

Directional Antenna System for KIMN, Denver, Colorado

August 18, 2014

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

The antenna is the ERI model 1182-6CP-DA-SP configuration. The circular polarized system consists of 98" spaced bays using two driven circular polarized radiating element per bay. The antenna was mounted on the North 70 degrees East tower leg with bracketry to provide an antenna orientation of North 70 degrees East. The antenna was tested on a 42" lambda tower, which is the structure the station plans to use to support the array. All tests were performed on a frequency of 100.3 megahertz, which is the center of the FM broadcast channel assigned to KIMN.

The other FM stations that will be transmitting from this directional antenna are KVOD @ 88.1 MHz, KUVO @ 89.3 MHz, KCFR-FM @ 90.1 MHz and KXKL @ 105.1 MHz.

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 KIMN, Denver, Colorado

(Continued)

DESCRIPTION OF THE TEST PROCEDURE

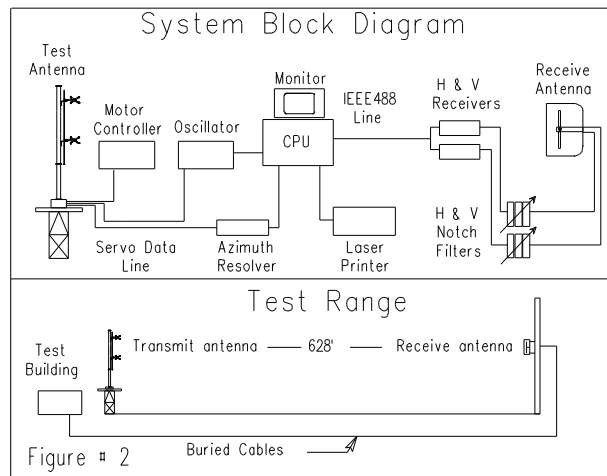
The test antenna consisted of one bay of the circular polarized system. The elements and brackets that were used in this test are electrically equivalent to those that will be supplied with the antenna. All devices included in the test model were properly grounded during all tests.

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 42" ERI 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 100.3 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 KIMN, Denver, Colorado

(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 six 98" spaced bays using two 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 1182-6CP-DA-SP array is to be mounted on the North 70 degrees East tower leg of the 42" ERI tower at a bearing of North 70 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 100.000 kilowatts (20.000 dBk).

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

Directional Antenna System
For
KIMN, Denver, Colorado

(Continued)

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 10 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.

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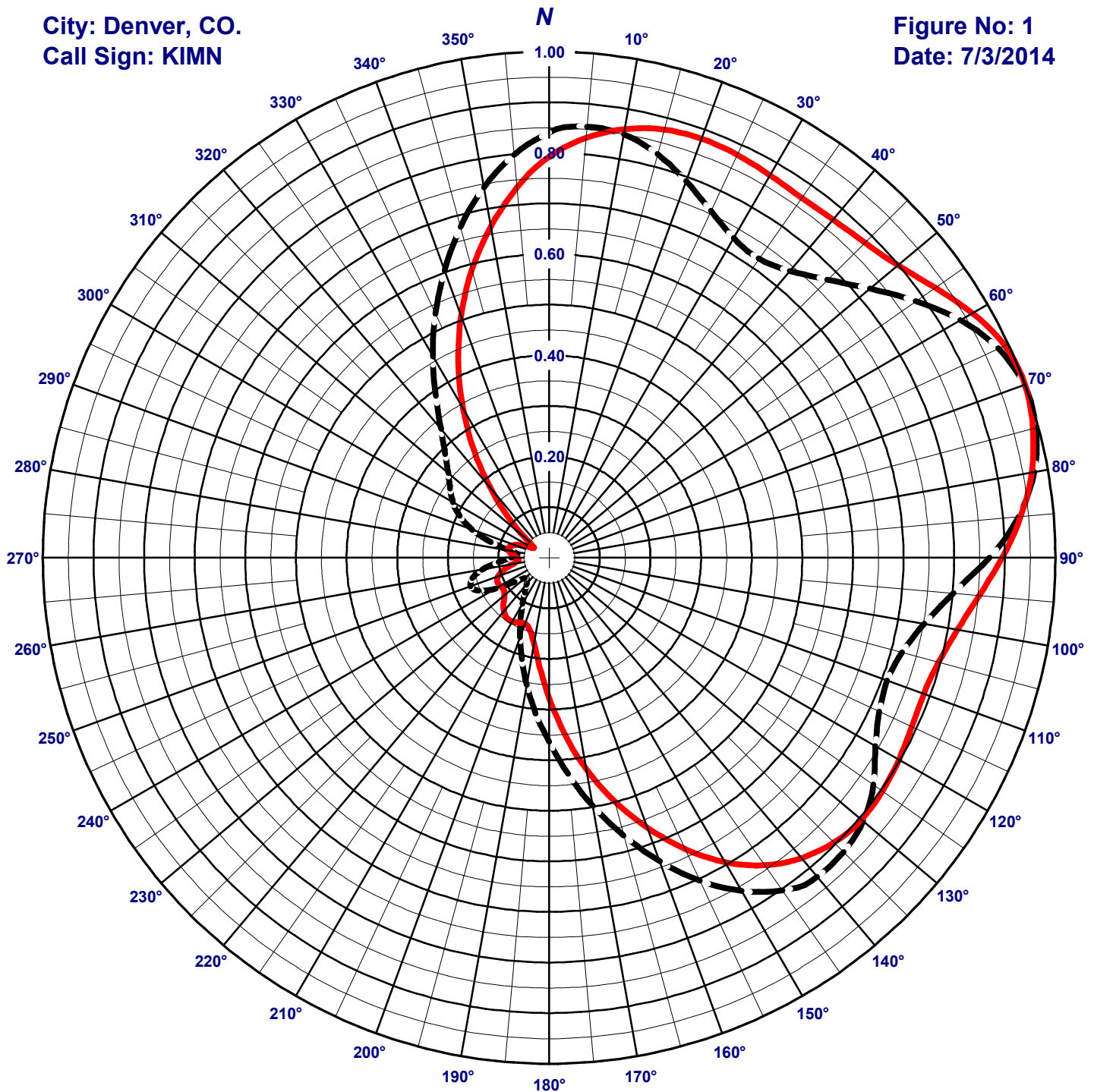
A handwritten signature in black ink, reading "Tom Scharf". The signature is written in a cursive style with a large, stylized 'T' and 'S'.

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

City: Denver, CO.
Call Sign: KIMN

Figure No: 1
Date: 7/3/2014



Frequency: 100.3 MHz
Antenna Type: 1182-6CP-DA-SP
Antenna Orientation: 70° True
Antenna Mounting: Custom
Tower Type 42" ERI tower

VERTICAL
RMS: .607
Maximum: 1 @ 71°
Minimum: .06 @ 228°

HORIZONTAL
RMS: .61
Maximum: 1 @ 69°
Minimum: .036 @ 303°

Measured patterns of the horizontal and vertical components.

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: 7/3/2014

Station: KIMN

Antenna: 1182-6CP-DA-SP

Location: Denver, CO.

Antenna Orientation: 70° True

Frequency: 100.3 MHz

Number of Bays: 6

Azimuth	Envelope			Polarization	Azimuth	Envelope			Polarization
	Field	kW	dBk			Field	kW	dBk	
0°	0.840	70.573	18.486	Vertical	180°	0.364	13.234	11.217	Vertical
5°	0.855	73.128	18.641	Vertical	185°	0.309	9.535	9.793	Vertical
10°	0.860	73.931	18.688	Horizontal	190°	0.255	6.500	8.129	Vertical
15°	0.876	76.701	18.848	Horizontal	195°	0.208	4.314	6.349	Vertical
20°	0.881	77.627	18.900	Horizontal	200°	0.167	2.789	4.454	Vertical
25°	0.878	77.173	18.875	Horizontal	205°	0.141	1.997	3.004	Horizontal
30°	0.872	76.121	18.815	Horizontal	210°	0.146	2.120	3.262	Horizontal
35°	0.869	75.528	18.781	Horizontal	215°	0.145	2.117	3.257	Horizontal
40°	0.872	76.088	18.813	Horizontal	220°	0.139	1.922	2.838	Horizontal
45°	0.881	77.570	18.897	Horizontal	225°	0.127	1.611	2.070	Horizontal
50°	0.899	80.856	19.077	Horizontal	230°	0.115	1.323	1.216	Horizontal
55°	0.930	86.514	19.371	Horizontal	235°	0.110	1.203	0.801	Horizontal
60°	0.966	93.331	19.700	Horizontal	240°	0.122	1.480	1.702	Vertical
65°	0.993	98.562	19.937	Horizontal	245°	0.153	2.355	3.720	Vertical
70°	1.000	99.959	19.998	Horizontal	250°	0.165	2.736	4.371	Vertical
75°	0.995	99.087	19.960	Vertical	255°	0.157	2.463	3.914	Vertical
80°	0.973	94.584	19.758	Vertical	260°	0.134	1.805	2.565	Vertical
85°	0.935	87.461	19.418	Horizontal	265°	0.100	0.999	-0.006	Vertical
90°	0.895	80.025	19.032	Horizontal	270°	0.075	0.555	-2.554	Vertical
95°	0.853	72.759	18.619	Horizontal	275°	0.073	0.537	-2.699	Horizontal
100°	0.819	67.035	18.263	Horizontal	280°	0.081	0.660	-1.801	Horizontal
105°	0.796	63.439	18.024	Horizontal	285°	0.120	1.433	1.563	Vertical
110°	0.788	62.036	17.926	Horizontal	290°	0.162	2.614	4.173	Vertical
115°	0.790	62.436	17.954	Horizontal	295°	0.195	3.795	5.792	Vertical
120°	0.798	63.641	18.037	Horizontal	300°	0.219	4.804	6.816	Vertical
125°	0.804	64.580	18.101	Horizontal	305°	0.238	5.685	7.548	Vertical
130°	0.810	65.580	18.168	Vertical	310°	0.260	6.766	8.303	Vertical
135°	0.822	67.600	18.299	Vertical	315°	0.290	8.406	9.246	Vertical
140°	0.823	67.800	18.312	Vertical	320°	0.332	11.048	10.433	Vertical
145°	0.803	64.451	18.092	Vertical	325°	0.390	15.225	11.826	Vertical
150°	0.760	57.788	17.618	Vertical	330°	0.459	21.105	13.244	Vertical
155°	0.704	49.570	16.952	Vertical	335°	0.532	28.262	14.512	Vertical
160°	0.638	40.765	16.103	Vertical	340°	0.604	36.506	15.624	Vertical
165°	0.568	32.293	15.091	Vertical	345°	0.677	45.804	16.609	Vertical
170°	0.498	24.841	13.952	Vertical	350°	0.743	55.204	17.420	Vertical
175°	0.429	18.401	12.648	Vertical	355°	0.799	63.825	18.050	Vertical

Horizontal Polarization:

Maximum: 7.513 (8.758 dB)

Horizontal Plane: 7.412 (8.700 dB)

Maximum ERP: 100.000 kW

Vertical Polarization:

Maximum: 7.513 (8.758 dB)

Horizontal Plane: 7.412 (8.700 dB)

Maximum ERP: 100.000 kW

Total Input Power: 13.311 kW

Reference: KIMN1M.FIG

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

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# 1A

Date: 7/3/2014

Station: KIMN

Antenna: 1182-6CP-DA-SP

Location: Denver, CO.

Antenna Orientation: 70° True

Frequency: 100.3 MHz

Number of Bays: 6

Azimuth	Horizontal			Vertical			Azimuth	Horizontal			Vertical		
	Field	kW	dBk	Field	kW	dBk		Field	kW	dBk	Field	kW	dBk
0°	0.792	62.768	17.977	0.840	70.573	18.486	180°	0.277	7.661	8.843	0.364	13.234	11.217
5°	0.832	69.276	18.406	0.855	73.128	18.641	185°	0.216	4.672	6.695	0.309	9.535	9.793
10°	0.860	73.931	18.688	0.849	72.124	18.581	190°	0.173	2.979	4.741	0.255	6.500	8.129
15°	0.876	76.701	18.848	0.826	68.180	18.337	195°	0.148	2.180	3.384	0.208	4.314	6.349
20°	0.881	77.627	18.900	0.792	62.687	17.972	200°	0.139	1.939	2.877	0.167	2.789	4.454
25°	0.878	77.173	18.875	0.756	57.169	17.572	205°	0.141	1.997	3.004	0.133	1.765	2.468
30°	0.872	76.121	18.815	0.729	53.143	17.255	210°	0.146	2.120	3.262	0.105	1.109	0.449
35°	0.869	75.528	18.781	0.722	52.079	17.167	215°	0.145	2.117	3.257	0.084	0.711	-1.484
40°	0.872	76.088	18.813	0.740	54.686	17.379	220°	0.139	1.922	2.838	0.070	0.488	-3.116
45°	0.881	77.570	18.897	0.777	60.375	17.809	225°	0.127	1.611	2.070	0.062	0.384	-4.155
50°	0.899	80.856	19.077	0.827	68.370	18.349	230°	0.115	1.323	1.216	0.063	0.394	-4.043
55°	0.930	86.514	19.371	0.884	78.179	18.931	235°	0.110	1.203	0.801	0.083	0.683	-1.653
60°	0.966	93.331	19.700	0.938	88.045	19.447	240°	0.111	1.237	0.922	0.122	1.480	1.702
65°	0.993	98.562	19.937	0.979	95.747	19.811	245°	0.113	1.269	1.033	0.153	2.355	3.720
70°	1.000	99.959	19.998	0.999	99.723	19.988	250°	0.107	1.150	0.606	0.165	2.736	4.371
75°	0.989	97.885	19.907	0.995	99.087	19.960	255°	0.092	0.853	-0.688	0.157	2.463	3.914
80°	0.968	93.614	19.713	0.973	94.584	19.758	260°	0.073	0.536	-2.711	0.134	1.805	2.565
85°	0.935	87.461	19.418	0.931	86.602	19.375	265°	0.062	0.378	-4.221	0.100	0.999	-0.006
90°	0.895	80.025	19.032	0.870	75.619	18.786	270°	0.063	0.403	-3.949	0.075	0.555	-2.554
95°	0.853	72.759	18.619	0.802	64.275	18.080	275°	0.073	0.537	-2.699	0.063	0.400	-3.981
100°	0.819	67.035	18.263	0.752	56.572	17.526	280°	0.081	0.660	-1.801	0.078	0.607	-2.165
105°	0.796	63.439	18.024	0.722	52.076	17.166	285°	0.082	0.665	-1.770	0.120	1.433	1.563
110°	0.788	62.036	17.926	0.710	50.438	17.028	290°	0.073	0.532	-2.740	0.162	2.614	4.173
115°	0.790	62.436	17.954	0.719	51.765	17.140	295°	0.057	0.323	-4.907	0.195	3.795	5.792
120°	0.798	63.641	18.037	0.744	55.388	17.434	300°	0.039	0.155	-8.093	0.219	4.804	6.816
125°	0.804	64.580	18.101	0.782	61.148	17.864	305°	0.038	0.146	-8.348	0.238	5.685	7.548
130°	0.805	64.861	18.120	0.810	65.580	18.168	310°	0.066	0.432	-3.641	0.260	6.766	8.303
135°	0.796	63.364	18.018	0.822	67.600	18.299	315°	0.117	1.366	1.353	0.290	8.406	9.246
140°	0.775	60.036	17.784	0.823	67.800	18.312	320°	0.183	3.343	5.241	0.332	11.048	10.433
145°	0.742	55.035	17.406	0.803	64.451	18.092	325°	0.258	6.662	8.236	0.390	15.225	11.826
150°	0.694	48.233	16.833	0.760	57.788	17.618	330°	0.340	11.556	10.628	0.459	21.105	13.244
155°	0.635	40.351	16.059	0.704	49.570	16.952	335°	0.425	18.029	12.560	0.532	28.262	14.512
160°	0.568	32.270	15.088	0.638	40.765	16.103	340°	0.508	25.855	14.125	0.604	36.506	15.624
165°	0.498	24.797	13.944	0.568	32.293	15.091	345°	0.589	34.741	15.408	0.677	45.804	16.609
170°	0.425	18.083	12.573	0.498	24.841	13.952	350°	0.664	44.152	16.450	0.743	55.204	17.420
175°	0.349	12.204	10.865	0.429	18.401	12.648	355°	0.734	53.822	17.310	0.799	63.825	18.050

Horizontal Polarization:

Maximum: 7.513 (8.758 dB)

Horizontal Plane: 7.412 (8.700 dB)

Maximum ERP: 100.000 kW

Vertical Polarization:

Maximum: 7.513 (8.758 dB)

Horizontal Plane: 7.412 (8.700 dB)

Maximum ERP: 100.000 kW

Total Input Power: 13.311 kW

Reference: KIMN1M.FIG

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

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7777 GARDNER ROAD
CHANDLER, IN. 47610

FIGURE 10

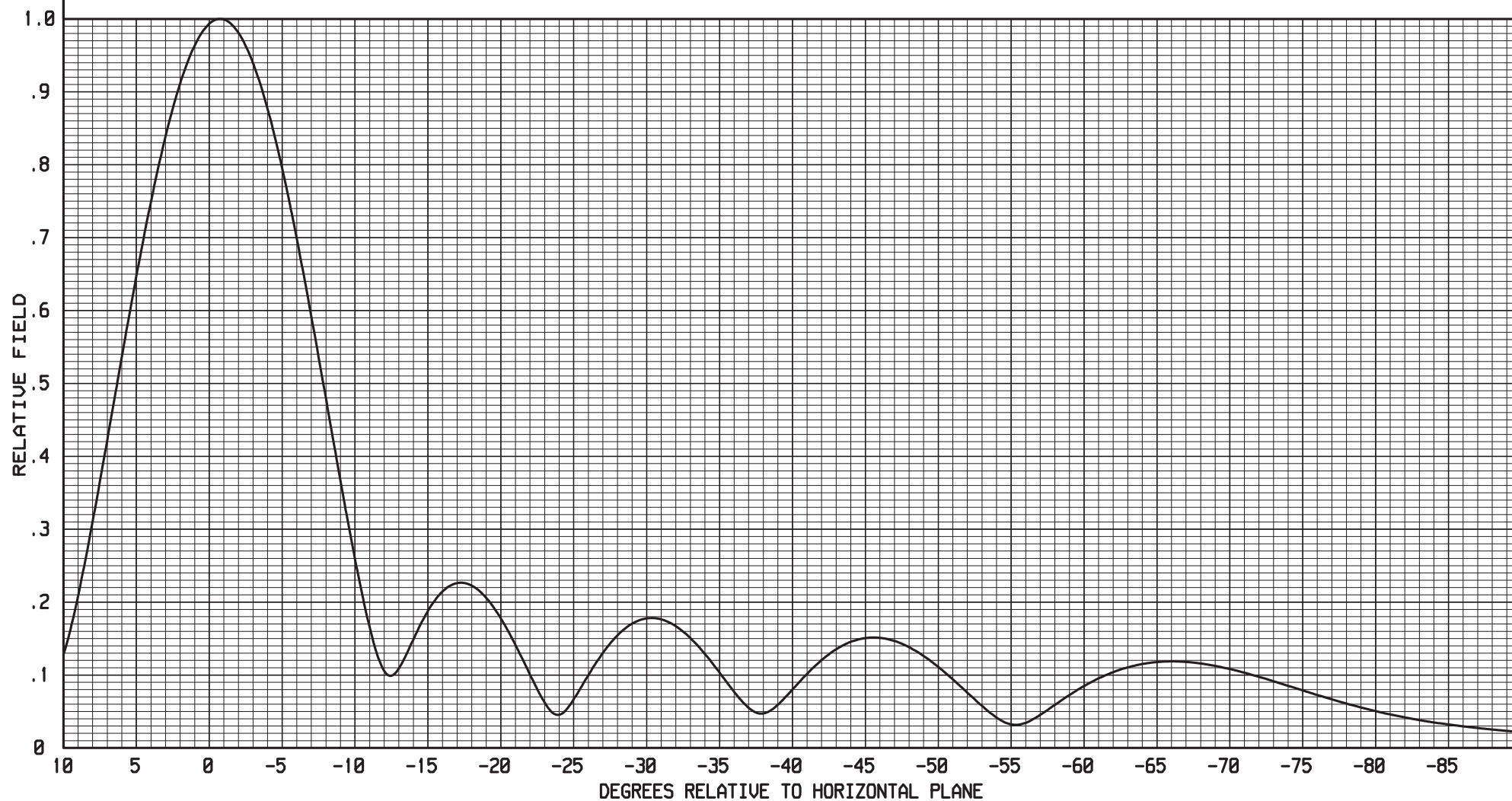
-----THEORETICAL-----
VERTICAL PLANE RELATIVE FIELD

6 LEVELS OF ERI PANEL ELEMENTS
-.74 DEGREE(S) BEAM TILT
10 PERCENT FIRST NULL FILL
4 PERCENT SECOND NULL FILL

JUNE 30, 2014

100.3 MHz.

BAY SPACING:
98.00 INCHES



ELECTRONICS RESEARCH, INC.

7777 GARDNER ROAD

CHANDLER, IN. 47610

FIGURE 10

JUNE 30, 2014

ERI PANEL ELEMENTS ANTENNA

100.3 MHZ. 6 LEVELS SPACED 98 INCHES

THETA	FIELD
DEGREES	VALUE

90	.0239
89.75	.0243
89.5	.0248
89.25	.0252
89	.0256
88.75	.026
88.5	.0263
88.25	.0267
88	.027
87.75	.0273
87.5	.0277
87.25	.0279
87	.0282
86.75	.0285
86.5	.0287
86.25	.0289
86	.0292
85.75	.0293
85.5	.0295
85.25	.0297
85	.0298
84.75	.03
84.5	.0301
84.25	.0302
84	.0303
83.75	.0305
83.5	.0306
83.25	.0307
83	.0308
82.75	.0309
82.5	.031
82.25	.0311
82	.0313
81.75	.0314
81.5	.0316
81.25	.0318
81	.032
80.75	.0323
80.5	.0326
80.25	.0329
80	.0333
79.75	.0337
79.5	.0342
79.25	.0347
79	.0353
78.75	.036
78.5	.0367
78.25	.0375
78	.0383
77.75	.0392

MM6DA10.TAB

77.5	.0402
77.25	.0412
77	.0423
76.75	.0435
76.5	.0448
76.25	.0461
76	.0474
75.75	.0488
75.5	.0503
75.25	.0519
75	.0535
74.75	.0551
74.5	.0568
74.25	.0586
74	.0603
73.75	.0622
73.5	.064
73.25	.0659
73	.0679
72.75	.0698
72.5	.0718
72.25	.0738
72	.0759
71.75	.0779
71.5	.08
71.25	.082
71	.0841
70.75	.0862
70.5	.0882
70.25	.0903
70	.0923
69.75	.0944
69.5	.0964
69.25	.0984
69	.1
68.75	.102
68.5	.104
68.25	.106
68	.108
67.75	.11
67.5	.111
67.25	.113
67	.115
66.75	.116
66.5	.118
66.25	.119
66	.12
65.75	.122
65.5	.123
65.25	.124
65	.125
64.75	.126
64.5	.127
64.25	.127
64	.128
63.75	.128
63.5	.129
63.25	.129
63	.129
62.75	.129
62.5	.129

MM6DA10.TAB

62.25	.128
62	.128
61.75	.127
61.5	.127
61.25	.126
61	.125
60.75	.124
60.5	.122
60.25	.121
60	.119
59.75	.118
59.5	.116
59.25	.114
59	.111
58.75	.109
58.5	.106
58.25	.104
58	.101
57.75	.0979
57.5	.0948
57.25	.0916
57	.0882
56.75	.0847
56.5	.0811
56.25	.0774
56	.0736
55.75	.0697
55.5	.0658
55.25	.0619
55	.0579
54.75	.054
54.5	.0501
54.25	.0464
54	.0429
53.75	.0397
53.5	.037
53.25	.0349
53	.0335
52.75	.033
52.5	.0335
52.25	.0349
52	.0372
51.75	.0402
51.5	.0437
51.25	.0477
51	.052
50.75	.0566
50.5	.0613
50.25	.0662
50	.0712
49.75	.0761
49.5	.0811
49.25	.0861
49	.091
48.75	.0959
48.5	.101
48.25	.105
48	.11
47.75	.114
47.5	.119
47.25	.123

47	.127
46.75	.13
46.5	.134
46.25	.137
46	.14
45.75	.143
45.5	.146
45.25	.148
45	.15
44.75	.152
44.5	.153
44.25	.154
44	.155
43.75	.155
43.5	.156
43.25	.155
43	.155
42.75	.154
42.5	.153
42.25	.151
42	.15
41.75	.147
41.5	.145
41.25	.142
41	.139
40.75	.135
40.5	.131
40.25	.127
40	.123
39.75	.118
39.5	.113
39.25	.108
39	.103
38.75	.0973
38.5	.0916
38.25	.0858
38	.0801
37.75	.0743
37.5	.0687
37.25	.0634
37	.0586
36.75	.0544
36.5	.051
36.25	.0489
36	.0481
35.75	.0487
35.5	.0508
35.25	.0542
35	.0587
34.75	.064
34.5	.0699
34.25	.0763
34	.0829
33.75	.0897
33.5	.0966
33.25	.103
33	.11
32.75	.117
32.5	.124
32.25	.13
32	.136

31.75	.142
31.5	.147
31.25	.153
31	.157
30.75	.162
30.5	.166
30.25	.17
30	.173
29.75	.175
29.5	.177
29.25	.179
29	.18
28.75	.181
28.5	.181
28.25	.18
28	.179
27.75	.177
27.5	.175
27.25	.172
27	.169
26.75	.165
26.5	.16
26.25	.155
26	.149
25.75	.143
25.5	.137
25.25	.13
25	.122
24.75	.114
24.5	.106
24.25	.0978
24	.0893
23.75	.0806
23.5	.0722
23.25	.0641
23	.0568
22.75	.0508
22.5	.0469
22.25	.0456
22	.0475
21.75	.0521
21.5	.0589
21.25	.0673
21	.0766
20.75	.0865
20.5	.0968
20.25	.107
20	.118
19.75	.128
19.5	.138
19.25	.148
19	.158
18.75	.167
18.5	.176
18.25	.184
18	.192
17.75	.199
17.5	.205
17.25	.211
17	.216
16.75	.22

MM6DA10.TAB

16.5	.223
16.25	.226
16	.227
15.75	.228
15.5	.228
15.25	.226
15	.224
14.75	.221
14.5	.217
14.25	.212
14	.206
13.75	.198
13.5	.191
13.25	.182
13	.172
12.75	.162
12.5	.151
12.25	.14
12	.13
11.75	.119
11.5	.11
11.25	.104
11	.0998
10.75	.1
10.5	.105
10.25	.115
10	.128
9.75	.145
9.5	.164
9.25	.185
9	.208
8.75	.232
8.5	.258
8.25	.284
8	.311
7.75	.338
7.5	.366
7.25	.394
7	.422
6.75	.451
6.5	.479
6.25	.508
6	.536
5.75	.564
5.5	.592
5.25	.62
5	.647
4.75	.674
4.5	.7
4.25	.725
4	.749
3.75	.773
3.5	.796
3.25	.818
3	.839
2.75	.859
2.5	.877
2.25	.895
2	.911
1.75	.926
1.5	.94

MM6DA10.TAB

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.25	.988
0	.993
-.25	.997
-.5	.999
-.75	1
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-1.25	.997
-1.5	.993
-1.75	.988
-2	.981
-2.25	.973
-2.5	.963
-2.75	.952
-3	.939
-3.25	.926
-3.5	.91
-3.75	.894
-4	.876
-4.25	.858
-4.5	.838
-4.75	.817
-5	.795
-5.25	.772
-5.5	.749
-5.75	.724
-6	.699
-6.25	.673
-6.5	.646
-6.75	.619
-7	.592
-7.25	.564
-7.5	.536
-7.75	.508
-8	.479
-8.25	.451
-8.5	.423
-8.75	.394
-9	.366
-9.25	.339
-9.5	.311
-9.75	.285
-10	.259
-10.25	.234
-10.5	.21
-10.75	.187
-11	.165
-11.25	.146
-11.5	.129
-11.75	.115
-12	.106
-12.25	.1
-12.5	.0992
-12.75	.102
-13	.109
-13.25	.118
-13.5	.128
-13.75	.138

-14	.149
-14.25	.16
-14.5	.17
-14.75	.179
-15	.188
-15.25	.196
-15.5	.203
-15.75	.209
-16	.215
-16.25	.219
-16.5	.222
-16.75	.225
-17	.226
-17.25	.227
-17.5	.226
-17.75	.225
-18	.223
-18.25	.22
-18.5	.216
-18.75	.211
-19	.206
-19.25	.2
-19.5	.193
-19.75	.186
-20	.178
-20.25	.169
-20.5	.16
-20.75	.151
-21	.141
-21.25	.131
-21.5	.121
-21.75	.111
-22	.101
-22.25	.0904
-22.5	.0805
-22.75	.071
-23	.0623
-23.25	.0548
-23.5	.0491
-23.75	.0458
-24	.0454
-24.25	.0479
-24.5	.0527
-24.75	.0592
-25	.0667
-25.25	.0748
-25.5	.0831
-25.75	.0915
-26	.0998
-26.25	.108
-26.5	.116
-26.75	.123
-27	.13
-27.25	.137
-27.5	.143
-27.75	.149
-28	.154
-28.25	.159
-28.5	.164
-28.75	.167
-29	.17

MM6DA10.TAB

-29.25	.173
-29.5	.175
-29.75	.177
-30	.178
-30.25	.178
-30.5	.178
-30.75	.177
-31	.176
-31.25	.175
-31.5	.173
-31.75	.17
-32	.167
-32.25	.164
-32.5	.16
-32.75	.155
-33	.151
-33.25	.146
-33.5	.14
-33.75	.135
-34	.129
-34.25	.123
-34.5	.116
-34.75	.11
-35	.103
-35.25	.0967
-35.5	.09
-35.75	.0834
-36	.077
-36.25	.0708
-36.5	.0649
-36.75	.0596
-37	.055
-37.25	.0512
-37.5	.0486
-37.75	.0473
-38	.0474
-38.25	.0488
-38.5	.0514
-38.75	.0549
-39	.0592
-39.25	.064
-39.5	.0692
-39.75	.0746
-40	.08
-40.25	.0855
-40.5	.091
-40.75	.0963
-41	.102
-41.25	.107
-41.5	.111
-41.75	.116
-42	.12
-42.25	.125
-42.5	.128
-42.75	.132
-43	.135
-43.25	.138
-43.5	.141
-43.75	.143
-44	.145
-44.25	.147

MM6DA10.TAB

-44.5	.149
-44.75	.15
-45	.151
-45.25	.151
-45.5	.151
-45.75	.151
-46	.151
-46.25	.15
-46.5	.149
-46.75	.148
-47	.147
-47.25	.145
-47.5	.143
-47.75	.141
-48	.138
-48.25	.135
-48.5	.133
-48.75	.129
-49	.126
-49.25	.123
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-49.75	.115
-50	.111
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-50.5	.103
-50.75	.0985
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-51.5	.085
-51.75	.0804
-52	.0758
-52.25	.0712
-52.5	.0666
-52.75	.0621
-53	.0577
-53.25	.0533
-53.5	.0492
-53.75	.0453
-54	.0417
-54.25	.0385
-54.5	.0357
-54.75	.0336
-55	.0322
-55.25	.0316
-55.5	.0318
-55.75	.0328
-56	.0345
-56.25	.0367
-56.5	.0393
-56.75	.0422
-57	.0454
-57.25	.0487
-57.5	.0521
-57.75	.0556
-58	.0591
-58.25	.0625
-58.5	.0659
-58.75	.0693
-59	.0726
-59.25	.0758
-59.5	.0789

MM6DA10.TAB

-59.75	.0819
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-60.25	.0877
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-60.75	.0929
-61	.0954
-61.25	.0977
-61.5	.0999
-61.75	.102
-62	.104
-62.25	.106
-62.5	.107
-62.75	.109
-63	.111
-63.25	.112
-63.5	.113
-63.75	.114
-64	.115
-64.25	.116
-64.5	.117
-64.75	.117
-65	.118
-65.25	.118
-65.5	.118
-65.75	.119
-66	.119
-66.25	.119
-66.5	.118
-66.75	.118
-67	.118
-67.25	.118
-67.5	.117
-67.75	.116
-68	.116
-68.25	.115
-68.5	.114
-68.75	.113
-69	.113
-69.25	.112
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-69.75	.109
-70	.108
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-70.5	.106
-70.75	.104
-71	.103
-71.25	.102
-71.5	.1
-71.75	.0989
-72	.0975
-72.25	.096
-72.5	.0945
-72.75	.093
-73	.0915
-73.25	.0899
-73.5	.0883
-73.75	.0868
-74	.0852
-74.25	.0836
-74.5	.082
-74.75	.0805

-75	.0789
-75.25	.0773
-75.5	.0757
-75.75	.0742
-76	.0726
-76.25	.0711
-76.5	.0696
-76.75	.0681
-77	.0666
-77.25	.0651
-77.5	.0637
-77.75	.0623
-78	.0609
-78.25	.0595
-78.5	.0581
-78.75	.0568
-79	.0555
-79.25	.0542
-79.5	.0529
-79.75	.0517
-80	.0505
-80.25	.0493
-80.5	.0482
-80.75	.0471
-81	.046
-81.25	.0449
-81.5	.0439
-81.75	.0429
-82	.0419
-82.25	.0409
-82.5	.04
-82.75	.0391
-83	.0382
-83.25	.0374
-83.5	.0366
-83.75	.0358
-84	.035
-84.25	.0342
-84.5	.0335
-84.75	.0328
-85	.0321
-85.25	.0315
-85.5	.0308
-85.75	.0302
-86	.0296
-86.25	.029
-86.5	.0284
-86.75	.0279
-87	.0273
-87.25	.0268
-87.5	.0263
-87.75	.0258
-88	.0253
-88.25	.0248
-88.5	.0243
-88.75	.0239
-89	.0234
-89.25	.023
-89.5	.0226
-89.75	.0222
-90	.0217

Directional Antenna System for KIMN, Denver, Colorado

(Continued)

ANTENNA SPECIFICATIONS

Antenna Type: 1182-6CP-DA-SP
Frequency: 100.3 MHz
Number of Bays: Six

MECHANICAL SPECIFICATIONS

Mounting: Custom
System length: 48 ft 4 inches
Aperture length required: 55 ft 10 inches
Orientation: 70° true
Input flange to the antenna 6 1/8" female.

ELECTRICAL SPECIFICATIONS (For directional use)

Maximum horizontal ERP: 100.000 kW (20.000 dBk)
Horizontal maximum power gain: 7.513 (8.758 dB)
Horizontal plane H pol gain: 7.412 (8.700 dB)
Maximum vertical ERP: 100.000 kW (20.000 dBk)
Vertical maximum power gain: 7.513 (8.758 dB)
Horizontal plane V pol gain: 7.412 (8.700 dB)
Total input power: 13.311 kW (11.242 dBk)

