

Exhibit 13 - FM Channel Study

FM Channel Study Kilgore Broadcast Maintenance

WSCO Xl tr @ WHBY Tower #3 Omni
Woodward

REFERENCE 44 08 18.7 N. 88 32 40.3 W. CH# 256D - 99.1 MHz, Pwr= 0.25 kW, HAAT= 71.0 M, COR= 309.8 M
Average Protected F(50-50)= 10.96 km
Omni-directional

DISPLAY DATES
DATA 04-29-17
SEARCH 05-18-17

CH CITY	CALL	TYPE STATE	ANT AZI <--	DIST FILE #	LAT LNG	PWR(kW) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*
256D W223CD Oshkosh	CP DC_	WI	171.2 351.2	8.36 BPFT20160729AEQ	44 03 51.1 88 31 42.6	0.120	28.0 317	8.5 Woodward Communications, I	-31.0*	-38.9*
258C2 WPKR Omro	LIC NC_	WI	196.1 16.0	35.82 BLH20040123BEI	43 49 44.0 88 40 06.0	25.000 151	5.1 423	47.1 Cumulus Licensing Lic	19.4	-12.4*
256B WMYX-FM Milwaukee	LIC _CN	WI	163.5 343.8	138.24 BMLH19860225KC	42 56 44.0 88 03 39.0	50.000 137	133.8 377	60.7 Entercom License, Lic	-6.9	20.2
254D W254CS Oshkosh	LIC _C_	WI	208.3 28.3	13.98 BLFT20160503ACH	44 01 40.0 88 37 39.1	0.210	1.0 294	9.1 Hometown Broadcasting, Lic	1.9	3.3
253C1 WQLH Green Bay	LIC _CN	WI	29.8 210.1	64.92 BMLH19910422KJ	44 38 41.0 88 08 13.0	100.000 152	6.8 367	56.4 Cumulus Licensing Lic	46.7	7.4
256L1 WAUP-LP Waupaca	LIC _	WI	301.4 120.9	55.23 BLL20150708ACH	44 23 44.0 89 08 17.6	0.076 35	319	17.5 Waupaca Area Community Rad	10.7	
257C3 WOWN Shawano	LIC ZCN	WI	13.7 193.8	70.43 BLH19930726KZ	44 45 14.0 88 20 01.0	14.000 134	46.6 390	30.4 Results Broadcasting Inc.	12.8	21.9
255A WEMP Two Rivers	LIC _CX	WI	105.1 285.7	64.57 BLH20131210BQU	43 59 03.0 87 45 55.0	6.000 89	31.3 310	20.6 Seehafer Broadcasting Corp	22.2	26.0
255C0 WVCX Tomah	LIC _C_	WI	259.0 77.6	156.45 BMLED20020128ABE	43 51 10.0 90 27 36.0	100.000 300	110.7 645	75.7 Vcy America, Inc.	34.8	65.1
259C2 WDKF Sturgeon Bay	LIC _CN	WI	52.5 233.2	91.47 BLH19910211KD	44 38 08.0 87 37 37.0	46.000 156	5.8 373	50.9 Midwest Communications In	74.2	39.5
256D W256CZ Stevens Point	APP _C_	WI	297.1 116.3	96.17 BPFT20170410ADJ	44 31 37.1 89 37 30.6	0.250	37.7 402	11.0 State Of Wisconsin - Educa	47.8	48.5
254A WMDC Mayville	LIC ZCN	WI	178.9 358.9	77.89 BLH19981026KF	43 26 17.0 88 31 35.0	6.000 100	2.6 393	27.1 Radio Plus, Inc.	64.0	49.3

Terrain database is FCC NGDC 30 Sec , R= 73.215 qualifying spacings or FCC minimum Spacings in KM, M= Margin in KM
In & Out distances between contours are shown at closest points. Reference zone= East Zone, Co to 3rd adjacent.
All separation margins (if shown) include rounding.
Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, _= Omni), Polarization (C,H,V,E), Beamtilt(Y,N,X)
***affixed to 'IN' or 'OUT' values = site inside restricted contour.
Reference station has protected zone issue: AM tower

/1 This is the subject facility of this instant application.

/2 Please see following pages for waiver request.

Protected zones report for W223CP.P on channel 256D 05-18-2017

Lat. 44 08 18.7 Lng. 88 32 40.3, ERP= 0.25 kw, HAAT= 71.04 m

Facility is okay with respect to Canada. Distance = 405.4 km.

Closest AM Facility is WHBY, KIMBERLY, WI, L, DA2 at 287.7° at a distance of 0.1 km

Facility is okay with respect to FCC monitoring stations.

Closest FCC Monitoring Station is 270.3 km= Allegan, MI

Facility is okay toward West Virginia Quiet Zone. Distance to center = 992.1 km

Facility is okay toward Table Mountain. Distance to Center = 1450.1 km, Azimuth = 257.8 Degrees True

Waiver For Compliance with 47 C.F.R. 74.1204

Interference to WPKR

The site for the facility of proposed CP amendment is located within the protected contour of third-adjacent channel station WPKR, channel 258C2, in Omro, WI, the Protected Station. The predicted contour at the proposed site for this amendment is 65.8 dBu F[50,50]. According to established contour protection ratios, the contour from the interfering station should be 40 dB higher than the protected contour. Therefore the respective potential interfering contour for this proposed amendment is 105.8 dBu F[50,10] (the “Affected Area”).



Figure 1

The antenna is proposed to be located with radiation center 54 meters AGL transmitting 0.250 KW ERP. Applicant proposes to use a PSI antenna model PSIFML-6A-75WAVE, which is a six-bay antenna with $\frac{3}{4}$ wavelength vertical bay spacing.

The 105.8 dBu contour is displayed in **Figure 1** with the maximum radiation contour (major lobe) of 570 meters displayed in orange. A graphical representation of radiation in the vertical plane along with tabular data is displayed on the last two pages of this exhibit. The depression angle in the table is highlighted for the lowest elevation and distance from the tower for the major lobe and each of the four minor lobes.

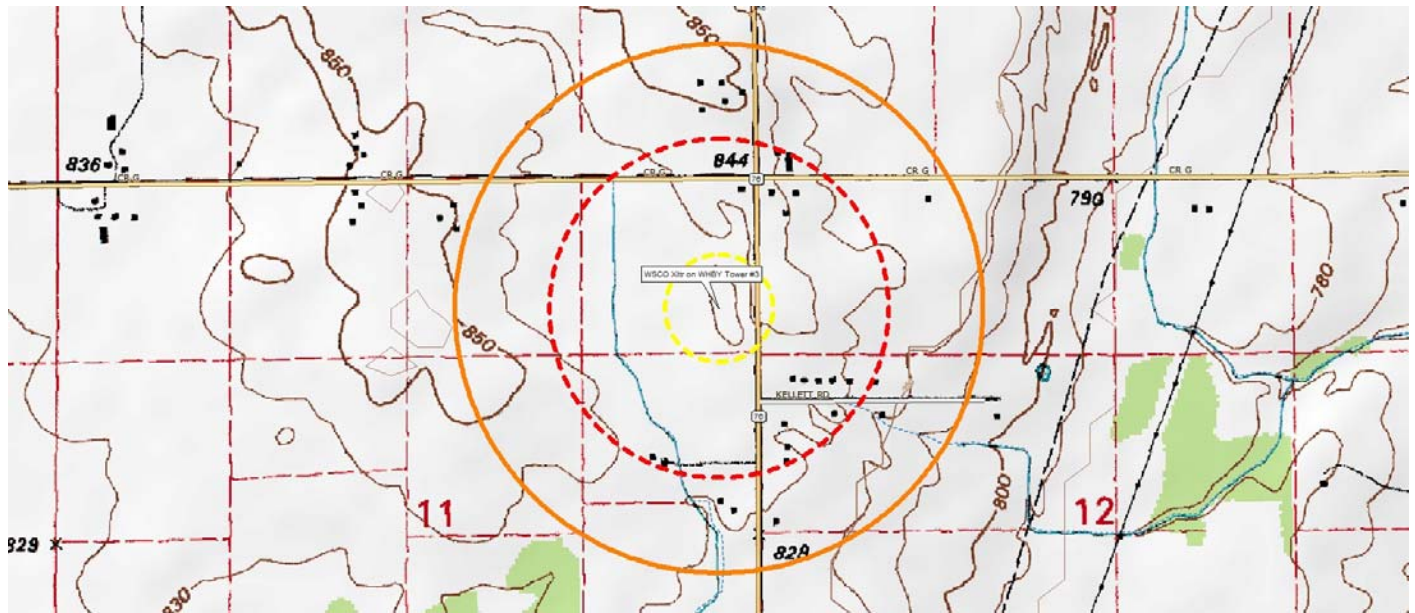


Figure 2

Minor lobe #4 (indicated by a black radius in **Figure 1**) at the 73 degree depression angle is less than nine meters from the tower and hovers above 25 meters AGL within a 9 meter radius of the tower. The lowest elevation of minor lobe #3 (indicated by a green radius in **Figure 1**) is at the 52 degree deflection angle and is limited to 6 meters above site elevation within a 39 meter radius of the tower. The lowest elevation of minor lobe #2 (indicated by a blue radius in **Figure 1**) is at the 34 degree deflection angle and is limited to 8.6 meters above site elevation within a 67 meter radius of the tower. There are no structures nor public areas within the radii of minor lobe #4 (black), of minor lobe #3 (green) and minor lobe #2 (blue).

The lowest elevation of minor lobe #1 (indicated by a yellow radius in **Figure 1**) is at the 19 degree deflection angle and is limited to 11.9 meters above site elevation within a 122 meter radius of the tower. The only structure within or near that radius is the WHBY transmitter building, which is barely outside of minor lobe #1 and is not open to the public. The only public area within minor lobe #1 (yellow) is State Highway 76. The topographic map in **Figure 2** displays the affected portion of State Highway 76 to be approximately even with the tower reference elevation. Therefore minor lobe #1 radiation hovering more than 11 meters AGL at State Highway 76 is above all public areas.

The portion of the major lobe that is of concern is located between the yellow and orange radii in **Figure 1**. The highest public location within that area is a two-story house with dormers (8 meters AGL) on the west side of State Highway 76 (see label in **Figure 1** and picture in **Figure 3**) on ground 3.3 meters above site elevation at a distance of 493 meters from the tower (see violet line in **Figure 1**). At that distance, the interference hovers more than 20 meters above site elevation and more than 8 meters above that house.



Figure 3

The only areas having even higher ground are located near the western edge of the orange radius. However, those are farm fields with no public locations.

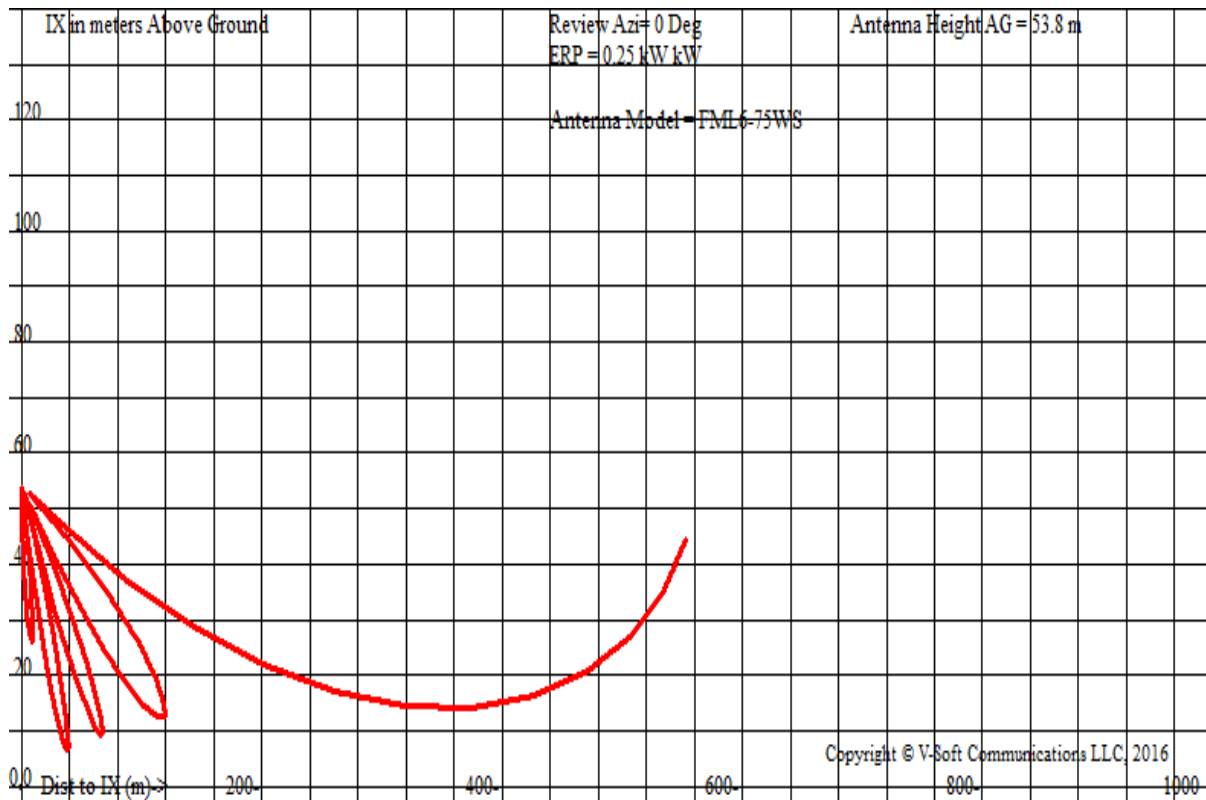
All other locations are at elevations ranging between approximately 3 meters above the site elevation to much lower than the site elevation with most public locations being even with or below site elevation. The lowest elevation of the radiation (red) is at the 6 degree deflection angle and is higher than 13 meters above site elevation at the 383 meter radius of the tower. There are no elevated roadways, no structures inhabitable by the public exceeding 8 meters AGL and no other public areas within those locations exceeding 8 meters AGL. Therefore, the interference hovers 5 meters or more above all such public areas.

Request for Waiver

No buildings, roads or other structures that the public would normally occupy would put the public within the interference pattern radiated by the antenna.

Since this proposal complies with 47 C.F.R. 74.1204(d) based upon the fact that no actual interference will occur due to no population and no public locations within the areas of interference, we hereby request waiver of 47 C.F.R. 74.1204(a)(3) for separation between this proposed facility and the Protected Station.

Please see the Vertical Radiation Chart and Table on the following pages.



WSCO Xltr @ WHBY Tower #3 Omni ,
 74.1204(d) Showing
 Translator or LPFM Maximum Licensed ERP = 0.25
 Translator or LPFM Antenna Height AG = 53.8 Meters
 WSCO Xltr @ WHBY Tower #3 Omni Antenna Model = FML6-75WS

Protected Station's Contour = 65.78786 dBu
 Translator's or LPFM's full Interference contour 105.78786

Review Azimuth = 0 Degrees True
 Relative Field on the horizon at Review Azimuth = 1.000
 Translator/LPFM ERP on the horizon at Review Azimuth = 0.25 kW
 Distance between stations = 35.8 km
 Protected Station= WPKR, 25 kW, 423 M Meters COR AMSL

Depression Angle From Horizon(Deg)	Vertical Relative Field	Horizontal Relative Field	ERP (kw)	Dist to IX Contour Along Dep. Angle(m)	Dist to IX Contour From Tower Base(m)	Height IX Above Ground (m)
00.0	1.0	1.0	0.2500	569.6092	569.6092	053.800
01.0	0.990	1.0	0.2450	563.9131	563.8272	043.958
02.0	0.960	1.0	0.2304	546.8248	546.4917	034.716
03.0	0.912	1.0	0.2079	519.4836	518.7717	026.612
04.0	0.847	1.0	0.1794	482.4590	481.2838	020.145
05.0	0.767	1.0	0.1471	436.8903	435.2278	015.723
06.0	0.676	1.0	0.1142	385.0558	382.9465	013.551
07.0	0.577	1.0	0.0832	328.6645	326.2147	013.746
08.0	0.472	1.0	0.0557	268.8555	266.2391	016.383
09.0	0.365	1.0	0.0333	207.9074	205.3477	021.276
10.0	0.261	1.0	0.0170	148.6680	146.4094	027.984
11.0	0.161	1.0	0.0065	091.7071	090.0222	036.301
12.0	0.069	1.0	0.0012	039.3030	038.4442	045.628
13.0	0.013	1.0	0.0000	007.4049	007.2151	052.134
14.0	0.083	1.0	0.0017	047.2776	045.8732	042.363
15.0	0.140	1.0	0.0049	079.7453	077.0280	033.160
16.0	0.182	1.0	0.0083	103.6689	099.6529	025.225
17.0	0.210	1.0	0.0110	119.6179	114.3912	018.827
18.0	0.224	1.0	0.0125	127.5925	121.3476	014.372
19.0	0.226	1.0	0.0128	128.7317	121.7182	011.889
20.0	0.215	1.0	0.0116	122.4660	115.0804	011.914
21.0	0.195	1.0	0.0095	111.0738	103.6963	013.995
22.0	0.166	1.0	0.0069	094.5551	087.6700	018.379
23.0	0.132	1.0	0.0044	075.1884	069.2113	024.422
24.0	0.094	1.0	0.0022	053.5433	048.9142	032.022
25.0	0.054	1.0	0.0007	030.7589	027.8770	040.801
26.0	0.014	1.0	0.0000	007.9745	007.1675	050.304
27.0	0.024	1.0	0.0001	013.6706	012.1806	047.594

Red

Yellow

28.0	0.058	1.0	0.0008	033.0373	029.1702	038.290	Blue
29.0	0.087	1.0	0.0019	049.5560	043.3427	029.775	
30.0	0.111	1.0	0.0031	063.2266	054.7559	022.187	
31.0	0.128	1.0	0.0041	072.9100	062.4961	016.249	
32.0	0.140	1.0	0.0049	079.7453	067.6278	011.541	
33.0	0.144	1.0	0.0052	082.0237	068.7909	009.127	
34.0	0.142	1.0	0.0050	080.8845	067.0563	008.570	
35.0	0.135	1.0	0.0046	076.8972	062.9905	009.694	
36.0	0.123	1.0	0.0038	070.0619	056.6813	012.619	
37.0	0.106	1.0	0.0028	060.3786	048.2205	017.463	
38.0	0.087	1.0	0.0019	049.5560	039.0507	023.290	
39.0	0.065	1.0	0.0011	037.0246	028.7735	030.500	
40.0	0.041	1.0	0.0004	023.3540	017.8902	038.788	
41.0	0.018	1.0	0.0001	010.2530	007.7380	047.073	
42.0	0.005	1.0	0.0000	002.8480	002.1165	051.894	
43.0	0.027	1.0	0.0002	015.3794	011.2478	043.311	
44.0	0.047	1.0	0.0006	026.7716	019.2579	035.203	
45.0	0.065	1.0	0.0011	037.0246	026.1803	027.620	
46.0	0.080	1.0	0.0016	045.5687	031.6547	021.021	
47.0	0.092	1.0	0.0021	052.4040	035.7395	015.474	Green
48.0	0.100	1.0	0.0025	056.9609	038.1143	011.470	
49.0	0.106	1.0	0.0028	060.3786	039.6119	008.232	
50.0	0.109	1.0	0.0030	062.0874	039.9090	006.238	
51.0	0.108	1.0	0.0029	061.5178	038.7144	005.992	
52.0	0.106	1.0	0.0028	060.3786	037.1728	006.221	
53.0	0.100	1.0	0.0025	056.9609	034.2799	008.309	
54.0	0.093	1.0	0.0022	052.9737	031.1371	010.943	
55.0	0.085	1.0	0.0018	048.4168	027.7707	014.139	
56.0	0.075	1.0	0.0014	042.7207	023.8891	018.383	
57.0	0.064	1.0	0.0010	036.4550	019.8548	023.226	
58.0	0.052	1.0	0.0007	029.6197	015.6960	028.681	
59.0	0.040	1.0	0.0004	022.7844	011.7348	034.270	
60.0	0.029	1.0	0.0002	016.5187	008.2593	039.494	
61.0	0.017	1.0	0.0001	009.6834	004.6946	045.331	
62.0	0.007	1.0	0.0000	003.9873	001.8719	050.279	
63.0	0.003	1.0	0.0000	001.7088	000.7758	052.277	
64.0	0.013	1.0	0.0000	007.4049	003.2461	047.145	
65.0	0.021	1.0	0.0001	011.9618	005.0553	042.959	Black
66.0	0.028	1.0	0.0002	015.9491	006.4871	039.230	
67.0	0.035	1.0	0.0003	019.9363	007.7897	035.449	
68.0	0.040	1.0	0.0004	022.7844	008.5352	032.675	
69.0	0.044	1.0	0.0005	025.0628	008.9817	030.402	
70.0	0.047	1.0	0.0006	026.7716	009.1564	028.643	
71.0	0.050	1.0	0.0006	028.4805	009.2723	026.871	
72.0	0.051	1.0	0.0007	029.0501	008.9770	026.172	
73.0	0.052	1.0	0.0007	029.6197	008.6600	025.475	
74.0	0.051	1.0	0.0007	029.0501	008.0073	025.875	
75.0	0.050	1.0	0.0006	028.4805	007.3713	026.290	
76.0	0.049	1.0	0.0006	027.9109	006.7522	026.718	
77.0	0.047	1.0	0.0006	026.7716	006.0223	027.715	
78.0	0.045	1.0	0.0005	025.6324	005.3293	028.728	
79.0	0.042	1.0	0.0004	023.9236	004.5648	030.316	
80.0	0.039	1.0	0.0004	022.2148	003.8576	031.923	
81.0	0.035	1.0	0.0003	019.9363	003.1187	034.109	
82.0	0.032	1.0	0.0003	018.2275	002.5368	035.750	
83.0	0.028	1.0	0.0002	015.9491	001.9437	037.970	
84.0	0.024	1.0	0.0001	013.6706	001.4290	040.204	
85.0	0.020	1.0	0.0001	011.3922	000.9929	042.451	
86.0	0.016	1.0	0.0001	009.1137	000.6357	044.708	
87.0	0.012	1.0	0.0000	006.8353	000.3577	046.974	
88.0	0.008	1.0	0.0000	004.5569	000.1590	049.246	
89.0	0.004	1.0	0.0000	002.2784	000.0398	051.522	
90.0	0.001	1.0	0.0000	000.5696	000.0000	053.230	