



Antenna Model:

TFU-20GTH/VP-R 04

Proposal Number: C-70506
Date: 16-Mar-17
Customer: Nexstar
Location: Wichita, KS

Electrical Specifications

Polarization: Elliptical
Azimuth Pattern: Omni
Antenna Input: 6-1/8" 75 Ohm EIA/DCA
VSWR: Channel 1.08 : 1
Bandwidth: 6 MHz
Rated Input Power: 45 kW (16.53 dBk) Maximum Average Power

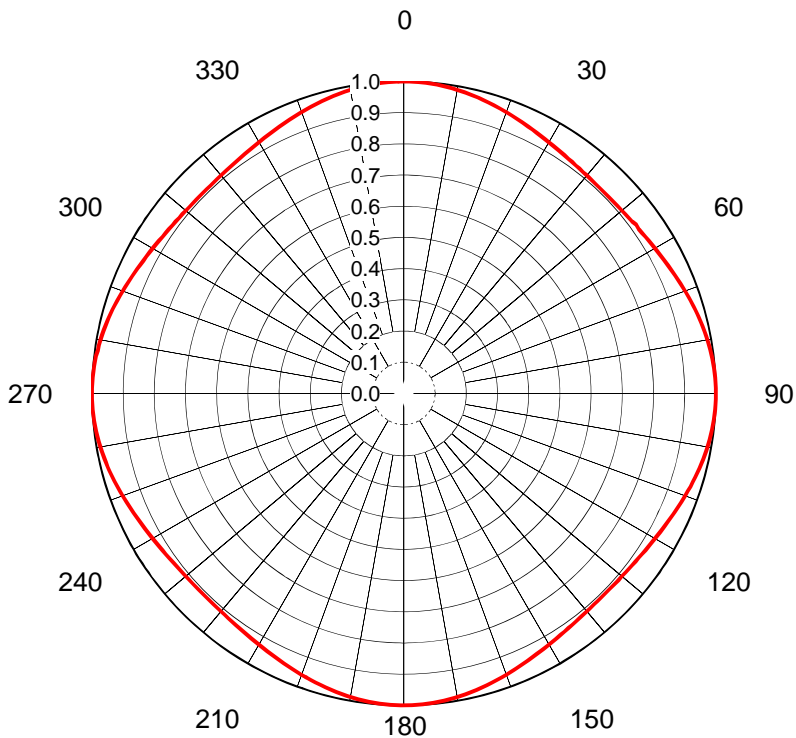
Mechanical Specifications

Mounting: Top Mounted
Environmental Protection: Full Radome
Height: 44.1 ft (13.4m) less Lightning Protector 48.1 ft (14.7m) with Lightning Protector
Weight: 6300 lb (2.9t)
Effective Projected Area: 51.1 ft² (4.7m²) TIA/EIA-222-F Basic Wind Speed: 80 m/h (128.7 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
KSNW	15	479 MHz	471 kW (26.73 dBk)	118 kW (20.71 dBk)	43.2 kW (16.35 dBk)	14.40 (11.58dB)	3.60 (5.56dB)	12.19 (10.86dB)	3.05 (4.84dB)

AZIMUTH PATTERN Horizontal Polarization



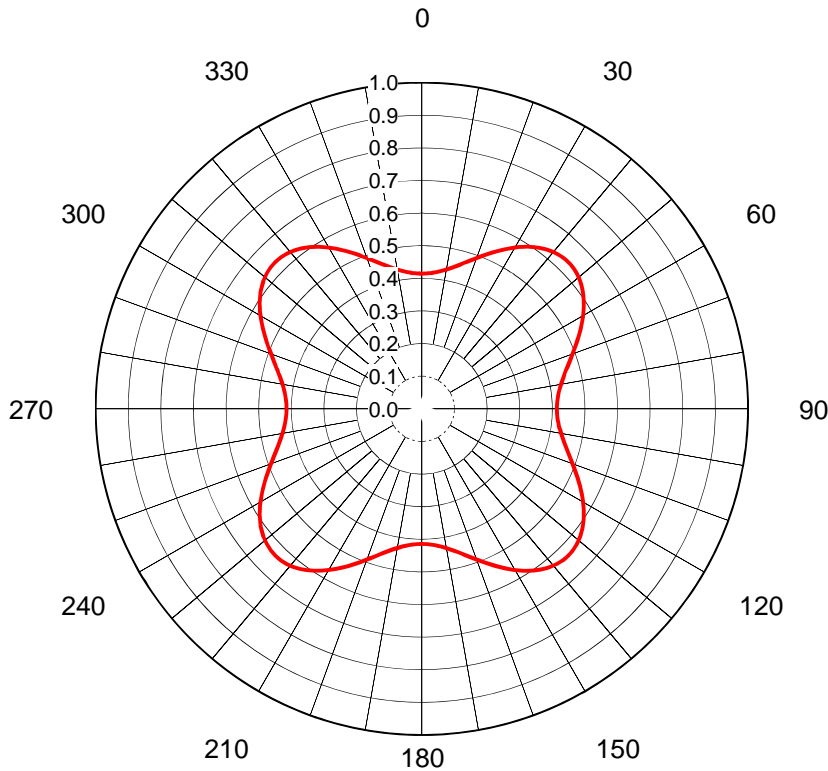
Proposal No. **C-70506**
 Date **16-Mar-17**
 Call Letters **KSNW**
 Channel **15**
 Frequency **479 MHz**
 Antenna Type **TFU-20GTH/VP-R 04**
 Gain **1.1 (0.41dB)**
 Calculated
 Circularity **+/- 1.0 dB**

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	1.000	36	0.917	72	0.966	108	0.966	144	0.917	180	1.000	216	0.917	252	0.966	288	0.966
1	1.000	37	0.916	73	0.969	109	0.963	145	0.919	181	1.000	217	0.916	253	0.969	289	0.963
2	0.999	38	0.914	74	0.972	110	0.959	146	0.921	182	0.999	218	0.914	254	0.972	290	0.959
3	0.999	39	0.913	75	0.975	111	0.956	147	0.923	183	0.999	219	0.913	255	0.975	291	0.956
4	0.998	40	0.912	76	0.978	112	0.953	148	0.925	184	0.998	220	0.912	256	0.978	292	0.953
5	0.997	41	0.911	77	0.981	113	0.950	149	0.927	185	0.997	221	0.911	257	0.981	293	0.950
6	0.996	42	0.911	78	0.983	114	0.947	150	0.930	186	0.996	222	0.911	258	0.983	294	0.947
7	0.994	43	0.910	79	0.986	115	0.944	151	0.932	187	0.994	223	0.910	259	0.986	295	0.944
8	0.992	44	0.910	80	0.988	116	0.941	152	0.935	188	0.992	224	0.910	260	0.988	296	0.941
9	0.990	45	0.910	81	0.990	117	0.938	153	0.938	189	0.990	225	0.910	261	0.990	297	0.938
10	0.988	46	0.910	82	0.992	118	0.935	154	0.941	190	0.988	226	0.910	262	0.992	298	0.935
11	0.986	47	0.910	83	0.994	119	0.932	155	0.944	191	0.986	227	0.910	263	0.994	299	0.932
12	0.983	48	0.911	84	0.996	120	0.930	156	0.947	192	0.983	228	0.911	264	0.996	300	0.930
13	0.981	49	0.911	85	0.997	121	0.927	157	0.950	193	0.981	229	0.911	265	0.997	301	0.927
14	0.978	50	0.912	86	0.998	122	0.925	158	0.953	194	0.978	230	0.912	266	0.998	302	0.925
15	0.975	51	0.913	87	0.999	123	0.923	159	0.956	195	0.975	231	0.913	267	0.999	303	0.923
16	0.972	52	0.914	88	0.999	124	0.921	160	0.959	196	0.972	232	0.914	268	0.999	304	0.921
17	0.969	53	0.916	89	1.000	125	0.919	161	0.963	197	0.969	233	0.916	269	1.000	305	0.919
18	0.966	54	0.920	90	1.000	126	0.917	162	0.966	198	0.966	234	0.917	270	1.000	306	0.917
19	0.963	55	0.919	91	1.000	127	0.916	163	0.969	199	0.963	235	0.919	271	1.000	307	0.916
20	0.959	56	0.921	92	0.999	128	0.914	164	0.972	200	0.959	236	0.921	272	0.999	308	0.914
21	0.956	57	0.923	93	0.999	129	0.913	165	0.975	201	0.956	237	0.923	273	0.999	309	0.913
22	0.953	58	0.925	94	0.998	130	0.912	166	0.978	202	0.953	238	0.925	274	0.998	310	0.912
23	0.950	59	0.927	95	0.997	131	0.911	167	0.981	203	0.950	239	0.927	275	0.997	311	0.911
24	0.947	60	0.930	96	0.996	132	0.911	168	0.983	204	0.947	240	0.930	276	0.996	312	0.911
25	0.944	61	0.932	97	0.994	133	0.910	169	0.986	205	0.944	241	0.932	277	0.994	313	0.910
26	0.941	62	0.935	98	0.992	134	0.910	170	0.988	206	0.941	242	0.935	278	0.990	314	0.910
27	0.938	63	0.938	99	0.990	135	0.910	171	0.990	207	0.938	243	0.938	279	0.990	315	0.910
28	0.935	64	0.941	100	0.988	136	0.910	172	0.992	208	0.935	244	0.941	280	0.988	316	0.910
29	0.932	65	0.944	101	0.986	137	0.910	173	0.994	209	0.932	245	0.944	281	0.986	317	0.910
30	0.930	66	0.947	102	0.983	138	0.911	174	0.996	210	0.930	246	0.947	282	0.983	318	0.911
31	0.927	67	0.950	103	0.981	139	0.911	175	0.997	211	0.927	247	0.950	283	0.981	319	0.911
32	0.925	68	0.953	104	0.978	140	0.912	176	0.998	212	0.925	248	0.953	284	0.978	320	0.912
33	0.923	69	0.956	105	0.975	141	0.913	177	0.999	213	0.923	249	0.956	285	0.975	321	0.913
34	0.921	70	0.959	106	0.972	142	0.914	178	0.999	214	0.921	250	0.959	286	0.972	322	0.914
35	0.919	71	0.963	107	0.969	143	0.916	179	1.000	215	0.919	251	0.963	287	0.969	323	0.916

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AZIMUTH PATTERN Vertical Polarization

Proposal No. **C-70506**
 Date **16-Mar-17**
 Call Letters **KSNW**
 Channel **15**
 Frequency **479 MHz**
 Antenna Type **TFU-20GTH/VP-R 04**
 Gain **1.47 (1.68dB)**
 Calculated
 Circularity **+/- 2.0 dB**



Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.414	36	0.611	72	0.478	108	0.478	144	0.611	180	0.414	216	0.611	252	0.478	288	0.478
1	0.415	37	0.616	73	0.471	109	0.485	145	0.605	181	0.415	217	0.616	253	0.471	289	0.485
2	0.415	38	0.620	74	0.464	110	0.492	146	0.599	182	0.415	218	0.620	254	0.464	290	0.492
3	0.416	39	0.624	75	0.458	111	0.500	147	0.593	183	0.416	219	0.624	255	0.458	291	0.500
4	0.417	40	0.628	76	0.452	112	0.507	148	0.586	184	0.417	220	0.628	256	0.452	292	0.507
5	0.419	41	0.631	77	0.447	113	0.515	149	0.579	185	0.419	221	0.631	257	0.447	293	0.515
6	0.421	42	0.633	78	0.442	114	0.523	150	0.571	186	0.421	222	0.633	258	0.442	294	0.523
7	0.424	43	0.634	79	0.438	115	0.531	151	0.563	187	0.424	223	0.634	259	0.438	295	0.531
8	0.427	44	0.635	80	0.434	116	0.540	152	0.556	188	0.427	224	0.635	260	0.434	296	0.540
9	0.430	45	0.636	81	0.430	117	0.548	153	0.548	189	0.430	225	0.636	261	0.430	297	0.548
10	0.434	46	0.635	82	0.427	118	0.556	154	0.540	190	0.434	226	0.635	262	0.427	298	0.556
11	0.438	47	0.634	83	0.424	119	0.563	155	0.531	191	0.438	227	0.634	263	0.424	299	0.563
12	0.442	48	0.633	84	0.421	120	0.571	156	0.523	192	0.442	228	0.633	264	0.421	300	0.571
13	0.447	49	0.631	85	0.419	121	0.579	157	0.515	193	0.447	229	0.631	265	0.419	301	0.579
14	0.452	50	0.628	86	0.417	122	0.586	158	0.507	194	0.452	230	0.628	266	0.417	302	0.586
15	0.458	51	0.624	87	0.416	123	0.593	159	0.500	195	0.458	231	0.624	267	0.416	303	0.593
16	0.464	52	0.620	88	0.415	124	0.599	160	0.492	196	0.464	232	0.620	268	0.415	304	0.599
17	0.471	53	0.616	89	0.415	125	0.605	161	0.485	197	0.471	233	0.616	269	0.415	305	0.605
18	0.478	54	0.611	90	0.414	126	0.611	162	0.478	198	0.478	234	0.611	270	0.414	306	0.611
19	0.485	55	0.605	91	0.415	127	0.616	163	0.471	199	0.485	235	0.605	271	0.415	307	0.616
20	0.492	56	0.599	92	0.415	128	0.620	164	0.464	200	0.492	236	0.599	272	0.415	308	0.620
21	0.500	57	0.593	93	0.416	129	0.624	165	0.458	201	0.500	237	0.593	273	0.416	309	0.624
22	0.507	58	0.586	94	0.417	130	0.628	166	0.452	202	0.507	238	0.586	274	0.417	310	0.628
23	0.515	59	0.579	95	0.419	131	0.631	167	0.447	203	0.515	239	0.579	275	0.419	311	0.631
24	0.523	60	0.571	96	0.421	132	0.633	168	0.442	204	0.523	240	0.571	276	0.421	312	0.633
25	0.531	61	0.563	97	0.424	133	0.634	169	0.438	205	0.531	241	0.563	277	0.424	313	0.634
26	0.540	62	0.556	98	0.427	134	0.635	170	0.434	206	0.540	242	0.556	278	0.427	314	0.635
27	0.548	63	0.548	99	0.430	135	0.636	171	0.430	207	0.548	243	0.548	279	0.430	315	0.636
28	0.556	64	0.540	100	0.434	136	0.635	172	0.427	208	0.556	244	0.540	280	0.434	316	0.635
29	0.563	65	0.531	101	0.438	137	0.634	173	0.424	209	0.563	245	0.531	281	0.438	317	0.634
30	0.571	66	0.523	102	0.442	138	0.633	174	0.421	210	0.571	246	0.523	282	0.442	318	0.633
31	0.579	67	0.515	103	0.447	139	0.631	175	0.419	211	0.579	247	0.515	283	0.447	319	0.631
32	0.586	68	0.507	104	0.452	140	0.628	176	0.417	212	0.586	248	0.507	284	0.452	320	0.628
33	0.593	69	0.500	105	0.458	141	0.624	177	0.416	213	0.593	249	0.500	285	0.458	321	0.624
34	0.599	70	0.492	106	0.464	142	0.620	178	0.415	214	0.599	250	0.492	286	0.464	322	0.620
35	0.605	71	0.485	107	0.471	143	0.616	179	0.415	215	0.605	251	0.485	287	0.471	323	0.616

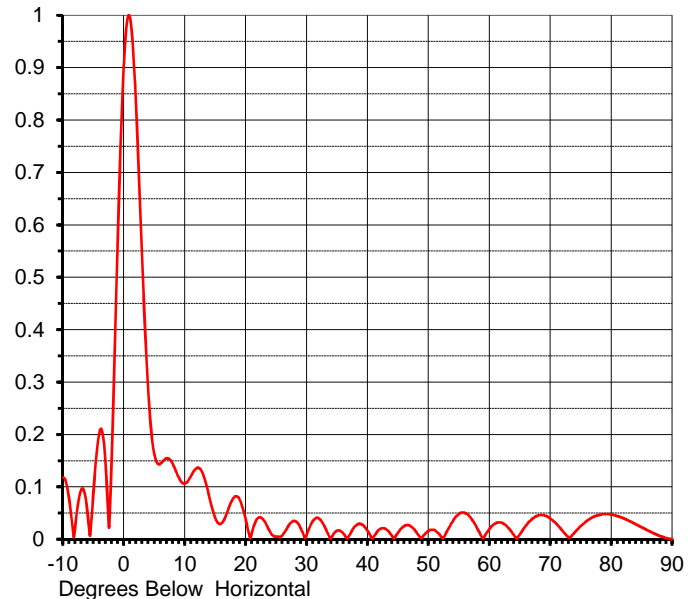
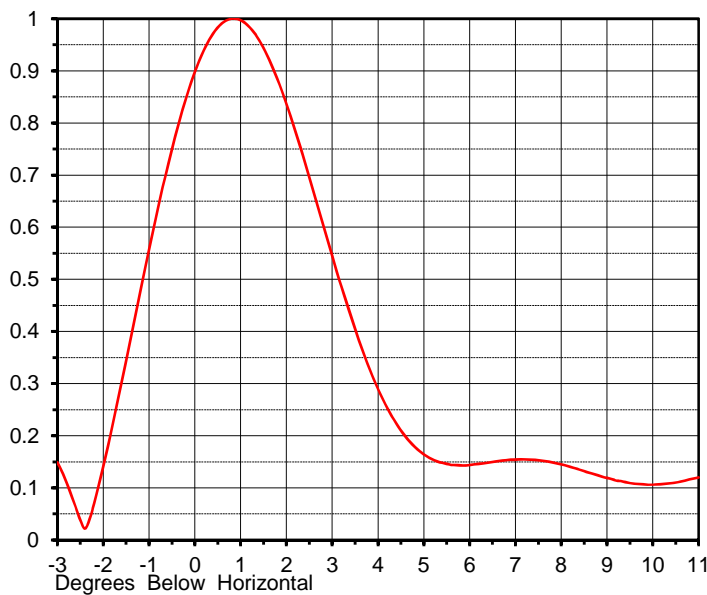
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ELEVATION PATTERN

Proposal No. **C-70506**
 Date **16-Mar-17**
 Call Letters **KSNW**
 Channel **15**
 Frequency **479 MHz**
 Antenna Type **TFU-20GTH/VP-R 04**

RMS Directivity at Main Lobe **18.0 (12.55 dB)**
 RMS Directivity at Horizontal **15.2 (11.82 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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***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.*

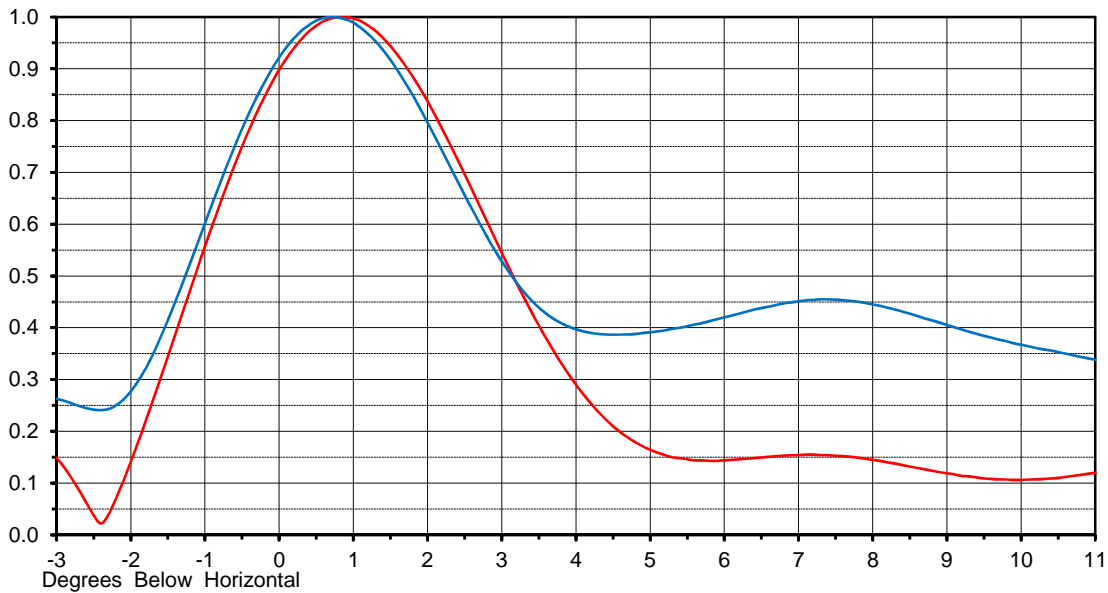
FutureFill OVERLAY

Proposal No. **C-70506**
 Date **16-Mar-17**
 Call Letters **KSNW**
 Channel **15**
 Frequency **479 MHz**
 Antenna Type **TFU-20GTH/VP-R 04**

RMS Directivity 18.0 **(12.55dB)**
 RMS Directivity 11.4 **(10.58dB)**
 Calculated

Beam Tilt 0.75
 Beam Tilt 0.70

Pattern No. 20G180075 **Red**
 Pattern No. 20G18007-FF **Blue**



Tabulations for 20G18007-FF

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.288	10.0	0.367	30.0	0.028	50.0	0.080	70.0	0.053
-9.0	0.219	11.0	0.338	31.0	0.046	51.0	0.079	71.0	0.050
-8.0	0.246	12.0	0.291	32.0	0.054	52.0	0.095	72.0	0.044
-7.0	0.346	13.0	0.215	33.0	0.037	53.0	0.115	73.0	0.038
-6.0	0.303	14.0	0.149	34.0	0.027	54.0	0.130	74.0	0.036
-5.0	0.140	15.0	0.144	35.0	0.044	55.0	0.132	75.0	0.038
-4.0	0.212	16.0	0.138	36.0	0.049	56.0	0.120	76.0	0.042
-3.0	0.263	17.0	0.113	37.0	0.041	57.0	0.098	77.0	0.045
-2.0	0.277	18.0	0.129	38.0	0.027	58.0	0.082	78.0	0.048
-1.0	0.602	19.0	0.159	39.0	0.022	59.0	0.085	79.0	0.048
0.0	0.922	20.0	0.154	40.0	0.045	60.0	0.101	80.0	0.047
1.0	0.989	21.0	0.121	41.0	0.075	61.0	0.114	81.0	0.044
2.0	0.796	22.0	0.084	42.0	0.093	62.0	0.115	82.0	0.040
3.0	0.528	23.0	0.068	43.0	0.092	63.0	0.102	83.0	0.034
4.0	0.397	24.0	0.080	44.0	0.083	64.0	0.081	84.0	0.028
5.0	0.391	25.0	0.082	45.0	0.091	65.0	0.055	85.0	0.022
6.0	0.420	26.0	0.062	46.0	0.110	66.0	0.035	86.0	0.016
7.0	0.451	27.0	0.051	47.0	0.120	67.0	0.034	87.0	0.011
8.0	0.445	28.0	0.059	48.0	0.114	68.0	0.043	88.0	0.006
9.0	0.405	29.0	0.047	49.0	0.096	69.0	0.051	89.0	0.002
								90.0	0.000

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MECHANICAL SPECIFICATIONS

Proposal No.	C-70506
Date	16-Mar-17
Call Letters	KSNW
Channel	15
Frequency	479 MHz
Antenna Type	TFU-20GTH/VP-R 04

Preliminary Specifications

Top Mounted

Without ice TIA/EIA-222-F

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

Height with Lightning Protector	H4	48.1 ft (14.7m)
Height less Lightning Protector	H2	44.1 ft (13.4m)
Height of Center of Radiation	H3	22.1 ft (6.7m)
Force Coeff. x Projected Area	CaAc	51.1 ft ² (4.7m ²)
Moment Arm	D1	23.8 ft (7.3m)

Weight	W	6300 lb (2.9t)
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Antenna designed in accordance with AISC specifications for design of structural steel as prescribed by TIA/EIA-222-F

Prepared by:	KLP	Date:	16-Mar-17	ME:	EE:
	jls	Date:	23-Mar-17		

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Summary

Proposal No.	C-70506
Date	16-Mar-17
Call Letters	KSNW
Channel	15
Frequency	479 MHz
Antenna Type	TFU-20GTH/VP-R 04

Antenna

	Hpol	Vpol
ERP:	471 kW (26.73 dBk)	118 kW (20.71 dBk)
RMS Gain*	14.40 (11.58 dB)	3.60 (5.56 dB)

Antenna Input Power	32.7 kW (15.15 dBk)
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Transmission Line

Type:	Rigid	Attenuation:	(1.21 dB)
Size:	6-1/8"	Efficiency:	75.7%
Impedance:	75 Ohm		
Length:	1143 ft	348.4 m	

Transmitter Output

43.2 kW (16.35 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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