

# Exhibit 13

## FM Channel Study

WSCO Fill-In Madal Aerials Tower Dirl  
Woodward Communications

REFERENCE	CH# 256D - 99.1 MHz, Pwr= 0.19 kW DA, HAAT= 81.6 M, COR= 317.3 M	DISPLAY DATES
44 03 51.1 N.	Average Protected F(50-50)= 10.9 km	DATA 07-13-16
88 31 42.6 W.	Standard Directional	SEARCH 07-25-16

CH CITY	CALL	TYPE	ANT STATE	AZI. <--	DIST FILE #	LAT. LNG.	Pwr(kW) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*
258C2 Omro	WPKR	LIC	NC WI	203.2 23.1	28.45 BLH20040123BEI	43 49 44.0 88 40 06.0	25.000 151	5.0 423	46.7 Cumulus Licensing Llc	16.7	-18.6* /1
256B Milwaukee	WMYX-FM	LIC	CN WI	163.0 343.3	129.96 BMLH19860225KCC	42 56 44.0 88 03 39.0	50.000 137	134.0 377	60.5 Entercom License, Llc	-13.0*	25.0 /2
254D Oshkosh	W254CS	LIC	C WI	242.9 62.9	8.88 BLFT20160503ACH	44 01 40.0 88 37 39.1	0.210	1.0 294	9.9 Hometown Broadcasting, Llc	1.2	-1.4* /1
253C1 Green Bay	WQLH	LIC	CN WI	25.6 205.9	71.65 BMLH19910422KJ	44 38 41.0 88 08 13.0	100.000 152	6.8 367	56.6 Cumulus Licensing Llc	53.6	14.1
256L1 Waupaca	WAUP-LP	LIC		307.4 127.0	60.96 BLL20150708ACH	44 23 44.0 89 08 17.6	0.076 35			24.0	19.0
257C3 Shawano	WOWN	LIC	ZCN WI	11.3 191.5	78.22 BLH19930726KZ	44 45 14.0 88 20 01.0	14.000 134	47.9 390	30.4 Results Broadcasting Inc.	20.0	28.9
255A Two Rivers	WEMP	LIC	CX WI	98.0 278.6	61.66 BLH20131210BQU	43 59 03.0 87 45 55.0	6.000 89	29.5 310	18.8 Seehafer Broadcasting Corp	21.6	24.8
255C0 Tomah	WVCX	LIC	C WI	262.0 80.7	156.35 BMLD20020128ABE	43 51 10.0 90 27 36.0	100.000 300	110.1 645	75.1 Vcy America, Inc.	37.7	69.5
254A Mayville	WMDC	LIC	ZCN WI	179.9 359.9	69.61 BLH19981026KF	43 26 17.0 88 31 35.0	6.000 100	2.6 393	26.9 Radio Plus, Inc.	59.2	41.9
259C2 Sturgeon Bay	WDKF	LIC	CN WI	48.1 228.8	95.77 BLH19910211KD	44 38 08.0 87 37 37.0	46.000 156	5.7 373	50.4 Midwest Communications	78.8	44.1 In

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.

/1 Request waiver of 47 C.F.R. 74.1204(a)(3) since proposal complies with 47 C.F.R. 74.1204(d) because UD/D contours limit interference. See next page.

/2 Translators are not protected from receiving interference by other stations.

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Protected zones report for WSCO-Xltr on channel 256D 07-25-2016  
Lat. 44 03 51.1 Lng. 88 31 42.6, ERP= 0.19 kw, HAAT= 81.6 m

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Facility is okay with respect to Canada. Distance = 409.9 km.  
Facility is okay with respect to AM station towers.

Closest AM Facility is WOSH, OSHKOSH, WI, L, ND2 at 181.5° at a distance of 2.0 km  
Facility is okay with respect to FCC monitoring stations.

Closest FCC Monitoring Station is 264.2 km= Allegan, MI

Facility is okay toward West Virginia Quiet Zone. Distance to center = 986.1 km

Facility is okay toward Table Mountain. Distance to Center = 1449.6 km, Azimuth = 258.2 Degrees True

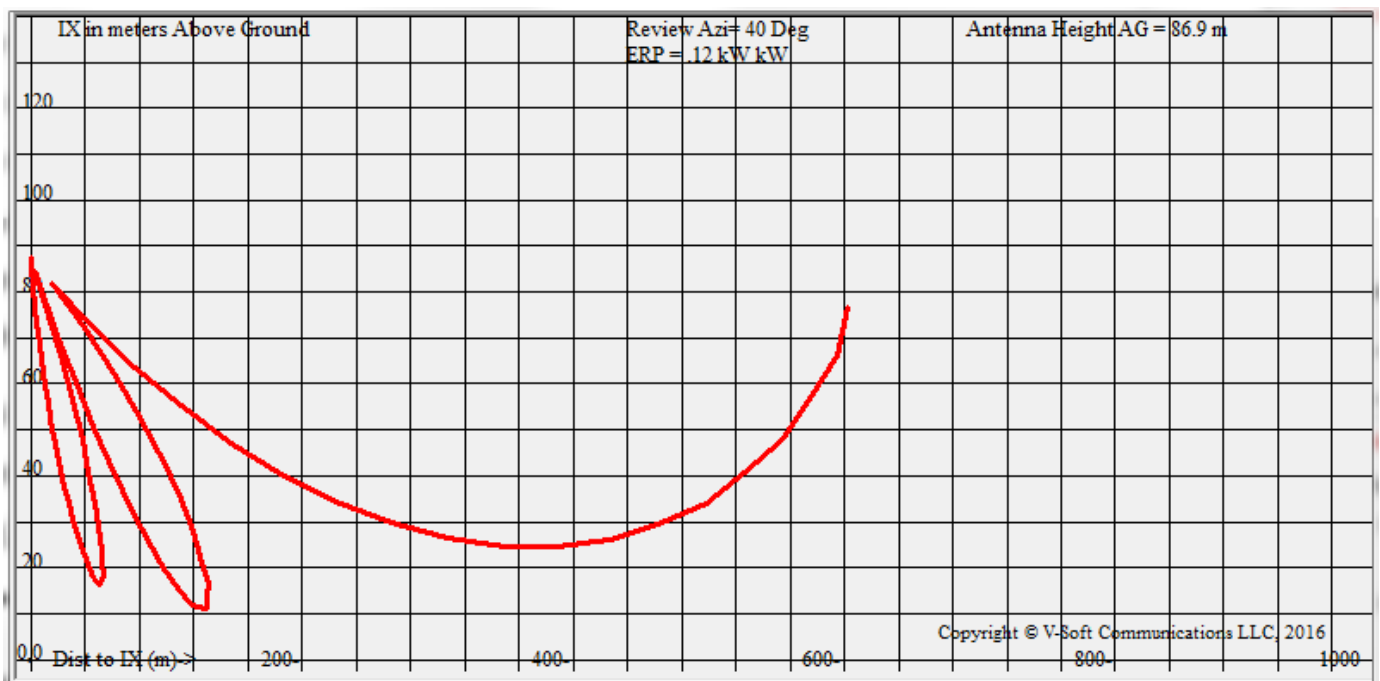
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# Waiver For Compliance with 47 C.F.R. 74.1204

## Interference to W254CS

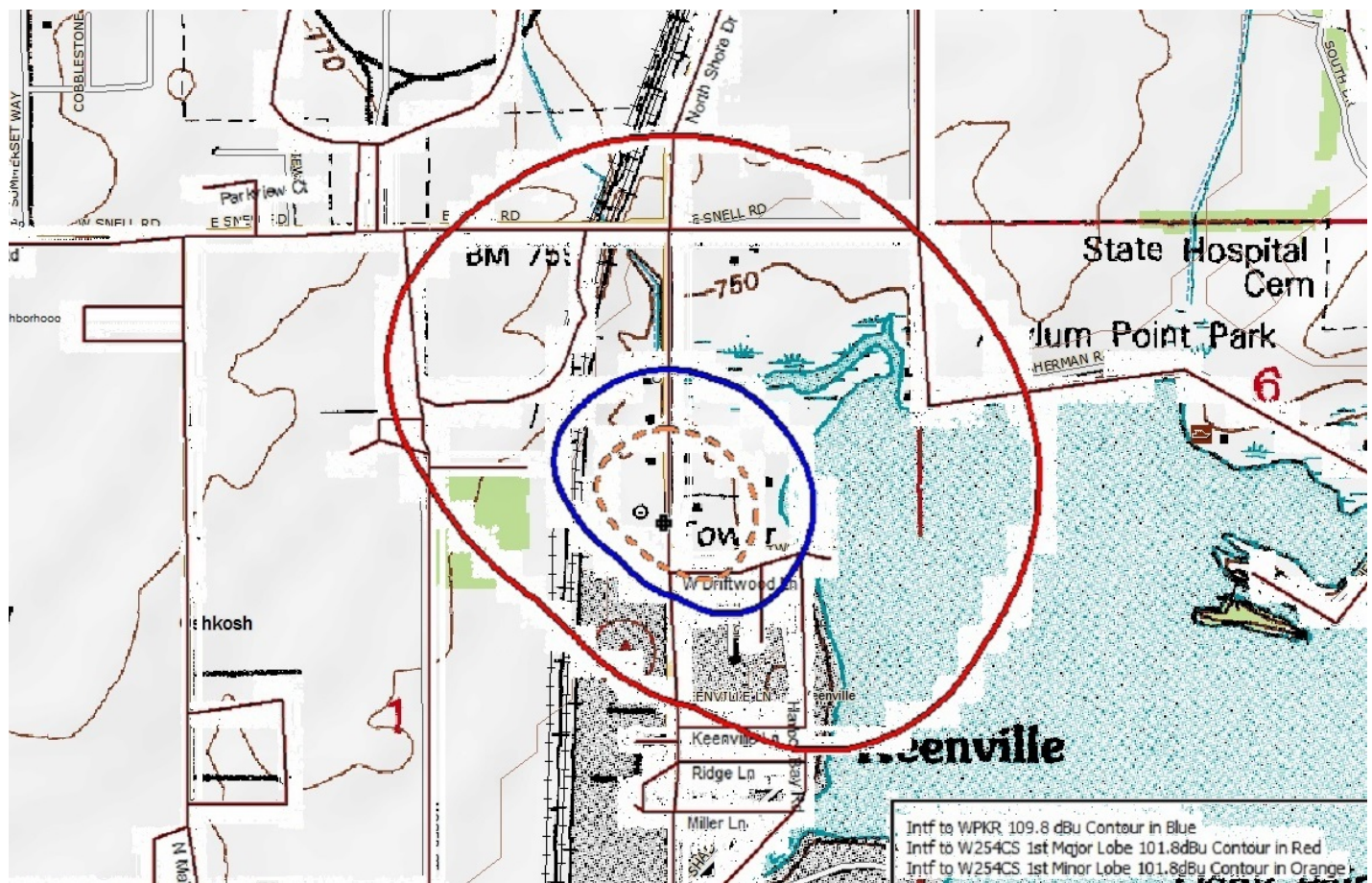
The site for the facility of proposed CP amendment is located within the protected contour of second-adjacent channel station W254CS, channel 254D, in Oshkosh, WI, the Protected Station. The predicted contour at the proposed site for this amendment is 61.8 dBu F[50,50]. According to established contour 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 101.8 dBu F[50,10].

A graphical representation of radiation in the vertical plane, displayed in **Figure 1**, shows the lowest point of interference hovers 10.5 meters AGL for the 1<sup>st</sup> minor lobe referenced to site elevation. **Table 1** contains the tabular data at the end of this document. Beyond the 1<sup>st</sup> minor lobe, the lowest point of interference is 24 meters AGL referenced to site elevation.



**Figure 1**

The directional 101.8dBu interfering signal for W254CS is represented by the red contour in **Figure 3** and **Figure 4** which encompasses the W254CS UD/D interference area. The ground elevation is approximately even with or below the site elevation within the 101.8 dBu Contour for the 1<sup>st</sup> minor lobe radiating downward, represented by the orange Contour in **Figure 3** and **Figure 4**. Within the 1<sup>st</sup> minor lobe contour all residences, business buildings, storage buildings and other structures where the public might be located are less than 7 meters, which does not exceed occupied space in a typical two-story residence.



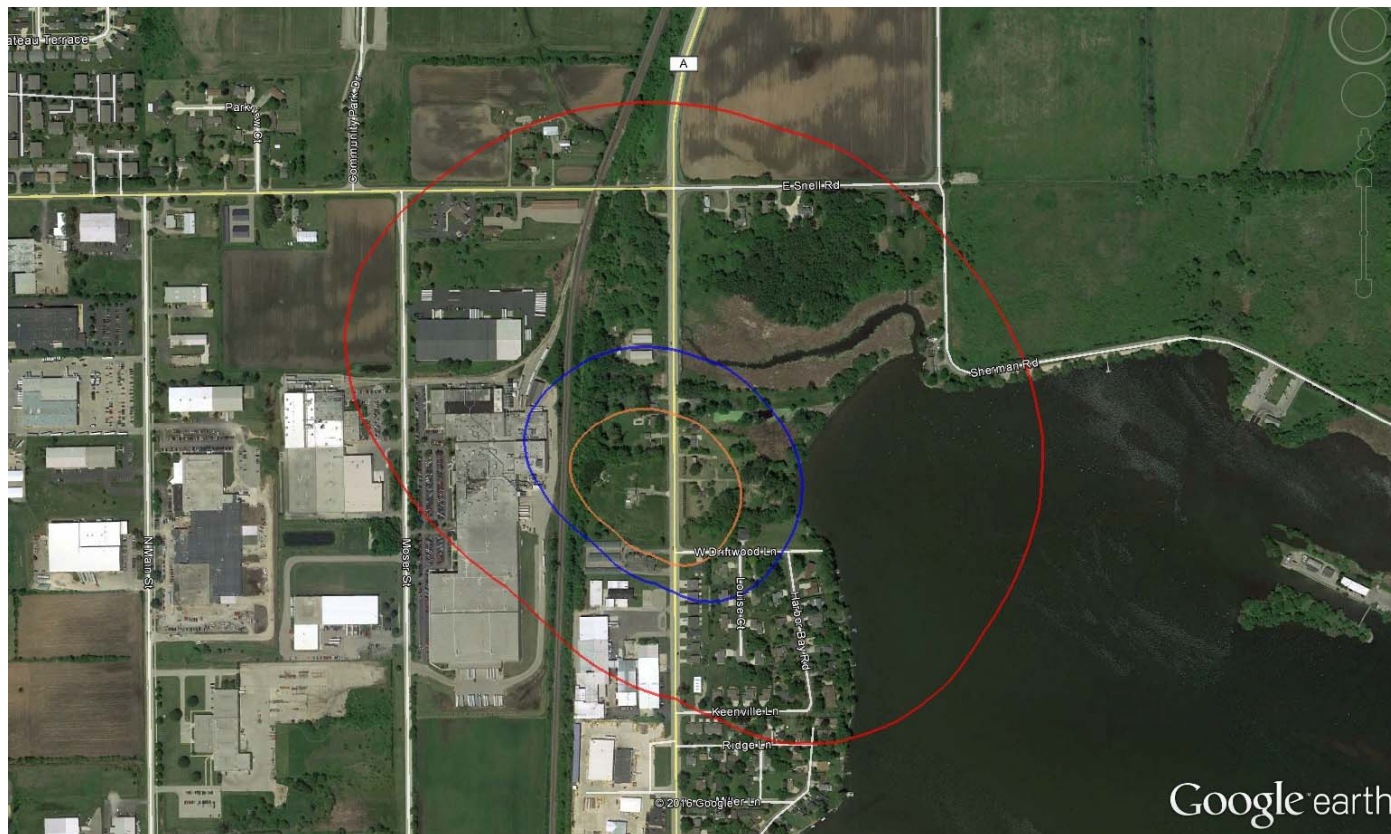
**Figure 2**

Ground elevation is up to 4 meters higher than site reference elevation within the red main lobe interference contour but outside of the orange minor lobe contour. The huge factory just across the railroad tracks and west of the proposed facility, the highest structure that can be occupied by the public, does not exceed 12 meters AGL (16m above reference). There are much taller silos



adjacent to the manufacturing plant complex, as viewed in **Figure 4**, but they are not accessible to the public. The interference areas hovering more than 24 meters AGL outside of the orange minor lobe contour easily clears all public locations outside of the Orange minor lobe area.

Since all other structures within the area of concern are lower, they are also not affected by the actual interference contour hovering above them.



**Figure 3**

### **Interference to WPKR**

The site for the facility of proposed CP amendment is located within the protected contour of second-adjacent channel station WPKR, channel 258C2, in Omro, WI, the Protected Station. The predicted contour at the proposed site for this amendment is 69.81 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 109.8 dBu F[50,10].

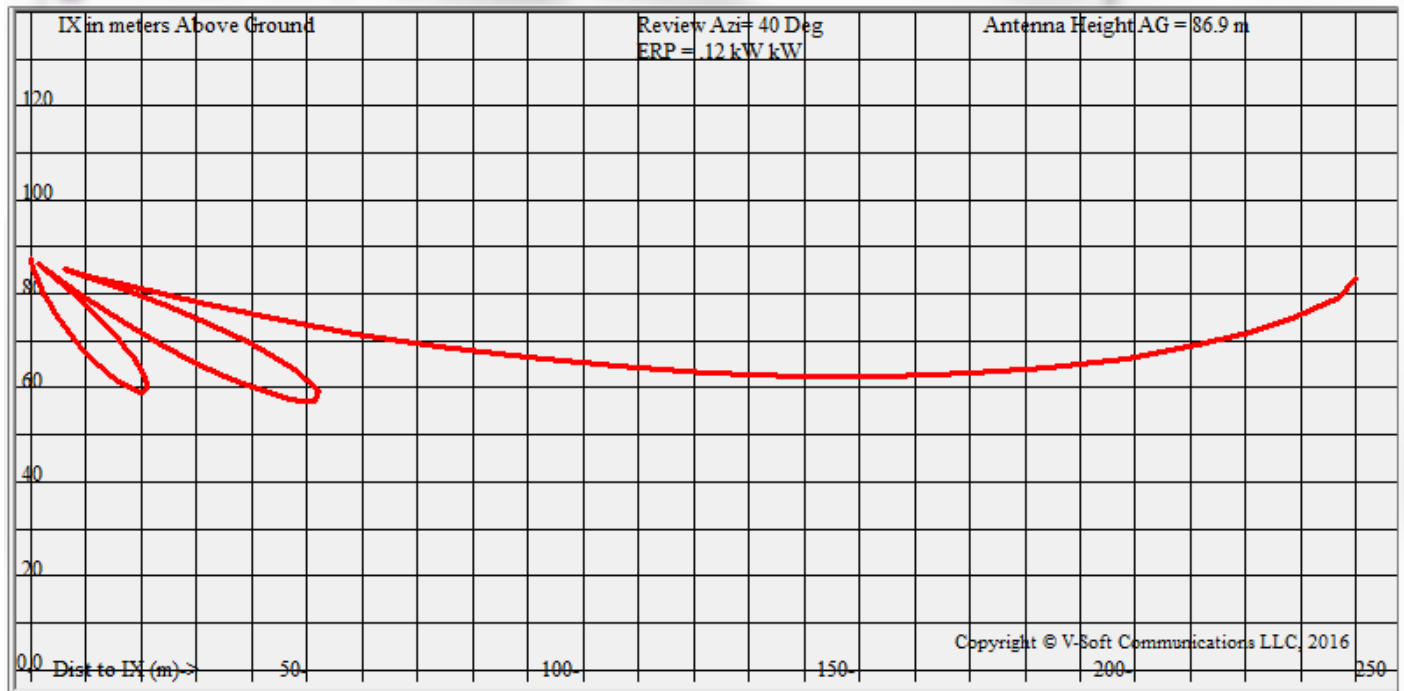
The antenna is proposed to be located with radiation center 86.9 meters AGL transmitting 0.190 KW ERP. Applicant proposes to use a directional PSI antenna model PSIFMT-4-75WS, which is a four-bay directional antenna with  $\frac{3}{4}$  wavelength vertical bay spacing. A graphical representation of radiation in the vertical plane, displayed in **Figure 5**, shows the lowest point of actual interference hovers above 56 meters AGL at the reference elevation. **Table 2** contains the tabular data at the end of this document.



**Figure 4**

The directional 109.8 dBu interfering signal for WPKR is represented by the blue contour in **Figure 3** and **Figure 4** which encompasses the WPKR UD/D interference area. The ground elevation within that area is approximately even with or below the site elevation. Within this area all residences, business buildings, storage buildings and other structures where the public might be located are less than 7 meters height, which does not exceed occupied space in a typical two-story residence.

The interference to WPKR reception hovers far above all publicly accessible locations within the blue contour for the WPKR interference.



**Figure 5**

Within the interfering contours affecting both stations, there are no elevated highways, elevated bridges overpasses, etc.

## **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 can occur due to no population and no public locations within the actual 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.

# Table 1

WSCO-Xltr Oshkosh, WI  
 74.1204(d) Showing  
 Translator or LPFM Maximum Licensed ERP = 0.12  
 Translator or LPFM Antenna Height AG = 86.9 Meters  
 WSCO-Xltr Antenna Model = PSIFMT6-4-75WS

Protected Station's Contour = 61.81628 dBu  
 Translator's or LPFM's full Interference contour 101.81628

Review Azimuth = 40 Degrees True  
 Relative Field on the horizon at Review Azimuth = 0.995  
 Translator/LPFM ERP on the horizon at Review Azimuth = 0.119 kW  
 Distance between stations = 8.9 km  
 Protected Station= W254CS, .21 kW, 294 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)
00.00	1.0	1.0	0.1194	621.8536	621.8536	086.900
01.00	0.989	1.0	0.1167	614.7645	614.6709	076.171
02.00	0.977	1.0	0.1140	607.6753	607.3052	065.692
03.00	0.945	1.0	0.1065	587.4029	586.5979	056.158
04.00	0.912	1.0	0.0993	567.1305	565.7490	047.339
05.00	0.867	1.0	0.0898	539.2093	537.1574	039.905
06.00	0.822	1.0	0.0807	511.2880	508.4872	033.456
07.00	0.765	1.0	0.0699	475.7491	472.2029	028.921
08.00	0.708	1.0	0.0598	440.2102	435.9261	025.635
09.00	0.645	1.0	0.0497	401.0956	396.1574	024.155
10.00	0.582	1.0	0.0405	361.9810	356.4817	024.043
11.00	0.514	1.0	0.0316	319.8815	314.0044	025.864
12.00	0.447	1.0	0.0238	277.7820	271.7118	029.146
13.00	0.38	1.0	0.0172	236.0867	230.0358	033.792
14.00	0.313	1.0	0.0117	194.3914	188.6172	039.872
15.00	0.251	1.0	0.0075	155.7743	150.4664	046.583
16.00	0.188	1.0	0.0042	117.1572	112.6187	054.607
17.00	0.131	1.0	0.0021	081.6183	078.0520	063.037
18.00	0.074	1.0	0.0007	046.0794	043.8241	072.661
19.00	0.051	1.0	0.0003	031.4036	029.6927	076.676
20.00	0.027	1.0	0.0001	016.7279	015.7190	081.179
21.00	0.069	1.0	0.0006	042.8457	039.9999	071.545
22.00	0.111	1.0	0.0015	068.9636	063.9419	061.066
23.00	0.143	1.0	0.0025	089.1427	082.0563	052.069
24.00	0.176	1.0	0.0037	109.3219	099.8705	042.435
25.00	0.197	1.0	0.0046	122.6917	111.1965	035.048
26.00	0.219	1.0	0.0057	136.0616	122.2913	027.255
27.00	0.231	1.0	0.0064	143.4927	127.8529	021.756
28.00	0.243	1.0	0.0070	150.9239	133.2579	016.046
29.00	0.244	1.0	0.0071	151.7945	132.7624	013.309
30.00	0.246	1.0	0.0072	152.6651	132.2118	010.567
31.00	0.237	1.0	0.0067	147.5659	126.4886	010.898
32.00	0.229	1.0	0.0063	142.4667	120.8186	011.404
33.00	0.212	1.0	0.0054	131.8641	110.5905	015.082
34.00	0.195	1.0	0.0045	121.2615	100.5303	019.091
35.00	0.173	1.0	0.0036	107.7050	088.2268	025.123
36.00	0.151	1.0	0.0027	094.1486	076.1678	031.561
37.00	0.125	1.0	0.0019	077.8250	062.1538	040.064
38.00	0.099	1.0	0.0012	061.5013	048.4637	049.036

39.00	0.072	1.0	0.0006	044.6491	034.6989	058.801
40.00	0.045	1.0	0.0002	027.7969	021.2936	069.033
41.00	0.026	1.0	0.0001	016.0438	012.1084	076.374
42.00	0.007	1.0	0.0000	004.2908	003.1887	084.029
43.00	0.03	1.0	0.0001	018.4691	013.5074	074.304
44.00	0.053	1.0	0.0003	032.6473	023.4845	064.221
45.00	0.071	1.0	0.0006	044.0272	031.1320	055.768
46.00	0.089	1.0	0.0009	055.4072	038.4890	047.043
47.00	0.103	1.0	0.0013	063.8022	043.5130	040.238
48.00	0.116	1.0	0.0016	072.1972	048.3094	033.247
49.00	0.125	1.0	0.0019	077.5762	050.8946	028.352
50.00	0.133	1.0	0.0021	082.9553	053.3226	023.353
51.00	0.137	1.0	0.0023	085.4116	053.7513	020.523
52.00	0.141	1.0	0.0024	087.8679	054.0969	017.659
53.00	0.141	1.0	0.0024	087.8679	052.8802	016.726
54.00	0.141	1.0	0.0024	087.8679	051.6475	015.813
55.00	0.138	1.0	0.0023	085.8780	049.2576	016.553
56.00	0.135	1.0	0.0022	083.8881	046.9096	017.354
57.00	0.13	1.0	0.0020	080.6544	043.9275	019.258
58.00	0.125	1.0	0.0019	077.4208	041.0268	021.243
59.00	0.118	1.0	0.0017	073.5964	037.9049	023.816
60.00	0.112	1.0	0.0015	069.7720	034.8860	026.476
61.00	0.105	1.0	0.0013	065.2635	031.6404	029.819
62.00	0.098	1.0	0.0011	060.7551	028.5228	033.256
63.00	0.09	1.0	0.0010	055.9357	025.3943	037.061
64.00	0.082	1.0	0.0008	051.1164	022.4079	040.957
65.00	0.075	1.0	0.0007	046.8256	019.7893	044.462
66.00	0.068	1.0	0.0006	042.5348	017.3005	048.043
67.00	0.061	1.0	0.0004	038.1507	014.9067	051.782
68.00	0.054	1.0	0.0004	033.7667	012.6492	055.592
69.00	0.049	1.0	0.0003	030.1599	010.8083	058.743
70.00	0.043	1.0	0.0002	026.5531	009.0817	061.948
71.00	0.037	1.0	0.0002	023.2262	007.5617	064.939
72.00	0.032	1.0	0.0001	019.8993	006.1492	067.975
73.00	0.028	1.0	0.0001	017.1632	005.0180	070.487
74.00	0.023	1.0	0.0001	014.4270	003.9766	073.032
75.00	0.019	1.0	0.0000	012.0951	003.1304	075.217
76.00	0.016	1.0	0.0000	009.7631	002.3619	077.427
77.00	0.013	1.0	0.0000	007.9908	001.7975	079.114
78.00	0.01	1.0	0.0000	006.2185	001.2929	080.817
79.00	0.008	1.0	0.0000	004.9126	000.9374	082.078
80.00	0.006	1.0	0.0000	003.6068	000.6263	083.348
81.00	0.004	1.0	0.0000	002.6740	000.4183	084.259
82.00	0.003	1.0	0.0000	001.7412	000.2423	085.176
83.00	0.002	1.0	0.0000	001.1815	000.1440	085.727
84.00	0.001	1.0	0.0000	000.6219	000.0650	086.282
85.00	0.001	1.0	0.0000	000.3420	000.0298	086.559
86.00	0.0	1.0	0.0000	000.0622	000.0043	086.838
87.00	0.0	1.0	0.0000	000.0933	000.0049	086.807
88.00	0.0	1.0	0.0000	000.1244	000.0043	086.776
89.00	0.0	1.0	0.0000	000.1244	000.0022	086.776
90.00	0.0	1.0	0.0000	000.1244	000.0000	086.776



## Table 2

WSCO-Xltr Oshkosh, WI  
 74.1204(d) Showing  
 Translator or LPFM Maximum Licensed ERP = 0.12  
 Translator or LPFM Antenna Height AG = 86.9 Meters  
 WSCO-Xltr Antenna Model = PSIFMT6-4-75WS

Protected Station's Contour = 69.80999 dBu  
 Translator's or LPFM's full Interference contour 109.80999

Review Azimuth = 40 Degrees True  
 Relative Field on the horizon at Review Azimuth = 0.995  
 Translator/LPFM ERP on the horizon at Review Azimuth = 0.119 kW  
 Distance between stations = 28.5 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)
00.00	1.0	1.0	0.1194	247.7437	247.7437	086.900
01.00	0.989	1.0	0.1167	244.9195	244.8821	082.626
02.00	0.977	1.0	0.1140	242.0952	241.9477	078.451
03.00	0.945	1.0	0.1065	234.0187	233.6980	074.652
04.00	0.912	1.0	0.0993	225.9423	225.3919	071.139
05.00	0.867	1.0	0.0898	214.8186	214.0011	068.177
06.00	0.822	1.0	0.0807	203.6949	202.5790	065.608
07.00	0.765	1.0	0.0699	189.5363	188.1236	063.801
08.00	0.708	1.0	0.0598	175.3778	173.6710	062.492
09.00	0.645	1.0	0.0497	159.7947	157.8274	061.903
10.00	0.582	1.0	0.0405	144.2116	142.0207	061.858
11.00	0.514	1.0	0.0316	127.4394	125.0980	062.583
12.00	0.447	1.0	0.0238	110.6671	108.2488	063.891
13.00	0.38	1.0	0.0172	094.0559	091.6453	065.742
14.00	0.313	1.0	0.0117	077.4447	075.1442	068.164
15.00	0.251	1.0	0.0075	062.0598	059.9452	070.838
16.00	0.188	1.0	0.0042	046.6749	044.8668	074.035
17.00	0.131	1.0	0.0021	032.5164	031.0956	077.393
18.00	0.074	1.0	0.0007	018.3578	017.4593	081.227
19.00	0.051	1.0	0.0003	012.5111	011.8294	082.827
20.00	0.027	1.0	0.0001	006.6643	006.2624	084.621
21.00	0.069	1.0	0.0006	017.0695	015.9358	080.783
22.00	0.111	1.0	0.0015	027.4748	025.4742	076.608
23.00	0.143	1.0	0.0025	035.5141	032.6909	073.024
24.00	0.176	1.0	0.0037	043.5533	039.7880	069.185
25.00	0.197	1.0	0.0046	048.8798	044.3002	066.242
26.00	0.219	1.0	0.0057	054.2063	048.7203	063.138
27.00	0.231	1.0	0.0064	057.1669	050.9360	060.947
28.00	0.243	1.0	0.0070	060.1274	053.0893	058.672
29.00	0.244	1.0	0.0071	060.4742	052.8920	057.582
30.00	0.246	1.0	0.0072	060.8211	052.6726	056.489
31.00	0.237	1.0	0.0067	058.7896	050.3925	056.621
32.00	0.229	1.0	0.0063	056.7581	048.1336	056.823
33.00	0.212	1.0	0.0054	052.5341	044.0588	058.288
34.00	0.195	1.0	0.0045	048.3100	040.0508	059.885
35.00	0.173	1.0	0.0036	042.9092	035.1492	062.288
36.00	0.151	1.0	0.0027	037.5084	030.3449	064.853
37.00	0.125	1.0	0.0019	031.0051	024.7618	068.241
38.00	0.099	1.0	0.0012	024.5019	019.3077	071.815
39.00	0.072	1.0	0.0006	017.7880	013.8239	075.706
40.00	0.045	1.0	0.0002	011.0741	008.4833	079.782

41.00	0.026	1.0	0.0001	006.3918	004.8239	082.707
42.00	0.007	1.0	0.0000	001.7094	001.2704	085.756
43.00	0.03	1.0	0.0001	007.3580	005.3813	081.882
44.00	0.053	1.0	0.0003	013.0065	009.3561	077.865
45.00	0.071	1.0	0.0006	017.5403	012.4028	074.497
46.00	0.089	1.0	0.0009	022.0740	015.3339	071.021
47.00	0.103	1.0	0.0013	025.4185	017.3354	068.310
48.00	0.116	1.0	0.0016	028.7630	019.2462	065.525
49.00	0.125	1.0	0.0019	030.9060	020.2762	063.575
50.00	0.133	1.0	0.0021	033.0490	021.2435	061.583
51.00	0.137	1.0	0.0023	034.0276	021.4143	060.456
52.00	0.141	1.0	0.0024	035.0062	021.5520	059.315
53.00	0.141	1.0	0.0024	035.0062	021.0672	058.943
54.00	0.141	1.0	0.0024	035.0062	020.5761	058.579
55.00	0.138	1.0	0.0023	034.2134	019.6240	058.874
56.00	0.135	1.0	0.0022	033.4206	018.6886	059.193
57.00	0.13	1.0	0.0020	032.1324	017.5005	059.952
58.00	0.125	1.0	0.0019	030.8441	016.3449	060.743
59.00	0.118	1.0	0.0017	029.3205	015.1012	061.767
60.00	0.112	1.0	0.0015	027.7968	013.8984	062.827
61.00	0.105	1.0	0.0013	026.0007	012.6054	064.159
62.00	0.098	1.0	0.0011	024.2046	011.3634	065.529
63.00	0.09	1.0	0.0010	022.2845	010.1170	067.044
64.00	0.082	1.0	0.0008	020.3645	008.9272	068.596
65.00	0.075	1.0	0.0007	018.6551	007.8840	069.993
66.00	0.068	1.0	0.0006	016.9457	006.8924	071.419
67.00	0.061	1.0	0.0004	015.1991	005.9388	072.909
68.00	0.054	1.0	0.0004	013.4525	005.0394	074.427
69.00	0.049	1.0	0.0003	012.0156	004.3060	075.682
70.00	0.043	1.0	0.0002	010.5787	003.6181	076.959
71.00	0.037	1.0	0.0002	009.2532	003.0126	078.151
72.00	0.032	1.0	0.0001	007.9278	002.4498	079.360
73.00	0.028	1.0	0.0001	006.8377	001.9992	080.361
74.00	0.023	1.0	0.0001	005.7477	001.5843	081.375
75.00	0.019	1.0	0.0000	004.8186	001.2471	082.246
76.00	0.016	1.0	0.0000	003.8896	000.9410	083.126
77.00	0.013	1.0	0.0000	003.1835	000.7161	083.798
78.00	0.01	1.0	0.0000	002.4774	000.5151	084.477
79.00	0.008	1.0	0.0000	001.9572	000.3734	084.979
80.00	0.006	1.0	0.0000	001.4369	000.2495	085.485
81.00	0.004	1.0	0.0000	001.0653	000.1666	085.848
82.00	0.003	1.0	0.0000	000.6937	000.0965	086.213
83.00	0.002	1.0	0.0000	000.4707	000.0574	086.433
84.00	0.001	1.0	0.0000	000.2477	000.0259	086.654
85.00	0.001	1.0	0.0000	000.1363	000.0119	086.764
86.00	0.0	1.0	0.0000	000.0248	000.0017	086.875
87.00	0.0	1.0	0.0000	000.0372	000.0019	086.863
88.00	0.0	1.0	0.0000	000.0495	000.0017	086.850
89.00	0.0	1.0	0.0000	000.0495	000.0009	086.850
90.00	0.0	1.0	0.0000	000.0495	000.0000	086.850