

Subpart C—Technical Standards

SOURCE: 30 FR 7176, May 28, 1965; 36 FR 2562, Feb. 6, 1971, unless otherwise noted.

§ 25.201 [Reserved]**§ 25.202 Frequencies, frequency tolerance, and emission limits.**

(a)(1) In addition to the frequency-use restrictions set forth in § 2.106 of this chapter, the following restrictions apply:

(i) In the 27.5–28.35 GHz band, the FSS (Earth-to-space) is secondary to the Upper Microwave Flexible Use Service authorized pursuant to part 30 of this chapter, except for FSS operations associated with earth stations authorized pursuant to § 25.136.

(ii) Use of the 37.5–40 GHz band by the FSS (space-to-Earth) is limited to individually licensed earth stations. Earth stations in this band must not be ubiquitously deployed and must not be used to serve individual consumers.

(iii) The U.S. non-Federal Table of Frequency Allocations, in § 2.106 of this chapter, is applicable between Commission space station licensees relying on a U.S. ITU filing and transmitting to or receiving from anywhere on Earth, including airborne earth stations, in the 17.7–20.2 GHz or 27.5–30 GHz bands.

(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 1.5/1.6 GHz 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
54.25–56.90 GHz
57.00–58.20 GHz
65.00–71.00 GHz

(6) The following frequencies are available for use by the Satellite Digital Audio Radio Service (SDARS), and for any associated terrestrial repeaters: 2320–2345 MHz (space-to-Earth)

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

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

(8) The following frequencies are available for use by Earth Stations on Vessels (ESVs) communicating with GSO FSS space stations, subject to the provisions in § 2.106 of this chapter:

3700–4200 MHz (space-to-Earth)
5925–6425 MHz (Earth-to-space)

(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.

(10) The following frequencies are available for use by Vehicle-Mounted Earth Stations (VMESs):

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)
18.3–18.8 GHz (space-to-Earth)
19.7–20.2 GHz (space-to-Earth)

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28.35–28.6 GHz (Earth-to-space)
29.25–30.0 GHz (Earth-to-space)

(i) The following frequencies are available for use by Earth Stations in Motion (ESIMs) communicating with GSO FSS space stations, subject to the provisions in §2.106 of this chapter:

10.7–11.7 GHz (space-to-Earth)
11.7–12.2 GHz (space-to-Earth)
14.0–14.5 GHz (Earth-to-space)
17.8–18.3 GHz (space-to-Earth)
18.3–18.8 GHz (space-to-Earth)
18.8–19.3 GHz (space-to-Earth)
19.3–19.4 GHz (space-to-Earth)
19.6–19.7 GHz (space-to-Earth)
19.7–20.2 GHz (space-to-Earth)
28.35–28.6 GHz (Earth-to-space)
28.6–29.1 GHz (Earth-to-space)
29.25–30.0 GHz (Earth-to-space)

(ii) The following frequencies are available for use by Earth Stations in Motion (ESIMs) communicating with NGSO FSS space stations, subject to the provisions in §2.106 of this chapter:

10.7–11.7 GHz (space-to-Earth)
11.7–12.2 GHz (space-to-Earth)
14.0–14.5 GHz (Earth-to-space)
17.8–18.3 GHz (space-to-Earth)
18.3–18.6 GHz (space-to-Earth)
18.8–19.3 GHz (space-to-Earth)
19.3–19.4 GHz (space-to-Earth)
19.6–19.7 GHz (space-to-Earth)
19.7–20.2 GHz (space-to-Earth)
28.4–28.6 GHz (Earth-to-space)
28.6–29.1 GHz (Earth-to-space)
29.5–30.0 GHz (Earth-to-space)

(11) [Reserved]

(12) The following frequencies are available for use by the mobile-satellite service (Earth-to-space) for the reception of Automatic Identification Systems (AIS) broadcast messages from ships:

156.7625–156.7875 MHz
156.8125–156.8375 MHz
161.9625–161.9875 MHz
162.0125–162.0375 MHz

(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) [Reserved]

(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.* Except for SDARS terrestrial repeaters and as provided for in paragraph (i), the mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with the schedule set forth in paragraphs (f)(1) through (f)(4) of this section. The out-of-band emissions of SDARS terrestrial repeaters shall be attenuated in accordance with the schedule set forth in paragraph (h) of this section.

(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)(1) Telemetry, tracking, and command signals may be transmitted in frequencies within the assigned bands that are not at a band edge only if the transmissions cause no greater interference and require no greater protection from harmful interference than the communications traffic on the satellite network or have been coordinated with operators of authorized co-frequency space stations at orbital locations within six degrees of the assigned orbital location.

(2) Frequencies, polarization, and coding of telemetry, tracking, and

command transmissions must be selected to minimize interference into other satellite networks.

(h) *Out-of-band emission limitations for SDARS terrestrial repeaters.* (1) Any SDARS terrestrial repeater operating at a power level greater than 2-watt average EIRP is required to attenuate its out-of-band emissions below the transmitter power P by a factor of not less than $90 + 10 \log (P)$ dB in a 1-megahertz bandwidth outside the 2320–2345 MHz band, where P is average transmitter output power in watts.

(2) Any SDARS terrestrial repeater operating at a power level equal to or less than 2-watt average EIRP is required to attenuate its out-of-band emissions below the transmitter power P by a factor of not less than $75 + 10 \log (P)$ dB in a 1-megahertz bandwidth outside the 2320–2345 MHz band, where P is average transmitter output power in watts.

(3) SDARS repeaters are permitted to attenuate out-of-band emissions less than the levels specified in paragraphs (h)(1) and (h)(2), of this section unless a potentially affected WCS licensee provides written notice that it intends to commence commercial service within the following 365 days. Starting 180 days after receipt of such written notice, SDARS repeaters within the area notified by the potentially affected WCS licensee must attenuate out-of-band emissions to the levels specified in paragraphs (h)(1) and (h)(2) of this section.

(4) For the purpose of this section, a WCS licensee is potentially affected if it is authorized to operate a base station in the 2305–2315 MHz or 2350–2360 MHz bands within 25 kilometers of a repeater seeking to operate with an out of band emission attenuation factor less than those prescribed in paragraphs (h)(1) or (2) of this section.

(i) The WCS licensee is authorized to operate a base station in the 2305–2315 MHz or 2350–2360 MHz bands in the same Major Economic Area (MEA) as that in which a SDARS terrestrial repeater is located.

(ii) The WCS licensee is authorized to operate a base station in the 2315–2320 MHz or 2345–2350 MHz bands in the same Regional Economic Area Group-

ing (REAG) as that in which a SDARS terrestrial repeater is located.

(iii) A SDARS terrestrial repeater is located within 5 kilometers of the boundary of an MEA or REAG in which the WCS licensee is authorized to operate a WCS base station.

(i) The following unwanted emissions power limits for non-geostationary satellites operating in the inter-satellite service that transmit in the 22.55–23.55 GHz band shall apply in any 200 MHz of the 23.6–24 GHz passive band, based on the date that complete advance publication information is received by the ITU's Radiocommunication Bureau:

(1) For information received before January 1, 2020: –36 dBW.

(2) For information received on or after January 1, 2020: –46 dBW.

(j) For earth stations in the Fixed-Satellite Service (Earth-to-space) that transmit in the 49.7–50.2 GHz and 50.4–50.9 GHz bands, the unwanted emission power in the 50.2–50.4 GHz band shall not exceed –20 dBW/200 MHz (measured at the input of the antenna), except that the maximum unwanted emission power may be increased to –10 dBW/200 MHz for earth stations having an antenna gain greater than or equal to 57 dBi. These limits apply under clear-sky conditions. During fading conditions, the limits may be exceeded by earth stations when using uplink power control.

[30 FR 7176, May 28, 1965]

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting § 25.202, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and at www.govinfo.gov.

§ 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