

Technical Report Supporting a Minor Modification of a FM Translator Station Construction Permit Application

Pursuant to 47 C.F.R. Section 74:

for

*W255DE.C - DeForest, WI
(Facility ID: 201582)*

*Non-Adjacent Channel Change per
47 C.F.R. Section 74.1233(a)(1)(i)(A)(2)
to
CH245D(96.9 MHz) - DeForest, WI*

*as a
Commercial, Fill-In
AM Translator for
WPDR(AM) - Portage, WI*

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EXPLANATION OF PROPOSAL: This LMS Schedule 349 Filing and accompanying technical report supports a Minor Modification of a FM Translator Station Construction Permit Application for W255DE.C - DeForest, WI (Facility ID: 201582). This filing requests a 47 C.F.R. Section 74.1233(a)(1)(i)(A)(2) non-adjacent channel change from CH255D (98.9 MHz) to CH245D (96.9 MHz) based upon a showing of reduced interference. Operation on the new frequency of CH245D (96.9 MHz) with a directional power of 0.250 kW ERP circular polarization (H&V) is requested. The FM Translator will operate from a corrected COR of 329.0 meters AMSL at the same (corrected) site location. This filing will specify continued rebroadcast of Class D, AM Primary Station WPDR(AM) - Portage, WI (1350 kHz); Facility ID No. 35516. The Translator will remain licensed to the current community of DeForest, WI.

FACILITY COMPLIANCE SHOWINGS: A map of the proposed 60 dB μ service contour in relation to the present 60 dB μ service contour has been included in *Exhibit 1*. The minor change proposed service area will overlap a portion of the present service area as noted in the exhibit. The proposed 60 dB μ contour of the Translator lies wholly inside the larger of the AM primary daytime 2.0 mV/m contour or a 25 mile radius around the AM site. The primary station service contour relationship has been plotted in *Exhibit 2*. Regarding permission to retransmit the current Primary Station, both WPDR(AM) and W255DE.C(CH245D.P) are under common control of Magnum Communications, Inc.; therefore, permission to rebroadcast is implied. The applicant would further like to note AM Station WPDR(AM) will be rebroadcast on co-owned AM Fill-In Translator W290AL.L - Baraboo, WI (Fac ID: 86124); however, W290AL.L and this CH245D.P proposal will not serve substantially the same area as noted in *Exhibit 2*.

The proposed facility will be located on an existing 60.0 meter (197 ft) self-supporting cellular monopole tower which does not require Antenna Structure Registration. In support of this filing, a copy of USGS Topographic Aerial Photomapping of the existing tower site has been included in *Exhibit 3*. A depiction of the tower and antenna configuration has been included in *Exhibit 4*. Further notification to the FAA or ASR governing authorities is not required as this proposal will not increase the overall tower height.

The applicant would like to note use of the NED 03 second terrain database for all allocation, contour and HAAT showings contained herein. A copy of the proposed HAAT calculation has been included in *Exhibit 5*.

ALLOCATION COMPLIANCE SHOWINGS: The proposed Translator remains in compliance with 47 C.F.R. Section 74.1204 toward all allocation protection concerns with the exception of WMAD(FM) - Cross Plains, WI (CH242B1). A general allocation study for this proposal is found in ***Exhibit 6***.

The applicant would like to note the existence of a 47 C.F.R. Section 74.1204(d) Second/Third Adjacent Channel Given Interference Waiver Request toward WMAD(FM) - Cross Plains, WI (CH242B1) as included in ***Exhibit(s) 8(a-b)***. In this instance, the worst case affected station's signal strength at the Translator site has been identified as the 70.5 dBμ F(50:50) service contour, associated with a Translator interference contour adjusted by +40 dBμ per 47 C.F.R. Section 74.1204(a). Concerning distances between 100 meters from the Translator site to the extent of the interference contour, protection has been demonstrated through a downward radiation study as included in ***Exhibit 8a***. Full protection will be afforded all concerns as this portion of the interference area will not reach the ground nor a five meter artificial plane representing a standard two story home when taking into account the downward radiation characteristics of the antenna. A copy of the antenna manufacturer's directional and vertical radiation pattern data has been included in ***Exhibit 9***. Concerning distances within 100 meters of the Translator site, protection has been demonstrated through aerial photography of the site as included in ***Exhibit 8b***. Full protection will be afforded all concerns as this portion of the interference area is void of all housing, buildings or major roads representing locations where people live, work or travel on a regular basis. The applicant would like to note the existence of a dedicated transmitter building within this affected radius; however, buildings of this nature have been routinely exempt as a matter of FCC Policy (see similar grant under BPFT-20160129ALR).

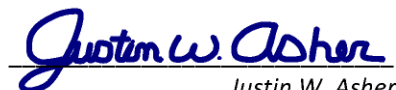
There are three (3) facilities, existing or proposed, close enough to merit further study. Therefore, a supplemental contour protection study has been provided toward each facility as included in ***Exhibit(s) 7(a-c)***. It is believed sufficient clearance exists precluding the need for additional contour protection showings.

Regarding protection of international concerns, the facility is, and will remain, more than 320 km from the common border between the United States and Canada or Mexico. As a result, no further international protection showings are believed required.

ENVIRONMENTAL COMPLIANCE SHOWINGS: The proposed facility complies with the maximum permissible radiofrequency electromagnetic exposure limits for controlled and uncontrolled environments as set forth under §1.1310 and/or §1.1307(b)(3) of the Commission's rules and the RF radiation protection guidelines as set forth in OET Bulletin No. 65 (Edition 97-01), and the accompanying Supplement A, (Edition 97-01). Compliance has been demonstrated in the attached **RF Appendix 1** of this filing. The facility is, or will be, properly marked with signs. Entry is, or will be, restricted by means of fencing, locked doors or gates. In addition, coordination with other users of the site will be secured to reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency electromagnetic fields in excess of FCC guidelines.

Regarding compliance with the NEPA, Nationwide Programmatic Agreement and NHPA Section 106 for tower co-location, compliance with the Agreement is not required where no new tower construction is being proposed and the tower is not being substantially altered. Specifically, compliance is not necessary where only an antenna and feed-line are being added to an existing structure, as here. However, should the Commission determine compliance is necessary, upon notification to the applicant, the applicant will file FCC Form 621.

CERTIFICATION OF TECHNICAL CONSULTANT: *I declare, under penalty of perjury, that the contents of this report are true and accurate to the best of my knowledge and belief. I further certify I have over twenty-two years of experience as a broadcast technical consultant before the Federal Communications Commission ("the FCC"); and am familiar with the Code of Federal Regulations Title 47 ("the Rules") as pertaining to this report and its contents herein. The underlying data utilized in this report was taken directly from FCC databases or indirectly through third party software vendors securing data directly from FCC databases. This firm cannot be held liable for errors or omissions resulting from the underlying data. The information contained herein is believed accurate to the date reported below.*



Justin W. Asher
Technical Consultant
October 22, 2021

NED 03 SEC Terrain Database
US Census 2010 PL Database
NED 1983 Coordinate Datum

Exhibit 1

Service Contour Study: Present vs Proposed Operations

Present 60 dBμ F(50:50) Contour
Proposed 60 dBμ F(50:50) Contour

W255DE.C
DeForest, WI
BNPFT20171201AEI
Facility ID: 201582
Latitude: 43-15-22.90 N
Longitude: 089-20-27.40 W
ERP: 0.25 kW
Channel: 255D (98.9 MHz)
AMSL Height: 335.0 m
Horiz. Pattern: Directional

60 dBμ F(50:50) Contour
Total Population: 17,435
Total Area: 199.0 sq. km

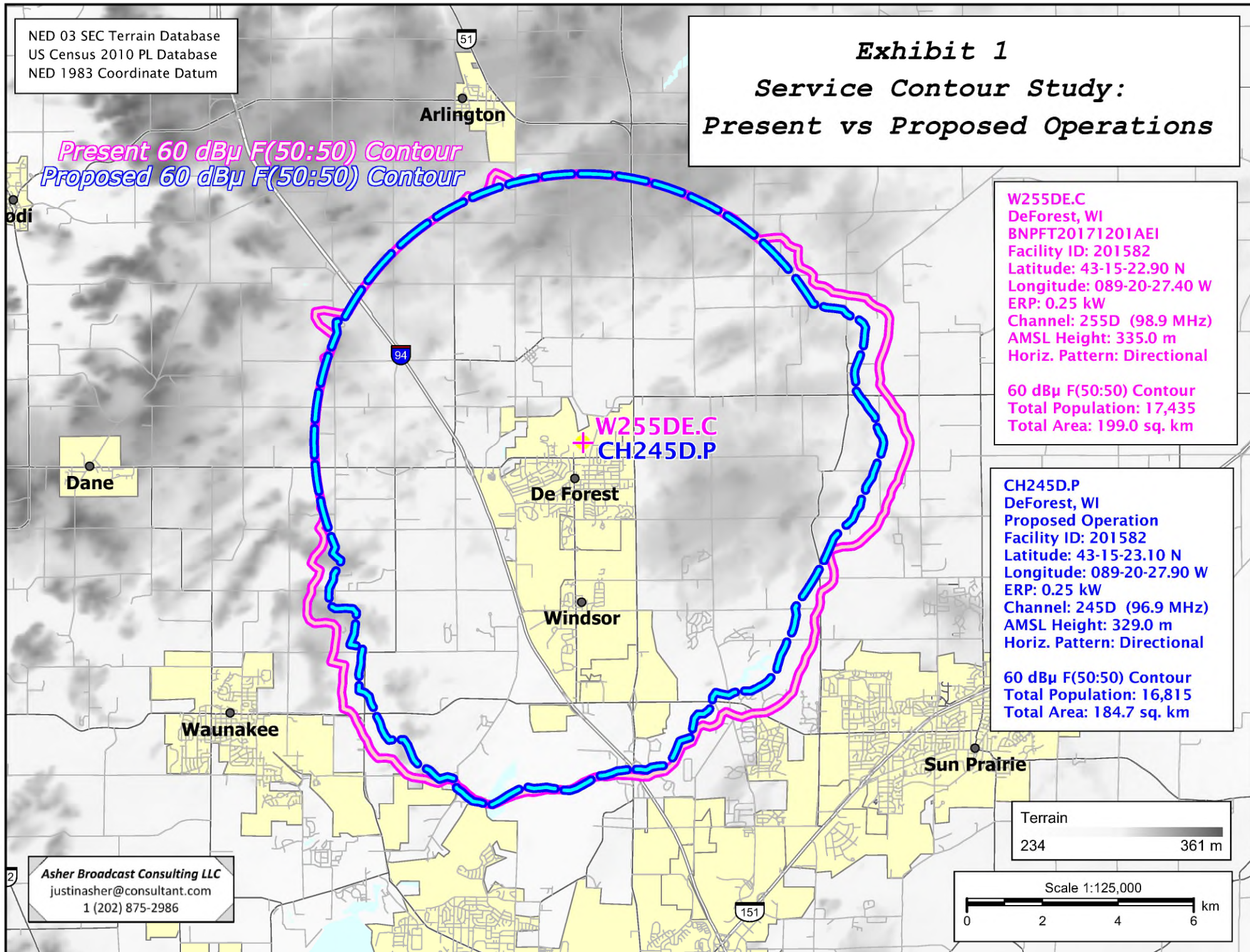
CH245D.P
DeForest, WI
Proposed Operation
Facility ID: 201582
Latitude: 43-15-23.10 N
Longitude: 089-20-27.90 W
ERP: 0.25 kW
Channel: 245D (96.9 MHz)
AMSL Height: 329.0 m
Horiz. Pattern: Directional

60 dBμ F(50:50) Contour
Total Population: 16,815
Total Area: 184.7 sq. km

Terrain
234 361 m

Scale 1:125,000
0 2 4 6 km

Asher Broadcast Consulting LLC
justinasher@consultant.com
1 (202) 875-2986



25 mile Radius from AM Site

Primary 2 mV/m Daytime Contour

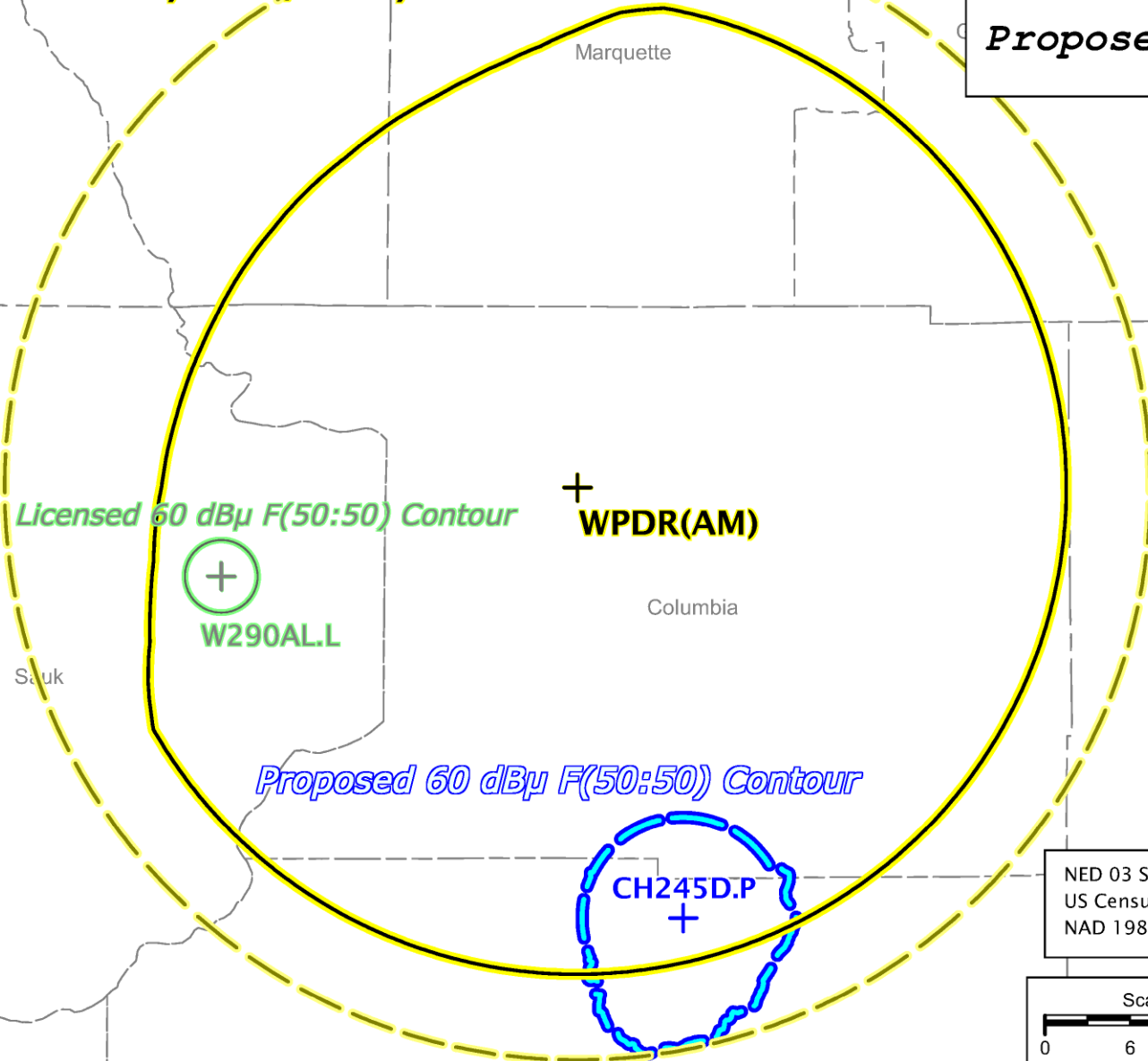


Exhibit 2

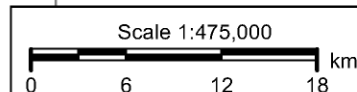
Service Contour Study: Proposed vs Primary Operations

WPDR(AM) - 1350 kHz
Portage, Wisconsin
Station Class: D
Region 2 Class: B
Facility ID: 35516
File Number: BL-19940423AE
43-31-42.0 N 89-26-01.0 W (NAD 27)
43-31-41.9 N 89-26-01.4 W (NAD 83)
Power: 1 kW, Non-Directional
Hours: Daytime
Pattern Type: Theoretical
Towers: 1 Augmentations: 0
Tower Height: 217.4 Deg; 134.1 m
RMS Theoretical: 437.74 mV/m

CH245D.P
DeForest, WI
Proposed Operation
Facility ID: 201582
Latitude: 43-15-23.10 N
Longitude: 089-20-27.90 W
ERP: 0.25 kW
Channel: 245D (96.9 MHz)
AMSL Height: 329.0 m
Horiz. Pattern: Directional

W290AL.L
Baraboo, WI
BLFT19980209TJ
Facility ID: 86124
Latitude: 43-28-15.90 N
Longitude: 089-44-32.40 W
ERP: 0.004 kW
Channel: 290D (105.9 MHz)
AMSL Height: 277.0 m
Pattern: Omni

NED 03 SEC Terrain Database
US Census 2010 PL Database
NAD 1983 Coordinate Datum



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THE APPLICANT WOULD LIKE TO NOTE AM STATION WPDR(AM) WILL BE REBROADCAST ON CO-OWNED AM FILL-IN TRANSLATOR W290AL.L - BARABOO, WI (FAC ID: 86124); HOWEVER, W290AL.L AND THIS CH245D.P PROPOSAL WILL NOT SERVE SUBSTANTIALLY THE SAME AREA AS NOTED HEREIN.

The National Map Advanced Viewer

Exhibit 3 - Copy of USGS Topographic Aerial Photomap of Existing Site

#1:932.39 ft/284.19 m

Site Coordinates

(NGS NADCON)

Latitude

Longitude

NAD 27 datum values:

NAD 83 datum values:

43-15-23.1

89-20-27.9

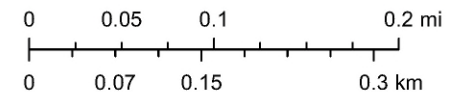
Asher Broadcast Consulting LLC

justinasher@consultant.com

1 (202) 875-2986

9/9/2021, 1:59:52 PM

1:9,028

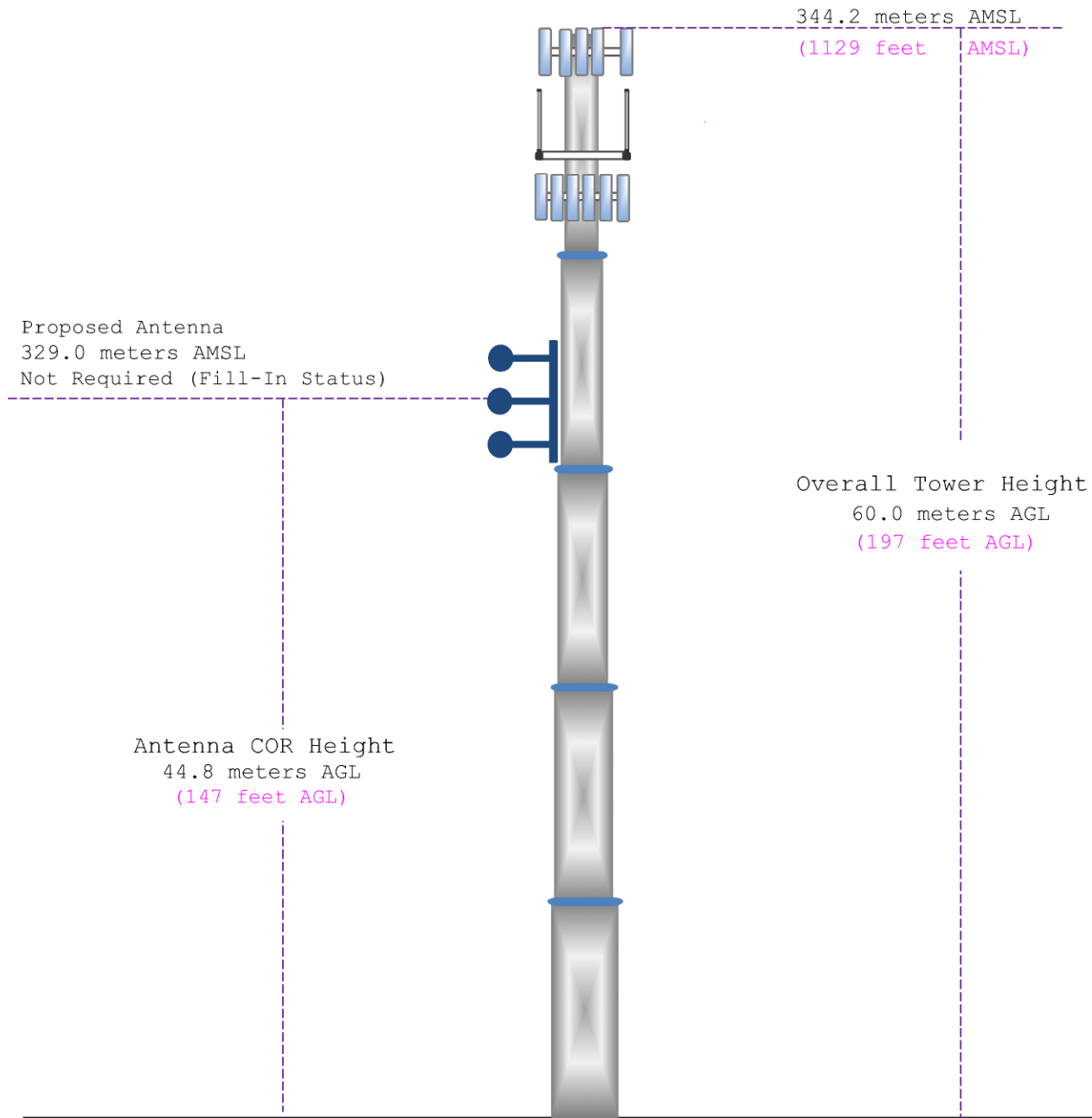


USGS The National Map: Orthoimagery and US Topo. Data refreshed

USGS
2021 USGS

Exhibit 4

Vertical Plan of Antenna System and Support Tower



Ground Elevation: 284.2 meters AMSL (932 feet AMSL)		
Address: 0.45 km northwest of the intersection of N. Stevenson Street & E North Street		
City: DeForest	Latitude (D M S) Longitude (D M S)	
County: Dane	----- (NAD 1927)	
State: Wisconsin	Lat/Long: 43-15-23.1 N 089-20-27.9 W (NAD 1983)	
Antenna Structure Registration Not Required	Drawing Is Not To Scale	Asher Broadcast Consulting, LLC justinasher@consultant.com 1(202)875-2986

Exhibit 5

HAAT and Miscellaneous Coordinate Information

HAAT Calculation (NAD 1983):

N. Lat. = 431523.1 W. Lng. = 892027.9
 HAAT and Distance to Contour,
 FCC, FM 2-10 Mi, 51 pts Method - NED 03 SEC

Azi.	AV EL	HAAT	ERP kW	dBk	Field	60-F5
000	314.0	15.0	0.2500	-6.02	1.000	7.09
030	307.1	21.9	0.2500	-6.02	1.000	7.09
060	297.8	31.2	0.2500	-6.02	1.000	7.21
090	290.9	38.1	0.2500	-6.02	1.000	7.94
120	300.6	28.4	0.2500	-6.02	1.000	7.09
150	293.0	36.0	0.2500	-6.02	1.000	7.72
180	265.0	64.0	0.1406	-8.52	0.750	9.05
210	279.3	49.7	0.2500	-6.02	1.000	9.23
240	292.9	36.1	0.2500	-6.02	1.000	7.72
270	314.1	14.9	0.2500	-6.02	1.000	7.09
300	307.5	21.5	0.2500	-6.02	1.000	7.09
330	308.8	20.2	0.2500	-6.02	1.000	7.09

Ave El= 297.58 M HAAT= 31.42 M AMSL= 329.0

NAD 1983 to NAD 1927 Conversion:

Various Coordinate Conversion Calculations (NAD 1983):

Position Type	Lat Lon
Degrees Lat Long	43.2564167°, -089.3410833°
Degrees Minutes	43°15.38500', -089°20.46500'
Degrees Minutes Seconds	43°15'23.1000", -089°20'27.9000"
UTM	16T 309974mE 4791951mN
UTM centimeter	16T 309974.25mE 4791951.16mN
MGRS	16TCN0997491951
Grid North	-1.6°
GARS	182MC18
Maidenhead	EN53HG91BM69
GEOREF	GJAP39531538

Exhibit 6

Tabulation of Proposed Allocation

Blue Text indicates contour protection studies toward select stations as included in ***Exhibit(s) 7(a-c)***.

Yellow Text denotes the existence of a 47 C.F.R. Section 74.1204(d) Second/Third Adjacent Channel Given Interference Waiver Request as included in ***Exhibit(s) 8(a-b)***.

REFERENCE CH# 245D - 96.9 MHz, Pwr= 0.25 kW DA, HAAT= 31.4 M, COR= 329 M 43 15 23.10 N. Average Protected F(50-50)= 7.23 km 89 20 27.90 W. Standard Directional											
DISPLAY DATES DATA 10-20-21 SEARCH 10-20-21											
CH CITY	CALL	TYPE ANT STATE	AZI <--	DIST FILE #	LAT LNG	PWR(kW) HAAT (M)	INT (km) COR (M)	PRO (km) LICENSEE	*IN* (Overlap in km)	*OUT*	
242B1 WMAD Cross Plains	LIC NCN WI	256.9 76.7	21.52 BLH20110804AAK	43 12 44.00 89 35 59.40	5.100 213	3.5 513	43.3 Ihm Licenses, LLC	10.8	-23.4*		
244D W244DR Madison	LIC_CN WI	185.5 5.5	32.76 BLFT20170817AAF	42 57 47.00 89 22 47.40	0.230	23.9 422	16.0 Mid-West Management Inc.,	-0.9	3.5		
246L1 WIXL-LP Madison	LIC_CN WI	172.6 352.6	21.51 BLL20070813AQM	43 03 52.30 89 18 24.70	0.075 35	23.9 311	3.1 Lake City Church, Inc.	2.5			
245L1 WULD-LP Waterloo	LIC_CN WI	104.1 284.4	35.51 BLL20160617AAG	43 10 39.90 88 54 58.30	0.069 36	291	11.2 Waterloo Christian Radio C	5.2			
245B WWDV Zion	LIC DEN IL	124.5 305.5	144.68 BMLH20131121AIN	42 30 35.10 87 53 11.30	50.000 148	129.2 360	61.1 Chicago FCC License Sub, L	7.9	47.9		
247D W247CI Middleton	LIC_CN WI	219.4 39.3	24.02 BLFT20161102ABJ	43 05 21.80 89 31 44.50	0.040	0.4 340	6.4 Relevant Radio, Inc.	14.3	16.4		
245D W245DE Dodgeville	LIC_CN WI	240.1 59.6	74.56 0000132126	42 55 10.00 90 08 06.40	0.250	50.4 472	14.9 Dodge Point Broadcasting C	16.0	32.8		
245A WWWX Oshkosh	LIC_CN WI	34.4 215.0	114.07 BLH19911129KB	44 06 00.90 88 32 02.40	6.000 100	85.7 333	27.5 Cumulus Licensing LLC	21.3	62.8		
247D W247CY Baraboo	LIC_CN WI	304.4 124.0	49.96 0000116449	43 30 31.90 89 51 09.50	0.250	1.1 436	15.5 Magnum Communications, Inc	41.7	32.9		
248B WZOK Rockford	LIC_CN IL	167.1 347.3	111.43 BLH20070731ALC	42 16 45.10 89 02 15.40	50.000 138	5.9 378	64.4 Townsquare License, LLC	96.7	45.1		
246C1 WCOW-FM Sparta	LIC_CN WI	303.4 122.4	145.63 BLH19881215KB	43 58 05.80 90 51 35.40	100.000 179	93.2 465	62.7 Sparta-Tomah Broadcasting	45.3	72.3		
247B WRNW Milwaukee	LIC_CN WI	97.5 278.5	115.73 BLH19840925DP	43 06 41.00 87 55 38.30	15.500 278	5.5 491	64.4 Ihm Licenses, LLC	102.4	49.7		
243B WKLH Milwaukee	LIC_CN WI	98.2 279.2	117.75 BMLH20120730ACY	43 05 48.00 87 54 19.30	20.000 247	5.7 455	65.1 Lakefront Communications,	104.2	51.1		
244A WKGL-FM Loves Park	LIC ZCN IL	170.3 350.5	100.70 BLH20020823AAB	42 21 48.10 89 08 06.40	2.200 168	31.2 404	21.0 Townsquare License, LLC	60.7	66.6		
246D W246DW Rockford	LIC_CN IL	168.1 348.2	101.01 0000162255	42 22 02.00 89 05 13.00	0.250	23.2 378	15.3 Long Nine, Inc.	68.9	73.3		
246D W246DW Rockford	CP_CN IL	168.1 348.2	101.00 BNPFT20181023AAD	42 22 02.10 89 05 13.40	0.250	23.1 377	15.3 Long Nine, Inc.	69.0	73.3		

Terrain database is NED 03 SEC , R= 73.215 qualifying spacings or FCC minimum Spacings in KM, M= Margin in KM
 In & Out distances between contours are shown at closest points. Reference zone= East Zone, Co to 3rd adjacent.
 All separation margins (if shown) include rounding.
 Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, _= Omni), Polarization (C,H,V,E), Beamtilt(Y,N,X)
 "*"affixed to 'IN' or 'OUT' values = site inside restricted contour.

Exhibit 7a

Contour Protection Studies Toward Select Allocation Concern(s)

Magnum Communications, Inc.

FMCommander Single Allocation Study - 10-20-2021 - NED 03 SEC
CH245D.P's Overlaps (In= -0.86 km, Out= 3.47 km)

CH245D.P CH 245 D DA
Lat= 43 15 23.10, Lng= 89 20 27.90
0.25 kW 31.4 m HAAT, 329 m COR
Prot.= 60 dBu, Intef.= 54 dBu

W244DR CH 244 D BLFT20170817AAF
Lat= 42 57 47.00, Lng= 89 22 47.40
0.23 kW 0 m HAAT, 422 m COR
Prot.= 60 dBu, Intef.= 54 dBu

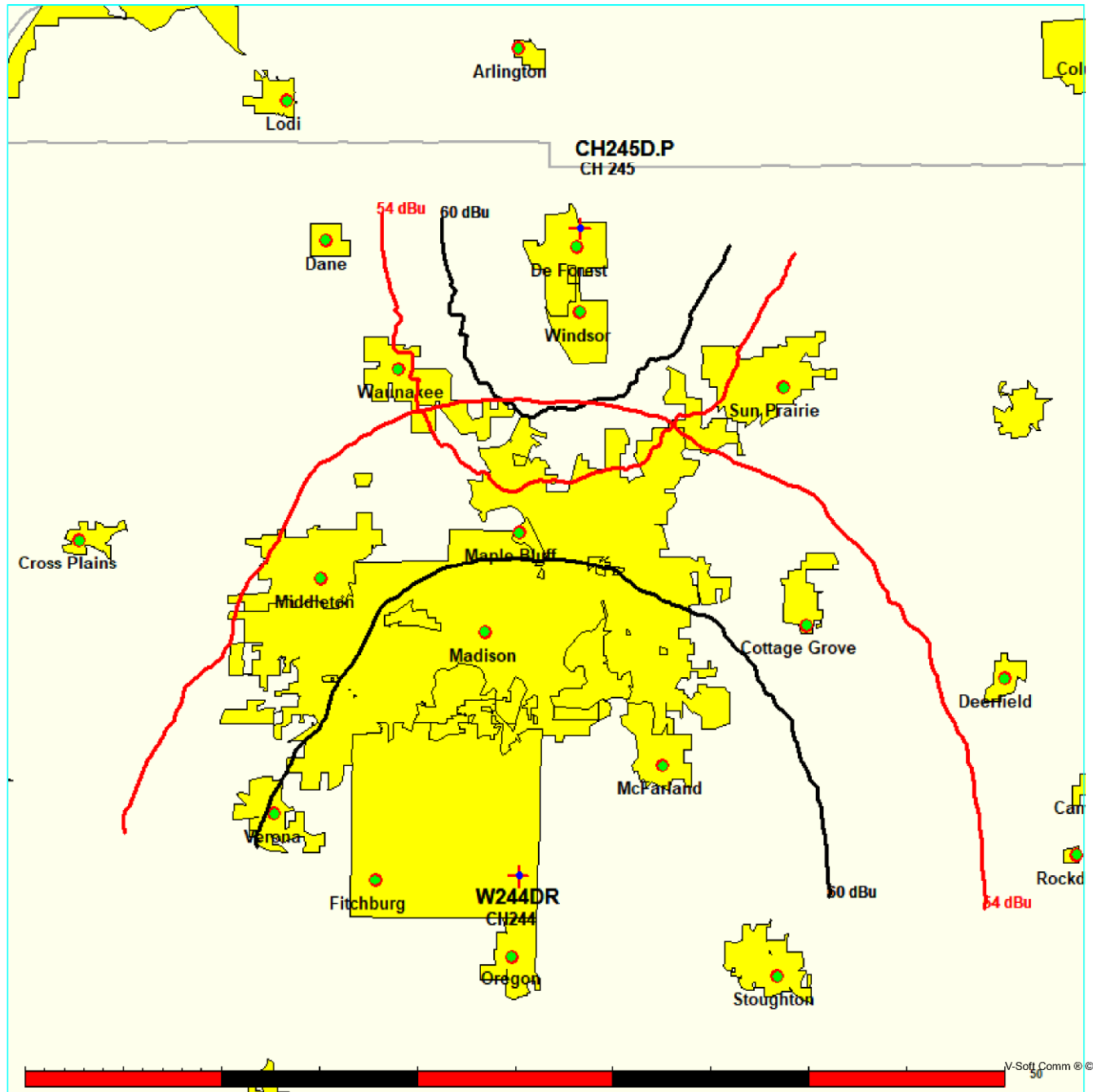


Exhibit 7a

Contour Protection Studies Toward Select Allocation Concern(s)

10-20-2021

Terrain Data: NED 03 SEC

FMOver Analysis

CH245D.P

W244DR BLFT20170817AAF

Channel = 245D
Max ERP = 0.25 kW
RCAMSL = 329 m
N. Lat. 43 15 23.10
W. Lng. 89 20 27.90
Protected
60 dBu

Channel = 244D
Max ERP = 0.23 kW
RCAMSL = 422 m
N. Lat. 42 57 47.00
W. Lng. 89 22 47.40
Interfering
54 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
146.0	000.2500	0037.9	007.9	016.2	000.2300	0158.5	027.1	51.88	
147.0	000.2500	0037.1	007.8	015.9	000.2300	0158.4	027.1	51.90	
148.0	000.2500	0036.4	007.8	015.6	000.2300	0158.4	027.0	51.94	
149.0	000.2500	0036.0	007.7	015.3	000.2300	0158.5	027.0	52.00	
150.0	000.2500	0036.0	007.7	015.1	000.2300	0158.7	026.9	52.07	
151.0	000.2500	0035.0	007.6	014.7	000.2300	0158.9	026.9	52.09	
152.0	000.2500	0033.8	007.5	014.3	000.2300	0159.0	026.9	52.10	
153.0	000.2500	0034.5	007.5	014.2	000.2300	0159.0	026.7	52.19	
154.0	000.2500	0036.3	007.8	014.3	000.2300	0159.0	026.5	52.36	
155.0	000.2500	0037.0	007.8	014.2	000.2300	0159.0	026.3	52.45	
156.0	000.2500	0037.3	007.9	014.0	000.2300	0159.0	026.2	52.52	
157.0	000.2500	0036.7	007.8	013.7	000.2300	0158.9	026.2	52.54	
158.0	000.2500	0037.4	007.9	013.5	000.2300	0158.8	026.0	52.63	
159.0	000.2500	0039.4	008.1	013.6	000.2300	0158.8	025.8	52.81	
160.0	000.2500	0041.2	008.3	013.6	000.2300	0158.8	025.5	52.99	
161.0	000.2411	0041.9	008.3	013.3	000.2300	0158.5	025.5	53.02	
162.0	000.2318	0042.7	008.3	013.0	000.2300	0158.0	025.4	53.05	
163.0	000.2228	0045.1	008.5	012.9	000.2300	0157.9	025.1	53.20	
164.0	000.2144	0047.6	008.7	012.8	000.2300	0157.8	024.9	53.36	
165.0	000.2061	0049.3	008.7	012.6	000.2300	0157.8	024.8	53.46	
166.0	000.1976	0051.0	008.8	012.4	000.2300	0157.9	024.6	53.56	
167.0	000.1892	0051.7	008.8	012.0	000.2300	0158.4	024.6	53.62	
168.0	000.1815	0052.7	008.8	011.7	000.2300	0158.6	024.5	53.67	
169.0	000.1739	0054.4	008.8	011.4	000.2300	0158.6	024.4	53.75	
170.0	000.1661	0055.0	008.8	011.0	000.2300	0158.7	024.4	53.76	
171.0	000.1632	0055.1	008.7	010.6	000.2300	0158.6	024.4	53.77	
172.0	000.1608	0055.4	008.7	010.3	000.2300	0158.4	024.4	53.79	
173.0	000.1580	0055.9	008.7	010.0	000.2300	0158.4	024.3	53.82	
174.0	000.1556	0056.3	008.7	009.6	000.2300	0158.3	024.3	53.85	
175.0	000.1533	0057.4	008.8	009.3	000.2300	0158.3	024.2	53.91	
176.0	000.1505	0058.3	008.8	009.0	000.2300	0158.2	024.1	53.96	

Exhibit 7a

Contour Protection Studies Toward Select Allocation Concern(s)

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
177.0	000.1482	0059.0	008.8	008.6	000.2300	0158.1	024.1	53.98
178.0	000.1455	0060.1	008.9	008.3	000.2300	0158.0	024.0	54.03* 0.04
179.0	000.1433	0062.1	009.0	007.9	000.2300	0157.9	023.9	54.11* 0.16
180.0	000.1406	0064.0	009.1	007.6	000.2300	0157.8	023.8	54.18* 0.25
181.0	000.1433	0064.7	009.1	007.2	000.2300	0157.6	023.7	54.26* 0.35
182.0	000.1455	0065.0	009.2	006.9	000.2300	0157.5	023.6	54.30* 0.41
183.0	000.1482	0064.4	009.2	006.5	000.2300	0157.3	023.6	54.30* 0.41
184.0	000.1505	0063.4	009.2	006.1	000.2300	0157.0	023.6	54.27* 0.36
185.0	000.1533	0062.8	009.2	005.7	000.2300	0156.9	023.6	54.26* 0.36
186.0	000.1556	0062.0	009.2	005.3	000.2300	0156.8	023.6	54.24* 0.33
187.0	000.1580	0062.0	009.2	004.9	000.2300	0156.7	023.6	54.26* 0.36
188.0	000.1608	0062.0	009.2	004.5	000.2300	0156.4	023.5	54.26* 0.36
189.0	000.1632	0061.3	009.2	004.1	000.2300	0155.9	023.6	54.22* 0.30
190.0	000.1661	0061.5	009.3	003.7	000.2300	0155.5	023.5	54.22* 0.30
191.0	000.1739	0061.7	009.4	003.3	000.2300	0155.4	023.4	54.29* 0.40
192.0	000.1815	0062.1	009.5	002.8	000.2300	0155.5	023.3	54.38* 0.51
193.0	000.1892	0063.2	009.7	002.4	000.2300	0155.7	023.2	54.50* 0.68
194.0	000.1976	0063.9	009.9	001.9	000.2300	0156.0	023.1	54.61* 0.82
195.0	000.2061	0063.0	009.9	001.4	000.2300	0156.4	023.1	54.63* 0.86
196.0	000.2144	0061.4	009.9	001.0	000.2300	0156.6	023.1	54.60* 0.81
197.0	000.2228	0060.4	009.9	000.6	000.2300	0156.8	023.1	54.59* 0.80
198.0	000.2318	0058.3	009.9	000.2	000.2300	0156.8	023.2	54.52* 0.70
199.0	000.2411	0056.3	009.8	359.9	000.2300	0156.7	023.4	54.41* 0.57
200.0	000.2500	0054.7	009.7	359.5	000.2300	0156.5	023.5	54.33* 0.45
201.0	000.2500	0052.5	009.5	359.4	000.2300	0156.5	023.7	54.13* 0.18
202.0	000.2500	0052.6	009.5	359.0	000.2300	0156.7	023.8	54.10* 0.14
203.0	000.2500	0054.1	009.7	358.5	000.2300	0156.5	023.7	54.14* 0.20
204.0	000.2500	0053.6	009.6	358.1	000.2300	0156.3	023.8	54.05* 0.07
205.0	000.2500	0052.9	009.6	357.8	000.2300	0156.2	024.0	53.95
206.0	000.2500	0052.9	009.6	357.5	000.2300	0156.1	024.0	53.88
207.0	000.2500	0052.9	009.6	357.2	000.2300	0156.3	024.1	53.84
208.0	000.2500	0052.3	009.5	356.9	000.2300	0156.5	024.3	53.75
209.0	000.2500	0050.9	009.4	356.7	000.2300	0156.6	024.5	53.61
210.0	000.2500	0049.7	009.2	356.6	000.2300	0156.6	024.7	53.47
211.0	000.2500	0049.0	009.2	356.4	000.2300	0156.7	024.8	53.37
212.0	000.2500	0049.8	009.3	355.9	000.2300	0156.7	024.8	53.35
213.0	000.2500	0051.2	009.4	355.4	000.2300	0156.8	024.8	53.37
214.0	000.2500	0050.6	009.3	355.2	000.2300	0156.7	025.0	53.26
215.0	000.2500	0049.8	009.2	355.1	000.2300	0156.6	025.1	53.14
216.0	000.2500	0048.6	009.1	355.0	000.2300	0156.6	025.3	53.00
217.0	000.2500	0048.0	009.1	354.8	000.2300	0156.7	025.5	52.89
218.0	000.2500	0046.9	008.9	354.7	000.2300	0156.9	025.7	52.77
219.0	000.2500	0046.3	008.9	354.6	000.2300	0157.1	025.8	52.68
220.0	000.2500	0045.3	008.8	354.5	000.2300	0157.3	026.0	52.56
221.0	000.2500	0045.3	008.8	354.3	000.2300	0157.5	026.1	52.49

Exhibit 7a

Contour Protection Studies Toward Select Allocation Concern(s)

10-20-2021 Terrain Data: NED 03 SEC FMOver Analysis

W244DR BLFT20170817AAF

CH245D.P

Channel = 244D
 Max ERP = 0.23 kW
 RCAMSL = 422 m
 N. Lat. 42 57 47.00
 W. Lng. 89 22 47.40
 Protected
 60 dBu

Channel = 245D
 Max ERP = 0.25 kW
 RCAMSL = 329 m
 N. Lat. 43 15 23.10
 W. Lng. 89 20 27.90
 Interfering
 54 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
320.0	000.2300	0115.4	013.5	208.0	000.2500	0052.3	025.2	43.73	
321.0	000.2300	0116.1	013.6	207.9	000.2500	0052.4	025.0	43.91	
322.0	000.2300	0118.5	013.7	207.9	000.2500	0052.3	024.7	44.10	
323.0	000.2300	0119.7	013.8	207.9	000.2500	0052.4	024.5	44.29	
324.0	000.2300	0121.2	013.8	207.8	000.2500	0052.4	024.2	44.48	
325.0	000.2300	0123.7	014.0	207.8	000.2500	0052.4	023.9	44.68	
326.0	000.2300	0125.9	014.1	207.8	000.2500	0052.4	023.7	44.88	
327.0	000.2300	0128.8	014.3	207.9	000.2500	0052.4	023.4	45.10	
328.0	000.2300	0131.5	014.4	207.9	000.2500	0052.4	023.1	45.32	
329.0	000.2300	0134.4	014.6	207.9	000.2500	0052.4	022.8	45.55	
330.0	000.2300	0137.6	014.8	208.0	000.2500	0052.3	022.4	45.78	
331.0	000.2300	0140.4	014.9	208.0	000.2500	0052.3	022.1	46.02	
332.0	000.2300	0142.8	015.1	207.9	000.2500	0052.3	021.8	46.26	
333.0	000.2300	0144.7	015.2	207.8	000.2500	0052.4	021.6	46.50	
334.0	000.2300	0146.6	015.3	207.6	000.2500	0052.6	021.3	46.76	
335.0	000.2300	0146.4	015.3	207.2	000.2500	0052.9	021.1	46.98	
336.0	000.2300	0146.6	015.3	206.7	000.2500	0052.9	020.8	47.15	
337.0	000.2300	0147.2	015.4	206.3	000.2500	0052.9	020.6	47.33	
338.0	000.2300	0149.1	015.5	206.1	000.2500	0052.9	020.3	47.56	
339.0	000.2300	0149.3	015.5	205.6	000.2500	0052.9	020.1	47.74	
340.0	000.2300	0151.2	015.6	205.3	000.2500	0052.9	019.9	47.96	
341.0	000.2300	0151.6	015.6	204.8	000.2500	0053.0	019.6	48.16	
342.0	000.2300	0152.6	015.7	204.3	000.2500	0053.5	019.4	48.43	
343.0	000.2300	0153.4	015.7	203.8	000.2500	0053.7	019.2	48.65	
344.0	000.2300	0153.9	015.8	203.2	000.2500	0054.0	019.0	48.87	
345.0	000.2300	0154.8	015.8	202.7	000.2500	0054.0	018.8	49.05	
346.0	000.2300	0155.8	015.9	202.1	000.2500	0052.9	018.6	49.04	
347.0	000.2300	0156.3	015.9	201.5	000.2500	0051.7	018.4	48.99	
348.0	000.2300	0156.3	015.9	200.7	000.2500	0053.0	018.2	49.35	
349.0	000.2300	0156.3	015.9	200.0	000.2500	0054.7	018.1	49.77	
350.0	000.2300	0156.5	015.9	199.3	000.2434	0055.9	017.9	49.97	
351.0	000.2300	0156.3	015.9	198.5	000.2361	0057.3	017.8	50.16	
352.0	000.2300	0156.9	016.0	197.7	000.2292	0059.1	017.6	50.41	

Exhibit 7a

Contour Protection Studies Toward Select Allocation Concern(s)

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
353.0	000.2300	0157.3	016.0	196.9	000.2221	0060.5	017.5	50.58
354.0	000.2300	0157.4	016.0	196.1	000.2150	0061.3	017.4	50.64
355.0	000.2300	0156.6	015.9	195.2	000.2075	0062.7	017.3	50.71
356.0	000.2300	0156.7	015.9	194.3	000.2001	0063.8	017.2	50.77
357.0	000.2300	0156.5	015.9	193.4	000.1925	0063.4	017.2	50.61
358.0	000.2300	0156.2	015.9	192.5	000.1853	0062.8	017.1	50.43
359.0	000.2300	0156.7	015.9	191.6	000.1784	0061.8	017.0	50.21
000.0	000.2300	0156.7	015.9	190.7	000.1714	0061.6	017.0	50.07
001.0	000.2300	0156.6	015.9	189.8	000.1654	0061.4	016.9	49.91
002.0	000.2300	0155.9	015.9	188.8	000.1627	0061.4	016.9	49.84
003.0	000.2300	0155.4	015.9	187.9	000.1604	0062.0	016.9	49.85
004.0	000.2300	0155.7	015.9	186.9	000.1578	0062.1	016.9	49.82
005.0	000.2300	0156.7	015.9	186.0	000.1556	0062.1	016.8	49.82
006.0	000.2300	0157.0	016.0	185.0	000.1534	0062.8	016.8	49.86
007.0	000.2300	0157.5	016.0	184.1	000.1508	0063.3	016.8	49.88
008.0	000.2300	0157.9	016.0	183.1	000.1485	0064.3	016.8	49.93
009.0	000.2300	0158.2	016.0	182.2	000.1460	0064.9	016.8	49.93
010.0	000.2300	0158.4	016.0	181.2	000.1438	0064.8	016.8	49.82
011.0	000.2300	0158.7	016.1	180.3	000.1413	0064.3	016.8	49.66
012.0	000.2300	0158.4	016.1	179.4	000.1423	0063.0	016.9	49.47
013.0	000.2300	0158.1	016.0	178.4	000.1445	0060.9	017.0	49.20
014.0	000.2300	0159.0	016.1	177.5	000.1469	0059.5	017.0	49.07
015.0	000.2300	0158.7	016.1	176.6	000.1491	0058.6	017.1	48.93
016.0	000.2300	0158.4	016.0	175.7	000.1512	0058.2	017.2	48.83
017.0	000.2300	0159.3	016.1	174.8	000.1537	0057.1	017.3	48.71
018.0	000.2300	0159.1	016.1	174.0	000.1557	0056.3	017.4	48.53
019.0	000.2300	0157.5	016.0	173.3	000.1573	0056.0	017.6	48.35
020.0	000.2300	0154.9	015.8	172.7	000.1588	0055.7	017.9	48.12
021.0	000.2300	0154.3	015.8	172.0	000.1608	0055.4	018.0	47.98
022.0	000.2300	0153.4	015.7	171.3	000.1624	0055.3	018.2	47.85
023.0	000.2300	0151.1	015.6	170.8	000.1637	0055.0	018.5	47.62
024.0	000.2300	0151.1	015.6	170.1	000.1657	0055.1	018.6	47.55
025.0	000.2300	0152.1	015.7	169.3	000.1714	0054.6	018.7	47.54
026.0	000.2300	0152.9	015.7	168.6	000.1771	0053.6	018.9	47.41
027.0	000.2300	0152.6	015.7	168.0	000.1818	0052.6	019.1	47.20
028.0	000.2300	0151.6	015.6	167.4	000.1857	0052.1	019.3	47.01
029.0	000.2300	0152.7	015.7	166.7	000.1918	0051.4	019.4	46.93
030.0	000.2300	0153.2	015.7	166.0	000.1972	0051.0	019.6	46.83
031.0	000.2300	0154.4	015.8	165.3	000.2033	0050.1	019.7	46.67
032.0	000.2300	0154.9	015.8	164.7	000.2084	0048.7	019.9	46.37
033.0	000.2300	0155.7	015.9	164.1	000.2137	0047.8	020.1	46.15
034.0	000.2300	0156.2	015.9	163.5	000.2185	0046.5	020.3	45.85
035.0	000.2300	0157.1	016.0	162.9	000.2237	0044.8	020.4	45.44
036.0	000.2300	0159.6	016.1	162.1	000.2312	0042.9	020.6	45.07
037.0	000.2300	0161.0	016.2	161.4	000.2370	0042.1	020.8	44.87

Exhibit 7b

Contour Protection Studies Toward Select Allocation Concern(s)

Magnum Communications, Inc.

FMCommander Single Allocation Study - 10-20-2021 - NED 03 SEC
CH245D.P's Overlaps (In= 3.06 km, Out= 2.55 km)

CH245D.P CH 245 D DA
Lat= 43 15 23.10, Lng= 89 20 27.90
0.25 kW 31.4 m HAAT, 329 m COR
Prot.= 60 dBu, Intef.= 54 dBu

WIXL-LP CH 246 L1 BLL20070813AQM
Lat= 43 03 52.30, Lng= 89 18 24.70
0.075 kW 34.689 m HAAT, 310.9 m COR
Prot.= 60 dBu, Intef.= 54 dBu

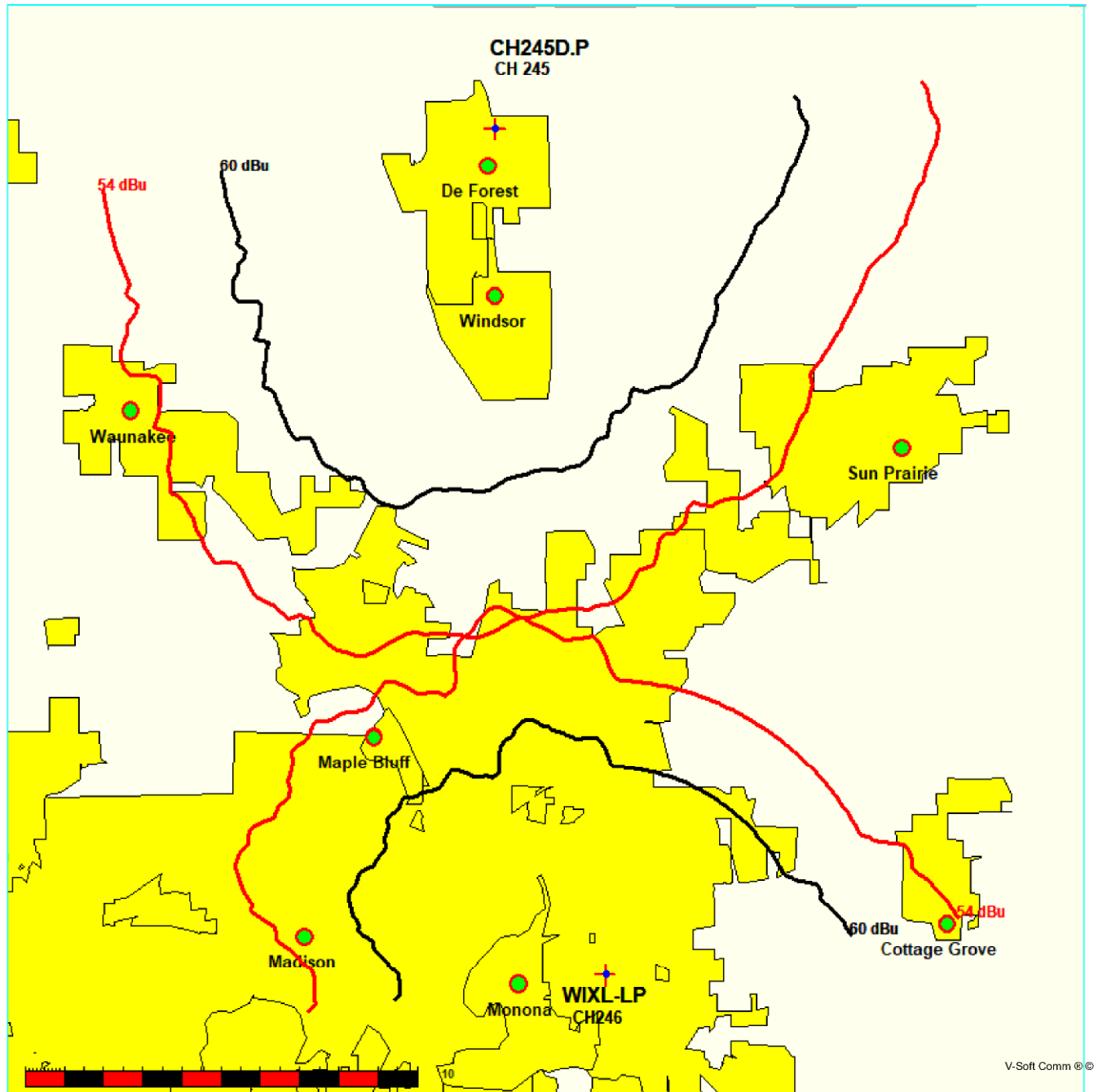


Exhibit 7b

Contour Protection Studies Toward Select Allocation Concern(s)

10-20-2021

Terrain Data: NED 03 SEC

FMOver Analysis

CH245D.P

WIXL-LP BLL20070813AQM

Channel = 245D

Max ERP = 0.25 kW

RCAMSL = 329 m

N. Lat. 43 15 23.10

W. Lng. 89 20 27.90

Protected
60 dBu

Channel = 246L1

Max ERP = 0.075 kW

RCAMSL = 310.9 m

N. Lat. 43 03 52.30

W. Lng. 89 18 24.70

Interfering
54 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
132.0	000.2500	0033.6	007.5	009.6	000.0750	0019.8	016.6	40.42	
133.0	000.2500	0033.7	007.5	009.4	000.0750	0020.2	016.5	40.52	
134.0	000.2500	0034.1	007.5	009.2	000.0750	0020.6	016.3	40.62	
135.0	000.2500	0034.8	007.6	009.2	000.0750	0020.8	016.2	40.75	
136.0	000.2500	0035.2	007.6	009.0	000.0750	0021.1	016.0	40.87	
137.0	000.2500	0035.6	007.7	008.9	000.0750	0021.4	015.9	40.98	
138.0	000.2500	0036.3	007.7	008.8	000.0750	0021.6	015.8	41.11	
139.0	000.2500	0037.1	007.8	008.7	000.0750	0021.8	015.6	41.25	
140.0	000.2500	0038.0	007.9	008.7	000.0750	0021.9	015.4	41.40	
141.0	000.2500	0038.0	007.9	008.3	000.0750	0022.8	015.3	41.49	
142.0	000.2500	0038.3	008.0	008.1	000.0750	0023.5	015.2	41.59	
143.0	000.2500	0038.4	008.0	007.7	000.0750	0024.7	015.1	41.68	
144.0	000.2500	0038.2	008.0	007.3	000.0750	0025.5	015.0	41.76	
145.0	000.2500	0038.1	007.9	006.9	000.0750	0026.1	014.9	41.84	
146.0	000.2500	0037.9	007.9	006.4	000.0750	0026.5	014.9	41.92	
147.0	000.2500	0037.1	007.8	005.8	000.0750	0027.2	014.8	41.94	
148.0	000.2500	0036.4	007.8	005.2	000.0750	0028.3	014.8	41.97	
149.0	000.2500	0036.0	007.7	004.7	000.0750	0029.0	014.8	42.03	
150.0	000.2500	0036.0	007.7	004.2	000.0750	0029.3	014.7	42.12	
151.0	000.2500	0035.0	007.6	003.6	000.0750	0029.7	014.7	42.09	
152.0	000.2500	0033.8	007.5	002.9	000.0750	0029.7	014.8	42.04	
153.0	000.2500	0034.5	007.5	002.6	000.0750	0029.5	014.6	42.19	
154.0	000.2500	0036.3	007.8	002.5	000.0750	0029.6	014.4	42.48	
155.0	000.2500	0037.0	007.8	002.1	000.0750	0030.1	014.2	42.66	
156.0	000.2500	0037.3	007.9	001.7	000.0750	0031.1	014.2	43.02	
157.0	000.2500	0036.7	007.8	001.1	000.0750	0032.4	014.2	43.33	
158.0	000.2500	0037.4	007.9	000.7	000.0750	0033.7	014.0	43.79	
159.0	000.2500	0039.4	008.1	000.5	000.0750	0034.2	013.8	44.27	
160.0	000.2500	0041.2	008.3	000.3	000.0750	0034.8	013.5	44.73	
161.0	000.2411	0041.9	008.3	359.7	000.0750	0036.5	013.5	45.19	
162.0	000.2318	0042.7	008.3	359.1	000.0750	0038.1	013.4	45.61	
163.0	000.2228	0045.1	008.5	358.7	000.0750	0038.8	013.2	46.06	

Exhibit 7b
Contour Protection Studies Toward Select Allocation Concern(s)

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
164.0	000.2144	0047.6	008.7	358.3	000.0750	0039.3	013.0	46.46
165.0	000.2061	0049.3	008.7	357.7	000.0750	0039.5	012.9	46.68
166.0	000.1976	0051.0	008.8	357.1	000.0750	0039.5	012.8	46.80
167.0	000.1892	0051.7	008.8	356.4	000.0750	0039.2	012.8	46.75
168.0	000.1815	0052.7	008.8	355.7	000.0750	0039.3	012.8	46.78
169.0	000.1739	0054.4	008.8	355.1	000.0750	0039.4	012.7	46.90
170.0	000.1661	0055.0	008.8	354.4	000.0750	0039.2	012.8	46.82
171.0	000.1632	0055.1	008.7	353.7	000.0750	0039.0	012.8	46.72
172.0	000.1608	0055.4	008.7	353.0	000.0750	0039.3	012.8	46.79
173.0	000.1580	0055.9	008.7	352.3	000.0750	0040.0	012.8	46.94
174.0	000.1556	0056.3	008.7	351.6	000.0750	0040.5	012.8	47.06
175.0	000.1533	0057.4	008.8	350.9	000.0750	0041.3	012.7	47.29
176.0	000.1505	0058.3	008.8	350.2	000.0750	0041.9	012.7	47.46
177.0	000.1482	0059.0	008.8	349.5	000.0750	0042.6	012.7	47.60
178.0	000.1455	0060.1	008.9	348.8	000.0750	0043.3	012.7	47.77
179.0	000.1433	0062.1	009.0	348.0	000.0750	0043.9	012.6	48.00
180.0	000.1406	0064.0	009.1	347.3	000.0750	0044.9	012.6	48.29
181.0	000.1433	0064.7	009.1	346.5	000.0750	0045.8	012.5	48.55
182.0	000.1455	0065.0	009.2	345.7	000.0750	0046.4	012.5	48.69
183.0	000.1482	0064.4	009.2	345.0	000.0750	0047.7	012.6	48.88
184.0	000.1505	0063.4	009.2	344.3	000.0750	0048.7	012.7	48.96
185.0	000.1533	0062.8	009.2	343.7	000.0750	0049.5	012.7	49.02
186.0	000.1556	0062.0	009.2	343.0	000.0750	0049.5	012.8	48.93
187.0	000.1580	0062.0	009.2	342.3	000.0750	0049.4	012.8	48.86
188.0	000.1608	0062.0	009.2	341.6	000.0750	0049.0	012.8	48.73
189.0	000.1632	0061.3	009.2	341.0	000.0750	0048.4	012.9	48.49
190.0	000.1661	0061.5	009.3	340.2	000.0750	0048.0	013.0	48.37
191.0	000.1739	0061.7	009.4	339.3	000.0750	0047.1	012.9	48.24
192.0	000.1815	0062.1	009.5	338.4	000.0750	0045.7	012.9	47.99
193.0	000.1892	0063.2	009.7	337.3	000.0750	0045.9	012.9	48.09
194.0	000.1976	0063.9	009.9	336.3	000.0750	0045.1	012.8	47.97
195.0	000.2061	0063.0	009.9	335.6	000.0750	0044.6	012.9	47.75
196.0	000.2144	0061.4	009.9	335.0	000.0750	0043.9	013.0	47.44
197.0	000.2228	0060.4	009.9	334.4	000.0750	0042.6	013.1	47.01
198.0	000.2318	0058.3	009.9	334.1	000.0750	0041.3	013.3	46.53
199.0	000.2411	0056.3	009.8	333.8	000.0750	0040.4	013.5	46.07
200.0	000.2500	0054.7	009.7	333.4	000.0750	0039.3	013.6	45.63
201.0	000.2500	0052.5	009.5	333.6	000.0750	0039.9	013.9	45.40
202.0	000.2500	0052.6	009.5	333.1	000.0750	0038.5	014.0	44.94
203.0	000.2500	0054.1	009.7	332.2	000.0750	0036.6	014.1	44.47
204.0	000.2500	0053.6	009.6	331.9	000.0750	0036.4	014.2	44.21
205.0	000.2500	0052.9	009.6	331.7	000.0750	0036.2	014.4	43.96
206.0	000.2500	0052.9	009.6	331.3	000.0750	0036.2	014.5	43.81
207.0	000.2500	0052.9	009.6	331.0	000.0750	0036.3	014.7	43.65
208.0	000.2500	0052.3	009.5	330.8	000.0750	0036.2	014.8	43.45

Exhibit 7b

Contour Protection Studies Toward Select Allocation Concern(s)

10-20-2021 Terrain Data: NED 03 SEC FMOver Analysis

WIXL-LP BLL20070813AQM

CH245D.P

Channel = 246L1
 Max ERP = 0.075 kW
 RCAMSL = 310.9 m
 N. Lat. 43 03 52.30
 W. Lng. 89 18 24.70
 Protected
 60 dBu

Channel = 245D
 Max ERP = 0.25 kW
 RCAMSL = 329 m
 N. Lat. 43 15 23.10
 W. Lng. 89 20 27.90
 Interfering
 54 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
308.0	000.0750	0049.2	006.7	188.2	000.1614	0061.8	017.4	49.45	
309.0	000.0750	0049.5	006.7	188.1	000.1610	0061.9	017.3	49.55	
310.0	000.0750	0050.4	006.8	188.1	000.1610	0061.9	017.2	49.66	
311.0	000.0750	0050.2	006.8	187.8	000.1603	0062.0	017.1	49.74	
312.0	000.0750	0048.4	006.6	187.2	000.1587	0061.9	017.0	49.70	
313.0	000.0750	0047.5	006.6	186.8	000.1576	0062.1	017.0	49.75	
314.0	000.0750	0047.2	006.5	186.5	000.1569	0062.1	016.9	49.79	
315.0	000.0750	0046.5	006.5	186.2	000.1560	0062.0	016.8	49.81	
316.0	000.0750	0045.4	006.4	185.7	000.1550	0062.2	016.8	49.84	
317.0	000.0750	0044.4	006.3	185.3	000.1539	0062.5	016.8	49.88	
318.0	000.0750	0043.7	006.3	184.9	000.1530	0062.9	016.7	49.94	
319.0	000.0750	0044.1	006.3	184.7	000.1525	0063.1	016.6	50.03	
320.0	000.0750	0044.8	006.4	184.6	000.1521	0063.1	016.5	50.12	
321.0	000.0750	0044.9	006.4	184.3	000.1514	0063.3	016.4	50.19	
322.0	000.0750	0045.6	006.4	184.1	000.1509	0063.3	016.3	50.29	
323.0	000.0750	0045.8	006.4	183.9	000.1502	0063.5	016.2	50.36	
324.0	000.0750	0044.7	006.4	183.4	000.1491	0063.9	016.2	50.39	
325.0	000.0750	0042.3	006.2	182.7	000.1474	0064.6	016.3	50.36	
326.0	000.0750	0039.7	006.0	182.0	000.1455	0065.0	016.4	50.27	
327.0	000.0750	0038.9	005.9	181.6	000.1446	0065.1	016.4	50.26	
328.0	000.0750	0038.2	005.9	181.2	000.1437	0064.8	016.4	50.22	
329.0	000.0750	0037.5	005.8	180.8	000.1427	0064.6	016.3	50.17	
330.0	000.0750	0036.0	005.7	180.3	000.1413	0064.3	016.4	50.05	
331.0	000.0750	0036.3	005.7	180.0	000.1406	0064.0	016.3	50.06	
332.0	000.0750	0036.4	005.7	179.7	000.1414	0063.6	016.3	50.08	
333.0	000.0750	0038.2	005.9	179.6	000.1416	0063.5	016.1	50.21	
334.0	000.0750	0041.2	006.1	179.6	000.1416	0063.5	015.9	50.43	
335.0	000.0750	0043.8	006.3	179.6	000.1417	0063.4	015.6	50.62	
336.0	000.0750	0045.0	006.4	179.3	000.1424	0062.9	015.5	50.69	
337.0	000.0750	0045.7	006.4	179.0	000.1432	0062.2	015.4	50.71	
338.0	000.0750	0045.5	006.4	178.6	000.1442	0061.2	015.4	50.64	
339.0	000.0750	0046.6	006.5	178.3	000.1448	0060.6	015.3	50.68	
340.0	000.0750	0048.0	006.6	178.0	000.1455	0060.2	015.1	50.77	

Exhibit 7b
Contour Protection Studies Toward Select Allocation Concern(s)

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
341.0	000.0750	0048.4	006.6	177.6	000.1465	0059.7	015.1	50.79
342.0	000.0750	0049.3	006.7	177.3	000.1475	0059.3	015.0	50.61
343.0	000.0750	0049.5	006.7	176.9	000.1485	0058.8	014.9	50.63
344.0	000.0750	0049.2	006.7	176.4	000.1496	0058.5	014.9	50.62
345.0	000.0750	0047.6	006.6	175.9	000.1508	0058.2	015.0	50.77
346.0	000.0750	0046.0	006.4	175.4	000.1522	0057.8	015.1	50.66
347.0	000.0750	0045.3	006.4	174.9	000.1534	0057.3	015.2	50.59
348.0	000.0750	0043.9	006.3	174.5	000.1545	0056.8	015.2	50.47
349.0	000.0750	0043.1	006.2	174.0	000.1555	0056.3	015.3	50.38
350.0	000.0750	0042.2	006.2	173.6	000.1565	0056.2	015.3	50.34
351.0	000.0750	0041.2	006.1	173.2	000.1575	0056.0	015.4	50.27
352.0	000.0750	0040.2	006.0	172.8	000.1585	0055.8	015.5	50.20
353.0	000.0750	0039.3	006.0	172.4	000.1596	0055.6	015.6	50.15
354.0	000.0750	0039.1	005.9	172.0	000.1607	0055.4	015.6	50.12
355.0	000.0750	0039.4	006.0	171.7	000.1616	0055.3	015.6	50.15
356.0	000.0750	0039.2	006.0	171.3	000.1625	0055.3	015.6	50.15
357.0	000.0750	0039.4	006.0	170.9	000.1635	0055.1	015.6	50.15
358.0	000.0750	0039.5	006.0	170.5	000.1646	0055.0	015.6	50.17
359.0	000.0750	0038.4	005.9	170.2	000.1656	0055.1	015.7	50.12
000.0	000.0750	0035.6	005.7	169.9	000.1665	0055.0	015.9	49.93
001.0	000.0750	0032.6	005.4	169.8	000.1680	0054.8	016.1	49.73
002.0	000.0750	0030.5	005.3	169.6	000.1696	0054.8	016.3	49.59
003.0	000.0750	0029.7	005.2	169.3	000.1718	0054.6	016.4	49.57
004.0	000.0750	0029.5	005.2	169.0	000.1742	0054.4	016.4	49.57
005.0	000.0750	0028.6	005.2	168.7	000.1765	0053.8	016.4	49.52
006.0	000.0750	0026.9	005.2	168.3	000.1788	0053.3	016.5	49.46
007.0	000.0750	0025.9	005.2	168.0	000.1811	0052.8	016.5	49.41
008.0	000.0750	0023.7	005.2	167.7	000.1834	0052.3	016.5	49.35
009.0	000.0750	0021.1	005.2	167.4	000.1857	0052.1	016.6	49.34
010.0	000.0750	0019.4	005.2	167.2	000.1880	0051.9	016.6	49.32
011.0	000.0750	0018.9	005.2	166.9	000.1903	0051.6	016.6	49.29
012.0	000.0750	0017.1	005.2	166.6	000.1927	0051.3	016.7	49.27
013.0	000.0750	0017.0	005.2	166.3	000.1951	0051.2	016.7	49.25
014.0	000.0750	0018.2	005.2	166.0	000.1974	0051.0	016.7	49.23
015.0	000.0750	0019.2	005.2	165.7	000.1997	0050.6	016.8	49.18
016.0	000.0750	0019.8	005.2	165.5	000.2020	0050.3	016.8	49.13
017.0	000.0750	0019.3	005.2	165.2	000.2043	0049.8	016.9	49.04
018.0	000.0750	0018.1	005.2	164.9	000.2065	0049.2	016.9	48.93
019.0	000.0750	0017.1	005.2	164.7	000.2086	0048.7	017.0	48.83
020.0	000.0750	0015.1	005.2	164.4	000.2107	0048.3	017.0	48.75
021.0	000.0750	0013.4	005.2	164.2	000.2128	0048.0	017.1	48.69
022.0	000.0750	0013.1	005.2	163.9	000.2148	0047.5	017.1	48.58
023.0	000.0750	0012.4	005.2	163.7	000.2168	0046.9	017.2	48.46
024.0	000.0750	0012.3	005.2	163.5	000.2187	0046.5	017.3	48.35
025.0	000.0750	0013.7	005.2	163.2	000.2207	0045.9	017.3	48.22

Exhibit 7c

Contour Protection Studies Toward Select Allocation Concern(s)

Magnum Communications, Inc.

FMCommander Single Allocation Study - 10-20-2021 - NED 03 SEC
CH245D.P's Overlaps (In= 11.22 km, Out= 5.22 km)

CH245D.P CH 245 D DA
Lat= 43 15 23.10, Lng= 89 20 27.90
0.25 kW 31.4 m HAAT, 329 m COR
Prot.= 60 dBu, Intef.= 40 dBu

WULD-LP CH 245 L1 BLL20160617AAG
Lat= 43 10 39.90, Lng= 88 54 58.30
0.069 kW 36.09809 m HAAT, 291.2 m COR
Prot.= 60 dBu, Intef.= 40 dBu

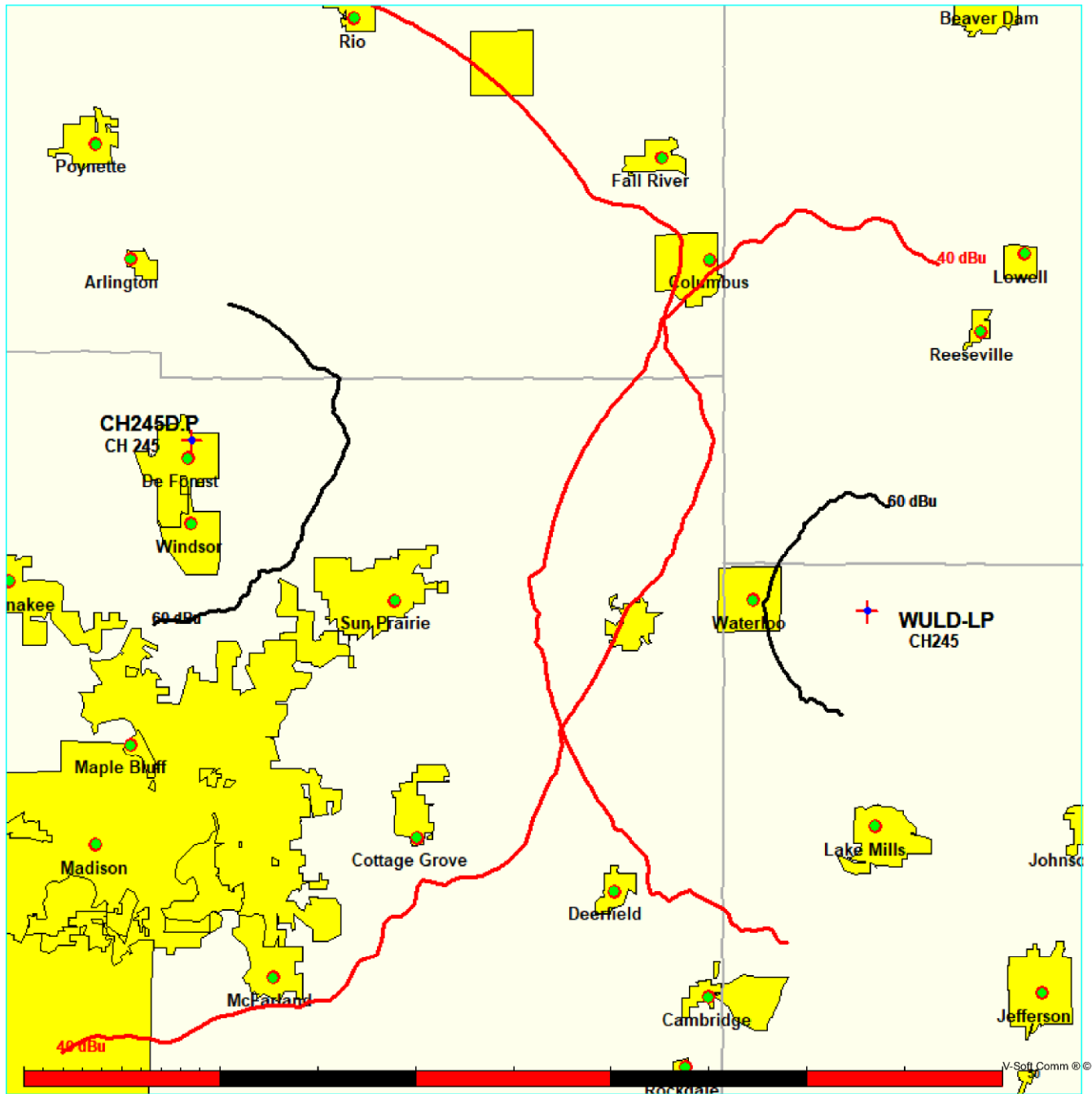


Exhibit 7c

Contour Protection Studies Toward Select Allocation Concern(s)

10-20-2021 Terrain Data: NED 03 SEC FMOver Analysis

CH245D.P

WULD-LP BLL20160617AAG

Channel = 245D
 Max ERP = 0.25 kW
 RCAMSL = 329 m
 N. Lat. 43 15 23.10
 W. Lng. 89 20 27.90
 Protected
 60 dBu

Channel = 245L1
 Max ERP = 0.069 kW
 RCAMSL = 291.2 m
 N. Lat. 43 10 39.90
 W. Lng. 88 54 58.30
 Interfering
 40 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
062.0	000.2500	0034.3	007.5	294.0	000.0690	0019.9	030.4	30.47	
063.0	000.2500	0036.0	007.7	294.1	000.0690	0019.8	030.1	30.57	
064.0	000.2500	0036.3	007.7	294.0	000.0690	0019.9	030.0	30.63	
065.0	000.2500	0037.0	007.8	293.9	000.0690	0019.9	029.9	30.71	
066.0	000.2500	0038.2	008.0	293.9	000.0690	0019.9	029.7	30.80	
067.0	000.2500	0039.0	008.0	293.9	000.0690	0019.9	029.5	30.88	
068.0	000.2500	0039.0	008.0	293.7	000.0690	0019.9	029.4	30.93	
069.0	000.2500	0038.3	008.0	293.4	000.0690	0020.0	029.4	30.96	
070.0	000.2500	0037.8	007.9	293.1	000.0690	0020.1	029.3	30.98	
071.0	000.2500	0037.1	007.8	292.8	000.0690	0020.0	029.3	31.00	
072.0	000.2500	0036.2	007.7	292.5	000.0690	0020.0	029.3	31.01	
073.0	000.2500	0035.3	007.6	292.2	000.0690	0020.1	029.2	31.02	
074.0	000.2500	0034.3	007.5	291.8	000.0690	0020.2	029.3	31.01	
075.0	000.2500	0033.4	007.4	291.5	000.0690	0020.4	029.3	31.01	
076.0	000.2500	0032.9	007.4	291.2	000.0690	0020.7	029.2	31.03	
077.0	000.2500	0032.9	007.4	291.0	000.0690	0020.9	029.1	31.07	
078.0	000.2500	0032.8	007.4	290.8	000.0690	0021.1	029.1	31.10	
079.0	000.2500	0032.4	007.3	290.5	000.0690	0021.4	029.0	31.12	
080.0	000.2500	0032.8	007.4	290.4	000.0690	0021.6	028.9	31.17	
081.0	000.2500	0033.4	007.4	290.2	000.0690	0021.8	028.8	31.24	
082.0	000.2500	0034.2	007.5	290.1	000.0690	0021.9	028.7	31.31	
083.0	000.2500	0034.7	007.6	289.9	000.0690	0022.2	028.6	31.37	
084.0	000.2500	0035.5	007.7	289.7	000.0690	0022.4	028.5	31.44	
085.0	000.2500	0036.3	007.7	289.5	000.0690	0022.6	028.3	31.52	
086.0	000.2500	0036.4	007.8	289.3	000.0690	0022.7	028.3	31.55	
087.0	000.2500	0036.6	007.8	289.1	000.0690	0022.8	028.2	31.59	
088.0	000.2500	0037.0	007.8	288.8	000.0690	0022.8	028.1	31.64	
089.0	000.2500	0037.8	007.9	288.6	000.0690	0022.9	028.0	31.72	
090.0	000.2500	0038.1	007.9	288.4	000.0690	0023.0	027.9	31.76	
091.0	000.2500	0037.9	007.9	288.1	000.0690	0023.1	027.9	31.77	
092.0	000.2500	0037.6	007.9	287.8	000.0690	0023.0	027.9	31.77	
093.0	000.2500	0037.1	007.8	287.5	000.0690	0023.3	027.9	31.77	
094.0	000.2500	0036.7	007.8	287.2	000.0690	0023.2	027.9	31.76	

Exhibit 7c

Contour Protection Studies Toward Select Allocation Concern(s)

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
095.0	000.2500	0036.3	007.7	286.9	000.0690	0023.4	027.9	31.75
096.0	000.2500	0036.0	007.7	286.6	000.0690	0023.6	027.9	31.74
097.0	000.2500	0035.8	007.7	286.4	000.0690	0023.9	027.9	31.75
098.0	000.2500	0035.1	007.6	286.1	000.0690	0024.3	028.0	31.72
099.0	000.2500	0034.6	007.6	285.8	000.0690	0024.8	028.0	31.70
100.0	000.2500	0034.6	007.6	285.5	000.0690	0025.1	028.0	31.70
101.0	000.2500	0034.2	007.5	285.2	000.0690	0025.5	028.0	31.68
102.0	000.2500	0034.0	007.5	285.0	000.0690	0025.8	028.0	31.68
103.0	000.2500	0034.2	007.5	284.7	000.0690	0026.2	028.0	31.69
104.0	000.2500	0033.5	007.4	284.4	000.0690	0026.5	028.1	31.65
105.0	000.2500	0033.3	007.4	284.2	000.0690	0026.8	028.1	31.64
106.0	000.2500	0033.1	007.4	283.9	000.0690	0027.1	028.1	31.63
107.0	000.2500	0032.4	007.3	283.6	000.0690	0027.2	028.2	31.58
108.0	000.2500	0031.6	007.3	283.4	000.0690	0027.3	028.3	31.53
109.0	000.2500	0031.1	007.2	283.2	000.0690	0027.5	028.4	31.50
110.0	000.2500	0030.4	007.1	282.9	000.0690	0027.5	028.4	31.45
111.0	000.2500	0029.3	007.1	282.7	000.0690	0027.6	028.5	31.42
112.0	000.2500	0026.7	007.1	282.4	000.0690	0027.6	028.5	31.41
113.0	000.2500	0025.1	007.1	282.2	000.0690	0027.7	028.5	31.39
114.0	000.2500	0024.3	007.1	282.0	000.0690	0027.8	028.6	31.38
115.0	000.2500	0025.0	007.1	281.7	000.0690	0027.9	028.6	31.36
116.0	000.2500	0026.1	007.1	281.5	000.0690	0028.0	028.6	31.35
117.0	000.2500	0027.2	007.1	281.2	000.0690	0028.0	028.7	31.33
118.0	000.2500	0028.0	007.1	281.0	000.0690	0028.2	028.7	31.31
119.0	000.2500	0028.5	007.1	280.8	000.0690	0028.3	028.7	31.29
120.0	000.2500	0028.4	007.1	280.5	000.0690	0028.3	028.8	31.27
121.0	000.2500	0027.9	007.1	280.3	000.0690	0028.4	028.8	31.25
122.0	000.2500	0027.3	007.1	280.1	000.0690	0028.6	028.9	31.22
123.0	000.2500	0027.5	007.1	279.8	000.0690	0028.8	028.9	31.20
124.0	000.2500	0028.5	007.1	279.6	000.0690	0029.0	029.0	31.17
125.0	000.2500	0029.0	007.1	279.4	000.0690	0029.0	029.0	31.14
126.0	000.2500	0029.2	007.1	279.2	000.0690	0029.1	029.1	31.11
127.0	000.2500	0029.3	007.1	279.0	000.0690	0029.1	029.1	31.08
128.0	000.2500	0030.2	007.1	278.7	000.0690	0029.3	029.2	31.06
129.0	000.2500	0031.7	007.3	278.4	000.0690	0029.5	029.1	31.09
130.0	000.2500	0032.2	007.3	278.1	000.0690	0029.8	029.1	31.09
131.0	000.2500	0033.0	007.4	277.8	000.0690	0030.0	029.1	31.08
132.0	000.2500	0033.6	007.5	277.5	000.0690	0030.2	029.1	31.11
133.0	000.2500	0033.7	007.5	277.3	000.0690	0030.4	029.2	31.13
134.0	000.2500	0034.1	007.5	277.1	000.0690	0030.8	029.3	31.19
135.0	000.2500	0034.8	007.6	276.8	000.0690	0031.2	029.3	31.28
136.0	000.2500	0035.2	007.6	276.5	000.0690	0031.6	029.3	31.35
137.0	000.2500	0035.6	007.7	276.3	000.0690	0032.0	029.4	31.42
138.0	000.2500	0036.3	007.7	276.0	000.0690	0032.3	029.4	31.48
139.0	000.2500	0037.1	007.8	275.6	000.0690	0032.4	029.4	31.47
140.0	000.2500	0038.0	007.9	275.3	000.0690	0032.4	029.5	31.45

Exhibit 7c

Contour Protection Studies Toward Select Allocation Concern(s)

10-20-2021 Terrain Data: NED 03 SEC FMOver Analysis

WULD-LP BLL20160617AAG

CH245D.P

Channel = 245L1
 Max ERP = 0.069 kW
 RCAMSL = 291.2 m
 N. Lat. 43 10 39.90
 W. Lng. 88 54 58.30
 Protected
 60 dBu

Channel = 245D
 Max ERP = 0.25 kW
 RCAMSL = 329 m
 N. Lat. 43 15 23.10
 W. Lng. 89 20 27.90
 Interfering
 40 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
239.0	000.0690	0028.2	005.1	110.6	000.2500	0030.0	032.1	35.29	
240.0	000.0690	0026.3	005.1	110.5	000.2500	0030.1	032.1	35.34	
241.0	000.0690	0027.0	005.1	110.4	000.2500	0030.1	032.0	35.38	
242.0	000.0690	0028.0	005.1	110.3	000.2500	0030.2	031.9	35.42	
243.0	000.0690	0026.9	005.1	110.2	000.2500	0030.3	031.9	35.47	
244.0	000.0690	0026.4	005.1	110.1	000.2500	0030.4	031.8	35.51	
245.0	000.0690	0025.7	005.1	110.0	000.2500	0030.4	031.7	35.55	
246.0	000.0690	0025.5	005.1	109.9	000.2500	0030.5	031.7	35.58	
247.0	000.0690	0025.9	005.1	109.8	000.2500	0030.5	031.6	35.63	
248.0	000.0690	0024.9	005.1	109.6	000.2500	0030.6	031.5	35.67	
249.0	000.0690	0024.7	005.1	109.5	000.2500	0030.7	031.5	35.72	
250.0	000.0690	0024.7	005.1	109.4	000.2500	0030.8	031.4	35.76	
251.0	000.0690	0024.6	005.1	109.3	000.2500	0030.9	031.4	35.80	
252.0	000.0690	0025.9	005.1	109.1	000.2500	0031.0	031.3	35.85	
253.0	000.0690	0026.7	005.1	109.0	000.2500	0031.1	031.3	35.90	
254.0	000.0690	0026.5	005.1	108.9	000.2500	0031.3	031.2	35.96	
255.0	000.0690	0028.2	005.1	108.7	000.2500	0031.4	031.2	36.01	
256.0	000.0690	0029.6	005.1	108.6	000.2500	0031.5	031.1	36.05	
257.0	000.0690	0030.2	005.1	108.5	000.2500	0031.5	031.0	36.09	
258.0	000.0690	0029.7	005.1	108.3	000.2500	0031.5	031.0	36.11	
259.0	000.0690	0029.3	005.1	108.2	000.2500	0031.6	031.0	36.14	
260.0	000.0690	0029.6	005.1	108.0	000.2500	0031.6	030.9	36.17	
261.0	000.0690	0029.3	005.1	107.9	000.2500	0031.6	030.9	36.18	
262.0	000.0690	0029.8	005.1	107.7	000.2500	0031.7	030.8	36.21	
263.0	000.0690	0029.8	005.1	107.6	000.2500	0031.8	030.8	36.26	
264.0	000.0690	0030.4	005.2	107.5	000.2500	0031.9	030.7	36.32	
265.0	000.0690	0031.1	005.2	107.3	000.2500	0032.0	030.7	36.39	
266.0	000.0690	0030.7	005.2	107.2	000.2500	0032.2	030.6	36.43	
267.0	000.0690	0030.6	005.2	107.0	000.2500	0032.4	030.6	36.48	
268.0	000.0690	0030.8	005.2	106.9	000.2500	0032.6	030.6	36.54	
269.0	000.0690	0030.7	005.2	106.7	000.2500	0032.8	030.6	36.60	
270.0	000.0690	0030.4	005.2	106.5	000.2500	0032.9	030.6	36.63	
271.0	000.0690	0031.1	005.2	106.4	000.2500	0033.0	030.5	36.69	

Exhibit 7c

Contour Protection Studies Toward Select Allocation Concern(s)

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
272.0	000.0690	0031.4	005.2	106.2	000.2500	0033.1	030.4	36.73
273.0	000.0690	0031.6	005.3	106.1	000.2500	0033.1	030.4	36.76
274.0	000.0690	0031.9	005.3	105.9	000.2500	0033.2	030.3	36.79
275.0	000.0690	0032.2	005.3	105.7	000.2500	0033.2	030.3	36.82
276.0	000.0690	0032.3	005.3	105.6	000.2500	0033.2	030.3	36.84
277.0	000.0690	0030.8	005.2	105.4	000.2500	0033.2	030.4	36.79
278.0	000.0690	0029.8	005.1	105.2	000.2500	0033.3	030.4	36.78
279.0	000.0690	0029.1	005.1	105.0	000.2500	0033.3	030.4	36.79
280.0	000.0690	0028.6	005.1	104.9	000.2500	0033.4	030.4	36.80
281.0	000.0690	0028.2	005.1	104.7	000.2500	0033.4	030.4	36.81
282.0	000.0690	0027.8	005.1	104.5	000.2500	0033.4	030.4	36.81
283.0	000.0690	0027.5	005.1	104.3	000.2500	0033.4	030.4	36.81
284.0	000.0690	0027.0	005.1	104.2	000.2500	0033.4	030.4	36.83
285.0	000.0690	0025.7	005.1	104.0	000.2500	0033.5	030.4	36.83
286.0	000.0690	0024.4	005.1	103.8	000.2500	0033.6	030.4	36.86
287.0	000.0690	0023.3	005.1	103.7	000.2500	0033.8	030.4	36.90
288.0	000.0690	0023.1	005.1	103.5	000.2500	0033.9	030.4	36.92
289.0	000.0690	0022.7	005.1	103.3	000.2500	0034.0	030.4	36.94
290.0	000.0690	0022.0	005.1	103.2	000.2500	0034.2	030.4	36.97
291.0	000.0690	0020.9	005.1	103.0	000.2500	0034.2	030.4	36.97
292.0	000.0690	0020.1	005.1	102.8	000.2500	0034.1	030.4	36.95
293.0	000.0690	0020.1	005.1	102.7	000.2500	0034.1	030.5	36.93
294.0	000.0690	0019.9	005.1	102.5	000.2500	0034.0	030.5	36.91
295.0	000.0690	0019.6	005.1	102.3	000.2500	0034.0	030.5	36.90
296.0	000.0690	0019.2	005.1	102.2	000.2500	0034.0	030.5	36.90
297.0	000.0690	0019.5	005.1	102.0	000.2500	0034.0	030.5	36.89
298.0	000.0690	0020.0	005.1	101.8	000.2500	0034.0	030.6	36.87
299.0	000.0690	0020.7	005.1	101.7	000.2500	0033.9	030.6	36.84
300.0	000.0690	0021.1	005.1	101.5	000.2500	0033.8	030.6	36.81
301.0	000.0690	0021.2	005.1	101.4	000.2500	0033.8	030.6	36.79
302.0	000.0690	0021.6	005.1	101.2	000.2500	0034.0	030.7	36.81
303.0	000.0690	0022.5	005.1	101.1	000.2500	0034.1	030.7	36.83
304.0	000.0690	0023.1	005.1	100.9	000.2500	0034.3	030.7	36.85
305.0	000.0690	0024.0	005.1	100.7	000.2500	0034.4	030.8	36.86
306.0	000.0690	0025.2	005.1	100.6	000.2500	0034.5	030.8	36.86
307.0	000.0690	0026.2	005.1	100.4	000.2500	0034.5	030.9	36.85
308.0	000.0690	0026.4	005.1	100.3	000.2500	0034.7	030.9	36.86
309.0	000.0690	0027.1	005.1	100.2	000.2500	0034.6	030.9	36.84
310.0	000.0690	0028.4	005.1	100.0	000.2500	0034.6	031.0	36.82
311.0	000.0690	0027.7	005.1	099.9	000.2500	0034.6	031.0	36.78
312.0	000.0690	0027.7	005.1	099.7	000.2500	0034.5	031.1	36.75
313.0	000.0690	0028.3	005.1	099.6	000.2500	0034.5	031.1	36.73
314.0	000.0690	0029.1	005.1	099.4	000.2500	0034.5	031.2	36.71
315.0	000.0690	0029.3	005.1	099.3	000.2500	0034.5	031.2	36.69
316.0	000.0690	0029.8	005.1	099.2	000.2500	0034.6	031.3	36.68
317.0	000.0690	0030.0	005.1	099.1	000.2500	0034.7	031.3	36.67

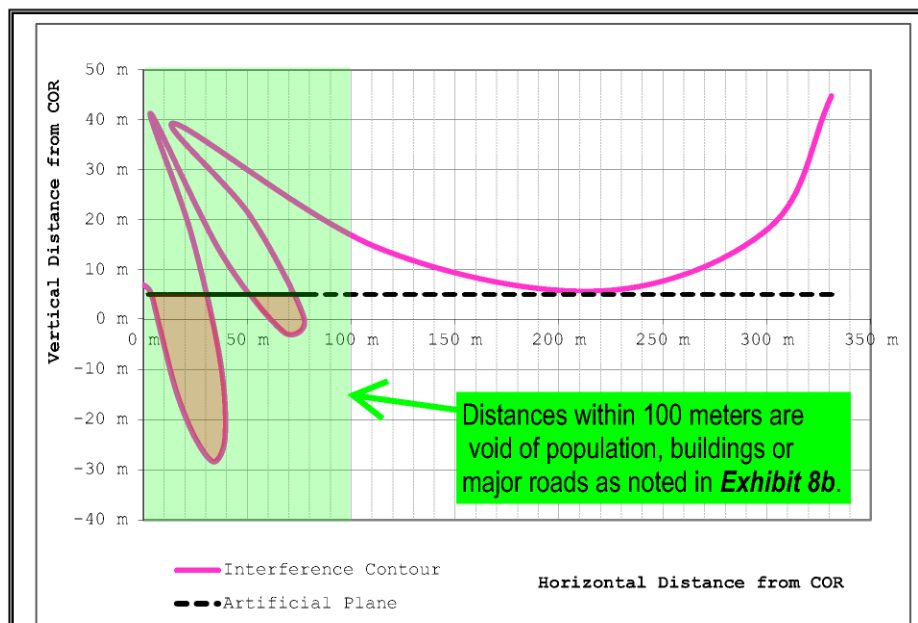
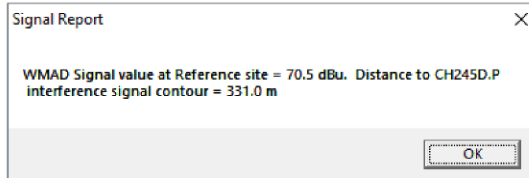
Exhibit 8a

47 C.F.R. Section 74.1204(d) Second / Third Adjacent Given Interference Waiver Request

The applicant would like to note the existence of a 47 C.F.R. Section 74.1204(d) Second/Third Adjacent Channel Given Interference Waiver Request toward WMAD(FM) - Cross Plains, WI (CH242B1) as included in **Exhibit(s) 8(a-b)**. In this instance, the worst case affected station's signal strength at the Translator site has been identified as the 70.5 dBμ F(50:50) service contour, associated with a Translator interference contour adjusted by +40 dBμ per 47 C.F.R. Section 74.1204(a).

Concerning distances between 100 meters from the Translator site to the extent of the interference contour, protection has been demonstrated through a downward radiation study as included in **Exhibit 8a**. Full protection will be afforded all concerns as this portion of the interference area will not reach the ground nor a five meter artificial plane representing a standard two story home when taking into account the downward radiation characteristics of the antenna. A copy of the antenna manufacturer's vertical radiation pattern data has been included in **Exhibit 9**.

Concerning distances within 100 meters of the Translator site, protection has been demonstrated through aerial photography of the site as included in **Exhibit 8b**. Full protection will be afforded all concerns as this portion of the interference area is void of all housing, buildings or major roads representing locations where people live, work or travel on a regular basis. The applicant would like to note the existence of a dedicated transmitter building within this affected radius; however, buildings of this nature have been routinely exempt as a matter of FCC Policy (see similar grant under BPFT-20160129ALR).



Proposed Antenna: 3 Bay Nicom BKG77/3L(0.85WL)					Field Strength (dBμ) Equation				
Proposed Power: 0.250 kW					106.92-20*(LOG10[DistMeters]/1000))+[ERP in dBk]				
Antenna Height AGL: 44.8 meters					Distance (Free Space) Equation:				
Protection Plane Height: 5.0 meters					(10^((106.92-[desired dBμ]+[FRP in dBk])/20))*1000				
Protected Contour: 70.50 dBμ f(50:50)									
Interference Contour: 110.50 dBμ f(50:10)									
Angle Below Horizon	Vertical Relative Field	ERP in kW	ERP in dBk	Meters from Antenna to Int. Contour	Meters from Antenna to Artificial Plane	Meters from Antenna to Ground Level	Field Strength at Protection Plane (dBμ)	Field Strength at Ground Level (dBμ)	
0°	1.000	0.250	-6.02	331.11 m					
-5°	0.913	0.208	-6.81	302.30 m	456.65 m	514.02 m	106.92 dBμ	105.89 dBμ	
-10°	0.678	0.115	-9.40	224.49 m	229.20 m	257.99 m	110.32 dBμ	109.29 dBμ	
-15°	0.357	0.032	-14.97	118.21 m	153.78 m	173.09 m	108.22 dBμ	107.19 dBμ	
-20°	0.049	0.001	-32.22	16.22 m	116.37 m	130.99 m	93.39 dBμ	92.36 dBμ	
-25°	0.171	0.007	-21.36	56.62 m	94.17 m	106.01 m	106.08 dBμ	105.05 dBμ	
-30°	0.270	0.018	-17.39	89.40 m	79.60 m	89.60 m	111.51 dBμ	110.48 dBμ	
-35°	0.250	0.016	-18.06	82.78 m	69.39 m	78.11 m	112.03 dBμ	111.00 dBμ	
-40°	0.148	0.005	-22.62	49.00 m	61.92 m	69.70 m	108.47 dBμ	107.44 dBμ	
-45°	0.015	0.000	-42.50	4.97 m	56.29 m	63.36 m	89.41 dBμ	88.39 dBμ	
-50°	0.107	0.003	-25.43	35.43 m	51.96 m	58.48 m	107.17 dBμ	106.15 dBμ	
-55°	0.194	0.009	-20.26	64.24 m	48.59 m	54.69 m	112.93 dBμ	111.90 dBμ	
-60°	0.238	0.014	-18.49	78.80 m	45.96 m	51.73 m	115.18 dBμ	114.16 dBμ	
-65°	0.244	0.015	-18.27	80.79 m	43.91 m	49.43 m	115.80 dBμ	114.77 dBμ	
-70°	0.220	0.012	-19.17	72.84 m	42.35 m	47.68 m	115.21 dBμ	114.18 dBμ	
-75°	0.185	0.009	-20.68	61.26 m	41.20 m	46.38 m	113.94 dBμ	112.92 dBμ	
-80°	0.145	0.005	-22.79	48.01 m	40.41 m	45.49 m	112.00 dBμ	110.97 dBμ	
-85°	0.119	0.004	-24.51	39.40 m	39.95 m	44.97 m	110.38 dBμ	109.35 dBμ	
-90°	0.114	0.003	-24.88	37.75 m	39.80 m	44.80 m	110.04 dBμ	109.01 dBμ	

The applicant would like to note the existence of a 47 C.F.R. Section 74.1204(d) Second/Third Adjacent Channel Given Interference Waiver Request toward WMAD(FM) - Cross Plains, WI (CH242B1) as included in *Exhibit(s) 8(a-b)*. In this instance, the worst case affected station's signal strength at the Translator site has been identified as the 70.5 dBμ F(50:50) service contour, associated with a Translator interference contour adjusted by +40 dBμ per 47 C.F.R. Section 74.1204(a).

Concerning distances between 100 meters from the Translator site to the extent of the interference contour, protection has been demonstrated through a downward radiation study as included in *Exhibit 8a*. Full protection will be afforded all concerns as this portion of the interference area will not reach the ground nor a five meter artificial plane representing a standard two story home when taking into account the downward radiation characteristics of the antenna. A copy of the antenna manufacturer's vertical radiation pattern data has been included in *Exhibit 9*.

Concerning distances within 100 meters of the Translator site, protection has been demonstrated through aerial photography of the site as included in *Exhibit 8b*. Full protection will be afforded all concerns as this portion of the interference area is void of all housing, buildings or major roads representing locations where people live, work or travel on a regular basis. The applicant would like to note the existence of a dedicated transmitter building within this affected radius; however, buildings of this nature have been routinely exempt as a matter of FCC Policy (see similar grant under BPFT-20160129ALR).

Exhibit 8b
§74.1204(d) 2nd/3rd Adjacent Channel
Given Interference Waiver Request

Site Coordinates

	<u>Latitude</u>	<u>Longitude</u>
NAD 27 datum:	---	---
NAD 83 datum:	43-15-23.1	89-20-27.9

Restricted Access, Dedicated
Transmitter Building

Transitory Railroad Cars

100 meter arc

Asher Broadcast Consulting LLC
justinasher@consultant.com
1 (202) 875-2986

Google Earth Pro™
Account #4375669785
Used with Permission

Google Earth

500 ft

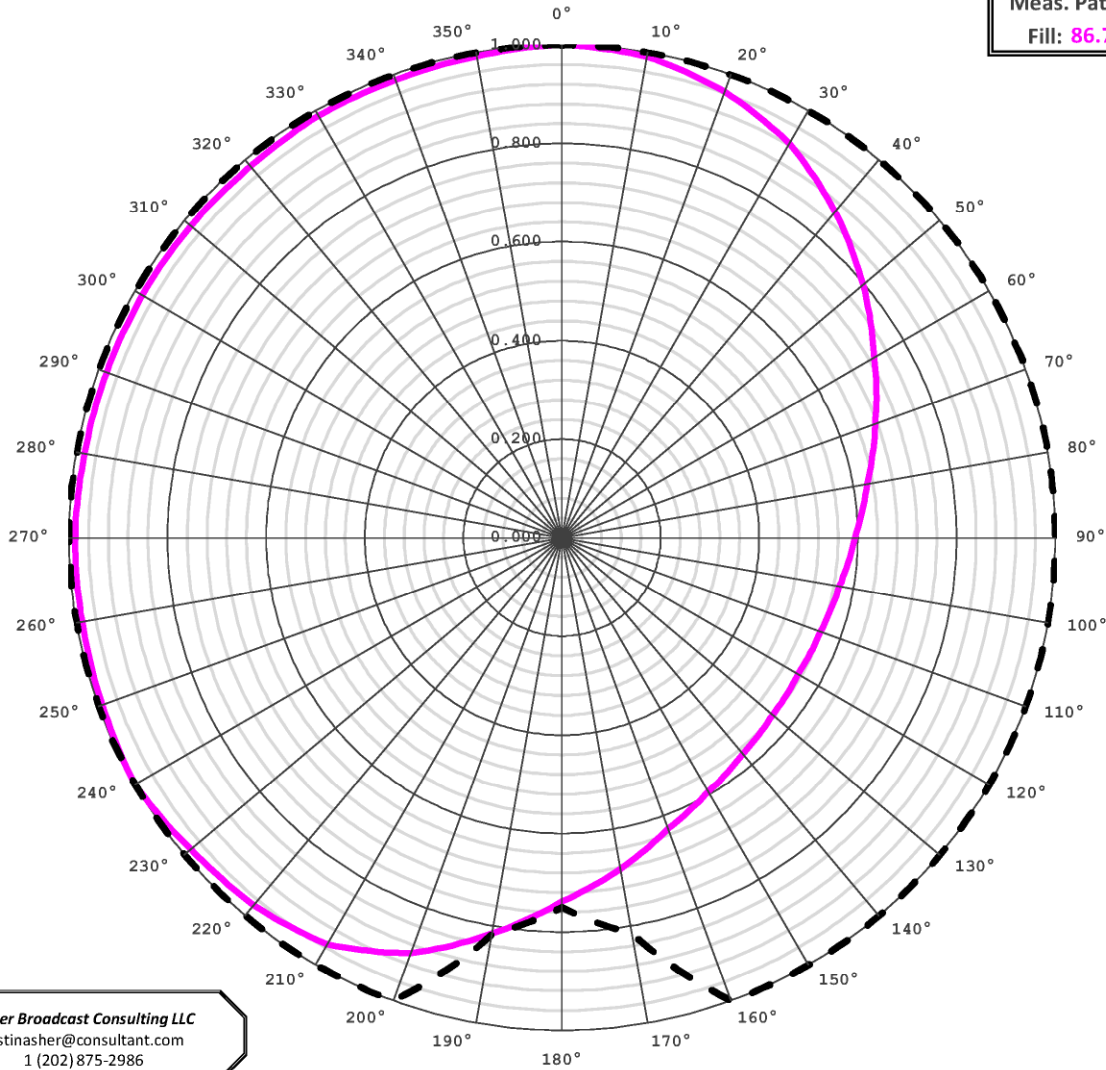


Manufacturer's	Make/Model	Orientation	Power
Element 1:	BKG77	300° True	100.0%
Element 2:			
Element 3:			
Element 4:			

Composite Power: 100%

Exhibit 9 - Copy of Manufacturer's Directional Antenna Pattern Data

Meas. Pattern
Fill: 86.7%



Azimuth ° True	FCC Pattern	Manufacturer's Pattern
0°	1.000	1.000
10°	1.000	0.991
20°	1.000	0.963
30°	1.000	0.923
40°	1.000	0.862
50°	1.000	0.797
60°	1.000	0.731
70°	1.000	0.676
80°	1.000	0.628
90°	1.000	0.594
100°	1.000	0.571
110°	1.000	0.558
120°	1.000	0.553
130°	1.000	0.558
140°	1.000	0.571
150°	1.000	0.594
160°	1.000	0.628
170°	0.815	0.682
180°	0.750	0.738
190°	0.815	0.815
200°	1.000	0.897
210°	1.000	0.953
220°	1.000	0.973
230°	1.000	0.983
240°	1.000	1.000
250°	1.000	0.992
260°	1.000	0.988
270°	1.000	0.988
280°	1.000	0.983
290°	1.000	0.983
300°	1.000	0.983
310°	1.000	0.983
320°	1.000	0.983
330°	1.000	0.988
340°	1.000	0.988
350°	1.000	0.992

Asher Broadcast Consulting LLC
justinasher@consultant.com
1 (202) 875-2986

Allocation (FCC) Pattern: ---
Manufacturer's Pattern: ———

Exhibit 9
Copy of Manufacturer's Directional Antenna Documentation
(Actual Antenna Pattern rotated to 300.0°T) (public record copy)



Your Number 1 Source For Radio And Digital TV Gear

BKG 77

Medium Power Broadband FM Circular Polarization Antenna

TECHNICAL SPECIFICATIONS

Antenna type: circular
polarization: dipole
Front-to-back ratio: 3 dB
Frequency range: 87.5 - 108 MHz
Lightening protection: all parts grounded
Bandwidth: 20 MHz
Max wind velocity: 120 mph (190 km/h)
Impedance: 50 ohms
Wind load: 53 Lbs (24 kg)
Connectors: N type (1 kw) -7/8 type / 7/16DIN(2 kw)
Wind surface: 1.1 ft² (0.10 m²)
Power rating: 2000 Watts max
Materials (external): stainless steel
VSWR: < 1.3
Mounting: from 2" to 4"
Polarization: vertical and horizontal
Weight: 25 Lbs (11.3 kg)
Gain: - 3 dBd (referred to half-wave dipole)
Dimensions: 58"x32"x32" (1450×800×800mm)
H plane: omnidirectional ±1.5 dB (with a 4" mast)
V plane: omnidirectional ±3 dB (with a 4" mast)
Packing: 68"×10"×10"



Optional Mini-Radome

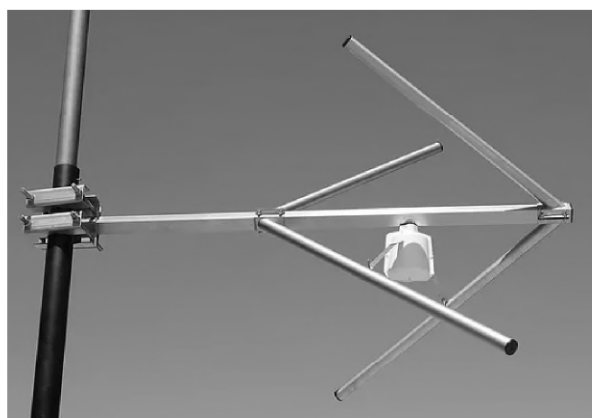


Exhibit 9

Copy of Manufacturer's Directional Antenna Documentation (Actual Antenna Pattern rotated to 300.0°T) (public record copy)

TX station: BKG77-3(0.85wl)

Site name:

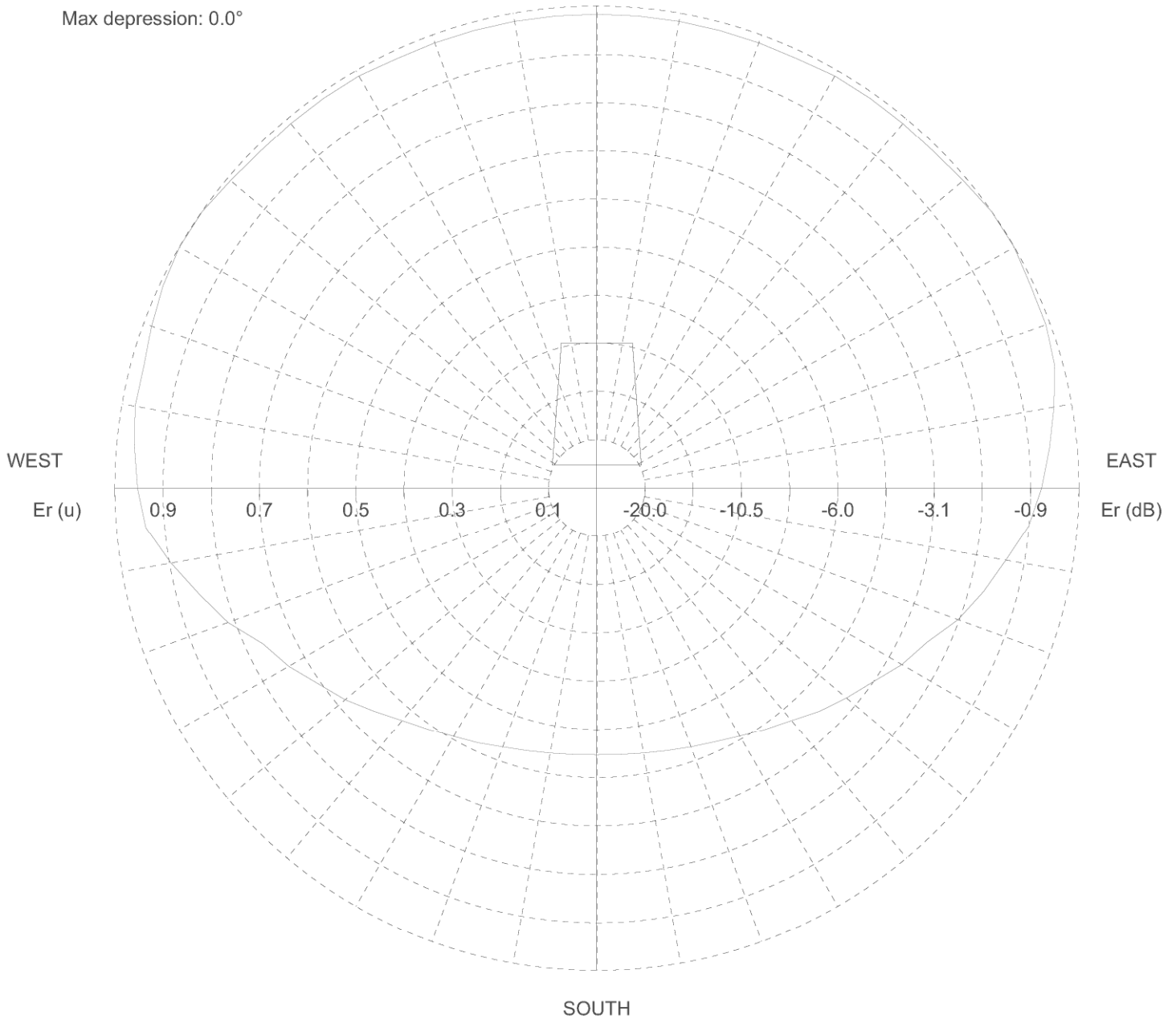
Frequency: 100.00 MHz

Horizontal diagram of Maxima

NORTH

Max azimuth: 60°

Max depression: 0.0°



—— 0.0° depres. (Total antenna), Gain (dBd): -3.03 ERP T.max (KW): 0.498

ERP E.max (KW): 0.387

NicomUsa, Inc

Exhibit 9

Copy of Manufacturer's Directional Antenna Documentation

(Actual Antenna Pattern rotated to 300.0°T) (public record copy)

TX station: BKG77-3(0.85wl)

Site name:

Frequency: 100.00 MHz

Horizontal diagram of Maxima

Az (°)	Dep (°)	Er (%)	ERP (W)	Az (°)	Dep (°)	Er (%)	ERP (W)	Az (°)	Dep (°)	Er (%)	ERP (W)
0.0	0.0	98.3	373.6	120.0	0.0	73.1	206.6	240.0	0.0	73.8	210.7
5.0	0.0	98.3	373.6	125.0	0.0	69.9	189.2	245.0	0.0	76.4	225.7
10.0	0.0	98.3	373.6	130.0	0.0	67.6	176.7	250.0	0.0	81.5	256.6
15.0	0.0	98.3	373.6	135.0	0.0	65.3	165.1	255.0	0.0	85.3	281.6
20.0	0.0	98.3	373.6	140.0	0.0	62.8	152.7	260.0	0.0	89.7	311.1
25.0	0.0	98.3	373.6	145.0	0.0	61.0	144.0	265.0	0.0	93.9	341.1
30.0	0.0	98.8	377.5	150.0	0.0	59.4	136.3	270.0	0.0	95.3	351.1
35.0	0.0	98.8	377.5	155.0	0.0	58.0	130.3	275.0	0.0	96.3	358.5
40.0	0.0	98.8	377.5	160.0	0.0	57.1	126.1	280.0	0.0	97.3	366.1
45.0	0.0	98.8	377.5	165.0	0.0	56.3	122.8	285.0	0.0	97.3	366.1
50.0	0.0	99.2	380.8	170.0	0.0	55.8	120.3	290.0	0.0	98.3	373.6
55.0	0.0	100.0	386.5	175.0	0.0	55.4	118.7	295.0	0.0	99.3	381.4
60.0	0.0	100.0	386.7	180.0	0.0	55.3	118.2	300.0	0.0	100.0	386.7
65.0	0.0	99.3	381.4	185.0	0.0	55.4	118.7	305.0	0.0	100.0	386.5
70.0	0.0	99.1	380.0	190.0	0.0	55.8	120.3	310.0	0.0	99.2	380.8
75.0	0.0	98.3	373.6	195.0	0.0	56.3	122.8	315.0	0.0	98.8	377.5
80.0	0.0	96.3	358.5	200.0	0.0	57.1	126.1	320.0	0.0	98.8	377.5
85.0	0.0	94.3	343.8	205.0	0.0	58.3	131.4	325.0	0.0	98.8	377.5
90.0	0.0	92.3	329.3	210.0	0.0	59.4	136.5	330.0	0.0	98.8	377.5
95.0	0.0	90.0	312.9	215.0	0.0	61.0	144.0	335.0	0.0	98.3	373.6
100.0	0.0	86.2	287.1	220.0	0.0	62.8	152.7	340.0	0.0	98.3	373.6
105.0	0.0	83.0	266.7	225.0	0.0	65.3	165.1	345.0	0.0	98.3	373.6
110.0	0.0	79.7	245.9	230.0	0.0	68.2	179.6	350.0	0.0	98.3	373.6
115.0	0.0	75.6	221.0	235.0	0.0	70.6	192.7	355.0	0.0	98.3	373.6

Exhibit 9

Copy of Manufacturer's Directional Antenna Documentation

(Actual Antenna Pattern rotated to 300.0°T)

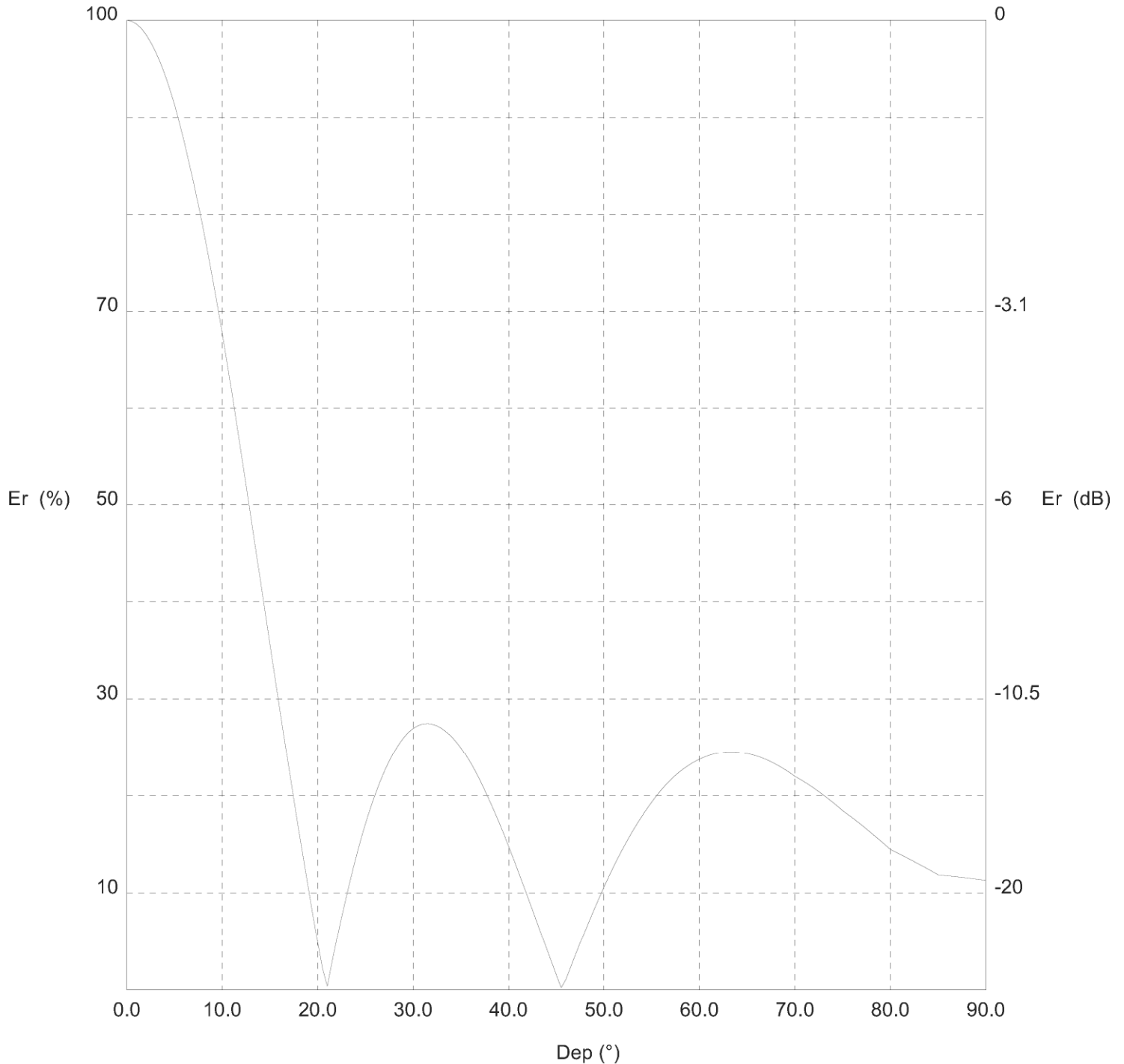
(public record copy)

TX station: BKG77-3(0.85wl)

Site name:

Frequency: 100.00 MHz

Vertical diagram



0.0° Az. (Total antenna)

NicomUsa, Inc

Exhibit 9

Copy of Manufacturer's Directional Antenna Documentation

(Actual Antenna Pattern rotated to 300.0°T) (public record copy)

TX station: BKG77-3(0.85wl)

Site name:

Frequency: 100.00 MHz

Vertical diagram at an azimuth of 0° degrees

Dep (°)	Er (%)	ERP (KW)	Dep (°)	Er (%)	ERP (KW)	Dep (°)	Er (%)	ERP (KW)
0.0	100.0	1.37	30.0	27.0	0.10	60.0	23.8	0.08
0.5	99.9	1.37	30.5	27.3	0.10	60.5	24.0	0.08
1.0	99.6	1.36	31.0	27.4	0.10	61.0	24.2	0.08
1.5	99.2	1.35	31.5	27.5	0.10	61.5	24.3	0.08
2.0	98.5	1.33	32.0	27.4	0.10	62.0	24.5	0.08
2.5	97.8	1.31	32.5	27.3	0.10	62.5	24.5	0.08
3.0	96.8	1.28	33.0	27.0	0.10	63.0	24.6	0.08
3.5	95.7	1.26	33.5	26.6	0.10	63.5	24.6	0.08
4.0	94.4	1.22	34.0	26.2	0.09	64.0	24.5	0.08
4.5	92.9	1.18	34.5	25.6	0.09	64.5	24.5	0.08
5.0	91.3	1.14	35.0	25.0	0.09	65.0	24.4	0.08
5.5	89.5	1.10	35.5	24.2	0.08	65.5	24.3	0.08
6.0	87.6	1.05	36.0	23.4	0.08	66.0	24.1	0.08
6.5	85.5	1.00	36.5	22.5	0.07	66.5	23.9	0.08
7.0	83.3	0.95	37.0	21.6	0.06	67.0	23.7	0.08
7.5	81.0	0.90	37.5	20.6	0.06	67.5	23.5	0.08
8.0	78.6	0.85	38.0	19.5	0.05	68.0	23.3	0.07
8.5	76.0	0.79	38.5	18.4	0.05	68.5	23.0	0.07
9.0	73.4	0.74	39.0	17.3	0.04	69.0	22.7	0.07
9.5	70.6	0.68	39.5	16.1	0.04	69.5	22.4	0.07
10.0	67.8	0.63	40.0	14.8	0.03	70.0	22.0	0.07
10.5	64.7	0.57	40.5	13.6	0.03	70.5	21.7	0.06
11.0	61.6	0.52	41.0	12.3	0.02	71.0	21.4	0.06
11.5	58.5	0.47	41.5	11.0	0.02	71.5	21.1	0.06
12.0	55.3	0.42	42.0	9.6	0.01	72.0	20.8	0.06
12.5	52.1	0.37	42.5	8.3	0.01	72.5	20.4	0.06
13.0	48.8	0.33	43.0	6.9	0.01	73.0	20.1	0.06
13.5	45.5	0.28	43.5	5.6	0.00	73.5	19.7	0.05
14.0	42.2	0.24	44.0	4.2	0.00	74.0	19.3	0.05
14.5	38.9	0.21	44.5	2.9	0.00	74.5	18.9	0.05
15.0	35.7	0.17	45.0	1.5	0.00	75.0	18.5	0.05
15.5	32.4	0.14	45.5	0.2	0.00	75.5	18.1	0.05
16.0	29.1	0.12	46.0	1.1	0.00	76.0	17.8	0.04
16.5	25.9	0.09	46.5	2.4	0.00	76.5	17.4	0.04
17.0	22.7	0.07	47.0	3.6	0.00	77.0	17.0	0.04
17.5	19.6	0.05	47.5	4.9	0.00	77.5	16.6	0.04
18.0	16.5	0.04	48.0	6.1	0.01	78.0	16.2	0.04
18.5	13.5	0.02	48.5	7.3	0.01	78.5	15.8	0.03
19.0	10.5	0.02	49.0	8.5	0.01	79.0	15.4	0.03
19.5	7.7	0.01	49.5	9.6	0.01	79.5	14.9	0.03
20.0	4.9	0.00	50.0	10.7	0.02	80.0	14.5	0.03
20.5	2.2	0.00	50.5	11.7	0.02	80.5	14.3	0.03
21.0	0.4	0.00	51.0	12.7	0.02	81.0	14.0	0.03
21.5	2.9	0.00	51.5	13.7	0.03	81.5	13.8	0.03
22.0	5.3	0.00	52.0	14.7	0.03	82.0	13.5	0.03
22.5	7.5	0.01	52.5	15.6	0.03	82.5	13.3	0.02
23.0	9.7	0.01	53.0	16.4	0.04	83.0	13.0	0.02
23.5	11.7	0.02	53.5	17.2	0.04	83.5	12.7	0.02
24.0	13.7	0.03	54.0	18.0	0.04	84.0	12.5	0.02
24.5	15.5	0.03	54.5	18.7	0.05	84.5	12.2	0.02
25.0	17.1	0.04	55.0	19.4	0.05	85.0	11.9	0.02
25.5	18.7	0.05	55.5	20.1	0.06	85.5	11.9	0.02
26.0	20.1	0.06	56.0	20.7	0.06	86.0	11.8	0.02
26.5	21.4	0.06	56.5	21.2	0.06	86.5	11.8	0.02
27.0	22.6	0.07	57.0	21.7	0.06	87.0	11.7	0.02
27.5	23.6	0.08	57.5	22.2	0.07	87.5	11.6	0.02
28.0	24.5	0.08	58.0	22.6	0.07	88.0	11.6	0.02
28.5	25.3	0.09	58.5	22.9	0.07	88.5	11.5	0.02
29.0	26.0	0.09	59.0	23.3	0.07	89.0	11.5	0.02
29.5	26.6	0.10	59.5	23.5	0.08	89.5	11.4	0.02