



Antenna Model: **THV-4A9/VP-R O4**

Proposal Number: **C-71397-13**
Date: **6-Jul-21**
Customer: **Sonshine Family TV Corp**
Location: **Bethlehem, PA**

Electrical Specifications

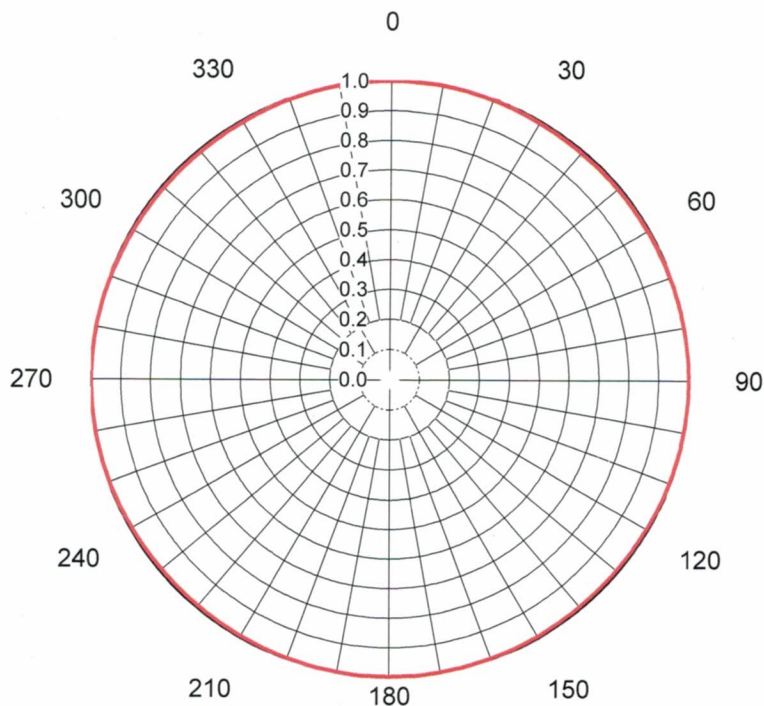
Polarization: **Elliptical**
Azimuth Pattern: **Omni**
Antenna Input: **4-1/16"** **50 Ohm** **EIA/DCA**
VSWR: **Channel** **1.10 : 1**
Bandwidth: **6 MHz**
Rated Input Power: **40 kW** **(16.02 dBk)** **Maximum Average Power**

Mechanical Specifications

Mounting: **Bottom of Stack**
Environmental Protection: **Full Radome**
Height: **26.8 ft (8.2m)** **less Lightning Protector**
Weight: **3200 lb (1.5t)**
Effective Projected Area: **39.7 ft² (3.7m²)** **TIA-222-G** **Basic Wind Speed: 89 m/h (143.2 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
WBPH	9	189 MHz	80.0 kW (19.03 dBk)	75.7 kW (18.79 dBk)	40.0 kW (16.02 dBk)	2.21 (3.44dB)	2.09 (3.20dB)	2.18 (3.38dB)	2.06 (3.14dB)

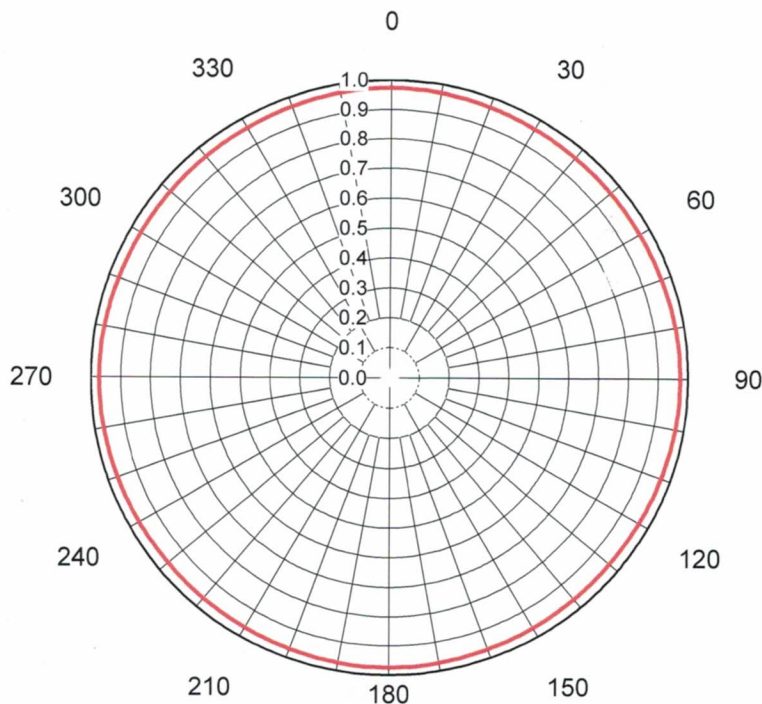


AZIMUTH PATTERN Horizontal Polarization

Proposal No. **C-71397-13**
 Date **6-Jul-21**
 Call Letters **WBPH**
 Channel **9**
 Frequency **189 MHz**
 Antenna Type **THV-4A9/VP-R O4**
 Gain **1.01 (0.04dB)**
 Calculated
 Circularity **+/- 1.0 dB**

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

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AZIMUTH PATTERN Vertical Polarization

Proposal No. C-71397-13
 Date 6-Jul-21
 Call Letters WBPH
 Channel 9
 Frequency 189 MHz
 Antenna Type THV-4A9/VP-R O4
 Gain 1.01 (0.05dB)
 Calculated
 Circularity +/- 1.0 dB

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.973	36	0.964	72	0.968	108	0.968	144	0.964	180	0.973	216	0.964	252	0.968	288	0.968
1	0.973	37	0.963	73	0.969	109	0.968	145	0.964	181	0.973	217	0.963	253	0.969	289	0.968
2	0.973	38	0.963	74	0.969	110	0.968	146	0.964	182	0.973	218	0.963	254	0.969	290	0.968
3	0.973	39	0.963	75	0.970	111	0.967	147	0.964	183	0.973	219	0.963	255	0.970	291	0.967
4	0.973	40	0.963	76	0.970	112	0.967	148	0.964	184	0.973	220	0.963	256	0.970	292	0.967
5	0.973	41	0.963	77	0.970	113	0.967	149	0.964	185	0.973	221	0.963	257	0.970	293	0.967
6	0.973	42	0.963	78	0.971	114	0.966	150	0.965	186	0.973	222	0.963	258	0.971	294	0.966
7	0.972	43	0.963	79	0.971	115	0.966	151	0.965	187	0.972	223	0.963	259	0.971	295	0.966
8	0.972	44	0.963	80	0.972	116	0.966	152	0.965	188	0.972	224	0.963	260	0.972	296	0.966
9	0.972	45	0.963	81	0.972	117	0.965	153	0.965	189	0.972	225	0.963	261	0.972	297	0.965
10	0.972	46	0.963	82	0.972	118	0.965	154	0.966	190	0.972	226	0.963	262	0.972	298	0.965
11	0.971	47	0.963	83	0.972	119	0.965	155	0.966	191	0.971	227	0.963	263	0.972	299	0.965
12	0.971	48	0.963	84	0.973	120	0.965	156	0.966	192	0.971	228	0.963	264	0.973	300	0.965
13	0.970	49	0.963	85	0.973	121	0.964	157	0.967	193	0.970	229	0.963	265	0.973	301	0.964
14	0.970	50	0.963	86	0.973	122	0.964	158	0.967	194	0.970	230	0.963	266	0.973	302	0.964
15	0.970	51	0.963	87	0.973	123	0.964	159	0.967	195	0.970	231	0.963	267	0.973	303	0.964
16	0.969	52	0.963	88	0.973	124	0.964	160	0.968	196	0.969	232	0.963	268	0.973	304	0.964
17	0.969	53	0.963	89	0.973	125	0.964	161	0.968	197	0.969	233	0.963	269	0.973	305	0.964
18	0.968	54	0.964	90	0.973	126	0.964	162	0.968	198	0.968	234	0.964	270	0.973	306	0.964
19	0.968	55	0.964	91	0.973	127	0.963	163	0.969	199	0.968	235	0.964	271	0.973	307	0.963
20	0.968	56	0.964	92	0.973	128	0.963	164	0.969	200	0.968	236	0.964	272	0.973	308	0.963
21	0.967	57	0.964	93	0.973	129	0.963	165	0.970	201	0.967	237	0.964	273	0.973	309	0.963
22	0.967	58	0.964	94	0.973	130	0.963	166	0.970	202	0.967	238	0.964	274	0.973	310	0.963
23	0.967	59	0.964	95	0.973	131	0.963	167	0.970	203	0.967	239	0.964	275	0.973	311	0.963
24	0.966	60	0.965	96	0.973	132	0.963	168	0.971	204	0.966	240	0.965	276	0.973	312	0.963
25	0.966	61	0.965	97	0.972	133	0.963	169	0.971	205	0.966	241	0.965	277	0.972	313	0.963
26	0.966	62	0.965	98	0.972	134	0.963	170	0.972	206	0.966	242	0.965	278	0.972	314	0.963
27	0.965	63	0.965	99	0.972	135	0.963	171	0.972	207	0.965	243	0.965	279	0.972	315	0.963
28	0.965	64	0.966	100	0.972	136	0.963	172	0.972	208	0.965	244	0.966	280	0.972	316	0.963
29	0.965	65	0.966	101	0.971	137	0.963	173	0.972	209	0.965	245	0.966	281	0.971	317	0.963
30	0.965	66	0.966	102	0.971	138	0.963	174	0.973	210	0.965	246	0.966	282	0.971	318	0.963
31	0.964	67	0.967	103	0.970	139	0.963	175	0.973	211	0.964	247	0.967	283	0.970	319	0.963
32	0.964	68	0.967	104	0.970	140	0.963	176	0.973	212	0.964	248	0.967	284	0.970	320	0.963
33	0.964	69	0.967	105	0.970	141	0.963	177	0.973	213	0.964	249	0.967	285	0.970	321	0.963
34	0.964	70	0.968	106	0.969	142	0.963	178	0.973	214	0.964	250	0.968	286	0.969	322	0.963
35	0.964	71	0.968	107	0.969	143	0.963	179	0.973	215	0.964	251	0.968	287	0.969	323	0.963

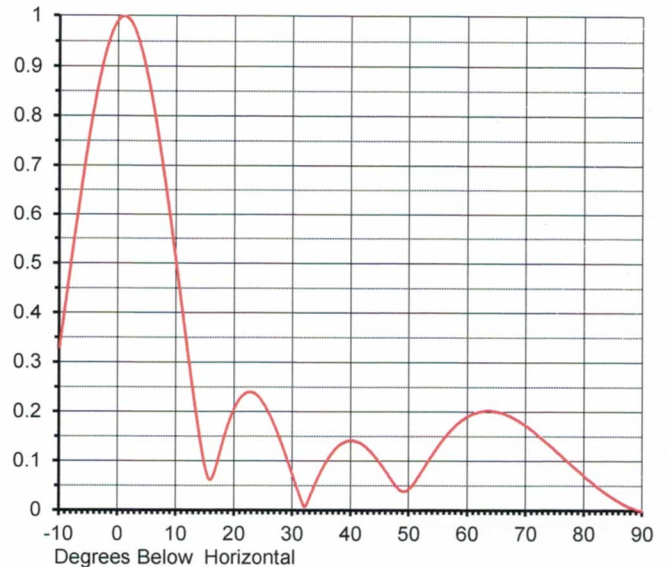
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ELEVATION PATTERN

Proposal No. C-71397-13
 Date 6-Jul-21
 Call Letters WBPH
 Channel 9
 Frequency 189 MHz
 Antenna Type THV-4A9/VP-R O4

RMS Directivity at Main Lobe 4.3 (6.33 dB)
 RMS Directivity at Horizontal 4.2 (6.23 dB)
 Calculated

Beam Tilt 1.00 deg
 Pattern Number 04V043100



Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.329	10.0	0.502	30.0	0.073	50.0	0.044	70.0	0.172
-9.0	0.417	11.0	0.411	31.0	0.039	51.0	0.058	71.0	0.164
-8.0	0.506	12.0	0.321	32.0	0.009	52.0	0.076	72.0	0.154
-7.0	0.593	13.0	0.234	33.0	0.029	53.0	0.095	73.0	0.144
-6.0	0.677	14.0	0.155	34.0	0.057	54.0	0.113	74.0	0.134
-5.0	0.755	15.0	0.089	35.0	0.082	55.0	0.131	75.0	0.123
-4.0	0.826	16.0	0.063	36.0	0.103	56.0	0.147	76.0	0.113
-3.0	0.886	17.0	0.094	37.0	0.120	57.0	0.161	77.0	0.102
-2.0	0.935	18.0	0.138	38.0	0.132	58.0	0.173	78.0	0.091
-1.0	0.971	19.0	0.177	39.0	0.139	59.0	0.183	79.0	0.081
0.0	0.993	20.0	0.207	40.0	0.142	60.0	0.191	80.0	0.071
1.0	1.000	21.0	0.228	41.0	0.140	61.0	0.197	81.0	0.061
2.0	0.993	22.0	0.239	42.0	0.134	62.0	0.201	82.0	0.051
3.0	0.971	23.0	0.240	43.0	0.124	63.0	0.202	83.0	0.042
4.0	0.935	24.0	0.233	44.0	0.111	64.0	0.203	84.0	0.033
5.0	0.886	25.0	0.218	45.0	0.096	65.0	0.201	85.0	0.025
6.0	0.825	26.0	0.197	46.0	0.079	66.0	0.198	86.0	0.018
7.0	0.755	27.0	0.171	47.0	0.062	67.0	0.193	87.0	0.012
8.0	0.676	28.0	0.140	48.0	0.047	68.0	0.187	88.0	0.006
9.0	0.591	29.0	0.107	49.0	0.039	69.0	0.180	89.0	0.002
						90.0	0.000	90.0	0.000

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