

ENGINEERING STATEMENT – SECOND ADJACENT CHANNEL PROTECTION

WBAV-FM, Gastonia, NC, 270C0 (56.1 kilometers at 251 degrees True from LPFM site) is a second adjacent-channel station to the proposed channel 268 LPFM facility. The 60 dBu F50,50 protected service contour of this station extends beyond the LPFM transmitter site. Using the well-established *Living Way Ministries* Methodology, no actual interference to any population is predicted to exist to WBAV-FM.

Note that a rule waiver of Section 73.807 for this second adjacent-channel protection using the well-established *Living Way Ministries* Methodology is respectfully requested if such a rule waiver is deemed necessary for protection to this station.

The F50,50 signal strength from WBAV-FM at the proposed LPFM transmitter site is 67 dBu (the “desired” signal). The second/third adjacent-channel protection is an undesired-to-desired (“U/D”) dB signal strength ratio of 40:1. Therefore, predicted interference to the worst-case of the above protected facility is an LPFM signal of greater than or equal to 107 dBu.

Figure EE1 is the vertical plane relative field pattern for the proposed Nicom BKG-77 three bay halfwave-spaced antenna. By adjusting for the vertical plane downward relative field values of the proposed antenna, it is herein demonstrated that the 107 dBu interfering signal (using a free space field determination) does not exist at any point a ground level. (Actually, the study is made to 2 meters above ground level to account for a person’s height.)

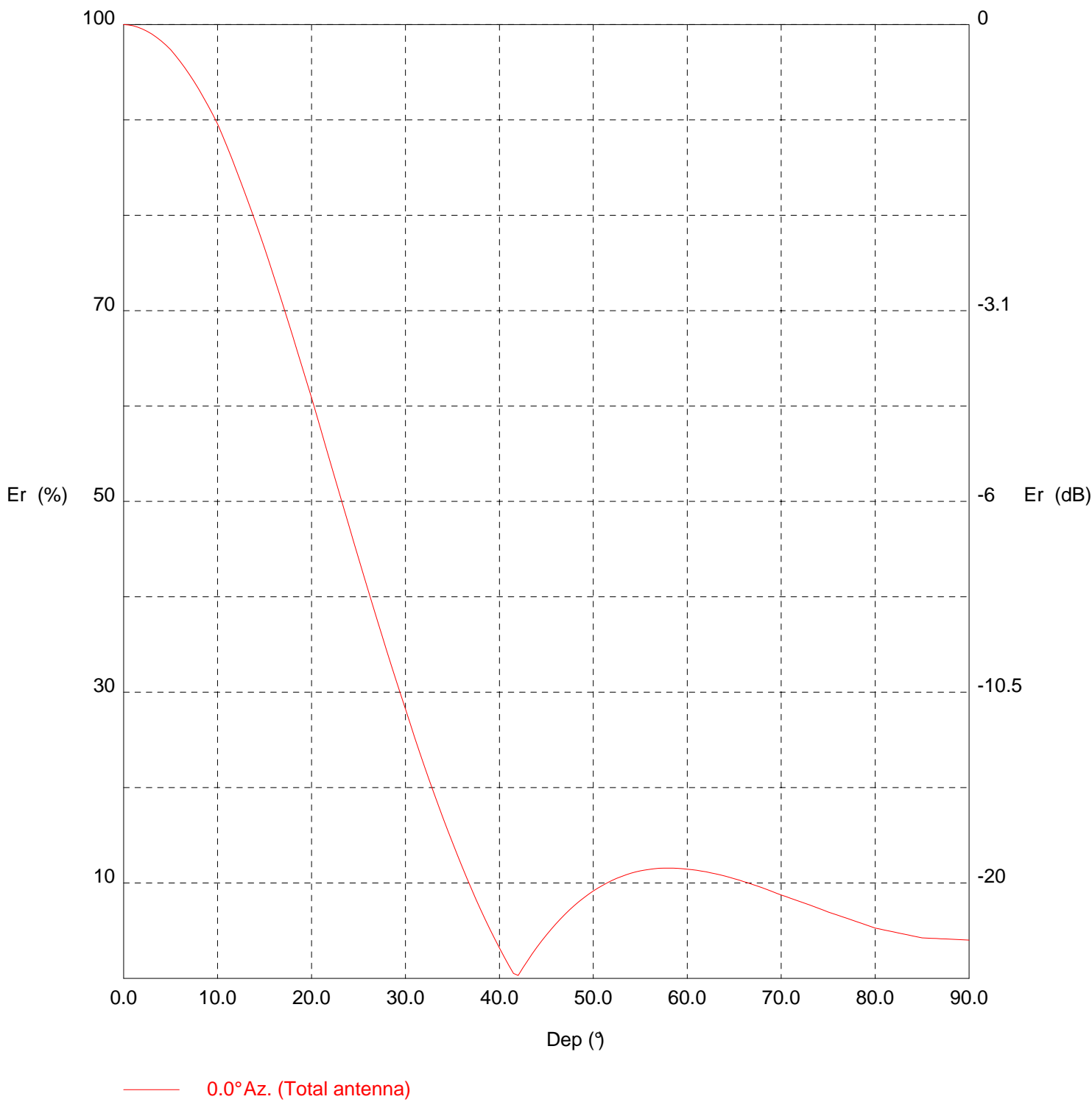
Attached as Figure EE2 is a tabulation of various points at two meters AGL from the proposed translator tower base. (Column B is the different distances from the tower base to each studied point.) The actual distance from the antenna to each point is listed in Column C, the hypotenuse of the vertical height (Column A) and the horizontal distance (Column B). Also, the vertical distance from the antenna bottom to the calculated interference signal for each studied point is provided in Column K. Because the calculated distance to the free space interfering signal (Column J) is less than the hypotenuse distance (Column C) and the interfering signal vertical distance (Column K) is less than the vertical distance (Column A) for each studied point, the interfering signal does not reach any studied point. (In other words, the interfering signal does not make it to 2 meters of above ground level—the clearance is at least 13 meters.) The attached aerial photo demonstrates that there are no tall buildings within 154 meters of the proposed site. Based on the above study, WBAV-FM is adequately protected by the proposed facility.

TX station: BKG77/3 GENERIC
Frequency: 100.00 MHz

Site name:

FIGURE EE1 (1 of 2)

Vertical diagram



TX station: BKG77/3 GENERIC

Site name:

Frequency: 100.00 MHz

FIGURE EE1 (2 of 2)

Vertical diagram at an azimuth of 0°degrees

Dep (°)	Er (%)	ERP (KW)	Dep (°)	Er (%)	ERP (KW)	Dep (°)	Er (%)	ERP (KW)
0.0	100.0	1.37	30.0	28.2	0.11	60.0	11.4	0.02
0.5	100.0	1.37	30.5	26.7	0.10	60.5	11.4	0.02
1.0	99.9	1.37	31.0	25.2	0.09	61.0	11.3	0.02
1.5	99.7	1.36	31.5	23.7	0.08	61.5	11.2	0.02
2.0	99.5	1.36	32.0	22.3	0.07	62.0	11.2	0.02
2.5	99.3	1.35	32.5	20.9	0.06	62.5	11.1	0.02
3.0	99.0	1.34	33.0	19.5	0.05	63.0	11.0	0.02
3.5	98.7	1.34	33.5	18.1	0.05	63.5	10.8	0.02
4.0	98.3	1.32	34.0	16.8	0.04	64.0	10.7	0.02
4.5	97.8	1.31	34.5	15.5	0.03	64.5	10.6	0.02
5.0	97.4	1.30	35.0	14.2	0.03	65.0	10.4	0.01
5.5	96.8	1.28	35.5	13.0	0.02	65.5	10.3	0.01
6.0	96.2	1.27	36.0	11.8	0.02	66.0	10.1	0.01
6.5	95.5	1.25	36.5	10.6	0.02	66.5	10.0	0.01
7.0	94.8	1.23	37.0	9.4	0.01	67.0	9.8	0.01
7.5	94.0	1.21	37.5	8.3	0.01	67.5	9.7	0.01
8.0	93.2	1.19	38.0	7.2	0.01	68.0	9.5	0.01
8.5	92.4	1.17	38.5	6.1	0.01	68.5	9.3	0.01
9.0	91.5	1.15	39.0	5.1	0.00	69.0	9.1	0.01
9.5	90.6	1.12	39.5	4.1	0.00	69.5	8.9	0.01
10.0	89.6	1.10	40.0	3.2	0.00	70.0	8.7	0.01
10.5	88.4	1.07	40.5	2.3	0.00	70.5	8.6	0.01
11.0	87.2	1.04	41.0	1.4	0.00	71.0	8.4	0.01
11.5	86.0	1.01	41.5	0.5	0.00	71.5	8.2	0.01
12.0	84.7	0.98	42.0	0.3	0.00	72.0	8.1	0.01
12.5	83.4	0.95	42.5	1.1	0.00	72.5	7.9	0.01
13.0	82.1	0.92	43.0	1.8	0.00	73.0	7.7	0.01
13.5	80.8	0.89	43.5	2.6	0.00	73.5	7.5	0.01
14.0	79.4	0.86	44.0	3.3	0.00	74.0	7.3	0.01
14.5	78.0	0.83	44.5	3.9	0.00	74.5	7.1	0.01
15.0	76.6	0.80	45.0	4.5	0.00	75.0	6.9	0.01
15.5	75.1	0.77	45.5	5.1	0.00	75.5	6.8	0.01
16.0	73.5	0.74	46.0	5.7	0.00	76.0	6.6	0.01
16.5	72.0	0.71	46.5	6.2	0.01	76.5	6.5	0.01
17.0	70.4	0.68	47.0	6.7	0.01	77.0	6.3	0.01
17.5	68.9	0.65	47.5	7.2	0.01	77.5	6.1	0.01
18.0	67.3	0.62	48.0	7.7	0.01	78.0	6.0	0.00
18.5	65.7	0.59	48.5	8.1	0.01	78.5	5.8	0.00
19.0	64.1	0.56	49.0	8.5	0.01	79.0	5.6	0.00
19.5	62.5	0.54	49.5	8.8	0.01	79.5	5.4	0.00
20.0	60.9	0.51	50.0	9.2	0.01	80.0	5.3	0.00
20.5	59.2	0.48	50.5	9.5	0.01	80.5	5.2	0.00
21.0	57.5	0.45	51.0	9.8	0.01	81.0	5.1	0.00
21.5	55.8	0.43	51.5	10.0	0.01	81.5	5.0	0.00
22.0	54.1	0.40	52.0	10.3	0.01	82.0	4.9	0.00
22.5	52.4	0.38	52.5	10.5	0.02	82.5	4.8	0.00
23.0	50.7	0.35	53.0	10.7	0.02	83.0	4.7	0.00
23.5	49.1	0.33	53.5	10.9	0.02	83.5	4.6	0.00
24.0	47.4	0.31	54.0	11.0	0.02	84.0	4.4	0.00
24.5	45.7	0.29	54.5	11.2	0.02	84.5	4.3	0.00
25.0	44.1	0.27	55.0	11.3	0.02	85.0	4.2	0.00
25.5	42.4	0.25	55.5	11.4	0.02	85.5	4.2	0.00
26.0	40.8	0.23	56.0	11.4	0.02	86.0	4.2	0.00
26.5	39.2	0.21	56.5	11.5	0.02	86.5	4.2	0.00
27.0	37.5	0.19	57.0	11.5	0.02	87.0	4.1	0.00
27.5	35.9	0.18	57.5	11.6	0.02	87.5	4.1	0.00
28.0	34.4	0.16	58.0	11.6	0.02	88.0	4.1	0.00
28.5	32.8	0.15	58.5	11.6	0.02	88.5	4.1	0.00
29.0	31.3	0.13	59.0	11.5	0.02	89.0	4.1	0.00
29.5	29.7	0.12	59.5	11.5	0.02	89.5	4.0	0.00

FIGURE EE2

FREE SPACE FIELD STRENGTH AT A DISTANCE STUDY RESULTS

PROJECT: CONCORD, NC, CHANNEL 268L

10-Feb-17

Pt	Column A Vert Dist From Ant Bottom (meters)	Column B Horiz Dist From Tower Base (meters)	Column C Hypot- enuse Dist fr Ant Bottom (meters)	Column D Down- ward Angle fr Ant Bottom (degrees)	Column E Max ERP (watts)	Column F Max ERP (dBmw)	Column G Pattern Relative Field at Down- ward Angle	Column H Free Space Inter- ferring Signal (dBu)	Column I Adjusted ERP in Down- ward Angle (dBmW)	Column J Interf Distance along Hypot- enuse (meters)	Column K Vert Interf Distance below Antenna (meters)
1	46	0.1	46.0	89.9	24	43.80	0.010	107.0	3.80	1.5	1.5
2	46	10	47.1	77.7	24	43.80	0.061	107.0	19.51	9.4	9.2
3	46	20	50.2	66.5	24	43.80	0.100	107.0	23.80	15.4	14.1
4	46	30	54.9	56.9	24	43.80	0.115	107.0	25.02	17.7	14.8
5	46	40	61.0	49.0	24	43.80	0.085	107.0	22.39	13.1	9.9
6	46	50	67.9	42.6	24	43.80	0.011	107.0	4.63	1.7	1.1
7	46	60	75.6	37.5	24	43.80	0.083	107.0	22.18	12.8	7.8
8	46	70	83.8	33.3	24	43.80	0.195	107.0	29.60	30.0	16.5
9	46	80	92.3	29.9	24	43.80	0.297	107.0	33.26	45.7	22.8
10	46	90	101.1	27.1	24	43.80	0.375	107.0	35.28	57.8	26.3
11	46	100	110.1	24.7	24	43.80	0.457	107.0	37.00	70.4	29.4
12	46	110	119.2	22.7	24	43.80	0.524	107.0	38.19	80.7	31.1
13	46	120	128.5	21.0	24	43.80	0.575	107.0	39.00	88.6	31.7
14	46	140	147.4	18.2	24	43.80	0.673	107.0	40.36	103.7	32.4
15	46	154	160.7	16.6	24	43.80	0.720	107.0	40.95	110.9	31.7

NOTE: Study point at 2 meters above ground (or rooftop, see write-up) level.

RESULTS: COLUMN J DISTANCES ARE LESS THAN COLUMN C AND COLUMN K DISTANCES ARE LESS THAN COLUMN A DISTANCES IN ALL INSTANCES; THEREFORE, INTERFERRING SIGNAL DOES NOT EXIST AT ANY LOCATION (TWO METERS OR LESS ABOVE GROUND LEVEL)



Google Earth

feet 1000
meters 300

