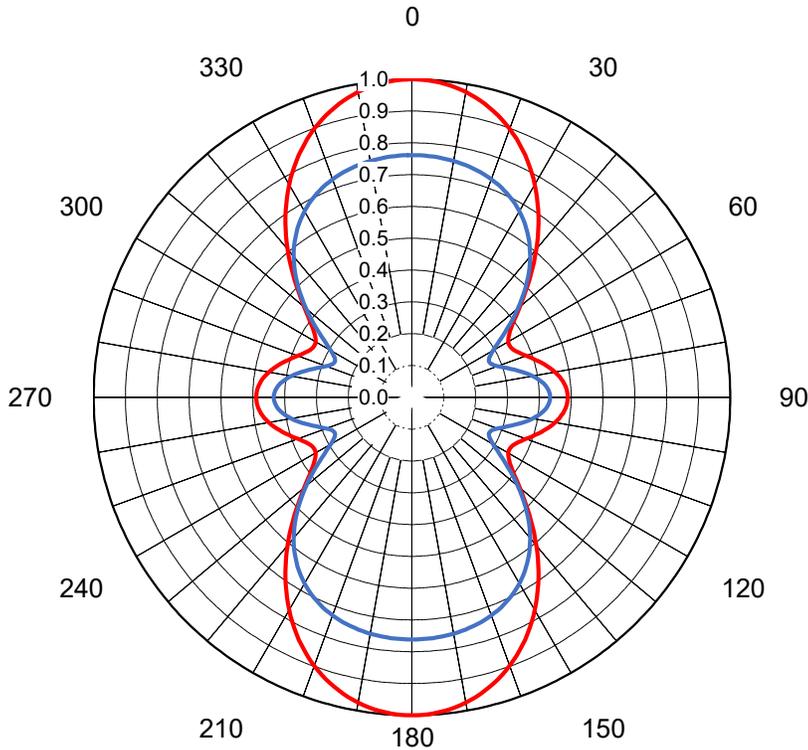


AZIMUTH OVERLAY

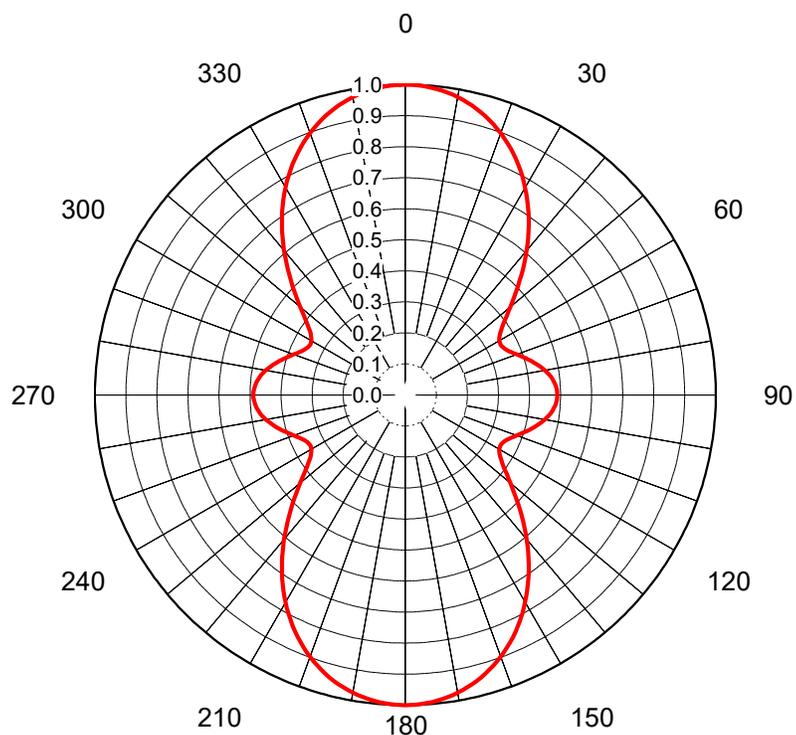


Proposal No. **C-70958**
 Date **25-Aug-17**
 Call Letters **WHDT**
 Channel **34**
 Frequency **593 MHz**
 Antenna Type **TFU-27JSC/VP-R P220**

Blue **TFU-P220-V**

Deg	Value																		
0	1.000	36	0.676	72	0.397	108	0.397	144	0.676	180	1.000	216	0.676	252	0.397	288	0.397	324	0.676
1	1.000	37	0.659	73	0.405	109	0.389	145	0.693	181	1.000	217	0.659	253	0.405	289	0.389	325	0.693
2	0.999	38	0.642	74	0.413	110	0.382	146	0.709	182	0.999	218	0.642	254	0.413	290	0.382	326	0.709
3	0.998	39	0.625	75	0.421	111	0.375	147	0.725	183	0.998	219	0.625	255	0.421	291	0.375	327	0.725
4	0.996	40	0.608	76	0.428	112	0.368	148	0.741	184	0.996	220	0.608	256	0.428	292	0.368	328	0.741
5	0.994	41	0.590	77	0.436	113	0.362	149	0.757	185	0.994	221	0.590	257	0.436	293	0.362	329	0.757
6	0.991	42	0.573	78	0.443	114	0.357	150	0.772	186	0.991	222	0.573	258	0.443	294	0.357	330	0.772
7	0.988	43	0.555	79	0.450	115	0.353	151	0.786	187	0.988	223	0.555	259	0.450	295	0.353	331	0.786
8	0.984	44	0.538	80	0.456	116	0.350	152	0.801	188	0.984	224	0.538	260	0.456	296	0.350	332	0.801
9	0.979	45	0.521	81	0.462	117	0.348	153	0.814	189	0.979	225	0.521	261	0.462	297	0.348	333	0.814
10	0.975	46	0.504	82	0.468	118	0.347	154	0.828	190	0.975	226	0.504	262	0.468	298	0.347	334	0.828
11	0.969	47	0.488	83	0.473	119	0.348	155	0.841	191	0.969	227	0.488	263	0.473	299	0.348	335	0.841
12	0.963	48	0.472	84	0.477	120	0.350	156	0.853	192	0.963	228	0.472	264	0.477	300	0.350	336	0.853
13	0.957	49	0.457	85	0.481	121	0.353	157	0.865	193	0.957	229	0.457	265	0.481	301	0.353	337	0.865
14	0.950	50	0.442	86	0.484	122	0.358	158	0.877	194	0.950	230	0.442	266	0.484	302	0.358	338	0.877
15	0.943	51	0.428	87	0.486	123	0.364	159	0.888	195	0.943	231	0.428	267	0.486	303	0.364	339	0.888
16	0.935	52	0.414	88	0.488	124	0.372	160	0.898	196	0.935	232	0.414	268	0.488	304	0.372	340	0.898
17	0.926	53	0.402	89	0.489	125	0.381	161	0.908	197	0.926	233	0.402	269	0.489	305	0.381	341	0.908
18	0.918	54	0.391	90	0.489	126	0.391	162	0.918	198	0.918	234	0.391	270	0.489	306	0.391	342	0.918
19	0.908	55	0.381	91	0.489	127	0.402	163	0.926	199	0.908	235	0.381	271	0.489	307	0.402	343	0.926
20	0.898	56	0.372	92	0.488	128	0.414	164	0.935	200	0.898	236	0.372	272	0.488	308	0.414	344	0.935
21	0.888	57	0.364	93	0.486	129	0.428	165	0.943	201	0.888	237	0.364	273	0.486	309	0.428	345	0.943
22	0.877	58	0.358	94	0.484	130	0.442	166	0.950	202	0.877	238	0.358	274	0.484	310	0.442	346	0.950
23	0.865	59	0.353	95	0.481	131	0.457	167	0.957	203	0.865	239	0.353	275	0.481	311	0.457	347	0.957
24	0.853	60	0.349	96	0.477	132	0.472	168	0.963	204	0.853	240	0.349	276	0.477	312	0.472	348	0.963
25	0.841	61	0.348	97	0.473	133	0.488	169	0.969	205	0.841	241	0.348	277	0.473	313	0.488	349	0.969
26	0.828	62	0.347	98	0.468	134	0.504	170	0.975	206	0.828	242	0.347	278	0.468	314	0.504	350	0.975
27	0.814	63	0.348	99	0.462	135	0.521	171	0.980	207	0.814	243	0.348	279	0.462	315	0.521	351	0.979
28	0.801	64	0.350	100	0.456	136	0.538	172	0.984	208	0.801	244	0.350	280	0.456	316	0.538	352	0.984
29	0.786	65	0.353	101	0.450	137	0.555	173	0.988	209	0.786	245	0.353	281	0.450	317	0.555	353	0.988
30	0.772	66	0.357	102	0.443	138	0.573	174	0.991	210	0.772	246	0.357	282	0.443	318	0.573	354	0.991
31	0.757	67	0.362	103	0.436	139	0.590	175	0.994	211	0.757	247	0.362	283	0.436	319	0.590	355	0.994
32	0.741	68	0.368	104	0.428	140	0.608	176	0.996	212	0.741	248	0.368	284	0.428	320	0.608	356	0.996
33	0.725	69	0.375	105	0.421	141	0.625	177	0.998	213	0.725	249	0.375	285	0.421	321	0.625	357	0.998
34	0.709	70	0.382	106	0.413	142	0.642	178	0.999	214	0.709	250	0.382	286	0.413	322	0.642	358	0.999
35	0.693	71	0.389	107	0.405	143	0.659	179	1.000	215	0.693	251	0.389	287	0.405	323	0.659	359	1.000

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AZIMUTH PATTERN Horizontal Polarization

In Free Space

Proposal No. **C-70958**
 Date **25-Aug-17**
 Call Letters **WHDT**
 Channel **34**
 Frequency **593 MHz**
 Antenna Type **TFU-27JSC/VP-R P220**
 Gain **2.24 (3.51dB)**
 Calculated

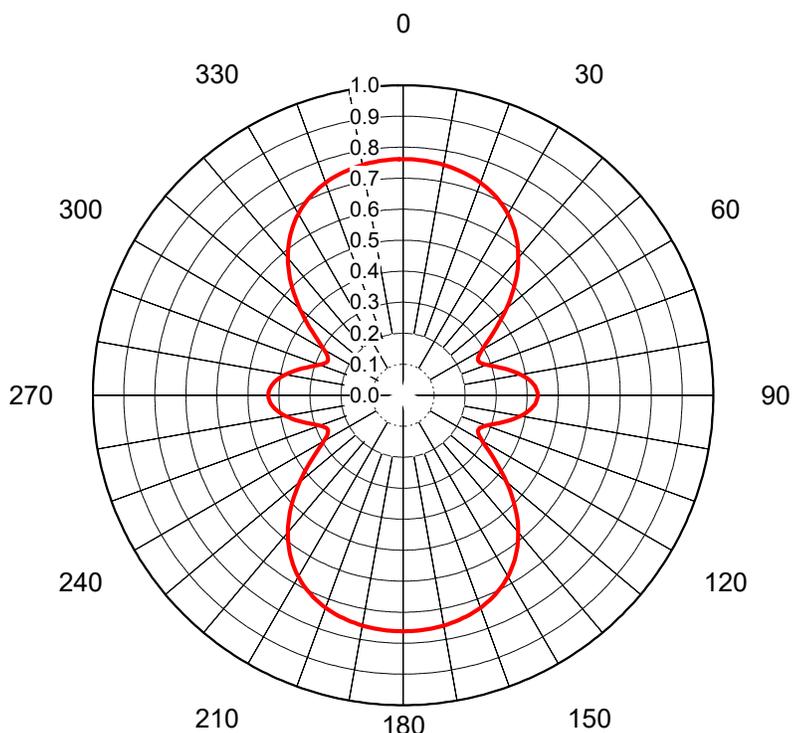
Deg	Value																		
0	1.000	36	0.676	72	0.397	108	0.397	144	0.676	180	1.000	216	0.676	252	0.397	288	0.397	324	0.676
1	1.000	37	0.659	73	0.405	109	0.389	145	0.693	181	1.000	217	0.659	253	0.405	289	0.389	325	0.693
2	0.999	38	0.642	74	0.413	110	0.382	146	0.709	182	0.999	218	0.642	254	0.413	290	0.382	326	0.709
3	0.998	39	0.625	75	0.421	111	0.375	147	0.725	183	0.998	219	0.625	255	0.421	291	0.375	327	0.725
4	0.996	40	0.608	76	0.428	112	0.368	148	0.741	184	0.996	220	0.608	256	0.428	292	0.368	328	0.741
5	0.994	41	0.590	77	0.436	113	0.362	149	0.757	185	0.994	221	0.590	257	0.436	293	0.362	329	0.757
6	0.991	42	0.573	78	0.443	114	0.357	150	0.772	186	0.991	222	0.573	258	0.443	294	0.357	330	0.772
7	0.988	43	0.555	79	0.450	115	0.353	151	0.786	187	0.988	223	0.555	259	0.450	295	0.353	331	0.786
8	0.984	44	0.538	80	0.456	116	0.350	152	0.801	188	0.984	224	0.538	260	0.456	296	0.350	332	0.801
9	0.979	45	0.521	81	0.462	117	0.348	153	0.814	189	0.979	225	0.521	261	0.462	297	0.348	333	0.814
10	0.975	46	0.504	82	0.468	118	0.347	154	0.828	190	0.975	226	0.504	262	0.468	298	0.347	334	0.828
11	0.969	47	0.488	83	0.473	119	0.348	155	0.841	191	0.969	227	0.488	263	0.473	299	0.348	335	0.841
12	0.963	48	0.472	84	0.477	120	0.350	156	0.853	192	0.963	228	0.472	264	0.477	300	0.350	336	0.853
13	0.957	49	0.457	85	0.481	121	0.353	157	0.865	193	0.957	229	0.457	265	0.481	301	0.353	337	0.865
14	0.950	50	0.442	86	0.484	122	0.358	158	0.877	194	0.950	230	0.442	266	0.484	302	0.358	338	0.877
15	0.943	51	0.428	87	0.486	123	0.364	159	0.888	195	0.943	231	0.428	267	0.486	303	0.364	339	0.888
16	0.935	52	0.414	88	0.488	124	0.372	160	0.898	196	0.935	232	0.414	268	0.488	304	0.372	340	0.898
17	0.926	53	0.402	89	0.489	125	0.381	161	0.908	197	0.926	233	0.402	269	0.489	305	0.381	341	0.908
18	0.918	54	0.391	90	0.489	126	0.391	162	0.918	198	0.918	234	0.391	270	0.489	306	0.391	342	0.918
19	0.908	55	0.381	91	0.489	127	0.402	163	0.926	199	0.908	235	0.381	271	0.489	307	0.402	343	0.926
20	0.898	56	0.372	92	0.488	128	0.414	164	0.935	200	0.898	236	0.372	272	0.488	308	0.414	344	0.935
21	0.888	57	0.364	93	0.486	129	0.428	165	0.943	201	0.888	237	0.364	273	0.486	309	0.428	345	0.943
22	0.877	58	0.358	94	0.484	130	0.442	166	0.950	202	0.877	238	0.358	274	0.484	310	0.442	346	0.950
23	0.865	59	0.353	95	0.481	131	0.457	167	0.957	203	0.865	239	0.353	275	0.481	311	0.457	347	0.957
24	0.853	60	0.349	96	0.477	132	0.472	168	0.963	204	0.853	240	0.349	276	0.477	312	0.472	348	0.963
25	0.841	61	0.348	97	0.473	133	0.488	169	0.969	205	0.841	241	0.348	277	0.473	313	0.488	349	0.969
26	0.828	62	0.347	98	0.468	134	0.504	170	0.975	206	0.828	242	0.347	278	0.468	314	0.504	350	0.975
27	0.814	63	0.348	99	0.462	135	0.521	171	0.980	207	0.814	243	0.348	279	0.462	315	0.521	351	0.979
28	0.801	64	0.350	100	0.456	136	0.538	172	0.984	208	0.801	244	0.350	280	0.456	316	0.538	352	0.984
29	0.786	65	0.353	101	0.450	137	0.555	173	0.988	209	0.786	245	0.353	281	0.450	317	0.555	353	0.988
30	0.772	66	0.357	102	0.443	138	0.573	174	0.991	210	0.772	246	0.357	282	0.443	318	0.573	354	0.991
31	0.757	67	0.362	103	0.436	139	0.590	175	0.994	211	0.757	247	0.362	283	0.436	319	0.590	355	0.994
32	0.741	68	0.368	104	0.428	140	0.608	176	0.996	212	0.741	248	0.368	284	0.428	320	0.608	356	0.996
33	0.725	69	0.375	105	0.421	141	0.625	177	0.998	213	0.725	249	0.375	285	0.421	321	0.625	357	0.998
34	0.709	70	0.382	106	0.413	142	0.642	178	0.999	214	0.709	250	0.382	286	0.413	322	0.642	358	0.999
35	0.693	71	0.389	107	0.405	143	0.659	179	1.000	215	0.693	251	0.389	287	0.405	323	0.659	359	1.000

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AZIMUTH PATTERN Vertical Polarization

In Free Space

Proposal No. **C-70958**
 Date **25-Aug-17**
 Call Letters **WHDT**
 Channel **34**
 Frequency **593 MHz**
 Antenna Type **TFU-27JSC/VP-R P220**
 Gain **1.88 (2.73dB)**
 Calculated



Deg	Value																		
0	0.762	36	0.623	72	0.304	108	0.304	144	0.623	180	0.762	216	0.623	252	0.304	288	0.304	324	0.623
1	0.762	37	0.612	73	0.313	109	0.295	145	0.633	181	0.762	217	0.612	253	0.313	289	0.295	325	0.633
2	0.761	38	0.601	74	0.324	110	0.286	146	0.642	182	0.761	218	0.601	254	0.324	290	0.286	326	0.642
3	0.761	39	0.590	75	0.334	111	0.279	147	0.651	183	0.761	219	0.590	255	0.334	291	0.279	327	0.651
4	0.760	40	0.578	76	0.345	112	0.274	148	0.660	184	0.760	220	0.578	256	0.345	292	0.274	328	0.660
5	0.760	41	0.565	77	0.355	113	0.270	149	0.668	185	0.760	221	0.565	257	0.355	293	0.270	329	0.668
6	0.759	42	0.552	78	0.366	114	0.267	150	0.676	186	0.759	222	0.552	258	0.366	294	0.267	330	0.676
7	0.758	43	0.539	79	0.375	115	0.267	151	0.683	187	0.758	223	0.539	259	0.375	295	0.267	331	0.683
8	0.757	44	0.525	80	0.385	116	0.269	152	0.689	188	0.757	224	0.525	260	0.385	296	0.269	332	0.689
9	0.756	45	0.511	81	0.394	117	0.272	153	0.696	189	0.756	225	0.511	261	0.394	297	0.272	333	0.696
10	0.754	46	0.496	82	0.402	118	0.278	154	0.702	190	0.754	226	0.496	262	0.402	298	0.278	334	0.702
11	0.753	47	0.481	83	0.409	119	0.285	155	0.707	191	0.753	227	0.481	263	0.409	299	0.285	335	0.707
12	0.751	48	0.466	84	0.416	120	0.294	156	0.712	192	0.751	228	0.466	264	0.416	300	0.294	336	0.712
13	0.749	49	0.450	85	0.421	121	0.305	157	0.717	193	0.749	229	0.450	265	0.421	301	0.305	337	0.717
14	0.747	50	0.434	86	0.426	122	0.316	158	0.722	194	0.747	230	0.434	266	0.426	302	0.316	338	0.722
15	0.745	51	0.419	87	0.430	123	0.329	159	0.726	195	0.745	231	0.419	267	0.430	303	0.329	339	0.726
16	0.742	52	0.403	88	0.432	124	0.343	160	0.730	196	0.742	232	0.403	268	0.432	304	0.343	340	0.730
17	0.739	53	0.388	89	0.434	125	0.357	161	0.733	197	0.739	233	0.388	269	0.434	305	0.357	341	0.733
18	0.736	54	0.372	90	0.434	126	0.372	162	0.736	198	0.736	234	0.372	270	0.434	306	0.372	342	0.736
19	0.733	55	0.357	91	0.434	127	0.388	163	0.739	199	0.733	235	0.357	271	0.434	307	0.388	343	0.739
20	0.730	56	0.343	92	0.432	128	0.403	164	0.742	200	0.730	236	0.343	272	0.432	308	0.403	344	0.742
21	0.726	57	0.329	93	0.430	129	0.419	165	0.745	201	0.726	237	0.329	273	0.430	309	0.419	345	0.745
22	0.722	58	0.316	94	0.426	130	0.434	166	0.747	202	0.722	238	0.316	274	0.426	310	0.434	346	0.747
23	0.717	59	0.305	95	0.421	131	0.450	167	0.749	203	0.717	239	0.305	275	0.421	311	0.450	347	0.749
24	0.712	60	0.294	96	0.416	132	0.466	168	0.751	204	0.712	240	0.294	276	0.416	312	0.466	348	0.751
25	0.707	61	0.285	97	0.409	133	0.481	169	0.753	205	0.707	241	0.285	277	0.409	313	0.481	349	0.753
26	0.702	62	0.278	98	0.402	134	0.496	170	0.754	206	0.702	242	0.278	278	0.402	314	0.496	350	0.754
27	0.696	63	0.272	99	0.394	135	0.511	171	0.756	207	0.696	243	0.272	279	0.394	315	0.511	351	0.756
28	0.689	64	0.269	100	0.385	136	0.525	172	0.757	208	0.689	244	0.269	280	0.385	316	0.525	352	0.757
29	0.683	65	0.267	101	0.375	137	0.539	173	0.758	209	0.683	245	0.267	281	0.375	317	0.539	353	0.758
30	0.676	66	0.267	102	0.366	138	0.552	174	0.759	210	0.676	246	0.267	282	0.366	318	0.552	354	0.759
31	0.668	67	0.270	103	0.355	139	0.565	175	0.760	211	0.668	247	0.270	283	0.355	319	0.565	355	0.760
32	0.660	68	0.274	104	0.345	140	0.578	176	0.760	212	0.660	248	0.274	284	0.345	320	0.578	356	0.760
33	0.651	69	0.279	105	0.334	141	0.590	177	0.761	213	0.651	249	0.279	285	0.334	321	0.590	357	0.761
34	0.642	70	0.286	106	0.324	142	0.601	178	0.761	214	0.642	250	0.286	286	0.324	322	0.601	358	0.761
35	0.633	71	0.295	107	0.313	143	0.612	179	0.762	215	0.633	251	0.295	287	0.313	323	0.612	359	0.762

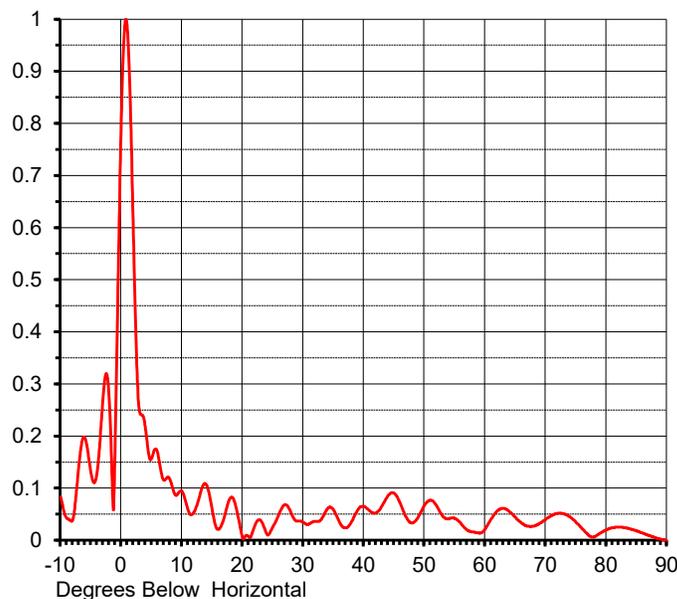
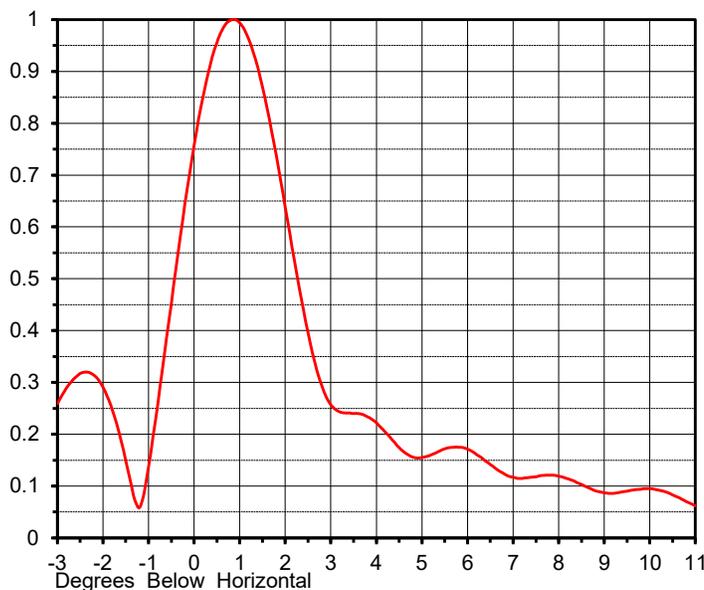
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ELEVATION PATTERN

Proposal No. **C-70958**
 Date **25-Aug-17**
 Call Letters **WHDT**
 Channel **34**
 Frequency **593 MHz**
 Antenna Type **TFU-27JSC/VP-R P220**

RMS Directivity at Main Lobe **24.0 (13.80 dB)**
 RMS Directivity at Horizontal **15.7 (11.96 dB)**
Calculated

Beam Tilt **0.75 deg**
 Pattern Number **27J240075**



Angle	Field								
-10.0	0.083	10.0	0.094	30.0	0.035	50.0	0.067	70.0	0.040
-9.0	0.042	11.0	0.058	31.0	0.031	51.0	0.077	71.0	0.048
-8.0	0.039	12.0	0.054	32.0	0.036	52.0	0.066	72.0	0.052
-7.0	0.144	13.0	0.089	33.0	0.040	53.0	0.046	73.0	0.051
-6.0	0.196	14.0	0.107	34.0	0.060	54.0	0.041	74.0	0.045
-5.0	0.129	15.0	0.058	35.0	0.058	55.0	0.042	75.0	0.034
-4.0	0.130	16.0	0.021	36.0	0.034	56.0	0.032	76.0	0.022
-3.0	0.275	17.0	0.045	37.0	0.024	57.0	0.020	77.0	0.010
-2.0	0.272	18.0	0.081	38.0	0.036	58.0	0.016	78.0	0.006
-1.0	0.195	19.0	0.059	39.0	0.058	59.0	0.014	79.0	0.014
0.0	0.808	20.0	0.005	40.0	0.065	60.0	0.021	80.0	0.020
1.0	0.981	21.0	0.007	41.0	0.056	61.0	0.041	81.0	0.024
2.0	0.587	22.0	0.027	42.0	0.052	62.0	0.056	82.0	0.025
3.0	0.248	23.0	0.038	43.0	0.066	63.0	0.061	83.0	0.024
4.0	0.213	24.0	0.012	44.0	0.086	64.0	0.055	84.0	0.021
5.0	0.157	25.0	0.026	45.0	0.090	65.0	0.044	85.0	0.018
6.0	0.167	26.0	0.050	46.0	0.071	66.0	0.033	86.0	0.014
7.0	0.115	27.0	0.068	47.0	0.044	67.0	0.027	87.0	0.009
8.0	0.117	28.0	0.052	48.0	0.033	68.0	0.027	88.0	0.005
9.0	0.086	29.0	0.037	49.0	0.045	69.0	0.032	89.0	0.002
								90.0	0.000

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