

**Antenna Model:****TFU-27ETT/VP-R 04**

Proposal Number: **C-71732-3**  
Date: **22-Apr-22**  
Customer: **Scripps**  
Location: **Las Vegas, NV**

**Electrical Specifications**

Polarization: **Elliptical**  
Azimuth Pattern: **Omni**  
Antenna Input: **6-1/8"** **50 Ohm** **EIA/DCA**  
VSWR: **Channel** **1.08 : 1**  
Bandwidth: **6 MHz**  
Rated Input Power: **60 kW** **(17.78 dBk)** **Maximum Average Power**

**Mechanical Specifications**

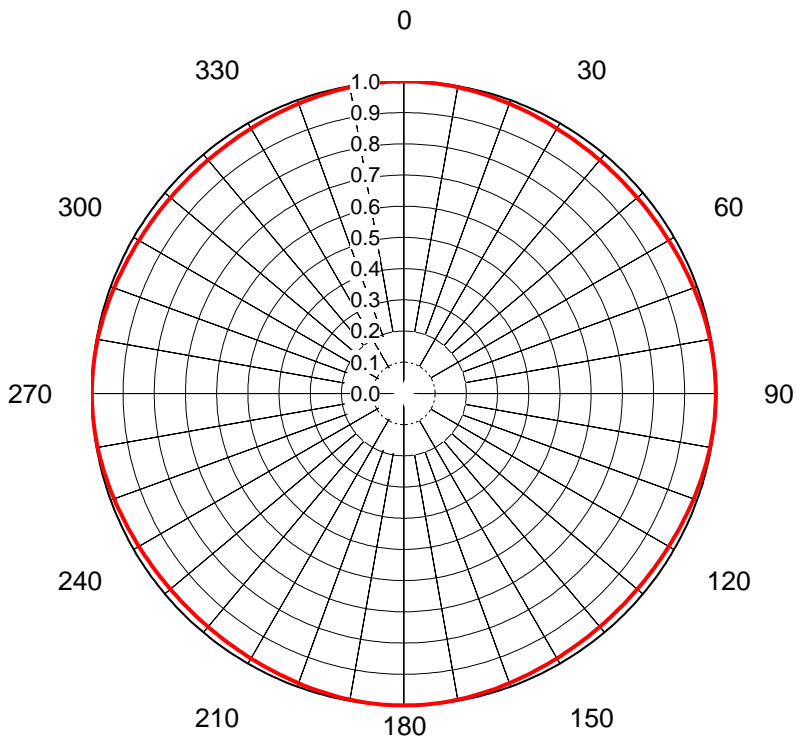
Mounting: **Top Mounted**  
Environmental Protection: **Full Radome**  
Height: **53 ft (16.2m)** less Lightning Protector **56 ft (17.1m)** with Lightning Protector  
Weight: **5800 lb (2.6t)**  
Effective Projected Area: **40.5 ft² (3.8m²)** **TIA-222-G** Design Ult. Wind Speed: **105 m/h (169 km/h)**

**Channel Specifications**

Call	CH	Freq	Hpol ERP	Vpol ERP	TPO	RMS	RMS	RMS	RMS
						Main Lobe Hpol Gain	Main Lobe Vpol Gain	at Horizontal Hpol Gain	at Horizontal Vpol Gain
KTNV	26	545 MHz	1,000 kW (30.00 dBk)	250 kW (23.98 dBk)	54.1 kW (17.33 dBk)	19.84 (12.98dB)	4.96 (6.95dB)	12.95 (11.12dB)	3.24 (5.10dB)

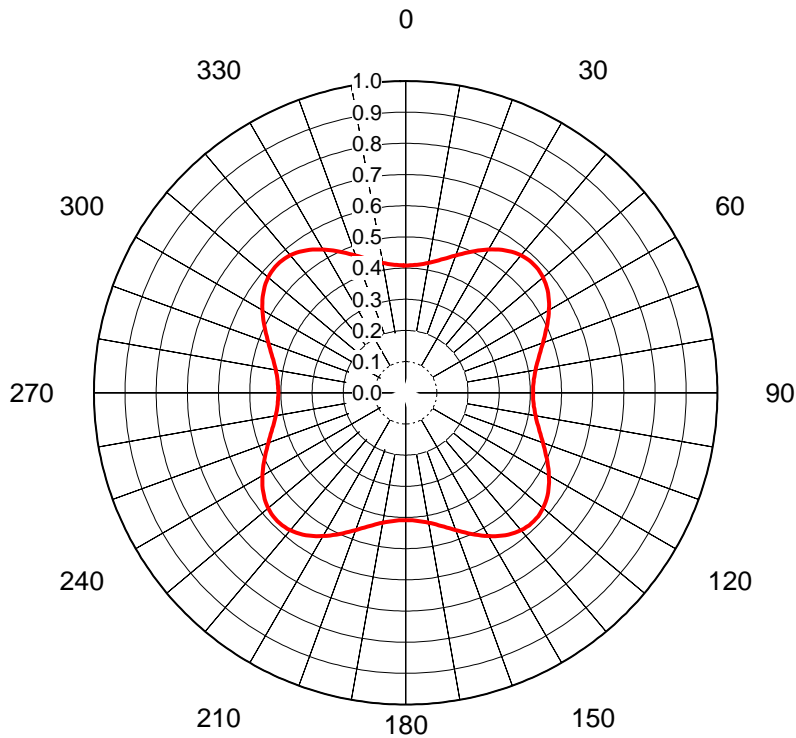
## AZIMUTH PATTERN Horizontal Polarization

Proposal No. **C-71732-3**  
 Date **22-Apr-22**  
 Call Letters **KTNV**  
 Channel **26**  
 Frequency **545 MHz**  
 Antenna Type **TFU-27ETT/VP-R O4**  
 Gain **1.03 (0.11dB)**  
 Calculated  
 Circularity **+/- 1.0 dB**



Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	1.000	36	0.978	72	0.990	108	0.990	144	0.978	180	1.000	216	0.978	252	0.990	288	0.990
1	1.000	37	0.977	73	0.991	109	0.989	145	0.978	181	1.000	217	0.977	253	0.991	289	0.989
2	1.000	38	0.977	74	0.992	110	0.988	146	0.978	182	1.000	218	0.977	254	0.992	290	0.988
3	1.000	39	0.977	75	0.993	111	0.987	147	0.979	183	1.000	219	0.977	255	0.993	291	0.987
4	0.999	40	0.976	76	0.993	112	0.987	148	0.979	184	0.999	220	0.976	256	0.993	292	0.987
5	0.999	41	0.976	77	0.994	113	0.986	149	0.980	185	0.999	221	0.976	257	0.994	293	0.986
6	0.999	42	0.976	78	0.995	114	0.985	150	0.981	186	0.999	222	0.976	258	0.995	294	0.985
7	0.998	43	0.976	79	0.996	115	0.984	151	0.981	187	0.998	223	0.976	259	0.996	295	0.984
8	0.998	44	0.976	80	0.996	116	0.983	152	0.982	188	0.998	224	0.976	260	0.996	296	0.983
9	0.997	45	0.976	81	0.997	117	0.983	153	0.983	189	0.997	225	0.976	261	0.997	297	0.983
10	0.996	46	0.976	82	0.998	118	0.982	154	0.983	190	0.996	226	0.976	262	0.998	298	0.982
11	0.996	47	0.976	83	0.998	119	0.981	155	0.984	191	0.996	227	0.976	263	0.998	299	0.981
12	0.995	48	0.976	84	0.999	120	0.981	156	0.985	192	0.995	228	0.976	264	0.999	300	0.981
13	0.994	49	0.976	85	0.999	121	0.980	157	0.986	193	0.994	229	0.976	265	0.999	301	0.980
14	0.994	50	0.976	86	0.999	122	0.979	158	0.987	194	0.994	230	0.976	266	0.999	302	0.979
15	0.993	51	0.977	87	1.000	123	0.979	159	0.987	195	0.993	231	0.977	267	1.000	303	0.979
16	0.992	52	0.977	88	1.000	124	0.978	160	0.988	196	0.992	232	0.977	268	1.000	304	0.978
17	0.991	53	0.977	89	1.000	125	0.978	161	0.989	197	0.991	233	0.977	269	1.000	305	0.978
18	0.990	54	0.978	90	1.000	126	0.978	162	0.990	198	0.990	234	0.978	270	1.000	306	0.978
19	0.989	55	0.978	91	1.000	127	0.977	163	0.991	199	0.989	235	0.978	271	1.000	307	0.977
20	0.988	56	0.978	92	1.000	128	0.977	164	0.992	200	0.988	236	0.978	272	1.000	308	0.977
21	0.987	57	0.979	93	1.000	129	0.977	165	0.993	201	0.987	237	0.979	273	1.000	309	0.977
22	0.987	58	0.979	94	0.999	130	0.976	166	0.993	202	0.987	238	0.979	274	0.999	310	0.976
23	0.986	59	0.980	95	0.999	131	0.976	167	0.994	203	0.986	239	0.980	275	0.999	311	0.976
24	0.985	60	0.981	96	0.999	132	0.976	168	0.995	204	0.985	240	0.981	276	0.999	312	0.976
25	0.984	61	0.981	97	0.998	133	0.976	169	0.996	205	0.984	241	0.981	277	0.998	313	0.976
26	0.983	62	0.982	98	0.998	134	0.976	170	0.996	206	0.983	242	0.982	278	0.998	314	0.976
27	0.983	63	0.983	99	0.997	135	0.976	171	0.997	207	0.983	243	0.983	279	0.997	315	0.976
28	0.982	64	0.983	100	0.996	136	0.976	172	0.998	208	0.982	244	0.983	280	0.996	316	0.976
29	0.981	65	0.984	101	0.996	137	0.976	173	0.998	209	0.981	245	0.984	281	0.996	317	0.976
30	0.981	66	0.985	102	0.995	138	0.976	174	0.999	210	0.981	246	0.985	282	0.995	318	0.976
31	0.980	67	0.986	103	0.994	139	0.976	175	0.999	211	0.980	247	0.986	283	0.994	319	0.976
32	0.979	68	0.987	104	0.994	140	0.976	176	0.999	212	0.979	248	0.987	284	0.994	320	0.976
33	0.979	69	0.987	105	0.993	141	0.977	177	1.000	213	0.979	249	0.987	285	0.993	321	0.977
34	0.978	70	0.988	106	0.992	142	0.977	178	1.000	214	0.978	250	0.988	286	0.992	322	0.977
35	0.978	71	0.989	107	0.991	143	0.977	179	1.000	215	0.978	251	0.989	287	0.991	323	0.977

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## AZIMUTH PATTERN Vertical Polarization

Proposal No. **C-71732-3**  
 Date **22-Apr-22**  
 Call Letters **KTNV**  
 Channel **26**  
 Frequency **545 MHz**  
 Antenna Type **TFU-27ETT/VP-R O4**  
 Gain **1.39 (1.44dB)**  
 Calculated  
 Circularity **+/- 2.0 dB**

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.408	36	0.562	72	0.457	108	0.457	144	0.562	180	0.408	216	0.562	252	0.457	288	0.457
1	0.409	37	0.566	73	0.452	109	0.463	145	0.557	181	0.409	217	0.566	253	0.452	289	0.463
2	0.409	38	0.570	74	0.447	110	0.469	146	0.553	182	0.409	218	0.570	254	0.447	290	0.469
3	0.410	39	0.573	75	0.442	111	0.474	147	0.548	183	0.410	219	0.573	255	0.442	291	0.474
4	0.411	40	0.576	76	0.438	112	0.481	148	0.542	184	0.411	220	0.576	256	0.438	292	0.481
5	0.412	41	0.578	77	0.434	113	0.487	149	0.537	185	0.412	221	0.578	257	0.434	293	0.487
6	0.414	42	0.580	78	0.430	114	0.493	150	0.531	186	0.414	222	0.580	258	0.430	294	0.493
7	0.416	43	0.581	79	0.426	115	0.499	151	0.525	187	0.416	223	0.581	259	0.426	295	0.499
8	0.418	44	0.582	80	0.423	116	0.506	152	0.518	188	0.418	224	0.582	260	0.423	296	0.506
9	0.420	45	0.582	81	0.420	117	0.512	153	0.512	189	0.420	225	0.582	261	0.420	297	0.512
10	0.423	46	0.582	82	0.418	118	0.518	154	0.506	190	0.423	226	0.582	262	0.418	298	0.518
11	0.426	47	0.581	83	0.416	119	0.525	155	0.499	191	0.426	227	0.581	263	0.416	299	0.525
12	0.430	48	0.580	84	0.414	120	0.531	156	0.493	192	0.430	228	0.580	264	0.414	300	0.531
13	0.434	49	0.578	85	0.412	121	0.537	157	0.487	193	0.434	229	0.578	265	0.412	301	0.537
14	0.438	50	0.576	86	0.411	122	0.542	158	0.481	194	0.438	230	0.576	266	0.411	302	0.542
15	0.442	51	0.573	87	0.410	123	0.548	159	0.474	195	0.442	231	0.573	267	0.410	303	0.548
16	0.447	52	0.570	88	0.409	124	0.553	160	0.469	196	0.447	232	0.570	268	0.409	304	0.553
17	0.452	53	0.566	89	0.409	125	0.557	161	0.463	197	0.452	233	0.566	269	0.409	305	0.557
18	0.457	54	0.562	90	0.408	126	0.562	162	0.457	198	0.457	234	0.562	270	0.408	306	0.562
19	0.463	55	0.557	91	0.409	127	0.566	163	0.452	199	0.463	235	0.557	271	0.409	307	0.566
20	0.469	56	0.553	92	0.409	128	0.570	164	0.447	200	0.469	236	0.553	272	0.409	308	0.570
21	0.474	57	0.548	93	0.410	129	0.573	165	0.442	201	0.474	237	0.548	273	0.410	309	0.573
22	0.481	58	0.542	94	0.411	130	0.576	166	0.438	202	0.481	238	0.542	274	0.411	310	0.576
23	0.487	59	0.537	95	0.412	131	0.578	167	0.434	203	0.487	239	0.537	275	0.412	311	0.578
24	0.493	60	0.531	96	0.414	132	0.580	168	0.430	204	0.493	240	0.531	276	0.414	312	0.580
25	0.499	61	0.525	97	0.416	133	0.581	169	0.426	205	0.499	241	0.525	277	0.416	313	0.581
26	0.506	62	0.518	98	0.418	134	0.582	170	0.423	206	0.506	242	0.518	278	0.418	314	0.582
27	0.512	63	0.512	99	0.420	135	0.582	171	0.420	207	0.512	243	0.512	279	0.420	315	0.582
28	0.518	64	0.506	100	0.423	136	0.582	172	0.418	208	0.518	244	0.506	280	0.423	316	0.582
29	0.525	65	0.499	101	0.426	137	0.581	173	0.416	209	0.525	245	0.499	281	0.426	317	0.581
30	0.531	66	0.493	102	0.430	138	0.580	174	0.414	210	0.531	246	0.493	282	0.430	318	0.580
31	0.537	67	0.487	103	0.434	139	0.578	175	0.412	211	0.537	247	0.487	283	0.434	319	0.578
32	0.542	68	0.481	104	0.438	140	0.576	176	0.411	212	0.542	248	0.481	284	0.438	320	0.576
33	0.548	69	0.474	105	0.442	141	0.573	177	0.410	213	0.548	249	0.474	285	0.442	321	0.573
34	0.553	70	0.469	106	0.447	142	0.570	178	0.409	214	0.553	250	0.469	286	0.447	322	0.570
35	0.557	71	0.463	107	0.452	143	0.566	179	0.409	215	0.557	251	0.463	287	0.452	323	0.566

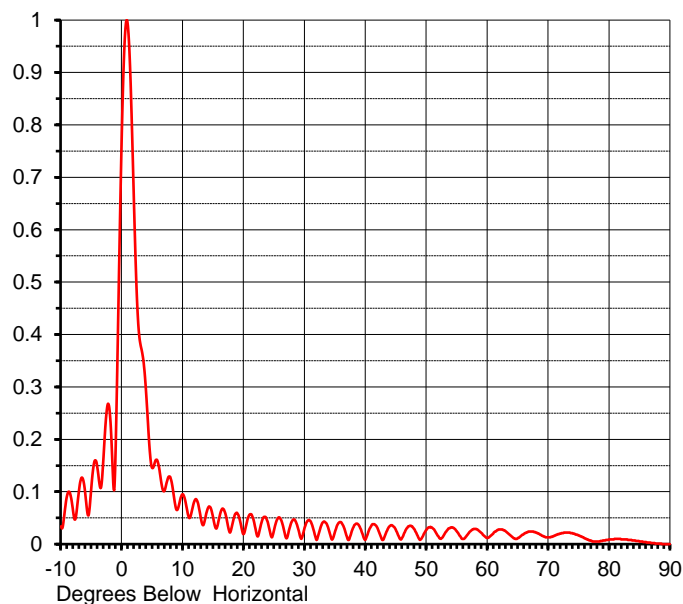
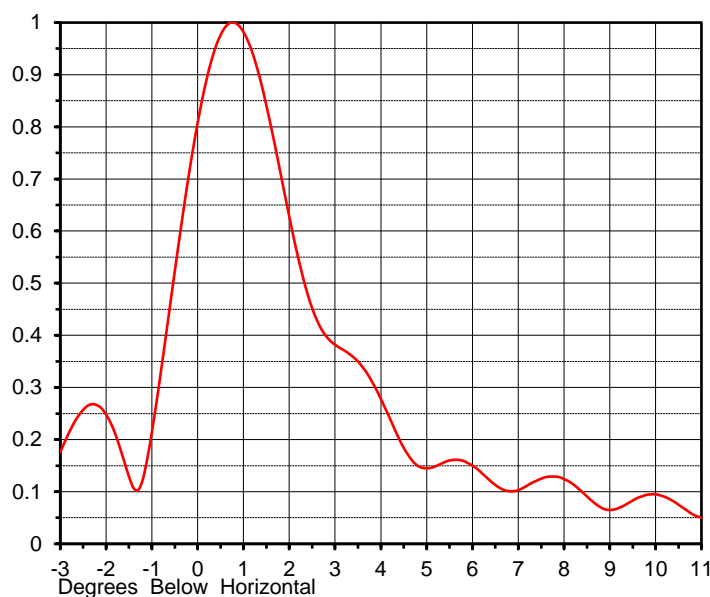
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## ELEVATION PATTERN

Proposal No. **C-71732-3**  
 Date **22-Apr-22**  
 Call Letters **KTNV**  
 Channel **26**  
 Frequency **545 MHz**  
 Antenna Type **TFU-27ETT/VP-R 04**

RMS Directivity at Main Lobe **24.8 ( 13.94 dB )**  
 RMS Directivity at Horizontal **16.2 ( 12.10 dB )**  
**Calculated**

Beam Tilt **0.75 deg**  
 Pattern Number **27E248075**



Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.034	10.0	0.095	30.0	0.033	50.0	0.028	70.0	0.013
-9.0	0.094	11.0	0.050	31.0	0.042	51.0	0.030	71.0	0.016
-8.0	0.059	12.0	0.085	32.0	0.009	52.0	0.013	72.0	0.020
-7.0	0.109	13.0	0.045	33.0	0.042	53.0	0.021	73.0	0.022
-6.0	0.091	14.0	0.066	34.0	0.024	54.0	0.032	74.0	0.020
-5.0	0.115	15.0	0.047	35.0	0.026	55.0	0.023	75.0	0.016
-4.0	0.141	16.0	0.053	36.0	0.041	56.0	0.010	76.0	0.011
-3.0	0.176	17.0	0.056	37.0	0.010	57.0	0.023	77.0	0.006
-2.0	0.248	18.0	0.033	38.0	0.033	58.0	0.029	78.0	0.005
-1.0	0.214	19.0	0.057	39.0	0.033	59.0	0.021	79.0	0.007
0.0	0.808	20.0	0.020	40.0	0.010	60.0	0.012	80.0	0.009
1.0	0.982	21.0	0.057	41.0	0.037	61.0	0.022	81.0	0.010
2.0	0.628	22.0	0.023	42.0	0.028	62.0	0.028	82.0	0.009
3.0	0.382	23.0	0.046	43.0	0.012	63.0	0.024	83.0	0.008
4.0	0.278	24.0	0.037	44.0	0.035	64.0	0.014	84.0	0.007
5.0	0.145	25.0	0.030	45.0	0.025	65.0	0.012	85.0	0.005
6.0	0.150	26.0	0.048	46.0	0.013	66.0	0.020	86.0	0.004
7.0	0.103	27.0	0.011	47.0	0.034	67.0	0.024	87.0	0.002
8.0	0.124	28.0	0.046	48.0	0.028	68.0	0.022	88.0	0.001
9.0	0.065	29.0	0.025	49.0	0.009	69.0	0.016	89.0	0.000
								90.0	0.000

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## MECHANICAL SPECIFICATIONS

Proposal No. **C-71732-3**  
 Date **22-Apr-22**  
 Call Letters **KTNV**  
 Channel **26**  
 Frequency **545 MHz**  
 Antenna Type **TFU-27ETT/VP-R 04**

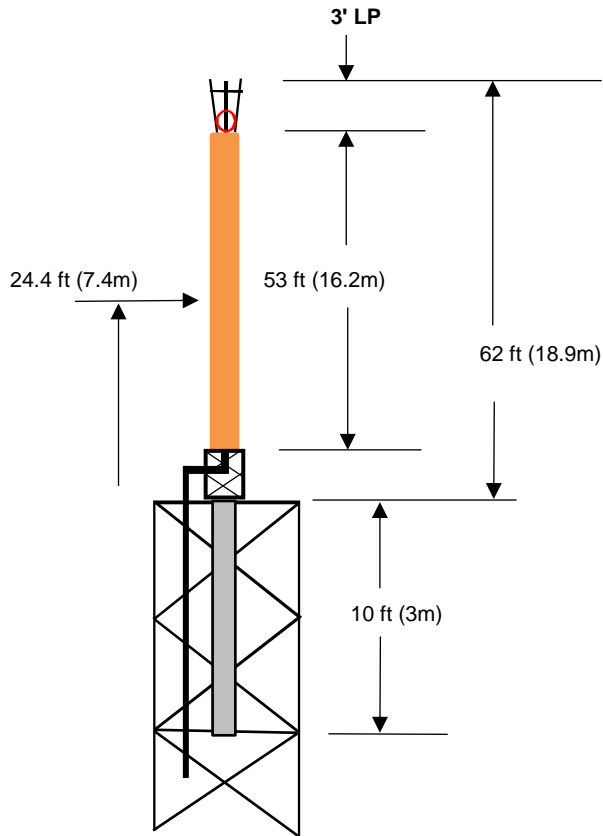
### Preliminary Specifications

#### Top Mounted

##### Without ice TIA-222-G

Height AGL(z) 190 ft (57.9 m)  
 Design Ult. Wind Speed 105 m/h (169 km/h)

Structure Class III  
 Exposure Category C  
 Topography Category 5  
 Height of Crest 1350 ft (411.5 m)



#### Mechanical Specifications

		antenna only	full stack	
Height with Lightning Protector	H4	56 ft (17.1m)	62 ft (18.9m)	
Height less Lightning Protector	H2	53 ft (16.2m)	59 ft (18m)	
Height of Center of Radiation	H3	26.5 ft (8.1m)	32.5 ft (9.9m)	
Effective Projected Area	(EPA) <sub>S</sub>	40.5 ft <sup>2</sup> (3.8m <sup>2</sup> )	58.5 ft <sup>2</sup> (5.4m <sup>2</sup> )	
Moment Arm	D1	29.4 ft (9m)	24.4 ft (7.4m)	
Effective Projected Area	(EPA) <sub>S</sub>		11.8 ft <sup>2</sup> (1.1m <sup>2</sup> )	below tower top
Moment Arm	D3		4.8 ft (1.5m)	below tower top
Pole Bury Length	D2		10 ft (3m)	below tower top
Weight	W	5800 lb (2.6t)	9750 lb (4.4t)	

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

Prepared by: CAB Date: 29-May-19 ME: 6-June-19 EE:  
 Rev. No.3 by: SPJC Date: 22-Apr-22

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## Summary

Proposal No.	<b>C-71732-3</b>
Date	<b>22-Apr-22</b>
Call Letters	<b>KTNV</b>
Channel	<b>26</b>
Frequency	<b>545 MHz</b>
Antenna Type	<b>TFU-27ETT/VP-R 04</b>

## Antenna

	Hpol	Vpol
ERP:	<b>1,000 kW ( 30.00 dBk )</b>	<b>250 kW ( 23.98 dBk )</b>
RMS Gain*	19.84 ( 12.98 dB )	4.96 ( 6.95 dB )

<b>Antenna Input Power</b>	<b>50.4 kW ( 17.02 dBk )</b>
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## Transmission Line

Type:	<b>Rigid</b>	Attenuation:	<b>( 0.30 dB )</b>
Size:	<b>6-1/8"</b>	Efficiency:	<b>93.2%</b>
Impedance:	<b>50 Ohm</b>		
Length:	<b>250 ft</b>	<b>76.2 m</b>	

## Transmitter Output

<b>54.1 kW ( 17.33 dBk )</b>
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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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