

Kinston, North Carolina
Application for Minor Modification of FM Translator W224CJ
On Channel 225
by
Eastern Airwaves

Exhibit 13
Interference Analysis

December 2014

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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, 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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11 December 2014

Narrative

This Exhibit supports a minor modification application to modify a construction permit for FM translator W224CJ (new call sign W225CD), on Channel 225 in Kinston, North Carolina. Allocation details are provided in this exhibit. This proposal complies fully with the requirements of 47 C.F.R. §74.1204(a), with the exception of facilities protected under 47 C.F.R. §74.1204(d) by the Undesired to Desired (U/D) method described below. The proposed modified facilities create no mutual exclusivities with any licensed facilities, construction permits, or applications as shown in the allocation table in this exhibit.

This application is limited to changing the proposed antenna from a two bay to a four bay full wave spaced antenna.

Figure 1 shows the licensed 60 dBu F(50,50) coverage area, and the proposed 60 dBu F(50,50) coverage area. As shown on Figure 1, the proposed modification is a minor modification of the licensed facilities. The predicted 60 dBu F(50,50) contour for this proposal and that authorized in BPFT-20130939BOV are identical. Figure 2 shows fill-in status confirmation.

Allocations

This application proposes service to Kinston, North Carolina, on channel 225. 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 under §74.1204(a) contour protection by this application, with the exception of facilities protected by the Undesired to Desired (U/D) method. Facilities protected by the U/D method are listed in Table 2. The

allocations table was prepared using the NGDC 30 arcsecond terrain database which is described below.

Television Channel 6 Protection

There are no television channel 6 stations requiring protection. This application proposes a channel which is not subject to television channel 6 separation requirements.

AM Station Protection

This facility is authorized on the radiator of WELS (AM), facility ID 20408. The proposed antenna is a replacement for an existing single bay antenna, not presently in use. The transmission line is already installed. An application for return to direct measurement of power has already been filed for WELS (AM) to reflect the modification.

Directional station WRNS (AM), facility ID 36944, is located within the study distance in 47 C.F.R. §1.30002 of the Commission's Rules. A Method of Moments study of the affect of the new four bay antenna has been completed, and shows that there is no significant impact on the night time operation of WRNS (AM). That study is attached as a separate exhibit.

Table 1: Allocations

Allocation Study											
Eastern Airwaves, Llc											
CH# 225D - 92.9 MHz, Pwr= 0.25 kw, HAAT= 84.9 M, COR= 106 M											
Average Protected F(50-50)= 11.9 km											
Omni-directional											
DISPLAY DATES											
DATA 12-11-14											
SEARCH 12-11-14											
CH	CALL	TYPE	ANT	AZI.	DIST	LAT.	Pwr(kw)	INT(km)	PRO(km)	*IN*	*OUT*
CITY		STATE		<--	FILE #	LNG.	HAAT(M)	COR(M)	LICENSEE	(Overlap	in km)
227C	WERO	LIC	CN	69.8	26.21	35 21 55.0	100.000	13.0	89.3	1.0	-64.2*
Washington			NC	249.9	BLH19791206AF	77 23 38.0	543	554	Nm License, Llc		
Protected by U/D showings. See text and figures.											
225D	w224CJ!	CP	C	0.0	0.00	35 17 03.0	0.250	38.8	11.4	-50.2	-50.2
Kinston			NC	0.0	BPFT20130930BOV	77 39 53.0	85	106	Eastern Airwaves, Llc		
CP being modified.											
224D	w224CJ!	LIC	C	119.4	5.79	35 15 31.0	0.250	14.3	10.3	-21.1	-23.1
Kinston			NC	299.4	BLFT20130528ALW	77 36 33.0	70	90	Eastern Airwaves, Llc		
License facility modified by existing CP, as modified in this application.											
225C	WEGX	LIC	CX	236.5	182.57	34 22 04.0	100.000	190.0	86.1	-19.7*	54.3
Dillon			SC	55.6	BMLH20140905AAY	79 19 21.0	493	521	Amfm Radio Licenses, L.L.c		
222D	w222AO	LIC	C	295.5	32.45	35 24 33.4	0.250	1.1	12.6	20.0	18.7
South Goldsboro			NC	115.3	BLFT20130814ADK	77 59 15.0	98	132	Radio Training Network, In		
224C2	WBNK	LIC	NCX	112.6	114.64	34 53 00.4	11.500	68.6	46.4	33.5	49.6
Pine Knoll Shores			NC	293.2	BLH20090102AAD	76 30 21.3	228	228	Tower Investment Trust, In		
222C2	WQSL	LIC	CN	166.8	87.12	34 31 10.0	22.500	5.6	51.2	69.6	34.9
Jacksonville			NC	347.0	BLH19950612KDD	77 26 52.0	221	226	Nm License, Llc		
224D	w224CI	LIC	C	204.0	62.30	34 46 17.0	0.015	9.7	6.9	40.7	38.1
Rose Hill			NC	23.9	BLFT20130509ACM	77 56 35.0	119	133	Conner Media Corporation		
223C0	WYFL	LIC	DCX	335.3	115.17	36 13 30.0	100.000	10.3	73.1	93.6	41.0
Henderson			NC	154.9	BLED20140723ACU	78 12 10.0	308	403	Bible Broadcasting Network		
225D	1564601	APP	DC	295.3	105.64	35 41 07.0	0.250	25.4	7.5	68.9	59.5
Raleigh			NC	114.7	BNPFT20030317KBC	78 43 14.0	165	270	Carolina Radio Group, Inc.		
225B	WVBW	LIC	CN	32.5	210.64	36 52 35.0	50.000	137.5	64.9	61.2	88.7
Suffolk			VA	213.3	BMLH19880519KDD	76 23 28.0	148	150	Mhr License Llc		
279C1	WTIB	LIC	DCX	41.7	91.79	35 53 54.0	100.000	1.1	11.1	21.5R	70.3M
Williamston			NC	222.1	BMLH20101022AAA	76 59 10.0	299	305	Inner Banks Media, Llc		
225D	631055	APP	C	300.4	124.11	35 50 34.0	0.250	28.6	8.5	84.4	76.0
Morrisville			NC	119.7	BNPFT20030314BRQ	78 51 03.0	61	162	Capstar Tx Limited Partner		
278C2	WRCQ	LIC	CN	254.2	93.22	35 03 09.0	48.000	1.1	11.1	14.5R	78.7M
Dunn			NC	73.6	BLH19900207KBB	78 38 54.0	153	187	Cumulus Licensing Llc		
224D	w224CX	LIC	C	194.4	114.37	34 17 08.0	0.150	20.3	13.5	82.2	83.6
Wilmington			NC	14.3	BLFT20140908AAA	77 58 32.0		148	Conner Media Corporation		
228D	w227CU	APP	DC	295.3	105.64	35 41 07.0	0.250	1.1	14.1	93.2	90.4
Cary			NC	114.7	BMPFT20141124ADG	78 43 14.0		207	Juan Alberto Ayala		
226L1	WBPL-LP	LIC		192.3	121.98	34 12 35.0	0.097			102.2	99.0
Wilmington			NC	12.1	BLL20120814ABA	77 56 53.0	30	35	Archangel Gabriel Associat		

Terrain database is FCC NGDC 30 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. Call signs with exclamation marks need not be protected.
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 restricted contour.
< = Station meets FCC minimum distance spacing for its class.
Reference station has protected zone issue: AM tower WELS (AM)

Table 2: Facilities Protected by U/D Method

Facility	WERO Washington, North Carolina
Relationship	227C, second adjacent
Distance (km)	26.22
Bearing (degrees)	69.8
ERP (kW, on azimuth)	100.0
HAAT (m, on azimuth)	543.0
Ratio	40
Signal Strength (dBu)	88.7
Translator Signal Strength	128.7
Translator distance (km)	.041

Undesired to Desired Method under §74.1204(d)

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 proposed antenna is a SWR FMEC/4 four level antenna, with the elements spaced one wavelength vertically. The elevation pattern is shown in Figure 3.

The WERO field strength calculated at ground level at the proposed W224CJ site is 88.7 dBu, using the FM Curves calculator on the FCC web site. For the translator interference contour, free space calculations are used. The corresponding 128.7 dBu field strength distance is .041 kilometers in the horizontal plane. The proposed antenna location is 80 meters above ground. Therefore the worst case predicted interfering signal will not reach ground level. When the elevation pattern of the antenna is considered, the distance to the interference contour in the vertical plane is even less. The 128.7 dBu signal level does not reach ground level. A vertical plot of the predicted interference contour is shown in Figure 4.

Figure 5 is a topographic map of the transmitter site. Figure 6 is an aerial photograph of the site, showing the absence of any structures in the area of interest. 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 evaluated using terrain extracted from the NGDC 30 arcsecond terrain database, formatted by V-Soft Communications to match the database in use at the Commission..

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.

W224CJ.C (W225CD)

BPED20130930BOV
Latitude: 35-17-03 N
Longitude: 077-39-53 W
ERP: 0.25 kW
Channel: 225 92.9 MHz
AMSL Height: 106.0 m
Elevation: 26.0 m
Horiz. Pattern: Omni

WELS

Type: AM
Channel: 1010
Latitude: 35-17-03 N
Longitude: 077-39-53 W

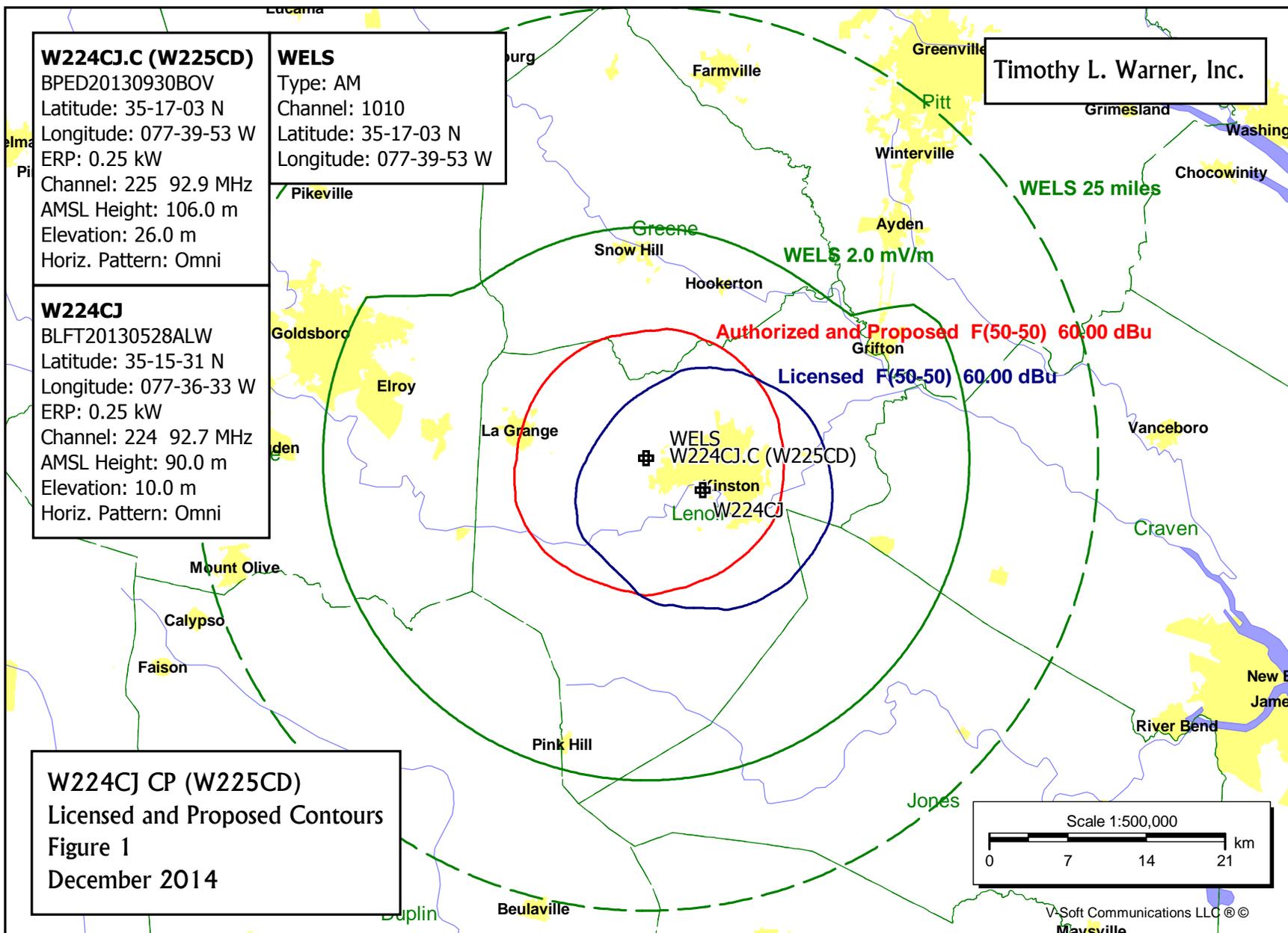
W224CJ

BLFT20130528ALW
Latitude: 35-15-31 N
Longitude: 077-36-33 W
ERP: 0.25 kW
Channel: 224 92.7 MHz
AMSL Height: 90.0 m
Elevation: 10.0 m
Horiz. Pattern: Omni

W224CJ CP (W225CD)

Licensed and Proposed Contours
Figure 1
December 2014

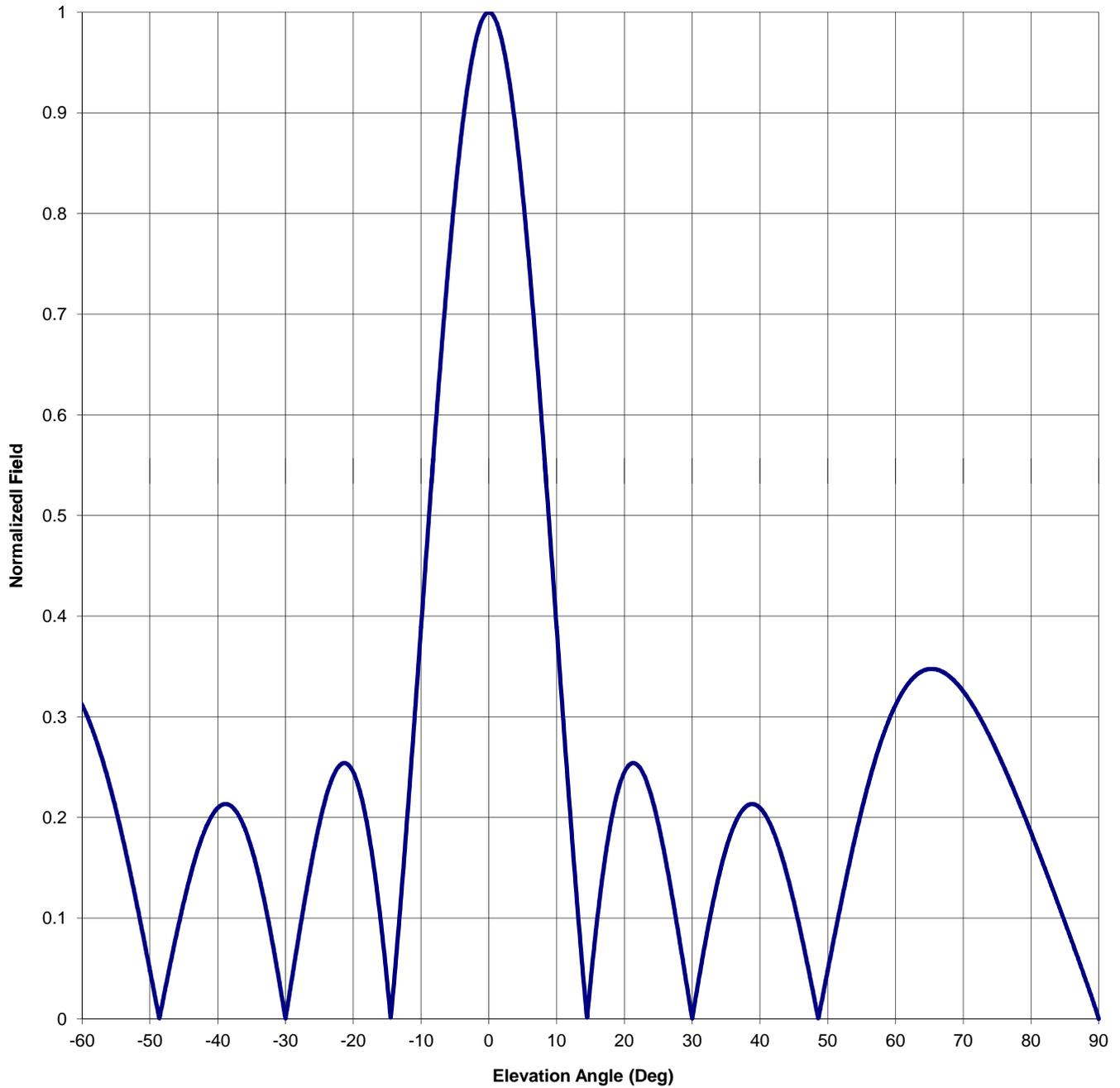
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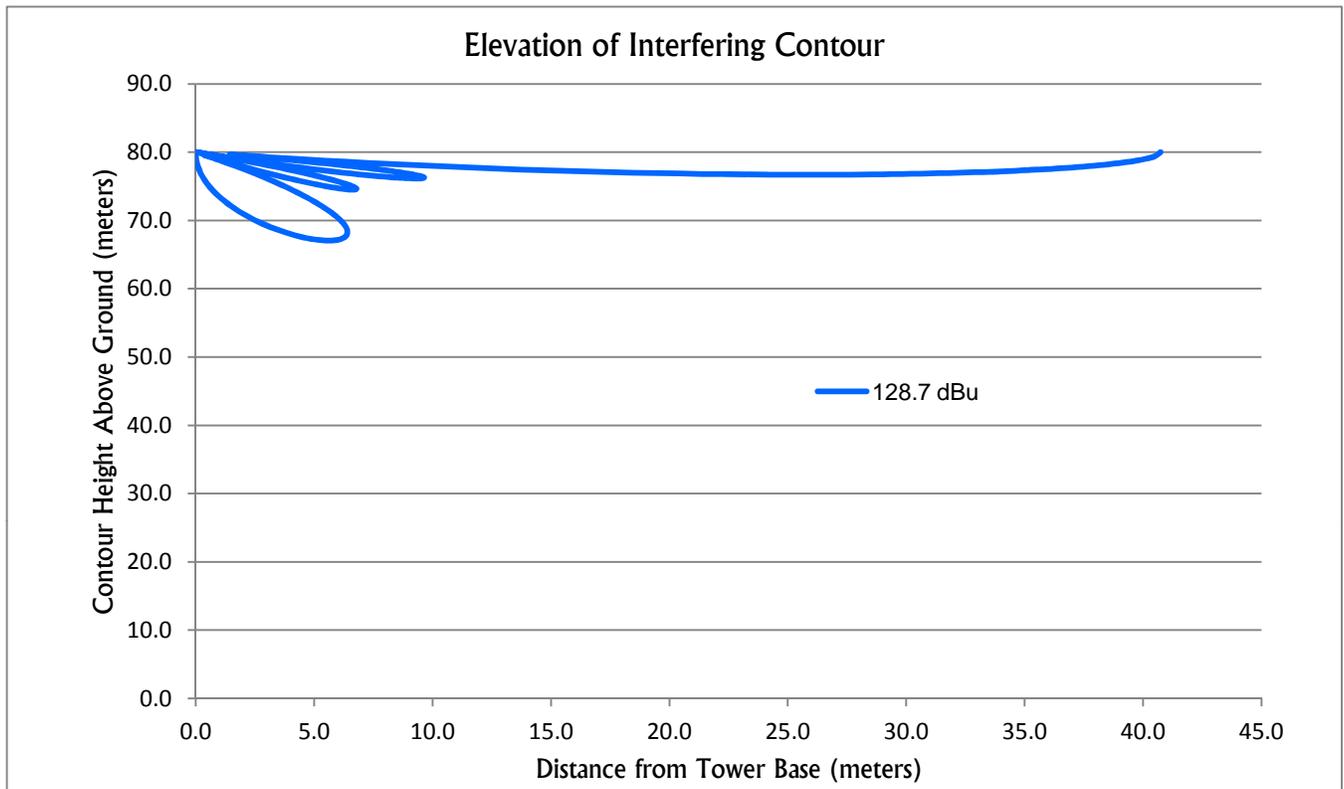


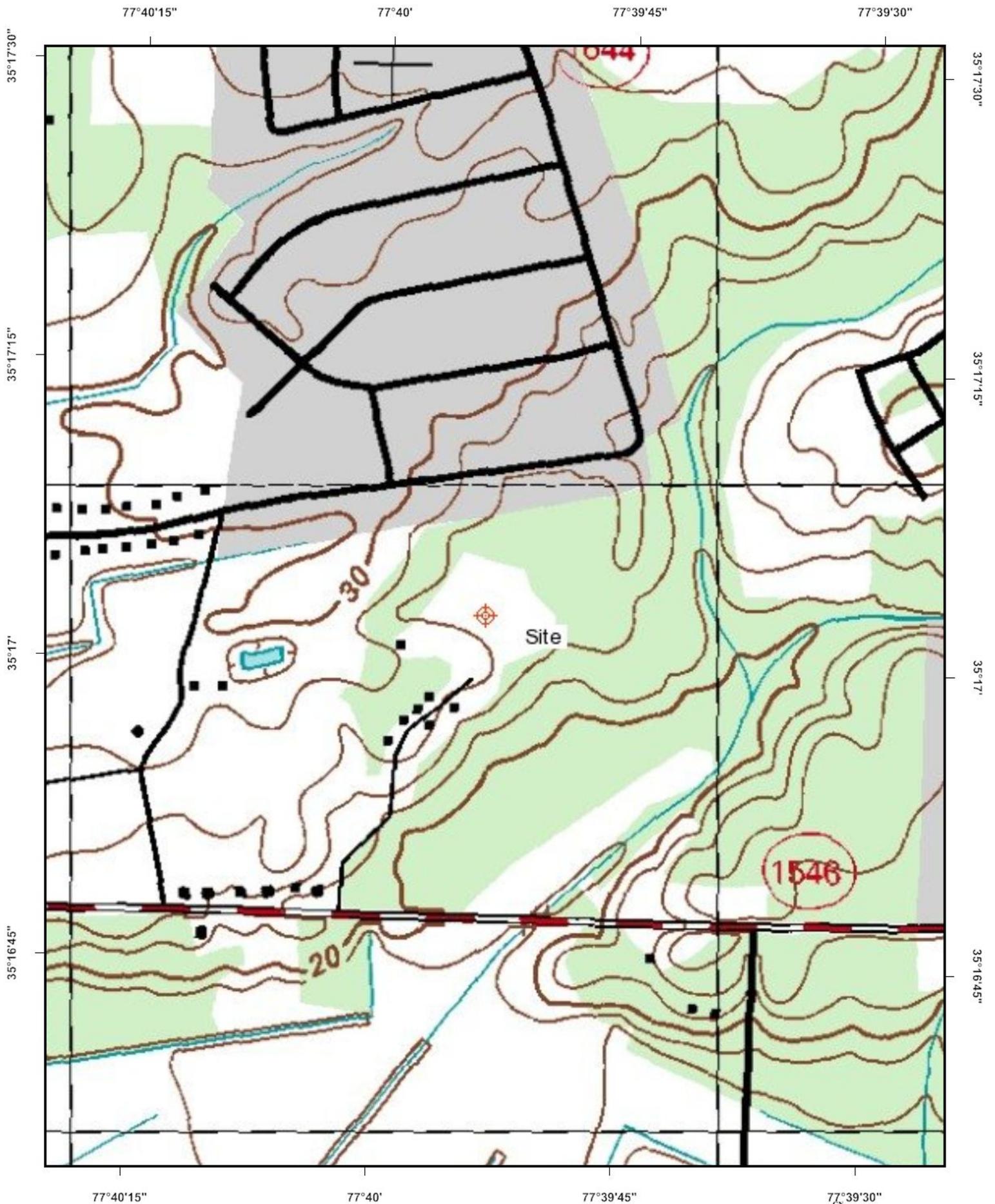
Antenna Mfg.: Shively
Antenna Type: FMEC/4
Station: W224CJ.C
Frequency: 92.9
Channel #: 225
Figure: 3

Date: 12/11/2014

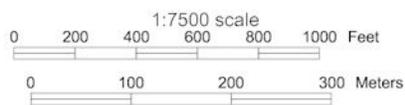
Beam Tilt	0	
Gain (Max)	2.137	3.299 dB
Gain (Horizon)	2.137	3.299 dB







Universal Transverse Mercator (UTM) Projection Zone 18
 North American Datum of 1983



77°39'30"
 Magnetic declination of 11W at center of map
 on March 17, 2011

Figure 5

77°40'

77°39'55"

77°39'50"

77°39'45"

35°17'10"

35°17'05"

35°17'

35°16'55"

35°17'10"

35°17'05"

35°17'

35°16'55"



77°40'

77°39'55"

77°39'50"

77°39'45"

Universal Transverse Mercator (UTM) Projection Zone 18
North American Datum of 1983

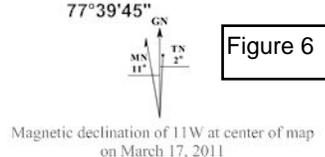
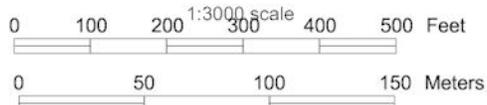


Figure 6