



Antenna Model:

TFU-20GTH/VP-R S190

Proposal Number: C-70466-1
Date: 14-Mar-17
Customer: Nexstar
Location: Natchez, MS

Electrical Specifications

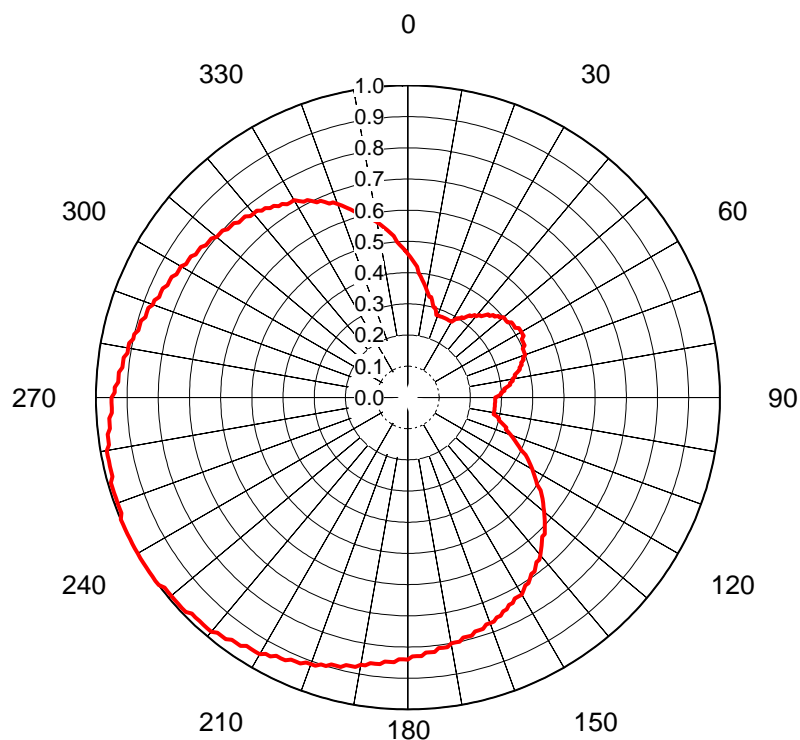
Polarization: Elliptical
Azimuth Pattern: Directional
Antenna Input: 4-1/16" 50 Ohm EIA/DCA
VSWR: Channel 1.08 : 1
Bandwidth: 6 MHz
Rated Input Power: 20 kW (13.01 dBk) Maximum Average Power

Mechanical Specifications

Mounting: Top Mounted
Environmental Protection: Full Radome
Height: 43.3 ft (13.2m) less Lightning Protector 47.3 ft (14.4m) with Lightning Protector
Weight: 6600 lb (3t)
Effective Projected Area: 38 ft² (3.5m²) TIA/EIA-222-F **Basic Wind Speed:** 80 m/h (128.7 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
WNTZ	15	479 MHz	492 kW (26.92 dBk)	123 kW (20.90 dBk)	21.2 kW (13.27 dBk)	30.36 (14.82dB)	7.59 (8.80dB)	25.70 (14.10dB)	6.42 (8.08dB)



AZIMUTH PATTERN Horizontal Polarization

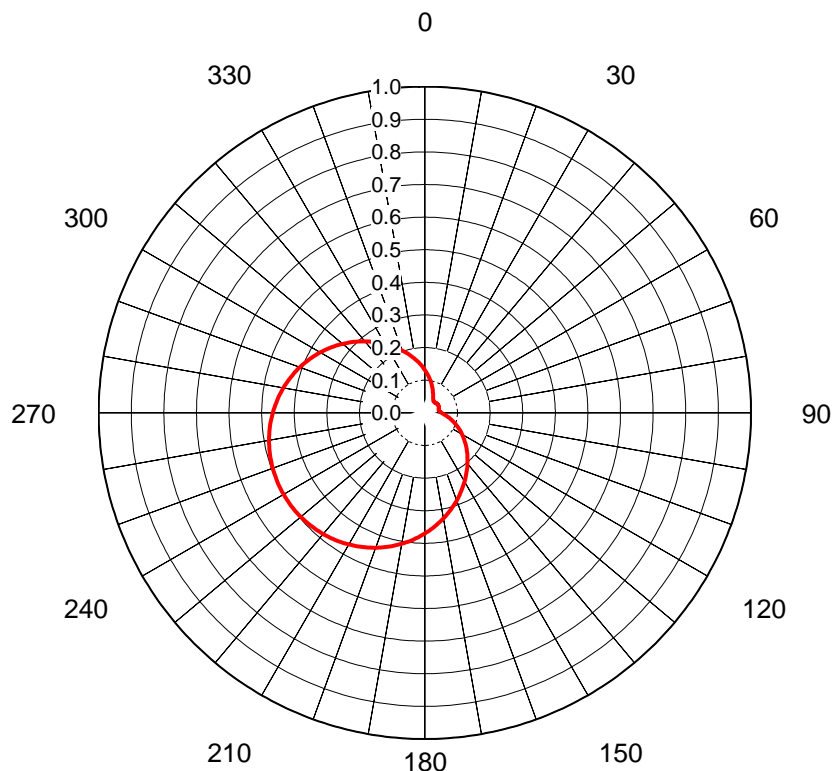
Proposal No. **C-70466-1**
 Date **14-Mar-17**
 Call Letters **WNTZ**
 Channel **15**
 Frequency **479 MHz**
 Antenna Type **TFU-20GTH/VP-R S190**
 Gain **2 (3.01dB)**
 Calculated

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.460	36	0.320	72	0.390	108	0.330	144	0.690	180	0.840	216	0.960	252	0.990	288	0.880
1	0.450	37	0.330	73	0.380	109	0.340	145	0.690	181	0.840	217	0.970	253	0.990	289	0.880
2	0.440	38	0.330	74	0.380	110	0.350	146	0.700	182	0.840	218	0.970	254	0.990	290	0.870
3	0.430	39	0.340	75	0.370	111	0.360	147	0.710	183	0.850	219	0.970	255	0.980	291	0.870
4	0.420	40	0.340	76	0.370	112	0.370	148	0.710	184	0.850	220	0.980	256	0.980	292	0.860
5	0.400	41	0.350	77	0.360	113	0.380	149	0.720	185	0.850	221	0.980	257	0.980	293	0.860
6	0.390	42	0.350	78	0.350	114	0.390	150	0.730	186	0.860	222	0.980	258	0.980	294	0.860
7	0.380	43	0.360	79	0.350	115	0.400	151	0.730	187	0.860	223	0.980	259	0.980	295	0.850
8	0.370	44	0.370	80	0.340	116	0.420	152	0.730	188	0.860	224	0.980	260	0.980	296	0.850
9	0.360	45	0.370	81	0.340	117	0.430	153	0.740	189	0.870	225	0.980	261	0.970	297	0.850
10	0.350	46	0.380	82	0.330	118	0.440	154	0.740	190	0.870	226	0.990	262	0.970	298	0.840
11	0.340	47	0.380	83	0.330	119	0.450	155	0.750	191	0.880	227	0.990	263	0.970	299	0.840
12	0.330	48	0.390	84	0.320	120	0.460	156	0.750	192	0.880	228	0.990	264	0.960	300	0.840
13	0.330	49	0.390	85	0.310	121	0.470	157	0.760	193	0.880	229	0.990	265	0.960	301	0.830
14	0.320	50	0.400	86	0.310	122	0.480	158	0.760	194	0.890	230	0.990	266	0.960	302	0.830
15	0.310	51	0.400	87	0.300	123	0.490	159	0.770	195	0.890	231	0.990	267	0.950	303	0.830
16	0.300	52	0.400	88	0.300	124	0.500	160	0.770	196	0.890	232	0.990	268	0.950	304	0.820
17	0.300	53	0.400	89	0.290	125	0.520	161	0.770	197	0.900	233	1.000	269	0.950	305	0.820
18	0.290	54	0.410	90	0.280	126	0.530	162	0.780	198	0.900	234	1.000	270	0.950	306	0.820
19	0.280	55	0.410	91	0.280	127	0.540	163	0.780	199	0.910	235	1.000	271	0.940	307	0.810
20	0.280	56	0.410	92	0.280	128	0.550	164	0.780	200	0.910	236	1.000	272	0.940	308	0.810
21	0.280	57	0.410	93	0.280	129	0.560	165	0.790	201	0.910	237	1.000	273	0.930	309	0.810
22	0.280	58	0.420	94	0.280	130	0.570	166	0.790	202	0.920	238	1.000	274	0.930	310	0.800
23	0.280	59	0.420	95	0.280	131	0.580	167	0.790	203	0.920	239	1.000	275	0.930	311	0.800
24	0.280	60	0.420	96	0.280	132	0.590	168	0.800	204	0.920	240	1.000	276	0.920	312	0.800
25	0.280	61	0.420	97	0.280	133	0.600	169	0.800	205	0.930	241	1.000	277	0.920	313	0.790
26	0.280	62	0.420	98	0.280	134	0.610	170	0.800	206	0.930	242	1.000	278	0.920	314	0.790
27	0.280	63	0.410	99	0.280	135	0.620	171	0.810	207	0.930	243	1.000	279	0.910	315	0.790
28	0.280	64	0.410	100	0.280	136	0.620	172	0.810	208	0.940	244	1.000	280	0.910	316	0.780
29	0.280	65	0.410	101	0.280	137	0.630	173	0.810	209	0.940	245	1.000	281	0.910	317	0.780
30	0.280	66	0.410	102	0.290	138	0.640	174	0.820	210	0.950	246	1.000	282	0.900	318	0.780
31	0.290	67	0.400	103	0.300	139	0.650	175	0.820	211	0.950	247	1.000	283	0.900	319	0.770
32	0.300	68	0.400	104	0.300	140	0.660	176	0.820	212	0.950	248	0.990	284	0.890	320	0.770
33	0.300	69	0.400	105	0.310	141	0.670	177	0.830	213	0.950	249	0.990	285	0.890	321	0.770
34	0.310	70	0.400	106	0.320	142	0.670	178	0.830	214	0.960	250	0.990	286	0.890	322	0.760
35	0.310	71	0.390	107	0.330	143	0.680	179	0.830	215	0.960	251	0.990	287	0.880	323	0.760

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AZIMUTH PATTERN Vertical Polarization

Proposal No. **C-70466-1**
 Date **14-Mar-17**
 Call Letters **WNTZ**
 Channel **15**
 Frequency **479 MHz**
 Antenna Type **TFU-20GTH/VP-R S190**
 Gain **2.68 (4.28dB)**
 Calculated



Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.132	36	0.045	72	0.045	108	0.094	144	0.219	180	0.370	216	0.478	252	0.495	288	0.415	324	0.269
1	0.129	37	0.045	73	0.045	109	0.097	145	0.223	181	0.374	217	0.480	253	0.494	289	0.411	325	0.265
2	0.125	38	0.044	74	0.044	110	0.100	146	0.227	182	0.378	218	0.482	254	0.493	290	0.408	326	0.260
3	0.122	39	0.044	75	0.044	111	0.103	147	0.231	183	0.382	219	0.483	255	0.491	291	0.404	327	0.256
4	0.119	40	0.044	76	0.044	112	0.106	148	0.235	184	0.386	220	0.485	256	0.490	292	0.401	328	0.252
5	0.116	41	0.044	77	0.044	113	0.109	149	0.239	185	0.390	221	0.486	257	0.489	293	0.397	329	0.248
6	0.112	42	0.044	78	0.044	114	0.112	150	0.244	186	0.393	222	0.488	258	0.488	294	0.393	330	0.244
7	0.109	43	0.044	79	0.044	115	0.116	151	0.248	187	0.397	223	0.489	259	0.486	295	0.390	331	0.239
8	0.106	44	0.044	80	0.044	116	0.119	152	0.252	188	0.401	224	0.490	260	0.485	296	0.386	332	0.235
9	0.103	45	0.044	81	0.044	117	0.122	153	0.256	189	0.404	225	0.491	261	0.483	297	0.382	333	0.231
10	0.100	46	0.044	82	0.044	118	0.125	154	0.260	190	0.408	226	0.493	262	0.482	298	0.378	334	0.227
11	0.097	47	0.045	83	0.045	119	0.129	155	0.265	191	0.411	227	0.494	263	0.480	299	0.374	335	0.223
12	0.094	48	0.045	84	0.045	120	0.132	156	0.269	192	0.415	228	0.495	264	0.478	300	0.370	336	0.219
13	0.091	49	0.045	85	0.046	121	0.135	157	0.273	193	0.418	229	0.495	265	0.476	301	0.366	337	0.215
14	0.088	50	0.046	86	0.047	122	0.139	158	0.277	194	0.421	230	0.496	266	0.474	302	0.362	338	0.211
15	0.085	51	0.046	87	0.048	123	0.142	159	0.282	195	0.425	231	0.497	267	0.472	303	0.358	339	0.207
16	0.082	52	0.046	88	0.049	124	0.145	160	0.286	196	0.428	232	0.498	268	0.470	304	0.354	340	0.204
17	0.080	53	0.047	89	0.050	125	0.149	161	0.290	197	0.431	233	0.498	269	0.468	305	0.350	341	0.200
18	0.077	54	0.047	90	0.051	126	0.152	162	0.295	198	0.434	234	0.499	270	0.466	306	0.346	342	0.196
19	0.074	55	0.047	91	0.053	127	0.156	163	0.299	199	0.437	235	0.499	271	0.464	307	0.341	343	0.192
20	0.072	56	0.047	92	0.055	128	0.159	164	0.303	200	0.440	236	0.499	272	0.461	308	0.337	344	0.188
21	0.069	57	0.047	93	0.056	129	0.163	165	0.307	201	0.443	237	0.500	273	0.459	309	0.333	345	0.185
22	0.067	58	0.047	94	0.058	130	0.166	166	0.312	202	0.446	238	0.500	274	0.457	310	0.329	346	0.181
23	0.065	59	0.047	95	0.060	131	0.170	167	0.316	203	0.449	239	0.500	275	0.454	311	0.325	347	0.177
24	0.062	60	0.048	96	0.062	132	0.174	168	0.320	204	0.451	240	0.500	276	0.451	312	0.320	348	0.174
25	0.060	61	0.047	97	0.065	133	0.177	169	0.325	205	0.454	241	0.500	277	0.449	313	0.316	349	0.170
26	0.058	62	0.047	98	0.067	134	0.181	170	0.329	206	0.457	242	0.500	278	0.446	314	0.312	350	0.166
27	0.056	63	0.047	99	0.069	135	0.185	171	0.333	207	0.459	243	0.500	279	0.443	315	0.307	351	0.163
28	0.055	64	0.047	100	0.072	136	0.188	172	0.337	208	0.461	244	0.499	280	0.440	316	0.303	352	0.159
29	0.053	65	0.047	101	0.074	137	0.192	173	0.341	209	0.464	245	0.499	281	0.437	317	0.299	353	0.156
30	0.051	66	0.047	102	0.077	138	0.196	174	0.346	210	0.466	246	0.499	282	0.434	318	0.295	354	0.152
31	0.050	67	0.047	103	0.080	139	0.200	175	0.350	211	0.468	247	0.498	283	0.431	319	0.290	355	0.149
32	0.049	68	0.046	104	0.082	140	0.204	176	0.354	212	0.470	248	0.498	284	0.428	320	0.286	356	0.145
33	0.048	69	0.046	105	0.085	141	0.207	177	0.358	213	0.472	249	0.497	285	0.425	321	0.282	357	0.142
34	0.047	70	0.046	106	0.088	142	0.211	178	0.362	214	0.474	250	0.496	286	0.421	322	0.277	358	0.139
35	0.046	71	0.045	107	0.091	143	0.215	179	0.366	215	0.476	251	0.495	287	0.418	323	0.273	359	0.135

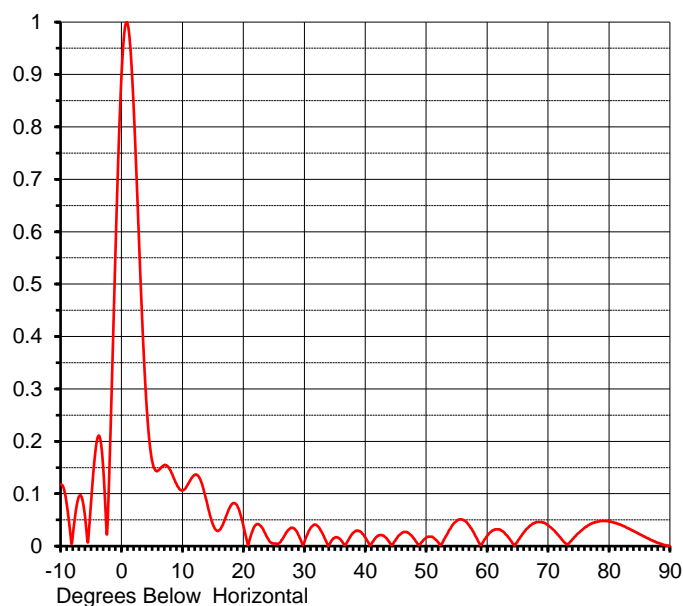
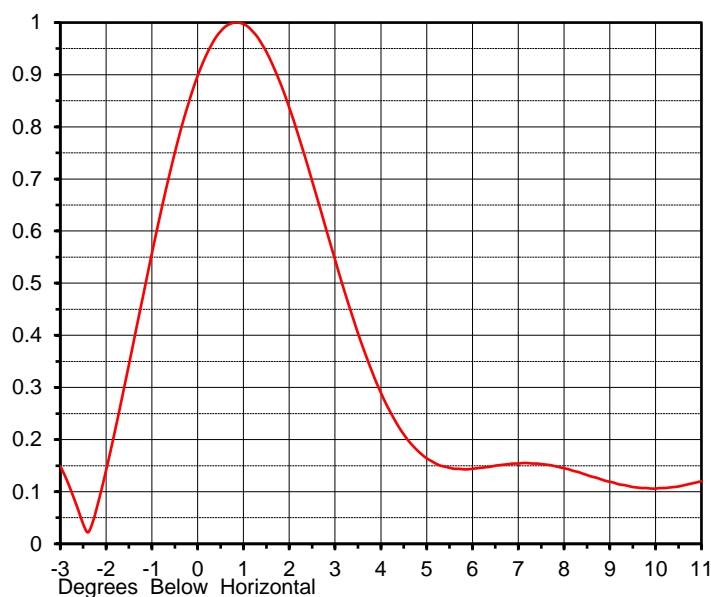
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ELEVATION PATTERN

Proposal No. **C-70466-1**
 Date **14-Mar-17**
 Call Letters **WNTZ**
 Channel **15**
 Frequency **479 MHz**
 Antenna Type **TFU-20GTH/VP-R S190**

RMS Directivity at Main Lobe **18.0 (12.55 dB)**
 RMS Directivity at Horizontal **14.5 (11.61 dB)**
Calculated

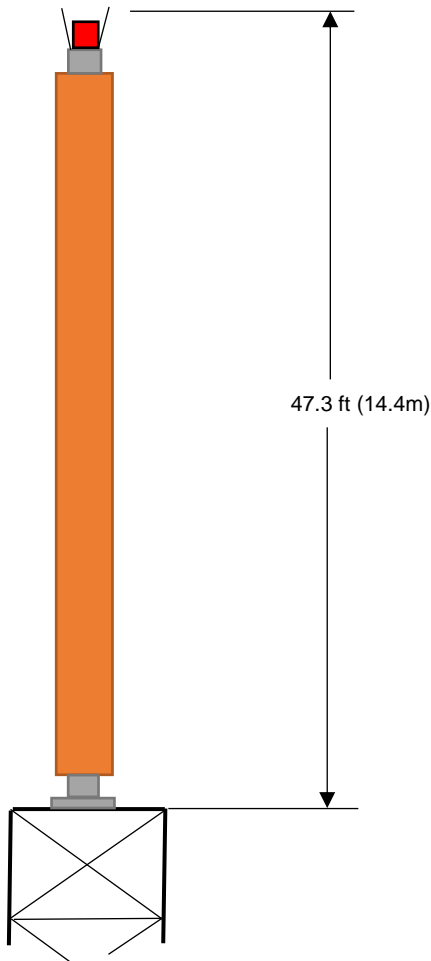
Beam Tilt **0.75 deg**
 Pattern Number **20G180075**



Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.118	10.0	0.107	30.0	0.011	50.0	0.017	70.0	0.039
-9.0	0.073	11.0	0.122	31.0	0.036	51.0	0.017	71.0	0.029
-8.0	0.030	12.0	0.136	32.0	0.039	52.0	0.005	72.0	0.015
-7.0	0.096	13.0	0.122	33.0	0.021	53.0	0.016	73.0	0.003
-6.0	0.047	14.0	0.079	34.0	0.003	54.0	0.036	74.0	0.014
-5.0	0.098	15.0	0.039	35.0	0.017	55.0	0.049	75.0	0.026
-4.0	0.208	16.0	0.031	36.0	0.010	56.0	0.050	76.0	0.036
-3.0	0.131	17.0	0.055	37.0	0.009	57.0	0.039	77.0	0.043
-2.0	0.179	18.0	0.080	38.0	0.026	58.0	0.019	78.0	0.047
-1.0	0.598	19.0	0.074	39.0	0.028	59.0	0.003	79.0	0.048
0.0	0.920	20.0	0.034	40.0	0.015	60.0	0.021	80.0	0.047
1.0	0.992	21.0	0.015	41.0	0.006	61.0	0.031	81.0	0.044
2.0	0.811	22.0	0.041	42.0	0.020	62.0	0.031	82.0	0.040
3.0	0.515	23.0	0.035	43.0	0.019	63.0	0.022	83.0	0.034
4.0	0.271	24.0	0.013	44.0	0.005	64.0	0.007	84.0	0.028
5.0	0.159	25.0	0.005	45.0	0.014	65.0	0.011	85.0	0.022
6.0	0.145	26.0	0.008	46.0	0.026	66.0	0.027	86.0	0.016
7.0	0.155	27.0	0.027	47.0	0.025	67.0	0.039	87.0	0.011
8.0	0.143	28.0	0.035	48.0	0.013	68.0	0.046	88.0	0.006
9.0	0.117	29.0	0.020	49.0	0.005	69.0	0.045	89.0	0.002
								90.0	0.000

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MECHANICAL SPECIFICATIONS



Proposal No. **C-70466-1**
 Date **14-Mar-17**
 Call Letters **WNTZ**
 Channel **15**
 Frequency **479 MHz**
 Antenna Type **TFU-20GTH/VP-R S190**

Preliminary Specifications

Top Mounted

Without ice TIA/EIA-222-F

Basic Wind Speed 80 m/h (128.7 km/h)

Mechanical Specifications

Height with Lightning Protector	H4	47.3 ft (14.4m)
Height less Lightning Protector	H2	43.3 ft (13.2m)
Height of Center of Radiation	H3	21.65 ft (6.6m)
Force Coeff. x Projected Area	CaAc	38 ft² (3.5m²)
Moment Arm	D1	24 ft (7.3m)

Weight W 6600 lb (3t)

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

Prepared by: KLP Date: 14-Mar-17 ME: *SPJC* EE: 44
 Rev. No.1 by: KLP Date: 13-Jun-17

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Summary

Proposal No.	C-70466-1
Date	14-Mar-17
Call Letters	WNTZ
Channel	15
Frequency	479 MHz
Antenna Type	TFU-20GTH/VP-R S190

Antenna

	Hpol		Vpol	
ERP:	492 kW	(26.92 dBk)	123 kW	(20.90 dBk)
Peak Gain*	30.36	(14.82 dB)	7.59	(8.80 dB)

Antenna Input Power	16.2 kW	(12.10 dBk)
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Transmission Line

Type:	Rigid	Attenuation:	(1.17 dB)
Size:	6-1/8"	Efficiency:	76.3%
Impedance:	75 Ohm		
Length:	1110 ft	338.3 m	

Transmitter Output

21.2 kW	(13.27 dBk)
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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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