

ENGINEERING STATEMENT
APPLICATION FOR A DTV
CONSTRUCTION PERMIT FOR FLASHCUT FOR
AN EXISTING LOW POWER TELEVISION STATION
W45CI, ASHLAND, WISCONSIN
CHANNEL 45 9.332 KW MAX ERP 285 METERS RC/AMSL

JULY 2015

COHEN, DIPPELL AND EVERIST, P.C.
CONSULTING ENGINEERS
RADIO AND TELEVISION
WASHINGTON, D.C.

COHEN, DIPPELL AND EVERIST, P. C.

City of Washington)
) ss
District of Columbia)

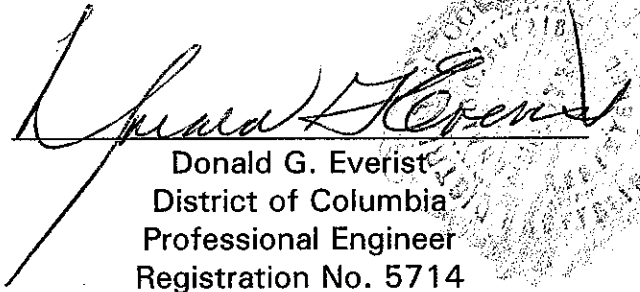
Donald G. Everist, being duly sworn upon his oath, deposes and states that:

He is a graduate electrical engineer, a Registered Professional Engineer in the District of Columbia, and is President, Secretary and Treasurer of Cohen, Dippell and Everist, P.C., Consulting Engineers, Radio - Television, with offices at 1420 N Street, N.W., Suite One, Washington, D.C. 20005;

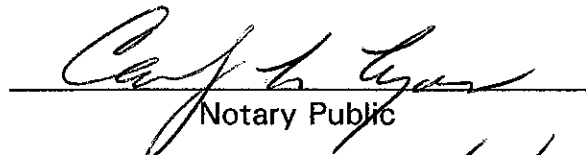
That his qualifications are a matter of record in the Federal Communications Commission;

That the attached engineering report was prepared by him or under his supervision and direction and

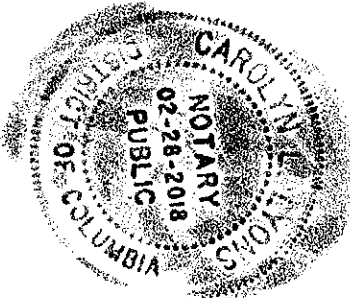
That the facts stated herein are true of his own knowledge, except such facts as are stated to be on information and belief, and as to such facts he believes them to be true.


Donald G. Everist
District of Columbia
Professional Engineer
Registration No. 5714

Subscribed and sworn to before me this 29th day of July, 2015.


Notary Public

My Commission Expires: 8/28/2018



Introduction

This engineering statement has been prepared on behalf of KQDS Acquisition, Corp., licensee of LPTV station W45CI, Ashland, Wisconsin. This statement supports the licensee's request to convert to DTV operation on the currently licensed analog Channel 45, commonly referred to as "flash-cut" with a DTV effective radiated power ("ERP") of 9.332 kW at a radiation center above mean sea level ("RCAMSL") of 285 meters. The proposed digital operation for W45CI has received Canadian coordination for this technical operation. The site coordinates have been updated to reflect those of the ASRN.

Transmitter Site

The existing antenna will be utilized and no significant alteration of the tower is proposed or required. The existing tower (Exhibit E-1) is located 3.0 km east of the center of Ashland, Wisconsin, and 0.71 km east of the intersection of Jones Road and Odanah Road (County Highway 4). There is no change in transmitter site. The geographic coordinates of the site follow below.

North Latitude: 46° 35' 24"

West Longitude: 90° 50' 06"

NAD-27 from CDBS

The antenna registration number is 1200096 The application will specify the ASRN
NAD-83 coordinates which are:

North Latitude: 46° 35' 23.3"

West Longitude: 90° 50' 13.3"

NAD-83

Elevation Data

Elevation of site above mean sea level	213.4 meters (700 feet)
Center of radiation of antenna above ground level	71.6 meters (235 feet)
Center of radiation of antenna above mean sea level	285 meters (935 feet)
Overall height of tower above ground level	126.8 meters (416 feet)

Equipment Data

Transmitter:	Type-approved
Transmission Line:	Andrew, Type HJ7-50A, 1-5/8", 86.9 meters (285 feet) with 68.5% efficiency
Antenna:	Dielectric, TLP16-B with maximum gain of 14.35 dB and 1.0° electrical beam tilt

Power Data

Transmitter:	0.500 kW	-3.01 dBk
Emission Mask:	Simple	
Transmission Line Loss:	0.157 kW	1.64 dB
Input Into Antenna:	0.343 kW	-4.65 dBk
Antenna Gain:	27	14.35 dB
ERP:	9.332 kW	9.70 dBk

As indicated above, the transmitter with typical power output of 0.5 kW will deliver 0.343 kW to the input of the antenna. The antenna, having a maximum gain of 14.35 dB and an

electrical beam tilt of 1.0° , will produce maximum ERP of 9.332 kW. A coverage map provides the protected contour of the proposed facility compared to the currently licensed operation of W45CI and has been included as Exhibit E-2 of this report. The antenna elevation pattern and associated tabulation and the horizontal pattern and accompanying tabulation are on file at the Commission as this antenna make and model has been designated as “Off-the-Shelf”, and is the currently licensed antenna for W45CI with no alterations proposed.

Other Broadcast Facilities

A brief analysis was completed to determine the presence of stations in the vicinity of the W45CI tower using the July 15, 2015, data contained within the Commission’s Consolidated Database System (“CDBS”). Within 500 meters of the proposed site, there is one authorized LPFM radio station and one FM translator, no authorized DTV and NTSC television stations, and no other low-power analog television and television translator stations aside from W45CI. There is one AM facility within 3.2 km of the existing tower. Although no adverse technical affects are expected due to the proposed changes, the licensee will take measures to resolve any problems proven to be related to the changes proposed in this application.

Interference Analysis

A study of predicted interference caused by the proposed W45CI low-power digital operation has been performed using the Longley-Rice program for which the source data has been posted by the Commission on its website at http://www.fcc.gov/oet/dtv/dtv_apps.html. The FCC's FORTRAN-77 code was modified only to the extent necessary (primarily input/output handling) for the program to run on a Microsoft Windows XP/Intel platform. Comparison of service/interference areas and population indicates this model closely matches the FCC's digital

low-power TV/translator evaluation program. Best efforts have been made to use data and calculation identical to the FCC's program. The model employs the Longley-Rice propagation methodology and evaluates in grid cells of approximately 1 sq. km. Using 3-second terrain data sampled approximately every 1.0 km at one-degree azimuth intervals with 2000 census centroids, all studies are based upon data in the current CDBS database update of the FCC's engineering database. A Longley-Rice study was performed with the proposed W45CI low-power digital facilities and all relevant stations listed in the FCC database as of July 16, 2015. The study results and the included stations are listed in Table I.

Other Licensed and Broadcast Facilities

No adverse technical effect is anticipated by the proposed DTV operation to any other FCC licensed facility. If required, the licensee will install filters or take other measures as necessary to resolve the problem.

FCC Rule, Section 1.1307

Pursuant to OET Bulletin No. 65 dated August 1997, these non-broadcast stations are all exempt from RFF evaluations for the following reason:

<u>Station</u>	<u>Licensed Under Part No.</u>	<u>Reason for Exemption</u>
	Part 74, Subpart F	Subpart F Exempt
	Part 90	Antenna Height > 10 meters
	Part 90	ERP < 1000 watts
	Part 74, Subpart F	Subpart F Exempt

The RFF contribution of each station will be calculated using the following formula:

$$S = \frac{33.4(F^2) \text{ Total ERP}}{R^2}$$

where:

S = power density in $\mu\text{W}/\text{cm}^2$

F = relative field factor

Total ERP = ERP Horizontal Polarization + ERP Vertical Polarization

R = RCAGL - 2 meters

ERP = RMS ERP in watts for DTV Stations

ERP = $[0.4 \text{ ERP}_v + \text{ERP}_A]$ for NTSC Stations

ERP_v = peak visual ERP in watts

ERP_A = RMS aural ERP in watts

The proposed 9.332 kW directional operation will utilize a Dielectric, Type TLP16-B antenna (or equivalent) described above with a center of radiation above ground of 71.6 meters.

The proposed antenna is side-mounted on an existing tower with an overall height of 126.8 meters above ground. The proposed digital operation of W45CI will create a radiofrequency field level of $4.0 \mu\text{W}/\text{cm}^2$ at the base of the tower. This level is less than 1.0% of the Maximum Permissible Exposure ("MPE") limit for the general population and uncontrolled environment.

Authorized personnel and rigging contractors will be alerted to the potential zone of high field levels on the tower, and if necessary, the station will operate with reduced power or terminate the operation of the transmitter as appropriate when it is necessary for authorized personnel or contractors to perform work on or near the tower. Workers and the general public, therefore, will not be subjected to RFF levels in excess of the current FCC guidelines.

Environmental Assessment

An environmental assessment (“EA”) is categorically excluded under Section 1.1306 of the FCC Rules and Regulations as the tower was constructed prior to the requirements specified in WT Docket No. 03-128 and the licensee indicates:

- (a)(1) The existing tower is not located in an officially designated wilderness area.
- (a)(2) The existing tower is not located in an officially designated wildlife preserve.
- (a)(3) The proposed facilities will not affect any listed threatened or endangered species or habitats.
- (a)(3)(ii) The proposed facilities will not jeopardize the continued existence of any proposed endangered or threatened species or likely to result in the destruction or adverse modification of proposed critical habitats.
- (a)(4) The proposed facilities located on a tower which was built prior to the adoption of WT Docket No. 03-128 and is grandfathered and has not affected any known districts, sites, buildings, structures, or objects significant in American history, architecture, archaeology, engineering, or culture.
- (a)(5) The existing tower is not located near any known Indian religious sites.
- (a)(6) The existing tower is not located in a flood plain.
- (a)(7) The installation of the DTV facilities on an existing tower will not involve a significant change in surface features of the ground in the vicinity of the tower.
- (a)(8) It is not proposed to equip the tower with high intensity white lights unless required by the FAA.
- (b) Workers and the general public will not be subjected to RFF levels in excess of the current FCC guidelines contained in OET Bulletin No. 65, Edition 97-01, dated August 1997 and Supplement A.

ABOVE GROUND

ABOVE MEAN SEA LEVEL

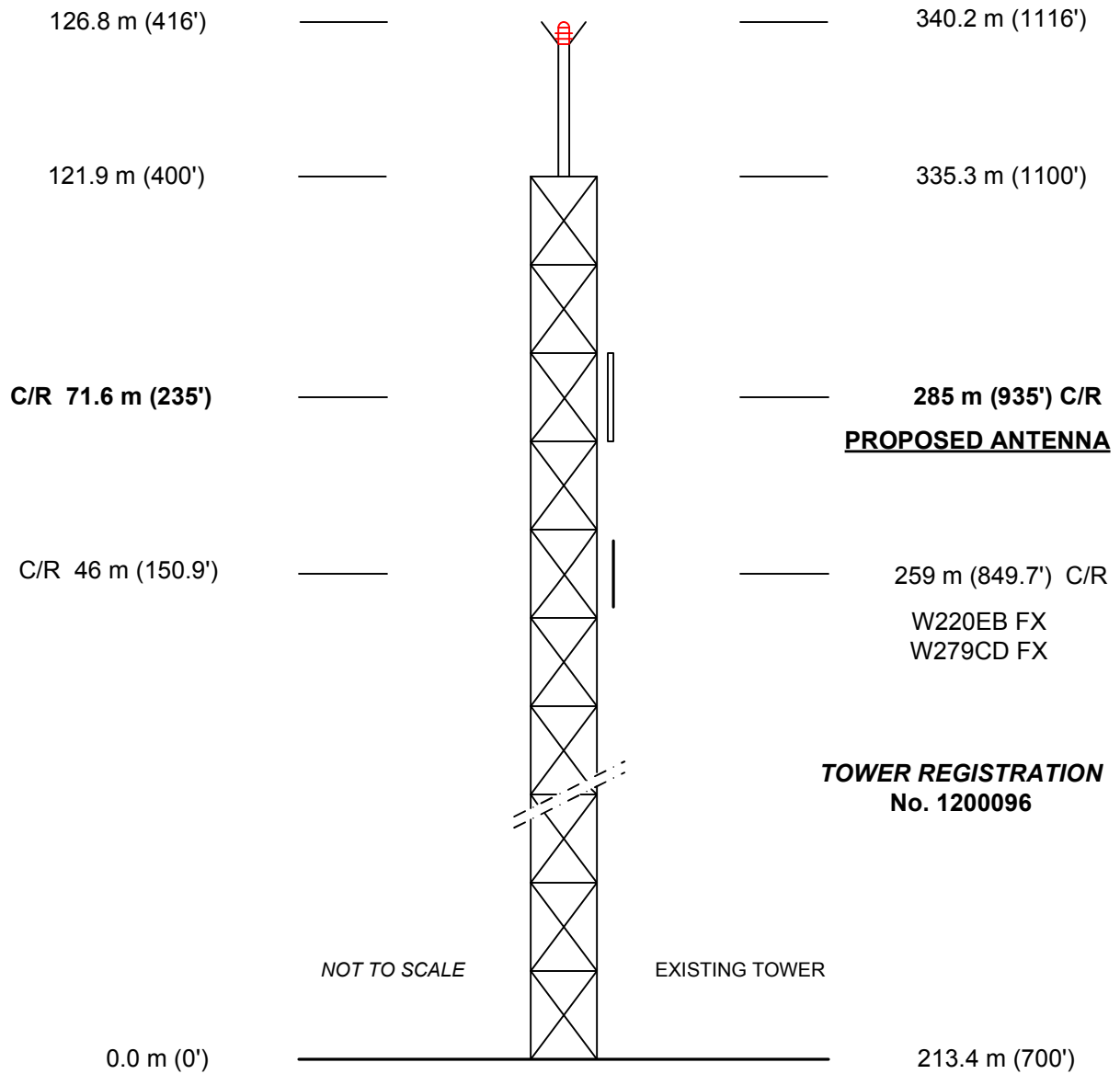
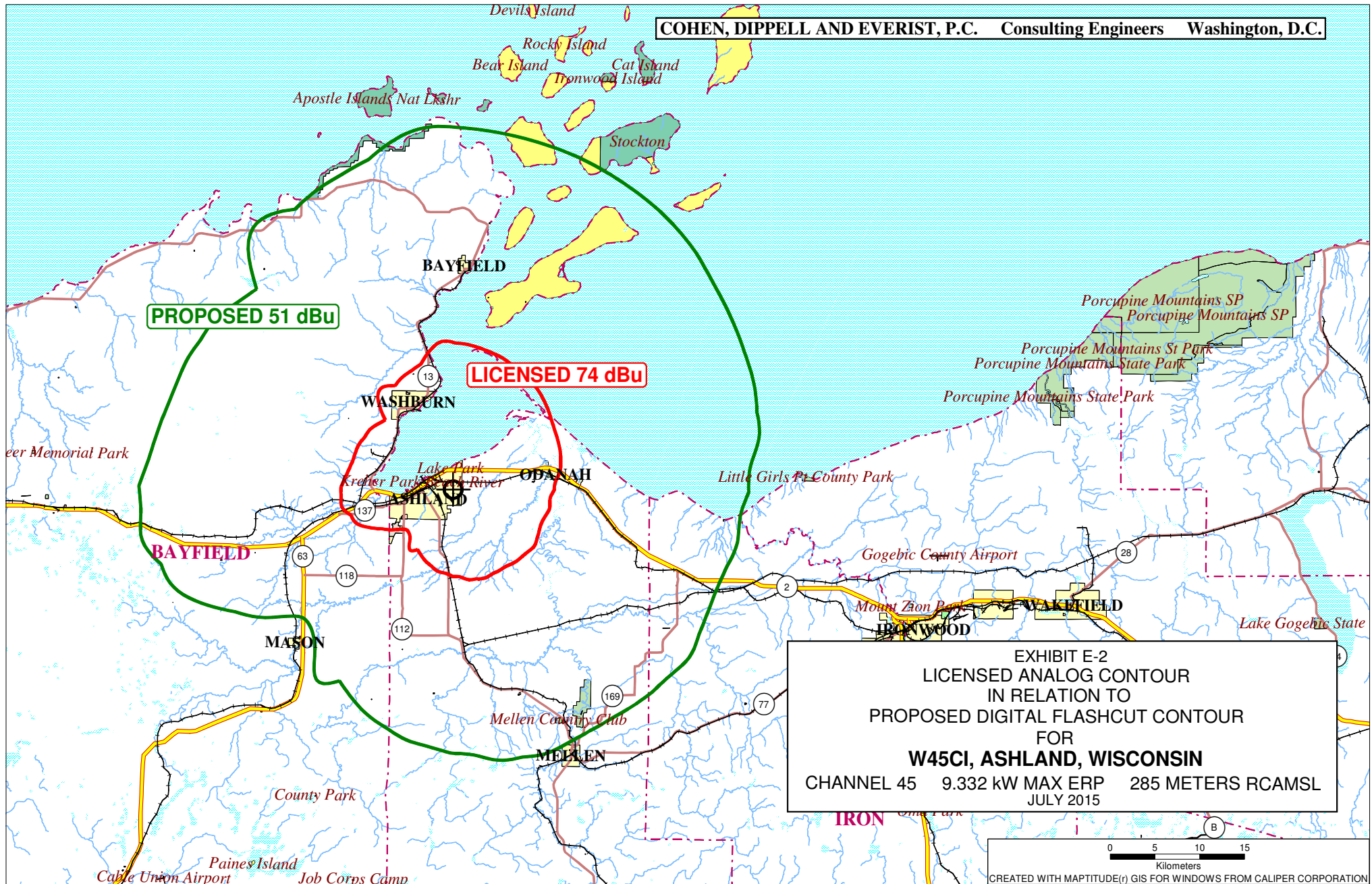


EXHIBIT E - 1
VERTICAL SKETCH
FOR THE DT FLASHCUT OPERATION OF
W45CI, ASHLAND, WISCONSIN
JULY 2015



COHEN, DIPPELL AND EVERIST, P.C.

TABLE I
LONGLEY-RICE INTERFERENCE
FOR THE PRELIMINARY ALLOCATION FOR DIGITAL FLASHCUT
W45CI, ASHLAND, WISCONSIN
CHANNEL 45 9.332 KW ERP 285 METERS RC/AMSL
JULY 2015

N 46° 35' 23"

W 90° 50' 12.6"

NAD-27

Emission Mask: Simple

<u>Channel</u>	<u>Call</u>	<u>City/State</u>	<u>Dist(km)</u>	<u>Status</u>	<u>FCC File No.</u>	<u>Result</u>
31	K31GH	HAYWARD WI	78.9	LIC	BLTTL-20020729AAS	0.00%
44	W02CF	MINOCQUA WI	112.9	CP	BDISDTL-20091022ABP	No interference
44	W44DO-D	RHINELANDER WI	168.6	CP	BDCCDTL-20120604ABF	No interference
45	K45MJ-D	HEWITT MN	403.5	CP	BNPDTL-20100505AKY	0.00%
45	K45JD	INTERNATIONAL FALLS MN	288.6	LIC	BLTT-20060414AAK	No interference
45	KSTC-TV	MINNEAPOLIS MN	246.2	LIC	BLCDT-20090619ACD	0.00%
45	K45MO-D	RACINE MN	338.4	CP	BNPDTL-20100510AKB	No interference
45	K45LH-D	RED LAKE MN	346.4	LIC	BLDTT-20111206AAK	No interference
45	K45LJ-D	ST. JAMES MN	403	LIC	BLDTL-20120625AAX	No interference
45	W45DR-D	BARABOO WI	301.3	CP	BNPDTL-20100125ABB	No interference
45	WMKQ-LP	ELK MOUND WI	194.3	LIC	BLTTL-20041021ACA	No interference
45	W45CD-D	FENCE WI	208.4	LIC	BLDTT-20081121AHY	No interference
46	K46MH-D	DULUTH MN	100.3	CP	BNPDTL-20100720AJW	No interference
46	WTPX-TV	ANTIGO WI	201.8	LIC	BMLCDT-20041015ADT	0.00%