

# **Preliminary Specification for ALP™ Series Side Mounted UHF Elliptically Polarized Coaxial Slotted Array Television Antenna**

**WTXF, RF Channel 25  
WTXF/FOX29 Philadelphia, PA, Allentown, PA  
September 12, 2018**

**Antenna Model:  
ALP12L1-ESP-25**

**Specification Number  
20180822-046-2**

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**Preliminary Specification for  
ALP™ Series Side Mounted  
UHF Elliptically Polarized  
Coaxial Slotted Array Television Antenna**

**Electrical Characteristics:**

<b>Channel:</b>		25	
<b>Frequency:</b>		536 MHz to 542 MHz	
<b>Service:</b>		ATSC	
<b>Azimuth Pattern Number:</b>	Horizontal Polarization	ALP-P	
	Vertical Polarization	ALP-P	
<b>Elevation Pattern Number:</b>	Horizontal Polarization	ALP12L0	
	Vertical Polarization	ALP12L0	
<b>Azimuth Directivity:</b>	Horizontal Polarization	1.88	(2.74 dB)
	Vertical Polarization	2.47	(3.93 dB)
<b>Elevation Directivity:</b>	Horizontal Polarization	12.64	(11.02 dBd)
	Vertical Polarization	12.64	(11.02 dBd)
<b>Peak Power Gain:</b>	Horizontal Polarization	19.35	(12.87 dBd)
	Vertical Polarization	5.80	(7.64 dBd)
<b>Gain at Horizontal:</b>	Horizontal Polarization	19.10	(12.81 dBd)
	Vertical Polarization	5.73	(7.58 dBd)
<b>ERP Vertical/Horizontal Ratio:</b>		0.300	
<b>Power Ratio:</b>		0.228	
<b>Electrical Beam Tilt:</b>		0.25 Degrees	
<b>Input Power Required:</b>		0.53 kW	-(2.78 dBk)
<b>RF Input:</b>		1-5/8-inch EIA, 50 $\Omega$ , flanged male	
<b>Input Power Rating (maximum):</b>		4 kW Average Power, 8VSB	
<b>Antenna VSWR (maximum):</b>		1.10 Over 6 MHz Channel	

**Preliminary Specification for  
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UHF Elliptically Polarized  
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**Antenna Mechanical Characteristics:**

Mounting Configuration:	Side Mounted		
Height of Antenna	29.3 feet	(8.9 meters)	
Height of Center of Radiation (above RF input)	14.7 feet	(4.5 meters)	
Deicing:	Unpressurized radome slot covers		
Radome Height:	3.50 inches	(88.9 millimeters)	
Radome Color:	Gray		
Climbing Device:	Not Applicable		
Calculated Weight <sup>1</sup> :	No Ice	296.0 lb	134.3 kg
	0.5inch (13 mm) ice	531.0 lb	240.9 kg
Windload Data <sup>1, 2</sup>	EPA No Ice	30.4 ft <sup>2</sup>	(2.8 m <sup>2</sup> )
	0.5inch (13 mm) ice	37.9 ft <sup>2</sup>	(3.5 m <sup>2</sup> )

1) Please note, the listed weights and effective wind areas are based on the PRELIMINARY design of the antenna. Final As-Built values for the antenna are typically within +/-10% of the Preliminary design values, and will be provided in the technical manual that accompanies the antenna. Specified loads include the antenna, standard mounts, and power divider and jumper feed harnessing where applicable. Custom mounting brackets/adapters are NOT included.

2) Loads calculated in accordance with the ANSI/TIA-222-G standard.

**NOTE:** The purchaser or their representative shall be required to contact the tower owner, state and/or local building officials for specific design requirements and suitable parameters for a particular structure. Any variation from the parameters shown above must be communicated to ERI for comprehensive assessment.

## Broadcast Antenna System Power Analysis

**WTXF**                                      **RF Channel: 25**  
**WTXF/FOX29 Philadelphia, PA**  
**Allentown, PA**  
**ALP12L1-ESP-25**

### Antenna Parameters

#### Azimuth Directivity:

Horizontal: 1.88 (2.74 dB)  
 Vertical: 2.47 (3.93 dB)

#### Effective Radiated Power:

Horizontal: 10.20 kW (10.09 dBk)  
 Vertical: 3.06 kW (4.86 dBk)

#### Elevation Directivity:

Horizontal: 12.64 (11.02 dB)  
 Vertical: 12.64 (11.02 dB)

#### Power Gain:

Horizontal: 19.35 numeric (12.87 dBd)  
 Vertical: 5.80 numeric (7.64 dBd)

### Transmission Line

#### Vertical Run:

Type: 1-5/8-Inch HJ7-50A Air HELIAX, 50Ω  
 Length: 200 feet 61.0 meters  
 Attenuation: 0.497 dB/100 feet 1.630 dB/100 mtrs

#### Antenna Input Power:

0.53 kW -(2.78 dBk)

#### Horizontal Run:

Type: 1-5/8-Inch HJ7-50A Air HELIAX, 50Ω  
 Length: 25 feet 7.6 meters  
 Attenuation: 0.497 dB/100 feet 1.630 dB/100 mtrs

#### Transmission Line Losses:

-0.15 kW (1.118 dB)

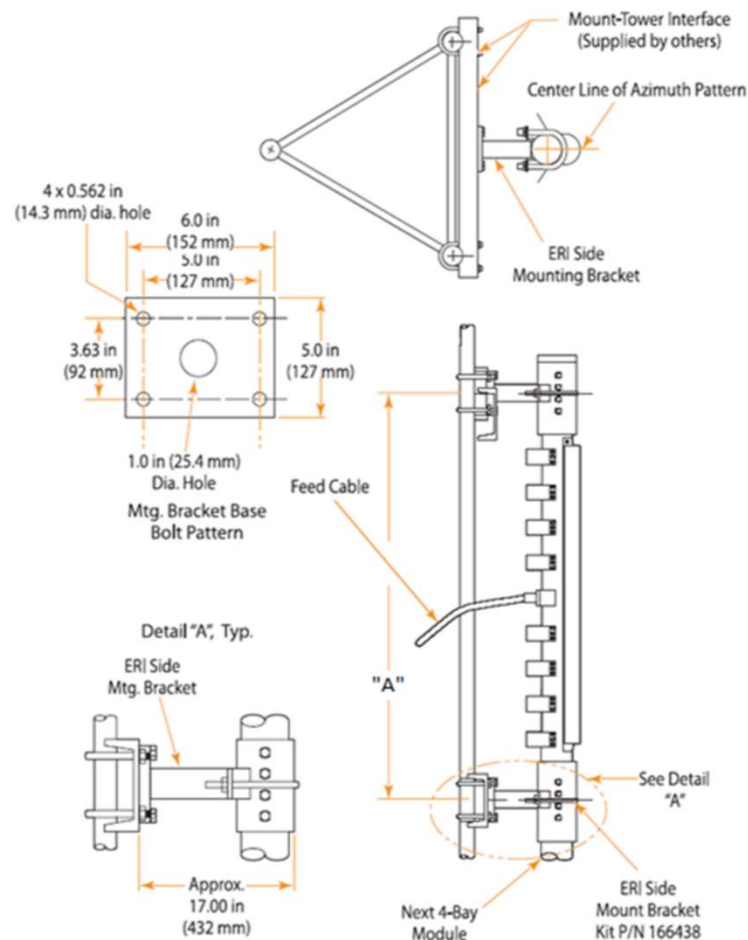
**Total Losses:** 1.118 dB

**Line Efficiency:** 77.31%

#### Transmitter Power Output:

0.68 kW  
 -(1.66 dBk)

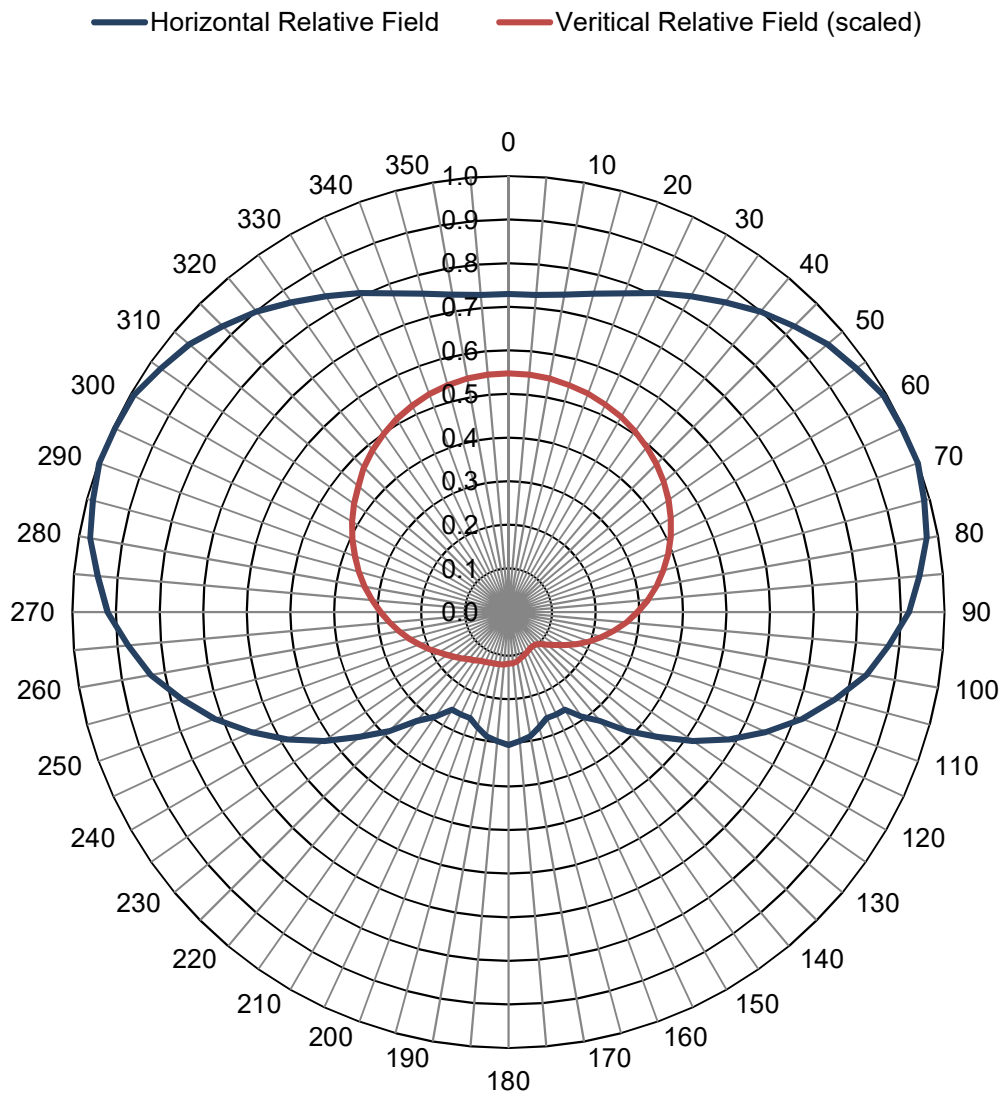
Typical Mounting Configuration Shown. Actual Configuration May Vary.



NOTE: All ALP Series UHF television antennas are shipped with 15-inch (381 mm) stand off brackets for mounting on poles or tower legs from 1.5-inches (35 mm) to 7.5-inches (191 mm) OD. Stand off support pipes, face mount brackets, and mounts for larger diameter poles are available from ERI as optional items. Please contact ERI for a proposal for these requirements.

## Composite Azimuth Patterns

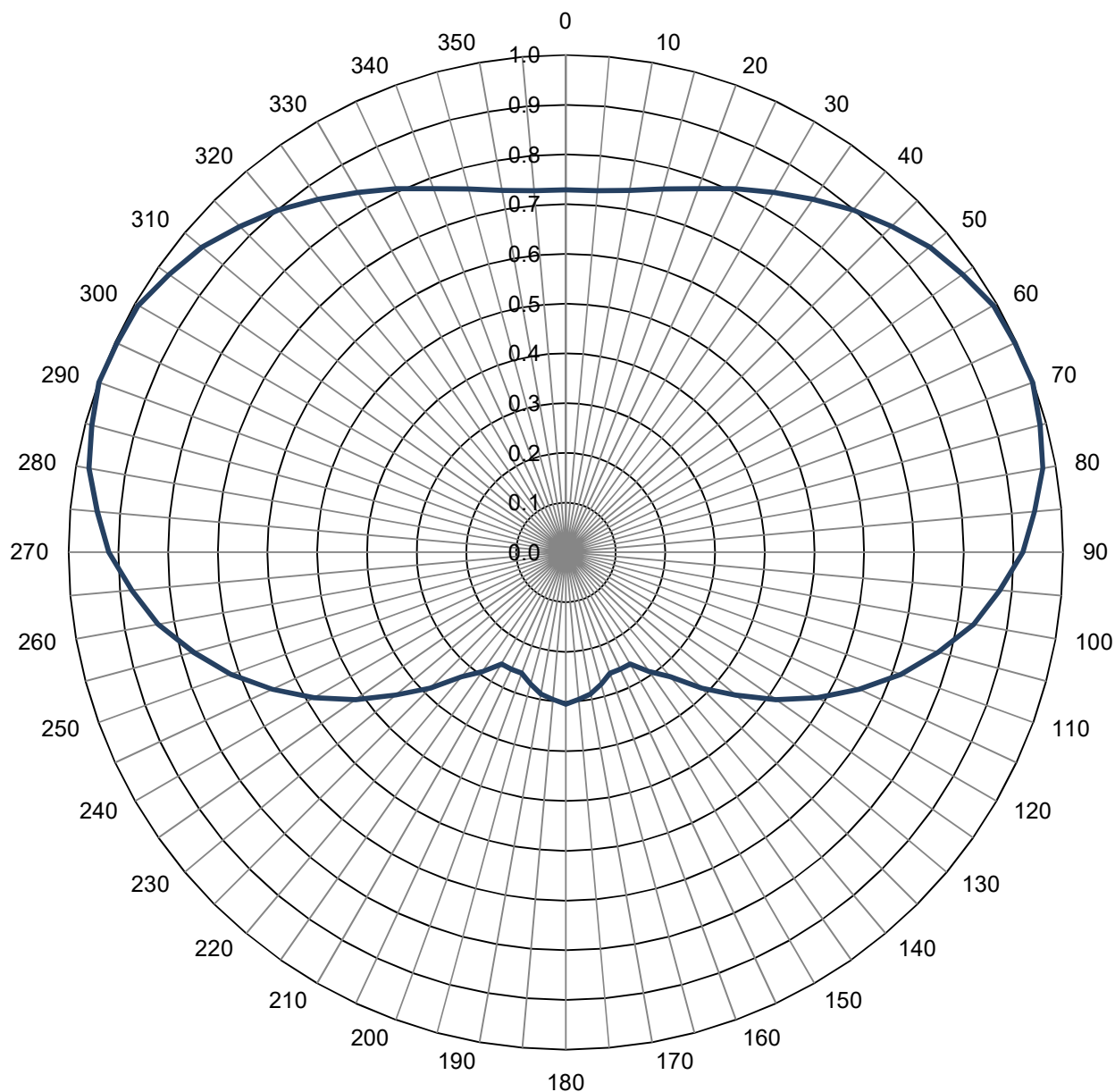
Type:	0.25	Polarization:	Elliptical
Directivity (H-Pol):	1.88 numeric (2.74 dB)	Channel:	25 (ATSC)
Directivity (V-Pol):	2.47 numeric (3.93 dB)	Location:	Allentown, PA
Percent Horizontal:	81.41%	NOTE: Pattern shape and directivity may vary with channel and mounting	
Percent Vertical:	18.59%		
Power Ratio:	22.83%		
V/H ERP Ratio:	30.00%		



### Azimuth Pattern

Type:	ALP-P	Polarization:	Horizontal
Directivity:	1.88 numeric (2.74 dB)	Channel:	25 (ATSC)
Peak(s) at:		Location:	Allentown, PA
		NOTE: Pattern shape and directivity may vary with channel and mounting configuration.	

### Relative Field



**Tabulated Data for Azimuth Pattern**

Type: ALP-P

Angle	Field	dB
0	0.729	-2.75
2	0.727	-2.77
4	0.728	-2.76
6	0.732	-2.71
8	0.735	-2.67
10	0.739	-2.63
12	0.745	-2.56
14	0.752	-2.48
16	0.760	-2.38
18	0.769	-2.28
20	0.778	-2.18
22	0.789	-2.06
24	0.801	-1.93
26	0.813	-1.80
28	0.824	-1.68
30	0.836	-1.56
32	0.848	-1.43
34	0.861	-1.30
36	0.874	-1.17
38	0.886	-1.05
40	0.899	-0.92
42	0.910	-0.82
44	0.921	-0.71
46	0.933	-0.60
48	0.944	-0.50
50	0.955	-0.40
52	0.963	-0.33
54	0.970	-0.26
56	0.978	-0.19
58	0.985	-0.13
60	0.993	-0.06
62	0.994	-0.05
64	0.996	-0.03
66	1.000	0.00
68	1.000	0.00
70	0.999	-0.01
72	0.995	-0.04
74	0.990	-0.09
76	0.984	-0.14
78	0.979	-0.18
80	0.974	-0.23
82	0.963	-0.33
84	0.952	-0.43
86	0.941	-0.53
88	0.930	-0.63
90	0.919	-0.73
92	0.902	-0.90
94	0.884	-1.07
96	0.867	-1.24
98	0.850	-1.41

Angle	Field	dB
100	0.833	-1.59
102	0.810	-1.83
104	0.786	-2.09
106	0.763	-2.35
108	0.740	-2.62
110	0.717	-2.89
112	0.690	-3.22
114	0.664	-3.56
116	0.637	-3.92
118	0.611	-4.28
120	0.585	-4.66
122	0.557	-5.08
124	0.529	-5.53
126	0.502	-5.99
128	0.474	-6.48
130	0.446	-7.01
132	0.422	-7.49
134	0.398	-8.00
136	0.374	-8.54
138	0.350	-9.12
140	0.326	-9.74
142	0.313	-10.09
144	0.299	-10.49
146	0.286	-10.87
148	0.273	-11.28
150	0.259	-11.73
152	0.259	-11.73
154	0.259	-11.73
156	0.259	-11.73
158	0.259	-11.73
160	0.259	-11.73
162	0.265	-11.54
164	0.271	-11.34
166	0.277	-11.15
168	0.283	-10.96
170	0.289	-10.78
172	0.292	-10.69
174	0.296	-10.57
176	0.299	-10.49
178	0.302	-10.40
180	0.305	-10.31
182	0.302	-10.40
184	0.299	-10.49
186	0.296	-10.57
188	0.292	-10.69
190	0.289	-10.78
192	0.283	-10.96
194	0.277	-11.15
196	0.271	-11.34
198	0.265	-11.54

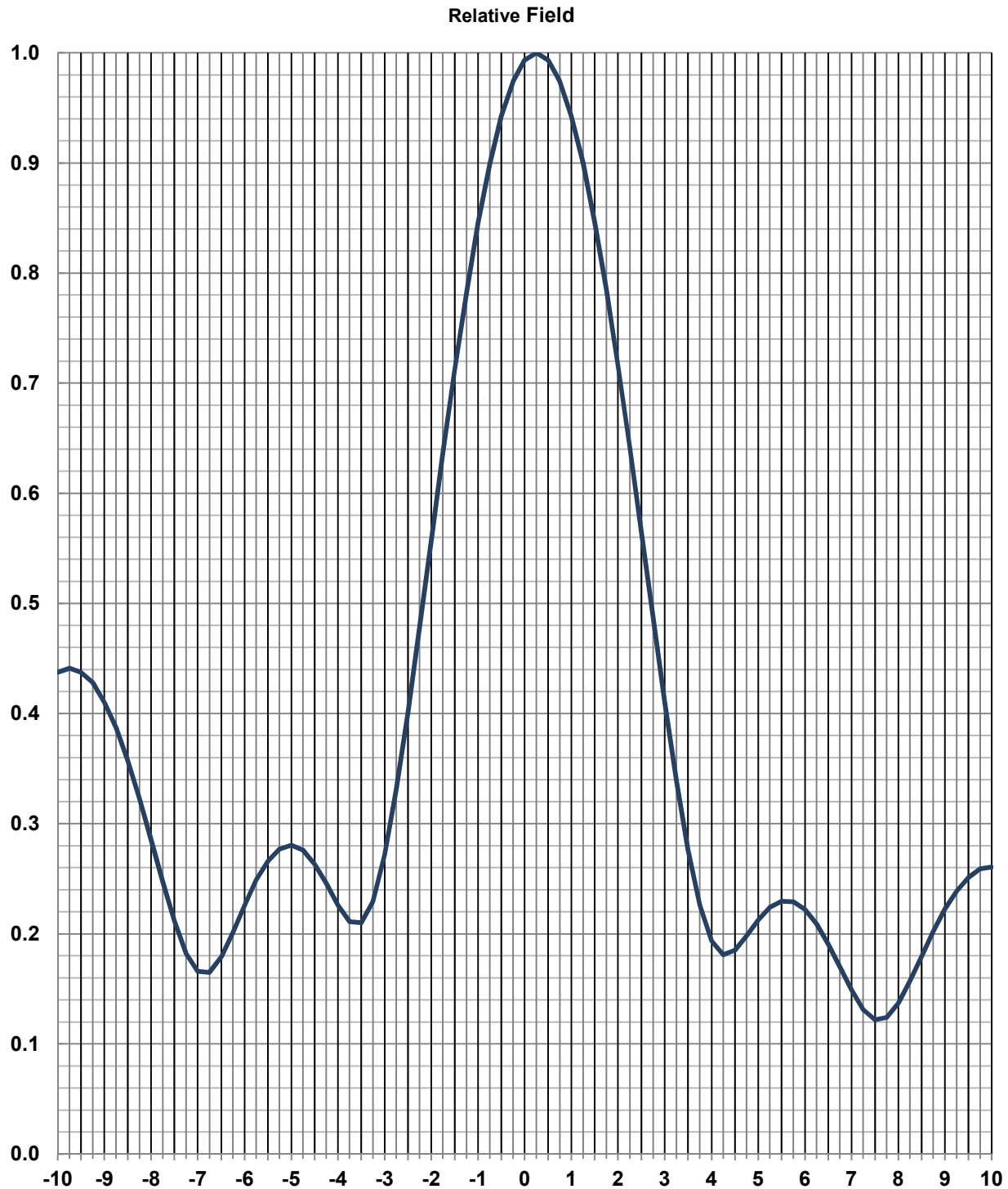
Angle	Field	dB
200	0.259	-11.73
202	0.259	-11.73
204	0.259	-11.73
206	0.259	-11.73
208	0.259	-11.73
210	0.259	-11.73
212	0.273	-11.28
214	0.286	-10.87
216	0.299	-10.49
218	0.313	-10.09
220	0.326	-9.74
222	0.350	-9.12
224	0.374	-8.54
226	0.398	-8.00
228	0.422	-7.49
230	0.446	-7.01
232	0.474	-6.48
234	0.502	-5.99
236	0.529	-5.53
238	0.557	-5.08
240	0.585	-4.66
242	0.611	-4.28
244	0.637	-3.92
246	0.664	-3.56
248	0.690	-3.22
250	0.717	-2.89
252	0.740	-2.62
254	0.763	-2.35
256	0.786	-2.09
258	0.810	-1.83
260	0.833	-1.59
262	0.850	-1.41
264	0.867	-1.24
266	0.884	-1.07
268	0.902	-0.90
270	0.919	-0.73
272	0.930	-0.63
274	0.941	-0.53
276	0.952	-0.43
278	0.963	-0.33
280	0.974	-0.23
282	0.979	-0.18
284	0.984	-0.14
286	0.990	-0.09
288	0.995	-0.04
290	0.999	-0.01
292	1.000	0.00
294	1.000	0.00
296	0.996	-0.03
298	0.994	-0.05

Angle	Field	dB
300	0.993	-0.06
302	0.985	-0.13
304	0.978	-0.19
306	0.970	-0.26
308	0.963	-0.33
310	0.955	-0.40
312	0.944	-0.50
314	0.933	-0.60
316	0.921	-0.71
318	0.910	-0.82
320	0.899	-0.92
322	0.886	-1.05
324	0.874	-1.17
326	0.861	-1.30
328	0.848	-1.43
330	0.836	-1.56
332	0.824	-1.68
334	0.813	-1.80
336	0.801	-1.93
338	0.789	-2.06
340	0.778	-2.18
342	0.769	-2.28
344	0.760	-2.38
346	0.752	-2.48
348	0.745	-2.56
350	0.739	-2.63
352	0.735	-2.67
354	0.732	-2.71
356	0.728	-2.76
358	0.727	-2.77
360	0.729	-2.75



### Elevation Pattern

Type:	ALP12L0	Polarization:	Horizontal
Directivity:		Channel:	25 (ATSC)
Main Lobe:	12.64 numeric (11.02 dB)	Location:	Allentown, PA
Horizontal:	12.48 numeric (10.96 dB)	Beam Tilt:	0.25 degrees



**Tabulated Data for Elevation Pattern**

Type:

ALP12L0

-10 to 10 degrees in 0.25 degree increments.

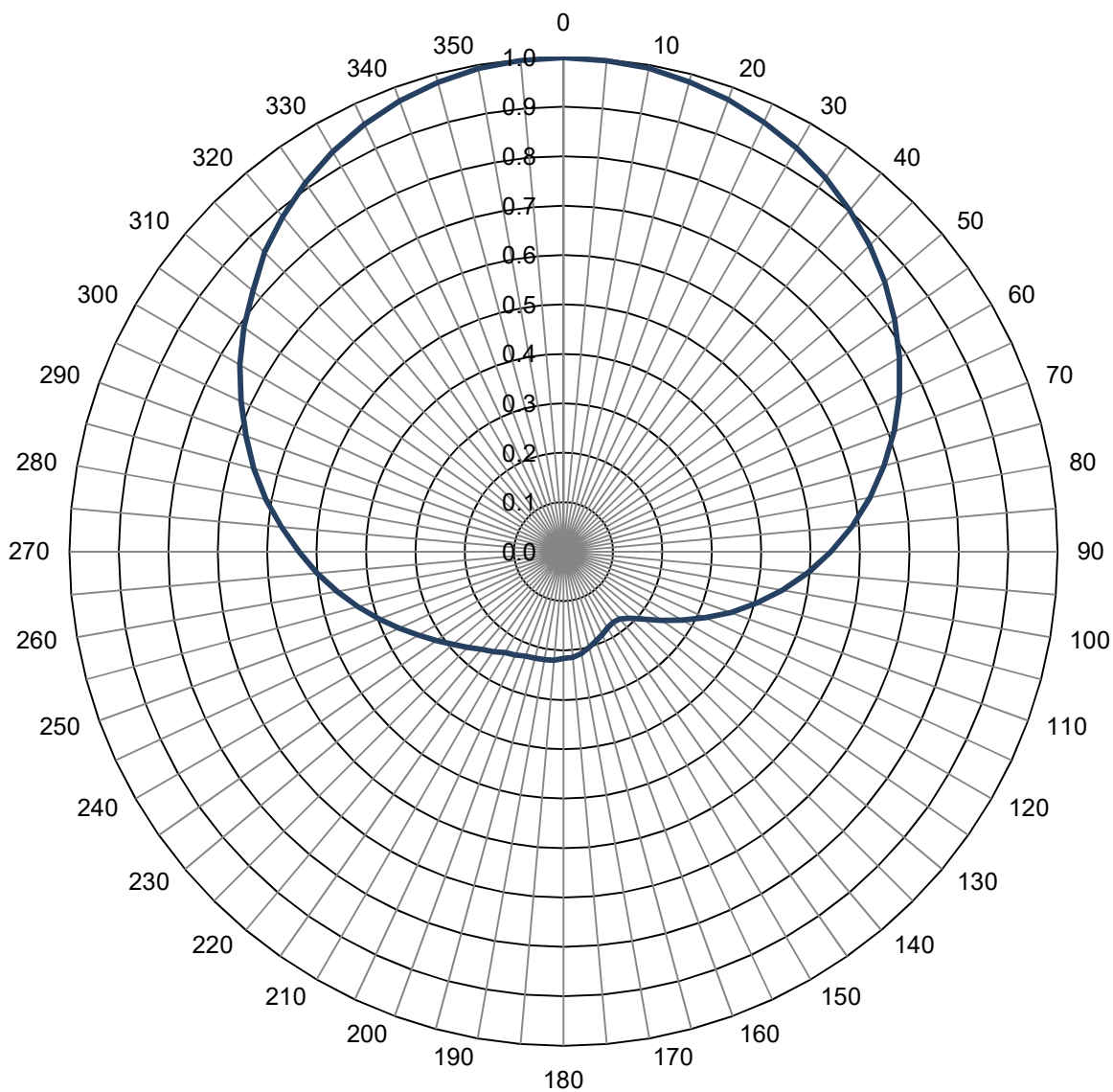
10 to 90 degrees in 0.50 degree increments.

Angle	Field	dB	Angle	Field	dB	Angle	Field	dB	Angle	Field	dB	Angle	Field	dB
-10.00	0.438	-7.18	2.25	0.642	-3.85	19.00	0.053	-25.51	43.50	0.038	-28.40	68.00	0.112	-19.02
-9.75	0.441	-7.11	2.50	0.565	-4.97	19.50	0.071	-23.04	44.00	0.032	-30.03	68.50	0.125	-18.10
-9.50	0.438	-7.18	2.75	0.487	-6.25	20.00	0.102	-19.87	44.50	0.025	-32.22	69.00	0.137	-17.30
-9.25	0.428	-7.37	3.00	0.411	-7.73	20.50	0.137	-17.27	45.00	0.019	-34.66	69.50	0.148	-16.59
-9.00	0.410	-7.74	3.25	0.339	-9.40	21.00	0.171	-15.34	45.50	0.015	-36.48	70.00	0.158	-16.03
-8.75	0.387	-8.25	3.50	0.277	-11.17	21.50	0.199	-14.04	46.00	0.014	-37.08	70.50	0.167	-15.57
-8.50	0.358	-8.93	3.75	0.226	-12.92	22.00	0.217	-13.29	46.50	0.014	-37.39	71.00	0.174	-15.19
-8.25	0.323	-9.82	4.00	0.194	-14.27	22.50	0.223	-13.03	47.00	0.011	-39.58	71.50	0.181	-14.87
-8.00	0.286	-10.89	4.25	0.181	-14.85	23.00	0.219	-13.19	47.50	0.006	-45.19	72.00	0.185	-14.68
-7.75	0.247	-12.15	4.50	0.185	-14.66	23.50	0.204	-13.81	48.00	0.003	-50.46	72.50	0.188	-14.52
-7.50	0.212	-13.49	4.75	0.198	-14.07	24.00	0.180	-14.89	48.50	0.015	-36.77	73.00	0.190	-14.42
-7.25	0.182	-14.80	5.00	0.213	-13.45	24.50	0.150	-16.48	49.00	0.029	-30.90	73.50	0.191	-14.38
-7.00	0.166	-15.60	5.25	0.224	-13.00	25.00	0.118	-18.56	49.50	0.044	-27.13	74.00	0.190	-14.42
-6.75	0.165	-15.65	5.50	0.230	-12.78	25.50	0.086	-21.31	50.00	0.061	-24.36	74.50	0.189	-14.49
-6.50	0.179	-14.94	5.75	0.229	-12.80	26.00	0.058	-24.81	50.50	0.077	-22.33	75.00	0.186	-14.61
-6.25	0.201	-13.94	6.00	0.222	-13.07	26.50	0.036	-28.87	51.00	0.093	-20.68	75.50	0.183	-14.77
-6.00	0.226	-12.92	6.25	0.209	-13.60	27.00	0.022	-33.15	51.50	0.106	-19.49	76.00	0.178	-15.02
-5.75	0.249	-12.08	6.50	0.191	-14.40	27.50	0.016	-36.19	52.00	0.118	-18.60	76.50	0.173	-15.26
-5.50	0.266	-11.50	6.75	0.170	-15.39	28.00	0.013	-38.06	52.50	0.126	-18.03	77.00	0.168	-15.52
-5.25	0.277	-11.15	7.00	0.149	-16.54	28.50	0.009	-41.41	53.00	0.131	-17.69	77.50	0.161	-15.86
-5.00	0.281	-11.04	7.25	0.131	-17.65	29.00	0.004	-49.12	53.50	0.132	-17.62	78.00	0.155	-16.22
-4.75	0.276	-11.18	7.50	0.122	-18.27	29.50	0.003	-50.46	54.00	0.129	-17.82	78.50	0.148	-16.62
-4.50	0.263	-11.60	7.75	0.124	-18.13	30.00	0.009	-41.41	54.50	0.123	-18.20	79.00	0.141	-17.05
-4.25	0.246	-12.18	8.00	0.137	-17.27	30.50	0.012	-38.42	55.00	0.114	-18.86	79.50	0.134	-17.49
-4.00	0.226	-12.92	8.25	0.157	-16.08	31.00	0.015	-36.77	55.50	0.103	-19.79	80.00	0.126	-17.99
-3.75	0.211	-13.51	8.50	0.180	-14.92	31.50	0.020	-33.98	56.00	0.090	-20.96	80.50	0.119	-18.53
-3.50	0.210	-13.56	8.75	0.202	-13.89	32.00	0.032	-30.03	56.50	0.077	-22.33	81.00	0.111	-19.09
-3.25	0.229	-12.80	9.00	0.223	-13.05	32.50	0.050	-26.02	57.00	0.065	-23.74	81.50	0.104	-19.70
-3.00	0.272	-11.32	9.25	0.239	-12.43	33.00	0.073	-22.79	57.50	0.057	-24.96	82.00	0.096	-20.35
-2.75	0.331	-9.60	9.50	0.251	-12.01	33.50	0.097	-20.31	58.00	0.053	-25.51	82.50	0.089	-21.06
-2.50	0.401	-7.94	9.75	0.259	-11.73	34.00	0.122	-18.31	58.50	0.056	-25.11	83.00	0.082	-21.78
-2.25	0.478	-6.41	10.00	0.261	-11.68	34.50	0.145	-16.80	59.00	0.062	-24.15	83.50	0.075	-22.56
-2.00	0.557	-5.08	10.50	0.250	-12.04	35.00	0.164	-15.73	59.50	0.070	-23.10	84.00	0.068	-23.41
-1.75	0.636	-3.93	11.00	0.222	-13.09	35.50	0.177	-15.04	60.00	0.077	-22.27	84.50	0.061	-24.36
-1.50	0.712	-2.95	11.50	0.181	-14.87	36.00	0.184	-14.73	60.50	0.083	-21.67	85.00	0.054	-25.43
-1.25	0.782	-2.14	12.00	0.133	-17.52	36.50	0.184	-14.73	61.00	0.087	-21.21	85.50	0.047	-26.56
-1.00	0.846	-1.46	12.50	0.086	-21.36	37.00	0.176	-15.09	61.50	0.088	-21.11	86.00	0.041	-27.85
-0.75	0.899	-0.92	13.00	0.044	-27.23	37.50	0.162	-15.81	62.00	0.088	-21.16	86.50	0.034	-29.37
-0.50	0.943	-0.51	13.50	0.011	-39.17	38.00	0.143	-16.89	62.50	0.085	-21.46	87.00	0.028	-31.21
-0.25	0.974	-0.23	14.00	0.010	-40.45	38.50	0.121	-18.38	63.00	0.081	-21.88	87.50	0.022	-33.35
0.00	0.994	-0.06	14.50	0.020	-34.20	39.00	0.097	-20.31	63.50	0.075	-22.56	88.00	0.016	-36.19
0.25	1.000	0.00	15.00	0.022	-33.15	39.50	0.074	-22.67	64.00	0.069	-23.29	88.50	0.010	-40.45
0.50	0.994	-0.06	15.50	0.025	-32.04	40.00	0.054	-25.43	64.50	0.064	-23.94	89.00	0.003	-50.46
0.75	0.974	-0.23	16.00	0.035	-29.12	40.50	0.041	-27.74	65.00	0.061	-24.29	89.50	0.000	---
1.00	0.943	-0.51	16.50	0.049	-26.29	41.00	0.038	-28.40	65.50	0.062	-24.15	90.00	0.002	-53.98
1.25	0.900	-0.92	17.00	0.059	-24.58	41.50	0.041	-27.85	66.00	0.068	-23.41			
1.50	0.847	-1.45	17.50	0.063	-24.01	42.00	0.044	-27.23	66.50	0.076	-22.38			
1.75	0.785	-2.10	18.00	0.061	-24.36	42.50	0.045	-26.94	67.00	0.087	-21.21			
2.00	0.716	-2.91	18.50	0.054	-25.43	43.00	0.043	-27.43	67.50	0.099	-20.09			

### Azimuth Pattern

Type:	ALP-P	Polarization:	Vertical
Directivity:	2.47 numeric (3.93 dB)	Channel:	25 (ATSC)
Peak(s) at:		Location:	Allentown, PA
		NOTE: Pattern shape and directivity may vary with channel and mounting configuration.	

### Relative Field



**Tabulated Data for Azimuth Pattern**

Type: ALP-P

Angle	Field	dB
0	0.999	-0.01
2	0.999	-0.01
4	0.998	-0.02
6	0.997	-0.03
8	0.995	-0.04
10	0.993	-0.06
12	0.990	-0.09
14	0.986	-0.12
16	0.982	-0.16
18	0.978	-0.20
20	0.973	-0.23
22	0.968	-0.28
24	0.962	-0.34
26	0.956	-0.39
28	0.950	-0.45
30	0.943	-0.51
32	0.935	-0.58
34	0.927	-0.66
36	0.920	-0.73
38	0.910	-0.81
40	0.901	-0.90
42	0.892	-0.99
44	0.882	-1.09
46	0.871	-1.20
48	0.860	-1.31
50	0.849	-1.42
52	0.837	-1.54
54	0.824	-1.68
56	0.812	-1.81
58	0.798	-1.96
60	0.785	-2.10
62	0.771	-2.26
64	0.757	-2.42
66	0.742	-2.59
68	0.727	-2.77
70	0.712	-2.95
72	0.696	-3.14
74	0.680	-3.35
76	0.662	-3.58
78	0.647	-3.79
80	0.630	-4.02
82	0.613	-4.25
84	0.596	-4.50
86	0.578	-4.76
88	0.560	-5.04
90	0.541	-5.34
92	0.523	-5.62
94	0.504	-5.95
96	0.486	-6.27
98	0.468	-6.60

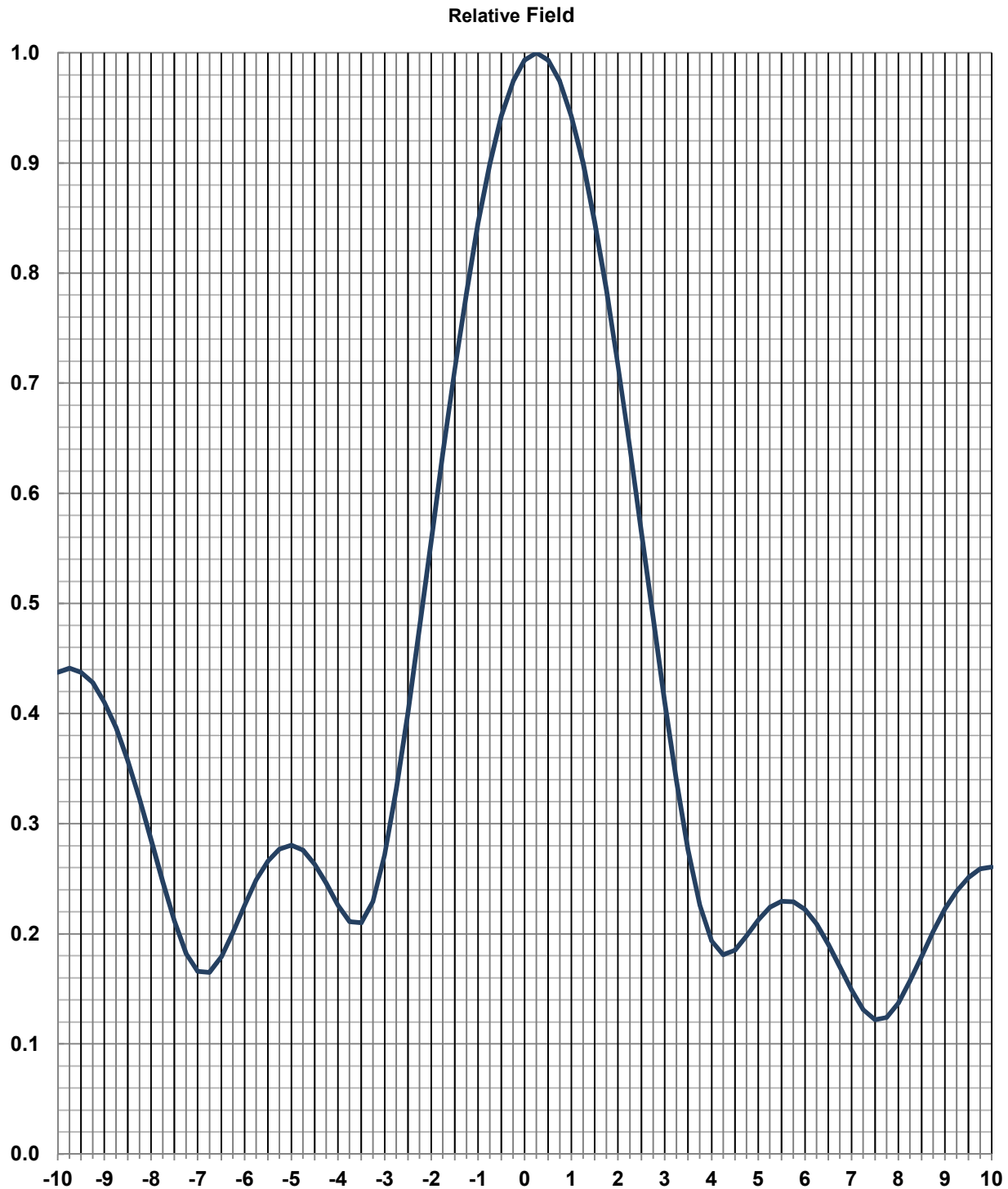
Angle	Field	dB
100	0.449	-6.95
102	0.432	-7.29
104	0.413	-7.67
106	0.394	-8.08
108	0.377	-8.47
110	0.360	-8.87
112	0.342	-9.32
114	0.325	-9.76
116	0.309	-10.19
118	0.292	-10.69
120	0.277	-11.14
122	0.262	-11.65
124	0.248	-12.10
126	0.235	-12.59
128	0.223	-13.03
130	0.212	-13.45
132	0.203	-13.86
134	0.194	-14.27
136	0.186	-14.59
138	0.181	-14.85
140	0.177	-15.02
142	0.176	-15.11
144	0.175	-15.13
146	0.175	-15.15
148	0.177	-15.05
150	0.179	-14.96
152	0.181	-14.87
154	0.183	-14.73
156	0.186	-14.60
158	0.189	-14.49
160	0.192	-14.31
162	0.196	-14.15
164	0.199	-14.04
166	0.203	-13.86
168	0.208	-13.65
170	0.209	-13.59
172	0.210	-13.56
174	0.214	-13.40
176	0.215	-13.34
178	0.215	-13.35
180	0.216	-13.30
182	0.220	-13.16
184	0.220	-13.13
186	0.220	-13.13
188	0.223	-13.05
190	0.222	-13.06
192	0.222	-13.08
194	0.223	-13.02
196	0.225	-12.97
198	0.224	-12.99

Angle	Field	dB
200	0.225	-12.95
202	0.227	-12.86
204	0.229	-12.81
206	0.232	-12.68
208	0.234	-12.63
210	0.236	-12.55
212	0.239	-12.43
214	0.245	-12.22
216	0.248	-12.09
218	0.253	-11.93
220	0.258	-11.76
222	0.264	-11.57
224	0.271	-11.35
226	0.278	-11.12
228	0.285	-10.91
230	0.293	-10.68
232	0.302	-10.41
234	0.310	-10.16
236	0.319	-9.94
238	0.328	-9.69
240	0.338	-9.42
242	0.350	-9.13
244	0.361	-8.85
246	0.373	-8.56
248	0.385	-8.29
250	0.398	-8.01
252	0.411	-7.73
254	0.423	-7.48
256	0.437	-7.18
258	0.451	-6.92
260	0.465	-6.65
262	0.478	-6.42
264	0.493	-6.14
266	0.507	-5.89
268	0.522	-5.65
270	0.536	-5.42
272	0.552	-5.16
274	0.566	-4.95
276	0.581	-4.72
278	0.597	-4.48
280	0.612	-4.26
282	0.625	-4.08
284	0.641	-3.87
286	0.656	-3.66
288	0.671	-3.47
290	0.684	-3.30
292	0.699	-3.12
294	0.714	-2.93
296	0.727	-2.77
298	0.741	-2.60

Angle	Field	dB
300	0.757	-2.42
302	0.769	-2.28
304	0.782	-2.13
306	0.796	-1.98
308	0.809	-1.85
310	0.820	-1.72
312	0.837	-1.55
314	0.849	-1.42
316	0.860	-1.31
318	0.873	-1.18
320	0.885	-1.07
322	0.895	-0.96
324	0.906	-0.86
326	0.916	-0.76
328	0.925	-0.68
330	0.934	-0.59
332	0.943	-0.51
334	0.950	-0.44
336	0.957	-0.38
338	0.964	-0.32
340	0.971	-0.26
342	0.975	-0.22
344	0.981	-0.17
346	0.985	-0.13
348	0.989	-0.09
350	0.992	-0.07
352	0.994	-0.05
354	0.997	-0.03
356	0.998	-0.01
358	0.999	-0.01
360	0.999	-0.01

### Elevation Pattern

Type:	ALP12L0	Polarization:	Vertical
Directivity:		Channel:	25 (ATSC)
Main Lobe:	12.64 numeric (11.02 dB)	Location:	Allentown, PA
Horizontal:	12.48 numeric (10.96 dB)	Beam Tilt:	0.25 degrees



**Tabulated Data for Elevation Pattern**

Type:

ALP12L0

-10 to 10 degrees in 0.25 degree increments.

10 to 90 degrees in 0.50 degree increments.

Angle	Field	dB	Angle	Field	dB	Angle	Field	dB	Angle	Field	dB	Angle	Field	dB
-10.00	0.438	-7.18	2.25	0.642	-3.85	19.00	0.053	-25.51	43.50	0.038	-28.40	68.00	0.112	-19.02
-9.75	0.441	-7.11	2.50	0.565	-4.97	19.50	0.071	-23.04	44.00	0.032	-30.03	68.50	0.125	-18.10
-9.50	0.438	-7.18	2.75	0.487	-6.25	20.00	0.102	-19.87	44.50	0.025	-32.22	69.00	0.137	-17.30
-9.25	0.428	-7.37	3.00	0.411	-7.73	20.50	0.137	-17.27	45.00	0.019	-34.66	69.50	0.148	-16.59
-9.00	0.410	-7.74	3.25	0.339	-9.40	21.00	0.171	-15.34	45.50	0.015	-36.48	70.00	0.158	-16.03
-8.75	0.387	-8.25	3.50	0.277	-11.17	21.50	0.199	-14.04	46.00	0.014	-37.08	70.50	0.167	-15.57
-8.50	0.358	-8.93	3.75	0.226	-12.92	22.00	0.217	-13.29	46.50	0.014	-37.39	71.00	0.174	-15.19
-8.25	0.323	-9.82	4.00	0.194	-14.27	22.50	0.223	-13.03	47.00	0.011	-39.58	71.50	0.181	-14.87
-8.00	0.286	-10.89	4.25	0.181	-14.85	23.00	0.219	-13.19	47.50	0.006	-45.19	72.00	0.185	-14.68
-7.75	0.247	-12.15	4.50	0.185	-14.66	23.50	0.204	-13.81	48.00	0.003	-50.46	72.50	0.188	-14.52
-7.50	0.212	-13.49	4.75	0.198	-14.07	24.00	0.180	-14.89	48.50	0.015	-36.77	73.00	0.190	-14.42
-7.25	0.182	-14.80	5.00	0.213	-13.45	24.50	0.150	-16.48	49.00	0.029	-30.90	73.50	0.191	-14.38
-7.00	0.166	-15.60	5.25	0.224	-13.00	25.00	0.118	-18.56	49.50	0.044	-27.13	74.00	0.190	-14.42
-6.75	0.165	-15.65	5.50	0.230	-12.78	25.50	0.086	-21.31	50.00	0.061	-24.36	74.50	0.189	-14.49
-6.50	0.179	-14.94	5.75	0.229	-12.80	26.00	0.058	-24.81	50.50	0.077	-22.33	75.00	0.186	-14.61
-6.25	0.201	-13.94	6.00	0.222	-13.07	26.50	0.036	-28.87	51.00	0.093	-20.68	75.50	0.183	-14.77
-6.00	0.226	-12.92	6.25	0.209	-13.60	27.00	0.022	-33.15	51.50	0.106	-19.49	76.00	0.178	-15.02
-5.75	0.249	-12.08	6.50	0.191	-14.40	27.50	0.016	-36.19	52.00	0.118	-18.60	76.50	0.173	-15.26
-5.50	0.266	-11.50	6.75	0.170	-15.39	28.00	0.013	-38.06	52.50	0.126	-18.03	77.00	0.168	-15.52
-5.25	0.277	-11.15	7.00	0.149	-16.54	28.50	0.009	-41.41	53.00	0.131	-17.69	77.50	0.161	-15.86
-5.00	0.281	-11.04	7.25	0.131	-17.65	29.00	0.004	-49.12	53.50	0.132	-17.62	78.00	0.155	-16.22
-4.75	0.276	-11.18	7.50	0.122	-18.27	29.50	0.003	-50.46	54.00	0.129	-17.82	78.50	0.148	-16.62
-4.50	0.263	-11.60	7.75	0.124	-18.13	30.00	0.009	-41.41	54.50	0.123	-18.20	79.00	0.141	-17.05
-4.25	0.246	-12.18	8.00	0.137	-17.27	30.50	0.012	-38.42	55.00	0.114	-18.86	79.50	0.134	-17.49
-4.00	0.226	-12.92	8.25	0.157	-16.08	31.00	0.015	-36.77	55.50	0.103	-19.79	80.00	0.126	-17.99
-3.75	0.211	-13.51	8.50	0.180	-14.92	31.50	0.020	-33.98	56.00	0.090	-20.96	80.50	0.119	-18.53
-3.50	0.210	-13.56	8.75	0.202	-13.89	32.00	0.032	-30.03	56.50	0.077	-22.33	81.00	0.111	-19.09
-3.25	0.229	-12.80	9.00	0.223	-13.05	32.50	0.050	-26.02	57.00	0.065	-23.74	81.50	0.104	-19.70
-3.00	0.272	-11.32	9.25	0.239	-12.43	33.00	0.073	-22.79	57.50	0.057	-24.96	82.00	0.096	-20.35
-2.75	0.331	-9.60	9.50	0.251	-12.01	33.50	0.097	-20.31	58.00	0.053	-25.51	82.50	0.089	-21.06
-2.50	0.401	-7.94	9.75	0.259	-11.73	34.00	0.122	-18.31	58.50	0.056	-25.11	83.00	0.082	-21.78
-2.25	0.478	-6.41	10.00	0.261	-11.68	34.50	0.145	-16.80	59.00	0.062	-24.15	83.50	0.075	-22.56
-2.00	0.557	-5.08	10.50	0.250	-12.04	35.00	0.164	-15.73	59.50	0.070	-23.10	84.00	0.068	-23.41
-1.75	0.636	-3.93	11.00	0.222	-13.09	35.50	0.177	-15.04	60.00	0.077	-22.27	84.50	0.061	-24.36
-1.50	0.712	-2.95	11.50	0.181	-14.87	36.00	0.184	-14.73	60.50	0.083	-21.67	85.00	0.054	-25.43
-1.25	0.782	-2.14	12.00	0.133	-17.52	36.50	0.184	-14.73	61.00	0.087	-21.21	85.50	0.047	-26.56
-1.00	0.846	-1.46	12.50	0.086	-21.36	37.00	0.176	-15.09	61.50	0.088	-21.11	86.00	0.041	-27.85
-0.75	0.899	-0.92	13.00	0.044	-27.23	37.50	0.162	-15.81	62.00	0.088	-21.16	86.50	0.034	-29.37
-0.50	0.943	-0.51	13.50	0.011	-39.17	38.00	0.143	-16.89	62.50	0.085	-21.46	87.00	0.028	-31.21
-0.25	0.974	-0.23	14.00	0.010	-40.45	38.50	0.121	-18.38	63.00	0.081	-21.88	87.50	0.022	-33.35
0.00	0.994	-0.06	14.50	0.020	-34.20	39.00	0.097	-20.31	63.50	0.075	-22.56	88.00	0.016	-36.19
0.25	1.000	0.00	15.00	0.022	-33.15	39.50	0.074	-22.67	64.00	0.069	-23.29	88.50	0.010	-40.45
0.50	0.994	-0.06	15.50	0.025	-32.04	40.00	0.054	-25.43	64.50	0.064	-23.94	89.00	0.003	-50.46
0.75	0.974	-0.23	16.00	0.035	-29.12	40.50	0.041	-27.74	65.00	0.061	-24.29	89.50	0.000	---
1.00	0.943	-0.51	16.50	0.049	-26.29	41.00	0.038	-28.40	65.50	0.062	-24.15	90.00	0.002	-53.98
1.25	0.900	-0.92	17.00	0.059	-24.58	41.50	0.041	-27.85	66.00	0.068	-23.41			
1.50	0.847	-1.45	17.50	0.063	-24.01	42.00	0.044	-27.23	66.50	0.076	-22.38			
1.75	0.785	-2.10	18.00	0.061	-24.36	42.50	0.045	-26.94	67.00	0.087	-21.21			
2.00	0.716	-2.91	18.50	0.054	-25.43	43.00	0.043	-27.43	67.50	0.099	-20.09			