ENGINEERING STATEMENT

OF

JOHN F.X. BROWNE, P.E.

IN SUPPORT OF AN AMENDMENT TO AN APPLICATION FOR

Construction Permit For Displacement

FM Translator W296AX

Escanaba, MI

Board of Trustees of Northern Michigan University

Background

The Board of Trustees of Northern Michigan University (NMU) is the licensee of Non-Commercial (NCE) stations WNMU-FM (BLED-1511, Facility ID 49572), and WNMU-DT, Marquette, MI. NMU also holds a license for translator W296AX at Escanaba, MI (BLFT-19980218TK, Facility ID 4262). W296AX (CH296, 107.1 MHz) is a vital link in bringing NMU educational programming to Escanaba. In March 2008, FM station WUPF-FM at Powers, MI (BLH-20080304AAD, Facility ID 164245) commenced broadcasting on CH297, 107.3 MHz. WUPF-FM requested that NMU change its frequency because of interference being experienced by WUPF; Exhibit 1 (attached) shows that interference to WUPF-FM is predicted to occur. WUPF-FM consented to allow NMU to operate W296AX for a reasonable period of time until a new frequency could be found. An adjacent frequency was not available for W296AX because use of any such channel was predicted to cause interference to another full service FM station; the "IF" channels (whose use is permitted under Section 73.1233) appeared to be unusable for the same reason. NMU applied to change to CH250 (97.9 MHz) due to displacement[1/] (BPFT-20080923AEH) accompanied by a request for waiver of Section 74.1233(a). NMU now wishes to amend this application to specify use of CH243 instead of

[1/] Section 74.1233(a) states that any frequency change, other than a change to the first, second, or third adjacent channels, or intermediate frequency (IF) channels is a major change.

CH250. CH243 is an "IF" frequency and it use would be allowed under the minor change rules.

Station Parameters

The station applied-for parameters are listed below and include the proposed channel change.

The coordinates of the proposed site are:

(NAD27)
45° 44' 43" N. Latitude
87° 03' 14" W. Longitude

Proposed Frequency:	96.5 MHz (CH243)
Polarization:	Horizontal
ERP:	0.031 kW
HAAT:	42.5m
RC AMSL:	234.6m
RC AGL:	51.6

The antenna patterns and type (Scala CA-4 70° skew) remain the same as specified in the pending application and are attached (Exhibit 1a – Exhibit 1d). The antenna is mounted on top of a hotel that has an overall height of 56m AGL in such a manner that it does not increase the overall height of the existing structure. The existing structure (which is a hotel) does not pass the FCC's TOWAIR program; however, the antenna will not exceed the overall height of the existing structure and is at the same location as the antenna specified in the license for W296AX.

Interference

A study (attached as Figure 2) was conducted with the proposed parameters using software that emulates the software used by the FCC. The results of the study indicate that there would be prohibited overlap of the 100dBu F(50,10) contour of the proposed facility (CH243) and the 60dBu F(50,50) contour of WGLQ-FM (Escanaba, MI) on CH246. However, Section 74.1204(d) of the Commission's rules states that an application otherwise precluded by this section will be accepted if it can be demonstrated that no actual interference will occur. Because of the extremely low ERP, the 100dBu field will exist only within a short distance of the antenna. Theoretical interference is predicted to occur when the undesired signal exceeds a value 40dB above the protected station's field strength. The vertical plane pattern and tabulation for the Scala CA-4 70^{o} skew antenna is attached as Exhibit 1c and Exhibit 1d. The WGLQ-FM predicted field strength at the most distant point that also intersects the 100dBu predicted contour of W296AX is 74.1dBu (depicted in Figure 1 attached). Using this data, calculations were made to determine whether the 114.1dBu (free space) field would actually reach the ground at any azimuth. As can be seen from the attached Table 1, there is no place where the 114.1dBu signal ever reaches the ground. While the protected station's field strength is predicted to be greater than 60dBu at the proposed translator site (and, therefore, an interfering signal would not be permitted to exceed 100dBu by the same margin that the protected signal strength exceeds 60dBu), it is clear that at no location within the protected station's 60dBu contour would the signal from the proposed translator exceed the desired signal by more than 40dB at a normal receiving antenna height.

Environmental / RFR

The proposed construction does not require preparation of an Environmental Assessment as it does not involve any of the factors listed in Section 1.1306.

The additional ground level RFR contributed to the site by this proposal in public areas is calculated to be 0.000012 mW/cm^2 which is less than 5% of the MPE for public exposure (0.2 mW/cm^2) at the proposed frequency.

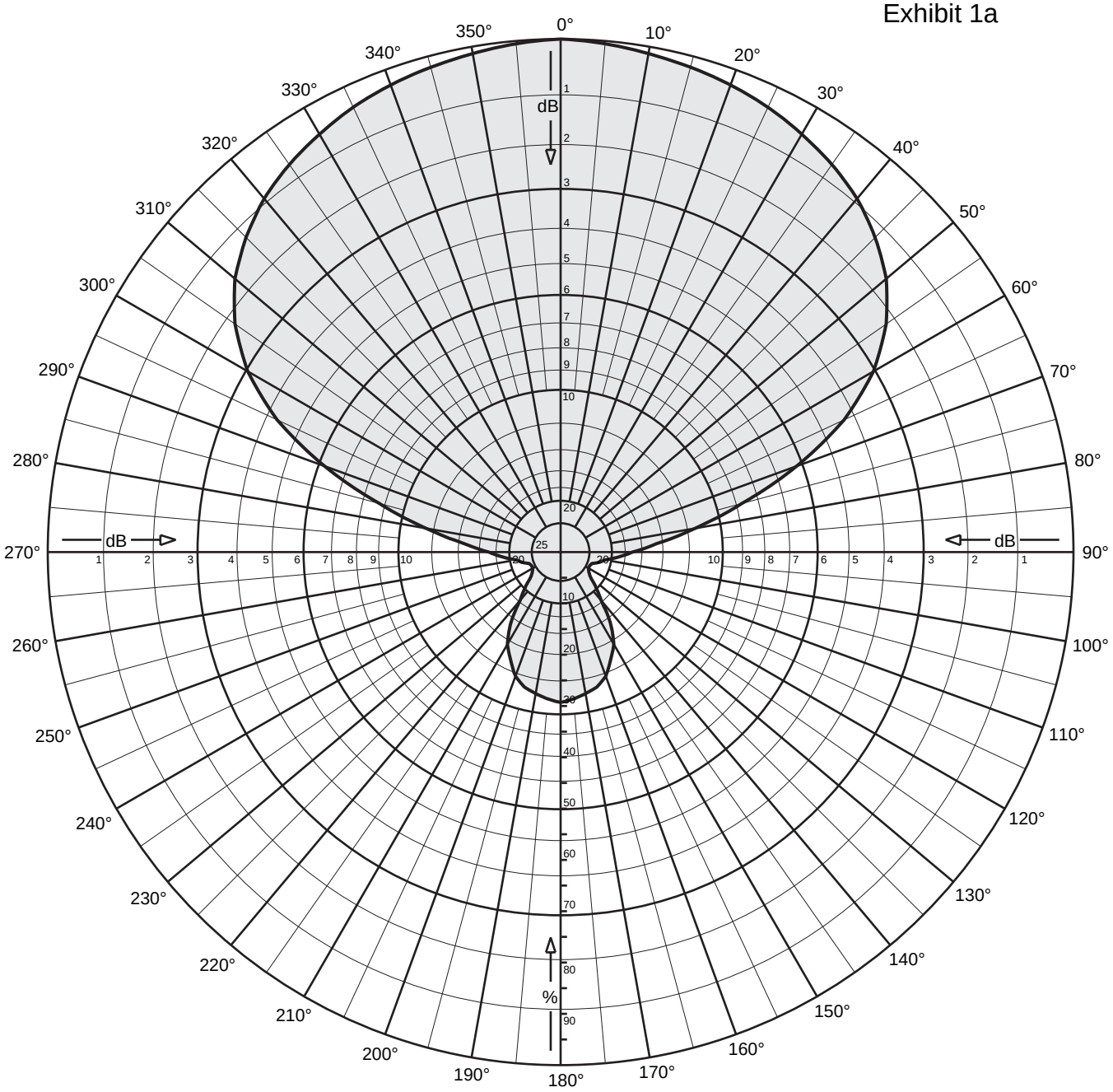
NMU agrees to comply with the Commission's requirements regarding power adjustments or cessation of operation as may be necessary to ensure a compliant environment for worker access. Access to the roof top where the antenna is mounted is provided to workers by a locked door, however, public access to the roof top is prohibited. Workers will be trained on RFR issues and be encouraged to wear personal RFR monitors when working on or near the structure or on the roof near the antenna.

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.

John F. X. Browne, P.E.
January 11, 2010

Exhibit 1a



Two CA2-FM Yagi antennas

Skewed 70 degrees

Gain: 5.0 dBd

Horizontal Polarization

Vertical stack

Horizontal plane Pattern

KATHREIN
SCALA DIVISION
Post Office Box 4580
Medford, OR 97501 (USA)
Phone:(541)779-6500
Fax:(541)779-3991
http://www.kathrein-scala.com

Exhibit 1b

KATHREIN
SCALA DIVISION

Two CA2-FM Yagi antennas
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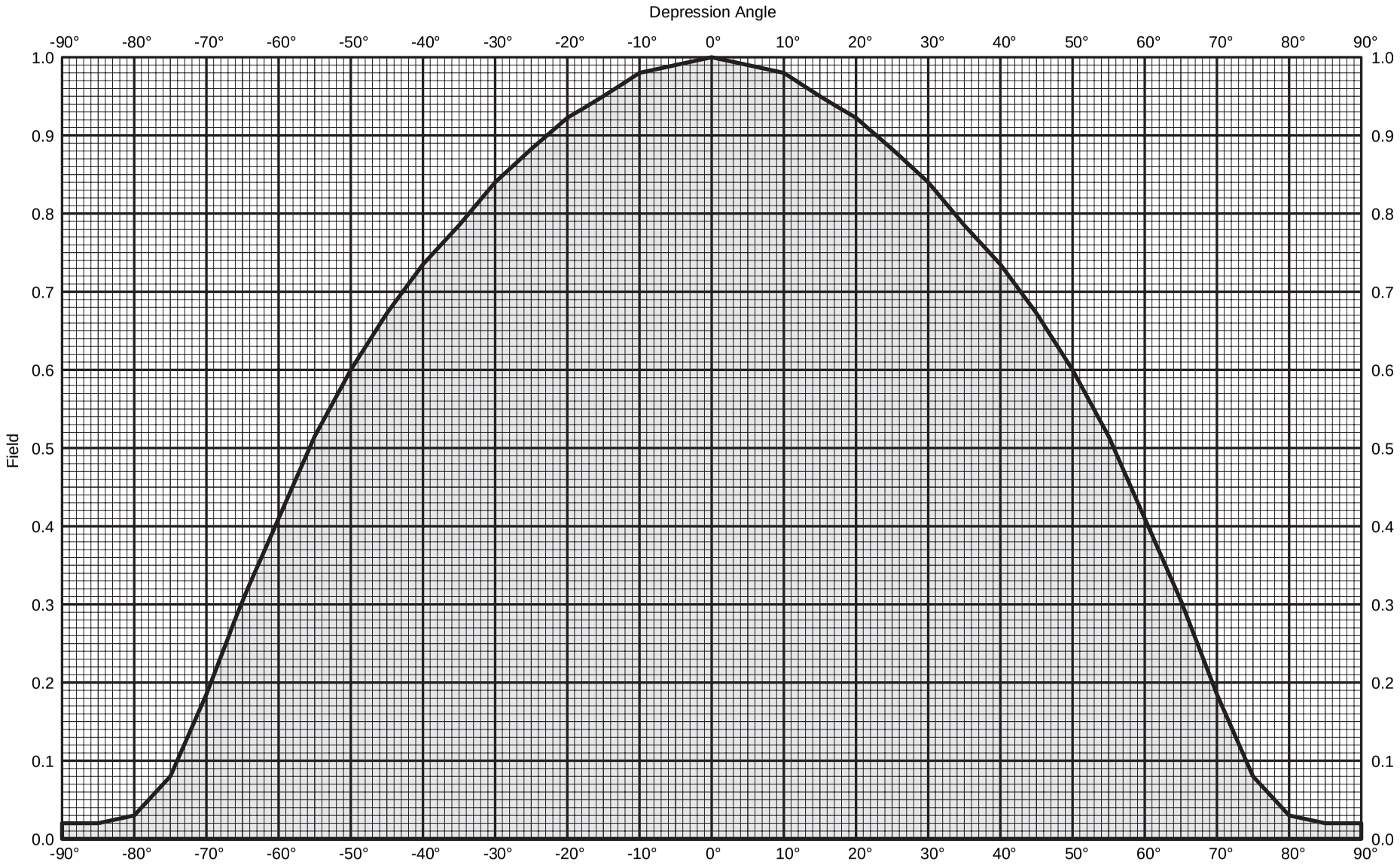
Horizontal plane Pattern

Angle	Field	Rel.dB	dBd	PwrMult	Angle	Field	Rel.dB	dBd	PwrMult
0	1.000	0.00	5.00	3.16	180	0.293	-10.66	-5.66	0.27
5	0.995	-0.04	4.96	3.13	185	0.287	-10.83	-5.83	0.26
10	0.987	-0.12	4.88	3.08	190	0.280	-11.06	-6.06	0.25
15	0.979	-0.19	4.81	3.03	195	0.273	-11.29	-6.29	0.23
20	0.969	-0.27	4.73	2.97	200	0.257	-11.78	-6.78	0.21
25	0.957	-0.38	4.62	2.90	205	0.231	-12.73	-7.73	0.17
30	0.941	-0.53	4.47	2.80	210	0.207	-13.66	-8.66	0.14
35	0.923	-0.70	4.30	2.69	215	0.170	-15.39	-10.39	0.09
40	0.900	-0.92	4.08	2.56	220	0.123	-18.24	-13.24	0.05
45	0.868	-1.23	3.77	2.38	225	0.097	-20.22	-15.22	0.03
50	0.829	-1.63	3.37	2.17	230	0.075	-22.44	-17.44	0.02
55	0.775	-2.21	2.79	1.90	235	0.067	-23.48	-18.48	0.01
60	0.704	-3.04	1.96	1.57	240	0.062	-24.08	-19.08	0.01
65	0.610	-4.29	0.71	1.18	245	0.062	-24.08	-19.08	0.01
70	0.490	-6.20	-1.20	0.76	250	0.065	-23.74	-18.74	0.01
75	0.366	-8.74	-3.74	0.42	255	0.078	-22.21	-17.21	0.02
80	0.265	-11.54	-6.54	0.22	260	0.087	-21.16	-16.16	0.02
85	0.188	-14.54	-9.54	0.11	265	0.112	-18.98	-13.98	0.04
90	0.140	-17.08	-12.08	0.06	270	0.140	-17.08	-12.08	0.06
95	0.112	-18.98	-13.98	0.04	275	0.188	-14.54	-9.54	0.11
100	0.087	-21.16	-16.16	0.02	280	0.265	-11.54	-6.54	0.22
105	0.078	-22.21	-17.21	0.02	285	0.366	-8.74	-3.74	0.42
110	0.065	-23.74	-18.74	0.01	290	0.490	-6.20	-1.20	0.76
115	0.062	-24.08	-19.08	0.01	295	0.610	-4.29	0.71	1.18
120	0.062	-24.08	-19.08	0.01	300	0.704	-3.04	1.96	1.57
125	0.067	-23.48	-18.48	0.01	305	0.775	-2.21	2.79	1.90
130	0.075	-22.44	-17.44	0.02	310	0.829	-1.63	3.37	2.17
135	0.097	-20.22	-15.22	0.03	315	0.868	-1.23	3.77	2.38
140	0.123	-18.24	-13.24	0.05	320	0.900	-0.92	4.08	2.56
145	0.170	-15.39	-10.39	0.09	325	0.923	-0.70	4.30	2.69
150	0.207	-13.66	-8.66	0.14	330	0.941	-0.53	4.47	2.80
155	0.231	-12.73	-7.73	0.17	335	0.957	-0.38	4.62	2.90
160	0.257	-11.78	-6.78	0.21	340	0.969	-0.27	4.73	2.97
165	0.273	-11.29	-6.29	0.23	345	0.979	-0.19	4.81	3.03
170	0.280	-11.06	-6.06	0.25	350	0.987	-0.12	4.88	3.08
175	0.287	-10.83	-5.83	0.26	355	0.995	-0.04	4.96	3.13

Exhibit 1c



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Vertical plane Pattern

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Exhibit 1d

Two CA2-FM Yagi antennas
Skewed 70 degrees
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Vertical stack
Vertical plane Pattern

Angle	Field	Rel.dB	dBd	PwrMult	Angle	Field	Rel.dB	dBd	PwrMult
-90	0.020	-33.98	-28.98	0.00	-45	0.673	-3.45	1.55	1.43
-89	0.020	-33.98	-28.98	0.00	-44	0.685	-3.29	1.71	1.48
-88	0.020	-33.98	-28.98	0.00	-43	0.697	-3.13	1.87	1.54
-87	0.020	-33.98	-28.98	0.00	-42	0.710	-2.97	2.03	1.59
-86	0.020	-33.98	-28.98	0.00	-41	0.722	-2.82	2.18	1.65
-85	0.020	-33.98	-28.98	0.00	-40	0.735	-2.67	2.33	1.71
-84	0.022	-33.15	-28.15	0.00	-39	0.745	-2.56	2.44	1.76
-83	0.024	-32.40	-27.40	0.00	-38	0.755	-2.44	2.56	1.80
-82	0.026	-31.70	-26.70	0.00	-37	0.765	-2.33	2.67	1.85
-81	0.028	-31.06	-26.06	0.00	-36	0.775	-2.21	2.79	1.90
-80	0.030	-30.46	-25.46	0.00	-35	0.785	-2.10	2.90	1.95
-79	0.040	-27.96	-22.96	0.01	-34	0.796	-1.98	3.02	2.00
-78	0.050	-26.02	-21.02	0.01	-33	0.807	-1.86	3.14	2.06
-77	0.060	-24.44	-19.44	0.01	-32	0.818	-1.74	3.26	2.12
-76	0.070	-23.10	-18.10	0.02	-31	0.829	-1.63	3.37	2.17
-75	0.080	-21.94	-16.94	0.02	-30	0.840	-1.51	3.49	2.23
-74	0.101	-19.91	-14.91	0.03	-29	0.849	-1.43	3.57	2.28
-73	0.122	-18.27	-13.27	0.05	-28	0.857	-1.34	3.66	2.32
-72	0.143	-16.89	-11.89	0.06	-27	0.865	-1.25	3.75	2.37
-71	0.164	-15.70	-10.70	0.09	-26	0.874	-1.17	3.83	2.42
-70	0.185	-14.66	-9.66	0.11	-25	0.883	-1.09	3.91	2.46
-69	0.209	-13.60	-8.60	0.14	-24	0.891	-1.01	3.99	2.51
-68	0.233	-12.65	-7.65	0.17	-23	0.898	-0.93	4.07	2.55
-67	0.257	-11.80	-6.80	0.21	-22	0.906	-0.85	4.15	2.60
-66	0.281	-11.03	-6.03	0.25	-21	0.914	-0.78	4.22	2.64
-65	0.305	-10.31	-5.31	0.29	-20	0.923	-0.70	4.30	2.69
-64	0.326	-9.74	-4.74	0.34	-19	0.928	-0.65	4.35	2.72
-63	0.347	-9.19	-4.19	0.38	-18	0.933	-0.60	4.40	2.76
-62	0.368	-8.68	-3.68	0.43	-17	0.939	-0.55	4.45	2.79
-61	0.389	-8.20	-3.20	0.48	-16	0.944	-0.50	4.50	2.82
-60	0.410	-7.74	-2.74	0.53	-15	0.950	-0.45	4.55	2.85
-59	0.431	-7.31	-2.31	0.59	-14	0.956	-0.39	4.61	2.89
-58	0.452	-6.90	-1.90	0.65	-13	0.962	-0.34	4.66	2.93
-57	0.473	-6.50	-1.50	0.71	-12	0.968	-0.28	4.72	2.96
-56	0.494	-6.13	-1.13	0.77	-11	0.974	-0.23	4.77	3.00
-55	0.515	-5.76	-0.76	0.84	-10	0.980	-0.18	4.82	3.04
-54	0.532	-5.48	-0.48	0.90	-9	0.982	-0.16	4.84	3.05
-53	0.549	-5.21	-0.21	0.95	-8	0.984	-0.14	4.86	3.06
-52	0.566	-4.94	0.06	1.01	-7	0.986	-0.12	4.88	3.07
-51	0.583	-4.69	0.31	1.07	-6	0.988	-0.10	4.90	3.09
-50	0.600	-4.44	0.56	1.14	-5	0.990	-0.09	4.91	3.10
-49	0.615	-4.23	0.77	1.19	-4	0.992	-0.07	4.93	3.11
-48	0.629	-4.03	0.97	1.25	-3	0.994	-0.05	4.95	3.12
-47	0.643	-3.83	1.17	1.31	-2	0.996	-0.03	4.97	3.14
-46	0.658	-3.64	1.36	1.37	-1	0.998	-0.02	4.98	3.15
					0	1.000	0.00	5.00	3.16

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Two CA2-FM Yagi antennas
Skewed 70 degrees
Gain: 5.0 dBd
Horizontal Polarization

Vertical stack
Vertical plane Pattern

Angle	Field	Rel.dB	dBd	PwrMult	Angle	Field	Rel.dB	dBd	PwrMult
0	1.000	0.00	5.00	3.16	45	0.673	-3.45	1.55	1.43
1	0.998	-0.02	4.98	3.15	46	0.658	-3.64	1.36	1.37
2	0.996	-0.03	4.97	3.14	47	0.643	-3.83	1.17	1.31
3	0.994	-0.05	4.95	3.12	48	0.629	-4.03	0.97	1.25
4	0.992	-0.07	4.93	3.11	49	0.615	-4.23	0.77	1.19
5	0.990	-0.09	4.91	3.10	50	0.600	-4.44	0.56	1.14
6	0.988	-0.10	4.90	3.09	51	0.583	-4.69	0.31	1.07
7	0.986	-0.12	4.88	3.07	52	0.566	-4.94	0.06	1.01
8	0.984	-0.14	4.86	3.06	53	0.549	-5.21	-0.21	0.95
9	0.982	-0.16	4.84	3.05	54	0.532	-5.48	-0.48	0.90
10	0.980	-0.18	4.82	3.04	55	0.515	-5.76	-0.76	0.84
11	0.974	-0.23	4.77	3.00	56	0.494	-6.13	-1.13	0.77
12	0.968	-0.28	4.72	2.96	57	0.473	-6.50	-1.50	0.71
13	0.962	-0.34	4.66	2.93	58	0.452	-6.90	-1.90	0.65
14	0.956	-0.39	4.61	2.89	59	0.431	-7.31	-2.31	0.59
15	0.950	-0.45	4.55	2.85	60	0.410	-7.74	-2.74	0.53
16	0.944	-0.50	4.50	2.82	61	0.389	-8.20	-3.20	0.48
17	0.939	-0.55	4.45	2.79	62	0.368	-8.68	-3.68	0.43
18	0.933	-0.60	4.40	2.76	63	0.347	-9.19	-4.19	0.38
19	0.928	-0.65	4.35	2.72	64	0.326	-9.74	-4.74	0.34
20	0.923	-0.70	4.30	2.69	65	0.305	-10.31	-5.31	0.29
21	0.914	-0.78	4.22	2.64	66	0.281	-11.03	-6.03	0.25
22	0.906	-0.85	4.15	2.60	67	0.257	-11.80	-6.80	0.21
23	0.898	-0.93	4.07	2.55	68	0.233	-12.65	-7.65	0.17
24	0.891	-1.01	3.99	2.51	69	0.209	-13.60	-8.60	0.14
25	0.883	-1.09	3.91	2.46	70	0.185	-14.66	-9.66	0.11
26	0.874	-1.17	3.83	2.42	71	0.164	-15.70	-10.70	0.09
27	0.865	-1.25	3.75	2.37	72	0.143	-16.89	-11.89	0.06
28	0.857	-1.34	3.66	2.32	73	0.122	-18.27	-13.27	0.05
29	0.849	-1.43	3.57	2.28	74	0.101	-19.91	-14.91	0.03
30	0.840	-1.51	3.49	2.23	75	0.080	-21.94	-16.94	0.02
31	0.829	-1.63	3.37	2.17	76	0.070	-23.10	-18.10	0.02
32	0.818	-1.74	3.26	2.12	77	0.060	-24.44	-19.44	0.01
33	0.807	-1.86	3.14	2.06	78	0.050	-26.02	-21.02	0.01
34	0.796	-1.98	3.02	2.00	79	0.040	-27.96	-22.96	0.01
35	0.785	-2.10	2.90	1.95	80	0.030	-30.46	-25.46	0.00
36	0.775	-2.21	2.79	1.90	81	0.028	-31.06	-26.06	0.00
37	0.765	-2.33	2.67	1.85	82	0.026	-31.70	-26.70	0.00
38	0.755	-2.44	2.56	1.80	83	0.024	-32.40	-27.40	0.00
39	0.745	-2.56	2.44	1.76	84	0.022	-33.15	-28.15	0.00
40	0.735	-2.67	2.33	1.71	85	0.020	-33.98	-28.98	0.00
41	0.722	-2.82	2.18	1.65	86	0.020	-33.98	-28.98	0.00
42	0.710	-2.97	2.03	1.59	87	0.020	-33.98	-28.98	0.00
43	0.697	-3.13	1.87	1.54	88	0.020	-33.98	-28.98	0.00
44	0.685	-3.29	1.71	1.48	89	0.020	-33.98	-28.98	0.00
					90	0.020	-33.98	-28.98	0.00

John F.X. Browne & Associates P.C.

Bd. Of Control Northern Michigan Unv
Figure 2

REFERENCE CH# 243D - 96.5 MHz, Pwr= 0.031 kW DA, HAAT= 42.7 M, COR= 234.6 M DISPLAY DATES
45 44 43.0 N. Average Protected F(50-50)= 5.01 km DATA 01-09-10
87 03 14.0 W. Standard Directional SEARCH 01-11-10

CH CALL / CITY	TYPE ANT / STATE	AZI / <--	DIST / FILE #	LAT / LNG	PWR(kW) / HAAT(M)	INT(km) / COR(M)	PRO(km) / LICENSEE	*IN* / (Overlap in km)	*OUT*
246C0 WGLQ	LIC _CN	10.7	44.0	46 08 04.0	100.000	10.8	75.6	31.5	-31.6*<
Escanaba	MI	190.8	BLH19820713AB	86 56 52.0	326	577	Lakes Radio, Inc.		
242C2 WSFQ	LIC _CN	222.2	93.3	45 07 19.0	49.000	77.3	51.6	10.6	34.2
Peshtigo	WI	41.7	BLH19960805KB	87 51 07.0	147	346	Armada Media-menominee, In		
244C3 WUPG	APP _CX	320.6	110.4	46 30 29.2	18.750	63.1	42.1	43.5	62.9
Republic	MI	139.9	BPH20091124AIO	87 58 06.5	116	610	Radioactive, Llc		
243C3 AL3858	VAC ___	267.6	169.2	45 39 43.0	25.000	111.3	36.7	53.8	119.2
Rhinelander	WI	86.1	RM11045	89 13 25.0	100	594			
244C3 WUPG	LIC NCX	319.2	117.4	46 32 23.6	25.000	53.8	33.4	59.8	78.5
Republic	MI	138.5	BLH20080418ABJ	88 03 17.9	52	561	Radioactive, Llc		

Terrain database is USGS 03 SEC , R= 73.215 qualifying spacings or FCC minimum Spacings in KM, M= Margin in KM
Contour distances are on direct line to and from reference station. Reference zone = 2, Co to 3rd adjacent.
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.
"<" = Contour Overlap

John F.X. Browne & Associates P.C.

W296AX 100 dBu F(50,10) Contour vs WGLQ 74.1 dBu F(50,50)

W296AX
Latitude: 45-44-43 N
Longitude: 087-03-14 W
ERP: 0.031 kW
Channel: 243
Frequency: 96.5 MHz
AMSL Height: 234.6 m
Horiz. Pattern: Directional

WGLQ
BLH19820713AB
Latitude: 46-08-04 N
Longitude: 086-56-52 W
ERP: 100.00 kW
Channel: 246
Frequency: 97.1 MHz
AMSL Height: 577.0 m
Horiz. Pattern: Omni

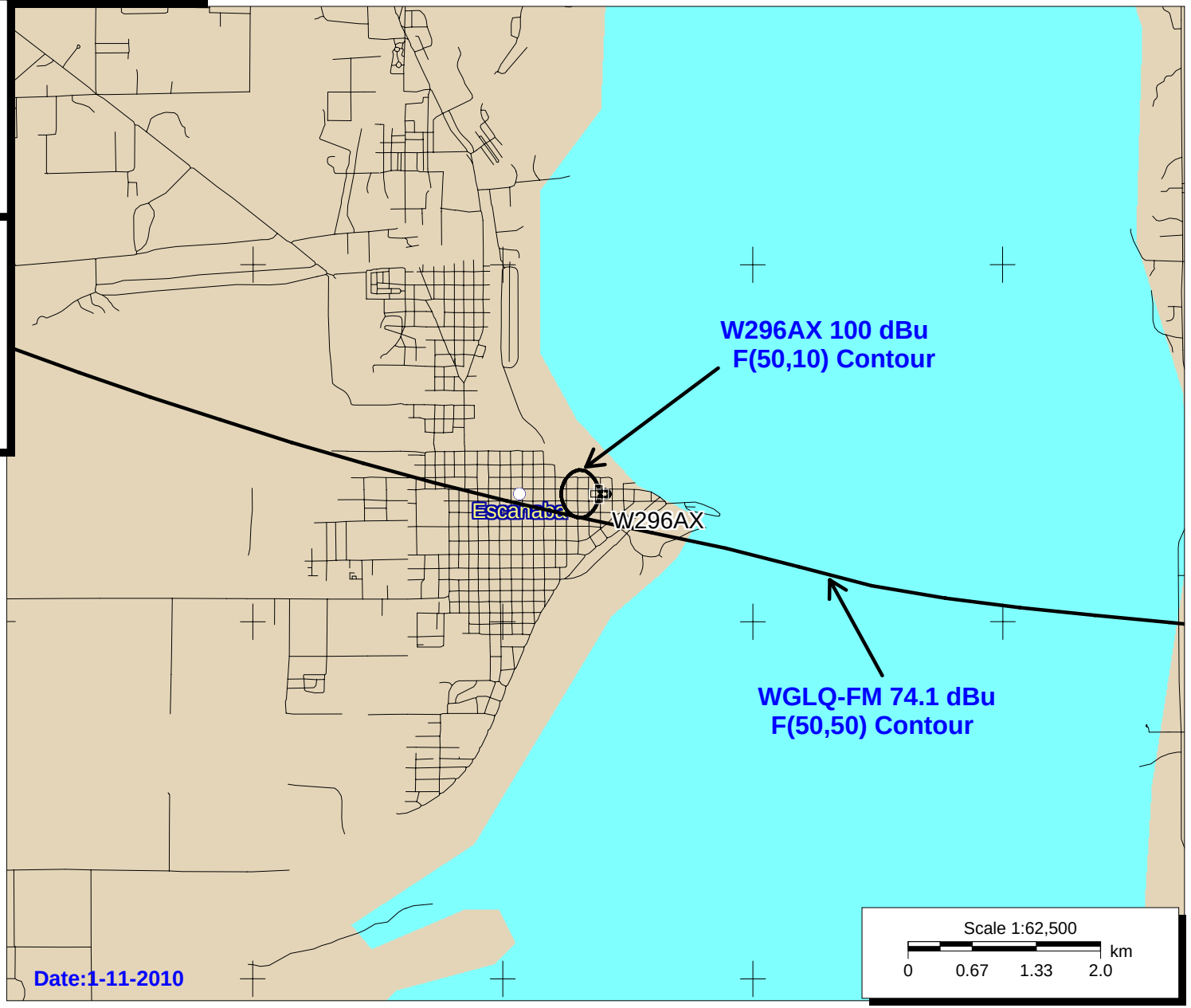

FIGURE 1

WNMU FM Translator W296AX

RCAGL 51.6 m
ERP 31 W

Table 1
Calculation of Close-in Field Strength

Horz. Dist. From Ant. (m)	Depression Angle to Point on Ground	Distance to Point from Antenna RC (m)	Antenna Elevation Pat. Relative Field	Power Flux Density (W/m^2)	E (dBu)
0	90	51.60	0.020	6.08E-07	83.6
5	84	51.84	0.022	7.29E-07	84.4
10	79	52.56	0.040	2.34E-06	89.5
15	74	53.74	0.101	1.43E-05	97.3
20	69	55.34	0.209	5.77E-05	103.4
25	64	57.34	0.326	1.31E-04	106.9
30	60	59.69	0.410	1.91E-04	108.6
35	56	62.35	0.494	2.54E-04	109.8
40	52	65.29	0.566	3.04E-04	110.6
45	49	68.47	0.615	3.26E-04	110.9
50	46	71.85	0.658	3.39E-04	111.1
55	43	75.42	0.697	3.46E-04	111.1
60	41	79.14	0.722	3.37E-04	111.0
65	38	82.99	0.755	3.35E-04	111.0
70	36	86.96	0.775	3.21E-04	110.8
75	35	91.04	0.785	3.01E-04	110.5
80	33	95.20	0.807	2.91E-04	110.4
85	31	99.44	0.829	2.81E-04	110.3
90	30	103.74	0.840	2.65E-04	110.0
95	29	108.11	0.849	2.50E-04	109.7
100	27	112.53	0.865	2.39E-04	109.5
105	26	116.99	0.874	2.26E-04	109.3
110	25	121.50	0.883	2.14E-04	109.1
115	24	126.05	0.891	2.02E-04	108.8
120	23	130.62	0.898	1.91E-04	108.6
125	22	135.23	0.906	1.82E-04	108.4
130	22	139.87	0.906	1.70E-04	108.1
135	21	144.53	0.914	1.62E-04	107.9
140	20	149.21	0.923	1.55E-04	107.7
145	20	153.91	0.923	1.46E-04	107.4
150	19	158.63	0.928	1.38E-04	107.2
155	18	163.36	0.933	1.32E-04	107.0
160	18	168.11	0.933	1.25E-04	106.7
165	17	172.88	0.939	1.19E-04	106.5
170	17	177.66	0.939	1.13E-04	106.3
175	16	182.45	0.944	1.08E-04	106.1
180	16	187.25	0.944	1.03E-04	105.9
185	16	192.06	0.944	9.77E-05	105.7
190	15	196.88	0.950	9.42E-05	105.5
195	15	201.71	0.950	8.97E-05	105.3
200	14	206.55	0.956	8.67E-05	105.1
205	14	211.39	0.956	8.27E-05	104.9
210	14	216.25	0.956	7.91E-05	104.7
215	13	221.11	0.962	7.66E-05	104.6
220	13	225.97	0.962	7.33E-05	104.4
225	13	230.84	0.962	7.03E-05	104.2
230	13	235.72	0.962	6.74E-05	104.0
235	12	240.60	0.968	6.55E-05	103.9
240	12	245.48	0.968	6.29E-05	103.8
245	12	250.37	0.968	6.05E-05	103.6
250	12	255.27	0.968	5.82E-05	103.4
255	11	260.17	0.974	5.67E-05	103.3
260	11	265.07	0.974	5.46E-05	103.1
265	11	269.98	0.974	5.27E-05	103.0
270	11	274.89	0.974	5.08E-05	102.8
275	11	279.80	0.974	4.90E-05	102.7
280	10	284.71	0.980	4.79E-05	102.6
285	10	289.63	0.980	4.63E-05	102.4
290	10	294.55	0.980	4.48E-05	102.3
295	10	299.48	0.980	4.33E-05	102.1
300	10	304.41	0.980	4.19E-05	102.0
305	10	309.33	0.980	4.06E-05	101.8
310	9	314.27	0.982	3.95E-05	101.7
315	9	319.20	0.982	3.83E-05	101.6
320	9	324.13	0.982	3.71E-05	101.5
325	9	329.07	0.982	3.60E-05	101.3
330	9	334.01	0.982	3.50E-05	101.2
335	9	338.95	0.982	3.40E-05	101.1
340	9	343.89	0.982	3.30E-05	100.9
345	9	348.84	0.982	3.21E-05	100.8
350	8	353.78	0.984	3.13E-05	100.7
355	8	358.73	0.984	3.04E-05	100.6
360	8	363.68	0.984	2.96E-05	100.5
365	8	368.63	0.984	2.88E-05	100.4
370	8	373.58	0.984	2.81E-05	100.2
375	8	378.53	0.984	2.73E-05	100.1
380	8	383.49	0.984	2.66E-05	100.0
385	8	388.44	0.984	2.60E-05	99.9
390	8	393.40	0.984	2.53E-05	99.8
395	7	398.36	0.986	2.48E-05	99.7
400	7	403.31	0.986	2.42E-05	99.6