



Antenna Model:

TFU-22GTH/VP-R 06 TC

Proposal Number: C-70468-5
Date: 26-Oct-17
Customer: Nexstar
Location: Austin, TX

Electrical Specifications

Polarization: Elliptical
Azimuth Pattern: Omni
Antenna Input: 6-1/8" 50 Ohm EIA/DCA
VSWR: Channel 1.10 : 1 Band 1.15 : 1
Bandwidth: 18 MHz
Rated Input Power: 80 kW (19.03 dBk) Maximum combined average power

Mechanical Specifications

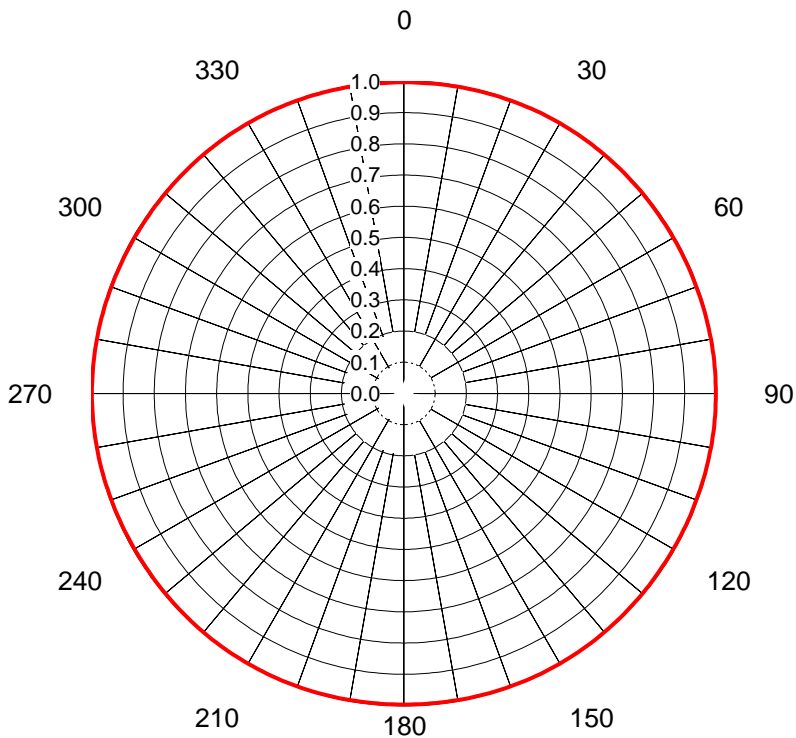
Mounting: Top of Stack
Environmental Protection: Full Radome
Height: 45 ft (13.7m) less Lightning Protector 49 ft (14.9m) with Lightning Protector
Weight: 5900 lb (2.7t)
Effective Projected Area: 56 ft² (5.2m²) TIA-222-G Basic Wind Speed: 90 m/h (144.8 km/h)

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
1	KNVA	23	527 MHz	500 kW (26.99 dBk)	100 kW (20.00 dBk)	42.1 kW (16.24 dBk)	15.25 (11.83dB)	3.05 (4.84dB)	12.71 (11.04dB)	2.54 (4.05dB)
2	KXAN	21	515 MHz	700.0 kW (28.45 dBk)	140.0 kW (21.46 dBk)	59.4 kW (17.74 dBk)	15.08 (11.78dB)	3.02 (4.80dB)	12.57 (10.99dB)	2.51 (4.00dB)

AZIMUTH PATTERN Horizontal Polarization

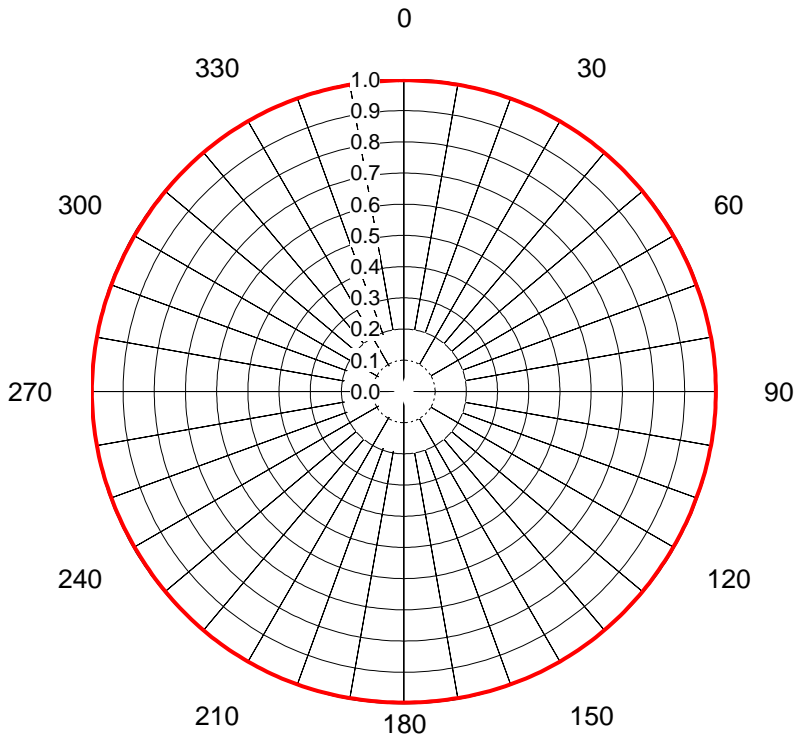
Proposal No. **C-70468-5**
 Date **26-Oct-17**
 Call Letters **KNVA**
 Channel **23**
 Frequency **527 MHz**
 Antenna Type **TFU-22GTH/VP-R 06 TC**
 Gain **1 (0.01dB)**
 Calculated
 Circularity **+/- 1.0 dB**



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

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AZIMUTH PATTERN Horizontal Polarization



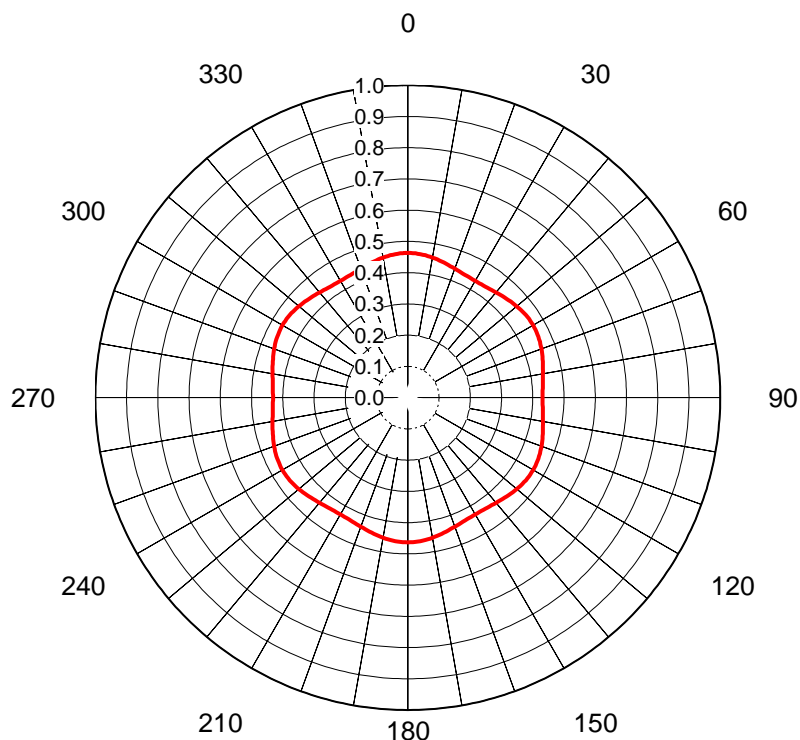
Proposal No. **C-70468-5**
 Date **26-Oct-17**
 Call Letters **KXAN**
 Channel **21**
 Frequency **515 MHz**
 Antenna Type **TFU-22GTH/VP-R 06 TC**
 Gain **1 (0.01dB)**
 Calculated
 Circularity **+/- 1.0 dB**

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

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AZIMUTH PATTERN Vertical Polarization

Proposal No. **C-70468-5**
 Date **26-Oct-17**
 Call Letters **KNVA**
 Channel **23**
 Frequency **527 MHz**
 Antenna Type **TFU-22GTH/VP-R 06 TC**
 Gain **1.07 (0.3dB)**
 Calculated
 Circularity **+/- 1.0 dB**

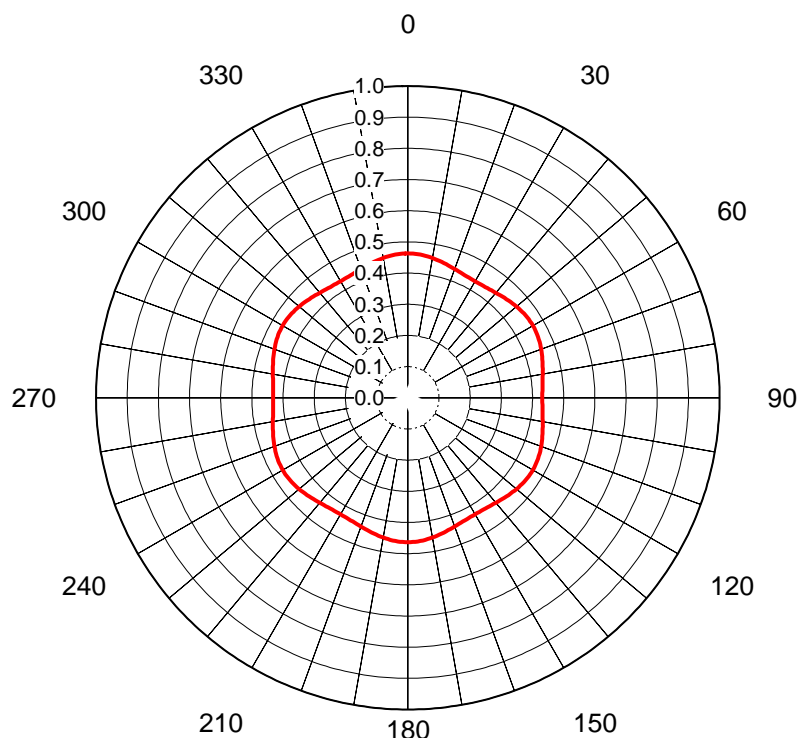


Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.463	36	0.435	72	0.452	108	0.452	144	0.435	180	0.463	216	0.435	252	0.452	288	0.452
1	0.463	37	0.436	73	0.451	109	0.454	145	0.434	181	0.463	217	0.436	253	0.451	289	0.454
2	0.463	38	0.437	74	0.449	110	0.455	146	0.433	182	0.463	218	0.437	254	0.449	290	0.455
3	0.462	39	0.438	75	0.447	111	0.457	147	0.432	183	0.462	219	0.438	255	0.447	291	0.457
4	0.462	40	0.439	76	0.446	112	0.458	148	0.432	184	0.462	220	0.439	256	0.446	292	0.458
5	0.461	41	0.441	77	0.444	113	0.459	149	0.432	185	0.461	221	0.441	257	0.444	293	0.459
6	0.460	42	0.442	78	0.442	114	0.460	150	0.432	186	0.460	222	0.442	258	0.442	294	0.460
7	0.459	43	0.444	79	0.441	115	0.461	151	0.432	187	0.459	223	0.444	259	0.441	295	0.461
8	0.458	44	0.446	80	0.439	116	0.462	152	0.432	188	0.458	224	0.446	260	0.439	296	0.462
9	0.457	45	0.447	81	0.438	117	0.462	153	0.432	189	0.457	225	0.447	261	0.438	297	0.462
10	0.455	46	0.449	82	0.437	118	0.463	154	0.433	190	0.455	226	0.449	262	0.437	298	0.463
11	0.454	47	0.451	83	0.436	119	0.463	155	0.434	191	0.454	227	0.451	263	0.436	299	0.463
12	0.452	48	0.452	84	0.435	120	0.463	156	0.435	192	0.452	228	0.452	264	0.435	300	0.463
13	0.451	49	0.454	85	0.434	121	0.463	157	0.436	193	0.451	229	0.454	265	0.434	301	0.463
14	0.449	50	0.455	86	0.433	122	0.463	158	0.437	194	0.449	230	0.455	266	0.433	302	0.463
15	0.447	51	0.457	87	0.432	123	0.462	159	0.438	195	0.447	231	0.457	267	0.432	303	0.462
16	0.446	52	0.458	88	0.432	124	0.462	160	0.439	196	0.446	232	0.458	268	0.432	304	0.462
17	0.444	53	0.459	89	0.432	125	0.461	161	0.441	197	0.444	233	0.459	269	0.432	305	0.461
18	0.442	54	0.460	90	0.432	126	0.460	162	0.442	198	0.442	234	0.460	270	0.432	306	0.460
19	0.441	55	0.461	91	0.432	127	0.459	163	0.444	199	0.441	235	0.461	271	0.432	307	0.459
20	0.439	56	0.462	92	0.432	128	0.458	164	0.446	200	0.439	236	0.462	272	0.432	308	0.458
21	0.438	57	0.462	93	0.432	129	0.457	165	0.447	201	0.438	237	0.462	273	0.432	309	0.457
22	0.437	58	0.463	94	0.433	130	0.455	166	0.449	202	0.437	238	0.463	274	0.433	310	0.455
23	0.436	59	0.463	95	0.434	131	0.454	167	0.451	203	0.436	239	0.463	275	0.434	311	0.454
24	0.435	60	0.463	96	0.435	132	0.452	168	0.452	204	0.435	240	0.463	276	0.435	312	0.452
25	0.434	61	0.463	97	0.436	133	0.451	169	0.454	205	0.434	241	0.463	277	0.436	313	0.451
26	0.433	62	0.463	98	0.437	134	0.449	170	0.455	206	0.433	242	0.463	278	0.437	314	0.449
27	0.432	63	0.462	99	0.438	135	0.447	171	0.457	207	0.432	243	0.462	279	0.438	315	0.447
28	0.432	64	0.462	100	0.439	136	0.446	172	0.458	208	0.432	244	0.462	280	0.439	316	0.446
29	0.432	65	0.461	101	0.441	137	0.444	173	0.459	209	0.432	245	0.461	281	0.441	317	0.444
30	0.432	66	0.460	102	0.442	138	0.442	174	0.460	210	0.432	246	0.460	282	0.442	318	0.442
31	0.432	67	0.459	103	0.444	139	0.441	175	0.461	211	0.432	247	0.459	283	0.444	319	0.441
32	0.432	68	0.458	104	0.446	140	0.439	176	0.462	212	0.432	248	0.458	284	0.446	320	0.439
33	0.432	69	0.457	105	0.447	141	0.438	177	0.462	213	0.432	249	0.457	285	0.447	321	0.438
34	0.433	70	0.455	106	0.449	142	0.437	178	0.463	214	0.433	250	0.455	286	0.449	322	0.437
35	0.434	71	0.454	107	0.451	143	0.436	179	0.463	215	0.434	251	0.454	287	0.451	323	0.436

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AZIMUTH PATTERN Vertical Polarization

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 Date **26-Oct-17**
 Call Letters **KXAN**
 Channel **21**
 Frequency **515 MHz**
 Antenna Type **TFU-22GTH/VP-R 06 TC**
 Gain **1.07 (0.3dB)**
 Calculated
 Circularity **+/- 1.0 dB**



Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.463	36	0.435	72	0.452	108	0.452	144	0.435	180	0.463	216	0.435	252	0.452	288	0.452
1	0.463	37	0.436	73	0.451	109	0.454	145	0.434	181	0.463	217	0.436	253	0.451	289	0.454
2	0.463	38	0.437	74	0.449	110	0.455	146	0.433	182	0.463	218	0.437	254	0.449	290	0.455
3	0.462	39	0.438	75	0.447	111	0.457	147	0.432	183	0.462	219	0.438	255	0.447	291	0.457
4	0.462	40	0.439	76	0.446	112	0.458	148	0.432	184	0.462	220	0.439	256	0.446	292	0.458
5	0.461	41	0.441	77	0.444	113	0.459	149	0.432	185	0.461	221	0.441	257	0.444	293	0.459
6	0.460	42	0.442	78	0.442	114	0.460	150	0.432	186	0.460	222	0.442	258	0.442	294	0.460
7	0.459	43	0.444	79	0.441	115	0.461	151	0.432	187	0.459	223	0.444	259	0.441	295	0.461
8	0.458	44	0.446	80	0.439	116	0.462	152	0.432	188	0.458	224	0.446	260	0.439	296	0.462
9	0.457	45	0.447	81	0.438	117	0.462	153	0.432	189	0.457	225	0.447	261	0.438	297	0.462
10	0.455	46	0.449	82	0.437	118	0.463	154	0.433	190	0.455	226	0.449	262	0.437	298	0.463
11	0.454	47	0.451	83	0.436	119	0.463	155	0.434	191	0.454	227	0.451	263	0.436	299	0.463
12	0.452	48	0.452	84	0.435	120	0.463	156	0.435	192	0.452	228	0.452	264	0.435	300	0.463
13	0.451	49	0.454	85	0.434	121	0.463	157	0.436	193	0.451	229	0.454	265	0.434	301	0.463
14	0.449	50	0.455	86	0.433	122	0.463	158	0.437	194	0.449	230	0.455	266	0.433	302	0.463
15	0.447	51	0.457	87	0.432	123	0.462	159	0.438	195	0.447	231	0.457	267	0.432	303	0.462
16	0.446	52	0.458	88	0.432	124	0.462	160	0.439	196	0.446	232	0.458	268	0.432	304	0.462
17	0.444	53	0.459	89	0.432	125	0.461	161	0.441	197	0.444	233	0.459	269	0.432	305	0.461
18	0.442	54	0.460	90	0.432	126	0.460	162	0.442	198	0.442	234	0.460	270	0.432	306	0.460
19	0.441	55	0.461	91	0.432	127	0.459	163	0.444	199	0.441	235	0.461	271	0.432	307	0.459
20	0.439	56	0.462	92	0.432	128	0.458	164	0.446	200	0.439	236	0.462	272	0.432	308	0.458
21	0.438	57	0.462	93	0.432	129	0.457	165	0.447	201	0.438	237	0.462	273	0.432	309	0.457
22	0.437	58	0.463	94	0.433	130	0.455	166	0.449	202	0.437	238	0.463	274	0.433	310	0.455
23	0.436	59	0.463	95	0.434	131	0.454	167	0.451	203	0.436	239	0.463	275	0.434	311	0.454
24	0.435	60	0.463	96	0.435	132	0.452	168	0.452	204	0.435	240	0.463	276	0.435	312	0.452
25	0.434	61	0.463	97	0.436	133	0.451	169	0.454	205	0.434	241	0.463	277	0.436	313	0.451
26	0.433	62	0.463	98	0.437	134	0.449	170	0.455	206	0.433	242	0.463	278	0.437	314	0.449
27	0.432	63	0.462	99	0.438	135	0.447	171	0.457	207	0.432	243	0.462	279	0.438	315	0.447
28	0.432	64	0.462	100	0.439	136	0.446	172	0.458	208	0.432	244	0.462	280	0.439	316	0.446
29	0.432	65	0.461	101	0.441	137	0.444	173	0.459	209	0.432	245	0.461	281	0.441	317	0.444
30	0.432	66	0.460	102	0.442	138	0.442	174	0.460	210	0.432	246	0.460	282	0.442	318	0.442
31	0.432	67	0.459	103	0.444	139	0.441	175	0.461	211	0.432	247	0.459	283	0.444	319	0.441
32	0.432	68	0.458	104	0.446	140	0.439	176	0.462	212	0.432	248	0.458	284	0.446	320	0.439
33	0.432	69	0.457	105	0.447	141	0.438	177	0.462	213	0.432	249	0.457	285	0.447	321	0.438
34	0.433	70	0.455	106	0.449	142	0.437	178	0.463	214	0.433	250	0.455	286	0.449	322	0.437
35	0.434	71	0.454	107	0.451	143	0.436	179	0.463	215	0.434	251	0.454	287	0.451	323	0.436

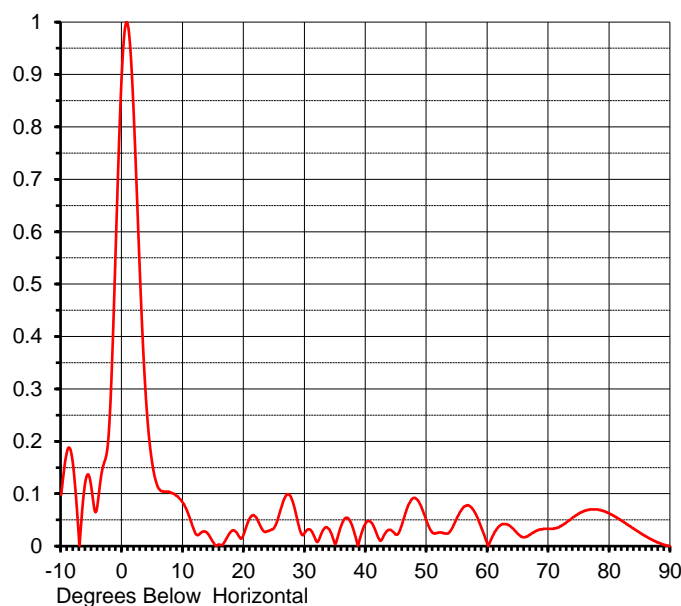
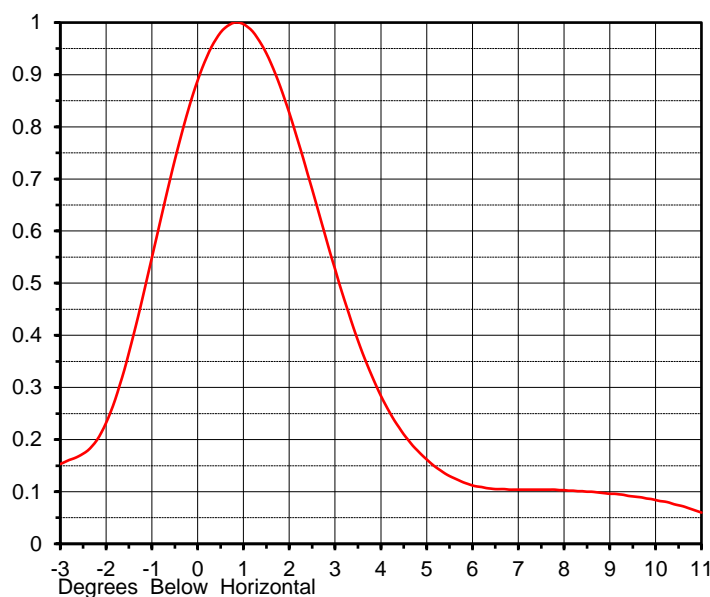
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ELEVATION PATTERN

Proposal No. **C-70468-5**
 Date **26-Oct-17**
 Call Letters **KNVA**
 Channel **23**
 Frequency **527 MHz**
 Antenna Type **TFU-22GTH/VP-R 06 TC**

RMS Directivity at Main Lobe **18.3 (12.62 dB)**
 RMS Directivity at Horizontal **15.3 (11.85 dB)**
Calculated

Beam Tilt **0.75 deg**
 Pattern Number **22G183075**



Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.098	10.0	0.082	30.0	0.026	50.0	0.047	70.0	0.033
-9.0	0.182	11.0	0.057	31.0	0.030	51.0	0.025	71.0	0.034
-8.0	0.150	12.0	0.025	32.0	0.008	52.0	0.026	72.0	0.038
-7.0	0.001	13.0	0.026	33.0	0.031	53.0	0.024	73.0	0.046
-6.0	0.125	14.0	0.025	34.0	0.032	54.0	0.031	74.0	0.055
-5.0	0.108	15.0	0.007	35.0	0.004	55.0	0.055	75.0	0.062
-4.0	0.082	16.0	0.003	36.0	0.040	56.0	0.074	76.0	0.068
-3.0	0.157	17.0	0.012	37.0	0.054	57.0	0.077	77.0	0.070
-2.0	0.253	18.0	0.029	38.0	0.030	58.0	0.062	78.0	0.070
-1.0	0.587	19.0	0.022	39.0	0.013	59.0	0.034	79.0	0.067
0.0	0.913	20.0	0.024	40.0	0.044	60.0	0.003	80.0	0.062
1.0	0.991	21.0	0.054	41.0	0.044	61.0	0.023	81.0	0.056
2.0	0.799	22.0	0.055	42.0	0.017	62.0	0.039	82.0	0.048
3.0	0.497	23.0	0.032	43.0	0.021	63.0	0.042	83.0	0.041
4.0	0.267	24.0	0.029	44.0	0.031	64.0	0.035	84.0	0.033
5.0	0.154	25.0	0.036	45.0	0.022	65.0	0.023	85.0	0.025
6.0	0.110	26.0	0.069	46.0	0.044	66.0	0.017	86.0	0.018
7.0	0.104	27.0	0.098	47.0	0.079	67.0	0.022	87.0	0.012
8.0	0.102	28.0	0.085	48.0	0.092	68.0	0.029	88.0	0.007
9.0	0.096	29.0	0.039	49.0	0.078	69.0	0.032	89.0	0.002
								90.0	0.000

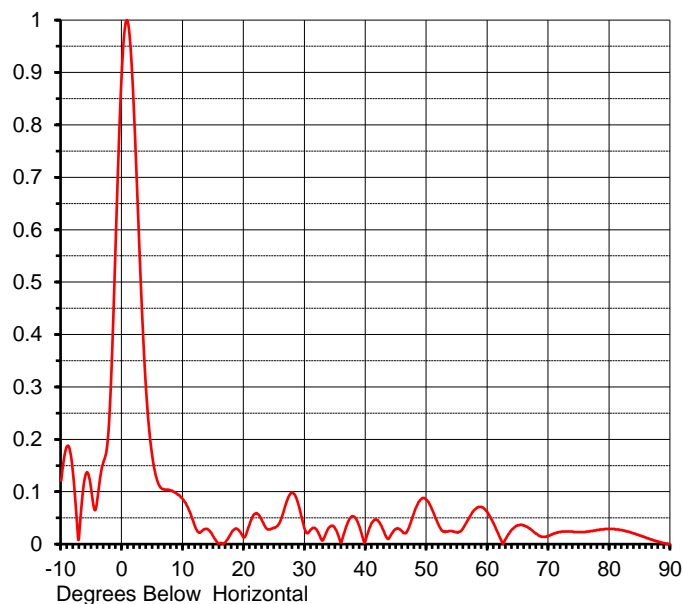
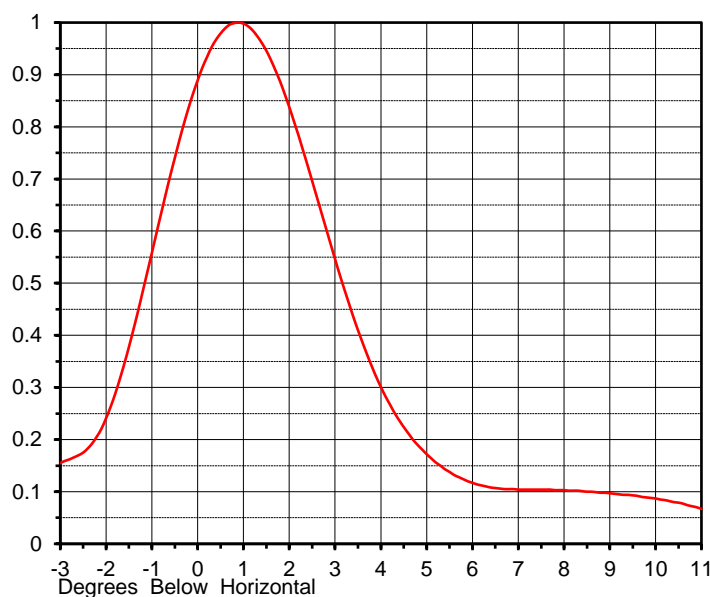
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ELEVATION PATTERN

Proposal No. **C-70468-5**
 Date **26-Oct-17**
 Call Letters **KXAN**
 Channel **21**
 Frequency **515 MHz**
 Antenna Type **TFU-22GTH/VP-R 06 TC**

RMS Directivity at Main Lobe **18.1 (12.58 dB)**
 RMS Directivity at Horizontal **15.1 (11.79 dB)**
Calculated

Beam Tilt **0.75 deg**
 Pattern Number **22G181075**



Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.121	10.0	0.085	30.0	0.028	50.0	0.084	70.0	0.016
-9.0	0.187	11.0	0.064	31.0	0.028	51.0	0.063	71.0	0.021
-8.0	0.129	12.0	0.033	32.0	0.026	52.0	0.035	72.0	0.023
-7.0	0.025	13.0	0.024	33.0	0.008	53.0	0.023	73.0	0.024
-6.0	0.132	14.0	0.029	34.0	0.032	54.0	0.025	74.0	0.024
-5.0	0.098	15.0	0.014	35.0	0.029	55.0	0.022	75.0	0.023
-4.0	0.091	16.0	0.001	36.0	0.004	56.0	0.031	76.0	0.023
-3.0	0.159	17.0	0.004	37.0	0.040	57.0	0.051	77.0	0.025
-2.0	0.263	18.0	0.023	38.0	0.053	58.0	0.067	78.0	0.027
-1.0	0.596	19.0	0.028	39.0	0.032	59.0	0.071	79.0	0.028
0.0	0.913	20.0	0.013	40.0	0.009	60.0	0.060	80.0	0.029
1.0	0.993	21.0	0.041	41.0	0.041	61.0	0.039	81.0	0.028
2.0	0.811	22.0	0.059	42.0	0.045	62.0	0.013	82.0	0.027
3.0	0.517	23.0	0.044	43.0	0.023	63.0	0.011	83.0	0.024
4.0	0.283	24.0	0.028	44.0	0.015	64.0	0.028	84.0	0.020
5.0	0.164	25.0	0.031	45.0	0.029	65.0	0.036	85.0	0.016
6.0	0.114	26.0	0.045	46.0	0.024	66.0	0.035	86.0	0.012
7.0	0.104	27.0	0.081	47.0	0.030	67.0	0.029	87.0	0.008
8.0	0.102	28.0	0.098	48.0	0.063	68.0	0.020	88.0	0.005
9.0	0.096	29.0	0.073	49.0	0.085	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.*

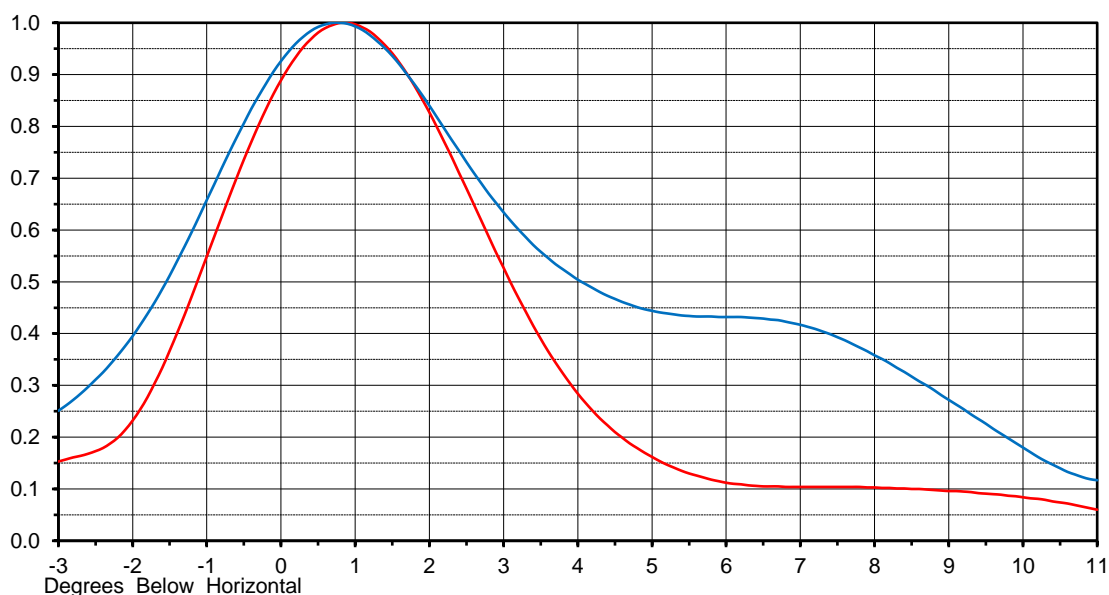
FutureFill OVERLAY

Proposal No. **C-70468-5**
 Date **26-Oct-17**
 Call Letters **KNVA**
 Channel **23**
 Frequency **527 MHz**
 Antenna Type **TFU-22GTH/VP-R 06 TC**

RMS Directivity 18.3 **(12.62dB)**
 RMS Directivity 11.3 **(10.52dB)**
 Calculated

Beam Tilt 0.75
 Beam Tilt 0.75

Pattern No. 22G183075 **Red**
 Pattern No. 22G19007-FF **Blue**



Tabulations for 22G19007-FF

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.311	10.0	0.180	30.0	0.080	50.0	0.084	70.0	0.045
-9.0	0.437	11.0	0.117	31.0	0.093	51.0	0.069	71.0	0.045
-8.0	0.368	12.0	0.136	32.0	0.085	52.0	0.062	72.0	0.047
-7.0	0.226	13.0	0.161	33.0	0.113	53.0	0.062	73.0	0.049
-6.0	0.352	14.0	0.143	34.0	0.135	54.0	0.073	74.0	0.051
-5.0	0.388	15.0	0.119	35.0	0.106	55.0	0.105	75.0	0.053
-4.0	0.261	16.0	0.110	36.0	0.058	56.0	0.145	76.0	0.055
-3.0	0.251	17.0	0.079	37.0	0.072	57.0	0.171	77.0	0.056
-2.0	0.395	18.0	0.036	38.0	0.084	58.0	0.173	78.0	0.055
-1.0	0.658	19.0	0.026	39.0	0.055	59.0	0.150	79.0	0.054
0.0	0.926	20.0	0.034	40.0	0.024	60.0	0.113	80.0	0.050
1.0	0.993	21.0	0.082	41.0	0.038	61.0	0.081	81.0	0.046
2.0	0.840	22.0	0.108	42.0	0.030	62.0	0.079	82.0	0.041
3.0	0.634	23.0	0.088	43.0	0.004	63.0	0.096	83.0	0.035
4.0	0.504	24.0	0.061	44.0	0.030	64.0	0.110	84.0	0.029
5.0	0.444	25.0	0.064	45.0	0.031	65.0	0.111	85.0	0.023
6.0	0.432	26.0	0.071	46.0	0.004	66.0	0.100	86.0	0.017
7.0	0.417	27.0	0.073	47.0	0.046	67.0	0.083	87.0	0.011
8.0	0.358	28.0	0.053	48.0	0.082	68.0	0.065	88.0	0.006
9.0	0.272	29.0	0.041	49.0	0.095	69.0	0.052	89.0	0.002
								90.0	0.000

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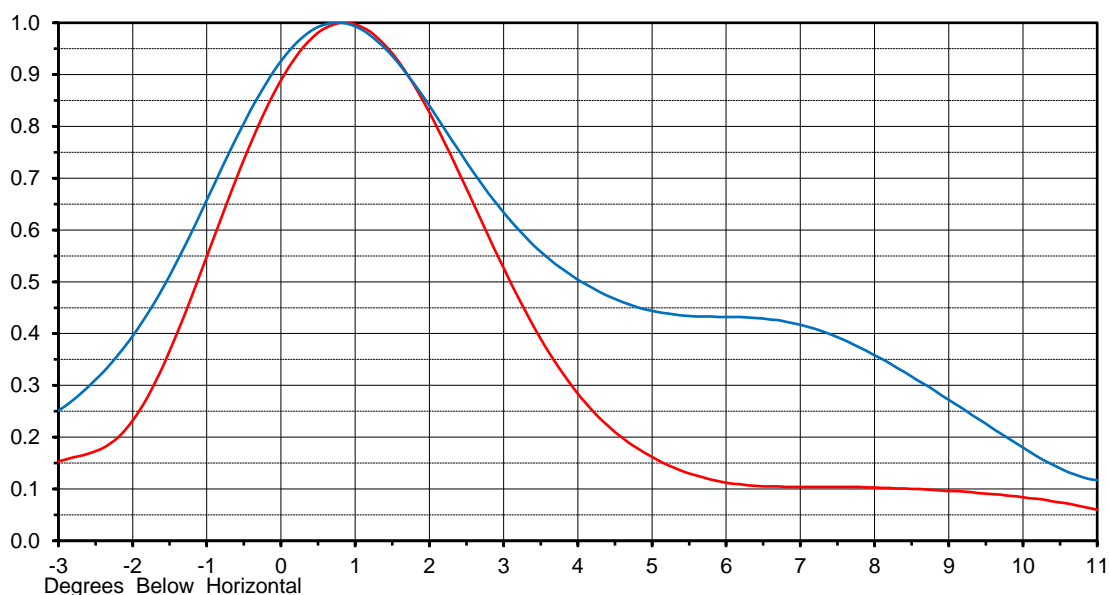
FutureFill OVERLAY

Proposal No. **C-70468-5**
 Date **26-Oct-17**
 Call Letters **KXAN**
 Channel **21**
 Frequency **515 MHz**
 Antenna Type **TFU-22GTH/VP-R 06 TC**

RMS Directivity 18.3 **(12.62dB)**
 RMS Directivity 11.3 **(10.52dB)**
 Calculated

Beam Tilt 0.75
 Beam Tilt 0.75

Pattern No. 22G183075 **Red**
 Pattern No. 22G19007-FF **Blue**

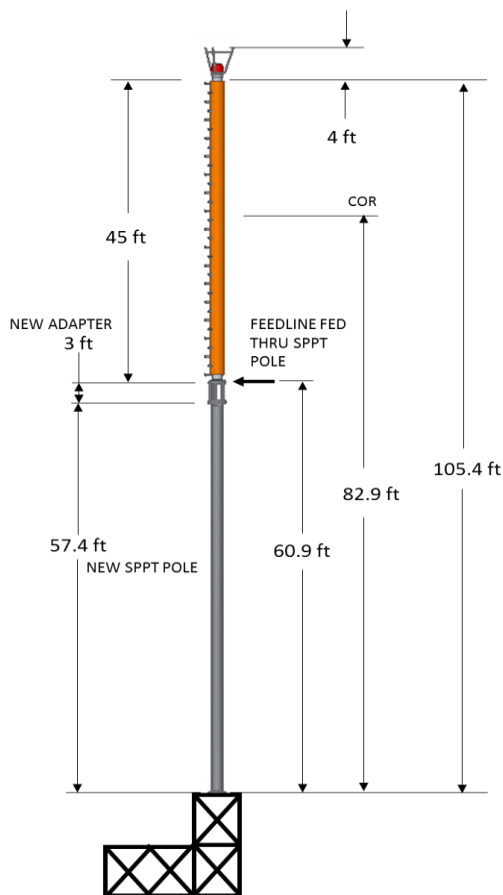


Tabulations for 22G19007-FF

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.311	10.0	0.180	30.0	0.080	50.0	0.084	70.0	0.045
-9.0	0.437	11.0	0.117	31.0	0.093	51.0	0.069	71.0	0.045
-8.0	0.368	12.0	0.136	32.0	0.085	52.0	0.062	72.0	0.047
-7.0	0.226	13.0	0.161	33.0	0.113	53.0	0.062	73.0	0.049
-6.0	0.352	14.0	0.143	34.0	0.135	54.0	0.073	74.0	0.051
-5.0	0.388	15.0	0.119	35.0	0.106	55.0	0.105	75.0	0.053
-4.0	0.261	16.0	0.110	36.0	0.058	56.0	0.145	76.0	0.055
-3.0	0.251	17.0	0.079	37.0	0.072	57.0	0.171	77.0	0.056
-2.0	0.395	18.0	0.036	38.0	0.084	58.0	0.173	78.0	0.055
-1.0	0.658	19.0	0.026	39.0	0.055	59.0	0.150	79.0	0.054
0.0	0.926	20.0	0.034	40.0	0.024	60.0	0.113	80.0	0.050
1.0	0.993	21.0	0.082	41.0	0.038	61.0	0.081	81.0	0.046
2.0	0.840	22.0	0.108	42.0	0.030	62.0	0.079	82.0	0.041
3.0	0.634	23.0	0.088	43.0	0.004	63.0	0.096	83.0	0.035
4.0	0.504	24.0	0.061	44.0	0.030	64.0	0.110	84.0	0.029
5.0	0.444	25.0	0.064	45.0	0.031	65.0	0.111	85.0	0.023
6.0	0.432	26.0	0.071	46.0	0.004	66.0	0.100	86.0	0.017
7.0	0.417	27.0	0.073	47.0	0.046	67.0	0.083	87.0	0.011
8.0	0.358	28.0	0.053	48.0	0.082	68.0	0.065	88.0	0.006
9.0	0.272	29.0	0.041	49.0	0.095	69.0	0.052	89.0	0.002
								90.0	0.000

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MECHANICAL SPECIFICATIONS



Proposal No. **C-70468-5**
 Date **26-Oct-17**
 Call Letters **KNVA**
 Channel **23**
 Frequency **527 MHz**
 Antenna Type **TFU-22GTH/VP-R 06 TC**

Preliminary Specifications

Top of Stack

With ice TIA-222-G

Height AGL(z) 1150 ft (350.5 m)
 Basic Wind Speed 90 m/h (144.8 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 30 m/h (48.3 km/h)

Mechanical Specifications

		without ice	with ice	full stack	full stack with ice
Height with Lightning Protector	H4	49 ft (14.9m)		109.4 ft (33.3m)	
Height less Lightning Protector	H2	45 ft (13.7m)		105.4 ft (32.1m)	
Height of Center of Radiation	H3	22.5 ft (6.9m)		82.9 ft (25.3m)	
Effective Projected Area	(EPA) _S	56 ft ² (5.2m ²)	132 ft ² (12.3m ²)	108.3 ft ² (10.1m ²)	259 ft ² (24.1m ²)
Moment Arm	D1	25 ft (7.6m)	25.8 ft (7.9m)	61 ft (18.6m)	61 ft (18.6m)

Weight W 5900 lb (2.7t) 8123 lb (3.7t) 21000 lb (9.5t) 25000 lb (11.3t)

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

Prepared by: KLP Date: 26-Oct-17 ME: EE:
 Rev. No.5 by: RMS Date: 4-Jan-19

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Summary

Proposal No.	C-70468-5
Date	26-Oct-17
Call Letters	KNVA
Channel	23
Frequency	527 MHz
Antenna Type	TFU-22GTH/VP-R 06 TC

Antenna

	Hpol		Vpol	
ERP:	500 kW	(26.99 dBk)	100 kW	(20.00 dBk)
RMS Gain*	15.25	(11.83 dB)	3.05	(4.84 dB)

Antenna Input Power	32.8 kW	(15.16 dBk)
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Transmission Line

Type:	Rigid Digiline	Attenuation:	(1.08 dB)
Size:	8-3/16"	Efficiency:	77.9%
Impedance:	75 Ohm		
Length:	1300 ft	396.2 m	

Transmitter Output

42.1 kW	(16.24 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-70468-5
Date	26-Oct-17
Call Letters	KXAN
Channel	21
Frequency	515 MHz
Antenna Type	TFU-22GTH/VP-R 06 TC

Antenna

	Hpol		Vpol	
ERP:	700 kW	(28.45 dBk)	140 kW	(21.46 dBk)
RMS Gain*	15.08	(11.78 dB)	3.02	(4.80 dB)

Antenna Input Power	46.4 kW	(16.67 dBk)
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Transmission Line

Type:	Rigid Digiline	Attenuation:	(1.07 dB)
Size:	8-3/16"	Efficiency:	78.1%
Impedance:	75 Ohm		
Length:	1300 ft	396.2 m	

Transmitter Output

59.4 kW	(17.74 dBk)
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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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