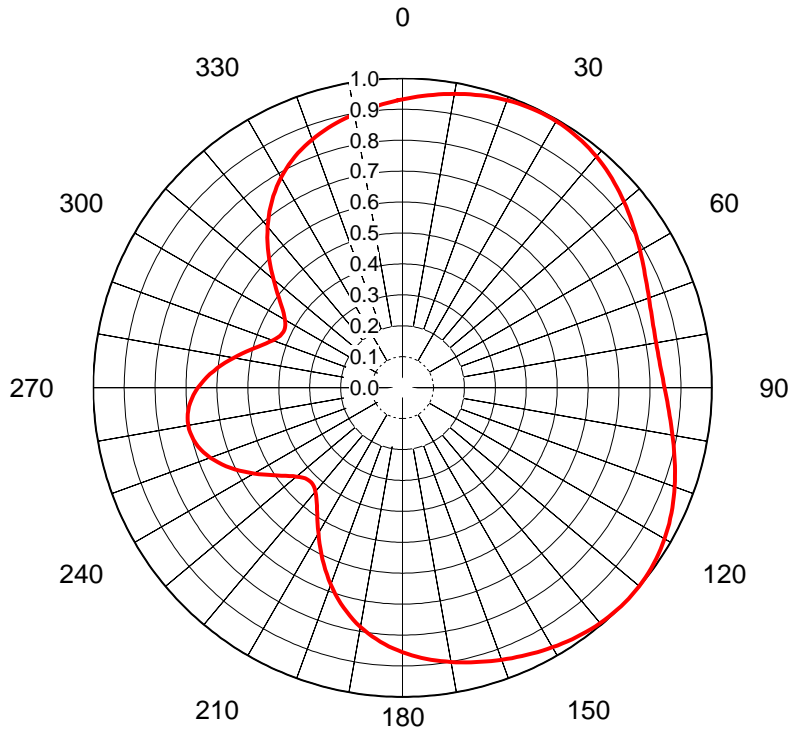


AZIMUTH PATTERN Horizontal Polarization

Proposal No. **WCWN Aux**
Date **13-Oct-23**
Call Letters **WCWN**
Channel **22**
Frequency **521 MHz**
Antenna Type **TFU-16WB/VP-R C160**
Gain **1.53 (1.85dB)**
Calculated

Pattern Number **WB-C160-22 Hpol**



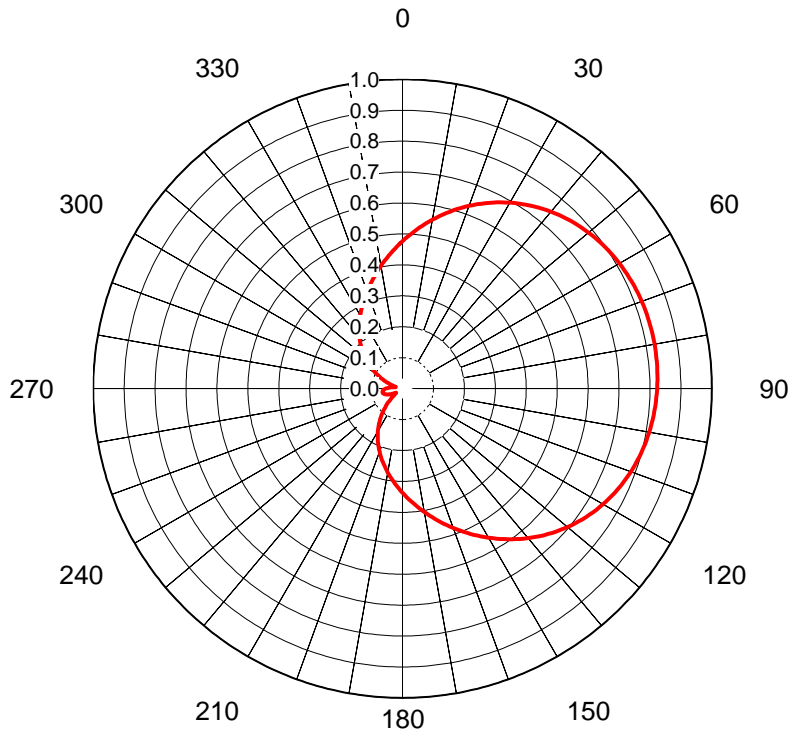
Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.932	36	0.986	72	0.843	108	0.926	144	0.986	180	0.856	216	0.471	252	0.676	288	0.464	324	0.726
1	0.936	37	0.984	73	0.840	109	0.931	145	0.983	181	0.850	217	0.462	253	0.683	289	0.455	325	0.737
2	0.939	38	0.981	74	0.838	110	0.936	146	0.981	182	0.844	218	0.453	254	0.688	290	0.447	326	0.747
3	0.942	39	0.978	75	0.837	111	0.941	147	0.978	183	0.838	219	0.445	255	0.693	291	0.440	327	0.757
4	0.945	40	0.975	76	0.835	112	0.946	148	0.975	184	0.831	220	0.439	256	0.697	292	0.434	328	0.767
5	0.949	41	0.972	77	0.834	113	0.950	149	0.972	185	0.825	221	0.433	257	0.700	293	0.430	329	0.776
6	0.952	42	0.969	78	0.833	114	0.955	150	0.969	186	0.818	222	0.429	258	0.702	294	0.427	330	0.785
7	0.955	43	0.965	79	0.833	115	0.959	151	0.966	187	0.810	223	0.427	259	0.703	295	0.425	331	0.793
8	0.958	44	0.961	80	0.833	116	0.963	152	0.963	188	0.802	224	0.425	260	0.703	296	0.425	332	0.801
9	0.961	45	0.957	81	0.833	117	0.967	153	0.960	189	0.794	225	0.426	261	0.703	297	0.427	333	0.809
10	0.964	46	0.953	82	0.833	118	0.971	154	0.957	190	0.785	226	0.427	262	0.702	298	0.429	334	0.817
11	0.967	47	0.949	83	0.834	119	0.975	155	0.953	191	0.776	227	0.430	263	0.700	299	0.433	335	0.824
12	0.970	48	0.944	84	0.835	120	0.978	156	0.950	192	0.767	228	0.435	264	0.697	300	0.439	336	0.830
13	0.973	49	0.940	85	0.836	121	0.982	157	0.947	193	0.757	229	0.441	265	0.693	301	0.445	337	0.837
14	0.976	50	0.935	86	0.838	122	0.984	158	0.943	194	0.747	230	0.447	266	0.688	302	0.453	338	0.843
15	0.978	51	0.930	87	0.840	123	0.987	159	0.940	195	0.736	231	0.455	267	0.682	303	0.462	339	0.848
16	0.981	52	0.925	88	0.842	124	0.990	160	0.936	196	0.725	232	0.464	268	0.676	304	0.472	340	0.854
17	0.983	53	0.921	89	0.845	125	0.992	161	0.933	197	0.714	233	0.474	269	0.669	305	0.483	341	0.859
18	0.985	54	0.916	90	0.847	126	0.994	162	0.930	198	0.702	234	0.484	270	0.661	306	0.494	342	0.864
19	0.987	55	0.911	91	0.850	127	0.995	163	0.926	199	0.690	235	0.495	271	0.653	307	0.506	343	0.869
20	0.989	56	0.906	92	0.854	128	0.997	164	0.923	200	0.678	236	0.507	272	0.644	308	0.519	344	0.873
21	0.990	57	0.901	93	0.857	129	0.998	165	0.919	201	0.665	237	0.518	273	0.634	309	0.532	345	0.878
22	0.992	58	0.896	94	0.861	130	0.999	166	0.915	202	0.652	238	0.531	274	0.624	310	0.545	346	0.882
23	0.993	59	0.891	95	0.865	131	1.000	167	0.912	203	0.639	239	0.543	275	0.613	311	0.558	347	0.886
24	0.994	60	0.887	96	0.869	132	1.000	168	0.908	204	0.626	240	0.555	276	0.602	312	0.572	348	0.890
25	0.994	61	0.882	97	0.873	133	1.000	169	0.904	205	0.612	241	0.567	277	0.591	313	0.586	349	0.894
26	0.995	62	0.878	98	0.877	134	1.000	170	0.901	206	0.599	242	0.579	278	0.579	314	0.599	350	0.897
27	0.995	63	0.873	99	0.882	135	0.999	171	0.897	207	0.585	243	0.591	279	0.567	315	0.613	351	0.901
28	0.995	64	0.869	100	0.887	136	0.999	172	0.893	208	0.571	244	0.602	280	0.555	316	0.627	352	0.905
29	0.995	65	0.865	101	0.891	137	0.998	173	0.889	209	0.558	245	0.614	281	0.542	317	0.640	353	0.908
30	0.994	66	0.861	102	0.896	138	0.997	174	0.885	210	0.544	246	0.624	282	0.530	318	0.653	354	0.912
31	0.994	67	0.858	103	0.901	139	0.995	175	0.880	211	0.531	247	0.634	283	0.518	319	0.666	355	0.915
32	0.993	68	0.854	104	0.906	140	0.994	176	0.876	212	0.518	248	0.644	284	0.506	320	0.679	356	0.919
33	0.991	69	0.851	105	0.911	141	0.992	177	0.871	213	0.505	249	0.653	285	0.495	321	0.691	357	0.922
34	0.990	70	0.848	106	0.916	142	0.990	178	0.866	214	0.493	250	0.662	286	0.484	322	0.703	358	0.925
35	0.988	71	0.845	107	0.921	143	0.988	179	0.861	215	0.482	251	0.669	287	0.473	323	0.714	359	0.929

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AZIMUTH PATTERN Vertical Polarization

Proposal No. **WCWN Aux**
Date **13-Oct-23**
Call Letters **WCWN**
Channel **22**
Frequency **521 MHz**
Antenna Type **TFU-16WB/VP-R C160**
Gain **2.62 (4.18dB)**
Calculated

Pattern Number **WB-C160-22 Vpol**



Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.477	36	0.727	72	0.825	108	0.791	144	0.602	180	0.337	216	0.123	252	0.059	288	0.034	324	0.239
1	0.485	37	0.733	73	0.825	109	0.789	145	0.595	181	0.330	217	0.117	253	0.060	289	0.039	325	0.245
2	0.492	38	0.737	74	0.826	110	0.786	146	0.587	182	0.324	218	0.111	254	0.062	290	0.044	326	0.251
3	0.500	39	0.742	75	0.826	111	0.782	147	0.580	183	0.318	219	0.105	255	0.063	291	0.049	327	0.256
4	0.508	40	0.747	76	0.827	112	0.779	148	0.572	184	0.311	220	0.099	256	0.064	292	0.054	328	0.262
5	0.516	41	0.751	77	0.827	113	0.776	149	0.564	185	0.305	221	0.094	257	0.065	293	0.059	329	0.268
6	0.523	42	0.756	78	0.827	114	0.772	150	0.557	186	0.299	222	0.088	258	0.065	294	0.065	330	0.274
7	0.531	43	0.760	79	0.827	115	0.769	151	0.549	187	0.293	223	0.082	259	0.066	295	0.070	331	0.280
8	0.539	44	0.764	80	0.827	116	0.765	152	0.541	188	0.287	224	0.076	260	0.066	296	0.076	332	0.286
9	0.547	45	0.768	81	0.827	117	0.761	153	0.534	189	0.281	225	0.071	261	0.066	297	0.082	333	0.291
10	0.554	46	0.771	82	0.827	118	0.757	154	0.526	190	0.275	226	0.065	262	0.065	298	0.087	334	0.297
11	0.562	47	0.775	83	0.827	119	0.753	155	0.518	191	0.269	227	0.060	263	0.065	299	0.093	335	0.304
12	0.570	48	0.778	84	0.827	120	0.748	156	0.510	192	0.263	228	0.054	264	0.064	300	0.099	336	0.310
13	0.577	49	0.782	85	0.826	121	0.744	157	0.503	193	0.257	229	0.049	265	0.063	301	0.105	337	0.316
14	0.585	50	0.785	86	0.826	122	0.739	158	0.495	194	0.252	230	0.044	266	0.061	302	0.111	338	0.322
15	0.592	51	0.788	87	0.825	123	0.734	159	0.487	195	0.246	231	0.040	267	0.060	303	0.117	339	0.328
16	0.600	52	0.791	88	0.825	124	0.729	160	0.479	196	0.240	232	0.036	268	0.058	304	0.123	340	0.335
17	0.607	53	0.794	89	0.824	125	0.724	161	0.472	197	0.234	233	0.032	269	0.056	305	0.129	341	0.341
18	0.614	54	0.796	90	0.823	126	0.719	162	0.464	198	0.229	234	0.029	270	0.054	306	0.135	342	0.348
19	0.622	55	0.799	91	0.822	127	0.713	163	0.457	199	0.223	235	0.026	271	0.052	307	0.141	343	0.354
20	0.629	56	0.801	92	0.821	128	0.708	164	0.449	200	0.217	236	0.025	272	0.049	308	0.147	344	0.361
21	0.636	57	0.804	93	0.820	129	0.702	165	0.442	201	0.211	237	0.025	273	0.046	309	0.153	345	0.368
22	0.643	58	0.806	94	0.819	130	0.696	166	0.434	202	0.206	238	0.025	274	0.044	310	0.159	346	0.374
23	0.650	59	0.808	95	0.818	131	0.690	167	0.427	203	0.200	239	0.027	275	0.041	311	0.165	347	0.381
24	0.656	60	0.810	96	0.816	132	0.684	168	0.419	204	0.194	240	0.028	276	0.038	312	0.170	348	0.388
25	0.663	61	0.812	97	0.815	133	0.678	169	0.412	205	0.188	241	0.031	277	0.035	313	0.176	349	0.395
26	0.669	62	0.813	98	0.813	134	0.671	170	0.405	206	0.182	242	0.034	278	0.032	314	0.182	350	0.402
27	0.676	63	0.815	99	0.812	135	0.665	171	0.398	207	0.177	243	0.036	279	0.029	315	0.188	351	0.410
28	0.682	64	0.816	100	0.810	136	0.658	172	0.391	208	0.171	244	0.039	280	0.026	316	0.194	352	0.417
29	0.688	65	0.818	101	0.808	137	0.652	173	0.384	209	0.165	245	0.042	281	0.024	317	0.199	353	0.424
30	0.694	66	0.819	102	0.806	138	0.645	174	0.377	210	0.159	246	0.045	282	0.023	318	0.205	354	0.432
31	0.700	67	0.820	103	0.804	139	0.638	175	0.370	211	0.153	247	0.048	283	0.022	319	0.211	355	0.439
32	0.706	68	0.821	104	0.802	140	0.631	176	0.363	212	0.147	248	0.050	284	0.023	320	0.216	356	0.447
33	0.712	69	0.822	105	0.799	141	0.624	177	0.356	213	0.141	249	0.053	285	0.025	321	0.222	357	0.454
34	0.717	70	0.823	106	0.797	142	0.617	178	0.350	214	0.135	250	0.055	286	0.027	322	0.228	358	0.462
35	0.722	71	0.824	107	0.794	143	0.609	179	0.343	215	0.129	251	0.057	287	0.030	323	0.234	359	0.469

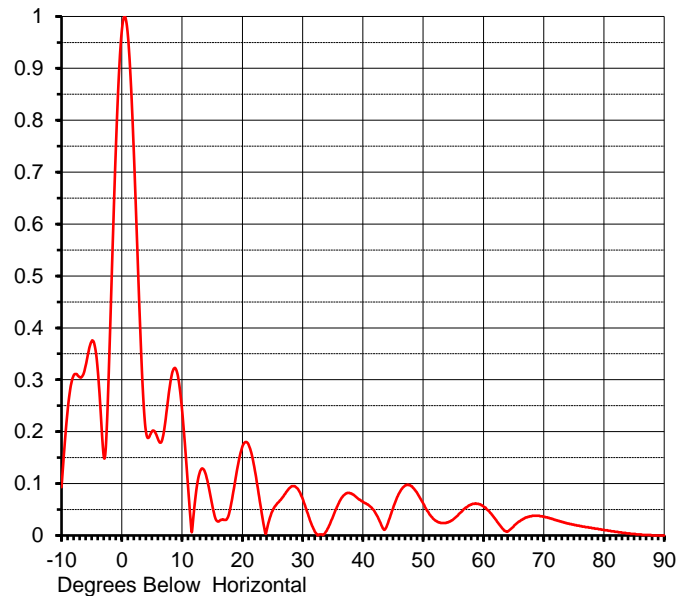
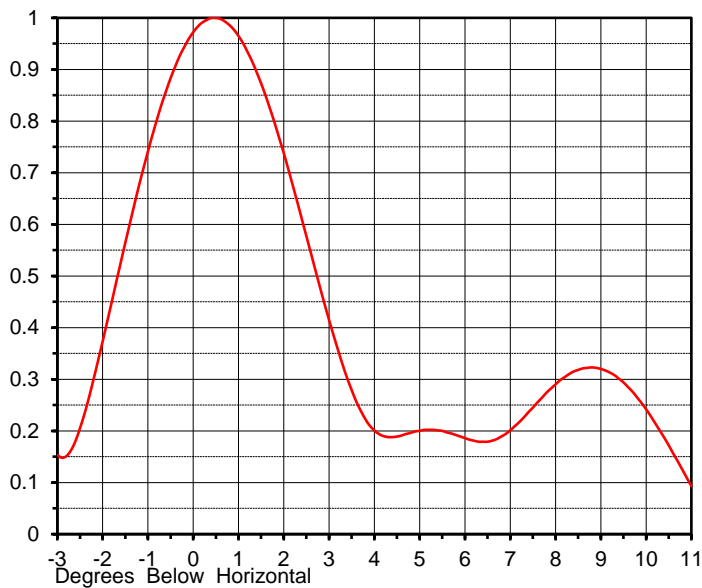
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ELEVATION PATTERN

Proposal No. **WCWN Aux**
 Date **13-Oct-23**
 Call Letters **WCWN**
 Channel **22**
 Frequency **521 MHz**
 Antenna Type **TFU-16WB/VP-R C160**

RMS Directivity at Main Lobe **14.3 (11.55 dB)**
 RMS Directivity at Horizontal **13.5 (11.30 dB)**
Calculated

Beam Tilt **0.55 deg**
 Pattern Number **16W143055-22**



Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.093	10.0	0.242	30.0	0.071	50.0	0.062	70.0	0.036
-9.0	0.239	11.0	0.093	31.0	0.037	51.0	0.042	71.0	0.033
-8.0	0.308	12.0	0.050	32.0	0.008	52.0	0.029	72.0	0.030
-7.0	0.305	13.0	0.124	33.0	0.002	53.0	0.024	73.0	0.026
-6.0	0.327	14.0	0.115	34.0	0.009	54.0	0.025	74.0	0.023
-5.0	0.374	15.0	0.059	35.0	0.035	55.0	0.031	75.0	0.021
-4.0	0.320	16.0	0.027	36.0	0.062	56.0	0.042	76.0	0.018
-3.0	0.153	17.0	0.030	37.0	0.079	57.0	0.053	77.0	0.016
-2.0	0.373	18.0	0.052	38.0	0.081	58.0	0.060	78.0	0.014
-1.0	0.741	19.0	0.118	39.0	0.073	59.0	0.061	79.0	0.013
0.0	0.972	20.0	0.171	40.0	0.065	60.0	0.056	80.0	0.011
1.0	0.965	21.0	0.176	41.0	0.058	61.0	0.046	81.0	0.009
2.0	0.738	22.0	0.131	42.0	0.045	62.0	0.031	82.0	0.007
3.0	0.415	23.0	0.059	43.0	0.022	63.0	0.016	83.0	0.005
4.0	0.201	24.0	0.008	44.0	0.019	64.0	0.008	84.0	0.004
5.0	0.200	25.0	0.047	45.0	0.052	65.0	0.017	85.0	0.003
6.0	0.186	26.0	0.064	46.0	0.081	66.0	0.027	86.0	0.002
7.0	0.201	27.0	0.079	47.0	0.096	67.0	0.034	87.0	0.001
8.0	0.290	28.0	0.093	48.0	0.095	68.0	0.037	88.0	0.000
9.0	0.320	29.0	0.092	49.0	0.082	69.0	0.038	89.0	0.000
								90.0	0.000

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