

W253AX

Goldsboro, North Carolina

Minor Modification of Translator Construction Permit

BPFT-20120103ACX

On Channel 252

by

Eastern Airwaves, LLC

Exhibit 13

Interference Analysis

April 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 13, Interference Analysis, for Eastern Airwaves, LLC, 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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Narrative

This Exhibit supports a minor modification application in for FM translator construction permit file number BPFT-20120103ACX on Channel 252 in Goldsboro, North Carolina. Allocation details are provided in this exhibit. The application proposes minor modification changes. Specific changes are a change of site, to a different tower in the WGBR directional array, and a decrease in height.

Figure 1 shows the licensed 60 dBu F(50,50) coverage area, the construction permit 60 dBu F(50,50), and the proposed 60 dBu F(50,50) coverage area. The 2 mV/m ground wave contour for primary station WGBR, Goldsboro, North Carolina, is shown on Figure 1, along with a 25 mile radius (dashed) line. The proposed 60 dBu F(50,50) contour is within the 2 mV/m contour and within 25 miles of the WGBR site.

No LPFM Preclusions

The proposed and authorized W253AX sites are in the Goldsboro (North Carolina) market which is not a market identified as being of concern for LPFM allocations. It is, however, within 39 kilometers of two markets which are identified as Appendix A markets, Raleigh (North Carolina) and Greenville-New Bern-Jacksonville (North Carolina)¹. The 30 minute grid boundary for Raleigh and the 20 minute grid boundary for Greenville-New Bern-Jacksonville are shown on Figure 1. The proposed facilities have a standard 12 radial HAAT of 72.9 meters, which produces a 60 dBu F(50,50) contour of 11.1 kilometers. This places the

¹ *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.*

proposed facilities in the middle tier of separation distances for 47 C.F.R. §73.807(d)(1). The required separation for co-channel facilities is 32 kilometers. A 32 kilometer radius circle is shown on Figure 1. It does not reach the LPFM grids for either market, and can therefore not preclude any LPFM opportunity identified in either market. The proposed site is not within 39 kilometers of any other Appendix A market. It is not within any out-of-grid Top 50 Spectrum Limited Market.

Allocations

This application proposes service to Goldsboro, North Carolina, on channel 252. An updated Table 1: Allocations is included in this exhibit with a list of the stations, construction permits, allocations, and applications studied. All are protected by this application, with the exception of facilities which are listed in Table 2 below. Those facilities are protected by the Undesired to Desired (U/D) Ratio method which is described below. Facilities protected by the U/D method are listed in Table 2.

Table 1: Allocations

Allocation Study												
Eastern Airwaves, LLC												
CH# 252D - 98.3 MHz, Pwr= 0.25 kw, HAAT= 76.0 M, COR= 110 M												
Average Protected F(50-50)= 11.1 km												
Omni-directional												
DISPLAY DATES												
DATA 04-15-13												
SEARCH 04-15-13												
REFERENCE	CH#	CALL	TYPE	ANT STATE	AZI. <--	DIST FILE #	LAT. LNG.	Pwr(kw) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*
35 22 27.0 N. 78 00 43.0 W.	252D	W253AX	CP	C NC	157.5 337.5	0.06 BPFT20120103ACX	35 22 25.0 78 00 42.0	0.250	40.4 118	11.8 Conner Media, Inc.	-51.9*	-51.6*
Construction Permit being modified.												
	251C1	WQSM	LIC	CN NC	248.9 68.3	89.98 BLH19871125KA	35 04 46.0 78 55 58.0	100.000 253	102.2 307	70.0 Cumulus Licensing Llc	-24.0*	2.7
	249A	WEQR	LIC	CX NC	118.3 298.4	19.44 BLH20080501AAS	35 17 28.0 77 49 25.0	2.650 153	2.5 182	28.2 New Age Communications, Inc	5.4	-9.8*
Protected by U/D, see text and figures.												
	253C3	WDWG	LIC	CN NC	14.9 195.0	61.78 BLH19951122KA	35 54 43.0 77 50 06.0	16.000 125	58.5 163	38.7 First Media Radio, Llc	-7.8	7.4
	255D	W255AL	LIC	C NC	29.6 209.7	4.47 BLFT20001220ADE	35 24 33.0 77 59 15.0	0.170 32	0.9 66	6.8 Radio Training Network, Inc	-7.5*	-3.4*
Protected by U/D, see text and figures												
	253D	W253AX	LIC	C NC	118.3 298.4	19.44 BLFT20111006AEW	35 17 28.0 77 49 25.0	0.250	13.6 78	9.0 Conner Media, Inc.	-5.6	-7.5
Licensed facilities being modified.												
	252A	WLGT	LIC	CN NC	81.6 262.1	88.69 BLH19890227KF	35 29 14.0 77 02 42.0	1.350 149	72.1 159	23.9 Media East, Llc	5.3	26.1
	252C3	WLUS-FM	LIC	ZCN VA	338.8 158.5	133.73 BLH20011017ACH	36 29 45.0 78 33 16.0	17.500 119	104.2 236	36.0 Lakes Media Holding Compan	18.6	58.8
	255C3	WNBR-FM	LIC	C NC	50.7 231.0	73.52 BLH20051028AAW	35 47 29.0 77 22 54.0	11.200 149	3.9 163	39.2 Coastal Carolina Radio, Ll	58.4	33.3
	250D	W250AZ	LIC	C NC	13.3 193.3	44.81 BLFT20071005AAI	35 46 02.0 77 53 52.0	0.013 112	0.3 149	6.7 Conner Media, Inc.	33.4	37.0
	255C3	AL7051	RSV-A	NC	49.8 230.1	74.81 RM10857	35 48 25.0 77 22 44.0	25.000 100	4.2 117	39.8	59.4	34.0
Chg. of Comm. from windsor.												
	252D	635182	APP	C NC	326.4 146.1	80.49 BNPFT20030314AQJ	35 58 36.0 78 30 26.0	0.170 34	21.5 140	6.4 w & C Broadcasting, Inc.	47.8	34.6
	252D	651001	APP	C NC	305.9 125.5	78.93 BNPFT20030317LJA	35 47 17.0 78 43 13.0	0.010 131	23.8 237	7.0 Conner Media Corporation	44.0	34.6
	254C1	WRMR	LIC	CN NC	153.8 334.1	108.64 BLH19990401KE	34 29 41.0 77 29 19.0	100.000 297	9.9 303	71.3 Sunrise Broadcasting, Llc	86.5	36.2
	252D	W252BO	LIC	C NC	140.4 320.7	85.41 BLFT20070306AAB	34 46 50.0 77 24 56.0	0.055 53	21.2 62	6.3 Educational Media Foundati	51.9	36.5
	252C3	WUIN	LIC	CN NC	180.5 0.5	156.75 BLH20000807AHJ	33 57 40.0 78 01 37.0	18.500 116	108.1 120	37.9 Sea-comm, Inc.	37.8	82.7
	254D	W254BV	LIC	DC NC	305.5 125.2	58.13 BLFT20121011AAU	35 40 35.0 78 32 08.0	0.250	1.1 274	17.8 Radio Training Network, In	45.9	39.2

Terrain database is NED 03 SEC, R= 73.215 qualifying spacings or FCC minimum spacings in KM, M= Margin in KM
 In & Out distances between contours are shown at closest points. Reference Zone= East Zone, Co to 3rd adj.
 All separation margins (if shown) include rounding
 Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, _= Omni), Polarization (C,H,V,E), Beamtilt(Y,N,X)
 "*"affixed to 'IN' or 'OUT' values = site inside protected contour.
 Reference station has protected zone issue:

Table 2: Facilities Protected by U/D Method

Facility	WEQR Walnut Creek, North Carolina	W255AL Goldsboro, North Carolina
Relationship	249A, third adjacent	255D, third adjacent
Distance (km)	19.45	4.47
Bearing (degrees)	118.3	29.6
ERP (kW, on azimuth)	2.65	.17
HAAT (m, on azimuth)	151.0	33.8
Ratio	40	40
Signal Strength (dBu)	67.0	67.1
Translator Signal Strength	107.0	107.1
Translator distance (km)	.495	.490

Undesired to Desired Method

Protection to some facilities is provided through the use of Undesired to Desired Signal Strength Ratio (U/D) calculations. Table 2 lists the parameters studied. The WEQR field strength calculated at ground level at the proposed W253AX site is 67.0 dBu, using the FM Curves calculator on the FCC web site. For the translator interference contour, free space calculations are used. The corresponding 107.0 dBu field strength distance is .495 kilometers in the horizontal plane.

The W255AL field strength calculated at ground level at the proposed W253AX site is 67.1 dBu, using the FM Curves calculator on the FCC web site. For the translator interference contour, free space calculations are used. The corresponding 107.1 dBu field strength distance is .490 kilometers in the horizontal plane.

Figure 2 is a vertical plane plot of the 107.0 dBu contour, calculated using the vertical elevation pattern of the Shively 6812B-3 transmitting antenna, a three bay antenna with elements spaced 1.0 wavelengths vertically. The 107.1 dBu contour is also shown. Since the

107.0 dBu signal is always less distant from the antenna than the 107.1 dBu signal, only the 107.0 dbu is described below. When the vertical elevation pattern is considered, the 107.0 dBu contour remains at least 23 meters (75 feet) above ground for all distance beyond 112 meters (367 feet). There is a circular area between 95 meters and 112 meters (312 feet and 367 feet) where the 107.0 dBu contour drops below 10 meters (32,8 feet) to a minimum of 7.4 meters (24.3 feet) above ground. Most of that area is within the transmitter site or over roadway or railroad right-of-way where there can be not structures which exceed 7.4 meters. There is a circular area between 20 and 38 meters (65 and 125 feet) from the tower where the 107.0 dBu contour reaches the ground that area is entirely within the guy field of the tower and part of the transmitter site. Figure 3 is an aerial photo of the transmitter site and area. Lines on the map indicate approximate distance to the nearest structures and to the edge of the roadway. Figure 4 is a topographic map of the same area with the same lines. The topographic map verifies that the land is generally level in the vicinity. Because the interference contour does not reach any occupied or potentially occupied area beyond the transmitter site, there is no population within the predicted interference area and therefore this facility is permitted under §74.1204(d).

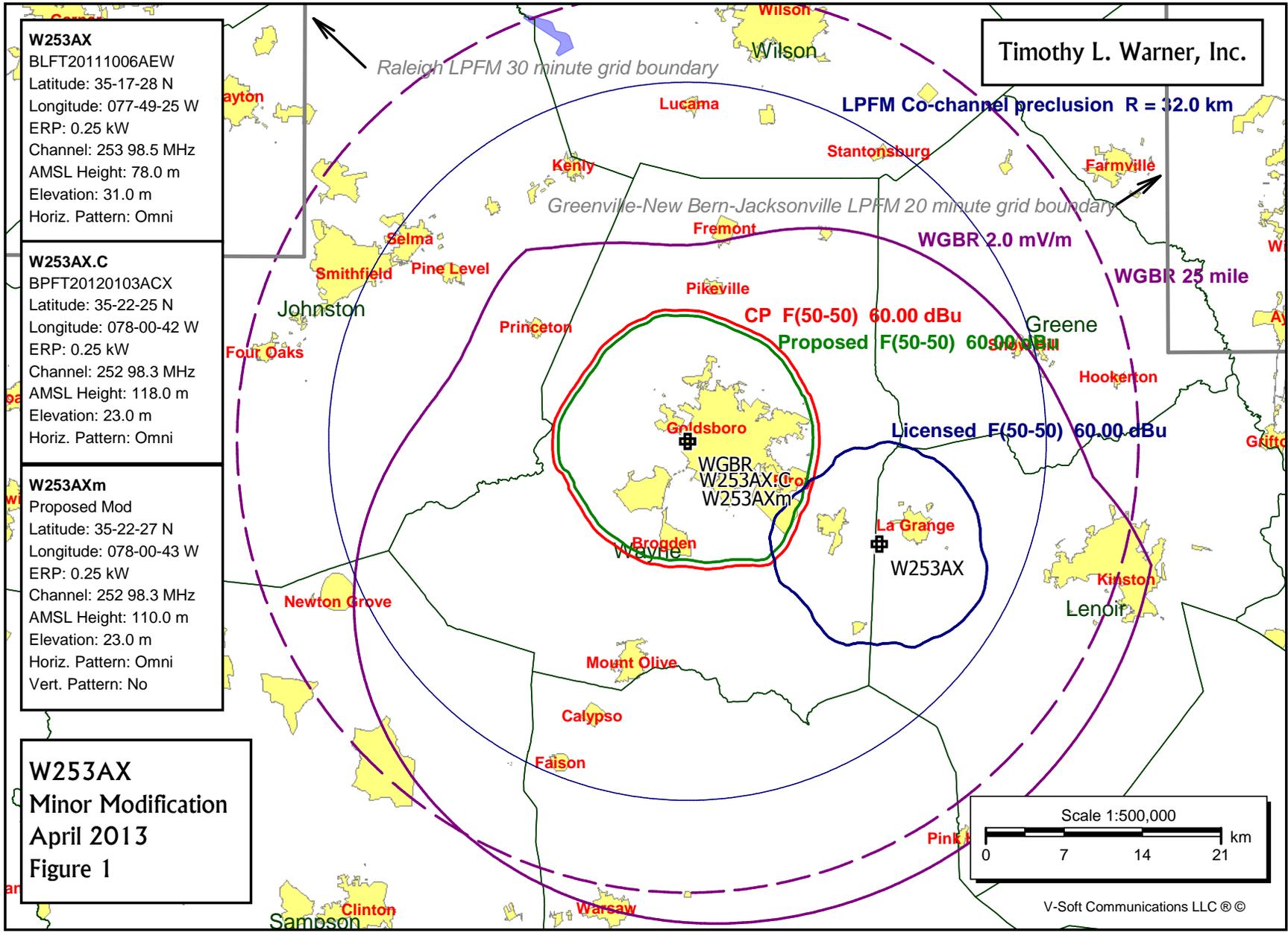
The applicant recognizes that the U/D method is only a tool for predicting likely interference. Should any actual interference be experienced, the applicant will cooperate fully in correcting the interference. Corrective steps may require changes in the transmitting antenna or other steps which would require Commission authorization, may require that the translator cease operation except for brief equipment tests, or may require filtering at the receivers which report interference.

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 also evaluated using terrain extracted from the V-Soft Communications NED 03 terrain database. The NED 03 database is derived from the USGS National Elevation Data 30 meter terrain database.

All population data is from 2010 U.S. Census PL data files. Population is counted by considering the location of the centroid of each census block. The data for each block is counted if it falls within the area being counted.



W253AX
 BLFT20111006AEW
 Latitude: 35-17-28 N
 Longitude: 077-49-25 W
 ERP: 0.25 kW
 Channel: 253 98.5 MHz
 AMSL Height: 78.0 m
 Elevation: 31.0 m
 Horiz. Pattern: Omni

W253AX.C
 BPFT20120103ACX
 Latitude: 35-22-25 N
 Longitude: 078-00-42 W
 ERP: 0.25 kW
 Channel: 252 98.3 MHz
 AMSL Height: 118.0 m
 Elevation: 23.0 m
 Horiz. Pattern: Omni

W253AXm
 Proposed Mod
 Latitude: 35-22-27 N
 Longitude: 078-00-43 W
 ERP: 0.25 kW
 Channel: 252 98.3 MHz
 AMSL Height: 110.0 m
 Elevation: 23.0 m
 Horiz. Pattern: Omni
 Vert. Pattern: No

W253AX
 Minor Modification
 April 2013
 Figure 1

Timothy L. Warner, Inc.

Raleigh LPFM 30 minute grid boundary

LPFM Co-channel preclusion R = 32.0 km

Greenville-New Bern-Jacksonville LPFM 20 minute grid boundary

WGBR 2.0 mV/m

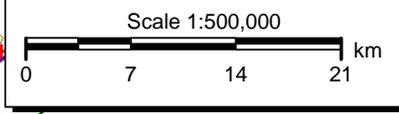
WGBR 25 mile

CP F(50-50) 60.00 dBu
 Proposed F(50-50) 60.00 dBu

Licensed F(50-50) 60.00 dBu

WGBR
 W253AX.C
 W253AXm

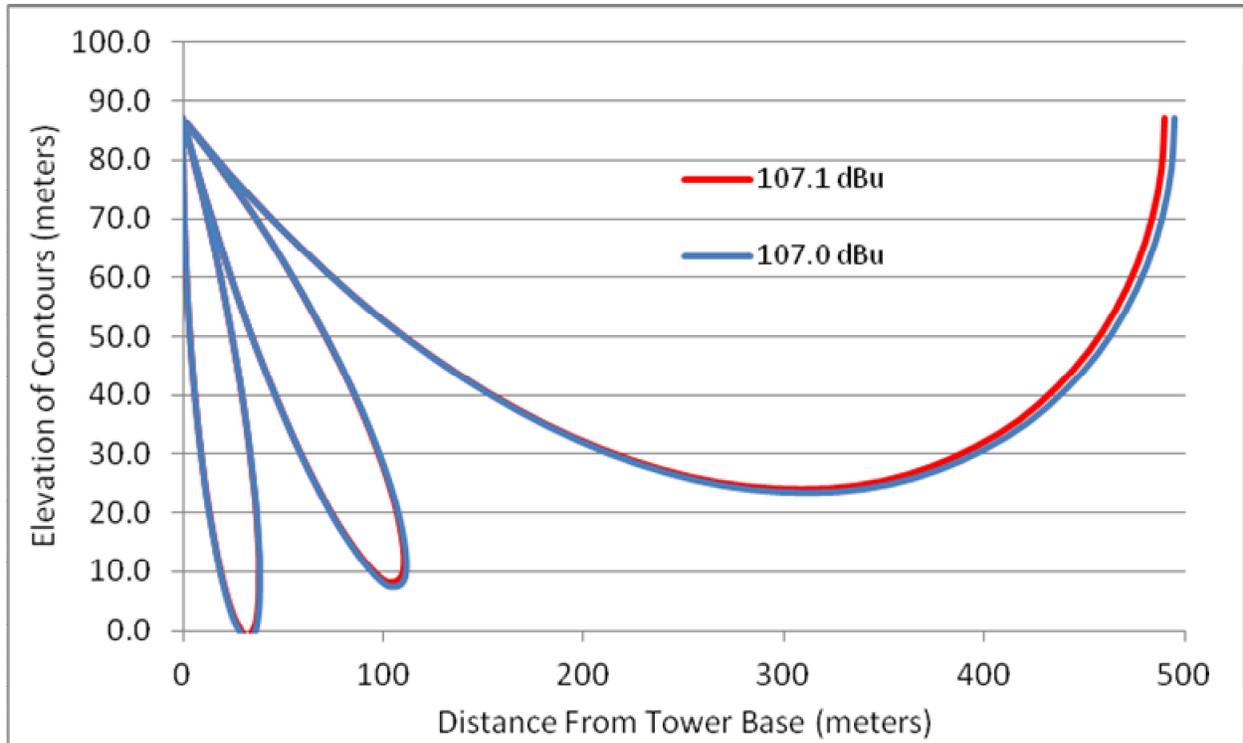
W253AX



V-Soft Communications LLC ©

Vertical Plot of 107.0 dBu Contour

Also showing 107.1 dBu Contour



Free space propagation
Shively 6812B-3 antenna
Center of Radiation 87 meters Above Ground Level
ERP 250 Watts

35°22'35"

35°22'30"

35°22'25"

35°22'20"

35°22'35"

35°22'30"

35°22'25"

35°22'20"



78°0'50"

78°0'45"

78°0'40"

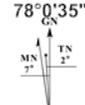
78°0'35"

Universal Transverse Mercator (UTM) Projection Zone 17
North American Datum of 1983

0 100 200 300 400 500 Feet

0 50 100 150 Meters

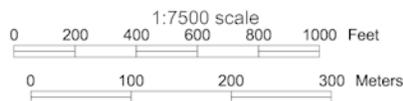
1:3000 scale



Magnetic declination of 7W at center of map
on March 17, 2011

Figure 3

Universal Transverse Mercator (UTM) Projection Zone 17
North American Datum of 1983



Magnetic declination of 7W at center of map
on March 17, 2011

Figure 4

