

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												
REFERENCE		CH# 225D - 92.9 MHz, Pwr= 0.25 kw, HAAT= 84.9 M, COR= 106 M								DISPLAY DATES		
35 17 03.0 N.		Average Protected F(50-50)= 11.9 km								DATA 12-11-14		
77 39 53.0 W.		Omni-directional								SEARCH 12-11-14		
CH CITY	CALL	TYPE STATE	ANT	AZI. <--	DIST FILE #	LAT. LNG.	Pwr(kw) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap	*OUT* in km)	
227C Washington	WERO	LIC	CN NC	69.8 249.9	26.21 BLH19791206AF	35 21 55.0 77 23 38.0	100.000 543	13.0 554	89.3 Nm License, LLC	1.0	-64.2*	
Protected by U/D showings. See text and figures.												
225D Kinston	W224CJ!	CP	C NC	0.0 0.0	0.00 BPFT20130930BOV	35 17 03.0 77 39 53.0	0.250 85	38.8 106	11.4 Eastern Airwaves, LLC	-50.2	-50.2	
CP being modified.												
224D Kinston	W224CJ!	LIC	C NC	119.4 299.4	5.79 BLFT20130528ALW	35 15 31.0 77 36 33.0	0.250 70	14.3 90	10.3 Eastern Airwaves, LLC	-21.1	-23.1	
License facility modified by existing CP, as modified in this application.												
225C Dillon	WEGX	LIC	CX SC	236.5 55.6	182.57 BMLH20140905AAY	34 22 04.0 79 19 21.0	100.000 493	190.0 521	86.1 Amfm Radio Licenses, L.L.C	-19.7*	54.3	
222D South Goldsboro	W222AO	LIC	C NC	295.5 115.3	32.45 BLFT20130814ADK	35 24 33.4 77 59 15.0	0.250 98	1.1 132	12.6 Radio Training Network, In	20.0	18.7	
224C2 Pine Knoll Shores	WBNK	LIC	NCX NC	112.6 293.2	114.64 BLH20090102AAD	34 53 00.4 76 30 21.3	11.500 228	68.6 228	46.4 Tower Investment Trust, In	33.5	49.6	
222C2 Jacksonville	WQSL	LIC	CN NC	166.8 347.0	87.12 BLH19950612KD	34 31 10.0 77 26 52.0	22.500 221	5.6 226	51.2 Nm License, LLC	69.6	34.9	
224D Rose Hill	W224CI	LIC	C NC	204.0 23.9	62.30 BLFT20130509ACM	34 46 17.0 77 56 35.0	0.015 119	9.7 133	6.9 Conner Media Corporation	40.7	38.1	
223C0 Henderson	WYFL	LIC	DCX NC	335.3 154.9	115.17 BLED20140723ACU	36 13 30.0 78 12 10.0	100.000 308	10.3 403	73.1 Bible Broadcasting Network	93.6	41.0	
225D Raleigh	1564601	APP	DC NC	295.3 114.7	105.64 BNPFT20030317KBC	35 41 07.0 78 43 14.0	0.250 165	25.4 270	7.5 Carolina Radio Group, Inc.	68.9	59.5	
225B Suffolk	WVBW	LIC	CN VA	32.5 213.3	210.64 BMLH19880519KD	36 52 35.0 76 23 28.0	50.000 148	137.5 150	64.9 Mhr License LLC	61.2	88.7	
279C1 Williamston	WTIB	LIC	DCX NC	41.7 222.1	91.79 BMLH20101022AAA	35 53 54.0 76 59 10.0	100.000 299	1.1 305	11.1 Inner Banks Media, LLC	21.5R	70.3M	
225D Morrisville	631055	APP	C NC	300.4 119.7	124.11 BNPFT20030314BRQ	35 50 34.0 78 51 03.0	0.250 61	28.6 162	8.5 Capstar Tx Limited Partner	84.4	76.0	
278C2 Dunn	WRCQ	LIC	CN NC	254.2 73.6	93.22 BLH19900207KB	35 03 09.0 78 38 54.0	48.000 153	1.1 187	11.1 Cumulus Licensing LLC	14.5R	78.7M	
224D Wilmington	W224CX	LIC	C NC	194.4 14.3	114.37 BLFT20140908AAA	34 17 08.0 77 58 32.0	0.150	20.3 148	13.5 Conner Media Corporation	82.2	83.6	
228D Cary	W227CU	APP	DC NC	295.3 114.7	105.64 BMPFT20141124ADG	35 41 07.0 78 43 14.0	0.250	1.1 207	14.1 Juan Alberto Ayala	93.2	90.4	
226L1 Wilmington	WBPL-LP	LIC	NC	192.3 12.1	121.98 BLL20120814ABA	34 12 35.0 77 56 53.0	0.097 30	35	102.2 Archangel Gabriel Associat	99.0		

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

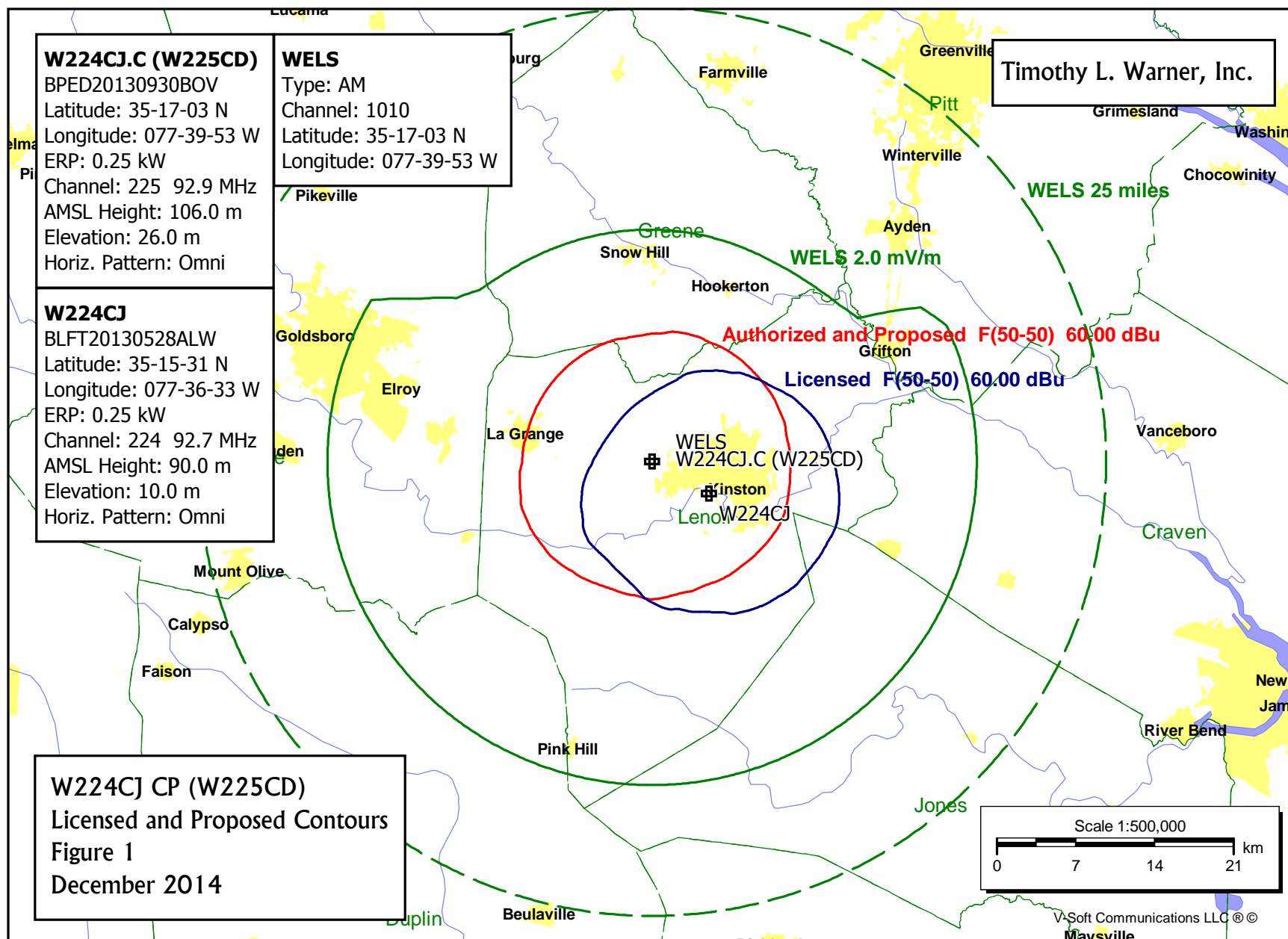
W224CJ

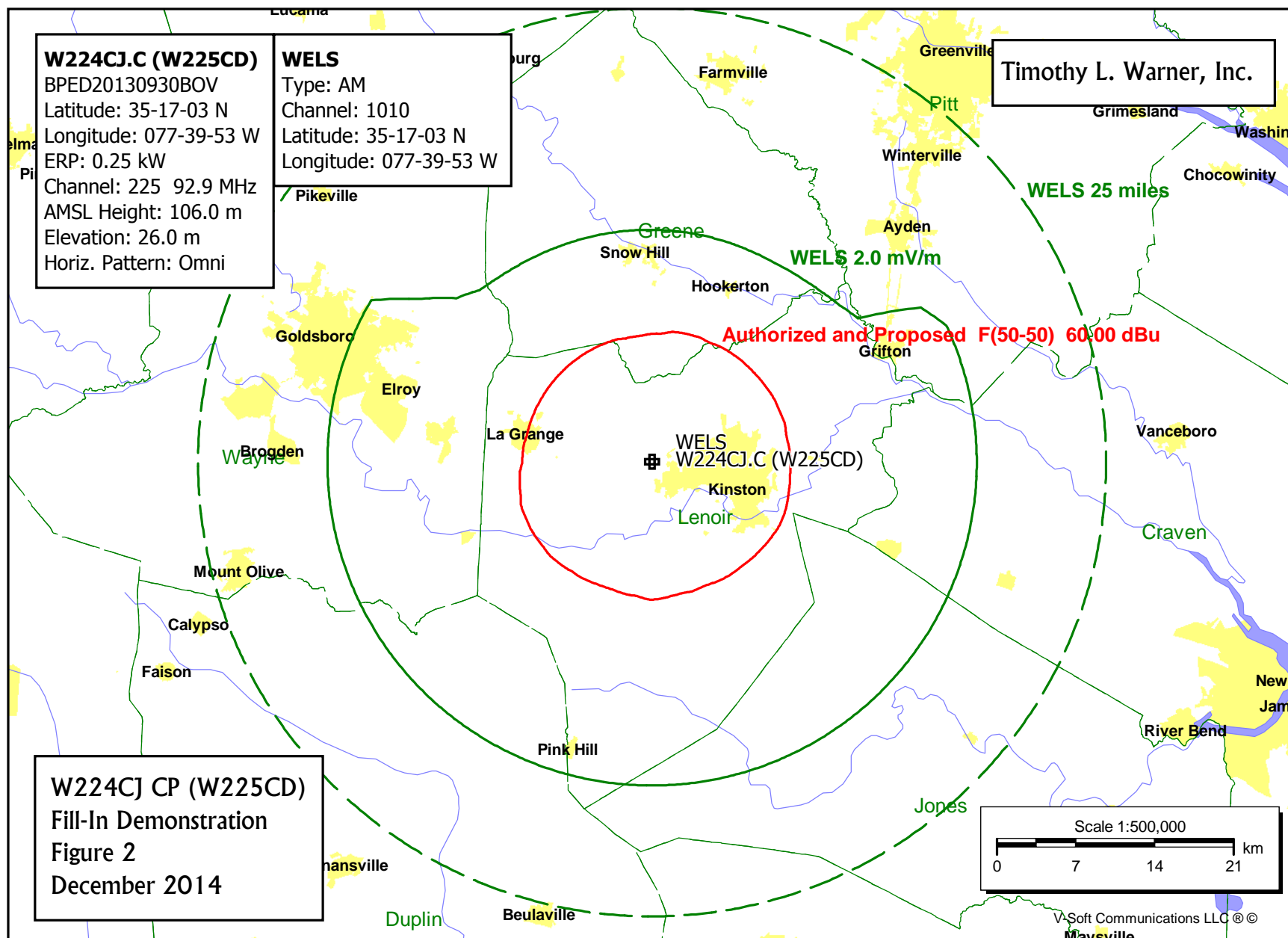
BLFT20130528ALW
Latitude: 35-15-31 N
Longitude: 077-36-33 W
ERP: 0.25 kW
Channel: 224 92.7 MHz
AMSL Height: 90.0 m
Elevation: 10.0 m
Horiz. Pattern: Omni

WELS

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

Timothy L. Warner, Inc.

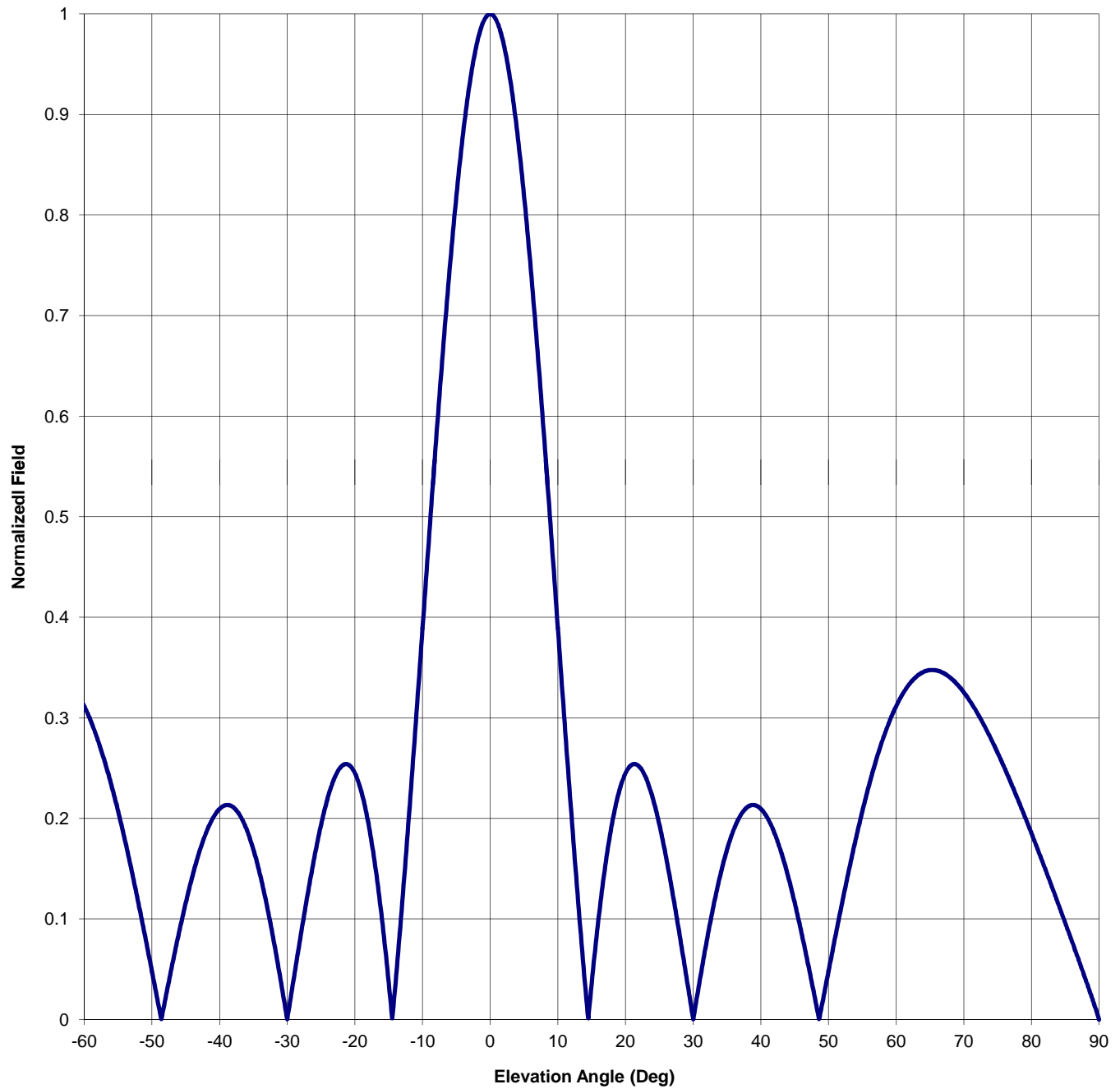


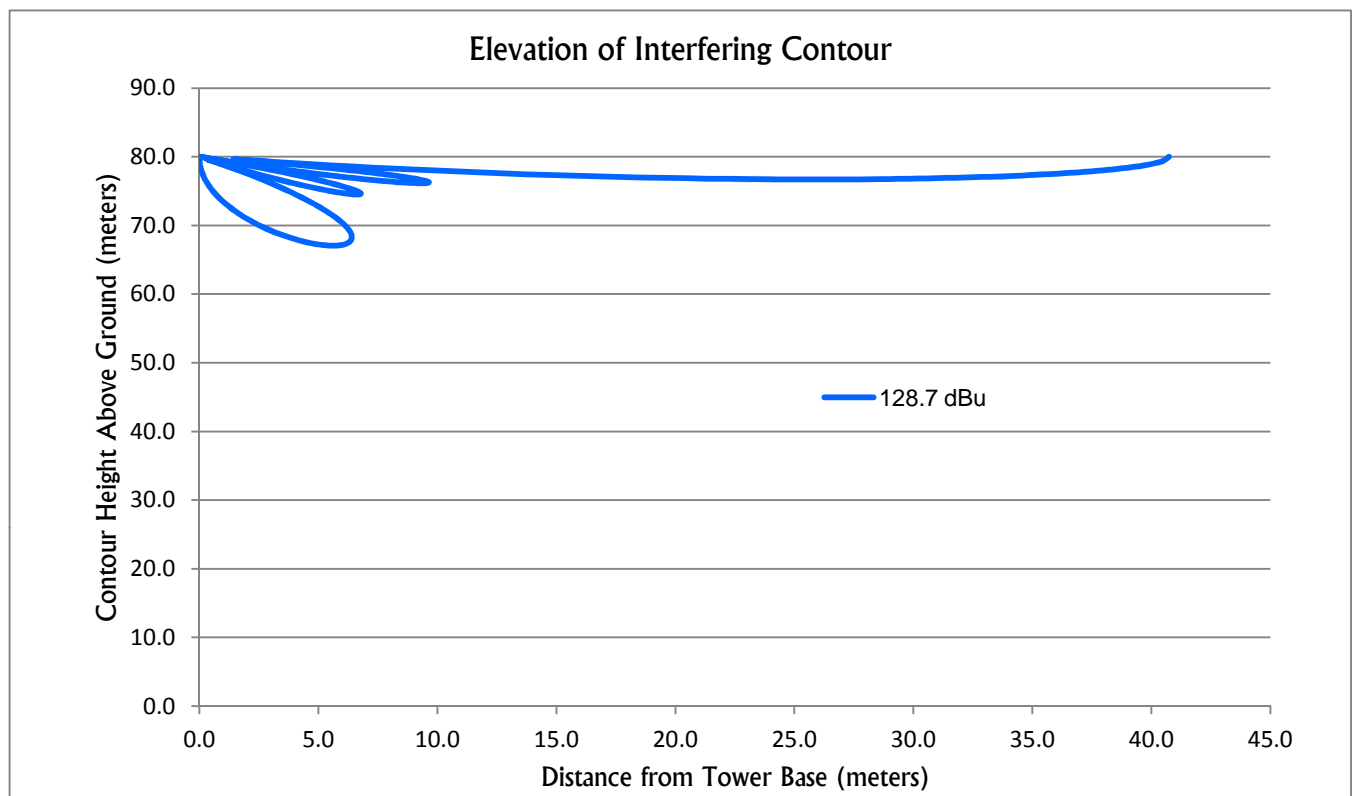


Antenna Mfg.: Shively
Antenna Type: FMEC/4
Station: W224CJ.C
Frequency: 92.9
Channel #: 225
Figure: 3

Date: 12/11/2014

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





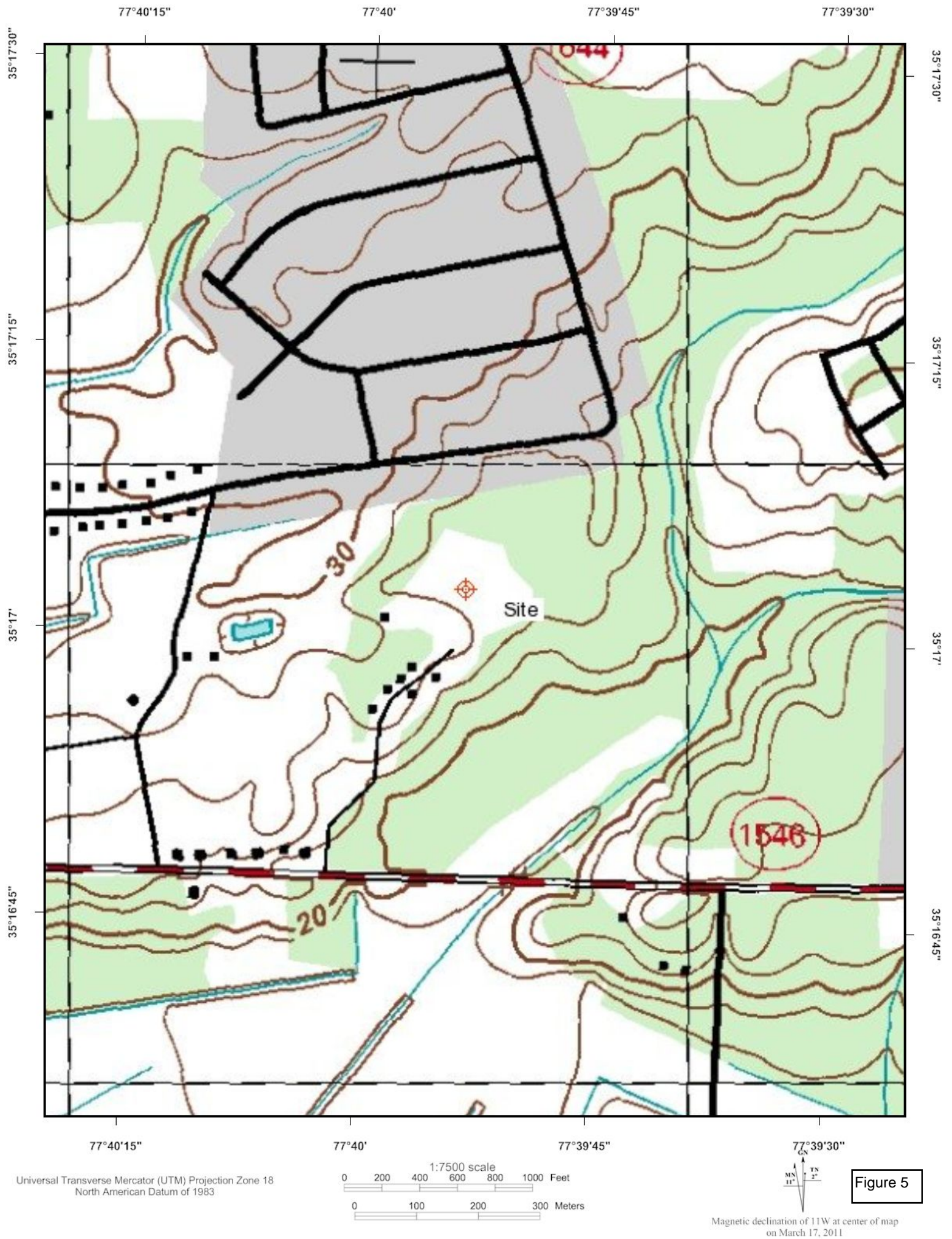


Figure 5

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"



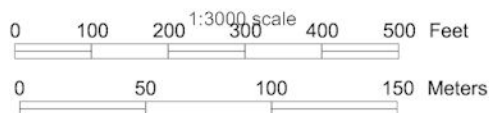
77°40'

77°39'55"

77°39'50"

77°39'45"

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



Magnetic declination of 11W at center of map
on March 17, 2011

Figure 6