

ENGINEERING STATEMENT
APPLICATION FOR A DTV
CONSTRUCTION PERMIT FOR FLASHCUT FOR
AN EXISTING LOW POWER TELEVISION STATION
K39GG, AITKIN, MINNESOTA
CHANNEL 39 6.745 KW MAX ERP 470.9 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)

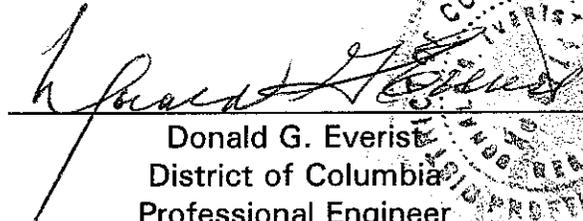
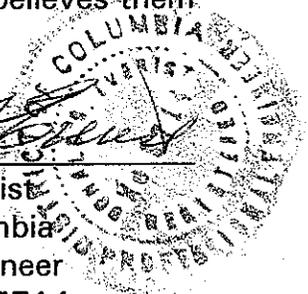
Donald G. Everist, being duly sworn upon his oath, deposes and states that:

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;

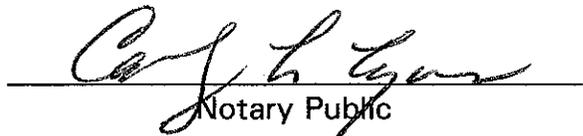
That his qualifications are a matter of record in the Federal Communications Commission;

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

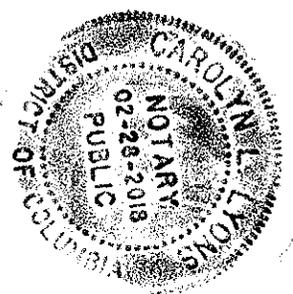
That the facts stated herein are true of his own knowledge, except such facts as are stated to be on information and belief, and as to such facts he believes them to be true.


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: 2/28/2018



Introduction

This engineering statement has been prepared on behalf of KQDS Acquisition Corp., licensee of low-power television station, K39GG, Aitkin, Minnesota. This statement supports the licensee's request to convert to DTV operation on the currently licensed analog Channel 39, commonly referred to as "flash-cut" with a DTV effective radiated power ("ERP") of 6.745 kW at a radiation center above mean sea level ("RCAMSL") of 470.9 meters. The FCC staff indicates that the application does not require Canadian concurrence.

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 near the intersection of Highway 30 and Highway 32 near Rabbit Lake Township, Minnesota. There is no change in transmitter site. The geographic coordinates of the site follow below.

North Latitude: 46° 32' 05"

West Longitude: 93° 50' 15"

NAD-27

The antenna registration number is 1064589. The application will specify the ASRN NAD-83 coordinates which are:

North Latitude: 46° 32' 05.1"

West Longitude: 93° 50' 16"

NAD-83

Elevation Data

Elevation of site above mean sea level	370.9 meters (1216.9 feet)
Center of radiation of antenna above ground level	100 meters (328 feet)
Center of radiation of antenna above mean sea level	470.9 meters (1544.9 feet)
Overall tower height above ground level including appurtenances	110 meters (361 feet)

Equipment Data

Transmitter:	Type-approved
Transmission Line:	Andrew, Type HJ7-50A, 1-5/8", 109.7 meters (360 feet) with 62.8% efficiency
Antenna:	Andrew, ALP12L2-HSOC, with maximum gain of 13.32 dB and 0.5° electrical beam tilt

Power Data

Transmitter:	0.500 kW	-3.01 dBk
Emission Mask:	Simple	
Transmission Line Loss:	0.186 kW	2.02 dB
Input Into Antenna:	0.314 kW	-5.03 dBk
Antenna Gain:	21.49	13.32 dB
ERP:	6.745 kW	8.29 dBk

As indicated above, the transmitter with typical power output of 0.5 kW will deliver 0.314 kW to the input of the antenna. The antenna, having a maximum gain of 13.32 dB and an electrical beam tilt of 0.5°, will produce maximum ERP of 6.745 kW. A map providing the protected contour of the proposed facility compared to the currently licensed operation of K39GG has been included as Exhibit E-2 of this report. The antenna elevation pattern with the associated tabulation and the horizontal pattern with the 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 K39GG with no alterations proposed.

Other Broadcast Facilities

A brief analysis was completed to determine the presence of stations in the vicinity of the K39GG tower using the July 1, 2015 data contained within the Commission’s Consolidated Database System (“CDBS”). Within 500 meters of the proposed site, there are no authorized FM radio stations, no authorized DTV and NTSC television stations, and no authorized low-power analog television or television translator station aside from K39GG. There are no AM facilities 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 K39GG 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 K39GG low-power digital facilities and all relevant stations listed in the FCC database as of July 1, 2015.

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 6.745 kW directional operation will utilize an Andrew, Type ALP12L2-HSOC antenna (or equivalent) described above with a center of radiation above ground of 100 meters. The proposed antenna is side-mounted on an existing tower with an overall height of 110 meters above ground. The proposed digital operation of K39GG will create a radio frequency field level of $1.5 \mu\text{W}/\text{cm}^2$ at the base of the tower. This level is less than 0.4% 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

110 m. (361')
109 m. (357.6')
100 m. (328') R/C

480.9 m. (1577.8')
470.9 m. (1544.9') R/C
PROPOSED ANTENNA

GUYED TOWER

ASRN: 1064589

(NOT TO SCALE)

0 m. (0')

370.9 m. (1216.9')

EXHIBIT E - 1
VERTICAL SKETCH
FOR THE DT FLASHCUT OPERATION OF
K39GG, AITKIN, MINNESOTA

JULY 2015

COHEN, DIPPELL and EVERIST, P.C. CONSULTING ENGINEERS

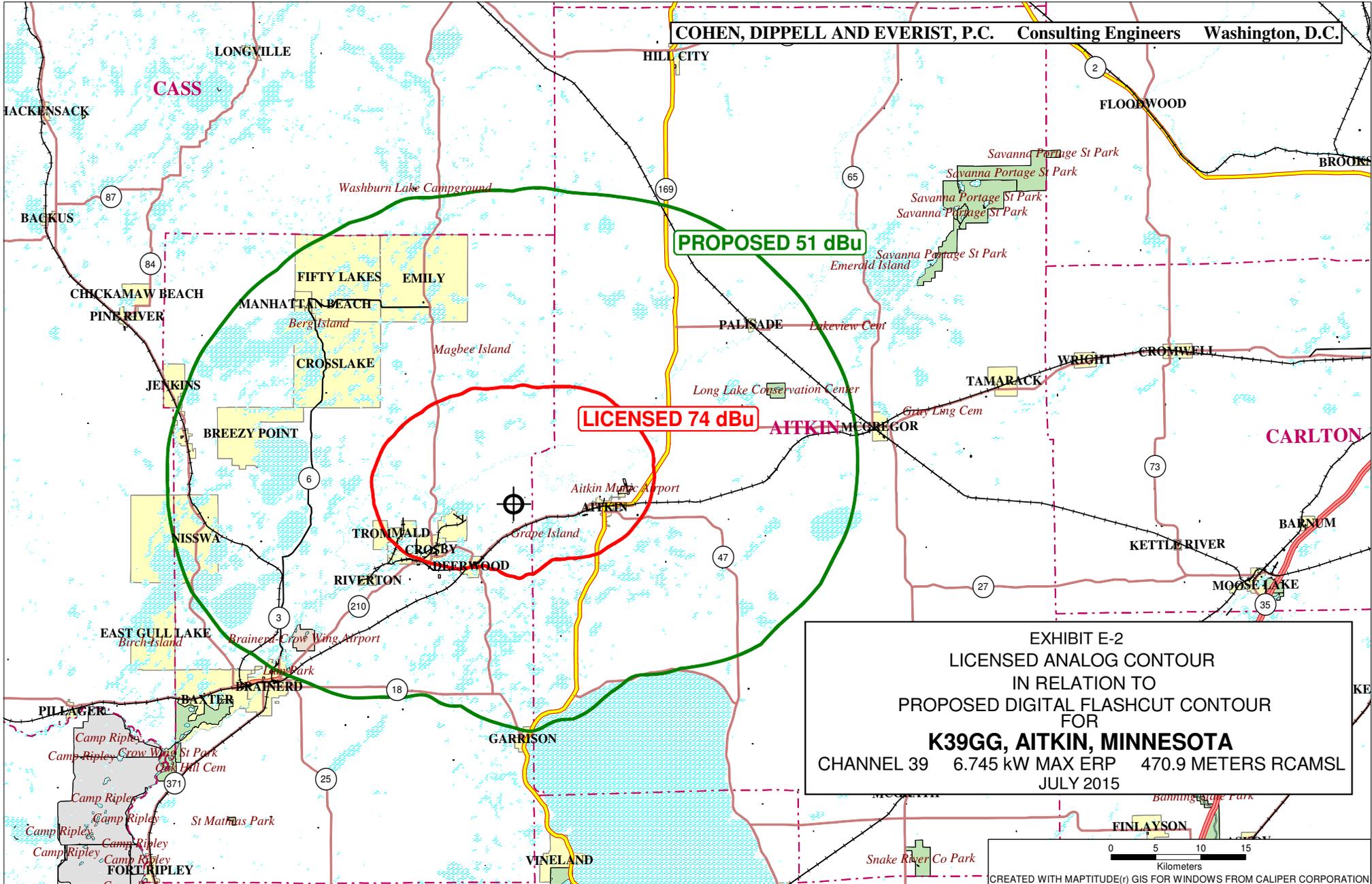
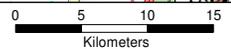


EXHIBIT E-2
LICENSED ANALOG CONTOUR
IN RELATION TO
PROPOSED DIGITAL FLASHCUT CONTOUR
FOR
K39GG, AITKIN, MINNESOTA
CHANNEL 39 6.745 kW MAX ERP 470.9 METERS RCAMSL
JULY 2015



COHEN, DIPPELL AND EVERIST, P.C.

TABLE I
LONGLEY-RICE INTERFERENCE
FOR THE PRELIMINARY ALLOCATION FOR DIGITAL FLASHCUT
K39GG, AITKIN, MINNESOTA
CHANNEL 39 6.745 KW ERP 470.9 METERS RC/AMSL
JULY 2015

N 46° 32' 05"

W 93° 50' 15"

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>
32	K32FY	PARK RAPIDS MN	99.4	LIC	BLTT-20020429AAS	0.00%
38	K38AC-D	ALEXANDRIA, ETC MN	140.7	LIC	BLDTL-20120313ABM	No interference
38	WDSE	DULUTH MN	133.9	CP	BDRTEDT-20090710ARN	No interference
38	K38MJ-D	MAX MN	121.4	LIC	BLDTT-20111107ALG	No interference
38	K38OH-D	SAINT CLOUD MN	111.8	LIC	BLANK-0000001758	No interference
39	W39DD-D	DODGE CENTER MN	304	CP	BNPDTL-20091130AGZ	No interference
39	K39CH-D	REDWOOD FALLS MN	237.5	LIC	BLDTT-20120604AAR	No interference
39	K39LX-D	SAUK CENTRE MN	124.8	CP	BNPDTL-20100505AKN	No interference
39	K39MD-D	SHERBURN MN	329.2	CP	BNPDTL-20100510AJL	No interference
39	K39FE-D	WILLMAR MN	178.5	LIC	BLDTT-20100122ACA	No interference
39	K39MA-D	FARGO ND	225.5	CP	BNPDTL-20100902ABB	No interference
39	NEW	GRAFTON ND	341.8	APP	BNPDTL-20100505AJQ	No interference
39	K39LH-D	VALLEY CITY ND	344.8	CP	BNPDTL-20100505ALQ	0.00%
39	K39CZ-D	ABERDEEN SD	380.7	CP	BDFCDTL-20120404AAS	0.00%
39	K39CZ-D	ABERDEEN SD	380.7	LIC	BLDTL-20140129AKO	0.00%
39	K39LN-D	WATERTOWN SD	309.3	CP	BNPDTL-20100505AEB	No interference
39	W39CV-D	MINOCQUA WI	320.3	LIC	BLDTT-20130722ADV	No interference
40	K40LT-D	ALEXANDRA MN	145.2	CP	BNPDTL-20100127ABS	No interference
40	KPXM-TV	ST. CLOUD MN	128.4	LIC	BLCDDT-20030903AAU	No interference
40	KPXM-TV	ST. CLOUD MN	172.4	CP	BPCDDT-20120323AGY	No interference
42	K42FH	BEMIDJI MN	134.9	APP	BSTA-20121025ABW	0.00%
42	K42FH	BEMIDJI MN	134.9	LIC	BLTT-20050922AEL	0.00%