

## ***Directional Antenna System for WPOZ, Union Park, Florida***

March 10, 2015

Electronics Research Inc. is providing a custom fabricated antenna system that is specially designed to meet the FCC requirements and the general needs of radio station WPOZ.

The antenna is the ERI model 1193-5CP-DA-SP configuration. The circular polarized system consists of 5 bays at 0.8 wavelength spaced bays and using three driven circular polarized radiating element per bay. The antenna was mounted on the North 90 degrees East tower leg with bracketry to provide an antenna orientation of North 90 degrees East. The antenna was tested on a 8' face tower, which is the structure the station plans to use to support the array. All tests were performed on a frequency of 88.3 megahertz, which is the center of the FM broadcast channel assigned to WPOZ.

Pattern measurements were made on a sixty-acre antenna pattern range that is owned and operated by Electronics Research, Inc. The tests were performed under the direction of Thomas B. Silliman, president of Electronics Research, Inc. Mr. Silliman has the Bachelor of Electrical Engineering and the Master of Electrical Engineering degrees from Cornell University and is a registered professional engineer in the states of Indiana, Maryland and Minnesota.



# Directional Antenna System For WPOZ, Union Park, Florida

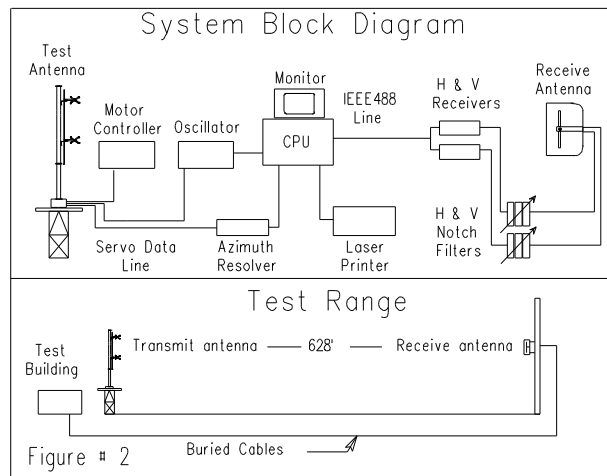
(Continued)

## DESCRIPTION OF THE TEST PROCEDURE

The test antenna consisted of one bay level of the circular polarized system. The elements and brackets that were used in this test are electrically equivalent to those that will be supplied with the antenna. The lines were properly grounded during all tests.

The power distribution and phase relationship to the antenna elements was adjusted in order to achieve the directional radiation patterns for both horizontal and vertical polarization components.

The proof-of-performance was accomplished using a 8' face tower with identical dimension and configuration including all braces, ladders, conduits, coaxial lines and other appurtenances that are included in the actual aperture at which the antenna will be installed. The structure was erected vertically on a turntable mounted on a non-metallic building with the antenna centered vertically on the structure, making the center of radiation of the test approximately 30 feet above ground. The turntable is equipped with a motor drive and a US Digital angle position indicator. The resolution of this angle position indicator is one-hundredth of a degree.



The antenna under test was operated in the transmitting mode and fed from a HP8657D signal generator. The frequency of the signal source was set at 88.3 MHz and was constantly monitored by a Rohde & Schwarz ESVD measuring receiver.

A broadband horizontal and vertical dipole system, located approximately 628 feet from the test antenna, was used to receive the emitted test signals. The dipole system was mounted at the same height above terrain as the center of the antenna under test.

# Directional Antenna System For WPOZ, Union Park, Florida

(Continued)

The signals received by the dipole system were fed to the test building by way of two buried Heliac cables to a Rohde & Schwarz measuring receiver. This data was interfaced to a laser jet printer by means of a computer system. Relative field strength was plotted as a function of azimuth.

The measurements were performed by rotating the test antenna in a counter-clockwise direction and plotting the received signal on polar coordinated graph paper in a clockwise direction. Both horizontal and vertical components were recorded separately.

## CONCLUSIONS

The circular polarized system consists of 5 bays at 0.8 wavelength spaced bays and using three driven circular polarized radiating element per bay. The power distribution and phase relationship will be fixed when the antenna is manufactured. Proper maintenance of the elements should be all that is required to maintain the pattern in adjustment.

The 1193-5CP-DA-SP array is to be mounted on the North 90 degrees East tower leg of the 8' face tower at a bearing of North 90 degrees East. Blue prints provided with the antenna will show the proper antenna orientation alignment. The antenna alignment procedure should be directed by a licensed surveyor as prescribed by the FCC.

Figure #1 represents the measured individual horizontal and vertical components, the composite maximum of either the horizontal or vertical component at any azimuth and the FCC filed envelope pattern. The horizontal plane relative field list for the composite pattern and the individual H & V components are shown as Figure #1 & 1A respectively. The actual measured pattern does not exceed the authorized FCC composite pattern at any azimuth. A calculated vertical plane relative field pattern is shown on Figure #3 attached. The power in the maximum will reach 100 kilowatts (20.000 dBk).

The power at North 230 degrees East does not exceed 9.9 kilowatts (9.956 dBk).

The power at North 320 degrees East does not exceed 14.5 kilowatts (11.614 dBk).

Directional Antenna System  
For  
WPOZ, Union Park, Florida

(Continued)

The RMS of the vertically polarized horizontal plane component does not exceed the RMS of the horizontally polarized horizontal plane component.

The composite horizontal and vertical maximum relative field pattern obtained from the measured data as shown on Figure #1 has an RMS that is greater than 85% of the filed composite pattern.

The clear vertical length of the structure required to support the antenna is 55 feet 8 inches.

The directional antenna should not be mounted on the top of an antenna tower that includes a top-mounted platform larger than the cross-sectional area of the tower in the horizontal plane. No obstructions other than those that are specified by the blue prints supplied with the antenna are to be mounted within 75 ft. horizontally of the system. The vertical distance to the nearest obstruction should be a minimum of 10 ft. from the directional antenna. Metallic guy wires should be a minimum distance of forty feet horizontally from the antenna.

ELECTRONICS RESEARCH, INC.

A handwritten signature in black ink, reading "Tom Scharf". The signature is written in a cursive style with a large, stylized "T" and "S".

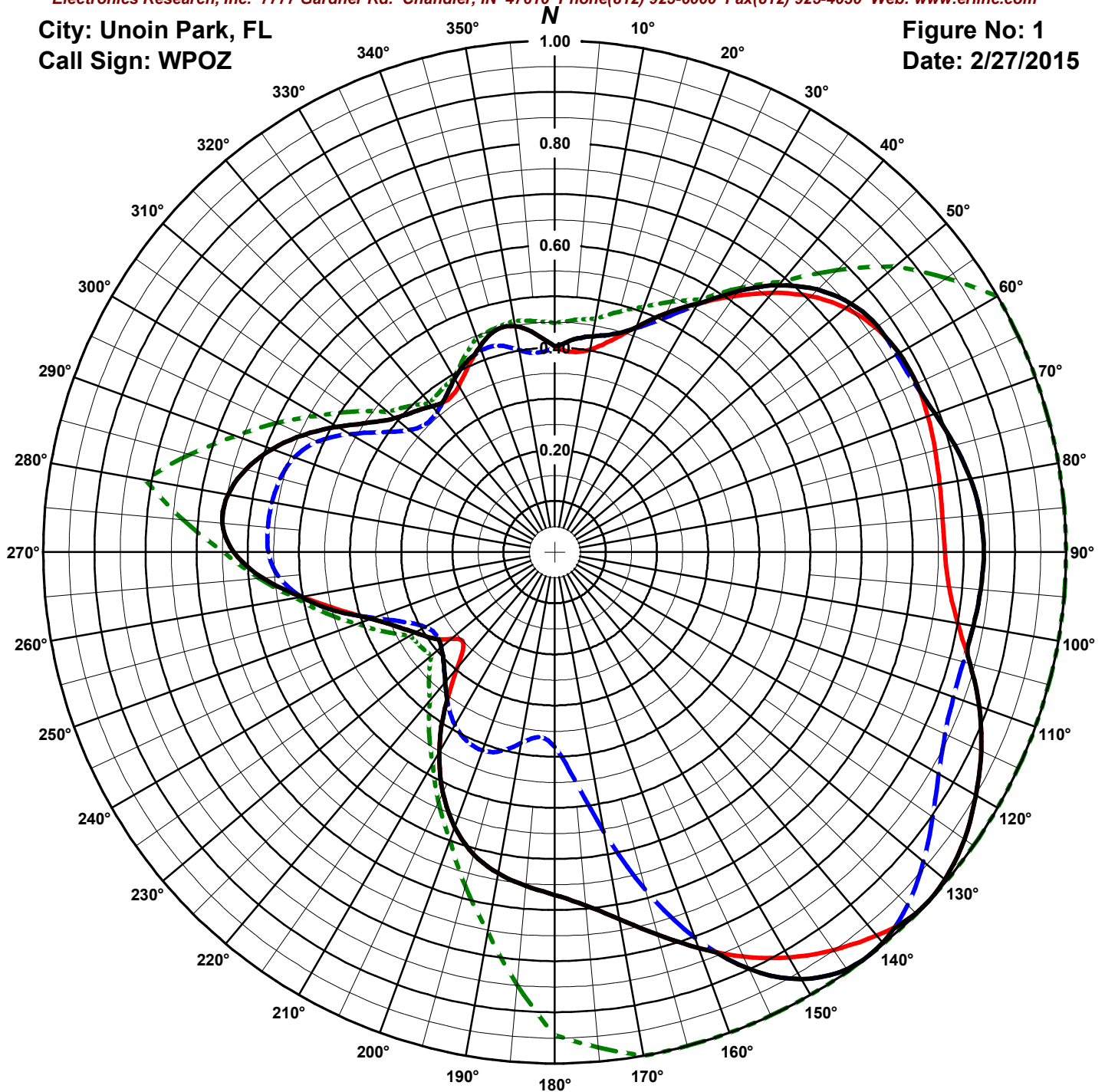
The Microsoft Word document on file electronically at Electronic Research, Inc. governs the specifications, scope, and configuration of the product described. All other representations whether verbal, printed, or electronic are subordinate to the master copy of this document on file at ERI.

# ERI® Horizontal Plane Relative Field Pattern

Electronics Research, Inc. 7777 Gardner Rd. Chandler, IN 47610 Phone(812) 925-6000 Fax(812) 925-4030 Web: www.eriinc.com

City: Unoin Park, FL  
Call Sign: WPOZ

Figure No: 1  
Date: 2/27/2015



Frequency: 88.3 MHz  
Antenna Type: 1193-5CP-DA

Antenna Mounting: Custom  
Tower Type: 8' Face tower

## HORIZONTAL

RMS: .642

Maximum: 1 @ 133°

Minimum: .251 @ 226°

## VERTICAL

RMS: .614

Maximum: 1 @ 142°

Minimum: .283 @ 235°

## COMPOSITE

RMS: .653

Maximum: 1 @ 133°

Minimum: .284 @ 233°

## FCC ENVELOPE

RMS: .74

Maximum: 1 @ 60°

Minimum: .315 @ 230°

Measured patterns of the horizontal and vertical components, with the composite maximum of either the H or V components and the filed FCC envelope pattern BPED-20140527AFR.

# ERI® Horizontal Plane Relative Field Pattern

Electronics Research, Inc. 7777 Gardner Rd. Chandler, IN 47610 Phone(812) 925-6000 Fax(812) 925-4030 Web: www.eriinc.com

Figure# 1

Date: 2/27/2015

Station: WPOZ

Antenna: 1193-5CP-DA

Location: Unoin Park, FL

Antenna Orientation: 90° True

Frequency: 88.3 MHz

Number of Bays: 5

Azimuth	Envelope			Polarization	Azimuth	Envelope			Polarization
	Field	kW	dBk			Field	kW	dBk	
0°	0.402	16.189	12.092	Horizontal	180°	0.671	44.974	16.530	Horizontal
5°	0.417	17.384	12.402	Vertical	185°	0.655	42.886	16.323	Horizontal
10°	0.428	18.358	12.638	Vertical	190°	0.637	40.628	16.088	Horizontal
15°	0.441	19.459	12.891	Vertical	195°	0.612	37.423	15.731	Horizontal
20°	0.468	21.937	13.412	Horizontal	200°	0.572	32.670	15.142	Horizontal
25°	0.516	26.578	14.245	Horizontal	205°	0.518	26.782	14.278	Horizontal
30°	0.561	31.495	14.982	Horizontal	210°	0.452	20.389	13.094	Horizontal
35°	0.623	38.775	15.886	Vertical	215°	0.374	14.023	11.469	Horizontal
40°	0.681	46.379	16.663	Vertical	220°	0.333	11.062	10.438	Vertical
45°	0.726	52.699	17.218	Vertical	225°	0.307	9.400	9.731	Vertical
50°	0.756	57.153	17.570	Vertical	230°	0.289	8.379	9.232	Vertical
55°	0.770	59.358	17.735	Vertical	235°	0.293	8.604	9.347	Horizontal
60°	0.778	60.515	17.819	Horizontal	240°	0.315	9.908	9.960	Horizontal
65°	0.781	60.934	17.849	Horizontal	245°	0.343	11.757	10.703	Horizontal
70°	0.791	62.645	17.969	Vertical	250°	0.382	14.592	11.641	Horizontal
75°	0.810	65.556	18.166	Vertical	255°	0.444	19.690	12.943	Vertical
80°	0.826	68.191	18.337	Vertical	260°	0.503	25.284	14.028	Vertical
85°	0.836	69.861	18.442	Vertical	265°	0.574	32.944	15.178	Horizontal
90°	0.839	70.363	18.473	Vertical	270°	0.628	39.395	15.954	Horizontal
95°	0.836	69.935	18.447	Vertical	275°	0.652	42.550	16.289	Horizontal
100°	0.831	69.098	18.395	Vertical	280°	0.648	42.017	16.234	Horizontal
105°	0.840	70.637	18.490	Horizontal	285°	0.625	39.061	15.917	Horizontal
110°	0.884	78.060	18.924	Horizontal	290°	0.589	34.636	15.395	Horizontal
115°	0.920	84.655	19.277	Horizontal	295°	0.542	29.360	14.678	Horizontal
120°	0.951	90.456	19.564	Horizontal	300°	0.490	23.986	13.800	Horizontal
125°	0.978	95.701	19.809	Horizontal	305°	0.441	19.480	12.896	Horizontal
130°	0.996	99.175	19.964	Horizontal	310°	0.408	16.608	12.203	Horizontal
135°	0.999	99.740	19.989	Horizontal	315°	0.388	15.072	11.782	Horizontal
140°	0.997	99.489	19.978	Vertical	320°	0.372	13.866	11.420	Horizontal
145°	0.996	99.151	19.963	Vertical	325°	0.371	13.777	11.392	Vertical
150°	0.964	92.942	19.682	Vertical	330°	0.391	15.326	11.854	Vertical
155°	0.899	80.871	19.078	Vertical	335°	0.409	16.763	12.243	Vertical
160°	0.824	67.883	18.318	Horizontal	340°	0.428	18.279	12.620	Horizontal
165°	0.774	59.925	17.776	Horizontal	345°	0.448	20.092	13.030	Horizontal
170°	0.729	53.093	17.250	Horizontal	350°	0.449	20.129	13.038	Horizontal
175°	0.693	48.070	16.819	Horizontal	355°	0.428	18.341	12.634	Horizontal

Horizontal Polarization:

Maximum: 5.828 (7.656 dB)

Horizontal Plane: 5.735 (7.581 dB)

Maximum ERP: 100.000 kW

Vertical Polarization:

Maximum: 5.828 (7.656 dB)

Horizontal Plane: 5.735 (7.581 dB)

Maximum ERP: 100.000 kW

Total Input Power: 17.157 kW

Reference: WPOZ1M.FIG

This list shows the the maximum azimuth values of either the horizontal or vertical components.

# ERI<sup>®</sup> Horizontal Plane Relative Field Pattern

Electronics Research, Inc. 7777 Gardner Rd. Chandler, IN 47610 Phone(812) 925-6000 Fax(812) 925-4030 Web: www.eriinc.com

Figure# 1A

Date: 2/27/2015

Station: WPOZ

Antenna: 1193-5CP-DA

Location: Unoin Park, FL

Antenna Orientation: 90° True

Frequency: 88.3 MHz

Number of Bays: 5

Azimuth	Horizontal			Vertical			Azimuth	Horizontal			Vertical		
	Field	kW	dBk	Field	kW	dBk		Field	kW	dBk	Field	kW	dBk
0°	0.402	16.189	12.092	0.400	15.965	12.032	180°	0.671	44.974	16.530	0.381	14.512	11.617
5°	0.393	15.438	11.886	0.417	17.384	12.402	185°	0.655	42.886	16.323	0.364	13.221	11.213
10°	0.402	16.187	12.092	0.428	18.358	12.638	190°	0.637	40.628	16.088	0.379	14.393	11.582
15°	0.429	18.387	12.645	0.441	19.459	12.891	195°	0.612	37.423	15.731	0.403	16.218	12.100
20°	0.468	21.937	13.412	0.466	21.680	13.361	200°	0.572	32.670	15.142	0.413	17.057	12.319
25°	0.516	26.578	14.245	0.505	25.477	14.061	205°	0.518	26.782	14.278	0.407	16.584	12.197
30°	0.561	31.495	14.982	0.559	31.228	14.945	210°	0.452	20.389	13.094	0.390	15.231	11.827
35°	0.611	37.327	15.720	0.623	38.775	15.886	215°	0.374	14.023	11.469	0.364	13.227	11.214
40°	0.662	43.776	16.412	0.681	46.379	16.663	220°	0.297	8.811	9.450	0.333	11.062	10.438
45°	0.707	50.028	16.992	0.726	52.699	17.218	225°	0.252	6.373	8.043	0.307	9.400	9.731
50°	0.743	55.147	17.415	0.756	57.153	17.570	230°	0.265	7.007	8.455	0.289	8.379	9.232
55°	0.766	58.655	17.683	0.770	59.358	17.735	235°	0.293	8.604	9.347	0.283	7.994	9.028
60°	0.778	60.515	17.819	0.772	59.583	17.751	240°	0.315	9.908	9.960	0.293	8.564	9.327
65°	0.781	60.934	17.849	0.777	60.405	17.811	245°	0.343	11.757	10.703	0.324	10.474	10.201
70°	0.777	60.303	17.803	0.791	62.645	17.969	250°	0.382	14.592	11.641	0.377	14.176	11.515
75°	0.770	59.319	17.732	0.810	65.556	18.166	255°	0.436	18.996	12.787	0.444	19.690	12.943
80°	0.765	58.478	17.670	0.826	68.191	18.337	260°	0.503	25.267	14.026	0.503	25.284	14.028
85°	0.762	58.016	17.635	0.836	69.861	18.442	265°	0.574	32.944	15.178	0.542	29.404	14.684
90°	0.763	58.204	17.650	0.839	70.363	18.473	270°	0.628	39.395	15.954	0.560	31.367	14.965
95°	0.774	59.917	17.775	0.836	69.935	18.447	275°	0.652	42.550	16.289	0.563	31.699	15.010
100°	0.800	64.033	18.064	0.831	69.098	18.395	280°	0.648	42.017	16.234	0.561	31.481	14.981
105°	0.840	70.637	18.490	0.828	68.478	18.356	285°	0.625	39.061	15.917	0.555	30.839	14.891
110°	0.884	78.060	18.924	0.830	68.849	18.379	290°	0.589	34.636	15.395	0.542	29.362	14.678
115°	0.920	84.655	19.277	0.842	70.958	18.510	295°	0.542	29.360	14.678	0.511	26.147	14.174
120°	0.951	90.456	19.564	0.867	75.211	18.763	300°	0.490	23.986	13.800	0.462	21.314	13.287
125°	0.978	95.701	19.809	0.902	81.400	19.106	305°	0.441	19.480	12.896	0.409	16.719	12.232
130°	0.996	99.175	19.964	0.941	88.591	19.474	310°	0.408	16.608	12.203	0.371	13.793	11.397
135°	0.999	99.740	19.989	0.976	95.282	19.790	315°	0.388	15.072	11.782	0.355	12.621	11.011
140°	0.979	95.876	19.817	0.997	99.489	19.978	320°	0.372	13.866	11.420	0.358	12.786	11.067
145°	0.950	90.218	19.553	0.996	99.151	19.963	325°	0.364	13.259	11.225	0.371	13.777	11.392
150°	0.915	83.812	19.233	0.964	92.942	19.682	330°	0.375	14.076	11.485	0.391	15.326	11.854
155°	0.873	76.154	18.817	0.899	80.871	19.078	335°	0.400	16.003	12.042	0.409	16.763	12.243
160°	0.824	67.883	18.318	0.803	64.424	18.091	340°	0.428	18.279	12.620	0.420	17.611	12.458
165°	0.774	59.925	17.776	0.682	46.547	16.679	345°	0.448	20.092	13.030	0.418	17.451	12.418
170°	0.729	53.093	17.250	0.555	30.837	14.891	350°	0.449	20.129	13.038	0.401	16.113	12.072
175°	0.693	48.070	16.819	0.447	19.982	13.006	355°	0.428	18.341	12.634	0.391	15.303	11.848

Horizontal Polarization:

Maximum: 5.828 (7.656 dB)

Horizontal Plane: 5.735 (7.581 dB)

Maximum ERP: 100.000 kW

Vertical Polarization:

Maximum: 5.828 (7.656 dB)

Horizontal Plane: 5.735 (7.581 dB)

Maximum ERP: 100.000 kW

Total Input Power: 17.157 kW

Reference: WPOZ1M.FIG

This list shows the azimuth values for the horizontal and vertical components.

ELECTRONICS RESEARCH, INC.  
7777 GARDNER ROAD  
CHANDLER, IN. 47610

FIGURE 3

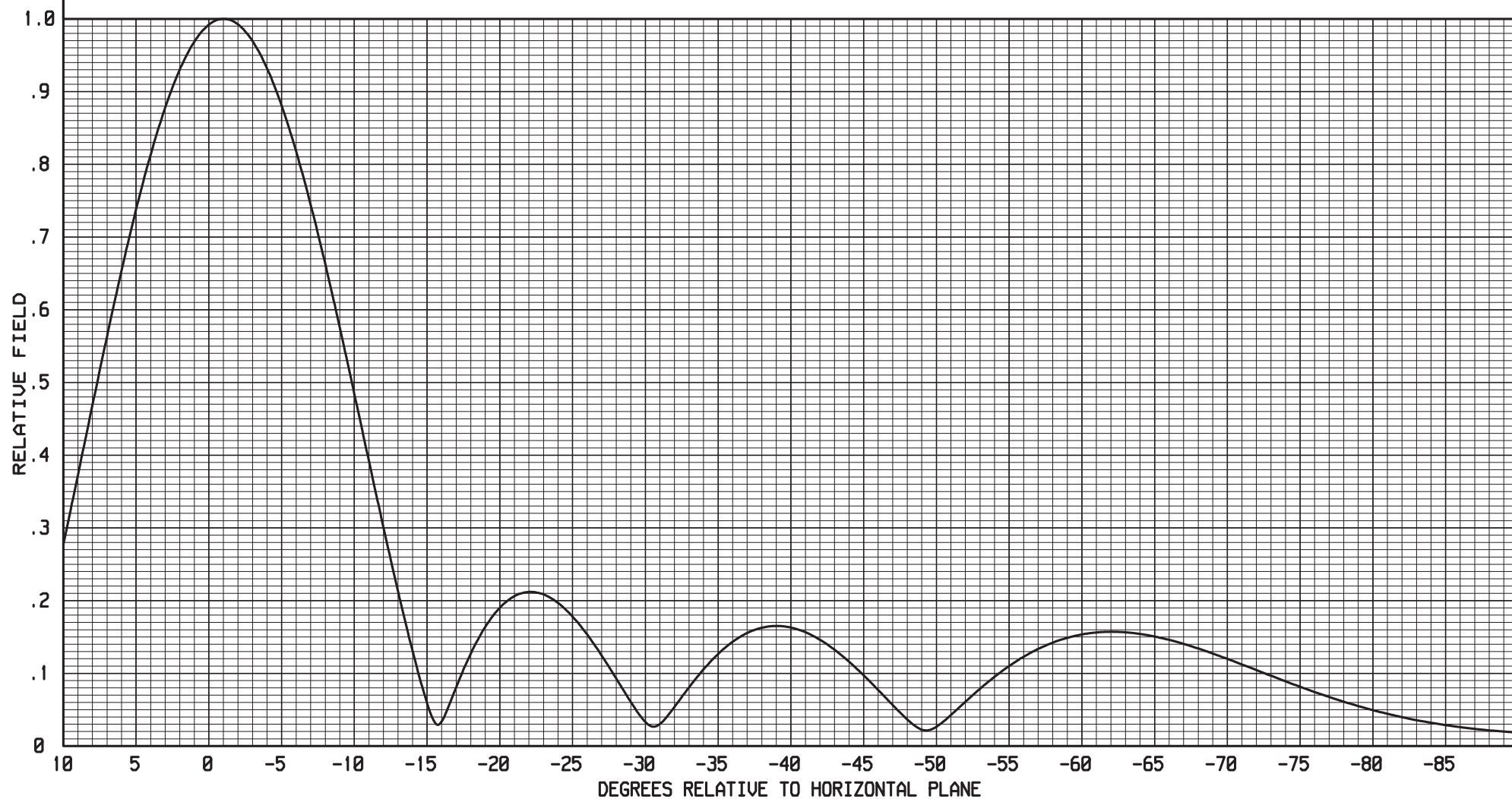
----THEORETICAL----  
VERTICAL PLANE RELATIVE FIELD

5 LEVELS OF ERI PANEL ELEMENTS  
-1.0 DEGREE(S) BEAM TILT  
3 PERCENT FIRST NULL FILL  
3 PERCENT SECOND NULL FILL

FEBRUARY 27, 2015

88.3 MHz.

BAY SPACING:  
106.93 INCHES  
( 0.8 WAVELENGTH)





ELECTRONICS RESEARCH, INC.

7777 GARDNER ROAD

CHANDLER, IN. 47610

FIGURE 3

FEBRUARY 27, 2015

ERI PANEL ELEMENTS ANTENNA -1.0 DEGREE TILT

88.3 MHZ. 5 LEVELS SPACED 106.934 INCHES

THETA DEGREES	FIELD VALUE
------------------	----------------

90	.0184
89.75	.0187
89.5	.019
89.25	.0193
89	.0196
88.75	.0199
88.5	.0201
88.25	.0203
88	.0205
87.75	.0207
87.5	.0209
87.25	.021
87	.0211
86.75	.0212
86.5	.0212
86.25	.0213
86	.0213
85.75	.0212
85.5	.0212
85.25	.0211
85	.021
84.75	.0208
84.5	.0207
84.25	.0205
84	.0202
83.75	.0199
83.5	.0197
83.25	.0193
83	.019
82.75	.0186
82.5	.0182
82.25	.0177
82	.0172
81.75	.0167
81.5	.0162
81.25	.0157
81	.0151
80.75	.0146
80.5	.014
80.25	.0135
80	.0129
79.75	.0124
79.5	.0119
79.25	.0115
79	.0111
78.75	.0108
78.5	.0107
78.25	.0106
78	.0108
77.75	.0111

## WPOZTEST7.TAB

77.5	.0115
77.25	.0121
77	.0129
76.75	.0138
76.5	.0148
76.25	.016
76	.0172
75.75	.0186
75.5	.02
75.25	.0215
75	.023
74.75	.0247
74.5	.0263
74.25	.0281
74	.0299
73.75	.0317
73.5	.0336
73.25	.0355
73	.0375
72.75	.0395
72.5	.0415
72.25	.0436
72	.0457
71.75	.0478
71.5	.05
71.25	.0522
71	.0544
70.75	.0566
70.5	.0588
70.25	.0611
70	.0633
69.75	.0656
69.5	.0679
69.25	.0702
69	.0725
68.75	.0748
68.5	.0771
68.25	.0794
68	.0817
67.75	.0839
67.5	.0862
67.25	.0884
67	.0907
66.75	.0929
66.5	.0951
66.25	.0972
66	.0994
65.75	.101
65.5	.104
65.25	.106
65	.108
64.75	.11
64.5	.111
64.25	.113
64	.115
63.75	.117
63.5	.118
63.25	.12
63	.122
62.75	.123
62.5	.125

## WPOZTEST7.TAB

62.25	.126
62	.127
61.75	.128
61.5	.129
61.25	.13
61	.131
60.75	.132
60.5	.133
60.25	.133
60	.134
59.75	.134
59.5	.134
59.25	.135
59	.135
58.75	.135
58.5	.134
58.25	.134
58	.134
57.75	.133
57.5	.132
57.25	.131
57	.13
56.75	.129
56.5	.128
56.25	.127
56	.125
55.75	.124
55.5	.122
55.25	.12
55	.118
54.75	.116
54.5	.113
54.25	.111
54	.108
53.75	.105
53.5	.102
53.25	.0993
53	.0961
52.75	.0928
52.5	.0893
52.25	.0858
52	.0821
51.75	.0783
51.5	.0744
51.25	.0704
51	.0663
50.75	.0622
50.5	.0579
50.25	.0536
50	.0493
49.75	.045
49.5	.0408
49.25	.0366
49	.0327
48.75	.029
48.5	.0259
48.25	.0235
48	.0222
47.75	.0222
47.5	.0235
47.25	.026

## WPOZTEST7.TAB

47	.0293
46.75	.0333
46.5	.0377
46.25	.0424
46	.0473
45.75	.0524
45.5	.0575
45.25	.0627
45	.068
44.75	.0732
44.5	.0784
44.25	.0836
44	.0888
43.75	.0938
43.5	.0988
43.25	.104
43	.109
42.75	.113
42.5	.118
42.25	.122
42	.127
41.75	.131
41.5	.135
41.25	.139
41	.142
40.75	.146
40.5	.149
40.25	.152
40	.154
39.75	.157
39.5	.159
39.25	.161
39	.163
38.75	.165
38.5	.166
38.25	.167
38	.167
37.75	.168
37.5	.168
37.25	.167
37	.167
36.75	.166
36.5	.165
36.25	.163
36	.161
35.75	.159
35.5	.157
35.25	.154
35	.151
34.75	.147
34.5	.143
34.25	.139
34	.135
33.75	.13
33.5	.125
33.25	.12
33	.114
32.75	.108
32.5	.102
32.25	.0952
32	.0885

## WPOZTEST7.TAB

31.75	.0816
31.5	.0745
31.25	.0673
31	.06
30.75	.0528
30.5	.0457
30.25	.039
30	.0331
29.75	.0288
29.5	.0269
29.25	.0282
29	.0323
28.75	.0384
28.5	.0459
28.25	.0541
28	.0628
27.75	.0718
27.5	.081
27.25	.0904
27	.0998
26.75	.109
26.5	.119
26.25	.128
26	.137
25.75	.147
25.5	.156
25.25	.164
25	.173
24.75	.182
24.5	.19
24.25	.198
24	.205
23.75	.213
23.5	.22
23.25	.226
23	.233
22.75	.238
22.5	.244
22.25	.249
22	.253
21.75	.257
21.5	.261
21.25	.263
21	.266
20.75	.268
20.5	.269
20.25	.269
20	.269
19.75	.269
19.5	.267
19.25	.265
19	.263
18.75	.259
18.5	.255
18.25	.25
18	.245
17.75	.239
17.5	.232
17.25	.224
17	.216
16.75	.207

## WPOZTEST7.TAB

16.5	.197
16.25	.187
16	.176
15.75	.164
15.5	.152
15.25	.139
15	.125
14.75	.111
14.5	.0961
14.25	.081
14	.0658
13.75	.0509
13.5	.0378
13.25	.0299
13	.0324
12.75	.0443
12.5	.0608
12.25	.0793
12	.0991
11.75	.12
11.5	.141
11.25	.163
11	.185
10.75	.208
10.5	.23
10.25	.254
10	.277
9.75	.301
9.5	.325
9.25	.349
9	.373
8.75	.397
8.5	.421
8.25	.445
8	.469
7.75	.493
7.5	.517
7.25	.54
7	.563
6.75	.587
6.5	.609
6.25	.632
6	.654
5.75	.676
5.5	.697
5.25	.718
5	.738
4.75	.758
4.5	.777
4.25	.795
4	.813
3.75	.831
3.5	.847
3.25	.863
3	.878
2.75	.892
2.5	.906
2.25	.918
2	.93
1.75	.941
1.5	.951

## WPOZTEST7.TAB

1.25	.96
1	.969
.75	.976
.5	.982
.25	.988
0	.992
-.25	.995
-.5	.998
-.75	.999
-1	1
-1.25	1
-1.5	.998
-1.75	.996
-2	.992
-2.25	.988
-2.5	.983
-2.75	.977
-3	.969
-3.25	.961
-3.5	.952
-3.75	.943
-4	.932
-4.25	.92
-4.5	.908
-4.75	.895
-5	.881
-5.25	.866
-5.5	.851
-5.75	.834
-6	.818
-6.25	.8
-6.5	.782
-6.75	.764
-7	.744
-7.25	.725
-7.5	.704
-7.75	.684
-8	.663
-8.25	.641
-8.5	.62
-8.75	.598
-9	.575
-9.25	.553
-9.5	.53
-9.75	.507
-10	.484
-10.25	.461
-10.5	.438
-10.75	.415
-11	.392
-11.25	.369
-11.5	.346
-11.75	.323
-12	.301
-12.25	.278
-12.5	.256
-12.75	.234
-13	.213
-13.25	.192
-13.5	.171
-13.75	.151

## WPOZTEST7.TAB

-14	.131
-14.25	.112
-14.5	.0931
-14.75	.0754
-15	.0589
-15.25	.0443
-15.5	.0333
-15.75	.0291
-16	.0337
-16.25	.0436
-16.5	.0556
-16.75	.0683
-17	.0809
-17.25	.0932
-17.5	.105
-17.75	.116
-18	.127
-18.25	.137
-18.5	.147
-18.75	.156
-19	.164
-19.25	.171
-19.5	.178
-19.75	.185
-20	.19
-20.25	.195
-20.5	.199
-20.75	.203
-21	.206
-21.25	.208
-21.5	.21
-21.75	.211
-22	.212
-22.25	.212
-22.5	.211
-22.75	.21
-23	.209
-23.25	.206
-23.5	.204
-23.75	.2
-24	.197
-24.25	.193
-24.5	.188
-24.75	.183
-25	.178
-25.25	.172
-25.5	.166
-25.75	.16
-26	.153
-26.25	.146
-26.5	.139
-26.75	.132
-27	.124
-27.25	.117
-27.5	.109
-27.75	.101
-28	.0928
-28.25	.0847
-28.5	.0766
-28.75	.0686
-29	.0607



## WPOZTEST7.TAB

-29.25	.053
-29.5	.0456
-29.75	.0389
-30	.0331
-30.25	.0288
-30.5	.0268
-30.75	.0273
-31	.0303
-31.25	.035
-31.5	.0408
-31.75	.0472
-32	.0538
-32.25	.0606
-32.5	.0674
-32.75	.0741
-33	.0807
-33.25	.0872
-33.5	.0935
-33.75	.0996
-34	.105
-34.25	.111
-34.5	.117
-34.75	.122
-35	.127
-35.25	.131
-35.5	.136
-35.75	.14
-36	.143
-36.25	.147
-36.5	.15
-36.75	.153
-37	.155
-37.25	.158
-37.5	.16
-37.75	.161
-38	.163
-38.25	.164
-38.5	.165
-38.75	.165
-39	.165
-39.25	.165
-39.5	.165
-39.75	.164
-40	.163
-40.25	.162
-40.5	.16
-40.75	.159
-41	.157
-41.25	.154
-41.5	.152
-41.75	.149
-42	.146
-42.25	.143
-42.5	.14
-42.75	.136
-43	.132
-43.25	.129
-43.5	.125
-43.75	.12
-44	.116
-44.25	.112

## WPOZTEST7.TAB

-44.5	.107
-44.75	.102
-45	.0973
-45.25	.0924
-45.5	.0874
-45.75	.0823
-46	.0772
-46.25	.072
-46.5	.0668
-46.75	.0616
-47	.0564
-47.25	.0513
-47.5	.0462
-47.75	.0413
-48	.0366
-48.25	.0322
-48.5	.0282
-48.75	.0249
-49	.0226
-49.25	.0216
-49.5	.022
-49.75	.0237
-50	.0265
-50.25	.03
-50.5	.0339
-50.75	.0382
-51	.0427
-51.25	.0472
-51.5	.0518
-51.75	.0564
-52	.061
-52.25	.0655
-52.5	.07
-52.75	.0744
-53	.0788
-53.25	.0831
-53.5	.0872
-53.75	.0913
-54	.0953
-54.25	.0991
-54.5	.103
-54.75	.106
-55	.11
-55.25	.113
-55.5	.117
-55.75	.12
-56	.123
-56.25	.126
-56.5	.128
-56.75	.131
-57	.134
-57.25	.136
-57.5	.138
-57.75	.14
-58	.142
-58.25	.144
-58.5	.146
-58.75	.147
-59	.149
-59.25	.15
-59.5	.151

## WPOZTEST7.TAB

-59.75	.153
-60	.153
-60.25	.154
-60.5	.155
-60.75	.156
-61	.156
-61.25	.157
-61.5	.157
-61.75	.157
-62	.157
-62.25	.157
-62.5	.157
-62.75	.157
-63	.156
-63.25	.156
-63.5	.155
-63.75	.155
-64	.154
-64.25	.153
-64.5	.153
-64.75	.152
-65	.151
-65.25	.15
-65.5	.148
-65.75	.147
-66	.146
-66.25	.145
-66.5	.143
-66.75	.142
-67	.14
-67.25	.139
-67.5	.137
-67.75	.136
-68	.134
-68.25	.132
-68.5	.131
-68.75	.129
-69	.127
-69.25	.125
-69.5	.124
-69.75	.122
-70	.12
-70.25	.118
-70.5	.116
-70.75	.114
-71	.112
-71.25	.11
-71.5	.108
-71.75	.106
-72	.104
-72.25	.103
-72.5	.101
-72.75	.0986
-73	.0967
-73.25	.0948
-73.5	.0928
-73.75	.0909
-74	.089
-74.25	.0871
-74.5	.0852
-74.75	.0834

## WPOZTEST7.TAB

-75	.0815
-75.25	.0797
-75.5	.0779
-75.75	.0761
-76	.0743
-76.25	.0726
-76.5	.0708
-76.75	.0691
-77	.0675
-77.25	.0658
-77.5	.0642
-77.75	.0626
-78	.061
-78.25	.0595
-78.5	.0579
-78.75	.0564
-79	.055
-79.25	.0535
-79.5	.0521
-79.75	.0508
-80	.0494
-80.25	.0481
-80.5	.0468
-80.75	.0456
-81	.0443
-81.25	.0432
-81.5	.042
-81.75	.0409
-82	.0398
-82.25	.0387
-82.5	.0376
-82.75	.0366
-83	.0357
-83.25	.0347
-83.5	.0338
-83.75	.0329
-84	.032
-84.25	.0312
-84.5	.0304
-84.75	.0296
-85	.0288
-85.25	.0281
-85.5	.0274
-85.75	.0267
-86	.0261
-86.25	.0254
-86.5	.0248
-86.75	.0242
-87	.0237
-87.25	.0231
-87.5	.0226
-87.75	.0221
-88	.0216
-88.25	.0211
-88.5	.0207
-88.75	.0203
-89	.0199
-89.25	.0195
-89.5	.0191
-89.75	.0187
-90	.0184

# Directional Antenna System for WPOZ, Union Park, Florida

(Continued)

## ANTENNA SPECIFICATIONS

Antenna Type: 1193-5CP-DA-SP  
Frequency: 88.3 MHz  
Number of Bays: Five

## MECHANICAL SPECIFICATIONS

Mounting: Custom  
System length: 42 ft 8 in  
Aperture length required: 55 ft 8 in  
Orientation: 90° true  
Input flange to the antenna 3 1/8" female.

## ELECTRICAL SPECIFICATIONS (For directional use)

Maximum horizontal ERP: 100.000 kW (20.000 dBk)  
Horizontal maximum power gain: 5.828 (7.656 dB)  
Horizontal H plane gain: 5.735 (7.581 dB)  
Maximum vertical ERP: 100.000 kW (20.000 dBk)  
Vertical maximum power gain: 5.828 (7.656 dB)  
Vertical H plane gain: 5.735 (7.581 dB)  
Total input power: 17.157 kW (12.344 dBk)

