



Antenna Model:

THV-9A9/VP-R 4C130 (SP)

Proposal Number: C-70518-1
Date: 15-Mar-17
Customer: Nexstar
Location: Johnson City, TN

Electrical Specifications

Polarization: Elliptical
Azimuth Pattern: Directional
Antenna Input: 3-1/8" 50 Ohm EIA/DCA
VSWR: Channel 1.10 : 1
Bandwidth: 6 MHz
Rated Input Power: 15 kW (11.76 dBk) Maximum Average Power

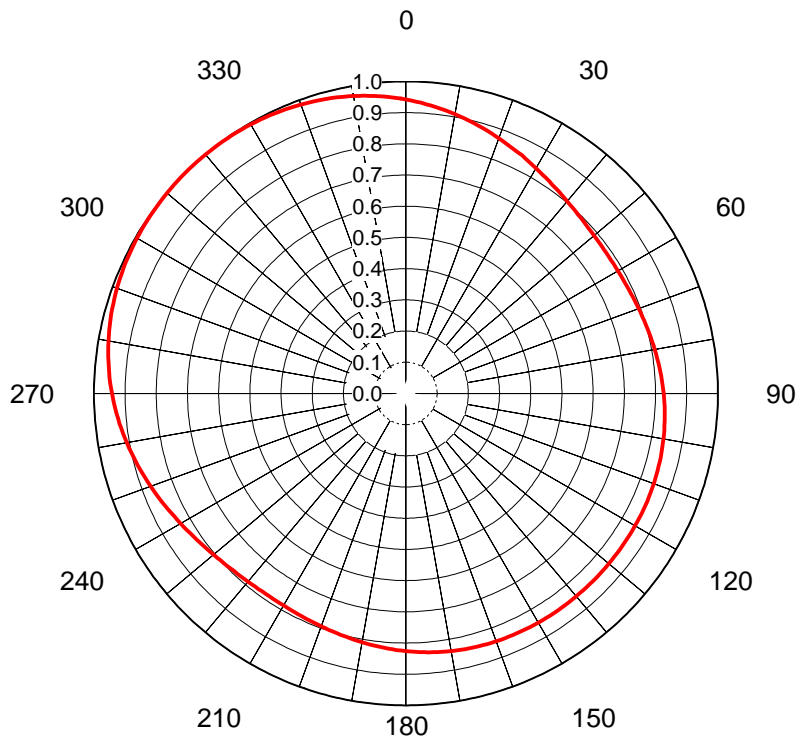
Mechanical Specifications

Mounting: Top Mounted
Environmental Protection: Full Radome
Height: 50.8 ft (15.5m) less Lightning Protector 53.8 ft (16.4m) with Lightning Protector
Weight: 9200 lb (4.2t)
Effective Projected Area: 99.6 ft² (9.3m²) TIA/EIA-222-F **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
WJHL	9	189 MHz	34.5 kW (15.38 dBk)	34.5 kW (15.38 dBk)	5.0 kW (6.98 dBk)	7.35 (8.66dB)	7.35 (8.66dB)	7.10 (8.51dB)	7.10 (8.51dB)

AZIMUTH PATTERN Horizontal Polarization



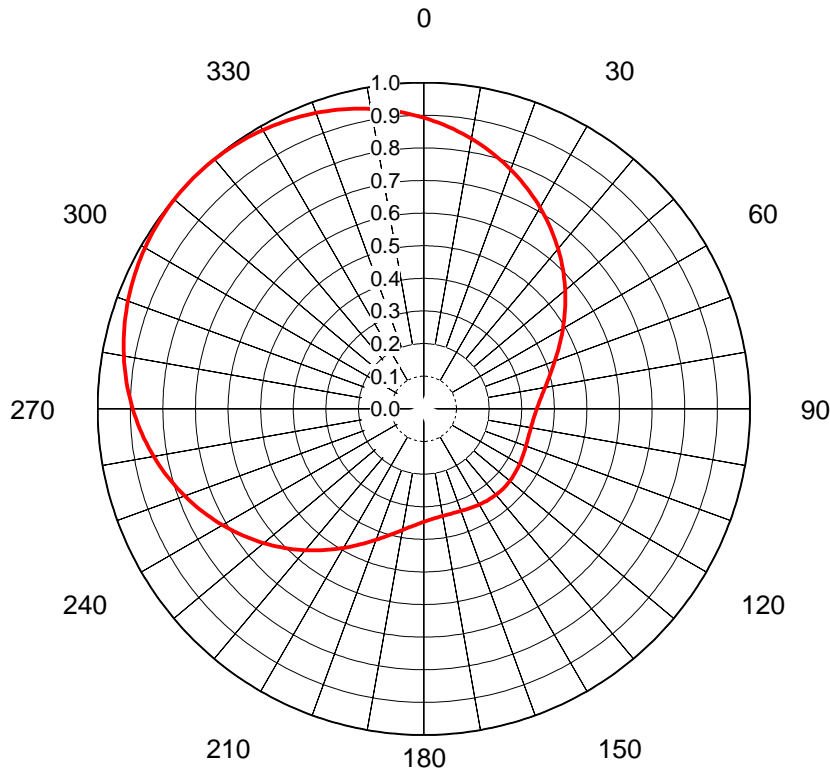
Proposal No. **C-70518-1**
 Date **15-Mar-17**
 Call Letters **WJHL**
 Channel **9**
 Frequency **189 MHz**
 Antenna Type **THV-9A9/VP-R 4C130 (SP)**
 Gain **1.31 (1.16dB)**
 Calculated

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.942	36	0.815	72	0.797	108	0.844	144	0.849	180	0.826	216	0.785	252	0.878	288	0.983
1	0.939	37	0.812	73	0.799	109	0.845	145	0.849	181	0.825	217	0.785	253	0.882	289	0.984
2	0.936	38	0.809	74	0.800	110	0.845	146	0.849	182	0.823	218	0.786	254	0.886	290	0.985
3	0.933	39	0.807	75	0.802	111	0.846	147	0.849	183	0.821	219	0.787	255	0.890	291	0.987
4	0.930	40	0.804	76	0.803	112	0.846	148	0.849	184	0.820	220	0.787	256	0.894	292	0.988
5	0.926	41	0.802	77	0.805	113	0.847	149	0.848	185	0.818	221	0.788	257	0.897	293	0.989
6	0.923	42	0.800	78	0.807	114	0.847	150	0.848	186	0.817	222	0.790	258	0.901	294	0.990
7	0.919	43	0.798	79	0.808	115	0.847	151	0.848	187	0.815	223	0.791	259	0.905	295	0.991
8	0.916	44	0.796	80	0.810	116	0.848	152	0.848	188	0.813	224	0.792	260	0.909	296	0.992
9	0.912	45	0.794	81	0.812	117	0.848	153	0.848	189	0.812	225	0.794	261	0.912	297	0.993
10	0.909	46	0.792	82	0.813	118	0.848	154	0.848	190	0.810	226	0.796	262	0.916	298	0.994
11	0.905	47	0.791	83	0.815	119	0.848	155	0.847	191	0.808	227	0.798	263	0.919	299	0.995
12	0.901	48	0.790	84	0.817	120	0.848	156	0.847	192	0.807	228	0.800	264	0.923	300	0.995
13	0.897	49	0.788	85	0.818	121	0.848	157	0.847	193	0.805	229	0.802	265	0.926	301	0.996
14	0.894	50	0.787	86	0.820	122	0.849	158	0.846	194	0.803	230	0.804	266	0.930	302	0.996
15	0.890	51	0.787	87	0.821	123	0.849	159	0.846	195	0.802	231	0.807	267	0.933	303	0.997
16	0.886	52	0.786	88	0.823	124	0.849	160	0.845	196	0.800	232	0.809	268	0.936	304	0.998
17	0.882	53	0.785	89	0.825	125	0.849	161	0.845	197	0.799	233	0.812	269	0.939	305	0.998
18	0.878	54	0.785	90	0.826	126	0.849	162	0.844	198	0.797	234	0.815	270	0.942	306	0.998
19	0.874	55	0.784	91	0.828	127	0.849	163	0.844	199	0.796	235	0.818	271	0.945	307	0.999
20	0.871	56	0.784	92	0.829	128	0.849	164	0.843	200	0.794	236	0.821	272	0.948	308	0.999
21	0.867	57	0.784	93	0.830	129	0.849	165	0.843	201	0.793	237	0.824	273	0.951	309	0.999
22	0.863	58	0.784	94	0.832	130	0.849	166	0.842	202	0.792	238	0.827	274	0.954	310	1.000
23	0.859	59	0.784	95	0.833	131	0.849	167	0.841	203	0.790	239	0.830	275	0.956	311	1.000
24	0.855	60	0.785	96	0.834	132	0.849	168	0.840	204	0.789	240	0.834	276	0.959	312	1.000
25	0.852	61	0.785	97	0.835	133	0.849	169	0.839	205	0.788	241	0.837	277	0.961	313	1.000
26	0.850	62	0.786	98	0.836	134	0.849	170	0.838	206	0.787	242	0.841	278	0.964	314	1.000
27	0.844	63	0.787	99	0.837	135	0.849	171	0.837	207	0.787	243	0.844	279	0.966	315	1.000
28	0.841	64	0.787	100	0.838	136	0.849	172	0.836	208	0.786	244	0.848	280	0.968	316	1.000
29	0.837	65	0.788	101	0.839	137	0.849	173	0.835	209	0.785	245	0.852	281	0.970	317	1.000
30	0.834	66	0.789	102	0.840	138	0.849	174	0.834	210	0.785	246	0.855	282	0.972	318	1.000
31	0.830	67	0.790	103	0.841	139	0.849	175	0.833	211	0.784	247	0.859	283	0.974	319	1.000
32	0.827	68	0.792	104	0.842	140	0.849	176	0.832	212	0.784	248	0.863	284	0.976	320	1.000
33	0.824	69	0.793	105	0.843	141	0.849	177	0.830	213	0.784	249	0.867	285	0.978	321	0.999
34	0.821	70	0.794	106	0.843	142	0.849	178	0.829	214	0.784	250	0.871	286	0.979	322	0.999
35	0.818	71	0.796	107	0.844	143	0.849	179	0.828	215	0.784	251	0.874	287	0.981	323	0.999

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AZIMUTH PATTERN Vertical Polarization

Proposal No. **C-70518-1**
 Date **15-Mar-17**
 Call Letters **WJHL**
 Channel **9**
 Frequency **189 MHz**
 Antenna Type **THV-9A9/VP-R 4C130 (SP)**
 Gain **2.18 (3.38dB)**
 Calculated



Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.892	36	0.670	72	0.416	108	0.333	144	0.343	180	0.347	216	0.536	252	0.793	288	0.960
1	0.888	37	0.663	73	0.410	109	0.333	145	0.342	181	0.349	217	0.543	253	0.799	289	0.963
2	0.883	38	0.655	74	0.405	110	0.333	146	0.342	182	0.351	218	0.551	254	0.805	290	0.965
3	0.878	39	0.648	75	0.400	111	0.334	147	0.341	183	0.354	219	0.558	255	0.812	291	0.968
4	0.873	40	0.641	76	0.395	112	0.334	148	0.340	184	0.357	220	0.566	256	0.818	292	0.970
5	0.868	41	0.633	77	0.390	113	0.335	149	0.340	185	0.360	221	0.573	257	0.824	293	0.973
6	0.863	42	0.626	78	0.386	114	0.335	150	0.339	186	0.363	222	0.581	258	0.829	294	0.975
7	0.857	43	0.618	79	0.381	115	0.336	151	0.338	187	0.366	223	0.588	259	0.835	295	0.977
8	0.852	44	0.611	80	0.377	116	0.336	152	0.338	188	0.370	224	0.596	260	0.841	296	0.980
9	0.846	45	0.603	81	0.373	117	0.337	153	0.337	189	0.373	225	0.603	261	0.846	297	0.982
10	0.841	46	0.596	82	0.370	118	0.338	154	0.336	190	0.377	226	0.611	262	0.852	298	0.984
11	0.835	47	0.588	83	0.366	119	0.338	155	0.336	191	0.381	227	0.618	263	0.857	299	0.985
12	0.829	48	0.581	84	0.363	120	0.339	156	0.335	192	0.386	228	0.626	264	0.863	300	0.987
13	0.824	49	0.573	85	0.360	121	0.340	157	0.335	193	0.390	229	0.633	265	0.868	301	0.989
14	0.818	50	0.566	86	0.357	122	0.340	158	0.334	194	0.395	230	0.641	266	0.873	302	0.990
15	0.812	51	0.558	87	0.354	123	0.341	159	0.334	195	0.400	231	0.648	267	0.878	303	0.992
16	0.805	52	0.551	88	0.351	124	0.342	160	0.333	196	0.405	232	0.655	268	0.883	304	0.993
17	0.799	53	0.543	89	0.349	125	0.342	161	0.333	197	0.410	233	0.663	269	0.888	305	0.994
18	0.793	54	0.536	90	0.347	126	0.343	162	0.333	198	0.416	234	0.670	270	0.892	306	0.995
19	0.787	55	0.529	91	0.345	127	0.343	163	0.332	199	0.421	235	0.677	271	0.897	307	0.996
20	0.780	56	0.521	92	0.343	128	0.344	164	0.332	200	0.427	236	0.684	272	0.902	308	0.997
21	0.774	57	0.514	93	0.341	129	0.344	165	0.332	201	0.433	237	0.691	273	0.906	309	0.998
22	0.767	58	0.507	94	0.339	130	0.344	166	0.332	202	0.439	238	0.699	274	0.910	310	0.999
23	0.761	59	0.500	95	0.338	131	0.345	167	0.332	203	0.445	239	0.706	275	0.914	311	0.999
24	0.754	60	0.492	96	0.337	132	0.345	168	0.333	204	0.452	240	0.713	276	0.919	312	0.999
25	0.747	61	0.485	97	0.336	133	0.345	169	0.333	205	0.458	241	0.720	277	0.923	313	1.000
26	0.740	62	0.479	98	0.335	134	0.345	170	0.334	206	0.465	242	0.727	278	0.926	314	1.000
27	0.734	63	0.472	99	0.334	135	0.345	171	0.334	207	0.472	243	0.734	279	0.930	315	1.000
28	0.727	64	0.465	100	0.334	136	0.345	172	0.335	208	0.479	244	0.740	280	0.934	316	1.000
29	0.720	65	0.458	101	0.333	137	0.345	173	0.336	209	0.485	245	0.747	281	0.937	317	1.000
30	0.713	66	0.452	102	0.333	138	0.345	174	0.337	210	0.492	246	0.754	282	0.941	318	0.999
31	0.706	67	0.445	103	0.332	139	0.345	175	0.338	211	0.500	247	0.761	283	0.944	319	0.999
32	0.699	68	0.439	104	0.332	140	0.344	176	0.339	212	0.507	248	0.767	284	0.948	320	0.999
33	0.691	69	0.433	105	0.332	141	0.344	177	0.341	213	0.514	249	0.774	285	0.951	321	0.998
34	0.684	70	0.427	106	0.332	142	0.344	178	0.343	214	0.521	250	0.780	286	0.954	322	0.997
35	0.677	71	0.421	107	0.332	143	0.343	179	0.345	215	0.529	251	0.787	287	0.957	323	0.996

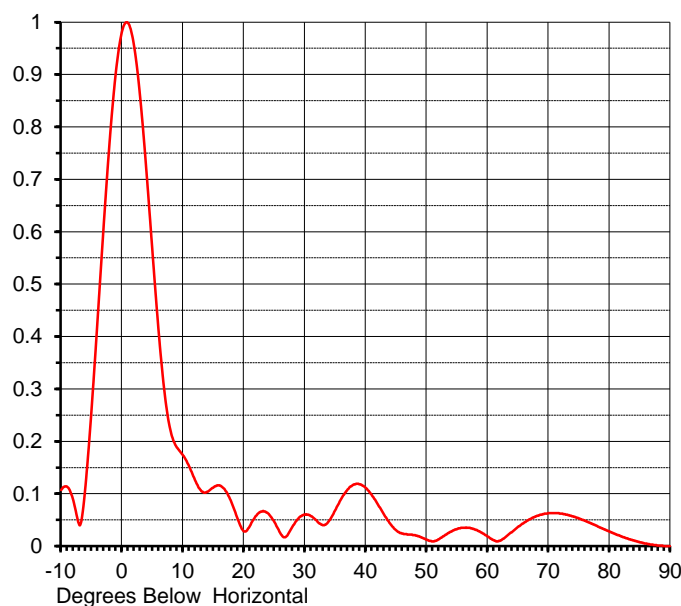
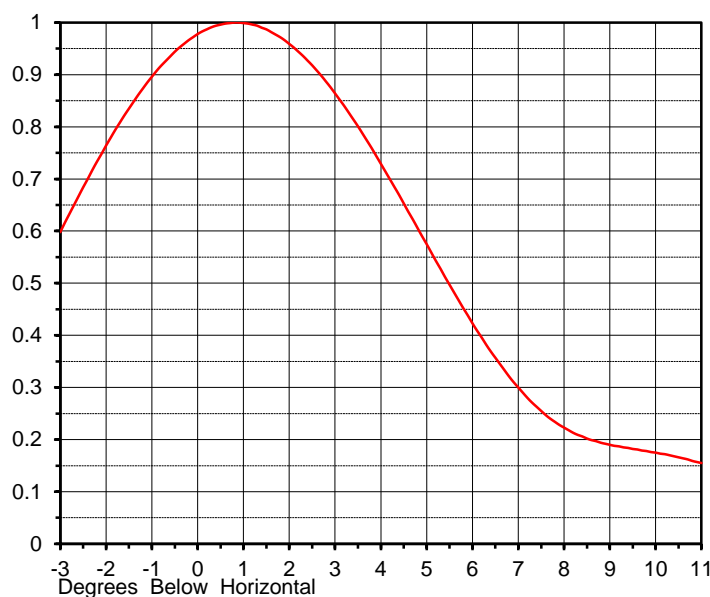
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ELEVATION PATTERN

Proposal No. **C-70518-1**
 Date **15-Mar-17**
 Call Letters **WJHL**
 Channel **9**
 Frequency **189 MHz**
 Antenna Type **THV-9A9/VP-R 4C130 (SP)**

RMS Directivity at Main Lobe **9.0 (9.54 dB)**
 RMS Directivity at Horizontal **8.7 (9.40 dB)**
Calculated

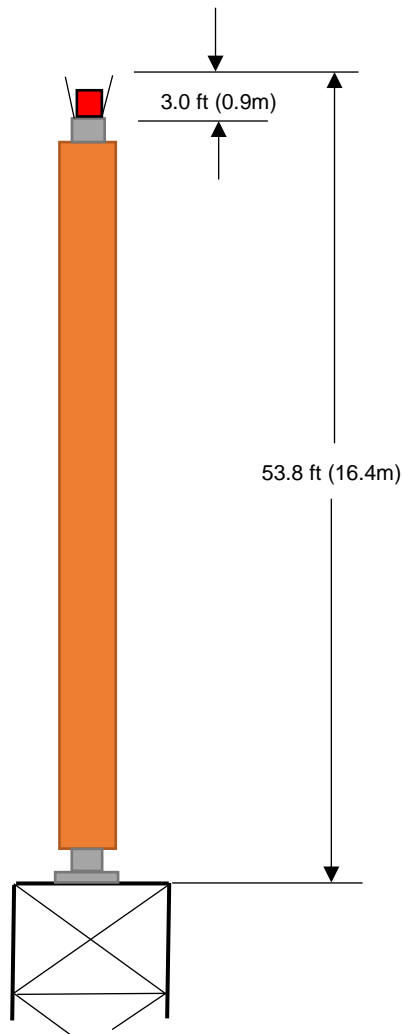
Beam Tilt **0.75 deg**
 Pattern Number **09V090075**



Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.107	10.0	0.173	30.0	0.060	50.0	0.012	70.0	0.063
-9.0	0.113	11.0	0.152	31.0	0.057	51.0	0.009	71.0	0.063
-8.0	0.087	12.0	0.125	32.0	0.048	52.0	0.013	72.0	0.062
-7.0	0.040	13.0	0.105	33.0	0.040	53.0	0.021	73.0	0.060
-6.0	0.116	14.0	0.104	34.0	0.049	54.0	0.028	74.0	0.057
-5.0	0.263	15.0	0.112	35.0	0.069	55.0	0.033	75.0	0.053
-4.0	0.437	16.0	0.116	36.0	0.091	56.0	0.035	76.0	0.048
-3.0	0.616	17.0	0.105	37.0	0.108	57.0	0.035	77.0	0.043
-2.0	0.779	18.0	0.082	38.0	0.117	58.0	0.031	78.0	0.038
-1.0	0.907	19.0	0.051	39.0	0.118	59.0	0.026	79.0	0.033
0.0	0.983	20.0	0.028	40.0	0.111	60.0	0.018	80.0	0.028
1.0	0.998	21.0	0.039	41.0	0.097	61.0	0.011	81.0	0.023
2.0	0.952	22.0	0.058	42.0	0.079	62.0	0.010	82.0	0.018
3.0	0.852	23.0	0.066	43.0	0.060	63.0	0.018	83.0	0.014
4.0	0.714	24.0	0.062	44.0	0.043	64.0	0.027	84.0	0.011
5.0	0.559	25.0	0.046	45.0	0.030	65.0	0.037	85.0	0.007
6.0	0.409	26.0	0.024	46.0	0.024	66.0	0.045	86.0	0.005
7.0	0.290	27.0	0.019	47.0	0.022	67.0	0.052	87.0	0.003
8.0	0.218	28.0	0.038	48.0	0.021	68.0	0.057	88.0	0.001
9.0	0.188	29.0	0.054	49.0	0.017	69.0	0.061	89.0	0.000
								90.0	0.000

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MECHANICAL SPECIFICATIONS



Proposal No. **C-70518-1**
 Date **15-Mar-17**
 Call Letters **WJHL**
 Channel **9**
 Frequency **189 MHz**
 Antenna Type **THV-9A9/VP-R 4C130 (SP)**

Preliminary Specifications

Top Mounted

Without ice TIA/EIA-222-F

Basic Wind Speed 90 m/h (144.8 km/h)

Mechanical Specifications

Height with Lightning Protector	H4	53.8 ft (16.4m)
Height less Lightning Protector	H2	50.8 ft (15.5m)
Height of Center of Radiation	H3	25.4 ft (7.7m)
Force Coeff. x Projected Area	CaAc	99.6 ft² (9.3m²)
Moment Arm	D1	26.4 ft (8m)

Weight W 9200 lb (4.2t)

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

Prepared by: KLP
 Rev. No.1 by: RMS

Date: 15-Mar-17
 Date: 2-Jun-17

ME:

RS

EE:

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Summary

Proposal No.	C-70518-1
Date	15-Mar-17
Call Letters	WJHL
Channel	9
Frequency	189 MHz
Antenna Type	THV-9A9/VP-R 4C130 (SP)

Antenna

	Hpol		Vpol	
ERP:	34.5 kW	(15.38 dBk)	34.5 kW	(15.38 dBk)
Peak Gain*	7.35	(8.66 dB)	7.35	(8.66 dB)

Antenna Input Power **4.7 kW (6.71 dBk)**

Transmission Line

Type:	Rigid	Attenuation:	(0.27 dB)
Size:	3-1/8"	Efficiency:	93.9%
Impedance:	50 Ohm		
Length:	200 ft	61.0 m	

Transmitter Output

5.0 kW (6.98 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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