



## **ENGINEERING STATEMENT**

**IN SUPPORT OF**

**APPLICATION FOR MINOR CHANGE IN A LICENSED FACILITY**

**NORTHERN MICHIGAN UNIVERSITY**

**WNMU-FM**

**MARQUETTE, MI**

### **Background**

Board of Control, Northern Michigan University (NMU) is the licensee of WNMU-FM, located at Marquette, MI, which is presently authorized to operate on Ch. 211 with following parameters:

#### **WNMU-FM (Ch. 211)**

Coordinates: 46° 21' 09.0" N (NAD27)

87° 51' 32.0" W

ERP: 100 kW (Omni, Circularly Polarized)

HAAT: 283m

NMU recently discovered that the antenna location coordinates listed on the license contain a typographical error. The WNMU-FM antenna is mounted on a registered tower, ASR#1023010, which has the following coordinates:

46° 21' 10.0" N (NAD27)

87° 51' 15.0" W

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NMU is filing the instant license modification application to correct the antenna location coordinates of WNMU-FM. All other parameters of the WNMU-FM facility (i.e., ERP, antenna radiation center height, etc.) will remain the same as authorized. Figure 1, attached hereto, is a coverage map depicting the 60 dBu contour of the existing facility vs. the 60 dBu contour of authorized facility.

The proposed correction in the coordinates of WNMU-FM will not result in any prohibited contour overlap to any other FM stations nor will it result in predicted interference to any digital television stations operating on Channel 6. Figure 2, also attached hereto, is a contour overlap study of WNMU with the adjusted coordinates.

**Antenna System, Tower, and Operating Parameters**

NMU is proposing to continue using the existing WNMU-FM omni-directional 12-bay RCA BFC-12A antenna. The antenna is mounted on a structure that has an overall height of 792.7m AMSL (with appurtenances) and the antenna has center of radiation of 730m AMSL (with a calculated HAAT of 283m).

The parameters for the authorized facility vis-à-vis the existing facility are listed in the table below:

<b>Parameters</b>	<b>Authorized Facility</b>	<b>Existing Facility</b>
Coordinates (NAD27):	46° 21' 09.0" N 87° 51' 32.0" W	46° 21' 10.0" N 87° 51' 15.0" W
ERP (kW):	100 (Omni, CP)	100 (Omni, CP)
RCAMSL (m):	730	730

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## **Coverage**

The entire principal community of Marquette, MI remains within the predicted 60 dBu contour based on the existing 100 kW ERP.

## **Environmental/RFR**

This report addresses only the conditions specified in 47CFR1.1307 that deal with Radio Frequency Radiation. Any other non-RFR conditions that might require the preparation of an EA are beyond the scope of this report; since the structure is existing and registered such conditions should not be an issue requiring further consideration.

The location of the existing facility is a multi-user site and it is assumed that the site is currently "in compliance" with FCC guidelines for human exposure to RFR (as defined in OET-65). The worst case ground level RFR contributed to the site by this proposal in public areas is calculated to be 0.008189 mW/cm<sup>2</sup>, which is less than 5% of the MPE for public exposure (0.2 mW/cm<sup>2</sup>) at Ch. 211 (90.1 MHz). The contribution to the overall RFR from the proposed facility is negligible and, therefore, the site will remain "in compliance" with FCC guidelines.

NMU agrees to comply with the Commission's requirements regarding power adjustments or cessation of operation as may be necessary to ensure a compliant environment for worker access. Workers will be trained on RFR issues and encouraged to wear personal RFR monitors when on the structure. The tower base is enclosed by a locked security fence and appropriate signage warning of potential RFR hazards is posted.

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**Certification**

I hereby certify that the foregoing report or statement was prepared by me but may include work performed by others under my supervision or direction. The statements of fact contained therein are believed to be true and correct based on personal knowledge, information and belief unless otherwise stated; with respect to facts not known of my own personal knowledge, I believe them to be true and correct based on their origin from sources known to me to be generally reliable and accurate. I have prepared this document with due care and in accordance with applicable standards of professional practice.

A handwritten signature in black ink, appearing to read "Ben Pidek", is written over a horizontal line.

Benjamin L. Pidek, P.E.  
September 20, 2013

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**Mid-State Consultants**

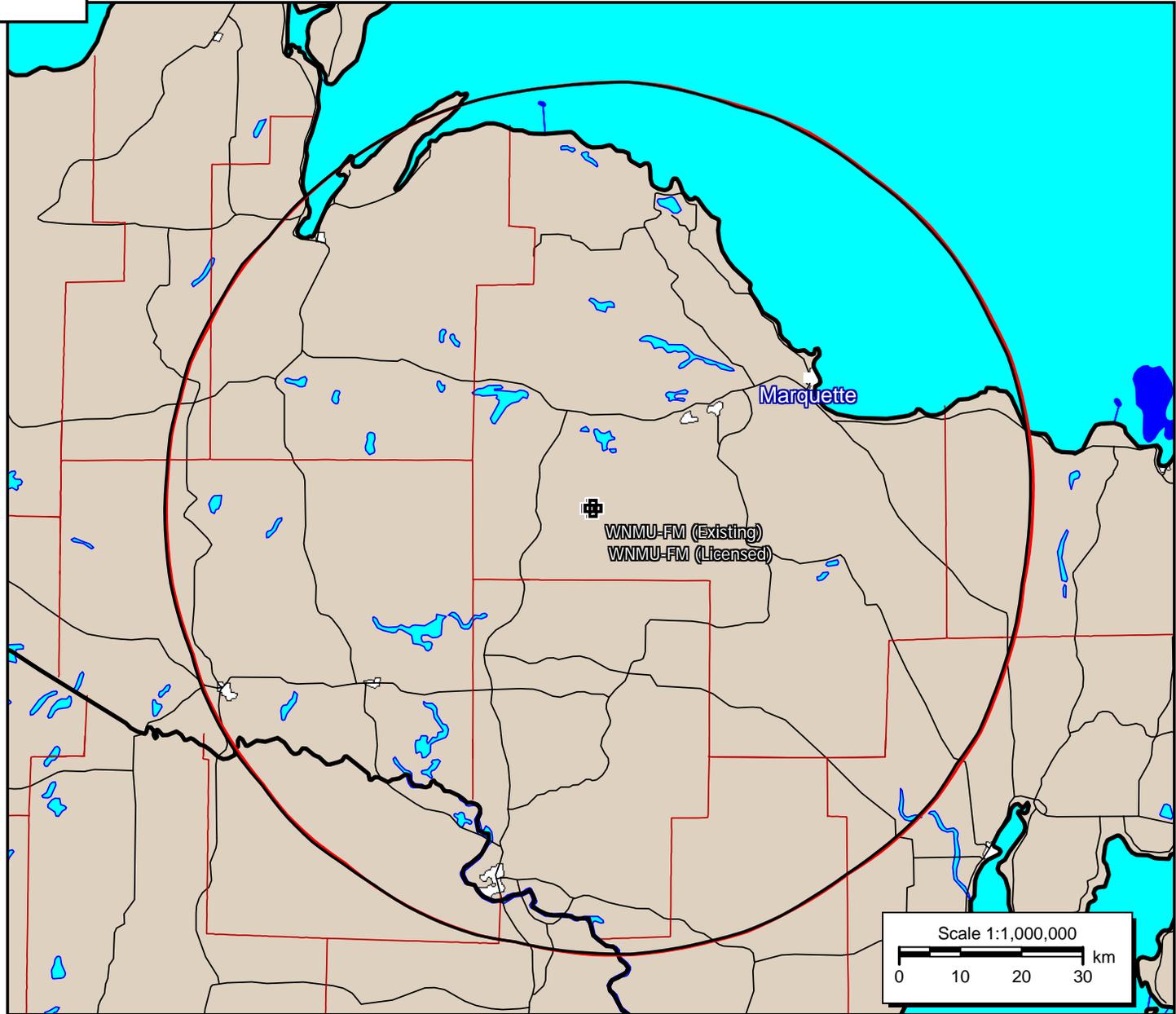
**FCC F(50,50) 60 dBu Service Contour of Licensed WNMU-FM Facility (Black) vs.  
FCC F(50,50) 60 dBu Service Contour of Existing WNMU-FM Facility (Red)**

**WNMU-FM (Licensed)**

BLED1511  
Latitude: 46-21-09 N  
Longitude: 087-51-32 W  
ERP: 100.00 kW  
Channel: 211  
Frequency: 90.1 MHz  
AMSL Height: 730.0 m  
Horiz. Pattern: Omni

**WNMU-FM (Existing)**

Latitude: 46-21-10 N  
Longitude: 087-51-15 W  
ERP: 100.00 kW  
Channel: 211  
Frequency: 90.1 MHz  
AMSL Height: 730.0 m  
Horiz. Pattern: Omni



**Figure 1**

Figure 2 - WNMU-FM Contour Overlap Study  
 Board Of Control , Northern Michigan University  
 CH# 211C1 - 90.1 MHz, Pwr= 100 kW, HAAT= 283.0 M, COR= 729.7 M  
 Average Protected F(50-50)= 71.01 km  
 Omni-directional

DISPLAY DATES  
 DATA 09-17-13  
 SEARCH 09-17-13

REFERENCE  
 46 21 10.0 N.  
 87 51 15.0 W.

CH CITY	CALL	TYPE STATE	ANT	AZI <--	DI ST FILE #	LAT LNG	PWR(kW) HAAT (M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*
211C1 Marquette	WNMU-FM	LIC_CN MI		265.1 85.1	0.36 BLED1511	46 21 09.0 87 51 32.0	100.000 283	171.4 730	71.9 Board Of Control , Northern	-240.7*	-240.5*
210C2 Rhinelander	WHSF	LIC_DCX WI		239.7 58.7	125.56 BLED20130301AGM	45 46 30.0 89 14 55.0	16.500 157	32.2 652	21.5 State Of Wisconsin - Educa	23.6	1.3
211C2 Green Bay	WORQ	LIC_DCX WI		182.7 2.6	221.83 BLED20021015AAY	44 21 32.0 87 59 07.0	11.000 197	114.9 439	46.2 Lakeshore Communi cations,	34.3	3.5
214C3 Goodman	WMVM	LIC_CX WI		213.9 33.5	77.49 BLED20041122AAF	45 46 23.0 88 24 38.0	7.000 87	3.1 525	32.0 Wrvm, Inc.	4.0	35.0
211C2 Harbor Springs	WHBP	CP_DCX MI		111.1 293.1	232.48 BPED20120620ABR	45 34 05.0 85 04 27.0	8.500 265	96.6 486	35.8 Interlochen Center For The	65.0	21.2
264C1 Crystal Falls	WOBE«	LIC_NCX MI		193.9 13.8	60.87 BLH20040213ACA	45 49 16.0 88 02 34.0	100.000 199	12.8 542	58.8 Results Broadcasting Of Ir	33.5R	27.4M
211C3 Harbor Springs	WHBP	LIC_DCX MI		112.4 294.4	238.66 BLED20110517ACU	45 30 08.0 85 01 44.0	1.200 306	92.4 545	34.8 Interlochen Center For The	74.3	31.9
210D Rhinelander	W210BP	LIC_C_ WI		235.9 54.8	142.30 BLFT20030709AAA	45 37 36.0 89 22 01.0	0.170 28	9.2 514	6.4 Wrvm, Inc.	63.2	33.4
211A Grand Portage	WGPO	LIC_CX MN		323.2 141.9	227.82 BLED20091102ABC	47 58 40.0 89 41 05.0	1.000 70	72.2 357	24.2 Cook County Communi ty Radi	86.1	35.5
212C1 Park Falls	WHBM	LIC_CX WI		257.2 75.5	192.26 BLED20100802ATY	45 56 43.0 90 16 22.0	35.000 217	80.0 689	54.2 State Of Wisconsin - Educa	42.7	36.0

Terrain database is USGS 03 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: