

Community Coverage From Antenna Location Coordinates

The WTGP(FM) antenna location coordinates are specified in the associated FCC Form 301, Section III-B, Question 3. These coordinates set forth the location of the proposed WTGP(FM) antenna/transmitter site.

Using the conventional FCC F(50,50) propagation curves, the proposed WTGP(FM) city-grade contour covers only the southern tip of Trenton, the WTGP(FM) community of license. However, as demonstrated herein, when the Longley-Rice alternate prediction method is used to predict the city grade contour distance, the proposed WTGP(FM) technical facility covers 100% of the Trenton.

Threshold Requirement for Supplemental Showing Pursuant to 47 CFR §73.313(e)

In the context of coverage of the community of license, the Commission established that, under certain circumstances, it is willing to consider supplemental showings (such as the Longley-Rice alternate prediction method) to predict the city-grade contour distance in lieu of the conventional FCC F(50,50) propagation curves.¹ By *Memorandum Opinion and Order* released July 2, 2008², the Commission clarified a 2002

¹ See *In the Matter of Amendments to Parts 73 and 74 of the Commission's Rules To Permit Certain Minor Changes Without a Construction Permit*, FCC 97-290, 12 FCC Rcd 12371 (1997) at 12401-12403 (paragraphs 67-72).

² See *CMP Houston-KC LLC, Memorandum Opinion and Order*, 23 FCC Rcd 10656 (2008) at paragraph 8.

Audio Division letter decision³ and restated the Commission's 1997 "10 percent or more" standard⁴ as the definitive threshold requirement for considering a supplemental showing submitted pursuant to Section 73.313(e) of the FCC Rules. The "10 percent or more" standard refers to predicted distance to the 70 dBu field strength contour. Pursuant to Commission policy, the 70 dBu contour distance as predicted by the supplemental method must be "10 percent or more" than the contour distance predicted by the conventional method (i.e. the FCC's F(50,50) propagation curves) for referral to the Office of Engineering and Technology (OET) for analysis.

Table 1 contains the tabulated distance to the 70 dBu contour along each radial through the proposed community of license using both the standard prediction method (FCC's F(50,50) curves) and the supplemental prediction method employed herein (Longley-Rice). As shown in Table 1, the instant proposal satisfies the 10 percent standard with an alternate showing of an average difference of 39 percent. Accordingly, the Applicant requests that the instant proposal be referred to OET for analysis.

³ See Audio Division Letter dated August 8, 2002, *In re: KMAJ-FM, Topeka, Kansas, Facility ID No. 42012, Application BPH-20000316ACF*.

⁴ See note 1 *supra*.

Longley-Rice Field Strength Analysis

The Longley-Rice Irregular Terrain Model, using a 30-second terrain database, was employed to predict the WTGP(FM) 70 dBu contour distance toward Trenton. The Longley-Rice input parameters are as follows:

Effective Radiated Power	=	33.8 kW
Frequency	=	104.1 MHZ
Transmit Antenna Height	=	146 m
Receive Antenna Height	=	9.1 m
Ground elevation	=	162.4 m
Reliability	=	F(50,50)

In addition, the appropriate radio climate, dielectric constant, conductivity and refractivity for this unique radio path considering the specific transmitter site location and surrounding terrain characteristics were determined by the computer model. Calculations were performed every 0.1 km to a maximum study distance of 100 kilometers at one degree intervals.

Because the Longley-Rice model is specifically intended for computer use, sample calculations are not included herein. However, an explanation of the methodology and used to compute the average 70 dBu Longley-Rice contour shown on Exhibit 1 follows.

From the Longley-Rice area study, the predicted field strength along each radial bearing was analyzed. The Longley-Rice average 70 dBu contour distance was derived by averaging the distance to the first occurrence of a predicted field strength of 70 dBu

with the distance to the last occurrence of a predicted field strength of 70 dBu along each radial. For example, along the 345° radial, the distance to the first occurrence was 38.4 km and the distance to the last occurrence was 48.1 km. Therefore, along the 345° radial, the average Longley-Rice 70 dBu contour distance was determined to be 43.3 km. The average Longley-Rice 70 dBu contour shown in Exhibit 1 was computed in one degree intervals utilizing this method.

Exhibit 1 is a map which shows the Trenton city-limits, the proposed facility's 70 dBu city-grade coverage using the FCC's propagation curves and the proposed facility's 70 dBu coverage using Longley-Rice alternate prediction method.⁵ As illustrated on the attached map, the Longley-Rice model predicts that the proposed WTGP(FM) city-grade contour covers 100% of the WTGP(FM) community of license, Trenton, Tennessee.

⁵ Exhibit 1 also shows the predicted 60 dBu F(50,50) protected service contour encompasses the proposed community of license.

TABLE 1

**DISTANCE TO CITY-GRADE CONTOUR THRESHOLD SHOWING
FROM THE WTGP TRANSMITTER SITE TOWARD THE COMMUNITY OF LICENSE
WTGP(FM), TRENTON, TENNESSEE**

Radials to City* (Azimuth degrees)	Distance to City (km)	Distance to the 70 dBu Contour in kilometers		
		Using F(50,50) Curves (F)	Using Supplemental Method (S)	% Difference [(S - F) / F] x 100
342	34.2	33.7	52.1	54.6
343	33.7	33.7	46.2	37.1
344	33.7	33.7	45.0	33.5
345	35.2	33.7	43.3	28.5
346	35.2	33.6	47.6	41.7
347	35.9	33.5	46.8	39.7
348	39.8	33.5	46.1	37.6
		Average Percent Difference		39.0

* The arc which encompasses the city-limits of Trenton spans from 342° to 348° true.

