

**Preliminary Specification for
TRASAR® Top Mounted
UHF Elliptically Polarized
Coaxial Slotted Array Television Antenna**

**WFLD (DT), RF Channel 24
FOX TELEVISION STATIONS INC., Chicago, IL
July 4, 2017**

**Antenna Model:
ATW13H3-ETC2-24H**

**Specification Number
20170703-015**

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**Preliminary Specification for
TRASAR® Top Mounted
UHF Elliptically Polarized
Coaxial Slotted Array Television Antenna**

Electrical Characteristics:

Channel:	24		
Frequency:	530 MHz to 536 MHz		
Service:	ATSC		
Azimuth Pattern Number:	Horizontal Polarization	CH24AZ-H-FINAL	
	Vertical Polarization	CH24AZ-V-FINAL	
Elevation Pattern Number:	Horizontal Polarization	ATW13H3H	
	Vertical Polarization	ATW10H3V	
Azimuth Directivity:	Horizontal Polarization	2.08	(3.18 dB)
	Vertical Polarization	2.09	(3.20 dB)
Elevation Directivity:	Horizontal Polarization	13.00	(11.14 dBd)
	Vertical Polarization	10.00	(10.00 dBd)
Peak Power Gain:	Horizontal Polarization	20.43	(13.10 dBd)
	Vertical Polarization	5.11	(7.08 dBd)
Gain at Horizontal:	Horizontal Polarization	18.79	(12.74 dBd)
	Vertical Polarization	4.83	(6.84 dBd)
Vertical/Horizontal Ratio:	0.25		
Electrical Beam Tilt:	0.75 Degrees		
Input Power Required:	42.04 kW (16.24 dBk)		
RF Input:	8-3/16-inch, 75 ohm, flange male		
Input Power Rating (maximum):	60 kW Average Power, 8VSB		
Antenna VSWR (maximum):	1.10 Over 6 MHz Channel		

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UHF Elliptically Polarized
Coaxial Slotted Array Television Antenna**

Mechanical Characteristics:

Mounting Configuration:		Top Mount
Height of Antenna (D):	27.1 feet	(8.3 meters)
Height of Center of Radiation (B):	13.6 feet	(4.1 meters)
Overall Height (Includes four 3.5 ft lightning spurs) (A):	30.6 feet	(9.3 meters)
Deicing:	Fully enclosed pressurized radome	
Radome Diameter (C):	16.4 inches	(417 millimeters)
Radome Color:	White	
Climbing Device:	Galvanized Steel Climbing Pole	
Calculated Weight ¹ :	No Ice	TBD
	0.5inch (13 mm) ice	TBD
Windload Data ³ :	EPA	No Ice
		0.5inch (13 mm) ice
		TBD
Effective Moment Arm ³ :	EPA	No Ice
		0.5inch (13 mm) ice
		TBD

MOUNTING FLANGE BOLT CIRCLE²: Quantity (16), 1.38 inch holes for 1.25 inch bolts, equally spaced on a 21.50 inch bolt circle.

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.

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, beacon and lightning spurs only. Custom mounting brackets/adapters and/or antenna input section are NOT included.

2 The mounting flange specified is the standard ERI mounting flange used for this antenna configuration. In those instances where an existing top mounted antenna is being replaced the antenna supplied will be designed with a mounting flange to match that of the existing antenna unless electrical and /or mechanical requirements for the new antenna preclude the matching flange. Customer responsible for supplying verified flange requirements for the flange configuration being matched.

3 Loads calculated in accordance with the ANSI/TIA-222 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

WFLD (DT) RF Channel: 24
FOX TELEVISION STATIONS INC.
Chicago, IL
ATW13H3-ETC2-24H

Antenna Parameters

Azimuth Directivity:

Horizontal:	2.08	(3.18 dB)
Vertical:	2.09	(3.20 dB)

Elevation Directivity:

Horizontal:	13.00	(11.14 dB)
Vertical:	10.00	(10.00 dB)

Transmission Line

Vertical Run:

Type:	8-3/16-inch, 75 ohm, rigid line	
Length:	350 feet	106.7 meters
Attenuation:	0.079 dB/100 feet	0.259 dB/100 mtrs

Horizontal Run:

Type:	8-3/16-inch, 75 ohm, rigid line	
Length:	50 feet	15.2 meters
Attenuation:	0.079 dB/100 feet	0.259 dB/100 mtrs

Effective Radiated Power:

Horizontal:	859.00 kW	(29.34 dBk)
Vertical:	214.75 kW	(23.32 dBk)

Power Gain:

Horizontal:	20.43 numeric	(13.10 dBd)
Vertical:	5.11 numeric	(7.08 dBd)

Antenna Input Power:

42.04 kW	(16.24 dBk)
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Transmission Line Losses:

-3.17 kW	(0.316 dB)
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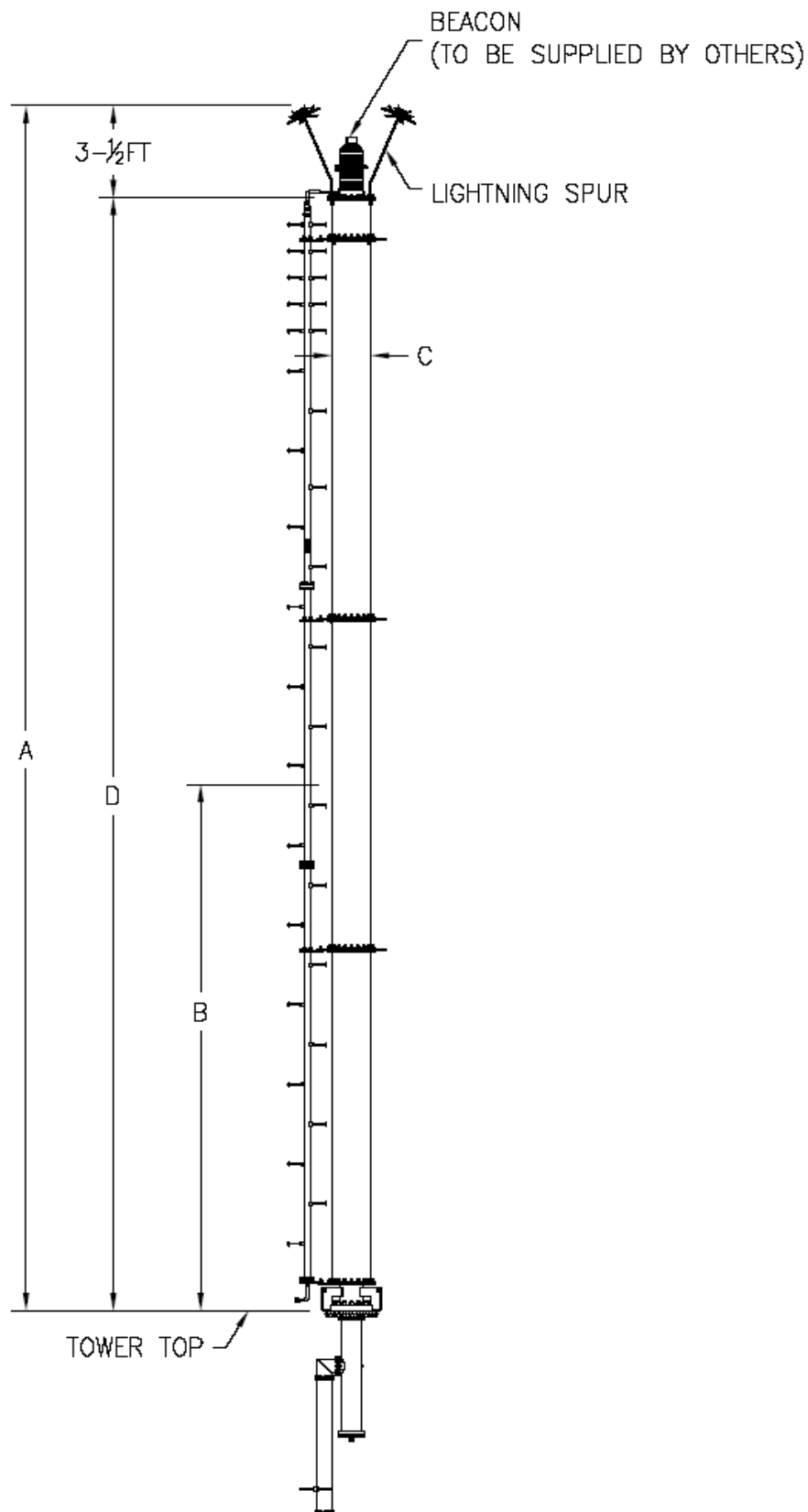
Total Losses:	0.316 dB
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Line Efficiency:	92.98%
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Transmitter Power Output:

45.22 kW
(16.55 dBk)

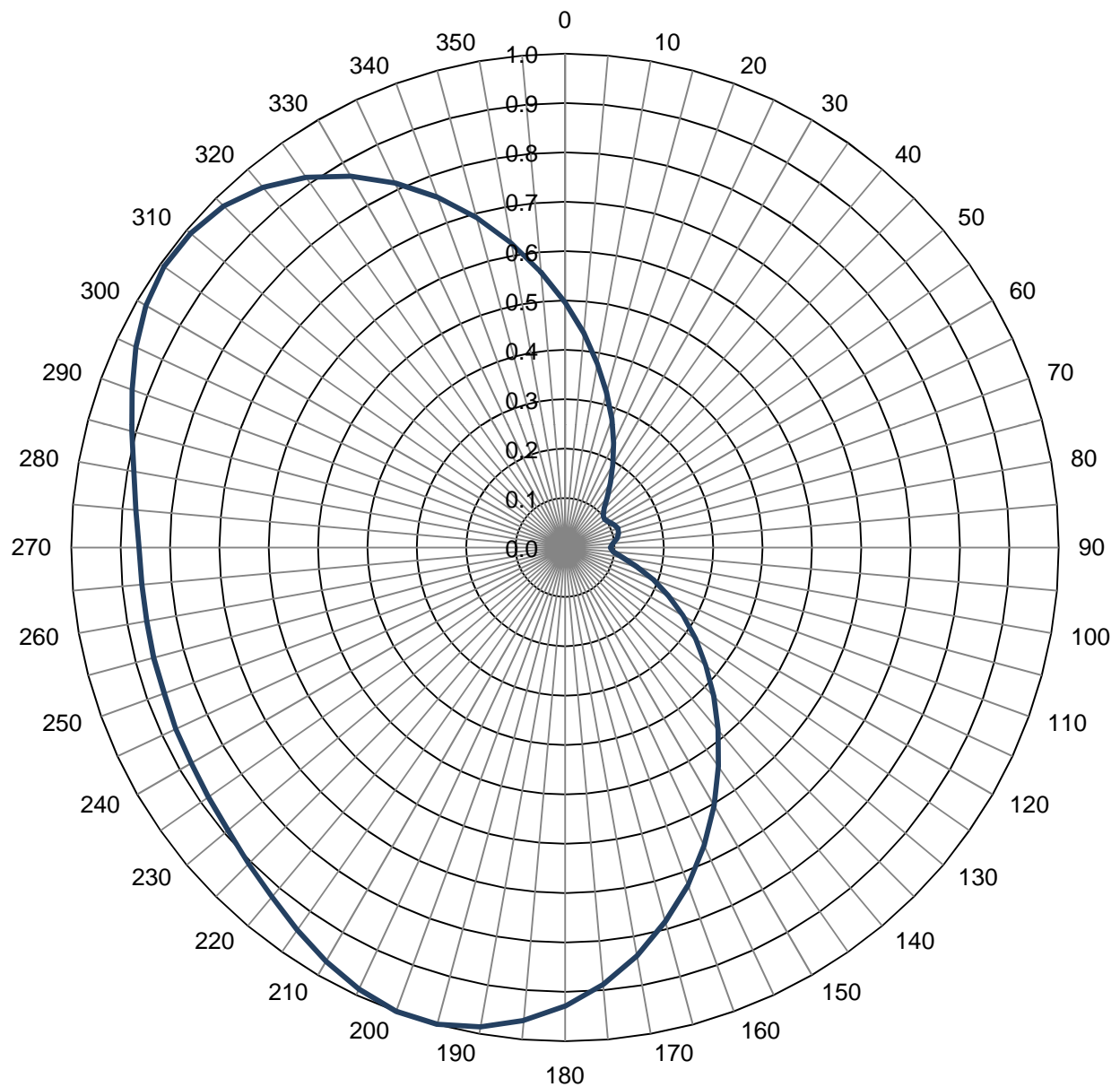
Typical Mounting Configuration Shown. Actual Configuration May Vary.



Azimuth Pattern

Type:	CH24AZ-H-FINAL	Polarization:	Horizontal
Directivity:	2.08 numeric (3.18 dB)	Frequency:	24 (ATSC)
Peak(s) at:		Location:	Chicago, IL
		NOTE: Pattern shape and directivity may vary with channel and mounting configuration.	

Relative Field



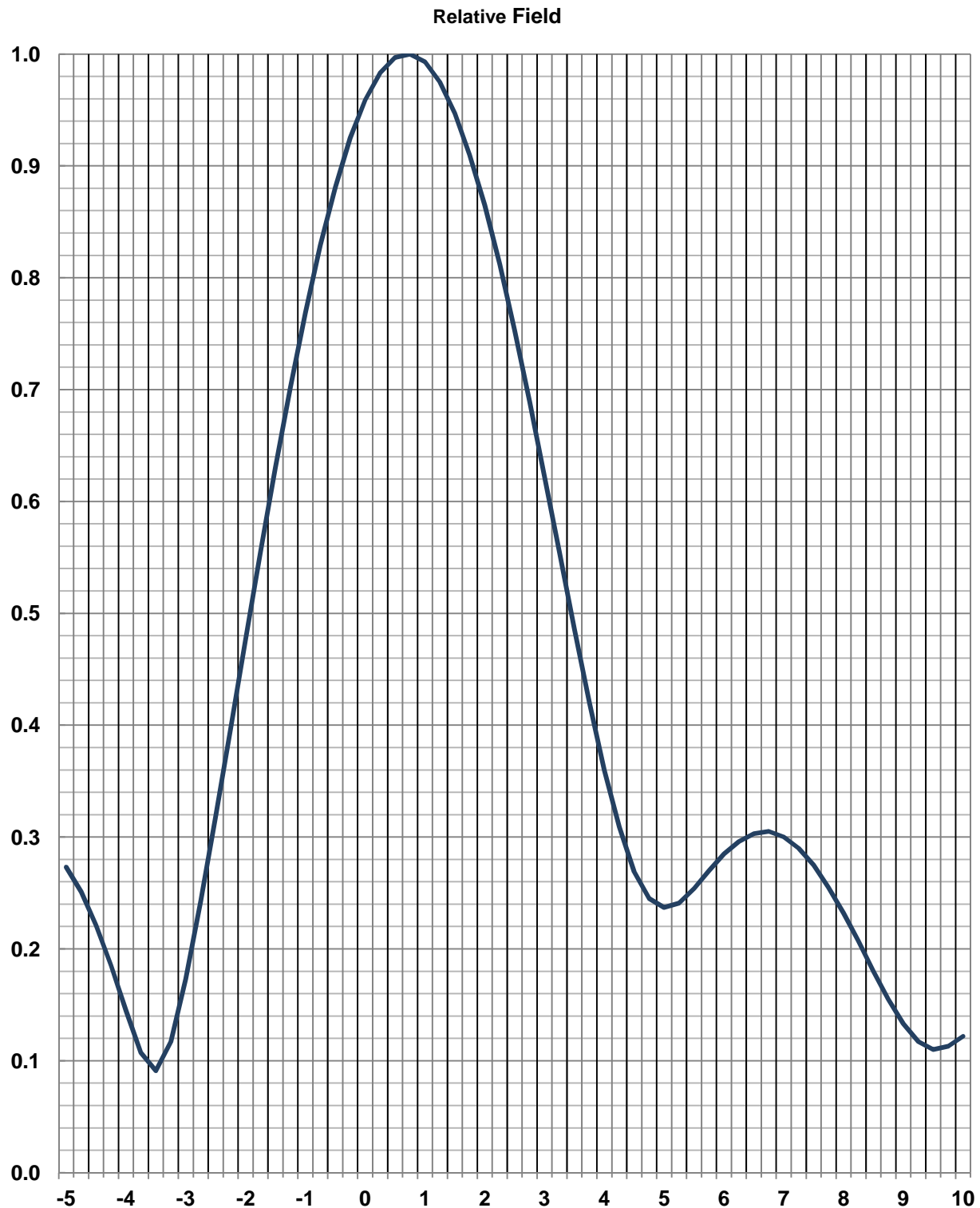
Tabulated Data for Azimuth Pattern

Type: CH24AZ-H-FINAL

Angle	Field	dB	Angle	Field	dB	Angle	Field	dB	Angle	Field	dB
0	0.496	-6.09	100	0.119	-18.49	200	1.000	0.00	300	0.980	-0.18
2	0.472	-6.52	102	0.131	-17.65	202	0.995	-0.04	302	0.987	-0.11
4	0.448	-6.97	104	0.144	-16.83	204	0.990	-0.09	304	0.990	-0.09
6	0.424	-7.45	106	0.158	-16.03	206	0.984	-0.14	306	0.993	-0.06
8	0.401	-7.94	108	0.173	-15.24	208	0.976	-0.21	308	0.993	-0.06
10	0.378	-8.45	110	0.190	-14.42	210	0.968	-0.28	310	0.990	-0.09
12	0.356	-8.97	112	0.206	-13.72	212	0.959	-0.36	312	0.987	-0.11
14	0.335	-9.50	114	0.223	-13.03	214	0.950	-0.45	314	0.983	-0.15
16	0.315	-10.03	116	0.240	-12.40	216	0.941	-0.53	316	0.973	-0.24
18	0.295	-10.60	118	0.257	-11.80	218	0.932	-0.61	318	0.963	-0.33
20	0.277	-11.15	120	0.276	-11.18	220	0.924	-0.69	320	0.952	-0.43
22	0.259	-11.73	122	0.294	-10.63	222	0.916	-0.76	322	0.937	-0.57
24	0.241	-12.36	124	0.313	-10.09	224	0.909	-0.83	324	0.923	-0.70
26	0.225	-12.96	126	0.333	-9.55	226	0.903	-0.89	326	0.907	-0.85
28	0.209	-13.60	128	0.352	-9.07	228	0.896	-0.95	328	0.887	-1.04
30	0.193	-14.29	130	0.372	-8.59	230	0.891	-1.00	330	0.868	-1.23
32	0.180	-14.89	132	0.394	-8.09	232	0.887	-1.04	332	0.848	-1.43
34	0.167	-15.55	134	0.416	-7.62	234	0.883	-1.08	334	0.825	-1.67
36	0.154	-16.25	136	0.437	-7.19	236	0.880	-1.11	336	0.803	-1.91
38	0.144	-16.83	138	0.460	-6.74	238	0.877	-1.14	338	0.780	-2.16
40	0.133	-17.52	140	0.482	-6.34	240	0.874	-1.17	340	0.755	-2.44
42	0.123	-18.20	142	0.505	-5.93	242	0.872	-1.19	342	0.730	-2.73
44	0.116	-18.71	144	0.530	-5.51	244	0.871	-1.20	344	0.705	-3.04
46	0.109	-19.25	146	0.554	-5.13	246	0.869	-1.22	346	0.679	-3.36
48	0.103	-19.74	148	0.579	-4.75	248	0.869	-1.22	348	0.652	-3.72
50	0.101	-19.91	150	0.604	-4.38	250	0.864	-1.27	350	0.626	-4.07
52	0.099	-20.09	152	0.629	-4.03	252	0.864	-1.27	352	0.599	-4.45
54	0.098	-20.18	154	0.654	-3.69	254	0.863	-1.28	354	0.572	-4.85
56	0.099	-20.09	156	0.679	-3.36	256	0.862	-1.29	356	0.547	-5.24
58	0.101	-19.91	158	0.704	-3.05	258	0.861	-1.30	358	0.522	-5.65
60	0.103	-19.74	160	0.728	-2.76	260	0.860	-1.31	360	0.496	-6.09
62	0.106	-19.49	162	0.750	-2.50	262	0.860	-1.31			
64	0.108	-19.33	164	0.773	-2.24	264	0.860	-1.31			
66	0.111	-19.09	166	0.796	-1.98	266	0.861	-1.30			
68	0.112	-19.02	168	0.818	-1.74	268	0.862	-1.29			
70	0.114	-18.86	170	0.840	-1.51	270	0.863	-1.28			
72	0.114	-18.86	172	0.860	-1.31	272	0.867	-1.24			
74	0.113	-18.94	174	0.879	-1.12	274	0.870	-1.21			
76	0.112	-19.02	176	0.897	-0.94	276	0.875	-1.16			
78	0.110	-19.17	178	0.913	-0.79	278	0.881	-1.10			
80	0.107	-19.41	180	0.929	-0.64	280	0.887	-1.04			
82	0.103	-19.74	182	0.944	-0.50	282	0.895	-0.96			
84	0.100	-20.00	184	0.956	-0.39	284	0.904	-0.88			
86	0.096	-20.35	186	0.968	-0.28	286	0.913	-0.79			
88	0.093	-20.63	188	0.979	-0.18	288	0.923	-0.70			
90	0.092	-20.72	190	0.986	-0.12	290	0.933	-0.60			
92	0.093	-20.63	192	0.992	-0.07	292	0.944	-0.50			
94	0.095	-20.45	194	0.999	-0.01	294	0.954	-0.41			
96	0.101	-19.91	196	1.000	0.00	296	0.964	-0.32			
98	0.110	-19.17	198	1.000	0.00	298	0.972	-0.25			

Elevation Pattern

Type:	ATW13H3H		Polarization:	Horizontal
Directivity:			Frequency:	24 (ATSC)
Main Lobe:	13.00 numeric	(11.14 dB)	Location:	Chicago, IL
Horizontal:	11.96 numeric	(10.78 dB)	Beam Tilt:	0.75 degrees



Tabulated Data for Elevation PatternType: ATW13H3H

-5 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
-5.00	0.273	-11.28	7.25	0.290	-10.75	29.00	0.041	-27.74	53.50	0.042	-27.54	78.00	0.065	-23.74
-4.75	0.251	-12.01	7.50	0.275	-11.21	29.50	0.053	-25.51	54.00	0.053	-25.51	78.50	0.067	-23.48
-4.50	0.221	-13.11	7.75	0.255	-11.87	30.00	0.067	-23.48	54.50	0.063	-24.01	79.00	0.069	-23.22
-4.25	0.185	-14.66	8.00	0.232	-12.69	30.50	0.077	-22.27	55.00	0.072	-22.85	79.50	0.070	-23.10
-4.00	0.145	-16.77	8.25	0.207	-13.68	31.00	0.082	-21.72	55.50	0.078	-22.16	80.00	0.071	-22.97
-3.75	0.107	-19.41	8.50	0.180	-14.89	31.50	0.081	-21.83	56.00	0.082	-21.72	80.50	0.071	-22.97
-3.50	0.091	-20.82	8.75	0.155	-16.19	32.00	0.074	-22.62	56.50	0.083	-21.62	81.00	0.070	-23.10
-3.25	0.117	-18.64	9.00	0.133	-17.52	32.50	0.063	-24.01	57.00	0.081	-21.83	81.50	0.069	-23.22
-3.00	0.173	-15.24	9.25	0.117	-18.64	33.00	0.049	-26.20	57.50	0.077	-22.27	82.00	0.067	-23.48
-2.75	0.243	-12.29	9.50	0.110	-19.17	33.50	0.037	-28.64	58.00	0.070	-23.10	82.50	0.065	-23.74
-2.50	0.318	-9.95	9.75	0.113	-18.94	34.00	0.033	-29.63	58.50	0.062	-24.15	83.00	0.062	-24.15
-2.25	0.397	-8.02	10.00	0.122	-18.27	34.50	0.041	-27.74	59.00	0.052	-25.68	83.50	0.059	-24.58
-2.00	0.476	-6.45	10.50	0.149	-16.54	35.00	0.053	-25.51	59.50	0.042	-27.54	84.00	0.056	-25.04
-1.75	0.555	-5.11	11.00	0.171	-15.34	35.50	0.065	-23.74	60.00	0.032	-29.90	84.50	0.052	-25.68
-1.50	0.630	-4.01	11.50	0.180	-14.89	36.00	0.073	-22.73	60.50	0.026	-31.70	85.00	0.049	-26.20
-1.25	0.702	-3.07	12.00	0.173	-15.24	36.50	0.077	-22.27	61.00	0.026	-31.70	85.50	0.044	-27.13
-1.00	0.769	-2.28	12.50	0.153	-16.31	37.00	0.076	-22.38	61.50	0.033	-29.63	86.00	0.040	-27.96
-0.75	0.829	-1.63	13.00	0.123	-18.20	37.50	0.070	-23.10	62.00	0.043	-27.33	86.50	0.035	-29.12
-0.50	0.881	-1.10	13.50	0.092	-20.72	38.00	0.060	-24.44	62.50	0.054	-25.35	87.00	0.031	-30.17
-0.25	0.925	-0.68	14.00	0.072	-22.85	38.50	0.047	-26.56	63.00	0.064	-23.88	87.50	0.026	-31.70
0.00	0.959	-0.36	14.50	0.077	-22.27	39.00	0.036	-28.87	63.50	0.074	-22.62	88.00	0.021	-33.56
0.25	0.983	-0.15	15.00	0.097	-20.26	39.50	0.031	-30.17	64.00	0.082	-21.72	88.50	0.016	-35.92
0.50	0.997	-0.03	15.50	0.117	-18.64	40.00	0.036	-28.87	64.50	0.088	-21.11	89.00	0.010	-40.00
0.75	1.000	0.00	16.00	0.129	-17.79	40.50	0.047	-26.56	65.00	0.093	-20.63	89.50	0.005	-46.02
1.00	0.993	-0.06	16.50	0.129	-17.79	41.00	0.058	-24.73	65.50	0.096	-20.35	90.00	0.000	---
1.25	0.975	-0.22	17.00	0.119	-18.49	41.50	0.068	-23.35	66.00	0.097	-20.26			
1.50	0.947	-0.47	17.50	0.100	-20.00	42.00	0.073	-22.73	66.50	0.096	-20.35			
1.75	0.910	-0.82	18.00	0.077	-22.27	42.50	0.075	-22.50	67.00	0.094	-20.54			
2.00	0.865	-1.26	18.50	0.058	-24.73	43.00	0.073	-22.73	67.50	0.091	-20.82			
2.25	0.812	-1.81	19.00	0.055	-25.19	43.50	0.067	-23.48	68.00	0.086	-21.31			
2.50	0.753	-2.46	19.50	0.069	-23.22	44.00	0.058	-24.73	68.50	0.080	-21.94			
2.75	0.689	-3.24	20.00	0.086	-21.31	44.50	0.047	-26.56	69.00	0.073	-22.73			
3.00	0.622	-4.12	20.50	0.099	-20.09	45.00	0.036	-28.87	69.50	0.065	-23.74			
3.25	0.554	-5.13	21.00	0.105	-19.58	45.50	0.030	-30.46	70.00	0.056	-25.04			
3.50	0.486	-6.27	21.50	0.102	-19.83	46.00	0.033	-29.63	70.50	0.047	-26.56			
3.75	0.420	-7.54	22.00	0.091	-20.82	46.50	0.042	-27.54	71.00	0.038	-28.40			
4.00	0.360	-8.87	22.50	0.074	-22.62	47.00	0.053	-25.51	71.50	0.028	-31.06			
4.25	0.309	-10.20	23.00	0.056	-25.04	47.50	0.063	-24.01	72.00	0.019	-34.42			
4.50	0.269	-11.40	23.50	0.044	-27.13	48.00	0.071	-22.97	72.50	0.011	-39.17			
4.75	0.245	-12.22	24.00	0.047	-26.56	48.50	0.076	-22.38	73.00	0.008	-41.94			
5.00	0.237	-12.51	24.50	0.061	-24.29	49.00	0.077	-22.27	73.50	0.013	-37.72			
5.25	0.241	-12.36	25.00	0.076	-22.38	49.50	0.075	-22.50	74.00	0.020	-33.98			
5.50	0.254	-11.90	25.50	0.087	-21.21	50.00	0.070	-23.10	74.50	0.028	-31.06			
5.75	0.270	-11.37	26.00	0.090	-20.92	50.50	0.061	-24.29	75.00	0.035	-29.12			
6.00	0.285	-10.90	26.50	0.087	-21.21	51.00	0.051	-25.85	75.50	0.042	-27.54			
6.25	0.296	-10.57	27.00	0.078	-22.16	51.50	0.041	-27.74	76.00	0.048	-26.38			
6.50	0.303	-10.37	27.50	0.063	-24.01	52.00	0.031	-30.17	76.50	0.053	-25.51			
6.75	0.305	-10.31	28.00	0.048	-26.38	52.50	0.028	-31.06	77.00	0.058	-24.73			
7.00	0.300	-10.46	28.50	0.038	-28.40	53.00	0.032	-29.90	77.50	0.062	-24.15			

Azimuth Pattern

Type:

CH24AZ-V-FINAL

Polarization:

Vertical

Directivity:

2.09 numeric

(3.20 dB)

Frequency:

24 (ATSC)

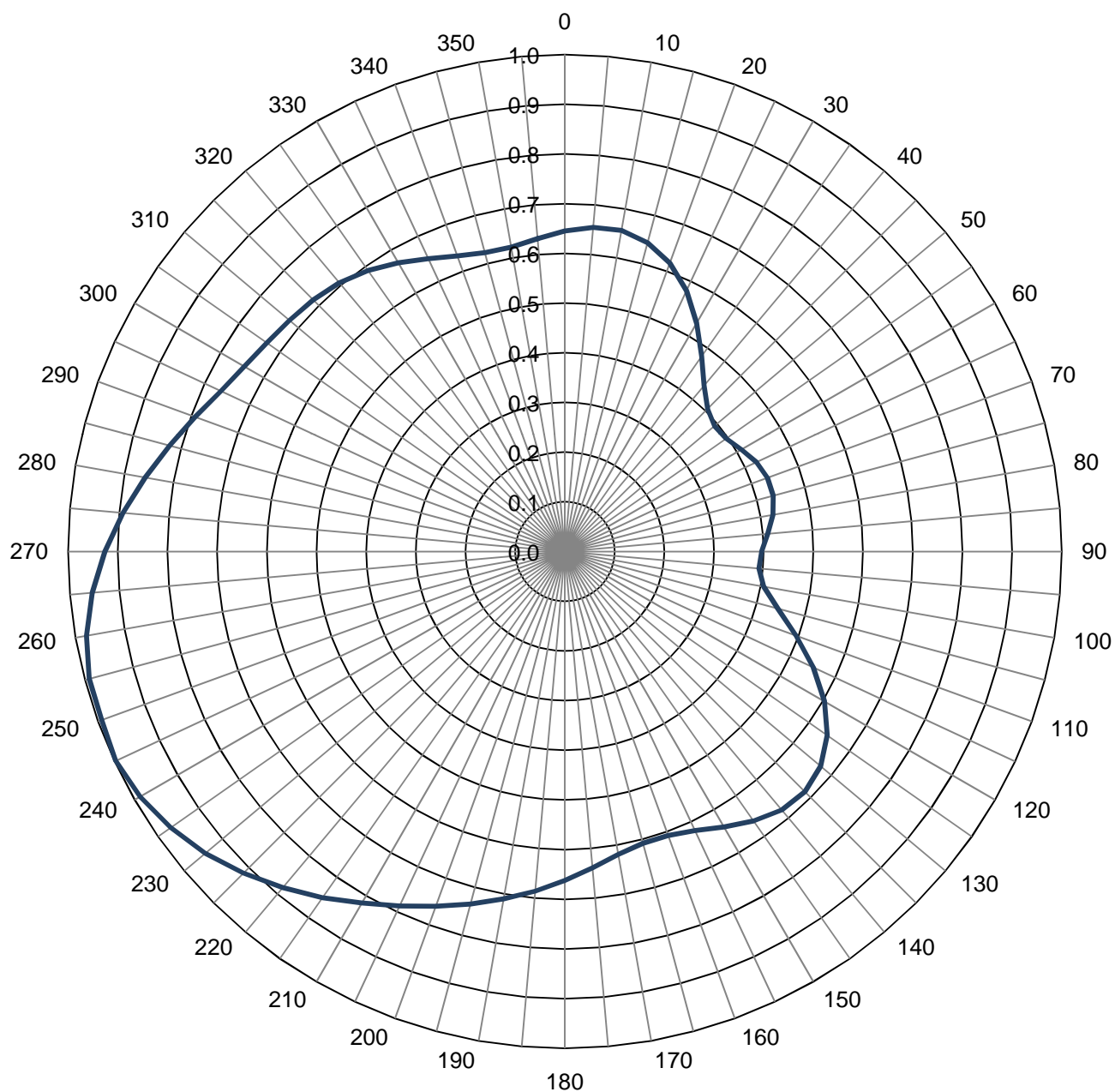
Peak(s) at:

Location:

Chicago, IL

NOTE: Pattern shape and directivity may vary with channel and mounting configuration.

Relative Field



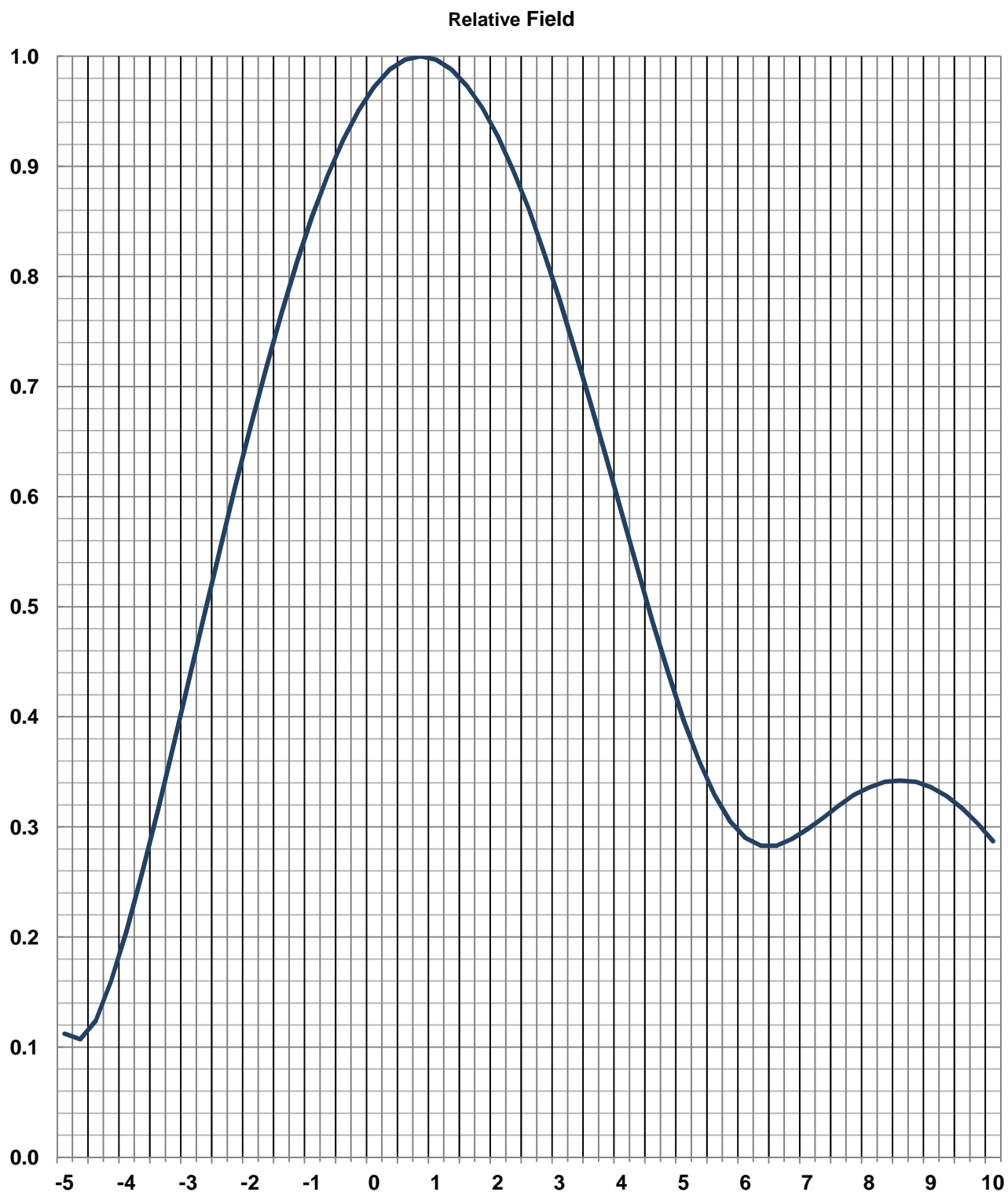
Tabulated Data for Azimuth Pattern

Type: CH24AZ-V-FINAL

Angle	Field	dB	Angle	Field	dB	Angle	Field	dB	Angle	Field	dB
0	0.645	-3.81	100	0.406	-7.83	200	0.760	-2.38	300	0.745	-2.56
2	0.650	-3.74	102	0.421	-7.51	202	0.770	-2.27	302	0.740	-2.62
4	0.653	-3.70	104	0.436	-7.21	204	0.781	-2.15	304	0.734	-2.69
6	0.657	-3.65	106	0.451	-6.92	206	0.793	-2.01	306	0.730	-2.73
8	0.658	-3.64	108	0.473	-6.50	208	0.805	-1.88	308	0.727	-2.77
10	0.656	-3.66	110	0.495	-6.11	210	0.817	-1.76	310	0.724	-2.81
12	0.654	-3.69	112	0.518	-5.71	212	0.830	-1.62	312	0.721	-2.84
14	0.648	-3.77	114	0.540	-5.35	214	0.844	-1.47	314	0.718	-2.88
16	0.639	-3.89	116	0.563	-4.99	216	0.857	-1.34	316	0.714	-2.93
18	0.630	-4.01	118	0.585	-4.66	218	0.870	-1.21	318	0.710	-2.97
20	0.618	-4.18	120	0.603	-4.39	220	0.883	-1.08	320	0.706	-3.02
22	0.603	-4.39	122	0.622	-4.12	222	0.896	-0.95	322	0.700	-3.10
24	0.588	-4.61	124	0.638	-3.90	224	0.909	-0.83	324	0.694	-3.17
26	0.570	-4.88	126	0.651	-3.73	226	0.922	-0.71	326	0.687	-3.26
28	0.550	-5.19	128	0.663	-3.57	228	0.934	-0.59	328	0.679	-3.36
30	0.530	-5.51	130	0.672	-3.45	230	0.945	-0.49	330	0.671	-3.47
32	0.510	-5.85	132	0.677	-3.39	232	0.956	-0.39	332	0.662	-3.58
34	0.490	-6.20	134	0.683	-3.31	234	0.965	-0.31	334	0.654	-3.69
36	0.470	-6.56	136	0.684	-3.30	236	0.973	-0.24	336	0.646	-3.80
38	0.453	-6.88	138	0.681	-3.34	238	0.981	-0.17	338	0.638	-3.90
40	0.436	-7.21	140	0.679	-3.36	240	0.987	-0.11	340	0.633	-3.97
42	0.419	-7.56	142	0.673	-3.44	242	0.992	-0.07	342	0.628	-4.04
44	0.410	-7.74	144	0.666	-3.53	244	0.997	-0.03	344	0.623	-4.11
46	0.402	-7.92	146	0.658	-3.64	246	0.998	-0.02	346	0.622	-4.12
48	0.393	-8.11	148	0.649	-3.76	248	0.999	-0.01	348	0.622	-4.12
50	0.393	-8.11	150	0.640	-3.88	250	0.992	-0.07	350	0.622	-4.12
52	0.393	-8.11	152	0.630	-4.01	252	0.992	-0.07	352	0.626	-4.07
54	0.394	-8.09	154	0.623	-4.11	254	0.992	-0.07	354	0.630	-4.01
56	0.399	-7.98	156	0.616	-4.21	256	0.991	-0.08	356	0.634	-3.96
58	0.405	-7.85	158	0.610	-4.29	258	0.984	-0.14	358	0.640	-3.88
60	0.410	-7.74	160	0.608	-4.32	260	0.978	-0.19	360	0.645	-3.81
62	0.416	-7.62	162	0.607	-4.34	262	0.970	-0.26			
64	0.423	-7.47	164	0.606	-4.35	264	0.960	-0.35			
66	0.428	-7.37	166	0.610	-4.29	266	0.950	-0.45			
68	0.431	-7.31	168	0.614	-4.24	268	0.939	-0.55			
70	0.434	-7.25	170	0.619	-4.17	270	0.926	-0.67			
72	0.436	-7.21	172	0.627	-4.05	272	0.914	-0.78			
74	0.435	-7.23	174	0.635	-3.94	274	0.900	-0.92			
76	0.433	-7.27	176	0.643	-3.84	276	0.886	-1.05			
78	0.430	-7.33	178	0.652	-3.72	278	0.872	-1.19			
80	0.425	-7.43	180	0.662	-3.58	280	0.858	-1.33			
82	0.419	-7.56	182	0.672	-3.45	282	0.844	-1.47			
84	0.413	-7.68	184	0.681	-3.34	284	0.830	-1.62			
86	0.407	-7.81	186	0.691	-3.21	286	0.817	-1.76			
88	0.400	-7.96	188	0.701	-3.09	288	0.804	-1.89			
90	0.396	-8.05	190	0.710	-2.97	290	0.792	-2.03			
92	0.393	-8.11	192	0.720	-2.85	292	0.780	-2.16			
94	0.390	-8.18	194	0.730	-2.73	294	0.769	-2.28			
96	0.394	-8.09	196	0.739	-2.63	296	0.759	-2.40			
98	0.400	-7.96	198	0.749	-2.51	298	0.752	-2.48			

Elevation Pattern

Type:	ATW10H3V		Polarization:	Vertical
Directivity:			Frequency:	24 (ATSC)
Main Lobe:	10.00 numeric	(10.00 dB)	Location:	Chicago, IL
Horizontal:	9.45 numeric	(9.75 dB)	Beam Tilt:	0.75 degrees



Tabulated Data for Elevation PatternType: ATW10H3V

-5 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
-5.00	0.112	-19.02	7.25	0.308	-10.23	29.00	0.103	-19.74	53.50	0.078	-22.16	78.00	0.063	-24.01
-4.75	0.107	-19.41	7.50	0.319	-9.92	29.50	0.092	-20.72	54.00	0.069	-23.22	78.50	0.064	-23.88
-4.50	0.124	-18.13	7.75	0.329	-9.66	30.00	0.079	-22.05	54.50	0.059	-24.58	79.00	0.064	-23.88
-4.25	0.160	-15.92	8.00	0.336	-9.47	30.50	0.064	-23.88	55.00	0.048	-26.38	79.50	0.064	-23.88
-4.00	0.206	-13.72	8.25	0.341	-9.34	31.00	0.050	-26.02	55.50	0.035	-29.12	80.00	0.064	-23.88
-3.75	0.258	-11.77	8.50	0.342	-9.32	31.50	0.041	-27.74	56.00	0.023	-32.77	80.50	0.063	-24.01
-3.50	0.314	-10.06	8.75	0.341	-9.34	32.00	0.042	-27.54	56.50	0.013	-37.72	81.00	0.062	-24.15
-3.25	0.372	-8.59	9.00	0.336	-9.47	32.50	0.052	-25.68	57.00	0.014	-37.08	81.50	0.060	-24.44
-3.00	0.432	-7.29	9.25	0.328	-9.68	33.00	0.065	-23.74	57.50	0.025	-32.04	82.00	0.058	-24.73
-2.75	0.491	-6.18	9.50	0.317	-9.98	33.50	0.077	-22.27	58.00	0.037	-28.64	82.50	0.056	-25.04
-2.50	0.550	-5.19	9.75	0.303	-10.37	34.00	0.087	-21.21	58.50	0.049	-26.20	83.00	0.053	-25.51
-2.25	0.608	-4.32	10.00	0.287	-10.84	34.50	0.094	-20.54	59.00	0.061	-24.29	83.50	0.050	-26.02
-2.00	0.663	-3.57	10.50	0.248	-12.11	35.00	0.097	-20.26	59.50	0.071	-22.97	84.00	0.047	-26.56
-1.75	0.716	-2.90	11.00	0.205	-13.76	35.50	0.096	-20.35	60.00	0.081	-21.83	84.50	0.044	-27.13
-1.50	0.766	-2.32	11.50	0.164	-15.70	36.00	0.091	-20.82	60.50	0.089	-21.01	85.00	0.040	-27.96
-1.25	0.813	-1.80	12.00	0.133	-17.52	36.50	0.083	-21.62	61.00	0.096	-20.35	85.50	0.036	-28.87
-1.00	0.855	-1.36	12.50	0.121	-18.34	37.00	0.072	-22.85	61.50	0.101	-19.91	86.00	0.032	-29.90
-0.75	0.892	-0.99	13.00	0.129	-17.79	37.50	0.060	-24.44	62.00	0.105	-19.58	86.50	0.028	-31.06
-0.50	0.924	-0.69	13.50	0.148	-16.59	38.00	0.047	-26.56	62.50	0.107	-19.41	87.00	0.024	-32.40
-0.25	0.951	-0.44	14.00	0.168	-15.49	38.50	0.036	-28.87	63.00	0.108	-19.33	87.50	0.020	-33.98
0.00	0.972	-0.25	14.50	0.183	-14.75	39.00	0.032	-29.90	63.50	0.108	-19.33	88.00	0.016	-35.92
0.25	0.988	-0.10	15.00	0.189	-14.47	39.50	0.038	-28.40	64.00	0.107	-19.41	88.50	0.011	-39.17
0.50	0.997	-0.03	15.50	0.187	-14.56	40.00	0.049	-26.20	64.50	0.104	-19.66	89.00	0.007	-43.10
0.75	1.000	0.00	16.00	0.176	-15.09	40.50	0.061	-24.29	65.00	0.100	-20.00	89.50	0.002	-53.98
1.00	0.997	-0.03	16.50	0.158	-16.03	41.00	0.072	-22.85	65.50	0.095	-20.45	90.00	0.000	---
1.25	0.988	-0.10	17.00	0.135	-17.39	41.50	0.081	-21.83	66.00	0.089	-21.01			
1.50	0.973	-0.24	17.50	0.109	-19.25	42.00	0.088	-21.11	66.50	0.083	-21.62			
1.75	0.953	-0.42	18.00	0.087	-21.21	42.50	0.091	-20.82	67.00	0.076	-22.38			
2.00	0.927	-0.66	18.50	0.074	-22.62	43.00	0.092	-20.72	67.50	0.068	-23.35			
2.25	0.896	-0.95	19.00	0.077	-22.27	43.50	0.089	-21.01	68.00	0.060	-24.44			
2.50	0.861	-1.30	19.50	0.090	-20.92	44.00	0.083	-21.62	68.50	0.052	-25.68			
2.75	0.821	-1.71	20.00	0.107	-19.41	44.50	0.075	-22.50	69.00	0.043	-27.33			
3.00	0.778	-2.18	20.50	0.122	-18.27	45.00	0.065	-23.74	69.50	0.035	-29.12			
3.25	0.732	-2.71	21.00	0.132	-17.59	45.50	0.053	-25.51	70.00	0.027	-31.37			
3.50	0.684	-3.30	21.50	0.136	-17.33	46.00	0.041	-27.74	70.50	0.020	-33.98			
3.75	0.635	-3.94	22.00	0.133	-17.52	46.50	0.030	-30.46	71.00	0.014	-37.08			
4.00	0.585	-4.66	22.50	0.124	-18.13	47.00	0.024	-32.40	71.50	0.012	-38.42			
4.25	0.535	-5.43	23.00	0.110	-19.17	47.50	0.029	-30.75	72.00	0.014	-37.08			
4.50	0.486	-6.27	23.50	0.093	-20.63	48.00	0.039	-28.18	72.50	0.019	-34.42			
4.75	0.440	-7.13	24.00	0.074	-22.62	48.50	0.051	-25.85	73.00	0.025	-32.04			
5.00	0.397	-8.02	24.50	0.059	-24.58	49.00	0.062	-24.15	73.50	0.031	-30.17			
5.25	0.360	-8.87	25.00	0.052	-25.68	49.50	0.073	-22.73	74.00	0.036	-28.87			
5.50	0.329	-9.66	25.50	0.058	-24.73	50.00	0.081	-21.83	74.50	0.042	-27.54			
5.75	0.305	-10.31	26.00	0.071	-22.97	50.50	0.088	-21.11	75.00	0.046	-26.74			
6.00	0.290	-10.75	26.50	0.085	-21.41	51.00	0.092	-20.72	75.50	0.050	-26.02			
6.25	0.283	-10.96	27.00	0.097	-20.26	51.50	0.094	-20.54	76.00	0.054	-25.35			
6.50	0.283	-10.96	27.50	0.106	-19.49	52.00	0.093	-20.63	76.50	0.057	-24.88			
6.75	0.289	-10.78	28.00	0.110	-19.17	52.50	0.090	-20.92	77.00	0.059	-24.58			
7.00	0.298	-10.52	28.50	0.108	-19.33	53.00	0.085	-21.41	77.50	0.061	-24.29			