Technical Report Supporting a Minor Change in Licensed Facility Construction Permit Application

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

for

W292EM.L - Lafayette, IN
(Facility ID: 140803)

Non-Adjacent Channel Change per
47 C.F.R. Section 74.1233(a)(1)

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as a

Non-Commercial,
Regular (non-fill-in) Translator
for WHLP(FM) - Hanna, IN

February, 2020

Asher Broadcast Consulting, LLC
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1(202)875-2986

Table of Contents

Supplemental Appendix(s):

Explanation of Technical Report 1

EXPLANATION OF PROPOSAL: This LMS filing and accompanying technical report supports a Minor Change in Licensed Facility Construction Permit Application for FM Translator W292EM.L - Lafayette, IN (Facility ID: 140803). This filing requests a 47 C.F.R. Section 74.1233(a)(1) non-adjacent channel change from CH292D (106.3 MHz) to CH232D (94.3 MHz) based upon a showing of reduced interference. Operation on the new frequency of CH232D (94.3 MHz) with a power of 0.250 kW ERP circular polarization (H&V) is requested. The FM Translator will operate from an antenna COR of 226.0 meters AMSL at the same site location. This LMS Filing will specify rebroadcast of non-commercial, Class B1, FM Primary Station WHLP(FM) - Hanna, IN (Facility ID: 91345) via the off-air reception of FM Translator W265CP - Buffalo, IN (Facility ID: 140809). The Translator will remain licensed to the community of Lafayette, IN.

FACILITY COMPLIANCE SHOWINGS: A map of the proposed 60 dBµ service contour in relation to the present 60 dBµ service contour has been included in ***Exhibit 1***. The minor change proposed service area will overlap a portion of the presently licensed service area as noted in the exhibit. The proposed 60 dBµ contour of the Translator lies wholly outside of the NCE-FM Primary Station 60 dBµ contour. The Primary Station service contour relationship has been plotted in ***Exhibit 2***.

The proposed facility will be located on the tower bearing Antenna Structure Registration Number 1222470. In support of this filing, a copy of the existing ASRN 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. A general allocation study for this proposal is found in ***Exhibit 6***. 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. Additional manufacturer's directional antenna documentation has been included in ***Exhibit 8***.

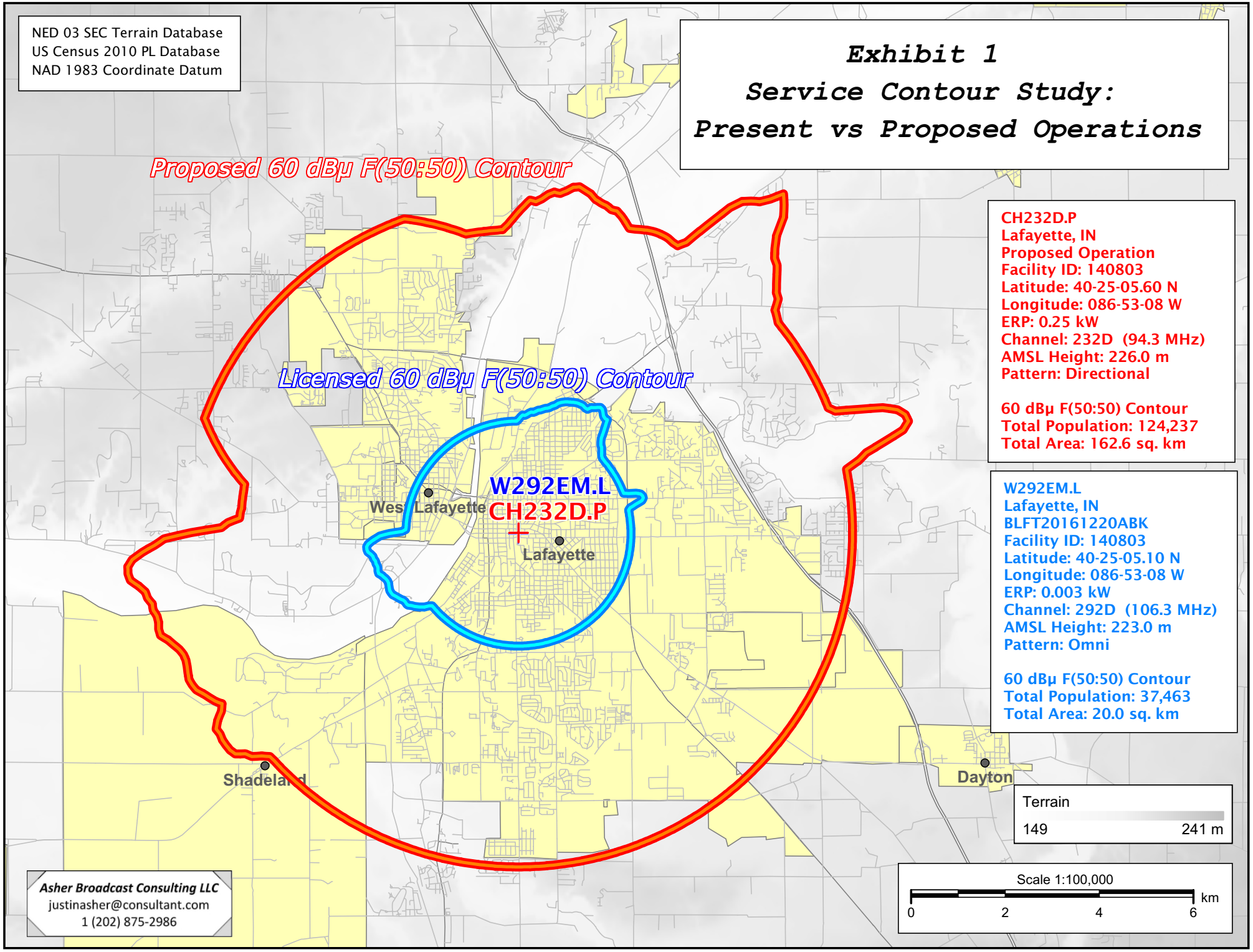
Regarding protection of international concerns, the facility is, and will remain, more than 320 km from the common border between the United States and Canada or Mexico. As a result, no further international protection showings are believed required.

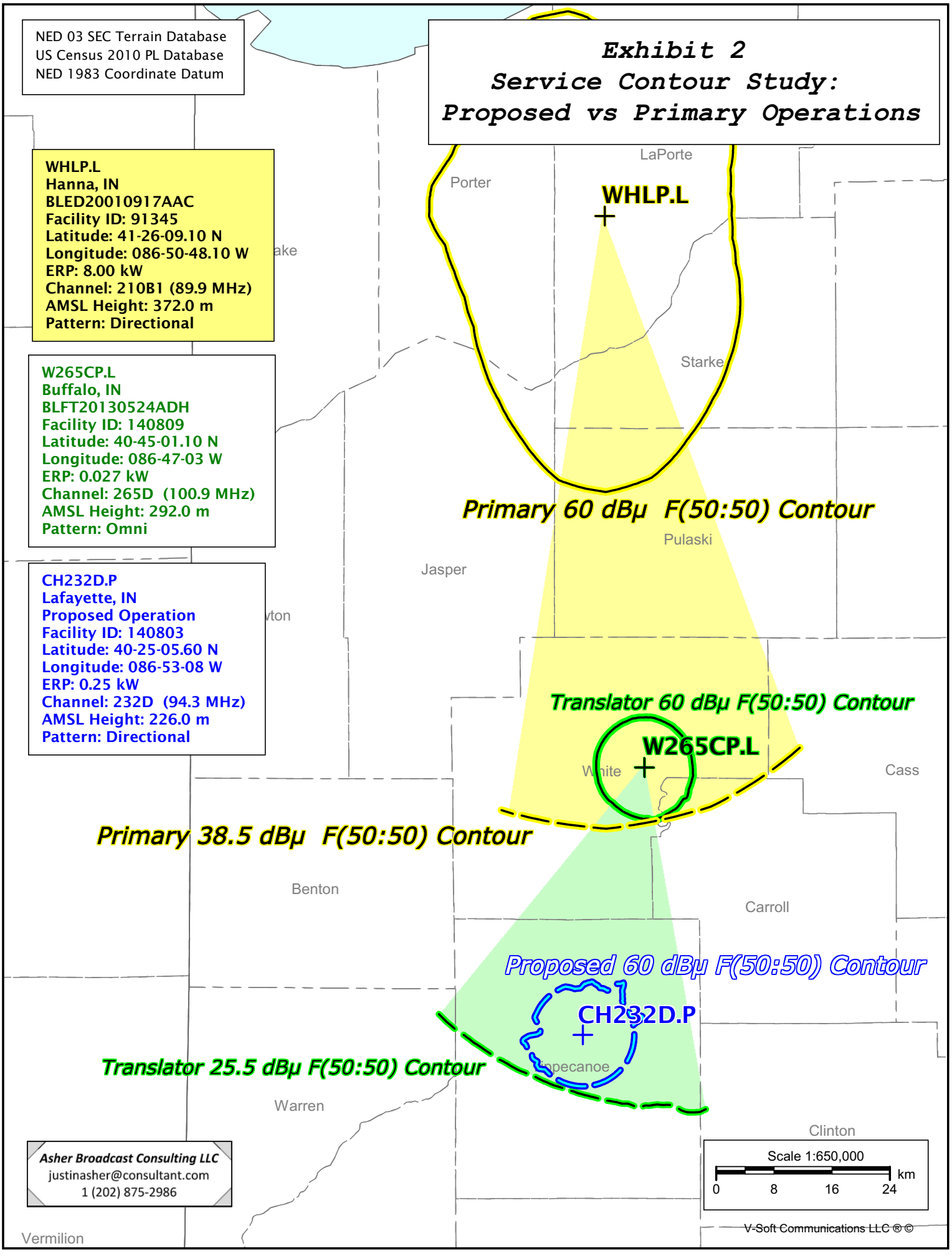
ENVIRONMENTAL COMPLIANCE SHOWINGS: The proposed facility complies with the maximum permissible radiofrequency electromagnetic exposure limits for controlled and uncontrolled environments as set forth under §1.1310 and/or §1.1307(b)(3) of the Commission's rules and the guidelines for RF radiation protection 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 is being replaced, and existing feed-line reused, on an existing structure. 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 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
February 20, 2020


NED 03 SEC Terrain Database
US Census 2010 PL Database
NAD 1983 Coordinate Datum
Exhibit 1
Service Contour Study:
Present vs Proposed Operations
Proposed 60 dBµ F(50:50) Contour
Licensed 60 dBµ F(50:50) Contour
CH232D.P
Lafayette, IN
Proposed Operation
Facility ID: 140803
Latitude: 40-25-05.60 N
Longitude: 086-53-08 W
ERP: 0.25 kW
Channel: 232D (94.3 MHz)
AMSL Height: 226.0 m
Pattern: Directional
60 dBµ F(50:50) Contour
Total Population: 124,237
Total Area: 162.6 sq. km
W292EM.L
CH232D.P
Lafayette
W292EM.L
Lafayette, IN
BLFT20161220ABK
Facility ID: 140803
Latitude: 40-25-05.10 N
Longitude: 086-53-08 W
ERP: 0.003 kW
Channel: 292D (106.3 MHz)
AMSL Height: 223.0 m
Pattern: Omni
60 dBµ F(50:50) Contour
Total Population: 37,463
Total Area: 20.0 sq. km
Dayton
Terrain
149
241 m
Scale 1:100,000
0
2
4
6
km
Asher Broadcast Consulting LLC
justinasher@consultant.com
1 (202) 875-2986


NED 03 SEC Terrain Database
US Census 2010 PL Database
NED 1983 Coordinate Datum
Exhibit 2
Service Contour Study:
Proposed vs Primary Operations
WHLP.L
Hanna, IN
BLED20010917AAC
Facility ID: 91345
Latitude: 41-26-09.10 N
Longitude: 086-50-48.10 W
ERP: 8.00 kW
Channel: 210B1 (89.9 MHz)
AMSL Height: 372.0 m
Pattern: Directional
W265CP.L
Buffalo, IN
BLFT20130524ADH
Facility ID: 140809
Latitude: 40-45-01.10 N
Longitude: 086-47-03 W
ERP: 0.027 kW
Channel: 265D (100.9 MHz)
AMSL Height: 292.0 m
Pattern: Omni
CH232D.P
Lafayette, IN
Proposed Operation
Facility ID: 140803
Latitude: 40-25-05.60 N
Longitude: 086-53-08 W
ERP: 0.25 kW
Channel: 232D (94.3 MHz)
AMSL Height: 226.0 m
Pattern: Directional
LaPorte
Porter
WHLP.L
Starke
Primary 60 dBμ F(50:50) Contour
Pulaski
Jasper
Translator 60 dBμ F(50:50) Contour
W265CP.L
White
Cass
Primary 38.5 dBμ F(50:50) Contour
Benton
Carroll
Proposed 60 dBμ F(50:50) Contour
CH232D.P
Translator 25.5 dBμ F(50:50) Contour
Warren
Clinton
Vermilion
Asher Broadcast Consulting LLC
justinasher@consultant.com
1 (202) 875-2986
Scale 1:650,000
km
0
8
16
24
V-Soft Communications LLC ® ©

ASR Registration Search

Registration 1222470

Map Registration

Exhibit 3
Copy of Existing Antenna Structure Registration
(public record copy)

Registration Detail

Reg Number	1222470	Status	Constructed
File Number	A1069276	Constructed	03/09/2001
EMI	No	Dismantled	
NEPA	No		

Antenna Structure

Structure Type: POLE - Any type of Pole

Location (in NAD83 Coordinates)

Lat/Long	40-25-05.6 N 086-53-08.0 W	Address	101 North Tenth Street
City, State	Lafayette , IN		
Zip	47901	County	TIPPECANOE
Center of AM Array		Position of Tower in Array	

Heights (meters)

Elevation of Site Above Mean Sea Level	Overall Height Above Ground (AGL)
172.0	60.7
Overall Height Above Mean Sea Level	**Overall Height Above Ground w/o Appurtenances**
232.7	59.4

Painting and Lighting Specifications

None

FAA Notification

FAA Study	00-AGL-2599-OE	FAA Issue Date	11/07/2000

Owner & Contact Information

FRN: 0002891919 — Owner Entity Type:

Owner

Metro Electronics Inc. d/b/a Communications Service Co.
101 N. 10th St.
Lafayette , IN 47901
P: (765)474-3776
F:
E:

Contact

Stevenson , David M
101 N. 10th St.
Lafayette , IN 47901
P: (765)474-3776
F:
E:

Last Action Status

Status	Constructed	Received	03/20/2017
Purpose	Notification	Entered	03/20/2017
Mode	Interactive		

Related Applications

03/20/2017	A1069276 - Notification (NT)
02/15/2002	A0247380 - Notification (NT)
02/09/2001	A0167797 - New (NE)

Comments

Comments

None

History

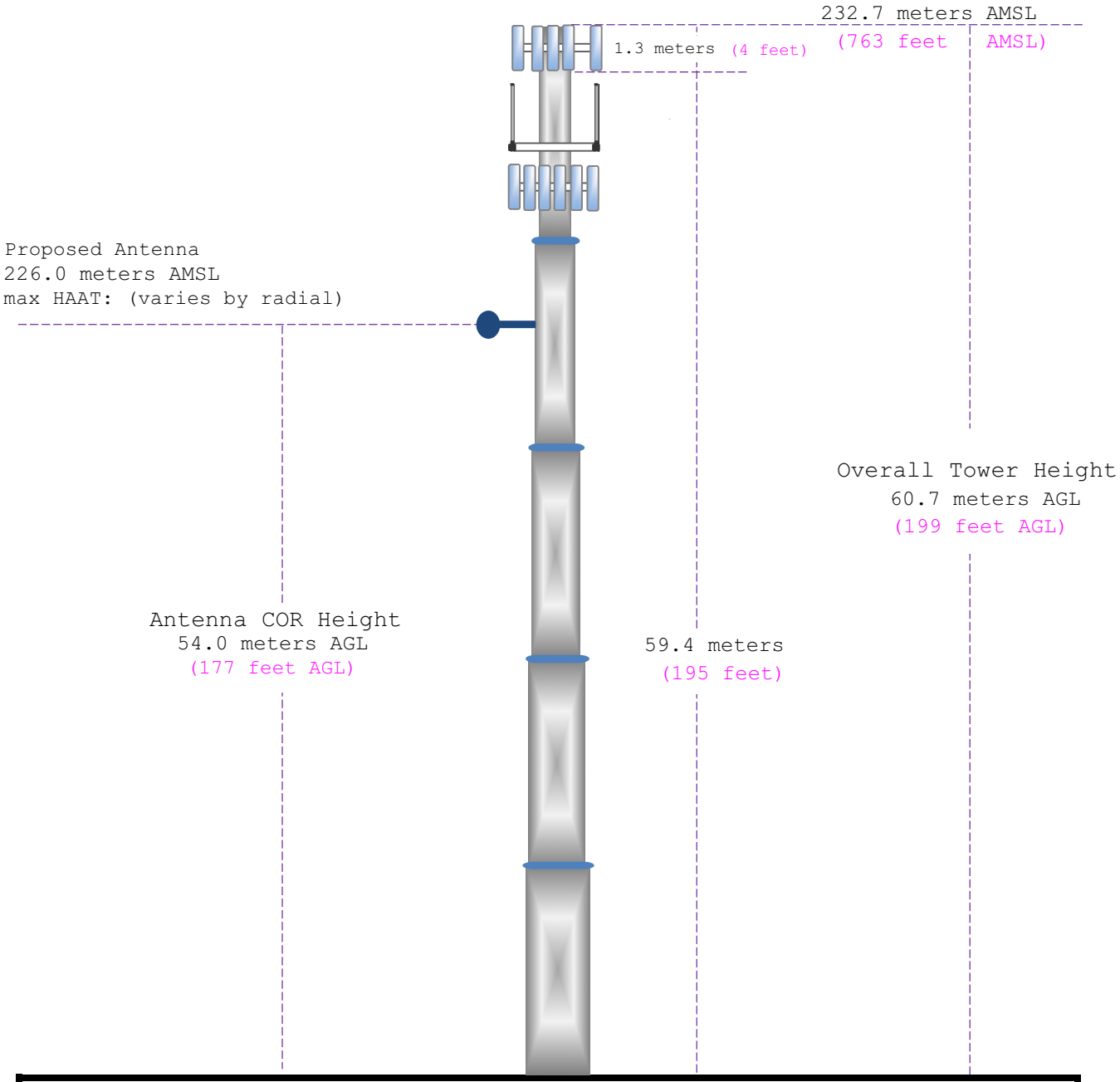
Date	Event
03/20/2017	Construction Notification Received
02/15/2002	Construction Notification Received
02/11/2002	Construction Reminder Letter Sent

All History (5)

Automated Letters

02/11/2002	Construction Reminder, Reference 200722
02/14/2001	Authorization, Reference 105313

Exhibit 4
Vertical Plan of Antenna System



Ground Elevation: 172.0 meters AMSL (564 feet AMSL)		
Address: 101 North Tenth Street **City:** Lafayette **County:** Tippecanoe **State:** Indiana	**Laitude (D M S)** ---- **Longitude (D M S)** ---- Lat/Long 40-25-05.6 N 086-53-08.0 W	(NAD 1927) (NAD 1983)
Antenna Structure Registration 1222470	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 (1983):

N. Lat. = 402505.6 W. Lng. = 865308.0
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	191.9	34.1	0.1702	-7.69	0.825	6.81
030	172.2	53.8	0.0801	-10.96	0.566	7.12
060	200.1	25.9	0.2500	-6.02	1.000	7.09
090	198.0	28.0	0.2500	-6.02	1.000	7.09
120	205.9	20.1	0.2500	-6.02	1.000	7.09
150	209.1	16.9	0.2500	-6.02	1.000	7.09
180	206.2	19.8	0.2500	-6.02	1.000	7.09
210	205.3	20.7	0.2500	-6.02	1.000	7.09
240	180.0	46.0	0.1201	-9.21	0.693	7.26
270	183.7	42.3	0.1201	-9.21	0.693	6.94
300	209.8	16.2	0.2500	-6.02	1.000	7.09
330	214.8	11.2	0.2500	-6.02	1.000	7.09

Ave El= 198.08 M HAAT= 27.92 M AMSL= 226.0

NAD 1983 to NAD 1927 Conversion:

Various Coordinate Conversion Calculations (NAD 1983):

Position Type	Lat Lon
Degrees Lat Long	40.4182222°, -086.8855556°
Degrees Minutes	40°25.09333', -086°53.13333'
Degrees Minutes Seconds	40°25'05.6000", -086°53'08.0000"
UTM	16T 509709mE 4474183mN
UTM centimeter	16T 509709.08mE 4474183.76mN
MGRS	16TEK0970974183
Grid North	0.1°
GARS	187LW12
Maidenhead	EN60NK30RI69
GEOREF	GJDL06862509

Exhibit 6
Tabulation of Proposed Allocation

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

CSN International

REFERENCE CH# 232D - 94.3 MHz, Pwr= 0.25 kW DA, HAAT= 28.0 M, COR= 226 M DISPLAY DATES
40 25 05.60 N. Average Protected F(50-50)= 7.09 km DATA 02-19-20
86 53 08.00 W. Standard Directional SEARCH 02-19-20

CH CALL / CITY	TYPE ANT / STATE	AZI <--	DIST / FILE #	LAT / LNG	PWR(kW) / HAAT(M)	INT(km) / COR(M)	PRO(km) / LICENSEE	*IN* (Overlap in km)	*OUT*
234B WFBQ Indianapolis	LIC ___ IN	134.8 315.2	82.23 BLH19980707KB	39 53 43.10 86 12 04.00	58.000 245	7.6 502	74.6 Capstar Tx, LLC	67.5	6.0
231B WGFA-FM Watseka	LIC ___ IL	299.9 119.4	84.40 BLH19970711KC	40 47 37.10 87 45 17.10	50.000 111	69.9 305	57.2 Iroquois County Broadcasti	7.4	13.0
233D W233BT Monticello	LIC ___ IN	13.0 193.1	37.90 BLFT20160419ABD	40 45 01.10 86 47 03.00	0.027	9.8 292	6.9 CSN International	20.9	20.6
232B1 WZOC Plymouth	LIC ___ IN	22.6 203.0	133.93 BLH20140124ALI	41 31 42.20 86 15 58.00	11.500 150	103.4 395	43.6 Wsjm, Inc.	23.6	62.6
232A WREB Greencastle	LIC ___ IN	180.4 0.4	84.23 BLH3278	39 39 38.10 86 53 34.00	3.000 49	53.3 285	13.2 The Original Company, Inc	23.9	47.3
235A WRHK Danville	LIC ___ IL	242.3 61.9	57.20 BLH19930415KA	40 10 40.10 87 28 55.10	6.000 100	3.0 295	31.2 Neuhoff Media Danville, LL	46.8	25.2
233B WLRW Champaign	LIC ___ IL	255.2 74.3	123.50 BLH20051107ABO	40 07 35.10 88 17 25.20	50.000 138	76.3 357	63.4 Saga Communications Of Ill	39.3	44.0
229A WFRR Walton	LIC ___ IN	60.1 240.6	68.98 BLH19951120KB	40 43 31.10 86 10 32.90	6.000 100	2.7 324	28.3 Christian Friends Broadcas	59.1	39.6
232D W232DM Indianapolis	CP D__ IN	142.1 322.5	97.34 BNPFT20171204ADJ	39 43 32.20 86 11 08.00	0.250	43.2 323	12.6 Continental Broadcast Grou	47.0	61.0
235D W235CU Logansport	LIC ___ IN	52.2 232.5	61.23 BLFT20170804AAP	40 45 17.10 86 18 41.00	0.250	1.1 286	11.0 Mid-America Radio Group, I	53.0	49.1
230B1 WNDX Lawrence	LIC N__ IN	130.2 310.8	101.13 BLH20120301AEG	39 49 39.10 85 58 50.90	8.400 140	3.6 393	42.8 Radio License Holding Src	90.4	56.8
232A WIFE-FM Rushville	LIC ___ IN	123.3 304.2	142.38 BMLH20000913AAR	39 42 22.20 85 29 40.90	1.050 171	72.8 462	24.4 Rodgers Broadcasting Corp.	62.5	94.2
232L1 WIWU-LP Marion	LIC ___ IN	83.3 264.1	103.74 BLL20071001AJP	40 31 15.10 85 39 58.90	0.100 25	281	Indiana Wesleyan Universit	78.1	74.4
285A WAXI Rockville	LIC ___ IN	204.7 24.5	84.43 BLH20160421AAO	39 43 38.10 87 17 56.10	1.700 134	18.8 317	12.7 Dlc Media, Inc.	9.5R	74.9M

Terrain database is NED 03 SEC , R= 73.215 qualifying spacings or FCC minimum Spacings in KM, M= Margin in KM
Contour distances are on direct line to and from reference station. 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)
« = Station meets FCC minimum distance spacing for its class.
< = Contour Overlap

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

CSN International

FMCommander Single Allocation Study - 02-19-2020 - NED 03 SEC
CH232D.P's Overlaps (In= 67.54 km, Out= 6.01 km)

CH232D.P CH 232 D DA
Lat= 40 25 05.60, Lng= 86 53 08.00
0.25 kW 28 m HAAT, 226 m COR
Prot.= 60 dBu, Intef.= 94 dBu

WFBQ CH 234 B BLH19980707KB
Lat= 39 53 43.10, Lng= 86 12 04.00
58.0 kW 245 m HAAT, 502 m COR
Prot.= 54 dBu, Intef.= 100 dBu

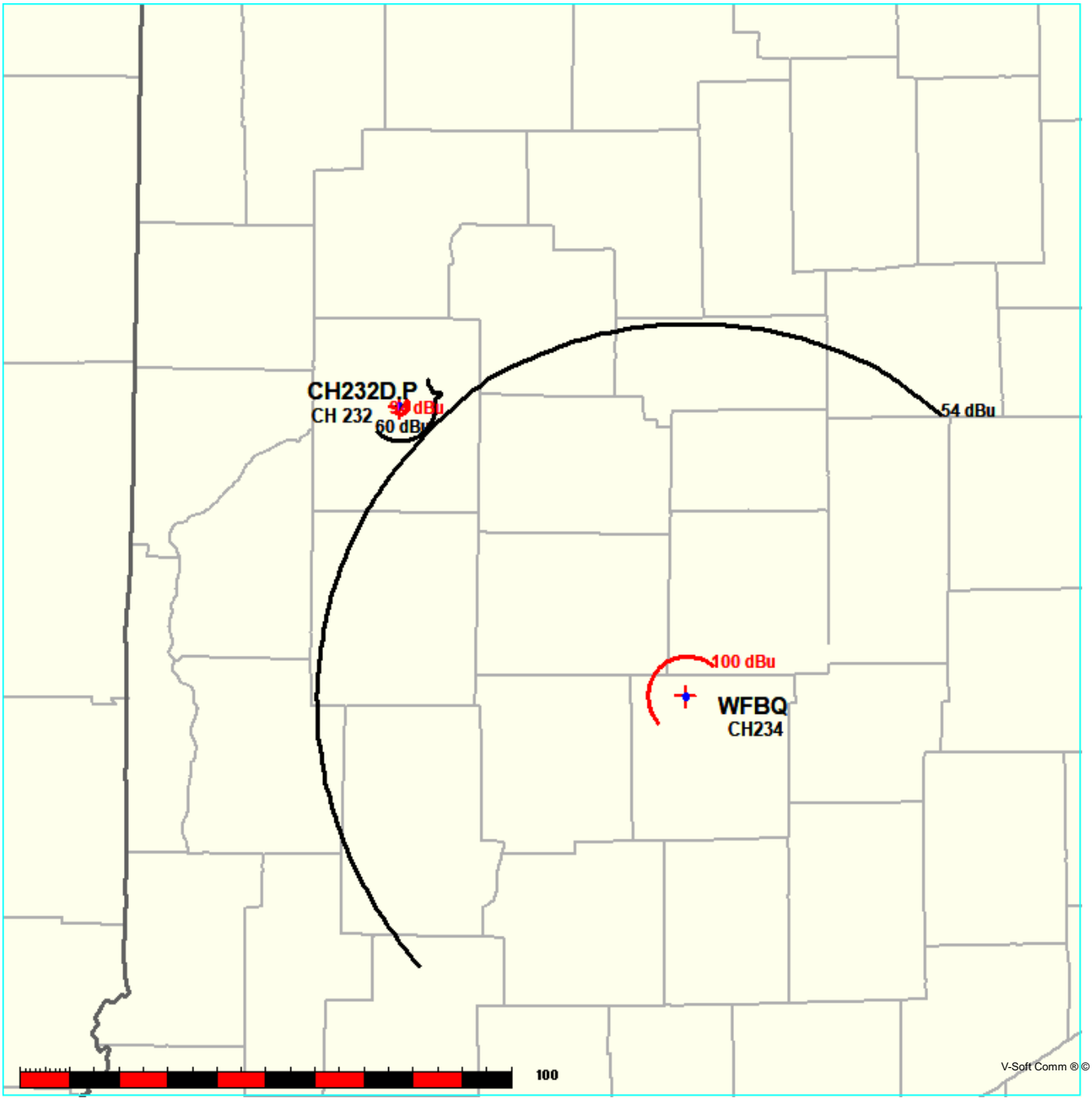

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Exhibit 7b
Contour Protection Studies Toward Select Allocation Concern(s)

CSN International

FMCommander Single Allocation Study - 02-19-2020 - NED 03 SEC
CH232D.P's Overlaps (In= 7.4 km, Out= 13.05 km)

CH232D.P CH 232 D DA
Lat= 40 25 05.60, Lng= 86 53 08.00
0.25 kW 28 m HAAT, 226 m COR
Prot.= 60 dBu, Intef.= 48 dBu

WGFA-FM CH 231 B BLH19970711KC
Lat= 40 47 37.10, Lng= 87 45 17.10
50.0 kW 111 m HAAT, 305 m COR
Prot.= 54 dBu, Intef.= 54 dBu

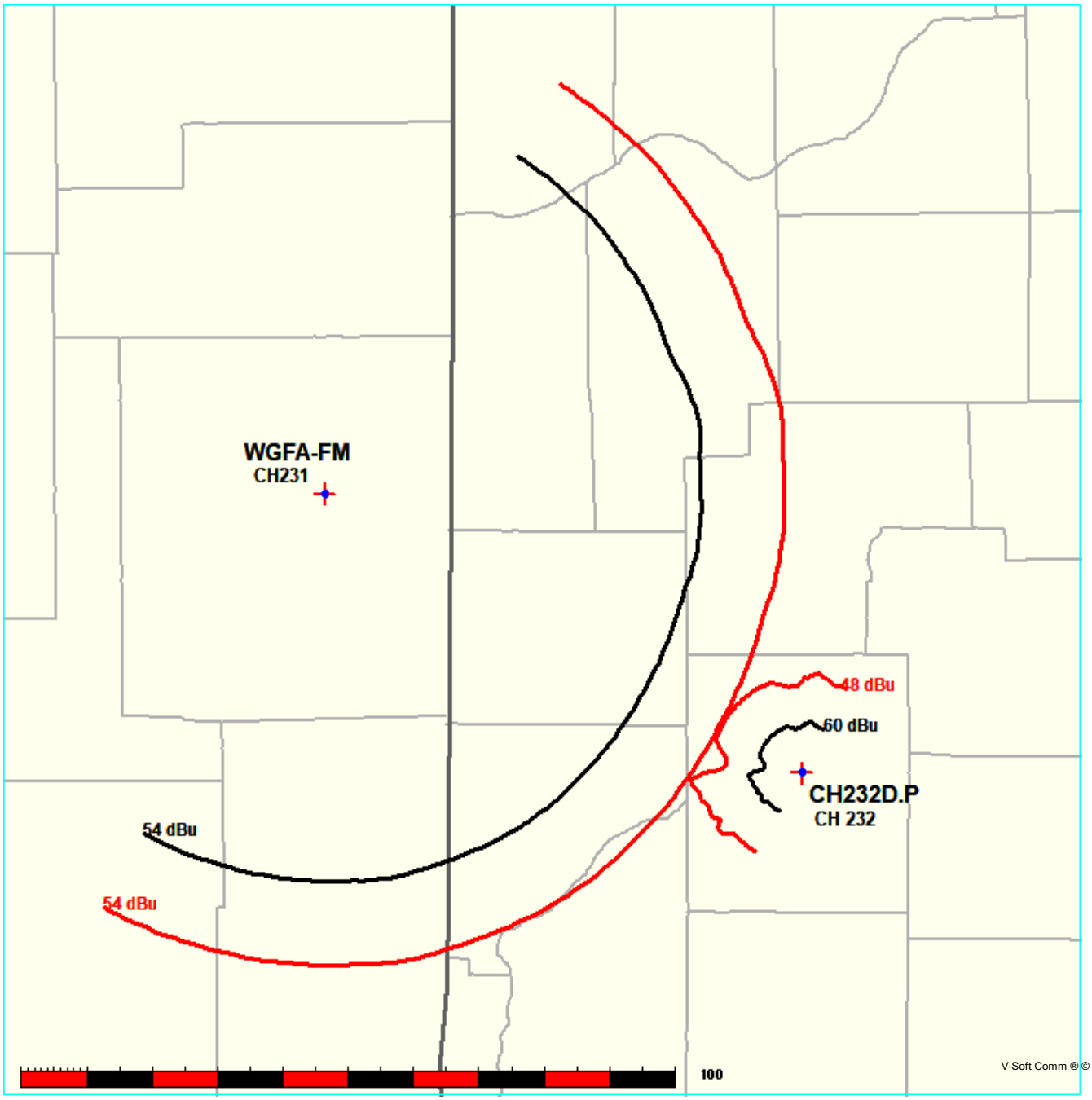

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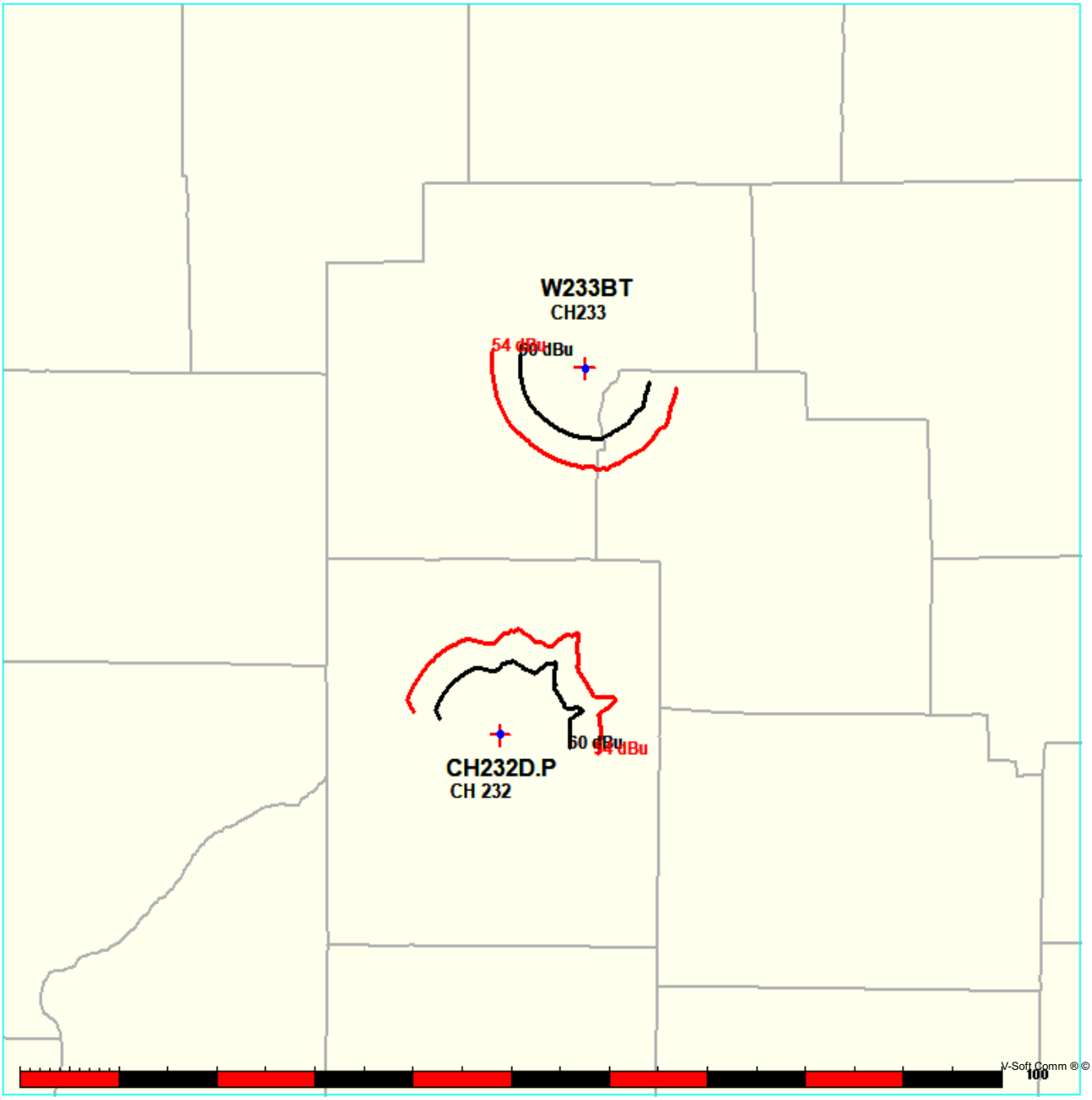
Exhibit 7c
Contour Protection Studies Toward Select Allocation Concern(s)

CSN International

FMCommander Single Allocation Study - 02-19-2020 - NED 03 SEC
CH232D.P's Overlaps (In= 20.86 km, Out= 20.6 km)

CH232D.P CH 232 D DA
Lat= 40 25 05.60, Lng= 86 53 08.00
0.25 kW 28 m HAAT, 226 m COR
Prot.= 60 dBu, Intef.= 54 dBu

W233BT CH 233 D BLFT20160419ABD
Lat= 40 45 01.10, Lng= 86 47 03.00
0.027 kW 0 m HAAT, 292 m COR
Prot.= 60 dBu, Intef.= 54 dBu



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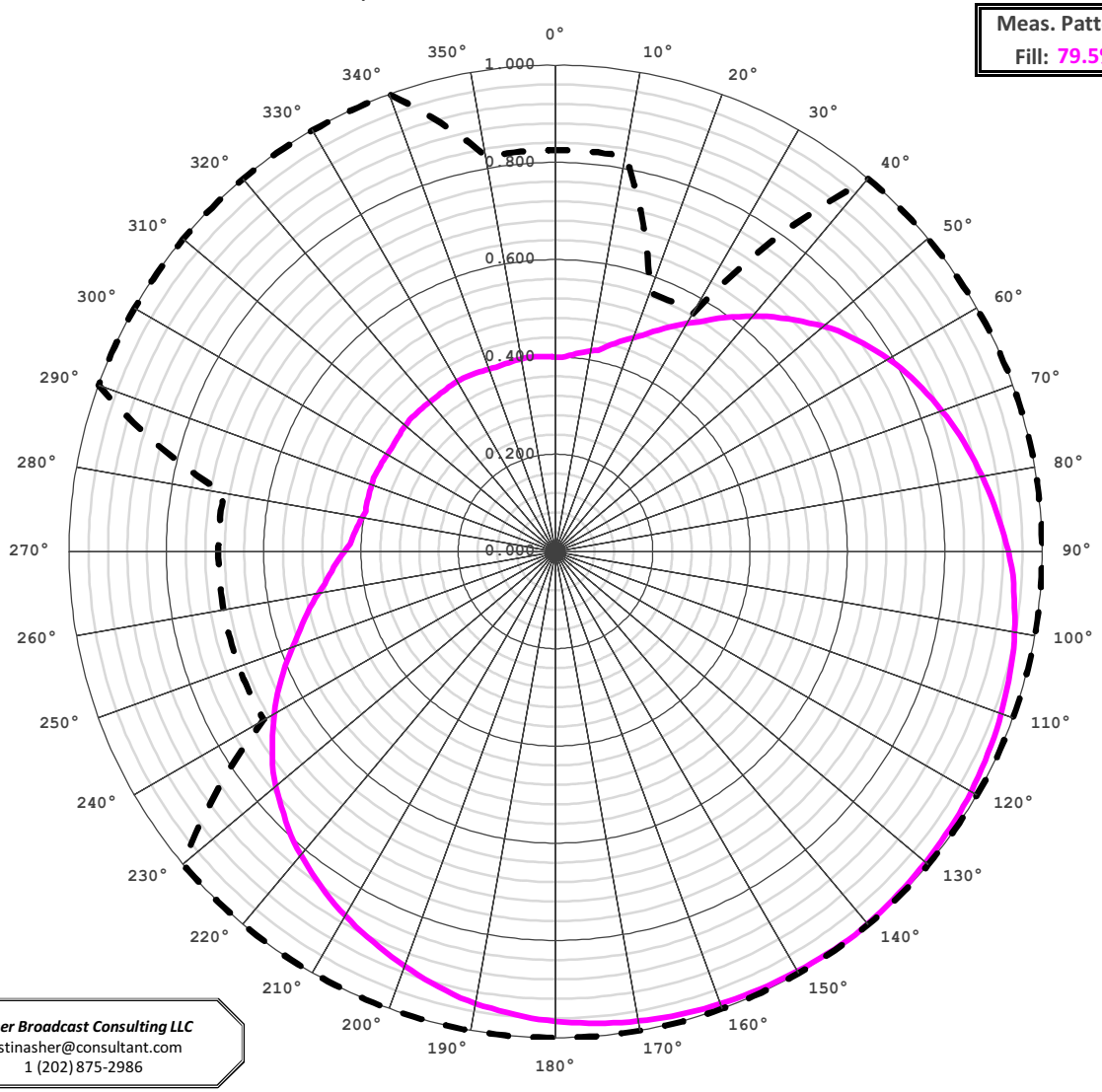
Manufacturer's	Make/Model	Orientation	Power
Element 1:	BKG1/P(Slant45)	142° True	100.0%
Element 2:			
Element 3:			
Element 4:			
	Composite Power:		100%

Exhibit 8 - Copy of Manufacturer's Directional Antenna Pattern Data

Meas. Pattern Fill: 79.5%



Azimuth ° True	FCC Pattern	Manufacturer's Pattern
0°	0.825	0.400
10°	0.825	0.418
20°	0.566	0.468
30°	0.566	0.541
40°	1.000	0.631
50°	1.000	0.720
60°	1.000	0.791
70°	1.000	0.846
80°	1.000	0.890
90°	1.000	0.931
100°	1.000	0.958
110°	1.000	0.975
120°	1.000	0.987
130°	1.000	0.994
140°	1.000	0.999
150°	1.000	0.996
160°	1.000	0.990
170°	1.000	0.980
180°	1.000	0.966
190°	1.000	0.944
200°	1.000	0.907
210°	1.000	0.865
220°	1.000	0.814
230°	1.000	0.750
240°	0.693	0.667
250°	0.693	0.576
260°	0.693	0.495
270°	0.693	0.434
280°	0.693	0.404
290°	1.000	0.402
300°	1.000	0.399
310°	1.000	0.403
320°	1.000	0.402
330°	1.000	0.403
340°	1.000	0.399
350°	0.825	0.402

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

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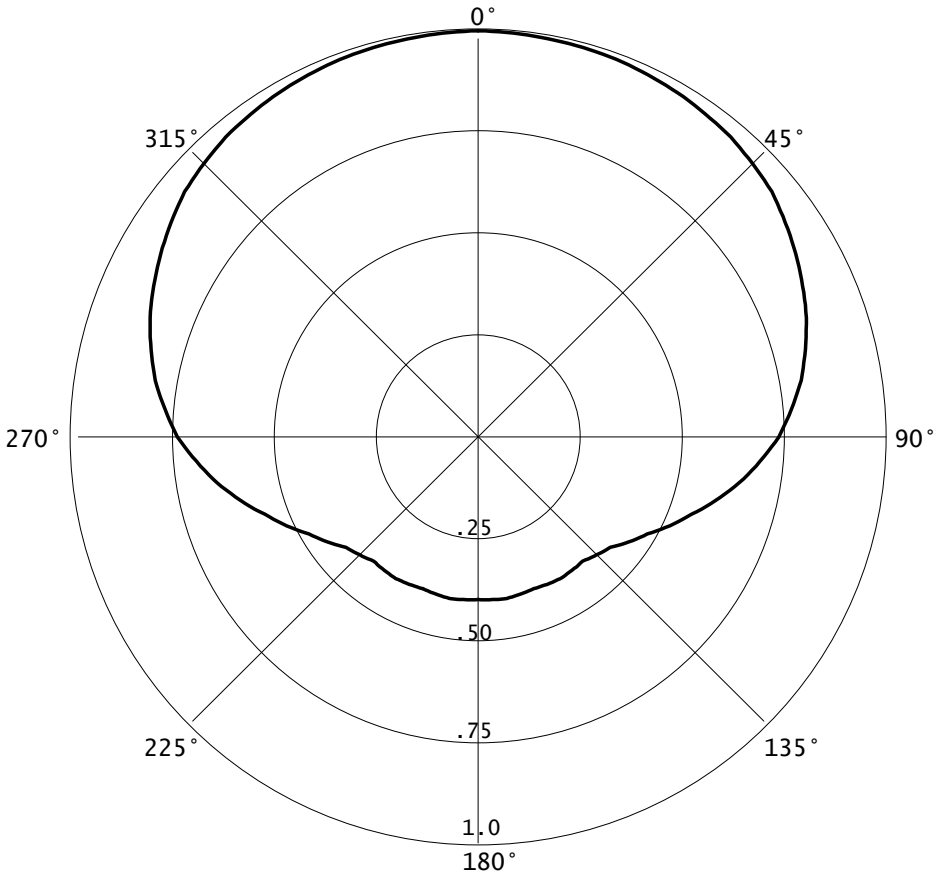
Exhibit 8
Copy of Manufacturer's Directional Antenna Documentation
(Actual Antenna Pattern rotated to 142.0°T) *(public record copy)*

BKG1/P-1DA(Slant45)
COMPOSITE PATTERN

RMS(V)= .739

Azi	Field	dBk
000	1.000	-10.000
010	0.995	-10.044
020	0.989	-10.096
030	0.978	-10.193
040	0.963	-10.327
050	0.939	-10.547
060	0.899	-10.925
070	0.856	-11.351
080	0.804	-11.895
090	0.737	-12.651
100	0.650	-13.742
110	0.557	-15.083
120	0.479	-16.393
130	0.423	-17.473
140	0.399	-17.981
150	0.403	-17.894
160	0.398	-18.002
170	0.404	-17.872
180	0.401	-17.937
190	0.404	-17.872
200	0.398	-18.002
210	0.403	-17.894
220	0.399	-17.981
230	0.423	-17.473
240	0.479	-16.393
250	0.557	-15.083
260	0.650	-13.742
270	0.737	-12.651
280	0.804	-11.895
290	0.856	-11.351
300	0.899	-10.925
310	0.939	-10.547
320	0.963	-10.327
330	0.978	-10.193
340	0.989	-10.096
350	0.995	-10.044



The directional antenna pattern will be produced by means of a Nicom Dipole BKG1/P broadcast element mounted at a 45° (degree) slant orientation to achieve horizontal and vertical polarization. The BKG1/P-1DA(Slant45) Directional Pattern is therefore a maximum composite pattern of the current horizontal and vertical broadcast patterns as notified by Nicom USA, Inc.

The maximum antenna gain for a single BKG1/P-1DA(Slant45) element will be -3.0 dBd or the common horizontal or vertical maximum antenna gain of 0.0 dBd adjusted by 3 dBd for dual broadcast in the Horizontal and Vertical planes (-3.0 dBd = 0.0 dBd - 3.0 dBd). The maximum gain for multiple bay options of the Nicom BKG1/P-_DA(Slant45) antenna would therefore also be adjusted by -3 dBd to account for operation in the horizontal and vertical planes.

The antenna proposed in this application will be mounted in accordance with specific instructions provided by the antenna manufacturer. The directional antenna will be mounted on the tower which is of uniform cross section. No other antennas of any type are or will be mounted on the same tower level as the directional antenna.

No antenna is or will be mounted within any vertical or horizontal distance specified by the antenna manufacturer as being necessary for proper operation of the directional antenna. In addition, the antenna will be assembled under the supervision of a qualified engineer and installed pursuant to the manufacturer's instructions and manufacturer specified antenna orientation.

Exhibit 8
Copy of Manufacturer's Directional Antenna Documentation
(Actual Antenna Pattern rotated to 142.0°T) *(public record copy)*

NiCOM Your Number 1 Source For Radio And Digital TV Gear

BKG1/P

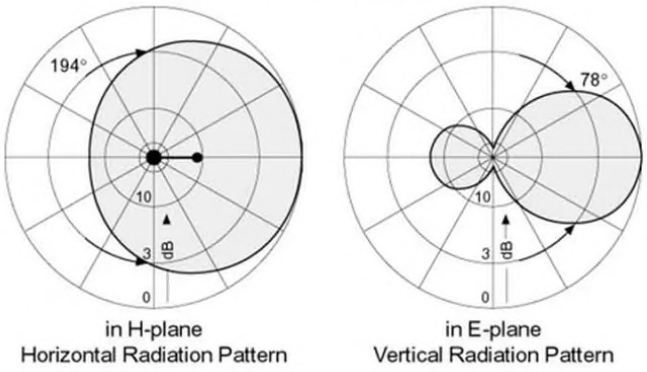
Medium PowerPortable Broadband FM Dipole

This broadband dipole antenna is constructed of stainless steel and is designed to last a long time in any weather condition. Because of its sturdy construction, it can support up to 2.5 KW of input power with the appropriate connector. Since it has a wide angle of radiation, it is strongly recommended for omni-directional arrays. Due to the fact that it is easily disassembled and reassembled, it can be placed in a compact container making it very portable and inexpensive to ship.

TECHNICAL SPECIFICATIONS

Antenna Type: dipole
Front-to-Back Ratio: 7 dB
Frequency Range: 87.5 - 108 MHz
Polarization: vertical
Gain: 0 dBd (unity gain)
Bandwidth: 20 MHz Max
VSWR: < 1.3
H Plane: 194 degrees
V Plane: 78 degrees
Impedance: 50 Ohms
Connectors: N type (1 kw) - 7/8 type (2 kw)
Power Rating: 2000 Watts max.
Wind Load: 39.6 Lbs (18 kg)
Wind Velocity: 119 mph (190 km/h)
Wind Surface: 1.2 ft2 (0.11 m2)
Lightning Protection: all parts grounded
Material: (external) stainless steel
Mounting: from 2" to 4"
Weight: 18 Lbs (8.1kg)
Average Dimensions: 50"×30"×2"
Packing: 46"×22"×4"

Radiation Patterns (at mid-band)



in H-plane
Horizontal Radiation Pattern

in E-plane
Vertical Radiation Pattern

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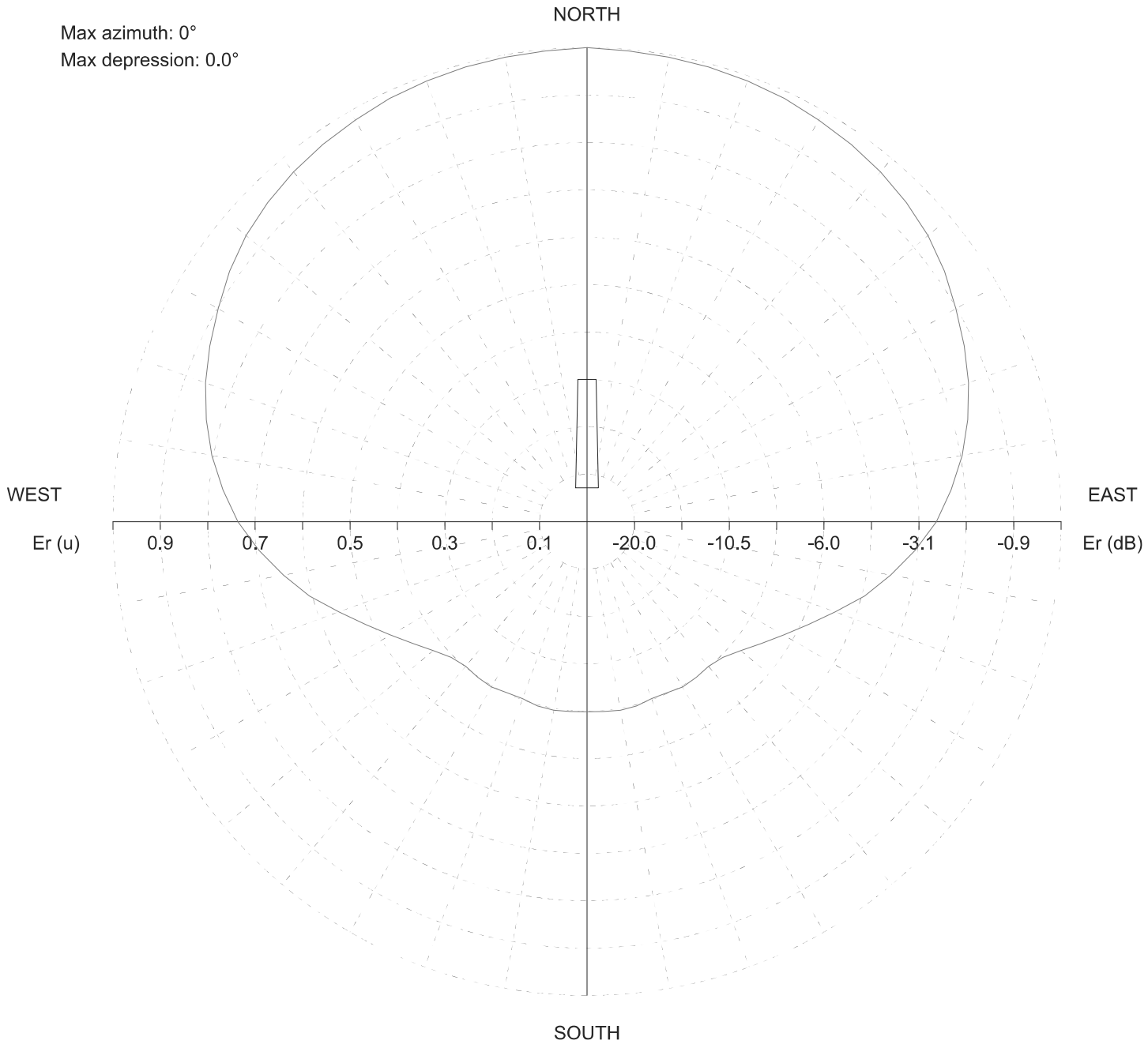
(Actual Antenna Pattern rotated to 142.0°T) ***(public record copy)***

TX station: BKG1/P

Site name:

Frequency: 100.00 MHz

Horizontal diagram of Maxima



0.0° depres. (Total antenna), Gain (dBd): 0.00 ERP T.max (KW): 1. ERP E.max (KW): 0.776

NicomUsa, Inc

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TX station: BKG1/P

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	100.0	776.2	120.0	0.0	47.9	178.0	240.0	0.0	47.9	178.0
5.0	0.0	99.7	772.1	125.0	0.0	44.8	156.0	245.0	0.0	51.5	205.9
10.0	0.0	99.5	768.1	130.0	0.0	42.3	139.1	250.0	0.0	55.7	240.8
15.0	0.0	99.3	765.7	135.0	0.0	40.5	127.4	255.0	0.0	60.6	285.0
20.0	0.0	98.9	759.7	140.0	0.0	39.9	123.3	260.0	0.0	65.0	328.3
25.0	0.0	98.5	753.4	145.0	0.0	40.1	125.1	265.0	0.0	69.5	374.7
30.0	0.0	97.8	743.2	150.0	0.0	40.3	126.0	270.0	0.0	73.7	421.3
35.0	0.0	97.2	733.2	155.0	0.0	39.9	123.5	275.0	0.0	77.1	461.6
40.0	0.0	96.3	720.1	160.0	0.0	39.8	122.8	280.0	0.0	80.4	501.4
45.0	0.0	95.2	703.9	165.0	0.0	40.3	126.1	285.0	0.0	83.2	536.8
50.0	0.0	93.9	684.4	170.0	0.0	40.4	126.9	290.0	0.0	85.6	569.2
55.0	0.0	92.1	658.3	175.0	0.0	40.3	125.8	295.0	0.0	87.8	598.3
60.0	0.0	89.9	627.1	180.0	0.0	40.1	125.0	300.0	0.0	89.9	627.1
65.0	0.0	87.8	598.3	185.0	0.0	40.3	125.8	305.0	0.0	92.1	658.3
70.0	0.0	85.6	569.2	190.0	0.0	40.4	126.9	310.0	0.0	93.9	684.4
75.0	0.0	83.2	536.8	195.0	0.0	40.3	126.1	315.0	0.0	95.2	703.9
80.0	0.0	80.4	501.4	200.0	0.0	39.8	122.8	320.0	0.0	96.3	720.1
85.0	0.0	77.1	461.6	205.0	0.0	39.9	123.5	325.0	0.0	97.2	733.2
90.0	0.0	73.7	421.3	210.0	0.0	40.3	126.0	330.0	0.0	97.8	743.2
95.0	0.0	69.5	374.7	215.0	0.0	40.1	125.1	335.0	0.0	98.5	753.4
100.0	0.0	65.0	328.3	220.0	0.0	39.9	123.3	340.0	0.0	98.9	759.7
105.0	0.0	60.6	285.0	225.0	0.0	40.5	127.4	345.0	0.0	99.3	765.7
110.0	0.0	55.7	240.8	230.0	0.0	42.3	139.1	350.0	0.0	99.5	768.1
115.0	0.0	51.5	205.9	235.0	0.0	44.8	156.0	355.0	0.0	99.7	772.1

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Copy of Manufacturer's Directional Antenna Documentation
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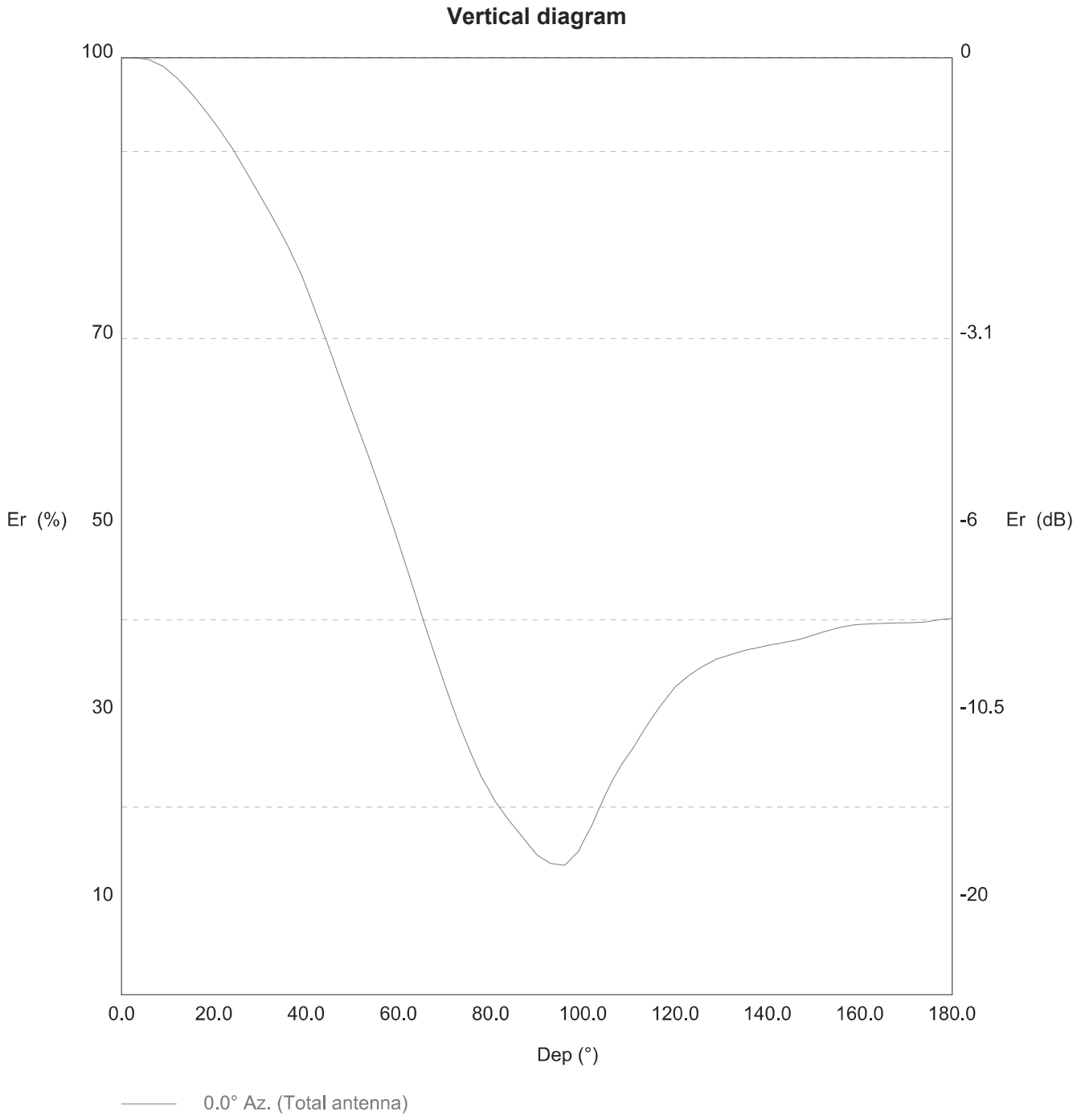
TX station: BKG1/P

Site name:

Frequency: 100.00 MHz



NicomUsa, Inc

Exhibit 8
Copy of Manufacturer's Directional Antenna Documentation
(Actual Antenna Pattern rotated to 142.0°T) *(public record copy)*

TX station: BKG1/P

Site name:

Frequency: 100.00 MHz

Vertical diagram at an azimuth of 0° degrees

Dep (°)	Er (%)	ERP (W)	Dep (°)	Er (%)	ERP (W)	Dep (°)	Er (%)	ERP (W)
0.0	100.0	776.2	60.0	48.3	180.9	120.0	32.8	83.6
1.0	100.0	776.1	61.0	46.8	169.7	121.0	33.2	85.8
2.0	100.0	775.9	62.0	45.2	158.9	122.0	33.7	88.0
3.0	100.0	775.7	63.0	43.7	148.5	123.0	34.1	90.2
4.0	99.9	774.8	64.0	42.2	138.1	124.0	34.4	91.9
5.0	99.8	773.8	65.0	40.6	128.0	125.0	34.7	93.6
6.0	99.8	772.9	66.0	39.1	118.4	126.0	35.0	95.3
7.0	99.5	769.2	67.0	37.6	109.6	127.0	35.3	96.8
8.0	99.3	765.6	68.0	36.1	101.1	128.0	35.6	98.2
9.0	99.1	762.0	69.0	34.6	92.9	129.0	35.8	99.6
10.0	98.7	755.7	70.0	33.2	85.4	130.0	36.0	100.4
11.0	98.3	749.5	71.0	31.7	78.1	131.0	36.1	101.3
12.0	97.9	743.2	72.0	30.3	71.2	132.0	36.3	102.1
13.0	97.3	735.2	73.0	29.0	65.4	133.0	36.4	103.0
14.0	96.8	727.2	74.0	27.8	59.9	134.0	36.6	103.8
15.0	96.3	719.2	75.0	26.5	54.6	135.0	36.7	104.7
16.0	95.7	710.3	76.0	25.4	50.1	136.0	36.8	105.3
17.0	95.1	701.4	77.0	24.3	45.8	137.0	36.9	105.9
18.0	94.5	692.6	78.0	23.2	41.7	138.0	37.0	106.5
19.0	93.8	683.0	79.0	22.3	38.7	139.0	37.1	107.1
20.0	93.1	673.5	80.0	21.5	35.8	140.0	37.2	107.7
21.0	92.5	664.1	81.0	20.6	33.1	141.0	37.3	108.2
22.0	91.8	653.7	82.0	19.9	30.9	142.0	37.4	108.8
23.0	91.0	643.4	83.0	19.2	28.8	143.0	37.5	109.3
24.0	90.3	633.1	84.0	18.6	26.7	144.0	37.6	109.8
25.0	89.5	621.6	85.0	17.9	25.0	145.0	37.7	110.4
26.0	88.7	610.3	86.0	17.3	23.4	146.0	37.8	111.0
27.0	87.8	599.0	87.0	16.7	21.8	147.0	37.9	111.6
28.0	87.0	587.3	88.0	16.1	20.2	148.0	38.1	112.5
29.0	86.1	575.7	89.0	15.5	18.7	149.0	38.2	113.4
30.0	85.3	564.3	90.0	14.9	17.3	150.0	38.4	114.2
31.0	84.4	552.9	91.0	14.6	16.5	151.0	38.5	115.2
32.0	83.5	541.7	92.0	14.3	15.8	152.0	38.7	116.1
33.0	82.7	530.6	93.0	14.0	15.2	153.0	38.8	117.1
34.0	81.7	518.8	94.0	13.9	15.0	154.0	39.0	117.9
35.0	80.8	507.1	95.0	13.9	14.9	155.0	39.1	118.6
36.0	79.9	495.6	96.0	13.8	14.8	156.0	39.2	119.4
37.0	78.9	482.9	97.0	14.3	15.9	157.0	39.3	119.9
38.0	77.8	470.4	98.0	14.8	17.0	158.0	39.4	120.4
39.0	76.8	458.0	99.0	15.3	18.1	159.0	39.5	120.9
40.0	75.5	442.7	100.0	16.2	20.5	160.0	39.5	121.1
41.0	74.2	427.7	101.0	17.2	23.0	161.0	39.5	121.3
42.0	72.9	412.9	102.0	18.1	25.5	162.0	39.5	121.4
43.0	71.6	398.0	103.0	19.3	28.8	163.0	39.6	121.6
44.0	70.3	383.3	104.0	20.4	32.3	164.0	39.6	121.7
45.0	68.9	368.9	105.0	21.5	35.9	165.0	39.6	121.9
46.0	67.5	354.2	106.0	22.4	39.1	166.0	39.6	122.0
47.0	66.2	339.7	107.0	23.4	42.4	167.0	39.6	122.0
48.0	64.8	325.5	108.0	24.3	45.8	168.0	39.7	122.1
49.0	63.4	312.3	109.0	25.0	48.5	169.0	39.7	122.1
50.0	62.1	299.4	110.0	25.7	51.3	170.0	39.7	122.2
51.0	60.8	286.8	111.0	26.4	54.2	171.0	39.7	122.2
52.0	59.5	274.4	112.0	27.2	57.6	172.0	39.7	122.4
53.0	58.1	262.3	113.0	28.1	61.1	173.0	39.7	122.5
54.0	56.8	250.4	114.0	28.9	64.6	174.0	39.8	122.7
55.0	55.4	238.3	115.0	29.6	67.9	175.0	39.8	123.2
56.0	54.0	226.6	116.0	30.3	71.1	176.0	39.9	123.7
57.0	52.6	215.1	117.0	31.0	74.4	177.0	40.0	124.2
58.0	51.2	203.3	118.0	31.6	77.5	178.0	40.0	124.5
59.0	49.7	191.9	119.0	32.2	80.5	179.0	40.1	124.7