ELECTRONICS RESEARCH, INC. ERI®

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

Directional Antenna System for WWWW, Ann Arbor, Michigan

September 2, 2010

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 WWWW.

The antenna is the ERI model MP-4C-DA configuration. The circular polarized system consists of 4 full-wavelength spaced bays using one driven circular polarized radiating element, one horizontal parasitic elements placed one quarter wave above and below each bay and two vertical parasitic elements per bay. The antenna was tested on a 12.75" o.d. pole, which is the structure the station plans to use to support the array. All tests were performed on a frequency of 102.9 megahertz, which is the center of the FM broadcast channel assigned to WWWW.

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.

EXHIBIT B

Directional Antenna System
Proposed For
WWWW, Ann Arbor, Michigan

(Continued)

DESCRIPTION OF THE TEST PROCEDURE

The test antenna consisted of two bay levels of the circular polarized system with the associated horizontal and vertical parasitic elements. The elements and brackets that were used in this test are electrically equivalent to those that will be supplied with the antenna. A section of 3 1/8 inch o.d. rigid coaxial line was used to feed the test antenna, and a section of 3 1/8 inch o.d. rigid outer conductor only was attached above the test 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 12.75" o.d. pole 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.

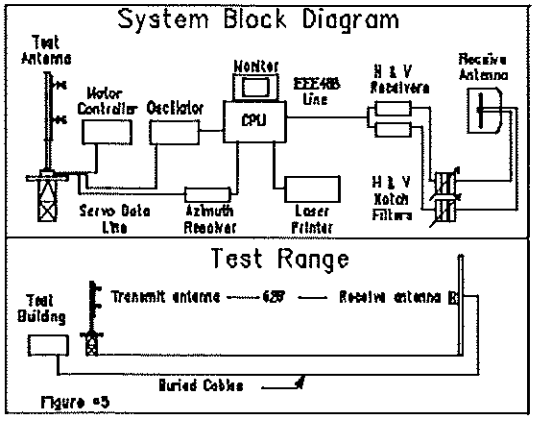


Figure #5

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 102.9 MHz and was constantly monitored by a Rohde & Schwarz ESVD measuring receiver.

(Continued)

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. The signals received by the dipole system were fed to the test building by way of two buried Heliax 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 co-ordinated graph paper in a clockwise direction. Both horizontal and vertical components were recorded separately.

CONCLUSIONS

The circular polarized system consists of 4 full-wavelength spaced bays using one driven circular polarized radiating element, one horizontal parasitic elements placed one quarter wave above and below each bay and two vertical parasitic elements per bay. The power distribution and phase relationship will be fixed when antenna is manufactured. Proper maintenance of the elements should be all that is required to maintain the pattern in adjustment.

The MP-4C-DA array is to be mounted on the 12.75" o.d. pole at a bearing of North 243 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 maximum value of either the horizontal or vertical component at any azimuth. The measured horizontal plane relative field pattern, for both the horizontal and vertical polarization components, is shown on Figure #2 attached. 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 50 kilowatts (16.99 dBk).

The power at North 60 degrees East does not exceed 14.50 kilowatts (1.614 dBk).

Directional Antenna System
Proposed For
WWWW, Ann Arbor, Michigan

(Continued)

The power at North 220 degrees East does not exceed 40.00 kilowatts (16.021 dBk).

The power at North 300 degrees East does not exceed 32.00 kilowatts (15.052 dBk).

The power at North 340 degrees East does not exceed 48.00 kilowatts (16.812 dBk).

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 that 85% of the filed composite pattern.

The clear vertical length of the structure required to support the antenna is 43 feet 7 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.

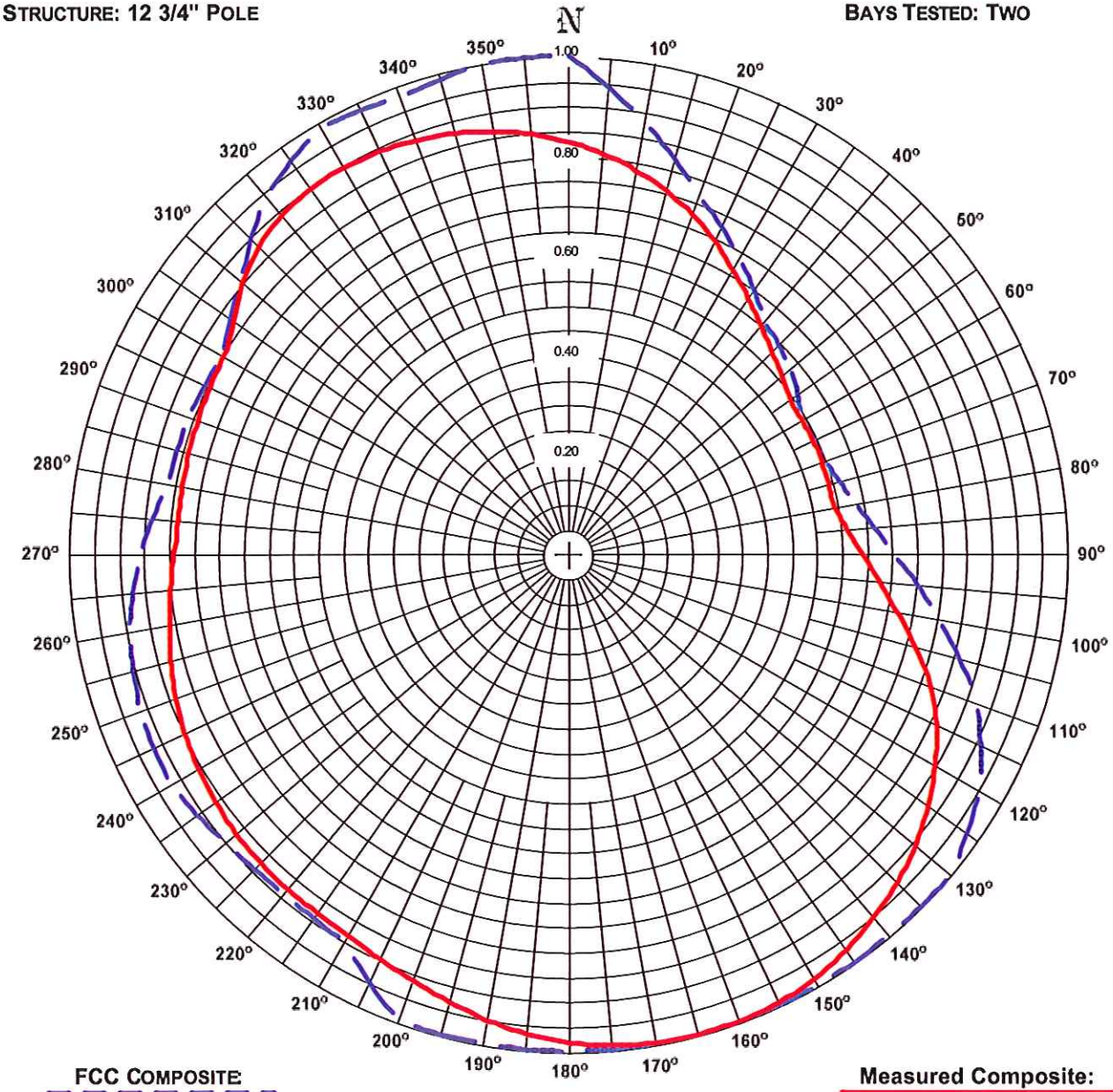
ELECTRONICS RESEARCH, INC.

ERI® Horizontal Plane Relative Field Pattern

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

FIGURE NO: 1
STATION: WWWW
LOCATION: ANN ARBOR, MI
ANTENNA: MP-4C-DA
STRUCTURE: 12 3/4" POLE

DATE: 9/1/2010
FREQUENCY: 102.9 MHz
ORIENTATION: 243° TRUE
MOUNTING: STANDARD
BAYS TESTED: TWO



FCC COMPOSITE

RMS: 0.870
MAXIMUM: 1.000 @ 0° TRUE
MINIMUM: 0.540 @ 60° TRUE

Measured Composite:

RMS: 0.818
Maximum: 1.000 @ 161° True
Minimum: 0.539 @ 57° True

COMMENTS: COMPOSITE PATTERN: THIS PATTERN SHOWS THE MAXIMUM OF EITHER THE H OR V AZIMUTH VALUES. THIS PATTERN IS GREATER THAN 85% OF THE FCC FILED COMPOSITE PATTERN BPH-20100803AAE.

ERI® Horizontal Plane Relative Field List

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

Station: WWWW
Location: Ann Arbor, MI
Frequency: 102.9 MHz

Antenna: MP-4C-DA
Orientation: 243° True
Tower: 12 3/4" Pole

Figure: 1
Date: 9/1/2010
Reference: wwww1m.fig

Angle	Envelope			Polarization	Angle	Envelope			Polarization
	Field	kW	dBk			Field	kW	dBk	
0°	0.827	34.19	15.34	Horizontal	180°	0.983	48.27	16.84	Horizontal
5°	0.806	32.45	15.11	Horizontal	185°	0.969	46.99	16.72	Horizontal
10°	0.782	30.55	14.85	Horizontal	190°	0.953	45.38	16.57	Horizontal
15°	0.755	28.49	14.55	Horizontal	195°	0.933	43.50	16.38	Horizontal
20°	0.725	26.30	14.20	Horizontal	200°	0.914	41.76	16.21	Horizontal
25°	0.693	24.01	13.80	Horizontal	205°	0.899	40.37	16.06	Horizontal
30°	0.659	21.69	13.36	Horizontal	210°	0.887	39.35	15.95	Vertical
35°	0.627	19.67	12.94	Horizontal	215°	0.882	38.87	15.90	Vertical
40°	0.600	17.99	12.55	Horizontal	220°	0.880	38.68	15.88	Vertical
45°	0.577	16.62	12.21	Horizontal	225°	0.878	38.51	15.86	Vertical
50°	0.557	15.54	11.91	Horizontal	230°	0.873	38.12	15.81	Vertical
55°	0.542	14.71	11.68	Horizontal	235°	0.866	37.53	15.74	Horizontal
60°	0.539	14.55	11.63	Vertical	240°	0.860	36.97	15.68	Horizontal
65°	0.540	14.59	11.64	Vertical	245°	0.851	36.23	15.59	Horizontal
70°	0.540	14.59	11.64	Vertical	250°	0.840	35.32	15.48	Horizontal
75°	0.540	14.56	11.63	Vertical	255°	0.827	34.24	15.34	Horizontal
80°	0.540	14.57	11.64	Horizontal	260°	0.814	33.10	15.20	Horizontal
85°	0.560	15.68	11.95	Horizontal	265°	0.802	32.13	15.07	Horizontal
90°	0.588	17.28	12.38	Horizontal	270°	0.792	31.34	14.96	Horizontal
95°	0.624	19.44	12.89	Horizontal	275°	0.787	30.98	14.91	Vertical
100°	0.667	22.25	13.47	Horizontal	280°	0.787	30.96	14.91	Vertical
105°	0.718	25.79	14.11	Horizontal	285°	0.788	31.06	14.92	Vertical
110°	0.771	29.72	14.73	Horizontal	290°	0.790	31.24	14.95	Vertical
115°	0.812	32.97	15.18	Horizontal	295°	0.794	31.51	14.98	Vertical
120°	0.847	35.91	15.55	Horizontal	300°	0.797	31.80	15.02	Vertical
125°	0.879	38.65	15.87	Horizontal	305°	0.820	33.62	15.27	Horizontal
130°	0.907	41.15	16.14	Horizontal	310°	0.851	36.20	15.59	Horizontal
135°	0.932	43.39	16.37	Horizontal	315°	0.876	38.33	15.84	Horizontal
140°	0.952	45.33	16.56	Horizontal	320°	0.891	39.68	15.99	Horizontal
145°	0.971	47.12	16.73	Vertical	325°	0.897	40.19	16.04	Horizontal
150°	0.986	48.60	16.87	Vertical	330°	0.895	40.09	16.03	Horizontal
155°	0.996	49.56	16.95	Vertical	335°	0.891	39.69	15.99	Horizontal
160°	1.000	49.98	16.99	Vertical	340°	0.884	39.05	15.92	Horizontal
165°	1.000	50.00	16.99	Horizontal	345°	0.874	38.17	15.82	Horizontal
170°	0.998	49.79	16.97	Horizontal	350°	0.861	37.06	15.69	Horizontal
175°	0.992	49.21	16.92	Horizontal	355°	0.845	35.72	15.53	Horizontal

Polarization: **Envelope**
Maximum Field: **1.000 @ 161° True**
Minimum Field: **0.539 @ 57° True**
RMS: **0.818**
Maximum ERP: **50.000 kW**
Maximum Power Gain: **3.123 (4.946 dB)**

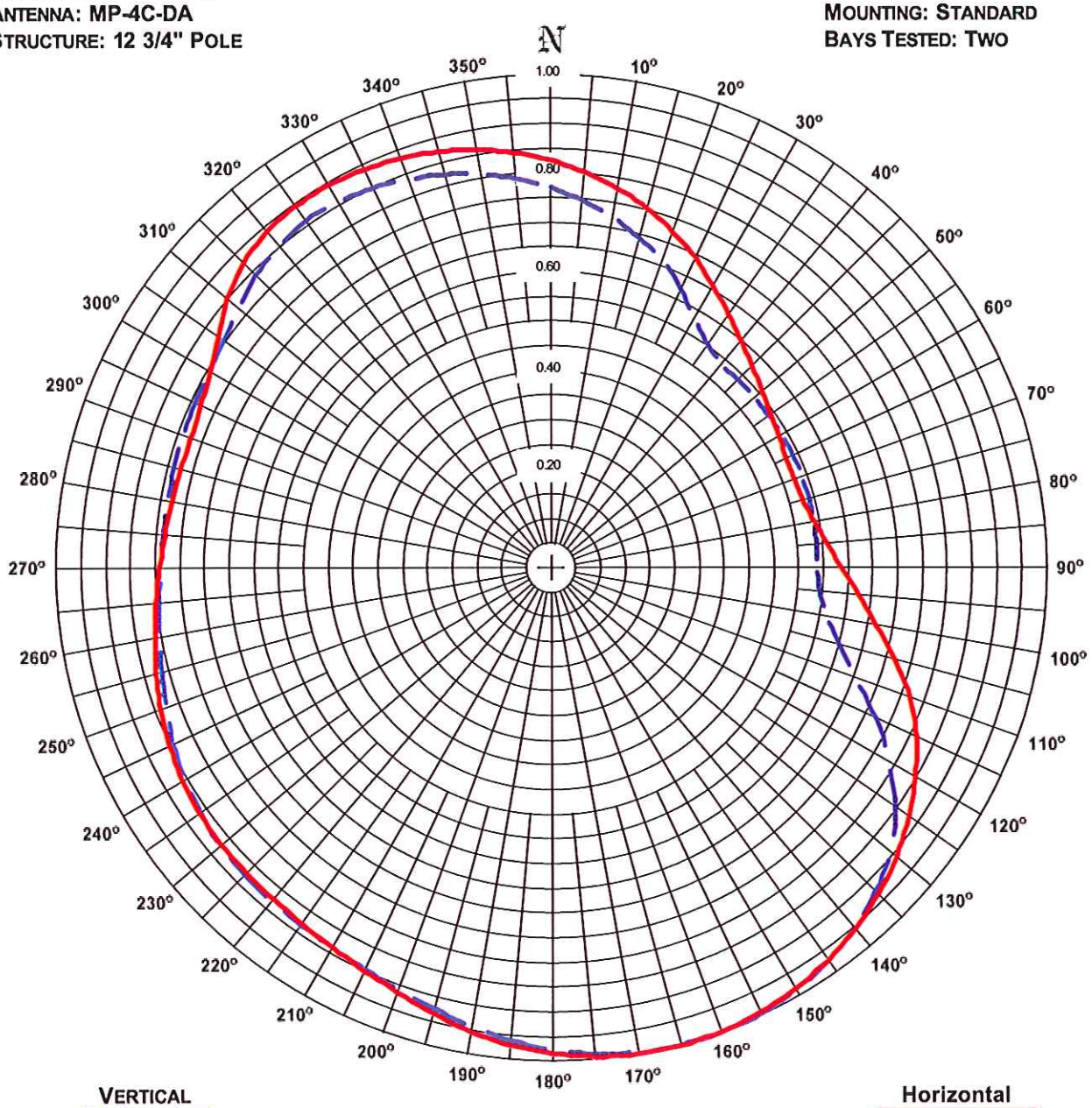
Total Input Power: 16.009 kW

ERI® Horizontal Plane Relative Field Pattern

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

FIGURE NO: 2
STATION: WWWW
LOCATION: ANN ARBOR, MI
ANTENNA: MP-4C-DA
STRUCTURE: 12 3/4" POLE

DATE: 9/1/2010
FREQUENCY: 102.9 MHz
ORIENTATION: 243° TRUE
MOUNTING: STANDARD
BAYS TESTED: TWO



VERTICAL

RMS: 0.794
MAXIMUM: 1.000 @ 161° TRUE
MINIMUM: 0.537 @ 45° TRUE

Horizontal

RMS: 0.816
Maximum: 1.000 @ 165° True
Minimum: 0.523 @ 69° True

COMMENTS: MEASURED PATTERNS OF THE HORIZONTAL AND VERTICAL COMPONENTS.

ERI® Horizontal Plane Relative Field List

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

Station: WWWW
Location: Ann Arbor, MI
Frequency: 102.9 MHz

Antenna: MP-4C-DA
Orientation: 243° True
Tower: 12 3/4" Pole

Figure: 2
Date: 9/1/2010
Reference: wwww1m.fig

Angle	Horizontal			Vertical			Angle	Horizontal			Vertical		
	Field	kW	dBk	Field	kW	dBk		Field	kW	dBk	Field	kW	dBk
0°	0.827	34.19	15.34	0.771	29.74	14.73	180°	0.983	48.27	16.84	0.975	47.50	16.77
5°	0.806	32.45	15.11	0.748	27.97	14.47	185°	0.969	46.99	16.72	0.960	46.07	16.63
10°	0.782	30.55	14.85	0.722	26.07	14.16	190°	0.953	45.38	16.57	0.942	44.35	16.47
15°	0.755	28.49	14.55	0.694	24.06	13.81	195°	0.933	43.50	16.38	0.923	42.64	16.30
20°	0.725	26.30	14.20	0.663	21.96	13.42	200°	0.914	41.76	16.21	0.908	41.22	16.15
25°	0.693	24.01	13.80	0.625	19.51	12.90	205°	0.899	40.37	16.06	0.896	40.13	16.03
30°	0.659	21.69	13.36	0.583	16.99	12.30	210°	0.887	39.33	15.95	0.887	39.35	15.95
35°	0.627	19.67	12.94	0.554	15.34	11.86	215°	0.879	38.62	15.87	0.882	38.87	15.90
40°	0.600	17.99	12.55	0.539	14.54	11.62	220°	0.874	38.24	15.82	0.880	38.68	15.88
45°	0.577	16.62	12.21	0.537	14.40	11.58	225°	0.873	38.11	15.81	0.878	38.51	15.86
50°	0.557	15.54	11.91	0.537	14.42	11.59	230°	0.871	37.91	15.79	0.873	38.12	15.81
55°	0.542	14.71	11.68	0.538	14.49	11.61	235°	0.866	37.53	15.74	0.866	37.50	15.74
60°	0.532	14.13	11.50	0.539	14.55	11.63	240°	0.860	36.97	15.68	0.856	36.64	15.64
65°	0.525	13.78	11.39	0.540	14.59	11.64	245°	0.851	36.23	15.59	0.843	35.56	15.51
70°	0.523	13.67	11.36	0.540	14.59	11.64	250°	0.840	35.32	15.48	0.828	34.31	15.35
75°	0.527	13.91	11.43	0.540	14.56	11.63	255°	0.827	34.24	15.34	0.815	33.19	15.21
80°	0.540	14.57	11.64	0.539	14.51	11.62	260°	0.814	33.10	15.20	0.804	32.30	15.09
85°	0.560	15.68	11.95	0.538	14.46	11.60	265°	0.802	32.13	15.07	0.795	31.63	15.00
90°	0.588	17.28	12.38	0.537	14.44	11.60	270°	0.792	31.34	14.96	0.790	31.20	14.94
95°	0.624	19.44	12.89	0.545	14.83	11.71	275°	0.784	30.72	14.87	0.787	30.98	14.91
100°	0.667	22.25	13.47	0.566	16.02	12.05	280°	0.778	30.28	14.81	0.787	30.96	14.91
105°	0.718	25.79	14.11	0.603	18.17	12.59	285°	0.775	30.01	14.77	0.788	31.06	14.92
110°	0.771	29.72	14.73	0.655	21.45	13.31	290°	0.774	29.94	14.76	0.790	31.24	14.95
115°	0.812	32.97	15.18	0.722	26.09	14.16	295°	0.780	30.41	14.83	0.794	31.51	14.98
120°	0.847	35.91	15.55	0.786	30.91	14.90	300°	0.795	31.61	15.00	0.797	31.80	15.02
125°	0.879	38.65	15.87	0.847	35.90	15.55	305°	0.820	33.62	15.27	0.806	32.48	15.12
130°	0.907	41.15	16.14	0.893	39.84	16.00	310°	0.851	36.20	15.59	0.821	33.72	15.28
135°	0.932	43.39	16.37	0.924	42.73	16.31	315°	0.876	38.33	15.84	0.840	35.27	15.47
140°	0.952	45.33	16.56	0.950	45.16	16.55	320°	0.891	39.68	15.99	0.854	36.43	15.61
145°	0.969	46.96	16.72	0.971	47.12	16.73	325°	0.897	40.19	16.04	0.860	37.02	15.68
150°	0.982	48.26	16.84	0.986	48.60	16.87	330°	0.895	40.09	16.03	0.858	36.79	15.66
155°	0.992	49.20	16.92	0.996	49.56	16.95	335°	0.891	39.69	15.99	0.850	36.11	15.58
160°	0.998	49.79	16.97	1.000	49.98	16.99	340°	0.884	39.05	15.92	0.839	35.22	15.47
165°	1.000	50.00	16.99	0.999	49.89	16.98	345°	0.874	38.17	15.82	0.826	34.12	15.33
170°	0.998	49.79	16.97	0.994	49.42	16.94	350°	0.861	37.06	15.69	0.810	32.83	15.16
175°	0.992	49.21	16.92	0.986	48.62	16.87	355°	0.845	35.72	15.53	0.792	31.37	14.96

Polarization:	**Horizontal**	**Vertical**
Maximum Field:	**1.000 @ 165° True**	**1.000 @ 161° True**
Minimum Field:	**0.523 @ 69° True**	**0.537 @ 45° True**
RMS:	**0.816**	**0.794**
Maximum ERP:	**50.000 kW**	**50.000 kW**
Maximum Power Gain:	**3.123 (4.946 dB)**	**3.123 (4.946 dB)**

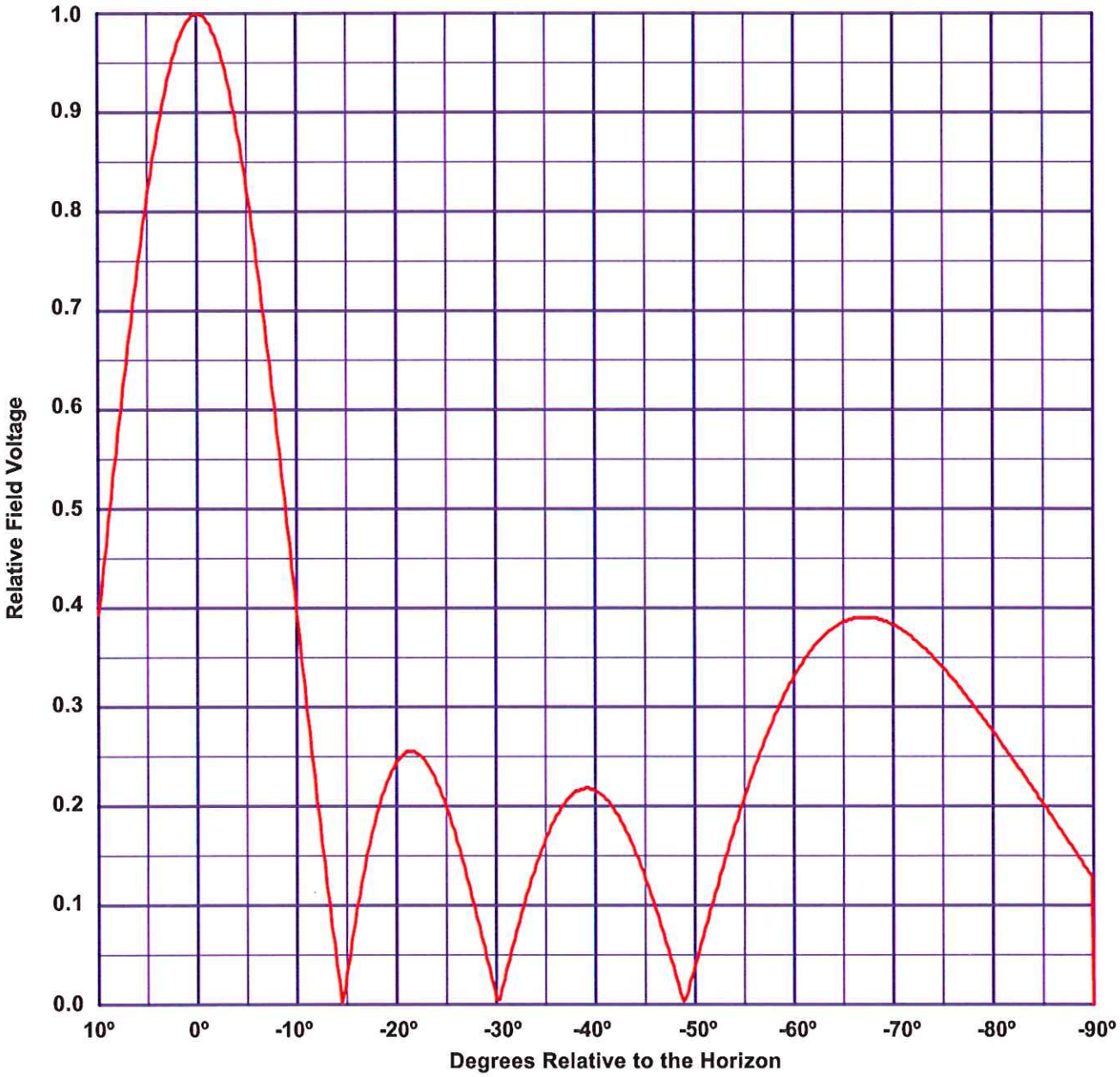
Total Input Power: 16.009 kW

ERI® Vertical Plane Relative Field Pattern

WWWW, Ann Arbor, MI, 102.9 MHz

Figure#: 3 **Date: 9/1/2010**

A 4 level, 1 wave-length spaced MP-4C-DA directional antenna with 0° beam tilt, 0% null fill and a H/V maximum power ratio of 1.000



Vertical Polarization Gain:	Horizontal Polarization Gain:
Maximum: 3.123 (4.946 dB)	Maximum: 3.123 (4.946 dB)
Horizontal Plane: 3.123 (4.946 dB)	Horizontal Plane: 3.123 (4.946 dB)

Electronics Research, Inc. 7777 Gardner Rd. Chandler, IN 47601 Phone: (812) 925-6000 Fax: (812) 925-4030 http://www.eriinc.com/

Directional Antenna System
for
WWWW, Ann Arbor, Michigan

(Continued)

ANTENNA SPECIFICATIONS

Antenna Type:	MP-4C-DA
Frequency:	102.9 MHz
Number of Bays:	Four

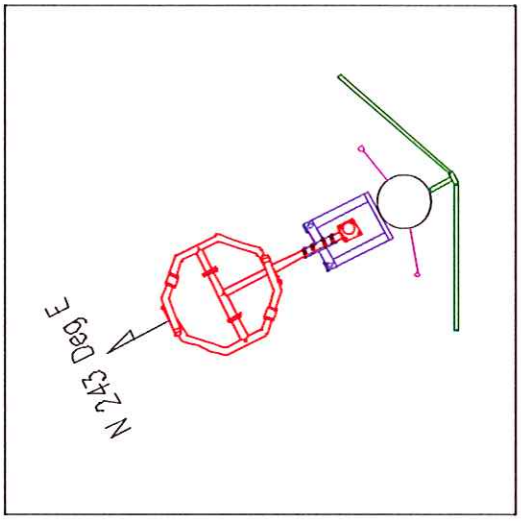
MECHANICAL SPECIFICATIONS

Mounting:	Standard
System length:	32 ft 4 in
Aperture length required:	43 ft 7 in
Orientation:	243° true

Input flange to the antenna 3 1/8" female.

ELECTRICAL SPECIFICATIONS
(For directional use)

Maximum horizontal ERP:	50.00 kW (16.99 dBk)
Horizontal maximum power gain:	3.123 (4.946 dB)
Maximum vertical ERP:	50.00 kW (16.99 dBk)
Vertical maximum power gain:	3.123 (4.946 dB)
Total input power:	16.009 kW (12.045 dBk)



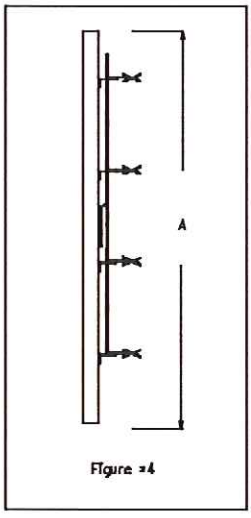


Figure #4