

**§ 25.210 Technical requirements for space stations in the Fixed-Satellite Service.**

(a) All space stations in the Fixed-Satellite Service used for domestic service in the 3700–4200 MHz and 5925–6425 MHz frequency bands shall:

(1) Use orthogonal linear polarization with one of the planes defined by the equatorial plane;

(2) Be designed so that the polarization sense of uplink transmissions is opposite to that of downlink transmissions on the same transponder; and

(3) Shall be capable of switching polarization sense upon ground command.

(b) All space stations in the Fixed-Satellite Service in the 20/30 GHz band shall use either orthogonal linear or orthogonal circular polarization. Those space stations utilizing orthogonal linear polarization shall also comply with paragraph (a) of this section.

(c) All space stations in the Fixed-Satellite Service shall have a minimum capability to change transponder saturation flux densities by ground command in 4 dB steps over a range of 12 dB.

(d) All space stations in the Fixed-Satellite Service in the 20/30 GHz band shall employ state-of-the-art full frequency reuse either through the use of orthogonal polarizations within the same beam and/or through the use of spatially independent beams.

(e) [Reserved]

(f) All space stations in the Fixed-Satellite Service in the 3600–3700 MHz, 3700–4200 MHz, 5091–5250 MHz, 5825–5925 MHz, 5925–6425 MHz, 6425–6525 MHz, 6525–6700 MHz, 6700–7025 MHz, 10.7–10.95 GHz, 10.95–11.2 GHz, 11.2–11.45 GHz, 11.45–11.7 GHz, 11.7–12.2 GHz, 12.2–12.7 GHz, 12.75–13.15 GHz, 13.15–13.2125 GHz, 13.2125–13.25 GHz, 13.75–14.0 GHz, 14.0–14.5 GHz, 15.43–15.63 GHz, and 24.75–25.25 GHz bands, or in the Broadcasting-Satellite Service in the 17.3–17.8 GHz band (space-to-Earth), shall employ state-of-the-art full frequency reuse either through the use of orthogonal polarizations within the same beam and/or the use of spatially independent beams.

(g)–(h) [Reserved]

(i)(1) Space station antennas in the Fixed-Satellite Service, other than antennas in the 17/24 GHz BSS, must be designed to provide a cross-polariza-

tion isolation such that the ratio of the on axis co-polar gain to the cross-polar gain of the antenna in the assigned frequency band shall be at least 30 dB within its primary coverage area.

(2) Space station antennas in the 17/24 GHz Broadcasting Satellite Service must be designed to provide a cross-polarization isolation such that the ratio of the on axis co-polar gain to the cross-polar gain of the antenna in the assigned frequency band shall be at least 25 dB within its primary coverage area.

(j) Space stations operated in the geostationary satellite orbit must be maintained within 0.05° of their assigned orbital longitude in the east/west direction, unless specifically authorized by the Commission to operate with a different longitudinal tolerance, and except as provided in Section 25.283(b) (End-of-life Disposal).

(k) Antenna measurements of both co-polarized and cross-polarized performance must be made on all antennas employed by space stations both within the primary coverage area to facilitate coordination with other Commission space station licensees and outside the primary coverage area to facilitate international frequency coordination with other Administrations. The results of such measurements shall be submitted to the Commission within thirty days after preliminary in-orbit testing is completed.

(1) All operators of space stations shall, on June 30 of each year, file a report with the International Bureau and the Commission's Columbia Operations Center in Columbia, Maryland, containing the following information current as of May 31 of that year:

(1) Status of satellite construction and anticipated launch dates, including any major problems or delays encountered;

(2) A listing of any non-scheduled transponder outages for more than thirty minutes and the cause(s) of such outages;

(3) A detailed description of the utilization made of each transponder on each of the in-orbit satellites. This description should identify the total capacity or the percentage of time each

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transponder is actually used for transmission, and the amount of unused system capacity in the transponder. This information is not required for those transponders that are sold on a non-common carrier basis. In that case, operators should indicate the number of transponders sold on each in-satellite orbit.

(4) Identification of any transponders not available for service or otherwise not performing to specifications, the cause of these difficulties, and the date any transponder was taken out of service or the malfunction identified.

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### § 25.211 Analog video transmissions in the Fixed-Satellite Services.

(a) Downlink analog video transmissions in the band 3700–4200 MHz shall be transmitted only on a center frequency of 3700+20N MHz, where N=1 to 24. The corresponding uplink frequency shall be 2225 MHz higher.

(b) All 4/6 GHz analog video transmissions shall contain an energy dispersal signal at all times with a minimum peak-to-peak bandwidth set at whatever value is necessary to meet the power flux density limits specified in § 25.208(a) and successfully coordinated internationally and accepted by adjacent U.S. satellite operators based on the use of state of the art space and earth station facilities. Further, all transmissions operating in frequency bands described in § 25.208 (b) and (c) shall also contain an energy dispersal signal at all times with a minimum peak-to-peak bandwidth set at whatever value is necessary to meet the power flux density limits specified in § 25.208(b) and (c) and successfully coordinated internationally and accepted by adjacent U.S. satellite operators based on the use of state of the art space and earth station facilities. The transmission of an unmodulated carrier at a power level sufficient to saturate a transponder is prohibited, except by the space station licensee to determine transponder performance characteristics. All 12/14 GHz video transmissions for TV/FM shall identify the

particular carrier frequencies for necessary coordination with adjacent U.S. satellite systems and affected satellite systems of other administrations.

(c) All initial analog video transmissions shall be preceded by a video test transmission at an uplink e.i.r.p. at least 10 dB below the normal operating level. The earth station operator shall not increase power until receiving notification from the satellite network control center that the frequency and polarization alignment are satisfactory pursuant to the procedures specified in § 25.272. The stationary earth station operator that has successfully transmitted an initial video test signal to a satellite pursuant to this paragraph is not required to make subsequent video test transmissions if subsequent transmissions are conducted using exactly the same parameters as the initial transmission.

(d) An earth station may be routinely licensed for transmission of full transponder video analog services provided:

(1) In the 5925–6425 MHz band, with an antenna equivalent diameter 4.5 meters or greater, the maximum input power into the antenna does not exceed 26.5 dBW; or

(2) In the 14.0–14.5 GHz band, with an antenna equivalent diameter of 1.2 meters or greater, the maximum input power into the antenna does not exceed 27 dBW.

(e) Antennas smaller than those specified in paragraph (d) of this section are subject to the provisions of § 25.220, which may include power reduction requirements. These antennas will not be routinely licensed for transmission of full transponder services.

(f) Each applicant for authorization for analog transmissions in the fixed-satellite service proposing to use maximum power into the antenna in excess of those specified in § 25.211(d), must comply with the procedures set forth in § 25.220.

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