§ 73.683 Field strength contours and presumptive determination of field strength at individual locations.

(a) In the authorization of TV stations, two field strength contours are considered. These are specified as Grade A and Grade B and indicate the approximate extent of coverage over average terrain in the absence of interference from other television stations. Under actual conditions, the true coverage may vary greatly from these estimates because the terrain over any specific path is expected to be different from the average terrain on which the field strength charts were based. The required field strength, *F* (50,50), in dB above one micro-volt per meter (dBu) for the Grade A and Grade B contours are as follows:

	Grade A (dBu)	Grade B (dBu)
Channels 2–6	68	47
Channels 7–13	71	56
Channels 14–69	74	64

(b) It should be realized that the F (50,50) curves when used for Channels 14–69 are not based on measured data at distances beyond about 48.3 kilometers (30 miles). Theory would indicate that the field strengths for Channels 14–69 should decrease more rapidly with distance beyond the horizon than for Channels 2–6, and modification of the curves for Channels 14–69 may be expected as a result of measurements to be made at a later date. For these reasons, the curves should be used with appreciation of their limitations in estimating levels of field strength. Further, the actual extent of service will usually be less than indicated by these estimates due to interference from other stations. Because of these factors, the predicted field strength contours give no assurance of service to any specific percentage of receiver locations within the distances indicated. In licensing proceedings these variations will not be considered.

(c) The field strength contours will 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 a TV station.

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

(3) In determining compliance with § 73.685(a) concerning the minimum field strength to be provided over the principal community to be served.

(d) For purposes of determining the eligibility of individual households for satellite retransmission of distant network signals under the copyright law provisions of 17 U.S.C. 119(d)(10)(A), field strength shall be determined by the Individual Location Longley-Rice (ILLR) propagation prediction model. Such eligibility determinations shall consider only the signals of network stations located in the subscriber's Designated Market Area. Guidance for use of the ILLR model in predicting the field strength of analog television signals for such determinations is provided in OET Bulletin No. 72 (stations operating with analog signals include some Class A stations licensed under part 73 of this chapter and some licensed low power TV and TV translator stations that operate under part 74 of this chapter). Guidance for use of the ILLR model in predicting the field strength of digital television signals for such determinations is provided in OET Bulletin No. 73 (stations operating with digital signals include all full service stations and some Class A stations that operate under part 73 of this chapter and some low power TV and TV translator stations that operate under Part 74 of this chapter). OET Bulletin No. 72 and OET Bulletin No. 73 are available at the FCC's Headquarters Building, 445 12th St., SW., Reference Information Center, Room CY–A257, Washington, DC, or at the FCC's Office of Engineering and Technology (OET) Web site: *http://www.fcc.gov/oet/info/documents/bulletins/*.

(e) If a location was predicted to be unserved by a local network station using a version of the ILLR model specified in OET Bulletin No. 72 or OET Bulletin No. 73, as appropriate, and the satellite subscriber at that location is receiving a distant signal affiliated with the same network from its satellite provider, the satellite subscriber shall remain eligible for receiving the distant signal from its satellite provider if that location is subsequently

predicted to be served by the local station due to either a change in the ILLR model or a change in the station's operations that change its coverage.

(f) A satellite carrier is exempt from the verification requirements of 47 U.S.C. 339(c)(4)(A) with respect to a test requested by a satellite subscriber to whom the retransmission of the signals of local broadcast stations is available under 47 U.S.C. 338 from such carrier. The definitions of satellite carrier, subscriber, and local market contained in 47 CFR 76.66(a) apply to this paragraph (f).

[44 FR 36039, June 20, 1979, as amended at 47 FR 35990, Aug. 18, 1982; 50 FR 23699, June 5, 1985; 50 FR 32416, Aug. 12, 1985; 65 FR 36641, June 9, 2000; 70 FR 21670, Apr. 27, 2005; 75 FR 80363, Dec. 22, 2010]

§ 73.684 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. The peak power of the visual signal is used in making predictions of coverage.

(b) Predictions of coverage shall be made only for the same purposes as relate to the use of field strength contours as specified in § 73.683(c).

(c) In predicting the distance to the field strength contours, the F (50,50) field strength charts (Figures 9 and 10 of § 73.699) shall be used. If the 50% field strength is defined as that value exceeded for 50% of the time, these F (50,50) charts give the estimated 50% field strengths exceeded at 50% of the locations in dB above 1 uV/m. The charts are based on an effective power of 1 kW radiated form a half-wave dipole in free space, which produces an unattenuated field strength at 1.61 kilometers (1 mile) of about 103 dB above 1 uV/m. To use the charts to predict the distance to a given contour, the following procedure is used: Convert the effective radiated power in kilowatts for the appropriate azimuth into decibel value referenced to 1 kW (dBu). If necessary, convert the selected contour to the decibel value (dBu) above 1 microvolt per meter (1 uV/m). Subtract the power value in dBk from the contour value in dBu. Note that for power less than 1 kW, the difference value will be greater than the contour value because the power in dBk is negative. Locate the difference value obtained on the vertical scale at the left edge of the chart. Follow the horizontal line for that value into the chart to the point of intersection with the vertical line above the height of the antenna above average terrain for the appropriate azimuth located on the scale at the bottom of the chart. If the point of intersection does not fall exactly on a distance curve, interpolate between the distance curves below and above the intersection point. The distance values for the curves are located along the right edge of the chart.

(1) In predicting the distance to the Grade A and Grade B field strength contours, the effective radiated power to be used is that radiated at the vertical angle corresponding to the depression angle between the transmitting antenna center of radiation and the radio horizon as determined individually for each azimuthal direction concerned. The depression angle is based on the difference in elevation of the antenna center of radiation above the average terrain and the radio horizon, assuming a smooth sperical earth with a radius of 8,495.5 kilometers (5,280 miles) and shall be determined by the following equation:

$$A = 0.0277\sqrt{H}$$

Where:

A is the depression angle in degrees.

H is the height in meters of the transmitting antenna radiation center above average terrain of the 3.2–16.1 kilometers (2–10 miles) sector of the pertinent radial.

This formula is empirically derived for the limited purpose specified here. Its use for any other purpose may be inappropriate.

(2) In case where the relative field strength at the depression angle determined by the above formula is 90% or more of the maximum field strength developed in the vertical plane containing the pertaining radial, the maximum radiation shall be used.

(3) In predicting field strengths for other than the Grade A and Grade B contours, the effective radiated power to be used is to be based on the appropriate antenna vertical plane radiation