



**STATEMENT OF JAMES D. SADLER
SPECIAL OPERATING CONDITIONS
AFFECTING STATIONS WHBG(AM) AND WSVA(AM)
IN SUPPORT OF AN APPLICATION FOR LICENSE
FM TRANSLATOR STATION W295CP - HARRISONBURG, VIRGINIA
FACILITY ID: 200014**

Applicant: Tidewater Communications, LLC

I am a Technical Consultant, an employee in the firm of Carl T. Jones Corporation with offices located in Springfield, VA. My education and experience are a matter of record with the Federal Communications Commission.

Discussion

The FM Translator W295CP Construction Permit, FCC File No. BNPFT-20171201AEY, authorizes the installation of a new FM transmitting antenna and associated transmission line on an existing tower located adjacent to the shared towers employed by AM Stations WHBG and WSVA. Special operating conditions, 4 and 5, were included in the W295CP Construction Permit requiring the permittee to provide notification of the construction to the AM Stations and, using method of moments analysis, examine the potential impact of the construction on the patterns of Station WHBG and WSVA. Because both of the AM Stations and the FM translator W295CP are co-owned by the permittee notification was not necessary in this case. This office

has been retained to determine the impact of the installation of the FM translator antenna and prepare this engineering statement and attached figures to satisfy the two conditions.

Radio Station WSVA operates on 550 kHz utilizing the center tower of its three tower array for daytime non-directional operation. At night, the station uses all three towers. Station WHBG operates non-directionally during daytime and nighttime hours on 1360 kHz using the center tower of the array. The authorized FM translator antenna is mounted on an existing tower located approximately 220 feet north-northeast of tower number 3 (NW) and 573 feet north-northwest of tower number 2 (C). The existing tower is base insulated and the guy wires are broken up with insulators. The tower was previously detuned at 550 kHz but has never been detuned at 1360 kHz.

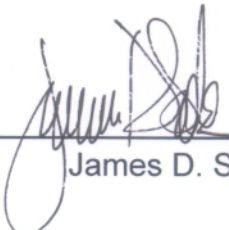
The new FM antenna was installed on the existing tower without increasing the physical height of the tower. Appropriate ground kits were installed on the transmission line at 50 foot intervals to minimize the effect of the installation on both AM operations. The FM translator transmission line crosses the base of the insulated tower via a newly mounted FM isocoupler.

Station WSVA (condition 5) is licensed pursuant to method of moment's rules. The existing tower was most recently detuned as part of the WSVA proof of performance. Following the installation of the new FM antenna, transmission line and associated isocoupler, the tower was again detuned at 550 kHz. As a result, the installation of the new FM equipment on the nearby tower has had no impact on the operation of Station WSVA.

Special operating condition 4 on the construction permit applies to the non-directional operation of Station WHBG. The existing tower located adjacent to the WHBG non-directional tower has never been detuned at the WHBG operating frequency of 1360 kHz. A method of moment's computer model was developed to model the effect of the existing tower on the WHBG non-directional pattern using Expert MiniNEC Broadcast Professional (Version 23.0). The tower model includes both the detuning network for detuning the tower at 550 kHz and the isocoupler stray impedance across the base insulator. The other two towers used in the WSVB nighttime directional array are detuned at 1360 kHz and were included in the model accordingly. A summary of the model details is included as Figure 1. A tabulation of the MiniNEC theoretical horizontal plane radiation pattern at 1 degree intervals versus the FCC theoretical horizontal plane radiation pattern is included as Figure 2. As demonstrated in the tabulation of Figure 2, the pattern distortion resulting from the existing tower does not exceed ± 2 dB in any direction. Therefore, additional detuning of the tower at 1360 kHz is not required.

In conclusion, based on the discussion herein and the method of moments model analysis, construction permit special conditions 4 and 5 are fully satisfied. This engineering statement was prepared by me or under my direct supervision and the information therein is believed to be true and correct.

Dated: May 15, 2018


James D. Sadler

NON-DIRECTIONAL MODEL WHBG(AM) – HARRISONBURG, VIRGINIA

Figure 1
Sheet 1 of 3

IMPEDANCE - NIGHTTIME

normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 1, sector 1							
1.36	662.58	-531.74	849.56	321.3	21.816	-.79685	-7.7564

GEOMETRY - NIGHTTIME

Wire coordinates in degrees; other dimensions in meters

Environment: perfect ground

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.194	27
		0	0	173.1		
2	none	222.5	135.	0	.194	27
		222.5	135.	173.1		
3	none	222.5	315.	0	.194	27
		222.5	315.	173.1		
4	none	285.3	335.6	0	.5457	33
		285.3	335.6	249.25		

Number of wires = 4
current nodes = 114

	minimum	maximum
Individual wires	wire value	wire value
segment length	1 6.41111	4 7.55303
radius	1 .194	4 .5457

ELECTRICAL DESCRIPTION - NIGHTTIME

Frequencies (MHz)

no.	frequency	step	no. of steps	segment length (wavelengths)
lowest				minimum maximum
1	1.36	0	1	.0178086 .0209806

Sources

source	node	sector	magnitude	phase	type
1	1	1	1.	0	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	28	1.E-03	0	.026	0	0
2	55	1.E-03	0	.026	0	0
3	82	.456	1,119.9	0	0	0

PEAK CURRENTS - NIGHTTIME

Frequency = 1.36 MHz

Input power = 5,000. watts

Efficiency = 100. %

coordinates in degrees

current				mag	phase	real	imaginary
no.	X	Y	Z	(amps)	(deg)	(amps)	(amps)
GND	0	0	0	3.88491	38.7	3.02987	2.43155
2	0	0	6.41111	3.02931	3.9	3.02216	.208007
3	0	0	12.8222	3.28108	336.1	2.99912	-1.33069
4	0	0	19.2333	3.99728	317.8	2.96099	-2.68529

**NON-DIRECTIONAL MODEL
WHBG(AM) – HARRISONBURG, VIRGINIA**

**Figure 1
Sheet 2 of 3**

5	0	0	25.6445	4.87468	306.6	2.90814	-3.91219
6	0	0	32.0556	5.77617	299.5	2.84111	-5.02914
7	0	0	38.4667	6.64111	294.6	2.76056	-6.04017
8	0	0	44.8778	7.43858	291.	2.66732	-6.94391
9	0	0	51.2889	8.15001	288.3	2.5623	-7.73675
10	0	0	57.7	8.76274	286.2	2.44655	-8.41427
11	0	0	64.1111	9.26752	284.5	2.32121	-8.97212
12	0	0	70.5222	9.65744	283.1	2.18753	-9.40643
13	0	0	76.9333	9.92746	281.9	2.04681	-9.71416
14	0	0	83.3444	10.0741	280.9	1.90041	-9.89325
15	0	0	89.7556	10.0955	280.	1.74975	-9.94276
16	0	0	96.1667	9.99126	279.2	1.59626	-9.86292
17	0	0	102.578	9.76222	278.5	1.4414	-9.65522
18	0	0	108.989	9.41063	277.9	1.28659	-9.32227
19	0	0	115.4	8.94007	277.3	1.13326	-8.86796
20	0	0	121.811	8.35514	276.8	.982767	-8.29714
21	0	0	128.222	7.66145	276.3	.83644	-7.61565
22	0	0	134.633	6.86533	275.8	.695496	-6.83001
23	0	0	141.044	5.97341	275.4	.561061	-5.947
24	0	0	147.456	4.9921	275.	.434102	-4.97319
25	0	0	153.867	3.9261	274.6	.315387	-3.91341
26	0	0	160.278	2.77525	274.2	.205295	-2.76765
27	0	0	166.689	1.52492	273.9	.103341	-1.52142
END	0	0	173.1	0	0	0	0
GND	-157.331	-157.331	0	1.4389	214.5	-1.18652	-.814007
29	-157.331	-157.331	6.41111	1.22027	214.5	-1.00599	-.690684
30	-157.331	-157.331	12.8222	1.06151	214.5	-.874343	-.601935
31	-157.331	-157.331	19.2333	.914221	214.7	-.751684	-.520357
32	-157.331	-157.331	25.6445	.773127	215.	-.633675	-.442924
33	-157.331	-157.331	32.0556	.636777	215.4	-.519142	-.368749
34	-157.331	-157.331	38.4667	.505122	216.1	-.408058	-.297719
35	-157.331	-157.331	44.8778	.37875	217.4	-.300888	-.230039
36	-157.331	-157.331	51.2889	.258676	219.9	-.198338	-.166059
37	-157.331	-157.331	57.7	.1467	226.4	-.10122	-.106185
38	-157.331	-157.331	64.1111	.0518885	258.5	-.0103886	-.0508379
39	-157.331	-157.331	70.5222	.0733072	359.7	.0733059	-4.25E-04
40	-157.331	-157.331	76.9333	.155598	16.7	.149045	.0446802
41	-157.331	-157.331	83.3444	.231876	21.3	.216067	.0841526
42	-157.331	-157.331	89.7556	.297927	23.3	.273682	.117722
43	-157.331	-157.331	96.1667	.352564	24.3	.321285	.14518
44	-157.331	-157.331	102.578	.395111	24.9	.358369	.166387
45	-157.331	-157.331	108.989	.425117	25.2	.384532	.181271
46	-157.331	-157.331	115.4	.442278	25.4	.399467	.189831
47	-157.331	-157.331	121.811	.446448	25.5	.402988	.192135
48	-157.331	-157.331	128.222	.437588	25.5	.394995	.188314
49	-157.331	-157.331	134.633	.415784	25.4	.375492	.178555
50	-157.331	-157.331	141.044	.381187	25.3	.344537	.163089
51	-157.331	-157.331	147.456	.33398	25.2	.30221	.142168
52	-157.331	-157.331	153.867	.274265	25.	.248517	.116019
53	-157.331	-157.331	160.278	.20179	24.8	.183138	.0847342
54	-157.331	-157.331	166.689	.115156	24.6	.104701	.0479444
END	-157.331	-157.331	173.1	0	0	0	0
GND	157.331	157.331	0	1.60699	215.1	-1.31553	-.922936
56	157.331	157.331	6.41111	1.36269	215.1	-1.11528	-.782999
57	157.331	157.331	12.8222	1.18498	215.1	-.969027	-.682034
58	157.331	157.331	19.2333	1.01983	215.3	-.832559	-.588984
59	157.331	157.331	25.6445	.861357	215.5	-.701081	-.500422
60	157.331	157.331	32.0556	.707961	215.9	-.573306	-.415365

**NON-DIRECTIONAL MODEL
WHBG(AM) – HARRISONBURG, VIRGINIA**

**Figure 1
Sheet 3 of 3**

61	157.331	157.331	38.4667	.559609	216.6	-.449228	-.333701
62	157.331	157.331	44.8778	.41699	217.8	-.3294	-.255687
63	157.331	157.331	51.2889	.281242	220.3	-.214628	-.181747
64	157.331	157.331	57.7	.154375	226.7	-.105849	-.112374
65	157.331	157.331	64.1111	.0482507	265.2	-4.04E-03	-.048081
66	157.331	157.331	70.5222	.0904384	6.8	.0898113	.0106321
67	157.331	157.331	76.9333	.185881	19.9	.174771	.0633012
68	157.331	157.331	83.3444	.272894	23.7	.249956	.109513
69	157.331	157.331	89.7556	.348039	25.3	.314573	.148914
70	157.331	157.331	96.1667	.410131	26.2	.367921	.181223
71	157.331	157.331	102.578	.458424	26.7	.409414	.206234
72	157.331	157.331	108.989	.492389	27.	.438581	.223818
73	157.331	157.331	115.4	.511674	27.2	.45507	.233926
74	157.331	157.331	121.811	.516082	27.3	.458658	.236588
75	157.331	157.331	128.222	.505559	27.3	.449231	.231908
76	157.331	157.331	134.633	.480177	27.3	.426785	.220056
77	157.331	157.331	141.044	.440097	27.2	.391387	.201249
78	157.331	157.331	147.456	.385518	27.1	.343138	.175729
79	157.331	157.331	153.867	.316541	27.	.282042	.143703
80	157.331	157.331	160.278	.232867	26.9	.207747	.105205
81	157.331	157.331	166.689	.132878	26.7	.118715	.0596928
END	157.331	157.331	173.1	0	0	0	0
GND	259.818	117.859	0	.0857051	328.7	.0732158	-.0445512
83	259.818	117.859	7.55303	.0313206	155.4	-.028488	.0130157
84	259.818	117.859	15.1061	.112411	156.2	-.102882	.0452935
85	259.818	117.859	22.6591	.195015	158.4	-.181361	.0716857
86	259.818	117.859	30.2121	.281218	160.6	-.265235	.093455
87	259.818	117.859	37.7652	.371498	162.6	-.354461	.111212
88	259.818	117.859	45.3182	.465332	164.4	-.448169	.125214
89	259.818	117.859	52.8712	.561687	166.	-.545071	.135612
90	259.818	117.859	60.4242	.659238	167.5	-.643646	.142531
91	259.818	117.859	67.9773	.756481	168.9	-.742238	.146105
92	259.818	117.859	75.5303	.851786	170.1	-.839094	.146497
93	259.818	117.859	83.0833	.943486	171.2	-.932448	.143901
94	259.818	117.859	90.6364	1.0299	172.3	-1.02054	.138547
95	259.818	117.859	98.1894	1.10939	173.2	-1.10167	.130703
96	259.818	117.859	105.742	1.18039	174.1	-1.1742	.120667
97	259.818	117.859	113.296	1.24144	175.	-1.23666	.108767
98	259.818	117.859	120.849	1.29121	175.8	-1.28769	.0953591
99	259.818	117.859	128.402	1.32855	176.5	-1.32609	.0808155
100	259.818	117.859	135.955	1.35249	177.2	-1.3509	.0655247
101	259.818	117.859	143.508	1.36224	177.9	-1.36133	.0498844
102	259.818	117.859	151.061	1.35724	178.6	-1.35681	.0342943
103	259.818	117.859	158.614	1.33715	179.2	-1.33701	.0191532
104	259.818	117.859	166.167	1.30185	179.8	-1.30184	4.85E-03
105	259.818	117.859	173.72	1.25142	180.4	-1.2514	-8.24E-03
106	259.818	117.859	181.273	1.18619	181.	-1.18603	-.0197553
107	259.818	117.859	188.826	1.10667	181.5	-1.10628	-.0293658
108	259.818	117.859	196.379	1.01352	182.1	-1.01285	-.0367617
109	259.818	117.859	203.932	.907575	182.6	-.906618	-.0416629
110	259.818	117.859	211.485	.78972	183.2	-.788504	-.0438158
111	259.818	117.859	219.038	.660835	183.7	-.659436	-.0429867
112	259.818	117.859	226.591	.521578	184.3	-.520122	-.0389407
113	259.818	117.859	234.144	.371848	184.8	-.370522	-.0313826
114	259.818	117.859	241.697	.210093	185.4	-.209152	-.0198629
END	259.818	117.859	249.25	0	0	0	0

STATION WHBG(AM)
Non-Directional Pattern Tabulation

Figure 2
Sheet 1 of 8

MiniNEC Theoretical WHBG(AM) Towers 1 and 3 Detuned Support Structure Detuned @ 550kHz with FM Iso-Coupler in parallel			
Azimuth (deg. T)	FCC Theoretical (mV/m @ 1km)	(mV/m @ 1km)	Pattern Distortion (dB)
0	830.03	687.76	-1.63
1	830.03	691.35	-1.59
2	830.03	695.30	-1.54
3	830.03	699.60	-1.48
4	830.03	704.27	-1.43
5	830.03	709.33	-1.36
6	830.03	714.76	-1.30
7	830.03	720.58	-1.23
8	830.03	726.79	-1.15
9	830.03	733.38	-1.08
10	830.03	740.35	-0.99
11	830.03	747.69	-0.91
12	830.03	755.39	-0.82
13	830.03	763.43	-0.73
14	830.03	771.80	-0.63
15	830.03	780.48	-0.53
16	830.03	789.44	-0.44
17	830.03	798.65	-0.33
18	830.03	808.09	-0.23
19	830.03	817.73	-0.13
20	830.03	827.52	-0.03
21	830.03	837.44	0.08
22	830.03	847.44	0.18
23	830.03	857.48	0.28
24	830.03	867.51	0.38
25	830.03	877.50	0.48
26	830.03	887.38	0.58
27	830.03	897.13	0.68
28	830.03	906.67	0.77
29	830.03	915.97	0.86
30	830.03	924.98	0.94
31	830.03	933.64	1.02
32	830.03	941.90	1.10
33	830.03	949.71	1.17
34	830.03	957.02	1.24
35	830.03	963.78	1.30
36	830.03	969.95	1.35
37	830.03	975.47	1.40
38	830.03	980.31	1.45
39	830.03	984.43	1.48
40	830.03	987.78	1.51
41	830.03	990.33	1.53
42	830.03	992.05	1.55
43	830.03	992.91	1.56
44	830.03	992.88	1.56

STATION WHBG(AM)
Non-Directional Pattern Tabulation

Figure 2
Sheet 2 of 8

MiniNEC Theoretical WHBG(AM) Towers 1 and 3 Detuned Support Structure Detuned @ 550kHz with FM Iso-Coupler in parallel			
Azimuth (deg. T)	FCC Theoretical (mV/m @ 1km)	(mV/m @ 1km)	Pattern Distortion (dB)
45	830.03	991.95	1.55
46	830.03	990.10	1.53
47	830.03	987.32	1.51
48	830.03	983.60	1.47
49	830.03	978.96	1.43
50	830.03	973.39	1.38
51	830.03	966.90	1.33
52	830.03	959.53	1.26
53	830.03	951.28	1.18
54	830.03	942.21	1.10
55	830.03	932.34	1.01
56	830.03	921.72	0.91
57	830.03	910.40	0.80
58	830.03	898.46	0.69
59	830.03	885.94	0.57
60	830.03	872.94	0.44
61	830.03	859.53	0.30
62	830.03	845.80	0.16
63	830.03	831.85	0.02
64	830.03	817.78	-0.13
65	830.03	803.69	-0.28
66	830.03	789.70	-0.43
67	830.03	775.93	-0.59
68	830.03	762.49	-0.74
69	830.03	749.52	-0.89
70	830.03	737.12	-1.03
71	830.03	725.43	-1.17
72	830.03	714.56	-1.30
73	830.03	704.63	-1.42
74	830.03	695.74	-1.53
75	830.03	687.98	-1.63
76	830.03	681.44	-1.71
77	830.03	676.18	-1.78
78	830.03	672.25	-1.83
79	830.03	669.68	-1.86
80	830.03	668.48	-1.88
81	830.03	668.64	-1.88
82	830.03	670.14	-1.86
83	830.03	672.92	-1.82
84	830.03	676.92	-1.77
85	830.03	682.07	-1.71
86	830.03	688.28	-1.63
87	830.03	695.45	-1.54
88	830.03	703.47	-1.44
89	830.03	712.25	-1.33
90	830.03	721.67	-1.22

STATION WHBG(AM)
Non-Directional Pattern Tabulation

Figure 2
Sheet 3 of 8

MiniNEC Theoretical WHBG(AM) Towers 1 and 3 Detuned Support Structure Detuned @ 550kHz with FM Iso-Coupler in parallel			
Azimuth (deg. T)	FCC Theoretical (mV/m @ 1km)	(mV/m @ 1km)	Pattern Distortion (dB)
91	830.03	731.63	-1.10
92	830.03	742.01	-0.97
93	830.03	752.73	-0.85
94	830.03	763.69	-0.72
95	830.03	774.79	-0.60
96	830.03	785.96	-0.47
97	830.03	797.11	-0.35
98	830.03	808.17	-0.23
99	830.03	819.09	-0.12
100	830.03	829.80	0.00
101	830.03	840.26	0.11
102	830.03	850.41	0.21
103	830.03	860.22	0.31
104	830.03	869.65	0.41
105	830.03	878.69	0.49
106	830.03	887.30	0.58
107	830.03	895.47	0.66
108	830.03	903.18	0.73
109	830.03	910.42	0.80
110	830.03	917.20	0.87
111	830.03	923.50	0.93
112	830.03	929.32	0.98
113	830.03	934.68	1.03
114	830.03	939.57	1.08
115	830.03	944.01	1.12
116	830.03	948.00	1.15
117	830.03	951.56	1.19
118	830.03	954.70	1.22
119	830.03	957.44	1.24
120	830.03	959.79	1.26
121	830.03	961.77	1.28
122	830.03	963.41	1.29
123	830.03	964.71	1.31
124	830.03	965.71	1.32
125	830.03	966.41	1.32
126	830.03	966.85	1.33
127	830.03	967.03	1.33
128	830.03	966.99	1.33
129	830.03	966.74	1.32
130	830.03	966.31	1.32
131	830.03	965.70	1.31
132	830.03	964.95	1.31
133	830.03	964.07	1.30
134	830.03	963.08	1.29
135	830.03	961.99	1.28
136	830.03	960.83	1.27

STATION WHBG(AM)
Non-Directional Pattern Tabulation

Figure 2
Sheet 4 of 8

MiniNEC Theoretical WHBG(AM) Towers 1 and 3 Detuned Support Structure Detuned @ 550kHz with FM Iso-Coupler in parallel			
Azimuth (deg. T)	FCC Theoretical (mV/m @ 1km)	(mV/m @ 1km)	Pattern Distortion (dB)
137	830.03	959.61	1.26
138	830.03	958.35	1.25
139	830.03	957.06	1.24
140	830.03	955.76	1.23
141	830.03	954.45	1.21
142	830.03	953.17	1.20
143	830.03	951.91	1.19
144	830.03	950.68	1.18
145	830.03	949.50	1.17
146	830.03	948.38	1.16
147	830.03	947.33	1.15
148	830.03	946.35	1.14
149	830.03	945.46	1.13
150	830.03	944.65	1.12
151	830.03	943.94	1.12
152	830.03	943.32	1.11
153	830.03	942.81	1.11
154	830.03	942.41	1.10
155	830.03	942.12	1.10
156	830.03	941.95	1.10
157	830.03	941.88	1.10
158	830.03	941.93	1.10
159	830.03	942.10	1.10
160	830.03	942.38	1.10
161	830.03	942.77	1.11
162	830.03	943.28	1.11
163	830.03	943.89	1.12
164	830.03	944.60	1.12
165	830.03	945.41	1.13
166	830.03	946.31	1.14
167	830.03	947.30	1.15
168	830.03	948.37	1.16
169	830.03	949.50	1.17
170	830.03	950.70	1.18
171	830.03	951.95	1.19
172	830.03	953.24	1.20
173	830.03	954.56	1.21
174	830.03	955.89	1.23
175	830.03	957.22	1.24
176	830.03	958.55	1.25
177	830.03	959.84	1.26
178	830.03	961.09	1.27
179	830.03	962.27	1.28
180	830.03	963.38	1.29
181	830.03	964.39	1.30
182	830.03	965.27	1.31

STATION WHBG(AM)
Non-Directional Pattern Tabulation

Figure 2
Sheet 5 of 8

MiniNEC Theoretical WHBG(AM) Towers 1 and 3 Detuned Support Structure Detuned @ 550kHz with FM Iso-Coupler in parallel			
Azimuth (deg. T)	FCC Theoretical (mV/m @ 1km)	(mV/m @ 1km)	Pattern Distortion (dB)
183	830.03	966.02	1.32
184	830.03	966.61	1.32
185	830.03	967.01	1.33
186	830.03	967.21	1.33
187	830.03	967.19	1.33
188	830.03	966.91	1.33
189	830.03	966.36	1.32
190	830.03	965.52	1.31
191	830.03	964.36	1.30
192	830.03	962.86	1.29
193	830.03	961.00	1.27
194	830.03	958.76	1.25
195	830.03	956.12	1.23
196	830.03	953.06	1.20
197	830.03	949.56	1.17
198	830.03	945.62	1.13
199	830.03	941.21	1.09
200	830.03	936.33	1.05
201	830.03	930.96	1.00
202	830.03	925.11	0.94
203	830.03	918.77	0.88
204	830.03	911.95	0.82
205	830.03	904.64	0.75
206	830.03	896.87	0.67
207	830.03	888.64	0.59
208	830.03	879.97	0.51
209	830.03	870.90	0.42
210	830.03	861.44	0.32
211	830.03	851.65	0.22
212	830.03	841.55	0.12
213	830.03	831.21	0.01
214	830.03	820.67	-0.10
215	830.03	810.00	-0.21
216	830.03	799.26	-0.33
217	830.03	788.53	-0.45
218	830.03	777.90	-0.56
219	830.03	767.44	-0.68
220	830.03	757.25	-0.80
221	830.03	747.43	-0.91
222	830.03	738.06	-1.02
223	830.03	729.27	-1.12
224	830.03	721.13	-1.22
225	830.03	713.76	-1.31
226	830.03	707.25	-1.39
227	830.03	701.69	-1.46
228	830.03	697.15	-1.52

STATION WHBG(AM)
Non-Directional Pattern Tabulation

Figure 2
Sheet 6 of 8

MiniNEC Theoretical WHBG(AM) Towers 1 and 3 Detuned Support Structure Detuned @ 550kHz			
Azimuth (deg. T)	FCC Theoretical (mV/m @ 1km)	with FM Iso-Coupler in parallel (mV/m @ 1km)	Pattern Distortion (dB)
229	830.03	693.71	-1.56
230	830.03	691.43	-1.59
231	830.03	690.35	-1.60
232	830.03	690.49	-1.60
233	830.03	691.86	-1.58
234	830.03	694.47	-1.55
235	830.03	698.28	-1.50
236	830.03	703.24	-1.44
237	830.03	709.32	-1.37
238	830.03	716.42	-1.28
239	830.03	724.48	-1.18
240	830.03	733.40	-1.08
241	830.03	743.08	-0.96
242	830.03	753.42	-0.84
243	830.03	764.30	-0.72
244	830.03	775.64	-0.59
245	830.03	787.30	-0.46
246	830.03	799.20	-0.33
247	830.03	811.22	-0.20
248	830.03	823.26	-0.07
249	830.03	835.24	0.05
250	830.03	847.06	0.18
251	830.03	858.64	0.29
252	830.03	869.89	0.41
253	830.03	880.75	0.52
254	830.03	891.16	0.62
255	830.03	901.04	0.71
256	830.03	910.34	0.80
257	830.03	919.03	0.88
258	830.03	927.05	0.96
259	830.03	934.36	1.03
260	830.03	940.95	1.09
261	830.03	946.78	1.14
262	830.03	951.83	1.19
263	830.03	956.09	1.23
264	830.03	959.55	1.26
265	830.03	962.21	1.28
266	830.03	964.06	1.30
267	830.03	965.11	1.31
268	830.03	965.38	1.31
269	830.03	964.86	1.31
270	830.03	963.58	1.30
271	830.03	961.57	1.28
272	830.03	958.83	1.25
273	830.03	955.41	1.22
274	830.03	951.33	1.18

STATION WHBG(AM)
Non-Directional Pattern Tabulation

Figure 2
Sheet 7 of 8

MiniNEC Theoretical WHBG(AM) Towers 1 and 3 Detuned Support Structure Detuned @ 550kHz with FM Iso-Coupler in parallel			
Azimuth (deg. T)	FCC Theoretical (mV/m @ 1km)	(mV/m @ 1km)	Pattern Distortion (dB)
275	830.03	946.63	1.14
276	830.03	941.34	1.09
277	830.03	935.49	1.04
278	830.03	929.13	0.98
279	830.03	922.30	0.92
280	830.03	915.04	0.85
281	830.03	907.40	0.77
282	830.03	899.42	0.70
283	830.03	891.14	0.62
284	830.03	882.61	0.53
285	830.03	873.88	0.45
286	830.03	865.00	0.36
287	830.03	856.00	0.27
288	830.03	846.93	0.18
289	830.03	837.84	0.08
290	830.03	828.76	-0.01
291	830.03	819.74	-0.11
292	830.03	810.81	-0.20
293	830.03	802.01	-0.30
294	830.03	793.38	-0.39
295	830.03	784.94	-0.49
296	830.03	776.73	-0.58
297	830.03	768.77	-0.67
298	830.03	761.08	-0.75
299	830.03	753.69	-0.84
300	830.03	746.61	-0.92
301	830.03	739.85	-1.00
302	830.03	733.43	-1.07
303	830.03	727.36	-1.15
304	830.03	721.64	-1.22
305	830.03	716.26	-1.28
306	830.03	711.24	-1.34
307	830.03	706.57	-1.40
308	830.03	702.24	-1.45
309	830.03	698.24	-1.50
310	830.03	694.57	-1.55
311	830.03	691.21	-1.59
312	830.03	688.15	-1.63
313	830.03	685.38	-1.66
314	830.03	682.88	-1.70
315	830.03	680.63	-1.72
316	830.03	678.62	-1.75
317	830.03	676.83	-1.77
318	830.03	675.24	-1.79
319	830.03	673.84	-1.81
320	830.03	672.60	-1.83

STATION WHBG(AM)
Non-Directional Pattern Tabulation

Figure 2
Sheet 8 of 8

MiniNEC Theoretical WHBG(AM) Towers 1 and 3 Detuned Support Structure Detuned @ 550kHz with FM Iso-Coupler in parallel			
Azimuth (deg. T)	FCC Theoretical (mV/m @ 1km)	(mV/m @ 1km)	Pattern Distortion (dB)
321	830.03	671.52	-1.84
322	830.03	670.58	-1.85
323	830.03	669.75	-1.86
324	830.03	669.03	-1.87
325	830.03	668.41	-1.88
326	830.03	667.87	-1.89
327	830.03	667.39	-1.89
328	830.03	666.97	-1.90
329	830.03	666.61	-1.90
330	830.03	666.28	-1.91
331	830.03	665.99	-1.91
332	830.03	665.73	-1.92
333	830.03	665.49	-1.92
334	830.03	665.28	-1.92
335	830.03	665.08	-1.92
336	830.03	664.91	-1.93
337	830.03	664.76	-1.93
338	830.03	664.64	-1.93
339	830.03	664.54	-1.93
340	830.03	664.47	-1.93
341	830.03	664.44	-1.93
342	830.03	664.47	-1.93
343	830.03	664.54	-1.93
344	830.03	664.69	-1.93
345	830.03	664.91	-1.93
346	830.03	665.22	-1.92
347	830.03	665.63	-1.92
348	830.03	666.16	-1.91
349	830.03	666.83	-1.90
350	830.03	667.64	-1.89
351	830.03	668.61	-1.88
352	830.03	669.77	-1.86
353	830.03	671.13	-1.85
354	830.03	672.71	-1.83
355	830.03	674.52	-1.80
356	830.03	676.59	-1.78
357	830.03	678.93	-1.75
358	830.03	681.56	-1.71
359	830.03	684.50	-1.67