

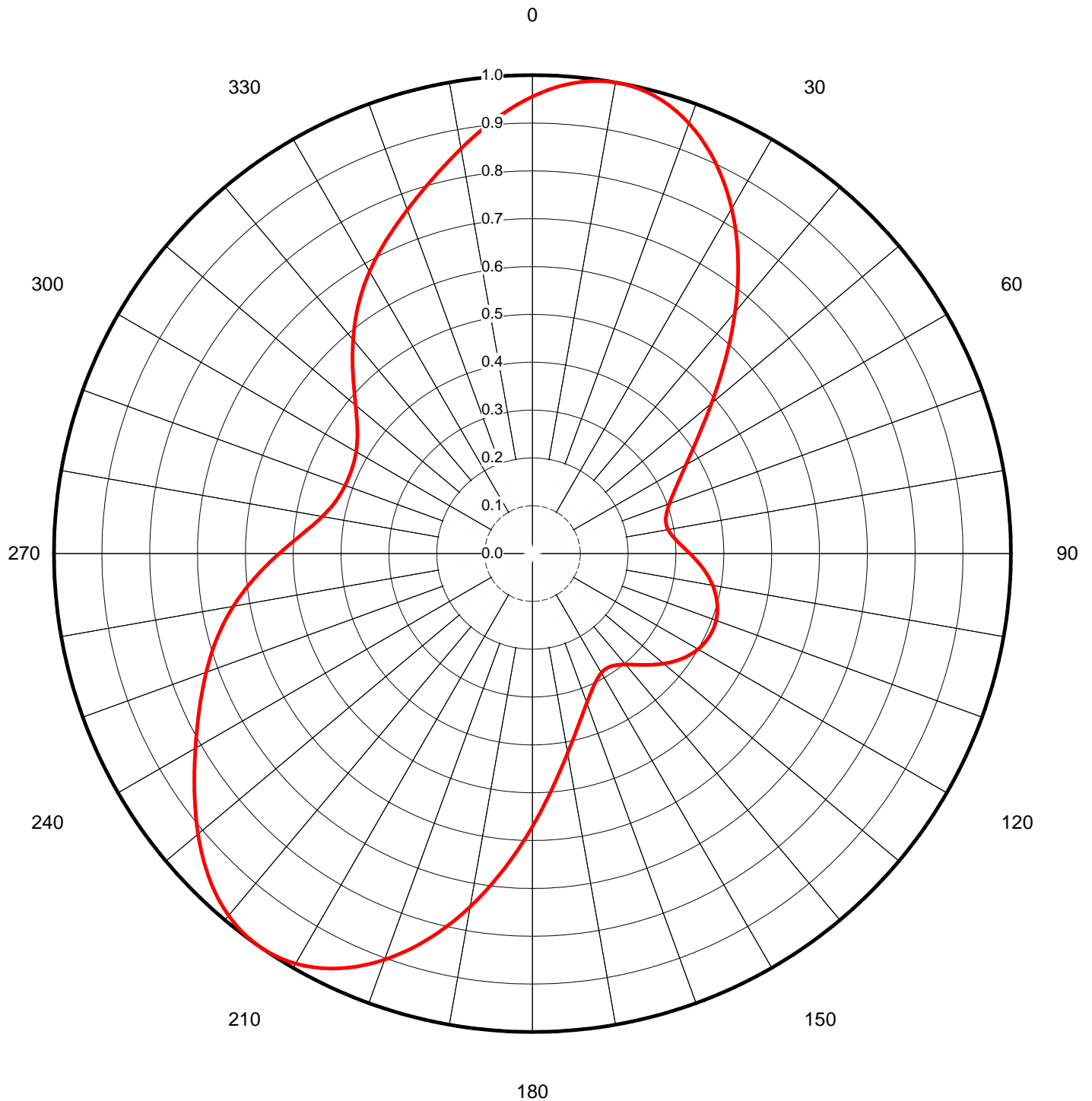


Proposal Number	C-00640		
Date	11-Sep-06		
Call Letters	WLRN	Channel	20
Location	Miami, FL		
Customer	Miami School Board		
Antenna Type	TUF-BP4SP-12/48USP-1-T		

AZIMUTH PATTERN

Gain	2.40	(3.80 dB)
Calculated / Measured	Calculated	

Frequency	509.00 MHz
Drawing #	TUF-BP4SP-5090





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Location **Miami, FL**
Customer **Miami School Board**
Antenna Type **TUF-BP4SP-12/48USP-1-T**

TABULATION OF AZIMUTH PATTERN

Azimuth Pattern Drawing #: **TUF-BP4SP-5090**

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
0	0.955	45	0.569	90	0.329	135	0.329	180	0.571	225	0.957	270	0.529	315	0.530
1	0.963	46	0.552	91	0.335	136	0.323	181	0.588	226	0.948	271	0.519	316	0.541
2	0.970	47	0.536	92	0.341	137	0.318	182	0.605	227	0.940	272	0.509	317	0.551
3	0.977	48	0.519	93	0.347	138	0.312	183	0.623	228	0.931	273	0.500	318	0.562
4	0.982	49	0.504	94	0.352	139	0.307	184	0.641	229	0.922	274	0.490	319	0.572
5	0.987	50	0.489	95	0.358	140	0.303	185	0.659	230	0.912	275	0.482	320	0.583
6	0.991	51	0.474	96	0.363	141	0.299	186	0.678	231	0.902	276	0.473	321	0.594
7	0.995	52	0.460	97	0.369	142	0.295	187	0.696	232	0.893	277	0.466	322	0.604
8	0.997	53	0.447	98	0.374	143	0.292	188	0.714	233	0.883	278	0.458	323	0.614
9	0.999	54	0.434	99	0.378	144	0.289	189	0.732	234	0.872	279	0.452	324	0.624
10	1.000	55	0.422	100	0.383	145	0.287	190	0.750	235	0.862	280	0.446	325	0.634
11	1.000	56	0.410	101	0.387	146	0.286	191	0.767	236	0.852	281	0.441	326	0.644
12	0.999	57	0.399	102	0.390	147	0.286	192	0.784	237	0.842	282	0.436	327	0.653
13	0.997	58	0.389	103	0.394	148	0.286	193	0.801	238	0.833	283	0.432	328	0.663
14	0.994	59	0.379	104	0.397	149	0.287	194	0.817	239	0.823	284	0.428	329	0.672
15	0.990	60	0.370	105	0.400	150	0.288	195	0.833	240	0.813	285	0.425	330	0.681
16	0.985	61	0.362	106	0.402	151	0.290	196	0.848	241	0.804	286	0.423	331	0.689
17	0.979	62	0.354	107	0.404	152	0.293	197	0.863	242	0.795	287	0.421	332	0.698
18	0.973	63	0.346	108	0.406	153	0.296	198	0.877	243	0.786	288	0.419	333	0.706
19	0.965	64	0.339	109	0.407	154	0.300	199	0.891	244	0.777	289	0.418	334	0.715
20	0.957	65	0.332	110	0.408	155	0.304	200	0.903	245	0.768	290	0.417	335	0.723
21	0.948	66	0.326	111	0.409	156	0.309	201	0.915	246	0.759	291	0.416	336	0.731
22	0.938	67	0.320	112	0.410	157	0.314	202	0.927	247	0.751	292	0.416	337	0.739
23	0.927	68	0.314	113	0.410	158	0.320	203	0.938	248	0.742	293	0.416	338	0.748
24	0.915	69	0.309	114	0.409	159	0.326	204	0.948	249	0.734	294	0.416	339	0.756
25	0.903	70	0.305	115	0.408	160	0.332	205	0.957	250	0.726	295	0.417	340	0.765
26	0.890	71	0.300	116	0.407	161	0.339	206	0.965	251	0.717	296	0.418	341	0.773
27	0.877	72	0.297	117	0.406	162	0.347	207	0.973	252	0.709	297	0.419	342	0.782
28	0.863	73	0.294	118	0.404	163	0.354	208	0.979	253	0.700	298	0.421	343	0.791
29	0.848	74	0.291	119	0.402	164	0.363	209	0.985	254	0.691	299	0.423	344	0.800
30	0.833	75	0.289	120	0.400	165	0.371	210	0.990	255	0.682	300	0.425	345	0.810
31	0.817	76	0.287	121	0.397	166	0.381	211	0.994	256	0.673	301	0.429	346	0.819
32	0.801	77	0.287	122	0.394	167	0.390	212	0.997	257	0.664	302	0.432	347	0.829
33	0.784	78	0.286	123	0.390	168	0.401	213	0.999	258	0.654	303	0.436	348	0.839
34	0.767	79	0.287	124	0.387	169	0.412	214	1.000	259	0.645	304	0.441	349	0.849
35	0.749	80	0.288	125	0.383	170	0.423	215	1.000	260	0.635	305	0.447	350	0.859
36	0.731	81	0.290	126	0.378	171	0.435	216	0.999	261	0.625	306	0.453	351	0.870
37	0.713	82	0.292	127	0.374	172	0.448	217	0.998	262	0.614	307	0.459	352	0.880
38	0.695	83	0.295	128	0.369	173	0.462	218	0.995	263	0.604	308	0.466	353	0.890
39	0.677	84	0.299	129	0.363	174	0.476	219	0.992	264	0.593	309	0.474	354	0.900
40	0.659	85	0.303	130	0.358	175	0.490	220	0.988	265	0.583	310	0.483	355	0.910
41	0.641	86	0.308	131	0.352	176	0.505	221	0.983	266	0.572	311	0.491	356	0.920
42	0.623	87	0.313	132	0.347	177	0.521	222	0.977	267	0.561	312	0.501	357	0.929
43	0.605	88	0.318	133	0.341	178	0.537	223	0.971	268	0.550	313	0.510	358	0.938
44	0.587	89	0.324	134	0.335	179	0.554	224	0.964	269	0.540	314	0.520	359	0.947

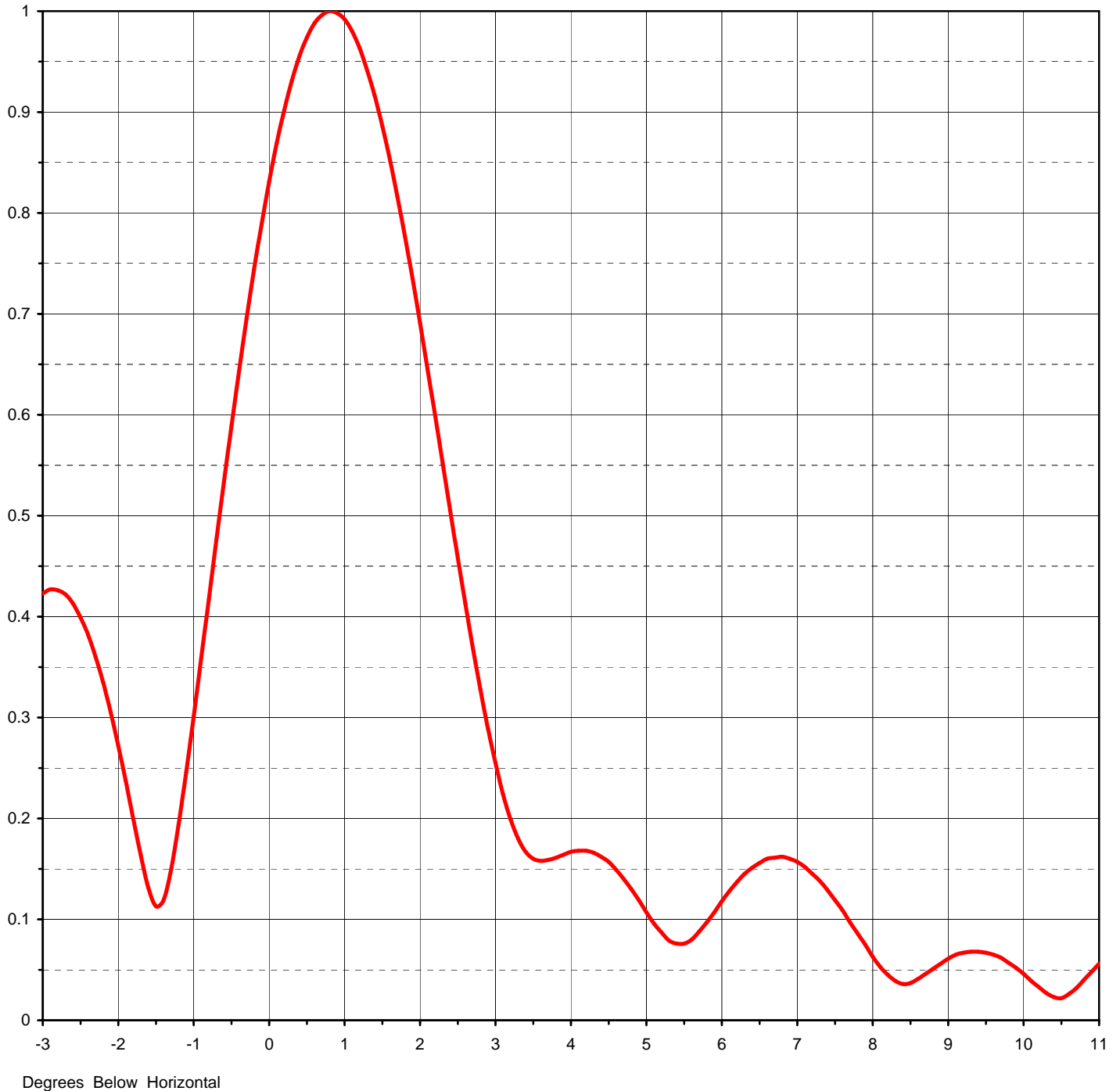


Proposal Number	C-00640		
Date	11-Sep-06		
Call Letters	WLRN	Channel	20
Location	Miami, FL		
Customer	Miami School Board		
Antenna Type	TUF-BP4SP-12/48USP-1-T		

ELEVATION PATTERN

RMS Gain at Main Lobe	22.50 (13.52 dB)
RMS Gain at Horizontal	15.50 (11.90 dB)
Calculated / Measured	Calculated

Beam Tilt	0.80 deg
Frequency	509.00 MHz
Drawing #	12U225080

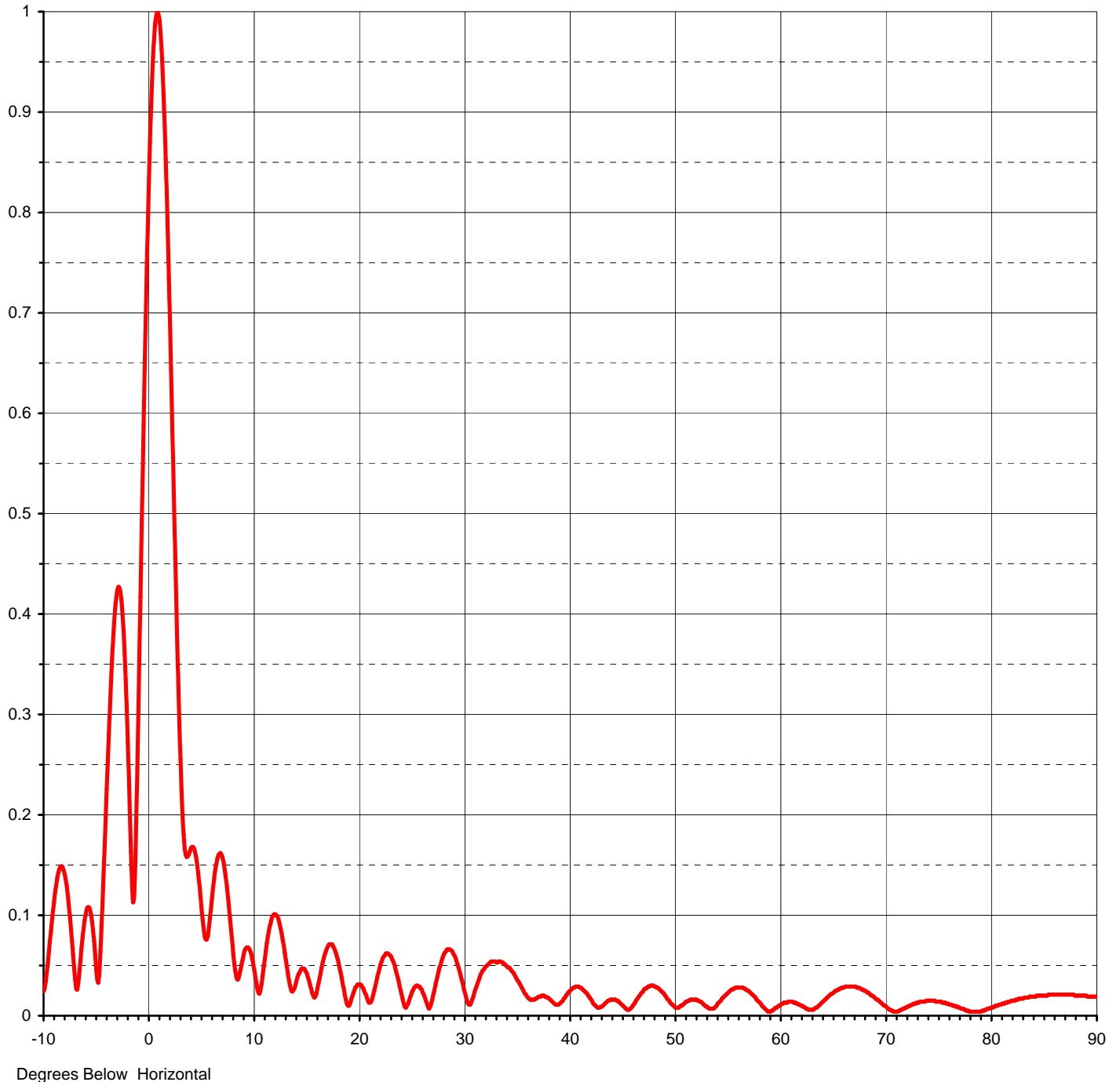




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Antenna Type	TUF-BP4SP-12/48USP-1-T	

ELEVATION PATTERN

RMS Gain at Main Lobe	22.50 (13.52 dB)	Beam Tilt	0.80 deg
RMS Gain at Horizontal	15.50 (11.90 dB)	Frequency	509.00 MHz
Calculated / Measured	Calculated	Drawing #	12U225080-90





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 Date **11-Sep-06**
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 Antenna Type **TUF-BP4SP-12/48USP-1-T**

TABULATION OF ELEVATION PATTERN

Elevation Pattern Drawing #: **12U225080-90**

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.024	2.4	0.505	10.6	0.022	30.5	0.011	51.0	0.013	71.5	0.006
-9.5	0.063	2.6	0.413	10.8	0.032	31.0	0.023	51.5	0.016	72.0	0.009
-9.0	0.114	2.8	0.328	11.0	0.048	31.5	0.038	52.0	0.016	72.5	0.011
-8.5	0.146	3.0	0.255	11.5	0.085	32.0	0.048	52.5	0.014	73.0	0.013
-8.0	0.141	3.2	0.199	12.0	0.101	32.5	0.053	53.0	0.009	73.5	0.014
-7.5	0.099	3.4	0.167	12.5	0.092	33.0	0.054	53.5	0.007	74.0	0.015
-7.0	0.036	3.6	0.158	13.0	0.063	33.5	0.054	54.0	0.010	74.5	0.015
-6.5	0.055	3.8	0.161	13.5	0.030	34.0	0.050	54.5	0.017	75.0	0.014
-6.0	0.101	4.0	0.167	14.0	0.030	34.5	0.045	55.0	0.022	75.5	0.013
-5.5	0.101	4.2	0.168	14.5	0.045	35.0	0.037	55.5	0.026	76.0	0.011
-5.0	0.047	4.4	0.162	15.0	0.044	35.5	0.028	56.0	0.028	76.5	0.010
-4.5	0.087	4.6	0.149	15.5	0.027	36.0	0.019	56.5	0.028	77.0	0.008
-4.0	0.226	4.8	0.130	16.0	0.022	36.5	0.016	57.0	0.025	77.5	0.006
-3.5	0.354	5.0	0.107	16.5	0.048	37.0	0.018	57.5	0.020	78.0	0.004
-3.0	0.423	5.2	0.087	17.0	0.067	37.5	0.020	58.0	0.014	78.5	0.004
-2.8	0.426	5.4	0.076	17.5	0.071	38.0	0.018	58.5	0.008	79.0	0.004
-2.6	0.413	5.6	0.080	18.0	0.057	38.5	0.013	59.0	0.004	79.5	0.006
-2.4	0.382	5.8	0.097	18.5	0.032	39.0	0.011	59.5	0.007	80.0	0.008
-2.2	0.335	6.0	0.118	19.0	0.010	39.5	0.017	60.0	0.010	80.5	0.010
-2.0	0.272	6.2	0.137	19.5	0.022	40.0	0.024	60.5	0.013	81.0	0.012
-1.8	0.199	6.4	0.151	20.0	0.031	40.5	0.028	61.0	0.014	81.5	0.013
-1.6	0.131	6.6	0.160	20.5	0.026	41.0	0.028	61.5	0.013	82.0	0.015
-1.4	0.119	6.8	0.162	21.0	0.013	41.5	0.024	62.0	0.010	82.5	0.016
-1.2	0.194	7.0	0.157	21.5	0.025	42.0	0.017	62.5	0.007	83.0	0.017
-1.0	0.301	7.2	0.145	22.0	0.047	42.5	0.010	63.0	0.006	83.5	0.018
-0.8	0.417	7.4	0.129	22.5	0.060	43.0	0.009	63.5	0.008	84.0	0.019
-0.6	0.533	7.6	0.109	23.0	0.060	43.5	0.013	64.0	0.013	84.5	0.020
-0.4	0.643	7.8	0.086	23.5	0.047	44.0	0.016	64.5	0.019	85.0	0.020
-0.2	0.744	8.0	0.063	24.0	0.025	44.5	0.015	65.0	0.023	85.5	0.021
0.0	0.831	8.2	0.045	24.5	0.008	45.0	0.011	65.5	0.026	86.0	0.021
0.2	0.902	8.4	0.036	25.0	0.021	45.5	0.006	66.0	0.028	86.5	0.021
0.4	0.955	8.6	0.041	25.5	0.030	46.0	0.009	66.5	0.029	87.0	0.021
0.6	0.988	8.8	0.051	26.0	0.026	46.5	0.017	67.0	0.029	87.5	0.021
0.8	1.000	9.0	0.061	26.5	0.012	47.0	0.024	67.5	0.027	88.0	0.020
1.0	0.992	9.2	0.067	27.0	0.016	47.5	0.029	68.0	0.025	88.5	0.020
1.2	0.963	9.4	0.068	27.5	0.039	48.0	0.030	68.5	0.021	89.0	0.020
1.4	0.916	9.6	0.065	28.0	0.058	48.5	0.027	69.0	0.017	89.5	0.019
1.6	0.853	9.8	0.062	28.5	0.066	49.0	0.022	69.5	0.013	90.0	0.019
1.8	0.777	10.0	0.052	29.0	0.062	49.5	0.015	70.0	0.009		
2.0	0.691	10.2	0.039	29.5	0.048	50.0	0.009	70.5	0.005		
2.2	0.599	10.4	0.027	30.0	0.027	50.5	0.009	71.0	0.004		