



Antenna Model:

TFU-17ETT/VP C170 MBTProposal Number: **C-71125-7**Date: **3-Sep-19**Customer: **Public Media Group**Location: **Los Angeles, CA**

Electrical Specifications

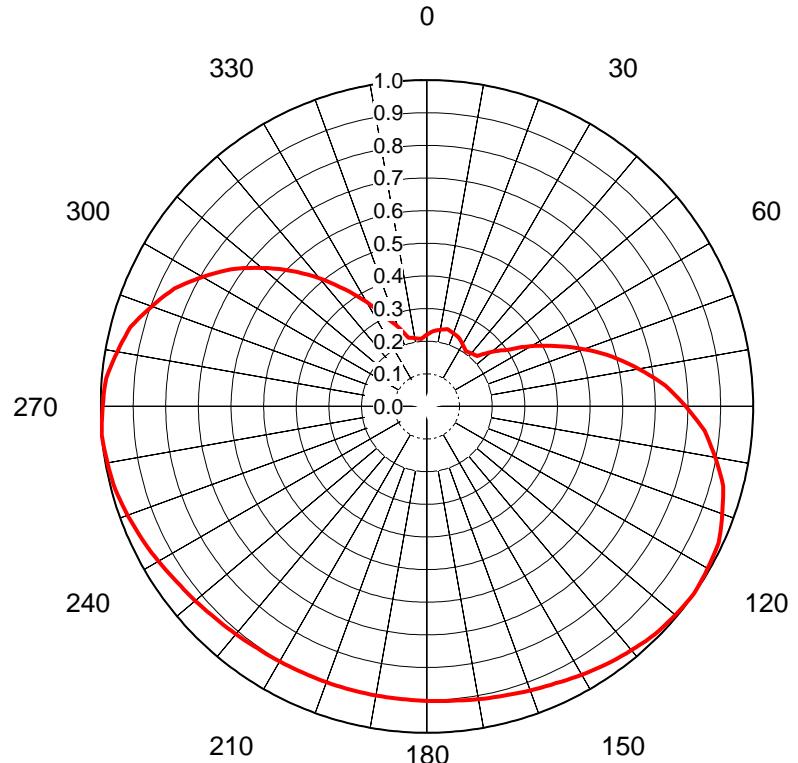
Polarization:	Elliptical		
Azimuth Pattern:	Directional		
Antenna Input:	6-1/8"	50 Ohm	EIA/DCA
VSWR:	Channel	1.08 : 1	
Bandwidth:	6 MHz		
Rated Input Power:	25 kW	(13.98 dBk)	Maximum Average Power

Mechanical Specifications

Mounting:	Top Mounted		
Environmental Protection:	Full Radome		
Height:	36.5 ft (11.1m)	less Lightning Protector	39.5 ft (12m) with Lightning Protector
Weight:	3350 lb (1.5t)		
Effective Projected Area:	24.5 ft² (2.3m²)	TIA-222-G	Basic Wind Speed: 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
KCET	28	557 MHz	150 kW (21.76 dBk)	121 kW (20.84 dBk)	9.05 kW (9.56 dBk)	18.31 (12.63dB)	14.82 (11.71dB)	9.57 (9.81dB)	7.74 (8.89dB)



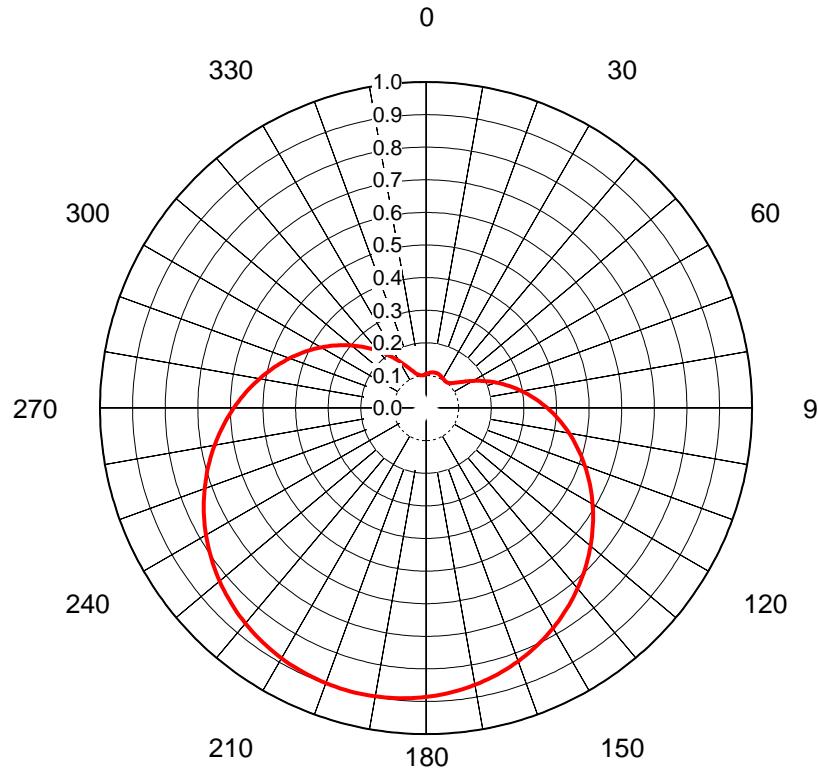
AZIMUTH PATTERN Horizontal Polarization

Proposal No.	C-71125-7
Date	3-Sep-19
Call Letters	KCET
Channel	28
Frequency	557 MHz
Antenna Type	TFU-17ETT/VP C170 MBT
Gain	1.7 (2.31dB)
Calculated	

without mechanical beam tilt

Deg	Value																		
0	0.220	36	0.208	72	0.543	108	0.954	144	0.965	180	0.902	216	0.906	252	0.980	288	0.914	324	0.452
1	0.222	37	0.209	73	0.558	109	0.959	145	0.963	181	0.902	217	0.907	253	0.983	289	0.906	325	0.437
2	0.225	38	0.210	74	0.573	110	0.964	146	0.960	182	0.901	218	0.909	254	0.985	290	0.897	326	0.424
3	0.227	39	0.211	75	0.588	111	0.968	147	0.958	183	0.901	219	0.910	255	0.988	291	0.888	327	0.410
4	0.229	40	0.213	76	0.603	112	0.973	148	0.955	184	0.900	220	0.911	256	0.989	292	0.880	328	0.396
5	0.232	41	0.214	77	0.617	113	0.978	149	0.952	185	0.900	221	0.912	257	0.990	293	0.871	329	0.383
6	0.233	42	0.215	78	0.632	114	0.982	150	0.950	186	0.900	222	0.913	258	0.992	294	0.863	330	0.370
7	0.235	43	0.216	79	0.646	115	0.987	151	0.947	187	0.900	223	0.915	259	0.993	295	0.854	331	0.356
8	0.236	44	0.217	80	0.660	116	0.988	152	0.944	188	0.900	224	0.916	260	0.994	296	0.842	332	0.343
9	0.237	45	0.218	81	0.675	117	0.990	153	0.941	189	0.900	225	0.917	261	0.995	297	0.830	333	0.329
10	0.238	46	0.226	82	0.689	118	0.991	154	0.939	190	0.900	226	0.919	262	0.996	298	0.818	334	0.315
11	0.240	47	0.235	83	0.704	119	0.992	155	0.936	191	0.899	227	0.921	263	0.998	299	0.806	335	0.302
12	0.241	48	0.243	84	0.719	120	0.993	156	0.934	192	0.899	228	0.923	264	0.999	300	0.794	336	0.294
13	0.242	49	0.252	85	0.733	121	0.995	157	0.932	193	0.899	229	0.925	265	1.000	301	0.781	337	0.285
14	0.244	50	0.260	86	0.745	122	0.996	158	0.930	194	0.899	230	0.927	266	0.999	302	0.769	338	0.277
15	0.245	51	0.268	87	0.757	123	0.997	159	0.928	195	0.899	231	0.928	267	0.997	303	0.757	339	0.268
16	0.244	52	0.277	88	0.769	124	0.999	160	0.927	196	0.899	232	0.930	268	0.996	304	0.745	340	0.260
17	0.242	53	0.285	89	0.781	125	1.000	161	0.925	197	0.899	233	0.932	269	0.995	305	0.733	341	0.252
18	0.241	54	0.294	90	0.794	126	0.999	162	0.923	198	0.899	234	0.934	270	0.993	306	0.719	342	0.243
19	0.240	55	0.302	91	0.806	127	0.998	163	0.921	199	0.899	235	0.936	271	0.992	307	0.704	343	0.235
20	0.238	56	0.315	92	0.818	128	0.996	164	0.919	200	0.900	236	0.939	272	0.991	308	0.689	344	0.226
21	0.237	57	0.329	93	0.830	129	0.995	165	0.917	201	0.900	237	0.941	273	0.990	309	0.675	345	0.218
22	0.236	58	0.343	94	0.842	130	0.994	166	0.916	202	0.900	238	0.944	274	0.988	310	0.660	346	0.217
23	0.235	59	0.356	95	0.854	131	0.993	167	0.915	203	0.900	239	0.947	275	0.987	311	0.646	347	0.216
24	0.233	60	0.370	96	0.863	132	0.992	168	0.913	204	0.900	240	0.950	276	0.982	312	0.632	348	0.215
25	0.232	61	0.383	97	0.871	133	0.990	169	0.912	205	0.900	241	0.952	277	0.978	313	0.617	349	0.214
26	0.229	62	0.396	98	0.880	134	0.989	170	0.911	206	0.900	242	0.955	278	0.973	314	0.603	350	0.213
27	0.227	63	0.410	99	0.888	135	0.988	171	0.910	207	0.901	243	0.958	279	0.968	315	0.588	351	0.211
28	0.225	64	0.424	100	0.897	136	0.985	172	0.909	208	0.901	244	0.960	280	0.964	316	0.573	352	0.210
29	0.222	65	0.437	101	0.906	137	0.983	173	0.907	209	0.902	245	0.963	281	0.959	317	0.558	353	0.209
30	0.220	66	0.452	102	0.914	138	0.980	174	0.906	210	0.902	246	0.965	282	0.954	318	0.543	354	0.208
31	0.217	67	0.467	103	0.923	139	0.978	175	0.905	211	0.903	247	0.968	283	0.949	319	0.528	355	0.207
32	0.214	68	0.482	104	0.931	140	0.975	176	0.905	212	0.904	248	0.970	284	0.945	320	0.512	356	0.209
33	0.212	69	0.497	105	0.940	141	0.973	177	0.904	213	0.904	249	0.973	285	0.940	321	0.497	357	0.212
34	0.209	70	0.512	106	0.945	142	0.970	178	0.904	214	0.905	250	0.975	286	0.931	322	0.482	358	0.214
35	0.207	71	0.528	107	0.949	143	0.968	179	0.903	215	0.905	251	0.978	287	0.923	323	0.467	359	0.217

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AZIMUTH PATTERN Vertical Polarization

Proposal No. C-71125-7
 Date 3-Sep-19
 Call Letters KCET
 Channel 28
 Frequency 557 MHz
 Antenna Type TFU-17ETT/VP C170 MBT
 Gain 2.53 (4.03dB)
 Calculated

without mechanical beam tilt

Deg	Value																		
0	0.104	36	0.101	72	0.242	108	0.504	144	0.746	180	0.886	216	0.873	252	0.710	288	0.460	324	0.202
1	0.105	37	0.101	73	0.249	109	0.511	145	0.752	181	0.888	217	0.871	253	0.704	289	0.453	325	0.196
2	0.106	38	0.101	74	0.256	110	0.519	146	0.758	182	0.889	218	0.868	254	0.698	290	0.446	326	0.190
3	0.107	39	0.101	75	0.263	111	0.526	147	0.763	183	0.891	219	0.865	255	0.691	291	0.438	327	0.184
4	0.107	40	0.102	76	0.270	112	0.533	148	0.769	184	0.892	220	0.862	256	0.685	292	0.431	328	0.178
5	0.108	41	0.103	77	0.277	113	0.540	149	0.774	185	0.894	221	0.859	257	0.678	293	0.424	329	0.172
6	0.109	42	0.104	78	0.284	114	0.547	150	0.779	186	0.895	222	0.856	258	0.672	294	0.416	330	0.167
7	0.109	43	0.105	79	0.291	115	0.554	151	0.784	187	0.896	223	0.853	259	0.665	295	0.409	331	0.161
8	0.110	44	0.106	80	0.299	116	0.562	152	0.790	188	0.897	224	0.849	260	0.659	296	0.401	332	0.156
9	0.111	45	0.108	81	0.306	117	0.569	153	0.795	189	0.897	225	0.846	261	0.652	297	0.394	333	0.151
10	0.111	46	0.110	82	0.313	118	0.576	154	0.799	190	0.898	226	0.842	262	0.645	298	0.387	334	0.146
11	0.111	47	0.113	83	0.320	119	0.583	155	0.804	191	0.898	227	0.838	263	0.638	299	0.379	335	0.141
12	0.112	48	0.115	84	0.328	120	0.590	156	0.809	192	0.899	228	0.834	264	0.632	300	0.372	336	0.137
13	0.112	49	0.118	85	0.335	121	0.597	157	0.813	193	0.899	229	0.830	265	0.625	301	0.365	337	0.133
14	0.112	50	0.121	86	0.342	122	0.604	158	0.818	194	0.899	230	0.826	266	0.618	302	0.357	338	0.129
15	0.112	51	0.125	87	0.350	123	0.611	159	0.822	195	0.899	231	0.822	267	0.611	303	0.350	339	0.125
16	0.112	52	0.129	88	0.357	124	0.618	160	0.826	196	0.899	232	0.818	268	0.604	304	0.342	340	0.121
17	0.112	53	0.133	89	0.365	125	0.625	161	0.830	197	0.899	233	0.813	269	0.597	305	0.335	341	0.118
18	0.112	54	0.137	90	0.372	126	0.632	162	0.834	198	0.899	234	0.809	270	0.590	306	0.328	342	0.115
19	0.111	55	0.141	91	0.379	127	0.638	163	0.838	199	0.898	235	0.804	271	0.583	307	0.320	343	0.113
20	0.111	56	0.146	92	0.387	128	0.645	164	0.842	200	0.898	236	0.799	272	0.576	308	0.313	344	0.110
21	0.111	57	0.151	93	0.394	129	0.652	165	0.846	201	0.897	237	0.795	273	0.569	309	0.306	345	0.108
22	0.110	58	0.156	94	0.401	130	0.659	166	0.849	202	0.897	238	0.790	274	0.562	310	0.299	346	0.106
23	0.109	59	0.161	95	0.409	131	0.665	167	0.853	203	0.896	239	0.784	275	0.554	311	0.291	347	0.105
24	0.109	60	0.167	96	0.416	132	0.672	168	0.856	204	0.895	240	0.779	276	0.547	312	0.284	348	0.104
25	0.108	61	0.172	97	0.424	133	0.678	169	0.859	205	0.894	241	0.774	277	0.540	313	0.277	349	0.103
26	0.107	62	0.178	98	0.431	134	0.685	170	0.862	206	0.892	242	0.769	278	0.533	314	0.270	350	0.102
27	0.107	63	0.184	99	0.438	135	0.691	171	0.865	207	0.891	243	0.763	279	0.526	315	0.263	351	0.101
28	0.106	64	0.190	100	0.446	136	0.698	172	0.868	208	0.889	244	0.758	280	0.519	316	0.256	352	0.101
29	0.105	65	0.196	101	0.453	137	0.704	173	0.871	209	0.888	245	0.752	281	0.511	317	0.249	353	0.101
30	0.104	66	0.202	102	0.460	138	0.710	174	0.873	210	0.886	246	0.746	282	0.504	318	0.242	354	0.101
31	0.104	67	0.209	103	0.468	139	0.716	175	0.876	211	0.884	247	0.741	283	0.497	319	0.235	355	0.101
32	0.103	68	0.215	104	0.475	140	0.723	176	0.878	212	0.882	248	0.735	284	0.490	320	0.228	356	0.102
33	0.102	69	0.222	105	0.482	141	0.729	177	0.880	213	0.880	249	0.729	285	0.482	321	0.222	357	0.102
34	0.102	70	0.228	106	0.490	142	0.735	178	0.882	214	0.878	250	0.723	286	0.475	322	0.215	358	0.103
35	0.101	71	0.235	107	0.497	143	0.741	179	0.884	215	0.876	251	0.716	287	0.468	323	0.209	359	0.104

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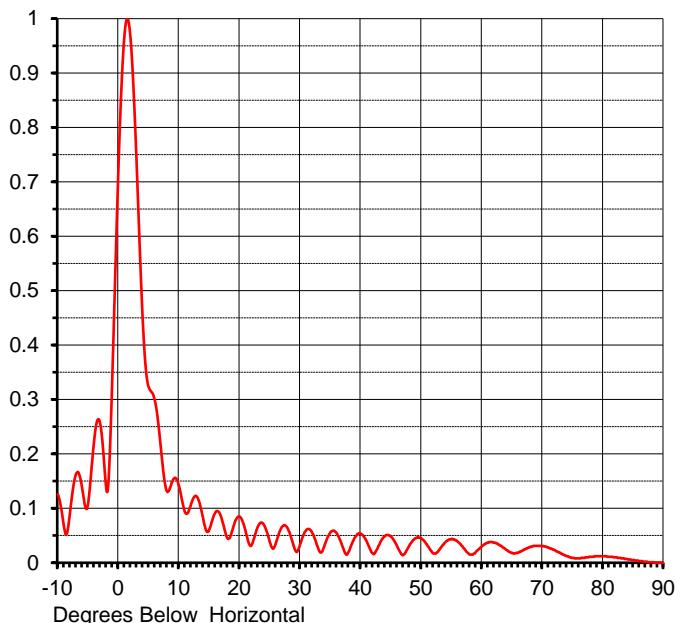
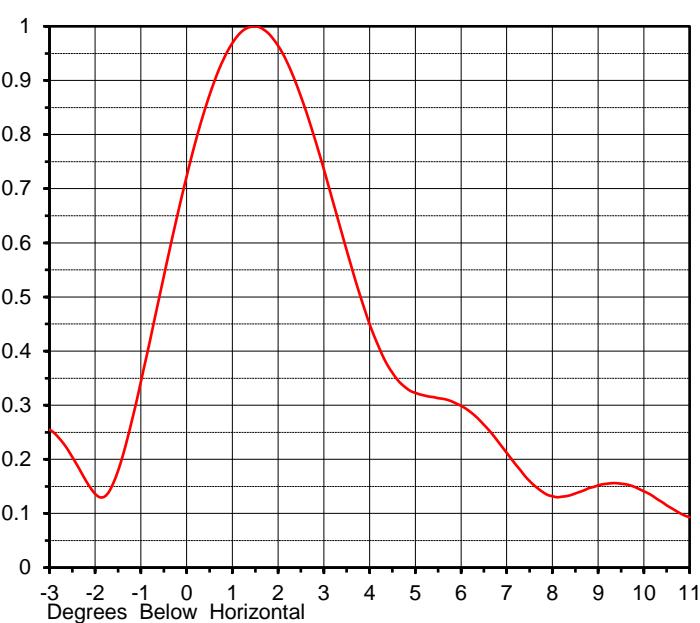
ELEVATION PATTERN

Proposal No. C-71125-7
 Date 3-Sep-19
 Call Letters KCET
 Channel 28
 Frequency 557 MHz
 Antenna Type TFU-17ETT/VP C170 MBT

RMS Directivity at Main Lobe
 RMS Directivity at Horizontal

16.6 (12.20 dB)
8.7 (9.40 dB)
 Calculated

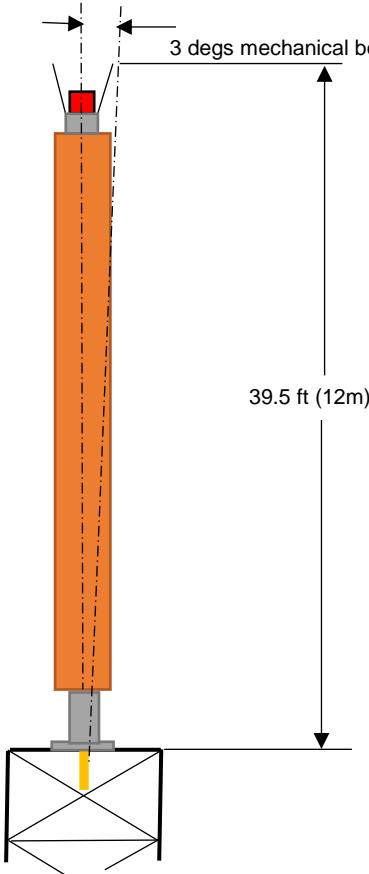
Beam Tilt 1.50 deg
 Pattern Number 17E166150



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

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MECHANICAL SPECIFICATIONS



Proposal No.	C-71125-7
Date	3-Sep-19
Call Letters	KCET
Channel	28
Frequency	557 MHz
Antenna Type	TFU-17ETT/VP C170 MBT

Top Mounted

With ice TIA-222-G

Basic Wind Speed	85 m/h (136.8 km/h)
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Structure Class	II
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Exposure Category	C
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Topography Category	3
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Height of Crest	3110 ft (947.9 m)
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Design Ice	2 in	$t_{iz} = 6.67 \text{ in}$
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Wind Speed w/Ice	30 m/h (48.3 km/h)
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Mechanical Specifications

	without ice	with ice
Height with Lightning Protector	H4	39.5 ft (12m)
Height less Lightning Protector	H2	36.5 ft (11.1m)
Height of Center of Radiation	H3	18.3 ft (5.6m)
Effective Projected Area	(EPA) _S	24.5 ft ² (2.3m ²)
Moment Arm	D1	20.9 ft (6.4m)
		126.4 ft ² (11.7m ²)
		23.9 ft (7.3m)

Weight	W	3350 lb (1.5t)	15000 lb (6.8t)
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Antenna designed in accordance with AISC specifications for design of structural steel as prescribed by TIA-222-G

Prepared by: KLP
Rev. No.7 by: JBC

Date: 24-Apr-18
Date: 3-Sep-19

ME:

EE:

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Summary

Proposal No.	C-71125-7
Date	3-Sep-19
Call Letters	KCET
Channel	28
Frequency	557 MHz
Antenna Type	TFU-17ETT/VP C170 MBT

Antenna

	Hpol	Vpol
ERP:	150 kW (21.76 dBk)	121 kW (20.84 dBk)
Peak Gain*	18.31 (12.63 dB)	14.82 (11.71 dB)

Antenna Input Power **8.19 kW (9.13 dBk)**

Transmission Line

Type:	Rigid	Attenuation:	(0.43 dB)
Size:	6-1/8"	Efficiency:	90.5%
Impedance:	50 Ohm		
Length:	350 ft	106.7 m	

Transmitter Output

9.05 kW (9.56 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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