

ENGINEERING STATEMENT – SECOND ADJACENT CHANNEL PROTECTION

WWFS, New York, NY, 274B and WFAN-FM, New York, NY, 270B (both 43.5 kilometers at 18 degrees True from LPFM site) are second adjacent-channel stations to the proposed channel 272 LPFM facility. The 54 dBu F50,50 protected service contour of each 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 WWFS or WFAN-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 WWFS at the proposed LPFM transmitter site is 64.4 dBu (the “desired” signal for WWFS). The F50,50 signal strength from WFAN-FM at the proposed LPFM transmitter site is 64.5 dBu (the “desired” signal for WFAN-FM). 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 two protected facilities is to that of WWFS and is a LPFM signal of greater than or equal to 104.4 dBu.

Figure EE1 is the vertical plane relative field pattern for the proposed Shively Labs 6812B 5-bay half-wave spaced antenna. By adjusting for the vertical plane downward relative field values of the proposed antenna, it is herein demonstrated that the 104.4 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.)

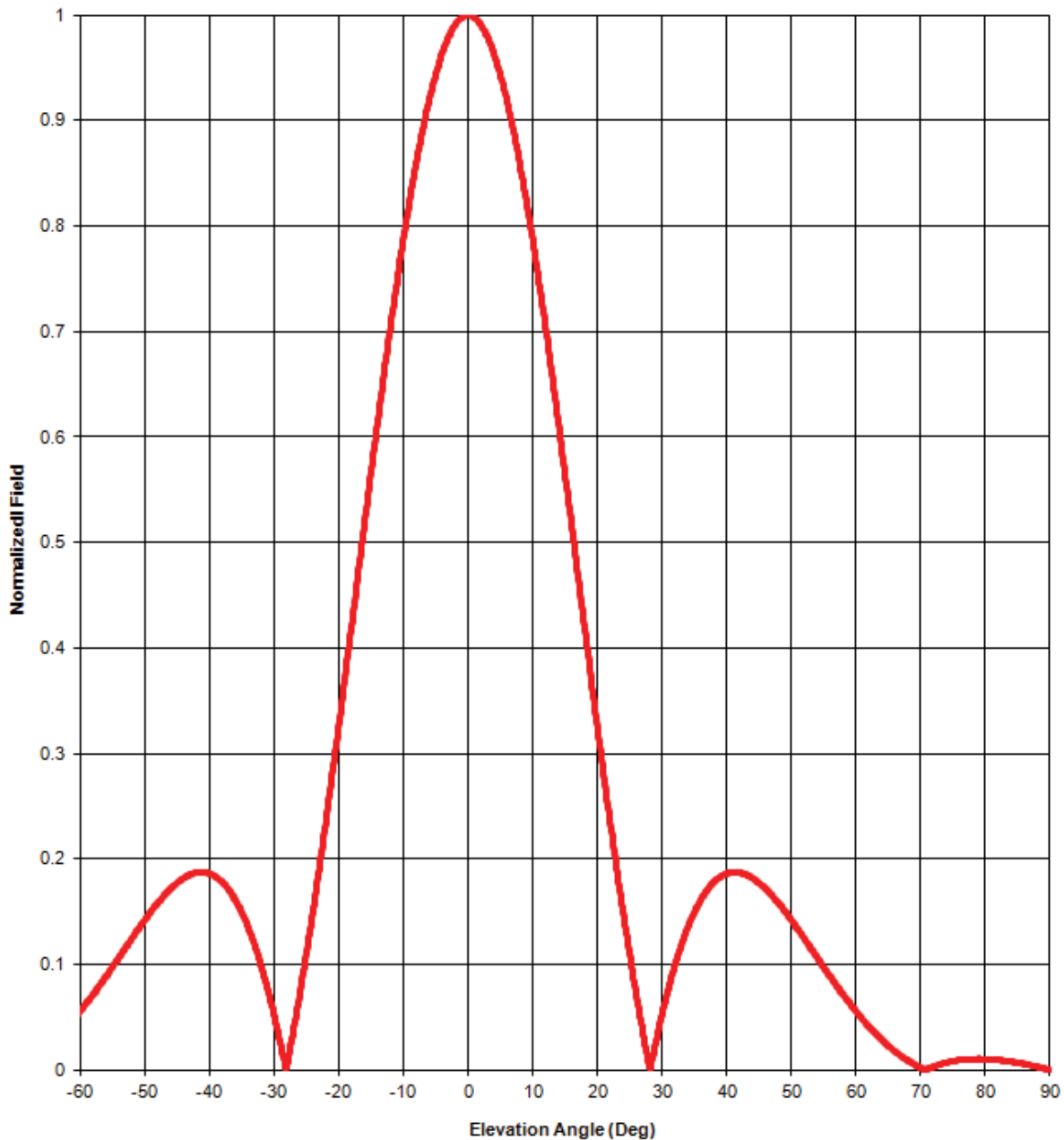
Attached as Figure EE2 is a tabulation of various points (at 2 meters above ground level) from the proposed translator tower base. (Column B is the different distances from the tower base to each studied point.) The actual distance from the antenna to each point is listed in Column C, the hypotenuse 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.) Therefore, pursuant to Section 74.1204(d) of the FCC Rules, WWFS and WFAN-FM are adequately protected by the proposed facility. (See below for a discussion of homes, buildings and roads.)

Figure EE3, attached, is an aerial photo of the proposed site. The above Figure EE2 clearances are at least 12 meters out to a distance of 70 meters from the tower base – the distance that includes any nearby homes or buildings. Any person on the top floor of any such home or building would be below this 12 meter clearance height. Also, out to 1470 meters from the tower base (the maximum distance of potential interference) the clearance from Figure EE2 is shown to be at least 5 meters (7 meters from ground level). Therefore, all main roads will not have predicted levels of interference. (Note that the tower site is on a hill so that the overpass shown to the south of the site is actually below the tower base elevation.)

Elevation pattern

FIGURE EE1 (Page 1 of 2)



Antenna model: 6812b, 5-bay half-wave-spaced

Test frequency: 98.1 MHz

Gain (maximum):

Power	dB
1.40	1.45 dB

Document No. 6812b 5-bay hw (130701)

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Degrees	Rel. Field	Degrees	Rel. Field	Degrees	Rel. Field	Degrees	Rel. Field	Degrees	Rel. Field
1	0.998	19	0.373	37	0.171	55	0.097	73	0.005
2	0.991	20	0.326	38	0.178	56	0.089	74	0.007
3	0.979	21	0.279	39	0.183	57	0.080	75	0.008
4	0.964	22	0.234	40	0.186	58	0.071	76	0.009
5	0.943	23	0.191	41	0.187	59	0.063	77	0.010
6	0.919	24	0.149	42	0.187	60	0.056	78	0.010
7	0.891	25	0.110	43	0.185	61	0.048	79	0.011
8	0.860	26	0.072	44	0.182	62	0.041	80	0.010
9	0.825	27	0.037	45	0.177	63	0.035	81	0.010
10	0.787	28	0.005	46	0.172	64	0.029	82	0.010
11	0.747	29	0.025	47	0.165	65	0.023	83	0.009
12	0.704	30	0.053	48	0.158	66	0.018	84	0.008
13	0.659	31	0.077	49	0.150	67	0.013	85	0.007
14	0.613	32	0.099	50	0.142	68	0.009	86	0.006
15	0.566	33	0.119	51	0.133	69	0.005	87	0.004
16	0.518	34	0.135	52	0.125	70	0.002	88	0.003
17	0.470	35	0.150	53	0.116	71	0.001	89	0.002
18	0.421	36	0.161	54	0.106	72	0.003	90	0.000

Elevation Pattern Tabulation

Antenna 6812b, 5-bay half-wave-spaced

Relative Field at 0° Depression = 1.000

FIGURE EE2

FREE SPACE FIELD STRENGTH AT A DISTANCE STUDY RESULTS

PROJECT: HAZLET, NJ, CHANNEL 272L1

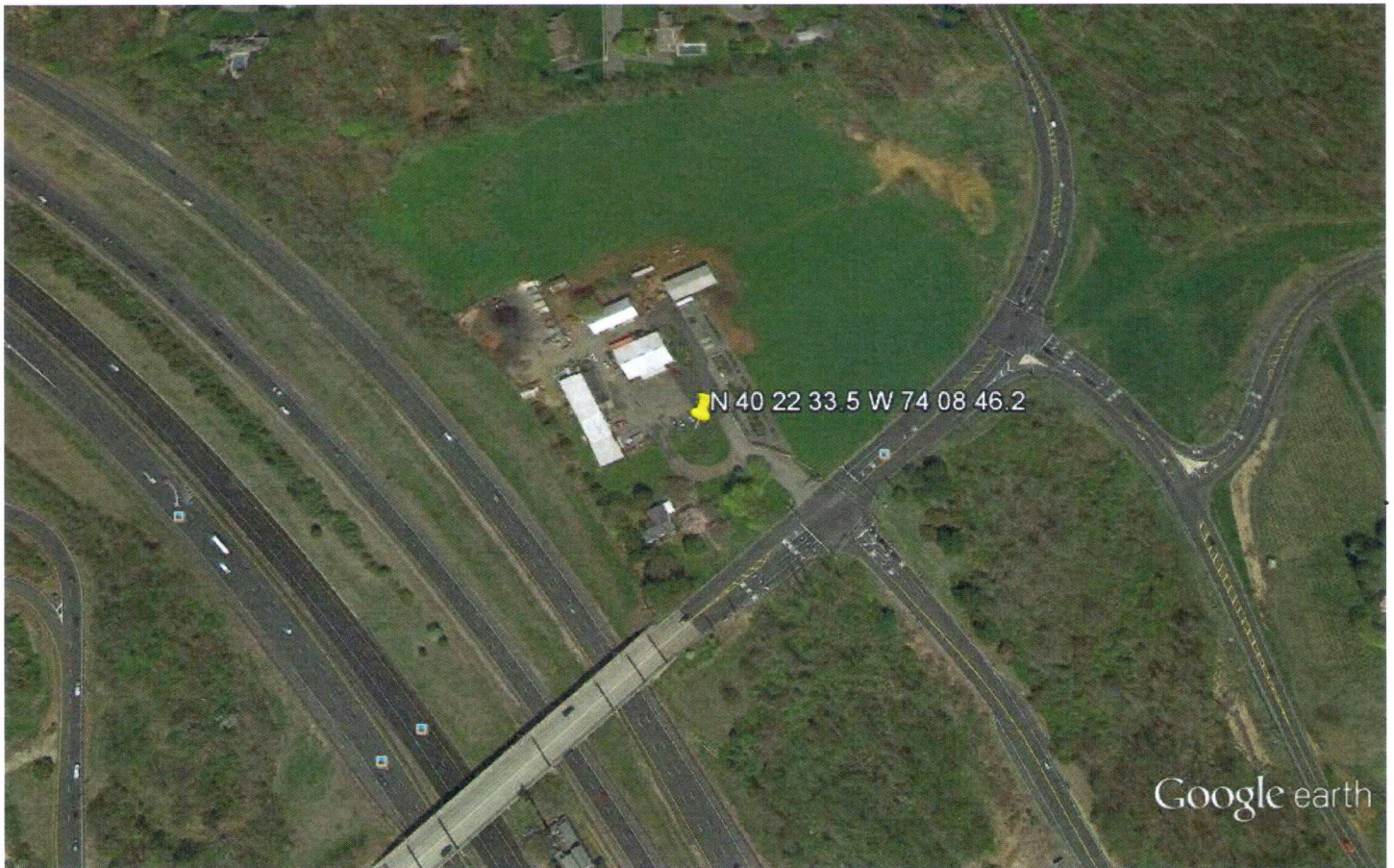
24-Jan-14

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	28	0.1	28.0	89.8	12	40.79	0.002	104.4	-13.19	0.3	0.3
2	28	10	29.7	70.3	12	40.79	0.002	104.4	-13.19	0.3	0.3
3	28	20	34.4	54.5	12	40.79	0.106	104.4	21.30	15.6	12.7
4	28	30	41.0	43.0	12	40.79	0.185	104.4	26.14	27.2	18.5
5	28	40	48.8	35.0	12	40.79	0.150	104.4	24.31	22.0	12.6
6	28	50	57.3	29.2	12	40.79	0.053	104.4	15.28	7.8	3.8
7	28	60	66.2	25.0	12	40.79	0.110	104.4	21.62	16.2	6.8
8	28	70	75.4	21.8	12	40.79	0.279	104.4	29.70	41.0	15.2
9	28	80	84.8	19.3	12	40.79	0.373	104.4	32.23	54.8	18.1
10	28	90	94.3	17.3	12	40.79	0.470	104.4	34.23	69.1	20.5
11	28	100	103.8	15.6	12	40.79	0.566	104.4	35.85	83.2	22.4
12	28	120	123.2	13.1	12	40.79	0.659	104.4	37.17	96.8	22.0
13	28	140	142.8	11.3	12	40.79	0.747	104.4	38.26	109.8	21.5
14	28	160	162.4	9.9	12	40.79	0.825	104.4	39.12	121.2	20.9

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, INTERFERING SIGNAL DOES NOT EXIST AT ANY LOCATION (TWO METERS OR LESS ABOVE GROUND LEVEL)

FIGURE EE3: Aerial Photo of Proposed Site



Google earth

feet 900
meters 200

