

TECHNICAL EXHIBIT
REQUEST FOR LICENSE
TELEVISION STATION WTOV-TV
STEUBENVILLE, OHIO
CH 9 30 KW 282 M

Technical Statement

This Technical Exhibit was prepared on behalf of Television Station WTOV-TV on Channel 9 assigned to Steubenville, Ohio in support of its request for station license. The station has completed equipment tests and by this instant application is requesting licensure for the authorized facility of an average horizontally polarized effective radiated power of 30 kilowatts on Channel 9.¹

It is noted that WTOV-TV is also adding a vertical polarization pursuant to Section 73.1690(c)(4) of the Commission's Rules. This additional polarization will be implemented using a separate antenna located at a lower radiation center than the current horizontally polarized antenna. The vertically polarized antenna is located 246 meters (808 feet) above ground level whereas the existing horizontally polarized antenna is located 265 meters (870 feet) above ground level. The vertically polarized effective radiated power does not exceed that of the horizontally polarized effective radiated power at any azimuth. The attached Appendix contains the manufacturer specifications for the separate vertically polarized antenna system.

¹ See FCC Construction Permit File Number: BPCDT-20110308ABN.

Figure 1 is a tabulation of the carrier transmission system losses.

Radiofrequency Electromagnetic Field Exposure

The proposed facility has been evaluated in terms of potential radiofrequency electromagnetic fields at ground level in accordance with OST Bulletin No. 65, *Evaluating Compliance with FCC Specified Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields*.²

For the calculation, a "worst-case" downward relative field value of 1.0 was assumed for the transmitting antennas. Therefore, using a maximum average effective radiated power of 50.5 kilowatts and a relative field value of 1.0, the predicted power density at the "worst case" ground level located 246 meters (808 feet) below the antenna radiation center is 0.03 mW/cm². This is less than fifteen percent of the Commission's guideline in an uncontrolled environment for a VHF television station.³

Charles A. Cooper

November 29, 2011

du Treil, Lundin & Rackley, Inc.
201 Fletcher Avenue
Sarasota, Florida 34237
941.329.6000

² OET Bulletin 65, Edition 97-01, August, 1997.

³ The FCC maximum guideline for an VHF broadcast television station on Channel 9 in an uncontrolled environment is 0.2 mW/cm².

Figure 1

TECHNICAL EXHIBIT
REQUEST FOR LICENSE
TELEVISION STATION WTOV-TV
STEUBENVILLE, OHIO
CH 9 30 KW 282 M

WTOV RF System Summary

Description	System
Transmitter Power Output (7 kW) (2.9 kW for Horizontal Polarization; 4.1 kW for Vertical Polarization):	8.5 dBk
Mask Filter (included in transmitter):	0.0 dB
Horizontally Polarized Transmission Line - EIA/DCA 6" inch, 1000'	0.6 dB
Horizontally Polarized Antenna: Dielectric, TW-12B9-R (12.0 Power Gain):	10.8 dB
Horizontally Polarized Effective Radiated Power (30 kW):	14.8 dBk
Vertically Polarized Transmission Line EIA/DCA 6-1/8" inch, 1000'	0.6 dB
Vertically Polarized Antenna: Dielectric, THA-C4-2HV/8-1 (5.8 Power Gain):	7.6 dB
Vertically Polarized Maximum Effective Radiated Power (20.5 kW):	13.1 dBk

APPENDIX A

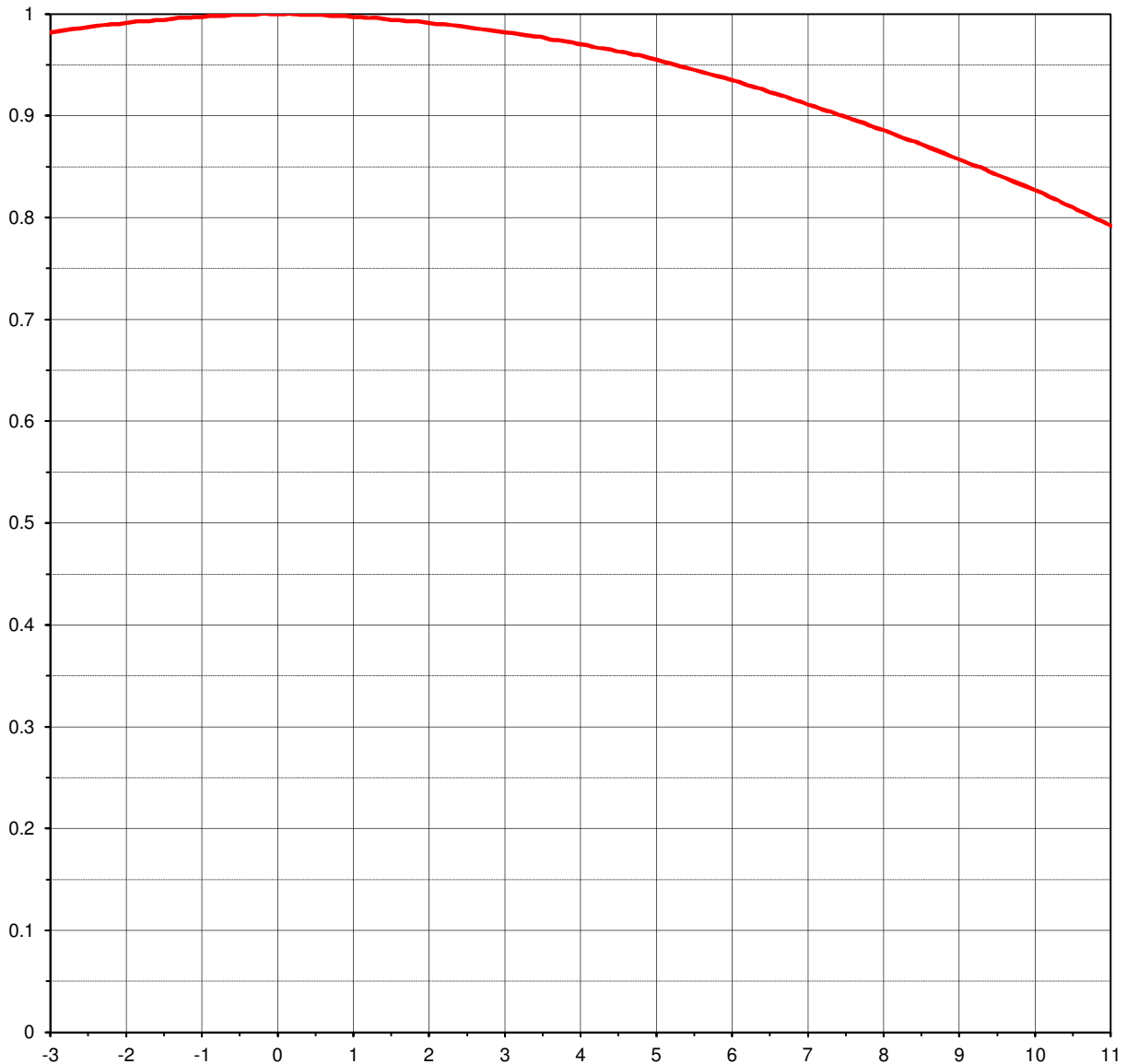
VERTICALLY POLARIZED ANTENNA SPECIFICATIONS



Proposal Number	C-04561	
Date	9-Feb-11	
Call Letters	WTOV	Channel 9
Location	Steubenville, OH	
Customer		
Antenna Type	THA-C4-2HV/8-1	

ELEVATION PATTERN

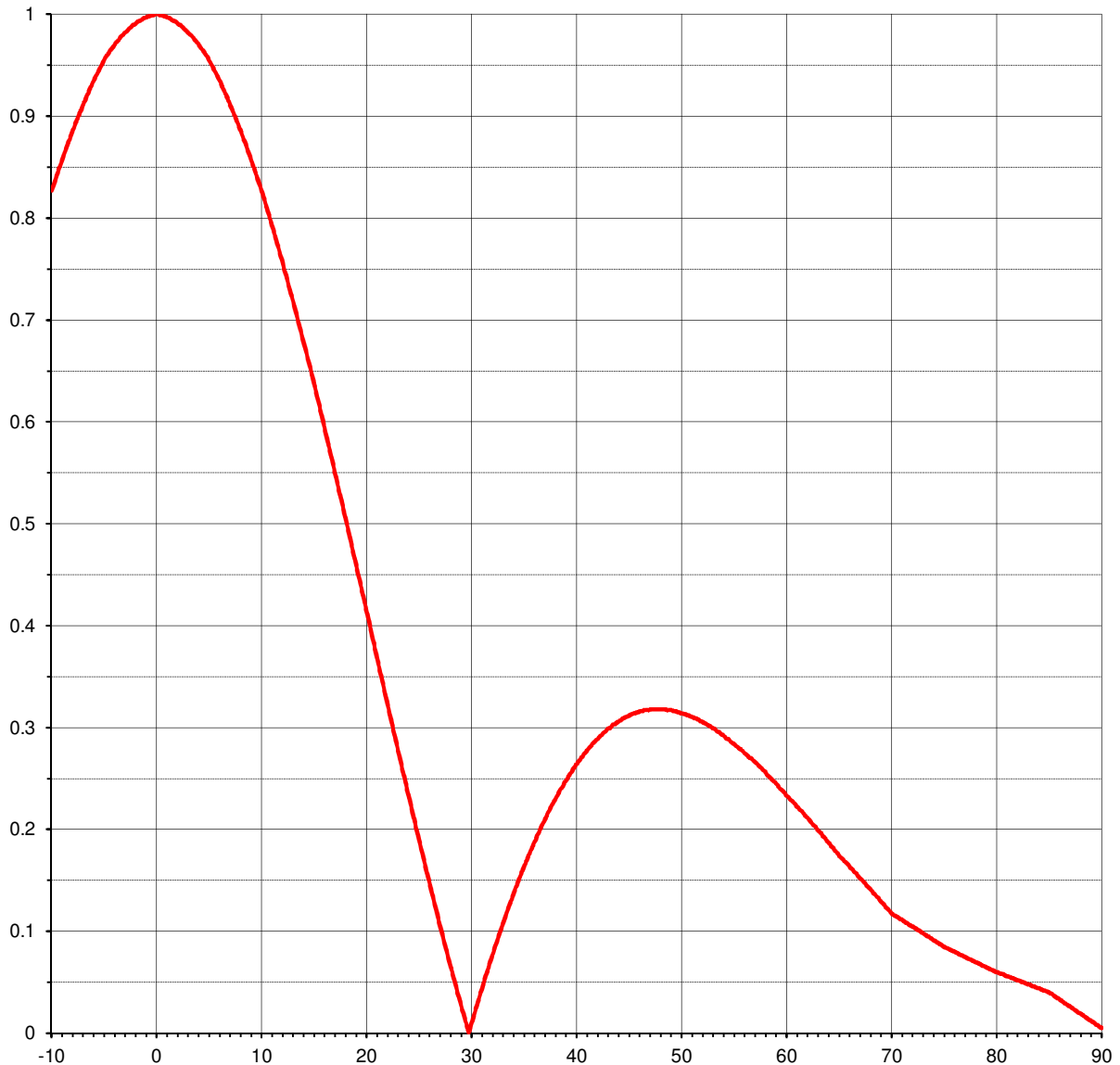
RMS Gain at Main Lobe	2.23 (3.48 dB)	Beam Tilt	0.00 deg
RMS Gain at Horizontal	2.20 (3.42 dB)	Frequency	189.00 MHz
Calculated / Measured	Calculated	Drawing #	02H022000



Degrees Below Horizontal

ELEVATION PATTERN

RMS Gain at Main Lobe	2.23	(3.48 dB)	Beam Tilt	0.00 deg
RMS Gain at Horizontal	2.20	(3.42 dB)	Frequency	189.00 MHz
Calculated / Measured	Calculated		Drawing #	02H022000-90





Proposal Number **C-04561**
 Date **9-Feb-11**
 Call Letters **WTOV** Channel **9**
 Location **Steubenville, OH**
 Customer
 Antenna Type **THA-C4-2HV/8-1**

TABULATION OF ELEVATION PATTERN

Elevation Pattern Drawing #: **02H022000-90**

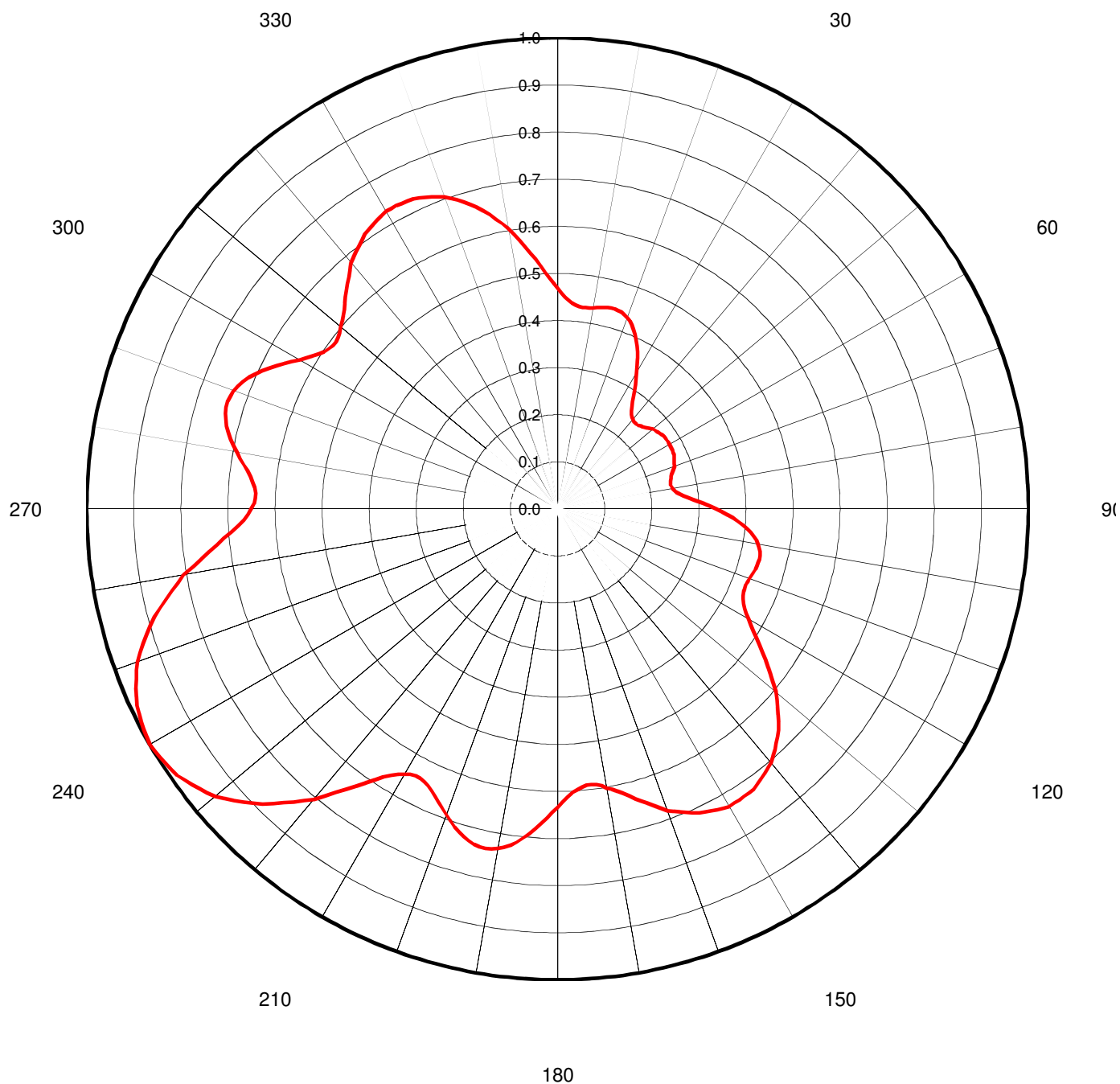
Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.827	2.4	0.988	10.6	0.810	30.5	0.024	51.0	0.311	71.5	0.108
-9.5	0.842	2.6	0.986	10.8	0.803	31.0	0.041	51.5	0.309	72.0	0.105
-9.0	0.857	2.8	0.984	11.0	0.796	31.5	0.058	52.0	0.306	72.5	0.101
-8.5	0.872	3.0	0.982	11.5	0.778	32.0	0.074	52.5	0.303	73.0	0.098
-8.0	0.886	3.2	0.980	12.0	0.760	32.5	0.090	53.0	0.300	73.5	0.095
-7.5	0.899	3.4	0.978	12.5	0.741	33.0	0.105	53.5	0.296	74.0	0.091
-7.0	0.911	3.6	0.975	13.0	0.722	33.5	0.120	54.0	0.293	74.5	0.088
-6.5	0.923	3.8	0.973	13.5	0.702	34.0	0.134	54.5	0.289	75.0	0.085
-6.0	0.935	4.0	0.970	14.0	0.682	34.5	0.148	55.0	0.284	75.5	0.082
-5.5	0.945	4.2	0.967	14.5	0.662	35.0	0.161	55.5	0.280	76.0	0.080
-5.0	0.955	4.4	0.965	15.0	0.642	35.5	0.174	56.0	0.276	76.5	0.077
-4.5	0.963	4.6	0.962	15.5	0.620	36.0	0.186	56.5	0.271	77.0	0.075
-4.0	0.970	4.8	0.959	16.0	0.598	36.5	0.197	57.0	0.267	77.5	0.072
-3.5	0.977	5.0	0.955	16.5	0.576	37.0	0.208	57.5	0.262	78.0	0.070
-3.0	0.982	5.2	0.951	17.0	0.554	37.5	0.219	58.0	0.257	78.5	0.067
-2.8	0.984	5.4	0.947	17.5	0.531	38.0	0.228	58.5	0.251	79.0	0.065
-2.6	0.986	5.6	0.943	18.0	0.509	38.5	0.238	59.0	0.246	79.5	0.062
-2.4	0.988	5.8	0.939	18.5	0.487	39.0	0.247	59.5	0.240	80.0	0.060
-2.2	0.990	6.0	0.935	19.0	0.464	39.5	0.255	60.0	0.234	80.5	0.058
-2.0	0.991	6.2	0.930	19.5	0.441	40.0	0.263	60.5	0.229	81.0	0.056
-1.8	0.993	6.4	0.926	20.0	0.419	40.5	0.270	61.0	0.223	81.5	0.054
-1.6	0.994	6.6	0.921	20.5	0.396	41.0	0.276	61.5	0.218	82.0	0.052
-1.4	0.995	6.8	0.916	21.0	0.373	41.5	0.282	62.0	0.212	82.5	0.050
-1.2	0.996	7.0	0.911	21.5	0.350	42.0	0.288	62.5	0.206	83.0	0.048
-1.0	0.997	7.2	0.906	22.0	0.327	42.5	0.293	63.0	0.200	83.5	0.046
-0.8	0.998	7.4	0.901	22.5	0.304	43.0	0.298	63.5	0.194	84.0	0.044
-0.6	0.999	7.6	0.896	23.0	0.282	43.5	0.302	64.0	0.188	84.5	0.042
-0.4	0.999	7.8	0.891	23.5	0.259	44.0	0.305	64.5	0.181	85.0	0.040
-0.2	1.000	8.0	0.886	24.0	0.237	44.5	0.309	65.0	0.174	85.5	0.036
0.0	1.000	8.2	0.880	24.5	0.215	45.0	0.311	65.5	0.169	86.0	0.033
0.2	1.000	8.4	0.875	25.0	0.194	45.5	0.314	66.0	0.163	86.5	0.029
0.4	0.999	8.6	0.869	25.5	0.172	46.0	0.315	66.5	0.158	87.0	0.026
0.6	0.999	8.8	0.863	26.0	0.151	46.5	0.317	67.0	0.152	87.5	0.022
0.8	0.998	9.0	0.857	26.5	0.130	47.0	0.317	67.5	0.147	88.0	0.019
1.0	0.997	9.2	0.851	27.0	0.109	47.5	0.318	68.0	0.141	88.5	0.015
1.2	0.996	9.4	0.845	27.5	0.089	48.0	0.318	68.5	0.135	89.0	0.012
1.4	0.995	9.6	0.839	28.0	0.069	48.5	0.318	69.0	0.129	89.5	0.008
1.6	0.994	9.8	0.836	28.5	0.050	49.0	0.317	69.5	0.123	90.0	0.005
1.8	0.993	10.0	0.830	29.0	0.031	49.5	0.316	70.0	0.117		
2.0	0.991	10.2	0.824	29.5	0.012	50.0	0.314	70.5	0.114		
2.2	0.990	10.4	0.817	30.0	0.006	50.5	0.313	71.0	0.111		

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Proposal Number	C-04561		
Date	9-Feb-11		
Call Letters	WTOV	Channel	9
Location	Steubenville, OH		
Customer			
Antenna Type	THA-C4-2HV/8-1		

AZIMUTH PATTERN/VERTICAL POLARIZATION

Gain	2.60	(4.15 dB)	Frequency	189.00 MHz
Calculated / Measured		Calculated	Drawing #	THAV-4C260
			0	





Proposal Number

C-04561

Date

9-Feb-11

Call Letters

WTOV

Channel

9

Location

Steubenville, OH

Customer

Antenna Type

THA-C4-2HV/8-1**TABULATION OF AZIMUTH PATTERN/VERTICAL POLARIZATION**

Azimuth Pattern Drawing #:

THAV-4C260

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
0	0.468	45	0.249	90	0.336	135	0.664	180	0.633	225	0.886	270	0.650	315	0.638
1	0.458	46	0.251	91	0.349	136	0.672	181	0.645	226	0.899	271	0.645	316	0.645
2	0.450	47	0.253	92	0.362	137	0.681	182	0.657	227	0.912	272	0.642	317	0.654
3	0.443	48	0.256	93	0.374	138	0.689	183	0.670	228	0.925	273	0.642	318	0.663
4	0.438	49	0.260	94	0.385	139	0.697	184	0.681	229	0.938	274	0.645	319	0.673
5	0.435	50	0.264	95	0.395	140	0.705	185	0.693	230	0.950	275	0.650	320	0.683
6	0.432	51	0.266	96	0.405	141	0.710	186	0.703	231	0.958	276	0.656	321	0.688
7	0.431	52	0.267	97	0.414	142	0.714	187	0.713	232	0.965	277	0.664	322	0.694
8	0.431	53	0.269	98	0.421	143	0.718	188	0.721	233	0.972	278	0.672	323	0.700
9	0.432	54	0.271	99	0.427	144	0.722	189	0.727	234	0.979	279	0.682	324	0.706
10	0.433	55	0.273	100	0.432	145	0.726	190	0.731	235	0.986	280	0.691	325	0.713
11	0.435	56	0.273	101	0.436	146	0.727	191	0.735	236	0.990	281	0.701	326	0.716
12	0.437	57	0.274	102	0.439	147	0.728	192	0.737	237	0.993	282	0.709	327	0.720
13	0.439	58	0.274	103	0.441	148	0.729	193	0.736	238	0.995	283	0.717	328	0.723
14	0.440	59	0.275	104	0.441	149	0.729	194	0.734	239	0.998	284	0.724	329	0.726
15	0.441	60	0.275	105	0.441	150	0.730	195	0.729	240	1.000	285	0.729	330	0.730
16	0.441	61	0.275	106	0.440	151	0.726	196	0.724	241	0.998	286	0.734	331	0.729
17	0.441	62	0.274	107	0.439	152	0.723	197	0.717	242	0.995	287	0.736	332	0.729
18	0.439	63	0.274	108	0.437	153	0.720	198	0.709	243	0.993	288	0.737	333	0.728
19	0.436	64	0.273	109	0.435	154	0.716	199	0.701	244	0.990	289	0.735	334	0.727
20	0.432	65	0.273	110	0.433	155	0.713	200	0.691	245	0.986	290	0.731	335	0.726
21	0.427	66	0.271	111	0.432	156	0.706	201	0.682	246	0.979	291	0.727	336	0.722
22	0.421	67	0.269	112	0.431	157	0.700	202	0.672	247	0.972	292	0.721	337	0.718
23	0.414	68	0.267	113	0.431	158	0.694	203	0.664	248	0.965	293	0.713	338	0.714
24	0.405	69	0.266	114	0.432	159	0.688	204	0.656	249	0.958	294	0.703	339	0.710
25	0.395	70	0.264	115	0.435	160	0.683	205	0.650	250	0.950	295	0.693	340	0.705
26	0.385	71	0.260	116	0.438	161	0.673	206	0.645	251	0.938	296	0.681	341	0.697
27	0.374	72	0.256	117	0.443	162	0.663	207	0.642	252	0.925	297	0.670	342	0.689
28	0.362	73	0.253	118	0.450	163	0.654	208	0.642	253	0.912	298	0.657	343	0.681
29	0.349	74	0.251	119	0.458	164	0.645	209	0.645	254	0.899	299	0.645	344	0.672
30	0.336	75	0.249	120	0.468	165	0.638	210	0.650	255	0.886	300	0.633	345	0.664
31	0.324	76	0.247	121	0.479	166	0.628	211	0.657	256	0.870	301	0.622	346	0.652
32	0.311	77	0.246	122	0.490	167	0.620	212	0.667	257	0.853	302	0.612	347	0.640
33	0.299	78	0.245	123	0.503	168	0.612	213	0.679	258	0.837	303	0.604	348	0.629
34	0.288	79	0.246	124	0.517	169	0.606	214	0.694	259	0.821	304	0.598	349	0.617
35	0.278	80	0.248	125	0.532	170	0.602	215	0.711	260	0.806	305	0.593	350	0.605
36	0.269	81	0.250	126	0.546	171	0.595	216	0.727	261	0.784	306	0.590	351	0.590
37	0.261	82	0.255	127	0.560	172	0.591	217	0.745	262	0.764	307	0.589	352	0.575
38	0.255	83	0.261	128	0.575	173	0.589	218	0.764	263	0.745	308	0.591	353	0.560
39	0.250	84	0.269	129	0.590	174	0.590	219	0.784	264	0.727	309	0.595	354	0.546
40	0.248	85	0.278	130	0.605	175	0.593	220	0.806	265	0.711	310	0.602	355	0.532
41	0.246	86	0.288	131	0.617	176	0.598	221	0.821	266	0.694	311	0.606	356	0.517
42	0.245	87	0.299	132	0.629	177	0.604	222	0.837	267	0.679	312	0.612	357	0.503
43	0.246	88	0.311	133	0.640	178	0.612	223	0.853	268	0.667	313	0.620	358	0.490
44	0.247	89	0.324	134	0.652	179	0.622	224	0.870	269	0.657	314	0.628	359	0.479

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