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ENGINEERING REPORT

North Charleston, SC, Channel 280D FM Translator Application

ENGINEERING STATEMENT

All required protections are met by contour non-overlap pursuant to Section 74.1204, with the exception of protection to WEZL, Charleston, SC 278C1 and WRFQ, Mount Pleasant, SC 283C1. WEZL and WRFQ are protected, as discussed below.

PROTECTION TO WEZL AND WRFQ

WEZL 278C1 and WRFQ 283C1 (both 27.9 kilometers at 116 degrees True from translator site) are second/third adjacent-channel stations to the proposed channel 280 translator facility. The 60 dBu F50,50 service contour of both WEZL and WRFQ extend well beyond the 280D transmitter site. Using the well-established *Living Way Ministries* Methodology, no actual interference to any population is predicted to exist to WEZL or WRFQ.

Note that a rule waiver of Section 74.1204 for this second and 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 WEZL and WRFQ at the proposed 280D transmitter site is greater than 78 dBu (the “desired” signals). The second/third adjacent-channel protection is an undesired-to-desired (“U/D”) dB signal strength ratio of 40:1. Therefore, predicted interference to WEZL or WRFQ is a 280D signal of greater than or equal to 118 dBu.

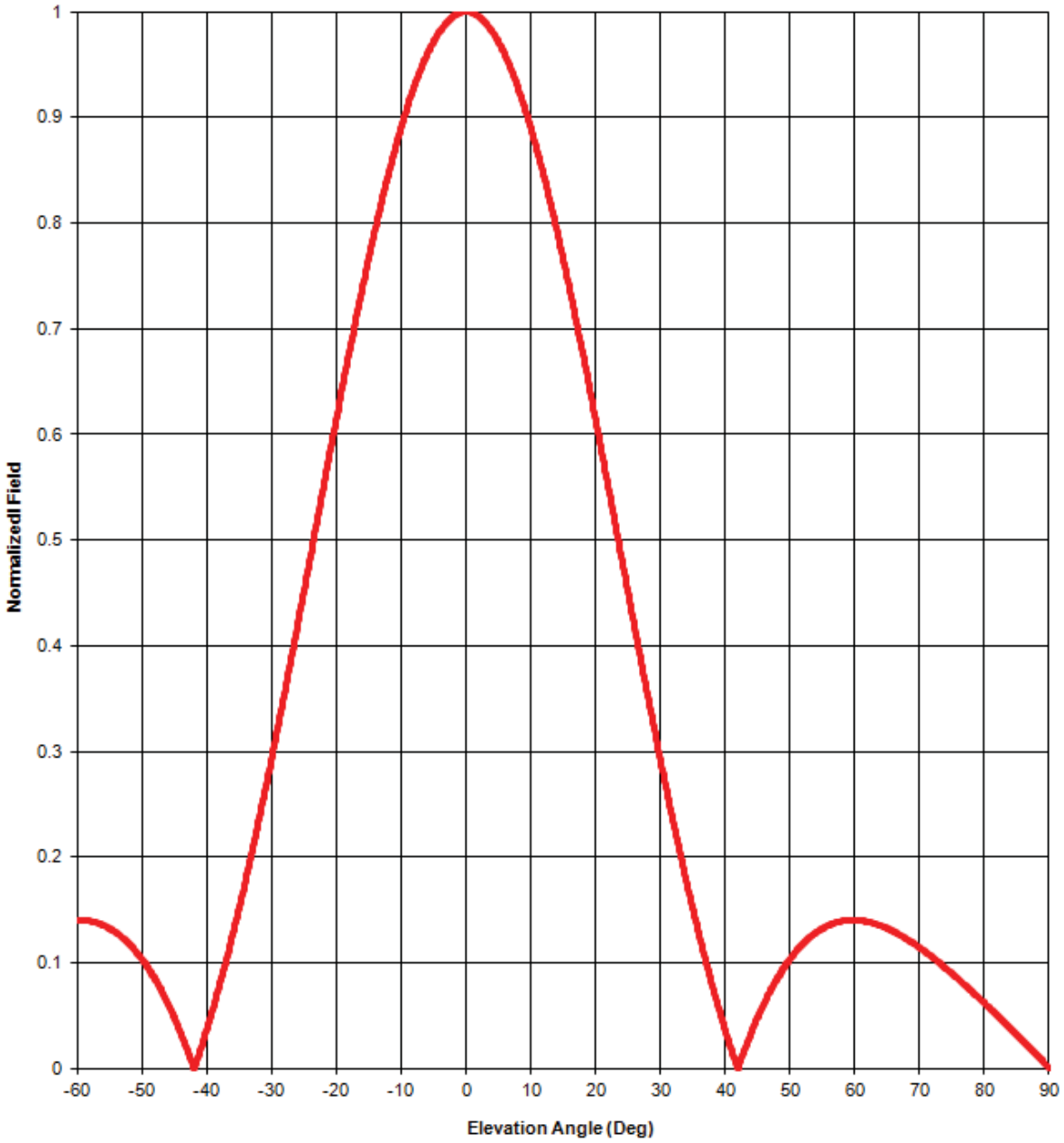
Figure EE1 is the vertical plane relative field pattern for the proposed antenna (a Shively Labs 6812B 3-bay halfwave spaced antenna). By adjusting for the vertical plane downward relative field values of the proposed antenna, it is herein demonstrated that the 118 dBu interfering signal (using a free space field determination) does not exist at any point two meters above ground level (“AGL”).

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 30 meters.) Therefore, pursuant to Section 74.1204(d) of the FCC Rules, WEZL and WRFQ are adequately protected by the proposed facility.

Elevation pattern

FIGURE EE1 (Page 1 of 2)



Antenna models: 6014, 6015, 6020, 6510, 6513, 6600, & 68xx except 6832, 3-bay half-wave-spaced

Test frequency: 98.1 MHz

Gain (maximum):

	Power	dß
6014, 6015, 68xx:	1.02	0.08 dß
6510, 6513, 6600:	2.04	3.08 dß

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Degrees	Rel. Field
1	0.999
2	0.995
3	0.990
4	0.982
5	0.972
6	0.959
7	0.945
8	0.929
9	0.911
10	0.891
11	0.869
12	0.845
13	0.820
14	0.794
15	0.767
16	0.738
17	0.708
18	0.678

Degrees	Rel. Field
19	0.646
20	0.615
21	0.582
22	0.550
23	0.517
24	0.484
25	0.451
26	0.419
27	0.387
28	0.355
29	0.323
30	0.293
31	0.263
32	0.234
33	0.205
34	0.178
35	0.152
36	0.126

Degrees	Rel. Field
37	0.102
38	0.079
39	0.057
40	0.037
41	0.017
42	0.001
43	0.018
44	0.034
45	0.048
46	0.062
47	0.074
48	0.085
49	0.095
50	0.104
51	0.111
52	0.118
53	0.124
54	0.129

Degrees	Rel. Field
55	0.133
56	0.136
57	0.138
58	0.140
59	0.140
60	0.140
61	0.140
62	0.139
63	0.137
64	0.135
65	0.133
66	0.130
67	0.126
68	0.123
69	0.119
70	0.114
71	0.110
72	0.105

Degrees	Rel. Field
73	0.100
74	0.095
75	0.090
76	0.084
77	0.079
78	0.073
79	0.068
80	0.062
81	0.056
82	0.050
83	0.044
84	0.038
85	0.032
86	0.026
87	0.020
88	0.013
89	0.007
90	0.000

Elevation Pattern Tabulation

Antenna models: 6014, 6015, 6020, 6510, 6513, 6600, & 68xx except 6832, 3-bay half-wave-spaced.

Relative Field at 0° Depression = 1.000

FIGURE EE2
FREE SPACE FIELD STRENGTH AT A DISTANCE STUDY RESULTS

PROJECT: NORTH CHARLESTON, SC, CHANNEL 280D

26-Jan-16

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	60	0.1	**60.0**	89.9	250	53.98	0.007	118.0	10.88	1.0	1.0
2	60	10	**60.8**	80.5	250	53.98	0.062	118.0	29.83	8.7	8.6
3	60	20	**63.2**	71.6	250	53.98	0.110	118.0	34.81	15.4	14.6
4	60	30	**67.1**	63.4	250	53.98	0.137	118.0	36.71	19.2	17.2
5	60	40	**72.1**	56.3	250	53.98	0.138	118.0	36.78	19.3	16.1
6	60	50	**78.1**	50.2	250	53.98	0.111	118.0	34.89	15.6	11.9
7	60	60	**84.9**	45.0	250	53.98	0.048	118.0	27.60	6.7	4.8
8	60	70	**92.2**	40.6	250	53.98	0.037	118.0	25.34	5.2	3.4
9	60	80	**100.0**	36.9	250	53.98	0.126	118.0	35.99	17.7	10.6
10	60	90	**108.2**	33.7	250	53.98	0.205	118.0	40.21	28.7	15.9
11	60	100	**116.6**	31.0	250	53.98	0.263	118.0	42.38	36.8	19.0
12	60	110	**125.3**	28.6	250	53.98	0.355	118.0	44.98	49.7	23.8
13	60	120	**134.2**	26.6	250	53.98	0.419	118.0	46.42	58.7	26.3
14	60	130	**143.2**	24.8	250	53.98	0.484	118.0	47.68	67.8	28.4
15	60	141	**153.2**	23.1	250	53.98	0.517	118.0	48.25	72.4	28.4

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)

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