

## Federal Communications Commission

## § 73.310

the Rules. Prior to commencement of stereophonic sound broadcasting, equipment performance measurements must be made to ensure that the transmitted signal complies with all applicable rules and standards.

(b) Each licensee or permittee engaging in multichannel broadcasting must measure the pilot subcarrier frequency as often as necessary to ensure that it is kept at all times within 2 Hz of the authorized frequency.

[48 FR 28454, June 22, 1983, and 48 FR 38479, Aug. 24, 1983]

### § 73.310 FM technical definitions.

(a) *Frequency modulation. Antenna height above average terrain (HAAT).* HAAT is calculated by: determining the average of the antenna heights above the terrain from 3 to 16 kilometers (2 to 10 miles) from the antenna for the eight directions evenly spaced for each 45° of azimuth starting with True North (a different antenna height will be determined in each direction from the antenna); and computing the average of these separate heights. In some cases less than eight directions may be used. (See § 73.313(d).) Where circular or elliptical polarization is used, the antenna height above average terrain must be based upon the height of the radiation of the antenna that transmits the horizontal component of radiation.

*Antenna power gain.* The square of the ratio of the root-mean-square (RMS) free space field strength produced at 1 kilometer in the horizontal plane in millivolts per meter for 1 kW antenna input power to 221.4 mV/m. This ratio is expressed in decibels (dB). If specified for a particular direction, antenna power gain is based on that field strength in the direction only.

*Auxiliary facility.* An auxiliary facility is an antenna separate from the main facility's antenna, permanently installed on the same tower or at a different location, from which a station may broadcast for short periods without prior Commission authorization or notice to the Commission while the main facility is not in operation (e.g., where tower work necessitates turning off the main antenna or where lightning has caused damage to the main

antenna or transmission system) (See § 73.1675).

*Center frequency.* The term "center frequency" means:

(1) The average frequency of the emitted wave when modulated by a sinusoidal signal.

(2) The frequency of the emitted wave without modulation.

*Composite antenna pattern.* The composite antenna pattern is a relative field horizontal plane pattern for 360 degrees of azimuth, for which the value at a particular azimuth is the greater of the horizontally polarized or vertically polarized component relative field values. The composite antenna pattern is normalized to a maximum of unity (1.000) relative field.

*Composite baseband signal.* A signal which is composed of all program and other communications signals that frequency modulates the FM carrier.

*Effective radiated power.* The term "effective radiated power" means the product of the antenna power (transmitter output power less transmission line loss) times: (1) The antenna power gain, or (2) the antenna field gain squared. Where circular or elliptical polarization is employed, the term effective radiated power is applied separately to the horizontal and vertical components of radiation. For allocation purposes, the effective radiated power authorized is the horizontally polarized component of radiation only.

*Equivalent isotropically radiated power (EIRP).* The term "equivalent isotropically radiated power (also known as "effective radiated power above isotropic) means the product of the antenna input power and the antenna gain in a given direction relative to an isotropic antenna.

*FM Blanketing.* Blanketing is that form of interference to the reception of other broadcast stations which is caused by the presence of an FM broadcast signal of 115 dBu (562 mV/m) or greater signal strength in the area adjacent to the antenna of the transmitting station. The 115 dBu contour is referred to as the blanketing contour and the area within this contour is referred to as the blanketing area.

*FM broadcast band.* The band of frequencies extending from 88 to 108 MHz,

which includes those assigned to non-commercial educational broadcasting.

*FM broadcast channel.* A band of frequencies 200 kHz wide and designated by its center frequency. Channels for FM broadcast stations begin at 88.1 MHz and continue in successive steps of 200 kHz to and including 107.9 MHz.

*FM broadcast station.* A station employing frequency modulation in the FM broadcast band and licensed primarily for the transmission of radio-telephone emissions intended to be received by the general public.

*Field strength.* The electric field strength in the horizontal plane.

*Free space field strength.* The field strength that would exist at a point in the absence of waves reflected from the earth or other reflecting objects.

*Frequency departure.* The amount of variation of a carrier frequency or center frequency from its assigned value.

*Frequency deviation.* The peak difference between modulated wave and the carrier frequency.

*Frequency modulation.* A system of modulation where the instantaneous radio frequency varies in proportion to the instantaneous amplitude of the modulating signal (amplitude of modulating signal to be measured after pre-emphasis, if used) and the instantaneous radio frequency is independent of the frequency of the modulating signal.

*Frequency swing.* The peak difference between the maximum and the minimum values of the instantaneous frequency of the carrier wave during modulation.

*Multiplex transmission.* The term “multiplex transmission” means the simultaneous transmission of two or more signals within a single channel. Multiplex transmission as applied to FM broadcast stations means the transmission of facsimile or other signals in addition to the regular broadcast signals.

*Percentage modulation.* The ratio of the actual frequency deviation to the frequency deviation defined as 100% modulation, expressed in percentage. For FM broadcast stations, a frequency deviation of  $\pm 75$  kHz is defined as 100% modulation.

(b) *Stereophonic sound broadcasting.* *Cross-talk.* An undesired signal occur-

ring in one channel caused by an electrical signal in another channel.

*FM stereophonic broadcast.* The transmission of a stereophonic program by a single FM broadcast station utilizing the main channel and a stereophonic subchannel.

*Left (or right) signal.* The electrical output of a microphone or combination of microphones placed so as to convey the intensity, time, and location of sounds originating predominately to the listener's left (or right) of the center of the performing area.

*Left (or right) stereophonic channel.* The left (or right) signal as electrically reproduced in reception of FM stereophonic broadcasts.

*Main channel.* The band of frequencies from 50 to 15,000 Hz which frequency-modulate the main carrier.

*Pilot subcarrier.* A subcarrier that serves as a control signal for use in the reception of FM stereophonic sound broadcasts.

*Stereophonic separation.* The ratio of the electrical signal caused in sound channel A to the signal caused in sound channel B by the transmission of only a channel B signal. Channels A and B may be any two channels of a stereophonic sound broadcast transmission system.

*Stereophonic sound.* The audio information carried by plurality of channels arranged to afford the listener a sense of the spatial distribution of sound sources. Stereophonic sound broadcasting includes, but is not limited to, biphonic (two channel), triphonic (three channel) and quadrophonic (four channel) program services.

*Stereophonic sound subcarrier.* A subcarrier within the FM broadcast baseband used for transmitting signals for stereophonic sound reception of the main broadcast program service.

*Stereophonic sound subchannel.* The band of frequencies from 23 kHz to 99 kHz containing sound subcarriers and their associated sidebands.

(c) *Visual transmissions.* Communications or message transmitted on a subcarrier intended for reception and visual presentation on a viewing screen, teleprinter, facsimile printer, or other form of graphic display or record.

(d) *Control and telemetry transmissions.* Signals transmitted on a multiplex

## Federal Communications Commission

## § 73.313

subcarrier intended for any form of control and switching functions or for equipment status data and aural or visual alarms.

[28 FR 13623, Dec. 14, 1963, as amended at 39 FR 10575, Mar. 21, 1974; 44 FR 36038, June 20, 1979; 48 FR 28454, June 22, 1983; 48 FR 29507, June 27, 1983; 48 FR 37216, Aug. 17, 1983; 49 FR 45145, Nov. 15, 1984; 57 FR 48333, Oct. 23, 1992; 62 FR 51058, Sept. 30, 1997]

### § 73.311 Field strength contours.

(a) Applications for FM broadcast authorizations must show the field strength contours required by FCC Form 301 or FCC Form 340, as appropriate.

(b) The field strength contours provided for in this section shall be considered for the following purposes only:

(1) In the estimation of coverage resulting from the selection of a particular transmitter site by an applicant for an FM broadcast station.

(2) In connection with problems of coverage arising out of application of § 73.3555.

(3) In determining compliance with § 73.315(a) concerning the minimum field strength to be provided over the principal community to be served.

(4) In determining compliance with § 73.215 concerning contour protection.

[28 FR 13623, Dec. 14, 1963, as amended at 31 FR 10126, July 27, 1966; 32 FR 11471, Aug. 9, 1967; 52 FR 10570, Apr. 2, 1987; 54 FR 9802, Mar. 8, 1989]

### § 73.312 Topographic data.

(a) In the preparation of the profile graphs previously described, and in determining the location and height above mean sea level of the antenna site, the elevation or contour intervals shall be taken from United States Geological Survey Topographic Quadrangle Maps, United States Army Corps of Engineers Maps or Tennessee Valley Authority maps, whichever is the latest, for all areas for which such maps are available. If such maps are not published for the area in question, the next best topographic information should be used. Topographic data may sometimes be obtained from state and municipal agencies. The data from the Sectional Aeronautical Charts (including bench marks) or railroad depot elevations and highway elevations from road maps

may be used where no better information is available. In cases where limited topographic data can be obtained, use may be made of an altimeter in a car driven along roads extending generally radially from the transmitter site.

(b) The Commission will not ordinarily require the submission of topographical maps for areas beyond 24 km (15 miles) from the antenna site, but the maps must include the principal city or cities to be served. If it appears necessary, additional data may be requested.

(c) The U.S. Geological Survey Topography Quadrangle Sheets may be obtained from the U.S. Geological Survey Department of the Interior, Washington, DC 20240. The Sectional Aeronautical Charts are available from the U.S. Coast and Geodetic Survey, Department of Commerce, Washington, DC 20235. These maps may also be secured from branch offices and from authorized agents or dealers in most principal cities.

(d) In lieu of maps, the average terrain elevation may be computer generated except in cases of dispute, using elevations from a 30 second, point or better topographic data file. The file must be identified and the data processed for intermediate points along each radial using linear interpolation techniques. The height above mean sea level of the antenna site must be obtained manually using appropriate topographic maps.

[28 FR 13623, Dec. 14, 1963, as amended at 31 FR 10126, July 27, 1966; 49 FR 48937, Dec. 17, 1984; 58 FR 44950, Aug. 25, 1993; 63 FR 33877, June 22, 1998]

### § 73.313 Prediction of coverage.

(a) All predictions of coverage made pursuant to this section shall be made without regard to interference and shall be made only on the basis of estimated field strengths.

(b) Predictions of coverage shall be made only for the same purposes as relate to the use of field strength contours as specified in § 73.311.

(c) In predicting the distance to the field strength contours, the F(50,50) field strength chart, Figure 1 of § 73.333 must be used. The 50% field strength is