

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

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

for

*W298CA.L - Greenfield, MA
(Facility ID: 25008)*

The applicant would like to note a request for 47 C.F.R. Section 73.3517 Contingent Processing toward WKVB(FM) - Westborough, MA (FAC ID: 74467) License(s) LMS-0000111585 and BLH-20051019ABP. The WKVB(FM) LMS-0000111585 and BLH-20051019ABP License(s) need not be protected in lieu of protection of granted WKVB(FM) Construction Permit LMS-0000112864. Therefore, the applicant requests a grant of this instant application be conditioned that the applicant may not commence operation with the facilities requested herein until WKVB(FM) (Facility ID: 74467) commences operation on channel 297B1 with the facilities authorized in LMS-0000112864; and a license will not be granted for the facilities requested herein until a license is granted for WKVB(FM) on channel 297B1 with the facilities authorized in LMS-0000112864.

*as a
Commercial, Fill-In
AM Translator for
WHMQ(AM) - Greenfield, MA*

June, 2020

Table of Contents

Table of Contents

Explanation of Technical Report

Exhibit 1 - Service Contour Study: Present vs Proposed Operations

Exhibit 2 - Service Contour Study: Proposed vs Primary Operations

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

Exhibit 4 - Vertical Plan of Antenna System

Exhibit 5 - HAAT Calculation & Miscellaneous Coordinate Information

Exhibit 6 - Tabulation of Proposed Allocation

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

Exhibit 8 - Manufacturer's Directional Antenna Pattern Documentation

Supplemental Appendix(s):

RF Appendix 1 - Radio Frequency Radiation Compliance Showing

Explanation of Technical Report

1

EXPLANATION OF PROPOSAL: This LMS Schedule 349 Filing and accompanying technical report supports a Minor Change in Licensed Facility Construction Permit Application for FM Translator W298CA.L - Greenfield, MA (Facility ID: 25008); License Number BLFT-20160608HSV. *W298CA.L also holds granted Construction Permit BMPFT-20171101ABZ. However, as this permit will expire on 07/28/2020; the applicant will separately request a voluntary dismissal of BMPFT-20171101ABZ and file this instant application as an original Minor Change in Licensed Facility Construction Permit Application request.* This filing requests a change in site location and new directional antenna pattern. Continued operation on CH298D (107.5 MHz) with a power of 0.060 kW ERP circular polarization (H&V) is requested. The FM Translator will operate from a COR of 308.3 meters AMSL at a new site location. This filing will continue to specify rebroadcast of Class C, AM Primary Station WHMQ(AM) - Greenfield, MA (1240 kHz); Facility ID No. 25834. The Translator will remain licensed to the current community of Greenfield, MA.

The applicant would like to note a request for 47 C.F.R. Section 73.3517 Contingent Processing toward WKVB(FM) - Westborough, MA (FAC ID: 74467) License(s) LMS-0000111585 and BLH-20051019ABP. The WKVB(FM) LMS-0000111585 and BLH-20051019ABP License(s) need not be protected in lieu of protection of granted WKVB(FM) Construction Permit LMS-0000112864. Therefore, the applicant requests a grant of this instant application be conditioned that the applicant may not commence operation with the facilities requested herein until WKVB(FM) (Facility ID: 74467) commences operation on channel 297B1 with the facilities authorized in LMS-0000112864; and a license will not be granted for the facilities requested herein until a license is granted for WKVB(FM) on channel 297B1 with the facilities authorized in LMS-0000112864.

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**.

The proposed facility will be located on an existing 59 meter AGL 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 FCC 30 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**.

Explanation of Technical Report

2

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 the above noted 47 C.F.R. Section 73.3517 Contingent Processing Request toward WKVB(FM) - Westborough, MA (FAC ID: 74467) License(s) LMS-0000111585 and BLH-20051019ABP. A general allocation study for this proposal is found in **Exhibit 6**. There are two (2) 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-b)**. It is believed sufficient clearance exists precluding the need for additional contour protection showings. A copy of the antenna manufacturer's directional antenna pattern specifications has been included in **Exhibit 8**.

Regarding protection of international concerns, the facility is and will remain within 320 km from the common border between the United States and Canada. However full protection will be afforded all Canadian concerns as noted in **Exhibit 6**.

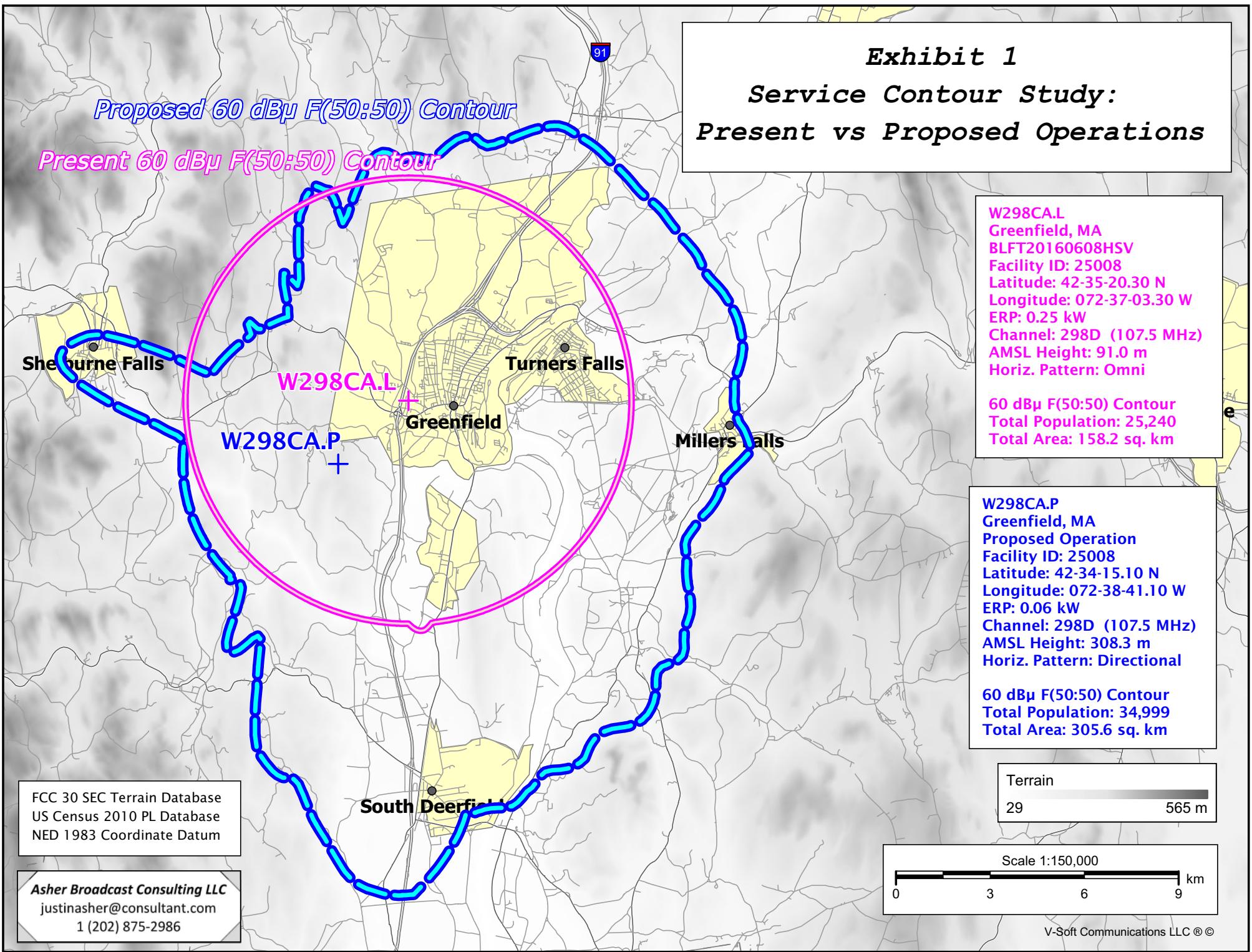
ENVIRONMENTAL COMPLIANCE SHOWINGS: The proposed facility complies with the maximum permissible radiofrequency electromagnetic exposure limits for controlled and uncontrolled environments as set forth under §1.1310 and/or §1.1307(b)(3) of the Commission's rules and the guidelines for RF radiation protection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

Exhibit 1
Service Contour Study:
Present vs Proposed Operations



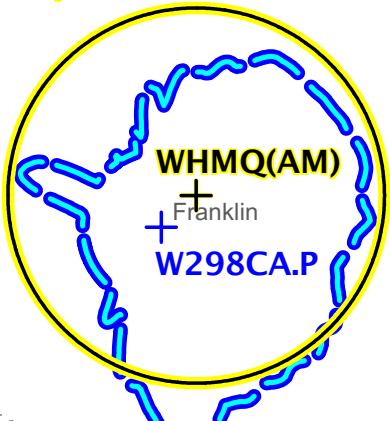
hington

Windham

25 mile Radius from AM Site

Exhibit 2
Service Contour Study:
Proposed vs Primary Operations

Primary 2 mV/m Daytime Contour



Proposed 60 dB_μ F(50:50) Contour

Hampshire

WHMQ(AM) - 1240 kHz
Greenfield, Massachusetts
Station Class: C
Region 2 Class: C
Facility ID: 25834
File Number: BML-20191028ACR
42-35-19.7 N 72-37-05.4 W (NAD 27)
42-35-20.0 N 72-37-03.7 W (NAD 83)
Power: 1 kW, Non-Directional
Hours: Daytime
Pattern Type: Theoretical
Towers: 1 Augmentations: 0
Tower Elec Height: 68.1 Deg; 45.73 m
RMS Theoretical: 292.9 mV/meter

W298CA.P
Greenfield, MA
Proposed Operation
Facility ID: 25008
Latitude: 42-34-15.10 N
Longitude: 072-38-41.10 W
ERP: 0.06 kW
Channel: 298D (107.5 MHz)
AMSL Height: 308.3 m
Horiz. Pattern: Directional

Worcester

FCC 30 SEC Terrain Database
US Census 2010 PL Database
NAD 1983 Coordinate Datum

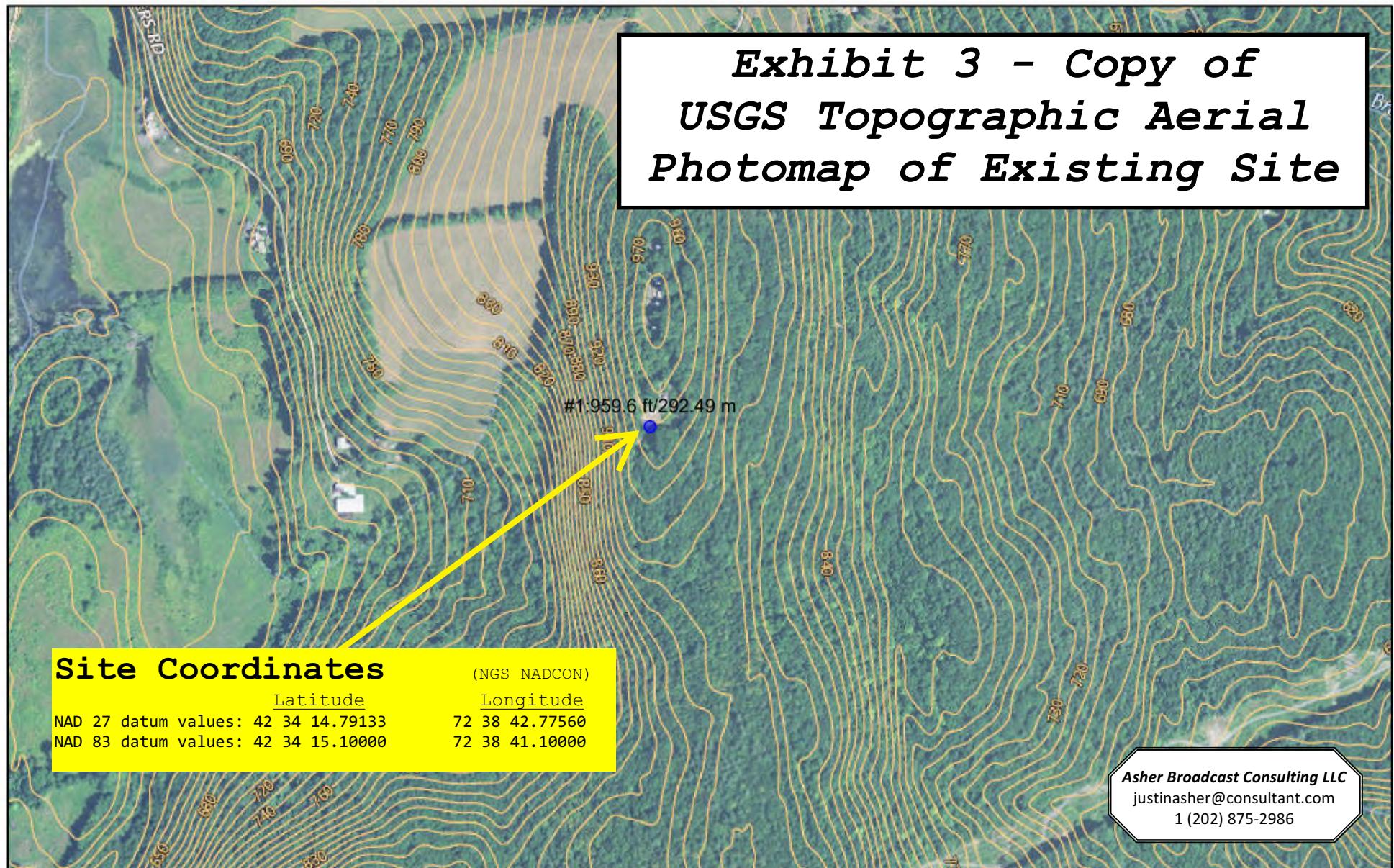
Scale 1:475,000
0 6 12 18 km

V-Soft Communications LLC ® ©

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

The National Map Advanced Viewer

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

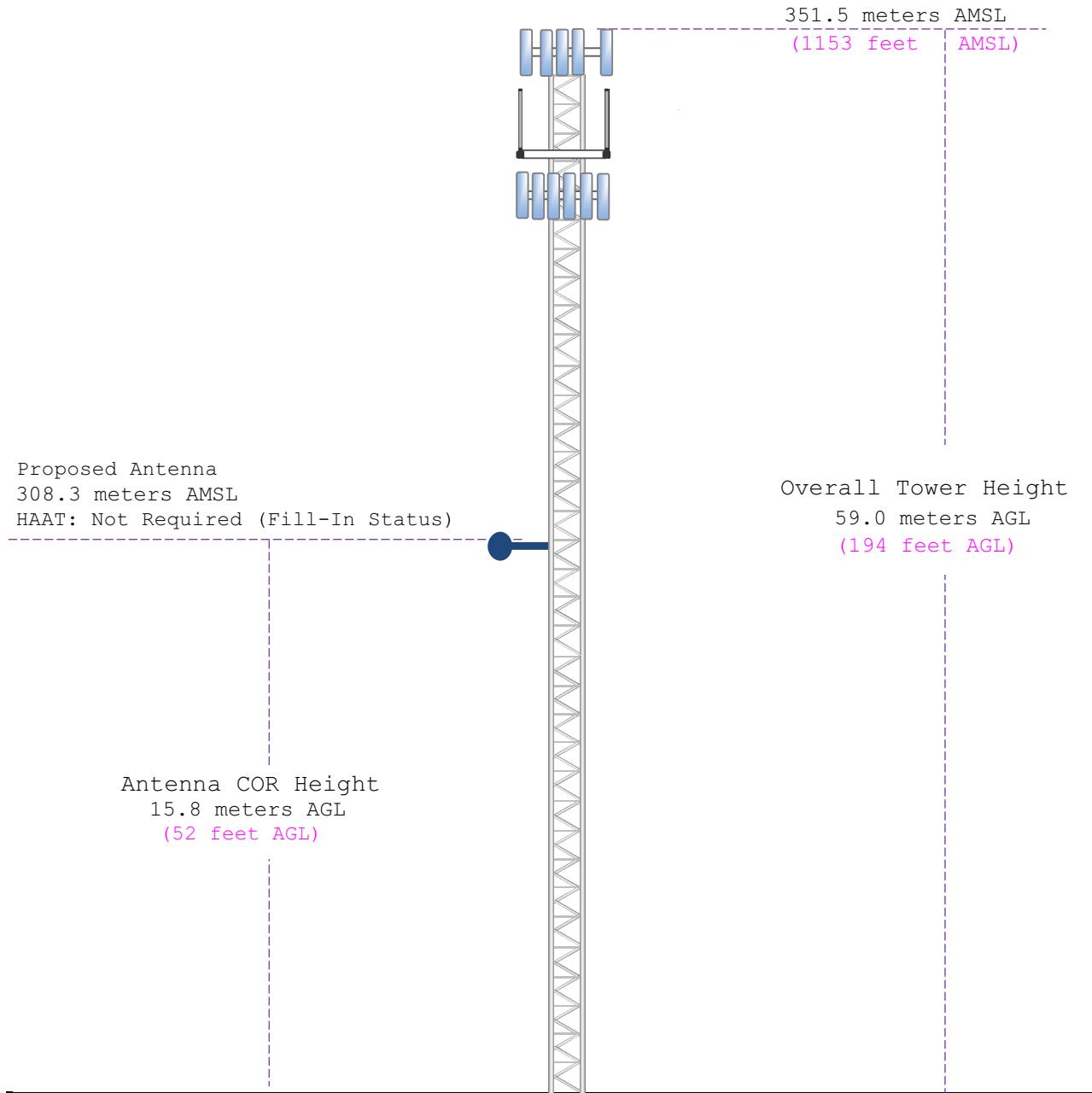


1:9,028

0 0.05 0.1 0.2 mi
0 0.07 0.15 0.3 km

Exhibit 4

Vertical Plan of Antenna System



Ground Elevation: 292.5 meters AMSL (960 feet AGL)			
Address: On Great Hill, off Old Albany Road			
City: Greenfield	<u>Latitude (D M S)</u>	<u>Longitude (D M S)</u>	
County: Franklin	NAD 27 datum values: 42 34 14.79133 72 38 42.77560		
State: Massachusetts	NAD 83 datum values: 42 34 15.10000 72 38 41.10000		
Antenna Structure Registration	Drawing Is Not To Scale	Asher Broadcast Consulting, LLC justinasher@consultant.com 1(202)875-2986	
Not Required			

Exhibit 5
HAAT and Miscellaneous Coordinate Information

HAAT Calculation (1927):

N. Lat. = 423415.1 W. Lng. = 723841.1
 HAAT and Distance to Contour,
 FCC, FM 2-10 Mi, 51 pts Method - FCC 30 SEC

Azi.	AV EL	HAAT	ERP kW	dBk	Field	60-F5
000	228.7	79.6	0.0600	-12.22	1.000	8.05
030	127.6	180.7	0.0600	-12.22	1.000	12.25
060	95.9	212.4	0.0600	-12.22	1.000	13.21
090	112.2	196.1	0.0600	-12.22	1.000	12.72
120	120.4	187.9	0.0600	-12.22	1.000	12.47
150	90.2	218.1	0.0384	-14.16	0.800	12.03
180	115.4	192.9	0.0600	-12.22	1.000	12.62
210	249.9	58.4	0.0600	-12.22	1.000	6.90
240	298.5	9.8	0.0600	-12.22	1.000	4.94
270	302.2	6.1	0.0600	-12.22	1.000	4.94
300	231.7	76.6	0.0600	-12.22	1.000	7.89
330	284.0	24.3	0.0600	-12.22	1.000	4.94

Ave El= 188.06 M HAAT= 120.24 M AMSL= 308.3

NAD 1983 to NAD 1927 Conversion:

	<u>Latitude</u>	
NAD 27 datum values:	42 34 14.79133	Longitude
NAD 83 datum values:	42 34 15.10000	72 38 42.77560
		72 38 41.10000

Various Coordinate Conversion Calculations (NAD 1983):

Position Type	Lat Lon
Degrees Lat Long	42.5708611°, -072.6447500°
Degrees Minutes	42°34.25167', -072°38.68500'
Degrees Minutes Seconds	42°34'15.1000", -072°38'41.1000"
UTM	18T 693307mE 4715850mN
UTM centimeter	18T 693307.82mE 4715850.07mN
MGRS	18TXN9330715850
Grid North	1.6°
GARS	215MB48
Maidenhead	FN32QN27PA11
GEOREF	HJCN21313425

Exhibit 6

Tabulation of Proposed Allocation

Green Text denotes Allotment Reservation RSV297B - Westborough, MA (AL6775) which does not require protection.

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

Yellow Text denotes 47 C.F.R. Section 73.3517 Contingent Processing toward WKVB(FM) - Westborough, MA (FAC ID: 74467) License(s) LMS-0000111585 and BLH-20051019ABP. The WKVB(FM) LMS-0000111585 and BLH-20051019ABP License(s) need not be protected *in lieu* of protection of granted WKVB(FM) Construction Permit LMS-0000112864. Therefore, the applicant requests a grant of this instant application be conditioned that the applicant may not commence operation with the facilities requested herein until WKVB(FM) (Facility ID: 74467) commences operation on channel 297B1 with the facilities authorized in LMS-0000112864; and a license will not be granted for the facilities requested herein until a license is granted for WKVB(FM) on channel 297B1 with the facilities authorized in LMS-0000112864.

REFERENCE 42 34 15.10 N. 72 38 41.10 W.		CH#	Saga Communications Of New England, LLC 298D - 107.5 MHz, Pwr= 0.06 kW DA, HAAT= 0.0 M, COR= 308.3 M Average Protected F(50-50)= 4.94 km Standard Directional				DISPLAY DATES DATA 06-19-20 SEARCH 06-19-20				
CH CITY	CALL STATION	TYPE STATE	ANT -->	AZI FILE #	DIST ---	LAT LNG	PWR (kW) HAAT (M)	INT (km) COR (M)	PRO (km) LICENSEE	*IN* (Overlap in km)	*OUT*
298D W298CA Greenfield	CP D MA	12.9 192.9	14.51 BMPFT20171101ABZ	42 41 53.30 72 36 18.30	0.250	448	---Reference---		Saga Communications Of New		
298D W298CA Greenfield	LIC MA	47.8 227.9	3.00 BLFT20160608HSV	42 35 20.30 72 37 03.30	0.250	91	---Reference---		Saga Communications Of New		
297B AL6775 Westborough	RSV-A MA	115.6 296.1	68.17 RM10220	42 18 11.33 71 53 50.28	50.000 150	68.8 389	56.1 -12.8*<		-13.8<		
297B WKVB Westborough	LIC D MA	108.6 289.2	80.59 0000111585	42 20 09.30 71 42 55.20	9.600 335	71.7 480	61.5 -2.8<		-5.7<	Educational Media Foundati	
297B WKVB Westborough	LIC Z MA	108.6 289.2	80.59 BLH20051019ABP	42 20 09.30 71 42 55.20	9.600 335	71.7 480	61.5 -2.8<		-5.7<	Educational Media Foundati	
298D W298BT Keene	LIC D NH	35.1 215.3	48.93 BMLFT20181130AAR	42 55 50.30 72 17 58.30	0.250 -93	19.8 193	6.0 16.2		0.1	Saga Communications Of New	
299L1 WAIY-LP Belchertown	LIC MA	149.5 329.6	28.69 BLL20161031ABH	42 20 54.30 72 28 02.30	0.100 12	160	4.8		2.6	Dwight Chapel Inc.	
298A DWRUT West Rutland	VAC VT	345.2 165.0	114.70 RM9706	43 34 04.25 73 00 28.38	6.000 100	100.0 465	38.4 8.5		55.6	Great Casco Bay Wireles	
299L1 WVEW-LP Brattleboro	LIC VT	10.9 190.9	30.69 BLL20120412AAN	42 50 31.20 72 34 25.30	0.100 -82	179	12.8		11.2	Vermont Earth Works, Inc.	
299B WGNA-FM Albany	LIC NY	274.3 93.3	110.90 BMLH19910606KC	42 38 13.20 73 59 49.40	12.500 300	92.1 539	76.8 13.9		24.0	Townsquare Media Of Albany	
295D W295CO Brattleboro	LIC D VT	353.5 173.5	30.83 BLFT20181212AAM	42 50 47.20 72 41 15.30	0.085	0.3 594	11.0 21.9		19.3	Saga Communications Of New	
295B WCCC Hartford	LIC CT	188.4 8.3	86.97 BMLED20140930ACT	41 47 48.40 72 47 50.40	23.000 221	5.7 310	64.1 71.2		21.8	Educational Media Foundati	
297B1 WKVB Westborough	CP MA	102.0 282.8	96.68 0000112864	42 23 02.70 71 29 35.30	2.100 321	55.4 398	42.5 30.0		34.1	Educational Media Foundati	
299L1 WACC-LP Enfield	LIC CT	175.7 355.7	66.61 BMLL20130620ABE	41 58 24.30 72 35 03.30	0.100 12	69	43.4		39.4	Asnuntuck Community Colleg	

Terrain database is FCC NGDC 30 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)
**affixed to 'IN' or 'OUT' values = site inside restricted contour.

< = Contour Overlap

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

Saga Communications Of New England, LLC

FMCommander Single Allocation Study - 06-19-2020 - FCC NGDC 30 Sec
W298CA.P's Overlaps (In= 16.17 km, Out= 0.14 km)

W298CA.P CH 298 D DA
Lat= 42 34 15.10, Lng= 72 38 41.10
0.06 kW 0 m HAAT, 308.3 m COR
Prot.= 60 dBu, Intef.= 40 dBu

W298BT CH 298 D DA BMLFT20181130AAR
Lat= 42 55 50.30, Lng= 72 17 58.30
0.25 kW -92.6 m HAAT, 193 m COR
Prot.= 60 dBu, Intef.= 40 dBu

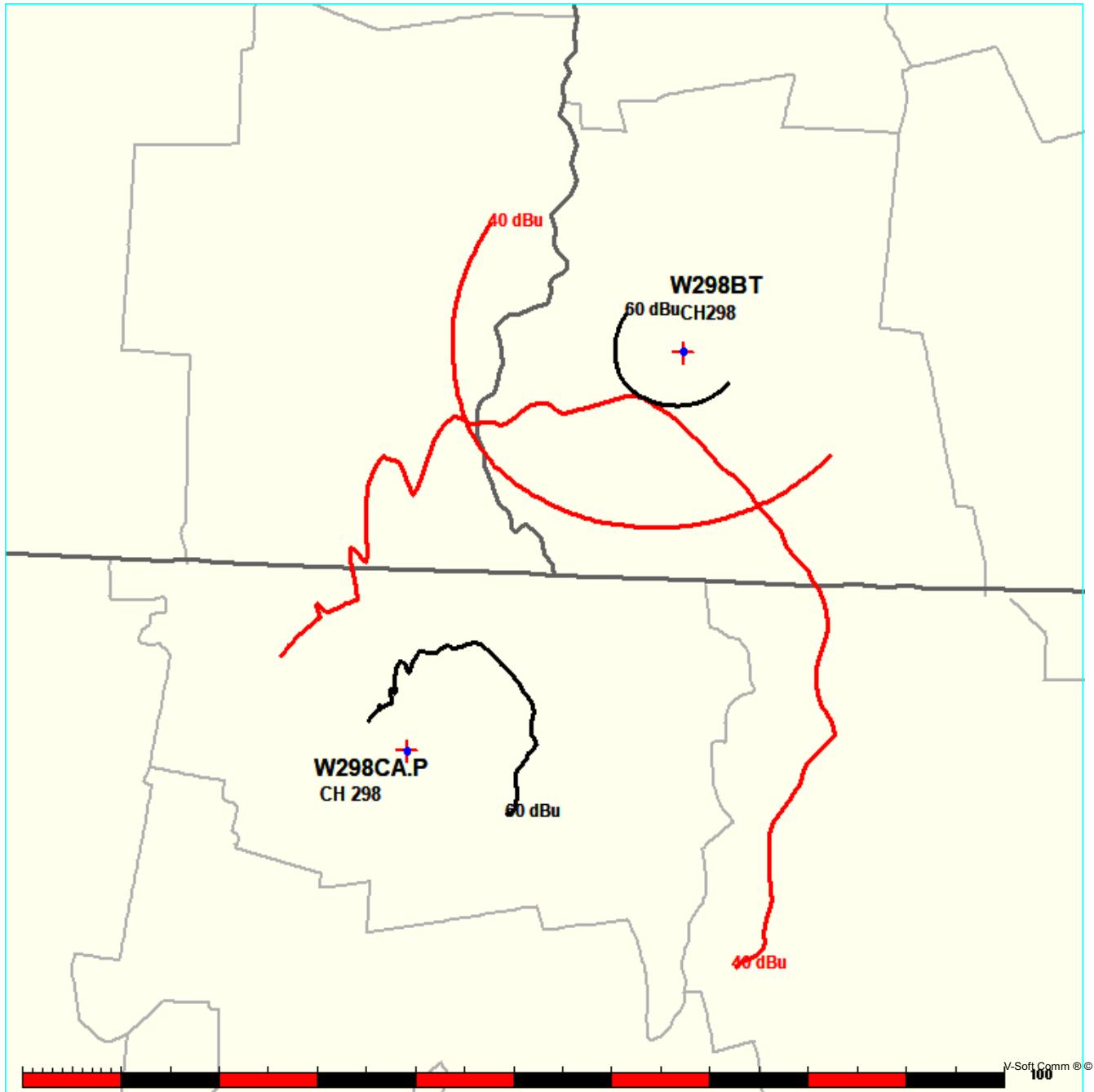


Exhibit 7a
Contour Protection Studies Toward Select Allocation Concern(s)

06-19-2020

Terrain Data: FCC NGDC 30 Sec FMOver Analysis

W298CA.P

W298BT BMLFT20181130AAR

Channel = 298D
 Max ERP = 0.06 kW
 RCAMSL = 308.3 m
 N. Lat. 42 34 15.10
 W. Lng. 72 38 41.10
 Protected
 60 dBu

Channel = 298D
 Max ERP = 0.25 kW
 RCAMSL = 193 m
 N. Lat. 42 55 50.30
 W. Lng. 72 17 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)
353.0	000.0600	0088.8	008.5	222.9	000.1447	-0080.3	043.0	29.25	
354.0	000.0600	0092.4	008.7	223.0	000.1448	-0080.6	042.7	29.32	
355.0	000.0600	0095.4	008.9	223.0	000.1448	-0080.6	042.5	29.38	
356.0	000.0600	0094.1	008.8	222.8	000.1442	-0079.6	042.5	29.38	
357.0	000.0600	0092.4	008.7	222.6	000.1436	-0078.6	042.4	29.38	
358.0	000.0600	0091.7	008.7	222.4	000.1431	-0077.7	042.3	29.38	
359.0	000.0600	0086.9	008.4	222.0	000.1420	-0075.7	042.4	29.33	
000.0	000.0600	0079.6	008.0	221.5	000.1405	-0073.1	042.6	29.22	
001.0	000.0600	0072.3	007.7	221.0	000.1391	-0070.6	042.8	29.12	
002.0	000.0600	0077.1	007.9	221.1	000.1393	-0071.0	042.5	29.21	
003.0	000.0600	0085.4	008.4	221.3	000.1400	-0072.3	042.1	29.36	
004.0	000.0600	0095.3	008.9	221.6	000.1408	-0073.6	041.6	29.53	
005.0	000.0600	0105.7	009.3	221.8	000.1414	-0074.7	041.1	29.69	
006.0	000.0600	0113.6	009.7	221.9	000.1416	-0075.1	040.7	29.81	
007.0	000.0600	0119.0	009.9	221.9	000.1416	-0075.0	040.5	29.89	
008.0	000.0600	0122.0	010.0	221.8	000.1412	-0074.4	040.3	29.94	
009.0	000.0600	0122.2	010.0	221.6	000.1407	-0073.4	040.2	29.96	
010.0	000.0600	0121.0	010.0	221.3	000.1400	-0072.2	040.1	29.95	
011.0	000.0600	0119.1	009.9	221.1	000.1392	-0070.8	040.1	29.94	
012.0	000.0600	0119.9	009.9	220.9	000.1386	-0069.8	040.0	29.95	
013.0	000.0600	0122.1	010.0	220.7	000.1382	-0069.0	039.8	29.99	
014.0	000.0600	0123.7	010.1	220.5	000.1376	-0068.1	039.7	30.01	
015.0	000.0600	0123.9	010.1	220.3	000.1370	-0067.1	039.6	30.02	
016.0	000.0600	0123.6	010.1	220.1	000.1363	-0066.0	039.6	30.02	
017.0	000.0600	0125.5	010.1	219.9	000.1359	-0065.2	039.4	30.05	
018.0	000.0600	0131.8	010.4	219.8	000.1356	-0064.8	039.1	30.14	
019.0	000.0600	0140.1	010.7	219.7	000.1355	-0064.5	038.7	30.25	
020.0	000.0600	0146.7	011.0	219.5	000.1352	-0064.0	038.4	30.35	
021.0	000.0600	0151.0	011.2	219.4	000.1348	-0063.3	038.2	30.41	
022.0	000.0600	0153.0	011.2	219.1	000.1343	-0062.6	038.1	30.44	
023.0	000.0600	0153.0	011.2	218.8	000.1337	-0061.8	038.0	30.44	
024.0	000.0600	0151.3	011.2	218.5	000.1331	-0061.0	038.0	30.41	
025.0	000.0600	0151.3	011.2	218.2	000.1325	-0060.5	038.0	30.41	

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)
026.0	000.0600	0154.9	011.3	218.0	000.1320	-0060.1	037.8	30.45
027.0	000.0600	0160.4	011.5	217.7	000.1315	-0059.7	037.6	30.52
028.0	000.0600	0166.2	011.7	217.5	000.1310	-0059.5	037.3	30.59
029.0	000.0600	0173.1	012.0	217.2	000.1305	-0059.2	037.0	30.67
030.0	000.0600	0180.7	012.3	217.0	000.1300	-0059.0	036.7	30.75
031.0	000.0600	0188.1	012.5	216.7	000.1294	-0059.0	036.5	30.82
032.0	000.0600	0195.0	012.7	216.4	000.1287	-0058.9	036.3	30.87
033.0	000.0600	0200.1	012.8	216.0	000.1281	-0058.7	036.1	30.91
034.0	000.0600	0202.4	012.9	215.7	000.1273	-0058.2	036.0	30.91
035.0	000.0600	0202.9	012.9	215.3	000.1266	-0057.4	036.0	30.89
036.0	000.0600	0202.9	012.9	214.9	000.1259	-0056.1	036.0	30.87
037.0	000.0600	0203.6	012.9	214.6	000.1252	-0054.5	036.0	30.85
038.0	000.0600	0204.4	013.0	214.2	000.1245	-0052.2	036.0	30.83
039.0	000.0600	0204.8	013.0	213.9	000.1238	-0049.6	036.0	30.80
040.0	000.0600	0204.6	013.0	213.5	000.1231	-0046.7	036.0	30.77
041.0	000.0600	0204.2	013.0	213.2	000.1224	-0043.8	036.1	30.73
042.0	000.0600	0203.7	012.9	212.8	000.1217	-0040.9	036.1	30.69
043.0	000.0600	0203.7	012.9	212.4	000.1210	-0038.0	036.2	30.65
044.0	000.0600	0203.9	012.9	212.1	000.1203	-0035.2	036.2	30.61
045.0	000.0600	0203.8	012.9	211.7	000.1196	-0032.4	036.2	30.56
046.0	000.0600	0203.3	012.9	211.4	000.1190	-0029.6	036.3	30.52
047.0	000.0600	0202.8	012.9	211.1	000.1183	-0027.0	036.4	30.47
048.0	000.0600	0202.7	012.9	210.7	000.1177	-0024.1	036.5	30.42
049.0	000.0600	0203.6	012.9	210.4	000.1170	-0021.0	036.5	30.38
050.0	000.0600	0205.3	013.0	210.0	000.1163	-0017.7	036.5	30.34
051.0	000.0600	0206.7	013.0	209.7	000.1157	-0014.5	036.6	30.30
052.0	000.0600	0207.5	013.1	209.3	000.1150	-0011.5	036.6	30.26
053.0	000.0600	0207.3	013.1	209.0	000.1144	-0008.8	036.7	30.20
054.0	000.0600	0207.2	013.0	208.7	000.1139	-0006.1	036.8	30.14
055.0	000.0600	0207.5	013.1	208.4	000.1133	-0003.5	036.9	30.09
056.0	000.0600	0208.3	013.1	208.0	000.1127	-0001.0	037.0	30.04
057.0	000.0600	0209.4	013.1	207.7	000.1121	0001.7	037.1	29.99
058.0	000.0600	0210.8	013.2	207.4	000.1115	0004.3	037.2	29.93
059.0	000.0600	0212.1	013.2	207.0	000.1109	0006.9	037.3	29.88
060.0	000.0600	0212.4	013.2	206.7	000.1103	0009.4	037.4	29.82
061.0	000.0600	0211.8	013.2	206.4	000.1098	0011.7	037.5	29.75
062.0	000.0600	0211.1	013.2	206.2	000.1093	0013.8	037.7	29.68
063.0	000.0600	0211.9	013.2	205.9	000.1088	0016.3	037.8	29.62
064.0	000.0600	0214.1	013.3	205.5	000.1082	0018.7	037.9	29.57
065.0	000.0600	0216.8	013.3	205.2	000.1076	0020.8	038.0	29.51
066.0	000.0600	0218.9	013.4	204.9	000.1070	0022.4	038.1	29.45
067.0	000.0600	0220.1	013.4	204.6	000.1065	0023.4	038.2	29.39
068.0	000.0600	0221.4	013.5	204.3	000.1060	0024.0	038.3	29.32
069.0	000.0600	0222.3	013.5	204.0	000.1055	0024.3	038.5	29.25
070.0	000.0600	0222.6	013.5	203.7	000.1050	0024.2	038.6	29.18

Exhibit 7a

Contour Protection Studies Toward Select Allocation Concern(s)

06-19-2020

Terrain Data: FCC NGDC 30 Sec FMOver Analysis

W298BT BMLFT20181130AAR

W298CA.P

Channel = 298D
 Max ERP = 0.25 kW
 RCAMSL = 193 m
 N. Lat. 42 55 50.30
 W. Lng. 72 17 58.30
 Protected
 60 dBu

Channel = 298D
 Max ERP = 0.06 kW
 RCAMSL = 308.3 m
 N. Lat. 42 34 15.10
 W. Lng. 72 38 41.10
 Interfering
 40 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
170.0	000.0778	0023.1	005.3	039.8	000.0600	0204.7	045.4	38.99	
171.0	000.0782	0020.7	005.3	039.7	000.0600	0204.7	045.3	39.02	
172.0	000.0786	0014.9	005.3	039.7	000.0600	0204.7	045.2	39.05	
173.0	000.0789	0002.8	005.3	039.6	000.0600	0204.7	045.1	39.08	
174.0	000.0793	-0011.2	005.3	039.5	000.0600	0204.8	045.1	39.11	
175.0	000.0797	-0024.8	005.3	039.4	000.0600	0204.8	045.0	39.15	
176.0	000.0800	-0036.5	005.3	039.4	000.0600	0204.8	044.9	39.18	
177.0	000.0804	-0044.2	005.3	039.3	000.0600	0204.8	044.9	39.20	
178.0	000.0808	-0039.0	005.3	039.2	000.0600	0204.8	044.8	39.23	
179.0	000.0811	-0029.9	005.3	039.1	000.0600	0204.8	044.7	39.26	
180.0	000.0815	-0020.8	005.4	039.0	000.0600	0204.8	044.7	39.29	
181.0	000.0822	-0018.5	005.4	038.9	000.0600	0204.8	044.6	39.32	
182.0	000.0828	-0016.1	005.4	038.8	000.0600	0204.8	044.5	39.35	
183.0	000.0835	-0014.1	005.4	038.8	000.0600	0204.8	044.5	39.37	
184.0	000.0842	-0014.5	005.4	038.7	000.0600	0204.8	044.4	39.40	
185.0	000.0848	-0014.0	005.4	038.6	000.0600	0204.8	044.3	39.42	
186.0	000.0855	-0014.2	005.4	038.5	000.0600	0204.7	044.3	39.45	
187.0	000.0862	-0016.1	005.4	038.4	000.0600	0204.7	044.2	39.47	
188.0	000.0868	-0019.6	005.4	038.3	000.0600	0204.6	044.2	39.49	
189.0	000.0875	-0021.4	005.4	038.2	000.0600	0204.5	044.1	39.52	
190.0	000.0882	-0021.0	005.5	038.1	000.0600	0204.5	044.1	39.54	
191.0	000.0892	-0018.4	005.5	038.0	000.0600	0204.4	044.0	39.56	
192.0	000.0902	-0016.7	005.5	037.9	000.0600	0204.3	043.9	39.58	
193.0	000.0913	-0014.3	005.5	037.8	000.0600	0204.2	043.9	39.60	
194.0	000.0923	-0010.7	005.5	037.7	000.0600	0204.1	043.8	39.62	
195.0	000.0933	-0009.1	005.5	037.6	000.0600	0204.0	043.8	39.63	
196.0	000.0944	-0009.5	005.6	037.5	000.0600	0203.9	043.7	39.65	
197.0	000.0954	-0009.7	005.6	037.3	000.0600	0203.9	043.7	39.67	
198.0	000.0965	-0007.2	005.6	037.2	000.0600	0203.8	043.6	39.69	
199.0	000.0975	-0002.7	005.6	037.1	000.0600	0203.7	043.6	39.70	
200.0	000.0986	0003.4	005.6	037.0	000.0600	0203.6	043.5	39.72	
201.0	000.1003	0010.9	005.6	036.9	000.0600	0203.5	043.5	39.73	
202.0	000.1020	0017.8	005.7	036.8	000.0600	0203.3	043.4	39.75	

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)
203.0	000.1037	0022.5	005.7	036.7	000.0600	0203.3	043.4	39.77
204.0	000.1055	0024.3	005.7	036.5	000.0600	0203.2	043.3	39.78
205.0	000.1073	0021.8	005.7	036.4	000.0600	0203.1	043.3	39.80
206.0	000.1090	0015.2	005.8	036.3	000.0600	0203.1	043.3	39.82
207.0	000.1108	0007.1	005.8	036.2	000.0600	0203.0	043.2	39.83
208.0	000.1126	-0000.7	005.8	036.0	000.0600	0203.0	043.2	39.85
209.0	000.1144	-0008.8	005.8	035.9	000.0600	0202.9	043.1	39.86
210.0	000.1163	-0017.5	005.9	035.8	000.0600	0202.9	043.1	39.87
211.0	000.1182	-0026.4	005.9	035.6	000.0600	0202.9	043.1	39.89
212.0	000.1201	-0034.4	005.9	035.5	000.0600	0202.8	043.0	39.90
213.0	000.1221	-0042.6	005.9	035.4	000.0600	0202.8	043.0	39.91
214.0	000.1240	-0050.6	005.9	035.2	000.0600	0202.9	043.0	39.92
215.0	000.1260	-0056.3	006.0	035.1	000.0600	0202.9	043.0	39.94
216.0	000.1280	-0058.6	006.0	035.0	000.0600	0202.8	042.9	39.94
217.0	000.1300	-0059.0	006.0	034.8	000.0600	0202.8	042.9	39.95
218.0	000.1321	-0060.1	006.0	034.7	000.0600	0202.7	042.9	39.96
219.0	000.1341	-0062.3	006.1	034.5	000.0600	0202.8	042.9	39.97
220.0	000.1362	-0065.8	006.1	034.4	000.0600	0202.7	042.9	39.97
221.0	000.1390	-0070.5	006.1	034.2	000.0600	0202.7	042.8	39.98
222.0	000.1419	-0075.6	006.2	034.1	000.0600	0202.5	042.8	39.98
223.0	000.1448	-0080.6	006.2	033.9	000.0600	0202.4	042.8	39.98
224.0	000.1478	-0085.4	006.2	033.8	000.0600	0202.2	042.8	39.98
225.0	000.1507	-0089.9	006.2	033.6	000.0600	0201.9	042.8	39.97
226.0	000.1537	-0094.0	006.3	033.5	000.0600	0201.5	042.8	39.95
227.0	000.1568	-0096.1	006.3	033.3	000.0600	0201.2	042.8	39.94
228.0	000.1598	-0095.8	006.3	033.2	000.0600	0200.7	042.8	39.92
229.0	000.1629	-0094.6	006.4	033.0	000.0600	0200.2	042.8	39.89
230.0	000.1661	-0094.0	006.4	032.9	000.0600	0199.5	042.8	39.86
231.0	000.1694	-0094.8	006.4	032.7	000.0600	0198.8	042.8	39.83
232.0	000.1728	-0096.2	006.5	032.6	000.0600	0198.1	042.8	39.79
233.0	000.1762	-0098.3	006.5	032.4	000.0600	0197.4	042.8	39.75
234.0	000.1797	-0101.3	006.5	032.2	000.0600	0196.5	042.8	39.70
235.0	000.1832	-0104.3	006.6	032.1	000.0600	0195.6	042.8	39.65
236.0	000.1867	-0107.1	006.6	031.9	000.0600	0194.6	042.8	39.60
237.0	000.1903	-0109.7	006.6	031.8	000.0600	0193.6	042.9	39.54
238.0	000.1939	-0112.0	006.7	031.6	000.0600	0192.5	042.9	39.48
239.0	000.1975	-0113.4	006.7	031.5	000.0600	0191.4	042.9	39.42
240.0	000.2012	-0113.6	006.7	031.3	000.0600	0190.3	042.9	39.36
241.0	000.2037	-0113.0	006.7	031.2	000.0600	0189.2	043.0	39.29
242.0	000.2062	-0112.2	006.8	031.0	000.0600	0188.1	043.0	39.22
243.0	000.2088	-0111.7	006.8	030.9	000.0600	0187.0	043.0	39.15
244.0	000.2113	-0111.6	006.8	030.7	000.0600	0186.0	043.1	39.08
245.0	000.2139	-0112.0	006.8	030.6	000.0600	0184.9	043.1	39.00
246.0	000.2165	-0112.0	006.8	030.4	000.0600	0183.8	043.2	38.93

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

Saga Communications Of New England, LLC

FMCommander Single Allocation Study - 06-19-2020 - FCC NGDC 30 Sec
W298CA.P's Overlaps (In= 4.8 km, Out= 2.55 km)

W298CA.P CH 298 D DA
Lat= 42 34 15.10, Lng= 72 38 41.10
0.06 kW 0 m HAAT, 308.3 m COR
Prot.= 60 dBu, Intef.= 54 dBu

WAIY-LP CH 299 L1 BLL20161031ABH
Lat= 42 20 54.30, Lng= 72 28 02.30
0.1 kW 12 m HAAT, 160 m COR
Prot.= 60 dBu, Intef.= 54 dBu

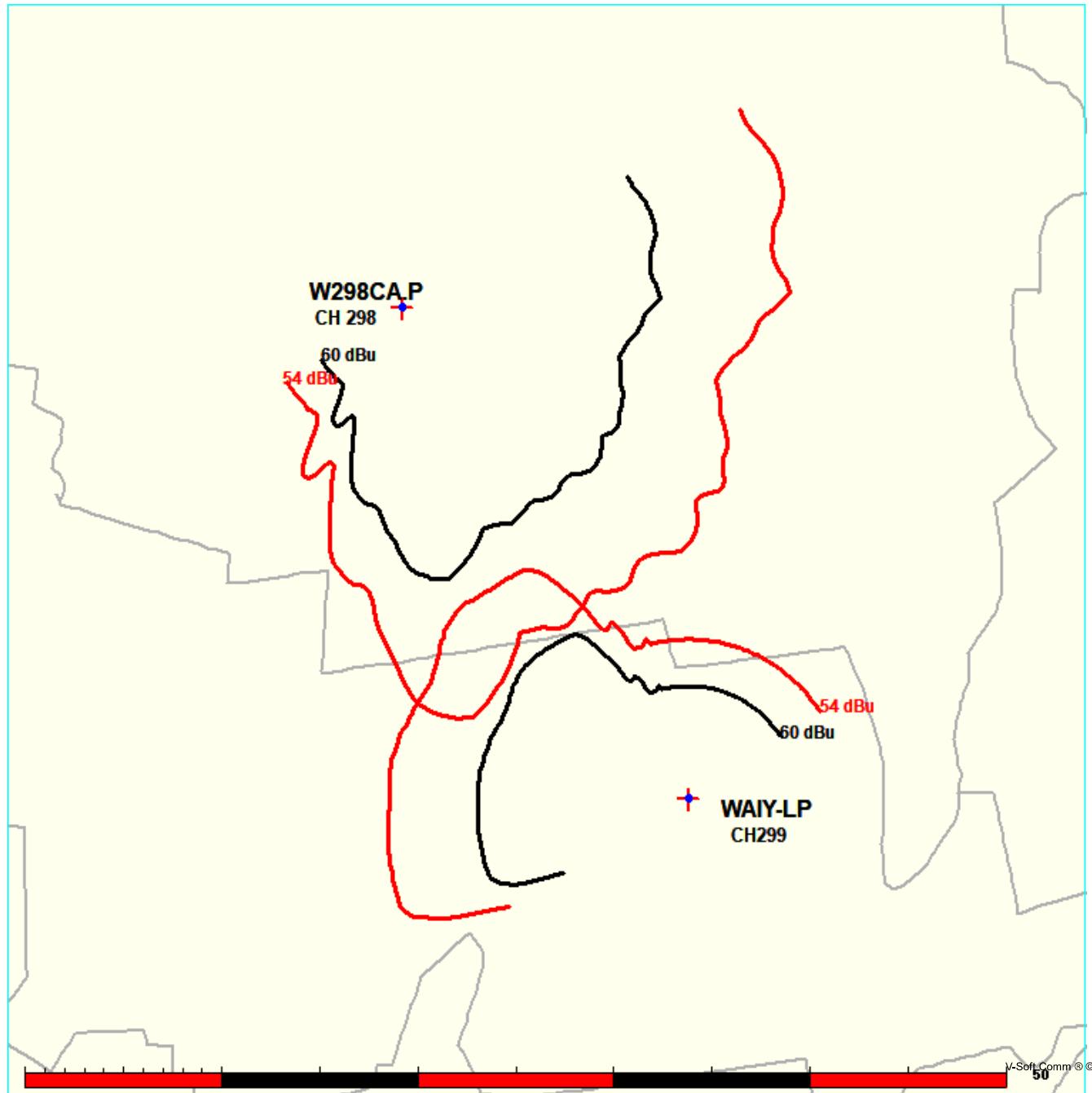


Exhibit 7b

Contour Protection Studies Toward Select Allocation Concern(s)

06-19-2020

Terrain Data: FCC NGDC 30 Sec

FMOver Analysis

W298CA.P

WAIY-LP BLL20161031ABH

Channel = 298D
 Max ERP = 0.06 kW
 RCAMSL = 308.3 m
 N. Lat. 42 34 15.10
 W. Lng. 72 38 41.10
 Protected
 60 dBu

Channel = 299L1
 Max ERP = 0.1 kW
 RCAMSL = 160 m
 N. Lat. 42 20 54.30
 W. Lng. 72 28 02.30
 Interfering
 54 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
107.0	000.0600	0161.8	011.6	350.8	000.0993	0016.4	021.6	37.56	
108.0	000.0600	0163.8	011.7	350.7	000.0994	0017.0	021.4	37.73	
109.0	000.0600	0166.4	011.8	350.7	000.0994	0017.1	021.2	37.90	
110.0	000.0600	0170.0	011.9	350.7	000.0993	0016.8	020.9	38.09	
111.0	000.0600	0173.0	012.0	350.7	000.0994	0017.0	020.7	38.28	
112.0	000.0600	0175.9	012.1	350.7	000.0994	0017.5	020.5	38.46	
113.0	000.0600	0177.7	012.2	350.5	000.0996	0019.0	020.3	38.63	
114.0	000.0600	0178.4	012.2	350.2	000.0998	0021.0	020.1	38.79	
115.0	000.0600	0179.0	012.2	349.9	000.0999	0022.7	019.9	38.95	
116.0	000.0600	0180.6	012.3	349.7	000.0997	0023.8	019.7	39.10	
117.0	000.0600	0183.8	012.3	349.5	000.0995	0024.4	019.4	39.28	
118.0	000.0600	0188.0	012.5	349.4	000.0994	0024.7	019.2	39.47	
119.0	000.0600	0189.9	012.5	349.1	000.0992	0025.6	019.0	39.63	
120.0	000.0600	0187.9	012.5	348.6	000.0986	0026.3	018.9	39.71	
121.0	000.0600	0182.5	012.3	347.8	000.0979	0026.0	018.8	39.71	
122.0	000.0600	0177.4	012.1	346.9	000.0971	0026.5	018.8	39.71	
123.0	000.0600	0176.2	012.1	346.4	000.0966	0027.8	018.7	39.78	
124.0	000.0600	0179.0	012.2	346.1	000.0963	0028.8	018.4	39.95	
125.0	000.0600	0183.8	012.3	345.9	000.0961	0029.5	018.2	40.15	
126.0	000.0600	0188.0	012.5	345.6	000.0959	0030.6	018.0	40.49	
127.0	000.0600	0191.2	012.6	345.3	000.0955	0031.9	017.7	40.98	
128.0	000.0600	0193.2	012.6	344.8	000.0951	0032.7	017.6	41.30	
129.0	000.0600	0194.0	012.7	344.3	000.0946	0032.2	017.4	41.29	
130.0	000.0600	0193.3	012.6	343.7	000.0940	0030.1	017.3	40.81	
131.0	000.0600	0191.1	012.6	342.9	000.0933	0026.1	017.2	40.81	
132.0	000.0600	0187.3	012.5	342.1	000.0926	0022.3	017.2	40.78	
133.0	000.0600	0181.8	012.3	341.2	000.0917	0021.7	017.3	40.71	
134.0	000.0600	0176.6	012.1	340.3	000.0909	0024.2	017.3	40.63	
135.0	000.0600	0173.3	012.0	339.5	000.0896	0028.3	017.3	40.55	
136.0	000.0600	0171.8	012.0	338.8	000.0880	0032.4	017.3	41.10	
137.0	000.0600	0171.9	012.0	338.2	000.0865	0036.0	017.2	42.00	
138.0	000.0600	0173.3	012.0	337.6	000.0851	0038.9	017.1	42.72	
139.0	000.0600	0176.1	012.1	337.0	000.0839	0041.1	016.9	43.31	

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)
140.0	000.0600	0179.6	012.2	336.5	000.0826	0042.7	016.8	43.73
141.0	000.0576	0183.5	012.2	335.8	000.0811	0043.3	016.7	43.85
142.0	000.0553	0186.7	012.2	335.0	000.0795	0043.0	016.7	43.71
143.0	000.0530	0188.5	012.1	334.3	000.0778	0041.9	016.7	43.35
144.0	000.0508	0188.9	012.0	333.5	000.0761	0041.5	016.8	43.12
145.0	000.0486	0188.6	011.9	332.7	000.0745	0043.1	016.9	43.29
146.0	000.0465	0190.2	011.8	332.0	000.0730	0047.2	016.9	44.01
147.0	000.0444	0195.8	011.8	331.3	000.0716	0052.5	016.9	44.98
148.0	000.0423	0203.9	011.9	330.6	000.0702	0058.3	016.8	45.90
149.0	000.0403	0211.8	012.0	329.9	000.0687	0063.9	016.7	46.60
150.0	000.0384	0218.1	012.0	329.2	000.0667	0069.0	016.7	47.11
151.0	000.0374	0224.1	012.1	328.5	000.0648	0074.2	016.6	47.65
152.0	000.0365	0229.8	012.2	327.7	000.0628	0079.8	016.5	48.19
153.0	000.0356	0233.8	012.2	327.0	000.0609	0085.4	016.5	48.66
154.0	000.0347	0234.8	012.2	326.3	000.0591	0089.9	016.6	48.92
155.0	000.0337	0234.1	012.1	325.6	000.0574	0092.9	016.7	48.99
156.0	000.0329	0233.9	012.0	324.9	000.0558	0094.9	016.8	48.95
157.0	000.0320	0235.2	011.9	324.3	000.0542	0096.1	016.9	48.87
158.0	000.0311	0237.7	011.9	323.6	000.0526	0097.0	017.0	48.76
159.0	000.0302	0240.6	011.9	322.9	000.0510	0097.5	017.1	48.62
160.0	000.0294	0242.8	011.9	322.3	000.0495	0097.9	017.2	48.45
161.0	000.0320	0244.1	012.2	321.3	000.0473	0098.3	017.0	48.46
162.0	000.0347	0244.2	012.4	320.4	000.0452	0098.9	016.8	48.43
163.0	000.0374	0243.8	012.6	319.4	000.0431	0099.5	016.7	48.37
164.0	000.0403	0243.2	012.8	318.4	000.0409	0100.1	016.6	48.28
165.0	000.0434	0242.5	013.0	317.4	000.0388	0100.7	016.5	48.17
166.0	000.0465	0241.4	013.2	316.4	000.0367	0101.4	016.5	48.05
167.0	000.0497	0240.1	013.4	315.4	000.0347	0102.3	016.4	47.91
168.0	000.0530	0238.8	013.6	314.4	000.0328	0103.4	016.4	47.77
169.0	000.0565	0237.4	013.7	313.3	000.0308	0104.4	016.4	47.60
170.0	000.0600	0236.4	013.9	312.3	000.0290	0105.2	016.4	47.38
171.0	000.0600	0235.6	013.9	311.7	000.0279	0105.5	016.6	47.10
172.0	000.0600	0234.6	013.9	311.1	000.0269	0105.6	016.8	46.81
173.0	000.0600	0233.1	013.8	310.6	000.0260	0105.8	017.0	46.52
174.0	000.0600	0230.7	013.7	310.2	000.0253	0105.9	017.2	46.23
175.0	000.0600	0227.2	013.6	309.8	000.0248	0106.0	017.4	45.95
176.0	000.0600	0224.0	013.5	309.5	000.0243	0106.1	017.6	45.68
177.0	000.0600	0219.5	013.4	309.3	000.0240	0106.2	017.9	45.42
178.0	000.0600	0214.0	013.3	309.2	000.0238	0106.3	018.2	45.16
179.0	000.0600	0204.7	013.0	309.4	000.0241	0106.2	018.5	44.92
180.0	000.0600	0192.9	012.6	309.8	000.0247	0106.0	018.9	44.68
181.0	000.0600	0181.0	012.3	310.2	000.0254	0105.9	019.3	44.47
182.0	000.0600	0170.6	011.9	310.6	000.0261	0105.8	019.7	44.26
183.0	000.0600	0162.8	011.6	310.9	000.0266	0105.7	020.1	44.07
184.0	000.0600	0155.3	011.3	311.2	000.0271	0105.6	020.4	43.88

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

06-19-2020

Terrain Data: FCC NGDC 30 Sec FMOver Analysis

WAIY-LP BLL20161031ABH

W298CA.P

Channel = 299L1
 Max ERP = 0.1 kW
 RCAMSL = 160 m
 N. Lat. 42 20 54.30
 W. Lng. 72 28 02.30
 Protected
 60 dBu

Channel = 298D
 Max ERP = 0.06 kW
 RCAMSL = 308.3 m
 N. Lat. 42 34 15.10
 W. Lng. 72 38 41.10
 Interfering
 54 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
287.0	000.1000	0103.9	010.5	168.2	000.0537	0238.5	022.1	52.70	
288.0	000.1000	0103.3	010.5	167.9	000.0527	0238.9	022.0	52.74	
289.0	000.1000	0102.5	010.4	167.6	000.0516	0239.3	021.9	52.77	
290.0	000.1000	0101.6	010.4	167.2	000.0504	0239.8	021.7	52.79	
291.0	000.1000	0100.9	010.4	166.9	000.0493	0240.2	021.6	52.81	
292.0	000.1000	0100.3	010.3	166.5	000.0482	0240.7	021.5	52.83	
293.0	000.1000	0099.8	010.3	166.2	000.0471	0241.1	021.3	52.85	
294.0	000.1000	0099.5	010.3	165.9	000.0461	0241.6	021.2	52.87	
295.0	000.1000	0099.6	010.3	165.6	000.0451	0241.9	021.0	52.91	
296.0	000.1000	0100.0	010.3	165.3	000.0443	0242.2	020.9	52.96	
297.0	000.1000	0100.6	010.3	165.0	000.0435	0242.4	020.7	53.01	
298.0	000.1000	0101.3	010.4	164.8	000.0427	0242.7	020.6	53.06	
299.0	000.1000	0101.9	010.4	164.5	000.0418	0242.9	020.4	53.10	
300.0	000.1000	0102.9	010.5	164.2	000.0410	0243.1	020.3	53.15	
301.0	000.1000	0104.1	010.5	164.0	000.0402	0243.3	020.1	53.21	
302.0	000.1000	0105.0	010.6	163.7	000.0393	0243.5	019.9	53.24	
303.0	000.1000	0105.5	010.6	163.3	000.0383	0243.7	019.8	53.25	
304.0	000.1000	0105.9	010.6	162.9	000.0372	0243.9	019.7	53.24	
305.0	000.1000	0106.2	010.6	162.5	000.0361	0244.1	019.5	53.21	
306.0	000.1000	0106.5	010.6	162.1	000.0350	0244.2	019.4	53.18	
307.0	000.1000	0106.6	010.6	161.7	000.0338	0244.3	019.3	53.12	
308.0	000.1000	0106.6	010.6	161.2	000.0325	0244.2	019.2	53.04	
309.0	000.1000	0106.3	010.6	160.7	000.0313	0243.8	019.1	52.93	
310.0	000.1000	0106.0	010.6	160.2	000.0300	0243.2	019.0	52.79	
311.0	000.1000	0105.7	010.6	159.7	000.0296	0242.3	019.0	52.78	
312.0	000.1000	0105.3	010.6	159.2	000.0301	0241.1	018.9	52.86	
313.0	000.1000	0104.7	010.5	158.7	000.0305	0239.6	018.8	52.92	
314.0	000.1000	0103.8	010.5	158.1	000.0310	0238.0	018.8	52.97	
315.0	000.1000	0102.7	010.4	157.5	000.0315	0236.4	018.8	53.00	
316.0	000.1000	0101.7	010.4	157.0	000.0320	0235.1	018.7	53.05	
317.0	000.1000	0100.9	010.4	156.4	000.0325	0234.2	018.7	53.10	

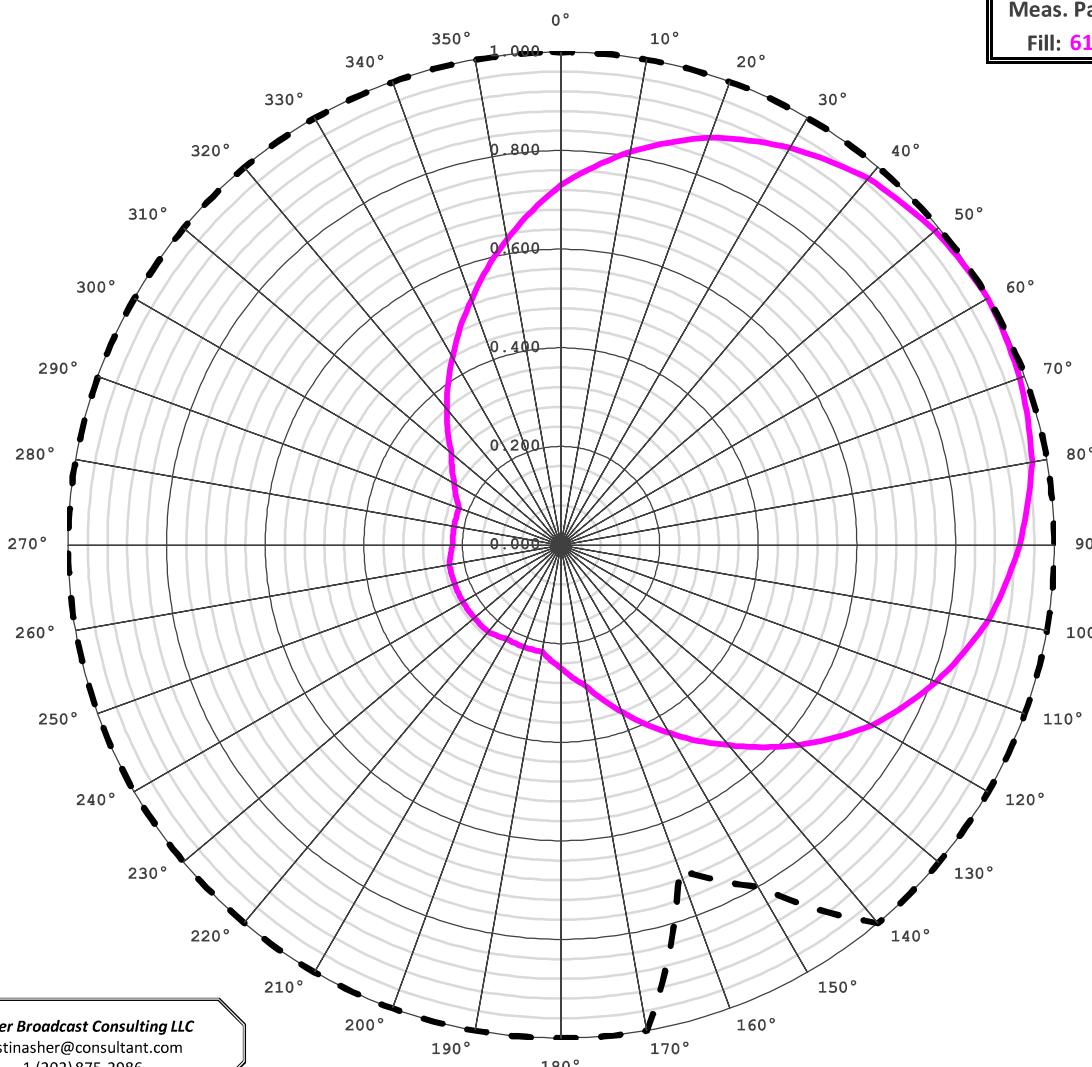
Exhibit 7b
Contour Protection Studies Toward Select Allocation Concern(s)

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
318.0	000.1000	0100.3	010.3	155.8	000.0330	0233.8	018.7	53.18
319.0	000.1000	0099.7	010.3	155.3	000.0335	0234.0	018.7	53.27
320.0	000.1000	0099.1	010.3	154.7	000.0340	0234.4	018.6	53.37
321.0	000.1000	0098.5	010.2	154.2	000.0345	0234.7	018.6	53.45
322.0	000.1000	0098.0	010.2	153.6	000.0350	0234.8	018.6	53.53
323.0	000.1000	0097.4	010.2	153.1	000.0355	0233.9	018.6	53.57
324.0	000.1000	0096.5	010.1	152.5	000.0360	0232.1	018.6	53.55
325.0	000.1000	0094.7	010.0	151.9	000.0366	0229.5	018.7	53.46
326.0	000.1000	0091.2	009.9	151.3	000.0371	0226.1	018.9	53.27
327.0	000.1000	0085.2	009.5	150.7	000.0377	0222.5	019.2	52.94
328.0	000.1000	0077.6	009.1	150.2	000.0382	0219.2	019.6	52.52
329.0	000.1000	0070.3	008.7	149.7	000.0389	0216.4	020.0	52.14
330.0	000.1000	0063.2	008.2	149.3	000.0398	0213.7	020.5	51.75
331.0	000.1000	0055.1	007.6	148.9	000.0404	0211.4	021.1	51.28
332.0	000.1000	0047.1	007.0	148.7	000.0410	0209.5	021.7	50.76
333.0	000.1000	0042.3	006.6	148.4	000.0415	0207.6	022.1	50.43
334.0	000.1000	0041.6	006.6	148.2	000.0420	0205.2	022.1	50.34
335.0	000.1000	0042.9	006.7	147.8	000.0427	0202.4	022.0	50.37
336.0	000.1000	0043.3	006.7	147.5	000.0433	0199.8	022.0	50.33
337.0	000.1000	0041.3	006.5	147.3	000.0438	0198.0	022.2	50.16
338.0	000.1000	0037.0	006.2	147.2	000.0441	0197.0	022.6	49.87
339.0	000.1000	0031.5	005.8	147.1	000.0441	0196.7	023.0	49.51
340.0	000.1000	0025.8	005.6	146.9	000.0445	0195.4	023.2	49.39
341.0	000.1000	0022.1	005.6	146.7	000.0450	0193.8	023.2	49.35
342.0	000.1000	0022.1	005.6	146.5	000.0455	0192.5	023.2	49.32
343.0	000.1000	0026.5	005.6	146.2	000.0460	0191.1	023.3	49.28
344.0	000.1000	0031.4	005.8	145.9	000.0466	0189.9	023.2	49.35
345.0	000.1000	0032.5	005.8	145.6	000.0473	0189.2	023.1	49.42
346.0	000.1000	0029.2	005.6	145.5	000.0474	0189.0	023.3	49.26
347.0	000.1000	0026.4	005.6	145.3	000.0479	0188.8	023.4	49.26
348.0	000.1000	0026.1	005.6	145.1	000.0484	0188.7	023.4	49.27
349.0	000.1000	0025.8	005.6	144.9	000.0489	0188.5	023.5	49.28
350.0	000.1000	0022.2	005.6	144.7	000.0493	0188.5	023.5	49.29
351.0	000.1000	0014.4	005.6	144.4	000.0498	0188.7	023.5	49.31
352.0	000.1000	0003.7	005.6	144.2	000.0503	0188.8	023.6	49.32
353.0	000.1000	-0011.0	005.6	144.0	000.0507	0188.9	023.6	49.33
354.0	000.1000	-0026.6	005.6	143.8	000.0512	0189.0	023.7	49.34
355.0	000.1000	-0039.2	005.6	143.6	000.0516	0188.9	023.7	49.34
356.0	000.1000	-0045.9	005.6	143.4	000.0521	0188.8	023.8	49.33
357.0	000.1000	-0050.7	005.6	143.2	000.0525	0188.7	023.8	49.32
358.0	000.1000	-0054.7	005.6	143.0	000.0530	0188.5	023.9	49.31
359.0	000.1000	-0062.1	005.6	142.8	000.0534	0188.3	023.9	49.29
000.0	000.1000	-0069.6	005.6	142.6	000.0538	0188.0	024.0	49.27
001.0	000.1000	-0074.9	005.6	142.5	000.0543	0187.7	024.1	49.25

Manufacturer's	Make/Model	Orientation	Power
Element 1:	BKY3P(Slant45)	060° True	100.0%
Element 2:			
Element 3:			
Element 4:			

Composite Power: 100%

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



Azimuth ° True	FCC Pattern	Manufacturer's Pattern
0°	1.000	0.730
10°	1.000	0.810
20°	1.000	0.880
30°	1.000	0.930
40°	1.000	0.970
50°	1.000	0.990
60°	1.000	1.000
70°	1.000	0.990
80°	1.000	0.970
90°	1.000	0.930
100°	1.000	0.880
110°	1.000	0.810
120°	1.000	0.730
130°	1.000	0.630
140°	1.000	0.530
150°	0.800	0.440
160°	0.700	0.360
170°	1.000	0.290
180°	1.000	0.250
190°	1.000	0.220
200°	1.000	0.220
210°	1.000	0.220
220°	1.000	0.230
230°	1.000	0.230
240°	1.000	0.230
250°	1.000	0.230
260°	1.000	0.230
270°	1.000	0.220
280°	1.000	0.220
290°	1.000	0.220
300°	1.000	0.250
310°	1.000	0.290
320°	1.000	0.360
330°	1.000	0.440
340°	1.000	0.530
350°	1.000	0.630

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

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

Exhibit 8
Copy of Manufacturer's Directional Antenna Documentation
(Actual Antenna Pattern rotated to 060.0°T) *(public record copy)*

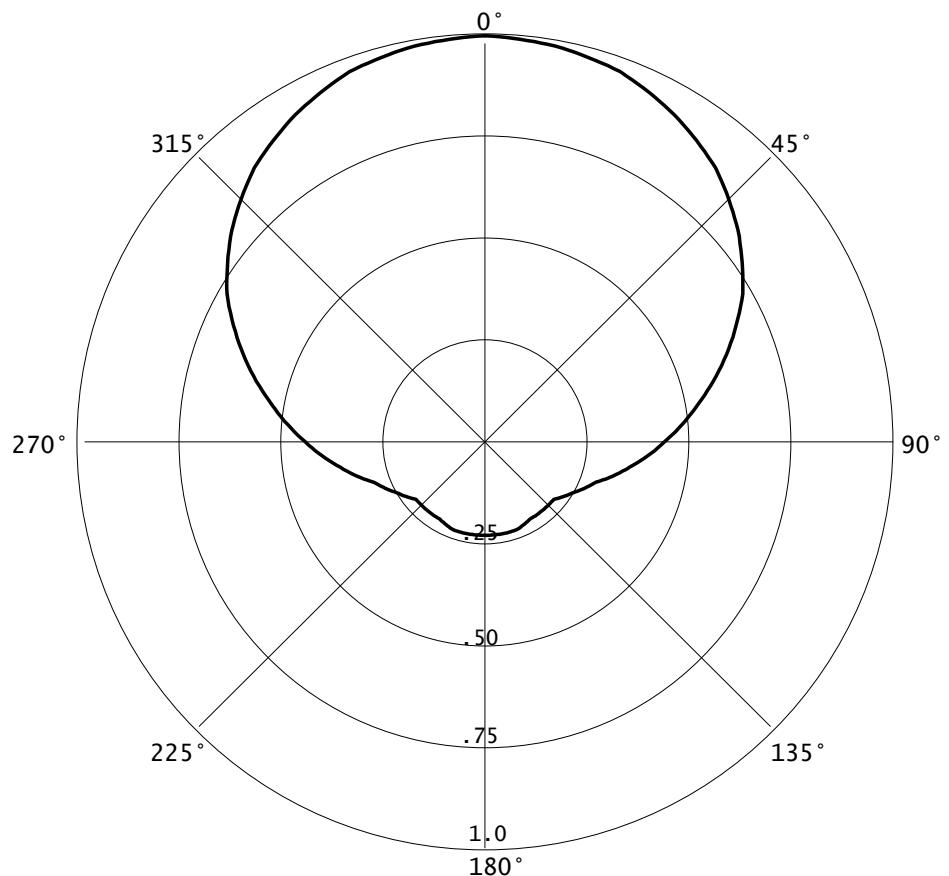
BKY3/P-1DA(Slant45)

COMPOSITE PATTERN

Azi	Field	dBk
000	1.000	-10.000
010	0.990	-10.087
020	0.970	-10.265
030	0.930	-10.630
040	0.880	-11.110
050	0.810	-11.830
060	0.730	-12.734
070	0.630	-14.013
080	0.530	-15.514
090	0.440	-17.131
100	0.360	-18.874
110	0.290	-20.752
120	0.250	-22.041
130	0.220	-23.152
140	0.220	-23.152
150	0.220	-23.152
160	0.230	-22.765
170	0.230	-22.765
180	0.230	-22.765
190	0.230	-22.765
200	0.230	-22.765
210	0.220	-23.152
220	0.220	-23.152
230	0.220	-23.152
240	0.250	-22.041
250	0.290	-20.752
260	0.360	-18.874
270	0.440	-17.131
280	0.530	-15.514
290	0.630	-14.013
300	0.730	-12.734
310	0.810	-11.830
320	0.880	-11.110
330	0.930	-10.630
340	0.970	-10.265
350	0.990	-10.087

RMS(V)= .608

Graph is Relative Field



The directional antenna pattern will be produced by means of a Nicom Dipole Reflector BKY3/P broadcast element mounted at a 45° (degree) slant orientation to achieve horizontal and vertical polarization. The BKY3/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 BKY3/P-1DA(Slant45) element will be 1.5 dBd or the common horizontal or vertical maximum antenna gain of 4.5 dBd adjusted by 3 dBd for dual broadcast in the Horizontal and Vertical planes (1.5 dBd = 4.5 dBd - 3.0 dBd). The maximum gain for multiple bay options of the Nicom BKY3/P-1DA(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

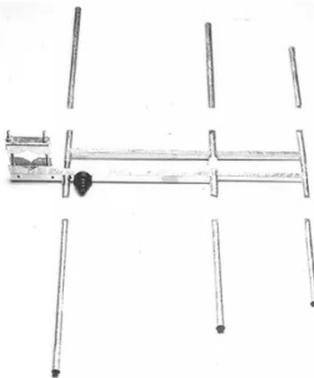
(Actual Antenna Pattern rotated to 060.0°)

(public record copy)

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BKY3P

Medium Power Portable Broadband FM Directional Antenna



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: 3 element directional antenna
Front-to-Back Ratio: 18 dB
Frequency Range: 87.5 - 108 MHz
Polarization: vertical or horizontal
Gain: 4.5 dB (referred to half-wave dipole)
Bandwidth: 20 MHz
VSWR: < 1.2 max.
H Plane: 150 degrees
V Plane: 70 degrees
Impedance: 50 Ohms
Connector: N type (1 kw) - EIA 7/8 (2 kw)
Power Rating: 2000 Watts max.
Wind Load: 48.4 Lbs (22 kg)
Wind Velocity: 130 mph (208 km/h) max
Wind Surface: 2.0 ft² (0.19 m²)
Lightning Protection: all parts grounded
Material: (external) stainless steel
Mounting: from 2" to 4"
Weight: 20 Lbs (9 kg)
Average Dimensions: 50"×72"×3" (1250×1800×60mm)
Packing: 53"×19"×4" (1300×480×100mm)

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Exhibit 8
Copy of Manufacturer's Directional Antenna Documentation
(Actual Antenna Pattern rotated to 060.0°T) **(public record copy)**

TX station: BKY/3
Frequency: 98.00 MHz

Site name:

Horizontal diagram

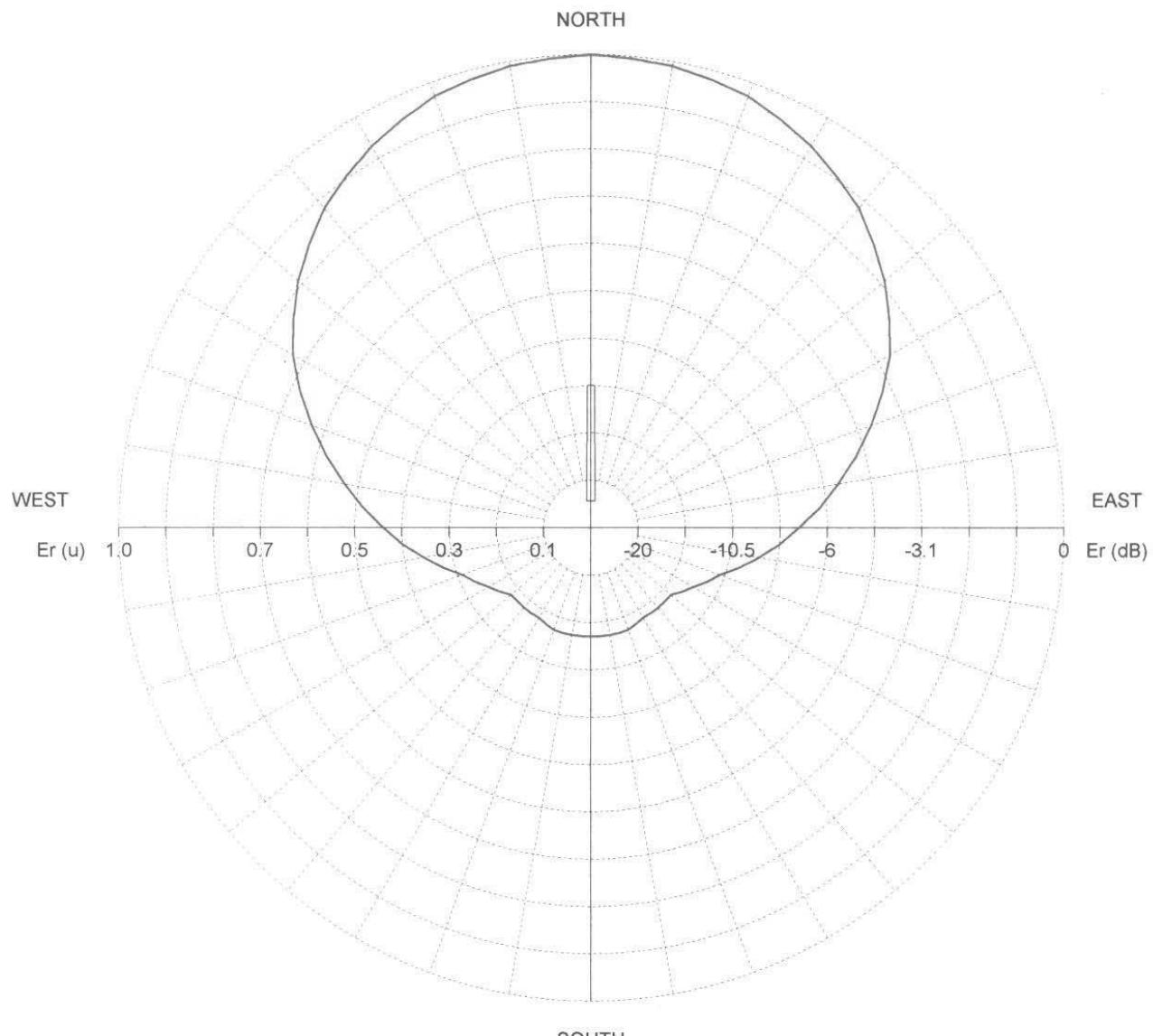


Exhibit 8
Copy of Manufacturer's Directional Antenna Documentation
(Actual Antenna Pattern rotated to 060.0°T) ***(public record copy)***

TX station: BKY/3
Frequency: 98.00 MHz

Site name:

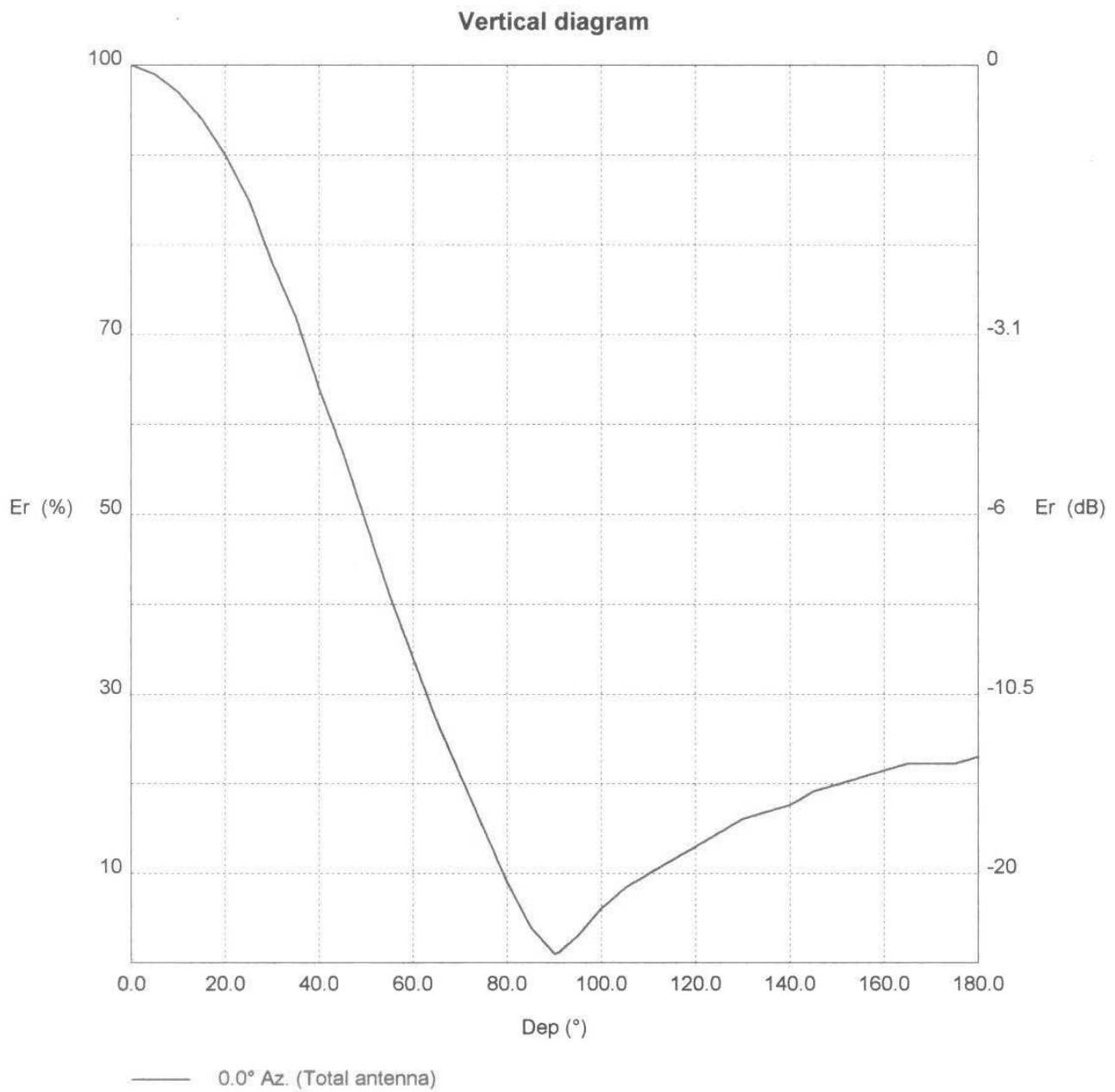


Exhibit 8
Copy of Manufacturer's Directional Antenna Documentation
(Actual Antenna Pattern rotated to 060.0°T) *(public record copy)*

TX station: BKY/3

Site name:

Frequency: 98.00 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	1.78	60.0	34.0	0.21	120.0	13.0	0.03
2.0	99.6	1.76	62.0	31.2	0.17	122.0	13.6	0.03
4.0	99.2	1.75	64.0	28.4	0.14	124.0	14.3	0.04
6.0	98.6	1.73	66.0	25.8	0.12	126.0	14.9	0.04
8.0	97.8	1.70	68.0	23.4	0.10	128.0	15.5	0.04
10.0	97.0	1.67	70.0	21.0	0.08	130.0	16.1	0.05
12.0	95.8	1.63	72.0	18.6	0.06	132.0	16.4	0.05
14.0	94.6	1.59	74.0	16.2	0.05	134.0	16.7	0.05
16.0	93.2	1.54	76.0	13.8	0.03	136.0	17.0	0.05
18.0	91.6	1.49	78.0	11.4	0.02	138.0	17.3	0.05
20.0	90.0	1.44	80.0	9.0	0.01	140.0	17.6	0.06
22.0	88.0	1.38	82.0	7.0	0.01	142.0	18.2	0.06
24.0	86.0	1.32	84.0	5.0	0.00	144.0	18.9	0.06
26.0	83.6	1.24	86.0	3.4	0.00	146.0	19.3	0.07
28.0	80.8	1.16	88.0	2.2	0.00	148.0	19.6	0.07
30.0	78.0	1.08	90.0	1.0	0.00	150.0	19.9	0.07
32.0	75.6	1.02	92.0	1.7	0.00	152.0	20.2	0.07
34.0	73.2	0.95	94.0	2.6	0.00	154.0	20.5	0.08
36.0	70.4	0.88	96.0	3.7	0.00	156.0	20.9	0.08
38.0	67.2	0.80	98.0	4.9	0.00	158.0	21.2	0.08
40.0	64.0	0.73	100.0	6.1	0.01	160.0	21.5	0.08
42.0	61.2	0.67	102.0	7.1	0.01	162.0	21.8	0.08
44.0	58.4	0.61	104.0	8.0	0.01	164.0	22.1	0.09
46.0	55.4	0.55	106.0	8.7	0.01	166.0	22.2	0.09
48.0	52.2	0.48	108.0	9.4	0.02	168.0	22.2	0.09
50.0	49.0	0.43	110.0	10.0	0.02	170.0	22.2	0.09
52.0	45.8	0.37	112.0	10.6	0.02	172.0	22.2	0.09
54.0	42.6	0.32	114.0	11.2	0.02	174.0	22.2	0.09
56.0	39.6	0.28	116.0	11.8	0.02	176.0	22.4	0.09
58.0	36.8	0.24	118.0	12.4	0.03	178.0	22.7	0.09

TX station: BKY/3

Site name:

Frequency: 98.00 MHz

Horizontal diagram at 0.0° depres. (Total antenna)

Az (°)	Er (%)	ERP (KW)	Az (°)	Er (%)	ERP (KW)	Az (°)	Er (%)	ERP (KW)
0.0	100.0	1.78	120.0	25.0	0.11	240.0	25.0	0.11
10.0	99.0	1.74	130.0	22.0	0.09	250.0	29.0	0.15
20.0	97.0	1.67	140.0	22.0	0.09	260.0	36.0	0.23
30.0	93.0	1.54	150.0	22.0	0.09	270.0	44.0	0.34
40.0	88.0	1.38	160.0	23.0	0.09	280.0	53.0	0.50
50.0	81.0	1.17	170.0	23.0	0.09	290.0	63.0	0.71
60.0	73.0	0.95	180.0	23.0	0.09	300.0	73.0	0.95
70.0	63.0	0.71	190.0	23.0	0.09	310.0	81.0	1.17
80.0	53.0	0.50	200.0	23.0	0.09	320.0	88.0	1.38
90.0	44.0	0.34	210.0	22.0	0.09	330.0	93.0	1.54
100.0	36.0	0.23	220.0	22.0	0.09	340.0	97.0	1.67
110.0	29.0	0.15	230.0	22.0	0.09	350.0	99.0	1.74