

Technical Report Supporting a Form 349 Application for a New FM Translator Station

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

for

*CH275D.P - Canton, NC
CH275D (102.9 MHz)*

"New FM Translator Operation"

as a

*Commercial, Fill-In Translator
for Class D AM Station
WYSE(AM) - Canton, NC*

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Explanation of Technical Report

1

EXPLANATION OF PROPOSAL: This Form 349 Filing and accompanying technical report supports an Original Construction Permit Application for a new FM Translator facility for CH275D.P - Canton, NC. This FCC Form 349 Filing requests a new CH275D (102.9 MHz) operation with a power of 0.099 kW ERP (vertical only polarization). The FM Translator will operate from a COR of 1023 meters AMSL. This Form 349 Filing will specify rebroadcast of Class D, AM Primary Station WYSE(AM) - Canton, NC (970 kHz); Facility ID No. 51155. The Translator will be licensed to the community of Canton, NC.

FACILITY COMPLIANCE SHOWINGS: A map of the proposed 60 dB μ service contour has been included in ***Exhibit 1***. 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 33.5 meter tower which does not require Antenna Structure Registration. In support of this filing, a copy of USGS Topographic Mapping and Aerial Photography of the existing tower site has been included in ***Exhibit(s) 3(a)*** and ***3(b)***. 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 C.F.R. 47 Section 74.1204 toward all allocation protection concerns with the exception of WMYI(FM) - Hendersonville, NC (CH273C1). A general allocation study for this proposal is found in ***Exhibit 6***.

The applicant would like to note the existence of a §74.1204(d) Second/Third Adjacent Channel Given Interference Waiver Request toward WMYI(FM) - Hendersonville, NC (CH273C1) as included in ***Exhibit 8***. The Interference Contour at the proposed Translator site has been calculated to be no less than the 106.3 dBμ F(50:10) interference contour corresponding to the worst case protected contour at the Translator site. This represents the proposed interference contour which falls wholly within the 40:1 dBu ratio. As seen in the Aerial Photograph, there is a lack of population, housing, buildings or major roads within this interference contour. The applicant would like to note the existence of multiple dedicated transmitter buildings located at the remote mountain top site. However, structures of this nature have been exempt as a matter of FCC Policy. A copy of the antenna manufacturer's directional antenna pattern has been included in ***Exhibit 9***.

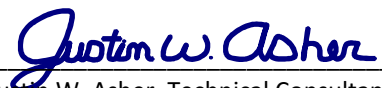
There are four additional facilities, existing or proposed, close enough to merit further study. Therefore, a supplemental contour protection study has been provided toward each facility as included in ***Exhibit(s) 7(a-d)***. It is believed sufficient clearance exists, precluding the need for additional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

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

ENVIRONMENTAL COMPLIANCE SHOWINGS: The proposed facility complies with the maximum permissible radiofrequency electromagnetic exposure limits for controlled and uncontrolled environments as set forth under §1.1310 and/or §1.1307(b)(3) of the Commission's rules and the 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 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 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

June 13, 2017

Exhibit 1
Service Contour Study:
Present vs Proposed Operations

Proposed 60 dBμ F(50:50) Contour

CH275D.P
Canton, NC
Proposed Operation
Facility ID: new
Latitude: 35-36-05 N
Longitude: 082-39-06 W
ERP: 0.099 kW
Channel: 275D (102.9 MHz)
AMSL Height: 1023.0 m
Horiz. Pattern: Directional

60 dBμ F(50:50) Contour
Total Population: 150,482
Coverage Area: 666.2 sq. km

CH275D.P
+

NED 03 SEC Terrain Database
US Census 2010 PL Database

Terrain
256 2029 m

Scale 1:200,000
0 3 6 9 km

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

V-Soft Communications LLC ©

Exhibit 2

Service Contour Study: Proposed vs Primary Operations

WYSE 970 kHz
Canton, North Carolina
Station Class: D
Region 2 Class: B
Facility ID: 51155
File Number: BL-
35-31-58.0 N 82-51-58.0 W (NAD 27)
35-31-58.4 N 82-51-57.5 W (NAD 83)
Power: 5 kW, Non-Directional
Hours: Daytime
Pattern Type: Theoretical
Towers: 1 Augmentations: 0
Tower Electrical Height: 88.8 Deg; 76.24 m
RMS Theoretical: 305.78 mV/meter (per kW)
or 683.74 mV/meter at 5 kW

CH275D.P
Canton, NC
Proposed Operation
Facility ID: new
Latitude: 35-36-05 N
Longitude: 082-39-06 W
ERP: 0.099 kW
Channel: 275D (102.9 MHz)
AMSL Height: 1023.0 m
Horiz. Pattern: Directional

Terrain
195 2027 m

NED 03 SEC Terrain Database
US Census 2010 PL Database

Scale 1:500,000
0 8 16 24 km

V-Soft Communications LLC ©

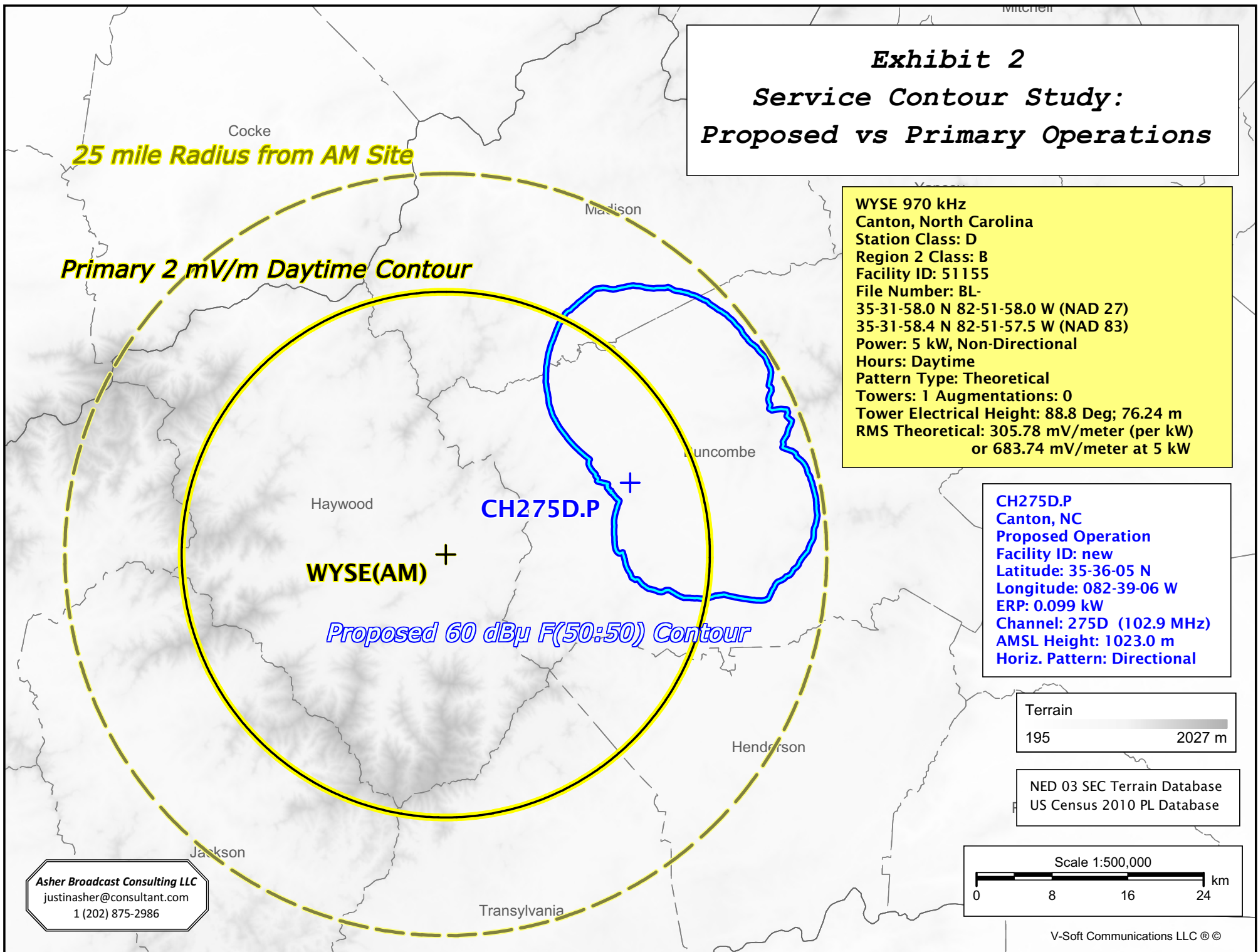


Exhibit 3(a) - Topographic Map of Existing Site

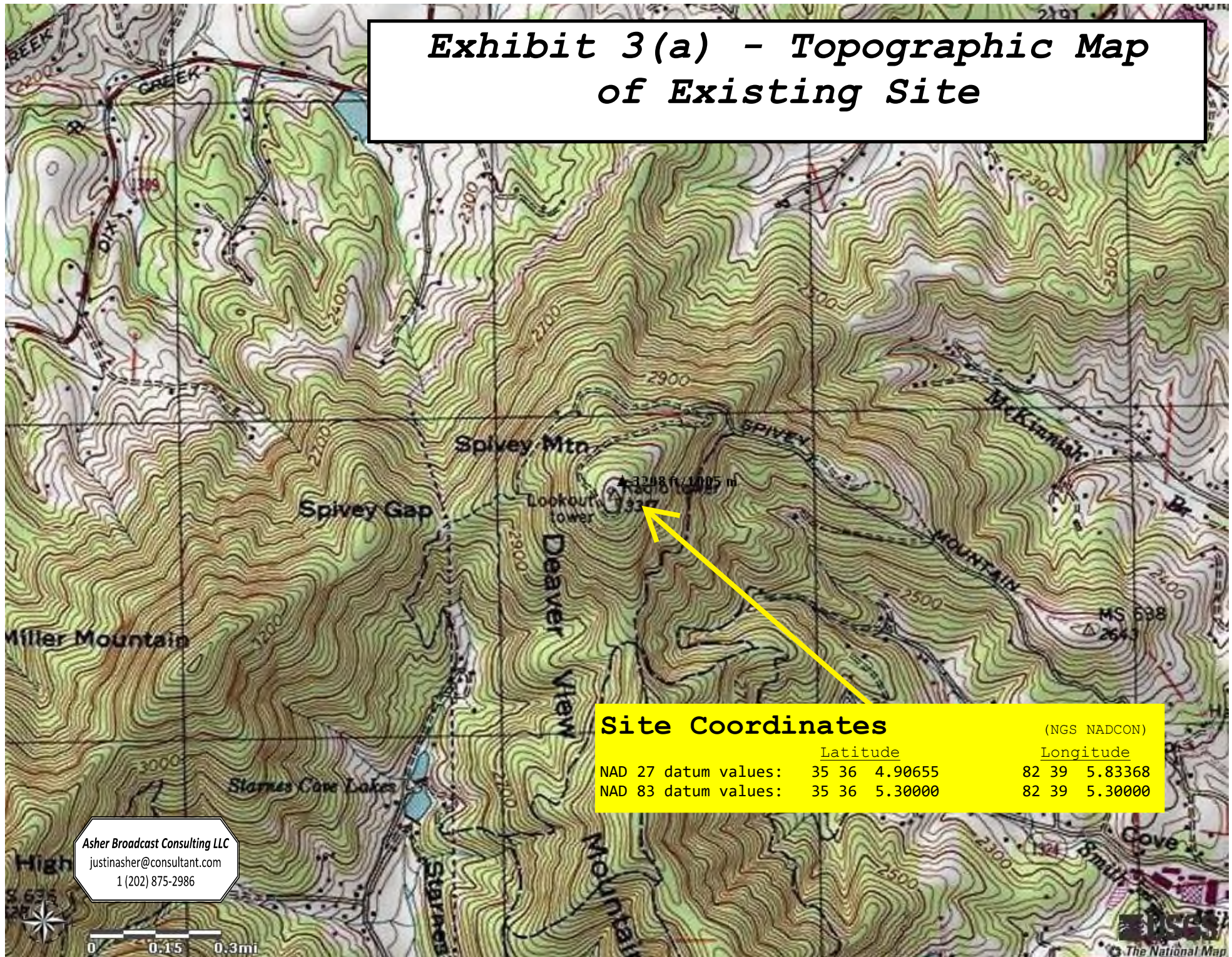


Exhibit 3(b) - Topographic Aerial Photograph of Existing Site

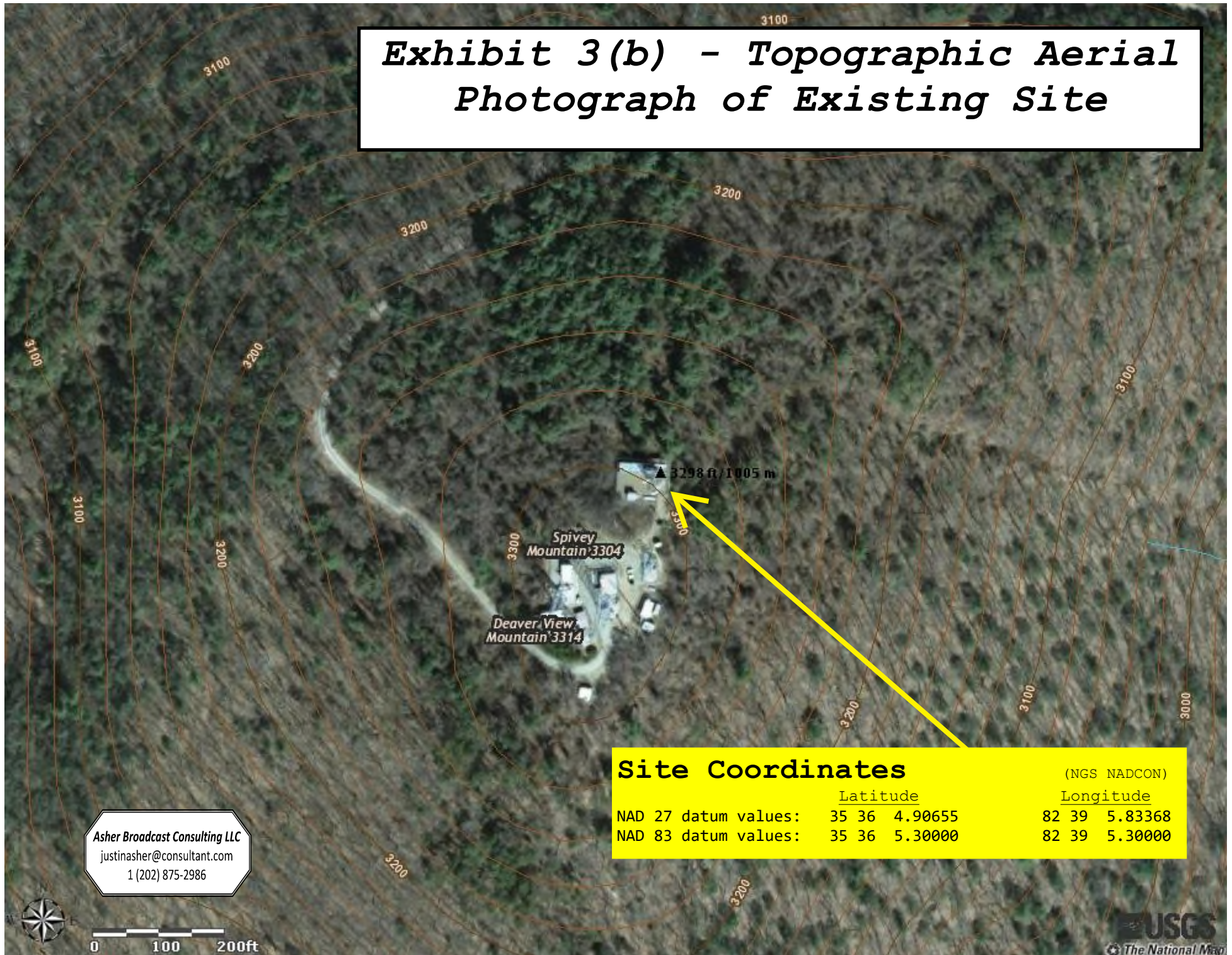
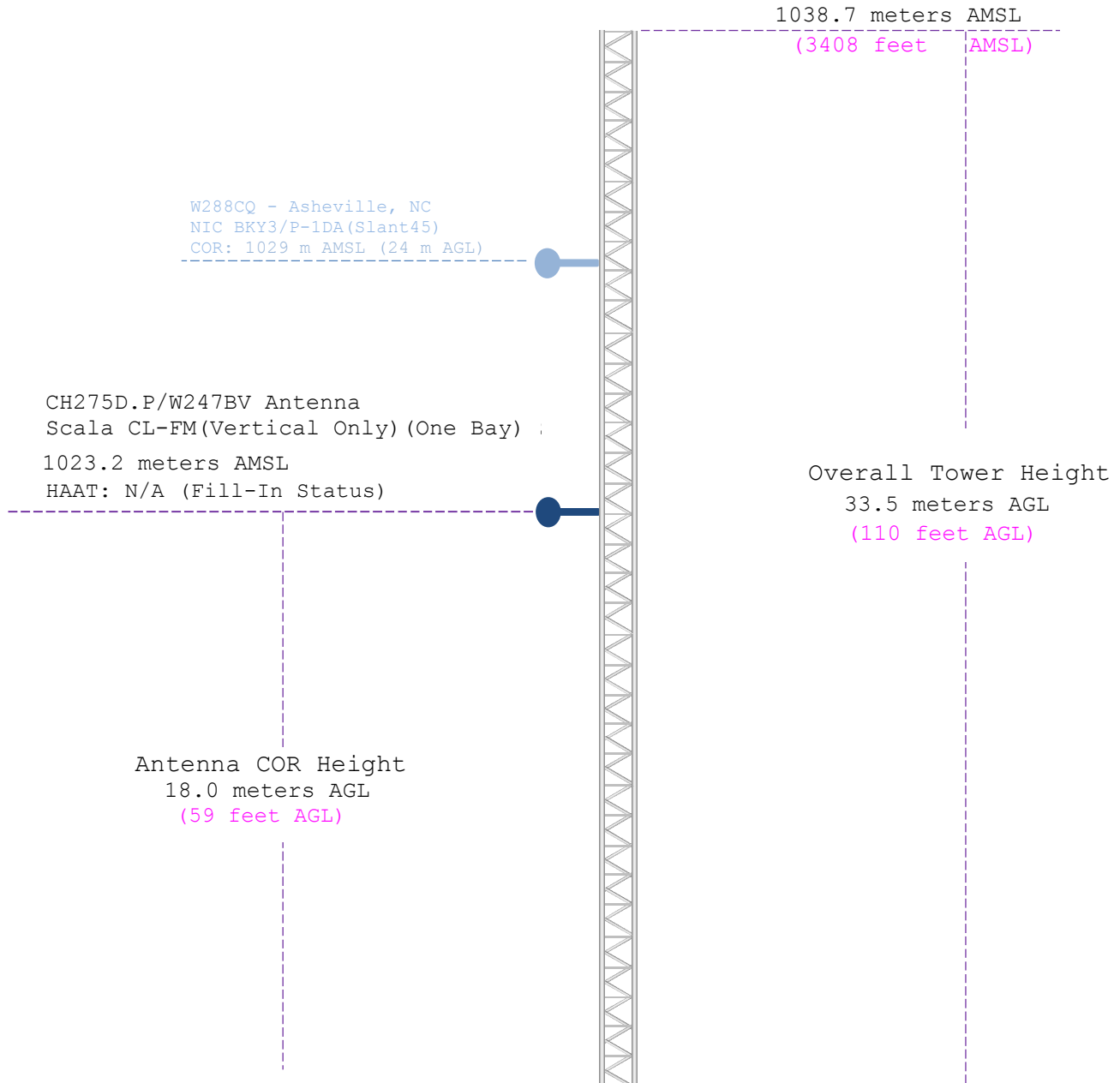


Exhibit 4

Vertical Plan of Antenna System



Ground Elevation: 1005.2 meters AMSL (3298 feet AMSL)		
Address: On Top of Spivey Mountain		
City: Asheville	<u>Latitude (D M S)</u> <u>Longitude (D M S)</u>	
County: Buncombe	NAD 27 datum values:	35 36 4.90655 82 39 5.83368
State: North Carolina	NAD 83 datum values:	35 36 5.30000 82 39 5.30000
Antenna Structure Registration	Drawing Is Not To Scale	Asher Broadcast Consulting, LLC
Not Required		justinasher@consultant.com 1(202)875-2986

Exhibit 5

HAAT and Miscellaneous Coordinate Information

HAAT Calculation (1927):

N. Lat. = 353605.0 W. Lng. = 823906.0
 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	617.6	405.4	0.0990	-10.04	1.000	20.76
030	631.8	391.2	0.0990	-10.04	1.000	20.42
060	754.4	268.6	0.0990	-10.04	1.000	16.93
090	679.8	343.2	0.0990	-10.04	1.000	19.20
120	668.5	354.5	0.0990	-10.04	1.000	19.49
150	650.7	372.3	0.0248	-16.06	0.500	14.06
180	740.1	282.9	0.0089	-20.50	0.300	9.55
210	697.8	325.2	0.0001	-39.16	0.035	2.21
240	768.4	254.6	0.0001	-39.16	0.035	2.17
270	938.9	84.1	0.0010	-30.04	0.100	2.91
300	730.5	292.5	0.0010	-30.04	0.100	4.91
330	646.6	376.4	0.0485	-13.14	0.700	16.75

Ave El= 710.42 M HAAT= 312.58 M AMSL= 1023.0

NAD 1983 to NAD 1927 Conversion:

	<u>Latitude</u>	<u>Longitude</u>
NAD 27 datum values:	35 36 4.90655	82 39 5.83368
NAD 83 datum values:	35 36 5.30000	82 39 5.30000

Various Coordinate Conversion Calculations (NAD 1983):

Position Type	Lat Lon
Degrees Lat Long	35.6014722°, -082.6514722°
Degrees Minutes	35°36.08833', -082°39.08833'
Degrees Minutes Seconds	35°36'05.3000", -082°39'05.3000"
UTM	17S 350404mE 3941002mN
UTM centimeter	17S 350404.73mE 3941002.63mN
MGRS	17SLV5040441002
Grid North	-1.0°
GARS	195LM45
Maidenhead	EM85QO14TI74
GEOREF	GJHF20913608

Exhibit 6

Tabulation of Proposed Allocation

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

Yellow Highlighted Text denotes the existence of a §74.1204(d) Second/Third Adjacent Channel Given Interference Waiver Request toward WMYI(FM) - Hendersonville, NC (CH273C1). The Interference Contour at the proposed Translator site has been calculated to be no less than the 106.3 dBμ F(50:10) interference contour corresponding to the worst case protected contour at the Translator site. This represents the proposed interference contour which falls wholly within the 40:1 dBu ratio. As seen in the **Exhibit 8** Aerial Photograph, there is a lack of population, housing, buildings or major roads within this interference contour. The applicant would like to note the existence of multiple dedicated transmitter buildings located at the remote mountain top site. However, structures of this nature have been exempt as a matter of FCC Policy (see similar grant under BPFT-20160725ABE).

Saga Communications Of North Carolina, Llc																
REFERENCE	CH#	275D	-	102.9	MHz,	Pwr=	0.099	kW	DA,	HAAT=	312.6	M,	COR=	1023	M	DISPLAY DATES
35 36 05.0 N.																DATA 06-13-17
82 39 06.0 W.																SEARCH 06-13-17
Average Protected F(50-50)= 18.35 km												Standard Directional				
CH	CALL	TYPE	ANT	AZI	DIST	LAT	PWR (kW)	INT (km)	PRO (km)	*IN*	*OUT*					
CITY		STATE		<--	FILE #	LNG	HAAT (M)	COR (M)	LICENSEE	(Overlap	in km)					
275D	W275BU	LIC DC_		249.5	44.03	35 27 43.0	0.125	94.9	33.3	-53.2*<	2.5					
Waynesville		NC		69.3	BLFT20161103ACI	83 06 26.0		1840	Western North Carolina Pub							
275C1	WLKO	LIC _C_		98.5	139.42	35 24 26.0	31.000	162.7	71.3	-43.2*<	4.7					
Hickory		NC		279.3	BMLH20120608AAZ	81 07 47.0	468	706	Capstar Tx, Llc							
273C1	WMYI	LIC NC_		175.6	51.70	35 08 15.6	44.000	8.3	65.6	33.2	-14.2*<					
Hendersonville		NC		355.7	BLH20110929AKK	82 36 30.6	416	1079	Capstar Tx, Llc							
276D	W276CT	APP DC_		152.5	32.95	35 20 18.0	0.099	16.5	11.3	2.8	1.3					
Hendersonville		NC		332.6	BPFT20170525AMW	82 29 02.0		769	Western North Carolina Pub							
276D	W276CT	LIC _C_		152.5	32.95	35 20 18.0	0.028	11.9	8.5	7.4	4.1					
Hendersonville		NC		332.6	BLFT20160615ABL	82 29 02.0		775	Western North Carolina Pub							
276A	WIKQ	LIC _C_		1.7	58.54	36 07 40.0	6.000	23.5	15.8	14.3	11.4					
Tusculum		TN		181.7	BMLH20110808ACY	82 37 57.0	-68	599	Radio Greeneville, Inc.							
275D	W275BJ	LIC DC_		163.4	76.55	34 56 29.0	0.250	44.7	13.1	19.8	23.1					
Greenville		SC		343.5	BLFT20150629ABO	82 24 41.0		733	Caron Broadcasting, Inc.							
278C	WIMZ-FM	LIC _CY		301.8	113.42	36 08 06.0	100.000	13.5	91.1	93.8	22.2					
Knoxville		TN		121.2	BMLH19890601KB	83 43 29.0	525	875	Midwest Communications, In							
274C3	WVEK-FM	LIC _C_		3.2	103.03	36 31 36.0	1.750	57.7	38.3	24.6	33.5					
Weber City		VA		183.3	BLH20080821ABX	82 35 13.0	376	835	Holston Valley Broadcastin							
274C3	AL5363	RSV-A		3.2	103.03	36 31 36.0	25.000	51.6	31.7	30.7	40.1					
Weber City		VA		183.3	RM11280	82 35 13.0	100	547								
275D	W275CK	CP _C_		38.7	123.49	36 27 54.0	0.250	63.3	20.7	40.6	40.1					
Mountain City		TN		219.2	BPFT20170412ABB	81 47 16.0		984	Johnson County Broadcastin							
275C3	WDUN-FM	LIC ZCN		216.2	153.31	34 29 05.0	16.000	97.3	30.3	53.9	112.5					
Clarkesville		GA		35.6	BLH19920304KC	83 38 24.0	126	502	Jacobs Media Corporation							
275D	W275CK	LIC _C_		37.9	125.70	36 29 24.5	0.250	23.8	7.1	82.3	56.0					
Mountain City		TN		218.4	BLFT20170224AAL	81 47 14.1		832	Johnson County Broadcastin							

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)
 ***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 North Carolina, LLC

FMCommander Single Allocation Study - 06-13-2017 - NED 03 SEC
CH275D.P's Overlaps (In= -53.15 km, Out= 2.46 km)

CH275D.P CH 275 D DA
Lat= 35 36 05.0, Lng= 82 39 06.0
0.099 kW 312.6 m HAAT, 1023 m COR
Prot.= 60 dBu, Intef.= 40 dBu

W275BU CH 275 D DA BLFT20161103ACI
Lat= 35 27 43.0, Lng= 83 06 26.0
0.125 kW 0 m HAAT, 1840 m COR
Prot.= 60 dBu, Intef.= 40 dBu

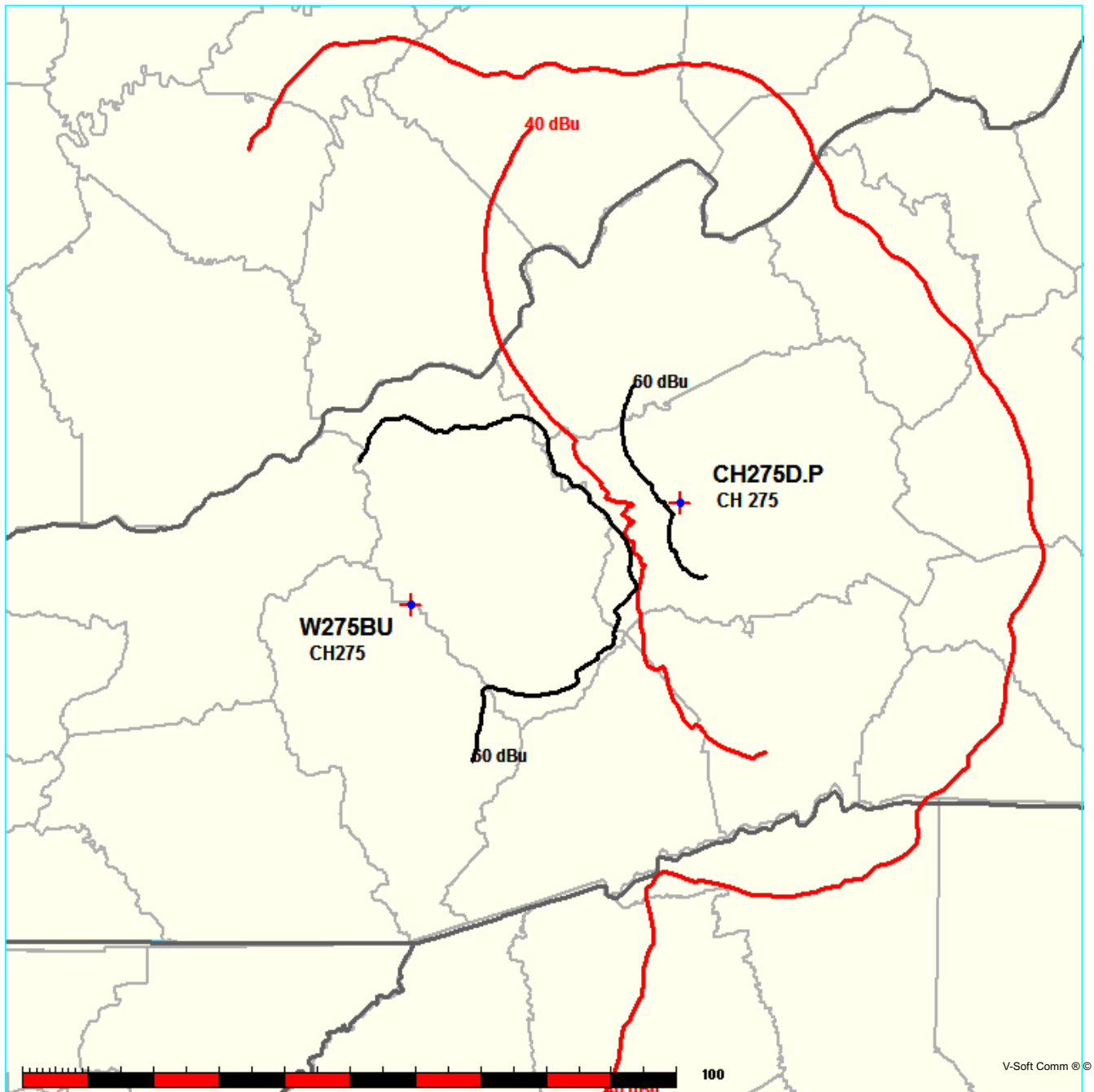


Exhibit 7a

Contour Protection Studies Toward Select Allocation Concern(s)

06-13-2017

Terrain Data: NED 03 SEC

FMOver Analysis

CH275D.P

W275BU BLFT20161103ACI

Channel = 275D
Max ERP = 0.099 kW
RCAMSL = 1023 m
N. Lat. 35 36 05.0
W. Lng. 82 39 06.0
Protected
60 dBu

Channel = 275D
Max ERP = 0.125 kW
RCAMSL = 1840 m
N. Lat. 35 27 43.0
W. Lng. 83 06 26.0
Interfering
40 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
209.0	000.0002	0317.8	002.6	071.5	000.1250	0897.0	042.1	57.66*	53.74
210.0	000.0001	0325.2	002.2	071.2	000.1250	0891.1	042.4	57.52*	53.31
211.0	000.0001	0327.1	002.2	071.1	000.1250	0890.5	042.3	57.52*	53.32
212.0	000.0001	0330.7	002.2	071.1	000.1250	0889.9	042.3	57.53*	53.32
213.0	000.0001	0330.2	002.2	071.0	000.1250	0889.2	042.3	57.53*	53.32
214.0	000.0001	0320.5	002.2	071.0	000.1250	0888.4	042.3	57.53*	53.31
215.0	000.0001	0305.3	002.2	070.9	000.1250	0887.6	042.2	57.52*	53.29
216.0	000.0001	0293.9	002.2	070.9	000.1250	0886.8	042.2	57.52*	53.28
217.0	000.0001	0299.4	002.2	070.9	000.1250	0886.2	042.2	57.53*	53.28
218.0	000.0001	0292.2	002.2	070.8	000.1250	0885.5	042.2	57.53*	53.28
219.0	000.0001	0288.1	002.2	070.8	000.1250	0884.9	042.2	57.53*	53.27
220.0	000.0001	0296.8	002.2	070.7	000.1250	0884.3	042.1	57.53*	53.28
221.0	000.0001	0302.6	002.2	070.7	000.1250	0883.8	042.1	57.54*	53.28
222.0	000.0001	0291.9	002.2	070.6	000.1250	0883.1	042.1	57.54*	53.27
223.0	000.0001	0289.0	002.2	070.6	000.1250	0882.6	042.1	57.54*	53.27
224.0	000.0001	0284.9	002.2	070.5	000.1250	0882.2	042.1	57.54*	53.27
225.0	000.0001	0276.1	002.2	070.5	000.1250	0881.8	042.1	57.54*	53.27
226.0	000.0001	0269.3	002.2	070.4	000.1250	0881.6	042.1	57.55*	53.28
227.0	000.0001	0255.1	002.2	070.4	000.1250	0881.3	042.0	57.55*	53.28
228.0	000.0001	0240.3	002.2	070.3	000.1250	0881.0	042.0	57.55*	53.27
229.0	000.0001	0242.4	002.2	070.3	000.1250	0880.6	042.0	57.55*	53.27
230.0	000.0001	0234.9	002.2	070.2	000.1250	0880.1	042.0	57.55*	53.26
231.0	000.0001	0236.8	002.2	070.2	000.1250	0879.6	042.0	57.55*	53.26
232.0	000.0001	0247.2	002.2	070.1	000.1250	0879.2	042.0	57.55*	53.26
233.0	000.0001	0258.5	002.2	070.1	000.1250	0878.7	042.0	57.55*	53.26
234.0	000.0001	0257.2	002.2	070.0	000.1250	0878.1	042.0	57.55*	53.25
235.0	000.0001	0258.2	002.2	070.0	000.1250	0877.5	041.9	57.55*	53.24
236.0	000.0001	0257.3	002.2	069.9	000.1250	0876.9	041.9	57.55*	53.23
237.0	000.0001	0255.2	002.2	069.9	000.1250	0876.3	041.9	57.55*	53.22
238.0	000.0001	0257.9	002.2	069.8	000.1250	0875.8	041.9	57.55*	53.21
239.0	000.0001	0262.7	002.2	069.8	000.1250	0875.3	041.9	57.54*	53.20
240.0	000.0001	0254.6	002.2	069.7	000.1250	0874.8	041.9	57.54*	53.18

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)	
241.0	000.0001	0243.4	002.2	069.7	000.1250	0874.4	041.9	57.56*	53.22
242.0	000.0001	0227.5	002.3	069.7	000.1250	0873.9	041.8	57.58*	53.28
243.0	000.0002	0207.7	002.3	069.6	000.1250	0873.2	041.8	57.58*	53.25
244.0	000.0002	0187.3	002.3	069.6	000.1250	0872.6	041.8	57.58*	53.25
245.0	000.0002	0160.8	002.3	069.5	000.1250	0872.0	041.8	57.57*	53.21
246.0	000.0002	0130.9	002.2	069.4	000.1250	0871.1	041.9	57.51*	53.07
247.0	000.0002	0127.5	002.2	069.4	000.1250	0870.4	041.9	57.51*	53.06
248.0	000.0002	0125.2	002.2	069.3	000.1250	0869.7	041.8	57.53*	53.09
249.0	000.0002	0128.8	002.3	069.3	000.1250	0869.0	041.7	57.55*	53.14
250.0	000.0002	0132.7	002.4	069.2	000.1250	0868.1	041.7	57.56*	53.16
251.0	000.0002	0134.5	002.4	069.2	000.1250	0867.2	041.7	57.56*	53.14
252.0	000.0002	0131.5	002.3	069.1	000.1250	0866.4	041.7	57.54*	53.09
253.0	000.0002	0134.5	002.4	069.1	000.1250	0865.5	041.7	57.54*	53.07
254.0	000.0002	0138.8	002.4	069.0	000.1250	0864.6	041.7	57.54*	53.06
255.0	000.0002	0139.4	002.4	068.9	000.1250	0863.7	041.7	57.53*	53.02
256.0	000.0002	0142.9	002.4	068.9	000.1250	0862.9	041.6	57.53*	53.01
257.0	000.0002	0155.1	002.5	068.8	000.1250	0862.1	041.6	57.55*	53.04
258.0	000.0002	0155.1	002.5	068.8	000.1250	0861.5	041.6	57.54*	53.01
259.0	000.0002	0143.6	002.4	068.7	000.1250	0861.0	041.7	57.50*	52.93
260.0	000.0002	0131.7	002.3	068.7	000.1250	0860.6	041.7	57.47*	52.84
261.0	000.0003	0124.6	002.4	068.6	000.1250	0859.6	041.6	57.50*	52.89
262.0	000.0004	0111.6	002.5	068.5	000.1250	0858.8	041.6	57.50*	52.88
263.0	000.0004	0098.5	002.5	068.5	000.1250	0858.0	041.6	57.48*	52.84
264.0	000.0005	0086.3	002.4	068.4	000.1250	0857.2	041.7	57.46*	52.77
265.0	000.0006	0071.1	002.4	068.4	000.1250	0856.8	041.8	57.42*	52.66
266.0	000.0006	0061.5	002.3	068.4	000.1250	0856.1	041.8	57.39*	52.59
267.0	000.0007	0063.2	002.4	068.3	000.1250	0854.7	041.7	57.41*	52.61
268.0	000.0008	0063.8	002.5	068.2	000.1250	0853.2	041.7	57.41*	52.60
269.0	000.0009	0075.1	002.7	068.0	000.1250	0850.7	041.5	57.47*	52.71
270.0	000.0010	0084.1	002.9	067.8	000.1250	0848.6	041.3	57.52*	52.80
271.0	000.0010	0097.8	003.1	067.7	000.1250	0847.3	041.2	57.58*	52.93
272.0	000.0010	0119.8	003.4	067.4	000.1250	0846.8	040.9	57.68*	53.16
273.0	000.0010	0125.6	003.5	067.3	000.1250	0847.3	040.9	57.69*	53.21
274.0	000.0010	0121.8	003.4	067.3	000.1250	0847.6	040.9	57.67*	53.16
275.0	000.0010	0118.6	003.4	067.2	000.1250	0848.0	041.0	57.65*	53.12
276.0	000.0010	0119.3	003.4	067.1	000.1250	0848.5	041.0	57.65*	53.11
277.0	000.0010	0122.0	003.4	067.0	000.1250	0849.3	041.0	57.65*	53.14
278.0	000.0010	0121.2	003.4	067.0	000.1250	0849.9	041.1	57.64*	53.12
279.0	000.0010	0128.7	003.5	066.8	000.1250	0851.4	041.0	57.67*	53.22
280.0	000.0010	0141.1	003.7	066.7	000.1250	0853.0	040.9	57.73*	53.37
281.0	000.0010	0145.0	003.7	066.5	000.1250	0853.4	040.9	57.74*	53.39
282.0	000.0010	0145.9	003.7	066.5	000.1250	0853.6	040.9	57.73*	53.37
283.0	000.0010	0144.7	003.7	066.4	000.1250	0853.6	041.0	57.71*	53.32

Exhibit 7a

Contour Protection Studies Toward Select Allocation Concern(s)

06-13-2017

Terrain Data: NED 03 SEC

FMOver Analysis

W275BU BLFT20161103ACI

CH275D.P

Channel = 275D
 Max ERP = 0.125 kW
 RCAMSL = 1840 m
 N. Lat. 35 27 43.0
 W. Lng. 83 06 26.0
 Protected
 60 dBu

Channel = 275D
 Max ERP = 0.099 kW
 RCAMSL = 1023 m
 N. Lat. 35 36 05.0
 W. Lng. 82 39 06.0
 Interfering
 40 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
024.0	000.1250	0709.3	029.6	291.7	000.0010	0244.6	031.3	29.44	
025.0	000.1250	0738.4	030.2	292.9	000.0010	0258.8	030.8	30.20	
026.0	000.1250	0760.8	030.8	293.8	000.0010	0270.0	030.2	30.87	
027.0	000.1250	0786.3	031.4	294.9	000.0010	0277.0	029.6	31.41	
028.0	000.1250	0806.1	031.8	295.7	000.0010	0280.8	029.1	31.87	
029.0	000.1250	0830.1	032.4	296.8	000.0010	0285.6	028.5	32.37	
030.0	000.1250	0846.6	032.8	297.6	000.0010	0288.2	027.9	32.82	
031.0	000.1250	0858.9	033.1	298.1	000.0010	0293.9	027.3	33.37	
032.0	000.1250	0871.5	033.4	298.6	000.0010	0294.6	026.7	33.78	
033.0	000.1250	0878.7	033.5	298.9	000.0010	0293.7	026.1	34.16	
034.0	000.1250	0882.5	033.6	299.0	000.0010	0293.3	025.5	34.55	
035.0	000.1250	0877.6	033.5	298.6	000.0010	0294.7	025.0	35.00	
036.0	000.1250	0875.2	033.4	298.3	000.0010	0294.2	024.4	35.40	
037.0	000.1250	0869.8	033.3	297.8	000.0010	0290.8	023.8	35.71	
038.0	000.1250	0859.9	033.1	297.0	000.0010	0286.1	023.3	35.96	
039.0	000.1250	0844.3	032.7	295.8	000.0010	0281.0	022.8	36.18	
040.0	000.1250	0832.3	032.5	294.8	000.0010	0276.7	022.3	36.41	
041.0	000.1250	0814.9	032.0	293.3	000.0010	0265.1	021.9	36.38	
042.0	000.1250	0788.5	031.4	291.3	000.0010	0238.3	021.6	35.77	
043.0	000.1250	0774.5	031.1	289.9	000.0010	0218.2	021.2	35.32	
044.0	000.1250	0766.6	030.9	288.8	000.0010	0203.8	020.8	35.05	
045.0	000.1250	0756.6	030.7	287.6	000.0010	0191.7	020.4	34.82	
046.0	000.1250	0734.5	030.2	285.6	000.0010	0162.8	020.2	33.54	
047.0	000.1250	0715.4	029.7	283.8	000.0010	0149.1	020.0	32.87	
048.0	000.1250	0714.3	029.7	282.9	000.0010	0144.5	019.6	32.90	
049.0	000.1250	0731.7	030.1	282.9	000.0010	0144.5	018.9	33.43	
050.0	000.1250	0744.7	030.4	282.7	000.0010	0144.0	018.3	33.88	
051.0	000.1250	0757.6	030.7	282.4	000.0010	0145.2	017.7	34.45	
052.0	000.1250	0762.9	030.8	281.5	000.0010	0145.8	017.2	34.89	

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)
053.0	000.1250	0751.1	030.5	279.7	000.0010	0137.6	017.0	34.53
054.0	000.1250	0753.2	030.6	278.5	000.0010	0121.3	016.6	33.79
055.0	000.1250	0774.6	031.1	278.3	000.0010	0120.5	015.9	34.34
056.0	000.1250	0792.3	031.5	277.9	000.0010	0121.4	015.2	34.97
057.0	000.1250	0800.4	031.7	276.8	000.0010	0121.6	014.7	35.36
058.0	000.1250	0803.4	031.8	275.2	000.0010	0117.9	014.3	35.55
059.0	000.1250	0800.8	031.7	273.2	000.0010	0124.7	014.0	36.34
060.0	000.1250	0793.2	031.5	270.9	000.0010	0096.3	013.9	34.29
061.0	000.1250	0795.1	031.6	269.0	000.0009	0075.2	013.6	32.09
062.0	000.1250	0807.7	031.9	267.5	000.0008	0061.8	013.1	30.47
063.0	000.1250	0820.9	032.2	265.7	000.0006	0061.7	012.5	30.30
064.0	000.1250	0835.9	032.5	263.9	000.0005	0088.2	012.0	32.96
065.0	000.1250	0848.8	032.8	261.7	000.0003	0117.3	011.5	34.62
066.0	000.1250	0852.7	032.9	259.0	000.0002	0143.1	011.3	35.37
067.0	000.1250	0849.6	032.9	256.1	000.0002	0144.0	011.3	35.50
068.0	000.1250	0850.5	032.9	253.2	000.0002	0136.2	011.2	35.11
069.0	000.1250	0864.6	033.2	250.3	000.0002	0132.9	010.8	35.46
070.0	000.1250	0877.5	033.5	247.2	000.0002	0126.0	010.6	34.60
071.0	000.1250	0888.5	033.7	243.8	000.0002	0190.3	010.4	37.79
072.0	000.1250	0902.7	034.0	240.3	000.0001	0251.6	010.2	39.31
073.0	000.1250	0909.1	034.2	236.9	000.0001	0255.3	010.2	39.33
074.0	000.1250	0912.4	034.2	233.6	000.0001	0258.9	010.3	39.24
075.0	000.1250	0919.9	034.4	230.2	000.0001	0233.4	010.4	38.18
076.0	000.1250	0924.3	034.5	227.1	000.0001	0253.1	010.6	38.55
077.0	000.1250	0925.2	034.5	224.3	000.0001	0282.8	010.9	39.06
078.0	000.1250	0922.7	034.4	221.9	000.0001	0292.0	011.3	38.73
079.0	000.1250	0917.4	034.3	219.9	000.0001	0295.3	011.7	38.12
080.0	000.1250	0908.9	034.2	218.2	000.0001	0289.7	012.3	37.18
081.0	000.1250	0896.1	033.9	217.1	000.0001	0299.5	012.9	36.61
082.0	000.1250	0894.8	033.9	215.4	000.0001	0300.2	013.3	36.02
083.0	000.1250	0901.3	034.0	213.3	000.0001	0328.3	013.7	36.32
084.0	000.1250	0920.3	034.4	210.5	000.0001	0326.9	013.9	35.98
085.0	000.1250	0935.1	034.7	208.1	000.0002	0313.3	014.2	37.83
086.0	000.1250	0928.3	034.5	207.3	000.0003	0310.1	014.8	38.00
087.0	000.1250	0906.3	034.1	207.6	000.0003	0311.8	015.5	37.07
088.0	000.1250	0879.0	033.5	208.3	000.0002	0314.0	016.3	35.59
089.0	000.1250	0851.5	032.9	209.1	000.0002	0319.2	017.2	34.01
090.0	000.1250	0826.9	032.3	209.8	000.0001	0324.8	017.9	32.38
091.0	000.1250	0796.3	031.6	211.0	000.0001	0327.1	018.8	31.49
092.0	000.1250	0785.3	031.3	210.9	000.0001	0327.0	019.4	31.00
093.0	000.1250	0800.8	031.7	209.2	000.0002	0319.5	019.7	31.89
094.0	000.1250	0807.4	031.9	208.1	000.0002	0313.2	020.1	32.69
095.0	000.1250	0802.4	031.7	207.8	000.0002	0312.6	020.7	32.60

Exhibit 7b

Contour Protection Studies Toward Select Allocation Concern(s)

Saga Communications Of North Carolina, LLC

FMCommander Single Allocation Study - 06-13-2017 - NED 03 SEC
CH275D.P's Overlaps (In= -43.2 km, Out= 4.66 km)

CH275D.P CH 275 D DA
Lat= 35 36 05.0, Lng= 82 39 06.0
0.099 kW 312.6 m HAAT, 1023 m COR
Prot.= 60 dBu, Intef.= 40 dBu

WLKO CH 275 C1 BMLH20120608AAZ
Lat= 35 24 26.0, Lng= 81 07 47.0
31.0 kW 468 m HAAT, 706 m COR
Prot.= 60 dBu, Intef.= 40 dBu

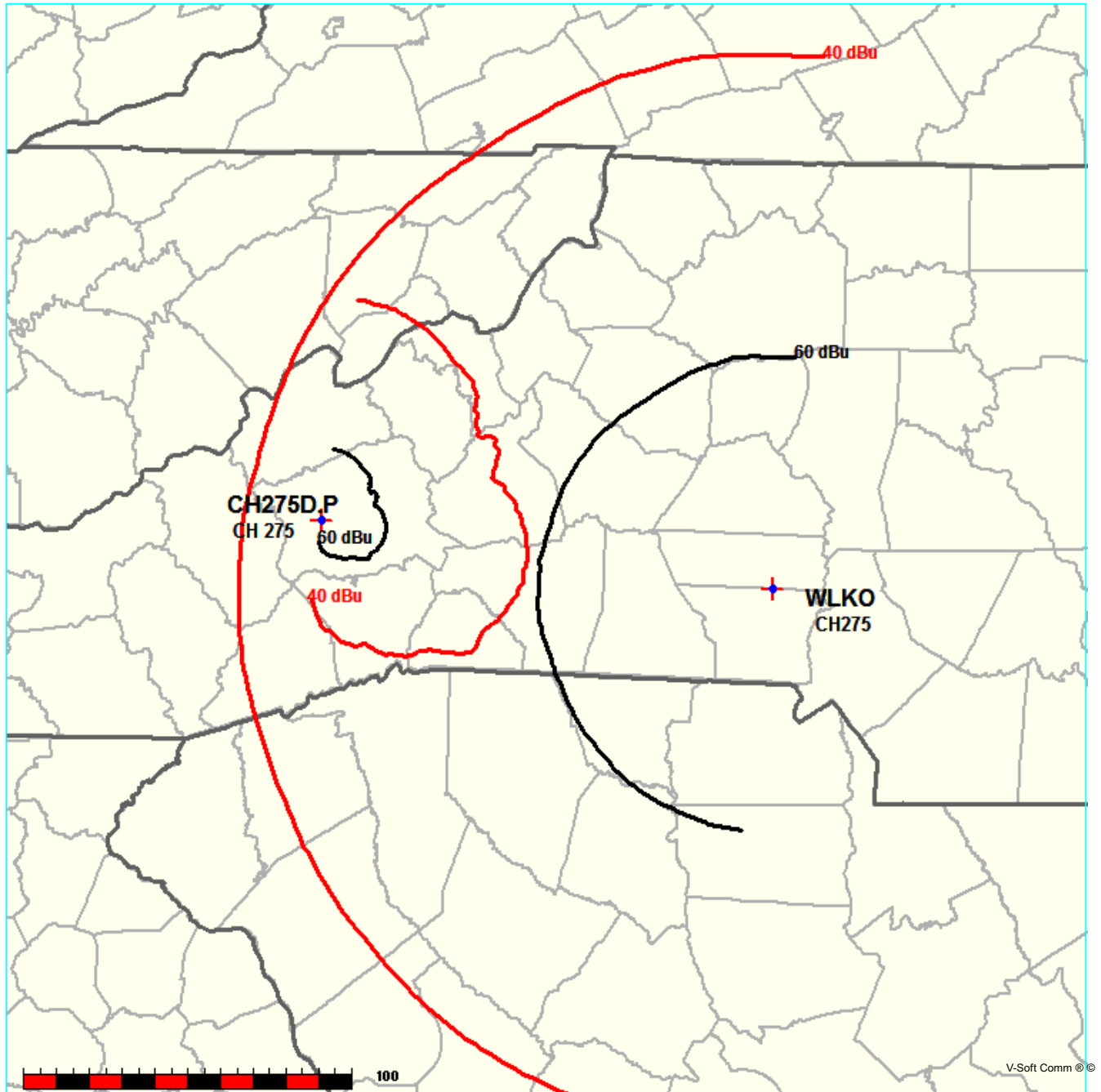


Exhibit 7b

Contour Protection Studies Toward Select Allocation Concern(s)

06-13-2017 Terrain Data: NED 03 SEC FMOver Analysis

CH275D.P

WLKO BMLH20120608AAZ

Channel = 275D
Max ERP = 0.099 kW
RCAMSL = 1023 m
N. Lat. 35 36 05.0
W. Lng. 82 39 06.0
Protected
60 dBu

Channel = 275C1
Max ERP = 31 kW
RCAMSL = 706 m
N. Lat. 35 24 26.0
W. Lng. 81 07 47.0
Interfering
40 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
056.0	000.0990	0300.3	018.0	284.8	031.0000	0445.5	126.8	48.08*	35.03
057.0	000.0990	0294.6	017.8	284.7	031.0000	0445.6	126.6	48.11*	35.14
058.0	000.0990	0279.6	017.3	284.4	031.0000	0445.8	126.8	48.09*	35.04
059.0	000.0990	0271.2	017.0	284.2	031.0000	0445.9	126.7	48.10*	35.06
060.0	000.0990	0268.6	016.9	284.1	031.0000	0446.0	126.6	48.13*	35.21
061.0	000.0990	0268.3	016.9	284.0	031.0000	0446.2	126.4	48.19*	35.43
062.0	000.0990	0260.1	016.6	283.8	031.0000	0446.7	126.4	48.20*	35.45
063.0	000.0990	0265.2	016.8	283.8	031.0000	0446.7	126.1	48.28*	35.78
064.0	000.0990	0292.9	017.7	283.9	031.0000	0446.4	125.2	48.50*	36.66
065.0	000.0990	0309.7	018.3	284.0	031.0000	0446.3	124.6	48.65*	37.25
066.0	000.0990	0308.8	018.2	283.9	031.0000	0446.6	124.4	48.70*	37.45
067.0	000.0990	0299.4	017.9	283.7	031.0000	0446.9	124.5	48.70*	37.43
068.0	000.0990	0303.9	018.1	283.6	031.0000	0447.0	124.2	48.78*	37.74
069.0	000.0990	0310.0	018.3	283.5	031.0000	0447.1	123.8	48.86*	38.08
070.0	000.0990	0303.6	018.1	283.3	031.0000	0447.4	123.8	48.88*	38.12
071.0	000.0990	0292.0	017.7	283.1	031.0000	0448.0	124.0	48.86*	38.03
072.0	000.0990	0285.4	017.5	283.0	031.0000	0448.5	124.0	48.86*	38.04
073.0	000.0990	0280.5	017.3	282.8	031.0000	0448.8	124.0	48.87*	38.08
074.0	000.0990	0270.2	017.0	282.6	031.0000	0449.3	124.2	48.84*	37.96
075.0	000.0990	0261.8	016.7	282.4	031.0000	0449.6	124.3	48.82*	37.86
076.0	000.0990	0261.8	016.7	282.3	031.0000	0449.7	124.2	48.86*	38.00
077.0	000.0990	0256.2	016.5	282.1	031.0000	0450.1	124.2	48.85*	37.98
078.0	000.0990	0268.3	016.9	282.1	031.0000	0450.3	123.7	48.99*	38.50
079.0	000.0990	0283.7	017.4	282.1	031.0000	0450.4	123.1	49.14*	39.10
080.0	000.0990	0293.0	017.7	282.0	031.0000	0450.6	122.7	49.25*	39.52
081.0	000.0990	0293.9	017.8	281.8	031.0000	0450.8	122.6	49.29*	39.68
082.0	000.0990	0302.8	018.1	281.7	031.0000	0450.9	122.2	49.39*	40.05
083.0	000.0990	0312.0	018.3	281.6	031.0000	0451.1	121.9	49.48*	40.43
084.0	000.0990	0318.1	018.5	281.5	031.0000	0451.3	121.6	49.56*	40.72
085.0	000.0990	0323.6	018.7	281.4	031.0000	0451.5	121.3	49.62*	40.98
086.0	000.0990	0326.5	018.8	281.3	031.0000	0451.7	121.2	49.67*	41.16
087.0	000.0990	0327.7	018.8	281.1	031.0000	0451.9	121.1	49.71*	41.29
088.0	000.0990	0336.0	019.0	281.0	031.0000	0452.2	120.8	49.79*	41.61

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)	
089.0	000.0990	0337.9	019.1	280.8	031.0000	0452.6	120.7	49.83*	41.76
090.0	000.0990	0343.2	019.2	280.7	031.0000	0452.9	120.5	49.89*	41.99
091.0	000.0990	0346.1	019.3	280.5	031.0000	0453.4	120.3	49.94*	42.16
092.0	000.0990	0350.2	019.4	280.4	031.0000	0453.8	120.2	49.98*	42.35
093.0	000.0990	0353.9	019.5	280.2	031.0000	0454.1	120.1	50.03*	42.51
094.0	000.0990	0358.6	019.6	280.1	031.0000	0454.4	119.9	50.08*	42.69
095.0	000.0990	0362.5	019.7	279.9	031.0000	0454.7	119.8	50.12*	42.85
096.0	000.0990	0365.0	019.8	279.8	031.0000	0455.2	119.7	50.15*	42.97
097.0	000.0990	0367.1	019.8	279.6	031.0000	0455.6	119.6	50.18*	43.07
098.0	000.0990	0369.4	019.9	279.4	031.0000	0455.8	119.6	50.20*	43.16
099.0	000.0990	0372.8	020.0	279.3	031.0000	0456.4	119.5	50.24*	43.29
100.0	000.0990	0377.9	020.1	279.1	031.0000	0456.9	119.4	50.29*	43.46
101.0	000.0990	0377.4	020.1	278.9	031.0000	0457.5	119.4	50.30*	43.48
102.0	000.0990	0378.3	020.1	278.8	031.0000	0457.9	119.4	50.31*	43.52
103.0	000.0990	0377.5	020.1	278.6	031.0000	0458.2	119.4	50.30*	43.50
104.0	000.0990	0374.8	020.0	278.4	031.0000	0458.7	119.5	50.29*	43.43
105.0	000.0990	0377.1	020.1	278.3	031.0000	0459.1	119.5	50.31*	43.48
106.0	000.0990	0380.7	020.2	278.1	031.0000	0459.4	119.5	50.32*	43.55
107.0	000.0990	0383.1	020.2	277.9	031.0000	0459.7	119.5	50.33*	43.58
108.0	000.0990	0380.9	020.2	277.7	031.0000	0459.9	119.6	50.31*	43.48
109.0	000.0990	0378.3	020.1	277.6	031.0000	0460.1	119.7	50.28*	43.36
110.0	000.0990	0377.7	020.1	277.4	031.0000	0460.5	119.8	50.27*	43.30
111.0	000.0990	0379.1	020.1	277.3	031.0000	0460.7	119.9	50.26*	43.27
112.0	000.0990	0373.9	020.0	277.1	031.0000	0460.7	120.1	50.21*	43.05
113.0	000.0990	0369.6	019.9	277.0	031.0000	0460.6	120.3	50.15*	42.84
114.0	000.0990	0366.3	019.8	276.8	031.0000	0460.4	120.5	50.10*	42.64
115.0	000.0990	0364.3	019.7	276.7	031.0000	0460.0	120.6	50.05*	42.45
116.0	000.0990	0366.0	019.8	276.5	031.0000	0459.7	120.7	50.02*	42.34
117.0	000.0990	0362.4	019.7	276.4	031.0000	0459.4	120.9	49.96*	42.11
118.0	000.0990	0355.3	019.5	276.3	031.0000	0459.2	121.2	49.88*	41.80
119.0	000.0990	0356.6	019.5	276.1	031.0000	0458.8	121.3	49.84*	41.66
120.0	000.0990	0354.5	019.5	276.0	031.0000	0458.2	121.5	49.77*	41.42
121.0	000.0970	0347.5	019.2	275.9	031.0000	0457.9	121.9	49.66*	40.99
122.0	000.0951	0349.1	019.2	275.8	031.0000	0457.5	122.1	49.60*	40.76
123.0	000.0931	0345.2	019.0	275.7	031.0000	0457.4	122.4	49.52*	40.43
124.0	000.0912	0340.7	018.7	275.6	031.0000	0457.4	122.8	49.43*	40.07
125.0	000.0893	0343.6	018.7	275.4	031.0000	0457.3	123.0	49.38*	39.89
126.0	000.0875	0350.5	018.8	275.3	031.0000	0457.3	123.1	49.35*	39.78
127.0	000.0856	0354.5	018.8	275.2	031.0000	0457.2	123.2	49.30*	39.59
128.0	000.0838	0362.3	018.9	275.0	031.0000	0457.1	123.3	49.28*	39.48
129.0	000.0820	0369.8	019.0	274.9	031.0000	0457.1	123.5	49.25*	39.36
130.0	000.0802	0377.2	019.0	274.7	031.0000	0457.3	123.6	49.22*	39.24

Exhibit 7b

Contour Protection Studies Toward Select Allocation Concern(s)

06-13-2017 Terrain Data: NED 03 SEC FMOver Analysis

WLKO BMLH20120608AAZ

CH275D.P

Channel = 275C1
 Max ERP = 31 kW
 RCAMSL = 706 m
 N. Lat. 35 24 26.0
 W. Lng. 81 07 47.0
 Protected
 60 dBu

Channel = 275D
 Max ERP = 0.099 kW
 RCAMSL = 1023 m
 N. Lat. 35 36 05.0
 W. Lng. 82 39 06.0
 Interfering
 40 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
234.0	031.0000	0462.9	071.8	128.3	000.0832	0365.0	102.6	26.20	
235.0	031.0000	0460.5	071.7	128.1	000.0837	0362.9	101.4	26.47	
236.0	031.0000	0459.6	071.6	127.8	000.0841	0360.8	100.2	26.76	
237.0	031.0000	0459.3	071.6	127.6	000.0845	0359.2	099.1	27.06	
238.0	031.0000	0458.2	071.5	127.3	000.0851	0357.1	097.9	27.35	
239.0	031.0000	0456.7	071.4	127.0	000.0856	0354.4	096.8	27.63	
240.0	031.0000	0456.7	071.4	126.7	000.0862	0352.7	095.6	27.94	
241.0	031.0000	0456.4	071.4	126.4	000.0867	0351.5	094.5	28.28	
242.0	031.0000	0456.2	071.3	126.1	000.0873	0350.9	093.4	28.63	
243.0	031.0000	0453.7	071.2	125.7	000.0881	0348.7	092.3	28.93	
244.0	031.0000	0450.9	071.0	125.2	000.0890	0344.4	091.3	29.16	
245.0	031.0000	0448.1	070.8	124.7	000.0899	0342.7	090.3	29.46	
246.0	031.0000	0447.3	070.7	124.3	000.0907	0341.2	089.3	29.79	
247.0	031.0000	0448.7	070.8	123.9	000.0914	0340.5	088.2	30.15	
248.0	031.0000	0450.1	070.9	123.5	000.0921	0341.8	087.1	30.58	
249.0	031.0000	0450.8	070.9	123.1	000.0930	0344.7	086.0	31.05	
250.0	031.0000	0450.0	070.9	122.6	000.0940	0348.0	085.1	31.52	
251.0	031.0000	0449.0	070.8	122.0	000.0950	0349.1	084.1	31.92	
252.0	031.0000	0450.2	070.9	121.5	000.0960	0347.1	083.1	32.23	
253.0	031.0000	0450.7	070.9	121.0	000.0970	0347.5	082.1	32.61	
254.0	031.0000	0451.2	071.0	120.4	000.0981	0350.9	081.2	33.09	
255.0	031.0000	0452.0	071.0	119.9	000.0990	0355.6	080.2	33.60	
256.0	031.0000	0451.4	071.0	119.2	000.0990	0357.2	079.4	33.94	
257.0	031.0000	0453.8	071.2	118.7	000.0990	0355.3	078.4	34.21	
258.0	031.0000	0455.9	071.3	118.0	000.0990	0355.2	077.5	34.53	
259.0	031.0000	0457.1	071.4	117.4	000.0990	0359.2	076.6	34.97	
260.0	031.0000	0459.1	071.6	116.7	000.0990	0364.0	075.7	35.44	
261.0	031.0000	0460.7	071.7	116.0	000.0990	0366.0	074.9	35.80	
262.0	031.0000	0462.1	071.8	115.3	000.0990	0364.4	074.1	36.03	

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)
263.0	031.0000	0462.4	071.8	114.5	000.0990	0365.0	073.4	36.30
264.0	031.0000	0461.2	071.7	113.6	000.0990	0368.2	072.8	36.60
265.0	031.0000	0461.8	071.8	112.7	000.0990	0370.0	072.1	36.89
266.0	031.0000	0463.8	071.9	111.9	000.0990	0374.6	071.4	37.29
267.0	031.0000	0462.7	071.8	111.0	000.0990	0379.1	070.9	37.59
268.0	031.0000	0461.1	071.7	110.0	000.0990	0377.7	070.5	37.69
269.0	031.0000	0458.0	071.5	109.0	000.0990	0378.3	070.3	37.79
270.0	031.0000	0456.6	071.4	108.0	000.0990	0380.9	070.0	37.98
271.0	031.0000	0457.0	071.4	107.0	000.0990	0383.0	069.6	38.18
272.0	031.0000	0457.5	071.4	106.1	000.0990	0380.9	069.2	38.26
273.0	031.0000	0457.6	071.5	105.1	000.0990	0377.2	068.9	38.26
274.0	031.0000	0457.8	071.5	104.0	000.0990	0374.8	068.6	38.29
275.0	031.0000	0457.1	071.4	103.0	000.0990	0377.5	068.4	38.42
276.0	031.0000	0458.3	071.5	102.0	000.0990	0378.4	068.2	38.54
277.0	031.0000	0460.6	071.7	100.9	000.0990	0377.3	067.9	38.61
278.0	031.0000	0459.6	071.6	099.9	000.0990	0377.6	067.9	38.62
279.0	031.0000	0457.2	071.4	098.8	000.0990	0372.1	068.0	38.41
280.0	031.0000	0454.5	071.2	097.8	000.0990	0368.9	068.2	38.25
281.0	031.0000	0452.2	071.1	096.7	000.0990	0366.6	068.4	38.10
282.0	031.0000	0450.5	070.9	095.7	000.0990	0364.1	068.7	37.94
283.0	031.0000	0448.4	070.8	094.7	000.0990	0362.1	068.9	37.77
284.0	031.0000	0446.3	070.6	093.7	000.0990	0356.8	069.3	37.48
285.0	031.0000	0445.6	070.6	092.7	000.0990	0353.2	069.5	37.27
286.0	031.0000	0446.0	070.6	091.7	000.0990	0349.2	069.8	37.05
287.0	031.0000	0445.9	070.6	090.8	000.0990	0345.5	070.1	36.81
288.0	031.0000	0447.5	070.7	089.8	000.0990	0342.1	070.3	36.61
289.0	031.0000	0445.4	070.6	088.9	000.0990	0337.3	070.9	36.26
290.0	031.0000	0445.4	070.6	087.9	000.0990	0335.6	071.3	36.04
291.0	031.0000	0445.7	070.6	087.0	000.0990	0327.7	071.7	35.61
292.0	031.0000	0445.8	070.6	086.1	000.0990	0326.4	072.2	35.39
293.0	031.0000	0445.2	070.5	085.2	000.0990	0324.1	072.8	35.11
294.0	031.0000	0446.6	070.7	084.4	000.0990	0321.5	073.3	34.85
295.0	031.0000	0448.4	070.8	083.5	000.0990	0315.4	073.8	34.47
296.0	031.0000	0449.3	070.8	082.6	000.0990	0309.4	074.4	34.06
297.0	031.0000	0449.2	070.8	081.8	000.0990	0300.7	075.1	33.54
298.0	031.0000	0448.2	070.8	081.1	000.0990	0294.5	075.8	33.07
299.0	031.0000	0447.3	070.7	080.4	000.0990	0293.8	076.6	32.79
300.0	031.0000	0446.3	070.6	079.7	000.0990	0291.1	077.5	32.42
301.0	031.0000	0446.0	070.6	079.0	000.0990	0284.0	078.3	31.93
302.0	031.0000	0447.1	070.7	078.3	000.0990	0272.0	079.0	31.31
303.0	031.0000	0447.0	070.7	077.7	000.0990	0262.9	079.9	30.75
304.0	031.0000	0446.9	070.7	077.1	000.0990	0256.3	080.8	30.25
305.0	031.0000	0444.8	070.5	076.5	000.0990	0258.1	081.8	29.99
306.0	031.0000	0442.7	070.4	076.0	000.0990	0261.5	082.8	29.76

Exhibit 7c

Contour Protection Studies Toward Select Allocation Concern(s)

Saga Communications Of North Carolina, Llc

FMCommander Single Allocation Study - 06-13-2017 - NED 03 SEC
CH275D.P's Overlaps (In= 2.8 km, Out= 1.28 km)

CH275D.P CH 275 D DA
Lat= 35 36 05.0, Lng= 82 39 06.0
0.099 kW 312.6 m HAAT, 1023 m COR
Prot.= 60 dBu, Intef.= 54 dBu

W276CT CH 276 D DA BPFT20170525AMW
Lat= 35 20 18.0, Lng= 82 29 02.0
0.099 kW 0 m HAAT, 769 m COR
Prot.= 60 dBu, Intef.= 54 dBu

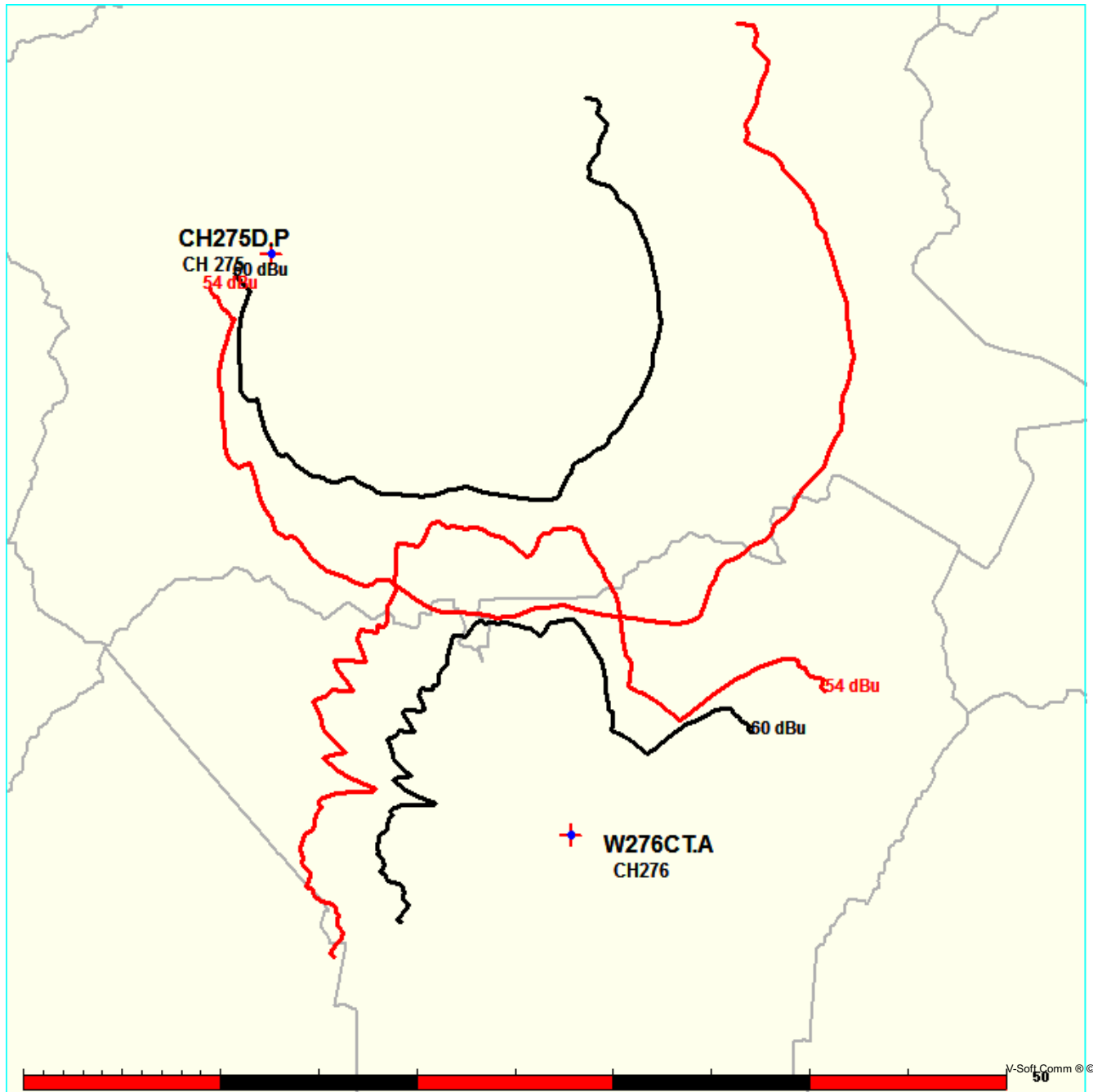


Exhibit 7c

Contour Protection Studies Toward Select Allocation Concern(s)

06-13-2017

Terrain Data: NED 03 SEC

FMOver Analysis

CH275D.P

W276CT BPFT20170525AMW

Channel = 275D
 Max ERP = 0.099 kW
 RCAMSL = 1023 m
 N. Lat. 35 36 05.0
 W. Lng. 82 39 06.0
 Protected
 60 dBu

Channel = 276D
 Max ERP = 0.099 kW
 RCAMSL = 769 m
 N. Lat. 35 20 18.0
 W. Lng. 82 29 02.0
 Interfering
 54 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
112.0	000.0990	0373.9	020.0	008.8	000.0990	0077.9	022.0	45.46	
113.0	000.0990	0369.6	019.9	008.3	000.0990	0079.7	021.7	45.91	
114.0	000.0990	0366.3	019.8	007.8	000.0990	0082.0	021.4	46.41	
115.0	000.0990	0364.3	019.7	007.4	000.0990	0084.0	021.1	46.88	
116.0	000.0990	0366.0	019.8	007.2	000.0990	0085.0	020.7	47.26	
117.0	000.0990	0362.4	019.7	006.7	000.0990	0086.9	020.4	47.69	
118.0	000.0990	0355.3	019.5	005.8	000.0990	0091.5	020.2	48.37	
119.0	000.0990	0356.6	019.5	005.5	000.0990	0093.1	019.8	48.79	
120.0	000.0990	0354.5	019.5	005.0	000.0990	0094.3	019.6	49.15	
121.0	000.0970	0347.5	019.2	003.8	000.0990	0098.9	019.4	49.73	
122.0	000.0951	0349.1	019.2	003.2	000.0990	0101.5	019.1	50.19	
123.0	000.0931	0345.2	019.0	002.2	000.0990	0106.9	018.9	50.80	
124.0	000.0912	0340.7	018.7	001.1	000.0990	0110.0	018.8	51.20	
125.0	000.0893	0343.6	018.7	000.5	000.0990	0110.3	018.5	51.43	
126.0	000.0875	0350.5	018.8	000.1	000.0990	0110.4	018.2	51.69	
127.0	000.0856	0354.5	018.8	359.5	000.0990	0109.9	017.9	51.86	
128.0	000.0838	0362.3	018.9	359.0	000.0990	0109.9	017.6	52.13	
129.0	000.0820	0369.8	019.0	358.5	000.0990	0109.9	017.3	52.38	
130.0	000.0802	0377.2	019.0	358.0	000.0990	0109.9	017.0	52.62	
131.0	000.0749	0383.8	018.9	356.8	000.0990	0109.8	016.9	52.72	
132.0	000.0699	0386.5	018.6	355.4	000.0990	0108.0	016.8	52.60	
133.0	000.0650	0383.9	018.2	353.7	000.0990	0105.5	016.9	52.33	
134.0	000.0602	0380.9	017.8	352.0	000.0990	0096.8	017.0	51.46	
135.0	000.0557	0377.5	017.4	350.3	000.0990	0099.1	017.2	51.53	
136.0	000.0513	0376.5	017.0	348.8	000.0990	0105.3	017.4	51.95	
137.0	000.0471	0375.6	016.6	347.3	000.0990	0108.5	017.5	52.07	
138.0	000.0431	0374.1	016.2	345.8	000.0990	0111.4	017.7	52.13	
139.0	000.0393	0374.6	015.8	344.5	000.0990	0114.4	018.0	52.18	
140.0	000.0356	0372.5	015.4	343.1	000.0990	0118.2	018.2	52.23	
141.0	000.0345	0373.2	015.3	342.2	000.0990	0118.7	018.2	52.27	
142.0	000.0333	0371.2	015.1	341.2	000.0990	0119.9	018.3	52.29	
143.0	000.0322	0369.2	014.9	340.3	000.0990	0121.3	018.4	52.32	

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

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)		Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
144.0	000.0310	0372.2	014.9		339.5	000.0990	0123.3	018.4	52.45
145.0	000.0299	0375.2	014.8		338.6	000.0990	0124.3	018.4	52.52
146.0	000.0289	0378.9	014.7		337.8	000.0990	0125.6	018.4	52.60
147.0	000.0278	0379.2	014.6		336.9	000.0990	0130.9	018.5	52.88
148.0	000.0268	0380.9	014.5		336.1	000.0990	0131.2	018.6	52.85
149.0	000.0257	0375.4	014.3		335.3	000.0990	0129.4	018.8	52.57
150.0	000.0247	0372.3	014.1		334.5	000.0990	0128.2	018.9	52.36
151.0	000.0238	0373.6	013.9		333.7	000.0990	0125.8	019.0	52.11
152.0	000.0228	0372.0	013.8		333.0	000.0990	0124.2	019.2	51.88
153.0	000.0219	0372.1	013.6		332.2	000.0990	0121.6	019.3	51.60
154.0	000.0209	0374.3	013.5		331.6	000.0990	0123.1	019.4	51.60
155.0	000.0200	0375.0	013.4		330.9	000.0990	0125.4	019.6	51.64
156.0	000.0192	0370.0	013.2		330.3	000.0990	0127.1	019.8	51.56
157.0	000.0183	0361.9	012.9		329.7	000.0990	0129.1	020.1	51.46
158.0	000.0175	0353.8	012.6		329.2	000.0990	0130.7	020.4	51.31
159.0	000.0166	0346.4	012.3		328.7	000.0990	0128.3	020.7	50.91
160.0	000.0158	0338.6	012.1		328.3	000.0990	0126.5	021.1	50.54
161.0	000.0158	0335.2	012.0		327.8	000.0990	0125.2	021.2	50.37
162.0	000.0158	0333.7	012.0		327.3	000.0990	0121.9	021.2	50.09
163.0	000.0158	0336.5	012.0		326.7	000.0990	0118.7	021.3	49.87
164.0	000.0158	0337.6	012.0		326.1	000.0990	0116.5	021.3	49.67
165.0	000.0158	0331.7	011.9		325.7	000.0990	0115.8	021.5	49.50
166.0	000.0158	0325.0	011.8		325.3	000.0990	0114.1	021.7	49.22
167.0	000.0158	0315.6	011.6		324.9	000.0990	0112.2	021.9	48.90
168.0	000.0158	0309.8	011.5		324.6	000.0990	0110.2	022.1	48.61
169.0	000.0158	0304.1	011.4		324.2	000.0990	0108.7	022.2	48.35
170.0	000.0158	0300.2	011.4		323.8	000.0990	0106.8	022.4	48.09
171.0	000.0151	0298.7	011.2		323.6	000.0990	0106.3	022.6	47.86
172.0	000.0143	0296.4	011.0		323.3	000.0990	0106.4	022.9	47.68
173.0	000.0136	0295.2	010.9		323.1	000.0990	0106.4	023.1	47.51
174.0	000.0128	0288.4	010.6		323.1	000.0990	0106.4	023.4	47.26
175.0	000.0121	0280.1	010.3		323.1	000.0990	0106.4	023.8	47.00
176.0	000.0114	0283.9	010.2		322.8	000.0990	0106.0	023.9	46.85
177.0	000.0108	0296.8	010.3		322.4	000.0990	0105.5	024.0	46.78
178.0	000.0101	0298.3	010.1		322.2	000.0990	0105.7	024.2	46.64
179.0	000.0095	0301.0	010.0		322.1	000.0990	0105.9	024.4	46.51
180.0	000.0089	0282.9	009.5		322.4	000.0990	0105.5	024.9	46.14
181.0	000.0083	0279.4	009.3		322.4	000.0990	0105.5	025.2	45.94
182.0	000.0078	0273.0	009.0		322.5	000.0990	0105.6	025.5	45.72
183.0	000.0072	0260.5	008.6		322.8	000.0990	0106.0	025.9	45.49
184.0	000.0067	0241.3	008.1		323.3	000.0990	0106.4	026.4	45.20
185.0	000.0062	0229.2	007.8		323.6	000.0990	0106.4	026.7	44.95

Exhibit 7c

Contour Protection Studies Toward Select Allocation Concern(s)

06-13-2017 Terrain Data: NED 03 SEC FMOver Analysis

W276CT BPFT20170525AMW

CH275D.P

Channel = 276D
 Max ERP = 0.099 kW
 RCAMSL = 769 m
 N. Lat. 35 20 18.0
 W. Lng. 82 29 02.0
 Protected
 60 dBu

Channel = 275D
 Max ERP = 0.099 kW
 RCAMSL = 1023 m
 N. Lat. 35 36 05.0
 W. Lng. 82 39 06.0
 Interfering
 54 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
288.0	000.0990	0079.8	009.2	166.3	000.0158	0322.9	027.2	46.30	
289.0	000.0990	0073.7	008.8	165.4	000.0158	0328.8	027.2	46.42	
290.0	000.0990	0070.4	008.6	164.9	000.0158	0332.4	027.2	46.53	
291.0	000.0990	0079.6	009.2	165.7	000.0158	0327.3	026.8	46.68	
292.0	000.0990	0083.6	009.4	165.9	000.0158	0326.0	026.5	46.83	
293.0	000.0990	0090.2	009.8	166.3	000.0158	0322.7	026.2	46.97	
294.0	000.0990	0092.8	009.9	166.3	000.0158	0322.6	026.0	47.12	
295.0	000.0990	0095.7	010.1	166.3	000.0158	0322.3	025.7	47.27	
296.0	000.0990	0099.1	010.2	166.4	000.0158	0321.9	025.5	47.43	
297.0	000.0990	0103.7	010.5	166.5	000.0158	0320.5	025.2	47.59	
298.0	000.0990	0101.7	010.4	166.1	000.0158	0324.4	025.1	47.74	
299.0	000.0990	0098.0	010.2	165.5	000.0158	0328.5	025.1	47.86	
300.0	000.0990	0097.0	010.1	165.1	000.0158	0330.8	025.0	47.98	
301.0	000.0990	0095.9	010.1	164.7	000.0158	0333.6	024.9	48.12	
302.0	000.0990	0090.0	009.8	164.0	000.0158	0337.6	025.0	48.15	
303.0	000.0990	0083.9	009.4	163.2	000.0158	0337.3	025.2	48.04	
304.0	000.0990	0090.9	009.8	163.4	000.0158	0337.6	024.8	48.34	
305.0	000.0990	0100.9	010.3	163.9	000.0158	0337.7	024.3	48.70	
306.0	000.0990	0105.8	010.6	163.9	000.0158	0337.7	024.0	48.91	
307.0	000.0990	0101.9	010.4	163.3	000.0158	0337.5	024.0	48.88	
308.0	000.0990	0097.7	010.2	162.6	000.0158	0334.2	024.1	48.75	
309.0	000.0990	0091.2	009.8	161.9	000.0158	0334.0	024.3	48.61	
310.0	000.0990	0088.8	009.7	161.3	000.0158	0335.2	024.3	48.63	
311.0	000.0990	0093.9	010.0	161.3	000.0158	0335.3	024.0	48.86	
312.0	000.0990	0102.3	010.4	161.5	000.0158	0334.9	023.5	49.19	
313.0	000.0990	0103.8	010.5	161.2	000.0158	0335.2	023.4	49.30	
314.0	000.0990	0105.9	010.6	160.9	000.0158	0335.7	023.2	49.44	
315.0	000.0990	0100.3	010.3	160.2	000.0158	0337.9	023.3	49.38	
316.0	000.0990	0096.5	010.1	159.6	000.0162	0341.9	023.4	49.51	
317.0	000.0990	0099.5	010.3	159.3	000.0164	0344.7	023.2	49.79	
318.0	000.0990	0095.8	010.1	158.8	000.0168	0347.4	023.3	49.90	
319.0	000.0990	0097.8	010.2	158.4	000.0171	0349.7	023.2	50.14	
320.0	000.0990	0101.8	010.4	158.2	000.0173	0352.1	022.9	50.44	

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

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
321.0	000.0990	0104.8	010.5	157.8	000.0176	0355.2	022.7	50.73
322.0	000.0990	0105.9	010.6	157.4	000.0179	0358.9	022.6	50.99
323.0	000.0990	0106.3	010.6	157.0	000.0183	0362.0	022.6	51.21
324.0	000.0990	0107.7	010.7	156.6	000.0187	0364.2	022.5	51.43
325.0	000.0990	0112.4	010.9	156.2	000.0190	0367.5	022.2	51.77
326.0	000.0990	0116.3	011.0	155.8	000.0193	0371.4	022.0	52.10
327.0	000.0990	0120.1	011.2	155.4	000.0197	0374.0	021.8	52.40
328.0	000.0990	0126.0	011.5	154.9	000.0201	0375.0	021.6	52.72
329.0	000.0990	0129.9	011.6	154.5	000.0205	0375.0	021.4	52.95
330.0	000.0990	0128.1	011.6	153.9	000.0210	0374.2	021.4	52.99
331.0	000.0990	0125.1	011.4	153.3	000.0215	0373.3	021.5	52.98
332.0	000.0990	0121.6	011.3	152.8	000.0220	0371.8	021.7	52.94
333.0	000.0990	0124.3	011.4	152.3	000.0225	0370.8	021.6	53.10
334.0	000.0990	0126.8	011.5	151.8	000.0230	0373.9	021.5	53.35
335.0	000.0990	0129.2	011.6	151.2	000.0236	0373.7	021.4	53.51
336.0	000.0990	0130.7	011.7	150.6	000.0241	0373.0	021.3	53.63
337.0	000.0990	0130.6	011.7	150.1	000.0247	0372.3	021.3	53.69
338.0	000.0990	0125.2	011.4	149.6	000.0251	0373.4	021.6	53.60
339.0	000.0990	0124.1	011.4	149.1	000.0256	0375.1	021.7	53.67
340.0	000.0990	0122.3	011.3	148.7	000.0261	0377.1	021.8	53.71
341.0	000.0990	0119.7	011.2	148.2	000.0265	0380.2	021.9	53.75
342.0	000.0990	0119.2	011.2	147.7	000.0270	0381.1	022.0	53.81
343.0	000.0990	0118.3	011.1	147.3	000.0275	0379.2	022.1	53.77
344.0	000.0990	0115.6	011.0	146.9	000.0279	0379.4	022.3	53.71
345.0	000.0990	0112.6	010.9	146.5	000.0283	0380.5	022.4	53.66
346.0	000.0990	0111.1	010.8	146.1	000.0287	0379.7	022.6	53.61
347.0	000.0990	0109.2	010.7	145.8	000.0291	0378.0	022.7	53.52
348.0	000.0990	0106.3	010.6	145.5	000.0295	0376.8	022.9	53.39
349.0	000.0990	0104.9	010.5	145.1	000.0298	0375.4	023.1	53.31
350.0	000.0990	0100.2	010.3	144.9	000.0300	0375.0	023.3	53.13
351.0	000.0990	0096.3	010.1	144.7	000.0302	0374.9	023.6	52.97
352.0	000.0990	0096.9	010.1	144.3	000.0307	0373.9	023.6	52.97
353.0	000.0990	0101.2	010.4	143.7	000.0314	0369.8	023.5	53.04
354.0	000.0990	0106.8	010.6	143.0	000.0322	0369.3	023.4	53.24
355.0	000.0990	0107.9	010.7	142.5	000.0327	0370.5	023.4	53.30
356.0	000.0990	0107.9	010.7	142.1	000.0331	0371.1	023.6	53.30
357.0	000.0990	0110.1	010.8	141.6	000.0337	0371.9	023.6	53.38
358.0	000.0990	0109.9	010.8	141.3	000.0342	0372.6	023.7	53.36
359.0	000.0990	0109.9	010.8	140.9	000.0346	0373.5	023.8	53.36
000.0	000.0990	0110.5	010.8	140.5	000.0350	0373.1	023.9	53.33
001.0	000.0990	0110.0	010.8	140.2	000.0354	0372.5	024.0	53.27
002.0	000.0990	0108.1	010.7	140.0	000.0356	0372.5	024.2	53.16
003.0	000.0990	0102.8	010.4	140.1	000.0355	0372.5	024.5	52.92
004.0	000.0990	0097.8	010.2	140.2	000.0354	0372.5	024.8	52.70

Exhibit 7d

Contour Protection Studies Toward Select Allocation Concern(s)

Saga Communications Of North Carolina, Llc

FMCommander Single Allocation Study - 06-13-2017 - NED 03 SEC
CH275D.P's Overlaps (In= 7.35 km, Out= 4.11 km)

CH275D.P CH 275 D DA
Lat= 35 36 05.0, Lng= 82 39 06.0
0.099 kW 312.6 m HAAT, 1023 m COR
Prot.= 60 dBu, Intef.= 54 dBu

W276CT CH 276 D BLFT20160615ABL
Lat= 35 20 18.0, Lng= 82 29 02.0
0.028 kW 0 m HAAT, 775 m COR
Prot.= 60 dBu, Intef.= 54 dBu

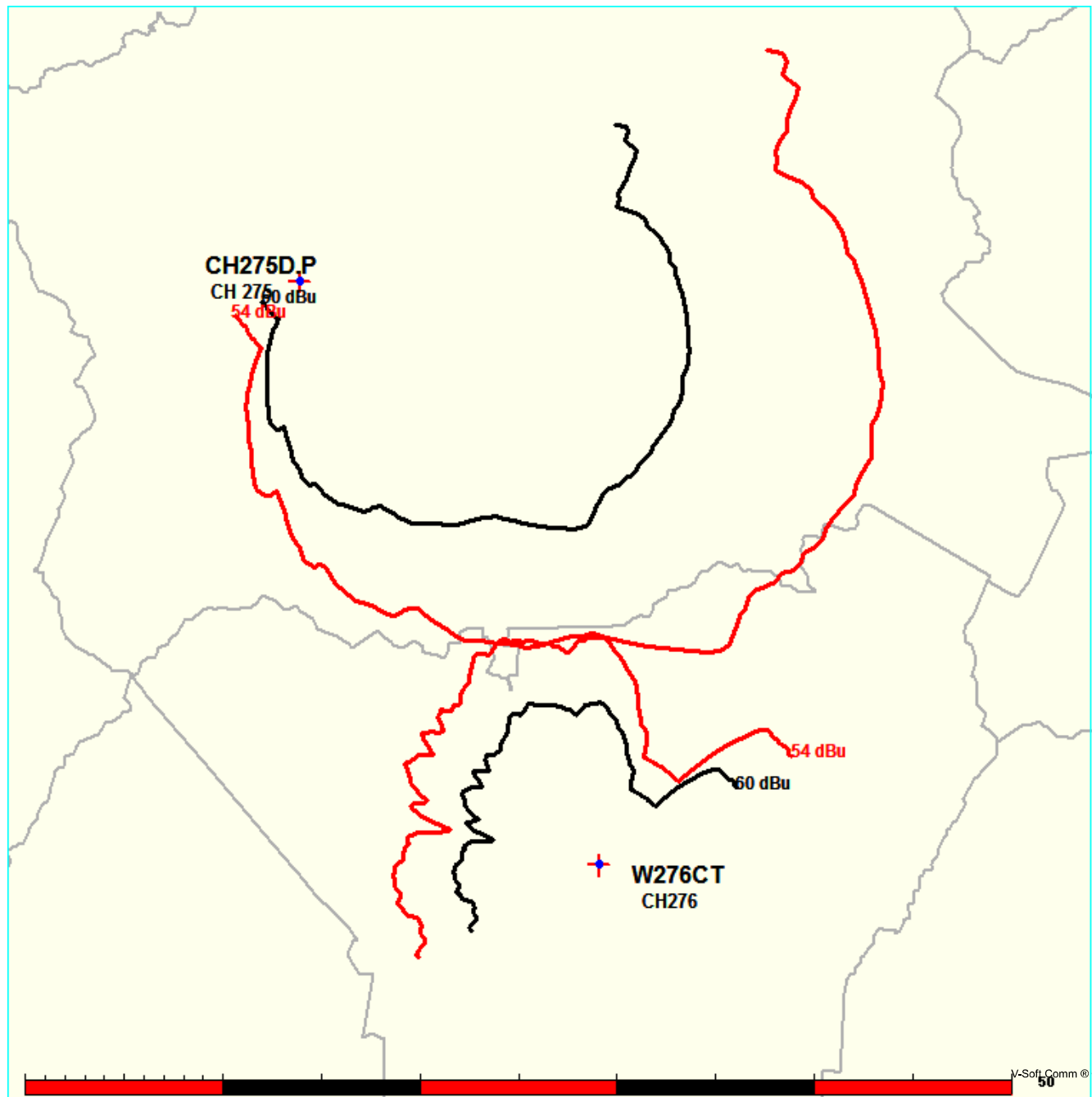


Exhibit 7d

Contour Protection Studies Toward Select Allocation Concern(s)

06-13-2017

Terrain Data: NED 03 SEC

FMOver Analysis

CH275D.P

W276CT BLFT20160615ABL

Channel = 275D
 Max ERP = 0.099 kW
 RCAMSL = 1023 m
 N. Lat. 35 36 05.0
 W. Lng. 82 39 06.0
 Protected
 60 dBu

Channel = 276D
 Max ERP = 0.028 kW
 RCAMSL = 775 m
 N. Lat. 35 20 18.0
 W. Lng. 82 29 02.0
 Interfering
 54 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
111.0	000.0990	0379.1	020.1	009.3	000.0279	0082.5	022.3	40.23	
112.0	000.0990	0373.9	020.0	008.8	000.0278	0083.9	022.0	40.62	
113.0	000.0990	0369.6	019.9	008.3	000.0277	0085.7	021.7	41.04	
114.0	000.0990	0366.3	019.8	007.8	000.0276	0088.0	021.4	41.52	
115.0	000.0990	0364.3	019.7	007.4	000.0276	0090.0	021.1	41.96	
116.0	000.0990	0366.0	019.8	007.2	000.0275	0091.0	020.7	42.33	
117.0	000.0990	0362.4	019.7	006.7	000.0274	0092.9	020.4	42.74	
118.0	000.0990	0355.3	019.5	005.8	000.0273	0097.5	020.2	43.37	
119.0	000.0990	0356.6	019.5	005.5	000.0273	0099.1	019.8	43.77	
120.0	000.0990	0354.5	019.5	005.0	000.0272	0100.3	019.6	44.10	
121.0	000.0970	0347.5	019.2	003.8	000.0270	0104.9	019.4	44.62	
122.0	000.0951	0349.1	019.2	003.2	000.0269	0107.5	019.1	45.04	
123.0	000.0931	0345.2	019.0	002.2	000.0267	0112.9	018.9	45.60	
124.0	000.0912	0340.7	018.7	001.1	000.0265	0116.0	018.8	45.94	
125.0	000.0893	0343.6	018.7	000.5	000.0264	0116.3	018.5	46.15	
126.0	000.0875	0350.5	018.8	000.1	000.0264	0116.4	018.2	46.40	
127.0	000.0856	0354.5	018.8	359.5	000.0262	0115.9	017.9	46.55	
128.0	000.0838	0362.3	018.9	359.0	000.0261	0115.9	017.6	46.80	
129.0	000.0820	0369.8	019.0	358.5	000.0260	0115.9	017.3	47.03	
130.0	000.0802	0377.2	019.0	358.0	000.0258	0115.9	017.0	47.25	
131.0	000.0749	0383.8	018.9	356.8	000.0256	0115.8	016.9	47.30	
132.0	000.0699	0386.5	018.6	355.4	000.0252	0114.0	016.8	47.13	
133.0	000.0650	0383.9	018.2	353.7	000.0248	0111.5	016.9	46.81	
134.0	000.0602	0380.9	017.8	352.0	000.0244	0102.8	017.0	45.91	
135.0	000.0557	0377.5	017.4	350.3	000.0240	0105.1	017.2	45.90	
136.0	000.0513	0376.5	017.0	348.8	000.0237	0111.3	017.4	46.24	
137.0	000.0471	0375.6	016.6	347.3	000.0235	0114.5	017.5	46.29	
138.0	000.0431	0374.1	016.2	345.8	000.0233	0117.4	017.7	46.29	
139.0	000.0393	0374.6	015.8	344.5	000.0231	0120.4	018.0	46.28	
140.0	000.0356	0372.5	015.4	343.1	000.0228	0124.2	018.2	46.27	
141.0	000.0345	0373.2	015.3	342.2	000.0227	0124.7	018.2	46.28	
142.0	000.0333	0371.2	015.1	341.2	000.0226	0125.9	018.3	46.27	
143.0	000.0322	0369.2	014.9	340.3	000.0224	0127.3	018.4	46.27	

Exhibit 7d
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)
144.0	000.0310	0372.2	014.9		339.5	000.0224	0129.3	018.4	46.39
145.0	000.0299	0375.2	014.8		338.6	000.0223	0130.3	018.4	46.45
146.0	000.0289	0378.9	014.7		337.8	000.0223	0131.6	018.4	46.53
147.0	000.0278	0379.2	014.6		336.9	000.0223	0136.9	018.5	46.81
148.0	000.0268	0380.9	014.5		336.1	000.0223	0137.2	018.6	46.77
149.0	000.0257	0375.4	014.3		335.3	000.0223	0135.4	018.8	46.49
150.0	000.0247	0372.3	014.1		334.5	000.0222	0134.2	018.9	46.27
151.0	000.0238	0373.6	013.9		333.7	000.0222	0131.8	019.0	46.02
152.0	000.0228	0372.0	013.8		333.0	000.0222	0130.2	019.2	45.79
153.0	000.0219	0372.1	013.6		332.2	000.0222	0127.6	019.3	45.50
154.0	000.0209	0374.3	013.5		331.6	000.0222	0129.1	019.4	45.51
155.0	000.0200	0375.0	013.4		330.9	000.0222	0131.4	019.6	45.54
156.0	000.0192	0370.0	013.2		330.3	000.0221	0133.1	019.8	45.46
157.0	000.0183	0361.9	012.9		329.7	000.0221	0135.1	020.1	45.34
158.0	000.0175	0353.8	012.6		329.2	000.0220	0136.7	020.4	45.17
159.0	000.0166	0346.4	012.3		328.7	000.0219	0134.3	020.7	44.75
160.0	000.0158	0338.6	012.1		328.3	000.0218	0132.5	021.1	44.36
161.0	000.0158	0335.2	012.0		327.8	000.0217	0131.2	021.2	44.17
162.0	000.0158	0333.7	012.0		327.3	000.0216	0127.9	021.2	43.87
163.0	000.0158	0336.5	012.0		326.7	000.0214	0124.7	021.3	43.63
164.0	000.0158	0337.6	012.0		326.1	000.0213	0122.5	021.3	43.42
165.0	000.0158	0331.7	011.9		325.7	000.0212	0121.8	021.5	43.23
166.0	000.0158	0325.0	011.8		325.3	000.0212	0120.1	021.7	42.96
167.0	000.0158	0315.6	011.6		324.9	000.0211	0118.2	021.9	42.64
168.0	000.0158	0309.8	011.5		324.6	000.0210	0116.2	022.1	42.34
169.0	000.0158	0304.1	011.4		324.2	000.0209	0114.7	022.2	42.08
170.0	000.0158	0300.2	011.4		323.8	000.0209	0112.8	022.4	41.81
171.0	000.0151	0298.7	011.2		323.6	000.0208	0112.3	022.6	41.58
172.0	000.0143	0296.4	011.0		323.3	000.0208	0112.4	022.9	41.39
173.0	000.0136	0295.2	010.9		323.1	000.0207	0112.4	023.1	41.21
174.0	000.0128	0288.4	010.6		323.1	000.0207	0112.4	023.4	40.96
175.0	000.0121	0280.1	010.3		323.1	000.0207	0112.4	023.8	40.70
176.0	000.0114	0283.9	010.2		322.8	000.0207	0112.0	023.9	40.54
177.0	000.0108	0296.8	010.3		322.4	000.0206	0111.5	024.0	40.45
178.0	000.0101	0298.3	010.1		322.2	000.0205	0111.7	024.2	40.30
179.0	000.0095	0301.0	010.0		322.1	000.0205	0111.9	024.4	40.17
180.0	000.0089	0282.9	009.5		322.4	000.0206	0111.5	024.9	39.82
181.0	000.0083	0279.4	009.3		322.4	000.0206	0111.5	025.2	39.62
182.0	000.0078	0273.0	009.0		322.5	000.0206	0111.6	025.5	39.41
183.0	000.0072	0260.5	008.6		322.8	000.0207	0112.0	025.9	39.18
184.0	000.0067	0241.3	008.1		323.3	000.0208	0112.4	026.4	38.91
185.0	000.0062	0229.2	007.8		323.6	000.0208	0112.4	026.7	38.67
186.0	000.0057	0218.8	007.4		323.9	000.0209	0113.4	027.1	38.52

Exhibit 7d

Contour Protection Studies Toward Select Allocation Concern(s)

06-13-2017

Terrain Data: NED 03 SEC

FMOver Analysis

W276CT BLFT20160615ABL

CH275D.P

Channel = 276D

Max ERP = 0.028 kW

RCAMSL = 775 m

N. Lat. 35 20 18.0

W. Lng. 82 29 02.0

Protected

60 dBu

Channel = 275D

Max ERP = 0.099 kW

RCAMSL = 1023 m

N. Lat. 35 36 05.0

W. Lng. 82 39 06.0

Interfering

54 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
288.0	000.0280	0085.8	006.9	162.3	000.0158	0333.3	028.4	45.79	
289.0	000.0280	0079.7	006.7	161.8	000.0158	0334.1	028.5	45.77	
290.0	000.0280	0076.4	006.5	161.4	000.0158	0335.1	028.5	45.80	
291.0	000.0280	0085.6	006.9	161.9	000.0158	0334.0	028.2	45.98	
292.0	000.0280	0089.6	007.1	162.0	000.0158	0333.7	028.0	46.10	
293.0	000.0280	0096.2	007.3	162.2	000.0158	0333.4	027.7	46.26	
294.0	000.0280	0098.8	007.4	162.2	000.0158	0333.4	027.5	46.36	
295.0	000.0280	0101.7	007.6	162.2	000.0158	0333.4	027.4	46.47	
296.0	000.0280	0105.1	007.7	162.2	000.0158	0333.4	027.2	46.59	
297.0	000.0280	0109.7	007.9	162.3	000.0158	0333.4	027.0	46.74	
298.0	000.0280	0107.7	007.8	162.0	000.0158	0333.8	026.9	46.77	
299.0	000.0280	0104.0	007.6	161.5	000.0158	0334.7	026.9	46.79	
300.0	000.0280	0103.0	007.6	161.3	000.0158	0335.3	026.9	46.85	
301.0	000.0280	0101.9	007.6	161.0	000.0158	0335.2	026.8	46.88	
302.0	000.0280	0096.0	007.3	160.5	000.0158	0337.1	026.9	46.87	
303.0	000.0280	0089.9	007.1	160.0	000.0159	0338.8	027.0	46.85	
304.0	000.0280	0096.9	007.4	160.1	000.0158	0338.0	026.7	47.02	
305.0	000.0280	0106.9	007.8	160.3	000.0158	0337.6	026.3	47.27	
306.0	000.0280	0111.8	007.9	160.3	000.0158	0337.7	026.1	47.42	
307.0	000.0280	0107.9	007.8	159.9	000.0159	0339.0	026.1	47.45	
308.0	000.0280	0103.7	007.6	159.5	000.0163	0343.2	026.2	47.61	
309.0	000.0280	0097.2	007.4	158.9	000.0167	0346.5	026.4	47.71	
310.0	000.0280	0094.8	007.3	158.6	000.0170	0348.4	026.4	47.82	
311.0	000.0280	0099.9	007.5	158.6	000.0170	0348.7	026.1	48.00	
312.0	000.0280	0108.3	007.8	158.6	000.0170	0348.3	025.8	48.21	
313.0	000.0280	0109.8	007.9	158.4	000.0171	0350.0	025.7	48.37	
314.0	000.0280	0111.9	007.9	158.2	000.0173	0352.0	025.6	48.55	
315.0	000.0280	0106.3	007.7	157.7	000.0177	0356.2	025.7	48.67	
316.0	000.0280	0102.5	007.6	157.3	000.0180	0359.6	025.8	48.78	
317.0	000.0280	0105.5	007.7	157.1	000.0182	0360.9	025.6	48.96	
318.0	000.0280	0101.8	007.6	156.8	000.0185	0363.3	025.7	49.04	
319.0	000.0280	0103.8	007.6	156.5	000.0187	0364.5	025.6	49.20	
320.0	000.0280	0107.8	007.8	156.3	000.0189	0366.1	025.4	49.40	

Exhibit 7d

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)
321.0	000.0280	0110.8	007.9	156.1	000.0191	0368.8	025.3	49.61
322.0	000.0280	0111.9	007.9	155.8	000.0193	0371.3	025.2	49.78
323.0	000.0280	0112.3	007.9	155.5	000.0196	0373.3	025.2	49.92
324.0	000.0280	0113.7	008.0	155.2	000.0198	0374.4	025.1	50.06
325.0	000.0280	0118.4	008.2	155.0	000.0201	0375.0	024.9	50.26
326.0	000.0280	0122.3	008.3	154.7	000.0203	0375.2	024.7	50.42
327.0	000.0280	0126.1	008.4	154.4	000.0206	0375.0	024.6	50.57
328.0	000.0280	0132.0	008.6	154.1	000.0208	0374.5	024.4	50.76
329.0	000.0280	0135.9	008.7	153.8	000.0211	0374.1	024.2	50.92
330.0	000.0280	0134.1	008.7	153.4	000.0215	0373.5	024.3	50.94
331.0	000.0280	0131.1	008.6	153.1	000.0218	0372.2	024.4	50.91
332.0	000.0280	0127.6	008.5	152.7	000.0221	0371.5	024.5	50.87
333.0	000.0280	0130.3	008.6	152.4	000.0225	0370.7	024.4	50.98
334.0	000.0280	0132.8	008.6	152.0	000.0228	0372.0	024.3	51.14
335.0	000.0280	0135.2	008.7	151.6	000.0232	0374.3	024.3	51.31
336.0	000.0280	0136.7	008.8	151.3	000.0235	0373.8	024.2	51.40
337.0	000.0280	0136.6	008.8	150.9	000.0239	0373.5	024.2	51.44
338.0	000.0280	0131.2	008.6	150.6	000.0242	0373.0	024.4	51.34
339.0	000.0280	0130.1	008.5	150.3	000.0245	0372.6	024.5	51.35
340.0	000.0280	0128.3	008.5	150.0	000.0248	0372.3	024.6	51.33
341.0	000.0280	0125.7	008.4	149.7	000.0251	0373.4	024.7	51.33
342.0	000.0280	0125.2	008.4	149.3	000.0254	0374.6	024.7	51.39
343.0	000.0280	0124.3	008.4	149.0	000.0257	0375.4	024.8	51.42
344.0	000.0280	0121.6	008.3	148.7	000.0260	0376.6	024.9	51.41
345.0	000.0280	0118.6	008.2	148.5	000.0263	0378.8	025.0	51.42
346.0	000.0280	0117.1	008.1	148.2	000.0266	0380.3	025.1	51.44
347.0	000.0280	0115.2	008.0	148.0	000.0268	0380.9	025.2	51.42
348.0	000.0280	0112.3	007.9	147.7	000.0270	0381.1	025.4	51.36
349.0	000.0280	0110.9	007.9	147.5	000.0273	0380.4	025.5	51.32
350.0	000.0280	0106.2	007.7	147.3	000.0275	0379.5	025.7	51.18
351.0	000.0280	0102.3	007.6	147.2	000.0276	0379.1	025.9	51.07
352.0	000.0280	0102.9	007.6	146.9	000.0279	0379.3	025.9	51.10
353.0	000.0280	0107.2	007.8	146.5	000.0284	0380.7	025.8	51.26
354.0	000.0280	0112.8	008.0	146.0	000.0289	0379.0	025.7	51.37
355.0	000.0280	0113.9	008.0	145.7	000.0292	0377.9	025.7	51.37
356.0	000.0280	0113.9	008.0	145.4	000.0295	0376.7	025.8	51.34
357.0	000.0280	0116.1	008.1	145.1	000.0299	0375.3	025.8	51.35
358.0	000.0280	0115.9	008.1	144.8	000.0301	0375.0	025.9	51.33
359.0	000.0280	0115.9	008.1	144.6	000.0304	0374.6	026.0	51.31
000.0	000.0280	0116.5	008.1	144.3	000.0307	0373.7	026.0	51.29
001.0	000.0280	0116.0	008.1	144.0	000.0310	0372.5	026.1	51.23
002.0	000.0280	0114.1	008.0	143.9	000.0312	0371.3	026.3	51.13
003.0	000.0280	0108.8	007.8	143.9	000.0311	0371.5	026.5	50.97

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

106.3 dBμ F(50:10) Interference Contour

The applicant would like to note the existence of a C.F.R. Section 74.1204(d) Second/Third Adjacent Channel Given Interference Waiver Request toward WMYI(FM) - Hendersonville, NC (CH273C1). The Interference Contour at the proposed Translator site has been calculated to be no less than the 106.3 dBμ F(50:10) interference contour corresponding to the worst case protected contour at the Translator site. This represents the proposed interference contour which falls wholly within the 40:1 dBu ratio. As seen in the Aerial Photograph, there is a lack of population, housing, buildings or major roads within this interference contour. The applicant would like to note the existence of multiple dedicated transmitter buildings located at the remote mountain top site. However, structures of this nature have been exempt as a matter of FCC Policy (see similar grant under BPFT-20160725ABE).

Multiple dedicated transmitter buildings. Structures of this nature have been exempt as a matter of FCC Policy (see similar grant under BPFT-20160725ABE).

Site Coordinates

	Latitude		Longitude	
	(NGS NADCON)			
NAD 27 datum values:	35	36 4.90655	82	39 5.83368
NAD 83 datum values:	35	36 5.30000	82	39 5.30000

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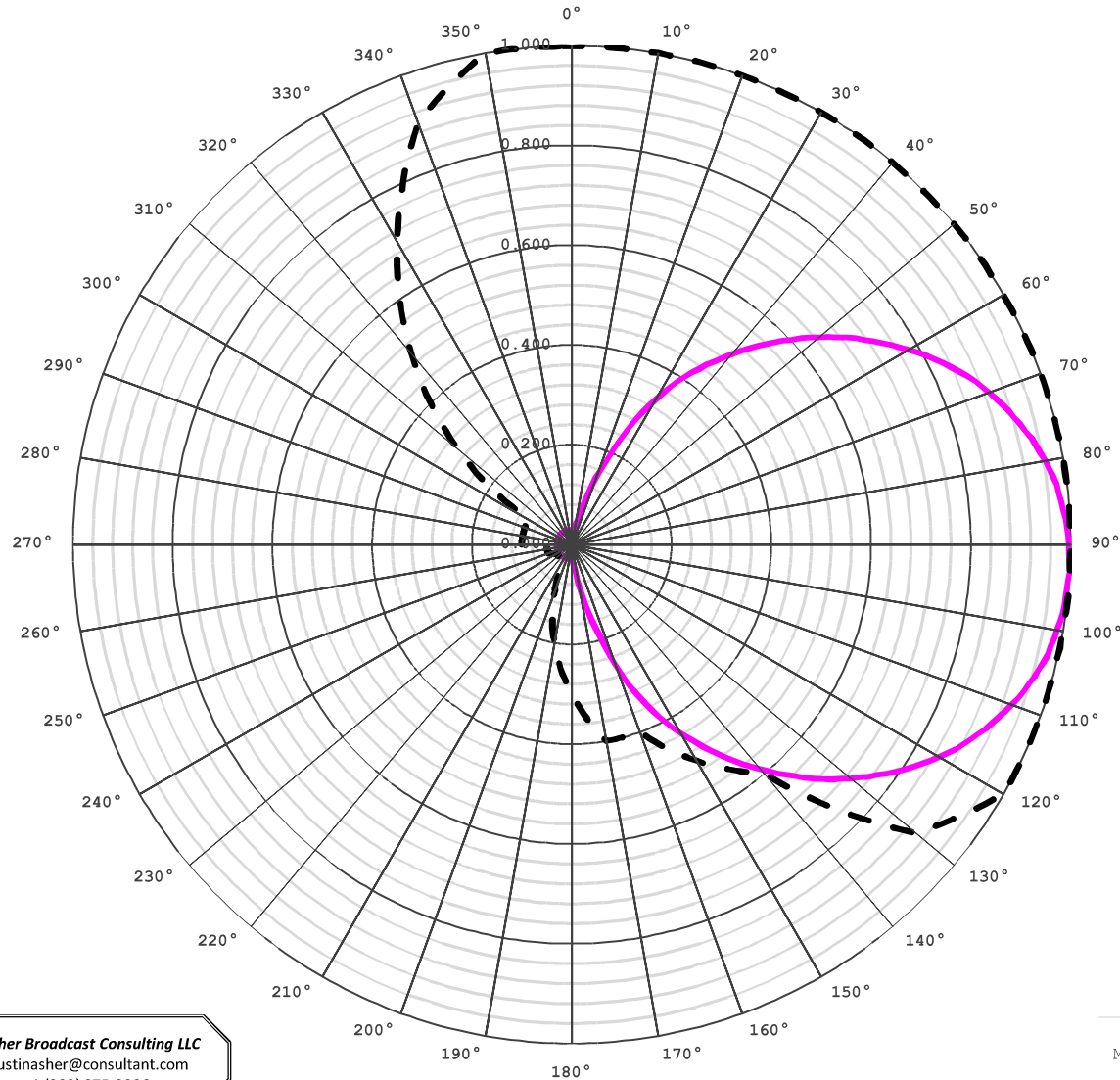
1000 ft



Manufacturer's	Make/Model	Orientation	Power
Element 1:	CI-FM(Vertical Only)	093° True	100.0%
Element 2:			
Element 3:			
Element 4:			

Composite Power: 100%

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



Azimuth ° True	FCC Pattern	Manufacturer's Pattern
0°	1.000	0.030
10°	1.000	0.038
20°	1.000	0.142
30°	1.000	0.336
40°	1.000	0.498
50°	1.000	0.646
60°	1.000	0.781
70°	1.000	0.890
80°	1.000	0.964
90°	1.000	0.996
100°	1.000	0.988
110°	1.000	0.938
120°	1.000	0.851
130°	0.900	0.729
140°	0.600	0.588
150°	0.500	0.436
160°	0.400	0.256
170°	0.400	0.086
180°	0.300	0.030
190°	0.200	0.030
200°	0.100	0.030
210°	0.035	0.030
220°	0.035	0.030
230°	0.035	0.030
240°	0.035	0.030
250°	0.050	0.030
260°	0.050	0.030
270°	0.100	0.030
280°	0.100	0.030
290°	0.100	0.030
300°	0.100	0.030
310°	0.300	0.030
320°	0.500	0.030
330°	0.700	0.030
340°	0.900	0.030
350°	1.000	0.030

Exhibit 9

Copy of Manufacturer's Directional Antenna Documentation (Actual Antenna Pattern rotated to 93.0°T) (public record copy)



CL-FM

FM Log Periodic Antenna
88–108 MHz

The Kathrein Scala Division CL-FM is a ruggedly built log-periodic antenna, designed for professional FM transmit and receive applications.

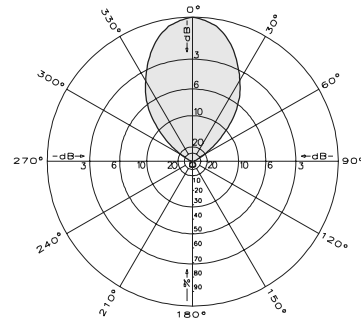
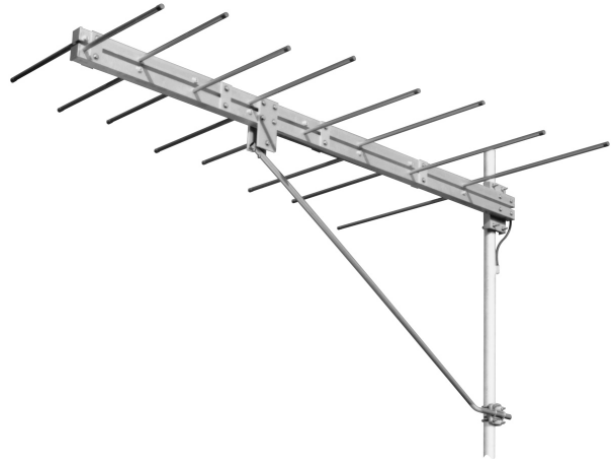
Like all Kathrein Scala Division antennas, the CL-FM is made of the finest materials using state of the art electrical and mechanical designs, resulting in superior performance and long service life.

The CL-FM may be used stand-alone or in stacked arrays for higher gain, increased side-lobe suppression, or custom azimuth patterns.

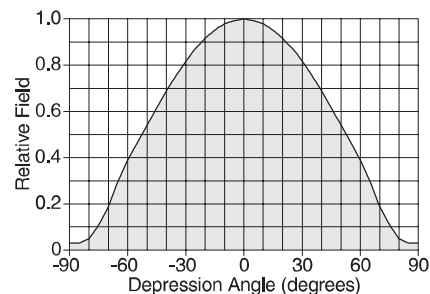
Specifications:

Frequency range	88–108 MHz (broadband)
Gain	7 dBd
Power gain	5.01
Impedance	50 or 75 ohms
VSWR	< 1.5:1
Polarization	Horizontal or vertical
Front-to-back ratio	>25 dB
Maximum input power	250 watts, type "N" 75 ohm connector 500 watts, type "N" 50 ohm connector
Azimuth pattern	52 degrees (half-power) horizontal polarization
Elevation pattern	78 degrees (half-power) horizontal polarization
Connector	Female 50Ω or 75Ω N
Weight	45 lb (20.4 kg)
Dimensions	104 x 67.9 inches (2642 x 1724 mm)
Wind load	at 100 mph (160 kph) 138 lbf (611 N) maximum
Wind survival rating*	120 mph (200 kph)
Shipping dimensions	116 x 14.5 x 6 inches (2946 x 369 x 153 mm)
Shipping weight	56 lb (25.4 kg)
Mounting	For masts of 2.375 inches (60 mm) OD.
CL-FM/HCM	Horizontal polarization center-mount
CL-FM/HRM	Horizontal polarization rear-mount
CL-FM/VRM	Vertical polarization rear-mount

See reverse for order information.



Azimuth pattern (E-plane)



Elevation pattern (H-plane)

* Mechanical design is based on environmental conditions as stipulated in TIA-222-G-2 (December 2009) and/or ETS 300 019-1-4 which include the static mechanical load imposed on an antenna by wind at maximum velocity. See the Engineering Section of the catalog for further details.



10492-F

Exhibit 9

Copy of Manufacturer's Directional Antenna Documentation (Actual Antenna Pattern rotated to 93.0°T)

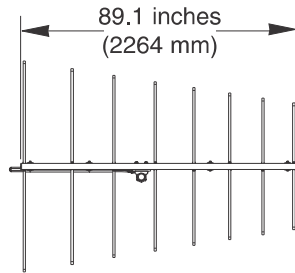
(public record copy)

CL-FM

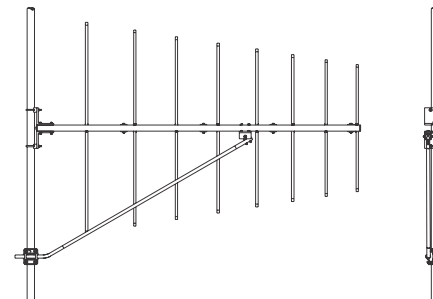
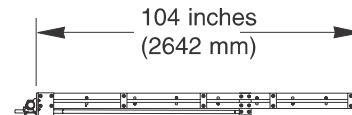
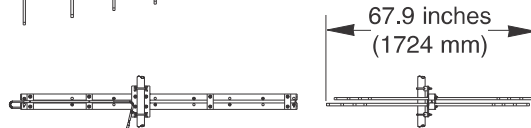
FM LOG-PERIODIC ANTENNA

7 dBd gain

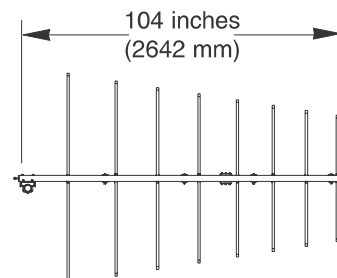
88–108 MHz



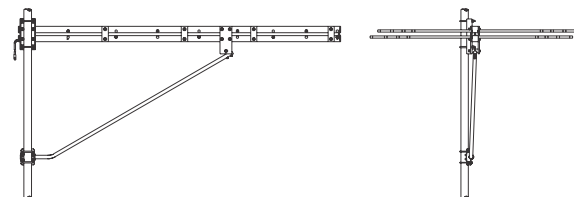
CL-FM/HCM
Horizontally polarized



CL-FM/VRM
Vertically polarized



CL-FM/HRM
Horizontally polarized



Vertically polarized antennas require lateral stabilization (not supplied) to prevent the antenna from turning on the mounting pipe.

Order Information:

Model	Description
CL-FM/HCM/50N	Antenna with 50Ω N connector Horizontal polarization center-mount
CL-FM/HCM/75N	Antenna with 75Ω N connector Horizontal polarization center-mount
CL-FM/HRM/50N	Antenna with 50Ω N connector Horizontal polarization rear-mount

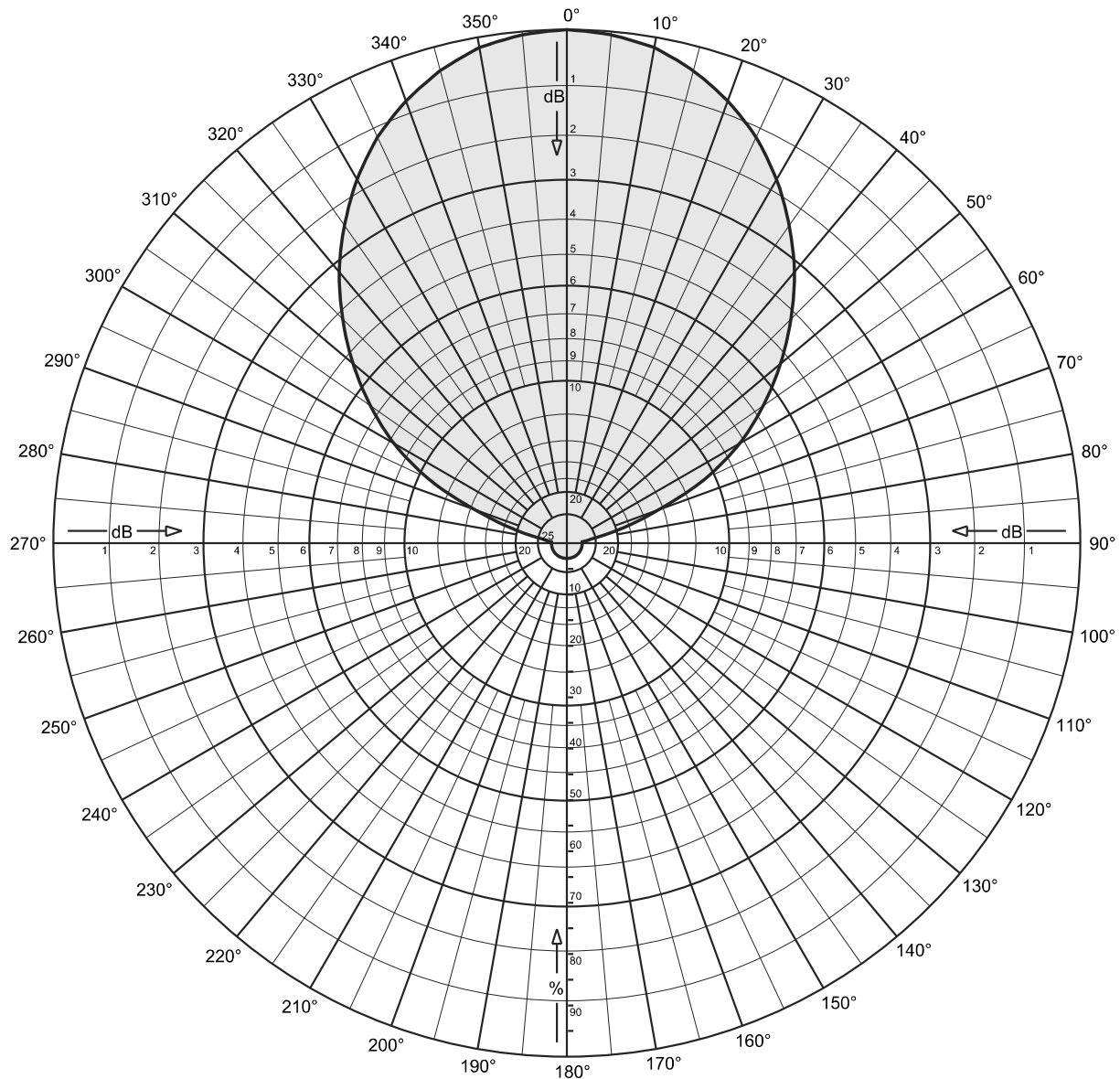
Order Information:

Model	Description
CL-FM/HRM/75N	Antenna with 75Ω N connector Horizontal polarization rear-mount
CL-FM/VRM/50N	Antenna with 50Ω N connector Vertical polarization rear-mount
CL-FM/VRM/75N	Antenna with 75Ω N connector Vertical polarization rear-mount

All specifications are subject to change without notice

Exhibit 9

Copy of Manufacturer's Directional Antenna Documentation
(Actual Antenna Pattern rotated to **93.0°T**) (public record copy)



CL-FM

FM

Maximum gain: 7.0 dBd

Vertical polarization Component

Horizontal radiation pattern

0 degree electrical downtilt



Exhibit 9

Copy of Manufacturer's Directional Antenna Documentation (Actual Antenna Pattern rotated to 93.0°T) (public record copy)



CL-FM

FM

Maximum gain: 7.0 dBd

Vertical polarization Component

Horizontal radiation pattern

0 degree electrical downtilt

Angle	Field	Rel.dB	dBd	PwrMult	Angle	Field	Rel.dB	dBd	PwrMult
0	1.000	0.00	7.00	5.01	45	0.618	-4.19	2.81	1.91
1	0.998	-0.01	6.99	5.00	46	0.602	-4.40	2.60	1.82
2	0.997	-0.02	6.98	4.99	47	0.588	-4.61	2.39	1.73
3	0.996	-0.03	6.97	4.97	48	0.573	-4.84	2.16	1.65
4	0.995	-0.04	6.96	4.96	49	0.558	-5.06	1.94	1.56
5	0.993	-0.06	6.94	4.95	50	0.544	-5.30	1.70	1.48
6	0.991	-0.08	6.92	4.92	51	0.528	-5.54	1.46	1.40
7	0.988	-0.10	6.90	4.89	52	0.513	-5.80	1.20	1.32
8	0.985	-0.13	6.87	4.87	53	0.498	-6.06	0.94	1.24
9	0.982	-0.15	6.85	4.84	54	0.483	-6.33	0.67	1.17
10	0.980	-0.18	6.82	4.81	55	0.467	-6.60	0.40	1.10
11	0.975	-0.22	6.78	4.76	56	0.452	-6.90	0.10	1.02
12	0.969	-0.27	6.73	4.71	57	0.436	-7.20	-0.20	0.95
13	0.964	-0.32	6.68	4.65	58	0.421	-7.51	-0.51	0.89
14	0.958	-0.37	6.63	4.60	59	0.405	-7.84	-0.84	0.82
15	0.952	-0.42	6.58	4.55	60	0.390	-8.18	-1.18	0.76
16	0.946	-0.49	6.51	4.48	61	0.372	-8.59	-1.59	0.69
17	0.938	-0.56	6.44	4.41	62	0.354	-9.02	-2.02	0.63
18	0.931	-0.62	6.38	4.34	63	0.336	-9.47	-2.47	0.57
19	0.923	-0.69	6.31	4.27	64	0.318	-9.95	-2.95	0.51
20	0.916	-0.76	6.24	4.21	65	0.300	-10.46	-3.46	0.45
21	0.908	-0.84	6.16	4.13	66	0.278	-11.12	-4.12	0.39
22	0.899	-0.92	6.08	4.05	67	0.256	-11.84	-4.84	0.33
23	0.890	-1.01	5.99	3.97	68	0.234	-12.62	-5.62	0.27
24	0.882	-1.10	5.90	3.89	69	0.212	-13.47	-6.47	0.23
25	0.873	-1.18	5.82	3.82	70	0.190	-14.42	-7.42	0.18
26	0.862	-1.29	5.71	3.72	71	0.174	-15.19	-8.19	0.15
27	0.851	-1.41	5.59	3.63	72	0.158	-16.03	-9.03	0.13
28	0.840	-1.52	5.48	3.53	73	0.142	-16.95	-9.95	0.10
29	0.829	-1.63	5.37	3.44	74	0.126	-17.99	-10.99	0.08
30	0.817	-1.75	5.25	3.35	75	0.110	-19.17	-12.17	0.06
31	0.806	-1.88	5.12	3.25	76	0.098	-20.18	-13.18	0.05
32	0.793	-2.02	4.98	3.15	77	0.086	-21.31	-14.31	0.04
33	0.781	-2.15	4.85	3.05	78	0.074	-22.62	-15.62	0.03
34	0.767	-2.30	4.70	2.95	79	0.062	-24.15	-17.15	0.02
35	0.756	-2.44	4.56	2.86	80	0.050	-26.02	-19.02	0.01
36	0.742	-2.59	4.41	2.76	81	0.046	-26.74	-19.74	0.01
37	0.729	-2.74	4.26	2.67	82	0.042	-27.54	-20.54	0.01
38	0.716	-2.90	4.10	2.57	83	0.038	-28.40	-21.40	0.01
39	0.704	-3.05	3.95	2.48	84	0.034	-29.37	-22.37	0.01
40	0.690	-3.22	3.78	2.39	85	0.030	-30.46	-23.46	0.00
41	0.675	-3.41	3.59	2.29	86	0.030	-30.46	-23.46	0.00
42	0.661	-3.60	3.40	2.19	87	0.030	-30.46	-23.46	0.00
43	0.646	-3.79	3.21	2.09	88	0.030	-30.46	-23.46	0.00
44	0.632	-3.99	3.01	2.00	89	0.030	-30.46	-23.46	0.00

Exhibit 9

Copy of Manufacturer's Directional Antenna Documentation (Actual Antenna Pattern rotated to 93.0°T)

(public record copy)



CL-FM

Horizontal radiation pattern

FM

0 degree electrical downtilt

Maximum gain: 7.0 dBd

Vertical polarization Component

Angle	Field	Rel.dB	dBd	PwrMult	Angle	Field	Rel.dB	dBd	PwrMult
90	0.030	-30.46	-23.46	0.00	135	0.030	-30.46	-23.46	0.00
91	0.030	-30.46	-23.46	0.00	136	0.030	-30.46	-23.46	0.00
92	0.030	-30.46	-23.46	0.00	137	0.030	-30.46	-23.46	0.00
93	0.030	-30.46	-23.46	0.00	138	0.030	-30.46	-23.46	0.00
94	0.030	-30.46	-23.46	0.00	139	0.030	-30.46	-23.46	0.00
95	0.030	-30.46	-23.46	0.00	140	0.030	-30.46	-23.46	0.00
96	0.030	-30.46	-23.46	0.00	141	0.030	-30.46	-23.46	0.00
97	0.030	-30.46	-23.46	0.00	142	0.030	-30.46	-23.46	0.00
98	0.030	-30.46	-23.46	0.00	143	0.030	-30.46	-23.46	0.00
99	0.030	-30.46	-23.46	0.00	144	0.030	-30.46	-23.46	0.00
100	0.030	-30.46	-23.46	0.00	145	0.030	-30.46	-23.46	0.00
101	0.030	-30.46	-23.46	0.00	146	0.030	-30.46	-23.46	0.00
102	0.030	-30.46	-23.46	0.00	147	0.030	-30.46	-23.46	0.00
103	0.030	-30.46	-23.46	0.00	148	0.030	-30.46	-23.46	0.00
104	0.030	-30.46	-23.46	0.00	149	0.030	-30.46	-23.46	0.00
105	0.030	-30.46	-23.46	0.00	150	0.030	-30.46	-23.46	0.00
106	0.030	-30.46	-23.46	0.00	151	0.030	-30.46	-23.46	0.00
107	0.030	-30.46	-23.46	0.00	152	0.030	-30.46	-23.46	0.00
108	0.030	-30.46	-23.46	0.00	153	0.030	-30.46	-23.46	0.00
109	0.030	-30.46	-23.46	0.00	154	0.030	-30.46	-23.46	0.00
110	0.030	-30.46	-23.46	0.00	155	0.030	-30.46	-23.46	0.00
111	0.030	-30.46	-23.46	0.00	156	0.030	-30.46	-23.46	0.00
112	0.030	-30.46	-23.46	0.00	157	0.030	-30.46	-23.46	0.00
113	0.030	-30.46	-23.46	0.00	158	0.030	-30.46	-23.46	0.00
114	0.030	-30.46	-23.46	0.00	159	0.030	-30.46	-23.46	0.00
115	0.030	-30.46	-23.46	0.00	160	0.030	-30.46	-23.46	0.00
116	0.030	-30.46	-23.46	0.00	161	0.030	-30.46	-23.46	0.00
117	0.030	-30.46	-23.46	0.00	162	0.030	-30.46	-23.46	0.00
118	0.030	-30.46	-23.46	0.00	163	0.030	-30.46	-23.46	0.00
119	0.030	-30.46	-23.46	0.00	164	0.030	-30.46	-23.46	0.00
120	0.030	-30.46	-23.46	0.00	165	0.030	-30.46	-23.46	0.00
121	0.030	-30.46	-23.46	0.00	166	0.030	-30.46	-23.46	0.00
122	0.030	-30.46	-23.46	0.00	167	0.030	-30.46	-23.46	0.00
123	0.030	-30.46	-23.46	0.00	168	0.030	-30.46	-23.46	0.00
124	0.030	-30.46	-23.46	0.00	169	0.030	-30.46	-23.46	0.00
125	0.030	-30.46	-23.46	0.00	170	0.030	-30.46	-23.46	0.00
126	0.030	-30.46	-23.46	0.00	171	0.030	-30.46	-23.46	0.00
127	0.030	-30.46	-23.46	0.00	172	0.030	-30.46	-23.46	0.00
128	0.030	-30.46	-23.46	0.00	173	0.030	-30.46	-23.46	0.00
129	0.030	-30.46	-23.46	0.00	174	0.030	-30.46	-23.46	0.00
130	0.030	-30.46	-23.46	0.00	175	0.030	-30.46	-23.46	0.00
131	0.030	-30.46	-23.46	0.00	176	0.030	-30.46	-23.46	0.00
132	0.030	-30.46	-23.46	0.00	177	0.030	-30.46	-23.46	0.00
133	0.030	-30.46	-23.46	0.00	178	0.030	-30.46	-23.46	0.00
134	0.030	-30.46	-23.46	0.00	179	0.030	-30.46	-23.46	0.00

Exhibit 9

Copy of Manufacturer's Directional Antenna Documentation (Actual Antenna Pattern rotated to 93.0°T) (public record copy)



CL-FM

FM

Maximum gain: 7.0 dBd

Vertical polarization Component

Horizontal radiation pattern

0 degree electrical downtilt

Angle	Field	Rel.dB	dBd	PwrMult	Angle	Field	Rel.dB	dBd	PwrMult
180	0.030	-30.46	-23.46	0.00	225	0.030	-30.46	-23.46	0.00
181	0.030	-30.46	-23.46	0.00	226	0.030	-30.46	-23.46	0.00
182	0.030	-30.46	-23.46	0.00	227	0.030	-30.46	-23.46	0.00
183	0.030	-30.46	-23.46	0.00	228	0.030	-30.46	-23.46	0.00
184	0.030	-30.46	-23.46	0.00	229	0.030	-30.46	-23.46	0.00
185	0.030	-30.46	-23.46	0.00	230	0.030	-30.46	-23.46	0.00
186	0.030	-30.46	-23.46	0.00	231	0.030	-30.46	-23.46	0.00
187	0.030	-30.46	-23.46	0.00	232	0.030	-30.46	-23.46	0.00
188	0.030	-30.46	-23.46	0.00	233	0.030	-30.46	-23.46	0.00
189	0.030	-30.46	-23.46	0.00	234	0.030	-30.46	-23.46	0.00
190	0.030	-30.46	-23.46	0.00	235	0.030	-30.46	-23.46	0.00
191	0.030	-30.46	-23.46	0.00	236	0.030	-30.46	-23.46	0.00
192	0.030	-30.46	-23.46	0.00	237	0.030	-30.46	-23.46	0.00
193	0.030	-30.46	-23.46	0.00	238	0.030	-30.46	-23.46	0.00
194	0.030	-30.46	-23.46	0.00	239	0.030	-30.46	-23.46	0.00
195	0.030	-30.46	-23.46	0.00	240	0.030	-30.46	-23.46	0.00
196	0.030	-30.46	-23.46	0.00	241	0.030	-30.46	-23.46	0.00
197	0.030	-30.46	-23.46	0.00	242	0.030	-30.46	-23.46	0.00
198	0.030	-30.46	-23.46	0.00	243	0.030	-30.46	-23.46	0.00
199	0.030	-30.46	-23.46	0.00	244	0.030	-30.46	-23.46	0.00
200	0.030	-30.46	-23.46	0.00	245	0.030	-30.46	-23.46	0.00
201	0.030	-30.46	-23.46	0.00	246	0.030	-30.46	-23.46	0.00
202	0.030	-30.46	-23.46	0.00	247	0.030	-30.46	-23.46	0.00
203	0.030	-30.46	-23.46	0.00	248	0.030	-30.46	-23.46	0.00
204	0.030	-30.46	-23.46	0.00	249	0.030	-30.46	-23.46	0.00
205	0.030	-30.46	-23.46	0.00	250	0.030	-30.46	-23.46	0.00
206	0.030	-30.46	-23.46	0.00	251	0.030	-30.46	-23.46	0.00
207	0.030	-30.46	-23.46	0.00	252	0.030	-30.46	-23.46	0.00
208	0.030	-30.46	-23.46	0.00	253	0.030	-30.46	-23.46	0.00
209	0.030	-30.46	-23.46	0.00	254	0.030	-30.46	-23.46	0.00
210	0.030	-30.46	-23.46	0.00	255	0.030	-30.46	-23.46	0.00
211	0.030	-30.46	-23.46	0.00	256	0.030	-30.46	-23.46	0.00
212	0.030	-30.46	-23.46	0.00	257	0.030	-30.46	-23.46	0.00
213	0.030	-30.46	-23.46	0.00	258	0.030	-30.46	-23.46	0.00
214	0.030	-30.46	-23.46	0.00	259	0.030	-30.46	-23.46	0.00
215	0.030	-30.46	-23.46	0.00	260	0.030	-30.46	-23.46	0.00
216	0.030	-30.46	-23.46	0.00	261	0.030	-30.46	-23.46	0.00
217	0.030	-30.46	-23.46	0.00	262	0.030	-30.46	-23.46	0.00
218	0.030	-30.46	-23.46	0.00	263	0.030	-30.46	-23.46	0.00
219	0.030	-30.46	-23.46	0.00	264	0.030	-30.46	-23.46	0.00
220	0.030	-30.46	-23.46	0.00	265	0.030	-30.46	-23.46	0.00
221	0.030	-30.46	-23.46	0.00	266	0.030	-30.46	-23.46	0.00
222	0.030	-30.46	-23.46	0.00	267	0.030	-30.46	-23.46	0.00
223	0.030	-30.46	-23.46	0.00	268	0.030	-30.46	-23.46	0.00
224	0.030	-30.46	-23.46	0.00	269	0.030	-30.46	-23.46	0.00

Exhibit 9

Copy of Manufacturer's Directional Antenna Documentation (Actual Antenna Pattern rotated to 93.0°T) (public record copy)



CL-FM

FM

Maximum gain: 7.0 dBd

Vertical polarization Component

Horizontal radiation pattern

0 degree electrical downtilt

Angle	Field	Rel.dB	dBd	PwrMult	Angle	Field	Rel.dB	dBd	PwrMult
270	0.030	-30.46	-23.46	0.00	315	0.618	-4.19	2.81	1.91
271	0.030	-30.46	-23.46	0.00	316	0.632	-3.99	3.01	2.00
272	0.030	-30.46	-23.46	0.00	317	0.646	-3.79	3.21	2.09
273	0.030	-30.46	-23.46	0.00	318	0.661	-3.60	3.40	2.19
274	0.030	-30.46	-23.46	0.00	319	0.675	-3.41	3.59	2.29
275	0.030	-30.46	-23.46	0.00	320	0.690	-3.22	3.78	2.39
276	0.034	-29.37	-22.37	0.01	321	0.704	-3.05	3.95	2.48
277	0.038	-28.40	-21.40	0.01	322	0.716	-2.90	4.10	2.57
278	0.042	-27.54	-20.54	0.01	323	0.729	-2.74	4.26	2.67
279	0.046	-26.74	-19.74	0.01	324	0.742	-2.59	4.41	2.76
280	0.050	-26.02	-19.02	0.01	325	0.756	-2.44	4.56	2.86
281	0.062	-24.15	-17.15	0.02	326	0.767	-2.30	4.70	2.95
282	0.074	-22.62	-15.62	0.03	327	0.781	-2.15	4.85	3.05
283	0.086	-21.31	-14.31	0.04	328	0.793	-2.02	4.98	3.15
284	0.098	-20.18	-13.18	0.05	329	0.806	-1.88	5.12	3.25
285	0.110	-19.17	-12.17	0.06	330	0.817	-1.75	5.25	3.35
286	0.126	-17.99	-10.99	0.08	331	0.829	-1.63	5.37	3.44
287	0.142	-16.95	-9.95	0.10	332	0.840	-1.52	5.48	3.53
288	0.158	-16.03	-9.03	0.13	333	0.851	-1.41	5.59	3.63
289	0.174	-15.19	-8.19	0.15	334	0.862	-1.29	5.71	3.72
290	0.190	-14.42	-7.42	0.18	335	0.873	-1.18	5.82	3.82
291	0.212	-13.47	-6.47	0.23	336	0.882	-1.10	5.90	3.89
292	0.234	-12.62	-5.62	0.27	337	0.890	-1.01	5.99	3.97
293	0.256	-11.84	-4.84	0.33	338	0.899	-0.92	6.08	4.05
294	0.278	-11.12	-4.12	0.39	339	0.908	-0.84	6.16	4.13
295	0.300	-10.46	-3.46	0.45	340	0.916	-0.76	6.24	4.21
296	0.318	-9.95	-2.95	0.51	341	0.923	-0.69	6.31	4.27
297	0.336	-9.47	-2.47	0.57	342	0.931	-0.62	6.38	4.34
298	0.354	-9.02	-2.02	0.63	343	0.938	-0.56	6.44	4.41
299	0.372	-8.59	-1.59	0.69	344	0.946	-0.49	6.51	4.48
300	0.390	-8.18	-1.18	0.76	345	0.952	-0.42	6.58	4.55
301	0.405	-7.84	-0.84	0.82	346	0.958	-0.37	6.63	4.60
302	0.421	-7.51	-0.51	0.89	347	0.964	-0.32	6.68	4.65
303	0.436	-7.20	-0.20	0.95	348	0.969	-0.27	6.73	4.71
304	0.452	-6.90	0.10	1.02	349	0.975	-0.22	6.78	4.76
305	0.467	-6.60	0.40	1.10	350	0.980	-0.18	6.82	4.81
306	0.483	-6.33	0.67	1.17	351	0.982	-0.15	6.85	4.84
307	0.498	-6.06	0.94	1.24	352	0.985	-0.13	6.87	4.87
308	0.513	-5.80	1.20	1.32	353	0.988	-0.10	6.90	4.89
309	0.528	-5.54	1.46	1.40	354	0.991	-0.08	6.92	4.92
310	0.544	-5.30	1.70	1.48	355	0.993	-0.06	6.94	4.95
311	0.558	-5.06	1.94	1.56	356	0.995	-0.04	6.96	4.96
312	0.573	-4.84	2.16	1.65	357	0.996	-0.03	6.97	4.97
313	0.588	-4.61	2.39	1.73	358	0.997	-0.02	6.98	4.99
314	0.602	-4.40	2.60	1.82	359	0.998	-0.01	6.99	5.00