

LAND MOBILE INTERFERENCE ANALYSIS
CONSIDERING USE OF CASCADED FILTER
LPTV STATION K14QM-D
DULUTH, MINNESOTA
CHANNEL 14 0.10 KW (H) (MAX-DA) 382.1 M AMSL

This report was prepared on behalf of LPTV station K14QM-D, Duluth, MN, in regard to its construction permit facility on Channel 14.* The facility will operate with a maximum directional horizontally-polarized effective radiated power (ERP) of 0.10 kW with an antenna height of 6 m AGL (382.1 m AMSL). A *simple* emission mask is specified. This analysis was based on the construction permit facility.

Channel 14 is immediately adjacent to the 460-470 MHz land mobile (LM) band. This report provides the results of an interference analysis regarding LM receive facilities that are authorized for operation in the adjacent LM band. The analysis is based on the FCC's master frequency database.

The permittee will be installing two cascaded 8-pole filters to provide full protection to LM facilities. A graph of the cascaded filter response is included with this report. The LM interference analysis results are based on the use of the simple emission mask with the additional suppression from the cascaded filter. This report provides the calculations of protection to LM services in the 460-470 MHz band taking into consideration the additional filtering for protection of LM services.

Protection of Land Mobile Facilities

An analysis was conducted of LM facilities in the 460-470 MHz LM band that could be affected by the proposed Channel 14 facility. Specifically, a study of

* See FCC File No. 0000193273. A FCC engineering data summary sheet is attached hereto for the subject K14QM-D facility for reference.

LM facilities within 80 km of the transmitter site, and in the band segment from 465-470 MHz, was conducted. This analysis encompassed 376 LM records.

A sample calculation of the interference analysis with respect to LM facility WPLU687 on 468.4750 MHz is summarized below:

Parameter	Value
Frequency	468.4750 MHz
Ch. 14 Average EIRP (ERPdipole=0.10 kW)	+52.2 dBm
Simple mask emission suppression [†]	47.8 dB
Cascaded filter suppression	85.3 dB
DTV coupling into LM (12.5 kHz assumed LM bandwidth)	16.0 dB
Cross-polarization discrimination	10.0 dB
Free-space path loss to receive antenna at frequency (0.3 km)	75.5 dB
LM antenna gain	11 dBi
LM line loss	2 dB
Azimuth pattern discrimination factor (dB) [‡]	0.0 dB
Received DTV interference power	-173.4 dBm
Equivalent field strength per Section 73.687(e)(4)(ii)	-42.8 dBuV/m
FCC interference criteria per Section 73.687(e)(4)(ii)	17 dBuV/m
Margin to interference per Section 73.687(e)(4)(ii)	59.8 dB
Analysis result	PASS

The analysis was based on the 17 dBuV/m interference field strength criteria outlined in Section 73.687(e)(4)(ii) of the FCC Rules. As indicated above, the proposed facility exceeds the margin to interference to the LM facility by 59.8 dB

[†] See Section 74.794(a)(2)(i) of the FCC Rules.

[‡] The transmitting antenna azimuthal pattern discrimination factor was not employed for any of the LM records analyzed for this study. This is a conservative analysis approach.

relative to the 17 dBuV/m threshold. Therefore, no objectionable interference is predicted from the proposed facility into LM facilities.

The LM interference analysis results were sorted in order of distance from the K14QM-D transmitter site, lowest to highest; call sign; and, followed by frequency, from highest to lowest. The results indicate that the K14QM-D facility is fully compliant with the interference protection requirements relating to adjacent LM facilities.



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August 15, 2022

FCC DATABASE INFORMATION FOR SUBJECT FACILITY

TV Inquiry LMS

du Treil, Lundin, & Rackley, Inc., Sarasota, Florida



Callsign: K14QM-D **Service:** LPD **Status:** MOD **App. Status:** GRA **Rec. Type:** C
Channel: 14 **Zone:** **Application File No.:** 0000193273 **Chan Share Host:**
Fac. ID: 181617 **FRN:** 0015723455 **Loc. Record ID:** 25076f91815d6ac501815e493530031b **DT Emission Mask:** S
City: DULUTH **State:** MN **Country:** US **CP Expiration Date:** 2022-09-06
Party Name: EICB-TV EAST, LLC **Last Change Date:** 2022-06-22

Latitude (NAD 83): 046-47-21 **Height AGL (m):** 6 **Polarization:** H
Longitude (NAD 83): 092-06-48.9 **Overall Height AGL (m):** 84.4 **Electrical Tilt (°):**
RCAMS (m): 382.1 **ERP (kW):** 0.1 **Mechanical Tilt (°):**
Site Elevation AMSL (m): 376.1 **Maximum ERP (kW):**
HAAT (m): **Maximum ERP (dBk):** **Degrees True (°):**

Ant Type: DIR **Antenna ID:** 100733 **Rotation (°):** 180

0°	1.000	90°	0.010	180°	0.010	270°	0.010
10°	0.917	100°	0.010	190°	0.010	280°	0.048
20°	0.880	110°	0.010	200°	0.010	290°	0.190
30°	0.710	120°	0.010	210°	0.010	300°	0.280
40°	0.555	130°	0.010	220°	0.010	310°	0.410
50°	0.410	140°	0.010	230°	0.010	320°	0.550
60°	0.280	150°	0.010	240°	0.010	330°	0.710
70°	0.190	160°	0.010	250°	0.010	340°	0.880
80°	0.048	170°	0.010	260°	0.010	350°	0.917

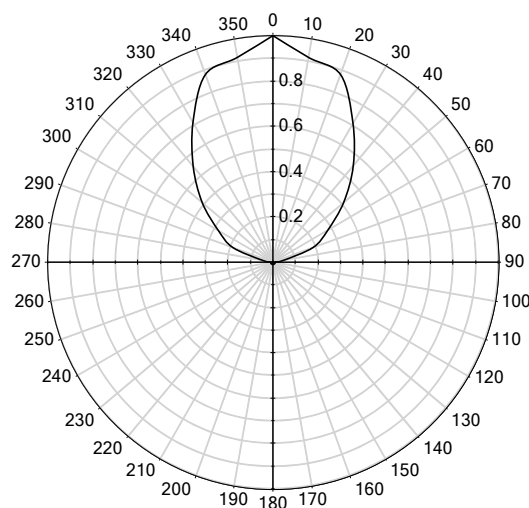
Antenna Make: SBP

Antenna Model: UPSL

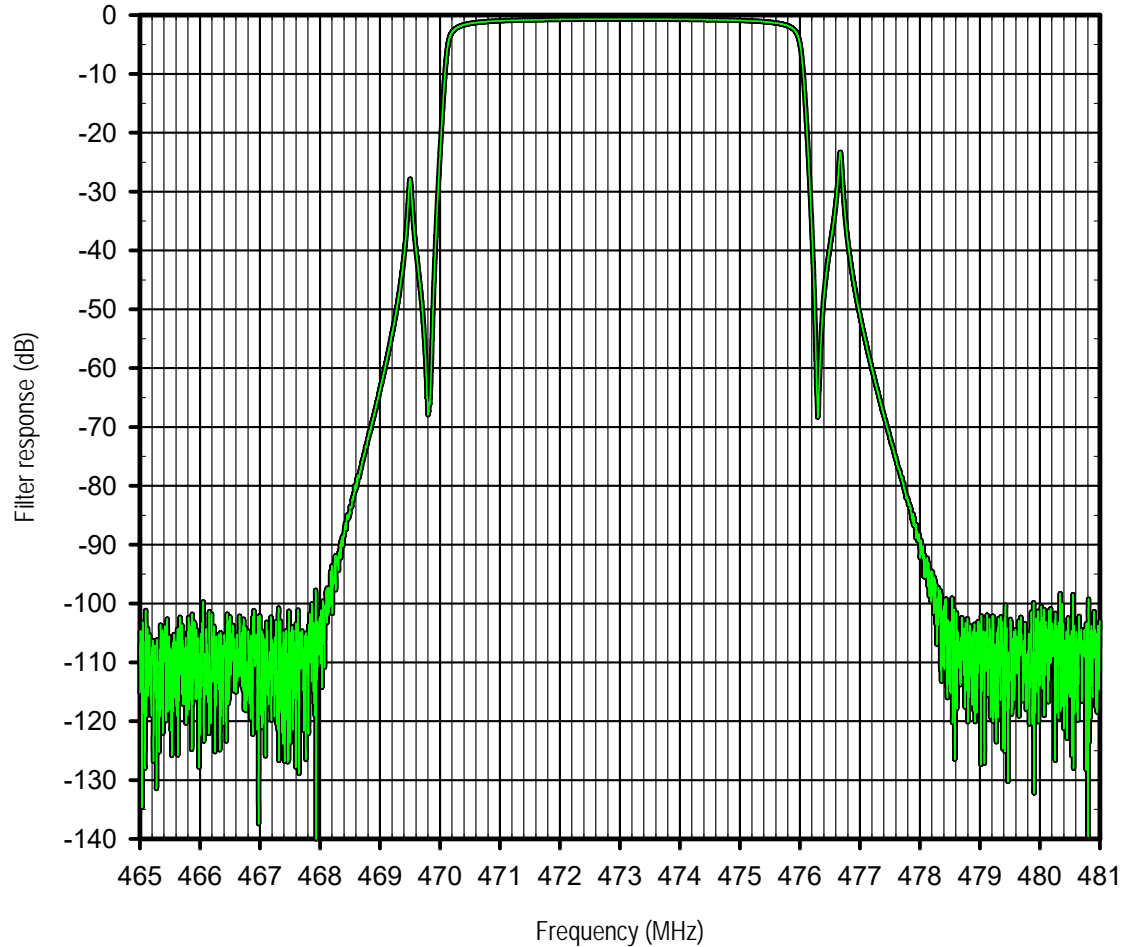
Last Change Date: 2022-06-13 14:19:33.839

Ant. Record ID: 25076f91815d6ac501815e493530031c

Note: Rotation or tilt is not applied to the pattern shown



Type: TOWER	ASRN: 1219696	FAA Study No.: 2005-AGL-2918-OE	Structure Height (m): 77.7
Latitude (NAD 83): 46-47-21.0	Date Received: 09/02/2014	Structure Height (ft): 254.9	
Longitude (NAD 83): 092-06-48.9	Date Entered: 09/02/2014	Ground Elevation (m): 376.1	
	Date Issued: 09/02/2014	Ground Elevation (ft): 1233.9	
	Date Constructed: 11/07/1991	Overall Height AGL (m): 84.4	
	Date Dismantled:	Overall Height AGL (ft): 276.9	
Struct. Address:		Overall Height AMSL (m): 460.5	
Intersection of N. 5th Ave. W and W 9th St.		Overall Height AMSL (ft): 1510.8	
Superior	MN		
Entity Name: Global Tower, LLC. through American Towers, LLC			



Filter response for K14QM-D, Duluth, MN, Channel 14

Dielectric two 250-watt 8-pole filters cascaded, Drawing 016A39401

Based on manufacturer supplied data.

FILTER RESPONSE FOR SPECIAL-TUNED 8-POLE FILTER FOR PROTECTION OF 465-470 MHZ LAND MOBILE

LPTV STATION K14QM-D
DULUTH, MINNESOTA
CHANNEL 14

du Treil, Lundin & Rackley, Inc. Sarasota, Florida

TABULATION OF LAND MOBILE RECORDS AND INTERFERENCE ANALYSIS
K14QM-D, DULUTH, MINNESOTA, CHANNEL 14 (SIMPLE EMISSION MASK WITH CASCADED FILTER)

Callsign	Licensee Name	Status Code	Location City	Location State	Location County	Latitude Degrees	Latitude Minutes	Latitude Seconds	Longitude Degrees	Longitude Minutes	Longitude Seconds	Distance From Center (km)	Azimuth From Center	Assigned Frequency	Distance (mi.)	Simple Emission Mask (dB)	LM Filter Response (dB)	Total Response (dB)	20*Log (Dist km) (dB)	Calc. Loss (dB)	Total IX (dBm)	Total IX (in dBu)	Margin above Limit
WPLU687	DSC Communications	Active	DULUTH	MN	ST. LOUIS	46	47	16	92	7	2	0.3	240.9	468.4750	0.2	47.8	85.3	133.2	-10.5	-50.7	-173.4	-42.8	59.8
WPLU687	DSC Communications	Active	DULUTH	MN	ST. LOUIS	46	47	16	92	7	2	0.3	240.9	468.3750	0.2	48.0	89.0	137.0	-10.5	-50.7	-177.2	-46.6	63.6
WPNP347	DSC Communications	Active	Duluth	MN	ST. LOUIS	46	47	16	92	7	3	0.3	242.6	466.2000	0.2	52.8	105.8	158.6	-10.5	-50.7	-198.8	-68.2	85.2
WPLU687	DSC Communications	Active	DULUTH	MN	ST. LOUIS	46	47	13.8	92	7	4.7	0.4	236.4	468.8500	0.2	47.2	70.1	117.3	-8.0	-50.7	-160.1	-29.5	46.5
WPLU687	DSC Communications	Active	DULUTH	MN	ST. LOUIS	46	47	13.8	92	7	4.7	0.4	236.4	468.6750	0.2	47.5	77.1	124.6	-8.0	-50.7	-167.4	-36.8	53.8
KNBI463	WDIO-TV, LLC	Active	DULUTH	MN	ST. LOUIS	46	47	12.8	92	7	17.7	0.7	247.4	469.85	0.4	46.1	61.1	107.2	-3.1	-50.7	-154.8	-24.2	41.2
KNBI464	WDIO-TV, LLC	Active	DULUTH	MN	ST. LOUIS	46	47	12.8	92	7	17.7	0.7	247.4	469.6	0.4	46.3	39.9	86.1	-3.1	-50.7	-133.8	-3.2	20.2
KOL491	DSC Communications	Active	DULUTH	MN	ST. LOUIS	46	47	6.8	92	7	15.7	0.7	232.3	466.7500	0.4	51.5	110.3	161.8	-3.1	-50.7	-209.4	-78.8	95.8
KOL491	DSC Communications	Active	DULUTH	MN	ST. LOUIS	46	47	6.8	92	7	15.7	0.7	232.3	466.7000	0.4	51.6	114.0	165.5	-3.1	-50.7	-213.1	-82.5	99.5
KOL491	DSC Communications	Active	DULUTH	MN	ST. LOUIS	46	47	6.8	92	7	15.7	0.7	232.3	466.6250	0.4	51.8	112.4	164.1	-3.1	-50.7	-211.7	-81.1	98.1
WPT374	Saint Louis, County Of	Active	Duluth	MN	ST. LOUIS	46	47	8	92	7	24	0.8	241.6	465.6	0.5	54.4	107.1	161.5	-1.9	-50.7	-210.3	-79.7	96.7
WQCI513	Zenith Asset Company LLC dba Best W	Active	DULUTH	MN	ST. LOUIS	46	46	59.8	92	6	23.7	0.8	140.9	466.1	0.5	53.1	110.1	163.2	-1.9	-50.7	-211.9	-81.3	98.3
WQUI792	Northwoods Sodding, Inc.	Active	Duluth	MN	ST. LOUIS	46	47	20	92	7	28	0.8	267.9	466.8	0.5	51.3	112.0	163.3	-1.9	-50.7	-212.0	-81.4	98.4
WPAM472	HOLIDAY INN	Active	DULUTH	MN	ST. LOUIS	46	47	6.2	92	6	7.4	1.0	117.5	469.0750	0.6	46.9	60.2	107.1	0.0	-50.7	-157.9	-27.3	44.3
WPAM472	HOLIDAY INN	Active	DULUTH	MN	ST. LOUIS	46	47	6.2	92	6	7.4	1.0	117.5	466.5125	0.6	52.0	110.4	162.4	0.0	-50.7	-213.1	-82.5	99.5
WQWE759	ALLETE, Inc., d/b/a Minnesota Power	Active	Duluth	MN	ST. LOUIS	46	46	59.4	92	7	24	1.0	228.1	469.8625	0.6	46.1	57.9	104.0	0.0	-50.7	-154.7	-24.1	41.1
WQWE759	ALLETE, Inc., d/b/a Minnesota Power	Active	Duluth	MN	ST. LOUIS	46	46	59.4	92	7	24	1.0	228.1	466.8125	0.6	51.3	108.2	159.5	0.0	-50.7	-210.2	-79.6	96.6
WQSJ234	Interstate Parking	Active	DULUTH	MN	ST. LOUIS	46	47	18.1	92	5	48.9	1.3	94.0	469.9500	0.8	46.0	33.4	79.5	2.3	-50.7	-132.5	-1.9	18.9
WQSJ234	Interstate Parking	Active	DULUTH	MN	ST. LOUIS	46	47	18.1	92	5	48.9	1.3	94.0	469.3000	0.8	46.6	48.5	95.1	2.3	-50.7	-148.1	-17.5	34.5
WQSJ234	Interstate Parking	Active	DULUTH	MN	ST. LOUIS	46	47	18.1	92	5	48.9	1.3	94.0	468.7500	0.8	47.4	74.1	121.5	2.3	-50.7	-174.5	-43.9	60.9
KVA283	DULUTH, CITY OF	Active	DULUTH	MN	ST. LOUIS	46	46	48.8	92	5	54.7	1.5	130.9	465.5250	0.9	54.7	107.8	162.5	3.5	-50.7	-216.7	-86.1	103.1
KVA283	DULUTH, CITY OF	Active	DULUTH	MN	ST. LOUIS	46	46	48.8	92	5	54.7	1.5	130.9	465.1000	0.9	55.9	111.7	167.5	3.5	-50.7	-221.7	-91.1	108.1
WPQH425	GREAT LAKES AQUARIUM	Active	DULUTH	MN	ST. LOUIS	46	46	47.8	92	5	58.7	1.5	134.0	466.4250	0.9	52.3	115.1	167.4	3.5	-50.7	-221.6	-91.0	108.0
WQMH632	SMDC Health Systems	Active	Duluth	MN	ST. LOUIS	46	47	36.8	92	5	42.7	1.5	70.8	469.975	0.9	46.0	28.4	74.4	3.5	-50.7	-128.7	1.9	15.1
WQMH632	SMDC Health Systems	Active	Duluth	MN	ST. LOUIS	46	47	31.8	92	5	40.4	1.5	77	469.8875	0.9	46.0	49.5	95.5	3.5	-50.7	-149.8	-19.2	36.2
WQMH632	SMDC Health Systems	Active	Duluth	MN	ST. LOUIS	46	47	36.8	92	5	42.7	1.5	70.8	469.675	0.9	46.2	46.8	93.0	3.5	-50.7	-147.2	-16.6	33.6
WQMH632	SMDC Health Systems	Active	Duluth	MN	ST. LOUIS	46	47	31.8	92	5	40.4	1.5	77	469.575	0.9	46.3	37.3	83.6	3.5	-50.7	-137.9	-7.3	24.3
WQMH632	SMDC Health Systems	Active	Duluth	MN	ST. LOUIS	46	47	31.8	92	5	40.4	1.5	77	468.7625	0.9	47.4	73.3	120.7	3.5	-50.7	-174.9	-44.3	61.3
WQMH632	SMDC Health Systems	Active	Duluth	MN	ST. LOUIS	46	47	36.8	92	5	42.7	1.5	70.8	468.525	0.9	47.8	83.6	131.3	3.5	-50.7	-185.5	-54.9	71.9
WQMH632	SMDC Health Systems	Active	Duluth	MN	ST. LOUIS	46	47	31.8	92	5	40.4	1.5	77	468.4875	0.9	47.8	85.3	133.1	3.5	-50.7	-187.3	-56.7	73.7
WQMH632	SMDC Health Systems	Active	Duluth	MN	ST. LOUIS	46	47	36.8	92	5	42.7	1.5	70.8	466.65	0.9	51.7	109.4	161.1	3.5	-50.7	-215.3	-84.7	101.7
WQMH632	SMDC Health Systems	Active	Duluth	MN	ST. LOUIS	46	47	32.5	92	5	33.6	1.6	77.4	469.2	1.0	46.7	54.1	100.8	4.1	-50.7	-155.6	-25.0	42.0
WQMH632	SMDC Health Systems	Active	Duluth	MN	ST. LOUIS	46	47	32.5	92	5	33.6	1.6	77.4	468.975	1.0	47.0	64.9	111.9	4.1	-50.7	-166.7	-36.1	53.1
WRPW872	Compass Minerals America, Inc.	Active	Duluth	MN	ST. LOUIS	46	46	26.8	92	6	33.7	1.7	169.1	468.2250	1.1	48.3	96.5	144.8	4.6	-50.7	-200.1	-69.5	86.5
WRPW872	Compass Minerals America, Inc.	Active	Duluth	MN	ST. LOUIS	46	46	26.8	92	6	33.7	1.7	169.1	466.8625	1.1	51.2	114.0	165.2	4.6	-50.7	-220.5	-89.9	106.9
WQKQ406	KEYSTONE BLUFFS	Active	DULUTH	MN	ST. LOUIS	46	47	1.6	92	8	21.1	2.0	252.9	468.6375	1.2	47.6	78.6	126.1	6.0	-50.7	-182.9	-52.3	69.3
WQNY354	St Lukes Hospital Assn of Duluth	Active	Duluth	MN	ST. LOUIS	46	47	49.7	92	5	13.3	2.2	66.3	469.9375	1.4	46.0	36.7	82.7	6.8	-50.7	-140.3	-9.7	26.7
WQNY354	St Lukes Hospital Assn of Duluth	Active	Duluth	MN	ST. LOUIS	46	47	49.7	92	5	13.3	2.2	66.3	468.625	1.4	47.6	79.3	126.9	6.8	-50.7	-184.5	-53.9	70.9
WQNY354	St Lukes Hospital Assn of Duluth	Active	Duluth	MN	ST. LOUIS	46	47	49.7	92	5	13.3	2.2	66.3	466.5625	1.4	51.9	109.0	160.9	6.8	-50.7	-218.4	-87.8	104.8
WQIC822	USA CENTRAL STATION ALARM CORP.	Active	DULUTH	MN	ST. LOUIS	46	46	9.4	92	7	22.3	2.3	197.7	465.9375	1.4	53.5	114.6	168.1	7.2	-50.7	-226.0	-95.4	112.4
WQUZ988	LAKE SUPERIOR COLLEGE	Active	DULUTH	MN	ST. LOUIS	46	47	4.5	92	8	40.3	2.4	257.8	467.4625	1.5	49.8	126.3	176.1	7.6	-50.7	-234.4	-103.8	120.8
WQUZ988	LAKE SUPERIOR COLLEGE	Active	DULUTH	MN	ST. LOUIS	46	47	4.5	92	8	40.3	2.4	257.8	467.3625	1.5	50.0	107.7	157.7	7.6	-50.7	-216.0	-85.4	102.4
WQUZ988	LAKE SUPERIOR COLLEGE	Active	DULUTH	MN	ST. LOUIS	46	47	4.5	92	8	40.3	2.4	257.8	467.3375	1.5	50.1	108.3	158.4	7.6	-50.7	-216.7	-86.1	103.1
WQUZ988	LAKE SUPERIOR COLLEGE	Active	DULUTH	MN	ST. LOUIS	46	47	4.5	92	8	40.3	2.4	257.8	467.3125	1.5	50.2	103.4	153.5	7.6	-50.7	-211.8	-81.2	98.2
WQUZ988	LAKE SUPERIOR COLLEGE	Active	DULUTH	MN	ST. LOUIS	46	47	4.5	92	8	40.3	2.4	257.8	467.2625	1.5	50.3	115.4	165.7	7.6	-50.7	-224.0	-93.4	110.4
WPNP386	BENDTEC INC	Active	DULUTH	MN	ST. LOUIS	46	45	51.8	92	6	43.7	2.8	177.7	468.6000	1.7	47.6	80.4	128.0	8.9	-50.7	-187.7	-57.1	74.1
WPQJ321	BENEDICTINE HEALTH CENTER DBA WE	Active	DULUTH	MN	ST. LOUIS	46	48	49.8	92	6	13.7	2.8	15.2	466.9500	1.7	51.0	107.3	158.3	8.9	-50.7	-217.9	-87.3	104.3
WNRV229	THE COLLEGE OF ST SCHOLASTICA	Active	DULUTH	MN	ST. LOUIS	46	48	54.8	92	6	23.7	2.9	10.4	466.775	1.8	51.4	111.0	162.4	9.2	-50.7	-222.3	-91.7	108.7
WNRV229	THE COLLEGE OF ST SCHOLASTICA	Active	DULUTH	MN	ST. LOUIS	46	48	54.8	92	6	23.7	2.9	10.4	466.5	1.8	52.1	108.0	160.1	9.2	-50.7	-220.0	-89.4	106.4
WPVJ740	CENTER FOR ALCOHOL & DRUG TREAT	Active	DULUTH	MN	ST. LOUIS	46	48	9	92	4	53	2.9	58.8	467.8500	1.8	49.0	108.8	157.8	9.2	-50.7	-217.8	-87.2	104.2

TABULATION OF LAND MOBILE RECORDS AND INTERFERENCE ANALYSIS
K14QM-D, DULUTH, MINNESOTA, CHANNEL 14 (SIMPLE EMISSION MASK WITH CASCADED FILTER)

Callsign	Licensee Name	Status Code	Location City	Location State	Location County	Latitude Degrees	Latitude Minutes	Latitude Seconds	Longitude Degrees	Longitude Minutes	Longitude Seconds	Distance From Center (km)	Azimuth From Center	Assigned Frequency	Distance (mi.)	Simple Emission Mask (dB)	LM Filter Response (dB)	Total Response (dB)	20*Log (Dist km) (dB)	Calc. Loss (dB)	Total IX (dBm)	Total IX (in dBu)	Margin above Limit
WNR9229	THE COLLAGE OF ST SCHOLASTICA	Active	DULUTH	MN	ST. LOUIS	46	48	57.8	92	6	22.7	3	10.5	466.775	1.9	51.4	111.0	162.4	9.5	-50.7	-222.6	-92.0	109.0
WNR9229	THE COLLAGE OF ST SCHOLASTICA	Active	DULUTH	MN	ST. LOUIS	46	48	57.8	92	6	22.7	3	10.5	466.5	1.9	52.1	108.0	160.1	9.5	-50.7	-220.3	-89.7	106.7
WQUJ886	MARYWOOD BENEDICTINE HEALTH CE	Active	DULUTH	MN	ST. LOUIS	46	48	56	92	6	20	3.0	11.8	467.4875	1.9	49.8	104.9	154.7	9.5	-50.7	-214.9	-84.3	101.3
WQUJ886	MARYWOOD BENEDICTINE HEALTH CE	Active	DULUTH	MN	ST. LOUIS	46	48	56	92	6	20	3.0	11.8	467.4625	1.9	49.8	126.3	176.1	9.5	-50.7	-236.3	-105.7	122.7
WQUJ886	MARYWOOD BENEDICTINE HEALTH CE	Active	DULUTH	MN	ST. LOUIS	46	48	56	92	6	20	3.0	11.8	467.4375	1.9	49.9	107.5	157.3	9.5	-50.7	-217.6	-87.0	104.0
WQUJ886	MARYWOOD BENEDICTINE HEALTH CE	Active	DULUTH	MN	ST. LOUIS	46	48	56	92	6	20	3.0	11.8	467.2375	1.9	50.3	109.3	159.6	9.5	-50.7	-219.8	-89.2	106.2
WQJC754	BENEDICTINE HEALTH CENTER DBA WE	Active	Duluth	MN	ST. LOUIS	46	48	59.9	92	6	16.1	3.1	12.8	469.9250	1.9	46.0	39.0	85.0	9.8	-50.7	-145.6	-15.0	32.0
WQJC754	BENEDICTINE HEALTH CENTER DBA WE	Active	Duluth	MN	ST. LOUIS	46	48	59.9	92	6	16.1	3.1	12.8	469.4500	1.9	46.4	35.0	81.4	9.8	-50.7	-142.0	-11.4	28.4
WQJC754	BENEDICTINE HEALTH CENTER DBA WE	Active	DULUTH	MN	ST. LOUIS	46	48	59.9	92	6	16.1	3.1	12.8	468.7875	1.9	47.3	72.7	120.0	9.8	-50.7	-180.6	-50.0	67.0
WQJC754	BENEDICTINE HEALTH CENTER DBA WE	Active	Duluth	MN	ST. LOUIS	46	48	59.9	92	6	16.1	3.1	12.8	467.3000	1.9	50.2	119.4	169.5	9.8	-50.7	-230.1	-99.5	116.5
WQJC754	BENEDICTINE HEALTH CENTER DBA WE	Active	Duluth	MN	ST. LOUIS	46	48	59.9	92	6	16.1	3.1	12.8	466.8750	1.9	51.2	117.2	168.3	9.8	-50.7	-228.8	-98.2	115.2
WQTS509	BENEDICTINE SISTERS BENEVOLENT AS	Active	DULUTH	MN	ST. LOUIS	46	48	57	92	6	2	3.1	18.5	467.8000	1.9	49.1	120.5	169.6	9.8	-50.7	-230.1	-99.5	116.5
WQTS509	BENEDICTINE SISTERS BENEVOLENT AS	Active	DULUTH	MN	ST. LOUIS	46	48	57	92	6	2	3.1	18.5	467.4125	1.9	49.9	126.6	176.5	9.8	-50.7	-237.1	-106.5	123.5
WQTS509	BENEDICTINE SISTERS BENEVOLENT AS	Active	DULUTH	MN	ST. LOUIS	46	48	57	92	6	2	3.1	18.5	467.3875	1.9	50.0	115.5	165.5	9.8	-50.7	-226.0	-95.4	112.4
WQTS509	BENEDICTINE SISTERS BENEVOLENT AS	Active	DULUTH	MN	ST. LOUIS	46	48	57	92	6	2	3.1	18.5	467.3375	1.9	50.1	108.3	158.4	9.8	-50.7	-218.9	-88.3	105.3
WQTS509	BENEDICTINE SISTERS BENEVOLENT AS	Active	DULUTH	MN	ST. LOUIS	46	48	57	92	6	2	3.1	18.5	467.2875	1.9	50.2	120.5	170.7	9.8	-50.7	-231.2	-100.6	117.6
WQTS509	BENEDICTINE SISTERS BENEVOLENT AS	Active	DULUTH	MN	ST. LOUIS	46	48	57	92	6	2	3.1	18.5	467.2125	1.9	50.4	108.1	158.5	9.8	-50.7	-219.0	-88.4	105.4
WQH8704	ARROWHEAD JUVENILE CENTER - ARC	Active	DULUTH	MN	ST. LOUIS	46	48	58.6	92	7	45.9	3.2	338.2	465.3500	2.0	55.1	106.7	161.8	10.1	-50.7	-222.6	-92.0	109.0
WPFC636	WESTERN LAKE SUPERIOR SANITARY D	Active	DULUTH	MN	ST. LOUIS	46	45	38.8	92	7	29.7	3.3	195.3	466.125	2.1	53.0	111.3	164.4	10.4	-50.7	-225.4	-94.8	111.8
WQDI346	SAINT LOUIS, COUNTY OF	Active	DULUTH	MN	ST. LOUIS	46	49	3.9	92	7	43.8	3.4	339.9	465.6	2.1	54.4	107.1	161.5	10.6	-50.7	-222.8	-92.2	109.2
WNFZ925	MILLER HILL MALL #0732 & TOWNE EA	Active	DULUTH	MN	ST. LOUIS	46	48	9.8	92	9	28.7	3.7	294.1	469.5250	2.3	46.3	30.4	76.8	11.4	-50.7	-138.9	-8.3	25.3
WQWB448	VIEWCREST HEALTHCARE CENTER	Active	DULUTH	MN	ST. LOUIS	46	47	7.3	92	9	41.3	3.7	263.4	469.7625	2.3	46.1	58.7	104.9	11.4	-50.7	-167.0	-36.4	53.4
WQWB448	VIEWCREST HEALTHCARE CENTER	Active	DULUTH	MN	ST. LOUIS	46	47	7.3	92	9	41.3	3.7	263.4	466.6625	2.3	51.7	102.6	154.2	11.4	-50.7	-216.3	-85.7	102.7
WQR8509	LAKE SUPERIOR WAREHOUSING CO., IN	Active	DULUTH	MN	ST. LOUIS	46	45	23	92	5	44	3.9	159.4	469.4000	2.4	46.5	40.9	87.4	11.8	-50.7	-150.0	-19.4	36.4
WQIK661	CHARLOTTE RUSSE	Active	DULUTH	MN	ST. LOUIS	46	48	23	92	9	39	4.1	298.0	467.9250	2.5	48.9	102.1	151.0	12.3	-50.7	-213.9	-83.3	100.3
WQIK661	CHARLOTTE RUSSE	Active	DULUTH	MN	ST. LOUIS	46	48	23	92	9	39	4.1	298.0	467.9000	2.5	48.9	104.2	153.1	12.3	-50.7	-216.1	-85.5	102.5
WQIK661	CHARLOTTE RUSSE	Active	DULUTH	MN	ST. LOUIS	46	48	23	92	9	39	4.1	298.0	467.8750	2.5	49.0	106.3	155.3	12.3	-50.7	-218.2	-87.6	104.6
WQIK661	CHARLOTTE RUSSE	Active	DULUTH	MN	ST. LOUIS	46	48	23	92	9	39	4.1	298.0	467.8500	2.5	49.0	108.8	157.8	12.3	-50.7	-220.8	-90.2	107.2
WQIU411	ALLETE, Inc. d/b/a Minnesota Power	Active	DULUTH	MN	ST. LOUIS	46	49	31	92	7	46	4.2	343.3	469.9000	2.6	46.0	45.2	91.2	12.5	-50.7	-154.4	-23.8	40.8
WQIU411	ALLETE, Inc. d/b/a Minnesota Power	Active	DULUTH	MN	ST. LOUIS	46	49	31	92	7	46	4.2	343.3	469.4375	2.6	46.4	37.1	83.5	12.5	-50.7	-146.7	-16.1	33.1
WQIU411	ALLETE, Inc. d/b/a Minnesota Power	Active	DULUTH	MN	ST. LOUIS	46	49	31	92	7	46	4.2	343.3	469.3875	2.6	46.5	42.3	88.8	12.5	-50.7	-152.0	-21.4	38.4
WQIU411	ALLETE, Inc. d/b/a Minnesota Power	Active	DULUTH	MN	ST. LOUIS	46	49	31	92	7	46	4.2	343.3	467.1500	2.6	50.5	110.8	161.3	12.5	-50.7	-224.5	-93.9	110.9
WQIU411	ALLETE, Inc. d/b/a Minnesota Power	Active	DULUTH	MN	ST. LOUIS	46	49	31	92	7	46	4.2	343.3	466.7625	2.6	51.4	104.6	156.0	12.5	-50.7	-219.1	-88.5	105.5
WQWV259	ALLETE, Inc. d/b/a Minnesota Power	Active	DULUTH	MN	ST. LOUIS	46	49	31	92	7	46	4.2	343.3	468.8625	2.6	47.2	69.5	116.7	12.5	-50.7	-179.8	-49.2	66.2
K824283	Oldcastle Materials Cement Holdings, I	Active	Duluth	MN	ST. LOUIS	46	45	8.2	92	5	55.6	4.3	164.6	467.1875	2.7	50.4	106.8	157.2	12.7	-50.7	-220.5	-89.9	106.9
WQAV256	SAKS OFF 5TH	Active	DULUTH	MN	ST. LOUIS	46	48	26	92	9	47	4.3	298.1	467.925	2.7	48.9	102.1	151.0	12.7	-50.7	-214.4	-83.8	100.8
WQAV256	SAKS OFF 5TH	Active	DULUTH	MN	ST. LOUIS	46	48	26	92	9	47	4.3	298.1	467.9	2.7	48.9	104.2	153.1	12.7	-50.7	-216.5	-85.9	102.9
WQAV256	SAKS OFF 5TH	Active	DULUTH	MN	ST. LOUIS	46	48	26	92	9	47	4.3	298.1	467.875	2.7	49.0	106.3	155.3	12.7	-50.7	-218.6	-88.0	105.0
WQAV256	SAKS OFF 5TH	Active	DULUTH	MN	ST. LOUIS	46	48	26	92	9	47	4.3	298.1	467.85	2.7	49.0	108.8	157.8	12.7	-50.7	-221.2	-90.6	107.6
WQHD885	HOME DEPOT U.S.A., INC.	Active	Duluth	MN	ST. LOUIS	46	48	20	92	9	51	4.3	295.3	467.9000	2.7	48.9	104.2	153.1	12.7	-50.7	-216.5	-85.9	102.9
WQHD885	HOME DEPOT U.S.A., INC.	Active	Duluth	MN	ST. LOUIS	46	48	20	92	9	51	4.3	295.3	467.8750	2.7	49.0	106.3	155.3	12.7	-50.7	-218.6	-88.0	105.0
WQHD885	HOME DEPOT U.S.A., INC.	Active	Duluth	MN	ST. LOUIS	46	48	20	92	9	51	4.3	295.3	467.8500	2.7	49.0	108.8	157.8	12.7	-50.7	-221.2	-90.6	107.6
WQHD885	HOME DEPOT U.S.A., INC.	Active	Duluth	MN	ST. LOUIS	46	48	20	92	9	51	4.3	295.3	467.8375	2.7	49.0	108.2	157.3	12.7	-50.7	-220.6	-90.0	107.0
WQHD885	HOME DEPOT U.S.A., INC.	Active	Duluth	MN	ST. LOUIS	46	48	20	92	9	51	4.3	295.3	467.7625	2.7	49.2	124.7	173.9	12.7	-50.7	-237.2	-106.6	123.6
WQL353	United Healthcare Services Inc.	Active	Duluth	MN	ST. LOUIS	46	49	33.2	92	7	56.2	4.3	340.8	468.6625	2.7	47.5	78.1	125.6	12.7	-50.7	-189.0	-58.4	75.4
WRF4931	Stella Maris Academy	Active	Duluth	MN	ST. LOUIS	46	48	57.4	92	4	1.8	4.6	49.9	468.6	2.9	47.6	80.4	128.0	13.3	-50.7	-192.0	-61.4	78.4
WNPH580	MIDWEST ENERGY RESOURCES	Active	Superior	WI	DOUGLAS	46	44	32.2	92	6	55.9	5.2	181.6	468.6875	3.2	47.5	76.7	124.2	14.3	-50.7	-189.2	-58.6	75.6
WQU7850	GENERAL MILLS OPERATIONS LLC	Active	SUPERIOR	WI	DOUGLAS	46	44	30	92	6	33	5.3	176.4	468.7125	3.3	47.4	75.8	123.2	14.5	-50.7	-188.5	-57.9	74.9
WQU7850	GENERAL MILLS OPERATIONS LLC	Active	SUPERIOR	WI	DOUGLAS	46	44	30	92	6	33	5.3	176.4	468.5125	3.3	47.8	83.7	131.5	14.5	-50.7	-196.7	-66.1	83.1
WQU7850	GENERAL MILLS OPERATIONS LLC	Active	SUPERIOR	WI	DOUGLAS	46	44	30	92	6	33	5.3	176.4	468.2625	3.3	48.2	97.7	145.9	14.5	-50.7	-211.1	-80.5	97.5

TABULATION OF LAND MOBILE RECORDS AND INTERFERENCE ANALYSIS
K14QM-D, DULUTH, MINNESOTA, CHANNEL 14 (SIMPLE EMISSION MASK WITH CASCADED FILTER)

Callsign	Licensee Name	Status Code	Location City	Location State	Location County	Latitude Degrees	Latitude Minutes	Latitude Seconds	Longitude Degrees	Longitude Minutes	Longitude Seconds	Distance From Center (km)	Azimuth From Center	Assigned Frequency	Distance (mi.)	Simple Emission Mask (dB)	LM Filter Response (dB)	Total Response (dB)	20*Log (Dist km) (dB)	Calc. Loss (dB)	Total IX (dBm)	Total IX (in dBu)	Margin above Limit
WNPH580	MIDWEST ENERGY RESOURCES	Active	SUPERIOR	WI	DOUGLAS	46	44	26.8	92	7	5.7	5.4	183.8	468.5500	3.4	47.7	81.8	129.5	14.6	-50.7	-194.9	-64.3	81.3
WNPH580	MIDWEST ENERGY RESOURCES	Active	SUPERIOR	WI	DOUGLAS	46	44	26.8	92	7	5.7	5.4	183.8	466.9000	3.4	51.1	102.7	153.8	14.6	-50.7	-219.1	-88.5	105.5
WPNQ838	CHS Inc	Active	SUPERIOR	WI	DOUGLAS	46	44	18.8	92	6	1.7	5.7	169.9	469.8250	3.5	46.1	66.2	112.3	15.1	-50.7	-178.1	-47.5	64.5
WPNQ838	CHS Inc	Active	SUPERIOR	WI	DOUGLAS	46	44	18.8	92	6	1.7	5.7	169.9	469.2500	3.5	46.7	51.4	98.1	15.1	-50.7	-163.9	-33.3	50.3
WPNQ838	CHS Inc	Active	SUPERIOR	WI	DOUGLAS	46	44	18.8	92	6	1.7	5.7	169.9	466.3000	3.5	52.6	107.6	160.2	15.1	-50.7	-226.0	-95.4	112.4
WPGG433	SAINT LOUIS, COUNTY OF	Active	DULUTH	MN	ST. LOUIS	46	49	33.8	92	10	19.7	6.1	312.6	465.45	3.8	54.9	105.6	160.4	15.7	-50.7	-226.8	-96.2	113.2
WPGG433	SAINT LOUIS, COUNTY OF	Active	DULUTH	MN	ST. LOUIS	46	49	33.8	92	10	19.7	6.1	312.6	465.2	3.8	55.6	110.0	165.6	15.7	-50.7	-231.9	-101.3	118.3
WPGG433	SAINT LOUIS, COUNTY OF	Active	DULUTH	MN	ST. LOUIS	46	49	33.8	92	10	19.7	6.1	312.6	465.025	3.8	56.1	104.7	160.8	15.7	-50.6	-227.1	-96.5	113.5
WRDI202	SAINT LOUIS, COUNTY OF	Active	DULUTH	MN	ST. LOUIS	46	49	33.8	92	10	19.7	6.1	312.6	465.5	3.8	54.7	108.4	163.1	15.7	-50.7	-229.5	-98.9	115.9
WRDI202	SAINT LOUIS, COUNTY OF	Active	DULUTH	MN	ST. LOUIS	46	49	33.8	92	10	19.7	6.1	312.6	465.3	3.8	55.3	110.4	165.7	15.7	-50.7	-232.1	-101.5	118.5
WRDI202	SAINT LOUIS, COUNTY OF	Active	DULUTH	MN	ST. LOUIS	46	49	33.8	92	10	19.7	6.1	312.6	465.075	3.8	55.9	116.9	172.9	15.7	-50.7	-239.2	-108.6	125.6
WQGN905	FRASER SHIPYARD INC	Active	Superior	WI	DOUGLAS	46	44	9.8	92	5	0.7	6.3	158.8	468.9125	3.9	47.1	67.5	114.6	16.0	-50.7	-181.4	-50.8	67.8
WQGN905	FRASER SHIPYARD INC	Active	Superior	WI	DOUGLAS	46	44	9.8	92	5	0.7	6.3	158.8	468.4250	3.9	47.9	86.3	134.2	16.0	-50.7	-200.9	-70.3	87.3
WQGU294	PER MAR SECURITY AND RESEARCH CO	Active	DULUTH	MN	ST. LOUIS	46	50	6	92	9	55	6.4	322.4	465.9125	4.0	53.6	104.5	158.1	16.1	-50.7	-224.9	-94.3	111.3
WQHC575	NORTHLAND COUNTRY CLUB	Active	DULUTH	MN	ST. LOUIS	46	49	37.8	92	2	54.9	6.5	49.5	466.9250	4.0	51.0	109.2	160.2	16.3	-50.7	-227.1	-96.5	113.5
WQHC575	NORTHLAND COUNTRY CLUB	Active	DULUTH	MN	ST. LOUIS	46	49	32.7	92	2	41	6.6	52.2	467.4375	4.1	49.9	107.5	157.3	16.4	-50.7	-224.4	-93.8	110.8
WRF931	Stella Maris Academy	Active	Duluth	MN	ST. LOUIS	46	44	37.5	92	10	10.8	6.6	220.2	469.9625	4.1	46.0	31.4	77.4	16.4	-50.7	-144.5	-13.9	30.9
WRF931	Stella Maris Academy	Active	Duluth	MN	ST. LOUIS	46	44	37.5	92	10	10.8	6.6	220.2	467.1875	4.1	50.4	106.8	157.2	16.4	-50.7	-224.3	-93.7	110.7
WNJD632	ST PAPER 1, LLC	Active	DULUTH	MN	ST. LOUIS	46	44	16	92	9	31.5	6.7	211.1	466.675	4.2	51.6	105.9	157.5	16.5	-50.7	-224.7	-94.1	111.1
WQDZ854	AMSOIL INC	Active	SUPERIOR	WI	DOUGLAS	46	43	33.6	92	7	33.6	7.1	187.7	466.8500	4.4	51.2	106.3	157.6	17.0	-50.7	-225.3	-94.7	111.7
WQJZ501	HERMANTOWN, CITY OF	Active	HERMANTOWN	MN	ST. LOUIS	46	48	44.2	92	11	59.7	7.1	291.4	467.2875	4.4	50.2	120.5	170.7	17.0	-50.7	-238.4	-107.8	124.8
WPDZ469	GRAYMOUNT WI	Active	SUPERIOR	WI	DOUGLAS	46	43	46.8	92	4	29.7	7.2	156.0	468.3375	4.5	48.1	92.2	140.2	17.1	-50.7	-208.1	-77.5	94.5
WNJD632	ST PAPER 1, LLC	Active	DULUTH	MN	ST. LOUIS	46	43	56.8	92	9	40.7	7.3	210	469	4.5	47.0	63.6	110.6	17.3	-50.7	-178.6	-48.0	65.0
WNJD632	ST PAPER 1, LLC	Active	DULUTH	MN	ST. LOUIS	46	43	56.8	92	9	40.7	7.3	210	468.925	4.5	47.1	67.0	114.1	17.3	-50.7	-182.1	-51.5	68.5
WNJD632	ST PAPER 1, LLC	Active	DULUTH	MN	ST. LOUIS	46	43	56.8	92	9	40.7	7.3	210	468.8	4.5	47.3	71.9	119.2	17.3	-50.7	-187.1	-56.5	73.5
WNJD632	ST PAPER 1, LLC	Active	DULUTH	MN	ST. LOUIS	46	43	56.8	92	9	40.7	7.3	210	468.725	4.5	47.4	75.2	122.6	17.3	-50.7	-190.6	-60.0	77.0
KNNJ594	Delta Air Lines Inc.	Active	DULUTH	MN	ST. LOUIS	46	50	17.8	92	10	47.7	7.4	317.3	465.6750	4.6	54.2	107.3	161.6	17.4	-50.7	-229.6	-99.0	116.0
WRF931	Stella Maris Academy	Active	Duluth	MN	ST. LOUIS	46	51	8.6	92	4	48.2	7.5	19.9	467.4625	4.7	49.8	126.3	176.1	17.5	-50.7	-244.3	-113.7	130.7
WQEQ255	DOUGLAS, COUNTY OF	Active	SUPERIOR	WI	DOUGLAS	46	43	17.5	92	5	49.8	7.6	170.6	465.6250	4.7	54.4	104.4	158.8	17.6	-50.7	-227.1	-96.5	113.5
WQEQ255	DOUGLAS, COUNTY OF	Active	SUPERIOR	WI	DOUGLAS	46	43	17.5	92	5	49.8	7.6	170.6	465.5750	4.7	54.5	110.4	164.9	17.6	-50.7	-233.2	-102.6	119.6
WRCI531	Cathedral School	Active	Superior	WI	DOUGLAS	46	43	17.8	92	5	42.7	7.6	169.4	469.8375	4.7	46.1	65.1	111.1	17.6	-50.7	-179.5	-48.9	65.9
WRCI531	Cathedral School	Active	Superior	WI	DOUGLAS	46	43	17.8	92	5	42.7	7.6	169.4	469.7875	4.7	46.1	65.0	111.1	17.6	-50.7	-179.5	-48.9	65.9
WQPW720	Superior Board of Education	Active	Superior	WI	DOUGLAS	46	43	0	92	7	18	8.1	184.4	469.025	5.0	47.0	62.6	109.5	18.2	-50.7	-178.4	-47.8	64.8
KNNN479	FEDERAL EXPRESS CORPORATION	Active	DULUTH	MN	ST. LOUIS	46	50	29.8	92	11	36.7	8.4	313.8	466.1125	5.2	53.1	110.3	163.3	18.5	-50.7	-232.5	-101.9	118.9
WQVF505	MCDONALD'S RESTAURANTS OF WISCONSIN	Active	SUPERIOR	WI	DOUGLAS	46	42	51	92	6	14	8.4	174.9	469.4625	5.2	46.4	33.4	79.8	18.5	-50.7	-149.0	-18.4	35.4
WQVF505	MCDONALD'S RESTAURANTS OF WISCONSIN	Active	SUPERIOR	WI	DOUGLAS	46	42	51	92	6	14	8.4	174.9	469.1875	5.2	46.7	55.0	101.7	18.5	-50.7	-170.9	-40.3	57.3
WQVF505	MCDONALD'S RESTAURANTS OF WISCONSIN	Active	SUPERIOR	WI	DOUGLAS	46	42	51	92	6	14	8.4	174.9	469.1625	5.2	46.8	56.2	103.0	18.5	-50.7	-172.2	-41.6	58.6
WQVF505	MCDONALD'S RESTAURANTS OF WISCONSIN	Active	SUPERIOR	WI	DOUGLAS	46	42	51	92	6	14	8.4	174.9	469.1375	5.2	46.8	57.4	104.3	18.5	-50.7	-173.5	-42.9	59.9
WQVF505	MCDONALD'S RESTAURANTS OF WISCONSIN	Active	SUPERIOR	WI	DOUGLAS	46	42	51	92	6	14	8.4	174.9	469.1125	5.2	46.8	58.7	105.6	18.5	-50.7	-174.8	-44.2	61.2
WQVF505	MCDONALD'S RESTAURANTS OF WISCONSIN	Active	SUPERIOR	WI	DOUGLAS	46	42	51	92	6	14	8.4	174.9	469.0875	5.2	46.9	59.8	106.7	18.5	-50.7	-175.9	-45.3	62.3
WQVF505	MCDONALD'S RESTAURANTS OF WISCONSIN	Active	SUPERIOR	WI	DOUGLAS	46	42	51	92	6	14	8.4	174.9	469.0625	5.2	46.9	60.9	107.8	18.5	-50.7	-177.0	-46.4	63.4
WQVF505	MCDONALD'S RESTAURANTS OF WISCONSIN	Active	SUPERIOR	WI	DOUGLAS	46	42	51	92	6	14	8.4	174.9	469.0375	5.2	46.9	62.0	109.0	18.5	-50.7	-178.2	-47.6	64.6
WQVF505	MCDONALD'S RESTAURANTS OF WISCONSIN	Active	SUPERIOR	WI	DOUGLAS	46	42	51	92	6	14	8.4	174.9	469.0125	5.2	47.0	63.1	110.1	18.5	-50.7	-179.3	-48.7	65.7
WQVF505	MCDONALD'S RESTAURANTS OF WISCONSIN	Active	SUPERIOR	WI	DOUGLAS	46	42	51	92	6	14	8.4	174.9	468.8375	5.2	47.2	70.8	118.1	18.5	-50.7	-187.3	-56.7	73.7
WQVF505	MCDONALD'S RESTAURANTS OF WISCONSIN	Active	SUPERIOR	WI	DOUGLAS	46	42	51	92	6	14	8.4	174.9	468.7625	5.2	47.4	73.3	120.7	18.5	-50.7	-189.9	-59.3	76.3
WQVF505	MCDONALD'S RESTAURANTS OF WISCONSIN	Active	SUPERIOR	WI	DOUGLAS	46	42	51	92	6	14	8.4	174.9	468.4875	5.2	47.8	85.3	133.1	18.5	-50.7	-202.3	-71.7	88.7
WPJY747	Delta Air Lines Inc.	Active	DULUTH	MN	ST. LOUIS	46	50	48.8	92	11	17.7	8.6	318.5	465.6500	5.3	54.3	114.2	168.5	18.7	-50.7	-237.8	-107.2	124.2
WNNF228	ALTERNATIVE COMMUNICATIONS	Active	PROCTOR	MN	ST. LOUIS	46	45	29.8	92	13	16.7	8.9	247.3	466.4000	5.5	52.3	109.2	161.5	19.0	-50.7	-231.1	-100.5	117.5
WQPW720	Superior Board of Education	Active	Superior	WI	DOUGLAS	46	42	32.1	92	5	41.9	9	171	466.7375	5.6	51.5	115.0	166.5	19.1	-50.7	-236.3	-105.7	122.7
WQPW720	Superior Board of Education	Active	Superior	WI	DOUGLAS	46	42	32.1	92	5	41.9	9	171	466.475	5.6	52.1	112.1	164.3	19.1	-50.7	-234.0	-103.4	120.4

TABULATION OF LAND MOBILE RECORDS AND INTERFERENCE ANALYSIS
K14QM-D, DULUTH, MINNESOTA, CHANNEL 14 (SIMPLE EMISSION MASK WITH CASCADED FILTER)

Callsign	Licensee Name	Status Code	Location City	Location State	Location County	Latitude Degrees	Latitude Minutes	Latitude Seconds	Longitude Degrees	Longitude Minutes	Longitude Seconds	Distance From Center (km)	Azimuth From Center	Assigned Frequency	Distance (mi.)	Simple Emission Mask (dB)	LM Filter Response (dB)	Total Response (dB)	20*Log (Dist km) (dB)	Calc. Loss (dB)	Total IX (dBm)	Total IX (in dBu)	Margin above Limit
WQWR301	ARROWHEAD ZOOLOGICAL SOCIETY	Active	DULUTH	MN	ST. LOUIS	46	43	32.5	92	11	26	9.2	219.7	465.0000	5.7	56.2	115.1	171.3	19.3	-50.6	-241.2	-110.6	127.6
WRER216	Lake Superior Zoo	Active	Duluth	MN	ST. LOUIS	46	43	32.8	92	11	25.9	9.2	219.8	468.2000	5.7	48.3	95.2	143.6	19.3	-50.7	-213.6	-83.0	100.0
KOL491	DSC Communications	Active	DULUTH	MN	ST. LOUIS	46	50	14.8	92	12	46.7	9.3	305.4	466.7500	5.8	51.5	110.3	161.8	19.4	-50.7	-231.8	-101.2	118.2
KOL491	DSC Communications	Active	DULUTH	MN	ST. LOUIS	46	50	14.8	92	12	46.7	9.3	305.4	466.7000	5.8	51.6	114.0	165.5	19.4	-50.7	-235.6	-105.0	122.0
KOL491	DSC Communications	Active	DULUTH	MN	ST. LOUIS	46	50	14.8	92	12	46.7	9.3	305.4	466.6250	5.8	51.8	112.4	164.1	19.4	-50.7	-234.2	-103.6	120.6
WPPB362	SUPERIOR SENIOR HIGH SCHOOL	Active	SUPERIOR	WI	DOUGLAS	46	42	26.8	92	5	14.7	9.3	167.6	466.60625	5.8	51.8	112.9	164.7	19.4	-50.7	-234.8	-104.2	121.2
WQPW720	Superior Board of Education	Active	Superior	WI	DOUGLAS	46	42	25.7	92	4	7.8	9.7	159.5	468.5375	6.0	47.7	82.4	130.1	19.7	-50.7	-200.6	-70.0	87.0
WQPW720	Superior Board of Education	Active	Superior	WI	DOUGLAS	46	42	25.7	92	4	7.8	9.7	159.5	468.45	6.0	47.9	85.4	133.3	19.7	-50.7	-203.7	-73.1	90.1
WQPW720	Superior Board of Education	Active	Superior	WI	DOUGLAS	46	42	25.7	92	4	7.8	9.7	159.5	468.325	6.0	48.1	91.6	139.7	19.7	-50.7	-210.1	-79.5	96.5
WQPW720	Superior Board of Education	Active	Superior	WI	DOUGLAS	46	42	25.7	92	4	7.8	9.7	159.5	467.1	6.0	50.6	113.0	163.7	19.7	-50.7	-234.1	-103.5	120.5
WQPW720	Superior Board of Education	Active	Superior	WI	DOUGLAS	46	42	25.7	92	4	7.8	9.7	159.5	466.25	6.0	52.7	125.0	177.8	19.7	-50.7	-248.2	-117.6	134.6
WQSE277	ESC SYSTEMS	Active	PROCTOR	MN	ST. LOUIS	46	44	47.1	92	13	26.2	9.7	240.6	467.5125	6.0	49.7	105.1	154.8	19.7	-50.7	-225.3	-94.7	111.7
KNBJ865	SUPERIOR, CITY OF	Active	SUPERIOR	WI	DOUGLAS	46	42	3.8	92	6	10.7	9.8	175.3	465.625	6.1	54.4	104.4	158.8	19.8	-50.7	-229.3	-98.7	115.7
WPLJ899	PROCTOR BUILDERS SUPPLY INC	Active		MN	ST. LOUIS	46	45	28.8	92	14	0.7	9.8	249.3	467.925	6.1	48.9	102.1	151.0	19.8	-50.7	-221.5	-90.9	107.9
WQMH632	SMDC Health Systems	Active	Superior	WI	DOUGLAS	46	41	51.4	92	6	9.7	10.2	175.3	469.8	6.3	46.1	67.9	114.0	20.2	-50.7	-185.0	-54.4	71.4
WQMH632	SMDC Health Systems	Active	Superior	WI	DOUGLAS	46	41	51.4	92	6	9.7	10.2	175.3	466.15	6.3	53.0	121.9	174.9	20.2	-50.7	-245.8	-115.2	132.2
WPGY587	HERMANTOWN SCHOOL DISTRICT 700	Active	HERMANTOWN	MN	ST. LOUIS	46	49	21.8	92	14	22.7	10.3	291.3	466.0500	6.4	53.2	106.1	159.3	20.3	-50.7	-230.3	-99.7	116.7
WREI455	HANSEN-MUELLER	Active	SUPERIOR	WI	DOUGLAS	46	42	28.4	92	2	53.6	10.3	151.1	466.5375	6.4	52.0	109.7	161.7	20.3	-50.7	-232.7	-102.1	119.1
WREI455	HANSEN-MUELLER	Active	SUPERIOR	WI	DOUGLAS	46	42	28.4	92	2	53.6	10.3	151.1	466.3875	6.4	52.4	107.2	159.6	20.3	-50.7	-230.5	-99.9	116.9
WQA1804	SUPERIOR BOARD OF EDUCATION	Active	Superior	WI	DOUGLAS	46	41	45	92	5	57.1	10.4	174	469.7375	6.5	46.1	54.3	100.4	20.3	-50.7	-171.5	-40.9	57.9
KKB282	TATE & LYLE CITRIC ACID INC	Active	DULUTH	MN	ST. LOUIS	46	42	24.9	92	12	14.2	11.5	217	467.0125	7.1	50.8	115.2	166.1	21.2	-50.7	-238.0	-107.4	124.4
WPGY610	Superior Refining Company, LLC	Active	Superior	WI	DOUGLAS	46	41	25.8	92	4	8.7	11.5	162.8	468.7375	7.1	47.4	74.6	122.0	21.2	-50.7	-193.9	-63.3	80.3
WPGY610	Superior Refining Company, LLC	Active	Superior	WI	DOUGLAS	46	41	21.6	92	4	33.9	11.5	165.6	468.7375	7.1	47.4	74.6	122.0	21.2	-50.7	-193.9	-63.3	80.3
WPD1785	MEYER, C R	Active	SUPERIOR	WI	DOUGLAS	46	40	59.8	92	5	7.7	12.0	169.7	468.7000	7.5	47.5	75.9	123.4	21.6	-50.7	-195.7	-65.1	82.1
WPD1785	MEYER, C R	Active	SUPERIOR	WI	DOUGLAS	46	40	59.8	92	5	7.7	12.0	169.7	466.9250	7.5	51.0	109.2	160.2	21.6	-50.7	-232.5	-101.9	118.9
WPLU687	DSC Communications	Active	DULUTH	MN	ST. LOUIS	46	42	23.6	92	13	37.7	12.6	223.3	466.8000	7.8	51.3	112.0	163.3	22.0	-50.7	-236.0	-105.4	122.4
WQLI405	DSC Communications	Active	Duluth	MN	ST. LOUIS	46	42	23.6	92	13	37.7	12.6	223.3	467.3500	7.8	50.1	108.9	158.9	22.0	-50.7	-231.6	-101.0	118.0
WQLI405	DSC Communications	Active	Duluth	MN	ST. LOUIS	46	42	23.6	92	13	37.7	12.6	223.3	467.1375	7.8	50.5	110.0	160.5	22.0	-50.7	-233.2	-102.6	119.6
WQLI405	DSC Communications	Active	Duluth	MN	ST. LOUIS	46	42	23.6	92	13	37.7	12.6	223.3	467.0000	7.8	50.9	112.8	163.7	22.0	-50.7	-236.4	-105.8	122.8
WQLI405	DSC Communications	Active	Duluth	MN	ST. LOUIS	46	42	23.6	92	13	37.7	12.6	223.3	466.5875	7.8	51.9	111.9	163.8	22.0	-50.7	-236.5	-105.9	122.9
WQLI405	DSC Communications	Active	Duluth	MN	ST. LOUIS	46	42	23.6	92	13	37.7	12.6	223.3	466.4625	7.8	52.2	110.5	162.7	22.0	-50.7	-235.4	-104.8	121.8
WPNQ472	BNSF Railway Co.	Active		WI	DOUGLAS	46	40	58.8	92	1	55.7	13.3	152.2	466.9125	8.3	51.1	108.3	159.4	22.5	-50.7	-232.6	-102.0	119.0
WPNQ472	BNSF Railway Co.	Active		WI	DOUGLAS	46	40	58.8	92	1	55.7	13.3	152.2	466.8875	8.3	51.1	102.5	153.6	22.5	-50.7	-226.8	-96.2	113.2
WQA1804	SUPERIOR BOARD OF EDUCATION	Active	SUPERIOR	WI	DOUGLAS	46	39	58.1	92	6	1.1	13.7	175.8	467.0625	8.5	50.7	107.8	158.5	22.7	-50.7	-231.9	-101.3	118.3
WQIU344	ALLETE, Inc., d/b/a Minnesota Power	Active	ADOLPH	MN	ST. LOUIS	46	46	27.7	92	17	35.6	13.8	263.2	469.1250	8.6	46.8	57.9	104.8	22.8	-50.7	-178.3	-47.7	64.7
WQIU344	ALLETE, Inc., d/b/a Minnesota Power	Active	ADOLPH	MN	ST. LOUIS	46	46	27.7	92	17	35.6	13.8	263.2	468.3125	8.6	48.1	94.1	142.2	22.8	-50.7	-215.7	-85.1	102.1
WQIU344	ALLETE, Inc., d/b/a Minnesota Power	Active	ADOLPH	MN	ST. LOUIS	46	46	27.7	92	17	35.6	13.8	263.2	466.4875	8.6	52.1	105.8	157.9	22.8	-50.7	-231.4	-100.8	117.8
WQIU413	ALLETE, Inc., d/b/a Minnesota Power	Active	DULUTH	MN	ST. LOUIS	46	54	51.8	92	3	8.7	14.7	18.4	468.3500	9.1	48.1	89.8	137.8	23.3	-50.7	-211.9	-81.3	98.3
WQIU413	ALLETE, Inc., d/b/a Minnesota Power	Active	DULUTH	MN	ST. LOUIS	46	54	51.8	92	3	8.7	14.7	18.4	467.5250	9.1	49.7	107.7	157.4	23.3	-50.7	-231.4	-100.8	117.8
WQIU413	ALLETE, Inc., d/b/a Minnesota Power	Active	DULUTH	MN	ST. LOUIS	46	54	51.8	92	3	8.7	14.7	18.4	467.0500	9.1	50.7	120.4	171.1	23.3	-50.7	-245.2	-114.6	131.6
WQCG652	INDEPENDENT SCHOOL DISTRICT 99 ES	Active	ESKO	MN	CARLTON	46	43	14	92	21	54	20.7	248.4	467.2250	12.9	50.3	107.1	157.4	26.3	-50.7	-234.4	-103.8	120.8
WQCG652	INDEPENDENT SCHOOL DISTRICT 99 ES	Active	ESKO	MN	CARLTON	46	43	14	92	21	54	20.7	248.4	466.3750	12.9	52.4	112.5	164.8	26.3	-50.7	-241.8	-111.2	128.2
WQQY229	NORTH SHORE COMMUNITY SCHOOL	Active	DULUTH	MN	ST. LOUIS	46	56	27.4	91	53	49.7	23.6	44.2	467.2125	14.7	50.4	108.1	158.5	27.5	-50.7	-236.7	-106.1	123.1
WQNY408	SAPPI CLOQUET LLC	Active	Cloquet	MN	CARLTON	46	43	28.8	92	26	2.5	25.5	253.7	466.9625	15.8	51.0	112.8	163.8	28.1	-50.7	-242.6	-112.0	129.0
WQNY408	SAPPI CLOQUET LLC	Active	Cloquet	MN	CARLTON	46	43	28.8	92	26	2.5	25.5	253.7	466.7875	15.8	51.4	116.5	167.8	28.1	-50.7	-246.6	-116.0	133.0
WQNY408	SAPPI CLOQUET LLC	Active	Cloquet	MN	CARLTON	46	43	28.8	92	26	2.5	25.5	253.7	466.6375	15.8	51.7	108.6	160.4	28.1	-50.7	-239.2	-108.6	125.6
WQNY408	SAPPI CLOQUET LLC	Active	Cloquet	MN	CARLTON	46	43	28.8	92	26	2.5	25.5	253.7	466.4375	15.8	52.2	109.7	161.9	28.1	-50.7	-240.7	-110.1	127.1
WQNY408	SAPPI CLOQUET LLC	Active	Cloquet	MN	CARLTON	46	43	28.8	92	26	2.5	25.5	253.7	466.175	15.8	52.9	111.7	164.6	28.1	-50.7	-243.4	-112.8	129.8
WRMI385	Shamrock Trucking, LLC.	Active	Cloquet	MN	CARLTON	46	42	33.6	92	25	33.2	25.5	249.7	469.95	15.8	46.0	33.4	79.5	28.1	-50.7	-158.3	-27.7	44.7
WRMI385	Shamrock Trucking, LLC.	Active	Cloquet	MN	CARLTON	46	42	33.6	92	25	33.2	25.5	249.7	469.8875	15.8	46.0	49.5	95.5	28.1	-50.7	-174.4	-43.8	60.8

TABULATION OF LAND MOBILE RECORDS AND INTERFERENCE ANALYSIS
K14QM-D, DULUTH, MINNESOTA, CHANNEL 14 (SIMPLE EMISSION MASK WITH CASCADED FILTER)

Callsign	Licensee Name	Status Code	Location City	Location State	Location County	Latitude Degrees	Latitude Minutes	Latitude Seconds	Longitude Degrees	Longitude Minutes	Longitude Seconds	Distance From Center (km)	Azimuth From Center	Assigned Frequency	Distance (mi.)	Simple Emission Mask (dB)	LM Filter Response (dB)	Total Response (dB)	20*Log (Dist km) (dB)	Calc. Loss (dB)	Total IX (dBm)	Total IX (in dBu)	Margin above Limit
WQBR226	JAMAR CO	Active	DULUTH	MN	ST. LOUIS	46	53	46	92	25	20	26.4	297.0	467.5000	16.4	49.7	121.3	171.0	28.4	-50.7	-250.2	-119.6	136.6
WQUQ319	ISD 94 Washington Elementary School	Active	CLOQUET	MN	CARLTON	46	42	29.7	92	26	29.5	26.6	250.3	467.0125	16.5	50.8	115.2	166.1	28.5	-50.7	-245.3	-114.7	131.7
WQIU408	ALLETE, Inc. d/b/a Minnesota Power	Active	DULUTH	MN	ST. LOUIS	46	58	38.6	92	20	1.1	26.8	321.5	469.2750	16.7	46.6	50.1	96.7	28.6	-50.7	-176.0	-45.4	62.4
WQIU408	ALLETE, Inc. d/b/a Minnesota Power	Active	DULUTH	MN	ST. LOUIS	46	58	38.6	92	20	1.1	26.8	321.5	468.6125	16.7	47.6	80.3	127.9	28.6	-50.7	-207.1	-76.5	93.5
WQIU408	ALLETE, Inc. d/b/a Minnesota Power	Active	DULUTH	MN	ST. LOUIS	46	58	38.6	92	20	1.1	26.8	321.5	468.4000	16.7	48.0	88.3	136.3	28.6	-50.7	-215.6	-85.0	102.0
WQIU345	ALLETE, Inc. d/b/a Minnesota Power	Active	CLOQUET	MN	CARLTON	46	42	22.7	92	26	43.6	27.0	250.1	468.9625	16.8	47.1	65.3	112.4	28.6	-50.7	-191.8	-61.2	78.2
WQIU345	ALLETE, Inc. d/b/a Minnesota Power	Active	CLOQUET	MN	CARLTON	46	42	22.7	92	26	43.6	27.0	250.1	466.9875	16.8	50.9	106.0	156.9	28.6	-50.7	-236.3	-105.7	122.7
WQIU345	ALLETE, Inc. d/b/a Minnesota Power	Active	CLOQUET	MN	CARLTON	46	42	22.7	92	26	43.6	27.0	250.1	466.7125	16.8	51.5	105.3	156.8	28.6	-50.7	-236.2	-105.6	122.6
WPFH879	UPPER LAKES FOODS	Active	CLOQUET	MN	CARLTON	46	43	25.8	92	27	18.6	27.1	254.5	469.875	16.8	46.1	52.6	98.7	28.7	-50.7	-178.1	-47.5	64.5
WRPX314	CABHS Willmar	Pending	Carlton	MN	CARLTON	46	40	16.4	92	25	23.4	27.1	241.0	469.8750	16.8	46.1	52.6	98.7	28.7	-50.7	-178.1	-47.5	64.5
WRPX314	CABHS Willmar	Pending	Carlton	MN	CARLTON	46	40	16.4	92	25	23.4	27.1	241.0	469.7375	16.8	46.1	54.3	100.4	28.7	-50.7	-179.8	-49.2	66.2
WRNR809	Community Memorial Hospital Associat	Active	Cloquet	MN	CARLTON	46	43	53	92	27	42	27.4	256.5	467.5125	17.0	49.7	105.1	154.8	28.8	-50.7	-234.3	-103.7	120.7
WRNR809	Community Memorial Hospital Associat	Active	Cloquet	MN	CARLTON	46	43	53	92	27	42	27.4	256.5	467.4875	17.0	49.8	104.9	154.7	28.8	-50.7	-234.1	-103.5	120.5
WRNR809	Community Memorial Hospital Associat	Active	Cloquet	MN	CARLTON	46	43	53	92	27	42	27.4	256.5	467.3125	17.0	50.2	103.4	153.5	28.8	-50.7	-233.0	-102.4	119.4
WRNR809	Community Memorial Hospital Associat	Active	Cloquet	MN	CARLTON	46	43	53	92	27	42	27.4	256.5	467.1875	17.0	50.4	106.8	157.2	28.8	-50.7	-236.6	-106.0	123.0
WRFU275	Savanna Pallets	Active	Cloquet	MN	CARLTON	46	42	4.6	92	27	8.7	27.7	249.4	469.9125	17.2	46.0	42.6	88.6	28.8	-50.7	-168.2	-37.6	54.6
WRFU275	Savanna Pallets	Active	Cloquet	MN	CARLTON	46	42	4.6	92	27	8.7	27.7	249.4	469.8125	17.2	46.1	67.5	113.6	28.8	-50.7	-193.2	-62.6	79.6
WPMA561	VILLA MARINA HEALTH & REHABILITAT	Active	SUPERIOR	WI	DOUGLAS	46	32	3.8	92	4	5.7	28.5	173	468.275	17.7	48.2	92.9	141.1	29.1	-50.7	-220.9	-90.3	107.3
WQK8214	Ulland Brothers	Active	Carlton	MN	CARLTON	46	39	49.5	92	27	37.8	30	242.3	467.4625	18.6	49.8	126.3	176.1	29.5	-50.7	-256.3	-125.7	142.7
WQKP964	FOND DU LAC MANAGEMENT INC	Active	CARLTON	MN	CARLTON	46	39	48.8	92	28	49.7	31.3	243.6	469.9625	19.4	46.0	31.4	77.4	29.9	-50.7	-158.0	-27.4	44.4
WQKP964	FOND DU LAC MANAGEMENT INC	Active	CARLTON	MN	CARLTON	46	39	48.8	92	28	49.7	31.3	243.6	468.8125	19.4	47.3	71.7	118.9	29.9	-50.7	-199.6	-69.0	86.0
WQKP964	FOND DU LAC MANAGEMENT INC	Active	CARLTON	MN	CARLTON	46	39	48.8	92	28	49.7	31.3	243.6	468.3875	19.4	48.0	88.7	136.7	29.9	-50.7	-217.3	-86.7	103.7
WQKP964	FOND DU LAC MANAGEMENT INC	Active	CARLTON	MN	CARLTON	46	39	48.8	92	28	49.7	31.3	243.6	467.0375	19.4	50.8	121.1	171.9	29.9	-50.7	-252.5	-121.9	138.9
WQKP964	FOND DU LAC MANAGEMENT INC	Active	CARLTON	MN	CARLTON	46	39	48.8	92	28	49.7	31.3	243.6	466.4125	19.4	52.3	107.0	159.3	29.9	-50.7	-239.9	-109.3	126.3
WQKY946	FOND DU LAC OJIBWE SCHOOL	Active	CLOQUET	MN	CARLTON	46	42	38	92	30	47	31.8	254.1	468.3625	19.8	48.0	89.4	137.4	30.0	-50.7	-218.2	-87.6	104.6
WQAI804	SUPERIOR BOARD OF EDUCATION	Active	SUPERIOR	WI	DOUGLAS	46	28	36.1	92	11	14.6	35.2	189.2	468.2	21.9	48.3	95.2	143.6	30.9	-50.7	-225.2	-94.6	111.6
WPJU667	Allnet Wireless LLC	Active		MN	ST. LOUIS	46	54	44.8	92	33	59.7	37.2	291.9	469.5750	23.1	46.3	37.3	83.6	31.4	-50.7	-165.8	-35.2	52.2
WPJU667	Allnet Wireless LLC	Active		MN	ST. LOUIS	46	54	44.8	92	33	59.7	37.2	291.9	469.4750	23.1	46.4	30.9	77.3	31.4	-50.7	-159.4	-28.8	45.8
WPJU667	Allnet Wireless LLC	Active		MN	ST. LOUIS	46	54	44.8	92	33	59.7	37.2	291.9	469.4250	23.1	46.5	38.3	84.7	31.4	-50.7	-166.8	-36.2	53.2
WPJU667	Allnet Wireless LLC	Active		MN	ST. LOUIS	46	54	44.8	92	33	59.7	37.2	291.9	469.3750	23.1	46.5	43.2	89.7	31.4	-50.7	-171.8	-41.2	58.2
WPJU667	Allnet Wireless LLC	Active		MN	ST. LOUIS	46	54	44.8	92	33	59.7	37.2	291.9	469.3250	23.1	46.6	46.9	93.5	31.4	-50.7	-175.6	-45.0	62.0
WPJU667	Allnet Wireless LLC	Active		MN	ST. LOUIS	46	54	44.8	92	33	59.7	37.2	291.9	469.3125	23.1	46.6	47.9	94.4	31.4	-50.7	-176.6	-46.0	63.0
WPJU667	Allnet Wireless LLC	Active		MN	ST. LOUIS	46	54	44.8	92	33	59.7	37.2	291.9	469.1125	23.1	46.8	58.7	105.6	31.4	-50.7	-187.7	-57.1	74.1
WPJU667	Allnet Wireless LLC	Active		MN	ST. LOUIS	46	54	44.8	92	33	59.7	37.2	291.9	469.0375	23.1	46.9	62.0	109.0	31.4	-50.7	-191.1	-60.5	77.5
WPJU667	Allnet Wireless LLC	Active		MN	ST. LOUIS	46	54	44.8	92	33	59.7	37.2	291.9	468.9375	23.1	47.1	66.7	113.8	31.4	-50.7	-195.9	-65.3	82.3
WPJU667	Allnet Wireless LLC	Active		MN	ST. LOUIS	46	54	44.8	92	33	59.7	37.2	291.9	468.4125	23.1	47.9	87.4	135.4	31.4	-50.7	-217.5	-86.9	103.9
WPJU667	Allnet Wireless LLC	Active		MN	ST. LOUIS	46	54	44.8	92	33	59.7	37.2	291.9	468.2875	23.1	48.2	92.6	140.7	31.4	-50.7	-222.8	-92.2	109.2
WNUV664	MAPLE SCHOOL DISTRICT	Active	MAPLE	WI	DOUGLAS	46	35	4.8	91	41	55.8	39.0	125.6	466.7250	24.2	51.5	104.6	156.1	31.8	-50.7	-238.6	-108.0	125.0
WQVA851	Louisiana Pacific Corp	Active	TWO HARBORS	MN	LAKE	47	2	46.1	91	40	27.1	44.0	49.3	469.6750	27.3	46.2	46.8	93.0	32.9	-50.7	-176.6	-46.0	63.0
WRAI528	Stanley LaBounty	Active	Two Harbors	MN	LAKE	47	2	43	91	40	5.4	44.3	49.7	467.125	27.5	50.6	107.1	157.7	32.9	-50.7	-241.3	-110.7	127.7
WQPT375	TWO HARBORS, CITY OF	Active	TWO HARBORS	MN	LAKE	47	2	42.6	91	38	4.7	46.3	51.8	467.8375	28.8	49.0	108.2	157.3	33.3	-50.7	-241.3	-110.7	127.7
WQPT375	TWO HARBORS, CITY OF	Active	TWO HARBORS	MN	LAKE	47	2	42.6	91	38	4.7	46.3	51.8	467.2875	28.8	50.2	120.5	170.7	33.3	-50.7	-254.7	-124.1	141.1
WQZA278	SCHOOL DISTRICT OF SOLON SPRINGS	Active	SOLON SPRINGS	WI	DOUGLAS	46	20	46.5	91	49	51.2	53.8	156.2	469.2375	33.4	46.7	52.3	99.0	34.6	-50.7	-184.4	-53.8	70.8
WQIY833	ALLETE, Inc. d/b/a Minnesota Power	Active	BARNUM	MN	CARLTON	46	30	40	92	41	23	53.9	235.1	469.0500	33.5	46.9	61.5	108.4	34.6	-50.7	-193.8	-63.2	80.2
WQIY833	ALLETE, Inc. d/b/a Minnesota Power	Active	BARNUM	MN	CARLTON	46	30	40	92	41	23	53.9	235.1	468.9000	33.5	47.1	67.9	115.0	34.6	-50.7	-200.4	-69.8	86.8
WQIY833	ALLETE, Inc. d/b/a Minnesota Power	Active	BARNUM	MN	CARLTON	46	30	40	92	41	23	53.9	235.1	468.4375	33.5	47.9	87.0	134.9	34.6	-50.7	-220.2	-89.6	106.6
KN7160	United Taconite LLC	Active	FORBES	MN	ST. LOUIS	47	21	7.8	92	34	29.7	71.7	331	467.2	44.6	50.4	115.4	165.8	37.1	-50.7	-253.6	-123.0	140.0
WQOB286	YMCA CAMP WARREN	Active	EVELETH	MN	ST. LOUIS	47	23	17.7	92	30	28.8	73	336	467.4875	45.4	49.8	104.9	154.7	37.3	-50.7	-242.7	-112.1	129.1
WQPC734	Bayfield Electric Cooperative	Active	Cornucopia	WI	BAYFIELD	46	49	3.8	91	5	43.7	77.8	87.3	466.3750	48.3	52.4	112.5	164.8	37.8	-50.7	-253.3	-122.7	139.7
WQEF732	Northshore Mining Company	Active	SILVER BAY	MN	LAKE	47	17	33	91	23	22	78.5	44.2	466.9625	48.8	51.0	112.8	163.8	37.9	-50.7	-252.4	-121.8	138.8

TABULATION OF LAND MOBILE RECORDS AND INTERFERENCE ANALYSIS
K14QM-D, DULUTH, MINNESOTA, CHANNEL 14 (SIMPLE EMISSION MASK WITH CASCADED FILTER)

Callsign	Licensee Name	Status Code	Location City	Location State	Location County	Latitude Degrees	Latitude Minutes	Latitude Seconds	Longitude Degrees	Longitude Minutes	Longitude Seconds	Distance From Center (km)	Azimuth From Center	Assigned Frequency	Distance (mi.)	Simple Emission Mask (dB)	LM Filter Response (dB)	Total Response (dB)	20*Log (Dist km) (dB)	Calc. Loss (dB)	Total IX (dBm)	Total IX (in dBu)	Margin above Limit
WRQV344	Cove Point Lodge	Active	Beaver Bay	MN	LAKE	47	14	51.2	91	18	45.5	79.4	49.7	466.4750	49.3	52.1	112.1	164.3	38.0	-50.7	-253.0	-122.4	139.4
WQXF529	ST RAPHAEL'S HEALTH & REHABILITATI	Active	EVELETH	MN	ST. LOUIS	47	27	56.1	92	32	25.9	81.9	336.9	467.4375	50.9	49.9	107.5	157.3	38.3	-50.7	-246.3	-115.7	132.7
WQXF529	ST RAPHAEL'S HEALTH & REHABILITATI	Active	EVELETH	MN	ST. LOUIS	47	27	56.1	92	32	25.9	81.9	336.9	467.3625	50.9	50.0	107.7	157.7	38.3	-50.7	-246.7	-116.1	133.1
WQXF529	ST RAPHAEL'S HEALTH & REHABILITATI	Active	EVELETH	MN	ST. LOUIS	47	27	56.1	92	32	25.9	81.9	336.9	467.3125	50.9	50.2	103.4	153.5	38.3	-50.7	-242.5	-111.9	128.9
WQXF529	ST RAPHAEL'S HEALTH & REHABILITATI	Active	EVELETH	MN	ST. LOUIS	47	27	56.1	92	32	25.9	81.9	336.9	467.2625	50.9	50.3	115.4	165.7	38.3	-50.7	-254.6	-124.0	141.0
WQXF529	ST RAPHAEL'S HEALTH & REHABILITATI	Active	EVELETH	MN	ST. LOUIS	47	27	56.1	92	32	25.9	81.9	336.9	467.2125	50.9	50.4	108.1	158.5	38.3	-50.7	-247.5	-116.9	133.9
KQH524	United Taconite LLC	Active	EVELETH	MN	ST. LOUIS	47	28	30.7	92	32	11.7	82.7	337.4	467	51.4	50.9	112.8	163.7	38.4	-50.7	-252.7	-122.1	139.1
WQIU410	ALLETE, Inc., d/b/a Minnesota Power	Active	VIRGINIA	MN	ST. LOUIS	47	29	21.7	92	31	9.6	83.7	338.6	469.9375	52.0	46.0	36.7	82.7	38.5	-50.7	-171.9	-41.3	58.3
WQIU410	ALLETE, Inc., d/b/a Minnesota Power	Active	VIRGINIA	MN	ST. LOUIS	47	29	21.7	92	31	9.6	83.7	338.6	468.5250	52.0	47.8	83.6	131.3	38.5	-50.7	-220.5	-89.9	106.9
WQIU410	ALLETE, Inc., d/b/a Minnesota Power	Active	VIRGINIA	MN	ST. LOUIS	47	29	21.7	92	31	9.6	83.7	338.6	466.9375	52.0	51.0	105.2	156.3	38.5	-50.7	-245.4	-114.8	131.8
WQIU410	ALLETE, Inc., d/b/a Minnesota Power	Active	VIRGINIA	MN	ST. LOUIS	47	29	21.7	92	31	9.6	83.7	338.6	466.6000	52.0	51.8	114.8	166.6	38.5	-50.7	-255.7	-125.1	142.1
WRJ725	ArcelorMittal Minnoria Mine Inc.	Active	MCKINLEY	MN	ST. LOUIS	47	30	50	92	24	40	83.7	344.5	467.4125	52.0	49.9	126.6	176.5	38.5	-50.7	-265.7	-135.1	152.1
WRJ725	ArcelorMittal Minnoria Mine Inc.	Active	MCKINLEY	MN	ST. LOUIS	47	30	50	92	24	40	83.7	344.5	467.3875	52.0	50.0	115.5	165.5	38.5	-50.7	-254.6	-124.0	141.0
WRJ725	ArcelorMittal Minnoria Mine Inc.	Active	MCKINLEY	MN	ST. LOUIS	47	30	50	92	24	40	83.7	344.5	467.3375	52.0	50.1	108.3	158.4	38.5	-50.7	-247.6	-117.0	134.0
WRJ725	ArcelorMittal Minnoria Mine Inc.	Active	MCKINLEY	MN	ST. LOUIS	47	30	50	92	24	40	83.7	344.5	467.3125	52.0	50.2	103.4	153.5	38.5	-50.7	-242.7	-112.1	129.1
WQJQ302	ARCELOMITTAL MINORCA MINE INC	Active	GILBERT	MN	ST. LOUIS	47	30	26.7	92	26	59.7	83.8	342.5	468.7125	52.1	47.4	75.8	123.2	38.5	-50.7	-212.4	-81.8	98.8
WRJ725	ArcelorMittal Minnoria Mine Inc.	Active	GILBERT	MN	ST. LOUIS	47	30	26.7	92	26	59.7	83.8	342.5	469.2250	52.1	46.7	52.9	99.6	38.5	-50.7	-188.8	-58.2	75.2
WRJ725	ArcelorMittal Minnoria Mine Inc.	Active	GILBERT	MN	ST. LOUIS	47	30	26.7	92	26	59.7	83.8	342.5	469.1500	52.1	46.8	56.7	103.5	38.5	-50.7	-192.7	-62.1	79.1
WRJ725	ArcelorMittal Minnoria Mine Inc.	Active	GILBERT	MN	ST. LOUIS	47	30	26.7	92	26	59.7	83.8	342.5	467.8000	52.1	49.1	120.5	169.6	38.5	-50.7	-258.8	-128.2	145.2
WPKI352	Northshore Mining Company	Active	SILVER BAY	MN	LAKE	47	16	50.7	91	15	53.6	84.5	49.3	466.1175	52.5	52.9	111.7	164.6	38.5	-50.7	-253.8	-123.2	140.2
WNMG744	SAINT LOUIS, COUNTY OF	Active	VIRGINIA	MN	ST. LOUIS	47	30	1	92	30	37	84.6	339.4	465.425	52.6	54.9	118.2	173.2	38.5	-50.7	-262.4	-131.8	148.8
WNRW882	Northshore Mining Company	Active	SILVER BAY	MN	LAKE	47	17	1.7	91	15	55.6	84.7	49.1	469.05	52.6	46.9	61.5	108.4	38.6	-50.7	-197.7	-67.1	84.1
WNRW882	Northshore Mining Company	Active	SILVER BAY	MN	LAKE	47	17	1.7	91	15	55.6	84.7	49.1	466.8	52.6	51.3	112.0	163.3	38.6	-50.7	-252.5	-121.9	138.9
WNRW882	Northshore Mining Company	Active	SILVER BAY	MN	LAKE	47	17	1.7	91	15	55.6	84.7	49.1	466.75	52.6	51.5	110.3	161.8	38.6	-50.7	-251.0	-120.4	137.4
WNRW882	Northshore Mining Company	Active	SILVER BAY	MN	LAKE	47	17	1.7	91	15	55.6	84.7	49.1	466.7	52.6	51.6	114.0	165.5	38.6	-50.7	-254.8	-124.2	141.2
WPXN232	NORTHSHORE MINING COMPANY	Active	SILVER BAY	MN	LAKE	47	17	2	91	15	55	84.7	49.1	467.075	52.6	50.7	115.8	166.5	38.6	-50.7	-255.8	-125.2	142.2
KQH524	United Taconite LLC	Active	EVELETH	MN	ST. LOUIS	47	29	19.7	92	33	32.7	84.8	336.7	466.125	52.7	53.0	111.3	164.4	38.6	-50.7	-253.6	-123.0	140.0
WNRW882	Northshore Mining Company	Active	SILVER BAY	MN	LAKE	47	17	11.7	91	15	37.6	85.2	49.1	469.05	52.9	46.9	61.5	108.4	38.6	-50.7	-197.8	-67.2	84.2
WNRW882	Northshore Mining Company	Active	SILVER BAY	MN	LAKE	47	17	11.7	91	15	37.6	85.2	49.1	466.8	52.9	51.3	112.0	163.3	38.6	-50.7	-252.6	-122.0	139.0
WNRW882	Northshore Mining Company	Active	SILVER BAY	MN	LAKE	47	17	11.7	91	15	37.6	85.2	49.1	466.75	52.9	51.5	110.3	161.8	38.6	-50.7	-251.1	-120.5	137.5
WNRW882	Northshore Mining Company	Active	SILVER BAY	MN	LAKE	47	17	11.7	91	15	37.6	85.2	49.1	466.7	52.9	51.6	114.0	165.5	38.6	-50.7	-254.8	-124.2	141.2
KAH786	NORTHSHORE MINING CORPORATION	Active	SILVER BAY	MN	LAKE	47	17	27.7	91	15	52.6	85.3	48.8	467.4125	53.0	49.9	126.6	176.5	38.6	-50.7	-265.8	-135.2	152.2
KAH786	NORTHSHORE MINING CORPORATION	Active	SILVER BAY	MN	LAKE	47	17	27.7	91	15	52.6	85.3	48.8	467.3875	53.0	50.0	115.5	165.5	38.6	-50.7	-254.8	-124.2	141.2
KAH786	NORTHSHORE MINING CORPORATION	Active	SILVER BAY	MN	LAKE	47	17	27.7	91	15	52.6	85.3	48.8	467.3375	53.0	50.1	108.3	158.4	38.6	-50.7	-247.7	-117.1	134.1
KAH786	NORTHSHORE MINING CORPORATION	Active	SILVER BAY	MN	LAKE	47	17	27.7	91	15	52.6	85.3	48.8	467.3125	53.0	50.2	103.4	153.5	38.6	-50.7	-242.9	-112.3	129.3
KAH786	NORTHSHORE MINING CORPORATION	Active	SILVER BAY	MN	LAKE	47	17	32.7	91	15	56.6	85.3	48.6	465.475	53.0	54.8	108.5	163.3	38.6	-50.7	-252.6	-122.0	139.0
KB67745	Northshore Mining Company	Active		MN	LAKE	47	17	32.7	91	15	56.6	85.3	48.6	469.9625	53.0	46.0	31.4	77.4	38.6	-50.7	-166.8	-36.2	53.2
KB67745	Northshore Mining Company	Pending		MN	LAKE	47	17	32.7	91	15	56.6	85.3	48.6	469.9625	53.0	46.0	31.4	77.4	38.6	-50.7	-166.8	-36.2	53.2
KB67745	Northshore Mining Company	Active		MN	LAKE	47	17	32.7	91	15	56.6	85.3	48.6	469.6125	53.0	46.3	40.8	87.0	38.6	-50.7	-176.4	-45.8	62.8
KB67745	Northshore Mining Company	Pending		MN	LAKE	47	17	32.7	91	15	56.6	85.3	48.6	469.6125	53.0	46.3	40.8	87.0	38.6	-50.7	-176.4	-45.8	62.8
KB67745	Northshore Mining Company	Active		MN	LAKE	47	17	32.7	91	15	56.6	85.3	48.6	469.2625	53.0	46.6	51.0	97.6	38.6	-50.7	-187.0	-56.4	73.4
KB67745	Northshore Mining Company	Pending		MN	LAKE	47	17	32.7	91	15	56.6	85.3	48.6	469.2625	53.0	46.6	51.0	97.6	38.6	-50.7	-187.0	-56.4	73.4
KB67745	Northshore Mining Company	Active		MN	LAKE	47	17	32.7	91	15	56.6	85.3	48.6	468.9125	53.0	47.1	67.5	114.6	38.6	-50.7	-204.0	-73.4	90.4
KB67745	Northshore Mining Company	Pending		MN	LAKE	47	17	32.7	91	15	56.6	85.3	48.6	468.9125	53.0	47.1	67.5	114.6	38.6	-50.7	-204.0	-73.4	90.4
KB67745	Northshore Mining Company	Active		MN	LAKE	47	17	32.7	91	15	56.6	85.3	48.6	468.2625	53.0	48.2	97.7	145.9	38.6	-50.7	-235.2	-104.6	121.6
KB67745	Northshore Mining Company	Pending		MN	LAKE	47	17	32.7	91	15	56.6	85.3	48.6	468.2625	53.0	48.2	97.7	145.9	38.6	-50.7	-235.2	-104.6	121.6
KB67745	Northshore Mining Company	Active		MN	LAKE	47	17	32.7	91	15	56.6	85.3	48.6	467.9125	53.0	48.9	108.3	157.2	38.6	-50.7	-246.5	-115.9	132.9
KB67745	Northshore Mining Company	Pending		MN	LAKE	47	17	32.7	91	15	56.6	85.3	48.6	467.9125	53.0	48.9	108.3	157.2	38.6	-50.7	-246.5	-115.9	132.9
KB67745	Northshore Mining Company	Active		MN	LAKE	47	17	32.7	91	15	56.6	85.3	48.6	467.1625	53.0	50.5	108.4	158.9	38.6	-50.7	-248.2	-117.6	134.6
KB67745	Northshore Mining Company	Pending		MN	LAKE	47	17	32.7	91	15	56.6	85.3	48.6	467.1625	53.0	50.5	108.4	158.9	38.6	-50.7	-248.2	-117.6	134.6

TABULATION OF LAND MOBILE RECORDS AND INTERFERENCE ANALYSIS
K14QM-D, DULUTH, MINNESOTA, CHANNEL 14 (SIMPLE EMISSION MASK WITH CASCADED FILTER)

Callsign	Licensee Name	Status Code	Location City	Location State	Location County	Latitude Degrees	Latitude Minutes	Latitude Seconds	Longitude Degrees	Longitude Minutes	Longitude Seconds	Distance From Center (km)	Azimuth From Center	Assigned Frequency	Distance (mi.)	Simple Emission Mask (dB)	LM Filter Response (dB)	Total Response (dB)	20*Log (Dist km) (dB)	Calc. Loss (dB)	Total IX (dBm)	Total IX (in dBu)	Margin above Limit
KB67745	Northshore Mining Company	Active		MN	LAKE	47	17	32.7	91	15	56.6	85.3	48.6	466.8125	53.0	51.3	108.2	159.5	38.6	-50.7	-248.8	-118.2	135.2
KB67745	Northshore Mining Company	Pending		MN	LAKE	47	17	32.7	91	15	56.6	85.3	48.6	466.8125	53.0	51.3	108.2	159.5	38.6	-50.7	-248.8	-118.2	135.2
KB67745	Northshore Mining Company	Active		MN	LAKE	47	17	32.7	91	15	56.6	85.3	48.6	466.4625	53.0	52.2	110.5	162.7	38.6	-50.7	-252.0	-121.4	138.4
KB67745	Northshore Mining Company	Pending		MN	LAKE	47	17	32.7	91	15	56.6	85.3	48.6	466.4625	53.0	52.2	110.5	162.7	38.6	-50.7	-252.0	-121.4	138.4
KB67745	Northshore Mining Company	Active		MN	LAKE	47	17	32.7	91	15	56.6	85.3	48.6	465.7625	53.0	54.0	106.0	160.0	38.6	-50.7	-249.2	-118.6	135.6
KB67745	Northshore Mining Company	Pending		MN	LAKE	47	17	32.7	91	15	56.6	85.3	48.6	465.7625	53.0	54.0	106.0	160.0	38.6	-50.7	-249.2	-118.6	135.6
WNRW882	Northshore Mining Company	Active	SILVER BAY	MN	LAKE	47	17	17.7	91	15	41.6	85.3	49	469.05	53.0	46.9	61.5	108.4	38.6	-50.7	-197.8	-67.2	84.2
WNRW882	Northshore Mining Company	Active	SILVER BAY	MN	LAKE	47	17	17.7	91	15	41.6	85.3	49	466.8	53.0	51.3	112.0	163.3	38.6	-50.7	-252.6	-122.0	139.0
WNRW882	Northshore Mining Company	Active	SILVER BAY	MN	LAKE	47	17	17.7	91	15	41.6	85.3	49	466.75	53.0	51.5	110.3	161.8	38.6	-50.7	-251.1	-120.5	137.5
WNRW882	Northshore Mining Company	Active	SILVER BAY	MN	LAKE	47	17	17.7	91	15	41.6	85.3	49	466.7	53.0	51.6	114.0	165.5	38.6	-50.7	-254.8	-124.2	141.2
WPOZ840	NORTHSHORE MINING COMPANY	Active	SILVER BAY	MN	LAKE	47	17	40	91	15	34	85.8	48.7	469.5625	53.3	46.3	35.6	81.9	38.7	-50.7	-171.3	-40.7	57.7
WPOZ840	NORTHSHORE MINING COMPANY	Active	SILVER BAY	MN	LAKE	47	17	40	91	15	34	85.8	48.7	469.4875	53.3	46.4	29.2	75.6	38.7	-50.7	-165.0	-34.4	51.4
WQUU402	Skywest Airlines	Active	HIBBING	MN	ST. LOUIS	47	23	11.7	92	50	20.3	86.3	320.7	465.65	53.6	54.3	114.2	168.5	38.7	-50.7	-257.9	-127.3	144.3
WQOW775	Delta Air Lines Inc.	Active	HIBBING	MN	ST. LOUIS	47	23	31.6	92	50	34.9	86.9	320.8	468.5125	54.0	47.8	83.7	131.5	38.8	-50.7	-221.0	-90.4	107.4
WQAV256	SAKS OFF 5TH	Active	Virginia	MN	ST. LOUIS	47	30	44	92	33	7	87	337.8	467.925	54.1	48.9	102.1	151.0	38.8	-50.7	-240.5	-109.9	126.9
WQAV256	SAKS OFF 5TH	Active	Virginia	MN	ST. LOUIS	47	30	44	92	33	7	87	337.8	467.9	54.1	48.9	104.2	153.1	38.8	-50.7	-242.6	-112.0	129.0
WQAV256	SAKS OFF 5TH	Active	Virginia	MN	ST. LOUIS	47	30	44	92	33	7	87	337.8	467.875	54.1	49.0	106.3	155.3	38.8	-50.7	-244.8	-114.2	131.2
WQAV256	SAKS OFF 5TH	Active	Virginia	MN	ST. LOUIS	47	30	44	92	33	7	87	337.8	467.85	54.1	49.0	108.8	157.8	38.8	-50.7	-247.3	-116.7	133.7
KNB1463	WDIO-TV, LLC	Active	HIBBING	MN	ST. LOUIS	47	22	51.8	92	57	18.7	91.7	316.2	469.85	57.0	46.1	61.1	107.2	39.2	-50.7	-197.1	-66.5	83.5
KNB1464	WDIO-TV, LLC	Active		MN	ST. LOUIS	47	22	51.8	92	57	18.7	91.7	316.2	469.6	57.0	46.3	39.9	86.1	39.2	-50.7	-176.1	-45.5	62.5
KOL491	DSC Communications	Active	HIBBING	MN	ST. LOUIS	47	22	50.8	92	57	19.7	91.7	316.2	466.7500	57.0	51.5	110.3	161.8	39.2	-50.7	-251.7	-121.1	138.1
KOL491	DSC Communications	Active	HIBBING	MN	ST. LOUIS	47	22	50.8	92	57	19.7	91.7	316.2	466.7000	57.0	51.6	114.0	165.5	39.2	-50.7	-255.5	-124.9	141.9
KOL491	DSC Communications	Active	HIBBING	MN	ST. LOUIS	47	22	50.8	92	57	19.7	91.7	316.2	466.6250	57.0	51.8	112.4	164.1	39.2	-50.7	-254.1	-123.5	140.5
WQLR868	SHUBAT TRANSPORTATION	Active	HIBBING	MN	ST. LOUIS	47	23	59.8	92	56	55.6	92.9	317.4	466.725	57.7	51.5	104.6	156.1	39.4	-50.7	-246.2	-115.6	132.6
WQVU257	CITY OF SANDSTONE	Active	SANDSTONE	MN	PINE	46	7	53.5	92	51	58.1	93.2	218.5	467.4125	57.9	49.9	126.6	176.5	39.4	-50.7	-266.6	-136.0	153.0
WRCV990	SANDSTONE HEALTH CARE CENTER LLC	Active	SANDSTONE	MN	PINE	46	7	37	92	51	55	93.6	218.3	467.4375	58.2	49.9	107.5	157.3	39.4	-50.7	-247.5	-116.9	133.9
WRCV990	SANDSTONE HEALTH CARE CENTER LLC	Active	SANDSTONE	MN	PINE	46	7	37	92	51	55	93.6	218.3	467.3875	58.2	50.0	115.5	165.5	39.4	-50.7	-255.6	-125.0	142.0
WRCV990	SANDSTONE HEALTH CARE CENTER LLC	Active	SANDSTONE	MN	PINE	46	7	37	92	51	55	93.6	218.3	467.3375	58.2	50.1	108.3	158.4	39.4	-50.7	-248.5	-117.9	134.9
WRCV990	SANDSTONE HEALTH CARE CENTER LLC	Active	SANDSTONE	MN	PINE	46	7	37	92	51	55	93.6	218.3	467.2875	58.2	50.2	120.5	170.7	39.4	-50.7	-260.8	-130.2	147.2
WRCV990	SANDSTONE HEALTH CARE CENTER LLC	Active	SANDSTONE	MN	PINE	46	7	37	92	51	55	93.6	218.3	467.2375	58.2	50.3	109.3	159.6	39.4	-50.7	-249.7	-119.1	136.1
WQPQ452	Mining Resources LLC	Active	Chisholm	MN	ST. LOUIS	47	28	4.8	92	50	47.7	93.7	324.0	469.8500	58.2	46.1	61.1	107.2	39.4	-50.7	-197.3	-66.7	83.7
WQPQ452	Mining Resources LLC	Active	Chisholm	MN	ST. LOUIS	47	28	4.8	92	50	47.7	93.7	324.0	468.2375	58.2	48.3	96.4	144.7	39.4	-50.7	-234.9	-104.3	121.3
WQPQ452	Mining Resources LLC	Active	Chisholm	MN	ST. LOUIS	47	28	4.8	92	50	47.7	93.7	324.0	467.0750	58.2	50.7	115.8	166.5	39.4	-50.7	-256.7	-126.1	143.1
WQPQ452	Mining Resources LLC	Active	Chisholm	MN	ST. LOUIS	47	28	4.8	92	50	47.7	93.7	324.0	466.1500	58.2	53.0	121.9	174.9	39.4	-50.7	-265.0	-134.4	151.4
WQJ1551	ALLETE, Inc., d/b/a Minnesota Power	Active	SANDSTONE	MN	PINE	46	7	16	92	51	37.4	93.8	217.9	468.6250	58.3	47.6	79.3	126.9	39.4	-50.7	-217.1	-86.5	103.5
WQJ1551	ALLETE, Inc., d/b/a Minnesota Power	Active	SANDSTONE	MN	PINE	46	7	16	92	51	37.4	93.8	217.9	467.1500	58.3	50.5	110.8	161.3	39.4	-50.7	-251.5	-120.9	137.9
WQJ1551	ALLETE, Inc., d/b/a Minnesota Power	Active	SANDSTONE	MN	PINE	46	7	16	92	51	37.4	93.8	217.9	466.6500	58.3	51.7	109.4	161.1	39.4	-50.7	-251.3	-120.7	137.7
WQDL267	Independent School District 701	Active	HIBBING	MN	ST. LOUIS	47	25	29.9	92	55	56.4	94.1	319.1	467.3000	58.5	50.2	119.4	169.5	39.5	-50.7	-259.7	-129.1	146.1
WPIJ923	TACTRAN INCORPORATED	Active	HIBBING	MN	ST. LOUIS	47	25	4.8	92	56	43.7	94.2	318.3	466.85	58.5	51.2	106.3	157.6	39.5	-50.7	-247.7	-117.1	134.1
WQPC734	Bayfield Electric Cooperative	Active	Cable	WI	BAYFIELD	46	10	54	91	15	12	94.5	135.4	466.3250	58.7	52.5	114.6	167.1	39.5	-50.7	-257.3	-126.7	143.7
WRBY830	ESSENTIA HEALTH SANDSTONE	Active	SANDSTONE	MN	PINE	46	7	8.2	92	53	7.1	95.2	218.7	467.4875	59.2	49.8	104.9	154.7	39.6	-50.7	-245.0	-114.4	131.4
WRBY830	ESSENTIA HEALTH SANDSTONE	Active	SANDSTONE	MN	PINE	46	7	8.2	92	53	7.1	95.2	218.7	467.1875	59.2	50.4	106.8	157.2	39.6	-50.7	-247.4	-116.8	133.8
WQLA761	Ironworld Development Corp	Active	Chisholm	MN	ST. LOUIS	47	28	39.8	92	53	47.7	96.9	322.6	468.6000	60.2	47.6	80.4	128.0	39.7	-50.7	-218.5	-87.9	104.9
KAF691	United States Steel Corporation	Active	KEEWATIN	MN	ST. LOUIS	47	24	46.8	93	3	46.7	100	314.3	467.25	62.1	50.3	107.6	157.9	40.0	-50.7	-248.6	-118.0	135.0
WNRD611	United States Steel Corporation	Active	KEEWATIN	MN	ST. LOUIS	47	24	46.8	93	3	46.7	100	314.3	468.875	62.1	47.2	69.0	116.2	40.0	-50.7	-206.9	-76.3	93.3
WNRD611	United States Steel Corporation	Active	KEEWATIN	MN	ST. LOUIS	47	24	46.8	93	3	46.7	100	314.3	468.625	62.1	47.6	79.3	126.9	40.0	-50.7	-217.6	-87.0	104.0
WNRD611	United States Steel Corporation	Active	KEEWATIN	MN	ST. LOUIS	47	24	46.8	93	3	46.7	100	314.3	468.425	62.1	47.9	86.3	134.2	40.0	-50.7	-225.0	-94.4	111.4
WNRD611	United States Steel Corporation	Active	KEEWATIN	MN	ST. LOUIS	47	24	46.8	93	3	46.7	100	314.3	468.275	62.1	48.2	92.9	141.1	40.0	-50.7	-231.8	-101.2	118.2
WNRD611	United States Steel Corporation	Active	KEEWATIN	MN	ST. LOUIS	47	24	46.8	93	3	46.7	100	314.3	467.05	62.1	50.7	120.4	171.1	40.0	-50.7	-261.8	-131.2	148.2
WNRD611	United States Steel Corporation	Active	KEEWATIN	MN	ST. LOUIS	47	24	46.8	93	3	46.7	100	314.3	466.975	62.1	50.9	137.3	188.2	40.0	-50.7	-278.9	-148.3	165.3

TABULATION OF LAND MOBILE RECORDS AND INTERFERENCE ANALYSIS
K14QM-D, DULUTH, MINNESOTA, CHANNEL 14 (SIMPLE EMISSION MASK WITH CASCADED FILTER)

Callsign	Licensee Name	Status Code	Location City	Location State	Location County	Latitude Degrees	Latitude Minutes	Latitude Seconds	Longitude Degrees	Longitude Minutes	Longitude Seconds	Distance From Center (km)	Azimuth From Center	Assigned Frequency	Distance (mi.)	Simple Emission Mask (dB)	LM Filter Response (dB)	Total Response (dB)	20*Log (Dist km) (dB)	Calc. Loss (dB)	Total IX (dBm)	Total IX (in dBu)	Margin above Limit
WNRD611	United States Steel Corporation	Active	KEEWATIN	MN	ST. LOUIS	47	24	46.8	93	3	46.7	100	314.3	466.825	62.1	51.3	116.9	168.2	40.0	-50.7	-258.9	-128.3	145.3
WNRD611	United States Steel Corporation	Active	KEEWATIN	MN	ST. LOUIS	47	24	46.8	93	3	46.7	100	314.3	466.65	62.1	51.7	109.4	161.1	40.0	-50.7	-251.8	-121.2	138.2
WQWV419	HIBBING DEVELOPMENT COMPANY	Active	HIBBING	MN	ST. LOUIS	47	28	32.8	92	57	55.7	100.0	320.1	468.7750	62.1	47.3	73.1	120.4	40.0	-50.7	-211.1	-80.5	97.5
WQWV419	HIBBING DEVELOPMENT COMPANY	Active	HIBBING	MN	ST. LOUIS	47	28	32.8	92	57	55.7	100.0	320.1	468.2000	62.1	48.3	95.2	143.6	40.0	-50.7	-234.3	-103.7	120.7
WQWV419	HIBBING DEVELOPMENT COMPANY	Active	HIBBING	MN	ST. LOUIS	47	28	32.8	92	57	55.7	100.0	320.1	465.9000	62.1	53.6	104.6	158.2	40.0	-50.7	-248.9	-118.3	135.3
WQWV419	HIBBING DEVELOPMENT COMPANY	Active	HIBBING	MN	ST. LOUIS	47	28	26.8	92	58	12.7	100.1	319.9	468.7750	62.2	47.3	73.1	120.4	40.0	-50.7	-211.1	-80.5	97.5
WQWV419	HIBBING DEVELOPMENT COMPANY	Active	HIBBING	MN	ST. LOUIS	47	28	26.8	92	58	12.7	100.1	319.9	468.2000	62.2	48.3	95.2	143.6	40.0	-50.7	-234.3	-103.7	120.7
WQWV419	HIBBING DEVELOPMENT COMPANY	Active	HIBBING	MN	ST. LOUIS	47	28	26.8	92	58	12.7	100.1	319.9	465.9000	62.2	53.6	104.6	158.2	40.0	-50.7	-248.9	-118.3	135.3
WNRD611	United States Steel Corporation	Active	KEEWATIN	MN	ST. LOUIS	47	24	45.8	93	4	0.7	100.2	314.2	468.275	62.3	48.2	92.9	141.1	40.0	-50.7	-231.8	-101.2	118.2
KYW311	Hibbing Development Company	Active	HIBBING	MN	ST. LOUIS	47	28	40.8	92	58	4.7	100.3	320.2	469.7750	62.3	46.1	62.2	108.4	40.0	-50.7	-199.1	-68.5	85.5
KYW311	Hibbing Development Company	Active	HIBBING	MN	ST. LOUIS	47	28	40.8	92	58	4.7	100.3	320.2	467.1000	62.3	50.6	113.0	163.7	40.0	-50.7	-254.4	-123.8	140.8
KYW311	Hibbing Development Company	Active	HIBBING	MN	ST. LOUIS	47	28	40.8	92	58	4.7	100.3	320.2	466.5000	62.3	52.1	108.0	160.1	40.0	-50.7	-250.8	-120.2	137.2
WQWV419	HIBBING DEVELOPMENT COMPANY	Active	HIBBING	MN	ST. LOUIS	47	28	3.8	92	59	10.7	100.4	319.1	469.4750	62.4	46.4	30.9	77.3	40.0	-50.7	-168.1	-37.5	54.5
WQWV419	HIBBING DEVELOPMENT COMPANY	Active	HIBBING	MN	ST. LOUIS	47	28	3.8	92	59	10.7	100.4	319.1	468.9750	62.4	47.0	64.9	111.9	40.0	-50.7	-202.7	-72.1	89.1
WQWV419	HIBBING DEVELOPMENT COMPANY	Active	HIBBING	MN	ST. LOUIS	47	28	3.8	92	59	10.7	100.4	319.1	468.7750	62.4	47.3	73.1	120.4	40.0	-50.7	-211.2	-80.6	97.6
WQWV419	HIBBING DEVELOPMENT COMPANY	Active	HIBBING	MN	ST. LOUIS	47	28	3.8	92	59	10.7	100.4	319.1	468.2000	62.4	48.3	95.2	143.6	40.0	-50.7	-234.3	-103.7	120.7
WQWV419	HIBBING DEVELOPMENT COMPANY	Active	HIBBING	MN	ST. LOUIS	47	28	3.8	92	59	10.7	100.4	319.1	467.4250	62.4	49.9	105.2	155.1	40.0	-50.7	-245.8	-115.2	132.2
WQWV419	HIBBING DEVELOPMENT COMPANY	Active	HIBBING	MN	ST. LOUIS	47	28	3.8	92	59	10.7	100.4	319.1	466.0500	62.4	53.2	106.1	159.3	40.0	-50.7	-250.0	-119.4	136.4
WQWV419	HIBBING DEVELOPMENT COMPANY	Active	HIBBING	MN	ST. LOUIS	47	28	3.8	92	59	10.7	100.4	319.1	465.9000	62.4	53.6	104.6	158.2	40.0	-50.7	-248.9	-118.3	135.3
WNVX731	Hibbing Taconite Company	Active	HIBBING	MN	ST. LOUIS	47	29	44.8	92	58	0.7	101.8	320.9	466.2125	63.3	52.8	108.4	161.2	40.2	-50.7	-252.0	-121.4	138.4
WQIU366	ALLETE, Inc., d/b/a Minnesota Power	Active	HIBBING	MN	ST. LOUIS	47	29	56	93	2	6	105.4	318.9	468.7875	65.5	47.3	72.7	120.0	40.5	-50.7	-211.2	-80.6	97.6
WQIU366	ALLETE, Inc., d/b/a Minnesota Power	Active	HIBBING	MN	ST. LOUIS	47	29	56	93	2	6	105.4	318.9	468.3250	65.5	48.1	91.6	139.7	40.5	-50.7	-230.8	-100.2	117.2
WQIU366	ALLETE, Inc., d/b/a Minnesota Power	Active	HIBBING	MN	ST. LOUIS	47	29	56	93	2	6	105.4	318.9	467.3500	65.5	50.1	108.9	158.9	40.5	-50.7	-250.1	-119.5	136.5
WQIU366	ALLETE, Inc., d/b/a Minnesota Power	Active	HIBBING	MN	ST. LOUIS	47	29	56	93	2	6	105.4	318.9	466.9125	65.5	51.1	108.3	159.4	40.5	-50.7	-250.6	-120.0	137.0
WQIU366	ALLETE, Inc., d/b/a Minnesota Power	Active	HIBBING	MN	ST. LOUIS	47	29	56	93	2	6	105.4	318.9	466.4375	65.5	52.2	109.7	161.9	40.5	-50.7	-253.1	-122.5	139.5
WNRD611	United States Steel Corporation	Active	Keewatin	MN	ITASCA	47	29	44.9	93	5	15.9	107.8	317.2	467.075	67.0	50.7	115.8	166.5	40.7	-50.7	-257.9	-127.3	144.3