Dielectric®

Antenna Model: **TFU-28GTH/VP-R O6DC**

Proposal Number:	**C-71043-1**
Date:	**28-Nov-17**
Customer:	**WIFS**
Location:	**Janesville, WI**

Electrical Specifications

Polarization:	**Elliptical**				
Azimuth Pattern:	**Omni**				
Antenna Input:	**6-1/8"**	**75 Ohm**	**EIA/DCA**		
VSWR:	Channel	**1.08 : 1**		Band	**1.08 : 1**
Bandwidth:	**12 MHz**				
Rated Input Power:	**60 kW**	**(17.78 dBk)**	**Maximum combined average power**		

Mechanical Specifications

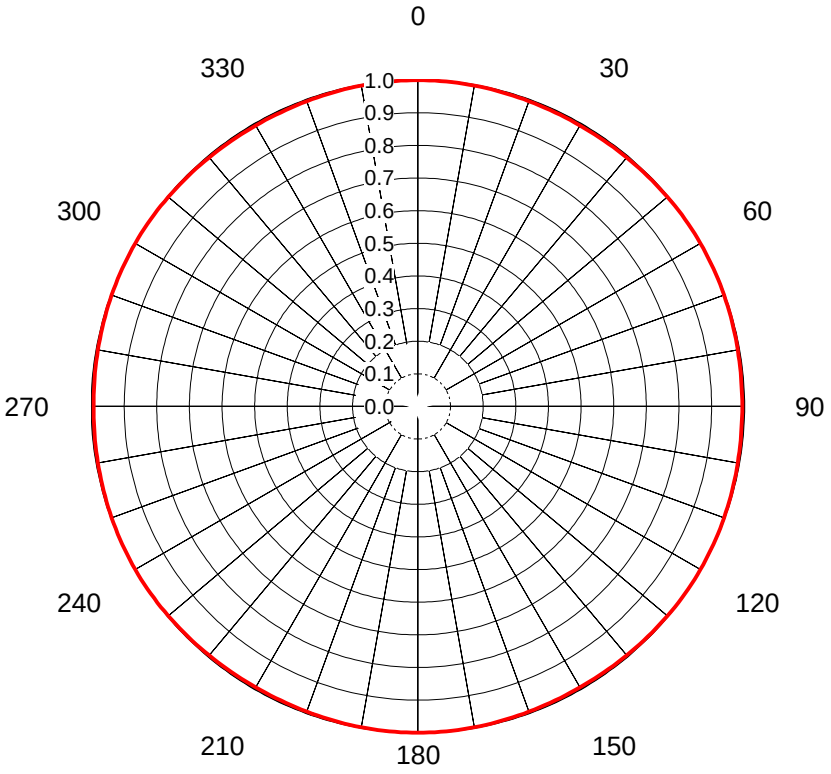
Mounting:	**Top Mounted**				
Environmental Protection:	**Full Radome**				
Height:	**57.1 ft (17.4m)**	less Lightning Protector	**61.1 ft (18.6m)**	with Lightning Protector	
Weight:	**8000 lb (3.6t)**				
Effective Projected Area:	**70 ft² (6.5m²)**	**TIA-222-G**	Basic Wind Speed:	**90 m/h (144.8 km/h)**	

Channel Specifications

	Call	CH	Freq	Hpol ERP	Vpol ERP	TPO	RMS Main Lobe Hpol Gain	RMS Main Lobe Vpol Gain	RMS at Horizontal Hpol Gain	RMS at Horizontal Vpol Gain
1	WIFS	21	515 MHz	170 kW (22.30 dBk)	72.9 kW (18.62 dBk)	16.0 kW (12.03 dBk)	14.00 (11.46dB)	6.00 (7.78dB)	10.35 (10.15dB)	4.44 (6.47dB)
2	WHA	20	509 MHz	140 kW (21.46 dBk)	60.0 kW (17.78 dBk)	13.5 kW (11.29 dBk)	13.65 (11.35dB)	5.85 (7.67dB)	10.10 (10.04dB)	4.33 (6.36dB)

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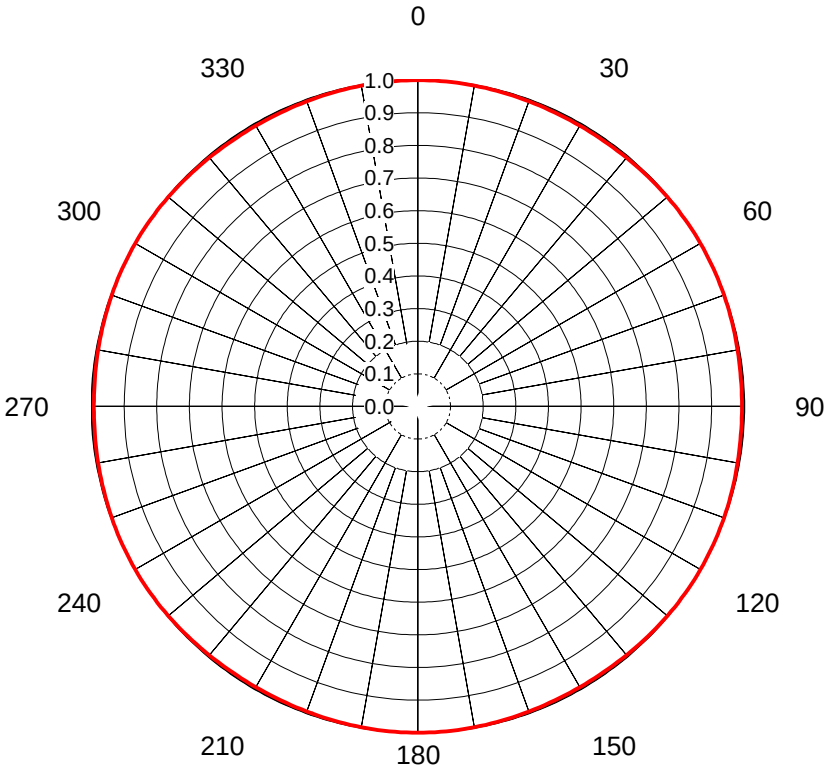


AZIMUTH PATTERN
Horizontal Polarization

Proposal No.	**C-71043-1**
Date	**28-Nov-17**
Call Letters	**WIFS**
Channel	**21**
Frequency	**515 MHz**
Antenna Type	**TFU-28GTH/VP-R O6DC**
Gain	**1.01 (0.03dB)**
	Calculated
Circularity	**+/- 1.0 dB**

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	1.000	36	0.995	72	0.998	108	0.998	144	0.995	180	1.000	216	0.995	252	0.998	288	0.998	324	0.995
1	1.000	37	0.995	73	0.998	109	0.998	145	0.994	181	1.000	217	0.995	253	0.998	289	0.998	325	0.994
2	1.000	38	0.995	74	0.997	110	0.999	146	0.994	182	1.000	218	0.995	254	0.997	290	0.998	326	0.994
3	1.000	39	0.995	75	0.997	111	0.999	147	0.994	183	1.000	219	0.995	255	0.997	291	0.999	327	0.994
4	1.000	40	0.996	76	0.997	112	0.999	148	0.994	184	1.000	220	0.996	256	0.997	292	0.999	328	0.994
5	1.000	41	0.996	77	0.996	113	0.999	149	0.994	185	1.000	221	0.996	257	0.996	293	0.999	329	0.994
6	0.999	42	0.996	78	0.996	114	0.999	150	0.994	186	0.999	222	0.996	258	0.996	294	0.999	330	0.994
7	0.999	43	0.996	79	0.996	115	1.000	151	0.994	187	0.999	223	0.996	259	0.996	295	1.000	331	0.994
8	0.999	44	0.997	80	0.996	116	1.000	152	0.994	188	0.999	224	0.997	260	0.996	296	1.000	332	0.994
9	0.999	45	0.997	81	0.995	117	1.000	153	0.994	189	0.999	225	0.997	261	0.995	297	1.000	333	0.994
10	0.999	46	0.997	82	0.995	118	1.000	154	0.994	190	0.999	226	0.997	262	0.995	298	1.000	334	0.994
11	0.998	47	0.998	83	0.995	119	1.000	155	0.994	191	0.998	227	0.998	263	0.995	299	1.000	335	0.994
12	0.998	48	0.998	84	0.995	120	1.000	156	0.995	192	0.998	228	0.998	264	0.995	300	1.000	336	0.995
13	0.998	49	0.998	85	0.994	121	1.000	157	0.995	193	0.998	229	0.998	265	0.994	301	1.000	337	0.995
14	0.997	50	0.999	86	0.994	122	1.000	158	0.995	194	0.997	230	0.999	266	0.994	302	1.000	338	0.995
15	0.997	51	0.999	87	0.994	123	1.000	159	0.995	195	0.997	231	0.999	267	0.994	303	1.000	339	0.995
16	0.997	52	0.999	88	0.994	124	1.000	160	0.996	196	0.997	232	0.999	268	0.994	304	1.000	340	0.996
17	0.996	53	0.999	89	0.994	125	1.000	161	0.996	197	0.996	233	0.999	269	0.994	305	1.000	341	0.996
18	0.996	54	0.999	90	0.994	126	0.999	162	0.996	198	0.996	234	0.999	270	0.994	306	0.999	342	0.996
19	0.996	55	1.000	91	0.994	127	0.999	163	0.996	199	0.996	235	1.000	271	0.994	307	0.999	343	0.996
20	0.996	56	1.000	92	0.994	128	0.999	164	0.997	200	0.996	236	1.000	272	0.994	308	0.999	344	0.997
21	0.995	57	1.000	93	0.994	129	0.999	165	0.997	201	0.995	237	1.000	273	0.994	309	0.999	345	0.997
22	0.995	58	1.000	94	0.994	130	0.999	166	0.997	202	0.995	238	1.000	274	0.994	310	0.999	346	0.997
23	0.995	59	1.000	95	0.994	131	0.998	167	0.998	203	0.995	239	1.000	275	0.994	311	0.998	347	0.998
24	0.995	60	1.000	96	0.995	132	0.998	168	0.998	204	0.995	240	1.000	276	0.995	312	0.998	348	0.998
25	0.994	61	1.000	97	0.995	133	0.998	169	0.998	205	0.994	241	1.000	277	0.995	313	0.998	349	0.998
26	0.994	62	1.000	98	0.995	134	0.997	170	0.999	206	0.994	242	1.000	278	0.995	314	0.997	350	0.999
27	0.994	63	1.000	99	0.995	135	0.997	171	0.999	207	0.994	243	1.000	279	0.995	315	0.997	351	0.999
28	0.994	64	1.000	100	0.996	136	0.997	172	0.999	208	0.994	244	1.000	280	0.996	316	0.997	352	0.999
29	0.994	65	1.000	101	0.996	137	0.996	173	0.999	209	0.994	245	1.000	281	0.996	317	0.996	353	0.999
30	0.994	66	0.999	102	0.996	138	0.996	174	0.999	210	0.994	246	0.999	282	0.996	318	0.996	354	0.999
31	0.994	67	0.999	103	0.996	139	0.996	175	1.000	211	0.994	247	0.999	283	0.996	319	0.996	355	1.000
32	0.994	68	0.999	104	0.997	140	0.996	176	1.000	212	0.994	248	0.999	284	0.997	320	0.996	356	1.000
33	0.994	69	0.999	105	0.997	141	0.995	177	1.000	213	0.994	249	0.999	285	0.997	321	0.995	357	1.000
34	0.994	70	0.999	106	0.997	142	0.995	178	1.000	214	0.994	250	0.999	286	0.997	322	0.995	358	1.000
35	0.994	71	0.998	107	0.998	143	0.995	179	1.000	215	0.994	251	0.998	287	0.998	323	0.995	359	1.000

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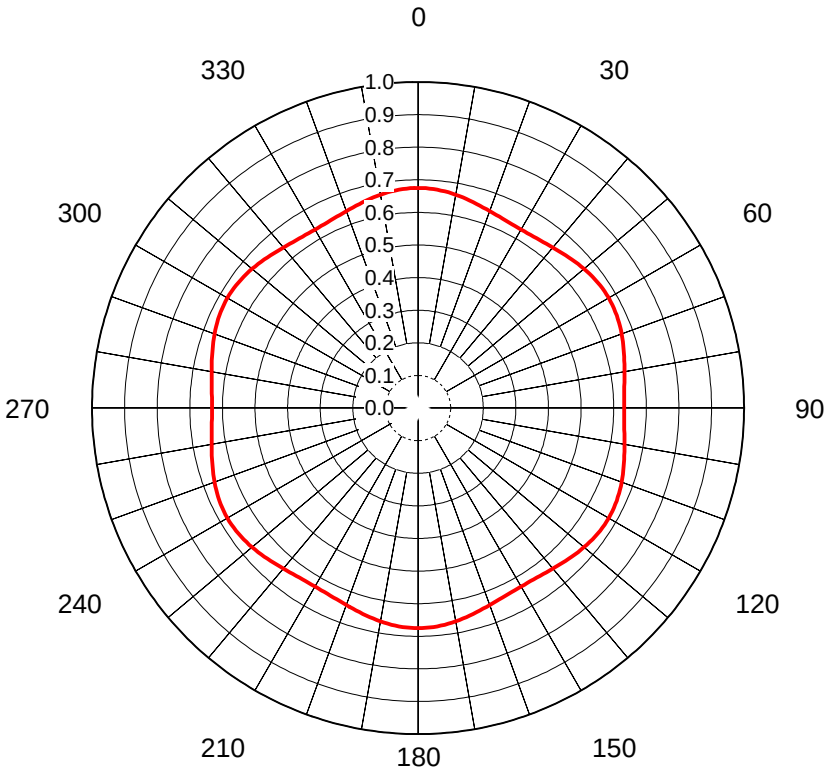
AZIMUTH PATTERN
Horizontal Polarization

Proposal No.	**C-71043-1**
Date	**28-Nov-17**
Call Letters	**WHA**
Channel	**20**
Frequency	**509 MHz**
Antenna Type	**TFU-28GTH/VP-R O6DC**
Gain	**1.01 (0.03dB)**
	Calculated
Circularity	**+/- 1.0 dB**

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	1.000	36	0.994	72	0.998	108	0.998	144	0.994	180	1.000	216	0.994	252	0.998	288	0.998	324	0.994
1	1.000	37	0.994	73	0.997	109	0.998	145	0.994	181	1.000	217	0.994	253	0.997	289	0.998	325	0.994
2	1.000	38	0.994	74	0.997	110	0.998	146	0.993	182	1.000	218	0.994	254	0.997	290	0.998	326	0.993
3	1.000	39	0.995	75	0.997	111	0.999	147	0.993	183	1.000	219	0.995	255	0.997	291	0.999	327	0.993
4	1.000	40	0.995	76	0.996	112	0.999	148	0.993	184	1.000	220	0.995	256	0.996	292	0.999	328	0.993
5	1.000	41	0.995	77	0.996	113	0.999	149	0.993	185	1.000	221	0.995	257	0.996	293	0.999	329	0.993
6	0.999	42	0.996	78	0.996	114	0.999	150	0.993	186	0.999	222	0.996	258	0.996	294	0.999	330	0.993
7	0.999	43	0.996	79	0.995	115	1.000	151	0.993	187	0.999	223	0.996	259	0.995	295	1.000	331	0.993
8	0.999	44	0.996	80	0.995	116	1.000	152	0.993	188	0.999	224	0.996	260	0.995	296	1.000	332	0.993
9	0.999	45	0.997	81	0.995	117	1.000	153	0.993	189	0.999	225	0.997	261	0.995	297	1.000	333	0.993
10	0.998	46	0.997	82	0.994	118	1.000	154	0.993	190	0.998	226	0.997	262	0.994	298	1.000	334	0.993
11	0.998	47	0.997	83	0.994	119	1.000	155	0.994	191	0.998	227	0.997	263	0.994	299	1.000	335	0.994
12	0.998	48	0.998	84	0.994	120	1.000	156	0.994	192	0.998	228	0.998	264	0.994	300	1.000	336	0.994
13	0.997	49	0.998	85	0.994	121	1.000	157	0.994	193	0.997	229	0.998	265	0.994	301	1.000	337	0.994
14	0.997	50	0.998	86	0.993	122	1.000	158	0.994	194	0.997	230	0.998	266	0.993	302	1.000	338	0.994
15	0.997	51	0.999	87	0.993	123	1.000	159	0.995	195	0.997	231	0.999	267	0.993	303	1.000	339	0.995
16	0.996	52	0.999	88	0.993	124	1.000	160	0.995	196	0.996	232	0.999	268	0.993	304	1.000	340	0.995
17	0.996	53	0.999	89	0.993	125	1.000	161	0.995	197	0.996	233	0.999	269	0.993	305	1.000	341	0.995
18	0.996	54	0.999	90	0.993	126	0.999	162	0.996	198	0.996	234	0.999	270	0.993	306	0.999	342	0.996
19	0.995	55	1.000	91	0.993	127	0.999	163	0.996	199	0.995	235	1.000	271	0.993	307	0.999	343	0.996
20	0.995	56	1.000	92	0.993	128	0.999	164	0.996	200	0.995	236	1.000	272	0.993	308	0.999	344	0.996
21	0.995	57	1.000	93	0.993	129	0.999	165	0.997	201	0.995	237	1.000	273	0.993	309	0.999	345	0.997
22	0.994	58	1.000	94	0.993	130	0.998	166	0.997	202	0.994	238	1.000	274	0.993	310	0.998	346	0.997
23	0.994	59	1.000	95	0.994	131	0.998	167	0.997	203	0.994	239	1.000	275	0.994	311	0.998	347	0.997
24	0.994	60	1.000	96	0.994	132	0.998	168	0.998	204	0.994	240	1.000	276	0.994	312	0.998	348	0.998
25	0.994	61	1.000	97	0.994	133	0.997	169	0.998	205	0.994	241	1.000	277	0.994	313	0.997	349	0.998
26	0.993	62	1.000	98	0.994	134	0.997	170	0.998	206	0.993	242	1.000	278	0.994	314	0.997	350	0.998
27	0.993	63	1.000	99	0.995	135	0.997	171	0.999	207	0.993	243	1.000	279	0.995	315	0.997	351	0.999
28	0.993	64	1.000	100	0.995	136	0.996	172	0.999	208	0.993	244	1.000	280	0.995	316	0.996	352	0.999
29	0.993	65	1.000	101	0.995	137	0.996	173	0.999	209	0.993	245	1.000	281	0.995	317	0.996	353	0.999
30	0.993	66	0.999	102	0.996	138	0.996	174	0.999	210	0.993	246	0.999	282	0.996	318	0.996	354	0.999
31	0.993	67	0.999	103	0.996	139	0.995	175	1.000	211	0.993	247	0.999	283	0.996	319	0.995	355	1.000
32	0.993	68	0.999	104	0.996	140	0.995	176	1.000	212	0.993	248	0.999	284	0.996	320	0.995	356	1.000
33	0.993	69	0.999	105	0.997	141	0.995	177	1.000	213	0.993	249	0.999	285	0.997	321	0.995	357	1.000
34	0.993	70	0.998	106	0.997	142	0.994	178	1.000	214	0.993	250	0.998	286	0.997	322	0.994	358	1.000
35	0.994	71	0.998	107	0.997	143	0.994	179	1.000	215	0.994	251	0.998	287	0.997	323	0.994	359	1.000

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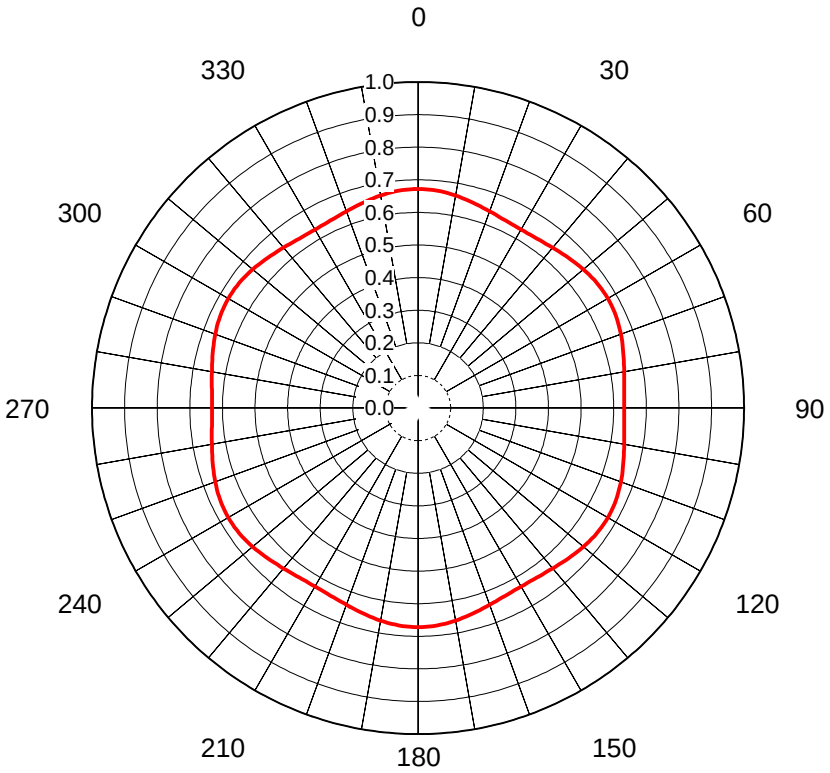
AZIMUTH PATTERN
Vertical Polarization

Proposal No.	**C-71043-1**
Date	**28-Nov-17**
Call Letters	**WIFS**
Channel	**21**
Frequency	**515 MHz**
Antenna Type	**TFU-28GTH/VP-R O6DC**
Gain	**1.07 (0.28dB)**
	Calculated
Circularity	**+/- 1.0 dB**

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.675	36	0.636	72	0.660	108	0.660	144	0.636	180	0.675	216	0.636	252	0.660	288	0.660	324	0.636
1	0.675	37	0.638	73	0.658	109	0.662	145	0.635	181	0.675	217	0.638	253	0.658	289	0.662	325	0.635
2	0.675	38	0.639	74	0.656	110	0.664	146	0.634	182	0.675	218	0.639	254	0.656	290	0.664	326	0.634
3	0.674	39	0.641	75	0.654	111	0.666	147	0.633	183	0.674	219	0.641	255	0.654	291	0.666	327	0.633
4	0.673	40	0.643	76	0.651	112	0.668	148	0.633	184	0.673	220	0.643	256	0.651	292	0.668	328	0.633
5	0.672	41	0.645	77	0.649	113	0.670	149	0.632	185	0.672	221	0.645	257	0.649	293	0.670	329	0.632
6	0.671	42	0.647	78	0.647	114	0.671	150	0.632	186	0.671	222	0.647	258	0.647	294	0.671	330	0.632
7	0.670	43	0.649	79	0.645	115	0.672	151	0.632	187	0.670	223	0.649	259	0.645	295	0.672	331	0.632
8	0.668	44	0.651	80	0.643	116	0.673	152	0.633	188	0.668	224	0.651	260	0.643	296	0.673	332	0.633
9	0.666	45	0.654	81	0.641	117	0.674	153	0.633	189	0.666	225	0.654	261	0.641	297	0.674	333	0.633
10	0.664	46	0.656	82	0.639	118	0.675	154	0.634	190	0.664	226	0.656	262	0.639	298	0.675	334	0.634
11	0.662	47	0.658	83	0.638	119	0.675	155	0.635	191	0.662	227	0.658	263	0.638	299	0.675	335	0.635
12	0.660	48	0.660	84	0.636	120	0.675	156	0.636	192	0.660	228	0.660	264	0.636	300	0.675	336	0.636
13	0.658	49	0.662	85	0.635	121	0.675	157	0.638	193	0.658	229	0.662	265	0.635	301	0.675	337	0.638
14	0.656	50	0.664	86	0.634	122	0.675	158	0.639	194	0.656	230	0.664	266	0.634	302	0.675	338	0.639
15	0.654	51	0.666	87	0.633	123	0.674	159	0.641	195	0.654	231	0.666	267	0.633	303	0.674	339	0.641
16	0.651	52	0.668	88	0.633	124	0.673	160	0.643	196	0.651	232	0.668	268	0.633	304	0.673	340	0.643
17	0.649	53	0.670	89	0.632	125	0.672	161	0.645	197	0.649	233	0.670	269	0.632	305	0.672	341	0.645
18	0.647	54	0.671	90	0.632	126	0.671	162	0.647	198	0.647	234	0.671	270	0.632	306	0.671	342	0.647
19	0.645	55	0.672	91	0.632	127	0.670	163	0.649	199	0.645	235	0.672	271	0.632	307	0.670	343	0.649
20	0.643	56	0.673	92	0.633	128	0.668	164	0.651	200	0.643	236	0.673	272	0.633	308	0.668	344	0.651
21	0.641	57	0.674	93	0.633	129	0.666	165	0.654	201	0.641	237	0.674	273	0.633	309	0.666	345	0.654
22	0.639	58	0.675	94	0.634	130	0.664	166	0.656	202	0.639	238	0.675	274	0.634	310	0.664	346	0.656
23	0.638	59	0.675	95	0.635	131	0.662	167	0.658	203	0.638	239	0.675	275	0.635	311	0.662	347	0.658
24	0.636	60	0.675	96	0.636	132	0.660	168	0.660	204	0.636	240	0.675	276	0.636	312	0.660	348	0.660
25	0.635	61	0.675	97	0.638	133	0.658	169	0.662	205	0.635	241	0.675	277	0.638	313	0.658	349	0.662
26	0.634	62	0.675	98	0.639	134	0.656	170	0.664	206	0.634	242	0.675	278	0.639	314	0.656	350	0.664
27	0.633	63	0.674	99	0.641	135	0.654	171	0.666	207	0.633	243	0.674	279	0.641	315	0.654	351	0.666
28	0.633	64	0.673	100	0.643	136	0.651	172	0.668	208	0.633	244	0.673	280	0.643	316	0.651	352	0.668
29	0.632	65	0.672	101	0.645	137	0.649	173	0.670	209	0.632	245	0.672	281	0.645	317	0.649	353	0.670
30	0.632	66	0.671	102	0.647	138	0.647	174	0.671	210	0.632	246	0.671	282	0.647	318	0.647	354	0.671
31	0.632	67	0.670	103	0.649	139	0.645	175	0.672	211	0.632	247	0.670	283	0.649	319	0.645	355	0.672
32	0.633	68	0.668	104	0.651	140	0.643	176	0.673	212	0.633	248	0.668	284	0.651	320	0.643	356	0.673
33	0.633	69	0.666	105	0.654	141	0.641	177	0.674	213	0.633	249	0.666	285	0.654	321	0.641	357	0.674
34	0.634	70	0.664	106	0.656	142	0.639	178	0.675	214	0.634	250	0.664	286	0.656	322	0.639	358	0.675
35	0.635	71	0.662	107	0.658	143	0.638	179	0.675	215	0.635	251	0.662	287	0.658	323	0.638	359	0.675

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AZIMUTH PATTERN
Vertical Polarization

Proposal No.	**C-71043-1**
Date	**28-Nov-17**
Call Letters	**WHA**
Channel	**20**
Frequency	**509 MHz**
Antenna Type	**TFU-28GTH/VP-R O6DC**
Gain	**1.06 (0.26dB)**
	Calculated
Circularity	**+/- 1.0 dB**

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.672	36	0.636	72	0.658	108	0.658	144	0.636	180	0.672	216	0.636	252	0.658	288	0.658	324	0.636
1	0.672	37	0.637	73	0.656	109	0.660	145	0.635	181	0.672	217	0.637	253	0.656	289	0.660	325	0.635
2	0.672	38	0.639	74	0.654	110	0.662	146	0.634	182	0.672	218	0.639	254	0.654	290	0.662	326	0.634
3	0.671	39	0.640	75	0.652	111	0.664	147	0.633	183	0.671	219	0.640	255	0.652	291	0.664	327	0.633
4	0.670	40	0.642	76	0.650	112	0.665	148	0.633	184	0.670	220	0.642	256	0.650	292	0.665	328	0.633
5	0.669	41	0.644	77	0.648	113	0.667	149	0.632	185	0.669	221	0.644	257	0.648	293	0.667	329	0.632
6	0.668	42	0.646	78	0.646	114	0.668	150	0.632	186	0.668	222	0.646	258	0.646	294	0.668	330	0.632
7	0.667	43	0.648	79	0.644	115	0.669	151	0.632	187	0.667	223	0.648	259	0.644	295	0.669	331	0.632
8	0.665	44	0.650	80	0.642	116	0.670	152	0.633	188	0.665	224	0.650	260	0.642	296	0.670	332	0.633
9	0.664	45	0.652	81	0.640	117	0.671	153	0.633	189	0.664	225	0.652	261	0.640	297	0.671	333	0.633
10	0.662	46	0.654	82	0.639	118	0.672	154	0.634	190	0.662	226	0.654	262	0.639	298	0.672	334	0.634
11	0.660	47	0.656	83	0.637	119	0.672	155	0.635	191	0.660	227	0.656	263	0.637	299	0.672	335	0.635
12	0.658	48	0.658	84	0.636	120	0.672	156	0.636	192	0.658	228	0.658	264	0.636	300	0.672	336	0.636
13	0.656	49	0.660	85	0.635	121	0.672	157	0.637	193	0.656	229	0.660	265	0.635	301	0.672	337	0.637
14	0.654	50	0.662	86	0.634	122	0.672	158	0.639	194	0.654	230	0.662	266	0.634	302	0.672	338	0.639
15	0.652	51	0.664	87	0.633	123	0.671	159	0.640	195	0.652	231	0.664	267	0.633	303	0.671	339	0.640
16	0.650	52	0.665	88	0.633	124	0.670	160	0.642	196	0.650	232	0.665	268	0.633	304	0.670	340	0.642
17	0.648	53	0.667	89	0.632	125	0.669	161	0.644	197	0.648	233	0.667	269	0.632	305	0.669	341	0.644
18	0.646	54	0.668	90	0.632	126	0.668	162	0.646	198	0.646	234	0.668	270	0.632	306	0.668	342	0.646
19	0.644	55	0.669	91	0.632	127	0.667	163	0.648	199	0.644	235	0.669	271	0.632	307	0.667	343	0.648
20	0.642	56	0.670	92	0.633	128	0.665	164	0.650	200	0.642	236	0.670	272	0.633	308	0.665	344	0.650
21	0.640	57	0.671	93	0.633	129	0.664	165	0.652	201	0.640	237	0.671	273	0.633	309	0.664	345	0.652
22	0.639	58	0.672	94	0.634	130	0.662	166	0.654	202	0.639	238	0.672	274	0.634	310	0.662	346	0.654
23	0.637	59	0.672	95	0.635	131	0.660	167	0.656	203	0.637	239	0.672	275	0.635	311	0.660	347	0.656
24	0.636	60	0.672	96	0.636	132	0.658	168	0.658	204	0.636	240	0.672	276	0.636	312	0.658	348	0.658
25	0.635	61	0.672	97	0.637	133	0.656	169	0.660	205	0.635	241	0.672	277	0.637	313	0.656	349	0.660
26	0.634	62	0.672	98	0.639	134	0.654	170	0.662	206	0.634	242	0.672	278	0.639	314	0.654	350	0.662
27	0.633	63	0.671	99	0.640	135	0.652	171	0.664	207	0.633	243	0.671	279	0.640	315	0.652	351	0.664
28	0.633	64	0.670	100	0.642	136	0.650	172	0.665	208	0.633	244	0.670	280	0.642	316	0.650	352	0.665
29	0.632	65	0.669	101	0.644	137	0.648	173	0.667	209	0.632	245	0.669	281	0.644	317	0.648	353	0.667
30	0.632	66	0.668	102	0.646	138	0.646	174	0.668	210	0.632	246	0.668	282	0.646	318	0.646	354	0.668
31	0.632	67	0.667	103	0.648	139	0.644	175	0.669	211	0.632	247	0.667	283	0.648	319	0.644	355	0.669
32	0.633	68	0.665	104	0.650	140	0.642	176	0.670	212	0.633	248	0.665	284	0.650	320	0.642	356	0.670
33	0.633	69	0.664	105	0.652	141	0.640	177	0.671	213	0.633	249	0.664	285	0.652	321	0.640	357	0.671
34	0.634	70	0.662	106	0.654	142	0.639	178	0.672	214	0.634	250	0.662	286	0.654	322	0.639	358	0.672
35	0.635	71	0.660	107	0.656	143	0.637	179	0.672	215	0.635	251	0.660	287	0.656	323	0.637	359	0.672

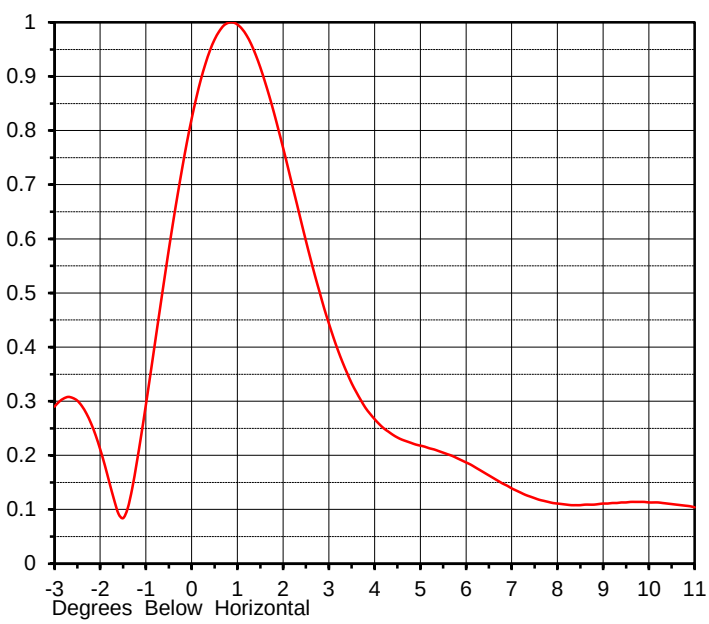
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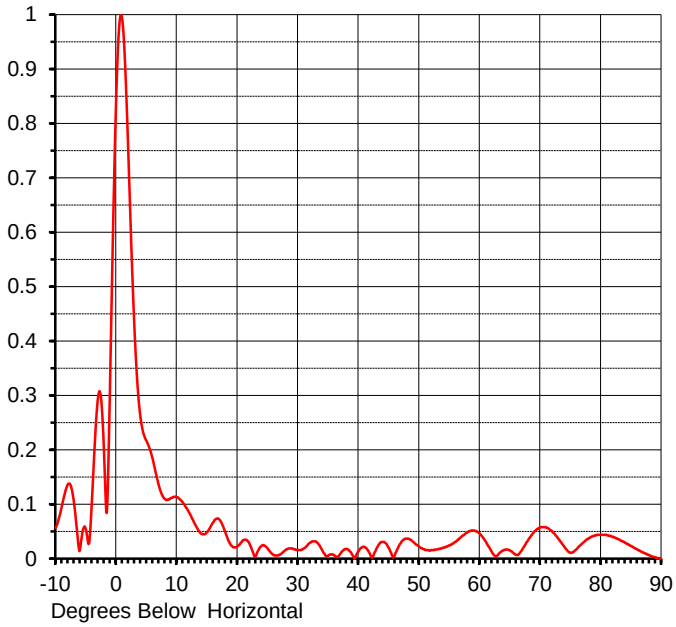
ELEVATION PATTERN

Proposal No.	**C-71043-1**
Date	**28-Nov-17**
Call Letters	**WIFS**
Channel	**21**
Frequency	**515 MHz**
Antenna Type	**TFU-28GTH/VP-R O6DC**

RMS Directivity at Main Lobe	**20.0 (13.01 dB)**	Beam Tilt	**0.75 deg**
RMS Directivity at Horizontal	**14.8 (11.70 dB)**	Pattern Number	**28G200075**

Calculated





Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.057	10.0	0.113	30.0	0.016	50.0	0.022	70.0	0.058
-9.0	0.097	11.0	0.103	31.0	0.019	51.0	0.016	71.0	0.057
-8.0	0.137	12.0	0.085	32.0	0.030	52.0	0.016	72.0	0.049
-7.0	0.103	13.0	0.063	33.0	0.031	53.0	0.017	73.0	0.036
-6.0	0.018	14.0	0.046	34.0	0.015	54.0	0.020	74.0	0.021
-5.0	0.052	15.0	0.049	35.0	0.006	55.0	0.025	75.0	0.011
-4.0	0.116	16.0	0.067	36.0	0.006	56.0	0.031	76.0	0.018
-3.0	0.299	17.0	0.072	37.0	0.010	57.0	0.041	77.0	0.029
-2.0	0.182	18.0	0.048	38.0	0.018	58.0	0.049	78.0	0.038
-1.0	0.351	19.0	0.024	39.0	0.006	59.0	0.052	79.0	0.043
0.0	0.860	20.0	0.023	40.0	0.014	60.0	0.046	80.0	0.044
1.0	0.988	21.0	0.034	41.0	0.021	61.0	0.031	81.0	0.043
2.0	0.734	22.0	0.027	42.0	0.005	62.0	0.012	82.0	0.040
3.0	0.418	23.0	0.005	43.0	0.020	63.0	0.007	83.0	0.035
4.0	0.258	24.0	0.024	44.0	0.031	64.0	0.016	84.0	0.029
5.0	0.216	25.0	0.018	45.0	0.019	65.0	0.015	85.0	0.023
6.0	0.183	26.0	0.007	46.0	0.008	66.0	0.007	86.0	0.017
7.0	0.135	27.0	0.008	47.0	0.030	67.0	0.017	87.0	0.011
8.0	0.110	28.0	0.017	48.0	0.037	68.0	0.035	88.0	0.006
9.0	0.111	29.0	0.019	49.0	0.031	69.0	0.050	89.0	0.002
								90.0	0.000

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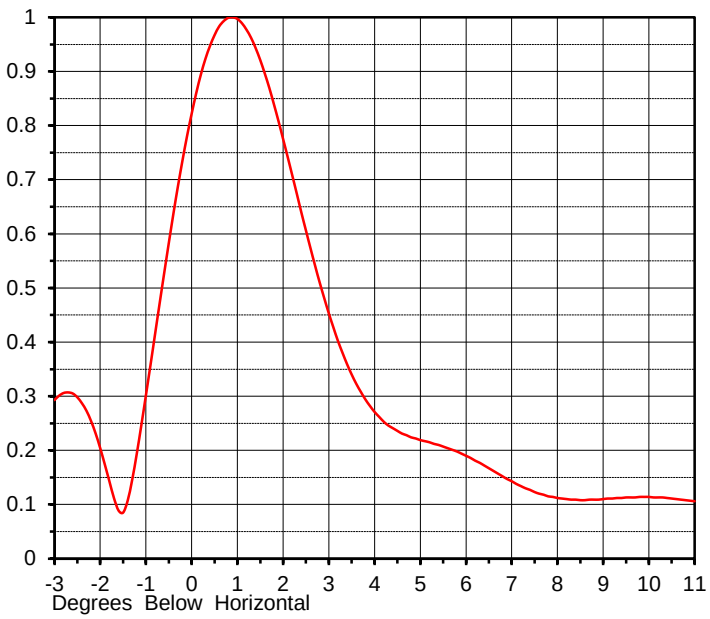
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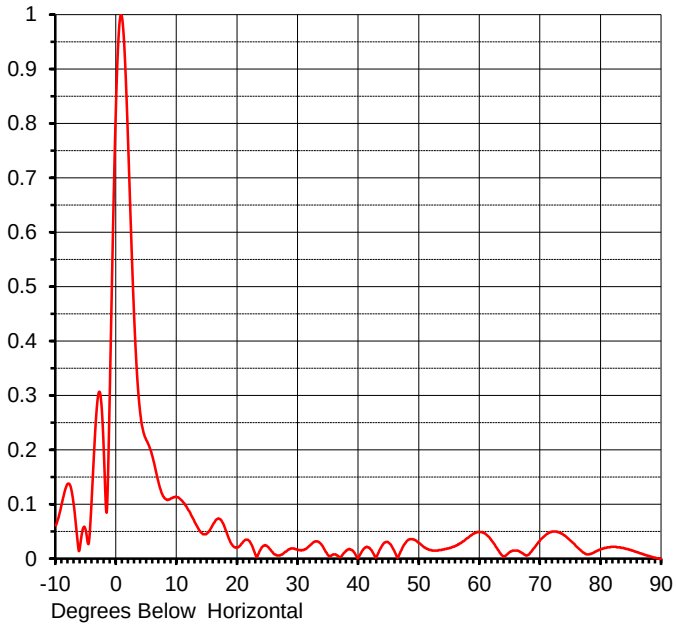
ELEVATION PATTERN

Proposal No.	**C-71043-1**
Date	**28-Nov-17**
Call Letters	**WHA**
Channel	**20**
Frequency	**509 MHz**
Antenna Type	**TFU-28GTH/VP-R O6DC**

RMS Directivity at Main Lobe	**19.5 (12.90 dB)**	Beam Tilt	**0.80 deg**
RMS Directivity at Horizontal	**14.4 (11.58 dB)**	Pattern Number	**28G195080**

Calculated

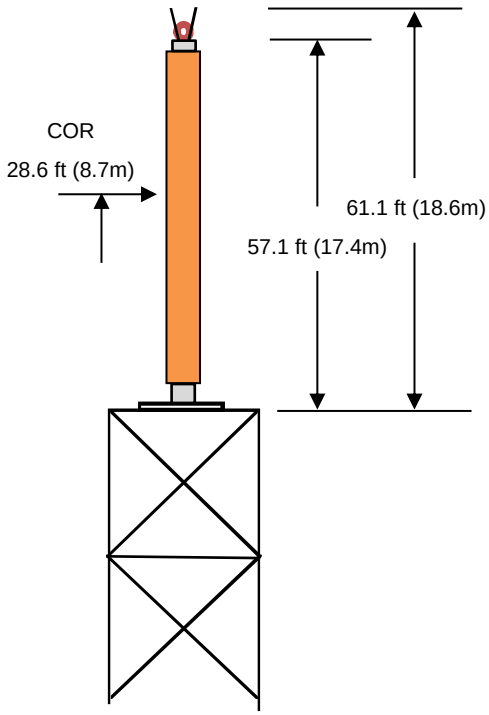




Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.061	10.0	0.113	30.0	0.016	50.0	0.029	70.0	0.035
-9.0	0.102	11.0	0.104	31.0	0.017	51.0	0.020	71.0	0.045
-8.0	0.138	12.0	0.088	32.0	0.025	52.0	0.016	72.0	0.050
-7.0	0.096	13.0	0.066	33.0	0.032	53.0	0.015	73.0	0.049
-6.0	0.023	14.0	0.048	34.0	0.024	54.0	0.017	74.0	0.043
-5.0	0.049	15.0	0.047	35.0	0.006	55.0	0.020	75.0	0.033
-4.0	0.127	16.0	0.064	36.0	0.008	56.0	0.024	76.0	0.022
-3.0	0.301	17.0	0.073	37.0	0.003	57.0	0.030	77.0	0.012
-2.0	0.174	18.0	0.054	38.0	0.015	58.0	0.038	78.0	0.008
-1.0	0.358	19.0	0.027	39.0	0.015	59.0	0.046	79.0	0.013
0.0	0.860	20.0	0.021	40.0	0.003	60.0	0.049	80.0	0.018
1.0	0.989	21.0	0.032	41.0	0.020	61.0	0.045	81.0	0.021
2.0	0.742	22.0	0.032	42.0	0.017	62.0	0.033	82.0	0.022
3.0	0.427	23.0	0.006	43.0	0.005	63.0	0.016	83.0	0.021
4.0	0.262	24.0	0.021	44.0	0.026	64.0	0.004	84.0	0.019
5.0	0.217	25.0	0.022	45.0	0.029	65.0	0.013	85.0	0.016
6.0	0.186	26.0	0.009	46.0	0.011	66.0	0.015	86.0	0.012
7.0	0.138	27.0	0.006	47.0	0.015	67.0	0.010	87.0	0.008
8.0	0.111	28.0	0.013	48.0	0.033	68.0	0.007	88.0	0.005
9.0	0.111	29.0	0.019	49.0	0.036	69.0	0.020	89.0	0.002
								90.0	0.000

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MECHANICAL SPECIFICATIONS



Proposal No.	**C-71043-1**
Date	**28-Nov-17**
Call Letters	**WIFS**
Channel	**21**
Frequency	**515 MHz**
Antenna Type	**TFU-28GTH/VP-R O6DC**

Preliminary Specifications

Top Mounted

With ice TIA-222-G

Height AGL(z)	1500 ft (457.2 m)
Basic Wind Speed	90 m/h (144.8 km/h)
Structure Class	II
Exposure Category	C
Topography Category	1
Design Ice	0.75 in t_{iz} = 2.10 in
Wind Speed w/Ice	40 m/h (64.4 km/h)

Mechanical Specifications		**without ice**	**with ice**
Height with Lightning Protector	H4	61.1 ft (18.6m)	
Height less Lightning Protector	H2	57.1 ft (17.4m)	
Height of Center of Radiation	H3	28.6 ft (8.7m)	
Effective Projected Area	$(EPA)_S$	70 ft² (6.5m²)	179.8 ft² (16.7m²)
Moment Arm	D1	30 ft (9.1m)	30.9 ft (9.4m)
Weight	W	8000 lb (3.6t)	12550 lb (5.7t)

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

Prepared by:	JBC	**Date:**	28-Nov-17	**ME:**	**EE:**
Rev. No.1 by:	JBC	**Date:**	28-Nov-17		

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Summary

Proposal No.	**C-71043-1**
Date	**28-Nov-17**
Call Letters	**WIFS**
Channel	**21**
Frequency	**515 MHz**
Antenna Type	**TFU-28GTH/VP-R O6DC**

Antenna

	Hpol		Vpol	
ERP:	**170 kW**	**(22.30 dBk)**	**72.9 kW**	**(18.62 dBk)**
RMS Gain*	14.00	(11.46 dB)	6.00	(7.78 dB)

Antenna Input Power

12.1 kW **(10.84 dBk)**

Transmission Line

Type:	**Rigid**	Attenuation:	**(1.19 dB)**
Size:	**8-3/16"**	Efficiency:	**76.1%**
Impedance:	**75 Ohm**		
Length:	**1440 ft**	**438.9 m**	

Transmitter Output

16.0 kW **(12.03 dBk)**

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.	**C-71043-1**
Date	**28-Nov-17**
Call Letters	**WHA**
Channel	**20**
Frequency	**509 MHz**
Antenna Type	**TFU-28GTH/VP-R O6DC**

Antenna

	Hpol		Vpol	
ERP:	**140 kW**	**(21.46 dBk)**	**60.0 kW**	**(17.78 dBk)**
RMS Gain*	13.65	(11.35 dB)	5.85	(7.67 dB)

Antenna Input Power

10.3 kW **(10.11 dBk)**

Transmission Line

Type:	**Rigid**	Attenuation:	**(1.18 dB)**
Size:	**8-3/16"**	Efficiency:	**76.2%**
Impedance:	**75 Ohm**		
Length:	**1440 ft**	**438.9 m**	

Transmitter Output

13.5 kW **(11.29 dBk)**

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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