



Antenna Model: **TUA-O4-8/32H-1-R SM**

Proposal Number: **C-70954-3**  
Date: **15-Aug-19**  
Customer: **Nexstar**  
Location: **Norfolk, VA**

#### Electrical Specifications

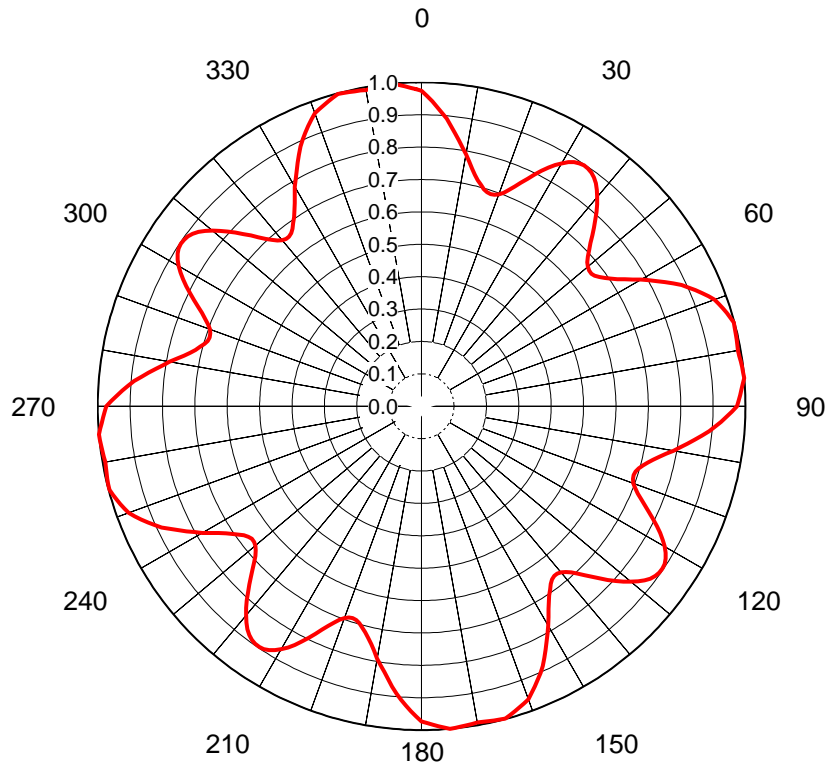
Polarization: **Horizontal**  
Azimuth Pattern: **Omni**  
Antenna Input: **6-1/8"** **50 Ohm** **EIA/DCA**  
VSWR: **Channel** **1.10 : 1** **Band** **1.10 : 1**  
Bandwidth: **470-860 MHz**  
Rated Input Power: **50 kW** **(16.99 dBk)** **Maximum combined average power**

#### Mechanical Specifications

Mounting: **Side Mounted**  
Environmental Protection: **Full Radome**  
Height: **31.7 ft (9.7m)**  
Weight: **3700 lb (1.7t)** **Excludes Mounts**  
Effective Projected Area: **69.5 ft² (6.5m²)** **TIA-222-G** **Basic Wind Speed: 100 m/h (160.9 km/h)**

#### Channel Specifications

	Call	CH	Freq	Hpol ERP	TPO	RMS Main Lobe Hpol Gain	RMS at Horizontal Hpol Gain
1	WNLO	45	659 MHz	15.0 kW (11.76 dBk)	1.5 kW (1.67 dBk)	15.62 (11.94dB)	14.16 (11.51dB)
2	WNLO	14	473 MHz	7.72 kW (8.88 dBk)	0.7 kW (-1.55 dBk)	15.66 (11.95dB)	14.86 (11.72dB)
3	WAVY	31	575 MHz	375.0 kW (25.74 dBk)	32.8 kW (15.16 dBk)	16.91 (12.28dB)	15.68 (11.95dB)
4	WAVY	19	503 MHz	375.0 kW (25.74 dBk)	32.9 kW (15.18 dBk)	16.38 (12.14dB)	15.41 (11.88dB)
5	WVBT	29	563 MHz	375.0 kW (25.74 dBk)	32.7 kW (15.14 dBk)	16.91 (12.28dB)	15.68 (11.95dB)
6	WVBT	21	515 MHz	295.0 kW (24.70 dBk)	26.0 kW (14.16 dBk)	16.38 (12.14dB)	15.41 (11.88dB)



## AZIMUTH PATTERN Horizontal Polarization

In Free Space

Proposal No. **C-70954-3**  
 Date **15-Aug-19**  
 Call Letters **WNLO**  
 Channel **45**  
 Frequency **659 MHz**  
 Antenna Type **TUA-O4-8/32H-1-R SM**  
 Gain **1.39 (1.42dB)**  
 Calculated  
 Circularity **+/- 2.0 dB**

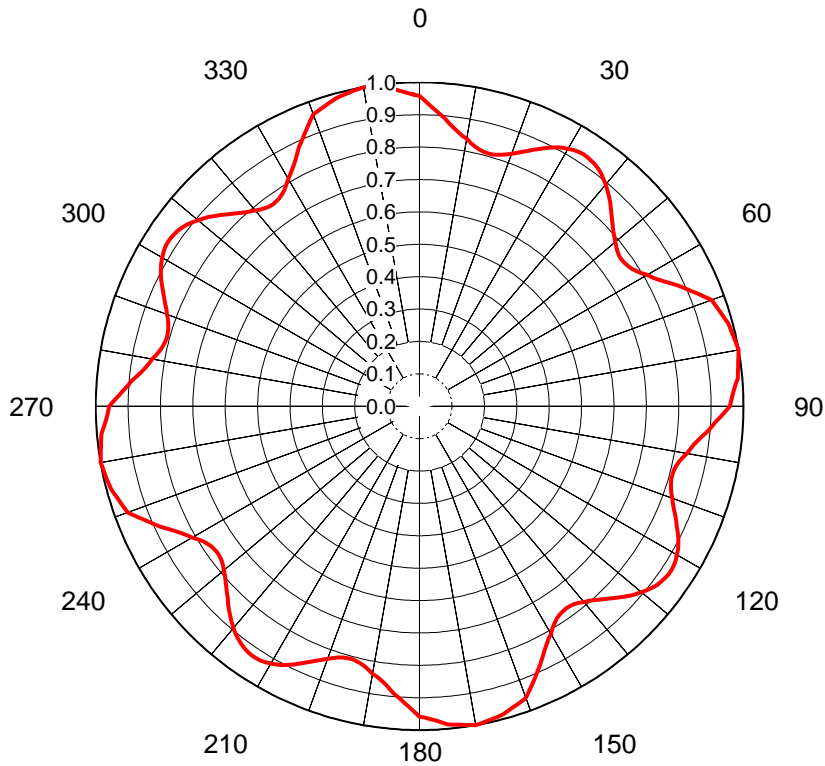
Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.974	36	0.892	72	0.978	108	0.688	144	0.678	180	0.974	216	0.892	252	0.978	288	0.688
1	0.958	37	0.885	73	0.985	109	0.690	145	0.691	181	0.958	217	0.885	253	0.985	289	0.690
2	0.942	38	0.874	74	0.992	110	0.696	146	0.704	182	0.942	218	0.874	254	0.992	290	0.696
3	0.925	39	0.860	75	0.998	111	0.706	147	0.721	183	0.925	219	0.860	255	0.998	291	0.706
4	0.908	40	0.843	76	0.997	112	0.720	148	0.739	184	0.908	220	0.843	256	0.997	292	0.720
5	0.891	41	0.826	77	0.996	113	0.737	149	0.760	185	0.891	221	0.826	257	0.996	293	0.737
6	0.870	42	0.806	78	0.994	114	0.756	150	0.782	186	0.870	222	0.806	258	0.994	294	0.756
7	0.849	43	0.786	79	0.993	115	0.775	151	0.802	187	0.849	223	0.786	259	0.993	295	0.775
8	0.829	44	0.766	80	0.992	116	0.796	152	0.822	188	0.829	224	0.766	260	0.992	296	0.796
9	0.809	45	0.745	81	0.993	117	0.816	153	0.843	189	0.809	225	0.745	261	0.993	297	0.816
10	0.791	46	0.725	82	0.995	118	0.835	154	0.864	190	0.791	226	0.725	262	0.995	298	0.835
11	0.769	47	0.707	83	0.997	119	0.852	155	0.886	191	0.769	227	0.707	263	0.997	299	0.852
12	0.750	48	0.691	84	0.999	120	0.866	156	0.902	192	0.750	228	0.691	264	0.999	300	0.866
13	0.733	49	0.678	85	1.000	121	0.879	157	0.918	193	0.733	229	0.678	265	1.000	301	0.879
14	0.719	50	0.670	86	0.995	122	0.888	158	0.934	194	0.719	230	0.670	266	0.995	302	0.888
15	0.708	51	0.665	87	0.989	123	0.894	159	0.949	195	0.708	231	0.665	267	0.989	303	0.894
16	0.697	52	0.665	88	0.984	124	0.897	160	0.963	196	0.697	232	0.665	268	0.984	304	0.897
17	0.691	53	0.669	89	0.979	125	0.896	161	0.971	197	0.691	233	0.669	269	0.979	305	0.896
18	0.688	54	0.678	90	0.974	126	0.892	162	0.978	198	0.688	234	0.678	270	0.974	306	0.892
19	0.690	55	0.691	91	0.958	127	0.885	163	0.985	199	0.690	235	0.691	271	0.958	307	0.885
20	0.696	56	0.704	92	0.942	128	0.874	164	0.992	200	0.696	236	0.704	272	0.942	308	0.874
21	0.706	57	0.721	93	0.925	129	0.860	165	0.998	201	0.706	237	0.721	273	0.925	309	0.860
22	0.720	58	0.739	94	0.908	130	0.843	166	0.997	202	0.720	238	0.739	274	0.908	310	0.843
23	0.737	59	0.760	95	0.891	131	0.826	167	0.996	203	0.737	239	0.760	275	0.891	311	0.826
24	0.756	60	0.782	96	0.870	132	0.806	168	0.994	204	0.756	240	0.782	276	0.870	312	0.806
25	0.775	61	0.802	97	0.849	133	0.786	169	0.993	205	0.775	241	0.802	277	0.849	313	0.786
26	0.796	62	0.822	98	0.829	134	0.766	170	0.992	206	0.796	242	0.822	278	0.829	314	0.766
27	0.816	63	0.843	99	0.809	135	0.745	171	0.993	207	0.816	243	0.843	279	0.809	315	0.745
28	0.835	64	0.864	100	0.791	136	0.725	172	0.995	208	0.835	244	0.864	280	0.791	316	0.725
29	0.852	65	0.886	101	0.769	137	0.707	173	0.997	209	0.852	245	0.886	281	0.769	317	0.707
30	0.866	66	0.902	102	0.750	138	0.691	174	0.999	210	0.866	246	0.902	282	0.750	318	0.691
31	0.879	67	0.918	103	0.733	139	0.678	175	1.000	211	0.879	247	0.918	283	0.733	319	0.678
32	0.888	68	0.934	104	0.719	140	0.670	176	0.995	212	0.888	248	0.934	284	0.719	320	0.670
33	0.894	69	0.949	105	0.708	141	0.665	177	0.989	213	0.894	249	0.949	285	0.708	321	0.665
34	0.897	70	0.963	106	0.697	142	0.665	178	0.984	214	0.897	250	0.963	286	0.697	322	0.665
35	0.896	71	0.971	107	0.691	143	0.669	179	0.979	215	0.896	251	0.971	287	0.691	323	0.669

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## AZIMUTH PATTERN Horizontal Polarization

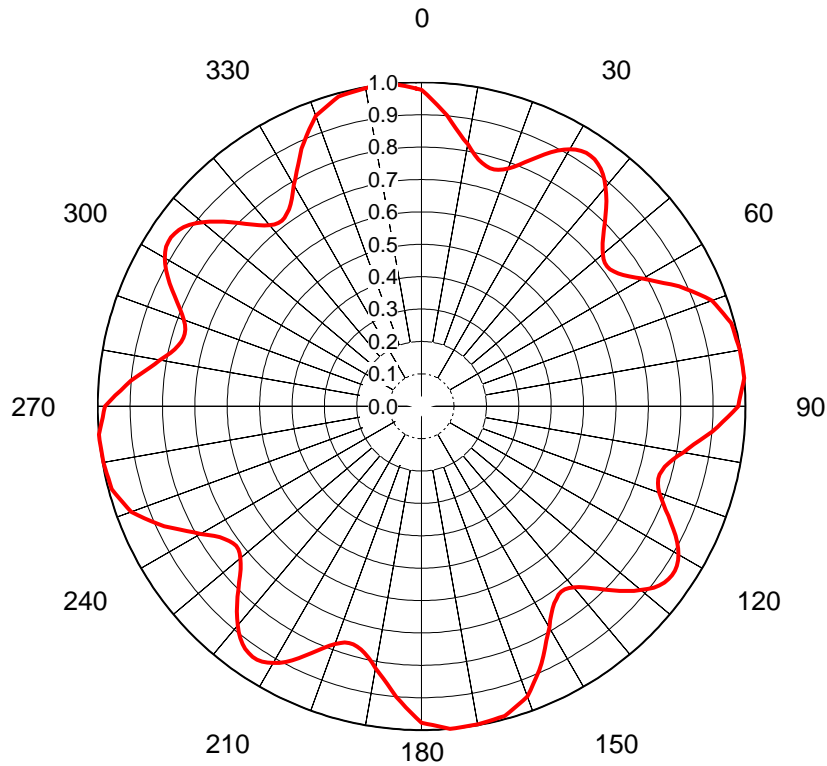
In Free Space

Proposal No. **C-70954-3**  
Date **15-Aug-19**  
Call Letters **WNLO**  
Channel **14**  
Frequency **473 MHz**  
Antenna Type **TUA-O4-8/32H-1-R SM**  
Gain **1.27 (1.03dB)**  
Calculated  
Circularity **+/- 2.0 dB**



Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.958	36	0.922	72	0.969	108	0.816	144	0.771	180	0.958	216	0.922	252	0.969	288	0.816
1	0.944	37	0.917	73	0.975	109	0.822	145	0.772	181	0.944	217	0.917	253	0.975	289	0.822
2	0.930	38	0.911	74	0.981	110	0.830	146	0.775	182	0.930	218	0.911	254	0.981	290	0.830
3	0.916	39	0.903	75	0.986	111	0.838	147	0.780	183	0.916	219	0.903	255	0.986	291	0.838
4	0.904	40	0.893	76	0.989	112	0.847	148	0.788	184	0.904	220	0.893	256	0.989	292	0.847
5	0.893	41	0.884	77	0.992	113	0.857	149	0.798	185	0.893	221	0.884	257	0.992	293	0.857
6	0.878	42	0.874	78	0.994	114	0.867	150	0.811	186	0.878	222	0.874	258	0.994	294	0.867
7	0.865	43	0.862	79	0.997	115	0.877	151	0.821	187	0.865	223	0.862	259	0.997	295	0.877
8	0.855	44	0.850	80	1.000	116	0.887	152	0.834	188	0.855	224	0.850	260	1.000	296	0.887
9	0.846	45	0.838	81	0.997	117	0.897	153	0.848	189	0.846	225	0.838	261	0.997	297	0.897
10	0.839	46	0.827	82	0.994	118	0.905	154	0.864	190	0.839	226	0.827	262	0.994	298	0.905
11	0.828	47	0.816	83	0.991	119	0.912	155	0.882	191	0.828	227	0.816	263	0.991	299	0.912
12	0.820	48	0.806	84	0.989	120	0.917	156	0.896	192	0.820	228	0.806	264	0.989	300	0.917
13	0.814	49	0.797	85	0.986	121	0.923	157	0.911	193	0.814	229	0.797	265	0.986	301	0.923
14	0.810	50	0.789	86	0.986	122	0.926	158	0.927	194	0.810	230	0.789	266	0.979	302	0.926
15	0.809	51	0.781	87	0.972	123	0.928	159	0.943	195	0.809	231	0.781	267	0.972	303	0.928
16	0.809	52	0.776	88	0.967	124	0.927	160	0.959	196	0.809	232	0.776	268	0.967	304	0.927
17	0.811	53	0.772	89	0.962	125	0.925	161	0.964	197	0.811	233	0.772	269	0.962	305	0.925
18	0.816	54	0.771	90	0.958	126	0.922	162	0.969	198	0.816	234	0.771	270	0.958	306	0.922
19	0.822	55	0.772	91	0.944	127	0.917	163	0.975	199	0.822	235	0.772	271	0.944	307	0.917
20	0.830	56	0.775	92	0.930	128	0.911	164	0.981	200	0.830	236	0.775	272	0.930	308	0.911
21	0.838	57	0.780	93	0.916	129	0.903	165	0.986	201	0.838	237	0.780	273	0.916	309	0.903
22	0.847	58	0.788	94	0.904	130	0.893	166	0.989	202	0.847	238	0.788	274	0.904	310	0.893
23	0.857	59	0.798	95	0.893	131	0.884	167	0.992	203	0.857	239	0.798	275	0.893	311	0.884
24	0.867	60	0.811	96	0.878	132	0.874	168	0.994	204	0.867	240	0.811	276	0.878	312	0.874
25	0.877	61	0.821	97	0.865	133	0.862	169	0.997	205	0.877	241	0.821	277	0.865	313	0.862
26	0.887	62	0.834	98	0.855	134	0.850	170	1.000	206	0.887	242	0.834	278	0.855	314	0.850
27	0.897	63	0.848	99	0.846	135	0.838	171	0.997	207	0.897	243	0.848	279	0.846	315	0.838
28	0.905	64	0.864	100	0.839	136	0.827	172	0.994	208	0.905	244	0.864	280	0.839	316	0.827
29	0.912	65	0.882	101	0.828	137	0.816	173	0.991	209	0.912	245	0.882	281	0.828	317	0.816
30	0.917	66	0.896	102	0.820	138	0.806	174	0.989	210	0.917	246	0.896	282	0.820	318	0.806
31	0.923	67	0.911	103	0.814	139	0.797	175	0.986	211	0.923	247	0.911	283	0.814	319	0.797
32	0.926	68	0.927	104	0.810	140	0.789	176	0.979	212	0.926	248	0.927	284	0.810	320	0.789
33	0.928	69	0.943	105	0.809	141	0.781	177	0.972	213	0.928	249	0.943	285	0.809	321	0.781
34	0.927	70	0.959	106	0.809	142	0.776	178	0.967	214	0.927	250	0.959	286	0.809	322	0.776
35	0.925	71	0.964	107	0.811	143	0.772	179	0.962	215	0.925	251	0.964	287	0.811	323	0.772

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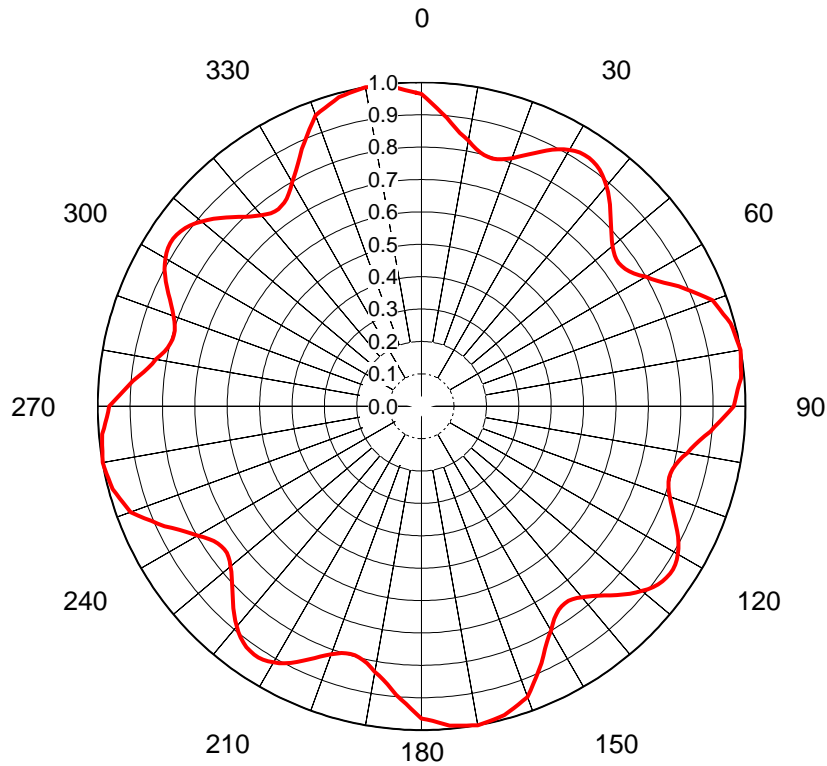
## AZIMUTH PATTERN Horizontal Polarization

In Free Space

Proposal No. **C-70954-3**  
 Date **15-Aug-19**  
 Call Letters **WAVY**  
 Channel **31**  
 Frequency **575 MHz**  
 Antenna Type **TUA-O4-8/32H-1-R SM**  
 Gain **1.31 (1.16dB)**  
 Calculated  
 Circularity **+/- 2.0 dB**

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.977	36	0.926	72	0.968	108	0.767	144	0.719	180	0.977	216	0.926	252	0.968	288	0.767
1	0.962	37	0.919	73	0.975	109	0.773	145	0.726	181	0.962	217	0.919	253	0.975	289	0.773
2	0.946	38	0.909	74	0.983	110	0.781	146	0.733	182	0.946	218	0.909	254	0.983	290	0.781
3	0.931	39	0.897	75	0.990	111	0.792	147	0.743	183	0.931	219	0.897	255	0.990	291	0.792
4	0.916	40	0.883	76	0.991	112	0.805	148	0.756	184	0.916	220	0.883	256	0.991	292	0.805
5	0.901	41	0.868	77	0.992	113	0.819	149	0.771	185	0.901	221	0.868	257	0.992	293	0.819
6	0.882	42	0.852	78	0.994	114	0.834	150	0.789	186	0.882	222	0.852	258	0.994	294	0.834
7	0.865	43	0.835	79	0.996	115	0.849	151	0.804	187	0.865	223	0.835	259	0.996	295	0.849
8	0.849	44	0.818	80	0.998	116	0.865	152	0.821	188	0.849	224	0.818	260	0.998	296	0.865
9	0.834	45	0.800	81	0.998	117	0.880	153	0.839	189	0.834	225	0.800	261	0.998	297	0.880
10	0.821	46	0.783	82	0.998	118	0.894	154	0.857	190	0.821	226	0.783	262	0.998	298	0.894
11	0.806	47	0.767	83	0.999	119	0.906	155	0.877	191	0.806	227	0.767	263	0.999	299	0.906
12	0.793	48	0.752	84	0.999	120	0.916	156	0.892	192	0.793	228	0.752	264	0.999	300	0.916
13	0.782	49	0.740	85	1.000	121	0.924	157	0.908	193	0.782	229	0.740	265	1.000	301	0.924
14	0.774	50	0.730	86	0.995	122	0.930	158	0.923	194	0.774	230	0.730	266	0.995	302	0.930
15	0.769	51	0.723	87	0.990	123	0.933	159	0.939	195	0.769	231	0.723	267	0.990	303	0.933
16	0.765	52	0.718	88	0.985	124	0.933	160	0.954	196	0.765	232	0.718	268	0.985	304	0.933
17	0.764	53	0.717	89	0.981	125	0.931	161	0.961	197	0.764	233	0.717	269	0.981	305	0.931
18	0.767	54	0.719	90	0.977	126	0.926	162	0.968	198	0.767	234	0.719	270	0.977	306	0.926
19	0.773	55	0.726	91	0.962	127	0.919	163	0.975	199	0.773	235	0.726	271	0.962	307	0.919
20	0.781	56	0.733	92	0.946	128	0.909	164	0.983	200	0.781	236	0.733	272	0.946	308	0.909
21	0.792	57	0.743	93	0.931	129	0.897	165	0.990	201	0.792	237	0.743	273	0.931	309	0.897
22	0.805	58	0.756	94	0.916	130	0.883	166	0.991	202	0.805	238	0.756	274	0.916	310	0.883
23	0.819	59	0.771	95	0.901	131	0.868	167	0.992	203	0.819	239	0.771	275	0.901	311	0.868
24	0.834	60	0.789	96	0.882	132	0.852	168	0.994	204	0.834	240	0.789	276	0.882	312	0.852
25	0.849	61	0.804	97	0.865	133	0.835	169	0.996	205	0.849	241	0.804	277	0.865	313	0.835
26	0.865	62	0.821	98	0.849	134	0.818	170	0.998	206	0.865	242	0.821	278	0.849	314	0.818
27	0.880	63	0.839	99	0.834	135	0.800	171	0.998	207	0.880	243	0.839	279	0.834	315	0.800
28	0.894	64	0.857	100	0.821	136	0.783	172	0.998	208	0.894	244	0.857	280	0.821	316	0.783
29	0.906	65	0.877	101	0.806	137	0.767	173	0.999	209	0.906	245	0.877	281	0.806	317	0.767
30	0.916	66	0.892	102	0.793	138	0.752	174	0.999	210	0.916	246	0.892	282	0.793	318	0.752
31	0.924	67	0.908	103	0.782	139	0.740	175	1.000	211	0.924	247	0.908	283	0.782	319	0.740
32	0.930	68	0.923	104	0.774	140	0.730	176	0.995	212	0.930	248	0.923	284	0.774	320	0.730
33	0.933	69	0.939	105	0.769	141	0.723	177	0.990	213	0.933	249	0.939	285	0.769	321	0.723
34	0.933	70	0.954	106	0.765	142	0.718	178	0.985	214	0.933	250	0.954	286	0.765	322	0.718
35	0.931	71	0.961	107	0.764	143	0.717	179	0.981	215	0.931	251	0.961	287	0.764	323	0.717

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## AZIMUTH PATTERN Horizontal Polarization

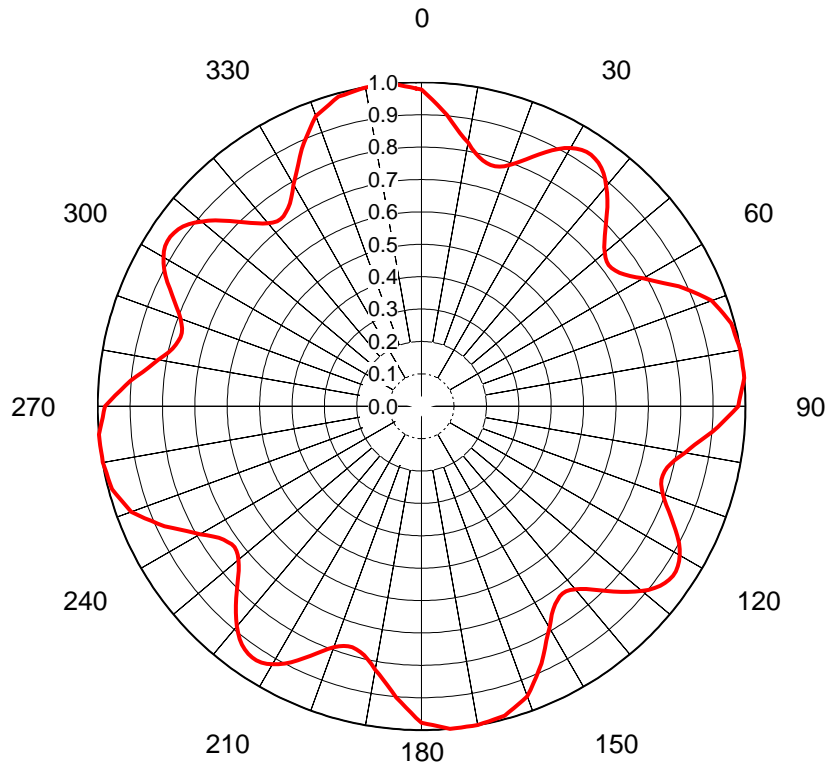
In Free Space

Proposal No. **C-70954-3**  
 Date **15-Aug-19**  
 Call Letters **WAVY**  
 Channel **19**  
 Frequency **503 MHz**  
 Antenna Type **TUA-O4-8/32H-1-R SM**  
 Gain **1.28 (1.08dB)**  
 Calculated  
 Circularity **+/- 2.0 dB**

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.964	36	0.919	72	0.968	108	0.802	144	0.752	180	0.964	216	0.919	252	0.968	288	0.802
1	0.949	37	0.914	73	0.974	109	0.808	145	0.755	181	0.949	217	0.914	253	0.974	289	0.808
2	0.935	38	0.907	74	0.981	110	0.815	146	0.758	182	0.935	218	0.907	254	0.981	290	0.815
3	0.921	39	0.898	75	0.988	111	0.824	147	0.765	183	0.921	219	0.898	255	0.988	291	0.824
4	0.907	40	0.887	76	0.990	112	0.834	148	0.774	184	0.907	220	0.887	256	0.990	292	0.834
5	0.895	41	0.877	77	0.992	113	0.845	149	0.785	185	0.895	221	0.877	257	0.992	293	0.845
6	0.879	42	0.865	78	0.995	114	0.856	150	0.799	186	0.879	222	0.865	258	0.995	294	0.856
7	0.865	43	0.852	79	0.997	115	0.867	151	0.811	187	0.865	223	0.852	259	0.997	295	0.867
8	0.852	44	0.839	80	1.000	116	0.878	152	0.825	188	0.852	224	0.839	260	1.000	296	0.878
9	0.842	45	0.825	81	0.998	117	0.889	153	0.840	189	0.842	225	0.825	261	0.998	297	0.889
10	0.833	46	0.813	82	0.995	118	0.899	154	0.858	190	0.833	226	0.813	262	0.995	298	0.899
11	0.821	47	0.800	83	0.993	119	0.907	155	0.876	191	0.821	227	0.800	263	0.993	299	0.907
12	0.812	48	0.789	84	0.992	120	0.913	156	0.891	192	0.812	228	0.789	264	0.992	300	0.913
13	0.804	49	0.779	85	0.990	121	0.919	157	0.907	193	0.804	229	0.779	265	0.990	301	0.919
14	0.799	50	0.770	86	0.993	122	0.923	158	0.923	194	0.799	230	0.770	266	0.993	302	0.923
15	0.796	51	0.762	87	0.977	123	0.925	159	0.939	195	0.796	231	0.762	267	0.977	303	0.925
16	0.796	52	0.756	88	0.972	124	0.925	160	0.956	196	0.796	232	0.756	268	0.972	304	0.925
17	0.797	53	0.753	89	0.968	125	0.923	161	0.962	197	0.797	233	0.753	269	0.968	305	0.923
18	0.802	54	0.752	90	0.964	126	0.919	162	0.968	198	0.802	234	0.752	270	0.964	306	0.919
19	0.808	55	0.755	91	0.949	127	0.914	163	0.974	199	0.808	235	0.755	271	0.949	307	0.914
20	0.815	56	0.758	92	0.935	128	0.907	164	0.981	200	0.815	236	0.758	272	0.935	308	0.907
21	0.824	57	0.765	93	0.921	129	0.898	165	0.988	201	0.824	237	0.765	273	0.921	309	0.898
22	0.834	58	0.774	94	0.907	130	0.887	166	0.990	202	0.834	238	0.774	274	0.907	310	0.887
23	0.845	59	0.785	95	0.895	131	0.877	167	0.992	203	0.845	239	0.785	275	0.895	311	0.877
24	0.856	60	0.799	96	0.879	132	0.865	168	0.995	204	0.856	240	0.799	276	0.879	312	0.865
25	0.867	61	0.811	97	0.865	133	0.852	169	0.997	205	0.867	241	0.811	277	0.865	313	0.852
26	0.878	62	0.825	98	0.852	134	0.839	170	1.000	206	0.878	242	0.825	278	0.852	314	0.839
27	0.889	63	0.840	99	0.842	135	0.825	171	0.998	207	0.889	243	0.840	279	0.842	315	0.825
28	0.899	64	0.858	100	0.833	136	0.813	172	0.995	208	0.899	244	0.858	280	0.833	316	0.813
29	0.907	65	0.876	101	0.821	137	0.800	173	0.993	209	0.907	245	0.876	281	0.821	317	0.800
30	0.913	66	0.891	102	0.812	138	0.789	174	0.992	210	0.913	246	0.891	282	0.812	318	0.789
31	0.919	67	0.907	103	0.804	139	0.779	175	0.990	211	0.919	247	0.907	283	0.804	319	0.779
32	0.923	68	0.923	104	0.799	140	0.770	176	0.983	212	0.923	248	0.923	284	0.799	320	0.770
33	0.925	69	0.939	105	0.796	141	0.762	177	0.977	213	0.925	249	0.939	285	0.796	321	0.762
34	0.925	70	0.956	106	0.796	142	0.756	178	0.972	214	0.925	250	0.956	286	0.796	322	0.756
35	0.923	71	0.962	107	0.797	143	0.753	179	0.968	215	0.923	251	0.962	287	0.797	323	0.753

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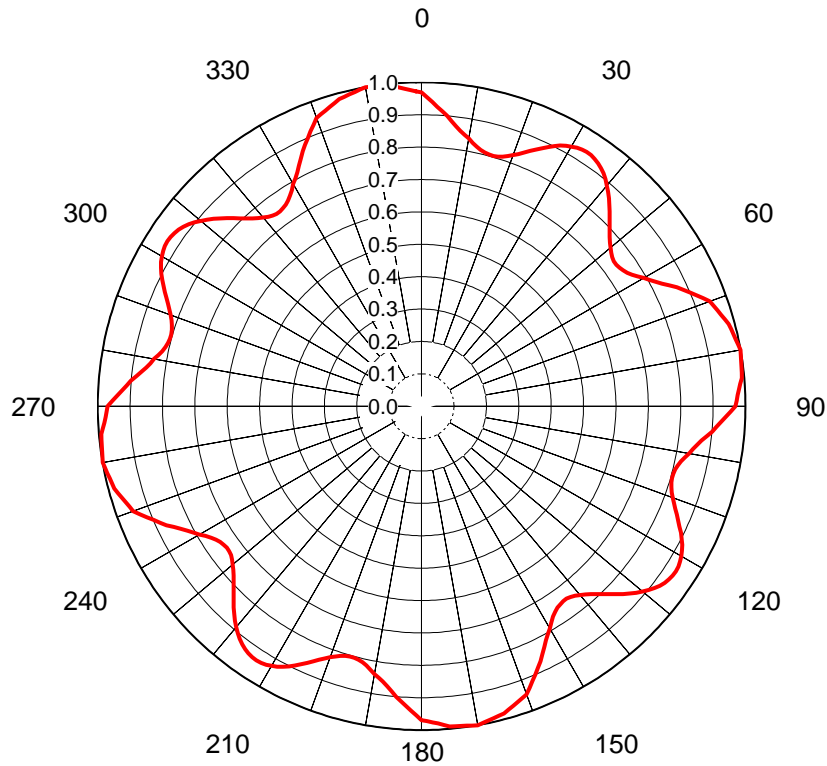
## AZIMUTH PATTERN Horizontal Polarization

In Free Space

Proposal No. **C-70954-3**  
 Date **15-Aug-19**  
 Call Letters **WVBT**  
 Channel **29**  
 Frequency **563 MHz**  
 Antenna Type **TUA-O4-8/32H-1-R SM**  
 Gain **1.3 (1.12dB)**  
 Calculated  
 Circularity **+/- 2.0 dB**

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.978	36	0.929	72	0.967	108	0.778	144	0.725	180	0.978	216	0.929	252	0.967	288	0.778
1	0.962	37	0.922	73	0.975	109	0.784	145	0.731	181	0.962	217	0.922	253	0.975	289	0.784
2	0.947	38	0.912	74	0.982	110	0.792	146	0.737	182	0.947	218	0.912	254	0.982	290	0.792
3	0.932	39	0.901	75	0.990	111	0.803	147	0.747	183	0.932	219	0.901	255	0.990	291	0.803
4	0.917	40	0.887	76	0.991	112	0.815	148	0.759	184	0.917	220	0.887	256	0.991	292	0.815
5	0.902	41	0.873	77	0.993	113	0.829	149	0.773	185	0.902	221	0.873	257	0.993	293	0.829
6	0.884	42	0.857	78	0.995	114	0.843	150	0.790	186	0.884	222	0.857	258	0.995	294	0.843
7	0.868	43	0.841	79	0.997	115	0.858	151	0.805	187	0.868	223	0.841	259	0.997	295	0.858
8	0.852	44	0.824	80	0.999	116	0.873	152	0.821	188	0.852	224	0.824	260	0.999	296	0.873
9	0.838	45	0.806	81	0.999	117	0.887	153	0.838	189	0.838	225	0.806	261	0.999	297	0.887
10	0.826	46	0.790	82	0.999	118	0.900	154	0.857	190	0.826	226	0.790	262	0.999	298	0.900
11	0.812	47	0.774	83	0.999	119	0.911	155	0.876	191	0.812	227	0.774	263	0.999	299	0.911
12	0.799	48	0.760	84	1.000	120	0.920	156	0.891	192	0.799	228	0.760	264	1.000	300	0.920
13	0.789	49	0.748	85	1.000	121	0.928	157	0.907	193	0.789	229	0.748	265	1.000	301	0.928
14	0.782	50	0.738	86	0.995	122	0.933	158	0.922	194	0.782	230	0.738	266	0.995	302	0.933
15	0.777	51	0.730	87	0.990	123	0.936	159	0.938	195	0.777	231	0.730	267	0.990	303	0.936
16	0.774	52	0.725	88	0.985	124	0.936	160	0.954	196	0.774	232	0.725	268	0.985	304	0.936
17	0.775	53	0.723	89	0.981	125	0.933	161	0.960	197	0.775	233	0.723	269	0.981	305	0.933
18	0.778	54	0.725	90	0.978	126	0.929	162	0.967	198	0.778	234	0.725	270	0.978	306	0.929
19	0.784	55	0.731	91	0.962	127	0.922	163	0.975	199	0.784	235	0.731	271	0.962	307	0.922
20	0.792	56	0.737	92	0.947	128	0.912	164	0.982	200	0.792	236	0.737	272	0.947	308	0.912
21	0.803	57	0.747	93	0.932	129	0.901	165	0.990	201	0.803	237	0.747	273	0.932	309	0.901
22	0.815	58	0.759	94	0.917	130	0.887	166	0.991	202	0.815	238	0.759	274	0.917	310	0.887
23	0.829	59	0.773	95	0.902	131	0.873	167	0.993	203	0.829	239	0.773	275	0.902	311	0.873
24	0.843	60	0.790	96	0.884	132	0.857	168	0.995	204	0.843	240	0.790	276	0.884	312	0.857
25	0.858	61	0.805	97	0.868	133	0.841	169	0.997	205	0.858	241	0.805	277	0.868	313	0.841
26	0.873	62	0.821	98	0.852	134	0.824	170	0.999	206	0.873	242	0.821	278	0.852	314	0.824
27	0.887	63	0.838	99	0.838	135	0.806	171	0.999	207	0.887	243	0.838	279	0.838	315	0.806
28	0.900	64	0.857	100	0.826	136	0.790	172	0.999	208	0.900	244	0.857	280	0.826	316	0.790
29	0.911	65	0.876	101	0.812	137	0.774	173	0.999	209	0.911	245	0.876	281	0.812	317	0.774
30	0.920	66	0.891	102	0.799	138	0.760	174	1.000	210	0.920	246	0.891	282	0.799	318	0.760
31	0.928	67	0.907	103	0.789	139	0.748	175	1.000	211	0.928	247	0.907	283	0.789	319	0.748
32	0.933	68	0.922	104	0.782	140	0.738	176	0.995	212	0.933	248	0.922	284	0.782	320	0.738
33	0.936	69	0.938	105	0.777	141	0.730	177	0.990	213	0.936	249	0.938	285	0.777	321	0.730
34	0.936	70	0.954	106	0.774	142	0.725	178	0.985	214	0.936	250	0.954	286	0.774	322	0.725
35	0.933	71	0.960	107	0.775	143	0.723	179	0.981	215	0.933	251	0.960	287	0.775	323	0.723

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## AZIMUTH PATTERN Horizontal Polarization

In Free Space

Proposal No. **C-70954-3**  
 Date **15-Aug-19**  
 Call Letters **WVBT**  
 Channel **21**  
 Frequency **515 MHz**  
 Antenna Type **TUA-O4-8/32H-1-R SM**  
 Gain **1.28 (1.07dB)**  
 Calculated  
 Circularity **+/- 2.0 dB**

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.969	36	0.927	72	0.960	108	0.811	144	0.743	180	0.969	216	0.927	252	0.960	288	0.811	324	0.743
1	0.955	37	0.921	73	0.967	109	0.817	145	0.746	181	0.955	217	0.921	253	0.967	289	0.817	325	0.746
2	0.940	38	0.912	74	0.974	110	0.825	146	0.750	182	0.940	218	0.912	254	0.974	290	0.825	326	0.750
3	0.926	39	0.902	75	0.982	111	0.834	147	0.757	183	0.926	219	0.902	255	0.982	291	0.834	327	0.757
4	0.913	40	0.890	76	0.985	112	0.845	148	0.766	184	0.913	220	0.890	256	0.985	292	0.845	328	0.766
5	0.901	41	0.878	77	0.988	113	0.856	149	0.778	185	0.901	221	0.878	257	0.988	293	0.856	329	0.778
6	0.885	42	0.865	78	0.992	114	0.867	150	0.793	186	0.885	222	0.865	258	0.992	294	0.867	330	0.793
7	0.871	43	0.850	79	0.996	115	0.879	151	0.804	187	0.871	223	0.850	259	0.996	295	0.879	331	0.804
8	0.859	44	0.836	80	1.000	116	0.891	152	0.818	188	0.859	224	0.836	260	1.000	296	0.891	332	0.818
9	0.848	45	0.821	81	0.998	117	0.902	153	0.834	189	0.848	225	0.821	261	0.998	297	0.902	333	0.834
10	0.840	46	0.807	82	0.996	118	0.911	154	0.851	190	0.840	226	0.807	262	0.996	298	0.911	334	0.851
11	0.828	47	0.793	83	0.995	119	0.919	155	0.869	191	0.828	227	0.793	263	0.995	299	0.919	335	0.869
12	0.819	48	0.781	84	0.994	120	0.926	156	0.884	192	0.819	228	0.781	264	0.994	300	0.926	336	0.884
13	0.812	49	0.770	85	0.993	121	0.931	157	0.899	193	0.812	229	0.770	265	0.993	301	0.931	337	0.899
14	0.807	50	0.761	86	0.986	122	0.935	158	0.915	194	0.807	230	0.761	266	0.986	302	0.935	338	0.915
15	0.804	51	0.753	87	0.981	123	0.936	159	0.931	195	0.804	231	0.753	267	0.981	303	0.936	339	0.931
16	0.804	52	0.747	88	0.976	124	0.935	160	0.947	196	0.804	232	0.747	268	0.976	304	0.935	340	0.947
17	0.806	53	0.744	89	0.973	125	0.932	161	0.954	197	0.806	233	0.744	269	0.973	305	0.932	341	0.954
18	0.811	54	0.743	90	0.969	126	0.927	162	0.960	198	0.811	234	0.743	270	0.969	306	0.927	342	0.960
19	0.817	55	0.746	91	0.955	127	0.921	163	0.967	199	0.817	235	0.746	271	0.955	307	0.921	343	0.967
20	0.825	56	0.750	92	0.940	128	0.912	164	0.974	200	0.825	236	0.750	272	0.940	308	0.912	344	0.974
21	0.834	57	0.757	93	0.926	129	0.902	165	0.982	201	0.834	237	0.757	273	0.926	309	0.902	345	0.982
22	0.845	58	0.766	94	0.913	130	0.890	166	0.985	202	0.845	238	0.766	274	0.913	310	0.890	346	0.985
23	0.856	59	0.778	95	0.901	131	0.878	167	0.988	203	0.856	239	0.778	275	0.901	311	0.878	347	0.988
24	0.867	60	0.793	96	0.885	132	0.865	168	0.992	204	0.867	240	0.793	276	0.885	312	0.865	348	0.992
25	0.879	61	0.804	97	0.871	133	0.850	169	0.996	205	0.879	241	0.804	277	0.871	313	0.850	349	0.996
26	0.891	62	0.818	98	0.859	134	0.836	170	1.000	206	0.891	242	0.818	278	0.859	314	0.836	350	1.000
27	0.902	63	0.834	99	0.848	135	0.821	171	0.998	207	0.902	243	0.834	279	0.848	315	0.821	351	0.998
28	0.911	64	0.851	100	0.840	136	0.807	172	0.996	208	0.911	244	0.851	280	0.840	316	0.807	352	0.996
29	0.919	65	0.869	101	0.828	137	0.793	173	0.995	209	0.919	245	0.869	281	0.828	317	0.793	353	0.995
30	0.926	66	0.884	102	0.819	138	0.781	174	0.994	210	0.926	246	0.884	282	0.819	318	0.781	354	0.994
31	0.931	67	0.899	103	0.812	139	0.770	175	0.993	211	0.931	247	0.899	283	0.812	319	0.770	355	0.993
32	0.935	68	0.915	104	0.807	140	0.761	176	0.986	212	0.935	248	0.915	284	0.807	320	0.761	356	0.986
33	0.936	69	0.931	105	0.804	141	0.753	177	0.981	213	0.936	249	0.931	285	0.804	321	0.753	357	0.981
34	0.935	70	0.947	106	0.804	142	0.747	178	0.976	214	0.935	250	0.947	286	0.804	322	0.747	358	0.976
35	0.932	71	0.954	107	0.806	143	0.744	179	0.973	215	0.932	251	0.954	287	0.806	323	0.744	359	0.973

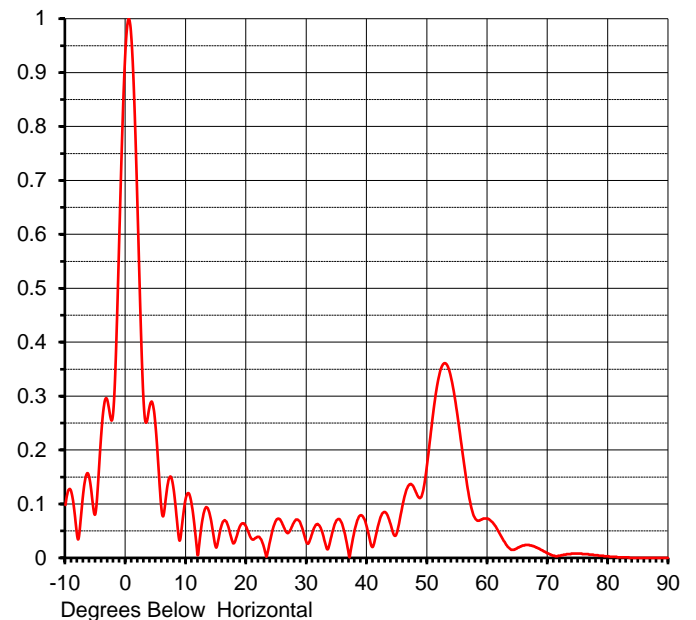
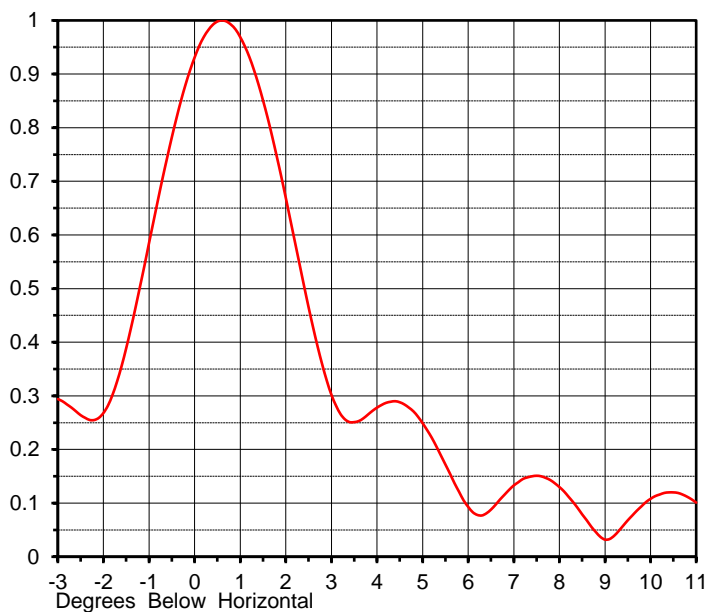
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## ELEVATION PATTERN

Proposal No. **C-70954-3**  
 Date **15-Aug-19**  
 Call Letters **WNLO**  
 Channel **45**  
 Frequency **659 MHz**  
 Antenna Type **TUA-O4-8/32H-1-R SM**

RMS Directivity at Main Lobe **15.6 ( 11.94 dB )**  
 RMS Directivity at Horizontal **14.2 ( 11.52 dB )**  
**Calculated**

Beam Tilt **0.50 deg**  
 Pattern Number **08U157050**



Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.098	10.0	0.113	30.0	0.028	50.0	0.177	70.0	0.008
-9.0	0.121	11.0	0.094	31.0	0.049	51.0	0.271	71.0	0.004
-8.0	0.037	12.0	0.006	32.0	0.061	52.0	0.340	72.0	0.004
-7.0	0.125	13.0	0.086	33.0	0.030	53.0	0.361	73.0	0.006
-6.0	0.146	14.0	0.077	34.0	0.036	54.0	0.331	74.0	0.008
-5.0	0.084	15.0	0.019	35.0	0.070	55.0	0.264	75.0	0.008
-4.0	0.239	16.0	0.064	36.0	0.058	56.0	0.182	76.0	0.007
-3.0	0.290	17.0	0.058	37.0	0.005	57.0	0.109	77.0	0.006
-2.0	0.282	18.0	0.028	38.0	0.054	58.0	0.072	78.0	0.005
-1.0	0.626	19.0	0.060	39.0	0.079	59.0	0.071	79.0	0.004
0.0	0.952	20.0	0.057	40.0	0.056	60.0	0.073	80.0	0.003
1.0	0.952	21.0	0.034	41.0	0.021	61.0	0.063	81.0	0.002
2.0	0.628	22.0	0.039	42.0	0.066	62.0	0.045	82.0	0.001
3.0	0.282	23.0	0.016	43.0	0.085	63.0	0.026	83.0	0.001
4.0	0.283	24.0	0.035	44.0	0.059	64.0	0.015	84.0	0.000
5.0	0.236	25.0	0.071	45.0	0.048	65.0	0.019	85.0	0.000
6.0	0.083	26.0	0.062	46.0	0.103	66.0	0.023	86.0	0.000
7.0	0.139	27.0	0.047	47.0	0.136	67.0	0.023	87.0	0.000
8.0	0.122	28.0	0.068	48.0	0.125	68.0	0.020	88.0	0.000
9.0	0.033	29.0	0.063	49.0	0.113	69.0	0.014	89.0	0.000
						90.0	0.000		

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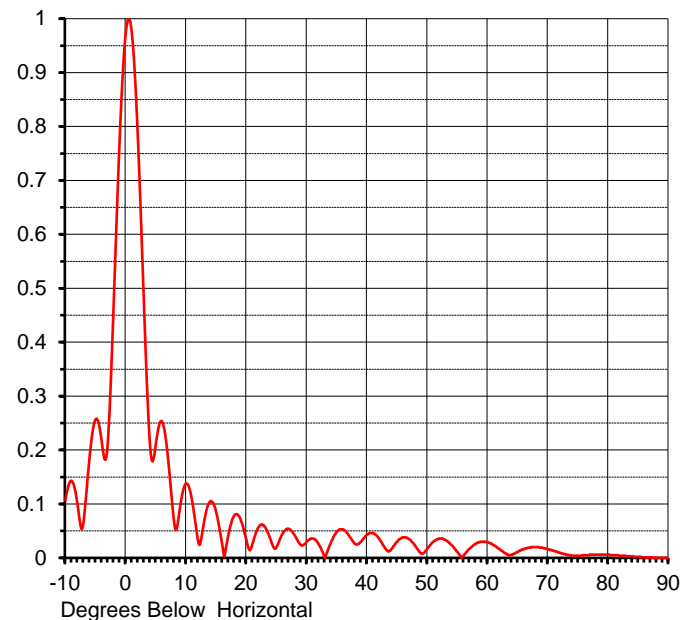
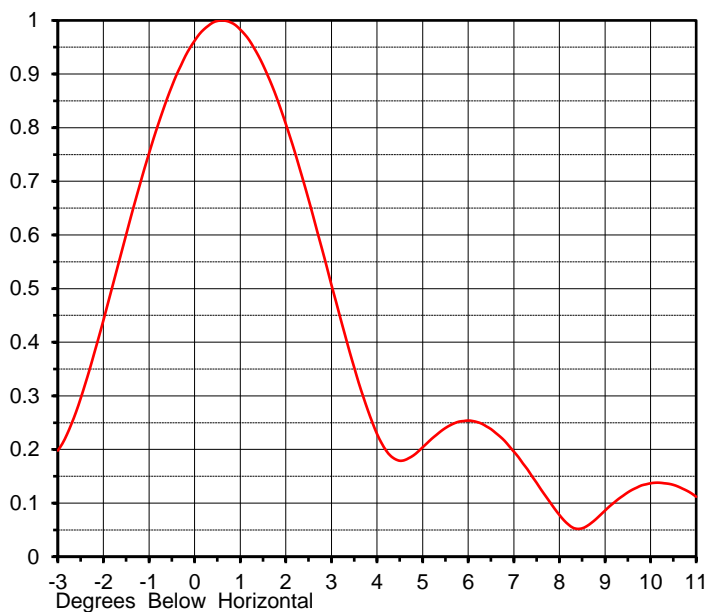


## ELEVATION PATTERN

Proposal No. **C-70954-3**  
 Date **15-Aug-19**  
 Call Letters **WNLO**  
 Channel **14**  
 Frequency **473 MHz**  
 Antenna Type **TUA-O4-8/32H-1-R SM**

RMS Directivity at Main Lobe **15.7 ( 11.95 dB )**  
 RMS Directivity at Horizontal **14.9 ( 11.73 dB )**  
**Calculated**

Beam Tilt **0.50 deg**  
 Pattern Number **08U157050**



Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.107	10.0	0.138	30.0	0.030	50.0	0.017	70.0	0.016
-9.0	0.143	11.0	0.106	31.0	0.036	51.0	0.030	71.0	0.013
-8.0	0.099	12.0	0.031	32.0	0.025	52.0	0.036	72.0	0.009
-7.0	0.067	13.0	0.068	33.0	0.000	53.0	0.033	73.0	0.006
-6.0	0.187	14.0	0.105	34.0	0.028	54.0	0.024	74.0	0.004
-5.0	0.257	15.0	0.084	35.0	0.048	55.0	0.011	75.0	0.004
-4.0	0.217	16.0	0.024	36.0	0.053	56.0	0.004	76.0	0.005
-3.0	0.211	17.0	0.042	37.0	0.042	57.0	0.017	77.0	0.006
-2.0	0.473	18.0	0.079	38.0	0.026	58.0	0.026	78.0	0.006
-1.0	0.780	19.0	0.072	39.0	0.030	59.0	0.030	79.0	0.006
0.0	0.974	20.0	0.033	40.0	0.043	60.0	0.029	80.0	0.006
1.0	0.974	21.0	0.026	41.0	0.046	61.0	0.024	81.0	0.005
2.0	0.781	22.0	0.057	42.0	0.036	62.0	0.016	82.0	0.004
3.0	0.476	23.0	0.058	43.0	0.018	63.0	0.008	83.0	0.003
4.0	0.212	24.0	0.034	44.0	0.016	64.0	0.006	84.0	0.003
5.0	0.212	25.0	0.020	45.0	0.030	65.0	0.011	85.0	0.002
6.0	0.253	26.0	0.045	46.0	0.038	66.0	0.016	86.0	0.001
7.0	0.186	27.0	0.054	47.0	0.035	67.0	0.019	87.0	0.001
8.0	0.068	28.0	0.042	48.0	0.022	68.0	0.020	88.0	0.000
9.0	0.094	29.0	0.024	49.0	0.008	69.0	0.019	89.0	0.000
								90.0	0.000

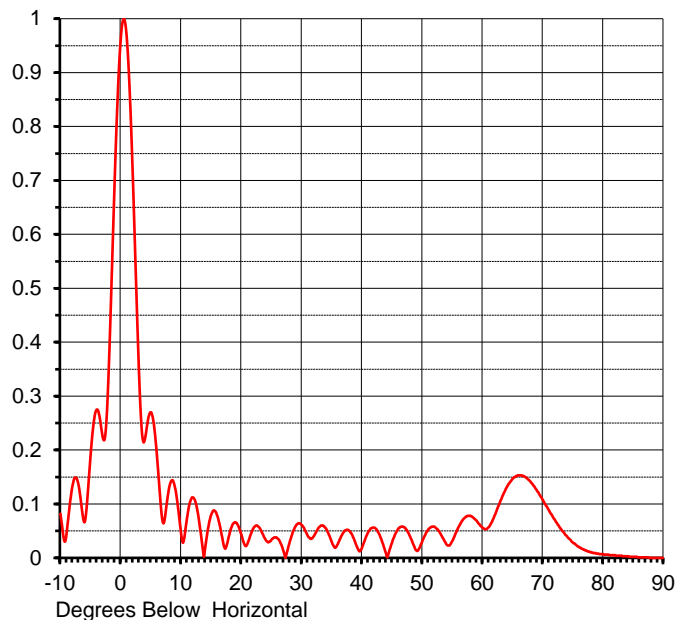
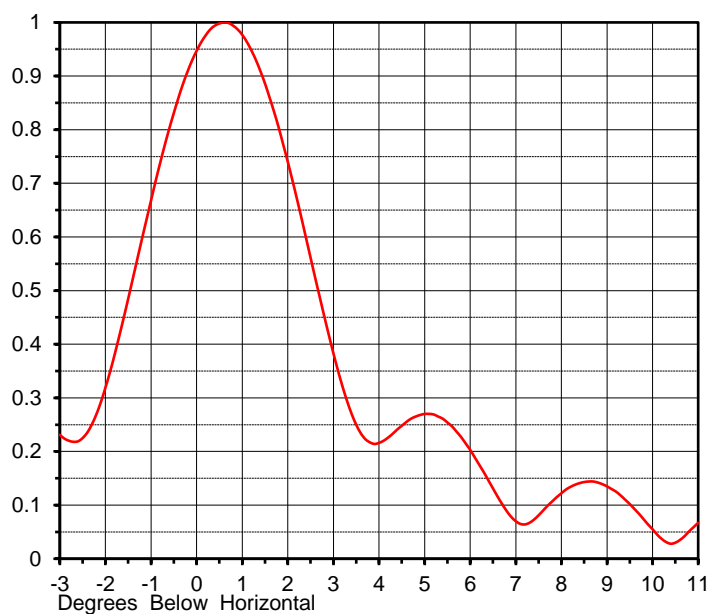
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## ELEVATION PATTERN

Proposal No. **C-70954-3**  
 Date **15-Aug-19**  
 Call Letters **WAVY**  
 Channel **31**  
 Frequency **575 MHz**  
 Antenna Type **TUA-O4-8/32H-1-R SM**

RMS Directivity at Main Lobe **16.9 ( 12.28 dB )**  
 RMS Directivity at Horizontal **15.7 ( 11.96 dB )**  
**Calculated**

Beam Tilt **0.50 deg**  
 Pattern Number **08U170050**



Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.082	10.0	0.045	30.0	0.061	50.0	0.031	70.0	0.107
-9.0	0.044	11.0	0.075	31.0	0.041	51.0	0.053	71.0	0.088
-8.0	0.134	12.0	0.112	32.0	0.040	52.0	0.058	72.0	0.070
-7.0	0.135	13.0	0.067	33.0	0.058	53.0	0.045	73.0	0.053
-6.0	0.066	14.0	0.019	34.0	0.055	54.0	0.025	74.0	0.040
-5.0	0.191	15.0	0.080	35.0	0.029	55.0	0.032	75.0	0.028
-4.0	0.275	16.0	0.078	36.0	0.026	56.0	0.057	76.0	0.020
-3.0	0.224	17.0	0.027	37.0	0.048	57.0	0.074	77.0	0.014
-2.0	0.348	18.0	0.043	38.0	0.049	58.0	0.078	78.0	0.010
-1.0	0.704	19.0	0.066	39.0	0.025	59.0	0.069	79.0	0.008
0.0	0.963	20.0	0.043	40.0	0.019	60.0	0.056	80.0	0.007
1.0	0.964	21.0	0.026	41.0	0.047	61.0	0.057	81.0	0.005
2.0	0.706	22.0	0.055	42.0	0.056	62.0	0.079	82.0	0.005
3.0	0.351	23.0	0.056	43.0	0.040	63.0	0.107	83.0	0.004
4.0	0.220	24.0	0.034	44.0	0.007	64.0	0.131	84.0	0.003
5.0	0.270	25.0	0.034	45.0	0.029	65.0	0.147	85.0	0.002
6.0	0.189	26.0	0.036	46.0	0.054	66.0	0.153	86.0	0.001
7.0	0.065	27.0	0.012	47.0	0.057	67.0	0.150	87.0	0.001
8.0	0.129	28.0	0.029	48.0	0.039	68.0	0.140	88.0	0.000
9.0	0.130	29.0	0.059	49.0	0.014	69.0	0.125	89.0	0.000
								90.0	0.000

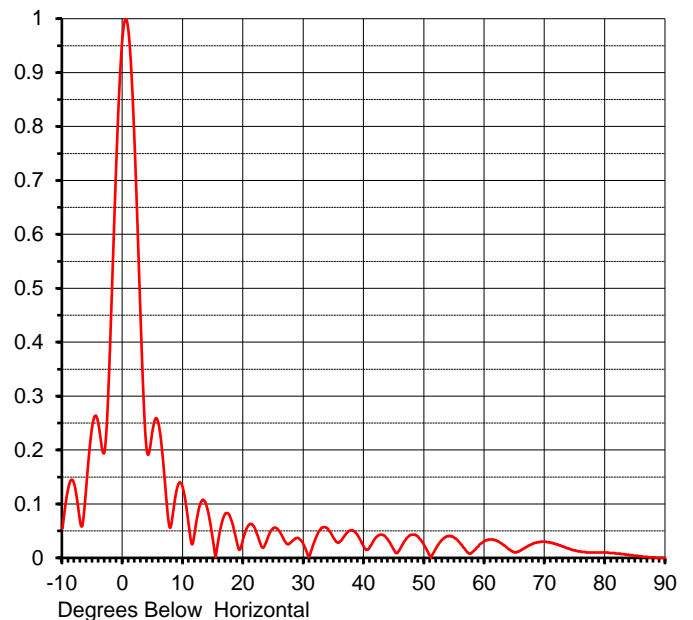
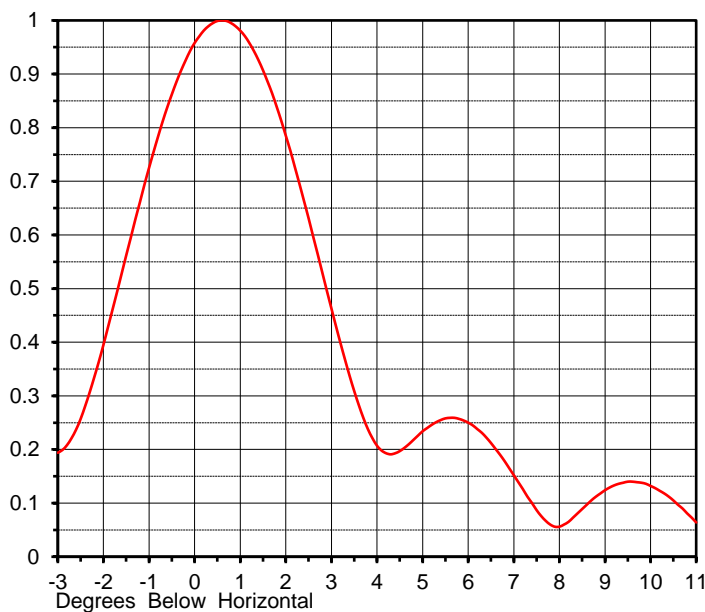
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## ELEVATION PATTERN

Proposal No. **C-70954-3**  
 Date **15-Aug-19**  
 Call Letters **WAVY**  
 Channel **19**  
 Frequency **503 MHz**  
 Antenna Type **TUA-O4-8/32H-1-R SM**

RMS Directivity at Main Lobe **16.4 ( 12.14 dB )**  
 RMS Directivity at Horizontal **15.4 ( 11.88 dB )**  
**Calculated**

Beam Tilt **0.50 deg**  
 Pattern Number **08U164050**



Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.055	10.0	0.128	30.0	0.024	50.0	0.023	70.0	0.030
-9.0	0.131	11.0	0.056	31.0	0.005	51.0	0.002	71.0	0.028
-8.0	0.135	12.0	0.052	32.0	0.037	52.0	0.019	72.0	0.025
-7.0	0.063	13.0	0.104	33.0	0.056	53.0	0.034	73.0	0.021
-6.0	0.139	14.0	0.092	34.0	0.054	54.0	0.040	74.0	0.017
-5.0	0.248	15.0	0.029	35.0	0.036	55.0	0.037	75.0	0.014
-4.0	0.246	16.0	0.043	36.0	0.030	56.0	0.026	76.0	0.011
-3.0	0.199	17.0	0.082	37.0	0.044	57.0	0.012	77.0	0.010
-2.0	0.428	18.0	0.070	38.0	0.051	58.0	0.011	78.0	0.010
-1.0	0.755	19.0	0.025	39.0	0.041	59.0	0.022	79.0	0.010
0.0	0.970	20.0	0.037	40.0	0.020	60.0	0.031	80.0	0.010
1.0	0.971	21.0	0.062	41.0	0.021	61.0	0.034	81.0	0.009
2.0	0.757	22.0	0.052	42.0	0.038	62.0	0.032	82.0	0.008
3.0	0.430	23.0	0.021	43.0	0.043	63.0	0.025	83.0	0.007
4.0	0.198	24.0	0.036	44.0	0.033	64.0	0.016	84.0	0.005
5.0	0.240	25.0	0.055	45.0	0.014	65.0	0.010	85.0	0.004
6.0	0.245	26.0	0.049	46.0	0.017	66.0	0.014	86.0	0.003
7.0	0.139	27.0	0.029	47.0	0.035	67.0	0.021	87.0	0.002
8.0	0.060	28.0	0.030	48.0	0.043	68.0	0.026	88.0	0.001
9.0	0.129	29.0	0.037	49.0	0.039	69.0	0.029	89.0	0.000
								90.0	0.000

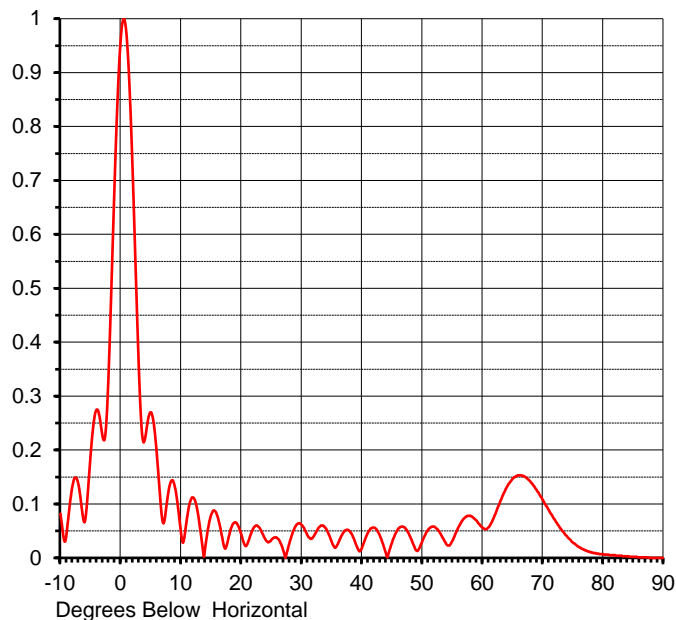
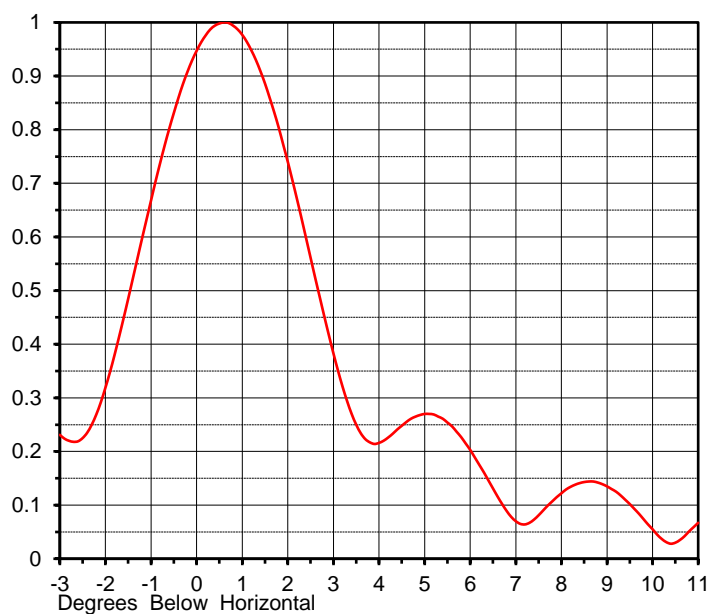
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## ELEVATION PATTERN

Proposal No. **C-70954-3**  
 Date **15-Aug-19**  
 Call Letters **WVBT**  
 Channel **29**  
 Frequency **563 MHz**  
 Antenna Type **TUA-O4-8/32H-1-R SM**

RMS Directivity at Main Lobe **16.9 ( 12.28 dB )**  
 RMS Directivity at Horizontal **15.7 ( 11.96 dB )**  
**Calculated**

Beam Tilt **0.50 deg**  
 Pattern Number **08U170050**



Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.082	10.0	0.045	30.0	0.061	50.0	0.031	70.0	0.107
-9.0	0.044	11.0	0.075	31.0	0.041	51.0	0.053	71.0	0.088
-8.0	0.134	12.0	0.112	32.0	0.040	52.0	0.058	72.0	0.070
-7.0	0.135	13.0	0.067	33.0	0.058	53.0	0.045	73.0	0.053
-6.0	0.066	14.0	0.019	34.0	0.055	54.0	0.025	74.0	0.040
-5.0	0.191	15.0	0.080	35.0	0.029	55.0	0.032	75.0	0.028
-4.0	0.275	16.0	0.078	36.0	0.026	56.0	0.057	76.0	0.020
-3.0	0.224	17.0	0.027	37.0	0.048	57.0	0.074	77.0	0.014
-2.0	0.348	18.0	0.043	38.0	0.049	58.0	0.078	78.0	0.010
-1.0	0.704	19.0	0.066	39.0	0.025	59.0	0.069	79.0	0.008
0.0	0.963	20.0	0.043	40.0	0.019	60.0	0.056	80.0	0.007
1.0	0.964	21.0	0.026	41.0	0.047	61.0	0.057	81.0	0.005
2.0	0.706	22.0	0.055	42.0	0.056	62.0	0.079	82.0	0.005
3.0	0.351	23.0	0.056	43.0	0.040	63.0	0.107	83.0	0.004
4.0	0.220	24.0	0.034	44.0	0.007	64.0	0.131	84.0	0.003
5.0	0.270	25.0	0.034	45.0	0.029	65.0	0.147	85.0	0.002
6.0	0.189	26.0	0.036	46.0	0.054	66.0	0.153	86.0	0.001
7.0	0.065	27.0	0.012	47.0	0.057	67.0	0.150	87.0	0.001
8.0	0.129	28.0	0.029	48.0	0.039	68.0	0.140	88.0	0.000
9.0	0.130	29.0	0.059	49.0	0.014	69.0	0.125	89.0	0.000
								90.0	0.000

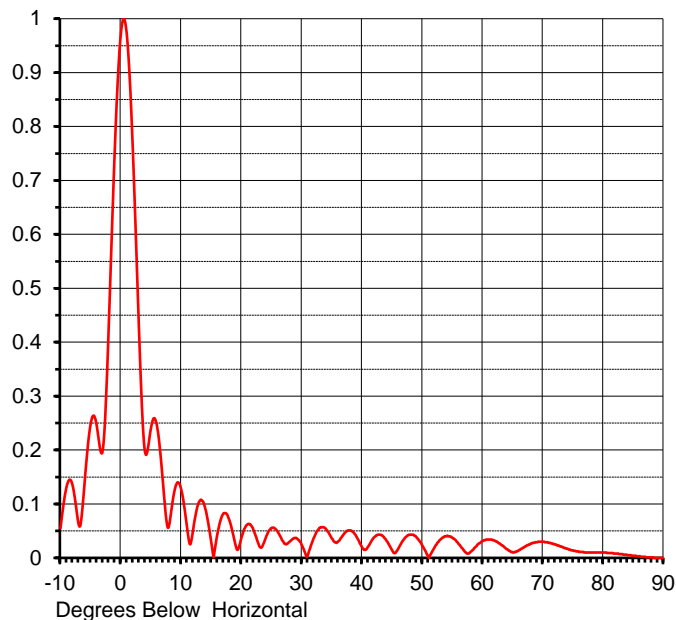
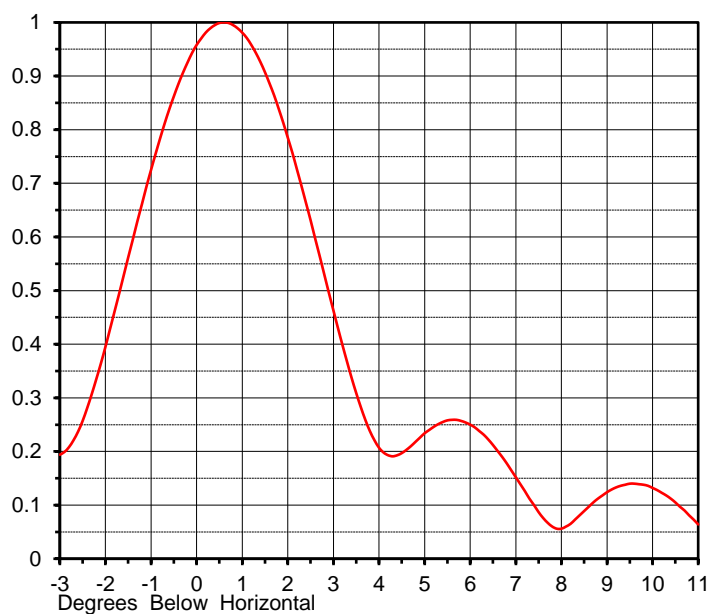
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## ELEVATION PATTERN

Proposal No. **C-70954-3**  
 Date **15-Aug-19**  
 Call Letters **WVBT**  
 Channel **21**  
 Frequency **515 MHz**  
 Antenna Type **TUA-O4-8/32H-1-R SM**

RMS Directivity at Main Lobe **16.4 ( 12.14 dB )**  
 RMS Directivity at Horizontal **15.4 ( 11.88 dB )**  
**Calculated**

Beam Tilt **0.50 deg**  
 Pattern Number **08U164050**

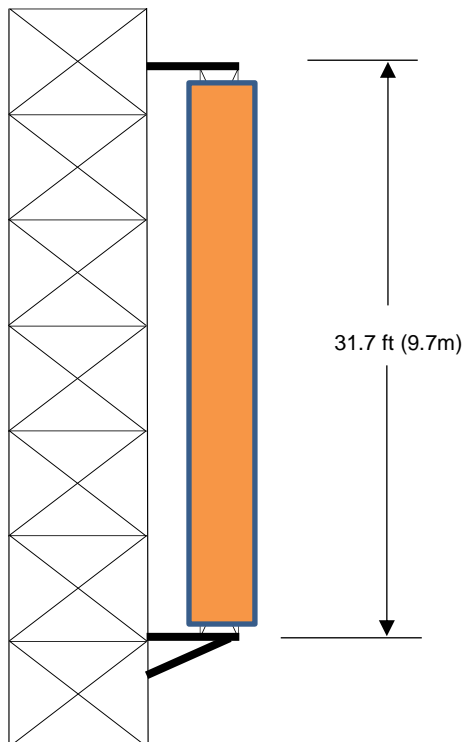


Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.055	10.0	0.128	30.0	0.024	50.0	0.023	70.0	0.030
-9.0	0.131	11.0	0.056	31.0	0.005	51.0	0.002	71.0	0.028
-8.0	0.135	12.0	0.052	32.0	0.037	52.0	0.019	72.0	0.025
-7.0	0.063	13.0	0.104	33.0	0.056	53.0	0.034	73.0	0.021
-6.0	0.139	14.0	0.092	34.0	0.054	54.0	0.040	74.0	0.017
-5.0	0.248	15.0	0.029	35.0	0.036	55.0	0.037	75.0	0.014
-4.0	0.246	16.0	0.043	36.0	0.030	56.0	0.026	76.0	0.011
-3.0	0.199	17.0	0.082	37.0	0.044	57.0	0.012	77.0	0.010
-2.0	0.428	18.0	0.070	38.0	0.051	58.0	0.011	78.0	0.010
-1.0	0.755	19.0	0.025	39.0	0.041	59.0	0.022	79.0	0.010
0.0	0.970	20.0	0.037	40.0	0.020	60.0	0.031	80.0	0.010
1.0	0.971	21.0	0.062	41.0	0.021	61.0	0.034	81.0	0.009
2.0	0.757	22.0	0.052	42.0	0.038	62.0	0.032	82.0	0.008
3.0	0.430	23.0	0.021	43.0	0.043	63.0	0.025	83.0	0.007
4.0	0.198	24.0	0.036	44.0	0.033	64.0	0.016	84.0	0.005
5.0	0.240	25.0	0.055	45.0	0.014	65.0	0.010	85.0	0.004
6.0	0.245	26.0	0.049	46.0	0.017	66.0	0.014	86.0	0.003
7.0	0.139	27.0	0.029	47.0	0.035	67.0	0.021	87.0	0.002
8.0	0.060	28.0	0.030	48.0	0.043	68.0	0.026	88.0	0.001
9.0	0.129	29.0	0.037	49.0	0.039	69.0	0.029	89.0	0.000
								90.0	0.000

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## MECHANICAL SPECIFICATIONS



Proposal No. **C-70954-3**  
 Date **15-Aug-19**  
 Call Letters **WNLO**  
 Channel **45**  
 Frequency **659 MHz**  
 Antenna Type **TUA-O4-8/32H-1-R SM**

### Preliminary Specifications

#### Side Mounted

#### With ice TIA-222-G

Height AGL(z) 1200 ft (365.8 m)  
 Basic Wind Speed 100 m/h (160.9 km/h)

Structure Class II  
 Exposure Category C  
 Topography Category 1

Design Ice 0.5 in  $t_{iz} = 1.40$  in  
 Wind Speed w/Ice 40 m/h (64.4 km/h)

#### Mechanical Specifications

		without ice	with ice	
Height	H2	31.7 ft (9.7m)		
Height of Center of Radiation	H3	15.85 ft (4.8m)		
Effective Projected Area	(EPA) <sub>A</sub>	69.5 ft <sup>2</sup> (6.5m <sup>2</sup> )	141 ft <sup>2</sup> (13.1m <sup>2</sup> )	Mounts Excluded
Weight	W	3700 lb (1.7t)	6530 lb (3t)	Mounts Excluded

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

Prepared by: CAB

Date: 24-Jul-17

ME:

EE:

Rev. No.3 by: CAB

Date: 15-Aug-19

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## Summary

Proposal No.	<b>C-70954-3</b>
Date	<b>15-Aug-19</b>
Call Letters	<b>WNLO</b>
Channel	<b>45</b>
Frequency	<b>659 MHz</b>
Antenna Type	<b>TUA-O4-8/32H-1-R SM</b>

## Antenna

		Hpol
ERP:	<b>15.0 kW</b>	<b>( 11.76 dBk )</b>
RMS Gain*	15.62	( 11.94 dB )

Antenna Input Power	<b>1.0 kW</b>	<b>-( 0.18 dBk )</b>
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## Transmission Line

Type:	<b>Flexline Air</b>	Attenuation:	<b>( 1.84 dB )</b>
Size:	<b>5"</b>	Efficiency:	<b>65.4%</b>
Impedance:	<b>50 Ohm</b>		
Length:	<b>825 ft</b>	<b>251.5 m</b>	

## Transmitter Output

<b>1.5 kW</b>	<b>( 1.67 dBk )</b>
---------------	---------------------

Transmitter filter losses not included

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

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## Summary

Proposal No.	<b>C-70954-3</b>
Date	<b>15-Aug-19</b>
Call Letters	<b>WNLO</b>
Channel	<b>14</b>
Frequency	<b>473 MHz</b>
Antenna Type	<b>TUA-O4-8/32H-1-R SM</b>

## Antenna

		Hpol
ERP:	<b>7.72 kW</b>	<b>( 8.88 dBk )</b>
RMS Gain*	15.66	( 11.95 dB )

<b>Antenna Input Power</b>	<b>0.5 kW</b>	<b>-( 3.07 dBk )</b>
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## Transmission Line

Type:	<b>Flexline Air</b>	Attenuation:	<b>( 1.53 dB )</b>
Size:	<b>5"</b>	Efficiency:	<b>70.4%</b>
Impedance:	<b>50 Ohm</b>		
Length:	<b>825 ft</b>	<b>251.5 m</b>	

## Transmitter Output

<b>0.70 kW</b>	<b>-( 1.55 dBk )</b>
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Transmitter filter losses not included

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

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## Summary

Proposal No.	<b>C-70954-3</b>
Date	<b>15-Aug-19</b>
Call Letters	<b>WAVY</b>
Channel	<b>31</b>
Frequency	<b>575 MHz</b>
Antenna Type	<b>TUA-O4-8/32H-1-R SM</b>

## Antenna

	<b>Hpol</b>
<b>ERP:</b>	<b>375.0 kW ( 25.74 dBk )</b>
<b>RMS Gain*</b>	<b>16.91 ( 12.28 dB )</b>

<b>Antenna Input Power</b>	<b>22.2 kW ( 13.46 dBk )</b>
----------------------------	------------------------------

## Transmission Line

Type:	<b>Flexline Air</b>	Attenuation:	<b>( 1.71 dB )</b>
Size:	<b>5"</b>	Efficiency:	<b>67.5%</b>
Impedance:	<b>50 Ohm</b>		
Length:	<b>825 ft</b>	<b>251.5 m</b>	

## Transmitter Output

<b>32.8 kW ( 15.16 dBk )</b>
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Transmitter filter losses not included

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

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## Summary

Proposal No.	<b>C-70954-3</b>
Date	<b>15-Aug-19</b>
Call Letters	<b>WAVY</b>
Channel	<b>19</b>
Frequency	<b>503 MHz</b>
Antenna Type	<b>TUA-O4-8/32H-1-R SM</b>

## Antenna

	Hpol	
ERP:	<b>375.0 kW</b>	<b>( 25.74 dBk )</b>
RMS Gain*	16.38	( 12.14 dB )

<b>Antenna Input Power</b>	<b>22.9 kW</b>	<b>( 13.60 dBk )</b>
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## Transmission Line

Type:	<b>Flexline Air</b>	Attenuation:	<b>( 1.58 dB )</b>
Size:	<b>5"</b>	Efficiency:	<b>69.5%</b>
Impedance:	<b>50 Ohm</b>		
Length:	<b>825 ft</b>	<b>251.5 m</b>	

## Transmitter Output

<b>32.9 kW</b>	<b>( 15.18 dBk )</b>
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Transmitter filter losses not included

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

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## Summary

Proposal No.	<b>C-70954-3</b>
Date	<b>15-Aug-19</b>
Call Letters	<b>WVBT</b>
Channel	<b>29</b>
Frequency	<b>563 MHz</b>
Antenna Type	<b>TUA-O4-8/32H-1-R SM</b>

## Antenna

	<b>Hpol</b>
<b>ERP:</b>	<b>375.0 kW ( 25.74 dBk )</b>
<b>RMS Gain*</b>	<b>16.91 ( 12.28 dB )</b>

<b>Antenna Input Power</b>	<b>22.2 kW ( 13.46 dBk )</b>
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## Transmission Line

Type:	<b>Flexline Air</b>	Attenuation:	<b>( 1.69 dB )</b>
Size:	<b>5"</b>	Efficiency:	<b>67.8%</b>
Impedance:	<b>50 Ohm</b>		
Length:	<b>825 ft</b>	<b>251.5 m</b>	

## Transmitter Output

<b>32.7 kW ( 15.14 dBk )</b>
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Transmitter filter losses not included

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

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## Summary

Proposal No.	<b>C-70954-3</b>
Date	<b>15-Aug-19</b>
Call Letters	<b>WVBT</b>
Channel	<b>21</b>
Frequency	<b>515 MHz</b>
Antenna Type	<b>TUA-O4-8/32H-1-R SM</b>

## Antenna

	Hpol	
ERP:	<b>295.0 kW</b>	<b>( 24.70 dBk )</b>
RMS Gain*	16.38	( 12.14 dB )

<b>Antenna Input Power</b>	<b>18.0 kW</b>	<b>( 12.56 dBk )</b>
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## Transmission Line

Type:	<b>Flexline Air</b>	Attenuation:	<b>( 1.60 dB )</b>
Size:	<b>5"</b>	Efficiency:	<b>69.2%</b>
Impedance:	<b>50 Ohm</b>		
Length:	<b>825 ft</b>	<b>251.5 m</b>	

## Transmitter Output

<b>26.0 kW</b>	<b>( 14.16 dBk )</b>
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Transmitter filter losses not included

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

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