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**ENGINEERING REPORT**

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**W232CY, to Edison, NJ, Channel 244D FM Translator Minor Mod**

**ENGINEERING STATEMENT**

This is a minor change to W232CY, an AM Revitalization filing that proposes a move to Edison, NJ with a change to channel 244. (Note that this new site for W232CY is located only 42 miles from the BNPFT-20130823AAK CP facility – well within the 250 mile allowable re-location distance for an AM Revitalization application.)

The support tower will be mounted on top of an existing approximately 25-foot tall building.

**PROTECTION TO WXNY-FM AND WQNT**

All contour non-overlap protection requirements are met with the exception of New York City stations WQNT (246B) and WXNY-FM (244B), discussed below.

WXNY-FM and WQNT (both 41 kilometers at 56 degrees True from the proposed translator site) are second adjacent-channel to the proposed channel 244D facility. The 54 dBu F50,50 service contour of each station extends well beyond the proposed 244D transmitter site. Using the well-established *Living Way Ministries* Methodology, no actual interference to any population is predicted to exist to WXNY-FM or WQNT.

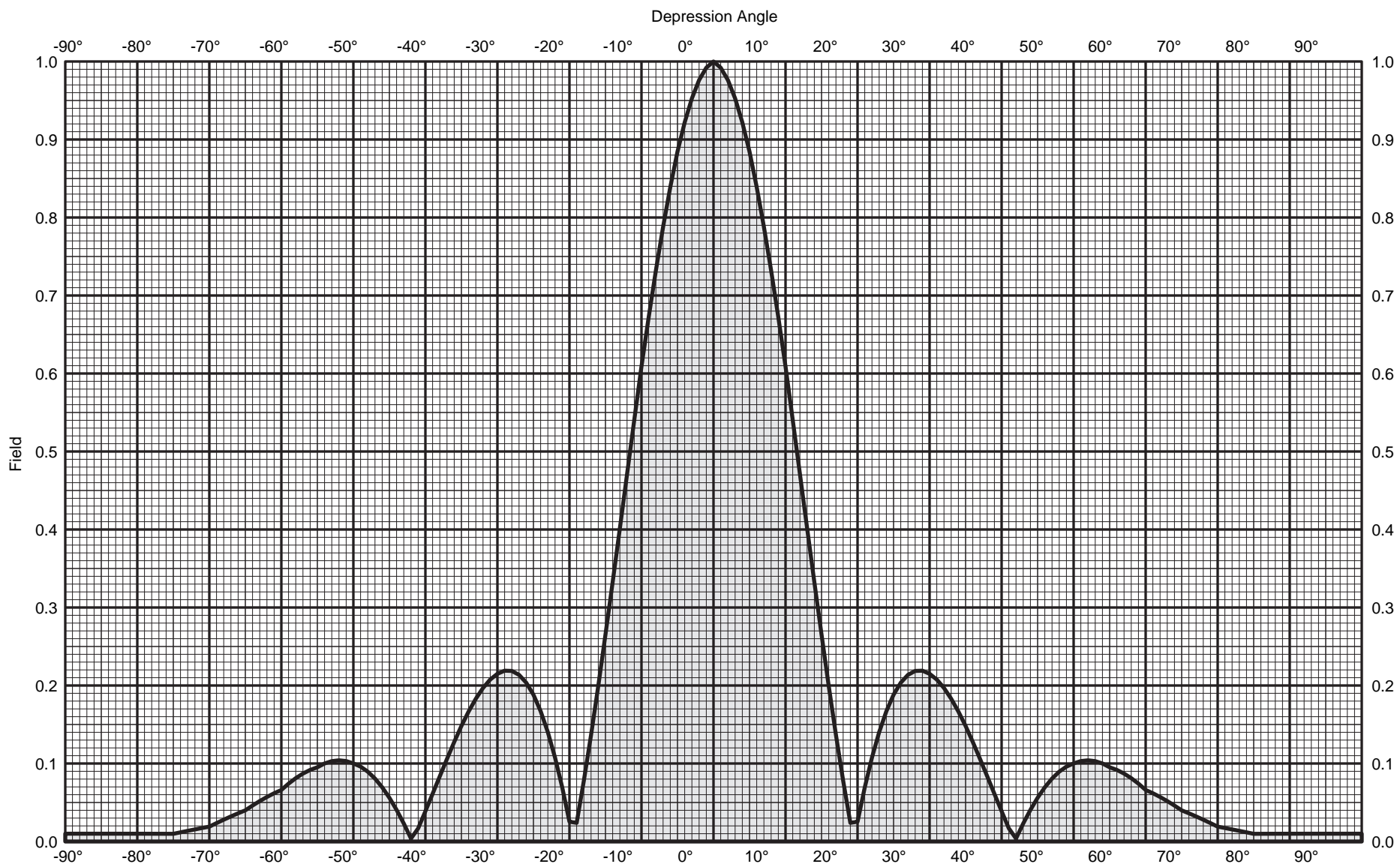
Note that a rule waiver of Section 74.1204 for this second/third adjacent-channel protection using the well-established *Living Way Ministries* Methodology is respectfully requested if such a rule waiver is deemed necessary for protection to any station.

The F50,50 signal strength from WXNY-FM at the proposed 244D transmitter site is at least 65.5 dBu (the “desired” signal for WXNY-FM). The F50,50 signal strength from WQNT at the proposed 244D transmitter site is at least 65.8 dBu (the other “desired” signal for WQNT). The second/third adjacent-channel protection of Section 74.1204 is an undesired-to-desired (“U/D”) dB signal strength ratio of 40:1. Therefore, predicted interference to WXNY-FM and WQNT from the proposed 244D facility is a signal of greater than or equal to 105.5 dBu.

Figure EE1 is the vertical plane relative field pattern for the proposed Scala CL-FM(V) three-bay (fullwave spaced) custom antenna. By adjusting for the vertical plane downward relative field values of the proposed antenna, it is herein demonstrated that the 105.5 dBu interfering signal (using a free space field determination) does not exist at any point at 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 2 meters above ground level) 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 any point.) The clearance to all studied points is at least 10 meters. There are no buildings of more than two stories within the 105.5 dBu free space loss contour of the proposed translator. (See attached aerial photo with the 105.5 dBu contour.) Therefore, pursuant to Section 74.1204(d) of the FCC Rules, WXNY-FM and WQNT are adequately protected by the proposed facility.

FIGURE EE1 (1 OF 3)



3 x CL-FM/VRM/50N Log-periodic Array

Frequency: 98.3 MHz

Gain: 10.9 dBd (x 12.3)

Vertical polarization

Vertical stacked 1.0 Wavelength

Vertical plane Pattern

FIGURE EE1 (2 OF 3)



3 x CL-FM/VRM/50N Log-periodic Array

Frequency: 98.3 MHz

Gain: 10.9 dBd (x 12.3)

Vertical polarization

Vertical stacked 1.0 Wavelength

Vertical plane Pattern

Angle	Field	Rel.dB	dBd	PwrMult	Angle	Field	Rel.dB	dBd	PwrMult
-90	0.010	-40.00	-29.10	0.00	-45	0.056	-25.03	-14.13	0.04
-89	0.010	-40.00	-29.10	0.00	-44	0.041	-27.85	-16.95	0.02
-88	0.010	-40.00	-29.10	0.00	-43	0.023	-32.75	-21.85	0.01
-87	0.010	-40.00	-29.10	0.00	-42	0.010	-40.00	-29.10	0.00
-86	0.010	-40.00	-29.10	0.00	-41	0.017	-35.43	-24.53	0.00
-85	0.010	-40.00	-29.10	0.00	-40	0.039	-28.22	-17.32	0.02
-84	0.010	-40.00	-29.10	0.00	-39	0.061	-24.27	-13.37	0.05
-83	0.010	-40.00	-29.10	0.00	-38	0.084	-21.55	-10.65	0.09
-82	0.010	-40.00	-29.10	0.00	-37	0.106	-19.50	-8.60	0.14
-81	0.010	-40.00	-29.10	0.00	-36	0.128	-17.89	-6.99	0.20
-80	0.010	-40.00	-29.10	0.00	-35	0.148	-16.59	-5.69	0.27
-79	0.010	-40.00	-29.10	0.00	-34	0.167	-15.57	-4.67	0.34
-78	0.010	-40.00	-29.10	0.00	-33	0.183	-14.75	-3.85	0.41
-77	0.010	-40.00	-29.10	0.00	-32	0.197	-14.12	-3.22	0.48
-76	0.010	-40.00	-29.10	0.00	-31	0.208	-13.65	-2.75	0.53
-75	0.010	-40.00	-29.10	0.00	-30	0.215	-13.35	-2.45	0.57
-74	0.012	-38.59	-27.69	0.00	-29	0.219	-13.19	-2.29	0.59
-73	0.014	-37.30	-26.40	0.00	-28	0.219	-13.20	-2.30	0.59
-72	0.015	-36.19	-25.29	0.00	-27	0.214	-13.41	-2.51	0.56
-71	0.017	-35.24	-24.34	0.00	-26	0.204	-13.82	-2.92	0.51
-70	0.019	-34.40	-23.50	0.00	-25	0.188	-14.51	-3.61	0.44
-69	0.024	-32.55	-21.65	0.01	-24	0.167	-15.55	-4.65	0.34
-68	0.028	-31.08	-20.18	0.01	-23	0.140	-17.07	-6.17	0.24
-67	0.032	-29.86	-18.96	0.01	-22	0.108	-19.36	-8.46	0.14
-66	0.036	-28.84	-17.94	0.02	-21	0.069	-23.19	-12.29	0.06
-65	0.040	-27.97	-17.07	0.02	-20	0.025	-31.90	-21.00	0.01
-64	0.046	-26.73	-15.83	0.03	-19	0.024	-32.45	-21.55	0.01
-63	0.052	-25.71	-14.81	0.03	-18	0.078	-22.16	-11.26	0.07
-62	0.057	-24.87	-13.97	0.04	-17	0.137	-17.29	-6.39	0.23
-61	0.062	-24.17	-13.27	0.05	-16	0.199	-14.01	-3.11	0.49
-60	0.066	-23.60	-12.70	0.05	-15	0.265	-11.53	-0.63	0.87
-59	0.074	-22.60	-11.70	0.07	-14	0.333	-9.56	1.34	1.36
-58	0.081	-21.81	-10.91	0.08	-13	0.401	-7.93	2.97	1.98
-57	0.087	-21.20	-10.30	0.09	-12	0.471	-6.54	4.36	2.73
-56	0.092	-20.75	-9.85	0.10	-11	0.540	-5.34	5.56	3.59
-55	0.095	-20.43	-9.53	0.11	-10	0.609	-4.31	6.59	4.56
-54	0.100	-20.00	-9.10	0.12	-9	0.672	-3.45	7.45	5.56
-53	0.103	-19.74	-8.84	0.13	-8	0.732	-2.71	8.19	6.59
-52	0.104	-19.65	-8.75	0.13	-7	0.788	-2.07	8.83	7.64
-51	0.103	-19.73	-8.83	0.13	-6	0.839	-1.53	9.37	8.66
-50	0.100	-19.99	-9.09	0.12	-5	0.884	-1.07	9.83	9.62
-49	0.096	-20.35	-9.45	0.11	-4	0.922	-0.71	10.19	10.46
-48	0.090	-20.96	-10.06	0.10	-3	0.953	-0.42	10.48	11.17
-47	0.081	-21.86	-10.96	0.08	-2	0.976	-0.21	10.69	11.72
-46	0.069	-23.16	-12.26	0.06	-1	0.992	-0.07	10.83	12.11
					0	1.000	0.00	10.90	12.30



3 x CL-FM/VRM/50N Log-periodic Array

Vertical stacked 1.0 Wavelength

Frequency: 98.3 MHz

Vertical plane Pattern

Gain: 10.9 dBd (x 12.3)

Vertical polarization

Angle	Field	Rel.dB	dBd	PwrMult	Angle	Field	Rel.dB	dBd	PwrMult
0	1.000	0.00	10.90	12.30	45	0.056	-25.03	-14.13	0.04
1	0.992	-0.07	10.83	12.11	46	0.069	-23.16	-12.26	0.06
2	0.976	-0.21	10.69	11.72	47	0.081	-21.86	-10.96	0.08
3	0.953	-0.42	10.48	11.17	48	0.090	-20.96	-10.06	0.10
4	0.922	-0.71	10.19	10.46	49	0.096	-20.35	-9.45	0.11
5	0.884	-1.07	9.83	9.62	50	0.100	-19.99	-9.09	0.12
6	0.839	-1.53	9.37	8.66	51	0.103	-19.73	-8.83	0.13
7	0.788	-2.07	8.83	7.64	52	0.104	-19.65	-8.75	0.13
8	0.732	-2.71	8.19	6.59	53	0.103	-19.74	-8.84	0.13
9	0.672	-3.45	7.45	5.56	54	0.100	-20.00	-9.10	0.12
10	0.609	-4.31	6.59	4.56	55	0.095	-20.43	-9.53	0.11
11	0.541	-5.34	5.56	3.59	56	0.092	-20.75	-9.85	0.10
12	0.471	-6.54	4.36	2.73	57	0.087	-21.20	-10.30	0.09
13	0.402	-7.93	2.97	1.98	58	0.081	-21.81	-10.91	0.08
14	0.333	-9.56	1.34	1.36	59	0.074	-22.60	-11.70	0.07
15	0.265	-11.52	-0.62	0.87	60	0.066	-23.60	-12.70	0.05
16	0.199	-14.01	-3.11	0.49	61	0.062	-24.17	-13.27	0.05
17	0.137	-17.29	-6.39	0.23	62	0.057	-24.87	-13.97	0.04
18	0.078	-22.16	-11.26	0.07	63	0.052	-25.71	-14.81	0.03
19	0.024	-32.44	-21.54	0.01	64	0.046	-26.73	-15.83	0.03
20	0.025	-31.91	-21.01	0.01	65	0.040	-27.97	-17.07	0.02
21	0.069	-23.19	-12.29	0.06	66	0.036	-28.84	-17.94	0.02
22	0.108	-19.37	-8.47	0.14	67	0.032	-29.86	-18.96	0.01
23	0.140	-17.07	-6.17	0.24	68	0.028	-31.08	-20.18	0.01
24	0.167	-15.55	-4.65	0.34	69	0.024	-32.55	-21.65	0.01
25	0.188	-14.51	-3.61	0.44	70	0.019	-34.40	-23.50	0.00
26	0.204	-13.82	-2.92	0.51	71	0.017	-35.24	-24.34	0.00
27	0.214	-13.41	-2.51	0.56	72	0.015	-36.19	-25.29	0.00
28	0.219	-13.20	-2.30	0.59	73	0.014	-37.30	-26.40	0.00
29	0.219	-13.19	-2.29	0.59	74	0.012	-38.59	-27.69	0.00
30	0.215	-13.35	-2.45	0.57	75	0.010	-40.00	-29.10	0.00
31	0.208	-13.65	-2.75	0.53	76	0.010	-40.00	-29.10	0.00
32	0.197	-14.12	-3.22	0.48	77	0.010	-40.00	-29.10	0.00
33	0.183	-14.75	-3.85	0.41	78	0.010	-40.00	-29.10	0.00
34	0.167	-15.57	-4.67	0.34	79	0.010	-40.00	-29.10	0.00
35	0.148	-16.59	-5.69	0.27	80	0.010	-40.00	-29.10	0.00
36	0.128	-17.88	-6.98	0.20	81	0.010	-40.00	-29.10	0.00
37	0.106	-19.50	-8.60	0.14	82	0.010	-40.00	-29.10	0.00
38	0.084	-21.55	-10.65	0.09	83	0.010	-40.00	-29.10	0.00
39	0.061	-24.27	-13.37	0.05	84	0.010	-40.00	-29.10	0.00
40	0.039	-28.22	-17.32	0.02	85	0.010	-40.00	-29.10	0.00
41	0.017	-35.43	-24.53	0.00	86	0.010	-40.00	-29.10	0.00
42	0.010	-40.00	-29.10	0.00	87	0.010	-40.00	-29.10	0.00
43	0.023	-32.76	-21.86	0.01	88	0.010	-40.00	-29.10	0.00
44	0.041	-27.85	-16.95	0.02	89	0.010	-40.00	-29.10	0.00
					90	0.010	-40.00	-29.10	0.00

## FIGURE EE2

### FREE SPACE FIELD STRENGTH AT A DISTANCE STUDY RESULTS

PROJECT: EDISON, NJ, CHANNEL 244D

8-Apr-17

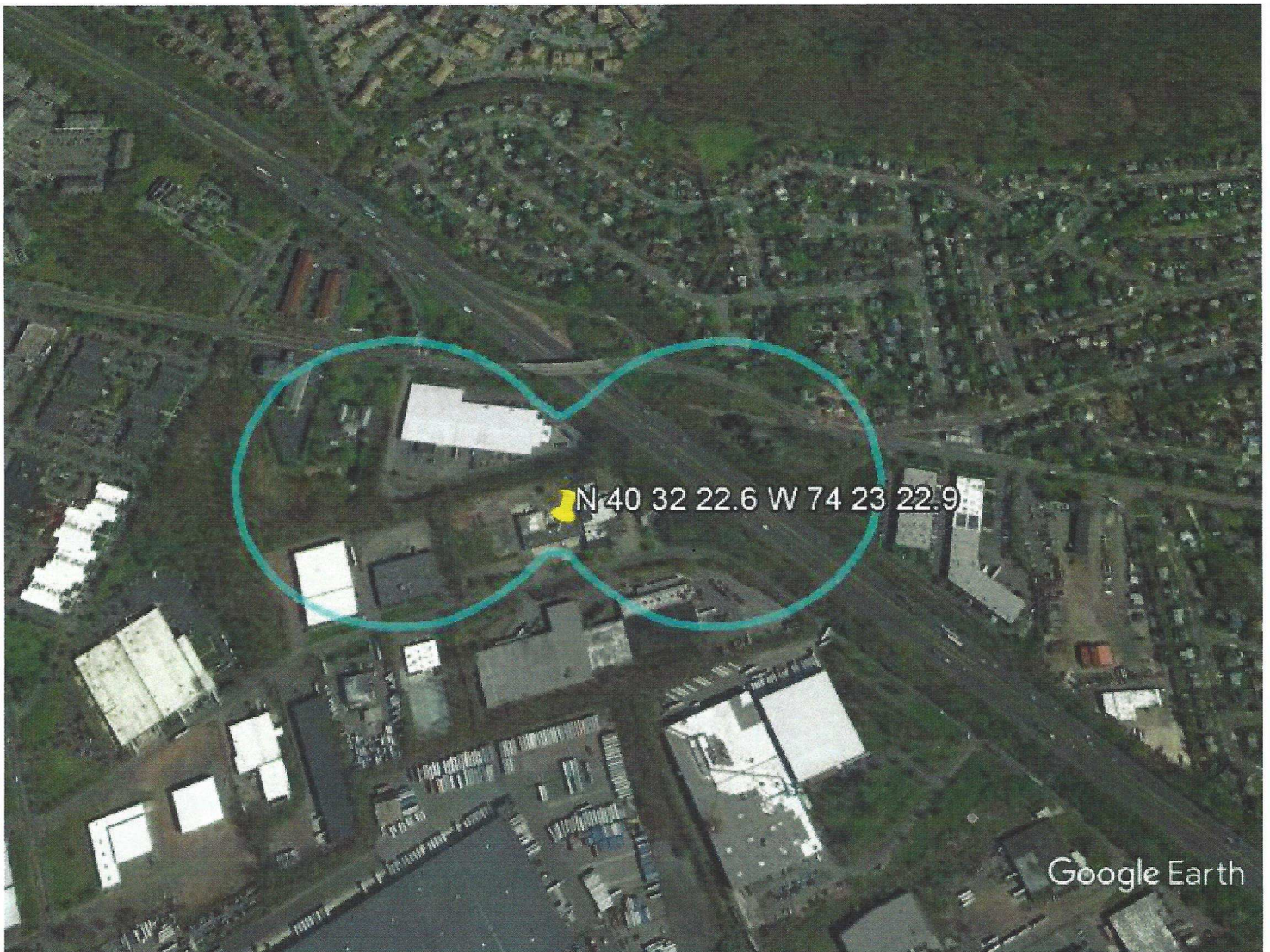
3 Bay CL-FMV FW

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	51	0.1	51.0	<a href="#">89.9</a>	100	<a href="#">50.00</a>	0.010	105.5	<a href="#">10.00</a>	3.7	<a href="#">3.7</a>
2	51	20	54.8	<a href="#">68.6</a>	100	<a href="#">50.00</a>	0.028	105.5	<a href="#">18.94</a>	10.5	<a href="#">9.7</a>
3	51	40	64.8	<a href="#">51.9</a>	100	<a href="#">50.00</a>	0.104	105.5	<a href="#">30.34</a>	38.9	<a href="#">30.6</a>
4	51	60	78.7	<a href="#">40.4</a>	100	<a href="#">50.00</a>	0.039	105.5	<a href="#">21.82</a>	14.6	<a href="#">9.4</a>
5	51	80	94.9	<a href="#">32.5</a>	100	<a href="#">50.00</a>	0.197	105.5	<a href="#">35.89</a>	73.6	<a href="#">39.6</a>
6	51	100	112.3	<a href="#">27.0</a>	100	<a href="#">50.00</a>	0.214	105.5	<a href="#">36.61</a>	80.0	<a href="#">36.3</a>
7	51	120	130.4	<a href="#">23.0</a>	100	<a href="#">50.00</a>	0.140	105.5	<a href="#">32.92</a>	52.3	<a href="#">20.5</a>
8	51	140	149.0	<a href="#">20.0</a>	100	<a href="#">50.00</a>	0.025	105.5	<a href="#">17.96</a>	9.3	<a href="#">3.2</a>
9	51	170	177.5	<a href="#">16.7</a>	100	<a href="#">50.00</a>	0.199	105.5	<a href="#">35.98</a>	74.4	<a href="#">21.4</a>
10	51	200	206.4	<a href="#">14.3</a>	100	<a href="#">50.00</a>	0.333	105.5	<a href="#">40.45</a>	124.4	<a href="#">30.7</a>
11	51	240	245.4	<a href="#">12.0</a>	100	<a href="#">50.00</a>	0.471	105.5	<a href="#">43.46</a>	176.0	<a href="#">36.6</a>
12	51	280	284.6	<a href="#">10.3</a>	100	<a href="#">50.00</a>	0.609	105.5	<a href="#">45.69</a>	227.6	<a href="#">40.8</a>
13	51	320	324.0	<a href="#">9.1</a>	100	<a href="#">50.00</a>	0.672	105.5	<a href="#">46.55</a>	251.1	<a href="#">39.5</a>
14	51	360	363.6	<a href="#">8.1</a>	100	<a href="#">50.00</a>	0.732	105.5	<a href="#">47.29</a>	273.5	<a href="#">38.4</a>
15	51	374	377.5	<a href="#">7.8</a>	100	<a href="#">50.00</a>	0.788	105.5	<a href="#">47.93</a>	294.5	<a href="#">39.8</a>

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 2000  
meters 600



PROPOSED 105.5 DBU FREE SPACE LOSS CONTOUR IS SHOWN