

JOHN J. MULLANEY  
Voice  
JOHN H. MULLANEY, P.E. (1994)  
ALAN E. GEARING, P.E.  
E-mail  
TIMOTHY Z. SAWYER

301 921-0115

301 590-9757 Fax  
mullengr@aol.com

**MULLANEY ENGINEERING, INC.**

9049 SHADY GROVE COURT  
GAITHERSBURG, MD 20877

**ENGINEERING EXHIBIT EE-1:**

**KM LPTV OF CHICAGO-13, L.L.C.  
CLASS A DIGITAL TELEVISION STATION  
WOCK-CA  
FCC FACILITY NUMBER  
35092**

**CHANNEL 04, CHICAGO, IL - DIGITAL**

**SEPTEMBER 2012**

**ENGINEERING EXHIBIT  
IN SUPPORT OF  
AN APPLICATION FOR AUTHORITY TO MAKE  
CHANGES IN CLASS A TELEVISION BROADCAST STATION  
WOCK-CA  
CHICAGO, ILLINOIS**

**ENGINEERING EXHIBIT EE-1:**

**KM LPTV OF CHICAGO-13, L.L.C.  
CLASS A DIGITAL TELEVISION STATION  
WOCK-CA  
FCC FACILITY NUMBER  
35092**

**CHANNEL 04, CHICAGO, IL - DIGITAL**

**SEPTEMBER 2012**

**TABLE OF CONTENTS:**

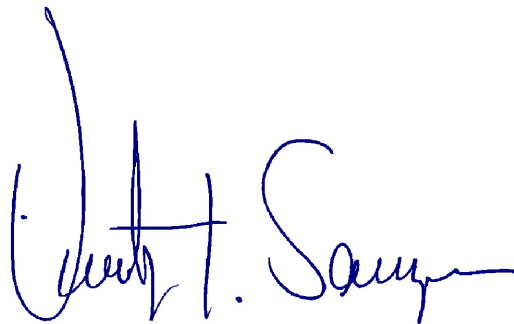
1. F.C.C. Form 301-CA, Section III
2. F.C.C. Form 301-CA, Section III (certification)
3. Declaration of Engineer
4. Narrative Statement
5. Figure 1, Predicted Service Contours
6. Figure 2, Directional Antenna Details
7. Figure 3, Allocation Study

## **DECLARATION**

I, Timothy Z. Sawyer, declare and that I have provided engineering services in the area of telecommunications since 1969. My qualifications are a matter of record with the Federal Communications Commission. I am a senior engineer with the firm of Mullaney Engineering, Inc., consulting radio telecommunications engineers with offices in Gaithersburg, Maryland.

The firm of Mullaney Engineering, Inc., has been retained by KM LPTV OF CHICAGO-13, L.L.C., to prepare the instant engineering exhibit in support of **an application for authority to make changes in CLASS A TELEVISION STATION WOCK-CA Chicago, Illinois.** (FCC FACILITY ID NUMBER: 35092.)

All facts contained herein are true of my own knowledge except those stated to be on information and belief, and as to those facts, I believe them to be true. I declare under the penalty of perjury that the foregoing is true and correct.



---

Timothy Z. Sawyer

Executed on the 7<sup>th</sup> day of September 2012

**ENGINEERING EXHIBIT EE-1:**

**KM LPTV OF CHICAGO-13, L.L.C.  
CLASS A DIGITAL TELEVISION STATION  
WOCK-CA  
FCC FACILITY NUMBER  
35092**

**CHANNEL 04, CHICAGO, IL - DIGITAL**

**SEPTEMBER 2012**

**NARRATIVE STATEMENT:**

**I. GENERAL:**

This engineering statement and the instant engineering exhibit of which it is part has been prepared on behalf of KM LPTV OF CHICAGO-13, L.L.C., (hereinafter "KM").

KM is the permittee of Class-A Digital Television Station WOCK-CA, Channel 4, Chicago, Illinois, FCC facility identification number 35092.

By means of the instant application, KM seeks authorization to change its authorized facility.

The proposed digital facilities will operate on channel 4 with a maximum effective radiated power of 1.0 kilowatts (1000 watts) and an antenna center of radiation height above mean sea level of 570.9 meters, using a directional antenna system (see Figure 2).

The proposed facilities will be built to comply with the *FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields* and the instant proposal is categorically excluded from environmental processing pursuant to the provisions of Section 1.1306 of the Commission's Rules. A more detailed

APPLICATION TO MAKE CHANGES  
CLASS A DIGITAL TELEVISION STATION CHANNEL 4  
WOOK-CA, CHICAGO, IL

discussion of environmental factors is included under the heading  
Environmental Considerations below.

Information requested by exhibits in response to questions on Section III of  
FCC Form 301-CA is incorporated in the following paragraphs, figures and/or  
tables.

Processing of this application is requested under the rules currently in effect at  
the time of filing.

## **II. ENGINEERING DISCUSSION**

### **Transmitter/Antenna Location:**

KM proposes to locate its directional antenna atop the John Hancock  
Building West tower and operate on television channel 4. No change in  
the geographic coordinates of the station will occur, or antenna location  
(height, etc.) **KM seeks only to make changes in the effective radiated  
power of the station.**

The antenna will be side-mounted on the west tower of the John Hancock  
Building with a center of radiation at 1280 feet (390.1 meters) above  
ground level (AGL), 1873 feet (570.9 meters) above mean sea level  
(AMSL).

### **Coverage & Service Contours:**

Figure 1, is a map showing the location of the present digital service  
contour and the proposed digital service contour.

APPLICATION TO MAKE CHANGES  
CLASS A DIGITAL TELEVISION STATION CHANNEL 4  
WOCK-CA, CHICAGO, IL

**Proposed Directional Antenna:**

The antenna consists of a two-bay single-element Scala TVO antenna "SCA TVOCUSWOCK." Equal power division is employed to all elements.

Information regarding the antenna directional pattern is included in Figure 2. The maximum power at any angle (i.e., below or above the horizon will not exceed 1.0 kilowatts (1000 watts).

**Allocation Study:**

The proposed channel in the directional antenna system will not result in an increase in interference to any full service operating analog or digital television stations, Class-A television stations or any existing DTV allotments or full-service applications or permits, or secondary (LPTV) services at the time of filing.

The Commission's Longley Rice propagation method described in OET Bulletin No. 69 were used in this determination. The results of the OET styled study are contained within Figure 3.

**Environmental Considerations:**

The applicant believes its proposal will not significantly affect the environment for the following reasons.

APPLICATION TO MAKE CHANGES  
CLASS A DIGITAL TELEVISION STATION CHANNEL 4  
WOCK-CA, CHICAGO, IL

The proposal does not meet any of the criteria specified in Section 1.1307 of the FCC Rules. More specifically, the proposed facilities are not known to fall within any of the categories enumerated in Sections 1.1307(a)(1)-(7) and will not involve the use of high intensity white lights. Furthermore, operation of the proposed facility will not involve the exposure of workers or the general public to levels of radio frequency electromagnetic fields exceeding guidelines adopted by the Federal Communications Commission. (The current FCC guidelines are based upon criteria contained in the National Council of Radiation Protection and Measurements (NCRP) Report No.86 (1986) and ANSI/IEEE C95.1-1992.)

With regard to the last item, the WOCK-CA digital antenna is to be mounted on the west tower atop the John Hancock building in a very complex radiofrequency environment. The building roof is inaccessible to the general public.

Based upon a worst case downward relative field value of 1.0 for all angles below the horizon and a maximum horizontal power of 0.3 kilowatts, and an antenna height of 53 meters above the rooftop. The power density level 2 meters above the roof top is predicted to be 0.0051 mW/cm<sup>2</sup> or less. The computed power density is 0.51 percent of the Commission's

APPLICATION TO MAKE CHANGES  
CLASS A DIGITAL TELEVISION STATION CHANNEL 4  
WOOK-CA, CHICAGO, IL

guidelines for a controlled area and 2.55 percent of an uncontrolled area -  
no further study from the proposal is required.

The applicant will fully-cooperate and coordinate with all site users as  
required by the Commission's rules.

**III. SUMMARY:**

KM proposes to make minor changes to its channel 4 digital operation by  
INCREASING its Effective Radiated Power (ERP) from 300 watts to 1000  
watts - no other changes are proposed.

The proposed digital facility will operate on Digital Television Channel 4 with  
a maximum ERP 1.0 kilowatt, utilizing a DIRECTIONAL antenna system. The  
estimated digital transmitter power output (TPO) is 1.223 kilowatts.

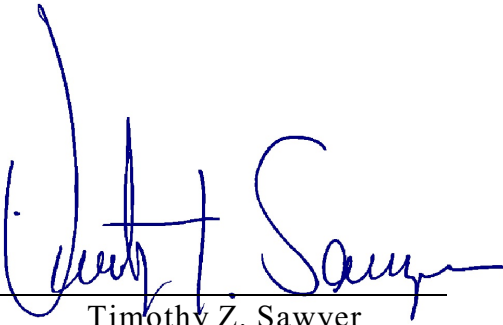
Operation as proposed herein would not cause/increase any normally prohibited  
contour overlap using a terrain dependant - OET Bulletin No. 69 review, and  
would not have any significant impact on the environment. The proposed  
operation will not create any new prohibited interference.

The proposed operation is fully in compliance with all other areas of the  
Commission's rules and applicable international agreements.



APPLICATION TO MAKE CHANGES  
CLASS A DIGITAL TELEVISION STATION CHANNEL 4  
WOOK-CA, CHICAGO, IL

7 September 2012



Timothy Z. Sawyer

MULLANEY ENGINEERING, INC.  
9049 SHADY GROVE COURT  
GAITHERSBURG, MARYLAND USA  
TEL.: 301-921-0115

**WOCK-CD-D**

BLDVA20100107AAN

Latitude: 41-53-56 N

Longitude: 087-37-23 W

ERP: 1.00 kW

Channel: 4 Frequency: 69.0 MHz

Antenna HAAAT Height: 392.0 m

Antenna AMSL Height: 570.8 m

Antenna AGL Height: 390.1 m

Ground Elevation: 180.7 m

Horiz. Pattern: Directional

**WOCK-CD DIGITAL CHANNEL 4**

PRESENT AND PROPOSED SERVICE CONTOUR

FIGURE 1

**Population Report Field Strength: 43.00 dBuV/m****PRESENT**

Total Population Within Contour: 6,835,441

Housing Units Within Contour: 2,821,552

**PROPOSED**

Total Population Within Contour: 7,888,379

Housing Units Within Contour: 3,204,281

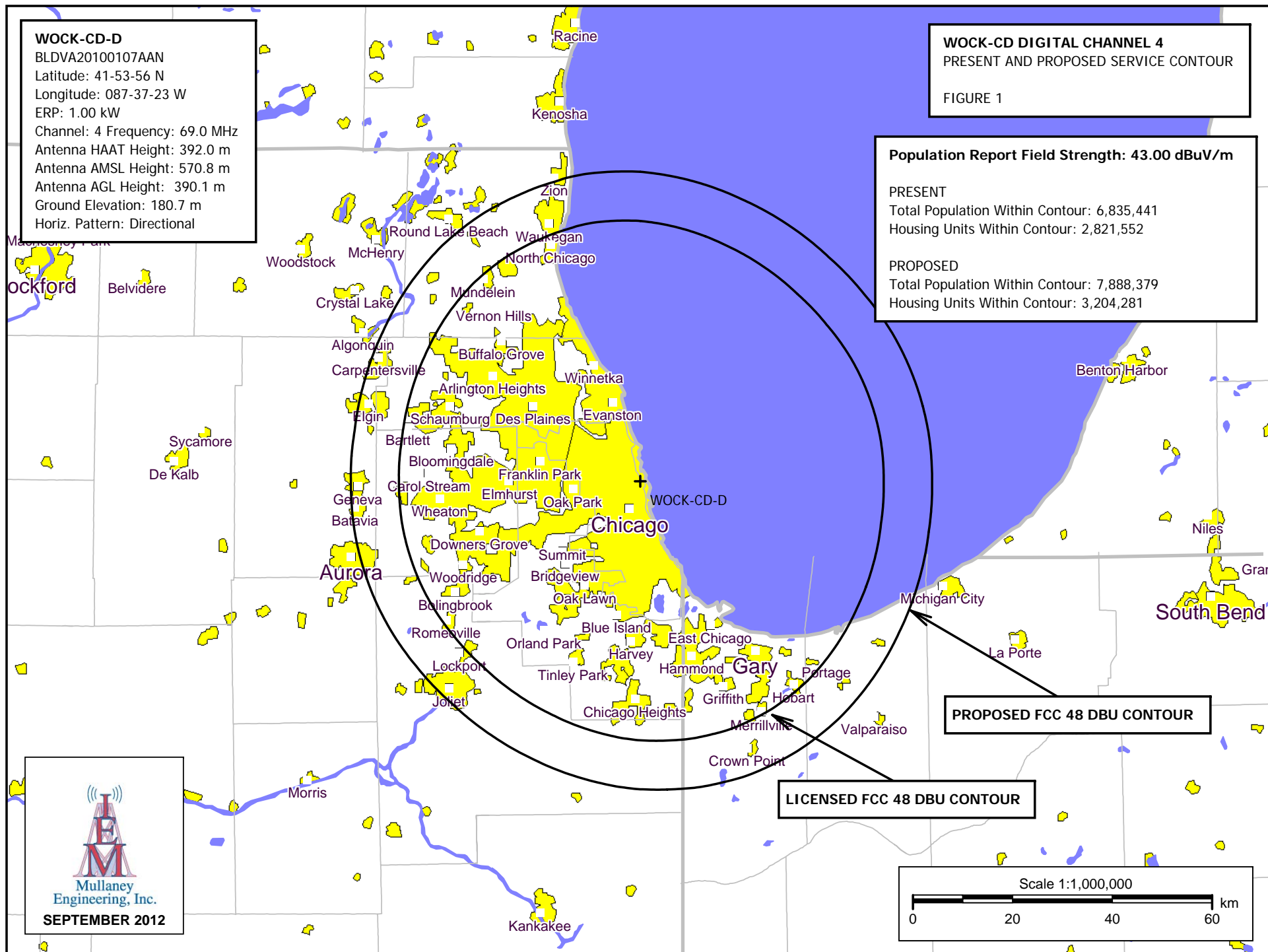
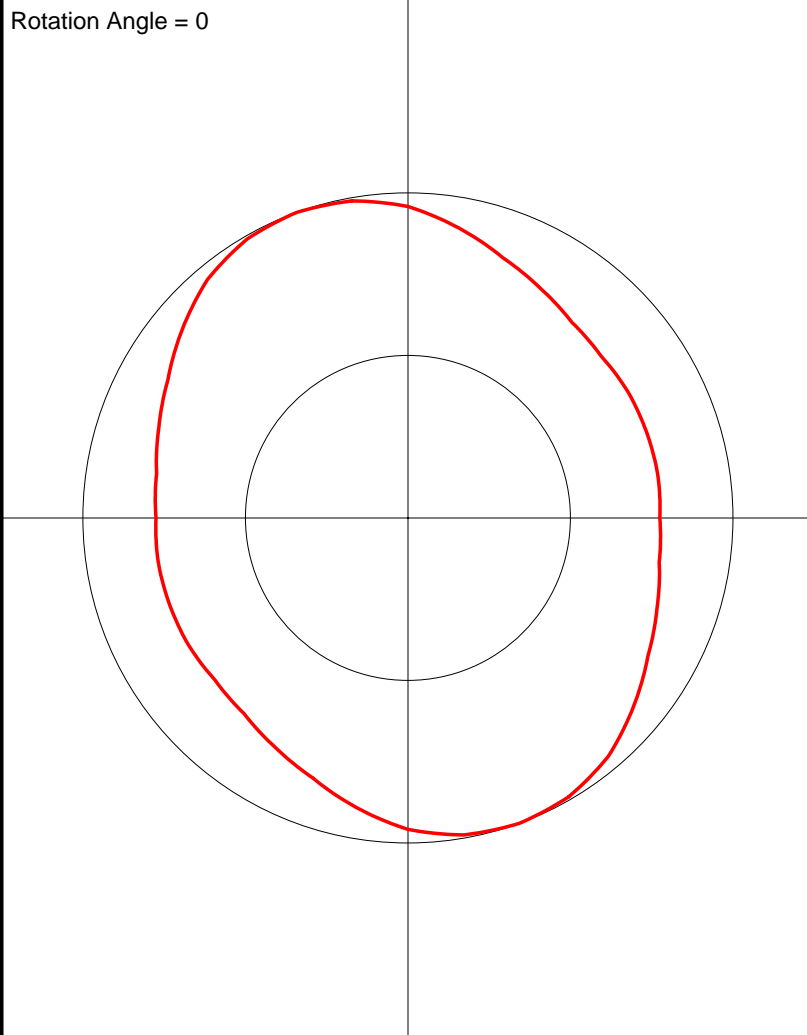


FIGURE 2 WOCK DIRECTIONAL ANTENNA PATTERN

Azimuth (deg)	Relative Field
0.0	0.958
10.0	0.905
20.0	0.852
30.0	0.815
40.0	0.785
50.0	0.775 <--MIN
60.0	0.78
70.0	0.78
80.0	0.78
90.0	0.775 <--MIN
100.0	0.785
110.0	0.815
120.0	0.852
130.0	0.905
140.0	0.958
150.0	0.99
160.0	1.000 <--MAX
170.0	0.99
180.0	0.958
190.0	0.905
200.0	0.852
210.0	0.815
220.0	0.785
230.0	0.775 <--MIN
240.0	0.78
250.0	0.78
260.0	0.78
270.0	0.775 <--MIN
280.0	0.785
290.0	0.815
300.0	0.852
310.0	0.905
320.0	0.958
330.0	0.99
340.0	1.000 <--MAX
350.0	0.99



# FIGURE 3 - OET BULLETIN 69 INTERFERENCE STUDY RESULTS - SUMMARY

## Outgoing Interference Population Report

WOCK-CD-D (4) Chicago, IL - BLDVA20100107AAN

Broadcast Type: Digital Service: F [Simple Emission Mask]

Lat: 41-53-56 N Lng: 087-37-23 W ERP: 1.0 kW AMSL: 570.8 m

TV Outgoing Interference Study

Signal Resolution: 1.0 km

Consider NTSC Taboo: Yes

KWX error points are considered to  
be interference free coverage.

Default # of radials computed for contours: 360

Contours calculated using 8 radial HAAT.

LR Profile Spacing Increment: 1.0 km

Masked interference points are being  
counted as interference.

Using LPTV/translator D/U rules.

Pop Centroid DB: 2000 US Census (SF1)

Study Date: 9/7/2012

TV Database Date: 9/7/2012

Primary Terrain: NED 3 Second US Terrain

Secondary Terrain: V-Soft 30 Second US Database

Population Database: 2010 US Census (PL)

## Stations Considered:

Call Letters	City	State	Dist	Azi
WHBF-TV-D (4)	Rock Island	IL	240.6	261.6
1441869-D.A (4)	Fort Wayne	IN	244.5	113.9
WHBF-D (4)	ROCK ISLAND	IL	240.6	261.6

Call	Area	HUnits	Contour	Masked Ix	Unmasked Ix	%
WHBF-TV-D (4)	349.5	3,367	1,806,741	0	8,152	0.45
1441869-D.A (4)	0.0	0	511,144	0	0	0.00
WHBF-D (4)	74.4	455	998,771	0	1,020	0.10

-----MEETS ALL FCC PROTECTION REQUIRMENTS-----