

**File Number BNPFT-20030317FRQ**

**Boone, North Carolina**

**Application for a new FM Translator**

**On Channel 233**

**by**

**Wake Forest University**

**Exhibit 1**

**Grid Preclusion Showing**

**July 2013**

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Declaration

I declare, under penalty of perjury, that I am a technical consultant to broadcasting and other communications systems, that I have over twenty-five years of experience in the engineering of broadcast and other communications systems, that I am familiar with the Federal Communications Commission's Rules found in the Code of Federal Regulations Title 47, that I am a Professional Engineer registered in North Carolina, that I have prepared or supervised the preparation of the attached Exhibit 1, Grid Preclusion Showing, for Wake Forest University, and that all of the facts therein, except for facts of which the Federal Communications Commission may take official notice, are true to the best of my knowledge and belief.



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22 July 2013

### Narrative

This Exhibit supports an amendment to an Auction 83 construction permit application for a new FM translator on Channel 233 in Boone, North Carolina, file number BNPFT-20030317FRQ. The tech box proposal (short form application) was filed in a filing window for Auction 83. This Exhibit provides a preclusion showing required in a Public Notice<sup>1</sup> of a window to file long form applications for further processing.

This application proposes a minor modification from the original short form application. Specifically, a new primary station is provided, commercial AM station WXIT, Blowing Rock, North Carolina, status is changed to fill-in, the antenna is changed, a directional antenna is proposed, and the channel is changed to the first adjacent channel. The minor modification creates no conflicts with any other Auction 83 tech box proposals, as will be shown in the Allocations Exhibit.

This facility protects third adjacent station WMEV-FM, Channel 230C, Marion, Virginia, by Undesired to Desired Signal Ratio. Details will be provided in a long form application.

### Required Showings

This facility is located outside the Market Grid of the Johnson City (Tennessee) Market, but within 39 kilometers of the Johnson City Grid. The Johnson City market is listed as a Spectrum Available Market using a 30 minute grid in Appendix B of the Fourth Report

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<sup>1</sup> *Public Notice Media Bureau Announces FM Translator Auction 83 Filing Window and Filing Procedures*, DA 13-283, released February 26, 2013. (Singleton PN)

and Order.<sup>2</sup> The required showing is identified as Test C, in Attachment B to the Singleton Window PN.

This facility is in not with 39 kilometers of any other Appendix A Market. It is not within any out-of-grid Top 50 Spectrum Limited Market.

### Johnson City Market Study

The Johnson City market protected channel/point combinations were generated using the Commissions LPFM grid tool. A portion of the printout from the LPFM grid tool follows. The preliminary section confirms the parameters studied and provides a summary of the channels. There are no protected points on channel 233, proposed in this application. There are protected points on lower first and second adjacent channels 231 and 232. There are no protected points on upper first or second adjacent channels 234 or 235. No I.F. channel protection is required.

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<sup>2</sup> *In the Matter of Creation of a Low Power Radio Service, Amendment of Service and Eligibility Rules for FM Broadcast Translator Stations, Fourth Report and Order and Third Order on Reconsideration*, FCC 12-19, released March 19, 2012.

Johnson City LPFM Grid Study Parameters and Overall Results

Johnson City, TN  
 Latitude 36-18-48  
 Longitude 082-21-13  
 Grid Size 31 x 31  
 Micro FM 100 watts at 30m HAAT  
 Co-Channel and 1st Adjacent Protected  
 2nd Adjacent Channel Protected  
 3rd Adjacent Channel Not Protected  
 I.F. Not Protected  
 TV Channel 6 Protected  
 CP Records Protected  
 APP Records Protected  
 FM Translators Protected  
 TV Channel 6 Translators/LP Protected  
 Auc83 FX App Records Protected

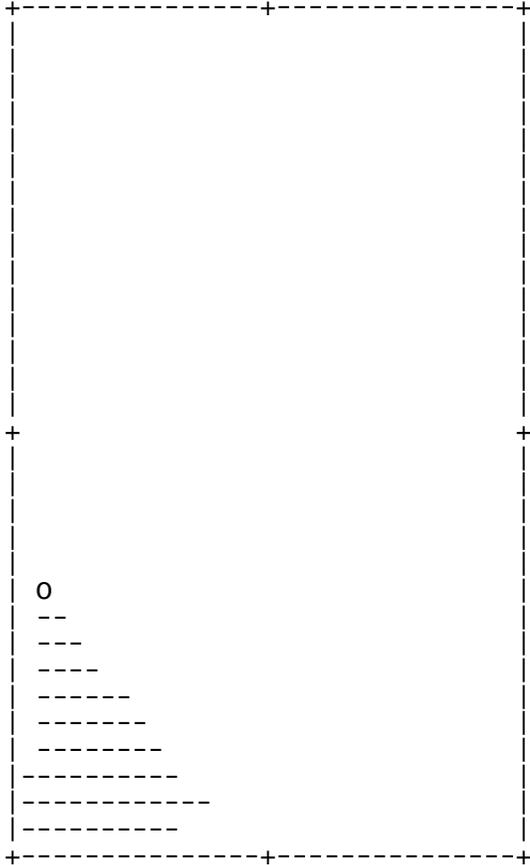
Chan	Avail	Chan	Avail	Chan	Avail	Chan	Avail	Chan	Avail
200	0	220	0	240	0	260	40	280	0
201	0	221	111	241	0	261	177	281	0
202	0	222	2	242	59	262	112	282	2
203	0	223	0	243	0	263	86	283	281
204	0	224	0	244	0	264	0	284	29
205	0	225	0	245	0	265	51	285	0
206	0	226	0	246	0	266	0	286	30
207	0	227	0	247	0	267	0	287	402
208	0	228	0	248	81	268	0	288	289
209	0	229	0	249	2	269	0	289	0
210	0	230	0	250	63	270	0	290	0
211	0	231	63	251	0	271	49	291	0
212	0	232	305	252	0	272	0	292	299
213	0	233	0	253	0	273	0	293	0
214	0	234	0	254	0	274	0	294	0
215	0	235	0	255	0	275	0	295	0
216	0	236	0	256	0	276	0	296	0
217	0	237	0	257	0	277	3	297	0
218	0	238	80	258	0	278	196	298	267
219	0	239	0	259	0	279	0	299	164
								300	51
-----									
Total	3294								

Total allotments, least preclusive spacing: 53  
 Total allotments, most preclusive spacing: 40

Note: Co-channel through second adjacent channel points shown highlighted above.

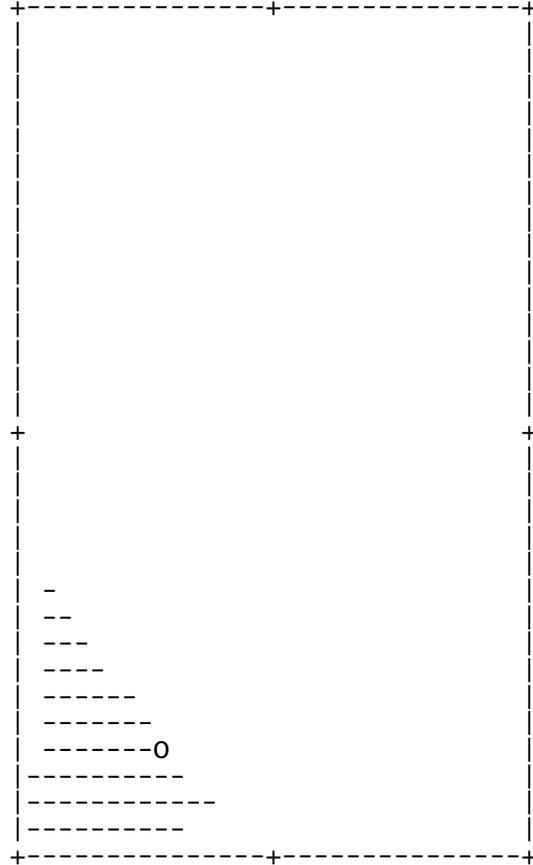
Johnson City LPFM Grid Study Specific Channel Points

Johnson City, TN  
Latitude 36-18-48  
Longitude 082-21-13  
Least preclusive siting  
Availability of Channel 231 (X)



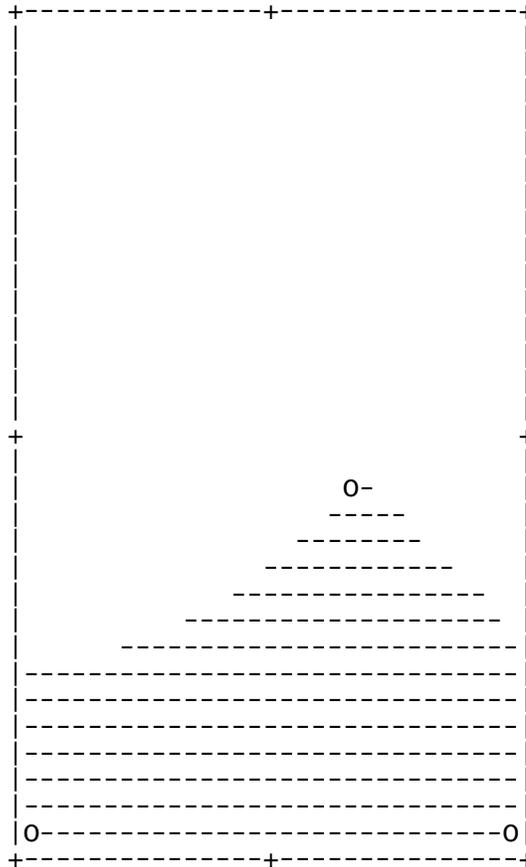
Point #909 at 36-12-48 082-35-13

Johnson City, TN  
Latitude 36-18-48  
Longitude 082-21-13  
Most preclusive siting  
Availability of Channel 231 (X)



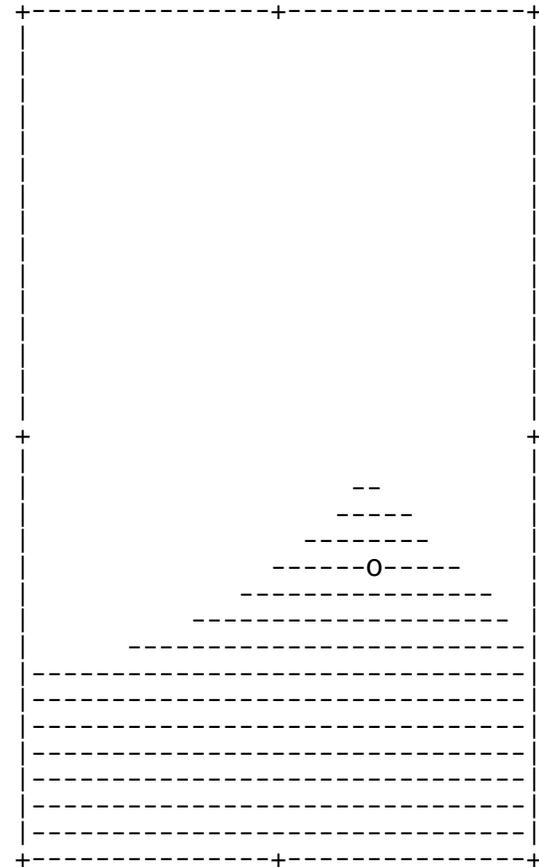
Point #686 at 36-06-48 082-28-13

Johnson City, TN  
 Latitude 36-18-48  
 Longitude 082-21-13  
 Least preclusive siting  
 Availability of channel 232 (X)



Point #931 at 36-03-48 082-36-13  
 Point #001 at 36-03-48 082-06-13  
 Point #324 at 36-16-48 082-16-13

Johnson City, TN  
 Latitude 36-18-48  
 Longitude 082-21-13  
 Most preclusive siting  
 Availability of channel 232 (X)



Point #290 at 36-13-48 082-15-13

Translator Height Above Average Terrain and Distance to Contour

The proposed translator facilities Height Above Average Terrain for the 12 radials used for translators is 404.5 meters. The corresponding distance to the 60 dBu F(50,50) contour is 19.678 kilometers, using the FM Curves utility on the Audio Division website. This translator falls in the largest classification for separation requirements in 47 C.F.R. §73.807(d)(1). The required separation for co-channel operation is 39 kilometers. The required separation for first

adjacent channels is 28 kilometers, and the required separation distance for second adjacent channels is 21 kilometers.

### Preclusion Study Description

Figure 1 shows the relationship of the proposed facilities to the Johnson City market grid. This facility as proposed in the short form filing is plotted with its Application ID, 649140.A. The Tech Box 60 dBu F(50,50) contour (dashed blue line) is shown. The proposed modified facilities are identified as 649140m. The proposed 60 dBu F(50,50) contour is shown as a solid red line. The protected contour for primary station WXIT (AM) is shown as a solid green line.

A black line shows the 39 kilometer radius circle where the proposed translator facilities could preclude a co-channel LPFM opportunity. A blue line shows the 28 kilometer first adjacent preclusion radius, and a purple line shows the 21 kilometer second adjacent preclusion radius. There are no co-channel points requiring protection in the Johnson City market grid. The 28 kilometer first adjacent channel preclusion circle does not reach the market grid, nor does the 21 kilometer second adjacent channel preclusion circle. The proposed facility does not preclude any identified points in the Johnson City market.

### Source of Data

Transmitter location, effective radiated power, directional antenna pattern, and elevation data are extracted from the Commission's CDBS. All contours for existing and proposed facilities are calculated using height above average terrain calculated at one degree horizontal increments. The contours were evaluated using terrain extracted from the NGDC 30

second terrain database, formatted for V-Soft allocation programs, at 0.1 kilometer increments.

**649140m**  
Proposed  
Latitude: 36-14-05 N  
Longitude: 081-42-13 W  
ERP: 0.08 kW  
Channel: 233 94.5 MHz  
AMSL Height: 1439.0 m  
Elevation: 1427.0 m  
Horiz. Pattern: Directional

**649140.A**  
BNPFT20030317FRQ  
Latitude: 36-14-05 N  
Longitude: 081-42-13 W  
ERP: 0.01 kW  
Channel: 234 94.7 MHz  
AMSL Height: 1439.0 m  
Elevation: 1427.0 m  
Horiz. Pattern: Omni

**WXIT**  
Type: AM  
Channel: 1200  
Latitude: 36-09-17 N  
Longitude: 081-39-41 W

**649140 Boone, North Carolina  
Preclusion Showing  
July 2013  
Figure 1**

**Timothy L. Warner, Inc.**

