

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
RCN License Subsidiary, Inc.
BIRMINGHAM, AL
Call Sign: E060118
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
June 27, 2017

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1. CONCLUSIONS

An interference study considering all existing, proposed and prior coordinated microwave facilities within the coordination contours of the proposed earth station demonstrates that this site will operate satisfactorily with the common carrier microwave environment. Operation will be restricted to the bandwidth shown in Section 4 of this report.

2. SUMMARY OF RESULTS

A number of great circle interference cases were identified during the interference study of the proposed earth station. Each of the cases, which exceeded the interference objective on a line-of-sight basis, was profiled and the propagation losses estimated using NBS TN101 (Revised) techniques. The losses were found to be sufficient to reduce the signal levels to acceptable magnitudes in every case.

The following companies reported potential great circle interference conflicts that did not meet the objectives on a line-of-sight basis. When over-the-horizon losses are considered on the interfering paths, sufficient blockage exists to negate harmful interference from occurring with the proposed transmit-receive earth station.

Company

Alabama Power Company
Alabama Regional Communications System
Cellco Partnership - Alabama
Jefferson County Commission
Norfolk Southern Railway
Verizon Wireless (VAW) LLC - Alabama

No other carriers reported potential interference cases.

3. SUPPLEMENTAL SHOWING

Pursuant to Part 25.203(c) of the FCC Rules and Regulations, the satellite earth station proposed in this application was coordinated by Comsearch using computer techniques and in accordance with Part 25 of the FCC Rules and Regulations.

Coordination data for this earth station was sent to the below listed carriers with a letter dated 05/18/2017.

Company

Alabama Great Southern Railroad Company
Alabama Power Company
Alabama Regional Communications System
Alltel Communications LLC - Alabama
Birmingham, City of
Calhoun County 911
Cellco Partnership - Alabama
City of Gadsden Alabama
City of Hoover
Conterra Ultra Broadband, LLC
Etowah County Communications
Gadsden Celltelco Partnership
Jefferson County Commission
Kimtron, Inc.
MCIS Inc
Morgan County EMCD
New Cingular Wireless PCS LLC - AL, MS
Norfolk Southern Railway
Northport, City of
PowerSouth Energy Cooperative
Southern Company Services Inc.
T-Mobile License LLC
Tallapoosa, County of
Tuscaloosa Cellular Partnership
Verizon Wireless (VAW) LLC - Alabama
WVTM HearstTelevision Inc

4. EARTH STATION COORDINATION DATA

This section presents the data pertinent to frequency coordination of the proposed earth station that was circulated to all carriers within its coordination contours.

COMSEARCH

Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147
(703)726-5500 <http://www.comsearch.com>

Date: 06/27/2017
Job Number: 170518COMSTC12

Administrative Information

Call Sign: E060118
Licensee Name: RCN License Subsidiary, Inc.

Site Information

BIRMINGHAM, AL

Venue Name: BIRMINGHAM RACE COURSE
Latitude (NAD 83): 33° 34' 32.1" N
Longitude (NAD 83): 86° 39' 40.7" W
Climate Zone: A
Rain Zone: 1
Ground Elevation (AMSL): 259.26 m / 850.6 ft

Link Information

Satellite Type: Geostationary
Mode: TR - Transmit-Receive
Modulation: Digital
Satellite Arc: 60° W to 143° West Longitude
Azimuth Range: 137.8° to 249.8°
Corresponding Elevation Angles: 41.6° / 19.3°
Antenna Centerline (AGL): 2.74 m / 9.0 ft

Antenna Information

Receive - C40551

Manufacturer: COMTECH ANTENNA SYSTEMS
Model: 5 METER OFFSAT
Gain / Diameter: 42.0 dBi / 5.5 m
3-dB / 15-dB Beamwidth: 1.00° / 2.00°

Transmit - C60551

Manufacturer: COMTECH ANTENNA SYSTEMS
Model: 5 METER OFFSAT
Gain / Diameter: 45.9 dBi / 5.5 m
0.60° / 1.60°

		<u>1M20G7W - 36M0G7W</u>			
Max Available RF Power	(dBW/4 kHz)			-14.0	-15.56
	(dBW/MHz)			10.0	8.44
Maximum EIRP	(dBW/4 kHz)			31.9	30.3
	(dBW/MHz)			55.9	54.3
	(dBW)			56.67	69.9
Interference Objectives:	Long Term	-156.0 dBW/MHz	20%	-154.0 dBW/4 kHz	20%
	Short Term	-146.0 dBW/MHz	0.01%	-131.0 dBW/4 kHz	0.0025%

Frequency Information

Receive 4.0 GHz

Emission / Frequency Range (MHz): 1M20G7W - 36M0G7W / 3700.0 - 4200.0

Transmit 6.1 GHz

1M20G7W - 36M0G7W / 5963.0 - 6323.0
1M20G7W - 36M0G7W / 6367.0 - 6423.0

Max Great Circle Coordination Distance: 304.0 km / 188.9 mi 138.5 km / 86.0 mi
Precipitation Scatter Contour Radius: 581.8 km / 361.4 mi 100.0 km / 62.1 mi

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Coordination Values

BIRMINGHAM, AL

Licensee Name RCN License Subsidiary, Inc.
Latitude (NAD 83) 33° 34' 32.1" N
Longitude (NAD 83) 86° 39' 40.7" W
Ground Elevation (AMSL) 259.26 m / 850.6 ft
Antenna Centerline (AGL) 2.74 m / 9.0 ft
Antenna Model COMTECH ANTENNA SYSTEMS 5 METER OFFSAT
Antenna Mode Receive 4.0 GHz Transmit 6.1 GHz
Interference Objectives: Long Term -156.0 dBW/MHz 20% -154.0 dBW/4 kHz 20%
Short Term -146.0 dBW/MHz 0.01% -131.0 dBW/4 kHz 0.0025%
Max Available RF Power -14.0 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 4.0 GHz		Transmit 6.1 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
0	1.18	109.18	-9.84	215.67	-11.44	100.00
5	0.72	113.82	-10.76	232.00	-13.63	100.00
10	1.43	117.89	-12.16	200.26	-14.10	100.00
15	1.97	114.62	-10.92	190.88	-13.95	100.00
20	1.73	110.94	-10.19	201.03	-12.48	100.00
25	1.34	107.17	-9.43	212.89	-9.83	100.00
30	2.02	103.60	-8.72	200.00	-8.22	100.00
35	2.55	99.88	-8.02	191.56	-8.18	100.00
40	1.87	95.96	-8.09	204.49	-8.12	100.00
45	1.74	92.12	-8.07	208.06	-8.21	100.00
50	2.07	88.28	-8.04	202.11	-8.26	100.00
55	2.74	84.38	-8.00	187.41	-8.25	100.00
60	3.32	80.43	-8.00	174.35	-8.21	100.00
65	3.13	76.59	-8.00	178.56	-8.18	100.00
70	2.95	72.82	-8.02	182.55	-8.14	100.00
75	3.22	68.99	-8.09	176.25	-8.25	100.00
80	3.76	65.10	-8.08	162.15	-8.20	100.00
85	4.22	61.27	-8.00	153.71	-8.11	100.00
90	4.36	57.67	-8.07	151.26	-8.29	100.00
95	4.20	54.34	-8.10	153.55	-8.27	100.00
100	3.07	51.82	-8.08	179.54	-8.18	100.00
105	3.02	48.93	-8.08	180.86	-8.11	100.00
110	2.43	46.71	-8.02	194.26	-8.20	100.00
115	2.17	44.61	-8.06	199.79	-8.10	100.00
120	1.98	42.84	-8.02	204.11	-8.24	100.00
125	1.80	41.50	-8.04	206.40	-8.12	100.00
130	1.72	40.54	-8.01	208.79	-8.19	100.00
135	1.96	39.75	-8.06	204.49	-8.18	100.00
140	2.59	39.10	-8.04	190.65	-8.14	100.00
145	2.60	39.59	-8.07	190.14	-8.27	100.00
150	2.70	40.52	-8.13	187.78	-9.10	100.00
155	2.43	42.26	-9.09	189.10	-9.19	100.00
160	2.85	43.82	-9.76	176.20	-10.14	100.00
165	2.76	45.75	-10.15	176.34	-11.10	100.00
170	2.99	46.89	-10.38	169.83	-12.06	100.00
175	3.26	47.43	-10.49	161.16	-12.10	100.00
180	3.08	47.88	-10.58	164.93	-12.10	100.00
185	3.15	47.54	-10.51	163.50	-12.10	100.00

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Short Term -146.0 dBW/MHz 0.01% -131.0 dBW/4 kHz 0.0025%
Max Available RF Power -14.0 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 4.0 GHz		Transmit 6.1 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
190	3.21	46.67	-10.33	163.01	-12.10	100.00
195	2.64	45.86	-10.17	179.01	-12.10	100.00
200	2.44	44.16	-9.83	185.32	-11.93	100.00
205	2.40	41.87	-9.37	188.29	-11.47	100.00
210	2.08	39.41	-8.88	197.97	-10.86	100.00
215	2.79	35.88	-8.18	185.43	-9.45	100.00
220	2.19	33.03	-8.00	199.54	-8.31	100.00
225	1.37	30.09	-8.00	218.96	-7.14	100.00
230	0.21	27.22	-6.89	303.99	-7.10	138.49
235	0.36	23.86	-5.54	295.07	-6.64	129.21
240	0.84	20.81	-4.32	262.91	-5.42	105.57
245	1.18	18.71	-2.97	254.48	-5.10	100.00
250	1.35	17.95	-2.36	252.58	-5.10	100.00
255	1.61	18.42	-2.74	241.00	-5.10	100.00
260	0.85	21.01	-4.40	261.74	-5.50	104.90
265	1.08	23.57	-5.43	242.67	-6.53	100.00
270	0.59	27.28	-6.91	262.49	-7.10	112.23
275	0.63	31.01	-8.00	253.53	-7.50	109.55
280	1.17	34.79	-8.00	225.17	-8.27	100.00
285	1.57	38.91	-8.09	212.66	-8.16	100.00
290	1.27	43.44	-8.03	221.98	-8.17	100.00
295	0.66	48.13	-8.03	251.27	-8.26	106.06
300	0.70	52.67	-8.03	248.52	-8.19	104.39
305	1.14	57.18	-8.01	226.21	-8.25	100.00
310	0.69	61.92	-8.05	249.13	-8.20	104.84
315	0.85	66.57	-8.04	239.14	-8.20	100.00
320	1.31	71.22	-8.05	220.48	-8.24	100.00
325	1.58	75.94	-8.00	212.70	-8.21	100.00
330	0.84	80.73	-8.07	239.45	-8.22	100.00
335	1.47	85.45	-8.02	216.00	-8.21	100.00
340	2.03	90.21	-8.02	202.94	-8.13	100.00
345	1.63	94.97	-8.04	211.15	-8.13	100.00
350	2.10	99.76	-8.05	201.33	-8.14	100.00
355	1.72	104.49	-8.90	204.80	-8.18	100.00

5. CERTIFICATION

I HEREBY CERTIFY THAT I AM THE TECHNICALLY QUALIFIED PERSON RESPONSIBLE FOR THE PREPARATION OF THE FREQUENCY COORDINATION DATA CONTAINED IN THIS APPLICATION, THAT I AM FAMILIAR WITH PARTS 101 AND 25 OF THE FCC RULES AND REGULATIONS, THAT I HAVE EITHER PREPARED OR REVIEWED THE FREQUENCY COORDINATION DATA SUBMITTED WITH THIS APPLICATION, AND THAT IT IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.



Timothy O. Crutcher
Frequency Planner
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147

DATED: June 27, 2017