Dielectric®

Antenna Model: **TFU-27ETT/VP-R C200**

Proposal Number:	C-70491-4
Date:	21-Jan-19
Customer:	Nexstar
Location:	Fort Wayne, IN

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:	35 kW	(15.44 dBk)	Maximum Average Power

Mechanical Specifications

Mounting:	Top Mounted			
Environmental Protection:	Full Radome			
Height:	50.9 ft (15.5m)	less Lightning Protector	58.1 ft (17.7m)	with Lightning Protector
Weight:	7500 lb (3.4t)	Excludes Mounts		
Effective Projected Area:	64.3 ft² (6m²)	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
WANE	32	581 MHz	1000 kW (30.00 dBk)	250 kW (23.98 dBk)	33.8 kW (15.28 dBk)	39.59 (15.98dB)	9.90 (9.95dB)	26.55 (14.24dB)	6.64 (8.22dB)

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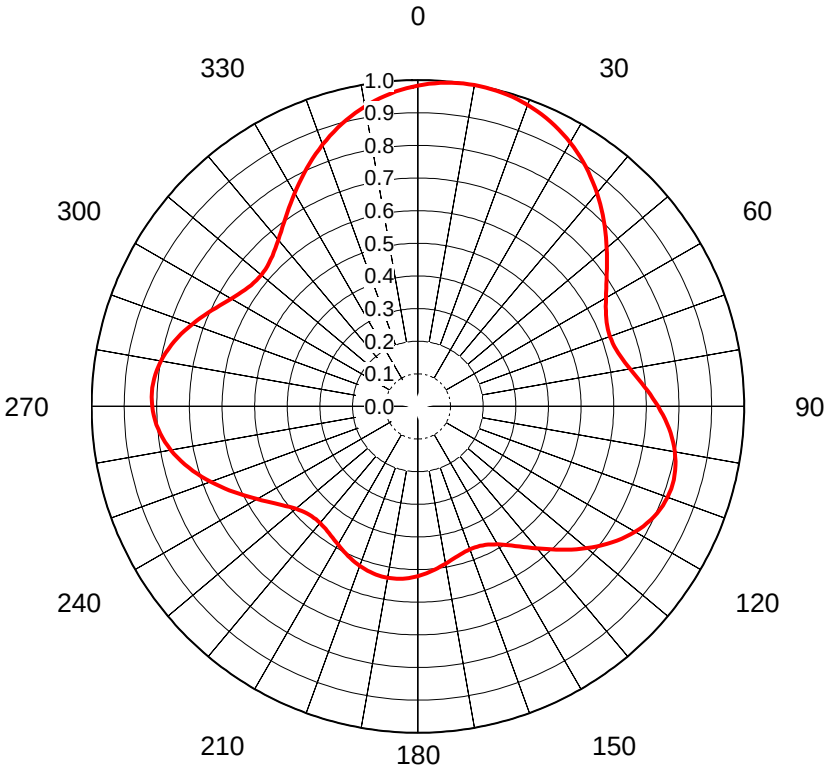

AZIMUTH PATTERN
Horizontal Polarization

Proposal No.	**C-70491-4**
Date	**21-Jan-19**
Call Letters	**WANE**
Channel	**32**
Frequency	**581 MHz**
Antenna Type	**TFU-27ETT/VP-R C200**
Gain	**1.95 (2.9dB)**
	Calculated

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.983	36	0.889	72	0.628	108	0.816	144	0.530	180	0.520	216	0.472	252	0.697	288	0.751	324	0.698
1	0.986	37	0.880	73	0.630	109	0.815	145	0.522	181	0.522	217	0.470	253	0.707	289	0.744	325	0.707
2	0.989	38	0.872	74	0.632	110	0.814	146	0.514	182	0.525	218	0.468	254	0.717	290	0.736	326	0.716
3	0.992	39	0.863	75	0.636	111	0.812	147	0.507	183	0.527	219	0.467	255	0.726	291	0.728	327	0.725
4	0.994	40	0.854	76	0.639	112	0.810	148	0.500	184	0.528	220	0.466	256	0.736	292	0.720	328	0.735
5	0.996	41	0.844	77	0.644	113	0.807	149	0.494	185	0.530	221	0.466	257	0.744	293	0.713	329	0.745
6	0.997	42	0.835	78	0.649	114	0.803	150	0.488	186	0.531	222	0.466	258	0.753	294	0.705	330	0.755
7	0.998	43	0.825	79	0.655	115	0.799	151	0.483	187	0.532	223	0.467	259	0.761	295	0.697	331	0.765
8	0.999	44	0.815	80	0.661	116	0.794	152	0.479	188	0.533	224	0.468	260	0.769	296	0.689	332	0.775
9	1.000	45	0.805	81	0.667	117	0.788	153	0.475	189	0.533	225	0.470	261	0.776	297	0.682	333	0.785
10	1.000	46	0.795	82	0.674	118	0.782	154	0.472	190	0.533	226	0.472	262	0.782	298	0.674	334	0.795
11	1.000	47	0.785	83	0.682	119	0.776	155	0.470	191	0.533	227	0.475	263	0.788	299	0.667	335	0.805
12	0.999	48	0.775	84	0.689	120	0.769	156	0.468	192	0.533	228	0.479	264	0.794	300	0.661	336	0.815
13	0.998	49	0.765	85	0.697	121	0.761	157	0.467	193	0.532	229	0.483	265	0.799	301	0.655	337	0.825
14	0.997	50	0.755	86	0.705	122	0.753	158	0.466	194	0.531	230	0.488	266	0.803	302	0.649	338	0.835
15	0.996	51	0.745	87	0.713	123	0.744	159	0.466	195	0.530	231	0.494	267	0.807	303	0.644	339	0.844
16	0.994	52	0.735	88	0.720	124	0.736	160	0.466	196	0.528	232	0.500	268	0.810	304	0.639	340	0.854
17	0.992	53	0.725	89	0.728	125	0.726	161	0.467	197	0.527	233	0.507	269	0.812	305	0.636	341	0.863
18	0.989	54	0.716	90	0.736	126	0.717	162	0.468	198	0.525	234	0.514	270	0.814	306	0.632	342	0.872
19	0.986	55	0.707	91	0.744	127	0.707	163	0.470	199	0.522	235	0.522	271	0.815	307	0.630	343	0.880
20	0.983	56	0.698	92	0.751	128	0.697	164	0.472	200	0.520	236	0.530	272	0.816	308	0.628	344	0.889
21	0.980	57	0.689	93	0.759	129	0.686	165	0.474	201	0.517	237	0.539	273	0.816	309	0.627	345	0.897
22	0.976	58	0.681	94	0.766	130	0.676	166	0.477	202	0.515	238	0.548	274	0.816	310	0.627	346	0.905
23	0.972	59	0.673	95	0.772	131	0.665	167	0.480	203	0.512	239	0.558	275	0.814	311	0.628	347	0.913
24	0.967	60	0.665	96	0.779	132	0.654	168	0.483	204	0.509	240	0.568	276	0.813	312	0.628	348	0.920
25	0.962	61	0.659	97	0.785	133	0.643	169	0.486	205	0.506	241	0.578	277	0.810	313	0.631	349	0.927
26	0.958	62	0.652	98	0.790	134	0.632	170	0.489	206	0.502	242	0.589	278	0.807	314	0.633	350	0.934
27	0.952	63	0.647	99	0.795	135	0.621	171	0.492	207	0.499	243	0.599	279	0.804	315	0.637	351	0.940
28	0.946	64	0.641	100	0.800	136	0.610	172	0.496	208	0.496	244	0.610	280	0.800	316	0.641	352	0.946
29	0.940	65	0.637	101	0.804	137	0.599	173	0.499	209	0.492	245	0.621	281	0.795	317	0.647	353	0.952
30	0.934	66	0.633	102	0.807	138	0.589	174	0.502	210	0.489	246	0.632	282	0.790	318	0.652	354	0.958
31	0.927	67	0.631	103	0.810	139	0.578	175	0.506	211	0.486	247	0.643	283	0.785	319	0.659	355	0.962
32	0.920	68	0.628	104	0.813	140	0.568	176	0.509	212	0.483	248	0.654	284	0.779	320	0.665	356	0.967
33	0.913	69	0.628	105	0.814	141	0.558	177	0.512	213	0.480	249	0.665	285	0.772	321	0.673	357	0.972
34	0.905	70	0.627	106	0.816	142	0.548	178	0.515	214	0.477	250	0.676	286	0.766	322	0.681	358	0.976
35	0.897	71	0.627	107	0.816	143	0.539	179	0.517	215	0.474	251	0.686	287	0.759	323	0.689	359	0.980

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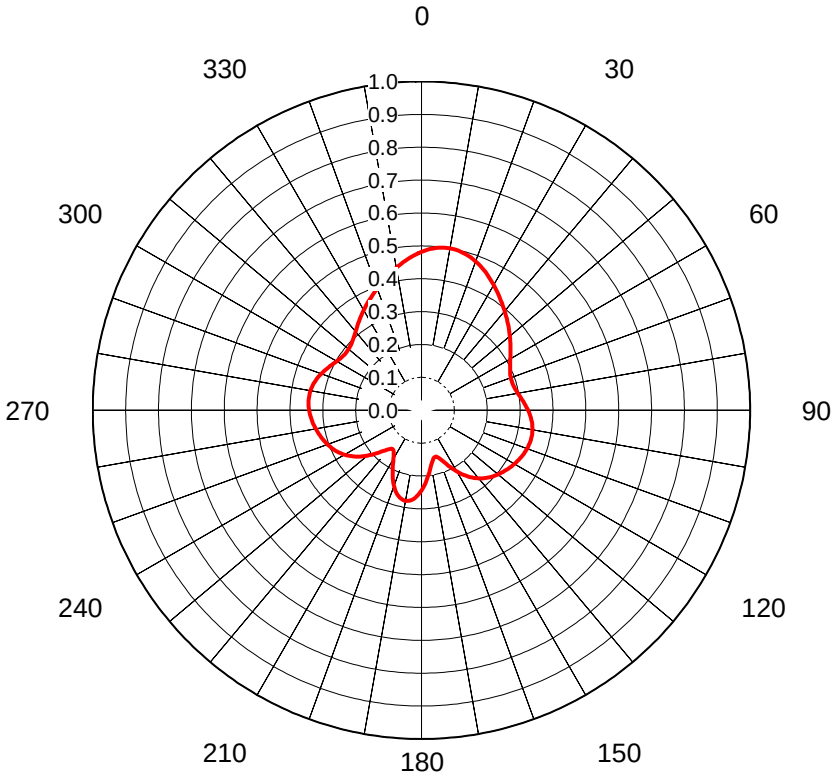


AZIMUTH PATTERN
Vertical Polarization

Proposal No.	**C-70491-4**
Date	**21-Jan-19**
Call Letters	**WANE**
Channel	**32**
Frequency	**581 MHz**
Antenna Type	**TFU-27ETT/VP-R C200**
Gain	**2.36 (3.73dB)**
	Calculated

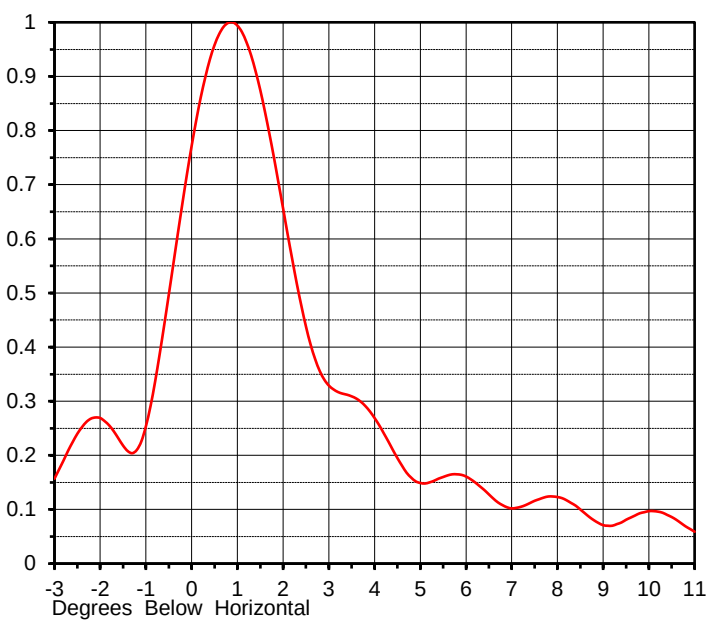
Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.482	36	0.412	72	0.288	108	0.343	144	0.251	180	0.244	216	0.148	252	0.309	288	0.329	324	0.327
1	0.485	37	0.407	73	0.289	109	0.343	145	0.246	181	0.251	217	0.148	253	0.311	289	0.327	325	0.331
2	0.488	38	0.403	74	0.289	110	0.342	146	0.240	182	0.256	218	0.149	254	0.314	290	0.324	326	0.335
3	0.491	39	0.398	75	0.290	111	0.341	147	0.234	183	0.262	219	0.151	255	0.316	291	0.322	327	0.339
4	0.493	40	0.394	76	0.291	112	0.340	148	0.228	184	0.266	220	0.154	256	0.318	292	0.319	328	0.343
5	0.495	41	0.389	77	0.292	113	0.338	149	0.221	185	0.270	221	0.159	257	0.320	293	0.316	329	0.347
6	0.497	42	0.385	78	0.294	114	0.337	150	0.215	186	0.274	222	0.165	258	0.322	294	0.314	330	0.351
7	0.498	43	0.381	79	0.296	115	0.335	151	0.208	187	0.276	223	0.169	259	0.324	295	0.311	331	0.355
8	0.499	44	0.376	80	0.298	116	0.334	152	0.201	188	0.278	224	0.175	260	0.326	296	0.308	332	0.360
9	0.500	45	0.372	81	0.300	117	0.332	153	0.195	189	0.279	225	0.181	261	0.328	297	0.305	333	0.364
10	0.500	46	0.368	82	0.303	118	0.330	154	0.188	190	0.280	226	0.188	262	0.330	298	0.303	334	0.368
11	0.500	47	0.364	83	0.305	119	0.328	155	0.181	191	0.279	227	0.195	263	0.332	299	0.300	335	0.372
12	0.499	48	0.360	84	0.308	120	0.326	156	0.175	192	0.278	228	0.201	264	0.334	300	0.298	336	0.376
13	0.498	49	0.355	85	0.311	121	0.324	157	0.169	193	0.276	229	0.208	265	0.335	301	0.296	337	0.381
14	0.497	50	0.351	86	0.314	122	0.322	158	0.164	194	0.274	230	0.215	266	0.337	302	0.294	338	0.385
15	0.495	51	0.347	87	0.316	123	0.320	159	0.159	195	0.270	231	0.221	267	0.338	303	0.292	339	0.389
16	0.493	52	0.343	88	0.319	124	0.318	160	0.154	196	0.266	232	0.228	268	0.340	304	0.291	340	0.394
17	0.491	53	0.339	89	0.322	125	0.316	161	0.151	197	0.262	233	0.234	269	0.341	305	0.290	341	0.398
18	0.488	54	0.335	90	0.324	126	0.314	162	0.149	198	0.256	234	0.240	270	0.342	306	0.289	342	0.403
19	0.485	55	0.331	91	0.327	127	0.311	163	0.148	199	0.251	235	0.246	271	0.343	307	0.289	343	0.407
20	0.482	56	0.327	92	0.329	128	0.309	164	0.148	200	0.244	236	0.251	272	0.343	308	0.288	344	0.412
21	0.479	57	0.323	93	0.332	129	0.307	165	0.149	201	0.238	237	0.256	273	0.344	309	0.289	345	0.416
22	0.475	58	0.319	94	0.334	130	0.304	166	0.151	202	0.230	238	0.261	274	0.344	310	0.289	346	0.421
23	0.471	59	0.316	95	0.336	131	0.301	167	0.154	203	0.223	239	0.266	275	0.345	311	0.290	347	0.426
24	0.467	60	0.312	96	0.338	132	0.299	168	0.159	204	0.215	240	0.271	276	0.345	312	0.291	348	0.430
25	0.463	61	0.309	97	0.339	133	0.296	169	0.164	205	0.208	241	0.275	277	0.344	313	0.293	349	0.435
26	0.458	62	0.305	98	0.341	134	0.293	170	0.170	206	0.200	242	0.279	278	0.344	314	0.295	350	0.440
27	0.454	63	0.302	99	0.342	135	0.289	171	0.177	207	0.192	243	0.282	279	0.344	315	0.297	351	0.444
28	0.449	64	0.300	100	0.343	136	0.286	172	0.184	208	0.184	244	0.286	280	0.343	316	0.300	352	0.449
29	0.444	65	0.297	101	0.344	137	0.282	173	0.192	209	0.177	245	0.289	281	0.342	317	0.302	353	0.454
30	0.440	66	0.295	102	0.344	138	0.279	174	0.200	210	0.170	246	0.293	282	0.341	318	0.305	354	0.458
31	0.435	67	0.293	103	0.344	139	0.275	175	0.208	211	0.164	247	0.296	283	0.339	319	0.309	355	0.463
32	0.430	68	0.291	104	0.345	140	0.271	176	0.215	212	0.159	248	0.299	284	0.338	320	0.312	356	0.467
33	0.426	69	0.290	105	0.345	141	0.266	177	0.223	213	0.154	249	0.301	285	0.336	321	0.316	357	0.471
34	0.421	70	0.289	106	0.344	142	0.261	178	0.230	214	0.151	250	0.304	286	0.334	322	0.319	358	0.475
35	0.416	71	0.289	107	0.344	143	0.256	179	0.238	215	0.149	251	0.307	287	0.332	323	0.323	359	0.479

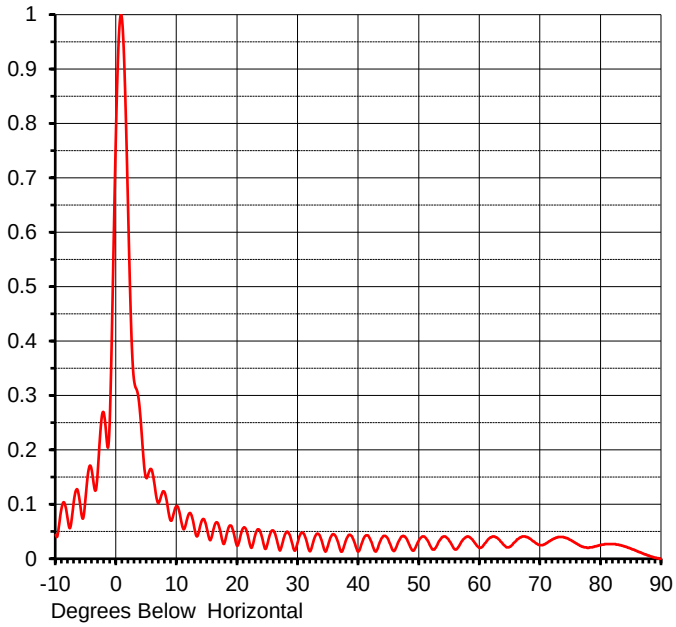
ELEVATION PATTERN

Proposal No.	**C-70491-4**
Date	**21-Jan-19**
Call Letters	**WANE**
Channel	**32**
Frequency	**581 MHz**
Antenna Type	**TFU-27ETT/VP-R C200**

RMS Directivity at Main Lobe	**24.5 (13.89 dB)**	Beam Tilt	**0.75 deg**
RMS Directivity at Horizontal	**14.6 (11.64 dB)**	Pattern Number	**27E245075**

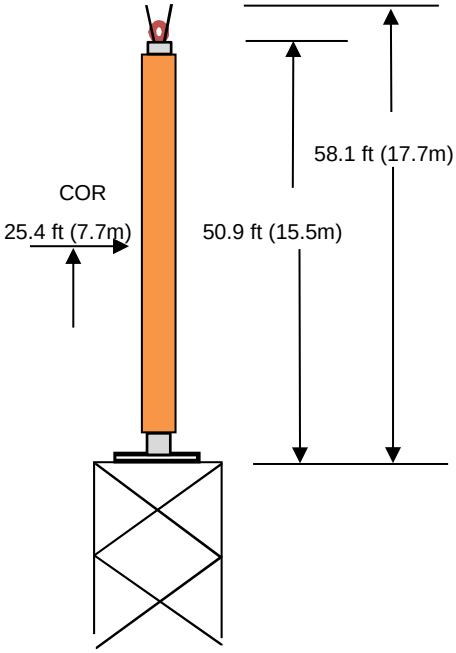
Calculated





Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.044	10.0	0.097	30.0	0.033	50.0	0.035	70.0	0.025
-9.0	0.096	11.0	0.056	31.0	0.045	51.0	0.039	71.0	0.029
-8.0	0.070	12.0	0.083	32.0	0.014	52.0	0.020	72.0	0.036
-7.0	0.108	13.0	0.050	33.0	0.045	53.0	0.026	73.0	0.040
-6.0	0.101	14.0	0.067	34.0	0.029	54.0	0.041	74.0	0.039
-5.0	0.123	15.0	0.052	35.0	0.027	55.0	0.032	75.0	0.034
-4.0	0.158	16.0	0.053	36.0	0.044	56.0	0.017	76.0	0.028
-3.0	0.174	17.0	0.057	37.0	0.015	57.0	0.032	77.0	0.022
-2.0	0.263	18.0	0.035	38.0	0.037	58.0	0.041	78.0	0.020
-1.0	0.291	19.0	0.060	39.0	0.038	59.0	0.032	79.0	0.023
0.0	0.819	20.0	0.024	40.0	0.014	60.0	0.020	80.0	0.025
1.0	0.982	21.0	0.057	41.0	0.041	61.0	0.030	81.0	0.027
2.0	0.608	22.0	0.028	42.0	0.033	62.0	0.040	82.0	0.027
3.0	0.322	23.0	0.047	43.0	0.016	63.0	0.037	83.0	0.025
4.0	0.256	24.0	0.041	44.0	0.041	64.0	0.025	84.0	0.022
5.0	0.148	25.0	0.030	45.0	0.032	65.0	0.022	85.0	0.018
6.0	0.156	26.0	0.050	46.0	0.016	66.0	0.033	86.0	0.014
7.0	0.103	27.0	0.015	47.0	0.040	67.0	0.041	87.0	0.009
8.0	0.121	28.0	0.048	48.0	0.035	68.0	0.039	88.0	0.005
9.0	0.070	29.0	0.029	49.0	0.015	69.0	0.031	89.0	0.002
								90.0	0.000

MECHANICAL SPECIFICATIONS



Proposal No.	**C-70491-4**
Date	**21-Jan-19**
Call Letters	**WANE**
Channel	**32**
Frequency	**581 MHz**
Antenna Type	**TFU-27ETT/VP-R C200**

Preliminary Specifications

Top Mounted

With ice TIA-222-G

Height AGL(z)	800 ft (243.8 m)
Basic Wind Speed	90 m/h (144.8 km/h)
Structure Class	II
Exposure Category	D
Topography Category	1
Design Ice	1 in t_{iz} = 2.80 in
Wind Speed w/Ice	40 m/h (64.4 km/h)

Mechanical Specifications		**without ice**	**with ice**
Height with Lightning Protector	H4	58.1 ft (17.7m)	
Height less Lightning Protector	H2	50.9 ft (15.5m)	
Height of Center of Radiation	H3	25.4 ft (7.7m)	
Effective Projected Area	$(EPA)_S$	64.3 ft² (6m²)	176.7 ft² (16.4m²)
Moment Arm	D1	26.9 ft (8.2m)	28.1 ft (8.6m)
Weight	W	7500 lb (3.4t)	13200 lb (6t)

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

Prepared by:	KLP	**Date:**	21-Jan-19	**ME:**	**EE:**
Rev. No.4 by:	JBC	**Date:**	21-Jan-19		

Summary

Proposal No.	**C-70491-4**
Date	**21-Jan-19**
Call Letters	**WANE**
Channel	**32**
Frequency	**581 MHz**
Antenna Type	**TFU-27ETT/VP-R C200**

Antenna

	Hpol		Vpol	
ERP:	1000 kW	**(30.00 dBk)**	250 kW	**(23.98 dBk)**
Peak Gain*	39.59	(15.98 dB)	9.90	(9.95 dB)

Antenna Input Power

25.3 kW (14.02 dBk)

Transmission Line

Type:	**Rigid**	Attenuation:	**(1.26 dB)**
Size:	**6-1/8"**	Efficiency:	**74.8%**
Impedance:	**75 Ohm**		
Length:	**1070 ft**	**326.1 m**	

Transmitter Output

33.8 kW (15.28 dBk)

Transmitter filter losses not included

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