7 000-7 050 kHz is also allocated to the fixed service on a primary basis. (WRC-03)

ADD

5.141A *Additional allocation:* in Uzbekistan and Kyrgyzstan, the bands 7 000-7 100 kHz and 7 100-7 200 kHz are also allocated to the fixed and land mobile services on a secondary basis. (WRC-03)

ADD

5.141B *Additional allocation:* after 29 March 2009, in Algeria, Saudi Arabia, Australia, Bahrain, Botswana, Brunei Darussalam, China, Comoros, Korea (Rep. of), Diego Garcia, Djibouti, Egypt, United Arab Emirates, Eritrea, Indonesia, Iran (Islamic Republic of), Japan, Jordan, Kuwait, Libyan Arab Jamahiriya, Morocco, Mauritania, New Zealand, Oman, Papua New Guinea, Qatar, Syrian Arab Republic, Singapore, Sudan, Tunisia, Viet Nam and Yemen, the band 7 100-7 200 kHz is also allocated to the fixed and the mobile, except aeronautical mobile (R), services on a primary basis. (WRC-03)

ADD

5.141C In Regions 1 and 3, the band 7 100-7 200 kHz is allocated to the broadcasting service until 29 March 2009 on a primary basis. (WRC-03)

MOD

5.142 Until 29 March 2009, the use of the band 7 100-7 300 kHz in Region 2 by the amateur service shall not impose constraints on the broadcasting service intended for use within Region 1 and Region 3. After 29 March 2009 the use of the band 7 200-7 300 kHz in Region 2 by the amateur service shall not impose constraints on the broadcasting service intended for use within Region 1 and Region 3. (WRC-03)

ADD

5.143A In Region 3, the band 7 350-7 450 kHz is allocated, until 29 March 2009, to the fixed service on a primary basis and to the land mobile service on a secondary basis. After 29 March 2009, frequencies in this band may be used by stations in the above-mentioned services, communicating only within the boundary of the country in which they are located, on condition that harmful interference is not caused to the broadcasting service. When using frequencies for these services, administrations are urged to use the minimum power required and to take account of the seasonal use of frequencies by the broadcasting service published in accordance with the Radio Regulations. (WRC-03)

ADD

5.143B In Region 1, the band 7 350-7 450 kHz is allocated, until 29 March 2009, to the fixed service on a primary basis and to the land mobile service on a secondary basis. After 29 March 2009, on condition that harmful interference is not caused to the broadcasting service, frequencies in the band 7 350-7 450 kHz may be used by stations in the fixed and land mobile services communicating only within the boundary of the country in which they are located, each station using a total radiated power that shall not exceed 24 dBW. (WRC-03)

ADD

5.143C *Additional allocation:* after 29 March 2009 in Algeria, Saudi Arabia, Bahrain, Comoros, Djibouti, Egypt, United Arab Emirates, Iran (Islamic Republic of), Jordan, Kuwait, Libyan Arab Jamahiriya, Morocco, Mauritania, Oman, Qatar, Syrian Arab Republic, Sudan, Tunisia and Yemen, the bands 7 350-7 400 kHz and 7 400-7 450 kHz are also allocated to the fixed service on a primary basis. (WRC-03)

ADD

5.143D In Region 2, the band 7 350-7 400 kHz is allocated, until 29 March 2009, to the fixed service on a primary basis and to the land mobile service on a secondary basis. After 29 March 2009, frequencies in this band may be used by stations in the above-mentioned services, communicating only within the boundary of the country in which they are located, on condition that harmful interference is not caused to the broadcasting service. When using frequencies for these services, administrations are urged to use the minimum power required and to take account of the seasonal use of frequencies by the broadcasting service published in accordance with the Radio Regulations. (WRC-03)

ADD

5.143E Until 29 March 2009, the band 7 450-8 100 kHz is allocated to the fixed service on a primary basis and to the land mobile service on a secondary basis. (WRC-03)

MOD

5.152 *Additional allocation:* in Armenia, Azerbaijan, China, Côte d'Ivoire, the Russian Federation, Georgia, Iran (Islamic Republic of), Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the band 14 250-14 350 kHz is also allocated to the fixed service on a primary basis. Stations of the fixed service shall not use a radiated power exceeding 24 dBW. (WRC-03)

MOD

5.154 *Additional allocation:* in Armenia, Azerbaijan, the Russian Federation, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the band 18 068-18 168 kHz is also allocated to the fixed service on a primary basis for use within their boundaries, with a peak envelope power not exceeding 1 kW. (WRC-03)

MOD

5.155 *Additional allocation:* in Armenia, Azerbaijan, Belarus, Bulgaria, the Russian Federation, Georgia, Kazakhstan, Moldova, Mongolia, Uzbekistan, Kyrgyzstan, Slovakia, the Czech Rep., Tajikistan, Turkmenistan and Ukraine, the band 21 850-21 870 kHz is also allocated to the aeronautical mobile (R) services on a primary basis. (WRC-03)

MOD

5.163 *Additional allocation:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Hungary, Kazakhstan, Latvia, Lithuania, Moldova, Mongolia, Uzbekistan, Kyrgyzstan, Slovakia, the Czech Rep., Tajikistan, Turkmenistan and Ukraine, the bands 47-48.5 MHz and 56.5-58 MHz are also allocated to the fixed and land mobile services on a secondary basis. (WRC-03)

MOD

5.164 *Additional allocation:* in Albania, Germany, Austria, Belgium, Bosnia and Herzegovina, Botswana, Bulgaria, Côte d'Ivoire, Denmark, Spain, Estonia, Finland, France, Gabon, Greece, Ireland, Israel, Italy, Jordan, Lebanon, Libyan Arab Jamahiriya, Liechtenstein, Luxembourg, Madagascar, Mali, Malta, Morocco, Mauritania, Monaco, Nigeria, Norway, the Netherlands, Poland, Syrian Arab Republic, the United Kingdom, Serbia and Montenegro, Slovenia, Sweden, Switzerland, Swaziland, Chad, Togo, Tunisia and Turkey, the band 47-68 MHz, in Romania the band 47-58 MHz, in South Africa the band 47-50 MHz, and in the Czech Rep. the band 66-68 MHz, are also allocated to the land mobile service on a primary basis. However, stations of the land mobile service in the countries mentioned in connection with each band referred to in this footnote shall not cause harmful interference to, or claim protection from, existing or planned broadcasting stations of countries other than those mentioned in connection with the band. (WRC-03)

MOD

5.174 *Alternative allocation:* in Bulgaria, Hungary and Romania, the band 68-73 MHz is allocated to the broadcasting service on a primary basis and used in accordance with the decisions in the Final Acts of the Special Regional Conference (Geneva, 1960). (WRC-03)

MOD

5.177 *Additional allocation:* in Armenia, Azerbaijan, Belarus, Bulgaria, the Russian Federation, Georgia, Kazakhstan, Latvia, Moldova, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the band 73-74 MHz is also allocated to the broadcasting service on a primary basis, subject to agreement obtained under No. **9.21**. (WRC-03)

MOD

5.179 *Additional allocation:* in Armenia, Azerbaijan, Belarus, Bulgaria, China, the Russian Federation, Georgia, Kazakhstan, Lithuania, Moldova, Mongolia, Kyrgyzstan, Slovakia, Tajikistan, Turkmenistan and Ukraine, the bands 74.6-74.8 MHz and 75.2-75.4 MHz are also allocated to the aeronautical radionavigation service, on a primary basis, for ground-based transmitters only. (WRC-03)

MOD

5.181 *Additional allocation:* in Egypt, Israel and Syrian Arab Republic, the band 74.8-75.2 MHz is also allocated to the mobile service on a secondary basis, subject to agreement obtained under No. **9.21**. In order to ensure that harmful interference is not caused to stations of the aeronautical radionavigation service, stations of the mobile service shall not be introduced in the band until it is no longer required for the aeronautical radionavigation service by any administration which may be identified in the application of the procedure invoked under No. **9.21**. (WRC-03)

MOD

75.2-137.175 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
108-117.975	AERONAUTICAL RADIONAVIGATION 5.197 5.197A	

ADD

5.197A The band 108-117.975 MHz may also be used by the aeronautical mobile (R) service on a primary basis, limited to systems that transmit navigational information in support of air navigation and surveillance functions in accordance with recognized international aviation standards. Such use shall be in accordance with Resolution **413 (WRC-03)** and shall not cause harmful interference to nor claim protection from stations operating in the aeronautical radionavigation service which operate in accordance with international aeronautical standards. (WRC-03)

MOD

5.203B *Additional allocation:* in Saudi Arabia, United Arab Emirates, Oman and Syrian Arab Republic, the band 136-137 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a secondary basis until 1 January 2005. (WRC-03)

MOD

5.204 *Different category of service:* in Afghanistan, Saudi Arabia, Bahrain, Bangladesh, Bosnia and Herzegovina, Brunei Darussalam, China, Cuba, the United Arab Emirates, India, Indonesia, Iran (Islamic Republic of), Iraq, Malaysia, Oman, Pakistan, the Philippines, Qatar, Serbia and Montenegro, Singapore, Thailand and Yemen, the band 137-138 MHz is allocated to the fixed and mobile, except aeronautical mobile (R), services on a primary basis (see No. **5.33**). (WRC-03)

MOD

5.210 *Additional allocation:* in France, Italy, the Czech Rep. and the United Kingdom, the bands 138-143.6 MHz and 143.65-144 MHz are also allocated to the space research service (space-to-Earth) on a secondary basis. (WRC-03)

MOD

5.212 *Alternative allocation:* in Angola, Botswana, Burundi, Cameroon, the Central African Rep., Congo (Rep. of the), Gabon, Gambia, Ghana, Guinea, Iraq, Jordan, Lesotho, Liberia, Libyan Arab Jamahiriya, Malawi, Mozambique, Namibia, Oman, Uganda, Dem. Rep. of the Congo, Rwanda, Sierra Leone, South Africa, Swaziland, Chad, Togo, Zambia and Zimbabwe, the band 138-144 MHz is allocated to the fixed and mobile services on a primary basis. (WRC-03)

MOD

5.221 Stations of the mobile-satellite service in the band 148-149.9 MHz shall not cause harmful interference to, or claim protection from, stations of the fixed or mobile services operating in accordance with the Table of Frequency Allocations in the following countries: Albania, Algeria, Germany, Saudi Arabia, Australia, Austria, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Benin, Bosnia and Herzegovina, Botswana, Brunei Darussalam, Bulgaria, Cameroon, China, Cyprus, Congo (Rep. of the), Korea (Rep. of), Côte d'Ivoire, Croatia, Cuba, Denmark, Egypt, the United Arab Emirates, Eritrea, Spain, Estonia, Ethiopia, the Russian Federation, Finland, France, Gabon, Ghana, Greece, Guinea, Guinea Bissau, Hungary, India, Iran (Islamic Republic of), Ireland, Iceland, Israel, Italy, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kuwait, The Former Yugoslav Republic of Macedonia, Lesotho, Latvia, Lebanon, Libyan Arab Jamahiriya, Liechtenstein, Lithuania, Luxembourg, Malaysia, Mali, Malta, Mauritania, Moldova, Mongolia, Mozambique, Namibia, Norway, New Zealand, Oman, Uganda, Uzbekistan, Pakistan, Panama, Papua New Guinea, Paraguay, the Netherlands, the Philippines, Poland, Portugal, Qatar, Syrian Arab Republic, Kyrgyzstan, Slovakia, Romania, the United Kingdom, Senegal, Serbia and Montenegro, Sierra Leone, Singapore, Slovenia, Sri Lanka, South Africa, Sweden, Switzerland, Swaziland, Tanzania, Chad, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Ukraine, Viet Nam, Yemen, Zambia, and Zimbabwe. (WRC-03)

MOD

5.237 *Additional allocation:* in Congo (Rep. of the), Eritrea, Ethiopia, Gambia, Guinea, Libyan Arab Jamahiriya, Malawi, Mali, Sierra Leone, Somali, Chad and Zimbabwe, the band 174-223 MHz is also allocated to the fixed and mobile services on a secondary basis. (WRC-03)

MOD

220-335.4 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
235-267	FIXED MOBILE 5.111 5.199 5.252 5.254 5.256 5.256A	

MOD

5.254 The bands 235-322 MHz and 335.4-399.9 MHz may be used by the mobile-satellite service, subject to agreement obtained under No. **9.21**, on condition that stations in this service do not cause harmful interference to those of other services operating or planned to be operated in accordance with the Table of Frequency Allocations except for the additional allocation made in footnote No. **5.256A**. (WRC-03)

ADD

5.256A *Additional allocation:* in China, the Russian Federation, Kazakhstan and Ukraine, the band 258-261 MHz is also allocated to the space research service (Earth-to-space) and space operation service (Earth-to-space) on a primary basis. Stations in the space research service (Earth-to-space) and space operation service (Earth-to-space) shall not cause harmful interference to, nor claim protection from, nor constrain the use and development of the mobile service systems and mobile-satellite service systems operating in the band. Stations in space research service (Earth-to-space) and space operation service (Earth-to-space) shall not constrain the future development of fixed service systems of other countries. (WRC-03)

MOD

5.262 *Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Bosnia and Herzegovina, Botswana, Bulgaria, Colombia, Costa Rica, Cuba, Egypt, the United Arab Emirates, Ecuador, the Russian Federation, Georgia, Hungary, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kazakhstan, Kuwait, Liberia, Malaysia, Moldova, Uzbekistan, Pakistan, the Philippines, Qatar, Syrian Arab Republic, Kyrgyzstan, Romania, Serbia and Montenegro, Singapore, Somalia, Tajikistan, Turkmenistan and Ukraine, the band 400.05-401 MHz is also allocated to the fixed and mobile services on a primary basis. (WRC-03)

MOD

410-470 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
430-432 AMATEUR RADIOLOCATION 5.271 5.272 5.273 5.274 5.275 5.276 5.277	**430-432** RADIOLOCATION Amateur 5.271 5.276 5.277 5.278 5.279	
432-438 AMATEUR RADIOLOCATION Earth exploration-satellite (active) 5.279A 5.138 5.271 5.272 5.276 5.277 5.280 5.281 5.282	**432-438** RADIOLOCATION Amateur Earth exploration-satellite (active) 5.279A 5.271 5.276 5.277 5.278 5.279 5.281 5.282	
438-440 AMATEUR RADIOLOCATION 5.271 5.273 5.274 5.275 5.276 5.277 5.283	**438-440** RADIOLOCATION Amateur 5.271 5.276 5.277 5.278 5.279	

MOD

5.271 *Additional allocation:* in Azerbaijan, Belarus, China, India, Latvia, Lithuania, Kyrgyzstan and Turkmenistan, the band 420-460 MHz is also allocated to the aeronautical radionavigation service (radio altimeters) on a secondary basis. (WRC-03)

MOD

5.273 *Different category of service:* in Libyan Arab Jamahiriya, the allocation of the bands 430-432 MHz and 438-440 MHz to the radiolocation service is on a secondary basis (see No. **5.32**). (WRC-03)

MOD

5.277 *Additional allocation:* in Angola, Armenia, Azerbaijan, Belarus, Cameroon, Congo (Rep. of the), Djibouti, the Russian Federation, Georgia, Hungary, Israel, Kazakhstan, Mali, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Rep., Romania, Rwanda, Tajikistan, Chad, Turkmenistan and Ukraine, the band 430-440 MHz is also allocated to the fixed service on a primary basis. (WRC-03)

ADD

5.279A The use of this band by sensors in the Earth exploration-satellite service (active) shall be in accordance with Recommendation ITU-R SA.1260-1. Additionally, the Earth exploration-satellite service (active) in the band 432-438 MHz shall not cause harmful interference to the aeronautical radionavigation service in China.

The provisions of this footnote in no way diminish the obligation of the Earth exploration-satellite service (active) to operate as a secondary service in accordance with Nos. **5.29** and **5.30**. (WRC-03)

MOD

5.288 In the territorial waters of the United States and the Philippines, the preferred frequencies for use by on-board communication stations shall be 457.525 MHz, 457.550 MHz, 457.575 MHz and 457.600 MHz paired, respectively, with 467.750 MHz, 467.775 MHz, 467.800 MHz and 467.825 MHz. The characteristics of the equipment used shall conform to those specified in Recommendation ITU-R M.1174-1. (WRC-03)

MOD

5.294 *Additional allocation:* in Burundi, Cameroon, Congo (Rep. of the), Côte d'Ivoire, Ethiopia, Israel, Kenya, Lebanon, Libyan Arab Jamahiriya, Malawi, Syrian Arab Republic, Sudan, Chad and Yemen, the band 470-582 MHz is also allocated to the fixed service on a secondary basis. (WRC-03)

MOD

5.296 *Additional allocation:* in Germany, Austria, Belgium, Côte d'Ivoire, Denmark, Spain, Finland, France, Ireland, Israel, Italy, Libyan Arab Jamahiriya, Lithuania, Malta, Morocco, Monaco, Norway, the Netherlands, Portugal, Syrian Arab Republic, the United Kingdom, Sweden, Switzerland, Swaziland and Tunisia, the band 470-790 MHz is also allocated on a secondary basis to the land mobile service, intended for applications ancillary to broadcasting. Stations of the land mobile service in the countries listed in this footnote shall not cause harmful interference to existing or planned stations operating in accordance with the Table in countries other than those listed in this footnote. (WRC-03)

MOD

5.311 Within the frequency band 620-790 MHz, assignments may be made to television stations using frequency modulation in the broadcasting-satellite service subject to agreement between the administrations concerned and those having services, operating in accordance with the Table, which may be affected (see Resolutions **33 (Rev.WRC-03)** and **507 (Rev.WRC-03)**). Such stations shall not produce a power flux-density in excess of the value –129 dB(W/m^2) for angles of arrival less than 20° (see Recommendation **705**) within the territories of other countries without the consent of the administrations of those countries. Resolution **545 (WRC-03)** applies. (WRC-03)

MOD

5.312 *Additional allocation*: in Armenia, Azerbaijan, Belarus, Bulgaria, the Russian Federation, Georgia, Hungary, Kazakhstan, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Rep., Romania, Tajikistan, Turkmenistan and Ukraine, the band 645-862 MHz is also allocated to the aeronautical radionavigation service on a primary basis. (WRC-03)

MOD

5.316 *Additional allocation*: in Germany, Saudi Arabia, Bosnia and Herzegovina, Burkina Faso, Cameroon, Côte d'Ivoire, Croatia, Denmark, Egypt, Finland, Greece, Israel, Jordan, Kenya, The Former Yugoslav Republic of Macedonia, Libyan Arab Jamahiriya, Liechtenstein, Mali, Monaco, Norway, the Netherlands, Portugal, the United Kingdom, Syrian Arab Republic, Serbia and Montenegro, Sweden and Switzerland, the band 790-830 MHz, and in these same countries and in Spain, France, Gabon and Malta, the band 830-862 MHz, are also allocated to the mobile, except aeronautical mobile, service on a primary basis. However, stations of the mobile service in the countries mentioned in connection with each band referred to in this footnote shall not cause harmful interference to, or claim protection from, stations of services operating in accordance with the Table in countries other than those mentioned in connection with the band. (WRC-03)

MOD

5.323 *Additional allocation*: in Armenia, Azerbaijan, Belarus, Bulgaria, the Russian Federation, Hungary, Kazakhstan, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Rep., Romania, Tajikistan, Turkmenistan and Ukraine, the band 862-960 MHz is also allocated to the aeronautical radionavigation service on a primary basis. Such use is subject to agreement obtained under No. **9.21** with administrations concerned and limited to ground-based radiobeacons in operation on 27 October 1997 until the end of their lifetime. (WRC-03)

MOD

890-1 300 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
960-1 164	AERONAUTICAL RADIONAVIGATION 5.328	
1 164-1 215	AERONAUTICAL RADIONAVIGATION 5.328 RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.328A	
1 215-1 240	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329 5.329A SPACE RESEARCH (active) 5.330 5.331 5.332	
1 240-1 300	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329 5.329A SPACE RESEARCH (active) Amateur 5.282 5.330 5.331 5.332 5.335 5.335A	

MOD

5.328A Stations in the radionavigation-satellite service in the band 1 164-1 215 MHz shall operate in accordance with the provisions of Resolution **609 (WRC-03)** and shall not claim protection from stations in the aeronautical radionavigation service in the band 960-1 215 MHz. No. **5.43A** does not apply. The provisions of No. **21.18** shall apply. (WRC-03)

ADD

5.328B The use of the bands 1 164-1 300 MHz, 1 559-1 610 MHz and 5 010-5 030 MHz by systems and networks in the radionavigation-satellite service for which complete coordination or notification information, as appropriate, is received by the Radiocommunication Bureau after 1 January 2005 is subject to the application of the provisions of Nos. **9.12**, **9.12A** and **9.13**. Resolution **610 (WRC-03)** shall also apply. (WRC-03)

MOD

5.329 Use of the radionavigation-satellite service in the band 1 215-1 300 MHz shall be subject to the condition that no harmful interference is caused to, and no protection is claimed from, the radionavigation service authorized under No. **5.331**. Furthermore, the use of the radionavigation-satellite service in the band 1 215-1 300 MHz shall be subject to the condition that no harmful interference is caused to the radiolocation service. No. **5.43** shall not apply in respect of the radiolocation service. Resolution **608 (WRC-03)** shall apply. (WRC-03)

MOD

5.330 *Additional allocation:* in Angola, Saudi Arabia, Bahrain, Bangladesh, Cameroon, China, the United Arab Emirates, Eritrea, Ethiopia, Guyana, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kuwait, Lebanon, Libyan Arab Jamahiriya, Mozambique, Nepal, Pakistan, the Philippines, Qatar, Syrian Arab Republic, Somalia, Sudan, Chad, Togo and Yemen, the band 1 215-1 300 MHz is also allocated to the fixed and mobile services on a primary basis. (WRC-03)

MOD

5.331 *Additional allocation:* in Algeria, Germany, Saudi Arabia, Australia, Austria, Bahrain, Belarus, Belgium, Benin, Bosnia and Herzegovina, Brazil, Burkina Faso, Burundi, Cameroon, China, Korea (Rep. of), Croatia, Denmark, Egypt, the United Arab Emirates, Estonia, the Russian Federation, Finland, France, Ghana, Greece, Guinea, Equatorial Guinea, Hungary, India, Indonesia, Iran (Islamic Republic of), Iraq, Ireland, Israel, Jordan, Kenya, Kuwait, The Former Yugoslav Republic of Macedonia, Lesotho, Latvia, Liechtenstein, Lithuania, Luxembourg, Madagascar, Mali, Mauritania, Nigeria, Norway, Oman, the Netherlands, Poland, Portugal, Qatar, Syrian Arab Republic, Slovakia, the United Kingdom, Serbia and Montenegro, Slovenia, Somalia, Sudan, Sri Lanka, South Africa, Sweden, Switzerland, Thailand, Togo, Turkey, Venezuela and Viet Nam, the band 1 215-1 300 MHz is also allocated to the radionavigation service on a primary basis. In Canada and the United States, the band 1 240-1 300 MHz is also allocated to the radionavigation service, and use of the radionavigation service shall be limited to the aeronautical radionavigation service. (WRC-03)

MOD

5.334 *Additional allocation:* in Canada and the United States, the band 1 350-1 370 MHz is also allocated to the aeronautical radionavigation service on a primary basis. (WRC-03)

MOD

1 350-1 525 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
1 350-1 400 FIXED MOBILE RADIOLOCATION 5.149 5.338 5.339 5.339A	**1 350-1 400** RADIOLOCATION 5.149 5.334 5.339 5.339A	
...		
1 429-1 452 FIXED MOBILE except aeronautical mobile 5.339A 5.341 5.342	**1 429-1 452** FIXED MOBILE 5.343 5.339A 5.341	
1 452-1 492 FIXED MOBILE except aeronautical mobile BROADCASTING 5.345 5.347 BROADCASTING-SATELLITE 5.345 5.347 5.347A 5.341 5.342	**1 452-1 492** FIXED MOBILE 5.343 BROADCASTING 5.345 5.347 BROADCASTING-SATELLITE 5.345 5.347 5.347A 5.341 5.344	
1 492-1 518 FIXED MOBILE except aeronautical mobile 5.341 5.342	**1 492-1 518** FIXED MOBILE 5.343 5.341 5.344	**1 492-1 518** FIXED MOBILE 5.341
1 518-1 525 FIXED MOBILE except aeronautical mobile MOBILE-SATELLITE (space-to-Earth) 5.348 5.348A 5.348B 5.348C 5.341 5.342	**1 518-1 525** FIXED MOBILE 5.343 MOBILE-SATELLITE (space-to-Earth) 5.348 5.348A 5.348B 5.348C 5.341 5.344	**1 518-1 525** FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.348 5.348A 5.348B 5.348C 5.341

MOD

5.338 In Azerbaijan, Mongolia, Kyrgyzstan, Slovakia, the Czech Rep., Romania and Turkmenistan, existing installations of the radionavigation service may continue to operate in the band 1 350-1 400 MHz. (WRC-03)

ADD

5.339A *Additional allocation:* the band 1 390-1 392 MHz is also allocated to the fixed-satellite service (Earth-to-space) on a secondary basis and the band 1 430-1 432 MHz is also allocated to the fixed-satellite service (space-to-Earth) on a secondary basis. These allocations are limited to use for feeder links for non-geostationary-satellite networks in the mobile-satellite service with service links below 1 GHz, and Resolution **745 (WRC-03)** applies. (WRC-03)

MOD

5.340 All emissions are prohibited in the following bands:

1 400-1 427 MHz,	
2 690-2 700 MHz,	except those provided for by No. **5.422**,
10.68-10.7 GHz,	except those provided for by No. **5.483**,
15.35-15.4 GHz,	except those provided for by No. **5.511**,
23.6-24 GHz,	
31.3-31.5 GHz,	
31.5-31.8 GHz,	in Region 2,
48.94-49.04 GHz,	from airborne stations
50.2-50.4 GHz[2],	
52.6-54.25 GHz,	
86-92 GHz,	
100-102 GHz,	
109.5-111.8 GHz,	
114.25-116 GHz,	
148.5-151.5 GHz,	
164-167 GHz,	
182-185 GHz,	
190-191.8 GHz,	
200-209 GHz,	
226-231.5 GHz,	
250-252 GHz. (WRC-03)	

MOD

5.347 *Different category of service:* in Bangladesh, Bosnia and Herzegovina, Botswana, Bulgaria, Burkina Faso, Cuba, Denmark, Egypt, Greece, Ireland, Italy, Mozambique, Portugal, Serbia and Montenegro, Sri Lanka, Swaziland, Yemen and Zimbabwe, the allocation of the band 1 452-1 492 MHz to the broadcasting-satellite service and the broadcasting service is on a secondary basis until 1 April 2007. (WRC-03)

ADD

5.347A In the bands:

1 452-1 492 MHz,
1 525-1 559 MHz,
1 613,8-1 626,5 MHz,
2 655-2 670 MHz,
2 670-2 690 MHz,
21.4-22 GHz,

Resolution **739 (WRC-03)** applies. (WRC-03)

MOD

5.348 The use of the band 1 518-1 525 MHz by the mobile-satellite service is subject to coordination under No. **9.11A**. In the band 1 518-1 525 MHz stations in the mobile-satellite service shall not claim protection from the stations in the fixed service. No. **5.43A** does not apply. (WRC-03)

MOD

5.348A In the band 1 518-1 525 MHz, the coordination threshold in terms of the power flux-density levels at the surface of the Earth in application of No. **9.11A** for space stations in the mobile-satellite (space-to-Earth) service, with respect to the land mobile service use for specialized mobile radios or used in conjunction with public switched telecommunication networks (PSTN) operating within the territory of Japan, shall be –150 dB(W/m^2) in any 4 kHz band for all angles of arrival, instead of those given in Table 5-2 of Appendix **5**. In the band 1 518-1 525 MHz stations in the mobile-satellite service shall not claim protection from stations in the mobile service in the territory of Japan. No. **5.43A** does not apply. (WRC-03)

ADD

5.348B In the band 1 518-1 525 MHz, stations in the mobile-satellite service shall not claim protection from aeronautical mobile telemetry stations in the mobile service in the territory of the United States (see Nos. **5.343** and **5.344**) and in the countries listed in No. **5.342**. No. **5.43A** does not apply. (WRC-03)

ADD

5.348C For the use of the bands 1 518-1 525 MHz and 1 668-1 675 MHz by the mobile-satellite service, see Resolution **225 (Rev.WRC-03)**. (WRC-03)

MOD

1 525-1 610 MHz

<table>
<tr><th colspan="3">Allocation to services</th></tr>
<tr><th>Region 1</th><th>Region 2</th><th>Region 3</th></tr>
<tr><td>1 525-1 530
SPACE OPERATION (space-to-Earth)
FIXED
MOBILE-SATELLITE (space-to-Earth) 5.347A 5.351A
Earth exploration-satellite
Mobile except aeronautical mobile 5.349
5.341 5.342 5.350 5.351 5.352A 5.354</td><td>1 525-1 530
SPACE OPERATION (space-to-Earth)
MOBILE-SATELLITE (space-to-Earth) 5.347A 5.351A
Earth exploration-satellite
Fixed
Mobile 5.343
5.341 5.351 5.354</td><td>1 525-1 530
SPACE OPERATION (space-to-Earth)
FIXED
MOBILE-SATELLITE (space-to-Earth) 5.347A 5.351A
Earth exploration-satellite
Mobile 5.349
5.341 5.351 5.352A 5.354</td></tr>
<tr><td>1 530-1 535
SPACE OPERATION (space-to-Earth)
MOBILE-SATELLITE (space-to-Earth) 5.347A 5.351A 5.353A
Earth exploration-satellite
Fixed
Mobile except aeronautical mobile
5.341 5.342 5.351 5.354</td><td colspan="2">1 530-1 535
SPACE OPERATION (space-to-Earth)
MOBILE-SATELLITE (space-to-Earth) 5.347A 5.351A 5.353A
Earth exploration-satellite
Fixed
Mobile 5.343
5.341 5.351 5.354</td></tr>
<tr><td>1 535-1 559</td><td colspan="2">MOBILE-SATELLITE (space-to-Earth) 5.347A 5.351A
5.341 5.351 5.353A 5.354 5.355 5.356 5.357 5.357A 5.359 5.362A</td></tr>
<tr><td>1 559-1 610</td><td colspan="2">AERONAUTICAL RADIONAVIGATION
RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329A
5.341 5.362B 5.362C 5.363</td></tr>
</table>

MOD

5.355 *Additional allocation:* in Bahrain, Bangladesh, Congo (Rep. of the), Egypt, Eritrea, Iraq, Israel, Kuwait, Lebanon, Malta, Qatar, Syrian Arab Republic, Somalia, Sudan, Chad, Togo and Yemen, the bands 1 540-1 559 MHz, 1 610-1 645.5 MHz and 1 646.5-1 660 MHz are also allocated to the fixed service on a secondary basis. (WRC-03)

MOD

5.359 *Additional allocation:* in Germany, Saudi Arabia, Armenia, Austria, Azerbaijan, Belarus, Benin, Bosnia and Herzegovina, Bulgaria, Cameroon, Spain, the Russian Federation, France, Gabon, Georgia, Greece, Guinea, Guinea-Bissau, Hungary, Jordan, Kazakhstan, Kuwait, Lebanon, Libyan Arab Jamahiriya, Lithuania, Mauritania, Moldova, Mongolia, Uganda, Uzbekistan, Pakistan, Poland, Syrian Arab Republic, Kyrgyzstan, the Dem. People's Rep. of Korea, Romania, Swaziland, Tajikistan, Tanzania, Tunisia, Turkmenistan and Ukraine, the bands 1 550-1 559 MHz, 1 610-1 645.5 MHz and 1 646.5-1 660 MHz are also allocated to the fixed service on a primary basis. Administrations are urged to make all practicable efforts to avoid the implementation of new fixed-service stations in these bands. (WRC-03)

MOD

5.362B *Additional allocation:* The band 1 559-1 610 MHz is also allocated to the fixed service on a primary basis until 1 January 2005 in Germany, Armenia, Azerbaijan, Belarus, Benin, Bosnia and Herzegovina, Bulgaria, Spain, the Russian Federation, France, Gabon, Georgia, Greece, Guinea, Guinea-Bissau, Hungary, Kazakhstan, Lithuania, Moldova, Mongolia, Nigeria, Uganda, Uzbekistan, Pakistan, Poland, Kyrgyzstan, the Dem. People's Rep. of Korea, Romania, Senegal, Swaziland, Tajikistan, Tanzania, Turkmenistan and Ukraine, and until 1 January 2010 in Saudi Arabia, Cameroon, Jordan, Kuwait, Lebanon, Libyan Arab Jamahiriya, Mali, Mauritania, Syrian Arab Republic and Tunisia. After these dates, the fixed service may continue to operate on a secondary basis until 1 January 2015, at which time this allocation shall no longer be valid. Administrations are urged to take all practicable steps to protect the radionavigation-satellite service and the aeronautical radionavigation service and not authorize new frequency assignments to fixed-service systems in this band. (WRC-03)

MOD

1 610-1 660 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
1 613.8-1 626.5	**1 613.8-1 626.5**	**1 613.8-1 626.5**
MOBILE-SATELLITE (Earth-to-space) 5.351A	MOBILE-SATELLITE (Earth-to-space) 5.351A	MOBILE-SATELLITE (Earth-to-space) 5.351A
AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION
Mobile-satellite (space-to-Earth) 5.347A	RADIODETERMINATION-SATELLITE (Earth-to-space)	Mobile-satellite (space-to-Earth) 5.347A
	Mobile-satellite (space-to-Earth) 5.347A	Radiodetermination-satellite (Earth-to-space)
5.341 5.355 5.359 5.363 5.364 5.365 5.366 5.367 5.368 5.369 5.371 5.372	5.341 5.364 5.365 5.366 5.367 5.368 5.370 5.372	5.341 5.355 5.359 5.364 5.365 5.366 5.367 5.368 5.369 5.372

MOD

5.369 *Different category of service:* in Angola, Australia, Burundi, China, Eritrea, Ethiopia, India, Iran (Islamic Republic of), Israel, Lebanon, Liberia, Libyan Arab Jamahiriya, Madagascar, Mali, Pakistan, Papua New Guinea, Syrian Arab Republic, Dem. Rep. of the Congo, Sudan, Swaziland, Togo and Zambia, the allocation of the band 1 610-1 626.5 MHz to the radiodetermination-satellite service (Earth-to-space) is on a primary basis (see No. **5.33**), subject to agreement obtained under No. **9.21** from countries not listed in this provision. (WRC-03)

MOD

1 660-1 710 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
1 660.5-1 668	RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile 5.149 5.341 5.379 5.379A	
1 668-1 668.4	MOBILE-SATELLITE (Earth-to-space) 5.348C 5.379B 5.379C RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile 5.149 5.341 5.379 5.379A 5.379D	
1 668.4-1 670	METEOROLOGICAL AIDS FIXED MOBILE except aeronautical mobile MOBILE-SATELLITE (Earth-to-space) 5.348C 5.379B 5.379C RADIO ASTRONOMY 5.149 5.341 5.379D 5.379E	
1 670-1 675	METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE 5.380 MOBILE-SATELLITE (Earth-to-space) 5.348C 5.379B 5.341 5.379D 5.379E 5.380A	
1 675-1 690	METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.341	
1 690-1 700 METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) Fixed Mobile except aeronautical mobile 5.289 5.341 5.382	**1 690-1 700** METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) 5.289 5.341 5.381	
1 700-1 710 FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.289 5.341		**1 700-1 710** FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.289 5.341 5.384

SUP

5.377

ADD

5.379B The use of the band 1 668-1 675 MHz by the mobile-satellite service is subject to coordination under No. **9.11A**. (WRC-03)

ADD

5.379C In order to protect the radio astronomy service in the band 1 668-1 670 MHz, the aggregate power flux-density values produced by mobile earth stations in a network of the mobile-satellite service operating in this band shall not exceed –181 dB(W/m^2) in 10 MHz and –194 dB(W/m^2) in any 20 kHz at any radio astronomy station recorded in the Master International Frequency Register, for more than 2% of integration periods of 2 000 s. (WRC-03)

ADD

5.379D For sharing of the band 1 668-1 675 MHz between the mobile-satellite service and the fixed, mobile and space research (passive) services, Resolution **744 (WRC-03)** shall apply. (WRC-03)

ADD

5.379E In the band 1 668.4-1 675 MHz, stations in the mobile-satellite service shall not cause harmful interference to stations in the meteorological aids service in China, Iran (Islamic Republic of), Japan and Uzbekistan. In the band 1 668.4-1 675 MHz, administrations are urged not to implement new systems in the meteorological aids service and are encouraged to migrate existing meteorological aids service operations to other bands as soon as practicable. (WRC-03)

ADD

5.380A In the band 1 670-1 675 MHz, stations in the mobile-satellite service shall not cause harmful interference to, nor constrain the development of, existing earth stations in the meteorological-satellite service notified in accordance with Resolution **670 (WRC-03)**. (WRC-03)

MOD

5.381 *Additional allocation:* in Afghanistan, Costa Rica, Cuba, India, Iran (Islamic Republic of) and Pakistan, the band 1 690-1 700 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-03)

MOD

5.382 *Different category of service:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Bosnia and Herzegovina, Bulgaria, Congo (Rep. of the), Egypt, the United Arab Emirates, Eritrea, Ethiopia, the Russian Federation, Guinea, Hungary, Iraq, Israel, Jordan, Kazakhstan, Kuwait, the Former Yugoslav Republic of Macedonia, Lebanon, Mauritania, Moldova, Mongolia, Oman, Uzbekistan, Poland, Qatar, Syrian Arab Republic, Kyrgyzstan, Romania, Serbia and Montenegro, Somalia, Tajikistan, Tanzania, Turkmenistan, Ukraine and Yemen, the allocation of the band 1 690-1 700 MHz to the fixed and mobile, except aeronautical mobile, services is on a primary basis (see No. **5.33**), and in the Dem. People's Rep. of Korea, the allocation of the band 1 690-1 700 MHz to the fixed service is on a primary basis (see No. **5.33**) and to the mobile, except aeronautical mobile, service on a secondary basis. (WRC-03)

MOD

1 710-2 170 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
1 710-1 930	FIXED MOBILE 5.380 5.384A 5.388A 5.149 5.341 5.385 5.386 5.387 5.388	
1 930-1 970 FIXED MOBILE 5.388A 5.388	**1 930-1 970** FIXED MOBILE 5.388A Mobile-satellite (Earth-to-space) 5.388	**1 930-1 970** FIXED MOBILE 5.388A 5.388
1 970-1 980	FIXED MOBILE 5.388A 5.388	
1 980-2 010	FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 5.351A 5.388 5.389A 5.389B 5.389F	
2 010-2 025 FIXED MOBILE 5.388A 5.388	**2 010-2 025** FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 5.388 5.389C 5.389E 5.390	**2 010-2 025** FIXED MOBILE 5.388A 5.388
...		
2 160-2 170 FIXED MOBILE 5.388A 5.388 5.392A	**2 160-2 170** FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.388 5.389C 5.389E 5.390	**2 160-2 170** FIXED MOBILE 5.388A 5.388

MOD

5.386 *Additional allocation:* the band 1 750-1 850 MHz is also allocated to the space operation (Earth-to-space) and space research (Earth-to-space) services in Region 2, in Australia, Guam, India, Indonesia and Japan on a primary basis, subject to agreement obtained under No. **9.21**, having particular regard to troposcatter systems. (WRC-03)

MOD

5.387 *Additional allocation:* in Azerbaijan, Belarus, Georgia, Kazakhstan, Mongolia, Kyrgyzstan, Slovakia, Romania, Tajikistan and Turkmenistan, the band 1 770-1 790 MHz is also allocated to the meteorological-satellite service on a primary basis, subject to agreement obtained under No. **9.21**. (WRC-03)

MOD

5.388A In Regions 1 and 3, the bands 1 885-1 980 MHz, 2 010-2 025 MHz and 2 110-2 170 MHz and, in Region 2, the bands 1 885-1 980 MHz and 2 110-2 160 MHz may be used by high altitude platform stations as base stations to provide International Mobile Telecommunications-2000 (IMT-2000), in accordance with Resolution **221 (Rev.WRC-03)**. Their use by IMT-2000 applications using high altitude platform stations as base stations does not preclude the use of these bands by any station in the services to which they are allocated and does not establish priority in the Radio Regulations. (WRC-03)

ADD

5.388B In Algeria, Saudi Arabia, Bahrain, Benin, Burkina Faso, Cameroon, Comoros, Côte d'Ivoire, China, Cuba, Djibouti, Egypt, United Arab Emirates, Eritrea, Ethiopia, Gabon, Ghana, India, Iran (Islamic Republic of), Israel, Libyan Arab Jamahiriya, Jordan, Kenya, Kuwait, Mali, Morocco, Mauritania, Nigeria, Oman, Uganda, Qatar, Syrian Arab Republic, Senegal, Singapore, Sudan, Tanzania, Chad, Togo, Tunisia, Yemen, Zambia and Zimbabwe, for the purpose of protecting fixed and mobile services, including IMT-2000 mobile stations, in their territories from co-channel interference, a HAPS operating as an IMT-2000 base station in neighbouring countries, in the bands referred to in No. **5.388A**, shall not exceed a co-channel power flux-density of -127 dB(W/(m^2 · MHz)) at the Earth's surface outside a country's borders unless explicit agreement of the affected administration is provided at the time of the notification of HAPS. (WRC-03)

SUP

5.389D

MOD

5.395 In France and Turkey, the use of the band 2 310-2 360 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile service. (WRC-03)

MOD

5.400 *Different category of service:* in Angola, Australia, Bangladesh, Burundi, China, Eritrea, Ethiopia, India, Iran (Islamic Republic of), Lebanon, Liberia, Libyan Arab Jamahiriya, Madagascar, Mali, Pakistan, Papua New Guinea, Dem. Rep. of the Congo, Syrian Arab Republic, Sudan, Swaziland, Togo and Zambia, the allocation of the band 2 483.5-2 500 MHz to the radiodetermination-satellite service (space-to-Earth) is on a primary basis (see No. **5.33**), subject to agreement obtained under No. **9.21** from countries not listed in this provision. (WRC-03)

MOD

2 520-2 700 MHz

<table>
<tr><th colspan="3">Allocation to services</th></tr>
<tr><th>Region 1</th><th>Region 2</th><th>Region 3</th></tr>
<tr><td>2 520-2 655
FIXED 5.409 5.410 5.411
MOBILE except aeronautical mobile 5.384A
BROADCASTING-SATELLITE 5.413 5.416

5.339 5.403 5.405 5.412
5.417C 5.417D 5.418B 5.418C</td><td>2 520-2 655
FIXED 5.409 5.411
FIXED-SATELLITE (space-to-Earth) 5.415
MOBILE except aeronautical mobile 5.384A
BROADCASTING-SATELLITE 5.413 5.416

5.339 5.403 5.417C 5.417D
5.418B 5.418C</td><td>2 520-2 535
FIXED 5.409 5.411
FIXED-SATELLITE (space-to-Earth) 5.415
MOBILE except aeronautical mobile 5.384A
BROADCASTING-SATELLITE 5.413 5.416
5.403 5.415A

2 535-2 655
FIXED 5.409 5.411
MOBILE except aeronautical mobile 5.384A
BROADCASTING-SATELLITE 5.413 5.416
5.339 5.418 5.417A 5.417B
5.417C 5.417D 5.418A 5.418B
5.418C</td></tr>
<tr><td>2 655-2 670
FIXED 5.409 5.410 5.411
MOBILE except aeronautical mobile 5.384A
BROADCASTING-SATELLITE 5.347A 5.413 5.416
Earth exploration-satellite (passive)
Radio astronomy
Space research (passive)

5.149 5.420</td><td>2 655-2 670
FIXED 5.409 5.411
FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.347A 5.415
MOBILE except aeronautical mobile 5.384A
BROADCASTING-SATELLITE 5.347A 5.413 5.416
Earth exploration-satellite (passive)
Radio astronomy
Space research (passive)

5.149 5.420</td><td>2 655-2 670
FIXED 5.409 5.411
FIXED-SATELLITE (Earth-to-space) 5.415
MOBILE except aeronautical mobile 5.384A
BROADCASTING-SATELLITE 5.347A 5.413 5.416
Earth exploration-satellite (passive)
Radio astronomy
Space research (passive)

5.149 5.420</td></tr>
<tr><td>2 670-2 690
FIXED 5.409 5.410 5.411
MOBILE except aeronautical mobile 5.384A
MOBILE-SATELLITE (Earth-to-space) 5.351A
Earth exploration-satellite (passive)
Radio astronomy
Space research (passive)

5.149 5.412 5.419 5.420</td><td>2 670-2 690
FIXED 5.409 5.411
FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.347A 5.415
MOBILE except aeronautical mobile 5.384A
MOBILE-SATELLITE (Earth-to-space) 5.351A
Earth exploration-satellite (passive)
Radio astronomy
Space research (passive)

5.149 5.419 5.420</td><td>2 670-2 690
FIXED 5.409 5.411
FIXED-SATELLITE (Earth-to-space) 5.415
MOBILE except aeronautical mobile 5.384A
MOBILE-SATELLITE (Earth-to-space) 5.351A
Earth exploration-satellite (passive)
Radio astronomy
Space research (passive)

5.149 5.419 5.420 5.420A</td></tr>
<tr><td>2 690-2 700</td><td colspan="2">EARTH EXPLORATION-SATELLITE (passive)
RADIO ASTRONOMY
SPACE RESEARCH (passive)
5.340 5.422</td></tr>
</table>

MOD

5.416 The use of the band 2 520-2 670 MHz by the broadcasting-satellite service is limited to national and regional systems for community reception, subject to agreement obtained under No. **9.21**. (WRC-03)

MOD

5.418 *Additional allocation:* in Korea (Rep. of), India, Japan, Pakistan and Thailand, the band 2 535-2 655 MHz is also allocated to the broadcasting-satellite service (sound) and complementary terrestrial broadcasting service on a primary basis. Such use is limited to digital audio broadcasting and is subject to the provisions of Resolution **528 (Rev.WRC-03)**. The provisions of No. **5.416** and Table **21-4** of Article **21**, do not apply to this additional allocation. Use of non-geostationary-satellite systems in the broadcasting-satellite service (sound) is subject to Resolution **539 (Rev.WRC-03)**. Geostationary broadcasting-satellite service (sound) systems for which complete Appendix **4** coordination information has been received after 1 June 2005 are limited to systems intended for national coverage. The power flux-density at the Earth's surface produced by emissions from a geostationary broadcasting-satellite service (sound) space station operating in the band 2 630-2 655 MHz, and for which complete Appendix **4** coordination information has been received after 1 June 2005, shall not exceed the following limits, for all conditions and for all methods of modulation:

$$-130 \quad \text{dB}(\text{W}/(\text{m}^2 \cdot \text{MHz})) \qquad \text{for } 0° \leq \theta \leq 5°$$

$$-130 + 0.4\,(\theta - 5) \quad \text{dB}(\text{W}/(\text{m}^2 \cdot \text{MHz})) \qquad \text{for } 5° < \theta \leq 25°$$

$$-122 \quad \text{dB}(\text{W}/(\text{m}^2 \cdot \text{MHz})) \qquad \text{for } 25° < \theta \leq 90°$$

where θ is the angle of arrival of the incident wave above the horizontal plane, in degrees. These limits may be exceeded on the territory of any country whose administration has so agreed. As an exception to the limits above, the pfd value of –122 dB(W/(m^2 · MHz)) shall be used as a threshold for coordination under No. **9.11** in an area of 1 500 km around the territory of the administration notifying the broadcasting-satellite service (sound) system. In addition, the pfd value shall not exceed –100 dB(W/(m^2 · MHz)) anywhere on the territory of the Russian Federation.

In addition, an administration listed in this provision shall not have simultaneously two overlapping frequency assignments, one under this provision and the other under No. **5.416** for systems for which complete Appendix **4** coordination information has been received after 1 June 2005. (WRC-03)

ADD

5.417A In applying provision No. **5.418**, in Korea (Rep. of) and Japan, *resolves* 3 of Resolution **528 (Rev.WRC-03)** is relaxed to allow the broadcasting-satellite service (sound) and the complementary terrestrial broadcasting service to additionally operate on a primary basis in the band 2 605-2 630 MHz. This use is limited to systems intended for national coverage. An administration listed in this provision shall not have simultaneously two overlapping frequency assignments, one under this provision and the other under No. **5.416**. The provisions of No. **5.416** and Table **21-4** of Article **21** do not apply. Use of non-geostationary-satellite systems in the broadcasting-satellite service (sound) in the band 2 605-2 630 MHz is subject to the provisions of Resolution **539 (Rev.WRC-03)**. The power flux-density at the Earth's surface produced by emissions from a geostationary broadcasting-satellite service (sound) space station operating in the band 2 605-2 630 MHz for which complete Appendix **4** coordination information, or notification information, has been received after 4 July 2003, for all conditions and for all methods of modulation, shall not exceed the following limits:

$$-130 \quad \text{dB}(\text{W}/(\text{m}^2 \cdot \text{MHz})) \qquad \text{for } 0° \leq \theta \leq 5°$$

$$-130 + 0.4\,(\theta - 5) \quad \text{dB}(\text{W}/(\text{m}^2 \cdot \text{MHz})) \qquad \text{for } 5° < \theta \leq 25°$$

$$-122 \quad \text{dB}(\text{W}/(\text{m}^2 \cdot \text{MHz})) \qquad \text{for } 25° < \theta \leq 90°$$

where θ is the angle of arrival of the incident wave above the horizontal plane, in degrees. These limits may be exceeded on the territory of any country whose administration has so agreed. In the case of the broadcasting-satellite service (sound) networks of Korea (Rep. of), as an exception to the limits above, the pfd value of −122 dB(W/(m^2 · MHz)) shall be used as a threshold for coordination under No. **9.11** in an area of 1 000 km around the territory of the administration notifying the BSS (sound) system, for angles of arrival greater than 35°. (WRC-03)

ADD

5.417B In Korea (Rep. of) and Japan, use of the band 2 605-2 630 MHz by non-geostationary-satellite systems in the broadcasting-satellite service (sound), pursuant to No. **5.417A**, for which complete Appendix **4** coordination information, or notification information, has been received after 4 July 2003, is subject to the application of the provisions of No. **9.12A**, in respect of geostationary-satellite networks for which complete Appendix **4** coordination information, or notification information, is considered to have been received after 4 July 2003, and No. **22.2** does not apply. No. **22.2** shall continue to apply with respect to geostationary-satellite networks for which complete Appendix **4** coordination information, or notification information, is considered to have been received before 5 July 2003. (WRC-03)

ADD

5.417C Use of the band 2 605-2 630 MHz by non-geostationary-satellite systems in the broadcasting-satellite service (sound), pursuant to No. **5.417A**, for which complete Appendix **4** coordination information, or notification information, has been received after 4 July 2003, is subject to the application of the provisions of No. **9.12**. (WRC-03)

ADD

5.417D Use of the band 2 605-2 630 MHz by geostationary-satellite networks for which complete Appendix **4** coordination information, or notification information, has been received after 4 July 2003 is subject to the application of the provisions of No. **9.13** with respect to non-geostationary-satellite systems in the broadcasting-satellite service (sound), pursuant to No. **5.417A**, and No. **22.2** does not apply. (WRC-03)

MOD

5.418A In certain Region 3 countries listed in No. **5.418**, use of the band 2 630-2 655 MHz by non-geostationary-satellite systems in the broadcasting-satellite service (sound) for which complete Appendix **4** coordination information, or notification information, has been received after 2 June 2000, is subject to the application of the provisions of No. **9.12A**, in respect of geostationary-satellite networks for which complete Appendix **4** coordination information, or notification information, is considered to have been received after 2 June 2000, and No. **22.2** does not apply. No. **22.2** shall continue to apply with respect to geostationary-satellite networks for which complete Appendix **4** coordination information, or notification information, is considered to have been received before 3 June 2000. (WRC-03)

MOD

5.418B Use of the band 2 630-2 655 MHz by non-geostationary-satellite systems in the broadcasting-satellite service (sound), pursuant to No. **5.418**, for which complete Appendix **4** coordination information, or notification information, has been received after 2 June 2000, is subject to the application of the provisions of No. **9.12**. (WRC-03)

MOD

5.418C Use of the band 2 630-2 655 MHz by geostationary-satellite networks for which complete Appendix **4** coordination information, or notification information, has been received after 2 June 2000 is subject to the application of the provisions of No. **9.13** with respect to non-geostationary-satellite systems in the broadcasting-satellite service (sound), pursuant to No. **5.418** and No. **22.2** does not apply. (WRC-03)

SUP

5.421

MOD

5.422 *Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Bosnia and Herzegovina, Brunei Darussalam, Congo (Rep. of the), Côte d'Ivoire, Cuba, Egypt, the United Arab Emirates, Eritrea, Ethiopia, the Russian Federation, Gabon, Georgia, Guinea, Guinea-Bissau, Iran (Islamic Republic of), Iraq, Israel, Jordan, Lebanon, Mauritania, Moldova, Mongolia, Nigeria, Oman, Uzbekistan, Pakistan, the Philippines, Qatar, Syrian Arab Republic, Kyrgyzstan, the Dem. Rep. of the Congo, Romania, Serbia and Montenegro, Somalia, Tajikistan, Tunisia, Turkmenistan, Ukraine and Yemen, the band 2 690-2 700 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. Such use is limited to equipment in operation by 1 January 1985. (WRC-03)

MOD

2 700-4 800 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
2 900-3 100	RADIOLOCATION 5.424A RADIONAVIGATION 5.426 5.425 5.427	

ADD

5.424A In the band 2 900-3 100 MHz, stations in the radiolocation service shall not cause harmful interference to, nor claim protection from, radar systems in the radionavigation service. (WRC-03)

MOD

5.428 *Additional allocation:* in Azerbaijan, Cuba, Mongolia, Kyrgyzstan, Romania and Turkmenistan, the band 3 100-3 300 MHz is also allocated to the radionavigation service on a primary basis. (WRC-03)

MOD

5.429 *Additional allocation:* in Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, China, Congo (Rep. of the), Korea (Rep. of), the United Arab Emirates, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kenya, Kuwait, Lebanon, Libyan Arab Jamahiriya, Malaysia, Oman, Pakistan, Qatar, Syrian Arab Republic, Dem. People's Rep. of Korea and Yemen, the band 3 300-3 400 MHz is also allocated to the fixed and mobile services on a primary basis. The countries bordering the Mediterranean shall not claim protection for their fixed and mobile services from the radiolocation service. (WRC-03)

MOD

5.430 *Additional allocation:* in Azerbaijan, Cuba, Mongolia, Kyrgyzstan, Romania and Turkmenistan, the band 3 300-3 400 MHz is also allocated to the radionavigation service on a primary basis. (WRC-03)

MOD

5.431 *Additional allocation:* in Germany, Israel and the United Kingdom, the band 3 400-3 475 MHz is also allocated to the amateur service on a secondary basis. (WRC-03)

MOD

4 800-5 830 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
5 000-5 010	AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (Earth-to-space) 5.367	
5 010-5 030	AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (Earth-to-space) (space-space) 5.328B 5.443B 5.367	
5 030-5 150	AERONAUTICAL RADIONAVIGATION 5.367 5.444 5.444A	
5 150-5 250	AERONAUTICAL RADIONAVIGATION FIXED-SATELLITE (Earth-to-space) 5.447A MOBILE except aeronautical mobile 5.446A 5.446B 5.446 5.447 5.447B 5.447C	
5 250-5 255	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH 5.447D MOBILE except aeronautical mobile 5.446A 5.447F 5.447E 5.448 5.448A	
5 255-5 350	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) MOBILE except aeronautical mobile 5.446A 5.447F 5.447E 5.448 5.448A	
5 350-5 460	EARTH EXPLORATION-SATELLITE (active) 5.448B SPACE RESEARCH (active) 5.448C AERONAUTICAL RADIONAVIGATION 5.449 RADIOLOCATION 5.448D	
5 460-5 470	RADIONAVIGATION 5.449 EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION 5.448D 5.448B	
5 470-5 570	MARITIME RADIONAVIGATION MOBILE except aeronautical mobile 5.446A 5.450A EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION 5.450B 5.448B 5.450 5.451 5.452	
5 570-5 650	MARITIME RADIONAVIGATION MOBILE except aeronautical mobile 5.446A 5.450A RADIOLOCATION 5.450B 5.450 5.451 5.452	
5 650-5 725	RADIOLOCATION MOBILE except aeronautical mobile 5.446A 5.450A Amateur Space research (deep space) 5.282 5.451 5.453 5.454 5.455	

SUP

5.443A

MOD

5.443B In order not to cause harmful interference to the microwave landing system operating above 5 030 MHz, the aggregate power flux-density produced at the Earth's surface in the band 5 030-5 150 MHz by all the space stations within any radionavigation-satellite service system (space-to-Earth) operating in the band 5 010-5 030 MHz shall not exceed –124.5 dB(W/m^2) in a 150 kHz band. In order not to cause harmful interference to the radio astronomy service in the band 4 990-5 000 MHz, radionavigation-satellite service systems operating in the band 5 010-5 030 MHz shall comply with the limits in the band 4 990-5 000 MHz defined in Resolution **741 (WRC-03)**. (WRC-03)

MOD

5.444 The band 5 030-5 150 MHz is to be used for the operation of the international standard system (microwave landing system) for precision approach and landing. The requirements of this system shall take precedence over other uses of this band. For the use of this band, No. **5.444A** and Resolution **114 (Rev.WRC-03)** apply. (WRC-03)

MOD

5.444A *Additional allocation:* the band 5 091-5 150 MHz is also allocated to the fixed-satellite service (Earth-to-space) on a primary basis. This allocation is limited to feeder links of non-geostationary mobile-satellite systems in the mobile-satellite service and is subject to coordination under No. **9.11A**.

In the band 5 091-5 150 MHz, the following conditions also apply:

– prior to 1 January 2018, the use of the band 5 091-5 150 MHz by feeder links of non-geostationary-satellite systems in the mobile-satellite service shall be made in accordance with Resolution **114 (Rev.WRC-03)**;

– prior to 1 January 2018, the requirements of existing and planned international standard systems for the aeronautical radionavigation service which cannot be met in the 5 000-5 091 MHz band, shall take precedence over other uses of this band;

– after 1 January 2012, no new assignments shall be made to earth stations providing feeder links of non-geostationary mobile-satellite systems;

– after 1 January 2018, the fixed-satellite service will become secondary to the aeronautical radionavigation service. (WRC-03)

ADD

5.446A The use of the bands 5 150-5 350 MHz and 5 470-5 725 MHz by the stations in the mobile service shall be in accordance with Resolution **229 (WRC-03)**. (WRC-03)

ADD

5.446B In the band 5 150-5 250 MHz, stations in the mobile service shall not claim protection from earth stations in the fixed-satellite service. No. **5.43A** does not apply to the mobile service with respect to fixed-satellite service earth stations. (WRC-03)

MOD

5.447 *Additional allocation:* in Israel, Lebanon, Pakistan, the Syrian Arab Republic and Tunisia, the band 5 150-5 250 MHz is also allocated to the mobile service, on a primary basis, subject to agreement obtained under No. **9.21**. In this case, the provisions of Resolution **229 (WRC-03)** do not apply. (WRC-03)

ADD

5.447E *Additional allocation:* The band 5 250-5 350 MHz is also allocated to the fixed service on a primary basis in the following countries in Region 3: Australia, Korea (Rep. of), India, Indonesia, Iran (Islamic Republic of), Japan, Malaysia, Papua New Guinea, Philippines, Sri Lanka, Thailand and Viet Nam. The use of this band by the fixed service is intended for the implementation of fixed wireless access systems and shall comply with Recommendation ITU-R F.1613. In addition, the fixed service shall not claim protection from the radiodetermination, Earth exploration-satellite (active) and space research (active) services, but the provisions of No. **5.43A** do not apply to the fixed service with respect to the Earth exploration-satellite (active) and space research (active) services. After implementation of fixed wireless access systems in the fixed service with protection for the existing radiodetermination systems, no more stringent constraints should be imposed on the fixed wireless access systems by future radiodetermination implementations. (WRC-03)

ADD

5.447F In the band 5 250-5 350 MHz, stations in the mobile service shall not claim protection from the radiolocation service, the Earth exploration-satellite service (active) and the space research service (active). These services shall not impose on the mobile service more stringent protection criteria, based on system characteristics and interference criteria, than those stated in Recommendations ITU-R M.1638 and ITU-R SA.1632. (WRC-03)

MOD

5.448 *Additional allocation:* in Azerbaijan, Libyan Arab Jamahiriya, Mongolia, Kyrgyzstan, Slovakia, Romania and Turkmenistan, the band 5 250-5 350 MHz is also allocated to the radionavigation service on a primary basis. (WRC-03)

MOD

5.448A The Earth exploration-satellite (active) and space research (active) services in the frequency band 5 250-5 350 MHz shall not claim protection from the radiolocation service. No. **5.43A** does not apply. (WRC-03)

MOD

5.448B The Earth exploration-satellite service (active) operating in the band 5 350-5 570 MHz and space research service (active) operating in the band 5 460-5 570 MHz shall not cause harmful interference to the aeronautical radionavigation service in the band 5 350-5 460 MHz, the radionavigation service in the band 5 460-5 470 MHz and the maritime radionavigation service in the band 5 470-5 570 MHz. (WRC-03)

ADD

5.448C The space research service (active) operating in the band 5 350-5 460 MHz shall not cause harmful interference to nor claim protection from other services to which this band is allocated. (WRC-03)

ADD

5.448D In the frequency band 5 350-5 470 MHz, stations in the radiolocation service shall not cause harmful interference to, nor claim protection from, radar systems in the aeronautical radionavigation service operating in accordance with No. **5.449**. (WRC-03)

MOD

5.450 *Additional allocation:* in Austria, Azerbaijan, Iran (Islamic Republic of), Mongolia, Kyrgyzstan, Romania, Turkmenistan and Ukraine, the band 5 470-5 650 MHz is also allocated to the aeronautical radionavigation service on a primary basis. (WRC-03)

ADD

5.450A In the band 5 470-5 725 MHz, stations in the mobile service shall not claim protection from radiodetermination services. Radiodetermination services shall not impose on the mobile service more stringent protection criteria, based on system characteristics and interference criteria, than those stated in Recommendation ITU-R M.1638. (WRC-03)

ADD

5.450B In the frequency band 5 470-5 650 MHz, stations in the radiolocation service, except ground-based radars used for meteorological purposes in the band 5 600-5 650 MHz, shall not cause harmful interference to, nor claim protection from, radar systems in the maritime radionavigation service. (WRC-03)

MOD

5.453 *Additional allocation:* in Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Cameroon, China, Congo (Rep. of the), Korea (Rep. of), Côte d'Ivoire, Egypt, the United Arab Emirates, Gabon, Guinea, Equatorial Guinea, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kenya, Kuwait, Lebanon, the Libyan Arab Jamahiriya, Madagascar, Malaysia, Nigeria, Oman, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, the Dem. People's Rep. of Korea, Singapore, Sri Lanka, Swaziland, Tanzania, Chad, Thailand, Togo, Viet Nam and Yemen, the band 5 650-5 850 MHz is also allocated to the fixed and mobile services on a primary basis. In this case, the provisions of Resolution **229 (WRC-03)** do not apply. (WRC-03)

MOD

5.454 *Different category of service:* in Azerbaijan, the Russian Federation, Georgia, Mongolia, Uzbekistan, Kyrgyzstan, Tajikistan and Turkmenistan, the allocation of the band 5 670-5 725 MHz to the space research service is on a primary basis (see No. **5.33**). (WRC-03)

MOD

5.455 *Additional allocation:* in Armenia, Azerbaijan, Belarus, Cuba, the Russian Federation, Georgia, Hungary, Kazakhstan, Latvia, Moldova, Mongolia, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the band 5 670-5 850 MHz is also allocated to the fixed service on a primary basis. (WRC-03)

MOD

5.456 *Additional allocation:* in Cameroon, the band 5 755-5 850 MHz is also allocated to the fixed service on a primary basis. (WRC-03)

MOD

5 830-7 550 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
5 925-6 700	FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B MOBILE 5.149 5.440 5.458	
...		
7 075-7 145	FIXED MOBILE 5.458 5.459	
7 145-7 235	FIXED MOBILE SPACE RESEARCH (Earth-to-space) 5.460 5.458 5.459	
7 235-7 250	FIXED MOBILE 5.458	

ADD

5.457A In the bands 5 925-6 425 MHz and 14-14.5 GHz, earth stations located on board vessels may communicate with space stations of the fixed-satellite service. Such use shall be in accordance with Resolution **902 (WRC-03)**. (WRC-03)

ADD

5.457B In the bands 5 925-6 425 MHz and 14-14.5 GHz, earth stations located on board vessels may operate with the characteristics and under the conditions contained in Resolution **902 (WRC-03)** in Algeria, Saudi Arabia, Bahrain, Comoros, Djibouti, Egypt, United Arab Emirates, Jordan, Kuwait, Libyan Arab Jamahiriya, Morocco, Mauritania, Oman, Qatar, Syrian Arab Republic, Sudan, Tunisia and Yemen, in the maritime mobile-satellite service on a secondary basis. Such use shall be in accordance with Resolution **902 (WRC-03)**. (WRC-03)

MOD

5.460 The use of the band 7 145-7 190 MHz by the space research service (Earth-to-space) is restricted to deep space; no emissions to deep space shall be effected in the band 7 190-7 235 MHz. Geostationary satellites in the space research service operating in the band 7 190-7 235 MHz shall not claim protection from existing and future stations of the fixed and mobile services and No. **5.43A** does not apply. (WRC-03)

MOD

7 550-8 750 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
8 400-8 500	FIXED 5.486 MOBILE except aeronautical mobile SPACE RESEARCH (space-to-Earth) 5.465 5.466	

MOD

5.466 *Different category of service:* in Israel, Singapore and Sri Lanka, the allocation of the band 8 400-8 500 MHz to the space research service is on a secondary basis (see No. **5.32**). (WRC-03)

SUP

5.467

MOD

5.468 *Additional allocation:* in Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Burundi, Cameroon, China, Congo (Rep. of the), Costa Rica, Egypt, the United Arab Emirates, Gabon, Guyana, Indonesia, Iran (Islamic Republic of), Iraq, Jamaica, Jordan, Kenya, Kuwait, Lebanon, Libyan Arab Jamahiriya, Malaysia, Mali, Morocco, Mauritania, Nepal, Nigeria, Oman, Pakistan, Qatar, Syrian Arab Republic, Dem. People's Rep. of Korea, Senegal, Singapore, Somalia, Swaziland, Tanzania, Chad, Togo, Tunisia and Yemen, the band 8 500-8 750 MHz is also allocated to the fixed and mobile services on a primary basis. (WRC-03)

MOD

5.469 *Additional allocation:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Hungary, Lithuania, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, the Czech Rep., Romania, Tajikistan, Turkmenistan and Ukraine, the band 8 500-8 750 MHz is also allocated to the land mobile and radionavigation services on a primary basis. (WRC-03)

MOD

5.473 *Additional allocation:* in Armenia, Austria, Azerbaijan, Belarus, Bulgaria, Cuba, the Russian Federation, Georgia, Hungary, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Romania, Tajikistan, Turkmenistan and Ukraine, the bands 8 850-9 000 MHz and 9 200-9 300 MHz are also allocated to the radionavigation service on a primary basis. (WRC-03)

MOD

5.477 *Different category of service:* in Algeria, Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Cameroon, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Guyana, India, Indonesia, Iran (Islamic Republic of), Iraq, Jamaica, Japan, Jordan, Kuwait, Lebanon, Liberia, Malaysia, Nigeria, Oman, Pakistan, Qatar, the Dem. People's Rep. of Korea, Singapore, Somalia, Sudan, Trinidad and Tobago, and Yemen, the allocation of the band 9 800-10 000 MHz to the fixed service is on a primary basis (see No. **5.33**). (WRC-03)

MOD

5.478 *Additional allocation:* in Azerbaijan, Bulgaria, Mongolia, Kyrgyzstan, Romania, Turkmenistan and Ukraine, the band 9 800-10 000 MHz is also allocated to the radionavigation service on a primary basis. (WRC-03)

MOD

5.481 *Additional allocation:* in Germany, Angola, Brazil, China, Costa Rica, Côte d'Ivoire, El Salvador, Ecuador, Spain, Guatemala, Hungary, Japan, Kenya, Morocco, Nigeria, Oman, Uzbekistan, Paraguay, Peru, the Dem. People's Rep. of Korea, Tanzania, Thailand and Uruguay, the band 10.45-10.5 GHz is also allocated to the fixed and mobile services on a primary basis. (WRC-03)

MOD

5.482 In the band 10.6-10.68 GHz, stations of the fixed and mobile, except aeronautical mobile, services shall be limited to a maximum equivalent isotropically radiated power of 40 dBW and the power delivered to the antenna shall not exceed –3 dBW. These limits may be exceeded subject to agreement obtained under No. **9.21**. However, in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Bangladesh, Belarus, China, the United Arab Emirates, Georgia, India, Indonesia, Iran (Islamic Republic of), Iraq, Japan, Kazakhstan, Kuwait, Latvia, Lebanon, Moldova, Nigeria, Pakistan, the Philippines, Qatar, Syrian Arab Republic, Tajikistan and Turkmenistan, the restrictions on the fixed and mobile, except aeronautical mobile, services are not applicable. (WRC-03)

MOD

5.483 *Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Bosnia and Herzegovina, China, Colombia, Korea (Rep. of), Costa Rica, Egypt, the United Arab Emirates, Georgia, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kazakhstan, Kuwait, Lebanon, Mongolia, Uzbekistan, Qatar, Kyrgyzstan, the Dem. People's Rep. of Korea, Romania, Serbia and Montenegro, Tajikistan, Turkmenistan and Yemen, the band 10.68-10.7 GHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. Such use is limited to equipment in operation by 1 January 1985. (WRC-03)

MOD

11.7-14.25 GHz

<table>
<tr><th colspan="3">Allocation to services</th></tr>
<tr><th>Region 1</th><th>Region 2</th><th>Region 3</th></tr>
<tr><td rowspan="3">11.7-12.5
FIXED
BROADCASTING
BROADCASTING-SATELLITE
MOBILE except aeronautical mobile

5.487 5.487A 5.492</td><td>11.7-12.1
FIXED 5.486
FIXED-SATELLITE (space-to-Earth) 5.484A
Mobile except aeronautical mobile
5.485 5.488</td><td rowspan="2">11.7-12.2
FIXED
MOBILE except aeronautical mobile
BROADCASTING
BROADCASTING-SATELLITE

5.487 5.487A 5.492</td></tr>
<tr><td>12.1-12.2
FIXED-SATELLITE (space-to-Earth) 5.484A
5.485 5.488 5.489</td></tr>
<tr><td>12.2-12.7
FIXED
MOBILE except aeronautical mobile
BROADCASTING
BROADCASTING-SATELLITE

5.487A 5.488 5.490 5.492</td><td>12.2-12.5
FIXED
FIXED-SATELLITE (space-to-Earth)
MOBILE except aeronautical mobile
BROADCASTING
5.484A 5.487</td></tr>
<tr><td>12.5-12.75
FIXED-SATELLITE (space-to-Earth) 5.484A (Earth-to-space)

5.494 5.495 5.496</td><td>12.7-12.75
FIXED
FIXED-SATELLITE (Earth-to-space)
MOBILE except aeronautical mobile</td><td>12.5-12.75
FIXED
FIXED-SATELLITE (space-to-Earth) 5.484A
MOBILE except aeronautical mobile
BROADCASTING-SATELLITE 5.493</td></tr>
<tr><td colspan="3">...</td></tr>
<tr><td>13.75-14</td><td colspan="2">FIXED-SATELLITE (Earth-to-space) 5.484A
RADIOLOCATION
Earth exploration-satellite
Standard frequency and time signal-satellite (Earth-to-space)
Space research
5.499 5.500 5.501 5.502 5.503</td></tr>
<tr><td>14-14.25</td><td colspan="2">FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B
RADIONAVIGATION 5.504
Mobile-satellite (Earth-to-space) 5.504C 5.506A
Space research
5.504A 5.505</td></tr>
</table>

MOD

5.487 In the band 11.7-12.5 GHz in Regions 1 and 3, the fixed, fixed-satellite, mobile, except aeronautical mobile, and broadcasting services, in accordance with their respective allocations, shall not cause harmful interference to, or claim protection from, broadcasting-satellite stations operating in accordance with the Regions 1 and 3 Plan in Appendix **30**. (WRC-03)

MOD

5.487A *Additional allocation:* in Region 1, the band 11.7-12.5 GHz, in Region 2, the band 12.2-12.7 GHz and, in Region 3, the band 11.7-12.2 GHz, are also allocated to the fixed-satellite service (space-to-Earth) on a primary basis, limited to non-geostationary systems and subject to application of the provisions of No. **9.12** for coordination with other non-geostationary-satellite systems in the fixed-satellite service. Non-geostationary-satellite systems in the fixed-satellite service shall not claim protection from geostationary-satellite networks in the broadcasting-satellite service operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-geostationary-satellite systems in the fixed-satellite service and of the complete coordination or notification information, as appropriate, for the geostationary-satellite networks, and No. **5.43A** does not apply. Non-geostationary-satellite systems in the fixed-satellite service in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated. (WRC-03)

MOD

5.488 The use of the band 11.7-12.2 GHz by geostationary-satellite networks in the fixed-satellite service in Region 2 is subject to application of the provisions of No. **9.14** for coordination with stations of terrestrial services in Regions 1, 2 and 3. For the use of the band 12.2-12.7 GHz by the broadcasting-satellite service in Region 2, see Appendix **30**. (WRC-03)

SUP

5.491

MOD

5.494 *Additional allocation:* in Algeria, Angola, Saudi Arabia, Bahrain, Cameroon, the Central African Rep., Congo (Rep. of the), Côte d'Ivoire, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Gabon, Ghana, Guinea, Iraq, Israel, Jordan, Kuwait, Lebanon, Libyan Arab Jamahiriya, Madagascar, Mali, Morocco, Mongolia, Nigeria, Qatar, Syrian Arab Republic, Dem. Rep. of the Congo, Somalia, Sudan, Chad, Togo and Yemen, the band 12.5-12.75 GHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-03)

MOD

5.495 *Additional allocation:* in Bosnia and Herzegovina, Croatia, France, Greece, Liechtenstein, Monaco, Uganda, Portugal, Romania, Serbia and Montenegro, Slovenia, Switzerland, Tanzania and Tunisia, the band 12.5-12.75 GHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a secondary basis. (WRC-03)

MOD

5.500 *Additional allocation:* in Algeria, Angola, Saudi Arabia, Bahrain, Brunei Darussalam, Cameroon, Egypt, the United Arab Emirates, Gabon, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kuwait, Lebanon, Madagascar, Malaysia, Mali, Malta, Morocco, Mauritania, Nigeria, Pakistan, Qatar, Syrian Arab Republic, Singapore, Sudan, Chad and Tunisia, the band 13.4-14 GHz is also allocated to the fixed and mobile services on a primary basis. (WRC-03)

MOD

5.501 *Additional allocation:* in Azerbaijan, Hungary, Japan, Mongolia, Kyrgyzstan, Romania, the United Kingdom and Turkmenistan, the band 13.4-14 GHz is also allocated to the radionavigation service on a primary basis. (WRC-03)

MOD

5.502 In the band 13.75-14 GHz, an earth station of a geostationary fixed-satellite service network shall have a minimum antenna diameter of 1.2 m and an earth station of a non-geostationary fixed-satellite service system shall have a minimum antenna diameter of 4.5 m. In addition, the e.i.r.p., averaged over one second, radiated by a station in the radiolocation or radionavigation services shall not exceed 59 dBW for elevation angles above 2° and 65 dBW at lower angles. Before an administration brings into use an earth station in a geostationary-satellite network in the fixed-satellite service in this band with an antenna size smaller than 4.5 m, it shall ensure that the power flux-density produced by this earth station does not exceed:

– –115 dB(W/(m^2 · 10 MHz)) for more than 1% of the time produced at 36 m above sea level at the low water mark, as officially recognized by the coastal state;

– –115 dB(W/(m^2 · 10 MHz)) for more than 1% of the time produced 3 m above ground at the border of the territory of an administration deploying or planning to deploy land mobile radars in this band, unless prior agreement has been obtained.

For earth stations within the fixed-satellite service having an antenna diameter greater than or equal to 4.5 m, the e.i.r.p. of any emission should be at least 68 dBW and should not exceed 85 dBW. (WRC-03)

MOD

5.503 In the band 13.75-14 GHz, geostationary space stations in the space research service for which information for advance publication has been received by the Bureau prior to 31 January 1992 shall operate on an equal basis with stations in the fixed-satellite service; after that date, new geostationary space stations in the space research service will operate on a secondary basis. Until those geostationary space stations in the space research service for which information for advance publication has been received by the Bureau prior to 31 January 1992 cease to operate in this band:

– in the band 13.77-13.78 GHz, the e.i.r.p. density of emissions from any earth station in the fixed-satellite service operating with a space station in geostationary-satellite orbit shall not exceed:

  i) $4.7D + 28$ dB(W/40 kHz), where D is the fixed-satellite service earth station antenna diameter (m) for antenna diameters equal to or greater than 1.2 m and less than 4.5 m;

  ii) $49.2 + 20 \log(D/4.5)$ dB(W/40 kHz), where D is the fixed-satellite service earth station antenna diameter (m) for antenna diameters equal to or greater than 4.5 m and less than 31.9 m;

  iii) 66.2 dB(W/40 kHz) for any fixed-satellite service earth station for antenna diameters (m) equal to or greater than 31.9 m;

  iv) 56.2 dB(W/4 kHz) for narrow-band (less than 40 kHz of necessary bandwidth) fixed-satellite service earth station emissions from any fixed-satellite service earth station having an antenna diameter of 4.5 m or greater;

– the e.i.r.p. density of emissions from any earth station in the fixed-satellite service operating with a space station in non-geostationary-satellite orbit shall not exceed 51 dBW in the 6 MHz band from 13.772 to 13.778 GHz.

Automatic power control may be used to increase the e.i.r.p. density in these frequency ranges to compensate for rain attenuation, to the extent that the power flux-density at the fixed-satellite service space station does not exceed the value resulting from use by an earth station of an e.i.r.p. meeting the above limits in clear-sky conditions. (WRC-03)

SUP

5.503A

ADD

5.504A In the band 14-14.5 GHz, aircraft earth stations in the secondary aeronautical mobile-satellite service may also communicate with space stations in the fixed-satellite service. The provisions of Nos. **5.29**, **5.30** and **5.31** apply. (WRC-03)

ADD

5.504B Aircraft earth stations operating in the aeronautical mobile-satellite service in the band 14-14.5 GHz shall comply with the provisions of Annex 1, Part C of Recommendation ITU-R M.1643, with respect to any radio astronomy station performing observations in the 14.47-14.5 GHz band located on the territory of Spain, France, India, Italy, the United Kingdom and South Africa. (WRC-03)

ADD

5.504C In the band 14-14.25 GHz, the power flux-density produced on the territory of the countries of Saudi Arabia, Botswana, Côte d'Ivoire, Egypt, Guinea, India, Iran (Islamic Republic of), Kuwait, Lesotho, Nigeria, Oman, Syrian Arab Republic and Tunisia by any aircraft earth station in the aeronautical mobile-satellite service shall not exceed the limits given in Annex 1, Part B of Recommendation ITU-R M.1643, unless otherwise specifically agreed by the affected administration(s). The provisions of this footnote in no way derogate the obligations of the aeronautical mobile-satellite service to operate as a secondary service in accordance with No. **5.29**. (WRC-03)

MOD

5.505 *Additional allocation:* in Algeria, Angola, Saudi Arabia, Bahrain, Bangladesh, Botswana, Brunei Darussalam, Cameroon, China, Congo (Rep. of the), Korea (Rep. of), Egypt, the United Arab Emirates, Gabon, Guatemala, Guinea, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kuwait, Lesotho, Lebanon, Malaysia, Mali, Morocco, Mauritania, Oman, Pakistan, the Philippines, Qatar, Syrian Arab Republic, the Dem. People's Rep. of Korea, Singapore, Somalia, Sudan, Swaziland, Tanzania, Chad and Yemen, the band 14-14.3 GHz is also allocated to the fixed service on a primary basis. (WRC-03)

ADD

5.506A In the band 14-14.5 GHz, ship earth stations with an e.i.r.p. greater than 21 dBW shall operate under the same conditions as earth stations located on board vessels, as provided in Resolution **902 (WRC-03)**. This footnote shall not apply to ship earth stations for which the complete Appendix **4** information has been received by the Bureau prior to 5 July 2003. (WRC-03)

ADD

5.506B Earth stations located on board vessels communicating with space stations in the fixed-satellite service may operate in the frequency band 14-14.5 GHz without the need for prior agreement from Cyprus, Greece and Malta, within the minimum distance given in Resolution **902 (WRC-03)** from these countries. (WRC-03)

MOD

14.25-15.63 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
14.25-14.3	FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B RADIONAVIGATION 5.504 Mobile-satellite (Earth-to-space) 5.506A 5.508A Space research 5.504A 5.505 5.508 5.509	
14.3-14.4 FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.506A 5.509A Radionavigation-satellite 5.504A	**14.3-14.4** FIXED-SATELLITE (Earth-to-space) 5.457A 5.484A 5.506 5.506B Mobile-satellite (Earth-to-space) 5.506A Radionavigation-satellite 5.504A	**14.3-14.4** FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.484A 5.506 5.506B MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.506A 5.509A Radionavigation-satellite 5.504A
14.4-14.47	FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.506A 5.509A Space research (space-to-Earth) 5.504A	
14.47-14.5	FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.509A Radio astronomy 5.149 5.504A	

MOD

5.508 *Additional allocation:* in Germany, Bosnia and Herzegovina, France, Italy, The Former Yugoslav Rep. of Macedonia, Libyan Arab Jamahiriya, the United Kingdom, Serbia and Montenegro and Slovenia, the band 14.25-14.3 GHz is also allocated to the fixed service on a primary basis. (WRC-03)

ADD

5.508A In the band 14.25-14.3 GHz, the power flux-density produced on the territory of the countries of Saudi Arabia, Botswana, China, Côte d'Ivoire, Egypt, France, Guinea, India, Iran (Islamic Republic of), Italy, Kuwait, Lesotho, Nigeria, Oman, Syrian Arab Republic, the United Kingdom and Tunisia by any aircraft earth station in the aeronautical mobile-satellite service shall not exceed the limits given in Annex 1, Part B of Recommendation ITU-R M.1643, unless otherwise specifically agreed by the affected administration(s). The provisions of this footnote in no way derogate the obligations of the aeronautical mobile-satellite service to operate as a secondary service in accordance with No. **5.29**. (WRC-03)

ADD

5.509A In the band 14.3-14.5 GHz, the power flux-density produced on the territory of the countries of Saudi Arabia, Botswana, Cameroon, China, Côte d'Ivoire, Egypt, France, Gabon, Guinea, India, Iran (Islamic Republic of), Italy, Kuwait, Lesotho, Morocco, Nigeria, Oman, Syrian Arab Republic, the United Kingdom, Sri Lanka, Tunisia and Viet Nam by any aircraft earth station in the aeronautical mobile-satellite service shall not exceed the limits given in Annex 1, Part B of Recommendation ITU-R M.1643, unless otherwise specifically agreed by the affected administration(s). The provisions of this footnote in no way derogate the obligations of the aeronautical mobile-satellite service to operate as a secondary service in accordance with No. **5.29**. (WRC-03)

MOD

15.63-18.6 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
17.3-17.7 FIXED-SATELLITE (Earth-to-space) 5.516 (space-to-Earth) 5.516A 5.516B Radiolocation 5.514	**17.3-17.7** FIXED-SATELLITE (Earth-to-space) 5.516 BROADCASTING-SATELLITE Radiolocation 5.514 5.515 5.517	**17.3-17.7** FIXED-SATELLITE (Earth-to-space) 5.516 Radiolocation 5.514
...		
18.1-18.4	FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B (Earth-to-space) 5.520 MOBILE 5.519 5.521	
18.4-18.6	FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B MOBILE	

MOD

5.512 *Additional allocation:* in Algeria, Angola, Saudi Arabia, Austria, Bahrain, Bangladesh, Bosnia and Herzegovina, Brunei Darussalam, Cameroon, Congo (Rep. of the), Costa Rica, Egypt, El Salvador, the United Arab Emirates, Eritrea, Finland, Guatemala, India, Indonesia, Iran (Islamic Republic of), Jordan, Kenya, Kuwait, Libyan Arab Jamahiriya, Malaysia, Mali, Morocco, Mauritania, Mozambique, Nepal, Nicaragua, Oman, Pakistan, Qatar, Serbia and Montenegro, Singapore, Slovenia, Somalia, Sudan, Swaziland, Tanzania, Chad, Togo and Yemen, the band 15.7-17.3 GHz is also allocated to the fixed and mobile services on a primary basis. (WRC-03)

MOD

5.514 *Additional allocation:* in Algeria, Angola, Saudi Arabia, Austria, Bahrain, Bangladesh, Bosnia and Herzegovina, Cameroon, Costa Rica, El Salvador, the United Arab Emirates, Finland, Guatemala, India, Iran (Islamic Republic of), Iraq, Israel, Italy, Japan, Jordan, Kuwait, Libyan Arab Jamahiriya, Lithuania, Nepal, Nicaragua, Nigeria, Oman, Uzbekistan, Pakistan, Qatar, Kyrgyzstan, Serbia and Montenegro, Slovenia and Sudan, the band 17.3-17.7 GHz is also allocated to the fixed and mobile services on a secondary basis. The power limits given in Nos. **21.3** and **21.5** shall apply. (WRC-03)

ADD

5.516A In the band 17.3-17.7 GHz, earth stations of the fixed-satellite service (space-to-Earth) in Region 1 shall not claim protection from the broadcasting-satellite service feeder-link earth stations operating under Appendix **30A**, nor put any limitations or restrictions on the locations of the broadcasting-satellite service feeder-link earth stations anywhere within the service area of the feeder link. (WRC-03)

ADD

5.516B The following bands are identified for use by high-density applications in the fixed-satellite service:

17.3-17.7 GHz	(space-to-Earth) in Region 1,
18.3-19.3 GHz	(space-to-Earth) in Region 2,
19.7-20.2 GHz	(space-to-Earth) in all Regions,
39.5-40 GHz	(space-to-Earth) in Region 1,
40-40.5 GHz	(space-to-Earth) in all Regions,
40.5-42 GHz	(space-to-Earth) in Region 2,
47.5-47.9 GHz	(space-to-Earth) in Region 1,
48.2-48.54 GHz	(space-to-Earth) in Region 1,
49.44-50.2 GHz	(space-to-Earth) in Region 1,
and	
27.5-27.82 GHz	(Earth-to-space) in Region 1,
28.35-28.45 GHz	(Earth-to-space) in Region 2,
28.45-28.94 GHz	(Earth-to-space) in all Regions,
28.94-29.1 GHz	(Earth-to-space) in Region 2 and 3,
29.25-29.46 GHz	(Earth-to-space) in Region 2,
29.46-30 GHz	(Earth-to-space) in all Regions,
48.2-50.2 GHz	(Earth-to-space) in Region 2.

This identification does not preclude the use of these bands by other fixed-satellite service applications or by other services to which these bands are allocated on a co-primary basis and does not establish priority in these Regulations among users of the bands. Administrations should take this into account when considering regulatory provisions in relation to these bands. See Resolution **143 (WRC-03)**. (WRC-03)

MOD

5.521 *Alternative allocation:* in Germany, Denmark, the United Arab Emirates and Greece, the band 18.1-18.4 GHz is allocated to the fixed, fixed-satellite (space-to-Earth) and mobile services on a primary basis (see No. **5.33**). The provisions of No. **5.519** also apply. (WRC-03)

MOD

18.6-22.21 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
18.6-18.8 EARTH EXPLORATION-SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) 5.522B MOBILE except aeronautical mobile Space research (passive) 5.522A 5.522C	**18.6-18.8** EARTH EXPLORATION-SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.522B MOBILE except aeronautical mobile SPACE RESEARCH (passive) 5.522A	**18.6-18.8** EARTH EXPLORATION-SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) 5.522B MOBILE except aeronautical mobile Space research (passive) 5.522A
18.8-19.3	FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.523A MOBILE	
...		
19.7-20.1 FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B Mobile-satellite (space-to-Earth) 5.524	**19.7-20.1** FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B MOBILE-SATELLITE (space-to-Earth) 5.524 5.525 5.526 5.527 5.528 5.529	**19.7-20.1** FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B Mobile-satellite (space-to-Earth) 5.524
20.1-20.2	FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B MOBILE-SATELLITE (space-to-Earth) 5.524 5.525 5.526 5.527 5.528	
...		
21.4-22 FIXED MOBILE BROADCASTING-SATELLITE 5.347A 5.530	**21.4-22** FIXED MOBILE	**21.4-22** FIXED MOBILE BROADCASTING-SATELLITE 5.347A 5.530 5.531

SUP

5.534

MOD

22.21-24.75 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
24.65-24.75 FIXED INTER-SATELLITE	**24.65-24.75** INTER-SATELLITE RADIOLOCATION-SATELLITE (Earth-to-space)	**24.65-24.75** FIXED INTER-SATELLITE MOBILE 5.533

MOD

24.75-29.9 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
24.75-25.25 FIXED	**24.75-25.25** FIXED-SATELLITE (Earth-to-space) 5.535	**24.75-25.25** FIXED FIXED-SATELLITE (Earth-to-space) 5.535 MOBILE
...		
25.5-27	EARTH EXPLORATION-SATELLITE (space-to Earth) 5.536A 5.536B FIXED INTER-SATELLITE 5.536 MOBILE SPACE RESEARCH (space-to-Earth) 5.536A 5.536C Standard frequency and time signal-satellite (Earth-to-space)	
...		
27.5-28.5	FIXED 5.537A FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.539 MOBILE 5.538 5.540	
28.5-29.1	FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.523A 5.539 MOBILE Earth exploration-satellite (Earth-to-space) 5.541 5.540	
29.1-29.5	FIXED FIXED-SATELLITE (Earth-to-space) 5.516B 5.523C 5.523E 5.535A 5.539 5.541A MOBILE Earth exploration-satellite (Earth-to-space) 5.541 5.540	
29.5-29.9 FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.539 Earth exploration-satellite (Earth-to-space) 5.541 Mobile-satellite (Earth-to-space) 5.540 5.542	**29.5-29.9** FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.539 MOBILE-SATELLITE (Earth-to-space) Earth exploration-satellite (Earth-to-space) 5.541 5.525 5.526 5.527 5.529 5.540 5.542	**29.5-29.9** FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.539 Earth exploration-satellite (Earth-to-space) 5.541 Mobile-satellite (Earth-to-space) 5.540 5.542

MOD

5.536A Administrations operating earth stations in the Earth exploration-satellite service or the space research service shall not claim protection from stations in the fixed and mobile services operated by other administrations. In addition, earth stations in the Earth exploration-satellite service or in the space research service should be operated taking into account Recommendations ITU-R SA.1278 and ITU-R SA.1625, respectively. (WRC-03)

ADD

5.536C In Algeria, Saudi Arabia, Bahrain, Botswana, Brazil, Cameroon, Comoros, Cuba, Djibouti, Egypt, United Arab Emirates, Estonia, Finland, Iran (Islamic Republic of), Israel, Jordan, Kenya, Kuwait, Lithuania, Malaysia, Morocco, Nigeria, Oman, Qatar, Syrian Arab Republic, Somalia, Sudan, Tanzania, Tunisia, Uruguay, Zambia and Zimbabwe, earth stations operating in the space research service in the band 25.5-27 GHz shall not claim protection from, or constrain the use and deployment of, stations of the fixed and mobile services. (WRC-03)

MOD

5.537A In Bhutan, Korea (Rep. of), the Russian Federation, Indonesia, Iran (Islamic Republic of), Japan, Kazakhstan, Lesotho, Malaysia, Maldives, Mongolia, Myanmar, Uzbekistan, Pakistan, Philippines, Kyrgyzstan, the Dem. People's Rep. of Korea, Sri Lanka, Thailand and Viet Nam, the allocation to the fixed service in the band 27.5-28.35 GHz may also be used by high altitude platform stations (HAPS). The use of HAPS within the band 27.5-28.35 GHz is limited, within the territory of the countries listed above, to a single 300 MHz sub-band. Such use of 300 MHz of the fixed-service allocation by HAPS in the above countries is further limited to operation in the HAPS-to-ground direction and shall not cause harmful interference to, nor claim protection from, other types of fixed-service systems or other co-primary services. Furthermore, the development of these other services shall not be constrained by HAPS. See Resolution **145 (WRC-03)**. (WRC-03)

MOD

29.9-34.2 GHz

Allocation to services		
Region 1	**Region 2**	Region 3
29.9-30	FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.539 MOBILE-SATELLITE (Earth-to-space) Earth exploration-satellite (Earth-to-space) 5.541 5.543 5.525 5.526 5.527 5.538 5.540 5.542	
...		
31.8-32	FIXED 5.547A RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) 5.547 5.547B 5.548	
32-32.3	FIXED 5.547A RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) 5.547 5.547C 5.548	

MOD

5.543A In Bhutan, Korea (Rep. of), the Russian Federation, Indonesia, Iran (Islamic Republic of), Japan, Kazakhstan, Lesotho, Malaysia, Maldives, Mongolia, Myanmar, Uzbekistan, Pakistan, Philippines, Kyrgyzstan, the Dem. People's Rep. of Korea, Sri Lanka, Thailand and Viet Nam, the allocation to the fixed service in the band 31-31.3 GHz may also be used by systems using high altitude platform stations (HAPS) in the ground-to-HAPS direction. The use of the band 31-31.3 GHz by systems using HAPS is limited to the territory of the countries listed above and shall not cause harmful interference to, nor claim protection from, other types of fixed-service systems, systems in the mobile service and systems operated under No. **5.545**. Furthermore, the development of these services shall not be constrained by HAPS. Systems using HAPS in the band 31-31.3 GHz shall not cause harmful interference to the radio astronomy service having a primary allocation in the band 31.3-31.8 GHz, taking into account the protection criterion as given in Recommendation ITU-R RA.769. In order to ensure the protection of satellite passive services, the level of unwanted power density into a HAPS ground station antenna in the band 31.3-31.8 GHz shall be limited to −106 dB(W/MHz) under clear-sky conditions, and may be increased up to −100 dB(W/MHz) under rainy conditions to take account of rain attenuation, provided the effective impact on the passive satellite does not exceed the impact under clear-sky conditions as given above. See Resolution **145 (WRC-03)**. (WRC-03)

MOD

5.545 *Different category of service:* in Armenia, Azerbaijan, Georgia, Mongolia, Kyrgyzstan, Tajikistan and Turkmenistan, the allocation of the band 31-31.3 GHz to the space research service is on a primary basis (see No. **5.33**). (WRC-03)

MOD

5.546 *Different category of service:* in Saudi Arabia, Armenia, Azerbaijan, Belarus, Egypt, the United Arab Emirates, Spain, Estonia, the Russian Federation, Finland, Georgia, Hungary, Iran (Islamic Republic of), Israel, Jordan, Latvia, Lebanon, Moldova, Mongolia, Uzbekistan, Poland, Syrian Arab Republic, Kyrgyzstan, Romania, the United Kingdom, South Africa, Tajikistan, Turkmenistan and Turkey, the allocation of the band 31.5-31.8 GHz to the fixed and mobile, except aeronautical mobile, services is on a primary basis (see No. **5.33**). (WRC-03)

MOD

5.547 The bands 31.8-33.4 GHz, 37-40 GHz, 40.5-43.5 GHz, 51.4-52.6 GHz, 55.78-59 GHz and 64-66 GHz are available for high-density applications in the fixed service (see Resolutions **75 (WRC-2000)** and **79 (WRC-2000)**). Administrations should take this into account when considering regulatory provisions in relation to these bands. Because of the potential deployment of high-density applications in the fixed-satellite service in the bands 39.5-40 GHz and 40.5-42 GHz (see No. **5.516B**), administrations should further take into account potential constraints to high-density applications in the fixed service, as appropriate. (WRC-03)

MOD

5.547C *Alternative allocation*: in the United States, the band 32-32.3 GHz is allocated to the radionavigation and space research (deep space) (space-to-Earth) services on a primary basis. (WRC-03)

MOD

5.548 In designing systems for the inter-satellite service in the band 32.3-33 GHz, for the radionavigation service in the band 32-33 GHz, and for the space research service (deep space) in the band 31.8-32.3 GHz, administrations shall take all necessary measures to prevent harmful interference between these services, bearing in mind the safety aspects of the radionavigation service (see Recommendation **707**). (WRC-03)

MOD

5.549 *Additional allocation:* in Saudi Arabia, Bahrain, Bangladesh, Egypt, the United Arab Emirates, Gabon, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kuwait, Lebanon, Libyan Arab Jamahiriya, Malaysia, Mali, Malta, Morocco, Mauritania, Nepal, Nigeria, Oman, Pakistan, the Philippines, Qatar, Syrian Arab Republic, Dem. Rep. of the Congo, Singapore, Somalia, Sudan, Sri Lanka, Togo, Tunisia and Yemen, the band 33.4-36 GHz is also allocated to the fixed and mobile services on a primary basis. (WRC-03)

MOD

34.2-40 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
35.5-36	METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.549 5.549A	
...		
37.5-38	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE SPACE RESEARCH (space-to-Earth) Earth exploration-satellite (space-to-Earth) 5.547	
38-39.5	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Earth exploration-satellite (space-to-Earth) 5.547	
39.5-40	FIXED FIXED-SATELLITE (space-to-Earth) 5.516B MOBILE MOBILE-SATELLITE (space-to-Earth) Earth exploration-satellite (space-to-Earth) 5.547	

ADD

5.549A In the band 35.5-36.0 GHz, the mean power flux-density at the Earth's surface, generated by any spaceborne sensor in the Earth exploration-satellite service (active) or space research service (active), for any angle greater than 0.8° from the beam centre shall not exceed –73.3 dB(W/m^2) in this band. (WRC-03)

MOD

40-40.5 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
40-40.5	EARTH EXPLORATION-SATELLITE (Earth-to-space) FIXED FIXED-SATELLITE (space-to-Earth) 5.516B MOBILE MOBILE-SATELLITE (space-to-Earth) SPACE RESEARCH (Earth-to-space) Earth exploration-satellite (space-to-Earth)	

MOD

5.550 *Different category of service:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Mongolia, Uzbekistan, Kyrgyzstan, Tajikistan and Turkmenistan, the allocation of the band 34.7-35.2 GHz to the space research service is on a primary basis (see No. **5.33**). (WRC-03)

SUP

5.551A

SUP

5.551AA

MOD

40.5-51.4 GHz

<table>
<tr><th colspan="3">Allocation to services</th></tr>
<tr><th>Region 1</th><th>Region 2</th><th>Region 3</th></tr>
<tr><td>40.5-41
FIXED
FIXED-SATELLITE
(space-to-Earth)
BROADCASTING
BROADCASTING-SATELLITE
Mobile

5.547</td><td>40.5-41
FIXED
FIXED-SATELLITE
(space-to-Earth) 5.516B
BROADCASTING
BROADCASTING-SATELLITE
Mobile
Mobile-satellite (space-to-Earth)
5.547</td><td>40.5-41
FIXED
FIXED-SATELLITE
(space-to-Earth)
BROADCASTING
BROADCASTING-SATELLITE
Mobile

5.547</td></tr>
<tr><td>41-42.5</td><td colspan="2">FIXED
FIXED-SATELLITE (space-to-Earth) 5.516B
BROADCASTING
BROADCASTING-SATELLITE
Mobile
5.547 5.551F 5.551H 5. 551I</td></tr>
<tr><td colspan="3">...</td></tr>
<tr><td>47.2-47.5</td><td colspan="2">FIXED
FIXED-SATELLITE (Earth-to-space) 5.552
MOBILE
5.552A</td></tr>
<tr><td>47.5-47.9
FIXED
FIXED-SATELLITE
(Earth-to-space) 5.552
(space-to-Earth) 5.516B 5.554A
MOBILE</td><td colspan="2">47.5-47.9
FIXED
FIXED-SATELLITE (Earth-to-space) 5.552
MOBILE</td></tr>
<tr><td>47.9-48.2</td><td colspan="2">FIXED
FIXED-SATELLITE (Earth-to-space) 5.552
MOBILE
5.552A</td></tr>
<tr><td>48.2-48.54
FIXED
FIXED-SATELLITE
(Earth-to-space) 5.552
(space-to-Earth) 5.516B 5.554A
5.555A
MOBILE</td><td colspan="2" rowspan="3">48.2-50.2
FIXED
FIXED-SATELLITE (Earth-to-space) 5.516B 5.552
MOBILE

5.149 5.340 5.555</td></tr>
<tr><td>48.54-49.44
FIXED
FIXED-SATELLITE
(Earth-to-space) 5.552
MOBILE
5.149 5.340 5.555</td></tr>
<tr><td>49.44-50.2
FIXED
FIXED-SATELLITE
(Earth-to-space) 5.552
(space-to-Earth) 5.516B 5.554A
5.555A
MOBILE</td></tr>
<tr><td>50.2-50.4</td><td colspan="2">EARTH EXPLORATION-SATELLITE (passive)
SPACE RESEARCH (passive)
5.340</td></tr>
</table>

SUP

5.551G

ADD

5.551H The equivalent power flux-density (epfd) produced in the band 42.5-43.5 GHz by all space stations in any non-geostationary-satellite system in the fixed-satellite service (space-to-Earth), or in the broadcasting-satellite service (space-to-Earth) operating in the 42-42.5 GHz band, shall not exceed the following values at the site of any radio astronomy station for more than 2% of the time:

–230 dB(W/m^2) in 1 GHz and –246 dB(W/m^2) in any 500 kHz of the 42.5-43.5 GHz band at the site of any radio astronomy station registered as a single-dish telescope; and

–209 dB(W/m^2) in any 500 kHz of the 42.5-43.5 GHz band at the site of any radio astronomy station registered as a very long baseline interferometry station.

These epfd values shall be evaluated using the methodology given in Recommendation ITU-R S.1586 and the reference antenna pattern and the maximum gain of an antenna in the radio astronomy service given in Recommendation ITU-R RA.1631 and shall apply over the whole sky and for elevation angles higher than the minimum operating angle θ_{min} of the radiotelescope (for which a default value of 5° should be adopted in the absence of notified information).

These values shall apply at any radio astronomy station that either:

– was in operation prior to 5 July 2003 and has been notified to the Bureau before 4 January 2004; or

– was notified before the date of receipt of the complete Appendix **4** information for coordination or notification, as appropriate, for the space station to which the limits apply.

Other radio astronomy stations notified after these dates may seek an agreement with administrations that have authorized the space stations. In Region 2, Resolution **743 (WRC-03)** shall apply. The limits in this footnote may be exceeded at the site of a radio astronomy station of any country whose administration so agreed. (WRC-03)

ADD

5.551I The power flux-density in the band 42.5-43.5 GHz produced by any geostationary space station in the fixed-satellite service (space-to-Earth), or the broadcasting-satellite service (space-to-Earth) operating in the 42-42.5 GHz band, shall not exceed the following values at the site of any radio astronomy station:

–137 dB(W/m^2) in 1 GHz and –153 dB(W/m^2) in any 500 kHz of the 42.5-43.5 GHz band at the site of any radio astronomy station registered as a single-dish telescope; and

–116 dB(W/m^2) in any 500 kHz of the 42.5-43.5 GHz band at the site of any radio astronomy station registered as a very long baseline interferometry station.

These values shall apply at the site of any radio astronomy station that either:

– was in operation prior to 5 July 2003 and has been notified to the Bureau before 4 January 2004; or

– was notified before the date of receipt of the complete Appendix **4** information for coordination or notification, as appropriate, for the space station to which the limits apply.

Other radio astronomy stations notified after these dates may seek an agreement with administrations that have authorized the space stations. In Region 2, Resolution **743 (WRC-03)** shall apply. The limits in this footnote may be exceeded at the site of a radio astronomy station of any country whose administration so agreed. (WRC-03)

ADD

5.554A The use of the bands 47.5-47.9 GHz, 48.2-48.54 GHz and 49.44-50.2 GHz by the fixed-satellite service (space-to-Earth) is limited to geostationary satellites. (WRC-03)

SUP

5.555A

ADD

5.555B The power flux-density in the band 48.94-49.04 GHz produced by any geostationary space station in the fixed-satellite service (space-to-Earth) operating in the bands 48.2-48.54 GHz and 49.44-50.2 GHz shall not exceed –151.8 dB(W/m^2) in any 500 kHz band at the site of any radio astronomy station. (WRC-03)

MOD

158.5-202 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
182-185	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	

SUP

5.563

ARTICLE 7

Application of the procedures

ADD

7.4A Unless otherwise stated in an applicable regulatory provision of these Regulations or in a Resolution relating to the application of the provisions of Articles **9** or **11**, the following shall be applied by the Bureau:

– when applying the provisions of No. **9.35** or **9.36**, as appropriate, the Bureau shall apply the provisions in force at the date of receipt of the information submitted under No. **9.34**;

– when applying the provisions of No. **11.31**, the Bureau shall apply the provisions in force at the date of receipt of the complete notice submitted under No. **11.15**;

– when applying the provisions of No. **11.32**, the Bureau shall apply the provisions in force at the date of receipt of complete information submitted under No. **9.34**. In the case where a new form of coordination exists on the date of receipt of notification under Article **11**, where no such form existed at the coordination stage, the Bureau shall apply the forms of coordination in force on the date of receipt of complete Appendix **4** data under Article **11**;

– in the case where a form of coordination or coordination requirements existed on the date of receipt of complete coordination data under Article **9** where no such form or coordination requirements exist on the date of receipt of complete notification data under Article **11**, the Bureau shall not take into account these forms of coordination or coordination requirements. (WRC-03)

MOD

ARTICLE 9

Procedure for effecting coordination with or obtaining agreement of other administrations[1, 2, 3, 4, 5, 6, 6A, 6B] (WRC-03)

ADD

[6A] **A.9.6A** For the purpose of this Article, a geostationary satellite is a geosynchronous satellite with an orbit the inclination of which is less than or equal to 15°. (WRC-03)

ADD

[6B] **A.9.7** See also Resolution **33 (Rev.WRC-03)**. (WRC-03)

Section I – Advance publication of information on satellite networks or satellite systems

General

MOD

9.1 Before initiating any action under this Article or under Article **11** in respect of frequency assignments for a satellite network or a satellite system, an administration, or one[7] acting on behalf of a group of named administrations, shall, prior to the coordination procedure described in Section II of Article **9** below, where applicable, send to the Bureau a general description of the network or system for advance publication in the International Frequency Information Circular (BR IFIC) not earlier than seven years and preferably not later than two years before the planned date of bringing into use of the network or system (see also No. **11.44**). The characteristics to be provided for this purpose are listed in Appendix **4**. The coordination or notification information may also be communicated to the Bureau at the same time; it shall be considered as having been received by the Bureau not earlier than six months after the date of receipt of the information for advance publication where coordination is required by Section II of Article **9**. Where coordination is not required by Section II, notification shall be considered as having been received by the Bureau not earlier than six months after the date of publication of the advance publication information. (WRC-03)

MOD

9.2 Amendments to the information sent in accordance with the provisions of No. **9.1** shall also be sent to the Bureau as soon as they become available. The use of an additional frequency band or modification of the orbital location by more than □6° for a space station using the geostationary-satellite orbit will require the application of the advance publication procedure for this band or orbital location, as appropriate. (WRC-03)

MOD

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[8] **9.2B.1** 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 Council Decision 482 unless the payment has already been received. See also Resolution **87 (WRC-03)**. (WRC-03)

MOD

9.5D If the information under No. **9.30** has not been received by the Bureau within a period of 24 months after the date of receipt by the Bureau of the relevant complete information under No. **9.1** or **9.2**, as appropriate, the information published under No. **9.2B** and not covered by a coordination request under No. **9.30** shall be cancelled, after the administration concerned has been informed at least three months before the end of the 24-month period. The Bureau shall also publish the cancellation in its BR IFIC. (WRC-03)

Section II – Procedure for effecting coordination[10, 11]

MOD

9.6 Before an administration[12, 13, 13A] notifies to the Bureau or brings into use a frequency assignment in any of the cases listed below, it shall effect coordination, as required, with other administrations identified under No. **9.27**: (WRC-03)

ADD

[13A] **9.6.3** Unless otherwise specified, coordination under any of the particular sharing situations defined in Nos. **9.7** to **9.21** is not applicable when limits for that sharing situation are specified elsewhere in these Regulations. (WRC-03)

MOD

9.14 *i)* for a space station of a satellite network for which the requirement to coordinate is included in a footnote to the Table of Frequency Allocations referring to this provision or to No. **9.11A** in respect of stations of terrestrial services where the threshold value is exceeded; (WRC-03)

MOD

9.17A *m)* for any specific earth station, in respect of other earth stations operating in the opposite direction of transmission or for any typical mobile earth station in respect of specific earth stations operating in the opposite direction of transmission, in frequency bands allocated with equal rights to space radiocommunication services in both directions of transmission and where the coordination area of the earth station includes the territory of another country or the earth station is located within the coordination area of another earth station, with the exception of the coordination under No. **9.19**; (WRC-03)

MOD

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[19] **9.38.1** 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 Council Decision 482 unless the payment has already been received. See also Resolution **87 (WRC-03)**. (WRC-03)

MOD

ARTICLE 11

Notification and recording of frequency assignments[1, 2, 3, 4, 4A, 5A] (WRC-03)

ADD

[4A] **A.11.4A** For the purpose of this Article, a geostationary satellite is a geosynchronous satellite with an orbit the inclination of which is less than or equal to 15°. (WRC-03)

ADD

[5A] **A.11.5** See also Resolution **33 (Rev.WRC-03)**. (WRC-03)

Section I – Notification

ADD

11.3A *aa)* if that assignment is subject to Resolution **221 (Rev.WRC-03)**; or (WRC-03)

ADD

11.21B *f)* any terrestrial station in bands referred to in a footnote which includes a reference to No. **9.21**, if it pertains to a service which is subject to the application of the procedure for seeking agreement under No. **9.21**; (WRC-03)

(MOD)

11.22 *g)* earth stations whose coordination area includes the territory of another administration, or where the earth station is located within the coordination area of an earth station operating in the opposite direction of transmission;[6, 7] (WRC-03)

(MOD)

11.23 *h)* earth stations whose interference potential is greater than that of a coordinated typical earth station.[6] (WRC-03)

MOD

11.24 Notices relating to assignments to stations of terrestrial services, except for those referred to in Nos. **11.25**, **11.26** or **11.26A**, shall reach the Bureau not earlier than three months before the assignments are brought into use. (WRC-03)

ADD

11.26A Notices relating to assignments for high altitude platform stations operating as base stations to provide IMT-2000 in the bands identified in **5.388A** shall reach the Bureau not earlier than three years before the assignments are brought into use. (WRC-03)

Section II – Examination of notices and recording of frequency assignments in the Master Register

MOD

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[8] **11.31.1** Conformity with the Table of Frequency Allocations implies the successful application of No. **9.21**, when necessary. However, the recording of the assignment with respect to those objecting administration(s) whose agreement(s) have not been obtained will be with a favourable finding, subject to the condition that the assignment in question shall not cause harmful interference to nor claim protection from the service(s) of the objecting administration(s) from which the agreement was sought. With respect to the administration(s) which have not objected under No. **9.21**, the recording of the assignment shall also be made with a favourable finding. (WRC-03)

MOD

11.39 When the examination with respect to No. **11.34** leads to a favourable finding, the assignment shall be recorded in the Master Register. When the finding is unfavourable, the notice shall be returned to the notifying administration, with an indication of the appropriate action. However, notices under Appendices **25**, **26** or **27** which are in accordance with the technical principles of the relevant appendix but not with the associated allotment plan shall be treated as follows: (WRC-03)

ADD

11.39F A notice which is not in conformity with the technical principles of Appendices **25**, **26** or **27**, as applicable, shall be returned to the notifying administration, unless the administration undertakes that it will be operated in accordance with No. **4.4**; in such a case the assignment shall be recorded in the Master Register for information purposes and subject to application of No. **8.5**. (WRC-03)

MOD

11.44 The notified date[17] of bringing into use of any assignment to a space station of a satellite network shall be not later than seven years following the date of receipt by the Bureau of the relevant complete information under No. **9.1** or **9.2**, as appropriate. Any frequency assignment not brought into use within the required period shall be cancelled by the Bureau after having informed the administration at least three months before the expiry of this period. (WRC-03)

SUP

11.44B

SUP

11.44C

SUP

11.44D

SUP

11.44E

SUP

11.44F

SUP

11.44G

SUP

11.44H

SUP

11.44I

MOD

11.48 If, after the expiry of the period of seven years from the date of receipt of the relevant complete information referred to in No. **9.1** or **9.2**, as appropriate, the administration responsible for the satellite network has not brought the frequency assignments to stations of the network into use, the corresponding information published under Nos. **9.2B** and **9.38**, as appropriate, shall be cancelled, but only after the administration concerned has been informed at least three months before the expiry date referred to in No. **11.44**. (WRC-03)

ADD

11.50 The Bureau shall review periodically the Master Register with the aim of maintaining or improving its accuracy, with particular emphasis on the review of the findings so as to adjust them to the changing allocation situation after each conference. (WRC-03)

ARTICLE 12

Seasonal planning of the HF bands allocated to the broadcasting service between 5900 kHz and 26100 kHz

Section III – The Procedure

MOD

12.33 Upon receipt of the schedules, the Bureau shall, in accordance with the Rules of Procedure, validate the data where necessary, perform a compatibility analysis and prepare the tentative high frequency broadcasting schedules (the Tentative Schedules). These Schedules shall include all assignments where administrations gave no alternatives, the selections made by the Bureau from any alternatives given, and the frequencies selected by the Bureau in cases where the need for its assistance was indicated by their intentional omission from the individual schedules. (WRC-03)

MOD

12.34 The Tentative Schedules shall be published two months and one month before the start of each of the two schedule periods in Nos. **12.17** and **12.18**. (WRC-03)

MOD

12.38 Administrations shall notify the Bureau of changes to their schedules as quickly as possible and the Bureau shall update and make available the Schedule on a monthly basis. The Bureau shall perform new compatibility analyses and publish the updated Schedule and the results of these analyses at regular intervals during the season. (WRC-03)

ARTICLE 13

Instructions to the Bureau

ADD

Section 0 – Development of the Rules of Procedure and proposals to resolve inconsistencies encountered in the application of the Radio Regulations (WRC-03)

ADD

13.0.1 The Board shall develop a new Rule of Procedure only when there is a clear need with proper justification for such a Rule. For all such Rules, the Board shall submit to the coming world radiocommunication conference the necessary modifications to the Radio Regulations, to alleviate such difficulties or inconsistencies and include its suggestions in the Report of the Director to the next world radiocommunication conference. (WRC-03)

ADD

13.0.2 If such a need is not identified under No. **13.0.1**, the Board shall submit also to the coming world radiocommunication conference the necessary modifications to the Radio Regulations to alleviate such difficulties or inconsistencies. (WRC-03)

Section III – Maintenance of the Rules of Procedure by the Bureau

ADD

13.12A In the preparation and development of the Rules of Procedure, the Board, the Bureau and administrations shall apply the following steps:

a) the Bureau shall also publish under No. **13.17**, on the ITU website, a list of future proposed Rules and the time-frame for their consideration by the Board and for comments by administrations on the list of future proposed Rules;

b) any practice used by the Bureau in the application of the provisions of the Radio Regulations shall be identified and proposed for inclusion in the Rules of Procedure in accordance with the procedures of this section;

c) all draft Rules prepared by the Bureau shall be available to administrations on the ITU website and by Circular Letter at least ten weeks prior to the start of the Board meeting;

d) any comments on these draft Rules of Procedure from administrations shall be submitted to the Bureau at least four weeks before the start of the Board meeting;

e) in submitting comments administrations should, if possible, suggest the actual text of their proposed Rules;

f) all comments from administrations shall be posted on the ITU website. However, those comments that do not meet the above time-limits shall not be considered by the Board;

g) any Rules of Procedure are to be in conformity with the spirit and principle of the Constitution, Convention and the Radio Regulations and shall avoid any relaxation to the application of the corresponding provisions of the Radio Regulation to which the Rules make reference. (WRC-03)

Section IV – Board documents

MOD

13.18 Within one week after a meeting of the Board, a summary of all decisions, including the reasons for each decision, taken in that meeting shall be made available on the ITU website. After each Board meeting the approved minutes of that meeting shall normally be circulated at least one month before the start of the following meeting to administrations by means of a circular letter and these approved minutes shall also be made available on the ITU website. (WRC-03)

ARTICLE 19

Identification of stations

Section II – Allocation of international series and assignment of call signs

ADD

19.31A 4) Means shall be provided for uniquely identifying mobile stations operating in automated terrestrial or satellite communication systems for the purposes of answering distress calls, for avoiding interference and for billing. Identification of the mobile station by accessing a registration database is satisfactory, provided that the system can associate the mobile station calling number with the particular mobile station user. (WRC-03)

MOD

19.35 § 16 The Secretary-General shall be responsible for allocating additional maritime identification digits (MIDs) to administrations within the limits specified, provided that it is ascertained that the possibilities offered by the MIDs allocated to an administration will soon be exhausted despite judicious ship station identity assignment as outlined in Section VI. (WRC-03)

SUP

_____

[2] **19.35.1**

MOD

19.36 § 17 Each administration has been allocated one or more maritime identification digit (MID) for its use. A second or subsequent MID should not be requested[2] unless the previously allocated MID is more than 80% exhausted in the basic category of three trailing zeros and the rate of assignments is such that 90% exhaustion is foreseen. (WRC-03)

ADD

_____

[2] **19.36.1** In no circumstances may an administration claim more MIDs than the total number of its ship stations notified to ITU divided by 1 000, plus one. Administrations shall make every attempt to reuse the Maritime Mobile Service Identities (MMSI) assigned from earlier MID resources, which become redundant after ships leave their national ship registry. Such numbers should be considered for reassignment after being absent from at least two successive editions of List VIIA of the ITU service publications. Administrations seeking additional MID resources must meet the criteria of having notified all previous assignments, in accordance with No. **20.16**. This criteria applies only to MMSIs in the basic category and to all MIDs assigned to the administration. (WRC-03)

Section III – Formation of call signs

MOD

19.48 *b)* combinations in Recommendation ITU-R M.1172 that are reserved for the abbreviations to be used in the radiocommunication services. (WRC-03)

SUP

19.49 *c)*

MOD

---

[4] **19.50.1** For call sign series beginning with B, F, G, I, K, M, N, R, W and 2, only the first character is required for nationality identification. In the cases of half series (i.e. when the first two characters are allocated to more than one Member State), the first three characters are required for nationality identification. (WRC-03)

MOD

19.68 § 30 1)

– one character (provided that it is the letter B, F, G, I, K, M, N, R or W) and a single digit (other than 0 or 1), followed by a group of not more than four characters, the last of which shall be a letter, *or*

– two characters and a single digit (other than 0 or 1), followed by a group of not more than four characters, the last of which shall be a letter. (WRC-03)

ADD

19.68A 1A) On special occasions, for temporary use, administrations may authorize use of call signs with more than the four characters referred to in No. **19.68**. (WRC-03)

Section IV – Identification of stations using radiotelephony

MOD

19.72 § 32 Stations using radiotelephony shall be identified as indicated in Nos. **19.73** to **19.82A**. (WRC-03)

ADD

19.82A § 35A *Amateur stations and experimental stations*

– a call sign (see No. **19.68**). (WRC-03)

Section V – Selective call numbers in the maritime mobile Service

MOD

19.96A 3) Five-digit ship station selective call numbers shall be assigned to sequential single frequency selective calling (SSFC) equipment (as described in Recommendation ITU-R M.257-3) for calling in radiotelephony and for the phasing in of narrow-band direct printing (NBDP) equipment (as described in Recommendation ITU-R M.476-5). Within one administration the same five-digit number may be used:

– for identification of ship stations fitted with both SSFC and NBDP equipment;

– for identification of ship stations of two different ships fitted with either SSFC or NBDP equipment only. (WRC-03)

Section VI – Maritime mobile service identities in the maritime mobile service and the maritime mobile-satellite service

MOD

19.101 2) These identities are formed in such a way that the identity or part thereof can be used by telephone and telex subscribers connected to the public telecommunications network principally to call ships automatically in the shore-to-ship direction. Access to public networks may also be achieved by means of free-form numbering plans, so long as the ship can be uniquely identified using the system's registration database (see No. **19.31A**) to obtain the ship station identity, call sign or ship name and nationality. (WRC-03)

ADD

19.108A § 41 The maritime identification digits $M_1I_2D_3$ are an integral part of the maritime mobile service identity and denote the geographical area of the administration responsible for the station so identified (see Nos. **19.102** to **19.106**). (WRC-03)

SUP

19.109

MOD

19.112 *a)* follow the guidelines contained in the most recent version of Recommendation ITU-R M.585 concerning the assignment and use of ship station identities; (WRC-03)

MOD

19.114 *c)* take particular care in assigning ship station identities with six significant digits (i.e. having three-trailing-zero identities), which should be assigned only to ship stations which can reasonably be expected to require such an identity for automatic access on a worldwide basis to public switched networks, in particular for mobile-satellite systems accepted for use in the GMDSS on or before 1 February 2002, as long as those systems maintain the MMSI as part of their numbering scheme. (WRC-03)

SUP

19.115

SUP

19.116

ARTICLE 20

MOD

Service publications (WRC-03)

MOD

Section I – Titles and contents of service publications (WRC-03)

MOD

20.1 § 1 The following publications shall be issued by the Secretary-General. As circumstances warrant and in response to individual requests by administrations, the published information shall also be available in computer printed form, machine-readable form, film, microfiche or by other appropriate means. (WRC-03)

MOD

Section II – Preparation and amendment of service publications (WRC-03)

MOD

20.15 § 11 The form, the content and the periodicity of each publication shall be decided by the Bureau in consultation with administrations and the international organizations concerned. (WRC-03)

MOD

20.16 § 12 Administrations shall take all appropriate measures to notify the Bureau immediately of any changes in the operational information contained in Lists IV, V and VI, in view of the importance of this information, particularly with regard to safety. In the case of other publications, administrations shall communicate the changes in the information contained in them as soon as possible. (WRC-03)

MOD

20.17 § 13 For the purpose of the service publications, a "country" shall be understood to mean the territory within the limits of which the station is located; a territory which does not have full responsibility for its international relations shall also be considered as a country for this purpose. (WRC-03)

ARTICLE 21

Terrestrial and space services sharing frequency bands above 1 GHz

Section II – Power limits for terrestrial stations

MOD

TABLE **21-2** (WRC-03)

Frequency band	Service	Limit as specified in Nos.
1 610-1 645.5 MHz (No. **5.359**) 1 646.5-1 660 MHz (No. **5.359**) 1 980-2 010 MHz 2 010-2 025 MHz (Region 2) 2 025-2 110 MHz 2 200-2 290 MHz 2 655-2 670 MHz[5] (Regions 2 and 3) 2 670-2 690 MHz 5 670-5 725 MHz (Nos. **5.453** and **5.455**) 5 725-5 755 MHz[5] (Region 1 countries listed in Nos. **5.451**, **5.453** and **5.455**) 5 755-5 850 MHz[5] (Region 1 countries listed in Nos. **5.451**, **5.453**, **5.455** and **5.456**) 5 850-7 075 MHz 7 145-7 235 MHz* 7 900-8 400 MHz 8 400-8 500 MHz	Fixed-satellite Meteorological-satellite Space research Space operation Earth exploration-satellite Mobile-satellite	**21.2**, **21.3**, **21.4** and **21.5**
10.7-11.7 GHz[5] (Region 1) 12.5-12.75 GHz[5] (Nos. **5.494** and **5.496**) 12.7-12.75 GHz[5] (Region 2) 12.75-13.25 GHz 13.75-14 GHz (Nos. **5.499** and **5.500**) 14.0-14.25 GHz (No. **5.505**) 14.25-14.3 GHz (Nos. **5.505**, **5.508** and **5.509**) 14.3-14.4 GHz[5] (Regions 1 and 3) 14.4-14.5 GHz 14.5-14.8 GHz	Fixed-satellite	**21.2**, **21.3** and **21.5**
17.7-18.4 GHz 18.6-18.8 GHz 19.3-19.7 GHz 22.55-23.55 GHz 24.45-24.75 GHz (Regions 1 and 3) 24.75-25.25 GHz (Region 3) 25.25-29.5 GHz	Fixed-satellite Earth exploration-satellite Space research Inter-satellite	**21.2**, **21.3**, **21.5** and **21.5A**

* For this frequency band only the limits of Nos. **21.3** and **21.5** apply.

Section III – Power limits for earth stations

MOD

TABLE **21-3** (WRC-03)

Frequency band	Services
...	Fixed-satellite
5 850-7 075 MHz	Earth-exploration-satellite
7 190-7 235 MHz	Meteorological-satellite
7 900-8 400 MHz	Mobile-satellite
...	Space operation
	Space research

ADD

21.13A 7) In the band 13.75-14 GHz, the level of off-axis e.i.r.p. emitted by an earth station of a geostationary fixed-satellite service network with an antenna diameter smaller than 4.5 m shall not exceed the following values:

Angle off-axis (degrees)	*Maximum e.i.r.p. in any 1 MHz band (dBW)*
$2 \le \varphi \le 7$	$43 - 25 \log \varphi$
$7 < \varphi \le 9.2$	22
$9.2 < \varphi \le 48$	$46 - 25 \log \varphi$
$\varphi > 48$	4

(WRC-03)

Section V – Limits of power flux-density from space stations

MOD

TABLE **21-4** (WRC-03)

Frequency band	**Service***	**Limit in dB(W/m^2) for angles of arrival (δ) above the horizontal plane**				**Reference bandwidth**
		0°-5°	**5°-25°**		**25°-90°**	
1 670-1 700 MHz	Earth exploration-satellite Meteorological-satellite	–133 (value based on sharing with meteorological aids service)				1.5 MHz
		0° ≤ δ ≤ 4°	**4° < δ ≤ 20°**	**20° < δ ≤ 60°**	**60° < δ ≤ 90°**	
1 518-1 525 MHz (Applicable to the territory of the United States in Region 2 between the longitudes 71° W and 125° W)	Mobile-satellite (space-to-Earth)	–181.0	–193.0 + 20 log δ	–213.3 + 35.6 log δ	–150.0	4 kHz

TABLE **21-4** *(continued)* (WRC-03)

Frequency band	**Service***	**Limit in dB(W/m^2) for angles of arrival (δ) above the horizontal plane**			**Reference bandwidth**
		0° ≤ δ ≤ 43.4°	**43.4° < δ ≤ 60°**	**60° < δ ≤ 90°**	
1 518-1 525 MHz (Applicable to all other territory of the United States in Region 2)	Mobile-satellite (space-to-Earth)	–155.0	–213.3 + 35.6 log δ	–150.0	4 kHz
		0°-5°	**5°-25°**	**25°-90°**	
1 525-1 530 MHz[7] (Region 1, Region 3) 1 670-1 690 MHz[11] 1 690-1 700 MHz (Nos. **5.381** and **5.382**) 1 700-1 710 MHz 2 025-2 110 MHz 2 200-2 300 MHz	Meteorological-satellite (space-to-Earth) Space research (space-to-Earth) (space-to-space) Space operation (space-to-Earth) (space-to-space) Earth exploration-satellite (space-to-Earth) (space-to-space)	–154 [9]	–154 + 0.5(δ – 5) [9]	–144 [9]	4 kHz
...					
3 400-4 200 MHz	Fixed-satellite (space-to-Earth) (geostationary-satellite orbit)	–152	–152 + 0.5(δ – 5)	–142	4 kHz
3 400-4 200 MHz	Fixed-satellite (space-to-Earth) (non-geostationary-satellite orbit)	$-138 - Y$ [aa, bb]	$-138 - Y + (12 + Y)(\delta - 5)/20$ [aa, bb]	–126 [bb]	1 MHz
4 500-4 800 MHz 5 670-5 725 MHz (Nos. **5.453** and **5.455**) 7 250-7 850 MHz	Fixed-satellite (space-to-Earth) Meteorological-satellite (space-to-Earth) Mobile-satellite Space research	–152	–152 + 0.5(δ – 5)	–142	4 kHz
...					
10.7-11.7 GHz	Fixed-satellite (space-to-Earth) (geostationary-satellite orbit)	–150	–150 + 0.5(δ – 5)	–140	4 kHz
10.7-11.7 GHz	Fixed-satellite (space-to-Earth) (non-geostationary-satellite orbit) [dd]	–126	–126 + 0.5(δ – 5)	–116	1 MHz

TABLE **21-4** *(continued)* (WRC-03)

Frequency band	Service*	Limit in dB(W/m^2) for angles of arrival (δ) above the horizontal plane			Reference bandwidth
		0°-5°	**5°-25°**	**25°-90°**	
11.7-12.5 GHz (Region 1) 12.5-12.75 GHz (Region 1 countries listed in Nos. **5.494** and **5.496**) 11.7-12.7 GHz (Region 2) 11.7-12.75 GHz (Region 3)	Fixed-satellite (space-to-Earth) (non-geostationary-satellite orbit) [dd]	–124	–124 + 0.5(δ – 5)	–114	1 MHz
12.2-12.75 GHz[7] (Region 3) 12.5-12.75 GHz[7] (Region 1 countries listed in Nos. **5.494** and **5.496**)	Fixed-satellite (space-to-Earth) (geostationary-satellite orbit)	–148	–148 + 0.5(δ – 5)	–138	4 kHz
10.7-11.7 GHz 11.7-12.5 GHz (Region 1) 12.5-12.75 GHz (Region 1 countries listed in Nos. **5.494** and **5.496**) 11.7-12.7 GHz (Region 2) 11.7-12.75 GHz (Region 3)	Fixed-satellite (space-to-Earth) (non-geostationary-satellite orbit) [cc]	–129 [bb]	–129 + 0.75(δ – 5) [bb]	–114 [bb]	1 MHz
...					
19.3-19.7 GHz 22.55-23.55 GHz 24.45-24.75 GHz 25.25-27.5 GHz	Fixed-satellite (space-to-Earth) Earth exploration-satellite (space-to-Earth) Inter-satellite Space research (space-to-Earth)	–115	–115 + 0.5(δ – 5)	–105	1 MHz
...					
32.3-33 GHz	Inter-satellite	–135	–135 + (δ – 5)	–115	1 MHz
...					
37.5-40 GHz	Fixed-satellite (non-geostationary-satellite orbit) Mobile-satellite (non-geostationary-satellite orbit)	–120 [10, 19]	–120 + 0.75(δ – 5) [10, 19]	–105 [10, 19]	1 MHz

TABLE **21-4** (*end*) (WRC-03)

Frequency band	**Service***	**Limit in dB(W/m^2) for angles of arrival (δ) above the horizontal plane**				**Reference bandwidth**
		0°-5°	**5°-20°**	**20°-25°**	**25°-90°**	
37.5-40 GHz	Fixed-satellite (non-geostationary-satellite orbit) Mobile-satellite (non-geostationary-satellite orbit)	–127 [19]	–127 + (4/3)(δ – 5) [19]	–107 + 0.4(δ – 20) [19]	–105 [19]	1 MHz
40-40.5 GHz	Fixed-satellite	–115	–115 + 0.5(δ – 5)		–105	1 MHz
40.5-42 GHz	Fixed-satellite (non-geostationary-satellite orbit) Broadcasting-satellite (non-geostationary-satellite orbit)	–115 [10, 19]	–115 + 0.5(δ – 5) [10, 19]		–105 [10, 19]	1 MHz
40.5-42 GHz	Fixed-satellite (geostationary-satellite orbit) Broadcasting-satellite (geostationary-satellite orbit)	–120 [19]	**5°-15°** –120 + (δ – 5) [19]	**15°-25°** –110 + 0.5(δ – 15) [19]	–105 [19]	1 MHz
42-42.5 GHz	Fixed-satellite (non-geostationary-satellite orbit) Broadcasting-satellite (non-geostationary-satellite orbit)	–120 [10, 19]	**5°-25°** –120 + 0.75(δ – 5) [10, 19]		–105 [10, 19]	1 MHz
42-42.5 GHz	Fixed-satellite (geostationary-satellite orbit) Broadcasting-satellite (geostationary-satellite orbit)	–127 [19]	**5°-20°** –127 + (4/3)(δ – 5) [19]	**20°-25°** –107 + 0.4(δ – 20) [19]	–105 [19]	1 MHz
...						
In Region 1: 47.5-47.9 GHz 48.2-48.54 GHz 49.44-50.2 GHz	Fixed-satellite (geostationary-satellite orbit)	–115	**5°-25°** –115 + 0.5(δ – 5)		–105	1 MHz

SUP

[16] **21.16.11**

SUP

[17] **21.16.12**

SUP

[18] **21.16.13**

ADD

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[19] **21.16.14** When addressing the sharing conditions between the fixed service and the fixed-satellite service in the bands 37.5-40 GHz and 40.5-42.5 GHz, the power flux-density at the Earth's surface from any FSS satellite should be no greater than the level(s) required to meet the FSS link availability and performance objectives of the subject applications, taking into account the technical and operational requirements of the overall design of the satellite network. In any case, the levels shall not exceed the applicable power flux-density limits in Table **21-4**. (WRC-03)

ADD

[aa] **21.16.15** The value of Y is defined as $Y = 0$ for $\max(N_N, N_S) \leq 2$; $Y = 5 \log(\max(N_N, N_S))$ for $\max(N_N, N_S) > 2$, where N_N is the maximum number of space stations in a system simultaneously transmitting on a co-frequency basis in the fixed-satellite service in the Northern Hemisphere, and N_S is the maximum number of space stations in the same system simultaneously transmitting on a co-frequency basis in the fixed-satellite service in the Southern Hemisphere. In determining N_N and N_S, two space stations simultaneously transmitting during periods of short-duration handover shall be considered as one satellite. (WRC-03)

ADD

[bb] **21.16.16** The applicability of these limits may need to be reviewed by a future competent conference if the number of co-frequency non-geostationary systems brought into use and simultaneously operating in the same hemisphere is greater than five. (WRC-03)

ADD

[cc] **21.16.17** These limits apply to non-geostationary fixed-satellite service space stations employing an orbit with an inclination angle between 35° and 145° and apogee altitude greater than 18 000 km. (WRC-03)

ADD

[dd] **21.16.18** These limits apply to non-geostationary fixed-satellite service space stations that are not covered by No. **21.16.17**. (WRC-03)

ADD

Section VI – Protection of aeronautical radionavigation service systems from aggregate emissions of space stations of radionavigation-satellite service systems in the 1 164-1 215 MHz band

21.18 § 7 Administrations operating or planning to operate radionavigation-satellite service systems or networks in the 1 164-1 215 MHz frequency band, for which complete coordination or notification information, as appropriate, was received by the Bureau after 2 June 2000, shall, in accordance with *resolves* 2 of Resolution **609 (WRC-03)**, take all necessary steps to ensure that the actual aggregate interference into aeronautical radionavigation service systems caused by such radionavigation-satellite service systems or networks operating co-frequency in these frequency bands does not exceed the equivalent power flux-density level shown in *resolves* 1 of Resolution **609 (WRC-03)**. (WRC-03)

ARTICLE 22

Space services[1]

Section II – Control of interference to geostationary-satellite systems

MOD

22.5C § 6 1) The equivalent power flux-density[2], epfd↓, at any point on the Earth's surface visible from the geostationary-satellite orbit, produced by emissions from all the space stations of a non-geostationary-satellite system in the fixed-satellite service in the frequency bands listed in Tables **22-1A** to **22-1E**, including emissions from a reflecting satellite, for all conditions and for all methods of modulation, shall not exceed the limits given in Tables **22-1A** to **22-1E** for the given percentages of time. These limits relate to the equivalent power flux-density which would be obtained under free-space propagation conditions, into a reference antenna and in the reference bandwidth specified in Tables **22-1A** to **22-1E**, for all pointing directions towards the geostationary-satellite orbit. (WRC-03)

MOD

22.5CA 2) The limits given in Tables **22-1A** to **22-1E** may be exceeded on the territory of any country whose administration has so agreed (see also Resolution **140 (WRC-03)**). (WRC-03)

MOD

TABLE **22-1A** (WRC-03)

Limits to the epfd↓ radiated by non-geostationary-satellite systems in the fixed-satellite service systems in certain frequency bands[3, 4, 5, 6]

Frequency band (GHz)	**epfd↓ (dB(W/m²))**	**Percentage of time during which epfd↓ may not be exceeded**	**Reference bandwidth (kHz)**	**Reference antenna diameter and reference radiation pattern**[7]
10.7-11.7 in all Regions; 11.7-12.2 in Region 2; 12.2-12.5 in Region 3 and 12.5-12.75 in Regions 1 and 3	–175.4 –174 –170.8 –165.3 –160.4 –160 –160	0 90 99 99.73 99.991 99.997 100	40	60 cm Recommendation ITU-R S.1428-1
	–181.9 –178.4 –173.4 –173 –164 –161.6 –161.4 –160.8 –160.5 –160 –160	0 99.5 99.74 99.857 99.954 99.984 99.991 99.997 99.997 99.9993 100	40	1.2 m Recommendation ITU-R S.1428-1
	–190.45 –189.45 –187.45 –182.4 –182 –168 –164 –162 –160 –160	0 90 99.5 99.7 99.855 99.971 99.988 99.995 99.999 100	40	3 m Recommendation ITU-R S.1428-1
	–195.45 –195.45 –190 –190 –172.5 –160 –160	0 99 99.65 99.71 99.99 99.998 100	40	10 m Recommendation ITU-R S.1428-1

MOD

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[7] **22.5C.6** For this Table, reference patterns of Recommendation ITU-R S.1428-1 shall be used only for the calculation of interference from non-geostationary-satellite systems in the fixed-satellite service systems into geostationary-satellite systems in the fixed-satellite service. (WRC-03)

MOD

TABLE **22-1B** (WRC-03)

Limits to the epfd$_\downarrow$ radiated by non-geostationary-satellite systems in the fixed-satellite service in certain frequency bands[3, 6, 8]

Frequency band (GHz)	**epfd$_\downarrow$ (dB(W/m^2))**	**Percentage of time during which epfd$_\downarrow$ may not be exceeded**	**Reference bandwidth (kHz)**	**Reference antenna diameter and reference radiation pattern**[7]
17.8-18.6	–175.4 –175.4 –172.5 –167 –164 –164	0 90 99 99.714 99.971 100	40	1 m Recommendation ITU-R S.1428-1
	–161.4 –161.4 –158.5 –153 –150 –150	0 90 99 99.714 99.971 100	1 000	
	–178.4 –178.4 –171.4 –170.5 –166 –164 –164	0 99.4 99.9 99.913 99.971 99.977 100	40	2 m Recommendation ITU-R S.1428-1
	–164.4 –164.4 –157.4 –156.5 –152 –150 –150	0 99.4 99.9 99.913 99.971 99.977 100	1 000	
	–185.4 –185.4 –180 –180 –172 –164 –164	0 99.8 99.8 99.943 99.943 99.998 100	40	5 m Recommendation ITU-R S.1428-1
	–171.4 –171.4 –166 –166 –158 –150 –150	0 99.8 99.8 99.943 99.943 99.998 100	1 000	

MOD

TABLE **22-1C** (WRC-03)

Limits to the epfd$_\downarrow$ radiated by non geostationary-satellite systems in the fixed-satellite service in certain frequency bands[3, 6, 8]

Frequency band (GHz)	epfd$_\downarrow$ (dB(W/m^2))	Percentage of time during which epfd$_\downarrow$ may not be exceeded	Reference bandwidth (kHz)	Reference antenna diameter and reference radiation pattern[7]
19.7-20.2	–187.4 –182 –172 –154 –154	0 71.429 97.143 99.983 100	40	70 cm Recommendation ITU-R S.1428-1
	–173.4 –168 –158 –140 –140	0 71.429 97.143 99.983 100	1 000	
	–190.4 –181.4 –170.4 –168.6 –165 –160 –154 –154	0 91 99.8 99.8 99.943 99.943 99.997 100	40	90 cm Recommendation ITU-R S.1428-1
	–176.4 –167.4 –156.4 –154.6 –151 –146 –140 –140	0 91 99.8 99.8 99.943 99.943 99.997 100	1 000	
	–196.4 –162 –154 –154	0 99.98 99.99943 100	40	2.5 m Recommendation ITU-R S.1428-1
	–182.4 –148 –140 –140	0 99.98 99.99943 100	1 000	
	–200.4 –189.4 –187.8 –184 –175 –164.2 –154.6 –154 –154	0 90 94 97.143 99.886 99.99 99.999 99.9992 100	40	5 m Recommendation ITU-R S.1428-1
	–186.4 –175.4 –173.8 –170 –161 –150.2 –140.6 –140 –140	0 90 94 97.143 99.886 99.99 99.999 99.9992 100	1 000	

MOD

TABLE **22-1D** (WRC-03)

Limits to the epfd↓ radiated by non-geostationary-satellite systems in the fixed-satellite service in certain frequency bands into 30 cm, 45 cm, 60 cm, 90 cm, 120 cm, 180 cm, 240 cm and 300 cm broadcasting-satellite service antennas[6, 9, 10, 11]

Frequency band (GHz)	epfd↓ (dB(W/m^2))	Percentage of time during which epfd↓ may not be exceeded	Reference bandwidth (kHz)	Reference antenna diameter and reference radiation pattern[12]
11.7-12.5 in Region 1; 11.7-12.2 and 12.5-12.75 in Region 3; 12.2-12.7 in Region 2	–165.841 –165.541 –164.041 –158.6 –158.6 –158.33 –158.33	0 25 96 98.857 99.429 99.429 100	40	30 cm Recommendation ITU-R BO.1443-1, Annex 1
	–175.441 –172.441 –169.441 –164 –160.75 –160 –160	0 66 97.75 99.357 99.809 99.986 100	40	45 cm Recommendation ITU-R BO.1443-1, Annex 1
	–176.441 –173.191 –167.75 –162 –161 –160.2 –160 –160	0 97.8 99.371 99.886 99.943 99.971 99.997 100	40	60 cm Recommendation ITU-R BO.1443-1, Annex 1
	–178.94 –178.44 –176.44 –171 –165.5 –163 –161 –160 –160	0 33 98 99.429 99.714 99.857 99.943 99.991 100	40	90 cm Recommendation ITU-R BO.1443-1, Annex 1
	–182.44 –180.69 –179.19 –178.44 –174.94 –173.75 –173 –169.5 –167.8 –164 –161.9 –161 –160.4 –160	0 90 98.9 98.9 99.5 99.68 99.68 99.85 99.915 99.94 99.97 99.99 99.998 100	40	120 cm Recommendation ITU-R BO.1443-1, Annex 1

TABLE **22-1D** (*end*) (WRC-03)

Frequency band (GHz)	**epfd↓ (dB(W/m²))**	**Percentage of time during which epfd↓ may not be exceeded**	**Reference bandwidth (kHz)**	**Reference antenna diameter and reference radiation pattern**[12]
11.7-12.5 in Region 1; 11.7-12.2 and 12.5-12.75 in Region 3; 12.2-12.7 in Region 2	–184.941 –184.101 –181.691 –176.25 –163.25 –161.5 –160.35 –160 –160	0 33 98.5 99.571 99.946 99.974 99.993 99.999 100	40	180 cm Recommendation ITU-R BO.1443-1, Annex 1
	–187.441 –186.341 –183.441 –178 –164.4 –161.9 –160.5 –160 –160	0 33 99.25 99.786 99.957 99.983 99.994 99.999 100	40	240 cm Recommendation ITU-R BO.1443-1, Annex 1
	–191.941 –189.441 –185.941 –180.5 –173 –167 –162 –160 –160	0 33 99.5 99.857 99.914 99.951 99.983 99.991 100	40	300 cm Recommendation ITU-R BO.1443-1, Annex 1

MOD

[12] **22.5C.11** For this Table, reference patterns of Annex 1 to Recommendation ITU-R BO.1443-1 shall be used only for the calculation of interference from non-geostationary-satellite systems in the fixed-satellite service into geostationary-satellite systems in the broadcasting-satellite service. (WRC-03)

ADD

TABLE **22-1E** (WRC-03)

Limits to the epfd↓ radiated by non-geostationary-satellite systems in the fixed-satellite service in certain frequency bands

Frequency band (MHz)	epfd↓ (dB(W/m^2))	Percentage of time during which epfd↓ may not be exceeded	Reference bandwidth (kHz)	Reference antenna diameter and reference radiation pattern (m)
3 700-4 200	–195.4	100	4	1.8 [13A]
	–197.9	100	4	2.4 [13A]
	–201.6	100	4	3.7 [13A]
	–203.3	100	4	4.5 [13A]
	–204.5	100	4	5.5 [13A]
	–207.5	100	4	8 [13A]
	–208.5	100	4	10 [13A]
	–212.0	100	4	15 [13A]

ADD

[13A] **22.5C.12** The associated reference radiation pattern is defined as follows:

a) for values of $\left(\frac{D}{\lambda}\right) \geq 100$:

$G(\varphi) = G_{max} - 2.5 \times 10^{-3} \left(\frac{D}{\lambda}\varphi\right)^2$ for $0 \leq \varphi < \varphi_m$

$G(\varphi) = G_1$ for $\varphi_m \leq \varphi < \varphi_r$

$G(\varphi) = 29 - 25 \log \varphi$ for $\varphi_r \leq \varphi < 20°$

$G(\varphi) = -3.5$ for $20° \leq \varphi < 26.3°$

$G(\varphi) = 32 - 25 \log \varphi$ for $26.3° \leq \varphi < 48°$

$G(\varphi) = -10$ for $48° \leq \varphi \leq 180°$

b) for values of $42 \leq \left(\frac{D}{\lambda}\right) < 100$:

$G(\varphi) = G_{max} - 2.5 \times 10^{-3} \left(\frac{D}{\lambda}\varphi\right)^2$ for $0 \leq \varphi < \varphi_m$

$G(\varphi) = G_1$ for $\varphi_m \leq \varphi < 100 \left(\frac{\lambda}{D}\right)$

$G(\varphi) = 29 - 25 \log \varphi$ for $100 \left(\frac{\lambda}{D}\right) \leq \varphi < 20°$

$G(\varphi) = -3.5$ for $20° \leq \varphi < 26.3°$

$G(\varphi) = 32 - 25 \log \varphi$ for $26.3° \leq \varphi < 48°$

$G(\varphi) = -10$ for $48° \leq \varphi \leq 180°$

c) for values of $\left(\frac{D}{\lambda}\right) < 42$:

$$G(\varphi) = G_{max} - 2{,}5 \times 10^{-3} \left(\frac{D}{\lambda}\varphi\right)^2 \quad \text{for} \quad 0 \leq \varphi < \varphi_m$$

$$G(\varphi) = G_1 \quad \text{for} \quad \varphi_m \leq \varphi < 100 \left(\frac{\lambda}{D}\right)$$

$$G(\varphi) = 32 - 25 \log \varphi \quad \text{for} \quad 100 \left(\frac{\lambda}{D}\right) \leq \varphi < 48°$$

$$G(\varphi) = -10 \quad \text{for} \quad 48° \leq \varphi \leq 180°$$

where:

D: antenna diameter
λ: wavelength
} expressed in the same units

φ: off-axis angle of the antenna (degrees)

G_1: gain of the first side lobe = $2 + 15 \log \left(\frac{D}{\lambda}\right)$ dBi

$\varphi_m = \frac{20\lambda}{D}\sqrt{G_{max} - G_1}$ degrees

$\varphi_r = 15.85 \left(\frac{D}{\lambda}\right)^{-0.6}$ degrees

$G_{max} = 7.7 + 20 \log \left(\frac{D}{\lambda}\right)$ dBi (WRC-03)

MOD

TABLE **22-2** (WRC-03)

Limits to the epfd↑ radiated by non-geostationary-satellite systems in the fixed-satellite service in certain frequency bands[14]

Frequency band	**epfd↑ (dB(W/m²))**	**Percentage of time epfd↑ level may not be exceeded**	**Reference bandwidth (kHz)**	**Reference antenna beamwidth and reference radiation pattern**[15]
5 925-6 725 MHz	–183.0	100	4	1.5° Recommendation ITU-R S.672-4, *Ls* = –20
12.50-12.75 GHz 12.75-13.25 GHz 13.75-14.5 GHz	–160	100	40	4° Recommendation ITU-R S.672-4, *Ls* = –20
17.3-18.1 GHz (Regions 1 and 3) 17.8-18.1 GHz (Region 2) [16]	–160	100	40	4° Recommendation ITU-R S.672-4, *Ls* = –20
27.5-28.6 GHz	–162	100	40	1.55° Recommendation ITU-R S.672-4, *Ls* = –10
29.5-30 GHz	–162	100	40	1.55° Recommendation ITU-R S.672-4, *Ls* = –10

MOD

22.5H 5) The limits specified in Nos. **22.5C** (except for Table **22-1E**) to **22.5D** (except for Table **22-2** for the frequency band 5 925-6 725 MHz) and **22.5F** apply to non-geostationary-satellite systems in the fixed-satellite service for which complete coordination or notification information, as appropriate, has been received by the Bureau after 22 November 1997. The limits specified in Table **22-1E** and those specified in Table **22-2** for the frequency band 5 925-6 725 MHz apply to non-geostationary-satellite systems in the fixed-satellite service for which complete notification information has been received by the Bureau after 5 July 2003. The limits in Tables **22-4A**, **22-4A1**, **22-4B** and **22-4C** do not apply to non-geostationary-satellite systems in the fixed-satellite service for which complete coordination or notification information, as appropriate, has been received by the Bureau before 22 November 1997. (WRC-03)

MOD

22.5I 6) An administration operating a non-geostationary-satellite system in the fixed-satellite service which is in compliance with the limits in Nos. **22.5C**, **22.5D** and **22.5F** shall be considered as having fulfilled its obligations under No. **22.2** with respect to any geostationary-satellite network, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-geostationary-satellite system and the geostationary-satellite network, provided that the epfd$\downarrow$ radiated by the non-geostationary-satellite system in the fixed-satellite service into any operating geostationary fixed-satellite service earth station does not exceed the operational and additional operational limits given in Tables **22-4A**, **22-4A1**, **22-4B** and **22-4C**, when the diameter of the earth station antenna is equal to the values given in Table **22-4A**, **22-4A1** or **22-4C**, or the gain of the earth station is equal to or greater than the values given in Table **22-4B** for the corresponding orbital inclination of the geostationary fixed-satellite service satellite. Except as otherwise agreed between concerned administrations, an administration operating a non-geostationary-satellite system in the fixed-satellite service that is subject to the limits in Nos. **22.5C**, **22.5D** and **22.5F** and which radiates epfd$\downarrow$ into any operating geostationary fixed-satellite service earth station at levels in excess of the operational or additional operational limits given in Tables **22-4A**, **22-4A1**, **22-4B** and **22-4C**, when the diameter of the earth station antenna is equal to the values given in Table **22-4A**, **22-4A1** or **22-4C**, or the gain of the earth station is equal to or greater than the values given in Table **22-4B** for the corresponding orbital inclination of the geostationary fixed-satellite service satellite, shall be considered to be in violation of its obligations under No. **22.2**, and the provisions of Article **15** (Section V) apply. In addition, administrations are encouraged to use the relevant ITU-R Recommendations to determine whether such a violation has occurred. (WRC-03)

ARTICLE 23

Broadcasting services

Section I – Broadcasting service

MOD

23.11 *C – HF bands allocated to the broadcasting service except the bands as referred to in No. **23.6*** (WRC-03)

MOD

23.12 § 3 Transmitting stations of the broadcasting service operating in the HF bands allocated to the broadcasting service, except the bands as referred to in No. **23.6**, shall meet the system specifications contained in Appendix **11**. (WRC-03)

ARTICLE 24

Fixed service

SUP

24.3

SUP

24.4

SUP

24.5

SUP

24.6

ARTICLE 25

Amateur services

Section I – Amateur service

MOD

25.1 § 1 Radiocommunication between amateur stations of different countries shall be permitted unless the administration of one of the countries concerned has notified that it objects to such radiocommunications. (WRC-03)

MOD

25.2 § 2 1) Transmissions between amateur stations of different countries shall be limited to communications incidental to the purposes of the amateur service, as defined in No. **1.56** and to remarks of a personal character. (WRC-03)

ADD

25.2A 1A) Transmissions between amateur stations of different countries shall not be encoded for the purpose of obscuring their meaning, except for control signals exchanged between earth command stations and space stations in the amateur-satellite service. (WRC-03)

MOD

25.3 2) Amateur stations may be used for transmitting international communications on behalf of third parties only in case of emergencies or disaster relief. An administration may determine the applicability of this provision to amateur stations under its jurisdiction. (WRC-03)

SUP

25.4

MOD

25.5 § 3 1) Administrations shall determine whether or not a person seeking a licence to operate an amateur station shall demonstrate the ability to send and receive texts in Morse code signals. (WRC-03)

MOD

25.6 2) Administrations shall verify the operational and technical qualifications of any person wishing to operate an amateur station. Guidance for standards of competence may be found in the most recent version of Recommendation ITU-R M.1544. (WRC-03)

MOD

25.7 § 4 The maximum power of amateur stations shall be fixed by the administrations concerned. (WRC-03)

MOD

25.8 § 5 1) All pertinent Articles and provisions of the Constitution, the Convention and of these Regulations shall apply to amateur stations. (WRC-03)

ADD

25.9A § 5A Administrations are encouraged to take the necessary steps to allow amateur stations to prepare for and meet communication needs in support of disaster relief. (WRC-03)

ADD

25.9B § 5B An administration may determine whether or not to permit a person who has been granted a licence to operate an amateur station by another administration to operate an amateur station while that person is temporarily in its territory, subject to such conditions or restrictions it may impose. (WRC-03)

Section II – Amateur-satellite service

MOD

25.11 § 7 Administrations authorizing space stations in the amateur-satellite service shall ensure that sufficient earth command stations are established before launch to ensure that any harmful interference caused by emissions from a station in the amateur-satellite service can be terminated immediately (see No. **22.1**). (WRC-03)

ARTICLE 28

Radiodetermination services

Section III – Radio direction-finding stations

MOD

28.13 2) Where a radio direction-finding service is provided in the authorized bands between 1 606.5 kHz and 2 850 kHz, the radio direction-finding stations should be able to take bearings on the radiotelephone distress and calling frequency 2 182 kHz. (WRC-03)

ARTICLE 29

Radio astronomy service

Section III – Protection of the radio astronomy service

MOD

29.12 § 9 In applying the measures outlined in this Section, administrations should bear in mind that the radio astronomy service is extremely susceptible to interference from space and airborne transmitters (for further information, see the most recent version of Recommendation ITU-R RA.769). (WRC-03)

ARTICLE 31

Frequencies for the global maritime distress and safety system (GMDSS)

Section II – Survival craft stations

MOD

31.9 *a)* in the bands between 1 606.5 kHz and 2 850 kHz, be able to transmit on 2 187.5 kHz; (WRC-03)

ARTICLE 32

Operational procedures for distress and safety communications in the global maritime distress and safety system (GMDSS)

Section I – General

MOD

32.7 § 6 The phonetic alphabet and figure code in Appendix **14** and the abbreviations and signals in accordance with the most recent version of Recommendation ITU-R M.1172 should be used where applicable[1]. (WRC-03)

ARTICLE 33

Operational procedures for urgency and safety communications in the global maritime distress and safety system (GMDSS)

Section IV – Safety communications

ADD

33.31A Safety messages transmitted by coast stations in accordance with a predefined timetable should not be announced by digital selective calling techniques. (WRC-03)

Section V – Transmission of maritime safety information[1]

MOD

33.45 § 24 1) The frequency 490 kHz may be used for the transmission of maritime safety information by means of narrow-band direct-printing telegraphy with forward error correction (see Appendix **15**). (WRC-03)

ARTICLE 47

Operator's certificates

Section I – General provisions

SUP

47.1

SUP

47.3

MOD

Section IV – Qualifying service[1] (WRC-03)

ADD

[1] **47.IV.1** The categories of certificates referred to in this Section are described in Appendix **13**, Part B, Section I. (CMR-03)

MOD

47.26 § 8 1) The holder of a radiocommunication general operator's certificate or a first- or second-class radiotelegraph operator's certificate shall be authorized to embark as chief operator of a ship station of the fourth category (which is described in Recommendation ITU-R M.1169). (WRC-03)

MOD

47.27 2) However, before becoming chief or sole operator of a ship station of the fourth category (in accordance with Recommendation ITU-R M.1169) which is required by international agreements to carry a radiotelegraph operator, the holder of a radiocommunication general operator's certificate or a first- or second-class radiotelegraph operator's certificate shall have had adequate experience as operator on board ship at sea. (WRC-03)

MOD

47.28 3) Before becoming chief operator of a ship station of the second or third category (in accordance with Recommendation ITU-R M.1169), the holder of a radiocommunication general operator's certificate or a first- or second-class radiotelegraph operator's certificate shall have had, as operator on board ship or in a coast station, at least six months' experience of which at least three months shall have been on board ship. (WRC-03)

MOD

47.29 4) Before becoming chief operator of a ship station of the first category (in accordance with Recommendation ITU-R M.1169), the holder of a radiocommunication general operator's certificate or a first-class radiotelegraph operator's certificate shall have had, as operator on board ship or in a coast station, at least one year's experience of which at least six months shall have been on board ship. (WRC-03)

ARTICLE 51

Conditions to be observed in the maritime services

Section I – Maritime mobile service

MOD

51.17 B2 – Bands between 1 606.5 kHz and 2 850 kHz (WRC-03)

MOD

51.18 § 10 In Region 2, any Morse radiotelegraph station installed on board a ship which uses frequencies in the band 2 089.5-2 092.5 kHz for call and reply shall be provided with at least one other frequency in the authorized bands between 1 606.5 kHz and 2 850 kHz. (WRC-03)

MOD

51.28 C2 – Bands between 1 606.5 kHz and 4 000 kHz (WRC-03)

MOD

51.29 § 14 All ship stations equipped with digital selective calling apparatus to work in the authorized bands between 1 606.5 kHz and 4 000 kHz shall be able to: (WRC-03)

MOD

51.35 *b)* send and receive class F1B or J2B emissions on an international calling channel (identified in Recommendation ITU-R M.541-8) in each of the HF maritime mobile bands necessary for their service; (WRC-03)

MOD

51.46 CA2 – Bands between 1 606.5 kHz and 4 000 kHz (WRC-03)

MOD

51.47 § 19 All ship stations equipped with narrow-band direct-printing telegraphy apparatus to work in the authorized bands between 1 606.5 kHz and 4 000 kHz shall be able to send and receive class F1B or J2B emissions on working frequencies necessary to carry out their service. (WRC-03)

MOD

51.51 D1 – Bands between 1 606.5 kHz and 4 000 kHz (WRC-03)

MOD

51.52 § 21 All ship stations equipped with radiotelephony apparatus to work in the authorized bands between 1 606.5 kHz and 2 850 kHz shall be able to: (WRC-03)

Section III – Stations on board aircraft communicating with stations of the maritime mobile service and the maritime mobile-satellite service

MOD

51.71 § 28 In the case of communication between stations on board aircraft and stations of the maritime mobile service, radiotelephone calling may be renewed as specified in Recommendation ITU-R M.1171 and radiotelegraph calling may be renewed after an interval of five minutes, notwithstanding the procedure contained in the most recent version of Recommendation ITU-R M.1170. (WRC-03)

ARTICLE 52

Special rules relating to the use of frequencies

Section I – General provisions

MOD

52.7 2) In the maritime mobile service, the frequency 490 kHz is used exclusively for the transmission by coast stations of meteorological and navigational warnings and urgent information to ships by means of narrow-band direct-printing telegraphy. (WRC-03)

MOD

52.8 *C – Bands between 1 606.5 kHz and 4 000 kHz* (WRC-03)

Section II – Use of frequencies for Morse radiotelegraphy

MOD

52.23 *b)* by coast stations to announce by means of Morse telegraphy the transmission of their traffic lists under the conditions provided for in the most recent version of Recommendation ITU-R M.1170. (WRC-03)

MOD

52.25 4) Before transmitting on 500 kHz, stations must listen on this frequency for a reasonable period to make sure that no distress traffic is being sent (see the most recent version of Recommendation ITU-R M.1170). (WRC-03)

MOD

52.31 § 13 1) The frequency for replying to a call sent on the general calling frequency (see No. **52.27**) shall be as follows:

– either 500 kHz,

– or the frequency specified by the calling station (see No. **52.29** and the most recent version of Recommendation ITU-R M.1170). (WRC-03)

MOD

52.32 2) In regions of heavy traffic, coast stations may answer calls made by ship stations of their own nationality in accordance with special arrangements made by the administration concerned (see the most recent version of Recommendation ITU-R M.1170). (WRC-03)

MOD

52.46 *C – Bands between 1 606.5 kHz and 4 000 kHz* (WRC-03)

MOD

52.47 § 18 1) The band 2 089.5-2 092.5 kHz is the calling and safety band for Morse radiotelegraphy in those parts of the band between 1 606.5 kHz and 2 850 kHz in which Morse radiotelegraphy is authorized. (WRC-03)

MOD

52.50 4) Coast stations which use frequencies in the band 2 089.5-2 092.5 kHz for calling shall be able to use at least one other frequency in those parts of the band between 1 606.5 kHz and 2 850 kHz in which Morse radiotelegraphy is authorized. (WRC-03)

MOD

52.63 2) So far as is practicable, a coast station shall transmit its calls at specified times in the form of traffic lists on the frequency or frequencies indicated in the List of Coast Stations (see the most recent version of Recommendation ITU-R M.1170). (WRC-03)

MOD

52.69 § 28 In order to reduce interference on Morse radiotelegraphy calling frequencies, a coast station shall take adequate steps to ensure, under normal conditions, the prompt receipt of Morse radiotelegraphy calls (see the most recent version of Recommendation ITU-R M.1170). (WRC-03)

Section III – Use of frequencies for narrow-band direct-printing telegraphy

SUP

52.98

MOD

52.99 *C – Bands between 1 606.5 kHz and 4 000 kHz* (WRC-03)

MOD

52.100 § 46 1) All ship stations equipped with narrow-band direct-printing telegraph apparatus to work in the authorized bands between 1 606.5 kHz and 4 000 kHz shall be able to send and receive class F1B or J2B emissions on at least two working frequencies. (WRC-03)

SUP

52.106

Section IV – Use of frequencies for digital selective-calling

MOD

52.124 *C – Bands between 1 606.5 kHz and 4 000 kHz* (WRC-03)

MOD

52.125 § 60 1) The class of emission to be used for digital selective-calling and acknowledgement in the bands between 1 606.5 kHz and 4 000 kHz shall be F1B. (WRC-03)

MOD

52.126 2) Coast stations should, when transmitting digital selective calls and acknowledgements in the bands between 1 606.5 kHz and 4 000 kHz, use the minimum power necessary to cover their service area. (WRC-03)

MOD

52.136 2) The international digital selective-calling frequency 2 177 kHz may be assigned to any coast station. In order to reduce interference on this frequency, it may be used as a general rule by coast stations to call ships of another nationality, or in cases where it is not known on which digital selective-calling frequencies within the bands between 1 606.5 kHz and 4 000 kHz the ship station is maintaining watch. (WRC-03)

MOD

52.139 2) A coast station providing international public correspondence service using digital selective-calling techniques within the bands between 1 606.5 kHz and 4 000 kHz should, during its hours of service, maintain automatic digital selective-calling watch on appropriate national or international calling frequencies. The hours and frequencies shall be indicated in the List of Coast Stations. (WRC-03)

MOD

52.140 3) Ship stations equipped with apparatus for digital selective-calling to work in the authorized bands between 1 606.5 kHz and 4 000 kHz should, when within the coverage area of coast stations providing services using digital selective-calling techniques in these bands, maintain an automatic digital selective-calling watch on one or more appropriate digital selective-calling frequencies within these bands, taking into account the digital selective-calling frequencies operated by the coast stations. (WRC-03)

Section V – Use of frequencies for wide-band telegraphy, facsimile, special transmission systems and oceanographic data transmissions

MOD

52.164 A1 – Bands between 1 606.5 kHz and 4 000 kHz (WRC-03)

Section VI – Use of frequencies for radiotelephony

MOD

52.181 § 85 Single-sideband apparatus in radiotelephone stations of the maritime mobile service operating in the bands allocated to this service between 1 606.5 kHz and 4 000 kHz and in the bands allocated exclusively to this service between 4 000 kHz and 27 500 kHz shall satisfy the technical and operational conditions specified in Recommendation ITU-R M.1173. (WRC-03)

MOD

52.182 *B – Bands between 1 606.5 kHz and 4 000 kHz* (WRC-03)

MOD

52.183 § 86 1) Unless otherwise specified in the present Regulations (see Nos. **51.53**, **52.188**, **52.189**, **52.199** and Appendix **13**), the class of emission to be used in the bands between 1 606.5 kHz and 4 000 kHz shall be J3E. (WRC-03)

MOD

52.184 2) The peak envelope power of coast radiotelephone stations operating in the authorized bands allocated between 1 606.5 kHz and 4 000 kHz shall not exceed: (WRC-03)

MOD

52.192 *b)* by coast stations to announce the transmission, on another frequency, of traffic lists as specified in Recommendation ITU-R M.1171. (WRC-03)

MOD

52.195 § 89 1) Before transmitting on the carrier frequency 2 182 kHz, a station shall, in accordance with Recommendation ITU-R M.1171, listen on this frequency for a reasonable period to make sure that no distress traffic is being sent. (WRC-03)

MOD

52.197 § 90 1) Coast stations which use 2 182 kHz for calling shall be able to use at least one other frequency in the authorized bands between 1 606.5 kHz and 2 850 kHz. (WRC-03)

MOD

52.198 2) Coast stations authorized to use radiotelephony on one or more frequencies other than 2 182 kHz in the authorized bands between 1 606.5 kHz and 2 850 kHz shall use class J3E emissions on those frequencies (see also No. **52.188**). (WRC-03)

MOD

52.199 3) Coast stations open to the public correspondence service on one or more frequencies between 1 606.5 kHz and 2 850 kHz shall also be capable of transmitting class H3E and J3E emissions with a carrier frequency of 2 182 kHz, and of receiving class A3E, H3E and J3E emissions with a carrier frequency of 2 182 kHz. (WRC-03)

MOD

52.202 § 91 The peak envelope power of ship radiotelephone stations operating in the authorized bands between 1 606.5 kHz and 2 850 kHz shall not exceed 400 W. (WRC-03)

MOD

52.213 2) In exceptional circumstances, if frequency usage according to Nos. **52.203** to **52.208** or No. **52.210** is not possible, a ship station may use one of its own assigned national ship-to-shore frequencies for communication with a coast station of another nationality, under the express condition that the coast station as well as the ship station shall take precautions, in accordance with Recommendation ITU-R M.1171, to ensure that the use of such a frequency will not cause harmful interference to the service for which the frequency in question is authorized. (WRC-03)

MOD

52.217 § 96 1) The class of emission to be used for analogue radiotelephony in the bands between 4 000 kHz and 26 175 kHz shall be J3E; for digital telecommunications in those bands, the class of emission shall be J2D. (WRC-03)

MOD

52.221A 2) Calling on the carrier frequencies 12 290 kHz and 16 420 kHz shall be permitted only to and from rescue coordination centres (see No. **30.6.1**), subject to the safeguards of Resolution **352 (WRC-03)**. The alternative carrier frequencies 12 359 kHz and 16 537 kHz may be used by ship stations and coast stations for calling on a simplex basis, provided that the peak envelope power does not exceed 1 kW. (WRC-03)

MOD

52.224 § 99 1) Before transmitting on the carrier frequencies 4 125 kHz, 6 215 kHz, 8 291 kHz, 12 290 kHz or 16 420 kHz a station shall, in accordance with Recommendation ITU-R M.1171, listen on the frequency for a reasonable period to make sure that no distress traffic is being sent (see No. **52.221A**). (WRC-03)

MOD

52.229 4) Transmitters used for radiotelephony in the bands between 4 000 kHz and 27 500 kHz shall comply with technical characteristics specified in Recommendation ITU-R M.1173. (WRC-03)

MOD

52.231 § 101 1) The frequency 156.8 MHz is the international frequency for distress traffic and for calling by radiotelephony when using frequencies in the authorized bands between 156 MHz and 174 MHz (see Appendix **13** for details of use). The class of emission to be used for radiotelephony on the frequency 156.8 MHz shall be G3E (as specified in Recommendation ITU-R M.489-2). (WRC-03)

MOD

52.234 *b)* by coast stations to announce the transmission on another frequency of traffic lists, in accordance with Recommendation ITU-R M.1171, and important maritime information. (WRC-03)

MOD

52.235 3) The frequency 156.8 MHz may be used by ship stations and coast stations for selective calling in accordance with Recommendation ITU-R M.257-3. (WRC-03)

MOD

52.240 8) Before transmitting on the frequency 156.8 MHz, a station shall, in accordance with Recommendation ITU-R M.1171, listen on this frequency for a reasonable period to make sure that no distress traffic is being sent. (WRC-03)

SUP

52.255

ARTICLE 55

Morse radiotelegraphy

MOD

55.1 The recommended procedure for conducting radiotelegraph communications is detailed in the most recent version of Recommendation ITU-R M.1170. (WRC-03)

ARTICLE 57

Radiotelephony

MOD

57.1 § 1 The procedure detailed in Recommendation ITU-R M.1171 shall be applicable to radiotelephone stations, except in cases of distress, urgency or safety, to which the provisions of Appendix **13** are applicable. (WRC-03)

ARTICLE 59

Entry into force and provisional application of the Radio Regulations (WRC-2000)

MOD

59.1 These Regulations, which complement the provisions of the Constitution and Convention of the International Telecommunication Union, and as revised and contained in the Final Acts of WRC-95, WRC-97, WRC-2000 and WRC-03, shall be applied, pursuant to Article 54 of the Constitution, on the following basis. (WRC-03)

59.2 The provisions of these Regulations, as revised by WRC-95, concerning new or modified frequency allocations (including any new or modified conditions applying to existing allocations) and the related provisions of Articles **S21*** and **S22***, and Appendix **S4***, apply provisionally as of 1 January 1997.

59.3 The other provisions of these Regulations, as revised by WRC-95 and WRC-97, apply provisionally as of 1 January 1999, with the following exceptions: (WRC-2000)

59.4 – the revised provisions for which other effective dates of application are stipulated in Resolutions:
49 (WRC-97), **51 (WRC-97)**, **52 (WRC-97)**, **54 (WRC-97)**, **130 (WRC-97)**, **533 (WRC-97)**, **534 (WRC-97)** and **538 (WRC-97)**.

59.5 The other provisions of these Regulations, as revised by WRC-2000, shall enter into force on 1 January 2002, with the following exceptions: (WRC-2000)

59.6 – the revised provisions for which other effective dates of application are stipulated in Resolutions:

49 (Rev.WRC-2000), **51 (Rev.WRC-2000)**, **53 (Rev.WRC-2000)**, **55 (WRC-2000)**, **56 (WRC-2000)**, **58 (WRC-2000)**, **59 (WRC-2000)**, **77 (WRC-2000)**, **84 (WRC-2000)**, **122 (Rev.WRC-2000)**, **128 (Rev.WRC-2000)**, **533 (Rev.WRC-2000)**, **539 (WRC-2000)**, **540 (WRC-2000)**, **541 (WRC-2000)**, **542 (WRC-2000)**, **604 (WRC-2000)** and **605 (WRC-2000)**. (WRC-2000)

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* *Note by the Secretariat:* In view of the changes in the numbering scheme used n this edition of the Radio Regulations, thse references correspond now to Articles **21** and **22** , and to Appendix **4**, as appropriate.

ADD

59.7 The other provisions of these Regulations, as revised by WRC-03, shall enter into force on 1 January 2005, with the following exceptions: (WRC-03)

ADD

59.8 – the revised provisions for which other effective dates of application are stipulated in Resolutions:

56 (Rev.WRC-03), **85 (WRC-03)**, **87 (WRC-03)**, **96 (WRC-03)**, **122 (Rev.WRC-03)**, **142 (WRC-03)**, **145 (WRC-03)**, **146 (WRC-03),** **221 (Rev.WRC-03)**, **413 (WRC-03)**, **539 (Rev.WRC-03)**, **546 (WRC-03)**, **743 (WRC-03)** and **902 (WRC-03)**. (WRC-03)

APPENDICES

APPENDIX 2 (Rev.WRC-03)

Table of transmitter frequency tolerances

MOD

Frequency bands (lower limit exclusive, upper limit inclusive) and categories of stations	Tolerances applicable to transmitters
Band: **9 kHz to 535 kHz**	
1 *Fixed stations:*	
– 9 kHz to 50 kHz	100
– 50 kHz to 535 kHz	50
2 *Land stations:*	
a) Coast stations	100 [1, 2]
b) Aeronautical stations	100
3 *Mobile stations:*	
a) Ship stations	200 [3, 4]
b) Ship's emergency transmitters	500 [5]
c) Survival craft stations	500
d) Aircraft stations	100
4 *Radiodetermination stations*	100
5 *Broadcasting stations*	10 Hz
Band: **535 kHz to 1 606.5 kHz (1 605 kHz in Region 2)**	
Broadcasting stations	10 Hz (WRC-03)
Band: **1 606.5 kHz (1 605 kHz in Region 2) to 4 000 kHz**	
1 *Fixed stations:*	
– power 200 W or less	100 [7, 8]
– power above 200 W	50 [7, 8]
2 *Land stations:*	
– power 200 W or less	100 [1, 2, 7, 9, 10]
– power above 200 W	50 [1, 2, 7, 9, 10]

Notes in the table of transmitter frequency tolerances

MOD

2 For coast station transmitters used for digital selective calling, the tolerance is 10 Hz. (WRC-03)

MOD

4 For ship station transmitters used for digital selective calling, the tolerance is 10 Hz. (WRC-03)

6 (SUP – WRC-03).

MOD

[19] For ship station transmitters in the band 26 175-27 500 kHz, on board small craft, with a carrier power not exceeding 5 W in or near coastal waters and utilizing F3E and G3E emissions, the frequency tolerance is 40×10^{-6}. (WRC-03)

MOD

APPENDIX 3 (Rev.WRC-03)

Tables of maximum permitted power levels for spurious or spurious domain emissions[1]

(See Article **3**)

MOD

1 The following sections indicate the maximum permitted levels of certain unwanted emissions, in terms of power as indicated in the tables, of components supplied by a transmitter to the antenna transmission line. Section I, which provides spurious emission limits, is applicable until 1 January 2012 to transmitters installed on or before 1 January 2003; Section II, which limits emissions in the spurious domain, is applicable to transmitters installed after 1 January 2003 and to all transmitters after 1 January 2012. The provisions of No. **4.5** apply to unwanted emissions not covered in Sections I and II.

2 Spurious and spurious domain emissions (covered by Sections I and II) from any part of the installation, other than the antenna and its transmission line, shall not have an effect greater than would occur if this antenna system were supplied with the maximum permitted power at the frequency of that emission.

3 These levels shall not, however, apply to emergency position-indicating radiobeacon (EPIRB) stations, emergency locator transmitters, ships' emergency transmitters, lifeboat transmitters, survival craft stations or maritime transmitters when used in emergency situations.

4 For technical or operational reasons, more stringent levels than those specified may be applied to protect specific services in certain frequency bands. The levels applied to protect these services, such as safety and passive services, shall be those agreed upon by the appropriate world radiocommunication conference. More stringent levels may also be fixed by specific agreement between the administrations concerned. Additionally, special consideration of transmitter spurious or spurious domain emissions may be required for the protection of safety services, radio astronomy and space services using passive sensors. Information on the levels of interference detrimental to radio astronomy, Earth exploration satellites and meteorological passive sensing is given in the most recent version of Recommendation ITU-R SM.329.

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[1] Spurious domain emissions are unwanted emissions at frequencies within the spurious domain.

5 Spurious and spurious domain emission limits (covered by Sections I and II) for combined radiocommunication and information technology equipment are those for the radiocommunication transmitters. (WRC-03)

MOD

Section II – Spurious domain emission limits for transmitters installed after 1 January 2003 and for all transmitters after 1 January 2012 (WRC-03)

Application of these limits

7 The frequency range of the measurement of spurious domain emissions is from 9 kHz to 110 GHz or the second harmonic if higher. (WRC-03)

8 Except as provided in § 9 and 10 of this Appendix, the spurious domain emission levels are specified in the following reference bandwidths:

– 1 kHz between 9 kHz and 150 kHz

– 10 kHz between 150 kHz and 30 MHz

– 100 kHz between 30 MHz and 1 GHz

– 1 MHz above 1 GHz. (WRC-03)

9 The reference bandwidth of all space service spurious domain emissions should be 4 kHz. (WRC-03)

10 For radar systems, the reference bandwidths for specifying spurious domain emission levels should be calculated for each particular system. Thus, for the four general types of radar pulse modulation utilized for radionavigation, radiolocation, acquisition, tracking and other radiodetermination functions, the reference bandwidth values are determined using the following:

– for a fixed-frequency, non-pulse-coded radar, the reciprocal of the radar pulse length, in seconds (e.g. if the radar pulse length is 1 μs, then the reference bandwidth is 1/(1 μs) = 1 MHz);

– for a fixed-frequency, phase-coded pulsed radar, the reciprocal of the phase chip length, in seconds (e.g. if the phase-coded chip is 2 μs long, then the reference bandwidth is 1/(2 μs) = 500 kHz);

– for a frequency modulated (FM) or chirped radar, the square root of the quantity obtained by dividing the chirp bandwidth in MHz by the pulse length, in μs (e.g. if the FM is from 1 250 MHz to 1 280 MHz, i.e. 30 MHz, during the pulse length of 10 μs, then the reference bandwidth is $(30 \text{ MHz}/10 \text{ μs})^{1/2} = 1.73$ MHz);

– for radars operating with multiple waveforms, the reference bandwidth for specifying spurious domain emission levels is determined empirically from observations of the radar emission and is obtained following the guidance given in the most recent version of Recommendation ITU-R M.1177.

In the case of radars, for which the bandwidth, as determined using the method above, is greater than 1 MHz, a reference bandwidth of 1 MHz should be used. (WRC-03)

10*bis* Guidance regarding the methods of measuring spurious domain emissions is given in the most recent version of Recommendation ITU-R SM.329. The e.i.r.p. method specified in this Recommendation should be used when it is not possible to accurately measure the power supplied to the antenna transmission line, or for specific applications where the antenna is designed to provide significant attenuation in the spurious domain. Additionally, the e.i.r.p. method may need some modification for special cases. Specific guidance regarding the methods of measuring spurious domain emissions from radar systems is given in the most recent version of Recommendation ITU-R M.1177.

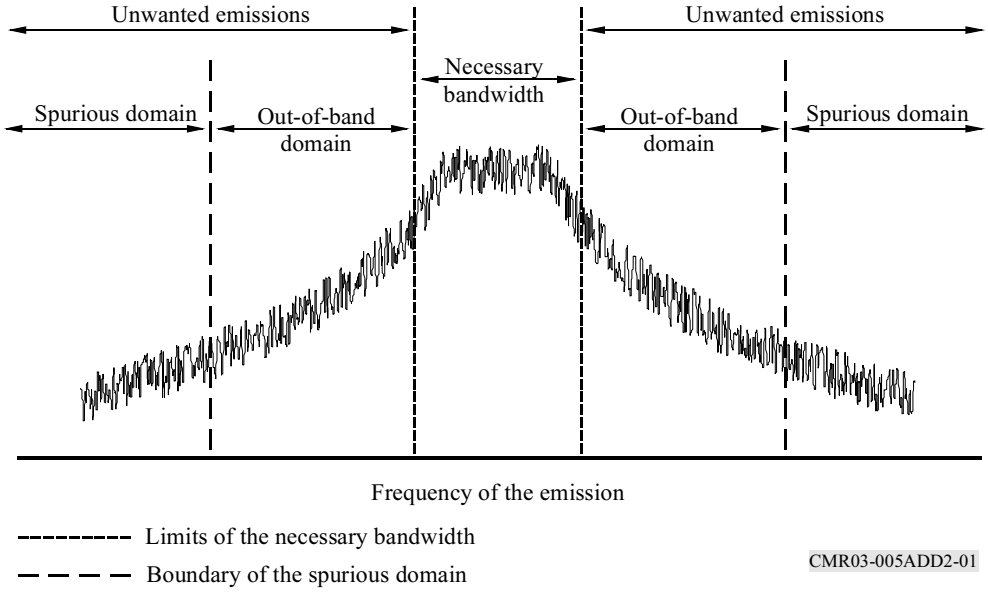
To improve measurement accuracy, sensitivity and efficiency, the resolution bandwidth in which spurious domain emissions are measured can be different from the reference bandwidth used for specifying spurious domain emission levels. (WRC-03)

11 The emission limits of this Section apply to all emissions, including harmonic emissions, intermodulation products, frequency conversion products and parasitic emissions, at frequencies in the spurious domain (see Fig. 1). The upper and lower parts of the spurious domain extend outward from a boundary determined using Annex 1. (WRC-03)

ADD

FIGURE 1

Out-of-band and spurious domains



SUP

11*bis*

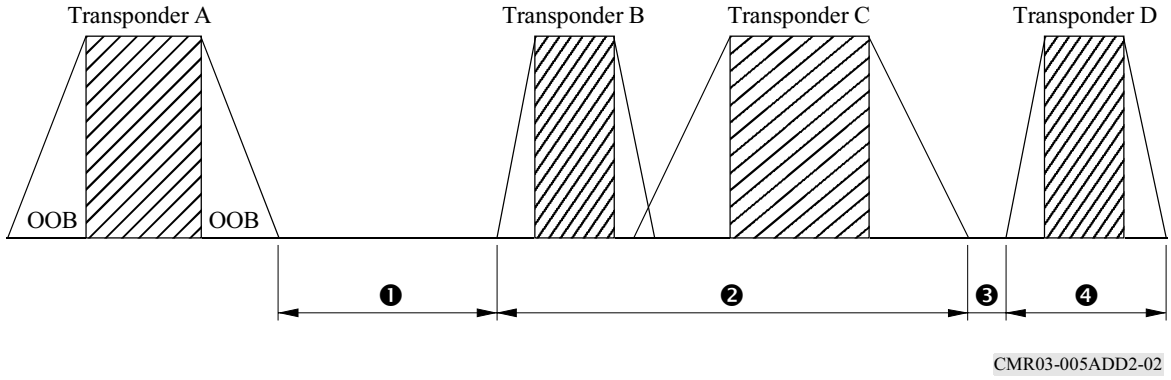
MOD

11*ter* For the case of a single satellite operating with more than one transponder in the same service area, and when considering the limits for spurious domain emissions as indicated in § 11 of this Appendix, spurious domain emissions from one transponder may fall on a frequency at which a second, companion transponder is transmitting. In these situations, the level of spurious domain emissions from the first transponder is well exceeded by the fundamental or out-of-band domain emissions of the second transponder. Therefore, the limits of this Appendix should not apply to those emissions of a satellite that fall within either the necessary bandwidth or the out-of-band domain of another transponder on the same satellite, in the same service area (see Fig. 2). (WRC-03)

MOD

FIGURE 2

Example of the applicability of spurious domain emission limits to a satellite transponder



Transponders A, B, C and D are operating on the same satellite in the same service area. Transponder A is not required to meet spurious domain emission limits in frequency ranges ❷ and ❹, but is required to meet them in frequency ranges ❶ and ❸. (WRC-03)

12 Examples of applying 43 + 10 log (*P*) to calculate attenuation requirements

Where specified in relation to mean power, spurious domain emissions are to be at least x dB below the total mean power P, i.e. $-x$ dBc. The power P (W) is to be measured in a bandwidth wide enough to include the total mean power. The spurious domain emissions are to be measured in the reference bandwidths given in the relevant ITU-R Recommendations. The measurement of the spurious domain emission power is independent of the value of necessary bandwidth. Because the absolute emission power limit, derived from 43 + 10 log (P), can become too stringent for high-power transmitters, alternative relative powers are also provided in Table II.

Example 1

A land mobile transmitter, with any value of necessary bandwidth, must meet a spurious domain emission attenuation of 43 + 10 log (*P*), or 70 dBc, whichever is less stringent. The reference bandwidths used for specifying spurious domain emission levels are provided in § 8 to 10 of this Appendix. Applying this in the frequency range between 30 MHz and 1 GHz gives a reference bandwidth of 100 kHz.

With a measured total mean power of 10 W:

– Attenuation relative to total mean power = 43 + 10 log (10) = 53 dBc.

– The 53 dBc value is less stringent than the 70 dBc, so the 53 dBc value is used.

– Therefore: Spurious domain emissions must not exceed 53 dBc in a 100 kHz bandwidth, or converting to an absolute level, they must not exceed 10 dBW – 53 dBc = –43 dBW in a 100 kHz reference bandwidth.

With a measured total mean power of 1 000 W:

– Attenuation relative to total mean power = 43 + 10 log (1 000) = 73 dBc.

– The 73 dBc value is more stringent than the 70 dBc limit, so the 70 dBc value is used.

– Therefore: Spurious domain emissions must not exceed 70 dBc in a 100 kHz bandwidth, or converting to an absolute level, they must not exceed 30 dBW – 70 dBc = –40 dBW in a 100 kHz reference bandwidth. (WRC-03)

Example 2

A space service transmitter with any value of necessary bandwidth must meet a spurious domain emission attenuation of 43 + 10 log (*P*), or 60 dBc, whichever is less stringent. To measure spurious domain emissions at any frequency, Note 10 to Table II indicates using a reference bandwidth of 4 kHz.

With a measured total mean power of 20 W:

– Attenuation relative to total mean power = 43 + 10 log (20) = 56 dBc.

– The 56 dBc value is less stringent than the 60 dBc limit, so the 56 dBc value is used.

– Therefore: Spurious domain emissions must not exceed 56 dBc in a 4 kHz reference bandwidth, or converting to an absolute level, they must not exceed 13 dBW – 56 dBc = –43 dBW in a 4 kHz reference bandwidth. (WRC-03)

MOD

TABLE II (WRC-03)

Attenuation values used to calculate maximum permitted spurious domain emission power levels for use with radio equipment

Service category in accordance with Article 1, or equipment type[15]	Attenuation (dB) below the power supplied to the antenna transmission line
All services except those services quoted below:	43 + 10 log (*P*), or 70 dBc, whichever is less stringent
Space services (earth stations)[10, 16]	43 + 10 log (*P*), or 60 dBc, whichever is less stringent
Space services (space stations)[10, 17]	43 + 10 log (*P*), or 60 dBc, whichever is less stringent
Radiodetermination[14]	43 + 10 log (*PEP*), or 60 dB, whichever is less stringent
Broadcast television[11]	46 + 10 log (*P*), or 60 dBc, whichever is less stringent, without exceeding the absolute mean power level of 1 mW for VHF stations or 12 mW for UHF stations. However, greater attenuation may be necessary on a case by case basis
Broadcast FM	46 + 10 log (*P*), or 70 dBc, whichever is less stringent; the absolute mean power level of 1 mW should not be exceeded
Broadcasting at MF/HF	50 dBc; the absolute mean power level of 50 mW should not be exceeded
SSB from mobile stations[12]	43 dB below *PEP*
Amateur services operating below 30 MHz (including those using SSB)[16]	43 + 10 log (*PEP*), or 50 dB, whichever is less stringent
Services operating below 30 MHz, except space, radiodetermination, broadcast, those using SSB from mobile stations, and amateur[12]	43 + 10 log (*X*), or 60 dBc, whichever is less stringent, where $X = PEP$ for SSB modulation, and $X = P$ for other modulation
Low-power device radio equipment[13]	56 + 10 log (*P*), or 40 dBc, whichever is less stringent
Emergency transmitters[18]	No limit

P: mean power in watts supplied to the antenna transmission line, in accordance with No. **1.158**. When burst transmission is used, the mean power *P* and the mean power of any spurious domain emissions are measured using power averaging over the burst duration.

PEP: peak envelope power in watts supplied to the antenna transmission line, in accordance with No. **1.157**.

dBc: decibels relative to the unmodulated carrier power of the emission. In the cases which do not have a carrier, for example in some digital modulation schemes where the carrier is not accessible for measurement, the reference level equivalent to dBc is decibels relative to the mean power *P*.

TABLE II (*end*)

10 Spurious domain emission limits for all space services are stated in a 4 kHz reference bandwidth.

11 For analogue television transmissions, the mean power level is defined with a specified video signal modulation. This video signal has to be chosen in such a way that the maximum mean power level (e.g. at the video signal blanking level for negatively modulated television systems) is supplied to the antenna transmission line.

12 All classes of emission using SSB are included in the category "SSB".

13 Low-power radio devices having a maximum output power of less than 100 mW and intended for short-range communication or control purposes; such equipment is in general exempt from individual licensing.

14 For radiodetermination systems (radar as defined by No. **1.100**), spurious domain emission attenuation (dB) shall be determined for radiated emission levels, and not at the antenna transmission line. The measurement methods for determining the radiated spurious domain emission levels from radar systems should be guided by the most recent version of Recommendation ITU-R M.1177. (WRC-03)

15 In some cases of digital modulation (including digital broadcasting), broadband systems, pulsed modulation and narrow-band high-power transmitters for all categories of services, there may be difficulties in meeting limits close to ± 250% of the necessary bandwidth.

16 Earth stations in the amateur-satellite service operating below 30 MHz are in the service category "Amateur services operating below 30 MHz (including those using SSB)". (WRC-2000)

17 Space stations in the space research service intended for operation in deep space as defined by No. **1.177** are exempt from spurious domain emission limits. (WRC-03)

18 Emergency position-indicating radio beacon, emergency locator transmitters, personal location beacons, search and rescue transponders, ship emergency, lifeboat and survival craft transmitters and emergency land, aeronautical or maritime transmitters. (WRC-2000)

ADD

ANNEX 1

Determination of the boundary between the out-of-band and spurious domains (WRC-03)

1 Except as provided below, the boundary between the out-of-band and spurious domains occurs at frequencies that are separated from the centre frequency of the emission by the values shown in Table 1. In general, the boundary, on either side of the centre frequency, occurs at a separation of 250% of the necessary bandwidth, or at 2.5 B_N, as shown in Table 1. For most systems, the centre frequency of the emission is the centre of the necessary bandwidth. For multichannel or multicarrier transmitters/transponders, where several carriers may be transmitted simultaneously from a final output amplifier or an active antenna, the centre frequency of the emission is taken to be the centre of the –3 dB bandwidth of the transmitter or transponder, and the transmitter or transponder bandwidth is used in place of the necessary bandwidth for determining the boundary. For multicarrier satellite systems, guidance on the boundary between

the out-of-band and spurious domains is provided in the most recent version of Recommendation ITU-R SM.1541. Some systems specify unwanted emissions relative to channel bandwidth, or channel spacing. These may be used as a substitute for the necessary bandwidth in Table 1, provided they are found in ITU-R Recommendations.

TABLE 1

Values for frequency separation between the centre frequency and the boundary of the spurious domain

Frequency range	Narrow-band case		Normal separation	Wideband case	
	for $B_N <$	Separation		for $B_N >$	Separation
9 kHz < f_c ≤ 150 kHz	250 Hz	625 Hz	2.5 B_N	10 kHz	1.5 B_N + 10 kHz
150 kHz < f_c ≤ 30 MHz	4 kHz	10 kHz	2.5 B_N	100 kHz	1.5 B_N + 100 kHz
30 MHz < f_c ≤ 1 GHz	25 kHz	62.5 kHz	2.5 B_N	10 MHz	1.5 B_N + 10 MHz
1 GHz < f_c ≤ 3 GHz	100 kHz	250 kHz	2.5 B_N	50 MHz	1.5 B_N + 50 MHz
3 GHz < f_c ≤ 10 GHz	100 kHz	250 kHz	2.5 B_N	100 MHz	1.5 B_N + 100 MHz
10 GHz < f_c ≤ 15 GHz	300 kHz	750 kHz	2.5 B_N	250 MHz	1.5 B_N + 250 MHz
15 GHz < f_c ≤ 26 GHz	500 kHz	1.25 MHz	2.5 B_N	500 MHz	1.5 B_N + 500 MHz
f_c > 26 GHz	1 MHz	2.5 MHz	2.5 B_N	500 MHz	1.5 B_N + 500 MHz

NOTE – In Table 1, f_c is the centre frequency of the emission and B_N is the necessary bandwidth. If the assigned frequency band of the emissions extends across two frequency ranges, then the values corresponding to the higher frequency range shall be used for determining the boundary.

Example 1: The necessary bandwidth of an emission at 26 MHz is 1.8 kHz. Since B_N is less than 4 kHz, the minimum separation of 10 kHz applies. The spurious domain begins 10 kHz each side of the centre of the necessary bandwidth.

Example 2: The necessary bandwidth of an emission at 8 GHz is 200 MHz. Since the wideband case applies for B_N > 100 MHz at that frequency, the spurious domain begins 1.5 × 200 MHz + 100 MHz = 400 MHz each side of the centre of the necessary bandwidth. Using the general separation formula, the out-of-band domain would have extended to 2.5 × 200 MHz = 500 MHz either side of the centre frequency.

2 Tables 2 and 3 show exceptions to Table 1 for narrow-band and wideband cases, respectively, applicable to particular systems or services and frequency bands.

TABLE 2

Narrow-band variations for particular systems or services and frequency bands

System or service	Frequency range		Narrow-band case	
			for $B_N <$ (kHz)	Separation (kHz)
Fixed service	14 kHz-1.5 MHz		20	50(1)
	1.5-30 MHz	$P_T \leq 50$ W	30	75(2)
		$P_T > 50$ W	80	200(2)

(1) The separation value is based on an assumption that the maximum value of the necessary bandwidth is about 3 kHz for the frequency range 14 kHz-1.5 MHz. The separation value of 50 kHz is extremely large as compared with the necessary bandwidth. This is because unwanted emissions of high power transmitters under modulated conditions have to be below the spurious limit (70 dBc) at the boundary between the out-of-band and spurious domains.

(2) P_T is the transmitter power. The separation values are based on an assumption that the maximum value of the necessary bandwidth is about 12 kHz for the frequency range 1.5-30 MHz. The separation value of 200 kHz for $P_T > 50$ W is extremely large as compared with the necessary bandwidth. This is because unwanted emissions of high power transmitters under modulated conditions have to be below the spurious limit, 70 dBc, at the boundary between the out-of-band and spurious domains. Also, if future systems in the fixed service operating in this frequency range require a necessary bandwidth larger than 12 kHz, it may become necessary to review the 200 kHz separation.

TABLE 3

Wideband variations for particular systems or services and frequency bands

System or service	Frequency range	Wideband case	
		For $B_N >$	Separation
Fixed service	14-150 kHz	20 kHz	1.5 B_N + 20 kHz
Fixed-satellite service (FSS)	3.4-4.2 GHz	250 MHz	1.5 B_N + 250 MHz
FSS	5.725-6.725 GHz	500 MHz	1.5 B_N + 500 MHz
FSS	7.25-7.75 GHz and 7.9-8.4 GHz	250 MHz	1.5 B_N + 250 MHz
FSS	10.7-12.75 GHz	500 MHz	1.5 B_N + 500 MHz
Broadcasting-satellite service	11.7-12.75 GHz	500 MHz	1.5 B_N + 500 MHz
FSS	12.75-13.25 GHz	500 MHz	1.5 B_N + 500 MHz
FSS	13.75-14.8 GHz	500 MHz	1.5 B_N + 500 MHz

3 For primary radar, the boundary between the out-of-band and spurious domains is the frequency at which the out-of-band domain limits specified in the applicable ITU-R Recommendations are equal to the spurious domain limit defined in Table II of this Appendix. Further guidance on the boundary between the out-of-band and spurious domains for primary radar is provided in the most recent version of Recommendation ITU-R SM.1541.

APPENDIX 4 (Rev.WRC-03)

Consolidated list and tables of characteristics for use in the application of the procedures of Chapter III

SUP

ANNEX 2A

Characteristics of satellite networks' earth stations or radio astronomy stations[2] (WRC-2000)

MOD

ANNEX 2

Characteristics of satellite networks, earth stations or radio astronomy stations[2] (WRC-03)

Information relating to the data listed in the following Tables

In many cases the data requirements involve the use of standard symbols in submissions to the Radiocommunication Bureau. These standard symbols may be found in the "Preface to the BR International Frequency Information Circular", (BR IFIC) (Space Services) and the Space Radiocommunication Stations on CD-ROM. (In the Table, this is referred to simply as "the Preface".) Information relating to the provision of data may also be found in ITU-R Recommendations, for example, information on the mask data can be found in Recommendation ITU-R S.1503 and Recommendation ITU-R SM.1413 provides general information related to submission of data.

Key to the symbols used in Tables A, B, C and D

X	Mandatory information
+	Mandatory under the conditions specified in column 2
O	Optional information
C	Mandatory if used as a basis to effect coordination with another administration

Reading the Appendix 4 Tables

The rules used to link the sign with the text are based on the Table column headings covering specific procedures and specific services.

1 If any data item has a condition attached to it, then it has a "+".

A.6.c	if agreement has been reached, the related provision code (see the Preface)	+

2 Data items grouped under a common subheading that limits the range of procedures, services or frequency bands have a "X" as the conditional nature is shown in the subheading title.

A.4.b.5	**For space stations operating in a frequency band subject to the provisions of Nos. 9.11A, 9.12 or 9.12A, the data elements to characterize properly the orbital statistics of non-geostationary-satellite systems:**	
A.4.b.5.a	the right ascension of the ascending node (Ω_j) for the j-th orbital plane, measured counter-clockwise in the equatorial plane from the direction of the vernal equinox to the point where the satellite makes its South-to-North crossing of the equatorial plane ($0° \leq \Omega_j < 360°$)	X

Footnotes to Tables A, B, C and D

1 Not required for coordination under No. **9.7A**.

2 The most recent version of Recommendation ITU-R SF.675 should be used to the extent applicable in calculating the maximum power density per Hz. For carriers below 15 GHz, the power density is averaged over the worst 4 kHz band. For carriers at or above 15 GHz, the power density is averaged over the worst 1 MHz band. In the case of assignments with a bandwidth less than the stated averaging bandwidth, the maximum density is calculated as if the assignment occupied the averaging bandwidth.

Table of characteristics to be submitted for space and radio astronomy services (WRC-03)

Items in Appendix	*A – GENERAL CHARACTERISTICS OF THE SATELLITE NETWORK, EARTH STATION OR RADIO ASTRONOMY STATION*	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary-satellite network subject to coordination under Section II of Article 9	Advance publication of a non-geostationary-satellite network not subject to coordination under Section II of Article 9	Notification or coordination of a geostationary-satellite network (including space operation functions under Article 2A of Appendices 30 or 30A)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station (including notification under Appendices 30A or 30B)	Notice for a satellite network in the broadcasting-satellite service under Appendix 30 (Articles 4 and 5)	Notice for a satellite network (feeder-link) under Appendix 30A (Articles 4 and 5)	Notice for a satellite network in the fixed-satellite service under Appendix 30B (Articles 6 and 8)	Items in Appendix	Radio astronomy
A.1	**IDENTITY OF THE SATELLITE NETWORK, EARTH STATION OR RADIOASTRONOMY STATION**										**A.1**	
A.1.a	the identity of the satellite network	X	X	X	X	X		X	X	X	A.1.a	
A.1.b	the beam identification In the case of Appendix **30** or **30A**, for modification, suppression or notification of Plan assignments In the case of Appendix **30B**, for a network derived from the Allotment Plan							+	+	+	A.1.b	
A.1.e	**Identity of the earth station or radio astronomy station:**										A.1.e	
A.1.e.1	the type of earth station (specific or typical)						X				A.1.e.1	
A.1.e.2	the name of the station						X				A.1.e.2	X
A.1.e.3	**For a specific earth station or radio astronomy station:**										A.1.e.3	
A.1.e.3.a	the country or geographical area in which the station is located, using the symbols from the Preface						X				A.1.e.3.a	X
A.1.e.3.b	the geographical coordinates of each transmitting or receiving antenna site constituting the station (longitude and latitude in degrees and minutes)						X				A.1.e.3.b	X

	For a specific earth station, seconds are to be provided if the coordination area of the earth station overlaps the territory of another administration											
A.1.f	**Administration and intergovernmental organization symbol:**										A.1.f	
A.1.f.1	the symbol of the notifying administration (see the Preface)	X	X	X	X	X	X	X	X	X	A.1.f.1	X
A.1.f.2	if the notice is submitted on behalf of a group of administrations, the symbols of each of the administrations in the group, submitting the information on the satellite network (see the Preface)	+	+	+	+	+		+	+	+	A.1.f.2	
A.1.f.3	if the notice is submitted on behalf of an intergovernmental satellite organization, the symbol of that organization (see the Preface)	+	+	+	+	+		+	+	+	A.1.f.3	
A.1.g	**Subregional systems:**										A.1.g	
A.1.g.1	an indicator showing whether the network is part of a subregional system									X	A.1.g.1	
A.1.g.2	for each participating administration, if applicable, the part of its national allotment proposed to be used to form the subregional system									+	A.1.g.2	

Items in Appendix	*A – GENERAL CHARACTERISTICS OF THE SATELLITE NETWORK, EARTH STATION OR RADIO ASTRONOMY STATION*	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary-satellite network subject to coordination under Section II of Article 9	Advance publication of a non-geostationary-satellite network not subject to coordination under Section II of Article 9	Notification or coordination of a geostationary-satellite network (including space operation functions under Article 2A of Appendices 30 or 30A)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station (including notification under Appendices 30A or 30B)	Notice for a satellite network in the broadcasting-satellite service under Appendix 30 (Articles 4 and 5)	Notice for a satellite network (feeder-link) under Appendix 30A (Articles 4 and 5)	Notice for a satellite network in the fixed-satellite service under Appendix 30B (Articles 6 and 8)	Items in Appendix	Radio astronomy
A.2	**DATE OF BRINGING INTO USE**										**A.2**	
A.2.a	the date (actual or foreseen, as appropriate) of bringing the frequency assignment (new or modified) into use The date of bringing into use denotes the date at which the frequency assignment is brought into regular operation* to provide the published radiocommunication service with the technical parameters within the technical characteristics notified to the Bureau Whenever the assignment is changed in any of its basic characteristics (except in the case of a change under A.1.a, the date to be given shall be that of the latest change (actual or foreseen, as appropriate) * Pending further studies by ITU-R on the applicability of the term "regular operation" to non-geostationary satellite networks, the condition of regular operation shall be limited to geostationary satellite networks	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	A.2.a	
A.2.b	for a space station, the period of validity of the frequency assignments (see Resolution **4 (Rev. WRC-03)**)	**X**	**X**	**X**	**X**	**X**					A.2.b	
A.2.c	the date (actual or foreseen, as appropriate) on which reception of the frequency band begins or on which any of the basic characteristics are modified										A.2.c	**X**
A.3	**OPERATING ADMINISTRATION OR AGENCY**										**A.3**	
A.3.a	the symbol for the operating administration or agency (see the Preface) that is in operational control of the space station, earth station or radio astronomy station In the case of Appendix **30B**, required only for notification under Article 8			**X**	**X**	**X**	**X**	**X**	**X**	+	A.3.a	**X**

A.3.b	the symbol for the address of the administration (see the Preface) to which communication should be sent on urgent matters regarding interference, quality of emissions and questions referring to the technical operation of the network or station (see Article **15**) In the case of Appendix **30B**, required only for notification under Article 8			X	X	X	X	X	X	+	A.3.b	X
A.4	**ORBITAL INFORMATION**										**A.4**	
A.4.a	**For a space station onboard a geostationary-satellite:**										A.4.a	
A.4.a.1	the nominal geographical longitude on the geostationary-satellite orbit (GSO)	X			X			X	X	X	A.4.a.1	
A.4.a.2.a	the planned longitudinal tolerance easterly limit				X			X	X	X	A.4.a.2.a	
A.4.a.2.b	the planned longitudinal tolerance westerly limit				X			X	X	X	A.4.a.2.b	
A.4.a.2.c	the planned inclination excursion				X					X	A.4.a.2.c	

Items in Appendix	*A – GENERAL CHARACTERISTICS OF THE SATELLITE NETWORK, EARTH STATION OR RADIO ASTRONOMY STATION*	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary-satellite network subject to coordination under Section II of Article 9	Advance publication of a non-geostationary-satellite network not subject to coordination under Section II of Article 9	Notification or coordination of a geostationary-satellite network (including space operation functions under Article 2A of Appendices 30 or 30A)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station (including notification under Appendices 30A or 30B)	Notice for a satellite network in the broadcasting-satellite service under Appendix 30 (Articles 4 and 5)	Notice for a satellite network (feeder-link) under Appendix 30A (Articles 4 and 5)	Notice for a satellite network in the fixed-satellite service under Appendix 30B (Articles 6 and 8)	Items in Appendix	Radio astronomy
A.4.a.4	**For a space station on board a geostationary-satellite, not derived from the Appendix 30B allotment plan:**										A.4.a.4	
A.4.a.4.a	the service arc easterly limit (the arc of the geostationary-satellite orbit within which the space station could provide the required service to its associated earth stations or service areas)									X	A.4.a.4.a	
A.4.a.4.b	the service arc westerly limit (the arc of the geostationary-satellite orbit within which the space station could provide the required service to its associated earth stations or service areas)									X	A.4.a.4.b	
A.4.b	**For space station(s) onboard non-geostationary satellite(s):**										A.4.b	
A.4.b.1	the number of orbital planes			X		X					A.4.b.1	
A.4.b.2	the reference body code		X	X		X					A.4.b.2	
A.4.b.3	**For space stations of a non-geostationary fixed-satellite service system operating in the band 3 400-4 200 MHz:**										A.4.b.3	
A.4.b.3.a	the maximum number of space stations (N_N) in a non-geostationary-satellite system simultaneously transmitting on a co-frequency basis in the fixed-satellite service in the Northern Hemisphere			X		X					A.4.b.3.a	
A.4.b.3.b	the maximum number of space stations (N_S) in a non-geostationary-satellite system simultaneously transmitting on a co-frequency basis in the fixed-satellite service in the Southern Hemisphere			X		X					A.4.b.3.b	
A.4.b.4	**For each orbital plane, where the Earth is the reference body:**										A.4.b.4	
A.4.b.4.a	the angle of inclination (i_j) of the orbital plane with respect to the Earth's equatorial plane ($0° \le i_j < 180°$)			X		X					A.4.b.4.a	

A.4.b.4.b	the number of satellites in the orbital plane			X		X					A.4.b.4.b	
A.4.b.4.c	the period			X		X					A.4.b.4.c	
A.4.b.4.d	the altitude, in kilometres, of the apogee of the space station			X		X					A.4.b.4.d	
A.4.b.4.e	the altitude, in kilometres, of the perigee of the space station			X		X					A.4.b.4.e	
A.4.b.5	**For space stations operating in a frequency band subject to the provisions of Nos. 9.11A, 9.12 or 9.12A, the data elements to characterize properly the orbital statistics of the non-geostationary-satellite system:**										A.4.b.5	
A.4.b.5.a	the right ascension of the ascending node (Ω_j) for the *j*-th orbital plane, measured counter-clockwise in the equatorial plane from the direction of the vernal equinox to the point where the satellite makes its South-to-North crossing of the equatorial plane ($0° \le \Omega_j < 360°$)					X					A.4.b.5.a	
A.4.b.5.b	the initial phase angle (ω_i) of the *i*-th satellite in its orbital plane at reference time $t = 0$, measured from the point of the ascending node ($0° \le \omega_i < 360°$)					X					A.4.b.5.b	
A.4.b.5.c	the argument of perigee (ω_p), measured in the orbital plane, in the direction of motion, from the ascending node to the perigee ($0° \le \omega_p < 360°$)					X					A.4.b.5.c	

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A.4.b.6	**For space stations operating in a frequency band subject to Nos. 22.5C, 22.5D or 22.5F, the data elements to characterize properly the orbital operation of the non-geostationary-satellite system:**										A.4.b.6	
A.4.b.6.a	**For each range of latitudes:**										A.4.b.6.a	
A.4.b.6.a.1	the maximum number of non-geostationary satellites transmitting with overlapping frequencies to a given location					X					A.4.b.6.a.1	
A.4.b.6.a.2	the associated start of the latitude range					X					A.4.b.6.a.2	
A.4.b.6.a.3	the associated end of the latitude range					X					A.4.b.6.a.3	
A.4.b.6.b	the minimum altitude of the space station above the surface of the Earth at which any satellite transmits					X					A.4.b.6.b	
A.4.b.6.c	an indicator showing whether the space station uses station-keeping to maintain a repeating ground track					X					A.4.b.6.c	
A.4.b.6.d	if the space station uses station-keeping to maintain a repeating ground track, the time in seconds that it takes for the constellation to return to its starting position, i.e. such that all satellites are in the same location with respect to the Earth and each other					+					A.4.b.6.d	
A.4.b.6.e	an indicator showing whether the space station should be modelled with a specific precession rate of the ascending node of the orbit instead of the J_2 term					X					A.4.b.6.e	
A.4.b.6.f	if the space station is to be modelled with a specific precession rate of the ascending node of the orbit instead of the J_2 term, the precession rate in degrees/day, measured counter-clockwise in the equatorial plane					+					A.4.b.6.f	

A.4.b.6.g	the longitude of the ascending node (θ_j) for the *j*-th orbital plane, measured counter-clockwise in the equatorial plane from the Greenwich meridian to the point where the satellite orbit makes its South-to-North crossing of the equatorial plane ($0° \le \theta_j < 360°$) *Note* – For the evaluation of epfd a reference to a point on the Earth is used and hence the "longitude of the ascending node" is required. All satellites in the constellation must use the same reference time					**X**					A.4.b.6.g	
A.4.b.6.h	the date (day:month:year) at which the satellite is at the location defined by the longitude of the ascending node (θ_j), (see Note under A.4.b.6.g)					**X**					A.4.b.6.h	
A.4.b.6.i	the time (hours:minutes) at which the satellite is at the location defined by the longitude of the ascending node (θ_j), (see Note under A.4.b.6.g)					**X**					A.4.b.6.i	
A.4.b.6.j	the longitudinal tolerance of the longitude of the ascending node					**X**					A.4.b.6.j	

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A.4.b.7	**For space stations operating in a frequency band subject to Nos. 22.5C, 22.5D or 22.5F, the data elements to characterize properly the performance of the non-geostationary-satellite system:**										A.4.b.7	
A.4.b.7.a	the maximum number of non-geostationary satellites receiving simultaneously with overlapping frequencies from the associated earth stations within a given cell					X					A.4.b.7.a	
A.4.b.7.b	the average number of associated earth stations with overlapping frequencies per square kilometre within a cell					X					A.4.b.7.b	
A.4.b.7.c	the average distance, in kilometres, between co-frequency cells					X					A.4.b.7.c	
A.4.b.7.d	**For the exclusion zone about the geostationary-satellite orbit:**										A.4.b.7.d	
A.4.b.7.d.1	the type of zone (based on topocentric angle, satellite-based angle or other method for establishing the exclusion zone)					X					A.4.b.7.d.1	
A.4.b.7.d.2	if the zone is based on a topocentric angle or a satellite-based angle, the width of the zone, in degrees					+					A.4.b.7.d.2	
A.4.b.7.d.3	if an alternative method is used for establishing the exclusion zone, a detailed description of the avoidance mechanism					+					A.4.b.7.d.3	
A.4.c	**For an earth station:**										A.4.c	
A.4.c.1	the identity of the associated space station(s) with which communication is to be established						X				A.4.c.1	
A.4.c.2	if communication is to be established with a geostationary space station, its orbital position						+				A.4.c.2	
A.5	**COORDINATIONS**										**A.5**	

A.5.a.1	the symbol of any administration (see the Preface) with which coordination has been successfully effected Required only in the case of notification				+	+	+[1]				A.5.a.1	
A.5.a.2	the symbol of any intergovernmental organization (see the Preface) with which coordination has been successfully effected Required only in the case of notification				+	+	+[1]				A.5.a.2	
A.5.b.1	the symbol of any administration (see the Preface) with which coordination has been sought but not completed				o	o	o				A.5.b.1	
A.5.b.2	the symbol of any intergovernmental organization (see the Preface) with which coordination has been sought but not completed				o	o					A.5.b.2	
A.5.c	the related provision code (see the Preface) under which coordination has been sought or completed if either A.5.a.1 (and A.5.a.2) or A.5.b.1 (and A.5.b.2) has been supplied				+	+	+[1]				A.5.c	

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A.6	**AGREEMENTS**										**A.6**	
A.6.a	if appropriate, the symbol of any administration or administration representing a group of administrations (see the Preface) with which agreement has been reached, including where the agreement is to exceed the limits prescribed in these Regulations				+	+	+[1]	+	+	+	A.6.a	
A.6.b	if appropriate, the symbol of any intergovernmental organization (see the Preface) with which agreement has been reached, including where the agreement is to exceed the limits prescribed in these Regulations				+	+	+[1]	+	+	+	A.6.b	
A.6.c	if agreement has been reached, the related provision code (see the Preface)				+	+	+[1]	+	+	+	A.6.c	
A.7	**SPECIFIC EARTH STATION OR RADIO ASTRONOMY STATION SITE CHARACTERISTICS**										**A.7**	
A.7.a.1	the horizon elevation angle, in degrees, for each azimuth around the earth station						+[1]				A.7.a.1	
A.7.a.2	the distance, in kilometres, from the earth station to the horizon for each azimuth around the earth station						O				A.7.a.2	
A.7.b.1	the planned minimum angle of elevation of the antenna's main beam axis, in degrees, from the horizontal plane For an earth station the minimum elevation angle is only required for operation to geostationary satellites and should have due regard to possible inclined-orbit operation of the associated geostationary space station						+[1]				A.7.b.1	X
A.7.b.2	the planned maximum angle of elevation of the antenna's main beam axis, in degrees, from the horizontal plane										A.7.b.2	X
A.7.c.1	the start azimuth for the planned range of operating azimuthal angles for the antenna's main beam axis, in degrees, clockwise from True North						+[1]				A.7.c.1	X

	For an earth station the start azimuth is only required for operation to geostationary satellites and should have due regard to possible inclined-orbit operation of the associated geostationary space station											
A.7.c.2	the end azimuth for the planned range of operating azimuthal angles for the antenna's main beam axis, in degrees, clockwise from True North For an earth station the end azimuth is only required for operation to geostationary satellites and should have due regard to possible inclined-orbit operation of the associated geostationary space station						+ [1]				A.7.c.2	X
A.7.d	the altitude, in metres, of the antenna above mean sea level						+ [1]				A.7.d	
A.7.e	the minimum angle of elevation of the antenna's main beam axis, in degrees, from the horizontal plane for each azimuth around the earth station that is operating to associated non-geostationary space stations						+				A.7.e	
A.7.f	the antenna diameter, in metres Required only for fixed-satellite service earth stations operating in the frequency band 13.75-14 GHz						+ [1]				A.7.f	

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A.8	**Not used**										**A.8**	
A.9	**Not used**										**A.9**	
A.10	**EARTH STATION COORDINATION AREA DIAGRAMS**										**A.10**	
A.10.a	the diagrams shall be drawn to an appropriate scale, indicating, for both transmission and reception, the location of the earth station and its associated coordination areas, or the coordination area related to the service area in which it is intended to operate the mobile earth station Earth station coordination area diagrams are required only for notification						+				A.10.a	
A.11	**REGULAR HOURS OF OPERATION**										**A.11**	
A.11.a	the start time UTC							X	X		A.11.a	
A.11.b	the stop time UTC							X	X		A.11.b	
A.12	**RANGE OF AUTOMATIC GAIN CONTROL, in dB**								X		**A.12**	
A.13	**REFERENCES TO THE PUBLISHED SPECIAL SECTIONS OF THE BUREAU'S INTERNATIONAL FREQUENCY INFORMATION CIRCULAR (see the Preface)**										**A.13**	
A.13.a	the reference and number of the advance publication information in accordance with No. **9.1**				X	X	X				A.13.a	
A.13.b	the reference and number of the coordination request in accordance with No. **9.6** In the case of notification of an earth station, the reference to the Special Section of the associated satellite network has to be provided				X	X	X				A.13.b	

	In the case of notification of an earth station coordinated under No. **9.7A**, the coordination Special Section number of this earth station has to be provided											
A.13.c	the reference and number of the information in accordance with Article 4 of Appendix **30**							**X**			A.13.c	
A.13.d	the reference and number of the information in accordance with Article 4 of Appendix **30A**								**X**		A.13.d	
A.13.e	the reference and number of the information in accordance with Article 6 of Appendix **30B**						**X**			**X**	A.13.e	

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A.14	**FOR STATIONS OPERATING IN A FREQUENCY BAND SUBJECT TO Nos. 22.5C, 22.5D OR 22.5F: SPECTRUM MASKS**										**A.14**	
A.14.a	**For each e.i.r.p. mask used by the non-geostationary space station:**										A.14.a	
A.14.a.1	the mask identification code					X					A.14.a.1	
A.14.a.2	the lowest frequency for which the mask is valid					X					A.14.a.2	
A.14.a.3	the highest frequency for which the mask is valid					X					A.14.a.3	
A.14.a.4	the mask pattern defined in terms of the power in the reference bandwidth for a series of off-axis angles with respect to a specified reference point					X					A.14.a.4	
A.14.b	**For each associated earth station e.i.r.p. mask:**										A.14.b	
A.14.b.1	the mask identification code					X					A.14.b.1	
A.14.b.2	the lowest frequency for which the mask is valid					X					A.14.b.2	
A.14.b.3	the highest frequency for which the mask is valid					X					A.14.b.3	
A.14.b.4	the minimum elevation angle at which any associated earth station can transmit to a non-geostationary satellite					X					A.14.b.4	
A.14.b.5	the minimum separation angle between the geostationary-satellite orbit arc and the associated earth station main beam-axis at which the associated earth station can transmit towards a non-geostationary satellite					X					A.14.b.5	
A.14.b.6	the mask pattern defined in terms of the power in the reference bandwidth for a series of off-axis angles with respect to a specified reference point					X					A.14.b.6	

A.14.c	**For each pfd mask used by the non-geostationary space station:** *Note* – The space station pfd mask is defined by the maximum power flux-density generated by any space station in the interfering non-geostationary-satellite system as seen from any point on the surface of the Earth										A.14.c	
A.14.c.1	the mask identification code					**X**					A.14.c.1	
A.14.c.2	the lowest frequency for which the mask is valid					**X**					A.14.c.2	
A.14.c.3	the highest frequency for which the mask is valid					**X**					A.14.c.3	
A.14.c.4	the type of mask					**X**					A.14.c.4	
A.14.c.5	the mask pattern of the power flux-density defined in three dimensions					**X**					A.14.c.5	
A.15	**COMMITMENT REGARDING COMPLIANCE WITH ADDITIONAL OPERATIONAL EQUIVALENT POWER FLUX DENSITY, epfd↓, LIMITS**										**A.15**	
A.15.a	a commitment that the filed for system will meet the additional operational epfd ↓ limits that are specified in Table **22-4A1** under No. **22.5I** Required only for non-geostationary-satellite systems operating in the fixed-satellite service in the bands 10.7-11.7 GHz (in all Regions), 11.7-12.2 GHz (Region 2), 12.2-12.5 GHz (Region 3), and 12.5-12.75 GHz (Regions 1 and 3)					**+**					A.15.a	

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A.16	**COMMITMENT REGARDING COMPLIANCE WITH OFF-AXIS POWER LIMITATIONS OR POWER FLUX-DENSITY, pfd, LIMITS**										**A.16**	
A.16.a	a commitment that the associated earth stations operating with a geostationary-satellite network in the fixed-satellite service meet the off-axis power limitations given in Nos. **22.26** to **22.28** or **22.32** (as appropriate) under the conditions specified in Nos. **22.30**, **22.31** and **22.34** to **22.39** Required only where the earth stations are subject to those power limitations				+						A.16.a	
A.16.b	a commitment by administrations that the filed system will meet the single entry power flux-density limits that are specified in No. **5.502** Required only for specific earth station antennas less than 4.5 m in diameter operating with geostationary space stations in the fixed-satellite service in the band 13.75-14 GHz						+				A.16.b	
A.17	**COMPLIANCE WITH POWER FLUX-DENSITY, pfd, LIMITS**										**A.17**	
A.17.a	a commitment of compliance with per-satellite power-flux density level produced at the Earth's surface of –129 dB(W/(m^2 · MHz)) in any 1 MHz band under free space propagation conditions Required only for satellite systems operating in the radionavigation-satellite service in the band 1 164-1 215 MHz				+	+					A.17.a	
A.17.b.1	the calculated aggregate power flux-density produced at the Earth's surface by any geostationary radionavigation-satellite system in the band 4 990-5 000 MHz in a 10 MHz bandwidth, as defined in *resolves* 1 of Resolution **741 (WRC-03)** Required only for geostationary satellite systems operating in the radionavigation-satellite service in the band 5 010-5 030 MHz				+						A.17.b.1	

A.17.b.2	the calculated aggregate power flux-density produced at the Earth's surface by all space stations within any radionavigation-satellite service system in the band 5 030-5 150 MHz in a 150 kHz bandwidth, as defined in No. **5.443B** Required only for satellite systems operating in the radionavigation-satellite service in the band 5 010-5 030 MHz				+	+					A.17.b.2	
A.17.b.3	the equivalent power flux-density produced at the Earth's surface by all space stations within any non-geostationary radionavigation-satellite service system in the band 4 990-5 000 MHz in a 10 MHz bandwidth, as defined in *resolves* 2 of Resolution **741 (WRC-03)** Required only for non-geostationary satellite systems operating in the radionavigation-satellite service in the band 5 010-5 030 MHz					+					A.17.b.3	

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A.17.c	the aggregate power flux-density produced at the Earth's surface in the band 15.35-15.4 GHz, as defined in No. **5.511A** Required only for non-geostationary-satellite systems operating in the fixed-satellite service (feeder links) in the band 15.43-15.63 GHz (space-to-Earth)					+					A.17.c	
A.17.d	the mean power flux-density produced at the Earth's surface by any spaceborne sensor, as defined in No. **5.549A** Required only for satellite systems operating in the Earth exploration-satellite service (active) or space research service (active) in the band 35.5-36 GHz				+	+					A.17.d	
A.17.e.1	the calculated equivalent power flux-density produced at the site of a radio astronomy station in the band 42.5-43.5 GHz, as defined in No. **5.551H** Required only for non-geostationary-satellite systems operating in the fixed-satellite service and broadcasting-satellite service in the band 42-42.5 GHz					+					A.17.e.1	
A.17.e.2	the calculated power flux-density produced at the site of a radio astronomy station in the band 42.5-43.5 GHz, as defined in No. **5.551I** Required only for geostationary-satellite systems operating in the fixed-satellite service and broadcasting-satellite service in the band 42-42.5 GHz				+						A.17.e.2	
A.18	**COMPLIANCE WITH NOTIFICATION OF AIRCRAFT EARTH STATION(S)**										**A.18**	
A.18.a	a commitment that the characteristics of the aircraft earth station (AES) in the aeronautical mobile-satellite service are within the characteristics of the specific and/or typical earth station published by the Bureau for the space station to which the AES is associated				+	+					A.18.a	

	Required only for the band 14-14.5 GHz, when an aircraft earth station in the aeronautical mobile-satellite service communicates with a space station in the fixed-satellite service											

Items in Appendix	*B – CHARACTERISTICS TO BE PROVIDED FOR EACH SATELLITE ANTENNA BEAM OR EACH EARTH STATION OR RADIO ASTRONOMY ANTENNA*	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary-satellite network subject to coordination under Section II of Article 9	Advance publication of a non-geostationary-satellite network not subject to coordination under Section II of Article 9	Notification or coordination of a geostationary-satellite network (including space operation functions under Article 2A of Appendices 30 or 30A)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station (including notification under Appendices 30A or 30B)	Notice for a satellite network in the broadcasting-satellite service under Appendix 30 (Articles 4 and 5)	Notice for a satellite network (feeder-link) under Appendix 30A (Articles 4 and 5)	Notice for a satellite network in the fixed-satellite service under Appendix 30B (Articles 6 and 8)	Items in Appendix	Radio astronomy
B.1	**IDENTIFICATION AND DIRECTION OF THE SATELLITE ANTENNA BEAM**										**B.1**	
B.1.a	the designation of the satellite antenna beam For an earth station, the designation of the satellite antenna beam of the associated space station			X	X	X	X	X	X	X	B.1.a	
B.1.b	an indicator showing whether the antenna beam, under B.1.a, is fixed or whether it is steerable and / or reconfigurable			X	X	X		X	X	X	B.1.b	
B.2	**TRANSMISSION / RECEPTION INDICATOR FOR THE BEAM OF THE SPACE STATION OR THE ASSOCIATED SPACE STATION**	X	X	X	X	X	+[1]			X	**B.2**	
B.3	**SPACE STATION ANTENNA CHARACTERISTICS**										**B.3**	
B.3.a	**For each space station antenna:**										B.3.a	
B.3.a.1	the maximum co-polar isotropic gain, in dBi Where a steerable beam (see No. **1.191**) is used, if the effective boresight area (see No. **1.175**) is identical with the global service area, the maximum antenna gain, in dBi, is applicable to all points on the Earth's visible surface			X	X	X		X	X	X	B.3.a.1	
B.3.a.2	if a non-elliptical beam, the maximum cross-polar isotropic antenna gain, in dBi							+	+		B.3.a.2	
B.3.b	**Antenna gain contours:**										B.3.b	
B.3.b.1	the co-polar antenna gain contours plotted on a map of the Earth's surface, preferably in a radial projection from the satellite onto a plane perpendicular to the axis from the centre of the Earth to the satellite				X			+	+	+	B.3.b.1	

	The space station antenna gain contours shall be drawn as isolines of the isotropic gain, at least for – 2, – 4, – 6, – 10 and – 20 dB and at 10 dB intervals thereafter, as necessary, relative to the maximum antenna gain, when any of these contours is located either totally or partially anywhere within the limit of visibility of the Earth from the given geostationary satellite Whenever possible, the gain contours of the space station antenna should also be provided in a numerical format (e.g. equation or table) Where a steerable beam (see No. **1.191**) is used, if the effective boresight area (see No. **1.175**) is less than the global service area, the contours are the result of moving the boresight of the steerable beam around the limit defined by the effective boresight area and are to be provided as described above but shall also include the 0 dB relative gain isoline The antenna gain contours shall include the effects of the planned inclination excursion, longitudinal tolerance and the planned pointing accuracy of the antenna In the case of Appendix **30**, **30A** or **30B**, only required for non-elliptical beams											
B.3.b.2	if a non-elliptical beam, the cross-polar gain contours shall be provided as defined under B.3.b.1							+	+		B.3.b.2	

Items in Appendix	*B – CHARACTERISTICS TO BE PROVIDED FOR EACH SATELLITE ANTENNA BEAM OR EACH EARTH STATION OR RADIO ASTRONOMY ANTENNA*	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary-satellite network subject to coordination under Section II of Article 9	Advance publication of a non-geostationary-satellite network not subject to coordination under Section II of Article 9	Notification or coordination of a geostationary-satellite network (including space operation functions under Article 2A of Appendices 30 or 30A)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station (including notification under Appendices 30A or 30B)	Notice for a satellite network in the broadcasting-satellite service under Appendix 30 (Articles 4 and 5)	Notice for a satellite network (feeder-link) under Appendix 30A (Articles 4 and 5)	Notice for a satellite network in the fixed-satellite service under Appendix 30B (Articles 6 and 8)	Items in Appendix	Radio astronomy
B.3.c	**Antenna radiation patterns:**										B.3.c	
B.3.c.1	the co-polar antenna radiation pattern, in the case of: – non-geostationary space stations – geostationary or non-geostationary space stations where the antenna radiation beam is directed towards another satellite – elliptical antenna beams for Appendix **30**, **30A** or **30B**			**X**	**+**	**X**		**+**	**+**	**+**	B.3.c.1	
B.3.c.2	if an elliptical beam, the cross-polar antenna radiation pattern							**+**	**+**		B.3.c.2	
B.3.d	the pointing accuracy of the antenna In the case of Appendix **30**, **30A** or **30B**, required only for elliptical beams				**X**			**+**	**+**	**+**	B.3.d	
B.3.e	if the space station is operating in a band allocated in the Earth-to-space direction and in the space-to-Earth direction, the gain of the antenna in the direction of those parts of the geostationary-satellite orbit which are not obstructed by the Earth				**+**				**+**		B.3.e	
B.3.f	**For a space station submitted in accordance with Appendix 30, 30A or 30B:**										B.3.f	
B.3.f.1	the boresight or aim point of the antenna beam (longitude and latitude)							**X**	**X**	**X**	B.3.f.1	
B.3.f.2	**For each elliptical beam:**										B.3.f.2	
B.3.f.2.a	the rotational accuracy, in degrees							**X**	**X**	**X**	B.3.f.2.a	
B.3.f.2.b	the major axis orientation, in degrees, anticlockwise from the Equator							**X**	**X**	**X**	B.3.f.2.b	
B.3.f.2.c	the major axis, in degrees, at the half-power beamwidth							**X**	**X**	**X**	B.3.f.2.c	
B.3.f.2.d	the minor axis, in degrees, at the half-power beamwidth							**X**	**X**	**X**	B.3.f.2.d	

B.4	**ADDITIONAL CHARACTERISTICS FOR NON-GEOSTATIONARY SPACE STATION ANTENNA**										**B.4**	
B.4.a.1	the reference number of each orbital plane in which the space station antenna characteristics are used			X		X					B.4.a.1	
B.4.a.2	if the antenna characteristics of a space station are not common to every satellite in the specified orbital plane, the reference number of each satellite in the specified orbital plane, on which the space station antenna characteristics are used			+		+					B.4.a.2	
B.4.b	**For a space station submitted in accordance with Nos. 9.11A, 9.12 or 9.12A:**										B.4.b	
B.4.b.1	**For the orientation angles of the satellite transmitting and receiving antenna beams:**										B.4.b.1	
B.4.b.1.a	the orientation angle alpha, in degrees, (see most recent version of Recommendation ITU-R SM.1413)					X					B.4.b.1.a	
B.4.b.1.b	the orientation angle beta, in degrees, (see most recent version of Recommendation ITU-R SM.1413)					X					B.4.b.1.b	
B.4.b.2	the satellite antenna gain $G(\theta_e)$ as a function of elevation angle (θ_e) at a fixed point on the Earth					X					B.4.b.2	
B.4.b.3	the spreading loss as a function of elevation angle (to be determined by equations or provided in graphical format)					X					B.4.b.3	

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B.4.b.4	**For each beam:**										B.4.b.4	
B.4.b.4.a	the maximum beam peak e.i.r.p./4 kHz					X					B.4.b.4.a	
B.4.b.4.b	the average beam peak e.i.r.p./4 kHz					X					B.4.b.4.b	
B.4.b.4.c	the maximum beam peak e.i.r.p./1 MHz					X					B.4.b.4.c	
B.4.b.4.d	the average beam peak e.i.r.p./1 MHz					X					B.4.b.4.d	
B.4.b.5	the calculated peak value of power flux-density produced within ± 5° inclination of the geostationary-satellite orbit Required only for the fixed-satellite service (space-to-Earth) in the band 6 700-7 075 MHz					+					B.4.b.5	
B.5	**EARTH STATION ANTENNA CHARACTERISTICS**										**B.5**	
B.5.a	the isotropic gain, in dBi, of the antenna in the direction of maximum radiation (see No. **1.160**)						X				B.5.a	
B.5.b	the half-power beamwidth, in degrees						+ [1]				B.5.b	
B.5.c	either the measured radiation pattern of the antenna or the reference radiation pattern to be used for coordination For coordination under No. **9.7A**, the reference radiation pattern is to be provided						X				B.5.c	
B.6	**RADIO ASTRONOMY STATION ANTENNA CHARACTERISTICS**										**B.6**	
B.6.a	the antenna type (see the Preface)										B.6.a	X
B.6.b	the antenna dimensions (see the Preface)										B.6.b	X

B.6.c	the effective area of the antenna (see the Preface)										B.6.c	x

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C.1	**FREQUENCY RANGE**										**C.1**	
C.1.a	the lower limit of the frequency range within which the carriers and the bandwidth of the emission will be located for each Earth-to-space or space-to-Earth service area, or for each space-to-space relay	**X**	**X**	**X**						**X**	C.1.a	
C.1.b	the upper limit of the frequency range within which the carriers and the bandwidth of the emission will be located for each Earth-to-space or space-to-Earth service area, or for each space-to-space relay	**X**	**X**	**X**						**X**	C.1.b	
C.2	**ASSIGNED FREQUENCY (FREQUENCIES)**										**C.2**	
C.2.a.1	the assigned frequency (frequencies), as defined in No. **1.148** – in kHz up to 28 000 kHz inclusive – in MHz above 28 000 kHz to 10 500 MHz inclusive – in GHz above 10 500 MHz If the basic characteristics are identical, with the exception of the assigned frequency, a list of frequency assignments may be provided In the case of Appendix **30B**, required only for notification under Article 8				**X**	**X**	**X**	**X**	**X**	**+**	C.2.a.1	
C.2.a.2	the channel number							**X**	**X**		C.2.a.2	
C.2.b	the centre of the frequency band observed – in kHz up to 28 000 kHz inclusive – in MHz above 28 000 kHz to 10 500 MHz inclusive – in GHz above 10 500 MHz										C.2.b	**X**

C.2.c	if the frequency assignment is to be filed under No. **4.4**, an indication to that effect			+	+	+	+				C.2.c	+
C.3	**ASSIGNED FREQUENCY BAND**										**C.3**	
C.3.a	the bandwidth of the assigned frequency band, in kHz (see No. **1.147**) In the case of Appendix **30B**, required only for notification under Article 8				X	X	X	X	X	+	C.3.a	
C.3.b	the bandwidth of the frequency band, in kHz, observed by the station										C.3.b	X
C.4	**CLASS OF STATION AND NATURE OF SERVICE**										**C.4**	
C.4.a	the class of station, using the symbols from the Preface	X	X	X	X	X	X	X	X		C.4.a	X
C.4.b	the nature of service performed, using the symbols from the Preface	X	X	X	X	X	X				C.4.b	X
C.5	**RECEIVING SYSTEM NOISE TEMPERATURE**										**C.5**	
C.5.a	the lowest total receiving system noise temperature, in kelvins, referred to the output of the receiving antenna of the space station			X	X	X			X	X	C.5.a	
C.5.b	the lowest total receiving system noise temperature, in kelvins, referred to the output of the receiving antenna of the earth station under clear-sky conditions This value shall be indicated for the nominal value of the angle of elevation when the associated transmitting station is onboard a geostationary satellite and, in other cases, for the minimum value of the angle of elevation						X				C.5.b	
C.5.c	the overall receiving system noise temperature, in kelvins, referred to the output of the receiving antenna										C.5.c	X

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C.6	**POLARIZATION**										**C.6**	
C.6.a	the type of polarization (see the Preface) In the case of circular polarization, this includes the sense of polarization (see Nos. **1.154** and **1.155**) In the case of a space station submitted in accordance with Appendix **30** or **30A**, see § 3.2 of Annex 5 to Appendix **30**			**X**	**X**	**X**	**+** [1]	**X**	**X**		C.6.a	
C.6.b	if linear polarization is used, the angle, in degrees, measured counter-clockwise in a plane normal to the beam axis from the equatorial plane to the electric vector of the waves as seen from the satellite In the case of a space station submitted in accordance with Appendix **30** or **30A**, see § 3.2 of Annex 5 to Appendix **30**			**+**	**+**	**+**	**+** [1]	**+**	**+**		C.6.b	
C.7	**NECESSARY BANDWIDTH AND CLASS OF EMISSION** (in accordance with Article **2** and Appendix **1)**										**C.7**	
C.7.a	the necessary bandwidth and the class of emission: for each carrier In the case of Appendix **30B**, required only for notification under Article 8			**O**	**X**	**X**	**X**	**X**	**X**	**+**	C.7.a	
C.7.b	the carrier frequency or frequencies of the emission(s)			**O**	**C**	**C**	**C**				C.7.b	
C.8	**POWER CHARACTERISTICS OF THE TRANSMISSION**										**C.8**	
C.8.a	**For the case where individual carriers can be identified:**										C.8.a	
C.8.a.1	the maximum value of the peak envelope power, in dBW, supplied to the input of the antenna for each carrier type Required if C.8.b.1 is not provided			**O**	**+**	**+**	**C**				C.8.a.1	

C.8.a.2	the maximum power density, in dB(W/Hz), supplied to the input of the antenna for each carrier type[2] Required if C.8.b.2 is not provided			+	+	+	O				C.8.a.2	
C.8.b	**For the case where it is not appropriate to identify individual carriers:**										C.8.b	
C.8.b.1	the total peak envelope power, in dBW, supplied to the input of the antenna For coordination or notification of an Appendix **30A** earth station the values shall include the maximum range of power control Required if C.8.a.1 is not provided			O	+	+	+[1]	X	X		C.8.b.1	
C.8.b.2	the maximum power density, in dB(W/Hz), supplied to the input of the antenna[2] For coordination or notification of an Appendix **30A** earth station the values shall include the maximum range of power control Required if C.8.a.2 is not provided			+	+	+	+[1]	X	X	X	C.8.b.2	
C.8.c.1	the minimum value of the peak envelope power, in dBW, supplied to the input of the antenna for each carrier type If not provided, the reason for absence under C.8.c.2			O	+	+	+[1]				C.8.c.1	
C.8.c.2	if C.8.c.1 is not provided, the reason for absence of the minimum value of the peak envelope power				+	+	+[1]				C.8.c.2	

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C.8.c.3	the minimum power density, in dB(W/Hz), supplied to the input of the antenna for each carrier type[2] If not provided, the reason for absence under C.8.c.4			O	+	+	+[1]				C.8.c.3	
C.8.c.4	if C.8.c.3 is not provided, the reason for absence of the minimum power density				+	+	+[1]				C.8.c.4	
C.8.d.1	the maximum total peak envelope power, in dBW, supplied to the input of the antenna for each contiguous satellite bandwidth For a satellite transponder, this corresponds to the maximum saturated peak envelope power Required only for a space-to-Earth or space-to-space link				+	+					C.8.d.1	
C.8.d.2	each contiguous satellite bandwidth For the maximum saturated peak envelope power of the satellite transponder, this corresponds to the bandwidth of each transponder Required only for a space-to-Earth or space-to-space link				+	+					C.8.d.2	
C.8.e.1	for space-to-Earth, Earth-to-space or space-to-space links. for each carrier type, the greater of either the carrier-to-noise ratio, in dB, required to meet the performance of the link under clear-sky conditions or the carrier-to-noise ratio, in dB, required to meet the short-time objectives of the link inclusive of necessary margins If not provided, the reason for absence under C.8.e.2			O	+	+	+[1]				C.8.e.1	
C.8.e.2	if C.8.e.1 is not provided, the reason for absence of the carrier-to-noise ratio				+	+	+[1]				C.8.e.2	
C.8.f.1	the space station's nominal equivalent isotropically radiated power(s) (e.i.r.p.) on the beam axis			+							C.8.f.1	

	Required only for a space-to-space link											
C.8.f.2	the associated space station's nominal equivalent isotropically radiated power(s) (e.i.r.p.) on the beam axis Required only for a space-to-space link			+							C.8.f.2	
C.8.g.1	the maximum aggregate power, in dBW, of all carriers (per transponder, if applicable) supplied to the input of the transmitting antenna of the earth station or the associated earth station Not required for coordination of a specific earth station under Nos. **9.15**, **9.17** or **9.17A**				**C**	**C**	**C**				C.8.g.1	
C.8.g.2	the aggregate bandwidth of all carriers (per transponder, if applicable) supplied to the input of the transmitting antenna of the earth station or the associated earth station Not required for coordination of a specific earth station under Nos. **9.15**, **9.17** or **9.17A**				**C**	**C**	**C**				C.8.g.2	
C.8.g.3	an indicator showing whether the bandwidth of the transponder corresponds to the aggregate bandwidth of all carriers (per transponder, if applicable) supplied to the input of the transmitting antenna of the earth station or the associated earth station Not required for coordination of a specific earth station under Nos. **9.15**, **9.17** or **9.17A**				**C**	**C**	**C**				C.8.g.3	

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C.8.h	the maximum power density per Hz supplied to the input of the antenna, in dB(W/Hz), averaged over the necessary bandwidth In the case of Appendix **30A**, required only in the band 17.3-18.1 GHz							X	+	X	C.8.h	
C.8.i	If power control is used, the range of power control, in dB, above the transmitting power indicated under C.8.b.1								+		C.8.i	
C.8.j	the frequency below which signals whose peak-to-average ratio is less than 5 dB will be located									X	C.8.j	
C.9	**INFORMATION ON MODULATION CHARACTERISTICS**										**C.9**	
C.9.a	**For each carrier, according to the nature of the signal modulating the carrier:**										C.9.a	
C.9.a.1	the type of modulation In the case of a non-geostationary space station required only for Nos. **9.11A, 9.12** or **9.12A**			O	C	+		X	X		C.9.a.1	
C.9.a.2	**For a carrier frequency modulated by a frequency-division multichannel telephony baseband (FDM/FM) or by a signal that can be represented by a multichannel telephony baseband:**										C.9.a.2	
C.9.a.2.a	the lowest frequency of the baseband			O	C	C					C.9.a.2.a	
C.9.a.2.b	the highest frequency of the baseband			O	C	C					C.9.a.2.b	
C.9.a.2.c	the r.m.s. frequency deviation of the pre-emphasized signal for a test tone as a function of baseband frequency			O	C	C					C.9.a.2.c	
C.9.a.3	**For a carrier frequency modulated by a television signal:**										C.9.a.3	

C.9.a.3.a	the peak-to-peak frequency deviation of the pre-emphasized signal			O	C	C		X	X		C.9.a.3.a	
C.9.a.3.b	the pre-emphasis characteristic			O	C	C		X	X		C.9.a.3.b	
C.9.a.3.c	if applicable, the characteristics of the multiplexing of the video signal with the sound signal(s) or other signals			O	C	C		+	+		C.9.a.3.c	
C.9.a.4	**For a carrier phase-shift modulated by a digital signal:**										C.9.a.4	
C.9.a.4.a	the bit rate			O	C	C					C.9.a.4.a	
C.9.a.4.b	the number of phases			O	C	C					C.9.a.4.b	
C.9.a.5	**For an amplitude modulated carrier (including single sideband):**										C.9.a.5	
C.9.a.5.a	the nature of the modulating signal, as precisely as possible			O	C	C					C.9.a.5.a	
C.9.a.5.b	the kind of amplitude modulation used			O	C	C					C.9.a.5.b	
C.9.a.6	**For a frequency modulated carrier:**										C.9.a.6	
C.9.a.6.a	the peak-to-peak frequency deviation, in MHz, of the energy dispersal waveform			O	C	C		X	X		C.9.a.6.a	
C.9.a.6.b	the sweep frequency, in kHz, of the energy dispersal waveform			O	C	C		X	X		C.9.a.6.b	
C.9.a.6.c	the energy dispersal waveform			O	C	C		X	X		C.9.a.6.c	
C.9.a.7	if other forms of modulation than frequency modulation, are being used, the type of energy dispersal			O	C	C		+	+		C.9.a.7	
C.9.a.8	for all other types of modulation, such particulars as may be useful for an interference study			O	C	C					C.9.a.8	
C.9.a.9	the TV standard			O	C	C		X	X		C.9.a.9	

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C.9.b	**For analogue carriers:**										C.9.b	
C.9.b.1	the sound-broadcasting characteristics							X	X		C.9.b.1	
C.9.b.2	the composition of the baseband							X	X		C.9.b.2	
C.9.c	**For a non-geostationary space station submitted in accordance with Nos. 9.11A, 9.12 or 9.12A:**										C.9.c	
C.9.c.1	the type of multiple access					X					C.9.c.1	
C.9.c.2	the spectrum mask					X					C.9.c.2	
C.9.d	**For stations operating in a frequency band subject to Nos. 22.5C, 22.5D or 22.5F:**										C.9.d	
C.9.d.1	the type of mask					X					C.9.d.1	
C.9.d.2	the pfd mask identification code					X					C.9.d.2	
C.9.d.3	the space station's e.i.r.p. mask identification code					X					C.9.d.3	
C.9.d.4	the associated earth station's e.i.r.p. mask identification code					X					C.9.d.4	
C.10	**TYPE AND IDENTITY OF THE ASSOCIATED STATION(S)** (the associated station may be another space station, a typical earth station of the network or a specific earth station)										**C.10**	
C.10.a	**For an associated space station:**										C.10.a	
C.10.a.1	the identity of the station			X	X	X					C.10.a.1	
C.10.a.2	if the associated space station is in the geostationary orbit, its nominal longitude			+	+	+					C.10.a.2	

C.10.b	**For an associated earth station:**										C.10.b	
C.10.b.1	the name of the station			X	X	X			X		C.10.b.1	
C.10.b.2	the type of station (specific or typical)			X	X	X					C.10.b.2	
C.10.c	**For a specific associated earth station:**										C.10.c	
C.10.c.1	the geographical coordinates of the antenna site			X	X	X			X		C.10.c.1	
C.10.c.2	the country or geographical area in which the earth station is located, using the symbols from the Preface			X	X	X			X		C.10.c.2	
C.10.d	**For an associated earth station (whether specific or typical):**										C.10.d	
C.10.d.1	the class of station, using the symbols from the Preface			X	X	X					C.10.d.1	
C.10.d.2	the nature of service performed, using the symbols from the Preface			X	X	X					C.10.d.2	
C.10.d.3	the isotropic gain, in dBi, of the antenna in the direction of maximum radiation (see No. **1.160**)			X	X	X		X	X	X	C.10.d.3	
C.10.d.4	the beamwidth, in degrees, between the half-power points (described in detail if not symmetrical)			O	X	X		X	X	X	C.10.d.4	
C.10.d.5.a	either the measured co-polar radiation pattern of the antenna or the co-polar reference radiation pattern			X	X	X		X	X	X	C.10.d.5.a	
C.10.d.5.b	either the measured cross-polar radiation pattern of the antenna or the cross-polar reference radiation pattern							X	X		C.10.d.5.b	

Items in Appendix	*C – CHARACTERISTICS TO BE PROVIDED FOR EACH GROUP OF FREQUENCY ASSIGNMENTS FOR A SATELLITE ANTENNA BEAM OR AN EARTH STATION OR RADIO ASTRONOMY ANTENNA*	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary-satellite network subject to coordination under Section II of Article 9	Advance publication of a non-geostationary-satellite network not subject to coordination under Section II of Article 9	Notification or coordination of a geostationary-satellite network (including space operation functions under Article 2A of Appendices 30 or 30A)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station (including notification under Appendices 30A or 30B)	Notice for a satellite network in the broadcasting-satellite service under Appendix 30 (Articles 4 and 5)	Notice for a satellite network (feeder-link) under Appendix 30A (Articles 4 and 5)	Notice for a satellite network in the fixed-satellite service under Appendix 30B (Articles 6 and 8)	Items in Appendix	Radio astronomy
C.10.d.6	if the associated station is a receiving earth station, the lowest total receiving system noise temperature, in kelvins, referred to the output of the receiving antenna of the earth station under clear-sky conditions			+	+	+				+	C.10.d.6	
C.10.d.7	the antenna diameter, in metres In cases other than Appendix **30A**, to be provided only for fixed-satellite service networks operating in the frequency band 13.75-14 GHz				+	+			X		C.10.d.7	
C.10.d.8	the equivalent antenna diameter (i.e. the diameter, in metres, of a parabolic antenna with the same off-axis performance as the receiving associated earth station antenna)							X			C.10.d.8	
C.11	**SERVICE AREA(S)**										**C.11**	
C.11.a	the service area or areas of the satellite beam on the Earth, when the associated transmitting or receiving stations are earth stations For a space station submitted in accordance with Appendix **30**, **30A** or **30B**, the service area identified by a set of a maximum of twenty test points and by a service area contour on the surface of the Earth or defined by a minimum elevation angle For advance publication of satellite networks subject to coordination, only a list of countries and geographical areas, using the symbols from the Preface, or a narrative description of the service area shall be supplied	X	X	X	X	X		X	X	X	C.11.a	
C.11.b	the appropriate information required to calculate the affected region (as defined in Recommendation ITU-R M.1187) Required only for a non-geostationary space station in the mobile-satellite service submitted in accordance with No. **9.11A**					+					C.11.b	
C.12	**REQUIRED PROTECTION RATIO**										**C.12**	

C.12.a	the minimum acceptable aggregate carrier-to-interference ratio, if less than 26 dB or 23 dB for submissions received by the Bureau as of 5 July 2003 The carrier-to-interference ratio is to be expressed in terms of the power averaged over the necessary bandwidth of the modulated wanted and interfering signals, assuming both the desired carrier and interfering signals have equivalent bandwidths and modulation types									+	C.12.a	
C.13	**CHARACTERISTICS OF OBSERVATIONS FOR RADIO ASTRONOMY STATIONS**										**C.13**	
C.13.a	the class of observations to be taken on the frequency band shown under C.3.b – Class A observations are those in which the sensitivity of the equipment is not a primary factor – Class B observations are those of such a nature that they can be made only with advanced low-noise receivers using the best techniques										C.13.a	X

Items in Appendix	*C – CHARACTERISTICS TO BE PROVIDED FOR EACH GROUP OF FREQUENCY ASSIGNMENTS FOR A SATELLITE ANTENNA BEAM OR AN EARTH STATION OR RADIO ASTRONOMY ANTENNA*	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary-satellite network subject to coordination under Section II of Article 9	Advance publication of a non-geostationary-satellite network not subject to coordination under Section II of Article 9	Notification or coordination of a geostationary-satellite network (including space operation functions under Article 2A of Appendices 30 or 30A)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station (including notification under Appendices 30A or 30B)	Notice for a satellite network in the broadcasting-satellite service under Appendix 30 (Articles 4 and 5)	Notice for a satellite network (feeder-link) under Appendix 30A (Articles 4 and 5)	Notice for a satellite network in the fixed-satellite service under Appendix 30B (Articles 6 and 8)	Items in Appendix	Radio astronomy
C.13.b	the type of radio astronomy station in the frequency band shown under C.3.b – Single-dish, "S", telescope used for spectral-line or continuum observations using single-dishes or closely connected arrays – Very long baseline interferometry (VLBI), "V", station used only for VLBI observations										C.13.b	X
C.13.c	the minimum elevation angle θ_{min} at which the radio astronomy station conducts single-dish or VLBI observations in the frequency band										C.13.c	X
C.14	**Not used**										**C.14**	
C.15	**DESCRIPTION OF THE GROUP(S) REQUIRED IN THE CASE OF NON-SIMULTANEOUS EMISSIONS**										**C.15**	
C.15.a	if part of an exclusive operation group, the group identification code							+	+	+	C.15.a	

Items in Appendix	*D – OVERALL LINK CHARACTERISTICS*	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary-satellite network subject to coordination under Section II of Article 9	Advance publication of a non-geostationary-satellite network not subject to coordination under Section II of Article 9	Notification or coordination of a geostationary-satellite network (including space operation functions under Article 2A of Appendices 30 or 30A)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station (including notification under Appendices 30A or 30B)	Notice for a satellite network in the broadcasting-satellite service under Appendix 30 (Articles 4 and 5)	Notice for a satellite network (feeder-link) under Appendix 30A (Articles 4 and 5)	Notice for a satellite network in the fixed-satellite service under Appendix 30B (Articles 6 and 8)	Items in Appendix	Radio astronomy
	For non-plan services, this data may be provided by administrations that so desire but only when simple frequency-changing transponders are used on the space station onboard a geostationary satellite											
D.1	**CONNECTION BETWEEN EARTH-TO-SPACE AND SPACE-TO-EARTH FREQUENCIES IN THE NETWORK**										**D.1**	
D.1.a	the connection between uplink and downlink frequency assignments in each transponder for each intended combination of receiving and transmitting beams In the case of Appendix **30** or **30A**, required only in Region 2				**O**			**+**	**+**		D.1.a	
D.2	**TRANSMISSION GAINS AND ASSOCIATED EQUIVALENT SATELLITE LINK NOISE TEMPERATURES**										**D.2**	
D.2.a	**For each entry under D.1.a:**										D.2.a	
D.2.a.1	the lowest equivalent satellite link noise temperature These values shall be indicated for the nominal value of the angle of elevation				**O**						D.2.a.1	
D.2.a.2	the associated transmission gain of the lowest equivalent satellite link noise temperature These values shall be indicated for the nominal value of the angle of elevation The transmission gain is evaluated from the output of the receiving antenna of the space station to the output of the receiving antenna of the earth station				**O**						D.2.a.2	
D.2.b.1	the values of associated equivalent satellite link noise temperature that correspond to the highest ratio of transmission gain to equivalent satellite link noise temperature				**O**						D.2.b.1	

D.2.b.2	the values of transmission gain that correspond to the highest ratio of transmission gain to equivalent satellite link noise temperature				O						D.2.b.2		

APPENDIX 5 (Rev.WRC-03)

Identification of administrations with which coordination is to be effected or agreement sought under the provisions of Article 9

ADD

1 *cbis)* recorded in the Master Register under No. **11.41**; or (WRC-03)

MOD

TABLE 5-1 (Rev.WRC-03)

Technical conditions for coordination
(see Article **9**)

Reference of Article 9	Case	Frequency bands (and Region) of the service for which coordination is sought	Threshold/condition	Calculation method	Remarks
No. **9.7** GSO/GSO	A station in a satellite network using the geostationary-satellite orbit (GSO), in any space radiocommunication service, in a frequency band and in a Region where this service is not subject to a Plan, in respect of any other satellite network using that orbit, in any space radio-communication service in a frequency band and in a Region where this service is not subject to a Plan, with the exception of the coordination between earth stations operating in the opposite direction of transmission	1) 3 400-4 200 MHz 5 725-5 850 MHz (Region 1) and 5 850-6 725 MHz 7 025-7 075 MHz 2) 10.95-11.2 GHz 11.45-11.7 GHz 11.7-12.2 GHz (Region 2) 12.2-12.5 GHz (Region 3) 12.5-12.75 GHz (Regions 1 and 3) 12.7-12.75 GHz (Region 2) and 13.75-14.5 GHz	i) Bandwidth overlap, and ii) any network in the fixed-satellite service (FSS) and any associated space operation functions (see No. **1.23**) with a space station within an orbital arc of ±10° of the nominal orbital position of a proposed network in the FSS i) Bandwidth overlap, and ii) any network in the FSS or broadcasting-satellite service (BSS), not subject to a Plan, and any associated space operation functions (see No. **1.23**) with a space station within an orbital arc of ±9° of the nominal orbital position of a proposed network in the FSS or BSS, not subject to a Plan		With respect to the space services listed in the threshold/condition column in the bands in 1), 2), 3), 4) and 5), an administration may request, pursuant to No. **9.41**, to be included in requests for coordination, indicating the networks for which the value of $\Delta T/T$ calculated by the method in § 2.2.1.2 and 3.2 of Appendix **8** exceeds 6%. When the Bureau, on request by an affected administration, studies this information pursuant to No. **9.42**, the calculation method given in § 2.2.1.2 and 3.2 of Appendix **8** shall be used

TABLE 5-1 (*continued*)

Reference of Article 9	Case	Frequency bands (and Region) of the service for which coordination is sought	Threshold/condition	Calculation method	Remarks
No. **9.7** GSO/GSO (*cont.*)		3) 17.7-20.2 GHz, (Regions 2 and 3), 17.3-20.2 GHz (Region 1) and 27.5-30 GHz	i) Bandwidth overlap, and ii) any network in the FSS and any associated space operation functions (see No. **1.23**) with a space station within an orbital arc of ±8° of the nominal orbital position of a proposed network in the FSS		
		4) Bands above 17.3 GHz, except those defined in § 3)	i) Bandwidth overlap, and ii) any network in the FSS and any associated space operation functions (see No. **1.23**) with a space station within an orbital arc of ±8° of the nominal orbital position of a proposed network in the FSS (see also Resolution **901 (WRC-03)**)		
		5) Bands above 17.3 GHz	i) Bandwidth overlap, and ii) any network in the FSS or BSS, not subject to a Plan, and any associated space operation functions (see No. **1.23**) with a space station within an orbital arc of ±16° of the nominal orbital position of a proposed network in the FSS or BSS, not subject to a Plan, except in the case of a network in the FSS with respect to a network in the FSS (see also Resolution **901 (WRC-03)**)		

TABLE 5-1 (*continued*)

Reference of Article 9	Case	Frequency bands (and Region) of the service for which coordination is sought	Threshold/condition	Calculation method	Remarks
No. **9.7** GSO/GSO (*cont.*)		6) All frequency bands, other than those in § 1), 2), 3), 4) and 5), allocated to a space service, and the bands in § 1), 2), 3), 4) and 5) where the radio service of the proposed network or affected networks is other than the space services listed in the threshold/condition column, or in the case of coordination of space stations operating in the opposite direction of transmission	i) Bandwidth overlap, and ii) Value of $\Delta T/T$ exceeds 6%	Appendix **8**	In application of Article 2A of Appendix **30** for the space operation functions using the guardbands defined in § 3.9 of Annex 5 of Appendix **30**, the threshold/condition specified for the FSS in band 2) applies. In application of Article 2A of Appendix **30A** for the space operation functions using the guardbands defined in § 3.1 and 4.1 of Annex 3 of Appendix **30A**, the threshold/condition specified for the FSS in band 4) applies

MOD

TABLE 5-1 (*continued*)

Reference of Article 9	**Case**	**Frequency bands (and Region) of the service for which coordination is sought**	**Threshold/condition**	**Calculation method**	**Remarks**
No. **9.11** GSO, non-GSO/ terrestrial	A space station in the BSS in any band shared on an equal primary basis with terrestrial services and where the BSS is not subject to a Plan, in respect of terrestrial services	620-790 MHz 1 452-1 492 MHz 2 310-2 360 MHz 2 535-2 655 MHz (Nos. **5.418** and **5.417A**) 12.5-12.75 GHz (Region 3) 17.3-17.8 GHz (Region 2) 21.4-22 GHz (Regions 1 and 3) 74-76 GHz	Bandwidths overlap: The detailed conditions for the application of No. **9.11** in the bands 2 630-2 655 MHz and 2 605-2 630 MHz are provided in Resolution **539 (Rev.WRC-03)** for non-GSO BSS (sound) systems pursuant to Nos. **5.418** and **5.417A**, and in Nos. **5.418** and **5.417A** for GSO BSS (sound) networks pursuant to those provisions. Resolution **545 (WRC-03)** applies in the 620-790 MHz band	Check by using the assigned frequencies and bandwidths	
...					
No. **9.14** Non-GSO/ terrestrial, GSO/ terrestrial	A space station in a satellite network in the frequency bands for which a footnote refers to No. **9.11A** or to No. **9.14**, in respect of stations of terrestrial services where threshold(s) is (are) exceeded	1) Frequency bands for which a footnote refers to No. **9.11A**; or 2) 11.7-12.2 GHz (Region 2 GSO FSS)	1) See § 1 of Annex 1 to this Appendix; or 2) In the band 11.7-12.2 GHz (Region 2 GSO FSS): -124 dB(W/(m^2 · MHz)) for $0° \le \theta \le 5°$ $-124 + 0.5\ (\theta - 5)$ dB(W/(m^2 · MHz)) for $5° < \theta \le 25°$ -114 dB(W/(m^2 · MHz)) for $\theta > 25°$ where θ is the angle of arrival of the incident wave above the horizontal plane (degrees)	1) See § 1 of Annex 1 to this Appendix	
...					

MOD

TABLE 5-1 (*continued*)

Reference of Article 9	**Case**	**Frequency bands (and Region) of the service for which coordination is sought**	**Threshold/condition**	**Calculation method**	**Remarks**
No. **9.17A** GSO, non-GSO/ GSO, non-GSO	A specific earth station in respect of other earth stations operating in the opposite direction of transmission or for any typical mobile earth station in respect of specific earth stations operating in the opposite direction of transmission in frequency bands allocated with equal rights to space radiocommunication services in both directions of transmission, where the coordination area of the earth station includes the territory of another country or the earth station is located within the coordination area of a coordinated earth station, with the exception of coordination under No. **9.19**	Any frequency band allocated to a space service	The coordination area of the earth station covers the territory of another administration or the earth station is located within the coordination area of an earth station	Appendix **7**	
...					

ANNEX 1

MOD

TABLE 5-2 (WRC-03)

Frequency band (MHz)	**Terrestrial service to be protected**	**Coordination threshold values**				
		GSO space stations		**Non-GSO space stations**		
		pfd (per space station) calculation factors (NOTE 2)		**pfd (per space station) calculation factors (NOTE 2)**		**% FDP (in 1 MHz) (NOTE 1)**
		P	***r* dB/ degrees**	***P***	***r* dB/ degrees**	
...						
1 518-1 525	Analogue FS telephony (NOTE 5)	–146 dB(W/m^2) in 4 kHz and –128 dB(W/m^2) in 1 MHz	0.5	–146 dB(W/m^2) in 4 kHz and –128 dB(W/m^2) in 1 MHz	0.5	
	All other cases (NOTE 4 and NOTE 8)	–128 dB(W/m^2) in 1 MHz	0.5	–128 dB(W/m^2) in 1 MHz	0.5	25
...						

MOD

NOTE 4 – Exceptions for the band 1 518-1 525 MHz are as follows:

4.1 For the land mobile service on the territory of Japan (No. **5.348A**): –150 dB(W/m^2) in 4 kHz at all angles of arrival is applicable to all satellite space-to-Earth emissions.

4.2 For the aeronautical mobile service for telemetry on the territory of the administrations listed in No. **5.342**: –140 dB(W/m^2) in 4 kHz at all angles of arrival.

4.3 For the point-to-multipoint systems operating in the fixed service in the territory of New Zealand: –138 dB(W/m^2) in 1 MHz for angles of arrival less than or equal to 5° above the horizon and increasing linearly to –125 dB(W/m^2) in 1 MHz for angles of arrival equal to 25° or greater above the horizon. (WRC-03)

ADD

NOTE 8 – In the band 1 518-1 520 MHz, for the point-to-multipoint systems operating in the fixed service on the territory of Australia: –138 dB(W/m^2) in 1 MHz for angles of arrival less than or equal to 5° above the horizon and increasing linearly to –125 dB(W/m^2) in 1 MHz for angles of arrival equal to 25° or greater above the horizon. (WRC-03)

APPENDIX 7 (Rev.WRC-03)

Methods for the determination of the coordination area around an earth station in frequency bands between 100 MHz and 105 GHz

MOD

1.4.4 Earth stations operating in bidirectionally allocated frequency bands

For earth stations operating in some frequency bands there may be allocations with equal rights to space services operating in both the Earth-to-space and space-to-Earth directions. In this case, where two earth stations are operating in opposite directions of transmission it is only necessary to establish the coordination area for the transmitting earth station, as receiving earth stations will automatically be taken into consideration. Hence, a receiving earth station operating in a bidirectionally allocated frequency band will only be involved in coordination with a transmitting earth station if it is located within the transmitting earth station's coordination area.

For a transmitting earth station operating with either geostationary or non-geostationary satellites in a bidirectionally allocated frequency band, the coordination area is determined using the procedures described in § 3. (WRC-03)

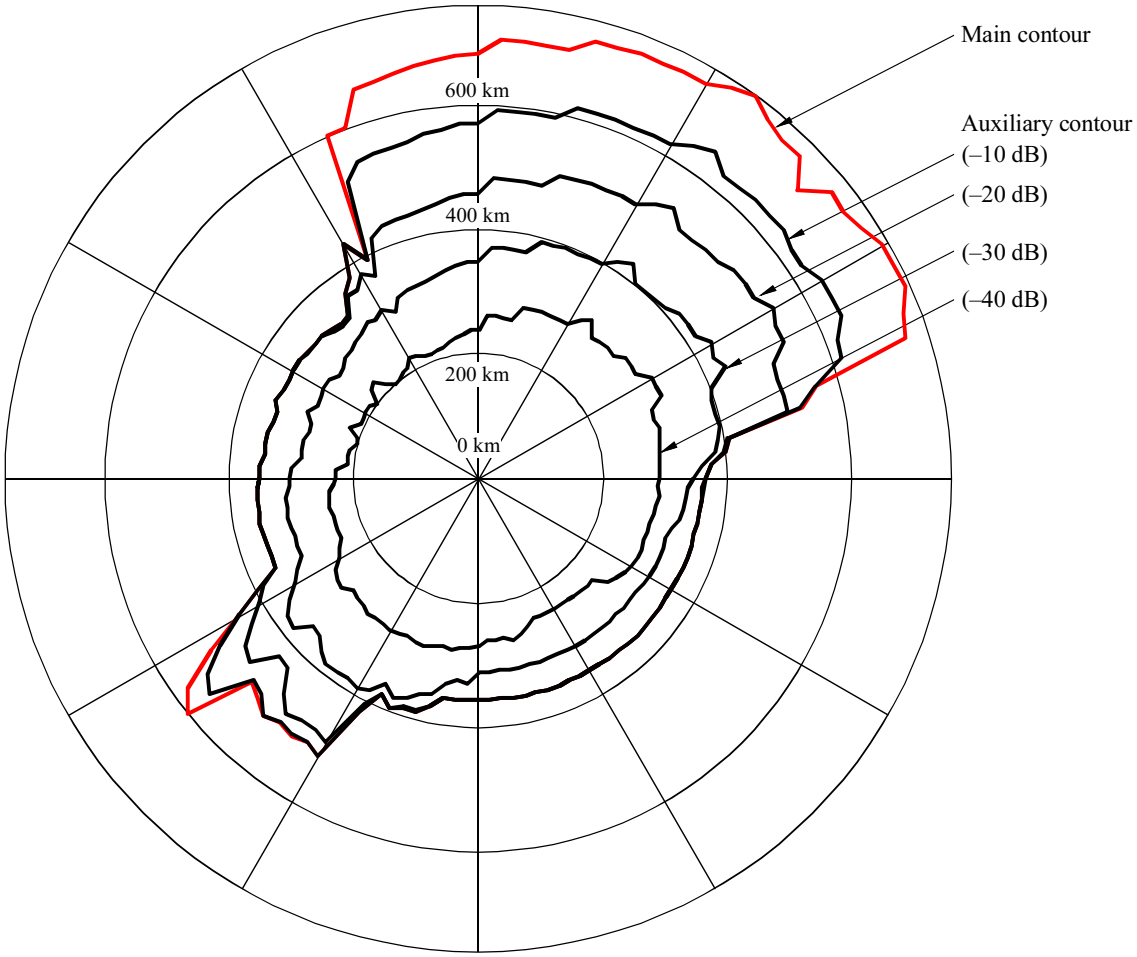
ANNEX 6

Supplementary and auxiliary contours

MOD

FIGURE 10 (WRC-03)

Propagation mode (1) main contour and auxiliary contours



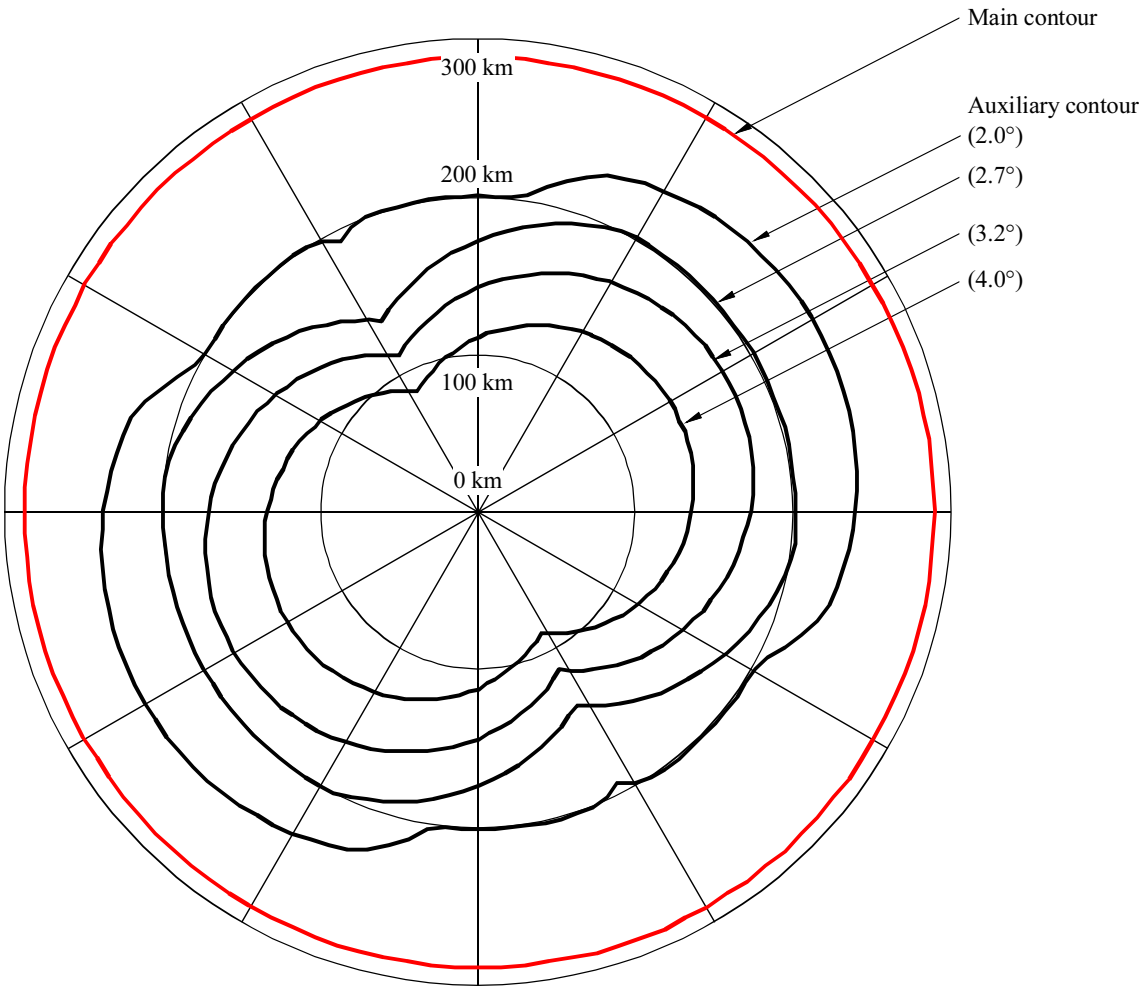
The propagation mode (1) auxiliary contours are shown for –10, –20, –30 and –40 dB adjustments in the minimum required loss.

CMR03-AP7A6-10

MOD

FIGURE 11 (WRC-03)

Propagation mode (2) main contour and auxiliary contours



The propagation mode (2) auxiliary contours are shown for terrestrial station main beam avoidance angles of 2.0º, 2.7º, 3.2º and 4.0º, respectively

CMR03-AP7A6-11

ANNEX 7

System parameters and predetermined coordination distances for determination of the coordination area around an earth station

MOD

TABLE 7a (WRC-03)

Parameters required for the determination of coordination distance for a transmitting earth station

Transmitting space radiocommunication service designation		**Mobile-satellite**		**Mobile-satellite, space operation**	**Earth exploration-satellite, meteorological satellite**		**Space operation**	**Space research, space operation**	**Mobile-satellite**	**Space operation**		**Mobile-satellite, radio-determination-satellite**	**Mobile-satellite**		**Space operation, space research**		**Mobile-satellite**		**Space research, space operation, Earth exploration-satellite**
Frequency bands (MHz)		121.45-121.55		148.0-149.9	401-403		433.75-434.25	449.75-450.25	806-840	1 427-1 429		1 610-1 626.5	1 668.4-1 675		1 750-1 850		1 980-2 025		2 025-2 110 2 110-2 120 (Deep space)
Receiving terrestrial service designations		Aeronautical mobile		Fixed, mobile	Fixed, mobile, meteorological aids		Amateur, radio-location fixed, mobile	Fixed, mobile, radio-location	Fixed, mobile broadcasting, aeronautical radionavigation	Fixed, mobile		Aeronautical radionavigation	Fixed, mobile		Fixed, mobile		Fixed, mobile		Fixed, mobile
Method to be used		§ 1.4.7		§ 2.1, § 2.2	§ 2.1, § 2.2		§ 2.1, § 2.2	§ 2.1, § 2.2	§ 1.4.6	§ 2.1, § 2.2		§ 1.4.6	§ 1.4.6		§ 2.1, § 2.2		§ 1.4.6		§ 2.1, § 2.2
Modulation at terrestrial station [1]		A	N	A	A	N		A and N	A and N	A	N		A	N	A	N	A	N	A
Terrestrial station interference parameters and criteria	p_0 (%)			1.0				0.01	0.01	0.01	0.01		0.01	0.01	0.01	0.01	0.01		0.01
	n			1				2	2	2	2		2	2	2	2	2		2
	p (%)			1.0				0.005	0.005	0.005	0.005		0.005	0.005	0.005	0.005	0.005		0.005
	N_L (dB)			–				0	0	0	0		0	0	0	0	0		0
	M_s (dB)			–				20	20	33	33		33	33	33	33	26 [2]		26 [2]
	W (dB)			–				0	0	0	0		0	0	0	0	0		0
Terrestrial station parameters	G_x (dBi) [3]			8				16	16	33	33		35	35	35	35	49 [2]		49 [2]
	T_e (K)			–				750	750	750	750		750	750	750	750	500 [2]		500 [2]
Reference bandwidth	B (Hz)			4×10^3				12.5×10^3	12.5×10^3	4×10^3	10^6		4×10^3	10^6	4×10^3	10^6	4×10^3		4×10^3
Permissible interference power	$P_r(p)$ (dBW) in B			–153				–139	–139	–131	–107		–131	–107	–131	–107	–140		–140

[1] A: analogue modulation; N: digital modulation.

[2] The parameters for the terrestrial station associated with transhorizon systems have been used. Line-of-sight radio-relay parameters associated with the frequency band 1 668.4-1 675 MHz may also be used to determine a supplementary contour. (WRC-03)

[3] Feeder losses are not included.

MOD

TABLE 7b (WRC-03)

Parameters required for the determination of coordination distance for a transmitting earth station

Transmitting space radiocommunication service designation		**Fixed-satellite, mobile-satellite**	**Fixed-satellite**	**Fixed-satellite**	**Fixed-satellite**		**Space operation, space research**		**Fixed-satellite, mobile-satellite, meteorological-satellite**		**Fixed-satellite**		**Fixed-satellite**		**Fixed-satellite**	**Fixed-satellite** [3]	**Fixed-satellite**	**Fixed-satellite** [3]
Frequency bands (GHz)		2.655-2.690	5.091-5.150	5.725-5.850	5.725-7.075		7.100-7.235 [5]		7.900-8.400		10.7-11.7		12.5-14.8		13.75-14.3	15.43-15.65	17.7-18.4	19.3-19.7
Receiving terrestrial service designations		Fixed, mobile	Aeronautical radio-navigation	Radio-location	Fixed, mobile		Fixed, mobile		Fixed, mobile		Fixed, mobile		Fixed, mobile		Radiolocation radionavigation (land only)	Aeronautical radionavigation	Fixed, mobile	Fixed, mobile
Method to be used		§ 2.1		§ 2.1	§ 2.1		§ 2.1, § 2.2		§ 2.1		§ 2.1		§ 2.1, § 2.2		§ 2.1		§ 2.1, § 2.2	§ 2.2
Modulation at terrestrial station [1]		A			A	N	A	N	A	N	A	N	A	N	–		N	N
Terrestrial station interference parameters and criteria	p_0 (%)	0.01			0.01	0.005	0.01	0.005	0.01	0.005	0.01	0.005	0.01	0.005	0.01		0.005	0.005
	n	2			2	2	2	2	2	2	2	2	2	2	1		2	2
	p (%)	0.005			0.005	0.0025	0.005	0.0025	0.005	0.0025	0.005	0.0025	0.005	0.0025	0.01		0.0025	0.0025
	N_L (dB)	0			0	0	0	0	0	0	0	0	0	0	0		0	0
	M_s (dB)	26 [2]			33	37	33	37	33	37	33	40	33	40	1		25	25
	W (dB)	0			0	0	0	0	0	0	0	0	0	0	0		0	0
Terrestrial station parameters	G_x (dBi) [4]	49 [2]	6		46	46	46	46	46	46	50	50	52	52	36		48	48
	T_e (K)	500 [2]			750	750	750	750	750	750	1 500	1 100	1 500	1 100	2 636		1 100	1 100
Reference bandwidth	B (Hz)	4×10^3	150×10^3		4×10^3	10^6	4×10^3	10^6	4×10^3	10^6	4×10^3	10^6	4×10^3	10^6	10^7		10^6	10^6
Permissible interference power	$P_r(p)$ (dBW) in B	–140	–160		–131	–103	–131	–103	–131	–103	–128	–98	–128	–98	–131		–113	–113

[1] A: analogue modulation; N: digital modulation.

[2] The parameters for the terrestrial station associated with transhorizon systems have been used. Line-of-sight radio-relay parameters associated with the frequency band 5 725-7 075 MHz may also be used to determine a supplementary contour with the exception that $G_x = 37$ dBi.

[3] Feeder links of non-geostationary-satellite systems in the mobile-satellite service.

[4] Feeder losses are not included.

[5] Actual frequency bands are 7 100-7 155 MHz and 7 190-7 235 MHz for space operation service and 7 145-7 235 MHz for the space research service.

MOD

TABLE 8a (WRC-03)

Parameters required for the determination of coordination distance for a receiving earth station

Receiving space radiocommunication service designation			**Space operation, space research**	**Meteoro-logical-satellite, mobile-satellite**	**Space research**	**Space research, space operation**	**Space operation**	**Mobile-satellite**	**Meteoro-logical-satellite**	**Mobile-satellite**	**Space research, space operation**	**Space operation**	**Meteoro-logical-satellite, Earth exploration-satellite**	**Space operation**	**Broad-casting-satellite**	**Mobile-satellite**	**Broadcasting-satellite (DAB)**	**Mobile-satellite, land-mobile satellite, maritime mobile-satellite**
Frequency bands (MHz)			137-138	137-138	143.6-143.65	174-184	163-167 272-273 [5]	335.4-399.9	400.15-401	400.15-401	400.15-401	401-402	460-470	549.75-550.25	620-790	856-890	1 452-1492	1 518-1 530 1 555-1 559 2 160-2 200 [1]
Transmitting terrestrial service designations			Fixed, mobile	Fixed, mobile	Fixed, mobile, radio-location	Fixed, mobile, broad-casting	Fixed, mobile	Fixed, mobile	Meteoro-logical aids	Meteoro-logical aids	Meteoro-logical aids	Meteoro-logical aids, fixed, mobile	Fixed, mobile	Fixed, mobile, broad-casting	Fixed, mobile, broad-casting	Fixed, mobile, broad-casting	Fixed, mobile, broadcasting	Fixed, mobile
Method to be used			§ 2.1	§ 2.1	§ 2.1	§ 2.1	§ 2.1	§ 1.4.6	§ 1.4.6	§ 1.4.6	–	§ 2.1	§ 2.1	§ 2.1	§ 1.4.5	§ 1.4.6	§ 1.4.5	§ 1.4.6
Modulation at earth station [2]			N		N		N				N	N					N	N
Earth station interference parameters and criteria	p_0 (%)		0.1		0.1		1.0		0.012		0.1	0.1	0.012					10
	n		2		2		1		1		2	2	1					1
	p (%)		0.05		0.05		1.0		0.012		0.05	0.05	0.012					10
	N_L (dB)		0		0		0		0		0	0						0
	M_s (dB)		1		1		1		4.3		1	1						1
	W (dB)		0		0		0		0		0	0						0
Terrestrial station parameters	E (dBW) in B [3]	A	–		–		15				–	–	5				38	37 [4]
		N	–		–		15				–	–	5				38	37
	P_t (dBW) in B	A	–		–		–1				–	–	–11				3	0
		N	–		–		–1				–	–	–11				3	0
	G_x (dBi)		–		–		16				–	–	16				35	37
Reference bandwidth	B (Hz)		1		1		10^3		177.5×10^3		1	1	85				25×10^3	4×10^3
Permissible interference power	$P_r(p)$ (dBW) in B		–199		–199		–173		–148		–208	–208	–178					–176

[1] In the band 2 160-2 200 MHz, the terrestrial station parameters of line-of-sight radio-relay systems have been used. If an administration believes that, in this band transhorizon systems need to be considered, the parameters associated with the frequency band 2 500-2 690 MHz may be used to determine the coordination area.

[2] A: analogue modulation; N: digital modulation.

[3] E is defined as the equivalent isotropically radiated power of the interfering terrestrial station in the reference bandwidth.

[4] This value is reduced from the nominal value of 50 dBW for the purposes of determination of coordination area, recognizing the low probability of high power emissions falling fully within the relatively narrow bandwidth of the earth station.

[5] The fixed-service parameters provided in the column for 163-167 MHz and 272-273 MHz are only applicable to the band 163-167 MHz.

MOD

TABLE 9a (WRC-03)

Parameters required for the determination of coordination distance for a transmitting earth station in bands shared bidirectionally with receiving earth stations

Space service designation in which the transmitting earth station operates		**Land mobile-satellite**	**Mobile-satellite**	**Land mobile-satellite**	**Earth exploration-satellite, meteorological-satellite**	**Mobile-satellite**		**Fixed-satellite, mobile-satellite**	**Fixed-satellite** [3]		**Fixed-satellite**	**Fixed-satellite, meteorological-satellite**	**Fixed-satellite**
Frequency bands (GHz)		0.1499-0.15005	0.272-0.273	0.3999-0.40005	0.401-0.402	1.670-1.675		2.655-2.690	5.150-5.216		6.700-7.075	8.025-8.400	8.025-8.400
Space service designation in which the *receiving* earth station operates		Radio-navigation-satellite	Space operation	Radio-navigation-satellite	Space operation	Meteorological-satellite		Fixed-satellite, broadcasting-satellite	Fixed-satellite	Radiodetermination-satellite	Fixed-satellite	Earth exploration-satellite	Earth exploration-satellite
Orbit [6]			Non-GSO		Non-GSO	Non-GSO	GSO		Non-GSO		Non-GSO	Non-GSO	GSO
Modulation at *receiving* earth station [1]			N		N	N	N				N	N	N
Receiving earth station interference parameters and criteria	p_0 (%)		1.0		0.1	0.006	0.011				0.005	0.011	0.083
	n		1		2	3	2				3	2	2
	p (%)		1.0		0.05	0.002	0.0055				0.0017	0.0055	0.0415
	N_L (dB)	0	0	0	0	0	0				1	0	1
	M_s (dB)	2	1	2	1	2.8	0.9	2	2	2	2	4.7	2
	W (dB)	0	0	0	0	0	0				0	0	0
Receiving earth station parameters	G_m (dBi) [2]	0	20	0	20	30	45		48.5		50.7		
	G_r (dBi) [4]	0	19	0	19	19 [9]	8		10		10	10	8
	ε_{min} [5]	3°	10°	3°	10°	5°	3°	3°	3°	3°	3°	5°	3°
	T_e (K) [7]	200	500	200	500	370	118	75	75	75	75		
Reference bandwidth	B (Hz)	4×10^3	10^3	4×10^3	1	10^6	4×10^3				10^6	10^6	10^6
Permissible interference power	$P_r(p)$ (dBW) in B	–172	–177	–172	–208	–145	–178				–151	–142	–154

Notes to Table 9a:

[1] A: analogue modulation; N: digital modulation.

[2] On-axis gain of the receive earth station antenna.

[3] Feeder links of non-geostationary-satellite systems in the mobile-satellite service.

[4] Horizon antenna gain for the receive earth station (refer to § 3 of the main body of this Appendix).

[5] Minimum elevation angle of operation in degrees (non-geostationary or geostationary).

[6] Orbit of the space service in which the receiving earth station operates (non-geostationary or geostationary).

[7] The thermal noise temperature of the receiving system at the terminal of the receiving antenna (under clear-sky conditions). Refer to § 2.1 of this Annex for missing values.

[8] Horizon antenna gain is calculated using the procedure of Annex 5. Where no value of G_m is specified, a value of 42 dBi is to be used.

[9] Non-geostationary horizon antenna gain, $G_e = G_{min} + 20$ dB (see § 2.2), with $G_{min} = 10 - 10 \log (D/\lambda)$, $D/\lambda = 13$ (refer to Annex 3 for definition of symbols).

[10] Unmanned space research is not a separate radiocommunication service and the system parameters are only to be used for the generation of supplementary contours.

MOD

TABLE 10 (WRC-03)

Predetermined coordination distances

Frequency sharing situation		**Coordination distance (in sharing situations involving services allocated with equal rights) (km)**
Type of earth station	**Type of terrestrial station**	
...		
Ground-based in the bands: 400.15-401 MHz 1 668.4-1 675 MHz	Station in the meteorological aids service (radiosonde)	580
Aircraft (mobile) in the bands: 400.15-401 MHz 1 668.4-1 675 MH z	Station in the meteorological aids service (radiosonde)	1 080
...		

APPENDIX 8 (Rev.WRC-03)

Method of calculation for determining if coordination is required between geostationary-satellite networks sharing the same frequency bands

MOD

2.2.1.2 Cases requiring independent treatment of the uplink and the downlink

If there is a change of modulation in the satellite, if the transmission gain for the satellite network being considered has not been supplied, or if the transmission originates on board the satellite, then the apparent increase in the noise temperature must be related to the total receiving system noise temperature of the specific link being examined (the space station or the earth station, whichever is applicable). In this case, the equivalent noise temperature of the entire satellite link and the transmission gain are not used and equations (1) and (2) above are used separately as required (see § 3.2). (WRC-03)

MOD

3.2 Cases requiring independent treatment of the uplink and the downlink

a) In the case of interference into only one link, the uplink or the downlink, the value $\Delta T_e/T_e$ or $\Delta T_s/T_s$, expressed as a percentage, shall be compared with the threshold value of 6%[3].

b) In the case of interference into both the uplink and the downlink, between which there is a change of modulation on board the satellite, or in cases where the optional values for transmission gain and equivalent link noise temperature have not been supplied, the values of $\Delta T_e/T_e$ and $\Delta T_s/T_s$, expressed as a percentage, shall each be compared with the threshold value of 6%[3]. (WRC-03)

MOD

APPENDIX 11 (Rev.WRC-03)

System specifications for double-sideband (DSB), single-sideband (SSB) and digitally modulated emissions in the HF broadcasting service

PART B – Single-sideband (SSB) system

MOD

1.1 Channel spacing

In a mixed DSB, SSB and digital environment (see Resolution **517 (Rev.WRC-03)**), the channel spacing shall be 10 kHz. In the interest of spectrum conservation, it is also permissible to interleave SSB emissions midway between two adjacent DSB channels, i.e., with 5 kHz separation between carrier frequencies, provided that the interleaved emission is not to the same geographical area as either of the emissions between which it is interleaved.

In an all inclusive SSB environment, the channel spacing and carrier frequency separation shall be 5 kHz. (WRC-03)

MOD

2.6 Carrier reduction (relative to peak envelope power)

In a mixed DSB, SSB and digital environment, the carrier reduction shall be 6 dB to allow SSB emissions to be received by conventional DSB receivers with envelope detection without significant deterioration of the reception quality. (WRC-03)

MOD

3.2 Demodulator and carrier acquisition

The reference receiver is equipped with a synchronous demodulator, using for the carrier acquisition a device which regenerates a carrier by means of a suitable control loop which locks the receiver to the incoming carrier. The reference receiver should work as well with DSB emissions as with SSB emissions having a carrier reduced to 6 dB below peak envelope power. (WRC-03)

ADD

PART C – Digital system (WRC-03)

1 System parameters

1.1 Channel spacing

The initial spacing for digitally modulated emissions shall be 10 kHz. However, interleaved channels with a separation of 5 kHz may be used in accordance with the appropriate protection criteria appearing in Resolution **543 (WRC-03)**, provided that the interleaved emission is not to the same geographical area as either of the emissions between which it is interleaved.

1.2 Channel utilization

Channels using digitally modulated emissions may share the same spectrum or be interleaved with analogue emissions in the same high frequency broadcasting (HFBC) band, provided the protection afforded to the analogue emissions is at least as great as that which is currently in force for analogue-to-analogue protection. Accomplishing this may require that the digital spectral power density (and total power) be lower by several dB than is currently used for either DSB or SSB emissions.

2 Emission characteristics

2.1 Bandwidth and centre frequency

A full digitally modulated emission will have a 10 kHz bandwidth with its centre frequency at any of the 5 kHz centre frequency locations in the channel raster currently in use within the HFBC bands.

Among several possible "simulcast" modes are those having a combination of analogue and digital emissions of the same programme in the same channel, that may use a digital emission of 5 kHz or 10 kHz bandwidth, next to either a 5 kHz or 10 kHz analogue emission. In all cases of this type, the 5 kHz interleaved raster used in HFBC shall be adhered to in placing the emission within these bands.

2.2 Frequency tolerance

The frequency tolerance shall be 10 Hz[1].

2.3 Audio-frequency band

The quality of service, using digital source coding within a 10 kHz bandwidth, taking into account the need to adapt the emission coding for various levels of error avoidance, detection and correction, can range from the equivalent of monophonic FM (approximately 15 kHz) to the

[1] See Note 21 of Appendix **2**.

low-level performance of a speech codec (of the order of 3 kHz). The choice of audio quality is connected to the needs of the broadcaster and listener, and includes the consideration of such characteristics as the propagation conditions expected. There is no single specification, only the upper and lower bounds noted in this paragraph.

2.4 Modulation

Quadrature amplitude modulation (QAM) with orthogonal frequency division multiplexing (OFDM) shall be used. 64-QAM is feasible under many propagation conditions; others such as 32-, 16- and 8-QAM are specified for use when needed.

2.5 RF protection ratio values

The protection ratio values for analogue and digital emissions for co-channel and adjacent channel conditions shall be in accordance with Resolution **543 (WRC-03)** as provisional RF protection ratio values subject to revision or confirmation by a future competent conference.

APPENDIX 13 (Rev.WRC-03)*

Distress and safety communications (non-GMDSS)

Part A2 – Frequencies for distress and safety

Section I – Availability of frequencies

MOD

§ 8 1A) The aeronautical emergency frequency 121.5 MHz[5] is used for the purposes of distress and urgency for radiotelephony by stations of the aeronautical mobile service using frequencies in the band between 117.975 MHz and 137 MHz. This frequency may also be used for these purposes in survival craft stations and emergency position-indicating radio-beacons. (WRC-03)

MOD

§ 12

d) *in the bands between 117.975 MHz and 137 MHz*, be able to transmit on 121.5 MHz, using amplitude modulated emissions. If a receiver is provided for any of these bands, it shall be able to receive class A3E emissions on 121.5 MHz; (WRC-03)

Section II – Protection of Distress and Safety Frequencies

MOD

§ 15 1) Apart from the transmissions authorized on 500 kHz, and taking account of No. **52.28**, all transmissions on the frequencies included between 495 kHz and 505 kHz are forbidden. (WRC-03)

Section III – Watch on distress frequencies

MOD

§ 19 2)

a) transmissions shall cease in the band between 495 kHz and 505 kHz; (WRC-03)

APPENDIX 15 (Rev.WRC-03)

Frequencies for distress and safety communications for the Global Maritime Distress and Safety System (GMDSS)

TABLE 15-1 (WRC-03)

Frequencies below 30 MHz

MOD

Frequency (kHz)	Description of usage	Notes
490	MSI	The frequency 490 kHz is used exclusively for maritime safety information (MSI)
...		

APPENDIX 17 (Rev.WRC-03)

Frequencies and channelling arrangements in the high-frequency bands for the maritime mobile service

(See Article **52**)

MOD

PART A – Table of subdivided bands (WRC-03)

In the Table, where appropriate[1], the assignable frequencies in a given band for each usage are:

– indicated by the lowest and highest frequency, in heavy type, assigned in that band;

– regularly spaced, the number of assignable frequencies (*f.*) and the spacing in kHz being indicated in italics.

Table of frequencies (kHz) to be used in the band between 4 000 kHz and 27 500 kHz allocated exclusively to the maritime mobile service

Band (MHz)	**4**	**6**	**8**	**12**	**16**	**18/19**	**22**	**25/26**
Limits (kHz)	4 063	6 200	8 195	12 230	16 360	18 780	22 000	25 070
Frequencies assignable to ship stations for oceanographic data transmission *c)*	**4 063.3** to **4 064.8** *6 f. 0.3 kHz*							
Limits (kHz)	4 065	6 200	8 195	12 230	16 360	18 780	22 000	25 070
Frequencies assignable to ship stations for telephony, duplex operation *a) i)*	**4 066.4** to **4 144.4** *27 f. 3 kHz*	**6 201.4** to **6 222.4** *8 f. 3 kHz*	**8 196.4** to **8 292.4** *33 f. 3 kHz*	**12 231.4** to **12 351.4** *41 f. 3 kHz*	**16 361.4** to **16 526.4** *56 f. 3 kHz*	**18 781.4** to **18 823.4** *15 f. 3 kHz*	**22 001.4** to **22 157.4** *53 f. 3 kHz*	**25 071.4** to **25 098.4** *10 f. 3 kHz*
Limits (kHz)	4 146	6 224	8 294	12 353	16 528	18 825	22 159	25 100

[1] Within the non-shaded boxes.

Table of frequencies (kHz) to be used in the band between 4 000 kHz and 27 500 kHz allocated exclusively to the maritime mobile service (*continued*)

Band (MHz)	**4**	**6**	**8**	**12**	**16**	**18/19**	**22**	**25/26**
Limits (kHz)	4 146	6 224	8 294	12 353	16 528	18 825	22 159	25 100
Frequencies assignable to ship stations and coast stations for telephony, simplex operation *a)*	**4 147.4** to **4 150.4** *2 f. 3 kHz*	**6 225.4** to **6 231.4** *3 f. 3 kHz*	**8 295.4** to **8 298.4** *2 f. 3 kHz*	**12 354.4** to **12 366.4** *5 f. 3 kHz*	**16 529.4** to **16 547.4** *7 f. 3 kHz*	**18 826.4** to **18 844.4** *7 f. 3 kHz*	**22 160.4** to **22 178.4** *7 f. 3 kHz*	**25 101.4** to **25 119.4** *7 f. 3 kHz*
Limits (kHz)	4 152	6 233	8 300	12 368	16 549	18 846	22 180	25 121
Frequencies assignable to ship stations for wide-band telegraphy, facsimile and special transmission systems	**4 154** to **4 170** *5 f. 4 kHz*	**6 235** to **6 259** *7 f. 4 kHz*	**8 302** to **8 338** *10 f. 4 kHz*	**12 370** to **12 418** *13 f. 4 kHz*	**16 551** to **16 615** *17 f. 4 kHz*	**18 848** to **18 868** *6 f. 4 kHz*	**22 182** to **22 238** *15 f. 4 kHz*	**25 123** to **25 159** *10 f. 4 kHz*
Limits (kHz)	4 172	6 261	8 340	12 420	16 617	18 870	22 240	25 161.25
Frequencies assignable to ship stations for oceanographic data transmission *c)*		**6 261.3** to **6 262.5** *5 f. 0.3 kHz*	**8 340.3** to **8 341.5** *5 f. 0.3 kHz*	**12 420.3** to **12 421.5** *5 f. 0.3 kHz*	**16 617.3** to **16 618.5** *5 f. 0.3 kHz*		**22 240.3** to **22 241.5** *5 f. 0.3 kHz*	
Limits (kHz)	4 172	6 262.75	8 341.75	12 421.75	16 618.75	18 870	22 241.75	25 161.25
Frequencies (paired) assignable to ship stations for narrow-band direct-printing (NBDP) telegraphy and data transmission systems at speeds not exceeding 100 Bd for FSK and 200 Bd for PSK *d) j) m) p)*	**4 172.5** to **4 181.5** *18 f. 0.5 kHz*	**6 263** to **6 275.5** *25 f. 0.5 kHz*						
Limits (kHz)	4 181.75	6 275.75	8 341.75	12 421.75	16 618.75	18 870	22 241.75	25 161.25
Calling frequencies assignable to ship stations for A1A or A1B Morse telegraphy *g) p)*								
Limits (kHz)	4 186.75	6 280.75	8 341.75	12 421.75	16 618.75	18 870	22 241.75	25 161.25
Frequencies (paired) assignable to ship stations for NBDP telegraphy and data transmission systems at speeds not exceeding 100 Bd for FSK and 200 Bd for PSK *d) m) p)*		**6 281** to **6 284.5** *8 f. 0.5 kHz*						
Limits (kHz)	4 186.75	6 284.75	8 341.75	12 421.75	16 618.75	18 870	22 241.75	25 161.25

Table of frequencies (kHz) to be used in the band between 4 000 kHz and 27 500 kHz allocated exclusively to the maritime mobile service (*continued*)

Band (MHz)	**4**	**6**	**8**	**12**	**16**	**18/19**	**22**	**25/26**
Limits (kHz)	4 186.75	6 284.75	8 341.75	12 421.75	16 618.75	18 870	22 241.75	25 161.25
Working frequencies assignable to ship stations for A1A or A1B Morse telegraphy *e) f) h) p)*	**4 187** to **4 202** *31 f.* *0.5 kHz*	**6 285** to **6 300** *31 f.* *0.5 kHz*	**8 342** to **8 365.5** *48 f.* *0.5 kHz*	**12 422** to **12 476.5** *110 f.* *0.5 kHz*	**16 619** to **16 683** *129 f.* *0.5 kHz*		**22 242** to **22 279** *75 f.* *0.5 kHz*	**25 161.5** to **25 171** *20 f.* *0.5 kHz*
Limits (kHz)	4 202.25	6 300.25	8 365.75	12 476.75	16 683.25	18 870	22 279.25	25 171.25
Calling frequencies assignable to ship stations for A1A or A1B Morse telegraphy *g) p)*								
Limits (kHz)	4 202.25	6 300.25	8 370.75	12 476.75	16 683.25	18 870	22 284.25	25 172.75
Working frequencies assignable to ship stations for A1A or A1B Morse telegraphy *e) f) p)*			**8 371** to **8 376** *11 f.* *0.5 kHz*					
Limits (kHz)	4 202.25	6 300.25	8 376.25	12 476.75	16 683.25	18 870	22 284.25	25 172.75
Frequencies (paired) assignable to ship stations for NBDP telegraphy and data transmission systems at speeds not exceeding 100 bauds for FSK and 200 bauds for PSK *d) j) m) p)*			**8 376.5** to **8 396** *40 f.* *0.5 kHz*	**12 477** to **12 549.5** *146 f.* *0.5 kHz*	**16 683.5** to **16 733.5** *101 f.* *0.5 kHz*	**18 870.5** to **18 892.5** *45 f.* *0.5 kHz*	**22 284.5** to **22 351.5** *135 f.* *0.5 kHz*	**25 173** to **25 192.5** *40 f.* *0.5 kHz*
Limits (kHz)	4 202.25	6 300.25	8 396.25	12 549.75	16 733.75	18 892.75	22 351.75	25 192.75
Calling frequencies assignable to ship stations for A1A or A1B Morse telegraphy *g) p)*								
Limits (kHz)	4 202.25	6 300.25	8 396.25	12 554.75	16 738.75	18 892.75	22 351.75	25 192.75
Frequencies (paired) assignable to ship stations for NBDP telegraphy and data transmission systems at speeds not exceeding 100 bauds for FSK and 200 bauds for PSK *d) m) p)*				**12 555** to **12 559.5** *10 f.* *0.5 kHz*	**16 739** to **16 784.5** *92 f.* *0.5 kHz*			
Limits (kHz)	4 202.25	6 300.25	8 396.25	12 559.75	16 784.75	18 892.75	22 351.75	25 192.75

Table of frequencies (kHz) to be used in the band between 4 000 kHz and 27 500 kHz allocated exclusively to the maritime mobile service (*continued*)

Band (MHz)	**4**	**6**	**8**	**12**	**16**	**18/19**	**22**	**25/26**
Limits (kHz)	4 202.25	6 300.25	8 396.25	12 559.75	16 784.75	18 892.75	22 351.75	25 192.75
Frequencies (non paired) assignable to ship stations for NBDP telegraphy and data transmission systems at speeds not exceeding 100 Bd for FSK and 200 Bd for PSK and for A1A or A1B Morse telegraphy (working) *b) p)*	**4 202.5** to **4 207** *10 f. 0.5 kHz*	**6 300.5** to **6 311.5** *23 f. 0.5 kHz*	**8 396.5** to **8 414** *36 f. 0.5 kHz*	**12 560** to **12 576.5** *34 f. 0.5 kHz*	**16 785** to **16 804** *39 f. 0.5 kHz*	**18 893** to **18 898** *11 f. 0.5 kHz*	**22 352** to **22 374** *45 f. 0.5 kHz*	**25 193** to **25 208** *31 f. 0.5 kHz*
Limits (kHz)	4 207.25	6 311.75	8 414.25	12 576.75	16 804.25	18 898.25	22 374.25	25 208.25
Frequencies assignable to ship stations for digital selective calling *k) l)*	**4 207.5** to **4 209** *4 f. 0.5 kHz*	**6 312** to **6 313.5** *4 f. 0.5 kHz*	**8 414.5** to **8 416** *4 f. 0.5 kHz*	**12 577** to **12 578.5** *4 f. 0.5 kHz*	**16 804.5** to **16 806** *4 f. 0.5 kHz*	**18 898.5** to **18 899.5** *3 f. 0.5 kHz*	**22 374.5** to **22 375.5** *3 f. 0.5 kHz*	**25 208.5** to **25 209.5** *3 f. 0.5 kHz*
Limits (kHz)	4 209.25	6 313.75	8 416.25	12 578.75	16 806.25	18 899.75	22 375.75	25 210
Limits (kHz)	4 209.25	6 313.75	8 416.25	12 578.75	16 806.25	19 680.25	22 375.75	26 100.25
Frequencies (paired) assignable to coast stations for NBDP and data transmission systems, at speeds not exceeding 100 Bd for FSK and 200 Bd for PSK *d) n) o) p)*	**4 209.5** to **4 219** *20 f. 0.5 kHz*	**6 314** to **6 330.5** *34 f. 0.5 kHz*	**8 416.5** to **8 436** *40 f. 0.5 kHz*	**12 579** to **12 656.5** *156 f. 0.5 kHz*	**16 806.5** to **16 902.5** *193 f. 0.5 kHz*	**19 680.5** to **19 703** *46 f. 0.5 kHz*	**22 376** to **22 443.5** *136 f. 0.5 kHz*	**26 100.5** to **26 120.5** *41 f. 0.5 kHz*
Limits (kHz)	4 219.25	6 330.75	8 436.25	12 656.75	16 902.75	19 703.25	22 443.75	26 120.75
Frequencies assignable to coast stations for digital selective calling *l)*	**4 219.5** to **4 220.5** *3 f. 0.5 kHz*	**6 331** to **6 332** *3 f. 0.5 kHz*	**8 436.5** to **8 437.5** *3 f. 0.5 kHz*	**12 657** to **12 658** *3 f. 0.5 kHz*	**16 903** to **16 904** *3 f. 0.5 kHz*	**19 703.5** to **19 704.5** *3 f. 0.5 kHz*	**22 444** to **22 445** *3 f. 0.5 kHz*	**26 121** to **26 122** *3 f. 0.5 kHz*
Limits (kHz)	4 221	6 332.5	8 438	12 658.5	16 904.5	19 705	22 445.5	26 122.5
Frequencies assignable to coast stations for wide-band and A1A or A1B Morse telegraphy, facsimile, special and data transmission systems and direct-printing telegraphy systems								
Limits (kHz)	4 351	6 501	8 707	13 077	17 242	19 755	22 696	26 145

Table of frequencies (kHz) to be used in the band between 4 000 kHz and 27 500 kHz allocated exclusively to the maritime mobile service (*end*)

Band (MHz)	**4**	**6**	**8**	**12**	**16**	**18/19**	**22**	**25/26**
Limits (kHz)	4 351	6 501	8 707	13 077	17 242	19 755	22 696	26 145
Frequencies assignable to coast stations for telephony, duplex operation *a)*	**4 352.4** to **4 436.4** *29 f. 3 kHz*	**6 502.4** to **6 523.4** *8 f. 3 kHz*	**8 708.4** to **8 813.4** *36 f. 3 kHz*	**13 078.4** to **13 198.4** *41 f. 3 kHz*	**17 243.4** to **17 408.4** *56 f. 3 kHz*	**19 756.4** to **19 798.4** *15 f. 3 kHz*	**22 697.4** to **22 853.4** *53 f. 3 kHz*	**26 146.4** to **26 173.4** *10 f. 3 kHz*
Limits (kHz)	4 438	6 525	8 815	13 200	17 410	19 800	22 855	26 175

a) See Part B, Section I.

b) See Part B, Section III.

c) The frequency bands may also be used by buoy stations for oceanographic data transmission and by stations interrogating these buoys.

d) See Part B, Section II.

e) In the frequency bands to be used by ship stations for A1A Morse telegraphy working at speeds not exceeding 40 Bd, administrations may assign additional frequencies interleaved between the assignable frequencies. Any frequencies so assigned shall be multiples of 100 Hz. Administrations shall ensure a uniform distribution of such assignments within the bands.

f) See Part B, Section V.

g) See Part B, Section IV.

h) For the conditions of use of the frequency 8 364 kHz, see Appendix **13**.

i) For the use of the carrier frequencies 4 125 kHz, 6 215 kHz, 8 291 kHz, 12 290 kHz and 16 420 kHz in these sub-bands by ship and coast stations for distress and safety purposes, by single-sideband radiotelephony, see Article **31** and Appendix **13**.

j) For the use of the frequencies 4 177.5 kHz, 6 268 kHz, 8 376.5 kHz, 12 520 kHz and 16 695 kHz in these sub-bands by ship and coast stations for distress and safety purposes, by NBDP telegraphy, see Article **31**.

k) For the use of the frequencies 4 207.5 kHz, 6 312 kHz, 8 414.5 kHz, 12 577 kHz and 16 804.5 kHz in these sub-bands by ship and coast stations for distress and safety purposes, by digital selective calling, see Article **31**.

l) The following paired frequencies (for ship/coast stations) 4 208/4 219.5 kHz, 6 312.5/6 331 kHz, 8 415/ 8 436.5 kHz, 12 577.5/12 657 kHz, 16 805/16 903 kHz, 18 898.5/19 703.5 kHz, 22 374.5/22 444 kHz and 25 208.5/26 121 kHz are the first choice international frequencies for digital selective calling (see Article **54**).

m) Frequencies from these frequency bands may also be used for A1A or A1B Morse telegraphy (working) (see Part B, Section II).

n) The frequencies 4 210 kHz, 6 314 kHz, 8 416.5 kHz, 12 579 kHz, 16 806.5 kHz, 19 680.5 kHz, 22 376 kHz and 26 100.5 kHz are the exclusive international frequencies for the transmission of maritime safety information (MSI) (see Articles **31** and **33**).

o) The frequency 4 209.5 kHz is an exclusive international frequency for the transmission of NAVTEX type information (see Articles **31** and **33**).

p) These sub-bands, except the frequencies referred to in Notes *j)*, *n)* and *o)*, may be used for the initial testing and the possible future introduction within the maritime mobile service of new digital technologies. Stations using these sub-bands for this purpose shall not cause harmful interference to, and shall not claim protection from, other stations operating in accordance with Article **5**.

PART B – Channelling arrangements

Section I – Radiotelephony

MOD

5 The following frequencies in Sub-Section A are allocated for calling purposes:

– Channel No. 421 in the 4 MHz band;

– Channel No. 606 in the 6 MHz band;

– Channel No. 821 in the 8 MHz band;

– Channel No. 1221 in the 12 MHz band;

– Channel No. 1621 in the 16 MHz band;

– Channel No. 1806 in the 18 MHz band;

– Channel No. 2221 in the 22 MHz band;

– Channel No. 2510 in the 25 MHz band.

Calling on the carrier frequencies 12 290 kHz and 16 420 kHz shall be permitted only to and from rescue coordination centres (see No. **30.6.1**), subject to the safeguards of Resolution **352 (WRC-03)** (see Nos. **52.221A** and **52.222A**).

The remaining frequencies in Sub-Sections A, B, C-1 and C-2 are working frequencies. (WRC-03)

MOD

6 *a)* Maritime radiotelephone stations using single-sideband emissions in the bands between 4 000 kHz and 27 500 kHz exclusively allocated to the maritime mobile service shall operate only on the carrier frequencies shown in the Sub-Sections A and B and, in the case of analogue radiotelephony, shall be in conformity with the technical characteristics specified in Recommendation ITU-R M.1173.

b) Ship stations, when using frequencies for single-sideband emissions in the bands 4 000-4 063 kHz and ship and coast stations, when using frequencies for single-sideband emissions in the band 8 100-8 195 kHz should operate on the carrier frequencies indicated in Sub-Sections C-1 and C-2 respectively. In the case of analogue radiotelephony technical characteristics of the equipment shall be those specified in Recommendation ITU-R M.1173.

c) Stations, when employing the single-sideband mode for analogue radiotelephony, shall use only class J3E emissions. For digital communications, class J2D emissions shall be used. (WRC-03)

SUP

8

APPENDIX 25 (Rev.WRC-03)

Provisions and associated frequency allotment Plan for coast radiotelephone stations operating in the exclusive maritime mobile bands between 4000 kHz and 27500 kHz

MOD

25/2.4 (WRC-03)

Column 1	Column 2	Column 3
Assigned frequency (carrier frequency) (channel number)	Allotment area[2]	Observations[3]

SUP

4

1	2	3
4 358.4 **(4 357)** (401)	AFS AUS CHL CKH CUB D1 DNK E GEO GRC HRV INS J KOR LVA NIU PNR PRG RUS EO RUS NW S SCG* SMO SOM TKM TUR UKR URG USA CL USA E USA SO USA W YEM	ADD ADD
4 361.4 **(4 360)** (402)	ALB ALS ARG AZE CHN G GUM HWA I IRN J KAZ MDG PNG PNR POL PTR RUS AS RUS NW THA TKM TUN USA CL USA E USA SO USA W	

1	2	3
4 364.4 **(4 363)** (403)	AFS ARG CAN CL CAN E CAN NO CAN W DNK E GRC HWA IND E IRQ MAC MCO NOR PNR PTR RUS EO S UKR USA CL USA E USA SO USA W	 ADD ADD
4 367.4 **(4 366)** (404)	ALS AUS B CHL SO CHN COG F IRN ISR J MCO NCL OMA PAQ POL SEN THA USA CL USA E USA W	 ADD
4 370.4 **(4 369)** (405)	AFS ALS AUS E AZE B CHL CHN CME CNR D2 F GMB GRC HOL >> >>	

1	2	3
(405)	<< << HWA IRN LTU LVA ROU RUS AS RUS EO RUS SW SNG URG USA CL USA E USA SO USA W	 ADD
4 373.4 **(4 372)** (406)	ALB ALS ARG ARS CHN CLM COG CYP E FJI FIN G GUM HWA ISL MDG PNR POL PTR TUN USA CL USA E USA SO USA W	
4 376.4 **(4 375)** (407)	AFS ALS ARG AUS BRB CAN CL CME D2 E GUM HOL HWA I IND E IRN J NOR PTR RUS AN >> >>	 ADD ADD

1	2	3
(407)	<< <<	
	RUS NW	
	SNG	
	TUR	
	USA E	
	USA W	
4 379.4	ALS	
(4 378)	ARG	
	ATN	
(408)	B	ADD
	BEL	
	CAN E	
	CAN W	
	CHN	
	GUM	
	HRV	
	HWA	
	I	
	INS	
	IRN	
	J	
	MLD	ADD
	MOZ	
	NZL	
	POL	
	SMA	ADD
	SUI	
	USA E	
	USA W	
4 382.4	ARS	
(4 381)	B	
	CHN	
(409)	CUB	
	DNK	
	GHA	ADD
	I	
	IND W	
	NOR	
	PNG	
	QAT	ADD
	S	
	THA	
	TUR	
	USA CL	
	USA E	
	USA SO	
	USA W	
4 385.4	ALG	
(4 384)	ARG SO	
	CAN W	
(410)	CHN	
	CNR	
	D2	
	G	
	GRC	
	GUM	
	HNG	
	HOL	
	>> >>	

1	2	3
(410)	<< <<	
	IRN	
	ISR	
	MLT	
	MTN	
	NZL	
	ROU	
	SEY	
	USA E	
4 388.4	AMS	ADD
(4 387)	ARG NO	
	BEL	
(411)	E	
	EQA	ADD
	FLK	
	HKG	
	I	ADD
	INS	
	IRN	
	J	
	KIR	ADD
	RUS NW	
	TUR	
	UKR	
	USA CL	
	USA E	
	USA W	
4 391.4	AUS	
(4 390)	D1	
	EST	
(412)	GEO	
	I	
	IND W	
	IRQ	
	J	
	LTU	
	LVA	
	RUS EO	
	RUS NW	
	RUS SW	
	RUS W	
	UKR	
	USA E	
	USA SO	
	USA W	
	YEM	
4 394.4	AGL	
(4 393)	ALG	
	ALS	
(413)	ARG	
	AZR	
	BHR	
	CAN E	
	CAN W	
	CPV	
	D1	
	FIN	
	>> >>	

1	2	3
(413)	<< <<	
	GNB	
	GRC	
	GUM	
	HWA	
	J	
	MCO	
	MDR	
	PNR	
	POR	
	PTR	
	RUS EO	
	TMP	
	UKR	
	USA CL	
	USA E	
	USA SO	
	USA W	
4 397.4	ALS	
(4 396)	CYP	
	D1	
(414)	E	
	FIN	
	INS	
	ISL	
	J	
	KEN	
	PTR	
	RUS EO	
	RUS SW	
	RUS W	
	SHN	
	USA E	
	USA SO	
4 400.4	ALS	
(4 399)	ARG	
	AUS	
(415)	CHN	
	DNK	
	EST	
	F	
	GRC	
	GUM	
	HWA	
	IRN	
	LTU	
	LVA	
	MDG	
	MLA	
	PNR	
	PTR	
	ROU	
	RUS NW	
	RUS SW	
	RUS W	
	USA E	
	USA SO	
	USA W	

1	2	3
4 403.4 **(4 402)** (416)	ALS ARG CL B EST F G GRC HNG INS IRN ISL J LTU LVA MAU OCE RUS SW USA CL USA E USA W	
4 406.4 **(4 405)** (417)	ARG AUS BEL CZE FIN G HKG HRV IND W J MLA MRC PNG RUS EO SCG SVK TUR TZA USA CL USA E USA SO USA W YEM	ADD
4 409.4 **(4 408)** (418)	ARG AZE B BUL CAN E CAN W CUB DJI DNK E EGY HWA I INS ISR >> >>	ADD ADD

1	2	3
(418)	<< << J KAZ MTN ROU RUS AS S TKM USA CL	
4 412.4 **(4 411)** (419)	AUS B CHL CHN CZE D2 F GUM HOL HRV HWA ISL J KOR LBY PTR RUS NW SVN TZA USA SO USA W	 ADD
4 415.4 **(4 414)** (420)	ALS AZE BUL CME DNK GUM HWA I IND E IRN J JOR KAZ MLA MRC PNR PTR RUS AN RUS AS S TKM TUR USA E USA W	
4 421.4 **(4 420)** (422)	ALS BEL CAN W CHN >> >>	

1	2	3
(422)	<< << CNR CUB EST FIN G GRC HNG INS IRQ J LBY LTU LVA MRC RUS NW RUS SW RUS W SUI USA E USA W	 ADD
4 424.4 **(4 423)** (423)	ALS B CHN D1 I INS ISR J MLT PNG PNR POL QAT USA CL USA E USA SO USA W	 ADD ADD ADD
4 427.4 **(4 426)** (424)	ALG ALS ARG AUS E AUS W CHN DNK GRC GUM HWA MRC PNR PTR S SUI THA USA CL USA E USA SO USA W	 ADD ADD

1	2	3
4 430.4	ALS	
(4 429)	B	ADD
	BEL	
(425)	CHL	
	DNK	
	E	
	GRC	
	GUM	
	HNG	
	HOL	
	HWA	
	J	
	JOR	ADD
	LBY	
	MLA	
	NZL	
	PNR	
	PTR	
	USA CL	
	USA E	
	USA SO	
	USA W	
4 433.4	AGL	
(4 432)	ALG	
	ALS	
(426)	ARG	
	AZR	
	BUL	
	CHN	
	CPV	
	CYP	
	DNK	
	G	
	GNB	
	GUM	
	HWA	
	J	
	MDR	
	MOZ	
	NOR	
	PNR	
	POR	
	PTR	
	THA	
	TMP	
	USA E	
	USA SO	
	USA W	
4 436.4	ALS	
(4 435)	AUS	
	BUL	
(427)	CHL	
	CHN	
	DGA	
	E	
	G	
	HWA	
	I	
	>> >>	

1	2	3
(427)	<< <<	
	J	
	MDG	
	PAQ	
	POR	
	RUS AN	
	RUS EO	
	RUS NW	
	SCG	
	UAE	
	USA CL	
	USA E	
	USA SO	
	USA W	
	VIR	
	VTN	
4 352.4	ARG CL	
(4 351)	ARG SO	
	AZE	
(428)	CHN	
	GRC	
	I	
	J	
	OMA	
	RUS AN	
	RUS AS	
	RUS EO	
	RUS NW	
	RUS SW	
	RUS W	
	TKM	
	UKR	
	USA SO	
4 355.4	ALS	
(4 354)	ARG SO	
	AUS	
(429)	AZE	
	B	
	BLR	
	CLM	
	DGA	
	E	
	G	
	GRC	
	GUM	
	HKG	
	HWA	
	I	
	J	
	KAZ	
	MDG	
	MDW	
	PTR	
	RUS AS	
	RUS EO	
	RUS NW	
	RUS SW	
	RUS W	
	>> >>	

1	2	3
(429)	<< <<	
	TKM	
	UKR	
	USA E	
	USA SO	
	USA W	
6 502.4	ALG	
(6 501)	ALS	
	ARG CL	
(601)	ARG SO	
	ARS	
	AZE	
	CAN W	
	CHL CL	
	CHL NO	
	CHN	
	COG	
	CZE	
	D1	
	EST	
	GEO	
	GRC	
	GUM	
	HNG	
	HRV	
	HWA	
	I	ADD
	INS	
	IRN	
	IRQ	
	ISL	
	J	
	KAZ	
	LBY	
	LTU	
	LVA	
	MLA	
	MLD	ADD
	NCL	ADD
	NZL	
	PTR	
	ROU	
	RUS AS	
	RUS SW	
	RUS W	
	SCG	
	SVK	
	TKM	
	UKR	
	USA CL	
	USA E	
	USA SO	
	USA W	
6 505.4	AFS	
(6 504)	ALS	
	AUS E	ADD
	AZE	
(602)	B	ADD
	>> >>	

1	2	3
(602)	<< <<	
	BEL	
	BUL	
	CAN E	
	CAN W	
	EQA	ADD
	EST	
	FJI	ADD
	GEO	
	GHA	ADD
	GUM	
	HOL	
	HRV	
	HWA	
	I	
	INS	
	IRN	
	KAZ	
	KOR	
	LTU	
	LVA	
	MCO	
	MDG	
	POL	
	POR	
	PTR	
	RUS AN	
	RUS AS	
	RUS EO	
	RUS NW	
	RUS SW	
	RUS W	
	SNG	
	TKM	
	TUN	
	TUR	
	USA CL	
	USA E	
	USA SO	
	USA W	
6 508.4	ALB	
(6 507)	ALG	
	ALS	
(603)	ARG	
	ARS	
	AUS	ADD
	CAN NO	
	CAN W	
	CYP	
	DNK	
	E	
	GRC	
	GUM	
	HNG	
	HWA	
	IND E	
	INS	
	IRN	
	>> >>	

1	2	3
(603)	<< <<	
	IRQ	
	ISL	
	ISR	
	J	
	LBY	
	MLT	ADD
	MTN	
	PTR	
	ROU	
	RUS EO	
	RUS NW	
	S	
	SMO	
	UKR	
	USA CL	
	USA E	
	USA SO	
	USA W	
6 511.4	ALS	
(6 510)	ATN	ADD
	AUS	
(604)	B	ADD
	BUL	
	CAN W	
	CHL	
	CHN	
	CME	
	E	
	GUM	
	HKG	
	HRV	
	HWA	
	I	
	INS	
	IRN	
	ISR	
	MDG	
	MTN	
	PNG	
	POL	
	PTR	
	RUS NW	
	TUN	
	TUR	
	TUV	ADD
	USA CL	
	USA E	
	USA SO	
	USA W	
6 514.4	ALG	
(6 513)	ALS	
	B	ADD
(605)	BUL	
	CAN E	
	CAN W	
	CNR	
	COG	
	>> >>	

1	2	3
(605)	<< <<	
	DNK	
	EGY	
	F	ADD
	GUM	
	HNG	
	HOL	
	HRV	
	HWA	
	IND W	
	INS	
	IRN	
	IRQ	
	J	
	KOR	
	LBY	
	MDG	
	NZL	ADD
	PTR	
	RUS EO	
	S	
	SVN	
	UKR	
	URG	
	USA CL	
	USA E	
	USA SO	
	USA W	
6 520.4	ARG	
(6 519)	AUS	
	CHN	
(607)	CLM	
	CUB	
	DGA	
	F	
	GRC	
	HKG	
	J	
	MDG	
	OMA	
	RUS AN	
	RUS EO	
	RUS NW	
	UAE	
	USA SO	
	VTN	
6 523.4	ALS	
(6 522)	ARG CL	
	ARG SO	
(608)	AUS	
	B	
	BLR	
	CHN	
	DGA	
	E	
	EST	
	G	
	GRC	
	>> >>	

1	2	3
(608)	<< <<	
	GUM	
	HWA	
	J	
	KOR	
	LVA	
	MDW	
	MOZ	
	PTR	
	RUS AS	
	RUS AN	
	RUS EO	
	RUS NW	
	RUS SW	
	RUS W	
	UKR	
	USA E	
	USA SO	
	USA W	
8 720.4	AFS	
(8 719)	ALS	
	BHR	
(801)	CHL	
	DNK	
	E	
	GUM	
	HWA	
	ISR	
	J	
	MLA	
	PNR	
	PTR	
	ROU	
	RUS AN	
	S	
	USA E	
	USA SO	
	USA W	
8 723.4	AGL	
(8 722)	ALG	
	ALS	
(802)	ARG	
	AUS	
	AZR	
	CHN	
	CLN	
	CPV	
	D2	
	FIN	
	G	
	GNB	
	GRC	
	HOL	
	HWA	
	IND E	
	IRQ	
	MDR	
	>> >>	

1	2	3
(802)	<< <<	
	MOZ	
	POR	
	USA E	
	USA SO	
8 726.4	AFS	
(8 725)	ATN	
	BEL	
(803)	CAN E	
	CUB	
	E	
	KOR	
	LTU	
	LVA	
	PNG	
	RUS EO	
	RUS NW	
	RUS SW	
	S	
	SEN	
	SUI	ADD
	TUR	
	USA CL	
8 729.4	ARG	
(8 728)	E	
	FIN	
(804)	GRC	
	IRQ	
	J	
	JOR	ADD
	MCO	
	POL	
	QAT	ADD
	RUS AS	
	RUS EO	
	SNG	
	USA E	
	USA SO	
	USA W	
8 732.4	AFS	
(8 731)	ALB	
	BEL	
(805)	E	
	EQA	ADD
	FIN	
	HOL	
	IRN	
	ISL	
	ISR	
	J	
	LVA	
	NCL	
	PNG	
	RUS EO	
	RUS SW	
	USA E	
	USA SO	
	USA W	

1	2	3
8 735.4	ALS	
(8 734)	ARG	
	AUS	ADD
(806)	BEL	
	BHR	
	E	
	GRC	
	GUM	
	HOL	
	HWA	
	I	
	J	
	PNR	
	POL	
	PTR	
	SMA	ADD
	UKR	
	USA E	
	USA W	
8 738.4	AZE	
(8 737)	CAN W	
	CHL	
(807)	COG	
	CUB	
	CYP	
	CZE	
	I	ADD
	ISL	
	J	
	MDG	
	MTN	
	NZL	
	RUS AN	
	RUS AS	
	RUS SW	
	RUS W	
	SHN	
	TKM	
	USA CL	
8 741.4	AFS	
(8 740)	ALS	
	ARG	
(808)	ARS	
	DNK	
	E	
	GRC	
	GUM	
	HWA	
	I	ADD
	J	
	ROU	
	S	
	USA E	
	USA W	
8 744.4	ALG	
(8 743)	AUS W	
	CHL	
(809)	CNR	
	>> >>	

1	2	3
(809)	<< <<	
	CUB	
	CZE	
	D2	
	FIN	
	GRC	
	ISL	
	J	
	MCO	
	NOR	
	SVK	
	THA	
	USA E	
	USA W	
8 747.4	ARG	
(8 746)	BUL	
	CAN E	
(810)	CHN	
	E	
	FJI	
	HRV	
	INS	
	IRN	
	J	
	MOZ	
	NOR	
	POL	
	TUR	
	USA E	
	USA SO	
	USA W	
8 750.4	ARG	
(8 749)	ARS	
	AUS	
(811)	DNK	
	F	
	HKG	
	HNG	
	HRV	
	J	
	NOR	
	S	
	SCG	
	TUR	
	USA E	
	USA SO	
	USA W	
8 753.4	ALS	
(8 752)	ARG SO	
	BEL	
(812)	CAN NO	
	CHN	
	E	
	GEO	
	HWA	
	I	ADD
	INS	
	ISR	
	>> >>	

1	2	3
(812)	<< <<	
	J	
	LTU	
	LVA	
	NZL	
	POL	
	RUS NW	
	USA CL	
	USA E	
	USA SO	
	USA W	
8 756.4	AGL	
(8 755)	ALG	
	ALS	
(813)	AUS	
	AZR	
	BEL	
	CHL NO	
	CHN	
	CPV	
	DNK	
	GNB	
	GRC	
	GUM	
	HNG	
	HWA	
	IND W	
	MDR	
	MOZ	
	NOR	
	PNR	
	POR	
	PTR	
	USA CL	
	USA E	
	USA SO	
	USA W	
8 759.4	ALS	
(8 758)	ARG	
	AZE	
(814)	CAN W	
	CUB	
	EST	
	GEO	
	GRC	
	HWA	
	I	
	INS	
	J	
	KIR	ADD
	LTU	
	LVA	
	RUS AN	
	RUS AS	
	RUS EO	
	RUS SW	
	RUS W	
	USA CL	
	>> >>	

1	2	3
(814)	<< <<	
	USA E	
	USA SO	
	USA W	
8 762.4	AUS W	
(8 761)	BEL	
	CHL	
(815)	CHN	
	D1	
	EST	
	GRC	
	IRQ	
	J	
	JOR	ADD
	MRC	
	RUS NW	
	RUS SW	
	SNG	
	USA E	
	USA SO	
	USA W	
8 765.4	ALS	
(8 764)	ARG	
	BRB	
(816)	CHN	
	COG	
	E	
	G	
	GRC	
	GUM	
	HWA	
	INS	
	LTU	
	LVA	
	PTR	
	RUS NW	
	RUS SW	
	RUS W	
	TUN	
	USA E	
	USA SO	
	USA W	
8 768.4	ALS	
(8 767)	AUS	
	CAN E	
(817)	CHL	
	D1	
	EGY	
	F	
	GUM	
	HWA	
	IRN	
	PNR	ADD
	PTR	
	ROU	
	RUS EO	
	RUS SW	
	THA	
	>> >>	

1	2	3
(817)	<< << USA CL USA E USA SO USA W YEM	
8 771.4 **(8 770)** (818)	ALS ARG BUL CHN CME CYP DNK GUM HWA LBY MLA PNR PTR S SEY UKR USA E USA W	
8 774.4 **(8 773)** (819)	ALS AZE B CAN W EST G GEO GRC GUM HWA I INS J KAZ LVA PAQ PNR RUS AN RUS AS RUS NW RUS SW THA TKM USA CL USA E USA SO USA W YEM	ADD
8 777.4 **(8 776)** (820)	ALS ARG CYP D1 D2 GRC >> >>	ADD

1	2	3
(820)	<< << GUM HWA I IND E IRN J PNR PTR RUS NW SMO TZA USA E USA W	ADD
8 783.4 **(8 782)** (822)	AUS B CHN G HNG HRV IRN KEN MRC SUI UKR USA E USA SO USA W	ADD
8 786.4 **(8 785)** (823)	ARG CAN E DNK GRC I IND W IRQ J ROU RUS EO RUS NW S TMP TZA USA W	ADD ADD
8 789.4 **(8 788)** (824)	B CHN D1 GRC IRN MRC OMA POL RUS NW SNG SUI TUN USA E USA SO USA W	

1	2	3
8 792.4 **(8 791)** (825)	ALG ALS AMS ARG BRB CAN CL CKH DNK F GHA HNG IND E IRN KAZ KGZ RUS EO S TKM UKR USA E USA SO USA W	ADD ADD ADD
8 795.4 **(8 794)** (826)	CAN W CHN CLM CME D2 G GUM HOL I INS J QAT UKR USA CL USA E	ADD
8 798.4 **(8 797)** (827)	ALS ARG DJI DNK E GUM HRV HWA IRN ISR KOR MAC NIU PNR PTR S SCG SVN USA E USA W	

1	2	3
8 801.4 **(8 800)** (828)	ALB ALS B D1 F GUM HNG HWA INS J MAU MRC MTN NOR PNR PTR UKR USA E USA W	
8 804.4 **(8 803)** (829)	AUS BEL BRM CHN CYP DNK FIN GMB IRN LBY MLD NOR OCE PRG S UKR USA E USA SO USA W	ADD ADD
8 807.4 **(8 806)** (830)	AZE B BUL CHN F HRV IND W INS IRN KAZ MCO PNG POL PTR RUS AS RUS EO USA SO YEM	 ADD

1	2	3
8 810.4 **(8 809)** (831)	CHN COG D2 FLK G I IRN ISL J MDG MLA MRC PTR SUI TUR USA SO USA W	
8 813.4 **(8 812)** (832)	ALS B BUL CHN CLM GUM HKG HWA KOR MDG MLT PTR QAT RUS AN RUS EO TUR UAE URG USA E USA SO USA W VTN	
8 708.4 **(8 707)** (834)	AUS CHL CHN CLM DGA GRC GUM HWA J KOR MDW POR PTR RUS AS RUS NW RUS SW RUS W UKR USA E USA SO	

1	2	3
8 711.4 **(8 710)** (835)	ALS ARG CL ARG SO AZE DGA E F GRC GUM HWA J KOR MDW OMA PTR RUS AN RUS AS RUS EO RUS NW SCG SUI THA TKM TUR UKR USA E USA SO USA W	
8 714.4 **(8 713)** (836)	AUS AZE CHL CHN E I RUS AN RUS AS RUS EO RUS NW TKM UKR URG USA SO	
8 717.4 **(8 716)** (837)	ARG CL ARG SO AZE BLR CHN CUB G GRC J KAZ MDG RUS AN RUS AS RUS EO RUS NW RUS SW >> >>	

1	2	3
(837)	<< << RUS W TKM UKR USA SO	
13 078.4 **(13 077)** (1201)	ARG CAN NO CHN CYP E G INS QAT RUS EO RUS NW RUS SW UKR USA E USA SO USA W	ADD
13 081.4 **(13 080)** (1202)	ARS CHL D2 FJI G GRC HNG J MRC RUS AN SUI TUN USA CL USA E USA SO USA W	
13 084.4 **(13 083)** (1203)	AGL ALS AUS E AZR CHN CLM CPV DNK GNB GRC HWA IRQ LBY MDR MOZ POR RUS EO S TMP USA CL USA E USA SO USA W	

1	2	3
13 087.4 **(13 086)** (1204)	ALS D2 F GRC GUM HWA ISR J LVA MAC NOR PNR PTR RUS SW RUS W USA E USA SO USA W	
13 090.4 **(13 089)** (1205)	ALS ARG D1 E GEO GUM HWA I J LTU LVA MOZ NCL NOR PTR TMP UKR USA E USA SO USA W YEM	
13 093.4 **(13 092)** (1206)	ALB AUS W CHN D2 E FIN G I IRN ISL J MDG MRC TUR USA E USA SO USA W	

1	2	3
13 096.4 **(13 095)** (1207)	AGL ALG ATN AZR BEL CAN W CHN CPV EQA GRC HOL IRN ISR J MDR MOZ POR RUS NW SCG TMP	ADD
13 099.4 **(13 098)** (1208)	ARG CHN CYP D1 EST GRC HNG I ISL J LTU LVA RUS SW RUS W USA E USA SO	ADD
13 102.4 **(13 101)** (1209)	AFS ALS B BHR CAN W E EST FIN I INS J NZL POL RUS NW RUS SW TUR USA E USA SO USA W	

1	2	3
13 105.4 **(13 104)** (1210)	CHL DJI DNK E GRC GUM IND W INS ROU RUS AN RUS EO S SUI URG USA E USA SO USA W	 ADD
13 108.4 **(13 107)** (1211)	ALS B CHN CUB DNK E I IRQ J KAZ MLA NOR PAQ RUS AN RUS AS S TKM USA CL USA E USA SO USA W	
13 111.4 **(13 110)** (1212)	ALS D1 GRC HWA INS J MAU PTR RUS EO RUS SW RUS W USA E USA SO	
13 114.4 **(13 113)** (1213)	ARG BEL BRB CAN E CHN CNR FIN >> >>	

1	2	3
(1213)	<< << GRC HOL I IND E IRN IRQ ISR KOR NOR RUS AN SMO USA W	 ADD
13 117.4 **(13 116)** (1214)	ALS AUS B CAN W CUB DNK GRC GUM HNG IRN PTR RUS EO S USA CL USA E USA SO USA W	
13 120.4 **(13 119)** (1215)	ALG BEL CME DNK E GRC HOL IND W ISL ISR J PNR PTR ROU S SEY USA SO USA W	
13 123.4 **(13 122)** (1216)	ALB ALS ARG CHN EGY FIN GUM HWA IRN MRC >> >>	

1	2	3
(1216)	<< << PNR POL PTR SNG TUR USA E USA SO USA W	
13 126.4 **(13 125)** (1217)	ALG AZE BUL CUB DNK GRC GUM IND E IRQ J KAZ NOR RUS AS RUS EO S SHN USA CL USA E USA SO USA W	
13 129.4 **(13 128)** (1218)	ALS BEL CHL CME CNR D1 GUM HWA I IRN J NIU NOR PNR PTR RUS SW TUR USA E USA SO USA W	
13 132.4 **(13 131)** (1219)	ALS B BEL BUL DNK HOL J LTU LVA >> >>	

1	2	3
(1219)	<< << MRC RUS EO RUS NW RUS SW RUS W S SNG UKR USA E USA SO USA W	
13 135.4 **(13 134)** (1220)	ALS ARG D2 FJI GRC GUM HWA IRN ISL J JOR PNR POL PTR TUN USA E USA SO USA W	ADD ADD
13 141.4 **(13 140)** (1222)	ALS ARG CAN E CKH F HWA IND W IRN J NOR ROU RUS EO TUR USA W	ADD ADD
13 144.4 **(13 143)** (1223)	ARS B CZE DNK GRC GUM J MRC S SVK UKR USA E USA SO USA W	
13 147.4 **(13 146)** (1224)	AFS ALS CHL D1 FIN G GHA GUM HRV HWA J MCO NZL PNR PTR USA E USA W	 ADD
13 150.4 **(13 149)** (1225)	CHN E GRC IRN JOR MDG NOR PNG ROU RUS NW USA E USA SO	 ADD
13 153.4 **(13 152)** (1226)	AUS CHL CZE DNK F IRN J MCO RUS NW S TUR USA E USA SO USA W	 ADD ADD
13 156.4 **(13 155)** (1227)	ALS AUS E FIN GUM HRV HWA IND E PNR POL PTR RUS EO SUI TZA USA E USA W	 ADD
13 159.4 **(13 158)** (1228)	B CHL CHN CUB EST G GEO HNG I LVA MLD NOR RUS SW RUS W UKR USA CL USA E USA W	 ADD ADD
13 162.4 **(13 161)** (1229)	ARG AUS AZE BUL CAN E F HRV J KAZ KGZ KOR LTU LVA POL QAT RUS AN RUS AS RUS NW RUS SW RUS W USA W	 ADD
13 165.4 **(13 164)** (1230)	ARG CYP FIN G HWA I J MTN SUI UKR USA E USA SO USA W	
13 168.4 **(13 167)** (1231)	ALS AUS F GRC GUM HKG >> >>	

1	2	3
(1231)	<< << HWA IRN LBY NOR PNR POL PRG PTR USA E USA W	
13 171.4 **(13 170)** (1232)	ALG ALS ARG AZE D2 G GRC GUM HWA J KAZ MTN PNR SMA TKM USA E USA W	 ADD ADD
13 174.4 **(13 173)** (1233)	AZE B CHN CLM E G GEO GRC J LVA MLT RUS AN RUS AS RUS EO RUS NW RUS SW RUS W TKM TUR UKR USA SO VTN	
13 177.4 **(13 176)** (1234)	ALS AUS CHN CLM E HWA KOR MDG >> >>	

1	2	3
(1234)	<< << OMA RUS EO USA SO USA W	
13 180.4 **(13 179)** (1235)	ARG CHN F G HOL J KOR LVA RUS AN RUS EO RUS NW RUS SW THA TUR UKR USA SO UZB	
13 183.4 **(13 182)** (1236)	BRM CHN I RUS EO UAE UKR USA SO	ADD
13 186.4 **(13 185)** (1237)	CHN F ISR J LVA PTR RUS AS RUS SW SUI TUR UAE UKR USA CL USA E USA SO VIR	
13 189.4 **(13 188)** (1238)	ALS B BLR CHL CHN EST GUM HWA KOR MCO PAQ PTR RUS AN >> >>	 ADD

1	2	3
(1238)	<< << RUS AS RUS EO RUS NW RUS SW TKM TUR UKR USA E USA SO USA W	
13 192.4 **(13 191)** (1239)	ALS AZE B BUL CAN E CHN E F GUM HWA J KAZ MDG PTR QAT RUS AN RUS AS RUS EO RUS SW RUS W SCG TKM TUR UKR USA E USA SO USA W	
13 195.4 **(13 194)** (1240)	ARG CL ARG SO AUS CHN DGA GRC GUM HKG HWA KGZ MDW POR PTR RUS AN RUS EO RUS NW RUS SW RUS W USA E USA SO USA W	

1	2	3
13 198.4 **(13 197)** (1241)	ALS CHN D2 DGA GUM HWA IND E IND W J MDW PTR UKR USA E USA W	
17 243.4 **(17 242)** (1601)	ALS ARG DNK HWA J LTU NOR RUS NW RUS SW RUS W S SEY TUN UKR USA E USA SO	
17 246.4 **(17 245)** (1602)	ARS AUS E CME G GRC MRC RUS AN RUS EO RUS SW USA E USA SO USA W	
17 249.4 **(17 248)** (1603)	ALS ARG NO CHN CYP DNK HNG I MLT NOR S USA E USA SO USA W	ADD

1	2	3
17 252.4 **(17 251)** (1604)	AUS CAN E F GRC J NOR ROU	
17 255.4 **(17 254)** (1605)	DNK F IND W IRN J OCE RUS SW S UKR USA E USA W	
17 258.4 **(17 257)** (1606)	B CUB FIN G I ISL J NZL PTR RUS SW TUR USA SO USA W	
17 261.4 **(17 260)** (1607)	ALS ATN CAN E GRC IND E IRN MCO NOR POL RUS EO RUS NW USA E USA SO USA W	
17 264.4 **(17 263)** (1608)	AFS CAN W CHN CZE DNK EQA I MTN S SVK TUR	ADD

1	2	3
17 267.4 **(17 266)** (1609)	ARS BEL CKH E GRC IND E ISR J RUS NW USA E USA SO USA W	
17 270.4 **(17 269)** (1610)	AUS CHN D1 EGY INS IRN MTN NOR RUS NW TUN UKR URG USA E USA SO USA W	
17 273.4 **(17 272)** (1611)	B FIN G HRV J LBY MLA SUI TUR USA E USA SO USA W	
17 276.4 **(17 275)** (1612)	ALS AUS CUB GEO GUM HWA JOR MRC PTR RUS EO RUS NW RUS SW UKR USA E USA SO USA W	ADD

1	2	3
17 279.4 **(17 278)** (1613)	ALS B BEL E GRC GUM HWA IRN ISR NOR PNR PTR ROU RUS EO SNG USA E USA SO USA W	
17 282.4 **(17 281)** (1614)	CAN W CHN DNK FIN I MLD NIU RUS AN S	 ADD
17 285.4 **(17 284)** (1615)	AGL AZR CPV FIN G GNB IRN ISL MDR MOZ POR RUS EO SUI TMP	
17 288.4 **(17 287)** (1616)	ALS D1 HWA I IRN J MRC RUS NW TUR USA E USA SO USA W	
17 291.4 **(17 290)** (1617)	B CNR DNK F GRC >> >>	

1	2	3
(1617)	<< << HNG IRN ISR RUS EO S	
17 294.4 **(17 293)** (1618)	ARG BHR DNK G HRV IND W J MRC S TUR	
17 297.4 **(17 296)** (1619)	ALS D2 F GRC GUM HWA MAU NOR PNR PTR RUS EO USA E USA W	
17 300.4 **(17 299)** (1620)	J LBY LTU LVA NOR RUS SW RUS W TUR UKR USA CL USA E	
17 306.4 **(17 305)** (1622)	ALS AUS DNK F GHA GRC HWA J PNR ROU S SUI	ADD ADD ADD ADD ADD
17 309.4 **(17 308)** (1623)	ALS CHN E FIN G GUM >> >>	

1	2	3
(1623)	<< << HOL HWA PNR PRG PTR UKR USA E USA SO USA W	
17 312.4 **(17 311)** (1624)	D1 E I J LTU LVA RUS SW RUS W SMO USA E USA SO USA W	
17 315.4 **(17 314)** (1625)	ALS BEL GRC GUM HWA IRN ISL J POL PTR USA E USA SO USA W	
17 318.4 **(17 317)** (1626)	CAN W CUB GRC HOL IRQ J QAT RUS AN RUS EO RUS NW USA E	 ADD
17 321.4 **(17 320)** (1627)	ALS BEL E EST GRC HNG HRV J LTU LVA NOR RUS SW RUS W	ADD

1	2	3
17 324.4 **(17 323)** (1628)	CUB EQA F GRC IRQ ISR MCO ROU RUS EO RUS NW	ADD ADD
17 327.4 **(17 326)** (1629)	ALG AUS BRM CAN E D2 GRC IRN J NOR SEN	 ADD
17 330.4 **(17 329)** (1630)	ALS BEL E GEO GUM HWA IND W ISL J LTU LVA PNR PTR RUS SW USA E USA SO USA W	
17 333.4 **(17 332)** (1631)	ALG BUL CHL CHN GRC IRQ POL SUI USA E	
17 336.4 **(17 335)** (1632)	ALS ARG AZR CYP G HNG J MDG MDR POR USA E USA SO USA W	

1	2	3
17 339.4 **(17 338)** (1633)	AFS ALS AZE B CHN D2 F GRC GUM HWA KAZ KGZ PNR POL PTR RUS AS TKM USA E USA W	
17 342.4 **17 341** (1634)	CAN NO CHN D1 E GRC J KOR ROU	
17 345.4 **(17 344)** (1635)	AGL AUS AZR BUL CPV DNK GNB I J MAC MDR MOZ PNR POR S TMP	 ADD ADD
17 348.4 **(17 347)** (1636)	ALG ALS FIN GRC GUM HOL HWA IND E J PNR PTR USA E USA W	

1	2	3
17 351.4 **(17 350)** (1637)	AZE CHN E G HKG KAZ KOR MDG NZL RUS AS	
17 354.4 **(17 353)** (1638)	ALS BUL D2 FIN GUM HWA MRC POL SCG SMA USA E USA W	 ADD ADD
17 357.4 **(17 356)** (1639)	ALB ALS CHN D1 E GUM HOL HWA PNR PTR USA E USA W	
17 360.4 **(17 359)** (1640)	BRB CHL D2 EST G GRC J LVA PNR	 ADD
17 363.4 **(17 362)** (1641)	ALG DNK IRQ J S SNG UKR USA E USA SO USA W	
17 366.4 **(17 365)** (1642)	ALS AUS CLM F HWA >> >>	

1	2	3
(1642)	<< << J PTR RUS EO UAE USA CL USA E USA SO USA W VIR	
17 369.4 **(17 368)** (1643)	AZE CHN CLM F KAZ QAT RUS AN RUS EO RUS NW TKM UKR USA SO	
17 372.4 **(17 371)** (1644)	ALS B HWA I RUS EO RUS NW UAE USA CL USA E USA SO USA W	
(17 375.4) **(17 374)** (1645)	ARG CHN ISR KGZ KOR LVA OMA RUS AN RUS EO RUS NW RUS SW RUS W TUR UKR USA SO UZB	
17 378.4 **(17 377)** (1646)	CHN I RUS EO RUS SW RUS W USA W	

1	2	3
17 381.4 **(17 380)** (1647)	ALS CAN E CHN EST HWA KOR LTU RUS AS RUS EO RUS NW TUR UKR USA CL USA E USA SO USA W	
17 384.4 **(17 383)** (1648)	ALS BLR CHN HWA KOR PTR RUS AN RUS AS RUS EO RUS NW RUS SW UKR USA CL USA W VIR	
17 387.4 **(17 386)** (1649)	ALS B BUL GUM HWA J MDG PTR RUS AN USA E USA SO USA W	
17 390.4 **(17 389)** (1650)	ALS ARG CL ARG SO AZE CHN E GRC HKG HWA J PTR RUS AN RUS NW RUS SW UKR >> >>	

1	2	3
(1650)	<< << USA E USA SO USA W	
17 393.4 **(17 392)** (1651)	ALS BLR CHN DGA E GUM HWA J MDW PTR RUS AN RUS EO RUS SW UKR USA E USA SO USA W	
17 396.4 **(17 395)** (1652)	CHN GUM HOL J MDG MDW PTR RUS AN RUS EO RUS NW RUS SW SCG TKM UKR USA E USA SO	
17 399.4 **(17 398)** (1653)	B CHN E PTR RUS AS RUS EO RUS NW RUS SW RUS W UKR USA E USA SO USA W VTN	
17 402.4 **(17 401)** (1654)	CHN G HWA J PTR RUS SW UKR >> >>	

1	2	3
(1654)	<< USA E USA SO USA W	
17 405.4 **(17 404)** (1655)	ALS CHL CHN DGA E G GRC GUM HWA KGZ MDW PTR RUS AN RUS NW RUS SW TUR UKR USA E USA SO USA W	
17 408.4 **(17 407)** (1656)	AUS CHN GUM HWA LVA MDW PTR RUS AN RUS NW RUS SW RUS W SUI UKR USA E USA SO USA W	
19 756.4 **(19 755)** (1801)	ALS AUS CHN E G HWA J JOR PTR RUS AN RUS EO RUS NW TUR UAE USA CL USA E USA SO USA W VIR	

1	2	3
19 759.4 **(19 758)** (1802)	CHN G HOL ISL J MOZ PTR RUS NW RUS SW RUS W UKR USA CL USA E USA SO VIR	
19 762.4 **(19 761)** (1803)	ALS AZE B CHN G HWA J JOR KOR LTU POR PTR RUS EO RUS NW RUS SW TKM UAE UKR USA CL USA E USA W VIR	
19 765.4 **(19 764)** (1804)	ALS CAN W CHN D2 HWA J RUS EO S TUR USA SO USA W	 ADD
19 768.4 **(19 767)** (1805)	ALS CHN HWA I J LVA RUS EO RUS SW RUS W TUR USA W	

1	2	3
19 774.4 **(19 773)** (1807)	ARG CL ARG SO CHN D2 GEO ISL J LVA RUS AN RUS EO RUS NW RUS SW TKM TUR USA SO	
19 777.4 **(19 776)** (1808)	ALS BLR CHN CUB HWA ISR MCO MDG PTR RUS AN RUS AS RUS EO RUS NW TUR UKR USA CL USA E USA SO USA W VIR	 ADD
19 780.4 **(19 779)** (1809)	ALS B CHN E GRC GUM HWA POL RUS NW RUS W SUI TUR UKR USA E USA SO USA W	 ADD
19 783.4 **(19 782)** (1810)	ALS ARG BUL CHN EST HKG HWA >>>>	

1	2	3
(1810)	<< << J LTU PTR RUS AN RUS AS RUS SW UKR USA W	
19 786.4 **(19 785)** (1811)	ALS B CAN E CHN DGA GRC GUM HWA J KOR MDG MDW PTR RUS EO RUS NW TUR UKR USA E USA SO USA W	
19 789.4 **(19 788)** (1812)	ALS ARG AZE CAN E CHN HWA J PTR RUS EO RUS NW SCG TUR UKR USA E USA SO USA W	
19 792.4 **(19 791)** (1813)	ALS CHN E F HWA IND E IND W J PTR S TUR USA E USA SO USA W	 ADD

1	2	3
19 795.4 **(19 794)** (1814)	ALS AUS AZE B CHN DGA E GUM HWA ISL MDW PTR RUS EO RUS NW SCG TUR USA E USA SO USA W	
19 798.4 **(19 797)** (1815)	ARG CL ARG SO AZE BLR CHN GUM J KAZ PTR RUS AN RUS AS RUS EO RUS NW RUS SW TKM UKR USA E USA SO USA W	
22 697.4 **(22 696)** (2201)	AUS CHN CME E GRC GUM HNG RUS NW USA E USA SO USA W	
22 700.4 **(22 699)** (2202)	ARG BRM CAN E HNG I IRN MTN NOR RUS EO UKR	 ADD

1	2	3
22 703.4 **(22 702)** (2203)	AUS E BUL DNK IRN J MRC PNR S	 ADD
22 706.4 **(22 705)** (2204)	AFS ARG CAN NO F FIN HRV ISR RUS EO RUS NW	
22 709.4 **(22 708)** (2205)	ALG AUS EST GRC HOL IRN LTU LVA RUS EO RUS NW RUS W USA E USA SO USA W	
22 712.4 **(22 711)** (2206)	AFS ALS BHR G GUM HRV HWA IND W J MRC POL PTR USA E USA SO USA W	 ADD
22 715.4 **(22 714)** (2207)	AZR CHN CPV D1 ISR LVA MDR POR RUS SW TMP TUN	

1	2	3
22 718.4 **(22 717)** (2208)	ARG NO BUL DNK I IND E J MRC NOR PNR S	 ADD ADD
22 721.4 **(22 720)** (2209)	ALS BEL CHN GRC GUM HWA KOR MRC PNR POL PTR RUS NW USA E USA W	
22 724.4 **(22 723)** (2210)	E FIN GRC HOL J UKR USA E	
22 727.4 **(22 726)** (2211)	CHN CUB DNK I J S UKR	
22 730.4 **(22 729)** (2212)	ALS AUS CYP G GUM HNG HWA MCO PNR PTR SNG USA E USA W	 ADD
22 733.4 **(22 732)** (2213)	BUL CAN E DNK E GEO IRQ LBY >> >>	

1	2	3
(2213)	<< << LTU NZL RUS EO RUS SW RUS W S TUR	
22 736.4 **(22 735)** (2214)	BEL CHN E FIN IRN RUS NW SUI TUR URG USA E USA SO USA W	
22 739.4 **(22 738)** (2215)	CHN F GHA GRC IRQ J NOR POL USA E USA SO USA W	 ADD
22 742.4 **(22 741)** (2216)	CAN W DNK GRC GUM I J MTN USA E USA SO	
22 745.4 **(22 744)** (2217)	ALS D1 E GRC GUM HKG HWA IRN ISR PNR PTR USA E USA W	
22 748.4 **(22 747)** (2218)	ALS CHN CYP DNK F >> >>	

1	2	3
(2218)	<< << GUM HWA PTR S UKR USA E USA SO USA W	
22 751.4 **(22 750)** (2219)	BEL CHN CUB GRC MCO POL SMO	
22 754.4 **(22 753)** (2220)	CAN W CHN CZE D2 G GRC SEN SUI SVK	 ADD
22 760.4 **(22 759)** (2222)	ARS AZR CPV D1 FIN GRC KOR MDR MLD POR TMP USA E USA SO USA W	 ADD
22 763.4 **(22 762)** (2223)	ALS AUS D1 HWA I J MLT PTR TUR USA E USA W	 ADD
22 766.4 **(22 765)** (2224)	ALS D2 E GRC GUM HWA IRQ MAU >> >>	

1	2	3
(2224)	<< <<	
	PNR	
	PTR	
	USA E	
	USA W	
22 769.4	ALG	
(22 768)	BEL	
	CHL	
(2225)	GRC	
	IND W	
	ISL	
	J	
22 772.4	ALB	
(22 771)	ALS	ADD
	CHN	
(2226)	D2	
	EGY	
	F	
	HWA	ADD
	ISL	
	JOR	ADD
	ROU	
	USA W	ADD
22 775.4	ALG	
(22 774)	G	
	GRC	
(2227)	IND E	
	J	
	UKR	
	USA E	
	USA SO	
	USA W	
22 778.4	AUS	
(22 777)	DNK	
	GRC	
(2228)	MRC	
	QAT	ADD
	RUS EO	
	S	
	USA E	
	USA W	
22 781.4	CAN E	
(22 780)	E	
	G	
(2229)	IND W	
	J	
	UKR	
22 784.4	ALS	
(22 783)	AUS	
	AZE	
(2230)	D2	
	E	
	GUM	
	HWA	
	KAZ	
	KGZ	
	PNR	
	PTR	
	>> >>	

1	2	3
(2230)	<< <<	
	RUS AS	
	S	
	TUR	
	USA E	
	USA W	
22 787.4	ALS	
(22 786)	ARS	
	CAN W	
(2231)	EST	
	F	
	FIN	
	GRC	
	J	
	LVA	
	MLA	
	NIU	
	RUS SW	
	USA E	
	USA SO	
	USA W	
22 790.4	CUB	
(22 789)	GEO	
	GRC	
(2232)	HOL	
	IRQ	
	LTU	
	LVA	
	POL	
	RUS EO	
	RUS SW	
	RUS W	
	SUI	
22 793.4	ALS	
(22 792)	CKH	
	GRC	ADD
(2233)	GUM	
	HWA	
	IRN	
	NOR	
	PNR	
	PTR	
	ROU	
	USA E	
	USA SO	
	USA W	
22 796.4	ARG	
(22 795)	DNK	
	INS	
(2234)	J	
	LBY	
	NOR	
	ROU	
	S	
22 799.4	ALS	
(22 798)	F	
	GRC	
(2235)	GUM	
	>> >>	

1	2	3
(2235)	<< <<	
	HWA	
	IRN	
	J	
	PTR	
	QAT	ADD
	RUS NW	
	USA E	
	USA SO	
	USA W	
22 802.4	DNK	
(22 801)	E	
	GRC	
(2236)	IRQ	
	J	
	NZL	
	UKR	
	USA E	
	USA W	
22 805.4	AZR	
(22 804)	CHN	
	I	
(2237)	IRN	
	J	
	MDR	
	NOR	
	POR	
	ROU	
	USA E	
	USA SO	
	USA W	
22 808.4	ALG	
(22 807)	AUS	
	B	
(2238)	D1	
	GRC	
	HNG	
	IRQ	
	J	
	LTU	
	LVA	
	RUS SW	
	RUS W	
22 811.4	ALS	
(22 810)	BEL	
	CHN	
(2239)	E	
	GUM	
	HRV	
	HWA	
	IND E	
	IRN	
	NOR	
	PNR	
	PTR	
	USA E	
	USA W	

1	2	3
22 814.4 **(22 813)** (2240)	CHL GRC J MDG NOR TUN	
22 817.4 **(22 816)** (2241)	ALS AZE CHN CLM GEO HKG HWA J PTR RUS EO RUS NW RUS SW TUR UKR USA CL USA E USA SO USA W VIR VTN	
22 820.4 **(22 819)** (2242)	BLR CLM RUS AN RUS AS RUS EO RUS NW RUS SW RUS W UKR USA SO	
22 823.4 **(22 822)** (2243)	ALS AUS B BUL HWA J KOR PTR RUS EO RUS W UAE USA CL USA E USA SO USA W VIR	
22 826.4 **(22 825)** (2244)	ALS HWA I J RUS AN >> >>	

1	2	3
(2244)	<< << RUS EO UKR USA W	
22 829.4 **(22 828)** (2245)	ALS ARG CL ARG SO CHN E HWA J RUS EO UAE USA SO USA W	
22 832.4 **(22 831)** (2246)	B J KGZ KOR LVA RUS EO RUS SW RUS W SUI TUR USA SO	
22 835.4 **(22 834)** (2247)	ALS CAN E HWA J RUS AN RUS AS RUS EO RUS NW RUS SW UKR USA CL USA E USA SO USA W VIR	
22 838.4 **(22 837)** (2248)	ALS CHN E HWA PTR USA E USA SO USA W	
22 841.4 **(22 840)** (2249)	ALS CHN HWA I J PTR RUS EO RUS NW RUS W >> >>	

1	2	3
(2249)	<< << UKR USA E USA SO USA W	
22 844.4 **(22 843)** (2250)	ALS AZE B DGA E GRC GUM HWA KAZ KOR MDW PTR RUS EO RUS NW RUS SW SCG TKM TUR UKR USA E USA SO USA W	
22 847.4 **(22 846)** (2251)	ALS B BLR CHN GUM HWA J MCO MDW PTR RUS AN RUS NW RUS SW TUR UKR USA E USA SO USA W	ADD
22 850.4 **(22 849)** (2252)	ALS G GUM HWA J LVA PTR RUS NW RUS SW TKM UAE UKR >> >>	

1	2	3
(2252)	<< USA E USA SO USA W	
22 853.4 **(22 852)** (2253)	ALS AUS AZE CHN DGA E G GEO GRC GUM HWA J KAZ MDW PTR RUS NW RUS W TKM UKR USA E USA SO USA W	
26 146.4 **(26 145)** (2501)	ALS AZE B CAN E CHN D1 HNG HWA JOR RUS EO SCG TUR UKR USA CL USA E USA SO USA W	
26 149.4 **(26 148)** (2502)	ALS AUS BLR CHN G HWA J MOZ PTR RUS EO RUS SW UKR USA CL USA E USA SO USA W VIR	

1	2	3
26 152.4 **(26 151)** (2503)	ARG CL BUL CHN J RUS EO SUI UAE USA SO	
26 155.4 **(26 154)** (2504)	ALS ARG SO B BLR CHN HWA J PTR RUS AN RUS AS RUS EO RUS NW RUS SW TKM UKR USA CL USA E USA SO USA W VIR	
26 158.4 **(26 157)** (2505)	ALS B CHN E GUM HWA IND E IND W ISR PTR RUS EO RUS NW RUS SW RUS W TUR UKR USA E USA SO USA W	
26 161.4 **(26 160)** (2506)	ALS ARG CHN HWA I J S TUR USA SO USA W	ADD

1	2	3
26 164.4 **(26 163)** (2507)	ALS ARG AZE CAN E CHN DGA E GRC GUM HKG HWA J KAZ MDW PTR RUS EO TKM TUR UKR USA E USA SO USA W	
26 167.4 **(26 166)** (2508)	ALS AUS B CAN W CHN DGA GRC GUM HNG JOR MDW POR PTR RUS EO RUS SW TUR UKR USA E USA SO USA W	
26 170.4 **(26 169)** (2509)	ALS ARG CL ARG SO CHN D2 GUM HWA J MDW PTR RUS EO S TUR USA E USA SO USA W	ADD

MOD

10 Special section No./Weekly Circular or BR IFIC No./Date (e.g. MAR/10/1305/280278). (WRC-03)

1	2	3		4	5	6	7				8	9		10
		3.1	3.2				7.1	7.2 a)	7.2 b)	7.2 c)		9a)	9b)	
401	AUS	12	800	CV	J3E	20.0	ND				2200-1000	2200-1000	30	MAR/54/1640/021084
401	PNR	9, 18	500	CP	J3E	30.0	ND				0000-1200		25	AR16/84/1838/160888
403	CAN CL	2, 16	1 000	CV	J3E	30.0	ND				0000-2359	0800-2000	360	AR16/120/2318/100398
403	PNR	9, 18	500	CP	J3E	30.0	ND				0800-1200		25	AR16/84/1838/160888
404	MCO	17	300	CP	J3E	40.0	ND				0700-2200	0800-1000 1500-1700	50	AP25/125/2379/250599
405	USA CL	16	800	CP	J3E	30.0 15.0	ND				1100-2300 2300-1100	1200-1800	180	MAR/50/1609/280284
407	AUS	11, 12	800	CO/CP	J3E	37.0	ND				0000-2400			MAR/48/1602/100184
407	I	17	1 200	CO	J3E	31.8	ND				0500-2200	0700-1100	60	MAR/58/1682/300785
408	B	18, 20	800	CV	J3E	21.8	ND				0000-2400		120	MAR/69/1712/040386
408	CHN	5	200	OT	J3E	26.0	D	340	60	3	1100-1900	1200-1300	190	
408	MLD	6	–	CO	J3E	30.0	D	300	120	5	0000-2400			AR16/79/1816/150388
408	SMA	8, 12, 13	1 000	CP	J3E	30.0	ND				1800-0400		30	MAR/10/1305/280278
409	GHA	19	500	CP	J3E	30.0	ND				0000-2359			AR16/114/2237/230796
							D	110	30	10				
							D	330	30	10				
409	QAT	6	2 500	CP	J3E	30.0	ND				0000-2400			AR16/89/1886/250789
411	AMS	10	–	CP	J3E	24.8	ND				0430-0445 0830-0845 1230-1245		25	MAR/15/1347/191278
411	EQA	9	800	CP	J3E	24.0	ND				0030-0530		30	AR16/90/1895/260989
411	I	17	–	CO	J3E	31.8	ND				0500-2200	0700-1100	60	AR16/75/1747/041186
411	KIR	7, 8	500	CP	J3E	27.0	ND				0800-1800			MAR/59/1686/270885
416	ARG CL	14, 20	1 000	CP	J3E	30.0	D	90	60	2	0000-2400	1100-1700	490	
417	TZA	6, 10, 19, 21	3 200	CO/CP	J3E	37.0	ND				0700-1800	0800-1000 1500-1700	240	MAR/66/1707/280186
418	B	18, 20	800	CV	J3E	21.8	ND				0000-2400	0700-1100	240	MAR/69/1712/040386
418	I	17	–	CO	J3E	31.8	ND				0500-2200	0700-1100	60	AR16/75/1747/041186
419	TZA	6, 10, 19, 21	3 200	CO/CP	J3E	37.0	ND				0700-1800	0800-1000 1500-1700	240	MAR/57/1680/160785
422	SUI	15, 17	4 000	CP	J3E	37.0	D	ROT	30	8	1900-0200	2000-2200	20	MAR/62/1694/221085
423	B	18, 20	800	CV	J3E	27.0	ND				0000-2400			MAR/16/1350/160179
423	MLT	6, 15, 17	3 000	CP	J3E	31.8	ND				1700-0500	2000-2100	60	MAR/41/1565/190483
423	QAT	6	800	CP	J3E	37.0	ND				0000-2400		200	MAR/23/1412/010480
		6	1 500	CP	J3E	37.0	D	130	60	9	0000-2400		200	
		6	1 500	CP	J3E	37.0	D	200	60	9	0000-2400		200	
		6	1 500	CP	J3E	37.0	D	310	60	9	0000-2400		200	
424	AUS E	12	800	CO/CP	J3E	30.0	ND				0000-2400			MAR/48/1602/100184
424	PNR	9, 18	500	CP	J3E	30.0	ND				0800-1200		25	AR16/73/1742/300986
425	B	18, 20	800	CV	J3E	27.0	ND				1000-2300	1900-2200	100	MAR/16/1350/160179
425	JOR	6, 15, 17	5 000	CP	J3E	37.0	ND				1700-0500			MAR/49/1604/240184
601	I	17	–	CO	J3E	31.8	ND				0400-2200	0600-1400	60	AR16/75/1747/041186
601	MLD	6	–	CO	J3E	30.0	D	300	120	5	0000-2400			AR16/79/1816/150388
601	NCL	7, 8, 12	2 500	CP	J3E	27.0	ND				0000-2400			AR16/71/1737/260886
602	AUS E	12	1 000	CV	J3E	26.0	ND				0000-2359	1900-0700		AP25/128/2406/301199
602	B	18, 20	800	CP	J3E	30.0	ND				0000-2400			MAR/69/1712/040386
602	EQA	9	800	CP	J3E	24.0	ND				0630-1000		30	AR16/90/1895/260989
602	FJI	12	1 000	CP	J3E	30.0	ND				1800-0600	2000-0500	120	MAR/37/1519/180582

1	2	3		4	5	6	7				8	9		10
		3.1	3.2				7.1	7.2 a)	7.2 b)	7.2 c)		9a)	9b)	
602	GHA	19	500	CP	J3E	30.0	ND				0000-2359			AR16/114/2237/230796
							D	110	30	10				
							D	330	30	10				
603	AUS	11, 12	4000	CP	J3E	30.0	ND				0000-2400	2100-0900	30	MAR/55/1651/181284
603	MLT	6, 15, 17	3000	CP	J3E	31.8	ND				0500-1700	0900-1100	60	MAR/41/1565/190483
604	ATN	18	1500	CP	J3E	30.0	ND				0000-0200 0600-1000		120	MAR/35/1495/171181
604	B	18, 20	800	CP	J3E	30.0	ND				1000-1300 1700-2000			MAR/69/1712/040386
604	TUV	8, 12	450	CP	J3E	30.0	ND				1800-1200	2000-0400	30	AR16/91/1897/101089
605	B	18, 20	800	CP	J3E	30.0	ND				1000-1300 1700-2000			MAR/69/1712/040386
605	F	15, 17	2500	CP	J3E	40.0	ND				0600-0900 1700-2200	1800-2200	300	MAR/56/1679/090785
605	NZL	7, 8, 11, 12, 13	6000	CP	J3E	37.0	ND				0000-2400	0400-0900	90	MAR/63/1695/291085
803	SUI	15, 16, 17, 18, 19	6000	CP	J3E	40.0	D	ROT	30	8	0600-0200	0600-1000 1700-2200	50	MAR/62/1694/221085
804	JOR	6, 15, 17	5000	CP	J3E	37.0	ND				0500-1700			MAR/49/1604/240184
804	QAT	6	1500	CP	J3E	37.0	ND				0000-2400		200	MAR/23/1412/010480
		6	2500	CP	J3E	37.0	D	130	60	10	0000-2400		200	
		6	2500	CP	J3E	37.0	D	200	60	10	0000-2400		200	
		6, 17	2500	CP	J3E	37.0	D	310	60	10	0000-2400		200	
805	EQA	9	800	CP	J3E	24.0	ND				1130-1730		30	AR16/90/1895/260989
806	AUS	11	2000	CP	J3E	30.0	ND				2100-0500	2100-0500	90	MAR/52/1631/310784
806	SMA	8, 12, 13	3000	CP	J3E	30.0	ND				1800-0400		30	MAR/11/1310/040478
807	I	15, 17	–	CO	J3E	31.8	ND				0000-2400	0500-1300	60	AR16/75/1747/041186
808	I	15, 17	–	CO	J3E	31.8	ND				0000-2400	1300-2100	60	AR16/75/1747/041186
812	I	15, 17	–	CO	J3E	31.8	ND				0000-2400	2100-0500	60	AR16/75/1747/041186
814	KIR	7, 8	500	CP	J3E	27.0	ND				1800-0800			MAR/65/1702/171285
815	JOR	6, 17	3000	CP	J3E	37.0	ND				0700-2000	0800-1200	60	AR16/100/2084/060793
817	PNR	9, 18	2000	CP	J3E	30.0	ND				1200-2300		25	AR16/84/1838/160888
819	PNR	9, 18	2000	CP	J3E	30.0	ND				1200-2300		25	AR16/84/1838/160888
820	D2	6, 15, 16, 17, 18, 19	6000	CP	J3E	40.0	ND				0400-2000		30	AR16/82/1827/310588
820	TZA	6, 10, 19, 21	3200	CO/CP	J3E	37.0	ND				0700-1800	0800-1000 1500-1700	240	MAR/66/1707/280186
822	AUS	11, 12	3000	CP	J3E	30.0	ND				2100-0900	2100-0900	90	MAR/64/1696/051185
823	TZA	6, 10, 19, 21	3200	CO/CP	J3E	30.0	ND				0700-1800	0800-1000 1500-1700	240	MAR/66/1707/280186
823	USA W	9	1200	CO	J3E	30.0	ND				1600-0400	1600-1800 0000-0200	180	AR16/92/1910/230190
825	AMS	10	–	CP	J3E	24.8	ND				0445-0500 0845-0900 1245-1300		25	MAR/15/1347/191278
825	GHA	19	500	CP	J3E	30.0	ND				0000-2359			AR16/114/2237/230796
							D	110	30	10				
							D	330	30	10				
825	S	5, 15	–	CP	J3E	40.0	D	10	60	11	0000-2400	0800-1000	90	AR16/70/1730/080786
		5, 15				40.0	D	50	60	11	0000-2400	0800-1000	90	
		6, 10, 17				40.0	D	130	60	11	0000-2400	0800-1000	90	
		6, 10, 17, 19, 21				40.0	D	170	60	11	0000-2400	0800-1000	90	
		15, 16, 17, 18, 19, 21				40.0	D	210	60	11	0000-2400	0800-1000	90	
		15, 16, 18, 19				40.0	D	250	60	11	0000-2400	0800-1000	90	
		15, 16				40.0	D	310	60	11	0000-2400	0800-1000	90	

1	2	3		4	5	6	7				8	9		10
		3.1	3.2				7.1	7.2 a)	7.2 b)	7.2 c)		9a)	9b)	
826	QAT	6	2 500	CP	J3E	30.0	ND				0000-2400			AR16/89/1886/250789
829	BRM	5, 6, 7	3 300	CP	J3E	24.0	ND				2330-1130	0330-0430	30	AR16/112/2223/160496
829	MLD	6	–	CO	J3E	30.0	D	300	120	5	0000-2400			AR16/79/1816/150388
830	CHN	5, 6, 7, 8	8 000	CP	J3E	38.5	ND				0000-2400	0000-0800	400	
830	MCO	15, 17	800	CP	J3E	40.0	ND				0700-2200	0800-1000 1500-1700	50	AP25/125/2379/250599
1 201	QAT	6	2 500	CP	J3E	30.0	ND				0400-0600 1400-1600			AR16/89/1886/250789
1 207	EQA	9	800	CP	J3E	24.0	ND				1830-2330		30	AR16/90/1895/260989
1 208	I	6, 15, 16, 17, 18	–	CO	J3E	31.8	ND				0300-2200	0600-1100	30	AR16/75/1747/041186
1 210	SUI	6, 10, 15, 16, 17, 18, 19, 20, 21	9 000	CP	J3E	40.0	D	ROT	30	8	0600-0200	0800-1200 1600-2100	60	MAR/62/1694/221085
1 213	USA W	9	1 600	CO	J3E	30.0	ND				1800-2300	2100-2200	180	AR16/95/1996/011091
1 220	D2	6, 15, 16, 17, 18, 19	6 000	CP	J3E	40.0	ND				0400-2000		30	AR16/82/1827/310588
1 220	JOR	6, 15, 17	5 000	CP	J3E	37.0	ND				0500-1700			MAR/49/1604/240184
1 222	ALS	4	1 600	CO	J3E	30.0	ND				2000-0100	2300-2400	180	AR16/95/1996/011091
1 222	USA W	9	1 600	CO	J3E	30.0	ND				1800-2300	2100-2200	180	AR16/95/1996/011091
1 224	GHA	19	500	CP	J3E	30.0	ND				0000-2359			AR16/114/2237/230796
							D	110	30	10				
							D	330	30	10				
1 225	JOR	6, 10	5 000	CP	J3E	37.0	D	144	60	9	0900-1700	1300-1500	30	AR16/100/2084/060793
1 226	MCO	01, 02, 06, 15, 16, 17, 18, 19	6 000	CP	J3E	40.0	ND				0700-2200	0800-1000 1500-1700	50	AP25/125/2379/250599
1 226	S	5, 15	–	CP	J3E	40.0	D	10	60	11	0000-2400	0800-1000	90	AR16/70/1730/080786
		5, 15				40.0	D	50	60	11	0000-2400	0800-1000	90	
		6, 10, 17				40.0	D	130	60	11	0000-2400	0800-1000	90	
		6, 10, 17, 19, 21				40.0	D	170	60	11	0000-2400	0800-1000	90	
		15, 16, 17, 18, 19, 21				40.0	D	210	60	11	0000-2400	0800-1000	90	
		15, 16, 18, 19				40.0	D	250	60	11	0000-2400	0800-1000	90	
		15, 16				40.0	D	310	60	11	0000-2400	0800-1000	90	
1 227	TZA	6, 10, 19, 21	3 200	CO/CP	J3E	37.0	ND				0700-1800	0800-1000 1500-1700	240	MAR/66/1707/280186
1 228	I	6, 15, 16, 17, 18	–	CO	J3E	31.8	ND				2200-0500	2300-0200	30	AR16/75/1747/041186
1 228	MLD	6	–	CO	J3E	30.0	D	300	120	5	0000-2400			AR16/79/1816/150388
1 229	QAT	6, 17	2 000	CP	J3E	37.0	ND				0400-0600 1400-1600		200	MAR/23/1412/010480
		6	3 000	CP	J3E	37.0	D	130	60	11	0400-0600 1400-1600			
		6, 17	3 000	CP	J3E	37.0	D	200	60	11	0400-0600 1400-1600			
		6, 17	3 000	CP	J3E	37.0	D	310	60	11	0400-0600 1400-1600			
1 232	PNR	9, 14, 16, 18	4 000	CP	J3E	30.0	ND				1200-2400		25	AR16/84/1838/160888
1 232	SMA	8, 12, 13	3 000	CP	J3E	30.0	ND				1800-0400		30	MAR/11/1310/040478
1 236	BRM	5, 6, 7	3 300	CP	J3E	24.0	ND				2330-1130	0330-0430	30	AR16/112/2223/160496
1 238	MCO	15, 16, 17	5 000	CP	J3E	40.0	ND				0700-2200	0800-1600	120	AP25/129/2445/290501
1 603	MLT	15, 17	3 000	CP	J3E	31.8	ND				0000-1159			MAR/21/1379/070879
1 608	EQA	9, 14	800	CP	J3E	27.0	ND				1800-2300	2000-2300	40	AR16/111/2221/020496
1 612	JOR	6, 10	6 000	CP	J3E	37.0	D	144	60	9	1000-1600	1300-1500	20	AR16/100/2084/060793
1 614	MLD	6	–	CO	J3E	30.0	D	300	120	5	0000-2400			AR16/79/1816/150388
1 622	ALS	4	2 400	CO	J3E	30.0	ND				2000-0600	0200-0300	180	AR16/95/1996/011091

1	2	3		4	5	6	7				8	9		10
		3.1	3.2				7.1	7.2 a)	7.2 b)	7.2 c)		9a)	9b)	
1622	GHA	19	500	CP	J3E	30.0	ND				0000-2359			AR16/114/2237/230796
							D	110	30	10				
							D	330	30	10				
1622	HWA	8	2400	CO	J3E	30.0	ND				2000-0600	0200-0300	180	AR16/95/1996/011091
1622	PNR	9, 14, 16, 18	4000	CP	J3E	30.0	ND				1200-2400		25	AR16/84/1838/160888
1622	SUI	3, 4, 5, 6, 7, 9, 10, 15, 16, 17, 18, 19, 20, 21	10000	CP	J3E	40.0	D	ROT	30	8	0600-0200	0800-1700	60	MAR/62/1694/221085
1626	J	3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14	–	CR	J3E	37.0	ND				0000-2400	0800-1000	500	
1626	QAT	6, 17	4000	CP	J3E	40.0	ND				0600-0800 1200-1400		200	MAR/23/1412/010480
		6	6000	CP	J3E	40.0	D	130	60	11	0600-0800 1200-1400			
		6, 10, 17	6000	CP	J3E	40.0	D	200	60	11	0600-0800 1200-1400			
		6, 15, 17	6000	CP	J3E	40.0	D	310	60	11	0600-0800 1200-1400			
1627	ALS	4	2400	CO	J3E	30.0	ND				2000-0600	0200-0300	180	AR16/95/1996/011091
1628	EQA	9, 14	800	CP	J3E	27.0	ND				1800-2300	2000-2300	40	AR16/111/2221/020496
1628	MCO	01, 02, 06, 15, 16, 17, 18, 19	6000	CP	J3E	40.0	ND				0700-2200	0800-1000 1400-1600	50	AP25/125/2379/250599
1629	BRM	5, 6, 7	3300	CP	J3E	24.0	ND				2330-1130	0330-0430	30	AR16/112/2223/160496
1630	J	3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14	–	CR	J3E	37.0	ND				0000-2400	0300-0700	650	
1634	CHN	8, 9, 10, 11, 12, 13, 14, 15, 17, 19, 20, 21	19000	CP	J3E	40.0	ND				0000-1000	0200-0600	200	
1635	I	5, 6, 7, 9, 10, 14, 15, 16, 18, 20, 21	–	CO	J3E	31.8	ND				0400-2400	0600-1600	30	AR16/75/1747/041186
1635	PNR	9, 14, 16, 18	4000	CP	J3E	30.0	ND				1500-2400		25	AR16/84/1838/160888
1637	CHN	8, 9, 10, 11, 12, 13, 14, 15, 17, 19, 20, 21	19000	CP	J3E	40.0	ND				0000-1000	0200-0600	200	
1638	SMA	8, 12, 13	4000	CP	J3E	30.0	ND				1800-0400		30	MAR/10/1305/280278
1638	D2	6, 15, 16, 17, 18, 19	6000	CP	J3E	40.0	ND				0400-2000		30	AR16/82/1827/310588
1639	CHN	5	800	OT	J3E	31.8	D	90	60	3	0000-1200	0100-0230	300	
1640	PNR	9, 14, 16, 18	4000	CP	J3E	30.0	ND				1500-2400		25	AR16/84/1838/160888
1804	S	06, 15, 16, 17, 18, 19	7000	CP	J3E	38.5	ND				0000-2359	0600-1900	120	AP25/126/2388/270799
1808	MCO	15, 16, 17	5000	CP	J3E	40.0	ND				0700-2200	0800-1600	120	AP25/129/2445/290501
1809	POL	5, 11, 21	20000	CP	J3E	40.0	ND				0000-2230	1730-2230	90	AR16/119/2310/130198
1813	S	06, 15, 16, 17, 18, 19	7000	CP	J3E	38.5	ND				0000-2359	0600-1900	120	AP25/130/2445/290501
2202	BRM	5, 6, 7	3300	CP	J3E	24.0	ND				2330-1130	0330-0430	30	AR16/112/2223/160496
2203	PNR	9, 14, 16, 18	4000	CP	J3E	30.0	ND				1500-2400		25	AR16/84/1838/160888
2206	BHR	6, 10, 15, 17, 19, 21	–	CP	J3E	34.8	ND				0000-2359			AR16/100/2084/060793
2208	I	5, 6, 7, 9, 10, 14, 15, 16, 18, 20, 21	–	CO	J3E	31.8	ND				0500-2400	0700-2200	30	AR16/75/1747/041186
2208	PNR	9, 14, 16, 18	4000	CP	J3E	30.0	ND				1200-2400		25	AR16/84/1838/160888
2209	CHN	4, 9, 10, 11, 12, 13, 14, 15, 17, 19, 20, 21	19000	CP	J3E	40.0	ND				0000-1000	0200-0600	200	
2211	CHN	4, 9, 10, 11, 12, 13, 14, 15, 17, 19, 20, 21	18000	CP	J3E	40.0	ND				0000-1000	0200-0600	240	

1	2	3		4	5	6	7				8	9		10
		3.1	3.2				7.1	7.2 a)	7.2 b)	7.2 c)		9a)	9b)	
2212	MCO	01, 02, 06, 10, 15, 16, 17, 18, 19, 20, 21	8000	CP	J3E	40.0	ND				0700-2200	0800-1000 1400-1600	50	AP25/125/2379/250599
2215	CHN	4, 9, 10, 11, 12, 13, 14, 15, 17, 19, 20, 21	19000	CP	J3E	40.0	ND				0000-1000	0200-0600	200	
2215	GHA	19	500	CP	J3E	30.0	ND D D	110 330	30 30	10 10	0000-2359			AR16/114/2237/230796
2218	CHN	4, 9, 10, 11, 12, 13, 14, 15, 17, 19, 20, 21	19000	CP	J3E	40.0	ND				0000-1000	0200-0600	200	
2220	CHN	4, 9, 10, 11, 12, 13, 14, 15, 17, 19, 20, 21	19000	CP	J3E	40.0	ND				0000-1000	0200-0600	240	
2220	SUI	6, 10, 18, 20, 21	14000	CP	J3E	40.0	D	ROT	70	8,5	0600-1800	0900-1600	60	MAR/27/1431/120880
2222	MLD	6	–	CO	J3E	30.0	D	300	120	5	0000-2400			AR16/79/1816/150388
2223	MLT	15, 17	3000	CP	J3E	31.8	ND				0000-1159			MAR/20/1372/190679
2226	ALS	4	2400	CO	J3E	30.0	ND				2000-0400	0100-0200	180	AR16/95/1996/011091
2226	HWA	8	2400	CO	J3E	30.0	ND				2000-0400	0100-0200	180	AR16/95/1996/011091
2226	JOR	6, 10, 11	8000	CP	J3E	37.0	D	144	60	9	1100-1400			AR16/100/2084/060793
2226	USA W	9	2400	CO	J3E	30.0	ND				1800-0200	2300-2400	180	AR16/95/1996/011091
2228	QAT	6, 10, 11	2500	CP	J3E	33.0	D	140	60	10	0000-1800	0400-1100		AR16/96/1997/081091
2233	GRC	17	2600	CO	J3E	30.0	ND				0500-2200	0600, 1000, 2200	30	MAR/51/1621/220584
2235	QAT	6, 17 6, 10, 11 6, 10, 17, 21 17, 15	5000 8000 8000 8000	CP CP CP CP	J3E J3E J3E J3E	40.0 40.0 40.0 40.0	ND D D D	130 200 310	60 60 60	11 11 11	0800-1200 0800-1200 0800-1200 0800-1200		200 200 200 200	MAR/23/1412/010480
2237	CHN	4, 9, 10, 11, 12, 13, 14, 15, 17, 19, 20, 21	19000	CP	J3E	40.0	ND				0000-1000	0200-0600	200	
2239	CHN	7	2700	CP	J3E	20.0	ND				0100-0930	0200-0400	280	
2251	MCO	15, 16, 17	5000	CP	J3E	40.0	ND				0700-2200	0800-1600	120	AP25/129/2445/290501
2506	S	06, 15, 16, 17, 18, 19	7000	CP	J3E	38.5	ND				0000-2359	0600-1900	120	AP25/130/2445/290501
2509	S	06, 15, 16, 17, 18, 19	7000	CP	J3E	38.5	ND				0000-2359	0600-1900	120	AP25/126/2388/270799

APPENDIX 27 (Rev.WRC-03)*

Frequency allotment Plan for the aeronautical mobile (R) service and related information

MOD

27/17 1.6 The arrangements contemplated in Nos. **27**/15 and **27**/16 should be made under the Articles of the Constitution and Convention of the International Telecommunication Union and the Radio Regulations entitled "Special agreements"*. (WRC-03)

SUP

27/29

MOD

* *Note by the Secretariat:* This edition of Appendix **27** incorporates editorial amendments to the Appendix **27** Aer2 as adopted by the WARC-Aer2.

The references in Appendix **27** now conform to the new numbering scheme of the Radio Regulations. In addition, the text of Appendix **27** contains updated definitions of the relevant aeronautical areas conforming with the new geographical situation reflecting the political changes since 1979. It also contains updated references to the classes of emissions in accordance with Article **2**.

MOD

APPENDIX 30 (Rev.WRC-03)*

Provisions for all services and associated Plans and List** 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** of the Radio Regulations) (WRC-03)

ADD

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

ARTICLE 1 (WRC-2000)

General definitions

MOD

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)

ADD

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)

ADD

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

Frequency bands

SUP

2.2

ADD

ARTICLE 2A (WRC-03)

Use of the guardbands

2A.1 The use of the guardbands defined in § 3.9 of Annex 5 of this Appendix 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) shall be coordinated with assignments of the BSS subject to a Plan using the provisions of Article 7 of this Appendix.

2A.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 of this Appendix, as appropriate. Advance publication information is not required. 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 of this Appendix.

2A.3 Any assignment intended to provide these functions in support of a geostationary-satellite network in the BSS whose assignments are submitted under Article 4 of this Appendix shall be brought into use within the regulatory time-limit applicable to the corresponding BSS assignments submitted under Article 4 of this Appendix.

2A.4 Any assignment intended to provide these functions for 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), shall be brought into use within the regulatory time-limit referred to in § 4.1.3 or § 4.2.6 of this Appendix from the date of receipt by the Bureau of the complete Appendix **4** data.

2A.5 Assignments intended to provide these functions shall be notified under Article **11**.

2A.6 Section II of Article **23** does not apply to assignments in the guardbands intended to provide the above-mentioned functions.

ARTICLE 4 (Rev.WRC-03)

Procedures for modifications to the Region 2 Plan or for additional uses in Regions 1 and 3[2]

MOD

---

[2] The provisions of Resolution **49 (Rev.WRC-03)** apply. (WRC-03)

MOD

4.1.3 An administration, or one[2A] 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 by that date[3]. A proposed new or modified assignment not included in the List by that date shall also lapse[3]. (WRC-03)

ADD

[2A] 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)

MOD

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[3] The provisions of Resolution **533 (Rev.WRC-2000)** apply. (WRC-03)

ADD

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[3A]. 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-03)** for the assignment with respect to the satellite that suffered the launch failure, if that information has not already been provided.

If, within one year of the request for extension, the administration has not provided to the Bureau updated Resolution **49 (Rev.WRC-03)** information for the new satellite under procurement, the related frequency assignments shall lapse. (WRC-03)

ADD

_____

[3A] 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)

MOD

_____

[4] 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 Council Decision 482 unless the payment has already been received (see also Resolution **87 (WRC-03)**). (WRC-03)

ADD

4.1.7*bis* 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)

ADD

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)

ADD

4.1.10*ter* 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)

ADD

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)

MOD

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)

MOD

4.1.15 The Bureau shall publish[4A] 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)

ADD

[4A] 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 Council Decision 482 unless the payment has already been received (see also Resolution **87 (WRC-03)**). (WRC-03)

MOD

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 of this Appendix 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)

MOD

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 List provisionally under the provisions of § 4.1.18, the calculation of the equivalent protection margin (EPM)[4B] of an assignment in the Regions 1 and 3 List or for which the procedure of Article 4 of this Appendix 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)

ADD

[4B] For the definition of EPM, see § 3.4 of Annex 5. (WRC-03)

MOD

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)

ADD

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)

MOD

4.2.6 An administration, or one[7A] 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 by that date[7B]. A request for a modification that has not been included in that Plan by that date shall also lapse[7B]. (WRC-03)

ADD

[7A] 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)

ADD

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

ADD

4.2.6*bis* 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[7C]. 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-03)** for the assignment with respect to the satellite that suffered the launch failure, if that information has not already been provided.

If, within one year of the request for extension, the administration has not provided to the Bureau updated Resolution **49 (Rev.WRC-03)** information for the new satellite under procurement, the related frequency assignments shall lapse. (WRC-03)

ADD

_____

[7C] 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)

MOD

_____

[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 Council Decision 482 unless the payment has already been received (see also Resolution **87 (WRC-03)**). (WRC-03)

MOD

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)

ADD

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)

ADD

4.2.14*ter* 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)

ADD

4.2.16*bis* 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)

MOD

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)

MOD

4.2.19 The Bureau shall publish[8A] in a Special Section of its BR IFIC the information received under § 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)

ADD

[8A] 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 Council Decision 482 unless the payment has already been received (see also Resolution **87 (WRC-03)**). (WRC-03)

ADD

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 of this Appendix 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)

ADD

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)

ADD

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)

ADD

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)

ARTICLE 5

Notification, examination and recording in the Master International Frequency Register of frequency assignments to space stations in the broadcasting-satellite service

MOD

5.1.1 Whenever an administration[8B] 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)

ADD

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[8B] 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)

ADD

5.1.2*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)

MOD

_____

[9] 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)

MOD

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 § *b)*, *c)*, *d)* and *e)* below);

b) with respect to its conformity with the appropriate Regional Plan or the Regions 1 and 3 List, as appropriate; *or*

c) 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/(m^2 · 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)

MOD

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 Column 2d. 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 entered in Column 2d for such frequency assignments. (WRC-03)

MOD

5.3.1 If an administration has not confirmed the bringing into use of a frequency assignment under § 5.2.8, the Bureau will make inquiries of the administration not earlier than six months after the expiry of the period specified in § 5.1.3. On receipt of the relevant information, the Bureau will either modify[9A] the date of coming into use or cancel the entry. (WRC-03)

ADD

[9A] See also § 4.1.3 or 4.2.6 of Article 4 of this Appendix. (WRC-03)

ARTICLE 7 (WRC-2000)

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[11]

MOD

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[11] 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)

MOD

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)

SUP

ARTICLE 9

Power flux-density limits between 12.2 GHz and 12.7 GHz to protect terrestrial services in Regions 1 and 3 from interference from Region 2 broadcasting-satellite space stations

ARTICLE 10

The Plan for the broadcasting-satellite service in the frequency band 12.2-12.7 GHz in Region 2

MOD

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)

ARTICLE 11 (Rev.WRC-03)

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

SUP

11.2 TEXT FOR NOTES IN THE REMARKS COLUMN OF THE PLAN

SUP

11.3 TABLE SHOWING CORRESPONDENCE BETWEEN CHANNEL NUMBERS AND ASSIGNED FREQUENCIES

ADD

11.2 TEXT FOR NOTES IN THE REMARKS COLUMN OF THE PLAN (WRC-03)

1 To be dedicated to the Islamic programme envisaged in WARC SAT-77 documents.

2 Not used.

3 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, Libyan Arab Jamahiriya, 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/(m^2 · 27 MHz)) or the pfd criteria referred to in Table 1, whichever is higher.

6 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).

7 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 (WRC-97)**, has been received prior to 12 May 2000.

8 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 Provisional beam. These assignments have been included in the Plan by WRC-2000. These assignments are for exclusive use by East Timor.

TABLE 1

Symbol	**Criteria**
a	§ 3 of Annex 1[1]
b	§ 4 of Annex 1[1]
c	§ 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

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

Beam name	Channels	Ref. Table 1	Affected administrations*	Affected networks/beams/terrestrial stations*
AFS02100	23	c	F, F/EUT, MLA	MEASAT-SA1, VIDEOSAT-8-KU-C, EUTELSAT 3-4E
AGL29500	1, 3, 5, 7, 9, 11, 13	c	USA	INTELSAT7 335.5E, INTELSAT8 335.5E
ARM06400	26	c	BLR/IK, CHN, D, F/EUT, G, HOL, J, PAK, TON, UAE, USA	ASIASAT-AKX, ASIASAT-BKX, ASIASAT-CK1, ASIASAT-CKX, ASIASAT-DKX, ASIASAT-EK1, ASIASAT-EKX, EMARSAT-1B, EMARSAT-1F, EMARSAT-1G, EUROPE*STAR-2G-1, EUROPE*STAR-2G-2, EUROPE*STAR-2G-3, EUTELSAT 3-25.5E, EUTELSAT 3-33E, EUTELSAT 3-36E, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, EUTELSAT 3-73.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-86E, EUTELSAT 3-88.5E, INTELSAT KFOS 85E, INTELSAT7 66E, INTERSPUTNIK-27E-Q, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, NSS-21, NSS-22, NSS-23, NSS-24, NSS-8, NSS-9, PAKSAT-1, PAKSAT-2, PAKSAT-C, PAKSAT-D, SKYSAT-A1, SKYSAT-A2, SKYSAT-B2, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, TONGASAT AP-KU-4
ARM06400	30, 34, 38	c	BLR/IK, CHN, D, F/EUT, G, HOL, J, LAO, MLA, PAK, PNG, THA, TON, UAE, USA	APSTAR-3, APSTAR-4, ASIASAT-AKX, ASIASAT-BKX, ASIASAT-CK1, ASIASAT-CKX, ASIASAT-DKX, ASIASAT-EK1, ASIASAT-EKX, EMARSAT-1B, EMARSAT-1F, EMARSAT-1G, EUROPE*STAR-2G-1, EUROPE*STAR-2G-2, EUROPE*STAR-2G-3, EUTELSAT 3-25.5E, EUTELSAT 3-33E, EUTELSAT 3-36E, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, EUTELSAT 3-73.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-86E, EUTELSAT 3-88.5E, INTELSAT KFOS 85E, INTELSAT7 66E, INTERSPUTNIK-27E-Q, L-STAR-1, L-STAR-2, L-STAR-3, L-STAR-5, L-STAR-6, MEASAT-1, MEASAT-3, MEASAT-91.5E, MEASAT-95E, MEASAT-SA3, MEASAT-SA4, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, NSS-21, NSS-22, NSS-23, NSS-24, NSS-8, NSS-9, PACSTAR-L1, PACSTAR-L2, PAKSAT-1, PAKSAT-2, PAKSAT-C, PAKSAT-D, SKYSAT-A1, SKYSAT-A2, SKYSAT-B2, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, THAICOM-A2B, THAICOM-A3B, THAICOM-A5B, THAICOM-C1, THAICOM-G1K, TONGASAT AP-KU-4
ARS34000	40	c	BLR/IK, CHN, D, F/EUT, G, HOL, INS, J, KOR, LAO, MLA, PAK, PNG, SNG, THA, TON, UAE, USA	AM-SAT A1, AM-SAT A4, APSTAR-3, APSTAR-4, ASIASAT-AK1, ASIASAT-AKX, ASIASAT-BKX, ASIASAT-CK1, ASIASAT-CKX, ASIASAT-DKX, ASIASAT-EK1, ASIASAT-EKX, EMARSAT-1B, EMARSAT-1F, EMARSAT-1G, EUROPE*STAR-2G-1, EUROPE*STAR-2G-2, EUROPE*STAR-2G-3, EUTELSAT 3-25.5E, EUTELSAT 3-33E, EUTELSAT 3-36E, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, EUTELSAT 3-73.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-86E, EUTELSAT 3-88.5E, INTELSAT7 66E, INTERSPUTNIK-27E-Q, JCSAT-3A, JCSAT-3B, KOREASAT-1, KOREASAT-2, L-STAR-1, L-STAR-2, L-STAR-3, L-STAR-4, L-STAR-5, L-STAR-6, MEASAT-1, MEASAT-3, MEASAT-91.5E, MEASAT-95E, MEASAT-SA3, MEASAT-SA4, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-125.5E, N-SAT-128, N-SAT-129.5E, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, N-STAR-A2, N-STAR-B2, NSS-21, NSS-22, NSS-23, NSS-24, NSS-8, NSS-9, PACSTAR-L1, PACSTAR-L2, PACSTAR-L3, PAKSAT-1, PAKSAT-2, PAKSAT-C, PAKSAT-D, PAKSAT-E, PALAPA-C5, PALAPA-C6, PALAPA-C7, SB-SAT-135, SJC-1, SKYSAT-A1, SKYSAT-A2, SKYSAT-A3, SKYSAT-B1, SKYSAT-B2, SKYSAT-B3, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, ST-1C, THAICOM-A2B, THAICOM-A3B, THAICOM-A5B, THAICOM-C1, THAICOM-G1K, THAICOM-G2K, TONGASAT AP-KU-4, TONGASAT C/KU-1, TONGASAT C/KU-2, TONGASAT C/KU-3

Beam name	Channels	Ref. Table 1	Affected administrations*	Affected networks/beams/terrestrial stations*
ARS__100	22, 24	c	F/EUT	EUTELSAT 3-16E
ARS__100	26	c	BLR/IK, CHN, D, F/EUT, G, HOL, J, PAK, SNG, THA, TON, UAE, USA	ASIASAT-AK1, ASIASAT-AKX, ASIASAT-BKX, ASIASAT-CK1, ASIASAT-CKX, ASIASAT-DKX , ASIASAT-EK1, ASIASAT-EKX, EMARSAT-1B, EMARSAT-1F, EMARSAT-1G, EUROPE*STAR-2G-1, EUROPE*STAR-2G-2, EUROPE*STAR-2G-3, EUTELSAT 3-16E, EUTELSAT 3-25.5E, EUTELSAT 3-33E, EUTELSAT 3-36E, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, EUTELSAT 3-73.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-86E, EUTELSAT 3-88.5E, INTELSAT KFOS 85E, INTELSAT7 66E, INTERSPUTNIK-27E-Q, JCSAT-3A, JCSAT-3B, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-125.5E, N-SAT-129.5E, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, NSS-21, NSS-22, NSS-23, NSS-24, NSS-8, NSS-9, PAKSAT-1, PAKSAT-2, PAKSAT-C, PAKSAT-D, PAKSAT-E, SKYSAT-A1, SKYSAT-A2, SKYSAT-A3, SKYSAT-B2, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, ST-1C, THAICOM-C2, TONGASAT AP-KU-4, TONGASAT C/KU-1
ARS__100	28	c	BLR/IK, CHN, D, F/EUT, G, HOL, INS, J, KOR, LAO, MLA, PAK, PNG, SNG, THA, TON, UAE, USA	AM-SAT A1, AM-SAT A4, APSTAR-3, APSTAR-4, ASIASAT-AK1, ASIASAT-AKX, ASIASAT-BKX, ASIASAT-CK1, ASIASAT-CKX, ASIASAT-DKX, ASIASAT-EK1, ASIASAT-EKX, EMARSAT-1B, EMARSAT-1F, EMARSAT-1G, EUROPE*STAR-2G-1, EUROPE*STAR-2G-2, EUROPE*STAR-2G-3, EUTELSAT 3-25.5E, EUTELSAT 3-33E, EUTELSAT 3-36E, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, EUTELSAT 3-73.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-86E, EUTELSAT 3-88.5E, INTELSAT KFOS 85E, INTELSAT7 66E, INTERSPUTNIK-27E-Q, JCSAT-3A, JCSAT-3B, KOREASAT-103KU, KOREASAT-123.7KU, L-STAR-1, L-STAR-2, L-STAR-3, L-STAR-4, L-STAR-5, L-STAR-6, MEASAT-1, MEASAT-3, MEASAT-91.5E, MEASAT-95E, MEASAT-SA3, MEASAT-SA4, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-125.5E, N-SAT-128, N-SAT-129.5E, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, NSS-21, NSS-22, NSS-23, NSS-24, NSS-8, NSS-9, PACSTAR-L1, PACSTAR-L2, PACSTAR-L3, PAKSAT-1, PAKSAT-2, PAKSAT-C, PAKSAT-D, PAKSAT-E, PALAPA-C5, PALAPA-C6, PALAPA-C7, SJC-1, SKYSAT-A1, SKYSAT-A2, SKYSAT-A3, SKYSAT-B2, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, ST-1C, THAICOM-A2B, THAICOM-A3B, THAICOM-A5B, THAICOM-C1, THAICOM-C2, THAICOM-G1K, THAICOM-G2K, TONGASAT AP-KU-4, TONGASAT C/KU-1
ARS__100	30, 32, 34, 36, 38	c	BLR/IK, CHN, D, F/EUT, G, HOL, INS, J, LAO, MLA, PAK, PNG, SNG, THA, TON, UAE, USA	AM-SAT A1, AM-SAT A4, APSTAR-3, APSTAR-4, ASIASAT-AK1, ASIASAT-AKX, ASIASAT-BKX, ASIASAT-CK1, ASIASAT-CKX, ASIASAT-DKX, ASIASAT-EK1, ASIASAT-EKX, EMARSAT-1B, EMARSAT-1F, EMARSAT-1G, EUROPE*STAR-2G-1, EUROPE*STAR-2G-2, EUROPE*STAR-2G-3, EUTELSAT 3-25.5E, EUTELSAT 3-33E, EUTELSAT 3-36E, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, EUTELSAT 3-73.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-86E, EUTELSAT 3-88.5E, INTELSAT KFOS 85E, INTELSAT7 66E, INTERSPUTNIK-27E-Q, JCSAT-3A, JCSAT-3B, L-STAR-1, L-STAR-2, L-STAR-3, L-STAR-4, L-STAR-5, L-STAR-6, MEASAT-1, MEASAT-3, MEASAT-91.5E, MEASAT-95E, MEASAT-SA3, MEASAT-SA4, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-125.5E, N-SAT-128, N-SAT-129.5E, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, NSS-21, NSS-22, NSS-23, NSS-24, NSS-8, NSS-9, PACSTAR-L1, PACSTAR-L2, PACSTAR-L3, PAKSAT-1, PAKSAT-2, PAKSAT-C, PAKSAT-D, PAKSAT-E, PALAPA-C5, PALAPA-C6, PALAPA-C7, SJC-1, SKYSAT-A1, SKYSAT-A2, SKYSAT-A3, SKYSAT-B2, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, ST-1C, THAICOM-A2B, THAICOM-A3B, THAICOM-A5B, THAICOM-C1, THAICOM-C2, THAICOM-G1K, THAICOM-G2K, TONGASAT AP-KU-4, TONGASAT C/KU-1

Beam name	Channels	Ref. Table 1	Affected administrations*	Affected networks/beams/terrestrial stations*
ARS__100	40	c	BLR/IK, CHN, D, F/EUT, G, HOL, INS, J, LAO, MLA, PAK, PNG, SNG, THA, TON, UAE, USA	AM-SAT A1, AM-SAT A4, APSTAR-3, APSTAR-4, ASIASAT-AK1, ASIASAT-AKX, ASIASAT-BKX, ASIASAT-CK1, ASIASAT-CKX, ASIASAT-DKX, ASIASAT-EK1, ASIASAT-EKX, EMARSAT-1B, EMARSAT-1F, EMARSAT-1G, EUROPE*STAR-2G-1, EUROPE*STAR-2G-2, EUROPE*STAR-2G-3, EUTELSAT 3-25.5E, EUTELSAT 3-33E, EUTELSAT 3-36E, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, EUTELSAT 3-73.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-86E, EUTELSAT 3-88.5E, INTELSAT7 66E, INTERSPUTNIK-27E-Q, JCSAT-3A, JCSAT-3B, L-STAR-1, L-STAR-2, L-STAR-3, L-STAR-4, L-STAR-5, L-STAR-6, MEASAT-1, MEASAT-3, MEASAT-91.5E, MEASAT-95E, MEASAT-SA3, MEASAT-SA4, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-125.5E, N-SAT-128, N-SAT-129.5E, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, NSS-21, NSS-22, NSS-23, NSS-24, NSS-8, NSS-9, PACSTAR-L1, PACSTAR-L2, PACSTAR-L3, PAKSAT-1, PAKSAT-2, PAKSAT-C, PAKSAT-D, PAKSAT-E, PALAPA-C5, PALAPA-C6, PALAPA-C7, SJC-1, SKYSAT-A1, SKYSAT-A2, SKYSAT-A3, SKYSAT-B2, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, ST-1C, THAICOM-A2B, THAICOM-A3B, THAICOM-A5B, THAICOM-C1, THAICOM-G1K, THAICOM-G2K, TONGASAT AP-KU-4, TONGASAT C/KU-1
AUSA_100	1, 5, 9	c	BLR/IK	INTERSPUTNIK-153.5EQ
AZE06400	25	c	BLR/IK, CHN, D, F/EUT, G, HOL, J, PAK, TON, USA	ASIASAT-AK1, ASIASAT-CK1, ASIASAT-EK1, EUROPE*STAR-2G-1, EUROPE*STAR-2G-2, EUROPE*STAR-2G-3, EUTELSAT 3-25.5E, EUTELSAT 3-33E, EUTELSAT 3-36E, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-88.5E, INTELSAT KFOS 85E, INTELSAT7 66E, INTERSPUTNIK-27E-Q, JCSAT-3B, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, NSS-21, NSS-22, NSS-23, NSS-24, NSS-8, NSS-9, PAKSAT-1, PAKSAT-2, PAKSAT-C, PAKSAT-D, SKYSAT-A1, SKYSAT-A2, SKYSAT-A3, SKYSAT-B2, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, TONGASAT AP-KU-4
AZE06400	27	c	BLR/IK, CHN, D, F/EUT, G, HOL, J, MLA, PAK, TON, UAE, USA	ASIASAT-AK1, ASIASAT-AKX, ASIASAT-BKX, ASIASAT-CK1, ASIASAT-CKX, ASIASAT-DKX, ASIASAT-EK1, ASIASAT-EKX, EMARSAT-1B, EMARSAT-1F, EMARSAT-1G, EUROPE*STAR-2G-1, EUROPE*STAR-2G-2, EUROPE*STAR-2G-3, EUTELSAT 3-25.5E, EUTELSAT 3-33E, EUTELSAT 3-36E, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, EUTELSAT 3-73.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-86E, EUTELSAT 3-88.5E, INTELSAT KFOS 85E, INTELSAT7 66E, INTERSPUTNIK-27E-Q, JCSAT-3B, MEASAT-SA3, MEASAT-SA4, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, NSS-21, NSS-22, NSS-23, NSS-24, NSS-8, NSS-9, PAKSAT-1, PAKSAT-2, PAKSAT-C, PAKSAT-D, SKYSAT-A1, SKYSAT-A2, SKYSAT-A3, SKYSAT-B2, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, TONGASAT AP-KU-4
AZE06400	29	c	BLR/IK, CHN, D, F/EUT, G, HOL, J, KOR, LAO, MLA, PAK, PNG, THA, TON, UAE, USA	APSTAR-3, APSTAR-4, ASIASAT-AK1, ASIASAT-AKX, ASIASAT-BKX, ASIASAT-CK1, ASIASAT-CKX, ASIASAT-DKX, ASIASAT-EK1, ASIASAT-EKX, EMARSAT-1B, EMARSAT-1F, EMARSAT-1G, EUROPE*STAR-2G-1, EUROPE*STAR-2G-2, EUROPE*STAR-2G-3, EUTELSAT 3-25.5E, EUTELSAT 3-33E, EUTELSAT 3-36E, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, EUTELSAT 3-73.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-86E, EUTELSAT 3-88.5E, INTELSAT KFOS 85E, INTELSAT7 66E, INTERSPUTNIK-27E-Q, JCSAT-3B, KOREASAT-103KU, KOREASAT-123.7KU, L-STAR-1, L-STAR-2, L-STAR-3, L-STAR-5, L-STAR-6, MEASAT-1, MEASAT-3, MEASAT-91.5E, MEASAT-95E, MEASAT-SA3, MEASAT-SA4, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, NSS-21, NSS-22, NSS-23, NSS-24, NSS-8, NSS-9, PACSTAR-L1, PACSTAR-L2, PAKSAT-1, PAKSAT-2, PAKSAT-C, PAKSAT-D, SJC-1, SKYSAT-A1, SKYSAT-A2, SKYSAT-A3, SKYSAT-B2, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, THAICOM-A2B, THAICOM-A3B, THAICOM-A5B, THAICOM-C1, THAICOM-G1K, TONGASAT AP-KU-4

Beam name	Channels	Ref. Table 1	Affected administrations*	Affected networks/beams/terrestrial stations*
AZE06400	31, 33, 35, 37, 39	c	BLR/IK, CHN, D, F/EUT, G, HOL, J, LAO, MLA, PAK, PNG, THA, TON, UAE, USA	APSTAR-3, APSTAR-4, ASIASAT-AK1, ASIASAT-AKX, ASIASAT-BKX, ASIASAT-CK1, ASIASAT-CKX, ASIASAT-DKX, ASIASAT-EK1, ASIASAT-EKX, EMARSAT-1B, EMARSAT-1F, EMARSAT-1G, EUROPE*STAR-2G-1, EUROPE*STAR-2G-2, EUROPE*STAR-2G-3, EUTELSAT 3-25.5E, EUTELSAT 3-33E, EUTELSAT 3-36E, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT-3-70.5E, EUTELSAT 3-73.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-86E, EUTELSAT 3-88.5E, INTELSAT KFOS 85E, INTELSAT7 66E, INTERSPUTNIK-27E-Q, JCSAT-3B, L-STAR-1, L-STAR-2, L-STAR-3, L-STAR-5, L-STAR-6, MEASAT-1, MEASAT-3, MEASAT-91.5E, MEASAT-95E, MEASAT-SA3, MEASAT-SA4, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, NSS-21, NSS-22, NSS-23, NSS-24, NSS-8, NSS-9, PACSTAR-L1, PACSTAR-L2, PAKSAT-1, PAKSAT-2, PAKSAT-C, PAKSAT-D, SJC-1, SKYSAT-A1, SKYSAT-A2, SKYSAT-A3, SKYSAT-B2, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, THAICOM-A2B, THAICOM-A3B, THAICOM-A5B, THAICOM-C1, THAICOM-G1K, TONGASAT AP-KU-4
BEL01800	22, 24	c	ARG, B, F, F/EUT, HOL, NOR, URG, USA	B-SAT I, BIFROST-14, EUTELSAT 3-10E, EUTELSAT 3-12.5W, EUTELSAT 3-13E, EUTELSAT 3-14.8W, EUTELSAT 3-16E, EUTELSAT 3-4E, EUTELSAT 3-64W, EUTELSAT 3-7E, F-SAT-KU-E-5W, INTELSAT8 304.5E, INTELSAT8 304E, INTELSAT8 310E, NAHUEL-D, NAHUEL-E, NSS-10, NSS-15, NSS-17, NSS-18, URUSAT-1, URUSAT-2, URUSAT-3, URUSAT-4, URUSAT-5, URUSAT-6, URUSAT-7, URUSAT-8, USASAT-14L, USASAT-26G, USASAT-26L, USASAT-35O, USASAT-41L, USASAT-41S, VIDEOSAT-5, VIDEOSAT-5-KA, VIDEOSAT-6, VIDEOSAT-6-KA, VIDEOSAT-7, VIDEOSAT-7-KA, VIDEOSAT-8-KU-C
BEL01800	26	c	ARG, B, F, F/EUT, HOL, NOR, PAK, URG, USA	B-SAT I, BIFROST-14, EUTELSAT 3-10E, EUTELSAT 3-12.5W, EUTELSAT 3-13E, EUTELSAT 3-14.8W, EUTELSAT 3-16E, EUTELSAT 3-4E, EUTELSAT 3-64W, EUTELSAT 3-7E, F-SAT-KU-E-5W, INTELSAT8 304.5E, INTELSAT8 304E, INTELSAT8 310E, NAHUEL-D, NAHUEL-E, NSS-10, NSS-15, NSS-17, NSS-18, PAKSAT-1, URUSAT-1, URUSAT-2, URUSAT-3, URUSAT-4, URUSAT-5, URUSAT-6, URUSAT-7, URUSAT-8, USASAT-14L, USASAT-26G, USASAT-26L, USASAT-35O, USASAT-41L, USASAT-41S, VIDEOSAT-5, VIDEOSAT-5-KA, VIDEOSAT-6, VIDEOSAT-6-KA, VIDEOSAT-7, VIDEOSAT-7-KA, VIDEOSAT-8-KU-C
BEL01800	28, 30, 32, 34, 36, 38, 40	c	PAK	PAKSAT-1
BEN23300	1, 5, 9, 13	c	USA	INTELSAT7 340E, INTELSAT8 340E
BFA10700	22, 24	c	E	HISPASAT-1, HISPASAT-2C3 KU
BHR25500	25	c	BLR/IK, D, F/EUT, HOL, PAK	EUROPE*STAR-2G-1, EUROPE*STAR-2G-2, EUROPE*STAR-2G-3, EUTELSAT 3-25.5E, EUTELSAT 3-33E, EUTELSAT 3-36E, EUTELSAT 3-44E, EUTELSAT 3-48E, INTERSPUTNIK-27E-Q, NSS-21, NSS-22, NSS-23, PAKSAT-1, PAKSAT-2, PAKSAT-C
BHR25500	27	c	F/EUT, MLA, PAK	EUTELSAT 3-33E, EUTELSAT 3-36E, MEASAT-SA3, PAKSAT-C
BHR25500	29, 33, 37	c	BLR/IK, D, F/EUT, HOL, MLA, PAK, THA, UAE	EMARSAT-1B, EMARSAT-1F, EMARSAT-1G, EUROPE*STAR-2G-1, EUROPE*STAR-2G-2, EUROPE*STAR-2G-3, EUTELSAT 3-25.5E, EUTELSAT 3-33E, EUTELSAT 3-36E, EUTELSAT 3-44E, EUTELSAT 3-48E, INTERSPUTNIK-27E-Q, MEASAT-SA3, MEASAT-SA4, NSS-21, NSS-22, NSS-23, PAKSAT-1, PAKSAT-2, PAKSAT-C, THAICOM-C1
BHR25500	31, 35, 39	c	F/EUT	EUTELSAT 3-33E, EUTELSAT 3-36E
BOT29700	22, 24, 26	c	NOR	BIFROST-14
BUL02000	22, 24, 26	c	NOR	BIFROST-14
CAF25800	22, 26	c	F/EUT, USA	USASAT-14L, EUTELSAT 3-12.5W, EUTELSAT 3-14.8W

Beam name	Channels	Ref. Table 1	Affected administrations*	Affected networks/beams/terrestrial stations*
CHNF_100	2, 4, 6, 8, 10, 12	c	BLR/IK, HOL, J, MHL, PNG, TON, USA	INTELSAT IBS 183E, INTELSAT7 157E, INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E, INTELSAT7 183E, INTELSAT8 174E, INTELSAT8 176E, INTELSAT8 177E, INTELSAT8 178E, INTELSAT8 180E, INTELSAT8 183E, INTERSPUTNIK-153.5EQ, JCSAT-1R, JCSAT-2R, N-SAT-123W, N-SAT-127W, N-SAT-131W, N-SAT-133W, N-SAT-141E, N-SAT-141W, N-SAT-143W, N-SAT-145W, N-SAT-147.5E, N-SAT-148W, N-SAT-150W, N-SAT-152W, N-SAT-159W, N-SAT-161W, N-SAT-163W, N-SAT-165W, N-SAT-166E, N-SAT-167W, N-SAT-168E, N-SAT-169W, N-SAT-172W, N-SAT-173W, N-SAT-174.5W, N-SAT-175.5E, N-SAT-175.5W, N-SAT-175W, N-SAT-176W, N-SAT-178.5E, N-SAT-178.5W, NSS-11, NSS-14, NSS-19, NSS-27,NSS-6, NSS-7, ORION-AP-1, ORION-AP-2, PACSTAR-L3, SUPERBIRD-A2, SUPERBIRD-B2, SUPERBIRD-C, TONGASAT C1/C1-R, USASAT-14E, USASAT-14K, USASAT-14M, USASAT-42L, USASAT-42Q
CHNF_100	14, 16, 18, 20, 24	c	BLR/IK, HOL, J, MHL, PNG, TON, USA	INTERSPUTNIK-153.5EQ, JCSAT-1R, JCSAT-2R, N-SAT-123W, N-SAT-127W, N-SAT-131W, N-SAT-133W, N-SAT-141E, N-SAT-141W, N-SAT-143W, N-SAT-145W, N-SAT-147.5E, N-SAT-148W, N-SAT-150W, N-SAT-152W, N-SAT-159W, N-SAT-161W, N-SAT-163W, N-SAT-165W, N-SAT-166E, N-SAT-167W, N-SAT-168E, N-SAT-169W, N-SAT-172W, N-SAT-173W, N-SAT-174.5W, N-SAT-175.5E, N-SAT-175.5W, N-SAT-175W, N-SAT-176W, N-SAT-178.5E, N-SAT-178.5W, NSS-11, NSS-14, NSS-19, NSS-27,NSS-6, NSS-7, ORION-AP-1, ORION-AP-2, PACSTAR-L3, SUPERBIRD-A2, SUPERBIRD-B2, SUPERBIRD-C, TONGASAT C1/C1-R, USASAT-14E, USASAT-14K, USASAT-14M, USASAT-42L, USASAT-42Q
CHNF_100	22	c	BLR/IK, USA	INTERSPUTNIK-153.5EQ, USASAT-14M
CME30000	22, 24, 26	c	F/EUT	EUTELSAT 3-12.5W
COD__100	2, 4, 6, 8, 10, 12	c	USA	INTELSAT IBS 342E, INTELSAT7 342E, INTELSAT7 340E, INTELSAT8 342E, INTELSAT8 340E
COG23500	1, 3, 5, 7, 9, 11, 13, 15, 17, 19	c	F/EUT	EUTELSAT 3-12.5W
CPV30100	2, 4, 6, 8, 10, 12	c	USA	INTELSAT7 325.5E, INTELSAT8 325.5E
CTI23700	1, 3, 5, 7, 9, 11, 13	c	USA	INTELSAT7 335.5E, INTELSAT8 335.5E
CVA08300	1, 3, 5, 7, 9, 11	c	NOR, USA	INTELSAT7 359E, INTELSAT8 359E, BIFROST-14, INTELSAT10 359E
CVA08500	22	c	NOR	BIFROST-14
CYP08600	1, 3, 5, 7, 9, 11, 13	c	NOR, USA	INTELSAT7 359E, INTELSAT8 359E, BIFROST-14
CYP08600	15, 17, 19	c	NOR	BIFROST-14
CZE14401	1, 9, 17, 25	c	F/EUT	EUTELSAT 3-12.5W
CZE14402	14	c	F/EUT	EUTELSAT 3-12.5W
CZE14403	2, 22, 24	c	F/EUT	EUTELSAT 3-12.5W

Beam name	Channels	Ref. Table 1	Affected administrations*	Affected networks/beams/terrestrial stations*
DNK__100	1, 3, 5, 7, 9, 11	c	HOL, USA	INTELSAT7 335.5E, INTELSAT K 338.5E, INTELSAT8 338.5E, INTELSAT8 330.5E, INTELSAT7 330.5E, INTELSAT8 335.5E, INTELSAT8 332.5E, INTELSAT7 332.5E, NSS-15
DNK__100	13	c	HOL, USA	INTELSAT7 335.5E, INTELSAT8 338.5E, INTELSAT8 330.5E, INTELSAT7 330.5E, INTELSAT8 335.5E, INTELSAT8 332.5E, INTELSAT7 332.5E, NSS-15
DNK__100	15, 17, 19	c	HOL	NSS-15
EGY02600	2, 6, 10, 14, 18	c	BLR/IK, F	INTERSPUTNIK-6W-Q, VIDEOSAT-5, VIDEOSAT-6, VIDEOSAT-5-KA, VIDEOSAT-6-KA
EST06100	1, 3, 5, 7, 9, 11	c	F, F/EUT, HOL, NOR, URG, USA	BIFROST-14, EUTELSAT 3-10E, EUTELSAT 3-12.5W, EUTELSAT 3-13E, EUTELSAT 3-14.8W, EUTELSAT 3-16E, EUTELSAT 3-4E, EUTELSAT 3-7E, F-SAT-KU-E-5W, INTELSAT IBS 307E, INTELSAT IBS 310E, INTELSAT IBS 342E, INTELSAT10 359E, INTELSAT7 304.5E, INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 330.5E, INTELSAT7 340E, INTELSAT7 342E, INTELSAT7 359E, INTELSAT8 304.5E, INTELSAT8 307E, INTELSAT8 310E, INTELSAT8 319.5E, INTELSAT8 325.5E, INTELSAT8 328.5E, INTELSAT8 330.5E, INTELSAT8 332.5E, INTELSAT8 335.5E, INTELSAT8 340E, INTELSAT8 342E, INTELSAT8 359E, NSS-15, NSS-18, URUSAT-6, URUSAT-7, USASAT-14L, USASAT-26L, USASAT-41L, USASAT-41S, VIDEOSAT-5, VIDEOSAT-5-KA, VIDEOSAT-6, VIDEOSAT-6-KA, VIDEOSAT-7, VIDEOSAT-7-KA, VIDEOSAT-8-KU-C
EST06100	13	c	F, F/EUT, HOL, NOR, URG, USA	BIFROST-14, EUTELSAT 3-10E, EUTELSAT 3-12.5W, EUTELSAT 3-13E, EUTELSAT 3-14.8W, EUTELSAT 3-16E, EUTELSAT 3-4E, EUTELSAT 3-7E, F-SAT-KU-E-5W, INTELSAT IBS 307E, INTELSAT IBS 310E, INTELSAT IBS 342E, INTELSAT10 359E, INTELSAT7 304.5E, INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 330.5E, INTELSAT7 340E, INTELSAT7 342E, INTELSAT7 359E, INTELSAT8 304.5E, INTELSAT8 307E, INTELSAT8 310E, INTELSAT8 319.5E, INTELSAT8 325.5E, INTELSAT8 328.5E, INTELSAT8 330.5E, INTELSAT8 332.5E, INTELSAT8 335.5E, INTELSAT8 340E, INTELSAT8 342E, INTELSAT8 359E, NSS-15, NSS-18, URUSAT-6, URUSAT-7, USASAT-14L, USASAT-26A, USASAT-26L, USASAT-41L, USASAT-41S, VIDEOSAT-5, VIDEOSAT-5-KA, VIDEOSAT-6, VIDEOSAT-6-KA, VIDEOSAT-7, VIDEOSAT-7-KA, VIDEOSAT-8-KU-C
EST06100	15, 17, 19	c	F, F/EUT, HOL, NOR, URG, USA	BIFROST-14, EUTELSAT 3-10E, EUTELSAT 3-12.5W, EUTELSAT 3-13E, EUTELSAT 3-14.8W, EUTELSAT 3-16E, EUTELSAT 3-4E, EUTELSAT 3-7E, F-SAT-KU-E-5W, INTELSAT8 304.5E, INTELSAT8 310E, NSS-15, NSS-18, URUSAT-6, URUSAT-7, USASAT-14L, USASAT-26L, USASAT-41L, USASAT-41S, VIDEOSAT-5, VIDEOSAT-5-KA, VIDEOSAT-6, VIDEOSAT-6-KA, VIDEOSAT-7, VIDEOSAT-7-KA, VIDEOSAT-8-KU-C
F 09300	22, 24, 26	c	BLR/IK, F/EUT	INTERSPUTNIK-6W-Q, EUTELSAT 3-12.5W
FJI19300	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23	c	J	N-SAT-178.5W
FSM00000	1, 3, 5, 7, 9, 11, 13	c	J, USA	INTELSAT7 157E, SUPERBIRD-A2
FSM00000	15, 17, 19, 21, 23	c	J	SUPERBIRD-A2

Beam name	Channels	Ref. Table 1	Affected administrations*	Affected networks/beams/terrestrial stations*
F____100	25	c	BLR/IK, CHN, D, F/EUT, G, HOL, J, MHL, TON, USA	ASIASAT-AK1, ASIASAT-CK1, ASIASAT-EK1, EUROPE*STAR-2G-1, EUROPE*STAR-2G-2, EUROPE*STAR-2G-3, EUTELSAT 3-25.5E, EUTELSAT 3-33E, EUTELSAT 3-36E, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-88.5E, INTELSAT KFOS 85E, INTELSAT7 66E, INTERSPUTNIK-27E-Q, JCSAT-3A, JCSAT-3B, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-125.5E, N-SAT-129.5E, N-SAT-141E, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, N-STAR-A2, N-STAR-B2, NSS-21, NSS-22, NSS-23, NSS-24, NSS-8, NSS-9, ORION-AP-1, SB-SAT-135, SKYSAT-A1, SKYSAT-A2, SKYSAT-A3, SKYSAT-B1, SKYSAT-B2, SKYSAT-B3, SKYSAT-B4, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, TONGASAT AP-KU-4, TONGASAT C/KU-1, TONGASAT C/KU-2, TONGASAT C/KU-3, TONGASAT C/KU-4
F____100	27	c	BLR/IK, CHN, D, F/EUT, G, HOL, J, THA, TON, USA	ASIASAT-AK1, ASIASAT-AKX, ASIASAT-BKX, ASIASAT-CK1, ASIASAT-CKX, ASIASAT-DKX, ASIASAT-EK1, ASIASAT-EKX, EUROPE*STAR-2G-1, EUROPE*STAR-2G-2, EUROPE*STAR-2G-3, EUTELSAT 3-25.5E, EUTELSAT 3-33E, EUTELSAT 3-36E, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, EUTELSAT 3-73.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-86E, EUTELSAT 3-88.5E, INTELSAT KFOS 85E, INTELSAT7 66E, INTERSPUTNIK-27E-Q, JCSAT-3A, JCSAT-3B, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-125.5E, N-SAT-129.5E, N-SAT-141E, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, N-STAR-A2, N-STAR-B2, NSS-21, NSS-22, NSS-23, NSS-24, NSS-8, NSS-9, SB-SAT-135, SKYSAT-A1, SKYSAT-A2, SKYSAT-A3, SKYSAT-B1, SKYSAT-B2, SKYSAT-B3, SKYSAT-B4, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, THAICOM-C2, TONGASAT AP-KU-4, TONGASAT C/KU-1, TONGASAT C/KU-2, TONGASAT C/KU-3, TONGASAT C/KU-4
F____100	29	c	BLR/IK, CHN, D, F/EUT, G, HOL, J, KOR, LAO, MLA, PNG, THA, TON, USA	ASIASAT-AK1, ASIASAT-AKX, ASIASAT-BKX, ASIASAT-CK1, ASIASAT-CKX, ASIASAT-DKX, ASIASAT-EK1, ASIASAT-EKX, EUROPE*STAR-2G-1, EUROPE*STAR-2G-2, EUROPE*STAR-2G-3, EUTELSAT 3-25.5E, EUTELSAT 3-33E, EUTELSAT 3-36E, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, EUTELSAT 3-73.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-86E, EUTELSAT 3-88.5E, INTELSAT KFOS 85E, INTELSAT7 66E, INTERSPUTNIK-27E-Q, JCSAT-3A, JCSAT-3B, KOREASAT-1, KOREASAT-103KU, KOREASAT-123.7KU, KOREASAT-2, L-STAR-1, L-STAR-2, L-STAR-3, L-STAR-4, L-STAR-5, L-STAR-6, MEASAT-1, MEASAT-3, MEASAT-91.5E, MEASAT-95E, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-125.5E, N-SAT-128, N-SAT-129.5E, N-SAT-141E, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, N-STAR-A2, N-STAR-B2, NSS-21, NSS-22, NSS-23, NSS-24, NSS-8, NSS-9, PACSTAR-L1, PACSTAR-L2, PACSTAR-L3, SB-SAT-135, SKYSAT-A1, SKYSAT-A2, SKYSAT-A3, SKYSAT-B1, SKYSAT-B2, SKYSAT-B3, SKYSAT-B4, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, THAICOM-A2B, THAICOM-A3B, THAICOM-A4B, THAICOM-A5B, THAICOM-C1, THAICOM-C2, THAICOM-G1K, THAICOM-G2K, THAICOM-G3K, TONGASAT AP-KU-4, TONGASAT C/KU-1, TONGASAT C/KU-2, TONGASAT C/KU-3, TONGASAT C/KU-4
F____100	31, 33, 35, 37, 39	c	BLR/IK, CHN, D, F/EUT, G, HOL, J, KOR, LAO, MLA, PNG, THA, TON, USA	ASIASAT-AK1, ASIASAT-AKX, ASIASAT-BKX, ASIASAT-CK1, ASIASAT-CKX, ASIASAT-DKX, ASIASAT-EK1, ASIASAT-EKX, EUROPE*STAR-2G-1, EUROPE*STAR-2G-2, EUROPE*STAR-2G-3, EUTELSAT 3-25.5E, EUTELSAT 3-33E, EUTELSAT 3-36E, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, EUTELSAT 3-73.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-86E, EUTELSAT 3-88.5E, INTELSAT KFOS 85E, INTELSAT7 66E, INTERSPUTNIK-27E-Q, JCSAT-3A, JCSAT-3B, KOREASAT-1, KOREASAT-2, L-STAR-1, L-STAR-2, L-STAR-3, L-STAR-4, L-STAR-5, L-STAR-6, MEASAT-1, MEASAT-3, MEASAT-91.5E, MEASAT-95E, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-125.5E, N-SAT-128, N-SAT-129.5E, N-SAT-141E, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, N-STAR-A2, N-STAR-B2, NSS-21, NSS-22, NSS-23, NSS-24, NSS-8, NSS-9, PACSTAR-L1, PACSTAR-L2, PACSTAR-L3, SB-SAT-135, SKYSAT-A1, SKYSAT-A2, SKYSAT-A3, SKYSAT-B1, SKYSAT-B2, SKYSAT-B3, SKYSAT-B4, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, THAICOM-A2B, THAICOM-A3B, THAICOM-A4B, THAICOM-A5B, THAICOM-C1, THAICOM-C2, THAICOM-G1K, THAICOM-G2K, THAICOM-G3K, TONGASAT AP-KU-4, TONGASAT C/KU-1, TONGASAT C/KU-2, TONGASAT C/KU-3, TONGASAT C/KU-4

Beam name	Channels	Ref. Table 1	Affected administrations*	Affected networks/beams/terrestrial stations*
G 02700	2, 6, 10	c	HOL, URG	INTELSAT IBS 319.5E, INTELSAT7 319.5E, INTELSAT8 319.5E, NSS-18, URUSAT-7
G 02700	14, 18	c	HOL, URG	NSS-18, URUSAT-7
GAB26000	1, 5, 9, 13, 17	c	F/EUT	EUTELSAT 3-12.5W
GMB30200	1, 5, 9, 13, 17	c	URG, USA	USASAT-26A, URUSAT-7
GNB30400	22, 24	c	E	HISPASAT-1, HISPASAT-2C3 KU
GRC10500	2, 4, 6, 8, 10, 12	c	NOR, USA	INTELSAT7 359E, INTELSAT8 359E, BIFROST-14, INTELSAT10 359E
GRC10500	14, 16, 18, 20	c	NOR	BIFROST-14
GUI19200	2, 4, 6, 8, 10, 12, 14, 16, 18, 20	c	E, URG, USA	USASAT-26A, HISPASAT 36W KU, URUSAT-7
HNG10601	3, 11, 19	c	F/EUT	EUTELSAT 3-12.5W
HNG10602	6	c	F/EUT	EUTELSAT 3-12.5W
HNG10603	2, 22, 24	c	F/EUT	EUTELSAT 3-12.5W
HOL21300	2, 4, 6, 8, 10	c	ARG, B, F, F/EUT, NOR, URG, USA	B-SAT I, BIFROST-14, EUTELSAT 3-10E, EUTELSAT 3-12.5W, EUTELSAT 3-13E, EUTELSAT 3-14.8W, EUTELSAT 3-16E, EUTELSAT 3-4E, EUTELSAT 3-64W, EUTELSAT 3-7E, F-SAT-KU-E-5W, INTELSAT IBS 307E, INTELSAT IBS 310E, INTELSAT IBS 342E, INTELSAT10 310E, INTELSAT10 359E, INTELSAT7 304.5E, INTELSAT7 304E, INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 325.5E, INTELSAT7 328.5E, INTELSAT7 330.5E, INTELSAT7 332.5E, INTELSAT7 335.5E, INTELSAT7 340E, INTELSAT7 342E, INTELSAT7 359E, INTELSAT8 304.5E, INTELSAT8 304E, INTELSAT8 307E, INTELSAT8 310E, INTELSAT8 325.5E, INTELSAT8 328.5E, INTELSAT8 330.5E, INTELSAT8 332.5E, INTELSAT8 335.5E, INTELSAT8 340E, INTELSAT8 342E, INTELSAT8 359E, NAHUEL-D, NAHUEL-E, URUSAT-1, URUSAT-2, URUSAT-3, URUSAT-4, URUSAT-5, URUSAT-6, URUSAT-7, URUSAT-8, USASAT-14L, USASAT-26G, USASAT-26L, USASAT-35O, USASAT-41L, USASAT-41S, VIDEOSAT-5, VIDEOSAT-5-KA, VIDEOSAT-6, VIDEOSAT-6-KA, VIDEOSAT-7, VIDEOSAT-7-KA, VIDEOSAT-8-KU-C
HOL21300	12	c	ARG, B, F, F/EUT, NOR, URG, USA	B-SAT I, BIFROST-14, EUTELSAT 3-10E, EUTELSAT 3-12.5W, EUTELSAT 3-13E, EUTELSAT 3-14.8W, EUTELSAT 3-16E, EUTELSAT 3-4E, EUTELSAT 3-64W, EUTELSAT 3-7E, F-SAT-KU-E-5W, INTELSAT IBS 307E, INTELSAT IBS 310E, INTELSAT IBS 342E, INTELSAT10 310E, INTELSAT10 359E, INTELSAT7 304.5E, INTELSAT7 304E, INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 325.5E, INTELSAT7 328.5E, INTELSAT7 330.5E, INTELSAT7 332.5E, INTELSAT7 335.5E, INTELSAT7 340E, INTELSAT7 342E, INTELSAT7 359E, INTELSAT8 304.5E, INTELSAT8 304E, INTELSAT8 307E, INTELSAT8 310E, INTELSAT8 325.5E, INTELSAT8 328.5E, INTELSAT8 330.5E, INTELSAT8 332.5E, INTELSAT8 335.5E, INTELSAT8 340E, INTELSAT8 342E, INTELSAT8 359E, NAHUEL-D, NAHUEL-E, URUSAT-1, URUSAT-2, URUSAT-3, URUSAT-4, URUSAT-5, URUSAT-6, URUSAT-7, URUSAT-8, USASAT-14L, USASAT-26A, USASAT-26G, USASAT-26L, USASAT-35O, USASAT-41L, USASAT-41S, VIDEOSAT-5, VIDEOSAT-5-KA, VIDEOSAT-6, VIDEOSAT-6-KA, VIDEOSAT-7, VIDEOSAT-7-KA, VIDEOSAT-8-KU-C

Beam name	Channels	Ref. Table 1	Affected administrations*	Affected networks/beams/terrestrial stations*
HOL21300	14, 16, 18, 20	c	ARG, B, F, F/EUT, NOR, URG, USA	B-SAT I, BIFROST-14, EUTELSAT 3-10E, EUTELSAT 3-12.5W, EUTELSAT 3-13E, EUTELSAT 3-14.8W, EUTELSAT 3-16E, EUTELSAT 3-4E, EUTELSAT 3-64W, EUTELSAT 3-7E, F-SAT-KU-E-5W, INTELSAT8 304.5E, INTELSAT8 304E, INTELSAT8 310E, NAHUEL-D, NAHUEL-E, URUSAT-1, URUSAT-2, URUSAT-3, URUSAT-4, URUSAT-5, URUSAT-6, URUSAT-7, URUSAT-8, USASAT-14L, USASAT-26G, USASAT-26L, USASAT-35O, USASAT-41L, USASAT-41S, VIDEOSAT-5, VIDEOSAT-5-KA, VIDEOSAT-6, VIDEOSAT-6-KA, VIDEOSAT-7, VIDEOSAT-7-KA, VIDEOSAT-8-KU-C
HRV14801	5, 13, 21	c	F/EUT	EUTELSAT 3-12.5W
HRV14802	10	c	F/EUT	EUTELSAT 3-12.5W
HRV14803	2, 22, 24	c	F/EUT	EUTELSAT 3-12.5W
I 08200	22	c	F/EUT, MLA, USA	MEASAT-SA2, USASAT-41S, EUTELSAT 3-7E, EUTELSAT 3-10E
I 08200	24, 26	c	F/EUT, USA	USASAT-41S, EUTELSAT 3-7E, EUTELSAT 3-10E
IRL21100	1, 3, 5, 7, 9, 11, 13, 15, 17, 19	c	URG, USA	USASAT-26A, URUSAT-7
ISL04900	27	a	GUY	GUY00302
ISL04900	29	a	DNK, JMC	GRLDNK01, JMC00005
ISL04900	31, 35, 37	a	DNK, GUY, JMC	GRLDNK01, GUY00302, JMC00005
ISL04900	33	a	GUY, JMC	GUY00302, JMC00005
ISL04900	39	a	JMC	JMC00005
ISL04900	23	c	ARG, B, F, F/EUT, HOL, NOR, URG, USA, VEN/ASA	B-SAT I, BIFROST-14, EUTELSAT 3-10E, EUTELSAT 3-12.5W, EUTELSAT 3-13E, EUTELSAT 3-14.8W, EUTELSAT 3-16E, EUTELSAT 3-4E, EUTELSAT 3-64W, EUTELSAT 3-7E, F-SAT-KU-E-5W, INTELSAT8 304.5E, INTELSAT8 304E, INTELSAT8 310E, NAHUEL-D, NAHUEL-E, NSS-10, NSS-15, NSS-17, NSS-18, SIMON BOLIVAR 2, SIMON BOLIVAR 4, URUSAT-1, URUSAT-2, URUSAT-3, URUSAT-4, URUSAT-5, URUSAT-6, URUSAT-7, URUSAT-8, USASAT-14L, USASAT-26G, USASAT-26L, USASAT-35K, USASAT-35M, USASAT-35O, USASAT-35Q, USASAT-41L, USASAT-41S, VIDEOSAT-5, VIDEOSAT-5-KA, VIDEOSAT-6, VIDEOSAT-6-KA, VIDEOSAT-7, VIDEOSAT-7-KA, VIDEOSAT-8-KU-C
ISL05000	22, 24	c	ARG, B, F, F/EUT, HOL, NOR, URG, USA, VEN/ASA	B-SAT I, BIFROST-14, EUTELSAT 3-10E, EUTELSAT 3-12.5W, EUTELSAT 3-13E, EUTELSAT 3-14.8W, EUTELSAT 3-16E, EUTELSAT 3-4E, EUTELSAT 3-64W, EUTELSAT 3-7E, F-SAT-KU-E-5W, INTELSAT8 304.5E, INTELSAT8 304E, INTELSAT8 310E, NAHUEL-D, NAHUEL-E, NSS-10, NSS-15, NSS-17, NSS-18, SIMON BOLIVAR 2, SIMON BOLIVAR 4, URUSAT-1, URUSAT-2, URUSAT-3, URUSAT-4, URUSAT-5, URUSAT-6, URUSAT-7, URUSAT-8, USASAT-14L, USASAT-26G, USASAT-26L, USASAT-35K, USASAT-35M, USASAT-35O, USASAT-35Q, USASAT-41L, USASAT-41S, VIDEOSAT-5, VIDEOSAT-5-KA, VIDEOSAT-6, VIDEOSAT-6-KA, VIDEOSAT-7, VIDEOSAT-7-KA, VIDEOSAT-8-KU-C
ISL05000	26	c	ARG, B, F, F/EUT, HOL, NOR, URG, USA, VEN/ASA	B-SAT I, BIFROST-14, EUTELSAT 3-10E, EUTELSAT 3-12.5W, EUTELSAT 3-13E, EUTELSAT 3-14.8W, EUTELSAT 3-16E, EUTELSAT 3-4E, EUTELSAT 3-64W, EUTELSAT 3-7E, F-SAT-KU-E-5W, INTELSAT8 304.5E, INTELSAT8 304E, INTELSAT8 310E, NAHUEL-D, NAHUEL-E, NSS-10, NSS-15, NSS-17, NSS-18, SIMON BOLIVAR 2, SIMON BOLIVAR 4, URUSAT-1, URUSAT-2, URUSAT-3, URUSAT-4, URUSAT-5, URUSAT-6, URUSAT-7, URUSAT-8, USASAT-14L, USASAT-26G, USASAT-26L, USASAT-35K, USASAT-35L, USASAT-35M, USASAT-35O, USASAT-35Q, USASAT-41L, USASAT-41S, VIDEOSAT-5, VIDEOSAT-5-KA, VIDEOSAT-6, VIDEOSAT-6-KA, VIDEOSAT-7, VIDEOSAT-7-KA, VIDEOSAT-8-KU-C

Beam name	Channels	Ref. Table 1	Affected administrations*	Affected networks/beams/terrestrial stations*
J 10985	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23	c	HOL, MHL, PNG, USA	NSS-11, NSS-12, NSS-14, NSS-27, NSS-6, NSS-7, ORION-AP-1, ORION-AP-2, PACSTAR-L3, USASAT-14E, USASAT-14K, USASAT-23J, USASAT-35C, USASAT-35D, USASAT-35E, USASAT-40M, USASAT-42L, USASAT-42Q
J 11100	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23	c	HOL, MHL, PNG, USA	NSS-11, NSS-12, NSS-14, NSS-27, NSS-6, NSS-7, ORION-AP-1, ORION-AP-2, PACSTAR-L3, USASAT-14E, USASAT-14K, USASAT-23J, USASAT-35C, USASAT-35D, USASAT-35E, USASAT-40M, USASAT-42L, USASAT-42Q
KEN24900	22, 24, 26	c	NOR	BIFROST-14
KIR__100	1, 3, 5, 7, 9, 11, 13	c	BLR/IK, HOL, J, MHL, PNG, TON, URG, USA	INTELSAT IBS 183E, INTELSAT7 157E, INTELSAT7 174E, INTELSAT7 176E, INTELSAT7 177E, INTELSAT7 178E, INTELSAT7 180E, INTELSAT7 183E, INTELSAT8 174E, INTELSAT8 176E, INTELSAT8 177E, INTELSAT8 178E, INTELSAT8 180E, INTELSAT8 183E, INTERSPUTNIK-153.5EQ, JCSAT-1R, JCSAT-2R, N-SAT-123W, N-SAT-127W, N-SAT-131W, N-SAT-133W, N-SAT-141E, N-SAT-141W, N-SAT-143W, N-SAT-145W, N-SAT-147.5E, N-SAT-148W, N-SAT-150W, N-SAT-152W, N-SAT-159W, N-SAT-161W, N-SAT-163W, N-SAT-165W, N-SAT-166E, N-SAT-167W, N-SAT-168E, N-SAT-169W, N-SAT-172W, N-SAT-173W, N-SAT-174.5W, N-SAT-175.5E, N-SAT-175.5W, N-SAT-175W, N-SAT-176W, N-SAT-178.5E, N-SAT-178.5W, NSS-10, NSS-11, NSS-12, NSS-14, NSS-19, NSS-27, NSS-6, NSS-7, ORION-AP-1, ORION-AP-2, PACSTAR-L3, SUPERBIRD-A2, SUPERBIRD-B2, SUPERBIRD-C, TONGASAT C1/C1-R, URUSAT-1, URUSAT-2, USASAT-14E, USASAT-14K, USASAT-14M, USASAT-35K, USASAT-35M, USASAT-35O, USASAT-40M, USASAT-42L, USASAT-42Q
KIR__100	15, 19, 23	c	J	N-SAT-175.5E
KIR__100	17, 21	c	BLR/IK, HOL, J, MHL, PNG, TON, URG, USA	INTERSPUTNIK-153.5EQ, JCSAT-1R, JCSAT-2R, N-SAT-123W, N-SAT-127W, N-SAT-131W, N-SAT-133W, N-SAT-141E, N-SAT-141W, N-SAT-143W, N-SAT-145W, N-SAT-147.5E, N-SAT-148W, N-SAT-150W, N-SAT-152W, N-SAT-159W, N-SAT-161W, N-SAT-163W, N-SAT-165W, N-SAT-166E, N-SAT-167W, N-SAT-168E, N-SAT-169W, N-SAT-172W, N-SAT-173W, N-SAT-174.5W, N-SAT-175.5E, N-SAT-175.5W, N-SAT-175W, N-SAT-176W, N-SAT-178.5E, N-SAT-178.5W, NSS-10, NSS-11, NSS-12, NSS-14, NSS-19, NSS-27, NSS-6, NSS-7, ORION-AP-1, ORION-AP-2, PACSTAR-L3, SUPERBIRD-A2, SUPERBIRD-B2, SUPERBIRD-C, TONGASAT C1/C1-R, URUSAT-1, URUSAT-2, USASAT-14E, USASAT-14K, USASAT-14M, USASAT-35K, USASAT-35M, USASAT-35O, USASAT-40M, USASAT-42L, USASAT-42Q
KRE28600	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23	c	J, MHL	ORION-AP-1, N-SAT-141E
KWT11300	26	c	BLR/IK, CHN, D, F/EUT, J, PAK, SNG, THA, TON, UAE	ASIASAT-AK1, EMARSAT-1B, EUROPE*STAR-2G-2, EUTELSAT 3-25.5E, EUTELSAT 3-33E, INTERSPUTNIK-27E-Q, N-SAT-125.5E, PAKSAT-1, PAKSAT-2, PAKSAT-C, PAKSAT-D, ST-1C, THAICOM-C2, TONGASAT AP-KU-4

Beam name	Channels	Ref. Table 1	Affected administrations*	Affected networks/beams/terrestrial stations*
KWT11300	28	c	BLR/IK, CHN, D, F/EUT, G, HOL, INS, J, KOR, LAO, MLA, PAK, PNG, SNG, THA, TON, UAE, USA	AM-SAT A4, APSTAR-3, APSTAR-4, ASIASAT-AK1, ASIASAT-AKX, ASIASAT-BKX, ASIASAT-CK1, ASIASAT-CKX, ASIASAT-DKX, ASIASAT-EK1, ASIASAT-EKX, EMARSAT-1B, EMARSAT-1F, EMARSAT-1G, EUROPE*STAR-2G-1, EUROPE*STAR-2G-2, EUROPE*STAR-2G-3, EUTELSAT 3-25.5E, EUTELSAT 3-33E, EUTELSAT 3-36E, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, EUTELSAT 3-73.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-86E, EUTELSAT 3-88.5E, INTELSAT KFOS 85E, INTELSAT7 66E, INTERSPUTNIK-27E-Q, JCSAT-3B, KOREASAT-103KU, KOREASAT-123.7KU, L-STAR-1, L-STAR-2, L-STAR-3, L-STAR-4, L-STAR-5, L-STAR-6, MEASAT-1, MEASAT-3, MEASAT-91.5E, MEASAT-95E, MEASAT-SA3, MEASAT-SA4, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-125.5E, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, NSS-21, NSS-22, NSS-23, NSS-24, NSS-8, NSS-9, PACSTAR-L1, PACSTAR-L2, PAKSAT-1, PAKSAT-2, PAKSAT-C, PAKSAT-D, PALAPA-C6, SJC-1, SKYSAT-A1, SKYSAT-A2, SKYSAT-A3, SKYSAT-B2, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, ST-1C, THAICOM-A2B, THAICOM-A3B, THAICOM-A5B, THAICOM-C1, THAICOM-C2, THAICOM-G1K, THAICOM-G2K, TONGASAT AP-KU-4
KWT11300	30, 34	c	BLR/IK, CHN, D, F/EUT, G, INS, J, LAO, MLA, PAK, SNG, THA, TON, UAE	AM-SAT A4, APSTAR-3, APSTAR-4, ASIASAT-AK1, EMARSAT-1B, EUROPE*STAR-2G-2, EUTELSAT 3-25.5E, EUTELSAT 3-33E, INTERSPUTNIK-27E-Q, L-STAR-4, MEASAT-SA3, MEASAT-SA4, N-SAT-125.5E, PAKSAT-1, PAKSAT-2, PAKSAT-C, PAKSAT-D, PALAPA-C6, SJC-1, ST-1C, THAICOM-C2, THAICOM-G1K, THAICOM-G2K, TONGASAT AP-KU-4
KWT11300	32, 36	c	BLR/IK, CHN, D, F/EUT, G, HOL, INS, J, LAO, MLA, PAK, PNG, SNG, THA, TON, UAE, USA	AM-SAT A4, APSTAR-3, APSTAR-4 , ASIASAT-AK1, ASIASAT-AKX, ASIASAT-BKX, ASIASAT-CK1, ASIASAT-CKX, ASIASAT-DKX, ASIASAT-EK1, ASIASAT-EKX, EMARSAT-1B, EMARSAT-1F, EMARSAT-1G, EUROPE*STAR-2G-1, EUROPE*STAR-2G-2, EUROPE*STAR-2G-3, EUTELSAT 3-25.5E, EUTELSAT 3-33E, EUTELSAT 3-36E, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, EUTELSAT 3-73.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-86E, EUTELSAT 3-88.5E, INTELSAT KFOS 85E, INTELSAT7 66E, INTERSPUTNIK-27E-Q, JCSAT-3B, L-STAR-1, L-STAR-2, L-STAR-3, L-STAR-4, L-STAR-5, L-STAR-6, MEASAT-1, MEASAT-3, MEASAT-91.5E, MEASAT-95E, MEASAT-SA3, MEASAT-SA4, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-125.5E, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, NSS-21, NSS-22, NSS-23, NSS-24, NSS-8, NSS-9, PACSTAR-L1, PACSTAR-L2, PAKSAT-1, PAKSAT-2, PAKSAT-C, PAKSAT-D, PALAPA-C6, SJC-1, SKYSAT-A1, SKYSAT-A2, SKYSAT-A3, SKYSAT-B2, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, ST-1C, THAICOM-A2B, THAICOM-A3B, THAICOM-A5B, THAICOM-C1, THAICOM-C2, THAICOM-G1K, THAICOM-G2K, TONGASAT AP-KU-4
KWT11300	38	c	BLR/IK, F/EUT, J, PAK, THA	EUTELSAT 3-25.5E, EUTELSAT 3-33E, INTERSPUTNIK-27E-Q, N-SAT-125.5E, PAKSAT-C, PAKSAT-D, THAICOM-G2K
KWT11300	40	c	BLR/IK, CHN, D, F/EUT, G, HOL, INS, J, LAO, MLA, PAK, PNG, SNG, THA, TON, UAE, USA	AM-SAT A4, APSTAR-3, APSTAR-4, ASIASAT-AK1, ASIASAT-AKX, ASIASAT-BKX, ASIASAT-CK1, ASIASAT-CKX, ASIASAT-DKX, ASIASAT-EK1, ASIASAT-EKX, EMARSAT-1B, EMARSAT-1F, EMARSAT-1G, EUROPE*STAR-2G-1, EUROPE*STAR-2G-2, EUROPE*STAR-2G-3, EUTELSAT 3-25.5E, EUTELSAT 3-33E, EUTELSAT 3-36E, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, EUTELSAT 3-73.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-86E, EUTELSAT 3-88.5E, INTELSAT7 66E, INTERSPUTNIK-27E-Q, JCSAT-3B, L-STAR-1, L-STAR-2, L-STAR-3, L-STAR-4, L-STAR-5, L-STAR-6, MEASAT-1, MEASAT-3, MEASAT-91.5E, MEASAT-95E, MEASAT-SA3, MEASAT-SA4, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-125.5E, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, NSS-21, NSS-22, NSS-23, NSS-24, NSS-8, NSS-9, PACSTAR-L1, PACSTAR-L2, PAKSAT-1, PAKSAT-2, PAKSAT-C, PAKSAT-D, PALAPA-C6, SJC-1, SKYSAT-A1, SKYSAT-A2, SKYSAT-A3, SKYSAT-B2, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, ST-1C, THAICOM-A2B, THAICOM-A3B, THAICOM-A5B, THAICOM-C1, THAICOM-G1K, THAICOM-G2K, TONGASAT AP-KU-4

Beam name	Channels	Ref. Table 1	Affected administrations*	Affected networks/beams/terrestrial stations*
LBR24400	1, 5, 9, 13	c	USA	INTELSAT7 325.5E, INTELSAT8 325.5E
LBY__100	2, 4, 6, 8, 10, 12	c	USA	INTELSAT7 335.5E, INTELSAT8 335.5E
MAU__100	26	c	BLR/IK, CHN, D, F/EUT, G, HOL, J, MHL, PAK, THA, TON, USA	ASIASAT-AK1, ASIASAT-AKX, ASIASAT-BKX, ASIASAT-CK1, ASIASAT-CKX, ASIASAT-DKX, ASIASAT-EK1, ASIASAT-EKX, EUROPE*STAR-2G-1, EUROPE*STAR-2G-2, EUROPE*STAR-2G-3, EUTELSAT 3-25.5E, EUTELSAT 3-33E, EUTELSAT 3-36E, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, EUTELSAT 3-73.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-86E, EUTELSAT 3-88.5E, INTELSAT KFOS 85E, INTELSAT7 66E, INTERSPUTNIK-27E-Q, JCSAT-3A, JCSAT-3B, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-125.5E, N-SAT-129.5E, N-SAT-141E, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, N-STAR-A2, N-STAR-B2, NSS-21, NSS-22, NSS-23, NSS-24, NSS-8, NSS-9, ORION-AP-1, PAKSAT-C, SB-SAT-135, SKYSAT-A1, SKYSAT-A2, SKYSAT-A3, SKYSAT-B1, SKYSAT-B2, SKYSAT-B3, SKYSAT-B4, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, THAICOM-C2, TONGASAT AP-KU-4, TONGASAT C/KU-1, TONGASAT C/KU-2, TONGASAT C/KU-3, TONGASAT C/KU-4
MAU__100	28	c	BLR/IK, CHN, D, F/EUT, G, HOL, J, KOR, LAO, MLA, PAK, PNG, THA, TON, USA	ASIASAT-AK1, ASIASAT-AKX, ASIASAT-BKX, ASIASAT-CK1, ASIASAT-CKX, ASIASAT-DKX, ASIASAT-EK1, ASIASAT-EKX, EUROPE*STAR-2G-1, EUROPE*STAR-2G-2, EUROPE*STAR-2G-3, EUTELSAT 3-25.5E, EUTELSAT 3-33E, EUTELSAT 3-36E, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, EUTELSAT 3-73.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-86E, EUTELSAT 3-88.5E, INTELSAT KFOS 85E, INTELSAT7 66E, INTERSPUTNIK-27E-Q, JCSAT-3A, JCSAT-3B, KOREASAT-103KU, KOREASAT-123.7KU, KOREASAT-2, L-STAR-1, L-STAR-2, L-STAR-3, L-STAR-4, L-STAR-5, L-STAR-6, MEASAT-1, MEASAT-3, MEASAT-91.5E, MEASAT-95E, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-125.5E, N-SAT-128, N-SAT-129.5E, N-SAT-141E, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, N-STAR-A2, N-STAR-B2, NSS-21, NSS-22, NSS-23, NSS-24, NSS-8, NSS-9, PACSTAR-L1, PACSTAR-L2, PACSTAR-L3, PAKSAT-C, SB-SAT-135, SJC-1, SKYSAT-A1, SKYSAT-A2, SKYSAT-A3, SKYSAT-B1, SKYSAT-B2, SKYSAT-B3, SKYSAT-B4, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, THAICOM-A2B, THAICOM-A3B, THAICOM-A4B, THAICOM-A5B, THAICOM-C1, THAICOM-C2, THAICOM-G1K, THAICOM-G2K, THAICOM-G3K, TONGASAT AP-KU-4, TONGASAT C/KU-1, TONGASAT C/KU-2, TONGASAT C/KU-3, TONGASAT C/KU-4
MAU__100	30, 32, 34, 36, 38	c	BLR/IK, CHN, D, F/EUT, G, HOL, J, KOR, LAO, MLA, PAK, PNG, THA, TON, USA	ASIASAT-AK1, ASIASAT-AKX, ASIASAT-BKX, ASIASAT-CK1, ASIASAT-CKX, ASIASAT-DKX, ASIASAT-EK1, ASIASAT-EKX, EUROPE*STAR-2G-1, EUROPE*STAR-2G-2, EUROPE*STAR-2G-3, EUTELSAT 3-25.5E, EUTELSAT 3-33E, EUTELSAT 3-36E, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, EUTELSAT 3-73.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-86E, EUTELSAT 3-88.5E, INTELSAT KFOS 85E, INTELSAT7 66E, INTERSPUTNIK-27E-Q, JCSAT-3A, JCSAT-3B, KOREASAT-1, KOREASAT-2, L-STAR-1, L-STAR-2, L-STAR-3, L-STAR-4, L-STAR-5, L-STAR-6, MEASAT-1, MEASAT-3, MEASAT-91.5E, MEASAT-95E, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-125.5E, N-SAT-128, N-SAT-129.5E, N-SAT-141E, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, N-STAR-A2, N-STAR-B2, NSS-21, NSS-22, NSS-23, NSS-24, NSS-8, NSS-9, PACSTAR-L1, PACSTAR-L2, PACSTAR-L3, PAKSAT-C, SB-SAT-135, SJC-1, SKYSAT-A1, SKYSAT-A2, SKYSAT-A3, SKYSAT-B1, SKYSAT-B2, SKYSAT-B3, SKYSAT-B4, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, THAICOM-A2B, THAICOM-A3B, THAICOM-A4B, THAICOM-A5B, THAICOM-C1, THAICOM-C2, THAICOM-G1K, THAICOM-G2K, THAICOM-G3K, TONGASAT AP-KU-4, TONGASAT C/KU-1, TONGASAT C/KU-2, TONGASAT C/KU-3, TONGASAT C/KU-4

Beam name	Channels	Ref. Table 1	Affected administrations*	Affected networks/beams/terrestrial stations*
MAU__100	40	c	BLR/IK, CHN, D, F/EUT, G, HOL, J, KOR, LAO, MLA, PAK, PNG, THA, TON, USA	ASIASAT-AK1, ASIASAT-AKX, ASIASAT-BKX, ASIASAT-CK1, ASIASAT-CKX, ASIASAT-DKX, ASIASAT-EK1, ASIASAT-EKX, EUROPE*STAR-2G-1, EUROPE*STAR-2G-2, EUROPE*STAR-2G-3, EUTELSAT 3-25.5E, EUTELSAT 3-33E, EUTELSAT 3-36E, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, EUTELSAT 3-73.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-86E, EUTELSAT 3-88.5E, INTELSAT7 66E, INTERSPUTNIK-27E-Q, JCSAT-3A, JCSAT-3B, KOREASAT-1, KOREASAT-2, L-STAR-1, L-STAR-2, L-STAR-3, L-STAR-4, L-STAR-5, L-STAR-6, MEASAT-1, MEASAT-3, MEASAT-91.5E, MEASAT-95E, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-125.5E, N-SAT-128, N-SAT-129.5E, N-SAT-141E, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, N-STAR-A2, N-STAR-B2, NSS-21, NSS-22, NSS-23, NSS-24, NSS-8, NSS-9, PACSTAR-L1, PACSTAR-L2, PACSTAR-L3, PAKSAT-C, SB-SAT-135, SJC-1, SKYSAT-A1, SKYSAT-A2, SKYSAT-A3, SKYSAT-B1, SKYSAT-B2, SKYSAT-B3, SKYSAT-B4, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, THAICOM-A2B, THAICOM-A3B, THAICOM-A4B, THAICOM-A5B, THAICOM-C1, THAICOM-G1K, THAICOM-G2K, THAICOM-G3K, TONGASAT AP-KU-4, TONGASAT C/KU-1, TONGASAT C/KU-2, TONGASAT C/KU-3, TONGASAT C/KU-4
MDA06300	26	c	HOL	NSS-23
MDA06300	28, 30, 32, 34, 36, 38, 40	c	HOL, THA	NSS-23, THAICOM-C1
MHL00000	4, 8, 12, 16, 20, 22, 24	c	J	N-SAT-147.5E
MLI__100	1, 3, 5, 7, 9, 11, 13	c	USA	INTELSAT IBS 342E, INTELSAT7 342E, INTELSAT7 340E, INTELSAT8 342E INTELSAT8 340E
MNG24800	27	c	BLR/IK, CHN, D, F/EUT, G, HOL, IND, INS, J, MLA, PNG, SNG, THA, TON, UAE, USA	ASIASAT-AK1, ASIASAT-AKX, ASIASAT-BKX, ASIASAT-CK1, ASIASAT-CKX, ASIASAT-DKX, ASIASAT-EK1, ASIASAT-EKX, EMARSAT-1B, EUROPE*STAR-2G-1, EUROPE*STAR-2G-2, EUROPE*STAR-2G-3, EUTELSAT 3-25.5E, EUTELSAT 3-33E, EUTELSAT 3-36E, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, EUTELSAT 3-73.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-86E, EUTELSAT 3-88.5E, INSAT-EK74, INTELSAT KFOS 85E, INTELSAT7 66E, INTERSPUTNIK-153.5EQ, INTERSPUTNIK-75E-Q, JCSAT-1R, JCSAT-2R, JCSAT-3A, JCSAT-3B, MEASAT-SA3, MEASAT-SA4, MTSAT-135E, MTSAT-140E, MTSAT-145E, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-125.5E, N-SAT-129.5E, N-SAT-141E, N-SAT-147.5E, N-SAT-163W, N-SAT-165W, N-SAT-166E, N-SAT-167W, N-SAT-168E, N-SAT-169W, N-SAT-172W, N-SAT-173W, N-SAT-174.5W, N-SAT-175.5E, N-SAT-175.5W, N-SAT-175W, N-SAT-176W, N-SAT-178.5E, N-SAT-178.5W, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, N-STAR-A2, N-STAR-B2, NSS-19, NSS-21, NSS-22, NSS-23, NSS-24, NSS-8, NSS-9, PACSTAR-3, PALAPA PAC-1 CKU, PALAPA PAC-2 CKU, PALAPA PAC-KU 146E, SB-SAT-135, SB-SAT-144, SB-SAT-154, SKYSAT-A1, SKYSAT-A2, SKYSAT-A3, SKYSAT-B1, SKYSAT-B2, SKYSAT-B3, SKYSAT-B4, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, SKYSAT-C5, ST-1C, SUPERBIRD-A2, SUPERBIRD-B2, SUPERBIRD-C, THAICOM-C2, TONGASAT AP-KU-4, TONGASAT C/KU-1, TONGASAT C/KU-2, TONGASAT C/KU-3, TONGASAT C/KU-4, TONGASAT C1/C1-R, USASAT-14E

Beam name	Channels	Ref. Table 1	Affected administrations*	Affected networks/beams/terrestrial stations*
MNG24800	31, 35	c	AUS, BLR/IK, CHN, D, F/EUT, G, HOL, IND, INS, J, KOR, LAO, MLA, PNG, SNG, THA, TON, UAE, USA	AM-SAT A1, AM-SAT A4, APSTAR-2, APSTAR-2 F1, APSTAR-2 F2, APSTAR-3, APSTAR-4, ASIASAT-AK1, ASIASAT-AKX, ASIASAT-BKX, ASIASAT-CK1, ASIASAT-CKX, ASIASAT-DKX, ASIASAT-EK1, ASIASAT-EKX, AUSSAT C 156E FSS, CHINASAT-13, CHINASAT-6, DFH-3-OC, DFH-3A-OA, DFH-3A-OB, DFH-3A-OC, DFH-3A-OD, DFH-4-OA, DFH-4-OB, DFH-4-OC, DFH-4-OD, DFH-4-OE, DFH-4-OF, EASTSAT, EMARSAT-1B, EUROPE*STAR-2G-1, EUROPE*STAR-2G-2, EUROPE*STAR-2G-3, EUTELSAT 3-25.5E, EUTELSAT 3-33E, EUTELSAT 3-36E, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, EUTELSAT 3-73.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-86E, EUTELSAT 3-88.5E, INSAT-EK74, INTELSAT KFOS 85E, INTELSAT7 66E, INTERSPUTNIK-153.5EQ, INTERSPUTNIK-75E-Q, JCSAT-1, JCSAT-1R, JCSAT-2, JCSAT-2R, JCSAT-3A, JCSAT-3B, KOREASAT-1, KOREASAT-2, L-STAR-1, L-STAR-2, L-STAR-3, L-STAR-4, L-STAR-5, L-STAR-6, MEASAT-1, MEASAT-148E, MEASAT-2, MEASAT-3, MEASAT-91.5E, MEASAT-95E, MEASAT-SA3, MEASAT-SA4, MTSAT-135E, MTSAT-140E, MTSAT-145E, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-125.5E, N-SAT-128, N-SAT-129.5E, N-SAT-141E, N-SAT-147.5E, N-SAT-163W, N-SAT-165W, N-SAT-166E, N-SAT-167W, N-SAT-168E, N-SAT-169W, N-SAT-172W, N-SAT-173W, N-SAT-174.5W, N-SAT-175.5E, N-SAT-175.5W, N-SAT-175W, N-SAT-176W, N-SAT-178.5E, N-SAT-178.5W, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, N-STAR-A2, N-STAR-B2, NSS-19, NSS-21, NSS-22, NSS-23, NSS-24, NSS-8, NSS-9, PACSTAR-3, PACSTAR-L1, PACSTAR-L2, PACSTAR-L3, PALAPA PAC-1 CKU, PALAPA PAC-2 CKU, PALAPA PAC-KU 146E, PALAPA-C5, PALAPA-C6, PALAPA-C7, SB-SAT-135, SB-SAT-144, SB-SAT-154, SJC-1, SKYSAT-A1, SKYSAT-A2, SKYSAT-A3, SKYSAT-B1, SKYSAT-B2, SKYSAT-B3, SKYSAT-B4, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, SKYSAT-C5, ST-1C, SUPERBIRD-A2, SUPERBIRD-B2, SUPERBIRD-C, THAICOM-A2B, THAICOM-A3B, THAICOM-A4B, THAICOM-A5B, THAICOM-C1, THAICOM-C2, THAICOM-G1K, THAICOM-G2K, THAICOM-G3K, TONGASAT AP-KU-4, TONGASAT C/KU-1, TONGASAT C/KU-2, TONGASAT C/KU-3, TONGASAT C/KU-4, TONGASAT C1/C1-R, USASAT-14E, USASAT-14G, USASAT-14H
MOZ30700	2, 6, 10	c	NOR, USA	INTELSAT7 359E, INTELSAT8 359E, BIFROST-14, INTELSAT10 359E
MOZ30700	14, 18	c	NOR	BIFROST-14
MRC20900	1, 3, 5, 7, 9, 11	c	HOL, USA	INTELSAT K 338.5E, INTELSAT7 332.5E, INTELSAT7 335.5E, INTELSAT7 338.5E, INTELSAT8 332.5E, INTELSAT8 335.5E, INTELSAT8 338.5E, NSS-15
MRC20900	13	c	HOL, USA	INTELSAT7 332.5E, INTELSAT7 335.5E, INTELSAT7 338.5E, INTELSAT8 332.5E, INTELSAT8 335.5E , INTELSAT8 338.5E, NSS-15
MRC20900	15, 17, 19	c	HOL	NSS-15
MTN__100	24	c	E, URG, USA	USASAT-26A, URUSAT-7, HISPASAT 36W KU
NGR11500	2, 4, 6, 8, 10, 12, 14, 16, 18, 20	c	E, URG, USA	USASAT-26A, HISPASAT 36W KU, URUSAT-7
NOR12000	1, 3, 5, 7, 9, 11, 13	c	USA	INTELSAT7 359E, INTELSAT8 359E, INTELSAT10 359E
NZL__100	2, 4, 6, 8, 10, 12	c	J, USA	INTELSAT7 157E, SUPERBIRD-A2
NZL__100	14, 16, 18, 20, 22, 24	c	J	SUPERBIRD-A2

Beam name	Channels	Ref. Table 1	Affected administrations*	Affected networks/beams/terrestrial stations*
OCE10100	2, 6, 10	c	ARG, B, F/EUT, HOL, J, TON, URG, USA, VEN/ASA	B-SAT I, EUTELSAT 3-64W, INTELSAT IBS 183E, INTELSAT IBS 307E, INTELSAT IBS 310E, INTELSAT IBS 319.5E, INTELSAT10 310E, INTELSAT7 174E, INTELSAT7 176E, INTELSAT7 177E, INTELSAT7 178E, INTELSAT7 180E, INTELSAT7 183E, INTELSAT7 304.5E, INTELSAT7 304E, INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 319.5E, INTELSAT8 174E, INTELSAT8 176E, INTELSAT8 177E, INTELSAT8 178E, INTELSAT8 180E, INTELSAT8 183E, INTELSAT8 304.5E, INTELSAT8 304E, INTELSAT8 307E, INTELSAT8 310E, INTELSAT8 319.5E, N-SAT-123W, N-SAT-127W, N-SAT-131W, N-SAT-133W, N-SAT-141W, N-SAT-143W, N-SAT-145W, N-SAT-148W, N-SAT-150W, N-SAT-152W, N-SAT-159W, N-SAT-161W, N-SAT-163W, N-SAT-165W, N-SAT-166E, N-SAT-167W, N-SAT-168E, N-SAT-169W, N-SAT-172W, N-SAT-173W, N-SAT-174.5W, N-SAT-175.5E, N-SAT-175.5W, N-SAT-175W, N-SAT-176W, N-SAT-178.5E, N-SAT-178.5W, NAHUEL-D, NAHUEL-E, NSS-10, NSS-11, NSS-12, NSS-14, NSS-17, NSS-18, NSS-19, NSS-27, NSS-6, NSS-7, SIMON BOLIVAR 2, SUPERBIRD-B2, TONGASAT C1/C1-R, URUSAT-1, URUSAT-2, URUSAT-3, URUSAT-4, URUSAT-5, URUSAT-6, URUSAT-7, URUSAT-8, USASAT-14E, USASAT-14K, USASAT-26G, USASAT-26L, USASAT-35K, USASAT-35M, USASAT-35O, USASAT-40M, USASAT-41L
OCE10100	14, 18, 20, 22, 24	c	ARG, B, F/EUT, HOL, J, TON, URG, USA, VEN/ASA	B-SAT I, EUTELSAT 3-64W, INTELSAT8 304.5E, INTELSAT8 304E, INTELSAT8 310E, N-SAT-123W, N-SAT-127W, N-SAT-131W, N-SAT-133W, N-SAT-141W, N-SAT-143W, N-SAT-145W, N-SAT-148W, N-SAT-150W, N-SAT-152W, N-SAT-159W, N-SAT-161W, N-SAT-163W, N-SAT-165W, N-SAT-166E, N-SAT-167W, N-SAT-168E, N-SAT-169W, N-SAT-172W, N-SAT-173W, N-SAT-174.5W, N-SAT-175.5E, N-SAT-175.5W, N-SAT-175W, N-SAT-176W, N-SAT-178.5E, N-SAT-178.5W, NAHUEL-D, NAHUEL-E, NSS-10, NSS-11, NSS-12, NSS-14, NSS-17, NSS-18, NSS-19, NSS-27, NSS-6, NSS-7, SIMON BOLIVAR 2, SUPERBIRD-B2, TONGASAT C1/C1-R, URUSAT-1, URUSAT-2, URUSAT-3, URUSAT-4, URUSAT-5, URUSAT-6, URUSAT-7, URUSAT-8, USASAT-14E, USASAT-14K, USASAT-26G, USASAT-26L, USASAT-35K, USASAT-35M, USASAT-35O, USASAT-40M, USASAT-41L
OMA12300	26	c	BLR/IK, CHN, D, F/EUT, G, HOL, J, PAK, SNG, THA, TON, UAE, USA	ASIASAT-AK1, ASIASAT-AKX, ASIASAT-BKX, ASIASAT-CK1, ASIASAT-CKX, ASIASAT-DKX, ASIASAT-EK1, ASIASAT-EKX, EMARSAT-1B, EMARSAT-1F EMARSAT-1G, EUROPE*STAR-2G-1, EUROPE*STAR-2G-2, EUROPE*STAR-2G-3, EUTELSAT 3-25.5E, EUTELSAT 3-33E, EUTELSAT 3-36E, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, EUTELSAT 3-73.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-86E, EUTELSAT 3-88.5E, INTELSAT KFOS 85E, INTELSAT7 66E, INTERSPUTNIK-27E-Q, JCSAT-3A, JCSAT-3B, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-125.5E, N-SAT-129.5E, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, N-STAR-A2, N-STAR-B2, NSS-21, NSS-22, NSS-23, NSS-24, NSS-8, NSS-9, PAKSAT-1, PAKSAT-2, PAKSAT-C, PAKSAT-D, PAKSAT-E, SB-SAT-135, SKYSAT-A1, SKYSAT-A2, SKYSAT-A3, SKYSAT-B1, SKYSAT-B2, SKYSAT-B3, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, ST-1C, THAICOM-C2, TONGASAT AP-KU-4, TONGASAT C/KU-1, TONGASAT C/KU-2, TONGASAT C/KU-3
OMA12300	30, 34, 38	c	BLR/IK, CHN, D, F/EUT, G, HOL, INS, J, KOR, LAO, MLA, PAK, PNG, SNG, THA, TON, UAE, USA	AM-SAT A1, AM-SAT A4, APSTAR-3, APSTAR-4, ASIASAT-AK1, ASIASAT-AKX, ASIASAT-BKX, ASIASAT-CK1, ASIASAT-CKX, ASIASAT-DKX, ASIASAT-EK1, ASIASAT-EKX, EMARSAT-1B, EMARSAT-1F, EMARSAT-1G, EUROPE*STAR-2G-1, EUROPE*STAR-2G-2, EUROPE*STAR-2G-3, EUTELSAT 3-25.5E, EUTELSAT 3-33E, EUTELSAT 3-36E, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, EUTELSAT 3-73.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-86E, EUTELSAT 3-88.5E, INTELSAT KFOS 85E, INTELSAT7 66E, INTERSPUTNIK-27E-Q, JCSAT-3A, JCSAT-3B, KOREASAT-1, KOREASAT-2, L-STAR-1, L-STAR-2, L-STAR-3, L-STAR-4, L-STAR-5, L-STAR-6, MEASAT-1, MEASAT-3, MEASAT-91.5E, MEASAT-95E, MEASAT-SA3, MEASAT-SA4, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-125.5E, N-SAT-128, N-SAT-129.5E, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, N-STAR-A2, N-STAR-B2, NSS-21, NSS-22, NSS-23, NSS-24, NSS-8, NSS-9, PACSTAR-L1, PACSTAR-L2, PACSTAR-L3, PAKSAT-1, PAKSAT-2, PAKSAT-C, PAKSAT-D, PAKSAT-E, PALAPA-C5, PALAPA-C6, PALAPA-C7, SB-SAT-135, SJC-1, SKYSAT-A1, SKYSAT-A2, SKYSAT-A3, SKYSAT-B1, SKYSAT-B2, SKYSAT-B3, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, ST-1C, THAICOM-A2B, THAICOM-A3B, THAICOM-A5B, THAICOM-C1, THAICOM-C2, THAICOM-G1K, THAICOM-G2K, TONGASAT AP-KU-4, TONGASAT C/KU-1, TONGASAT C/KU-2, TONGASAT C/KU-3

Beam name	Channels	Ref. Table 1	Affected administrations*	Affected networks/beams/terrestrial stations*
PLM33200	2, 4, 6, 8, 10, 12	c	BLR/IK, HOL, J, MHL, PNG, TON, URG	INTELSAT8 183E, INTERSPUTNIK-153.5EQ, JCSAT-1R, JCSAT-2R, N-SAT-123W, N-SAT-127W, N-SAT-131W, N-SAT-133W, N-SAT-141E, N-SAT-141W, N-SAT-143W, N-SAT-145W, N-SAT-147.5E, N-SAT-148W, N-SAT-150W, N-SAT-152W, N-SAT-159W, N-SAT-161W, N-SAT-163W, N-SAT-165W, N-SAT-166E, N-SAT-167W, N-SAT-168E, N-SAT-169W, N-SAT-172W, N-SAT-173W, N-SAT-174.5W, N-SAT-175.5E, N-SAT-175.5W, N-SAT-175W, N-SAT-176W, N-SAT-178.5E, N-SAT-178.5W, NSS-10, NSS-11, NSS-12, NSS-14, NSS-19, NSS-27, NSS-6, NSS-7, ORION-AP-1, ORION-AP-2, PACSTAR-L3, SUPERBIRD-A2, SUPERBIRD-B2, SUPERBIRD-C, TONGASAT C1/C1-R, URUSAT-1, URUSAT-2
PLM33200	14, 16, 18, 20, 22, 24	c	BLR/IK, HOL, J, MHL, PNG, TON, URG	INTERSPUTNIK-153.5EQ, JCSAT-1R, JCSAT-2R, N-SAT-123W, N-SAT-127W, N-SAT-131W, N-SAT-133W, N-SAT-141E, N-SAT-141W, N-SAT-143W, N-SAT-145W, N-SAT-147.5E, N-SAT-148W, N-SAT-150W, N-SAT-152W, N-SAT-159W, N-SAT-161W, N-SAT-163W, N-SAT-165W, N-SAT-166E, N-SAT-167W, N-SAT-168E, N-SAT-169W, N-SAT-172W, N-SAT-173W, N-SAT-174.5W, N-SAT-175.5E, N-SAT-175.5W, N-SAT-175W, N-SAT-176W, N-SAT-178.5E, N-SAT-178.5W, NSS-10, NSS-11, NSS-12, NSS-14, NSS-19, NSS-27, NSS-6, NSS-7, ORION-AP-1, ORION-AP-2, PACSTAR-L3, SUPERBIRD-A2, SUPERBIRD-B2, SUPERBIRD-C, TONGASAT C1/C1-R, URUSAT-1, URUSAT-2
POL13200	26	c	HOL	NSS-23
POL13200	28, 30, 32, 34, 36, 38, 40	c	HOL, THA	NSS-23, THAICOM-C1
POR__100	1, 3, 5, 7, 9, 11, 13	c	E, HOL, URG, USA	INTELSAT IBS 319.5E, INTELSAT7 319.5E, INTELSAT7 325.5E, INTELSAT8 319.5E, USASAT-26A, HISPASAT 36W KU, INTELSAT8 325.5E, NSS-18, URUSAT-7
POR__100	15, 17, 19	c	E, HOL, URG, USA	USASAT-26A, HISPASAT 36W KU, NSS-18, URUSAT-7
RUS-4	25	c	BLR/IK, CHN, F/EUT, G, HOL, J, MHL, PNG, SNG, TON, USA	ASIASAT-AK1, ASIASAT-CK1, ASIASAT-EK1, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-88.5E, INTELSAT KFOS 85E, INTELSAT7 66E, INTERSPUTNIK-153.5EQ, JCSAT-1R, JCSAT-2R, JCSAT-3A, JCSAT-3B, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-123W, N-SAT-125.5E, N-SAT-127W, N-SAT-128, N-SAT-129.5E, N-SAT-131W, N-SAT-133W, N-SAT-141E, N-SAT-141W, N-SAT-143W, N-SAT-145W, N-SAT-146, N-SAT-147.5E, N-SAT-148W, N-SAT-150W, N-SAT-152W, N-SAT-159W, N-SAT-161W, N-SAT-163W, N-SAT-165W, N-SAT-166E, N-SAT-167W, N-SAT-168E, N-SAT-169W, N-SAT-172W, N-SAT-173W, N-SAT-174.5W, N-SAT-175.5E, N-SAT-175.5W, N-SAT-175W, N-SAT-176W, N-SAT-178.5E, N-SAT-178.5W, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, N-STAR-A2, N-STAR-B2, NSS-11, NSS-12, NSS-14, NSS-19, NSS-23, NSS-24, NSS-27, NSS-6, NSS-7, NSS-8, NSS-9, ORION-AP-1, ORION-AP-2, PACSTAR-L3, SB-SAT-135, SB-SAT-144, SB-SAT-154, SKYSAT-A1, SKYSAT-A2, SKYSAT-A3, SKYSAT-B1, SKYSAT-B2, SKYSAT-B3, SKYSAT-B4, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, SKYSAT-C5, ST-1C, SUPERBIRD-A2, SUPERBIRD-B2, SUPERBIRD-C, TONGASAT AP-KU-4, TONGASAT C/KU-1, TONGASAT C/KU-2, TONGASAT C/KU-3, TONGASAT C/KU-4, TONGASAT C1/C1-R, USASAT-14E, USASAT-14K, USASAT-14M, USASAT-23J, USASAT-35C, USASAT-35D, USASAT-35E, USASAT-40M, USASAT-42L, USASAT-42Q

Beam name	Channels	Ref. Table 1	Affected administrations*	Affected networks/beams/terrestrial stations*
RUS-4	26	c	BLR/IK, CHN, F/EUT, G, HOL, IND, INS, J, MHL, PNG, SNG, THA, TON, USA	ASIASAT-AK1, ASIASAT-AKX, ASIASAT-BKX, ASIASAT-CK1, ASIASAT-CKX, ASIASAT-DKX, ASIASAT-EK1, ASIASAT-EKX, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, EUTELSAT 3-73.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-86E, EUTELSAT 3-88.5E, INSAT-EK111.5, INTELSAT KFOS 85E, INTELSAT7 66E, INTERSPUTNIK-153.5EQ, JCSAT-1R, JCSAT-2R, JCSAT-3A, JCSAT-3B, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-123W, N-SAT-125.5E, N-SAT-127W, N-SAT-128, N-SAT-129.5E, N-SAT-131W, N-SAT-133W, N-SAT-141E, N-SAT-141W, N-SAT-143W, N-SAT-145W, N-SAT-146, N-SAT-147.5E, N-SAT-148W, N-SAT-150W, N-SAT-152W, N-SAT-159W, N-SAT-161W, N-SAT-163W, N-SAT-165W, N-SAT-166E, N-SAT-167W, N-SAT-168E, N-SAT-169W, N-SAT-172W, N-SAT-173W, N-SAT-174.5W, N-SAT-175.5E, N-SAT-175.5W, N-SAT-175W, N-SAT-176W, N-SAT-178.5E, N-SAT-178.5W, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, N-STAR-A2, N-STAR-B2, NSS-11, NSS-12, NSS-14, NSS-19, NSS-23, NSS-24, NSS-27, NSS-6, NSS-7, NSS-8, NSS-9, ORION-AP-1, ORION-AP-2, PACSTAR-L3, PALAPA PAC-1 CKU, PALAPA PAC-2 CKU, SB-SAT-135, SB-SAT-144, SB-SAT-154, SKYSAT-A1, SKYSAT-A2, SKYSAT-A3, SKYSAT-B1, SKYSAT-B2, SKYSAT-B3, SKYSAT-B4, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, SKYSAT-C5, ST-1C, SUPERBIRD-A2, SUPERBIRD-B2, SUPERBIRD-C, THAICOM-C2, TONGASAT AP-KU-4, TONGASAT C/KU-1, TONGASAT C/KU-2, TONGASAT C/KU-3, TONGASAT C/KU-4, TONGASAT C1/C1-R, USASAT-14E, USASAT-14K, USASAT-14M, USASAT-23J, USASAT-35C, USASAT-35D, USASAT-35E, USASAT-40M, USASAT-42L, USASAT-42Q
RUS-4	27	c	BLR/IK, CHN, F/EUT, G, HOL, IND, INS, J, MLA, SNG, THA, TON, USA	ASIASAT-AK1, ASIASAT-AKX, ASIASAT-BKX, ASIASAT-CK1, ASIASAT-CKX, ASIASAT-DKX, ASIASAT-EK1, ASIASAT-EKX, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, EUTELSAT 3-73.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-86E, EUTELSAT 3-88.5E, INSAT-EK111.5, INTELSAT KFOS 85E, INTELSAT7 66E, INTERSPUTNIK-153.5EQ, JCSAT-1R, JCSAT-2R, JCSAT-3A, JCSAT-3B, MEASAT-SA4, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-125.5E, N-SAT-128, N-SAT-129.5E, N-SAT-141E, N-SAT-143W, N-SAT-145W, N-SAT-146, N-SAT-147.5E, N-SAT-148W, N-SAT-150W, N-SAT-152W, N-SAT-159W, N-SAT-161W, N-SAT-163W, N-SAT-165W, N-SAT-166E, N-SAT-167W, N-SAT-168E, N-SAT-169W, N-SAT-172W, N-SAT-173W, N-SAT-174.5W, N-SAT-175.5E, N-SAT-175.5W, N-SAT-175W, N-SAT-176W, N-SAT-178.5E, N-SAT-178.5W, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, N-STAR-A2, N-STAR-B2, NSS-19, NSS-23, NSS-24, NSS-8, NSS-9, PALAPA PAC-1 CKU, PALAPA PAC-2 CKU, SB-SAT-135, SB-SAT-144, SB-SAT-154, SKYSAT-A1, SKYSAT-A2, SKYSAT-A3, SKYSAT-B1, SKYSAT-B2, SKYSAT-B3, SKYSAT-B4, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, SKYSAT-C5, ST-1C, SUPERBIRD-A2, SUPERBIRD-B2, SUPERBIRD-C, THAICOM-C2, TONGASAT AP-KU-4, TONGASAT C/KU-1, TONGASAT C/KU-2, TONGASAT C/KU-3, TONGASAT C/KU-4, TONGASAT C1/C1-R, USASAT-14E

Beam name	Channels	Ref. Table 1	Affected administrations*	Affected networks/beams/terrestrial stations*
RUS-4	28	c	BLR/IK, CHN, F/EUT, G, HOL, IND, INS, J, KOR, LAO, MLA, PNG, SNG, THA, TON, USA	AM-SAT A1, AM-SAT A4, APSTAR-2, APSTAR-2 F1, APSTAR-2 F2, APSTAR-3, ASIASAT-AK1, ASIASAT-AKX, ASIASAT-BKX, ASIASAT-CK1, ASIASAT-CKX, ASIASAT-DKX, ASIASAT-EK1, ASIASAT-EKX, DFH-3-OC, DFH-4-OA, DFH-4-OB, DFH-4-OC, DFH-4-OD, DFH-4-OE, DFH-4-OF, EASTSAT, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, EUTELSAT 3-73.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-86E, EUTELSAT 3-88.5E, INSAT-EK111.5, INTELSAT KFOS 85E, INTELSAT7 66E, INTERSPUTNIK-153.5EQ, JCSAT-1, JCSAT-1R, JCSAT-2, JCSAT-2R, JCSAT-3A, JCSAT-3B, KOREASAT-1, KOREASAT-103KU, KOREASAT-123.7KU, KOREASAT-2, L-STAR-1, L-STAR-2, L-STAR-3, L-STAR-4, L-STAR-5, L-STAR-6, MEASAT-1, MEASAT-148E, MEASAT-2, MEASAT-3, MEASAT-91.5E, MEASAT-95E, MEASAT-SA4, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-125.5E, N-SAT-128, N-SAT-129.5E, N-SAT-141E, N-SAT-143W, N-SAT-145W, N-SAT-146, N-SAT-147.5E, N-SAT-148W, N-SAT-150W, N-SAT-152W, N-SAT-159W, N-SAT-161W, N-SAT-163W, N-SAT-165W, N-SAT-166E, N-SAT-167W, N-SAT-168E, N-SAT-169W, N-SAT-172W, N-SAT-173W, N-SAT-174.5W, N-SAT-175.5E, N-SAT-175.5W, N-SAT-175W, N-SAT-176W, N-SAT-178.5E, N-SAT-178.5W, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, N-STAR-A, N-STAR-A2, N-STAR-B, N-STAR-B2, NSS-19, NSS-23, NSS-24, NSS-8, NSS-9, PACSTAR-L1, PACSTAR-L2, PACSTAR-L3, PALAPA PAC-1 CKU, PALAPA PAC-2 CKU, PALAPA-C5, PALAPA-C6, PALAPA-C7, SB-SAT-135, SB-SAT-144, SB-SAT-154, SJC-1, SKYSAT-A1, SKYSAT-A2, SKYSAT-A3, SKYSAT-B1, SKYSAT-B2, SKYSAT-B3, SKYSAT-B4, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, SKYSAT-C5, ST-1C, SUPERBIRD-A, SUPERBIRD-A2, SUPERBIRD-B, SUPERBIRD-B2, SUPERBIRD-C, THAICOM-A2B, THAICOM-A3B, THAICOM-A4B, THAICOM-A5B, THAICOM-C1, THAICOM-C2, THAICOM-G1K, THAICOM-G2K, THAICOM-G3K, TONGASAT AP-KU-4, TONGASAT C/KU-1, TONGASAT C/KU-2, TONGASAT C/KU-3, TONGASAT C/KU-4, TONGASAT C1/C1-R, USASAT-14E, USASAT-14G, USASAT-14H
RUS-4	29	c	BLR/IK, CHN, F/EUT, G, HOL, IND, INS, J, KOR, LAO, MLA, PNG, SNG, THA, TON, USA	AM-SAT A1, AM-SAT A4, APSTAR-2, APSTAR-2 F1, APSTAR-2 F2, APSTAR-3, ASIASAT-AK1, ASIASAT-AKX, ASIASAT-BKX, ASIASAT-CK1, ASIASAT-CKX, ASIASAT-DKX, ASIASAT-EK1, ASIASAT-EKX, CHINASAT-6, D-STAR-1, D-STAR-2, DFH-3-OC, DFH-3A-OA, DFH-3A-OB, DFH-3A-OC, DFH-3A-OD, DFH-4-OA, DFH-4-OB, DFH-4-OC, DFH-4-OD, DFH-4-OE, DFH-4-OF, EASTSAT, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, EUTELSAT 3-73.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-86E, EUTELSAT 3-88.5E, INSAT-EK111.5, INTELSAT KFOS 85E, INTELSAT7 66E, INTERSPUTNIK-153.5EQ, JCSAT-1, JCSAT-1R, JCSAT-2, JCSAT-2R, JCSAT-3A, JCSAT-3B, KOREASAT-1, KOREASAT-103KU, KOREASAT-123.7KU, KOREASAT-2, L-STAR-1, L-STAR-2, L-STAR-3, L-STAR-4, L-STAR-5, L-STAR-6, MEASAT-1, MEASAT-148E, MEASAT-2, MEASAT-3, MEASAT-91.5E, MEASAT-95E, MEASAT-SA4, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-125.5E, N-SAT-128, N-SAT-129.5E, N-SAT-141E, N-SAT-143W, N-SAT-145W, N-SAT-146, N-SAT-147.5E, N-SAT-148W, N-SAT-150W, N-SAT-152W, N-SAT-159W, N-SAT-161W, N-SAT-163W, N-SAT-165W, N-SAT-166E, N-SAT-167W, N-SAT-168E, N-SAT-169W, N-SAT-172W, N-SAT-173W, N-SAT-174.5W, N-SAT-175.5E, N-SAT-175.5W, N-SAT-175W, N-SAT-176W, N-SAT-178.5E, N-SAT-178.5W, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, N-STAR-A, N-STAR-A2, N-STAR-B, N-STAR-B2, NSS-19, NSS-23, NSS-24, NSS-8, NSS-9, PACSTAR-L1, PACSTAR-L2, PACSTAR-L3, PALAPA PAC-1 CKU, PALAPA PAC-2 CKU, PALAPA-C5, PALAPA-C6, PALAPA-C7, SB-SAT-135, SB-SAT-144, SB-SAT-154, SJC-1, SKYSAT-A1, SKYSAT-A2, SKYSAT-A3, SKYSAT-B1, SKYSAT-B2, SKYSAT-B3, SKYSAT-B4, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, SKYSAT-C5, ST-1C, SUPERBIRD-A, SUPERBIRD-A2, SUPERBIRD-B, SUPERBIRD-B2, SUPERBIRD-C, THAICOM-A2B, THAICOM-A3B, THAICOM-A4B, THAICOM-A5B, THAICOM-C1, THAICOM-C2, THAICOM-G1K, THAICOM-G2K, THAICOM-G3K, TONGASAT AP-KU-4, TONGASAT C/KU-1, TONGASAT C/KU-2, TONGASAT C/KU-3, TONGASAT C/KU-4, TONGASAT C1/C1-R, USASAT-14E, USASAT-14G, USASAT-14H

Beam name	Channels	Ref. Table 1	Affected administrations*	Affected networks/beams/terrestrial stations*
RUS-4	31, 35, 37	c	BLR/IK, CHN, F/EUT, G, HOL, IND, INS, J, KOR, LAO, MLA, PNG, SNG, THA, TON, USA	AM-SAT A1, AM-SAT A4, APSTAR-2, APSTAR-2 F1, APSTAR-2 F2, APSTAR-3, ASIASAT-AK1, ASIASAT-AKX, ASIASAT-BKX, ASIASAT-CK1, ASIASAT-CKX, ASIASAT-DKX, ASIASAT-EK1, ASIASAT-EKX, CHINASAT-13, CHINASAT-6, D-STAR-1, D-STAR-2, DFH-3-OC, DFH-3A-OA, DFH-3A-OB, DFH-3A-OC, DFH-3A-OD, DFH-4-OA, DFH-4-OB, DFH-4-OC, DFH-4-OD, DFH-4-OE, DFH-4-OF, EASTSAT, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, EUTELSAT 3-73.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-86E, EUTELSAT 3-88.5E, INSAT-EK111.5, INTELSAT KFOS 85E, INTELSAT7 66E, INTERSPUTNIK-153.5EQ, JCSAT-1, JCSAT-1R, JCSAT-2, JCSAT-2R, JCSAT-3A, JCSAT-3B, KOREASAT-1, KOREASAT-103KU, KOREASAT-123.7KU, KOREASAT-2, L-STAR-1, L-STAR-2, L-STAR-3, L-STAR-4, L-STAR-5, L-STAR-6, MEASAT-1, MEASAT-148E, MEASAT-2, MEASAT-3, MEASAT-91.5E, MEASAT-95E, MEASAT-SA4, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-125.5E, N-SAT-128, N-SAT-129.5E, N-SAT-141E, N-SAT-143W, N-SAT-145W, N-SAT-146, N-SAT-147.5E, N-SAT-148W, N-SAT-150W, N-SAT-152W, N-SAT-159W, N-SAT-161W, N-SAT-163W, N-SAT-165W, N-SAT-166E, N-SAT-167W, N-SAT-168E, N-SAT-169W, N-SAT-172W, N-SAT-173W, N-SAT-174.5W, N-SAT-175.5E, N-SAT-175.5W, N-SAT-175W, N-SAT-176W, N-SAT-178.5E, N-SAT-178.5W, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, N-STAR-A, N-STAR-A2, N-STAR-B, N-STAR-B2, NSS-19, NSS-23, NSS-24, NSS-8, NSS-9, PACSTAR-L1, PACSTAR-L2, PACSTAR-L3, PALAPA PAC-1 CKU, PALAPA PAC-2 CKU, PALAPA-C5, PALAPA-C6, PALAPA-C7, SB-SAT-135, SB-SAT-144, SB-SAT-154, SJC-1, SKYSAT-A1, SKYSAT-A2, SKYSAT-A3, SKYSAT-B1, SKYSAT-B2, SKYSAT-B3, SKYSAT-B4, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, SKYSAT-C5, ST-1C, SUPERBIRD-A, SUPERBIRD-A2, SUPERBIRD-B, SUPERBIRD-B2, SUPERBIRD-C, THAICOM-A2B, THAICOM-A3B, THAICOM-A4B, THAICOM-A5B, THAICOM-C1, THAICOM-C2, THAICOM-G1K, THAICOM-G2K, THAICOM-G3K, TONGASAT AP-KU-4, TONGASAT C/KU-1, TONGASAT C/KU-2, TONGASAT C/KU-3, TONGASAT C/KU-4, TONGASAT C1/C1-R, USASAT-14E, USASAT-14G, USASAT-14H
RUS-4	33, 39	c	BLR/IK, CHN, F/EUT, G, HOL, IND, INS, J, KOR, LAO, MLA, PNG, SNG, THA, TON, USA	AM-SAT A1, AM-SAT A4, APSTAR-2, APSTAR-2 F1, APSTAR-2 F2, APSTAR-3, ASIASAT-AK1, ASIASAT-AKX, ASIASAT-BKX, ASIASAT-CK1, ASIASAT-CKX, ASIASAT-DKX, ASIASAT-EK1, ASIASAT-EKX, CHINASAT-13, CHINASAT-6, D-STAR-1, D-STAR-2, DFH-3-OC, DFH-3A-OA, DFH-3A-OB, DFH-3A-OC, DFH-3A-OD, DFH-4-OA, DFH-4-OB, DFH-4-OC, DFH-4-OD, DFH-4-OE, DFH-4-OF, EASTSAT, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, EUTELSAT 3-73.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-86E, EUTELSAT 3-88.5E, INSAT-EK111.5, INTELSAT KFOS 85E, INTELSAT7 66E, INTERSPUTNIK-153.5EQ, JCSAT-1, JCSAT-1R, JCSAT-2, JCSAT-2R, JCSAT-3A, JCSAT-3B, KOREASAT-1, KOREASAT-103KU, KOREASAT-123.7KU, KOREASAT-2, L-STAR-1, L-STAR-2, L-STAR-3, L-STAR-4, L-STAR-5, L-STAR-6, MEASAT-1, MEASAT-148E, MEASAT-2, MEASAT-3, MEASAT-91.5E, MEASAT-95E, MEASAT-SA4, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-125.5E, N-SAT-128, N-SAT-129.5E, N-SAT-141E, N-SAT-143W, N-SAT-145W, N-SAT-146, N-SAT-147.5E, N-SAT-148W, N-SAT-150W, N-SAT-152W, N-SAT-159W, N-SAT-161W, N-SAT-163W, N-SAT-165W, N-SAT-166E, N-SAT-167W, N-SAT-168E, N-SAT-169W, N-SAT-172W, N-SAT-173W, N-SAT-174.5W, N-SAT-175.5E, N-SAT-175.5W, N-SAT-175W, N-SAT-176W, N-SAT-178.5E, N-SAT-178.5W, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, N-STAR-A, N-STAR-A2, N-STAR-B, N-STAR-B2, NSS-19, NSS-23, NSS-24, NSS-8, NSS-9, PACSTAR-L1, PACSTAR-L2, PACSTAR-L3, PALAPA PAC-1 CKU, PALAPA PAC-2 CKU, PALAPA-C5, PALAPA-C6, PALAPA-C7, SB-SAT-135, SB-SAT-144, SB-SAT-154, SJC-1, SKYSAT-A1, SKYSAT-A2, SKYSAT-A3, SKYSAT-B1, SKYSAT-B2, SKYSAT-B3, SKYSAT-B4, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, SKYSAT-C5, ST-1C, SUPERBIRD-A, SUPERBIRD-A2, SUPERBIRD-B, SUPERBIRD-B2, SUPERBIRD-C, THAICOM-A2B, THAICOM-A3B, THAICOM-A4B, THAICOM-A5B, THAICOM-C1, THAICOM-C2, THAICOM-G1K, THAICOM-G2K, THAICOM-G3K, TONGASAT AP-KU-4, TONGASAT C/KU-1, TONGASAT C/KU-2, TONGASAT C/KU-3, TONGASAT C/KU-4, TONGASAT C1/C1-R, USASAT-14E, USASAT-14G, USASAT-14H

Beam name	Channels	Ref. Table 1	Affected administrations*	Affected networks/beams/terrestrial stations*
S 13800	21, 23, 25	c	F, F/EUT	VIDEOSAT-8-KU-C, EUTELSAT 3-4E, EUTELSAT 3-7E
SCG14800**	22, 24, 26	c	F	VIDEOSAT-5, VIDEOSAT-6, VIDEOSAT-5-KA, VIDEOSAT-6-KA
SDN__100	21, 23, 25	c	BLR/IK F	INTERSPUTNIK-6W-Q, VIDEOSAT-5, VIDEOSAT-6, VIDEOSAT-5-KA, VIDEOSAT-6-KA
SEN22200	23	c	E, URG, USA	USASAT-26A, HISPASAT 36W KU, URUSAT-7
SEY00000	26	c	BLR/IK, D, F/EUT, HOL, J, PAK, UAE, USA	EMARSAT-1F, EUROPE*STAR-2G-1, EUROPE*STAR-2G-2, EUROPE*STAR-2G-3, EUTELSAT 3-25.5E, EUTELSAT 3-33E, EUTELSAT 3-36E, EUTELSAT 3-44E, EUTELSAT 3-48E, INTELSAT7 66E, INTERSPUTNIK-27E-Q, N-SAT-65.5, NSS-21, NSS-22, NSS-23, NSS-8, PAKSAT-2
SEY00000	28, 30, 32, 34, 36, 38, 40	c	BLR/IK, D, F/EUT, HOL, J, PAK, THA, UAE, USA	EMARSAT-1F, EUROPE*STAR-2G-1, EUROPE*STAR-2G-2, EUROPE*STAR-2G-3, EUTELSAT 3-25.5E, EUTELSAT 3-33E, EUTELSAT 3-36E, EUTELSAT 3-44E, EUTELSAT 3-48E, INTELSAT7 66E, INTERSPUTNIK-27E-Q, N-SAT-65.5, NSS-21, NSS-22, NSS-23, NSS-8, PAKSAT-2, THAICOM-C1
SMO05700	1, 5, 9, 13, 17, 19, 21, 23	c	J	N-SAT-178.5W
SOM31200	26	c	D, F/EUT, HOL, PAK, UAE	EMARSAT-1F, EUROPE*STAR-2G-1, EUROPE*STAR-2G-2, EUROPE*STAR-2G-3, EUTELSAT 3-33E, EUTELSAT 3-36E, EUTELSAT 3-44E, EUTELSAT 3-48E, NSS-21, NSS-22, PAKSAT-1, PAKSAT-2, PAKSAT-C
SOM31200	28, 30, 32, 34, 36, 38, 40	c	D, F/EUT, HOL, MLA, PAK, UAE	EMARSAT-1F, EUROPE*STAR-2G-1, EUROPE*STAR-2G-2, EUROPE*STAR-2G-3, EUTELSAT 3-33E, EUTELSAT 3-36E, EUTELSAT 3-44E, EUTELSAT 3-48E, MEASAT-SA3, MEASAT-SA4, NSS-21, NSS-22, PAKSAT-1, PAKSAT-2, PAKSAT-C
STP24100	2, 4, 6, 8, 10, 12, 14, 16, 18, 20	c	F	VIDEOSAT-5, VIDEOSAT-5-KA
SVK14401	7, 15, 23	c	F/EUT	EUTELSAT 3-12.5W
SVK14402	18, 26	c	F/EUT	EUTELSAT 3-12.5W
SVK14403	2, 22, 24	c	F/EUT	EUTELSAT 3-12.5W
SYR22900	28, 32, 36, 40	c	F/EUT	EUTELSAT 3-25.5E
SYR33900	40	c	F/EUT	EUTELSAT 3-25.5E
TCD14300	1, 3, 5, 7, 9, 11, 13, 15, 17, 19	c	F/EUT	EUTELSAT 3-16E
TGO22600	1, 3, 5, 7, 9, 11	c	USA	INTELSAT7 330.5E, INTELSAT8 330.5E
TGO22600	13	c	E, USA	HISPASAT-1, INTELSAT7 330.5E, HISPASAT-2C3 KU, INTELSAT8 330.5E
TGO22600	15, 17, 19	c	E	HISPASAT-1, HISPASAT-2C3 KU

Beam name	Channels	Ref. Table 1	Affected administrations*	Affected networks/beams/terrestrial stations*
TJK06900	26	c	BLR/IK, CHN, D, F/EUT, G, HOL, IND, J, MHL, PAK, SNG, THA, TON, UAE, USA	ASIASAT-AK1, ASIASAT-AKX, ASIASAT-BKX, ASIASAT-CK1, ASIASAT-CKX, ASIASAT-DKX, ASIASAT-EK1, ASIASAT-EKX, EMARSAT-1B, EMARSAT-1F, EMARSAT-1G, EUROPE*STAR-2G-1, EUROPE*STAR-2G-2, EUROPE*STAR-2G-3, EUTELSAT 3-25.5E, EUTELSAT 3-33E, EUTELSAT 3-36E, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, EUTELSAT 3-73.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-86E, EUTELSAT 3-88.5E, INSAT-EK48, INSAT-EK55, INTELSAT KFOS 85E, INTELSAT7 66E, INTERSPUTNIK-27E-Q, JCSAT-1R, JCSAT-3A, JCSAT-3B, MTSAT-135E, MTSAT-140E, MTSAT-145E, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-125.5E, N-SAT-129.5E, N-SAT-141E, N-SAT-147.5E, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, N-STAR-A2, N-STAR-B2, NSS-21, NSS-22, NSS-23, NSS-24, NSS-8, NSS-9, ORION-AP-1, ORION-AP-2, PAKSAT-1, PAKSAT-2, PAKSAT-C, PAKSAT-D, PAKSAT-E, SB-SAT-135, SB-SAT-144, SKYSAT-A1, SKYSAT-A2, SKYSAT-A3, SKYSAT-B1, SKYSAT-B2, SKYSAT-B3, SKYSAT-B4, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, ST-1C, SUPERBIRD-C, THAICOM-C2, TONGASAT AP-KU-4, TONGASAT C/KU-1, TONGASAT C/KU-2, TONGASAT C/KU-3, TONGASAT C/KU-4
TJK06900	28	c	BLR/IK, CHN, D, F/EUT, G, HOL, IND, INS, J, KOR, LAO, MLA, PAK, PNG, SNG, THA, TON, UAE, USA	AM-SAT A1, AM-SAT A4, APSTAR-2 F1, APSTAR-2 F2, APSTAR-3, APSTAR-4, ASIASAT-AK1, ASIASAT-AKX, ASIASAT-BKX, ASIASAT-CK1, ASIASAT-CKX, ASIASAT-DKX, ASIASAT-EK1, ASIASAT-EKX, DFH-3-OC, DFH-4-OA, DFH-4-OB, DFH-4-OC, DFH-4-OD, DFH-4-OE, DFH-4-OF, EMARSAT-1B, EMARSAT-1F, EMARSAT-1G, EUROPE*STAR-2G-1, EUROPE*STAR-2G-2, EUROPE*STAR-2G-3, EUTELSAT 3-25.5E, EUTELSAT 3-33E, EUTELSAT 3-36E, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, EUTELSAT 3-73.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-86E, EUTELSAT 3-88.5E, INSAT-EK48, INSAT-EK55, INTELSAT KFOS 85E, INTELSAT7 66E, INTERSPUTNIK-27E-Q, JCSAT-1R, JCSAT-3A, JCSAT-3B, KOREASAT-103KU, KOREASAT-123.7KU, KOREASAT-2, L-STAR-1, L-STAR-2, L-STAR-3, L-STAR-4, L-STAR-5, L-STAR-6, MEASAT-1, MEASAT-148E, MEASAT-2, MEASAT-3, MEASAT-91.5E, MEASAT-95E, MEASAT-SA3, MEASAT-SA4, MTSAT-135E, MTSAT-140E, MTSAT-145E, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-125.5E, N-SAT-128, N-SAT-129.5E, N-SAT-141E, N-SAT-147.5E, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, N-STAR-A2, N-STAR-B2, NSS-21, NSS-22, NSS-23, NSS-24, NSS-8, NSS-9, PACSTAR-L1, PACSTAR-L2, PACSTAR-L3, PAKSAT-1, PAKSAT-2, PAKSAT-C, PAKSAT-D, PAKSAT-E, PALAPA-C6, PALAPA-C7, SB-SAT-135, SB-SAT-144, SJC-1, SKYSAT-A1, SKYSAT-A2, SKYSAT-A3, SKYSAT-B1, SKYSAT-B2, SKYSAT-B3, SKYSAT-B4, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, ST-1C, SUPERBIRD-C, THAICOM-A2B, THAICOM-A3B, THAICOM-A4B, THAICOM-A5B, THAICOM-AK3, THAICOM-C1, THAICOM-C2, THAICOM-G1K, THAICOM-G2K, THAICOM-G3K, TONGASAT AP-KU-4, TONGASAT C/KU-1, TONGASAT C/KU-2, TONGASAT C/KU-3, TONGASAT C/KU-4
TJK06900	30, 32, 34, 36, 38	c	BLR/IK, CHN, D, F/EUT, G, HOL, IND, INS, J, KOR, LAO, MLA, PAK, PNG, SNG, THA, TON, UAE, USA	AM-SAT A1, AM-SAT A4, APSTAR-2 F1, APSTAR-2 F2, APSTAR-3, APSTAR-4, ASIASAT-AK1, ASIASAT-AKX, ASIASAT-BKX, ASIASAT-CK1, ASIASAT-CKX, ASIASAT-DKX, ASIASAT-EK1, ASIASAT-EKX, CHINASAT-6, DFH-3-OC, DFH-3A-OA, DFH-3A-OB, DFH-3A-OC, DFH-3A-OD, DFH-4-OA, DFH-4-OB, DFH-4-OC, DFH-4-OD, DFH-4-OE, DFH-4-OF, EMARSAT-1B, EMARSAT-1F, EMARSAT-1G, EUROPE*STAR-2G-1, EUROPE*STAR-2G-2, EUROPE*STAR-2G-3, EUTELSAT 3-25.5E, EUTELSAT 3-33E, EUTELSAT 3-36E, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, EUTELSAT 3-73.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-86E, EUTELSAT 3-88.5E, INSAT-EK48, INSAT-EK55, INTELSAT KFOS 85E, INTELSAT7 66E, INTERSPUTNIK-27E-Q, JCSAT-1R, JCSAT-3A, JCSAT-3B, KOREASAT-1, KOREASAT-2, L-STAR-1, L-STAR-2, L-STAR-3, L-STAR-4, L-STAR-5, L-STAR-6, MEASAT-1, MEASAT-148E, MEASAT-2, MEASAT-3, MEASAT-91.5E, MEASAT-95E, MEASAT-SA3, MEASAT-SA4, MTSAT-135E, MTSAT-140E, MTSAT-145E, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-125.5E, N-SAT-128, N-SAT-129.5E, N-SAT-141E, N-SAT-147.5E, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, N-STAR-A2, N-STAR-B2, NSS-21, NSS-22, NSS-23, NSS-24, NSS-8, NSS-9, PACSTAR-L1, PACSTAR-L2, PACSTAR-L3, PAKSAT-1, PAKSAT-2, PAKSAT-C, PAKSAT-D, PAKSAT-E, PALAPA-C6, PALAPA-C7, SB-SAT-135, SB-SAT-144, SJC-1, SKYSAT-A1, SKYSAT-A2, SKYSAT-A3, SKYSAT-B1, SKYSAT-B2, SKYSAT-B3, SKYSAT-B4, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, ST-1C, SUPERBIRD-C, THAICOM-A2B, THAICOM-A3B, THAICOM-A4B, THAICOM-A5B, THAICOM-AK3, THAICOM-C1, THAICOM-C2, THAICOM-G1K, THAICOM-G2K, THAICOM-G3K, TONGASAT AP-KU-4, TONGASAT C/KU-1, TONGASAT C/KU-2, TONGASAT C/KU-3, TONGASAT C/KU-4

Beam name	Channels	Ref. Table 1	Affected administrations*	Affected networks/beams/terrestrial stations*
TJK06900	40	c	BLR/IK, CHN, D, F/EUT, G, HOL, IND, INS, J, KOR, LAO, MLA, PAK, PNG, SNG, THA, TON, UAE, USA	AM-SAT A1, AM-SAT A4, APSTAR-2 F1, APSTAR-2 F2, APSTAR-3, APSTAR-4, ASIASAT-AK1, ASIASAT-AKX, ASIASAT-BKX, ASIASAT-CK1, ASIASAT-CKX, ASIASAT-DKX, ASIASAT-EK1, ASIASAT-EKX, CHINASAT-6, DFH-3-OC, DFH-3A-OA, DFH-3A-OB, DFH-3A-OC, DFH-3A-OD, DFH-4-OA, DFH-4-OB, DFH-4-OC, DFH-4-OD, DFH-4-OE, DFH-4-OF, EMARSAT-1B, EMARSAT-1F, EMARSAT-1G, EUROPE*STAR-2G-1, EUROPE*STAR-2G-2, EUROPE*STAR-2G-3, EUTELSAT 3-25.5E, EUTELSAT 3-33E, EUTELSAT 3-36E, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, EUTELSAT 3-73.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-86E, EUTELSAT 3-88.5E, INSAT-EK48, INSAT-EK55, INTELSAT7 66E, INTERSPUTNIK-27E-Q, JCSAT-1R, JCSAT-3A, JCSAT-3B, KOREASAT-1, KOREASAT-2, L-STAR-1, L-STAR-2, L-STAR-3, L-STAR-4, L-STAR-5, L-STAR-6, MEASAT-1, MEASAT-148E, MEASAT-2, MEASAT-3, MEASAT-91.5E, MEASAT-95E, MEASAT-SA3, MEASAT-SA4, MTSAT-135E, MTSAT-140E, MTSAT-145E, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-125.5E, N-SAT-128, N-SAT-129.5E, N-SAT-141E, N-SAT-147.5E, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, N-STAR-A2, N-STAR-B2, NSS-21, NSS-22, NSS-23, NSS-24, NSS-8, NSS-9, PACSTAR-L1, PACSTAR-L2, PACSTAR-L3, PAKSAT-1, PAKSAT-2, PAKSAT-C, PAKSAT-D, PAKSAT-E, PALAPA-C6, PALAPA-C7, SB-SAT-135, SB-SAT-144, SJC-1, SKYSAT-A1, SKYSAT-A2, SKYSAT-A3, SKYSAT-B1, SKYSAT-B2, SKYSAT-B3, SKYSAT-B4, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, ST-1C, SUPERBIRD-C, THAICOM-A2B, THAICOM-A3B, THAICOM-A4B, THAICOM-A5B, THAICOM-AK3, THAICOM-C1, THAICOM-G1K, THAICOM-G2K, THAICOM-G3K, TONGASAT AP-KU-4, TONGASAT C/KU-1, TONGASAT C/KU-2, TONGASAT C/KU-3, TONGASAT C/KU-4
TKM06800	26	c	BLR/IK, CHN, D, F/EUT, G, HOL, IND, J, MHL, PAK, SNG, THA, TON, UAE, USA	ASIASAT-AK1, ASIASAT-AKX, ASIASAT-BKX, ASIASAT-CK1, ASIASAT-CKX, ASIASAT-DKX, ASIASAT-EK1, ASIASAT-EKX, EMARSAT-1B, EMARSAT-1F, EMARSAT-1G, EUROPE*STAR-2G-1, EUROPE*STAR-2G-2, EUROPE*STAR-2G-3, EUTELSAT 3-25.5E, EUTELSAT 3-33E, EUTELSAT 3-36E, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, EUTELSAT 3-73.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-86E, EUTELSAT 3-88.5E, INSAT-EK48, INSAT-EK55, INTELSAT KFOS 85E, INTELSAT7 66E, INTERSPUTNIK-27E-Q, JCSAT-3A, JCSAT-3B, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-125.5E, N-SAT-129.5E, N-SAT-141E, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, N-STAR-A2, N-STAR-B2, NSS-21, NSS-22, NSS-23, NSS-24, NSS-8, NSS-9, ORION-AP-1, PAKSAT-1, PAKSAT-2, PAKSAT-C, PAKSAT-D, PAKSAT-E, SB-SAT-135, SKYSAT-A1, SKYSAT-A2, SKYSAT-A3, SKYSAT-B1, SKYSAT-B2, SKYSAT-B3, SKYSAT-B4, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, ST-1C, THAICOM-C2, TONGASAT AP-KU-4, TONGASAT C/KU-1, TONGASAT C/KU-2, TONGASAT C/KU-3, TONGASAT C/KU-4
TKM06800	28	c	BLR/IK, CHN, D, F/EUT, G, HOL, IND, INS, J, KOR, LAO, MLA, PAK, PNG, SNG, THA, TON, UAE, USA	AM-SAT A1, AM-SAT A4, APSTAR-3, APSTAR-4, ASIASAT-AK1, ASIASAT-AKX, ASIASAT-BKX, ASIASAT-CK1, ASIASAT-CKX, ASIASAT-DKX, ASIASAT-EK1, ASIASAT-EKX, DFH-3-OC, EMARSAT-1B, EMARSAT-1F, EMARSAT-1G, EUROPE*STAR-2G-1, EUROPE*STAR-2G-2, EUROPE*STAR-2G-3, EUTELSAT 3-25.5E, EUTELSAT 3-33E, EUTELSAT 3-36E, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, EUTELSAT 3-73.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-86E, EUTELSAT 3-88.5E, INSAT-EK48, INSAT-EK55, INTELSAT KFOS 85E, INTELSAT7 66E, INTERSPUTNIK-27E-Q, JCSAT-3A, JCSAT-3B, KOREASAT-103KU, KOREASAT-123.7KU, KOREASAT-2, L-STAR-1, L-STAR-2, L-STAR-3, L-STAR-4, L-STAR-5, L-STAR-6, MEASAT-1, MEASAT-3, MEASAT-91.5E, MEASAT-95E, MEASAT-SA3, MEASAT-SA4, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-125.5E, N-SAT-128, N-SAT-129.5E, N-SAT-141E, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, N-STAR-A2, N-STAR-B2, NSS-21, NSS-22, NSS-23, NSS-24, NSS-8, NSS-9, PACSTAR-L1, PACSTAR-L2, PACSTAR-L3, PAKSAT-1, PAKSAT-2, PAKSAT-C, PAKSAT-D, PAKSAT-E, PALAPA-C5, PALAPA-C6, PALAPA-C7, SB-SAT-135, SJC-1, SKYSAT-A1, SKYSAT-A2, SKYSAT-A3, SKYSAT-B1, SKYSAT-B2, SKYSAT-B3, SKYSAT-B4, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, ST-1C, THAICOM-A2B, THAICOM-A3B, THAICOM-A4B, THAICOM-A5B, THAICOM-C1, THAICOM-C2, THAICOM-G1K, THAICOM-G2K, THAICOM-G3K, TONGASAT AP-KU-4, TONGASAT C/KU-1, TONGASAT C/KU-2, TONGASAT C/KU-3, TONGASAT C/KU-4

Beam name	Channels	Ref. Table 1	Affected administrations*	Affected networks/beams/terrestrial stations*
TKM06800	30, 32, 34, 36, 38	c	BLR/IK, CHN, D, F/EUT, G, HOL, IND, INS, J, KOR, LAO, MLA, PAK, PNG, SNG, THA, TON, UAE, USA	AM-SAT A1, AM-SAT A4, APSTAR-3, APSTAR-4, ASIASAT-AK1, ASIASAT-AKX, ASIASAT-BKX, ASIASAT-CK1, ASIASAT-CKX, ASIASAT-DKX, ASIASAT-EK1, ASIASAT-EKX, DFH-3-OC, EMARSAT-1B, EMARSAT-1F, EMARSAT-1G, EUROPE*STAR-2G-1, EUROPE*STAR-2G-2, EUROPE*STAR-2G-3, EUTELSAT 3-25.5E, EUTELSAT 3-33E, EUTELSAT 3-36E, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, EUTELSAT 3-73.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-86E, EUTELSAT 3-88.5E, INSAT-EK48, INSAT-EK55, INTELSAT KFOS 85E, INTELSAT7 66E, INTERSPUTNIK-27E-Q, JCSAT-3A, JCSAT-3B, KOREASAT-1, KOREASAT-2, L-STAR-1, L-STAR-2, L-STAR-3, L-STAR-4, L-STAR-5, L-STAR-6, MEASAT-1, MEASAT-3, MEASAT-91.5E, MEASAT-95E, MEASAT-SA3, MEASAT-SA4, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-125.5E, N-SAT-128, N-SAT-129.5E, N-SAT-141E, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, N-STAR-A2, N-STAR-B2, NSS-21, NSS-22, NSS-23, NSS-24, NSS-8, NSS-9, PACSTAR-L1, PACSTAR-L2, PACSTAR-L3, PAKSAT-1, PAKSAT-2, PAKSAT-C, PAKSAT-D, PAKSAT-E, PALAPA-C5, PALAPA-C6, PALAPA-C7, SB-SAT-135, SJC-1, SKYSAT-A1, SKYSAT-A2, SKYSAT-A3, SKYSAT-B1, SKYSAT-B2, SKYSAT-B3, SKYSAT-B4, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, ST-1C, THAICOM-A2B, THAICOM-A3B, THAICOM-A4B, THAICOM-A5B, THAICOM-C1, THAICOM-C2, THAICOM-G1K, THAICOM-G2K, THAICOM-G3K, TONGASAT AP-KU-4, TONGASAT C/KU-1, TONGASAT C/KU-2, TONGASAT C/KU-3, TONGASAT C/KU-4
TKM06800	40	c	BLR/IK, CHN, D, F/EUT, G, HOL, IND, INS, J, KOR, LAO, MLA, PAK, PNG, SNG, THA, TON, UAE, USA	AM-SAT A1, AM-SAT A4, APSTAR-3, APSTAR-4, ASIASAT-AK1, ASIASAT-AKX, ASIASAT-BKX, ASIASAT-CK1, ASIASAT-CKX, ASIASAT-DKX, ASIASAT-EK1, ASIASAT-EKX, DFH-3-OC, EMARSAT-1B, EMARSAT-1F, EMARSAT-1G, EUROPE*STAR-2G-1, EUROPE*STAR-2G-2, EUROPE*STAR-2G-3, EUTELSAT 3-25.5E, EUTELSAT 3-33E, EUTELSAT 3-36E, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, EUTELSAT 3-73.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-86E, EUTELSAT 3-88.5E, INSAT-EK48, INSAT-EK55, INTELSAT7 66E, INTERSPUTNIK-27E-Q, JCSAT-3A, JCSAT-3B, KOREASAT-1, KOREASAT-2, L-STAR-1, L-STAR-2, L-STAR-3, L-STAR-4, L-STAR-5, L-STAR-6, MEASAT-1, MEASAT-3, MEASAT-91.5E, MEASAT-95E, MEASAT-SA3, MEASAT-SA4, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-125.5E, N-SAT-128, N-SAT-129.5E, N-SAT-141E, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, N-STAR-A2, N-STAR-B2, NSS-21, NSS-22, NSS-23, NSS-24, NSS-8, NSS-9, PACSTAR-L1, PACSTAR-L2, PACSTAR-L3, PAKSAT-1, PAKSAT-2, PAKSAT-C, PAKSAT-D, PAKSAT-E, PALAPA-C5, PALAPA-C6, PALAPA-C7, SB-SAT-135, SJC-1, SKYSAT-A1, SKYSAT-A2, SKYSAT-A3, SKYSAT-B1, SKYSAT-B2, SKYSAT-B3, SKYSAT-B4, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, ST-1C, THAICOM-A2B, THAICOM-A3B, THAICOM-A4B, THAICOM-A5B, THAICOM-C1, THAICOM-G1K, THAICOM-G2K, THAICOM-G3K, TONGASAT AP-KU-4, TONGASAT C/KU-1, TONGASAT C/KU-2, TONGASAT C/KU-3, TONGASAT C/KU-4
TON21500	2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24	c	USA	USASAT-14K
TUV00000	4, 8, 12	c	J, USA	INTELSAT7 176E, INTELSAT8 176E, N-SAT-175.5E
TUV00000	16, 18, 20, 22, 24	c	J	N-SAT-175.5E
TZA22500	21, 25	c	F/EUT	EUTELSAT 3-10E

Beam name	Channels	Ref. Table 1	Affected administrations*	Affected networks/beams/terrestrial stations*
UAE27400	25	c	BLR/IK, CHN, D, F/EUT, G, HOL, J, PAK, SNG, TON, USA	ASIASAT-AK1, ASIASAT-CK1, ASIASAT-EK1, EUROPE*STAR-2G-1, EUROPE*STAR-2G-2, EUROPE*STAR-2G-3, EUTELSAT 3-25.5E, EUTELSAT 3-33E, EUTELSAT 3-36E, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-88.5E, INTELSAT KFOS 85E, INTELSAT7 66E, INTERSPUTNIK-27E-Q, JCSAT-3A, JCSAT-3B, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-125.5E, N-SAT-129.5E, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, NSS-21, NSS-22, NSS-23, NSS-24, NSS-8, NSS-9, PAKSAT-1, PAKSAT-2, PAKSAT-C, PAKSAT-D, PAKSAT-E, SKYSAT-A1, SKYSAT-A2, SKYSAT-A3, SKYSAT-B2, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, ST-1C, TONGASAT AP-KU-4, TONGASAT C/KU-1
UAE27400	27	c	BLR/IK, CHN, D, F/EUT, G, HOL, J, MLA, PAK, SNG, THA, TON, USA	ASIASAT-AK1, ASIASAT-AKX, ASIASAT-BKX, ASIASAT-CK1, ASIASAT-CKX, ASIASAT-DKX, ASIASAT-EK1, ASIASAT-EKX, EUROPE*STAR-2G-1, EUROPE*STAR-2G-2, EUROPE*STAR-2G-3, EUTELSAT 3-25.5E, EUTELSAT 3-33E, EUTELSAT 3-36E, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, EUTELSAT 3-73.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-86E, EUTELSAT 3-88.5E, INTELSAT KFOS 85E, INTELSAT7 66E, INTERSPUTNIK-27E-Q, JCSAT-3A, JCSAT-3B, MEASAT-SA3, MEASAT-SA4, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-125.5E, N-SAT-129.5E, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, N-STAR-A2, NSS-21, NSS-22, NSS-23, NSS-24, NSS-8, NSS-9, PAKSAT-1, PAKSAT-2, PAKSAT-C, PAKSAT-D, PAKSAT-E, SKYSAT-A1, SKYSAT-A2, SKYSAT-A3, SKYSAT-B1, SKYSAT-B2, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, ST-1C, THAICOM-C2, TONGASAT AP-KU-4, TONGASAT C/KU-1, TONGASAT C/KU-2
UAE27400	29	c	BLR/IK, CHN, D, F/EUT, G, HOL, INS, J, KOR, LAO, MLA, PAK, PNG, SNG, THA, TON, USA	AM-SAT A1, AM-SAT A4, APSTAR-3, APSTAR-4, ASIASAT-AK1, ASIASAT-AKX, ASIASAT-BKX, ASIASAT-CK1, ASIASAT-CKX, ASIASAT-DKX, ASIASAT-EK1, ASIASAT-EKX, EUROPE*STAR-2G-1, EUROPE*STAR-2G-2, EUROPE*STAR-2G-3, EUTELSAT 3-25.5E, EUTELSAT 3-33E, EUTELSAT 3-36E, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, EUTELSAT 3-73.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-86E, EUTELSAT 3-88.5E, INTELSAT KFOS 85E, INTELSAT7 66E, INTERSPUTNIK-27E-Q, JCSAT-3A, JCSAT-3B, KOREASAT-1, KOREASAT-103KU, KOREASAT-123.7KU, L-STAR-1, L-STAR-2, L-STAR-3, L-STAR-4, L-STAR-5, L-STAR-6, MEASAT-1, MEASAT-3, MEASAT-91.5E, MEASAT-95E, MEASAT-SA3, MEASAT-SA4, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-125.5E, N-SAT-128, N-SAT-129.5E, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, NSS-21, NSS-22, NSS-23, NSS-24, NSS-8, NSS-9, PACSTAR-L1, PACSTAR-L2, PACSTAR-L3, PAKSAT-1, PAKSAT-2, PAKSAT-C, PAKSAT-D, PAKSAT-E, PALAPA-C5, PALAPA-C6, PALAPA-C7, SJC-1, SKYSAT-A1, SKYSAT-A2, SKYSAT-A3, SKYSAT-B2, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, ST-1C, THAICOM-A2B, THAICOM-A5B, THAICOM-C1, THAICOM-C2, THAICOM-G1K, THAICOM-G2K, TONGASAT AP-KU-4, TONGASAT C/KU-1
UAE27400	31, 35, 39	c	BLR/IK, CHN, D, F/EUT, G, HOL, INS, J, KOR, LAO, MLA, PAK, PNG, SNG, THA, TON, USA	AM-SAT A1, AM-SAT A4, APSTAR-3, APSTAR-4, ASIASAT-AK1, ASIASAT-AKX, ASIASAT-BKX, ASIASAT-CK1, ASIASAT-CKX, ASIASAT-DKX, ASIASAT-EK1, ASIASAT-EKX, EUROPE*STAR-2G-1, EUROPE*STAR-2G-2, EUROPE*STAR-2G-3, EUTELSAT 3-25.5E, EUTELSAT 3-33E, EUTELSAT 3-36E, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, EUTELSAT 3-73.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-86E, EUTELSAT 3-88.5E, INTELSAT KFOS 85E, INTELSAT7 66E, INTERSPUTNIK-27E-Q, JCSAT-3A, JCSAT-3B, KOREASAT-1, KOREASAT-2, L-STAR-1, L-STAR-2, L-STAR-3, L-STAR-4, L-STAR-5, L-STAR-6, MEASAT-1, MEASAT-3, MEASAT-91.5E, MEASAT-95E, MEASAT-SA3, MEASAT-SA4, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-125.5E, N-SAT-128, N-SAT-129.5E, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, N-STAR-A2, NSS-21, NSS-22, NSS-23, NSS-24, NSS-8, NSS-9, PACSTAR-L1, PACSTAR-L2, PACSTAR-L3, PAKSAT-1, PAKSAT-2, PAKSAT-C, PAKSAT-D, PAKSAT-E, PALAPA-C5, PALAPA-C6, PALAPA-C7, SJC-1, SKYSAT-A1, SKYSAT-A2, SKYSAT-A3, SKYSAT-B1, SKYSAT-B2, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, ST-1C, THAICOM-A2B, THAICOM-A3B, THAICOM-A5B, THAICOM-C1, THAICOM-C2, THAICOM-G1K, THAICOM-G2K, TONGASAT AP-KU-4, TONGASAT C/KU-1, TONGASAT C/KU-2

Beam name	Channels	Ref. Table 1	Affected administrations*	Affected networks/beams/terrestrial stations*
UAE27400	33, 37	c	BLR/IK, CHN, D, F/EUT, G, HOL, INS, J, KOR, LAO, MLA, PAK, PNG, SNG, THA, TON, USA	AM-SAT A1, AM-SAT A4, APSTAR-3, APSTAR-4, ASIASAT-AK1, ASIASAT-AKX, ASIASAT-BKX, ASIASAT-CK1, ASIASAT-CKX, ASIASAT-DKX, ASIASAT-EK1, ASIASAT-EKX, EUROPE*STAR-2G-1, EUROPE*STAR-2G-2, EUROPE*STAR-2G-3, EUTELSAT 3-25.5E, EUTELSAT 3-33E, EUTELSAT 3-36E, EUTELSAT 3-44E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, EUTELSAT 3-73.5E, EUTELSAT 3-76E, EUTELSAT 3-80.5E, EUTELSAT 3-83.5E, EUTELSAT 3-86E, EUTELSAT 3-88.5E, INTELSAT KFOS 85E, INTELSAT7 66E, INTERSPUTNIK-27E-Q, JCSAT-3A, JCSAT-3B, KOREASAT-1, L-STAR-1, L-STAR-2, L-STAR-3, L-STAR-4, L-STAR-5, L-STAR-6, MEASAT-1, MEASAT-3, MEASAT-91.5E, MEASAT-95E, MEASAT-SA3, MEASAT-SA4, N-SAT-102.5E, N-SAT-103.5E, N-SAT-106.5, N-SAT-110, N-SAT-110E, N-SAT-117, N-SAT-120E, N-SAT-122.5E, N-SAT-125.5E, N-SAT-128, N-SAT-129.5E, N-SAT-65.5, N-SAT-73E, N-SAT-74.5E, N-SAT-76.5E, N-SAT-79.5E, N-SAT-82.5E, N-SAT-84E, N-SAT-86E, N-SAT-94E, NSS-21, NSS-22, NSS-23, NSS-24, NSS-8, NSS-9, PACSTAR-L1, PACSTAR-L2, PACSTAR-L3, PAKSAT-1, PAKSAT-2, PAKSAT-C, PAKSAT-D, PAKSAT-E, PALAPA-C5, PALAPA-C6, PALAPA-C7, SJC-1, SKYSAT-A1, SKYSAT-A2, SKYSAT-A3, SKYSAT-B2, SKYSAT-C1, SKYSAT-C2, SKYSAT-C3, SKYSAT-C4, ST-1C, THAICOM-A2B, THAICOM-A5B, THAICOM-C1, THAICOM-C2, THAICOM-G1K, THAICOM-G2K, TONGASAT AP-KU-4, TONGASAT C/KU-1
VUT12800	1, 5, 9, 13, 17, 19, 21, 23	c	J, MHL	ORION-AP-1, N-SAT-141E
WAK33400	3, 7, 11, 15, 19, 21, 23	c	J, MHL	ORION-AP-1, N-SAT-141E
ZMB31400	21, 23, 25	c	NOR	BIFROST-14
ZWE13500	1, 3, 5, 7, 9, 11, 13	c	NOR, USA	INTELSAT7 359E, INTELSAT8 359E, BIFROST-14
ZWE13500	15, 17, 19	c	NOR	BIFROST-14

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

** *Note by the Secretariat*: This designation replaces the former designation “YUG” which was used previously as a three-letter code for the Administration of Serbia and Montenegro.

TABLE 3

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

Beam name	Channels	Note	Affecting administrations*	Affecting networks/beams*
AFG__100	1, 3, 5, 7, 9, 11, 13	7	USA	INTELSAT7 342E, INTELSAT7 359E
AGL29500	1, 3, 5, 7, 9, 11, 13	7	HOL, USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 328.5E, INTELSAT7 338.5E, INTELSAT7 342E, INTELSAT7 359E, INTELSAT8 338.5E, INTELSAT8 328.5E
AND34100	2, 6, 10, 12	7	HOL, USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 319.5E, INTELSAT7 328.5E, INTELSAT7 342E, INTELSAT7 359E, INTELSAT IBS 319.5E, INTELSAT8 319.5E, USASAT-26A INTELSAT8 328.5E
AND34100	14, 16, 18, 20	7	USA	USASAT-26A
ARM06400	26	7	J	JCSAT-3B
ARM06400	28, 30, 32, 34, 36, 38, 40	7	J, KOR	JCSAT-3B, KOREASAT-2
ARS34000	40	7	J, KOR	JCSAT-3A, JCSAT-3B, KOREASAT-2
ARS__100	26	7	J	JCSAT-3A, JCSAT-3B
ARS__100	28, 30, 32, 34, 36, 38, 40	7	J, KOR	JCSAT-3A, JCSAT-3B, KOREASAT-2
AUSA_100	1, 5, 9	7	USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E
AUSB_100	4, 8, 12	7	USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E, INTELSAT8 174E
AZE06400	25, 27	7	J	JCSAT-3A, JCSAT-3B
AZE06400	29, 31, 33, 35, 37, 39	7	J, KOR	JCSAT-3A, JCSAT-3B, KOREASAT-2
BEN23300	1, 3, 5, 7, 9, 11, 13	7	HOL, USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 328.5E, INTELSAT7 338.5E, INTELSAT7 342E, INTELSAT7 359E, INTELSAT IBS 342E, INTELSAT8 338.5E, INTELSAT8 328.5E
BFA10700	22, 24	7	E	HISPASAT-1, HISPASAT-2C3 KU
BHR25500	25, 27	7	J	JCSAT-3A, JCSAT-3B
BHR25500	29, 31, 33, 35, 37, 39	7	J, KOR	JCSAT-3A, JCSAT-3B, KOREASAT-2
BIH14800	1, 3, 5, 7, 9, 11, 13	7	USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 328.5E, INTELSAT7 342E, INTELSAT7 359E
BLR06200	1, 3, 5, 7, 9, 11, 13	7	USA	INTELSAT7 310E, INTELSAT7 328.5E, INTELSAT7 342E, INTELSAT7 359E
BRM29800	1, 3, 5, 7, 9, 11, 13	7	USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E
BRU33000	2, 4, 6, 8, 10	7	USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E
CBG29900	2, 4, 6, 8, 10, 12	7	USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E
CHN15500	1, 3, 5, 7, 9, 11, 13	7	USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 359E
CHN15800	2, 4, 6, 8, 10, 12	7	USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E
CHN19000	3, 7, 11	7	USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E

Beam name	Channels	Note	Affecting administrations*	Affecting networks/beams*
CHN20000	2, 4, 6, 8, 10, 12	7	USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E
CHNA_100	2, 4, 6, 8, 10, 12	7	USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E, INTELSAT7 359E
CHNC_100	1, 3, 5, 7, 9, 11, 13	7	USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E
CHNE_100	1, 3, 5, 7, 9, 11, 13	7	USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E
CHNF_100	2, 4, 6, 8, 10, 12	7	USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E
CLN21900	1, 3, 5, 7, 9, 11, 13	7	USA	INTELSAT7 359E
COD__100	2, 4, 6, 8, 10, 12	7	HOL, USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 328.5E, INTELSAT7 338.5E, INTELSAT7 342E, INTELSAT7 359E, INTELSAT IBS 342E, INTELSAT8 338.5E, INTELSAT8 328.5E
COG23500	1, 3, 5, 7, 9, 11, 13	7	HOL, USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 328.5E, INTELSAT7 338.5E, INTELSAT7 342E, INTELSAT7 359E, INTELSAT IBS 342E, INTELSAT8 338.5E
COM20700	25, 27	7	J	JCSAT-3B
COM20700	29, 31, 33, 35, 37, 39	7	J, KOR	JCSAT-3B, KOREASAT-2
CPV30100	2, 4, 6, 8, 10, 12	7	HOL, USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 319.5E, INTELSAT7 328.5E, INTELSAT7 338.5E, INTELSAT7 342E, INTELSAT7 359E, INTELSAT8 319.5E, INTELSAT8 338.5E, INTELSAT8 328.5E
CTI23700	1, 3, 5, 7, 9, 11, 13	7	HOL, USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 328.5E, INTELSAT7 338.5E, INTELSAT7 342E, INTELSAT7 359E, INTELSAT8 338.5E, INTELSAT8 328.5E
CVA08300	1, 3, 5, 7, 9, 11	7	USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 328.5E, INTELSAT7 342E, INTELSAT7 359E
CYP08600	1, 3, 5, 7, 9, 11, 13	7	USA	INTELSAT7 328.5E, INTELSAT7 342E, INTELSAT7 359E
CZE14401	1, 9	7	HOL, USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 328.5E, INTELSAT7 338.5E, INTELSAT7 342E, INTELSAT7 359E, INTELSAT8 338.5E
CZE14403	2	7	HOL, USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 328.5E, INTELSAT7 338.5E, INTELSAT7 342E, INTELSAT7 359E, INTELSAT8 338.5E
D 08700	1, 3, 5, 7, 9, 11, 13	7	HOL, USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 328.5E, INTELSAT7 338.5E, INTELSAT7 342E, INTELSAT7 359E, INTELSAT IBS 342E, INTELSAT8 338.5E
DJI09900	2, 4, 6, 8, 10, 12	7	USA	INTELSAT7 328.5E, INTELSAT7 342E, INTELSAT7 359E
DNK090XR	29	6	JMC	JMC00005
DNK090XR	33	6	GUY, JMC	GUY00302, JMC00005
DNK091XR	31, 35	6	GUY, JMC	GUY00302, JMC00005
DNK__100	1, 3, 5, 7, 9, 11, 13	7	HOL, USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 328.5E, INTELSAT7 338.5E, INTELSAT7 342E, INTELSAT7 359E, INTELSAT8 338.5E, INTELSAT8 328.5E
EGY02600	2, 6, 8, 10, 12	7	USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 328.5E, INTELSAT7 342E, INTELSAT7 359E
ERI09200	25, 27	7	J	JCSAT-3B
ERI09200	29, 31, 33, 35, 37, 39	7	J, KOR	JCSAT-3B, KOREASAT-2
EST06100	1, 3, 5, 7, 9, 11, 13	7	USA	INTELSAT7 310E, INTELSAT7 328.5E, INTELSAT7 342E, INTELSAT7 359E

Beam name	Channels	Note	Affecting administrations*	Affecting networks/beams*
ETH09200	2, 4, 6, 8, 10, 12	7	USA	INTELSAT7 328.5E, INTELSAT7 342E, INTELSAT7 359E
FJI19300	1, 3, 5, 7, 9, 11, 13	7	HOL, USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E, INTELSAT7 183E, INTELSAT IBS 183E, INTELSAT8 174E
FSM00000	1, 3, 5, 7, 9, 11, 13	7	USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E
F____100	25, 27	7	J	JCSAT-3A, JCSAT-3B
F____100	29, 31, 33, 35, 37, 39	7	J, KOR	JCSAT-3A, JCSAT-3B, KOREASAT-2
G 02700	2, 4, 6, 8, 10, 12	7	HOL, USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 319.5E, INTELSAT7 328.5E, INTELSAT7 338.5E, INTELSAT7 342E, INTELSAT7 359E, INTELSAT8 319.5E, INTELSAT8 328.5E
GAB26000	1, 3, 5, 7, 9, 11, 13	7	HOL, USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 328.5E, INTELSAT7 338.5E, INTELSAT7 342E, INTELSAT7 359E, INTELSAT IBS 342E, INTELSAT8 338.5E
GEO06400	1, 3, 5, 7, 9, 11, 13	7	USA	INTELSAT7 328.5E, INTELSAT7 342E, INTELSAT7 359E
GMB30200	1, 3, 5, 7, 9, 11, 13	7	HOL, USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 319.5E, INTELSAT7 328.5E, INTELSAT7 342E, INTELSAT7 359E, INTELSAT IBS 319.5E, INTELSAT8 319.5E, USASAT-26A, INTELSAT8 328.5E
GMB30200	15, 17, 19	7	USA	USASAT-26A
GNB30400	22, 24	7	E	HISPASAT-1, HISPASAT-2C3 KU
GRC10500	2, 4, 6, 8, 10, 12	7	USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 328.5E, INTELSAT7 342E, INTELSAT7 359E
GUI19200	2, 4, 6, 8, 10, 12	7	HOL, USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 319.5E, INTELSAT7 328.5E, INTELSAT7 342E, INTELSAT7 359E, INTELSAT IBS 319.5E, INTELSAT8 319.5E, USASAT-26A, INTELSAT8 328.5E
GUI19200	14, 16, 18, 20	7	USA	USASAT-26A
HNG10601	3, 11	7	HOL, USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 328.5E, INTELSAT7 338.5E, INTELSAT7 342E, INTELSAT7 359E, INTELSAT8 338.5E
HNG10602	6	7	HOL, USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 328.5E, INTELSAT7 338.5E, INTELSAT7 342E, INTELSAT7 359E, INTELSAT8 338.5E
HNG10603	2	7	HOL, USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 328.5E, INTELSAT7 338.5E, INTELSAT7 342E, INTELSAT7 359E, INTELSAT8 338.5E
HOL21300	2, 4, 6, 8, 10, 12	7	USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 328.5E, INTELSAT7 342E, INTELSAT7 359E
HRV14801	5, 13	7	HOL, USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 328.5E, INTELSAT7 338.5E, INTELSAT7 342E, INTELSAT7 359E, INTELSAT8 338.5E
HRV14802	10	7	HOL, USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 328.5E, INTELSAT7 338.5E, INTELSAT7 342E, INTELSAT7 359E, INTELSAT8 338.5E
HRV14803	2	7	HOL, USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 328.5E, INTELSAT7 338.5E, INTELSAT7 342E, INTELSAT7 359E, INTELSAT8 338.5E
IND03700	4, 6, 8, 10, 12	7	USA	INTELSAT7 174E, INTELSAT7 177E
IND04700	1, 5, 7, 9, 11, 13	7	USA	INTELSAT7 174E
INDA_100	2, 4, 6, 8, 10, 12	7	USA	INTELSAT7 359E

Beam name	Channels	Note	Affecting administrations*	Affecting networks/beams*
INDB_100	1, 3, 5, 7, 9, 11, 13	7	USA	INTELSAT7 359E
INDD_100	1, 3, 5, 7, 9, 11, 13	7	USA	INTELSAT7 359E
INSA_100	1, 3, 5, 7, 9, 11, 13	7	USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E
INSB_100	2, 4, 6, 8, 10, 12	7	USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E
IRL21100	1, 3, 5, 7, 9, 11, 13	7	HOL, USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 319.5E, INTELSAT7 328.5E, INTELSAT7 342E, INTELSAT7 359E, INTELSAT IBS 319.5E, INTELSAT8 319.5E, USASAT-26A, INTELSAT8 328.5E
IRL21100	15, 17, 19	7	USA	USASAT-26A
IRN10900	1, 5, 9, 11, 13	7	USA	INTELSAT7 328.5E, INTELSAT7 342E, INTELSAT7 359E
IRQ25600	1, 3, 5, 7, 9, 11, 13	7	USA	INTELSAT7 328.5E, INTELSAT7 342E, INTELSAT7 359E
ISL04900	27	6	GUY	GUY00302
ISL04900	29	6	DNK, JMC	GRLDNK01, JMC00005
ISL04900	31, 35, 37	6	DNK, GUY, JMC	GRLDNK01, GUY00302, JMC00005
ISL04900	33	6	GUY, JMC	GUY00302, JMC00005
ISL04900	39	6	JMC	JMC00005
ISR11000	28, 30, 32, 34, 36, 38, 40	7	KOR	KOREASAT-2
J 10985	1, 3, 5, 7, 9, 11, 13	7	USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E
J 11100	1, 3, 5, 7, 9, 11, 13	7	USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E
JOR22400	2, 4, 6, 8, 10, 12	7	USA	INTELSAT7 328.5E, INTELSAT7 342E, INTELSAT7 359E
KAZ06600	1, 3, 5, 7, 9, 11, 13	7	USA	INTELSAT7 342E, INTELSAT7 359E
KEN24900	28, 30, 32, 34, 36, 38, 40	7	KOR	KOREASAT-2
KGZ07000	2, 4, 6, 8, 10, 12	7	USA	INTELSAT7 359E
KIR__100	1, 3, 5, 7, 9, 11, 13	7	HOL, USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E, INTELSAT7 183E, INTELSAT IBS 183E, INTELSAT8 174E
KOR11200	2, 4, 6, 8, 10, 12	7	USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E
KRE28600	1, 3, 5, 7, 9, 11, 13	7	USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E
KWT11300	26	7	J	JCSAT-3A, JCSAT-3B
KWT11300	28, 30, 32, 34, 36, 38, 40	7	J, KOR	JCSAT-3A, JCSAT-3B, KOREASAT-2
LAO28400	2, 4, 6, 8, 10, 12	7	USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E
LBN27900	1, 3, 5, 7, 9, 11, 13	7	USA	INTELSAT7 328.5E, INTELSAT7 342E, INTELSAT7 359E
LBR24400	1, 5, 7, 9, 11, 13	7	HOL, USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 319.5E, INTELSAT7 328.5E, INTELSAT7 338.5E, INTELSAT7 342E, INTELSAT7 359E, INTELSAT8 319.5E, INTELSAT8 338.5E, INTELSAT8 328.5E
LBY__100	2, 4, 6, 8, 10, 12	7	HOL, USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 328.5E, INTELSAT7 338.5E, INTELSAT7 342E, INTELSAT7 359E, INTELSAT8 338.5E, INTELSAT8 328.5E

Beam name	Channels	Note	Affecting administrations*	Affecting networks/beams*
LSO30500	1, 3, 5, 7, 9, 11, 13	7	USA	INTELSAT7 310E, INTELSAT7 328.5E, INTELSAT7 342E, INTELSAT7 359E
LTU06100	1, 3, 5, 7, 9, 11, 13	7	USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 328.5E, INTELSAT7 342E, INTELSAT7 359E
LUX11400	1, 3, 5, 7, 9, 11, 13	7	USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 328.5E, INTELSAT7 342E, INTELSAT7 359E
LVA06100	2, 4, 6, 8, 10, 12	7	USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 328.5E, INTELSAT7 342E, INTELSAT7 359E
MAU__100	26	7	J	JCSAT-3A, JCSAT-3B
MAU__100	28, 30, 32, 34, 36, 38, 40	7	J, KOR	JCSAT-3A, JCSAT-3B, KOREASAT-2
MCO11600	1, 3, 5, 7, 9, 11, 13	7	USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 328.5E, INTELSAT7 342E, INTELSAT7 359E
MDG23600	3, 5, 7, 9, 11, 13	7	USA	INTELSAT7 328.5E, INTELSAT7 342E, INTELSAT7 359E
MHL00000	4, 8, 12	7	USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E
MLA__100	2, 4, 6, 8, 10, 12	7	USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E
MLD30600	1, 3, 5, 7, 9, 11, 13	7	USA	INTELSAT7 359E
MLI__100	1, 3, 5, 7, 9, 11, 13	7	HOL, USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 328.5E, INTELSAT7 338.5E, INTELSAT7 342E, INTELSAT7 359E, INTELSAT IBS 342E, INTELSAT8 338.5E, INTELSAT8 328.5E
MNG24800	27	7	J	JCSAT-3A, JCSAT-3B, JCSAT-1R, SUPERBIRD-C
MNG24800	29, 31, 33, 35, 37, 39	7	CHN, J, KOR, MLA, THA	MEASAT-2, JCSAT-3A, JCSAT-3B, APSTAR-4, JCSAT-1R, THAICOM-A2B, SUPERBIRD-C, KOREASAT-2
MOZ30700	2, 6, 10, 12	7	USA	INTELSAT7 310E, INTELSAT7 328.5E, INTELSAT7 342E, INTELSAT7 359E
MRC20900	1, 3, 5, 7, 9, 11, 13	7	HOL, USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 328.5E, INTELSAT7 338.5E, INTELSAT7 342E, INTELSAT7 359E, INTELSAT8 338.5E, INTELSAT8 328.5E
MTN__100	22, 24, 26	7	USA	USASAT-26A
MWI30800	2, 4, 6, 8, 10, 12	7	USA	INTELSAT7 328.5E, INTELSAT7 342E, INTELSAT7 359E
NCL10000	4, 6, 8, 10, 12	7	USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E
NGR11500	2, 4, 6, 8, 10, 12	7	HOL, USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 319.5E, INTELSAT7 328.5E, INTELSAT7 342E, INTELSAT7 359E, INTELSAT IBS 319.5E, INTELSAT8 319.5E, USASAT-26A, INTELSAT8 328.5E
NGR11500	14, 16, 18, 20	7	USA	USASAT-26A
NOR12000	1, 3, 5, 7, 9, 11, 13	7	USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 328.5E, INTELSAT7 342E, INTELSAT7 359E
NRU30900	1, 5, 7, 9, 11, 13	7	USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E
NZL__100	2, 4, 6, 8, 10, 12	7	USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E
OCE10100	2, 6, 8, 10, 12	7	USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E
OMA12300	26	7	J	JCSAT-3A, JCSAT-3B
OMA12300	28, 30, 32, 34, 36, 38, 40	7	J, KOR	JCSAT-3A, JCSAT-3B, KOREASAT-2
PAK12700	2, 4, 6, 8, 10, 12	7	USA	INTELSAT7 359E

Beam name	Channels	Note	Affecting administrations*	Affecting networks/beams*
PHL28500	2, 4, 6, 8, 10, 12	7	USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E
PLM33200	2, 4, 6, 8, 10, 12	7	HOL	INTELSAT7 183E
PLW00000	2, 4, 6, 8, 10, 12	7	USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E
PNG13100	2, 4, 6, 8, 10, 12	7	USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E
POR__100	1, 3, 5, 7, 9, 11, 13	7	HOL, USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 319.5E, INTELSAT7 328.5E, INTELSAT7 342E, INTELSAT7 359E, INTELSAT IBS 319.5E, INTELSAT8 319.5E, USASAT-26A, INTELSAT8 328.5E
POR__100	15, 17, 19	7	USA	USASAT-26A
QAT24700	2, 4, 6, 8, 10, 12	7	USA	INTELSAT7 342E, INTELSAT7 359E
ROU13600	1, 3, 5, 7, 9, 11, 13	7	USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 328.5E, INTELSAT7 342E, INTELSAT7 359E
RRW31000	2, 6, 8, 10, 12	7	USA	INTELSAT7 310E, INTELSAT7 328.5E, INTELSAT7 342E, INTELSAT7 359E
RUS-4	25	7	J	JCSAT-3A, JCSAT-3B, JCSAT-1R, SUPERBIRD-C
RUS-4	26, 27	7	CHN, J	ASIASAT-AK1, ASIASAT-CK1, ASIASAT-EK1, JCSAT-3A, JCSAT-3B, JCSAT-1R, SUPERBIRD-C
RUS-4	28	7	CHN, J, KOR, MLA	ASIASAT-AK1, ASIASAT-CK1, ASIASAT-EK1, JCSAT-3A, JCSAT-3B, JCSAT-1R, SUPERBIRD-C, ASIASAT-CKX, MEASAT-2, KOREASAT-1, KOREASAT-2
RUS-4	29	7	CHN, J, KOR, MLA	ASIASAT-AK1, ASIASAT-CK1, ASIASAT-EK1, SJC-1, JCSAT-3A, JCSAT-3B, JCSAT-1R, SUPERBIRD-C, ASIASAT-CKX, MEASAT-2, KOREASAT-1, KOREASAT-2
RUS-4	31, 33, 35, 37, 39	7	CHN, J, KOR, MLA	ASIASAT-AK1, ASIASAT-CK1, ASIASAT-EK1, SJC-1, JCSAT-3A, JCSAT-3B, JCSAT-1R, SUPERBIRD-C, CHINASAT-6, ASIASAT-CKX, MEASAT-2, KOREASAT-1, KOREASAT-2
SDN__100	29, 31, 33, 35, 37, 39	7	KOR	KOREASAT-2
SEN22200	23, 25	7	USA	USASAT-26A
SEY00000	26	7	J	JCSAT-3A, JCSAT-3B
SEY00000	28, 30, 32, 34, 36, 38, 40	7	J, KOR	JCSAT-3A, JCSAT-3B, KOREASAT-2
SLM00000	1, 3, 5, 7, 9, 11, 13	7	USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E
SMO05700	1, 3, 5, 7, 9, 11, 13	7	HOL, USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E, INTELSAT7 183E, INTELSAT IBS 183E, INTELSAT8 174E
SMR31100	1, 3, 5, 7, 9, 11, 13	7	HOL, USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 319.5E, INTELSAT7 328.5E, INTELSAT7 342E, INTELSAT7 359E, INTELSAT IBS 319.5E, INTELSAT8 319.5E, USASAT-26A, INTELSAT8 328.5E
SMR31100	15, 17, 19	7	USA	USASAT-26A
SNG15100	1, 3, 5, 7, 9, 11, 13	7	USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E
SOM31200	26	7	J	JCSAT-3A, JCSAT-3B
SOM31200	28, 30, 32, 34, 36, 38, 40	7	J, KOR	JCSAT-3A, JCSAT-3B, KOREASAT-2
SRL25900	27	6	GUY	GUY00302
SRL25900	29, 39	6	JMC	JMC00005
SRL25900	31, 33, 35, 37	6	GUY, JMC	GUY00302, JMC00005

Beam name	Channels	Note	Affecting administrations*	Affecting networks/beams*
STP24100	2, 4, 6, 8, 10, 12	7	USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 328.5E, INTELSAT7 342E, INTELSAT7 359E, INTELSAT7 359E
SUI14000	2, 4, 6, 8, 10, 12	7	HOL, USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 328.5E, INTELSAT7 338.5E, INTELSAT7 342E, INTELSAT7 359E, INTELSAT IBS 342E, INTELSAT8 338.5E, INTELSAT7 342E
SVK14401	7	7	HOL, USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 328.5E, INTELSAT7 338.5E, INTELSAT7 342E, INTELSAT7 359E, INTELSAT8 338.5E
SVK14403	2	7	HOL, USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 328.5E, INTELSAT7 338.5E, INTELSAT7 342E, INTELSAT7 359E, INTELSAT8 338.5E
SVN14800	2, 4, 6, 8, 10, 12	7	USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 328.5E, INTELSAT7 342E, INTELSAT7 359E
SWZ31300	1, 3, 5, 7, 9, 11, 13	7	USA	INTELSAT7 328.5E, INTELSAT7 342E, INTELSAT7 359E
SYR22900	28, 30, 32, 34, 36, 38, 40	7	KOR	KOREASAT-2
SYR33900	40	7	KOR	KOREASAT-2
TCD14300	1, 3, 5, 7, 9, 11, 13	7	USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 328.5E, INTELSAT7 342E, INTELSAT7 359E
TGO22600	1, 3, 5, 7, 9, 11	7	HOL, USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 319.5E, INTELSAT7 328.5E, INTELSAT7 338.5E, INTELSAT7 342E, INTELSAT7 359E, INTELSAT8 319.5E, INTELSAT8 338.5E, INTELSAT8 328.5E
TGO22600	13	7	E, HOL, USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 319.5E, INTELSAT7 328.5E, INTELSAT7 338.5E, INTELSAT7 342E, INTELSAT7 359E, INTELSAT8 319.5E, INTELSAT8 338.5E, INTELSAT8 328.5E, HISPASAT-2C3 KU
TGO22600	15, 17, 19	7	E	HISPASAT-1, HISPASAT-2C3 KU
THA14200	1, 3, 5, 7, 9, 11, 13	7	USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E
TJK06900	26	7	J	JCSAT-3A, JCSAT-3B, JCSAT-1R
TJK06900	28, 30, 32, 34, 36, 38, 40	7	J, KOR, MLA	JCSAT-3A, JCSAT-3B, JCSAT-1R, MEASAT-2, KOREASAT-2
TKM06800	26	7	J	JCSAT-3A, JCSAT-3B
TKM06800	28, 30, 32, 34, 36, 38, 40	7	J, KOR	JCSAT-3A, JCSAT-3B, KOREASAT-2
TMP00000	2, 4, 6, 8, 10, 12	7	USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E
TON21500	2, 4, 6, 8, 10, 12	7	HOL, USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E, INTELSAT7 183E, INTELSAT8 174E
TUR14500	2, 4, 6, 8, 10, 12	7	USA	INTELSAT7 310E, INTELSAT7 328.5E, INTELSAT7 342E, INTELSAT7 359E
TUV00000	2, 4, 6, 8, 10, 12	7	HOL, USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E, INTELSAT7 183E, INTELSAT IBS 183E, INTELSAT8 174E
TZA22500	29, 31, 33, 35, 37, 39	7	KOR	KOREASAT-2
UAE27400	25, 27	7	J	JCSAT-3A, JCSAT-3B
UAE27400	29, 31, 33, 35, 37, 39	7	J, KOR	JCSAT-3A, JCSAT-3B, KOREASAT-2
UGA05100	29, 31, 33, 35, 37, 39	7	KOR	KOREASAT-2
UKR06300	2, 4, 6, 8, 10, 12	7	USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 328.5E, INTELSAT7 342E, INTELSAT7 359E
USAA_100	1, 3, 5, 7, 9, 11, 13	7	HOL	INTELSAT7 183E
UZB07100	1, 3, 5, 7, 9, 11, 13	7	USA	INTELSAT7 342E, INTELSAT7 359E

Beam name	Channels	Note	Affecting administrations*	Affecting networks/beams*
VTN32500	2, 4, 6, 8, 10, 12	7	USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E
VUT12800	1, 5, 7, 9, 11, 13	7	USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E
WAL10200	4, 8, 10, 12	7	USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E
YEM__100	1, 3, 5, 7, 9, 11, 13	7	USA	INTELSAT7 328.5E, INTELSAT7 342E, INTELSAT7 359E
YYY00000	29, 31, 33, 35, 37, 39	7	KOR	KOREASAT-2
ZMB31400	29, 31, 33, 35, 37, 39	7	KOR	KOREASAT-2
ZWE13500	1, 3, 5, 7, 9, 11, 13	7	USA	INTELSAT7 307E, INTELSAT7 310E, INTELSAT7 328.5E, INTELSAT7 342E, INTELSAT7 359E

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

TABLE 4

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

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

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

[1] 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 = 11 708.30 + 19.18 n, where n is the channel number.

TABLE 6A

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

1	2	3	4		5			6	7	8		9		10		11	12	13	14	15	16
Admin. symbol	Beam identification	Orbital Position	Boresight		Space station antenna characteristics			Space station antenna code	Shaped beam	Space station antenna gain		Earth station antenna		Polarization		e.i.r.p.	Designation of emission	Identity of the space station	Group code	Status	Remarks
			Long.	Lat.	Ma-jor axis	Minor axis	Orien-tation			Co-polar	Cross-polar	Code	Gain	Type	Angle						
AFG	AFG__100	50.00	65.88	33.86				CB_TSS_AFGA		42.71		MODRES	35.50	CL		58.4	27M0G7W			P	7
AFS	AFS02100	4.80	24.50	–28.00	3.13	1.68	27.00	R13TSS		37.24		MODRES	35.50	CL		59.1	27M0G7W			P	5
AGL	AGL29500	–24.80	16.06	–12.45	2.42	1.88	77.88	R13TSS		37.87		MODRES	35.50	CL		59.1	27M0G7W			P	5, 7
ALB	ALB29600	62.00	20.04	41.23	0.60	0.60	61.32	R13TSS		48.88		MODRES	35.50	CL		58.9	27M0G7W			P	
ALG	ALG__100	–24.80	1.86	27.60				CB_TSS_ALGA		39.59		MODRES	35.50	CL		54.5	27M0G7W			P	
AND	AND34100	–37.00	1.60	42.50	0.60	0.60	0.00	R13TSS		48.88		MODRES	35.50	CL		56.5	27M0G7W			P	7
ARM	ARM06400	22.80	44.99	39.95	0.73	0.60	148.17	R13TSS		48.02		MODRES	35.50	CR		58.9	27M0G7W			P	5, 7
ARS	ARS__100	17.00	44.72	23.76				CB_TSS_ARSA		37.81		MODRES	35.50	CL		57.7	27M0G7W		54	P	5, 7
ARS	ARS34000	17.00	52.30	24.80	2.68	0.70	143.00	R13TSS		41.71		MODRES	35.50	CL		59.2	27M0G7W		54	P	5, 7
AUS	AUS00400	152.00	123.00	–24.20	3.06	2.17	102.00	R13TSS		36.22		MODRES	35.50	CR		58.2	27M0G7W		30	P	
AUS	AUS0040A	152.00	96.83	–12.19	0.60	0.60	0.00	R13TSS		48.88		MODRES	35.50	CR		58.9	27M0G7W		30	P	
AUS	AUS0040B	152.00	105.69	–10.45	0.60	0.60	0.00	R13TSS		48.88		MODRES	35.50	CR		58.9	27M0G7W		30	P	
AUS	AUS0040C	152.00	110.52	–66.28	0.60	0.60	0.00	R13TSS		48.88		MODRES	35.50	CR		58.9	27M0G7W		30	P	
AUS	AUS00500	152.00	133.90	–18.40	2.82	1.74	105.00	R13TSS		37.53		MODRES	35.50	CL		59.4	27M0G7W			P	
AUS	AUS00600	152.00	136.60	–30.90	2.41	1.52	161.00	R13TSS		38.80		MODRES	35.50	CL		58.4	27M0G7W			P	
AUS	AUS00700	164.00	145.20	–38.10	2.12	1.02	147.00	R13TSS		41.09		MODRES	35.50	CR		58.5	27M0G7W		31	P	
AUS	AUS0070A	164.00	158.94	–54.50	0.60	0.60	0.00	R13TSS		48.88		MODRES	35.50	CR		58.9	27M0G7W		31	P	
AUS	AUS00800	164.00	145.90	–21.70	3.62	1.63	136.00	R13TSS		36.73		MODRES	35.50	CL		58.8	27M0G7W			P	
AUS	AUS00900	164.00	147.50	–32.10	2.31	1.43	187.00	R13TSS		39.25		MODRES	35.50	CR		59.3	27M0G7W		32	P	
AUS	AUS0090A	164.00	159.06	–31.52	0.60	0.60	0.00	R13TSS		48.88		MODRES	35.50	CR		58.9	27M0G7W		32	P	
AUS	AUS0090B	164.00	167.93	–29.02	0.60	0.60	0.00	R13TSS		48.88		MODRES	35.50	CR		58.9	27M0G7W		32	P	
AUS	AUSA_100	152.00	132.38	–38.37				CB_TSS_AUSA		48.88		MODRES	35.50	CR		58.9	27M0G7W			P	5, 7
AUS	AUSB_100	164.00	132.38	–38.37				CB_TSS_AUSB		48.88		MODRES	35.50	CL		58.9	27M0G7W			P	7
AUT	AUT01600	–18.80	10.31	49.47	1.82	0.92	151.78	MOD13FRTSS		42.19		MODRES	35.50	CR		59.1	27M0G7W			P	
AZE	AZE06400	23.20	47.47	40.14	0.93	0.60	158.14	R13TSS		46.98		MODRES	35.50	CL		58.9	27M0G7W			P	5, 7
BDI	BDI27000	11.00	29.90	–3.10	0.71	0.60	80.00	R13TSS		48.15		MODRES	35.50	CL		58.4	27M0G7W			P	
BEL	BEL01800	38.20	5.12	51.96	1.00	1.00	24.53	MOD13FRTSS		44.45		MODRES	35.50	CL		55.5	27M0G7W			P	5
BEN	BEN23300	–19.20	2.20	9.50	1.44	0.68	97.00	R13TSS		44.54		MODRES	35.50	CL		58.3	27M0G7W			P	5, 7
BFA	BFA10700	–30.00	–1.50	12.20	1.45	1.14	29.00	R13TSS		42.26		MODRES	35.50	CL		57.0	27M0G7W			P	5, 7
BGD	BGD22000	74.00	90.30	23.60	1.46	0.84	135.00	R13TSS		43.56		MODRES	35.50	CR		58.7	27M0G7W			P	
BHR	BHR25500	34.00	50.50	26.10	0.60	0.60	0.00	MOD13FRTSS		48.88		MODRES	35.50	CR		54.5	27M0G7W			P	5, 7
BIH	BIH14800	56.00	18.22	43.97	0.60	0.60	90.00	R13TSS		48.88		MODRES	35.50	CL		58.9	27M0G7W			P	7
BLR	BLR06200	37.80	27.91	53.06	1.21	0.60	11.47	R13TSS		45.83		MODRES	35.50	CL		58.9	27M0G7W			P	7

1	2	3	4		5			6	7	8		9		10		11	12	13	14	15	16
Admin. symbol	Beam identification	Orbital Position	Boresight		Space station antenna characteristics			Space station antenna code	Shaped beam	Space station antenna gain		Earth station antenna		Polarization		e.i.r.p.	Designation of emission	Identity of the space station	Group code	Status	Remarks
			Long.	Lat.	Ma-jor axis	Minor axis	Orien-tation			Co-polar	Cross-polar	Code	Gain	Type	Angle						
BOT	BOT29700	–0.80	23.30	–22.20	2.13	1.50	36.00	R13TSS		39.40		MODRES	35.50	CL		58.7	27M0G7W			P	5
BRM	BRM29800	104.00	96.97	18.67	3.33	1.66	91.58	R13TSS		37.04		MODRES	35.50	CL		58.9	27M0G7W			P	7
BRU	BRU33000	74.00	114.70	4.40	0.60	0.60	0.00	R13TSS		48.88		MODRES	35.50	CR		57.5	27M0G7W			P	7
BTN	BTN03100	86.00	90.44	27.05	0.72	0.60	175.47	R13TSS		48.11		MODRES	35.50	CR		58.9	27M0G7W			P	
BUL	BUL02000	–1.20	25.00	43.00	1.04	0.60	165.00	R13TSS		46.50		MODRES	35.50	CL		58.6	27M0G7W			P	5
CAF	CAF25800	–13.20	21.00	6.30	2.25	1.68	31.00	R13TSS		38.67		MODRES	35.50	CL		59.3	27M0G7W			P	5
CBG	CBG29900	86.00	104.82	12.34	1.04	0.86	9.45	R13TSS		44.91		MODRES	35.50	CR		59.3	27M0G7W			P	7
CHN	CHN15500	62.00	88.18	31.20	3.03	1.24	163.23	R13TSS		38.69		MODRES	35.50	CL		57.9	27M0G7W			P	7
CHN	CHN15800	134.00	113.29	39.70	2.80	1.55	35.44	R13TSS		38.07		MODRES	35.50	CR		57.0	27M0G7W			P	7
CHN	CHN19000	122.00	114.17	23.32	0.91	0.60	2.88	MOD13FRTSS		47.08		MODRES	35.50	CR		58.9	27M0G7W			P	7
CHN	CHN20000	122.00	113.55	22.20	0.60	0.60	0.00	MOD13FRTSS		48.88		MODRES	35.50	CL		57.0	27M0G7W			P	7
CHN	CHNA_100	62.00	90.56	39.22				CB_TSS_CHNA		40.01		MODRES	35.50	CR		58.5	27M0G7W			P	7
CHN	CHNC_100	134.00	105.77	27.56				CB_TSS_CHNC		39.51		MODRES	35.50	CL		57.1	27M0G7W			P	7
CHN	CHNE_100	92.20	114.96	20.16				CB_TSS_CHNE		44.74		MODRES	35.50	CL		59.4	27M0G7W			P	7
CHN	CHNF_100	92.20	123.54	45.78				CB_TSS_CHNF		43.71		MODRES	35.50	CR		60.4	27M0G7W			P	5, 7
CLN	CLN21900	50.00	80.60	7.70	1.18	0.60	106.00	R13TSS		45.95		MODRES	35.50	CL		56.7	27M0G7W			P	7
CME	CME30000	–13.00	12.70	6.20	2.54	1.68	87.00	R13TSS		38.15		MODRES	35.50	CR		58.5	27M0G7W			P	5
COD	COD__100	–19.20	21.85	–3.40				CB_TSS_CODA		38.36		MODRES	35.50	CR		59.7	27M0G7W			P	5, 7
COG	COG23500	–13.20	14.60	–0.70	2.02	1.18	59.00	R13TSS		40.67		MODRES	35.50	CL		58.8	27M0G7W			P	5, 7
COM	COM20700	29.00	44.10	–12.10	0.76	0.60	149.00	R13TSS		47.86		MODRES	35.50	CR		58.1	27M0G7W			P	7
CPV	CPV30100	–33.50	–24.12	16.09	0.77	0.63	94.46	R13TSS		47.56		MODRES	35.50	CL		57.2	27M0G7W			P	5, 7
CTI	CTI23700	–24.80	–5.78	7.19	1.50	1.26	111.74	R13TSS		41.67		MODRES	35.50	CL		58.8	27M0G7W			P	5, 7
CVA	CVA08300	–1.20	13.02	42.09	0.75	0.66	20.53	R13TSS		47.50		MODRES	35.50	CR		60.2	27M0G7W			P	5, 7
CVA	CVA08500	–1.20	12.59	41.09	1.72	1.31	144.13	MOD13FRTSS		40.92		MODRES	35.50	CR		56.5	27M0G7W			P	5
CYP	CYP08600	–1.20	33.45	35.12	0.60	0.60	0.00	MOD13FRTSS		48.88		MODRES	35.50	CR		56.1	27M0G7W			P	5, 7
CZE	CZE14401	–12.80	16.77	46.78	1.71	0.89	149.15	MOD13FRTSS		42.64		MODRES	35.50	CL		58.8	27M0G7W			P	5, 7
CZE	CZE14402	–12.80	16.77	46.78	1.71	0.89	149.15	MOD13FRTSS		42.64		MODRES	35.50	CR		58.8	27M0G7W			P	5
CZE	CZE14403	–12.80	16.77	46.78	1.71	0.89	149.15	MOD13FRTSS		42.64		MODRES	35.50	CR		58.8	27M0G7W		37	P	5, 7
D	D 08700	–18.80	10.31	49.47	1.82	0.92	151.78	MOD13FRTSS		42.19		MODRES	35.50	CR		59.1	27M0G7W			P	7
DJI	DJI09900	16.80	42.68	11.68	0.60	0.60	90.00	R13TSS		48.88		MODRES	35.50	CL		57.5	27M0G7W			P	7
DNK	DNK__100	–25.20	2.92	59.62				CB_TSS_DNKA		48.88		MODRES	35.50	CL		58.3	27M0G7W			P	5, 7
DNK	DNK090XR	–33.50	13.27	60.86	1.99	0.63	151.38	MOD13FRTSS		43.48		MODRES	35.50	CR		54.5	27M0G7W			P	6
DNK	DNK091XR	–33.50	–15.16	63.67	1.56	0.60	170.63	MOD13FRTSS		44.73		MODRES	35.50	CR		58.6	27M0G7W			P	6
E	E____100	–30.00	–9.40	34.15				CB_TSS_E__A		44.79		MODRES	35.50	CL		58.9	27M0G7W		01	P	
E	HISP33D1	–30.00	–4.00	39.00					COP	39.80	5.50	MODRES	35.50	CL		57.6	33M0G7W--	HISPASAT-1	01	PE	
E	HISP33D2	–30.00	–4.00	39.00					COP	39.80	5.50	MODRES	32.50	CL		57.6	33M0G7W--	HISPASAT-1	01	PE	

1	2	3	4		5			6	7	8		9		10		11	12	13	14	15	16
Admin. symbol	Beam identification	Orbital Position	Boresight		Space station antenna characteristics			Space station antenna code	Shaped beam	Space station antenna gain		Earth station antenna		Polarization		e.i.r.p.	Designation of emission	Identity of the space station	Group code	Status	Remarks
			Long.	Lat.	Ma-jor axis	Minor axis	Orien-tation			Co-polar	Cross-polar	Code	Gain	Type	Angle						
E	HISPA27D	–30.00	–4.00	39.00					COP	39.80	5.50	MODRES	38.43	CL		57.6	27M0G7W--	HISPASAT-1	01	PE	
E	HISPASA4	–30.00	–4.00	39.00					COP	39.80	5.50	MODRES	38.43	CL		57.6	27M0F8W	HISPASAT-1	01	PE	
EGY	EGY02600	–7.00	29.70	26.80	2.33	1.72	136.00	R13TSS		38.42		MODRES	35.50	CL		58.1	27M0G7W		12	P	5, 7, 8
ERI	ERI09200	22.80	39.41	14.98	1.67	0.95	145.48	R13TSS		42.44		MODRES	35.50	CR		58.9	27M0G7W			P	7
EST	EST06100	44.50	25.06	58.60	0.77	0.60	12.27	R13TSS		47.81		MODRES	35.50	CR		58.7	27M0G7W			P	5, 7
ETH	ETH09200	36.00	40.29	8.95	2.87	2.16	174.06	R13TSS		36.52		MODRES	35.50	CL		58.7	27M0G7W			P	7
F	F 09300	–7.00	3.52	45.41	2.22	1.15	159.34	R13TSS		40.39		MODRES	35.50	CL		58.8	27M0G7W		21	P	5, 8
F	F___100	–7.00	50.00	–15.65				CB_TSS_F__A		48.88		MODRES	35.50	CR		58.9	27M0G7W			P	5, 7
F	NCL10000	140.00	166.00	–21.00	1.14	0.72	146.00	R13TSS		45.30		MODRES	35.50	CR		58.7	27M0G7W			P	7
F	OCE10100	–160.00	–145.00	–16.30	4.34	3.54	4.00	R13TSS		32.58		MODRES	35.50	CL		58.5	27M0G7W			P	5, 7
F	WAL10200	140.00	–176.80	–14.00	0.74	0.60	29.00	R13TSS		47.97		MODRES	35.50	CR		59.4	27M0G7W			P	7
FIN	FIN10300	22.80	22.50	64.50	1.38	0.76	171.00	MOD13FRTSS		44.24		MODRES	35.50	CL		54.5	27M0G7W		52	P	
FIN	FIN10400	22.80	15.87	61.15	2.24	0.91	16.70	MOD13FRTSS		41.37		MODRES	35.50	CL		54.5	27M0G7W		52	P	
FJI	FJI19300	–178.00	179.62	–17.87	1.16	0.92	155.22	R13TSS		44.16		MODRES	35.50	CR		58.7	27M0G7W			P	5, 7
FSM	FSM00000	158.00	151.90	5.48	5.15	1.57	167.00	R13TSS		35.38		MODRES	35.50	CR		58.9	27M0G7W			P	5, 7
G	G 02700	–33.50	–3.50	53.80	1.84	0.72	142.00	R13TSS		43.23		MODRES	35.50	CR		58.0	27M0G7W			P	5, 7
GAB	GAB26000	–13.20	11.80	–0.60	1.43	1.12	64.00	R13TSS		42.40		MODRES	35.50	CR		58.3	27M0G7W			P	5, 7
GEO	GEO06400	23.20	43.35	42.27	1.11	0.60	161.21	R13TSS		46.23		MODRES	35.50	CR		58.9	27M0G7W			P	7
GHA	GHA10800	–25.00	–1.20	7.90	1.48	1.06	102.00	R13TSS		42.49		MODRES	35.50	CR		58.6	27M0G7W			P	
GMB	GMB30200	–37.20	–15.10	13.40	0.79	0.60	4.00	R13TSS		47.69		MODRES	35.50	CL		58.3	27M0G7W			P	5, 7
GNB	GNB30400	–30.00	–15.00	12.00	0.90	0.60	172.00	R13TSS		47.12		MODRES	35.50	CL		58.1	27M0G7W			P	5, 7
GNE	GNE30300	–18.80	10.30	1.50	0.68	0.60	10.00	R13TSS		48.34		MODRES	35.50	CL		58.8	27M0G7W			P	
GRC	GRC10500	–1.20	24.51	38.08	1.70	0.95	152.97	MOD13FRTSS		42.40		MODRES	35.50	CL		56.3	27M0G7W			P	5, 7
GUI	GUI19200	–37.00	–11.00	10.20	1.58	1.04	147.00	R13TSS		42.29		MODRES	35.50	CR		58.4	27M0G7W			P	5, 7
HNG	HNG10601	–12.80	16.77	46.78	1.71	0.89	149.15	MOD13FRTSS		42.64		MODRES	35.50	CL		59.3	27M0G7W			P	5, 7
HNG	HNG10602	–12.80	16.77	46.78	1.71	0.89	149.15	MOD13FRTSS		42.64		MODRES	35.50	CR		59.3	27M0G7W			P	5, 7
HNG	HNG10603	–12.80	16.77	46.78	1.71	0.89	149.15	MOD13FRTSS		42.64		MODRES	35.50	CR		59.3	27M0G7W		37	P	5, 7
HOL	HOL21300	38.20	5.12	51.96	1.00	1.00	24.53	MOD13FRTSS		44.45		MODRES	35.50	CL		58.5	27M0G7W			P	5, 7
HRV	HRV14801	–12.80	16.77	46.78	1.71	0.89	149.15	MOD13FRTSS		42.64		MODRES	35.50	CL		58.8	27M0G7W			P	5, 7
HRV	HRV14802	–12.80	16.77	46.78	1.71	0.89	149.15	MOD13FRTSS		42.64		MODRES	35.50	CR		58.8	27M0G7W			P	5, 7
HRV	HRV14803	–12.80	16.77	46.78	1.71	0.89	149.15	MOD13FRTSS		42.64		MODRES	35.50	CR		58.8	27M0G7W		37	P	5, 7
I	I 08200	9.00	12.67	40.74	1.99	1.35	144.20	R13TSS		40.14		MODRES	35.50	CR		54.5	27M0G7W			P	5, 8
IND	IND03700	68.00	93.00	25.50	1.46	1.13	40.00	R13TSS		42.27		MODRES	35.50	CL		58.9	27M0G7W			P	7
IND	IND04700	68.00	93.30	11.10	1.92	0.60	96.00	R13TSS		43.83		MODRES	35.50	CR		58.4	27M0G7W			P	7
IND	INDA_100	55.80	76.16	14.72				CB_TSS_INDA		45.66		MODRES	35.50	CR		58.8	27M0G7W			P	7
IND	INDB_100	55.80	83.43	24.22				CB_TSS_INDB		43.15		MODRES	35.50	CL		58.9	27M0G7W			P	7

1	2	3	4		5			6	7	8		9		10		11	12	13	14	15	16
Admin. symbol	Beam identification	Orbital Position	Boresight		Space station antenna characteristics			Space station antenna code	Shaped beam	Space station antenna gain		Earth station antenna		Polarization		e.i.r.p.	Designation of emission	Identity of the space station	Group code	Status	Remarks
			Long.	Lat.	Ma-jor axis	Minor axis	Orien-tation			Co-polar	Cross-polar	Code	Gain	Type	Angle						
IND	INDD_100	68.00	74.37	29.16				CB_TSS_INDD		41.80		MODRES	35.50	CR		59.3	27M0G7W			P	7
INS	INSA_100	80.20	108.82	–0.73				CB_TSS_INSA		38.88		MODRES	35.50	CR		59.2	27M0G7W			P	7
INS	INSB_100	104.00	129.75	–3.50				CB_TSS_INSB		37.53		MODRES	35.50	CL		58.8	27M0G7W			P	7
IRL	IRL21100	–37.20	–8.25	53.22	0.72	0.60	157.56	R13TSS		48.08		MODRES	35.50	CL		59.2	27M0G7W			P	5, 7
IRN	IRN10900	34.00	54.20	32.40	3.82	1.82	149.00	R13TSS		36.03		MODRES	35.50	CL		57.8	27M0G7W			P	7
IRQ	IRQ25600	50.00	43.78	33.28	1.74	1.23	156.76	R13TSS		41.14		MODRES	35.50	CL		58.3	27M0G7W			P	7
ISL	ISL04900	–33.50	–19.00	64.90	1.00	0.60	177.00	R13TSS		46.67		MODRES	35.50	CL		60.8	27M0G7W			P	5, 6
ISL	ISL05000	–33.50	–15.35	63.25	1.58	0.60	169.00	R13TSS		44.67		MODRES	35.50	CR		57.3	27M0G7W			P	5
ISR	ISR11000	–4.00	34.95	31.32	0.73	0.60	110.02	R13TSS		48.01		MODRES	35.50	CR		58.8	27M0G7W			P	7
J	000BS-3N	109.85	134.50	31.50	3.52	3.30	68.00	R13TSS		33.80		MODRES	35.50	CR		*	27M0F8W	BS-3N	02	PE	
J	J 10985	109.85	134.50	31.50	3.52	3.30	68.00	R13TSS		33.80		MODRES	35.50	CR		*	34M5G7W		02	P	5, 7
J	J 11100	110.00	134.50	31.50	3.52	3.30	68.00	R13TSS		33.80		MODRES	35.50	CR		*	34M5G7W		02	P	5, 7
J	J 1110E	110.00	134.50	31.50	3.52	3.30	68.00	R13TSS		33.80		MODRES	35.50	CR		*	27M0F8W	BS-3M	02	PE	
JOR	JOR22400	11.00	37.55	34.02	1.47	0.91	73.16	MOD13FRTSS		43.19		MODRES	35.50	CL		55.5	27M0G7W			P	7, 8
KAZ	KAZ06600	56.40	65.73	46.40	4.58	1.76	177.45	R13TSS		35.38		MODRES	35.50	CR		58.9	27M0G7W			P	7
KEN	KEN24900	–0.80	37.95	0.92	2.13	1.34	98.35	R13TSS		39.90		MODRES	35.50	CL		58.7	27M0G7W			P	5, 7
KGZ	KGZ07000	50.00	73.91	41.32	1.47	0.64	5.05	R13TSS		44.75		MODRES	35.50	CR		59.0	27M0G7W			P	7
KIR	KIR__100	176.00	–170.31	–0.56				CB_TSS_KIRA		42.58		MODRES	35.50	CL		58.9	27M0G7W			P	5, 7
KOR	KO11201D	116.00	127.50	36.00	1.24	1.02	168.00	R13TSS		43.40		MODRES	38.43	CL		**	27M0G7W	KOREASAT-1	03	PE	
KOR	KOR11200	116.00	127.50	36.00	1.24	1.02	168.00	R13TSS		43.80		MODRES	35.50	CL		***	27M0G7W		03	P	7
KOR	KOR11201	116.00	127.50	36.00	1.24	1.02	168.00	R13TSS		43.40		MODRES	38.43	CL		**	27M0F8W	KOREASAT-1	03	PE	
KRE	KRE28600	140.00	128.45	40.32	1.63	0.68	18.89	R13TSS		44.00		MODRES	35.50	CL		59.0	27M0G7W			P	5, 7
KWT	KWT11300	11.00	47.48	29.12	0.60	0.60	90.00	R13TSS		48.88		MODRES	35.50	CR		58.2	27M0G7W			P	5, 7
LAO	LAO28400	122.20	103.71	18.17	1.87	1.03	123.99	MOD13FRTSS		41.60		MODRES	35.50	CR		58.8	33M0G7W			P	7
LBN	LBN27900	11.00	37.55	34.02	1.47	0.91	73.16	MOD13FRTSS		43.19		MODRES	35.50	CR		55.5	27M0G7W			P	7
LBR	LBR24400	–33.50	–9.30	6.60	1.22	0.70	133.00	R13TSS		45.13		MODRES	35.50	CR		58.2	27M0G7W			P	5, 7
LBY	LBY__100	–24.80	17.62	26.55				CB_TSS_LBYA		40.30		MODRES	35.50	CL		58.0	27M0G7W			P	5, 7
LIE	LIE25300	–18.80	10.31	49.47	1.82	0.92	151.78	MOD13FRTSS		42.19		MODRES	35.50	CL		59.1	27M0G7W			P	
LSO	LSO30500	4.80	27.80	–29.80	0.66	0.60	36.00	R13TSS		48.47		MODRES	35.50	CR		59.2	27M0G7W			P	7
LTU	LTU06100	23.20	24.51	56.09				CB_TSS_LTUA		48.21		MODRES	35.50	CL		56.9	27M0G7W			P	7
LUX	LUX11400	28.20	5.21	49.20	0.60	0.60	90.00	R13TSS		48.88		MODRES	35.50	CL		57.9	27M0G7W		09	P	7
LVA	LVA06100	23.20	24.51	56.09				CB_TSS_LVAA		48.21		MODRES	35.50	CR		56.9	27M0G7W			P	7

1	2	3	4		5			6	7	8		9		10		11	12	13	14	15	16
Admin. symbol	Beam identification	Orbital Position	Boresight		Space station antenna characteristics			Space station antenna code	Shaped beam	Space station antenna gain		Earth station antenna		Polarization		e.i.r.p.	Designation of emission	Identity of the space station	Group code	Status	Remarks
			Long.	Lat.	Ma-jor axis	Minor axis	Orien-tation			Co-polar	Cross-polar	Code	Gain	Type	Angle						

* Channel 1: 58.2 dBW, channels 3, 5, 7: 59.2 dBW, channels 9, 11, 13: 59.3 dBW, other channels: 59.4 dBW.

** Channels 2, 4, 6: 63.6 dBW, channels 8, 10, 12: 63.7 dBW.

*** Channels 2, 4, 6: 59.0 dBW, other channels: 59.1 dBW.

1	2	3	4		5			6	7	8		9		10		11	12	13	14	15	16
Admin. symbol	Beam identification	Orbital Position	Boresight		Space station antenna characteristics			Space station antenna code	Shaped beam	Space station antenna gain		Earth station antenna		Polarization		e.i.r.p.	Designation of emission	Identity of the space station	Group code	Status	Remarks
			Long.	Lat.	Ma-jor axis	Minor axis	Orien-tation			Co-polar	Cross-polar	Code	Gain	Type	Angle						
MAU	MAU__100	29.00	58.61	–15.88				CB_TSS_MAUA		41.42		MODRES	35.50	CL		59.0	27M0G7W			P	5, 7
MCO	MCO11600	34.20	7.93	43.59	1.28	0.60	21.73	MOD13FRTSS		45.58		MODRES	35.50	CL		58.6	27M0G7W			P	7
MDA	MDA06300	50.00	28.45	46.99	0.60	0.60	90.00	R13TSS		48.88		MODRES	35.50	CR		58.9	27M0G7W			P	5
MDG	MDG23600	29.00	46.60	–18.80	2.72	1.14	65.00	R13TSS		39.53		MODRES	35.50	CL		58.3	27M0G7W			P	7
MHL	MHL00000	146.00	167.64	9.83	2.07	0.90	157.42	R13TSS		41.75		MODRES	35.50	CR		59.0	27M0G7W			P	5, 7
MKD	MKD14800	22.80	21.61	41.56	0.60	0.60	90.00	R13TSS		48.88		MODRES	35.50	CR		58.9	27M0G7W			P	
MLA	MLA__100	91.50	108.05	4.00				CB_TSS_MLAA		43.00		MODRES	35.50	CR		58.4	27M0G7W			P	7
MLD	MLD30600	50.00	72.95	5.78	1.19	0.91	104.53	R13TSS		44.09		MODRES	35.50	CR		58.7	27M0G7W			P	7
MLI	MLI__100	–19.20	–5.35	17.11				CB_TSS_MLIB		41.21		MODRES	35.50	CR		58.7	27M0G7W			P	5, 7
MLT	MLT14700	22.80	14.40	35.90	0.60	0.60	0.00	R13TSS		48.88		MODRES	35.50	CR		56.0	27M0G7W			P	
MNG	MNG24800	74.00	102.20	46.60	3.60	1.13	169.00	R13TSS		38.35		MODRES	35.50	CR		59.0	27M0G7W			P	5, 7
MOZ	MOZ30700	–1.00	34.00	–18.00	3.57	1.38	55.00	R13TSS		37.52		MODRES	35.50	CL		59.2	27M0G7W			P	5, 7
MRC	MRC20900	–25.20	–8.95	28.98	3.56	1.23	49.23	R13TSS		38.02		MODRES	35.50	CR		54.9	27M0G7W			P	5, 7
MTN	MTN__100	–36.80	–10.52	19.66				CB_TSS_MTNA		41.91		MODRES	35.50	CR		55.5	27M0G7W			P	5, 7
MWI	MWI30800	4.80	33.79	–13.25	1.56	0.70	92.69	R13TSS		44.10		MODRES	35.50	CR		59.2	27M0G7W			P	7
NGR	NGR11500	–37.20	7.63	17.01	2.20	1.80	102.40	R13TSS		38.48		MODRES	35.50	CL		59.5	27M0G7W			P	5, 7
NIG	NIG11900	–19.20	7.80	9.40	2.16	2.02	45.00	R13TSS		38.05		MODRES	35.50	CR		58.9	27M0G7W			P	
NMB	NMB02500	–18.80	17.50	–21.60	2.66	1.90	48.00	R13TSS		37.41		MODRES	35.50	CL		59.7	27M0G7W			P	
NOR	NOR12000	–0.80	13.42	62.76	1.43	0.60	19.61	MOD13FRTSS		45.10		MODRES	35.50	CL		56.2	27M0G7W		06	P	5, 7
NOR	NOR12100	–0.80	18.00	60.23	1.67	0.83	23.85	R13TSS		43.02		MODRES	35.50	CL		57.8	27M0G7W		06	P	
NPL	NPL12200	50.00	83.70	28.30	1.72	0.60	163.00	R13TSS		44.31		MODRES	35.50	CR		59.6	27M0G7W			P	
NRU	NRU30900	134.00	167.00	–0.50	0.60	0.60	0.00	R13TSS		48.88		MODRES	35.50	CL		57.5	27M0G7W			P	7
NZL	NZL__100	158.00	–170.68	–19.72				CB_TSS_NZLA		48.88		MODRES	35.50	CL		59.6	27M0G7W			P	5, 7
OMA	OMA12300	17.20	55.60	21.00	1.88	1.02	100.00	R13TSS		41.62		MODRES	35.50	CR		58.3	27M0G7W			P	5, 7
PAK	PAK12700	38.20	69.60	29.50	2.30	2.16	14.00	R13TSS		37.49		MODRES	35.50	CR		58.9	27M0G7W			P	7
PHL	PHL28500	98.00	121.30	11.10	3.46	1.76	99.00	R13TSS		36.60		MODRES	35.50	CL		58.7	27M0G7W			P	7
PLW	PLW00000	140.00	132.98	5.51	1.30	0.60	55.41	R13TSS		45.53		MODRES	35.50	CR		58.8	27M0G7W			P	7
PNG	PNG13100	134.00	148.07	–6.65	3.13	2.30	168.32	MOD13FRTSS		35.87		MODRES	35.50	CR		54.5	27M0G7W			P	7
POL	POL13200	50.00	20.07	51.86	1.20	0.69	17.76	R13TSS		45.26		MODRES	35.50	CL		59.2	27M0G7W			P	5
POR	POR__100	–37.00	–15.92	37.65				CB_TSS_PORA		47.17		MODRES	35.50	CR		58.4	27M0G7W			P	5, 7
PSE	YYY00000	–13.20	34.99	31.86	0.60	0.60	90.00	R13TSS		48.88		MODRES	35.50	CL		58.9	27M0G7W			P	3, 7
QAT	QAT24700	20.00	51.38	25.26	0.60	0.60	90.00	R13TSS		48.88		MODRES	35.50	CL		54.5	27M0G7W			P	7
ROU	ROU13600	50.00	25.12	45.75	1.17	0.73	9.52	R13TSS		45.15		MODRES	35.50	CR		58.9	27M0G7W			P	7
RRW	RRW31000	11.00	30.00	–2.10	0.66	0.60	42.00	R13TSS		48.47		MODRES	35.50	CL		59.8	27M0G7W			P	7
RUS	RSTREA11	36.00	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	35.50	CL		53.0	27M0F8W	RST-1	05	PE	
RUS	RSTREA12	36.00	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	35.50	CR		53.0	27M0F8W	RST-1	05	PE	

1	2	3	4		5			6	7	8		9		10		11	12	13	14	15	16
Admin. symbol	Beam identification	Orbital Position	Boresight		Space station antenna characteristics			Space station antenna code	Shaped beam	Space station antenna gain		Earth station antenna		Polarization		e.i.r.p.	Designation of emission	Identity of the space station	Group code	Status	Remarks
			Long.	Lat.	Ma-jor axis	Minor axis	Orien-tation			Co-polar	Cross-polar	Code	Gain	Type	Angle						
RUS	RSTRED11	36.00	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	35.50	CL		53.0	27M0G7W	RST-1	05	PE	
RUS	RSTRED12	36.00	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	35.50	CR		53.0	27M0G7W	RST-1	05	PE	
RUS	RSTRSD11	36.00	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	35.50	CL		53.0	27M0G7W	RST-1	05	P	
RUS	RSTRSD12	36.00	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	35.50	CR		53.0	27M0G7W	RST-1	05	P	
RUS	RSTRSD13	36.00	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	39.02	CL		53.0	27M0G7W	RST-1	05	P	
RUS	RSTRSD14	36.00	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	39.02	CR		53.0	27M0G7W	RST-1	05	P	
RUS	RSTRSD21	56.00	65.00	63.00	2.20	2.20	0.00	R123FR		37.70		MODRES	35.50	CL		55.0	27M0G7W	RST-2	14	P	
RUS	RSTRSD22	56.00	65.00	63.00	2.20	2.20	0.00	R123FR		37.70		MODRES	35.50	CR		55.0	27M0G7W	RST-2	14	P	
RUS	RSTRSD31	86.00	97.00	62.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	35.50	CL		55.0	27M0G7W	RST-3	33	P	
RUS	RSTRSD32	86.00	97.00	62.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	35.50	CR		55.0	27M0G7W	RST-3	33	P	
RUS	RSTRSD51	140.00	158.00	56.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	35.50	CL		55.0	27M0G7W	RST-5	35	P	
RUS	RSTRSD52	140.00	158.00	56.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	35.50	CR		55.0	27M0G7W	RST-5	35	P	
RUS	RUS00401	110.00	128.73	54.30	4.25	2.02	156.81	R13TSS		35.11		MODRES	35.50	CL		58.9	27M0G7W	RUS-4	34	P	5, 7, 8
RUS	RUS00402	110.00	128.73	54.30	4.25	2.02	156.81	R13TSS		35.11		MODRES	35.50	CR		58.9	27M0G7W	RUS-4	34	P	5, 7, 8
S	S 13800	5.00	16.20	61.00	1.04	0.98	14.00	R13TSS		44.36		MODRES	35.50	CL		55.6	27M0G7W		04	P	5
S	S 13900	5.00	17.00	61.50	2.00	1.00	10.00	R13TSS		41.44		MODRES	35.50	CL		61.1	27M0G7W		04	P	
SCG*	SCG14800	–7.00	20.50	43.98	0.91	0.60	145.16	R13TSS		47.07		MODRES	35.50	CR		58.9	27M0G7W			P	5
SDN	SDN__100	–7.00	30.24	13.53				CB_TSS_SDNA		40.26		MODRES	35.50	CR		59.4	27M0G7W			P	5, 7
SEN	SEN22200	–37.00	–14.40	13.80	1.46	1.04	139.00	R13TSS		42.63		MODRES	35.50	CL		58.6	27M0G7W			P	5, 7
SEY	SEY00000	42.50	51.86	–7.23	2.43	1.04	27.51	R13TSS		40.44		MODRES	35.50	CR		58.9	27M0G7W			P	5, 7
SLM	SLM00000	128.00	159.27	–8.40	1.35	1.08	118.59	R13TSS		42.81		MODRES	35.50	CL		58.9	27M0G7W			P	7
SMO	SMO05700	–178.00	–171.70	–13.87	0.60	0.60	90.00	R13TSS		48.88		MODRES	35.50	CR		58.6	27M0G7W			P	5, 7
SMR	SMR31100	–36.80	12.60	43.70	0.60	0.60	0.00	R13TSS		48.88		MODRES	35.50	CR		57.4	27M0G7W			P	7
SNG	SNG15100	88.00	103.86	1.42	0.92	0.72	175.12	R13TSS		46.25		MODRES	35.50	CL		58.5	27M0G7W			P	7
SOM	SOM31200	37.80	45.16	7.11	3.31	1.51	65.48	R13TSS		37.46		MODRES	35.50	CR		57.4	27M0G7W			P	5, 7
SRL	SRL25900	–33.50	–11.80	8.60	0.78	0.68	114.00	R13TSS		47.20		MODRES	35.50	CR		58.4	27M0G7W			P	6
STP	STP24100	–7.00	6.17	1.45	0.65	0.60	153.51	R13TSS		48.56		MODRES	35.50	CR		56.4	27M0G7W			P	5, 7
SUI	SUI14000	–18.80	10.31	49.47	1.82	0.92	151.78	MOD13FRTSS		42.19		MODRES	35.50	CL		59.1	27M0G7W			P	7
SVK	SVK14401	–12.80	16.77	46.78	1.71	0.89	149.15	MOD13FRTSS		42.64		MODRES	35.50	CL		59.3	27M0G7W			P	5, 7
SVK	SVK14402	–12.80	16.77	46.78	1.71	0.89	149.15	MOD13FRTSS		42.64		MODRES	35.50	CR		59.3	27M0G7W			P	5
SVK	SVK14403	–12.80	16.77	46.78	1.71	0.89	149.15	MOD13FRTSS		42.64		MODRES	35.50	CR		59.3	27M0G7W		37	P	5, 7
SVN	SVN14800	33.80	15.01	46.18	0.60	0.60	90.00	R13TSS		48.88		MODRES	35.50	CR		58.9	27M0G7W			P	7
SWZ	SWZ31300	4.80	31.39	–26.44	0.60	0.60	90.00	R13TSS		48.88		MODRES	35.50	CL		57.9	27M0G7W			P	7
SYR	SYR22900	11.00	37.55	34.02	1.47	0.91	73.16	MOD13FRTSS		43.19		MODRES	35.50	CL		55.5	27M0G7W		53	P	5, 7
SYR	SYR33900	11.00	37.60	34.20	1.32	0.88	74.00	MOD13FRTSS		43.80		MODRES	35.50	CL		56.4	27M0G7W		53	P	5, 7
TCD	TCD14300	17.00	18.36	15.47	3.23	2.05	82.89	R13TSS		36.23		MODRES	35.50	CR		58.9	27M0G7W			P	5, 7

1	2	3	4		5			6	7	8		9		10		11	12	13	14	15	16
Admin. symbol	Beam identification	Orbital Position	Boresight		Space station antenna characteristics			Space station antenna code	Shaped beam	Space station antenna gain		Earth station antenna		Polarization		e.i.r.p.	Designation of emission	Identity of the space station	Group code	Status	Remarks
			Long.	Lat.	Ma-jor axis	Minor axis	Orien-tation			Co-polar	Cross-polar	Code	Gain	Type	Angle						
TGO	TGO22600	–30.00	0.72	8.61	1.12	0.60	109.54	R13TSS		46.19		MODRES	35.50	CR		58.5	27M0G7W			P	5, 7
THA	THA14200	98.00	100.75	12.88	2.80	1.82	93.77	R13TSS		37.37		MODRES	35.50	CL		58.6	27M0G7W			P	7
TJK	TJK06900	38.00	71.14	38.41	1.21	0.73	155.31	R13TSS		45.00		MODRES	35.50	CL		58.8	27M0G7W			P	5, 7
TKM	TKM06800	50.00	59.24	38.83	2.26	1.02	166.64	R13TSS		40.81		MODRES	35.50	CR		58.9	27M0G7W			P	5, 7
TMP	TMP00000	128.00	126.03	–8.72	0.66	0.60	13.92	R13TSS		48.50		MODRES	35.50	CR		58.9	27M0G7W			P	7, 9
TON	TON21500	170.75	–175.23	–18.19	1.59	0.60	71.33	R13TSS		44.64		MODRES	35.50	CR		58.3	27M0G7W			P	5, 7
TUN	TUN15000	–25.20	9.50	33.50	1.88	0.72	135.00	MOD13FRTSS		43.13		MODRES	35.50	CR		57.3	27M0G7W		55	P	
TUN	TUN27200	–25.20	2.10	31.75	3.41	1.81	179.18	MOD13FRTSS		36.54		MODRES	35.50	CR		55.5	27M0G7W		55	P	4
TUR	TUR14500	42.00	34.95	39.09	3.18	0.99	0.79	R13TSS		39.47		MODRES	35.50	CL		58.8	27M0G7W		36	P	7
TUV	TUV00000	176.00	177.61	–7.11	0.94	0.60	137.58	R13TSS		46.93		MODRES	35.50	CR		58.9	27M0G7W			P	5, 7
TZA	TZA22500	11.00	34.60	–6.20	2.41	1.72	129.00	R13TSS		38.27		MODRES	35.50	CR		58.7	27M0G7W			P	5, 7
UAE	UAE27400	52.50	53.85	24.34	1.19	0.85	3.72	R13TSS		44.39		MODRES	35.50	CR		58.2	27M0G7W			P	5, 7
UGA	UGA05100	17.00	32.20	1.04	1.50	1.02	68.73	R13TSS		42.62		MODRES	35.50	CL		58.2	27M0G7W			P	7
UKR	UKR06300	38.20	31.74	48.22	2.29	0.96	177.78	R13TSS		41.01		MODRES	35.50	CR		58.9	27M0G7W			P	7
USA	GUM33100	122.00	144.50	13.10	0.60	0.60	0.00	R13TSS		48.88		MODRES	35.50	CL		58.3	27M0G7W			P	
USA	MRA33200	121.80	145.90	16.90	1.20	0.60	76.00	R13TSS		45.87		MODRES	35.50	CR		58.5	27M0G7W			P	
USA	PLM33200	170.00	–161.40	7.00	0.60	0.60	0.00	R13TSS		48.88		MODRES	35.50	CL		57.4	27M0G7W			P	5, 7
USA	USAA_100	170.00	–170.51	–12.72				CB_TSS_USAA		48.88		MODRES	35.50	CL		56.1	27M0G7W			P	7
USA	WAK33400	140.00	166.50	19.20	0.60	0.60	0.00	R13TSS		48.88		MODRES	35.50	CR		58.6	27M0G7W			P	5
UZB	UZB07100	33.80	63.80	41.21	2.56	0.89	159.91	R13TSS		40.84		MODRES	35.50	CR		58.8	27M0G7W			P	7
VTN	VTN32500	107.00	106.84	14.21	3.43	1.76	109.43	R13TSS		36.65		MODRES	35.50	CR		58.4	27M0G7W			P	7
VUT	VUT12800	140.00	168.00	–16.40	1.52	0.68	87.00	R13TSS		44.30		MODRES	35.50	CL		57.8	27M0G7W			P	5, 7
YEM	YEM__100	11.00	48.05	14.64				CB_TSS_YEMA		47.63		MODRES	35.50	CL		54.9	27M0G7W			P	7
ZMB	ZMB31400	–0.80	27.50	–13.10	2.38	1.48	39.00	R13TSS		38.98		MODRES	35.50	CR		58.7	27M0G7W			P	5, 7
ZWE	ZWE13500	–0.80	29.60	–18.80	1.46	1.36	37.00	R13TSS		41.47		MODRES	35.50	CR		59.2	27M0G7W			P	5, 7

* *Note by the Secretariat*: This designation replaces the former designation “YUG” which was used previously as a three-letter code for the Administration of Serbia and Montenegro.

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)

1	2	3	4	5																																							
Orbital Position	Admin. symbol	Beam Identification	Polarization type	Channel number																																							
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
				Minimum EPM																																							
−178.00	FJI	FJI19300	CR	6.1		6.1		6.1		6.1		6.1		6.1		6.1		6.1		6.1		6.1		6.1		6.1																	
−178.00	SMO	SMO05700	CR	1.6		1.6		1.6		1.6		1.6		1.6		1.6		1.6		1.6		1.6		1.6		1.6																	
−160.00	F	OCE10100	CL		99.9		99.9		99.9		99.9		99.9		99.9		99.9		99.9		99.9		99.9		99.9		99.9																
−37.20	GMB	GMB30200	CL	4.6		1.9		1.9		1.9		1.9		1.9		1.9		1.9		1.9		1.9																					
−37.20	IRL	IRL21100	CL	2.6		0.6		0.6		0.6		0.6		0.6		0.6		0.6		0.6		0.6																					
−37.20	NGR	NGR11500	CL		6.8		6.8		6.8		6.8		6.8		6.8		6.8		6.8		6.8		6.9																				
−37.00	AND	AND34100	CL		0.3		0.3		0.3		0.3		0.3		0.3		0.3		0.3		0.3		0.8																				
−37.00	GUI	GUI19200	CR		0.9		0.9		0.9		0.9		0.9		0.9		0.9		0.9		0.9		1.5																				
−37.00	POR	POR__100	CR	2.4		1.1		1.1		1.1		1.1		1.1		1.1		1.1		1.1		1.1																					
−37.00	SEN	SEN22200	CL																					−0.3		4.7		4.7		4.7		4.7		4.7		4.7		4.7		4.7		4.7	
−36.80	MTN	MTN__100	CR																						1.1		1.1		1.1		1.1		1.1		1.1		1.1		1.1		1.1		3.9
−36.80	SMR	SMR31100	CR	4.4		3.2		3.2		3.1		3.1		3.1		3.2		3.2		3.2		3.2																					
−33.50	CPV	CPV30100	CL		9.5		9.5		9.5		9.5		9.5		9.5		9.5		9.5		9.5		8.8																				
−33.50	DNK	DNK090XR	CR																													0.9				0.9							
−33.50	DNK	DNK091XR	CR																															−0.9				−0.9					
−33.50	G	G 02700	CR		−0.1		0.1		−0.1		−0.1		−0.1		−0.1		0.2		−0.1		0.1		0.3																				
−33.50	ISL	ISL04900	CL																					8.8		7.2		7.2		10.1		14.8		3.6		14.8		3.6		21.7		21.7	
−33.50	ISL	ISL05000	CR																						0.1		0.1		0.1														
−33.50	LBR	LBR24400	CR	3.3		0.4		0.4		0.4		0.4		0.4		0.4		0.4		0.4		0.4																					
−33.50	SRL	SRL25900	CR																					−0.4		1.0		1.0		1.0		1.0		0.9		1.0		0.9		1.0		1.0	
−30.00	BFA	BFA10700	CL																						1.5		1.5		1.5		1.5		1.5		1.5		1.5		1.5		1.5		2.4
−30.00	E	E____100	CL																					8.3		5.9		5.9		5.9		5.9		5.9		5.6		5.9		5.6		5.9	
−30.00	E	HISP33D1	CL																							−0.4				−0.4				−0.4				−0.4				−0.4	
−30.00	E	HISP33D2	CL																							−1.0				−1.0				−1.0				−1.0				−1.0	
−30.00	E	HISPA27D	CL																							1.3				1.3				1.3				1.3				1.3	
−30.00	E	HISPASA4	CL																							1.3				1.3				1.3				1.3				1.3	
−30.00	GNB	GNB30400	CL																						0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.7
−30.00	TGO	TGO22600	CR	7.9		7.5		7.5		7.5		7.5		7.5		7.5		7.5		7.5		7.5																					
−25.20	DNK	DNK__100	CL	−0.9		−1.5		−1.5		−1.5		−1.5		−1.5		−1.5		−1.5		−1.5		−1.5																					
−25.20	MRC	MRC20900	CR	0.1		−0.4		−0.4		−0.4		−0.4		−0.4		−0.3		−0.3		−0.4		−0.4																					
−25.20	TUN	TUN15000	CR																					−1.0		−0.8		−0.8		−0.8		−0.8		−0.8		−0.8		−0.8		−0.8		−0.8	
−25.20	TUN	TUN27200	CR																																	−0.9				−0.9			
−25.00	GHA	GHA10800	CR																					7.1		5.2		5.2		5.2		5.2		5.2		4.7		5.2		4.7		5.2	
−24.80	AGL	AGL29500	CL	4.6		3.6		3.6		3.6		3.6		3.6		3.6		3.6		3.6		3.6																					

1	2	3	4	5																																							
Orbital Position	Admin. symbol	Beam Identifica-tion	Polar-ization type	Channel number																																							
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
				Minimum EPM																																							
–24.80	ALG	ALG__100	CL																						–0.7		–0.7		–0.7		–0.7		–0.7		–0.8		–0.8		–0.8		–0.8		2.2
–24.80	CTI	CTI23700	CL	3.4		2.9		2.9		2.9		2.9		2.9		2.9		2.9		2.9		2.9																					
–24.80	LBY	LBY__100	CL		2.4		2.4		2.4		2.4		2.4		2.4		2.4		2.4		2.4		2.7																				
–19.20	BEN	BEN23300	CL	3.1		2.6		2.6		2.6		2.6		2.6		2.6		2.6		2.6		2.6																					
–19.20	COD	COD__100	CR		4.7		4.7		4.7		4.7		4.7		4.7		4.7		4.7		4.7		5.9																				
–19.20	MLI	MLI__100	CR	5.6		4.6		4.6		4.6		4.6		4.6		4.6		4.6		4.6		4.6																					
–19.20	NIG	NIG11900	CR																						3.5		3.5		3.5		3.5		3.5		3.5		3.5		3.5		3.5		4.1
–18.80	AUT	AUT01600	CR																					0.9		–0.1		0.0		0.0		0.1		0.0		0.1		0.0		0.0		0.0	
–18.80	D	D 08700	CR	1.1		–0.2		–0.1		–0.2		–0.1		–0.1		–0.1		–0.1		–0.1		–0.2																					
–18.80	GNE	GNE30300	CL																					2.0		1.4		1.4		1.4		1.4		1.4		1.4		1.4		1.4		1.4	
–18.80	LIE	LIE25300	CL																						0.4		0.4		0.4		0.4		0.4		0.4		0.4		0.4		0.4		2.8
–18.80	NMB	NMB02500	CL																					8.6		9.6		9.6		9.6		9.6		9.6		9.6		9.6		9.6		9.6	
–18.80	SUI	SUI14000	CL		0.2		0.7		0.2		0.7		0.3		0.7		0.3		0.7		0.2		0.8																				
–13.20	CAF	CAF25800	CL																						1.4		1.4		1.4		1.4		1.4		1.4		1.4		1.4		1.4		1.5
–13.20	COG	COG23500	CL	0.8		0.7		0.7		0.7		0.7		0.7		0.7		0.7		0.7		0.7																					
–13.20	GAB	GAB26000	CR	0.5		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0																					
–13.20	PSE	YYY00000	CL																					5.3		4.8		5.1		4.9		5.1		4.9		5.1		4.9		5.1		4.9	
–13.00	CME	CME30000	CR																						0.4		0.4		0.4		0.5		0.4		0.5		0.4		0.5		0.4		0.5
–12.80	CZE	CZE14401	CL	1.9								0.8								0.6								–0.9								–0.8							
–12.80	CZE	CZE14402	CR														0.1														–0.9								–0.9				
–12.80	CZE	CZE14403	CR		0.1*																				–0.9*		–0.9*																
–12.80	HNG	HNG10601	CL			1.1								1.2								1.1								–0.3								–0.3					
–12.80	HNG	HNG10602	CR						0.6																								–0.4								–0.4		
–12.80	HNG	HNG10603	CR		0.6*																				–0.4*		–0.4*																
–12.80	HRV	HRV14801	CL					0.6								0.8								0.3								–0.8								–0.8			
–12.80	HRV	HRV14802	CR										0.1																						–0.9								–0.2
–12.80	HRV	HRV14803	CR		0.1*																				–0.9*		–0.9*																
–12.80	SVK	SVK14401	CL							1.1								1.2								–0.4								–0.3								–0.3	
–12.80	SVK	SVK14402	CR																		0.6								–0.4								–0.4						
–12.80	SVK	SVK14403	CR		0.6*																				–0.4*		–0.4*																
–7.00	EGY	EGY02600	CL		10.9		10.9		10.9		10.9		10.9		10.9		10.9		10.9		10.9		5.9																				
–7.00	F	F 09300	CL																						5.4		4.3		5.6		4.3		5.6		4.8		5.6		4.8		5.6		5.5
–7.00	F	F____100	CR																					5.0		5.1		5.1		5.1		5.1		5.1		5.1		5.1		5.1		5.1	
–7.00	SCG**	SCG14800	CR																						–1.2		–1.1		–0.6		–0.9		–0.6		–0.9		–0.6		–0.9		–0.6		–0.5
–7.00	SDN	SDN__100	CR																					5.4		8.0		8.0		8.0		8.0		8.0		8.0		8.0		8.0		8.0	

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

** *Note by the Secretariat*: This designation replaces the former designation “YUG” which was used previously as a three-letter code for the administration of Serbia and Montenegro.

1	2	3	4	5																																							
Orbital Position	Admin. symbol	Beam Identifica-tion	Polar-ization type	Channel number																																							
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
				Minimum EPM																																							
–7.00	STP	STP24100	CR		6.1		5.6		5.6		5.6		5.6		5.6		5.6		5.6		5.6		4.9																				
–4.00	ISR	ISR11000	CR																						3.1		3.0		3.1		3.0		3.1		3.0		3.1		3.0		3.1		5.7
–1.20	BUL	BUL02000	CL																						1.0		–0.4		1.6		–0.4		1.6		–0.4		1.6		–0.4		1.6		–0.3
–1.20	CVA	CVA08300	CR	2.2		0.5		0.9		0.9		0.9		0.9																													
–1.20	CVA	CVA08500	CR																						–0.8																		
–1.20	CYP	CYP08600	CR	1.4		0.0		0.5		0.5		0.5		0.5		2.2		2.2		2.2		1.5																					
–1.20	GRC	GRC10500	CL		–0.4		0.6		–0.1		0.8		–0.1		0.9		–0.1		0.9		–0.3		1.0																				
–1.00	MOZ	MOZ30700	CL		2.8		3.8		2.8		3.8		2.8		3.8		2.8		3.8		2.8		3.6																				
–0.80	BOT	BOT29700	CL																						1.5		0.9		1.5		0.9		1.5		0.9		1.5		0.9		1.5		2.2
–0.80	KEN	KEN24900	CL																						3.8		2.8		3.9		2.8		3.9		2.8		3.9		2.8		3.9		3.3
–0.80	NOR	NOR12000	CL	4.4		2.0		–0.7		–0.7		–0.7		–0.7		–0.6		–0.6		–0.6		1.1																					
–0.80	NOR	NOR12100	CL																								–0.6				–0.6												
–0.80	ZMB	ZMB31400	CR																					2.8		3.2		4.3		3.2		4.3		3.2		4.3		3.2		4.3		3.2	
–0.80	ZWE	ZWE13500	CR	5.5		2.6		2.6		2.6		2.6		2.6		2.6		2.6		2.6		2.6																					
4.80	AFS	AFS02100	CL																					4.5		5.6		5.6		5.6		5.2		5.2		5.2		5.2		5.2		5.2	
4.80	LSO	LSO30500	CR	3.9		2.9		2.9		2.9		2.9		2.9		3.1		3.1		3.1		2.9																					
4.80	MWI	MWI30800	CR		3.2		3.8		3.3		3.9		3.3		3.9		3.9		3.9		3.8		3.4																				
4.80	SWZ	SWZ31300	CL	4.5		3.2		3.2		3.2		3.2		3.2		3.4		3.4		3.4		3.2																					
5.00	S	S 13800	CL																					4.7		–0.4		2.3		–0.4		2.3		0.6		4.5		0.6		4.5		0.6	
5.00	S	S 13900	CL																														8.7										
9.00	I	I 08200	CR																						–3.6		–3.8		–3.6		–3.8		–3.8		–3.8		–3.8		–3.8		–3.8		–2.6
11.00	BDI	BDI27000	CL																						3.0		3.0		3.0		3.0		3.0		3.0		3.0		3.0		3.0		5.6
11.00	JOR	JOR22400	CL		–1.0		–0.8		–0.7		–0.7		–0.7		–0.7		–0.7		–0.7		–0.8		0.0																				
11.00	KWT	KWT11300	CR																						5.4		5.4		5.4		5.4		5.4		5.4		5.4		5.4		5.4		6.3
11.00	LBN	LBN27900	CR	0.9		–0.6		–0.1		–0.1		–0.1		–0.1		–0.1		–0.1		–0.1		–0.6																					
11.00	RRW	RRW31000	CL		10.2		10.2		10.2		10.2		10.2		10.2		10.2		10.2		10.2		5.7																				
11.00	SYR	SYR22900	CL																						–1.0		–1.0		–1.0		–1.0		–1.0		–1.0		–1.0		–1.0		–1.0		–0.5
11.00	SYR	SYR33900	CL																																								1.4**
11.00	TZA	TZA22500	CR																					2.6		3.6		3.6		3.6		3.6		3.6		3.6		3.6		3.6		3.6	
11.00	YEM	YEM__100	CL	2.1		–0.3		–0.3		–0.3		–0.3		–0.3		–0.3		–0.3		–0.3		–0.3																					
16.80	DJI	DJI09900	CL		8.2		8.2		8.1		8.1		8.1		8.1		8.1		8.1		8.1		6.7																				
17.00	ARS	ARS__100	CL																						–0.4		–0.4		–0.4		–0.4		–0.4		–0.4		–0.4		–0.4		–0.4		0.0
17.00	ARS	ARS34000	CL																																								2.0
17.00	TCD	TCD14300	CR	9.8		8.8		8.8		8.8		8.8		8.8		8.8		8.8		8.8		8.8																					
17.00	UGA	UGA05100	CL																					3.6		4.0		4.0		4.0		4.0		4.0		4.0		4.0		4.0		4.0	

** See Note 1 of § 11.2 of Article 11.

1	2	3	4	5																																							
Orbital Position	Admin. symbol	Beam Identifica-tion	Polar-ization type	Channel number																																							
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
				Minimum EPM																																							
17.20	OMA	OMA12300	CR																						1.7		1.7		1.7		1.7		1.7		1.7		1.7		1.7		1.7		0.9
20.00	QAT	QAT24700	CL		5.9		5.9		5.9		5.9		5.9		5.9		5.9		5.8		5.8		6.2**																				
22.80	ARM	ARM06400	CR																						0.5		0.5		0.5		0.5		0.5		0.5		0.5		0.4		0.5		2.7
22.80	ERI	ERI09200	CR																					2.3		2.8		2.8		2.8		2.8		2.8		2.8		2.8		2.8		2.8	
22.80	FIN	FIN10300	CL																						–0.5		1.2		1.9		2.0		1.8		2.1		1.7		2.2		1.6		4.9
22.80	FIN	FIN10400	CL																																				–0.4				1.1
22.80	MKD	MKD14800	CR																					3.6		3.3		3.3		3.3		3.3		3.3		3.3		3.2		3.3		3.3	
22.80	MLT	MLT14700	CR																						1.7		1.8		1.7		1.8		1.7		1.8		1.7		1.7		1.8		3.4
23.20	AZE	AZE06400	CL																					0.6		–0.1		–0.1		–0.1		–0.1		–0.1		–0.1		–0.1		–0.1		–0.1	
23.20	GEO	GEO06400	CR	5.3		4.1		4.1		4.1		4.1		4.1		4.1		4.1		4.1		4.1																					
23.20	LTU	LTU06100	CL	1.4		0.1		0.0		0.0		–0.1		–0.1		–0.1		–0.2		–0.2		–0.2																					
23.20	LVA	LVA06100	CR		–0.8		–0.8		–0.8		–0.8		–0.9		–0.9		–0.9		–0.9		–0.9		–0.3																				
28.20	LUX	LUX11400	CL	3.1		2.9		2.8		2.8		2.8		2.8		2.8		2.8		2.8		2.8																					
29.00	COM	COM20700	CR																					11.2		9.5		9.5		9.5		9.5		9.5		9.5		9.5		9.5		9.6	
29.00	MAU	MAU__100	CL																						11.0		11.0		11.0		11.0		11.0		11.0		11.0		11.1		11.1		12.7
29.00	MDG	MDG23600	CL	14.0		13.6		13.5		13.4		13.4		13.3		13.3		13.2		13.2		13.2																					
33.80	SVN	SVN14800	CR		0.5		0.5		0.5		0.5		0.5		0.5		0.5		0.5		0.4		1.6																				
33.80	UZB	UZB07100	CR	3.3		1.9		1.9		1.9		1.9		1.9		1.9		1.9		1.9		1.9																					
34.00	BHR	BHR25500	CR																					0.9		0.9		8.7		8.8		9.2		8.8		9.2		8.8		9.2		8.8	
34.00	IRN	IRN10900	CL	1.2		0.9		0.9		0.9		0.9		0.9		0.9		0.9		0.9		0.9		8.8		8.5																	
34.20	MCO	MCO11600	CL	0.7		–1.0		–1.0		–1.0		–1.0		–1.0		–1.0		–1.0		–1.0		–1.0																					
36.00	ETH	ETH09200	CL		11.8		11.8		11.8		11.8		11.8		11.8		11.8		11.8		11.8		12.1																				
36.00	RUS	RSTREA11	CL																											–3.6				–3.6				–3.6				–3.6	
36.00	RUS	RSTREA12	CR																												–4.3				–4.3				–4.3				–4.2
36.00	RUS	RSTRED11	CL																											–3.6				–3.6				–3.6				–3.6	
36.00	RUS	RSTRED12	CR																												–4.3				–4.3				–4.3				–4.2
36.00	RUS	RSTRSD11	CL																									4.5		4.9		4.9		4.9		4.9		4.9		4.9		4.9	
36.00	RUS	RSTRSD12	CR																										3.4		3.4		3.4		3.4		3.4		3.4		3.4		3.4
36.00	RUS	RSTRSD13	CL																									4.9		5.0		5.0		5.0		5.0		5.0		5.0		5.0	
36.00	RUS	RSTRSD14	CR																										3.5		3.5		3.5		3.5		3.5		3.5		3.5		3.6
37.80	BLR	BLR06200	CL	3.8		1.3		1.3		1.3		1.3		1.3		1.3		1.3		1.3		1.3																					
37.80	SOM	SOM31200	CR																						3.3		3.3		11.7		10.2		11.7		10.2		11.7		10.2		11.7		10.4
38.00	TJK	TJK06900	CL																						0.6		1.2		7.9		7.8		7.9		7.8		7.9		7.8		7.9		7.9
38.20	BEL	BEL01800	CL																						2.5		2.2		2.0		1.7		2.0		1.7		2.0		1.7		2.0		3.4
38.20	HOL	HOL21300	CL		1.6		1.6		1.6		1.6		1.6		1.6		1.6		1.6		1.6		2.5																				
38.20	PAK	PAK12700	CR		3.5		3.5		3.5		3.5		3.5		3.5		3.5		3.5		3.5		4.6		2.0		2.1																

** See Note 1 of § 11.2 of Article 11.

1	2	3	4	5																																							
Orbital Position	Admin. symbol	Beam Identifica-tion	Polar-ization type	Channel number																																							
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
				Minimum EPM																																							
38.20	UKR	UKR06300	CR		0.6		0.6		0.6		0.6		0.6		0.6		0.6		0.6		0.6		1.5																				
42.00	TUR	TUR14500	CL		1.7		1.7		1.7		1.7		1.7		1.7		1.7		1.7		1.7		1.7																				
42.50	SEY	SEY00000	CR																						12.3		13.0		13.1		13.1		13.1		13.1		13.1		13.1		13.1		14.4
44.50	EST	EST06100	CR	6.6		5.6		5.6		5.6		5.6		5.6		5.6		5.6		5.6		5.6																					
50.00	AFG	AFG__100	CL	–0.3		–0.5		–0.5		–0.5		–0.5		–0.5		–0.5		–0.5		–0.5		–0.5		3.0		2.2																	
50.00	CLN	CLN21900	CL	0.8		0.5		0.5		0.5		0.5		0.5		0.5		0.5		0.5		0.5		1.5		1.6																	
50.00	IRQ	IRQ25600	CL	4.2		3.6		3.6		3.6		3.6		3.6		3.6		3.6		3.6		3.6**																					
50.00	KGZ	KGZ07000	CR		0.5		0.5		0.5		0.5		0.5		0.5		0.5		0.5		0.5		1.0																				
50.00	MDA	MDA06300	CR																						0.7		0.7		1.4		1.4		1.4		1.4		1.4		1.4		1.4		1.4
50.00	MLD	MLD30600	CR	6.3		4.8		4.8		4.8		4.8		4.8		4.8		4.8		4.8		4.8		4.7		4.3																	
50.00	NPL	NPL12200	CR		3.1		3.1		3.1		3.1		3.1		3.1		3.1		3.1		3.1		3.2		2.2		3.4																
50.00	POL	POL13200	CL																						2.4		2.7		3.1		3.1		3.1		3.1		3.1		3.1		3.1		3.2
50.00	ROU	ROU13600	CR	4.9		3.9		3.9		3.9		3.9		3.9		3.9		3.9		3.9		3.9																					
50.00	TKM	TKM06800	CR																						1.0		2.4		8.5		8.5		8.5		8.5		8.5		8.5		8.5		8.7
52.50	UAE	UAE27400	CR																					3.2		3.2		14.3		15.1		15.1		15.1		15.1		15.1		15.1		15.1**	
55.80	IND	INDA_100	CR		2.6		2.6		2.6		2.6		2.6		2.6		2.6		2.6		2.6		3.2		3.9		6.4																
55.80	IND	INDB_100	CL	2.7		2.1		2.1		2.1		2.1		2.1		2.1		2.1		2.1		2.1		3.2		3.2																	
56.00	BIH	BIH14800	CL	5.9		5.9		5.9		5.9		5.9		5.9		5.9		5.9		5.9		5.9																					
56.00	RUS	RSTRSD21	CL																									9.3		11.6		11.6		11.6		11.6		11.6		11.6		11.6	
56.00	RUS	RSTRSD22	CR																										3.5		3.5		3.5		3.5		3.5		3.5		3.5		3.6
56.40	KAZ	KAZ06600	CR	3.6		1.3		1.3		1.3		1.3		1.3		1.3		1.3		1.3		1.3																					
62.00	ALB	ALB29600	CL																						8.6		10.9		33.5		33.5		33.5		33.5		33.5		33.5		33.5		34.4
62.00	CHN	CHN15500	CL	2.7		1.5		1.5		1.5		1.5		1.5		1.5		1.5		1.5		1.5		1.5		1.5																	
62.00	CHN	CHNA_100	CR		1.9		1.9		1.9		1.9		1.9		1.9		1.9		1.9		1.9		2.1		2.3		5.3																
68.00	IND	IND03700	CL		4.5		4.5		4.5		4.5		4.5		4.5		4.5		4.5		4.5		4.5		4.5		7.2																
68.00	IND	IND04700	CR	5.4		5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0																	
68.00	IND	INDD_100	CR	6.0		4.6		4.6		4.6		4.6		4.6		4.6		4.6		4.6		4.6		4.6		4.6																	
74.00	BGD	BGD22000	CR	12.1		11.0		11.0		11.0		11.0		11.0		11.0		11.0		11.0		11.0		4.1		4.1																	
74.00	BRU	BRU33000	CR		5.1		5.1		5.1		5.1		5.1		5.1		5.1		5.1		5.1		4.8		4.5		6.9																
74.00	MNG	MNG24800	CR																					6.6		6.6		26.4		99.9		99.9		99.9		99.9		99.9		99.9		99.9	
80.20	INS	INSA_100	CR	12.8		9.7		9.7		9.7		9.7		9.7		9.7		9.7		9.7		9.7		9.7		9.7																	
86.00	BTN	BTN03100	CR	11.8		8.9		8.9		8.9		8.9		8.9		8.9		8.9		8.9		8.9		8.9		8.9																	
86.00	CBG	CBG29900	CR		9.7		9.7		9.7		9.7		9.7		9.7		9.7		9.7		9.7		9.7		9.7		11.7																
86.00	RUS	RSTRSD31	CL																									5.5		99.9		99.9		99.9		99.9		99.9		99.9		99.9	
86.00	RUS	RSTRSD32	CR																										99.9		99.9		99.9		99.9		99.9		99.9		99.9		99.9
88.00	SNG	SNG15100	CL	2.3		1.3		1.3		1.3		1.3		1.3		1.3		1.3		1.3		1.3		1.3		1.3																	

** See Note 1 of § 11.2 of Article 11.

1	2	3	4	5																																							
Orbital Position	Admin. symbol	Beam Identifica-tion	Polar-ization type	Channel number																																							
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
				Minimum EPM																																							
91.50	MLA	MLA__100	CR		0.8		0.8		0.8		0.8		0.8		0.8		0.8		0.8		0.8		0.8		0.8		3.5**																
92.20	CHN	CHNE_100	CL	4.4		1.5		1.5		1.5		1.5		1.5		1.5		1.5		1.5		1.5		1.5		1.5																	
92.20	CHN	CHNF_100	CR		4.4		4.4		4.4		4.4		4.4		4.4		4.4		4.4		4.4		4.4		4.4		6.6																
98.00	PHL	PHL28500	CL		2.3		2.3		2.3		2.3		2.3		2.3		2.3		2.3		2.3		2.3		2.3		4.7																
98.00	THA	THA14200	CL	1.8		–0.2		–0.2		–0.2		–0.2		–0.2		–0.2		–0.2		–0.2		–0.2		–0.2		–0.2																	
104.00	BRM	BRM29800	CL	2.1		–0.1		–0.1		–0.1		–0.1		–0.1		–0.1		–0.1		–0.1		–0.1		–0.1		–0.1																	
104.00	INS	INSB_100	CL		4.1		4.1		4.1		4.1		4.1		4.1		4.1		4.1		4.1		4.1		4.1		4.9**																
107.00	VTN	VTN32500	CR		0.2		0.2		0.2		0.2		0.2		0.2		0.2		0.2		0.2		0.2		0.2		3.1																
109.85	J	000BS–3N	CR	6.3		4.3		4.3		4.3		4.2		4.1		6.5		12.6																									
109.85	J	J 10985	CR	6.2		4.2		4.2		4.2		4.2		4.0		6.6		13.9		13.9		13.9		13.9		13.9																	
110.00	J	J 11100	CR	5.5		3.5		3.5		3.4		3.4		3.3		5.9		13.8		13.8		13.8		13.8		13.8																	
110.00	J	J 1110E	CR	5.4		3.4		3.4		3.4		3.3		3.1		5.6		12.4																									
110.00	RUS	RUS00401	CL																									13.2		99.9		99.9		99.9		99.9		99.9		99.9		99.9	
110.00	RUS	RUS00402	CR																										99.9		99.9												
116.00	KOR	KO11201D	CL		5.6		5.7		5.6		5.2		5.0		5.3																										
116.00	KOR	KOR11200	CL		–0.8		–0.8		–0.8		–0.8		–1.2		–1.2		4.3		3.9		3.9		3.9		3.9		4.9																
116.00	KOR	KOR11201	CL		5.6		5.7		5.6		5.2		5.0		5.3																										
121.80	USA	MRA33200	CR	5.3		3.5		3.5		3.5		3.5		3.5		3.5		3.5		3.5		3.5		3.5		3.5																	
122.00	CHN	CHN19000	CR	2.9		0.4		0.4		0.4		0.3		0.3		0.3		0.0		0.0		0.0		0.0		0.0																	
122.00	CHN	CHN20000	CL		1.4		1.4		1.4		1.3		1.3		1.4		0.9		0.7		0.7		0.7		0.7		2.4																
122.00	USA	GUM33100	CL		6.0		6.0		6.0		6.0		6.0		6.0		6.0		6.0		6.0		6.0		6.0		8.6																
122.20	LAO	LAO28400	CR		–1.8		–1.8		–1.8		–1.8		–1.8		–1.8		–1.8		–1.8		–1.8		–1.8		–1.8		–0.5																
128.00	SLM	SLM00000	CL	13.3		11.9		11.9		11.9		11.9		11.9		11.9		11.7		11.7		11.7		11.7		11.7																	
128.00	TMP	TMP00000	CR		9.4		9.3		9.3		9.3		9.3		9.3		9.3		9.2		9.2		9.2		9.2		10.4																
134.00	CHN	CHN15800	CR		–1.0		–1.0		–1.0		–1.0		–1.0		–1.0		–1.0		–1.0		–1.0		–1.0		–1.0		1.3																
134.00	CHN	CHNC_100	CL	2.1		–0.4		–0.4		–0.4		–0.4		–0.4		–0.4		–0.4		–0.4		–0.4		–0.4		–0.4																	
134.00	NRU	NRU30900	CL	8.6		7.3		7.3		7.3		7.3		7.3		7.3		7.3		7.3		7.3		7.3		7.3																	
134.00	PNG	PNG13100	CR		6.4		6.4		6.4		6.4		6.4		6.4		6.4		6.4		6.4		6.4		6.4		7.5																
140.00	F	NCL10000	CR		4.2		4.2		4.2		4.2		4.2		4.2		4.2		4.2		4.2		4.2		4.2		5.3																
140.00	F	WAL10200	CR		7.8		7.8		7.8		7.8		7.8		7.8		7.8		7.8		7.8		7.8		7.8		7.9																
140.00	KRE	KRE28600	CL	15.5		14.0		14.0		14.0		14.0		14.0		14.0		14.0		14.0		14.0		14.0		14.0																	
140.00	PLW	PLW00000	CR		11.2		11.2		11.2		11.2		11.2		11.2		11.2		11.2		11.2		11.2		11.2		11.4																
140.00	RUS	RSTRSD51	CL																									15.8		99.9		99.9		99.9		99.9		99.9		99.9		99.9	
140.00	RUS	RSTRSD52	CR																										99.9		99.9		99.9		99.9		99.9		99.9		99.9		99.9
140.00	USA	WAK33400	CR	16.0		14.0		14.0		14.0		14.0		14.0		14.0		14.0		14.0		14.0		14.0		14.0																	
140.00	VUT	VUT12800	CL	7.1		4.3		4.3		4.3		4.3		4.3		4.3		4.3		4.3		4.3		4.3		4.3																	

** See Note 1 of § 11.2 of Article 11.

1	2	3	4	5																																							
Orbital Position	Admin. symbol	Beam Identifica-tion	Polar-ization type	Channel number																																							
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
				Minimum EPM																																							
146.00	MHL	MHL00000	CR		25.2		25.1		25.2		25.1		25.2		25.4		25.5		25.4		25.5		25.4		25.5		26.3																
152.00	AUS	AUS00400	CR			5.7				5.7				5.7				5.7				5.7				5.7																	
152.00	AUS	AUS0040A	CR			16.9				16.9				16.9				16.9				16.9				16.9																	
152.00	AUS	AUS0040B	CR			16.3				16.3				16.3				16.3				16.3				16.3																	
152.00	AUS	AUS0040C	CR			17.4				17.4				17.4				17.4				17.4				17.4																	
152.00	AUS	AUS00500	CL				5.1				5.1				9.1				9.1				9.1				9.1																
152.00	AUS	AUS00600	CL		4.3				4.3				4.3				8.7				8.7				8.7																		
152.00	AUS	AUSA_100	CR	9.2				7.5				7.5																															
158.00	FSM	FSM00000	CR	14.9		23.5		14.6		23.5		14.6		23.5		23.8		24.9		25.3		24.9		25.3		24.9																	
158.00	NZL	NZL__100	CL		12.1		8.5		12.1		8.5		12.1		8.6		12.1		12.1		12.1		12.1		12.1		15.1																
164.00	AUS	AUS00700	CR			4.8				4.8				4.8				9.4				9.4				9.4																	
164.00	AUS	AUS0070A	CR			7.7				7.7				7.7				15.8				15.8				15.8																	
164.00	AUS	AUS00800	CL		5.4				5.4				5.4				5.4				5.4				5.4																		
164.00	AUS	AUS00900	CR	7.8				3.6				3.6				3.6				7.2				7.2																			
164.00	AUS	AUS0090A	CR	13.0				7.1				7.1				7.1				13.0				13.0																			
164.00	AUS	AUS0090B	CR	16.2				7.7				7.7				7.7				15.7				15.7																			
164.00	AUS	AUSB_100	CL				4.6				4.6				4.6																												
170.00	USA	PLM33200	CL		6.5		6.5		6.5		6.5		6.5		6.5		6.5		6.5		6.5		6.5		6.5		9.2																
170.00	USA	USAA_100	CL	9.9		7.4		7.4		7.4		7.4		7.4		7.4		7.4		7.4		7.4		7.4		7.4																	
170.75	TON	TON21500	CR		9.6		9.6		9.6		9.6		9.6		9.6		9.6		9.7		9.7		9.7		9.7		11.6																
176.00	KIR	KIR__100	CL	13.4		10.5		10.5		10.5		10.5		10.5		10.5		10.5		10.5		10.5		10.5		10.5																	
176.00	TUV	TUV00000	CR		6.2		6.2		6.2		6.2		6.2		6.2		6.2		6.2		6.2		6.2		6.2		9.1																

ANNEX 1 (WRC-2000)

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[14]

(See Article 4)

MOD

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 dB(W/(m^2 · 27 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:[15]

–147 dB(W/(m^2 · 27 MHz))	for 0° ≤ θ < 0.23°
–135.7 + 17.74 log θ dB(W/(m^2 · 27 MHz))	for 0.23° ≤ θ < 2.0°
–136.7 + 1.66 θ^2 dB(W/(m^2 · 27 MHz))	for 2.0° ≤ θ < 3.59°
–129.2 + 25 log θ dB(W/(m^2 · 27 MHz))	for 3.59° ≤ θ < 9°

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;

b) the effect of the proposed new or modified assignments in the List is that the equivalent downlink protection margin[16] 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)

(MOD)

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 margin[17] 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)

MOD

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:

-147 dB(W/(m^2 · 27 MHz)) for $0° \leq \theta < 0.23°$

$-135.7 + 17.74 \log \theta$ dB(W/(m^2 · 27 MHz)) for $0.23° \leq \theta < 1.8°$

$-134.0 + 0.89\ \theta^2$ dB(W/(m^2 · 27 MHz))	for $1.8° \leq \theta < 5.0°$
$-129.2 + 25 \log \theta$ dB(W/(m^2 · 27 MHz))	for $5.0° \leq \theta < 10.57°$
–103.6 dB(W/(m^2 · 27 MHz))	for $10.57° \leq \theta$

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

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)

(MOD)

4 Limits to the power flux-density to protect the terrestrial services of other administrations[18, 19, 20]

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.

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:

–148 dB(W/(m^2 · 4 kHz))	for	$\theta \leq 5°$
–148 + 0.5 (θ – 5) dB(W(m^2 · 4 kHz)	for	$5° < \theta \leq 25°$
–138 dB(W/(m^2 · 4 kHz))	for	$25° < \theta \leq 90°$

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

MOD

6 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 band 11.7-12.2 GHz[21] in Region 2 or in the 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 band 12.5-12.7 GHz in Region 1 and in the 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

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21 Including assignments operating under No. **5.485** of the Radio Regulations.

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:

-186.5 dB(W/(m^2 · 40 kHz))	for $0° \leq \theta < 0.054°$
$-164.0 + 17.74 \log \theta$ dB(W/(m^2 · 40 kHz))	for $0.054° \leq \theta < 2.0°$
$-165.0 + 1.66\ \theta^2$ dB(W/(m^2 · 40 kHz))	for $2.0° \leq \theta < 3.59°$
$-157.5 + 25 \log \theta$ dB(W/(m^2 · 40 kHz))	for $3.59° \leq \theta < 10.57°$
-131.9 dB(W/(m^2 · 40 kHz))	for $10.57° \leq \theta$

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.

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 $0° \leq \theta < 0.054°$
$-164.0 + 17.74 \log \theta$ dB(W/(m^2 · 40 kHz))	for $0.054° \leq \theta < 1.8°$
$-162.3 + 0.89\ \theta^2$ dB(W/(m^2 · 40 kHz))	for $1.8° \leq \theta < 5.0°$
$-157.5 + 25 \log \theta$ dB(W/(m^2 · 40 kHz))	for $5.0° \leq \theta < 10.57°$
-131.9 dB(W/(m^2 · 40 kHz))	for $10.57° \leq \theta$

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.

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-2000)**, had been received by the Bureau prior to 30 March 2002. (WRC-03)

MOD

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 of Region 1 is considered as being affected if the proposed modification to the Region 2 Plan would result in:

– the value of $\Delta T/T$ 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 $\Delta T/T$ resulting from the proposed modification exceeds 6%,

using the method of Appendix **8** (Case II). (WRC-03)

MOD

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**.

MOD

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;

d) 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:

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

where:

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

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

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

D: angular 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 dB(W/(m^2 · 27 MHz)) for service areas in Regions 1 and 3, *and*

b) –115 dB(W/(m^2 · 24 MHz)), as well as in dB(W/(m^2 · 27 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 · 24 MHz)), as well as in dB(W/(m^2 · 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

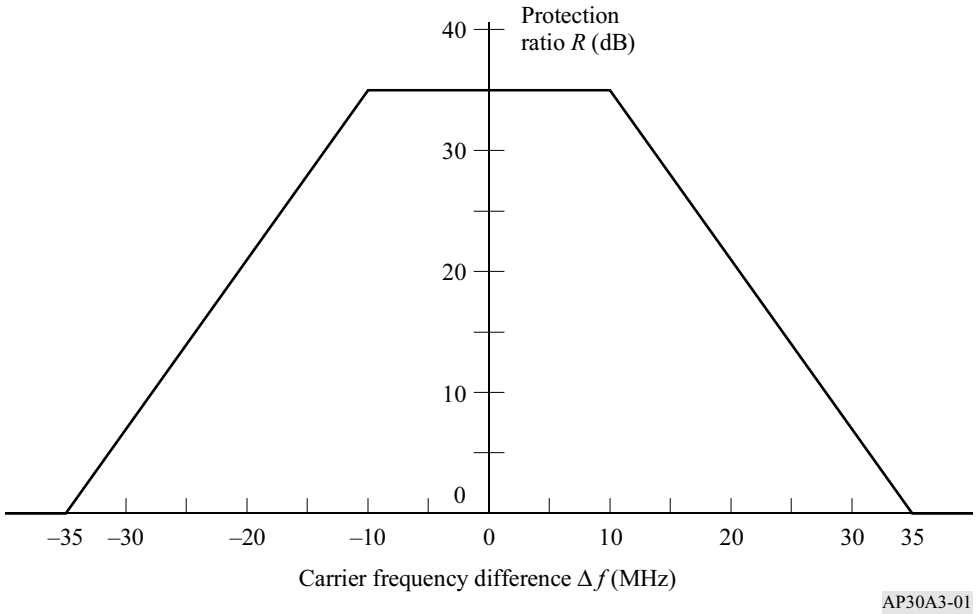
types of terrestrial transmissions, with the exception of amplitude-modulation multichannel television systems, is 35 dB for carrier frequency differences between the wanted and interfering signals of up to ±10 MHz, decreasing linearly from 35 dB to 0 dB for carrier frequency differences between 10 MHz 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 to this Appendix):

$D = 0.0025((d/\lambda)\,\varphi)^2$	dB	for $0° \le \varphi \le \varphi_m$
$D = G_{max} - (29 - 25\log(\varphi_r))$	dB	for $\varphi_m \le \varphi \le \varphi_r$
$D = G_{max} - (29 - 25\log(\varphi))$	dB	for $\varphi_r \le \varphi \le 14.45°$
$D = G_{max}$	dB	for $\varphi \le 14.45°$

where:

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

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

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

φ_r : $95(\lambda/d)$ (degrees)

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

d : diameter of the antenna (m)

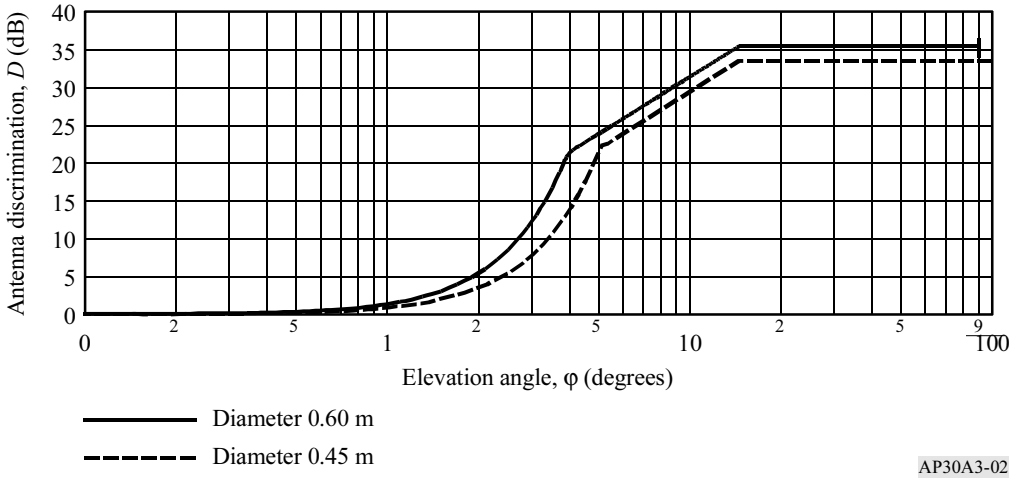
λ : the wavelength (m).

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.

FIGURE 2

Discrimination *D* of a ~~broad~~easting-satellite receiving antenna as a function of elevation angle



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 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 is specified for a particular service area, the appropriate value of should be used for each section of the edge of the service area under consideration.

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

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

2.5 Polarization discrimination (*P*)

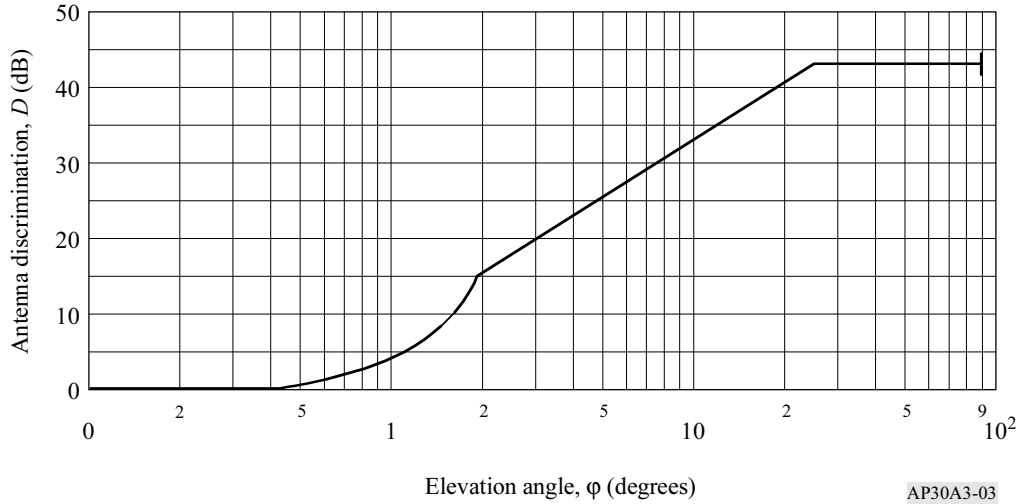
The value of *P* is equal to:

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



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

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

$$F_p = E - A + 10 \log (4\pi/\lambda^2) \quad (4)$$

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:

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

where:

f: frequency (GHz)

β_p: radiometeorological parameter, which reflects the relative incidence of clear-sky 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:

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

where ζ is the earth station latitude (degrees).

β_p is then determined using:

$$\beta_p = \begin{cases} 10^{(1.67-0.015\zeta_r)} & \text{for } \zeta_r \leq 70° \\ 4.17 & \text{for } \zeta_r > 70° \end{cases} \quad (7)$$

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
B	900
C	1 200

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

[2] As computed in § 2 of Appendix **7**.

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):

$$A_c = \frac{-6}{1 + d_c} \quad (8)$$

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:

$$A_1 = 122.43 + 16.5 \log f + A_c \quad (9)$$

3.2.2.2 *Distance-dependent part of the loss (dB) for ducting*

3.2.2.2*a* The specific attenuation (dB/km) due to dry air is given as:

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

3.2.2.2*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:

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

3.2.2.2*c* The specific attenuation (dB/km) due to water vapour for the ducting propagation model using a water vapour density of 7.5 g/m^3 for paths over land in Zones A1 and A2 is given as:

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

3.2.2.2*d* The specific attenuation (dB/km) due to water vapour for the ducting propagation model using a water vapour density of 10.0 g/m^3 for paths over sea in Zones B and C is given as:

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

Note that the value of 10.0 g/m^3 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.

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

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

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.

3.2.2.2*f* Values for zone-dependent parameters:

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

where:

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

$$\mu_1 = \left(10^{\frac{-d_{tm}}{16 \; - \; 6.6\tau}} + \left(10^{-(0.496 + 0.354\tau)}\right)^5 \right)^{0.2} \tag{16}$$

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 $\sigma \geq -3.4$.

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

μ_2 is limited to $\mu_2 \leq 1$.

$$\mu_4 = \begin{cases} 10^{(-0.935 + 0.0176\zeta_r) \log \mu_1} & \text{for } \zeta \leq 70^\circ \\ 10^{0.3 \log \mu_1} & \text{for } \zeta > 70^\circ \end{cases} \tag{19}$$

3.2.2.2*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:

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

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

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.

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

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

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).

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

3.2.2.2*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*

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

where:

ε_h: earth station horizon elevation angle (degrees)

N_0: path centre sea level surface refractivity given as:

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

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

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

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

$$L_6(p) = 20\,\log(d_i) + 5.73\times10^{-4}(112 - 15\cos(2\zeta))d_i + (\gamma_0 + \gamma_{wt})d_i + C_{2i} \tag{28}$$

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:

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

MOD

ANNEX 4 (Rev.WRC-03)

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 or in the broadcasting-satellite service (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 1 or Region 3 exceeds the following values:

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

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.

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[21A]:

–147 dB(W/(m^2 · 27 MHz))	for 0° □ □ □ 0.23°
–135.7. 17.74 log □ dB(W/(m^2 · 27 MHz))	for 0.23° □ □ □ 1.8°
–134.0 + 0.89 □□ dB(W/(m^2 · 27 MHz))	for 1.8° □ □ □ 5.0°
–129.2 + 25 log □ dB(W/(m^2 · 27 MHz))	for 5.0° □ □ □ 10.57°
–103.6 dB(W/(m^2 · 27 MHz))	for 10.57° □ □

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:

–147 dB(W/(m^2 · 27 MHz))	for 0° ≤ θ < 0.23°
–135.7 + 17.74 log θ dB(W/(m^2 · 27 MHz))	for 0.23° ≤ θ < 1.8°
–134.0 + 0.89 θ^2 dB(W/(m^2 · 27 MHz))	for 1.8° ≤ θ < 5.0°
–129.2 + 25 log θ dB(W/(m^2 · 27 MHz))	for 5.0° ≤ θ < 10.57°
–103.6 dB(W/(m^2 · 27 MHz))	for 10.57° ≤ θ

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.

[21A] For the protection of analogue assignments brought into service before 17 October 1997, the following values shall be used until 1 January 2015:

–147 dB(W/(m^2 · 27 MHz))	for 0° ≤ θ < 0.44°
–138 + 25 log θ dB(W/(m^2 · 27 MHz))	for 0.44° ≤ θ < 9°.

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[22] (WRC-2000)

MOD

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[27, 28]:

– 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[28, 29, 30]:

– 24 dB for co-channel signals;

– 16 dB for adjacent channel signals.

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 dB[31].

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 process[32].

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 2[32A]).

In Region 2, the following protection ratios have been adopted for the purpose of calculating the overall equivalent protection margin[32B]:

– 28 dB for co-channel signals;

– 13.6 dB for adjacent-channel signals;

– –9.9 dB for second adjacent-channel signals.

In Region 2, as a guide for planning, the reduction in the overall *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)

ADD

[32A] Annex 3 of this Recommendation may be applied only in compatibility analysis for bilateral coordination between administrations. (WRC-03)

ADD

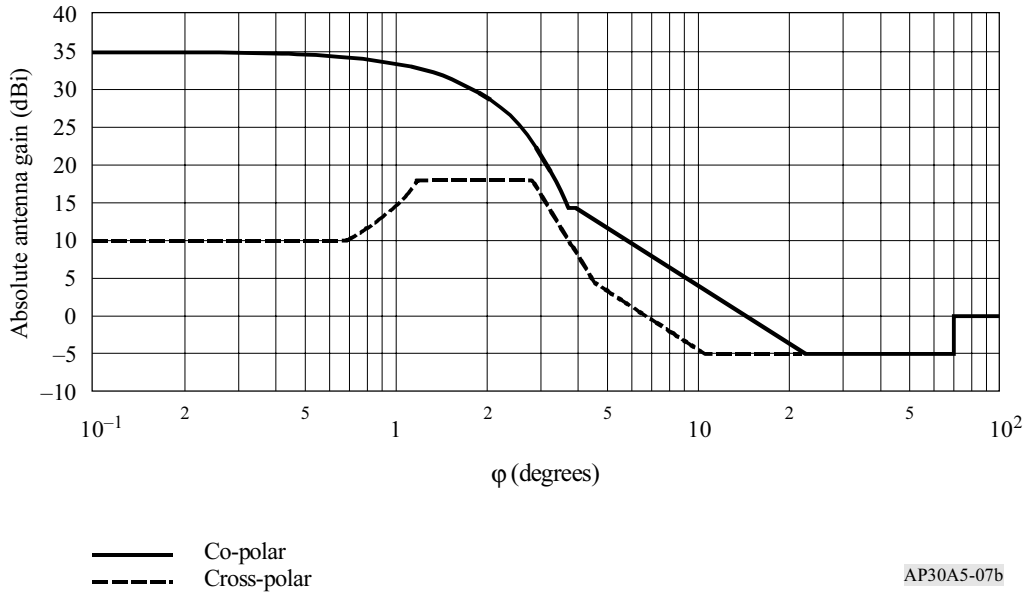
[32B] The definitions in § 1.7, 1.8, 1.9, 1.10 and 1.11 of this Annex apply to these calculations. (WRC-03)

3.7.2 Receiving antenna reference patterns

MOD

FIGURE 7*bis*

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



Co-polar pattern:

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

where:

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

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

where:

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

$$G_{co}(\varphi) = 29 - 25 \log \varphi \qquad \text{for } \varphi_r \le \varphi < \varphi_b$$

where:

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

$G_{co}(\varphi) = -5$ dBi for $\varphi_b \leq \varphi < 70°$

$G_{co}(\varphi) = 0$ dBi for $70° \leq \varphi < 180°$

Cross-polar pattern:

$G_{cross}(\varphi) = G_{max} - 25$ for $0 \leq \varphi < 0.25\ \varphi_0$

where:

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

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

$G_{cross}(\varphi) = G_{max} - 17$ for $0.44\ \varphi_0 \leq \varphi < \varphi_0$

$$G_{cross}(\varphi) = G_{max} - 17 - C\left|\frac{\varphi - \varphi_0}{\varphi_1 - \varphi_0}\right| \quad \text{for } \varphi_0 \leq \varphi < \varphi_1$$

where:

λ: wavelength corresponding to 12.1 GHz (m)

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

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

$G_{cross}(\varphi) = 21 - 25 \log \varphi$ for $\varphi_1 \leq \varphi < \varphi_2$

where:

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

$G_{cross}(\varphi) = -5$ dBi for $\varphi_2 \leq \varphi < 70°$

$G_{cross}(\varphi) = 0$ dBi for $70° \leq \varphi < 180°$

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)

MOD

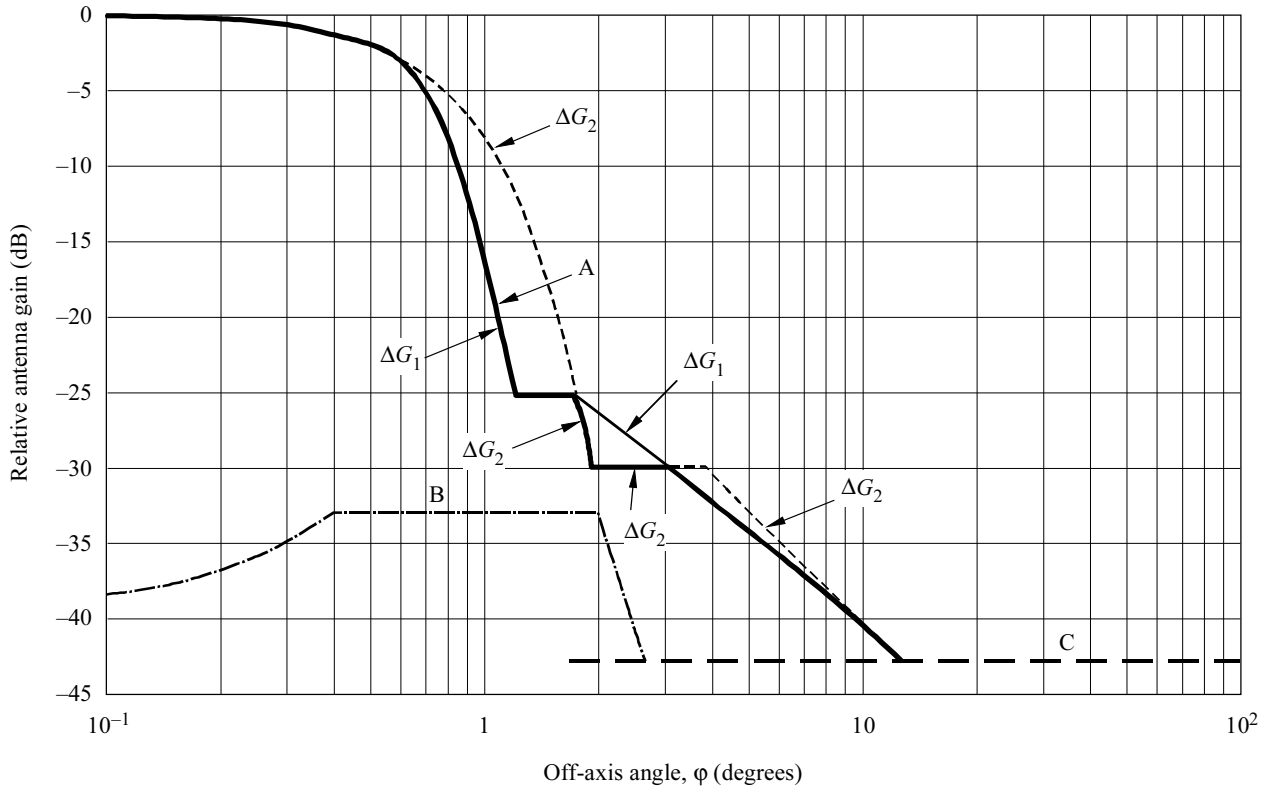
3.9.4 The guardbands at both the lower and upper edges may be used to provide space operation functions in accordance with No. **1.23** in support of the operation of geostationary-satellite networks in the broadcasting-satellite service. (WRC-03)

3.13.3 Transmitting antenna reference patterns

MOD

FIGURE 13 (WRC-2000)

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 $\varphi_0 = 1.2°$ (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:

$$\Delta G_1 = -12(\varphi/\varphi_0)^2 \qquad \text{for } 0 \le (\varphi/\varphi_0) \le 0.5$$

$$\Delta G_1 = -12\left(\frac{\frac{\varphi}{\varphi_0} - x}{\frac{B_{min}}{\varphi_0}}\right)^2 \qquad \text{for } 0.5 < (\varphi/\varphi_0) \le \left(\frac{1.45}{\varphi_0}B_{min} + x\right)$$

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

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

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

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

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

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

$$\Delta G_2 = -\left(G_{on\text{-}axis}\right) \qquad \text{after intersection with Curve C}$$

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

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

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

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

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

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

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

ANNEX 6[39]

Criteria for sharing between services

ADD

Part A – Technical bases for the criteria for interregional sharing between space services in Annexes 1 and 4 of this Appendix (WRC-03)

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 θ) 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

(1) This antenna diameter applies in certain cases (see Annexes 1, 3 and 4 of this Appendix).
(2) This antenna diameter does not apply for broadcasting-satellite service.

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 to this Appendix 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 $\theta°$

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

k: Boltzmann's constant (1.38×10^{-23} 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 m^2 effective aperture (dBi/m^2)

$G_a(\varphi)$: 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 broadcasting-satellite 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 § 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 of this Appendix by taking the envelope of the individual pfd masks for the relevant antenna diameters.

Orbital separation between wanted and interfering space stations (degrees)	power flux-density level in dB(W/(m^2 · 27 MHz)) corresponding to different antenna diameters							
	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 § 1 above							

(1) This antenna diameter applies to certain cases (see Annexes 1, 3 and 4 of this Appendix).
(2) This antenna diameter does not apply for broadcasting satellite service.

ADD

Part B – Sharing criteria used in establishing the WARC SAT-77 Plan (WRC-03)

MOD

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:

1) No broadcasting satellite serving an area in Region 1 and using a frequency in the band 11.7-12.2 GHz shall occupy a nominal orbital position further west than 37.2° 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.

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

[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/(m^2 · 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

Orbital position	37° W ±0.2°	33.5° W	30° W	25° W ±0.2°	19° W ±0.2°	13° W ±0.2°	7° W ±0.2°	4° W [1]	1° W ±0.2°	5° E ±0.2°	9° E [1]

[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/(m^2 · 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 ±0.2° from the centre of the cluster of satellites. Administrations may locate those satellites within a cluster at any orbital position within that cluster, provided they obtain the agreement of administrations having assignments to space stations in the same cluster. (See § 4.13.1 of Annex 3 to Appendix **30A**.)

MOD

APPENDIX 30A (Rev.WRC-03)*

Provisions and associated Plans and List[1] for feeder links for the broadcasting-satellite 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 GHz[2] 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** of the Radio Regulations) (WRC-03)

ADD

* 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)

MOD

[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)

ARTICLE 1 (WRC-2000)

General definitions

MOD

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)

ADD

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)

ADD

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

Frequency bands

SUP
2.2

ADD

ARTICLE 2A (WRC-03)

Use of the guardbands

2A.1 The use of the guardbands defined in § 3.1 and 4.1 of Annex 3 of this Appendix 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 shall be coordinated with assignments of the BSS feeder link subject to a Plan using the provisions of Article 7 of this Appendix.

2A.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. Advance publication information is not required. 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 of this Appendix.

2A.3 Any assignments intended to provide these functions in support of a geostationary-satellite network for the BSS feeder link whose assignments are submitted under Article 4 of this Appendix shall be brought into use within the regulatory time-limit of the corresponding BSS feeder-link assignments submitted under Article 4 of this Appendix.

2A.4 Any assignments intended to provide these functions for 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), shall be brought into use within the regulatory time-limit referred to in § 4.1.3 or 4.2.6 of this Appendix from the date of receipt by the Bureau of the complete Appendix **4** data.

2A.5 Assignments intended to provide the above-mentioned functions shall be notified under Article **11**.

ARTICLE 3 (WRC-2000)

Execution of the provisions and associated Plans

MOD

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)

ARTICLE 4 (WRC-2000)

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

MOD

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, 4A]:

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*

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*

d) having a feeder-link frequency assignment in the 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 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-03)

ADD

[4A] 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)

MOD

4.1.3 An administration, or one[4B] 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 by that date.[5] A proposed new or modified assignment not included in the List by that date[5] shall also lapse. (WRC-03)

ADD

[4B] 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)

MOD

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

ADD

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.

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[5A]. 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-03)** for the assignment with respect to the satellite that suffered the launch failure, if that information has not already been provided.

If, within one year of the request for extension, the administration has not provided to the Bureau updated Resolution **49 (Rev.WRC-03)** information for the new satellite under procurement, the related frequency assignments shall lapse. (WRC-03)

ADD

_____

[5A] 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)

MOD

_____

[6] 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 Council Decision 482 unless the payment has already been received (see also Resolution **87 (WRC-03)**). (WRC-03)

ADD

4.1.7*bis* 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)

ADD

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)

ADD

4.1.10*ter* 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 of this Appendix. (WRC-03)

ADD

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)

MOD

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)

MOD

4.1.15 The Bureau shall publish[6A] 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 feeder-link List. (WRC-03)

ADD

[6A] 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 Council Decision 482 unless the payment has already been received (see also Resolution **87 (WRC-03)**). (WRC-03)

MOD

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 of this Appendix 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)

MOD

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)[6B] 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)

ADD

[6B] For the definition of the EPM, see § 1.7 of Annex 3. (WRC-03)

MOD

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)

MOD

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)

MOD

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)

MOD

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)

MOD

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-03)**, 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-03)

MOD

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)

MOD

4.1.27 When an administration has successfully applied this procedure and received all the agreements[7] 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)

ADD

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)

MOD

4.1.28 The feeder-link List, as updated, shall be published periodically by the Bureau. (WRC-03)

MOD

4.1.29 New or modified assignments in the feeder-link List shall be limited to digital modulation. (WRC-03)

MOD

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*

b) to include in the Region 2 feeder-link Plan a new frequency assignment in the fixed-satellite service; *or*

c) to cancel a frequency assignment in the fixed-satellite service,

the following procedure shall be applied before any notification of the frequency assignment is made to the Bureau (see Article 5 and Resolution **42 (Rev.WRC-03)**). (WRC-03)

MOD

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[8, 8A, 9]:

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)

ADD

[8A] 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)

MOD

4.2.6 An administration, or one[9A] 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 by that date[9B]. A request for a modification that has not been included in that Plan by that date[9B] shall also lapse. (WRC-03)

ADD

[9A] 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)

ADD

[9B] The provisions of Resolution **533 (Rev.WRC-2000)** apply. (WRC-03)

ADD

4.2.6*bis* 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[9C]. 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-03)** for the assignment with respect to the satellite that suffered the launch failure, if that information has not already been provided.

If, within one year of the request for extension, the administration has not provided to the Bureau updated Resolution **49 (Rev.WRC-03)** information for the new satellite under procurement, the related frequency assignments shall lapse. (WRC-03)

ADD

[9C] 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)

MOD

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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 Council Decision 482 unless the payment has already been received (see also Resolution **87 (WRC-03)**). (WRC-03)

MOD

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)

ADD

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)

ADD

4.2.14*ter* 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 of this Appendix. (WRC-03)

ADD

4.2.16*bis* In application of § 4.1.16, 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)

MOD

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)

MOD

4.2.19 The Bureau shall publish[10A] in a Special Section of its BR IFIC the information received under § 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)

ADD

[10A] 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 Council Decision 482 unless the payment has already been received (see also Resolution **87 (WRC-03)**). (WRC-03)

ADD

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 of this Appendix 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)

ADD

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)

ADD

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)

ADD

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)

ARTICLE 5 (Rev.WRC-03)

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[11]

MOD

[11] 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 of this Appendix, shall be effected applying the provisions of Article **11** following completion of the procedure of Article **9**. (WRC-03)

MOD

5.1.2 Whenever an administration[11A] 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)

ADD

[11A] 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)

ADD

5.1.2*bis* 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)

MOD

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)

MOD

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 finding[11B]. (WRC-03)

ADD

[11B] 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)

ADD

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)

MOD

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)

MOD

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;

e) for Region 2, with respect to its conformity with the provisions of Resolution **42 (Rev.WRC-03)**; (WRC-03)

SUP

_____

12

MOD

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 Column 2d. 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 entered in Column 2d 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-03)

MOD

5.3.1 If an administration has not confirmed the bringing into use of a frequency assignment under § 5.2.8, the Bureau will make inquiries of the administration not earlier than six months after the expiry of the period specified in § 5.1.3. On receipt of the relevant information, the Bureau will either modify[12A] the date of coming into use or cancel the entry. (WRC-03)

ADD

_____

12A See also § 4.1.3 or 4.2.6 of Article 4. (WRC-03)

MOD

ARTICLE 6 (Rev.WRC-03)

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 Plan[12B] are involved[12C]

ADD

[12B] Only assignments included in the Region 2 feeder-link Plan before 3 June 2000 shall be taken into account. (WRC-03)

[12C] These procedures do not replace the procedures prescribed for terrestrial stations in Articles **9** and **11**. (WRC-03)

MOD

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 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[13A]

ADD

[13A] 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)

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

MOD

7.1 The provisions of No. **9.7**[14] 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 band 17.3-18.1 GHz, to transmitting space stations in the fixed-satellite service in Regions 2 and 3 in the band 17.7-18.1 GHz, to transmitting earth stations in the fixed-satellite service in Region 2 in the band 17.8-18.1 GHz and to transmitting space stations in the broadcasting-satellite service in Region 2 in the band 17.3-17.8 GHz. (WRC-03)

MOD

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)

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

MOD

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 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

9.2 TEXT FOR NOTES IN REMARKS COLUMN OF THE PLAN

MOD

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 of 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)

ARTICLE 9A (Rev.WRC-03)

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

SUP

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

ADD

9A.2 TEXT FOR NOTES IN THE REMARKS COLUMN OF THE REGIONS 1 AND 3 FEEDER-LINK PLAN (WRC-03)

1 (Not used.)

2 (Not used.)

3 (Not used.)

4 (Not used.)

5 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).

6 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).

7 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 feeder-link 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 Provisional beam. These assignments have been included in the Regions 1 and 3 feeder-link Plan by WRC-2000. These assignments are for exclusive use by East Timor.

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

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

Beam name	Channels	Affected administrations[1]	Affected networks or beams[1]
CPV30100	2, 4, 8, 10, 12	GUY JMC	GUY00302, JMC00005
CPV30100	6	JMC	JMC00005
G 02700	2, 4, 8, 10, 12	GUY JMC	GUY00302, JMC00005
G 02700	6	JMC	JMC00005
LBR24400	1	GUY	GUY00302
LBR24400	3, 9, 13	JMC	JMC00005
LBR24400	5, 7, 11	GUY JMC	GUY00302, JMC00005

[1] Administrations and corresponding networks or beams whose assignment(s) may receive interference from the beam shown in the left-hand column.

TABLE 1B

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

Beam name	Channels	Note	Affecting administrations[1]	Affecting networks or beams[1]
CPV30100	2, 4, 8, 10, 12	6	GUY JMC	GUY00302, JMC00005
CPV30100	6	6	JMC	JMC00005
E____100	1, 3, 5, 7, 9, 11, 13	6	G	BERBER02
G 02700	2, 4, 8, 10, 12	6	GUY JMC	GUY00302, JMC00005
G 02700	6	6	JMC	JMC00005
LBR24400	1	6	GUY	GUY00302
LBR24400	3, 9, 13	6	JMC	JMC00005
LBR24400	5, 7, 11	6	GUY JMC	GUY00302, JMC00005
NZL__100	24	7	J	SUPERBIRD-A

[1] 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[1] 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	14 717.10
12	14 736.28
13	14 755.46
14	14 774.64

[1] Assigned frequency = 14 506.12 + 19.18 *n*, where *n* is the channel number.

TABLE 2B

Table showing correspondence between channel numbers and assigned frequencies[1] 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	17 711.08
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

[1] Assigned frequency = 17 308.3 + 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)

1	2	3	4		5			6	7	8		9		10		11	12	13	14	15	16	17
Admin. symbol	Beam identification	Orbital position	Boresight		Space station antenna characteristics			Space station antenna code	Shaped beam	Space station antenna gain		Earth station antenna		Polarization		e.i.r.p.	Power control	Designation of emission	Identity of the space station	Group code	Status	Remarks
			Long.	Lat.	Major axis	Minor axis	Orien-tation			Co-polar	Cross-polar	Code	Gain	Type	Angle							
AFS	AFS02101	4.80	24.50	–28.00	3.13	1.68	27.00	MODRSS		37.24		MODTES	57.00	CL		82.0		27M0G7W		4L	P	
AFS	AFS02102	4.80	24.50	–28.00	3.13	1.68	27.00	MODRSS		37.24		MODTES	57.00	CR		82.0		27M0G7W		4L	P	
CHN	CHN19001	122.00	114.17	23.32	0.91	0.60	2.88	MODRSS		47.08		MODTES	57.00	CL		84.0		27M0G7W		4C	P	
CHN	CHN19002	122.00	114.17	23.32	0.91	0.60	2.88	MODRSS		47.08		MODTES	57.00	CR		84.0		27M0G7W		4C	P	
CME	CME30001	–13.00	12.70	6.20	2.54	1.68	87.00	MODRSS		38.15		MODTES	57.00	CL		84.0		27M0G7W		4I	P	
CME	CME30002	–13.00	12.70	6.20	2.54	1.68	87.00	MODRSS		38.15		MODTES	57.00	CR		84.0		27M0G7W		4I	P	
ETH	ETH09201	36.00	40.49	9.20	2.83	2.26	174.44	MODRSS		36.40		MODTES	57.00	CL		82.0		27M0G7W		4P	P	
ETH	ETH09202	36.00	40.49	9.20	2.83	2.26	174.44	MODRSS		36.40		MODTES	57.00	CR		82.0		27M0G7W		4P	P	
GHA	GHA10801	–25.00	–1.20	7.90	1.48	1.06	102.00	MODRSS		42.49		MODTES	57.00	CR		83.0		27M0G7W		4F	P	
GHA	GHA10802	–25.00	–1.20	7.90	1.48	1.06	102.00	MODRSS		42.49		MODTES	57.00	CL		83.0		27M0G7W		4F	P	
IND	INDA_101	55.80	76.16	14.72				CB_RSS_INDA		45.66		MODTES	57.00	CR		82.0		27M0G7W		4U	P	
IND	INDA_102	55.80	76.16	14.72				CB_RSS_INDA		45.66		MODTES	57.00	CL		82.0		27M0G7W		4U	P	
IRN	IRN10901	34.00	54.20	32.40	3.82	1.82	149.00	MODRSS		36.03		MODTES	57.00	CR		82.0		27M0G7W		4S	P	
IRN	IRN10902	34.00	54.20	32.40	3.82	1.82	149.00	MODRSS		36.03		MODTES	57.00	CL		82.0		27M0G7W		4S	P	
IRQ	IRQ25601	50.00	43.86	32.86	1.82	1.34	162.65	MODRSS		40.58		MODTES	57.00	CL		82.0		27M0G7W		4M	P	
IRQ	IRQ25602	50.00	43.86	32.86	1.82	1.34	162.65	MODRSS		40.58		MODTES	57.00	CR		82.0		27M0G7W		4M	P	
KOR	KO11201D	116.00	127.50	36.00	1.24	1.02	168.00	R13RSS		43.40		R13TES	57.30	CL		82.0		27M0G7W	KOREASAT-1	03	PE	
KOR	KOR11201	116.00	127.50	36.00	1.24	1.02	168.00	R13RSS		43.40		R13TES	57.30	CL		82.0		27M0F8W	KOREASAT-1	03	PE	
MOZ	MOZ30701	–1.00	34.00	–18.00	3.57	1.38	55.00	MODRSS		37.52		MODTES	57.00	CL		82.0		27M0G7W		4K	P	
MOZ	MOZ30702	–1.00	34.00	–18.00	3.57	1.38	55.00	MODRSS		37.52		MODTES	57.00	CR		82.0		27M0G7W		4K	P	
NIG	NIG11901	–19.20	7.80	9.40	2.16	2.02	45.00	MODRSS		38.05		MODTES	57.00	CR		82.0		27M0G7W		4G	P	
NIG	NIG11902	–19.20	7.80	9.40	2.16	2.02	45.00	MODRSS		38.05		MODTES	57.00	CL		82.0		27M0G7W		4G	P	
NMB	NMB02501	–18.80	17.50	–21.60	2.66	1.90	48.00	MODRSS		37.41		MODTES	57.00	CL		82.0		27M0G7W		4H	P	
NMB	NMB02502	–18.80	17.50	–21.60	2.66	1.90	48.00	MODRSS		37.41		MODTES	57.00	CR		82.0		27M0G7W		4H	P	
NPL	NPL12201	50.00	83.70	28.30	1.72	0.60	163.00	MODRSS		44.31		MODTES	57.00	CR		82.0		27M0G7W		4N	P	

1	2	3	4		5			6	7	8		9		10		11	12	13	14	15	16	17
Admin. symbol	Beam identification	Orbital position	Boresight		Space station antenna characteristics			Space station antenna code	Shaped beam	Space station antenna gain		Earth station antenna		Polarization		e.i.r.p.	Power control	Designation of emission	Identity of the space station	Group code	Status	Remarks
			Long.	Lat.	Major axis	Minor axis	Orien-tation			Co-polar	Cross-polar	Code	Gain	Type	Angle							
NPL	NPL12202	50.00	83.70	28.30	1.72	0.60	163.00	MODRSS		44.31		MODTES	57.00	CL		82.0		27M0G7W		4N	P	
PAK	PAK12701	38.20	69.60	29.50	2.30	2.16	14.00	MODRSS		37.49		MODTES	57.00	CR		82.0		27M0G7W		4R	P	
PAK	PAK12702	38.20	69.60	29.50	2.30	2.16	14.00	MODRSS		37.49		MODTES	57.00	CL		82.0		27M0G7W		4R	P	
PNG	PNG13101	134.00	148.07	–6.65	3.13	2.30	168.32	MODRSS		38.87		MODTES	57.00	CR		89.0		27M0G7W		4B	P	
PNG	PNG13102	134.00	148.07	–6.65	3.13	2.30	168.32	MODRSS		38.87		MODTES	57.00	CL		89.0		27M0G7W		4B	P	
SDN	SDN__101	–7.00	30.13	13.52				CB_RSS_SDNA		37.20		MODTES	57.00	CL		86.0		27M0G7W		4J	P	
SDN	SDN__102	–7.00	30.13	13.52				CB_RSS_SDNA		37.20		MODTES	57.00	CR		86.0		27M0G7W		4J	P	
SEN	SEN22201	–37.00	–14.40	13.80	1.46	1.04	139.00	MODRSS		42.63		MODTES	57.00	CL		82.0		27M0G7W		4D	P	
SEN	SEN22202	–37.00	–14.40	13.80	1.46	1.04	139.00	MODRSS		42.63		MODTES	57.00	CR		82.0		27M0G7W		4D	P	
SEY	SEY00001	42.50	51.86	–7.23	2.43	1.04	27.51	MODRSS		40.44		MODTES	57.00	CL		84.0		27M0G7W		4T	P	
SEY	SEY00002	42.50	51.86	–7.23	2.43	1.04	27.51	MODRSS		40.44		MODTES	57.00	CR		84.0		27M0G7W		4T	P	
SOM	SOM31201	37.80	45.17	6.61	3.37	1.68	62.04	MODRSS		36.92		MODTES	57.00	CL		83.0		27M0G7W		4Q	P	
SOM	SOM31202	37.80	45.17	6.61	3.37	1.68	62.04	MODRSS		36.92		MODTES	57.00	CR		83.0		27M0G7W		4Q	P	
TGO	TGO22601	–30.00	0.68	8.57	1.13	0.60	108.43	MODRSS		46.14		MODTES	57.00	CL		82.0		27M0G7W		4E	P	
TGO	TGO22602	–30.00	0.68	8.57	1.13	0.60	108.43	MODRSS		46.14		MODTES	57.00	CR		82.0		27M0G7W		4E	P	
USA	USAC_101	140.00	177.50	16.35				CB_RSS_USAC		44.06		MODTES	57.00	CL		87.0		27M0G7W		4A	P	
USA	USAC_102	140.00	177.50	16.35				CB_RSS_USAC		44.06		MODTES	57.00	CR		87.0		27M0G7W		4A	P	
YEM	YEM__101	11.00	48.29	14.53				CB_RSS_YEMA		47.78		MODTES	57.00	CR		82.0		27M0G7W		4O	P	
YEM	YEM__102	11.00	48.29	14.53				CB_RSS_YEMA		47.78		MODTES	57.00	CL		82.0		27M0G7W		4O	P	

TABLE 3A2

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

1	2	3	4		5			6	7	8		9		10		11	12	13	14	15	16	17
Admin. symbol	Beam identification	Orbital position	Boresight		Space station antenna characteristics			Space station antenna code	Shaped beam	Space station antenna gain		Earth station antenna		Polarization		e.i.r.p.	Power control	Designation of emission	Identity of the space station	Group code	Status	Remarks
			Long.	Lat.	Major axis	Minor axis	Orien-tation			Co-polar	Cross-polar	Code	Gain	Type	Angle							
AFG	AFG24501	50.00	67.00	34.30	1.89	1.19	18.00	MODRSS		40.93		MODTES	57.00	CL		84.0		27M0G7W		7I	P	
AFG	AFG24502	50.00	67.00	34.30	1.89	1.19	18.00	MODRSS		40.93		MODTES	57.00	CR		84.0		27M0G7W		7I	P	
AGL	AGL29500	–24.80	16.43	–12.37	2.66	1.75	77.43	MODRSS		37.77		MODTES	57.00	CR		84.0		27M0G7W			P	
ALB	ALB29600	62.00	19.50	41.37	0.60	0.60	69.35	MODRSS		48.88		MODTES	57.00	CL		82.6		27M0G7W			P	
ALG	ALG25152	–24.80	1.50	27.60	3.65	2.94	135.00	MODRSS		34.14		MODTES	57.00	CL		84.0		27M0G7W			P	
AND	AND34100	–37.00	1.60	42.50	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		83.0		27M0G7W			P	
ARM	ARM06400	22.80	44.99	39.95	0.73	0.60	148.17	MODRSS		48.02		MODTES	57.00	CR		84.0		27M0G7W			P	
ARS	ARS00375	17.00	44.60	23.40	4.21	2.48	145.00	MODRSS		34.26		MODTES	57.00	CL		84.0		27M0G7W		54	P	
ARS	ARS34000	17.00	44.60	23.40	4.21	2.48	145.00	MODRSS		34.28		MODTES	57.00	CL		84.0		27M0G7W		54	P	
AUS	AUS00400	152.00	135.00	–24.20	7.19	5.20	140.00	MODRSS		28.71		MODTES	57.00	CL		87.0		27M0G7W		30	P	
AUS	AUS00401	152.00	96.83	–12.19	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		30	P	
AUS	AUS00402	152.00	105.69	–10.45	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		30	P	
AUS	AUS00403	152.00	110.52	–66.28	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		30	P	
AUS	AUS00404	152.00	158.94	–54.50	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		30	P	
AUS	AUS00405	152.00	159.06	–31.52	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		30	P	
AUS	AUS00406	152.00	167.93	–29.02	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		30	P	
AUS	AUS0040A	152.00	135.36	–23.95	6.89	4.83	141.15	R123FR		29.23		MODTES	57.00	CL		87.0		27M0G7W		30	P	
AUS	AUS00500	152.00	135.00	–24.20	7.19	5.20	140.00	MODRSS		28.71		MODTES	57.00	CR		87.0		27M0G7W		41	P	
AUS	AUS00501	152.00	96.83	–12.19	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		41	P	
AUS	AUS00502	152.00	105.69	–10.45	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		41	P	
AUS	AUS00503	152.00	110.52	–66.28	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		41	P	
AUS	AUS00504	152.00	158.94	–54.50	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		41	P	
AUS	AUS00505	152.00	159.06	–31.52	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		41	P	
AUS	AUS00506	152.00	167.93	–29.02	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		41	P	

1	2	3	4		5			6	7	8		9		10		11	12	13	14	15	16	17
Admin. symbol	Beam identification	Orbital position	Boresight		Space station antenna characteristics			Space station antenna code	Shaped beam	Space station antenna gain		Earth station antenna		Polarization		e.i.r.p.	Power control	Designation of emission	Identity of the space station	Group code	Status	Remarks
			Long.	Lat.	Major axis	Minor axis	Orien-tation			Co-polar	Cross-polar	Code	Gain	Type	Angle							
AUS	AUS00600	152.00	135.50	–24.20	7.19	5.20	140.00	MODRSS		28.71		MODTES	57.00	CR		87.0		27M0G7W		42	P	
AUS	AUS00601	152.00	96.83	–12.19	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		42	P	
AUS	AUS00602	152.00	105.69	–10.45	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		42	P	
AUS	AUS00603	152.00	110.52	–66.28	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		42	P	
AUS	AUS00604	152.00	158.94	–54.50	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		42	P	
AUS	AUS00605	152.00	159.06	–31.52	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		42	P	
AUS	AUS00606	152.00	167.93	–29.02	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		42	P	
AUS	AUS00700	164.00	136.00	–23.90	7.26	4.48	132.00	MODRSS		29.32		MODTES	57.00	CR		87.0		27M0G7W		31	P	
AUS	AUS00701	164.00	96.83	–12.19	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		31	P	
AUS	AUS00702	164.00	105.69	–10.45	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		31	P	
AUS	AUS00703	164.00	110.52	–66.28	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		31	P	
AUS	AUS00704	164.00	158.94	–54.50	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		31	P	
AUS	AUS00705	164.00	159.06	–31.52	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		31	P	
AUS	AUS00706	164.00	167.93	–29.02	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		31	P	
AUS	AUS0070A	164.00	136.62	–24.16	6.82	4.20	134.19	R123FR		29.87		MODTES	57.00	CR		87.0		27M0G7W		31	P	
AUS	AUS00800	164.00	136.00	–23.90	7.26	4.48	132.00	MODRSS		29.32		MODTES	57.00	CL		87.0		27M0G7W		44	P	
AUS	AUS00801	164.00	96.83	–12.19	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		44	P	
AUS	AUS00802	164.00	105.69	–10.45	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		44	P	
AUS	AUS00803	164.00	110.52	–66.28	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		44	P	
AUS	AUS00804	164.00	158.94	–54.50	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		44	P	
AUS	AUS00805	164.00	159.06	–31.52	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		44	P	
AUS	AUS00806	164.00	167.93	–29.02	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		44	P	
AUS	AUS00900	164.00	136.00	–23.90	7.26	4.48	132.00	MODRSS		29.32		MODTES	57.00	CR		87.0		27M0G7W		32	P	
AUS	AUS00901	164.00	96.83	–12.19	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		32	P	
AUS	AUS00902	164.00	105.69	–10.45	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		32	P	
AUS	AUS00903	164.00	110.52	–66.28	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		32	P	
AUS	AUS00904	164.00	158.94	–54.50	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		32	P	

1	2	3	4		5			6	7	8		9		10		11	12	13	14	15	16	17
Admin. symbol	Beam identification	Orbital position	Boresight		Space station antenna characteristics			Space station antenna code	Shaped beam	Space station antenna gain		Earth station antenna		Polarization		e.i.r.p.	Power control	Designation of emission	Identity of the space station	Group code	Status	Remarks
			Long.	Lat.	Major axis	Minor axis	Orien-tation			Co-polar	Cross-polar	Code	Gain	Type	Angle							
AUS	AUS00905	164.00	159.06	–31.52	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		32	P	
AUS	AUS00906	164.00	167.93	–29.02	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		32	P	
AUS	AUS0090A	164.00	136.62	–24.16	6.82	4.20	134.19	R123FR		29.87		MODTES	57.00	CR		87.0		27M0G7W		32	P	
AUS	AUSA0000	152.00	135.36	–23.95	6.89	4.83	141.15	R123FR		29.23		MODTES	57.00	CL		87.0		27M0G7W		40	P	
AUS	AUSA0001	152.00	96.83	–12.19	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		40	P	
AUS	AUSA0002	152.00	105.69	–10.45	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		40	P	
AUS	AUSA0003	152.00	110.52	–66.28	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		40	P	
AUS	AUSA0004	152.00	158.94	–54.50	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		40	P	
AUS	AUSA0005	152.00	159.06	–31.52	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		40	P	
AUS	AUSA0006	152.00	167.93	–29.02	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		40	P	
AUS	AUSB0000	164.00	136.62	–24.16	6.82	4.20	134.19	R123FR		29.87		MODTES	57.00	CL		87.0		27M0G7W		43	P	
AUS	AUSB0001	164.00	96.83	–12.19	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		43	P	
AUS	AUSB0002	164.00	105.69	–10.45	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		43	P	
AUS	AUSB0003	164.00	110.52	–66.28	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		43	P	
AUS	AUSB0004	164.00	158.94	–54.50	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		43	P	
AUS	AUSB0005	164.00	159.06	–31.52	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		43	P	
AUS	AUSB0006	164.00	167.93	–29.02	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		43	P	
AUT	AUT01600	–18.80	10.31	49.47	1.82	0.92	151.78	MODRSS		42.19		MODTES	57.00	CR		84.0		27M0G7W			P	
AZE	AZE06400	23.20	47.47	40.14	0.93	0.60	158.14	MODRSS		46.98		MODTES	57.00	CL		84.0		27M0G7W			P	
BDI	BDI27000	11.00	29.90	–3.10	0.71	0.60	80.00	MODRSS		48.15		MODTES	57.00	CL		81.0		27M0G7W			P	
BEL	BEL01800	38.20	5.12	51.96	1.00	1.00	0.00	MODRSS		44.44		MODTES	57.00	CR		85.5		27M0G7W			P	
BEN	BEN23300	–19.20	2.20	9.50	1.44	0.68	97.00	MODRSS		44.54		MODTES	57.00	CL		84.0		27M0G7W			P	
BFA	BFA10700	–30.00	–1.50	12.20	1.45	1.14	29.00	MODRSS		42.26		MODTES	57.00	CL		84.0		27M0G7W			P	
BGD	BGD22000	74.00	90.30	23.60	1.46	0.84	135.00	MODRSS		43.56		MODTES	57.00	CR		84.0		27M0G7W			P	
BHR	BHR25500	34.00	50.50	26.10	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		83.0		27M0G7W			P	
BIH	BIH14800	56.00	18.22	43.97	0.60	0.60	90.00	MODRSS		48.88		MODTES	57.00	CR		84.0		27M0G7W			P	
BLR	BLR06200	37.80	28.04	53.18	1.17	0.60	9.68	MODRSS		45.96		MODTES	57.00	CL		84.0		27M0G7W			P	

1	2	3	4		5			6	7	8		9		10		11	12	13	14	15	16	17
Admin. symbol	Beam identification	Orbital position	Boresight		Space station antenna characteristics			Space station antenna code	Shaped beam	Space station antenna gain		Earth station antenna		Polarization		e.i.r.p.	Power control	Designation of emission	Identity of the space station	Group code	Status	Remarks
			Long.	Lat.	Major axis	Minor axis	Orien-tation			Co-polar	Cross-polar	Code	Gain	Type	Angle							
BOT	BOT29700	–0.80	23.30	–22.20	2.13	1.50	36.00	MODRSS		39.40		MODTES	57.00	CL		84.0		27M0G7W			P	
BRM	BRM29800	104.00	96.97	18.68	3.33	1.66	91.63	MODRSS		37.02		MODTES	57.00	CR		84.0		27M0G7W			P	
BRU	BRU3300A	74.00	114.70	4.40	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		84.0		27M0G7W			P	
BTN	BTN03100	86.00	90.44	27.05	0.72	0.60	175.47	MODRSS		48.11		MODTES	57.00	CR		84.0		27M0G7W			P	
BUL	BUL02000	–1.20	25.00	43.00	1.04	0.60	165.00	MODRSS		46.50		MODTES	57.00	CL		83.0		27M0G7W			P	
CAF	CAF25800	–13.20	21.00	6.30	2.25	1.68	31.00	MODRSS		38.67		MODTES	57.00	CR		84.0		27M0G7W			P	
CBG	CBG29900	86.00	104.89	12.79	1.12	0.94	32.89	MODRSS		44.22		MODTES	57.00	CR		84.0		27M0G7W			P	
CHN	CHN15400	62.00	101.90	33.50	5.10	2.80	143.00	MODRSS		32.90		MODTES	57.00	CR		84.0		27M0G7W		45	P	
CHN	CHN15500	62.00	101.90	33.50	5.10	2.80	143.00	MODRSS		32.90		MODTES	57.00	CL		84.0		27M0G7W		45	P	
CHN	CHN15800	134.00	113.21	34.27	6.40	3.16	10.74	MODRSS		31.39		MODTES	57.00	CL		84.0		27M0G7W		46	P	
CHN	CHN15900	134.00	113.21	34.27	6.40	3.16	10.74	MODRSS		31.39		MODTES	57.00	CR		84.0		27M0G7W		46	P	
CHN	CHN16000	92.20	108.10	33.70	5.00	4.00	148.00	MODRSS		31.44		MODTES	57.00	CR		84.0		27M0G7W		47	P	
CHN	CHN16100	92.20	108.10	33.70	5.00	4.00	148.00	MODRSS		31.44		MODTES	57.00	CL		84.0		27M0G7W		47	P	
CHN	CHN20000	122.00	113.55	22.20	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		84.0		27M0G7W			P	
CLN	CLN21900	50.00	80.60	7.70	1.18	0.60	106.00	MODRSS		45.95		MODTES	57.00	CL		84.0		27M0G7W			P	
COD	COD__100	–19.20	21.85	–3.40				CB_RSS_CODA		38.36		MODTES	57.00	CL		84.0		27M0G7W			P	
COG	COG23500	–13.20	14.60	–0.70	2.02	1.18	59.00	MODRSS		40.67		MODTES	57.00	CR		84.0		27M0G7W			P	
COM	COM20700	29.00	44.10	–12.10	0.76	0.60	149.00	MODRSS		47.86		MODTES	57.00	CR		84.0		27M0G7W			P	
CPV	CPV30100	–33.50	–24.12	16.09	0.77	0.63	94.46	MODRSS		47.56		MODTES	57.00	CL		84.0		27M0G7W			P	5, 6
CTI	CTI23700	–24.80	–5.66	7.39	1.45	1.29	126.59	MODRSS		41.73		MODTES	57.00	CR		84.0		27M0G7W			P	
CVA	CVA08300	–1.20	13.02	42.09	0.75	0.66	20.53	MODRSS		47.48		MODTES	57.00	CR		84.0		27M0G7W			P	
CVA	CVA08500	–1.20	13.02	42.09	0.75	0.66	20.53	MODRSS		47.48		MODTES	57.00	CR		84.0		27M0G7W			P	
CYP	CYP08600	–1.20	33.45	35.12	0.60	0.60	90.00	MODRSS		48.88		MODTES	57.00	CL		84.0		27M0G7W			P	
CZE	CZE14401	–12.80	16.77	46.78	1.71	0.89	149.15	MODRSS		42.64		MODTES	57.00	CR		84.0		27M0G7W			P	
CZE	CZE14402	–12.80	16.77	46.78	1.71	0.89	149.15	MODRSS		42.64		MODTES	57.00	CL		84.0		27M0G7W			P	
CZE	CZE14403	–12.80	16.77	46.78	1.71	0.89	149.15	MODRSS		42.64		MODTES	57.00	CL		84.0		27M0G7W		37	P	
D	D 08700	–18.80	10.31	49.47	1.82	0.92	151.78	MODRSS		42.19		MODTES	57.00	CR		84.0		27M0G7W			P	

1	2	3	4		5			6	7	8		9		10		11	12	13	14	15	16	17
Admin. symbol	Beam identification	Orbital position	Boresight		Space station antenna characteristics			Space station antenna code	Shaped beam	Space station antenna gain		Earth station antenna		Polarization		e.i.r.p.	Power control	Designation of emission	Identity of the space station	Group code	Status	Remarks
			Long.	Lat.	Major axis	Minor axis	Orien-tation			Co-polar	Cross-polar	Code	Gain	Type	Angle							
DJI	DJI09900	16.80	42.68	11.68	0.60	0.60	90.00	MODRSS		48.88		MODTES	57.00	CL		84.0		27M0G7W			P	
DNK	DNK__100	–25.20	5.28	61.83				CB_RSS_DNKA		48.88		MODTES	57.00	CL		79.5		27M0G7W			P	
DNK	DNK09000	–33.50	14.34	61.72	1.83	0.60	151.50	MODRSS		44.05		MODTES	57.00	CR		84.0		27M0G7W			P	
DNK	DNK09100	–33.50	–14.94	63.79	1.52	0.60	168.57	MODRSS		44.86		MODTES	57.00	CR		84.0		27M0G7W			P	
E	E____100	–30.00	–9.40	34.15				CB_RSS_E__A		44.79		MODTES	57.00	CR		84.0		27M0G7W		01	P	6
E	HISP27D4	–30.00	–3.10	39.90					ECO	43.00	18.70	R13TES	55.00	CR		82.5		27M0G7W–	HISPASAT-1	01	PE	
E	HISP27D6	–30.00	–3.10	39.90					ECO	43.00	18.70	R13TES	58.50	CR		83.5		27M0G7W–	HISPASAT-1	01	PE	
E	HISP33D4	–30.00	–3.10	39.90					ECO	43.00	18.70	MODTES	55.00	CR		82.5		33M0G7W–	HISPASAT-1	01	PE	
E	HISP33D6	–30.00	–3.10	39.90					ECO	43.00	18.70	MODTES	58.50	CR		83.5		33M0G7W–	HISPASAT-1	01	PE	
E	HISPASA4	–30.00	–3.10	39.90					ECO	43.00	18.70	R13TES	55.00	CR		82.5		27M0F8W	HISPASAT-1	01	PE	
E	HISPASA6	–30.00	–3.10	39.90					ECO	43.00	18.70	R13TES	58.50	CR		83.5		27M0F8W	HISPASAT-1	01	PE	
EGY	EGY02600	–7.00	29.70	26.80	2.33	1.72	136.00	MODRSS		38.42		MODTES	57.00	CR		84.0		27M0G7W		12	P	
ERI	ERI09200	22.80	39.41	14.98	1.67	0.95	145.49	MODRSS		42.44		MODTES	57.00	CL		84.0		27M0G7W			P	
EST	EST06100	44.50	25.40	59.18	0.67	0.60	5.99	MODRSS		48.42		MODTES	57.00	CR		84.0		27M0G7W			P	
F	F 09300	–7.00	3.30	45.37	2.18	1.20	156.36	MODRSS		40.27		MODTES	57.00	CR		84.0		27M0G7W		21	P	
F	F____100	–7.00	29.16	13.43				CB_RSS_F__A		48.88		MODTES	57.00	CL		84.0		27M0G7W		12	P	
F	F____200	140.00	174.50	–17.30				CB_RSS_F__B		45.80		MODTES	57.00	CL		84.0		27M0G7W		7F	P	
F	F____300	140.00	174.65	–17.65				CB_RSS_F__C		47.97		MODTES	57.00	CR		84.0		27M0G7W		7F	P	
F	OCE10100	–160.00	–145.00	–16.30	4.34	3.54	4.00	MODRSS		32.58		MODTES	57.00	CL		84.0		27M0G7W			P	
FIN	FIN10300	22.80	17.61	61.54	2.18	0.90	11.59	MODRSS		41.53		MODTES	57.00	CL		84.0		27M0G7W		52	P	
FIN	FIN10400	22.80	17.61	61.54	2.18	0.90	11.59	MODRSS		41.53		MODTES	57.00	CL		84.0		27M0G7W		52	P	
FJI	FJI19300	–178.00	179.62	–17.87	1.16	0.92	155.22	MODRSS		44.16		MODTES	57.00	CR		84.0		27M0G7W			P	
FSM	FSM00000	158.00	151.90	5.48	5.15	1.57	167.00	MODRSS		35.38		MODTES	57.00	CR		84.0		27M0G7W			P	
G	G 02700	–33.50	–3.50	53.80	1.84	0.72	142.00	MODRSS		43.23		MODTES	57.00	CR		84.0		27M0G7W			P	5, 6
GAB	GAB26000	–13.20	11.80	–0.60	1.43	1.12	64.00	MODRSS		42.40		MODTES	57.00	CL		84.0		27M0G7W			P	
GEO	GEO06400	23.20	43.35	42.27	1.11	0.60	161.21	MODRSS		46.23		MODTES	57.00	CL		84.0		27M0G7W			P	
GMB	GMB30200	–37.20	–15.10	13.40	0.79	0.60	4.00	MODRSS		47.69		MODTES	57.00	CL		83.0		27M0G7W			P	

1	2	3	4		5			6	7	8		9		10		11	12	13	14	15	16	17
Admin. symbol	Beam identification	Orbital position	Boresight		Space station antenna characteristics			Space station antenna code	Shaped beam	Space station antenna gain		Earth station antenna		Polarization		e.i.r.p.	Power control	Designation of emission	Identity of the space station	Group code	Status	Remarks
			Long.	Lat.	Major axis	Minor axis	Orien-tation			Co-polar	Cross-polar	Code	Gain	Type	Angle							
GNB	GNB30400	–30.00	–15.00	12.00	0.90	0.60	172.00	MODRSS		47.12		MODTES	57.00	CL		84.0		27M0G7W			P	
GNE	GNE30300	–18.80	10.30	1.50	0.68	0.60	10.00	MODRSS		48.34		MODTES	57.00	CR		84.0		27M0G7W			P	
GRC	GRC10500	–1.20	24.52	38.11	1.70	0.95	152.55	MODRSS		42.37		MODTES	57.00	CR		84.0		27M0G7W			P	
GUI	GUI19200	–37.00	–11.00	10.20	1.58	1.04	147.00	MODRSS		42.29		MODTES	57.00	CR		85.0		27M0G7W			P	
HNG	HNG10601	–12.80	16.77	46.78	1.71	0.89	149.15	MODRSS		42.64		MODTES	57.00	CR		84.0		27M0G7W			P	
HNG	HNG10602	–12.80	16.77	46.78	1.71	0.89	149.15	MODRSS		42.64		MODTES	57.00	CL		84.0		27M0G7W			P	
HNG	HNG10603	–12.80	16.77	46.78	1.71	0.89	149.15	MODRSS		42.64		MODTES	57.00	CL		84.0		27M0G7W		37	P	
HOL	HOL21300	38.20	5.12	51.96	1.00	1.00	0.00	MODRSS		44.44		MODTES	57.00	CL		85.5		27M0G7W			P	
HRV	HRV14801	–12.80	16.77	46.78	1.71	0.89	149.15	MODRSS		42.64		MODTES	57.00	CR		84.0		27M0G7W			P	
HRV	HRV14802	–12.80	16.77	46.78	1.71	0.89	149.15	MODRSS		42.64		MODTES	57.00	CL		84.0		27M0G7W			P	
HRV	HRV14803	–12.80	16.77	46.78	1.71	0.89	149.15	MODRSS		42.64		MODTES	57.00	CL		84.0		27M0G7W		37	P	
I	I 08200	9.00	12.67	40.74	1.99	1.35	144.20	MODRSS		40.14		MODTES	57.00	CR		84.0		27M0G7W			P	
IND	IND03700	68.00	93.00	25.50	1.46	1.13	40.00	MODRSS		42.27		MODTES	57.00	CL		84.0		27M0G7W			P	
IND	IND04701	68.00	93.30	11.10	1.92	0.60	96.00	MODRSS		43.83		MODTES	57.00	CR		84.0		27M0G7W		7E	P	
IND	IND04702	68.00	93.30	11.10	1.92	0.60	96.00	MODRSS		43.83		MODTES	57.00	CL		84.0		27M0G7W		7E	P	
IND	INDA_101	55.80	76.16	14.72				CB_RSS_INDA		45.66		MODTES	57.00	CR		84.0		27M0G7W		7G	P	
IND	INDA_102	55.80	76.16	14.72				CB_RSS_INDA		45.66		MODTES	57.00	CL		84.0		27M0G7W		7G	P	
IND	INDB_101	55.80	83.67	23.73				CB_RSS_INDB		43.13		MODTES	57.00	CR		84.0		27M0G7W		7H	P	
IND	INDB_102	55.80	83.67	23.73				CB_RSS_INDB		43.13		MODTES	57.00	CL		84.0		27M0G7W		7H	P	
IND	INDD_100	68.00	74.37	29.16				CB_RSS_INDD		41.79		MODTES	57.00	CR		84.0		27M0G7W			P	
INS	INS02800	80.20	113.60	–1.40	6.73	3.33	160.00	MODRSS		30.94		MODTES	57.00	CR		84.0		27M0G7W			P	
INS	INS03501	104.00	115.20	–1.70	9.14	3.43	170.00	MODRSS		29.48		MODTES	57.00	CL		84.0		27M0G7W		7D	P	
INS	INS03502	104.00	115.20	–1.70	9.14	3.43	170.00	MODRSS		29.48		MODTES	57.00	CR		84.0		27M0G7W		7D	P	
IRL	IRL21100	–37.20	–8.25	53.22	0.72	0.60	157.56	MODRSS		48.08		MODTES	57.00	CR		84.0		27M0G7W			P	
IRN	IRN10900	34.00	54.20	32.40	3.82	1.82	149.00	MODRSS		36.03		MODTES	57.00	CL		83.0		27M0G7W			P	
ISL	ISL04900	–33.50	–19.00	64.90	1.00	0.60	177.00	MODRSS		46.67		MODTES	57.00	CL		83.0		27M0G7W			P	
ISL	ISL05000	–33.50	–14.94	63.79	1.52	0.60	168.57	MODRSS		44.86		MODTES	57.00	CR		84.0		27M0G7W			P	

1	2	3	4		5			6	7	8		9		10		11	12	13	14	15	16	17
Admin. symbol	Beam identification	Orbital position	Boresight		Space station antenna characteristics			Space station antenna code	Shaped beam	Space station antenna gain		Earth station antenna		Polarization		e.i.r.p.	Power control	Designation of emission	Identity of the space station	Group code	Status	Remarks
			Long.	Lat.	Major axis	Minor axis	Orien-tation			Co-polar	Cross-polar	Code	Gain	Type	Angle							
ISR	ISR11000	–4.00	34.95	31.32	0.73	0.60	110.02	MODRSS		48.03		MODTES	57.00	CR		84.0		27M0G7W			P	
J	000BS–3N	109.85	134.50	31.50	3.52	3.30	68.00	MODRSS		33.80		MODTES	57.00	CR		87.0		27M0F8W	BS-3N	02	PE	
J	J 10985	109.85	134.50	31.50	3.52	3.30	68.00	MODRSS		33.80		MODTES	57.00	CR		87.0		34M5G7W		02	P	
J	J 11100	110.00	134.50	31.50	3.52	3.30	68.00	MODRSS		33.80		MODTES	57.00	CR		87.0		34M5G7W		02	P	
J	J 1110E	110.00	134.50	31.50	3.52	3.30	68.00	MODRSS		33.80		MODTES	57.00	CR		87.0		27M0F8W	BS-3M	02	PE	
JOR	JOR22400	11.00	37.55	34.02	1.47	0.91	73.16	MODRSS		43.19		MODTES	57.00	CL		85.0		27M0G7W			P	
KAZ	KAZ06600	56.40	65.73	46.40	4.58	1.76	177.45	MODRSS		35.38		MODTES	57.00	CL		84.0		27M0G7W			P	
KEN	KEN24900	–0.80	37.99	0.88	2.06	1.30	99.68	MODRSS		40.17		MODTES	57.00	CR		84.0		27M0G7W			P	
KGZ	KGZ07000	50.00	73.91	41.32	1.47	0.64	5.05	MODRSS		44.75		MODTES	57.00	CR		84.0		27M0G7W			P	
KIR	KIR__100	176.00	–170.31	–0.56				CB_RSS_KIRA		42.60		MODTES	57.00	CL		84.0		27M0G7W			P	
KOR	KOR11201	116.00	127.50	36.00	1.24	1.02	168.00	MODRSS		43.43		MODTES	57.00	CL		89.0		27M0G7W		03	P	
KOR	KOR11202	116.00	127.50	36.00	1.24	1.02	168.00	MODRSS		43.43		MODTES	57.00	CR		89.0		27M0G7W		03	P	
KRE	KRE28600	140.00	128.45	40.32	1.63	0.68	18.89	MODRSS		44.00		MODTES	57.00	CL		87.0		27M0G7W			P	
KWT	KWT11300	11.00	47.48	29.12	0.60	0.60	90.00	MODRSS		48.88		MODTES	57.00	CR		83.0		27M0G7W			P	
LAO	LAO28400	122.20	103.71	18.17	1.87	1.03	123.99	MODRSS		42.18		MODTES	57.00	CR		84.0		33M0G7W			P	
LBN	LBN27900	11.00	37.55	34.02	1.47	0.91	73.16	MODRSS		43.19		MODTES	57.00	CR		84.0		27M0G7W			P	
LBR	LBR24400	–33.50	–9.30	6.60	1.22	0.70	133.00	MODRSS		45.13		MODTES	57.00	CR		84.0		27M0G7W			P	5, 6
LBY	LBY28021	–24.80	17.50	26.30	3.68	1.84	130.00	MODRSS		36.14		MODTES	57.00	CL		84.0		27M0G7W			P	
LIE	LIE25300	–18.80	10.31	49.47	1.82	0.92	151.78	MODRSS		42.19		MODTES	57.00	CL		84.0		27M0G7W			P	
LSO	LSO30500	4.80	27.80	–29.80	0.66	0.60	36.00	MODRSS		48.47		MODTES	57.00	CL		84.0		27M0G7W			P	
LTU	LTU06100	23.20	24.52	56.11				CB_RSS_LTUA		47.92		MODTES	57.00	CR		84.0		27M0G7W			P	
LUX	LUX11400	28.20	5.21	49.20	0.60	0.60	90.00	MODRSS		48.88		MODTES	57.00	CL		84.0		27M0G7W		09	P	
LVA	LVA06100	23.20	24.52	56.11				CB_RSS_LVAA		47.92		MODTES	57.00	CR		84.0		27M0G7W			P	
MAU	MAU__100	29.00	58.61	–15.88				CB_RSS_MAUA		41.42		MODTES	57.00	CL		84.0		27M0G7W			P	
MCO	MCO11600	34.20	7.40	43.70	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		81.0		27M0G7W			P	
MDA	MDA06300	50.00	28.45	46.99	0.60	0.60	90.00	MODRSS		48.88		MODTES	57.00	CR		84.0		27M0G7W			P	
MDG	MDG23600	29.00	46.20	–18.60	2.57	0.80	67.00	MODRSS		41.32		MODTES	57.00	CL		84.0		27M0G7W			P	

1	2	3	4		5			6	7	8		9		10		11	12	13	14	15	16	17
Admin. symbol	Beam identification	Orbital position	Boresight		Space station antenna characteristics			Space station antenna code	Shaped beam	Space station antenna gain		Earth station antenna		Polarization		e.i.r.p.	Power control	Designation of emission	Identity of the space station	Group code	Status	Remarks
			Long.	Lat.	Major axis	Minor axis	Orien-tation			Co-polar	Cross-polar	Code	Gain	Type	Angle							
MHL	MHL00000	146.00	167.64	9.83	2.07	0.90	157.42	MODRSS		41.75		MODTES	57.00	CR		84.0		27M0G7W			P	
MKD	MKD14800	22.80	21.53	41.50	0.60	0.60	90.00	MODRSS		48.88		MODTES	57.00	CL		84.0		27M0G7W			P	
MLA	MLA__100	91.50	108.07	3.92				CB_RSS_MLAA		41.75		MODTES	57.00	CR		84.0		27M0G7W			P	
MLD	MLD30600	50.00	73.10	6.00	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		84.0		27M0G7W			P	
MLI	MLI__100	–19.20	–4.80	16.10				CB_RSS_MLIA		41.11		MODTES	57.00	CR		87.0		27M0G7W			P	
MLT	MLT14700	22.80	14.40	35.90	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		84.0		27M0G7W			P	
MNG	MNG24800	74.00	101.95	46.79	3.32	1.04	169.27	MODRSS		39.07		MODTES	59.92	CL		86.9		27M0G7W			P	
MRC	MRC20900	–25.20	–8.90	28.90	3.96	1.55	50.00	MODRSS		36.57		MODTES	57.00	CR		80.0		27M0G7W			P	
MTN	MTN__100	–36.80	–11.24	20.91				CB_RSS_MTNA		37.55		MODTES	57.00	CR		86.0		27M0G7W			P	
MWI	MWI30800	4.80	33.79	–13.25	1.56	0.70	92.69	MODRSS		44.10		MODTES	57.00	CR		84.0		27M0G7W			P	
NGR	NGR11500	–37.20	7.63	16.97	2.20	1.80	100.58	MODRSS		38.47		MODTES	57.00	CL		84.0		27M0G7W			P	
NOR	NOR12000	–0.80	16.70	61.58	1.84	0.95	177.31	MODRSS		42.02		MODTES	57.00	CR		84.0		27M0G7W		06	P	
NOR	NOR12100	–0.80	16.70	61.58	1.84	0.95	177.31	MODRSS		42.02		MODTES	57.00	CL		84.0		27M0G7W		06	P	
NRU	NRU30900	134.00	167.00	–0.50	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		84.0		27M0G7W			P	
NZL	NZL__100	158.00	–174.35	–24.30				CB_RSS_NZLA		48.88		MODTES	57.00	CL		84.0		27M0G7W			P	7
OMA	OMA12300	17.20	55.60	21.00	1.88	1.02	100.00	MODRSS		41.62		MODTES	57.00	CL		85.0		27M0G7W			P	
PHL	PHL28500	98.00	121.30	11.10	3.46	1.76	99.00	MODRSS		36.60		MODTES	57.00	CL		84.0		27M0G7W			P	
PLW	PLW00000	140.00	132.98	5.51	1.30	0.60	55.41	MODRSS		45.53		MODTES	57.00	CR		84.0		27M0G7W			P	
POL	POL13200	50.00	19.71	52.18	1.22	0.63	16.12	MODRSS		45.59		MODTES	57.00	CR		84.0		27M0G7W			P	
POR	POR__100	–37.00	–15.92	37.65				CB_RSS_PORA		47.17		MODTES	57.00	CR		84.0		27M0G7W			P	
PSE	YYY00001	–13.20	34.99	31.86	0.60	0.60	90.00	MODRSS		48.88		MODTES	57.00	CL		80.5		27M0G7W			P	8
QAT	QAT24700	20.00	51.59	25.35	0.60	0.60	90.00	MODRSS		48.88		MODTES	57.00	CL		84.0		27M0G7W			P	
ROU	ROU13600	50.00	25.12	45.75	1.17	0.73	9.52	MODRSS		45.15		MODTES	57.00	CL		84.0		27M0G7W			P	
RRW	RRW31000	11.00	30.00	–2.10	0.66	0.60	42.00	MODRSS		48.47		MODTES	57.00	CR		81.0		27M0G7W			P	
RUS	RSTREA11	36.00	38.00	53.00					COP	38.40	8.40	MODTES	57.00	CR		84.0		27M0F8W	RST-1	05	PE	
RUS	RSTREA12	36.00	38.00	53.00					COP	38.40	8.40	MODTES	57.00	CL		84.0		27M0F8W	RST-1	05	PE	
RUS	RSTRED11	36.00	38.00	53.00					COP	38.40	8.40	MODTES	57.00	CR		84.0		27M0G7W	RST-1	05	PE	

1	2	3	4		5			6	7	8		9		10		11	12	13	14	15	16	17
Admin. symbol	Beam identification	Orbital position	Boresight		Space station antenna characteristics			Space station antenna code	Shaped beam	Space station antenna gain		Earth station antenna		Polarization		e.i.r.p.	Power control	Designation of emission	Identity of the space station	Group code	Status	Remarks
			Long.	Lat.	Major axis	Minor axis	Orien-tation			Co-polar	Cross-polar	Code	Gain	Type	Angle							
RUS	RSTRED12	36.00	38.00	53.00					COP	38.40	8.40	MODTES	57.00	CL		84.0		27M0G7W	RST-1	05	PE	
RUS	RSTRSD11	36.00	38.00	53.00					COP	38.40	8.40	MODTES	57.00	CR		84.0		27M0G7W	RST-1	05	P	
RUS	RSTRSD12	36.00	38.00	53.00					COP	38.40	8.40	MODTES	57.00	CL		84.0		27M0G7W	RST-1	05	P	
RUS	RSTRSD21	56.00	65.00	63.00					COP	38.40	8.40	MODTES	57.00	CR		84.0		27M0G7W	RST-2	14	P	
RUS	RSTRSD22	56.00	65.00	63.00					COP	38.40	8.40	MODTES	57.00	CL		84.0		27M0G7W	RST-2	14	P	
RUS	RSTRSD31	86.00	97.00	62.00					COP	38.40	8.40	MODTES	57.00	CR		84.0		27M0G7W	RST-3	33	P	
RUS	RSTRSD32	86.00	97.00	62.00					COP	38.40	8.40	MODTES	57.00	CL		84.0		27M0G7W	RST-3	33	P	
RUS	RSTRSD51	140.00	158.00	56.00					COP	38.40	8.40	MODTES	57.00	CR		84.0		27M0G7W	RST-5	35	P	
RUS	RSTRSD52	140.00	158.00	56.00					COP	38.40	8.40	MODTES	57.00	CL		84.0		27M0G7W	RST-5	35	P	
RUS	RUS00401	110.00	118.22	51.52					COP	38.40	8.40	MODTES	57.00	CR		84.0		27M0G7W	RUS-4	34	P	
RUS	RUS00402	110.00	118.22	51.52					COP	38.40	8.40	MODTES	57.00	CL		84.0		27M0G7W	RUS-4	34	P	
S	S 13800	5.00	17.00	61.50	2.00	1.00	10.00	MODRSS		41.44		MODTES	57.00	CL		84.0		27M0G7W		04	P	
S	S 13900	5.00	17.00	61.50	2.00	1.00	10.00	MODRSS		41.44		MODTES	57.00	CL		84.0		27M0G7W		04	P	
SCG*	SCG14800	–7.00	20.50	43.98	0.91	0.60	145.16	MODRSS		47.07		MODTES	57.00	CL		84.0		27M0G7W			P	
SEY	SEY00000	42.50	51.86	–7.23	2.43	1.04	27.51	MODRSS		40.44		MODTES	57.00	CR		84.0		27M0G7W			P	
SLM	SLM00000	128.00	159.27	–8.40	1.35	1.08	118.59	MODRSS		42.81		MODTES	57.00	CL		84.0		27M0G7W			P	
SMO	SMO05700	–178.00	–171.70	–13.87	0.60	0.60	90.00	MODRSS		48.88		MODTES	57.00	CL		84.0		27M0G7W			P	
SMR	SMR31100	–36.80	12.50	43.90	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		83.0		27M0G7W			P	
SNG	SNG15100	88.00	103.86	1.42	0.92	0.72	175.12	MODRSS		46.25		MODTES	57.00	CL		84.0		27M0G7W			P	
SRL	SRL25900	–33.50	–11.80	8.60	0.78	0.68	114.00	MODRSS		47.20		MODTES	57.00	CR		84.0		27M0G7W			P	
STP	STP24100	–7.00	7.00	0.80	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		84.0		27M0G7W			P	
SUI	SUI14000	–18.80	10.31	49.47	1.82	0.92	151.78	MODRSS		42.19		MODTES	57.00	CL		84.0		27M0G7W			P	
SVK	SVK14401	–12.80	16.77	46.78	1.71	0.89	149.15	MODRSS		42.64		MODTES	57.00	CR		84.0		27M0G7W			P	
SVK	SVK14402	–12.80	16.77	46.78	1.71	0.89	149.15	MODRSS		42.64		MODTES	57.00	CL		84.0		27M0G7W			P	
SVK	SVK14403	–12.80	16.77	46.78	1.71	0.89	149.15	MODRSS		42.64		MODTES	57.00	CL		84.0		27M0G7W		37	P	
SVN	SVN14800	33.80	15.01	46.18	0.60	0.60	90.00	MODRSS		48.88		MODTES	57.00	CR		82.0		27M0G7W			P	
SWZ	SWZ31300	4.80	31.39	–26.44	0.60	0.60	90.00	MODRSS		48.88		MODTES	57.00	CR		82.0		27M0G7W			P	
SYR	SYR22900	11.00	37.55	34.02	1.47	0.91	73.16	MODRSS		43.19		MODTES	57.00	CL		84.0		27M0G7W		53	P	

1	2	3	4		5			6	7	8		9		10		11	12	13	14	15	16	17
Admin. symbol	Beam identification	Orbital position	Boresight		Space station antenna characteristics			Space station antenna code	Shaped beam	Space station antenna gain		Earth station antenna		Polarization		e.i.r.p.	Power control	Designation of emission	Identity of the space station	Group code	Status	Remarks
			Long.	Lat.	Major axis	Minor axis	Orien-tation			Co-polar	Cross-polar	Code	Gain	Type	Angle							
SYR	SYR33900	11.00	37.60	34.20	1.32	0.88	74.00	MODRSS		43.80		MODTES	57.00	CL		84.0		27M0G7W		53	P	
TCD	TCD14300	17.00	18.39	15.52	3.21	2.05	83.26	MODRSS		36.26		MODTES	57.00	CR		84.0		27M0G7W			P	
THA	THA14200	98.00	100.75	12.88	2.80	1.82	93.77	MODRSS		37.38		MODTES	57.00	CR		84.0		27M0G7W			P	
TJK	TJK06900	38.00	71.14	38.41	1.21	0.73	155.31	MODRSS		45.00		MODTES	57.00	CL		82.0		27M0G7W			P	
TKM	TKM06800	50.00	59.24	38.83	2.26	1.02	166.64	MODRSS		40.81		MODTES	57.00	CL		85.7		27M0G7W			P	
TMP	TMP00000	128.00	126.03	–8.72	0.66	0.60	13.92	MODRSS		48.50		MODTES	57.00	CR		84.0		27M0G7W			P	10
TON	TON21500	170.75	–175.23	–18.19	1.59	0.60	71.33	MODRSS		44.64		MODTES	57.00	CR		84.0		27M0G7W			P	
TUN	TUN15000	–25.20	9.50	33.50	1.88	0.72	135.00	MODRSS		43.13		MODTES	57.00	CR		84.0		27M0G7W		55	P	
TUN	TUN27200	–25.20	2.50	32.00	3.59	1.75	175.00	MODRSS		36.47		MODTES	57.00	CR		84.0		27M0G7W		55	P	
TUR	TUR14500	42.00	35.14	38.99	3.19	1.10	0.03	MODRSS		39.00		MODTES	57.00	CL		84.0		27M0G7W		36	P	
TUV	TUV00000	176.00	177.61	–7.11	0.94	0.60	137.58	MODRSS		46.93		MODTES	57.00	CR		84.0		27M0G7W			P	
TZA	TZA22500	11.00	34.60	–6.20	2.41	1.72	129.00	MODRSS		38.27		MODTES	57.00	CR		84.0		27M0G7W			P	
UAE	UAE27400	52.50	53.98	24.37	1.23	0.84	6.62	MODRSS		44.31		MODTES	57.00	CR		84.0		27M0G7W			P	
UGA	UGA05100	17.00	32.20	1.04	1.50	1.02	68.73	MODRSS		42.62		MODTES	57.00	CR		84.0		27M0G7W			P	
UKR	UKR06300	38.20	31.82	48.19	2.32	0.95	177.32	MODRSS		41.01		MODTES	57.00	CR		84.0		27M0G7W			P	
USA	GUM33101	122.00	155.56	13.21				CB_RSS_GUMA		43.61		MODTES	57.00	CR		87.0		27M0G7W		7C	P	
USA	GUM33102	122.00	155.56	13.21				CB_RSS_GUMA		43.61		MODTES	57.00	CL		87.0		27M0G7W		7C	P	
USA	MRA33200	121.80	155.56	13.21				CB_RSS_MRAA		43.61		MODTES	57.00	CR		91.0		27M0G7W			P	
USA	PLM33200	170.00	–145.55	19.50				CB_RSS_PLMA		39.35		MODTES	57.00	CL		87.0		27M0G7W			P	
USA	USAA_101	170.00	–145.55	19.50				CB_RSS_USAA		39.35		MODTES	57.00	CR		87.0		27M0G7W		7A	P	
USA	USAA_102	170.00	–145.55	19.50				CB_RSS_USAA		39.35		MODTES	57.00	CL		87.0		27M0G7W		7A	P	
UZB	UZB07100	33.80	63.80	41.21	2.56	0.89	159.91	MODRSS		40.84		MODTES	57.00	CR		82.0		27M0G7W			P	
VTN	VTN32500	107.00	106.84	14.21	3.43	1.76	109.43	MODRSS		36.64		MODTES	57.00	CR		84.0		27M0G7W			P	
VUT	VUT12801	140.00	168.00	–16.40	1.52	0.68	87.00	MODRSS		44.30		MODTES	57.00	CL		84.0		27M0G7W		7B	P	
VUT	VUT12802	140.00	168.00	–16.40	1.52	0.68	87.00	MODRSS		44.30		MODTES	57.00	CR		84.0		27M0G7W		7B	P	
ZMB	ZMB31400	–0.80	27.50	–13.10	2.38	1.48	39.00	MODRSS		38.98		MODTES	57.00	CR		84.0		27M0G7W			P	
ZWE	ZWE13500	–0.80	29.60	–18.80	1.46	1.36	37.00	MODRSS		41.47		MODTES	57.00	CL		85.0		27M0G7W			P	

* *Note by the Secretariat*: This designation replaces the former designation “YUG” which was used previously as a three-letter code for the Administration of Serbia and Montenegro.

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												
Orbital position	Admin. symbol	Beam Identification	Polarization type	Channel number												
				2	3	4	5	6	7	8	9	10	11	12	13	14
				Minimum equivalent protection margin												
–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	
–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	YEM__102	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					–0.1		–0.1		–0.1		–0.1		2.4
50.00	NPL	NPL12201	CR		38.2		3.9		1.2		1.2		1.2		1.2	
50.00	NPL	NPL12202	CL			4.6		1.2		1.2		1.2		1.2		3.9
55.80	IND	INDA_101	CR		25.7		24.7		24.7		24.7		24.7		24.7	

1	2	3	4	5												
Orbital position	**Admin. symbol**	**Beam Identification**	**Polarization type**	**Channel number**												
				2	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
				Minimum equivalent protection margin												
55.80	IND	INDA_102	CL			24.7		24.7		24.7		24.7		24.7		25.6
55.80	IND	INDA_102	CL			24.7		24.7		24.7		24.7		24.7		25.6
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 3B2

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)

1	2	3	4	5																																							
Orbital Position	Admin. symbol	Beam Identification	Polarization type	Channel number																																							
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
				Minimum equivalent protection margin																																							
–178.00	FJI	FJI19300	CR	3.3		3.3		3.3		3.3		3.3		3.3		3.3		3.3		3.3		3.3		3.3		3.3															
–178.00	SMO	SMO05700	CL	12.2		12.2		12.2		12.2		12.2		12.2		12.2		12.2		12.2		12.2		12.2		12.2															
–160.00	F	OCE10100	CL		999.9		999.9		999.9		999.9		999.9		999.9		999.9		999.9		999.9		999.9		999.9		999.9														
–37.20	GMB	GMB30200	CL																					1.3		3.2		3.2		3.2		3.2		3.2		3.2		3.2		3.2		3.2	
–37.20	IRL	IRL21100	CR																					9.2		10.2		10.2		10.2		10.2		10.3		10.2		10.2		10.3		10.3	
–37.20	NGR	NGR11500	CL	1.8		–0.4		–0.4		–0.4		–0.4		–0.4		–0.4		–0.4		–0.4		–0.4																					
–37.00	AND	AND34100	CL																						10.6		10.6		10.6		10.6		10.6		10.6		10.6		10.6		10.6		13.3
–37.00	GUI	GUI19200	CR		0.8		0.8		0.8		0.8		0.8		0.8		0.8		0.8		0.8		1.5																				
–37.00	POR	POR__100	CR	2.4		0.0		–0.1		0.0		–0.1		0.0		–0.1		0.0		–0.1		0.0																					
–36.80	MTN	MTN__100	CR																						0.3		0.3		0.3		0.3		0.3		0.3		0.3		0.3		0.3		2.0
–36.80	SMR	SMR31100	CL		10.6		10.6		10.6		10.6		10.6		10.6		10.6		10.6		10.6		12.0																				
–33.50	CPV	CPV30100	CL		14.3		14.3		14.3		14.3		14.3		14.3		14.3		14.3		14.3		11.6																				
–33.50	DNK	DNK09000	CR																												5.1						5.1						
–33.50	DNK	DNK09100	CR																																1.1				1.1				
–33.50	G	G 02700	CR		6.4		6.4		6.4		6.4		6.4		6.4		6.4		6.4		6.4		4.2																				
–33.50	ISL	ISL04900	CL																					1.5		–0.1		–0.1		1.8		7.5		2.8		1.8		1.8		2.8		14.1	
–33.50	ISL	ISL05000	CR																						1.1		1.1		1.1														
–33.50	LBR	LBR24400	CR	10.6		7.7		7.7		7.7		7.7		7.7		7.7		7.7		7.7		7.7																					
–33.50	SRL	SRL25900	CR																					9.7		11.8		11.8		11.4		13.1		13.7		11.4		11.4		13.7		17.1	
–30.00	BFA	BFA10700	CL																						12.0		12.0		12.0		12.0		12.0		12.0		12.0		12.0		12.0		14.9
–30.00	E	E___100	CR	7.9		7.6		7.6		7.6		7.6		7.6		7.6		7.6		7.6		7.6																					
–30.00	E	HISP27D4	CR	10.2				10.1				10.1				10.1				10.1																							
–30.00	E	HISP27D6	CR	11.2				11.1				11.1				11.1				11.1																							
–30.00	E	HISP33D4	CR	10.1				10.1				10.1				10.1				10.1																							
–30.00	E	HISP33D6	CR	11.1				11.1				11.1				11.1				11.1																							
–30.00	E	HISPASA4	CR	10.2				10.1				10.1				10.1				10.1																							

1	2	3	4	5																																							
Orbital Position	Admin. symbol	Beam Identification	Polarization type	Channel number																																							
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
				Minimum equivalent protection margin																																							
–30.00	E	HISPASA6	CR	11.2				11.1				11.1				11.1				11.1																							
–30.00	GNB	GNB30400	CL	15.6		16.9		15.2		16.9		15.2		16.9		15.2		16.9		15.2		16.9																					
–25.20	DNK	DNK__100	CL	1.2		–0.6		–0.6		–0.6		–0.6		–0.6		–0.6		–0.6		–0.6		–0.9																					
–25.20	MRC	MRC20900	CR		1.1		1.1		1.1		1.1		1.1		1.1		1.1		1.1		1.1		–1.1																				
–25.20	TUN	TUN15000	CR																						–0.4		–0.4		–0.4		–0.4		–0.4		–0.4		–0.4		–0.4		–0.4		–0.2
–25.20	TUN	TUN27200	CR																																		–1.2				–1.2		
–24.80	AGL	AGL29500	CR	9.2		6.8		6.8		6.8		6.8		6.8		6.8		6.8		6.8		6.8																					
–24.80	ALG	ALG25152	CL																						–1.0		–1.0		–1.0		–1.0		–1.0		–1.0		–1.1		–1.0		–1.1		0.0
–24.80	CTI	CTI23700	CR																					6.5		5.5		5.5		5.5		5.5		5.5		5.3		5.2		5.3		5.2	
–24.80	LBY	LBY28021	CL		–0.9		–0.9		–0.9		–0.9		–0.9		–0.9		–0.9		–0.9		–0.9		0.6																				
–19.20	BEN	BEN23300	CL																					4.4		9.4		9.4		9.4		9.4		9.4		9.4		9.4		9.4		9.4	
–19.20	COD	COD__100	CL	4.5		2.1		2.1		2.1		2.1		2.1		2.1		2.1		2.1		2.1																					
–19.20	MLI	MLI__100	CR		4.2		4.2		4.2		4.2		4.2		4.2		4.2		4.2		4.2		2.4																				
–18.80	AUT	AUT01600	CR																					–0.3		–0.2		–0.2		–0.2		–0.2		–0.2		–0.2		–0.2		–0.2		–0.2	
–18.80	D	D 08700	CR	2.5		–0.4		–0.4		–0.4		–0.4		–0.4		–0.4		–0.4		–0.4		–0.4																					
–18.80	GNE	GNE30300	CR																						13.0		13.0		13.0		13.0		13.0		13.0		13.0		13.0		13.0		14.7
–18.80	LIE	LIE25300	CL																						0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		2.5
–18.80	SUI	SUI14000	CL		0.3		0.3		0.3		0.3		0.3		0.3		0.3		0.3		0.3		0.3																				
–13.20	CAF	CAF25800	CR		1.1		–0.4		1.1		–0.4		1.1		–0.4		1.1		–0.4		1.1		1.0																				
–13.20	COG	COG23500	CR																						9.8		9.8		9.8		9.8		9.8		9.8		9.8		9.8		9.8		11.7
–13.20	GAB	GAB26000	CL	4.9		1.7		1.7		1.7		1.7		1.7		1.7		1.7		1.7		1.7																					
–13.20	PSE	YYY00001	CL																					8.6		10.1		10.1		10.1		10.1		10.1		10.1		10.1		10.1		10.1	
–12.80	CZE	CZE14401	CR	2.8								0.8								0.8								0.0								0.0							
–12.80	CZE	CZE14402	CL														0.1														–0.7								–0.7				
–12.80	CZE	CZE14403	CL		0.1*																				–0.7*		–0.7*																
–12.80	HNG	HNG10601	CR			0.8								0.8								0.8								0.0								0.0					
–12.80	HNG	HNG10602	CL						0.1																								–0.7								–0.7		
–12.80	HNG	HNG10603	CL		0.1*																				–0.7*		–0.7*																
–12.80	HRV	HRV14801	CR					0.8								0.8								0.8								0.0								0.0			

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1	2	3	4	5																																							
Orbital Position	Admin. symbol	Beam Identification	Polarization type	Channel number																																							
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
				Minimum equivalent protection margin																																							
–12.80	HRV	HRV14802	CL										0.1																						–0.7								2.1
–12.80	HRV	HRV14803	CL		0.1*																				–0.7*		–0.7*																
–12.80	SVK	SVK14401	CR							0.8								0.8								0.0								0.0								0.0	
–12.80	SVK	SVK14402	CL																		0.1								–0.7								–0.7						
–12.80	SVK	SVK14403	CL		0.1*																				–0.7*		–0.7*																
–7.00	EGY	EGY02600	CR		27.4		28.1		27.4		28.1		27.4		28.1		27.4		28.7		27.8		9.2																				
–7.00	F	F 09300	CR																						–0.4		–0.4		–0.4		–0.4		–0.4		–0.4		–0.4		–0.4		–0.4		–0.4
–7.00	F	F____100	CL	17.3		16.4		16.4		16.4		16.4		16.4		16.4		17.1		17.9		17.9																					
–7.00	SCG**	SCG14800	CL																						1.5		1.5		1.5		1.5		1.5		1.5		1.5		1.5		1.5		2.0
–7.00	STP	STP24100	CL																						14.0		14.0		14.0		14.0		14.0		14.0		14.0		14.0		14.0		14.1
–4.00	ISR	ISR11000	CR																						18.2		18.2		18.2		18.2		18.2		18.2		18.2		18.2		18.2		20.9
–1.20	BUL	BUL02000	CL	3.5		1.6		1.6		1.6		1.6		1.6		1.6		3.2		5.6		5.5																					
–1.20	CVA	CVA08300	CR		1.7		2.3		1.7		2.3		1.7		2.3																												
–1.20	CVA	CVA08500	CR														1.7																										
–1.20	CYP	CYP08600	CL																					7.7		4.6		4.7		4.6		4.7		4.6		4.7		4.6		4.7		4.6	
–1.20	GRC	GRC10500	CR																						0.2		–0.6		0.2		–0.6		0.2		–0.6		0.2		–0.6		0.2		0.6
–0.80	BOT	BOT29700	CL																					3.2		–0.4		0.8		–0.4		0.8		–0.4		0.8		–0.4		0.8		–0.4	
–0.80	KEN	KEN24900	CR		1.4		2.4		1.4		2.5		1.4		2.5		1.4		3.3		1.9		5.3																				
–0.80	NOR	NOR12000	CR	1.7		–0.7		–0.7		–0.7		–0.7		–0.7		–0.9		0.9		4.2		4.6																					
–0.80	NOR	NOR12100	CL																								4.4				4.4												
–0.80	ZMB	ZMB31400	CR																						0.2		–1.0		0.2		–1.0		0.2		–1.0		0.2		–1.0		0.2		0.7
–0.80	ZWE	ZWE13500	CL	8.6		7.6		7.6		7.6		7.6		7.6		7.6		7.8		7.9		7.9																					
4.80	LSO	LSO30500	CL		6.3		6.2		6.3		6.2		6.3		6.2		6.1		6.1		5.8		8.0																				
4.80	MWI	MWI30800	CR																					10.6		11.1		11.1		11.1		6.9		6.9		6.9		6.9		6.9		5.4	
4.80	SWZ	SWZ31300	CR	6.9		3.9		3.9		3.9		3.9		3.9		3.8		3.8		3.8		3.4																					
5.00	S	S 13800	CL																					7.5		7.2		8.2		7.2		8.2		7.2		8.2		7.2		8.2		7.2	
5.00	S	S 13900	CL																														9.8										

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** *Note by the Secretariat*: This designation replaces the former designation “YUG” which was used previously as a three-letter code for the Administration of Serbia and Montenegro.

1	2	3	4	5																																							
Orbital Position	Admin. symbol	Beam Identification	Polarization type	Channel number																																							
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
				Minimum equivalent protection margin																																							
9.00	I	I 08200	CR																						12.2		12.0		12.2		11.6		11.1		11.2		11.2		11.2		11.2		11.4
11.00	BDI	BDI27000	CL	3.2		0.4		0.4		0.4		0.4		0.4		0.4		0.4		0.4		0.4																					
11.00	JOR	JOR22400	CL																						5.8		5.8		5.8		5.8		5.8		5.8		5.8		5.8		5.8		7.6
11.00	KWT	KWT11300	CR																					8.0		7.1		7.1		7.1		7.1		7.1		7.1		7.1		7.1		7.1	
11.00	LBN	LBN27900	CR	2.0		–0.8		–0.8		–0.8		–0.8		–0.8		–0.8		–0.8		–0.8		–0.8																					
11.00	RRW	RRW31000	CR		0.2		0.2		0.2		0.2		0.2		0.2		0.2		0.2		0.2		2.6																				
11.00	SYR	SYR22900	CL		–0.7		–0.7		–0.7		–0.7		–0.7		–0.7		–0.7		–0.7		–0.7		1.4																				
11.00	SYR	SYR33900	CL		–0.7																																						
11.00	TZA	TZA22500	CR																						0.1		0.1		0.1		0.1		0.1		0.1		0.1		0.1		0.1		2.0
16.80	DJI	DJI09900	CL	8.7		6.0		6.0		6.0		6.0		6.0		6.0		6.0		6.0		6.0																					
17.00	ARS	ARS00375	CL																						4.3		4.3		4.3		4.3		4.3		4.3		4.3		4.3		4.3		6.8
17.00	ARS	ARS34000	CL																																								6.8
17.00	TCD	TCD14300	CR	4.3		4.0		4.0		4.0		4.0		4.0		4.0		4.0		4.0		4.1																					
17.00	UGA	UGA05100	CR																					11.5		10.7		10.7		10.7		10.7		10.7		10.7		10.7		10.7		10.7	
17.20	OMA	OMA12300	CL		2.0		2.0		2.0		2.0		2.0		2.0		2.0		2.0		2.0		4.4																				
20.00	QAT	QAT24700	CL		13.7		13.7		13.7		13.7		13.7		13.7		13.7		13.7		13.7		15.5																				
22.80	ARM	ARM06400	CR																						2.4		2.4		2.4		2.4		2.4		2.4		2.4		2.4		2.4		5.1
22.80	ERI	ERI09200	CL																						1.3		1.3		1.3		1.3		1.3		1.3		1.3		1.3		1.3		1.7
22.80	FIN	FIN10300	CL																						0.2		0.2		0.2		0.2		0.2		0.2		0.2		0.2		0.2		1.7
22.80	FIN	FIN10400	CL																																				0.2				1.7
22.80	MKD	MKD14800	CL		8.7		8.7		8.7		8.7		8.7		8.7		8.7		8.7		8.7		10.6																				
22.80	MLT	MLT14700	CR	9.1		7.7		7.7		7.7		7.7		7.7		7.7		7.7		7.7		7.8																					
23.20	AZE	AZE06400	CL																					4.7		2.5		2.5		2.5		2.5		2.5		2.5		2.5		2.5		2.5	
23.20	GEO	GEO06400	CL	8.1		6.0		6.0		6.0		6.0		6.0		6.0		6.0		6.0		6.0																					
23.20	LTU	LTU06100	CR																					5.6		3.0		3.0		3.0		3.0		3.0		3.0		3.0		3.0		3.0	
23.20	LVA	LVA06100	CR	6.4		6.3		6.2		6.2		6.2		6.2		6.2		6.2		6.2		6.4																					
28.20	LUX	LUX11400	CL	18.5		18.2		17.7		18.2		17.7		18.2		17.7		18.2		18.2		18.3																					
29.00	COM	COM20700	CR																					12.9		9.9		9.9		9.9		9.9		9.9		9.9		9.9		9.9		9.9	
29.00	MAU	MAU__100	CL																						2.6		2.6		2.6		2.6		2.6		2.6		2.6		2.6		2.6		5.6
29.00	MDG	MDG23600	CL	28.0		27.5		27.5		27.5		27.5		27.5		27.5		27.5		27.5		27.9																					

1	2	3	4	5																																							
Orbital Position	Admin. symbol	Beam Identification	Polarization type	Channel number																																							
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
				Minimum equivalent protection margin																																							
33.80	SVN	SVN14800	CR		5.9		5.9		5.9		5.9		5.9		5.9		5.9		6.0		6.0		6.1																				
33.80	UZB	UZB07100	CR																						0.3		2.5		5.8		4.7		5.8		4.7		5.8		4.7		5.8		5.0
34.00	BHR	BHR25500	CR		6.6		6.6		6.6		6.6		6.6		6.6		6.6		6.6		6.6		6.7																				
34.00	IRN	IRN10900	CL	2.4		–0.2		–0.2		–0.2		–0.3		–0.2		–0.3		–0.2		–0.2		–0.2		0.6		1.9																	
34.20	MCO	MCO11600	CR																						2.3		8.7		17.2		17.2		17.2		17.2		17.2		17.2		17.2		17.7
36.00	RUS	RSTREA11	CR																											–0.8				–0.8				–0.8				–0.8	
36.00	RUS	RSTREA12	CL																												–1.2				–1.2				–1.2				–0.4
36.00	RUS	RSTRED11	CR																											–0.8				–0.8				–0.8				–0.8	
36.00	RUS	RSTRED12	CL																												–1.2				–1.2				–1.2				–0.4
36.00	RUS	RSTRSD11	CR																									–0.5		–0.5		–0.5		–0.5		–0.5		–0.5		–0.5		–0.5	
36.00	RUS	RSTRSD12	CL																										–0.7		–0.7		–0.7		–0.7		–0.7		–0.7		–0.7		0.2
37.80	BLR	BLR06200	CL	2.1		0.4		0.2		0.4		0.2		0.4		0.2		0.4		0.4		0.4																					
38.00	TJK	TJK06900	CL		1.9		1.9		1.9		1.9		1.9		1.9		1.9		1.9		1.9		4.4																				
38.20	BEL	BEL01800	CR																						–1.2		0.6		1.3		1.3		1.3		1.3		1.3		1.3		1.3		4.2
38.20	HOL	HOL21300	CL																					–0.1		–0.8		1.3		1.3		1.3		1.3		1.3		1.3		1.3		1.3	
38.20	UKR	UKR06300	CR		0.5		0.5		0.5		0.5		0.5		0.5		0.5		0.6		0.6		0.3																				
42.00	TUR	TUR14500	CL		7.9		7.9		7.9		7.9		7.9		7.9		7.9		7.9		7.9		7.9																				
42.50	SEY	SEY00000	CR																						19.9		20.1		20.2		20.2		20.2		20.2		20.2		20.2		20.2		21.0
44.50	EST	EST06100	CR	14.4		13.8		13.8		13.8		13.8		13.8		13.8		13.8		13.8		13.8																					
50.00	AFG	AFG24501	CL																													1.5		1.5		1.5		1.5		1.5		1.5	
50.00	AFG	AFG24502	CR																														1.5		1.5		1.5		1.5		1.5		4.0
50.00	CLN	CLN21900	CL	1.0		0.9		0.9		0.9		0.9		0.9		0.8		0.8		0.8		0.8		4.9		4.9																	
50.00	KGZ	KGZ07000	CR		–1.0		–1.0		–1.0		–1.0		–1.0		–1.0		–1.0		–1.0		–1.0		0.4																				
50.00	MDA	MDA06300	CR																					3.2		0.8		1.0		1.0		0.7		0.5		0.5		0.5		0.5		0.5	
50.00	MLD	MLD30600	CR	5.5		5.3		5.3		5.3		5.3		5.3		5.2		5.2		5.2		5.2		5.6		5.8																	
50.00	POL	POL13200	CR	5.9		4.5		4.5		4.5		4.5		4.5		4.5		4.5		4.5		4.5																					
50.00	ROU	ROU13600	CL																						0.4		0.5		0.7		–0.1		–0.9		–0.9		–0.9		–0.9		–0.9		2.0
50.00	TKM	TKM06800	CL	–0.2		–1.0		–1.0		–1.0		–1.0		–1.0		–1.0		–1.0		–1.0		–1.0																					
52.50	UAE	UAE27400	CR																					28.1		28.6		34.6		35.0		26.8		26.2		26.2		26.2		26.2		26.2	
55.80	IND	INDA_101	CR													0.5		4.7		4.7		4.7		15.0		15.0																	

1	2	3	4	5																																							
Orbital Position	Admin. symbol	Beam Identification	Polarization type	Channel number																																			
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
				Minimum equivalent protection margin																																							
55.80	IND	INDA_102	CL														9.3		9.3		9.3		11.7		17.4		14.2																
55.80	IND	INDB_101	CR	5.3		5.3		5.3		5.3		5.3		5.3																													
55.80	IND	INDB_102	CL		7.3		7.3		7.3		7.3		7.3		–0.2																												
56.00	BIH	BIH14800	CR	13.0		12.6		12.6		12.6		12.6		12.6		12.3		12.3		12.3		12.3																					
56.00	RUS	RSTRSD21	CR																									11.0		17.6		17.2		17.1		17.1		17.1		17.1		17.1	
56.00	RUS	RSTRSD22	CL																										17.7		17.6		17.2		17.2		17.2		17.2		17.2		18.2
56.40	KAZ	KAZ06600	CL	3.2		1.2		1.2		1.2		1.2		1.2		3.1		6.0		6.0		6.0																					
62.00	ALB	ALB29600	CL																						12.8		14.1		46.6		46.5		46.3		46.3		46.3		46.3		46.3		47.4
62.00	CHN	CHN15400	CR		13.5		13.5		13.5		13.5		13.5		13.7		15.1		15.1		15.1		15.5		2.6		2.6																
62.00	CHN	CHN15500	CL	14.5		13.6		13.6		13.6		13.6		13.6		15.0		15.4		15.4		15.4		2.5		–0.5																	
68.00	IND	IND03700	CL		5.2		5.2		5.2		5.2		5.2		5.2		5.2		5.2		5.2		5.2		5.2		8.2																
68.00	IND	IND04701	CR																													40.8		40.8		40.8		40.8		40.8		40.8	
68.00	IND	IND04702	CL																														44.2		44.2		44.2		44.2		44.2		47.1
68.00	IND	INDD_100	CR	6.0		3.0		3.0		3.0		3.0		3.0		3.0		3.0		3.0		3.0		3.0		3.0																	
74.00	BGD	BGD22000	CR	4.7		1.7		1.7		1.7		1.7		1.7		1.7		1.7		1.7		1.7		0.9		0.9																	
74.00	BRU	BRU3300A	CR		12.1		12.1		12.1		12.1		12.1		12.1		12.1		12.1		12.1		11.7		11.3		13.6																
74.00	MNG	MNG24800	CL																					8.1		8.1		15.8		999.9		48.6		48.1		48.1		48.1		48.1		48.1	
80.20	INS	INS02800	CR	16.0		14.6		14.6		14.6		14.6		14.6		14.6		14.6		14.6		14.6		14.5		14.5																	
86.00	BTN	BTN03100	CR	8.6		5.6		5.6		5.6		5.6		5.6		5.6		5.6		5.6		5.6		5.6		5.6																	
86.00	CBG	CBG29900	CR		2.1		2.1		2.1		2.1		2.1		2.1		2.1		2.1		2.1		2.1		2.1		4.0																
86.00	RUS	RSTRSD31	CR																									1.9		999.9		999.9		999.9		999.9		999.9		999.9		999.9	
86.00	RUS	RSTRSD32	CL																										999.9		999.9		999.9		999.9		999.9		999.9		999.9		999.9
88.00	SNG	SNG15100	CL	15.4		13.0		13.0		13.0		13.0		13.0		13.0		13.0		13.0		13.0		13.0		13.0																	
91.50	MLA	MLA__100	CR		11.4		11.4		11.4		11.4		11.4		11.4		11.4		11.4		11.4		11.4		11.4		13.7																
92.20	CHN	CHN16000	CR	7.7		4.9		4.9		4.9		4.9		4.9		4.9		4.9		4.9		4.9		4.9		4.9																	
92.20	CHN	CHN16100	CL		11.1		11.1		11.1		11.1		11.1		11.1		11.1		11.1		11.1		11.1		11.1		11.2																
98.00	PHL	PHL28500	CL		5.1		5.1		5.1		5.1		5.1		5.1		5.1		5.1		5.1		5.1		5.1		7.9																
98.00	THA	THA14200	CR	8.1		5.3		5.3		5.3		5.3		5.3		5.3		5.3		5.3		5.3		5.3		5.3																	
104.00	BRM	BRM29800	CR	15.4		13.8		13.8		13.8		13.8		13.8		13.8		13.8		13.8		13.8		13.8		13.8																	
104.00	INS	INS03501	CL																													36.4		37.0		37.0		37.0		37.0		37.0	

1	2	3	4	5																																							
Orbital Position	Admin. symbol	Beam Identification	Polarization type	Channel number																																							
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
				Minimum equivalent protection margin																																							
104.00	INS	INS03502	CR																														42.1		42.1		42.1		42.1		42.1		45.1
107.00	VTN	VTN32500	CR		14.2		14.2		14.2		14.2		14.2		14.2		14.2		14.2		14.2		14.3		14.4		17.1																
109.85	J	000BS–3N	CR	21.6		19.4		19.2		19.2		19.2		19.2		19.9		21.0																									
109.85	J	J 10985	CR	23.9		21.6		21.4		21.4		21.4		21.4		22.1		23.1		21.7		21.4		21.4		21.4																	
110.00	J	J 11100	CR	23.7		21.4		21.2		21.2		21.2		21.2		22.0		23.0		21.6		21.2		21.3		21.3																	
110.00	J	J 1110E	CR	21.4		19.2		19.0		19.0		19.0		19.0		19.8		20.8																									
110.00	RUS	RUS00401	CR																									29.2		999.9		14.1		13.2		13.2		13.2		13.2		13.2	
110.00	RUS	RUS00402	CL																										999.9		20.8												
116.00	KOR	KOR11201	CL																													28.2		29.2		29.2		29.2		29.2		29.2	
116.00	KOR	KOR11202	CR																														31.8		31.8		31.8		31.8		31.8		34.7
121.80	USA	MRA33200	CR	3.2		0.2		0.2		0.2		0.2		0.2		0.2		0.2		0.2		0.2		0.2		0.2																	
122.00	CHN	CHN20000	CL		13.8		13.8		13.8		13.8		13.8		13.8		13.9		13.9		13.8		13.8		13.8		15.9																
122.00	USA	GUM33101	CR																													29.3		28.6		28.6		28.6		28.6		28.6	
122.00	USA	GUM33102	CL																														28.6		28.6		28.6		28.6		28.6		29.3
122.20	LAO	LAO28400	CR		0.3		0.3		0.3		0.3		0.3		0.3		0.3		0.3		0.3		0.4		0.4		1.6																
128.00	SLM	SLM00000	CL	16.4		13.4		13.4		13.4		13.4		13.4		13.4		13.4		13.4		13.4		13.4		13.4																	
128.00	TMP	TMP00000	CR		19.6		19.6		19.6		19.6		19.6		19.6		19.6		19.6		19.6		19.6		19.6		22.6																
134.00	CHN	CHN15800	CL		0.6		0.6		0.6		0.6		0.6		0.6		0.6		0.6		0.6		0.6		0.6		3.6																
134.00	CHN	CHN15900	CR	2.0		2.0		2.0		2.0		2.0		2.0		2.0		2.0		2.0		2.0		2.0		2.0																	
134.00	NRU	NRU30900	CL	18.8		17.6		17.6		17.6		17.6		17.6		17.6		17.6		17.6		17.6		17.6		17.6																	
140.00	F	F____200	CL		10.2		10.2		10.2		10.2		10.2		10.2		10.2		10.2		10.2		10.2		10.2		11.2																
140.00	F	F____300	CR	8.5		6.7		6.7		6.7		6.7		6.7		6.7		6.7		6.7		6.7		6.7		6.7																	
140.00	KRE	KRE28600	CL	13.6		12.2		12.2		12.2		12.2		12.2		12.2		12.2		12.2		12.2		12.2		12.2																	
140.00	PLW	PLW00000	CR		9.7		9.7		9.7		9.7		9.7		9.7		9.7		9.7		9.7		9.7		9.7		7.9																
140.00	RUS	RSTRSD51	CR																									0.1		999.9		3.0		1.6		1.6		1.6		1.6		1.6	
140.00	RUS	RSTRSD52	CL																										999.9		7.3		1.6		1.6		1.6		1.6		1.6		3.0
140.00	VUT	VUT12801	CL																													8.9		8.9		8.9		8.9		8.9		8.9	
140.00	VUT	VUT12802	CR																														8.9		8.9		8.9		8.9		8.9		10.4
146.00	MHL	MHL00000	CR		41.3		40.8		41.3		40.8		41.3		41.1		41.6		41.1		41.6		41.1		41.6		41.8																
152.00	AUS	AUS00400	CL			–0.3				–0.3				–0.3				–0.3				–0.3				–0.3																	

1	2	3	4	5																																							
Orbital Position	Admin. symbol	Beam Identification	Polarization type	Channel number																																							
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
				Minimum equivalent protection margin																																							
152.00	AUS	AUS00401	CL			6.0				6.0				6.0				6.0				6.0				6.0																	
152.00	AUS	AUS00402	CL			6.0				6.0				6.0				6.0				6.0				6.0																	
152.00	AUS	AUS00403	CL			6.0				6.0				6.0				6.0				6.0				6.0																	
152.00	AUS	AUS00404	CL			6.0				6.0				6.0				6.0				6.0				6.0																	
152.00	AUS	AUS00405	CL			6.0				6.0				6.0				6.0				6.0				6.0																	
152.00	AUS	AUS00406	CL			6.0				6.0				6.0				6.0				6.0				6.0																	
152.00	AUS	AUS0040A	CL			–0.4				–0.4				–0.4				–0.4				–0.4				–0.4																	
152.00	AUS	AUS00500	CR				–3.3				–3.3				–0.3				–0.3				–0.3				–0.3																
152.00	AUS	AUS00501	CR				3.0				3.0				6.0				6.0				6.0				6.0																
152.00	AUS	AUS00502	CR				3.0				3.0				6.0				6.0				6.0				6.0																
152.00	AUS	AUS00503	CR				3.0				3.0				6.0				6.0				6.0				6.0																
152.00	AUS	AUS00504	CR				3.0				3.0				6.0				6.0				6.0				6.0																
152.00	AUS	AUS00505	CR				3.0				3.0				6.0				6.0				6.0				6.0																
152.00	AUS	AUS00506	CR				3.0				3.0				6.0				6.0				6.0				6.0																
152.00	AUS	AUS00600	CR																										999.9		999.9		999.9		999.9				999.9				999.9
152.00	AUS	AUS00601	CR																										999.9		999.9		999.9		999.9				999.9				999.9
152.00	AUS	AUS00602	CR																										999.9		999.9		999.9		999.9				999.9				999.9
152.00	AUS	AUS00603	CR																										999.9		999.9		999.9		999.9				999.9				999.9
152.00	AUS	AUS00604	CR																										999.9		999.9		999.9		999.9				999.9				999.9
152.00	AUS	AUS00605	CR																										999.9		999.9		999.9		999.9				999.9				999.9
152.00	AUS	AUS00606	CR																										999.9		999.9		999.9		999.9				999.9				999.9
152.00	AUS	AUSA0000	CL	39.7				–0.4				–0.4																													
152.00	AUS	AUSA0001	CL	61.2				6.0				6.0																													
152.00	AUS	AUSA0002	CL	60.5				6.0				6.0																													
152.00	AUS	AUSA0003	CL	61.5				6.0				6.0																													
152.00	AUS	AUSA0004	CL	53.4				6.0				6.0																													
152.00	AUS	AUSA0005	CL	55.9				6.0				6.0																													
152.00	AUS	AUSA0006	CL	48.3				6.0				6.0																													
158.00	FSM	FSM00000	CR	8.8		5.7		5.7		5.7		5.7		5.7		5.7		5.7		5.7		5.7		5.7		5.7																	
158.00	NZL	NZL__100	CL		8.5		8.4		8.5		8.4		8.5		8.4		8.6		8.6		8.6		8.6		8.6		11.2																

1	2	3	4	5																																							
Orbital Position	Admin. symbol	Beam Identification	Polarization type	Channel number																																							
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
				Minimum equivalent protection margin																																							
164.00	AUS	AUS00700	CR			–2.9				–2.9				–2.9				0.1				0.1				0.1																	
164.00	AUS	AUS00701	CR			3.0				3.0				3.0				6.0				6.0				6.0																	
164.00	AUS	AUS00702	CR			3.0				3.0				3.0				6.0				6.0				6.0																	
164.00	AUS	AUS00703	CR			3.0				3.0				3.0				6.0				6.0				6.0																	
164.00	AUS	AUS00704	CR			3.0				3.0				3.0				6.0				6.0				6.0																	
164.00	AUS	AUS00705	CR			3.0				3.0				3.0				6.0				6.0				6.0																	
164.00	AUS	AUS00706	CR			3.0				3.0				3.0				6.0				6.0				6.0																	
164.00	AUS	AUS0070A	CR			–3.1				–3.1				–3.1				–0.1				–0.1				–0.1																	
164.00	AUS	AUS00800	CL		0.2				0.2				0.2				0.2				0.2				0.2																		
164.00	AUS	AUS00801	CL		6.0				6.0				6.0				6.0				6.0				6.0																		
164.00	AUS	AUS00802	CL		6.0				6.0				6.0				6.0				6.0				6.0																		
164.00	AUS	AUS00803	CL		6.0				6.0				6.0				6.0				6.0				6.0																		
164.00	AUS	AUS00804	CL		6.0				6.0				6.0				6.0				6.0				6.0																		
164.00	AUS	AUS00805	CL		6.0				6.0				6.0				6.0				6.0				6.0																		
164.00	AUS	AUS00806	CL		6.0				6.0				6.0				6.0				6.0				6.0																		
164.00	AUS	AUS00900	CR																									31.9		999.9		38.1		36.8				36.8				36.8	
164.00	AUS	AUS00901	CR																									65.2		999.9		63.1		61.7				61.7				61.7	
164.00	AUS	AUS00902	CR																									65.4		999.9		63.3		61.9				61.9				61.9	
164.00	AUS	AUS00903	CR																									60.5		999.9		62.1		60.8				60.8				60.8	
164.00	AUS	AUS00904	CR																									50.2		999.9		60.8		59.5				59.5				59.5	
164.00	AUS	AUS00905	CR																									56.4		999.9		59.4		58.1				58.1				58.1	
164.00	AUS	AUS00906	CR																									48.1		999.9		57.0		55.8				55.8				55.8	
164.00	AUS	AUS0090A	CR																									42.0		999.9		40.3		38.9				38.9				38.9	
164.00	AUS	AUSB0000	CL				–0.1				–0.1				–0.1																												
164.00	AUS	AUSB0001	CL				6.0				6.0				6.0																												
164.00	AUS	AUSB0002	CL				6.0				6.0				6.0																												
164.00	AUS	AUSB0003	CL				6.0				6.0				6.0																												
164.00	AUS	AUSB0004	CL				6.0				6.0				6.0																												
164.00	AUS	AUSB0005	CL				6.0				6.0				6.0																												
164.00	AUS	AUSB0006	CL				6.0				6.0				6.0																												

1	2	3	4	5																																							
Orbital Position	Admin. symbol	Beam Identification	Polarization type	Channel number																																							
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
				Minimum equivalent protection margin																																							
170.00	USA	PLM33200	CL		10.2		10.2		10.2		10.2		10.2		10.2		10.2		10.2		10.2		10.2		10.2		10.2																
170.00	USA	USAA_101	CR																													45.5		45.5		999.9		45.5		999.9		45.5	
170.00	USA	USAA_102	CL																														45.5		48.5		48.5		48.5		48.5		48.5
170.75	TON	TON21500	CR		11.6		11.6		11.6		11.6		11.6		11.6		11.6		11.6		11.6		11.6		11.6		11.6																
176.00	KIR	KIR__100	CL	4.2		1.2		1.2		1.2		1.2		1.2		1.2		1.2		1.2		1.2		1.2		1.2																	
176.00	TUV	TUV00000	CR		4.7		4.7		4.7		4.7		4.7		4.7		4.7		4.7		4.7		4.7		4.7		7.7																

MOD

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 (WRC-03)

MOD

3 Limits to the change in the overall equivalent protection margin with respect to frequency assignments in conformity with the Region 2 feeder-link Plan[18] (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 equivalent protection margin[19] 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)

MOD

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 dB(W/(m^2 · 27 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 margin[20] 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)

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)

MOD

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)

MOD

6 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) (WRC-03)

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 of that administration would cause an increase in the noise temperature of the receiving 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)

MOD

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**.

MOD

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[21] (WRC-03)

2.2 Rain attenuation

MOD

Step 6 remains the same except the frequency dependent coefficients k and α shall be obtained from Recommendation ITU-R P.838-2. (WRC-03)

3 Basic technical characteristics for Regions 1 and 3

MOD

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)

(MOD) (Spanish version only)

c) Frequency translation rules

MOD

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 margins[26]:

– 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[27, 28]:

– co-channel protection ratio = 30 dB;

– adjacent channel protection ratio = 22 dB. (WRC-2000)

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 process[29]. (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 2[29A]). (WRC-03)

ADD

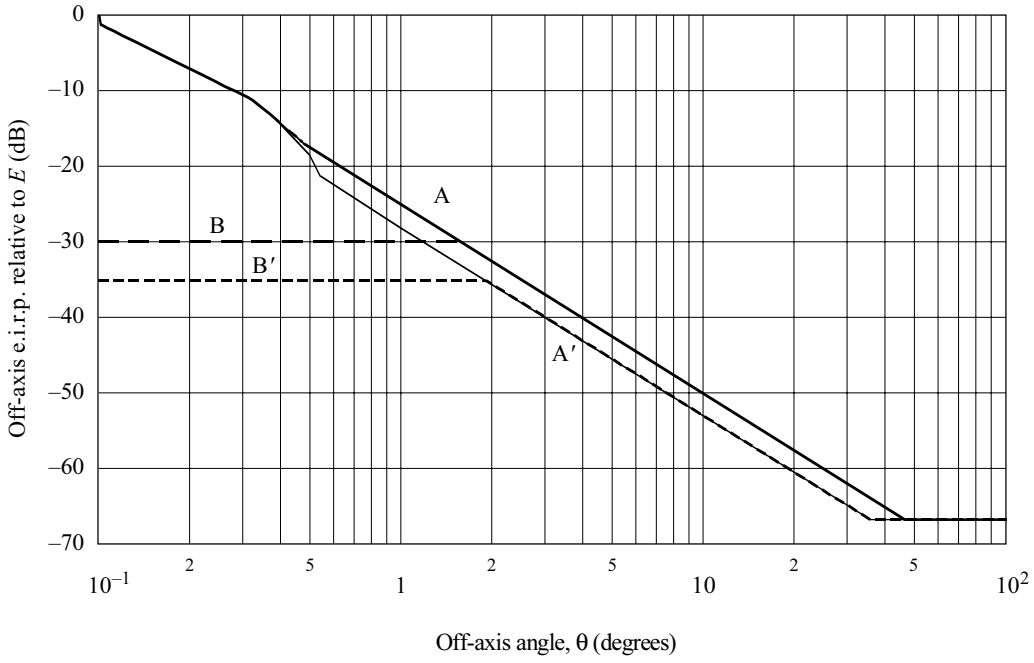
[29A] Annex 3 of this Recommendation may be applied only in compatibility analysis for bilateral coordination between administrations. (WRC-03)

3.7.1 Cross–section of receiving antenna beam

MOD

FIGURE A

Earth station e.i.r.p. at off-axis antenna angles



[redacted]

AP30AA3-A

Co-polar component (dBW):

Curve A (WARC Orb-88)			*Curve A′* (WRC-97)		
E	for	$0° \leq \theta \leq 0.1°$	E	for	$0° \leq \theta \leq 0.1°$
$E - 21 - 20 \log \theta$	for	$0.1° < \theta \leq 0.32°$	$E - 21 - 20 \log \theta$	for	$0.1° < \theta \leq 0.32°$
$E - 5.7 - 53.2\ \theta^2$	for	$0.32° < \theta \leq 0.44°$	$E - 5.7 - 53.2\ \theta^2$	for	$0.32° < \theta \leq 0.54°$
$E - 25 - 25 \log \theta$	for	$0.44° < \theta \leq 48°$	$E - 28 - 25 \log \theta$	for	$0.54° < \theta \leq 36.31°$
$E - 67$	for	$48° < \theta$	$E - 67$	for	$36.31° < \theta$

Cross-polar component (dBW): (WRC-03)

Curve B (WARC Orb-88)			*Curve B′* (WRC-97)		
$E - 30$	for	$0° \leq \theta \leq 1.6°$	$E - 35$	for	$0° \leq \theta \leq 1.91°$
$E - 25 - 25 \log \theta$	for	$1.6° < \theta \leq 48°$	$E - 28 - 25 \log \theta$	for	$1.91° < \theta \leq 36.31°$
$E - 67$	for	$48° < \theta$	$E - 67$	for	$36.31° < \theta$

where:

E: earth station e.i.r.p. on the antenna axis (dBW);

θ: off-axis angle referred to the main lobe axis (degrees).

MOD

3.8 System noise temperature

The satellite system noise temperature values generally used in the Plan at the 1988 Conference (WARC Orb-88) are 1 800 K for 17 GHz and 1 500 K for 14 GHz[32]. 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)

MOD

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)

MOD

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)

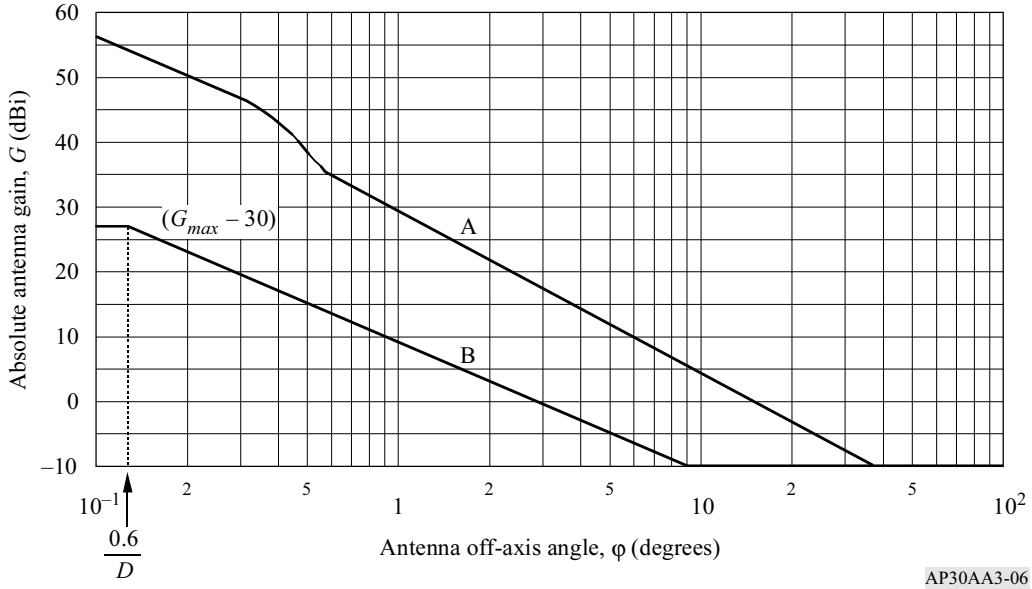
MOD

4.4.2 Transmitting antenna reference patterns (WRC-03)

MOD

FIGURE 6

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



Curve A: co-polar component (dBi)

$G_{co} = G_{max}$ for $0° \leq \varphi < 0.1°$

$G_{co} = 36 - 20 \log \varphi$ for $0.1° \leq \varphi < 0.32°$

$G_{co} = 51.3 - 53.2 \varphi^2$ for $0.32° \leq \varphi < 0.54°$

$G_{co} = \max (29 - 25 \log \varphi, -10)$ for $0.54° \leq \varphi \leq 180°$

If $G_{co} > G_{max}$: $G_{co} = G_{max}$ (WRC-03)

Curve B: cross-polar component (dBi)

$G_{cross} = G_{max} - 30$ for $0° \leq \varphi < (0.6/D)°$

$G_{cross} = \max (9 - 20 \log \varphi, -10)$ for $(0.6/D)° \leq \varphi \leq 180°$

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) ($D \geq 2.5$).

NOTE 1 – In the angular range between 0.1° and 0.54°, the co-polar gain must not exceed the reference pattern.

NOTE 2 – In the angular range between 0° and (0.6/*D*)°, the cross polar gain must not exceed the reference pattern.

NOTE 3 – At the larger off–axis angles and for 90% of all side-lobe peaks in each of the reference angular windows, the gain must not exceed the reference pattern. The reference angular windows are 0.54° to 1°, 1° to 2°, 2° to 4°, 4° to 7°, 7° to 10°, 10° to 20°, 20° to 40°, 40° to 70°, 70° to 100° and 100° to 180°. The first reference angular window for evaluating the cross-polar component should be (0.6/*D*)° to 1°.

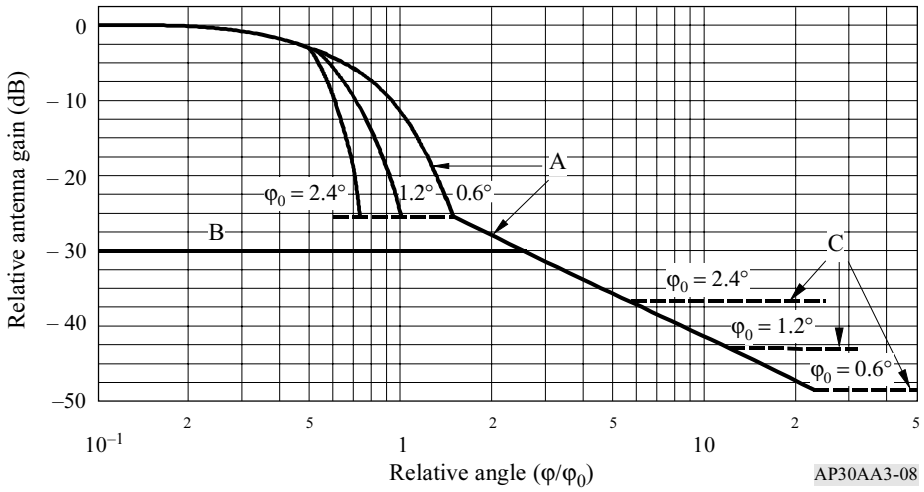
MOD

4.6.3 Receiving antenna reference patterns (WRC-03)

MOD

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)

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

$-33.33\,\varphi_0^2\,(\varphi/\varphi_0 - x)^2$ for $0.5 < \varphi/\varphi_0 \leq \dfrac{0.87}{\varphi_0} + x$

-25.23 for $\dfrac{0.87}{\varphi_0} + x < \varphi/\varphi_0 \leq 1.45$

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

after intersection with Curve C, as Curve C. (WRC-03)

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

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

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)

$$x = 0.5\left(1 - \frac{0.6}{\varphi_0}\right)$$

MOD

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 of this Appendix, a value of 600 K (instead of 1 500 K) is used in application of § 5 of Annex 1 and § 1 of Annex 4 of this Appendix. For those assignments which have been subsequently modified, the noise temperature value provided in that modification is used. (WRC-03)

ANNEX 4 (WRC-2000)

Criteria for sharing between services

MOD

1 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)

MOD

2 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)

APPENDIX 30B (Rev.WRC-03)

Provisions and associated Plan for the fixed-satellite service in the frequency bands 4 500-4 800 MHz, 6 725-7 025 MHz, 10.70-10.95 GHz, 11.20-11.45 GHz and 12.75-13.25 GHz

ARTICLE 5

The Plan and the associated List of assignments

MOD

5.3 The predetermined arc (PDA) is a segment of the geostationary-satellite orbit (GSO) about a nominal orbital position intended to provide flexibility in the Plan.

a) The size of the PDA depends on the stage of development of the satellite system:

– for a system in the *pre-design stage*, the PDA is the fixed portion of the GSO defined by the intersection between a segment of ±10° about the nominal orbital position established at the Conference and the corresponding service arc. After twenty years from the date of entry into force of this Appendix, the PDA for a system in the pre-design stage is the fixed portion of the GSO defined by the intersection between a segment of ±20° about the nominal orbital position established at the Conference and the corresponding service arc, provided that the minimum elevation angle after the application of this procedure is not less than 20° or than the value indicated for each climatic zone in Annex 1 to this Appendix, whichever is larger, for all allotments affected;

– for a system in the *design stage*, the PDA is the fixed portion of the GSO defined by the intersection between a segment of ±5° about the nominal orbital position as may be modified by the application of this Appendix and the PDA defined for the pre-design stage;

– for a system in the *operational stage*, the PDA will be considered as being zero.

b) The stage of development to be associated with allotments in Part A and assignments in the List derived from allotments in Part A, with existing systems in Part B, with subregional systems or additional uses, is given in Table 1.

c) An administration will not be considered to be affected if the nominal orbital position associated with its allotment in the Plan or with its assignments in the List is moved within the corresponding PDA while keeping an aggregate $C/I \geq 26$ dB. WRC-03 decided that for submissions received as from 5 July 2003 the value $C/I \geq 23$ dB shall be applied. (WRC-03)

ARTICLE 6

Procedures for implementation of the Plan and regulation of the fixed-satellite service in the planned bands[1] (WRC-03)

MOD

[1] 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 § 6.26, 6.33 and 6.49 and the corresponding entries in the List under § 6.26, 6.34, 6.50, as appropriate, or cancel entries in the List under § 6.44, as appropriate, 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 specified in the above-mentioned Decision 482, unless the payment has already been received (see also Resolution **87 (WRC-03)**). (WRC-03)

Section I – Procedure for conversion of an allotment into an assignment

MOD

6.1 When an administration intends to convert an allotment into an assignment employing all or part of its allotment in Part A of the Plan, it shall, not earlier than eight years and not later than two years before the planned date of bringing the network into use, send to the Bureau the information specified in Appendix **4**. If the assignment is not brought into use by that date, the assignments recorded in the Appendix **30B** List shall be transferred to allotment(s) in Part A of the Appendix **30B** Plan with the predetermined arc (PDA) defined for a system in the pre-design stage in accordance with § 5.3 of Article 5 of Appendix **30B**, without any changes to other technical parameters of allotments, of existing systems or of assignments recorded in the List. (WRC-03)

Section IB – Procedure for recording in the List of the existing systems contained in Part B of the Plan

MOD

6.29 For existing systems in Part B of the Plan, as well as those entered in the List, the provisions of Resolution **51 (Rev.WRC-2000)** shall be applied. If the assignment is not brought into use in accordance with those provisions, the assignments recorded in the Appendix **30B** List or existing systems in Part B of the Appendix **30B** Plan, as appropriate, shall be cancelled and the Bureau shall also update the reference situation of all allotments, existing systems and assignments recorded in the List, without any changes to their technical parameters. (WRC-03)

MOD

6.34 If, within forty-five days of the BR IFIC mentioned in § 6.33 the Bureau receives no comments, it shall be deemed that there are no objections to the proposed relocations and the Bureau shall record the assignment in the List. The administration shall then notify the assignment in accordance with Article 8. (WRC-03)

Section II – Procedure for the introduction of a subregional system

MOD

6.38 When a group of administrations intends to bring into use a subregional system it shall select one or more orbital positions for the system, preferably from the national allotments concerned, and send details of the assignment of the proposed network to the Bureau, not earlier than eight years and not later than two years before the planned date of bringing into use. For this purpose, the administrations shall designate one among them to act on their behalf in the application of the provisions of this Appendix. The selected administration shall be known as the notifying administration. If the assignment is not brought into use by the planned date, the Bureau shall:

a) cancel the related special sections and/or circular telegrams, as appropriate, and the assignments recorded in the Appendix **30B** List;

b) reactivate any relevant suspended allotments; *and*

c) update the reference situation of all allotments, existing systems and assignments recorded in the List, without any changes to their technical parameters. (WRC-03)

MOD

6.43 Upon receipt of a complete (Appendix **4**) notice relating to the proposed assignment, the Bureau shall use the method of Annex 4 to determine whether the proposed assignment affects: (WRC-03)

a) the allotments in the Plan;

b) the assignments which appear in the List;

c) the assignments for which the Bureau has previously received complete information in accordance with this Article.

ADD

6.43*bis* In the case where multiple consecutive complete notices belonging to the same notifying administration have to be examined under § 6.43 without any notice from other administrations having been received in the meantime, the Bureau shall implement, whenever feasible, the following measures, where applicable, in order to accelerate, to the maximum extent possible, the processing of the notices:

– simultaneous processing of the information relating to the 6/4 and 13/10-11 GHz frequency bands in the same network having the same or different date of receipt;

– sequential examination of networks having the same or different date of receipt. The Bureau's finding for all these networks shall be given at the same time and the publication of all related special sections under § 6.49 shall be included in a single set of publications with one single deadline for comments and published in the same BR IFIC. (WRC-03)

MOD

6.50 If, within forty-five days from the date of the BR IFIC mentioned in § 6.49, the Bureau receives no comments, it shall be deemed that there are no objections to the proposed solution and the proposed assignment shall be recorded in the List. The administration shall then notify the assignment in accordance with Article 8. Comments, if any, shall be limited to the case of an administration believing that the agreed protection criteria have not been met. If it receives such comments, the Bureau shall initiate the appropriate action to resolve the matter. (WRC-03)

Section III – Supplementary provisions applicable to additional uses in the planned bands

ADD

6.56*bis* In the case where multiple consecutive complete notices belonging to the same notifying administration have to be examined under § 6.56 without any notice from other administrations having been received in the meantime, the Bureau shall implement, whenever feasible, the following measures, where applicable, in order to accelerate, to the maximum extent possible, the processing of the notices:

– simultaneous processing of the information relating to the 6/4 and 13/10-11 GHz frequency bands in the same network having the same or different date of receipt;

– sequential examination of networks having the same or different date of receipt. The Bureau's finding for all these networks shall be given at the same time. (WRC-03)

MOD

6.57 For this purpose it shall, not earlier than eight years and not later than two years before the planned date of bringing the related assignment into use, send the information specified in Appendix **4** to the Bureau. If the assignment is not brought into use by that date, the Bureau shall:

a) cancel the related special sections and/or circular telegrams, as appropriate, and the assignments recorded in the Appendix **30B** List;

b) reactivate any relevant suspended allotments; *and*

c) update the reference situation of all allotments, existing systems and assignments recorded in the List, without any changes to their technical parameters. (WRC-03)

ARTICLE 8

Procedure for notification and recording in the Master Register of assignments in the planned bands for the fixed-satellite service

MOD
8.1 Any assignment for which the relevant procedure of Article 6 has been successfully applied shall be notified to the Bureau using the relevant characteristics listed in Appendix **4**, not earlier than three years before the assignments are brought into use. (WRC-03)

SUP
8.2

ADD
8.2 If the first notice referred to in § 8.1 has not been received by the Bureau within the eight-year period mentioned in § 6.1, 6.38 or 6.57 of Article 6, as appropriate, the assignments in the List shall no longer be taken into account by the Bureau and administrations. The Bureau shall then act as if the assignment in the List has not been brought into use in conformity with § 6.1, 6.38 or 6.57 of Article 6, as appropriate. The Bureau shall inform the notifying administration, three months in advance of the end of the eight-year period, of the actions it intends to take. (WRC-03)

SUP
8.3

ADD
8.3 Notices not containing those characteristics specified in Appendix **4** as mandatory or required shall be returned with comments to help the notifying administration to complete and resubmit them, unless the information not provided is immediately forthcoming in response to an inquiry by the Bureau. (WRC-03)

SUP
8.4

ADD
8.4 Upon reception by the Bureau of a complete notice under § 8.1, a PDA of zero degrees (operational stage) shall be associated with this assignment. (WRC-03)

ADD
8.5 Complete notices shall be marked by the Bureau with their date of receipt and shall be examined in the date order of their receipt. Following receipt of a complete notice the Bureau shall, within not more than two months, publish its contents, with any diagrams and maps and the date of receipt, in the BR IFIC, which shall constitute the acknowledgement to the notifying administration of receipt of its notice. When the Bureau is not in a position to comply with the time-limit referred to above, it shall periodically so inform the administrations, giving the reasons therefor. (WRC-03)

ADD

8.6 The Bureau shall not postpone the formulation of a finding on a complete notice unless it lacks sufficient data to reach a conclusion thereon. (WRC-03)

ADD

8.7 Each notice shall be examined: (WRC-03)

ADD

8.8 *a)* with respect to its conformity with the Table of Frequency Allocations and the other provisions[4A] of these Regulations, except those provisions relating to conformity with the fixed-satellite service Plan which are the subject of the following subparagraph; (WRC-03)

[4A] The "other provisions" shall be identified and included in the Rules of Procedure. (WRC-03)

ADD

8.9 *b)* with respect to its conformity with the fixed-satellite service Plan and the associated provisions. (WRC-03)

ADD

8.10 When the examination with respect to § 8.8 leads to a favourable finding, the assignment shall be examined further with respect to § 8.9; otherwise the notice shall be returned with an indication of the appropriate action. (WRC-03)

ADD

8.11 When the examination with respect to § 8.9 leads to a favourable finding, the assignment shall be recorded in the Master Register. When the finding is unfavourable, the notice shall be returned to the notifying administration, with an indication of the appropriate action. (WRC-03)

ADD

8.12 In every case when a new assignment is recorded in the Master Register it shall, in accordance with the provisions of Article **8**, include an indication of the finding reflecting the status of the assignment. This information shall also be published in the BR IFIC. (WRC-03)

ADD

8.13 A notice of a change in the characteristics of an assignment already recorded, as specified in Appendix **4**, shall be examined by the Bureau under § 8.8, and 8.9 as appropriate. Any changes to the characteristics of an assignment, that has been notified and confirmed as having been brought into use, shall be brought into use within eight years from the date of the notification of the modification. Any changes to the characteristics of an assignment that has been notified but not yet brought into use shall be brought into use within the period provided for in § 6.1, 6.29, 6.38 or 6.57 of Article 6, as appropriate. (WRC-03)

ADD

8.14 In the case of a change in the characteristics of an assignment which is in conformity with § 8.8, should the Bureau reach a favourable finding with respect to § 8.9, the amended assignment shall retain the original date of entry in the Master Register. The date of receipt by the Bureau of the notice relating to the change shall be entered in the Master Register. (WRC-03)

ADD

8.15 In applying the provisions of this Article, any resubmitted notice which is received by the Bureau more than six months after the date on which the original notice was returned by the Bureau shall be considered to be a new notice. (WRC-03)

ADD

8.16 All frequency assignments notified in advance of their being brought into use shall be entered provisionally in the Master Register. Any frequency assignment provisionally recorded under this provision shall be brought into use by the date specified in the notice. Within thirty days of such an assignment being brought into use, the notifying administration shall so inform the Bureau. If the Bureau does not receive that confirmation within the above period, after sending a reminder, it shall cancel the entry. The Bureau shall, however, inform the administration concerned before taking such action. (WRC-03)

ADD

8.17 Where the use of a recorded assignment to a space station is suspended for a period not exceeding eighteen months, the notifying administration shall, as soon as possible, inform the Bureau of the date on which such use was suspended and the date on which the assignment is to be brought back into regular use. This latter date shall not exceed two years from the date of suspension. (WRC-03)

ADD

8.18 No provision of this Appendix shall be considered as modifying the requirements of Article **9** relating to coordination between earth stations in the fixed-satellite service and stations of terrestrial services sharing the planned bands on an equal primary basis. (WRC-03)

ADD

8.19 Notification of assignments to a specific earth station using assignments included in the List shall be effected applying the provisions of Article **11**. (WRC-03)

MOD

ANNEX 1 (WRC-03)

Parameters used in characterizing the fixed-satellite service Plan

Section A – Technical data used in establishing the Allotment Plan and the associated provisions

MOD

1.4 Interference criteria

The Plan has been prepared with a view to assuring for each allotment an aggregate carrier-to-interference ratio under free-space conditions of 26 dB or higher. WRC-03 decided to apply an aggregate carrier-to-interference ratio under free-space conditions of 23 dB for submissions received by the Bureau as from 5 July 2003. (WRC-03)

MOD

1.6 Earth station characteristics

1.6.4 The earth station antenna reference pattern applicable to all Part A allotments is shown in Table 1 below. If so desired by an administration, the improved side-lobe pattern shown in Table 2 below may be used. (WRC-03)

MOD

1.6.5 In cases where the aggregate C/I ratio of 26 dB cannot be obtained (WRC-03 decided that for the examination of submissions received as from 5 July 2003 the value 23 dB (instead of the of 26 dB) shall be applied), it would be appropriate for the countries concerned to agree on the use of antennas with an improved side-lobe pattern or on other suitable means so as to obtain the above ratio (see Table 2 below). (WRC-03)

TABLE 1 (Rev.WRC-03)

$G_{max} = 10 \log (\eta(\pi D/\lambda)^2)$	
$G(\varphi) = G_{max} - 2.5 \times 10^{-3} \left(\frac{D}{\lambda}\varphi\right)^2$	for $0 < \varphi < \varphi_m$
$G(\varphi) = \min (G_1, 29 - 25 \log \varphi)$	for $\varphi_m \le \varphi \le 19.95°$
$G(\varphi) = \max (\min (-3.5, 32 - 25 \log \varphi), -10)$	for $\varphi > 19.95°$

where:

D: antenna diameter
λ: wavelength
} expressed in the same unit

φ: off-axis angle of the antenna (degrees)

G_1: gain of the first side lobe $= -1 + 15 \log \frac{D}{\lambda}$

$$\varphi_m = \frac{20\lambda}{D} - \sqrt{G_{max} - G_1} \quad \text{degrees}$$

η: antenna efficiency

TABLE 2 (WRC-03)

$G_{max} = 10 \log (\eta(\pi D/\lambda)^2)$	
$G(\varphi) = G_{max} - 2.5 \times 10^{-3} \left(\frac{D}{\lambda}\varphi\right)^2$	for $0 < \varphi < \varphi_m$
$G(\varphi) = G_1$	for $\varphi_m \le \varphi < \varphi_r$
$G(\varphi) = 29 - 25 \log \varphi$	for $\varphi_r \le \varphi < 36.3°$
$G(\varphi) = -10$	for $36.3° \le \varphi < 180°$

where:

D: antenna diameter
λ: wavelength
} expressed in the same unit

φ: off-axis angle of the antenna (degrees)

G_1: gain of the first side lobe $= -1 + 15 \log \frac{D}{\lambda}$

$$\varphi_m = \frac{20\lambda}{D} - \sqrt{G_{max} - G_1} \quad \text{degrees}$$

$$\varphi_r = 15.85 \left(\frac{D}{\lambda}\right)^{-0.6} \quad \text{degrees}$$

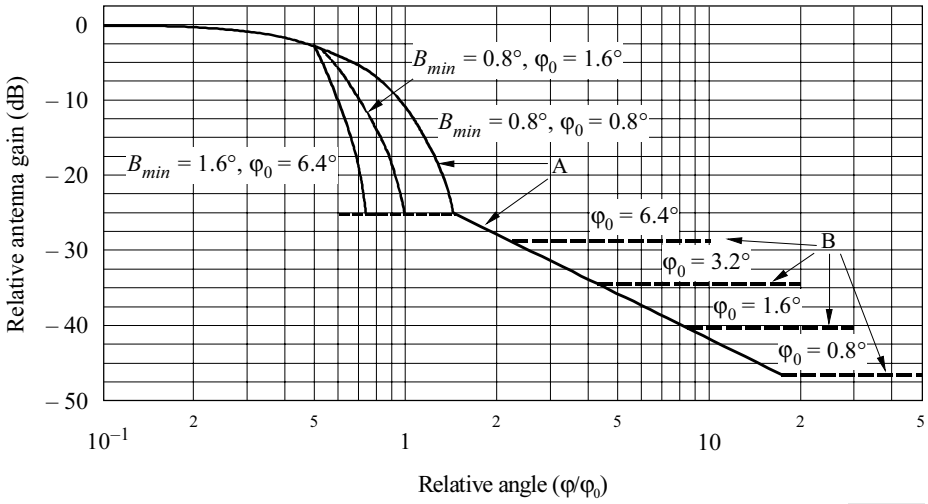
η: antenna efficiency

1.7 Space station characteristics

MOD

FIGURE 2* (WRC-03)

Reference patterns for satellite antennas with fast roll-off in the main beam



RP/A1-02

Curve A: dB relative to main beam gain

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

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

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

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

after intersection with Curve B: Curve B.

Curve B: Minus the on-axis gain (Curve B represents examples of four antennas having different values of φ_0 as labelled in Fig. 2. The on-axis gains of these antennas are approximately 28.3, 34.3, 40.4 and 46.4 dBi, respectively)

where:

φ: off-axis angle (degrees)

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

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

where:

$$B_{min} = \begin{cases} 0.8° \text{ for } 13/10\text{-}11\,\text{GHz} \\ \\ 1.6° \text{ for } 6/4\,\text{GHz} \end{cases}$$

* Figure 2 represents patterns for same combinations of B_{min} and φ_0. (WRC-03)

SUP

ANNEX 2

Basic data to be furnished in notices relating to stations in the fixed-satellite service entering the design stage using frequency bands of the Plan

ADD

ANNEX 2 (WRC-03)

Basic data to be furnished in notices relating to stations in the fixed-satellite service entering the design stage using frequency bands of the Plan

These data are listed in Appendix **4**.

ANNEX 4 (WRC-03)

Limits for determining whether an allotment or an assignment made in accordance with the provisions of Appendix 30B is considered to be affected

MOD

An allotment shall be considered as being affected by another administration if, at its nominal orbital position within the predetermined arc, the calculated single-entry carrier-to-interference ratio is less than or equal to 30 dB (WRC-03 decided that for the examination of submissions received as from 5 July 2003 the value 27 dB (instead of 30 dB) shall be applied), or the calculated value, based on the Plan, due to that other administration (whichever is the lower), at any test point within the service area of the interfered-with satellite network. The single-entry carrier-to-interference ratio is calculated using the method in Appendix 1 to this Annex.

An assignment shall be considered affected by a signal whose peak-to-average ratio (k) exceeds 5 dB in that portion of the spectrum which has been defined for low-density carrier usage, as identified in Annex 3B, if the single-entry carrier-to-interference ratio, calculated on the basis of power density averaged over the necessary bandwidth of the desired carrier, falls below:

$$25 + k \qquad \text{dB}$$

(WRC-03 decided that for the examination of submissions received as from 5 July 2003 the value $22 + k$ dB (instead of $25 + k$ dB) shall be applied.)

Even if the single-entry carrier-to-interference ratio is above 30 dB (WRC-03 decided that for the examination of submissions received as from 5 July 2003 the value 27 dB (instead of 30 dB) shall be applied) (or the calculated value based on the Plan due to that other administration, whichever value is lower), an allotment or an assignment shall be considered affected if the

overall aggregate C/I, as calculated using Appendix 1 to this Annex, falls below 26 dB (WRC-03 decided that for the examination of submissions received as from 5 July 2003 the value 23 dB (instead of 26 dB) shall be applied) or the calculated value for the assignment, based on the Plan, whichever is lower.

ANNEX 5

Application of the PDA (predetermined arc) concept

MOD

1.1 For the purposes of this Annex, an administration will be considered as being affected by another administration if, at its nominal orbital position within the predetermined arc, the calculated single-entry carrier-to-interference ratio is less than or equal to 30 dB (WRC-03 decided that for the examination of submissions received as from 5 July 2003 the value 27 dB (instead of 30 dB) shall be applied), or the calculated value, based on the Plan, due to that other administration (whichever is lower), at any test point within the service area of the interfered-with satellite network. The single-entry C/I ratio is calculated by the method in Appendix 1, Annex 4.

Even if the single-entry C/I ratio is above 30 dB (WRC-03 decided that for the examination of submissions received as from 5 July 2003 the value 27 dB (instead of 30 dB) shall be applied), or the calculated value, based on the Plan, due to that other administration (whichever is lower), an administration shall be considered as being affected if the overall aggregate C/I ratio, calculated by the method in Appendix 1, falls below 26 dB[9] (WRC-03 decided that for the examination of submissions received as from 5 July 2003 the value 23 dB (instead of 26 dB) shall be applied), or the value for the assignment (whichever is lower). (WRC-03)

MOD

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[9] For allotments with an aggregate C/I ratio less than 26 dB (WRC-03 decided that for the examination of submissions received as from 5 July 2003 the value 23 dB (instead of 26 dB) shall be applied), the calculated C/I ratio based on the Plan will be used. However, if through the use of the PDA Concept, this value is improved in the latter application of this procedure, the improved value will be used until it reaches 26 dB (WRC-03 decided that for the examination of submissions received as from 5 July 2003 the value 23 dB (instead of 26 dB) shall be applied). (WRC-03)

ANNEX 6

Technical means which may be used to avoid incompatibilities between systems in the fixed-satellite service at their implementation stage

MOD

5 Transmission (modulation) and reception techniques allowing for the C/I ratios less than 26 dB (WRC-03 decided that for the examination of submissions received as from 5 July 2003 the value 23 dB (instead of 26 dB) shall be applied). (WRC-03)

APPENDIX 42 (Rev.WRC-03)

Table of allocation of international call sign series

MOD

Call sign series	Allocated to
4WA-4WZ	Democratic Republic of Timor-Leste

(WRC-03)