MOD

119.98-158.5 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
119.98-120.02	EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE S5.XXY SPACE RESEARCH (passive) S5.341	
120.02-122.25	EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE S5.XXY SPACE RESEARCH (passive) S5.138	
122.25-123	FIXED INTER-SATELLITE MOBILE S5.558 Amateur S5.138	
123-126	FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) RADIONAVIGATION RADIONAVIGATION-SATELLITE Radio astronomy S5.554	
126-130	FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) RADIONAVIGATION RADIONAVIGATION-SATELLITE Radio astronomy S5.QQQ S5.149 S5.554	
130-134	EARTH EXPLORATION-SATELLITE (active) S5.LLL FIXED INTER-SATELLITE MOBILE S5.558 RADIO ASTRONOMY S5.149 S5.FFF	
134-136	AMATEUR AMATEUR-SATELLITE Radio astronomy	
136-141	RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite S5.149	

MOD

119.98-158.5 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
141-148.5	FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION S5.149	
148.5-151.5	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) S5.340	
151.5-155.5	FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION S5.149	
155.5-158.5	EARTH EXPLORATION-SATELLITE (passive) S5.AAB FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) S5.CCA S5.149 S5.BBA	

ADD

S5.QQQ *Additional allocation*: In Korea (Rep. of), the bands 128-130 GHz, 171-171.6 GHz, 172.2-172.8 GHz and 173.3-174 GHz are also allocated to the radio astronomy service on a primary basis until 2015.

ADD

S5.LLL The allocation to the Earth exploration-satellite service (active) is limited to the band 133.5-134 GHz.

ADD

S5.AAB In the band 155.5-158.5 GHz, the allocation to the Earth exploration-satellite (passive) and space research (passive) services shall terminate on 1 January 2018.

ADD

S5.BBA The date of entry into force of the allocation to the fixed and mobile services in the band 155.5-158.5 GHz shall be 1 January 2018.

MOD

158.5-202 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
158.5-164	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)	
164-167	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) S5.340	
167-168	FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE S5.558	
168-170	FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE S5.558 S5.149	
170-174.5	FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE S5.558 S5.149 S5.QQQ	
174.5-174.8	FIXED INTER-SATELLITE MOBILE S5.558	
174.8- 182	EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE S5.YYY SPACE RESEARCH (passive)	
185-190	EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE S5.YYY SPACE RESEARCH (passive)	
190-191.8	EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) S5.340	

MOD

158.5-202 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
191.8-200	FIXED INTER-SATELLITE MOBILE S5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE S5.149 S5.341 S5.554	
200-202	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) S5.340 S5.341 S5.RRR	

ADD

S5.YYY Use of the bands 174.8-182 GHz and 185-190 GHz by the inter-satellite service is limited to satellites in the geostationary-satellite orbit. The single-entry power flux-density produced by a station in the inter-satellite service, for all conditions and for all methods of modulation, at all altitudes from 0 km to 1 000 km above the Earth's surface and in the vicinity of all geostationary orbital positions occupied by passive sensors, shall not exceed -144 dB(W/(m^2 MHz)) for all angles of arrival.

ADD

S5.RRR In the bands 200-209 GHz, 235-238 GHz, 250-252 GHz and 265-275 GHz, ground-based passive atmospheric sensing is carried out to monitor atmospheric constituents.

MOD

202-1 000 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
202-209	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) S5.340 S5.341 S5.RRR	
209-217	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY S5.149 S5.341	
217-226	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) S5.CCA S5.149 S5.341	
226-231.5	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) S5.340	
231.5-232	FIXED MOBILE Radiolocation	
232-235	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Radiolocation	
235-238	EARTH EXPLORATION-SATELLITE (passive) FIXED-SATELLITE (space-to-Earth) SPACE RESEARCH (passive) S5.RRR S5.NNN	
238-240	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE	
240-241	FIXED MOBILE RADIOLOCATION	
241-248	RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite S5.138 S5.149	

MOD

202-1 000 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
248-250	AMATEUR AMATEUR-SATELLITE Radio astronomy S5.149	
250-252	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) S5.340 S5.RRR	
252-265	FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY RADIONAVIGATION RADIONAVIGATION-SATELLITE S5.149 S5.554	
265-275	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY S5.149 S5.RRR	
275-1 000	(Not allocated) S5.565	

ADD

S5.NNN The band 237.9-238 GHz is also allocated to the Earth exploration-satellite service (active) and the space research service (active) for spaceborne cloud radars only.

SUP

S5.564

MOD

S5.565 The frequency band 275-1 000 GHz may be used by administrations for experimentation with, and development of, various active and passive services. In this band a need has been identified for the following spectral line measurements for passive services:

- radio astronomy service: 275-323 GHz, 327-371 GHz, 388-424 GHz, 426-442 GHz, 453-510 GHz, 623-711 GHz, 795-909 GHz and 926-945 GHz;
- Earth exploration-satellite service (passive) and space research service (passive): 275-277 GHz, 294-306 GHz, 316-334 GHz, 342-349 GHz, 363-365 GHz, 371-389 GHz, 416-434 GHz, 442-444 GHz, 496-506 GHz, 546-568 GHz, 624-629 GHz, 634-654 GHz, 659-661 GHz, 684-692 GHz, 730-732 GHz, 851-853 GHz and 951-956 GHz.

Future research in this largely unexplored spectral region may yield additional spectral lines and continuum bands of interest to the passive services. Administrations are urged to take all practicable steps to protect these passive services from harmful interference until the date when the allocation table is established in the above-mentioned frequency band.

ARTICLE S8

Status of frequency assignments recorded in the Master International Frequency Register

MOD

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[1] **S8.1.1** The expression "frequency assignment", wherever it appears in this Chapter, shall be understood to refer either to a new frequency assignment or to a change in an assignment already recorded in the Master Register. Additionally, wherever the expression relates to a geostationary or non-geostationary space station, it shall be associated with § A.4 of Annex 2A to Appendix **S4**, as relevant, and wherever the expression relates to an earth station associated with a geostationary or non-geostationary space station, it shall be associated with § A.4 *c)* of Annex 2A to Appendix **S4**, as relevant.

ARTICLE S9

Procedure for effecting coordination with or obtaining agreement of other administrations[1, 2, 3, 4, 5, 5bis]

MOD

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[3] **A.S9.3** See Appendices **S30** and **S30A**, as appropriate, for the coordination of:

a) proposed modifications to the Appendix **S30** Plans for the broadcasting-satellite service in the frequency bands 11.7-12.2 GHz (in Region 3), 11.7-12.5 GHz (in Region 1) and 12.2-12.7 GHz (in Region 2), or new or modified assignments proposed for inclusion in the Regions 1 and 3 List of additional uses, with respect to frequency assignments in the same service or in other services to which these bands are allocated;

b) frequency assignments in other services to which the frequency bands referred to in § *a)* above are allocated in the same Region or in another Region, with respect to assignments in 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);

c) proposed modifications to the Appendix **S30A** Plans for feeder links to the broadcasting-satellite service in the frequency bands 17.3-17.8 GHz (in Region 2) and 14.5-14.8 GHz and 17.3-18.1 GHz (in Regions 1 and 3), or new or modified assignments proposed for inclusion in the Regions 1 and 3 List of additional uses, with respect to frequency assignments in the same service or in other services to which these bands are allocated;

d) frequency assignments in other services to which the frequency bands referred to in § *c)* above are allocated in the same Region or in another Region, with respect to assignments in the fixed-satellite service (Earth-to-space) in the frequency bands 17.3-17.8 GHz (in Region 2) and 14.5-14.8 GHz and 17.3-18.1 GHz (in Regions 1 and 3).

For the broadcasting-satellite service and for feeder links for the broadcasting-satellite service in the fixed-satellite service in Region 2, Resolution **42 (Rev.Orb-88)** is also applicable.

MOD

[4] **A.S9.4** Resolution **49 (Rev.WRC-2000)** shall also be applied with respect to those satellite networks and satellite systems that are subject to it.

MOD

[5] **A.S9.5** See also Resolution **51 (Rev.WRC-2000)**.

ADD

[5bis] **A.S9.5A** The provisions of Appendices **S30**, **S30A** and **S30B** do not apply to non-GSO FSS systems.

MOD

S9.2 Amendments to the information sent in accordance with the provisions of No. **S9.1** 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 ±12° 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.

MOD

S9.2B On receipt of the complete information sent under Nos. **S9.1** and **S9.2**, the Bureau shall publish[6A] it in a special section of its International Frequency Information Circular (IFIC) within three months. 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 therefore.

ADD

[6A] **S9.2B.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 60 days prior to due date of the payment if payment has not been received by that date. This provision was identified in reply to Resolution **88** (Minneapolis, 1998) of the Plenipotentiary Conference and shall enter into force at a date to be determined by the forthcoming plenipotentiary conference.

MOD

S9.5B If, upon receipt of the International Frequency Information Circular (IFIC) containing information published under No. **S9.2B**, any administration considers its existing or planned satellite systems or networks or terrestrial stations[7] to be affected, it may send its comments to the publishing administration, so that the latter may take those comments into consideration when initiating the coordination procedure. A copy of these comments may also be sent to the Bureau. Thereafter, both administrations shall endeavour to cooperate in joint efforts to resolve any difficulties, with the assistance of the Bureau, if so requested by either of the parties, and shall exchange any additional relevant information that may be available.

Sub-Section IIA – Requirement and request for coordination

ADD

S9.7A *a1)*[11bis, 11ter] for a specific earth station in a geostationary-satellite network in the fixed-satellite service in certain frequency bands, in respect of a non-geostationary-satellite system in the fixed-satellite service;

ADD

S9.7B *a2)*[11bis, 11ter] for a non-geostationary-satellite system in the fixed-satellite service in certain frequency bands, in respect of a specific earth station in a geostationary-satellite network in the fixed-satellite service;

ADD

[11bis] **S9.7A.1** and **S9.7B.1** The coordination of a specific earth station under Nos. **S9.7A** or **S9.7B** shall remain within the authority of the administration on whose territory the station is located.

ADD

[11ter] **S9.7A.2** and **S9.7B.2** Coordination information relating to a specific earth station received by the Bureau prior to 30 June 2000 is considered as complete information under Nos. **S9.7A** or **S9.7B** from the date of receipt of complete information for the associated satellite network under No. **S9.7**, provided that the maximum isotropic antenna gain, the lowest total receiving system noise temperature of the earth station and the necessary bandwidth of the emission received by the earth station are equal to those of any typical earth station included in the coordination request for the GSO FSS network.

SUP

S9.8

SUP

S9.9

SUP

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[12] **S9.8.1** and **S9.9.1**

MOD

S9.11A *e)* for a station for which the requirement to coordinate is included in a footnote to the Table of Frequency Allocations referring to this provision, the provisions of Nos. **S9.12** to **S9.16** are applicable;

MOD

S9.12 *f)* for a station in a satellite network using a non-geostationary-satellite orbit, for which the requirement to coordinate is included in a footnote to the Table of Frequency Allocations referring to this provision or to No. **S9.11A**, in respect of any other satellite network using a non-geostationary-satellite orbit, with the exception of coordination between earth stations operating in the opposite direction of transmission;

ADD

S9.12A *g)* for a station in a satellite network using a non-geostationary-satellite orbit, for which the requirement to coordinate is included in a footnote to the Table of Frequency Allocations referring to this provision or to No. **S9.11A**, in respect of any other satellite network using the geostationary-satellite orbit, with the exception of coordination between earth stations operating in the opposite direction of transmission;

MOD

S9.13 *h)* for a station in a satellite network using the geostationary-satellite orbit, for which the requirement to coordinate is included in a footnote to the Table of Frequency Allocations referring to this provision or to No. **S9.11A**, in respect of any other satellite network using a non-geostationary-satellite orbit, with the exception of coordination between earth stations operating in the opposite direction of transmission;

MOD

S9.14 *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 No. **S9.11A** in respect of stations of terrestrial services where the threshold value is exceeded;

MOD

S9.15 *j)* for either a specific earth station or typical earth station of a non-geostationary satellite network for which the requirement to coordinate is included in a footnote to the Table of Frequency Allocations referring to No. **S9.11A**, in respect of terrestrial stations in frequency bands allocated with equal rights to space and terrestrial services and where the coordination area of the earth station includes the territory of another country;

MOD

S9.16 *k)* for a transmitting station of a terrestrial service for which the requirement to coordinate is included in a footnote to the Table of Frequency Allocations referring to No. **S9.11A** and which is located within the coordination area of an earth station in a non-geostationary-satellite network;

MOD

S9.17 *l)* for any specific earth station or typical mobile earth station in frequency bands above 100 MHz allocated with equal rights to space and terrestrial services, in respect of terrestrial stations, where the coordination area of the earth station includes the territory of another country, with the exception of the coordination under No. **S9.15**;

MOD

S9.17A *m)* for any specific earth station, in respect of other 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. **S9.19**;

(MOD)

S9.18 *n)* for any transmitting station of a terrestrial service in the bands referred to in No. **S9.17** within the coordination area of an earth station, in respect of this earth station, with the exception of the coordination under Nos. **S9.16** and **S9.19**;

MOD

S9.19 *o)* for any transmitting station of a terrestrial service or any transmitting earth station in the fixed-satellite service (Earth-to-space) in a frequency band shared on an equal primary basis with the broadcasting-satellite service, with respect to typical earth stations included in the service area of a space station in the broadcasting-satellite service;

(MOD)

S9.21 *p)* for any station of a service for which the requirement to seek the agreement of other administrations is included in a footnote to the Table of Frequency Allocations referring to this provision.

MOD

S9.32 If the responsible administration concludes that coordination is not required under Nos. **S9.7** to **S9.7B**, it shall send the relevant information pursuant to Appendix **S4** to the Bureau for action under No. **S9.34**.

MOD

S9.35 *a)* examine that information with respect to its conformity with No. **S11.31**[13bis];

ADD

[13bis] **S9.35.1** The Bureau shall include the detailed results of its examination under No. **S11.31** of compliance with the limits in Tables **S22-1** to **S22-3** in the publication under No. **S9.38**.

MOD

S9.36 *b)* identify in accordance with No. **S9.27** any administration with which coordination may need to be effected[14, 14bis];

ADD

[14bis] **S9.36.2** In the case of coordination under Nos. **S9.7**, **S9.7A** and **S9.7B**, the Bureau shall also identify the specific satellite networks or earth stations with which coordination needs to be effected. In the case of coordination under **S9.7** the list of the networks identified by the Bureau under No. **S9.27** is for information purposes only, to help administrations comply with this procedure.

MOD

S9.38 *d)* publish[14A], as appropriate, the complete information in the International Frequency Information Circular (IFIC) within four months. Where 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.

ADD

[14A] **S9.38.1** 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 60 days prior to due date of the payment if payment has not been received by that date. This provision was identified in reply to Resolution **88** (Minneapolis, 1998) of the Plenipotentiary Conference and shall enter into force at a date to be determined by the forthcoming plenipotentiary conference.

MOD

S9.41 Following receipt of the International Frequency Information Circular (IFIC) referring to requests for coordination under Nos. **S9.7** to **S9.7B**, an administration believing that it should have been included in the request or the initiating administration believing that an administration identified under No. **S9.36** in accordance with the provisions of No. **S9.7** (GSO/GSO), No. **S9.7A** (GSO earth station/non-GSO system) or No. **S9.7B** (non-GSO system/GSO earth station) of Table **S5-1** of Appendix **S5** (items 1, 2 and 3 of the frequency band column) should not have been included in the request, shall, within four months of the date of publication of the relevant International Frequency Information Circular (IFIC), inform the initiating administration or the identified administration, as appropriate, and the Bureau, giving its technical reasons for doing so, and shall request that its name be included or that the name of the identified administration be excluded, as appropriate.

MOD

S9.42 The Bureau shall study this information on the basis of Appendix **S5** and shall inform both administrations of its conclusions. Should the Bureau agree to include or exclude, as appropriate, the administration in the request, it shall publish an addendum to the publication under No. **S9.38**.

MOD

S9.51 Following its action under No. **S9.50**, the administration with which coordination was sought under Nos. **S9.7** to **S9.7B** shall, within four months of the date of publication of the Weekly Circular under No. **S9.38**, either inform the requesting administration and the Bureau of its agreement or act under No. **S9.52**.

ADD

S9.53A Upon expiry of the deadline for comments in respect of a coordination request under Nos. **S9.11** to **S9.14** and **S9.21**, the Bureau shall, according to its records, publish a Special Section, indicating the list of administrations having submitted their disagreement or other comments within the regulatory deadline.

MOD

S9.60 If, within the same four-month period specified in Nos. **S9.51** or **S9.51A**, an administration with which coordination is sought under Nos. **S9.7** to **S9.7B**and **S9.15** to **S9.19** fails to reply or to give a decision under Nos. **S9.51** or **S9.51A** or, following its disagreement under No. **S9.52**, fails to provide information concerning its own assignments on which its disagreement is based, the requesting administration may seek the assistance of the Bureau.

MOD

ARTICLE S11

Notification and recording of frequency assignments[1, 2, 3, 3bis]

MOD

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[1] **A.S11.1** See also Appendices **S30** and **S30A** as appropriate, for the notification and recording of:

a) frequency assignments to stations in 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);

b) frequency assignments to stations in other services to which the frequency bands referred to in § *a)* above are allocated in the same Region or in another Region, so far as their relationship to the broadcasting-satellite service is concerned, 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);

c) frequency assignments to feeder-link stations in the fixed-satellite service (Earth-to-space) in the frequency bands 14.5-14.8 GHz in Region 1 (see No. **S5.510**) and in Region 3, 17.3-18.1 GHz in Regions 1 and 3 and 17.3-17.8 GHz in Region 2, and to stations in other services in these bands;

d) frequency assignments to stations in the same service or other services to which the frequency bands referred to in § *c)* above are allocated in the same Region or in another Region, so far as their relationship to the fixed-satellite service (Earth-to-space) in these bands is concerned.

For the broadcasting-satellite service in Region 2 and for feeder links in the fixed-satellite service for the broadcasting-satellite service in Region 2, Resolution **42 (Rev.Orb-88)** is also applicable.

See also Appendix **S30B** for the notification and recording of assignments in the following frequency bands:

All Regions, fixed-satellite service only

4 500-4 800 MHz (space-to-Earth)
6 725-7 025 MHz (Earth-to-space)
10.7-10.95 GHz (space-to-Earth)
11.2-11.45 GHz (space-to-Earth)
12.75-13.25 GHz (Earth-to-space).

MOD

[2] **A.S11.2** Resolution **49 (Rev.WRC-2000)** shall also be applied with respect to those satellite networks and satellite systems that are subject to it.

MOD

[3] **A.S11.3** See also Resolution **51 (Rev.WRC-2000)**.

ADD

[3bis] **A.S11.3A** The provisions of Appendices **S30**, **S30A** and **S30B** do not apply to non-GSO FSS systems.

MOD

S11.32A *c)* with respect to the probability of harmful interference that may be caused to or by assignments recorded with a favourable finding under Nos. **S11.36** and **S11.37** or **S11.38**, or recorded in application of No. **S11.41**, or published under Nos. **S9.38** or **S9.58** but not yet notified, as appropriate, for those cases for which the notifying administration states that the procedure for coordination under Nos. **S9.7**,**S9.7A**, **S9.7B**, **S9.11**, **S9.12**, **S9.12A**, **S9.13** or **S9.14**, could not be successfully completed (see also No. **S9.65**);[10] or

MOD

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[10] **S11.32A.1** The examination of such notices with respect to any other frequency assignment for which a request for coordination under Nos. **S9.7**, **S9.7A**, **S9.7B**, **S9.12**, **S9.12A** or **S9.13**, as appropriate, has been published under No. **S9.38** but not yet notified shall be effected by the Bureau in the order of their publication under the same number using the most recent information available.

MOD

S11.33 *d)* with respect to the probability of harmful interference that may be caused to or by other assignments recorded with a favourable finding in application of Nos. **S11.36** and **S11.37** or **S11.38** or in application of No. **S11.41**, as appropriate, for those cases for which the notifying administration states that the procedure for coordination or prior agreement under Nos. **S9.15**[11], **S9.16**[11], **S9.17**[11], **S9.17A** or **S9.18**[11] could not be successfully completed (see also No. **S9.65**);[12] or

MOD

S11.35 In cases where the Bureau is not in a position to conduct the examination under No. **S11.32A** or **S11.33**, the Bureau shall immediately inform the notifying administration, which may then resubmit its notice under No. **S11.41**, under the assumption that the finding under No. **S11.32A** or **S11.33** is unfavourable.

MOD

S11.44 The notified date[16] of bringing into use of any assignment to a space station of a satellite network shall be no later than five years following the date of receipt by the Bureau of the relevant information under No. **S9.1**. The notified date of bringing into use may be extended at the request of the notifying administration by not more than two years, only under the conditions specified under Nos. **S11.44B** to **S11.44I**. 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.

ADD

[16] **S11.44.1** In the case of space station frequency assignments that are brought into use prior to the completion of the coordination process, and for which the Resolution **49 (WRC-97)** data have been submitted to the Bureau, the assignment shall continue to be taken into consideration for a maximum period of seven years from the date of receipt of the relevant information under No. **S9.1**. If the first notice for recording of the assignments in question under No. **S11.15** has not been received by the Bureau by the end of this seven-year period, the assignments shall no longer be taken into account by the Bureau and administrations. The Bureau shall inform the notifying administration of its pending actions three months in advance.

In the case of satellite networks for which relevant advance publication information has been received prior to 22 November 1997, the corresponding period will be nine years from the date of publication of this information.

ARTICLE S14

Procedure for the review of a finding or other decision of the Bureau

MOD

S14.6 The decision of the Board on the review, to be taken in accordance with the Convention, shall be regarded as final in so far as the Bureau and the Board are concerned. That decision, together with the supporting information, shall be published as under No. **S14.4**. If the review results in a modification to a finding previously formulated by the Bureau, the Bureau shall re-apply the relevant steps of the procedure under which the previous finding had been formulated, including, if appropriate, removal of the corresponding entries from the Master Register or any consequential effect on notices subsequently received by the Bureau. However, if the administration which requested the review disagrees with the Board's decision it may raise the matter at a world radiocommunication conference.

ARTICLE S15

Interferences

Section I – Interference from radio stations

MOD

S15.8 § 4 Special consideration shall be given to avoiding interference on distress and safety frequencies, those related to distress and safety identified in Article **S31** and Appendix **S13**, and those related to safety and regularity of flight identified in Appendix **S27**.

Section VI – Procedure in a case of harmful interference

MOD

S15.28 § 20 Recognizing that transmissions on distress and safety frequencies and frequencies used for the safety and regularity of flight (see Article **S31**, Appendix **S13** and Appendix **S27**) require absolute international protection and that the elimination of harmful interference to such transmissions is imperative, administrations undertake to act immediately when their attention is drawn to any such harmful interference.

MOD

S15.35 § 27 On being informed that a station over which it has jurisdiction is believed to have been the cause of harmful interference, an administration shall, as soon as possible, acknowledge receipt of that information by the quickest means available. Such acknowledgement shall not constitute an acceptance of responsibility.

MOD

S15.37 § 29 An administration receiving a communication to the effect that one of its stations is causing harmful interference to a safety service shall promptly investigate the matter and take any necessary remedial action and respond in a timely manner.

ARTICLE S21

Terrestrial and space services sharing frequency bands above 1 GHz

S21.5 3) The power delivered by a transmitter to the antenna of a station in the fixed or mobile services shall not exceed +13 dBW in frequency bands between 1 GHz and 10 GHz, or +10 dBW in frequency bands above 10 GHz, except as cited in No. **S21.5A**.

ADD

S21.5A As an exception to the power levels given in No. **S21.5**, the sharing environment within which the Earth exploration-satellite (passive) and space research (passive) services shall operate in the band 18.6-18.8 GHz is defined by the following limitations on the operation of the fixed service: the power of each RF carrier frequency delivered to the input of each antenna of a station in the fixed service in the band 18.6-18.8 GHz shall not exceed –3 dBW.

MOD

S21.6 4) The limits given in Nos. **S21.2**, **S21.3**, **S21.4**, **S21.5** and **S21.5A** apply, where applicable, to the services and frequency bands indicated in Table **S21-2** for reception by space stations where the frequency bands are shared with equal rights with the fixed or mobile services:

MOD

TABLE **S21-2** *(end)*

Frequency band	Service	Limit as specified in Nos.
18.6-18.8 GHz	Earth exploration-satellite Space research	**S21.5A**

MOD

S21.7 5) Transhorizon systems in the 1 700-1 710 MHz, 1 980-2 010 MHz, 2 025-2 110 MHz and 2 200-2 290 MHz bands may exceed the limits given in Nos. **S21.3** and **S21.5**, but the provisions of Nos. **S21.2** and **S21.4** should be observed. Considering the difficult sharing conditions with other services, administrations are urged to keep the number of transhorizon systems in these bands to a minimum.

MOD

TABLE **S21-4** *(continued)*

Frequency band	Service*	Limit in dB(W/m²) for angle of arrival (δ) above the horizontal plane			Reference bandwidth
		0°-5°	5°-25°	25°-90°	
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	−126	−126 + 0.5(δ − 5)	−116	1 MHz
11.7-12.5 GHz (Region 1) 12.5-12.75 GHz (Region 1 countries listed in Nos. **S5.494** and **S5.496**) 11.7-12.7 GHz (Region 2) 11.7-12.75 GHz (Region 3)	Fixed-satellite (space-to-Earth), non-geostationary-satellite orbit	−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. **S5.494** and **S5.496**)	Fixed-satellite (space-to-Earth), geostationary-satellite orbit	−148	−148 + 0.5(δ − 5)	−138	4 kHz
15.43-15.63 GHz	Fixed-satellite (space-to-Earth)	−127	5°-20°: −127 20°-25°: −127 + 0.56(δ − 20)²	25°-29°: −113 29°-31°: −136.9 + 25 log (δ − 20) 31°-90°: −111	1 MHz
17.7-19.3 GHz[7, 8]	Fixed-satellite (space-to-Earth) Meteorological-satellite (space-to-Earth)	−115[12bis] or −115−X[12]	−115 + 0.5(δ − 5)[12bis] or −115 − X + ((10 + X)/20) (δ − 5)[12]	−105[12bis] or −105 [12]	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	−115	−115 + 0.5(δ − 5)	−105	1 MHz

MOD

TABLE S21-4 *(end)*

Frequency band	Service*	Limit in dB(W/m²) for angle of arrival (δ) above the horizontal plane				Reference bandwidth
		0°-5°	5°-25°		25°-90°	
31.8-32.3 GHz	Space research	−120[16]	−120 + 0.75(δ − 5) [16]		−105	1 MHz
32.0-33.0 GHz	Inter-satellite	−135	−135 + (δ − 5)		−115	1 MHz
37-38 GHz	Space research, non-geostationary-satellite orbit	−120 [16]	−120 + 0.75(δ − 5) [16]		−105	1 MHz
37-38 GHz	Space research, geostationary-satellite orbit	−125	−125 + (δ − 5)		−105	1 MHz
37.5-40.0 GHz	Fixed-satellite (Non-geostationary) Mobile-satellite (Non-geostationary)	−120 [10, 16, FSS]	−120 + 0.75(δ-5) [10, 16, FSS]		−105 [10, 16, FSS]	1 MHz
37.5-40.0 GHz	Fixed-satellite (Geostationary) Mobile-satellite (Geostationary)	−127 [16, FSS]	5°-20°	20°-25°	−105 [16, FSS]	1 MHz
			−127 + (4/3)(δ-5) [16, FSS]	−107 + 0.4(δ-20) [16, FSS]		
40-40.5 GHz	Fixed-satellite	−115	−115 + 0.5(δ-5)		−105	1 MHz
40.5-42.0 GHz	Fixed-satellite (Non-geostationary) Broadcasting-satellite (Non-geostationary)	−115 [10, 16, FSS, BSS]	−115 + 0.5(δ-5) [10, 16, FSS, BSS]		−105 [10, 16, FSS, BSS]	1 MHz
40.5-42.0 GHz	Fixed-satellite (Geostationary) Broadcasting-satellite (Geostationary)	−120 [16, FSS, BSS]	5°-15°	15°-25°	−105 [16, FSS, BSS]	1 MHz
			−120 + (δ-5) [16, FSS, BSS]	−110 + 0.5(δ-15) [16, FSS, BSS]		
42.0-42.5 GHz	Fixed-satellite (Non-geostationary) Broadcasting-satellite (Non-geostationary)	−120 [10, 16, FSS, BSS]	−120 + 0.75(δ-5) [10, 16, FSS, BSS]		−105 [10, 16, FSS, BSS]	1 MHz
42.0-42.5 GHz	Fixed-satellite (Geostationary) Broadcasting-satellite (Geostationary)	−127 [16, FSS, BSS]	5°-20°	20°-25°	−105 [16, FSS, BSS]	1 MHz
			−127 + (4/3)(δ-5) [16, FSS, BSS]	−107 + 0.4(δ-20) [16, FSS, BSS]		

MOD

[8] **S21.16.2** In addition to the limits given in Table **S21-4**, in the band 18.6-18.8 GHz the sharing environment within which the Earth exploration-satellite (passive) and space research (passive) services shall operate is defined by the following limitations on the operation of the fixed-satellite service: the power flux-density across the 200 MHz band 18.6-18.8 GHz produced at the surface of the Earth by emissions from a space station under assumed free-space propagation conditions shall not exceed –95 dB(W/m^2), except for less than 5% of time, when the limit may be exceeded by up to 3 dB. The provisions of No. **S21.17** do not apply in this band.

MOD

[10] **S21.16.4** The values given in this table entry shall apply to emissions of space stations of non-geostationary satellites in systems operating with 99 or fewer satellites. Further study concerning the applicability of these values is necessary in order to apply them to systems operating with 100 or more satellites.

MOD

[12] **S21.16.6** The function X is defined as a function of the number, N, of satellites in the non-GSO FSS constellation, as follows:

- for $N \leq 50$ $\quad = 0$ (dB)
- for $50 < N \leq 288$ $\quad X = \frac{5}{119}(N - 50)$ (dB)
- for $N > 288$ $\quad X = \frac{1}{69}(N + 402)$ (dB)

In the band 18.8-19.3 GHz, these limits apply to emissions of any space station in a non-GSO FSS system for which complete coordination or notification information, as appropriate, has been received by the Radiocommunication Bureau after 17 November 1995, and which was not operational by that date.

ADD

[12*bis*] **S21.16.6*bis*** These limits apply to emissions of a space station on a meteorological satellite and on a GSO FSS satellite. They also apply to emissions of any space station in a non-GSO FSS system in the band 18.8-19.3 GHz for which complete coordination or notification information has been received by the Radiocommunication Bureau by 17 November 1995, or which was in operation by that date.

SUP

[14] **S21.16.8**

SUP

[15] **S21.16.9**

ADD

[16] **S21.16.10** During the launch and near-Earth operational phase of deep space facilities, non-GSO space research service systems shall not exceed a pfd value of:

–115 dB(W/m^2)	if $\delta < 5°$
–115 + 0.5 (δ – 5) dB(W/m^2)	if $5° \leq \delta \leq 25°$
–105 dB(W/m^2)	if $\delta > 25°$

in any 1 MHz band, where δ is the angle of arrival above the horizontal plane.

ADD

[16] **S21.16.10** Except to the extent provided in footnote S21.16.FSS, these values are provisional and shall be applied subject to Resolution **[COM5/28] (WRC-2000)**.

ADD

[FSS] **S21.16.FSS** In the bands 37.5-40 and 40.5-42.5 GHz, notwithstanding any further studies, the power flux-density limits in this table shall be applied to stations in the fixed-satellite service for which complete coordination (GSO) or notification information (non-GSO), as appropriate, has been received by the Bureau after 2 June 2000 and before the end of WRC-03.

ADD

[BSS] **S21.16.BSS** The values given for the BSS are provisional and need review by a future conference.

ARTICLE S22

Space services[1]

Section II – Control of interference to geostationary-satellite systems

SUP

S22.5B

MOD

S22.5C § 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 **S22-1A** to **S22-1D**, including emissions from a reflecting satellite, for all conditions and for all methods of modulation, shall not exceed the limits given in Tables **S22-1A** to **S22-1D** 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 **S22-1A** to **S22-1D**, for all pointing directions towards the geostationary-satellite orbit.

MOD

[2] **S22.5C.1, S22.5D.1, S22.5F.1** The equivalent power flux-density is defined as the sum of the power flux-densities produced at a GSO receive station on the Earth's surface or in the geostationary orbit, as appropriate, by all the transmit stations within a non-geostationary-satellite system, taking into account the off-axis discrimination of a reference receiving antenna assumed to be pointing in its nominal direction. The equivalent power flux-density is calculated using the following formula:

$$epfd = 10 \cdot \log_{10}\left[\sum_{i=1}^{N_a} 10^{\frac{P_i}{10}} \cdot \frac{G_t(\theta_i)}{4.\pi d_i^2} \cdot \frac{G_r(\phi_i)}{G_{r,\max}}\right]$$

where:

N_a: is the number of transmit stations in the non-GSO system that are visible from the GSO receive station considered on the Earth's surface or in the geostationary orbit, as appropriate;

i: is the index of the transmit station considered in the non-GSO system;

P_i: is the RF power at the input of the antenna of the transmit station, considered in the non-GSO system in dBW in the reference bandwidth;

θ_i: is the off-axis angle between the boresight of the transmit station considered in the non-GSO system and the direction of the GSO receive station;

$G_t(\theta_i)$: is the transmit antenna gain (as a ratio) of the station considered in the non-GSO system in the direction of the GSO receive station;

d_i: is the distance in metres between the transmit station considered in the non-GSO system and the GSO receive station;

ϕ_i: is the off-axis angle between the boresight of the antenna of the GSO receive station and the direction of the ith transmit station considered in the non-GSO system;

$G_r(\phi_i)$: is the receive antenna gain (as a ratio) of the GSO receive station in the direction of the ith transmit station considered in the non-GSO system;

$G_{r,max}$: is the maximum gain (as a ratio) of the antenna of the GSO receive station;

$epfd$: is the computed equivalent power flux-density in dB(W/m^2) in the reference bandwidth.

ADD

S22.5CA 2) The limits given in Tables **S22-1A** to **S22-1D** may be exceeded on the territory of any country whose administration has so agreed.

SUP

TABLE **S22-1**

ADD

TABLE **S22-1A**[3, 5, 6, 6bis]

Limits to the epfd↓ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	epfd↓ dB(W/m²)	Percentage of time during which epfd↓ level may not be exceeded	Reference bandwidth (kHz)	Reference antenna diameter and reference radiation pattern[4]
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
	−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
	−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

TABLE **S22-1A**[3, 5, 6, 6bis] *(end)*

Frequency band (GHz)	**epfd↓ dB(W/m²)**	**Percentage of time during which epfd↓ level may not be exceeded**	**Reference bandwidth (kHz)**	**Reference antenna diameter and reference radiation pattern**[4]
	−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

3 For certain GSO FSS receive earth stations, see also Nos. **S9.7A** and **S9.7B**.

4 Under this section, reference patterns of Recommendation ITU-R S.1428 shall be used only for the calculation of interference from non-GSO FSS systems into GSO FSS systems.

5 In addition to the limits shown in Table **S22-1A**, the following single-entry epfd↓ limits apply to all antenna sizes greater than 60 cm in the frequency bands listed in Table **S22-1A**.

100% of the time epfd↓ (dB(W/(m² · 40 kHz)))	**Latitude (North or South) (°)**
−160	0 < |Latitude| ≤ 57.5
−160 + 3.4 (57.5 − |Latitude|)/4	57.5 < |Latitude| ≤ 63.75
−165.3	63.75 ≤ |Latitude|

6 For each reference antenna diameter, the limit consists of the complete curve on a plot which is linear in decibels for the epfd levels and logarithmic for the time percentages, with straight lines joining the data points.

6*bis* In meeting these limits, the administrations intending to develop such systems shall ensure that the assignments appearing in the Plan of Appendix **S30B** will be fully protected.

ADD

TABLE **S22-1B**[7, 9, 9bis]

Limits to the epfd↓ radiated by non-GSO FSS systems in certain frequency bands

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[8]
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
	−161.4 −161.4 −158.5 −153 −150 −150	0 90 99 99.714 99.971 100	1 000	
17.8-18.6	−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
	−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	
17.8-18.6	−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
	−171.4 −171.4 −166 −166 −158 −150 −150	0 99.8 99.8 99.943 99.943 99.998 100	1 000	

7 For certain GSO FSS receive earth stations, see also Nos. **S9.7A** and **S9.7B**.

8 Under this section, reference patterns of Recommendation ITU-R S.1428 shall be used only for the calculation of interference from non-GSO FSS systems into GSO FSS systems.

9 For each reference antenna diameter, the limit consists of the complete curve on a plot which is linear in decibels for the epfd levels and logarithmic for the time percentages, with straight lines joining the data points.

9bis A non-GSO system shall meet the limits of this table in both the 40 kHz and the 1 MHz reference bandwidths.

ADD

TABLE **S22-1C**[10, 12, 12*bis*]

Limits to the epfd↓ radiated by non-GSO FSS systems in certain frequency bands

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[11]
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
	−173.4 −168 −158 −140 −140	0 71.429 97.143 99.983 100	1 000	
19.7-20.2	−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
	−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	
19.7-20.2	−196.4 −162 −154 −154	0 99.98 99.99943 100	40	2.5 m Recommendation ITU-R S.1428
	−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

TABLE S22-1C[10, 12, 12bis] *(end)*

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[11]
	−186.4	0	1 000	
	−175.4	90		
	−173.8	94		
	−170	97.143		
	−161	99.886		
	−150.2	99.99		
	−140.6	99.999		
	−140	99.9992		
	−140	100		

10 For certain GSO FSS receive earth stations, see also Nos. **S9.7A** and **S9.7B**.

11 Under this section, reference patterns of Recommendation ITU-R S.1428 shall be used only for the calculation of interference from non-GSO FSS systems into GSO FSS networks.

12 For each reference antenna diameter, the limit consists of the complete curve on a plot which is linear in decibels for the epfd levels and logarithmic for the time percentages, with straight lines joining the data points.

12*bis* A non-GSO system shall meet the limits of this table in both the 40 kHz and the 1 MHz reference bandwidths.

ADD

TABLE S22-1D[13, 15, 16, 16bis]

Limits to the epfd↓ radiated by non-GSO FSS systems in certain frequency bands 30 cm, 45 cm, 60 cm, 90 cm, 120 cm, 180 cm, 240 cm and 300 cm BSS antennas

Frequency band (GHz)	epfd↓ dB(W/m²)	Percentage of time during which epfd↓ level may not be exceeded	Reference bandwidth (kHz)	Reference antenna diameter and reference radiation pattern[14]
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 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 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 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 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 Annex 1

TABLE **S22-1D**[13, 15, 16, 16*bis*] *(suite)*

Frequency band (GHz)	epfd↓ dB(W/m²)	Percentage of time during which epfd↓ level may not be exceeded	Reference bandwidth (kHz)	Reference antenna diameter and reference radiation pattern[14]
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	0	40	180 cm Recommendation ITU-R BO.1443 Annex 1
	−184.101	33		
	−181.691	98.5		
	−176.25	99.571		
	−163.25	99.946		
	−161.5	99.974		
	−160.35	99.993		
	−160	99.999		
	−160	100		
	−187.441	0	40	240 cm Recommendation ITU-R BO.1443 Annex 1
	−186.341	33		
	−183.441	99.25		
	−178	99.786		
	−164.4	99.957		
	−161.9	99.983		
	−160.5	99.994		
	−160	99.999		
	−160	100		
	−191.941	0	40	300 cm Recommendation ITU-R BO.1443 Annex 1
	−189.441	33		
	−185.941	99.5		
	−180.5	99.857		
	−173	99.914		
	−167	99.951		
	−162	99.983		
	−160	99.991		
	−160	100		

13 For BSS antenna diameters 180 cm, 240 cm and 300 cm, in addition to the single-entry limits shown in Table **S22-1D**, the following single-entry 100% of the time epfd↓ limits also apply in the frequency bands listed in Table **S22-1D**:

100% of the time epfd↓ (dB(W/(m² · 40 kHz)))	Latitude (North or South) (°)
−160	$0 \le \lvert \text{Latitude} \rvert \le 57.5$
$-160 + 3.4\,(57.5 - \lvert \text{Latitude} \rvert)/4$	$57.5 \le \lvert \text{Latitude} \rvert \le 63.75$
−165.3	$63.75 \le \lvert \text{Latitude} \rvert$

14 Under this section, reference patterns of Annex 1 to Recommendation ITU-R BO.1443 shall be used only for the calculation of interference from non-GSO FSS systems into GSO BSS systems.

15 For each reference antenna diameter, the limit consists of the complete curve on a plot which is linear in decibels for the epfd levels and logarithmic for the time percentages, with straight lines joining the data points.

16 For a BSS earth station antenna diameter of 240 cm, in addition to the single-entry 100% of the time epfd↓ limit specified in note 13 to this table, a single-entry 100% of the time operational epfd↓ limit is specified in Table **S22-4C**.

16*bis* In meeting these limits, the administrations intending to develop such systems shall ensure that the assignments appearing in the Plans of Appendix **S30** will be fully protected.

MOD

S22.5D 3) The equivalent power flux-density[2], epfd↑, produced at any point in the geostationary-satellite orbit by emissions from all the earth stations in a non-GSO FSS system in the frequency bands listed in Table **S22-2**, for all conditions and for all methods of modulation, shall not exceed the limits given in Table **S22-2** for the specified 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 Table **S22-2**, for all pointing directions towards the Earth's surface visible from any given location in the geostationary-satellite orbit.

(SUP)

[3] **S22.5D.1**

MOD

TABLE **S22-2**[17bis]

Limits to the epfd↑ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	**epfd↑ dB(W/m²)**	**Percentage of time epfd↑ level may not be exceeded**	**Reference bandwidth (kHz)**	**Reference antenna beamwidth and reference radiation pattern**[17]
12.50-12.75 12.75-13.25 13.75-14.5	−160	100	40	4 degrees Rec. ITU-R S.672-4, Ls = −20
17.3-18.1 (Regions 1 and 3) 17.8-18.1 (Region 2)*	−160	100	40	4 degrees Rec. ITU-R S.672-4, Ls = −20
27.5-28.6	−162	100	40	1.55 degrees Rec. ITU-R S.672-4, Ls = −10
29.5-30.0	−162	100	40	1.55 degrees Rec. ITU-R S.672-4, Ls = −10

[17] Under this section, reference patterns of Recommendation ITU-R S.672-4 shall be used only for the calculation of interference from non-GSO FSS systems into GSO FSS systems. For the case of Ls = −10, the values a = 1.83 and b = 6.32 shall be used in the equations in Annex 1 to Recommendation ITU-R S.672-4 for single-feed circular beams. In all cases of Ls, the parabolic main beam equation shall start at zero.

[17bis] In meeting these limits, the administrations intending to develop such systems shall ensure that the assignments appearing in the Plans of Appendices **S30A** and **S30B** will be fully protected.

* This epfd↑ level also applies to the frequency band 17.3-17.8 GHz to protect BSS feeder links in Region 2 from non-GSO FSS Earth-to-space transmissions in Regions 1 and 3.

SUP

S22.5E

(SUP)

[4] **S22.5E.1**

(SUP)

[5] **S22.5F.1**

MOD

S22.5F 4) The equivalent power flux-density[2], $epfd_{is}$, produced at any point in the geostationary-satellite orbit by emissions from all the space stations in a non-GSO FSS system in the frequency bands listed in Table **S22-3**, including emissions from a reflecting satellite, for all conditions and for all methods of modulation, shall not exceed the limits given in Table **S22-3** for the specified 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 Table **S22-3**, for all pointing directions towards the Earth's surface visible from any given location in the geostationary orbit.

MOD

TABLE **S22-3**[18bis]

Limits to the $epfd_{is}$ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	**$epfd_{is}$ dB(W/m^2)**	**Percentage of time during which $epfd_{is}$ level may not be exceeded**	**Reference bandwidth (kHz)**	**Reference antenna beamwidth and reference radiation pattern[18]**
10.7-11.7 (Region 1) 12.5-12.75 (Region 1) 12.7-12.75 (Region 2)	–160	100	40	4 degrees Rec. ITU-R S.672-4, Ls = –20
17.8-18.4	–160	100	40	4 degrees Rec. ITU-R S.672-4, Ls = –20

[18] Under this section, this reference pattern of Recommendation ITU-R S.672-4 shall be used only for the calculation of interference from non-GSO FSS systems into GSO FSS systems. In applying the equations of Annex 1 to Recommendation ITU-R S.672-4, the parabolic main beam equation shall start at zero.

[18bis] In meeting these limits, the administrations intending to develop such systems shall ensure that the assignments appearing in the Plans of Appendix **S30A** will be fully protected.

SUP

S22.5G

ADD

S22.5H 5) The limits specified in Nos. **S22.5C** to **S22.5D** and **S22.5F** apply to non-GSO FSS systems for which complete coordination or notification information, as appropriate, has been received by the Bureau after 22 November 1997. The limits in Tables **S22-4A**, **S22-4A1**, **S22-4B** and **S22-4C** do not apply to non-GSO FSS systems for which complete coordination or notification information, as appropriate, has been received by the Bureau before 22 November 1997.

ADD

S22.5I 6) An administration operating a non-GSO FSS system which is in compliance with the limits in Nos. **S22.5C**, **S22.5D** and **S22.5F** shall be considered as having fulfilled its obligations under No. **S22.2** with respect to any GSO network, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-GSO system and the GSO network, provided that the $epfd_{\downarrow}$ radiated by the non-GSO FSS system into any operating GSO FSS earth station does not exceed the operational and additional operational limits given in Tables **S22-4A**, **S22-4A1**, **S22-4B** and **S22-4C**, when the diameter of the earth station antenna is equal to the values given in Table **S22-4A**, **S22-4A1** or **S22-4C**, or the gain of the earth station is equal to or greater than the values given in Table **S22-4B** for the corresponding orbital inclination of the GSO FSS satellite. Except as otherwise agreed between concerned administrations, an administration operating a non-GSO FSS system that is subject to the limits in Nos. **S22.5C**, **S22.5D** and **S22.5F** and which radiates $epfd_{\downarrow}$ into any operating GSO FSS earth station at levels in excess of the operational or additional operational limits given in Tables **S22-4A**, **S22-4A1**, **S22-4B** and **S22-4C**, when the diameter of the earth station antenna is equal to the values given in Table **S22-4A**, **S22-4A1** or **S22-4C**, or the gain of the earth station is equal to or greater than the values given in Table **S22-4B** for the corresponding orbital inclination of the GSO FSS satellite, shall be considered to be in violation of its obligations under No. **S22.2**.

SUP

TABLE S22-4

PART A

PART B

ADD

TABLE **S22-4A**[20, 22, 22*bis*]

Operational limits to the epfd↓ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	epfd↓ dB(W/m²)	Percentage of time during which epfd↓ may not be exceeded	Reference bandwidth (kHz)	Receive GSO earth station antenna diameter[21] (m)	Orbital inclination of GSO satellite (degrees)
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 (prior to 31 December 2005)	−163 −166 −167.5 −169.5	100	40	3 6 9 ≥ 18	≤ 2.5
	−160 −163 −164.5 −166.5	100	40	3 6 9 ≥ 18	> 2.5 and ≤ 4.5
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 (from 31 December 2005)	−161.25 −164 −165.5 −167.5	100	40	3 6 9 ≥ 18	≤ 2.5
	−158.25 −161 −162.5 −164.5	100	40	3 6 9 ≥ 18	> 2.5 and ≤ 4.5

20 For certain GSO FSS receive earth stations, see also Nos. **S9.7A** and **S9.7B**.

21 For antenna diameters between the values given in this table, the limits are given by linear interpolation using a linear scale for epfd↓ in decibels and a logarithmic scale for antenna diameter in metres.

22 In addition to the operational limits shown in Table **S22-4A**, the additional operational limits in Table **S22-4A1** apply to certain GSO FSS earth station antenna sizes in the frequency bands listed in Table **S22-4A**.

22*bis* The operational limits on the epfd↓ radiated by non-GSO FSS systems shall be the values given in note 5 to Table **S22-1A** or Table **S22-4A**, whichever are the more stringent.

ADD

TABLE **S22-4A1**

Additional operational limits on the epfd↓ radiated by non-GSO FSS systems into 3 m and 10 m GSO FSS earth station antennas

epfd↓ (dB(W/(m^2 · 40 kHz)))	Percentage of time during which epfd↓ may not be exceeded	Receive GSO earth station antenna diameter (m)
−182	99.9	3
−179	99.94	
−176	99.97	
−171	99.98	
−168	99.984	
−165	99.993	
−163	99.999	
−161.25	99.99975	
−161.25	100	
−185	99.97	10
−183	99.98	
−179	99.99	
−175	99.996	
−171	99.998	
−168	99.999	
−166	99.9998	
−166	100	

ADD

TABLE **S22-4B**[23]

Operational limits to the epfd↓ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	epfd↓ dB(W/m^2)	Percentage of time during which epfd↓ may not be exceeded	Reference bandwidth (kHz)	Receive GSO earth station antenna gain (dBi)	Orbital inclination of GSO satellite (degrees)
19.7-20.2	−157	100	40	≥ 49	≤ 2.5
	−157	100	40	≥ 43[24]	≤ 2.5
	−155	100	40	≥ 49	> 2.5 and ≤ 4.5
19.7-20.2	−143	100	1 000	≥ 49	≤ 2.5
	−143	100	1 000	≥ 43[24]	≤ 2.5
	−141	100	1 000	≥ 49	> 2.5 and ≤ 4.5
17.8-18.6	−164	100	40	≥ 49	≤ 2.5
	−162	100	40	≥ 49	> 2.5 and ≤ 4.5
17.8-18.6	−150	100	1 000	≥ 49	≤ 2.5
	−148	100	1 000	≥ 49	> 2.5 and ≤ 4.5

[23] For certain GSO FSS receive earth stations, see also Nos. **S9.7A** and **S9.7B**.

[24] The operational limit applies to non-GSO systems operating at altitudes of 7 000 km or above in order to protect GSO FSS systems employing adaptive coding.

ADD

TABLE S22-4C[25]

Operational limits to the epfd↓ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	epfd↓ dB(W/m²)	Percentage of time during which epfd↓ may not be exceeded	Reference bandwidth (kHz)	Receive GSO earth station antenna diameter (m)	Orbital inclination of GSO satellite (degrees)
12.2-12.7 GHz in Region 2	–167	100	40	2.4	≤ 0.5

[25] These limits apply into GSO earth stations located in Region 2 west of 140° W, north of 60° N, pointing toward GSO BSS satellites at 91° W, 101° W, 110° W, 119° W and 148° W with elevation angles greater than 5°. [This limit is implemented during a transition period of 15 years.]

ADD

S22.5J 7) In case of *force majeure*, telecommand and ranging carriers transmitted to non-GSO FSS satellites are not subject to the limits given in Table **S22-2**.

ADD

S22.5K 8) Administrations operating or planning to operate non-GSO FSS systems in the bands listed in Tables **S22-1A** to **S22-1D** of No. **S22.5C** will apply the provisions of Resolution **[COM5/6] (WRC-2000)**to ensure that the actual aggregate interference into GSO FSS and GSO BSS networks caused by such systems operating co-frequency in these frequency bands does not exceed the aggregate power levels shown in Tables **[COM5/6]-1A** to **[COM5/6]-1D** of Resolution **[COM5/6] (WRC-2000)** In the event that an administration operating a GSO network in conformity with the Radio Regulations identifies epfd levels from non-GSO FSS systems which may be in excess of the aggregate limits contained in Tables **[COM5/6]-1A** to **[COM5/6]-1D** of Resolution **[COM5/6] (WRC-2000)**, the administrations responsible for the non-GSO FSS systems will apply the provisions contained in *resolves* 2 of Resolution **[COM5/6] (WRC-2000)**

MOD

Section VI – Off-axis power limits on earth stations of a geostationary-satellite network in the fixed-satellite service[11, 12]

MOD

[11] **S22.VI.1** The provisions of this section shall not be used for coordination of, or to evaluate interference between, GSO FSS networks (see No. **S9.50.1**).

ADD

[12] **S22.VI.2** Although the provisions of this section cover off-axis power limitations in all directions, the radiation pattern of GSO FSS earth station antennas in more than two orthogonal planes is not required.

MOD

S22.26 § 9 The level of equivalent isotropically radiated power (e.i.r.p.) emitted by an earth station of a geostationary-satellite network shall not exceed the following values for any off-axis angle φ which is 3° or more off the main-lobe axis of an earth station antenna:

Off-axis angle	*Maximum e.i.r.p.*
$3° \leq \varphi \leq 7°$	(42 – 25 log φ) dB(W/40 kHz)
$7° < \varphi \leq 9.2°$	21 dB(W/40 kHz)
$9.2° < \varphi \leq 48°$	(45 – 25 log φ) dB(W/40 kHz)
$48° < \varphi \leq 180°$	3 dB(W/40 kHz)

MOD

S22.27 For FM-TV emissions with energy dispersal, the limits in No. **S22.26** above may be exceeded by up to 3 dB, provided that the off-axis total e.i.r.p. of the transmitted FM-TV carrier does not exceed the following values:

Off-axis angle	*Maximum e.i.r.p.*
$3° \leq \varphi \leq 7°$	(56 – 25 log φ) dBW
$7° < \varphi \leq 9.2°$	35 dBW
$9.2° < \varphi \leq 48°$	(59 – 25 log φ) dBW
$48° < \varphi \leq 180°$	17 dBW

MOD

S22.28 FM-TV carriers which operate without energy dispersal should be modulated at all times with programme material or appropriate test patterns. In this case, the off-axis total e.i.r.p. of the emitted FM-TV carrier shall not exceed the following values:

Off-axis angle	*Maximum e.i.r.p.*
$3° \leq \varphi \leq 7°$	(56 – 25 log φ) dBW
$7° < \varphi \leq 9.2°$	35 dBW
$9.2° < \varphi \leq 48°$	(59 – 25 log φ) dBW
$48° < \varphi \leq 180°$	17 dBW

ADD

S22.30 The e.i.r.p. limits given in Nos. **S22.26**, **S22.27**,**S22.28** and **S22.32** do not apply to earth station antennas in service or ready to be in service[13] prior to 2 June 2000, nor to earth stations associated with a satellite network in the fixed-satellite service for which complete coordination or notification information has been received before 2 June 2000.

ADD

---

[13] **S22.30.1** "Ready to be in service" relates to the case where antennas have been installed but the start of service has been delayed due to *force majeure*.

ADD

S22.31 Telecommand and ranging[x] carriers transmitted to geostationary satellites in the fixed-satellite service in normal mode of operation (i.e. earth station transmitting telecommand and ranging carriers to a directional receiving antenna on the space station) may exceed the levels given in No. **S22.26** by no more than 16 dB in the frequency bands 12.75-13.25 GHz and 13.75-14.5 GHz. In all other modes of operation, and in case of *force majeure*, telecommand and ranging carriers transmitted to geostationary satellites in the fixed-satellite service are exempted from the levels given in No. **S22.26**.

ADD

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[x] **S22.31.1** Measurement of the distance to the satellite.

ADD

S22.32 § 10 The level of equivalent isotropically radiated power (e.i.r.p.) density emitted by an earth station in a geostationary-satellite network in the 29.5-30 GHz frequency band shall not exceed the following values for any off-axis angle φ which is 3° or more off the main-lobe axis of an earth station antenna:

Off-axis angle	*Maximum e.i.r.p. density*
$3° \leq \varphi \leq 7°$	$(28 - 25 \log \varphi)$ dB(W/40 kHz)
$7° < \varphi \leq 9.2°$	7 dB(W/40 kHz)
$9.2° < \varphi \leq 48°$	$(31 - 25 \log \varphi)$ dB(W/40 kHz)
$48° < \varphi \leq 180°$	−1 dB(W/40 kHz)

ADD

S22.33 Not used.

ADD

S22.34 Telecommand and ranging carriers transmitted to geostationary satellites in the fixed-satellite service in normal mode of operation (i.e. earth station transmitting telecommand and ranging carriers to a directional receiving antenna on the space station) may exceed the levels given in No. **S22.32** by no more than 10 dB in the frequency band 29.5-30 GHz. In all other modes of operation, and in case of *force majeure*, telecommand and ranging carriers transmitted to geostationary satellites in the fixed-satellite service are exempted from the levels given in No. **S22.32**.

ADD

S22.35 For GSO systems in which the earth stations are expected to transmit simultaneously in the same 40 kHz band, e.g. for GSO systems employing CDMA, the maximum e.i.r.p. values given in No. **S22.32** should be decreased by 10log(N) dB, where N is the number of earth stations which are in the receive satellite beam of the satellite with which these earth stations are communicating and which are expected to transmit simultaneously on the same frequency.

ADD

S22.36 Earth stations operating in the frequency band 29.5-30 GHz should be designed in such a manner that 90% of their peak off-axis e.i.r.p. density levels do not exceed the values given in No. **S22.32**. Further study is needed to determine the off-axis angular range over which these exceedences would be permitted, taking into account the interference level into adjacent satellites. The statistical processing of the off-axis e.i.r.p. density peaks should be carried out using the method given in Recommendation ITU-R S.732.

ADD

S22.37 The limits given in Nos. **S22.26** to **S22.28** and **S22.32** apply under clear-sky conditions. During rain-fade conditions, the limits may be exceeded by earth stations when using uplink power control.

ADD

S22.38 Earth stations in the fixed-satellite service operating in the 29.5-30 GHz band, which have lower elevation angles to the geostationary-satellite orbit, will require higher e.i.r.p. levels relative to the same terminals at higher elevation angles to achieve the same power flux-densities at the GSO, due to the combined effect of increased distance and atmospheric absorption. Earth stations with low elevation angles may exceed the levels given in No. **S22.32** by the following amounts:

Elevation angle to GSO (ε)	*Increase in e.i.r.p. density (dB)*
$\varepsilon \leq 5°$	2.5
$5 < \varepsilon \leq 30°$	$0.1(25 - \varepsilon) + 0.5$

ADD

S22.39 The values in No. **S22.32** applicable to the off-axis angle range from 48° to 180° are intended to account for spillover effects.

ARTICLE S23

Broadcasting services

ADD

S23.13A If the Bureau receives an indication of a written agreement under No. **S23.13**, it shall include reference to that agreement when the assignments to the system are recorded with reference to No. **S23.13** in the remarks column of the Master Register or included in the Regions 1 and 3 List.

ADD

S23.13B If, within the four-month period following the publication of the Special Section for a BSS* network submitted for coordination under Article **S9** or Appendix **S30**, an administration informs the Bureau that all technical means have not been used to reduce the radiation over its territory, the Bureau shall draw the attention of the responsible administration to the comments received. The Bureau shall request the two administrations to make every effort possible in order to resolve the issue. Either administration may request the Bureau to study the matter and submit its report to the administrations concerned. If no agreement can be reached, then the Bureau shall delete the territory of the objecting administration from the service area without adversely affecting the rest of the service area and inform the responsible administration.

ADD

S23.13C If, after the four-month period mentioned above, an administration objects to remaining in the service area, the Bureau shall delete the territory of the objecting administration from the service area of the BSS* network concerned without adversely affecting the rest of the service area and inform the responsible administration.

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* Except sound broadcasting.

APPENDIX S30B

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

(MOD)

ARTICLE 6

Procedures for implementation of the Plan and regulation of the fixed-satellite service in the planned bands[1A]

ADD

[1A] 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 Nos. 6.26, 6.33 and 6.49 or cancel the entry in the List under No. 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 60 days prior to due date of the payment if payment has not been received by that date. This provision was identified in reply to Resolution **88** (Minneapolis, 1998) of the Plenipotentiary Conference and shall enter into force at a date to be determined by the forthcoming plenipotentiary conference.

ARTICLE S59

Entry into force and provisional application of the Radio Regulations

S59.1 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 and WRC-2000, shall be applied, pursuant to Article 54 of the Constitution, on the following basis.

S59.3 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:

S59.5 The other provisions of these Regulations, as revised by WRC-2000, shall enter into force on 1 January 2002, with the following exceptions:

S59.6 – 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) 122 (Rev.WRC-2000), 128 (Rev.WRC-2000), 533 (Rev.WRC-2000),[COM4/4] (WRC-2000) [COM4/5] (WRC-2000), [COM4/6] (WRC-2000) [COM5/9] (WRC-2000),[COM5/16] (WRC-2000) [COM5/18] (WRC-2000) [COM5/19] (WRC-2000), [COM5/28] (WRC-2000) [COM5/31] (WRC-2000), [GT PLEN-1/1] (WRC-2000)[GT PLEN-1/2] (WRC-2000)**and **[GT PLEN-1/4] (WRC-2000)**

APPENDIX S3

Table of maximum permitted spurious emission power levels

(See Article **S3**)

Section I – Spurious emission limits for transmitters installed on or before 1 January 2003 (valid until 1 January 2012)

MOD

6 Radar systems are exempt from spurious emission limits under this section. The lowest practicable power of spurious emission should be achieved.

Section II – Spurious emission limits for transmitters installed after 1 January 2003 and for all transmitters after 1 January 2012

MOD

8 Guidance regarding the methods of measuring spurious emissions is given in the most recent version of Recommendation ITU-R SM.329. The e.i.r.p. method specified in that Recommendation should be used when it is not possible to accurately measure the power supplied to the antenna transmission line (for example, radars), or for specific applications where the antenna is designed to provide significant attenuation at the spurious frequencies. Additionally, the e.i.r.p. method may need some modification for special cases, e.g. beam forming radars.

ADD

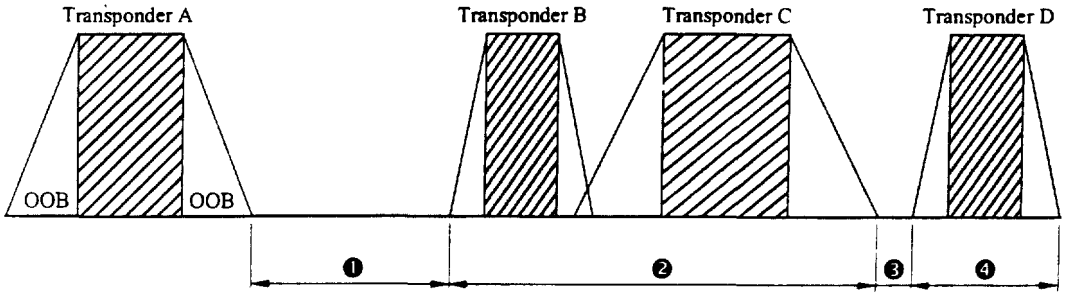
11*bis* As the bandwidth of an emitted signal becomes more and more narrow (to the limiting case of an unmodulated carrier with a theoretical necessary bandwidth of zero), the application of the term "necessary bandwidth" as used in determining the region where spurious emission limits apply to space services becomes more and more difficult. In the limiting case, ±250% of necessary bandwidth (recognized in many cases as establishing the region beyond which spurious emissions are defined) approaches zero. Beacon signals and other unmodulated signals, such as those used in uplink and downlink circuits in control and tracking of satellites, are examples of a case where it is difficult in practice to apply the concept of "necessary bandwidth" in determining where out-of-band emissions end, and spurious emissions begin. Pending further studies and definitive action by a future world radiocommunication conference for determining the portion of spectrum where spurious emission limits apply for transmitters using amplifiers to pass an essentially unmodulated signal (or a signal with very small bandwidth), the amplifier bandwidth is taken to be the necessary bandwidth.

ADD

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 emissions as indicated in § 11 of this Appendix, spurious emissions from one transponder may fall on a frequency at which a second, companion transponder is transmitting. In these situations, the level of spurious emissions from the first transponder is well exceeded by the fundamental or out-of-band emissions of the second transponder. Therefore, the limits of this Appendix should not apply to those spurious emissions of a satellite that fall within either the necessary bandwidth or the out-of-band region of another transponder on the same satellite, in the same service area (see Figure 1).

FIGURE 1

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



CMR-2000/256-01

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 emission limits in frequency ranges ❷ and ❹, but is required to meet them in frequency ranges ❶ and ❸.

MOD

TABLE II

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

Service category in accordance with Article S1, 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

MOD

[14] For radiodetermination systems (radar as defined by No. **S1.100**), spurious emission attenuation (in dB) shall be determined for radiated emission levels, and not at the antenna transmission line. The measurement methods for determining the radiated spurious emission levels from radar systems should be guided by Recommendation ITU-R M.1177.

ADD

[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)".

ADD

[17] Space stations in the space research service intended for operation in deep space as defined by No. **S1.177** are exempt from spurious emission limits.

ADD

[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.

APPENDIX S4

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

ANNEX 1A

List of characteristics of stations in the terrestrial services [1]

MOD

ITEM B – Notifying administration

Symbol of the notifying administration.

MOD

ITEM SYNC – Synchronized network

Symbol followed by the identification of the network, if the station concerned by the assignment pertains to a synchronized network.

ADD

ITEM 1AA – Usable frequency range

For MF/HF adaptive systems, the difference between the maximum and minimum assignable frequencies of a distinct frequency band.

SUP

ITEM 1D

MOD

ITEM 1E – Frequency offset, in terms of the line frequency

The carrier frequency offset expressed as a multiple of 1/12 of the line frequency of the television system concerned, expressed by a number (positive or negative).

ADD

ITEM 1E1 – Frequency offset (kHz)

The carrier frequency offset, in kHz, expressed by a number (positive or negative).

SUP

ITEM 1H

MOD

ITEM 3A – Call sign or station identification

The call sign or other identification used in accordance with Article **S19**.

MOD

ITEM 4A – Name of the location of the transmitting station

The name of the locality by which the transmitting station is known or in which it is situated.

MOD

ITEM 4B – Country or geographical area

Symbol of the geographical area in which the station is located.

SUP

ITEM 4F

MOD

ITEM 5A – Name of the location of the receiving station

The name of the locality by which the receiving station is known or in which it is situated.

MOD

ITEM 5B – Country or geographical area

Symbol of the geographical area in which the receiving station is located.

ADD

ITEM 7A1 – Frequency stability

Frequency stability for analogue television (RELAXED, NORMAL or PRECISION).

MOD

ITEM 7AA – Type of modulation

For HF broadcasting stations in their exclusive bands, a symbol which specifies the use of DSB, SSB or any new modulation techniques recommended by ITU-R.

ADD

ITEM 7B1 – Adjacent channel protection ratio

For assignments to stations of the broadcasting service covered by the LF/MF Broadcasting Agreement (Regions 1 and 3) (Geneva, 1975), the protection ratio (dB) to be used for adjacent channel interference calculations.

MOD

ITEM 7D – Transmission system

Symbol corresponding to the transmission system for an assignment to a VHF sound broadcasting station.

MOD

ITEM 8A – Power delivered to the antenna

The power delivered to the antenna transmission line expressed in dBW, with the exception of LF/MF sound broadcasting, for which the power delivered to the antenna shall be expressed in kW.