

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
COMCAST CABLEVISION OF NASHVILLE I, LLC
NASHVILLE, TN
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
June 19, 2018

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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. Further, there will be no restrictions of its operation due to interference considerations.

2. SUMMARY OF RESULTS

No great circle interference cases were identified during the interference study of the proposed earth station.

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 06/19/2018.

<u>Company</u>
Comsearch

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: 06/19/2018
Job Number: 180619COMSGE87

Administrative Information

Status ENGINEER PROPOSAL
Call Sign WZ91
Licensee Code COMNAH
Licensee Name COMCAST CABLEVISION OF NASHVILLE I, LLC

Site Information

NASHVILLE, TN
Venue Name
Latitude (NAD 83) 36° 11' 46.5" N
Longitude (NAD 83) 86° 48' 59.5" W
Climate Zone A
Rain Zone 1
Ground Elevation (AMSL) 123.82 m / 406.3 ft

Link Information

Satellite Type Geostationary
Mode RO - Receive-Only
Modulation Digital
Satellite Arc 60° W to 143° West Longitude
Azimuth Range 139.4° to 248.4°
Corresponding Elevation Angles 39.4° / 18.4°
Antenna Centerline (AGL) 4.57 m / 15.0 ft

Antenna Information

Receive - S40452
Manufacturer SCIENTIFIC-ATLANTA, INC
Model 8345 4.5 METER
Gain / Diameter 43.3 dBi / 4.5 m
3-dB / 15-dB Beamwidth 1.20° / 2.50°

Interference Objectives: Long Term -156.0 dBW/MHz 20%
 Short Term -146.0 dBW/MHz 0.01%

Frequency Information

Receive 4.0 GHz
Emission / Frequency Range (MHz) 36M0G7W / 3700.0 - 4200.0

Max Great Circle Coordination Distance 284.0 km / 176.5 mi
Precipitation Scatter Contour Radius 584.8 km / 363.3 mi

COMSEARCH

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Coordination Values

NASHVILLE, TN

Licensee Name COMCAST CABLEVISION OF NASHVILLE I, LLC
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Antenna Model SCIENTIFIC-ATLANTA, INC 8345 4.5 METER
Antenna Mode Receive 4.0 GHz
Interference Objectives: Long Term -156.0 dBW/MHz 20%
Short Term -146.0 dBW/MHz 0.01%

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 4.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
0	1.60	110.62	-11.19	199.92
5	1.43	115.34	-14.84	187.88
10	1.32	120.02	-16.71	182.30
15	1.37	116.47	-15.29	187.38
20	1.16	112.72	-12.88	204.58
25	1.15	108.97	-10.49	213.36
30	1.21	105.17	-9.73	215.31
35	1.25	101.31	-9.70	214.26
40	1.38	97.43	-9.70	210.22
45	1.51	93.50	-9.70	206.63
50	1.29	89.56	-9.70	212.86
55	1.17	85.63	-9.70	216.67
60	0.97	81.74	-9.70	223.28
65	0.80	77.89	-9.70	233.16
70	0.71	74.08	-9.70	238.33
75	0.56	70.35	-9.70	247.79
80	0.49	66.68	-9.70	252.67
85	0.72	62.98	-9.70	237.70
90	0.57	59.55	-9.70	246.94
95	0.25	56.35	-9.70	280.29
100	0.27	53.17	-9.70	278.36
105	0.22	50.23	-9.70	284.03
110	0.27	47.47	-9.70	278.68
115	0.80	44.61	-9.70	233.11
120	0.57	42.69	-9.70	246.78
125	0.98	40.61	-9.70	222.78
130	1.13	39.20	-9.70	217.82
135	0.96	38.62	-9.70	224.07
140	1.18	38.18	-9.70	216.36
145	1.12	38.58	-9.70	218.17
150	1.02	39.55	-9.77	220.90
155	0.90	41.03	-9.77	226.90
160	0.71	43.01	-10.00	236.51
165	1.08	44.49	-10.70	214.31
170	1.01	45.89	-10.70	216.62
175	0.95	46.77	-10.70	219.48
180	0.85	47.15	-10.91	223.71
185	0.75	46.97	-12.70	220.20

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Coordination Values

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Antenna Model SCIENTIFIC-ATLANTA, INC 8345 4.5 METER
Antenna Mode Receive 4.0 GHz
Interference Objectives: Long Term -156.0 dBW/MHz 20%
Short Term -146.0 dBW/MHz 0.01%

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 4.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
190	0.98	45.93	-12.70	208.54
195	0.80	44.75	-12.70	217.67
200	0.53	43.16	-11.71	238.17
205	0.32	41.08	-10.70	265.75
210	0.51	38.34	-10.70	245.34
215	0.41	35.52	-10.70	255.36
220	0.43	32.37	-10.70	254.04
225	0.29	29.12	-8.70	282.19
230	0.34	25.60	-8.70	276.54
235	0.45	22.30	-8.70	262.75
240	0.54	19.72	-8.64	255.33
245	0.67	18.09	-8.32	248.94
250	0.73	17.78	-8.26	245.15
255	0.98	18.63	-8.43	229.84
260	1.30	20.59	-8.70	217.70
265	1.55	23.50	-8.70	210.19
270	2.29	26.72	-8.70	194.09
275	3.16	30.39	-9.09	172.51
280	3.13	34.75	-9.70	169.97
285	2.82	39.35	-9.70	177.20
290	2.46	44.02	-9.70	185.35
295	2.70	48.59	-9.70	179.97
300	3.06	53.19	-9.70	171.60
305	3.60	57.84	-9.70	157.67
310	4.33	62.52	-9.70	144.27
315	3.65	67.40	-9.70	156.42
320	2.82	72.29	-9.70	177.21
325	2.14	77.13	-9.70	192.74
330	1.65	81.95	-9.70	205.28
335	1.51	86.73	-9.70	206.62
340	1.85	91.52	-9.70	199.92
345	1.86	96.31	-9.70	199.58
350	2.12	101.11	-9.70	193.12
355	2.43	105.92	-9.88	185.29

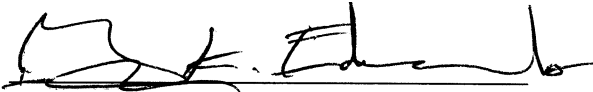
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Earth Station Data Sheet

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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.

BY: 

Gary K. Edwards
Senior Manager
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147

DATED: June 19, 2018

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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. Further, there will be no restrictions of its operation due to interference considerations.

2. SUMMARY OF RESULTS

No great circle interference cases were identified during the interference study of the proposed earth station.

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3. SUPPLEMENTAL SHOWING

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Coordination data for this earth station was sent to the below listed carriers with a letter dated 06/19/2018.

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Date: 06/19/2018
Job Number: 180619COMSGE88

Administrative Information

Status ENGINEER PROPOSAL
Call Sign WZ91
Licensee Code COMNAH
Licensee Name COMCAST CABLEVISION OF NASHVILLE I, LLC

Site Information

NASHVILLE, TN
Venue Name
Latitude (NAD 83) 36° 11' 46.5" N
Longitude (NAD 83) 86° 48' 59.5" W
Climate Zone A
Rain Zone 1
Ground Elevation (AMSL) 123.82 m / 406.3 ft

Link Information

Satellite Type Geostationary
Mode RO - Receive-Only
Modulation Digital
Satellite Arc 60° W to 143° West Longitude
Azimuth Range 139.4° to 248.4°
Corresponding Elevation Angles 39.4° / 18.4°
Antenna Centerline (AGL) 4.57 m / 15.0 ft

Antenna Information

Receive - S40501
Manufacturer SCIENTIFIC-ATLANTA, INC
Model 8008B (5 METER)
Gain / Diameter 44.5 dBi / 5.0 m
3-dB / 15-dB Beamwidth 0.86° / 2.00°

Interference Objectives: Long Term -156.0 dBW/MHz 20%
 Short Term -146.0 dBW/MHz 0.01%

Frequency Information

Receive 4.0 GHz
Emission / Frequency Range (MHz) 36M0G7W / 3700.0 - 4200.0

Max Great Circle Coordination Distance 318.0 km / 197.6 mi
Precipitation Scatter Contour Radius 584.8 km / 363.3 mi

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Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 4.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
0	1.60	110.62	-9.50	205.16
5	1.43	115.34	-9.70	208.99
10	1.32	120.02	-12.52	201.54
15	1.37	116.47	-10.38	207.39
20	1.16	112.72	-9.50	217.97
25	1.15	108.97	-9.50	218.20
30	1.21	105.17	-9.50	216.46
35	1.25	101.31	-9.50	215.23
40	1.38	97.43	-9.50	211.16
45	1.51	93.50	-9.50	207.55
50	1.29	89.56	-9.50	213.82
55	1.17	85.63	-9.50	217.66
60	0.97	81.74	-9.50	224.32
65	0.80	77.89	-9.50	234.25
70	0.71	74.08	-9.50	239.44
75	0.56	70.35	-9.50	248.95
80	0.49	66.68	-9.50	253.85
85	0.72	62.98	-9.50	238.81
90	0.57	59.55	-9.50	248.09
95	0.25	56.35	-9.50	281.56
100	0.27	53.17	-9.50	279.62
105	0.22	50.23	-9.50	285.31
110	0.27	47.47	-9.50	279.95
115	0.80	44.61	-9.42	234.63
120	0.57	42.69	-9.04	250.76
125	0.98	40.61	-8.62	228.44
130	1.13	39.20	-8.18	225.63
135	0.96	38.62	-7.95	233.47
140	1.18	38.18	-7.77	226.25
145	1.12	38.58	-7.93	227.32
150	1.02	39.55	-8.32	228.49
155	0.90	41.03	-8.71	232.60
160	0.71	43.01	-9.10	241.54
165	1.08	44.49	-9.40	220.73
170	1.01	45.89	-9.50	222.62
175	0.95	46.77	-9.50	225.59
180	0.85	47.15	-9.50	231.09
185	0.75	46.97	-9.50	237.01

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Antenna Mode Receive 4.0 GHz
Interference Objectives: Long Term -156.0 dBW/MHz 20%
Short Term -146.0 dBW/MHz 0.01%

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 4.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
190	0.98	45.93	-9.50	224.16
195	0.80	44.75	-9.45	234.52
200	0.53	43.16	-9.13	252.96
205	0.32	41.08	-8.72	278.04
210	0.51	38.34	-7.84	262.44
215	0.41	35.52	-6.71	280.15
220	0.43	32.37	-5.45	287.13
225	0.29	29.12	-4.15	313.77
230	0.34	25.60	-2.74	318.01
235	0.45	22.30	-1.42	312.80
240	0.54	19.72	-0.33	311.73
245	0.67	18.09	0.65	309.90
250	0.73	17.78	0.83	306.55
255	0.98	18.63	0.32	285.83
260	1.30	20.59	-0.74	265.26
265	1.55	23.50	-1.90	248.14
270	2.29	26.72	-3.19	218.63
275	3.16	30.39	-4.65	194.98
280	3.13	34.75	-6.40	186.80
285	2.82	39.35	-8.24	184.50
290	2.46	44.02	-9.30	187.27
295	2.70	48.59	-9.50	180.96
300	3.06	53.19	-9.50	172.63
305	3.60	57.84	-9.50	158.66
310	4.33	62.52	-9.50	145.15
315	3.65	67.40	-9.50	157.40
320	2.82	72.29	-9.50	178.21
325	2.14	77.13	-9.50	193.68
330	1.65	81.95	-9.50	206.18
335	1.51	86.73	-9.50	207.54
340	1.85	91.52	-9.50	200.83
345	1.86	96.31	-9.50	200.50
350	2.12	101.11	-9.50	194.06
355	2.43	105.92	-9.50	187.15

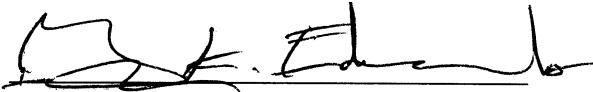
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Call Sign WZ91
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Licensee Name COMCAST CABLEVISION OF NASHVILLE I, LLC

Site Information NASHVILLE, TN

Venue Name
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Longitude (NAD 83) 86° 48' 59.5" W
Climate Zone A
Rain Zone 1
Ground Elevation (AMSL) 123.82 m / 406.3 ft

Link Information

Satellite Type Geostationary
Mode RO - Receive-Only
Modulation Digital
Satellite Arc 60° W to 143° West Longitude
Azimuth Range 139.4° to 248.4°
Corresponding Elevation Angles 39.4° / 18.4°
Antenna Centerline (AGL) 4.57 m / 15.0 ft

Antenna Information Receive - C40381

Manufacturer Patriot
Model 3.8 METER
Gain / Diameter 42.9 dBi / 3.8 m
3-dB / 15-dB Beamwidth 1.40° / 2.80°

Interference Objectives: Long Term -156.0 dBW/MHz 20%
Short Term -146.0 dBW/MHz 0.01%

Frequency Information Receive 4.0 GHz

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

Max Great Circle Coordination Distance 305.8 km / 190.0 mi
Precipitation Scatter Contour Radius 584.8 km / 363.3 mi

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			Horizon Gain (dBi)	Coordination Distance (km)
0	1.60	110.62	-8.10	211.70
5	1.43	115.34	-8.24	216.06
10	1.32	120.02	-10.10	210.11
15	1.37	116.47	-8.69	215.43
20	1.16	112.72	-8.10	225.16
25	1.15	108.97	-8.10	225.41
30	1.21	105.17	-8.10	223.59
35	1.25	101.31	-8.10	222.30
40	1.38	97.43	-8.10	218.02
45	1.51	93.50	-8.10	214.22
50	1.29	89.56	-8.10	220.83
55	1.17	85.63	-8.10	224.84
60	0.97	81.74	-8.10	231.79
65	0.80	77.89	-8.10	242.12
70	0.71	74.08	-8.10	247.48
75	0.56	70.35	-8.10	257.41
80	0.49	66.68	-8.10	262.31
85	0.72	62.98	-8.10	246.84
90	0.57	59.55	-8.10	256.53
95	0.25	56.35	-8.10	290.61
100	0.27	53.17	-8.10	288.64
105	0.22	50.23	-8.10	294.43
110	0.27	47.47	-8.10	288.97
115	0.80	44.61	-8.10	242.06
120	0.57	42.69	-8.10	256.36
125	0.98	40.61	-7.34	235.48
130	1.13	39.20	-6.94	232.39
135	0.96	38.62	-6.82	239.85
140	1.18	38.18	-6.74	231.93
145	1.12	38.58	-6.82	233.47
150	1.02	39.55	-7.01	235.74
155	0.90	41.03	-7.51	239.30
160	0.71	43.01	-8.30	246.14
165	1.08	44.49	-8.90	223.30
170	1.01	45.89	-9.28	223.76
175	0.95	46.77	-9.45	225.83
180	0.85	47.15	-9.53	230.93
185	0.75	46.97	-9.49	237.05

COMSEARCH

Earth Station Data Sheet

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

Coordination Values

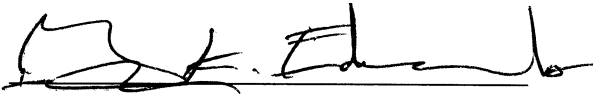
NASHVILLE, TN

Licensee Name COMCAST CABLEVISION OF NASHVILLE I, LLC
Latitude (NAD 83) 36° 11' 46.5" N
Longitude (NAD 83) 86° 48' 59.5" W
Ground Elevation (AMSL) 123.82 m / 406.3 ft
Antenna Centerline (AGL) 4.57 m / 15.0 ft
Antenna Model Patriot 3.8 METER
Antenna Mode Receive 4.0 GHz
Interference Objectives: Long Term -156.0 dBW/MHz 20%
Short Term -146.0 dBW/MHz 0.01%

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 4.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
190	0.98	45.93	-9.29	225.28
195	0.80	44.75	-9.00	237.00
200	0.53	43.16	-8.36	257.56
205	0.32	41.08	-7.53	285.69
210	0.51	38.34	-6.77	269.16
215	0.41	35.52	-6.20	283.47
220	0.43	32.37	-6.10	282.75
225	0.29	29.12	-5.75	301.87
230	0.34	25.60	-4.34	305.83
235	0.45	22.30	-3.02	300.49
240	0.54	19.72	-1.82	300.66
245	0.67	18.09	-0.19	303.54
250	0.73	17.78	0.12	301.14
255	0.98	18.63	-0.73	278.20
260	1.30	20.59	-2.34	254.54
265	1.55	23.50	-3.50	238.19
270	2.29	26.72	-4.79	210.29
275	3.16	30.39	-6.10	187.72
280	3.13	34.75	-6.10	188.31
285	2.82	39.35	-6.97	190.78
290	2.46	44.02	-8.10	193.09
295	2.70	48.59	-8.10	187.87
300	3.06	53.19	-8.10	179.76
305	3.60	57.84	-8.10	165.79
310	4.33	62.52	-8.10	151.61
315	3.65	67.40	-8.10	164.48
320	2.82	72.29	-8.10	185.20
325	2.14	77.13	-8.10	200.25
330	1.65	81.95	-8.10	210.26
335	1.51	86.73	-8.10	214.21
340	1.85	91.52	-8.10	204.84
345	1.86	96.31	-8.10	204.51
350	2.12	101.11	-8.10	200.62
355	2.43	105.92	-8.10	193.90

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.

BY: 

Gary K. Edwards
Senior Manager
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147

DATED: June 19, 2018