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WHND Contour-to-Contour Allocation Table
State Of Wisconsin - Educational Communications Board
CH# 209C2 - 89.7 MHz, Pwr= 22 kW, HAAT= 163.5 M, COR= 347 M
Average Protected F(50-50)= 46.56 km
Omni-directional

DISPLAY DATES
DATA 07-01-13
SEARCH 07-01-13

REFERENCE
45 14 16.0 N.
87 05 28.0 W.

| 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* |
|--|------|-------------------------|-------------------|----------------------------|---------------------------------|--------------------|-------------------|------------------------------------|-------------------------|-------|
| 209C2 WHND Sister Bay | | APP _CX WI | 0.0 0.0 | 0.00 BMPED20130614AAD | 45 14 16.0 87 05 28.0 | 23.000 163 | 122.7 347 | 47.4 State Of Wisconsin - Educa | -169.7* -169.1* | |
| 209C2 WHND Sister Bay 7/12/2010: | | CP DCX WI | 13.1 193.1 | 0.09 BPED20100407AAG | 45 14 19.0 87 05 27.0 | 20.000 164 | 117.1 347 | 44.2 State Of Wisconsin - Educa | -163.9* -165.7* | |
| | | Accepted on channel | | 209-B by Industry | Canada in 6/28/2010 letter. | | | Note: not short-spaced. | | |
| 209C3 WHND Sister Bay | | LIC _C_ WI | 13.1 193.1 | 0.09 BLED19990924ABH | 45 14 19.0 87 05 27.0 | 3.400 164 | 85.9 347 | 29.8 State Of Wisconsin - Educa | -132.7* -151.3* | |
| 210C1 WLJN-FM Traverse City 2/26/2010: | | CP DCX MI | 114.0 295.0 | 123.48 BPED20091027AES | 44 46 36.0 85 39 43.0 | 100.000 169 | 91.5 402 | 60.6 Good News Media, Inc. | -13.9 -7.0<* | |
| | | Accepted on channel | | 210C1 by Industry | Canada in 1/11/2010 letter. | | | Note: not short-spaced. | | |
| 209C3 WLMN Manistee 5/13/2008: | | LIC DCX MI | 151.9 332.5 | 142.41 BLED20100728AFC | 44 06 18.0 86 15 01.0 | 15.000 86 | 89.7 292 | 26.3 Interlochen Center For The | 9.4 -9.4<* | |
| | | Accepted on channel | | 209B1 by Industry | Canada in 5/12/2008 letter, not | | | specialy negotiated. | | |
| | | See Construction Permit | | BNPED-20071019ASC. | | | | | | |
| 209D W209BM De Pere | | LIC _V_ WI | 216.1 35.4 | 120.40 BLFT20080910ACT | 44 21 32.0 87 58 58.0 | 0.010 145 | 23.4 388 | 6.9 Calvary Chapel Of Twin Fal | 52.7 -5.6<* | |
| 210C2 WLJN-FM Traverse City | | LIC _VX MI | 114.0 295.0 | 123.48 BLED20011128AAQ | 44 46 36.0 85 39 43.0 | 39.000 169 | 78.2 402 | 52.1 Good News Media, Inc. | -0.7 1.4<* | |
| 207C1 WPNE Green Bay | | LIC _CY WI | 218.3 37.6 | 116.75 BLED20030815ADO | 44 24 35.0 88 00 06.0 | 100.000 286 | 10.2 513 | 72.1 State Of Wisconsin - Educa | 61.8 39.7 | |
| 208D 494496 Garfield Township | | APP _C_ MI | 115.0 296.0 | 122.80 BNPFT20000327AAI | 44 45 43.0 85 40 53.0 | 0.010 165 | 10.1 400 | 6.9 Smile Fm | 66.3 45.9 | |
| 211C1 WNMU-FM Marquette | | LIC _CN MI | 334.6 154.1 | 137.48 BLED1511 | 46 21 09.0 87 51 32.0 | 100.000 283 | 10.3 730 | 73.4 Board Of Control, Northern | 80.1 59.2 | |

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= - Zone 2, 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 protected contour.

< = Station meets FCC minimum distance spacing for its class.

Reference station has protected zone issue:

<** Overlap is over Lake Michigan

<*** Secondary Station

HOW TO READ THE FM COMPUTER PRINT-OUT

The computer printout should be self-explanatory for the most part. The parameters of the station being checked, (reference station) are printed in the heading. The 60 dBu protected contour is predicted from the Commission's F(50-50) table, while the 40, 54, 80 and 100 dBu contours are interference contours derived from the Commission's F(50-10) table. Contour distances are in kilometers and are predicted using the Commission's TVFMINT FORTRAN subroutine. When interference contour distances are less than 16 kilometers the F(50-50) tables are used. If signal contour distances are less than 1.6 km the free-space equation is used.

The column listed **"*IN*"** is the sum of the reference station's 60 dBu protected contour and the data file station's interference contour subtracted from the distance between the stations. (All distances are derived by the method detailed in Sec. 73.208 of the Rules and Regulations as amended in Docket 80-90.) Therefore, the column is a measure of incoming interference. Negative distances in this column indicate the presence of contour overlap. The column labeled **"*OUT*"** shows the smallest distance in kilometers of overlap or clearance of the reference station's interference contour along the arc of database station's protected contour. Negative distance figures in this column indicate outgoing contour overlap.

Listed antenna heights and power are the FCC specific antenna heights and the ERPs. Under the **"AZIMUTH"** column, the first row of numbers indicate the True North bearings from the reference station toward the database stations, while the numbers in the second row indicate the reverse bearings from the database stations to the reference station.

The columns labeled **"INT"** and **"PRO"** contain the distance in kilometers of the appropriate interference contour and the protected contour of a data base station.

For I.F. relationships, 73.215 short-spaced stations and commercial stations where the minimum spacings are met, the **"IN"** and **"OUT"** columns change their significance. The letter **"R"** stands for the minimum **required** distance in kilometers, while the letter **"M"** in the next column follows the **available clear space** separation in kilometers. Minimum separation distances when displayed are taken from Sec 73.207 of the rules as amended or from 73.215. Canadian and Mexican separation distances, U/D ratios and protected contour values are from the US/Mexican Working Agreement and the US/Canada Working Agreement".

The call letters of stations meeting the minimum separation distances will be flagged by the characters **"<<"** appended to the end of the call letters. The **"^"** character appended to the call letters means the station has been **"max-classed"** according to the provisions of section 73.215 of the Rules.

The first three letters of the **"TYPE"** column identify the current FCC status of the stations. The fourth letter will be a **"D"** if the facility is directional. **"Z"** indicates a 73.215 directional. An **"N"** indicates it is a 73.215 station that operates with an omni-directional antenna. The fifth letter will be an E, H or V depending on the type of antenna polarization. The sixth letter will be a **"Y"** if the antenna uses beam tilt or an **"X"** if the commission is not sure, otherwise it will be an **"N"** or left blank.

WHND and WLJN-FM (CP) License Contour-to-Contour Map
State Of Wisconsin - Educational Communications Board

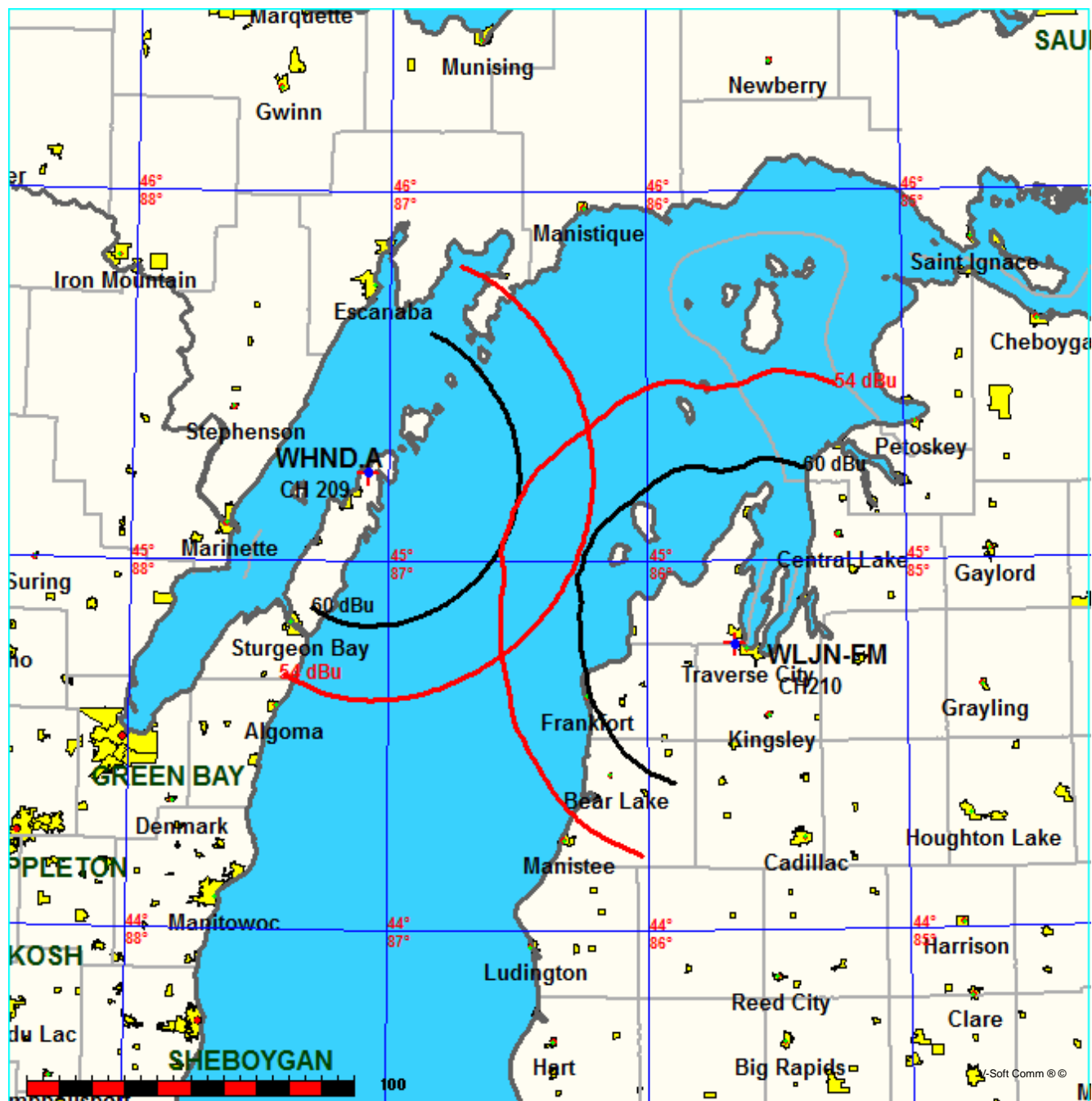
FMCommander Single Allocation Study - 07-01-2013 - FCC NGDC 30 Sec
WHND.A's Overlaps (In= -0.67 km, Out= 1.38 km)

WHND.A CH 209 C2

Lat= 45 14 16.0, Lng= 87 05 28.0
22.0 kW 163.5 M HAAT, 347 M COR
Prot.= 60 dBu, Intef.= 54 dBu

WLJN-FM CH 210 C2 BLED20011128AAQ

Lat= 44 46 36.0, Lng= 85 39 43.0
39.0 kW 169 M HAAT, 402 M COR
Prot.= 60 dBu, Intef.= 54 dBu



07-01-2013

Terrain Data: FCC NGDC 30 Sec

FMOver Analysis

WHND.A

WLJN-FM BPED20091027AES

Channel = 209C2

Max ERP = 22 kW

RCAMSL = 347 M

N. Lat. 45 14 16.0

W. Lng. 87 05 28.0

Protected

60 dBu

Channel = 210C1

Max ERP = 100 kW

RCAMSL = 402 M

N. Lat. 44 46 36.0

W. Lng. 85 39 43.0

Interfering

54 dBu

| Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Actual (dBu) | IX (km) |
|----------------------|-------------|-------------|--------------|----------------------|-------------|-------------|--------------|-----------------|------------|
| 054.0 | 022.0000 | 0159.2 | 046.0 | 316.6 | 100.0000 | 0178.3 | 108.5 | 49.57 | |
| 055.0 | 022.0000 | 0158.9 | 046.0 | 316.5 | 100.0000 | 0178.3 | 107.6 | 49.77 | |
| 056.0 | 022.0000 | 0159.0 | 046.0 | 316.4 | 100.0000 | 0178.3 | 106.9 | 49.95 | |
| 057.0 | 022.0000 | 0159.3 | 046.1 | 316.4 | 100.0000 | 0178.3 | 106.1 | 50.14 | |
| 058.0 | 022.0000 | 0159.6 | 046.1 | 316.3 | 100.0000 | 0178.3 | 105.3 | 50.33 | |
| 059.0 | 022.0000 | 0160.0 | 046.1 | 316.2 | 100.0000 | 0178.3 | 104.5 | 50.53 | |
| 060.0 | 022.0000 | 0160.5 | 046.2 | 316.2 | 100.0000 | 0178.4 | 103.7 | 50.72 | |
| 061.0 | 022.0000 | 0160.8 | 046.2 | 316.1 | 100.0000 | 0178.4 | 102.9 | 50.93 | |
| 062.0 | 022.0000 | 0161.2 | 046.3 | 316.0 | 100.0000 | 0178.5 | 102.1 | 51.13 | |
| 063.0 | 022.0000 | 0161.5 | 046.3 | 315.8 | 100.0000 | 0178.6 | 101.3 | 51.34 | |
| 064.0 | 022.0000 | 0161.8 | 046.4 | 315.7 | 100.0000 | 0178.7 | 100.6 | 51.54 | |
| 065.0 | 022.0000 | 0162.1 | 046.4 | 315.6 | 100.0000 | 0178.8 | 099.8 | 51.76 | |
| 066.0 | 022.0000 | 0162.4 | 046.4 | 315.4 | 100.0000 | 0179.0 | 099.0 | 51.97 | |
| 067.0 | 022.0000 | 0162.5 | 046.4 | 315.3 | 100.0000 | 0179.2 | 098.3 | 52.19 | |
| 068.0 | 022.0000 | 0162.7 | 046.5 | 315.1 | 100.0000 | 0179.5 | 097.5 | 52.41 | |
| 069.0 | 022.0000 | 0162.9 | 046.5 | 314.9 | 100.0000 | 0179.8 | 096.8 | 52.63 | |
| 070.0 | 022.0000 | 0163.1 | 046.5 | 314.7 | 100.0000 | 0180.2 | 096.0 | 52.86 | |
| 071.0 | 022.0000 | 0163.2 | 046.5 | 314.5 | 100.0000 | 0180.6 | 095.3 | 53.08 | |
| 072.0 | 022.0000 | 0163.3 | 046.5 | 314.3 | 100.0000 | 0181.1 | 094.6 | 53.31 | |
| 073.0 | 022.0000 | 0163.4 | 046.6 | 314.0 | 100.0000 | 0181.6 | 093.9 | 53.53 | |
| 074.0 | 022.0000 | 0163.5 | 046.6 | 313.8 | 100.0000 | 0182.2 | 093.2 | 53.76 | |
| 075.0 | 022.0000 | 0163.6 | 046.6 | 313.5 | 100.0000 | 0182.7 | 092.5 | 53.99 | |
| 076.0 | 022.0000 | 0163.6 | 046.6 | 313.2 | 100.0000 | 0183.3 | 091.8 | 54.21* | 0.71 |
| 077.0 | 022.0000 | 0163.6 | 046.6 | 313.0 | 100.0000 | 0183.9 | 091.1 | 54.43* | 1.45 |
| 078.0 | 022.0000 | 0163.6 | 046.6 | 312.7 | 100.0000 | 0184.4 | 090.5 | 54.65* | 2.19 |
| 079.0 | 022.0000 | 0163.7 | 046.6 | 312.4 | 100.0000 | 0184.9 | 089.8 | 54.87* | 2.90 |
| 080.0 | 022.0000 | 0163.8 | 046.6 | 312.0 | 100.0000 | 0185.3 | 089.1 | 55.08* | 3.60 |
| 081.0 | 022.0000 | 0164.0 | 046.6 | 311.7 | 100.0000 | 0185.7 | 088.5 | 55.29* | 4.29 |
| 082.0 | 022.0000 | 0164.2 | 046.6 | 311.4 | 100.0000 | 0186.0 | 087.9 | 55.50* | 4.96 |
| 083.0 | 022.0000 | 0164.5 | 046.7 | 311.0 | 100.0000 | 0186.2 | 087.3 | 55.70* | 5.60 |
| 084.0 | 022.0000 | 0164.7 | 046.7 | 310.7 | 100.0000 | 0186.2 | 086.6 | 55.89* | 6.21 |
| 085.0 | 022.0000 | 0164.9 | 046.7 | 310.3 | 100.0000 | 0186.1 | 086.1 | 56.07* | 6.80 |
| 086.0 | 022.0000 | 0165.0 | 046.7 | 309.9 | 100.0000 | 0186.0 | 085.5 | 56.25* | 7.36 |
| 087.0 | 022.0000 | 0165.1 | 046.7 | 309.5 | 100.0000 | 0185.8 | 084.9 | 56.41* | 7.89 |
| 088.0 | 022.0000 | 0165.3 | 046.8 | 309.1 | 100.0000 | 0185.6 | 084.4 | 56.58* | 8.43 |
| 089.0 | 022.0000 | 0165.5 | 046.8 | 308.7 | 100.0000 | 0185.5 | 083.8 | 56.74* | 8.94 |

| Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Actual (dBu) |
|----------------------|-------------|-------------|--------------|----------------------|-------------|-------------|--------------|-----------------|
| 090.0 | 022.0000 | 0165.7 | 046.8 | 308.3 | 100.0000 | 0185.2 | 083.3 | 56.89* 9.43 |
| 091.0 | 022.0000 | 0165.9 | 046.8 | 307.8 | 100.0000 | 0184.8 | 082.8 | 57.04* 9.89 |
| 092.0 | 022.0000 | 0166.1 | 046.9 | 307.4 | 100.0000 | 0184.3 | 082.3 | 57.17* 10.32 |
| 093.0 | 022.0000 | 0166.3 | 046.9 | 306.9 | 100.0000 | 0183.6 | 081.8 | 57.30* 10.71 |
| 094.0 | 022.0000 | 0166.5 | 046.9 | 306.4 | 100.0000 | 0182.8 | 081.4 | 57.41* 11.07 |
| 095.0 | 022.0000 | 0166.6 | 046.9 | 305.9 | 100.0000 | 0182.0 | 080.9 | 57.51* 11.39 |
| 096.0 | 022.0000 | 0166.6 | 046.9 | 305.4 | 100.0000 | 0181.1 | 080.5 | 57.61* 11.68 |
| 097.0 | 022.0000 | 0166.7 | 046.9 | 304.9 | 100.0000 | 0180.3 | 080.1 | 57.70* 11.97 |
| 098.0 | 022.0000 | 0166.8 | 046.9 | 304.4 | 100.0000 | 0179.6 | 079.8 | 57.78* 12.25 |
| 099.0 | 022.0000 | 0166.8 | 046.9 | 303.9 | 100.0000 | 0179.1 | 079.4 | 57.88* 12.54 |
| 100.0 | 022.0000 | 0166.9 | 047.0 | 303.3 | 100.0000 | 0178.7 | 079.1 | 57.97* 12.83 |
| 101.0 | 022.0000 | 0166.9 | 047.0 | 302.8 | 100.0000 | 0178.4 | 078.8 | 58.05* 13.10 |
| 102.0 | 022.0000 | 0167.0 | 047.0 | 302.2 | 100.0000 | 0178.1 | 078.5 | 58.13* 13.35 |
| 103.0 | 022.0000 | 0166.9 | 047.0 | 301.6 | 100.0000 | 0177.8 | 078.2 | 58.20* 13.57 |
| 104.0 | 022.0000 | 0166.9 | 047.0 | 301.1 | 100.0000 | 0177.3 | 078.0 | 58.26* 13.75 |
| 105.0 | 022.0000 | 0166.9 | 047.0 | 300.5 | 100.0000 | 0176.5 | 077.8 | 58.30* 13.86 |
| 106.0 | 022.0000 | 0166.9 | 047.0 | 299.9 | 100.0000 | 0175.2 | 077.6 | 58.30* 13.89 |
| 107.0 | 022.0000 | 0166.9 | 047.0 | 299.3 | 100.0000 | 0173.7 | 077.4 | 58.29* 13.87 |
| 108.0 | 022.0000 | 0166.9 | 047.0 | 298.7 | 100.0000 | 0171.9 | 077.2 | 58.26* 13.79 |
| 109.0 | 022.0000 | 0166.9 | 047.0 | 298.1 | 100.0000 | 0170.0 | 077.1 | 58.23* 13.68 |
| 110.0 | 022.0000 | 0166.9 | 047.0 | 297.5 | 100.0000 | 0168.6 | 077.0 | 58.20* 13.59 |
| 111.0 | 022.0000 | 0166.9 | 046.9 | 296.9 | 100.0000 | 0167.4 | 076.9 | 58.17* 13.53 |
| 112.0 | 022.0000 | 0166.8 | 046.9 | 296.3 | 100.0000 | 0166.9 | 076.9 | 58.17* 13.52 |
| 113.0 | 022.0000 | 0166.8 | 046.9 | 295.7 | 100.0000 | 0166.8 | 076.8 | 58.18* 13.55 |
| 114.0 | 022.0000 | 0166.8 | 046.9 | 295.1 | 100.0000 | 0167.1 | 076.8 | 58.19* 13.59 |
| 115.0 | 022.0000 | 0166.7 | 046.9 | 294.5 | 100.0000 | 0167.2 | 076.8 | 58.19* 13.59 |
| 116.0 | 022.0000 | 0166.6 | 046.9 | 293.8 | 100.0000 | 0167.1 | 076.9 | 58.18* 13.54 |
| 117.0 | 022.0000 | 0166.6 | 046.9 | 293.2 | 100.0000 | 0166.6 | 076.9 | 58.14* 13.42 |
| 118.0 | 022.0000 | 0166.5 | 046.9 | 292.6 | 100.0000 | 0165.7 | 077.0 | 58.07* 13.22 |
| 119.0 | 022.0000 | 0166.4 | 046.9 | 292.0 | 100.0000 | 0164.5 | 077.1 | 57.98* 12.95 |
| 120.0 | 022.0000 | 0166.3 | 046.9 | 291.4 | 100.0000 | 0162.8 | 077.2 | 57.87* 12.60 |
| 121.0 | 022.0000 | 0166.2 | 046.9 | 290.8 | 100.0000 | 0160.6 | 077.4 | 57.72* 12.15 |
| 122.0 | 022.0000 | 0166.1 | 046.9 | 290.2 | 100.0000 | 0158.1 | 077.6 | 57.55* 11.63 |
| 123.0 | 022.0000 | 0166.0 | 046.9 | 289.7 | 100.0000 | 0155.5 | 077.8 | 57.37* 11.07 |
| 124.0 | 022.0000 | 0165.9 | 046.8 | 289.1 | 100.0000 | 0152.8 | 078.0 | 57.18* 10.48 |
| 125.0 | 022.0000 | 0165.8 | 046.8 | 288.5 | 100.0000 | 0150.2 | 078.2 | 56.98* 9.87 |
| 126.0 | 022.0000 | 0165.7 | 046.8 | 287.9 | 100.0000 | 0147.8 | 078.5 | 56.79* 9.27 |
| 127.0 | 022.0000 | 0165.6 | 046.8 | 287.4 | 100.0000 | 0145.8 | 078.8 | 56.61* 8.70 |
| 128.0 | 022.0000 | 0165.5 | 046.8 | 286.8 | 100.0000 | 0143.9 | 079.1 | 56.43* 8.13 |
| 129.0 | 022.0000 | 0165.4 | 046.8 | 286.3 | 100.0000 | 0142.3 | 079.4 | 56.26* 7.57 |
| 130.0 | 022.0000 | 0165.3 | 046.8 | 285.8 | 100.0000 | 0141.0 | 079.8 | 56.09* 7.04 |
| 131.0 | 022.0000 | 0165.1 | 046.8 | 285.2 | 100.0000 | 0139.9 | 080.1 | 55.94* 6.52 |
| 132.0 | 022.0000 | 0165.0 | 046.7 | 284.7 | 100.0000 | 0139.2 | 080.5 | 55.79* 6.03 |
| 133.0 | 022.0000 | 0164.9 | 046.7 | 284.2 | 100.0000 | 0138.5 | 080.9 | 55.63* 5.52 |
| 134.0 | 022.0000 | 0164.7 | 046.7 | 283.7 | 100.0000 | 0137.9 | 081.3 | 55.48* 5.01 |
| 135.0 | 022.0000 | 0164.6 | 046.7 | 283.2 | 100.0000 | 0137.6 | 081.8 | 55.33* 4.51 |
| 136.0 | 022.0000 | 0164.4 | 046.7 | 282.8 | 100.0000 | 0137.5 | 082.2 | 55.19* 4.04 |
| 137.0 | 022.0000 | 0164.1 | 046.6 | 282.3 | 100.0000 | 0137.6 | 082.7 | 55.05* 3.57 |
| 138.0 | 022.0000 | 0163.9 | 046.6 | 281.9 | 100.0000 | 0137.7 | 083.2 | 54.91* 3.09 |
| 139.0 | 022.0000 | 0163.6 | 046.6 | 281.5 | 100.0000 | 0137.9 | 083.7 | 54.76* 2.58 |
| 140.0 | 022.0000 | 0163.3 | 046.5 | 281.0 | 100.0000 | 0137.9 | 084.3 | 54.60* 2.06 |

| Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Actual (dBu) | |
|----------------------|-------------|-------------|--------------|----------------------|-------------|-------------|--------------|-----------------|------|
| 141.0 | 022.0000 | 0163.0 | 046.5 | 280.6 | 100.0000 | 0138.0 | 084.8 | 54.44* | 1.51 |
| 142.0 | 022.0000 | 0162.6 | 046.5 | 280.2 | 100.0000 | 0137.9 | 085.4 | 54.27* | 0.94 |
| 143.0 | 022.0000 | 0162.3 | 046.4 | 279.9 | 100.0000 | 0137.7 | 086.0 | 54.10* | 0.33 |
| 144.0 | 022.0000 | 0162.0 | 046.4 | 279.5 | 100.0000 | 0137.4 | 086.6 | 53.91 | |
| 145.0 | 022.0000 | 0161.7 | 046.3 | 279.1 | 100.0000 | 0136.8 | 087.2 | 53.71 | |
| 146.0 | 022.0000 | 0161.4 | 046.3 | 278.8 | 100.0000 | 0136.2 | 087.8 | 53.50 | |
| 147.0 | 022.0000 | 0161.2 | 046.3 | 278.5 | 100.0000 | 0135.5 | 088.4 | 53.30 | |
| 148.0 | 022.0000 | 0161.1 | 046.3 | 278.1 | 100.0000 | 0135.0 | 089.0 | 53.09 | |
| 149.0 | 022.0000 | 0161.0 | 046.3 | 277.8 | 100.0000 | 0134.4 | 089.7 | 52.89 | |
| 150.0 | 022.0000 | 0161.0 | 046.3 | 277.5 | 100.0000 | 0134.0 | 090.3 | 52.69 | |
| 151.0 | 022.0000 | 0161.0 | 046.3 | 277.2 | 100.0000 | 0133.6 | 091.0 | 52.49 | |
| 152.0 | 022.0000 | 0161.0 | 046.3 | 276.9 | 100.0000 | 0133.2 | 091.6 | 52.29 | |
| 153.0 | 022.0000 | 0160.9 | 046.3 | 276.7 | 100.0000 | 0132.8 | 092.3 | 52.08 | |
| 154.0 | 022.0000 | 0160.8 | 046.2 | 276.4 | 100.0000 | 0132.5 | 093.0 | 51.88 | |
| 155.0 | 022.0000 | 0160.6 | 046.2 | 276.2 | 100.0000 | 0132.2 | 093.7 | 51.68 | |
| 156.0 | 022.0000 | 0160.5 | 046.2 | 275.9 | 100.0000 | 0132.0 | 094.4 | 51.47 | |
| 157.0 | 022.0000 | 0160.4 | 046.2 | 275.7 | 100.0000 | 0131.8 | 095.1 | 51.27 | |
| 158.0 | 022.0000 | 0160.4 | 046.2 | 275.5 | 100.0000 | 0131.5 | 095.8 | 51.07 | |
| 159.0 | 022.0000 | 0160.5 | 046.2 | 275.2 | 100.0000 | 0131.4 | 096.6 | 50.88 | |
| 160.0 | 022.0000 | 0160.5 | 046.2 | 275.0 | 100.0000 | 0131.2 | 097.3 | 50.68 | |
| 161.0 | 022.0000 | 0160.5 | 046.2 | 274.9 | 100.0000 | 0131.1 | 098.0 | 50.48 | |
| 162.0 | 022.0000 | 0160.7 | 046.2 | 274.7 | 100.0000 | 0130.9 | 098.8 | 50.29 | |
| 163.0 | 022.0000 | 0161.1 | 046.3 | 274.5 | 100.0000 | 0130.8 | 099.5 | 50.10 | |
| 164.0 | 022.0000 | 0161.5 | 046.3 | 274.3 | 100.0000 | 0130.8 | 100.2 | 49.91 | |
| 165.0 | 022.0000 | 0161.8 | 046.4 | 274.1 | 100.0000 | 0130.7 | 101.0 | 49.73 | |
| 166.0 | 022.0000 | 0162.1 | 046.4 | 274.0 | 100.0000 | 0130.8 | 101.7 | 49.54 | |
| 167.0 | 022.0000 | 0162.2 | 046.4 | 273.8 | 100.0000 | 0130.8 | 102.5 | 49.36 | |
| 168.0 | 022.0000 | 0162.4 | 046.4 | 273.7 | 100.0000 | 0130.7 | 103.3 | 49.18 | |
| 169.0 | 022.0000 | 0162.3 | 046.4 | 273.6 | 100.0000 | 0130.7 | 104.1 | 48.99 | |
| 170.0 | 022.0000 | 0162.0 | 046.4 | 273.5 | 100.0000 | 0130.7 | 104.9 | 48.81 | |
| 171.0 | 022.0000 | 0161.4 | 046.3 | 273.5 | 100.0000 | 0130.7 | 105.7 | 48.63 | |
| 172.0 | 022.0000 | 0160.7 | 046.2 | 273.4 | 100.0000 | 0130.7 | 106.5 | 48.45 | |
| 173.0 | 022.0000 | 0160.1 | 046.1 | 273.4 | 100.0000 | 0130.7 | 107.3 | 48.27 | |

07-01-2013

Terrain Data: FCC NGDC 30 Sec

FMOver Analysis

WLJN-FM BPED20091027AES

WHND.A

Channel = 210C1

Max ERP = 100 kW

RCAMSL = 402 M

N. Lat. 44 46 36.0

W. Lng. 85 39 43.0

Protected

60 dBu

Channel = 209C2

Max ERP = 22 kW

RCAMSL = 347 M

N. Lat. 45 14 16.0

W. Lng. 87 05 28.0

Interfering

54 dBu

| Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Actual (dBu) | IX (km) |
|----------------------|-------------|-------------|--------------|----------------------|-------------|-------------|--------------|-----------------|------------|
| 235.0 | 049.2804 | 0126.3 | 048.8 | 137.1 | 022.0000 | 0164.1 | 107.5 | 42.77 | |
| 236.0 | 051.4950 | 0125.9 | 049.1 | 137.2 | 022.0000 | 0164.1 | 106.7 | 42.96 | |
| 237.0 | 053.7582 | 0125.8 | 049.5 | 137.4 | 022.0000 | 0164.0 | 105.8 | 43.17 | |
| 238.0 | 056.0701 | 0125.8 | 049.9 | 137.5 | 022.0000 | 0164.0 | 104.9 | 43.39 | |
| 239.0 | 058.4307 | 0125.8 | 050.2 | 137.6 | 022.0000 | 0164.0 | 103.9 | 43.61 | |
| 240.0 | 060.8400 | 0125.8 | 050.6 | 137.7 | 022.0000 | 0163.9 | 103.0 | 43.84 | |
| 241.0 | 063.8401 | 0125.8 | 051.0 | 137.9 | 022.0000 | 0163.9 | 102.0 | 44.08 | |
| 242.0 | 066.9124 | 0126.0 | 051.5 | 138.0 | 022.0000 | 0163.9 | 101.1 | 44.33 | |
| 243.0 | 070.0569 | 0126.2 | 051.9 | 138.1 | 022.0000 | 0163.8 | 100.1 | 44.58 | |
| 244.0 | 073.2736 | 0126.5 | 052.4 | 138.2 | 022.0000 | 0163.8 | 099.1 | 44.84 | |
| 245.0 | 076.5625 | 0126.8 | 052.8 | 138.3 | 022.0000 | 0163.8 | 098.1 | 45.11 | |
| 246.0 | 079.9236 | 0127.2 | 053.2 | 138.4 | 022.0000 | 0163.7 | 097.1 | 45.39 | |
| 247.0 | 083.3569 | 0127.5 | 053.7 | 138.5 | 022.0000 | 0163.7 | 096.0 | 45.67 | |
| 248.0 | 086.8624 | 0128.1 | 054.1 | 138.6 | 022.0000 | 0163.7 | 095.0 | 45.97 | |
| 249.0 | 090.4401 | 0128.9 | 054.6 | 138.7 | 022.0000 | 0163.7 | 093.9 | 46.27 | |
| 250.0 | 094.0900 | 0129.5 | 055.1 | 138.7 | 022.0000 | 0163.7 | 092.9 | 46.57 | |
| 251.0 | 094.6729 | 0129.5 | 055.1 | 138.6 | 022.0000 | 0163.7 | 092.0 | 46.84 | |
| 252.0 | 095.2576 | 0129.1 | 055.1 | 138.3 | 022.0000 | 0163.8 | 091.1 | 47.10 | |
| 253.0 | 095.8441 | 0128.7 | 055.1 | 138.1 | 022.0000 | 0163.8 | 090.2 | 47.36 | |
| 254.0 | 096.4324 | 0127.6 | 055.0 | 137.8 | 022.0000 | 0163.9 | 089.4 | 47.61 | |
| 255.0 | 097.0225 | 0126.4 | 054.9 | 137.4 | 022.0000 | 0164.0 | 088.5 | 47.86 | |
| 256.0 | 097.6144 | 0125.3 | 054.8 | 137.1 | 022.0000 | 0164.1 | 087.7 | 48.10 | |
| 257.0 | 098.2081 | 0124.5 | 054.7 | 136.7 | 022.0000 | 0164.2 | 086.9 | 48.35 | |
| 258.0 | 098.8036 | 0124.1 | 054.7 | 136.4 | 022.0000 | 0164.3 | 086.1 | 48.60 | |
| 259.0 | 099.4009 | 0124.0 | 054.8 | 136.1 | 022.0000 | 0164.3 | 085.3 | 48.86 | |
| 260.0 | 100.0000 | 0124.1 | 054.8 | 135.8 | 022.0000 | 0164.4 | 084.4 | 49.12 | |
| 261.0 | 100.0000 | 0124.3 | 054.9 | 135.4 | 022.0000 | 0164.5 | 083.6 | 49.37 | |
| 262.0 | 100.0000 | 0124.8 | 054.9 | 135.1 | 022.0000 | 0164.5 | 082.8 | 49.63 | |
| 263.0 | 100.0000 | 0125.6 | 055.1 | 134.8 | 022.0000 | 0164.6 | 082.0 | 49.89 | |
| 264.0 | 100.0000 | 0126.5 | 055.2 | 134.4 | 022.0000 | 0164.7 | 081.1 | 50.15 | |
| 265.0 | 100.0000 | 0127.2 | 055.3 | 134.0 | 022.0000 | 0164.7 | 080.3 | 50.41 | |
| 266.0 | 100.0000 | 0128.0 | 055.4 | 133.6 | 022.0000 | 0164.8 | 079.5 | 50.66 | |
| 267.0 | 100.0000 | 0128.8 | 055.5 | 133.2 | 022.0000 | 0164.9 | 078.7 | 50.92 | |

| Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Actual (dBu) |
|----------------------|-------------|-------------|--------------|----------------------|-------------|-------------|--------------|-----------------|
| 268.0 | 100.0000 | 0129.6 | 055.6 | 132.8 | 022.0000 | 0164.9 | 077.9 | 51.17 |
| 269.0 | 100.0000 | 0130.4 | 055.7 | 132.4 | 022.0000 | 0165.0 | 077.2 | 51.41 |
| 270.0 | 100.0000 | 0130.7 | 055.8 | 131.9 | 022.0000 | 0165.0 | 076.5 | 51.64 |
| 271.0 | 100.0000 | 0130.7 | 055.8 | 131.3 | 022.0000 | 0165.1 | 075.8 | 51.85 |
| 272.0 | 100.0000 | 0130.6 | 055.8 | 130.7 | 022.0000 | 0165.2 | 075.2 | 52.05 |
| 273.0 | 100.0000 | 0130.6 | 055.8 | 130.2 | 022.0000 | 0165.2 | 074.6 | 52.25 |
| 274.0 | 100.0000 | 0130.8 | 055.8 | 129.6 | 022.0000 | 0165.3 | 074.0 | 52.45 |
| 275.0 | 100.0000 | 0131.2 | 055.9 | 129.0 | 022.0000 | 0165.4 | 073.4 | 52.65 |
| 276.0 | 100.0000 | 0132.1 | 056.0 | 128.4 | 022.0000 | 0165.4 | 072.7 | 52.87 |
| 277.0 | 100.0000 | 0133.3 | 056.2 | 127.8 | 022.0000 | 0165.5 | 072.0 | 53.09 |
| 278.0 | 100.0000 | 0134.7 | 056.4 | 127.2 | 022.0000 | 0165.5 | 071.4 | 53.31 |
| 279.0 | 100.0000 | 0136.5 | 056.6 | 126.6 | 022.0000 | 0165.6 | 070.7 | 53.55 |
| 280.0 | 100.0000 | 0137.8 | 056.8 | 126.0 | 022.0000 | 0165.7 | 070.0 | 53.75 |
| 281.0 | 100.0000 | 0137.9 | 056.8 | 125.3 | 022.0000 | 0165.8 | 069.6 | 53.91 |
| 282.0 | 100.0000 | 0137.7 | 056.8 | 124.5 | 022.0000 | 0165.8 | 069.2 | 54.03* 0.10 |
| 283.0 | 100.0000 | 0137.5 | 056.8 | 123.7 | 022.0000 | 0165.9 | 068.9 | 54.15* 0.46 |
| 284.0 | 100.0000 | 0138.2 | 056.9 | 123.0 | 022.0000 | 0166.0 | 068.4 | 54.30* 0.92 |
| 285.0 | 100.0000 | 0139.6 | 057.1 | 122.2 | 022.0000 | 0166.1 | 067.9 | 54.47* 1.43 |
| 286.0 | 100.0000 | 0141.6 | 057.3 | 121.5 | 022.0000 | 0166.2 | 067.4 | 54.66* 2.00 |
| 287.0 | 100.0000 | 0144.5 | 057.7 | 120.8 | 022.0000 | 0166.3 | 066.7 | 54.89* 2.67 |
| 288.0 | 100.0000 | 0148.1 | 058.2 | 120.0 | 022.0000 | 0166.3 | 066.0 | 55.13* 3.39 |
| 289.0 | 100.0000 | 0152.4 | 058.8 | 119.2 | 022.0000 | 0166.4 | 065.2 | 55.39* 4.17 |
| 290.0 | 100.0000 | 0157.0 | 059.4 | 118.4 | 022.0000 | 0166.5 | 064.5 | 55.64* 4.94 |
| 291.0 | 100.0000 | 0161.3 | 059.9 | 117.6 | 022.0000 | 0166.5 | 063.8 | 55.87* 5.61 |
| 292.0 | 100.0000 | 0164.5 | 060.3 | 116.7 | 022.0000 | 0166.6 | 063.3 | 56.04* 6.10 |
| 293.0 | 100.0000 | 0166.3 | 060.5 | 115.7 | 022.0000 | 0166.7 | 063.0 | 56.14* 6.41 |
| 294.0 | 100.0000 | 0167.1 | 060.6 | 114.8 | 022.0000 | 0166.7 | 062.9 | 56.19* 6.56 |
| 295.0 | 100.0000 | 0167.1 | 060.6 | 113.8 | 022.0000 | 0166.8 | 062.9 | 56.20* 6.57 |
| 296.0 | 100.0000 | 0166.8 | 060.5 | 112.9 | 022.0000 | 0166.8 | 062.9 | 56.18* 6.52 |
| 297.0 | 100.0000 | 0167.6 | 060.6 | 111.9 | 022.0000 | 0166.8 | 062.9 | 56.19* 6.55 |
| 298.0 | 100.0000 | 0169.7 | 060.9 | 110.9 | 022.0000 | 0166.9 | 062.8 | 56.24* 6.69 |
| 299.0 | 100.0000 | 0172.8 | 061.2 | 109.9 | 022.0000 | 0166.9 | 062.6 | 56.31* 6.88 |
| 300.0 | 100.0000 | 0175.5 | 061.5 | 108.9 | 022.0000 | 0166.9 | 062.5 | 56.34* 6.98 |
| 301.0 | 100.0000 | 0177.3 | 061.6 | 107.9 | 022.0000 | 0166.9 | 062.5 | 56.33* 6.95 |
| 302.0 | 100.0000 | 0178.0 | 061.7 | 106.9 | 022.0000 | 0166.9 | 062.7 | 56.27* 6.78 |
| 303.0 | 100.0000 | 0178.5 | 061.8 | 106.0 | 022.0000 | 0166.9 | 062.9 | 56.19* 6.55 |
| 304.0 | 100.0000 | 0179.2 | 061.8 | 105.0 | 022.0000 | 0166.9 | 063.2 | 56.10* 6.29 |
| 305.0 | 100.0000 | 0180.4 | 061.9 | 104.1 | 022.0000 | 0166.9 | 063.4 | 56.02* 6.05 |
| 306.0 | 100.0000 | 0182.1 | 062.1 | 103.1 | 022.0000 | 0166.9 | 063.7 | 55.94* 5.81 |
| 307.0 | 100.0000 | 0183.7 | 062.3 | 102.2 | 022.0000 | 0167.0 | 063.9 | 55.84* 5.53 |
| 308.0 | 100.0000 | 0184.9 | 062.4 | 101.2 | 022.0000 | 0166.9 | 064.3 | 55.72* 5.17 |
| 309.0 | 100.0000 | 0185.6 | 062.4 | 100.4 | 022.0000 | 0166.9 | 064.7 | 55.57* 4.73 |
| 310.0 | 100.0000 | 0186.0 | 062.5 | 099.5 | 022.0000 | 0166.9 | 065.2 | 55.41* 4.23 |
| 311.0 | 100.0000 | 0186.2 | 062.5 | 098.7 | 022.0000 | 0166.8 | 065.8 | 55.22* 3.68 |
| 312.0 | 100.0000 | 0185.4 | 062.4 | 097.9 | 022.0000 | 0166.8 | 066.4 | 55.01* 3.03 |
| 313.0 | 100.0000 | 0183.8 | 062.3 | 097.2 | 022.0000 | 0166.7 | 067.1 | 54.76* 2.29 |
| 314.0 | 100.0000 | 0181.7 | 062.1 | 096.6 | 022.0000 | 0166.7 | 067.9 | 54.49* 1.49 |
| 315.0 | 100.0000 | 0179.6 | 061.9 | 096.0 | 022.0000 | 0166.6 | 068.7 | 54.22* 0.68 |
| 316.0 | 100.0000 | 0178.5 | 061.8 | 095.3 | 022.0000 | 0166.6 | 069.5 | 53.97 |
| 317.0 | 100.0000 | 0178.5 | 061.8 | 094.7 | 022.0000 | 0166.5 | 070.2 | 53.74 |
| 318.0 | 100.0000 | 0179.4 | 061.8 | 094.0 | 022.0000 | 0166.5 | 070.9 | 53.51 |

| Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Actual (dBu) |
|----------------------|-------------|-------------|--------------|----------------------|-------------|-------------|--------------|-----------------|
| 319.0 | 100.0000 | 0180.0 | 061.9 | 093.3 | 022.0000 | 0166.4 | 071.6 | 53.28 |
| 320.0 | 100.0000 | 0180.1 | 061.9 | 092.7 | 022.0000 | 0166.3 | 072.3 | 53.02 |
| 321.0 | 100.0000 | 0179.4 | 061.9 | 092.2 | 022.0000 | 0166.1 | 073.2 | 52.75 |
| 322.0 | 100.0000 | 0178.4 | 061.7 | 091.7 | 022.0000 | 0166.0 | 074.1 | 52.46 |
| 323.0 | 100.0000 | 0177.6 | 061.7 | 091.2 | 022.0000 | 0165.9 | 074.9 | 52.17 |
| 324.0 | 100.0000 | 0177.2 | 061.6 | 090.7 | 022.0000 | 0165.9 | 075.8 | 51.89 |
| 325.0 | 100.0000 | 0177.3 | 061.6 | 090.2 | 022.0000 | 0165.8 | 076.7 | 51.61 |
| 326.0 | 100.0000 | 0177.9 | 061.7 | 089.7 | 022.0000 | 0165.7 | 077.5 | 51.34 |
| 327.0 | 100.0000 | 0179.0 | 061.8 | 089.2 | 022.0000 | 0165.6 | 078.3 | 51.07 |
| 328.0 | 100.0000 | 0180.3 | 061.9 | 088.7 | 022.0000 | 0165.5 | 079.2 | 50.80 |
| 329.0 | 100.0000 | 0181.7 | 062.1 | 088.2 | 022.0000 | 0165.4 | 080.0 | 50.53 |
| 330.0 | 100.0000 | 0182.9 | 062.2 | 087.8 | 022.0000 | 0165.3 | 080.9 | 50.24 |
| 331.0 | 100.0000 | 0184.0 | 062.3 | 087.4 | 022.0000 | 0165.2 | 081.8 | 49.96 |
| 332.0 | 100.0000 | 0185.9 | 062.5 | 086.9 | 022.0000 | 0165.1 | 082.7 | 49.68 |
| 333.0 | 100.0000 | 0188.6 | 062.7 | 086.4 | 022.0000 | 0165.0 | 083.6 | 49.40 |
| 334.0 | 100.0000 | 0191.1 | 063.0 | 086.0 | 022.0000 | 0165.0 | 084.5 | 49.12 |
| 335.0 | 100.0000 | 0192.9 | 063.1 | 085.6 | 022.0000 | 0165.0 | 085.4 | 48.83 |
| 336.0 | 100.0000 | 0193.7 | 063.2 | 085.3 | 022.0000 | 0164.9 | 086.4 | 48.52 |
| 337.0 | 100.0000 | 0194.1 | 063.2 | 085.0 | 022.0000 | 0164.9 | 087.5 | 48.21 |
| 338.0 | 100.0000 | 0195.0 | 063.3 | 084.8 | 022.0000 | 0164.8 | 088.5 | 47.91 |
| 339.0 | 100.0000 | 0196.6 | 063.5 | 084.5 | 022.0000 | 0164.8 | 089.5 | 47.60 |
| 340.0 | 100.0000 | 0198.1 | 063.6 | 084.2 | 022.0000 | 0164.7 | 090.5 | 47.30 |
| 341.0 | 099.4009 | 0199.5 | 063.7 | 084.0 | 022.0000 | 0164.7 | 091.6 | 46.99 |
| 342.0 | 098.8036 | 0200.4 | 063.7 | 083.8 | 022.0000 | 0164.6 | 092.6 | 46.67 |
| 343.0 | 098.2081 | 0200.7 | 063.7 | 083.7 | 022.0000 | 0164.6 | 093.7 | 46.36 |
| 344.0 | 097.6144 | 0200.5 | 063.6 | 083.6 | 022.0000 | 0164.6 | 094.8 | 46.04 |
| 345.0 | 097.0225 | 0199.7 | 063.5 | 083.5 | 022.0000 | 0164.6 | 095.9 | 45.73 |
| 346.0 | 096.4324 | 0198.2 | 063.3 | 083.6 | 022.0000 | 0164.6 | 097.1 | 45.42 |
| 347.0 | 095.8441 | 0196.5 | 063.1 | 083.6 | 022.0000 | 0164.6 | 098.2 | 45.11 |
| 348.0 | 095.2576 | 0194.8 | 062.8 | 083.6 | 022.0000 | 0164.6 | 099.3 | 44.81 |
| 349.0 | 094.6729 | 0191.7 | 062.5 | 083.8 | 022.0000 | 0164.6 | 100.4 | 44.52 |
| 350.0 | 094.0900 | 0186.9 | 062.0 | 084.0 | 022.0000 | 0164.7 | 101.5 | 44.23 |
| 351.0 | 090.4401 | 0180.7 | 061.0 | 084.5 | 022.0000 | 0164.8 | 102.7 | 43.95 |
| 352.0 | 086.8624 | 0174.9 | 060.1 | 085.0 | 022.0000 | 0164.9 | 103.8 | 43.67 |
| 353.0 | 083.3569 | 0171.1 | 059.3 | 085.4 | 022.0000 | 0164.9 | 104.9 | 43.41 |
| 354.0 | 079.9236 | 0168.8 | 058.7 | 085.7 | 022.0000 | 0165.0 | 105.9 | 43.16 |

WHND and WLMN Contour to Contour Study
State Of Wisconsin - Educational Communications Board

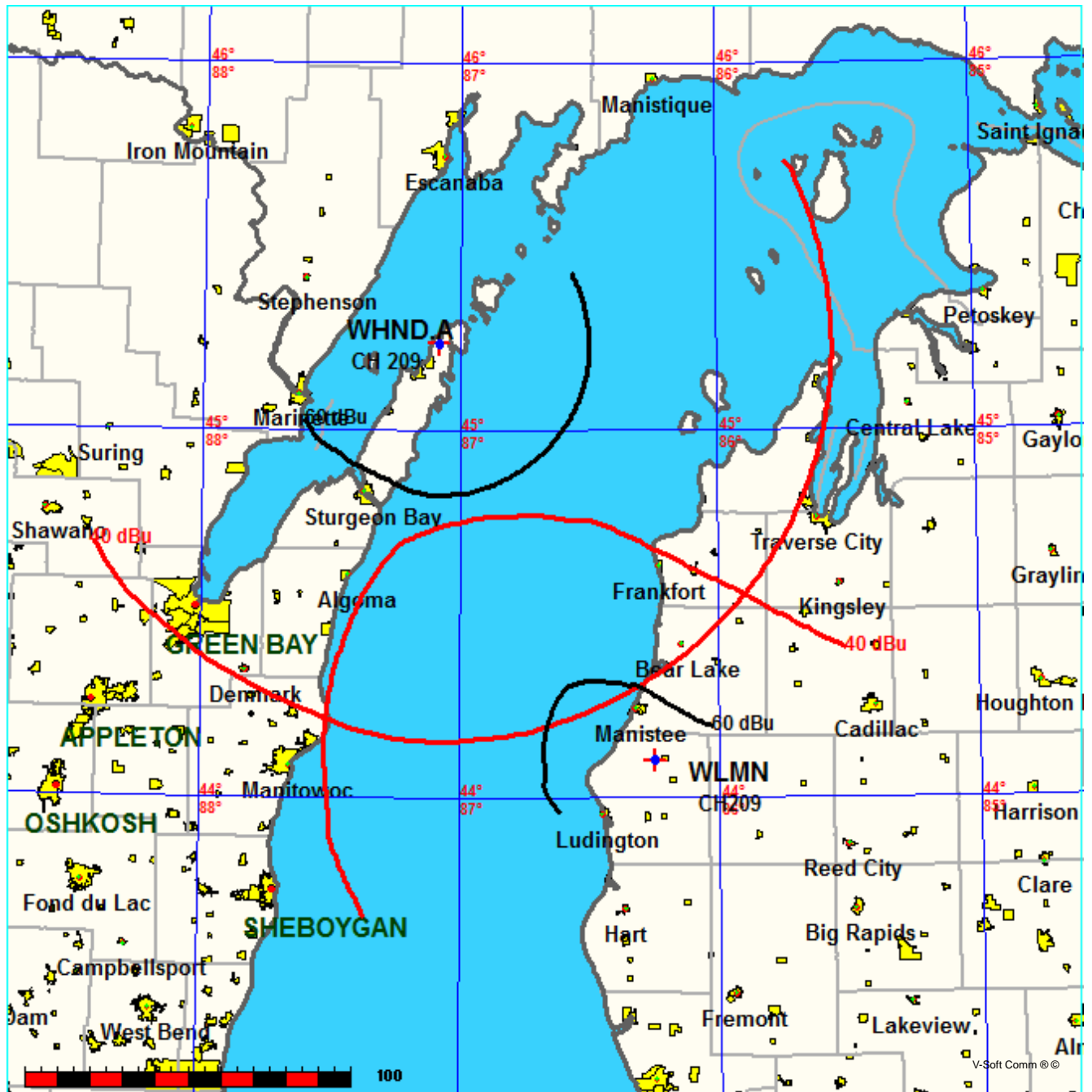
FMCommander Single Allocation Study - 07-01-2013 - FCC NGDC 30 Sec
WHND.A's Overlaps (In= 9.37 km, Out= -9.37 km)

WHND.A CH 209 C2

Lat= 45 14 16.0, Lng= 87 05 28.0
22.0 kW 163.5 M HAAT, 347 M COR
Prot.= 60 dBu, Intef.= 40 dBu

WLMN CH 209 C3 DA BLED20100728AFC

Lat= 44 06 18.0, Lng= 86 15 01.0
15.0 kW 86 M HAAT, 292 M COR
Prot.= 60 dBu, Intef.= 40 dBu

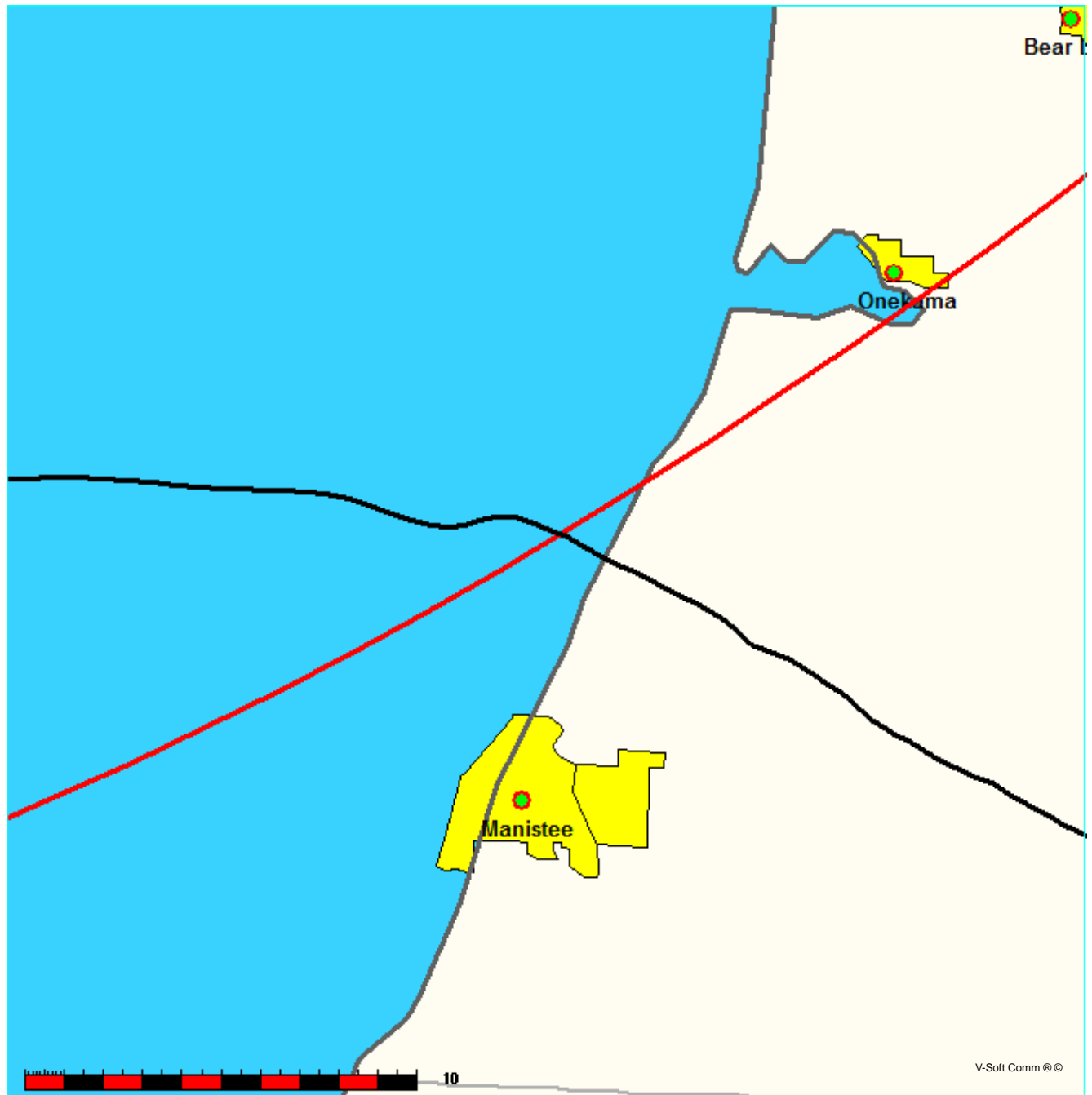


WHND and WKMN Contour to Contour Study - Zoom Scale
State Of Wisconsin - Educational Communications Board

FMCommander Single Allocation Study - 07-01-2013 - FCC NGDC 30 Sec
WHND.A's Overlaps (In= 9.37 km, Out= -9.37 km)

WHND.A CH 209 C2
Lat= 45 14 16.0, Lng= 87 05 28.0
22.0 kW 163.5 M HAAT, 347 M COR
Prot.= 60 dBu, Intef.= 40 dBu

WLMN CH 209 C3 DA BLED20100728AFC
Lat= 44 06 18.0, Lng= 86 15 01.0
15.0 kW 86 M HAAT, 292 M COR
Prot.= 60 dBu, Intef.= 40 dBu



07-01-2013

Terrain Data: FCC NGDC 30 Sec

FMOver Analysis

WHND.A

WLMN BLED20100728AFC

Channel = 209C2

Max ERP = 22 kW

RCAMSL = 347 M

N. Lat. 45 14 16.0

W. Lng. 87 05 28.0

Protected

60 dBu

Channel = 209C3

Max ERP = 15 kW

RCAMSL = 292 M

N. Lat. 44 06 18.0

W. Lng. 86 15 01.0

Interfering

40 dBu

| Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Actual (dBu) | IX (km) |
|----------------------|-------------|-------------|--------------|----------------------|-------------|-------------|--------------|-----------------|------------|
| 092.0 | 022.0000 | 0166.1 | 046.9 | 351.0 | 002.2750 | 0090.5 | 125.9 | 27.14 | |
| 093.0 | 022.0000 | 0166.3 | 046.9 | 351.0 | 002.2815 | 0090.6 | 125.1 | 27.30 | |
| 094.0 | 022.0000 | 0166.5 | 046.9 | 350.9 | 002.2887 | 0090.6 | 124.3 | 27.45 | |
| 095.0 | 022.0000 | 0166.6 | 046.9 | 350.8 | 002.2971 | 0090.6 | 123.5 | 27.61 | |
| 096.0 | 022.0000 | 0166.6 | 046.9 | 350.7 | 002.3063 | 0090.7 | 122.7 | 27.77 | |
| 097.0 | 022.0000 | 0166.7 | 046.9 | 350.6 | 002.3163 | 0090.7 | 121.9 | 27.93 | |
| 098.0 | 022.0000 | 0166.8 | 046.9 | 350.5 | 002.3271 | 0090.8 | 121.1 | 28.08 | |
| 099.0 | 022.0000 | 0166.8 | 046.9 | 350.4 | 002.3387 | 0090.8 | 120.3 | 28.24 | |
| 100.0 | 022.0000 | 0166.9 | 047.0 | 350.3 | 002.3511 | 0090.9 | 119.5 | 28.40 | |
| 101.0 | 022.0000 | 0166.9 | 047.0 | 350.1 | 002.3643 | 0091.0 | 118.8 | 28.56 | |
| 102.0 | 022.0000 | 0167.0 | 047.0 | 350.0 | 002.3793 | 0091.1 | 118.0 | 28.72 | |
| 103.0 | 022.0000 | 0166.9 | 047.0 | 349.8 | 002.3984 | 0091.2 | 117.3 | 28.89 | |
| 104.0 | 022.0000 | 0166.9 | 047.0 | 349.7 | 002.4187 | 0091.2 | 116.5 | 29.06 | |
| 105.0 | 022.0000 | 0166.9 | 047.0 | 349.5 | 002.4401 | 0091.3 | 115.8 | 29.23 | |
| 106.0 | 022.0000 | 0166.9 | 047.0 | 349.3 | 002.4627 | 0091.4 | 115.0 | 29.40 | |
| 107.0 | 022.0000 | 0166.9 | 047.0 | 349.1 | 002.4865 | 0091.4 | 114.3 | 29.58 | |
| 108.0 | 022.0000 | 0166.9 | 047.0 | 348.9 | 002.5115 | 0091.5 | 113.6 | 29.75 | |
| 109.0 | 022.0000 | 0166.9 | 047.0 | 348.7 | 002.5377 | 0091.6 | 112.9 | 29.93 | |
| 110.0 | 022.0000 | 0166.9 | 047.0 | 348.5 | 002.5652 | 0091.8 | 112.2 | 30.11 | |
| 111.0 | 022.0000 | 0166.9 | 046.9 | 348.3 | 002.5941 | 0091.9 | 111.5 | 30.29 | |
| 112.0 | 022.0000 | 0166.8 | 046.9 | 348.0 | 002.6242 | 0092.0 | 110.8 | 30.47 | |
| 113.0 | 022.0000 | 0166.8 | 046.9 | 347.8 | 002.6558 | 0092.0 | 110.1 | 30.65 | |
| 114.0 | 022.0000 | 0166.8 | 046.9 | 347.5 | 002.6888 | 0092.1 | 109.5 | 30.83 | |
| 115.0 | 022.0000 | 0166.7 | 046.9 | 347.3 | 002.7233 | 0092.1 | 108.8 | 31.02 | |
| 116.0 | 022.0000 | 0166.6 | 046.9 | 347.0 | 002.7593 | 0092.2 | 108.2 | 31.20 | |
| 117.0 | 022.0000 | 0166.6 | 046.9 | 346.7 | 002.7967 | 0092.4 | 107.6 | 31.39 | |
| 118.0 | 022.0000 | 0166.5 | 046.9 | 346.4 | 002.8355 | 0092.5 | 106.9 | 31.57 | |
| 119.0 | 022.0000 | 0166.4 | 046.9 | 346.1 | 002.8759 | 0092.7 | 106.3 | 31.76 | |
| 120.0 | 022.0000 | 0166.3 | 046.9 | 345.8 | 002.9178 | 0092.8 | 105.8 | 31.94 | |
| 121.0 | 022.0000 | 0166.2 | 046.9 | 345.5 | 002.9613 | 0092.8 | 105.2 | 32.12 | |
| 122.0 | 022.0000 | 0166.1 | 046.9 | 345.2 | 003.0063 | 0092.7 | 104.6 | 32.30 | |
| 123.0 | 022.0000 | 0166.0 | 046.9 | 344.8 | 003.0529 | 0092.5 | 104.1 | 32.48 | |
| 124.0 | 022.0000 | 0165.9 | 046.8 | 344.5 | 003.1010 | 0092.2 | 103.6 | 32.64 | |
| 125.0 | 022.0000 | 0165.8 | 046.8 | 344.1 | 003.1507 | 0091.8 | 103.1 | 32.81 | |
| 126.0 | 022.0000 | 0165.7 | 046.8 | 343.8 | 003.2020 | 0091.3 | 102.6 | 32.96 | |
| 127.0 | 022.0000 | 0165.6 | 046.8 | 343.4 | 003.2548 | 0090.7 | 102.1 | 33.11 | |

| Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Actual (dBu) |
|----------------------|-------------|-------------|--------------|----------------------|-------------|-------------|--------------|-----------------|
| 128.0 | 022.0000 | 0165.5 | 046.8 | 343.0 | 003.3092 | 0090.0 | 101.6 | 33.26 |
| 129.0 | 022.0000 | 0165.4 | 046.8 | 342.7 | 003.3652 | 0089.3 | 101.2 | 33.40 |
| 130.0 | 022.0000 | 0165.3 | 046.8 | 342.3 | 003.4228 | 0088.5 | 100.7 | 33.54 |
| 131.0 | 022.0000 | 0165.1 | 046.8 | 341.9 | 003.4820 | 0087.9 | 100.3 | 33.69 |
| 132.0 | 022.0000 | 0165.0 | 046.7 | 341.5 | 003.5428 | 0087.4 | 099.9 | 33.83 |
| 133.0 | 022.0000 | 0164.9 | 046.7 | 341.0 | 003.6052 | 0087.0 | 099.5 | 33.97 |
| 134.0 | 022.0000 | 0164.7 | 046.7 | 340.6 | 003.6693 | 0086.8 | 099.2 | 34.12 |
| 135.0 | 022.0000 | 0164.6 | 046.7 | 340.2 | 003.7350 | 0086.7 | 098.8 | 34.27 |
| 136.0 | 022.0000 | 0164.4 | 046.7 | 339.8 | 003.8118 | 0086.8 | 098.5 | 34.43 |
| 137.0 | 022.0000 | 0164.1 | 046.6 | 339.3 | 003.8983 | 0086.9 | 098.2 | 34.60 |
| 138.0 | 022.0000 | 0163.9 | 046.6 | 338.9 | 003.9869 | 0087.0 | 098.0 | 34.76 |
| 139.0 | 022.0000 | 0163.6 | 046.6 | 338.4 | 004.0776 | 0087.2 | 097.7 | 34.93 |
| 140.0 | 022.0000 | 0163.3 | 046.5 | 338.0 | 004.1702 | 0087.5 | 097.5 | 35.09 |
| 141.0 | 022.0000 | 0163.0 | 046.5 | 337.5 | 004.2647 | 0087.9 | 097.3 | 35.25 |
| 142.0 | 022.0000 | 0162.6 | 046.5 | 337.0 | 004.3610 | 0088.4 | 097.1 | 35.41 |
| 143.0 | 022.0000 | 0162.3 | 046.4 | 336.6 | 004.4591 | 0088.8 | 097.0 | 35.56 |
| 144.0 | 022.0000 | 0162.0 | 046.4 | 336.1 | 004.5587 | 0089.2 | 096.8 | 35.70 |
| 145.0 | 022.0000 | 0161.7 | 046.3 | 335.6 | 004.6597 | 0089.6 | 096.7 | 35.84 |
| 146.0 | 022.0000 | 0161.4 | 046.3 | 335.2 | 004.7623 | 0089.8 | 096.6 | 35.97 |
| 147.0 | 022.0000 | 0161.2 | 046.3 | 334.7 | 004.8662 | 0090.0 | 096.5 | 36.09 |
| 148.0 | 022.0000 | 0161.1 | 046.3 | 334.2 | 004.9714 | 0090.1 | 096.4 | 36.21 |
| 149.0 | 022.0000 | 0161.0 | 046.3 | 333.7 | 005.0779 | 0090.1 | 096.3 | 36.32 |
| 150.0 | 022.0000 | 0161.0 | 046.3 | 333.3 | 005.1858 | 0090.1 | 096.3 | 36.42 |
| 151.0 | 022.0000 | 0161.0 | 046.3 | 332.8 | 005.2949 | 0090.1 | 096.3 | 36.52 |
| 152.0 | 022.0000 | 0161.0 | 046.3 | 332.3 | 005.4052 | 0090.1 | 096.3 | 36.61 |
| 153.0 | 022.0000 | 0160.9 | 046.3 | 331.8 | 005.5167 | 0090.2 | 096.3 | 36.70 |
| 154.0 | 022.0000 | 0160.8 | 046.2 | 331.3 | 005.6290 | 0090.3 | 096.3 | 36.78 |
| 155.0 | 022.0000 | 0160.6 | 046.2 | 330.9 | 005.7421 | 0090.4 | 096.4 | 36.85 |
| 156.0 | 022.0000 | 0160.5 | 046.2 | 330.4 | 005.8559 | 0090.4 | 096.5 | 36.92 |
| 157.0 | 022.0000 | 0160.4 | 046.2 | 329.9 | 005.9750 | 0090.5 | 096.6 | 36.99 |
| 158.0 | 022.0000 | 0160.4 | 046.2 | 329.5 | 006.1210 | 0090.5 | 096.7 | 37.07 |
| 159.0 | 022.0000 | 0160.5 | 046.2 | 329.0 | 006.2680 | 0090.6 | 096.8 | 37.14 |
| 160.0 | 022.0000 | 0160.5 | 046.2 | 328.5 | 006.4158 | 0090.8 | 097.0 | 37.22 |
| 161.0 | 022.0000 | 0160.5 | 046.2 | 328.1 | 006.5643 | 0091.0 | 097.1 | 37.28 |
| 162.0 | 022.0000 | 0160.7 | 046.2 | 327.6 | 006.7142 | 0091.3 | 097.3 | 37.35 |
| 163.0 | 022.0000 | 0161.1 | 046.3 | 327.1 | 006.8659 | 0091.6 | 097.5 | 37.42 |
| 164.0 | 022.0000 | 0161.5 | 046.3 | 326.7 | 007.0184 | 0091.9 | 097.7 | 37.48 |
| 165.0 | 022.0000 | 0161.8 | 046.4 | 326.2 | 007.1712 | 0092.1 | 097.9 | 37.54 |
| 166.0 | 022.0000 | 0162.1 | 046.4 | 325.8 | 007.3231 | 0092.4 | 098.1 | 37.58 |
| 167.0 | 022.0000 | 0162.2 | 046.4 | 325.3 | 007.4745 | 0092.6 | 098.4 | 37.62 |
| 168.0 | 022.0000 | 0162.4 | 046.4 | 324.9 | 007.6250 | 0092.9 | 098.7 | 37.65 |
| 169.0 | 022.0000 | 0162.3 | 046.4 | 324.5 | 007.7738 | 0093.2 | 099.0 | 37.67 |
| 170.0 | 022.0000 | 0162.0 | 046.4 | 324.1 | 007.9181 | 0093.4 | 099.4 | 37.67 |
| 171.0 | 022.0000 | 0161.4 | 046.3 | 323.7 | 008.0577 | 0093.6 | 099.8 | 37.66 |
| 172.0 | 022.0000 | 0160.7 | 046.2 | 323.3 | 008.1950 | 0093.9 | 100.3 | 37.64 |
| 173.0 | 022.0000 | 0160.1 | 046.1 | 322.9 | 008.3298 | 0094.1 | 100.8 | 37.61 |
| 174.0 | 022.0000 | 0159.3 | 046.1 | 322.6 | 008.4619 | 0094.3 | 101.2 | 37.58 |
| 175.0 | 022.0000 | 0159.0 | 046.0 | 322.2 | 008.5967 | 0094.5 | 101.7 | 37.55 |
| 176.0 | 022.0000 | 0159.7 | 046.1 | 321.8 | 008.7454 | 0094.7 | 102.1 | 37.55 |
| 177.0 | 022.0000 | 0160.5 | 046.2 | 321.4 | 008.8931 | 0095.0 | 102.5 | 37.55 |
| 178.0 | 022.0000 | 0160.7 | 046.2 | 321.0 | 009.0308 | 0095.3 | 102.9 | 37.53 |

| Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Actual (dBu) |
|----------------------|-------------|-------------|--------------|----------------------|-------------|-------------|--------------|-----------------|
| 179.0 | 022.0000 | 0160.3 | 046.2 | 320.7 | 009.1586 | 0095.5 | 103.5 | 37.49 |
| 180.0 | 022.0000 | 0160.0 | 046.1 | 320.4 | 009.2838 | 0095.8 | 104.0 | 37.44 |
| 181.0 | 022.0000 | 0159.6 | 046.1 | 320.1 | 009.4042 | 0096.0 | 104.6 | 37.39 |
| 182.0 | 022.0000 | 0159.1 | 046.0 | 319.8 | 009.5450 | 0096.2 | 105.1 | 37.34 |
| 183.0 | 022.0000 | 0158.7 | 046.0 | 319.5 | 009.6897 | 0096.4 | 105.7 | 37.29 |
| 184.0 | 022.0000 | 0158.2 | 045.9 | 319.2 | 009.8306 | 0096.6 | 106.3 | 37.24 |
| 185.0 | 022.0000 | 0157.6 | 045.8 | 318.9 | 009.9638 | 0096.7 | 106.9 | 37.17 |
| 186.0 | 022.0000 | 0156.9 | 045.8 | 318.7 | 010.0931 | 0096.7 | 107.6 | 37.10 |
| 187.0 | 022.0000 | 0156.4 | 045.7 | 318.4 | 010.2204 | 0096.8 | 108.2 | 37.03 |
| 188.0 | 022.0000 | 0155.8 | 045.6 | 318.2 | 010.3434 | 0096.7 | 108.9 | 36.95 |
| 189.0 | 022.0000 | 0155.3 | 045.6 | 318.0 | 010.4631 | 0096.7 | 109.5 | 36.88 |
| 190.0 | 022.0000 | 0154.6 | 045.5 | 317.7 | 010.5739 | 0096.7 | 110.2 | 36.79 |
| 191.0 | 022.0000 | 0153.5 | 045.3 | 317.6 | 010.6694 | 0096.6 | 110.9 | 36.69 |
| 192.0 | 022.0000 | 0152.2 | 045.2 | 317.4 | 010.7553 | 0096.5 | 111.7 | 36.59 |
| 193.0 | 022.0000 | 0151.0 | 045.0 | 317.2 | 010.8375 | 0096.5 | 112.4 | 36.48 |
| 194.0 | 022.0000 | 0149.8 | 044.9 | 317.1 | 010.9163 | 0096.4 | 113.1 | 36.38 |
| 195.0 | 022.0000 | 0148.7 | 044.7 | 316.9 | 010.9923 | 0096.3 | 113.9 | 36.27 |
| 196.0 | 022.0000 | 0147.5 | 044.6 | 316.8 | 011.0611 | 0096.3 | 114.6 | 36.16 |
| 197.0 | 022.0000 | 0146.3 | 044.4 | 316.7 | 011.1234 | 0096.2 | 115.4 | 36.05 |
| 198.0 | 022.0000 | 0145.2 | 044.3 | 316.6 | 011.1861 | 0096.1 | 116.1 | 35.94 |
| 199.0 | 022.0000 | 0144.4 | 044.1 | 316.5 | 011.2521 | 0096.1 | 116.8 | 35.84 |
| 200.0 | 022.0000 | 0143.7 | 044.1 | 316.3 | 011.3183 | 0096.0 | 117.6 | 35.73 |
| 201.0 | 022.0000 | 0143.1 | 044.0 | 316.2 | 011.3858 | 0096.0 | 118.3 | 35.63 |
| 202.0 | 022.0000 | 0143.1 | 044.0 | 316.1 | 011.4630 | 0095.9 | 119.0 | 35.54 |
| 203.0 | 022.0000 | 0143.4 | 044.0 | 315.9 | 011.5482 | 0095.8 | 119.7 | 35.45 |
| 204.0 | 022.0000 | 0143.5 | 044.0 | 315.8 | 011.6239 | 0095.8 | 120.4 | 35.36 |
| 205.0 | 022.0000 | 0143.1 | 044.0 | 315.7 | 011.6788 | 0095.7 | 121.1 | 35.25 |
| 206.0 | 022.0000 | 0142.6 | 043.9 | 315.6 | 011.7273 | 0095.7 | 121.9 | 35.14 |
| 207.0 | 022.0000 | 0142.6 | 043.9 | 315.5 | 011.7888 | 0095.7 | 122.6 | 35.03 |
| 208.0 | 022.0000 | 0143.3 | 044.0 | 315.3 | 011.8681 | 0095.6 | 123.3 | 34.94 |
| 209.0 | 022.0000 | 0144.0 | 044.1 | 315.2 | 011.9443 | 0095.6 | 124.0 | 34.84 |
| 210.0 | 022.0000 | 0144.4 | 044.1 | 315.1 | 012.0042 | 0095.5 | 124.7 | 34.73 |
| 211.0 | 022.0000 | 0144.5 | 044.2 | 315.0 | 012.0539 | 0095.5 | 125.5 | 34.62 |

07-01-2013

Terrain Data: FCC NGDC 30 Sec

FMOver Analysis

WLMN BLED20100728AFC

WHND.A

Channel = 209C3

Max ERP = 15 kW

RCAMSL = 292 M

N. Lat. 44 06 18.0

W. Lng. 86 15 01.0

Protected

60 dBu

Channel = 209C2

Max ERP = 22 kW

RCAMSL = 347 M

N. Lat. 45 14 16.0

W. Lng. 87 05 28.0

Interfering

40 dBu

| Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Actual (dBu) | IX (km) |
|----------------------|-------------|-------------|--------------|----------------------|-------------|-------------|--------------|-----------------|------------|
| 272.0 | 015.0000 | 0094.3 | 034.1 | 165.2 | 022.0000 | 0161.9 | 128.9 | 38.47 | |
| 273.0 | 015.0000 | 0094.4 | 034.1 | 165.2 | 022.0000 | 0161.9 | 128.3 | 38.58 | |
| 274.0 | 015.0000 | 0094.5 | 034.1 | 165.1 | 022.0000 | 0161.8 | 127.8 | 38.69 | |
| 275.0 | 015.0000 | 0094.4 | 034.1 | 165.0 | 022.0000 | 0161.8 | 127.2 | 38.80 | |
| 276.0 | 015.0000 | 0094.3 | 034.1 | 164.9 | 022.0000 | 0161.8 | 126.7 | 38.90 | |
| 277.0 | 015.0000 | 0094.5 | 034.1 | 164.8 | 022.0000 | 0161.8 | 126.1 | 39.01 | |
| 278.0 | 015.0000 | 0094.7 | 034.1 | 164.7 | 022.0000 | 0161.7 | 125.5 | 39.12 | |
| 279.0 | 015.0000 | 0094.9 | 034.2 | 164.6 | 022.0000 | 0161.7 | 125.0 | 39.23 | |
| 280.0 | 015.0000 | 0095.1 | 034.2 | 164.5 | 022.0000 | 0161.7 | 124.4 | 39.33 | |
| 281.0 | 015.0000 | 0095.5 | 034.3 | 164.4 | 022.0000 | 0161.6 | 123.8 | 39.44 | |
| 282.0 | 015.0000 | 0095.7 | 034.3 | 164.3 | 022.0000 | 0161.6 | 123.3 | 39.55 | |
| 283.0 | 015.0000 | 0096.0 | 034.4 | 164.2 | 022.0000 | 0161.5 | 122.7 | 39.65 | |
| 284.0 | 015.0000 | 0096.1 | 034.4 | 164.1 | 022.0000 | 0161.5 | 122.2 | 39.75 | |
| 285.0 | 015.0000 | 0096.0 | 034.4 | 164.0 | 022.0000 | 0161.4 | 121.7 | 39.85 | |
| 286.0 | 015.0000 | 0095.9 | 034.4 | 163.8 | 022.0000 | 0161.4 | 121.2 | 39.94 | |
| 287.0 | 015.0000 | 0095.9 | 034.3 | 163.6 | 022.0000 | 0161.3 | 120.7 | 40.04* | 0.19 |
| 288.0 | 015.0000 | 0095.8 | 034.3 | 163.5 | 022.0000 | 0161.2 | 120.2 | 40.13* | 0.67 |
| 289.0 | 015.0000 | 0096.0 | 034.4 | 163.3 | 022.0000 | 0161.2 | 119.7 | 40.23* | 1.17 |
| 290.0 | 015.0000 | 0096.2 | 034.4 | 163.2 | 022.0000 | 0161.1 | 119.2 | 40.32* | 1.67 |
| 291.0 | 015.0000 | 0096.4 | 034.4 | 163.0 | 022.0000 | 0161.1 | 118.7 | 40.41* | 2.16 |
| 292.0 | 015.0000 | 0096.4 | 034.4 | 162.8 | 022.0000 | 0161.0 | 118.2 | 40.51* | 2.63 |
| 293.0 | 015.0000 | 0096.4 | 034.4 | 162.7 | 022.0000 | 0160.9 | 117.7 | 40.59* | 3.08 |
| 294.0 | 015.0000 | 0096.6 | 034.5 | 162.5 | 022.0000 | 0160.9 | 117.3 | 40.68* | 3.55 |
| 295.0 | 015.0000 | 0097.1 | 034.6 | 162.3 | 022.0000 | 0160.8 | 116.8 | 40.78* | 4.04 |
| 296.0 | 015.0000 | 0097.7 | 034.7 | 162.1 | 022.0000 | 0160.7 | 116.2 | 40.88* | 4.55 |
| 297.0 | 015.0000 | 0098.3 | 034.8 | 162.0 | 022.0000 | 0160.7 | 115.7 | 40.97* | 5.04 |
| 298.0 | 015.0000 | 0098.7 | 034.8 | 161.8 | 022.0000 | 0160.6 | 115.3 | 41.06* | 5.51 |
| 299.0 | 015.0000 | 0098.8 | 034.8 | 161.6 | 022.0000 | 0160.6 | 114.8 | 41.15* | 5.94 |
| 300.0 | 015.0000 | 0098.6 | 034.8 | 161.3 | 022.0000 | 0160.6 | 114.4 | 41.22* | 6.32 |
| 301.0 | 014.9970 | 0098.2 | 034.7 | 161.1 | 022.0000 | 0160.5 | 114.1 | 41.29* | 6.66 |
| 302.0 | 014.9940 | 0097.7 | 034.7 | 160.8 | 022.0000 | 0160.5 | 113.8 | 41.35* | 6.98 |
| 303.0 | 014.9910 | 0097.4 | 034.6 | 160.6 | 022.0000 | 0160.5 | 113.4 | 41.42* | 7.32 |
| 304.0 | 014.9880 | 0097.3 | 034.6 | 160.3 | 022.0000 | 0160.5 | 113.1 | 41.49* | 7.67 |

| Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Actual (dBu) | |
|----------------------|-------------|-------------|--------------|----------------------|-------------|-------------|--------------|-----------------|------|
| 305.0 | 014.9850 | 0097.3 | 034.6 | 160.1 | 022.0000 | 0160.5 | 112.7 | 41.56* | 8.02 |
| 306.0 | 014.9820 | 0097.2 | 034.6 | 159.8 | 022.0000 | 0160.5 | 112.4 | 41.62* | 8.35 |
| 307.0 | 014.9790 | 0096.9 | 034.5 | 159.5 | 022.0000 | 0160.5 | 112.1 | 41.68* | 8.64 |
| 308.0 | 014.9760 | 0096.6 | 034.5 | 159.3 | 022.0000 | 0160.5 | 111.9 | 41.73* | 8.91 |
| 309.0 | 014.9730 | 0096.1 | 034.4 | 159.0 | 022.0000 | 0160.5 | 111.6 | 41.78* | 9.15 |
| 310.0 | 014.9700 | 0095.7 | 034.3 | 158.7 | 022.0000 | 0160.5 | 111.4 | 41.83* | 9.37 |
| 311.0 | 014.3590 | 0095.4 | 033.9 | 158.3 | 022.0000 | 0160.5 | 111.4 | 41.82* | 9.32 |
| 312.0 | 013.7607 | 0095.3 | 033.6 | 158.0 | 022.0000 | 0160.4 | 111.5 | 41.81* | 9.27 |
| 313.0 | 013.1752 | 0095.3 | 033.2 | 157.6 | 022.0000 | 0160.4 | 111.5 | 41.79* | 9.21 |
| 314.0 | 012.6023 | 0095.4 | 032.9 | 157.3 | 022.0000 | 0160.4 | 111.6 | 41.78* | 9.13 |
| 315.0 | 012.0422 | 0095.5 | 032.6 | 156.9 | 022.0000 | 0160.4 | 111.7 | 41.76* | 9.05 |
| 316.0 | 011.4949 | 0095.9 | 032.2 | 156.6 | 022.0000 | 0160.4 | 111.8 | 41.75* | 8.98 |
| 317.0 | 010.9602 | 0096.4 | 032.0 | 156.3 | 022.0000 | 0160.4 | 111.8 | 41.73* | 8.90 |
| 318.0 | 010.4383 | 0096.7 | 031.6 | 156.0 | 022.0000 | 0160.5 | 112.0 | 41.71* | 8.78 |
| 319.0 | 009.9292 | 0096.6 | 031.3 | 155.6 | 022.0000 | 0160.5 | 112.2 | 41.67* | 8.59 |
| 320.0 | 009.4327 | 0096.1 | 030.8 | 155.3 | 022.0000 | 0160.5 | 112.5 | 41.61* | 8.29 |
| 321.0 | 009.0489 | 0095.3 | 030.4 | 155.0 | 022.0000 | 0160.6 | 112.7 | 41.56* | 8.03 |
| 322.0 | 008.6731 | 0094.6 | 030.0 | 154.7 | 022.0000 | 0160.6 | 113.0 | 41.51* | 7.78 |
| 323.0 | 008.3053 | 0094.0 | 029.6 | 154.4 | 022.0000 | 0160.7 | 113.3 | 41.46* | 7.52 |
| 324.0 | 007.9454 | 0093.5 | 029.2 | 154.1 | 022.0000 | 0160.7 | 113.5 | 41.40* | 7.25 |
| 325.0 | 007.5935 | 0092.9 | 028.8 | 153.8 | 022.0000 | 0160.8 | 113.8 | 41.35* | 6.96 |
| 326.0 | 007.2495 | 0092.3 | 028.4 | 153.5 | 022.0000 | 0160.8 | 114.2 | 41.29* | 6.65 |
| 327.0 | 006.9136 | 0091.7 | 028.0 | 153.2 | 022.0000 | 0160.9 | 114.5 | 41.22* | 6.33 |
| 328.0 | 006.5856 | 0091.0 | 027.6 | 153.0 | 022.0000 | 0160.9 | 114.8 | 41.16* | 6.00 |
| 329.0 | 006.2656 | 0090.6 | 027.3 | 152.7 | 022.0000 | 0160.9 | 115.2 | 41.10* | 5.67 |
| 330.0 | 005.9535 | 0090.5 | 026.9 | 152.5 | 022.0000 | 0161.0 | 115.4 | 41.04* | 5.38 |
| 331.0 | 005.7122 | 0090.4 | 026.7 | 152.2 | 022.0000 | 0161.0 | 115.7 | 40.99* | 5.14 |
| 332.0 | 005.4759 | 0090.2 | 026.4 | 152.0 | 022.0000 | 0161.0 | 116.0 | 40.94* | 4.87 |
| 333.0 | 005.2445 | 0090.0 | 026.1 | 151.8 | 022.0000 | 0161.0 | 116.2 | 40.89* | 4.60 |
| 334.0 | 005.0182 | 0090.1 | 025.9 | 151.6 | 022.0000 | 0161.0 | 116.5 | 40.83* | 4.33 |
| 335.0 | 004.7969 | 0089.9 | 025.6 | 151.3 | 022.0000 | 0161.0 | 116.8 | 40.78* | 4.03 |
| 336.0 | 004.5805 | 0089.3 | 025.2 | 151.1 | 022.0000 | 0161.0 | 117.2 | 40.70* | 3.66 |
| 337.0 | 004.3691 | 0088.4 | 024.9 | 150.9 | 022.0000 | 0161.0 | 117.6 | 40.62* | 3.23 |
| 338.0 | 004.1628 | 0087.5 | 024.5 | 150.7 | 022.0000 | 0161.0 | 118.0 | 40.54* | 2.80 |
| 339.0 | 003.9614 | 0087.0 | 024.1 | 150.6 | 022.0000 | 0161.0 | 118.4 | 40.46* | 2.40 |
| 340.0 | 003.7650 | 0086.7 | 023.8 | 150.4 | 022.0000 | 0161.0 | 118.8 | 40.39* | 2.03 |
| 341.0 | 003.6118 | 0087.0 | 023.6 | 150.2 | 022.0000 | 0161.0 | 119.1 | 40.34* | 1.78 |
| 342.0 | 003.4618 | 0088.1 | 023.5 | 150.0 | 022.0000 | 0161.0 | 119.2 | 40.31* | 1.61 |
| 343.0 | 003.3149 | 0090.0 | 023.5 | 149.8 | 022.0000 | 0161.0 | 119.3 | 40.29* | 1.53 |
| 344.0 | 003.1712 | 0091.6 | 023.5 | 149.6 | 022.0000 | 0161.0 | 119.4 | 40.27* | 1.40 |
| 345.0 | 003.0308 | 0092.6 | 023.4 | 149.5 | 022.0000 | 0161.0 | 119.6 | 40.23* | 1.19 |
| 346.0 | 002.8934 | 0092.7 | 023.2 | 149.3 | 022.0000 | 0161.0 | 120.0 | 40.16* | 0.85 |
| 347.0 | 002.7593 | 0092.2 | 022.9 | 149.2 | 022.0000 | 0161.0 | 120.4 | 40.08* | 0.44 |
| 348.0 | 002.6284 | 0092.0 | 022.6 | 149.0 | 022.0000 | 0161.0 | 120.8 | 40.01* | 0.04 |
| 349.0 | 002.5006 | 0091.5 | 022.2 | 148.9 | 022.0000 | 0161.1 | 121.2 | 39.93 | |
| 350.0 | 002.3761 | 0091.1 | 021.9 | 148.8 | 022.0000 | 0161.1 | 121.7 | 39.84 | |
| 351.0 | 002.2792 | 0090.5 | 021.7 | 148.6 | 022.0000 | 0161.1 | 122.1 | 39.77 | |
| 352.0 | 002.1843 | 0090.3 | 021.4 | 148.5 | 022.0000 | 0161.1 | 122.4 | 39.70 | |
| 353.0 | 002.0914 | 0090.1 | 021.2 | 148.4 | 022.0000 | 0161.1 | 122.8 | 39.62 | |
| 354.0 | 002.0006 | 0089.9 | 020.9 | 148.3 | 022.0000 | 0161.1 | 123.2 | 39.55 | |
| 355.0 | 001.9117 | 0089.6 | 020.7 | 148.2 | 022.0000 | 0161.1 | 123.6 | 39.48 | |

| Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Actual (dBu) |
|----------------------|-------------|-------------|--------------|----------------------|-------------|-------------|--------------|-----------------|
| 356.0 | 001.8249 | 0089.8 | 020.4 | 148.1 | 022.0000 | 0161.1 | 123.9 | 39.41 |
| 357.0 | 001.7401 | 0090.1 | 020.2 | 148.0 | 022.0000 | 0161.1 | 124.3 | 39.34 |
| 358.0 | 001.6573 | 0090.0 | 020.0 | 147.9 | 022.0000 | 0161.1 | 124.7 | 39.27 |
| 359.0 | 001.5766 | 0089.5 | 019.7 | 147.8 | 022.0000 | 0161.1 | 125.1 | 39.19 |
| 000.0 | 001.4978 | 0089.0 | 019.4 | 147.8 | 022.0000 | 0161.1 | 125.6 | 39.10 |
| 001.0 | 001.4648 | 0088.8 | 019.2 | 147.7 | 022.0000 | 0161.1 | 125.8 | 39.05 |
| 002.0 | 001.4322 | 0088.7 | 019.1 | 147.6 | 022.0000 | 0161.1 | 126.1 | 38.99 |
| 003.0 | 001.4000 | 0088.5 | 019.0 | 147.5 | 022.0000 | 0161.2 | 126.4 | 38.93 |
| 004.0 | 001.3681 | 0087.9 | 018.8 | 147.4 | 022.0000 | 0161.2 | 126.8 | 38.87 |
| 005.0 | 001.3365 | 0087.3 | 018.6 | 147.4 | 022.0000 | 0161.2 | 127.1 | 38.80 |
| 006.0 | 001.3054 | 0087.0 | 018.5 | 147.3 | 022.0000 | 0161.2 | 127.4 | 38.74 |
| 007.0 | 001.2746 | 0086.8 | 018.3 | 147.2 | 022.0000 | 0161.2 | 127.7 | 38.68 |
| 008.0 | 001.2442 | 0086.1 | 018.1 | 147.2 | 022.0000 | 0161.2 | 128.1 | 38.62 |
| 009.0 | 001.2141 | 0085.2 | 017.9 | 147.1 | 022.0000 | 0161.2 | 128.5 | 38.55 |
| 010.0 | 001.1844 | 0084.5 | 017.7 | 147.1 | 022.0000 | 0161.2 | 128.8 | 38.48 |
| 011.0 | 001.1718 | 0083.9 | 017.6 | 147.0 | 022.0000 | 0161.2 | 129.1 | 38.42 |
| 012.0 | 001.1593 | 0083.4 | 017.5 | 146.9 | 022.0000 | 0161.2 | 129.4 | 38.36 |
| 013.0 | 001.1468 | 0083.1 | 017.4 | 146.9 | 022.0000 | 0161.3 | 129.7 | 38.31 |
| 014.0 | 001.1344 | 0082.7 | 017.3 | 146.8 | 022.0000 | 0161.3 | 130.0 | 38.25 |
| 015.0 | 001.1220 | 0082.4 | 017.2 | 146.7 | 022.0000 | 0161.3 | 130.3 | 38.20 |
| 016.0 | 001.1098 | 0082.2 | 017.1 | 146.7 | 022.0000 | 0161.3 | 130.5 | 38.14 |
| 017.0 | 001.0976 | 0082.1 | 017.1 | 146.6 | 022.0000 | 0161.3 | 130.8 | 38.09 |
| 018.0 | 001.0854 | 0082.2 | 017.0 | 146.5 | 022.0000 | 0161.3 | 131.1 | 38.04 |
| 019.0 | 001.0733 | 0082.3 | 017.0 | 146.5 | 022.0000 | 0161.3 | 131.3 | 37.99 |
| 020.0 | 001.0613 | 0082.6 | 017.0 | 146.4 | 022.0000 | 0161.3 | 131.6 | 37.94 |
| 021.0 | 001.0613 | 0082.6 | 017.0 | 146.3 | 022.0000 | 0161.4 | 131.8 | 37.90 |
| 022.0 | 001.0613 | 0082.4 | 016.9 | 146.3 | 022.0000 | 0161.4 | 132.1 | 37.85 |
| 023.0 | 001.0613 | 0081.9 | 016.9 | 146.2 | 022.0000 | 0161.4 | 132.3 | 37.80 |
| 024.0 | 001.0613 | 0081.5 | 016.8 | 146.2 | 022.0000 | 0161.4 | 132.6 | 37.74 |
| 025.0 | 001.0613 | 0081.3 | 016.8 | 146.1 | 022.0000 | 0161.4 | 132.9 | 37.69 |
| 026.0 | 001.0613 | 0081.2 | 016.8 | 146.0 | 022.0000 | 0161.4 | 133.1 | 37.64 |
| 027.0 | 001.0613 | 0081.2 | 016.8 | 146.0 | 022.0000 | 0161.4 | 133.4 | 37.59 |
| 028.0 | 001.0613 | 0081.1 | 016.8 | 145.9 | 022.0000 | 0161.5 | 133.6 | 37.54 |
| 029.0 | 001.0613 | 0081.2 | 016.8 | 145.8 | 022.0000 | 0161.5 | 133.9 | 37.49 |
| 030.0 | 001.0613 | 0081.3 | 016.8 | 145.8 | 022.0000 | 0161.5 | 134.2 | 37.44 |
| 031.0 | 001.0733 | 0081.1 | 016.8 | 145.7 | 022.0000 | 0161.5 | 134.4 | 37.39 |

WHND and WLJN-FM (CP) Contour-to-Contour Map
State Of Wisconsin - Educational Communications Board

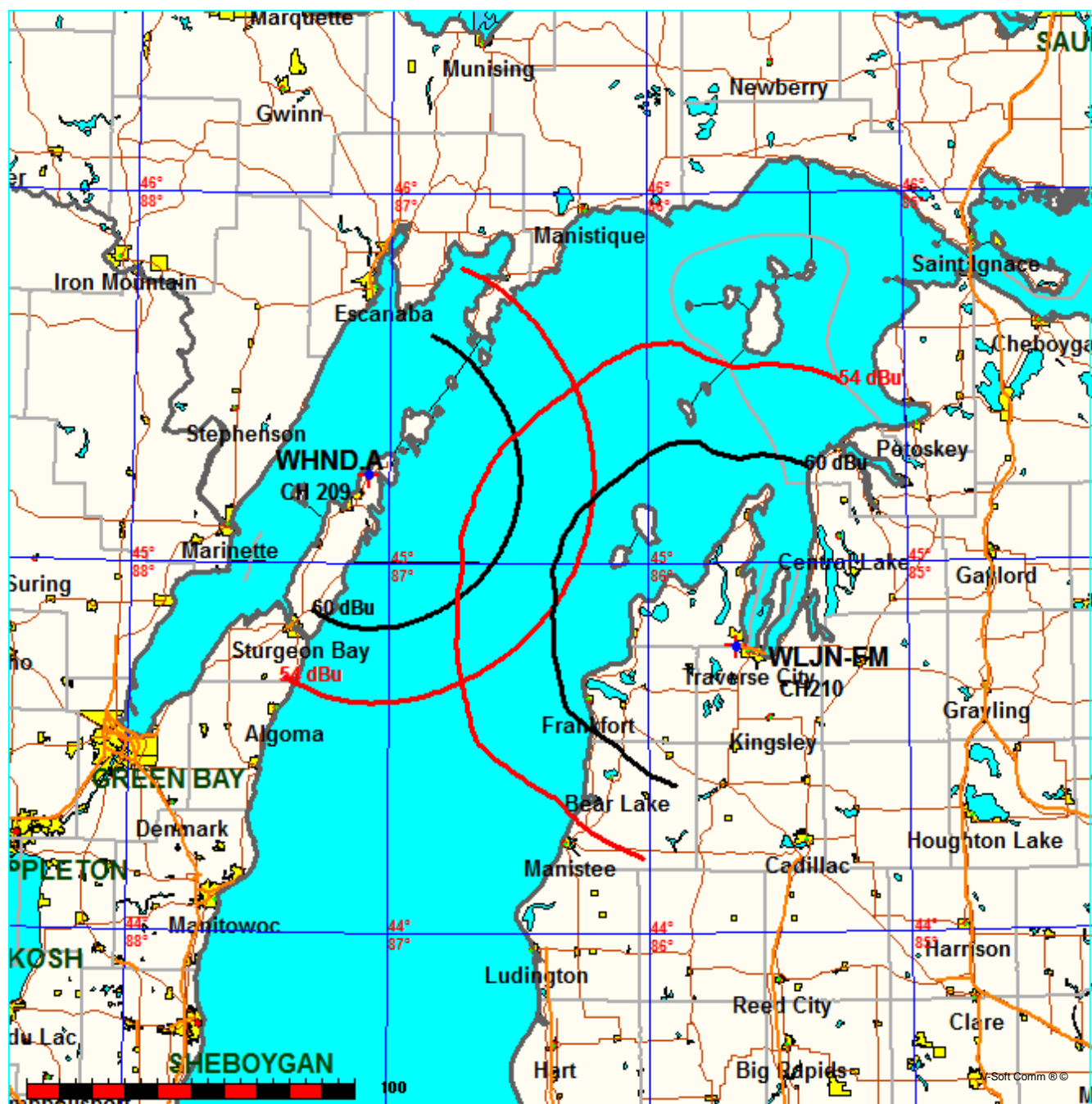
FMCommander Single Allocation Study - 07-01-2013 - FCC NGDC 30 Sec
WHND.A's Overlaps (In= -13.89 km, Out= -6.98 km)

WHND.A CH 209 C2

Lat= 45 14 16.0, Lng= 87 05 28.0
22.0 kW 163.5 M HAAT, 347 M COR
Prot.= 60 dBu, Intef.= 54 dBu

WLJN-FM CH 210 C1 DA BPED20091027AES

Lat= 44 46 36.0, Lng= 85 39 43.0
100.0 kW 169 M HAAT, 402 M COR
Prot.= 60 dBu, Intef.= 54 dBu



07-01-2013

Terrain Data: FCC NGDC 30 Sec

FMOver Analysis

WHND.A

WLJN-FM BPED20091027AES

Channel = 209C2

Max ERP = 22 kW

RCAMSL = 347 M

N. Lat. 45 14 16.0

W. Lng. 87 05 28.0

Protected

60 dBu

Channel = 210C1

Max ERP = 100 kW

RCAMSL = 402 M

N. Lat. 44 46 36.0

W. Lng. 85 39 43.0

Interfering

54 dBu

| Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Actual (dBu) | IX (km) |
|----------------------|-------------|-------------|--------------|----------------------|-------------|-------------|--------------|-----------------|------------|
| 054.0 | 022.0000 | 0159.2 | 046.0 | 316.6 | 100.0000 | 0178.3 | 108.5 | 49.57 | |
| 055.0 | 022.0000 | 0158.9 | 046.0 | 316.5 | 100.0000 | 0178.3 | 107.6 | 49.77 | |
| 056.0 | 022.0000 | 0159.0 | 046.0 | 316.4 | 100.0000 | 0178.3 | 106.9 | 49.95 | |
| 057.0 | 022.0000 | 0159.3 | 046.1 | 316.4 | 100.0000 | 0178.3 | 106.1 | 50.14 | |
| 058.0 | 022.0000 | 0159.6 | 046.1 | 316.3 | 100.0000 | 0178.3 | 105.3 | 50.33 | |
| 059.0 | 022.0000 | 0160.0 | 046.1 | 316.2 | 100.0000 | 0178.3 | 104.5 | 50.53 | |
| 060.0 | 022.0000 | 0160.5 | 046.2 | 316.2 | 100.0000 | 0178.4 | 103.7 | 50.72 | |
| 061.0 | 022.0000 | 0160.8 | 046.2 | 316.1 | 100.0000 | 0178.4 | 102.9 | 50.93 | |
| 062.0 | 022.0000 | 0161.2 | 046.3 | 316.0 | 100.0000 | 0178.5 | 102.1 | 51.13 | |
| 063.0 | 022.0000 | 0161.5 | 046.3 | 315.8 | 100.0000 | 0178.6 | 101.3 | 51.34 | |
| 064.0 | 022.0000 | 0161.8 | 046.4 | 315.7 | 100.0000 | 0178.7 | 100.6 | 51.54 | |
| 065.0 | 022.0000 | 0162.1 | 046.4 | 315.6 | 100.0000 | 0178.8 | 099.8 | 51.76 | |
| 066.0 | 022.0000 | 0162.4 | 046.4 | 315.4 | 100.0000 | 0179.0 | 099.0 | 51.97 | |
| 067.0 | 022.0000 | 0162.5 | 046.4 | 315.3 | 100.0000 | 0179.2 | 098.3 | 52.19 | |
| 068.0 | 022.0000 | 0162.7 | 046.5 | 315.1 | 100.0000 | 0179.5 | 097.5 | 52.41 | |
| 069.0 | 022.0000 | 0162.9 | 046.5 | 314.9 | 100.0000 | 0179.8 | 096.8 | 52.63 | |
| 070.0 | 022.0000 | 0163.1 | 046.5 | 314.7 | 100.0000 | 0180.2 | 096.0 | 52.86 | |
| 071.0 | 022.0000 | 0163.2 | 046.5 | 314.5 | 100.0000 | 0180.6 | 095.3 | 53.08 | |
| 072.0 | 022.0000 | 0163.3 | 046.5 | 314.3 | 100.0000 | 0181.1 | 094.6 | 53.31 | |
| 073.0 | 022.0000 | 0163.4 | 046.6 | 314.0 | 100.0000 | 0181.6 | 093.9 | 53.53 | |
| 074.0 | 022.0000 | 0163.5 | 046.6 | 313.8 | 100.0000 | 0182.2 | 093.2 | 53.76 | |
| 075.0 | 022.0000 | 0163.6 | 046.6 | 313.5 | 100.0000 | 0182.7 | 092.5 | 53.99 | |
| 076.0 | 022.0000 | 0163.6 | 046.6 | 313.2 | 100.0000 | 0183.3 | 091.8 | 54.21* | 0.71 |
| 077.0 | 022.0000 | 0163.6 | 046.6 | 313.0 | 100.0000 | 0183.9 | 091.1 | 54.43* | 1.45 |
| 078.0 | 022.0000 | 0163.6 | 046.6 | 312.7 | 100.0000 | 0184.4 | 090.5 | 54.65* | 2.19 |
| 079.0 | 022.0000 | 0163.7 | 046.6 | 312.4 | 100.0000 | 0184.9 | 089.8 | 54.87* | 2.90 |
| 080.0 | 022.0000 | 0163.8 | 046.6 | 312.0 | 100.0000 | 0185.3 | 089.1 | 55.08* | 3.60 |
| 081.0 | 022.0000 | 0164.0 | 046.6 | 311.7 | 100.0000 | 0185.7 | 088.5 | 55.29* | 4.29 |
| 082.0 | 022.0000 | 0164.2 | 046.6 | 311.4 | 100.0000 | 0186.0 | 087.9 | 55.50* | 4.96 |
| 083.0 | 022.0000 | 0164.5 | 046.7 | 311.0 | 100.0000 | 0186.2 | 087.3 | 55.70* | 5.60 |
| 084.0 | 022.0000 | 0164.7 | 046.7 | 310.7 | 100.0000 | 0186.2 | 086.6 | 55.89* | 6.21 |
| 085.0 | 022.0000 | 0164.9 | 046.7 | 310.3 | 100.0000 | 0186.1 | 086.1 | 56.07* | 6.80 |
| 086.0 | 022.0000 | 0165.0 | 046.7 | 309.9 | 100.0000 | 0186.0 | 085.5 | 56.25* | 7.36 |
| 087.0 | 022.0000 | 0165.1 | 046.7 | 309.5 | 100.0000 | 0185.8 | 084.9 | 56.41* | 7.89 |
| 088.0 | 022.0000 | 0165.3 | 046.8 | 309.1 | 100.0000 | 0185.6 | 084.4 | 56.58* | 8.43 |
| 089.0 | 022.0000 | 0165.5 | 046.8 | 308.7 | 100.0000 | 0185.5 | 083.8 | 56.74* | 8.94 |

| Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Actual (dBu) |
|----------------------|-------------|-------------|--------------|----------------------|-------------|-------------|--------------|-----------------|
| 090.0 | 022.0000 | 0165.7 | 046.8 | 308.3 | 100.0000 | 0185.2 | 083.3 | 56.89* 9.43 |
| 091.0 | 022.0000 | 0165.9 | 046.8 | 307.8 | 100.0000 | 0184.8 | 082.8 | 57.04* 9.89 |
| 092.0 | 022.0000 | 0166.1 | 046.9 | 307.4 | 100.0000 | 0184.3 | 082.3 | 57.17* 10.32 |
| 093.0 | 022.0000 | 0166.3 | 046.9 | 306.9 | 100.0000 | 0183.6 | 081.8 | 57.30* 10.71 |
| 094.0 | 022.0000 | 0166.5 | 046.9 | 306.4 | 100.0000 | 0182.8 | 081.4 | 57.41* 11.07 |
| 095.0 | 022.0000 | 0166.6 | 046.9 | 305.9 | 100.0000 | 0182.0 | 080.9 | 57.51* 11.39 |
| 096.0 | 022.0000 | 0166.6 | 046.9 | 305.4 | 100.0000 | 0181.1 | 080.5 | 57.61* 11.68 |
| 097.0 | 022.0000 | 0166.7 | 046.9 | 304.9 | 100.0000 | 0180.3 | 080.1 | 57.70* 11.97 |
| 098.0 | 022.0000 | 0166.8 | 046.9 | 304.4 | 100.0000 | 0179.6 | 079.8 | 57.78* 12.25 |
| 099.0 | 022.0000 | 0166.8 | 046.9 | 303.9 | 100.0000 | 0179.1 | 079.4 | 57.88* 12.54 |
| 100.0 | 022.0000 | 0166.9 | 047.0 | 303.3 | 100.0000 | 0178.7 | 079.1 | 57.97* 12.83 |
| 101.0 | 022.0000 | 0166.9 | 047.0 | 302.8 | 100.0000 | 0178.4 | 078.8 | 58.05* 13.10 |
| 102.0 | 022.0000 | 0167.0 | 047.0 | 302.2 | 100.0000 | 0178.1 | 078.5 | 58.13* 13.35 |
| 103.0 | 022.0000 | 0166.9 | 047.0 | 301.6 | 100.0000 | 0177.8 | 078.2 | 58.20* 13.57 |
| 104.0 | 022.0000 | 0166.9 | 047.0 | 301.1 | 100.0000 | 0177.3 | 078.0 | 58.26* 13.75 |
| 105.0 | 022.0000 | 0166.9 | 047.0 | 300.5 | 100.0000 | 0176.5 | 077.8 | 58.30* 13.86 |
| 106.0 | 022.0000 | 0166.9 | 047.0 | 299.9 | 100.0000 | 0175.2 | 077.6 | 58.30* 13.89 |
| 107.0 | 022.0000 | 0166.9 | 047.0 | 299.3 | 100.0000 | 0173.7 | 077.4 | 58.29* 13.87 |
| 108.0 | 022.0000 | 0166.9 | 047.0 | 298.7 | 100.0000 | 0171.9 | 077.2 | 58.26* 13.79 |
| 109.0 | 022.0000 | 0166.9 | 047.0 | 298.1 | 100.0000 | 0170.0 | 077.1 | 58.23* 13.68 |
| 110.0 | 022.0000 | 0166.9 | 047.0 | 297.5 | 100.0000 | 0168.6 | 077.0 | 58.20* 13.59 |
| 111.0 | 022.0000 | 0166.9 | 046.9 | 296.9 | 100.0000 | 0167.4 | 076.9 | 58.17* 13.53 |
| 112.0 | 022.0000 | 0166.8 | 046.9 | 296.3 | 100.0000 | 0166.9 | 076.9 | 58.17* 13.52 |
| 113.0 | 022.0000 | 0166.8 | 046.9 | 295.7 | 100.0000 | 0166.8 | 076.8 | 58.18* 13.55 |
| 114.0 | 022.0000 | 0166.8 | 046.9 | 295.1 | 100.0000 | 0167.1 | 076.8 | 58.19* 13.59 |
| 115.0 | 022.0000 | 0166.7 | 046.9 | 294.5 | 100.0000 | 0167.2 | 076.8 | 58.19* 13.59 |
| 116.0 | 022.0000 | 0166.6 | 046.9 | 293.8 | 100.0000 | 0167.1 | 076.9 | 58.18* 13.54 |
| 117.0 | 022.0000 | 0166.6 | 046.9 | 293.2 | 100.0000 | 0166.6 | 076.9 | 58.14* 13.42 |
| 118.0 | 022.0000 | 0166.5 | 046.9 | 292.6 | 100.0000 | 0165.7 | 077.0 | 58.07* 13.22 |
| 119.0 | 022.0000 | 0166.4 | 046.9 | 292.0 | 100.0000 | 0164.5 | 077.1 | 57.98* 12.95 |
| 120.0 | 022.0000 | 0166.3 | 046.9 | 291.4 | 100.0000 | 0162.8 | 077.2 | 57.87* 12.60 |
| 121.0 | 022.0000 | 0166.2 | 046.9 | 290.8 | 100.0000 | 0160.6 | 077.4 | 57.72* 12.15 |
| 122.0 | 022.0000 | 0166.1 | 046.9 | 290.2 | 100.0000 | 0158.1 | 077.6 | 57.55* 11.63 |
| 123.0 | 022.0000 | 0166.0 | 046.9 | 289.7 | 100.0000 | 0155.5 | 077.8 | 57.37* 11.07 |
| 124.0 | 022.0000 | 0165.9 | 046.8 | 289.1 | 100.0000 | 0152.8 | 078.0 | 57.18* 10.48 |
| 125.0 | 022.0000 | 0165.8 | 046.8 | 288.5 | 100.0000 | 0150.2 | 078.2 | 56.98* 9.87 |
| 126.0 | 022.0000 | 0165.7 | 046.8 | 287.9 | 100.0000 | 0147.8 | 078.5 | 56.79* 9.27 |
| 127.0 | 022.0000 | 0165.6 | 046.8 | 287.4 | 100.0000 | 0145.8 | 078.8 | 56.61* 8.70 |
| 128.0 | 022.0000 | 0165.5 | 046.8 | 286.8 | 100.0000 | 0143.9 | 079.1 | 56.43* 8.13 |
| 129.0 | 022.0000 | 0165.4 | 046.8 | 286.3 | 100.0000 | 0142.3 | 079.4 | 56.26* 7.57 |
| 130.0 | 022.0000 | 0165.3 | 046.8 | 285.8 | 100.0000 | 0141.0 | 079.8 | 56.09* 7.04 |
| 131.0 | 022.0000 | 0165.1 | 046.8 | 285.2 | 100.0000 | 0139.9 | 080.1 | 55.94* 6.52 |
| 132.0 | 022.0000 | 0165.0 | 046.7 | 284.7 | 100.0000 | 0139.2 | 080.5 | 55.79* 6.03 |
| 133.0 | 022.0000 | 0164.9 | 046.7 | 284.2 | 100.0000 | 0138.5 | 080.9 | 55.63* 5.52 |
| 134.0 | 022.0000 | 0164.7 | 046.7 | 283.7 | 100.0000 | 0137.9 | 081.3 | 55.48* 5.01 |
| 135.0 | 022.0000 | 0164.6 | 046.7 | 283.2 | 100.0000 | 0137.6 | 081.8 | 55.33* 4.51 |
| 136.0 | 022.0000 | 0164.4 | 046.7 | 282.8 | 100.0000 | 0137.5 | 082.2 | 55.19* 4.04 |
| 137.0 | 022.0000 | 0164.1 | 046.6 | 282.3 | 100.0000 | 0137.6 | 082.7 | 55.05* 3.57 |
| 138.0 | 022.0000 | 0163.9 | 046.6 | 281.9 | 100.0000 | 0137.7 | 083.2 | 54.91* 3.09 |
| 139.0 | 022.0000 | 0163.6 | 046.6 | 281.5 | 100.0000 | 0137.9 | 083.7 | 54.76* 2.58 |
| 140.0 | 022.0000 | 0163.3 | 046.5 | 281.0 | 100.0000 | 0137.9 | 084.3 | 54.60* 2.06 |

| Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Actual (dBu) | |
|----------------------|-------------|-------------|--------------|----------------------|-------------|-------------|--------------|-----------------|------|
| 141.0 | 022.0000 | 0163.0 | 046.5 | 280.6 | 100.0000 | 0138.0 | 084.8 | 54.44* | 1.51 |
| 142.0 | 022.0000 | 0162.6 | 046.5 | 280.2 | 100.0000 | 0137.9 | 085.4 | 54.27* | 0.94 |
| 143.0 | 022.0000 | 0162.3 | 046.4 | 279.9 | 100.0000 | 0137.7 | 086.0 | 54.10* | 0.33 |
| 144.0 | 022.0000 | 0162.0 | 046.4 | 279.5 | 100.0000 | 0137.4 | 086.6 | 53.91 | |
| 145.0 | 022.0000 | 0161.7 | 046.3 | 279.1 | 100.0000 | 0136.8 | 087.2 | 53.71 | |
| 146.0 | 022.0000 | 0161.4 | 046.3 | 278.8 | 100.0000 | 0136.2 | 087.8 | 53.50 | |
| 147.0 | 022.0000 | 0161.2 | 046.3 | 278.5 | 100.0000 | 0135.5 | 088.4 | 53.30 | |
| 148.0 | 022.0000 | 0161.1 | 046.3 | 278.1 | 100.0000 | 0135.0 | 089.0 | 53.09 | |
| 149.0 | 022.0000 | 0161.0 | 046.3 | 277.8 | 100.0000 | 0134.4 | 089.7 | 52.89 | |
| 150.0 | 022.0000 | 0161.0 | 046.3 | 277.5 | 100.0000 | 0134.0 | 090.3 | 52.69 | |
| 151.0 | 022.0000 | 0161.0 | 046.3 | 277.2 | 100.0000 | 0133.6 | 091.0 | 52.49 | |
| 152.0 | 022.0000 | 0161.0 | 046.3 | 276.9 | 100.0000 | 0133.2 | 091.6 | 52.29 | |
| 153.0 | 022.0000 | 0160.9 | 046.3 | 276.7 | 100.0000 | 0132.8 | 092.3 | 52.08 | |
| 154.0 | 022.0000 | 0160.8 | 046.2 | 276.4 | 100.0000 | 0132.5 | 093.0 | 51.88 | |
| 155.0 | 022.0000 | 0160.6 | 046.2 | 276.2 | 100.0000 | 0132.2 | 093.7 | 51.68 | |
| 156.0 | 022.0000 | 0160.5 | 046.2 | 275.9 | 100.0000 | 0132.0 | 094.4 | 51.47 | |
| 157.0 | 022.0000 | 0160.4 | 046.2 | 275.7 | 100.0000 | 0131.8 | 095.1 | 51.27 | |
| 158.0 | 022.0000 | 0160.4 | 046.2 | 275.5 | 100.0000 | 0131.5 | 095.8 | 51.07 | |
| 159.0 | 022.0000 | 0160.5 | 046.2 | 275.2 | 100.0000 | 0131.4 | 096.6 | 50.88 | |
| 160.0 | 022.0000 | 0160.5 | 046.2 | 275.0 | 100.0000 | 0131.2 | 097.3 | 50.68 | |
| 161.0 | 022.0000 | 0160.5 | 046.2 | 274.9 | 100.0000 | 0131.1 | 098.0 | 50.48 | |
| 162.0 | 022.0000 | 0160.7 | 046.2 | 274.7 | 100.0000 | 0130.9 | 098.8 | 50.29 | |
| 163.0 | 022.0000 | 0161.1 | 046.3 | 274.5 | 100.0000 | 0130.8 | 099.5 | 50.10 | |
| 164.0 | 022.0000 | 0161.5 | 046.3 | 274.3 | 100.0000 | 0130.8 | 100.2 | 49.91 | |
| 165.0 | 022.0000 | 0161.8 | 046.4 | 274.1 | 100.0000 | 0130.7 | 101.0 | 49.73 | |
| 166.0 | 022.0000 | 0162.1 | 046.4 | 274.0 | 100.0000 | 0130.8 | 101.7 | 49.54 | |
| 167.0 | 022.0000 | 0162.2 | 046.4 | 273.8 | 100.0000 | 0130.8 | 102.5 | 49.36 | |
| 168.0 | 022.0000 | 0162.4 | 046.4 | 273.7 | 100.0000 | 0130.7 | 103.3 | 49.18 | |
| 169.0 | 022.0000 | 0162.3 | 046.4 | 273.6 | 100.0000 | 0130.7 | 104.1 | 48.99 | |
| 170.0 | 022.0000 | 0162.0 | 046.4 | 273.5 | 100.0000 | 0130.7 | 104.9 | 48.81 | |
| 171.0 | 022.0000 | 0161.4 | 046.3 | 273.5 | 100.0000 | 0130.7 | 105.7 | 48.63 | |
| 172.0 | 022.0000 | 0160.7 | 046.2 | 273.4 | 100.0000 | 0130.7 | 106.5 | 48.45 | |
| 173.0 | 022.0000 | 0160.1 | 046.1 | 273.4 | 100.0000 | 0130.7 | 107.3 | 48.27 | |

07-01-2013

Terrain Data: FCC NGDC 30 Sec

FMOver Analysis

WLJN-FM BPED20091027AES

WHND.A

Channel = 210C1

Max ERP = 100 kW

RCAMSL = 402 M

N. Lat. 44 46 36.0

W. Lng. 85 39 43.0

Protected

60 dBu

Channel = 209C2

Max ERP = 22 kW

RCAMSL = 347 M

N. Lat. 45 14 16.0

W. Lng. 87 05 28.0

Interfering

54 dBu

| Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Actual (dBu) | IX (km) |
|----------------------|-------------|-------------|--------------|----------------------|-------------|-------------|--------------|-----------------|------------|
| 235.0 | 049.2804 | 0126.3 | 048.8 | 137.1 | 022.0000 | 0164.1 | 107.5 | 42.77 | |
| 236.0 | 051.4950 | 0125.9 | 049.1 | 137.2 | 022.0000 | 0164.1 | 106.7 | 42.96 | |
| 237.0 | 053.7582 | 0125.8 | 049.5 | 137.4 | 022.0000 | 0164.0 | 105.8 | 43.17 | |
| 238.0 | 056.0701 | 0125.8 | 049.9 | 137.5 | 022.0000 | 0164.0 | 104.9 | 43.39 | |
| 239.0 | 058.4307 | 0125.8 | 050.2 | 137.6 | 022.0000 | 0164.0 | 103.9 | 43.61 | |
| 240.0 | 060.8400 | 0125.8 | 050.6 | 137.7 | 022.0000 | 0163.9 | 103.0 | 43.84 | |
| 241.0 | 063.8401 | 0125.8 | 051.0 | 137.9 | 022.0000 | 0163.9 | 102.0 | 44.08 | |
| 242.0 | 066.9124 | 0126.0 | 051.5 | 138.0 | 022.0000 | 0163.9 | 101.1 | 44.33 | |
| 243.0 | 070.0569 | 0126.2 | 051.9 | 138.1 | 022.0000 | 0163.8 | 100.1 | 44.58 | |
| 244.0 | 073.2736 | 0126.5 | 052.4 | 138.2 | 022.0000 | 0163.8 | 099.1 | 44.84 | |
| 245.0 | 076.5625 | 0126.8 | 052.8 | 138.3 | 022.0000 | 0163.8 | 098.1 | 45.11 | |
| 246.0 | 079.9236 | 0127.2 | 053.2 | 138.4 | 022.0000 | 0163.7 | 097.1 | 45.39 | |
| 247.0 | 083.3569 | 0127.5 | 053.7 | 138.5 | 022.0000 | 0163.7 | 096.0 | 45.67 | |
| 248.0 | 086.8624 | 0128.1 | 054.1 | 138.6 | 022.0000 | 0163.7 | 095.0 | 45.97 | |
| 249.0 | 090.4401 | 0128.9 | 054.6 | 138.7 | 022.0000 | 0163.7 | 093.9 | 46.27 | |
| 250.0 | 094.0900 | 0129.5 | 055.1 | 138.7 | 022.0000 | 0163.7 | 092.9 | 46.57 | |
| 251.0 | 094.6729 | 0129.5 | 055.1 | 138.6 | 022.0000 | 0163.7 | 092.0 | 46.84 | |
| 252.0 | 095.2576 | 0129.1 | 055.1 | 138.3 | 022.0000 | 0163.8 | 091.1 | 47.10 | |
| 253.0 | 095.8441 | 0128.7 | 055.1 | 138.1 | 022.0000 | 0163.8 | 090.2 | 47.36 | |
| 254.0 | 096.4324 | 0127.6 | 055.0 | 137.8 | 022.0000 | 0163.9 | 089.4 | 47.61 | |
| 255.0 | 097.0225 | 0126.4 | 054.9 | 137.4 | 022.0000 | 0164.0 | 088.5 | 47.86 | |
| 256.0 | 097.6144 | 0125.3 | 054.8 | 137.1 | 022.0000 | 0164.1 | 087.7 | 48.10 | |
| 257.0 | 098.2081 | 0124.5 | 054.7 | 136.7 | 022.0000 | 0164.2 | 086.9 | 48.35 | |
| 258.0 | 098.8036 | 0124.1 | 054.7 | 136.4 | 022.0000 | 0164.3 | 086.1 | 48.60 | |
| 259.0 | 099.4009 | 0124.0 | 054.8 | 136.1 | 022.0000 | 0164.3 | 085.3 | 48.86 | |
| 260.0 | 100.0000 | 0124.1 | 054.8 | 135.8 | 022.0000 | 0164.4 | 084.4 | 49.12 | |
| 261.0 | 100.0000 | 0124.3 | 054.9 | 135.4 | 022.0000 | 0164.5 | 083.6 | 49.37 | |
| 262.0 | 100.0000 | 0124.8 | 054.9 | 135.1 | 022.0000 | 0164.5 | 082.8 | 49.63 | |
| 263.0 | 100.0000 | 0125.6 | 055.1 | 134.8 | 022.0000 | 0164.6 | 082.0 | 49.89 | |
| 264.0 | 100.0000 | 0126.5 | 055.2 | 134.4 | 022.0000 | 0164.7 | 081.1 | 50.15 | |
| 265.0 | 100.0000 | 0127.2 | 055.3 | 134.0 | 022.0000 | 0164.7 | 080.3 | 50.41 | |
| 266.0 | 100.0000 | 0128.0 | 055.4 | 133.6 | 022.0000 | 0164.8 | 079.5 | 50.66 | |
| 267.0 | 100.0000 | 0128.8 | 055.5 | 133.2 | 022.0000 | 0164.9 | 078.7 | 50.92 | |

| Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Actual (dBu) |
|----------------------|-------------|-------------|--------------|----------------------|-------------|-------------|--------------|-----------------|
| 268.0 | 100.0000 | 0129.6 | 055.6 | 132.8 | 022.0000 | 0164.9 | 077.9 | 51.17 |
| 269.0 | 100.0000 | 0130.4 | 055.7 | 132.4 | 022.0000 | 0165.0 | 077.2 | 51.41 |
| 270.0 | 100.0000 | 0130.7 | 055.8 | 131.9 | 022.0000 | 0165.0 | 076.5 | 51.64 |
| 271.0 | 100.0000 | 0130.7 | 055.8 | 131.3 | 022.0000 | 0165.1 | 075.8 | 51.85 |
| 272.0 | 100.0000 | 0130.6 | 055.8 | 130.7 | 022.0000 | 0165.2 | 075.2 | 52.05 |
| 273.0 | 100.0000 | 0130.6 | 055.8 | 130.2 | 022.0000 | 0165.2 | 074.6 | 52.25 |
| 274.0 | 100.0000 | 0130.8 | 055.8 | 129.6 | 022.0000 | 0165.3 | 074.0 | 52.45 |
| 275.0 | 100.0000 | 0131.2 | 055.9 | 129.0 | 022.0000 | 0165.4 | 073.4 | 52.65 |
| 276.0 | 100.0000 | 0132.1 | 056.0 | 128.4 | 022.0000 | 0165.4 | 072.7 | 52.87 |
| 277.0 | 100.0000 | 0133.3 | 056.2 | 127.8 | 022.0000 | 0165.5 | 072.0 | 53.09 |
| 278.0 | 100.0000 | 0134.7 | 056.4 | 127.2 | 022.0000 | 0165.5 | 071.4 | 53.31 |
| 279.0 | 100.0000 | 0136.5 | 056.6 | 126.6 | 022.0000 | 0165.6 | 070.7 | 53.55 |
| 280.0 | 100.0000 | 0137.8 | 056.8 | 126.0 | 022.0000 | 0165.7 | 070.0 | 53.75 |
| 281.0 | 100.0000 | 0137.9 | 056.8 | 125.3 | 022.0000 | 0165.8 | 069.6 | 53.91 |
| 282.0 | 100.0000 | 0137.7 | 056.8 | 124.5 | 022.0000 | 0165.8 | 069.2 | 54.03* 0.10 |
| 283.0 | 100.0000 | 0137.5 | 056.8 | 123.7 | 022.0000 | 0165.9 | 068.9 | 54.15* 0.46 |
| 284.0 | 100.0000 | 0138.2 | 056.9 | 123.0 | 022.0000 | 0166.0 | 068.4 | 54.30* 0.92 |
| 285.0 | 100.0000 | 0139.6 | 057.1 | 122.2 | 022.0000 | 0166.1 | 067.9 | 54.47* 1.43 |
| 286.0 | 100.0000 | 0141.6 | 057.3 | 121.5 | 022.0000 | 0166.2 | 067.4 | 54.66* 2.00 |
| 287.0 | 100.0000 | 0144.5 | 057.7 | 120.8 | 022.0000 | 0166.3 | 066.7 | 54.89* 2.67 |
| 288.0 | 100.0000 | 0148.1 | 058.2 | 120.0 | 022.0000 | 0166.3 | 066.0 | 55.13* 3.39 |
| 289.0 | 100.0000 | 0152.4 | 058.8 | 119.2 | 022.0000 | 0166.4 | 065.2 | 55.39* 4.17 |
| 290.0 | 100.0000 | 0157.0 | 059.4 | 118.4 | 022.0000 | 0166.5 | 064.5 | 55.64* 4.94 |
| 291.0 | 100.0000 | 0161.3 | 059.9 | 117.6 | 022.0000 | 0166.5 | 063.8 | 55.87* 5.61 |
| 292.0 | 100.0000 | 0164.5 | 060.3 | 116.7 | 022.0000 | 0166.6 | 063.3 | 56.04* 6.10 |
| 293.0 | 100.0000 | 0166.3 | 060.5 | 115.7 | 022.0000 | 0166.7 | 063.0 | 56.14* 6.41 |
| 294.0 | 100.0000 | 0167.1 | 060.6 | 114.8 | 022.0000 | 0166.7 | 062.9 | 56.19* 6.56 |
| 295.0 | 100.0000 | 0167.1 | 060.6 | 113.8 | 022.0000 | 0166.8 | 062.9 | 56.20* 6.57 |
| 296.0 | 100.0000 | 0166.8 | 060.5 | 112.9 | 022.0000 | 0166.8 | 062.9 | 56.18* 6.52 |
| 297.0 | 100.0000 | 0167.6 | 060.6 | 111.9 | 022.0000 | 0166.8 | 062.9 | 56.19* 6.55 |
| 298.0 | 100.0000 | 0169.7 | 060.9 | 110.9 | 022.0000 | 0166.9 | 062.8 | 56.24* 6.69 |
| 299.0 | 100.0000 | 0172.8 | 061.2 | 109.9 | 022.0000 | 0166.9 | 062.6 | 56.31* 6.88 |
| 300.0 | 100.0000 | 0175.5 | 061.5 | 108.9 | 022.0000 | 0166.9 | 062.5 | 56.34* 6.98 |
| 301.0 | 100.0000 | 0177.3 | 061.6 | 107.9 | 022.0000 | 0166.9 | 062.5 | 56.33* 6.95 |
| 302.0 | 100.0000 | 0178.0 | 061.7 | 106.9 | 022.0000 | 0166.9 | 062.7 | 56.27* 6.78 |
| 303.0 | 100.0000 | 0178.5 | 061.8 | 106.0 | 022.0000 | 0166.9 | 062.9 | 56.19* 6.55 |
| 304.0 | 100.0000 | 0179.2 | 061.8 | 105.0 | 022.0000 | 0166.9 | 063.2 | 56.10* 6.29 |
| 305.0 | 100.0000 | 0180.4 | 061.9 | 104.1 | 022.0000 | 0166.9 | 063.4 | 56.02* 6.05 |
| 306.0 | 100.0000 | 0182.1 | 062.1 | 103.1 | 022.0000 | 0166.9 | 063.7 | 55.94* 5.81 |
| 307.0 | 100.0000 | 0183.7 | 062.3 | 102.2 | 022.0000 | 0167.0 | 063.9 | 55.84* 5.53 |
| 308.0 | 100.0000 | 0184.9 | 062.4 | 101.2 | 022.0000 | 0166.9 | 064.3 | 55.72* 5.17 |
| 309.0 | 100.0000 | 0185.6 | 062.4 | 100.4 | 022.0000 | 0166.9 | 064.7 | 55.57* 4.73 |
| 310.0 | 100.0000 | 0186.0 | 062.5 | 099.5 | 022.0000 | 0166.9 | 065.2 | 55.41* 4.23 |
| 311.0 | 100.0000 | 0186.2 | 062.5 | 098.7 | 022.0000 | 0166.8 | 065.8 | 55.22* 3.68 |
| 312.0 | 100.0000 | 0185.4 | 062.4 | 097.9 | 022.0000 | 0166.8 | 066.4 | 55.01* 3.03 |
| 313.0 | 100.0000 | 0183.8 | 062.3 | 097.2 | 022.0000 | 0166.7 | 067.1 | 54.76* 2.29 |
| 314.0 | 100.0000 | 0181.7 | 062.1 | 096.6 | 022.0000 | 0166.7 | 067.9 | 54.49* 1.49 |
| 315.0 | 100.0000 | 0179.6 | 061.9 | 096.0 | 022.0000 | 0166.6 | 068.7 | 54.22* 0.68 |
| 316.0 | 100.0000 | 0178.5 | 061.8 | 095.3 | 022.0000 | 0166.6 | 069.5 | 53.97 |
| 317.0 | 100.0000 | 0178.5 | 061.8 | 094.7 | 022.0000 | 0166.5 | 070.2 | 53.74 |
| 318.0 | 100.0000 | 0179.4 | 061.8 | 094.0 | 022.0000 | 0166.5 | 070.9 | 53.51 |

WHND and WLJN-FM License Contour-to-Contour Map
State Of Wisconsin - Educational Communications Board

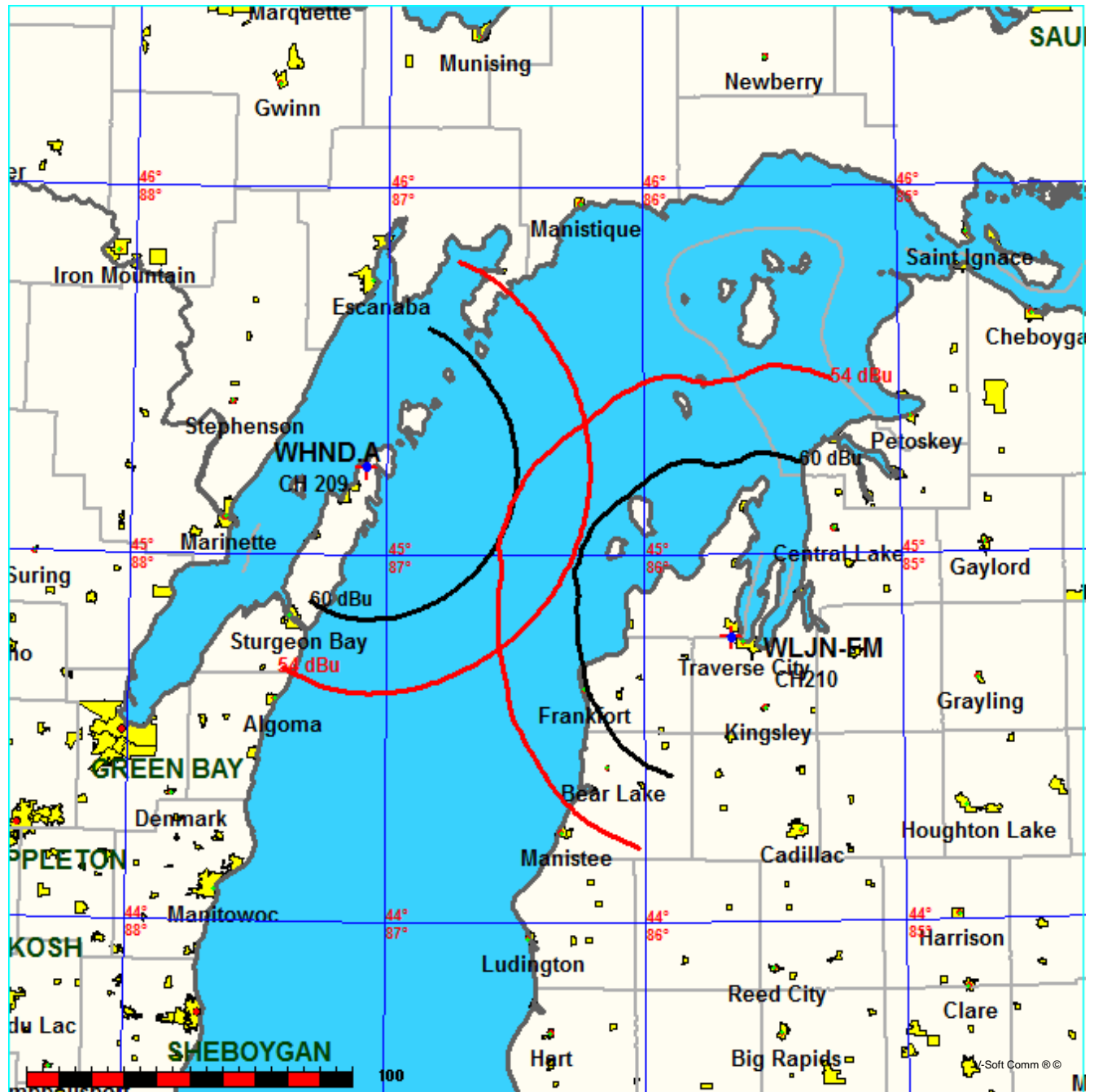
FMCommander Single Allocation Study - 07-01-2013 - FCC NGDC 30 Sec
WHND.A's Overlaps (In= -0.67 km, Out= 1.38 km)

WHND.A CH 209 C2

Lat= 45 14 16.0, Lng= 87 05 28.0
22.0 kW 163.5 M HAAT, 347 M COR
Prot.= 60 dBu, Intef.= 54 dBu

WLJN-FM CH 210 C2 BLED20011128AAQ

Lat= 44 46 36.0, Lng= 85 39 43.0
39.0 kW 169 M HAAT, 402 M COR
Prot.= 60 dBu, Intef.= 54 dBu



07-01-2013

Terrain Data: FCC NGDC 30 Sec

FMOver Analysis

WHND.A

WLJN-FM BLED20011128AAQ

Channel = 209C2

Max ERP = 22 kW

RCAMSL = 347 M

N. Lat. 45 14 16.0

W. Lng. 87 05 28.0

Protected

60 dBu

Channel = 210C2

Max ERP = 39 kW

RCAMSL = 402 M

N. Lat. 44 46 36.0

W. Lng. 85 39 43.0

Interfering

54 dBu

| Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Actual (dBu) | IX (km) |
|----------------------|-------------|-------------|--------------|----------------------|-------------|-------------|--------------|-----------------|------------|
| 054.0 | 022.0000 | 0159.2 | 046.0 | 316.6 | 039.0000 | 0178.3 | 108.5 | 45.48 | |
| 055.0 | 022.0000 | 0158.9 | 046.0 | 316.5 | 039.0000 | 0178.3 | 107.6 | 45.68 | |
| 056.0 | 022.0000 | 0159.0 | 046.0 | 316.4 | 039.0000 | 0178.3 | 106.9 | 45.86 | |
| 057.0 | 022.0000 | 0159.3 | 046.1 | 316.4 | 039.0000 | 0178.3 | 106.1 | 46.05 | |
| 058.0 | 022.0000 | 0159.6 | 046.1 | 316.3 | 039.0000 | 0178.3 | 105.3 | 46.24 | |
| 059.0 | 022.0000 | 0160.0 | 046.1 | 316.2 | 039.0000 | 0178.3 | 104.5 | 46.44 | |
| 060.0 | 022.0000 | 0160.5 | 046.2 | 316.2 | 039.0000 | 0178.4 | 103.7 | 46.63 | |
| 061.0 | 022.0000 | 0160.8 | 046.2 | 316.1 | 039.0000 | 0178.4 | 102.9 | 46.84 | |
| 062.0 | 022.0000 | 0161.2 | 046.3 | 316.0 | 039.0000 | 0178.5 | 102.1 | 47.04 | |
| 063.0 | 022.0000 | 0161.5 | 046.3 | 315.8 | 039.0000 | 0178.6 | 101.3 | 47.25 | |
| 064.0 | 022.0000 | 0161.8 | 046.4 | 315.7 | 039.0000 | 0178.7 | 100.6 | 47.46 | |
| 065.0 | 022.0000 | 0162.1 | 046.4 | 315.6 | 039.0000 | 0178.8 | 099.8 | 47.67 | |
| 066.0 | 022.0000 | 0162.4 | 046.4 | 315.4 | 039.0000 | 0179.0 | 099.0 | 47.88 | |
| 067.0 | 022.0000 | 0162.5 | 046.4 | 315.3 | 039.0000 | 0179.2 | 098.3 | 48.10 | |
| 068.0 | 022.0000 | 0162.7 | 046.5 | 315.1 | 039.0000 | 0179.5 | 097.5 | 48.32 | |
| 069.0 | 022.0000 | 0162.9 | 046.5 | 314.9 | 039.0000 | 0179.8 | 096.8 | 48.54 | |
| 070.0 | 022.0000 | 0163.1 | 046.5 | 314.7 | 039.0000 | 0180.2 | 096.0 | 48.77 | |
| 071.0 | 022.0000 | 0163.2 | 046.5 | 314.5 | 039.0000 | 0180.6 | 095.3 | 48.99 | |
| 072.0 | 022.0000 | 0163.3 | 046.5 | 314.3 | 039.0000 | 0181.1 | 094.6 | 49.22 | |
| 073.0 | 022.0000 | 0163.4 | 046.6 | 314.0 | 039.0000 | 0181.6 | 093.9 | 49.44 | |
| 074.0 | 022.0000 | 0163.5 | 046.6 | 313.8 | 039.0000 | 0182.2 | 093.2 | 49.67 | |
| 075.0 | 022.0000 | 0163.6 | 046.6 | 313.5 | 039.0000 | 0182.7 | 092.5 | 49.90 | |
| 076.0 | 022.0000 | 0163.6 | 046.6 | 313.2 | 039.0000 | 0183.3 | 091.8 | 50.12 | |
| 077.0 | 022.0000 | 0163.6 | 046.6 | 313.0 | 039.0000 | 0183.9 | 091.1 | 50.34 | |
| 078.0 | 022.0000 | 0163.6 | 046.6 | 312.7 | 039.0000 | 0184.4 | 090.5 | 50.57 | |
| 079.0 | 022.0000 | 0163.7 | 046.6 | 312.4 | 039.0000 | 0184.9 | 089.8 | 50.78 | |
| 080.0 | 022.0000 | 0163.8 | 046.6 | 312.0 | 039.0000 | 0185.3 | 089.1 | 50.99 | |
| 081.0 | 022.0000 | 0164.0 | 046.6 | 311.7 | 039.0000 | 0185.7 | 088.5 | 51.20 | |
| 082.0 | 022.0000 | 0164.2 | 046.6 | 311.4 | 039.0000 | 0186.0 | 087.9 | 51.41 | |
| 083.0 | 022.0000 | 0164.5 | 046.7 | 311.0 | 039.0000 | 0186.2 | 087.3 | 51.61 | |
| 084.0 | 022.0000 | 0164.7 | 046.7 | 310.7 | 039.0000 | 0186.2 | 086.6 | 51.80 | |
| 085.0 | 022.0000 | 0164.9 | 046.7 | 310.3 | 039.0000 | 0186.1 | 086.1 | 51.98 | |
| 086.0 | 022.0000 | 0165.0 | 046.7 | 309.9 | 039.0000 | 0186.0 | 085.5 | 52.16 | |
| 087.0 | 022.0000 | 0165.1 | 046.7 | 309.5 | 039.0000 | 0185.8 | 084.9 | 52.32 | |
| 088.0 | 022.0000 | 0165.3 | 046.8 | 309.1 | 039.0000 | 0185.6 | 084.4 | 52.49 | |
| 089.0 | 022.0000 | 0165.5 | 046.8 | 308.7 | 039.0000 | 0185.5 | 083.8 | 52.65 | |

| Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Actual (dBu) |
|----------------------|-------------|-------------|--------------|----------------------|-------------|-------------|--------------|-----------------|
| 090.0 | 022.0000 | 0165.7 | 046.8 | 308.3 | 039.0000 | 0185.2 | 083.3 | 52.80 |
| 091.0 | 022.0000 | 0165.9 | 046.8 | 307.8 | 039.0000 | 0184.8 | 082.8 | 52.95 |
| 092.0 | 022.0000 | 0166.1 | 046.9 | 307.4 | 039.0000 | 0184.3 | 082.3 | 53.09 |
| 093.0 | 022.0000 | 0166.3 | 046.9 | 306.9 | 039.0000 | 0183.6 | 081.8 | 53.21 |
| 094.0 | 022.0000 | 0166.5 | 046.9 | 306.4 | 039.0000 | 0182.8 | 081.4 | 53.32 |
| 095.0 | 022.0000 | 0166.6 | 046.9 | 305.9 | 039.0000 | 0182.0 | 080.9 | 53.42 |
| 096.0 | 022.0000 | 0166.6 | 046.9 | 305.4 | 039.0000 | 0181.1 | 080.5 | 53.52 |
| 097.0 | 022.0000 | 0166.7 | 046.9 | 304.9 | 039.0000 | 0180.3 | 080.1 | 53.61 |
| 098.0 | 022.0000 | 0166.8 | 046.9 | 304.4 | 039.0000 | 0179.6 | 079.8 | 53.70 |
| 099.0 | 022.0000 | 0166.8 | 046.9 | 303.9 | 039.0000 | 0179.1 | 079.4 | 53.79 |
| 100.0 | 022.0000 | 0166.9 | 047.0 | 303.3 | 039.0000 | 0178.7 | 079.1 | 53.88 |
| 101.0 | 022.0000 | 0166.9 | 047.0 | 302.8 | 039.0000 | 0178.4 | 078.8 | 53.96 |
| 102.0 | 022.0000 | 0167.0 | 047.0 | 302.2 | 039.0000 | 0178.1 | 078.5 | 54.04* 0.13 |
| 103.0 | 022.0000 | 0166.9 | 047.0 | 301.6 | 039.0000 | 0177.8 | 078.2 | 54.11* 0.36 |
| 104.0 | 022.0000 | 0166.9 | 047.0 | 301.1 | 039.0000 | 0177.3 | 078.0 | 54.17* 0.54 |
| 105.0 | 022.0000 | 0166.9 | 047.0 | 300.5 | 039.0000 | 0176.5 | 077.8 | 54.21* 0.64 |
| 106.0 | 022.0000 | 0166.9 | 047.0 | 299.9 | 039.0000 | 0175.2 | 077.6 | 54.22* 0.67 |
| 107.0 | 022.0000 | 0166.9 | 047.0 | 299.3 | 039.0000 | 0173.7 | 077.4 | 54.20* 0.64 |
| 108.0 | 022.0000 | 0166.9 | 047.0 | 298.7 | 039.0000 | 0171.9 | 077.2 | 54.18* 0.55 |
| 109.0 | 022.0000 | 0166.9 | 047.0 | 298.1 | 039.0000 | 0170.0 | 077.1 | 54.14* 0.43 |
| 110.0 | 022.0000 | 0166.9 | 047.0 | 297.5 | 039.0000 | 0168.6 | 077.0 | 54.11* 0.33 |
| 111.0 | 022.0000 | 0166.9 | 046.9 | 296.9 | 039.0000 | 0167.4 | 076.9 | 54.08* 0.26 |
| 112.0 | 022.0000 | 0166.8 | 046.9 | 296.3 | 039.0000 | 0166.9 | 076.9 | 54.08* 0.25 |
| 113.0 | 022.0000 | 0166.8 | 046.9 | 295.7 | 039.0000 | 0166.8 | 076.8 | 54.09* 0.28 |
| 114.0 | 022.0000 | 0166.8 | 046.9 | 295.1 | 039.0000 | 0167.1 | 076.8 | 54.10* 0.32 |
| 115.0 | 022.0000 | 0166.7 | 046.9 | 294.5 | 039.0000 | 0167.2 | 076.8 | 54.10* 0.32 |
| 116.0 | 022.0000 | 0166.6 | 046.9 | 293.8 | 039.0000 | 0167.1 | 076.9 | 54.09* 0.28 |
| 117.0 | 022.0000 | 0166.6 | 046.9 | 293.2 | 039.0000 | 0166.6 | 076.9 | 54.05* 0.15 |
| 118.0 | 022.0000 | 0166.5 | 046.9 | 292.6 | 039.0000 | 0165.7 | 077.0 | 53.98 |
| 119.0 | 022.0000 | 0166.4 | 046.9 | 292.0 | 039.0000 | 0164.5 | 077.1 | 53.89 |
| 120.0 | 022.0000 | 0166.3 | 046.9 | 291.4 | 039.0000 | 0162.8 | 077.2 | 53.78 |
| 121.0 | 022.0000 | 0166.2 | 046.9 | 290.8 | 039.0000 | 0160.6 | 077.4 | 53.63 |
| 122.0 | 022.0000 | 0166.1 | 046.9 | 290.2 | 039.0000 | 0158.1 | 077.6 | 53.46 |
| 123.0 | 022.0000 | 0166.0 | 046.9 | 289.7 | 039.0000 | 0155.5 | 077.8 | 53.28 |
| 124.0 | 022.0000 | 0165.9 | 046.8 | 289.1 | 039.0000 | 0152.8 | 078.0 | 53.09 |
| 125.0 | 022.0000 | 0165.8 | 046.8 | 288.5 | 039.0000 | 0150.2 | 078.2 | 52.89 |
| 126.0 | 022.0000 | 0165.7 | 046.8 | 287.9 | 039.0000 | 0147.8 | 078.5 | 52.70 |
| 127.0 | 022.0000 | 0165.6 | 046.8 | 287.4 | 039.0000 | 0145.8 | 078.8 | 52.52 |
| 128.0 | 022.0000 | 0165.5 | 046.8 | 286.8 | 039.0000 | 0143.9 | 079.1 | 52.34 |
| 129.0 | 022.0000 | 0165.4 | 046.8 | 286.3 | 039.0000 | 0142.3 | 079.4 | 52.17 |
| 130.0 | 022.0000 | 0165.3 | 046.8 | 285.8 | 039.0000 | 0141.0 | 079.8 | 52.00 |
| 131.0 | 022.0000 | 0165.1 | 046.8 | 285.2 | 039.0000 | 0139.9 | 080.1 | 51.85 |
| 132.0 | 022.0000 | 0165.0 | 046.7 | 284.7 | 039.0000 | 0139.2 | 080.5 | 51.70 |
| 133.0 | 022.0000 | 0164.9 | 046.7 | 284.2 | 039.0000 | 0138.5 | 080.9 | 51.55 |
| 134.0 | 022.0000 | 0164.7 | 046.7 | 283.7 | 039.0000 | 0137.9 | 081.3 | 51.39 |
| 135.0 | 022.0000 | 0164.6 | 046.7 | 283.2 | 039.0000 | 0137.6 | 081.8 | 51.24 |
| 136.0 | 022.0000 | 0164.4 | 046.7 | 282.8 | 039.0000 | 0137.5 | 082.2 | 51.10 |
| 137.0 | 022.0000 | 0164.1 | 046.6 | 282.3 | 039.0000 | 0137.6 | 082.7 | 50.96 |
| 138.0 | 022.0000 | 0163.9 | 046.6 | 281.9 | 039.0000 | 0137.7 | 083.2 | 50.82 |
| 139.0 | 022.0000 | 0163.6 | 046.6 | 281.5 | 039.0000 | 0137.9 | 083.7 | 50.67 |
| 140.0 | 022.0000 | 0163.3 | 046.5 | 281.0 | 039.0000 | 0137.9 | 084.3 | 50.52 |

| Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Actual (dBu) |
|----------------------|-------------|-------------|--------------|----------------------|-------------|-------------|--------------|-----------------|
| 141.0 | 022.0000 | 0163.0 | 046.5 | 280.6 | 039.0000 | 0138.0 | 084.8 | 50.35 |
| 142.0 | 022.0000 | 0162.6 | 046.5 | 280.2 | 039.0000 | 0137.9 | 085.4 | 50.19 |
| 143.0 | 022.0000 | 0162.3 | 046.4 | 279.9 | 039.0000 | 0137.7 | 086.0 | 50.01 |
| 144.0 | 022.0000 | 0162.0 | 046.4 | 279.5 | 039.0000 | 0137.4 | 086.6 | 49.82 |
| 145.0 | 022.0000 | 0161.7 | 046.3 | 279.1 | 039.0000 | 0136.8 | 087.2 | 49.62 |
| 146.0 | 022.0000 | 0161.4 | 046.3 | 278.8 | 039.0000 | 0136.2 | 087.8 | 49.41 |
| 147.0 | 022.0000 | 0161.2 | 046.3 | 278.5 | 039.0000 | 0135.5 | 088.4 | 49.21 |
| 148.0 | 022.0000 | 0161.1 | 046.3 | 278.1 | 039.0000 | 0135.0 | 089.0 | 49.00 |
| 149.0 | 022.0000 | 0161.0 | 046.3 | 277.8 | 039.0000 | 0134.4 | 089.7 | 48.80 |
| 150.0 | 022.0000 | 0161.0 | 046.3 | 277.5 | 039.0000 | 0134.0 | 090.3 | 48.60 |
| 151.0 | 022.0000 | 0161.0 | 046.3 | 277.2 | 039.0000 | 0133.6 | 091.0 | 48.40 |
| 152.0 | 022.0000 | 0161.0 | 046.3 | 276.9 | 039.0000 | 0133.2 | 091.6 | 48.20 |
| 153.0 | 022.0000 | 0160.9 | 046.3 | 276.7 | 039.0000 | 0132.8 | 092.3 | 47.99 |
| 154.0 | 022.0000 | 0160.8 | 046.2 | 276.4 | 039.0000 | 0132.5 | 093.0 | 47.79 |
| 155.0 | 022.0000 | 0160.6 | 046.2 | 276.2 | 039.0000 | 0132.2 | 093.7 | 47.59 |
| 156.0 | 022.0000 | 0160.5 | 046.2 | 275.9 | 039.0000 | 0132.0 | 094.4 | 47.38 |
| 157.0 | 022.0000 | 0160.4 | 046.2 | 275.7 | 039.0000 | 0131.8 | 095.1 | 47.18 |
| 158.0 | 022.0000 | 0160.4 | 046.2 | 275.5 | 039.0000 | 0131.5 | 095.8 | 46.98 |
| 159.0 | 022.0000 | 0160.5 | 046.2 | 275.2 | 039.0000 | 0131.4 | 096.6 | 46.79 |
| 160.0 | 022.0000 | 0160.5 | 046.2 | 275.0 | 039.0000 | 0131.2 | 097.3 | 46.59 |
| 161.0 | 022.0000 | 0160.5 | 046.2 | 274.9 | 039.0000 | 0131.1 | 098.0 | 46.39 |
| 162.0 | 022.0000 | 0160.7 | 046.2 | 274.7 | 039.0000 | 0130.9 | 098.8 | 46.20 |
| 163.0 | 022.0000 | 0161.1 | 046.3 | 274.5 | 039.0000 | 0130.8 | 099.5 | 46.01 |
| 164.0 | 022.0000 | 0161.5 | 046.3 | 274.3 | 039.0000 | 0130.8 | 100.2 | 45.82 |
| 165.0 | 022.0000 | 0161.8 | 046.4 | 274.1 | 039.0000 | 0130.7 | 101.0 | 45.64 |
| 166.0 | 022.0000 | 0162.1 | 046.4 | 274.0 | 039.0000 | 0130.8 | 101.7 | 45.45 |
| 167.0 | 022.0000 | 0162.2 | 046.4 | 273.8 | 039.0000 | 0130.8 | 102.5 | 45.27 |
| 168.0 | 022.0000 | 0162.4 | 046.4 | 273.7 | 039.0000 | 0130.7 | 103.3 | 45.09 |
| 169.0 | 022.0000 | 0162.3 | 046.4 | 273.6 | 039.0000 | 0130.7 | 104.1 | 44.90 |
| 170.0 | 022.0000 | 0162.0 | 046.4 | 273.5 | 039.0000 | 0130.7 | 104.9 | 44.72 |
| 171.0 | 022.0000 | 0161.4 | 046.3 | 273.5 | 039.0000 | 0130.7 | 105.7 | 44.54 |
| 172.0 | 022.0000 | 0160.7 | 046.2 | 273.4 | 039.0000 | 0130.7 | 106.5 | 44.36 |
| 173.0 | 022.0000 | 0160.1 | 046.1 | 273.4 | 039.0000 | 0130.7 | 107.3 | 44.18 |

07-01-2013

Terrain Data: FCC NGDC 30 Sec

FMOver Analysis

WLJN-FM BLED20011128AAQ

WHND.A

Channel = 210C2

Max ERP = 39 kW

RCAMSL = 402 M

N. Lat. 44 46 36.0

W. Lng. 85 39 43.0

Protected

60 dBu

Channel = 209C2

Max ERP = 22 kW

RCAMSL = 347 M

N. Lat. 45 14 16.0

W. Lng. 87 05 28.0

Interfering

54 dBu

| Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Actual (dBu) | IX (km) |
|----------------------|-------------|-------------|--------------|----------------------|-------------|-------------|--------------|-----------------|------------|
| 235.0 | 039.0000 | 0126.3 | 046.7 | 136.0 | 022.0000 | 0164.3 | 107.8 | 42.72 | |
| 236.0 | 039.0000 | 0125.9 | 046.6 | 135.9 | 022.0000 | 0164.4 | 107.1 | 42.88 | |
| 237.0 | 039.0000 | 0125.8 | 046.6 | 135.8 | 022.0000 | 0164.4 | 106.3 | 43.07 | |
| 238.0 | 039.0000 | 0125.8 | 046.6 | 135.7 | 022.0000 | 0164.4 | 105.5 | 43.26 | |
| 239.0 | 039.0000 | 0125.8 | 046.6 | 135.6 | 022.0000 | 0164.4 | 104.7 | 43.45 | |
| 240.0 | 039.0000 | 0125.8 | 046.6 | 135.5 | 022.0000 | 0164.5 | 103.9 | 43.64 | |
| 241.0 | 039.0000 | 0125.8 | 046.6 | 135.4 | 022.0000 | 0164.5 | 103.1 | 43.83 | |
| 242.0 | 039.0000 | 0126.0 | 046.6 | 135.3 | 022.0000 | 0164.5 | 102.3 | 44.03 | |
| 243.0 | 039.0000 | 0126.2 | 046.6 | 135.2 | 022.0000 | 0164.5 | 101.5 | 44.23 | |
| 244.0 | 039.0000 | 0126.5 | 046.7 | 135.1 | 022.0000 | 0164.5 | 100.7 | 44.44 | |
| 245.0 | 039.0000 | 0126.8 | 046.7 | 135.0 | 022.0000 | 0164.6 | 099.9 | 44.64 | |
| 246.0 | 039.0000 | 0127.2 | 046.8 | 134.8 | 022.0000 | 0164.6 | 099.1 | 44.85 | |
| 247.0 | 039.0000 | 0127.5 | 046.8 | 134.7 | 022.0000 | 0164.6 | 098.4 | 45.06 | |
| 248.0 | 039.0000 | 0128.1 | 046.9 | 134.6 | 022.0000 | 0164.6 | 097.6 | 45.28 | |
| 249.0 | 039.0000 | 0128.9 | 047.0 | 134.4 | 022.0000 | 0164.7 | 096.8 | 45.50 | |
| 250.0 | 039.0000 | 0129.5 | 047.1 | 134.3 | 022.0000 | 0164.7 | 096.0 | 45.72 | |
| 251.0 | 039.0000 | 0129.5 | 047.1 | 134.1 | 022.0000 | 0164.7 | 095.2 | 45.93 | |
| 252.0 | 039.0000 | 0129.1 | 047.0 | 133.8 | 022.0000 | 0164.8 | 094.5 | 46.14 | |
| 253.0 | 039.0000 | 0128.7 | 047.0 | 133.5 | 022.0000 | 0164.8 | 093.8 | 46.34 | |
| 254.0 | 039.0000 | 0127.6 | 046.8 | 133.2 | 022.0000 | 0164.9 | 093.2 | 46.52 | |
| 255.0 | 039.0000 | 0126.4 | 046.7 | 132.9 | 022.0000 | 0164.9 | 092.6 | 46.70 | |
| 256.0 | 039.0000 | 0125.3 | 046.5 | 132.5 | 022.0000 | 0165.0 | 092.0 | 46.88 | |
| 257.0 | 039.0000 | 0124.5 | 046.4 | 132.2 | 022.0000 | 0165.0 | 091.4 | 47.06 | |
| 258.0 | 039.0000 | 0124.1 | 046.3 | 131.9 | 022.0000 | 0165.0 | 090.7 | 47.25 | |
| 259.0 | 039.0000 | 0124.0 | 046.3 | 131.6 | 022.0000 | 0165.1 | 090.1 | 47.44 | |
| 260.0 | 039.0000 | 0124.1 | 046.3 | 131.3 | 022.0000 | 0165.1 | 089.4 | 47.64 | |
| 261.0 | 039.0000 | 0124.3 | 046.4 | 130.9 | 022.0000 | 0165.2 | 088.8 | 47.84 | |
| 262.0 | 039.0000 | 0124.8 | 046.4 | 130.6 | 022.0000 | 0165.2 | 088.1 | 48.04 | |
| 263.0 | 039.0000 | 0125.6 | 046.6 | 130.4 | 022.0000 | 0165.2 | 087.4 | 48.24 | |
| 264.0 | 039.0000 | 0126.5 | 046.7 | 130.0 | 022.0000 | 0165.3 | 086.7 | 48.45 | |
| 265.0 | 039.0000 | 0127.2 | 046.8 | 129.7 | 022.0000 | 0165.3 | 086.1 | 48.65 | |
| 266.0 | 039.0000 | 0128.0 | 046.9 | 129.4 | 022.0000 | 0165.3 | 085.4 | 48.86 | |
| 267.0 | 039.0000 | 0128.8 | 047.0 | 129.0 | 022.0000 | 0165.4 | 084.8 | 49.06 | |

| Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Actual (dBu) |
|----------------------|-------------|-------------|--------------|----------------------|-------------|-------------|--------------|-----------------|
| 268.0 | 039.0000 | 0129.6 | 047.1 | 128.7 | 022.0000 | 0165.4 | 084.1 | 49.25 |
| 269.0 | 039.0000 | 0130.4 | 047.2 | 128.3 | 022.0000 | 0165.4 | 083.5 | 49.44 |
| 270.0 | 039.0000 | 0130.7 | 047.3 | 127.9 | 022.0000 | 0165.5 | 083.0 | 49.62 |
| 271.0 | 039.0000 | 0130.7 | 047.3 | 127.4 | 022.0000 | 0165.5 | 082.5 | 49.78 |
| 272.0 | 039.0000 | 0130.6 | 047.3 | 127.0 | 022.0000 | 0165.6 | 082.0 | 49.93 |
| 273.0 | 039.0000 | 0130.6 | 047.3 | 126.5 | 022.0000 | 0165.6 | 081.5 | 50.08 |
| 274.0 | 039.0000 | 0130.8 | 047.3 | 126.0 | 022.0000 | 0165.7 | 081.0 | 50.23 |
| 275.0 | 039.0000 | 0131.2 | 047.3 | 125.5 | 022.0000 | 0165.7 | 080.5 | 50.38 |
| 276.0 | 039.0000 | 0132.1 | 047.5 | 125.1 | 022.0000 | 0165.8 | 080.0 | 50.55 |
| 277.0 | 039.0000 | 0133.3 | 047.6 | 124.6 | 022.0000 | 0165.8 | 079.4 | 50.73 |
| 278.0 | 039.0000 | 0134.7 | 047.8 | 124.1 | 022.0000 | 0165.9 | 078.9 | 50.91 |
| 279.0 | 039.0000 | 0136.5 | 048.1 | 123.7 | 022.0000 | 0165.9 | 078.3 | 51.10 |
| 280.0 | 039.0000 | 0137.8 | 048.3 | 123.2 | 022.0000 | 0166.0 | 077.8 | 51.27 |
| 281.0 | 039.0000 | 0137.9 | 048.3 | 122.6 | 022.0000 | 0166.0 | 077.4 | 51.38 |
| 282.0 | 039.0000 | 0137.7 | 048.3 | 122.0 | 022.0000 | 0166.1 | 077.1 | 51.47 |
| 283.0 | 039.0000 | 0137.5 | 048.2 | 121.4 | 022.0000 | 0166.2 | 076.9 | 51.56 |
| 284.0 | 039.0000 | 0138.2 | 048.3 | 120.8 | 022.0000 | 0166.2 | 076.5 | 51.68 |
| 285.0 | 039.0000 | 0139.6 | 048.5 | 120.3 | 022.0000 | 0166.3 | 076.1 | 51.82 |
| 286.0 | 039.0000 | 0141.6 | 048.8 | 119.7 | 022.0000 | 0166.4 | 075.6 | 51.98 |
| 287.0 | 039.0000 | 0144.5 | 049.2 | 119.2 | 022.0000 | 0166.4 | 075.0 | 52.17 |
| 288.0 | 039.0000 | 0148.1 | 049.7 | 118.6 | 022.0000 | 0166.4 | 074.3 | 52.39 |
| 289.0 | 039.0000 | 0152.4 | 050.3 | 118.0 | 022.0000 | 0166.5 | 073.6 | 52.63 |
| 290.0 | 039.0000 | 0157.0 | 050.9 | 117.4 | 022.0000 | 0166.5 | 072.9 | 52.87 |
| 291.0 | 039.0000 | 0161.3 | 051.4 | 116.7 | 022.0000 | 0166.6 | 072.2 | 53.08 |
| 292.0 | 039.0000 | 0164.5 | 051.8 | 116.1 | 022.0000 | 0166.6 | 071.8 | 53.23 |
| 293.0 | 039.0000 | 0166.3 | 052.0 | 115.4 | 022.0000 | 0166.7 | 071.5 | 53.32 |
| 294.0 | 039.0000 | 0167.1 | 052.1 | 114.6 | 022.0000 | 0166.7 | 071.4 | 53.37 |
| 295.0 | 039.0000 | 0167.1 | 052.1 | 113.9 | 022.0000 | 0166.8 | 071.4 | 53.37 |
| 296.0 | 039.0000 | 0166.8 | 052.0 | 113.2 | 022.0000 | 0166.8 | 071.4 | 53.35 |
| 297.0 | 039.0000 | 0167.6 | 052.1 | 112.4 | 022.0000 | 0166.8 | 071.4 | 53.37 |
| 298.0 | 039.0000 | 0169.7 | 052.4 | 111.7 | 022.0000 | 0166.9 | 071.2 | 53.42 |
| 299.0 | 039.0000 | 0172.8 | 052.7 | 110.9 | 022.0000 | 0166.9 | 071.0 | 53.49 |
| 300.0 | 039.0000 | 0175.5 | 053.0 | 110.2 | 022.0000 | 0166.9 | 070.9 | 53.54 |
| 301.0 | 039.0000 | 0177.3 | 053.1 | 109.4 | 022.0000 | 0166.9 | 070.8 | 53.54 |
| 302.0 | 039.0000 | 0178.0 | 053.2 | 108.7 | 022.0000 | 0166.9 | 071.0 | 53.51 |
| 303.0 | 039.0000 | 0178.5 | 053.3 | 107.9 | 022.0000 | 0166.9 | 071.1 | 53.45 |
| 304.0 | 039.0000 | 0179.2 | 053.3 | 107.2 | 022.0000 | 0166.9 | 071.3 | 53.39 |
| 305.0 | 039.0000 | 0180.4 | 053.4 | 106.5 | 022.0000 | 0166.9 | 071.5 | 53.34 |
| 306.0 | 039.0000 | 0182.1 | 053.6 | 105.7 | 022.0000 | 0166.9 | 071.6 | 53.29 |
| 307.0 | 039.0000 | 0183.7 | 053.7 | 105.0 | 022.0000 | 0166.9 | 071.8 | 53.22 |
| 308.0 | 039.0000 | 0184.9 | 053.8 | 104.2 | 022.0000 | 0166.9 | 072.1 | 53.14 |
| 309.0 | 039.0000 | 0185.6 | 053.9 | 103.5 | 022.0000 | 0166.9 | 072.4 | 53.03 |
| 310.0 | 039.0000 | 0186.0 | 053.9 | 102.9 | 022.0000 | 0166.9 | 072.8 | 52.91 |
| 311.0 | 039.0000 | 0186.2 | 053.9 | 102.2 | 022.0000 | 0167.0 | 073.2 | 52.78 |
| 312.0 | 039.0000 | 0185.4 | 053.8 | 101.6 | 022.0000 | 0167.0 | 073.7 | 52.61 |
| 313.0 | 039.0000 | 0183.8 | 053.7 | 101.0 | 022.0000 | 0166.9 | 074.3 | 52.42 |
| 314.0 | 039.0000 | 0181.7 | 053.5 | 100.5 | 022.0000 | 0166.9 | 074.9 | 52.21 |
| 315.0 | 039.0000 | 0179.6 | 053.4 | 100.0 | 022.0000 | 0166.9 | 075.6 | 51.99 |
| 316.0 | 039.0000 | 0178.5 | 053.2 | 099.4 | 022.0000 | 0166.8 | 076.2 | 51.79 |
| 317.0 | 039.0000 | 0178.5 | 053.2 | 098.9 | 022.0000 | 0166.8 | 076.8 | 51.61 |
| 318.0 | 039.0000 | 0179.4 | 053.3 | 098.3 | 022.0000 | 0166.8 | 077.3 | 51.45 |

| Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Actual (dBu) |
|----------------------|-------------|-------------|--------------|----------------------|-------------|-------------|--------------|-----------------|
| 319.0 | 039.0000 | 0180.0 | 053.4 | 097.7 | 022.0000 | 0166.7 | 077.8 | 51.27 |
| 320.0 | 039.0000 | 0180.1 | 053.4 | 097.2 | 022.0000 | 0166.7 | 078.4 | 51.08 |
| 321.0 | 039.0000 | 0179.4 | 053.3 | 096.8 | 022.0000 | 0166.7 | 079.1 | 50.87 |
| 322.0 | 039.0000 | 0178.4 | 053.2 | 096.3 | 022.0000 | 0166.7 | 079.8 | 50.64 |
| 323.0 | 039.0000 | 0177.6 | 053.2 | 095.9 | 022.0000 | 0166.6 | 080.5 | 50.42 |
| 324.0 | 039.0000 | 0177.2 | 053.1 | 095.5 | 022.0000 | 0166.6 | 081.2 | 50.20 |
| 325.0 | 039.0000 | 0177.3 | 053.1 | 095.0 | 022.0000 | 0166.6 | 081.9 | 49.98 |
| 326.0 | 039.0000 | 0177.9 | 053.2 | 094.6 | 022.0000 | 0166.5 | 082.6 | 49.77 |
| 327.0 | 039.0000 | 0179.0 | 053.3 | 094.1 | 022.0000 | 0166.5 | 083.3 | 49.56 |
| 328.0 | 039.0000 | 0180.3 | 053.4 | 093.7 | 022.0000 | 0166.4 | 083.9 | 49.36 |
| 329.0 | 039.0000 | 0181.7 | 053.5 | 093.2 | 022.0000 | 0166.4 | 084.6 | 49.14 |
| 330.0 | 039.0000 | 0182.9 | 053.6 | 092.8 | 022.0000 | 0166.3 | 085.3 | 48.92 |
| 331.0 | 039.0000 | 0184.0 | 053.7 | 092.4 | 022.0000 | 0166.2 | 086.1 | 48.69 |
| 332.0 | 039.0000 | 0185.9 | 053.9 | 092.0 | 022.0000 | 0166.1 | 086.8 | 48.48 |
| 333.0 | 039.0000 | 0188.6 | 054.1 | 091.6 | 022.0000 | 0166.0 | 087.5 | 48.26 |
| 334.0 | 039.0000 | 0191.1 | 054.3 | 091.2 | 022.0000 | 0165.9 | 088.2 | 48.04 |
| 335.0 | 039.0000 | 0192.9 | 054.5 | 090.8 | 022.0000 | 0165.9 | 089.0 | 47.81 |
| 336.0 | 039.0000 | 0193.7 | 054.6 | 090.5 | 022.0000 | 0165.8 | 089.8 | 47.56 |
| 337.0 | 039.0000 | 0194.1 | 054.6 | 090.2 | 022.0000 | 0165.8 | 090.6 | 47.30 |
| 338.0 | 039.0000 | 0195.0 | 054.7 | 089.9 | 022.0000 | 0165.7 | 091.5 | 47.06 |
| 339.0 | 039.0000 | 0196.6 | 054.8 | 089.6 | 022.0000 | 0165.6 | 092.3 | 46.81 |
| 340.0 | 039.0000 | 0198.1 | 054.9 | 089.3 | 022.0000 | 0165.6 | 093.2 | 46.56 |
| 341.0 | 039.0000 | 0199.5 | 055.1 | 089.1 | 022.0000 | 0165.5 | 094.0 | 46.31 |
| 342.0 | 039.0000 | 0200.4 | 055.1 | 088.9 | 022.0000 | 0165.5 | 094.9 | 46.06 |
| 343.0 | 039.0000 | 0200.7 | 055.2 | 088.7 | 022.0000 | 0165.4 | 095.8 | 45.80 |
| 344.0 | 039.0000 | 0200.5 | 055.1 | 088.5 | 022.0000 | 0165.4 | 096.7 | 45.54 |
| 345.0 | 039.0000 | 0199.7 | 055.1 | 088.4 | 022.0000 | 0165.4 | 097.7 | 45.28 |
| 346.0 | 039.0000 | 0198.2 | 054.9 | 088.3 | 022.0000 | 0165.4 | 098.6 | 45.02 |
| 347.0 | 039.0000 | 0196.5 | 054.8 | 088.3 | 022.0000 | 0165.4 | 099.6 | 44.76 |
| 348.0 | 039.0000 | 0194.8 | 054.7 | 088.3 | 022.0000 | 0165.4 | 100.6 | 44.51 |
| 349.0 | 039.0000 | 0191.7 | 054.4 | 088.3 | 022.0000 | 0165.4 | 101.5 | 44.25 |
| 350.0 | 039.0000 | 0186.9 | 054.0 | 088.5 | 022.0000 | 0165.4 | 102.5 | 44.00 |
| 351.0 | 039.0000 | 0180.7 | 053.4 | 088.7 | 022.0000 | 0165.4 | 103.5 | 43.75 |
| 352.0 | 039.0000 | 0174.9 | 052.9 | 088.9 | 022.0000 | 0165.5 | 104.5 | 43.51 |
| 353.0 | 039.0000 | 0171.1 | 052.5 | 089.0 | 022.0000 | 0165.5 | 105.5 | 43.29 |
| 354.0 | 039.0000 | 0168.8 | 052.3 | 089.1 | 022.0000 | 0165.5 | 106.4 | 43.07 |

| Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Actual (dBu) |
|----------------------|-------------|-------------|--------------|----------------------|-------------|-------------|--------------|-----------------|
| 319.0 | 100.0000 | 0180.0 | 061.9 | 093.3 | 022.0000 | 0166.4 | 071.6 | 53.28 |
| 320.0 | 100.0000 | 0180.1 | 061.9 | 092.7 | 022.0000 | 0166.3 | 072.3 | 53.02 |
| 321.0 | 100.0000 | 0179.4 | 061.9 | 092.2 | 022.0000 | 0166.1 | 073.2 | 52.75 |
| 322.0 | 100.0000 | 0178.4 | 061.7 | 091.7 | 022.0000 | 0166.0 | 074.1 | 52.46 |
| 323.0 | 100.0000 | 0177.6 | 061.7 | 091.2 | 022.0000 | 0165.9 | 074.9 | 52.17 |
| 324.0 | 100.0000 | 0177.2 | 061.6 | 090.7 | 022.0000 | 0165.9 | 075.8 | 51.89 |
| 325.0 | 100.0000 | 0177.3 | 061.6 | 090.2 | 022.0000 | 0165.8 | 076.7 | 51.61 |
| 326.0 | 100.0000 | 0177.9 | 061.7 | 089.7 | 022.0000 | 0165.7 | 077.5 | 51.34 |
| 327.0 | 100.0000 | 0179.0 | 061.8 | 089.2 | 022.0000 | 0165.6 | 078.3 | 51.07 |
| 328.0 | 100.0000 | 0180.3 | 061.9 | 088.7 | 022.0000 | 0165.5 | 079.2 | 50.80 |
| 329.0 | 100.0000 | 0181.7 | 062.1 | 088.2 | 022.0000 | 0165.4 | 080.0 | 50.53 |
| 330.0 | 100.0000 | 0182.9 | 062.2 | 087.8 | 022.0000 | 0165.3 | 080.9 | 50.24 |
| 331.0 | 100.0000 | 0184.0 | 062.3 | 087.4 | 022.0000 | 0165.2 | 081.8 | 49.96 |
| 332.0 | 100.0000 | 0185.9 | 062.5 | 086.9 | 022.0000 | 0165.1 | 082.7 | 49.68 |
| 333.0 | 100.0000 | 0188.6 | 062.7 | 086.4 | 022.0000 | 0165.0 | 083.6 | 49.40 |
| 334.0 | 100.0000 | 0191.1 | 063.0 | 086.0 | 022.0000 | 0165.0 | 084.5 | 49.12 |
| 335.0 | 100.0000 | 0192.9 | 063.1 | 085.6 | 022.0000 | 0165.0 | 085.4 | 48.83 |
| 336.0 | 100.0000 | 0193.7 | 063.2 | 085.3 | 022.0000 | 0164.9 | 086.4 | 48.52 |
| 337.0 | 100.0000 | 0194.1 | 063.2 | 085.0 | 022.0000 | 0164.9 | 087.5 | 48.21 |
| 338.0 | 100.0000 | 0195.0 | 063.3 | 084.8 | 022.0000 | 0164.8 | 088.5 | 47.91 |
| 339.0 | 100.0000 | 0196.6 | 063.5 | 084.5 | 022.0000 | 0164.8 | 089.5 | 47.60 |
| 340.0 | 100.0000 | 0198.1 | 063.6 | 084.2 | 022.0000 | 0164.7 | 090.5 | 47.30 |
| 341.0 | 099.4009 | 0199.5 | 063.7 | 084.0 | 022.0000 | 0164.7 | 091.6 | 46.99 |
| 342.0 | 098.8036 | 0200.4 | 063.7 | 083.8 | 022.0000 | 0164.6 | 092.6 | 46.67 |
| 343.0 | 098.2081 | 0200.7 | 063.7 | 083.7 | 022.0000 | 0164.6 | 093.7 | 46.36 |
| 344.0 | 097.6144 | 0200.5 | 063.6 | 083.6 | 022.0000 | 0164.6 | 094.8 | 46.04 |
| 345.0 | 097.0225 | 0199.7 | 063.5 | 083.5 | 022.0000 | 0164.6 | 095.9 | 45.73 |
| 346.0 | 096.4324 | 0198.2 | 063.3 | 083.6 | 022.0000 | 0164.6 | 097.1 | 45.42 |
| 347.0 | 095.8441 | 0196.5 | 063.1 | 083.6 | 022.0000 | 0164.6 | 098.2 | 45.11 |
| 348.0 | 095.2576 | 0194.8 | 062.8 | 083.6 | 022.0000 | 0164.6 | 099.3 | 44.81 |
| 349.0 | 094.6729 | 0191.7 | 062.5 | 083.8 | 022.0000 | 0164.6 | 100.4 | 44.52 |
| 350.0 | 094.0900 | 0186.9 | 062.0 | 084.0 | 022.0000 | 0164.7 | 101.5 | 44.23 |
| 351.0 | 090.4401 | 0180.7 | 061.0 | 084.5 | 022.0000 | 0164.8 | 102.7 | 43.95 |
| 352.0 | 086.8624 | 0174.9 | 060.1 | 085.0 | 022.0000 | 0164.9 | 103.8 | 43.67 |
| 353.0 | 083.3569 | 0171.1 | 059.3 | 085.4 | 022.0000 | 0164.9 | 104.9 | 43.41 |
| 354.0 | 079.9236 | 0168.8 | 058.7 | 085.7 | 022.0000 | 0165.0 | 105.9 | 43.16 |