

N. Lat. = 411832.0 W. Lng. = 960133.0  
 HAAT and Distance to Contour,  
 FCC OET,TV 3.2 - 16.1, 130 pts - NED 03 SEC

Proposed Noise Limited Contour Distances and Vertical Elevation											
Azi.	AV EL	HAAT	ERP kW	dBk	Field	DAng	VFld	D-kW	%Max	D-dBk	39-F9
000	373.5	253.5	21.5000	13.32	1.000	0.441	0.997	21.3582	99.7	13.32	68.57
010	347.4	279.6	21.5000	13.32	1.000	0.463	0.998	21.4114	99.8	13.32	70.37
020	346.5	280.5	21.5000	13.32	1.000	0.464	0.998	21.4133	99.8	13.32	70.44
030	337.9	289.1	21.5000	13.32	1.000	0.471	0.998	21.4301	99.8	13.32	71.08
040	324.9	302.1	21.5000	13.32	1.000	0.481	0.999	21.4553	99.9	13.32	72.09
050	312.3	314.7	21.5000	13.32	1.000	0.491	1.000	21.4793	100.0	13.32	73.09
060	314.7	312.3	21.5000	13.32	1.000	0.489	0.999	21.4747	99.9	13.32	72.90
070	321.9	305.1	21.5000	13.32	1.000	0.484	0.999	21.4611	99.9	13.32	72.33
080	330.9	296.1	21.5000	13.32	1.000	0.477	0.999	21.4438	99.9	13.32	71.62
090	320.5	306.5	21.5000	13.32	1.000	0.485	0.999	21.4638	99.9	13.32	72.44
100	317.9	309.1	21.5000	13.32	1.000	0.487	0.999	21.4688	99.9	13.32	72.64
110	312.6	314.4	21.5000	13.32	1.000	0.491	1.000	21.4787	100.0	13.32	73.07
120	316.9	310.1	21.5000	13.32	1.000	0.488	0.999	21.4707	99.9	13.32	72.72
130	331.6	295.4	21.5000	13.32	1.000	0.476	0.999	21.4424	99.9	13.32	71.56
140	342.4	284.6	21.5000	13.32	1.000	0.467	0.998	21.4213	99.8	13.32	70.74
150	353.2	273.8	21.5000	13.32	1.000	0.458	0.998	21.3999	99.8	13.32	69.95
160	352.5	274.5	21.5000	13.32	1.000	0.459	0.998	21.4012	99.8	13.32	70.00
170	326.5	300.5	21.5000	13.32	1.000	0.480	0.999	21.4523	99.9	13.32	71.97
180	332.1	294.9	21.5000	13.32	1.000	0.476	0.999	21.4415	99.9	13.32	71.53
190	333.3	293.7	21.5000	13.32	1.000	0.475	0.999	21.4391	99.9	13.32	71.43
200	337.4	289.6	21.5000	13.32	1.000	0.471	0.998	21.4311	99.8	13.32	71.12
210	339.3	287.7	21.5000	13.32	1.000	0.470	0.998	21.4275	99.8	13.32	70.98
220	347.4	279.6	21.5000	13.32	1.000	0.463	0.998	21.4114	99.8	13.32	70.37
230	345.7	281.3	21.5000	13.32	1.000	0.465	0.998	21.4148	99.8	13.32	70.50
240	352.0	275.0	21.5000	13.32	1.000	0.459	0.998	21.4023	99.8	13.32	70.04
250	352.8	274.2	21.5000	13.32	1.000	0.459	0.998	21.4006	99.8	13.32	69.98
260	358.5	268.5	21.5000	13.32	1.000	0.454	0.997	21.3891	99.7	13.32	69.58
270	359.2	267.8	21.5000	13.32	1.000	0.453	0.997	21.3876	99.7	13.32	69.53
280	359.5	267.5	21.5000	13.32	1.000	0.453	0.997	21.3870	99.7	13.32	69.51
290	357.3	269.7	21.5000	13.32	1.000	0.455	0.997	21.3916	99.7	13.32	69.66
300	350.1	276.9	21.5000	13.32	1.000	0.461	0.998	21.4060	99.8	13.32	70.17
310	363.7	263.3	21.5000	13.32	1.000	0.449	0.997	21.3786	99.7	13.32	69.22
320	375.4	251.6	21.5000	13.32	1.000	0.439	0.997	21.3543	99.7	13.32	68.44
330	374.2	252.8	21.5000	13.32	1.000	0.440	0.997	21.3568	99.7	13.32	68.52
340	366.2	260.8	21.5000	13.32	1.000	0.447	0.997	21.3735	99.7	13.32	69.05
350	376.0	251.0	21.5000	13.32	1.000	0.439	0.997	21.3530	99.7	13.32	68.40

Ave El= 343.45 M HAAT= 283.55 M AMSL= 627

***PRELIMINARY SPECIFICATION FOR  
ERI CARINA™ HORIZONTALLY POLARIZED  
COAXIAL SLOTTED ARRAY ANTENNA***

*Prepared For  
Nebraska Educational Telecommunications  
Channel 17*

*November 11, 2015*

**ANTENNA TYPE:  
ALP12M2-HSOC-17**

**SPECIFICATION NO:**



## **PRELIMINARY SPECIFICATION FOR ERI CARINA™ HORIZONTALLY POLARIZED COAXIAL SLOTTED ARRAY ANTENNA**

### **ELECTRICAL CHARACTERISTICS:**

CHANNEL:	DTV:	17
FREQUENCY RANGE:	DTV:	488.00 - 494.00 MHz
AZIMUTH PATTERN NUMBER:	Hor Pol:	ALP-OC
ELEVATION PATTERN NUMBER:	Hor Pol:	ALP12M2
AZIMUTH DIRECTIVITY:	Hor Pol:	1.70 (2.30 dB)
ELEVATION DIRECTIVITY:	Hor Pol:	12.64 (11.02 dBd)
PEAK POWER GAIN:	Hor Pol:	21.49 (13.32 dBd)
GAIN AT HORIZONTAL:	Hor Pol:	20.43 (13.10 dBd)
ELECTRICAL BEAM TILT:		-0.50 Degrees
INPUT POWER REQUIRED:		1.001 kW Average Power, 8VSB Digital
MAXIMUM INPUT POWER:		4.50 kW Average Power
INPUT TYPE:		3-1/8" EIA
ANTENNA VSWR (MAXIMUM):	DTV:	1.10 Over 6 MHz of Channel

*Preliminary, subject to final design and review.*

## PRELIMINARY SPECIFICATION FOR ERI CARINA™ HORIZONTALLY POLARIZED COAXIAL SLOTTED ARRAY ANTENNA

### MECHANICAL CHARACTERISTICS:

#### MOUNTING CONFIGURATION:

\*(Tower Interface supplied and installed by others.)

Side Mount

HEIGHT OF ANTENNA:

30.8 feet

HEIGHT OF CENTER OF  
RADIATION:

15.4 feet

OVERALL HEIGHT (A):

30.8 feet

DEICING:

Unpressurized Slot Cover Radome Enclosure

RADOME DIAMETER (C):

CONTACT ERI

RADOME COLOR:

GRAY

CLIMBING DEVICE:

NOT APPLICABLE

CALCULATED WEIGHT<sup>1</sup>:

175 lbs.

ANTENNA AREA<sup>3</sup>:

FRONT AREA:

$C_A A_C$ : 10.9 square feet

$A_C$ : 9.1 square feet

SIDE AREA:

$C_A A_C$ : 16.0 square feet

$A_C$ : 13.3 square feet

***This antenna is designed to be supported by a structure that can resist the antenna base reactions and which provides a support that is rigid in the three translational and three rotational degrees of freedom.***

<sup>1</sup> Calculated weight is based on the PRELIMINARY design of the antenna. The actual weight of the antenna will be within  $\pm 10\%$  of the calculated weight. The actual weight will be given in the technical manual that accompanies the antenna.

<sup>3</sup> Antenna Area is calculated per EIA/TIA-RS222-F.

**Note:** Localized conditions may require higher wind speed specifications than TIA/EIA specifications. Check with local authorities to verify wind speed requirements.

Preliminary, subject to final design and review.

## Broadcast Antenna System Power Analysis

### Nebraska Educational Telecommunications Channel 17

#### ALP12M2-HSOC-17

##### ANTENNA PARAMETERS

###### Azimuth Directivity:

Hor. Pol: 1.70  
dBd: 2.30

###### Elevation Directivity:

Hor. Pol: 12.64  
dBd: 11.02

##### TRANSMISSION LINE:

###### VERTICAL RUN:

Type: HJ7-50A  
Length, ft: 1000 ft.  
Attenuation, dB/100 ft: 0.472 dB/100 ft.

###### HORIZONTAL RUN:

Type: HJ7-50A  
Length, ft: 0 ft.  
Attenuation, dB/100 ft: 0.472 dB/100 ft.

Line Efficiency: 33.72 %

##### ERP:

kW: 21.50  
dBk: 13.32

##### POWER GAIN:

Ratio: 21.49  
dBd: 13.32

##### ANTENNA INPUT:

kW: 1.00  
dBk: 0.00

##### LINE LOSS:

kW: 1.97  
dB: 4.72

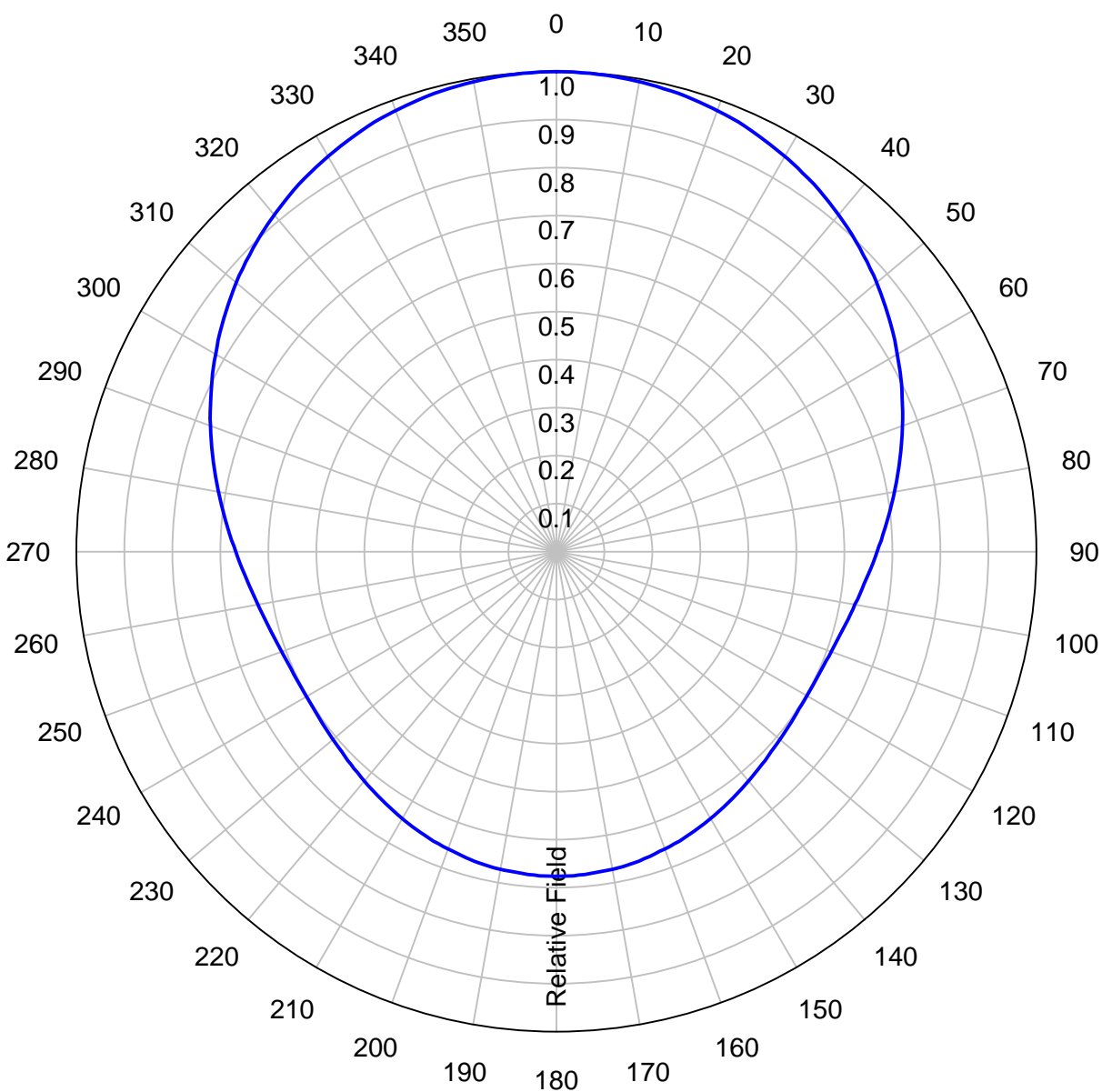
##### TRANSMITTER POWER:

kW: 2.97  
dBk: 4.72

Preliminary, subject to final design and review.

**AZIMUTH PATTERN****Type:**ALP-OC**Channel:**17**Directivity:**NumericdBd1.702.30**Location:****Polarization:**Horizontal**Peak(s) at:**

Note: Pattern shape and directivity may vary with channel and mouting configuration.



*Preliminary, subject to final design and review.*

## TABULATED DATA FOR AZIMUTH PATTERN

Type: ALP-OC

PolarizationHorizontal

ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB
0	1.000	0.00	92	0.660	-3.61	184	0.675	-3.41	276	0.695	-3.16
2	1.000	0.00	94	0.652	-3.72	186	0.674	-3.43	278	0.705	-3.04
4	0.999	-0.01	96	0.644	-3.82	188	0.673	-3.44	280	0.715	-2.91
6	0.998	-0.02	98	0.638	-3.90	190	0.672	-3.45	282	0.725	-2.79
8	0.996	-0.03	100	0.631	-4.00	192	0.670	-3.48	284	0.735	-2.67
10	0.994	-0.05	102	0.626	-4.07	194	0.668	-3.50	286	0.746	-2.55
12	0.992	-0.07	104	0.621	-4.14	196	0.665	-3.54	288	0.756	-2.43
14	0.989	-0.10	106	0.616	-4.21	198	0.662	-3.58	290	0.767	-2.30
16	0.986	-0.12	108	0.612	-4.26	200	0.659	-3.62	292	0.778	-2.18
18	0.982	-0.16	110	0.609	-4.31	202	0.656	-3.66	294	0.788	-2.07
20	0.978	-0.19	112	0.606	-4.35	204	0.653	-3.70	296	0.799	-1.95
22	0.974	-0.23	114	0.604	-4.38	206	0.649	-3.76	298	0.810	-1.83
24	0.969	-0.27	116	0.603	-4.39	208	0.646	-3.80	300	0.820	-1.72
26	0.963	-0.33	118	0.602	-4.41	210	0.642	-3.85	302	0.831	-1.61
28	0.957	-0.38	120	0.602	-4.41	212	0.638	-3.90	304	0.841	-1.50
30	0.951	-0.44	122	0.602	-4.41	214	0.634	-3.96	306	0.851	-1.40
32	0.945	-0.49	124	0.603	-4.39	216	0.630	-4.01	308	0.861	-1.30
34	0.938	-0.56	126	0.604	-4.38	218	0.627	-4.05	310	0.871	-1.20
36	0.931	-0.62	128	0.606	-4.35	220	0.623	-4.11	312	0.880	-1.11
38	0.923	-0.70	130	0.608	-4.32	222	0.619	-4.17	314	0.889	-1.02
40	0.915	-0.77	132	0.610	-4.29	224	0.616	-4.21	316	0.898	-0.93
42	0.907	-0.85	134	0.613	-4.25	226	0.613	-4.25	318	0.907	-0.85
44	0.898	-0.93	136	0.616	-4.21	228	0.610	-4.29	320	0.915	-0.77
46	0.889	-1.02	138	0.619	-4.17	230	0.608	-4.32	322	0.923	-0.70
48	0.880	-1.11	140	0.623	-4.11	232	0.606	-4.35	324	0.931	-0.62
50	0.871	-1.20	142	0.627	-4.05	234	0.604	-4.38	326	0.938	-0.56
52	0.861	-1.30	144	0.630	-4.01	236	0.603	-4.39	328	0.945	-0.49
54	0.851	-1.40	146	0.634	-3.96	238	0.602	-4.41	330	0.951	-0.44
56	0.841	-1.50	148	0.638	-3.90	240	0.602	-4.41	332	0.957	-0.38
58	0.831	-1.61	150	0.642	-3.85	242	0.602	-4.41	334	0.963	-0.33
60	0.820	-1.72	152	0.646	-3.80	244	0.603	-4.39	336	0.969	-0.27
62	0.810	-1.83	154	0.649	-3.76	246	0.604	-4.38	338	0.974	-0.23
64	0.799	-1.95	156	0.653	-3.70	248	0.606	-4.35	340	0.978	-0.19
66	0.788	-2.07	158	0.656	-3.66	250	0.609	-4.31	342	0.982	-0.16
68	0.778	-2.18	160	0.659	-3.62	252	0.612	-4.26	344	0.986	-0.12
70	0.767	-2.30	162	0.662	-3.58	254	0.616	-4.21	346	0.989	-0.10
72	0.756	-2.43	164	0.665	-3.54	256	0.621	-4.14	348	0.992	-0.07
74	0.746	-2.55	166	0.668	-3.50	258	0.626	-4.07	350	0.994	-0.05
76	0.735	-2.67	168	0.670	-3.48	260	0.631	-4.00	352	0.996	-0.03
78	0.725	-2.79	170	0.672	-3.45	262	0.638	-3.90	354	0.998	-0.02
80	0.715	-2.91	172	0.673	-3.44	264	0.644	-3.82	356	0.999	-0.01
82	0.705	-3.04	174	0.674	-3.43	266	0.652	-3.72	358	1.000	0.00
84	0.695	-3.16	176	0.675	-3.41	268	0.660	-3.61	360	1.000	0.00
86	0.686	-3.27	178	0.676	-3.40	270	0.668	-3.50			
88	0.677	-3.39	180	0.676	-3.40	272	0.677	-3.39			
90	0.668	-3.50	182	0.676	-3.40	274	0.686	-3.27			

Preliminary, subject to final design and review.

## **TABULATED DATA FOR AZIMUTH PATTERN FCC FILING FORMAT**

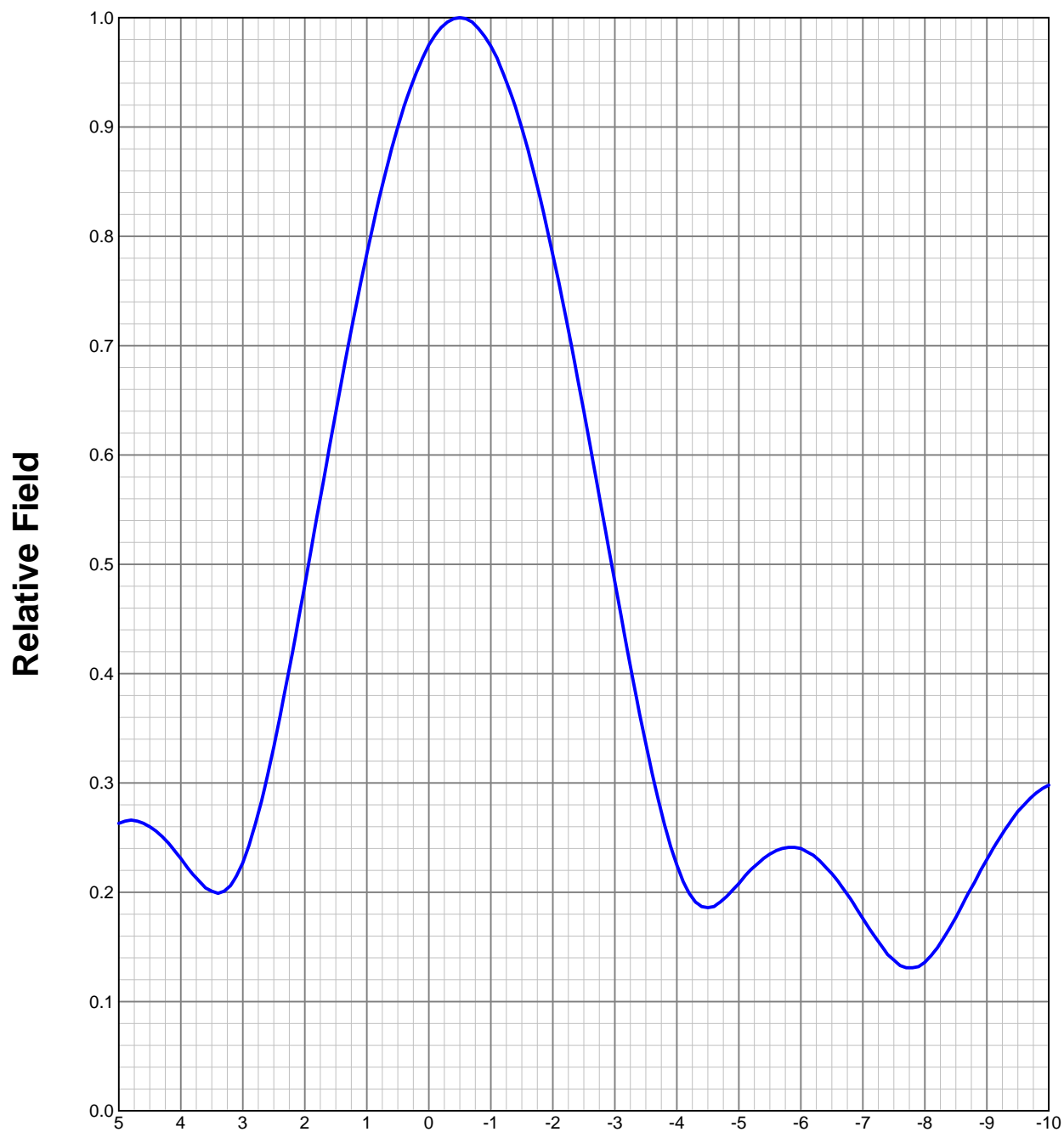
Type: ALP-OC

PolarizationHorizontal

<b>ANGLE</b>	<b>FIELD</b>	<b>ERP (kW)</b>	<b>ERP (dBk)</b>
0	1.000	21.500	13.324
10	0.994	21.243	13.272
20	0.978	20.564	13.131
30	0.951	19.445	12.888
40	0.915	18.000	12.553
50	0.871	16.311	12.125
60	0.820	14.457	11.601
70	0.767	12.648	11.020
80	0.715	10.991	10.411
90	0.668	9.594	9.820
100	0.631	8.560	9.325
110	0.609	7.974	9.017
120	0.602	7.792	8.916
130	0.608	7.948	9.002
140	0.623	8.345	9.214
150	0.642	8.862	9.475
160	0.659	9.337	9.702
170	0.672	9.709	9.872
180	0.676	9.825	9.923
190	0.672	9.709	9.872
200	0.659	9.337	9.702
210	0.642	8.862	9.475
220	0.623	8.345	9.214
230	0.608	7.948	9.002
240	0.602	7.792	8.916
250	0.609	7.974	9.017
260	0.631	8.560	9.325
270	0.668	9.594	9.820
280	0.715	10.991	10.411
290	0.767	12.648	11.020
300	0.820	14.457	11.601
310	0.871	16.311	12.125
320	0.915	18.000	12.553
330	0.951	19.445	12.888
340	0.978	20.564	13.131
350	0.994	21.243	13.272

*Preliminary, subject to final design and review.*



**ELEVATION PATTERN****Type:****ALP12M2****Channel:****17****Directivity:****Numeric****dBd****Location:****Main Lobe:****12.64****11.02****Beam Tilt:****-0.50****Horizontal:****12.02****10.80****Polarization:****Horizontal***Preliminary, subject to final design and review.*

## TABULATED DATA FOR ELEVATION PATTERN

Type: ALP12M2

PolarizationHorizontal

ANGLEFIELD	dB	ANGLEFIELD	dB	ANGLEFIELD	dB	ANGLEFIELD	dB	ANGLEFIELD	dB
5.00	0.263	-11.60	-6.75	0.198	-14.07	-27.00	0.030	-30.46	-50.50
4.75	0.266	-11.52	-7.00	0.176	-15.09	-27.50	0.021	-33.56	-51.00
4.50	0.260	-11.70	-7.25	0.155	-16.19	-28.00	0.019	-34.42	-51.50
4.25	0.248	-12.11	-7.50	0.138	-17.20	-28.50	0.017	-35.39	-52.00
4.00	0.231	-12.73	-7.75	0.131	-17.65	-29.00	0.012	-38.42	-52.50
3.75	0.213	-13.43	-8.00	0.136	-17.33	-29.50	0.006	-44.44	-53.00
3.50	0.201	-13.94	-8.25	0.153	-16.28	-30.00	0.000	-40.00	-53.50
3.25	0.204	-13.83	-8.50	0.177	-15.04	-30.50	0.005	-46.02	-54.00
3.00	0.227	-12.88	-8.75	0.204	-13.81	-31.00	0.008	-41.94	-54.50
2.75	0.272	-11.29	-9.00	0.230	-12.77	-31.50	0.013	-37.72	-55.00
2.50	0.333	-9.55	-9.25	0.254	-11.92	-32.00	0.022	-33.15	-55.50
2.25	0.404	-7.86	-9.50	0.274	-11.24	-32.50	0.037	-28.64	-56.00
2.00	0.481	-6.36	-9.75	0.288	-10.80	-33.00	0.057	-24.88	-56.50
1.75	0.560	-5.03	-10.00	0.298	-10.52	-33.50	0.080	-21.94	-57.00
1.50	0.639	-3.89	-10.50	0.300	-10.46	-34.00	0.104	-19.66	-57.50
1.25	0.714	-2.92	-11.00	0.282	-11.00	-34.50	0.128	-17.86	-58.00
1.00	0.784	-2.11	-11.50	0.246	-12.18	-35.00	0.148	-16.59	-58.50
0.75	0.847	-1.45	-12.00	0.199	-14.02	-35.50	0.164	-15.70	-59.00
0.50	0.900	-0.92	-12.50	0.147	-16.65	-36.00	0.173	-15.24	-59.50
0.25	0.943	-0.51	-13.00	0.096	-20.35	-36.50	0.176	-15.09	-60.00
0.00	0.975	-0.22	-13.50	0.053	-25.51	-37.00	0.171	-15.34	-60.50
-0.25	0.994	-0.06	-14.00	0.020	-33.98	-37.50	0.160	-15.92	-61.00
-0.50	1.000	0.00	-14.50	0.001	-60.00	-38.00	0.144	-16.83	-61.50
-0.75	0.993	-0.06	-15.00	0.011	-39.17	-38.50	0.123	-18.20	-62.00
-1.00	0.974	-0.23	-15.50	0.015	-36.48	-39.00	0.100	-20.00	-62.50
-1.25	0.942	-0.52	-16.00	0.023	-32.77	-39.50	0.076	-22.38	-63.00
-1.50	0.899	-0.92	-16.50	0.035	-29.12	-40.00	0.056	-25.04	-63.50
-1.75	0.845	-1.46	-17.00	0.047	-26.56	-40.50	0.043	-27.33	-64.00
-2.00	0.783	-2.12	-17.50	0.055	-25.19	-41.00	0.039	-28.18	-64.50
-2.25	0.714	-2.92	-18.00	0.056	-25.04	-41.50	0.042	-27.54	-65.00
-2.50	0.640	-3.88	-18.50	0.051	-25.85	-42.00	0.047	-26.56	-65.50
-2.75	0.562	-5.01	-19.00	0.048	-26.38	-42.50	0.049	-26.20	-66.00
-3.00	0.484	-6.30	-19.50	0.059	-24.58	-43.00	0.047	-26.56	-66.50
-3.25	0.407	-7.81	-20.00	0.087	-21.21	-43.50	0.043	-27.33	-67.00
-3.50	0.336	-9.47	-20.50	0.123	-18.20	-44.00	0.036	-28.87	-67.50
-3.75	0.273	-11.26	-21.00	0.159	-15.97	-44.50	0.029	-30.75	-68.00
-4.00	0.225	-12.96	-21.50	0.192	-14.33	-45.00	0.023	-32.77	-68.50
-4.25	0.195	-14.20	-22.00	0.216	-13.31	-45.50	0.020	-33.98	-69.00
-4.50	0.186	-14.61	-22.50	0.229	-12.80	-46.00	0.020	-33.98	-69.50
-4.75	0.194	-14.27	-23.00	0.231	-12.73	-46.50	0.021	-33.56	-70.00
-5.00	0.208	-13.64	-23.50	0.221	-13.11	-47.00	0.021	-33.56	-70.50
-5.25	0.224	-13.01	-24.00	0.201	-13.94	-47.50	0.018	-34.89	-71.00
-5.50	0.235	-12.58	-24.50	0.173	-15.24	-48.00	0.011	-39.17	-71.50
-5.75	0.240	-12.38	-25.00	0.141	-17.02	-48.50	0.002	-53.98	-72.00
-6.00	0.240	-12.40	-25.50	0.107	-19.41	-49.00	0.010	-40.00	-72.50
-6.25	0.232	-12.71	-26.00	0.076	-22.38	-49.50	0.024	-32.40	-73.00
-6.50	0.217	-13.27	-26.50	0.049	-26.20	-50.00	0.040	-27.96	-73.50

*Preliminary, subject to final design and review.*