TECHNICAL EXHIBIT
APPLICATION FOR CONSTRUCTION PERMIT

DIGITAL TELEVISION STATION WLUC-TV
MARQUETTE, MICHIGAN
FACILITY ID: 21259
DTV CHANNEL 35 / 83 KW ERP / DA

BARRINGTON MARQUETTE LICENSE LLC

JULY, 2013

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Canton, IL 61520
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APPLICATION FOR CONSTRUCTION PERMIT

The following engineering statement and attached exhibits have been prepared for **Barrington Marquette License LLC** ("Barrington"), licensee of digital television station WLUC-TV at Marquette, Michigan, and are in support of their application for construction permit.

This application seeks to replace the construction permit for WLUC-TV that had previously been authorized to the former licensee of the facility.[1] The technical parameters proposed under this application are identical to those that were provided under the original referenced construction permit. At present, WLUC-TV is authorized to operate on channel 35 with a maximum effective radiated power of 63 kW at a center of radiation of 699.8 meters AMSL.[2] The proposed facility would operate with a maximum effective radiated power of 83 kW at a center of radiation of 705.8 meters AMSL.[3] No change in the site location or directional pattern of the antenna is proposed under this application.

The proposed facility utilizes a Dielectric TLP-24M (C) antenna oriented at 317 degrees true. Exhibit E-1 contains the antenna data from the manufacturer. The five pages in this exhibit, labeled Exhibit E-1A through E-1E, depict the horizontal plane and vertical plane radiation characteristics. As indicated, the antenna would utilize 0.5 degrees of electrical beamtilt, and no mechanical beamtilt. The relative field tabulation on the form pages includes the existing rotation of the antenna. As a result, the rotation figure has been set at zero degrees.

[1] See FCC File No. BPCDT-20041021ADR as extended by BEPCDT-20081021ACY, etc.
[2] Licensed center of radiation above average terrain is 257 meters.
[3] Center of radiation above average terrain is 264 meters based on a 360 radial sample of the NED 3-second terrain database.

The proposed facility would continue to provide the requisite signal level over the community of license. Exhibit E-2 illustrates the 48 dBu and 41 dBu F(50,90) service contours for the proposed facility. As this map demonstrates, the 48 dBu contour would fully encompass Marquette, Michigan.

The proposed facility would not cause impermissible interference to any existing or proposed facility in the region. Exhibits E-3A and E-3B provide the outgoing interference study for the proposed facility neglecting masking. As these two exhibits demonstrate, the proposed facility would cause interference to a very small number of cells with a resident population well below that permitted under the Commission's Rules.

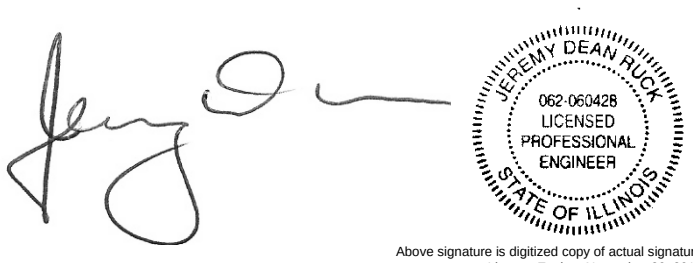
The requirements of notification to radio astronomy installations, radio receiving installations, and FCC monitoring stations are not applicable. The proposed facility is not located within the National Radio Astronomy quiet zone, in the vicinity of the Arecibo radio telescope, or in the vicinity of the Table Mountain radio quiet zone. The closest protected FCC installation is the Allegan, Michigan facility. Although the Allegan facility is located within the state of Michigan, it is located nearly 275 miles from the proposed site.

The proposed facility will not constitute a substantial environmental impact, and is exempt from environmental processing. The proposed facility would continue to utilize an existing tower that is registered with the Commission. The changes proposed under this application would not increase the existing environmental impact already present from the facility. Assuming a relative field of 0.2 directed towards the ground, the equations in *Appendix A* of *OET Bulletin 65* yield a

predicted power density at two meters above ground level of 1.72 $\mu W/cm^2$. This value is less than 1% of the 397 $\mu W/cm^2$ permissible under the uncontrolled environment condition of the applicable safety standard.[4]

Barrington certifies that it will coordinate with all other users of the site to ensure that workers having access to the facility are not exposed to levels of radiofrequency radiation in excess of the applicable safety standards. Such coordination will include, but is not necessarily limited to, a reduction in transmitter power or cessation of operation.

The preceding statement and attached exhibits have been prepared by me, or under my direction, and are true and accurate to the best of my belief and knowledge.



Above signature is digitized copy of actual signature
License Expires November 30, 2013

Jeremy D. Ruck, PE
July 25, 2013

[4] Uncontrolled environment condition was determined by determining quotient of frequency of lower edge of channel and 1500 per *OET Bulletin 65*. This value was then converted from mW/cm^2 to $\mu W/cm^2$.

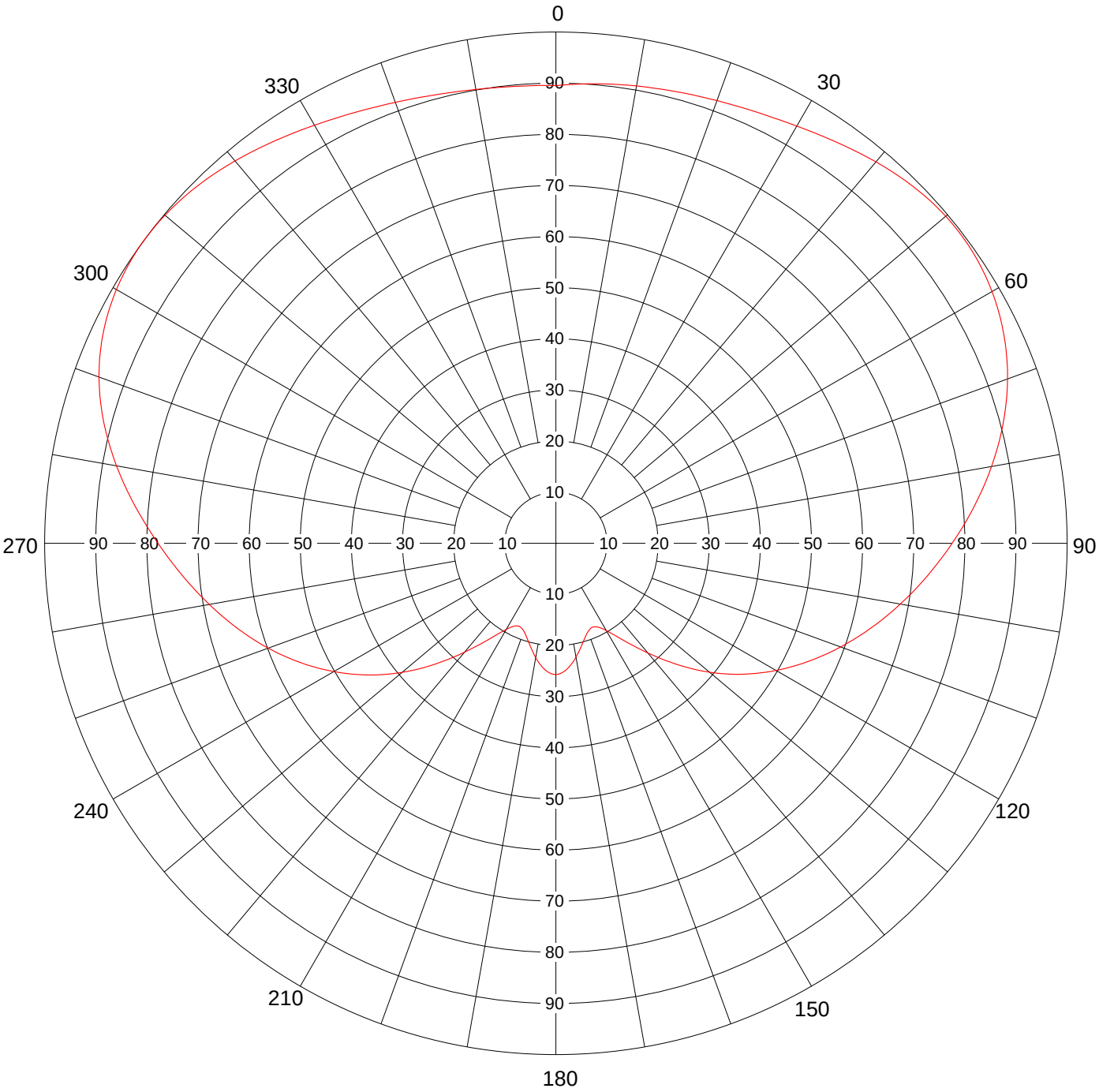
Exhibit No.
E-1A

Dielectric

Date	**25 Jul 2013**		
Call Letters	**WLUC-TV**	Channel	**35**
Location	**Marquette, MI**		
Customer	**Barrington**		
Antenna Type	**TLP-24M (C)**		

AZIMUTH PATTERN

Gain	**1.90 (2.79 dB)**	Frequency	**599 MHz**
Calculated / Measured	**Calculated**	Drawing #	**TLP-M**



Remarks:

Exhibit No.
E-1B

Dielectric

Date	**25 Jul 2013**		
Call Letters	**WLUC-TV**	Channel	**35**
Location	**Marquette, MI**		
Customer	**Barrington**		
Antenna Type	**TLP-24M (C)**		

TABULATION OF AZIMUTH PATTERN

Azimuth Pattern Drawing # **TLP-M**

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
0	0.895	45	0.988	90	0.775	135	0.335	180	0.257	225	0.334	270	0.778	315	0.990
1	0.897	46	0.990	91	0.766	136	0.324	181	0.256	226	0.346	271	0.788	316	0.987
2	0.898	47	0.992	92	0.757	137	0.313	182	0.255	227	0.357	272	0.797	317	0.985
3	0.900	48	0.993	93	0.748	138	0.302	183	0.253	228	0.369	273	0.807	318	0.982
4	0.901	49	0.994	94	0.739	139	0.291	184	0.251	229	0.381	274	0.816	319	0.979
5	0.902	50	0.995	95	0.730	140	0.280	185	0.248	230	0.393	275	0.826	320	0.976
6	0.904	51	0.996	96	0.720	141	0.270	186	0.245	231	0.404	276	0.835	321	0.973
7	0.905	52	0.996	97	0.711	142	0.260	187	0.241	232	0.415	277	0.845	322	0.970
8	0.906	53	0.996	98	0.702	143	0.250	188	0.236	233	0.427	278	0.854	323	0.967
9	0.907	54	0.996	99	0.693	144	0.241	189	0.232	234	0.438	279	0.863	324	0.964
10	0.908	55	0.995	100	0.684	145	0.232	190	0.227	235	0.449	280	0.873	325	0.960
11	0.910	56	0.993	101	0.675	146	0.224	191	0.222	236	0.460	281	0.882	326	0.957
12	0.911	57	0.992	102	0.666	147	0.216	192	0.217	237	0.470	282	0.890	327	0.954
13	0.912	58	0.990	103	0.657	148	0.209	193	0.212	238	0.481	283	0.899	328	0.951
14	0.913	59	0.988	104	0.648	149	0.203	194	0.207	239	0.491	284	0.907	329	0.947
15	0.914	60	0.985	105	0.639	150	0.197	195	0.202	240	0.502	285	0.916	330	0.944
16	0.916	61	0.982	106	0.630	151	0.192	196	0.198	241	0.512	286	0.923	331	0.941
17	0.917	62	0.979	107	0.620	152	0.188	197	0.194	242	0.522	287	0.931	332	0.938
18	0.918	63	0.975	108	0.611	153	0.184	198	0.190	243	0.532	288	0.938	333	0.935
19	0.920	64	0.971	109	0.602	154	0.182	199	0.186	244	0.542	289	0.945	334	0.933
20	0.921	65	0.967	110	0.593	155	0.180	200	0.183	245	0.552	290	0.951	335	0.930
21	0.923	66	0.962	111	0.583	156	0.179	201	0.181	246	0.561	291	0.957	336	0.927
22	0.925	67	0.957	112	0.574	157	0.179	202	0.179	247	0.571	292	0.963	337	0.925
23	0.926	68	0.952	113	0.565	158	0.180	203	0.178	248	0.580	293	0.968	338	0.922
24	0.928	69	0.946	114	0.555	159	0.182	204	0.178	249	0.590	294	0.972	339	0.920
25	0.930	70	0.940	115	0.546	160	0.184	205	0.178	250	0.599	295	0.977	340	0.918
26	0.932	71	0.934	116	0.536	161	0.187	206	0.180	251	0.608	296	0.981	341	0.916
27	0.935	72	0.927	117	0.527	162	0.190	207	0.182	252	0.617	297	0.984	342	0.914
28	0.937	73	0.920	118	0.517	163	0.194	208	0.185	253	0.626	298	0.987	343	0.912
29	0.940	74	0.913	119	0.507	164	0.198	209	0.189	254	0.635	299	0.990	344	0.910
30	0.942	75	0.906	120	0.497	165	0.202	210	0.194	255	0.644	300	0.993	345	0.908
31	0.945	76	0.898	121	0.487	166	0.207	211	0.200	256	0.653	301	0.995	346	0.907
32	0.948	77	0.890	122	0.477	167	0.211	212	0.206	257	0.662	302	0.996	347	0.905
33	0.951	78	0.882	123	0.467	168	0.216	213	0.214	258	0.671	303	0.998	348	0.904
34	0.954	79	0.874	124	0.457	169	0.221	214	0.221	259	0.680	304	0.999	349	0.903
35	0.958	80	0.865	125	0.446	170	0.226	215	0.229	260	0.688	305	1.000	350	0.901
36	0.961	81	0.857	126	0.436	171	0.231	216	0.238	261	0.697	306	1.000	351	0.900
37	0.964	82	0.848	127	0.425	172	0.235	217	0.248	262	0.706	307	1.000	352	0.899
38	0.967	83	0.839	128	0.414	173	0.240	218	0.257	263	0.715	308	1.000	353	0.899
39	0.971	84	0.830	129	0.403	174	0.244	219	0.267	264	0.724	309	0.999	354	0.898
40	0.974	85	0.821	130	0.392	175	0.247	220	0.278	265	0.733	310	0.998	355	0.897
41	0.977	86	0.812	131	0.381	176	0.250	221	0.289	266	0.742	311	0.997	356	0.897
42	0.980	87	0.803	132	0.370	177	0.253	222	0.300	267	0.751	312	0.996	357	0.896
43	0.983	88	0.794	133	0.358	178	0.255	223	0.311	268	0.760	313	0.994	358	0.896
44	0.985	89	0.784	134	0.347	179	0.256	224	0.322	269	0.769	314	0.992	359	0.896

Remarks:

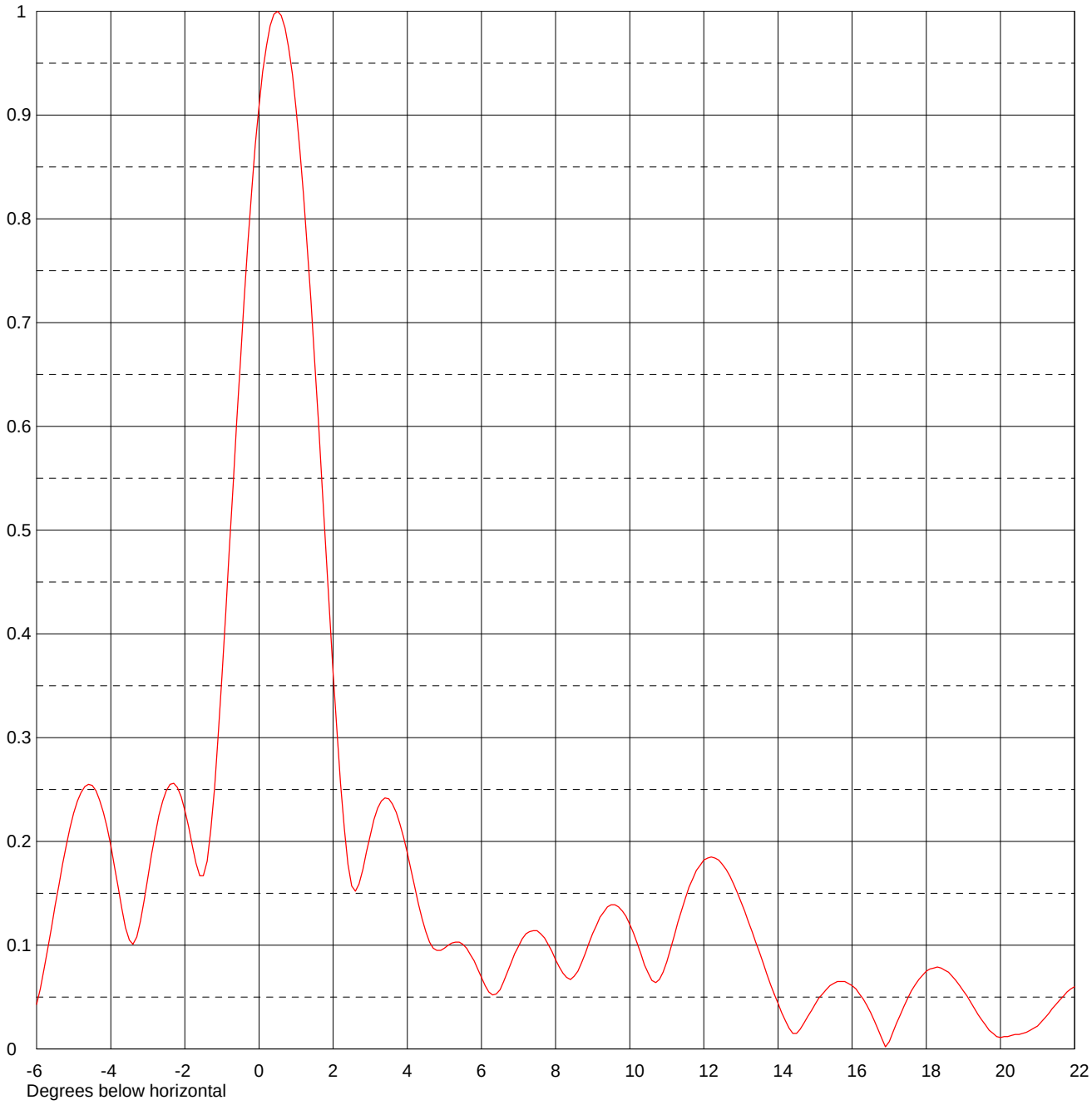
Exhibit No.
E-1C

Dielectric

Date	**25 Jul 2013**		
Call Letters	**WLUC-TV**	Channel	**35**
Location	**Marquette, MI**		
Customer	**Barrington**		
Antenna Type	**TLP-24M (C)**		

ELEVATION PATTERN

RMS Gain at Main Lobe	**23.0 (13.62 dB)**	Beam Tilt	**0.50 Degrees**
RMS Gain at Horizontal	**19.0 (12.79 dB)**	Frequency	**599.00 MHz**
Calculated / Measured	**Calculated**	Drawing #	**24L230050**



Remarks:

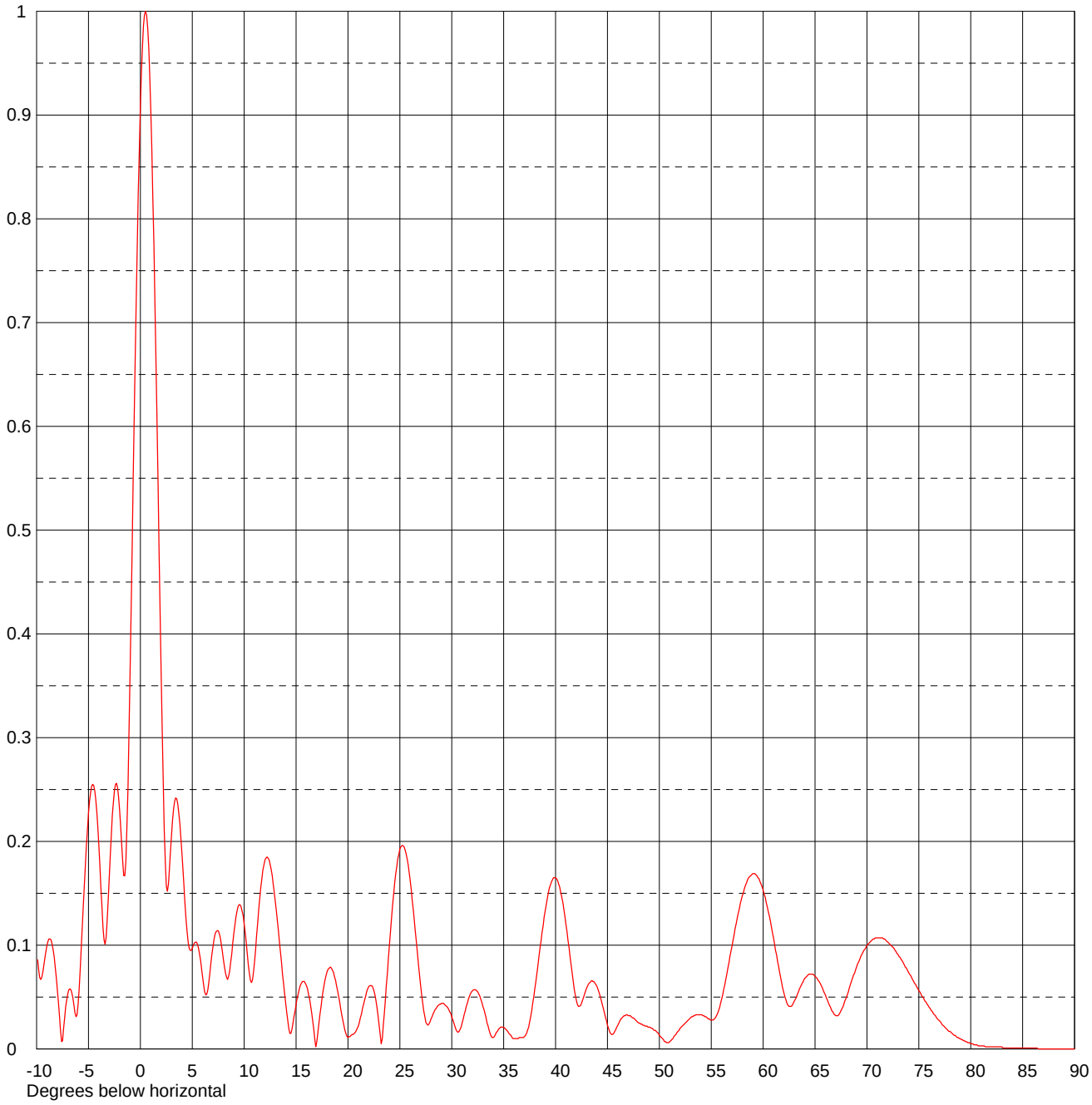
Exhibit No.
E-1D

Dielectric

Date	**25 Jul 2013**		
Call Letters	**WLUC-TV**	Channel	**35**
Location	**Marquette, MI**		
Customer	**Barrington**		
Antenna Type	**TLP-24M (C)**		

ELEVATION PATTERN

RMS Gain at Main Lobe	**23.0 (13.62 dB)**	Beam Tilt	**0.50 Degrees**
RMS Gain at Horizontal	**19.0 (12.79 dB)**	Frequency	**599.00 MHz**
Calculated / Measured	**Calculated**	Drawing #	**24L230050-90**



Remarks:

Exhibit No.
E-1E

Dielectric

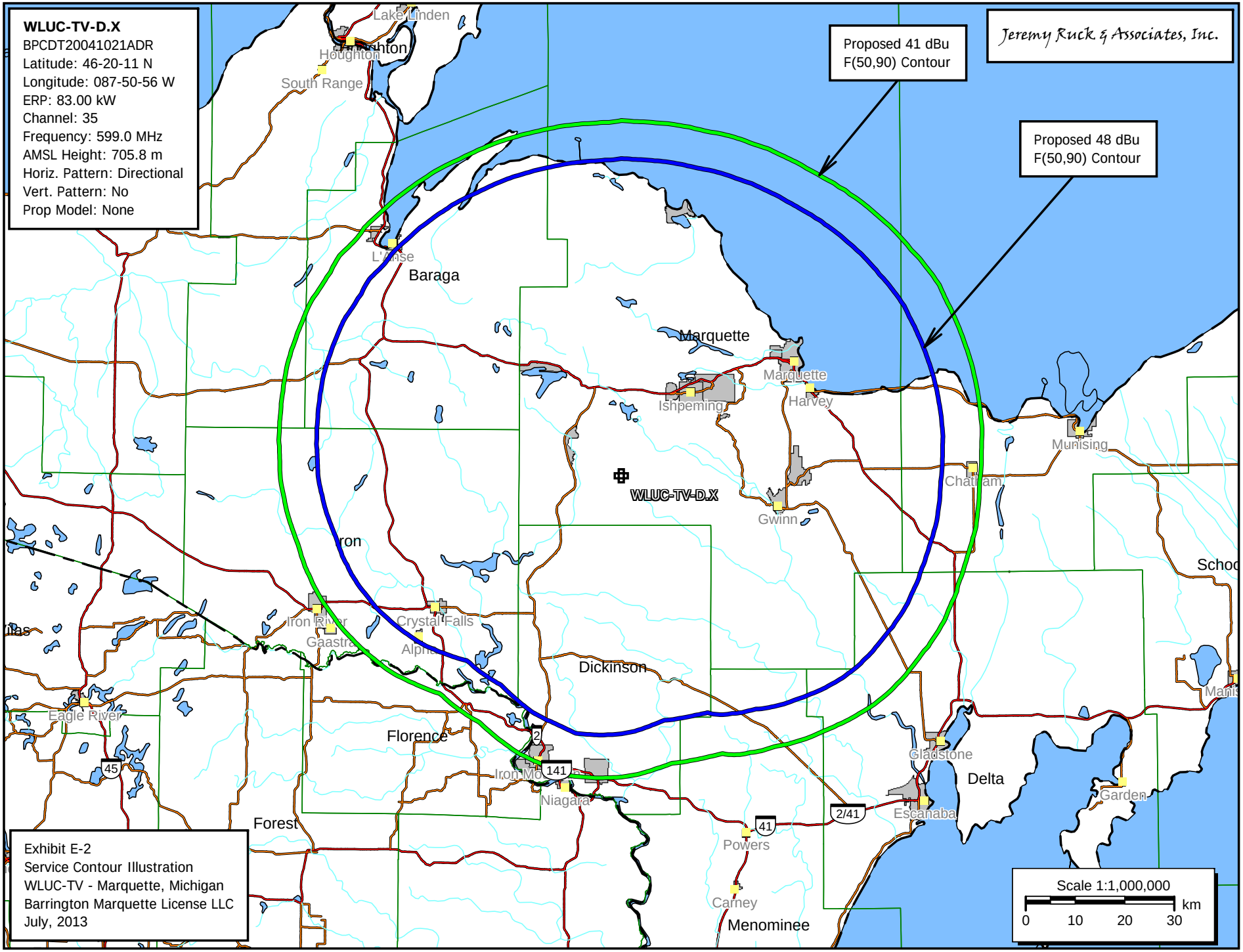
Date	**25 Jul 2013**		
Call Letters	**WLUC-TV**	Channel	**35**
Location	**Marquette, MI**		
Customer	**Barrington**		
Antenna Type	**TLP-24M (C)**		

TABULATION OF ELEVATION PATTERN

Elevation Pattern Drawing # **24L230050-90**

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.098	2.4	0.178	10.6	0.066	30.5	0.017	51.0	0.007	71.5	0.107
-9.5	0.069	2.6	0.152	10.8	0.067	31.0	0.025	51.5	0.013	72.0	0.103
-9.0	0.100	2.8	0.173	11.0	0.084	31.5	0.044	52.0	0.020	72.5	0.098
-8.5	0.101	3.0	0.206	11.5	0.145	32.0	0.056	52.5	0.025	73.0	0.091
-8.0	0.057	3.2	0.232	12.0	0.182	32.5	0.055	53.0	0.030	73.5	0.083
-7.5	0.008	3.4	0.242	12.5	0.178	33.0	0.041	53.5	0.033	74.0	0.074
-7.0	0.053	3.6	0.236	13.0	0.142	33.5	0.022	54.0	0.033	74.5	0.065
-6.5	0.049	3.8	0.217	13.5	0.093	34.0	0.011	54.5	0.031	75.0	0.056
-6.0	0.043	4.0	0.189	14.0	0.044	34.5	0.019	55.0	0.028	75.5	0.048
-5.5	0.138	4.2	0.156	14.5	0.015	35.0	0.021	55.5	0.032	76.0	0.040
-5.0	0.227	4.4	0.125	15.0	0.043	35.5	0.015	56.0	0.048	76.5	0.033
-4.5	0.254	4.6	0.103	15.5	0.063	36.0	0.010	56.5	0.072	77.0	0.027
-4.0	0.196	4.8	0.095	16.0	0.061	36.5	0.011	57.0	0.099	77.5	0.021
-3.5	0.105	5.0	0.097	16.5	0.035	37.0	0.012	57.5	0.126	78.0	0.017
-3.0	0.165	5.2	0.102	17.0	0.007	37.5	0.026	58.0	0.148	78.5	0.013
-2.8	0.207	5.4	0.103	17.5	0.049	38.0	0.058	58.5	0.163	79.0	0.010
-2.6	0.239	5.6	0.097	18.0	0.075	38.5	0.097	59.0	0.169	79.5	0.007
-2.4	0.255	5.8	0.085	18.5	0.076	39.0	0.133	59.5	0.165	80.0	0.005
-2.2	0.252	6.0	0.069	19.0	0.056	39.5	0.158	60.0	0.153	80.5	0.004
-2.0	0.230	6.2	0.055	19.5	0.028	40.0	0.165	60.5	0.132	81.0	0.003
-1.8	0.196	6.4	0.053	20.0	0.011	40.5	0.151	61.0	0.107	81.5	0.002
-1.6	0.167	6.6	0.065	20.5	0.014	41.0	0.120	61.5	0.079	82.0	0.002
-1.4	0.181	6.8	0.083	21.0	0.022	41.5	0.081	62.0	0.054	82.5	0.002
-1.2	0.252	7.0	0.099	21.5	0.043	42.0	0.047	62.5	0.041	83.0	0.002
-1.0	0.359	7.2	0.111	22.0	0.060	42.5	0.044	63.0	0.046	83.5	0.001
-0.8	0.481	7.4	0.114	22.5	0.056	43.0	0.059	63.5	0.058	84.0	0.001
-0.6	0.605	7.6	0.111	23.0	0.023	43.5	0.066	64.0	0.068	84.5	0.001
-0.4	0.723	7.8	0.101	23.5	0.034	44.0	0.060	64.5	0.072	85.0	0.001
-0.2	0.826	8.0	0.086	24.0	0.101	44.5	0.043	65.0	0.070	85.5	0.001
0.0	0.909	8.2	0.073	24.5	0.160	45.0	0.023	65.5	0.063	86.0	0.001
0.2	0.967	8.4	0.067	25.0	0.193	45.5	0.014	66.0	0.052	86.5	0.000
0.4	0.997	8.6	0.075	25.5	0.192	46.0	0.023	66.5	0.040	87.0	0.000
0.6	0.996	8.8	0.092	26.0	0.162	46.5	0.031	67.0	0.032	87.5	0.000
0.8	0.965	9.0	0.111	26.5	0.112	47.0	0.032	67.5	0.037	88.0	0.000
1.0	0.906	9.2	0.127	27.0	0.061	47.5	0.030	68.0	0.049	88.5	0.000
1.2	0.823	9.4	0.137	27.5	0.026	48.0	0.025	68.5	0.065	89.0	0.000
1.4	0.721	9.6	0.139	28.0	0.029	48.5	0.023	69.0	0.079	89.5	0.000
1.6	0.605	9.8	0.133	28.5	0.039	49.0	0.021	69.5	0.091	90.0	0.000
1.8	0.483	10.0	0.120	29.0	0.044	49.5	0.018	70.0	0.100		
2.0	0.363	10.2	0.102	29.5	0.041	50.0	0.013	70.5	0.105		
2.2	0.256	10.4	0.081	30.0	0.031	50.5	0.007	71.0	0.107		

Remarks:


WLUC-TV-D.X
BPCDT20041021ADR
Latitude: 46-20-11 N
Longitude: 087-50-56 W
ERP: 83.00 kW
Channel: 35
Frequency: 599.0 MHz
AMSL Height: 705.8 m
Horiz. Pattern: Directional
Vert. Pattern: No
Prop Model: None
Proposed 41 dBu F(50,90) Contour
Proposed 48 dBu F(50,90) Contour
Jeremy Ruck & Associates, Inc.
Lake Linden
Houghton
South Range
L'Anse
Baraga
Marquette
Ishpeming
Harvey
Munising
Chatham
Gwinn
WLUC-TV-D.X
Iron River
Crystal Falls
Gaastra
Alpha
Dickinson
Eagle River
Florence
Iron Mo
Niagara
Forest
Powers
Carney
Menominee
Gladstone
Delta
Escanaba
Garden
45
141
2
41
2/41
Exhibit E-2
Service Contour Illustration
WLUC-TV - Marquette, Michigan
Barrington Marquette License LLC
July, 2013
Scale 1:1,000,000
km
0
10
20
30

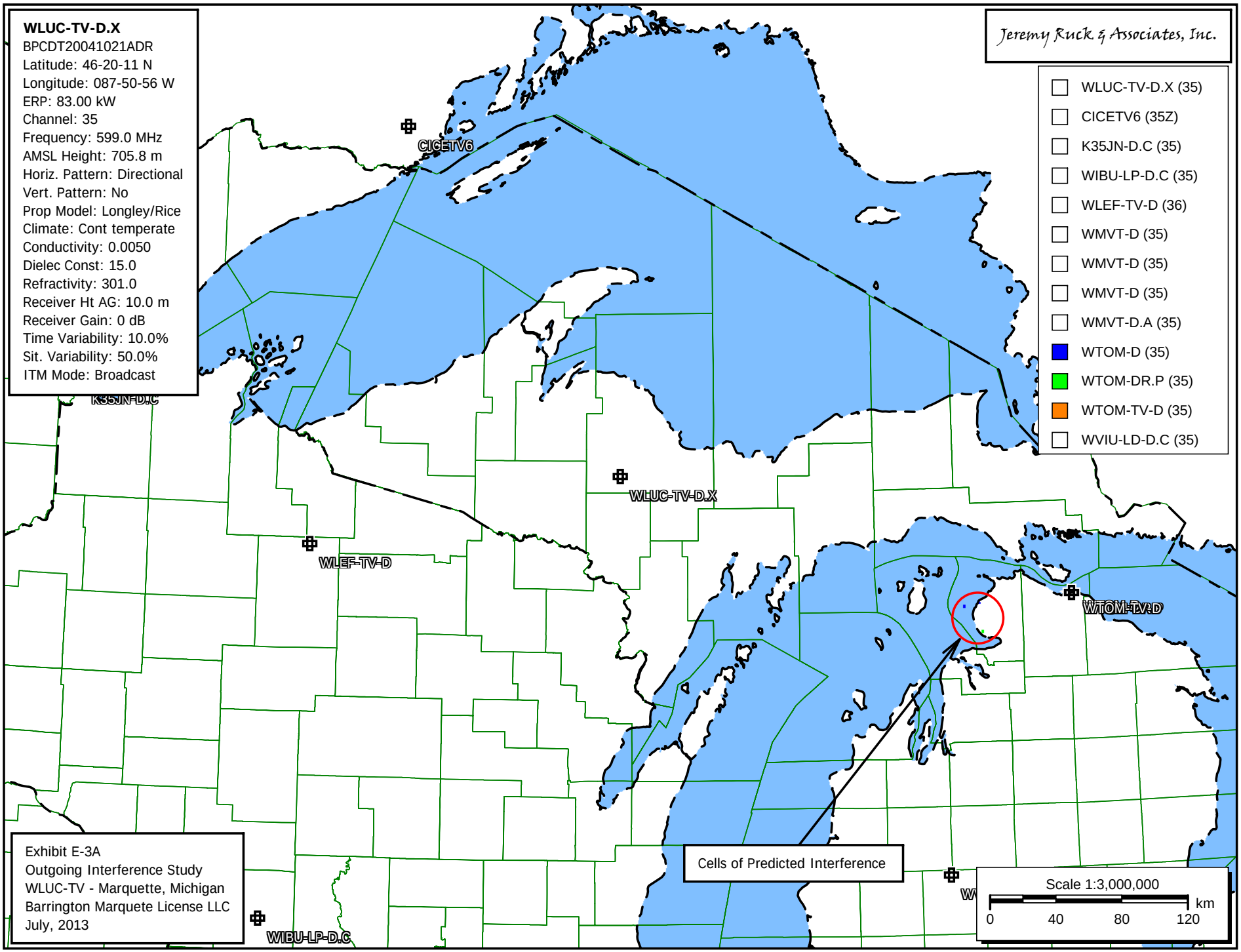

WLUC-TV-D.X
BPCDT20041021ADR
Latitude: 46-20-11 N
Longitude: 087-50-56 W
ERP: 83.00 kW
Channel: 35
Frequency: 599.0 MHz
AMSL Height: 705.8 m
Horiz. Pattern: Directional
Vert. Pattern: No
Prop Model: Longley/Rice
Climate: Cont temperate
Conductivity: 0.0050
Dielec Const: 15.0
Refractivity: 301.0
Receiver Ht AG: 10.0 m
Receiver Gain: 0 dB
Time Variability: 10.0%
Sit. Variability: 50.0%
ITM Mode: Broadcast
Jeremy Ruck & Associates, Inc.
WLUC-TV-D.X (35)
CICETV6 (35Z)
K35JN-D.C (35)
WIBU-LP-D.C (35)
WLEF-TV-D (36)
WMVT-D (35)
WMVT-D (35)
WMVT-D (35)
WMVT-D.A (35)
WTOM-D (35)
WTOM-DR.P (35)
WTOM-TV-D (35)
WVIU-LD-D.C (35)
CICETV6
K35JN-D.C
WLUC-TV-D.X
WLEF-TV-D
WTOM-TV-D
WIBU-LP-D.C
Cells of Predicted Interference
Scale 1:3,000,000
0
40
80
120
km
Exhibit E-3A
Outgoing Interference Study
WLUC-TV - Marquette, Michigan
Barrington Marquete License LLC
July, 2013

Exhibit E-3B
Outgoing Interference Population Report

WLUC-TV-D.X (35) Marquette, MI - BPCDT20041021ADR
Broadcast Type: Digital Service: T
Lat: 46-20-11 N Lng: 087-50-56 W ERP: 83.0 kW AMSL: 705.8 m
TV Outgoing Interference Study
Signal Resolution: 2.0 km
Consider NTSC Taboo: Yes
KWX error points are considered to
     be interference free coverage.
Default # of radials computed for contours: 360
Contours calculated using 8 radial HAAT.
LR Profile Spacing Increment: 0.1 km
Masked interference points are being
     counted as interference.
Pop Centroid DB: 2010 US Census (PL)

Study Date: 7/25/2013
TV Database Date: 7/25/2013

Primary Terrain: NED 3 Second US Terrain
Secondary Terrain: FCC 30 Second US Database

Population Database: 2010 US Census (PL)

Stations Considered:

Call Letters	City	State	Dist	Azi
CICETV6 (35Z)	Scoble	ON	247.8	328.8
K35JN-D.C (35)	Duluth	MN	331.2	280.2
WIBU-LP-D.C (35)	Tomah	WI	346.0	219.4
WLEF-TV-D (36)	Park Falls	WI	192.3	257.8
WMVT-D (35)	Milwaukee	WI	360.1	180.7
WMVT-D (35)	MILWAUKEE	WI	360.1	180.7
WMVT-D (35)	Milwaukee	WI	360.1	180.7
WMVT-D.A (35)	Milwaukee	WI	360.0	180.7
WTOM-D (35)	CHEBOYGAN	MI	282.0	104.4
WTOM-DR.P (35)	Cheboygan	MI	282.0	104.4
WTOM-TV-D (35)	Cheboygan	MI	282.0	104.4
WVIU-LD-D.C (35)	Cadillac	MI	313.8	140.3

Call	Area	HUnits	Contour	Masked Ix	Unmasked Ix	%
CICETV6 (35Z)	0.0	0	0	0	0	0.00
K35JN-D.C (35)	0.0	0	194,542	0	0	0.00
WIBU-LP-D.C (35)	0.0	0	162,204	0	0	0.00
WLEF-TV-D (36)	0.0	0	192,415	0	0	0.00
WMVT-D (35)	0.0	0	2,958,582	0	0	0.00
WMVT-D (35)	0.0	0	2,954,761	0	0	0.00
WMVT-D (35)	0.0	0	3,119,063	0	0	0.00
WMVT-D.A (35)	0.0	0	2,992,613	0	0	0.00
WTOM-D (35)	6.9	16	83,262	0	14	0.02
WTOM-DR.P (35)	3.4	140	84,171	0	68	0.08
WTOM-TV-D (35)	6.9	16	83,262	0	14	0.02
WVIU-LD-D.C (35)	0.0	0	144,055	0	0	0.00

	Housing Units	Population
Michigan		
Emmet County		
Total	21,304	32,694
WTOM-D (35)	16	14
WTOM-DR.P (35)	140	68
WTOM-TV-D (35)	16	14

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