

of the equipment on a space object, including the space station.

*Space telemetering.* The use of telemetering for the transmission from a space station of results of measurements made in a spacecraft, including those relating to the functioning of the spacecraft.

*Space tracking.* Determination of the orbit, velocity or instantaneous position of an object in space by means of radiodetermination, excluding primary radar, for the purpose of following the movement of the object.

*Structural attenuation.* The term "structural attenuation" means the signal attenuation caused by transmitting to and from mobile terminals which are located in buildings or other man-made structures that attenuate the transmission of radiofrequency radiation.

*Terrestrial radiocommunication.* Any radiocommunication other than space radiocommunication or radio astronomy.

*Terrestrial station.* A station effecting terrestrial radiocommunication.

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**§ 25.202 Frequencies, frequency tolerance and emission limitations.**

(a)(1) *Frequency band.* The following frequencies are available for use by the fixed-satellite service. Precise frequencies and bandwidths of emission shall be assigned on a case-by-case basis. The Table follows:

Space-to-Earth (GHz)	Earth-to-space (GHz)
3.65–3.7 <sup>17</sup>	
3.7–4.2 <sup>1</sup>	5.925–6.425 <sup>1</sup>
10.7–10.95 <sup>1 12</sup>	12.75–13.25 <sup>1 12 14</sup>
10.95–11.2 <sup>1 2 12</sup>	13.75–14 <sup>4 12</sup>
11.2–11.45 <sup>1 12</sup>	14–14.2 <sup>5</sup>
11.45–11.7 <sup>1 2 12</sup>	14.2–14.5
11.7–12.2 <sup>3</sup>	17.3–17.8 <sup>9</sup>
12.2–12.7 <sup>13</sup>	24.75–25.05 <sup>18</sup>
18.3–18.58 <sup>1 10</sup>	25.05–25.25 <sup>1 18</sup>
18.58–18.8 <sup>6 10 11</sup>	27.5–29.5 <sup>1</sup>
18.8–19.3 <sup>7 10</sup>	29.5–30

Space-to-Earth (GHz)	Earth-to-space (GHz)
19.3–19.7 <sup>8 10</sup>	47.2–50.2 <sup>1</sup>
19.7–20.2 <sup>10</sup>	
37.5–40 <sup>15 16</sup>	
37.6–38.6	
40–42 <sup>16</sup>	

<sup>1</sup>This band is shared coequally with terrestrial radio communication service.

<sup>2</sup>Use of this band by geostationary satellite orbit satellite systems in the fixed-satellite service is limited to international systems; *i.e.*, other than domestic systems.

<sup>3</sup>Fixed-satellite transponders may be used additionally for transmissions in the broadcasting-satellite service.

<sup>4</sup>This band is shared on an equal basis with the Government radiolocation service and grandfathered space stations in the Tracking and Data Relay Satellite System.

<sup>5</sup>In this band, stations in the radionavigation service shall operate on a secondary basis to the fixed-satellite service.

<sup>6</sup>The band 18.58–18.8 GHz is shared coequally with existing terrestrial radiocommunication systems until June 8, 2010.

<sup>7</sup>The band 18.8–19.3 GHz is shared coequally with terrestrial radiocommunication services, until June 8, 2010. After this date, the sub-band 19.26–19.3 GHz is shared coequally with existing terrestrial radiocommunication systems.

<sup>8</sup>The use of the band 19.3–19.7 GHz by the fixed-satellite service (space-to-Earth) is limited to feeder links for the mobile-satellite service.

<sup>9</sup>The use of the band 17.3–17.8 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links for broadcasting-satellite service, and the sub-band 17.7–17.8 GHz is shared co-equally with terrestrial fixed services.

<sup>10</sup>This band is shared co-equally with the Federal Government fixed-satellite service.

<sup>11</sup>The band 18.6–18.8 GHz is shared coequally with the non-Federal Government and Federal Government Earth exploration-satellite (passive) and space research (passive) services.

<sup>12</sup>Use of this band by non-geostationary satellite orbit systems in the fixed-satellite service is limited to gateway earth station operations.

<sup>13</sup>Use of this band by the fixed-satellite service is limited to non-geostationary satellite orbit systems.

<sup>14</sup>Use of this band by NGSO FSS gateway earth station uplink operations is subject to the provisions of § 2.106 NG53.

<sup>15</sup>Use of this band by the fixed-satellite service is limited to "gateway" earth station operations, provided the licensee under this Part obtains a license under Part 101 of this Chapter or an agreement from a Part 101 licensee for the area in which an earth station is to be located. Satellite earth station facilities in this band may not be ubiquitously deployed and may not be used to serve individual consumers.

<sup>16</sup>The band 37.5–40.0 GHz is designated as being available for use by the fixed and mobile services and the band 40.0–42.0 GHz is designated as being available for use by the fixed-satellite service.

<sup>17</sup>FSS earth stations in this band must operate on a secondary basis to terrestrial radiocommunication services, except that the band is shared co-equally between certain grandfathered earth stations and the terrestrial radiocommunication services.

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<sup>18</sup> Use of the band 24.75-25.25 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links for space stations in the broadcasting-satellite service, and the sub-band 25.05-25.25 GHz is shared co-equally with terrestrial fixed services. The allocation to the fixed-satellite service (Earth-to-space) in the band 24.75-25.25 GHz shall come into effect on 1 April 2007.

(2) [Reserved]

(3) The following frequencies are available for use by the non-voice, non-geostationary mobile-satellite service:

- 137-138 MHz: Space-to-Earth
- 148-150.05 MHz: Earth-to-space
- 399.9-400.05 MHz: Earth-to-space
- 400.15-401 MHz: Space-to-Earth

(4)(i) The following frequencies are available for use by the 1.6/2.4 GHz Mobile-Satellite Service:

- 1610-1626.5 MHz: User-to-Satellite Link
- 1613.8-1626.5 MHz: Satellite-to-User Link (secondary)
- 2483.5-2500 MHz: Satellite-to-User Link

(ii) The following frequencies are available for use by the 2 GHz Mobile-Satellite Service: 2000-2020 MHz: User-to-Satellite Link; 2180-2200 MHz: Satellite-to-User Link.

(iii)(A) The following frequencies are available for use by the L-band Mobile-Satellite Service:

- 1525-1559 MHz: Space-to-Earth
- 1626.5-1660.5 MHz: Earth-to-space

(B) The use of the frequencies 1544-1545 MHz and 1645.5-1646.5 MHz is limited to distress and safety communications.

(5) The following frequencies are available for use by the inter-satellite service:

- 22.55-23.00 GHz
- 23.00-23.55 GHz
- 24.45-24.65 GHz
- 24.65-24.75 GHz

(6) The following spectrum is available for exclusive use by the satellite digital audio radio service:

- 2320-2345 MHz: space-to-Earth (primary).

(7) The following frequencies are available for use by the Direct Broadcast Satellite service:

- 12.2-12.7 GHz: Space-to-Earth.

(8) The following frequencies are available for use by ESVs:

- 3700-4200 MHz (space-to-Earth)
- 5925-6425 MHz (Earth-to-space)
- 10.95-11.2 GHz (space-to-Earth)

- 11.45-11.7 GHz (space-to-Earth)
- 11.7-12.2 GHz (space-to-Earth)
- 14.0-14.5 GHz (Earth-to-space)

ESVs shall be authorized and coordinated as set forth in §§ 25.221 and 25.222. ESV operators, collectively, may coordinate up to 180 megahertz of spectrum in the 5925-6425 MHz (Earth-to-space) band for all ESV operations at any given location subject to coordination.

(9) The following frequencies are available for use by the Broadcasting-Satellite Service after 1 April 2007:

- 17.3-17.7 GHz (space-to-Earth)
- 17.7-17.8 GHz (space-to-Earth)

NOTE 1 TO PARAGRAPH (a)(9): Use of the 17.3-17.7 GHz band by the broadcasting-satellite service is limited to geostationary satellite orbit systems.

NOTE 2 TO PARAGRAPH (a)(9): Use of the 17.7-17.8 GHz band (space-to-Earth) by the broadcasting-satellite service is limited to transmissions from geostationary satellite orbit systems to receiving earth stations located outside of the United States and its Possessions. In the United States and its Possessions, the 17.7-17.8 GHz band is allocated on a primary basis to the Fixed Service.

(b) Other frequencies and associated bandwidths of emission may be assigned on a case-by-case basis to space systems under this part in conformance with § 2.106 of this chapter and the Commission's rules and policies.

(c) Orbital locations assigned to space stations licensed under this part by the commission are subject to change by summary order of the Commission on 30 days notice. An authorization to construct and/or to launch a space station becomes null and void if the construction is not begun or is not completed, or if the space station is not launched and positioned at its assigned orbital location and operations commenced in accordance with the station authorization, by the respective date(s) specified in the authorization. Frequencies and orbital location assignments are subject to the policies set forth in the Report and Order, FCC 83-184, adopted April 27, 1983 in CC Docket No. 81-704 and the Report and Order, adopted July 25, 1985 in CC Docket No. 84-1299 as modified by the Report and Order, adopted January 19, 1996 in IB Docket No. 95-41.

(d) *Frequency tolerance, Earth stations.* The carrier frequency of each earth

station transmitter authorized in these services shall be maintained within 0.001 percent of the reference frequency.

(e) *Frequency tolerance, space stations.* The carrier frequency of each space station transmitter authorized in these services shall be maintained within 0.002 percent of the reference frequency.

(f) *Emission limitations.* The mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with the following schedule:

(1) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth: 25 dB;

(2) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth: 35 dB;

(3) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 250 percent of the authorized bandwidth: An amount equal to 43 dB plus 10 times the logarithm (to the base 10) of the transmitter power in watts;

(4) In any event, when an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in paragraphs (f) (1), (2) and (3) of this section.

(g) Telemetry, tracking and telecommand functions for U.S. domestic satellites shall be conducted at either or both edges of the allocated band(s). Frequencies, polarization and coding shall be selected to minimize inter-

ference into other satellite networks and within their own satellite system.

[30 FR 7176, May 28, 1965, as amended at 36 FR 2562, Feb. 6, 1971; 38 FR 8573, Apr. 4, 1973; 39 FR 33527, Sept. 18, 1974; 48 FR 40254, Sept. 6, 1983; 50 FR 36079, Sept. 5, 1985; 51 FR 18445, May 20, 1986; 51 FR 20975, June 10, 1986; 54 FR 49993, Dec. 4, 1989; 56 FR 24024, May 28, 1991; 58 FR 13419, Mar. 11, 1993; 58 FR 68061, Dec. 23, 1993; 59 FR 53329, Oct. 21, 1994; 61 FR 9952, Mar. 12, 1996; 61 FR 52307, Oct. 7, 1996; 62 FR 11105, Mar. 11, 1997; 64 FR 2591, Jan. 15, 1999; 64 FR 6565, Feb. 10, 1999; 65 FR 54171, Sept. 7, 2000; 65 FR 59144, Oct. 4, 2000; 66 FR 10622, Feb. 16, 2001; 66 FR 63515, Dec. 7, 2001; 67 FR 17299, Apr. 10, 2002; 67 FR 39862, June 11, 2002; 67 FR 51114, Aug. 7, 2002; 68 FR 11993, Mar. 13, 2003; 68 FR 16966, Apr. 8, 2003; 68 FR 34338, June 9, 2003; 68 FR 74387, Dec. 23, 2003; 69 FR 52206, Aug. 25, 2004; 70 FR 4783, Jan. 31, 2005; 70 FR 24725, May 11, 2005; 70 FR 32255, June 2, 2005; 72 FR 50028, Aug. 29, 2007]

#### § 25.203 Choice of sites and frequencies.

(a) Sites and frequencies for earth stations, other than ESVs, operating in frequency bands shared with equal rights between terrestrial and space services, shall be selected, to the extent practicable, in areas where the surrounding terrain and existing frequency usage are such as to minimize the possibility of harmful interference between the sharing services.

(b) An applicant for an earth station authorization, other than an ESV, in a frequency band shared with equal rights with terrestrial microwave services shall compute the great circle coordination distance contour(s) for the proposed station in accordance with the procedures set forth in § 25.251. The applicant shall submit with the application a map or maps drawn to appropriate scale and in a form suitable for reproduction indicating the location of the proposed station and these contours. These maps, together with the pertinent data on which the computation of these contours is based, including all relevant transmitting and/or receiving parameters of the proposed station that is necessary in assessing the likelihood of interference, an appropriately scaled plot of the elevation of the local horizon as a function of azimuth, and the electrical characteristics of the earth station antenna(s), shall be submitted by the applicant in a single exhibit to the application. The