

TECHNICAL EXHIBIT  
APPLICATION FOR MODIFICATION OF  
DTV CONSTRUCTION PERMIT  
STATION WIS-DT  
COLUMBIA, SOUTH CAROLINA  
CH 41 874 KW (MAX-DA) 462 M

Technical Narrative

This Technical Exhibit supports an application for digital television (DTV) station WIS-DT which is paired with NTSC (analog) channel 10 at Columbia, South Carolina. This application requests modification of its construction permit (CP) for its digital television operation on channel 41 at Columbia. The Federal Communications Commission (FCC) assigned channel 41 as WIS-DT's DTV allotment in the Memorandum, Opinion and Order (MO&O) concerning reconsideration of the 6<sup>th</sup> Report and Order in MM Docket No. 87-268. The FCC assigned an effective radiated power of 874 kilowatts with a directional antenna envelope and an antenna height above average terrain (HAAT) of 472 meters for the DTV allotment.

Proposed Facilities

Station WIS-DT proposes to operate DTV channel 41 from its existing NTSC tower site location. It is proposed to operate with an Andrew ATL25H4-HSS-41 directional type antenna with a maximum average effective radiated power of 874 kilowatts. The antenna height above average terrain for the channel 41 DTV operation will be 462 meters. Since the proposed facilities do not exceed those allocated by

the Commission, no allocation study is necessary for this "checklist" application.

The existing DTV transmitter site is described by the following coordinates (NAD-27):

34° 07' 29" North Latitude  
80° 45' 23" West Longitude

A sketch of antenna and pertinent elevations are included as Figure 1.

The Appendix contains the antenna manufacturer's horizontal and vertical plane radiation patterns for the proposed DTV antenna system. The proposed "omnioid" type antenna will be oriented such that the main lobe will be at 225° true.

Figure 2 is a map showing the DTV predicted coverage contour. The map provides the predicted F(50,90) noise limited contour. The extent of the contour has been calculated using the normal FCC prediction method. The Columbia city limits were derived from information contained in the 2000 U.S. Census of Population and Housing.

Radiofrequency Electromagnetic Field Exposure

The proposed WIS-DT facilities were evaluated in terms of potential radiofrequency electromagnetic field exposure at ground level to workers and the general public. The radiation center for the proposed WIS-DT antenna is located 416 meters above ground level. The maximum effective radiated power is 874 kilowatts. A relative field value of 0.2 is assumed for the antenna's downward radiation. The calculated power density at a point 2 meters above ground level is  $0.008 \text{ mW/cm}^2$ . This is less than 5 percent of the Commission's recommended limit of  $0.42 \text{ mW/cm}^2$  for channel 41 for an "uncontrolled" environment.

Access to the transmitting site will be restricted and appropriately marked with warning signs. In the event that workers or other authorized personnel enter restricted areas or climb the tower, appropriate measures will be taken to assure worker safety with respect to radio frequency radiation exposure. Such measures include reducing the average exposure by spreading out the work over a longer period of time, wearing "accepted" RFR protective clothing and/or RFR exposure monitors or scheduling work when the stations are at

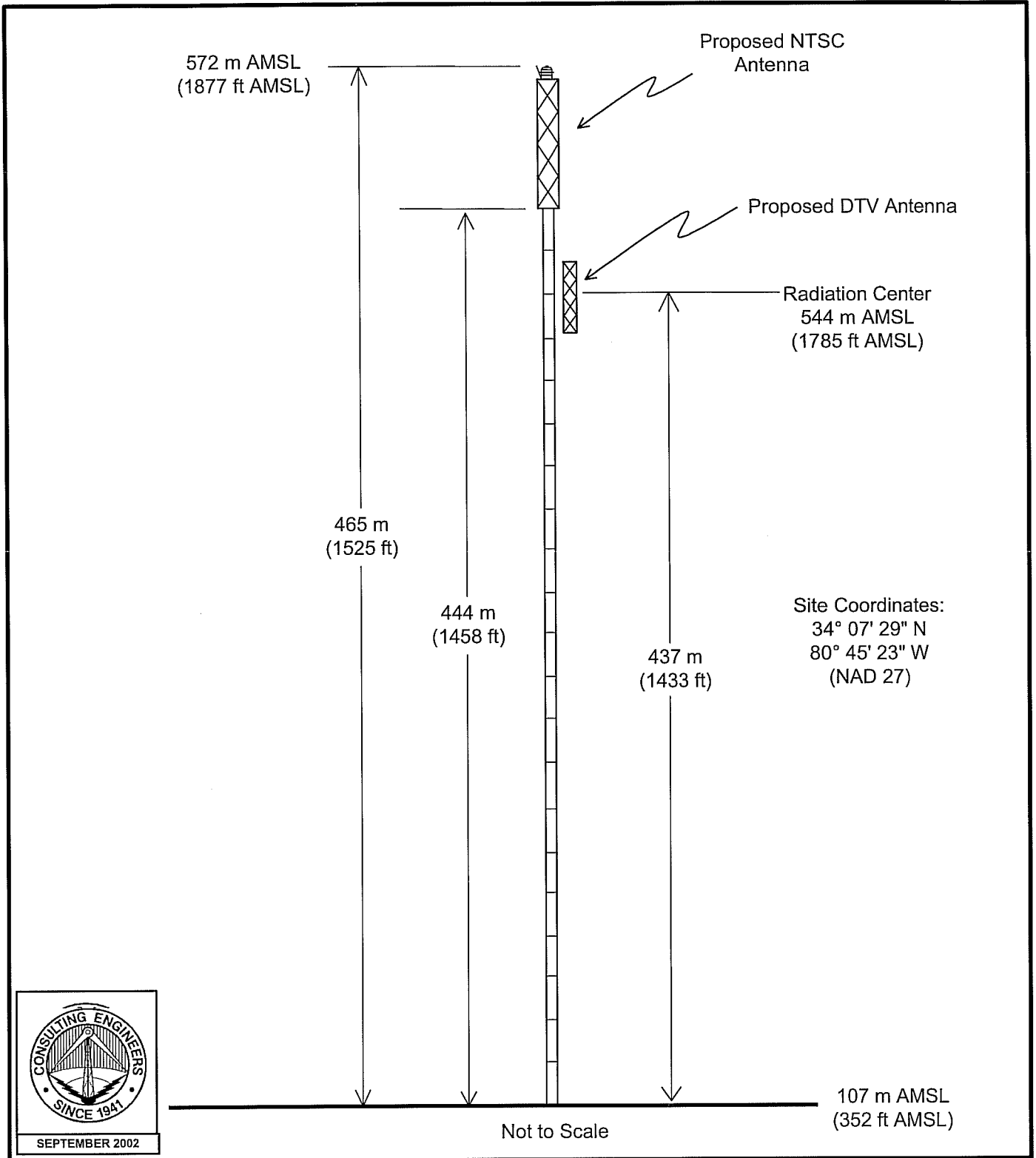
reduced power or shut down. The proposed WIS-DT operation appears to be otherwise categorically excluded from environmental processing.

Charles Cooper

du Treil, Lundin & Rackley, Inc.  
201 Fletcher Avenue  
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941.329.6000

October 2, 2002

Figure 1

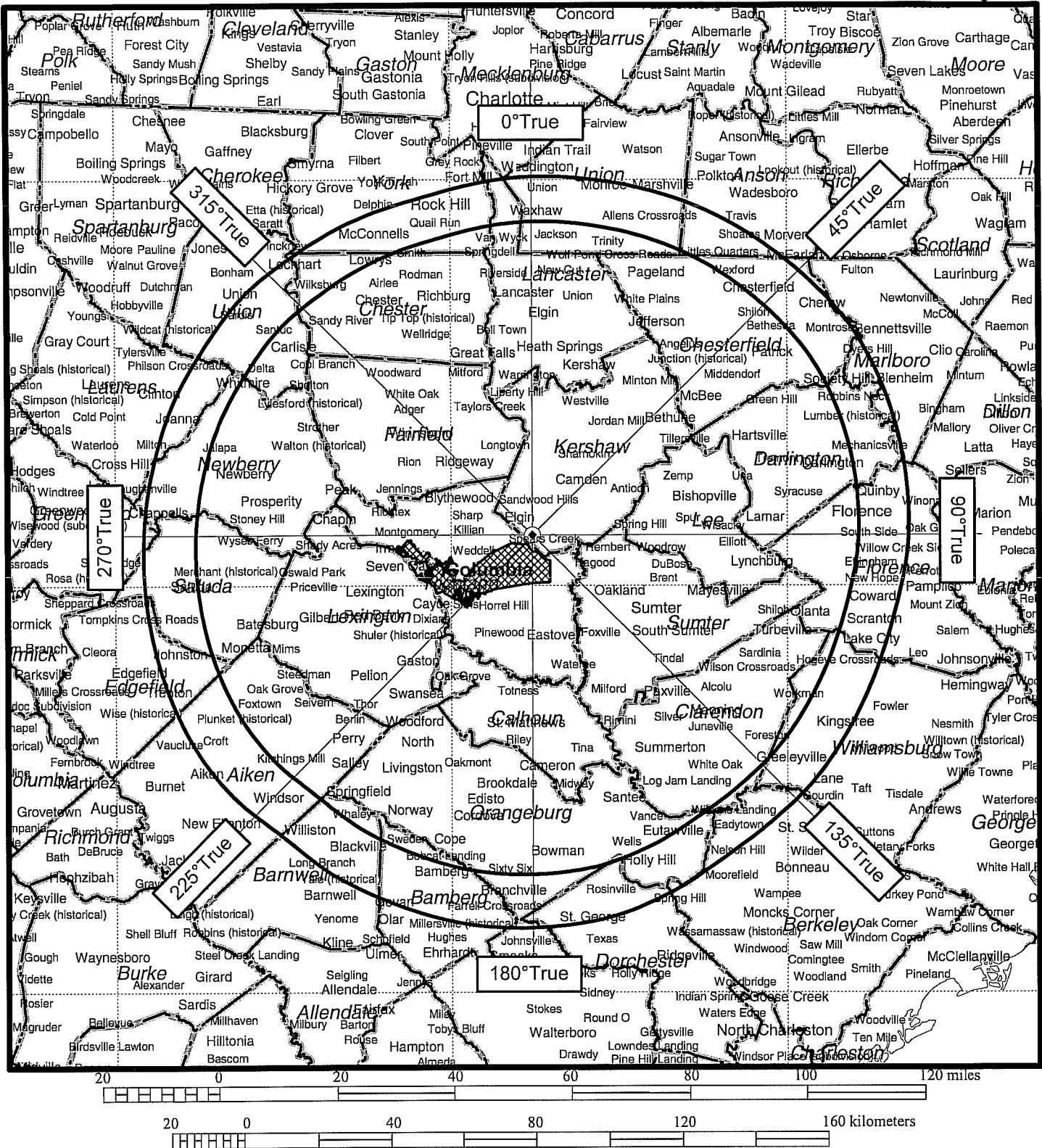


## PROPOSED ANTENNA AND SUPPORTING STRUCTURE

TELEVISION STATION WIS-DT  
COLUMBIA, SOUTH CAROLINA  
CH 41 874 KW (MAX-DA) 462 M

du Treil, Lundin & Rackley, Inc. Sarasota, Florida

Figure 2



## DTV NOISE-LIMITED COVERAGE CONTOUR

TELEVISION STATION WIS-DT  
COLUMBIA, SOUTH CAROLINA  
CH 41 874 KW 462 M

du Treil, Lundin & Rackley, Inc., Sarasota, Florida

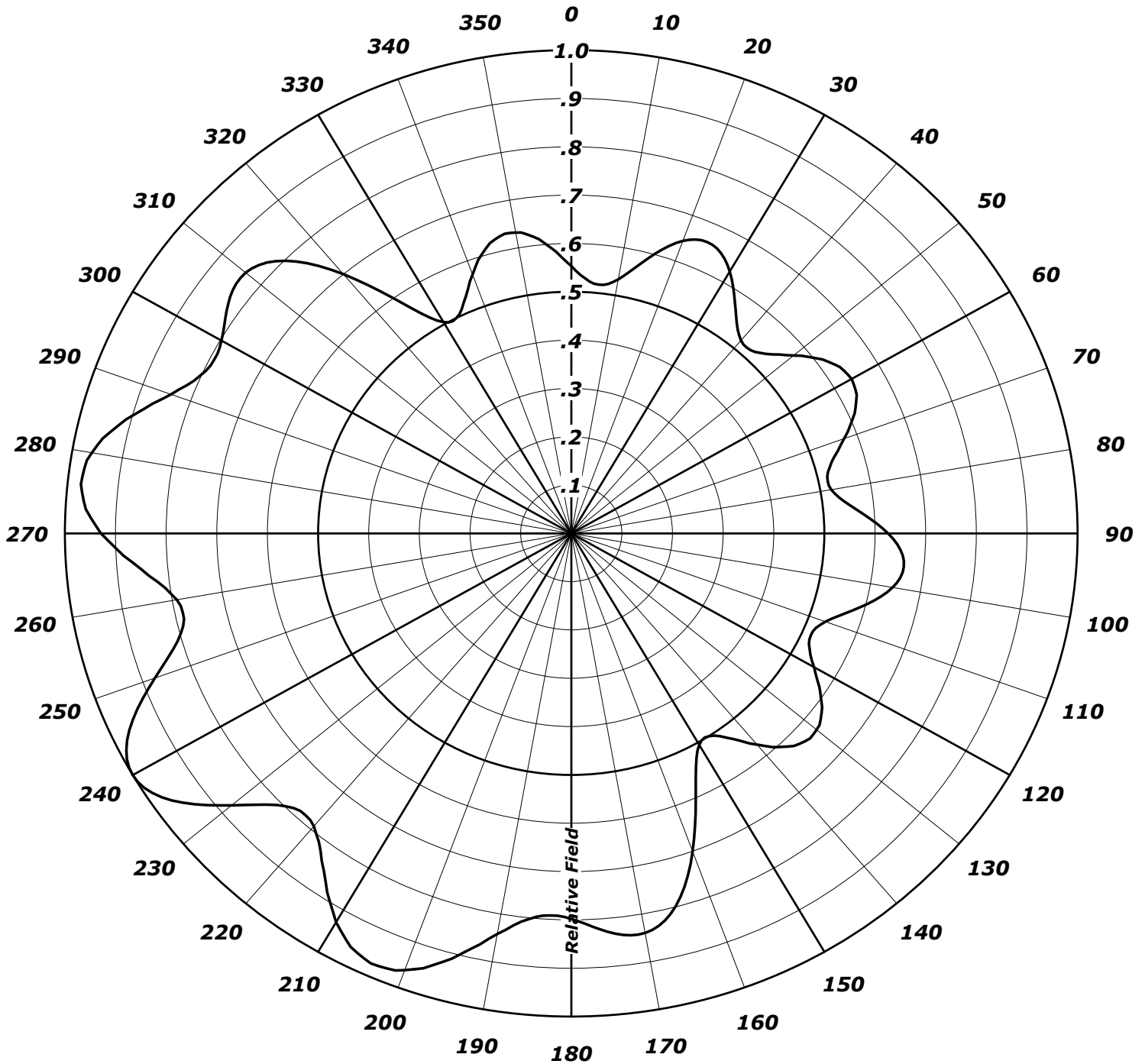
# APPENDIX

## MANUFACTURER ANTENNA SPECIFICATIONS

**ANDREW**  
**AZIMUTH PATTERN**

Type: CH41AZ-H-BID-OC200

	Numeric	dBd
Directivity:	<u>2.00</u>	<u>( 3.01 )</u>
Peak(s) At:	<u></u>	
Polarization:	<u>Horizontal</u>	
Channel:	<u>41 and 48</u>	
Location:	<u>Columbia, SC</u>	







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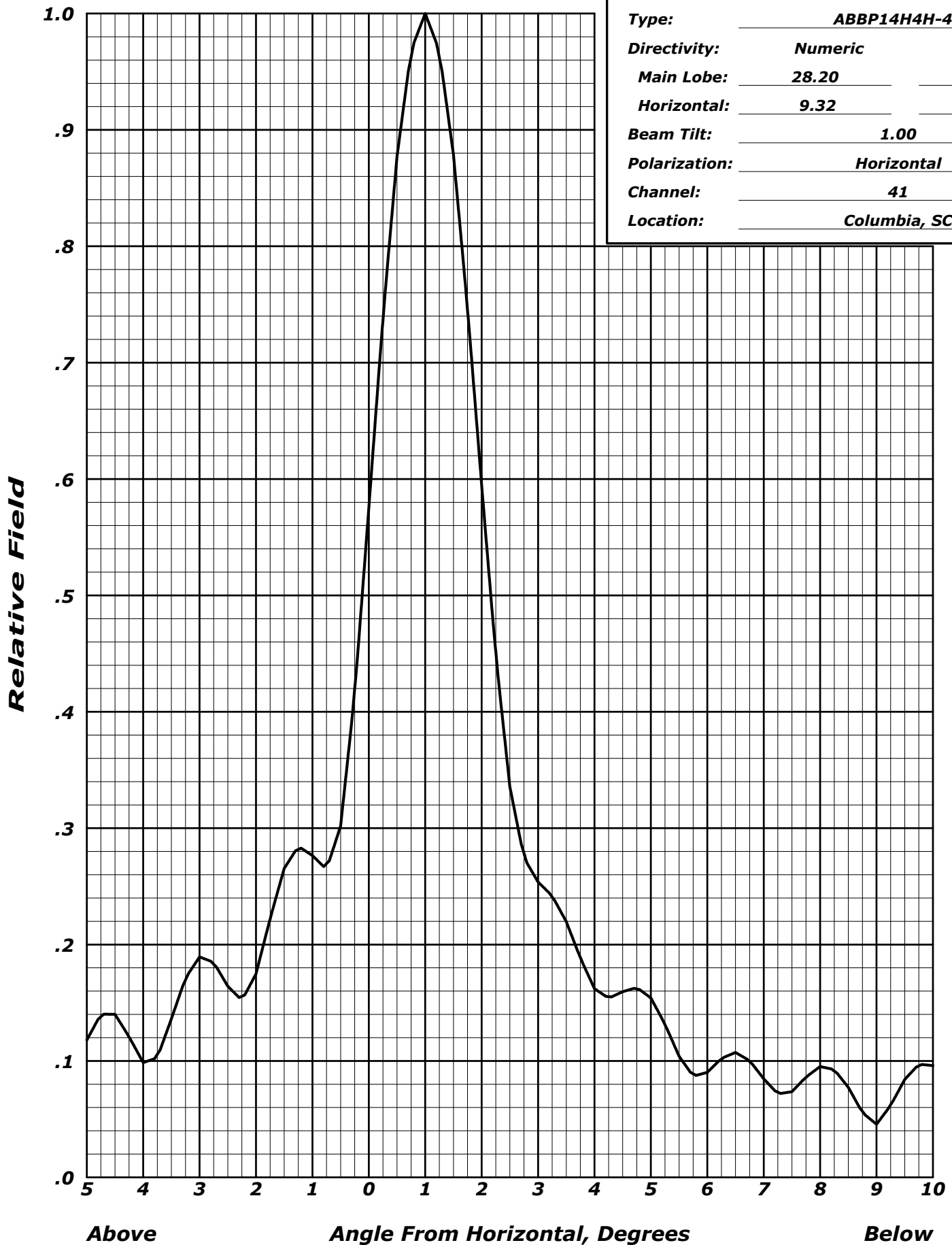
**TABULATED DATA FOR AZIMUTH PATTERN**  
**TYPE : CH41AZ-H-BID-OC200**

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Angle	Field	dB	Angle	Field	dB	Angle	Field	dB	Angle	Field	dB
0	0.553	-5.14	110	0.534	-5.45	220	0.791	-2.04	330	0.505	-5.93
2	0.535	-5.44	112	0.521	-5.66	222	0.784	-2.11	332	0.498	-6.06
4	0.522	-5.64	114	0.518	-5.72	224	0.790	-2.05	334	0.504	-5.94
6	0.518	-5.72	116	0.522	-5.64	226	0.809	-1.84	336	0.523	-5.63
8	0.521	-5.66	118	0.535	-5.44	228	0.839	-1.52	338	0.545	-5.27
10	0.534	-5.45	120	0.553	-5.14	230	0.875	-1.16	340	0.570	-4.88
12	0.554	-5.13	122	0.573	-4.84	232	0.913	-0.79	342	0.595	-4.51
14	0.578	-4.77	124	0.593	-4.54	234	0.948	-0.46	344	0.613	-4.25
16	0.603	-4.40	126	0.612	-4.26	236	0.976	-0.21	346	0.627	-4.06
18	0.626	-4.07	128	0.625	-4.09	238	0.994	-0.05	348	0.634	-3.96
20	0.644	-3.82	130	0.632	-3.98	240	1.000	0.00	350	0.632	-3.98
22	0.656	-3.66	132	0.634	-3.96	242	0.994	-0.05	352	0.625	-4.09
24	0.660	-3.61	134	0.627	-4.06	244	0.976	-0.21	354	0.612	-4.26
26	0.656	-3.66	136	0.613	-4.25	246	0.948	-0.46	356	0.593	-4.54
28	0.644	-3.82	138	0.595	-4.51	248	0.913	-0.79	358	0.573	-4.84
30	0.626	-4.07	140	0.570	-4.88	250	0.875	-1.16	360	0.553	-5.14
32	0.603	-4.40	142	0.545	-5.27	252	0.839	-1.52			
34	0.578	-4.77	144	0.523	-5.63	254	0.809	-1.84			
36	0.554	-5.13	146	0.504	-5.94	256	0.790	-2.05			
38	0.534	-5.45	148	0.498	-6.06	258	0.784	-2.11			
40	0.521	-5.66	150	0.505	-5.93	260	0.791	-2.04			
42	0.518	-5.72	152	0.526	-5.58	262	0.810	-1.83			
44	0.522	-5.64	154	0.561	-5.03	264	0.838	-1.53			
46	0.535	-5.44	156	0.604	-4.38	266	0.868	-1.23			
48	0.553	-5.14	158	0.652	-3.71	268	0.899	-0.92			
50	0.573	-4.84	160	0.700	-3.09	270	0.929	-0.64			
52	0.593	-4.53	162	0.744	-2.56	272	0.950	-0.45			
54	0.613	-4.26	164	0.782	-2.13	274	0.965	-0.31			
56	0.626	-4.07	166	0.811	-1.82	276	0.974	-0.23			
58	0.635	-3.94	168	0.830	-1.62	278	0.971	-0.26			
60	0.639	-3.89	170	0.839	-1.52	280	0.961	-0.34			
62	0.635	-3.94	172	0.840	-1.52	282	0.946	-0.48			
64	0.626	-4.07	174	0.833	-1.59	284	0.922	-0.70			
66	0.613	-4.26	176	0.821	-1.71	286	0.896	-0.95			
68	0.593	-4.53	178	0.809	-1.85	288	0.869	-1.22			
70	0.573	-4.84	180	0.798	-1.96	290	0.841	-1.50			
72	0.553	-5.14	182	0.792	-2.03	292	0.819	-1.74			
74	0.535	-5.44	184	0.793	-2.02	294	0.803	-1.91			
76	0.522	-5.64	186	0.802	-1.91	296	0.793	-2.02			
78	0.518	-5.72	188	0.819	-1.74	298	0.792	-2.03			
80	0.521	-5.66	190	0.841	-1.50	300	0.798	-1.96			
82	0.534	-5.45	192	0.869	-1.22	302	0.809	-1.85			
84	0.554	-5.13	194	0.896	-0.95	304	0.821	-1.71			
86	0.578	-4.77	196	0.922	-0.70	306	0.833	-1.59			
88	0.603	-4.40	198	0.946	-0.48	308	0.840	-1.52			
90	0.626	-4.07	200	0.961	-0.34	310	0.839	-1.52			
92	0.644	-3.82	202	0.971	-0.26	312	0.830	-1.62			
94	0.656	-3.66	204	0.974	-0.23	314	0.811	-1.82			
96	0.660	-3.61	206	0.965	-0.31	316	0.782	-2.13			
98	0.656	-3.66	208	0.950	-0.45	318	0.744	-2.56			
100	0.644	-3.82	210	0.929	-0.64	320	0.700	-3.09			
102	0.626	-4.07	212	0.899	-0.92	322	0.652	-3.71			
104	0.603	-4.40	214	0.868	-1.23	324	0.604	-4.38			
106	0.578	-4.77	216	0.838	-1.53	326	0.561	-5.03			
108	0.554	-5.13	218	0.810	-1.83	328	0.526	-5.58			

**ANDREW**  
**ELEVATION PATTERN**

Type:	ABBP14H4H-41	
Directivity:	Numeric	dBd
Main Lobe:	28.20	(14.50)
Horizontal:	9.32	( 9.69)
Beam Tilt:	1.00	
Polarization:	Horizontal	
Channel:	41	
Location:	Columbia, SC	





## TABULATED DATA FOR ELEVATION PATTERN

TYPE : ABBP14H4H-41

Angle Field    dB -5 To 10 In 0.25 Increments	Angle Field    dB 10 To 90 In 0.5 Increments	Angle Field    dB	Angle Field    dB
-5.00 0.118 -18.57	8.75 0.057 -24.93	35.00 0.024 -32.29	62.50 0.008 -42.05
-4.75 0.138 -17.20	9.00 0.046 -26.82	35.50 0.026 -31.70	63.00 0.009 -41.31
-4.50 0.140 -17.07	9.25 0.062 -24.09	36.00 0.017 -35.19	63.50 0.009 -40.63
-4.25 0.121 -18.38	9.50 0.084 -21.50	36.50 0.012 -38.34	64.00 0.010 -40.45
-4.00 0.099 -20.12	9.75 0.096 -20.38	37.00 0.023 -32.69	64.50 0.009 -41.11
-3.75 0.106 -19.52	10.00 0.096 -20.35	37.50 0.030 -30.52	65.00 0.008 -42.38
-3.50 0.136 -17.32	10.50 0.056 -25.01	38.00 0.026 -31.63	65.50 0.006 -43.88
-3.25 0.170 -15.41	11.00 0.052 -25.63	38.50 0.018 -34.99	66.00 0.006 -44.73
-3.00 0.189 -14.45	11.50 0.093 -20.62	39.00 0.020 -34.07	66.50 0.006 -44.15
-2.75 0.183 -14.75	12.00 0.088 -21.11	39.50 0.027 -31.34	67.00 0.007 -42.97
-2.50 0.164 -15.69	12.50 0.054 -25.30	40.00 0.027 -31.34	67.50 0.008 -42.27
-2.25 0.156 -16.16	13.00 0.067 -23.45	40.50 0.019 -34.56	68.00 0.008 -42.16
-2.00 0.175 -15.15	13.50 0.083 -21.64	41.00 0.011 -39.41	68.50 0.007 -42.50
-1.75 0.222 -13.08	14.00 0.058 -24.67	41.50 0.016 -35.86	69.00 0.007 -43.48
-1.50 0.265 -11.52	14.50 0.030 -30.49	42.00 0.020 -33.81	69.50 0.006 -44.58
-1.25 0.282 -11.00	15.00 0.051 -25.80	42.50 0.016 -35.76	70.00 0.005 -45.19
-1.00 0.276 -11.17	15.50 0.049 -26.14	43.00 0.005 -45.85	70.50 0.006 -45.04
-0.75 0.270 -11.39	16.00 0.013 -37.79	43.50 0.008 -41.51	71.00 0.006 -44.29
-0.50 0.302 -10.40	16.50 0.032 -29.92	44.00 0.018 -34.70	71.50 0.007 -43.35
-0.25 0.420 -7.53	17.00 0.054 -25.32	44.50 0.021 -33.35	72.00 0.007 -42.85
0.00 0.575 -4.80	17.50 0.042 -27.56	45.00 0.017 -35.49	72.50 0.007 -42.62
0.25 0.736 -2.66	18.00 0.015 -36.77	45.50 0.008 -41.94	73.00 0.007 -42.97
0.50 0.877 -1.14	18.50 0.033 -29.68	46.00 0.008 -41.83	73.50 0.007 -43.61
0.75 0.963 -0.33	19.00 0.042 -27.58	46.50 0.015 -36.48	74.00 0.006 -44.88
1.00 1.000 0.00	19.50 0.029 -30.63	47.00 0.017 -35.19	74.50 0.005 -46.56
1.25 0.962 -0.33	20.00 0.025 -31.97	47.50 0.015 -36.65	75.00 0.004 -48.40
1.50 0.879 -1.12	20.50 0.035 -29.00	48.00 0.010 -39.58	75.50 0.003 -49.63
1.75 0.745 -2.56	21.00 0.033 -29.71	48.50 0.011 -39.17	76.00 0.003 -49.37
2.00 0.595 -4.51	21.50 0.023 -32.73	49.00 0.015 -36.77	76.50 0.004 -48.18
2.25 0.452 -6.90	22.00 0.027 -31.47	49.50 0.016 -36.08	77.00 0.004 -46.94
2.50 0.336 -9.48	22.50 0.030 -30.57	50.00 0.014 -37.33	77.50 0.005 -45.85
2.75 0.279 -11.10	23.00 0.022 -33.00	50.50 0.010 -39.58	78.00 0.006 -45.04
3.00 0.254 -11.91	23.50 0.019 -34.20	51.00 0.010 -39.74	78.50 0.006 -44.58
3.25 0.241 -12.36	24.00 0.024 -32.47	51.50 0.012 -38.20	79.00 0.006 -44.44
3.50 0.220 -13.16	24.50 0.019 -34.61	52.00 0.013 -37.65	79.50 0.006 -44.58
3.75 0.189 -14.48	25.00 0.003 -51.06	52.50 0.012 -38.64	80.00 0.006 -45.04
4.00 0.162 -15.80	25.50 0.014 -37.02	53.00 0.009 -40.63	80.50 0.005 -45.51
4.25 0.155 -16.18	26.00 0.023 -32.69	53.50 0.009 -41.31	81.00 0.005 -46.38
4.50 0.159 -15.94	26.50 0.022 -33.23	54.00 0.010 -40.00	81.50 0.004 -47.13
4.75 0.162 -15.82	27.00 0.019 -34.56	54.50 0.011 -39.33	82.00 0.004 -48.18
5.00 0.154 -16.24	27.50 0.020 -33.76	55.00 0.009 -40.54	82.50 0.003 -49.37
5.25 0.131 -17.65	28.00 0.020 -33.98	55.50 0.006 -44.73	83.00 0.003 -50.75
5.50 0.104 -19.66	28.50 0.018 -35.04	56.00 0.001 -60.00	83.50 0.003 -52.04
5.75 0.089 -21.02	29.00 0.020 -33.94	56.50 0.004 -47.33	84.00 0.002 -53.56
6.00 0.090 -20.90	29.50 0.022 -33.03	57.00 0.009 -41.31	84.50 0.002 -54.89
6.25 0.102 -19.87	30.00 0.019 -34.61	57.50 0.011 -39.49	85.00 0.001 -56.48
6.50 0.107 -19.39	30.50 0.014 -36.83	58.00 0.011 -39.25	85.50 0.001 -57.72
6.75 0.099 -20.05	31.00 0.018 -34.85	58.50 0.010 -40.09	86.00 0.001 -59.17
7.00 0.085 -21.44	31.50 0.020 -34.07	59.00 0.009 -41.11	86.50 0.001 -60.00
7.25 0.073 -22.71	32.00 0.016 -35.97	59.50 0.008 -41.51	87.00 0.001 -60.00
7.50 0.074 -22.66	32.50 0.016 -35.92	60.00 0.009 -41.21	87.50 0.001 -60.00
7.75 0.086 -21.33	33.00 0.021 -33.47	60.50 0.009 -40.82	88.00 0.001 -60.00
8.00 0.095 -20.43	33.50 0.020 -33.81	61.00 0.009 -40.92	88.50 0.001 -60.00
8.25 0.091 -20.79	34.00 0.013 -37.79	61.50 0.008 -41.51	89.00 0.001 -60.00
8.50 0.077 -22.24	34.50 0.015 -36.71	62.00 0.008 -42.16	89.50 0.001 -60.00