

**ENGINEERING EXHIBIT  
MINOR CHANGE IN LICENSED FACILITY  
FM STATION WNNL  
FUQUAY-VARINA, NC  
FACILITY ID 9728**

Radio One Licenses, LLC (Radio One), the licensee of FM Station WNNL, Fuquay-Varina, NC (facility ID 9728) submits this engineering exhibit as part of an application for a minor change in the licensed facility of WNNL.

This application proposes a different directional antenna pattern, height above average terrain (HAAT) and effective radiated power (ERP) for station WNNL. No change to the supporting tower, antenna location coordinates, station class or community of license are proposed. No waivers are requested in this application.

**Proposed Facility:**

Frequency: 103.9 MHz

Channel 280

Class C3

8.8 Kilowatts effective radiated power

Directional antenna, contour processing under Section 73.215

272 meters antenna center of radiation above mean sea level

147 meters antenna center of radiation above ground level

167 meters antenna center of radiation height above average terrain

35 Degrees, 35 Minutes, 47 Seconds North Longitude

78 Degrees, 45 Minutes, 18 Seconds West Longitude

Supporting structure: Antenna Structure Registration Number 1024085

**Allotment and interference:**

The proposed site meets the minimum spacing required by FCC Rules Section 73.207 for all stations, allotments and applications, except for WTQR, Winston-Salem NC, as shown in the spacing study in Figure 1. This application requests processing under Section 73.215 with respect to the following station:

WTQR

Winston-Salem, NC  
Facility ID 58392  
104.1 MHZ  
Channel 281 C  
73.215 Station

Contour protection will be provided by employing a directional antenna as shown in Figure 2. Figure 3 and Figure 4 show contour protection provided by the proposed facility to the short spaced station. The existing tower proposed for use is not within 0.8 Kilometers of an AM non-directional station, or within 3.2 Kilometers of an AM directional station.

**Community Coverage:**

The proposed facility produces 70 dBu coverage over the entire community of license, Fuquay-Varina NC, as shown in Figure 5

**Calculations:**

A 30 second terrain data base (V-Soft 30 Second US Database) is used for calculation of the contours. The FCC website tools were employed to determine HAAT and ERP, as shown in Figure 6 and Figure 7.

**Environmental:**

The proposed facility will use the existing tower presently employed as the licensed site of WNNL. Except for replacement of the licensed antenna, no changes to the tower are proposed herein. The overall height of the tower will not be increased, nor will the painting or lighting of the tower be changed. Predicted radiofrequency electromagnetic radiation two meters above ground level is less than five percent of the FCC guideline for uncontrolled public exposure, as shown in Figure 8.

**Summary:**

Radio One proposes a different directional antenna pattern, height above average terrain (HAAT) and effective radiated power (ERP) for station WNNL. No change to the supporting tower, antenna location coordinates, station class or community of license are proposed. No waivers are requested in this application. No new short spacing is created. The community of license will receive 70 dBu coverage required by FCC rules and policy. Proposed facility is not of environmental concern and is within FCC guidelines for uncontrolled public exposure to radiofrequency electromagnetic radiation.



Greg Strickland  
Radio One, Inc.  
14<sup>th</sup> Floor  
1010 Wayne Avenue  
Silver Spring, MD 20910  
301-429-3254  
[gstrickland@radio-one.com](mailto:gstrickland@radio-one.com)

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# Spacing Study

WNNL Licensed and proposed site Section 73.207 Spacing Study  
Radio One Licenses, LLC

REFERENCE		CLASS = C3	DISPLAY DATES
35 35 47.0 N.			DATA 01-09-13
78 45 18.0 W.	Current	Spacings to 3rd Adj.	SEARCH 01-09-13
----- Channel 280 - 103.9 MHz -----			

Call	Channel	Location		Azi	Dist	FCC	Margin
WNNL	LIC-Z 280C3	Fuquay-varina	NC	0.0	0.00	153.0	-153.0
WTQR	LIC-N 281C	Winston-salem	NC	301.3	169.36	176.0	-6.6
WCOM-LP	LIC 278L1	Chapel Hill	NC	317.9	42.17	40.0	2.2
WFXX	LIC 282C1	Bunn	NC	51.6	79.54	76.0	3.5
WSOC-FM	LIC-N 279C	Charlotte	NC	258.2	179.54	176.0	3.5
WRCQ	LIC 278C2	Dunn	NC	170.9	61.11	56.0	5.1
WTIB	LIC-D 279C1	Williamston	NC	77.6	163.46	144.0	19.5
WCCG	LIC 283A	Hope Mills	NC	187.6	73.15	42.0	31.2

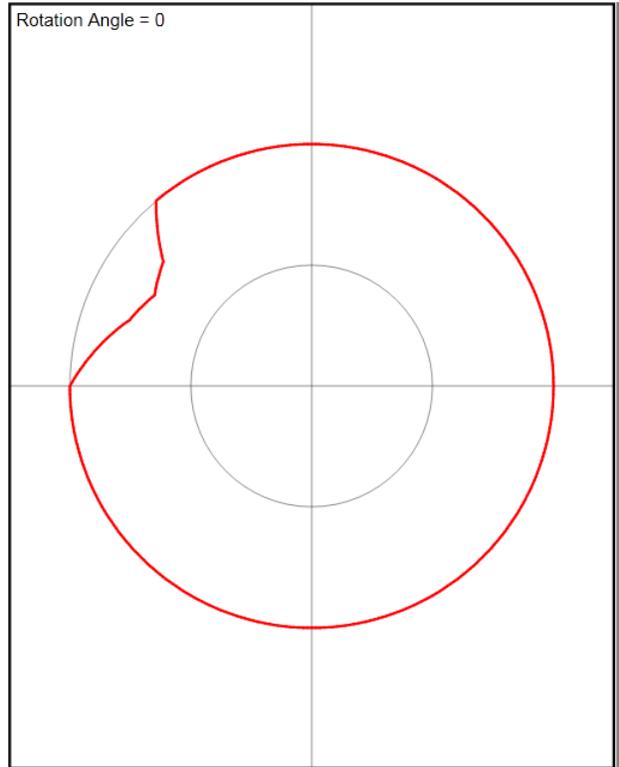
# Figure 2

## Proposed tabulated directional antenna pattern

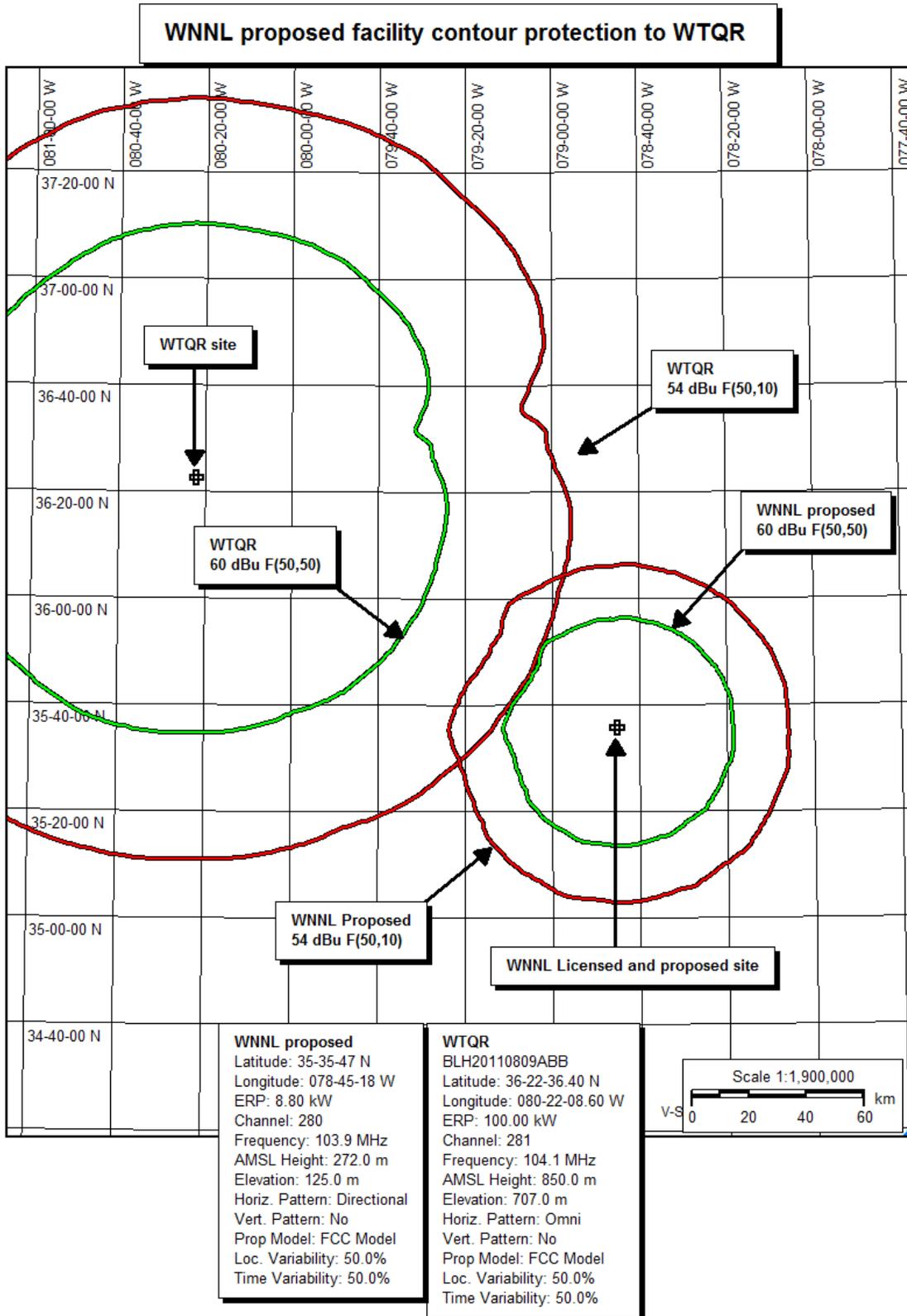
### Antenna Pattern

Pre-Rotation Antenna Pattern....

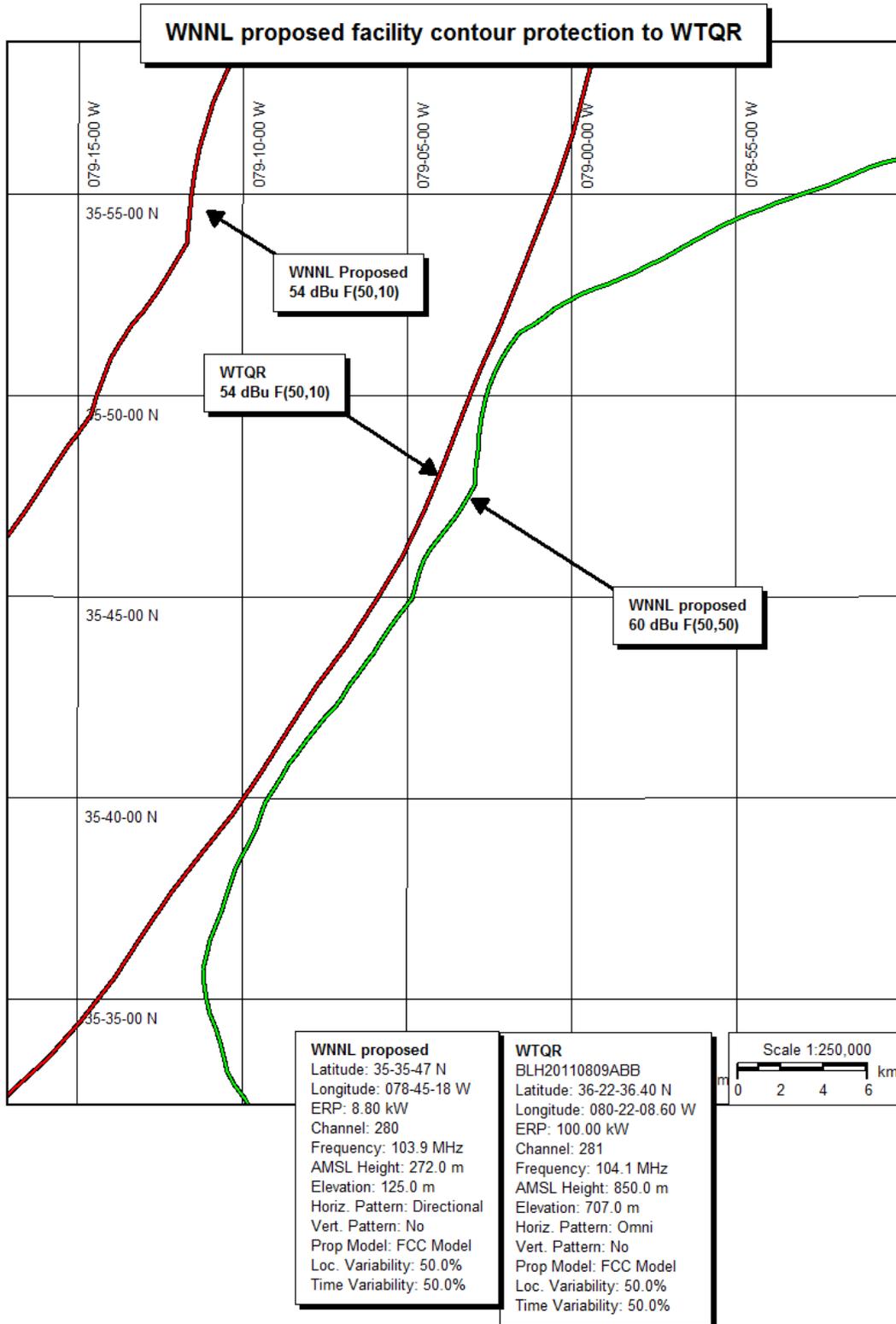
Azimuth (deg)	Relative Field
0.0	1.0
10.0	1.0
20.0	1.0
30.0	1.0
40.0	1.0
50.0	1.0
60.0	1.0
70.0	1.0
80.0	1.0
90.0	1.0
100.0	1.0
110.0	1.0
120.0	1.0
130.0	1.0
140.0	1.0
150.0	1.0
160.0	1.0
170.0	1.0
180.0	1.0
190.0	1.0
200.0	1.0
210.0	1.0
220.0	1.0
230.0	1.0
240.0	1.0
250.0	1.0
260.0	1.0
270.0	1.0
280.0	0.9
290.0	0.8
300.0	0.75
310.0	0.8
320.0	1.0
330.0	1.0
340.0	1.0
350.0	1.0



# Figure 3 Contour Protection

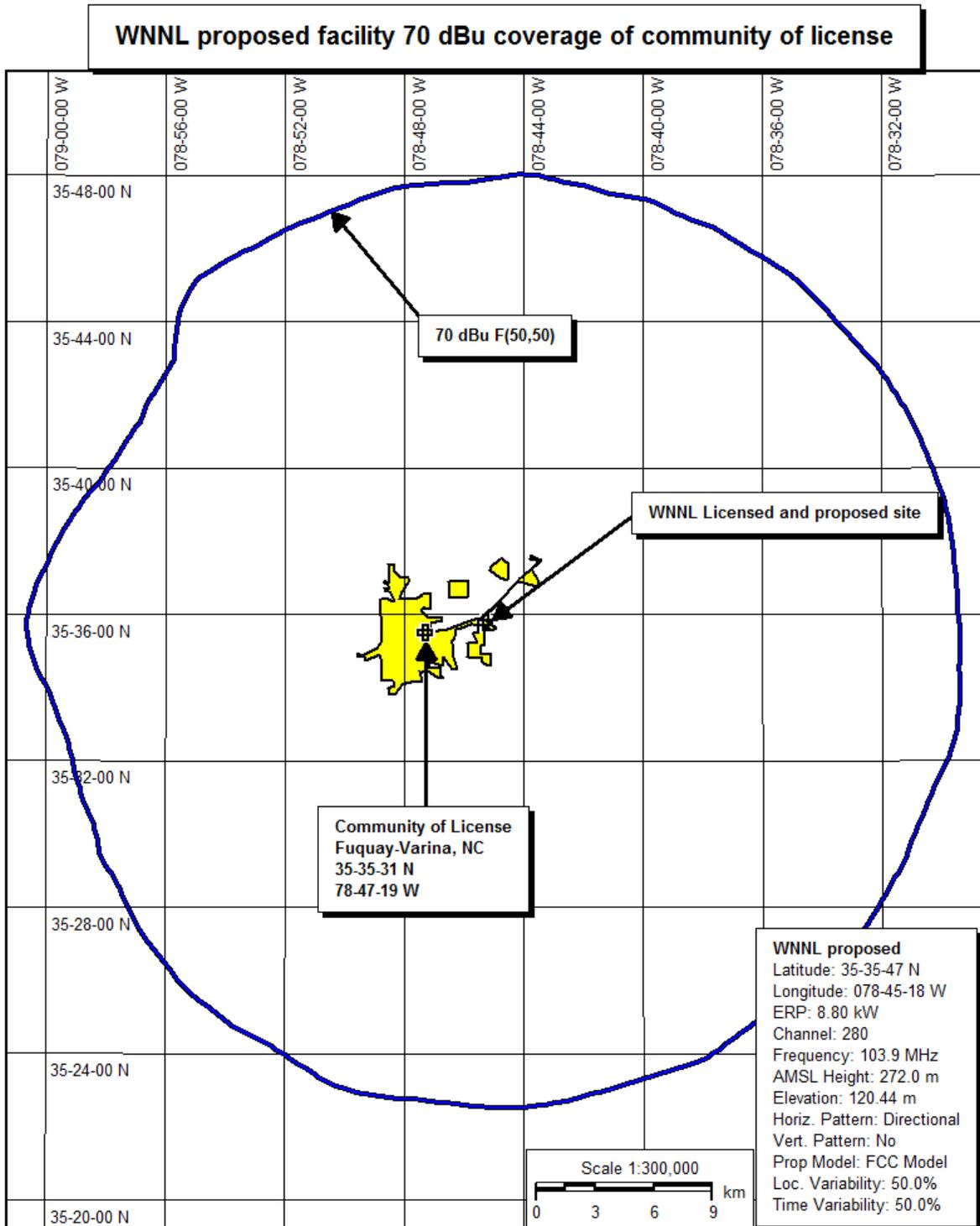


# Figure 4 Contour Protection



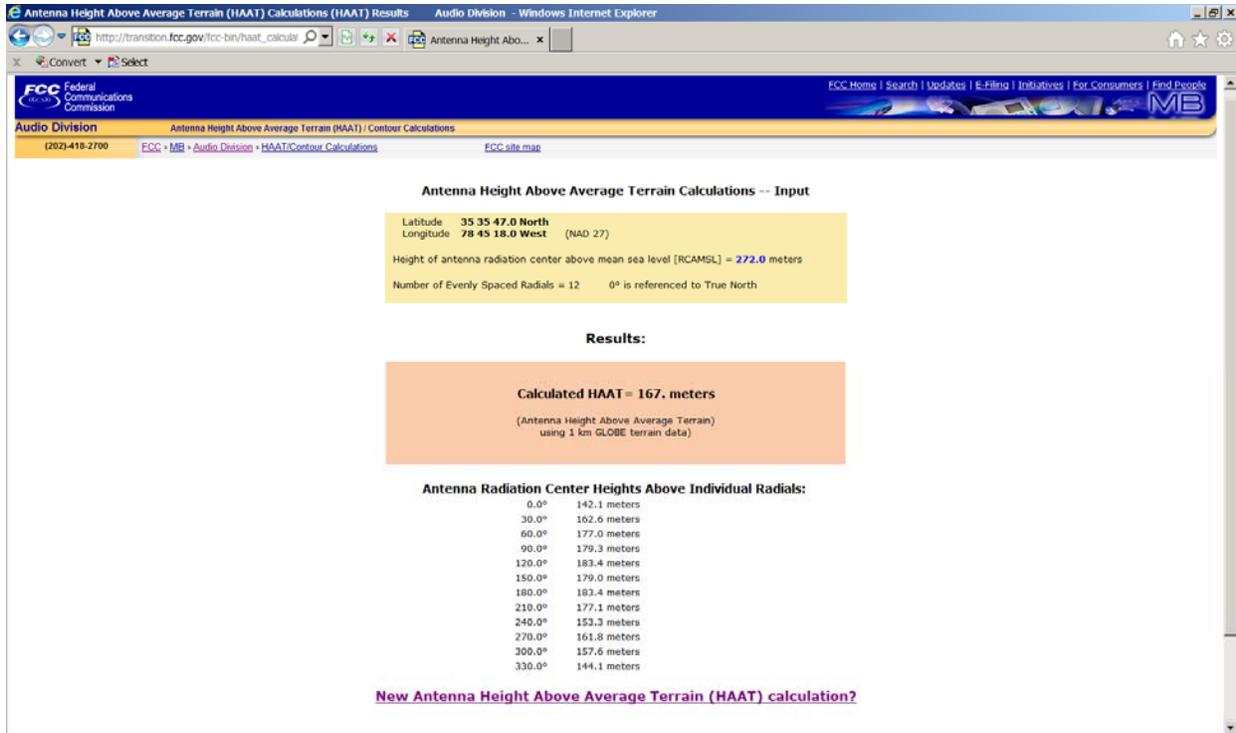
# Figure 5

## Community of License 70 dBu coverage



# Figure 6

## Height Above Average Terrain calculation



# Figure 7

## Effective Radiated Power Calculation

The screenshot shows a web browser window displaying the FCC's FMpower Results page. The page title is "FMpower Results" and it is part of the Audio Division. The main content area is titled "Class C3 facilities for Equivalency Determination:" and lists the following information:

- Reference ERP = 25 000 kW
- Reference HAAT = 100.0 meters
- F(50,50) 60 dBu protected contour at 39.1 km distance
- Equivalent ERP (rounded per 47 CFR 73.212) = 8.800 kW**
- at 167.0 meters HAAT
- Unrounded ERP = 8.778 kW for 167.0 meters HAAT

A blue banner at the bottom of the main content area states: "Class C3 stations are authorized in NC."

Below the main content area, there is a link: "Enter New Data in FMpower?" and a note: "Related items: FM and TV Propagation Curves. This document may be accessed at <http://www.fcc.gov/mb/audio/bickel/fmpower.html>"

The footer of the page contains navigation links: "FCC Home", "Search", "RSS", "Updates", "E-Filing", "Initiatives", "Consumers", and "Find People". It also includes contact information for the Federal Communications Commission and links to "Privacy Policy", "Website Policies & Notices", "Required Browser Plug-ins", and "Freedom of Information Act".

# Figure 8

## FM Model RFR of proposed facility

