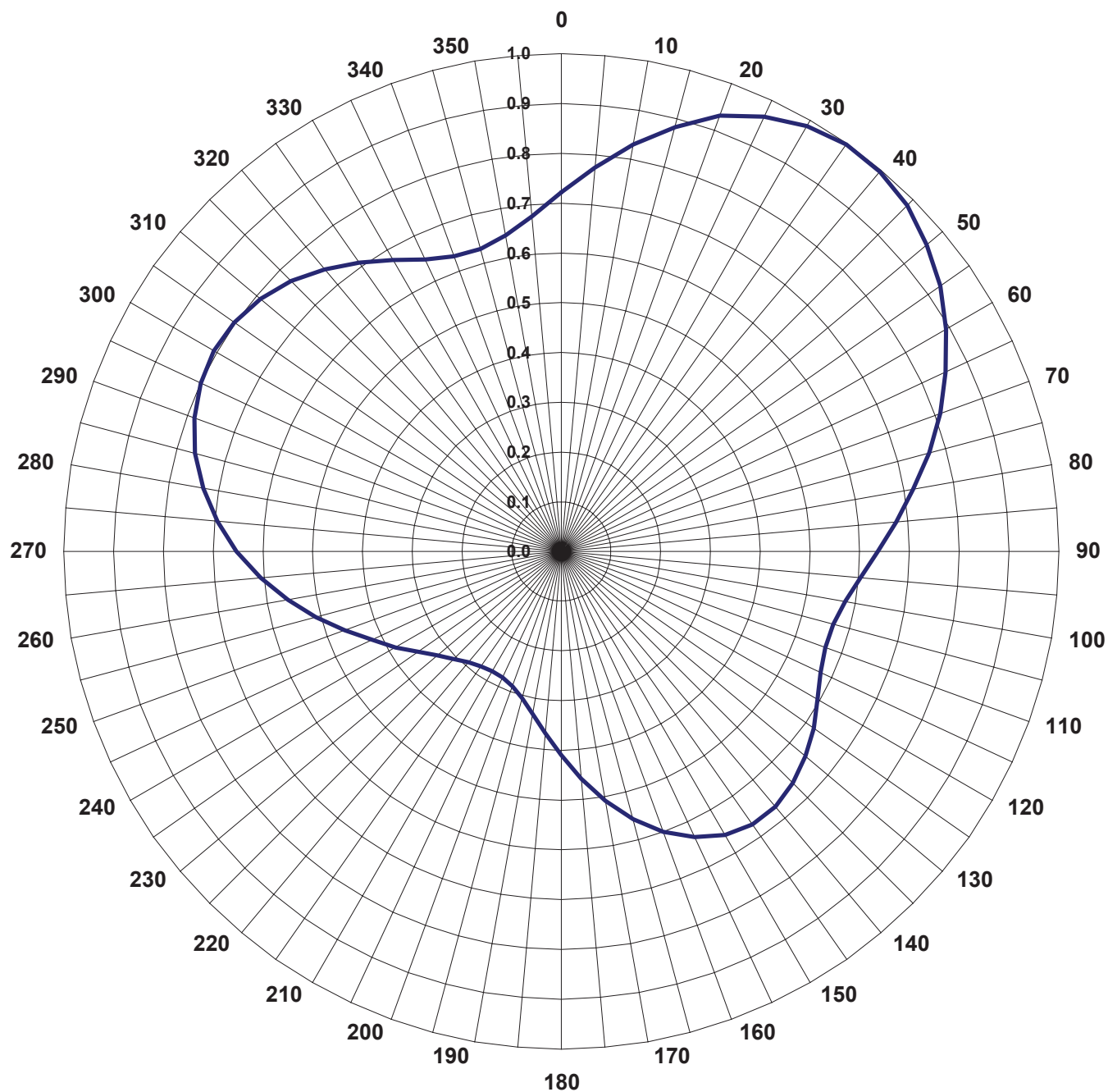


## AZIMUTH PATTERN

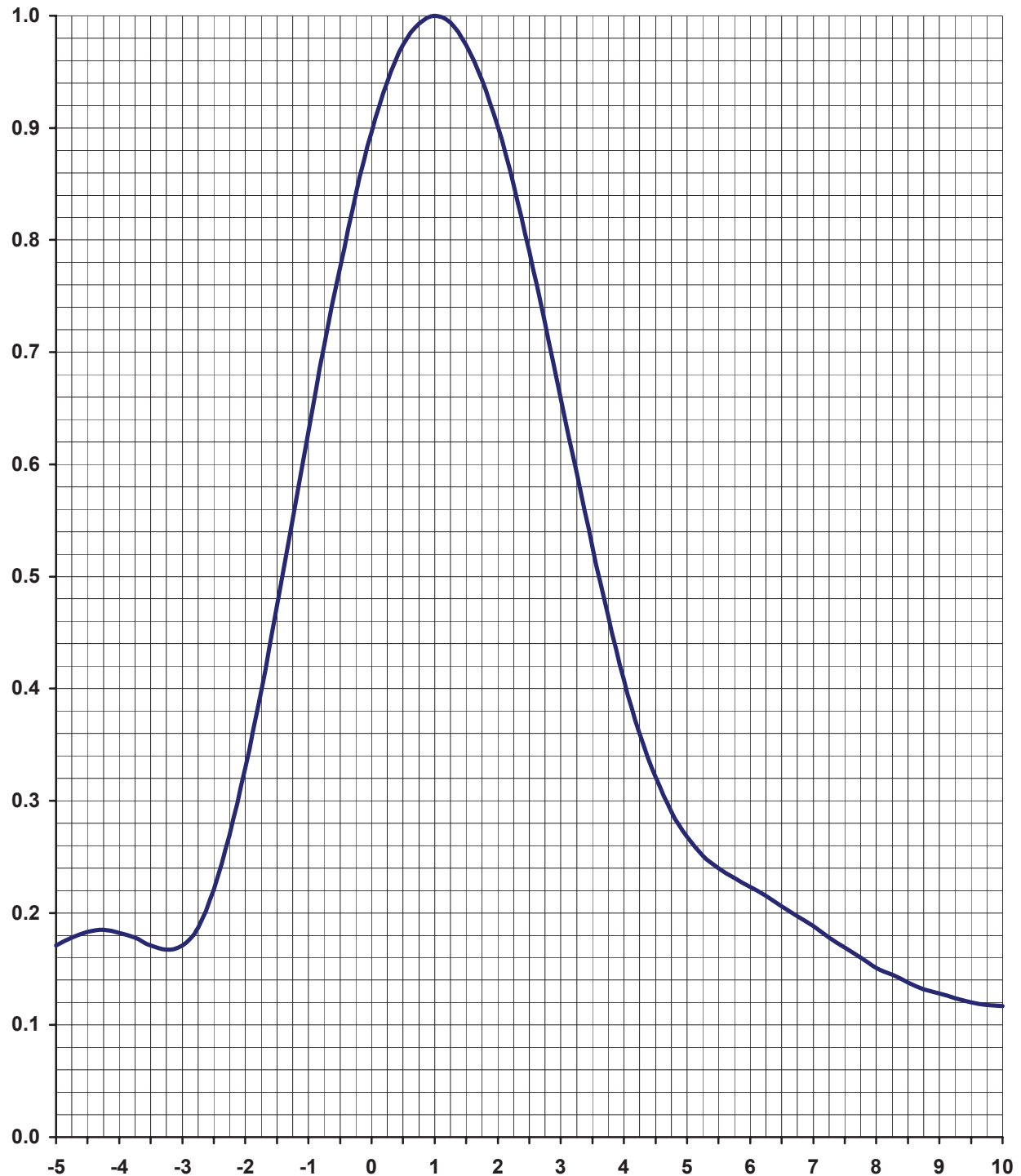
**TYPE:****CH21HAZ-CX****Frequency:****21 (DTV)****Numeric****dB****Location:****Harrisburg, PA****Directivity:****2.22****3.46****Polarization:****Horizontal****Peak(s) at:**

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



**TABULATED DATA FOR AZIMUTH PATTERN****TYPE: CH21HAZ-CX**

ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB
0	0.721	-2.84	92	0.622	-4.12	184	0.375	-8.51	276	0.703	-3.06
2	0.742	-2.59	94	0.610	-4.30	186	0.360	-8.88	278	0.716	-2.90
4	0.763	-2.35	96	0.599	-4.46	188	0.346	-9.23	280	0.731	-2.72
6	0.785	-2.10	98	0.589	-4.60	190	0.332	-9.59	282	0.744	-2.57
8	0.808	-1.85	100	0.579	-4.75	192	0.319	-9.92	284	0.757	-2.42
10	0.830	-1.62	102	0.573	-4.84	194	0.309	-10.20	286	0.770	-2.27
12	0.855	-1.36	104	0.568	-4.92	196	0.300	-10.47	288	0.777	-2.19
14	0.874	-1.17	106	0.565	-4.96	198	0.294	-10.63	290	0.785	-2.11
16	0.893	-0.98	108	0.564	-4.97	200	0.288	-10.81	292	0.793	-2.02
18	0.913	-0.79	110	0.565	-4.96	202	0.284	-10.95	294	0.799	-1.95
20	0.931	-0.62	112	0.567	-4.93	204	0.281	-11.04	296	0.802	-1.91
22	0.944	-0.50	114	0.573	-4.83	206	0.279	-11.09	298	0.805	-1.88
24	0.958	-0.37	116	0.579	-4.75	208	0.278	-11.13	300	0.806	-1.87
26	0.970	-0.27	118	0.586	-4.64	210	0.278	-11.12	302	0.806	-1.88
28	0.980	-0.17	120	0.594	-4.52	212	0.279	-11.09	304	0.804	-1.90
30	0.987	-0.12	122	0.603	-4.39	214	0.281	-11.03	306	0.802	-1.92
32	0.993	-0.06	124	0.614	-4.24	216	0.284	-10.95	308	0.796	-1.98
34	0.997	-0.03	126	0.623	-4.12	218	0.287	-10.85	310	0.789	-2.06
36	0.998	-0.02	128	0.632	-3.98	220	0.291	-10.72	312	0.782	-2.13
38	0.998	-0.02	130	0.641	-3.87	222	0.296	-10.57	314	0.774	-2.23
40	0.996	-0.04	132	0.649	-3.76	224	0.302	-10.40	316	0.764	-2.34
42	0.992	-0.07	134	0.655	-3.67	226	0.309	-10.20	318	0.751	-2.48
44	0.985	-0.13	136	0.662	-3.58	228	0.316	-10.00	320	0.740	-2.62
46	0.978	-0.19	138	0.666	-3.53	230	0.325	-9.76	322	0.727	-2.77
48	0.969	-0.28	140	0.669	-3.50	232	0.335	-9.50	324	0.716	-2.91
50	0.959	-0.37	142	0.670	-3.48	234	0.346	-9.22	326	0.702	-3.07
52	0.948	-0.47	144	0.668	-3.50	236	0.357	-8.95	328	0.688	-3.25
54	0.937	-0.57	146	0.668	-3.51	238	0.370	-8.63	330	0.676	-3.40
56	0.923	-0.70	148	0.664	-3.56	240	0.385	-8.30	332	0.664	-3.55
58	0.909	-0.83	150	0.658	-3.64	242	0.399	-7.97	334	0.653	-3.71
60	0.893	-0.99	152	0.650	-3.75	244	0.414	-7.65	336	0.645	-3.81
62	0.878	-1.13	154	0.640	-3.88	246	0.429	-7.35	338	0.637	-3.92
64	0.862	-1.29	156	0.627	-4.06	248	0.447	-7.00	340	0.631	-4.00
66	0.846	-1.46	158	0.614	-4.24	250	0.464	-6.66	342	0.628	-4.04
68	0.828	-1.64	160	0.599	-4.46	252	0.484	-6.30	344	0.628	-4.04
70	0.810	-1.83	162	0.584	-4.68	254	0.501	-6.00	346	0.629	-4.02
72	0.792	-2.03	164	0.566	-4.95	256	0.519	-5.69	348	0.635	-3.95
74	0.772	-2.25	166	0.548	-5.23	258	0.537	-5.40	350	0.644	-3.82
76	0.754	-2.45	168	0.528	-5.54	260	0.558	-5.07	352	0.655	-3.67
78	0.735	-2.67	170	0.508	-5.88	262	0.578	-4.76	354	0.667	-3.52
80	0.718	-2.88	172	0.489	-6.21	264	0.597	-4.49	356	0.684	-3.30
82	0.701	-3.08	174	0.469	-6.58	266	0.616	-4.21	358	0.701	-3.09
84	0.685	-3.29	176	0.450	-6.95	268	0.633	-3.97	360	0.721	-2.84
86	0.667	-3.52	178	0.429	-7.35	270	0.653	-3.70			
88	0.653	-3.71	180	0.409	-7.76	272	0.670	-3.47			
90	0.636	-3.93	182	0.393	-8.12	274	0.686	-3.27			

**ELEVATION PATTERN****TYPE:****ATW16HS4H****Frequency:****21 (DTV)****Directivity:****Numeric****dBd****Location:****Harrisburg, PA****Main Lobe:****16.00****12.04****Beam Tilt:****1.00****Horizontal:****12.85****11.09****Polarization:****Horizontal**

## TABULATED DATA FOR ELEVATION PATTERN

### ATW16HS4H

-5 to 10 degrees in 0.25 increments

10 to 90 degrees in 0.50 increments

ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB
-5.000	0.171	-15.34	6.75	0.197	-14.11	27.00	0.043	-27.33	50.50	0.041	-27.74	74.00	0.038	-28.40
-4.750	0.178	-14.99	7.00	0.188	-14.52	27.50	0.048	-26.38	51.00	0.041	-27.74	74.50	0.036	-28.87
-4.500	0.183	-14.75	7.25	0.178	-14.99	28.00	0.049	-26.20	51.50	0.042	-27.54	75.00	0.035	-29.12
-4.250	0.185	-14.66	7.50	0.169	-15.44	28.50	0.046	-26.74	52.00	0.043	-27.33	75.50	0.033	-29.63
-4.000	0.182	-14.80	7.75	0.160	-15.92	29.00	0.042	-27.54	52.50	0.045	-26.94	76.00	0.033	-29.63
-3.750	0.178	-14.99	8.00	0.151	-16.42	29.50	0.038	-28.40	53.00	0.046	-26.74	76.50	0.033	-29.63
-3.500	0.171	-15.34	8.25	0.145	-16.77	30.00	0.037	-28.64	53.50	0.046	-26.74	77.00	0.033	-29.63
-3.250	0.167	-15.55	8.50	0.138	-17.20	30.50	0.041	-27.74	54.00	0.046	-26.74	77.50	0.034	-29.37
-3.000	0.171	-15.34	8.75	0.132	-17.59	31.00	0.044	-27.13	54.50	0.045	-26.94	78.00	0.036	-28.87
-2.750	0.187	-14.56	9.00	0.128	-17.86	31.50	0.046	-26.74	55.00	0.044	-27.13	78.50	0.037	-28.64
-2.500	0.221	-13.11	9.25	0.124	-18.13	32.00	0.045	-26.94	55.50	0.043	-27.33	79.00	0.039	-28.18
-2.250	0.269	-11.40	9.50	0.120	-18.42	32.50	0.042	-27.54	56.00	0.043	-27.33	79.50	0.040	-27.96
-2.000	0.329	-9.66	9.75	0.118	-18.56	33.00	0.038	-28.40	56.50	0.043	-27.33	80.00	0.042	-27.54
-1.750	0.398	-8.00	10.00	0.117	-18.64	33.50	0.037	-28.64	57.00	0.043	-27.33	80.50	0.042	-27.54
-1.500	0.474	-6.48	10.50	0.113	-18.94	34.00	0.038	-28.40	57.50	0.044	-27.13	81.00	0.043	-27.33
-1.250	0.551	-5.18	11.00	0.107	-19.41	34.50	0.042	-27.54	58.00	0.045	-26.94	81.50	0.043	-27.33
-1.000	0.629	-4.03	11.50	0.101	-19.91	35.00	0.045	-26.94	58.50	0.045	-26.94	82.00	0.043	-27.33
-0.750	0.705	-3.04	12.00	0.092	-20.72	35.50	0.046	-26.74	59.00	0.046	-26.74	82.50	0.043	-27.33
-0.500	0.776	-2.20	12.50	0.085	-21.41	36.00	0.044	-27.13	59.50	0.046	-26.74	83.00	0.042	-27.54
-0.250	0.841	-1.50	13.00	0.083	-21.62	36.50	0.041	-27.74	60.00	0.046	-26.74	83.50	0.041	-27.74
0.000	0.896	-0.95	13.50	0.083	-21.62	37.00	0.037	-28.64	60.50	0.046	-26.74	84.00	0.040	-27.96
0.250	0.941	-0.53	14.00	0.083	-21.62	37.50	0.037	-28.64	61.00	0.046	-26.74	84.50	0.037	-28.64
0.500	0.974	-0.23	14.50	0.081	-21.83	38.00	0.038	-28.40	61.50	0.046	-26.74	85.00	0.036	-28.87
0.750	0.993	-0.06	15.00	0.074	-22.62	38.50	0.042	-27.54	62.00	0.046	-26.74	85.50	0.033	-29.63
1.000	1.000	0.00	15.50	0.068	-23.35	39.00	0.044	-27.13	62.50	0.046	-26.74	86.00	0.030	-30.46
1.250	0.994	-0.05	16.00	0.063	-24.01	39.50	0.045	-26.94	63.00	0.046	-26.74	86.50	0.028	-31.06
1.500	0.974	-0.23	16.50	0.063	-24.01	40.00	0.044	-27.13	63.50	0.046	-26.74	87.00	0.024	-32.40
1.750	0.943	-0.51	17.00	0.066	-23.61	40.50	0.041	-27.74	64.00	0.045	-26.94	87.50	0.021	-33.56
2.000	0.901	-0.91	17.50	0.067	-23.48	41.00	0.038	-28.40	64.50	0.045	-26.94	88.00	0.017	-35.39
2.250	0.849	-1.42	18.00	0.065	-23.74	41.50	0.037	-28.64	65.00	0.045	-26.94	88.50	0.013	-37.72
2.500	0.790	-2.05	18.50	0.058	-24.73	42.00	0.038	-28.40	65.50	0.045	-26.94	89.00	0.009	-40.92
2.750	0.726	-2.78	19.00	0.052	-25.68	42.50	0.041	-27.74	66.00	0.045	-26.94	89.50	0.005	-46.02
3.000	0.659	-3.62	19.50	0.051	-25.85	43.00	0.043	-27.33	66.50	0.046	-26.74	90.00	0.002	-53.98
3.250	0.592	-4.55	20.00	0.053	-25.51	43.50	0.045	-26.94	67.00	0.047	-26.56			
3.500	0.526	-5.58	20.50	0.057	-24.88	44.00	0.045	-26.94	67.50	0.048	-26.38			
3.750	0.465	-6.65	21.00	0.058	-24.73	44.50	0.043	-27.33	68.00	0.049	-26.20			
4.000	0.408	-7.79	21.50	0.054	-25.35	45.00	0.041	-27.74	68.50	0.050	-26.02			
4.250	0.360	-8.87	22.00	0.050	-26.02	45.50	0.039	-28.18	69.00	0.051	-25.85			
4.500	0.321	-9.87	22.50	0.045	-26.94	46.00	0.038	-28.40	69.50	0.052	-25.68			
4.750	0.290	-10.75	23.00	0.044	-27.13	46.50	0.040	-27.96	70.00	0.052	-25.68			
5.000	0.268	-11.44	23.50	0.048	-26.38	47.00	0.042	-27.54	70.50	0.052	-25.68			
5.250	0.251	-12.01	24.00	0.051	-25.85	47.50	0.044	-27.13	71.00	0.051	-25.85			
5.500	0.240	-12.40	24.50	0.052	-25.68	48.00	0.045	-26.94	71.50	0.050	-26.02			
5.750	0.231	-12.73	25.00	0.050	-26.02	48.50	0.046	-26.74	72.00	0.048	-26.38			
6.000	0.223	-13.03	25.50	0.044	-27.13	49.00	0.045	-26.94	72.50	0.046	-26.74			
6.250	0.215	-13.35	26.00	0.041	-27.74	49.50	0.043	-27.33	73.00	0.043	-27.33			
6.500	0.206	-13.72	26.50	0.040	-27.96	50.00	0.042	-27.54	73.50	0.041	-27.74			