

Technical Report Supporting a Form 301-FM Minor Change Construction Permit Application

Pursuant to C.F.R. 47 Section 73:

*WPVQ(FM).L - Greenfield, MA
(Facility ID: 54780)*

*"Correction of Coordinates;
Correction of Ground Elevation;
& Minor Increase in Power to a
3.0 kW at 100 meter HAAT Equivalent
C.F.R. 47 Section 73.213(c) Operation"*

*as a
Class A (Former 3.0 kW)
FM Facility on
CH237A (95.3 MHz)*

October, 2017

Asher Broadcast Consulting, LLC
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EXPLANATION OF PROPOSAL: This Form 301-FM filing and accompanying technical report supports a Minor Change Construction Permit Application for FM station WPVQ(FM) - Greenfield, MA (Facility ID: 54780). While no physical change in site location is requested, a three second correction in coordinates and four meter correction in ground elevation has also been noted herein. Continued operation on the frequency of CH237A (95.3 MHz), with an adjusted power of 0.610 kW ERP (Circular Polarization) is requested at a corrected antenna height of 458 meters AMSL (224 meters HAAT). WPVQ(FM) will continue to employ a non-directional antenna. WPVQ(FM) will continue to serve the community of Greenfield, MA.

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 present service area as noted in the exhibit. In addition, this exhibit demonstrates city grade service of 3.16 mV/m, or 70 dBμ F(50:50), to 100% of the community of license.

A Longley-Rice coverage map of the proposed operation has been plotted in ***Exhibit 2***. The applicant acknowledges this map has been provided for illustrative purposes only.

The proposed facility will be located on the tower bearing Antenna Structure Registration Number 1009561. However in the process of preparing this filing, an error in coordinates and ground elevation was discovered with regard to the underling ASRN. Revised FAA Study 2017-ANE-4086-OE is currently pending to correct these errors. A corrected Antenna Structure Registration will be completed and provided to the Commission upon receipt of the future FAA “Determination of No Hazard”. In support of the corrected site location, a copy of the USGS Topographic Aerial Photograph for the corrected tower site has been included in ***Exhibit 3***. A depiction of the tower and antenna configuration has been included in ***Exhibit 4***.

The applicant would like to note use of the FCC's own Globe 1 km terrain database for the HAAT showing contained herein. A copy of the proposed HAAT calculation has been included in ***Exhibit 5***. In addition, the requested power of 0.610 kW ERP has been verified accurate for the proposed 224 meter HAAT value also as noted in ***Exhibit 5***.

As no change in frequency, class or community of license is proposed herein, the existing Special Allotment Reference Point of 42° 41' 50.00" NL; 72° 36' 20.00" WL (NAD 27) remains valid for this WPVQ(FM) - Greenfield, MA; CH237A (95.3 MHz) filing. These coordinates of record (*FA USED Allotment Record; CDBS Application ID: 291748*) represent a continued viable site location which meets both the current allocation restrictions and completely encompasses the community of license city limits with a 16.2 km Class A city grade reference arc.

ALLOCATION COMPLIANCE SHOWINGS: The proposed full-service site will meet all Class A spacing requirements of C.F.R. 47 Section 73.207 toward each allocation protection with the exception of three facilities. A tabulation of the existing spacing toward each relevant allocation protection is found in ***Exhibit 6***. In this instance, the proposed facility is presently licensed under the grandfathered Former 3 kW Class A Rules of C.F.R. 47 Section 73.213(C)(1) or 73.213(c)(2) toward WXL(FM) - Hartford, VT (CH237A); WVTQ(FM) - Sunderland, VT (CH236A); and WMAS-FM - Enfield, CT (CH234B).

Concerning C.F.R. 47 Section 73.213(C)(1) protection toward WXL(FM) - Hartford, VT (CH237A) and WVTQ(FM) - Sunderland, VT (CH236A); continued Former 3 kW Class A Spacings will be met as noted in ***Exhibit 7***.

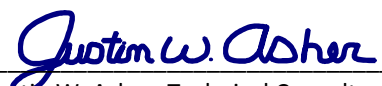
Concerning C.F.R. 47 Section 73.213(C)(2) protection toward WMAS-FM - Enfield, CT (CH234B); continued processing under C.F.R. 47 Section 73.213(C)(2) is respectfully requested herein as originally requested and granted under WMAS-FM Construction Permit Application BPH-20110104AAH. WMAS-FM Construction Permit Application BPH-20110104AAH states, *“WMAS-FM short-spacing with WPVQ is a grandfathered short-spacing under Section 73.213(c)(2). The proposal complies with Section 73.213(c)(2) as there will be no change in transmitter site or facilities. Furthermore, the proposal complies with FCC precedents in reallocation proposals involving such short-spacings. See Report and Order in MM Docket No. 02-49, Worcester and Westborough, Massachusetts, RM 10220, DA 03-3554. It is noted that based on the coordinate correction for the existing WMAS-FM tower site the separation with WPVQ will slightly decrease from 65.35 km to 65.32 km (0.03 km decrease). However, as both the present and proposed separations round to 65 km there will be no change in the separation to WPVQ based on FCC rounding procedures.”* In this instance, there will continue to be no additional change in either transmitter site location other than the WPVQ(FM) correction in coordinates. However, the correction will further relieve the WMAS-FM separation from 65.32 km to 65.41 km (by an additional 0.09 km). As both the present and proposed separations round to 65 km there will continue to be no change in the separation to WPVQ(FM) based on FCC rounding procedures. Full contour protection will continue to be afforded WMAS-FM as noted in ***Exhibit 8***.

The remainder of the information in this report is responsive to the Rules of the Commission, and provides the data for FCC Online Form 301, Section III-B.

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 with 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 existing antenna is being 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 eighteen 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 27, 2017

Exhibit 1

Service Contour Study: Present vs Proposed Operations

Proposed 60 dBμ F(50:50) Contour

Present 60 dBμ F(50:50) Contour

Proposed 70 dBμ F(50:50) Contour

Present 70 dBμ F(50:50) Contour

WPVQ.P⁺
WPVQ.L

WPVQ.P
Greenfield, MA
Proposed Operation
Facility ID: 54780
Latitude: 42-41-53 N
Longitude: 072-36-20 W
ERP: 0.61 kW
Channel: 237A (95.3 MHz)
AMSL Height: 458.0 m
Horiz. Pattern: Omni

70 dBμ F(50:50) Contour
Total Population: 42,084
Total Area: 612.5 sq. km

60 dBμ F(50:50) Contour
Total Population: 90,025
Total Area: 1,914.0 sq. km

WPVQ.L
Greenfield, MA
BLH20010410AAB
Facility ID: 54780
Latitude: 42-41-50 N
Longitude: 072-36-20 W
ERP: 0.57 kW
Channel: 237A (95.3 MHz)
AMSL Height: 454.0 m
Horiz. Pattern: Omni

70 dBμ F(50:50) Contour
Total Population: 41,274
Total Area: 583.0 sq. km

60 dBμ F(50:50) Contour
Total Population: 87,302
Total Area: 1,827.0 sq. km

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Terrain
27 1201 m

Scale 1:350,000
0 5 10 15 km

Exhibit 2

Service Contour Study: Proposed Longley-Rice Method

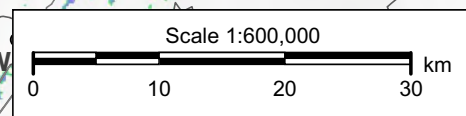
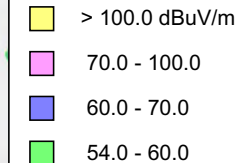
non-FCC-sanctioned coverage map
for illustrative purposes only

WPVQ.P
Greenfield, MA
Proposed Operation
Facility ID: 54780
Latitude: 42-41-53 N
Longitude: 072-36-20 W
ERP: 0.61 kW
Channel: 237A (95.3 MHz)
AMSL Height: 458.0 m
Horiz. Pattern: Omni
Prop Model: Longley-Rice
Climate: Cont temperate
Conductivity: 0.0050
Dielec Const: 15.0
Refractivity: 311.0
Receiver Ht AG: 2.0 m
Receiver Gain: 0 dB
Time Variability: 50.0%
Sit. Variability: 50.0%
ITM Mode: Broadcast

70 dBμ Longley-Rice Contour
Total Population: 58,186

60 dBμ Longley-Rice Contour
Total Population: 117,177

US Census 2010 PL Database



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The National Map Advanced Viewer

Exhibit 3 *USGS Aerial Photograph* *of Existing (Corrected) Site*

#1:1241.69 ft/378.47 m

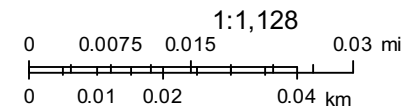
Site Coordinates

(NGS NADCON)

	<u>Latitude</u>	<u>Longitude</u>
NAD 27 datum values:	42 41 52.59842	72 36 20.17429
NAD 83 datum values:	42 41 52.90000	72 36 18.50000

October 20, 2017

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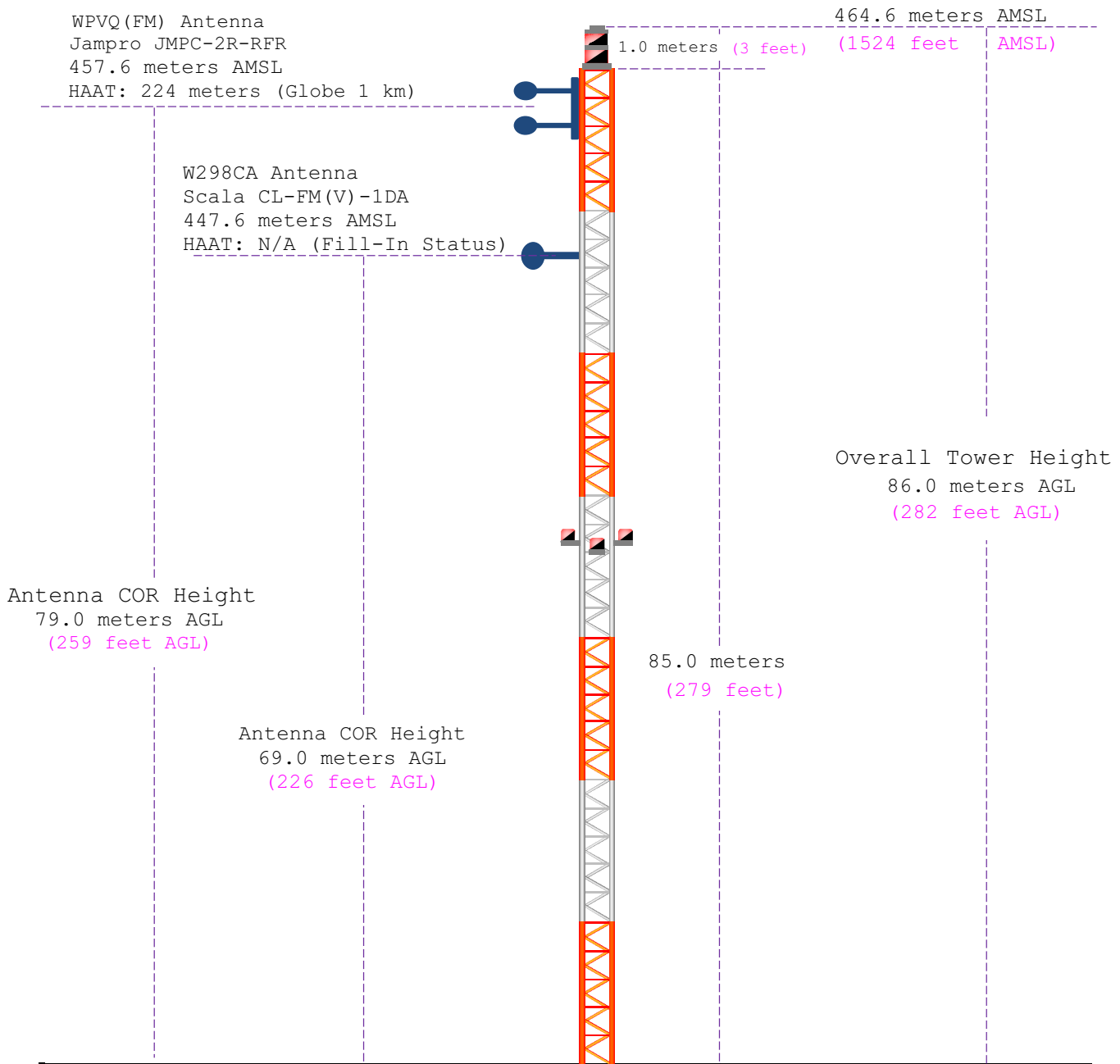


USGS The National Map: Orthoimagery
USGS The National Map: Orthoimagery

USGS

Exhibit 4

Vertical Plan of Antenna System



Ground Elevation: 378.6 meters AMSL (1242 feet AMSL)		
Address: 0.65 km north of the "T" intersection of Frizzell Hill Road and East Hill Road.		
City: Leyden	<u>Latitude (D M S)</u> <u>Longitude (D M S)</u>	
County: Franklin	NAD 27 datum values: 42 41 52.59842 72 36 20.17429	
State: Massachusetts	NAD 83 datum values: 42 41 52.90000 72 36 18.50000	
Antenna Structure Registration	Drawing	Asher Broadcast Consulting, LLC
1009561 (pending correction)	Is Not	justinasher@consultant.com
	To Scale	1(202)875-2986

Exhibit 5

HAAT and Miscellaneous Coordinate Information

HAAT Calculation (1927): (*fcc.gov*)

Antenna Height Above Average Terrain Calculations – Results

Input Data

Latitude 42° 41' 53" North
 Longitude 72° 36' 20" West (NAD 83)

Height of antenna radiation center above mean sea level: 457.6 meters AMSL

Number of Evenly Spaced Radials = 8 (0° is referenced to True North)

Results

Calculated HAAT = 224 meters

Antenna Height Above Average Terrain calculated using 1 km [GLOBE terrain data](#)

Individual "Radial HAAT" Values, in meters

0°	214.4 m
45°	282.9 m
90°	283.3 m
135°	301.6 m
180°	353.0 m
225°	181.0 m
270°	128.4 m
315°	50.6 m

[Print Results?](#) [New Calculation?](#)

FMpower Results

Section 73.213(c) grandfathered 3 kW Class A facilities for equivalency determination:
 Reference ERP = 3.000 kW ERP
 Reference HAAT = 100 meters HAAT
 E(50.50) 60 dBu protected contour at 24.2 km distance

Equivalent ERP = 0.610 kilowatts (kW)
 (rounded per [47 CFR 73.212](#))

Unrounded ERP = 0.607 kW for 224 meters HAAT

Class A FM stations are authorized throughout the United States.

[New Calculation?](#)

NAD 1983 to NAD 1927 Conversion:

	<u>Latitude</u>	<u>Longitude</u>
NAD 27 datum values:	42 41 52.59842	72 36 20.17429
NAD 83 datum values:	42 41 52.90000	72 36 18.50000

Various Coordinate Conversion Calculations (NAD 1983):

Position Type	Lat Lon
Degrees Lat Long	42.6980278°, -072.6051389°
Degrees Minutes	42°41.88167', -072°36.30833'
Degrees Minutes Seconds	42°41'52.9000", -072°36'18.5000"
UTM	18T 696159mE 4730063mN
UTM centimeter	18T 696159.04mE 4730063.07mN
MGRS	18TXN9615930063
Grid North	1.6°
GARS	215MB42
Maidenhead	FN32QQ77JM26
GEOREF	HJCN23694188

Exhibit 6

Tabulation of Proposed Commercial Spacings

Green Text indicates continued processing under C.F.R. 47 Section 73.213(c)(1) for select grandfathered Former 3 kW Class A Stations. This proposal will remain fully spaced under the C.F.R. 47 Section 73.213(c)(1) Former 3 kW Spacings as noted in **Exhibit 7**.

Red Text indicates continued processing under C.F.R. 47 Section 73.213(c)(2) toward WMAS-FM - Enfield, CT (FAC ID: 36543) as originally requested and granted in WMAS-FM Construction Permit Application BPH-20110104AAH. Full Protection will be afforded WMAS-FM as noted in **Exhibit 8**.

Saga Communications Of New England, Llc

REFERENCE	CLASS = A Int = A	DISPLAY DATES
42 41 53.0 N.		DATA 10-24-17
72 36 20.0 W.	Current Spacings to 3rd Adj.	SEARCH 10-24-17
----- Channel 237 - 95.3 MHz -----		

Call	Channel	Location	Power	Azi	Dist	FCC	Margin
Lat.	Lng.	Ant			HAAT		
WPVQ	LIC 237A	Greenfield	MA	180.0	0.09	114.5	-114.4
42 41 50.0	72 36 20.0	C	0.570 kW		232 M		
Saga Communications Of Ne BLH20010410AAB							
WXLF	LIC-Z 237A	Hartford	VT	13.2	109.13	114.5	-5.4
43 39 14.0	72 17 44.0	ZCX	6.000 kW		87 M		
Wbin Media Co., Inc. BLH20110317ACH							
R10401	DEL 237A	White River	VT	13.2	109.14	114.5	-5.4
43 39 14.0	72 17 43.0		0.000 kW		100 M		
Nassau Broadcasting Iii, L							
WVTQ	LIC-N 236A	Sunderland	VT	321.5	66.69	71.5	-4.8
43 09 58.0	73 07 02.0	NC	0.096 kW		731 M		
Vermont Public Radio BML20060526AHS							
WMAS-FM	LIC 234B	Enfield	CT	180.4	65.41	68.5	-3.1
42 06 33.0	72 36 40.0	CX	50.000 kW		55 M		
Radio License Holding Cbc, BLH20111107ARY							
R10401	ADD 237A	Hartford	VT	9.3	116.10	114.5	1.6
43 43 45.0	72 22 22.0		0.000 kW		100 M		
Nassau Broadcasting Iii, L							
WYJB	LIC 238B	Albany	NY	267.0	114.52	112.5	2.0
42 38 11.0	74 00 00.0	CN	12.000 kW		312 M		
6 Johnson Road Licenses, I BLH19860131KB							
WHRB	LIC-N 237A	Cambridge	MA	106.3	132.91	114.5	18.4
42 21 08.0	71 03 25.0	NCN	1.450 kW		185 M		
Harvard Radio Broadcasting BLH20111115ABD							
WLVO	CP -Z 238B	Providence	RI	138.7	131.74	112.5	19.2
41 48 12.0	71 33 27.0	ZCN	26.000 kW		209 M		
Brown Broadcasting Service BPH20161216AAF							
WZID	LIC 239B	Manchester	NH	68.7	88.93	68.5	20.4
42 59 02.0	71 35 22.0	CN	14.500 kW		282 M		
Saga Communications Of New BLH19870928KA							

Reference station has protected zone issue: Canada
All separation margins include rounding

Exhibit 7

Tabulation of Licensed & Proposed C.F.R. 47 Section 73.213(c)(1) Former 3 kW Class A "Grandfathered" Commercial Spacings

Green Text indicates continued processing under C.F.R. 47 Section 73.213(c)(1) for select grandfathered Former 3 kW Class A Stations. This proposal will remain fully spaced under the C.F.R. 47 Section 73.213(c)(1) Former 3 kW Spacings as noted in **Exhibit 7**.

Red Text indicates continued processing under C.F.R. 47 Section 73.213(c)(2) toward WMAS-FM - Enfield, CT (FAC ID: 36543) as originally requested and granted in WMAS-FM Construction Permit Application BPH-20110104AAH. Full Protection will be afforded WMAS-FM as noted in **Exhibit 8**.

Licensed Operation

```

REFERENCE                                     DISPLAY DATES
42 41 50.0 N.                               DATA  10-24-17
72 36 20.0 W.                               SEARCH 10-24-17
----- CLASS = A  Int = A -----
Former Spacings to 3rd Adj.
----- Channel 237 - 95.3 MHz -----

```

Call	Channel	Location	Azi	Dist	FCC	Margin
WPVQ	LIC 237A	Greenfield MA	0.0	0.00	104.5	-104.5
WMAS-FM	LIC 234B	Enfield CT	180.4	65.32	68.5	-3.2
WVTQ	LIC-N 236A	Sunderland VT	321.6	66.76	63.5	3.3
WXLFF	LIC-Z 237A	Hartford VT	13.2	109.22	104.5	4.7
R10401	DEL 237A	White River Junction VT	13.2	109.23	104.5	4.7
WYJB	LIC 238B	Albany NY	267.1	114.51	104.5	10.0
R10401	ADD 237A	Hartford VT	9.3	116.19	104.5	11.7
WZID	LIC 239B	Manchester NH	68.6	88.96	68.5	20.5

Reference station has protected zone issue: Canada
All separation margins include rounding

Proposed Operation

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REFERENCE                                     DISPLAY DATES
42 41 53.0 N.                               DATA  10-24-17
72 36 20.0 W.                               SEARCH 10-24-17
----- CLASS = A  Int = A -----
Former Spacings to 3rd Adj.
----- Channel 237 - 95.3 MHz -----

```

Call	Channel	Location	Azi	Dist	FCC	Margin
WPVQ	LIC 237A	Greenfield MA	180.0	0.09	104.5	-104.4
WMAS-FM	LIC 234B	Enfield CT	180.4	65.41	68.5	-3.1
WVTQ	LIC-N 236A	Sunderland VT	321.5	66.69	63.5	3.2
WXLFF	LIC-Z 237A	Hartford VT	13.2	109.13	104.5	4.6
R10401	DEL 237A	White River Junction VT	13.2	109.14	104.5	4.6
WYJB	LIC 238B	Albany NY	267.0	114.52	104.5	10.0
R10401	ADD 237A	Hartford VT	9.3	116.10	104.5	11.6
WZID	LIC 239B	Manchester NH	68.7	88.93	68.5	20.4

Reference station has protected zone issue: Canada
All separation margins include rounding

Exhibit 8
Proposed C.F.R. 47 Section 73.213(c)(2)
Former 3 kW Class A "Grandfathered" Contour Protection Studies

Saga Communications Of New England, Llc

FMCommander Single Allocation Study - 10-24-2017 - FCC NGDC 30 Sec
WPVQ.P's Overlaps (In= 30.71 km, Out= 10.61 km)

WPVQ.P CH 237 A
Lat= 42 41 53.0, Lng= 72 36 20.0
0.61 kW, 458 m COR
Prot.= 60 dBu, Intef.= 94 dBu

WMAS-FM CH 234 B BLH20111107ARY
Lat= 42 06 33.0, Lng= 72 36 40.0
50.0 kW, 117 m COR
Prot.= 54 dBu, Intef.= 100 dBu

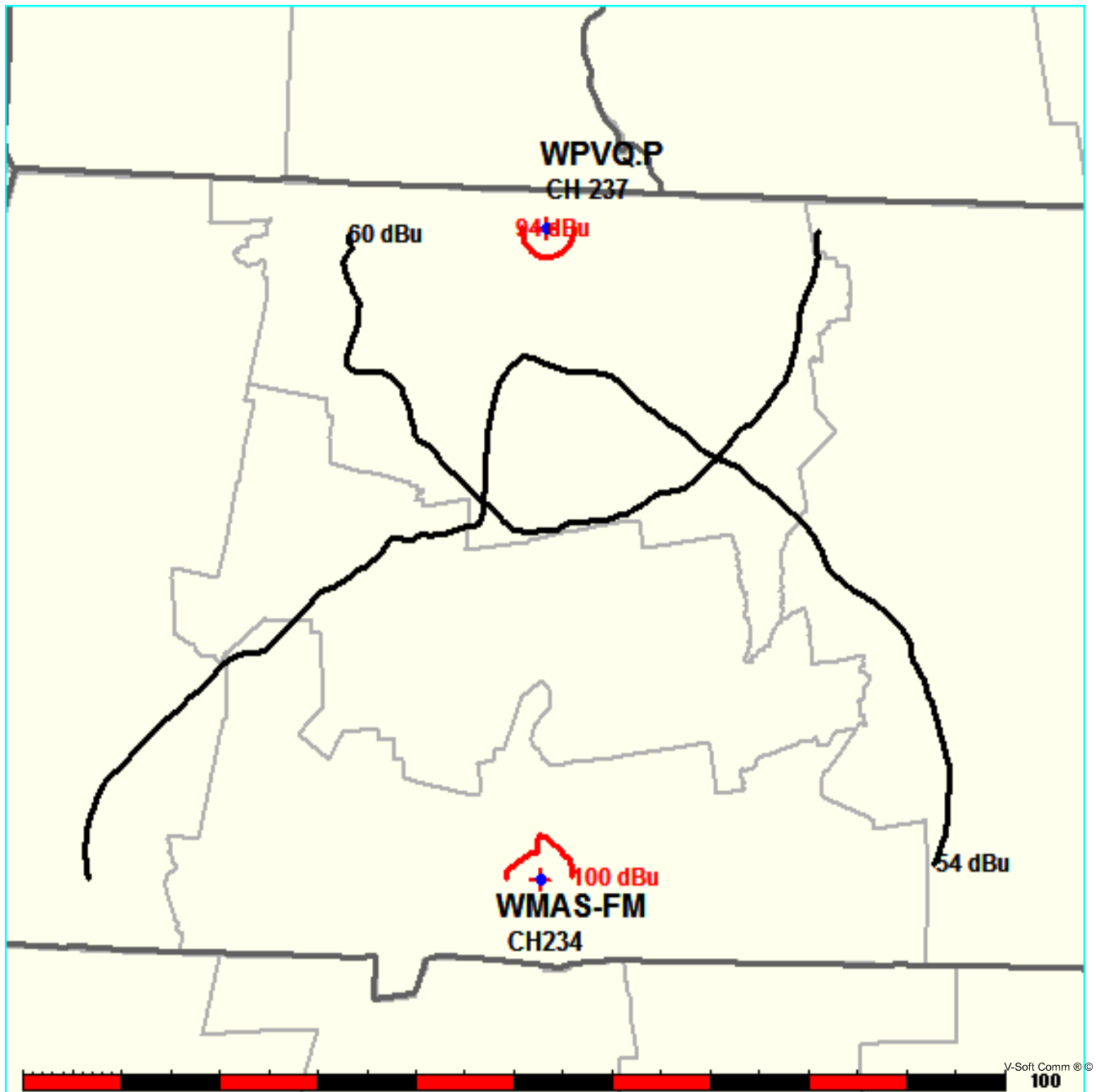


Exhibit 8

Proposed C.F.R. 47 Section 73.213(c)(2)

Former 3 kW Class A "Grandfathered" Contour Protection Studies

10-24-2017 Terrain Data: FCC NGDC 30 Sec FMOver Analysis

WPVQ.P

WMAS-FM BLH20111107ARY

Channel = 237A
 Max ERP = 0.61 kW
 RCAMSL = 458 m
 N. Lat. 42 41 53.0
 W. Lng. 72 36 20.0
 Protected
 60 dBu

Channel = 234B
 Max ERP = 50 kW
 RCAMSL = 117 m
 N. Lat. 42 06 33.0
 W. Lng. 72 36 40.0
 Interfering
 100 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
139.0	000.6100	0320.0	028.7	023.8	050.0000	0053.3	047.9	57.12	
140.0	000.6100	0322.8	028.8	023.6	050.0000	0053.3	047.4	57.27	
141.0	000.6100	0324.7	028.9	023.5	050.0000	0053.2	046.9	57.42	
142.0	000.6100	0326.1	029.0	023.2	050.0000	0053.2	046.4	57.56	
143.0	000.6100	0327.8	029.1	023.0	050.0000	0053.2	045.9	57.71	
144.0	000.6100	0329.0	029.1	022.7	050.0000	0053.2	045.5	57.86	
145.0	000.6100	0330.2	029.2	022.5	050.0000	0053.2	045.0	58.01	
146.0	000.6100	0331.5	029.2	022.2	050.0000	0053.2	044.5	58.17	
147.0	000.6100	0333.8	029.3	021.9	050.0000	0053.3	044.0	58.33	
148.0	000.6100	0337.0	029.5	021.7	050.0000	0053.3	043.5	58.51	
149.0	000.6100	0340.2	029.6	021.4	050.0000	0053.4	043.0	58.69	
150.0	000.6100	0342.3	029.7	021.1	050.0000	0053.6	042.6	58.87	
151.0	000.6100	0342.8	029.8	020.7	050.0000	0053.8	042.2	59.06	
152.0	000.6100	0342.3	029.7	020.2	050.0000	0054.2	041.8	59.25	
153.0	000.6100	0340.9	029.7	019.6	050.0000	0054.8	041.5	59.45	
154.0	000.6100	0337.7	029.5	019.0	050.0000	0055.6	041.2	59.65	
155.0	000.6100	0333.5	029.3	018.3	050.0000	0056.4	041.0	59.84	
156.0	000.6100	0330.1	029.2	017.6	050.0000	0057.1	040.7	60.02	
157.0	000.6100	0329.3	029.1	017.0	050.0000	0057.5	040.4	60.18	
158.0	000.6100	0331.0	029.2	016.5	050.0000	0057.8	040.0	60.37	
159.0	000.6100	0334.1	029.4	016.1	050.0000	0058.1	039.6	60.57	
160.0	000.6100	0337.0	029.5	015.6	050.0000	0058.5	039.2	60.78	
161.0	000.6100	0339.8	029.6	015.1	050.0000	0059.2	038.8	61.02	
162.0	000.6100	0342.5	029.7	014.5	050.0000	0059.8	038.4	61.25	
163.0	000.6100	0345.1	029.9	014.0	050.0000	0060.6	038.0	61.50	
164.0	000.6100	0346.5	029.9	013.3	050.0000	0061.5	037.7	61.72	
165.0	000.6100	0347.0	029.9	012.7	050.0000	0062.3	037.5	61.94	
166.0	000.6100	0347.4	030.0	012.0	050.0000	0063.6	037.2	62.18	
167.0	000.6100	0348.3	030.0	011.2	050.0000	0065.0	036.9	62.46	
168.0	000.6100	0348.7	030.0	010.5	050.0000	0066.7	036.7	62.75	
169.0	000.6100	0348.0	030.0	009.7	050.0000	0068.8	036.6	63.06	
170.0	000.6100	0346.5	029.9	008.9	050.0000	0070.7	036.4	63.33	

Exhibit 8
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Former 3 kW Class A "Grandfathered" Contour Protection Studies

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
171.0	000.6100	0346.3	029.9	008.1	050.0000	0072.0	036.3	63.54
172.0	000.6100	0345.8	029.9	007.3	050.0000	0072.7	036.2	63.68
173.0	000.6100	0344.3	029.8	006.5	050.0000	0072.9	036.1	63.72
174.0	000.6100	0343.5	029.8	005.7	050.0000	0073.0	036.0	63.76
175.0	000.6100	0344.2	029.8	004.9	050.0000	0072.8	035.9	63.80
176.0	000.6100	0347.8	030.0	004.1	050.0000	0072.3	035.7	63.85
177.0	000.6100	0352.3	030.2	003.3	050.0000	0072.3	035.4	63.96
178.0	000.6100	0356.6	030.4	002.5	050.0000	0073.0	035.1	64.14
179.0	000.6100	0357.9	030.4	001.6	050.0000	0073.8	035.1	64.28
180.0	000.6100	0358.6	030.5	000.7	050.0000	0074.8	035.0	64.41
181.0	000.6100	0359.3	030.5	359.9	050.0000	0076.2	035.0	64.58
182.0	000.6100	0360.9	030.6	359.0	050.0000	0077.7	034.9	64.76
183.0	000.6100	0363.1	030.7	358.1	050.0000	0078.6	034.9	64.89
184.0	000.6100	0363.8	030.7	357.2	050.0000	0076.4	034.9	64.64
185.0	000.6100	0362.1	030.6	356.4	050.0000	0073.8	035.0	64.28
186.0	000.6100	0359.8	030.5	355.5	050.0000	0070.9	035.2	63.86
187.0	000.6100	0355.5	030.3	354.8	050.0000	0065.5	035.5	63.12
188.0	000.6100	0348.1	030.0	354.1	050.0000	0060.1	036.0	62.27
189.0	000.6100	0339.3	029.6	353.4	050.0000	0055.0	036.5	61.37
190.0	000.6100	0329.7	029.1	352.9	050.0000	0049.6	037.1	60.29
191.0	000.6100	0321.6	028.8	352.3	050.0000	0044.3	037.6	59.17
192.0	000.6100	0317.0	028.6	351.7	050.0000	0038.8	037.9	58.01
193.0	000.6100	0313.3	028.4	351.1	050.0000	0033.3	038.3	56.78
194.0	000.6100	0308.6	028.2	350.5	050.0000	0030.3	038.7	56.03
195.0	000.6100	0301.7	027.9	350.1	050.0000	0029.5	039.1	55.80
196.0	000.6100	0294.0	027.5	349.6	050.0000	0028.6	039.7	55.63
197.0	000.6100	0286.6	027.2	349.2	050.0000	0027.4	040.2	55.47
198.0	000.6100	0280.7	026.9	348.8	050.0000	0025.8	040.6	55.32
199.0	000.6100	0276.6	026.7	348.4	050.0000	0023.8	041.0	55.20
200.0	000.6100	0272.5	026.6	348.0	050.0000	0021.3	041.4	55.08
201.0	000.6100	0268.7	026.4	347.6	050.0000	0019.2	041.8	54.96
202.0	000.6100	0265.8	026.2	347.2	050.0000	0018.3	042.2	54.85
203.0	000.6100	0262.9	026.1	346.8	050.0000	0018.3	042.6	54.74
204.0	000.6100	0258.5	025.9	346.4	050.0000	0018.8	043.0	54.62
205.0	000.6100	0252.5	025.6	346.2	050.0000	0019.3	043.5	54.48
206.0	000.6100	0246.5	025.3	346.0	050.0000	0019.9	044.0	54.35
207.0	000.6100	0242.5	025.2	345.7	050.0000	0020.6	044.4	54.23
208.0	000.6100	0240.8	025.1	345.4	050.0000	0021.3	044.8	54.14
209.0	000.6100	0239.4	025.0	345.0	050.0000	0021.9	045.1	54.05
210.0	000.6100	0238.9	025.0	344.6	050.0000	0022.3	045.5	53.96
211.0	000.6100	0239.4	025.0	344.2	050.0000	0022.8	045.8	53.89
212.0	000.6100	0237.3	024.9	344.0	050.0000	0023.2	046.1	53.79
213.0	000.6100	0230.7	024.6	343.9	050.0000	0023.3	046.7	53.66
214.0	000.6100	0222.7	024.2	344.0	050.0000	0023.2	047.3	53.52

Exhibit 8

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Former 3 kW Class A "Grandfathered" Contour Protection Studies

10-24-2017 Terrain Data: FCC NGDC 30 Sec FMOver Analysis

WMAS-FM BLH20111107ARY

WPVQ.P

Channel = 234B
 Max ERP = 50 kW
 RCAMSL = 117 m
 N. Lat. 42 06 33.0
 W. Lng. 72 36 40.0
 Protected
 54 dBu

Channel = 237A
 Max ERP = 0.61 kW
 RCAMSL = 458 m
 N. Lat. 42 41 53.0
 W. Lng. 72 36 20.0
 Interfering
 94 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
317.0	050.0000	0027.9	036.1	212.7	000.6100	0232.9	046.4	49.89	
318.0	050.0000	0028.6	036.1	212.5	000.6100	0234.3	045.8	50.20	
319.0	050.0000	0029.7	036.1	212.3	000.6100	0235.8	045.2	50.52	
320.0	050.0000	0030.8	036.5	212.5	000.6100	0234.5	044.5	50.77	
321.0	050.0000	0031.2	036.7	212.5	000.6100	0234.7	043.8	51.06	
322.0	050.0000	0031.0	036.5	212.0	000.6100	0237.2	043.3	51.40	
323.0	050.0000	0030.3	036.3	211.4	000.6100	0239.1	042.8	51.70	
324.0	050.0000	0029.5	036.1	210.9	000.6100	0239.4	042.2	51.94	
325.0	050.0000	0028.8	036.1	210.5	000.6100	0239.3	041.7	52.19	
326.0	050.0000	0028.5	036.1	210.2	000.6100	0239.1	041.1	52.44	
327.0	050.0000	0028.8	036.1	209.8	000.6100	0238.9	040.5	52.69	
328.0	050.0000	0029.3	036.1	209.4	000.6100	0239.0	040.0	52.94	
329.0	050.0000	0029.7	036.1	208.9	000.6100	0239.5	039.4	53.21	
330.0	050.0000	0030.0	036.1	208.4	000.6100	0240.2	038.9	53.49	
331.0	050.0000	0030.3	036.2	208.1	000.6100	0240.7	038.3	53.78	
332.0	050.0000	0030.5	036.3	207.7	000.6100	0241.2	037.7	54.07	
333.0	050.0000	0030.7	036.4	207.3	000.6100	0241.9	037.1	54.37	
334.0	050.0000	0031.3	036.7	207.0	000.6100	0242.5	036.5	54.71	
335.0	050.0000	0032.4	037.2	207.0	000.6100	0242.6	035.7	55.10	
336.0	050.0000	0033.1	037.5	206.7	000.6100	0243.4	035.0	55.47	
337.0	050.0000	0032.7	037.3	205.8	000.6100	0247.8	034.6	55.80	
338.0	050.0000	0031.6	036.8	204.4	000.6100	0256.0	034.4	56.14	
339.0	050.0000	0031.0	036.5	203.4	000.6100	0261.5	034.2	56.45	
340.0	050.0000	0031.3	036.7	202.8	000.6100	0263.7	033.6	56.79	
341.0	050.0000	0031.2	036.7	201.9	000.6100	0266.0	033.2	57.07	
342.0	050.0000	0029.3	036.1	200.5	000.6100	0270.6	033.2	57.21	
343.0	050.0000	0025.7	036.1	199.6	000.6100	0274.1	032.8	57.51	
344.0	050.0000	0023.2	036.1	198.7	000.6100	0277.8	032.5	57.80	
345.0	050.0000	0021.9	036.1	197.8	000.6100	0281.9	032.1	58.11	
346.0	050.0000	0019.8	036.1	196.8	000.6100	0288.0	031.8	58.46	
347.0	050.0000	0018.2	036.1	195.8	000.6100	0295.4	031.5	58.85	

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Former 3 kW Class A "Grandfathered" Contour Protection Studies

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
348.0	050.0000	0021.4	036.1	194.8	000.6100	0303.2	031.2	59.23
349.0	050.0000	0026.5	036.1	193.8	000.6100	0309.9	030.9	59.57
350.0	050.0000	0029.4	036.1	192.7	000.6100	0314.5	030.7	59.83
351.0	050.0000	0032.6	037.2	192.4	000.6100	0315.7	029.4	60.60
352.0	050.0000	0041.6	041.2	194.1	000.6100	0308.0	025.4	62.95
353.0	050.0000	0051.0	045.1	196.0	000.6100	0294.0	021.6	65.40
354.0	050.0000	0059.5	047.9	197.0	000.6100	0286.6	018.7	67.51
355.0	050.0000	0067.4	049.9	196.9	000.6100	0287.1	016.5	69.33
356.0	050.0000	0072.5	051.1	195.5	000.6100	0297.7	015.0	70.88
357.0	050.0000	0075.7	051.9	193.1	000.6100	0313.0	014.0	72.43
358.0	050.0000	0078.5	052.5	190.0	000.6100	0329.8	013.2	74.00
359.0	050.0000	0077.7	052.3	185.9	000.6100	0360.0	013.2	74.73
000.0	050.0000	0076.0	051.9	181.9	000.6100	0360.8	013.5	74.34
001.0	050.0000	0074.4	051.6	178.2	000.6100	0357.1	013.9	73.74
002.0	050.0000	0073.4	051.3	174.6	000.6100	0343.6	014.2	73.00
003.0	050.0000	0072.5	051.1	171.3	000.6100	0346.3	014.6	72.63
004.0	050.0000	0072.3	051.1	167.9	000.6100	0348.7	014.9	72.37
005.0	050.0000	0072.9	051.2	164.5	000.6100	0346.8	015.0	72.13
006.0	050.0000	0073.0	051.2	161.4	000.6100	0340.8	015.3	71.71
007.0	050.0000	0072.9	051.2	158.5	000.6100	0332.4	015.8	71.14
008.0	050.0000	0072.2	051.0	156.0	000.6100	0330.1	016.3	70.59
009.0	050.0000	0070.6	050.7	154.2	000.6100	0336.9	017.2	70.09
010.0	050.0000	0068.1	050.0	153.0	000.6100	0340.8	018.2	69.36
011.0	050.0000	0065.5	049.4	152.1	000.6100	0342.2	019.2	68.56
012.0	050.0000	0063.5	048.9	151.2	000.6100	0342.7	020.1	67.82
013.0	050.0000	0061.9	048.5	150.2	000.6100	0342.4	021.0	67.13
014.0	050.0000	0060.6	048.2	149.2	000.6100	0340.6	021.8	66.45
015.0	050.0000	0059.3	047.8	148.3	000.6100	0338.1	022.7	65.73
016.0	050.0000	0058.2	047.5	147.5	000.6100	0335.2	023.5	65.04
017.0	050.0000	0057.5	047.3	146.6	000.6100	0332.8	024.3	64.43
018.0	050.0000	0056.7	047.0	145.8	000.6100	0331.2	025.1	63.82
019.0	050.0000	0055.6	046.7	145.4	000.6100	0330.6	025.9	63.20
020.0	050.0000	0054.4	046.3	145.0	000.6100	0330.2	026.8	62.60
021.0	050.0000	0053.6	046.0	144.5	000.6100	0329.7	027.6	62.05
022.0	050.0000	0053.3	045.9	143.9	000.6100	0328.9	028.4	61.56
023.0	050.0000	0053.2	045.9	143.1	000.6100	0327.9	029.1	61.11
024.0	050.0000	0053.3	045.9	142.2	000.6100	0326.5	029.8	60.67
025.0	050.0000	0053.5	046.0	141.4	000.6100	0325.3	030.4	60.25
026.0	050.0000	0053.4	046.0	140.8	000.6100	0324.5	031.2	59.83
027.0	050.0000	0052.9	045.8	140.5	000.6100	0323.9	032.0	59.40
028.0	050.0000	0052.2	045.5	140.4	000.6100	0323.6	032.8	58.98
029.0	050.0000	0051.8	045.4	140.1	000.6100	0323.1	033.6	58.58
030.0	050.0000	0051.5	045.3	139.8	000.6100	0322.4	034.4	58.18