

## AZIMUTH PATTERN Horizontal Polarization

Proposal No. **C-70308-2**  
Date **27-Feb-17**  
Call Letters **WLS 22**  
Frequency **521 MHz**  
Antenna Type **TFU-15ETT/VP-R S140**

Gain **1.41 (1.48dB)**  
**Calculated**

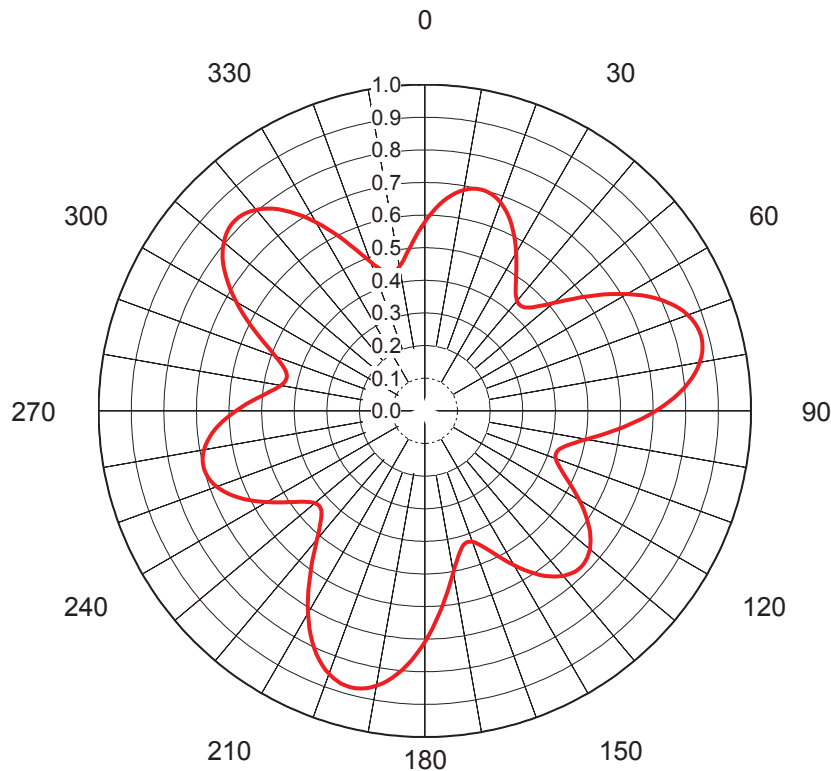
Directional  
Drawing # **WLS\_D22-H**

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.819	36	0.695	72	0.888	108	0.862	144	0.790	180	0.921	216	0.776	252	0.720	288	0.926
1	0.812	37	0.696	73	0.893	109	0.857	145	0.793	181	0.922	217	0.769	253	0.724	289	0.931
2	0.806	38	0.699	74	0.897	110	0.853	146	0.796	182	0.922	218	0.763	254	0.728	290	0.936
3	0.800	39	0.701	75	0.901	111	0.848	147	0.799	183	0.923	219	0.757	255	0.733	291	0.940
4	0.794	40	0.704	76	0.905	112	0.844	148	0.802	184	0.923	220	0.751	256	0.738	292	0.945
5	0.788	41	0.707	77	0.908	113	0.839	149	0.806	185	0.923	221	0.745	257	0.743	293	0.950
6	0.782	42	0.711	78	0.911	114	0.835	150	0.810	186	0.922	222	0.739	258	0.748	294	0.954
7	0.776	43	0.715	79	0.914	115	0.830	151	0.813	187	0.921	223	0.734	259	0.753	295	0.958
8	0.770	44	0.719	80	0.916	116	0.826	152	0.817	188	0.920	224	0.729	260	0.759	296	0.962
9	0.764	45	0.724	81	0.918	117	0.821	153	0.821	189	0.918	225	0.724	261	0.764	297	0.966
10	0.759	46	0.729	82	0.920	118	0.817	154	0.826	190	0.916	226	0.719	262	0.770	298	0.969
11	0.753	47	0.734	83	0.921	119	0.813	155	0.830	191	0.914	227	0.715	263	0.776	299	0.973
12	0.748	48	0.739	84	0.922	120	0.810	156	0.835	192	0.911	228	0.711	264	0.782	300	0.976
13	0.743	49	0.745	85	0.923	121	0.806	157	0.839	193	0.908	229	0.707	265	0.788	301	0.979
14	0.738	50	0.751	86	0.923	122	0.802	158	0.844	194	0.905	230	0.704	266	0.794	302	0.982
15	0.733	51	0.756	87	0.923	123	0.799	159	0.848	195	0.901	231	0.701	267	0.800	303	0.984
16	0.728	52	0.763	88	0.922	124	0.796	160	0.853	196	0.897	232	0.699	268	0.806	304	0.987
17	0.724	53	0.769	89	0.922	125	0.793	161	0.857	197	0.893	233	0.696	269	0.812	305	0.989
18	0.720	54	0.776	90	0.921	126	0.790	162	0.862	198	0.888	234	0.695	270	0.819	306	0.991
19	0.716	55	0.782	91	0.919	127	0.788	163	0.867	199	0.883	235	0.693	271	0.825	307	0.993
20	0.712	56	0.789	92	0.918	128	0.786	164	0.871	200	0.878	236	0.692	272	0.831	308	0.995
21	0.709	57	0.796	93	0.916	129	0.784	165	0.875	201	0.873	237	0.691	273	0.838	309	0.996
22	0.706	58	0.803	94	0.914	130	0.782	166	0.880	202	0.867	238	0.691	274	0.844	310	0.997
23	0.703	59	0.809	95	0.911	131	0.781	167	0.884	203	0.861	239	0.691	275	0.850	311	0.998
24	0.700	60	0.816	96	0.908	132	0.780	168	0.888	204	0.855	240	0.691	276	0.856	312	0.999
25	0.698	61	0.823	97	0.906	133	0.779	169	0.892	205	0.849	241	0.692	277	0.863	313	1.000
26	0.696	62	0.830	98	0.902	134	0.779	170	0.895	206	0.843	242	0.693	278	0.869	314	1.000
27	0.694	63	0.836	99	0.899	135	0.779	171	0.899	207	0.836	243	0.694	279	0.875	315	1.000
28	0.693	64	0.843	100	0.895	136	0.779	172	0.902	208	0.830	244	0.696	280	0.881	316	1.000
29	0.692	65	0.849	101	0.892	137	0.779	173	0.906	209	0.823	245	0.698	281	0.887	317	1.000
30	0.691	66	0.855	102	0.888	138	0.780	174	0.908	210	0.816	246	0.700	282	0.893	318	0.999
31	0.691	67	0.861	103	0.884	139	0.781	175	0.911	211	0.809	247	0.703	283	0.899	319	0.998
32	0.691	68	0.867	104	0.880	140	0.782	176	0.914	212	0.803	248	0.706	284	0.904	320	0.997
33	0.691	69	0.873	105	0.875	141	0.784	177	0.916	213	0.796	249	0.709	285	0.910	321	0.996
34	0.692	70	0.878	106	0.871	142	0.786	178	0.918	214	0.789	250	0.712	286	0.915	322	0.995
35	0.693	71	0.883	107	0.867	143	0.788	179	0.919	215	0.782	251	0.716	287	0.921	323	0.993

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## AZIMUTH PATTERN Vertical Polarization

Proposal No. **C-70308-2**  
 Date **27-Feb-17**  
 Call Letters **WLS 22**  
 Frequency **521 MHz**  
 Antenna Type **TFU-15ETT/VP-R S140**  
 Gain **1.92 (2.83dB)**  
 Directional  
 Drawing # **WLS\_D22-V1**



Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.579	36	0.474	72	0.871	108	0.423	144	0.625	180	0.709	216	0.592	252	0.691	288	0.461
1	0.594	37	0.463	73	0.875	109	0.424	145	0.614	181	0.729	217	0.571	253	0.696	289	0.473
2	0.607	38	0.453	74	0.877	110	0.427	146	0.602	182	0.747	218	0.551	254	0.698	290	0.486
3	0.621	39	0.446	75	0.877	111	0.433	147	0.589	183	0.765	219	0.532	255	0.700	291	0.501
4	0.633	40	0.440	76	0.876	112	0.441	148	0.575	184	0.782	220	0.514	256	0.700	292	0.518
5	0.645	41	0.436	77	0.874	113	0.451	149	0.561	185	0.798	221	0.497	257	0.699	293	0.535
6	0.656	42	0.435	78	0.870	114	0.462	150	0.546	186	0.812	222	0.482	258	0.696	294	0.553
7	0.665	43	0.437	79	0.864	115	0.474	151	0.531	187	0.825	223	0.468	259	0.693	295	0.572
8	0.674	44	0.441	80	0.856	116	0.488	152	0.517	188	0.837	224	0.457	260	0.688	296	0.591
9	0.681	45	0.448	81	0.847	117	0.502	153	0.502	189	0.847	225	0.448	261	0.681	297	0.611
10	0.688	46	0.457	82	0.837	118	0.517	154	0.488	190	0.856	226	0.441	262	0.674	298	0.630
11	0.693	47	0.468	83	0.825	119	0.531	155	0.475	191	0.864	227	0.437	263	0.665	299	0.649
12	0.696	48	0.482	84	0.812	120	0.546	156	0.462	192	0.870	228	0.435	264	0.656	300	0.668
13	0.699	49	0.497	85	0.798	121	0.561	157	0.451	193	0.874	229	0.436	265	0.645	301	0.686
14	0.700	50	0.514	86	0.782	122	0.575	158	0.441	194	0.876	230	0.440	266	0.633	302	0.703
15	0.700	51	0.532	87	0.765	123	0.589	159	0.433	195	0.877	231	0.446	267	0.621	303	0.720
16	0.698	52	0.551	88	0.747	124	0.602	160	0.427	196	0.877	232	0.453	268	0.607	304	0.735
17	0.696	53	0.571	89	0.729	125	0.614	161	0.424	197	0.875	233	0.463	269	0.594	305	0.750
18	0.691	54	0.592	90	0.709	126	0.625	162	0.423	198	0.871	234	0.474	270	0.579	306	0.763
19	0.686	55	0.613	91	0.689	127	0.636	163	0.425	199	0.866	235	0.487	271	0.564	307	0.776
20	0.679	56	0.634	92	0.668	128	0.645	164	0.429	200	0.859	236	0.500	272	0.549	308	0.787
21	0.672	57	0.655	93	0.647	129	0.653	165	0.436	201	0.850	237	0.515	273	0.535	309	0.796
22	0.663	58	0.676	94	0.625	130	0.660	166	0.445	202	0.840	238	0.529	274	0.520	310	0.805
23	0.653	59	0.696	95	0.604	131	0.666	167	0.457	203	0.829	239	0.544	275	0.505	311	0.812
24	0.642	60	0.716	96	0.583	132	0.671	168	0.470	204	0.816	240	0.560	276	0.492	312	0.817
25	0.630	61	0.735	97	0.562	133	0.674	169	0.486	205	0.802	241	0.574	277	0.479	313	0.821
26	0.617	62	0.753	98	0.541	134	0.676	170	0.503	206	0.787	242	0.589	278	0.467	314	0.823
27	0.603	63	0.771	99	0.522	135	0.677	171	0.522	207	0.771	243	0.603	279	0.457	315	0.824
28	0.589	64	0.787	100	0.503	136	0.676	172	0.541	208	0.753	244	0.617	280	0.449	316	0.823
29	0.574	65	0.802	101	0.486	137	0.674	173	0.562	209	0.735	245	0.630	281	0.442	317	0.821
30	0.559	66	0.816	102	0.470	138	0.671	174	0.583	210	0.716	246	0.642	282	0.438	318	0.817
31	0.544	67	0.829	103	0.456	139	0.666	175	0.604	211	0.696	247	0.653	283	0.435	319	0.812
32	0.529	68	0.840	104	0.445	140	0.660	176	0.625	212	0.676	248	0.663	284	0.436	320	0.805
33	0.515	69	0.850	105	0.436	141	0.653	177	0.647	213	0.655	249	0.672	285	0.438	321	0.796
34	0.500	70	0.859	106	0.429	142	0.645	178	0.668	214	0.634	250	0.679	286	0.444	322	0.787
35	0.487	71	0.866	107	0.425	143	0.636	179	0.689	215	0.613	251	0.686	287	0.451	323	0.776

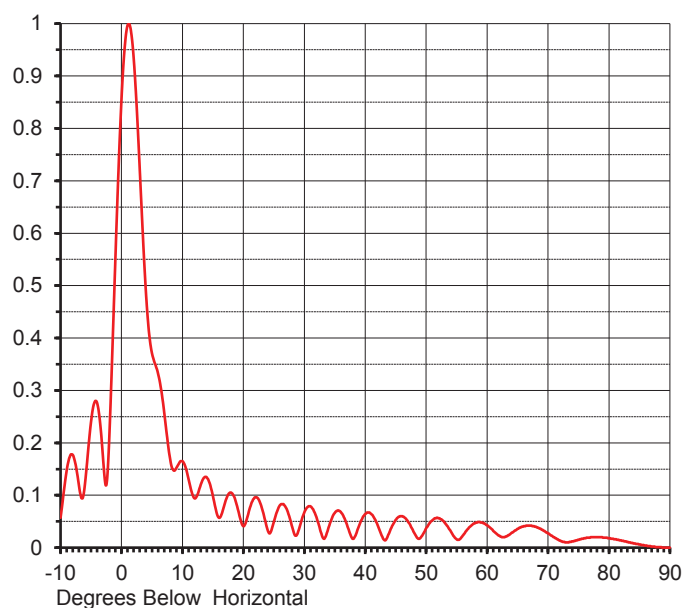
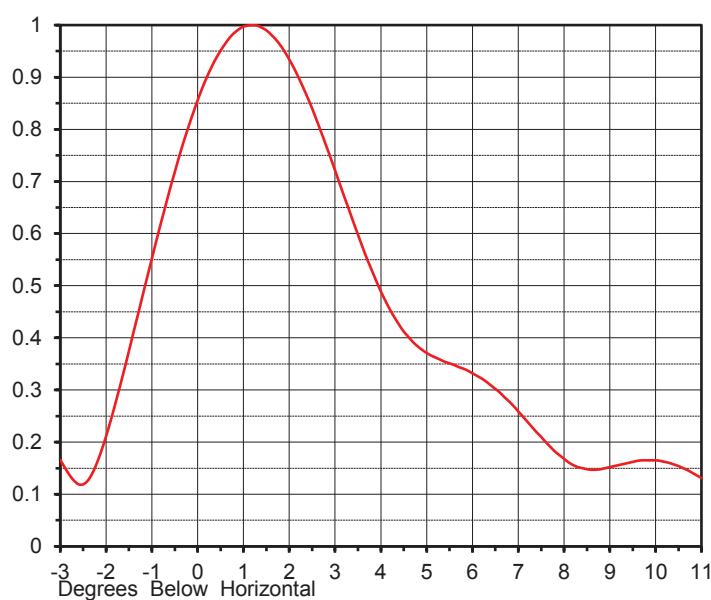
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## ELEVATION PATTERN

Proposal No. **C-70308-2**  
 Date **27-Feb-17**  
 Call Letters **WLS 22**  
 Frequency **521 MHz**  
 Antenna Type **TFU-15ETT/VP-R S140**

RMS Directivity at Main Lobe **13.75 ( 11.38 dB )**  
 RMS Directivity at Horizontal **10.10 ( 10.04 dB )**  
**Calculated**

Beam Tilt **1.20 deg**  
 Drawing Number **15E1375120**



Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.057	10.0	0.165	30.0	0.067	50.0	0.037	70.0	0.027
-9.0	0.147	11.0	0.131	31.0	0.079	51.0	0.052	71.0	0.020
-8.0	0.177	12.0	0.094	32.0	0.058	52.0	0.056	72.0	0.013
-7.0	0.120	13.0	0.120	33.0	0.020	53.0	0.048	73.0	0.010
-6.0	0.121	14.0	0.134	34.0	0.039	54.0	0.032	74.0	0.012
-5.0	0.240	15.0	0.099	35.0	0.066	55.0	0.016	75.0	0.015
-4.0	0.276	16.0	0.057	36.0	0.068	56.0	0.023	76.0	0.018
-3.0	0.166	17.0	0.086	37.0	0.044	57.0	0.038	77.0	0.020
-2.0	0.211	18.0	0.105	38.0	0.017	58.0	0.047	78.0	0.020
-1.0	0.552	19.0	0.078	39.0	0.042	59.0	0.048	79.0	0.019
0.0	0.856	20.0	0.041	40.0	0.064	60.0	0.043	80.0	0.018
1.0	0.997	21.0	0.073	41.0	0.064	61.0	0.032	81.0	0.016
2.0	0.934	22.0	0.096	42.0	0.044	62.0	0.023	82.0	0.014
3.0	0.721	23.0	0.077	43.0	0.016	63.0	0.021	83.0	0.011
4.0	0.489	24.0	0.033	44.0	0.030	64.0	0.028	84.0	0.008
5.0	0.371	25.0	0.049	45.0	0.053	65.0	0.036	85.0	0.006
6.0	0.332	26.0	0.081	46.0	0.060	66.0	0.041	86.0	0.004
7.0	0.259	27.0	0.076	47.0	0.050	67.0	0.042	87.0	0.002
8.0	0.168	28.0	0.040	48.0	0.029	68.0	0.040	88.0	0.001
9.0	0.152	29.0	0.031	49.0	0.018	69.0	0.034	89.0	0.000
								90.0	0.000

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