ANTENNA STANDARDS—Continued

Frequency (MHz)	Category	Maximum beamwidth to 3 dB points [1] (included angle in degrees)	Minimum antenna gain (dbi)	Minimum radiation suppression to angle in degrees from centerline of main beam in decibels						
				5° to10°	10° to 15°	15° to 20°	20° to 30°	30° to 100°	100° to 140°	140° to 180°
71,000 to 76,000 (cross-polar) [14].	N/A	1.2	43	45	50	50	55	55	55	55
81,000 to 86,000 (co-polar) [14].	N/A	1.2	43	35	40	45	50	50	55	55
81,000 to 86,000 (cross-polar) [14].	N/A	1.2	43	45	50	50	55	55	55	55
92,000 to 95,000	N/A	0.6	50.0	36	40	45	50	55	55	55

[1] If a licensee chooses to show compliance using maximum beamwidth to 3 dB points, the beamwidth limit shall apply in both the azimuth and the elevation planes.

[2] Except for Multiple Address System frequencies listed in §§ 101.147(b)(1) through (b)(4), where omnidirectional antennas may be used.

[3] Antennas used at outlying stations as part of a central protection alarm system need conform to only the following 2 standards:

(i) The minimum on-beam forward gain must be at least 10 dBi, and

(ii) The minimum front-to-back ratio must be at least 20 dB.

[4] Omnidirectional antennas may be authorized in the band 2150–2160 MHz.

[5] These antenna standards apply to all point-to-point stations authorized after June 1, 1997. Existing licensees and pending applicants on that date are grandfathered and need not comply with these standards.

[6] These antenna standards apply to all point-to-point stations authorized on or before June 1, 1997.

[7] For stations authorized or pending on April 1, 2003, the minimum radiation suppression for Category B is 35dB in the 10,550–10,680 MHz band and 36 dB in the 21,200–23,600 MHz band for discrimination angles from 100° to 180°.

[8] These antenna standards apply only to DEMS User Stations licensed, in operation, or applied for prior to July 15, 1993.

[9] Except for Temporary-fixed operations in the band 13200–13250 MHz with output powers less than 250 mW and as provided in § 101.147(q), and except for antennas in the MVDDS service in the band 12.2–12.7 GHz.

[10] DEMS User Station antennas in this band must meet performance Standard B and have a minimum antenna gain of 34 dBi. The maximum beamwidth requirement does not apply to DEMS User Stations. DEMS Nodal Stations need not comply with these standards. Stations authorized to operate in the 24,250–25,250 MHz band do not have to meet these standards, however, the Commission may require the use of higher performance antennas where interference problems can be resolved by the use of such antennas.

[11] Except as provided in § 101.147(s).

[12] The minimum front-to-back ratio shall be 38 dBi.

[13] Mobile, except aeronautical mobile, stations need not comply with these standards.

[14] Antenna gain less than 50 dBi (but greater than or equal to 43 dBi) is permitted only with a proportional reduction in maximum authorized EIRP in a ratio of 2 dB of power per 1 dB of gain, so that the maximum allowable EIRP (in dBW) for antennas of less than 50 dBi gain becomes + 55 − 2(50–G), where G is the antenna gain in dBi. In addition, antennas in these bands must meet two additional standards for minimum radiation suppression: At angles between 1.2 and 5 degrees from the centerline of the main beam, co-polar discrimination must be G − 28, where G is the antenna gain in dBi; and at angles of less than 5 degrees from the centerline of main beam, cross-polar discrimination must be at least 25 dB.

(c) The Commission shall require the replacement of any antenna or periscope antenna system of a permanent fixed station operating at 932.5 MHz or higher that does not meet performance Standard A specified in paragraph (c) of this section, at the expense of the licensee operating such antenna, upon a showing that said antenna causes or is likely to cause interference to (or receive interference from) any other authorized or applied for station whereas a higher performance antenna is not likely to involve such interference. Antenna performance is expected to meet the standards of paragraph (c) of this section for parallel polarization. For cases of potential interference, an antenna will not be considered to meet Standard A unless the parallel polarization performance for the discrimination angle involved meets the requirements, even if the cross-polarization performance controls the interference.

(d) In cases where passive reflectors are employed in conjunction with transmitting antenna systems, the foregoing paragraphs of this section also will be applicable. However, in such instances, the center of the major lobe of radiation from the antenna normally must be directed at the passive reflector, and the center of the major lobe of radiation from the passive reflector directed toward the receiving station with which it communicates.

(e) Periscope antennas used at an electric power facility plant area will be excluded from the requirements of paragraph (c) of this section on a case-