



Antenna Model: **TFU-34ETT/VP-R CT150**

Proposal Number: **C-71851**  
Date: **6-Feb-22**  
Customer: **Nexstar**  
Location: **Hagerstown, MD**

### Electrical Specifications

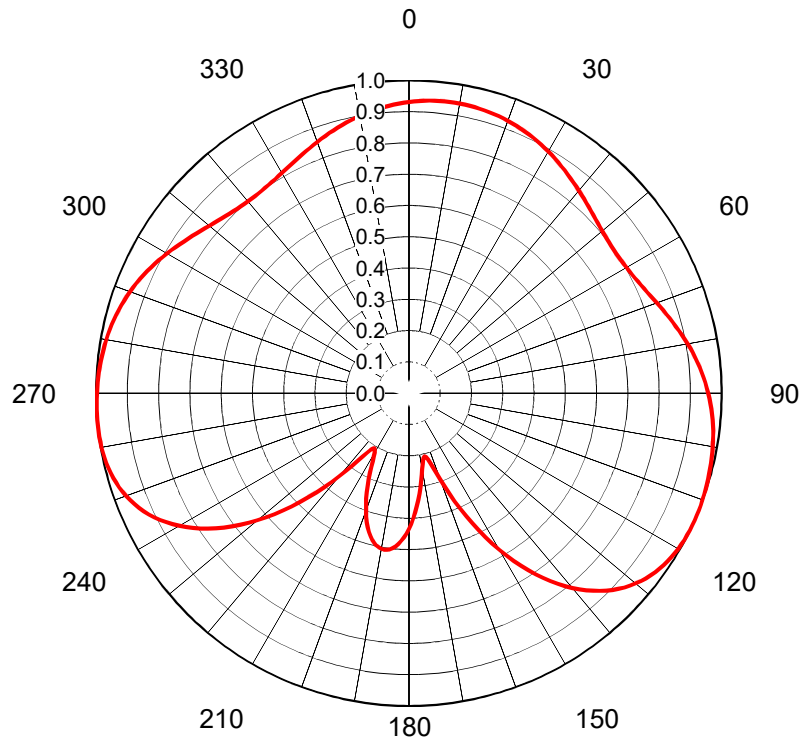
Polarization: **Elliptical**  
Azimuth Pattern: **Directional**  
Antenna Input: **6-1/8"** **75 Ohm** **EIA/DCA**  
VSWR: **Channel** **1.08 : 1** **Band** **1.08 : 1**  
Bandwidth: **6 MHz**  
Rated Input Power: **35 kW** **(15.44 dBk)** **Maximum Average Power**

### Mechanical Specifications

Mounting: **Top Mounted**  
Environmental Protection: **Full Radome**  
Height: **69.1 ft (21.1m)** less Lightning Protector **73.1 ft (22.3m)** with Lightning Protector  
Weight: **14500 lb (6.6t)**  
Effective Projected Area: **82.5 ft² (7.7m²)** **TIA-222-G** Basic Wind Speed: **90 m/h (144.8 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
WDVM	23	527 MHz	1,000 kW (30.00 dBk)	300 kW (24.77 dBk)	29.6 kW (14.71 dBk)	37.50 (15.74dB)	11.25 (10.51dB)	2.31 (3.63dB)	0.69 (-1.60dB)

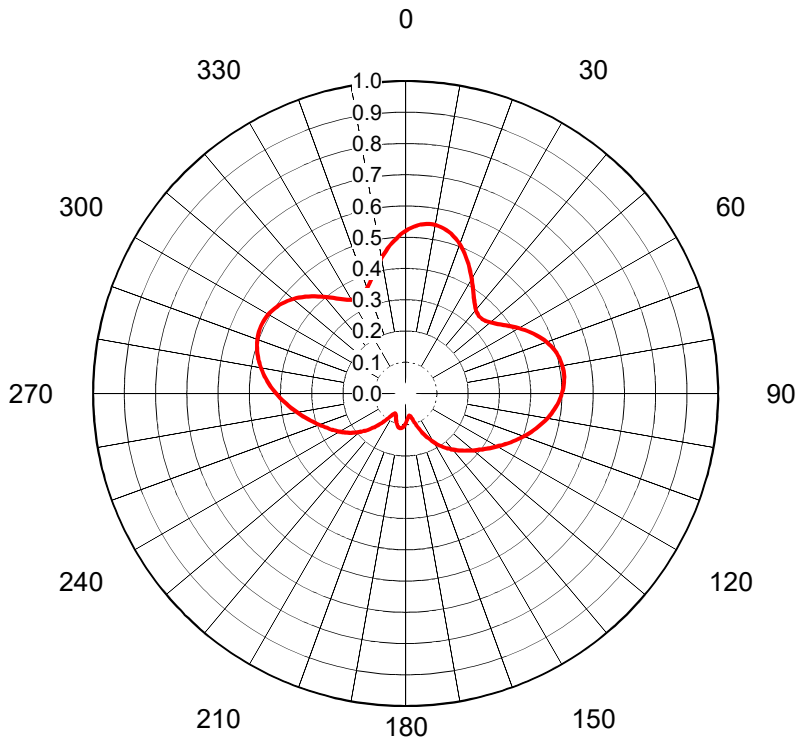


## AZIMUTH PATTERN Horizontal Polarization

Proposal No. **C-71851**  
 Date **6-Feb-22**  
 Call Letters **WDVM**  
 Channel **23**  
 Frequency **527 MHz**  
 Antenna Type **TFU-34ETT/VP-R CT150**  
 Gain **1.51 (1.78dB)**  
 Calculated

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.931	36	0.865	72	0.855	108	0.997	144	0.731	180	0.434	216	0.250	252	0.974	288	0.957
1	0.933	37	0.860	73	0.861	109	0.998	145	0.707	181	0.449	217	0.271	253	0.979	289	0.953
2	0.935	38	0.855	74	0.868	110	0.999	146	0.683	182	0.462	218	0.294	254	0.983	290	0.949
3	0.936	39	0.850	75	0.874	111	0.999	147	0.658	183	0.474	219	0.320	255	0.987	291	0.944
4	0.937	40	0.845	76	0.880	112	1.000	148	0.632	184	0.484	220	0.347	256	0.990	292	0.939
5	0.939	41	0.841	77	0.887	113	1.000	149	0.605	185	0.492	221	0.376	257	0.992	293	0.934
6	0.939	42	0.836	78	0.893	114	1.000	150	0.578	186	0.498	222	0.404	258	0.995	294	0.929
7	0.940	43	0.832	79	0.899	115	1.000	151	0.550	187	0.503	223	0.434	259	0.996	295	0.923
8	0.940	44	0.828	80	0.905	116	0.999	152	0.521	188	0.506	224	0.463	260	0.998	296	0.917
9	0.940	45	0.823	81	0.911	117	0.999	153	0.492	189	0.506	225	0.492	261	0.999	297	0.911
10	0.940	46	0.820	82	0.917	118	0.998	154	0.463	190	0.506	226	0.521	262	0.999	298	0.905
11	0.940	47	0.816	83	0.923	119	0.996	155	0.434	191	0.503	227	0.550	263	1.000	299	0.899
12	0.939	48	0.813	84	0.929	120	0.995	156	0.404	192	0.498	228	0.578	264	1.000	300	0.893
13	0.939	49	0.810	85	0.934	121	0.992	157	0.376	193	0.492	229	0.605	265	1.000	301	0.887
14	0.937	50	0.807	86	0.939	122	0.990	158	0.347	194	0.484	230	0.632	266	1.000	302	0.880
15	0.936	51	0.805	87	0.944	123	0.987	159	0.320	195	0.474	231	0.658	267	0.999	303	0.874
16	0.935	52	0.803	88	0.949	124	0.983	160	0.294	196	0.462	232	0.683	268	0.999	304	0.868
17	0.933	53	0.801	89	0.953	125	0.979	161	0.271	197	0.449	233	0.707	269	0.998	305	0.861
18	0.931	54	0.800	90	0.957	126	0.974	162	0.250	198	0.434	234	0.731	270	0.997	306	0.855
19	0.929	55	0.800	91	0.961	127	0.968	163	0.232	199	0.418	235	0.753	271	0.997	307	0.849
20	0.927	56	0.799	92	0.965	128	0.962	164	0.219	200	0.401	236	0.774	272	0.996	308	0.844
21	0.924	57	0.800	93	0.969	129	0.955	165	0.211	201	0.383	237	0.794	273	0.994	309	0.838
22	0.921	58	0.800	94	0.972	130	0.946	166	0.208	202	0.364	238	0.813	274	0.993	310	0.833
23	0.918	59	0.802	95	0.975	131	0.938	167	0.211	203	0.344	239	0.831	275	0.992	311	0.828
24	0.915	60	0.803	96	0.978	132	0.928	168	0.219	204	0.323	240	0.848	276	0.990	312	0.823
25	0.912	61	0.806	97	0.980	133	0.917	169	0.231	205	0.303	241	0.864	277	0.988	313	0.819
26	0.908	62	0.808	98	0.982	134	0.905	170	0.246	206	0.283	242	0.879	278	0.987	314	0.815
27	0.904	63	0.811	99	0.985	135	0.893	171	0.264	207	0.264	243	0.893	279	0.985	315	0.811
28	0.900	64	0.815	100	0.987	136	0.879	172	0.283	208	0.246	244	0.905	280	0.982	316	0.808
29	0.896	65	0.819	101	0.988	137	0.864	173	0.303	209	0.231	245	0.917	281	0.980	317	0.806
30	0.892	66	0.823	102	0.990	138	0.848	174	0.323	210	0.219	246	0.928	282	0.978	318	0.803
31	0.888	67	0.828	103	0.992	139	0.831	175	0.344	211	0.211	247	0.938	283	0.975	319	0.802
32	0.883	68	0.833	104	0.993	140	0.813	176	0.364	212	0.208	248	0.947	284	0.972	320	0.800
33	0.879	69	0.838	105	0.994	141	0.794	177	0.383	213	0.211	249	0.955	285	0.969	321	0.800
34	0.874	70	0.844	106	0.996	142	0.774	178	0.401	214	0.219	250	0.962	286	0.965	322	0.799
35	0.869	71	0.849	107	0.997	143	0.753	179	0.418	215	0.232	251	0.968	287	0.961	323	0.800

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## AZIMUTH PATTERN Vertical Polarization

Proposal No. **C-71851**  
 Date **6-Feb-22**  
 Call Letters **WDVM**  
 Channel **23**  
 Frequency **527 MHz**  
 Antenna Type **TFU-34ETT/VP-R CT150**  
 Gain **2.19 (3.4dB)**  
 Calculated

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.520	36	0.373	72	0.489	108	0.414	144	0.214	180	0.096	216	0.102	252	0.304	288	0.500	324	0.376
1	0.526	37	0.366	73	0.493	109	0.408	145	0.209	181	0.099	217	0.108	253	0.310	289	0.503	325	0.370
2	0.531	38	0.360	74	0.497	110	0.402	146	0.203	182	0.102	218	0.114	254	0.315	290	0.505	326	0.364
3	0.535	39	0.355	75	0.500	111	0.395	147	0.198	183	0.105	219	0.121	255	0.321	291	0.507	327	0.359
4	0.539	40	0.350	76	0.503	112	0.389	148	0.192	184	0.107	220	0.128	256	0.327	292	0.508	328	0.354
5	0.542	41	0.346	77	0.505	113	0.383	149	0.186	185	0.109	221	0.134	257	0.333	293	0.509	329	0.350
6	0.545	42	0.344	78	0.507	114	0.376	150	0.180	186	0.111	222	0.141	258	0.339	294	0.510	330	0.346
7	0.546	43	0.342	79	0.508	115	0.370	151	0.174	187	0.112	223	0.148	259	0.345	295	0.510	331	0.344
8	0.547	44	0.341	80	0.509	116	0.364	152	0.167	188	0.112	224	0.155	260	0.351	296	0.511	332	0.342
9	0.548	45	0.341	81	0.510	117	0.357	153	0.161	189	0.112	225	0.161	261	0.357	297	0.510	333	0.341
10	0.547	46	0.342	82	0.511	118	0.351	154	0.155	190	0.112	226	0.167	262	0.364	298	0.509	334	0.341
11	0.546	47	0.344	83	0.510	119	0.345	155	0.148	191	0.112	227	0.174	263	0.370	299	0.508	335	0.342
12	0.545	48	0.346	84	0.510	120	0.339	156	0.141	192	0.111	228	0.180	264	0.376	300	0.507	336	0.344
13	0.542	49	0.350	85	0.509	121	0.333	157	0.134	193	0.109	229	0.186	265	0.383	301	0.505	337	0.346
14	0.539	50	0.354	86	0.508	122	0.327	158	0.128	194	0.107	230	0.192	266	0.389	302	0.503	338	0.350
15	0.535	51	0.359	87	0.507	123	0.321	159	0.121	195	0.105	231	0.198	267	0.395	303	0.500	339	0.355
16	0.531	52	0.364	88	0.505	124	0.315	160	0.114	196	0.102	232	0.203	268	0.402	304	0.497	340	0.360
17	0.526	53	0.370	89	0.503	125	0.310	161	0.108	197	0.099	233	0.209	269	0.408	305	0.493	341	0.366
18	0.520	54	0.376	90	0.500	126	0.304	162	0.102	198	0.096	234	0.214	270	0.414	306	0.489	342	0.373
19	0.514	55	0.383	91	0.497	127	0.299	163	0.096	199	0.093	235	0.219	271	0.420	307	0.485	343	0.380
20	0.508	56	0.389	92	0.494	128	0.293	164	0.090	200	0.089	236	0.224	272	0.426	308	0.481	344	0.388
21	0.501	57	0.396	93	0.491	129	0.288	165	0.085	201	0.086	237	0.229	273	0.432	309	0.476	345	0.396
22	0.493	58	0.404	94	0.487	130	0.283	166	0.081	202	0.083	238	0.234	274	0.438	310	0.470	346	0.405
23	0.485	59	0.411	95	0.483	131	0.278	167	0.077	203	0.079	239	0.239	275	0.444	311	0.465	347	0.414
24	0.477	60	0.418	96	0.479	132	0.273	168	0.075	204	0.077	240	0.244	276	0.449	312	0.459	348	0.423
25	0.468	61	0.425	97	0.475	133	0.268	169	0.073	205	0.074	241	0.249	277	0.455	313	0.452	349	0.432
26	0.459	62	0.432	98	0.470	134	0.263	170	0.072	206	0.073	242	0.253	278	0.460	314	0.446	350	0.441
27	0.450	63	0.439	99	0.465	135	0.258	171	0.072	207	0.072	243	0.258	279	0.465	315	0.439	351	0.450
28	0.441	64	0.446	100	0.460	136	0.253	172	0.073	208	0.072	244	0.263	280	0.470	316	0.432	352	0.459
29	0.432	65	0.452	101	0.455	137	0.249	173	0.074	209	0.073	245	0.268	281	0.475	317	0.425	353	0.468
30	0.423	66	0.459	102	0.449	138	0.244	174	0.077	210	0.075	246	0.273	282	0.479	318	0.418	354	0.477
31	0.414	67	0.465	103	0.444	139	0.239	175	0.079	211	0.077	247	0.278	283	0.483	319	0.411	355	0.485
32	0.405	68	0.470	104	0.438	140	0.234	176	0.083	212	0.081	248	0.283	284	0.487	320	0.404	356	0.493
33	0.396	69	0.476	105	0.432	141	0.229	177	0.086	213	0.085	249	0.288	285	0.491	321	0.396	357	0.501
34	0.388	70	0.481	106	0.426	142	0.224	178	0.089	214	0.090	250	0.293	286	0.494	322	0.389	358	0.508
35	0.380	71	0.485	107	0.420	143	0.219	179	0.093	215	0.096	251	0.299	287	0.497	323	0.383	359	0.514

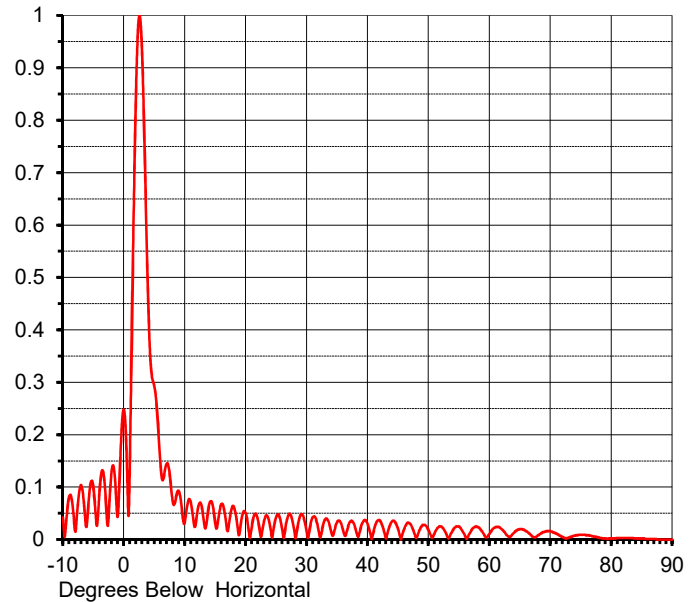
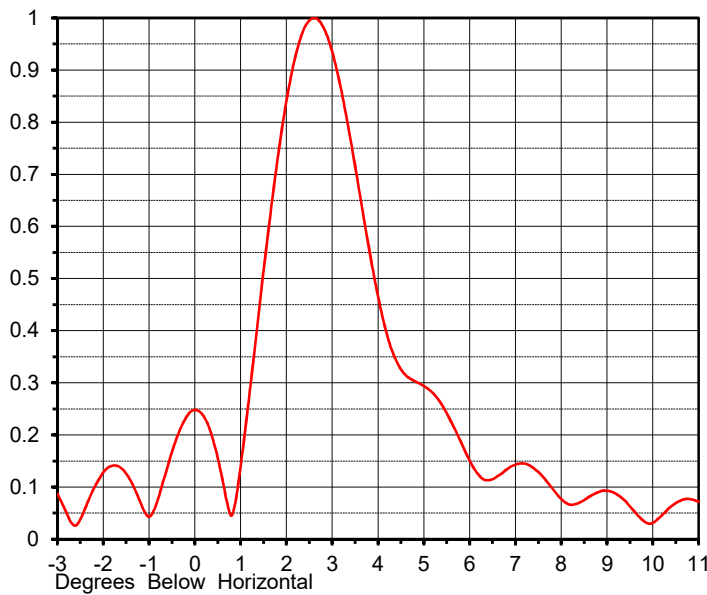
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## ELEVATION PATTERN

Proposal No. **C-71851**  
 Date **6-Feb-22**  
 Call Letters **WDVM**  
 Channel **23**  
 Frequency **527 MHz**  
 Antenna Type **TFU-34ETT/VP-R CT150**

RMS Directivity at Main Lobe **30.0 ( 14.77 dB )**  
 RMS Directivity at Horizontal **1.8 ( 2.55 dB )**  
**Calculated**

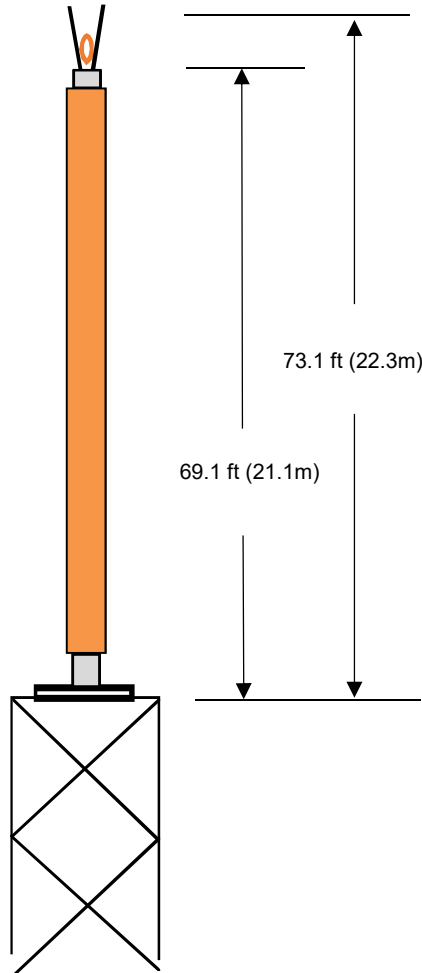
Beam Tilt **2.60 deg**  
 Pattern Number **260**



Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.042	10.0	0.031	30.0	0.017	50.0	0.019	70.0	0.016
-9.0	0.079	11.0	0.072	31.0	0.042	51.0	0.011	71.0	0.011
-8.0	0.017	12.0	0.044	32.0	0.017	52.0	0.025	72.0	0.005
-7.0	0.104	13.0	0.049	33.0	0.037	53.0	0.009	73.0	0.003
-6.0	0.034	14.0	0.064	34.0	0.018	54.0	0.017	74.0	0.007
-5.0	0.102	15.0	0.034	35.0	0.032	55.0	0.025	75.0	0.009
-4.0	0.085	16.0	0.067	36.0	0.019	56.0	0.008	76.0	0.008
-3.0	0.087	17.0	0.017	37.0	0.030	57.0	0.016	77.0	0.006
-2.0	0.128	18.0	0.064	38.0	0.023	58.0	0.024	78.0	0.004
-1.0	0.043	19.0	0.011	39.0	0.026	59.0	0.012	79.0	0.002
0.0	0.248	20.0	0.051	40.0	0.031	60.0	0.010	80.0	0.002
1.0	0.140	21.0	0.023	41.0	0.014	61.0	0.023	81.0	0.003
2.0	0.841	22.0	0.039	42.0	0.037	62.0	0.020	82.0	0.003
3.0	0.935	23.0	0.033	43.0	0.003	63.0	0.007	83.0	0.003
4.0	0.466	24.0	0.027	44.0	0.034	64.0	0.012	84.0	0.002
5.0	0.294	25.0	0.042	45.0	0.021	65.0	0.020	85.0	0.002
6.0	0.151	26.0	0.020	46.0	0.019	66.0	0.016	86.0	0.001
7.0	0.143	27.0	0.045	47.0	0.030	67.0	0.006	87.0	0.001
8.0	0.077	28.0	0.017	48.0	0.003	68.0	0.008	88.0	0.000
9.0	0.093	29.0	0.046	49.0	0.027	69.0	0.014	89.0	0.000
								90.0	0.000

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## MECHANICAL SPECIFICATIONS



Proposal No. **C-71851**  
 Date **6-Feb-22**  
 Call Letters **WDVM**  
 Channel **23**  
 Frequency **527 MHz**  
 Antenna Type **TFU-34ETT/VP-R CT150**

### Preliminary Specifications

#### Top Mounted

#### Without ice TIA-222-G

Height AGL(z) 350 ft (106.7 m)  
 Basic Wind Speed 90 m/h (144.8 km/h)

Structure Class II  
 Exposure Category C  
 Topography Category 3  
 Height of Crest 1000 ft (304.8 m)

#### Mechanical Specifications

Height with Lightning Protector	H4	73.1 ft (22.3m)
Height less Lightning Protector	H2	69.1 ft (21.1m)
Height of Center of Radiation	H3	34.55 ft (10.5m)
Effective Projected Area	(EPA) <sub>S</sub>	82.5 ft <sup>2</sup> (7.7m <sup>2</sup> )
Moment Arm	D1	37.4 ft (11.4m)

Weight	W	14500 lb (6.6t)
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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

Date: 6-Feb-22

ME:

EE:

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## Summary

Proposal No. **C-71851**  
Date **6-Feb-22**  
Call Letters **WDVM**  
Channel **23**  
Frequency **527 MHz**  
Antenna Type **TFU-34ETT/VP-R CT150**

## Antenna

	Hpol		Vpol	
ERP:	<b>1,000 kW</b>	<b>( 30.00 dBk )</b>	<b>300 kW</b>	<b>( 24.77 dBk )</b>
Peak Gain*	37.50	( 15.74 dB )	11.25	( 10.51 dB )

**Antenna Input Power** **26.7 kW ( 14.26 dBk )**

## Transmission Line

Type:	<b>Rigid</b>	Attenuation:	<b>( 0.45 dB )</b>	
Size:	<b>6-1/8"</b>	Efficiency:	<b>90.2%</b>	
Impedance:	<b>75 Ohm</b>			
Length:	<b>400 ft</b>	<b>121.9 m</b>		

## Transmitter Output

**29.6 kW ( 14.71 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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