Dielectric®

Antenna Model: **TFU-17ETT/VP-R 4C160**

Proposal Number:	**C-71573-**
Date:	**24-Apr-18**
Customer:	**RNN National, LLC**
Location:	**Long Beach, CA**

Electrical Specifications

Polarization:	**Elliptical**		
Azimuth Pattern:	**Directional**		
Antenna Input:	**6-1/8"**	**75 Ohm**	**EIA/DCA**
VSWR:	Channel	**1.08 : 1**	
Bandwidth:	**6 MHz**		
Rated Input Power:	**52 kW**	**(17.16 dBk)**	**Maximum Average Power**

Mechanical Specifications

Mounting:	**Top Mounted**				
Environmental Protection:	**Full Radome**				
Height:	**39.6 ft (12.1m)**	less Lightning Protector	**43.6 ft (13.3m)**	with Lightning Protector	
Weight:	**5600 lb (2.5t)**				
Effective Projected Area:	**50.3 ft² (4.7m²)**	**TIA-222-G**	Basic Wind Speed:	**85 m/h (136.8 km/h)**	

Channel Specifications

Call	CH	Freq	Hpol ERP	Vpol ERP	TPO	Peak Main Lobe Hpol Gain	Peak Main Lobe Vpol Gain	Peak at Horizontal Hpol Gain	Peak at Horizontal Vpol Gain
KSCI	18	497 MHz	1,000 kW (30.00 dBk)	350 kW (25.44 dBk)	53.3 kW (17.27 dBk)	19.72 (12.95dB)	6.90 (8.39dB)	10.31 (10.13dB)	3.61 (5.57dB)

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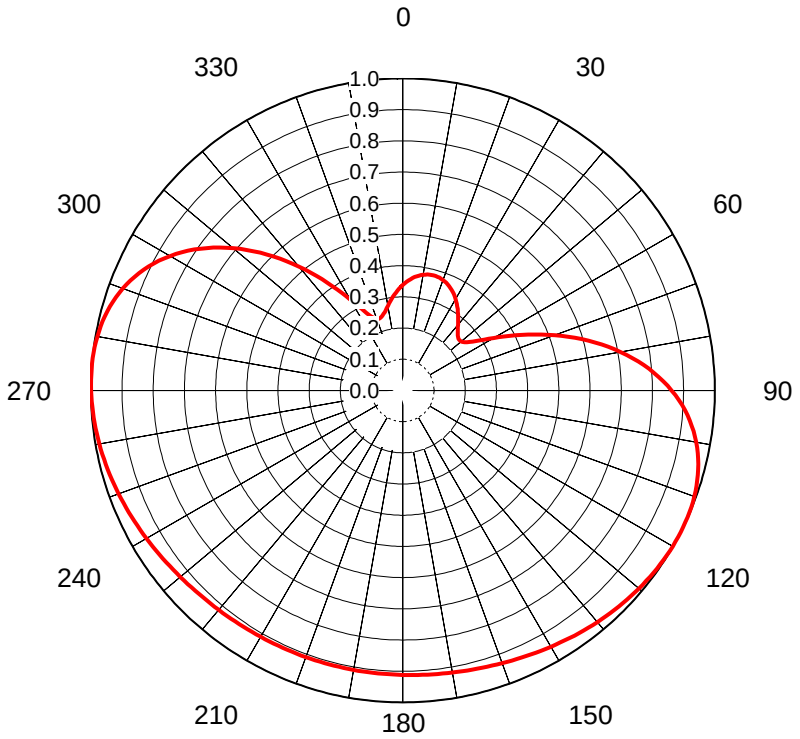
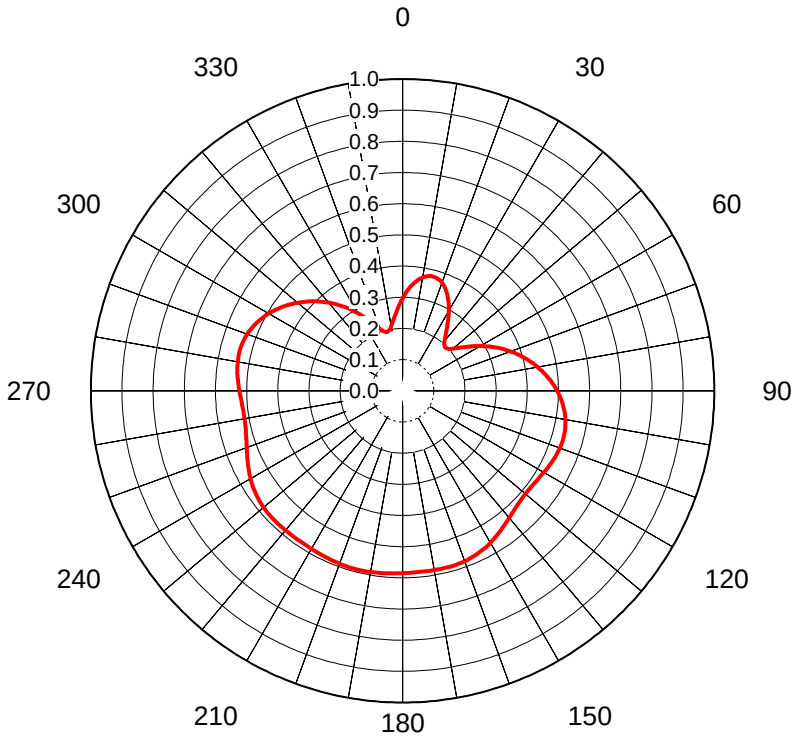


AZIMUTH PATTERN
Horizontal Polarization

Proposal No.	**C-71573-**
Date	**24-Apr-18**
Call Letters	**KSCI**
Channel	**18**
Frequency	**497 MHz**
Antenna Type	**TFU-17ETT/VP-R 4C160**
Gain	**1.62 (2.1dB)**
	Calculated

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.338	36	0.301	72	0.557	108	0.990	144	0.961	180	0.912	216	0.915	252	0.973	288	0.967	324	0.440
1	0.344	37	0.295	73	0.577	109	0.992	145	0.959	181	0.911	217	0.916	253	0.975	289	0.961	325	0.422
2	0.349	38	0.288	74	0.597	110	0.994	146	0.957	182	0.911	218	0.916	254	0.977	290	0.955	326	0.403
3	0.353	39	0.282	75	0.616	111	0.996	147	0.955	183	0.911	219	0.917	255	0.979	291	0.948	327	0.386
4	0.358	40	0.275	76	0.635	112	0.997	148	0.953	184	0.911	220	0.918	256	0.981	292	0.941	328	0.368
5	0.362	41	0.269	77	0.654	113	0.998	149	0.951	185	0.910	221	0.919	257	0.983	293	0.933	329	0.352
6	0.366	42	0.263	78	0.673	114	0.999	150	0.949	186	0.910	222	0.920	258	0.985	294	0.925	330	0.336
7	0.369	43	0.258	79	0.691	115	1.000	151	0.947	187	0.910	223	0.921	259	0.986	295	0.916	331	0.322
8	0.372	44	0.253	80	0.709	116	1.000	152	0.945	188	0.910	224	0.922	260	0.988	296	0.906	332	0.308
9	0.374	45	0.249	81	0.727	117	1.000	153	0.943	189	0.910	225	0.923	261	0.989	297	0.896	333	0.295
10	0.377	46	0.246	82	0.744	118	1.000	154	0.941	190	0.910	226	0.925	262	0.991	298	0.885	334	0.284
11	0.378	47	0.244	83	0.761	119	1.000	155	0.939	191	0.909	227	0.926	263	0.992	299	0.874	335	0.274
12	0.380	48	0.243	84	0.777	120	0.999	156	0.937	192	0.909	228	0.927	264	0.993	300	0.862	336	0.265
13	0.381	49	0.243	85	0.792	121	0.998	157	0.935	193	0.909	229	0.929	265	0.995	301	0.849	337	0.257
14	0.381	50	0.244	86	0.807	122	0.998	158	0.934	194	0.909	230	0.930	266	0.996	302	0.836	338	0.252
15	0.382	51	0.247	87	0.822	123	0.997	159	0.932	195	0.909	231	0.932	267	0.997	303	0.822	339	0.247
16	0.381	52	0.252	88	0.836	124	0.996	160	0.930	196	0.909	232	0.934	268	0.998	304	0.807	340	0.244
17	0.381	53	0.257	89	0.849	125	0.995	161	0.929	197	0.909	233	0.935	269	0.998	305	0.792	341	0.243
18	0.380	54	0.265	90	0.862	126	0.993	162	0.927	198	0.909	234	0.937	270	0.999	306	0.777	342	0.243
19	0.378	55	0.274	91	0.874	127	0.992	163	0.926	199	0.909	235	0.939	271	1.000	307	0.761	343	0.244
20	0.377	56	0.284	92	0.885	128	0.991	164	0.925	200	0.910	236	0.941	272	1.000	308	0.744	344	0.246
21	0.374	57	0.295	93	0.896	129	0.989	165	0.923	201	0.910	237	0.943	273	1.000	309	0.727	345	0.249
22	0.372	58	0.308	94	0.906	130	0.988	166	0.922	202	0.910	238	0.945	274	1.000	310	0.709	346	0.253
23	0.369	59	0.322	95	0.916	131	0.986	167	0.921	203	0.910	239	0.947	275	1.000	311	0.691	347	0.258
24	0.366	60	0.336	96	0.925	132	0.984	168	0.920	204	0.910	240	0.949	276	0.999	312	0.673	348	0.263
25	0.362	61	0.352	97	0.933	133	0.983	169	0.919	205	0.910	241	0.951	277	0.998	313	0.654	349	0.269
26	0.358	62	0.369	98	0.941	134	0.981	170	0.918	206	0.911	242	0.953	278	0.997	314	0.635	350	0.275
27	0.353	63	0.386	99	0.948	135	0.979	171	0.917	207	0.911	243	0.955	279	0.996	315	0.616	351	0.282
28	0.349	64	0.403	100	0.955	136	0.977	172	0.916	208	0.911	244	0.957	280	0.994	316	0.597	352	0.288
29	0.344	65	0.422	101	0.961	137	0.975	173	0.916	209	0.911	245	0.959	281	0.992	317	0.577	353	0.295
30	0.338	66	0.440	102	0.967	138	0.973	174	0.915	210	0.912	246	0.961	282	0.990	318	0.557	354	0.301
31	0.333	67	0.459	103	0.972	139	0.971	175	0.914	211	0.912	247	0.963	283	0.987	319	0.538	355	0.308
32	0.327	68	0.479	104	0.976	140	0.969	176	0.914	212	0.913	248	0.965	284	0.984	320	0.518	356	0.314
33	0.321	69	0.498	105	0.980	141	0.967	177	0.913	213	0.913	249	0.967	285	0.980	321	0.498	357	0.321
34	0.314	70	0.518	106	0.984	142	0.965	178	0.913	214	0.914	250	0.969	286	0.976	322	0.479	358	0.327
35	0.308	71	0.538	107	0.987	143	0.963	179	0.912	215	0.914	251	0.972	287	0.972	323	0.459	359	0.333



AZIMUTH PATTERN
Vertical Polarization

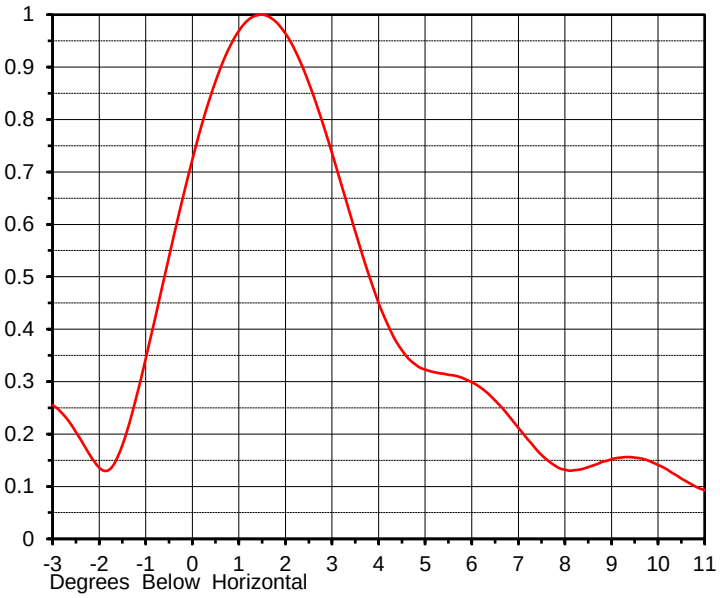
Proposal No.	**C-71573-**
Date	**24-Apr-18**
Call Letters	**KSCI**
Channel	**18**
Frequency	**497 MHz**
Antenna Type	**TFU-17ETT/VP-R 4C160**
Gain	**1.56 (1.92dB)**
	Calculated

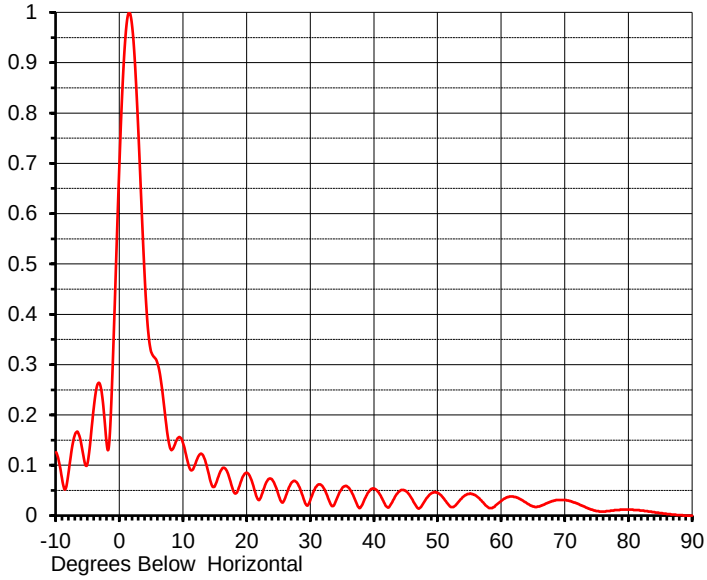
Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.297	36	0.240	72	0.384	108	0.538	144	0.544	180	0.585	216	0.584	252	0.526	288	0.534	324	0.338
1	0.306	37	0.231	73	0.391	109	0.537	145	0.547	181	0.585	217	0.584	253	0.524	289	0.532	325	0.329
2	0.315	38	0.223	74	0.399	110	0.537	146	0.551	182	0.586	218	0.584	254	0.522	290	0.530	326	0.321
3	0.324	39	0.216	75	0.406	111	0.536	147	0.554	183	0.587	219	0.584	255	0.520	291	0.528	327	0.313
4	0.332	40	0.210	76	0.413	112	0.535	148	0.557	184	0.587	220	0.584	256	0.518	292	0.526	328	0.304
5	0.340	41	0.205	77	0.419	113	0.534	149	0.560	185	0.588	221	0.584	257	0.517	293	0.523	329	0.296
6	0.347	42	0.200	78	0.426	114	0.533	150	0.563	186	0.588	222	0.584	258	0.516	294	0.520	330	0.287
7	0.354	43	0.197	79	0.433	115	0.531	151	0.566	187	0.589	223	0.584	259	0.515	295	0.516	331	0.279
8	0.359	44	0.196	80	0.439	116	0.530	152	0.568	188	0.589	224	0.584	260	0.515	296	0.513	332	0.270
9	0.365	45	0.195	81	0.446	117	0.528	153	0.571	189	0.590	225	0.584	261	0.515	297	0.509	333	0.262
10	0.369	46	0.196	82	0.452	118	0.527	154	0.573	190	0.590	226	0.584	262	0.515	298	0.505	334	0.253
11	0.373	47	0.198	83	0.458	119	0.525	155	0.575	191	0.591	227	0.584	263	0.515	299	0.500	335	0.245
12	0.376	48	0.201	84	0.464	120	0.523	156	0.577	192	0.591	228	0.583	264	0.516	300	0.496	336	0.237
13	0.378	49	0.205	85	0.470	121	0.522	157	0.578	193	0.591	229	0.583	265	0.517	301	0.491	337	0.230
14	0.379	50	0.210	86	0.475	122	0.520	158	0.580	194	0.592	230	0.582	266	0.518	302	0.486	338	0.223
15	0.379	51	0.216	87	0.481	123	0.519	159	0.581	195	0.592	231	0.581	267	0.519	303	0.481	339	0.216
16	0.379	52	0.223	88	0.486	124	0.518	160	0.582	196	0.592	232	0.580	268	0.520	304	0.475	340	0.210
17	0.378	53	0.230	89	0.491	125	0.517	161	0.583	197	0.591	233	0.578	269	0.522	305	0.470	341	0.205
18	0.376	54	0.237	90	0.496	126	0.516	162	0.583	198	0.591	234	0.577	270	0.523	306	0.464	342	0.201
19	0.373	55	0.245	91	0.500	127	0.515	163	0.584	199	0.591	235	0.575	271	0.525	307	0.458	343	0.198
20	0.369	56	0.253	92	0.505	128	0.515	164	0.584	200	0.590	236	0.573	272	0.527	308	0.452	344	0.196
21	0.365	57	0.262	93	0.509	129	0.515	165	0.584	201	0.590	237	0.571	273	0.528	309	0.446	345	0.195
22	0.359	58	0.270	94	0.513	130	0.515	166	0.584	202	0.589	238	0.568	274	0.530	310	0.439	346	0.196
23	0.354	59	0.279	95	0.516	131	0.515	167	0.584	203	0.589	239	0.566	275	0.531	311	0.433	347	0.197
24	0.347	60	0.287	96	0.520	132	0.516	168	0.584	204	0.588	240	0.563	276	0.533	312	0.426	348	0.200
25	0.340	61	0.296	97	0.523	133	0.517	169	0.584	205	0.588	241	0.560	277	0.534	313	0.419	349	0.205
26	0.332	62	0.304	98	0.526	134	0.518	170	0.584	206	0.587	242	0.557	278	0.535	314	0.413	350	0.210
27	0.324	63	0.313	99	0.528	135	0.520	171	0.584	207	0.587	243	0.554	279	0.536	315	0.406	351	0.216
28	0.315	64	0.321	100	0.530	136	0.522	172	0.584	208	0.586	244	0.551	280	0.537	316	0.399	352	0.223
29	0.306	65	0.329	101	0.532	137	0.524	173	0.584	209	0.585	245	0.547	281	0.537	317	0.391	353	0.231
30	0.297	66	0.338	102	0.534	138	0.526	174	0.584	210	0.585	246	0.544	282	0.538	318	0.384	354	0.240
31	0.287	67	0.346	103	0.535	139	0.529	175	0.584	211	0.585	247	0.541	283	0.538	319	0.377	355	0.249
32	0.277	68	0.354	104	0.536	140	0.532	176	0.584	212	0.584	248	0.538	284	0.538	320	0.369	356	0.258
33	0.268	69	0.361	105	0.537	141	0.535	177	0.584	213	0.584	249	0.535	285	0.537	321	0.361	357	0.268
34	0.258	70	0.369	106	0.538	142	0.538	178	0.584	214	0.584	250	0.532	286	0.536	322	0.354	358	0.277
35	0.249	71	0.377	107	0.538	143	0.541	179	0.585	215	0.584	251	0.529	287	0.535	323	0.346	359	0.287

ELEVATION PATTERN

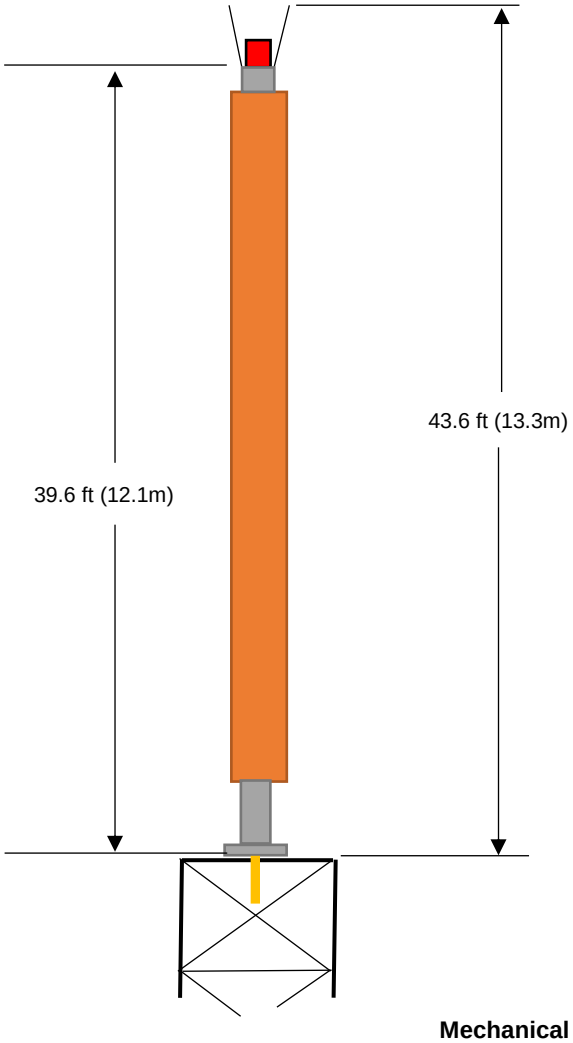
Proposal No.	**C-71573-**
Date	**24-Apr-18**
Call Letters	**KSCI**
Channel	**18**
Frequency	**497 MHz**
Antenna Type	**TFU-17ETT/VP-R 4C160**

RMS Directivity at Main Lobe	**16.6 (12.20 dB)**	Beam Tilt	**1.50 deg**
RMS Directivity at Horizontal	**8.7 (9.40 dB)**	Pattern Number	**17E166150**
	Calculated		





Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.126	10.0	0.141	30.0	0.034	50.0	0.045	70.0	0.031
-9.0	0.067	11.0	0.093	31.0	0.060	51.0	0.032	71.0	0.028
-8.0	0.091	12.0	0.108	32.0	0.055	52.0	0.017	72.0	0.023
-7.0	0.163	13.0	0.121	33.0	0.026	53.0	0.024	73.0	0.018
-6.0	0.138	14.0	0.081	34.0	0.031	54.0	0.038	74.0	0.012
-5.0	0.109	15.0	0.061	35.0	0.056	55.0	0.044	75.0	0.009
-4.0	0.225	16.0	0.092	36.0	0.055	56.0	0.039	76.0	0.008
-3.0	0.255	17.0	0.083	37.0	0.030	57.0	0.027	77.0	0.009
-2.0	0.136	18.0	0.045	38.0	0.020	58.0	0.015	78.0	0.011
-1.0	0.344	19.0	0.067	39.0	0.046	59.0	0.020	79.0	0.012
0.0	0.723	20.0	0.085	40.0	0.053	60.0	0.030	80.0	0.012
1.0	0.969	21.0	0.058	41.0	0.039	61.0	0.037	81.0	0.011
2.0	0.964	22.0	0.033	42.0	0.017	62.0	0.037	82.0	0.010
3.0	0.736	23.0	0.066	43.0	0.032	63.0	0.032	83.0	0.008
4.0	0.450	24.0	0.070	44.0	0.049	64.0	0.024	84.0	0.007
5.0	0.323	25.0	0.038	45.0	0.048	65.0	0.018	85.0	0.005
6.0	0.299	26.0	0.036	46.0	0.031	66.0	0.019	86.0	0.003
7.0	0.212	27.0	0.066	47.0	0.014	67.0	0.024	87.0	0.002
8.0	0.132	28.0	0.062	48.0	0.031	68.0	0.029	88.0	0.001
9.0	0.152	29.0	0.029	49.0	0.045	69.0	0.031	89.0	0.000
								90.0	0.000



MECHANICAL SPECIFICATIONS

Proposal No.	**C-71573-**
Date	**24-Apr-18**
Call Letters	**KSCI**
Channel	**18**
Frequency	**497 MHz**
Antenna Type	**TFU-17ETT/VP-R 4C160**

Top Mounted

With ice TIA-222-G

Basic Wind Speed	85 m/h (136.8 km/h)
Structure Class	II
Exposure Category	C
Topography Category	3
Height of Crest	3110 ft (947.9 m)
Design Ice	2 in t_{iz} = 6.54 in
Wind Speed w/Ice	30 m/h (48.3 km/h)

Mechanical Specifications		**without ice**	**with ice**
Height with Lightning Protector	H4	43.6 ft (13.3m)	
Height less Lightning Protector	H2	39.6 ft (12.1m)	
Height of Center of Radiation	H3	19.8 ft (6m)	
Effective Projected Area	$(EPA)_S$	50.3 ft² (4.7m²)	209.6 ft² (19.5m²)
Moment Arm	D1	21.2 ft (6.5m)	23.4 ft (7.1m)
Weight	W	5600 lb (2.5t)	21400 lb (9.7t)

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

Prepared by: CAB **Date:** 24-Apr-18 **ME:** **EE:**

0

Summary

Proposal No.	**C-71573-**
Date	**24-Apr-18**
Call Letters	**KSCI**
Channel	**18**
Frequency	**497 MHz**
Antenna Type	**TFU-17ETT/VP-R 4C160**

Antenna

	Hpol		Vpol	
ERP:	**1,000 kW**	**(30.00 dBk)**	**350 kW**	**(25.44 dBk)**
Peak Gain*	19.72	(12.95 dB)	6.90	(8.39 dB)

Antenna Input Power

50.7 kW **(17.05 dBk)**

Transmission Line

Type:	**Rigid**	Attenuation:	**(0.22 dB)**
Size:	**6-1/8"**	Efficiency:	**95.2%**
Impedance:	**75 Ohm**		
Length:	**200 ft**	**61.0 m**	

Transmitter Output

53.3 kW **(17.27 dBk)**

Transmitter filter losses not included

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