

## **Technical Report W286DP.CP Minor Modification**

This technical report is submitted for a minor modification to W286DP.CP, FCC file no. BNPFT-20180502ABJ. A change in antenna is submitted. The translator will continue to serve as a fill-in facility to rebroadcast WLAY(AM) 1450 kHz at Muscle Shoals, AL, FCC facility I.D. no. 60611.

### **W286DP.CP Analysis:**

An overlap study in exhibit E-1 shows the W286DP.CP modification is within the WVNA-FM 288A second adjacent protected contour. A tabulation of the +40 121.3 dBu F(50-10) contour in exhibit E-2 using the vertical elevation pattern of the Nicom BKG77 two bay, 0.5 wavelength-spaced antenna (exhibit E-3), shows the interfering contour will not reach any population, roads or buildings (exhibit E-4). Based on this showing, a waiver of Section 74.1204 is requested, in accordance with *Living Way Ministries, Inc.* (FCC 08-242). The 60 dBu F(50-50) contour overlaps the current CP 60 dBu contour and is contained within the WLAY(AM) and WLAY(AM).CP 2.0 mV/m daytime contours (exhibit E-5).

### **Antenna System:**

W286DP.CP is located on the existing tower, ASR #1299445, at coordinates:

**34 45 23N 87 40 43W NAD 27.**

A Nicom BKG77 two bay, 0.5 wavelength spaced, directional antenna (exhibit E-6) will be mounted at a COR AGL of 91 meters, 247 meters AMSL and operate at 0.250 kW ERP.

**RF Exposure Calculation:**

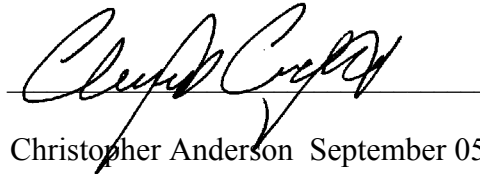
The RF contribution was calculated using the formula from the OET Bulletin 65:

$$S \text{ (RF in microwatts/cm}^2\text{)} = \frac{33.4 \times F^2 \times (H \text{ ERP} + V \text{ ERP in watts})}{R^2 \text{ (height of radiation center in meters}^2\text{)}}$$

Using a worst case vertical (F) factor of 1.0, the RF is calculated to be 2.11  $\mu\text{W/cm}^2$  to the ground, which is well below 5% of the 200  $\mu\text{W/cm}^2$  maximum permissible for general public exposure allowing exclusion from consideration.

**Conclusion:**

It is concluded that the minor modification application for W286DP.CP complies with all Commission rules and policies.



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# E-1 W286DP.CP Mod. Overlap Study

REFERENCE 34 45 23.0 N. 87 40 43.0 W.		CH# 286D - 105.1 MHz, Pwr= 0.25 kW DA, HAAT= 85.0 M, COR= 247 M Average Protected F(50-50)= 11.9 km Standard Directional							DISPLAY DATES DATA 09-05-18 SEARCH 09-05-18	
CH CITY	CALL	TYPE STATE	ANT AZI <--	DIST FILE #	LAT LNG	PWR(kW) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*
286D Florence	1782008	APP DC_ AL	0.0 0.0	0.00 BNPFT20180502ABJ	34 45 23.0 87 40 43.0	0.250		---Reference---		
288A Muscle Shoals	WVNA-FM	LIC _C_ AL	199.2 19.1	9.67 BLH20040304ACS	34 40 27.0 87 42 48.0	4.400 118	3.0 297	31.9 Urban Radio Licenses, Lic	-3.3*	-23.1*(1)
286C2 Albertville	R16696	RSV-R _ AL	109.6 290.3	122.39	34 22 48.0 86 25 20.0	50.000 150	133.2 408	46.6	-22.4*	31.2
285C2 Iuka	WKZU	LIC _CN MS	272.2 91.7	65.41 BLH19900827KB	34 46 35.0 88 23 40.0	50.000 135	74.6 290	49.1 Kudzu Communications, Inc.	-19.6*	1.6
286C2 Waverly	WVWF	LIC _CN TN	1.5 181.5	148.35 BLH19890619KB	36 05 25.0 87 38 05.0	50.000 150	140.5 355	54.7 M P Media Lic	-3.3	55.5
284D Florence	631644	APP _C_ AL	10.6 190.6	12.25 BNPFT20030317A0A	34 51 53.0 87 39 14.0	0.250 37	1.1 213	10.2 Clear Channel Broadcasting	0.0	1.0
284D Florence	1789985	APP _C_ AL	10.6 190.6	12.25 BNPFT20180809ABI	34 51 53.0 87 39 14.0	0.250	1.1 213	10.2 Clear Channel Broadcasting	0.0	1.0
287D Lawrenceburg	W287AA	LIC _C_ TN	30.1 210.3	64.11 BLFT20170717ABR	35 15 18.0 87 19 30.0	0.250	22.9 385	14.9 Roger W. Wright DbA/ Prosp	29.9	31.5
286D Ardmore	W286DF	CP _C_ TN	70.4 250.9	79.50 BMPFT20180524AAI	34 59 35.0 86 51 22.0	0.250	23.8 255	7.1 Gra Communications, Lic	43.7	30.5
289A Addison	WQAH-FM	LIC _CX AL	131.9 312.2	74.63 BLH20140129AAJ	34 18 24.0 87 04 25.0	4.500 115	2.7 356	28.9 Abercrombie Broadcasting F	59.8	43.3
285D Priceville	W285EN	LIC _C_ AL	108.5 289.0	74.79 BLFT20111109AQK	34 32 24.5 86 54 15.3	0.250 45	13.4 232	9.5 Somerville Baptist Church	49.7	48.0
288D Athens	W288EB	CP DC_ AL	86.2 266.6	60.79 BMPFT20180507ADC	34 47 26.0 87 00 51.0	0.250	0.0 273	2.0 Frc Of Alabama, Lic D/b/a	49.0	52.5

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 adjacent.  
 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 restricted contour.  
 Reference station has protected zone issue: AM tower

- (1) The +40 121.33 F(50-10) dBu contour within the WVNA-FM 288A second-adjacent protected contour lowest point = 63.3 meters (exhibit E-2).

E-2 W286DP.CP Mod. +40 dBu Tabulation Within WVNA-FM 288A

W286DP.CP Mod. Florence, AL, Showing Protection to WVNA-FM  
Geographic Coordinates: N. 34 45 23.00 W. 87 40 43.00  
74.1204(d) Study - Using FCC 30 SEC Terrain Database  
Translator or LPFM Maximum Licensed ERP = 0.25  
Translator or LPFM Antenna Height AG = 91 Meters  
W286DP.CP Mod. Antenna Model = NICOM BKG77-2-05

Protected Station's Contour = 81.32988 dBu  
Translator's or LPFM's full Interference contour 121.32988

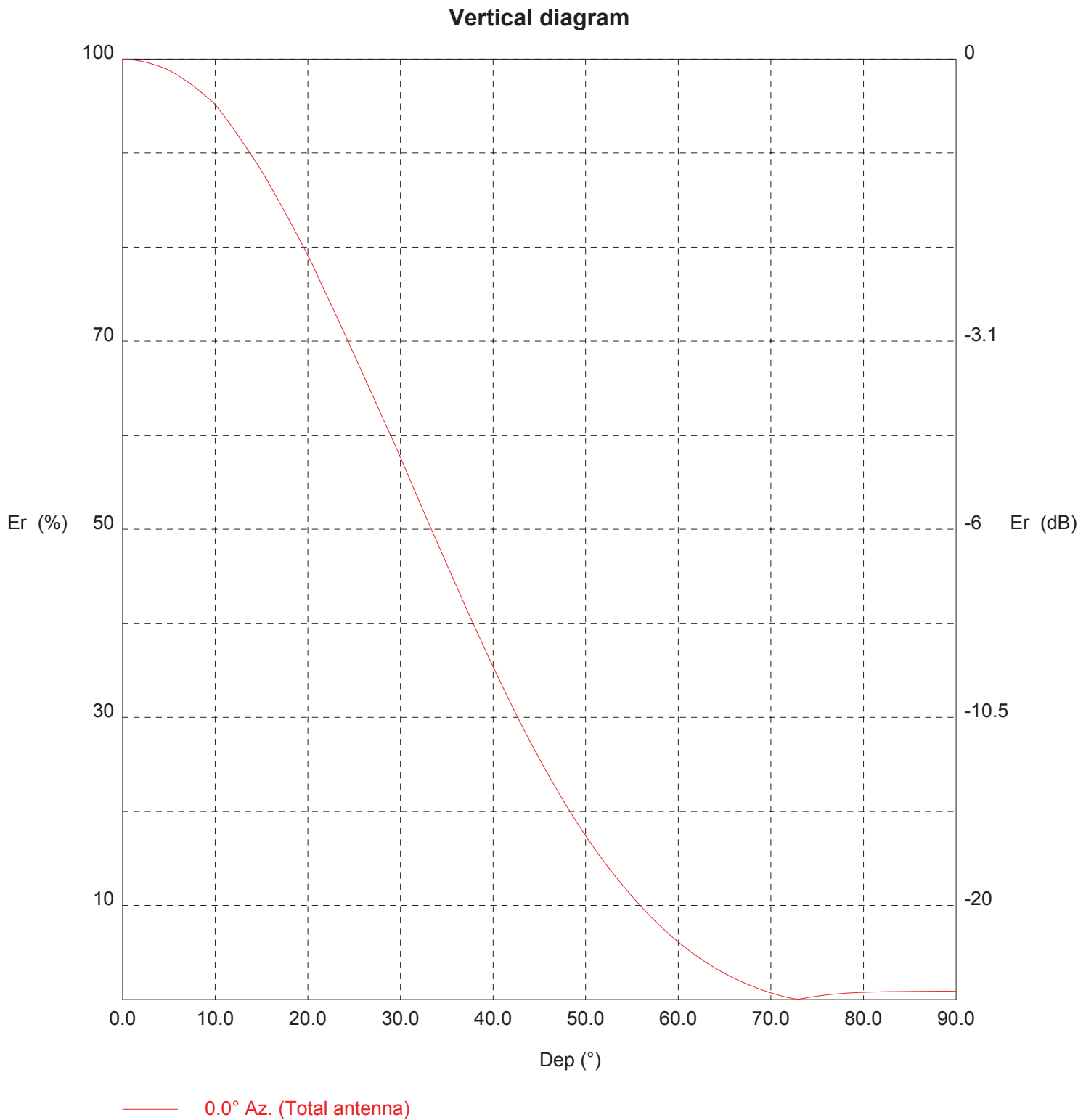
Review Azimuth = 30 Degrees True  
Horizontal Relative Field at Review Azimuth = 1.000  
Translator/LPFM ERP on the horizontal at Review Azimuth = 0.25 kW  
Distance between stations = 9.7 km  
Protected Station= WVNA-FM, 4.4 kW, 297 M Meters COR AMSL

Depression Angle From Horizon(Deg)	Vertical Relative Field	Horizontal Relative Field	ERP (kw)	Dist to IX Contour Along Dep. Angle (m)	Dist to IX Contour From Tower Base (m)	Height IX Above Ground (m) (1)
00.00	1.0	1.0	0.2500	095.1647	095.1647	091.000
01.00	0.999	1.0	0.2495	095.0696	095.0551	089.341
02.00	0.998	1.0	0.2490	094.9744	094.9165	087.685
03.00	0.995	1.0	0.2475	094.6889	094.5591	086.044
04.00	0.992	1.0	0.2460	094.4034	094.1734	084.415
05.00	0.988	1.0	0.2440	094.0227	093.6650	082.805
06.00	0.982	1.0	0.2411	093.4518	092.9398	081.232
07.00	0.976	1.0	0.2381	092.8808	092.1885	079.681
08.00	0.969	1.0	0.2347	092.2146	091.3172	078.166
09.00	0.961	1.0	0.2309	091.4533	090.3274	076.694
10.00	0.952	1.0	0.2266	090.5968	089.2205	075.268
11.00	0.939	1.0	0.2204	089.3597	087.7179	073.949
12.00	0.925	1.0	0.2139	088.0274	086.1038	072.698
13.00	0.911	1.0	0.2075	086.6951	084.4731	071.498
14.00	0.896	1.0	0.2007	085.2676	082.7348	070.372
15.00	0.881	1.0	0.1940	083.8401	080.9833	069.301
16.00	0.864	1.0	0.1866	082.2223	079.0372	068.336
17.00	0.846	1.0	0.1789	080.5094	076.9915	067.461
18.00	0.828	1.0	0.1714	078.7964	074.9398	066.651
19.00	0.81	1.0	0.1640	077.0834	072.8838	065.904
20.00	0.791	1.0	0.1564	075.2753	070.7356	065.254
21.00	0.771	1.0	0.1486	073.3720	068.4987	064.706
22.00	0.75	1.0	0.1406	071.3735	066.1764	064.263
23.00	0.728	1.0	0.1325	069.2799	063.7725	063.930
24.00	0.707	1.0	0.1250	067.2815	061.4647	063.634
25.00	0.686	1.0	0.1176	065.2830	059.1665	063.410
26.00	0.664	1.0	0.1102	063.1894	056.7942	063.300
27.00	0.642	1.0	0.1030	061.0958	054.4367	063.263 (1)
28.00	0.62	1.0	0.0961	059.0021	052.0958	063.300
29.00	0.598	1.0	0.0894	056.9085	049.7733	063.410
30.00	0.577	1.0	0.0832	054.9100	047.5535	063.545
31.00	0.553	1.0	0.0765	052.6261	045.1094	063.896
32.00	0.53	1.0	0.0702	050.4373	042.7733	064.272
33.00	0.508	1.0	0.0645	048.3437	040.5444	064.670
34.00	0.485	1.0	0.0588	046.1549	038.2641	065.191
35.00	0.463	1.0	0.0536	044.0613	036.0929	065.727
36.00	0.44	1.0	0.0484	041.8725	033.8755	066.388
37.00	0.418	1.0	0.0437	039.7789	031.7688	067.060
38.00	0.396	1.0	0.0392	037.6852	029.6964	067.799
39.00	0.375	1.0	0.0352	035.6868	027.7338	068.542
40.00	0.354	1.0	0.0313	033.6883	025.8067	069.346
41.00	0.333	1.0	0.0277	031.6899	023.9166	070.210
42.00	0.313	1.0	0.0245	029.7866	022.1357	071.069
43.00	0.293	1.0	0.0215	027.8833	020.3925	071.984
44.00	0.274	1.0	0.0188	026.0751	018.7569	072.887
45.00	0.256	1.0	0.0164	024.3622	017.2267	073.773
46.00	0.238	1.0	0.0142	022.6492	015.7335	074.708
47.00	0.221	1.0	0.0122	021.0314	014.3434	075.619
48.00	0.205	1.0	0.0105	019.5088	013.0539	076.502
49.00	0.189	1.0	0.0089	017.9861	011.8000	077.426
50.00	0.174	1.0	0.0076	016.5587	010.6437	078.315
51.00	0.16	1.0	0.0064	015.2264	009.5823	079.167
52.00	0.146	1.0	0.0053	013.8940	008.5540	080.051
53.00	0.133	1.0	0.0044	012.6569	007.6171	080.892
54.00	0.121	1.0	0.0037	011.5149	006.7683	081.684
55.00	0.11	1.0	0.0030	010.4681	006.0043	082.425
56.00	0.099	1.0	0.0025	009.4213	005.2683	083.189
57.00	0.088	1.0	0.0019	008.3745	004.5611	083.977
58.00	0.079	1.0	0.0016	007.5180	003.9839	084.624
59.00	0.07	1.0	0.0012	006.6615	003.4309	085.290
60.00	0.061	1.0	0.0009	005.8050	002.9025	085.973
61.00	0.053	1.0	0.0007	005.0437	002.4452	086.589
62.00	0.046	1.0	0.0005	004.3776	002.0551	087.135
63.00	0.039	1.0	0.0004	003.7114	001.6850	087.693
64.00	0.033	1.0	0.0003	003.1404	001.3767	088.177
65.00	0.028	1.0	0.0002	002.6646	001.1261	088.585
66.00	0.023	1.0	0.0001	002.1888	000.8903	089.000
67.00	0.018	1.0	0.0001	001.7130	000.6693	089.423
68.00	0.014	1.0	0.0000	001.3323	000.4991	089.765
69.00	0.01	1.0	0.0000	000.9516	000.3410	090.112
70.00	0.007	1.0	0.0000	000.6662	000.2278	090.374
71.00	0.004	1.0	0.0000	000.3807	000.1239	090.640
72.00	0.002	1.0	0.0000	000.1903	000.0588	090.819

E-2 W286DP.CP Mod. +40 dBu Tabulation Within WVNA-FM 288A, cont.

Depression Angle From Horizon(Deg)	Vertical Relative Field	Horizontal Relative Field	ERP (kw)	Dist to IX Contour Along Dep. Angle (m)	Dist to IX Contour From Tower Base (m)	Height IX Above Ground (m)
73.00	0.0	1.0	0.0000	000.0095	000.0028	090.991
74.00	0.002	1.0	0.0000	000.1903	000.0525	090.817
75.00	0.004	1.0	0.0000	000.3807	000.0985	090.632
76.00	0.005	1.0	0.0000	000.4758	000.1151	090.538
77.00	0.006	1.0	0.0000	000.5710	000.1284	090.444
78.00	0.007	1.0	0.0000	000.6662	000.1385	090.348
79.00	0.008	1.0	0.0000	000.7137	000.1362	090.299
80.00	0.008	1.0	0.0000	000.7613	000.1322	090.250
81.00	0.008	1.0	0.0000	000.7613	000.1191	090.248
82.00	0.008	1.0	0.0000	000.7613	000.1060	090.246
83.00	0.008	1.0	0.0000	000.7613	000.0928	090.244
84.00	0.009	1.0	0.0000	000.8565	000.0895	090.148
85.00	0.008	1.0	0.0000	000.7613	000.0664	090.242
86.00	0.009	1.0	0.0000	000.8565	000.0597	090.146
87.00	0.009	1.0	0.0000	000.8565	000.0448	090.145
88.00	0.009	1.0	0.0000	000.8565	000.0299	090.144
89.00	0.009	1.0	0.0000	000.8565	000.0149	090.144
90.00	0.009	1.0	0.0000	000.8565	000.0000	090.144

(1) The +40 121.33 F(50-10) dBu contour lowest point = 63.3 meters.



TX station: BKG77/2 GENERIC

Site name: 1/2 WAVE SEPARATION

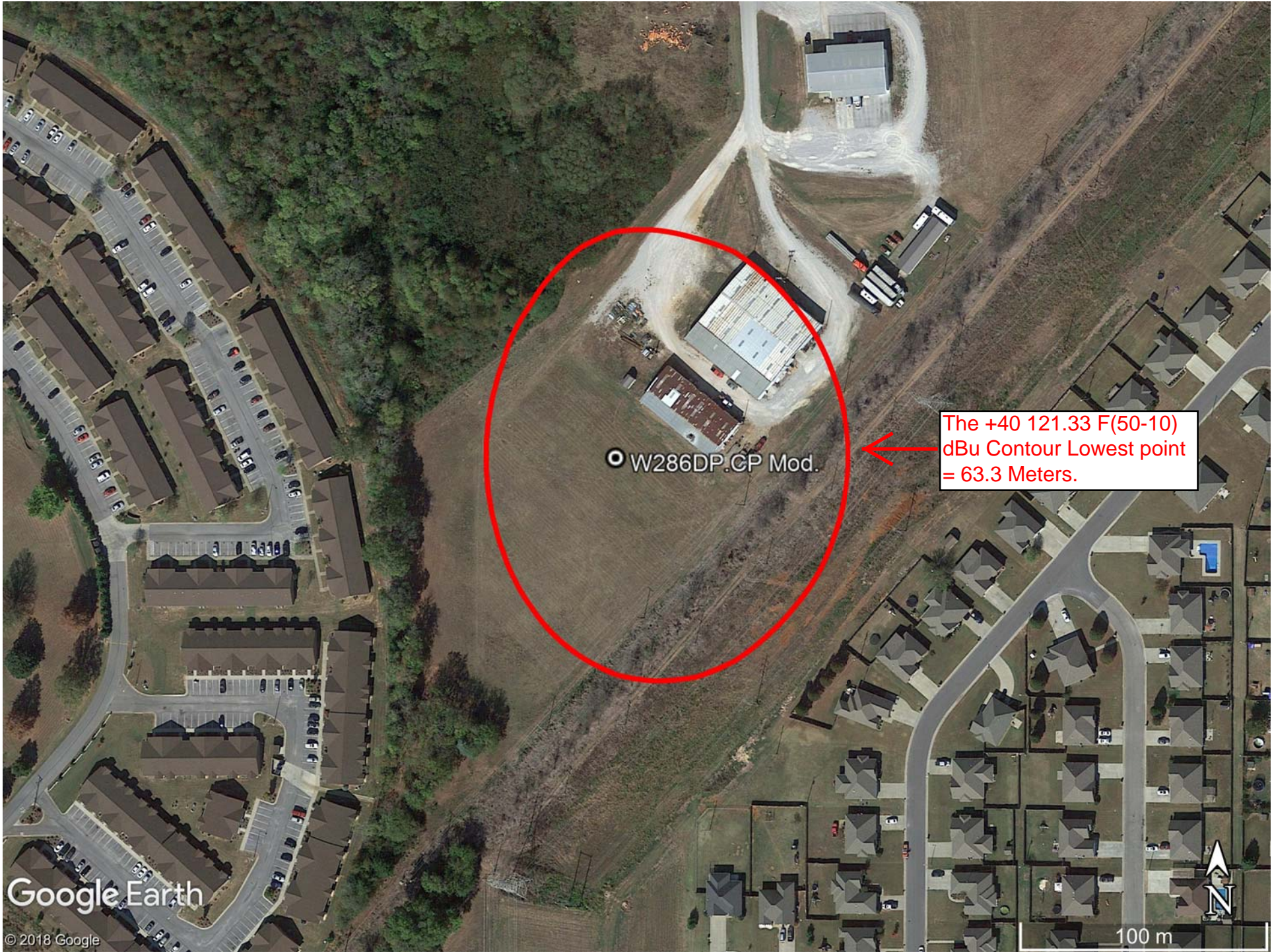
Frequency: 98.10 MHz

**Vertical diagram at an azimuth of 0° degrees**

Dep (°)	Er (%)	ERP (W)	Dep (°)	Er (%)	ERP (W)	Dep (°)	Er (%)	ERP (W)
0.0	100.0	914.2	30.0	57.7	304.2	60.0	6.1	3.4
0.5	100.0	913.7	30.5	56.5	292.0	60.5	5.7	3.0
1.0	99.9	912.9	31.0	55.3	280.1	61.0	5.3	2.6
1.5	99.9	911.6	31.5	54.2	268.5	61.5	5.0	2.3
2.0	99.8	910.0	32.0	53.0	257.2	62.0	4.6	1.9
2.5	99.7	908.1	32.5	51.9	246.3	62.5	4.3	1.7
3.0	99.5	905.7	33.0	50.8	235.6	63.0	3.9	1.4
3.5	99.4	903.0	33.5	49.6	225.3	63.5	3.6	1.2
4.0	99.2	899.9	34.0	48.5	215.3	64.0	3.3	1.0
4.5	99.0	896.5	34.5	47.4	205.5	64.5	3.1	0.9
5.0	98.8	892.7	35.0	46.3	196.1	65.0	2.8	0.7
5.5	98.5	887.7	35.5	45.2	186.5	65.5	2.5	0.6
6.0	98.2	882.4	36.0	44.0	177.3	66.0	2.3	0.5
6.5	97.9	876.7	36.5	42.9	168.4	66.5	2.0	0.4
7.0	97.6	870.7	37.0	41.8	159.8	67.0	1.8	0.3
7.5	97.2	864.3	37.5	40.7	151.5	67.5	1.6	0.2
8.0	96.9	857.7	38.0	39.6	143.5	68.0	1.4	0.2
8.5	96.5	850.8	38.5	38.5	135.8	68.5	1.2	0.1
9.0	96.1	843.5	39.0	37.5	128.5	69.0	1.0	0.1
9.5	95.6	836.0	39.5	36.4	121.4	69.5	0.9	0.1
10.0	95.2	828.2	40.0	35.4	114.6	70.0	0.7	0.0
10.5	94.5	817.1	40.5	34.4	107.9	70.5	0.6	0.0
11.0	93.9	805.8	41.0	33.3	101.5	71.0	0.4	0.0
11.5	93.2	794.4	41.5	32.3	95.4	71.5	0.3	0.0
12.0	92.5	782.7	42.0	31.3	89.5	72.0	0.2	0.0
12.5	91.8	770.9	42.5	30.3	84.0	72.5	0.1	0.0
13.0	91.1	759.0	43.0	29.3	78.7	73.0	0.0	0.0
13.5	90.4	746.9	43.5	28.4	73.6	73.5	0.1	0.0
14.0	89.6	734.6	44.0	27.4	68.8	74.0	0.2	0.0
14.5	88.9	722.3	44.5	26.5	64.3	74.5	0.3	0.0
15.0	88.1	709.8	45.0	25.6	59.9	75.0	0.4	0.0
15.5	87.3	696.2	45.5	24.7	55.8	75.5	0.4	0.0
16.0	86.4	682.5	46.0	23.8	51.9	76.0	0.5	0.0
16.5	85.5	668.7	46.5	23.0	48.2	76.5	0.5	0.0
17.0	84.6	655.0	47.0	22.1	44.7	77.0	0.6	0.0
17.5	83.8	641.2	47.5	21.3	41.5	77.5	0.6	0.0
18.0	82.8	627.4	48.0	20.5	38.4	78.0	0.7	0.0
18.5	81.9	613.7	48.5	19.7	35.4	78.5	0.7	0.0
19.0	81.0	599.9	49.0	18.9	32.7	79.0	0.7	0.0
19.5	80.1	586.2	49.5	18.2	30.1	79.5	0.7	0.1
20.0	79.1	572.5	50.0	17.4	27.7	80.0	0.8	0.1
20.5	78.1	557.6	50.5	16.7	25.5	80.5	0.8	0.1
21.0	77.1	542.9	51.0	16.0	23.4	81.0	0.8	0.1
21.5	76.0	528.2	51.5	15.3	21.4	81.5	0.8	0.1
22.0	75.0	513.7	52.0	14.6	19.6	82.0	0.8	0.1
22.5	73.9	499.3	52.5	14.0	17.9	82.5	0.8	0.1
23.0	72.8	485.1	53.0	13.3	16.3	83.0	0.8	0.1
23.5	71.8	471.1	53.5	12.7	14.8	83.5	0.9	0.1
24.0	70.7	457.2	54.0	12.1	13.4	84.0	0.9	0.1
24.5	69.6	443.5	54.5	11.5	12.2	84.5	0.9	0.1
25.0	68.6	429.9	55.0	11.0	11.0	85.0	0.8	0.1
25.5	67.5	416.4	55.5	10.4	9.9	85.5	0.9	0.1
26.0	66.4	403.0	56.0	9.9	8.9	86.0	0.9	0.1
26.5	65.3	389.8	56.5	9.3	8.0	86.5	0.9	0.1
27.0	64.2	376.9	57.0	8.8	7.1	87.0	0.9	0.1
27.5	63.1	364.2	57.5	8.3	6.4	87.5	0.9	0.1
28.0	62.0	351.7	58.0	7.9	5.6	88.0	0.9	0.1
28.5	60.9	339.4	58.5	7.4	5.0	88.5	0.9	0.1
29.0	59.8	327.4	59.0	7.0	4.4	89.0	0.9	0.1
29.5	58.8	315.7	59.5	6.5	3.9	89.5	0.9	0.1

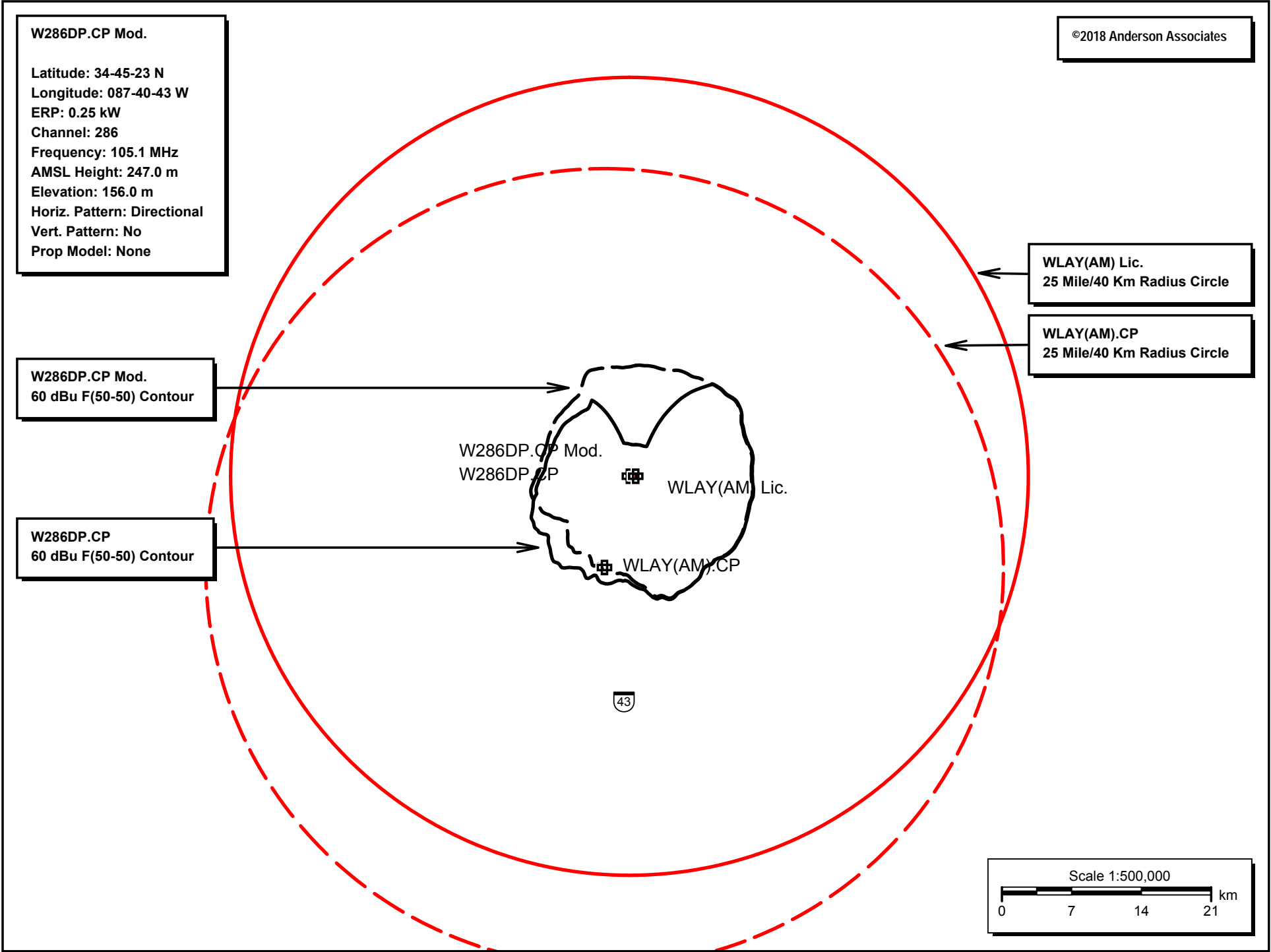


E-4 W286DP.CP Mod. 121.33 +40 F(50-10) dBu Contour Aerial Photo





E-5 W286DP.CP Mod. 60 dBu Contour Plot

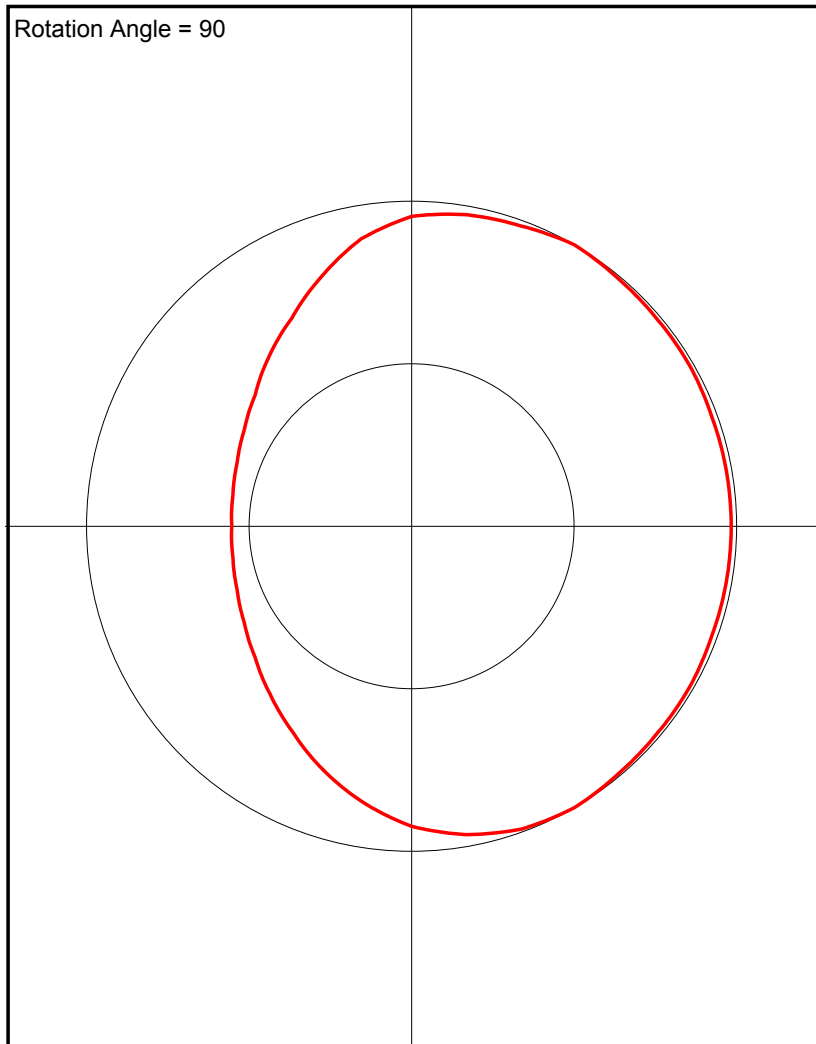


# E-6 W286DP.CP Mod. Antenna Pattern

Azimuth (deg)
Relative Field

0.0	0.953
10.0	0.973
20.0	0.983
30.0	1.0
40.0	0.992
50.0	0.988
60.0	0.988
70.0	0.983
80.0	0.983
90.0	0.983
100.0	0.983
110.0	0.983
120.0	0.988
130.0	0.988
140.0	0.992
150.0	1.0
160.0	0.991
170.0	0.963
180.0	0.923
190.0	0.862
200.0	0.797
210.0	0.731
220.0	0.676
230.0	0.628
240.0	0.594
250.0	0.571
260.0	0.558
270.0	0.553
280.0	0.558
290.0	0.571
300.0	0.594
310.0	0.628
320.0	0.682
330.0	0.738
340.0	0.815
350.0	0.897

Rotation Angle = 90



## ASR Registration 1299445

### Registration Detail

Reg Number	1299445	Status	Constructed
File Number	A1078892	Constructed	03/21/2017
EMI	No	Dismantled	
NEPA			

### Antenna Structure

Structure Type GTOWER - Guyed Structure Used for Communication Purposes

#### Location (in NAD83 Coordinates)

Lat/Long	34-45-23.6 N 087-40-43.6 W	Address	appx. 300 ft.South of end of Johnson St., .
City, State	Muscle Shoals , AL		
Zip	35661	County	COLBERT
Center of AM Array		Position of Tower in Array	

#### Heights (meters)

Elevation of Site Above Mean Sea Level	Overall Height Above Ground (AGL)
155.5	106.4
Overall Height Above Mean Sea Level	Overall Height Above Ground w/o Appurtenances
261.9	106.4

### Painting and Lighting Specifications

FAA Chapters 4, 6, 12  
Paint and Light in Accordance with FAA Circular Number 70/7460-1K

#### FAA Notification

FAA Study	2015-ASO-9602-OE	FAA Issue Date	08/14/2015
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### Owner & Contact Information

FRN	0006920771	Owner Entity Type	Individual
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#### Owner

WRIGHT , ROGER 1212 N. Locuat Ave. P.O. Box 156 Lawrenceburg , TN 38464	P: (931)629-7713 F: E: proscomm@bellsouth.net
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#### Contact

WRIGHT , ROGER 1212 N. Locuat Ave. P.O. Box 156 Lawrenceburg , TN 38464	P: (931)629-7713 F: E: proscomm@bellsouth.net
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### Last Action Status

Status	Constructed	Received	06/12/2017
Purpose	Notification	Entered	06/12/2017