Dielectric®

Antenna Model: **TFU-24GTH/VP-R 06**

Proposal Number:	C-70493-5
Date:	18-Mar-19
Customer:	Nexstar
Location:	Dayton, OH

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:	62 kW	(17.92 dBk)	Maximum Average Power

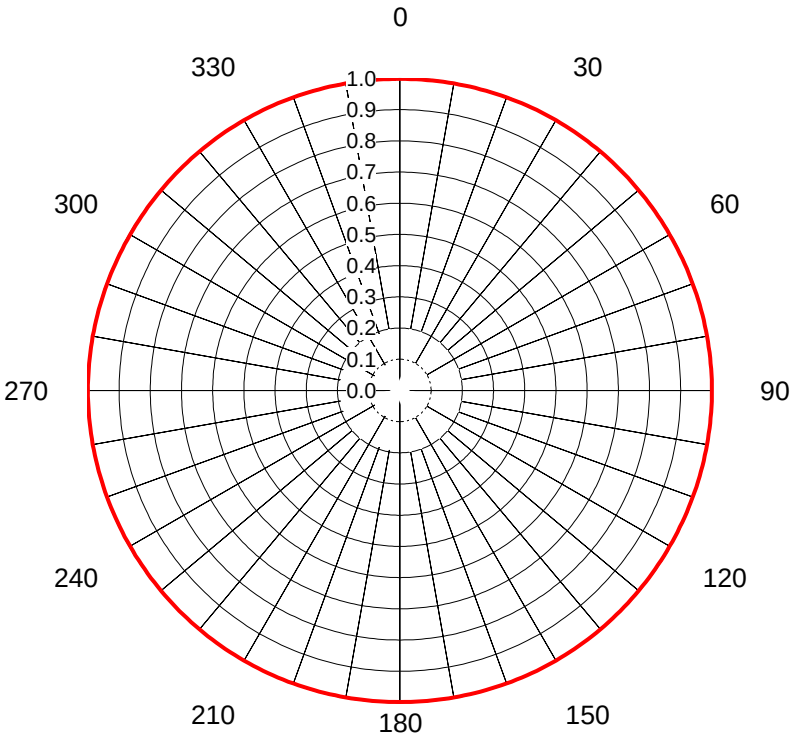
Mechanical Specifications

Mounting:	Top Mounted			
Environmental Protection:	Full Radome			
Height:	43.4 ft (13.2m)	less Lightning Protector	47.3 ft (14.4m)	with Lightning Protector
Weight:	5350 lb (2.4t)			
Effective Projected Area:	54.9 ft² (5.1m²)	TIA-222-G	**Basic Wind Speed:**	90 m/h (144.8 km/h)

Channel Specifications

Call	CH	Freq	Hpol ERP	Vpol ERP	TPO	RMS Main Lobe Hpol Gain	RMS Main Lobe Vpol Gain	RMS at Horizontal Hpol Gain	RMS at Horizontal Vpol Gain
WDTN	31	575 MHz	1000 kW (30.00 dBk)	250 kW (23.98 dBk)	74.1 kW (18.70 dBk)	17.20 (12.36dB)	4.30 (6.33dB)	13.81 (11.40dB)	3.45 (5.38dB)

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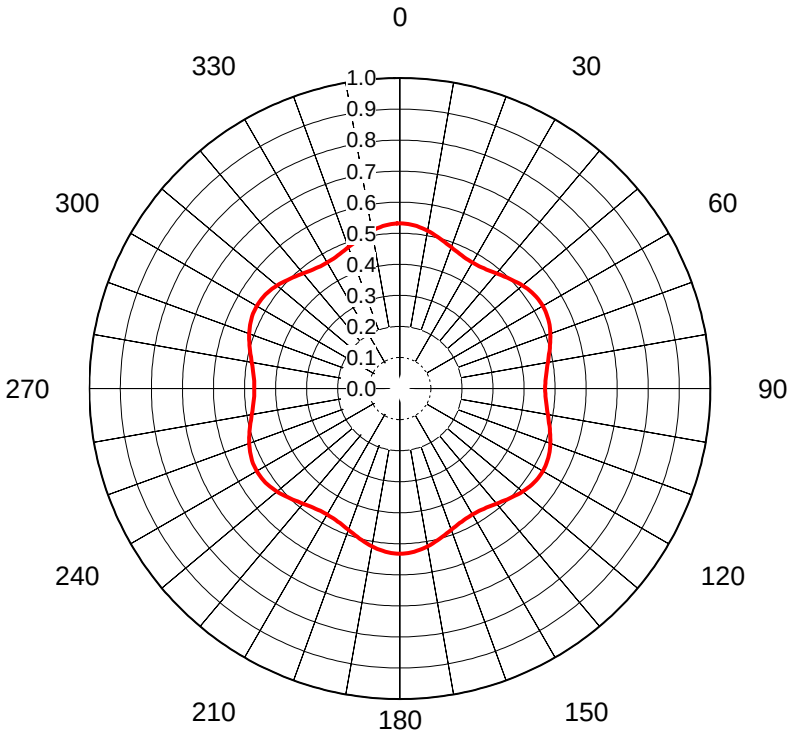
AZIMUTH PATTERN
Horizontal Polarization

Proposal No.	**C-70493-5**
Date	**18-Mar-19**
Call Letters	**WDTN**
Channel	**31**
Frequency	**575 MHz**
Antenna Type	**TFU-24GTH/VP-R 06**
Gain	**1 (0.01dB)**
	Calculated
Circularity	**+/- 1.0 dB**

06H-D31

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.999	36	1.000	72	0.999	108	0.999	144	1.000	180	0.999	216	1.000	252	0.999	288	0.999	324	1.000
1	0.999	37	1.000	73	0.999	109	0.999	145	1.000	181	0.999	217	1.000	253	0.999	289	0.999	325	1.000
2	0.999	38	1.000	74	0.999	110	0.999	146	1.000	182	0.999	218	1.000	254	0.999	290	0.999	326	1.000
3	0.999	39	1.000	75	0.999	111	0.999	147	1.000	183	0.999	219	1.000	255	0.999	291	0.999	327	1.000
4	0.999	40	1.000	76	0.999	112	0.999	148	1.000	184	0.999	220	1.000	256	0.999	292	0.999	328	1.000
5	0.999	41	1.000	77	0.999	113	0.999	149	1.000	185	0.999	221	1.000	257	0.999	293	0.999	329	1.000
6	0.999	42	0.999	78	0.999	114	0.999	150	1.000	186	0.999	222	0.999	258	0.999	294	0.999	330	1.000
7	0.999	43	0.999	79	1.000	115	0.999	151	1.000	187	0.999	223	0.999	259	1.000	295	0.999	331	1.000
8	0.999	44	0.999	80	1.000	116	0.999	152	1.000	188	0.999	224	0.999	260	1.000	296	0.999	332	1.000
9	0.999	45	0.999	81	1.000	117	0.999	153	1.000	189	0.999	225	0.999	261	1.000	297	0.999	333	1.000
10	0.999	46	0.999	82	1.000	118	0.999	154	1.000	190	0.999	226	0.999	262	1.000	298	0.999	334	1.000
11	0.999	47	0.999	83	1.000	119	0.999	155	1.000	191	0.999	227	0.999	263	1.000	299	0.999	335	1.000
12	0.999	48	0.999	84	1.000	120	0.999	156	1.000	192	0.999	228	0.999	264	1.000	300	0.999	336	1.000
13	0.999	49	0.999	85	1.000	121	0.999	157	1.000	193	0.999	229	0.999	265	1.000	301	0.999	337	1.000
14	0.999	50	0.999	86	1.000	122	0.999	158	1.000	194	0.999	230	0.999	266	1.000	302	0.999	338	1.000
15	0.999	51	0.999	87	1.000	123	0.999	159	1.000	195	0.999	231	0.999	267	1.000	303	0.999	339	1.000
16	0.999	52	0.999	88	1.000	124	0.999	160	1.000	196	0.999	232	0.999	268	1.000	304	0.999	340	1.000
17	0.999	53	0.999	89	1.000	125	0.999	161	1.000	197	0.999	233	0.999	269	1.000	305	0.999	341	1.000
18	0.999	54	0.999	90	1.000	126	0.999	162	0.999	198	0.999	234	0.999	270	1.000	306	0.999	342	0.999
19	1.000	55	0.999	91	1.000	127	0.999	163	0.999	199	1.000	235	0.999	271	1.000	307	0.999	343	0.999
20	1.000	56	0.999	92	1.000	128	0.999	164	0.999	200	1.000	236	0.999	272	1.000	308	0.999	344	0.999
21	1.000	57	0.999	93	1.000	129	0.999	165	0.999	201	1.000	237	0.999	273	1.000	309	0.999	345	0.999
22	1.000	58	0.999	94	1.000	130	0.999	166	0.999	202	1.000	238	0.999	274	1.000	310	0.999	346	0.999
23	1.000	59	0.999	95	1.000	131	0.999	167	0.999	203	1.000	239	0.999	275	1.000	311	0.999	347	0.999
24	1.000	60	0.999	96	1.000	132	0.999	168	0.999	204	1.000	240	0.999	276	1.000	312	0.999	348	0.999
25	1.000	61	0.999	97	1.000	133	0.999	169	0.999	205	1.000	241	0.999	277	1.000	313	0.999	349	0.999
26	1.000	62	0.999	98	1.000	134	0.999	170	0.999	206	1.000	242	0.999	278	1.000	314	0.999	350	0.999
27	1.000	63	0.999	99	1.000	135	0.999	171	0.999	207	1.000	243	0.999	279	1.000	315	0.999	351	0.999
28	1.000	64	0.999	100	1.000	136	0.999	172	0.999	208	1.000	244	0.999	280	1.000	316	0.999	352	0.999
29	1.000	65	0.999	101	1.000	137	0.999	173	0.999	209	1.000	245	0.999	281	1.000	317	0.999	353	0.999
30	1.000	66	0.999	102	0.999	138	0.999	174	0.999	210	1.000	246	0.999	282	0.999	318	0.999	354	0.999
31	1.000	67	0.999	103	0.999	139	1.000	175	0.999	211	1.000	247	0.999	283	0.999	319	1.000	355	0.999
32	1.000	68	0.999	104	0.999	140	1.000	176	0.999	212	1.000	248	0.999	284	0.999	320	1.000	356	0.999
33	1.000	69	0.999	105	0.999	141	1.000	177	0.999	213	1.000	249	0.999	285	0.999	321	1.000	357	0.999
34	1.000	70	0.999	106	0.999	142	1.000	178	0.999	214	1.000	250	0.999	286	0.999	322	1.000	358	0.999
35	1.000	71	0.999	107	0.999	143	1.000	179	0.999	215	1.000	251	0.999	287	0.999	323	1.000	359	0.999

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AZIMUTH PATTERN
Vertical Polarization

Proposal No.	**C-70493-5**
Date	**18-Mar-19**
Call Letters	**WDTN**
Channel	**31**
Frequency	**575 MHz**
Antenna Type	**TFU-24GTH/VP-R 06**
Gain	**1.13 (0.53dB)**
	Calculated
Circularity	**+/- 1.0 dB**
	06V-D31

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.532	36	0.474	72	0.510	108	0.510	144	0.474	180	0.532	216	0.474	252	0.510	288	0.510	324	0.474
1	0.532	37	0.476	73	0.507	109	0.513	145	0.473	181	0.532	217	0.476	253	0.507	289	0.513	325	0.473
2	0.531	38	0.479	74	0.503	110	0.516	146	0.471	182	0.531	218	0.479	254	0.503	290	0.516	326	0.471
3	0.530	39	0.481	75	0.500	111	0.519	147	0.470	183	0.530	219	0.481	255	0.500	291	0.519	327	0.470
4	0.529	40	0.484	76	0.497	112	0.521	148	0.469	184	0.529	220	0.484	256	0.497	292	0.521	328	0.469
5	0.528	41	0.487	77	0.493	113	0.524	149	0.468	185	0.528	221	0.487	257	0.493	293	0.524	329	0.468
6	0.526	42	0.490	78	0.490	114	0.526	150	0.468	186	0.526	222	0.490	258	0.490	294	0.526	330	0.468
7	0.524	43	0.493	79	0.487	115	0.528	151	0.468	187	0.524	223	0.493	259	0.487	295	0.528	331	0.468
8	0.521	44	0.497	80	0.484	116	0.529	152	0.469	188	0.521	224	0.497	260	0.484	296	0.529	332	0.469
9	0.519	45	0.500	81	0.481	117	0.530	153	0.470	189	0.519	225	0.500	261	0.481	297	0.530	333	0.470
10	0.516	46	0.503	82	0.479	118	0.531	154	0.471	190	0.516	226	0.503	262	0.479	298	0.531	334	0.471
11	0.513	47	0.507	83	0.476	119	0.532	155	0.473	191	0.513	227	0.507	263	0.476	299	0.532	335	0.473
12	0.510	48	0.510	84	0.474	120	0.532	156	0.474	192	0.510	228	0.510	264	0.474	300	0.532	336	0.474
13	0.507	49	0.513	85	0.473	121	0.532	157	0.476	193	0.507	229	0.513	265	0.473	301	0.532	337	0.476
14	0.503	50	0.516	86	0.471	122	0.531	158	0.479	194	0.503	230	0.516	266	0.471	302	0.531	338	0.479
15	0.500	51	0.519	87	0.470	123	0.530	159	0.481	195	0.500	231	0.519	267	0.470	303	0.530	339	0.481
16	0.497	52	0.521	88	0.469	124	0.529	160	0.484	196	0.497	232	0.521	268	0.469	304	0.529	340	0.484
17	0.493	53	0.524	89	0.468	125	0.528	161	0.487	197	0.493	233	0.524	269	0.468	305	0.528	341	0.487
18	0.490	54	0.526	90	0.468	126	0.526	162	0.490	198	0.490	234	0.526	270	0.468	306	0.526	342	0.490
19	0.487	55	0.528	91	0.468	127	0.524	163	0.493	199	0.487	235	0.528	271	0.468	307	0.524	343	0.493
20	0.484	56	0.529	92	0.469	128	0.521	164	0.497	200	0.484	236	0.529	272	0.469	308	0.521	344	0.497
21	0.481	57	0.530	93	0.470	129	0.519	165	0.500	201	0.481	237	0.530	273	0.470	309	0.519	345	0.500
22	0.479	58	0.531	94	0.471	130	0.516	166	0.503	202	0.479	238	0.531	274	0.471	310	0.516	346	0.503
23	0.476	59	0.532	95	0.473	131	0.513	167	0.507	203	0.476	239	0.532	275	0.473	311	0.513	347	0.507
24	0.474	60	0.532	96	0.474	132	0.510	168	0.510	204	0.474	240	0.532	276	0.474	312	0.510	348	0.510
25	0.473	61	0.532	97	0.476	133	0.507	169	0.513	205	0.473	241	0.532	277	0.476	313	0.507	349	0.513
26	0.471	62	0.531	98	0.479	134	0.503	170	0.516	206	0.471	242	0.531	278	0.479	314	0.503	350	0.516
27	0.470	63	0.530	99	0.481	135	0.500	171	0.519	207	0.470	243	0.530	279	0.481	315	0.500	351	0.519
28	0.469	64	0.529	100	0.484	136	0.497	172	0.521	208	0.469	244	0.529	280	0.484	316	0.497	352	0.521
29	0.468	65	0.528	101	0.487	137	0.493	173	0.524	209	0.468	245	0.528	281	0.487	317	0.493	353	0.524
30	0.468	66	0.526	102	0.490	138	0.490	174	0.526	210	0.468	246	0.526	282	0.490	318	0.490	354	0.526
31	0.468	67	0.524	103	0.493	139	0.487	175	0.528	211	0.468	247	0.524	283	0.493	319	0.487	355	0.528
32	0.469	68	0.521	104	0.497	140	0.484	176	0.529	212	0.469	248	0.521	284	0.497	320	0.484	356	0.529
33	0.470	69	0.519	105	0.500	141	0.481	177	0.530	213	0.470	249	0.519	285	0.500	321	0.481	357	0.530
34	0.471	70	0.516	106	0.503	142	0.479	178	0.531	214	0.471	250	0.516	286	0.503	322	0.479	358	0.531
35	0.473	71	0.513	107	0.507	143	0.476	179	0.532	215	0.473	251	0.513	287	0.507	323	0.476	359	0.532

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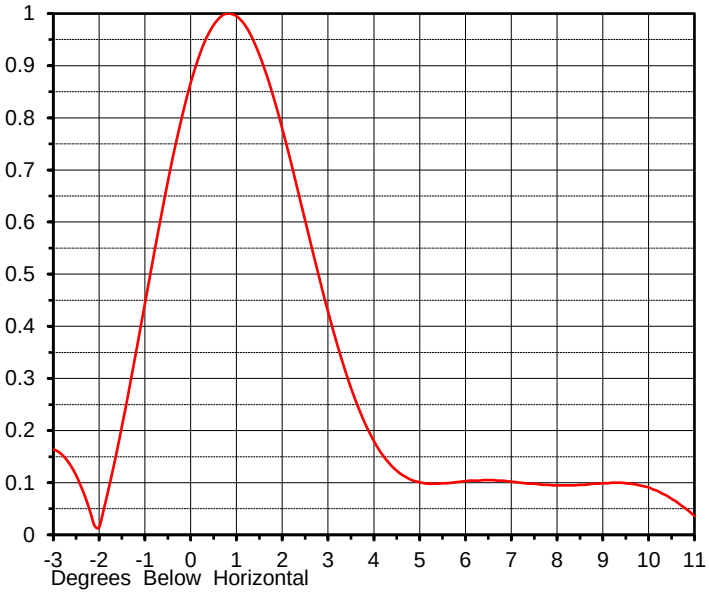
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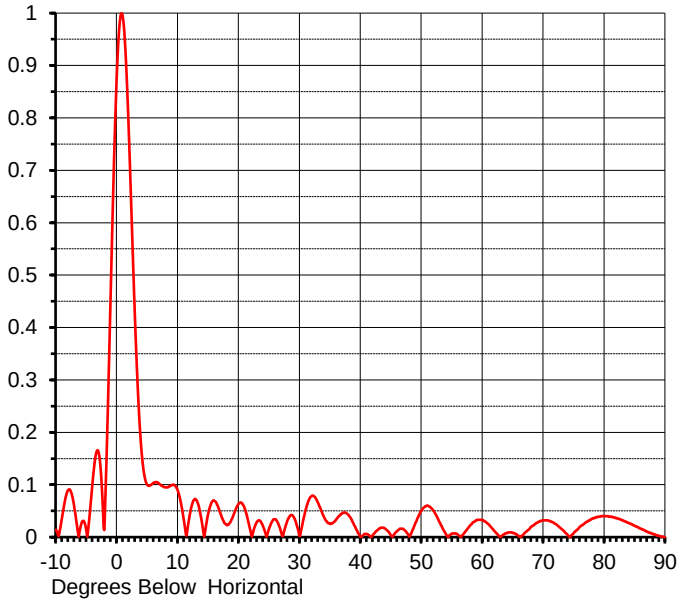
ELEVATION PATTERN

Proposal No.	**C-70493-5**
Date	**18-Mar-19**
Call Letters	**WDTN**
Channel	**31**
Frequency	**575 MHz**
Antenna Type	**TFU-24GTH/VP-R 06**

RMS Directivity at Main Lobe	**21.5 (13.32 dB)**	Beam Tilt	**0.75 deg**
RMS Directivity at Horizontal	**17.3 (12.38 dB)**	Pattern Number	**24G215075**

Calculated





Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.014	10.0	0.087	30.0	0.002	50.0	0.051	70.0	0.032
-9.0	0.040	11.0	0.029	31.0	0.054	51.0	0.060	71.0	0.031
-8.0	0.090	12.0	0.047	32.0	0.079	52.0	0.049	72.0	0.025
-7.0	0.055	13.0	0.071	33.0	0.065	53.0	0.027	73.0	0.015
-6.0	0.020	14.0	0.022	34.0	0.037	54.0	0.005	74.0	0.003
-5.0	0.009	15.0	0.047	35.0	0.025	55.0	0.007	75.0	0.009
-4.0	0.108	16.0	0.069	36.0	0.034	56.0	0.004	76.0	0.020
-3.0	0.160	17.0	0.044	37.0	0.046	57.0	0.008	77.0	0.029
-2.0	0.048	18.0	0.023	38.0	0.042	58.0	0.023	78.0	0.035
-1.0	0.491	19.0	0.039	39.0	0.021	59.0	0.032	79.0	0.039
0.0	0.896	20.0	0.064	40.0	0.000	60.0	0.032	80.0	0.040
1.0	0.987	21.0	0.053	41.0	0.006	61.0	0.024	81.0	0.039
2.0	0.746	22.0	0.006	42.0	0.004	62.0	0.011	82.0	0.036
3.0	0.396	23.0	0.030	43.0	0.016	63.0	0.001	83.0	0.032
4.0	0.165	24.0	0.019	44.0	0.016	64.0	0.008	84.0	0.027
5.0	0.099	25.0	0.018	45.0	0.003	65.0	0.008	85.0	0.021
6.0	0.104	26.0	0.034	46.0	0.012	66.0	0.001	86.0	0.016
7.0	0.101	27.0	0.006	47.0	0.015	67.0	0.009	87.0	0.010
8.0	0.095	28.0	0.033	48.0	0.001	68.0	0.020	88.0	0.006
9.0	0.099	29.0	0.038	49.0	0.028	69.0	0.028	89.0	0.002
								90.0	0.000

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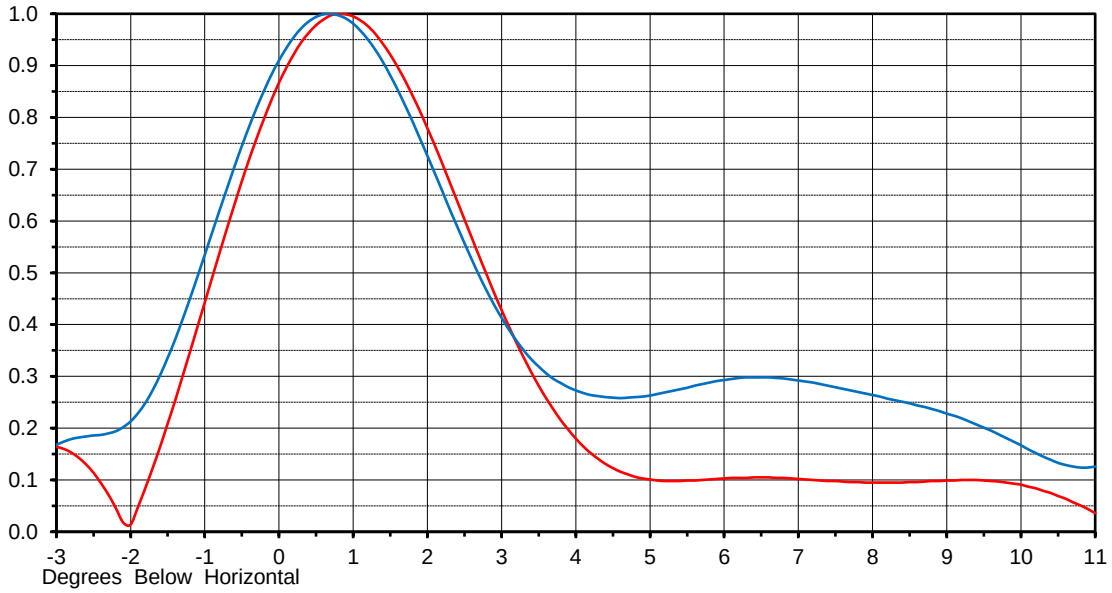
FutureFill *refers to broadband panels or limited bandwidth slotted coaxial antennas that can be modified in the field to provide the flexibility to customize the null structure at a future date.*

FutureFill OVERLAY

Proposal No.	**C-70493-5**
Date	**18-Mar-19**
Call Letters	**WDTN**
Channel	**31**
Frequency	**575 MHz**
Antenna Type	**TFU-24GTH/VP-R 06**

RMS Directivity	21.5	**(13.32dB)**	Beam Tilt	0.75	Pattern No. 24G215075	Red
RMS Directivity	15.8	**(11.99dB)**	Beam Tilt	0.70	Pattern No.	Blue

Calculated

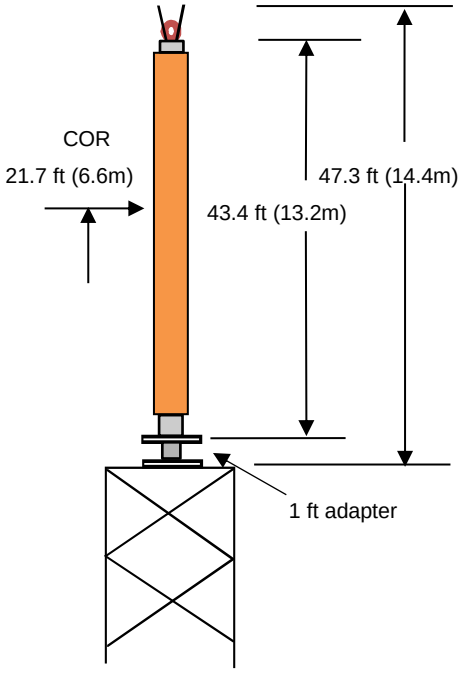


Tabulations for

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.156	10.0	0.167	30.0	0.020	50.0	0.093	70.0	0.025
-9.0	0.215	11.0	0.126	31.0	0.049	51.0	0.116	71.0	0.029
-8.0	0.237	12.0	0.194	32.0	0.063	52.0	0.120	72.0	0.031
-7.0	0.181	13.0	0.215	33.0	0.047	53.0	0.104	73.0	0.029
-6.0	0.206	14.0	0.144	34.0	0.039	54.0	0.082	74.0	0.028
-5.0	0.201	15.0	0.118	35.0	0.052	55.0	0.068	75.0	0.029
-4.0	0.085	16.0	0.155	36.0	0.076	56.0	0.069	76.0	0.033
-3.0	0.168	17.0	0.143	37.0	0.103	57.0	0.081	77.0	0.037
-2.0	0.213	18.0	0.118	38.0	0.109	58.0	0.090	78.0	0.041
-1.0	0.535	19.0	0.126	39.0	0.089	59.0	0.090	79.0	0.043
0.0	0.910	20.0	0.134	40.0	0.068	60.0	0.080	80.0	0.043
1.0	0.981	21.0	0.094	41.0	0.067	61.0	0.065	81.0	0.041
2.0	0.726	22.0	0.053	42.0	0.074	62.0	0.057	82.0	0.037
3.0	0.413	23.0	0.079	43.0	0.072	63.0	0.059	83.0	0.033
4.0	0.273	24.0	0.061	44.0	0.066	64.0	0.063	84.0	0.028
5.0	0.263	25.0	0.019	45.0	0.075	65.0	0.061	85.0	0.022
6.0	0.293	26.0	0.041	46.0	0.094	66.0	0.052	86.0	0.016
7.0	0.292	27.0	0.023	47.0	0.097	67.0	0.037	87.0	0.011
8.0	0.264	28.0	0.024	48.0	0.080	68.0	0.023	88.0	0.006
9.0	0.228	29.0	0.038	49.0	0.071	69.0	0.019	89.0	0.002
								90.0	0.000

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MECHANICAL SPECIFICATIONS



Proposal No.	**C-70493-5**
Date	**18-Mar-19**
Call Letters	**WDTN**
Channel	**31**
Frequency	**575 MHz**
Antenna Type	**TFU-24GTH/VP-R 06**

Preliminary Specifications

Top Mounted

With ice TIA-222-G

Height AGL(z)	1900 ft (579.1 m)
Basic Wind Speed	90 m/h (144.8 km/h)
Structure Class	II
Exposure Category	C
Topography Category	1
Design Ice	0.75 in t_{iz} = 2.10 in
Wind Speed w/Ice	40 m/h (64.4 km/h)

Mechanical Specifications		**without ice**	**with ice**	
Height with Lightning Protector	H4	47.3 ft (14.4m)		
Height less Lightning Protector	H2	43.4 ft (13.2m)		
Height of Center of Radiation	H3	21.7 ft (6.6m)		with adapter
Effective Projected Area	$(EPA)_S$	54.9 ft² (5.1m²)	133.8 ft² (12.4m²)	with adapter
Moment Arm	D1	23.8 ft (7.3m)	24.8 ft (7.6m)	with adapter
Weight	W	5350 lb (2.4t)	8875 lb (4t)	with adapter

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

Prepared by:	KLP	**Date:**	18-Mar-19	**ME:**	**EE:**
Rev. No.5 by:	JBC	**Date:**	18-Mar-19		

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Summary

Proposal No.	**C-70493-5**
Date	**18-Mar-19**
Call Letters	**WDTN**
Channel	**31**
Frequency	**575 MHz**
Antenna Type	**TFU-24GTH/VP-R 06**

Antenna

	Hpol		Vpol	
ERP:	**1000 kW**	**(30.00 dBk)**	**250 kW**	**(23.98 dBk)**
RMS Gain*	17.20	(12.36 dB)	4.30	(6.33 dB)

Antenna Input Power **58.1 kW (17.64 dBk)**

Transmission Line

Type:	**Rigid**	Attenuation:	**(1.05 dB)**
Size:	**7-3/16"**	Efficiency:	**78.5%**
Impedance:	**75 Ohm**		
Length:	**1045 ft**	**318.5 m**	

Transmitter Output

74.1 kW (18.70 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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