

WMQS
BLED-20170127AAF
Murphy, North Carolina
Application for Modified Facilities for Noncommercial FM Station
On Channel 203 Class C3
by
Western North Carolina Public Radio, Inc.

Exhibit: Technical Compliance

September 2021

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Declaration

I declare, under penalty of perjury, that I am a technical consultant to broadcasting and other communications systems, that I have over twenty-five years of experience in the engineering of broadcast and other communications systems, that I am familiar with the Federal Communications Commission's Rules found in the Code of Federal Regulations Title 47, that I am a Professional Engineer registered in North Carolina, that I have prepared or supervised the preparation of the attached Exhibit: Technical Compliance, for Western North Carolina Public Radio, Inc., and that all of the facts therein, except for facts of which the Federal Communications Commission may take official notice, are true to the best of my knowledge and belief.



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25 September 2021

Narrative

This Exhibit provides details of the allocations for the proposed modified facilities of WMQS, Murphy, North Carolina. The authorization file number is BLED-20170127AAF. This proposal complies fully with the requirements of 47 C.F.R. §73.509.

The changes are limited increased power, change of class, and a change to a directional pattern.

Allocations

This application proposes service to Murphy, North Carolina, on channel 203 as a Class C3 facility. The Allocations Table in this exhibit provides a list of the stations, construction permits, allocations, and applications studied. All currently licensed facilities are protected from interference from the proposed facilities under 47 C.F.R. §73.509 by this application.

An Allocations Study is included as Figure 1. Where there are facilities whose overlap is less than 3.2 kilometers (2 miles) additional figures are provided, along with the output tables from the computer program FMOVER. Those facilities are identified below.

Figure/Table	Facility ID	Community	Channel and Relationship
2	WPPR	Demorest, Georgia	202C2, first adjacent
3	WRAS	Atlanta, Georgia	201C1, co-channel
4	WWQS	Spring City, Tennessee	203A, co-channel

Source of Data

Transmitter location, effective radiated power, directional antenna pattern, and elevation data are extracted from the Commission's LMS. All contours for existing and proposed facilities are calculated using height above average terrain calculated at one degree horizontal increments. All contours for existing and proposed facilities are calculated using height above average terrain calculated at one degree horizontal increments. The contours were evaluated using terrain extracted from the FCC 30 meter terrain database, formatted by V-Soft Communications to work with its allocation and mapping programs.

Population data is from 2010 U.S. Census PL data files. Population is counted by considering the location of the centroid of each census block. The data for each block is counted if it falls within the area being counted.

Area and Population

The area within the proposed 60 dBu F(50,50) service contour is calculated by a computer program which sums the areas within the contours based on 360 radials. The area is shown on a Figure at the end of this Exhibit. The population is calculated by the centroid method and is also listed on the Figure.

Table 1: Allocations

Allocation Study											
REFERENCE		CH# 203C3- 88.5 MHZ, Pwr= 2 kW DA, HAAT= 205.7 M, COR= 835 M								DISPLAY DATES	
35 07 37.3 N.		Average Protected F(50-50)= 30.5 km								DATA 09-25-21	
84 01 34.6 W.		Standard Directional								SEARCH 09-25-21	
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)	
203A	WMQS	LIC	CN	0.0	0.00	35 07 37.30	0.500	28.5	8.5	-40.5*	-53.9*
Murphy			NC	0.0	BLD20170127AAF	84 01 34.60	199	835	Western North Carolina Pub		
202C2	WPPR	LIC	DCN	154.6	74.20	34 31 24.40	7.300	34.6	21.1	10.0	0.2
Demorest			GA	334.8	BLD20080428ABF	83 40 45.60	194	611	Georgia Public Telecommuni		
203C1	WRAS	LIC	DCN	191.4	156.68	33 44 41.40	50.000	127.8	54.3	0.4	26.4
Atlanta			GA	11.2	BMLED20180709ABI	84 21 35.70	318	596	Georgia State University		
203A	WMQS	LIC	DCN	311.5	100.46	35 43 24.20	6.000	75.6	25.9	0.5	1.3
Spring City			TN	131.1	BLD20120516ACA	84 51 33.80	94	478	The Power Foundation		
202C2	WYLV	LIC	CN	4.4	97.75	36 00 13.10	2.850	75.3	49.5	5.7	30.6
Maynardville			TN	184.5	BLD20150515AAL	83 56 34.00	452	761	Educational Media Foundati		
204A	WCDG	LIC	DCN	175.2	64.05	34 33 10.30	0.600	12.5	8.7	22.9	15.2
Dahlonega			GA	355.3	BLD20121212ABB	83 58 04.60	-28	434	Legacy Broadcasting, Inc.		
203C2	WAHP	LIC	DCN	119.8	161.67	34 23 43.00	50.000	103.7	34.7	22.8	32.4
Due West			SC	300.6	0000145490	82 29 48.00	91	308	Radio Training Network, In		
204C	WNCW	LIC	DCN	66.3	171.51	35 44 06.40	17.000	109.8	73.6	24.4	39.0
Spindale			NC	247.3	0000143612	82 17 10.40	926	2022	Isothermal Community Colle		
202A	WLYG	LIC	DCN	206.8	82.12	34 28 01.30	0.200	9.6	6.7	41.1	30.8
Jasper			GA	26.6	BLD20000303AAA	84 25 48.70	1	451	Joy Christian Ministries		
205C	WMBW	LIC	CN	261.9	124.37	34 57 43.30	100.000	12.9	88.8	79.0	33.8
Chattanooga			TN	81.1	BMLED20020919AAA	85 22 39.90	460	760	The Moody Bible Institute		
201C1	WUTC	LIC	CN	274.8	114.39	35 12 26.20	30.000	8.4	70.2	76.9	42.6
Chattanooga			TN	94.1	BLD19931130KA	85 16 51.80	271	673	University Of Tennessee		
06+--	WOOT-LD«	LI	D N	274.8	114.39	37 08 00.42	1.400	24.8	6.7	31.5R	82.9M
Chattanooga, Etc.			TN	94.1	BLTVA-20070713ADV	81 35 42.39		637			

Terrain database is FCC 30 meter, R= 73.215 qualifying spacings or FCC minimum spacings in KM, M= Margin in KM
 In & out distances between contours are shown at closest points. Reference Zone= - Zone 2, 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.

« = Station meets FCC minimum distance spacing for its class.

Table 2: FMOVER protection of WPPR, Demorest, Georgia

09-25-2021 Terrain Data: FCC 30 meter FMOVER Analysis

WMQSm21

WPPR BLED20080428ABF

Channel = 203C3
 Max ERP = 2 kW
 RCAMSL = 835 m
 N. Lat. 35 07 37.30
 W. Lng. 84 01 34.60
 Protected
 60 dBu

Channel = 202C2
 Max ERP = 7.3 kW
 RCAMSL = 610.7 m
 N. Lat. 34 31 24.40
 W. Lng. 83 40 45.60
 Interfering
 54 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
110.0	002.0000	0254.0	033.9	000.3	001.1204	0172.9	055.5	46.27	
111.0	002.0000	0259.7	034.3	000.4	001.1247	0173.0	054.8	46.55	
112.0	002.0000	0260.9	034.3	000.3	001.1193	0173.0	054.2	46.75	
113.0	002.0000	0270.0	034.9	000.6	001.1294	0173.3	053.4	47.10	
114.0	002.0000	0275.6	035.2	000.6	001.1318	0173.5	052.7	47.38	
115.0	002.0000	0278.4	035.4	000.5	001.1279	0173.2	052.1	47.60	
116.0	002.0000	0274.2	035.1	360.0	001.1098	0172.4	051.6	47.66	
117.0	002.0000	0274.5	035.2	359.7	001.1031	0170.7	051.1	47.76	
118.0	002.0000	0272.0	035.0	359.2	001.0924	0166.2	050.6	47.68	
119.0	002.0000	0274.0	035.1	359.0	001.0873	0166.6	050.0	47.91	
120.0	002.0000	0277.6	035.3	358.8	001.0838	0166.9	049.4	48.16	
121.0	002.0000	0282.4	035.6	358.7	001.0814	0166.4	048.7	48.38	
122.0	002.0000	0287.6	035.9	358.6	001.0789	0165.7	048.0	48.60	
123.0	002.0000	0294.3	036.3	358.6	001.0778	0165.3	047.3	48.87	
124.0	002.0000	0294.1	036.3	358.1	001.0675	0160.9	046.8	48.80	
125.0	002.0000	0295.4	036.3	357.7	001.0587	0158.7	046.3	48.89	
126.0	002.0000	0291.8	036.1	357.0	001.0435	0155.4	045.9	48.81	
127.0	002.0000	0282.8	035.6	356.0	001.0217	0157.2	045.7	48.87	
128.0	002.0000	0276.3	035.3	355.2	001.0028	0159.0	045.5	48.96	
129.0	002.0000	0273.1	035.1	354.5	000.9875	0160.2	045.2	49.09	
130.0	002.0000	0275.9	035.2	354.0	000.9787	0160.4	044.7	49.29	
131.0	001.9642	0273.7	035.0	353.2	000.9615	0158.6	044.4	49.22	
132.0	001.9286	0271.9	034.7	352.4	000.9445	0155.3	044.2	49.06	
133.0	001.8935	0272.0	034.6	351.7	000.9295	0154.8	043.9	49.09	
134.0	001.8586	0280.2	034.9	351.3	000.9220	0152.0	043.3	49.18	
135.0	001.8240	0284.1	035.0	350.8	000.9098	0147.3	042.9	49.07	
136.0	001.7898	0281.1	034.7	349.8	000.8911	0139.6	042.8	48.60	
137.0	001.7559	0281.9	034.6	349.1	000.8757	0133.1	042.6	48.27	
138.0	001.7224	0284.8	034.6	348.4	000.8619	0125.9	042.2	47.94	
139.0	001.6891	0290.6	034.8	347.8	000.8498	0116.3	041.8	47.51	
140.0	001.6562	0299.3	035.1	347.3	000.8392	0110.2	041.2	47.28	
141.0	001.6164	0303.1	035.1	346.5	000.8243	0106.6	040.9	47.06	
142.0	001.5771	0304.2	035.0	345.7	000.8076	0107.5	040.8	47.09	
143.0	001.5383	0310.8	035.1	344.9	000.7938	0107.8	040.4	47.20	
144.0	001.4999	0312.6	035.0	344.1	000.7773	0109.7	040.3	47.31	
145.0	001.4621	0315.0	035.0	343.2	000.7611	0117.2	040.2	47.79	
146.0	001.4247	0318.9	035.0	342.4	000.7455	0124.4	040.0	48.22	
147.0	001.3878	0320.9	034.9	341.5	000.7292	0126.6	039.9	48.28	
148.0	001.3514	0319.9	034.6	340.6	000.7121	0126.7	040.0	48.13	
149.0	001.3154	0316.8	034.2	339.6	000.7015	0130.9	040.3	48.20	
150.0	001.2800	0306.9	033.5	338.6	000.7015	0138.1	040.9	48.32	

151.0	001.2609	0303.5	033.2		337.8	000.7015	0144.4	041.1	48.57
152.0	001.2450	0297.7	032.8		336.9	000.7015	0148.1	041.5	48.60
153.0	001.2293	0298.8	032.8		336.1	000.7015	0150.9	041.5	48.75
154.0	001.2106	0294.5	032.4		335.3	000.7015	0153.2	041.8	48.72
155.0	001.1951	0295.6	032.4		334.6	000.7015	0153.5	041.8	48.72
156.0	001.1766	0287.5	031.8		333.8	000.7015	0152.4	042.4	48.41
157.0	001.1613	0284.6	031.5		333.1	000.7015	0151.6	042.7	48.23
158.0	001.1431	0276.1	030.9		332.4	000.7015	0151.4	043.4	47.94
159.0	001.1280	0274.7	030.8		331.8	000.7015	0152.8	043.6	47.91
160.0	001.1101	0274.1	030.6		331.1	000.7015	0154.2	043.8	47.89
161.0	001.0658	0275.0	030.4		330.5	000.7015	0155.2	044.1	47.80
162.0	001.0253	0271.0	029.9		329.9	000.7012	0154.8	044.7	47.53
163.0	000.9828	0269.8	029.5		329.4	000.6988	0154.0	045.2	47.27
164.0	000.9439	0263.1	028.9		329.0	000.6969	0153.5	045.9	46.93
165.0	000.9059	0262.6	028.6		328.5	000.6946	0153.9	046.4	46.76
166.0	000.8659	0268.8	028.6		327.9	000.6920	0152.3	046.5	46.61
167.0	000.8295	0268.8	028.3		327.4	000.6899	0152.5	046.9	46.43
168.0	000.7913	0267.8	028.0		327.0	000.6881	0154.5	047.4	46.32
169.0	000.7565	0262.2	027.4		326.7	000.6868	0155.1	048.1	46.07
170.0	000.7200	0261.6	027.1		326.4	000.6852	0154.1	048.6	45.82
171.0	000.6962	0259.4	026.8		326.0	000.6836	0152.5	049.1	45.54
172.0	000.6728	0256.4	026.4		325.7	000.6822	0151.3	049.6	45.26
173.0	000.6498	0258.3	026.3		325.3	000.6804	0152.0	050.0	45.17
174.0	000.6272	0264.7	026.4		324.8	000.6782	0151.2	050.1	45.05
175.0	000.6050	0269.2	026.4		324.3	000.6762	0150.6	050.3	44.92
176.0	000.5832	0272.9	026.3		323.9	000.6743	0149.8	050.6	44.75
177.0	000.5618	0278.5	026.3		323.5	000.6724	0148.3	050.9	44.57
178.0	000.5408	0282.9	026.3		323.1	000.6706	0146.9	051.1	44.38
179.0	000.5202	0288.3	026.3		322.7	000.6687	0146.5	051.4	44.24
180.0	000.5000	0288.7	026.1		322.4	000.6676	0146.3	051.9	44.04
181.0	000.5000	0293.9	026.3		321.9	000.6652	0145.0	052.0	43.92
182.0	000.5000	0287.1	026.0		321.7	000.6644	0145.0	052.5	43.71
183.0	000.5000	0292.8	026.2		321.1	000.6620	0143.2	052.6	43.56
184.0	000.5000	0294.6	026.3		320.7	000.6601	0144.5	052.9	43.52
185.0	000.5000	0290.5	026.1		320.5	000.6592	0145.5	053.3	43.39
186.0	000.5000	0280.5	025.7		320.5	000.6591	0145.5	053.9	43.15
187.0	000.5000	0279.6	025.7		320.2	000.6578	0145.3	054.3	43.00
188.0	000.5000	0279.2	025.6		319.9	000.6570	0146.2	054.6	42.91
189.0	000.5000	0279.8	025.7		319.6	000.6570	0147.0	055.0	42.83
190.0	000.5000	0286.5	026.0		319.0	000.6570	0147.5	055.1	42.79
191.0	000.5100	0281.4	025.9		318.8	000.6570	0148.4	055.5	42.68
192.0	000.5202	0286.4	026.2		318.3	000.6570	0152.5	055.7	42.83
193.0	000.5304	0284.6	026.2		317.9	000.6570	0152.5	056.0	42.70
194.0	000.5408	0284.5	026.4		317.6	000.6570	0154.2	056.4	42.67
195.0	000.5512	0286.3	026.5		317.2	000.6570	0153.9	056.6	42.55
196.0	000.5618	0285.6	026.6		316.9	000.6570	0154.1	057.0	42.43
197.0	000.5725	0280.2	026.5		316.7	000.6570	0154.4	057.5	42.27
198.0	000.5832	0283.6	026.8		316.3	000.6570	0154.6	057.7	42.18
199.0	000.5941	0291.2	027.2		315.7	000.6570	0154.6	057.9	42.10

09-25-2021 Terrain Data: FCC 30 meter FMOVer Analysis

WPPR BLEED20080428ABF

WMQSm21

Channel = 202C2
 Max ERP = 7.3 kW
 RCAMSL = 610.7 m
 N. Lat. 34 31 24.40
 W. Lng. 83 40 45.60
 Protected
 60 dBu

Channel = 203C3
 Max ERP = 2 kW
 RCAMSL = 835 m
 N. Lat. 35 07 37.30
 W. Lng. 84 01 34.60
 Interfering
 54 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
290.0	000.6570	0152.6	020.7	168.4	000.7779	0268.3	061.3	46.28	
291.0	000.6570	0152.1	020.6	168.2	000.7852	0269.0	061.0	46.45	
292.0	000.6570	0146.4	020.2	167.7	000.8031	0265.8	060.9	46.47	
293.0	000.6570	0146.5	020.2	167.5	000.8102	0265.9	060.6	46.62	
294.0	000.6570	0150.3	020.5	167.5	000.8102	0265.9	060.2	46.79	
295.0	000.6570	0156.6	020.9	167.6	000.8059	0265.8	059.7	46.97	
296.0	000.6570	0157.3	021.0	167.4	000.8128	0266.2	059.4	47.14	
297.0	000.6570	0156.4	020.9	167.2	000.8230	0268.1	059.1	47.36	
298.0	000.6570	0155.1	020.8	166.9	000.8339	0268.8	058.9	47.53	
299.0	000.6570	0152.9	020.7	166.5	000.8462	0268.5	058.7	47.65	
300.0	000.6570	0155.2	020.8	166.4	000.8511	0267.8	058.3	47.79	
301.0	000.6570	0152.8	020.7	166.0	000.8642	0268.5	058.2	47.94	
302.0	000.6570	0154.7	020.8	165.9	000.8707	0269.4	057.8	48.14	
303.0	000.6570	0155.6	020.9	165.7	000.8794	0267.5	057.5	48.23	
304.0	000.6570	0157.4	021.0	165.5	000.8871	0265.2	057.2	48.32	
305.0	000.6570	0159.5	021.1	165.3	000.8948	0263.8	056.9	48.45	
306.0	000.6570	0160.8	021.2	165.0	000.9040	0262.9	056.6	48.58	
307.0	000.6570	0161.4	021.2	164.8	000.9144	0261.2	056.3	48.67	
308.0	000.6570	0163.4	021.3	164.5	000.9230	0261.6	056.0	48.86	
309.0	000.6570	0162.8	021.3	164.2	000.9355	0261.7	055.8	48.99	
310.0	000.6570	0165.2	021.5	164.0	000.9444	0263.2	055.5	49.22	
311.0	000.6570	0164.7	021.4	163.7	000.9574	0266.3	055.3	49.46	
312.0	000.6570	0161.6	021.2	163.2	000.9742	0267.9	055.3	49.61	
313.0	000.6570	0158.2	021.0	162.8	000.9922	0270.9	055.2	49.79	
314.0	000.6570	0157.5	021.0	162.4	001.0073	0270.5	055.1	49.90	
315.0	000.6570	0156.7	020.9	162.1	001.0228	0270.5	055.0	50.01	
316.0	000.6570	0154.7	020.8	161.7	001.0391	0272.6	054.9	50.17	
317.0	000.6570	0154.1	020.7	161.3	001.0536	0274.0	054.8	50.33	
318.0	000.6570	0152.5	020.6	160.9	001.0698	0275.0	054.8	50.45	
319.0	000.6570	0147.7	020.3	160.4	001.0907	0272.5	054.9	50.38	
320.0	000.6570	0145.8	020.2	160.0	001.1082	0274.2	054.9	50.51	
321.0	000.6614	0143.5	020.1	159.7	001.1163	0274.5	054.9	50.55	
322.0	000.6658	0145.1	020.2	159.4	001.1217	0273.8	054.7	50.65	
323.0	000.6702	0146.7	020.4	159.0	001.1273	0274.7	054.4	50.80	
324.0	000.6746	0149.9	020.6	158.7	001.1318	0273.9	054.1	50.92	
325.0	000.6791	0151.2	020.7	158.4	001.1369	0274.6	053.9	51.05	
326.0	000.6835	0152.5	020.8	158.1	001.1422	0275.8	053.7	51.19	
327.0	000.6880	0154.5	021.0	157.7	001.1483	0278.7	053.5	51.40	
328.0	000.6925	0152.6	020.9	157.3	001.1557	0284.0	053.5	51.59	
329.0	000.6970	0153.5	021.0	156.9	001.1623	0285.0	053.4	51.71	
330.0	000.7015	0154.8	021.1	156.6	001.1680	0286.0	053.2	51.83	
331.0	000.7015	0154.7	021.1	156.2	001.1741	0286.9	053.2	51.90	
332.0	000.7015	0151.8	020.9	155.8	001.1811	0289.4	053.3	51.94	
333.0	000.7015	0151.4	020.9	155.4	001.1884	0291.8	053.3	52.04	

334.0	000.7015	0152.8	021.0		155.0	001.1955	0295.8	053.2	52.24
335.0	000.7015	0154.0	021.1		154.6	001.2016	0296.4	053.1	52.32
336.0	000.7015	0151.5	020.9		154.2	001.2077	0294.3	053.3	52.20
337.0	000.7015	0147.6	020.6		153.8	001.2142	0295.1	053.6	52.14
338.0	000.7015	0142.7	020.3		153.5	001.2208	0297.7	053.9	52.10
339.0	000.7015	0135.8	019.8		153.1	001.2269	0298.7	054.5	51.96
340.0	000.7015	0128.8	019.3		152.8	001.2320	0298.9	055.0	51.77
341.0	000.7198	0127.2	019.3		152.5	001.2375	0296.9	055.0	51.70
342.0	000.7382	0126.4	019.4		152.1	001.2431	0297.4	055.0	51.75
343.0	000.7569	0118.6	018.9		151.9	001.2471	0297.7	055.5	51.57
344.0	000.7758	0110.5	018.4		151.7	001.2505	0298.7	056.1	51.38
345.0	000.7950	0108.0	018.3		151.4	001.2552	0301.7	056.3	51.42
346.0	000.8144	0105.5	018.1		151.1	001.2596	0303.5	056.5	51.42
347.0	000.8340	0108.1	018.5		150.7	001.2672	0302.9	056.3	51.53
348.0	000.8538	0119.8	019.6		150.0	001.2798	0306.8	055.3	52.08
349.0	000.8739	0132.5	020.7		149.3	001.3045	0313.1	054.4	52.71
350.0	000.8942	0140.9	021.4		148.7	001.3269	0319.1	053.9	53.20
351.0	000.9148	0149.9	022.1		148.0	001.3512	0319.9	053.3	53.52
352.0	000.9356	0155.2	022.6		147.4	001.3727	0320.2	053.0	53.70
353.0	000.9566	0157.6	022.9		146.9	001.3915	0320.7	052.9	53.81
354.0	000.9779	0160.4	023.2		146.4	001.4112	0319.0	052.9	53.85
355.0	000.9994	0160.4	023.3		145.9	001.4277	0318.9	052.9	53.86
356.0	001.0211	0157.3	023.2		145.6	001.4401	0318.0	053.2	53.76
357.0	001.0431	0155.4	023.2		145.2	001.4537	0316.5	053.4	53.67
358.0	001.0652	0160.2	023.6		144.6	001.4771	0312.9	053.3	53.67
359.0	001.0877	0166.5	024.1		143.9	001.5032	0312.4	053.1	53.82
000.0	001.1103	0172.7	024.7		143.2	001.5298	0311.3	052.9	53.92
001.0	001.1448	0172.3	024.8		142.8	001.5477	0308.7	053.1	53.83
002.0	001.1797	0175.6	025.2		142.1	001.5719	0304.8	053.1	53.78
003.0	001.2152	0178.1	025.5		141.5	001.5950	0303.7	053.1	53.79
004.0	001.2512	0182.0	025.9		140.9	001.6208	0303.3	053.1	53.85
005.0	001.2877	0184.1	026.2		140.3	001.6434	0301.2	053.2	53.80
006.0	001.3248	0187.4	026.6		139.7	001.6664	0295.4	053.3	53.65
007.0	001.3624	0189.2	026.8		139.1	001.6849	0291.9	053.4	53.52
008.0	001.4005	0188.9	027.0		138.7	001.6999	0287.2	053.7	53.31
009.0	001.4391	0186.6	027.0		138.3	001.7112	0285.0	054.0	53.12
010.0	001.4782	0183.0	026.9		138.1	001.7198	0284.8	054.4	52.97
011.0	001.5313	0182.6	027.1		137.6	001.7352	0284.1	054.7	52.89
012.0	001.5852	0188.1	027.7		136.8	001.7613	0281.5	054.7	52.84
013.0	001.6401	0190.7	028.1		136.2	001.7823	0281.5	054.9	52.82
014.0	001.6960	0191.2	028.3		135.7	001.7992	0281.9	055.2	52.76
015.0	001.7527	0192.9	028.7		135.2	001.8183	0284.0	055.5	52.78
016.0	001.8104	0191.0	028.7		134.8	001.8296	0283.7	055.9	52.64
017.0	001.8691	0189.8	028.9		134.5	001.8419	0283.8	056.2	52.52
018.0	001.9286	0191.9	029.2		133.9	001.8612	0279.8	056.5	52.32
019.0	001.9891	0194.0	029.6		133.4	001.8807	0274.8	056.8	52.07

Table 3: FMOVER Protection of WRAS, Atlanta, Georgia

09-25-2021 Terrain Data: FCC 30 meter FMOVER Analysis

WMQSm21

WRAS BMLED20180709ABI

Channel = 203C3
 Max ERP = 2 kW
 RCAMSL = 835 m
 N. Lat. 35 07 37.30
 W. Lng. 84 01 34.60
 Protected
 60 dBu

Channel = 203C1
 Max ERP = 50 kW
 RCAMSL = 596 m
 N. Lat. 33 44 41.40
 W. Lng. 84 21 35.70
 Interfering
 40 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
131.0	001.9642	0273.7	035.0	023.5	017.4782	0314.2	142.7	38.11	
132.0	001.9286	0271.9	034.7	023.3	017.3577	0314.3	142.2	38.18	
133.0	001.8935	0272.0	034.6	023.2	017.2656	0314.3	141.6	38.27	
134.0	001.8586	0280.2	034.9	023.2	017.2951	0314.3	141.0	38.42	
135.0	001.8240	0284.1	035.0	023.1	017.2539	0314.3	140.4	38.53	
136.0	001.7898	0281.1	034.7	022.9	017.1045	0314.6	139.9	38.59	
137.0	001.7559	0281.9	034.6	022.8	017.0085	0314.3	139.4	38.67	
138.0	001.7224	0284.8	034.6	022.7	016.9415	0314.1	138.8	38.76	
139.0	001.6891	0290.6	034.8	022.7	016.9113	0314.1	138.2	38.88	
140.0	001.6562	0299.3	035.1	022.7	016.9163	0314.1	137.5	39.03	
141.0	001.6164	0303.1	035.1	022.5	016.8382	0313.8	137.0	39.12	
142.0	001.5771	0304.2	035.0	022.4	016.7202	0313.1	136.5	39.17	
143.0	001.5383	0310.8	035.1	022.3	016.6711	0312.8	135.9	39.28	
144.0	001.4999	0312.6	035.0	022.1	016.5548	0312.4	135.4	39.34	
145.0	001.4621	0315.0	035.0	022.0	016.4436	0311.9	134.9	39.40	
146.0	001.4247	0318.9	035.0	021.8	016.3489	0311.4	134.4	39.47	
147.0	001.3878	0320.9	034.9	021.7	016.2253	0310.9	134.0	39.52	
148.0	001.3514	0319.9	034.6	021.4	016.0621	0310.3	133.6	39.54	
149.0	001.3154	0316.8	034.2	021.1	015.8705	0309.9	133.4	39.53	
150.0	001.2800	0306.9	033.5	020.7	015.5986	0308.8	133.4	39.43	
151.0	001.2609	0303.5	033.2	020.5	015.4274	0308.0	133.1	39.41	
152.0	001.2450	0297.7	032.8	020.2	015.2319	0307.5	133.0	39.38	
153.0	001.2293	0298.8	032.8	020.0	015.1237	0307.1	132.6	39.43	
154.0	001.2106	0294.5	032.4	019.7	015.0990	0307.1	132.4	39.46	
155.0	001.1951	0295.6	032.4	019.5	015.0828	0307.7	132.0	39.55	
156.0	001.1766	0287.5	031.8	019.2	015.0524	0308.5	132.0	39.55	
157.0	001.1613	0284.6	031.5	018.9	015.0302	0309.5	131.9	39.61	
158.0	001.1431	0276.1	030.9	018.6	014.9996	0310.0	131.9	39.60	
159.0	001.1280	0274.7	030.8	018.3	014.9797	0310.3	131.7	39.64	
160.0	001.1101	0274.1	030.6	018.1	014.9602	0311.0	131.5	39.70	
161.0	001.0658	0275.0	030.4	017.9	014.9384	0311.9	131.4	39.75	
162.0	001.0253	0271.0	029.9	017.6	014.9113	0312.9	131.5	39.75	
163.0	000.9828	0269.8	029.5	017.3	014.8873	0313.8	131.5	39.77	
164.0	000.9439	0263.1	028.9	017.0	014.8579	0315.0	131.7	39.74	
165.0	000.9059	0262.6	028.6	016.7	014.8357	0315.6	131.7	39.75	
166.0	000.8659	0268.8	028.6	016.5	014.8199	0316.4	131.4	39.83	
167.0	000.8295	0268.8	028.3	016.3	014.7981	0317.8	131.4	39.86	
168.0	000.7913	0267.8	028.0	016.0	014.7753	0318.5	131.5	39.86	
169.0	000.7565	0262.2	027.4	015.7	014.7492	0319.2	131.8	39.81	
170.0	000.7200	0261.6	027.1	015.5	014.7274	0318.6	131.9	39.76	
171.0	000.6962	0259.4	026.8	015.2	014.7064	0318.2	131.9	39.73	

172.0	000.6728	0256.4	026.4		015.0	014.6851	0317.7	132.1	39.68
173.0	000.6498	0258.3	026.3		014.8	014.6674	0317.6	132.0	39.69
174.0	000.6272	0264.7	026.4		014.6	014.6524	0317.5	131.8	39.73
175.0	000.6050	0269.2	026.4		014.4	014.6360	0317.6	131.6	39.76
176.0	000.5832	0272.9	026.3		014.2	014.6189	0318.1	131.5	39.79
177.0	000.5618	0278.5	026.3		014.0	014.6027	0317.9	131.4	39.81
178.0	000.5408	0282.9	026.3		013.8	014.5857	0318.1	131.3	39.84
179.0	000.5202	0288.3	026.3		013.6	014.5690	0317.7	131.1	39.85
180.0	000.5000	0288.7	026.1		013.4	014.5502	0317.7	131.2	39.82
181.0	000.5000	0293.9	026.3		013.2	014.5353	0317.7	130.9	39.88
182.0	000.5000	0287.1	026.0		013.0	014.5163	0317.4	131.1	39.83
183.0	000.5000	0292.8	026.2		012.8	014.5011	0317.4	130.8	39.89
184.0	000.5000	0294.6	026.3		012.6	014.4845	0317.0	130.6	39.91
185.0	000.5000	0290.5	026.1		012.4	014.4664	0317.2	130.7	39.89
186.0	000.5000	0280.5	025.7		012.2	014.4475	0316.7	131.1	39.78
187.0	000.5000	0279.6	025.7		012.0	014.4306	0316.0	131.1	39.76
188.0	000.5000	0279.2	025.6		011.8	014.4138	0315.3	131.1	39.74
189.0	000.5000	0279.8	025.7		011.6	014.3971	0314.6	131.0	39.73
190.0	000.5000	0286.5	026.0		011.4	014.3806	0314.0	130.7	39.78
191.0	000.5100	0281.4	025.9		011.2	014.3635	0313.8	130.8	39.75
192.0	000.5202	0286.4	026.2		011.0	014.3464	0313.9	130.5	39.82
193.0	000.5304	0284.6	026.2		010.8	014.3292	0313.8	130.5	39.81
194.0	000.5408	0284.5	026.4		010.6	014.3117	0313.3	130.4	39.82
195.0	000.5512	0286.3	026.5		010.4	014.2939	0312.3	130.2	39.82
196.0	000.5618	0285.6	026.6		010.2	014.2762	0311.6	130.2	39.81
197.0	000.5725	0280.2	026.5		010.0	014.2594	0311.2	130.3	39.75
198.0	000.5832	0283.6	026.8		009.8	014.1409	0310.9	130.1	39.75
199.0	000.5941	0291.2	027.2		009.6	014.0035	0310.5	129.7	39.78
200.0	000.6050	0299.6	027.7		009.3	013.8603	0309.9	129.3	39.81
201.0	000.6161	0310.8	028.3		009.1	013.7065	0310.2	128.8	39.88
202.0	000.6272	0319.6	028.9		008.8	013.5531	0309.8	128.4	39.91
203.0	000.6384	0324.9	029.2		008.5	013.4051	0310.2	128.2	39.92
204.0	000.6498	0328.8	029.5		008.3	013.2594	0310.5	128.0	39.92
205.0	000.6612	0328.7	029.7		008.0	013.1255	0311.2	128.1	39.89
206.0	000.6728	0325.1	029.6		007.8	013.0052	0311.7	128.3	39.82
207.0	000.6844	0317.2	029.4		007.6	012.9037	0312.1	128.7	39.71
208.0	000.6962	0313.4	029.3		007.4	012.7893	0312.8	128.9	39.64
209.0	000.7081	0320.4	029.7		007.1	012.6307	0313.2	128.7	39.64
210.0	000.7200	0326.7	030.2		006.9	012.4722	0313.5	128.5	39.64
211.0	000.7442	0331.8	030.7		006.6	012.3053	0313.4	128.2	39.63
212.0	000.7688	0333.7	031.0		006.3	012.1524	0312.4	128.1	39.57
213.0	000.7938	0331.6	031.1		006.0	012.0202	0312.5	128.3	39.49
214.0	000.8192	0326.4	031.1		005.8	011.9082	0312.9	128.5	39.40
215.0	000.8450	0328.3	031.4		005.5	011.7561	0313.2	128.5	39.36
216.0	000.8712	0331.7	031.8		005.2	011.5936	0314.0	128.4	39.34
217.0	000.8978	0334.2	032.2		004.9	011.4366	0314.5	128.4	39.30
218.0	000.9248	0332.2	032.3		004.7	011.3102	0314.9	128.6	39.22
219.0	000.9522	0328.8	032.4		004.5	011.1952	0315.4	128.9	39.13
220.0	000.9800	0329.1	032.6		004.2	011.0558	0316.7	129.0	39.08
221.0	000.9940	0326.7	032.6		004.0	010.9537	0317.5	129.4	38.99
222.0	001.0082	0320.2	032.4		003.9	010.8844	0317.7	129.9	38.85
223.0	001.0224	0302.0	031.5		003.9	010.9055	0317.7	130.9	38.64
224.0	001.0368	0288.1	030.9		003.9	010.9007	0317.7	131.7	38.45
225.0	001.0513	0284.1	030.8		003.8	010.8263	0317.8	132.2	38.33
226.0	001.0658	0285.6	030.9		003.5	010.7106	0318.3	132.4	38.25
227.0	001.0805	0297.7	031.7		003.1	010.5098	0319.2	132.2	38.23
228.0	001.0952	0307.1	032.3		002.8	010.3310	0320.4	132.2	38.20
229.0	001.1101	0314.5	032.8		002.5	010.1681	0320.7	132.2	38.13
230.0	001.1250	0311.8	032.8		002.3	010.0906	0320.9	132.7	38.00
231.0	001.1400	0309.8	032.8		002.1	010.0101	0320.7	133.1	37.87
232.0	001.1552	0318.5	033.3		001.8	009.8397	0319.6	133.2	37.75
233.0	001.1704	0314.2	033.2		001.7	009.7840	0319.4	133.7	37.61
234.0	001.1858	0316.1	033.4		001.4	009.6756	0319.3	134.0	37.48

235.0	001.2012	0318.7	033.6		001.2	009.5639	0319.0	134.4	37.36
236.0	001.2168	0318.8	033.7		001.0	009.4757	0319.0	134.8	37.23
237.0	001.2325	0319.1	033.9		000.8	009.3888	0318.9	135.2	37.09
238.0	001.2482	0318.9	033.9		000.7	009.3085	0318.4	135.6	36.95
239.0	001.2641	0321.9	034.2		000.5	009.2008	0318.1	136.0	36.81
240.0	001.2800	0326.3	034.5		000.2	009.0833	0318.2	136.4	36.69
241.0	001.2577	0327.8	034.5		000.1	009.0343	0318.4	136.9	36.55
242.0	001.2356	0326.8	034.3		000.0	009.0105	0318.7	137.5	36.42
243.0	001.2137	0329.2	034.3		359.9	008.9888	0319.2	138.1	36.31
244.0	001.1920	0334.2	034.4		359.8	008.9888	0318.6	138.5	36.19
245.0	001.1704	0335.6	034.3		359.7	008.9888	0318.6	139.1	36.07
246.0	001.1491	0336.9	034.3		359.6	008.9888	0318.6	139.7	35.95
247.0	001.1280	0332.0	033.9		359.7	008.9888	0318.6	140.4	35.80
248.0	001.1071	0329.5	033.6		359.7	008.9888	0318.6	141.0	35.67
249.0	001.0863	0328.8	033.4		359.7	008.9888	0318.6	141.7	35.54
250.0	001.0658	0326.5	033.1		359.7	008.9888	0318.6	142.3	35.41

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09-25-2021 Terrain Data: FCC 30 meter FMOVer Analysis

WRAS BMLED20180709ABI

WMQSm21

Channel = 203C1
 Max ERP = 50 kW
 RCAMSL = 596 m
 N. Lat. 33 44 41.40
 W. Lng. 84 21 35.70
 Protected
 60 dBu

Channel = 203C3
 Max ERP = 2 kW
 RCAMSL = 835 m
 N. Lat. 35 07 37.30
 W. Lng. 84 01 34.60
 Interfering
 40 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
311.0	048.4719	0322.0	066.7	216.5	000.8834	0333.2	136.4	26.97	
312.0	046.9674	0324.7	066.6	216.4	000.8808	0332.7	135.2	27.19	
313.0	045.4867	0325.7	066.3	216.2	000.8765	0332.2	134.1	27.40	
314.0	044.0297	0326.8	066.1	216.0	000.8720	0331.7	133.0	27.61	
315.0	042.5964	0326.4	065.7	215.8	000.8658	0331.5	131.9	27.82	
316.0	041.1869	0327.5	065.5	215.6	000.8607	0330.8	130.8	28.01	
317.0	039.8010	0330.2	065.3	215.4	000.8564	0330.2	129.7	28.22	
318.0	038.4389	0331.3	065.0	215.2	000.8505	0329.5	128.7	28.40	
319.0	037.1005	0329.3	064.5	214.9	000.8417	0328.3	127.7	28.54	
320.0	035.7858	0329.4	064.2	214.6	000.8344	0327.2	126.7	28.69	
321.0	034.3289	0329.1	063.7	214.3	000.8258	0326.2	125.8	28.82	
322.0	032.9023	0329.7	063.4	213.9	000.8176	0326.8	124.8	29.01	
323.0	031.5059	0329.9	062.9	213.6	000.8088	0328.9	123.9	29.24	
324.0	030.1399	0330.5	062.5	213.2	000.7999	0331.7	123.0	29.49	
325.0	028.8041	0330.9	062.1	212.9	000.7906	0332.1	122.2	29.65	
326.0	027.4985	0329.6	061.6	212.4	000.7797	0334.7	121.4	29.86	
327.0	026.2233	0328.6	061.0	212.0	000.7688	0333.7	120.6	29.94	
328.0	024.9783	0327.7	060.5	211.6	000.7577	0333.5	119.9	30.04	
329.0	023.7636	0328.9	060.1	211.1	000.7479	0332.9	119.2	30.13	
330.0	022.5792	0329.3	059.7	210.7	000.7371	0330.8	118.5	30.15	
331.0	021.6614	0331.1	059.4	210.3	000.7282	0328.6	117.7	30.19	
332.0	020.7626	0329.5	058.9	209.9	000.7184	0325.5	117.1	30.16	
333.0	019.8828	0326.0	058.2	209.3	000.7119	0321.5	116.6	30.09	
334.0	019.0221	0323.3	057.6	208.8	000.7057	0318.8	116.1	30.07	
335.0	018.1804	0322.6	057.1	208.3	000.6999	0314.6	115.6	30.02	
336.0	017.3578	0324.1	056.8	207.9	000.6948	0313.4	115.0	30.09	
337.0	016.5543	0325.1	056.4	207.4	000.6894	0315.2	114.5	30.24	
338.0	015.7697	0323.6	055.9	206.9	000.6832	0318.2	114.1	30.40	
339.0	015.0042	0326.0	055.6	206.5	000.6781	0321.9	113.6	30.64	
340.0	014.2578	0325.7	055.1	205.9	000.6721	0325.4	113.2	30.82	
341.0	013.6765	0326.1	054.7	205.5	000.6666	0327.1	112.8	30.96	
342.0	013.1072	0324.0	054.2	204.9	000.6604	0328.5	112.5	31.04	
343.0	012.5500	0323.8	053.8	204.4	000.6547	0330.0	112.2	31.15	
344.0	012.0050	0324.9	053.4	203.9	000.6492	0328.5	111.9	31.14	
345.0	011.4720	0324.6	053.0	203.4	000.6434	0327.9	111.6	31.14	
346.0	010.9512	0326.5	052.7	203.0	000.6381	0324.7	111.3	31.07	
347.0	010.4424	0324.2	052.1	202.4	000.6317	0322.6	111.2	30.96	
348.0	009.9458	0322.0	051.5	201.8	000.6255	0318.8	111.2	30.78	
349.0	009.4613	0322.5	051.1	201.3	000.6198	0315.4	111.1	30.66	
350.0	008.9888	0322.5	050.6	200.8	000.6141	0309.5	111.0	30.44	
351.0	008.9888	0323.3	050.6	200.4	000.6099	0306.6	110.5	30.46	
352.0	008.9888	0320.0	050.4	200.0	000.6048	0299.4	110.3	30.29	
353.0	008.9888	0319.0	050.4	199.6	000.6002	0296.0	110.0	30.26	
354.0	008.9888	0319.3	050.4	199.2	000.5957	0292.3	109.6	30.23	

355.0	008.9888	0319.2	050.4		198.7	000.5911	0291.2	109.2	30.27
356.0	008.9888	0318.7	050.3		198.3	000.5864	0285.8	108.9	30.17
357.0	008.9888	0318.7	050.3		197.9	000.5818	0282.3	108.6	30.13
358.0	008.9888	0317.0	050.2		197.4	000.5769	0279.0	108.4	30.05
359.0	008.9888	0317.5	050.3		197.0	000.5722	0280.5	108.1	30.14
000.0	008.9888	0318.9	050.4		196.5	000.5676	0282.0	107.7	30.25
001.0	009.4613	0319.1	050.8		196.2	000.5635	0285.1	107.0	30.51
002.0	009.9458	0320.4	051.4		195.8	000.5594	0284.7	106.3	30.68
003.0	010.4424	0319.3	051.8		195.3	000.5549	0285.1	105.7	30.82
004.0	010.9512	0317.6	052.1		194.9	000.5501	0285.5	105.2	30.94
005.0	011.4720	0314.4	052.3		194.4	000.5452	0285.3	104.8	31.01
006.0	012.0050	0312.5	052.6		194.0	000.5403	0284.4	104.4	31.07
007.0	012.5500	0313.5	053.1		193.5	000.5354	0284.7	103.8	31.22
008.0	013.1072	0311.3	053.3		193.0	000.5303	0284.7	103.5	31.28
009.0	013.6765	0310.2	053.7		192.5	000.5251	0286.3	103.1	31.40
010.0	014.2578	0311.1	054.1		192.0	000.5199	0286.1	102.6	31.50
011.0	014.3434	0314.0	054.3		191.4	000.5145	0281.7	102.3	31.40
012.0	014.4292	0315.9	054.5		190.9	000.5091	0281.4	102.2	31.40
013.0	014.5153	0317.4	054.7		190.4	000.5037	0285.6	102.0	31.52
014.0	014.6016	0317.9	054.8		189.8	000.5000	0285.2	102.0	31.48
015.0	014.6882	0317.8	054.8		189.3	000.5000	0281.8	102.1	31.37
016.0	014.7750	0318.5	054.9		188.8	000.5000	0278.3	102.1	31.26
017.0	014.8622	0314.9	054.7		188.2	000.5000	0278.7	102.4	31.18
018.0	014.9495	0311.3	054.6		187.7	000.5000	0277.5	102.7	31.04
019.0	015.0371	0309.2	054.5		187.2	000.5000	0277.2	103.0	30.95
020.0	015.1250	0307.1	054.4		186.7	000.5000	0280.6	103.3	30.96
021.0	015.7866	0309.7	055.0		186.1	000.5000	0280.4	103.0	31.05
022.0	016.4623	0312.1	055.5		185.5	000.5000	0285.5	102.7	31.28
023.0	017.1522	0314.5	056.0		184.9	000.5000	0290.8	102.5	31.51
024.0	017.8563	0313.7	056.4		184.3	000.5000	0293.7	102.5	31.59
025.0	018.5745	0310.8	056.5		183.8	000.5000	0294.7	102.7	31.56
026.0	019.3069	0310.9	056.9		183.2	000.5000	0294.1	102.7	31.54
027.0	020.0534	0313.0	057.4		182.6	000.5000	0287.4	102.7	31.35
028.0	020.8142	0312.2	057.7		182.0	000.5000	0287.2	102.8	31.30
029.0	021.5890	0312.1	058.0		181.4	000.5000	0292.7	103.0	31.41
030.0	022.3781	0310.5	058.3		180.9	000.5000	0292.4	103.3	31.32
031.0	021.9851	0308.9	058.0		180.4	000.5000	0289.4	104.0	31.00
032.0	021.5956	0307.0	057.7		180.1	000.5000	0288.4	104.8	30.74
033.0	021.2096	0306.8	057.5		179.7	000.5070	0288.7	105.5	30.60
034.0	020.8271	0306.1	057.3		179.3	000.5147	0287.0	106.2	30.40
035.0	020.4480	0304.6	057.0		178.9	000.5218	0288.5	107.0	30.27
036.0	020.0724	0305.3	056.9		178.5	000.5297	0285.3	107.7	30.04
037.0	019.7004	0303.7	056.6		178.2	000.5363	0283.5	108.6	29.81
038.0	019.3318	0301.6	056.3		177.9	000.5424	0282.7	109.4	29.60
039.0	018.9666	0300.1	056.0		177.6	000.5484	0283.5	110.3	29.44
040.0	018.6050	0301.0	055.9		177.3	000.5554	0282.2	111.0	29.26
041.0	019.3691	0299.6	056.2		176.8	000.5653	0277.5	111.5	29.09
042.0	020.1486	0298.9	056.5		176.4	000.5754	0274.0	112.0	28.96
043.0	020.9434	0297.8	056.8		175.9	000.5851	0272.3	112.5	28.86
044.0	021.7536	0295.9	057.0		175.5	000.5943	0270.6	113.1	28.74
045.0	022.5792	0295.4	057.3		175.0	000.6041	0269.5	113.6	28.65
046.0	023.4202	0294.9	057.6		174.6	000.6138	0267.2	114.2	28.52
047.0	024.2765	0293.8	057.9		174.2	000.6230	0268.2	114.9	28.46
048.0	025.1482	0294.2	058.3		173.7	000.6329	0260.8	115.5	28.20
049.0	026.0353	0296.2	058.7		173.3	000.6437	0260.0	116.0	28.12
050.0	026.9378	0297.2	059.1		172.8	000.6538	0258.0	116.7	28.00
051.0	028.1925	0296.6	059.5		172.4	000.6636	0259.3	117.4	27.94
052.0	029.4758	0295.3	059.8		172.0	000.6728	0256.4	118.1	27.77
053.0	030.7877	0296.1	060.3		171.6	000.6832	0256.0	118.8	27.68
054.0	032.1281	0294.1	060.6		171.2	000.6914	0258.4	119.6	27.62
055.0	033.4971	0293.1	060.9		170.8	000.7001	0259.2	120.4	27.52
056.0	034.8947	0291.6	061.2		170.5	000.7080	0259.7	121.2	27.40
057.0	036.3208	0289.4	061.4		170.2	000.7152	0261.2	122.1	27.29

058.0	037.7754	0286.9	061.6		169.9	000.7227	0261.7	123.0	27.16
059.0	039.2587	0285.3	061.9		169.6	000.7332	0261.2	123.9	27.02
060.0	040.7704	0286.6	062.3		169.3	000.7467	0261.9	124.8	26.94
061.0	041.6511	0288.1	062.7		169.0	000.7576	0262.3	125.7	26.82
062.0	042.5411	0288.9	062.9		168.7	000.7667	0264.2	126.7	26.72
063.0	043.4405	0288.5	063.1		168.5	000.7740	0267.2	127.7	26.63
064.0	044.3494	0288.8	063.3		168.3	000.7818	0269.1	128.7	26.52
065.0	045.2676	0289.5	063.6		168.0	000.7896	0268.1	129.7	26.33
066.0	046.1953	0290.8	063.9		167.8	000.7984	0266.3	130.8	26.13
067.0	047.1323	0292.2	064.2		167.6	000.8069	0265.8	131.8	25.95
068.0	048.0788	0292.4	064.4		167.4	000.8136	0266.3	132.9	25.78
069.0	049.0347	0295.2	064.8		167.2	000.8231	0268.2	133.9	25.66
070.0	050.0000	0294.6	065.0		167.0	000.8279	0268.7	135.0	25.47
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Table 4: FMOVER Protection of WWQS, Spring City, Tennessee

09-25-2021 Terrain Data: FCC 30 meter FMOVER Analysis

WMQSm21

WWQS BLED20120516ACA

Channel = 203C3
 Max ERP = 2 kW
 RCAMSL = 835 m
 N. Lat. 35 07 37.30
 W. Lng. 84 01 34.60
 Protected
 60 dBu

Channel = 203A
 Max ERP = 6 kW
 RCAMSL = 478 m
 N. Lat. 35 43 24.20
 W. Lng. 84 51 33.80
 Interfering
 40 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
267.0	000.5408	0327.0	028.2	144.9	000.9172	0248.7	082.8	39.04	
268.0	000.5182	0327.8	028.0	144.6	000.9034	0248.1	082.5	39.04	
269.0	000.4980	0331.3	027.9	144.3	000.8930	0248.0	082.1	39.10	
270.0	000.4763	0334.6	027.7	144.0	000.8814	0247.5	081.8	39.13	
271.0	000.4685	0331.0	027.4	143.7	000.8671	0247.0	081.6	39.12	
272.0	000.4627	0323.2	027.0	143.3	000.8495	0246.7	081.5	39.07	
273.0	000.4551	0323.9	027.0	143.0	000.8393	0246.8	081.1	39.12	
274.0	000.4494	0326.5	027.0	142.8	000.8313	0246.3	080.8	39.18	
275.0	000.4418	0330.2	027.0	142.6	000.8233	0245.8	080.4	39.25	
276.0	000.4343	0331.8	027.0	142.4	000.8134	0245.1	080.1	39.28	
277.0	000.4287	0331.6	026.9	142.1	000.8023	0244.4	079.8	39.28	
278.0	000.4214	0333.7	026.9	141.8	000.7924	0243.5	079.5	39.30	
279.0	000.4159	0330.5	026.7	141.5	000.7787	0242.6	079.3	39.25	
280.0	000.4086	0322.4	026.2	141.0	000.7610	0241.8	079.3	39.12	
281.0	000.4122	0316.5	026.0	140.7	000.7481	0242.1	079.2	39.11	
282.0	000.4177	0310.9	025.9	140.4	000.7359	0242.2	079.0	39.10	
283.0	000.4214	0308.7	025.9	140.1	000.7256	0242.7	078.7	39.14	
284.0	000.4269	0311.0	026.0	139.9	000.7230	0242.7	078.3	39.25	
285.0	000.4325	0310.2	026.1	139.6	000.7244	0243.0	078.0	39.37	
286.0	000.4362	0313.4	026.3	139.4	000.7255	0243.1	077.6	39.52	
287.0	000.4418	0307.0	026.1	139.1	000.7274	0242.7	077.5	39.55	
288.0	000.4456	0305.3	026.1	138.8	000.7290	0242.4	077.3	39.62	
289.0	000.4512	0307.5	026.2	138.6	000.7302	0242.1	076.9	39.74	
290.0	000.4551	0305.6	026.2	138.3	000.7319	0241.8	076.7	39.81	
291.0	000.4570	0297.2	025.9	137.8	000.7342	0242.2	076.8	39.81	
292.0	000.4570	0281.9	025.2	137.3	000.7370	0241.8	077.1	39.69	
293.0	000.4589	0278.6	025.1	137.0	000.7388	0240.3	077.1	39.68	
294.0	000.4608	0279.4	025.2	136.7	000.7403	0239.0	076.8	39.72	
295.0	000.4608	0275.8	025.0	136.4	000.7422	0238.9	076.8	39.73	
296.0	000.4627	0262.1	024.5	135.9	000.7447	0238.8	077.2	39.62	
297.0	000.4646	0256.7	024.2	135.6	000.7466	0237.5	077.2	39.57	
298.0	000.4666	0252.8	024.1	135.2	000.7484	0235.9	077.2	39.53	
299.0	000.4666	0241.5	023.6	134.8	000.7507	0234.1	077.6	39.36	
300.0	000.4685	0219.1	022.5	134.3	000.7534	0231.3	078.5	38.98	
301.0	000.4782	0203.6	021.9	134.0	000.7555	0229.7	079.1	38.76	
302.0	000.4861	0220.9	022.8	133.8	000.7562	0229.3	078.0	39.08	
303.0	000.4960	0237.3	023.7	133.7	000.7571	0228.9	077.1	39.39	
304.0	000.5040	0244.6	024.2	133.4	000.7585	0228.7	076.6	39.55	
305.0	000.5141	0242.0	024.2	133.1	000.7602	0229.0	076.5	39.59	
306.0	000.5243	0243.9	024.4	132.8	000.7618	0228.9	076.3	39.68	
307.0	000.5325	0247.5	024.6	132.5	000.7635	0229.4	076.0	39.81	

308.0	000.5429	0242.9	024.5		132.2	000.7653	0230.0	076.0	39.82
309.0	000.5512	0239.2	024.4		131.9	000.7671	0230.8	076.1	39.83
310.0	000.5618	0232.0	024.2		131.5	000.7690	0230.6	076.3	39.76
311.0	000.5767	0230.5	024.2		131.2	000.7707	0229.4	076.2	39.76
312.0	000.5919	0229.3	024.3		130.9	000.7725	0230.0	076.1	39.82
313.0	000.6072	0223.7	024.2		130.6	000.7743	0230.2	076.3	39.78
314.0	000.6227	0214.9	023.9		130.3	000.7760	0229.9	076.6	39.67
315.0	000.6384	0204.8	023.5		130.0	000.7776	0230.7	077.1	39.57
316.0	000.6544	0189.1	022.8		129.8	000.7730	0231.3	077.8	39.32
317.0	000.6705	0171.7	021.9		129.5	000.7690	0231.4	078.6	39.03
318.0	000.6868	0160.7	021.4		129.3	000.7649	0231.4	079.2	38.81
319.0	000.7033	0147.7	020.7		129.1	000.7616	0230.8	080.0	38.52
320.0	000.7200	0152.2	021.1		128.8	000.7559	0230.0	079.7	38.57
321.0	000.7442	0152.0	021.2		128.5	000.7508	0230.0	079.6	38.57
322.0	000.7688	0146.0	021.0		128.3	000.7468	0229.4	079.9	38.42
323.0	000.7938	0132.7	020.2		128.2	000.7447	0229.1	080.8	38.12
324.0	000.8192	0132.8	020.4		127.9	000.7397	0228.8	080.7	38.10
325.0	000.8450	0133.5	020.6		127.7	000.7346	0229.6	080.6	38.13
326.0	000.8712	0148.2	021.8		127.1	000.7254	0230.9	079.6	38.45
327.0	000.8978	0158.9	022.6		126.7	000.7169	0229.9	078.9	38.60
328.0	000.9248	0147.2	022.0		126.6	000.7151	0229.7	079.6	38.34
329.0	000.9522	0134.7	021.2		126.5	000.7141	0229.6	080.4	38.06
330.0	000.9800	0118.9	020.2		126.6	000.7148	0229.7	081.5	37.72
331.0	001.0224	0103.6	019.1		126.7	000.7167	0229.9	082.7	37.35
332.0	001.0658	0094.2	018.3		126.7	000.7169	0229.9	083.6	37.08
333.0	001.1101	0084.0	017.3		126.8	000.7184	0230.3	084.6	36.79
334.0	001.1552	0081.4	017.2		126.6	000.7158	0229.8	084.8	36.67
335.0	001.2012	0082.3	017.5		126.3	000.7110	0229.5	084.7	36.67
336.0	001.2482	0078.5	017.2		126.2	000.7094	0229.3	085.1	36.53
337.0	001.2961	0064.6	015.7		126.6	000.7156	0229.7	086.6	36.11
338.0	001.3448	0056.7	014.8		126.7	000.7178	0230.1	087.4	35.86
339.0	001.3944	0059.1	015.3		126.4	000.7124	0229.5	087.2	35.89
340.0	001.4450	0059.3	015.5		126.2	000.7087	0229.2	087.2	35.85
341.0	001.4965	0071.6	017.2		125.4	000.6944	0227.7	085.9	36.12
342.0	001.5488	0080.8	018.6		124.7	000.6823	0227.6	085.0	36.33
343.0	001.6020	0067.8	017.1		125.1	000.6900	0227.6	086.4	35.94
344.0	001.6562	0040.4	013.1		126.5	000.7148	0229.7	089.7	35.12
345.0	001.7113	0025.6	011.6		127.0	000.7235	0230.9	091.0	34.79
346.0	001.7672	0010.0	011.7		126.9	000.7211	0230.7	091.1	34.75
347.0	001.8240	0013.5	011.7		126.8	000.7187	0230.4	091.2	34.70
348.0	001.8818	0008.6	011.8		126.6	000.7163	0229.8	091.2	34.65
349.0	001.9405	-0002.0	011.9		126.5	000.7140	0229.6	091.3	34.61
350.0	002.0000	-0020.0	012.0		126.4	000.7116	0229.5	091.4	34.56
351.0	002.0000	-0022.1	012.0		126.3	000.7099	0229.4	091.5	34.50
352.0	002.0000	-0023.5	012.0		126.2	000.7083	0229.1	091.7	34.44
353.0	002.0000	-0026.8	012.0		126.1	000.7067	0228.9	091.8	34.37
354.0	002.0000	-0025.0	012.0		126.0	000.7051	0228.8	092.0	34.31
355.0	002.0000	-0017.2	012.0		125.9	000.7035	0228.5	092.1	34.24
356.0	002.0000	-0007.8	012.0		125.8	000.7020	0228.1	092.3	34.17

09-25-2021 Terrain Data: FCC 30 meter FMOVer Analysis

WWQS BLEDD20120516ACA

WMQSm21

Channel = 203A
 Max ERP = 6 kW
 RCAMSL = 478 m
 N. Lat. 35 43 24.20
 W. Lng. 84 51 33.80
 Protected
 60 dBu

Channel = 203C3
 Max ERP = 2 kW
 RCAMSL = 835 m
 N. Lat. 35 07 37.30
 W. Lng. 84 01 34.60
 Interfering
 40 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
086.0	000.1940	0220.2	018.2	319.9	000.7185	0151.9	088.5	32.51	
087.0	000.1946	0219.3	018.2	319.8	000.7162	0151.4	088.3	32.54	
088.0	000.1953	0219.9	018.2	319.7	000.7144	0150.7	088.0	32.58	
089.0	000.1959	0220.6	018.3	319.6	000.7126	0149.7	087.8	32.61	
090.0	000.1966	0221.7	018.3	319.5	000.7109	0149.1	087.5	32.66	
091.0	000.2007	0220.4	018.4	319.3	000.7089	0149.3	087.2	32.74	
092.0	000.2049	0219.7	018.4	319.2	000.7070	0148.8	086.9	32.79	
093.0	000.2091	0221.1	018.6	319.2	000.7058	0148.2	086.6	32.86	
094.0	000.2134	0222.5	018.8	319.1	000.7045	0148.1	086.2	32.94	
095.0	000.2177	0226.3	019.0	319.0	000.7039	0147.8	085.8	33.05	
096.0	000.2221	0226.8	019.1	318.9	000.7021	0147.6	085.5	33.13	
097.0	000.2265	0227.1	019.2	318.8	000.7001	0148.3	085.2	33.23	
098.0	000.2310	0227.9	019.4	318.7	000.6982	0149.0	084.9	33.34	
099.0	000.2355	0233.2	019.7	318.6	000.6975	0149.5	084.4	33.50	
100.0	000.2400	0233.9	019.8	318.5	000.6953	0151.7	084.1	33.67	
101.0	000.2526	0231.4	020.0	318.4	000.6932	0154.4	083.8	33.88	
102.0	000.2656	0235.1	020.4	318.4	000.6927	0155.0	083.3	34.06	
103.0	000.2789	0235.7	020.6	318.3	000.6912	0156.2	082.8	34.23	
104.0	000.2925	0234.3	020.8	318.1	000.6889	0158.2	082.5	34.42	
105.0	000.3065	0232.2	021.0	318.0	000.6863	0161.2	082.2	34.63	
106.0	000.3207	0233.7	021.3	317.9	000.6846	0162.7	081.7	34.82	
107.0	000.3353	0233.4	021.5	317.7	000.6821	0164.7	081.3	35.00	
108.0	000.3502	0231.5	021.6	317.5	000.6792	0165.6	081.0	35.12	
109.0	000.3655	0233.8	021.9	317.4	000.6771	0166.4	080.6	35.28	
110.0	000.3810	0231.6	022.1	317.2	000.6738	0168.4	080.3	35.44	
111.0	000.4009	0230.5	022.3	317.0	000.6708	0171.4	079.9	35.66	
112.0	000.4214	0230.9	022.6	316.9	000.6681	0173.5	079.5	35.87	
113.0	000.4423	0231.4	022.8	316.7	000.6652	0176.2	079.1	36.09	
114.0	000.4637	0230.9	023.1	316.5	000.6619	0179.7	078.7	36.34	
115.0	000.4856	0231.5	023.3	316.3	000.6587	0184.4	078.3	36.64	
116.0	000.5081	0228.9	023.5	316.0	000.6546	0188.8	078.0	36.88	
117.0	000.5310	0225.9	023.6	315.8	000.6504	0194.8	077.8	37.17	
118.0	000.5545	0228.3	023.9	315.5	000.6471	0199.1	077.4	37.47	
119.0	000.5785	0230.1	024.2	315.3	000.6434	0201.9	076.9	37.70	
120.0	000.6029	0229.0	024.4	315.0	000.6391	0204.4	076.6	37.86	
121.0	000.6194	0227.0	024.5	314.7	000.6343	0207.1	076.5	37.98	
122.0	000.6361	0226.1	024.6	314.4	000.6297	0209.5	076.3	38.11	
123.0	000.6530	0225.7	024.7	314.1	000.6250	0213.1	076.1	38.29	
124.0	000.6701	0227.5	024.9	313.9	000.6205	0216.0	075.8	38.47	
125.0	000.6875	0227.6	025.1	313.5	000.6157	0219.3	075.6	38.63	
126.0	000.7051	0228.8	025.3	313.2	000.6108	0222.1	075.3	38.79	
127.0	000.7229	0230.8	025.6	312.9	000.6060	0224.4	075.0	38.93	
128.0	000.7409	0228.8	025.6	312.6	000.6008	0226.4	074.9	38.99	
129.0	000.7591	0230.4	025.8	312.2	000.5957	0228.2	074.7	39.11	

130.0	000.7776	0230.7	026.0		311.9	000.5905	0229.1	074.5	39.16
131.0	000.7720	0229.8	025.9		311.6	000.5852	0227.1	074.6	39.02
132.0	000.7664	0230.5	025.9		311.2	000.5799	0228.7	074.6	39.04
133.0	000.7608	0229.1	025.8		310.9	000.5748	0232.1	074.7	39.08
134.0	000.7553	0229.9	025.8		310.5	000.5696	0234.6	074.7	39.11
135.0	000.7498	0234.9	026.0		310.2	000.5642	0232.4	074.6	39.06
136.0	000.7443	0239.0	026.2		309.8	000.5597	0232.1	074.4	39.05
137.0	000.7388	0240.3	026.2		309.5	000.5560	0233.1	074.5	39.05
138.0	000.7333	0241.8	026.2		309.1	000.5523	0237.4	074.5	39.16
139.0	000.7279	0242.6	026.2		308.8	000.5492	0242.2	074.6	39.27
140.0	000.7225	0242.8	026.2		308.4	000.5464	0243.0	074.7	39.23
141.0	000.7604	0241.8	026.4		308.0	000.5431	0242.7	074.6	39.25
142.0	000.7994	0244.0	026.8		307.6	000.5388	0246.3	074.3	39.43
143.0	000.8393	0246.8	027.3		307.2	000.5342	0248.2	074.0	39.55
144.0	000.8801	0247.4	027.6		306.7	000.5303	0244.2	073.8	39.45
145.0	000.9220	0248.6	028.0		306.3	000.5266	0245.1	073.6	39.51
146.0	000.9648	0246.2	028.2		305.9	000.5231	0243.6	073.6	39.43
147.0	001.0086	0245.2	028.4		305.5	000.5187	0243.0	073.6	39.38
148.0	001.0534	0246.3	028.7		305.0	000.5140	0242.0	073.5	39.35
149.0	001.0991	0246.3	029.0		304.5	000.5095	0245.0	073.4	39.43
150.0	001.1458	0243.7	029.2		304.1	000.5054	0245.4	073.5	39.38
151.0	001.2058	0241.9	029.4		303.7	000.5016	0242.4	073.5	39.24
152.0	001.2674	0242.7	029.8		303.2	000.4976	0238.7	073.4	39.11
153.0	001.3305	0241.0	030.0		302.8	000.4935	0234.1	073.5	38.90
154.0	001.3951	0241.7	030.4		302.2	000.4885	0224.7	073.4	38.53
155.0	001.4613	0241.4	030.7		301.8	000.4842	0215.5	073.4	38.14
156.0	001.5289	0238.9	030.9		301.3	000.4809	0206.7	073.6	37.71
157.0	001.5982	0238.6	031.2		300.9	000.4768	0204.1	073.7	37.55
158.0	001.6689	0240.5	031.7		300.3	000.4715	0210.8	073.7	37.77
159.0	001.7412	0242.3	032.1		299.8	000.4680	0225.9	073.7	38.31
160.0	001.8150	0244.8	032.6		299.2	000.4669	0238.4	073.7	38.75
161.0	001.9099	0245.3	033.0		298.6	000.4666	0248.2	073.7	39.05
162.0	002.0073	0247.4	033.5		298.0	000.4666	0252.9	073.7	39.20
163.0	002.1070	0245.0	033.8		297.6	000.4657	0256.0	074.0	39.20
164.0	002.2092	0245.6	034.2		297.0	000.4647	0256.8	074.2	39.17
165.0	002.3138	0242.1	034.3		296.6	000.4639	0256.9	074.5	39.05
166.0	002.4209	0240.3	034.5		296.2	000.4631	0260.9	074.8	39.06
167.0	002.5303	0240.5	034.9		295.7	000.4621	0265.8	075.1	39.13
168.0	002.6422	0240.5	035.2		295.2	000.4612	0274.5	075.3	39.30
169.0	002.7565	0240.3	035.6		294.7	000.4608	0277.2	075.7	39.27
170.0	002.8732	0241.6	036.0		294.2	000.4608	0279.3	075.9	39.24
171.0	003.0237	0240.0	036.3		293.8	000.4604	0278.4	076.3	39.09
172.0	003.1782	0240.1	036.7		293.3	000.4594	0277.3	076.6	38.93
173.0	003.3364	0241.2	037.1		292.7	000.4584	0279.3	077.0	38.87
174.0	003.4985	0236.9	037.2		292.4	000.4578	0280.9	077.5	38.74
175.0	003.6645	0236.2	037.5		292.0	000.4570	0281.9	077.9	38.62

Figure 2: Allocation Study: WPPR
Western North Carolina Public Radio, Inc

FMCommander Single Allocation Study - 09-25-2021 - FCC 30 meter
WMQSm21's Overlaps (In= 10.03 km, Out= 0.2 km)

WMQSm21 CH 203 C3 DA
Lat= 35 07 37.30, Lng= 84 01 34.60
2.0 kW 205.7 m HAAT, 835 m COR
Prot.= 60 dBu, Intef.= 54 dBu

WPPR CH 202 C2 DA BLED20080428ABF
Lat= 34 31 24.40, Lng= 83 40 45.60
7.3 kW 193.9 m HAAT, 610.7 m COR
Prot.= 60 dBu, Intef.= 54 dBu

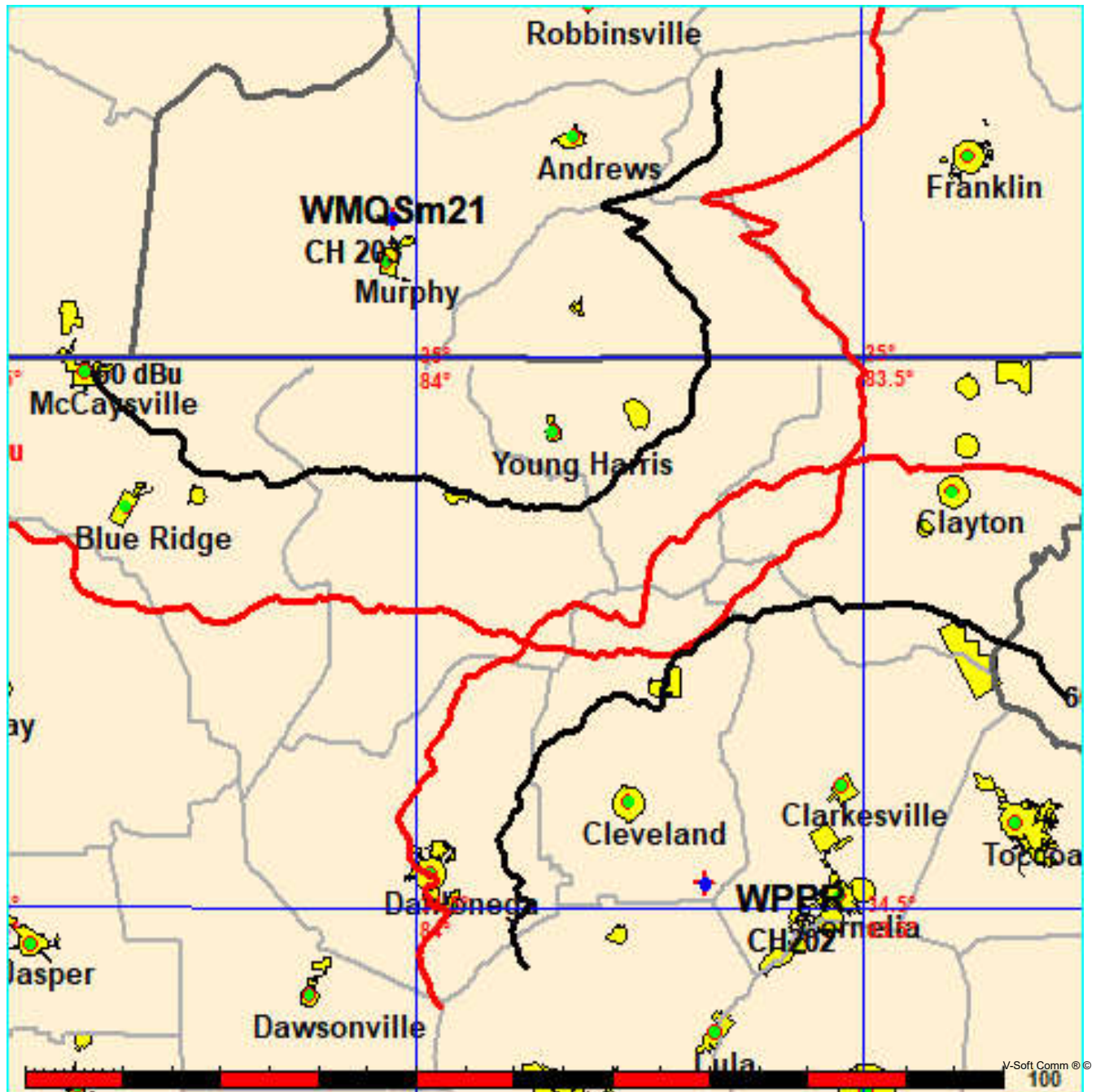


Figure 2A: Allocation Study: WPPR Detail
Western North Carolina Public Radio, Inc

FMCommander Single Allocation Study - 09-25-2021 - FCC 30 meter
WMQSm21's Overlaps (In= 10.03 km, Out= 0.2 km)

WMQSm21 CH 203 C3 DA
Lat= 35 07 37.30, Lng= 84 01 34.60
2.0 kW 205.7 m HAAT, 835 m COR
Prot.= 60 dBu, Intef.= 54 dBu

WPPR CH 202 C2 DA BLED20080428ABF
Lat= 34 31 24.40, Lng= 83 40 45.60
7.3 kW 193.9 m HAAT, 610.7 m COR
Prot.= 60 dBu, Intef.= 54 dBu

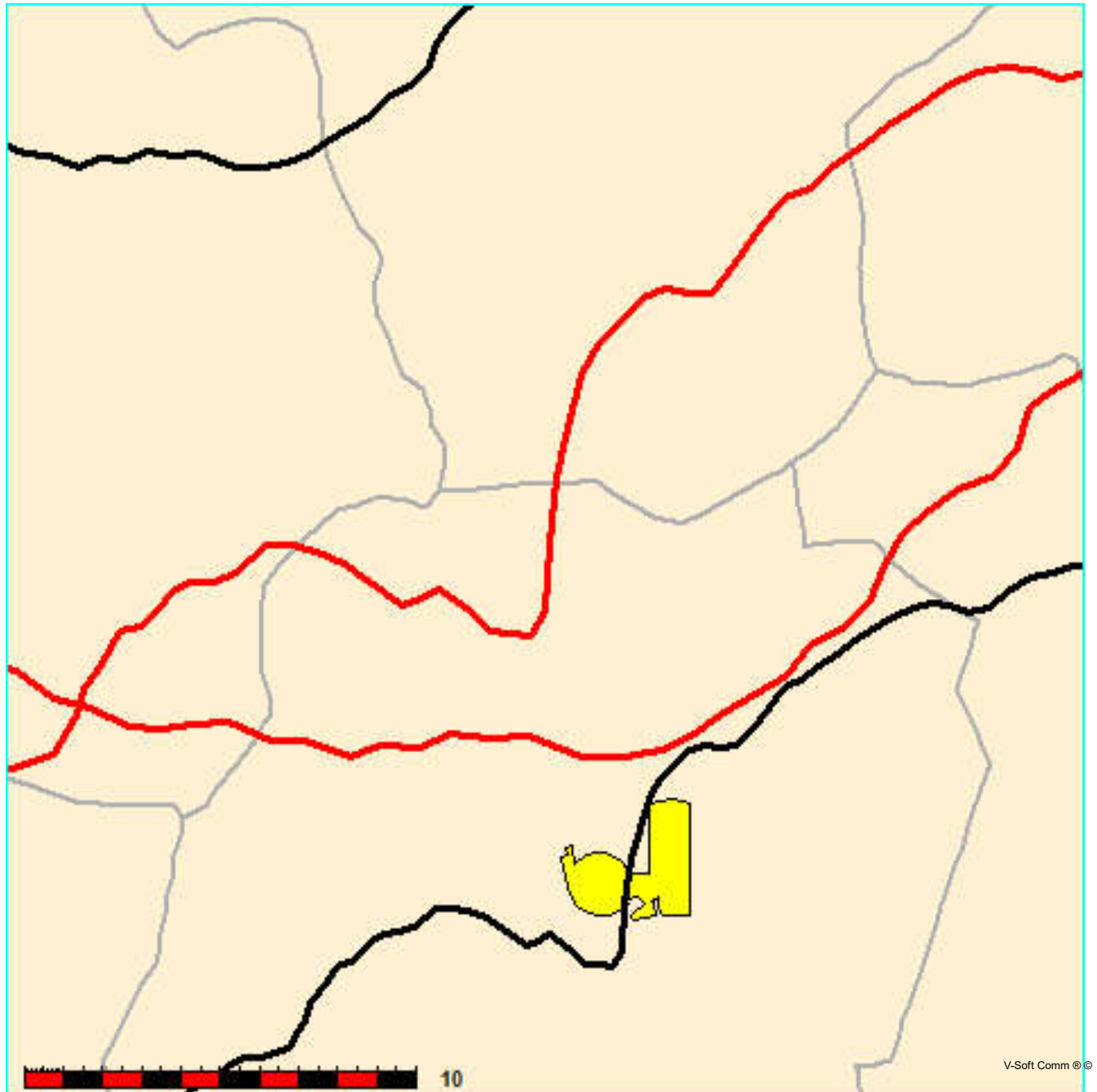


Figure 3: Allocation Study: WRAS
Western North Carolina Public Radio, Inc

FMCommander Single Allocation Study - 09-25-2021 - FCC 30 meter
WMQSm21's Overlaps (In= 0.35 km, Out= 26.41 km)

WMQSm21 CH 203 C3 DA
Lat= 35 07 37.30, Lng= 84 01 34.60
2.0 kW 205.7 m HAAT, 835 m COR
Prot.= 60 dBu, Intef.= 40 dBu

WRAS CH 203 C1 DA BMLED20180709ABI
Lat= 33 44 41.40, Lng= 84 21 35.70
50.0 kW 318 m HAAT, 596 m COR
Prot.= 60 dBu, Intef.= 40 dBu

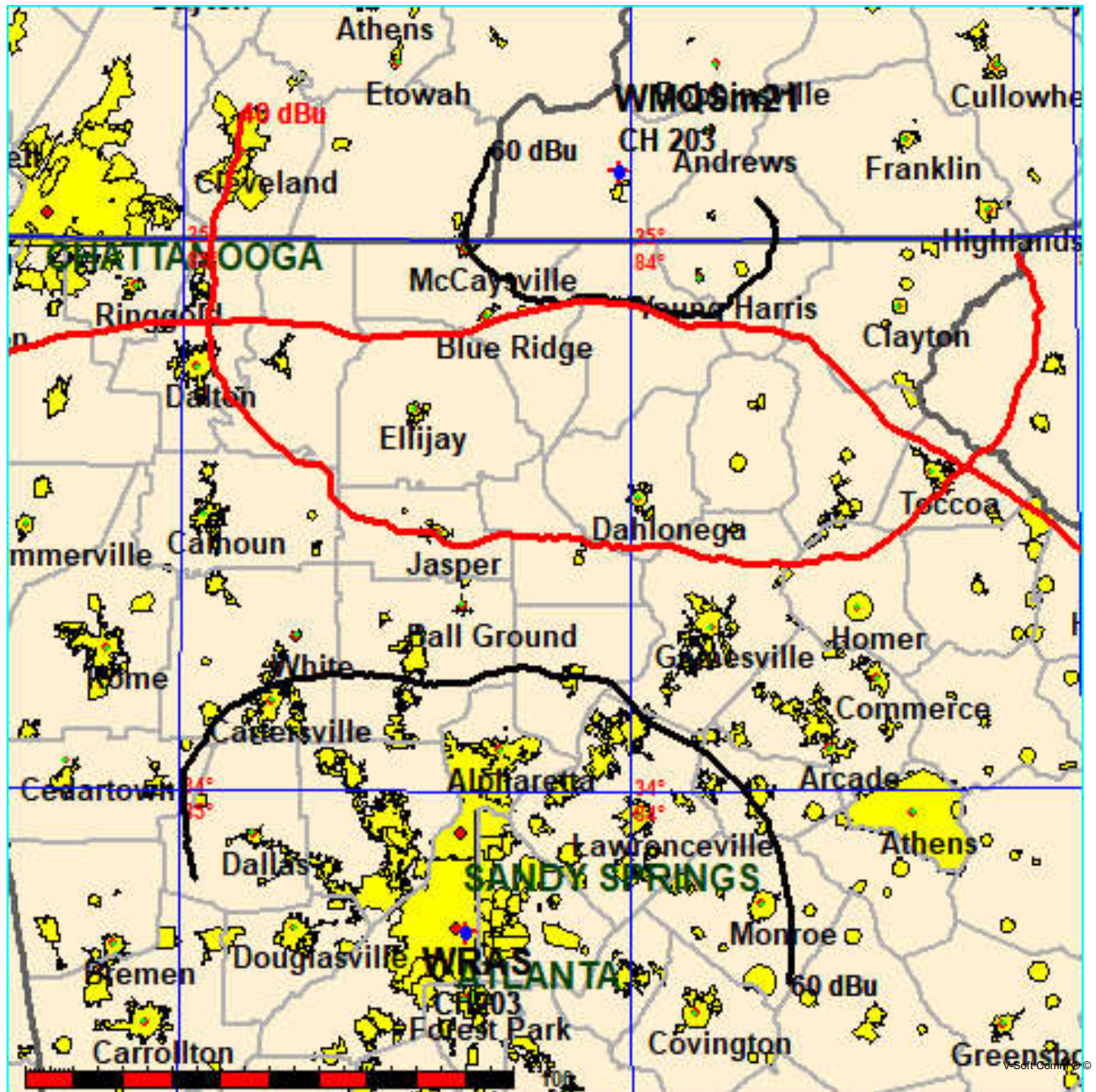


Figure 3A: Allocation Study: WRAS Detail
Western North Carolina Public Radio, Inc

FMCommander Single Allocation Study - 09-25-2021 - FCC 30 meter
WMQSm21's Overlaps (In= 0.35 km, Out= 26.41 km)

WMQSm21 CH 203 C3 DA
Lat= 35 07 37.30, Lng= 84 01 34.60
2.0 kW 205.7 m HAAT, 835 m COR
Prot.= 60 dBu, Intef.= 40 dBu

WRAS CH 203 C1 DA BMLED20180709ABI
Lat= 33 44 41.40, Lng= 84 21 35.70
50.0 kW 318 m HAAT, 596 m COR
Prot.= 60 dBu, Intef.= 40 dBu

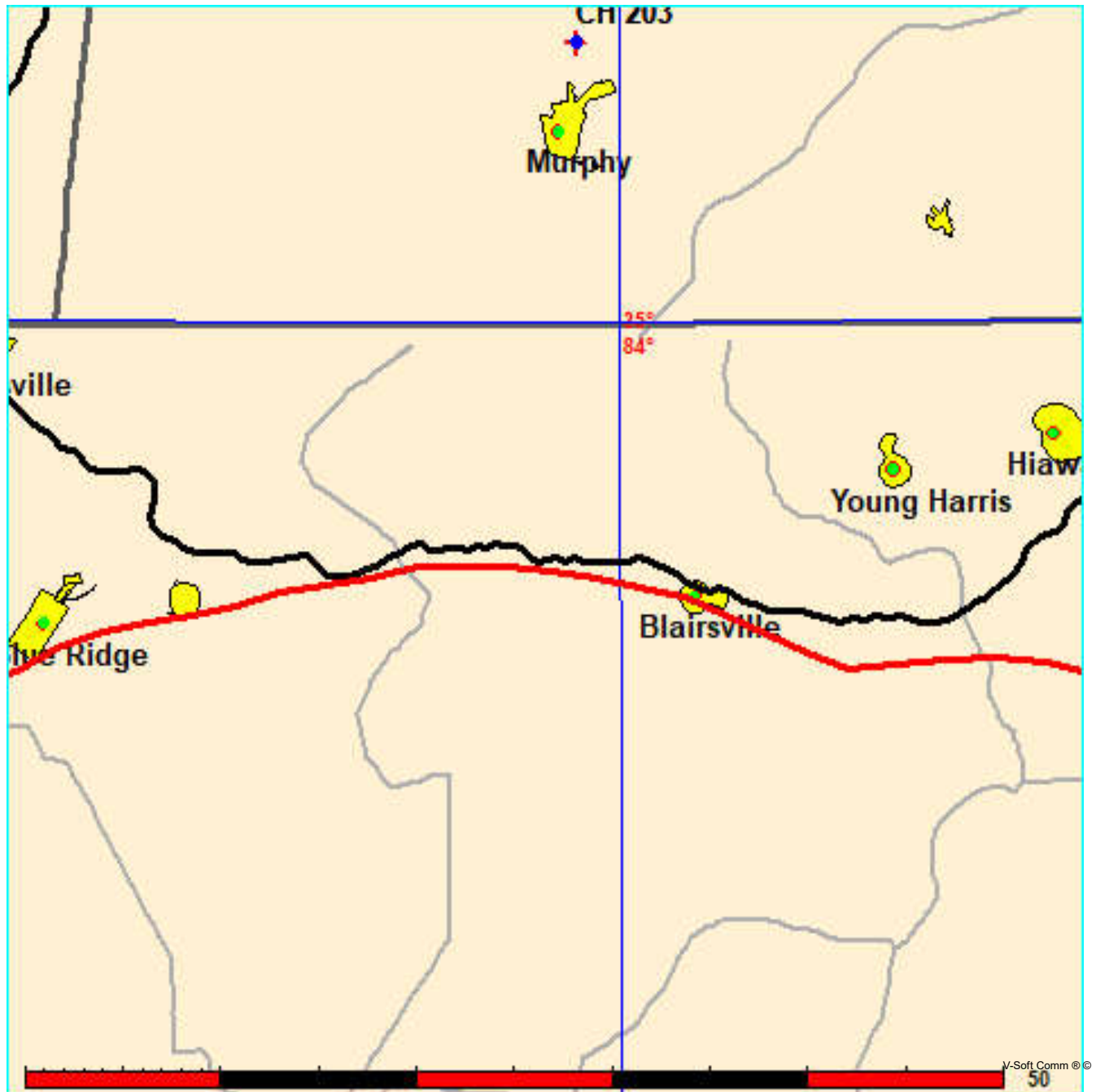


Figure 4: Allocation Study: WWQS
Western North Carolina Public Radio, Inc

FMCommander Single Allocation Study - 09-25-2021 - FCC 30 meter
WMQSm21's Overlaps (In= 0.51 km, Out= 1.34 km)

WMQSm21 CH 203 C3 DA
Lat= 35 07 37.30, Lng= 84 01 34.60
2.0 kW 205.7 m HAAT, 835 m COR
Prot.= 60 dBu, Intef.= 40 dBu

WWQS CH 203 A DA BLED20120516ACA
Lat= 35 43 24.20, Lng= 84 51 33.80
6.0 kW 94 m HAAT, 478 m COR
Prot.= 60 dBu, Intef.= 40 dBu

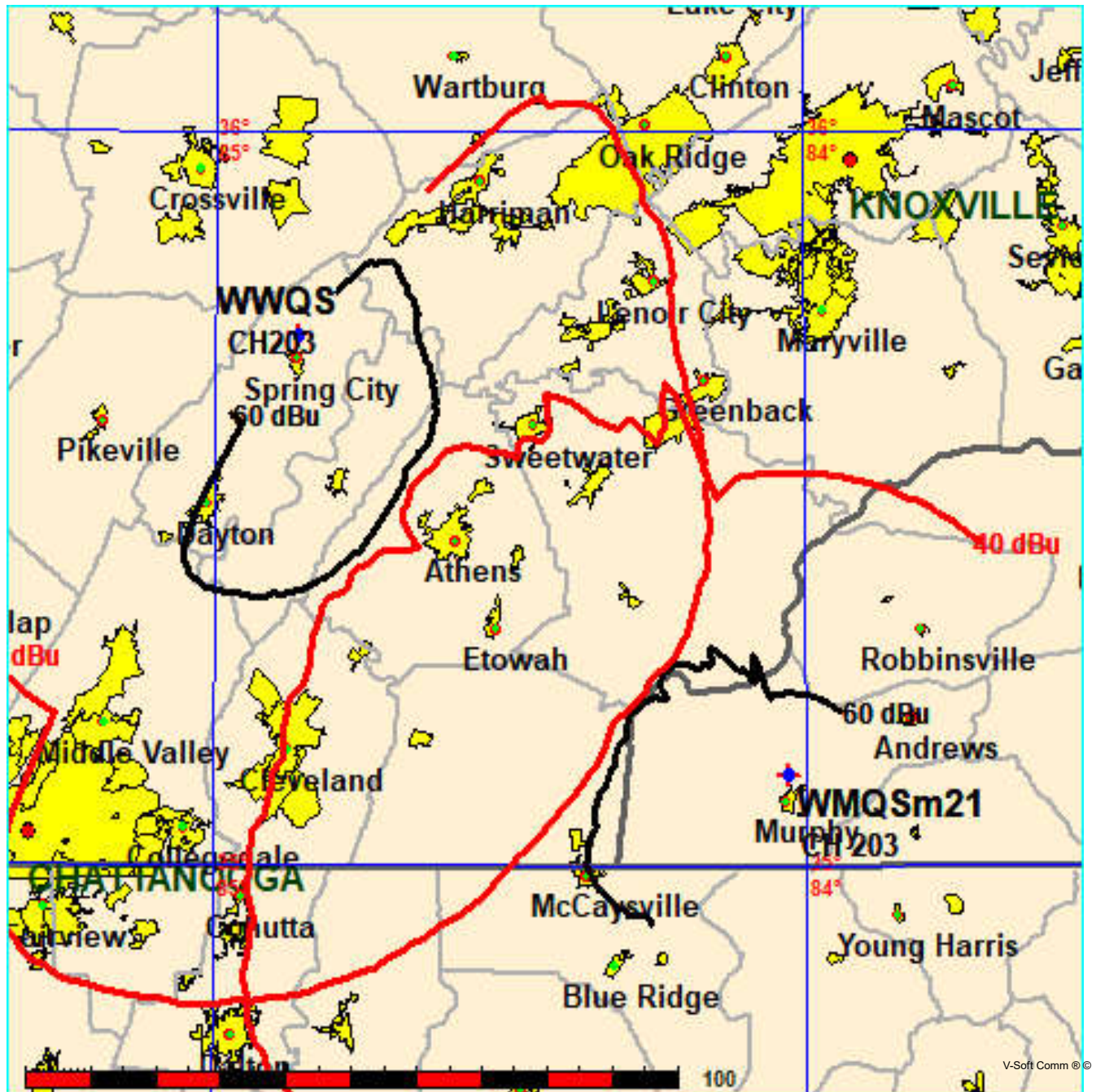


Figure 4A: Allocation Study: WWQS Detail
Western North Carolina Public Radio, Inc

FMCommander Single Allocation Study - 09-25-2021 - FCC 30 meter
WMQSm21's Overlaps (In= 0.51 km, Out= 1.34 km)

WMQSm21 CH 203 C3 DA
Lat= 35 07 37.30, Lng= 84 01 34.60
2.0 kW 205.7 m HAAT, 835 m COR
Prot.= 60 dBu, Intef.= 40 dBu

WWQS CH 203 A DA BLED20120516ACA
Lat= 35 43 24.20, Lng= 84 51 33.80
6.0 kW 94 m HAAT, 478 m COR
Prot.= 60 dBu, Intef.= 40 dBu

