

**AMENDMENT TO APPLICATION  
FOR  
CONSTRUCTION PERMIT  
FOR  
MCC RADIO, LLC  
LICENSEE OF  
KEAG, CH247C1, ANCHORAGE, AK**

**JANUARY 2004**

**BY:  
BEEM CO.  
ARCADIA, CA  
(626) 446-3468**

## **ENGINEERING STATEMENT OF JOEL T. SAXBERG**

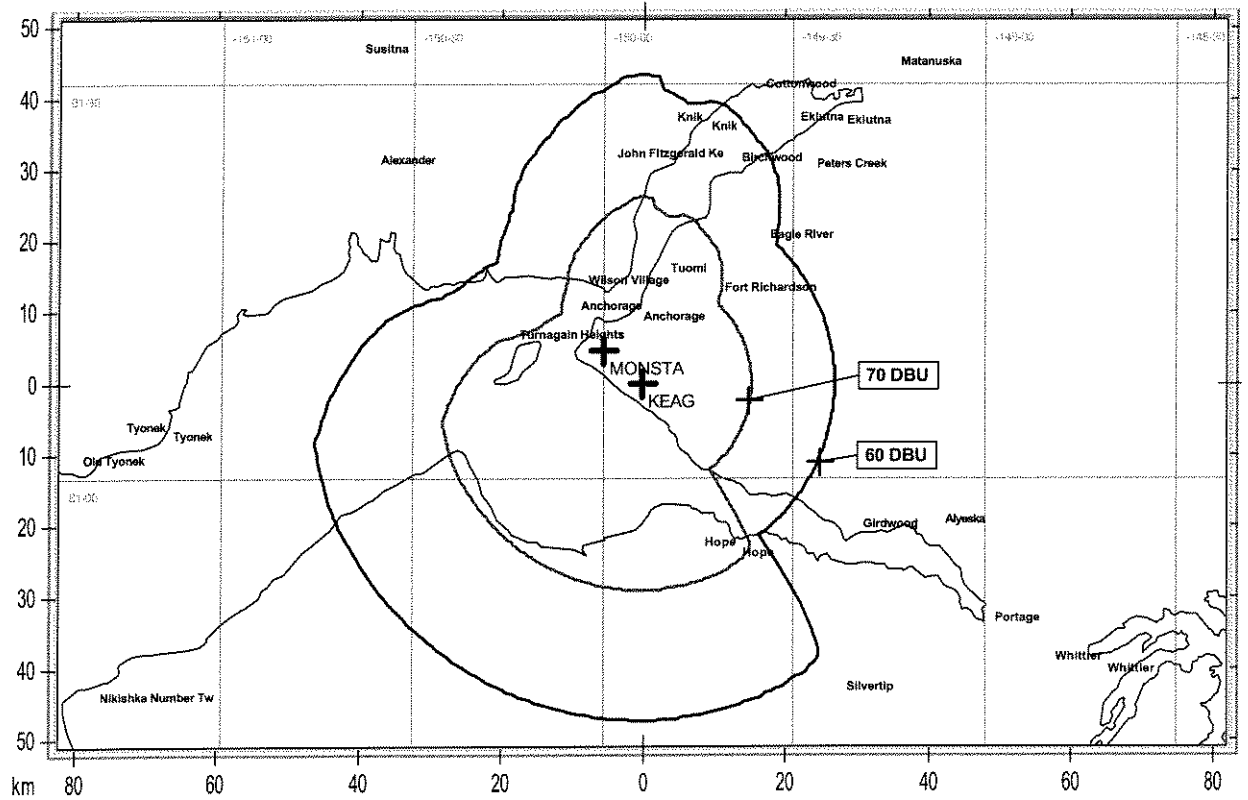
**This application for amendment to application for construction permit for minor change of KEAG, CH 247C1, Anchorage, Alaska was prepared for the licensee, MCC Radio, LLC by Broadcast Engineering and Equipment Maintenance Company, "BEEM Co."**

**CO-LOCATION – Diplex operation of FM Station KBRJ, CH 281C1, and KDBZ, CH 271C3 is proposed from the present KBRJ/KDBZ location. Please note that these three FM's are already operating from this structure (KEAG is presently operating under an STA), therefore there will be one directional antenna added for KEAG. The new KEAG FM antenna will be installed with a center of radiation at 84.4 meters AGL. A minima at 310° was designed to protect the FCC Anchorage, Alaska monitoring station. The field is reduced to 0.316 and the ERP is restricted to 5.5 kW. This corresponds to a 10 dB reduction in signal towards the monitoring station. Longley-Rice propagation methods were used to determine the signal level from the proposed installation over the monitoring station. The field by using the above methods is 89 dBu or 28.2 mV/m. KEAG has a restriction of 33 mV/m at the station. It is believed that the directional antenna proposed in this amendment would afford the required protection to the monitoring station. The proposed antenna will be a six element,  $\frac{1}{2}$  wavelength spaced directional ERI model to reduce downward radiofrequency electromagnetic fields. The support structure is also the AM antenna for KHAR, 590 kHz, 5 kW and KUDO, 1080 kHz, 10 kW. All five stations are licensed to the city of Anchorage, Alaska. KBRJ and KEAG will operate with an ERP of 55 kW and KDBZ operates with an ERP of 23 kW. Non-directional circular polarization operation is proposed for the other two FM facilities. The two AM facilities are also non-directional.**

**RADIOFREQUENCY ELECTROMAGNETIC FIELDS – Using the manufacturers vertical plane patterns, calculations of the power density around the tower base were made. These calculations show the combined power density for five FM stations to produce less than 0.09 mW/cm<sup>2</sup> at two meters above ground level. A copy of the vertical plane pattern for each station is attached. The center of radiation for KBRJ, CH281C1, 55kW, and KDBZ, CH271C3, 23 kW, will remain at 100 meters above ground level. KEAG, CH247C1, 55 kW will mount its antenna at 84 meters above ground level, below the KBRJ antenna. On the other communication tower located 207' (63.1 m) from the KEAG tower are FM antennas for KWHL, CH 293, 100 kW, & KMXS, CH 276, 20 kW (Operating under an STA). KWHL**

**uses a 12 element one-half wavelength spaced ERI directional antenna with center of radiation at 97 m above ground level and KMXS operates with a 8 element one-half wavelength spaced ERI antenna with center of radiation at 79 m above ground level. The licensee agrees to reduce power or terminate emissions to protect tower workers from radiofrequency electromagnetic fields in excess of FCC guideline levels. Access to the tower base is restricted to authorized personnel only.**

ANCHORAGE, ALASKA



MCC RADIO, LLC



State Borders Lat/Lon Grid



Proposal Number

Revision

Date

03 Nov 2003

Call Letters

Channel 271

Location

Anchorage, AK

Customer

Antenna Type

DCR-M6BR

**ELEVATION PATTERN**

RMS Gain at Main Lobe

**3.14 (4.97 dB)**

Beam Tilt

**0.40 Degrees**

RMS Gain at Horizontal

**3.1 (4.91 dB)**

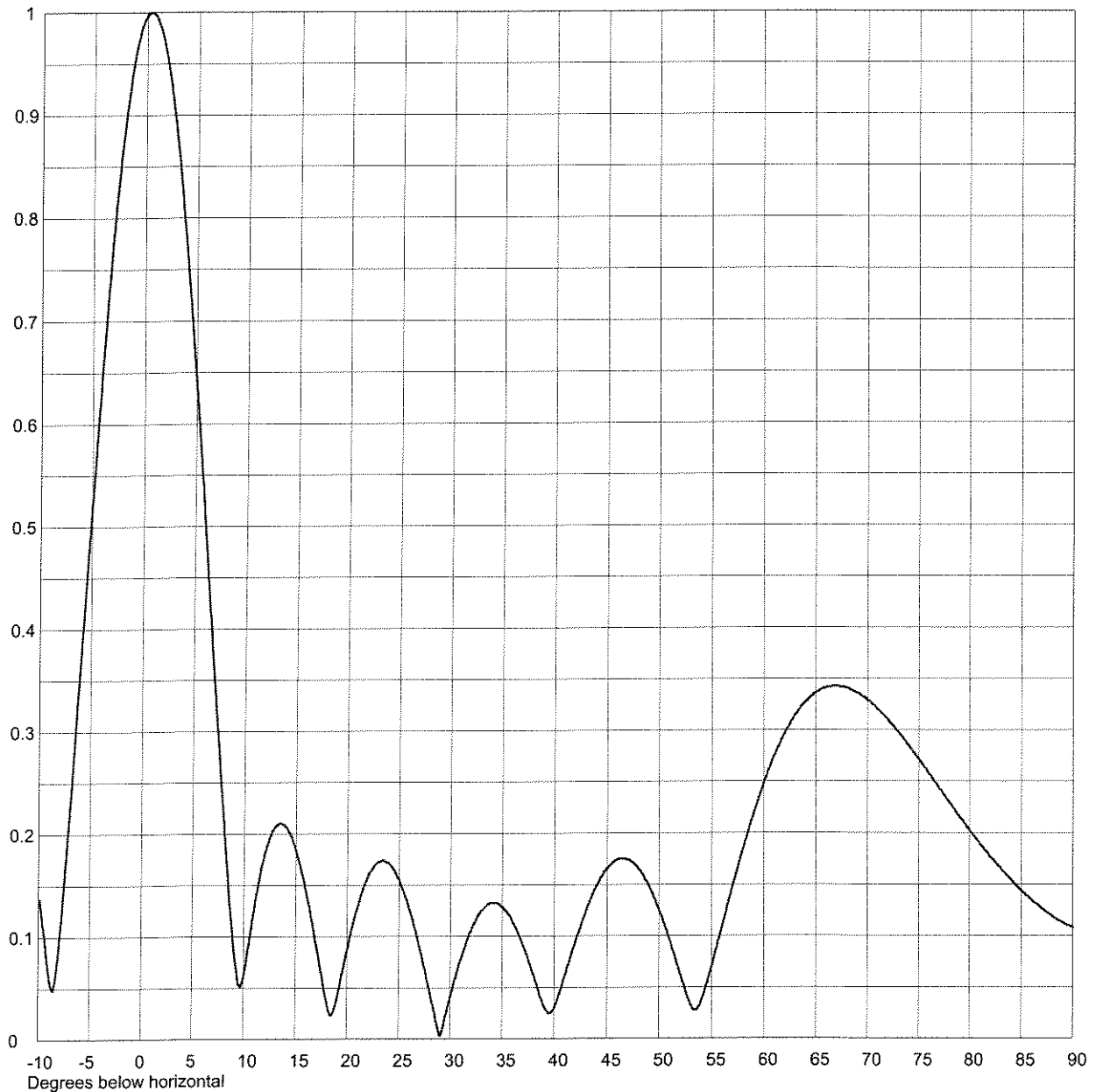
Frequency

**102.10 MHz**

Calculated / Measured

**Calculated**

Drawing #

**FB06M05063040-1021-90**

Remarks:



Proposal Number  
 Date **03 Nov 2003**  
 Call Letters  
 Location **Anchorage, AK**  
 Customer  
 Antenna Type **DCR-M6BR**

Revision  
 Channel **271**

### TABULATION OF ELEVATION PATTERN

Elevation Pattern Drawing # **FB06M05063040-1021**

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.145	2.4	0.923	10.6	0.101	30.5	0.060	51.0	0.096	71.5	0.315
-9.5	0.104	2.6	0.908	10.8	0.115	31.0	0.078	51.5	0.080	72.0	0.310
-9.0	0.063	2.8	0.891	11.0	0.128	31.5	0.093	52.0	0.063	72.5	0.304
-8.5	0.051	3.0	0.873	11.5	0.157	32.0	0.106	52.5	0.047	73.0	0.298
-8.0	0.092	3.2	0.854	12.0	0.181	32.5	0.117	53.0	0.033	73.5	0.291
-7.5	0.154	3.4	0.833	12.5	0.197	33.0	0.125	53.5	0.028	74.0	0.285
-7.0	0.222	3.6	0.812	13.0	0.207	33.5	0.130	54.0	0.036	74.5	0.278
-6.5	0.295	3.8	0.790	13.5	0.210	34.0	0.132	54.5	0.052	75.0	0.271
-6.0	0.370	4.0	0.766	14.0	0.207	34.5	0.132	55.0	0.070	75.5	0.264
-5.5	0.445	4.2	0.742	14.5	0.198	35.0	0.128	55.5	0.090	76.0	0.257
-5.0	0.520	4.4	0.717	15.0	0.184	35.5	0.123	56.0	0.109	76.5	0.250
-4.5	0.593	4.6	0.691	15.5	0.166	36.0	0.114	56.5	0.129	77.0	0.243
-4.0	0.663	4.8	0.664	16.0	0.143	36.5	0.104	57.0	0.148	77.5	0.236
-3.5	0.729	5.0	0.637	16.5	0.118	37.0	0.091	57.5	0.167	78.0	0.229
-3.0	0.790	5.2	0.610	17.0	0.091	37.5	0.077	58.0	0.185	78.5	0.223
-2.8	0.813	5.4	0.582	17.5	0.063	38.0	0.062	58.5	0.202	79.0	0.216
-2.6	0.835	5.6	0.553	18.0	0.037	38.5	0.046	59.0	0.219	79.5	0.209
-2.4	0.855	5.8	0.524	18.5	0.023	39.0	0.032	59.5	0.234	80.0	0.202
-2.2	0.874	6.0	0.495	19.0	0.038	39.5	0.025	60.0	0.249	80.5	0.196
-2.0	0.892	6.2	0.466	19.5	0.063	40.0	0.030	60.5	0.262	81.0	0.189
-1.8	0.909	6.4	0.437	20.0	0.087	40.5	0.044	61.0	0.275	81.5	0.183
-1.6	0.925	6.6	0.408	20.5	0.110	41.0	0.061	61.5	0.286	82.0	0.177
-1.4	0.939	6.8	0.378	21.0	0.129	41.5	0.078	62.0	0.297	82.5	0.171
-1.2	0.952	7.0	0.349	21.5	0.146	42.0	0.095	62.5	0.306	83.0	0.166
-1.0	0.963	7.2	0.321	22.0	0.159	42.5	0.110	63.0	0.314	83.5	0.160
-0.8	0.973	7.4	0.292	22.5	0.167	43.0	0.125	63.5	0.321	84.0	0.155
-0.6	0.981	7.6	0.264	23.0	0.172	43.5	0.138	64.0	0.327	84.5	0.149
-0.4	0.988	7.8	0.237	23.5	0.174	44.0	0.149	64.5	0.332	85.0	0.144
-0.2	0.993	8.0	0.210	24.0	0.171	44.5	0.158	65.0	0.336	85.5	0.139
0.0	0.997	8.2	0.184	24.5	0.165	45.0	0.166	65.5	0.339	86.0	0.135
0.2	0.999	8.4	0.159	25.0	0.155	45.5	0.171	66.0	0.341	86.5	0.131
0.4	1.000	8.6	0.134	25.5	0.142	46.0	0.174	66.5	0.342	87.0	0.126
0.6	0.999	8.8	0.112	26.0	0.126	46.5	0.175	67.0	0.343	87.5	0.122
0.8	0.997	9.0	0.091	26.5	0.109	47.0	0.174	67.5	0.342	88.0	0.119
1.0	0.993	9.2	0.073	27.0	0.089	47.5	0.171	68.0	0.341	88.5	0.115
1.2	0.987	9.4	0.059	27.5	0.068	48.0	0.165	68.5	0.339	89.0	0.113
1.4	0.980	9.6	0.052	28.0	0.046	48.5	0.158	69.0	0.336	89.5	0.110
1.6	0.972	9.8	0.053	28.5	0.024	49.0	0.149	69.5	0.333	90.0	0.108
1.8	0.962	10.0	0.061	29.0	0.003	49.5	0.138	70.0	0.329		
2.0	0.950	10.2	0.074	29.5	0.021	50.0	0.125	70.5	0.325		
2.2	0.937	10.4	0.087	30.0	0.041	50.5	0.111	71.0	0.320		

Remarks:



Proposal Number

Revision

Date

03 Nov 2003

Call Letters

Channel 281

Location

Anchorage, AK

Customer

Antenna Type

DCR-M6BR

**ELEVATION PATTERN**

RMS Gain at Main Lobe

**3.07 (4.87 dB)**

Beam Tilt

**0.40 Degrees**

RMS Gain at Horizontal

**3.05 (4.84 dB)**

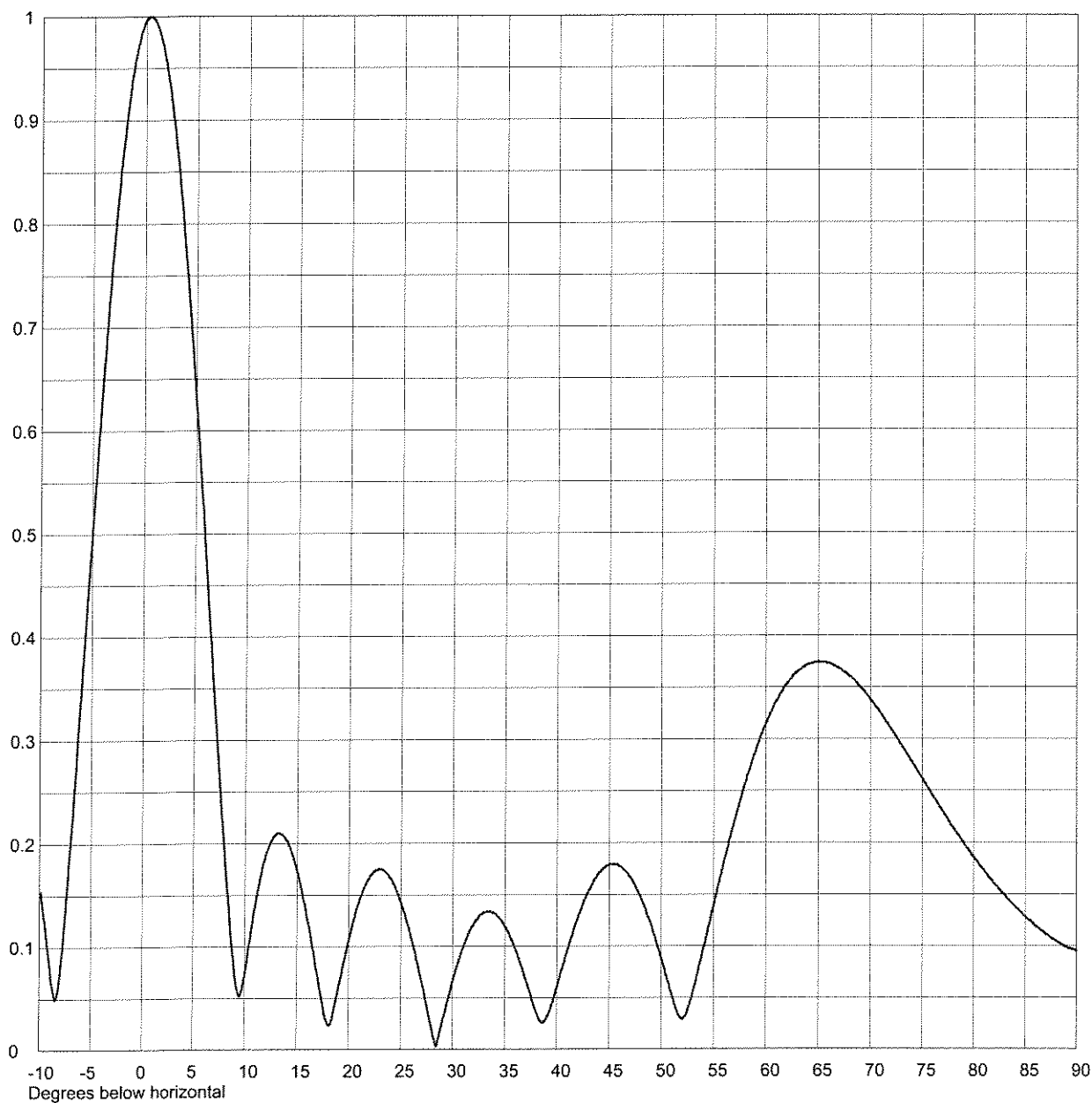
Frequency

**104.10 MHz**

Calculated / Measured

**Calculated**

Drawing #

**FB06M05061040-1041-90**

Remarks:



Proposal Number

Revision

Date

03 Nov 2003

Call Letters

Channel 281

Location

Anchorage, AK

Customer

Antenna Type

DCR-M6BR

## TABULATION OF ELEVATION PATTERN

Elevation Pattern Drawing #

FB06M05061040-1041-

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.161	2.4	0.920	10.6	0.115	30.5	0.084	51.0	0.052	71.5	0.317
-9.5	0.121	2.6	0.904	10.8	0.129	31.0	0.099	51.5	0.037	72.0	0.309
-9.0	0.079	2.8	0.887	11.0	0.141	31.5	0.112	52.0	0.029	72.5	0.302
-8.5	0.049	3.0	0.868	11.5	0.168	32.0	0.121	52.5	0.037	73.0	0.294
-8.0	0.075	3.2	0.848	12.0	0.189	32.5	0.129	53.0	0.054	73.5	0.286
-7.5	0.134	3.4	0.827	12.5	0.202	33.0	0.133	53.5	0.074	74.0	0.278
-7.0	0.202	3.6	0.805	13.0	0.209	33.5	0.134	54.0	0.096	74.5	0.270
-6.5	0.275	3.8	0.782	13.5	0.209	34.0	0.132	54.5	0.118	75.0	0.262
-6.0	0.351	4.0	0.758	14.0	0.203	34.5	0.127	55.0	0.139	75.5	0.253
-5.5	0.428	4.2	0.733	14.5	0.191	35.0	0.119	55.5	0.161	76.0	0.245
-5.0	0.504	4.4	0.707	15.0	0.173	35.5	0.109	56.0	0.182	76.5	0.238
-4.5	0.579	4.6	0.680	15.5	0.152	36.0	0.097	56.5	0.202	77.0	0.230
-4.0	0.652	4.8	0.653	16.0	0.127	36.5	0.083	57.0	0.221	77.5	0.222
-3.5	0.720	5.0	0.625	16.5	0.100	37.0	0.068	57.5	0.240	78.0	0.214
-3.0	0.783	5.2	0.597	17.0	0.072	37.5	0.052	58.0	0.257	78.5	0.207
-2.8	0.806	5.4	0.568	17.5	0.044	38.0	0.036	58.5	0.273	79.0	0.200
-2.6	0.828	5.6	0.539	18.0	0.024	38.5	0.026	59.0	0.288	79.5	0.193
-2.4	0.850	5.8	0.509	18.5	0.033	39.0	0.030	59.5	0.302	80.0	0.186
-2.2	0.870	6.0	0.479	19.0	0.058	39.5	0.043	60.0	0.315	80.5	0.179
-2.0	0.888	6.2	0.450	19.5	0.083	40.0	0.060	60.5	0.326	81.0	0.173
-1.8	0.906	6.4	0.420	20.0	0.106	40.5	0.078	61.0	0.337	81.5	0.166
-1.6	0.922	6.6	0.390	20.5	0.127	41.0	0.096	61.5	0.345	82.0	0.160
-1.4	0.937	6.8	0.360	21.0	0.145	41.5	0.112	62.0	0.353	82.5	0.154
-1.2	0.950	7.0	0.331	21.5	0.158	42.0	0.128	62.5	0.360	83.0	0.149
-1.0	0.961	7.2	0.302	22.0	0.168	42.5	0.141	63.0	0.365	83.5	0.143
-0.8	0.972	7.4	0.273	22.5	0.173	43.0	0.153	63.5	0.369	84.0	0.138
-0.6	0.980	7.6	0.245	23.0	0.175	43.5	0.163	64.0	0.372	84.5	0.133
-0.4	0.988	7.8	0.218	23.5	0.172	44.0	0.171	64.5	0.373	85.0	0.128
-0.2	0.993	8.0	0.191	24.0	0.166	44.5	0.176	65.0	0.374	85.5	0.124
0.0	0.997	8.2	0.165	24.5	0.156	45.0	0.179	65.5	0.374	86.0	0.119
0.2	0.999	8.4	0.140	25.0	0.142	45.5	0.179	66.0	0.373	86.5	0.115
0.4	1.000	8.6	0.117	25.5	0.126	46.0	0.178	66.5	0.371	87.0	0.111
0.6	0.999	8.8	0.095	26.0	0.108	46.5	0.173	67.0	0.368	87.5	0.108
0.8	0.997	9.0	0.076	26.5	0.087	47.0	0.167	67.5	0.365	88.0	0.104
1.0	0.992	9.2	0.061	27.0	0.066	47.5	0.158	68.0	0.360	88.5	0.101
1.2	0.987	9.4	0.053	27.5	0.043	48.0	0.148	68.5	0.356	89.0	0.099
1.4	0.979	9.6	0.054	28.0	0.020	48.5	0.135	69.0	0.350	89.5	0.097
1.6	0.971	9.8	0.061	28.5	0.004	49.0	0.121	69.5	0.344	90.0	0.095
1.8	0.960	10.0	0.073	29.0	0.026	49.5	0.105	70.0	0.338		
2.0	0.948	10.2	0.087	29.5	0.046	50.0	0.088	70.5	0.331		
2.2	0.935	10.4	0.101	30.0	0.066	50.5	0.070	71.0	0.324		

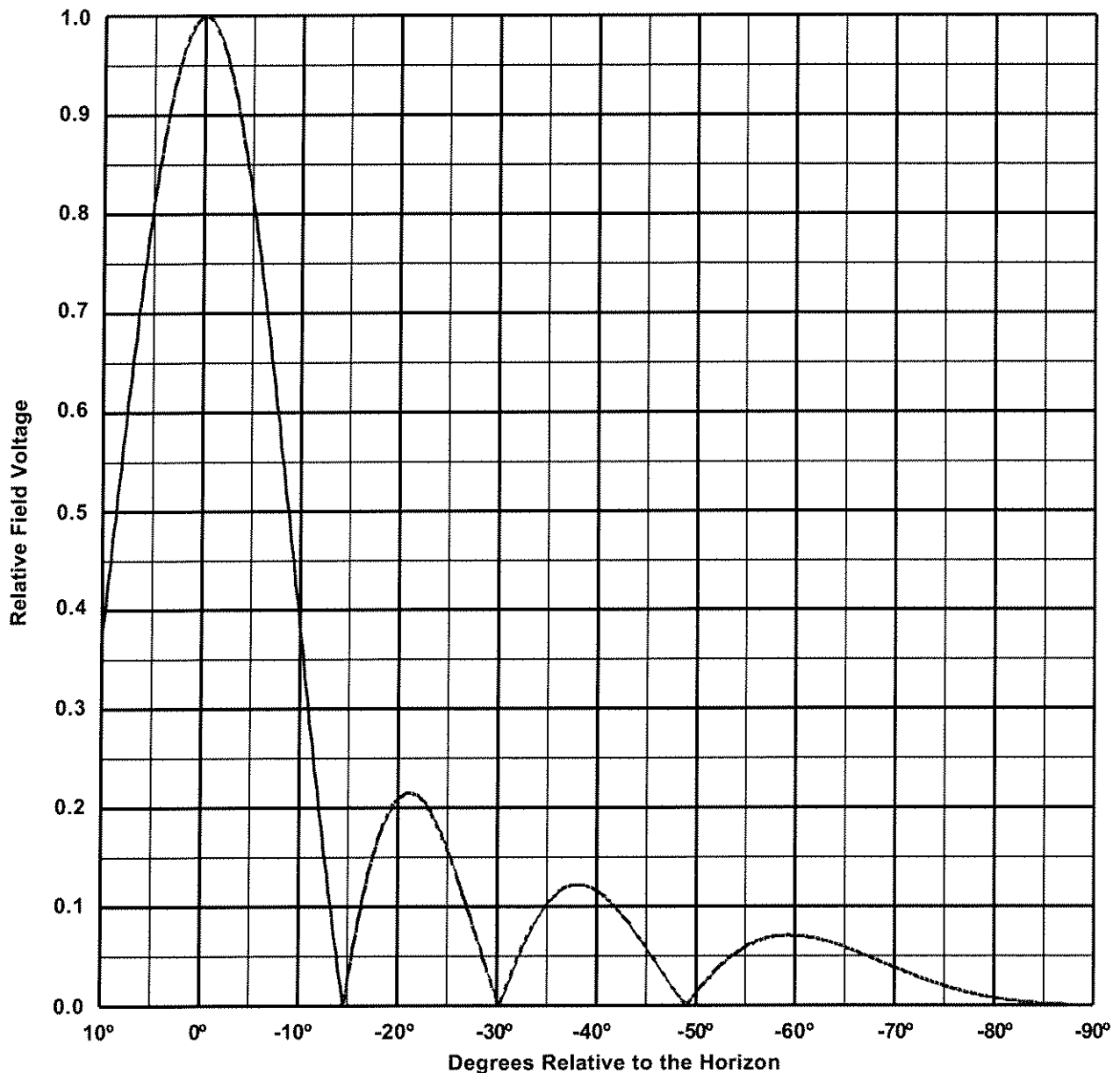
Remarks:



# **ERI<sup>®</sup>** *Vertical Plane Relative Field Pattern*

**ERI TYPE SHP, SHPX, MP, MPX, LP OR LPX ELEMENTS**

*An 8 level, .5 wave-length spaced non directional antenna  
with 0° beam tilt, 0% null fill and a HIV maximum power ratio of 1.000*



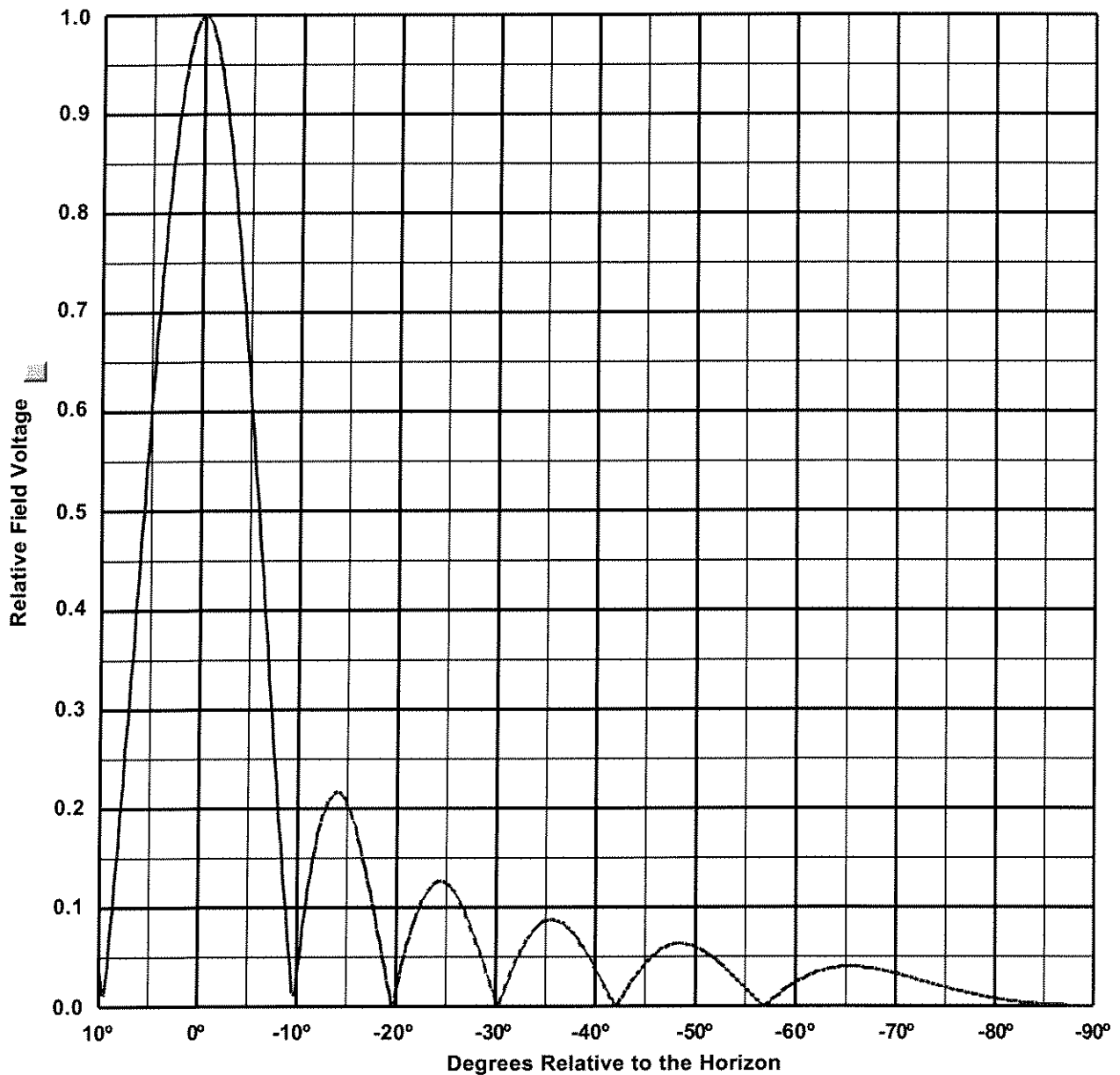
<b>Vertical Polarization Gain:</b>	<b>Horizontal Polarization Gain:</b>
Maximum: 2.519 (4.012 dB)	Maximum: 2.519 (4.012 dB)
Horizontal Plane: 2.519 (4.012 dB)	Horizontal Plane: 2.519 (4.012 dB)

# **ERI<sup>®</sup>** *Vertical Plane Relative Field Pattern*

**ERI TYPE SHP, SHPX, MP, MPX, LP OR LPX ELEMENTS**

*A 12 level, .5 wave-length spaced non directional antenna*

*with 0° beam tilt, 0% null fill and a HIV maximum power ratio of 1.000*



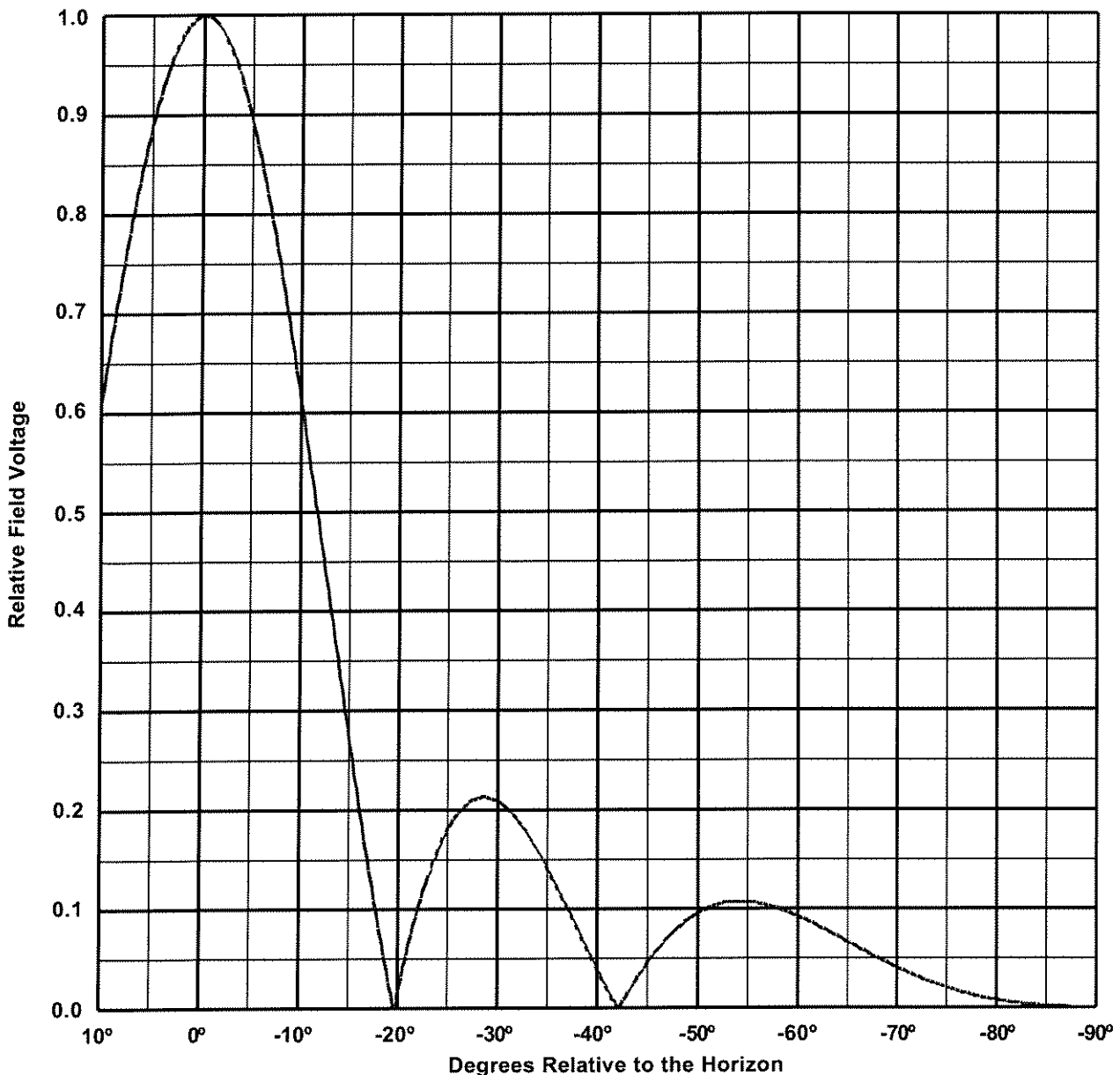
<b>Vertical Polarization Gain:</b>	<b>Horizontal Polarization Gain:</b>
Maximum: 3.732 (5.720 dB)	Maximum: 3.732 (5.720 dB)
Horizontal Plane: 3.732 (5.720 dB)	Horizontal Plane: 3.732 (5.720 dB)

# **ERI<sup>®</sup>** *Vertical Plane Relative Field Pattern*

**ERI TYPE SHP, SHPX, MP, MPX, LP OR LPX ELEMENTS**

*A 6 level, .5 wave-length spaced non directional antenna*

*with 0° beam tilt, 0% null fill and a H/V maximum power ratio of 1.000*



Vertical Polarization Gain:
Maximum: 1.913 (2.817 dB)
Horizontal Plane: 1.913 (2.817 dB)

Horizontal Polarization Gain:
Maximum: 1.913 (2.817 dB)
Horizontal Plane: 1.913 (2.817 dB)