



Antenna Model: **TFU-27JTH/VP-R O4 (SP)**

Proposal Number: C-70249-2
Date: 20-Nov-17
Customer: SCETV
Location: Columbia, SC

Electrical Specifications

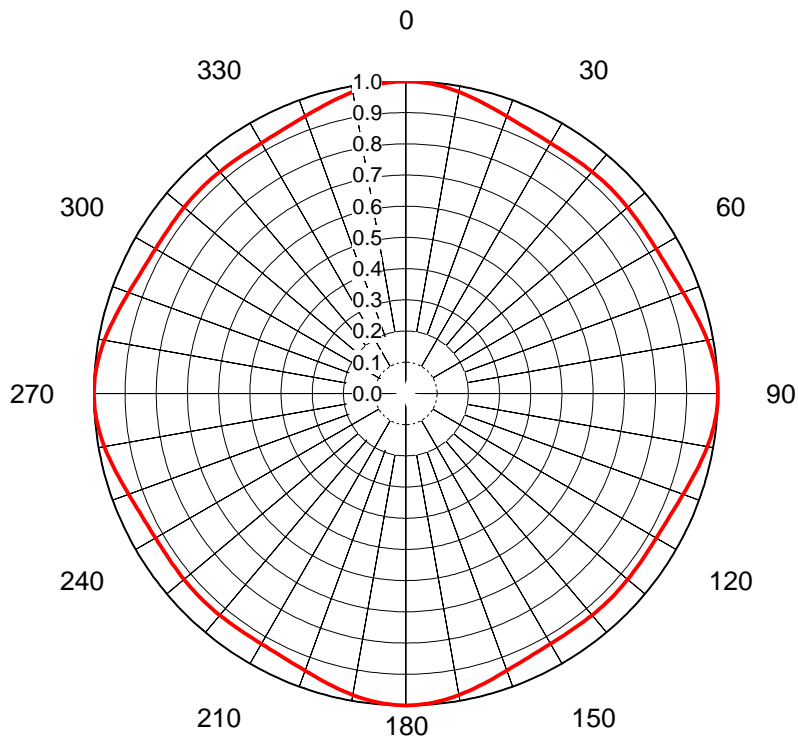
Polarization: Elliptical
Azimuth Pattern: Omni
Antenna Input: 6-1/8" 75 Ohm EIA/DCA
VSWR: Channel 1.08:1
Bandwidth: 6 MHz
Rated Input Power: 56 kW (17.48 dBk) Maximum Average Power

Mechanical Specifications

Mounting: Top Mounted
Environmental Protection: Full Radome
Height: 49.9 ft (15.2m) less Lightning Protector 53.9 ft (16.4m) with Lightning Protector
Weight: 7200 lb (3.3t)
Effective Projected Area: 56.3 ft² (5.2m²) 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
WRLK	33	587 MHz	282.0 kW (24.50 dBk)	94.0 kW (19.73 dBk)	17.9 kW (12.53 dBk)	21.38 (13.30dB)	7.13 (8.53dB)	18.17 (12.59dB)	6.06 (7.82dB)



AZIMUTH PATTERN Horizontal Polarization

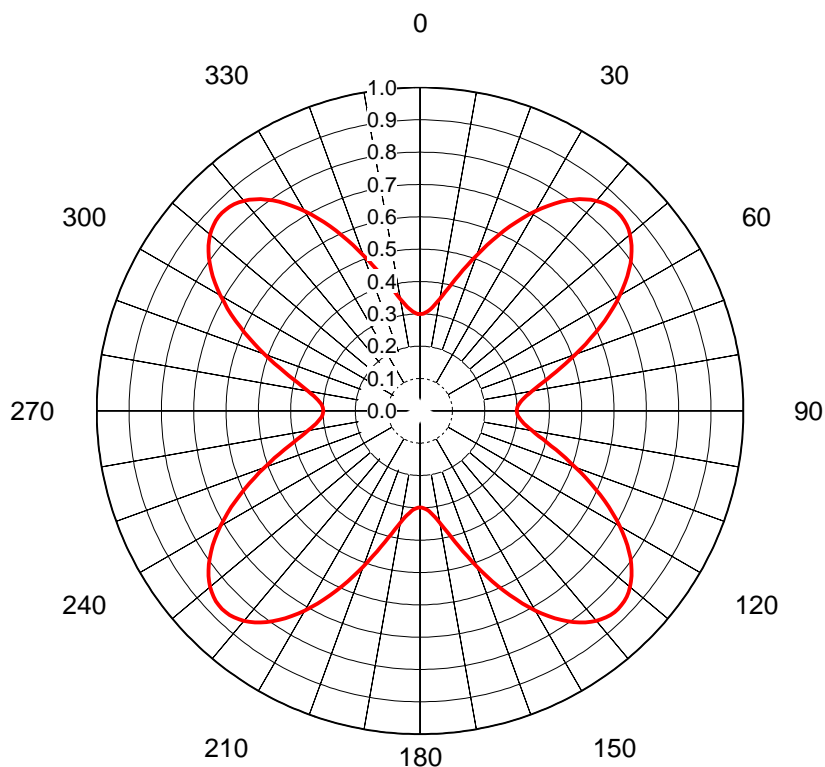
Proposal No. **C-70249-2**
 Date **20-Nov-17**
 Call Letters **WRLK**
 Channel **33**
 Frequency **587 MHz**
 Antenna Type **TFU-27JTH/VP-R O4 (SP)**
 Gain **1.1 (0.43dB)**
Calculated
 Circularity **+/- 1.0 dB**
 Drawing # **TFU-04 D33**

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	1.000	36	0.926	72	0.952	108	0.952	144	0.926	180	1.000	216	0.926	252	0.952	288	0.952
1	1.000	37	0.927	73	0.956	109	0.949	145	0.926	181	1.000	217	0.927	253	0.956	289	0.949
2	0.999	38	0.927	74	0.959	110	0.945	146	0.926	182	0.999	218	0.927	254	0.959	290	0.945
3	0.998	39	0.928	75	0.963	111	0.942	147	0.926	183	0.998	219	0.928	255	0.963	291	0.942
4	0.997	40	0.928	76	0.967	112	0.940	148	0.926	184	0.997	220	0.928	256	0.967	292	0.940
5	0.995	41	0.928	77	0.971	113	0.937	149	0.926	185	0.995	221	0.928	257	0.971	293	0.937
6	0.993	42	0.928	78	0.974	114	0.935	150	0.927	186	0.993	222	0.928	258	0.974	294	0.935
7	0.990	43	0.929	79	0.978	115	0.933	151	0.927	187	0.990	223	0.929	259	0.978	295	0.933
8	0.988	44	0.929	80	0.981	116	0.931	152	0.928	188	0.988	224	0.929	260	0.981	296	0.931
9	0.985	45	0.929	81	0.985	117	0.930	153	0.930	189	0.985	225	0.929	261	0.985	297	0.930
10	0.981	46	0.929	82	0.988	118	0.928	154	0.931	190	0.981	226	0.929	262	0.988	298	0.928
11	0.978	47	0.929	83	0.990	119	0.927	155	0.933	191	0.978	227	0.929	263	0.990	299	0.927
12	0.974	48	0.928	84	0.993	120	0.927	156	0.935	192	0.974	228	0.928	264	0.993	300	0.927
13	0.971	49	0.928	85	0.995	121	0.926	157	0.937	193	0.971	229	0.928	265	0.995	301	0.926
14	0.967	50	0.928	86	0.997	122	0.926	158	0.940	194	0.967	230	0.928	266	0.997	302	0.926
15	0.963	51	0.928	87	0.998	123	0.926	159	0.942	195	0.963	231	0.928	267	0.998	303	0.926
16	0.959	52	0.927	88	0.999	124	0.926	160	0.945	196	0.959	232	0.927	268	0.999	304	0.926
17	0.956	53	0.927	89	1.000	125	0.926	161	0.949	197	0.956	233	0.927	269	1.000	305	0.926
18	0.952	54	0.926	90	1.000	126	0.926	162	0.952	198	0.952	234	0.926	270	1.000	306	0.926
19	0.949	55	0.926	91	1.000	127	0.927	163	0.956	199	0.949	235	0.926	271	1.000	307	0.927
20	0.945	56	0.926	92	0.999	128	0.927	164	0.959	200	0.945	236	0.926	272	0.999	308	0.927
21	0.942	57	0.926	93	0.998	129	0.928	165	0.963	201	0.942	237	0.926	273	0.998	309	0.928
22	0.940	58	0.926	94	0.997	130	0.928	166	0.967	202	0.940	238	0.926	274	0.997	310	0.928
23	0.937	59	0.926	95	0.995	131	0.928	167	0.971	203	0.937	239	0.926	275	0.995	311	0.928
24	0.935	60	0.927	96	0.993	132	0.928	168	0.974	204	0.935	240	0.927	276	0.993	312	0.928
25	0.933	61	0.927	97	0.990	133	0.929	169	0.978	205	0.933	241	0.927	277	0.990	313	0.929
26	0.931	62	0.928	98	0.988	134	0.929	170	0.981	206	0.931	242	0.928	278	0.988	314	0.929
27	0.930	63	0.930	99	0.985	135	0.929	171	0.985	207	0.930	243	0.930	279	0.985	315	0.929
28	0.928	64	0.931	100	0.981	136	0.929	172	0.988	208	0.928	244	0.931	280	0.981	316	0.929
29	0.927	65	0.933	101	0.978	137	0.929	173	0.990	209	0.927	245	0.933	281	0.978	317	0.929
30	0.927	66	0.935	102	0.974	138	0.928	174	0.993	210	0.927	246	0.935	282	0.974	318	0.928
31	0.926	67	0.937	103	0.971	139	0.928	175	0.995	211	0.926	247	0.937	283	0.971	319	0.928
32	0.926	68	0.940	104	0.967	140	0.928	176	0.997	212	0.926	248	0.940	284	0.967	320	0.928
33	0.926	69	0.942	105	0.963	141	0.928	177	0.998	213	0.926	249	0.942	285	0.963	321	0.928
34	0.926	70	0.945	106	0.959	142	0.927	178	0.999	214	0.926	250	0.945	286	0.959	322	0.927
35	0.926	71	0.949	107	0.956	143	0.927	179	1.000	215	0.926	251	0.949	287	0.956	323	0.927

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AZIMUTH PATTERN Vertical Polarization

Proposal No. **C-70249-2**
 Date **20-Nov-17**
 Call Letters **WRLK**
 Channel **33**
 Frequency **587 MHz**
 Antenna Type **TFU-27JTH/VP-R O4 (SP)**
 Gain **2.04 (3.09dB)**
Calculated
 Circularity **+/- 5.0 dB**
 Drawing # **TFU-04 D33-V**



Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.299	36	0.808	72	0.473	108	0.473	144	0.808	180	0.299	216	0.808	252	0.473	288	0.473
1	0.300	37	0.820	73	0.455	109	0.492	145	0.794	181	0.300	217	0.820	253	0.455	289	0.492
2	0.301	38	0.830	74	0.437	110	0.512	146	0.780	182	0.301	218	0.830	254	0.437	290	0.512
3	0.304	39	0.840	75	0.420	111	0.532	147	0.765	183	0.304	219	0.840	255	0.420	291	0.532
4	0.307	40	0.848	76	0.404	112	0.552	148	0.748	184	0.307	220	0.848	256	0.404	292	0.552
5	0.312	41	0.854	77	0.390	113	0.573	149	0.731	185	0.312	221	0.854	257	0.390	293	0.573
6	0.317	42	0.860	78	0.376	114	0.594	150	0.713	186	0.317	222	0.860	258	0.376	294	0.594
7	0.324	43	0.863	79	0.363	115	0.614	151	0.694	187	0.324	223	0.863	259	0.363	295	0.614
8	0.332	44	0.866	80	0.352	116	0.635	152	0.675	188	0.332	224	0.866	260	0.352	296	0.635
9	0.341	45	0.866	81	0.341	117	0.655	153	0.655	189	0.341	225	0.866	261	0.341	297	0.655
10	0.352	46	0.866	82	0.332	118	0.675	154	0.635	190	0.352	226	0.866	262	0.332	298	0.675
11	0.363	47	0.863	83	0.324	119	0.694	155	0.614	191	0.363	227	0.863	263	0.324	299	0.693
12	0.376	48	0.860	84	0.317	120	0.713	156	0.594	192	0.376	228	0.860	264	0.317	300	0.713
13	0.390	49	0.854	85	0.312	121	0.731	157	0.573	193	0.390	229	0.854	265	0.312	301	0.731
14	0.404	50	0.848	86	0.307	122	0.748	158	0.552	194	0.404	230	0.848	266	0.307	302	0.748
15	0.420	51	0.840	87	0.304	123	0.765	159	0.532	195	0.420	231	0.840	267	0.304	303	0.765
16	0.437	52	0.830	88	0.301	124	0.780	160	0.512	196	0.437	232	0.830	268	0.301	304	0.780
17	0.455	53	0.820	89	0.300	125	0.794	161	0.492	197	0.455	233	0.820	269	0.300	305	0.794
18	0.473	54	0.808	90	0.299	126	0.808	162	0.473	198	0.473	234	0.808	270	0.299	306	0.808
19	0.492	55	0.794	91	0.300	127	0.820	163	0.455	199	0.492	235	0.794	271	0.300	307	0.820
20	0.512	56	0.780	92	0.301	128	0.830	164	0.437	200	0.512	236	0.780	272	0.301	308	0.830
21	0.532	57	0.765	93	0.304	129	0.840	165	0.420	201	0.532	237	0.765	273	0.304	309	0.840
22	0.552	58	0.748	94	0.307	130	0.848	166	0.404	202	0.552	238	0.748	274	0.307	310	0.848
23	0.573	59	0.731	95	0.312	131	0.854	167	0.390	203	0.573	239	0.731	275	0.312	311	0.854
24	0.594	60	0.713	96	0.317	132	0.860	168	0.376	204	0.594	240	0.713	276	0.317	312	0.860
25	0.614	61	0.694	97	0.324	133	0.863	169	0.363	205	0.614	241	0.694	277	0.324	313	0.863
26	0.635	62	0.675	98	0.332	134	0.866	170	0.352	206	0.635	242	0.675	278	0.332	314	0.866
27	0.655	63	0.655	99	0.341	135	0.866	171	0.341	207	0.655	243	0.655	279	0.341	315	0.866
28	0.675	64	0.635	100	0.352	136	0.866	172	0.332	208	0.675	244	0.635	280	0.352	316	0.866
29	0.694	65	0.614	101	0.363	137	0.863	173	0.324	209	0.694	245	0.614	281	0.363	317	0.863
30	0.713	66	0.594	102	0.376	138	0.860	174	0.317	210	0.713	246	0.594	282	0.376	318	0.860
31	0.731	67	0.573	103	0.390	139	0.854	175	0.312	211	0.731	247	0.573	283	0.390	319	0.854
32	0.748	68	0.552	104	0.404	140	0.848	176	0.307	212	0.748	248	0.552	284	0.404	320	0.848
33	0.765	69	0.532	105	0.420	141	0.840	177	0.304	213	0.765	249	0.532	285	0.420	321	0.840
34	0.780	70	0.512	106	0.437	142	0.830	178	0.301	214	0.780	250	0.512	286	0.437	322	0.830
35	0.794	71	0.492	107	0.455	143	0.820	179	0.300	215	0.794	251	0.492	287	0.455	323	0.820

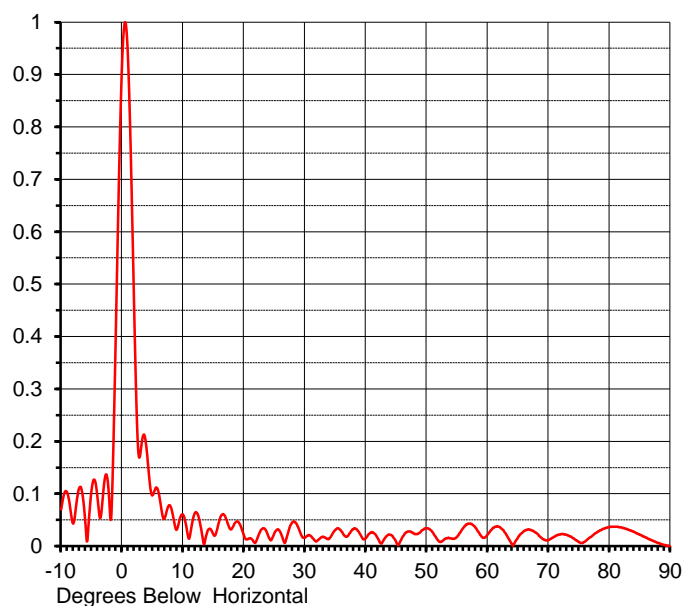
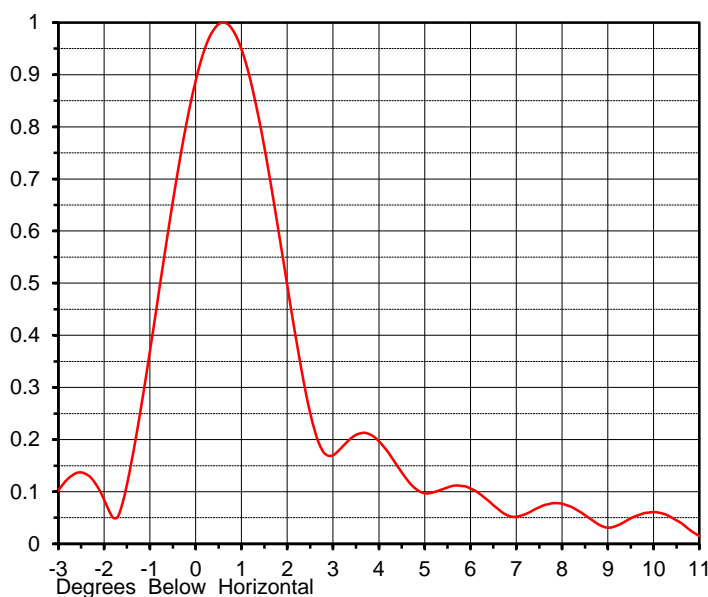
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ELEVATION PATTERN

Proposal No. **C-70249-2**
 Date **20-Nov-17**
 Call Letters **WRLK**
 Channel **33**
 Frequency **587 MHz**
 Antenna Type **TFU-27JTH/VP-R O4 (SP)**

RMS Directivity at Main Lobe **28.5 (14.55 dB)**
 RMS Directivity at Horizontal **22.5 (13.52 dB)**
Calculated

Beam Tilt **0.50 deg**
 Drawing Number **27J285050**



Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.070	10.0	0.060	30.0	0.016	50.0	0.034	70.0	0.012
-9.0	0.102	11.0	0.014	31.0	0.019	51.0	0.026	71.0	0.018
-8.0	0.043	12.0	0.064	32.0	0.010	52.0	0.009	72.0	0.023
-7.0	0.112	13.0	0.031	33.0	0.018	53.0	0.014	73.0	0.021
-6.0	0.040	14.0	0.028	34.0	0.014	54.0	0.015	74.0	0.015
-5.0	0.108	15.0	0.022	35.0	0.031	55.0	0.018	75.0	0.008
-4.0	0.088	16.0	0.050	36.0	0.028	56.0	0.035	76.0	0.009
-3.0	0.114	17.0	0.054	37.0	0.019	57.0	0.043	77.0	0.018
-2.0	0.065	18.0	0.033	38.0	0.033	58.0	0.035	78.0	0.027
-1.0	0.426	19.0	0.047	39.0	0.024	59.0	0.018	79.0	0.033
0.0	0.922	20.0	0.020	40.0	0.015	60.0	0.022	80.0	0.036
1.0	0.921	21.0	0.015	41.0	0.027	61.0	0.035	81.0	0.037
2.0	0.441	22.0	0.009	42.0	0.014	62.0	0.036	82.0	0.035
3.0	0.177	23.0	0.033	43.0	0.013	63.0	0.023	83.0	0.032
4.0	0.187	24.0	0.019	44.0	0.022	64.0	0.003	84.0	0.027
5.0	0.097	25.0	0.025	45.0	0.007	65.0	0.017	85.0	0.022
6.0	0.102	26.0	0.026	46.0	0.017	66.0	0.029	86.0	0.016
7.0	0.054	27.0	0.016	47.0	0.028	67.0	0.031	87.0	0.011
8.0	0.074	28.0	0.046	48.0	0.023	68.0	0.025	88.0	0.006
9.0	0.032	29.0	0.033	49.0	0.027	69.0	0.014	89.0	0.002
								90.0	0.000

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***FutureFill** refers to broadband panels or limited bandwidth slotted coaxial antennas that can be modified in the field to provide the flexibility to customize the null structure at a future date.*

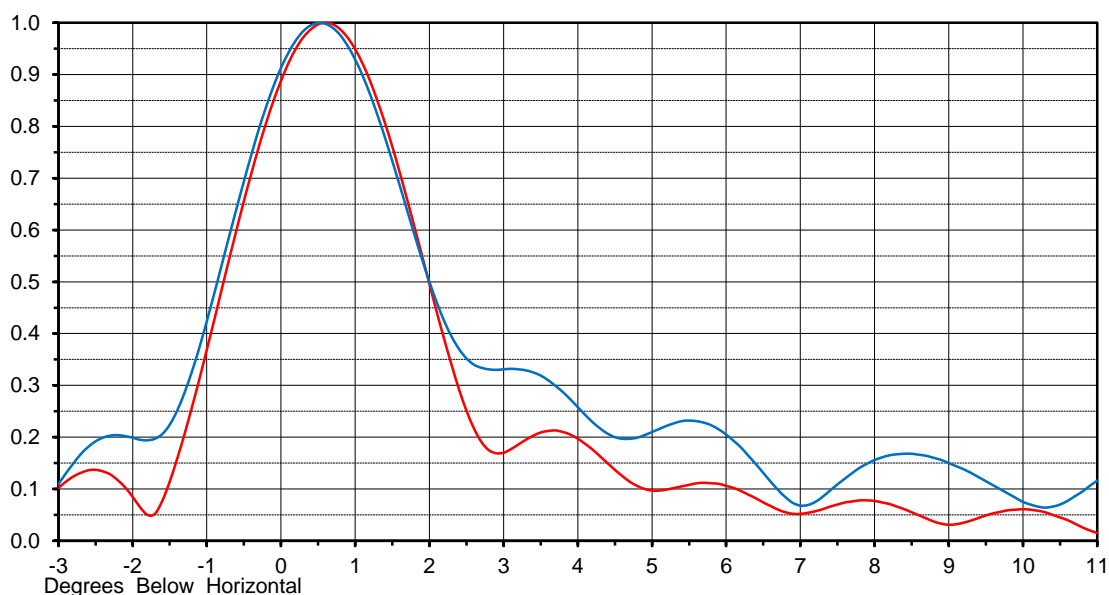
FutureFill OVERLAY

Proposal No. **C-70249-2**
 Date **20-Nov-17**
 Call Letters **WRLK**
 Channel **33**
 Frequency **587 MHz**
 Antenna Type **TFU-27JTH/VP-R O4 (SP)**

RMS Directivity 28.5 **(14.55dB)**
 RMS Directivity 22.5 **(13.52dB)**
 Calculated

Beam Tilt 0.50
 Beam Tilt 0.50

Drawing No. 27J285050 **Red**
 Drawing No. 27J285050-FF **Blue**



Tabulations for 27J285050-FF

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.072	10.0	0.075	30.0	0.018	50.0	0.086	70.0	0.015
-9.0	0.131	11.0	0.116	31.0	0.023	51.0	0.064	71.0	0.016
-8.0	0.174	12.0	0.176	32.0	0.020	52.0	0.044	72.0	0.026
-7.0	0.163	13.0	0.120	33.0	0.034	53.0	0.051	73.0	0.030
-6.0	0.095	14.0	0.104	34.0	0.014	54.0	0.053	74.0	0.030
-5.0	0.257	15.0	0.095	35.0	0.022	55.0	0.039	75.0	0.026
-4.0	0.200	16.0	0.048	36.0	0.043	56.0	0.032	76.0	0.023
-3.0	0.109	17.0	0.085	37.0	0.052	57.0	0.045	77.0	0.025
-2.0	0.199	18.0	0.111	38.0	0.051	58.0	0.057	78.0	0.029
-1.0	0.424	19.0	0.087	39.0	0.037	59.0	0.063	79.0	0.033
0.0	0.913	20.0	0.040	40.0	0.053	60.0	0.065	80.0	0.036
1.0	0.929	21.0	0.063	41.0	0.067	61.0	0.060	81.0	0.036
2.0	0.500	22.0	0.042	42.0	0.050	62.0	0.045	82.0	0.034
3.0	0.331	23.0	0.036	43.0	0.044	63.0	0.028	83.0	0.031
4.0	0.258	24.0	0.047	44.0	0.061	64.0	0.035	84.0	0.027
5.0	0.210	25.0	0.044	45.0	0.056	65.0	0.056	85.0	0.021
6.0	0.205	26.0	0.026	46.0	0.033	66.0	0.068	86.0	0.016
7.0	0.068	27.0	0.035	47.0	0.031	67.0	0.067	87.0	0.011
8.0	0.156	28.0	0.062	48.0	0.061	68.0	0.054	88.0	0.006
9.0	0.150	29.0	0.039	49.0	0.085	69.0	0.033	89.0	0.002
								90.0	0.000

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MECHANICAL SPECIFICATIONS

Proposal No. **C-70249-2**
 Date **20-Nov-17**
 Call Letters **WRLK**
 Channel **33**
 Frequency **587 MHz**
 Antenna Type **TFU-27JTH/VP-R O4 (SP)**

Preliminary Specifications

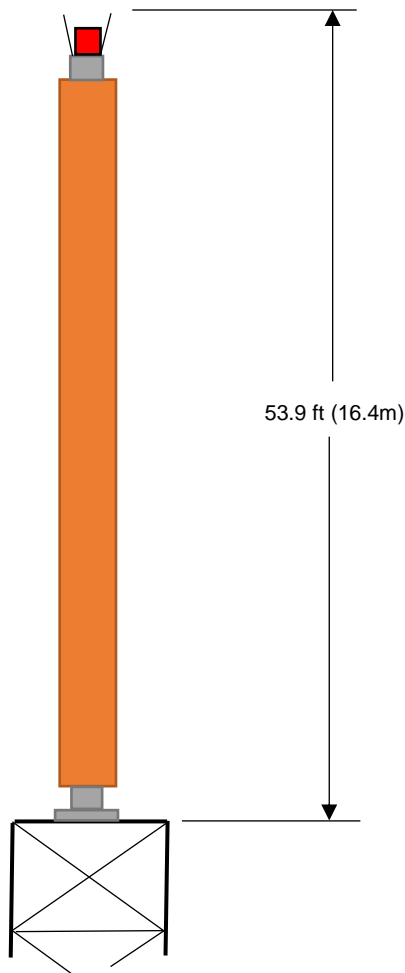
Top Mounted

With ice TIA-222-G

Height AGL(z) 1035 ft (315.5 m)
 Basic Wind Speed 90 m/h (144.8 km/h)

Structure Class III
 Exposure Category C
 Topography Category 1

Design Ice 0.75 in $t_{iz} = 2.42$ in
 Wind Speed w/Ice 30 m/h (48.3 km/h)



Mechanical Specifications

		without ice	with ice
Height with Lightning Protector	H4	53.9 ft (16.4m)	
Height less Lightning Protector	H2	49.9 ft (15.2m)	
Height of Center of Radiation	H3	24.95 ft (7.6m)	
Effective Projected Area	(EPA) _S	56.3 ft² (5.2m²)	154.7 ft² (14.4m²)
Moment Arm	D1	26.5 ft (8.1m)	27.6 ft (8.4m)

Weight W 7200 lb (3.3t) 11700 lb (5.3t)

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

Prepared by: NJS
 Rev. No.2 by: JSM

Date: 20-Nov-17
 Date: 8-Dec-17

ME:

RS

EE:

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Summary

Proposal No.	C-70249-2
Date	20-Nov-17
Call Letters	WRLK
Channel	33
Frequency	587 MHz
Antenna Type	TFU-27JTH/VP-R O4 (SP)

Antenna

	Hpol	Vpol
ERP:	282.0 kW (24.50 dBk)	94.0 kW (19.73 dBk)
RMS Gain*	21.38 (13.30 dB)	7.13 (8.53 dB)

Antenna Input Power	13.2 kW (11.20 dBk)
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Transmission Line

Type:	Rigid	Attenuation:	(1.33 dB)
Size:	6-1/8"	Efficiency:	73.7%
Impedance:	75 Ohm		
Length:	1120 ft	341.4 m	

Transmitter Output

17.9 kW (12.53 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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