

DENNY & ASSOCIATES, P.C.
CONSULTING ENGINEERS
OXON HILL, MARYLAND

FCC FORM 301, EXHIBIT 40
DIRECTIONAL ANTENNA PATTERN DATA
APPLICATION FOR MODIFICATION OF
DTV CONSTRUCTION PERMIT
(FCC FILE NUMBER BMPCDT-20000501ADT)
PREPARED FOR
WCSC, INC.
STATION WCSC-DT
CHARLESTON, SOUTH CAROLINA
CH47 1000 KW (MAX-DA, BT) 521 METERS

ENGINEERING STATEMENT

This engineering exhibit was prepared on behalf of WCSC, Inc. (hereinafter WCSC), permittee of station WCSC-DT, Charleston, South Carolina, in support of an application for modification of construction permit (FCC File Number BMPCDT-20000501ADT) to specify a directional antenna system. No other changes are proposed. WCSC proposes to use a Dielectric Communications type TUP-C3-10-1 panel antenna providing the directional pattern described herein. Pages 3 through 8 attached provide details of the proposed directional antenna system as required by Section 73.625(c) of the FCC Rules and Regulations.

CERTIFICATION

I declare under penalty of perjury that the foregoing is true and correct to
the best of my knowledge. Executed on December 6, 2002

Merl E. Rinehart

Merl E. Rinehart, P.E.

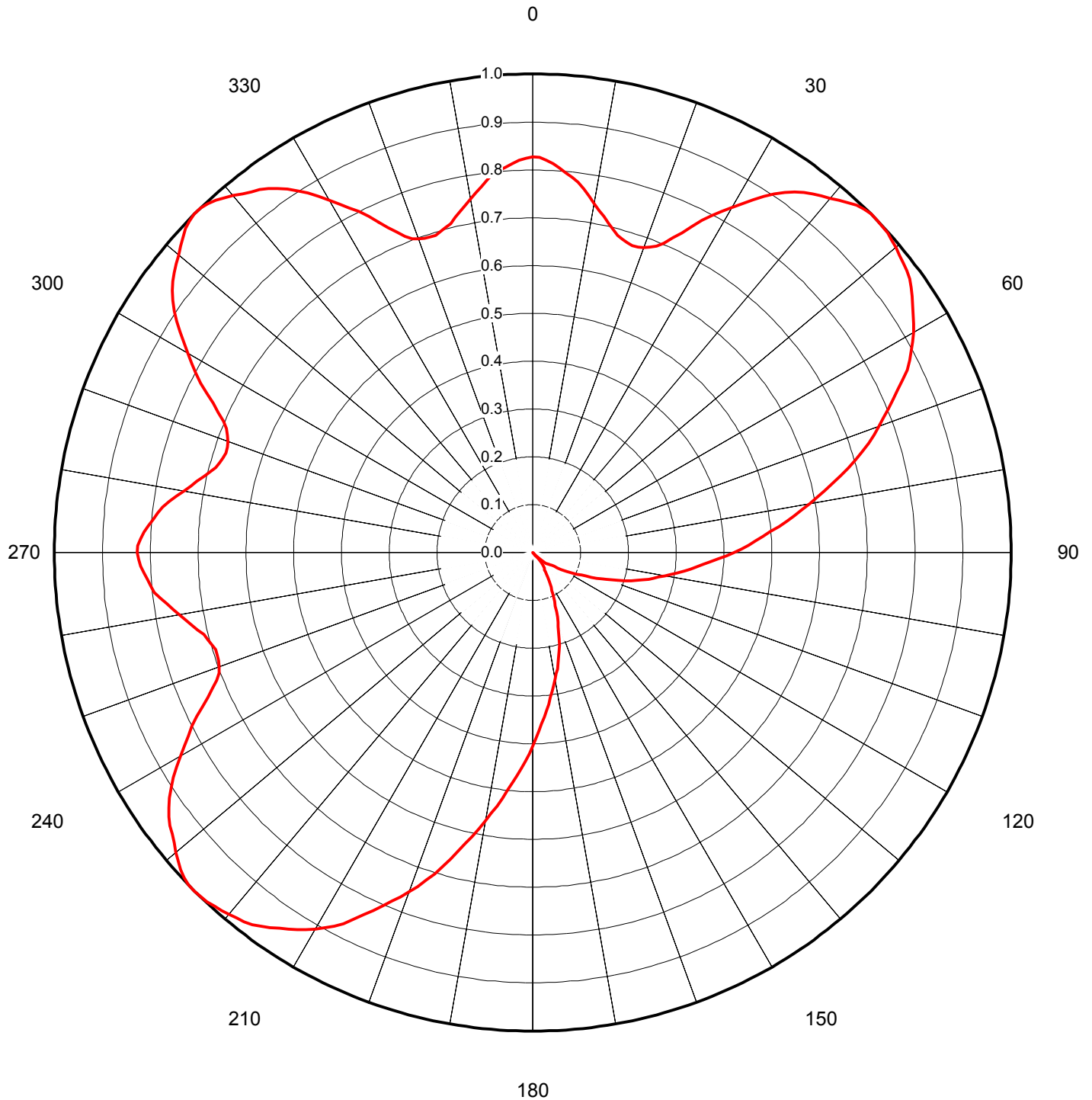


Date	6-Dec-02	Channel	47
Call Letters	WCSC		
Location	Charleston, SC		
Customer	WCSC, Inc.		
Antenna Type	TUP-C3-10-1		

AZIMUTH PATTERN

Gain	2.00	(3.01 dB)
Calculated / Measured	Calculated	

Frequency	671.00 MHz
Drawing #	TUP-C3-6710





Date
Call Letters
Location
Customer
Antenna Type

6-Dec-02
WCSC
Charleston, SC
WCSC, Inc.
TUP-C3-10-1

Channel

47

TABULATION OF AZIMUTH PATTERN (Sheet 1)

Azimuth Pattern Drawing #: **TUP-C3-6710**

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
0	0.827	45	1.000	90	0.421	135	0.000	180	0.405	225	1.000	270	0.827	315	1.000
1	0.825	46	1.000	91	0.405	136	0.000	181	0.421	226	1.000	271	0.825	316	1.000
2	0.819	47	0.999	92	0.388	137	0.008	182	0.437	227	0.996	272	0.819	317	0.996
3	0.813	48	0.998	93	0.372	138	0.016	183	0.452	228	0.990	273	0.813	318	0.990
4	0.805	49	0.994	94	0.358	139	0.023	184	0.467	229	0.982	274	0.805	319	0.982
5	0.797	50	0.991	95	0.344	140	0.029	185	0.482	230	0.974	275	0.797	320	0.974
6	0.788	51	0.987	96	0.332	141	0.034	186	0.499	231	0.964	276	0.788	321	0.964
7	0.780	52	0.983	97	0.319	142	0.037	187	0.518	232	0.956	277	0.780	322	0.956
8	0.767	53	0.979	98	0.305	143	0.039	188	0.536	233	0.949	278	0.767	323	0.949
9	0.753	54	0.974	99	0.292	144	0.041	189	0.552	234	0.939	279	0.753	324	0.939
10	0.740	55	0.966	100	0.280	145	0.042	190	0.569	235	0.929	280	0.740	325	0.929
11	0.728	56	0.957	101	0.268	146	0.044	191	0.588	236	0.916	281	0.728	326	0.916
12	0.717	57	0.947	102	0.258	147	0.048	192	0.606	237	0.901	282	0.717	327	0.901
13	0.706	58	0.938	103	0.248	148	0.053	193	0.624	238	0.886	283	0.706	328	0.886
14	0.695	59	0.929	104	0.237	149	0.061	194	0.643	239	0.868	284	0.695	329	0.868
15	0.686	60	0.919	105	0.225	150	0.070	195	0.662	240	0.850	285	0.686	330	0.850
16	0.681	61	0.908	106	0.214	151	0.076	196	0.683	241	0.832	286	0.681	331	0.832
17	0.677	62	0.896	107	0.202	152	0.082	197	0.703	242	0.816	287	0.677	332	0.816
18	0.674	63	0.885	108	0.187	153	0.088	198	0.720	243	0.801	288	0.674	333	0.801
19	0.675	64	0.871	109	0.175	154	0.096	199	0.738	244	0.782	289	0.675	334	0.782
20	0.678	65	0.852	110	0.164	155	0.104	200	0.755	245	0.762	290	0.678	335	0.762
21	0.682	66	0.835	111	0.155	156	0.112	201	0.771	246	0.743	291	0.682	336	0.743
22	0.690	67	0.818	112	0.144	157	0.121	202	0.785	247	0.728	292	0.690	337	0.728
23	0.703	68	0.802	113	0.133	158	0.133	203	0.802	248	0.713	293	0.703	338	0.713
24	0.720	69	0.785	114	0.121	159	0.144	204	0.818	249	0.702	294	0.720	339	0.702
25	0.737	70	0.771	115	0.112	160	0.155	205	0.835	250	0.697	295	0.737	340	0.697
26	0.757	71	0.755	116	0.104	161	0.164	206	0.852	251	0.694	296	0.757	341	0.694
27	0.779	72	0.738	117	0.096	162	0.175	207	0.871	252	0.693	297	0.779	342	0.693
28	0.798	73	0.720	118	0.088	163	0.187	208	0.885	253	0.693	298	0.798	343	0.693
29	0.814	74	0.703	119	0.082	164	0.202	209	0.896	254	0.698	299	0.814	344	0.698
30	0.832	75	0.683	120	0.076	165	0.214	210	0.908	255	0.703	300	0.832	345	0.703
31	0.850	76	0.662	121	0.070	166	0.225	211	0.919	256	0.709	301	0.850	346	0.709
32	0.869	77	0.643	122	0.061	167	0.237	212	0.929	257	0.718	302	0.869	347	0.718
33	0.887	78	0.624	123	0.053	168	0.248	213	0.938	258	0.728	303	0.887	348	0.728
34	0.903	79	0.606	124	0.048	169	0.258	214	0.947	259	0.739	304	0.903	349	0.739
35	0.918	80	0.588	125	0.044	170	0.268	215	0.957	260	0.749	305	0.918	350	0.749
36	0.931	81	0.569	126	0.042	171	0.280	216	0.966	261	0.760	306	0.931	351	0.760
37	0.942	82	0.552	127	0.041	172	0.292	217	0.974	262	0.772	307	0.942	352	0.772
38	0.951	83	0.536	128	0.039	173	0.305	218	0.979	263	0.784	308	0.951	353	0.784
39	0.958	84	0.518	129	0.037	174	0.319	219	0.983	264	0.795	309	0.958	354	0.795
40	0.966	85	0.499	130	0.034	175	0.332	220	0.987	265	0.801	310	0.966	355	0.801
41	0.976	86	0.482	131	0.029	176	0.344	221	0.991	266	0.807	311	0.976	356	0.807
42	0.984	87	0.467	132	0.023	177	0.358	222	0.994	267	0.814	312	0.984	357	0.814
43	0.991	88	0.452	133	0.016	178	0.372	223	0.998	268	0.819	313	0.991	358	0.819
44	0.997	89	0.437	134	0.008	179	0.388	224	0.999	269	0.823	314	0.997	359	0.823

Date **6-Dec-02**
 Call Letters **WCSC-DT** Channel **47**
 Location **Charleston, SC**
 Customer **WCSC, Inc.**
 Antenna Type **TUP-C3-10-1**

TABULATION OF AZIMUTH PATTERN (Sheet 2)

Azimuth Pattern Drawing # **TUP-C3-6710**

Angle	Field	ERP (kW)	ERP (dBk)
0	0.827	683.9	28.34
10	0.740	548.6	27.38
20	0.678	459.7	26.60
30	0.832	692.2	28.40
40	0.966	933.2	29.70
50	0.991	982.1	29.92
60	0.919	844.6	29.26
70	0.771	594.4	27.74
80	0.588	345.7	25.38
90	0.421	177.2	22.48
100	0.280	78.4	18.94
110	0.164	26.9	14.29
120	0.076	5.78	7.62
130	0.034	1.15	0.63
140	0.029	0.84	-0.75
150	0.070	4.90	6.90
160	0.155	24.0	13.80
170	0.268	71.8	18.56
180	0.405	164.0	22.15
190	0.569	323.8	25.10
200	0.755	570.0	27.56
210	0.908	824.5	29.16
220	0.987	974.2	29.88
230	0.974	948.7	29.77
240	0.850	722.5	28.58
250	0.697	485.8	26.86
260	0.749	561.0	27.48
270	0.827	683.9	28.35
280	0.740	547.6	27.38
290	0.687	472.0	26.73
300	0.832	692.2	28.40
310	0.966	933.2	29.69
320	0.974	948.7	29.77
330	0.850	722.5	28.59
340	0.697	485.8	26.86
350	0.749	561.0	27.49

Maxima

Angle	Field	ERP (kW)	ERP (dBk)
0	0.827	683.9	28.34
45	1.000	1000.0	30.00
225	1.000	1000.0	30.00

Minima

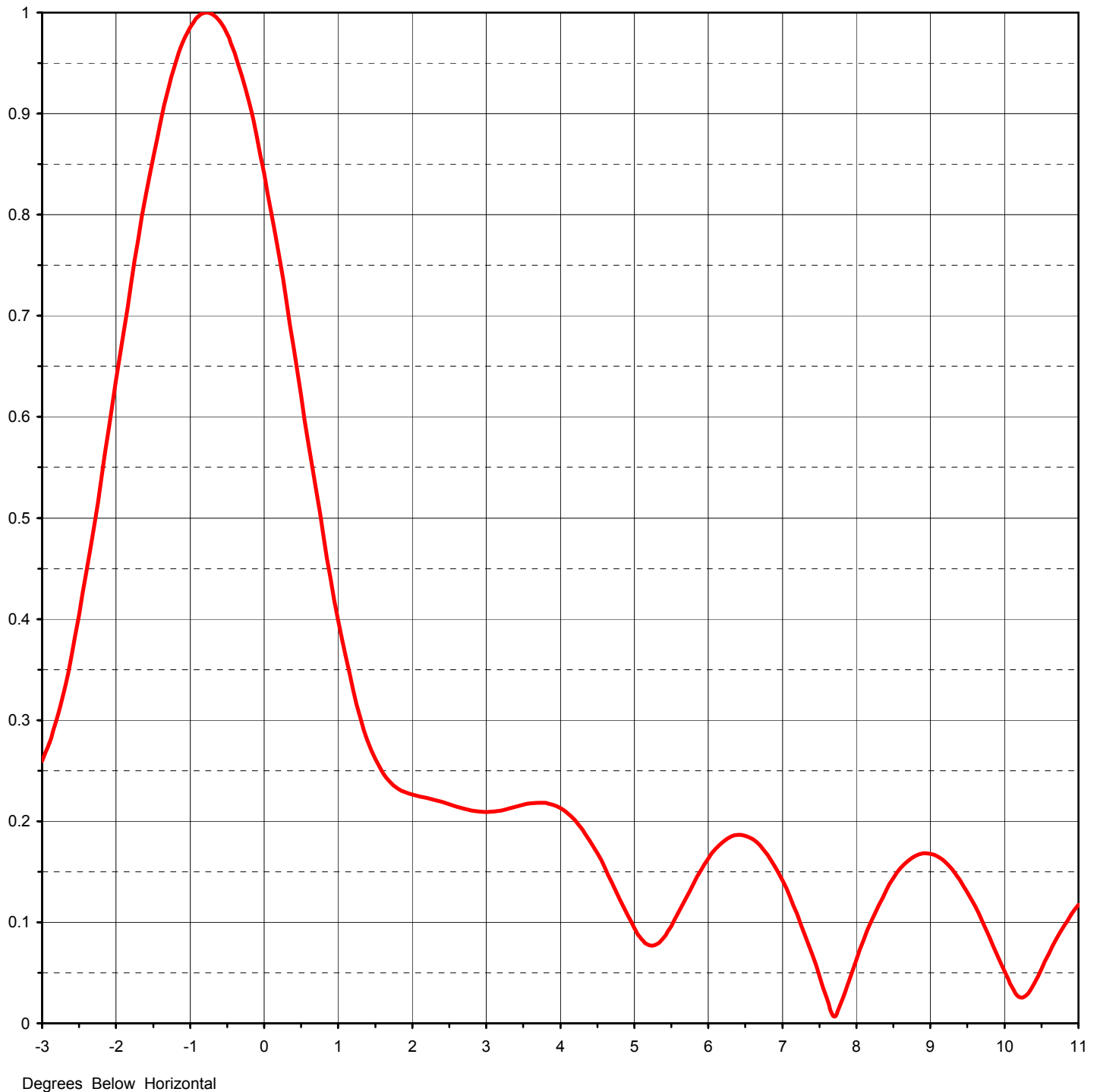
Angle	Field	ERP (kW)	ERP (dBk)
18	0.674	454.3	26.57
246	0.204	10.4	10.17
135	0.000	00.0	--

Remarks: **Denny & Associates, P.C.**

ELEVATION PATTERN

RMS Gain at Main Lobe **22.00 (13.42 dB)**
RMS Gain at Horizontal **15.60 (11.93 dB)**
Calculated / Measured **Calculated**

Beam Tilt **0.75 deg**
Frequency **671.00 MHz**
Drawing # **10U220075**





Date
Call Letters
Location
Customer
Antenna Type

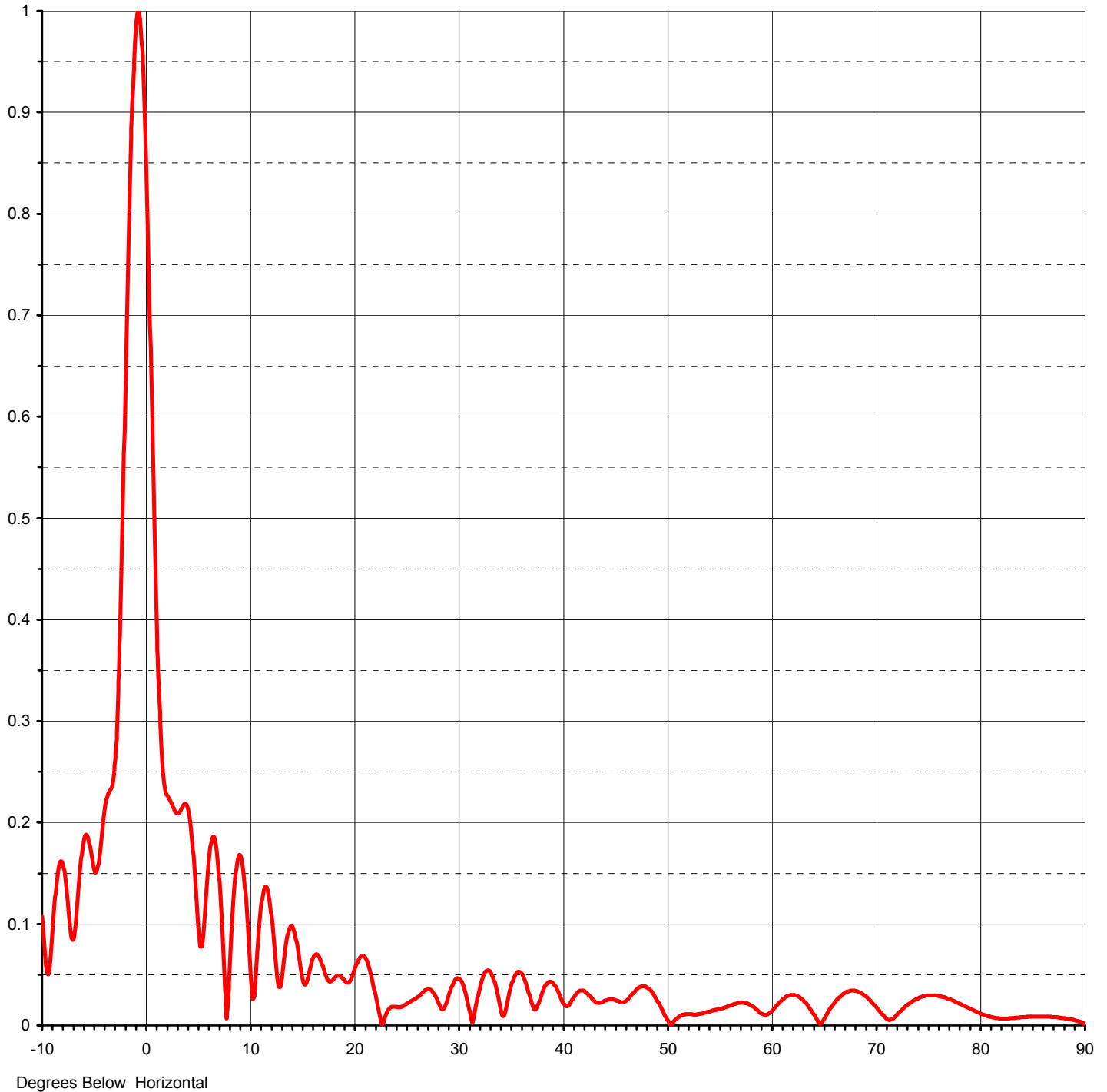
6-Dec-02
WCSC
Charleston, SC
WCSC, Inc.
TUP-C3-10-1

Channel **47**

ELEVATION PATTERN

RMS Gain at Main Lobe **22.00 (13.42 dB)**
RMS Gain at Horizontal **15.60 (11.93 dB)**
Calculated / Measured **Calculated**

Beam Tilt **0.75 deg**
Frequency **671.00 MHz**
Drawing # **10U220075-90**





Date **6-Dec-02**
 Call Letters **WCSC** Channel **47**
 Location **Charleston, SC**
 Customer **WCSC, Inc.**
 Antenna Type **TUP-C3-10-1**

TABULATION OF ELEVATION PATTERN

Elevation Pattern Drawing #: **10U220075-90**

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.107	2.4	0.219	10.6	0.054	30.5	0.039	51.0	0.007	71.5	0.006
-9.5	0.052	2.6	0.214	10.8	0.083	31.0	0.019	51.5	0.010	72.0	0.011
-9.0	0.094	2.8	0.211	11.0	0.108	31.5	0.009	52.0	0.011	72.5	0.016
-8.5	0.150	3.0	0.209	11.5	0.137	32.0	0.034	52.5	0.011	73.0	0.020
-8.0	0.158	3.2	0.211	12.0	0.116	32.5	0.051	53.0	0.011	73.5	0.024
-7.5	0.116	3.4	0.214	12.5	0.064	33.0	0.054	53.5	0.012	74.0	0.027
-7.0	0.085	3.6	0.218	13.0	0.042	33.5	0.042	54.0	0.014	74.5	0.029
-6.5	0.136	3.8	0.218	13.5	0.081	34.0	0.020	54.5	0.015	75.0	0.030
-6.0	0.183	4.0	0.213	14.0	0.098	34.5	0.014	55.0	0.016	75.5	0.030
-5.5	0.181	4.2	0.201	14.5	0.082	35.0	0.036	55.5	0.017	76.0	0.029
-5.0	0.153	4.4	0.181	15.0	0.050	35.5	0.050	56.0	0.019	76.5	0.028
-4.5	0.167	4.6	0.154	15.5	0.044	36.0	0.052	56.5	0.021	77.0	0.026
-4.0	0.213	4.8	0.123	16.0	0.064	36.5	0.041	57.0	0.022	77.5	0.024
-3.5	0.232	5.0	0.094	16.5	0.070	37.0	0.023	57.5	0.022	78.0	0.021
-3.0	0.259	5.2	0.078	17.0	0.058	37.5	0.017	58.0	0.020	78.5	0.019
-2.8	0.301	5.4	0.085	17.5	0.045	38.0	0.031	58.5	0.017	79.0	0.016
-2.6	0.365	5.6	0.110	18.0	0.045	38.5	0.041	59.0	0.012	79.5	0.014
-2.4	0.446	5.8	0.139	18.5	0.049	39.0	0.043	59.5	0.010	80.0	0.012
-2.2	0.539	6.0	0.163	19.0	0.045	39.5	0.035	60.0	0.014	80.5	0.010
-2.0	0.636	6.2	0.180	19.5	0.043	40.0	0.023	60.5	0.019	81.0	0.008
-1.8	0.731	6.4	0.186	20.0	0.053	40.5	0.019	61.0	0.025	81.5	0.007
-1.6	0.818	6.6	0.182	20.5	0.066	41.0	0.026	61.5	0.029	82.0	0.007
-1.4	0.892	6.8	0.167	21.0	0.068	41.5	0.033	62.0	0.030	82.5	0.007
-1.2	0.949	7.0	0.141	21.5	0.055	42.0	0.034	62.5	0.029	83.0	0.007
-1.0	0.986	7.2	0.108	22.0	0.033	42.5	0.030	63.0	0.025	83.5	0.008
-0.8	1.000	7.4	0.068	22.5	0.009	43.0	0.025	63.5	0.020	84.0	0.008
-0.6	0.992	7.6	0.025	23.0	0.009	43.5	0.022	64.0	0.012	84.5	0.009
-0.4	0.961	7.8	0.021	23.5	0.018	44.0	0.024	64.5	0.002	85.0	0.009
-0.2	0.910	8.0	0.063	24.0	0.018	44.5	0.026	65.0	0.007	85.5	0.009
0.0	0.841	8.2	0.101	24.5	0.018	45.0	0.025	65.5	0.015	86.0	0.009
0.2	0.759	8.4	0.131	25.0	0.021	45.5	0.023	66.0	0.023	86.5	0.009
0.4	0.668	8.6	0.154	25.5	0.024	46.0	0.024	66.5	0.028	87.0	0.008
0.6	0.574	8.8	0.166	26.0	0.027	46.5	0.028	67.0	0.032	87.5	0.008
0.8	0.482	9.0	0.168	26.5	0.032	47.0	0.034	67.5	0.034	88.0	0.007
1.0	0.399	9.2	0.160	27.0	0.035	47.5	0.038	68.0	0.034	88.5	0.006
1.2	0.330	9.4	0.142	27.5	0.034	48.0	0.038	68.5	0.032	89.0	0.005
1.4	0.279	9.6	0.116	28.0	0.025	48.5	0.034	69.0	0.028	89.5	0.004
1.6	0.248	9.8	0.101	28.5	0.016	49.0	0.026	69.5	0.023	90.0	0.000
1.8	0.233	10.0	0.068	29.0	0.027	49.5	0.016	70.0	0.018		
2.0	0.226	10.2	0.036	29.5	0.041	50.0	0.007	70.5	0.012		
2.2	0.223	10.4	0.028	30.0	0.047	50.5	0.002	71.0	0.007		