

§ 73.209

$$ML = (LAT1_{dd} + LAT2_{dd}) \div 2$$

(3) Calculate the number of kilometers per degree latitude difference for the middle latitude calculated in paragraph (c)(2) as follows:

$$KPD_{lat} = 111.13209 - 0.56605 \cos(2ML) + 0.00120 \cos(4ML)$$

(4) Calculate the number of kilometers per degree longitude difference for the middle latitude calculated in paragraph (c)(2) as follows:

$$KPD_{lon} = 111.41513 \cos(ML) - 0.09455 \cos(3ML) + 0.00012 \cos(5ML)$$

(5) Calculate the North-South distance in kilometers as follows:

$$NS = KPD_{lat}(LAT1_{dd} - LAT2_{dd})$$

(6) Calculate the East-West distance in kilometers as follows:

$$EW = KPD_{lon}(LON1_{dd} - LON2_{dd})$$

(7) Calculate the distance between the two reference points by taking the square root of the sum of the squares of the East-West and North-South distances as follows:

$$DIST = (NS^2 + EW^2)^{0.5}$$

(8) Round the distance to the nearest kilometer.

(9) Terms used in this section are defined as follows:

(i) $LAT1_{dd}$ and $LON1_{dd}$ = the coordinates of the first reference point in degree-decimal format.

(ii) $LAT2_{dd}$ and $LON2_{dd}$ = the coordinates of the second reference point in degree-decimal format.

(iii) ML = the middle latitude in degree-decimal format.

(iv) KPD_{lat} = the number of kilometers per degree of latitude at a given middle latitude.

(v) KPD_{lon} = the number of kilometers per degree of longitude at a given middle latitude.

(vi) NS = the North-South distance in kilometers.

(vii) EW = the East-West distance in kilometers.

(viii) $DIST$ = the distance between the two reference points, in kilometers.

[28 FR 13623, Dec. 14, 1963, as amended at 29 FR 14116, Oct. 14, 1964; 48 FR 29505, June 27, 1983; 52 FR 37788, Oct. 9, 1987; 52 FR 39920, Oct. 26, 1987; 54 FR 9806, Mar. 8, 1989; 57 FR 36020, Aug. 12, 1992; 58 FR 38537, July 19, 1993]

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§ 73.209 Protection from interference.

(a) Permittees and licensees of FM broadcast stations are not protected from any interference which may be caused by the grant of a new station, or of authority to modify the facilities of an existing station, in accordance with the provisions of this subpart. However, they are protected from interference caused by Class D (secondary) noncommercial educational FM stations. See § 73.509.

(b) The nature and extent of the protection from interference afforded FM broadcast stations operating on Channels 221–300 is limited to that which results when assignments are made in accordance with the rules in this subpart.

(c) Permittees and licensees of FM stations are not protected from interference which may be caused by the grant of a new LPFM station or of authority to modify an existing LPFM station, except as provided in subpart G of this part.

[43 FR 39715, Sept. 6, 1978 and 48 FR 29505, June 27, 1983; 54 FR 9802, Mar. 8, 1989; 65 FR 7640, Feb. 15, 2000; 65 FR 67299, Nov. 9, 2000]

§ 73.210 Station classes.

(a) The rules applicable to a particular station, including minimum and maximum facilities requirements, are determined by its class. Possible class designations depend upon the zone in which the station's transmitter is located, or proposed to be located. The zones are defined in § 73.205. Allotted station classes are indicated in the Table of Allotments, § 73.202. Class A, B1 and B stations may be authorized in Zones I and I-A. Class A, C3, C2, C1, C0 and C stations may be authorized in Zone II.

(b) The power and antenna height requirements for each class are set forth in § 73.211. If a station has an ERP and an antenna HAAT such that it cannot be classified using the maximum limits and minimum requirements in § 73.211, its class shall be determined using the following procedure:

(1) Determine the reference distance of the station using the procedure in paragraph (b)(1)(i) of § 73.211. If this distance is less than or equal to 28 km, the station is Class A; otherwise,

(2) For a station in Zone I or Zone I-A, except for Puerto Rico and the Virgin Islands:

(i) If this distance is greater than 28 km and less than or equal to 39 km, the station is Class B1.

(ii) If this distance is greater than 39 km and less than or equal to 52 km, the station is Class B.

(3) For a station in Zone II:

(i) If this distance is greater than 28 km and less than or equal to 39 km, the station is Class C3.

(ii) If this distance is greater than 39 km and less than or equal to 52 km, the station is Class C2.

(iii) If this distance is greater than 52 km and less than or equal to 72 km, the station is Class C1.

(iv) If this distance is greater than 72 km and less than or equal to 83 km, the station is Class C0.

(v) If this distance is greater than 83 km and less than or equal to 92 km, the station is Class C.

(4) For a station in Puerto Rico or the Virgin Islands:

(i) If this distance is less than or equal to 42 km, the station is Class A.

(ii) If this distance is greater than 42 km and less than or equal to 46 km, the station is Class B1.

(iii) If this distance is greater than 46 km and less than or equal to 78 km, the station is Class B.

[52 FR 37788, Oct. 9, 1987; 52 FR 39920, Oct. 26, 1987, as amended at 54 FR 16367, Apr. 24, 1989; 54 FR 19374, May 5, 1989; 54 FR 35339, Aug. 25, 1989; 65 FR 79777, Dec. 20, 2000]

§ 73.211 Power and antenna height requirements.

(a) *Minimum requirements.* (1) Except as provided in paragraphs (a)(3) and (b)(2) of this section, FM stations must operate with a minimum effective radiated power (ERP) as follows:

(i) The minimum ERP for Class A stations is 0.1 kW.

(ii) The ERP for Class B1 stations must exceed 6 kW.

(iii) The ERP for Class B stations must exceed 25 kW.

(iv) The ERP for Class C3 stations must exceed 6 kW.

(v) The ERP for Class C2 stations must exceed 25 kW.

(vi) The ERP for Class C1 stations must exceed 50 kW.

(vii) The minimum ERP for Class C and C0 stations is 100 kW.

(2) Class C0 stations must have an antenna height above average terrain (HAAT) of at least 300 meters (984 feet). Class C stations must have an antenna height above average terrain (HAAT) of at least 451 meters (1480 feet).

(3) Stations of any class except Class A may have an ERP less than that specified in paragraph (a)(1) of this section, provided that the reference distance, determined in accordance with paragraph (b)(1)(i) of this section, exceeds the distance to the class contour for the next lower class. Class A stations may have an ERP less than 100 watts provided that the reference distance, determined in accordance with paragraph (b)(1)(i) of this section, equals or exceeds 6 kilometers.

(b) *Maximum limits.* (1) Except for stations located in Puerto Rico or the Virgin Islands, the maximum ERP in any direction, reference HAAT, and distance to the class contour for each FM station class are listed below:

Station class	Maximum ERP	Reference HAAT in meters (ft.)	Class contour distance in kilometers
A	6 kW (7.8 dBk)	100 (328)	28
B1	25 kW (14.0 dBk)	100 (328)	39
B	50 kW (17.0 dBk)	150 (492)	52
C3	25 kW (14.0 dBk)	100 (328)	39
C2	50 kW (17.0 dBk)	150 (492)	52
C1	100 kW (20.0 dBk)	299 (981)	72
C0	100 kW (20.0 dBk)	450 (1476)	83
C	100 kW (20.0 dBk)	600 (1968)	92

(i) The reference distance of a station is obtained by finding the predicted distance to the 1mV/m contour using Figure 1 of § 73.333 and then rounding to the nearest kilometer. Antenna HAAT is determined using the procedure in § 73.313. If the HAAT so determined is less than 30 meters (100 feet), a HAAT of 30 meters must be used when finding the predicted distance to the 1 mV/m contour.

(ii) If a station's ERP is equal to the maximum for its class, its antenna HAAT must not exceed the reference HAAT, regardless of the reference distance. For example, a Class A station operating with 6 kW ERP may have an antenna HAAT of 100 meters, but not 101 meters, even though the reference distance is 28 km in both cases.