

***PRELIMINARY SPECIFICATION FOR
ERI TRASAR[®] ELLIPTICALLY POLARIZED
COAXIAL SLOTTED ARRAY ANTENNA***

*Prepared For Channel 23
WQPT TV*

*Moline, IL
November 27, 2017*

**ANTENNA TYPE:
ATW29HS3-ETC1-23H**

**SPECIFICATION NO:
WQPT Maxmimization**



**PRELIMINARY SPECIFICATION FOR
ERI TRASAR® ELLIPTICALLY POLARIZED
COAXIAL SLOTTED ARRAY ANTENNA**

ELECTRICAL CHARACTERISTICS:

CHANNEL:	DTV:	23
FREQUENCY RANGE:	DTV:	524.00 - 530.00 MHz
AZIMUTH PATTERN NUMBER:	Hor Pol:	ATW-C1
	Ver Pol:	ATW-V5
ELEVATION PATTERN NUMBER:	Hor Pol:	ATW29HS3H
	Ver Pol:	ATW26HS3V
AZIMUTH DIRECTIVITY:	Hor Pol:	1.52 (1.82 dB)
	Ver Pol:	2.11 (3.24 dB)
ELEVATION DIRECTIVITY:	Hor Pol:	29.00 (14.62 dBd)
	Ver Pol:	26.00 (14.15 dBd)
ELEVATION GAIN:	Hor Pol:	23.37 (13.69 dBd)
	Ver Pol:	5.05 (7.03 dBd)
PEAK POWER GAIN:	Hor Pol:	35.52 (15.50 dBd)
	Ver Pol:	10.66 (10.28 dBd)
GAIN AT HORIZONTAL:	Hor Pol:	22.96 (13.61 dBd)
	Ver Pol:	6.73 (8.28 dBd)
GAIN RATIO: VER POL/HOR POL		0.30
ELECTRICAL BEAM TILT:		-0.75 Degrees
INPUT POWER REQUIRED:		28.154 kW Average Power, 8VSB Digital
MAXIMUM INPUT POWER:		CONTACT ERI
INPUT TYPE:		CONTACT ERI
ANTENNA VSWR (MAXIMUM):	DTV:	1.10 Over 6 MHz of Channel

Preliminary, subject to final design and review.

PRELIMINARY SPECIFICATION FOR ERI TRASAR® ELLIPTICALLY POLARIZED COAXIAL SLOTTED ARRAY ANTENNA

MECHANICAL CHARACTERISTICS:

MOUNTING CONFIGURATION:

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

Top Mount

HEIGHT OF ANTENNA:

66.0 feet

*HEIGHT OF CENTER OF
RADIATION:*

33.0 feet

OVERALL HEIGHT (A):

69.0 feet

DEICING:

Pressurized Radome Enclosure

RADOME DIAMETER (C):

CONTACT ERI

RADOME COLOR:

AVIATION ORANGE (standard)

CLIMBING DEVICE:

Galvanized Steel Pole

CALCULATED WEIGHT¹:

CONTACT ERI

ANTENNA AREA:

CONTACT ERI

MOUNTING FLANGE:

CONTACT ERI

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 transitional and three rotational degrees of freedom.

¹ 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. This figure is for the antenna only and does not include the antenna input section.

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

WQPT TV Channel 23
Moline, IL
ATW29HS3-ETC1-23H

ANTENNA PARAMETERS

Azimuth Directivity:

Hor. Pol: 1.52 (1.82 dBd)

Ver. Pol: 2.11 (3.24 dBd)

Elevation Directivity:

Hor. Pol: 29.00 (14.62 dBd)

Ver. Pol: 26.00 (14.15 dBd)

TRANSMISSION LINE:

VERTICAL RUN:

Type: MACX675B

Length, ft: 1060 ft.

Attenuation, dB/100 ft: 0.104 dB/100 ft.

HORIZONTAL RUN:

Type: MACX675B

Length, ft: 200 ft.

Attenuation, dB/100 ft: 0.104 dB/100 ft.

Line Efficiency: 73.92 %

ERP:

Hor. Pol: 1000.00 kW (30.00 dBk)

Ver. Pol: 300.00 kW (24.77 dBk)

POWER GAIN:

Hor. Pol: 35.52 (15.50 dBd)

Ver. Pol: 10.66 (10.28 dBd)

ANTENNA INPUT:

kW: 28.15

dBk: 14.50

LINE LOSS:

kW: 9.94

dB: 1.31

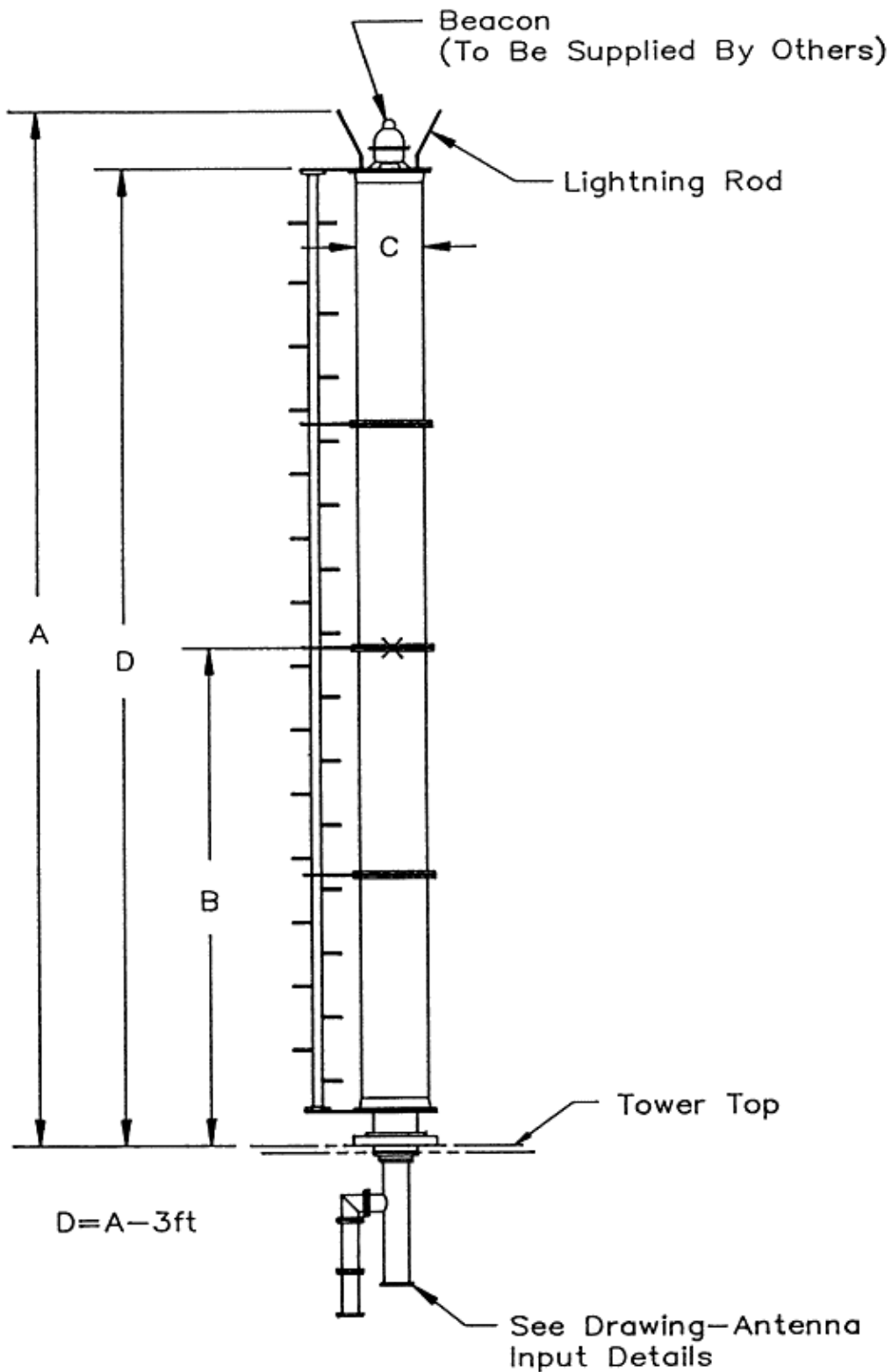
TRANSMITTER POWER:

kW: 38.09

dBk: 15.81

Preliminary, subject to final design and review.

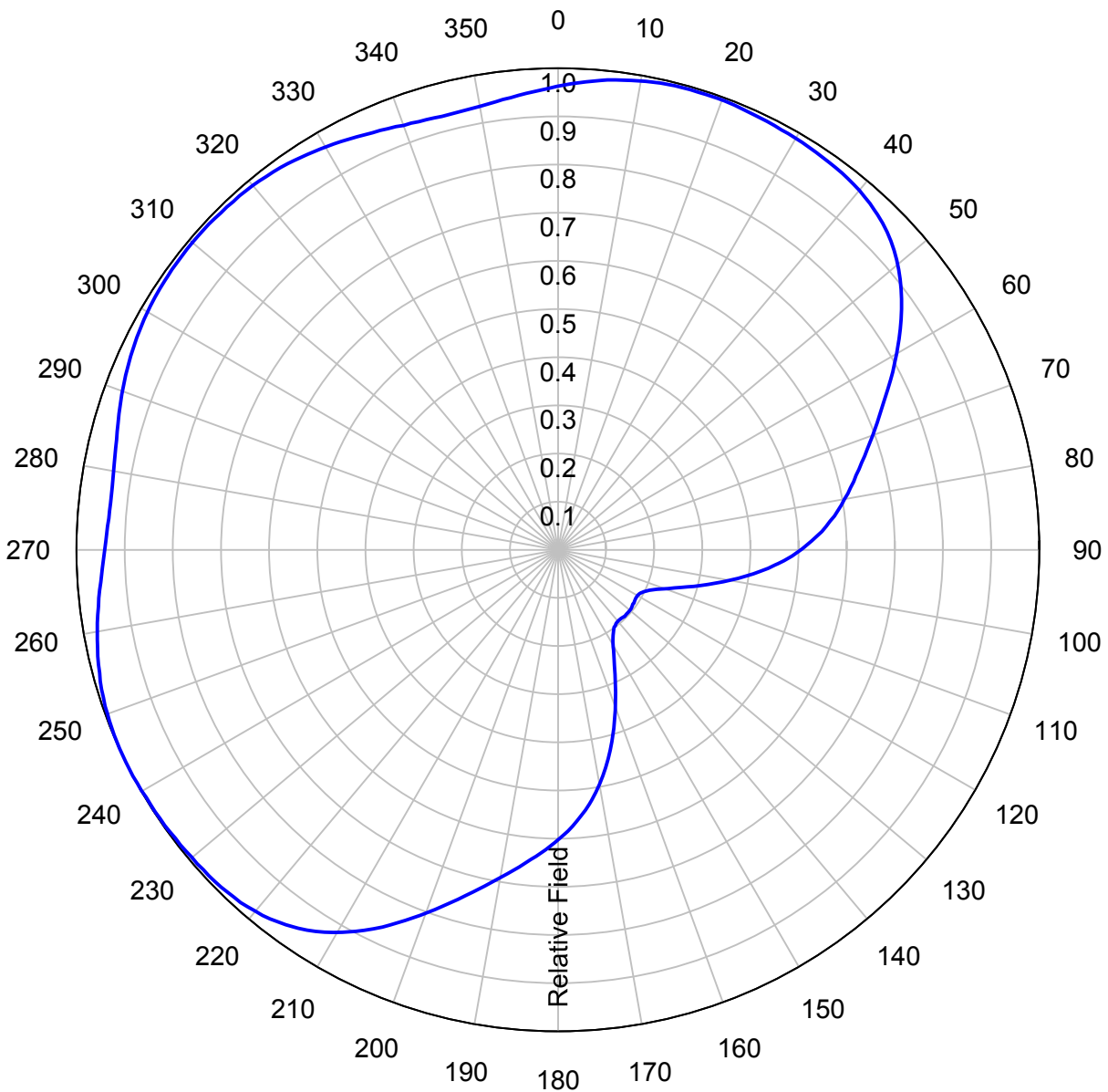
TYPICAL MOUNTING CONFIGURATION SHOWN. ACTUAL MOUNTING CONFIGURATION MAY VARY.



Preliminary, subject to final design and review.

AZIMUTH PATTERN**Type:****ATW-C1****Channel:****23****Directivity:****Numeric****dBd****Location:****Moline, IL****Peak(s) at:****1.52****1.82****Polarization:****Horizontal**

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: ATW-C1

Polarization: Horizontal

ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB
0	0.963	-0.33	92	0.479	-6.39	184	0.637	-3.92	276	0.934	-0.59
2	0.969	-0.27	94	0.452	-6.90	186	0.654	-3.69	278	0.935	-0.58
4	0.975	-0.22	96	0.423	-7.47	188	0.672	-3.45	280	0.937	-0.57
6	0.981	-0.17	98	0.393	-8.11	190	0.691	-3.21	282	0.941	-0.53
8	0.985	-0.13	100	0.363	-8.80	192	0.711	-2.96	284	0.945	-0.49
10	0.989	-0.10	102	0.333	-9.55	194	0.732	-2.71	286	0.951	-0.44
12	0.992	-0.07	104	0.305	-10.31	196	0.755	-2.44	288	0.957	-0.38
14	0.994	-0.05	106	0.279	-11.09	198	0.778	-2.18	290	0.963	-0.33
16	0.994	-0.05	108	0.255	-11.87	200	0.803	-1.91	292	0.968	-0.28
18	0.994	-0.05	110	0.235	-12.58	202	0.827	-1.65	294	0.974	-0.23
20	0.994	-0.05	112	0.219	-13.19	204	0.852	-1.39	296	0.978	-0.19
22	0.993	-0.06	114	0.206	-13.72	206	0.875	-1.16	298	0.982	-0.16
24	0.991	-0.08	116	0.198	-14.07	208	0.897	-0.94	300	0.985	-0.13
26	0.990	-0.09	118	0.192	-14.33	210	0.917	-0.75	302	0.988	-0.10
28	0.988	-0.10	120	0.190	-14.42	212	0.935	-0.58	304	0.990	-0.09
30	0.987	-0.11	122	0.190	-14.42	214	0.950	-0.45	306	0.991	-0.08
32	0.985	-0.13	124	0.191	-14.38	216	0.962	-0.34	308	0.991	-0.08
34	0.983	-0.15	126	0.192	-14.33	218	0.972	-0.25	310	0.992	-0.07
36	0.981	-0.17	128	0.194	-14.24	220	0.979	-0.18	312	0.992	-0.07
38	0.978	-0.19	130	0.195	-14.20	222	0.985	-0.13	314	0.991	-0.08
40	0.974	-0.23	132	0.195	-14.20	224	0.988	-0.10	316	0.990	-0.09
42	0.968	-0.28	134	0.195	-14.20	226	0.991	-0.08	318	0.989	-0.10
44	0.960	-0.35	136	0.194	-14.24	228	0.992	-0.07	320	0.987	-0.11
46	0.950	-0.45	138	0.193	-14.29	230	0.993	-0.06	322	0.984	-0.14
48	0.937	-0.57	140	0.193	-14.29	232	0.995	-0.04	324	0.981	-0.17
50	0.921	-0.71	142	0.195	-14.20	234	0.996	-0.03	326	0.976	-0.21
52	0.903	-0.89	144	0.198	-14.07	236	0.997	-0.03	328	0.971	-0.26
54	0.882	-1.09	146	0.205	-13.76	238	0.998	-0.02	330	0.966	-0.30
56	0.860	-1.31	148	0.215	-13.35	240	0.999	-0.01	332	0.960	-0.35
58	0.836	-1.56	150	0.228	-12.84	242	1.000	0.00	334	0.954	-0.41
60	0.811	-1.82	152	0.246	-12.18	244	1.000	0.00	336	0.948	-0.46
62	0.787	-2.08	154	0.267	-11.47	246	1.000	0.00	338	0.943	-0.51
64	0.762	-2.36	156	0.291	-10.72	248	0.998	-0.02	340	0.938	-0.56
66	0.738	-2.64	158	0.318	-9.95	250	0.996	-0.03	342	0.935	-0.58
68	0.716	-2.90	160	0.348	-9.17	252	0.993	-0.06	344	0.933	-0.60
70	0.695	-3.16	162	0.378	-8.45	254	0.989	-0.10	346	0.932	-0.61
72	0.675	-3.41	164	0.408	-7.79	256	0.984	-0.14	348	0.933	-0.60
74	0.656	-3.66	166	0.438	-7.17	258	0.978	-0.19	350	0.935	-0.58
76	0.638	-3.90	168	0.467	-6.61	260	0.972	-0.25	352	0.939	-0.55
78	0.621	-4.14	170	0.495	-6.11	262	0.965	-0.31	354	0.944	-0.50
80	0.604	-4.38	172	0.520	-5.68	264	0.959	-0.36	356	0.950	-0.45
82	0.587	-4.63	174	0.543	-5.30	266	0.952	-0.43	358	0.956	-0.39
84	0.568	-4.91	176	0.564	-4.97	268	0.946	-0.48	360	0.963	-0.33
86	0.549	-5.21	178	0.584	-4.67	270	0.941	-0.53			
88	0.527	-5.56	180	0.602	-4.41	272	0.938	-0.56			
90	0.504	-5.95	182	0.620	-4.15	274	0.935	-0.58			

Preliminary, subject to final design and review.

**TABULATED DATA FOR AZIMUTH PATTERN
FCC FILING FORMAT****Type: ATW-C1****Polarization: Horizontal**

ANGLE	FIELD	ERP (kW)	ERP (dBk)
0	0.963	927.369	29.673
10	0.989	978.121	29.904
20	0.994	988.036	29.948
30	0.987	974.169	29.886
40	0.974	948.676	29.771
50	0.921	848.241	29.285
60	0.811	657.721	28.180
70	0.695	483.025	26.840
80	0.604	364.816	25.621
90	0.504	254.016	24.049
100	0.363	131.769	21.198
110	0.235	55.225	17.421
120	0.190	36.100	15.575
130	0.195	38.025	15.801
140	0.193	37.249	15.711
150	0.228	51.984	17.159
160	0.348	121.104	20.832
170	0.495	245.025	23.892
180	0.602	362.404	25.592
190	0.691	477.481	26.790
200	0.803	644.809	28.094
210	0.917	840.889	29.247
220	0.979	958.441	29.816
230	0.993	986.049	29.939
240	0.999	998.001	29.991
250	0.996	992.016	29.965
260	0.972	944.784	29.753
270	0.941	885.481	29.472
280	0.937	877.969	29.435
290	0.963	927.369	29.673
300	0.985	970.225	29.869
310	0.992	984.064	29.930
320	0.987	974.169	29.886
330	0.966	933.156	29.700
340	0.938	879.844	29.444
350	0.935	874.225	29.416

Preliminary, subject to final design and review.

AZIMUTH PATTERN

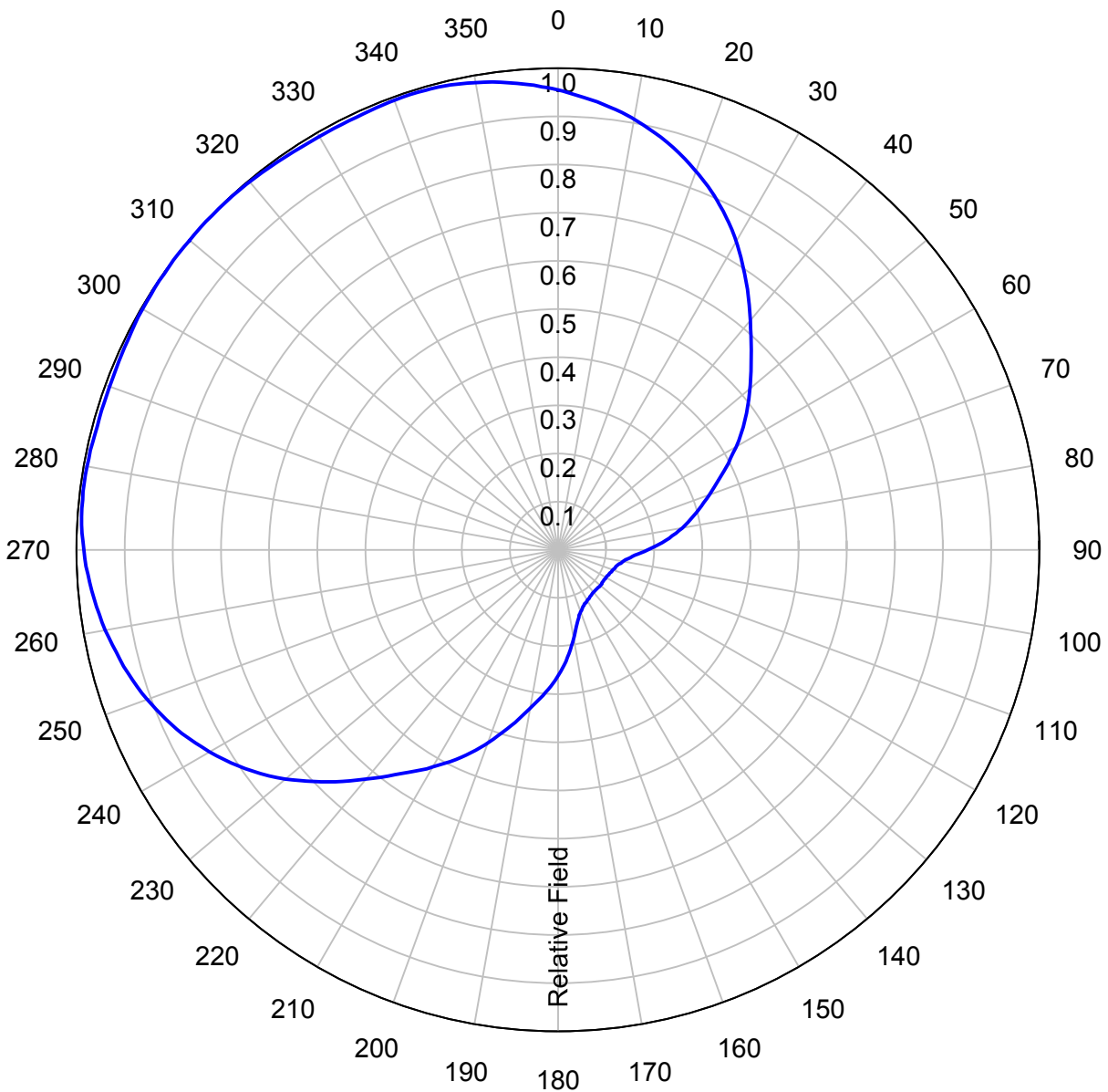
Type: ATW-V5

	Numeric	dBd
Directivity:	<u>2.11</u>	<u>3.24</u>
Peak(s) at:		

Channel: 23

Location:	<u>Moline, IL</u>
Polarization:	<u>Vertical</u>

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: ATW-V5

Polarization: Vertical

ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB
0	0.955	-0.40	92	0.172	-15.29	184	0.290	-10.75	276	0.993	-0.06
2	0.946	-0.48	94	0.160	-15.92	186	0.304	-10.34	278	0.994	-0.05
4	0.938	-0.56	96	0.151	-16.42	188	0.318	-9.95	280	0.993	-0.06
6	0.929	-0.64	98	0.142	-16.95	190	0.334	-9.53	282	0.993	-0.06
8	0.919	-0.73	100	0.137	-17.27	192	0.350	-9.12	284	0.991	-0.08
10	0.908	-0.84	102	0.133	-17.52	194	0.369	-8.66	286	0.991	-0.08
12	0.896	-0.95	104	0.128	-17.86	196	0.387	-8.25	288	0.991	-0.08
14	0.883	-1.08	106	0.125	-18.06	198	0.406	-7.83	290	0.991	-0.08
16	0.869	-1.22	108	0.124	-18.13	200	0.427	-7.39	292	0.992	-0.07
18	0.853	-1.38	110	0.121	-18.34	202	0.446	-7.01	294	0.993	-0.06
20	0.837	-1.55	112	0.120	-18.42	204	0.465	-6.65	296	0.994	-0.05
22	0.820	-1.72	114	0.118	-18.56	206	0.484	-6.30	298	0.996	-0.03
24	0.802	-1.92	116	0.117	-18.64	208	0.502	-5.99	300	0.997	-0.03
26	0.782	-2.14	118	0.115	-18.79	210	0.520	-5.68	302	0.998	-0.02
28	0.762	-2.36	120	0.115	-18.79	212	0.539	-5.37	304	0.999	-0.01
30	0.740	-2.62	122	0.114	-18.86	214	0.557	-5.08	306	0.999	-0.01
32	0.716	-2.90	124	0.114	-18.86	216	0.577	-4.78	308	1.000	0.00
34	0.693	-3.19	126	0.114	-18.86	218	0.599	-4.45	310	0.999	-0.01
36	0.669	-3.49	128	0.115	-18.79	220	0.621	-4.14	312	1.000	0.00
38	0.645	-3.81	130	0.115	-18.79	222	0.645	-3.81	314	0.999	-0.01
40	0.621	-4.14	132	0.115	-18.79	224	0.669	-3.49	316	0.999	-0.01
42	0.599	-4.45	134	0.114	-18.86	226	0.693	-3.19	318	0.998	-0.02
44	0.577	-4.78	136	0.114	-18.86	228	0.716	-2.90	320	0.997	-0.03
46	0.557	-5.08	138	0.114	-18.86	230	0.740	-2.62	322	0.996	-0.03
48	0.539	-5.37	140	0.115	-18.79	232	0.762	-2.36	324	0.994	-0.05
50	0.520	-5.68	142	0.115	-18.79	234	0.782	-2.14	326	0.993	-0.06
52	0.502	-5.99	144	0.117	-18.64	236	0.802	-1.92	328	0.992	-0.07
54	0.484	-6.30	146	0.118	-18.56	238	0.820	-1.72	330	0.991	-0.08
56	0.465	-6.65	148	0.120	-18.42	240	0.837	-1.55	332	0.991	-0.08
58	0.446	-7.01	150	0.121	-18.34	242	0.853	-1.38	334	0.991	-0.08
60	0.427	-7.39	152	0.124	-18.13	244	0.869	-1.22	336	0.991	-0.08
62	0.406	-7.83	154	0.125	-18.06	246	0.883	-1.08	338	0.993	-0.06
64	0.387	-8.25	156	0.128	-17.86	248	0.896	-0.95	340	0.993	-0.06
66	0.369	-8.66	158	0.133	-17.52	250	0.908	-0.84	342	0.994	-0.05
68	0.350	-9.12	160	0.137	-17.27	252	0.919	-0.73	344	0.993	-0.06
70	0.334	-9.53	162	0.142	-16.95	254	0.929	-0.64	346	0.992	-0.07
72	0.318	-9.95	164	0.151	-16.42	256	0.938	-0.56	348	0.989	-0.10
74	0.304	-10.34	166	0.160	-15.92	258	0.946	-0.48	350	0.985	-0.13
76	0.290	-10.75	168	0.172	-15.29	260	0.955	-0.40	352	0.981	-0.17
78	0.276	-11.18	170	0.187	-14.56	262	0.962	-0.34	354	0.975	-0.22
80	0.262	-11.63	172	0.201	-13.94	264	0.969	-0.27	356	0.969	-0.27
82	0.247	-12.15	174	0.217	-13.27	266	0.975	-0.22	358	0.962	-0.34
84	0.232	-12.69	176	0.232	-12.69	268	0.981	-0.17	360	0.955	-0.40
86	0.217	-13.27	178	0.247	-12.15	270	0.985	-0.13			
88	0.201	-13.94	180	0.262	-11.63	272	0.989	-0.10			
90	0.187	-14.56	182	0.276	-11.18	274	0.992	-0.07			

Preliminary, subject to final design and review.

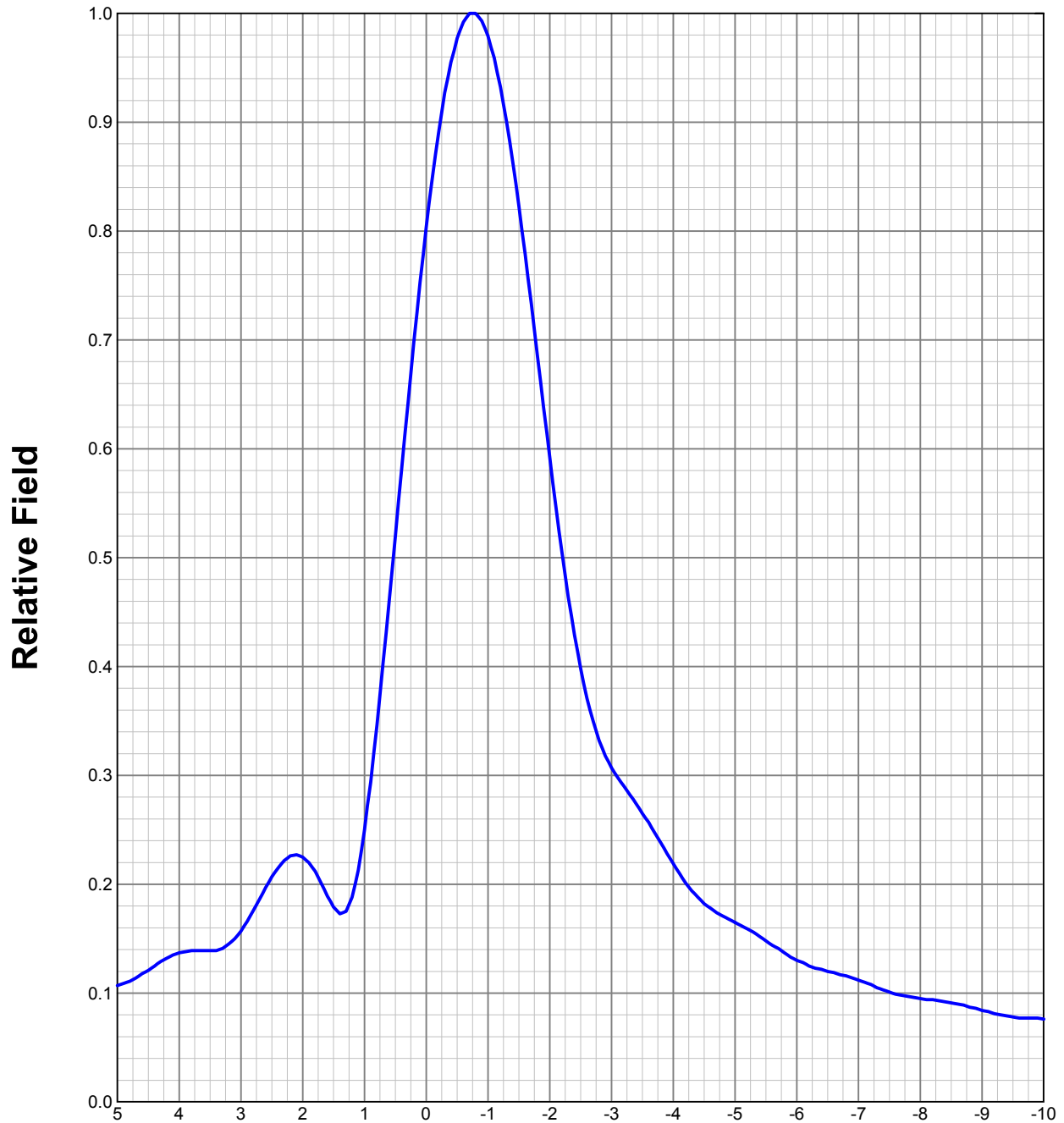
**TABULATED DATA FOR AZIMUTH PATTERN
FCC FILING FORMAT****Type: ATW-V5****Polarization: Vertical**

ANGLE	FIELD	ERP (kW)	ERP (dBk)
0	0.955	273.607	24.371
10	0.908	247.339	23.933
20	0.837	210.171	23.226
30	0.740	164.280	22.156
40	0.621	115.692	20.633
50	0.520	81.120	19.091
60	0.427	54.699	17.380
70	0.334	33.467	15.246
80	0.262	20.593	13.137
90	0.187	10.491	10.208
100	0.137	5.631	7.506
110	0.121	4.392	6.427
120	0.115	3.968	5.985
130	0.115	3.968	5.985
140	0.115	3.968	5.985
150	0.121	4.392	6.427
160	0.137	5.631	7.506
170	0.187	10.491	10.208
180	0.262	20.593	13.137
190	0.334	33.467	15.246
200	0.427	54.699	17.380
210	0.520	81.120	19.091
220	0.621	115.692	20.633
230	0.740	164.280	22.156
240	0.837	210.171	23.226
250	0.908	247.339	23.933
260	0.955	273.607	24.371
270	0.985	291.067	24.640
280	0.993	295.815	24.710
290	0.991	294.624	24.693
300	0.997	298.203	24.745
310	0.999	299.400	24.763
320	0.997	298.203	24.745
330	0.991	294.624	24.693
340	0.993	295.815	24.710
350	0.985	291.067	24.640

Preliminary, subject to final design and review.

ELEVATION PATTERN

Type:	ATW29HS3H		Channel:	23
Directivity:	Numeric	dBd	Location:	Moline, IL
Main Lobe:	29.00	14.62	Beam Tilt:	-0.75
Horizontal:	18.75	12.73	Polarization:	Horizontal



Preliminary, subject to final design and review.

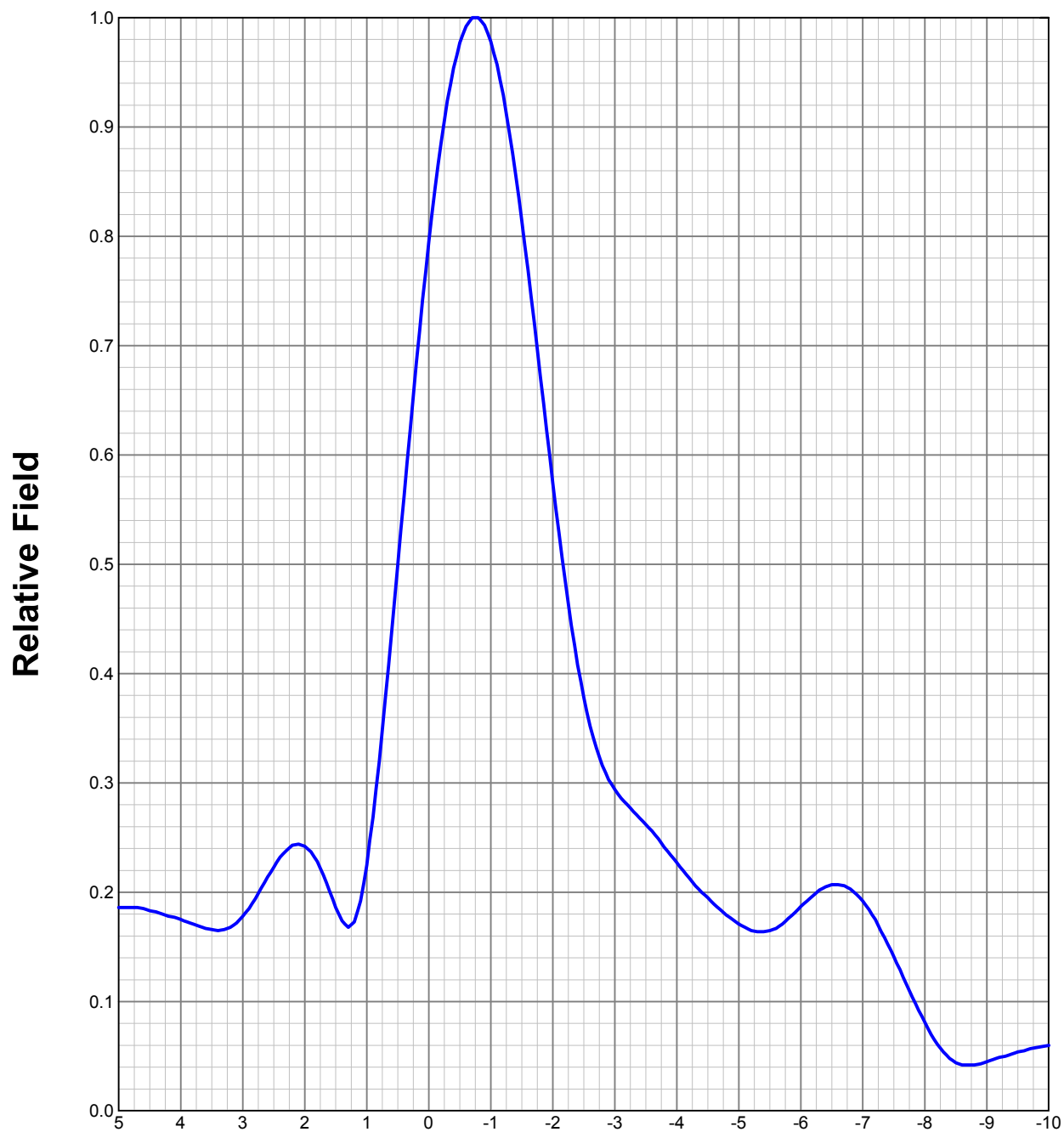
TABULATED DATA FOR ELEVATION PATTERN

Type: ATW29HS3H

Polarization: Horizontal

ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB
5.00	0.107	-19.41	-6.75	0.117	-18.67	-27.00	0.033	-29.63	-50.50	0.027	-31.37	-74.00	0.030	-30.46
4.75	0.113	-18.98	-7.00	0.112	-19.02	-27.50	0.032	-29.90	-51.00	0.026	-31.70	-74.50	0.030	-30.46
4.50	0.121	-18.34	-7.25	0.106	-19.45	-28.00	0.029	-30.75	-51.50	0.025	-32.04	-75.00	0.031	-30.17
4.25	0.131	-17.69	-7.50	0.101	-19.91	-28.50	0.029	-30.75	-52.00	0.026	-31.70	-75.50	0.032	-29.90
4.00	0.137	-17.27	-7.75	0.098	-20.22	-29.00	0.031	-30.17	-52.50	0.028	-31.06	-76.00	0.034	-29.37
3.75	0.139	-17.14	-8.00	0.095	-20.45	-29.50	0.031	-30.17	-53.00	0.028	-31.06	-76.50	0.035	-29.12
3.50	0.139	-17.14	-8.25	0.093	-20.58	-30.00	0.028	-31.06	-53.50	0.028	-31.06	-77.00	0.036	-28.87
3.25	0.143	-16.89	-8.50	0.091	-20.82	-30.50	0.028	-31.06	-54.00	0.027	-31.37	-77.50	0.037	-28.64
3.00	0.157	-16.08	-8.75	0.088	-21.11	-31.00	0.030	-30.46	-54.50	0.026	-31.70	-78.00	0.037	-28.64
2.75	0.181	-14.85	-9.00	0.084	-21.51	-31.50	0.030	-30.46	-55.00	0.027	-31.37	-78.50	0.036	-28.87
2.50	0.207	-13.68	-9.25	0.081	-21.88	-32.00	0.027	-31.37	-55.50	0.028	-31.06	-79.00	0.034	-29.37
2.25	0.224	-13.00	-9.50	0.078	-22.16	-32.50	0.026	-31.70	-56.00	0.029	-30.75	-79.50	0.033	-29.63
2.00	0.225	-12.96	-9.75	0.077	-22.27	-33.00	0.029	-30.75	-56.50	0.029	-30.75	-80.00	0.031	-30.17
1.75	0.207	-13.70	-10.00	0.076	-22.38	-33.50	0.030	-30.46	-57.00	0.028	-31.06	-80.50	0.028	-31.06
1.50	0.179	-14.94	-10.50	0.073	-22.73	-34.00	0.027	-31.37	-57.50	0.028	-31.06	-81.00	0.026	-31.70
1.25	0.181	-14.82	-11.00	0.067	-23.48	-34.50	0.026	-31.70	-58.00	0.028	-31.06	-81.50	0.023	-32.77
1.00	0.250	-12.04	-11.50	0.064	-23.88	-35.00	0.027	-31.37	-58.50	0.029	-30.75	-82.00	0.021	-33.56
0.75	0.374	-8.54	-12.00	0.064	-23.88	-35.50	0.029	-30.75	-59.00	0.030	-30.46	-82.50	0.018	-34.89
0.50	0.520	-5.68	-12.50	0.060	-24.44	-36.00	0.028	-31.06	-59.50	0.030	-30.46	-83.00	0.016	-35.92
0.25	0.669	-3.49	-13.00	0.055	-25.19	-36.50	0.025	-32.04	-60.00	0.030	-30.46	-83.50	0.014	-37.08
0.00	0.804	-1.89	-13.50	0.056	-25.04	-37.00	0.026	-31.70	-60.50	0.029	-30.75	-84.00	0.013	-37.72
-0.25	0.909	-0.83	-14.00	0.055	-25.19	-37.50	0.028	-31.06	-61.00	0.029	-30.75	-84.50	0.012	-38.42
-0.50	0.977	-0.20	-14.50	0.050	-26.02	-38.00	0.028	-31.06	-61.50	0.029	-30.75	-85.00	0.011	-39.17
-0.75	1.000	0.00	-15.00	0.048	-26.38	-38.50	0.026	-31.70	-62.00	0.030	-30.46	-85.50	0.010	-40.00
-1.00	0.979	-0.18	-15.50	0.050	-26.02	-39.00	0.025	-32.04	-62.50	0.031	-30.17	-86.00	0.009	-40.92
-1.25	0.917	-0.76	-16.00	0.048	-26.38	-39.50	0.026	-31.70	-63.00	0.031	-30.17	-86.50	0.008	-41.94
-1.50	0.823	-1.69	-16.50	0.044	-27.13	-40.00	0.028	-31.06	-63.50	0.031	-30.17	-87.00	0.007	-43.10
-1.75	0.710	-2.98	-17.00	0.044	-27.13	-40.50	0.027	-31.37	-64.00	0.030	-30.46	-87.50	0.006	-44.44
-2.00	0.592	-4.55	-17.50	0.046	-26.74	-41.00	0.025	-32.04	-64.50	0.030	-30.46	-88.00	0.005	-46.02
-2.25	0.484	-6.31	-18.00	0.043	-27.33	-41.50	0.025	-32.04	-65.00	0.030	-30.46	-88.50	0.004	-47.96
-2.50	0.398	-8.00	-18.50	0.039	-28.18	-42.00	0.027	-31.37	-65.50	0.031	-30.17	-89.00	0.003	-50.46
-2.75	0.341	-9.34	-19.00	0.041	-27.74	-42.50	0.028	-31.06	-66.00	0.032	-29.90	-89.50	0.001	-60.00
-3.00	0.307	-10.26	-19.50	0.042	-27.54	-43.00	0.027	-31.37	-66.50	0.032	-29.90	-90.00	0.000	-40.00
-3.25	0.286	-10.87	-20.00	0.038	-28.40	-43.50	0.025	-32.04	-67.00	0.032	-29.90			
-3.50	0.265	-11.54	-20.50	0.036	-28.87	-44.00	0.025	-32.04	-67.50	0.032	-29.90			
-3.75	0.242	-12.31	-21.00	0.038	-28.40	-44.50	0.027	-31.37	-68.00	0.031	-30.17			
-4.00	0.219	-13.19	-21.50	0.038	-28.40	-45.00	0.028	-31.06	-68.50	0.031	-30.17			
-4.25	0.198	-14.09	-22.00	0.035	-29.12	-45.50	0.027	-31.37	-69.00	0.031	-30.17			
-4.50	0.182	-14.80	-22.50	0.033	-29.63	-46.00	0.025	-32.04	-69.50	0.032	-29.90			
-4.75	0.172	-15.26	-23.00	0.036	-28.87	-46.50	0.025	-32.04	-70.00	0.033	-29.63			
-5.00	0.165	-15.65	-23.50	0.036	-28.87	-47.00	0.027	-31.37	-70.50	0.034	-29.37			
-5.25	0.158	-16.05	-24.00	0.032	-29.90	-47.50	0.028	-31.06	-71.00	0.035	-29.12			
-5.50	0.148	-16.59	-24.50	0.032	-29.90	-48.00	0.027	-31.37	-71.50	0.035	-29.12			
-5.75	0.139	-17.14	-25.00	0.034	-29.37	-48.50	0.025	-32.04	-72.00	0.034	-29.37			
-6.00	0.130	-17.72	-25.50	0.034	-29.37	-49.00	0.025	-32.04	-72.50	0.033	-29.63			
-6.25	0.124	-18.13	-26.00	0.030	-30.46	-49.50	0.026	-31.70	-73.00	0.032	-29.90			
-6.50	0.120	-18.42	-26.50	0.030	-30.46	-50.00	0.028	-31.06	-73.50	0.031	-30.17			

Preliminary, subject to final design and review.

ELEVATION PATTERN**Type:****ATW26HS3V****Channel:****23****Directivity:****Numeric****dBd****Location:****Moline, IL****Main Lobe:****26.00****14.15****Beam Tilt:****-0.75****Horizontal:****16.43****12.16****Polarization:****Vertical***Preliminary, subject to final design and review.*

TABULATED DATA FOR ELEVATION PATTERN

Type: ATW26HS3V

Polarization: Vertical

ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB
5.00	0.186	-14.61	-6.75	0.205	-13.79	-27.00	0.096	-20.35	-50.50	0.020	-33.98	-74.00	0.036	-28.87
4.75	0.186	-14.61	-7.00	0.192	-14.33	-27.50	0.108	-19.33	-51.00	0.013	-37.72	-74.50	0.036	-28.87
4.50	0.183	-14.75	-7.25	0.169	-15.42	-28.00	0.102	-19.83	-51.50	0.007	-43.10	-75.00	0.036	-28.87
4.25	0.179	-14.94	-7.50	0.141	-17.02	-28.50	0.084	-21.51	-52.00	0.022	-33.15	-75.50	0.036	-28.87
4.00	0.175	-15.14	-7.75	0.110	-19.17	-29.00	0.062	-24.15	-52.50	0.038	-28.40	-76.00	0.037	-28.64
3.75	0.170	-15.39	-8.00	0.081	-21.83	-29.50	0.042	-27.54	-53.00	0.052	-25.68	-76.50	0.038	-28.40
3.50	0.166	-15.60	-8.25	0.057	-24.81	-30.00	0.025	-32.04	-53.50	0.062	-24.15	-77.00	0.039	-28.18
3.25	0.167	-15.55	-8.50	0.044	-27.13	-30.50	0.014	-37.08	-54.00	0.066	-23.61	-77.50	0.040	-27.96
3.00	0.178	-14.99	-8.75	0.042	-27.54	-31.00	0.012	-38.42	-54.50	0.067	-23.48	-78.00	0.039	-28.18
2.75	0.199	-14.02	-9.00	0.045	-26.94	-31.50	0.011	-39.17	-55.00	0.064	-23.88	-78.50	0.039	-28.18
2.50	0.223	-13.03	-9.25	0.050	-26.11	-32.00	0.009	-40.92	-55.50	0.059	-24.58	-79.00	0.037	-28.64
2.25	0.240	-12.38	-9.50	0.054	-25.35	-32.50	0.010	-40.00	-56.00	0.053	-25.51	-79.50	0.036	-28.87
2.00	0.242	-12.32	-9.75	0.058	-24.81	-33.00	0.009	-40.92	-56.50	0.046	-26.74	-80.00	0.033	-29.63
1.75	0.222	-13.07	-10.00	0.060	-24.44	-33.50	0.016	-35.92	-57.00	0.040	-27.96	-80.50	0.031	-30.17
1.50	0.186	-14.61	-10.50	0.063	-24.01	-34.00	0.040	-27.96	-57.50	0.036	-28.87	-81.00	0.028	-31.06
1.25	0.170	-15.37	-11.00	0.065	-23.74	-34.50	0.069	-23.22	-58.00	0.033	-29.63	-81.50	0.025	-32.04
1.00	0.225	-12.96	-11.50	0.065	-23.74	-35.00	0.092	-20.72	-58.50	0.032	-29.90	-82.00	0.023	-32.77
0.75	0.349	-9.16	-12.00	0.068	-23.35	-35.50	0.100	-20.00	-59.00	0.031	-30.17	-82.50	0.020	-33.98
0.50	0.500	-6.02	-12.50	0.093	-20.63	-36.00	0.092	-20.72	-59.50	0.029	-30.75	-83.00	0.018	-34.89
0.25	0.654	-3.69	-13.00	0.128	-17.86	-36.50	0.071	-22.97	-60.00	0.028	-31.06	-83.50	0.016	-35.92
0.00	0.795	-1.99	-13.50	0.146	-16.71	-37.00	0.048	-26.38	-60.50	0.026	-31.70	-84.00	0.014	-37.08
-0.25	0.905	-0.86	-14.00	0.132	-17.59	-37.50	0.035	-29.12	-61.00	0.026	-31.70	-84.50	0.012	-38.42
-0.50	0.977	-0.20	-14.50	0.091	-20.82	-38.00	0.032	-29.90	-61.50	0.026	-31.70	-85.00	0.011	-39.17
-0.75	1.000	0.00	-15.00	0.042	-27.54	-38.50	0.026	-31.70	-62.00	0.027	-31.37	-85.50	0.010	-40.00
-1.00	0.978	-0.19	-15.50	0.019	-34.42	-39.00	0.015	-36.48	-62.50	0.026	-31.70	-86.00	0.009	-40.92
-1.25	0.912	-0.80	-16.00	0.020	-33.98	-39.50	0.009	-40.92	-63.00	0.022	-33.15	-86.50	0.008	-41.94
-1.50	0.814	-1.79	-16.50	0.014	-37.08	-40.00	0.015	-36.48	-63.50	0.016	-35.92	-87.00	0.007	-43.10
-1.75	0.697	-3.14	-17.00	0.028	-31.06	-40.50	0.017	-35.39	-64.00	0.009	-40.92	-87.50	0.006	-44.44
-2.00	0.574	-4.82	-17.50	0.039	-28.18	-41.00	0.011	-39.17	-64.50	0.007	-43.10	-88.00	0.005	-46.02
-2.25	0.464	-6.67	-18.00	0.033	-29.63	-41.50	0.005	-46.02	-65.00	0.016	-35.92	-88.50	0.004	-47.96
-2.50	0.378	-8.45	-18.50	0.028	-31.06	-42.00	0.021	-33.56	-65.50	0.026	-31.70	-89.00	0.003	-50.46
-2.75	0.324	-9.79	-19.00	0.055	-25.19	-42.50	0.040	-27.96	-66.00	0.036	-28.87	-89.50	0.001	-60.00
-3.00	0.294	-10.63	-19.50	0.087	-21.21	-43.00	0.057	-24.88	-66.50	0.043	-27.33	-90.00	0.000	-40.00
-3.25	0.277	-11.15	-20.00	0.109	-19.25	-43.50	0.072	-22.85	-67.00	0.049	-26.20			
-3.50	0.262	-11.63	-20.50	0.118	-18.56	-44.00	0.081	-21.83	-67.50	0.053	-25.51			
-3.75	0.245	-12.22	-21.00	0.110	-19.17	-44.50	0.082	-21.72	-68.00	0.054	-25.35			
-4.00	0.227	-12.88	-21.50	0.084	-21.51	-45.00	0.074	-22.62	-68.50	0.054	-25.35			
-4.25	0.209	-13.58	-22.00	0.048	-26.38	-45.50	0.060	-24.44	-69.00	0.054	-25.35			
-4.50	0.195	-14.20	-22.50	0.017	-35.39	-46.00	0.043	-27.33	-69.50	0.052	-25.68			
-4.75	0.181	-14.82	-23.00	0.016	-35.92	-46.50	0.032	-29.90	-70.00	0.051	-25.85			
-5.00	0.171	-15.34	-23.50	0.014	-37.08	-47.00	0.031	-30.17	-70.50	0.049	-26.20			
-5.25	0.165	-15.68	-24.00	0.005	-46.02	-47.50	0.031	-30.17	-71.00	0.047	-26.56			
-5.50	0.165	-15.65	-24.50	0.021	-33.56	-48.00	0.027	-31.37	-71.50	0.045	-26.94			
-5.75	0.173	-15.21	-25.00	0.026	-31.70	-48.50	0.020	-33.98	-72.00	0.044	-27.13			
-6.00	0.187	-14.56	-25.50	0.014	-37.08	-49.00	0.014	-37.08	-72.50	0.042	-27.54			
-6.25	0.200	-14.00	-26.00	0.028	-31.06	-49.50	0.017	-35.39	-73.00	0.039	-28.18			
-6.50	0.207	-13.68	-26.50	0.065	-23.74	-50.00	0.022	-33.15	-73.50	0.038	-28.40			

Preliminary, subject to final design and review.