

# **COMPREHENSIVE TECHNICAL EXHIBIT APPLICATION FOR CONSTRUCTION PERMIT**

**WLEY Licensing Incorporated  
WLEY-FM Aurora, IL  
Facility ID 71282  
Channel 300B 107.9 MHz 21kW 232 m**

## **APPLICATION FOR CONSTRUCTION PERMIT**

The following engineering statement and attached exhibits have been prepared for WLEY Licensing Incorporated, licensee of FM broadcast station WLEY-FM Aurora, Illinois, and are in support of their application for Construction Permit.

### **PURPOSE OF APPLICATION**

This application seeks a construction permit for existing license under FCC File No. BLH-19910827KB. WLEY Licensing Incorporated seeks a construction permit to correct a small discrepancy in the WLEY-FM License. WLEY Licensing Incorporated had replaced their directional antenna in May 2015. WLEY Licensing Incorporated then filed the FCC form 302 to notify the FCC of the antenna change. While under review the FCC noticed a discrepancy in site coordinates and site elevation that has exist since the original license application for the current licensed location, see attachment A1.

### **WLEY License**

Site Location: 41-56-01.0 N 88-04-23.0 W (NAD 27)

Site Elevation: 232 meters

### **Corrected Location and Site Elevation**

Site Location: 41-56-03.0 N 88-04-22.0 W (NAD 27)

Site Elevation: 227.4 meters

The WLEY Licensing Incorporated proposed facility will continue to provide service to the licensed community of Aurora, IL, see attachment A2. The proposed facility would comply with the community coverage requirements of Section 73.315 of the Commission's Rules. Attachment A2 illustrates the predicted 70dBu 50-50 and 60dBu 50-50 service contours by the standard method. The proposed WLEY-FM contour would fully encompass Aurora, Illinois. In addition, there are no major terrain obstructions between the proposed site, and the community of license.

The WLEY Licensing Incorporated proposed facility will maintain the licensed service area without extending it, see attachments A3, A4, A5 and A6.

## **INSTALLED ANTENNA SYSTEM**

The new installed directional antenna is manufactured by Electronics Research Inc. (ERI), model number SHP-4AC-DA-HW It consists of four circularly polarized sections, spaced in half wavelength intervals, along with parasitic elements to produce the desired licensed pattern. The composite horizontal and vertical maximum relative field pattern obtained from this antenna were measured to have an RMS of 92% of the filed composite pattern in compliance with 47 C.F.R. Section 73.1690(c)(2)(ii). The composite measured pattern and measurement procedures comply with 47 C.F.R. Section 73.1690(c)(2), see attachment.

The installation of the new directional antenna system complies with 47 C.F.R. Section 73.1690(c)(2)(iv). Attached are the surveyor's statements form Chicago Guarantee Survey Company dated May 28, 2015 stating observed azimuth orientation of the antenna at 168° 29' 09" from true North, see attachment.

The installation of the new directional antenna system complies with 47 C.F.R. Section 73.1690(c)(2)(v). Attached are the installation engineer's statements certifying installation per manufacturer's specifications, see attached affidavit.

## ENVIRONMENTAL

The WLEY Licensing Incorporated proposed facility would not constitute a significant environmental impact, and is exempt from environmental processing. The proposed facility would utilize an existing tower that is used under the existing license that is registered with the Commission for WSCR-AM. The addition of the new WLEY antenna to this structure would not increase the existing environmental impact.

Additionally, the proposed location of WLEY-FM at this structure would not result in human exposure to radiofrequency radiation in excess of the applicable safety standards. Using the OET Bulletin 65 Compliance worst case formula gives a value for S of 28.72  $\mu\text{W}/\text{cm}^2$  at 2 meters above ground at the base of the tower. Which is well under the OET Bulletin 65 power density limit of 200.0  $\mu\text{W}/\text{cm}^2$  for uncontrolled exposure.

WLEY Licensing Incorporated certifies that it will coordinate with all users of the site to ensure that workers and other personnel are not exposed to radiofrequency radiation in excess of the applicable safety standards. Such coordination activities will include, but are not necessarily limited to, a reduction in transmitter power, or cessation of operation.

### OET Bulletin 65 Compliance

A formula for the power density of an isotropic radiator station is:

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

where:

S = highest power density in microwatts/sq.cm predicted at ground level

F = typical relative field factor in the downward direction (-60 to -90 elevation)

R = distance from ground to center of radiation in meters

ERP = Effective Radiated Power in watts

This formula may be used to calculate the absolute worst case power density for all FM and TV antennas.

### WLEY-FM

Power: 42,000 watts (horizontal plus vertical)

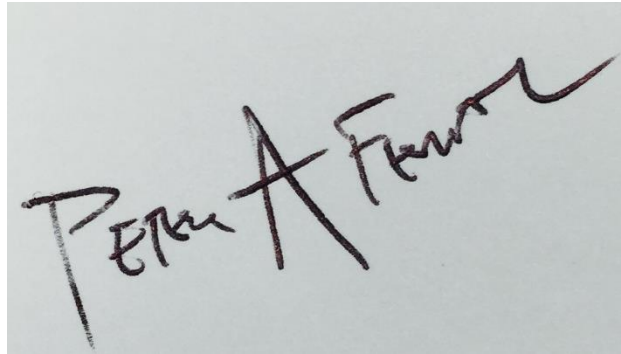
Height of radiation center above ground: 223.0 meters

F = 1

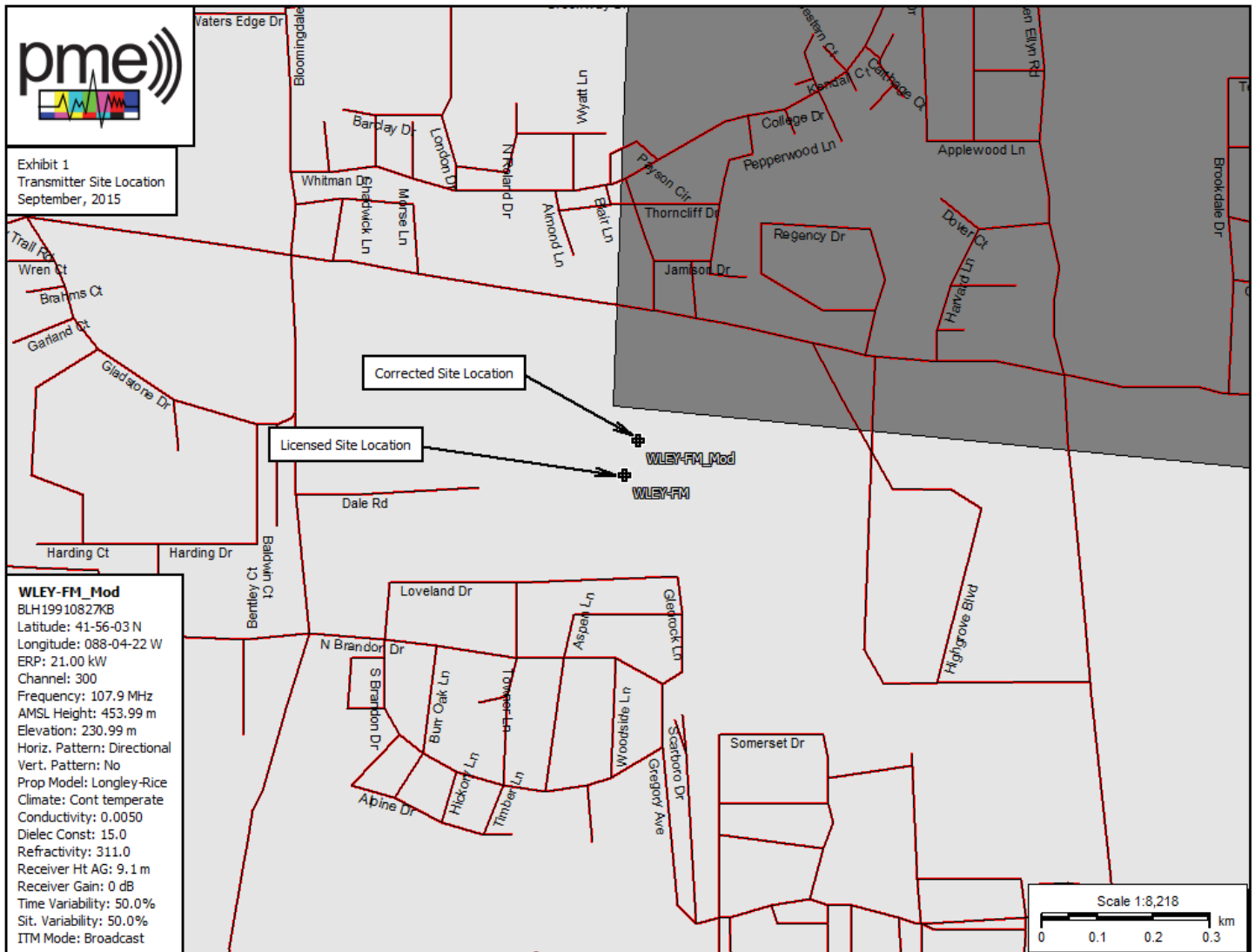
OET Bulletin 65 power density limit: 200.0  $\mu\text{W}/\text{cm}^2$

Using the worst case formula gives a value for S of 28.72  $\mu\text{W}/\text{cm}^2$  at 2 meters above ground at the base of the tower. This is 14.36% of the maximum allowed.

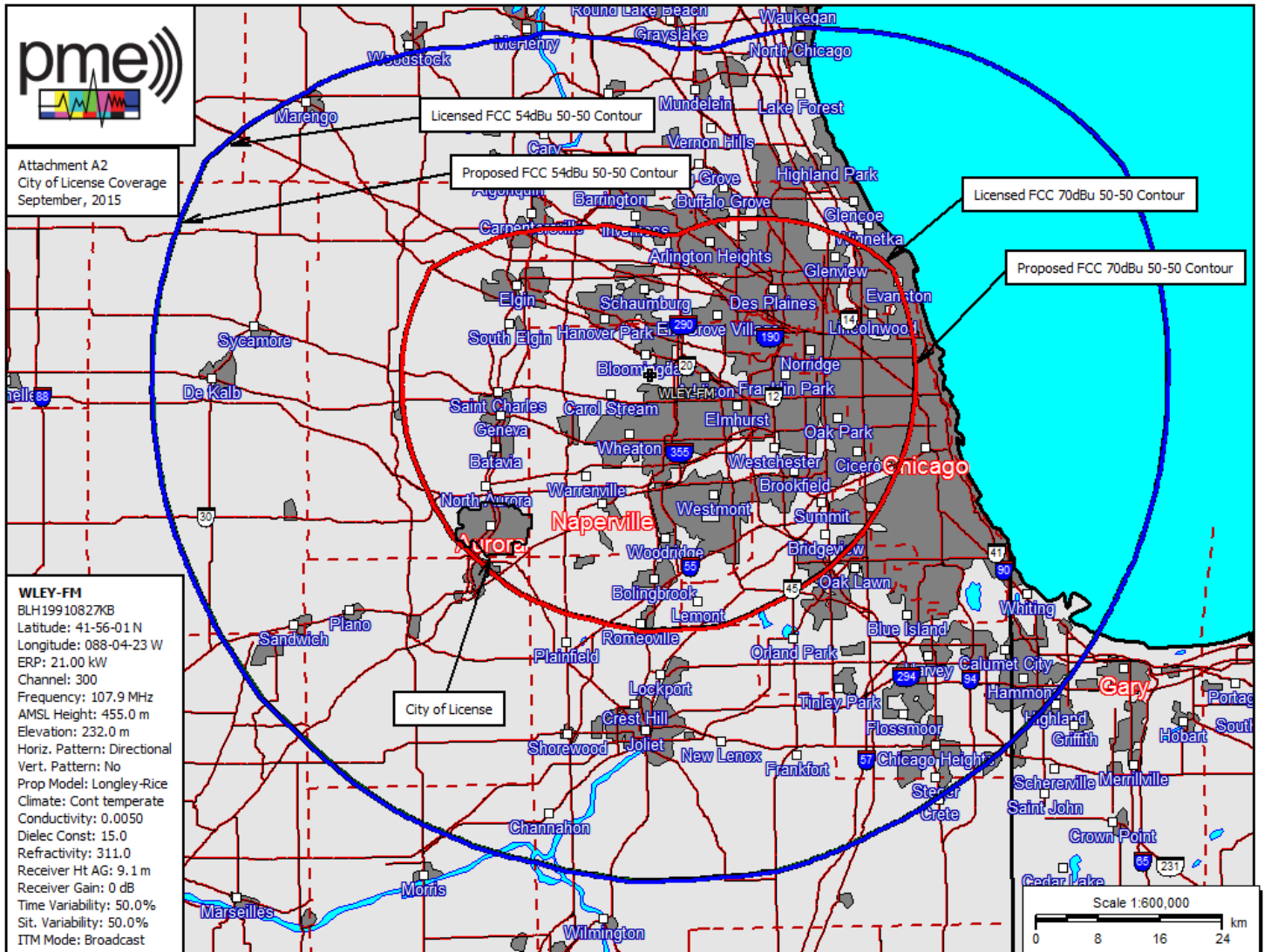
The preceding statement and attached exhibits have been prepared by me, or under my direction, and are true and accurate to the best of my belief and knowledge.

A handwritten signature in dark ink on a light gray background. The signature is written in a cursive style and reads "Peter A. Farrow". The first name "Peter" is written in a standard cursive, while the middle initial "A" is a large, stylized capital letter. The last name "Farrow" is written in a more fluid cursive script.

# ATTACHMENT A1



## ATTACHMENT A2



## ATTACHMENT A3

### PROPOSED STA SPACING

Wley Licensing, Inc.

REFERENCE		DISPLAY DATES
41 56 03.0 N.	CLASS = B Int = B	DATA 08-07-15
88 04 22.0 W.	Current Spacings to 3rd Adj.	SEARCH 09-13-15
----- Channel 300 - 107.9 MHz -----		

Call	Channel	Location		Azi	Dist	FCC	Margin
WLEY-FM	LIC-D 300B	Aurora	IL	200.8	0.06	240.5	-240.4
WVCY-FM_	LIC-D 299B	Milwaukee	WI	360.0	114.25	168.5	-54.3
WGCI-FM_	LIC 298B	Chicago	IL	99.5	36.79	73.5	-36.7
WMUS	LIC-N 300B1	Muskegon	MI	43.0	206.40	210.5	-4.1
NEW	CP 300L1	New Buffalo	MI	97.6	112.45	111.5	1.0
WIBL	LIC-Z 299B1	Fairbury	IL	202.4	156.52	144.5	12.0
WCDD	LIC-N 300B1	Canton	IL	227.2	224.69	210.5	14.2
WLLT	LIC-N 299A	Polo	IL	268.7	127.21	112.5	14.7
WDRV	LIC-D 246B	Chicago	IL	98.2	37.82	19.5	18.3
WNTR	LIC 300B	Indianapolis	IN	144.6	275.91	240.5	35.4
WWQC	LIC 297A	Clifton	IL	184.8	109.49	68.5	41.0
KFMW	LIC 300C	Waterloo	IA	280.7	315.85	273.5	42.4
W300AL	LIC 300D	Mishawaka	IN	102.2	160.02	111.5	48.5

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Reference station has protected zone issue: AM tower  
% = Station Fails minimum 73.215 spacings  
All separation margins include rounding

# ATTACHMENT A4

## EXISTING LICENSED SPACING

Wley Licensing, Inc.

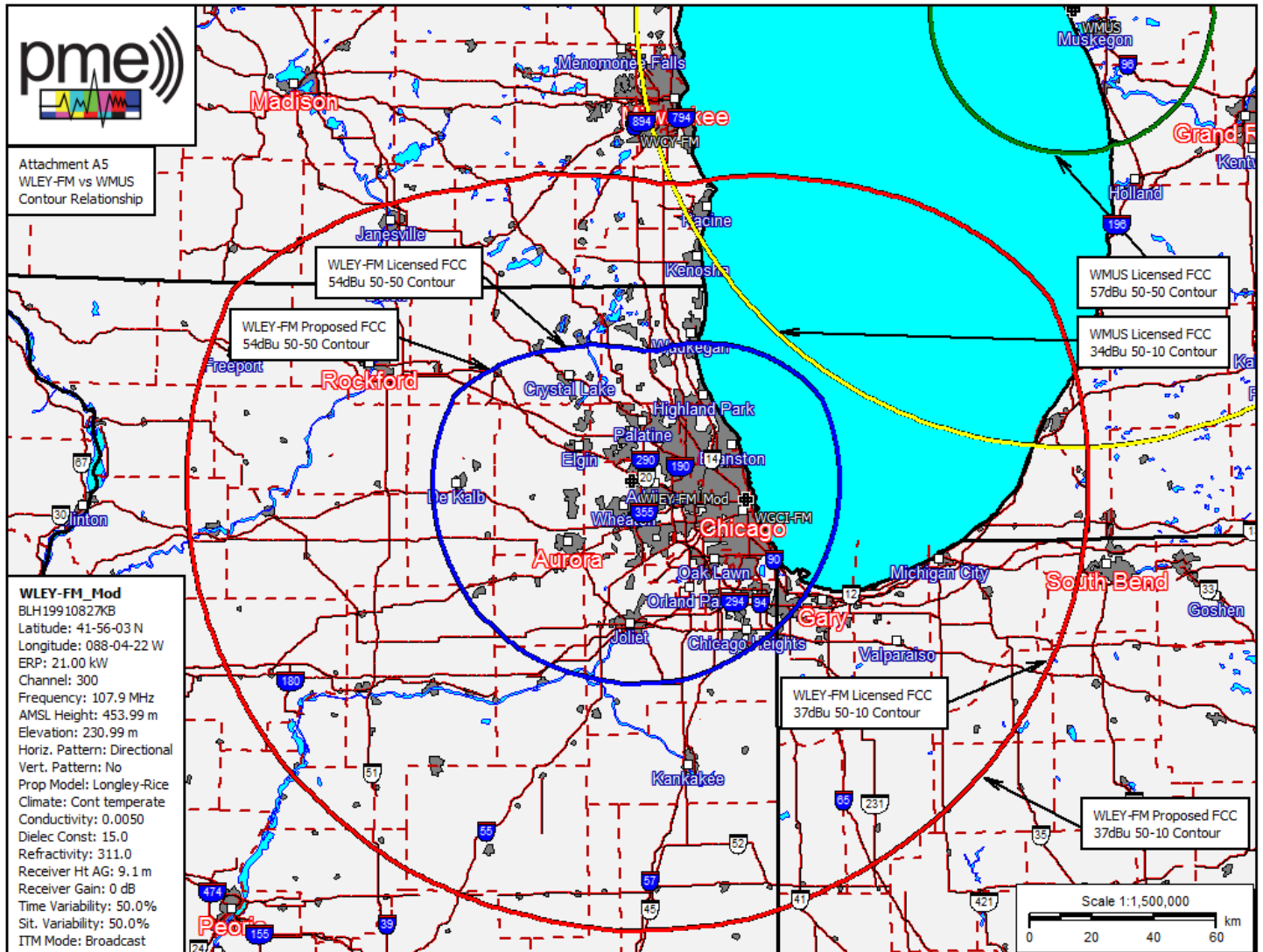
REFERENCE		DISPLAY DATES
41 56 01.0 N.	CLASS = B Int = B	DATA 08-07-15
88 04 23.0 W.	Current Spacings to 3rd Adj.	SEARCH 09-13-15
----- Channel 300 - 107.9 MHz -----		

Call	Channel	Location		Azi	Dist	FCC	Margin
WLEY-FM	LIC-D 300B	Aurora	IL	0.0	0.00	240.5	-240.5
WVCY-FM %	LIC-D 299B	Milwaukee	WI	0.0	114.42	168.5	-54.1
WGCI-FM %	LIC 298B	Chicago	IL	99.4	36.70	73.5	-36.8
WMUS	LIC-N 300B1	Muskegon	MI	43.0	206.26	210.5	-4.2
NEW	CP 300L1	New Buffalo	MI	97.6	112.16	111.5	0.7
WIBL	LIC-Z 299B1	Fairbury	IL	202.4	156.54	144.5	12.0
WCDD	LIC-N 300B1	Canton	IL	227.2	224.42	210.5	13.9
WLLT	LIC-N 299A	Polo	IL	268.7	126.83	112.5	14.3
WDRV	LIC-D 246B	Chicago	IL	98.1	37.73	19.5	18.2
WNTR	LIC 300B	Indianapolis	IN	144.6	275.83	240.5	35.3
WWQC	LIC 297A	Clifton	IL	184.8	109.54	68.5	41.0
KFMW	LIC 300C	Waterloo	IA	280.7	314.97	273.5	41.5
W300AL	LIC 300D	Mishawaka	IN	102.1	159.61	111.5	48.1

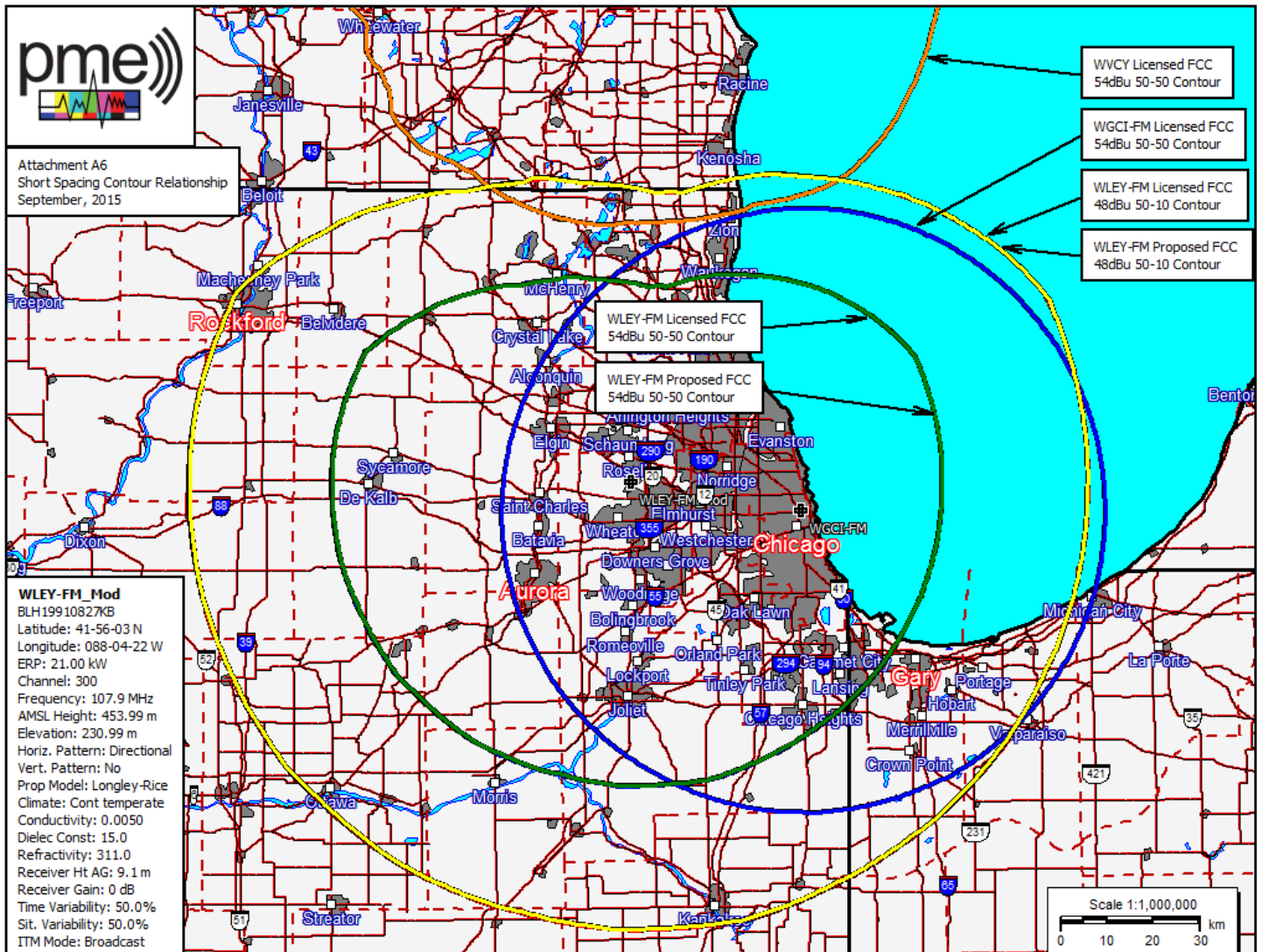
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Reference station has protected zone issue: AM tower  
% = Station Fails minimum 73.215 spacings  
All separation margins include rounding



# ATTACHMENT A5



# ATTACHMENT A6



**ATTACHMENT A7****Transmitter Power Output Calculation / Antenna System Gains and Losses**

<b>Transmitter Power Output</b>	15,445 Watts
<b>Line Loss Transmitter Room</b>	
30 Feet of 3 1/8" Rigid Transmission Line	0.03 dB
Dielectric Series 60000 Switch	0.1 dB
<b>Line Loss Transmitter Building to Isocoupler</b>	
504 feet of Andrew HJ11	0.59976 dB
Isocoupler Loss	0.025 dB
<b>Line Loss Isocoupler to Antenna</b>	
726 feet of Commscope HJ8-50B	1.07448 dB
<b>ERI SHP-4AC-DA-HW Antenna Gain</b>	3.164 dB
<b>Effective Radiated Power (ERP)</b>	21 kW