



Antenna Model:

**TFU-29JSC/VP-R 03**

**Proposal Number:** C-70457  
**Date:** 15-Mar-17  
**Customer:** Nexstar  
**Location:** Joplin, MO

### Electrical Specifications

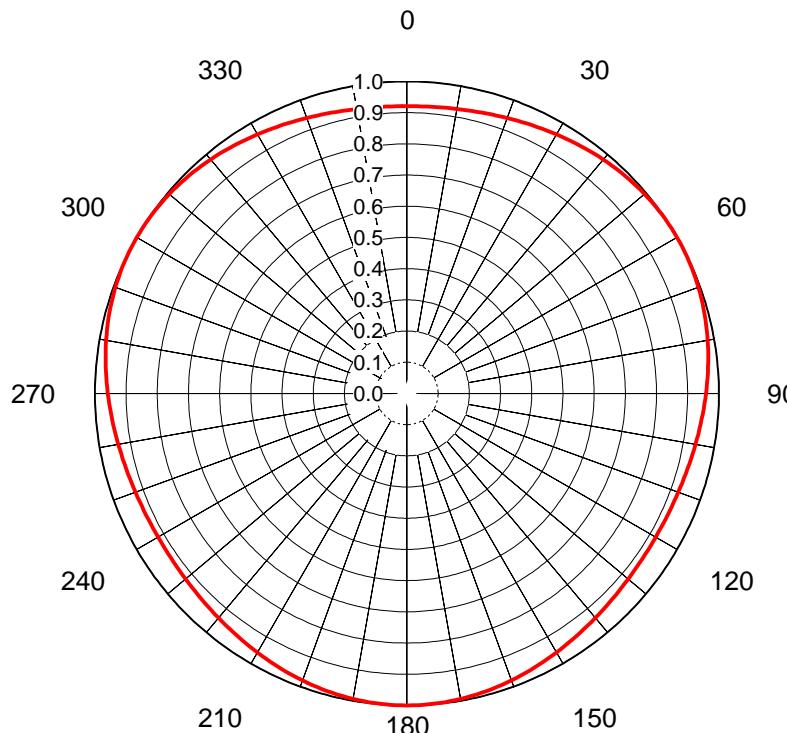
**Polarization:** Elliptical  
**Azimuth Pattern:** Omni  
**Antenna Input:** 6-1/8" 75 Ohm EIA/DCA  
**VSWR:** Channel 1.08 : 1  
**Bandwidth:** 6 MHz  
**Rated Input Power:** 35 kW (15.44 dBk) Maximum Average Power

### Mechanical Specifications

**Mounting:** Side Mounted  
**Environmental Protection:** Full Radome  
**Height:** 60.5 ft (18.4m)  
**Weight:** 1000 lb (0.5t)  
**Effective Projected Area:** 88.6 ft<sup>2</sup> (8.2m<sup>2</sup>) TIA/EIA-222-F    **Basic Wind Speed:** 70 m/h (112.7 km/h)

### Channel Specifications

Call	CH	Freq	Hpol ERP	Vpol ERP	TPO	RMS	RMS	RMS	RMS
						Main Lobe Hpol Gain	Main Lobe Vpol Gain	at Horizontal Hpol Gain	at Horizontal Vpol Gain
KODE	23	527 MHz	663 kW (28.22 dBk)	166 kW (22.19 dBk)	40.4 kW (16.06 dBk)	21.60 (13.34dB)	5.40 (7.32dB)	12.31 (10.90dB)	3.08 (4.88dB)



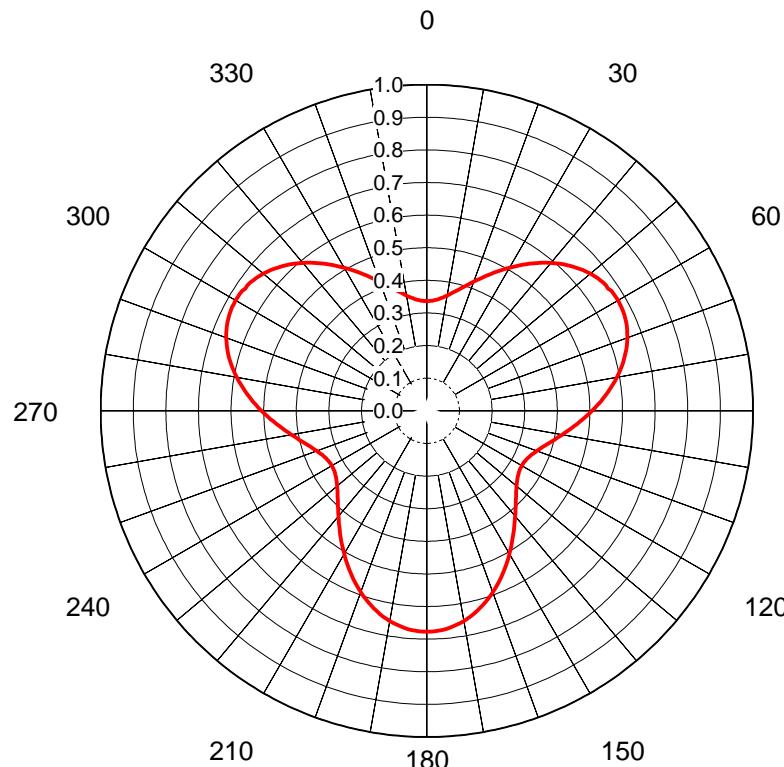
## AZIMUTH PATTERN Horizontal Polarization

In Free Space

Proposal No.	C-70457
Date	15-Mar-17
Call Letters	KODE
Channel	23
Frequency	527 MHz
Antenna Type	TFU-29JSC/VP-R 03
Gain	1.09 (0.35dB)
Calculated	
Circularity	+/- 1.0 dB

Deg	Value																		
0	0.921	36	0.971	72	0.992	108	0.928	144	0.947	180	1.000	216	0.947	252	0.928	288	0.992	324	0.971
1	0.921	37	0.973	73	0.991	109	0.927	145	0.949	181	1.000	217	0.945	253	0.929	289	0.993	325	0.969
2	0.921	38	0.975	74	0.989	110	0.926	146	0.951	182	1.000	218	0.943	254	0.930	290	0.994	326	0.967
3	0.921	39	0.977	75	0.988	111	0.925	147	0.953	183	0.999	219	0.941	255	0.932	291	0.995	327	0.965
4	0.922	40	0.979	76	0.986	112	0.924	148	0.955	184	0.999	220	0.939	256	0.933	292	0.996	328	0.963
5	0.922	41	0.981	77	0.984	113	0.923	149	0.957	185	0.999	221	0.938	257	0.935	293	0.997	329	0.961
6	0.923	42	0.983	78	0.983	114	0.923	150	0.959	186	0.998	222	0.936	258	0.936	294	0.998	330	0.959
7	0.923	43	0.984	79	0.981	115	0.922	151	0.961	187	0.997	223	0.935	259	0.938	295	0.999	331	0.957
8	0.924	44	0.986	80	0.979	116	0.922	152	0.963	188	0.996	224	0.933	260	0.939	296	0.999	332	0.955
9	0.925	45	0.988	81	0.977	117	0.921	153	0.965	189	0.995	225	0.932	261	0.941	297	0.999	333	0.953
10	0.926	46	0.989	82	0.975	118	0.921	154	0.967	190	0.994	226	0.930	262	0.943	298	1.000	334	0.951
11	0.927	47	0.991	83	0.973	119	0.921	155	0.969	191	0.993	227	0.929	263	0.945	299	1.000	335	0.949
12	0.928	48	0.992	84	0.971	120	0.921	156	0.971	192	0.992	228	0.928	264	0.947	300	1.000	336	0.947
13	0.929	49	0.993	85	0.969	121	0.921	157	0.973	193	0.991	229	0.927	265	0.949	301	1.000	337	0.945
14	0.930	50	0.994	86	0.967	122	0.921	158	0.975	194	0.989	230	0.926	266	0.951	302	1.000	338	0.943
15	0.932	51	0.995	87	0.965	123	0.921	159	0.977	195	0.988	231	0.925	267	0.953	303	0.999	339	0.941
16	0.933	52	0.996	88	0.963	124	0.922	160	0.979	196	0.986	232	0.924	268	0.955	304	0.999	340	0.939
17	0.935	53	0.997	89	0.961	125	0.922	161	0.981	197	0.984	233	0.923	269	0.957	305	0.999	341	0.938
18	0.936	54	0.998	90	0.959	126	0.923	162	0.983	198	0.983	234	0.923	270	0.959	306	0.998	342	0.936
19	0.938	55	0.999	91	0.957	127	0.923	163	0.984	199	0.981	235	0.922	271	0.961	307	0.997	343	0.935
20	0.939	56	0.999	92	0.955	128	0.924	164	0.986	200	0.979	236	0.922	272	0.963	308	0.996	344	0.933
21	0.941	57	0.999	93	0.953	129	0.925	165	0.988	201	0.977	237	0.921	273	0.965	309	0.995	345	0.932
22	0.943	58	1.000	94	0.951	130	0.926	166	0.989	202	0.975	238	0.921	274	0.967	310	0.994	346	0.930
23	0.945	59	1.000	95	0.949	131	0.927	167	0.991	203	0.973	239	0.921	275	0.969	311	0.993	347	0.929
24	0.947	60	1.000	96	0.947	132	0.928	168	0.992	204	0.971	240	0.921	276	0.971	312	0.992	348	0.928
25	0.949	61	1.000	97	0.945	133	0.929	169	0.993	205	0.969	241	0.921	277	0.973	313	0.991	349	0.927
26	0.951	62	1.000	98	0.943	134	0.930	170	0.994	206	0.967	242	0.921	278	0.975	314	0.989	350	0.926
27	0.953	63	0.999	99	0.941	135	0.932	171	0.995	207	0.965	243	0.921	279	0.977	315	0.988	351	0.925
28	0.955	64	0.999	100	0.939	136	0.933	172	0.996	208	0.963	244	0.922	280	0.979	316	0.986	352	0.924
29	0.957	65	0.999	101	0.938	137	0.935	173	0.997	209	0.961	245	0.922	281	0.981	317	0.984	353	0.923
30	0.959	66	0.998	102	0.936	138	0.936	174	0.998	210	0.959	246	0.923	282	0.983	318	0.983	354	0.923
31	0.961	67	0.997	103	0.935	139	0.938	175	0.999	211	0.957	247	0.923	283	0.984	319	0.981	355	0.922
32	0.963	68	0.996	104	0.933	140	0.939	176	0.999	212	0.955	248	0.924	284	0.986	320	0.979	356	0.922
33	0.965	69	0.995	105	0.932	141	0.941	177	0.999	213	0.953	249	0.925	285	0.988	321	0.977	357	0.921
34	0.967	70	0.994	106	0.930	142	0.943	178	1.000	214	0.951	250	0.926	286	0.989	322	0.975	358	0.921
35	0.969	71	0.993	107	0.929	143	0.945	179	1.000	215	0.949	251	0.927	287	0.991	323	0.973	359	0.921

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## AZIMUTH PATTERN Vertical Polarization

In Free Space

Proposal No.	C-70457
Date	15-Mar-17
Call Letters	KODE
Channel	23
Frequency	527 MHz
Antenna Type	TFU-29JSC/VP-R 03
Gain	1.69 (2.28dB)
Calculated	
Circularity	+/- 4.0 dB

Deg	Value																
0	0.336	36	0.559	72	0.645	108	0.369	144	0.454	180	0.677	216	0.454	252	0.369	288	0.645
1	0.337	37	0.568	73	0.639	109	0.364	145	0.463	181	0.677	217	0.446	253	0.374	289	0.650
2	0.337	38	0.576	74	0.633	110	0.359	146	0.471	182	0.676	218	0.437	254	0.380	290	0.654
3	0.338	39	0.584	75	0.627	111	0.355	147	0.480	183	0.675	219	0.429	255	0.386	291	0.659
4	0.340	40	0.592	76	0.621	112	0.351	148	0.489	184	0.673	220	0.421	256	0.393	292	0.662
5	0.342	41	0.599	77	0.614	113	0.348	149	0.498	185	0.671	221	0.414	257	0.399	293	0.666
6	0.345	42	0.607	78	0.607	114	0.345	150	0.507	186	0.669	222	0.407	258	0.407	294	0.669
7	0.348	43	0.614	79	0.599	115	0.342	151	0.516	187	0.666	223	0.399	259	0.414	295	0.671
8	0.351	44	0.621	80	0.592	116	0.340	152	0.524	188	0.662	224	0.393	260	0.421	296	0.673
9	0.355	45	0.627	81	0.584	117	0.338	153	0.533	189	0.659	225	0.386	261	0.429	297	0.675
10	0.359	46	0.633	82	0.576	118	0.337	154	0.542	190	0.654	226	0.380	262	0.437	298	0.676
11	0.364	47	0.639	83	0.568	119	0.337	155	0.551	191	0.650	227	0.374	263	0.446	299	0.677
12	0.369	48	0.645	84	0.559	120	0.336	156	0.559	192	0.645	228	0.369	264	0.454	300	0.677
13	0.374	49	0.650	85	0.551	121	0.337	157	0.568	193	0.639	229	0.364	265	0.463	301	0.677
14	0.380	50	0.654	86	0.542	122	0.337	158	0.576	194	0.633	230	0.359	266	0.471	302	0.676
15	0.386	51	0.659	87	0.533	123	0.338	159	0.584	195	0.627	231	0.355	267	0.480	303	0.675
16	0.393	52	0.662	88	0.524	124	0.340	160	0.592	196	0.621	232	0.351	268	0.489	304	0.670
17	0.399	53	0.666	89	0.516	125	0.342	161	0.599	197	0.614	233	0.348	269	0.498	305	0.671
18	0.407	54	0.669	90	0.507	126	0.345	162	0.607	198	0.607	234	0.345	270	0.507	306	0.669
19	0.414	55	0.671	91	0.498	127	0.348	163	0.614	199	0.599	235	0.342	271	0.516	307	0.666
20	0.421	56	0.670	92	0.489	128	0.351	164	0.621	200	0.592	236	0.340	272	0.524	308	0.662
21	0.429	57	0.675	93	0.480	129	0.355	165	0.627	201	0.584	237	0.338	273	0.533	309	0.659
22	0.437	58	0.676	94	0.471	130	0.359	166	0.633	202	0.576	238	0.337	274	0.542	310	0.654
23	0.446	59	0.677	95	0.463	131	0.364	167	0.639	203	0.568	239	0.337	275	0.551	311	0.650
24	0.454	60	0.677	96	0.454	132	0.369	168	0.645	204	0.559	240	0.336	276	0.559	312	0.645
25	0.463	61	0.677	97	0.446	133	0.374	169	0.650	205	0.551	241	0.337	277	0.568	313	0.639
26	0.471	62	0.676	98	0.437	134	0.380	170	0.654	206	0.542	242	0.337	278	0.576	314	0.633
27	0.480	63	0.675	99	0.429	135	0.386	171	0.659	207	0.533	243	0.338	279	0.584	315	0.627
28	0.489	64	0.673	100	0.421	136	0.393	172	0.662	208	0.524	244	0.340	280	0.592	316	0.621
29	0.498	65	0.671	101	0.414	137	0.399	173	0.666	209	0.516	245	0.342	281	0.599	317	0.614
30	0.507	66	0.669	102	0.407	138	0.407	174	0.669	210	0.507	246	0.345	282	0.607	318	0.607
31	0.516	67	0.666	103	0.399	139	0.414	175	0.671	211	0.498	247	0.348	283	0.614	319	0.599
32	0.524	68	0.662	104	0.393	140	0.421	176	0.673	212	0.489	248	0.351	284	0.621	320	0.592
33	0.533	69	0.659	105	0.386	141	0.429	177	0.675	213	0.480	249	0.355	285	0.627	321	0.584
34	0.542	70	0.654	106	0.380	142	0.437	178	0.676	214	0.471	250	0.359	286	0.633	322	0.576
35	0.551	71	0.650	107	0.374	143	0.446	179	0.677	215	0.463	251	0.364	287	0.639	323	0.568

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## ELEVATION PATTERN

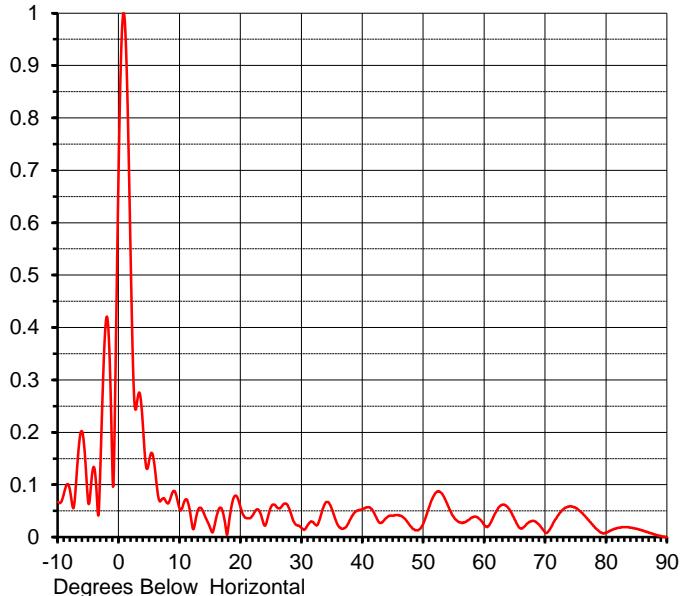
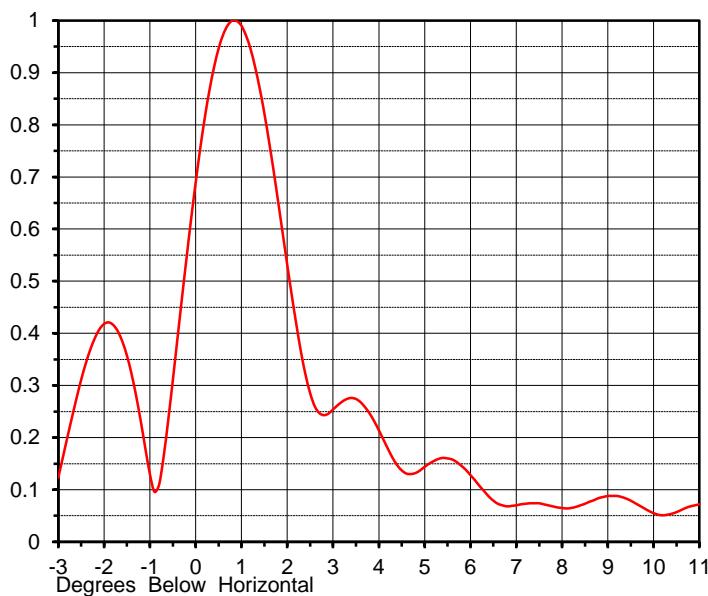
Proposal No. **C-70457**  
 Date **15-Mar-17**  
 Call Letters **KODE**  
 Channel **23**  
 Frequency **527 MHz**  
 Antenna Type **TFU-29JSC/VP-R 03**

RMS Directivity at Main Lobe  
 RMS Directivity at Horizontal

**27.0 ( 14.31 dB )**  
**12.8 ( 11.07 dB )**

**Calculated**

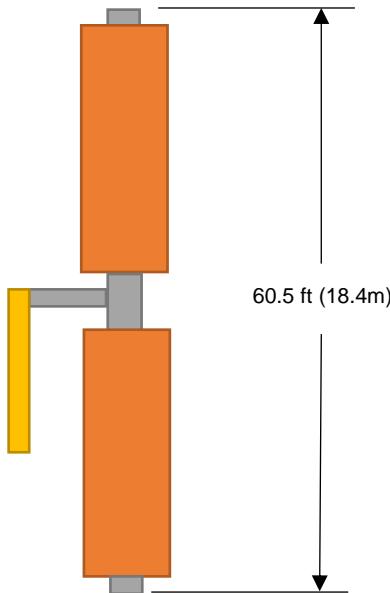
Beam Tilt **0.75 deg**  
 Pattern Number **29Y270075**



Angle	Field								
-10.0	0.067	10.0	0.052	30.0	0.017	50.0	0.028	70.0	0.008
-9.0	0.086	11.0	0.072	31.0	0.024	51.0	0.061	71.0	0.021
-8.0	0.085	12.0	0.022	32.0	0.026	52.0	0.085	72.0	0.041
-7.0	0.114	13.0	0.053	33.0	0.037	53.0	0.083	73.0	0.054
-6.0	0.199	14.0	0.043	34.0	0.067	54.0	0.059	74.0	0.059
-5.0	0.063	15.0	0.016	35.0	0.051	55.0	0.037	75.0	0.055
-4.0	0.128	16.0	0.040	36.0	0.021	56.0	0.028	76.0	0.046
-3.0	0.162	17.0	0.049	37.0	0.017	57.0	0.030	77.0	0.033
-2.0	0.421	18.0	0.025	38.0	0.035	58.0	0.038	78.0	0.020
-1.0	0.096	19.0	0.079	39.0	0.050	59.0	0.036	79.0	0.009
0.0	0.755	20.0	0.054	40.0	0.054	60.0	0.022	80.0	0.009
1.0	0.971	21.0	0.036	41.0	0.057	61.0	0.028	81.0	0.014
2.0	0.472	22.0	0.043	42.0	0.042	62.0	0.051	82.0	0.018
3.0	0.262	23.0	0.050	43.0	0.027	63.0	0.062	83.0	0.019
4.0	0.196	24.0	0.022	44.0	0.038	64.0	0.054	84.0	0.018
5.0	0.150	25.0	0.059	45.0	0.041	65.0	0.032	85.0	0.016
6.0	0.118	26.0	0.056	46.0	0.041	66.0	0.016	86.0	0.012
7.0	0.072	27.0	0.063	47.0	0.034	67.0	0.026	87.0	0.008
8.0	0.064	28.0	0.052	48.0	0.019	68.0	0.031	88.0	0.005
9.0	0.088	29.0	0.024	49.0	0.013	69.0	0.023	89.0	0.002
									90.0 0.000

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## MECHANICAL SPECIFICATIONS



Proposal No.	<b>C-70457</b>
Date	<b>15-Mar-17</b>
Call Letters	<b>KODE</b>
Channel	<b>23</b>
Frequency	<b>527 MHz</b>
Antenna Type	<b>TFU-29JSC/VP-R 03</b>

Preliminary Specifications

### Side Mounted

#### Without ice TIA/EIA-222-F

Height AGL	881 ft (268.5 m)
Basic Wind Speed	70 m/h (112.7 km/h)

### Mechanical Specifications

Height	H2	60.5 ft (18.4m)
Height of Center of Radiation	H3	30.25 ft (9.2m)
Force Coeff. x Projected Area	CaAc	88.6 ft <sup>2</sup> (8.2m <sup>2</sup> )
Weight	W	1000 lb (0.5t)

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

Prepared by: KLP

Date: 15-Mar-17

ME:



EE:

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## Summary

Proposal No.	<b>C-70457</b>
Date	<b>15-Mar-17</b>
Call Letters	<b>KODE</b>
Channel	<b>23</b>
Frequency	<b>527 MHz</b>
Antenna Type	<b>TFU-29JSC/VP-R 03</b>

## Antenna

	<b>Hpol</b>	<b>Vpol</b>
<b>ERP:</b>	<b>663 kW ( 28.22 dBk )</b>	<b>166 kW ( 22.19 dBk )</b>
RMS Gain*	21.60 ( 13.34 dB )	5.40 ( 7.32 dB )

**Antenna Input Power**      **30.7 kW ( 14.87 dBk )**

## Transmission Line

Type:	<b>Rigid</b>	Attenuation:	<b>( 1.19 dB )</b>
Size:	<b>6-1/8"</b>	Efficiency:	<b>76.0%</b>
Impedance:	<b>75 Ohm</b>		
Length:	<b>1070 ft</b>	<b>326.1 m</b>	

## Transmitter Output

**40.4 kW ( 16.06 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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