

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

Prepared for
KCEC-DT Channel 51 Denver, CO
March 29, 2008

ANTENNA TYPE:
ATW28H5-HSC1-51S

SPECIFICATION NO.:
KO030508-1844 Rev. A

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

ELECTRICAL CHARACTERISTICS:

CHANNEL :	DTV:	51
FREQUENCY RANGE :	DTV:	692 - 698 MHz
AZIMUTH PATTERN NUMBER :		CH25HAZ-TX
ELEVATION PATTERN NUMBER :		ATW28H5H
AZIMUTH DIRECTIVITY :		1.52 (1.82 dBd)
ELEVATION DIRECTIVITY :		28.00 (14.47 dBd)
PEAK POWER GAIN :		42.56 (16.29 dBd)
GAIN AT HORIZONTAL :		8.39 (9.24 dBd)
ELECTRICAL BEAM TILT :		1.25 Degrees
INPUT POWER REQUIRED :		21.15 kW (13.25 dBk)
INPUT TYPE :		6 1/8-75 Ohm
INPUT POWER (MAXIMUM - Derated 88%) :		37 kW Average, 8VSB Digital
ANTENNA VSWR (MAXIMUM) :	DTV:	1.10 Over 6MHz Channel

PRELIMINARY SPECIFICATION FOR TRASAR[®] HORIZONTALLY POLARIZED COAXIAL SLOTTED ARRAY ANTENNA

MECHANICAL CHARACTERISTICS:

MOUNTING CONFIGURATION:

Side Mount

*(Tower Interface supplied and installed by others)

HEIGHT OF ANTENNA :

45.50 feet

HEIGHT OF CENTER OF RADIATION (B) :

22.75 feet

OVERALL HEIGHT (A) :

48.50 feet

(Includes two 3-foot Lightning Rods)

DEICING :

Pressurized Radome Enclosure

RADOME DIAMETER (C):

12.40 inches, OD

RADOME COLOR :

AVIATION ORANGE (Standard)

CLIMBING DEVICE :

Not Applicable

CALCULATED WEIGHT :

1545.0 lbs

With 0.5" Radial Ice:

1925.0 lbs

WINDLOAD DATA²:

CaAc :

58.5 sq.ft.

CaAcice:

64.1 sq.ft.

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 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.

² Based on a wind speed of 85 miles per hour (MPH), a height above average terrain (HAAT) of 763 feet, and a height above ground level (HAGL) of 128 feet per EIA/TIA-222-F. CaAa includes lightning spurs.

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

Broadcast Antenna System

Power Analysis

KCEC-DT
Denver, CO
ATW28H5-HSC1-51S

Channel 51

ANTENNA PARAMETERS :

Azimuth Directivity :
 Hor. Pol : 1.52
 dBd : 1.82

Elevation Directivity :
 Hor. Pol : 28.00
 dBd : 14.47

TRANSMISSION LINE :

VERTICAL RUN :
 Type: MACX675B
 Length, ft. : 140
 Attenuation , dB/100 ft: 0.12

HORIZONTAL RUN :
 Type: MACX675B
 Length, ft. : 100
 Attenuation , dB/100 ft: 0.12

OTHER LINE LOSSES:

Type: N/A
 Length, ft. : 0
 Attenuation , dB/100 ft: 0

Line Efficiency : 93.58%

ERP :

kW : 900.00
 dBk : 29.54

POWER GAIN :

Ratio : 42.56
 dBd : 16.29

ANTENNA INPUT :

kW : 21.15
 dBk : 13.25

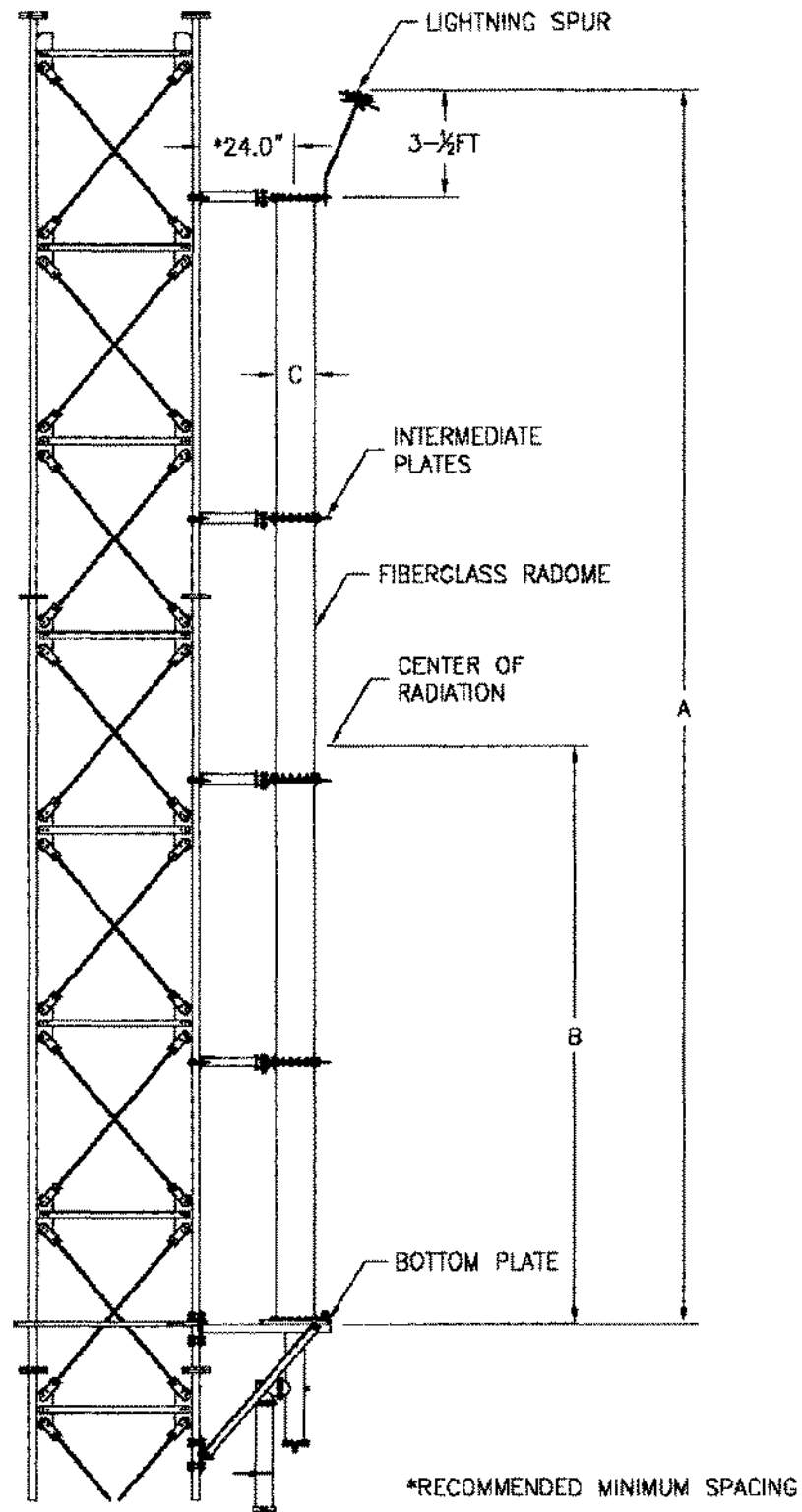
LINE LOSS :

kW : 1.45
 dB : 0.29

TRANSMITTER POWER :

kW : 22.60
 dBk : 13.54

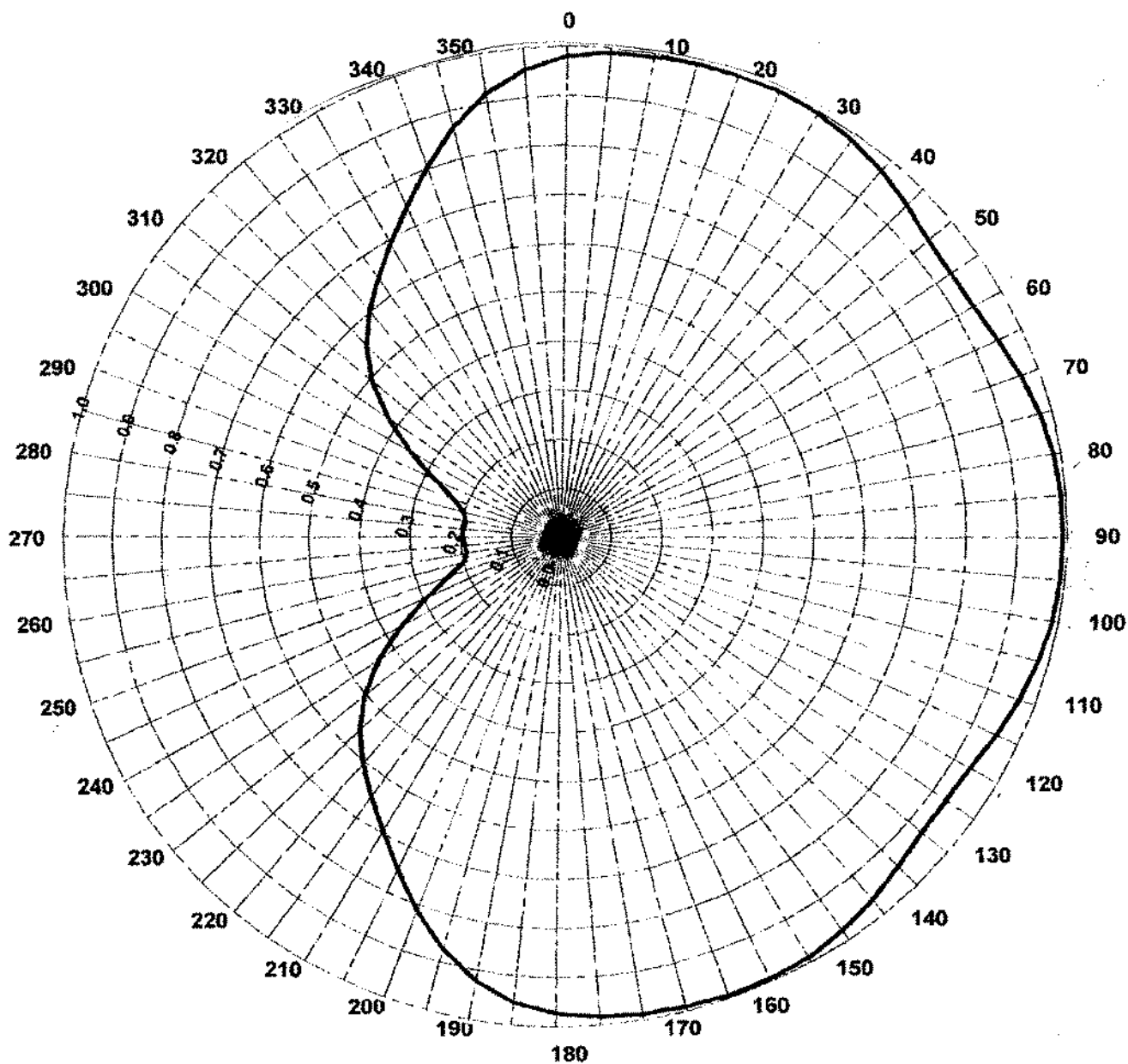
TYPICAL MOUNTING CONFIGURATION SHOWN. ACTUAL CONFIGURATION MAY VARY.



TOWER AND MOUNT
NOT PROVIDED

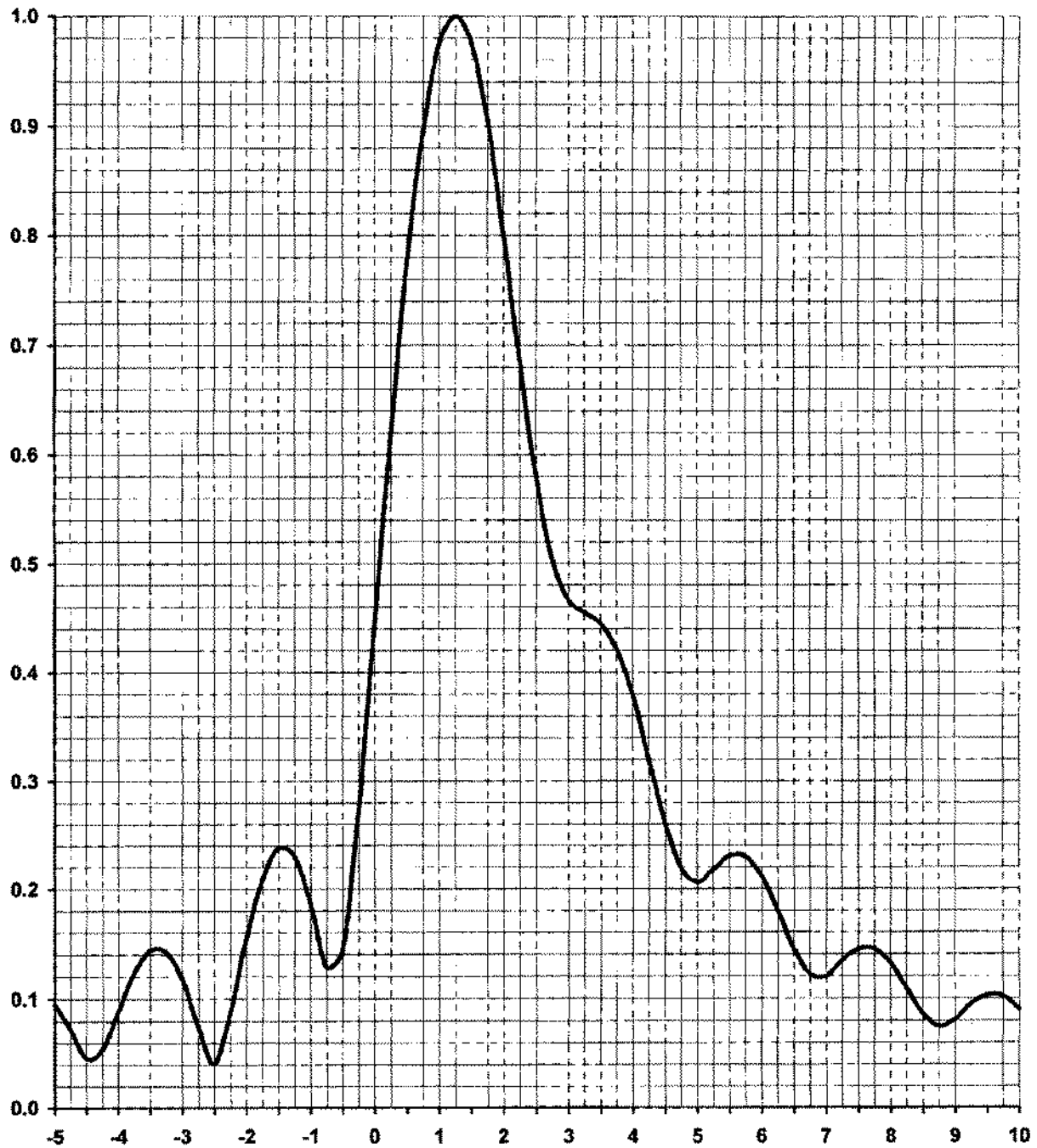
AZIMUTH PATTERN**TYPE:****CH25HAZ-TX****Frequency:****51 (DTV)****Directivity:****Numeric****dB****Location:****Denver, CO****Peak(s) at:****1.52****1.82****Polarization:****Horizontal**

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



TABULATED DATA FOR AZIMUTH PATTERN**Type: CH25HAZ-TX**

ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB
0	0.979	-0.18	92	0.992	-0.07	184	0.960	-0.35	276	0.194	-14.24
2	0.985	-0.13	94	0.991	-0.08	186	0.950	-0.45	278	0.193	-14.29
4	0.988	-0.10	96	0.990	-0.09	188	0.937	-0.57	280	0.193	-14.29
6	0.991	-0.08	98	0.989	-0.10	190	0.921	-0.71	282	0.195	-14.20
8	0.992	-0.07	100	0.987	-0.11	192	0.903	-0.89	284	0.198	-14.07
10	0.993	-0.06	102	0.984	-0.14	194	0.882	-1.09	286	0.205	-13.76
12	0.995	-0.04	104	0.981	-0.17	196	0.860	-1.31	288	0.215	-13.35
14	0.996	-0.03	106	0.976	-0.21	198	0.836	-1.56	290	0.228	-12.84
16	0.997	-0.03	108	0.971	-0.26	200	0.811	-1.82	292	0.246	-12.18
18	0.998	-0.02	110	0.966	-0.30	202	0.787	-2.08	294	0.267	-11.47
20	0.999	-0.01	112	0.960	-0.35	204	0.762	-2.36	296	0.291	-10.72
22	1	-0	114	0.954	-0.41	206	0.738	-2.64	298	0.318	-9.95
24	1	-0	116	0.948	-0.46	208	0.716	-2.90	300	0.348	-9.17
26	1	-0	118	0.943	-0.51	210	0.695	-3.16	302	0.378	-8.45
28	0.998	-0.02	120	0.938	-0.56	212	0.675	-3.41	304	0.408	-7.79
30	0.996	-0.03	122	0.935	-0.58	214	0.656	-3.66	306	0.438	-7.17
32	0.993	-0.06	124	0.933	-0.60	216	0.638	-3.90	308	0.467	-6.61
34	0.989	-0.10	126	0.932	-0.61	218	0.621	-4.14	310	0.495	-6.11
36	0.984	-0.14	128	0.933	-0.60	220	0.604	-4.38	312	0.520	-5.68
38	0.978	-0.19	130	0.935	-0.58	222	0.587	-4.63	314	0.543	-5.30
40	0.972	-0.25	132	0.939	-0.55	224	0.568	-4.91	316	0.564	-4.97
42	0.965	-0.31	134	0.944	-0.50	226	0.549	-5.21	318	0.584	-4.67
44	0.959	-0.36	136	0.950	-0.45	228	0.527	-5.56	320	0.602	-4.41
46	0.952	-0.43	138	0.956	-0.39	230	0.504	-5.95	322	0.620	-4.15
48	0.946	-0.48	140	0.963	-0.33	232	0.479	-6.39	324	0.637	-3.92
50	0.941	-0.53	142	0.969	-0.27	234	0.452	-6.90	326	0.654	-3.69
52	0.938	-0.56	144	0.975	-0.22	236	0.423	-7.47	328	0.672	-3.45
54	0.935	-0.58	146	0.981	-0.17	238	0.393	-8.11	330	0.691	-3.21
56	0.934	-0.59	148	0.985	-0.13	240	0.362	-8.80	332	0.711	-2.96
58	0.935	-0.58	150	0.989	-0.10	242	0.333	-9.55	334	0.732	-2.71
60	0.937	-0.57	152	0.992	-0.07	244	0.305	-10.31	336	0.755	-2.44
62	0.941	-0.53	154	0.994	-0.05	246	0.279	-11.09	338	0.778	-2.18
64	0.945	-0.39	156	0.994	-0.05	248	0.255	-11.87	340	0.803	-1.91
66	0.951	-0.44	158	0.994	-0.05	250	0.235	-12.58	342	0.827	-1.65
68	0.957	-0.38	160	0.994	-0.05	252	0.219	-13.19	344	0.852	-1.39
70	0.963	-0.33	162	0.993	-0.06	254	0.206	-13.72	346	0.875	-1.16
72	0.968	-0.28	164	0.991	-0.08	256	0.198	-14.07	348	0.897	-0.94
74	0.974	-0.24	166	0.990	-0.09	258	0.192	-14.33	350	0.917	-0.75
76	0.978	-0.19	168	0.988	-0.10	260	0.190	-14.42	352	0.935	-0.58
78	0.982	-0.16	170	0.987	-0.11	262	0.190	-14.42	354	0.950	-0.45
80	0.985	-0.13	172	0.985	-0.13	264	0.191	-14.38	356	0.962	-0.34
82	0.988	-0.10	174	0.983	-0.15	266	0.192	-14.33	358	0.972	-0.25
84	0.990	-0.09	176	0.981	-0.17	268	0.194	-14.24			
86	0.991	-0.08	178	0.978	-0.19	270	0.195	-14.20			
88	0.991	-0.08	180	0.974	-0.23	272	0.195	-14.20			
90	0.992	-0.07	182	0.968	-0.28	274	0.195	-14.20			

ELEVATION PATTERN**TYPE:****ATW28H5H****Frequency:****51 (DTV)****Directivity:****Numeric****dBd****Location:****Denver, CO****Main Lobe:****28.00****14.47****Beam Tilt:****1.25****Horizontal:****5.52****7.42****Polarization:****Horizontal**

TABULATED DATA FOR ELEVATION PATTERN**ATW28H5H****-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	0.096	-20.36	6.75	0.122	-18.31	27.00	0.030	-30.46	50.50	0.012	-38.42	74.00	0.024	-32.40
-4.750	0.072	-22.91	7.00	0.120	-18.42	27.50	0.036	-28.87	51.00	0.021	-33.56	74.50	0.016	-35.92
-4.500	0.046	-26.75	7.25	0.134	-17.46	28.00	0.028	-31.06	51.50	0.030	-30.46	75.00	0.009	-40.92
-4.250	0.054	-25.43	7.50	0.145	-16.77	28.50	0.018	-34.90	52.00	0.032	-29.90	75.50	0.006	-44.44
-4.000	0.089	-21.01	7.75	0.145	-16.77	29.00	0.026	-31.70	52.50	0.027	-31.37	76.00	0.011	-39.17
-3.750	0.124	-18.17	8.00	0.132	-17.59	29.50	0.035	-29.12	53.00	0.017	-35.39	76.50	0.017	-35.39
-3.500	0.144	-16.83	8.25	0.109	-19.25	30.00	0.031	-30.17	53.50	0.011	-39.17	77.00	0.023	-32.77
-3.250	0.142	-16.99	8.50	0.086	-21.31	30.50	0.019	-34.43	54.00	0.020	-33.98	77.50	0.028	-31.06
-3.000	0.118	-18.56	8.75	0.075	-22.50	31.00	0.022	-33.15	54.50	0.029	-30.75	78.00	0.031	-30.17
-2.750	0.074	-22.62	9.00	0.081	-21.83	31.50	0.032	-29.90	55.00	0.033	-29.63	78.50	0.033	-29.63
-2.500	0.041	-27.74	9.25	0.095	-20.49	32.00	0.033	-29.63	55.50	0.030	-30.46	79.00	0.035	-29.12
-2.250	0.089	-21.01	9.50	0.103	-19.74	32.50	0.022	-33.15	56.00	0.022	-33.15	79.50	0.035	-29.12
-2.000	0.155	-16.19	9.75	0.102	-19.87	33.00	0.017	-35.39	56.50	0.011	-39.17	80.00	0.034	-29.37
-1.750	0.209	-13.62	10.00	0.090	-20.92	33.50	0.027	-31.37	57.00	0.012	-38.42	80.50	0.032	-29.90
-1.500	0.237	-12.51	10.50	0.057	-24.88	34.00	0.033	-29.63	57.50	0.023	-32.77	81.00	0.030	-30.46
-1.250	0.229	-12.80	11.00	0.067	-23.48	34.50	0.027	-31.37	58.00	0.031	-30.17	81.50	0.028	-31.06
-1.000	0.186	-14.61	11.50	0.083	-21.62	35.00	0.016	-35.92	58.50	0.033	-29.63	82.00	0.025	-32.04
-0.750	0.128	-17.86	12.00	0.068	-23.35	35.50	0.020	-33.98	59.00	0.029	-30.75	82.50	0.022	-33.15
-0.500	0.144	-16.83	12.50	0.045	-26.94	36.00	0.030	-30.46	59.50	0.021	-33.56	83.00	0.020	-33.98
-0.250	0.276	-11.17	13.00	0.061	-24.29	36.50	0.030	-30.46	60.00	0.010	-40.00	83.50	0.017	-35.39
0.000	0.444	-7.05	13.50	0.072	-22.85	37.00	0.021	-33.56	60.50	0.010	-40.00	84.00	0.015	-36.48
0.250	0.617	-4.20	14.00	0.055	-25.19	37.50	0.014	-37.08	61.00	0.021	-33.56	84.50	0.012	-38.42
0.500	0.774	-2.23	14.50	0.039	-28.18	38.00	0.024	-32.40	61.50	0.030	-30.46	85.00	0.011	-39.17
0.750	0.896	-0.96	15.00	0.055	-25.19	38.50	0.031	-30.17	62.00	0.035	-29.12	85.50	0.009	-40.92
1.000	0.975	-0.22	15.50	0.061	-24.29	39.00	0.028	-31.06	62.50	0.034	-29.37	86.00	0.008	-41.94
1.250	1.000	0.00	16.00	0.045	-26.94	39.50	0.018	-34.90	63.00	0.028	-31.06	86.50	0.007	-43.10
1.500	0.975	-0.22	16.50	0.033	-29.63	40.00	0.015	-36.48	63.50	0.019	-34.43	87.00	0.006	-44.44
1.750	0.904	-0.88	17.00	0.049	-26.20	40.50	0.026	-31.70	64.00	0.008	-41.94	87.50	0.005	-46.02
2.000	0.801	-1.93	17.50	0.052	-25.68	41.00	0.031	-30.17	64.50	0.009	-40.92	88.00	0.004	-47.96
2.250	0.685	-3.29	18.00	0.037	-28.64	41.50	0.028	-31.06	65.00	0.021	-33.56	88.50	0.003	-50.46
2.500	0.579	-4.75	18.50	0.029	-30.75	42.00	0.017	-35.39	65.50	0.031	-30.17	89.00	0.003	-50.46
2.750	0.504	-5.95	19.00	0.044	-27.13	42.50	0.015	-36.48	66.00	0.037	-28.64	89.50	0.002	-53.98
3.000	0.466	-6.63	19.50	0.047	-26.56	43.00	0.025	-32.04	66.50	0.039	-28.18	90.00	0.001	-60.00
3.250	0.455	-6.85	20.00	0.032	-29.90	43.50	0.031	-30.17	67.00	0.038	-28.40			
3.500	0.445	-7.03	20.50	0.027	-31.37	44.00	0.028	-31.06	67.50	0.032	-29.90			
3.750	0.422	-7.50	21.00	0.041	-27.74	44.50	0.017	-35.39	68.00	0.023	-32.77			
4.000	0.379	-8.43	21.50	0.044	-27.13	45.00	0.013	-37.72	68.50	0.012	-38.42			
4.250	0.321	-9.88	22.00	0.031	-30.17	45.50	0.022	-33.15	69.00	0.003	-50.46			
4.500	0.261	-11.67	22.50	0.026	-31.70	46.00	0.029	-30.75	69.50	0.012	-38.42			
4.750	0.219	-13.21	23.00	0.038	-28.40	46.50	0.029	-30.75	70.00	0.023	-32.77			
5.000	0.206	-13.72	23.50	0.041	-27.74	47.00	0.020	-33.98	70.50	0.032	-29.90			
5.250	0.217	-13.27	24.00	0.029	-30.75	47.50	0.011	-39.17	71.00	0.038	-28.40			
5.500	0.230	-12.77	24.50	0.023	-32.77	48.00	0.018	-34.90	71.50	0.042	-27.54			
5.750	0.229	-12.82	25.00	0.034	-29.37	48.50	0.027	-31.37	72.00	0.043	-27.33			
6.000	0.211	-13.51	25.50	0.038	-28.40	49.00	0.031	-30.17	72.50	0.041	-27.74			
6.250	0.180	-14.90	26.00	0.028	-31.06	49.50	0.026	-31.70	73.00	0.037	-28.64			
6.500	0.145	-16.77	26.50	0.019	-34.43	50.00	0.016	-35.92	73.50	0.031	-30.17			