Dielectric®

Antenna Model: **TFU-24WB/VP-R C160 SP**

Proposal Number:	**C-70980-2**
Date:	**23-Oct-17**
Customer:	**Graham Media**
Location:	**Jacksonville, FL**

Electrical Specifications

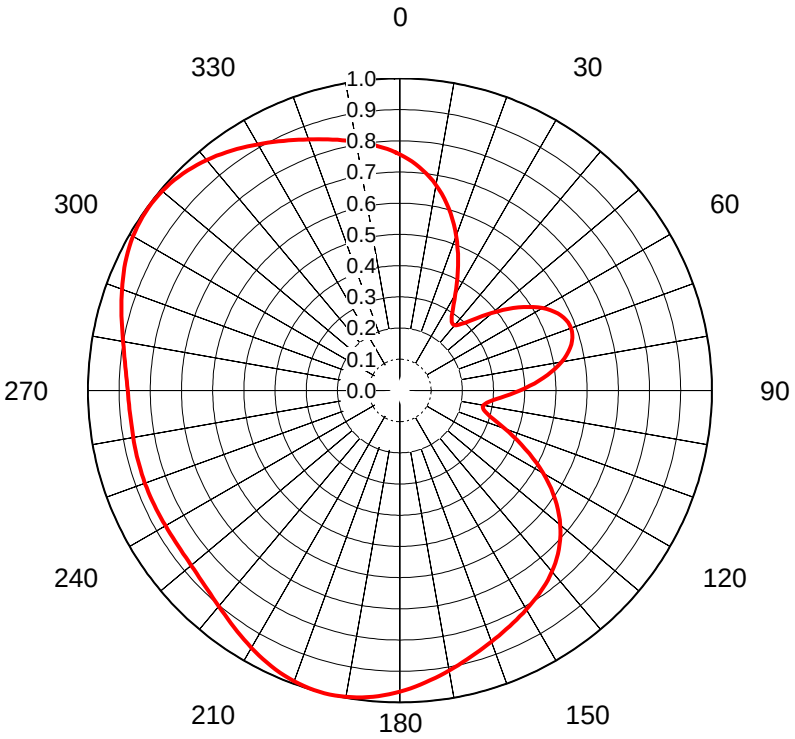
Polarization:	**Elliptical**				
Azimuth Pattern:	**Directional**				
Antenna Input:	**6-1/8"**	**50 Ohm**	**EIA/DCA**		
VSWR:	Channel	**1.15 : 1**		Band	**1.15 : 1**
Bandwidth:	**228 MHz**				
Rated Input Power:	**60 kW**	**(17.78 dBk)**	**Maximum combined average power**		

Mechanical Specifications

Mounting:	**Side Mounted**				
Environmental Protection:	**Full Radome**				
Height:	**46.4 ft (14.1m)**				
Weight:	**2650 lb (1.2t)**	Includes antenna, support pole, and mounts			
Effective Projected Area:	**87 ft² (8.1m²)**	**TIA-222-G**	Basic Wind Speed:	**98.4 m/h (158.4 km/h)**	

Channel Specifications

	Call	CH	Freq	Hpol ERP	Vpol ERP	TPO	Peak Main Lobe Hpol Gain	Peak Main Lobe Vpol Gain	Peak at Horizontal Hpol Gain	Peak at Horizontal Vpol Gain
1	WJXT	42	641 MHz	1,000 kW (30.00 dBk)	75.3 kW (18.77 dBk)	40.6 kW (16.08 dBk)	31.72 (15.01dB)	2.39 (3.78dB)	24.84 (13.95dB)	1.87 (2.72dB)
2	WCWJ	34	593 MHz	863 kW (29.36 dBk)	85.4 kW (19.31 dBk)	32.4 kW (15.11 dBk)	33.87 (15.30dB)	3.35 (5.25dB)	27.62 (14.41dB)	2.73 (4.36dB)
3	WJXT	18	497 MHz	670 kW (28.26 dBk)	200 kW (23.01 dBk)	30.9 kW (14.90 dBk)	26.95 (14.31dB)	8.05 (9.06dB)	23.41 (13.69dB)	6.99 (8.45dB)
4	WCWJ	20	509 MHz	970 kW (29.87 dBk)	243 kW (23.85 dBk)	43.6 kW (16.39 dBk)	27.78 (14.44dB)	6.94 (8.42dB)	23.97 (13.80dB)	5.99 (7.78dB)

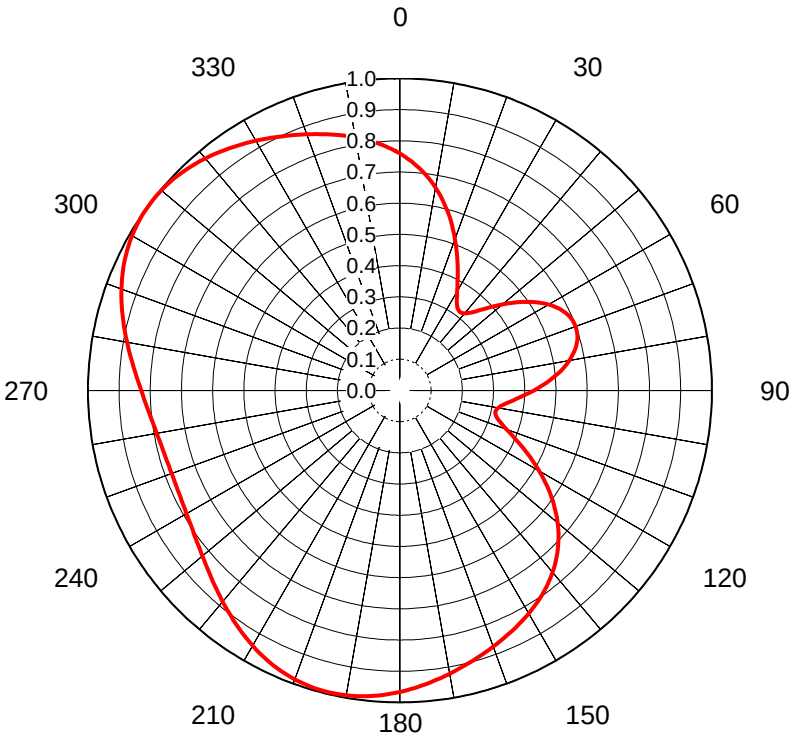


AZIMUTH PATTERN
Horizontal Polarization

In Free Space

Proposal No.	**C-70980-2**
Date	**23-Oct-17**
Call Letters	**WJXT**
Channel	**42**
Frequency	**641 MHz**
Antenna Type	**TFU-24WB/VP-R C160 SP**
Gain	**1.66 (2.21dB)**
	Calculated

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.756	36	0.282	72	0.581	108	0.327	144	0.782	180	0.965	216	0.922	252	0.870	288	0.938	324	0.944
1	0.750	37	0.276	73	0.578	109	0.342	145	0.787	181	0.970	217	0.917	253	0.869	289	0.943	325	0.939
2	0.742	38	0.272	74	0.574	110	0.358	146	0.792	182	0.974	218	0.912	254	0.869	290	0.948	326	0.933
3	0.735	39	0.271	75	0.569	111	0.374	147	0.797	183	0.978	219	0.907	255	0.869	291	0.953	327	0.928
4	0.727	40	0.273	76	0.562	112	0.391	148	0.802	184	0.982	220	0.903	256	0.869	292	0.958	328	0.922
5	0.718	41	0.277	77	0.555	113	0.409	149	0.806	185	0.985	221	0.899	257	0.869	293	0.962	329	0.916
6	0.709	42	0.283	78	0.547	114	0.426	150	0.811	186	0.989	222	0.895	258	0.868	294	0.967	330	0.911
7	0.700	43	0.292	79	0.537	115	0.444	151	0.815	187	0.991	223	0.891	259	0.868	295	0.971	331	0.905
8	0.690	44	0.302	80	0.527	116	0.462	152	0.820	188	0.994	224	0.888	260	0.868	296	0.975	332	0.899
9	0.679	45	0.314	81	0.515	117	0.479	153	0.824	189	0.996	225	0.884	261	0.868	297	0.978	333	0.894
10	0.668	46	0.327	82	0.503	118	0.497	154	0.829	190	0.997	226	0.882	262	0.868	298	0.982	334	0.888
11	0.657	47	0.341	83	0.490	119	0.514	155	0.833	191	0.999	227	0.879	263	0.868	299	0.985	335	0.883
12	0.644	48	0.356	84	0.476	120	0.530	156	0.838	192	1.000	228	0.877	264	0.868	300	0.988	336	0.877
13	0.632	49	0.371	85	0.462	121	0.547	157	0.843	193	1.000	229	0.875	265	0.868	301	0.990	337	0.872
14	0.618	50	0.387	86	0.447	122	0.562	158	0.847	194	1.000	230	0.873	266	0.869	302	0.992	338	0.867
15	0.604	51	0.403	87	0.432	123	0.578	159	0.852	195	1.000	231	0.871	267	0.869	303	0.994	339	0.861
16	0.590	52	0.418	88	0.416	124	0.593	160	0.857	196	0.999	232	0.870	268	0.870	304	0.995	340	0.856
17	0.575	53	0.434	89	0.401	125	0.607	161	0.862	197	0.998	233	0.869	269	0.871	305	0.996	341	0.851
18	0.559	54	0.449	90	0.385	126	0.621	162	0.867	198	0.996	234	0.868	270	0.873	306	0.996	342	0.847
19	0.544	55	0.464	91	0.369	127	0.634	163	0.873	199	0.994	235	0.868	271	0.874	307	0.996	343	0.842
20	0.527	56	0.478	92	0.354	128	0.647	164	0.878	200	0.992	236	0.867	272	0.876	308	0.996	344	0.837
21	0.511	57	0.492	93	0.339	129	0.659	165	0.883	201	0.989	237	0.867	273	0.878	309	0.995	345	0.832
22	0.493	58	0.505	94	0.325	130	0.671	166	0.889	202	0.986	238	0.867	274	0.881	310	0.994	346	0.828
23	0.476	59	0.517	95	0.312	131	0.682	167	0.894	203	0.983	239	0.867	275	0.883	311	0.993	347	0.823
24	0.459	60	0.528	96	0.300	132	0.692	168	0.900	204	0.979	240	0.867	276	0.886	312	0.991	348	0.819
25	0.441	61	0.538	97	0.290	133	0.702	169	0.906	205	0.975	241	0.868	277	0.890	313	0.989	349	0.814
26	0.423	62	0.548	98	0.282	134	0.711	170	0.912	206	0.971	242	0.868	278	0.893	314	0.986	350	0.810
27	0.406	63	0.556	99	0.276	135	0.720	171	0.917	207	0.966	243	0.868	279	0.897	315	0.983	351	0.805
28	0.389	64	0.563	100	0.272	136	0.729	172	0.923	208	0.962	244	0.868	280	0.901	316	0.980	352	0.800
29	0.372	65	0.569	101	0.271	137	0.737	173	0.929	209	0.957	245	0.869	281	0.905	317	0.976	353	0.796
30	0.355	66	0.575	102	0.272	138	0.744	174	0.934	210	0.952	246	0.869	282	0.909	318	0.972	354	0.791
31	0.340	67	0.579	103	0.276	139	0.751	175	0.940	211	0.947	247	0.869	283	0.914	319	0.968	355	0.786
32	0.325	68	0.581	104	0.282	140	0.758	176	0.945	212	0.942	248	0.869	284	0.919	320	0.964	356	0.780
33	0.312	69	0.583	105	0.291	141	0.764	177	0.951	213	0.937	249	0.870	285	0.924	321	0.959	357	0.775
34	0.300	70	0.584	106	0.301	142	0.770	178	0.956	214	0.932	250	0.870	286	0.928	322	0.954	358	0.769
35	0.290	71	0.583	107	0.313	143	0.776	179	0.961	215	0.927	251	0.870	287	0.933	323	0.949	359	0.763

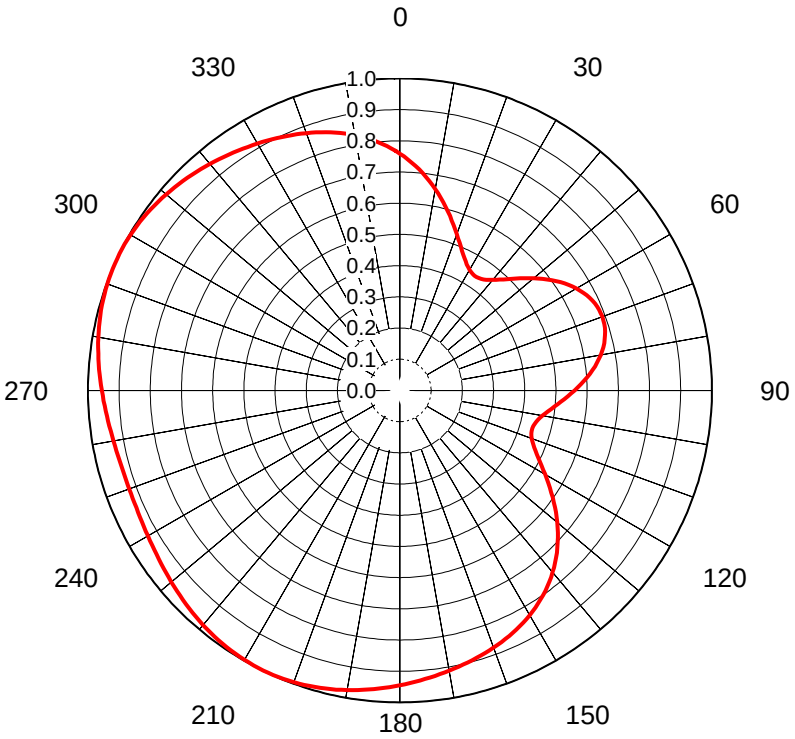


AZIMUTH PATTERN
Horizontal Polarization

In Free Space

Proposal No.	**C-70980-2**
Date	**23-Oct-17**
Call Letters	**WCWJ**
Channel	**34**
Frequency	**593 MHz**
Antenna Type	**TFU-24WB/VP-R C160 SP**
Gain	**1.69 (2.27dB)**
	Calculated

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.759	36	0.319	72	0.597	108	0.341	144	0.790	180	0.966	216	0.909	252	0.779	288	0.938	324	0.953
1	0.751	37	0.317	73	0.595	109	0.352	145	0.797	181	0.970	217	0.903	253	0.780	289	0.944	325	0.949
2	0.743	38	0.317	74	0.592	110	0.364	146	0.803	182	0.974	218	0.896	254	0.781	290	0.950	326	0.944
3	0.734	39	0.318	75	0.587	111	0.376	147	0.809	183	0.977	219	0.890	255	0.782	291	0.955	327	0.939
4	0.725	40	0.322	76	0.582	112	0.390	148	0.815	184	0.980	220	0.884	256	0.783	292	0.960	328	0.934
5	0.715	41	0.328	77	0.576	113	0.405	149	0.820	185	0.983	221	0.877	257	0.785	293	0.965	329	0.929
6	0.705	42	0.335	78	0.568	114	0.420	150	0.825	186	0.985	222	0.871	258	0.787	294	0.970	330	0.924
7	0.694	43	0.344	79	0.560	115	0.435	151	0.831	187	0.987	223	0.865	259	0.789	295	0.974	331	0.919
8	0.683	44	0.354	80	0.551	116	0.451	152	0.836	188	0.989	224	0.859	260	0.791	296	0.979	332	0.914
9	0.671	45	0.365	81	0.542	117	0.467	153	0.841	189	0.991	225	0.853	261	0.794	297	0.982	333	0.909
10	0.659	46	0.376	82	0.531	118	0.483	154	0.846	190	0.992	226	0.847	262	0.797	298	0.986	334	0.904
11	0.647	47	0.389	83	0.520	119	0.499	155	0.850	191	0.993	227	0.842	263	0.800	299	0.989	335	0.899
12	0.634	48	0.402	84	0.509	120	0.515	156	0.855	192	0.994	228	0.836	264	0.804	300	0.991	336	0.894
13	0.621	49	0.415	85	0.496	121	0.531	157	0.860	193	0.994	229	0.831	265	0.807	301	0.994	337	0.889
14	0.607	50	0.429	86	0.483	122	0.547	158	0.865	194	0.994	230	0.826	266	0.811	302	0.996	338	0.884
15	0.593	51	0.442	87	0.470	123	0.562	159	0.869	195	0.994	231	0.821	267	0.815	303	0.997	339	0.879
16	0.578	52	0.456	88	0.457	124	0.577	160	0.874	196	0.993	232	0.817	268	0.820	304	0.999	340	0.874
17	0.563	53	0.469	89	0.443	125	0.592	161	0.879	197	0.991	233	0.813	269	0.824	305	0.999	341	0.869
18	0.548	54	0.483	90	0.429	126	0.607	162	0.883	198	0.990	234	0.809	270	0.829	306	1.000	342	0.864
19	0.532	55	0.495	91	0.416	127	0.621	163	0.888	199	0.988	235	0.805	271	0.834	307	1.000	343	0.859
20	0.517	56	0.508	92	0.402	128	0.634	164	0.893	200	0.986	236	0.801	272	0.840	308	1.000	344	0.854
21	0.501	57	0.519	93	0.389	129	0.647	165	0.898	201	0.983	237	0.798	273	0.845	309	0.999	345	0.849
22	0.485	58	0.530	94	0.376	130	0.660	166	0.902	202	0.980	238	0.795	274	0.851	310	0.998	346	0.844
23	0.469	59	0.541	95	0.364	131	0.672	167	0.907	203	0.976	239	0.792	275	0.857	311	0.997	347	0.839
24	0.453	60	0.551	96	0.353	132	0.684	168	0.912	204	0.973	240	0.790	276	0.863	312	0.995	348	0.834
25	0.438	61	0.559	97	0.343	133	0.695	169	0.917	205	0.969	241	0.788	277	0.869	313	0.993	349	0.829
26	0.422	62	0.568	98	0.334	134	0.706	170	0.922	206	0.964	242	0.786	278	0.875	314	0.991	350	0.824
27	0.408	63	0.575	99	0.326	135	0.716	171	0.927	207	0.960	243	0.784	279	0.882	315	0.988	351	0.818
28	0.393	64	0.581	100	0.320	136	0.726	172	0.931	208	0.955	244	0.782	280	0.888	316	0.985	352	0.813
29	0.380	65	0.587	101	0.316	137	0.736	173	0.936	209	0.950	245	0.781	281	0.894	317	0.982	353	0.807
30	0.367	66	0.591	102	0.314	138	0.745	174	0.941	210	0.945	246	0.780	282	0.901	318	0.978	354	0.801
31	0.355	67	0.595	103	0.314	139	0.753	175	0.945	211	0.939	247	0.779	283	0.907	319	0.975	355	0.795
32	0.345	68	0.597	104	0.315	140	0.761	176	0.950	212	0.933	248	0.779	284	0.914	320	0.971	356	0.788
33	0.336	69	0.599	105	0.319	141	0.769	177	0.954	213	0.927	249	0.779	285	0.920	321	0.967	357	0.782
34	0.328	70	0.599	106	0.325	142	0.776	178	0.958	214	0.921	250	0.779	286	0.926	322	0.962	358	0.774
35	0.322	71	0.599	107	0.332	143	0.783	179	0.962	215	0.915	251	0.779	287	0.932	323	0.958	359	0.767

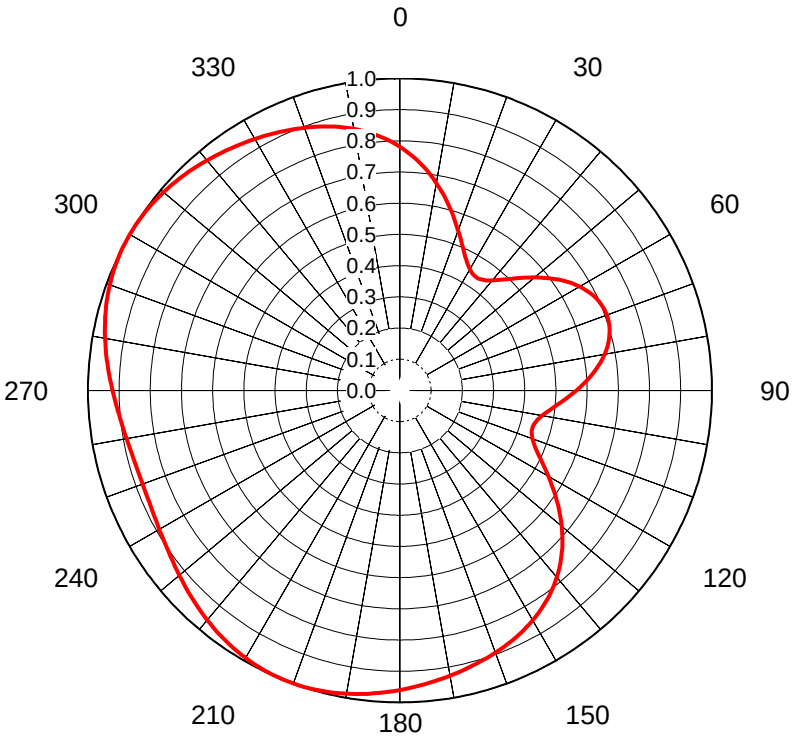


AZIMUTH PATTERN
Horizontal Polarization

In Free Space

Proposal No.	**C-70980-2**
Date	**23-Oct-17**
Call Letters	**WJXT**
Channel	**18**
Frequency	**497 MHz**
Antenna Type	**TFU-24WB/VP-R C160 SP**
Gain	**1.5 (1.76dB)**
	Calculated

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.759	36	0.442	72	0.689	108	0.443	144	0.794	180	0.945	216	0.989	252	0.924	288	0.996	324	0.934
1	0.750	37	0.446	73	0.687	109	0.446	145	0.801	181	0.948	217	0.988	253	0.924	289	0.997	325	0.931
2	0.741	38	0.450	74	0.684	110	0.450	146	0.808	182	0.952	218	0.986	254	0.925	290	0.998	326	0.927
3	0.731	39	0.456	75	0.681	111	0.455	147	0.814	183	0.955	219	0.984	255	0.925	291	0.999	327	0.924
4	0.721	40	0.462	76	0.677	112	0.461	148	0.820	184	0.958	220	0.981	256	0.926	292	0.999	328	0.920
5	0.711	41	0.470	77	0.672	113	0.468	149	0.826	185	0.961	221	0.979	257	0.928	293	1.000	329	0.917
6	0.700	42	0.478	78	0.666	114	0.476	150	0.832	186	0.964	222	0.977	258	0.929	294	1.000	330	0.914
7	0.689	43	0.487	79	0.660	115	0.484	151	0.837	187	0.967	223	0.974	259	0.931	295	1.000	331	0.910
8	0.678	44	0.496	80	0.654	116	0.494	152	0.843	188	0.970	224	0.972	260	0.932	296	1.000	332	0.907
9	0.667	45	0.506	81	0.646	117	0.504	153	0.848	189	0.973	225	0.969	261	0.934	297	0.999	333	0.903
10	0.655	46	0.516	82	0.638	118	0.514	154	0.852	190	0.975	226	0.966	262	0.936	298	0.999	334	0.900
11	0.643	47	0.527	83	0.630	119	0.525	155	0.857	191	0.978	227	0.964	263	0.938	299	0.998	335	0.896
12	0.631	48	0.538	84	0.621	120	0.537	156	0.861	192	0.980	228	0.961	264	0.940	300	0.997	336	0.893
13	0.619	49	0.548	85	0.611	121	0.549	157	0.866	193	0.983	229	0.958	265	0.943	301	0.996	337	0.889
14	0.607	50	0.559	86	0.602	122	0.561	158	0.870	194	0.985	230	0.956	266	0.945	302	0.994	338	0.885
15	0.594	51	0.570	87	0.591	123	0.573	159	0.874	195	0.987	231	0.953	267	0.948	303	0.993	339	0.882
16	0.582	52	0.581	88	0.581	124	0.585	160	0.877	196	0.989	232	0.950	268	0.950	304	0.991	340	0.878
17	0.569	53	0.591	89	0.571	125	0.598	161	0.881	197	0.991	233	0.948	269	0.953	305	0.989	341	0.874
18	0.557	54	0.601	90	0.560	126	0.610	162	0.885	198	0.992	234	0.945	270	0.955	306	0.987	342	0.870
19	0.545	55	0.611	91	0.549	127	0.622	163	0.888	199	0.994	235	0.943	271	0.958	307	0.985	343	0.865
20	0.533	56	0.621	92	0.538	128	0.635	164	0.892	200	0.995	236	0.941	272	0.961	308	0.983	344	0.861
21	0.522	57	0.630	93	0.528	129	0.647	165	0.895	201	0.996	237	0.939	273	0.963	309	0.980	345	0.856
22	0.511	58	0.638	94	0.517	130	0.658	166	0.899	202	0.997	238	0.936	274	0.966	310	0.978	346	0.852
23	0.500	59	0.646	95	0.507	131	0.670	167	0.902	203	0.998	239	0.934	275	0.969	311	0.975	347	0.847
24	0.490	60	0.653	96	0.497	132	0.681	168	0.905	204	0.998	240	0.933	276	0.972	312	0.972	348	0.842
25	0.481	61	0.660	97	0.488	133	0.693	169	0.909	205	0.998	241	0.931	277	0.974	313	0.970	349	0.836
26	0.472	62	0.666	98	0.480	134	0.703	170	0.912	206	0.998	242	0.929	278	0.977	314	0.967	350	0.831
27	0.464	63	0.672	99	0.472	135	0.714	171	0.915	207	0.998	243	0.928	279	0.979	315	0.964	351	0.825
28	0.457	64	0.677	100	0.464	136	0.724	172	0.919	208	0.998	244	0.927	280	0.982	316	0.960	352	0.819
29	0.451	65	0.681	101	0.458	137	0.734	173	0.922	209	0.998	245	0.926	281	0.984	317	0.957	353	0.812
30	0.447	66	0.684	102	0.452	138	0.744	174	0.925	210	0.997	246	0.925	282	0.986	318	0.954	354	0.806
31	0.443	67	0.687	103	0.448	139	0.753	175	0.929	211	0.996	247	0.924	283	0.988	319	0.951	355	0.799
32	0.440	68	0.689	104	0.445	140	0.762	176	0.932	212	0.995	248	0.924	284	0.990	320	0.947	356	0.792
33	0.439	69	0.690	105	0.443	141	0.770	177	0.935	213	0.994	249	0.923	285	0.992	321	0.944	357	0.784
34	0.439	70	0.690	106	0.442	142	0.778	178	0.938	214	0.993	250	0.923	286	0.993	322	0.941	358	0.776
35	0.440	71	0.690	107	0.442	143	0.786	179	0.942	215	0.991	251	0.923	287	0.995	323	0.937	359	0.768

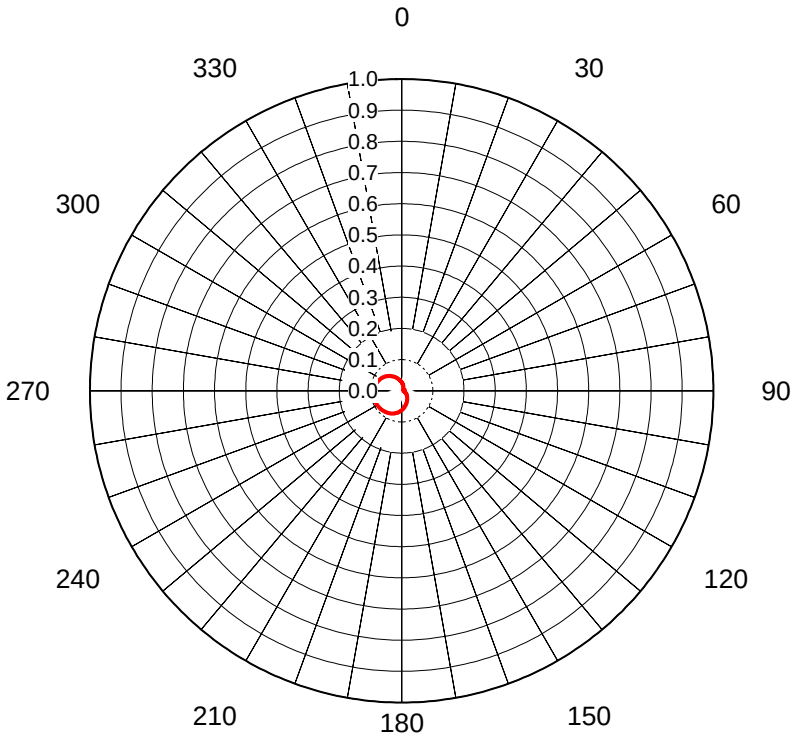


AZIMUTH PATTERN
Horizontal Polarization

In Free Space

Proposal No.	**C-70980-2**
Date	**23-Oct-17**
Call Letters	**WCWJ**
Channel	**20**
Frequency	**509 MHz**
Antenna Type	**TFU-24WB/VP-R C160 SP**
Gain	**1.5 (1.76dB)**
	Calculated

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.781	36	0.440	72	0.704	108	0.444	144	0.814	180	0.960	216	0.974	252	0.878	288	0.985	324	0.950
1	0.772	37	0.443	73	0.702	109	0.447	145	0.821	181	0.963	217	0.971	253	0.879	289	0.987	325	0.947
2	0.763	38	0.448	74	0.699	110	0.452	146	0.828	182	0.966	218	0.968	254	0.879	290	0.990	326	0.943
3	0.753	39	0.454	75	0.696	111	0.458	147	0.834	183	0.969	219	0.964	255	0.881	291	0.992	327	0.940
4	0.743	40	0.460	76	0.691	112	0.465	148	0.840	184	0.972	220	0.961	256	0.882	292	0.993	328	0.937
5	0.732	41	0.468	77	0.686	113	0.473	149	0.846	185	0.975	221	0.957	257	0.883	293	0.995	329	0.934
6	0.722	42	0.477	78	0.680	114	0.482	150	0.851	186	0.978	222	0.953	258	0.885	294	0.996	330	0.930
7	0.710	43	0.486	79	0.674	115	0.491	151	0.856	187	0.980	223	0.950	259	0.887	295	0.998	331	0.927
8	0.699	44	0.496	80	0.666	116	0.502	152	0.861	188	0.983	224	0.946	260	0.890	296	0.999	332	0.924
9	0.687	45	0.506	81	0.658	117	0.513	153	0.866	189	0.985	225	0.942	261	0.892	297	0.999	333	0.920
10	0.675	46	0.517	82	0.650	118	0.525	154	0.871	190	0.987	226	0.938	262	0.895	298	1.000	334	0.917
11	0.663	47	0.529	83	0.641	119	0.537	155	0.875	191	0.989	227	0.934	263	0.897	299	1.000	335	0.914
12	0.650	48	0.540	84	0.631	120	0.549	156	0.879	192	0.991	228	0.930	264	0.900	300	1.000	336	0.910
13	0.637	49	0.552	85	0.621	121	0.562	157	0.883	193	0.993	229	0.926	265	0.904	301	1.000	337	0.907
14	0.624	50	0.564	86	0.610	122	0.575	158	0.887	194	0.994	230	0.922	266	0.907	302	0.999	338	0.903
15	0.611	51	0.575	87	0.600	123	0.588	159	0.891	195	0.996	231	0.919	267	0.910	303	0.999	339	0.900
16	0.598	52	0.587	88	0.588	124	0.601	160	0.895	196	0.997	232	0.915	268	0.914	304	0.998	340	0.896
17	0.585	53	0.598	89	0.577	125	0.614	161	0.898	197	0.998	233	0.911	269	0.917	305	0.997	341	0.892
18	0.572	54	0.609	90	0.566	126	0.627	162	0.902	198	0.999	234	0.908	270	0.921	306	0.996	342	0.888
19	0.559	55	0.620	91	0.554	127	0.640	163	0.905	199	0.999	235	0.905	271	0.925	307	0.994	343	0.884
20	0.546	56	0.630	92	0.542	128	0.652	164	0.908	200	0.999	236	0.901	272	0.929	308	0.992	344	0.880
21	0.533	57	0.640	93	0.531	129	0.665	165	0.912	201	0.999	237	0.898	273	0.933	309	0.991	345	0.876
22	0.521	58	0.649	94	0.520	130	0.677	166	0.915	202	0.999	238	0.896	274	0.937	310	0.989	346	0.871
23	0.509	59	0.657	95	0.509	131	0.689	167	0.918	203	0.999	239	0.893	275	0.941	311	0.987	347	0.867
24	0.498	60	0.665	96	0.499	132	0.701	168	0.922	204	0.998	240	0.890	276	0.944	312	0.984	348	0.862
25	0.488	61	0.673	97	0.489	133	0.712	169	0.925	205	0.998	241	0.888	277	0.948	313	0.982	349	0.857
26	0.478	62	0.680	98	0.479	134	0.723	170	0.928	206	0.996	242	0.886	278	0.952	314	0.979	350	0.851
27	0.469	63	0.686	99	0.471	135	0.734	171	0.931	207	0.995	243	0.884	279	0.956	315	0.977	351	0.846
28	0.461	64	0.691	100	0.463	136	0.745	172	0.935	208	0.994	244	0.882	280	0.960	316	0.974	352	0.840
29	0.454	65	0.695	101	0.457	137	0.754	173	0.938	209	0.992	245	0.881	281	0.963	317	0.971	353	0.834
30	0.448	66	0.699	102	0.451	138	0.764	174	0.941	210	0.990	246	0.880	282	0.967	318	0.968	354	0.827
31	0.444	67	0.702	103	0.447	139	0.773	175	0.944	211	0.988	247	0.879	283	0.970	319	0.965	355	0.820
32	0.440	68	0.704	104	0.444	140	0.782	176	0.948	212	0.985	248	0.878	284	0.973	320	0.962	356	0.813
33	0.438	69	0.705	105	0.442	141	0.791	177	0.951	213	0.983	249	0.878	285	0.977	321	0.959	357	0.806
34	0.438	70	0.706	106	0.441	142	0.799	178	0.954	214	0.980	250	0.878	286	0.980	322	0.956	358	0.798
35	0.438	71	0.706	107	0.442	143	0.806	179	0.957	215	0.977	251	0.878	287	0.982	323	0.953	359	0.790

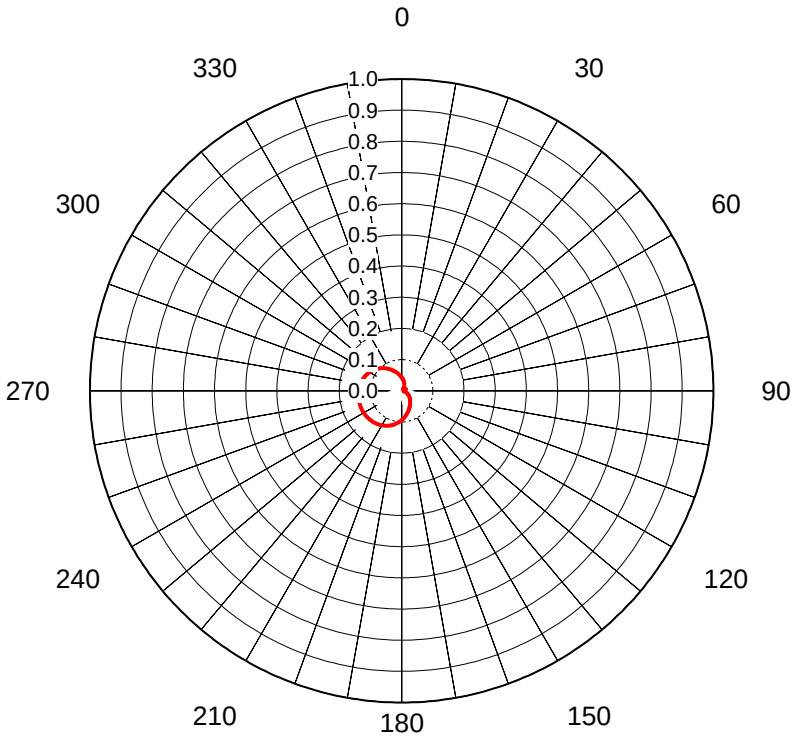


AZIMUTH PATTERN
Vertical Polarization

In Free Space

Proposal No.	**C-70980-2**
Date	**23-Oct-17**
Call Letters	**WJXT**
Channel	**42**
Frequency	**641 MHz**
Antenna Type	**TFU-24WB/VP-R C160 SP**
Gain	**2.64 (4.21dB)**
	Calculated

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.027	36	0.008	72	0.010	108	0.009	144	0.031	180	0.063	216	0.085	252	0.092	288	0.084	324	0.058
1	0.027	37	0.008	73	0.010	109	0.010	145	0.031	181	0.063	217	0.085	253	0.092	289	0.084	325	0.057
2	0.026	38	0.007	74	0.010	110	0.011	146	0.032	182	0.064	218	0.086	254	0.092	290	0.083	326	0.057
3	0.025	39	0.007	75	0.010	111	0.011	147	0.033	183	0.065	219	0.086	255	0.092	291	0.083	327	0.056
4	0.025	40	0.007	76	0.010	112	0.012	148	0.033	184	0.066	220	0.086	256	0.092	292	0.082	328	0.055
5	0.024	41	0.007	77	0.009	113	0.012	149	0.034	185	0.067	221	0.087	257	0.092	293	0.082	329	0.054
6	0.024	42	0.006	78	0.009	114	0.013	150	0.035	186	0.068	222	0.087	258	0.092	294	0.081	330	0.053
7	0.023	43	0.006	79	0.009	115	0.013	151	0.036	187	0.069	223	0.087	259	0.092	295	0.080	331	0.052
8	0.022	44	0.006	80	0.009	116	0.014	152	0.037	188	0.069	224	0.088	260	0.091	296	0.080	332	0.051
9	0.022	45	0.006	81	0.009	117	0.014	153	0.037	189	0.070	225	0.088	261	0.091	297	0.079	333	0.050
10	0.021	46	0.006	82	0.009	118	0.015	154	0.038	190	0.071	226	0.088	262	0.091	298	0.079	334	0.049
11	0.021	47	0.006	83	0.008	119	0.016	155	0.039	191	0.072	227	0.088	263	0.091	299	0.078	335	0.048
12	0.020	48	0.006	84	0.008	120	0.016	156	0.040	192	0.072	228	0.089	264	0.091	300	0.078	336	0.047
13	0.020	49	0.006	85	0.008	121	0.017	157	0.041	193	0.073	229	0.089	265	0.091	301	0.077	337	0.046
14	0.019	50	0.006	86	0.008	122	0.017	158	0.042	194	0.074	230	0.089	266	0.091	302	0.076	338	0.045
15	0.019	51	0.006	87	0.007	123	0.018	159	0.043	195	0.074	231	0.089	267	0.091	303	0.076	339	0.044
16	0.018	52	0.007	88	0.007	124	0.018	160	0.044	196	0.075	232	0.090	268	0.090	304	0.075	340	0.044
17	0.017	53	0.007	89	0.007	125	0.019	161	0.045	197	0.076	233	0.090	269	0.090	305	0.074	341	0.043
18	0.017	54	0.007	90	0.007	126	0.019	162	0.045	198	0.076	234	0.090	270	0.090	306	0.073	342	0.042
19	0.016	55	0.007	91	0.006	127	0.020	163	0.046	199	0.077	235	0.090	271	0.090	307	0.073	343	0.041
20	0.016	56	0.007	92	0.006	128	0.021	164	0.047	200	0.078	236	0.090	272	0.089	308	0.072	344	0.040
21	0.015	57	0.008	93	0.006	129	0.021	165	0.048	201	0.078	237	0.091	273	0.089	309	0.071	345	0.039
22	0.015	58	0.008	94	0.006	130	0.022	166	0.049	202	0.079	238	0.091	274	0.089	310	0.070	346	0.038
23	0.014	59	0.008	95	0.006	131	0.022	167	0.050	203	0.079	239	0.091	275	0.089	311	0.070	347	0.037
24	0.014	60	0.008	96	0.006	132	0.023	168	0.051	204	0.080	240	0.091	276	0.088	312	0.069	348	0.037
25	0.013	61	0.009	97	0.006	133	0.023	169	0.052	205	0.080	241	0.091	277	0.088	313	0.068	349	0.036
26	0.013	62	0.009	98	0.006	134	0.024	170	0.053	206	0.081	242	0.091	278	0.088	314	0.067	350	0.035
27	0.012	63	0.009	99	0.006	135	0.025	171	0.054	207	0.081	243	0.091	279	0.087	315	0.066	351	0.034
28	0.012	64	0.009	100	0.006	136	0.025	172	0.055	208	0.082	244	0.092	280	0.087	316	0.066	352	0.033
29	0.011	65	0.009	101	0.007	137	0.026	173	0.056	209	0.082	245	0.092	281	0.087	317	0.065	353	0.033
30	0.011	66	0.009	102	0.007	138	0.026	174	0.057	210	0.083	246	0.092	282	0.086	318	0.064	354	0.032
31	0.010	67	0.010	103	0.007	139	0.027	175	0.058	211	0.083	247	0.092	283	0.086	319	0.063	355	0.031
32	0.010	68	0.010	104	0.008	140	0.028	176	0.059	212	0.084	248	0.092	284	0.086	320	0.062	356	0.030
33	0.010	69	0.010	105	0.008	141	0.028	177	0.060	213	0.084	249	0.092	285	0.085	321	0.061	357	0.030
34	0.009	70	0.010	106	0.009	142	0.029	178	0.061	214	0.084	250	0.092	286	0.085	322	0.060	358	0.029
35	0.009	71	0.010	107	0.009	143	0.030	179	0.062	215	0.085	251	0.092	287	0.084	323	0.059	359	0.028

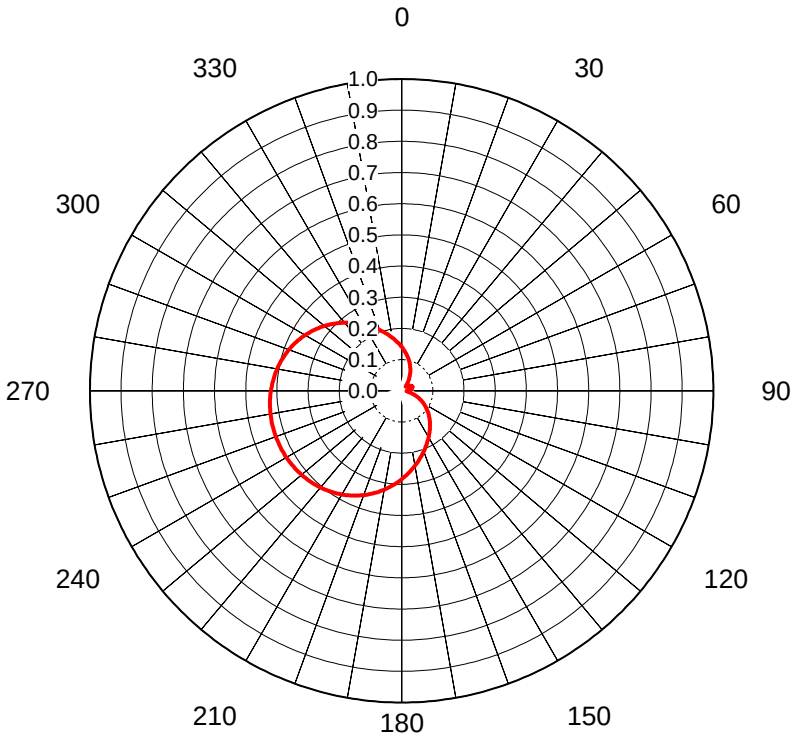


AZIMUTH PATTERN
Vertical Polarization

In Free Space

Proposal No.	**C-70980-2**
Date	**23-Oct-17**
Call Letters	**WCWJ**
Channel	**34**
Frequency	**593 MHz**
Antenna Type	**TFU-24WB/VP-R C160 SP**
Gain	**2.65 (4.23dB)**
	Calculated

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.043	36	0.011	72	0.014	108	0.013	144	0.047	180	0.095	216	0.132	252	0.141	288	0.129	324	0.089
1	0.042	37	0.010	73	0.014	109	0.014	145	0.048	181	0.096	217	0.133	253	0.141	289	0.128	325	0.088
2	0.041	38	0.009	74	0.014	110	0.015	146	0.049	182	0.097	218	0.133	254	0.141	290	0.127	326	0.086
3	0.040	39	0.009	75	0.014	111	0.016	147	0.050	183	0.099	219	0.134	255	0.141	291	0.127	327	0.085
4	0.039	40	0.008	76	0.013	112	0.017	148	0.051	184	0.100	220	0.134	256	0.141	292	0.126	328	0.083
5	0.038	41	0.008	77	0.013	113	0.018	149	0.052	185	0.101	221	0.135	257	0.141	293	0.125	329	0.082
6	0.037	42	0.007	78	0.013	114	0.019	150	0.053	186	0.103	222	0.135	258	0.141	294	0.124	330	0.081
7	0.037	43	0.007	79	0.013	115	0.020	151	0.054	187	0.104	223	0.136	259	0.140	295	0.123	331	0.079
8	0.036	44	0.007	80	0.012	116	0.021	152	0.056	188	0.105	224	0.136	260	0.140	296	0.123	332	0.078
9	0.035	45	0.007	81	0.012	117	0.022	153	0.057	189	0.107	225	0.137	261	0.140	297	0.122	333	0.076
10	0.034	46	0.007	82	0.011	118	0.023	154	0.058	190	0.108	226	0.137	262	0.140	298	0.121	334	0.075
11	0.033	47	0.007	83	0.011	119	0.024	155	0.059	191	0.109	227	0.137	263	0.140	299	0.120	335	0.073
12	0.032	48	0.007	84	0.010	120	0.024	156	0.061	192	0.110	228	0.138	264	0.139	300	0.119	336	0.072
13	0.031	49	0.008	85	0.010	121	0.025	157	0.062	193	0.112	229	0.138	265	0.139	301	0.118	337	0.071
14	0.030	50	0.008	86	0.009	122	0.026	158	0.063	194	0.113	230	0.138	266	0.139	302	0.117	338	0.069
15	0.029	51	0.009	87	0.009	123	0.027	159	0.065	195	0.114	231	0.139	267	0.139	303	0.116	339	0.068
16	0.028	52	0.009	88	0.008	124	0.028	160	0.066	196	0.115	232	0.139	268	0.138	304	0.115	340	0.067
17	0.028	53	0.010	89	0.008	125	0.029	161	0.067	197	0.116	233	0.139	269	0.138	305	0.114	341	0.065
18	0.027	54	0.010	90	0.007	126	0.030	162	0.069	198	0.117	234	0.140	270	0.138	306	0.113	342	0.064
19	0.026	55	0.010	91	0.007	127	0.031	163	0.070	199	0.118	235	0.140	271	0.137	307	0.111	343	0.063
20	0.025	56	0.011	92	0.006	128	0.032	164	0.071	200	0.119	236	0.140	272	0.137	308	0.110	344	0.061
21	0.024	57	0.011	93	0.006	129	0.033	165	0.073	201	0.120	237	0.140	273	0.137	309	0.109	345	0.060
22	0.023	58	0.012	94	0.006	130	0.033	166	0.074	202	0.121	238	0.140	274	0.136	310	0.108	346	0.059
23	0.022	59	0.012	95	0.006	131	0.034	167	0.076	203	0.122	239	0.141	275	0.136	311	0.107	347	0.057
24	0.021	60	0.013	96	0.006	132	0.035	168	0.077	204	0.123	240	0.141	276	0.135	312	0.105	348	0.056
25	0.020	61	0.013	97	0.006	133	0.036	169	0.079	205	0.124	241	0.141	277	0.135	313	0.104	349	0.055
26	0.019	62	0.013	98	0.006	134	0.037	170	0.080	206	0.125	242	0.141	278	0.135	314	0.103	350	0.054
27	0.018	63	0.013	99	0.007	135	0.038	171	0.082	207	0.126	243	0.141	279	0.134	315	0.102	351	0.053
28	0.018	64	0.014	100	0.007	136	0.039	172	0.083	208	0.126	244	0.141	280	0.134	316	0.100	352	0.052
29	0.017	65	0.014	101	0.008	137	0.040	173	0.085	209	0.127	245	0.141	281	0.133	317	0.099	353	0.050
30	0.016	66	0.014	102	0.008	138	0.041	174	0.086	210	0.128	246	0.141	282	0.132	318	0.098	354	0.049
31	0.015	67	0.014	103	0.009	139	0.042	175	0.087	211	0.129	247	0.141	283	0.132	319	0.096	355	0.048
32	0.014	68	0.014	104	0.010	140	0.043	176	0.089	212	0.129	248	0.141	284	0.131	320	0.095	356	0.047
33	0.013	69	0.014	105	0.011	141	0.044	177	0.090	213	0.130	249	0.141	285	0.131	321	0.093	357	0.046
34	0.012	70	0.014	106	0.012	142	0.045	178	0.092	214	0.131	250	0.141	286	0.130	322	0.092	358	0.045
35	0.011	71	0.014	107	0.012	143	0.046	179	0.093	215	0.131	251	0.141	287	0.129	323	0.091	359	0.044

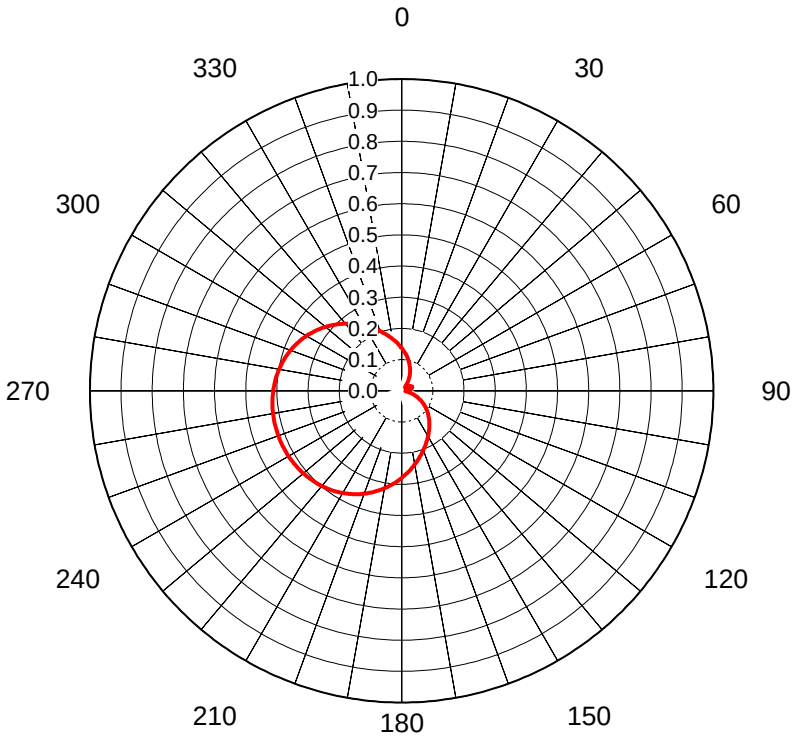


AZIMUTH PATTERN
Vertical Polarization

In Free Space

Proposal No.	**C-70980-2**
Date	**23-Oct-17**
Call Letters	**WJXT**
Channel	**18**
Frequency	**497 MHz**
Antenna Type	**TFU-24WB/VP-R C160 SP**
Gain	**2.65 (4.24dB)**
	Calculated

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.141	36	0.034	72	0.037	108	0.044	144	0.154	180	0.284	216	0.397	252	0.429	288	0.390	324	0.269
1	0.138	37	0.031	73	0.037	109	0.047	145	0.157	181	0.288	217	0.399	253	0.429	289	0.387	325	0.265
2	0.135	38	0.029	74	0.036	110	0.050	146	0.160	182	0.292	218	0.401	254	0.429	290	0.385	326	0.262
3	0.132	39	0.027	75	0.036	111	0.053	147	0.163	183	0.295	219	0.403	255	0.429	291	0.383	327	0.258
4	0.129	40	0.025	76	0.035	112	0.056	148	0.166	184	0.299	220	0.405	256	0.429	292	0.380	328	0.254
5	0.126	41	0.023	77	0.034	113	0.059	149	0.169	185	0.303	221	0.407	257	0.428	293	0.377	329	0.250
6	0.123	42	0.021	78	0.033	114	0.062	150	0.173	186	0.307	222	0.408	258	0.428	294	0.375	330	0.246
7	0.120	43	0.020	79	0.032	115	0.065	151	0.176	187	0.311	223	0.410	259	0.428	295	0.372	331	0.242
8	0.117	44	0.019	80	0.031	116	0.068	152	0.179	188	0.315	224	0.411	260	0.427	296	0.369	332	0.238
9	0.114	45	0.019	81	0.030	117	0.072	153	0.183	189	0.318	225	0.413	261	0.427	297	0.366	333	0.234
10	0.111	46	0.018	82	0.029	118	0.075	154	0.186	190	0.322	226	0.414	262	0.426	298	0.363	334	0.230
11	0.108	47	0.019	83	0.028	119	0.078	155	0.189	191	0.326	227	0.415	263	0.425	299	0.360	335	0.226
12	0.105	48	0.019	84	0.026	120	0.081	156	0.193	192	0.329	228	0.417	264	0.425	300	0.357	336	0.223
13	0.102	49	0.020	85	0.025	121	0.084	157	0.196	193	0.333	229	0.418	265	0.424	301	0.354	337	0.219
14	0.099	50	0.021	86	0.024	122	0.087	158	0.200	194	0.336	230	0.419	266	0.423	302	0.351	338	0.215
15	0.096	51	0.022	87	0.022	123	0.090	159	0.203	195	0.340	231	0.420	267	0.422	303	0.348	339	0.211
16	0.093	52	0.023	88	0.021	124	0.093	160	0.207	196	0.343	232	0.421	268	0.421	304	0.344	340	0.208
17	0.090	53	0.024	89	0.019	125	0.096	161	0.210	197	0.346	233	0.422	269	0.420	305	0.341	341	0.204
18	0.087	54	0.025	90	0.018	126	0.099	162	0.214	198	0.350	234	0.423	270	0.419	306	0.338	342	0.201
19	0.084	55	0.027	91	0.017	127	0.102	163	0.218	199	0.353	235	0.424	271	0.418	307	0.334	343	0.197
20	0.080	56	0.028	92	0.016	128	0.105	164	0.222	200	0.356	236	0.424	272	0.417	308	0.331	344	0.193
21	0.077	57	0.029	93	0.016	129	0.108	165	0.225	201	0.359	237	0.425	273	0.416	309	0.327	345	0.190
22	0.074	58	0.030	94	0.015	130	0.111	166	0.229	202	0.362	238	0.426	274	0.415	310	0.323	346	0.186
23	0.071	59	0.031	95	0.016	131	0.114	167	0.233	203	0.365	239	0.426	275	0.413	311	0.320	347	0.183
24	0.068	60	0.032	96	0.016	132	0.117	168	0.237	204	0.368	240	0.427	276	0.412	312	0.316	348	0.180
25	0.065	61	0.033	97	0.017	133	0.120	169	0.241	205	0.371	241	0.427	277	0.410	313	0.312	349	0.176
26	0.062	62	0.034	98	0.019	134	0.123	170	0.244	206	0.374	242	0.428	278	0.409	314	0.308	350	0.173
27	0.059	63	0.035	99	0.021	135	0.126	171	0.248	207	0.376	243	0.428	279	0.407	315	0.305	351	0.170
28	0.056	64	0.035	100	0.023	136	0.129	172	0.252	208	0.379	244	0.429	280	0.406	316	0.301	352	0.166
29	0.053	65	0.036	101	0.025	137	0.132	173	0.256	209	0.382	245	0.429	281	0.404	317	0.297	353	0.163
30	0.050	66	0.036	102	0.027	138	0.135	174	0.260	210	0.384	246	0.429	282	0.402	318	0.293	354	0.160
31	0.047	67	0.037	103	0.030	139	0.138	175	0.264	211	0.386	247	0.429	283	0.400	319	0.289	355	0.157
32	0.045	68	0.037	104	0.033	140	0.141	176	0.268	212	0.389	248	0.429	284	0.398	320	0.285	356	0.154
33	0.042	69	0.037	105	0.035	141	0.144	177	0.272	213	0.391	249	0.430	285	0.396	321	0.281	357	0.150
34	0.039	70	0.037	106	0.038	142	0.147	178	0.276	214	0.393	250	0.430	286	0.394	322	0.277	358	0.147
35	0.036	71	0.037	107	0.041	143	0.151	179	0.280	215	0.395	251	0.430	287	0.392	323	0.273	359	0.144



AZIMUTH PATTERN
Vertical Polarization

In Free Space

Proposal No.	**C-70980-2**
Date	**23-Oct-17**
Call Letters	**WCWJ**
Channel	**20**
Frequency	**509 MHz**
Antenna Type	**TFU-24WB/VP-R C160 SP**
Gain	**2.64 (4.21dB)**
	Calculated

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.138	36	0.031	72	0.036	108	0.042	144	0.150	180	0.280	216	0.392	252	0.421	288	0.384	324	0.265
1	0.135	37	0.029	73	0.035	109	0.045	145	0.153	181	0.284	217	0.393	253	0.421	289	0.382	325	0.261
2	0.132	38	0.026	74	0.035	110	0.048	146	0.156	182	0.287	218	0.395	254	0.421	290	0.379	326	0.257
3	0.129	39	0.024	75	0.034	111	0.051	147	0.160	183	0.291	219	0.397	255	0.421	291	0.377	327	0.253
4	0.126	40	0.022	76	0.034	112	0.054	148	0.163	184	0.295	220	0.399	256	0.420	292	0.375	328	0.249
5	0.123	41	0.020	77	0.033	113	0.057	149	0.166	185	0.299	221	0.400	257	0.420	293	0.372	329	0.246
6	0.120	42	0.018	78	0.032	114	0.060	150	0.169	186	0.303	222	0.402	258	0.420	294	0.369	330	0.242
7	0.117	43	0.016	79	0.031	115	0.063	151	0.172	187	0.307	223	0.403	259	0.419	295	0.367	331	0.238
8	0.114	44	0.015	80	0.030	116	0.066	152	0.176	188	0.310	224	0.405	260	0.419	296	0.364	332	0.234
9	0.111	45	0.014	81	0.029	117	0.069	153	0.179	189	0.314	225	0.406	261	0.418	297	0.361	333	0.230
10	0.108	46	0.014	82	0.028	118	0.073	154	0.182	190	0.318	226	0.407	262	0.418	298	0.358	334	0.226
11	0.105	47	0.014	83	0.026	119	0.076	155	0.186	191	0.321	227	0.408	263	0.417	299	0.355	335	0.222
12	0.102	48	0.015	84	0.025	120	0.079	156	0.189	192	0.325	228	0.410	264	0.417	300	0.352	336	0.219
13	0.099	49	0.016	85	0.023	121	0.082	157	0.192	193	0.328	229	0.411	265	0.416	301	0.349	337	0.215
14	0.096	50	0.017	86	0.022	122	0.085	158	0.196	194	0.332	230	0.412	266	0.415	302	0.346	338	0.211
15	0.093	51	0.018	87	0.020	123	0.088	159	0.199	195	0.335	231	0.413	267	0.415	303	0.343	339	0.207
16	0.090	52	0.019	88	0.019	124	0.091	160	0.203	196	0.339	232	0.414	268	0.414	304	0.340	340	0.204
17	0.087	53	0.021	89	0.017	125	0.094	161	0.207	197	0.342	233	0.414	269	0.413	305	0.336	341	0.200
18	0.084	54	0.022	90	0.016	126	0.097	162	0.210	198	0.345	234	0.415	270	0.412	306	0.333	342	0.197
19	0.081	55	0.024	91	0.014	127	0.100	163	0.214	199	0.348	235	0.416	271	0.411	307	0.329	343	0.193
20	0.078	56	0.025	92	0.013	128	0.103	164	0.218	200	0.351	236	0.417	272	0.410	308	0.326	344	0.189
21	0.075	57	0.027	93	0.012	129	0.106	165	0.221	201	0.354	237	0.417	273	0.409	309	0.322	345	0.186
22	0.072	58	0.028	94	0.012	130	0.109	166	0.225	202	0.357	238	0.418	274	0.407	310	0.319	346	0.183
23	0.069	59	0.029	95	0.012	131	0.112	167	0.229	203	0.360	239	0.418	275	0.406	311	0.315	347	0.179
24	0.066	60	0.030	96	0.013	132	0.115	168	0.233	204	0.363	240	0.419	276	0.405	312	0.311	348	0.176
25	0.063	61	0.031	97	0.014	133	0.118	169	0.237	205	0.366	241	0.419	277	0.404	313	0.308	349	0.172
26	0.060	62	0.032	98	0.016	134	0.121	170	0.240	206	0.369	242	0.420	278	0.402	314	0.304	350	0.169
27	0.057	63	0.033	99	0.018	135	0.123	171	0.244	207	0.371	243	0.420	279	0.401	315	0.300	351	0.166
28	0.054	64	0.034	100	0.020	136	0.126	172	0.248	208	0.374	244	0.420	280	0.399	316	0.296	352	0.163
29	0.051	65	0.034	101	0.022	137	0.129	173	0.252	209	0.376	245	0.421	281	0.397	317	0.292	353	0.159
30	0.048	66	0.035	102	0.025	138	0.132	174	0.256	210	0.379	246	0.421	282	0.396	318	0.289	354	0.156
31	0.046	67	0.035	103	0.028	139	0.135	175	0.260	211	0.381	247	0.421	283	0.394	319	0.285	355	0.153
32	0.043	68	0.036	104	0.030	140	0.138	176	0.264	212	0.383	248	0.421	284	0.392	320	0.281	356	0.150
33	0.040	69	0.036	105	0.033	141	0.141	177	0.268	213	0.385	249	0.421	285	0.390	321	0.277	357	0.147
34	0.037	70	0.036	106	0.036	142	0.144	178	0.272	214	0.388	250	0.421	286	0.388	322	0.273	358	0.144
35	0.034	71	0.036	107	0.039	143	0.147	179	0.276	215	0.390	251	0.421	287	0.386	323	0.269	359	0.141

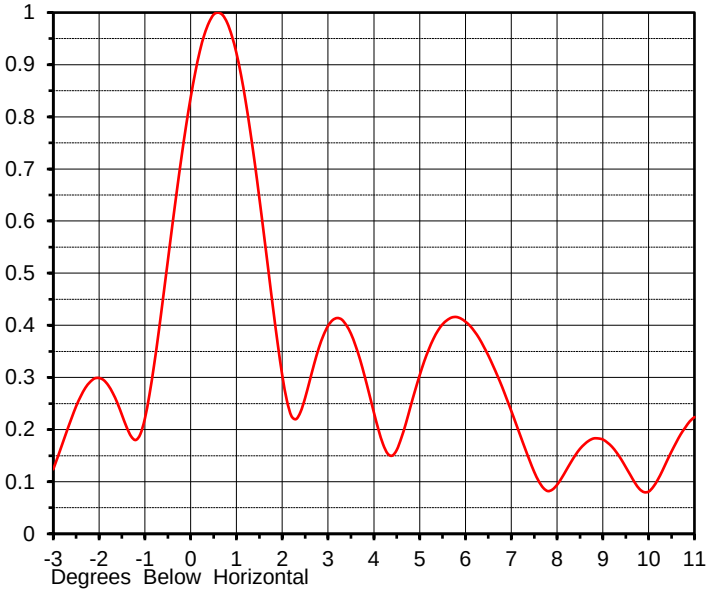
Dielectric®

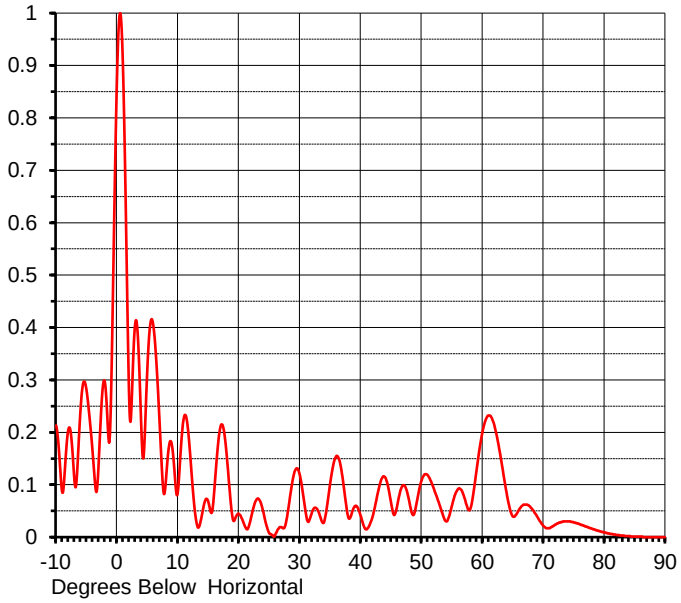
ELEVATION PATTERN

Proposal No.	**C-70980-2**
Date	**23-Oct-17**
Call Letters	**WJXT**
Channel	**42**
Frequency	**641 MHz**
Antenna Type	**TFU-24WB/VP-R C160 SP**

RMS Directivity at Main Lobe	**20.0 (13.01 dB)**	Beam Tilt	**0.50 deg**
RMS Directivity at Horizontal	**15.7 (11.96 dB)**	Pattern Number	**24W200050**

Calculated





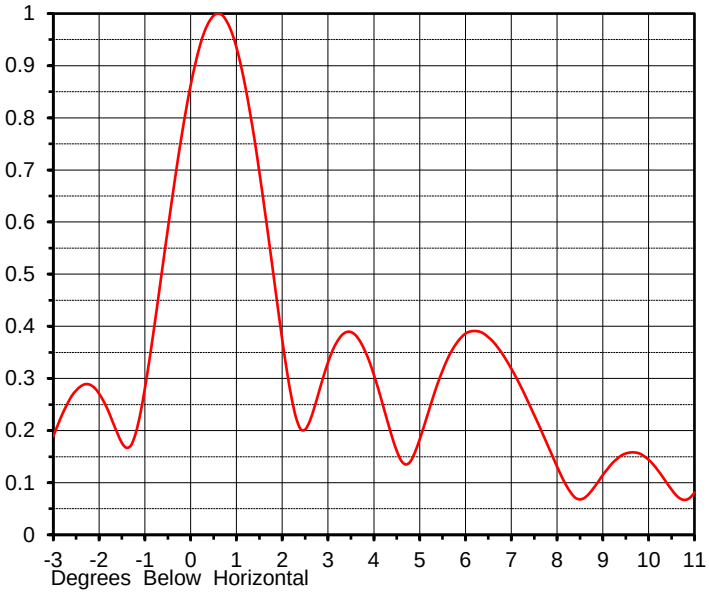
Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.213	10.0	0.090	30.0	0.118	50.0	0.109	70.0	0.021
-9.0	0.085	11.0	0.230	31.0	0.044	51.0	0.118	71.0	0.017
-8.0	0.205	12.0	0.156	32.0	0.048	52.0	0.092	72.0	0.024
-7.0	0.108	13.0	0.030	33.0	0.050	53.0	0.059	73.0	0.029
-6.0	0.244	14.0	0.047	34.0	0.030	54.0	0.030	74.0	0.030
-5.0	0.279	15.0	0.066	35.0	0.105	55.0	0.062	75.0	0.028
-4.0	0.159	16.0	0.096	36.0	0.155	56.0	0.092	76.0	0.024
-3.0	0.148	17.0	0.212	37.0	0.114	57.0	0.075	77.0	0.020
-2.0	0.295	18.0	0.155	38.0	0.036	58.0	0.055	78.0	0.016
-1.0	0.267	19.0	0.034	39.0	0.059	59.0	0.128	79.0	0.012
0.0	0.885	20.0	0.044	40.0	0.040	60.0	0.203	80.0	0.009
1.0	0.880	21.0	0.020	41.0	0.015	61.0	0.232	81.0	0.006
2.0	0.256	22.0	0.038	42.0	0.042	62.0	0.209	82.0	0.004
3.0	0.410	23.0	0.073	43.0	0.095	63.0	0.149	83.0	0.003
4.0	0.200	24.0	0.048	44.0	0.114	64.0	0.079	84.0	0.002
5.0	0.331	25.0	0.007	45.0	0.063	65.0	0.039	85.0	0.001
6.0	0.399	26.0	0.006	46.0	0.062	66.0	0.053	86.0	0.001
7.0	0.212	27.0	0.019	47.0	0.099	67.0	0.062	87.0	0.000
8.0	0.107	28.0	0.047	48.0	0.065	68.0	0.055	88.0	0.000
9.0	0.175	29.0	0.119	49.0	0.056	69.0	0.038	89.0	0.000
								90.0	0.000

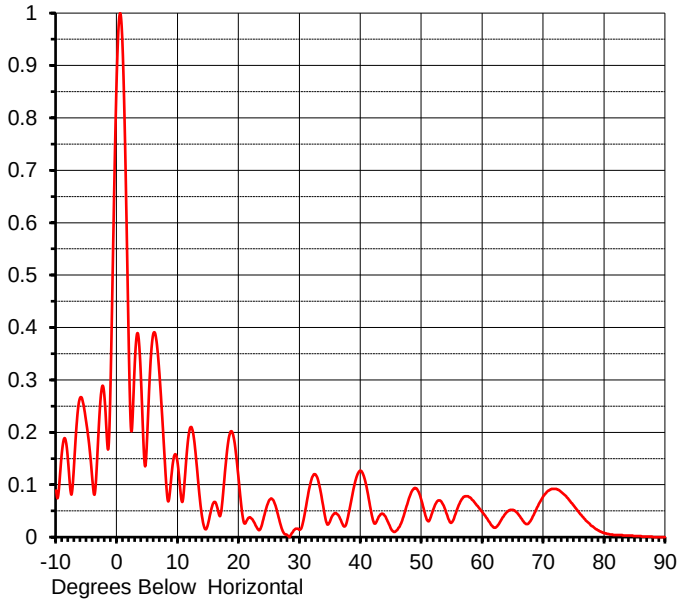
ELEVATION PATTERN

Proposal No.	**C-70980-2**
Date	**23-Oct-17**
Call Letters	**WCWJ**
Channel	**34**
Frequency	**593 MHz**
Antenna Type	**TFU-24WB/VP-R C160 SP**

RMS Directivity at Main Lobe	**21.4 (13.30 dB)**	Beam Tilt	**0.50 deg**
RMS Directivity at Horizontal	**17.4 (12.41 dB)**	Pattern Number	**24W214050**

Calculated





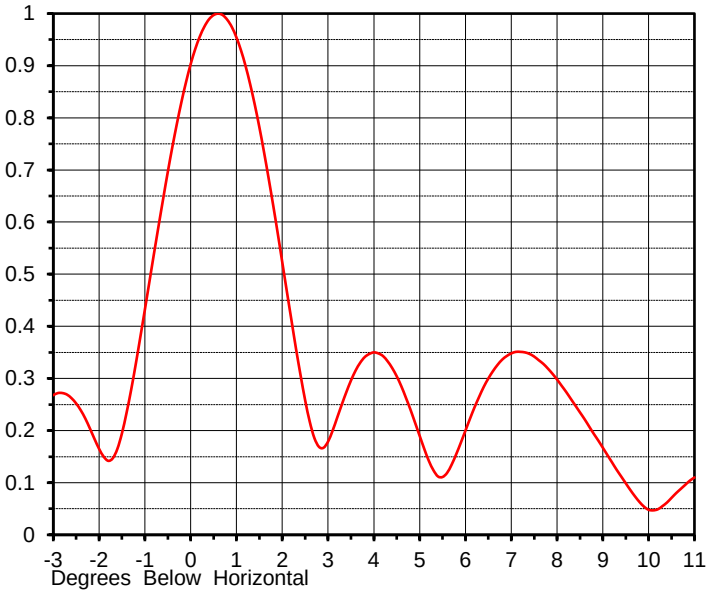
Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.089	10.0	0.135	30.0	0.014	50.0	0.068	70.0	0.079
-9.0	0.168	11.0	0.095	31.0	0.058	51.0	0.031	71.0	0.090
-8.0	0.138	12.0	0.209	32.0	0.114	52.0	0.056	72.0	0.092
-7.0	0.151	13.0	0.145	33.0	0.108	53.0	0.070	73.0	0.085
-6.0	0.267	14.0	0.035	34.0	0.047	54.0	0.047	74.0	0.074
-5.0	0.214	15.0	0.029	35.0	0.032	55.0	0.029	75.0	0.059
-4.0	0.102	16.0	0.067	36.0	0.045	56.0	0.059	76.0	0.044
-3.0	0.211	17.0	0.044	37.0	0.025	57.0	0.077	77.0	0.031
-2.0	0.256	18.0	0.160	38.0	0.045	58.0	0.075	78.0	0.021
-1.0	0.336	19.0	0.197	39.0	0.102	59.0	0.061	79.0	0.013
0.0	0.903	20.0	0.104	40.0	0.126	60.0	0.047	80.0	0.008
1.0	0.899	21.0	0.026	41.0	0.092	61.0	0.030	81.0	0.005
2.0	0.315	22.0	0.036	42.0	0.032	62.0	0.018	82.0	0.004
3.0	0.354	23.0	0.017	43.0	0.040	63.0	0.032	83.0	0.003
4.0	0.279	24.0	0.034	44.0	0.040	64.0	0.048	84.0	0.003
5.0	0.210	25.0	0.071	45.0	0.015	65.0	0.052	85.0	0.002
6.0	0.390	26.0	0.060	46.0	0.014	66.0	0.041	86.0	0.002
7.0	0.303	27.0	0.017	47.0	0.039	67.0	0.026	87.0	0.001
8.0	0.112	28.0	0.003	48.0	0.077	68.0	0.034	88.0	0.000
9.0	0.126	29.0	0.013	49.0	0.093	69.0	0.058	89.0	0.000
								90.0	0.000

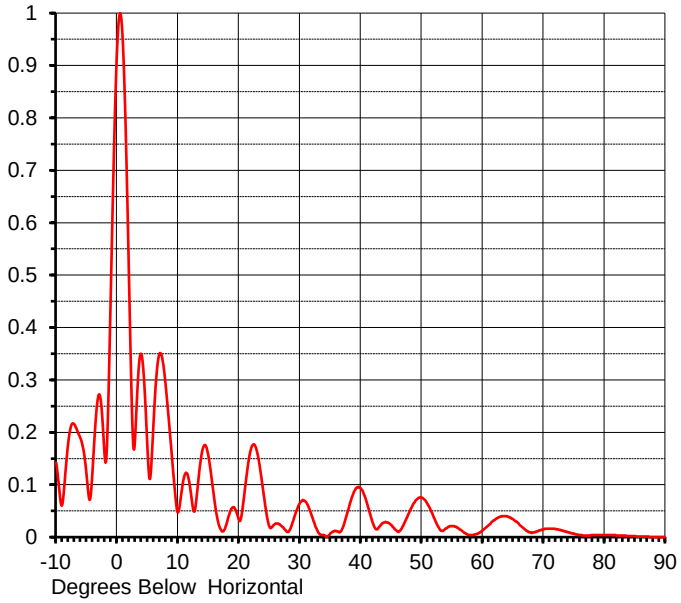
ELEVATION PATTERN

Proposal No.	**C-70980-2**
Date	**23-Oct-17**
Call Letters	**WJXT**
Channel	**18**
Frequency	**497 MHz**
Antenna Type	**TFU-24WB/VP-R C160 SP**

RMS Directivity at Main Lobe	**21.0 (13.22 dB)**	Beam Tilt	**0.50 deg**
RMS Directivity at Horizontal	**18.2 (12.60 dB)**	Pattern Number	**24W210050**

Calculated





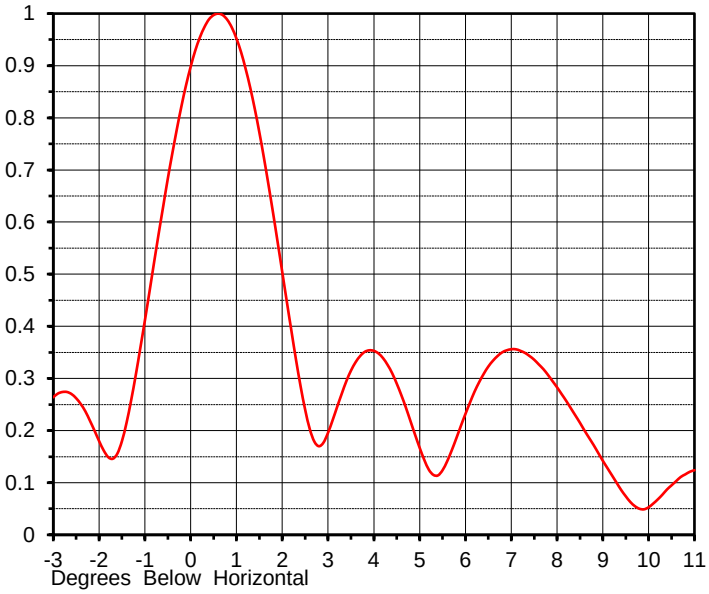
Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.142	10.0	0.047	30.0	0.065	50.0	0.075	70.0	0.015
-9.0	0.062	11.0	0.115	31.0	0.067	51.0	0.062	71.0	0.016
-8.0	0.182	12.0	0.093	32.0	0.039	52.0	0.037	72.0	0.015
-7.0	0.215	13.0	0.071	33.0	0.009	53.0	0.014	73.0	0.013
-6.0	0.188	14.0	0.166	34.0	0.003	54.0	0.017	74.0	0.009
-5.0	0.117	15.0	0.154	35.0	0.007	55.0	0.021	75.0	0.006
-4.0	0.133	16.0	0.068	36.0	0.011	56.0	0.017	76.0	0.004
-3.0	0.272	17.0	0.015	37.0	0.017	57.0	0.008	77.0	0.003
-2.0	0.150	18.0	0.027	38.0	0.055	58.0	0.004	78.0	0.004
-1.0	0.486	19.0	0.057	39.0	0.089	59.0	0.006	79.0	0.004
0.0	0.932	20.0	0.033	40.0	0.093	60.0	0.013	80.0	0.004
1.0	0.929	21.0	0.094	41.0	0.065	61.0	0.023	81.0	0.004
2.0	0.467	22.0	0.169	42.0	0.026	62.0	0.033	82.0	0.003
3.0	0.200	23.0	0.161	43.0	0.019	63.0	0.039	83.0	0.003
4.0	0.348	24.0	0.086	44.0	0.029	64.0	0.040	84.0	0.002
5.0	0.165	25.0	0.020	45.0	0.023	65.0	0.034	85.0	0.002
6.0	0.223	26.0	0.026	46.0	0.011	66.0	0.024	86.0	0.001
7.0	0.351	27.0	0.021	47.0	0.023	67.0	0.014	87.0	0.001
8.0	0.286	28.0	0.010	48.0	0.049	68.0	0.008	88.0	0.000
9.0	0.153	29.0	0.035	49.0	0.070	69.0	0.011	89.0	0.000
								90.0	0.000

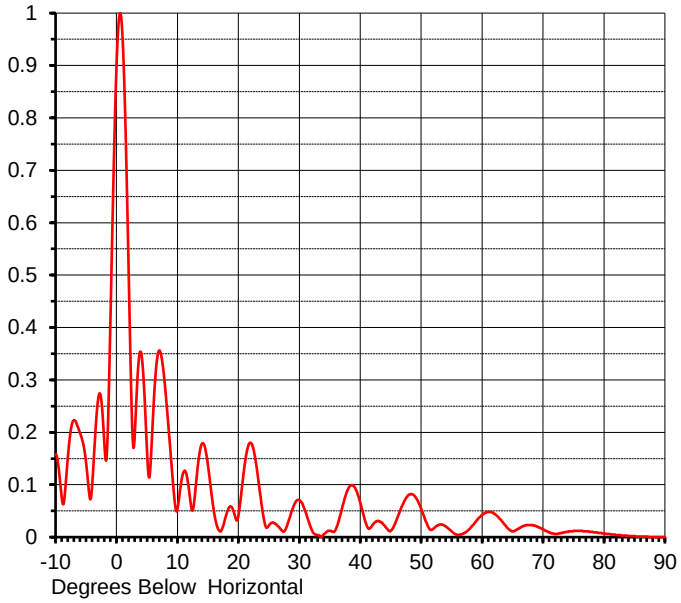
ELEVATION PATTERN

Proposal No.	**C-70980-2**
Date	**23-Oct-17**
Call Letters	**WCWJ**
Channel	**20**
Frequency	**509 MHz**
Antenna Type	**TFU-24WB/VP-R C160 SP**

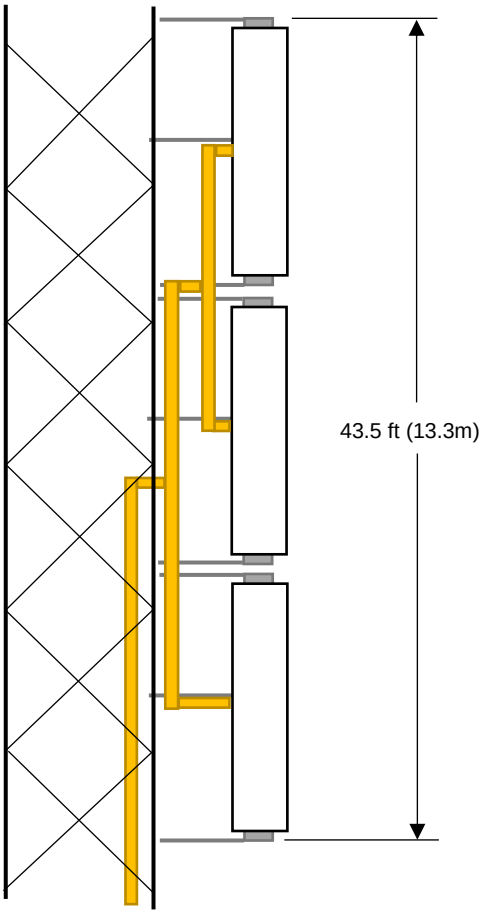
RMS Directivity at Main Lobe	**21.2 (13.26 dB)**	Beam Tilt	**0.50 deg**
RMS Directivity at Horizontal	**18.3 (12.62 dB)**	Pattern Number	**24W212050**

Calculated





Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.158	10.0	0.060	30.0	0.070	50.0	0.051	70.0	0.014
-9.0	0.068	11.0	0.126	31.0	0.046	51.0	0.021	71.0	0.009
-8.0	0.163	12.0	0.071	32.0	0.013	52.0	0.017	72.0	0.006
-7.0	0.223	13.0	0.108	33.0	0.004	53.0	0.024	73.0	0.008
-6.0	0.196	14.0	0.179	34.0	0.006	54.0	0.020	74.0	0.010
-5.0	0.132	15.0	0.129	35.0	0.012	55.0	0.010	75.0	0.012
-4.0	0.115	16.0	0.041	36.0	0.018	56.0	0.004	76.0	0.012
-3.0	0.271	17.0	0.011	37.0	0.059	57.0	0.008	77.0	0.011
-2.0	0.162	18.0	0.046	38.0	0.094	58.0	0.018	78.0	0.010
-1.0	0.466	19.0	0.053	39.0	0.095	59.0	0.032	79.0	0.008
0.0	0.929	20.0	0.048	40.0	0.062	60.0	0.043	80.0	0.007
1.0	0.926	21.0	0.143	41.0	0.021	61.0	0.048	81.0	0.005
2.0	0.447	22.0	0.179	42.0	0.024	62.0	0.044	82.0	0.004
3.0	0.220	23.0	0.125	43.0	0.030	63.0	0.033	83.0	0.003
4.0	0.348	24.0	0.040	44.0	0.020	64.0	0.018	84.0	0.002
5.0	0.144	25.0	0.024	45.0	0.013	65.0	0.011	85.0	0.002
6.0	0.254	26.0	0.025	46.0	0.037	66.0	0.017	86.0	0.001
7.0	0.356	27.0	0.013	47.0	0.065	67.0	0.022	87.0	0.001
8.0	0.270	28.0	0.026	48.0	0.081	68.0	0.023	88.0	0.000
9.0	0.128	29.0	0.060	49.0	0.076	69.0	0.020	89.0	0.000
								90.0	0.000



MECHANICAL SPECIFICATIONS

Proposal No.	**C-70980-2**
Date	**23-Oct-17**
Call Letters	**WJXT**
Channel	**42**
Frequency	**641 MHz**
Antenna Type	**TFU-24WB/VP-R C160 SP**

Preliminary Specifications

Side Mounted

Without ice TIA-222-G

Height AGL(z)	900 ft (274.3 m)
Basic Wind Speed	98.4 m/h (158.4 km/h)
Structure Class	II
Exposure Category	C
Topography Category	1

Mechanical Specifications

Height	H2	46.4 ft (14.1m)
Height of Center of Radiation	H3	23.7 ft (7.2m)
Effective Projected Area	$(EPA)_A$	87 ft² (8.1m²)
Weight	W	2650 lb (1.2t)

Antenna designed in accordance with AISC specifications for design of structural steel as prescribed by TIA-222-G

Prepared by:	CAB	**Date:**	23-Aug-17	**ME:**	**EE:**
Rev. No.2 by:	CAB	**Date:**	23-Oct-17		

Summary

Proposal No.	**C-70980-2**
Date	**23-Oct-17**
Call Letters	**WJXT**
Channel	**42**
Frequency	**641 MHz**
Antenna Type	**TFU-24WB/VP-R C160 SP**

Antenna

	Hpol		Vpol	
ERP:	**1,000 kW**	**(30.00 dBk)**	**75.3 kW**	**(18.77 dBk)**
Peak Gain*	31.72	(15.01 dB)	2.39	(3.78 dB)

Antenna Input Power

31.5 kW **(14.99 dBk)**

Transmission Line

Type:	**Rigid**	Attenuation:		**(1.10 dB)**
Size:	**7-3/16"**	Efficiency:	**77.7%**	
Impedance:	**75 Ohm**			
Length:	**1025 ft**	**312.4 m**		

Transmitter Output

40.6 kW **(16.08 dBk)**

Transmitter filter losses not included

* Directivity and Gain are with respect to half wave dipole. The gain includes feed system losses

Summary

Proposal No.	**C-70980-2**
Date	**23-Oct-17**
Call Letters	**WCWJ**
Channel	**34**
Frequency	**593 MHz**
Antenna Type	**TFU-24WB/VP-R C160 SP**

Antenna

	Hpol		Vpol	
ERP:	**863 kW**	**(29.36 dBk)**	**85.4 kW**	**(19.31 dBk)**
Peak Gain*	33.87	(15.30 dB)	3.35	(5.25 dB)

Antenna Input Power

25.5 kW (14.06 dBk)

Transmission Line

Type:	**Rigid**	Attenuation:	**(1.05 dB)**
Size:	**7-3/16"**	Efficiency:	**78.5%**
Impedance:	**75 Ohm**		
Length:	**1025 ft**	**312.4 m**	

Transmitter Output

32.4 kW (15.11 dBk)

Transmitter filter losses not included

* Directivity and Gain are with respect to half wave dipole. The gain includes feed system losses

Summary

Proposal No.	**C-70980-2**
Date	**23-Oct-17**
Call Letters	**WJXT**
Channel	**18**
Frequency	**497 MHz**
Antenna Type	**TFU-24WB/VP-R C160 SP**

Antenna

	Hpol		Vpol	
ERP:	**670 kW**	**(28.26 dBk)**	**200 kW**	**(23.01 dBk)**
Peak Gain*	26.95	(14.31 dB)	8.05	(9.06 dB)

Antenna Input Power

24.9 kW **(13.95 dBk)**

Transmission Line

Type:	**Rigid**	Attenuation:		**(0.95 dB)**
Size:	**7-3/16"**	Efficiency:	**80.4%**	
Impedance:	**75 Ohm**			
Length:	**1025 ft**	**312.4 m**		

Transmitter Output

30.9 kW **(14.90 dBk)**

Transmitter filter losses not included

* Directivity and Gain are with respect to half wave dipole. The gain includes feed system losses

Summary

Proposal No.	**C-70980-2**
Date	**23-Oct-17**
Call Letters	**WCWJ**
Channel	**20**
Frequency	**509 MHz**
Antenna Type	**TFU-24WB/VP-R C160 SP**

Antenna

	Hpol		Vpol	
ERP:	**970 kW**	**(29.87 dBk)**	**243 kW**	**(23.85 dBk)**
Peak Gain*	27.78	(14.44 dB)	6.94	(8.42 dB)

Antenna Input Power

34.9 kW **(15.43 dBk)**

Transmission Line

Type:	**Rigid**	Attenuation:	**(0.96 dB)**
Size:	**7-3/16"**	Efficiency:	**80.1%**
Impedance:	**75 Ohm**		
Length:	**1025 ft**	**312.4 m**	

Transmitter Output

43.6 kW **(16.39 dBk)**

Transmitter filter losses not included

* Directivity and Gain are with respect to half wave dipole. The gain includes feed system losses