

which clearly demonstrates the spectral occupancy and interference characteristics of the emission. The licensee may subchannelize its authorized bandwidth, provided that digital modulation is employed and the aggregate power does not exceed the authorized power for the channel, and may utilize all or a portion of its authorized bandwidth for MDS response stations authorized pursuant to § 21.909 of this part. The licensee may also, jointly with affected adjacent channel licensees, transmit utilizing bandwidth in excess of its authorized frequencies, provided that digital modulation is employed, all power spectral density requirements set forth in this part are met and the out-of-band emissions restrictions set forth in § 21.908 of this part are met at and beyond the edges of the channels employed. The wider channels thus created may be redivided to create narrower channels.

(c) Any licensee of a station in the 2150–2162 MHz or 2596–2644 MHz, 2650–2656 MHz, 2662–2668 MHz, or 2674–2680 MHz frequency bands, after notice and opportunity for hearing, may be required to use the frequency offset technique to avoid or to minimize harmful interference to another licensed station in the 2150–2162 MHz and 2596–2544 MHz, 2650–2656 MHz, 2662–2668 MHz, and 2674–2680 MHz frequency bands or to make other changes as provided in §§ 21.100, 21.107, 21.900, 21.901, 21.902, 21.904, 21.905(a), 21.905(b), 21.906, 21.907, and 21.908 of this part.

(d) Notwithstanding the above, any digital emission which complies with the out-of-band emission restrictions of § 21.908 of this part may be used in the following circumstances:

(1) At any MDS main or booster station transmitter which is located more than 160.94 km (100 miles) from the nearest boundary of all cochannel and adjacent channel ITFS and MDS protected service areas, including Basic Trading Areas and Partitioned Service Areas; and

(2) At all MDS response station transmitters within a response service area if all points along the response service area boundary line are more than 160.94 km (100 miles) from the nearest boundary of all cochannel and adjacent channel ITFS and MDS pro-

TECTED service areas, including Basic Trading Areas and Partitioned Service Areas; and

(3) At any MDS transmitter where all parties entitled by this part to interference protection from that transmitter have mutually consented to the use at that transmitter of such emissions.

[44 FR 60534, Oct. 19, 1979, as amended at 49 FR 48700, Dec. 14, 1984; 55 FR 46011, Oct. 31, 1990; 56 FR 57818, Nov. 14, 1991; 63 FR 65104, Nov. 25, 1998; 64 FR 4054, Jan. 27, 1999; 64 FR 63732, Nov. 22, 1999]

§ 21.906 Antennas.

(a) Main and booster station transmitting antennas shall be omnidirectional, except that a directional antenna with a main beam sufficiently broad to provide adequate service may be used either to avoid possible interference with other users in the frequency band, or to provide coverage more consistent with distribution of potential receiving points. In lieu of an omnidirectional antenna, a station may employ an array of directional antennas in order to reuse spectrum efficiently. When an applicant proposes to employ a directional antenna, or a licensee notifies the Commission pursuant to § 21.42 of the installation of a sectorized antenna system, the applicant shall provide the Commission with information regarding the orientation of the directional antenna(s), expressed in degree of azimuth, with respect to true north, and the make and model of such antenna(s).

(b) The use of horizontal or vertical plane wave polarization, or right hand or left hand rotating elliptical polarization may be used to minimize the hazard of harmful interference between systems.

(c) Transmitting antennas located within 56.3 kilometers (35 miles) of the Canadian border should be directed so as to minimize, to the extent that is practical, emissions toward the border.

(d) Directive receiving antennas shall be used at all points other than response station hubs and response stations operating with an EIRP no greater than –6 dBW per 6 MHz channel and shall be elevated no higher than necessary to assure adequate service. Receiving antenna height shall not exceed

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the height criteria of Part 17 of this chapter, unless authorization for use of a specific maximum height (above ground and mean sea level) for each location has been obtained from the Commission prior to the erection of the antenna. (See part 17 of this chapter concerning construction, marking and lighting of antenna structures.) A response station operating with an EIRP no greater than -6 dBW per 6 MHz channel may use an omnidirectional receiving antenna. However, for the purpose of interference protection, such response stations will be treated as if utilizing a receive antenna meeting the requirements of the reference receiving antenna of Figure 1 of § 21.902(f)(3).

[44 FR 60534, Oct. 19, 1979, as amended at 52 FR 37786, Oct. 9, 1987; 58 FR 44896, Aug. 25, 1993; 63 FR 65104, Nov. 25, 1998; 64 FR 4054, Jan. 27, 1999; 64 FR 63733, Nov. 22, 1999; 65 FR 46617, July 31, 2000]

§ 21.907 [Reserved]

§ 21.908 Transmitting equipment.

(a) Except as otherwise provided in this section, the requirements of paragraphs (a), (b), (c), (d), and (e) of § 73.687 of this chapter shall apply to stations in this service transmitting standard television signals.

EDITORIAL NOTE: At 63 FR 65104, Nov. 25, 1999, paragraph (b) was redesignated as paragraph (a) and newly designated paragraph (a) was revised. However, paragraph (a) already exists. The text of the newly redesignated paragraph (a) follows:

(a) The maximum out-of-band power of an MDS station transmitter or booster transmitting on a single 6 MHz channel with an EIRP in excess of -9 dBW employing analog modulation shall be attenuated at the channel edges by at least 38 dB relative to the peak visual carrier, then linearly sloping from that level to at least 60 dB of attenuation at 1 MHz below the lower band edge and 0.5 MHz above the upper band edge, and attenuated at least 60 dB at all other frequencies. The maximum out-of-band power of an MDS station transmitter or booster transmitting on a single 6 MHz channel or a portion thereof with an EIRP in excess of -9 dBW (or, when subchannels are used, the appropriately adjusted value

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based upon the ratio of the channel-to-subchannel bandwidths) employing digital modulation shall be attenuated at the 6 MHz channel edges at least 25 dB relative to the licensed average 6 MHz channel power level, then attenuated along a linear slope to at least 40 dB at 250 kHz beyond the nearest channel edge, then attenuated along a linear slope from that level to at least 60 dB at 3 MHz above the upper and below the lower licensed channel edges, and attenuated at least 60 dB at all other frequencies. Notwithstanding the foregoing, in situations where an MDS station or booster station transmits, or where adjacent channel licensees jointly transmit, a single signal over more than one contiguous 6 MHz channel utilizing digital modulation with an EIRP in excess of -9 dBW (or, when subchannels or superchannels are used, the appropriately adjusted value based upon the ratio of 6 MHz to the subchannel or superchannel bandwidth), the maximum out-of-band power shall be attenuated at the channel edges of those combined channels at least 25 dB relative to the power level of each channel, then attenuated along a linear slope from that level to at least 40 dB at 250 kHz above or below the channel edges of those combined channels, then attenuated along a linear slope from that level to at least 60 dB at 3 MHz above the upper and below the lower edges of those combined channels, and attenuated at least 60 dB at all other frequencies. However, should harmful interference occur as a result of emissions outside the assigned channel, additional attenuation may be required. A transmitter licensed prior to November 1, 1991, that remains at the station site initially licensed, and does not comply with this paragraph, may continue to be used for its life if it does not cause harmful interference to the operation of any other licensee. Any non-conforming transmitter replaced after November 1, 1991, must be replaced by a transmitter meeting the requirements of this paragraph.

(b) A booster transmitting on multiple contiguous or non-contiguous channels carrying separate signals (a "broadband" booster) with an EIRP in excess of -9 dBW per 6 MHz channel and employing analog, digital or a