

**Technical Report  
WLAY(AM) New 286D (105.1)**

This technical report is submitted in support of an Auction 100 Long Form application for a new fill-in translator on channel 286 to rebroadcast WLAY(AM) 1450 kHz at Muscle Shoals, AL, FCC facility I.D. no. 60611.

**New 286D Translator Analysis:**

An overlap study in exhibit E-1 shows the new 286D translator is within the WVNA-FM 288A and New 284D second adjacent protected contours. A tabulation of the 121.3 and 111.3 +40 dBu F(50-10) contours (exhibits E1A and E1B) show the interfering contours will not reach any population, roads or buildings (exhibit E1C). 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 is contained within the WLAY(AM) and WLAY(AM).CP 25 mile radii (exhibit E2).

It is noted that the proposed facility does not receive any interference from Auction 83 application BNPFT-20030317LNG and that any interference to it is disproved in exhibits E1B and E1C.

**Antenna System:**

The new 286D translator is to be located on the existing tower, ASR #1299445, at coordinates:

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

A PSI two bay, 0.75 wavelength spaced, directional antenna (exhibit E-6) will be mounted at a COR AGL of 91 meters, 246 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  $\mu\text{W}/\text{cm}^2$  to

the ground, which is well below 5% of the 200  $\mu\text{W}/\text{cm}^2$  maximum permissible for general public exposure allowing exclusion from consideration.

**Conclusion:**

It is concluded that the application for a new 286D translator facility for WLAY(AM) complies with all Commission rules and policies.

March 27, 2018

Charles M. Anderson

# E1 Channel Study

REFERENCE		CH# 286D - 105.1 MHz, Pwr= 0.25 kW DA, HAAT= 0.0 M, COR= 247 M							DISPLAY DATES		
34 45 23.0 N.		Average Protected F(50-50)= 7.09 km							DATA 03-26-18		
87 40 43.0 W.		Standard Directional							SEARCH 03-27-18		
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)	
286D	1775998	APP DC_		0.0	0.00	34 45 23.0	0.250	0.00	0.00	64.5R	-64.5M
Florence		AL		0.0	BNPFT20180130AHO	87 40 43.0		247	Urban Radio Li censes, LI c		
288A	WVNA-FM	LIC _C_		199.2	9.67	34 40 27.0	4.400	3.0	31.9	-4.4*	-23.4*
Muscle Shoals		AL		19.1	BLH20040304ACS	87 42 48.0	118	297	Urban Radio Li censes, LI c		

See E1A for disproval of WVNA-FM interference per *Living Way*.

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	-22.5*	30.9*
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	-19.3*	2.5*
284D Florence	650980	APP _C_ AL	0.6 180.6	5.03 BNPFT20030317LNG	34 48 06.0 87 40 41.0	0.250 43	1.1 206	9.7 Ohio Broadcast Associates	0.7*	-4.7*

See E1B and E1C for disproval of interference to BNPFT-20030317LNG per *Living Way*.

286C2 Waverly	WVWF	LIC _CN TN	1.5 181.5	148.35 BLH19890619KB	36 05 25.0 87 38 05.0	50.000 150	140.0 355	54.7	-0.9*	83.2*
284D Florence	631644	APP _C_ AL	10.6 190.6	12.25 BNPFT20030317AOA	34 51 53.0 87 39 14.0	0.250 37	1.1 213	10.2	3.7*	1.4*
286D Ardmore	W286DF	CP _C_ TN	70.5 250.9	79.45 BNPFT20171205AAB	34 59 33.0 86 51 23.0	0.250	29.6 284	8.7	37.8*	28.3*

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

# E1A WVNA-FM Analysis

BNPFT-20180130AHO Florence, AL Showing Protection to WVNA-FM  
 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  
 1775998 Antenna Model = PSI FML-2-75% SPACED

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

Review Azimuth = 0 Degrees True  
 Relative Field on the horizon at Review Azimuth = 1.000  
 Translator/LPFM ERP on the horizon 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)
00.00	1.00	1.0	0.2500	095.1647	095.1647	091.000
05.00	0.975	1.0	0.2377	092.7856	092.4325	082.913
10.00	0.903	1.0	0.2039	085.9337	084.6282	076.078
15.00	0.792	1.0	0.1568	075.3705	072.8023	071.493
20.00	0.65	1.0	0.1056	061.8571	058.1266	069.844
25.00	0.493	1.0	0.0608	046.9162	042.5205	071.172
30.00	0.331	1.0	0.0274	031.4995	027.2794	075.250
35.00	0.178	1.0	0.0079	016.9393	013.8759	081.284
40.00	0.043	1.0	0.0005	004.0921	003.1347	088.370
45.00	0.068	1.0	0.0012	006.4712	004.5758	086.424
50.00	0.149	1.0	0.0056	014.1795	009.1144	080.138
55.00	0.202	1.0	0.0102	019.2233	011.0260	075.253
60.00	0.227	1.0	0.0129	021.6024	010.8012	072.292
65.00	0.226	1.0	0.0128	021.5072	009.0893	071.508
70.00	0.205	1.0	0.0105	019.5088	006.6724	072.668
75.00	0.168	1.0	0.0071	015.9877	004.1379	075.557
80.00	0.118	1.0	0.0035	011.2294	001.9500	079.941
85.00	0.061	1.0	0.0009	005.8050	000.5059	085.217
90.00	0.001	1.0	0.0000	000.0952	000.0000	090.905

# E1B BNPFT-20030317LNG Analysis

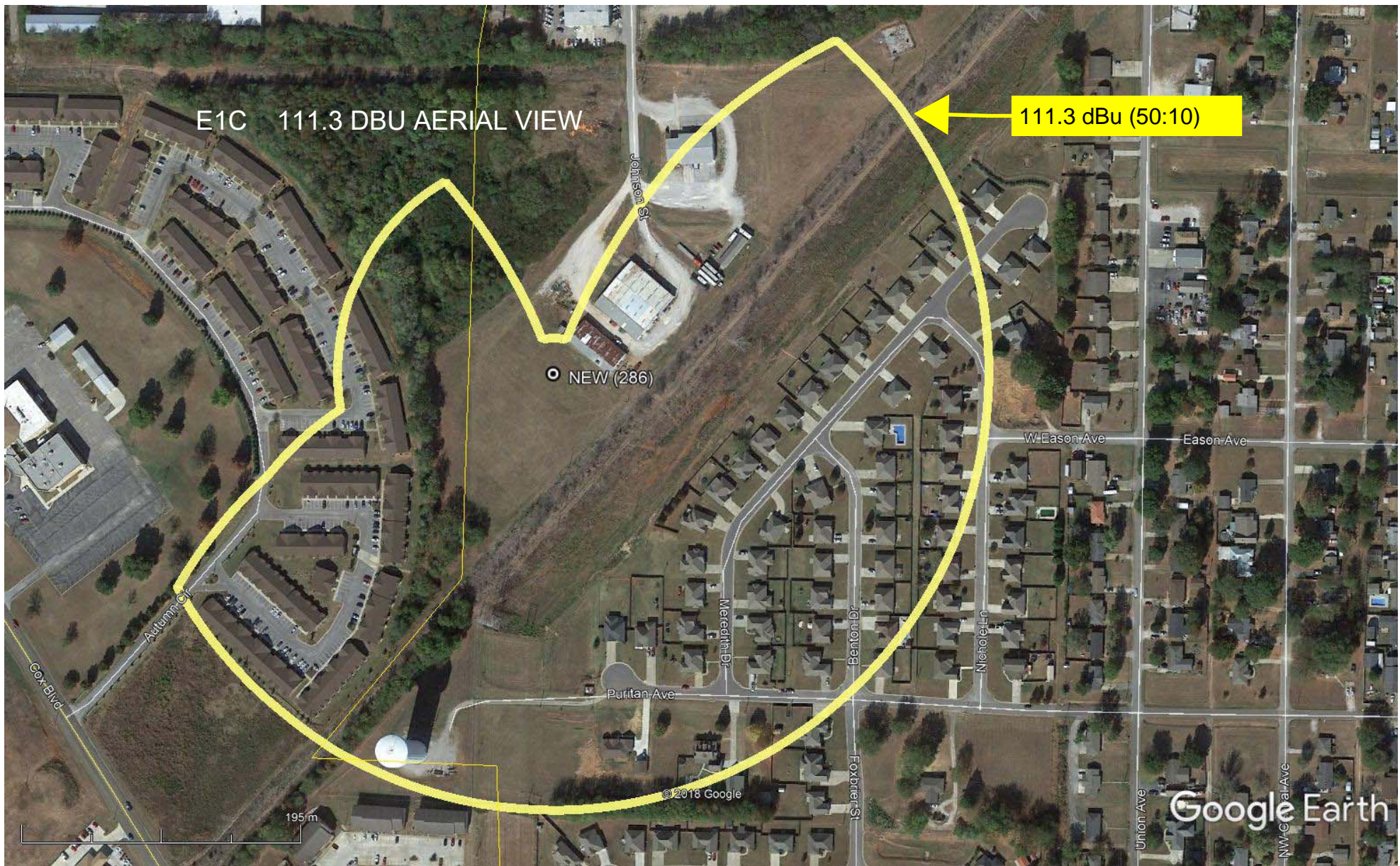
BNPFT-20180130AHO Florence, AL Showing Protection to Auction 83 BNPFT-20030317LNG  
 74.1204(d) Study - Using FCC 30 SEC Terrain Database  
 Translator or LPFM Maximum Licensed ERP = 0.25  
 Translator or LPFM Antenna Height AG = 91 Meters  
 1775998 Antenna Model = PSI FML-2-75% SPACING

Protected Station's Contour = 71.27567 dBu  
 Translator's or LPFM's full Interference contour 111.27567

Review Azimuth = 0 Degrees True  
 Relative Field on the horizon at Review Azimuth = 1.000  
 Translator/LPFM ERP on the horizon at Review Azimuth = 0.25 kW  
 Distance between stations = 5.0 km  
 Protected Station= 650980, .25 kW, 206 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)
00.00	1.00	1.0	0.2500	302.8214	302.8214	091.000
05.00	0.975	1.0	0.2377	295.2508	294.1273	065.267
10.00	0.903	1.0	0.2039	273.4477	269.2934	043.516
15.00	0.792	1.0	0.1568	239.8345	231.6624	028.926
20.00	0.65	1.0	0.1056	196.8339	184.9633	023.679
25.00	0.493	1.0	0.0608	149.2909	135.3035	027.907
30.00	0.331	1.0	0.0274	100.2339	086.8051	040.883
35.00	0.178	1.0	0.0079	053.9022	044.1541	060.083
40.00	0.043	1.0	0.0005	013.0213	009.9749	082.630
45.00	0.068	1.0	0.0012	020.5919	014.5606	076.439
50.00	0.149	1.0	0.0056	045.1204	029.0028	056.436
55.00	0.202	1.0	0.0102	061.1699	035.0856	040.893
60.00	0.227	1.0	0.0129	068.7404	034.3702	031.469
65.00	0.226	1.0	0.0128	068.4376	028.9230	028.974
70.00	0.205	1.0	0.0105	062.0784	021.2321	032.665
75.00	0.168	1.0	0.0071	050.8740	013.1672	041.860
80.00	0.118	1.0	0.0035	035.7329	006.2050	055.810
85.00	0.061	1.0	0.0009	018.4721	001.6099	072.598
90.00	0.001	1.0	0.0000	000.3028	000.0000	090.697

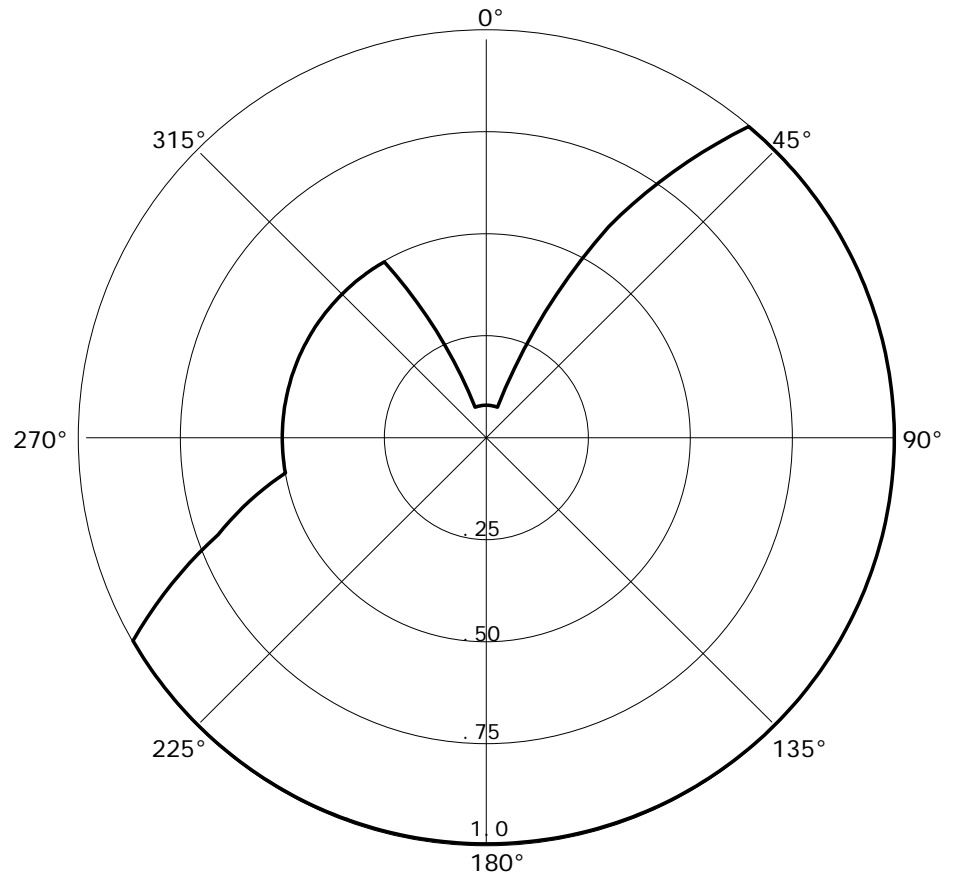




# E1D DA TABULATION

RMS(V)= .812 Graph is Relative Field

Azi	Field	dBk	kW
000	0.080	-27.959	0.002
010	0.080	-27.959	0.002
020	0.080	-27.959	0.002
030	0.600	-10.458	0.090
040	1.000	-06.021	0.250
050	1.000	-06.021	0.250
060	1.000	-06.021	0.250
070	1.000	-06.021	0.250
080	1.000	-06.021	0.250
090	1.000	-06.021	0.250
100	1.000	-06.021	0.250
110	1.000	-06.021	0.250
120	1.000	-06.021	0.250
130	1.000	-06.021	0.250
140	1.000	-06.021	0.250
150	1.000	-06.021	0.250
160	1.000	-06.021	0.250
170	1.000	-06.021	0.250
180	1.000	-06.021	0.250
190	1.000	-06.021	0.250
200	1.000	-06.021	0.250
210	1.000	-06.021	0.250
220	1.000	-06.021	0.250
230	1.000	-06.021	0.250
240	1.000	-06.021	0.250
250	0.700	-09.119	0.122
260	0.500	-12.041	0.063
270	0.500	-12.041	0.063
280	0.500	-12.041	0.063
290	0.500	-12.041	0.063
300	0.500	-12.041	0.063
310	0.500	-12.041	0.063
320	0.500	-12.041	0.063
330	0.500	-12.041	0.063
340	0.080	-27.959	0.002
350	0.080	-27.959	0.002



PSI FML-2 DA 75% SPACED. Elevation pattern appended to report.



**NEW**  
**BNPFT20180130AHO**  
Latitude: 34-45-23 N  
Longitude: 087-40-43 W  
ERP: 0.25 kW  
Channel: 286  
Frequency: 105.1 MHz  
AMSL Height: 247.0 m  
Elevation: 156.0 m  
Horiz. Pattern: Directional  
Vert. Pattern: No  
Prop Model: None

WLAY-LIC 25 MILES

WLAY-CP 25 MILES

E2 CONTOURS

PROPOSED 60 DBU

NEW  
WLAY  
Muscle Shoals

WLAY

Colbert

Franklin

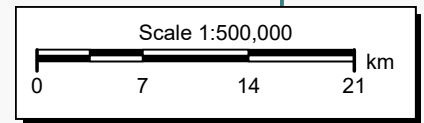
Lauderdale

Tishomingo

Lawrence

Limestone

Anderson Associates



V-Soft Communications LLC ©



 [Map Registration](#)**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**

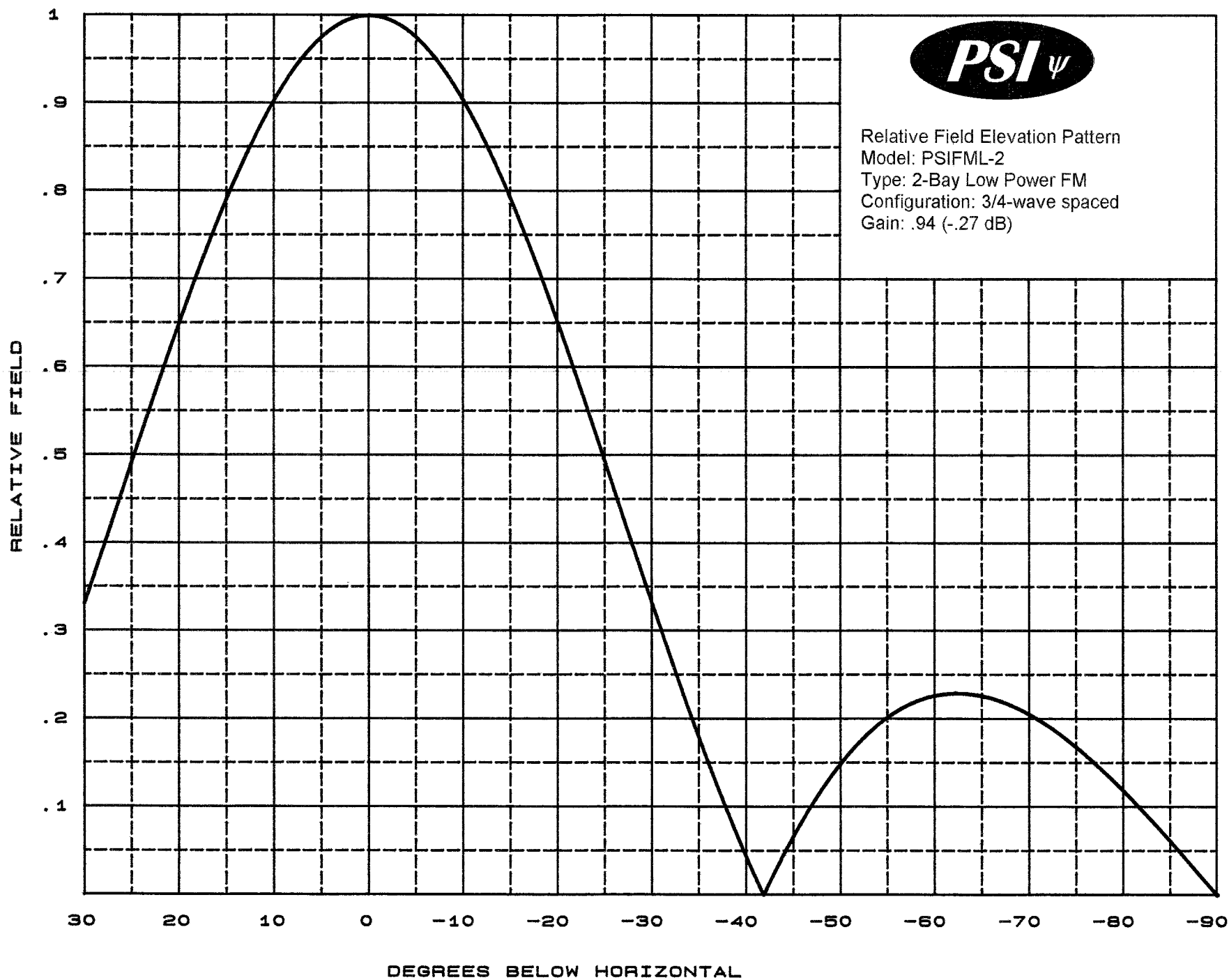
FRN	0006920771	Owner Entity Type	Individual
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**Owner**

WRIGHT , ROGER  
1212 N. Locuat Ave.  
P.O. Box 156  
Lawrenceburg , TN 38464

P: (931)629-7713  
F:  
E: proscomm@bellsouth.net

**Contact**





# **Propagation Systems Inc.**

Elevation Pattern Tabulation

Antenna: PSIFML-2 Special

Bay spacing: 3/4 wave

Angle	Field	dB	Angle	Field	dB	Angle	Field	dB
-90.0	0.001	-60.000	-50.0	0.149	-16.513	-10.0	0.903	-0.883
-89.0	0.012	-38.221	-49.0	0.135	-17.364	-9.0	0.921	-0.713
-88.0	0.025	-32.201	-48.0	0.120	-18.405	-8.0	0.937	-0.561
-87.0	0.037	-28.679	-47.0	0.104	-19.677	-7.0	0.952	-0.429
-86.0	0.049	-26.207	-46.0	0.086	-21.289	-6.0	0.964	-0.315
-85.0	0.061	-24.285	-45.0	0.068	-23.404	-5.0	0.975	-0.219
-84.0	0.073	-22.748	-44.0	0.048	-26.425	-4.0	0.984	-0.139
-83.0	0.085	-21.443	-43.0	0.027	-31.481	-3.0	0.991	-0.079
-82.0	0.096	-20.349	-42.0	0.005	-46.848	-2.0	0.996	-0.036
-81.0	0.107	-19.378	-41.0	0.018	-34.664	-1.0	0.999	-0.009
-80.0	0.118	-18.538	-40.0	0.043	-27.417	0.0	1.000	0.000
-79.0	0.129	-17.792	-39.0	0.068	-23.365	1.0	0.999	-0.009
-78.0	0.139	-17.125	-38.0	0.094	-20.529	2.0	0.996	-0.036
-77.0	0.149	-16.522	-37.0	0.121	-18.329	3.0	0.991	-0.079
-76.0	0.159	-15.984	-36.0	0.149	-16.531	4.0	0.984	-0.139
-75.0	0.168	-15.508	-35.0	0.178	-14.998	5.0	0.975	-0.219
-74.0	0.176	-15.072	-34.0	0.207	-13.669	6.0	0.964	-0.315
-73.0	0.184	-14.685	-33.0	0.237	-12.489	7.0	0.952	-0.429
-72.0	0.192	-14.335	-32.0	0.268	-11.431	8.0	0.937	-0.561
-71.0	0.199	-14.026	-31.0	0.299	-10.475	9.0	0.921	-0.713
-70.0	0.205	-13.752	-30.0	0.331	-9.602	10.0	0.903	-0.882
-69.0	0.211	-13.518	-29.0	0.363	-8.801	11.0	0.884	-1.072
-68.0	0.216	-13.315	-28.0	0.395	-8.061	12.0	0.863	-1.279
-67.0	0.220	-13.146	-27.0	0.428	-7.377	13.0	0.841	-1.508
-66.0	0.224	-13.009	-26.0	0.460	-6.742	14.0	0.817	-1.757
-65.0	0.226	-12.904	-25.0	0.493	-6.151	15.0	0.792	-2.029
-64.0	0.228	-12.834	-24.0	0.525	-5.599	16.0	0.765	-2.322
-63.0	0.229	-12.800	-23.0	0.557	-5.083	17.0	0.738	-2.639
-62.0	0.229	-12.794	-22.0	0.589	-4.603	18.0	0.710	-2.979
-61.0	0.228	-12.829	-21.0	0.620	-4.154	19.0	0.680	-3.344
-60.0	0.227	-12.898	-20.0	0.650	-3.736	20.0	0.650	-3.736
-59.0	0.224	-13.009	-19.0	0.680	-3.344	21.0	0.620	-4.154
-58.0	0.220	-13.158	-18.0	0.710	-2.979	22.0	0.589	-4.603
-57.0	0.215	-13.351	-17.0	0.738	-2.639	23.0	0.557	-5.083
-56.0	0.209	-13.600	-16.0	0.765	-2.323	24.0	0.525	-5.599
-55.0	0.202	-13.894	-15.0	0.792	-2.029	25.0	0.493	-6.151
-54.0	0.194	-14.260	-14.0	0.817	-1.759	26.0	0.460	-6.742
-53.0	0.184	-14.685	-13.0	0.840	-1.510	27.0	0.428	-7.377
-52.0	0.174	-15.192	-12.0	0.863	-1.281	28.0	0.395	-8.061
-51.0	0.162	-15.795	-11.0	0.884	-1.072	29.0	0.363	-8.801
						30.0	0.331	-9.602

file: FML 2-bay elevation tabulation

revision: A

Date: 1/28/08