

***APPLICATION FOR MODIFICATION
OF CONSTRUCTION PERMIT***

**FM TRANSLATOR STATION W279CL
ANDERSON, INDIANA
103.7 MHz / 0.038 kW ERP**

WOOF BOOM RADIO MUNCIE LICENSE LLC

JULY, 2014

APPLICATION FOR MODIFICATION OF CONSTRUCTION PERMIT

The following engineering statement and attached exhibits have been prepared for **Woof Boom Radio Muncie License LLC** ("Woof Boom"), permittee of new FM translator station W279CL at Anderson, Indiana, and are in support of their application for modification of construction permit.¹ This application seeks to modify the current outstanding construction permit under FCC File No. BNPFT-20130820AAN.

This application seeks to relocate the translator from the currently authorized site, to the antenna system for AM broadcast station WHBU at Anderson, Indiana.² The construction permit was recently assigned to Woof Boom, and as part of the relocation, W279CL will become a fill-in translator for class C AM station WHBU. No change in the authorized effective radiated power of 38 Watts is proposed under this application; however, elevation parameters associated with the antenna will necessarily change.

The proposed facility would operate on FM channel 279 with an effective radiated power of 38 Watts utilizing a non-directional antenna. The proposed center of radiation is 56.1 meters above ground level, which when combined with the site elevation of 265.2 meters AMSL, yields a center of radiation of 321.3 meters AMSL. All studies in this application are predicated on the use of the NED 3-second linearly interpolated terrain database.

The proposed relocation of the facility would constitute a minor change to the existing authorization. Exhibit E-1 illustrates the authorized 60 dBu service contour of the translator along

¹ The Facility ID for W279CL at Anderson, Indiana is 142530.

² The Facility ID for WHBU at Anderson, Indiana is 2212.

JEREMY RUCK & ASSOCIATES, INC.

P.O. Box 415
221 S. 1st Avenue
Canton, IL 61520

Tel: 309.647.1200
Fax: 855.332.9537
jeremyruck.com

with the proposed 60 dBu service contour. As this map demonstrates, these two contours would overlap.

The primary station for the translator would be changed to AM broadcast station WHBU at Anderson, Indiana. Exhibit E-2 depicts the predicted 60 dBu service contour for the proposed translator facility along with the 2.0 mV/m daytime contour of WHBU, and a twenty-five mile radius centered on the WHBU. As this map demonstrates, the proposed 60 dBu service contour would be wholly contained within both of these constructs.

The proposed facility would comply with the provisions of Section 74.1204 of the Commission's Rules. Exhibit E-3 is a tabular based interference study for the proposed facility. As this study demonstrates, the proposed facility would comply with all of the contour overlap requirements of that section to all proposed and existing facilities with the exception of WOLT(FM) at Indianapolis, Indiana, and WLBC-FM at Muncie, Indiana. The tabular study is graphically depicted in the contour maps in Exhibit E-4.³

Although there would be normally prohibited contour overlap between the proposed facility and both WLBC-FM and WOLT, the potential interference region would affect zero population. Exhibit E-5 illustrates the predicted 63.3 dBu service contour of WOLT, and the 71.3 dBu service contour of WLBC-FM. As indicated in this map, these contours intersect the proposed W279CL transmitter site.

³ The Facility ID for WOLT at Indianapolis, Indiana is 59589. The Facility ID for WLBC-FM at Muncie, Indiana is 17602.

JEREMY RUCK & ASSOCIATES, INC.

P.O. Box 415
221 S. 1st Avenue
Canton, IL 61520

Tel: 309.647.1200
Fax: 855.332.9537
jeremyruck.com

Since both full power facilities operate second adjacent to the proposed translator facility, interference to either would potentially occur in regions where the translator field strength is at least 40 dB greater than the corresponding full-power station field strength. Specifically interference to WOLT would potentially occur in regions where the translator field strength is at least 103.3 dBu, while interference to WLBC-FM may occur in regions of 111.3 dBu. Since the former is the more restrictive of the two values, it will be utilized as the interfering field strength for the purposes of this study.

The power density for the proposed facility interfering field strength is given by the following equation:

$$S = \frac{E^2}{Z_0}$$

In this equation, S represents the calculated power density in Watts per square meter, E is the electric field intensity, Z_0 is the characteristic impedance of free space.

The power density is also given by:

$$S = \frac{P}{4\pi R^2}$$

Where S is the same units, P is the power in Watts and R is the distance from the antenna. Rearranging the terms in the equation, it can be solved for the distance to the desired power density as follows:

$$R^2 = \frac{P}{4\pi S}$$

The results of these calculations for depression angles of 0 degrees to 90 degrees are tabulated in Exhibit E-6. The data in this exhibit is based on the use of a non-directional antenna. In addition to the tabular data in this exhibit, several graphs are included that graphically illustrate the situation. As indicated on the form pages, the proposed antenna is a PSI PSIFML-3/0.625 model, which has three sections with 0.625 wavelength spacing. The relative field values listed at the various depression angles are based on published data for the antenna obtained from the PSI website.

The resulting radii values indicate the volume in which interference potentially may occur relative to the center of radiation of the antenna. As indicated in the table, the interference region is above ground at all depression angles, and exceeds 7 meters above ground except in regard to a limited number of structures. The following satellite image illustrates the tower location along with a 212 meter site radius. Structures warranting additional consideration are so designated on this image.

JEREMY RUCK & ASSOCIATES, INC.

P.O. Box 415
221 S. 1st Avenue
Canton, IL 61520

Tel: 309.647.1200
Fax: 855.332.9537
jeremyruck.com

7.18.2014



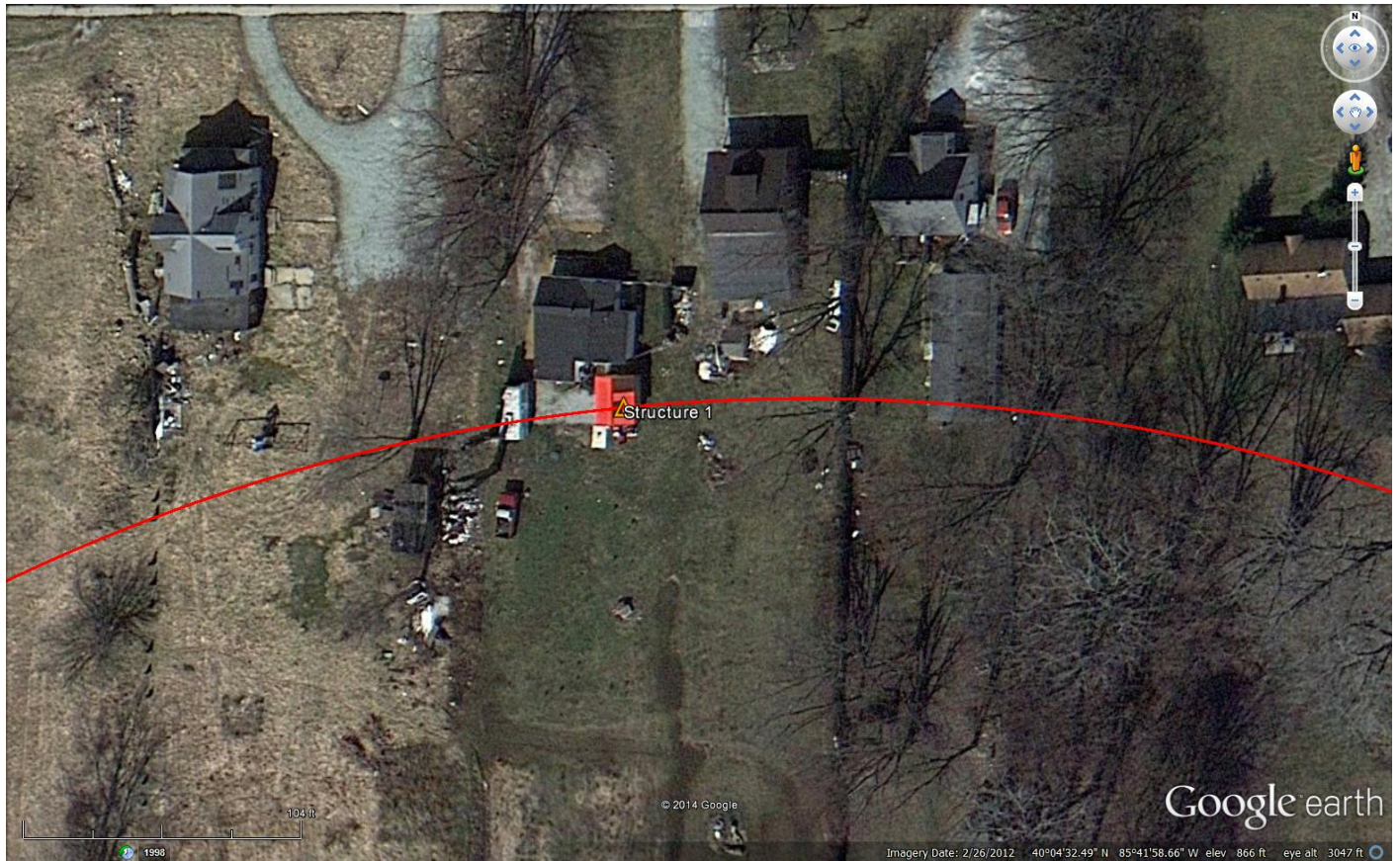
As indicated on the above image, there are four structures warranting additional consideration. The following image illustrates the structure designated as "Structure 1".

JEREMY RUCK & ASSOCIATES, INC.

P.O. Box 415
221 S. 1st Avenue
Canton, IL 61520

Tel: 309.647.1200
Fax: 855.332.9537
jeremyruck.com

7.18.2014



This structure is further depicted by the following street level image.

JEREMY RUCK & ASSOCIATES, INC.

P.O. Box 415
221 S. 1st Avenue
Canton, IL 61520

Tel: 309.647.1200
Fax: 855.332.9537
jeremyruck.com

7.18.2014



The distinctive red roof indicated in the satellite image is visible from this street level image, and is an outbuilding or shed of some type. This structure is approximately 3 meters or 10 feet in overall height. At the distance of 212 meters to this structure, the potential interference region is approximately 7 meters above ground. Therefore, this structure, despite its uninhabited nature, resides below the potential interference region.

The buildings denoted as "Structure 2" and "Structure 3" are depicted in the following street level image. These buildings consist of a barn and a garage. These structures are only sporadically inhabited, and therefore involve zero population.



The final structure is a group of structures, which are off-site storage units. They are illustrated in the following image.



These structures are of single story in construction, and would not be impacted by the potential interference area. Additionally, they are uninhabited, thus zero population would be impacted.

The proposed facility would not constitute a significant environmental impact, and is exempt from environmental processing. The proposed antenna would be added to an existing structure that is registered with the Commission. The addition of the proposed translator antenna to the structure would not increase the existing environmental impact already present from the tower.

Additionally, the proposed facility would not result in a radiofrequency radiation exposure hazard to persons at the site. Under a worst case scenario, the calculated power density at ground level at the site would be $0.87 \mu\text{W}/\text{cm}^2$.

JEREMY RUCK & ASSOCIATES, INC.

P.O. Box 415
221 S. 1st Avenue
Canton, IL 61520

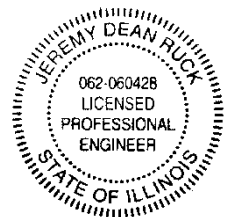
Tel: 309.647.1200
Fax: 855.332.9537
jeremyruck.com

7.18.2014

10

Woof Boom certifies that it will coordinate with all present and future users of the site to ensure that workers having access to the site are not exposed to levels of radiofrequency radiation in excess of the applicable safety standards. Such coordination will include, but is not necessarily limited to, a reduction in transmitter power or cessation of operation.

The preceding statement and attached exhibits have been prepared by me, or under my direction, and are true and accurate to the best of my belief and knowledge.



Above signature is digitized copy of actual signature
License Expires November 30, 2015

Jeremy D. Ruck, PE
July 18, 2014

JEREMY RUCK & ASSOCIATES, INC.

P.O. Box 415
221 S. 1st Avenue
Canton, IL 61520

Tel: 309.647.1200
Fax: 855.332.9537
jeremyruck.com

7.18.2014

11

W279CL.X

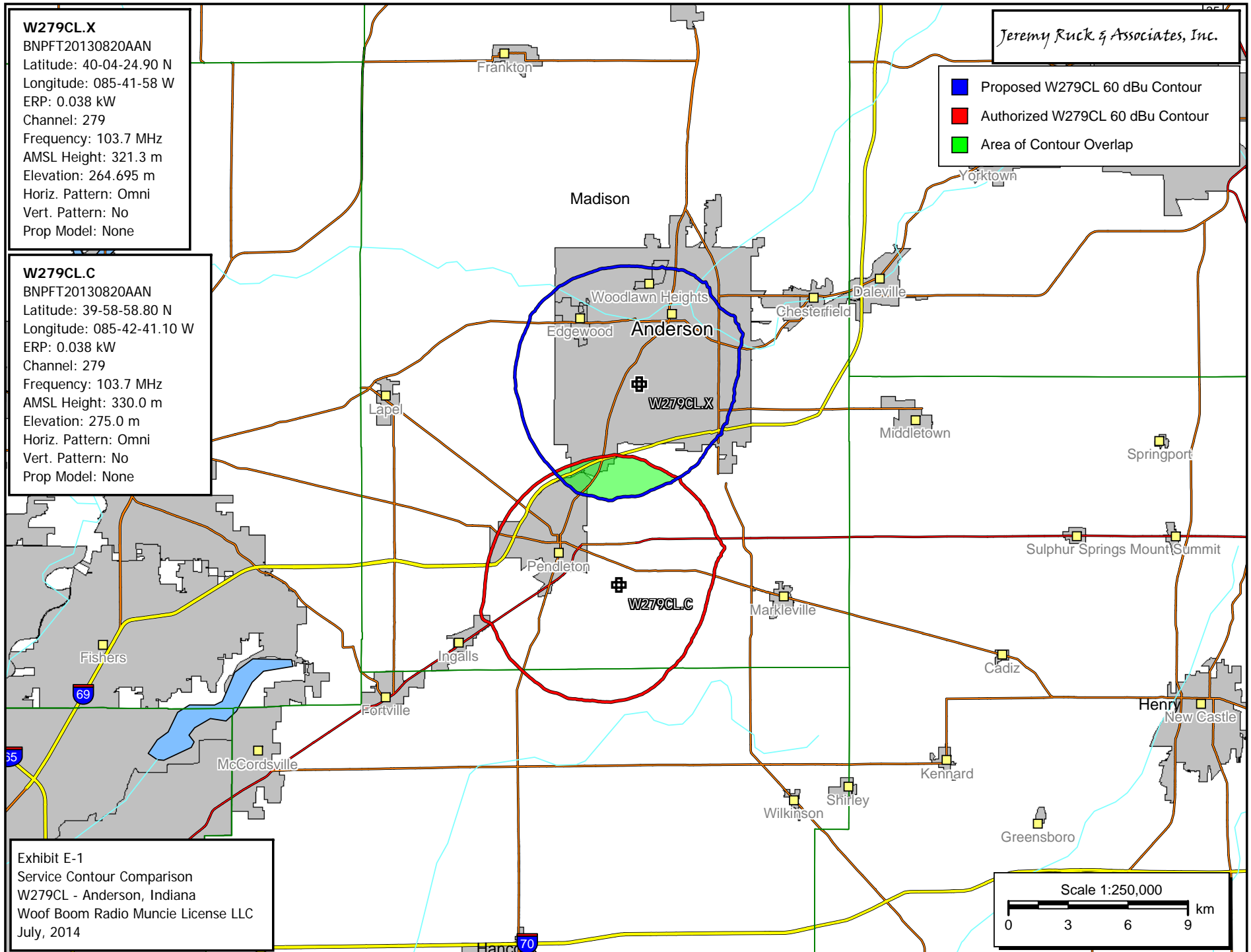
BNPFT20130820AAN
Latitude: 40-04-24.90 N
Longitude: 085-41-58 W
ERP: 0.038 kW
Channel: 279
Frequency: 103.7 MHz
AMSL Height: 321.3 m
Elevation: 264.695 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None

W279CL.C

BNPFT20130820AAN
Latitude: 39-58-58.80 N
Longitude: 085-42-41.10 W
ERP: 0.038 kW
Channel: 279
Frequency: 103.7 MHz
AMSL Height: 330.0 m
Elevation: 275.0 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None

Jeremy Ruck & Associates, Inc.

- Proposed W279CL 60 dBu Contour
- Authorized W279CL 60 dBu Contour
- Area of Contour Overlap



W279CL.X

BNPFT20130820AAN

Latitude: 40-04-24.90 N

Longitude: 085-41-58 W

ERP: 0.038 kW

Channel: 279

Frequency: 103.7 MHz

AMSL Height: 321.3 m

Elevation: 264.695 m

Horiz. Pattern: Omni

Vert. Pattern: No

Prop Model: None

Jeremy Ruck & Associates, Inc.

Proposed 60 dBu Service Contour

WHBU 2 mV/m Daytime Service Contour

WHBU 25 mile Site Radius

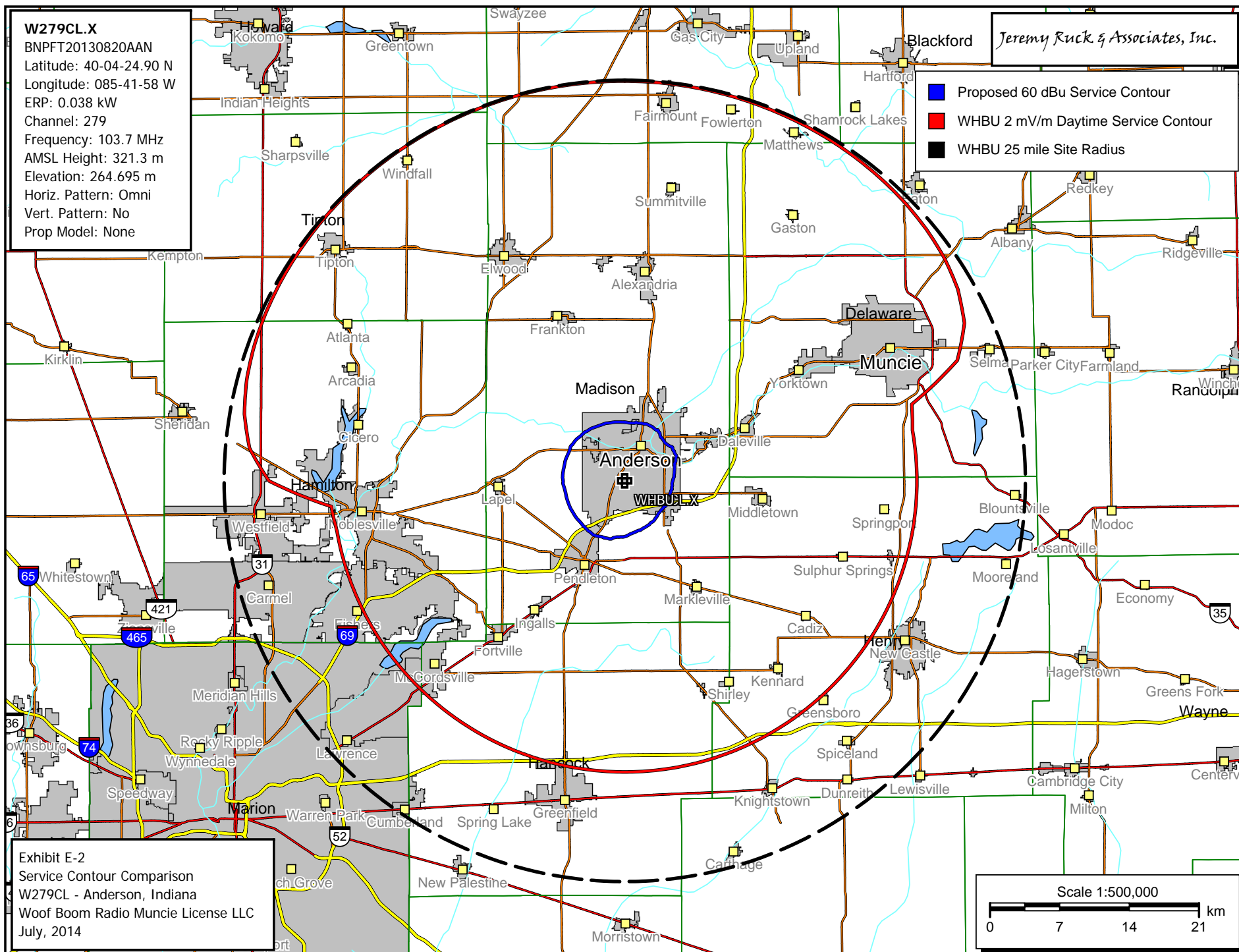


Exhibit E-2

Service Contour Comparison

W279CL - Anderson, Indiana

Woof Boom Radio Muncie License LLC

July, 2014

Jeremy Ruck & Associates, Inc.
Consulting Engineers - Canton, Illinois

Exhibit E-3 - Tabular Interference Study
W279CL - Anderson, Indiana
CH# 279D - 103.7 MHz, Pwr= 0.038 kW, HAAT= 51.0 M, COR= 321.3 M
Average Protected F(50-50)= 5.79 km
Omni-directional

REFERENCE
40 04 24.9 N.
85 41 58.0 W.

DISPLAY DATES
DATA 07-18-14
SEARCH 07-18-14

CH CITY	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*
281B Muncie	WLBC-FM	LIC_CX IN	70.2 250.5	28.93 BMLH20041020AAB	40 09 40.0 85 22 44.0	41.000 140	5.7 438	63.3 Woof Boom Radio Muncie Li c	17.5	-35.2*
277B Indianapolis	WOLT	LIC_C_ IN	245.3 65.0	47.10 BMLH20061208ACR	39 53 43.0 86 12 04.0	18.000 259	5.9 515	67.4 Capstar Tx Llc	35.1	-21.1*
279D Anderson	W279CL	CP_C_ IN	185.8 5.8	10.12 BNPFT20130820AAN	39 58 58.8 85 42 41.1	0.038 59	21.8 330	6.5 Hoosier Broadcasting Corpo	-17.4*	-16.7
279B Bloomington	WFIU	LIC_CX IN	213.6 33.1	123.99 BLED20021223ABE	39 08 31.0 86 29 43.0	29.000 197	129.4 413	63.1 Trustees Of Indiana Univer	-11.7*	31.4
279D Muncie	W279CF	CP_C_ IN	67.5 247.7	26.06 BNPFT20130326ABB	40 09 47.0 85 24 58.0	0.019 88	23.2 380	6.8 Horizon Christian Fellowsh	-2.8	0.1
279A Royal Center	WHZR	LIC_CN IN	325.7 145.3	99.57 BLH19890705KA	40 48 43.0 86 21 56.0	6.000 100	88.8 322	29.9 Mid-america Radio Group O	4.5	48.7
279D Rushville	W279AM	LIC_DC_ IN	157.1 337.2	56.09 BLFT20090518ABP	39 36 31.1 85 26 39.0	0.230 12	10.4 302	3.2 Indiana Community Radio Co	40.5	36.2

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 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.
Reference station has protected zone issue:

W279CL.X

BNPFT20130820AAN

Latitude: 40-04-24.90 N

Longitude: 085-41-58 W

ERP: 0.038 kW

Channel: 279

Frequency: 103.7 MHz

AMSL Height: 321.3 m

Elevation: 264.695 m

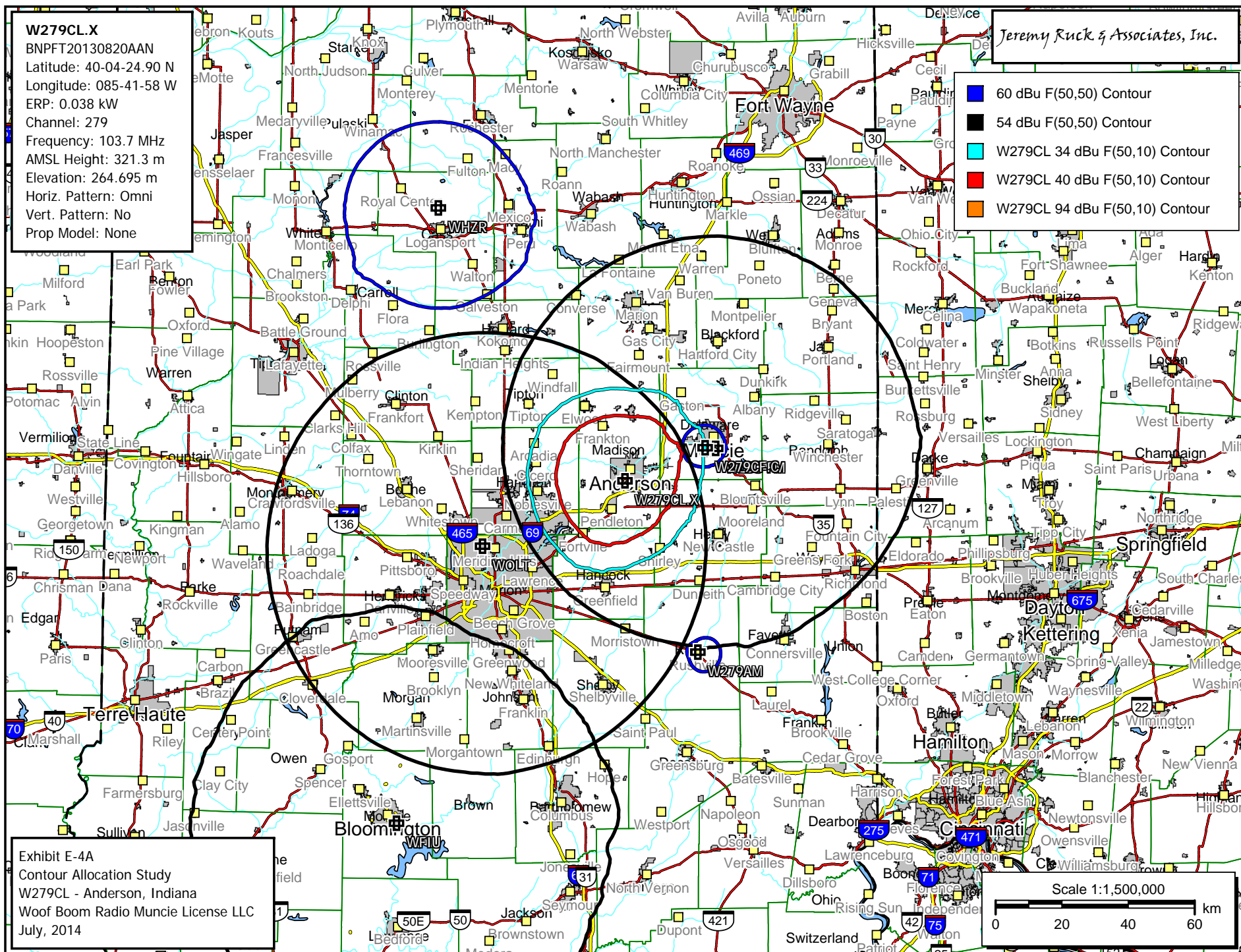
Horiz. Pattern: Omni

Vert. Pattern: No

Prop Model: None

Jeremy Ruck & Associates, Inc.

- 60 dBu F(50,50) Contour
- 54 dBu F(50,50) Contour
- W279CL 34 dBu F(50,10) Contour
- W279CL 40 dBu F(50,10) Contour
- W279CL 94 dBu F(50,10) Contour



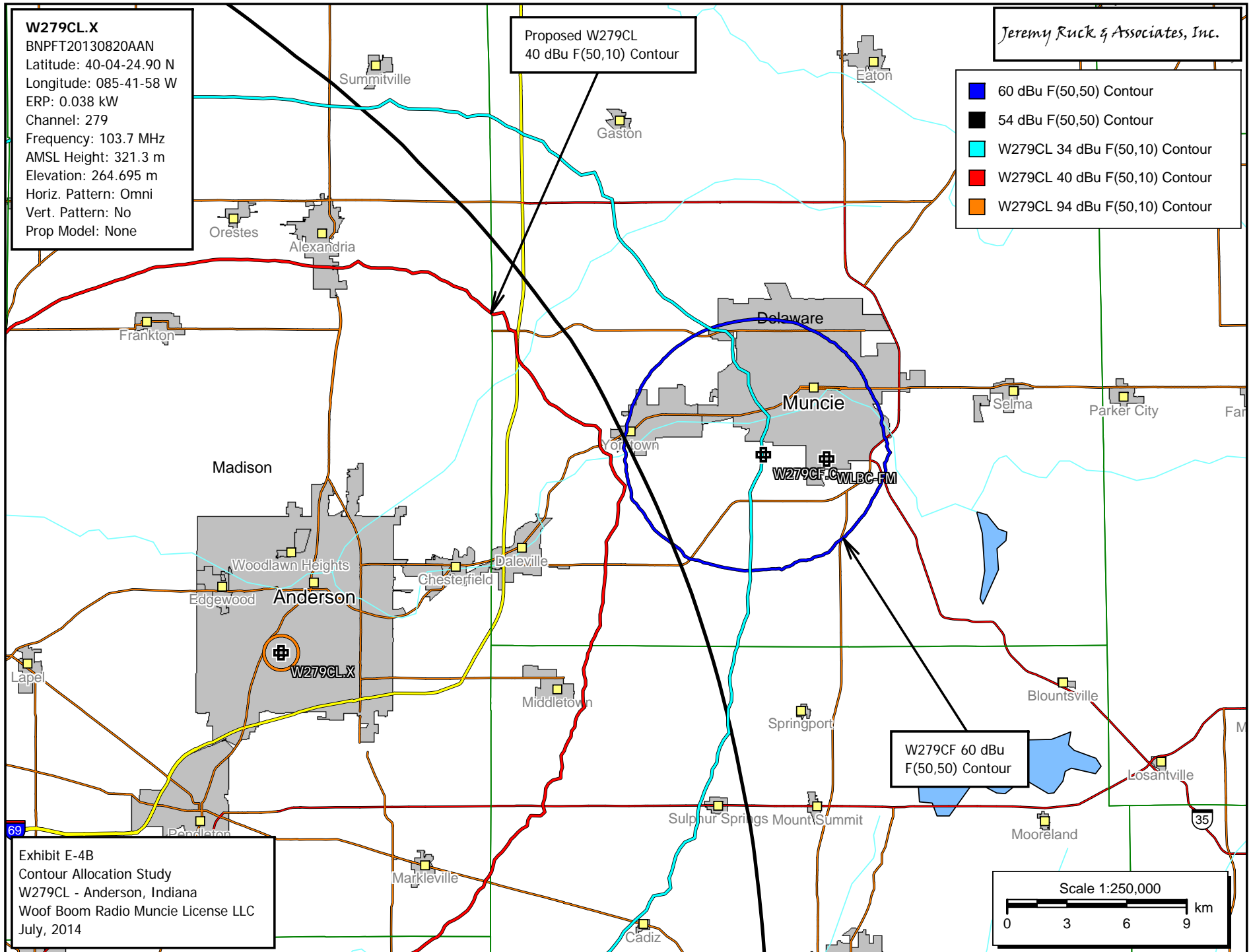
W279CL.X

BNPFT20130820AAN
Latitude: 40-04-24.90 N
Longitude: 085-41-58 W
ERP: 0.038 kW
Channel: 279
Frequency: 103.7 MHz
AMSL Height: 321.3 m
Elevation: 264.695 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None

Proposed W279CL
40 dBu F(50,10) Contour

Jeremy Ruck & Associates, Inc.

- 60 dBu F(50,50) Contour
- 54 dBu F(50,50) Contour
- W279CL 34 dBu F(50,10) Contour
- W279CL 40 dBu F(50,10) Contour
- W279CL 94 dBu F(50,10) Contour



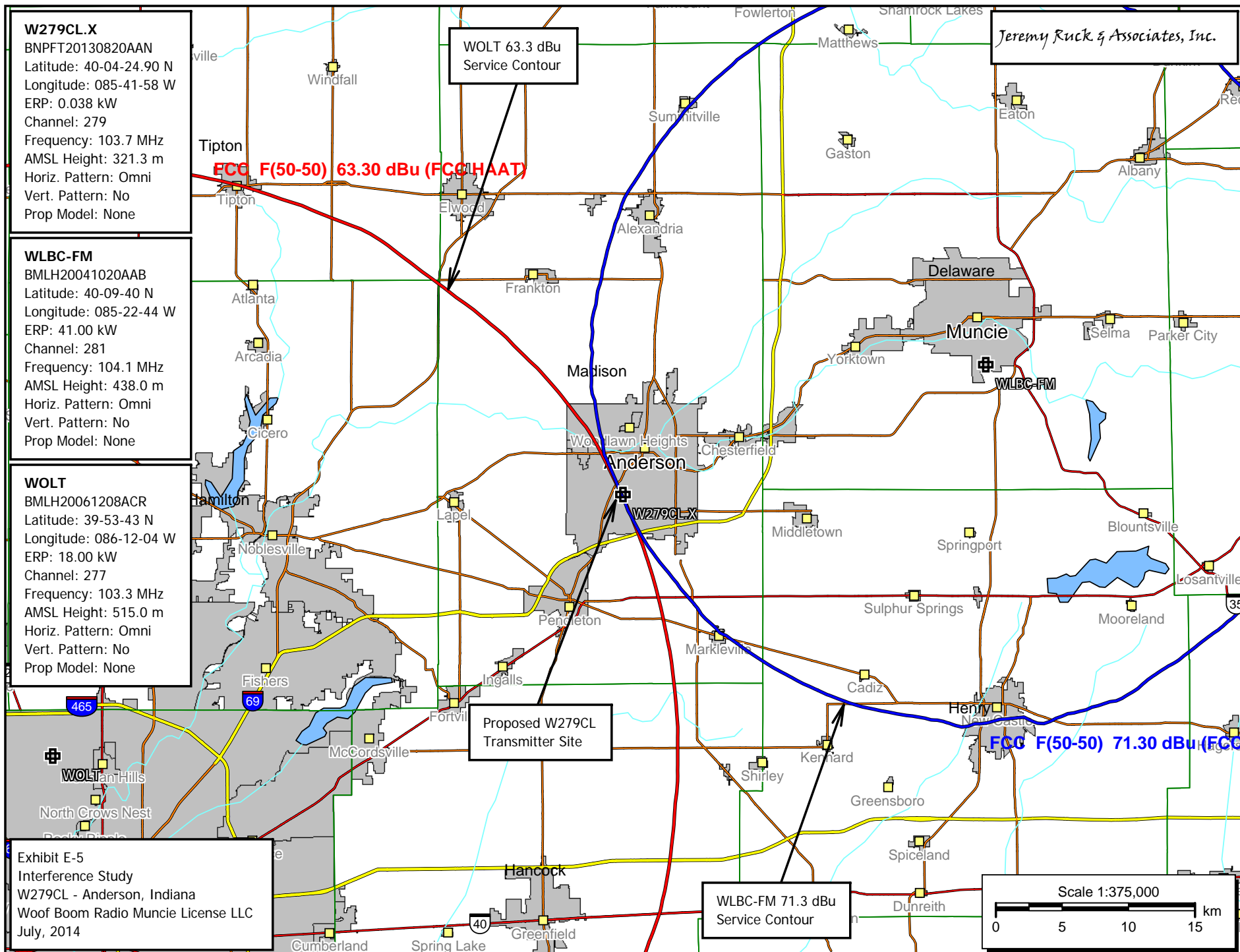
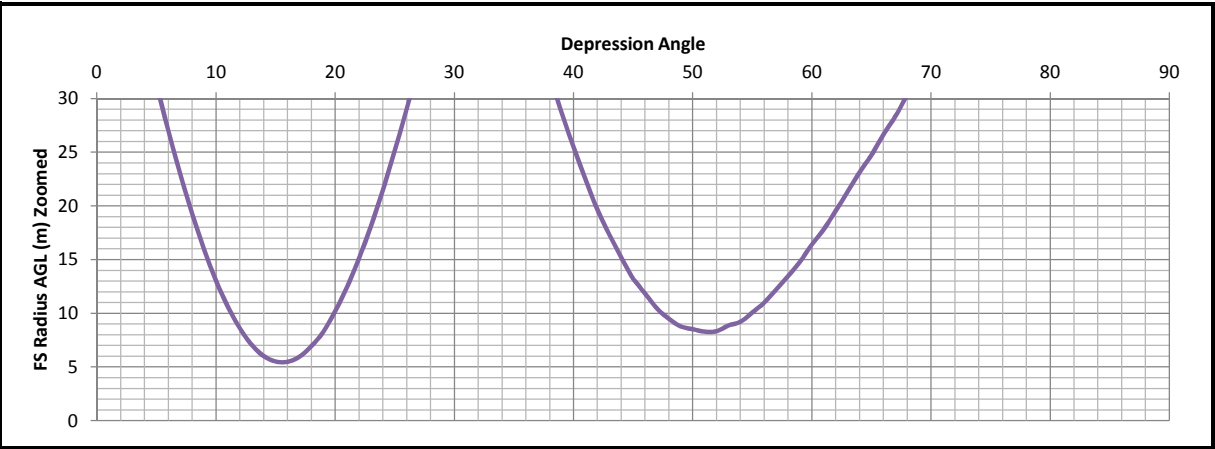
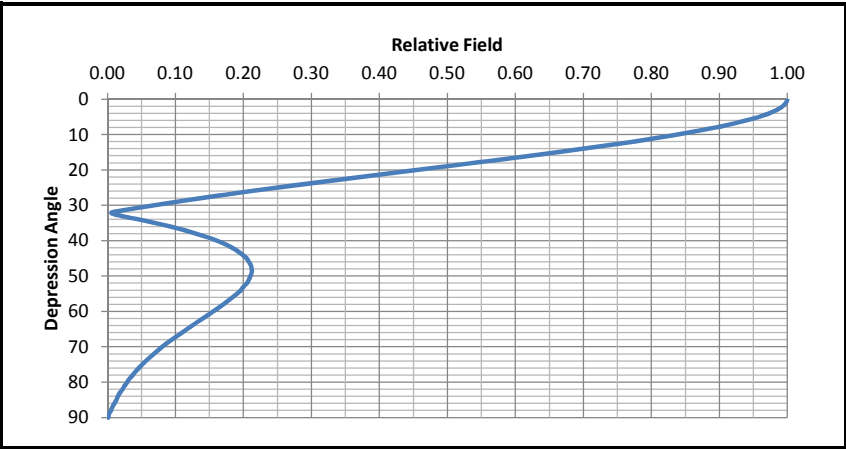


Exhibit E-6
Proximity Interference Analysis
W279CL - Anderson, Indiana

Antenna No:	47	⬆	⬆	Center of Radiation:	56.1 m AGL
Manufacturer:	PSI	⬆	⬆	Effective Radiated Power:	38 Watts
Model:	PSIFML-3/0.625			FS Contour:	103.3 dBu
Number of Bays:	3			E Field Strength:	0.14622 V/m
Bay Spacing:	0.625			Z0 (Ohms):	377 Ohms
				Power Density:	5.67099E-05 W/m^2



Depression Angle	Relative Field	Relative Power	ERP Watts	Radii in meters			
				Field Strength	Horizontal	Vertical	AGL
0	1.0000	1.0000	38.00	295.72	295.72	0.00	56.10
1	0.9980	0.9960	37.85	295.13	295.08	5.15	50.95
2	0.9930	0.9860	37.47	293.65	293.47	10.25	45.85
3	0.9850	0.9702	36.87	291.28	290.88	15.24	40.86
4	0.9730	0.9467	35.98	287.73	287.03	20.07	36.03
5	0.9580	0.9178	34.88	283.30	282.22	24.69	31.41
6	0.9390	0.8817	33.51	277.68	276.16	29.03	27.07
7	0.9180	0.8427	32.02	271.47	269.45	33.08	23.02
8	0.8940	0.7992	30.37	264.37	261.80	36.79	19.31
9	0.8670	0.7517	28.56	256.39	253.23	40.11	15.99
10	0.8380	0.7022	26.69	247.81	244.05	43.03	13.07
11	0.8060	0.6496	24.69	238.35	233.97	45.48	10.62
12	0.7720	0.5960	22.65	228.30	223.31	47.47	8.63
13	0.7370	0.5432	20.64	217.95	212.36	49.03	7.07
14	0.7000	0.4900	18.62	207.00	200.85	50.08	6.02
15	0.6610	0.4369	16.60	195.47	188.81	50.59	5.51
16	0.6210	0.3856	14.65	183.64	176.53	50.62	5.48
17	0.5800	0.3364	12.78	171.52	164.02	50.15	5.95
18	0.5380	0.2894	11.00	159.10	151.31	49.16	6.94
19	0.4970	0.2470	9.39	146.97	138.97	47.85	8.25
20	0.4540	0.2061	7.83	134.26	126.16	45.92	10.18
21	0.4120	0.1697	6.45	121.84	113.74	43.66	12.44
22	0.3700	0.1369	5.20	109.42	101.45	40.99	15.11
23	0.3290	0.1082	4.11	97.29	89.56	38.01	18.09
24	0.2880	0.0829	3.15	85.17	77.80	34.64	21.46
25	0.2480	0.0615	2.34	73.34	66.47	30.99	25.11
26	0.2090	0.0437	1.66	61.81	55.55	27.09	29.01
27	0.1720	0.0296	1.12	50.86	45.32	23.09	33.01
28	0.1350	0.0182	0.69	39.92	35.25	18.74	37.36
29	0.1010	0.0102	0.39	29.87	26.12	14.48	41.62
30	0.0670	0.0045	0.17	19.81	17.16	9.91	46.19
31	0.0360	0.0013	0.05	10.65	9.13	5.48	50.62
32	0.0060	0.0000	0.00	1.77	1.50	0.94	55.16
33	0.0210	0.0004	0.02	6.21	5.21	3.38	52.72
34	0.0470	0.0022	0.08	13.90	11.52	7.77	48.33
35	0.0710	0.0050	0.19	21.00	17.20	12.04	44.06
36	0.0930	0.0086	0.33	27.50	22.25	16.17	39.93
37	0.1130	0.0128	0.49	33.42	26.69	20.11	35.99
38	0.1310	0.0172	0.65	38.74	30.53	23.85	32.25
39	0.1470	0.0216	0.82	43.47	33.78	27.36	28.74
40	0.1610	0.0259	0.98	47.61	36.47	30.60	25.50
41	0.1730	0.0299	1.14	51.16	38.61	33.56	22.54
42	0.1840	0.0339	1.29	54.41	40.44	36.41	19.69
43	0.1920	0.0369	1.40	56.78	41.52	38.72	17.38
44	0.1990	0.0396	1.50	58.85	42.33	40.88	15.22
45	0.2050	0.0420	1.60	60.62	42.87	42.87	13.23

Depression Angle	Relative Field	Relative Power	ERP Watts	Radii in meters			
				Field Strength	Horizontal	Vertical	AGL
45	0.2050	0.0420	1.60	60.62	42.87	42.87	13.23
46	0.2080	0.0433	1.64	61.51	42.73	44.25	11.85
47	0.2110	0.0445	1.69	62.40	42.55	45.63	10.47
48	0.2120	0.0449	1.71	62.69	41.95	46.59	9.51
49	0.2120	0.0449	1.71	62.69	41.13	47.31	8.79
50	0.2100	0.0441	1.68	62.10	39.92	47.57	8.53
51	0.2080	0.0433	1.64	61.51	38.71	47.80	8.30
52	0.2050	0.0420	1.60	60.62	37.32	47.77	8.33
53	0.2000	0.0400	1.52	59.14	35.59	47.23	8.87
54	0.1960	0.0384	1.46	57.96	34.07	46.89	9.21
55	0.1900	0.0361	1.37	56.19	32.23	46.03	10.07
56	0.1840	0.0339	1.29	54.41	30.43	45.11	10.99
57	0.1770	0.0313	1.19	52.34	28.51	43.90	12.20
58	0.1700	0.0289	1.10	50.27	26.64	42.63	13.47
59	0.1630	0.0266	1.01	48.20	24.83	41.32	14.78
60	0.1550	0.0240	0.91	45.84	22.92	39.70	16.40
61	0.1480	0.0219	0.83	43.77	21.22	38.28	17.82
62	0.1400	0.0196	0.74	41.40	19.44	36.55	19.55
63	0.1320	0.0174	0.66	39.03	17.72	34.78	21.32
64	0.1240	0.0154	0.58	36.67	16.07	32.96	23.14
65	0.1170	0.0137	0.52	34.60	14.62	31.36	24.74
66	0.1090	0.0119	0.45	32.23	13.11	29.45	26.65
67	0.1020	0.0104	0.40	30.16	11.79	27.77	28.33
68	0.0940	0.0088	0.34	27.80	10.41	25.77	30.33
69	0.0870	0.0076	0.29	25.73	9.22	24.02	32.08
70	0.0800	0.0064	0.24	23.66	8.09	22.23	33.87
71	0.0740	0.0055	0.21	21.88	7.12	20.69	35.41
72	0.0680	0.0046	0.18	20.11	6.21	19.12	36.98
73	0.0620	0.0038	0.15	18.33	5.36	17.53	38.57
74	0.0560	0.0031	0.12	16.56	4.56	15.92	40.18
75	0.0510	0.0026	0.10	15.08	3.90	14.57	41.53
76	0.0460	0.0021	0.08	13.60	3.29	13.20	42.90
77	0.0410	0.0017	0.06	12.12	2.73	11.81	44.29
78	0.0370	0.0014	0.05	10.94	2.27	10.70	45.40
79	0.0320	0.0010	0.04	9.46	1.81	9.29	46.81
80	0.0290	0.0008	0.03	8.58	1.49	8.45	47.65
81	0.0250	0.0006	0.02	7.39	1.16	7.30	48.80
82	0.0220	0.0005	0.02	6.51	0.91	6.44	49.66
83	0.0180	0.0003	0.01	5.32	0.65	5.28	50.82
84	0.0150	0.0002	0.01	4.44	0.46	4.41	51.69
85	0.0130	0.0002	0.01	3.84	0.34	3.83	52.27
86	0.0100	0.0001	0.00	2.96	0.21	2.95	53.15
87	0.0070	0.0000	0.00	2.07	0.11	2.07	54.03
88	0.0050	0.0000	0.00	1.48	0.05	1.48	54.62
89	0.0020	0.0000	0.00	0.59	0.01	0.59	55.51
90	0.0010	0.0000	0.00	0.30	0.00	0.30	55.80

