



TFU-26DSC/VP-R P200

**Proposal Number:** C-70189  
**Date:** 13-Feb-17  
**Customer:** TEGNA  
**Location:** Seattle, WA

### Electrical Specifications

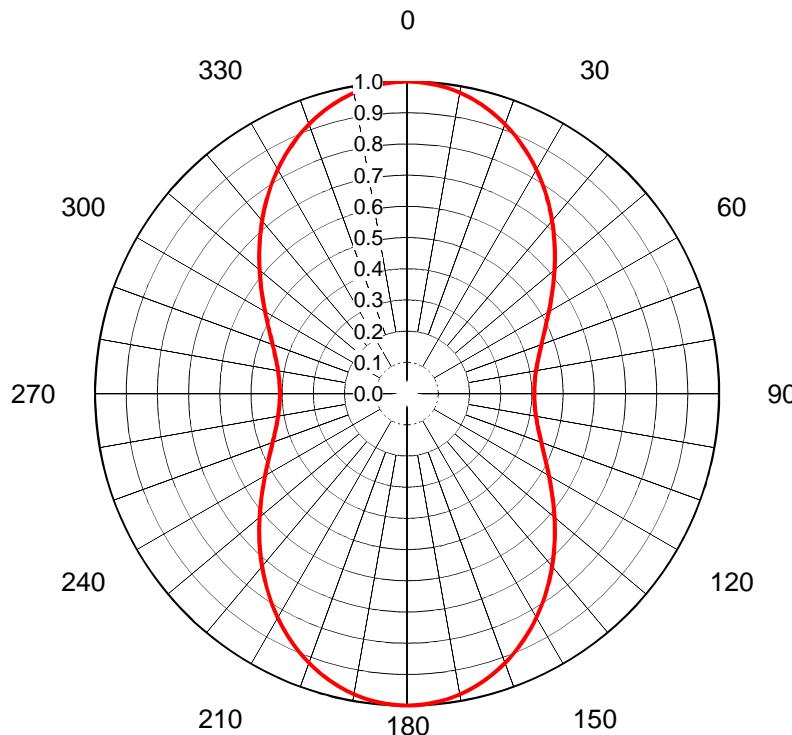
Polarity	Elliptical		
Azimuth Pattern	Directional		
Antenna Input	6-1/8" 50	50 Ohm	EIA/DCA
VSWR	Channel	1.08 : 1	
Bandwidth	6 MHz		
Rated Input Power	20 kW	(13.01 dBk)	Maximum Average Power

### Mechanical Specifications

Mounting	Side Mounted		
Environmental Protection	Full Radome		
Height	53.1 ft (16.2m)		
Weight	2100 lb (1t)		
Effective Projected Area	39.3 ft <sup>2</sup> (3.7m <sup>2</sup> )	TIA-222-G	Excludes Mounts
		<b>Basic Wind Speed</b>	85 m/h (136.8 km/h)

### Channel Specifications

Call	CH	Freq	Hpol ERP	Vpol ERP	TPO	Peak	Peak	Peak	Peak
						Main Lobe Hpol Gain	Main Lobe Vpol Gain	at Horizontal Hpol Gain	at Horizontal Vpol Gain
KING	25	539 MHz	608.0 kW (27.84 dBk)	107.3 kW (20.31 dBk)	19.3 kW (12.86 dBk)	36.49 (15.62dB)	6.44 (8.09dB)	31.50 (14.98dB)	5.56 (7.45dB)

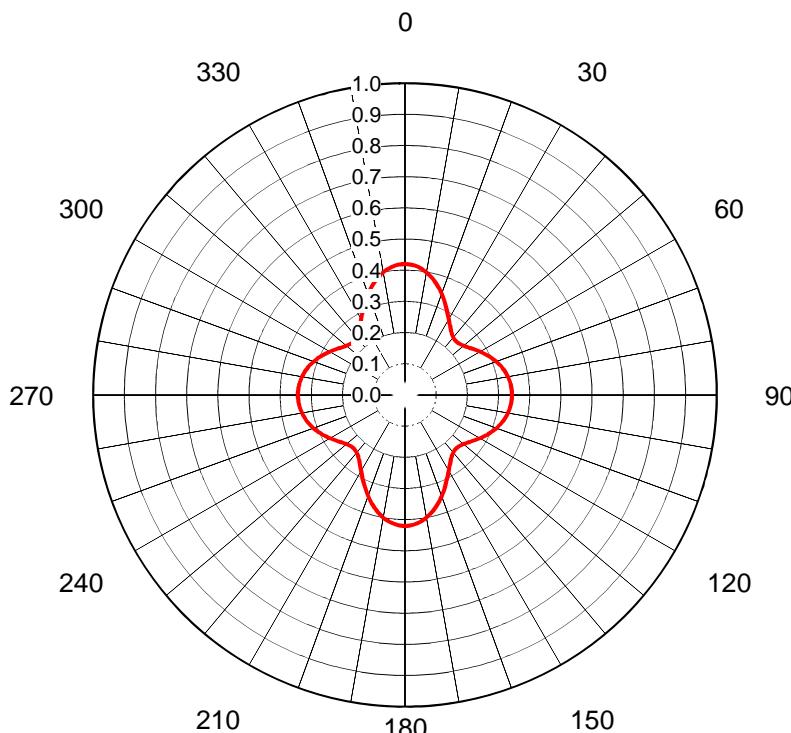


## AZIMUTH PATTERN Horizontal Polarization

Proposal No. C-70189  
 Date 13-Feb-17  
 Call Letters KING 25  
 Frequency 539 MHz  
 Antenna Type TFU-26DSC/VP-R P200  
 Gain 1.94 (2.88dB)  
 Calculated  
 Directional Drawing # P200H D48

Deg	Value																		
0	1.000	36	0.767	72	0.448	108	0.448	144	0.767	180	1.000	216	0.767	252	0.448	288	0.448	324	0.767
1	1.000	37	0.756	73	0.444	109	0.453	145	0.777	181	1.000	217	0.756	253	0.444	289	0.453	325	0.777
2	0.999	38	0.745	74	0.439	110	0.458	146	0.788	182	0.999	218	0.745	254	0.439	290	0.458	326	0.788
3	0.998	39	0.734	75	0.436	111	0.464	147	0.798	183	0.998	219	0.734	255	0.436	291	0.464	327	0.798
4	0.997	40	0.723	76	0.432	112	0.469	148	0.809	184	0.997	220	0.723	256	0.432	292	0.469	328	0.809
5	0.994	41	0.712	77	0.429	113	0.475	149	0.819	185	0.994	221	0.712	257	0.429	293	0.475	329	0.819
6	0.992	42	0.702	78	0.425	114	0.482	150	0.829	186	0.992	222	0.702	258	0.425	294	0.482	330	0.829
7	0.989	43	0.691	79	0.423	115	0.488	151	0.839	187	0.989	223	0.691	259	0.423	295	0.488	331	0.839
8	0.986	44	0.680	80	0.420	116	0.495	152	0.849	188	0.986	224	0.680	260	0.420	296	0.495	332	0.849
9	0.983	45	0.669	81	0.418	117	0.502	153	0.858	189	0.983	225	0.669	261	0.418	297	0.502	333	0.858
10	0.979	46	0.659	82	0.415	118	0.509	154	0.868	190	0.979	226	0.659	262	0.415	298	0.509	334	0.868
11	0.974	47	0.648	83	0.414	119	0.517	155	0.877	191	0.974	227	0.648	263	0.414	299	0.517	335	0.877
12	0.970	48	0.638	84	0.412	120	0.525	156	0.886	192	0.970	228	0.638	264	0.412	300	0.525	336	0.886
13	0.964	49	0.627	85	0.411	121	0.533	157	0.894	193	0.964	229	0.627	265	0.411	301	0.533	337	0.894
14	0.959	50	0.617	86	0.410	122	0.542	158	0.903	194	0.959	230	0.617	266	0.410	302	0.542	338	0.903
15	0.953	51	0.607	87	0.409	123	0.550	159	0.911	195	0.953	231	0.607	267	0.409	303	0.550	339	0.911
16	0.947	52	0.597	88	0.408	124	0.559	160	0.919	196	0.947	232	0.597	268	0.408	304	0.559	340	0.919
17	0.940	53	0.587	89	0.408	125	0.569	161	0.926	197	0.940	233	0.587	269	0.408	305	0.569	341	0.926
18	0.934	54	0.578	90	0.408	126	0.578	162	0.934	198	0.934	234	0.578	270	0.408	306	0.578	342	0.934
19	0.926	55	0.569	91	0.408	127	0.587	163	0.940	199	0.926	235	0.569	271	0.408	307	0.587	343	0.940
20	0.919	56	0.559	92	0.408	128	0.597	164	0.947	200	0.919	236	0.559	272	0.408	308	0.597	344	0.947
21	0.911	57	0.550	93	0.409	129	0.607	165	0.953	201	0.911	237	0.550	273	0.409	309	0.607	345	0.953
22	0.903	58	0.542	94	0.410	130	0.617	166	0.959	202	0.903	238	0.542	274	0.410	310	0.617	346	0.959
23	0.894	59	0.533	95	0.411	131	0.627	167	0.964	203	0.894	239	0.533	275	0.411	311	0.627	347	0.964
24	0.886	60	0.525	96	0.412	132	0.638	168	0.970	204	0.886	240	0.525	276	0.412	312	0.638	348	0.970
25	0.877	61	0.517	97	0.414	133	0.648	169	0.974	205	0.877	241	0.517	277	0.414	313	0.648	349	0.974
26	0.868	62	0.509	98	0.415	134	0.659	170	0.979	206	0.868	242	0.509	278	0.415	314	0.659	350	0.979
27	0.858	63	0.502	99	0.418	135	0.669	171	0.983	207	0.858	243	0.502	279	0.418	315	0.669	351	0.983
28	0.849	64	0.495	100	0.420	136	0.680	172	0.986	208	0.849	244	0.495	280	0.420	316	0.680	352	0.986
29	0.839	65	0.488	101	0.423	137	0.691	173	0.989	209	0.839	245	0.488	281	0.423	317	0.691	353	0.989
30	0.829	66	0.482	102	0.425	138	0.702	174	0.992	210	0.829	246	0.482	282	0.425	318	0.702	354	0.992
31	0.819	67	0.475	103	0.429	139	0.712	175	0.994	211	0.819	247	0.475	283	0.429	319	0.712	355	0.994
32	0.809	68	0.469	104	0.432	140	0.723	176	0.997	212	0.809	248	0.469	284	0.432	320	0.723	356	0.997
33	0.798	69	0.464	105	0.436	141	0.734	177	0.998	213	0.798	249	0.464	285	0.436	321	0.734	357	0.998
34	0.788	70	0.458	106	0.439	142	0.745	178	0.999	214	0.788	250	0.458	286	0.439	322	0.745	358	0.999
35	0.777	71	0.453	107	0.444	143	0.756	179	1.000	215	0.777	251	0.453	287	0.444	323	0.756	359	1.000

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## AZIMUTH PATTERN Vertical Polarization

Proposal No. C-70189  
 Date 13-Feb-17  
 Call Letters KING 25  
 Frequency 539 MHz  
 Antenna Type TFU-26DSC/VP-R P200  
  
 Gain 1.75 (2.42dB)  
 Calculated  
  
 Directional Drawing # P200V D25

Deg	Value																		
0	0.420	36	0.252	72	0.318	108	0.318	144	0.252	180	0.420	216	0.252	252	0.318	288	0.318	324	0.252
1	0.420	37	0.249	73	0.321	109	0.315	145	0.256	181	0.420	217	0.249	253	0.321	289	0.315	325	0.256
2	0.419	38	0.246	74	0.323	110	0.312	146	0.260	182	0.419	218	0.246	254	0.323	290	0.312	326	0.260
3	0.418	39	0.243	75	0.326	111	0.309	147	0.265	183	0.418	219	0.243	255	0.326	291	0.309	327	0.265
4	0.417	40	0.241	76	0.328	112	0.306	148	0.270	184	0.417	220	0.241	256	0.328	292	0.306	328	0.270
5	0.415	41	0.240	77	0.330	113	0.303	149	0.276	185	0.415	221	0.240	257	0.330	293	0.303	329	0.276
6	0.412	42	0.238	78	0.332	114	0.299	150	0.281	186	0.412	222	0.238	258	0.332	294	0.299	330	0.281
7	0.410	43	0.238	79	0.334	115	0.296	151	0.287	187	0.410	223	0.238	259	0.334	295	0.296	331	0.287
8	0.407	44	0.238	80	0.335	116	0.292	152	0.293	188	0.407	224	0.238	260	0.335	296	0.292	332	0.293
9	0.403	45	0.238	81	0.337	117	0.289	153	0.299	189	0.403	225	0.238	261	0.337	297	0.289	333	0.299
10	0.399	46	0.239	82	0.338	118	0.285	154	0.306	190	0.399	226	0.239	262	0.338	298	0.285	334	0.306
11	0.395	47	0.240	83	0.339	119	0.281	155	0.312	191	0.395	227	0.240	263	0.339	299	0.281	335	0.312
12	0.391	48	0.241	84	0.341	120	0.278	156	0.319	192	0.391	228	0.241	264	0.341	300	0.278	336	0.319
13	0.386	49	0.243	85	0.341	121	0.274	157	0.325	193	0.386	229	0.243	265	0.341	301	0.274	337	0.325
14	0.381	50	0.245	86	0.342	122	0.270	158	0.332	194	0.381	230	0.245	266	0.342	302	0.270	338	0.332
15	0.375	51	0.248	87	0.343	123	0.267	159	0.339	195	0.375	231	0.248	267	0.343	303	0.267	339	0.339
16	0.370	52	0.251	88	0.343	124	0.263	160	0.345	196	0.370	232	0.251	268	0.343	304	0.263	340	0.345
17	0.364	53	0.254	89	0.343	125	0.260	161	0.351	197	0.364	233	0.254	269	0.343	305	0.260	341	0.351
18	0.358	54	0.257	90	0.343	126	0.257	162	0.358	198	0.358	234	0.257	270	0.343	306	0.257	342	0.358
19	0.351	55	0.260	91	0.343	127	0.254	163	0.364	199	0.351	235	0.260	271	0.343	307	0.254	343	0.364
20	0.345	56	0.263	92	0.343	128	0.251	164	0.370	200	0.345	236	0.263	272	0.343	308	0.251	344	0.370
21	0.339	57	0.267	93	0.343	129	0.248	165	0.375	201	0.339	237	0.267	273	0.343	309	0.248	345	0.375
22	0.332	58	0.270	94	0.342	130	0.245	166	0.381	202	0.332	238	0.270	274	0.342	310	0.245	346	0.381
23	0.325	59	0.274	95	0.341	131	0.243	167	0.386	203	0.325	239	0.274	275	0.341	311	0.243	347	0.386
24	0.319	60	0.278	96	0.341	132	0.241	168	0.391	204	0.319	240	0.278	276	0.341	312	0.241	348	0.391
25	0.312	61	0.281	97	0.339	133	0.240	169	0.395	205	0.312	241	0.281	277	0.339	313	0.240	349	0.395
26	0.306	62	0.285	98	0.338	134	0.239	170	0.399	206	0.306	242	0.285	278	0.338	314	0.239	350	0.399
27	0.299	63	0.289	99	0.337	135	0.238	171	0.403	207	0.299	243	0.289	279	0.337	315	0.238	351	0.403
28	0.293	64	0.292	100	0.335	136	0.238	172	0.407	208	0.293	244	0.292	280	0.335	316	0.238	352	0.407
29	0.287	65	0.296	101	0.334	137	0.238	173	0.410	209	0.287	245	0.296	281	0.334	317	0.238	353	0.410
30	0.281	66	0.299	102	0.332	138	0.238	174	0.412	210	0.281	246	0.299	282	0.332	318	0.238	354	0.412
31	0.276	67	0.303	103	0.330	139	0.240	175	0.415	211	0.276	247	0.303	283	0.330	319	0.240	355	0.415
32	0.270	68	0.306	104	0.328	140	0.241	176	0.417	212	0.270	248	0.306	284	0.328	320	0.241	356	0.417
33	0.265	69	0.309	105	0.326	141	0.243	177	0.418	213	0.265	249	0.309	285	0.326	321	0.243	357	0.418
34	0.260	70	0.312	106	0.323	142	0.246	178	0.419	214	0.260	250	0.312	286	0.323	322	0.246	358	0.419
35	0.256	71	0.315	107	0.321	143	0.249	179	0.420	215	0.256	251	0.315	287	0.321	323	0.249	359	0.420

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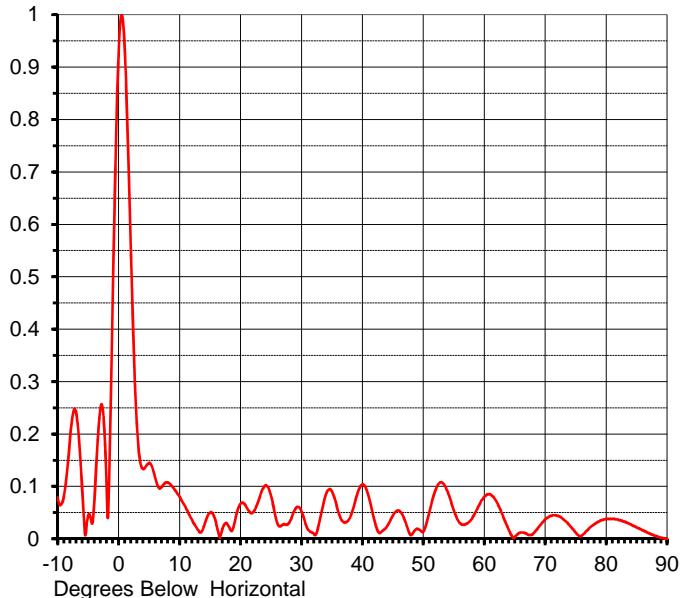
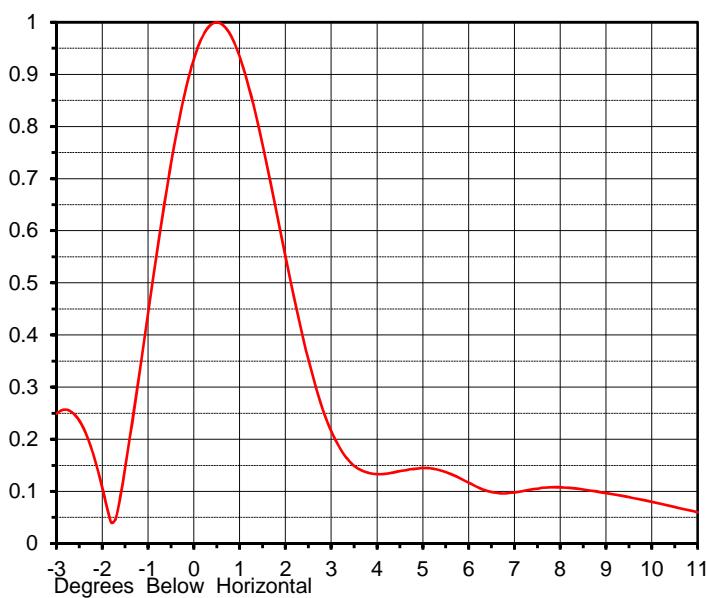
## ELEVATION PATTERN

Proposal No. **C-70189**  
 Date **13-Feb-17**  
 Call Letters **KING 25**  
 Frequency **539 MHz**  
 Antenna Type **TFU-26DSC/VP-R P200**

RMS Directivity at Main Lobe  
 RMS Directivity at Horizontal

**22.50 ( 13.52 dB )**  
**19.40 ( 12.88 dB )**  
**Calculated**

Beam Tilt **0.50 deg**  
 Drawing Number **26Q225050**



Angle	Field								
-10.0	0.079	10.0	0.080	30.0	0.052	50.0	0.014	70.0	0.037
-9.0	0.080	11.0	0.060	31.0	0.019	51.0	0.051	71.0	0.044
-8.0	0.189	12.0	0.037	32.0	0.010	52.0	0.093	72.0	0.044
-7.0	0.242	13.0	0.017	33.0	0.035	53.0	0.108	73.0	0.037
-6.0	0.098	14.0	0.024	34.0	0.084	54.0	0.090	74.0	0.026
-5.0	0.045	15.0	0.050	35.0	0.091	55.0	0.055	75.0	0.012
-4.0	0.070	16.0	0.029	36.0	0.054	56.0	0.030	76.0	0.006
-3.0	0.249	17.0	0.018	37.0	0.031	57.0	0.028	77.0	0.017
-2.0	0.108	18.0	0.025	38.0	0.041	58.0	0.039	78.0	0.027
-1.0	0.442	19.0	0.030	39.0	0.079	59.0	0.061	79.0	0.034
0.0	0.929	20.0	0.067	40.0	0.104	60.0	0.080	80.0	0.038
1.0	0.934	21.0	0.060	41.0	0.082	61.0	0.085	81.0	0.038
2.0	0.551	22.0	0.050	42.0	0.034	62.0	0.071	82.0	0.036
3.0	0.215	23.0	0.075	43.0	0.012	63.0	0.046	83.0	0.033
4.0	0.133	24.0	0.101	44.0	0.023	64.0	0.018	84.0	0.028
5.0	0.145	25.0	0.082	45.0	0.044	65.0	0.003	85.0	0.022
6.0	0.117	26.0	0.031	46.0	0.054	66.0	0.012	86.0	0.016
7.0	0.098	27.0	0.027	47.0	0.034	67.0	0.009	87.0	0.011
8.0	0.108	28.0	0.031	48.0	0.007	68.0	0.009	88.0	0.006
9.0	0.097	29.0	0.057	49.0	0.019	69.0	0.023	89.0	0.002

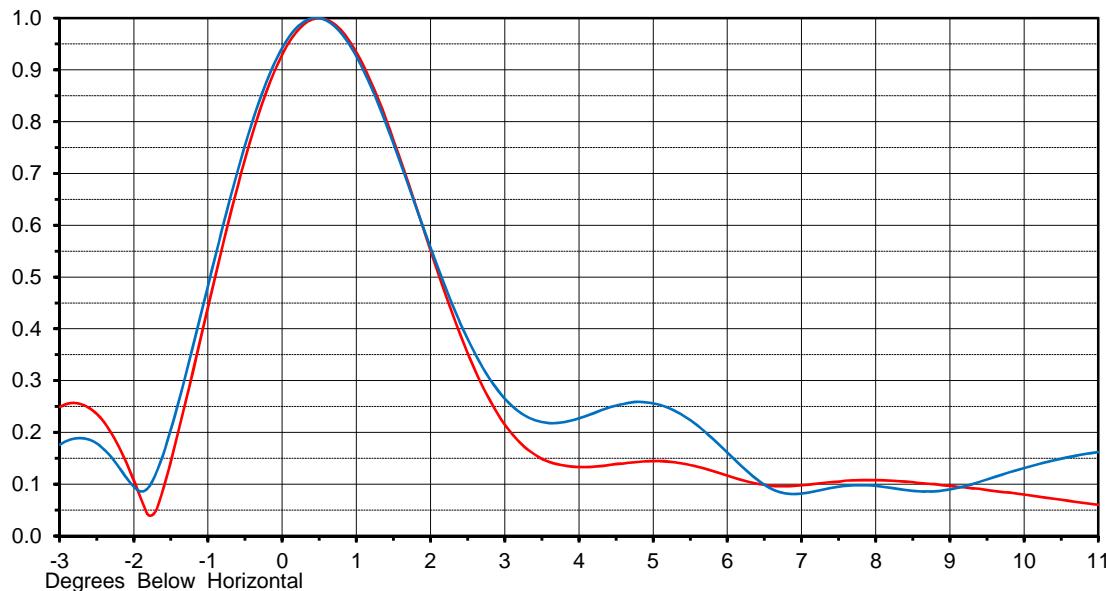
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**FutureFill** refers to the use of predetermined illuminations with broadband panels or limited bandwidth slotted coaxial antennas that can be modified in the field to provide the flexibility to customize the null structure at a future date.

## FutureFill OVERLAY

Proposal No.	C-70189
Date	13-Feb-17
Call Letters	KING 25
Frequency	539 MHz
Antenna Type	TFU-26DSC/VP-R P200

RMS Directivity	22.50	( 13.5 dB )	Beam Tilt	0.50	Drawing No.	26Q225050	Red
RMS Directivity	17.29	( 12.4 dB )	Beam Tilt	0.45	Drawing No.	26Q22505-FF	Blue
Calculated							



Tabulations for 26Q22505-FF

Angle	Field								
-10.0	0.144	10.0	0.131	30.0	0.102	50.0	0.067	70.0	0.022
-9.0	0.054	11.0	0.162	31.0	0.115	51.0	0.110	71.0	0.030
-8.0	0.182	12.0	0.167	32.0	0.117	52.0	0.169	72.0	0.032
-7.0	0.260	13.0	0.151	33.0	0.101	53.0	0.189	73.0	0.028
-6.0	0.104	14.0	0.176	34.0	0.154	54.0	0.160	74.0	0.020
-5.0	0.110	15.0	0.198	35.0	0.176	55.0	0.103	75.0	0.012
-4.0	0.068	16.0	0.157	36.0	0.127	56.0	0.050	76.0	0.014
-3.0	0.176	17.0	0.148	37.0	0.069	57.0	0.023	77.0	0.024
-2.0	0.095	18.0	0.144	38.0	0.063	58.0	0.028	78.0	0.032
-1.0	0.483	19.0	0.086	39.0	0.106	59.0	0.055	79.0	0.038
0.0	0.942	20.0	0.093	40.0	0.141	60.0	0.081	80.0	0.040
1.0	0.926	21.0	0.097	41.0	0.127	61.0	0.090	81.0	0.040
2.0	0.557	22.0	0.081	42.0	0.079	62.0	0.077	82.0	0.038
3.0	0.265	23.0	0.103	43.0	0.048	63.0	0.049	83.0	0.034
4.0	0.227	24.0	0.148	44.0	0.044	64.0	0.019	84.0	0.028
5.0	0.256	25.0	0.159	45.0	0.034	65.0	0.018	85.0	0.022
6.0	0.161	26.0	0.121	46.0	0.021	66.0	0.029	86.0	0.017
7.0	0.082	27.0	0.087	47.0	0.047	67.0	0.029	87.0	0.011
8.0	0.097	28.0	0.106	48.0	0.080	68.0	0.020	88.0	0.006
9.0	0.090	29.0	0.119	49.0	0.082	69.0	0.014	89.0	0.002
									90.0 0.000

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## **MECHANICALS**

Proposal No. **C-70189**  
Date **13-Feb-17**  
Call Letters **KING** **25**  
Frequency **539 MHz**  
Antenna Type **TFU-26DSC/VP-R P200**

## Preliminary Specifications

## **Side Mounted**

Mechanical Specification without ice TIA-222-G

**Basic Wind Speed** 85 m/h (136.8 km/h)

<b>Structure Class</b>	I
<b>Exposure Category</b>	C
<b>Topography Category</b>	1

## Mechanical Specifications with ice TIA-222-G

Design Ice 0.5 in  $t_{iz} = 1.34$  in  
 Wind Speed w/Ice 50 m/h (80.5 km/h)

<b>Mechanical Specifications</b>		<b>without ice</b>	<b>with ice</b>	
Height	H2	53.1 ft (16.2m)		
Height of Center of Radiation	H3	26.6 ft (8.1m)		
Effective Projected Area	(EPA)A	39.3 ft <sup>2</sup> (3.7m <sup>2</sup> )	92.3 ft <sup>2</sup> (8.6m <sup>2</sup> )	Mounts Excluded
Weight	W	2100 lb (1t)	3700 lb (1.7t)	Mounts Excluded

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

**Prepared by:** KLP **Date:** 13-Feb-17 **ME:** EE:  
jls **Date:** 9-Mar-17

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