

Myrtle Beach, South Carolina
Application for Minor Modification of FM Translator W255BZ
On Channel 255
by
Friends of Public Radio, Inc.

Exhibit 12
Interference Analysis

March 2012

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Timothy L. Warner, Inc.
Post Office Box 8045
Asheville, North Carolina 28814-8045
(828) 258-1238
twarner@tlwinc.net

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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 12, Interference Analysis, for Friends of Public Radio, Inc., 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.



Timothy L. Warner, P.E.
Post Office Box 8045
Asheville, North Carolina 28801
(828) 258-1238
twarner@tlwinc.net
19 March 2012

Narrative

This Exhibit supports a minor modification to FM translator W255BZ, Myrtle Beach, South Carolina. Allocation details are provided in this exhibit. This proposal complies fully with the requirements of 74 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 as shown in the allocation table in this exhibit.

Figure 1 shows the authorized 60 dBu F(50,50) coverage area, and the proposed 60 dBu F(50,50) coverage area. As shown in Figure 1, this application proposes a minor modification.

The minor modification proposes a change of location, increase in height AMSL, above ground, and above average terrain, and an increase in effective radiated power.

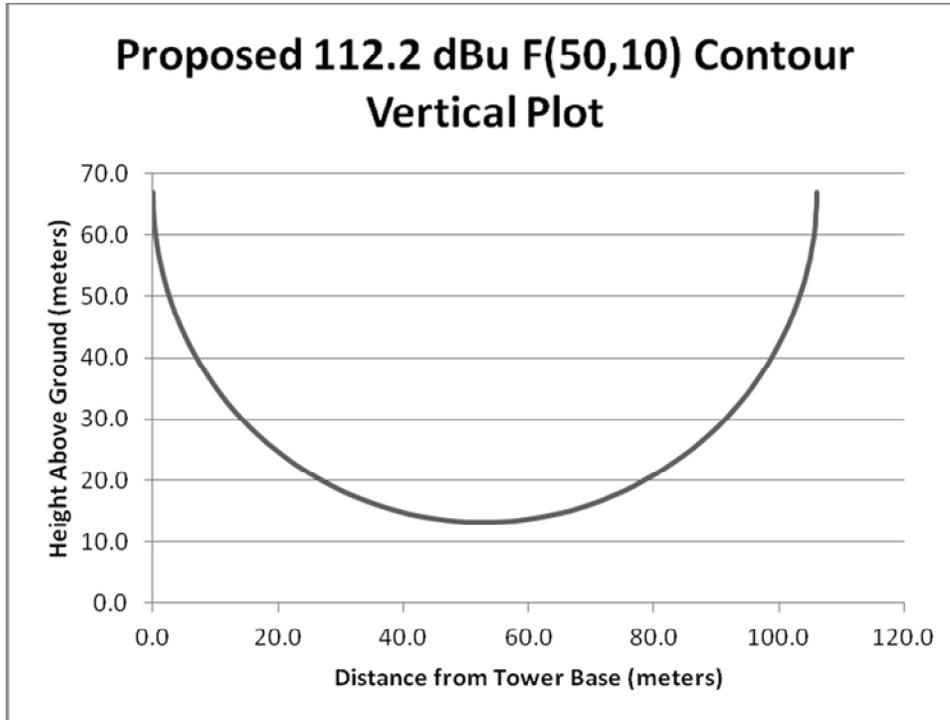
Allocations

This application proposes service to Myrtle Beach, South Carolina, on channel 255. 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 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 NED 03 arcsecond terrain database which is described below.

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. Figure 2 shows the relevant contours, including the WRNN 106.8 dBu contour and the WDAI 72.2 dBu contour. For the translator interference contour, free space calculations are used. For WRNN, the maximum distance is 2 meters, which clearly does not reach the ground. For WDAI, the maximum distance is 106 meters. The proposed radiation center is 67 meters above ground level. When the vertical elevation pattern of the antenna is considered, the 112.2 dBu contour will not reach ground level. The vertical elevation pattern provided by the manufacturer is plotted as Figure 3 and tabulated as Figure 4. The vertical 112.2 dBu contour is plotted below. As shown, it does not reach ground.

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. The USGS National Elevation Dataset has been developed by merging the highest-resolution, best-quality elevation data available across the United States into a seamless raster format. NED is the result of the maturation of the USGS effort to provide 1:24,000-scale Digital Elevation Model (DEM) data for the conterminous US and 1:63,360-scale DEM data for Alaska.

All population data is from 2000 U.S. Census SF1 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.

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.

Table 1: Allocations

Timothy L. Warner, Inc.
Asheville, North Carolina

Allocation Study
Friends Of Public Radio, Inc.
CH# 255D - 98.9 MHz, Pwr= 0.038 kw, HAAT= 71.6 M, COR= 76 M
Average Protected F(50-50)= 6.8 km
Omni-directional

DISPLAY DATES
DATA 03-19-12
SEARCH 03-19-12

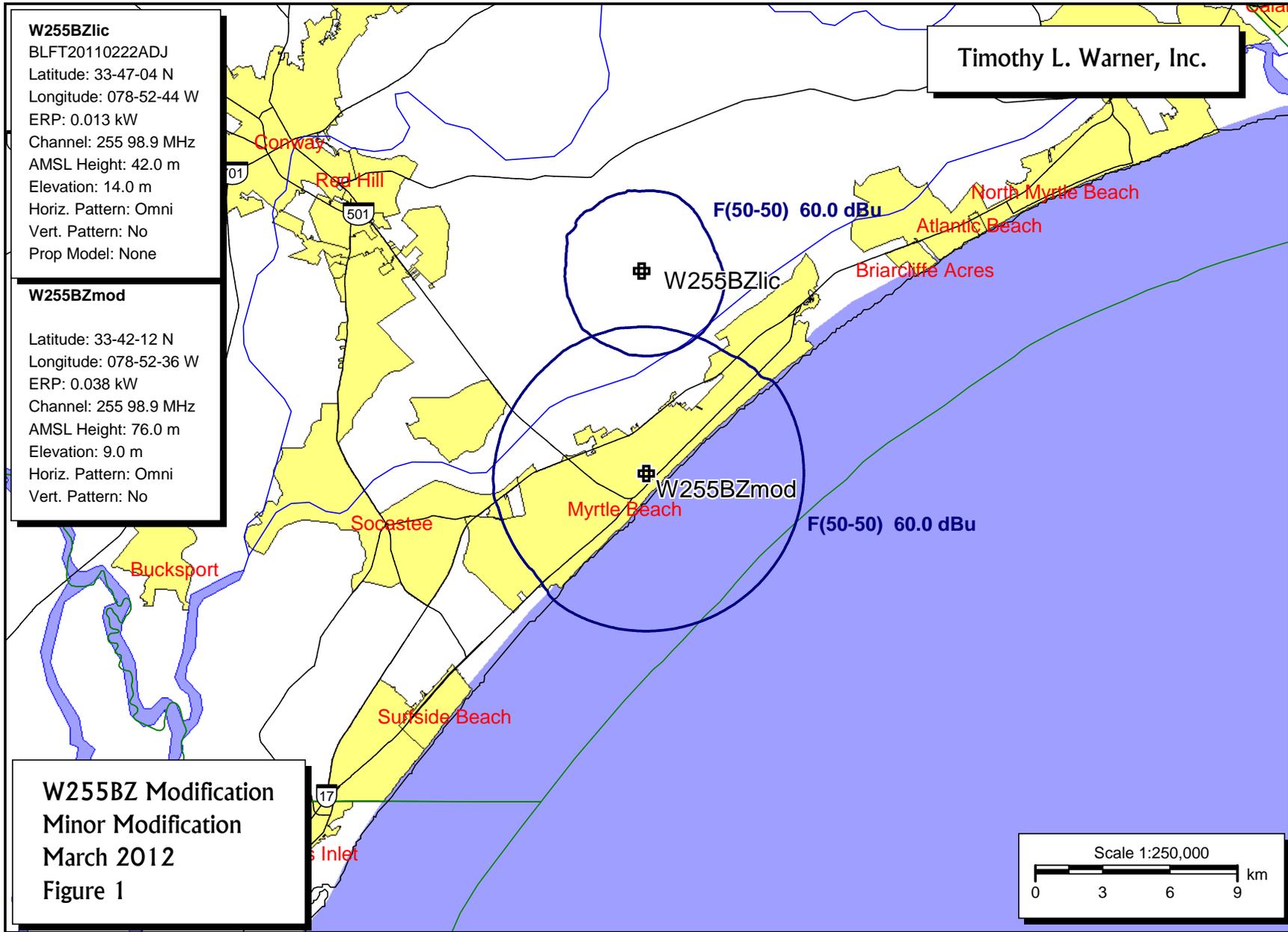
REFERENCE
33 42 12.0 N.
78 52 36.0 W.

CH CITY	CALL	TYPE	ANT STATE	AZI. <--	DIST FILE #	LAT. LNG.	Pwr(kw) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap)	*OUT* (in km)
255C2	WVIK McClellanville	LIC	CN SC	228.0 47.6	85.40 BLH19941005KA	33 11 15.0 79 33 31.0	50.000 150	137.8 157	52.2 98.9, Inc.	-59.2*	10.5
258C3	WRNN-FM Socastee	LIC	C SC	318.1 138.1	2.65 BLH20040318AAT	33 43 16.0 78 53 45.0	21.500 108	4.1 112	39.7 Nm Licensing Llc	-8.0*	-37.5*
253C3	WDAI Pawleys Island	LIC	NC SC	231.9 51.8	20.25 BLH20030207ACI	33 35 27.0 79 02 55.0	6.100 203	3.6 204	38.7 Cumulus Licensing Llc	9.9	-20.6*
255D	W255BZ Myrtle Beach This is the facility being modified.	LIC	C SC	358.7 178.7	8.99 BLFT20110222ADJ	33 47 04.0 78 52 44.0	0.013	12.1 42	3.8 Friends Of Public Radio, Inc.	-9.6*	-16.6
256C1	WZFX Whiteville	LIC	CN NC	3.9 184.0	114.68 BLH19860909KB	34 44 05.0 78 47 25.0	100.000 299	104.8 333	72.2 Wdas License Limited Partn	3.4	33.2
256D	W203BG Conway	CP	DV SC	339.8 159.7	20.07 BPFT20110623ADD	33 52 23.0 78 57 07.0	0.070	2.4 40	1.6 Calvary Chapel Of Twin Fal	11.8	7.8
254L1	WNMI-LP North Myrtle Beach	LIC	SC	51.1 231.2	30.55 BLL20040304ABX	33 52 32.0 78 37 09.0	0.100 29	8.0 35	5.6 City Of North Myrtle Beach	15.6	14.9
254C1	WRMR Jacksonville	LIC	CN NC	55.1 235.8	155.28 BLH19990401KE	34 29 41.0 77 29 19.0	100.000 297	104.8 303	72.1 Sunrise Broadcasting, Llc	43.5	73.4
252C3	WUIN Oak Island 2/9/01: Pursuant to Report and Order, DA 01-272, the name of the city of license was changed from Long Beach to Oak Island when the towns of Long Beach and Yaupon Beach consolidated.	LIC	NC NC	69.7 250.2	83.69 BLH20000807AHJ	33 57 40.0 78 01 37.0	18.500 116	4.0 120	38.9 Sea-comm, Inc.	72.7	44.3
255D	W255BD Darlington	LIC	C SC	305.3 124.8	105.37 BLFT20100415AAA	34 14 51.0 79 48 41.0	0.250 123	48.0 159	14.2 Miller Communications, Inc	50.8	69.3
252D	W252BL Mullins	LIC	C SC	326.9 146.7	65.02 BLFT20070508ADK	34 11 35.0 79 15 48.0	0.038 70	0.4 89	6.9 Educational Media Foundation	58.0	57.7
257C3	WKKT-FM Kingstree	LIC	CX SC	282.3 101.7	106.12 BLH20041216ADI	33 54 07.0 79 59 52.0	11.000 150	3.9 180	39.1 Miller Communications, Inc	95.5	66.6

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= - Zone 2, Co to 3rd adjacent. 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.

Table 2: Facilities Protected by Undesired to Desired (U/D) Ratio

Facility	WRNN Socastee, South Carolina	WDAI Pawleys Island, South Carolina
Relationship	258C3, third adjacent	253C3, second adjacent
Distance (km)	2.65	20.25
Bearing (degrees)	138.1	51.8
ERP (kW, on azimuth)	21.5	6.1
HAAT (m, on azimuth)	111.8	197.2
Ratio (dB)	40	40
Signal Strength (dBu)	106.8	72.2
Translator Signal Strength (dBu)	146.8	112.2
Translator distance (km)	.002	.106



W255BZlic

BLFT20110222ADJ
Latitude: 33-47-04 N
Longitude: 078-52-44 W
ERP: 0.013 kW
Channel: 255 98.9 MHz
AMSL Height: 42.0 m
Elevation: 14.0 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None

WRNN-FM

BLH20040318AAT
Latitude: 33-43-16 N
Longitude: 078-53-45 W
ERP: 21.50 kW
Channel: 258 99.5 MHz
AMSL Height: 112.0 m
Elevation: 7.0 m
Horiz. Pattern: Omni
Vert. Pattern: No

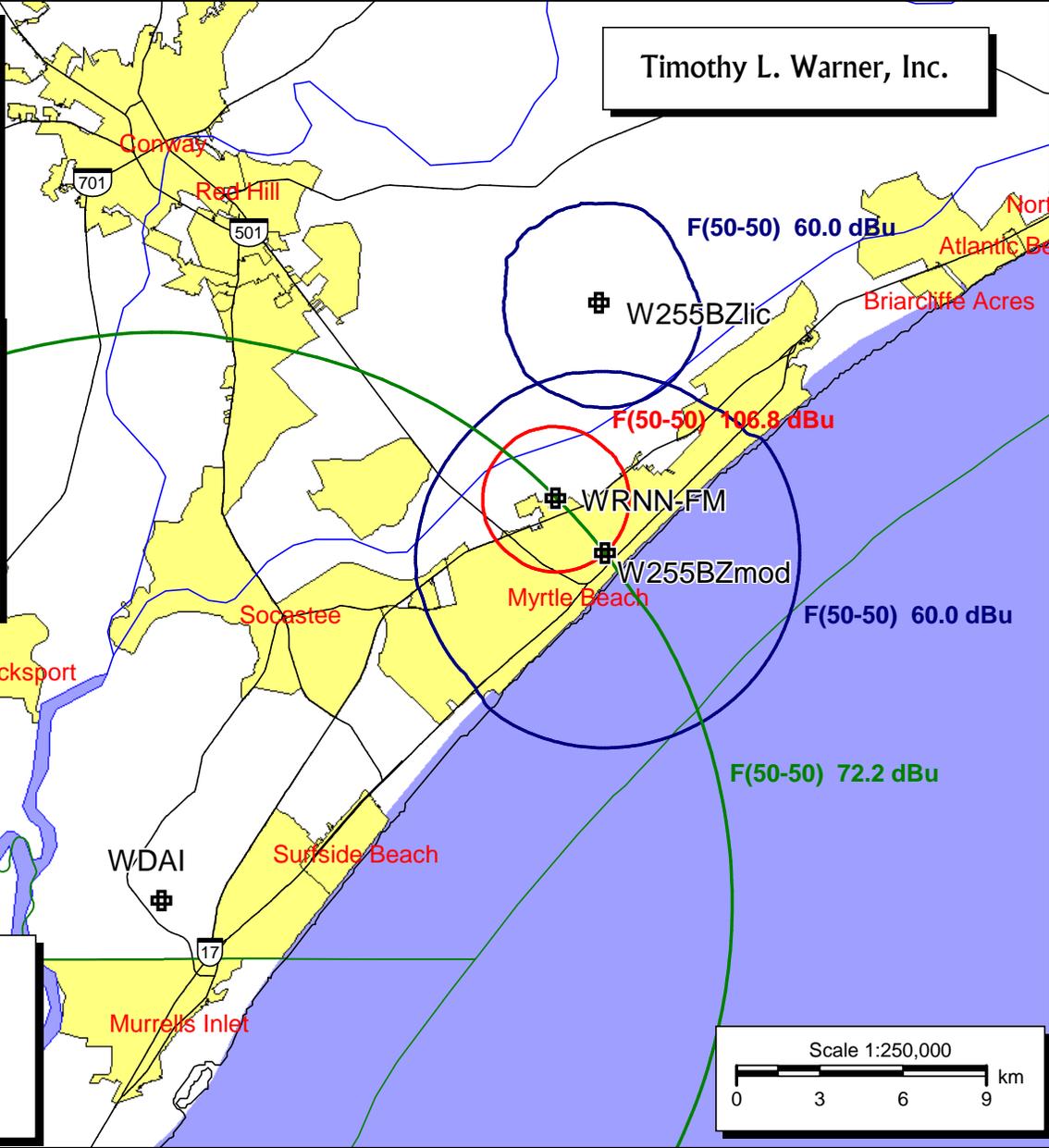
W255BZmod

Latitude: 33-42-12 N
Longitude: 078-52-36 W
ERP: 0.038 kW
Channel: 255 98.9 MHz
AMSL Height: 76.0 m
Elevation: 9.0 m
Horiz. Pattern: Omni
Vert. Pattern: No

WDAI

BLH20030207ACI
Latitude: 33-35-27 N
Longitude: 079-02-55 W
ERP: 6.10 kW
Channel: 253 98.5 MHz
AMSL Height: 204.0 m
Elevation: 6.0 m
Horiz. Pattern: Omni
Vert. Pattern: No

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**W255BZ Modification
Relationship to WRNN-FM and WDAI
March 2012
Figure 2**



Antenna Mfg.: Shively Labs

Date: 11/23/2011

Antenna Type: 6812-1

Station: none

Beam Tilt 0

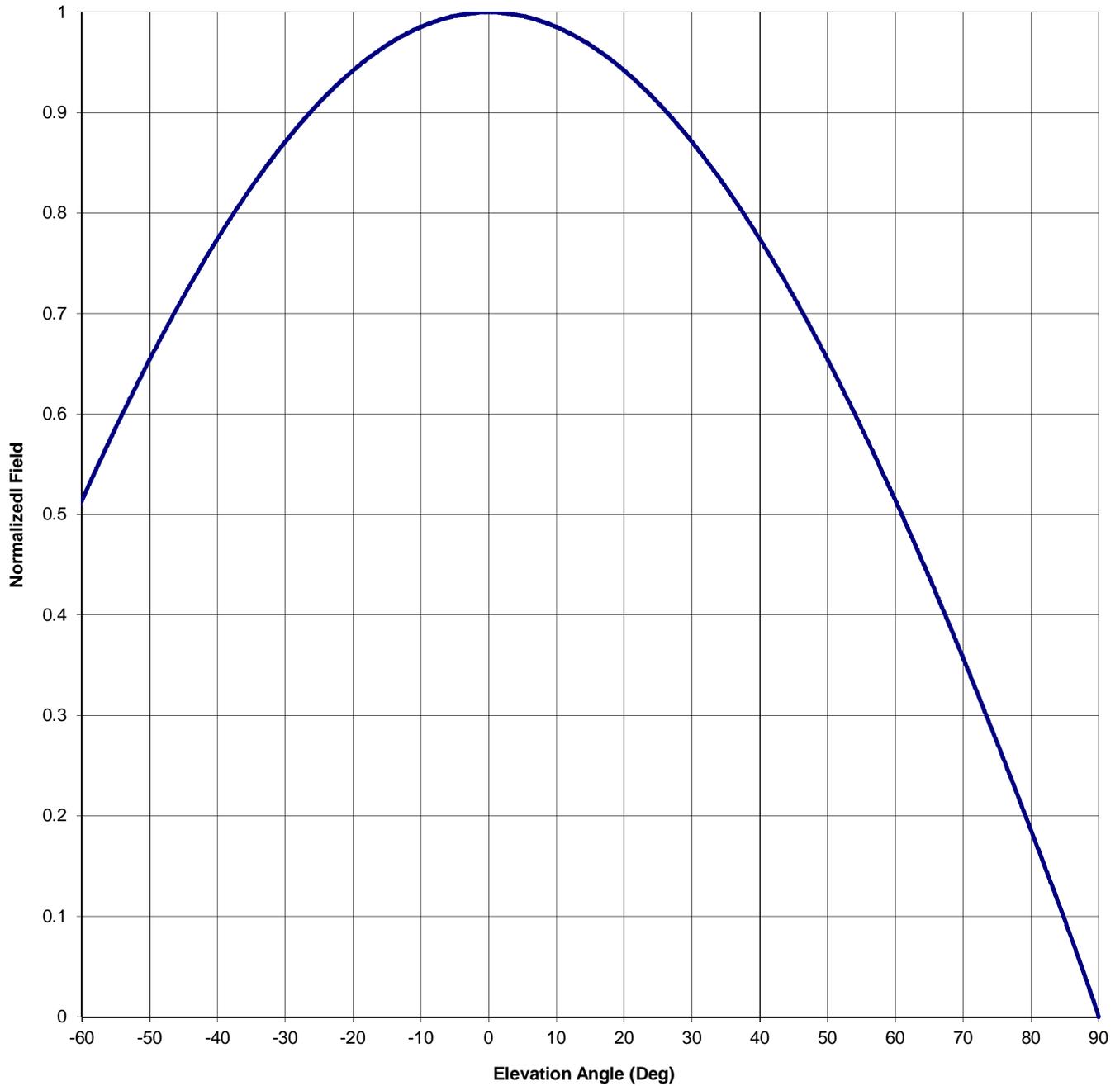
Frequency: 93.1

Gain (Max) 0.460 -3.369 dB

Channel #: 226

Gain (Horizon) 0.460 -3.369 dB

Figure: 3



W255BZ Modification
Antenna Vertical Elevation Plot
March 2012
Figure 3

Antenna Mfg.: Shively Labs

Date: 11/23/2011

Antenna Type: 6812-1

Station: none

Beam Tilt 0

Frequency: 93.1

Gain (Max) 0.460 -3.369 dB

Channel #: 226

Gain (Horizon) 0.460 -3.369 dB

Figure: 3

Angle of Depression (Deg)	Relative Field						
-90	0.000	-44	0.729	0	1.000	46	0.705
-89	0.021	-43	0.741	1	1.000	47	0.693
-88	0.040	-42	0.752	2	0.999	48	0.680
-87	0.059	-41	0.763	3	0.999	49	0.667
-86	0.078	-40	0.774	4	0.998	50	0.654
-85	0.096	-39	0.785	5	0.996	51	0.641
-84	0.114	-38	0.796	6	0.995	52	0.628
-83	0.133	-37	0.806	7	0.993	53	0.614
-82	0.151	-36	0.816	8	0.991	54	0.600
-81	0.168	-35	0.826	9	0.988	55	0.586
-80	0.186	-34	0.835	10	0.985	56	0.572
-79	0.204	-33	0.845	11	0.982	57	0.558
-78	0.221	-32	0.854	12	0.979	58	0.544
-77	0.239	-31	0.862	13	0.975	59	0.529
-76	0.256	-30	0.871	14	0.971	60	0.514
-75	0.273	-29	0.879	15	0.967	61	0.499
-74	0.290	-28	0.887	16	0.963	62	0.484
-73	0.307	-27	0.895	17	0.958	63	0.469
-72	0.324	-26	0.903	18	0.953	64	0.453
-71	0.341	-25	0.910	19	0.948	65	0.437
-70	0.357	-24	0.917	20	0.942	66	0.422
-69	0.373	-23	0.924	21	0.936	67	0.406
-68	0.390	-22	0.930	22	0.930	68	0.390
-67	0.406	-21	0.936	23	0.924	69	0.373
-66	0.422	-20	0.942	24	0.917	70	0.357
-65	0.437	-19	0.948	25	0.910	71	0.341
-64	0.453	-18	0.953	26	0.903	72	0.324
-63	0.469	-17	0.958	27	0.895	73	0.307
-62	0.484	-16	0.963	28	0.887	74	0.290
-61	0.499	-15	0.967	29	0.879	75	0.273
-60	0.514	-14	0.971	30	0.871	76	0.256
-59	0.529	-13	0.975	31	0.862	77	0.239
-58	0.544	-12	0.979	32	0.854	78	0.221
-57	0.558	-11	0.982	33	0.845	79	0.204
-56	0.572	-10	0.985	34	0.835	80	0.186
-55	0.586	-9	0.988	35	0.826	81	0.168
-54	0.600	-8	0.991	36	0.816	82	0.151
-53	0.614	-7	0.993	37	0.806	83	0.133
-52	0.628	-6	0.995	38	0.796	84	0.114
-51	0.641	-5	0.996	39	0.785	85	0.096
-50	0.654	-4	0.998	40	0.774	86	0.078
-49	0.667	-3	0.999	41	0.763	87	0.059
-48	0.680	-2	0.999	42	0.752	88	0.040
-47	0.693	-1	1.000	43	0.741	89	0.021
-46	0.705	0	1.000	44	0.729	90	0.000
-45	0.717			45	0.717		