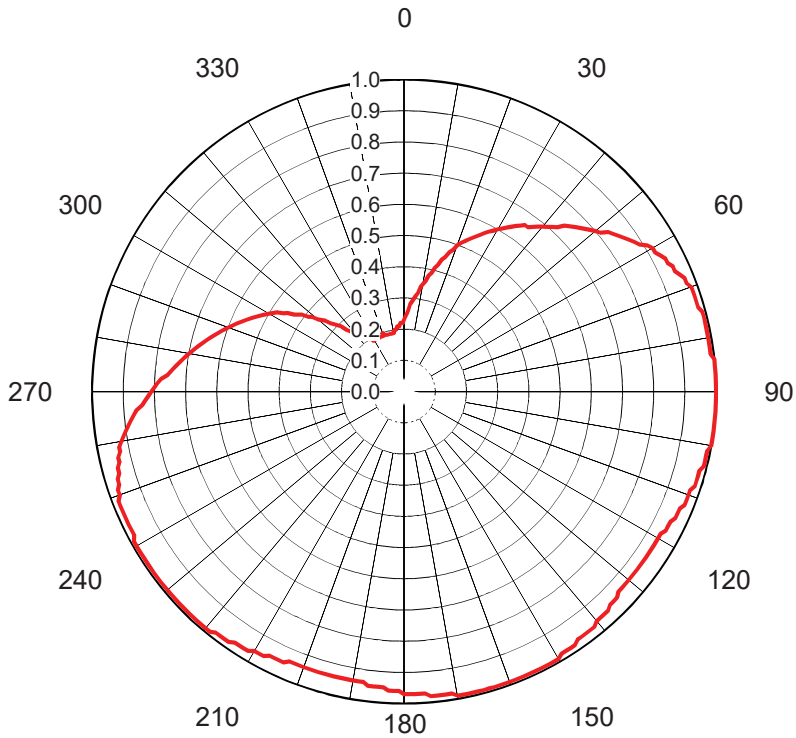


AZIMUTH PATTERN Horizontal Polarization



Proposal No. **C-70490**
 Date **14-Mar-17**
 Call Letters **WWCW**
 Channel **21**
 Frequency **515 MHz**
 Antenna Type **TFU-23ETT-R C150**
 Gain **1.52 (1.83dB)**
 Calculated

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.230	36	0.660	72	0.980	108	0.980	144	0.970	180	0.970	216	0.980	252	0.960	288	0.620
1	0.240	37	0.660	73	0.980	109	0.970	145	0.970	181	0.960	217	0.980	253	0.960	289	0.610
2	0.250	38	0.670	74	0.980	110	0.970	146	0.980	182	0.960	218	0.980	254	0.950	290	0.600
3	0.260	39	0.680	75	0.990	111	0.970	147	0.980	183	0.960	219	0.990	255	0.950	291	0.590
4	0.280	40	0.690	76	0.990	112	0.970	148	0.980	184	0.950	220	0.990	256	0.940	292	0.580
5	0.290	41	0.700	77	0.990	113	0.960	149	0.980	185	0.950	221	0.990	257	0.940	293	0.570
6	0.300	42	0.710	78	0.990	114	0.960	150	0.990	186	0.950	222	0.990	258	0.930	294	0.560
7	0.310	43	0.720	79	0.990	115	0.960	151	0.990	187	0.950	223	0.990	259	0.930	295	0.550
8	0.320	44	0.740	80	0.990	116	0.950	152	0.990	188	0.940	224	0.990	260	0.920	296	0.540
9	0.340	45	0.750	81	0.990	117	0.950	153	0.990	189	0.940	225	0.990	261	0.910	297	0.530
10	0.350	46	0.760	82	0.990	118	0.950	154	0.990	190	0.940	226	0.990	262	0.900	298	0.520
11	0.360	47	0.770	83	0.990	119	0.940	155	0.990	191	0.940	227	0.990	263	0.890	299	0.510
12	0.380	48	0.780	84	1.000	120	0.940	156	0.990	192	0.940	228	0.990	264	0.880	300	0.500
13	0.390	49	0.790	85	1.000	121	0.940	157	0.990	193	0.940	229	0.990	265	0.870	301	0.490
14	0.410	50	0.800	86	1.000	122	0.940	158	0.990	194	0.940	230	0.990	266	0.860	302	0.480
15	0.420	51	0.810	87	1.000	123	0.940	159	0.990	195	0.940	231	0.990	267	0.840	303	0.460
16	0.440	52	0.830	88	1.000	124	0.940	160	0.990	196	0.940	232	0.990	268	0.830	304	0.450
17	0.450	53	0.840	89	1.000	125	0.940	161	0.990	197	0.940	233	0.990	269	0.820	305	0.430
18	0.470	54	0.850	90	1.000	126	0.940	162	0.990	198	0.940	234	0.990	270	0.810	306	0.420
19	0.480	55	0.860	91	1.000	127	0.940	163	0.990	199	0.940	235	0.990	271	0.800	307	0.410
20	0.500	56	0.870	92	1.000	128	0.940	164	0.990	200	0.940	236	0.990	272	0.790	308	0.390
21	0.510	57	0.880	93	1.000	129	0.940	165	0.990	201	0.940	237	0.990	273	0.780	309	0.380
22	0.520	58	0.890	94	1.000	130	0.940	166	0.990	202	0.940	238	0.990	274	0.760	310	0.360
23	0.530	59	0.910	95	1.000	131	0.940	167	0.990	203	0.940	239	0.990	275	0.750	311	0.350
24	0.540	60	0.920	96	1.000	132	0.940	168	0.990	204	0.950	240	0.990	276	0.740	312	0.340
25	0.550	61	0.920	97	1.000	133	0.940	169	0.990	205	0.950	241	0.990	277	0.730	313	0.320
26	0.560	62	0.930	98	1.000	134	0.950	170	0.990	206	0.950	242	0.980	278	0.720	314	0.310
27	0.570	63	0.940	99	1.000	135	0.950	171	0.980	207	0.950	243	0.980	279	0.710	315	0.300
28	0.580	64	0.940	100	1.000	136	0.950	172	0.980	208	0.960	244	0.980	280	0.700	316	0.290
29	0.590	65	0.950	101	0.990	137	0.960	173	0.980	209	0.960	245	0.980	281	0.690	317	0.270
30	0.600	66	0.950	102	0.990	138	0.960	174	0.980	210	0.960	246	0.980	282	0.680	318	0.260
31	0.610	67	0.960	103	0.990	139	0.960	175	0.980	211	0.970	247	0.980	283	0.670	319	0.250
32	0.620	68	0.970	104	0.990	140	0.960	176	0.970	212	0.970	248	0.980	284	0.660	320	0.240
33	0.630	69	0.970	105	0.980	141	0.970	177	0.970	213	0.970	249	0.980	285	0.650	321	0.230
34	0.640	70	0.980	106	0.980	142	0.970	178	0.970	214	0.970	250	0.970	286	0.640	322	0.230
35	0.650	71	0.980	107	0.980	143	0.970	179	0.970	215	0.980	251	0.970	287	0.630	323	0.220

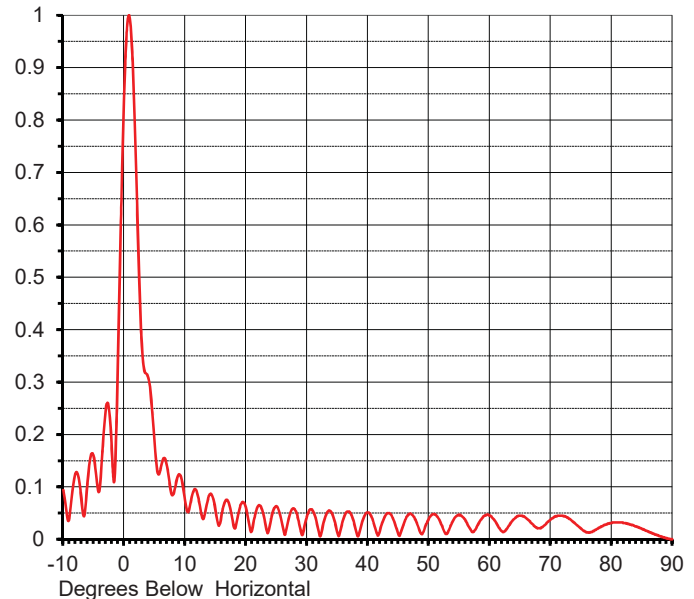
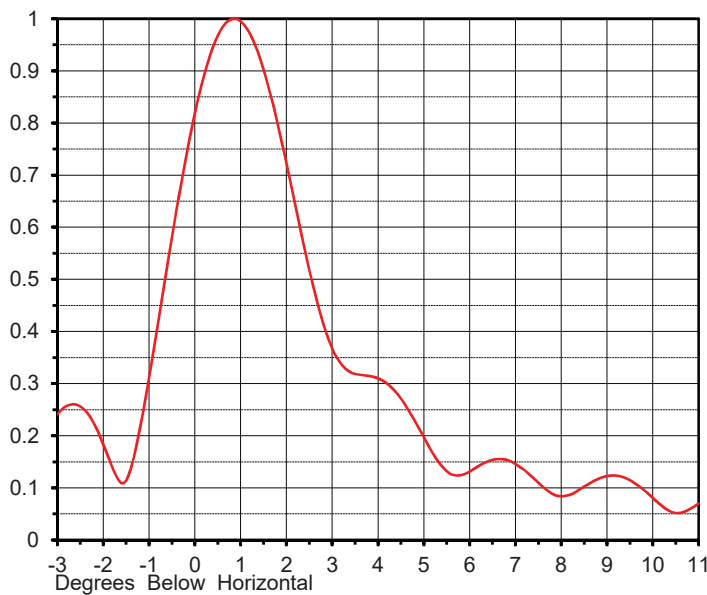
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ELEVATION PATTERN

Proposal No. **C-70490**
 Date **14-Mar-17**
 Call Letters **WWCW**
 Channel **21**
 Frequency **515 MHz**
 Antenna Type **TFU-23ETT-R C150**

RMS Directivity at Main Lobe **22.0 (13.42 dB)**
 RMS Directivity at Horizontal **14.7 (11.67 dB)**
Calculated

Beam Tilt **0.75 deg**
 Pattern Number **23E220075**



Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.094	10.0	0.073	30.0	0.045	50.0	0.040	70.0	0.038
-9.0	0.043	11.0	0.076	31.0	0.053	51.0	0.047	71.0	0.044
-8.0	0.126	12.0	0.087	32.0	0.010	52.0	0.029	72.0	0.045
-7.0	0.072	13.0	0.039	33.0	0.043	53.0	0.011	73.0	0.039
-6.0	0.112	14.0	0.085	34.0	0.051	54.0	0.036	74.0	0.030
-5.0	0.157	15.0	0.054	35.0	0.012	55.0	0.047	75.0	0.020
-4.0	0.100	16.0	0.047	36.0	0.040	56.0	0.036	76.0	0.013
-3.0	0.251	17.0	0.073	37.0	0.052	57.0	0.015	77.0	0.016
-2.0	0.162	18.0	0.023	38.0	0.018	58.0	0.027	78.0	0.022
-1.0	0.364	19.0	0.062	39.0	0.031	59.0	0.044	79.0	0.028
0.0	0.857	20.0	0.058	40.0	0.051	60.0	0.045	80.0	0.031
1.0	0.986	21.0	0.019	41.0	0.029	61.0	0.032	81.0	0.032
2.0	0.682	22.0	0.064	42.0	0.018	62.0	0.015	82.0	0.031
3.0	0.350	23.0	0.039	43.0	0.048	63.0	0.024	83.0	0.028
4.0	0.306	24.0	0.033	44.0	0.042	64.0	0.039	84.0	0.024
5.0	0.181	25.0	0.063	45.0	0.009	65.0	0.045	85.0	0.020
6.0	0.137	26.0	0.024	46.0	0.034	66.0	0.040	86.0	0.015
7.0	0.140	27.0	0.040	47.0	0.049	67.0	0.029	87.0	0.010
8.0	0.085	28.0	0.057	48.0	0.031	68.0	0.021	88.0	0.006
9.0	0.124	29.0	0.014	49.0	0.012	69.0	0.027	89.0	0.002
								90.0	0.000

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MECHANICAL SPECIFICATIONS

Proposal No.	C-70490
Date	14-Mar-17
Call Letters	WWCW
Channel	21
Frequency	515 MHz
Antenna Type	TFU-23ETT-R C150

Preliminary Specifications

Top Mounted

Without ice TIA/EIA-222-F

Height AGL	860 ft (262.1 m)
Basic Wind Speed	70 m/h (112.7 km/h)

Mechanical Specifications

Height with Lightning Protector	H4	47.3 ft (14.4m)
Height less Lightning Protector	H2	43.3 ft (13.2m)
Height of Center of Radiation	H3	21.7 ft (6.6m)
Force Coeff. x Projected Area	CaAc	43.3 ft² (4m²)
Moment Arm	D1	27.1 ft (8.3m)

Weight	W	4900 lb (2.2t)
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Antenna designed in accordance with AISC specifications for design of structural steel as prescribed by TIA/EIA-222-F

Prepared by:	KLP	Date:	14-Mar-17	ME:	EE:
	jls	Date:	16-Mar-17		

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