

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
Comcast Cable Comm Management LLC
ADAMS, 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: 180619COMSTW13

Administrative Information

Status ENGINEER PROPOSAL
Call Sign
Licensee Code CCCMGT
Licensee Name Comcast Cable Comm Management LLC

Site Information ADAMS, TN

Venue Name
Latitude (NAD 83) 36° 34' 52.0" N
Longitude (NAD 83) 87° 4' 0.0" W
Climate Zone A
Rain Zone 1
Ground Elevation (AMSL) 170.96 m / 560.9 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 248.0°
Corresponding Elevation Angles 38.9° / 18.5°
Antenna Centerline (AGL) 2.74 m / 9.0 ft

Antenna Information

Manufacturer PATRIOT
Model PRT-386
Gain / Diameter 41.9 dBi / 3.5 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 358.7 km / 222.9 mi
Precipitation Scatter Contour Radius 584.6 km / 363.2 mi

COMSEARCH

Earth Station Data Sheet

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Coordination Values

ADAMS, TN

Licensee Name Comcast Cable Comm Management LLC
Latitude (NAD 83) 36° 34' 52.0" N
Longitude (NAD 83) 87° 4' 0.0" W
Ground Elevation (AMSL) 170.96 m / 560.9 ft
Antenna Centerline (AGL) 2.74 m / 9.0 ft
Antenna Model PATRIOT PRT-386
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	0.26	110.80	-10.00	277.82
5	0.00	115.46	-10.00	285.28
10	0.51	119.83	-10.00	249.37
15	0.54	116.29	-10.00	247.18
20	0.00	112.46	-10.00	285.28
25	0.00	108.75	-10.00	285.28
30	0.00	104.98	-10.00	285.28
35	0.00	101.15	-10.00	285.28
40	0.00	97.30	-10.00	285.28
45	0.00	93.42	-10.00	285.28
50	0.00	89.53	-10.00	285.28
55	0.00	85.64	-10.00	285.28
60	0.00	81.76	-10.00	285.28
65	0.00	77.91	-10.00	285.28
70	0.00	74.10	-10.00	285.28
75	0.00	70.34	-10.00	285.28
80	0.00	66.65	-10.00	285.28
85	0.00	63.05	-10.00	285.28
90	0.00	59.56	-10.00	285.28
95	0.25	56.07	-10.00	278.94
100	0.34	52.81	-10.00	268.04
105	0.42	49.75	-10.00	258.24
110	0.29	47.09	-9.82	275.69
115	0.40	44.53	-9.22	265.87
120	0.47	42.35	-8.67	261.05
125	0.48	40.63	-8.22	263.12
130	0.38	39.46	-7.90	275.97
135	0.51	38.59	-7.66	263.45
140	0.47	38.42	-7.61	267.46
145	0.41	38.82	-7.73	273.43
150	0.46	39.65	-7.96	266.86
155	0.39	41.08	-8.34	271.96
160	0.38	42.91	-8.81	270.43
165	0.46	44.65	-9.25	258.88
170	0.48	45.98	-9.56	254.39
175	0.43	46.86	-9.77	259.41
180	0.31	47.25	-9.86	272.33
185	0.23	47.05	-9.81	282.43

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Ground Elevation (AMSL) 170.96 m / 560.9 ft
Antenna Centerline (AGL) 2.74 m / 9.0 ft
Antenna Model PATRIOT PRT-386
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	0.26	46.19	-9.61	280.19
195	0.48	44.64	-9.24	256.97
200	0.44	42.86	-8.80	263.44
205	0.72	40.40	-8.16	246.19
210	0.88	37.72	-7.41	241.20
215	0.81	34.92	-6.58	250.33
220	0.83	31.80	-5.56	255.49
225	1.06	28.34	-4.31	250.47
230	1.21	24.78	-2.85	254.35
235	1.30	21.46	-1.29	261.47
240	0.92	19.27	-0.12	286.45
245	0.62	18.11	0.55	312.97
250	0.00	18.58	0.27	358.69
255	0.30	19.43	-0.21	342.26
260	0.41	21.56	-1.34	319.52
265	0.40	24.59	-2.77	308.88
270	0.55	28.06	-4.20	282.95
275	0.00	32.29	-5.73	314.55
280	0.00	36.42	-7.03	304.86
285	0.26	40.62	-8.22	289.75
290	0.00	45.14	-9.36	289.35
295	0.00	49.65	-10.00	285.28
300	0.00	54.23	-10.00	285.28
305	0.24	58.81	-10.00	280.35
310	0.00	63.52	-10.00	285.28
315	0.00	68.20	-10.00	285.28
320	0.00	72.91	-10.00	285.28
325	0.00	77.64	-10.00	285.28
330	0.00	82.37	-10.00	285.28
335	1.28	87.09	-10.00	211.77
340	1.04	91.86	-10.00	218.99
345	0.90	96.62	-10.00	225.68
350	0.51	101.36	-10.00	248.78
355	0.49	106.10	-10.00	250.86

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: _____

Twila Meyer
DB Technician IV
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147

DATED: June 19, 2018

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
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ADAMS, TN
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
July 16, 2018

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2. SUMMARY OF RESULTS

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3. SUPPLEMENTAL SHOWING

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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: 07/16/2018
Job Number: 180716COMSTW04

Administrative Information

Status ENGINEER PROPOSAL
Call Sign
Licensee Code ZCATEC
Licensee Name Comcast Cable Communications, LLC

Site Information ADAMS, TN

Venue Name
Latitude (NAD 83) 36° 34' 52.0" N
Longitude (NAD 83) 84° 4' 0.0" W
Climate Zone A
Rain Zone 1
Ground Elevation (AMSL) 420.09 m / 1378.3 ft

Link Information

Satellite Type Geostationary
Mode RO - Receive-Only
Modulation Digital
Satellite Arc 60° W to 143° West Longitude
Azimuth Range 143.2° to 250.2°
Corresponding Elevation Angles 40.6° / 16.1°
Antenna Centerline (AGL) 0.91 m / 3.0 ft

Antenna Information

Manufacturer WINE GARD
Model 2 METER
Gain / Diameter 39.0 dBi / 2.0 m
3-dB / 15-dB Beamwidth 1.90° / 3.80°

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 316.4 km / 196.6 mi
Precipitation Scatter Contour Radius 593.9 km / 369.0 mi

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Earth Station Data Sheet

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ADAMS, TN

Licensee Name Comcast Cable Communications, LLC
Latitude (NAD 83) 36° 34' 52.0" N
Longitude (NAD 83) 84° 4' 0.0" W
Ground Elevation (AMSL) 420.09 m / 1378.3 ft
Antenna Centerline (AGL) 0.91 m / 3.0 ft
Antenna Model WINE GARD 2 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	13.52	109.73	-10.00	100.00
5	13.44	114.72	-10.00	100.00
10	13.82	119.73	-10.00	100.00
15	14.43	123.69	-10.00	100.00
20	13.77	119.22	-10.00	100.00
25	14.86	115.16	-10.00	100.00
30	15.71	110.90	-10.00	100.00
35	18.67	106.80	-10.00	100.00
40	22.80	102.52	-10.00	100.00
45	26.72	97.92	-10.00	100.00
50	26.10	93.05	-10.00	100.00
55	24.88	88.22	-10.00	100.00
60	26.38	83.36	-10.00	100.00
65	27.32	78.47	-10.00	100.00
70	27.51	73.60	-10.00	100.00
75	26.16	68.87	-10.00	100.00
80	24.68	64.26	-10.00	100.00
85	23.07	59.79	-10.00	100.00
90	22.16	55.32	-10.00	100.00
95	18.38	51.85	-10.00	100.00
100	17.74	47.75	-9.97	100.00
105	17.17	43.80	-9.04	100.00
110	16.61	40.08	-8.07	100.00
115	13.76	38.10	-7.52	100.00
120	10.50	37.27	-7.28	100.00
125	9.46	35.55	-6.77	104.07
130	7.74	35.08	-6.63	120.02
135	4.32	37.02	-7.21	156.02
140	4.44	36.23	-6.98	155.18
145	4.29	36.31	-7.00	157.56
150	4.38	36.74	-7.13	155.54
155	5.78	36.50	-7.06	137.87
160	4.27	39.51	-7.92	153.31
165	5.58	39.93	-8.03	135.80
170	5.53	41.12	-8.35	134.98
175	6.70	40.64	-8.23	124.61
180	7.28	40.28	-8.13	118.81
185	5.85	41.49	-8.45	132.79

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Coordination Values

ADAMS, TN

Licensee Name Comcast Cable Communications, LLC
Latitude (NAD 83) 36° 34' 52.0" N
Longitude (NAD 83) 84° 4' 0.0" W
Ground Elevation (AMSL) 420.09 m / 1378.3 ft
Antenna Centerline (AGL) 0.91 m / 3.0 ft
Antenna Model WINE GARD 2 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	5.39	41.26	-8.39	136.25
195	6.80	38.78	-7.71	125.57
200	6.72	37.32	-7.30	128.17
205	5.80	36.16	-6.96	138.12
210	5.73	33.86	-6.24	141.97
215	6.34	30.70	-5.18	139.96
220	6.05	27.99	-4.17	148.23
225	5.13	25.48	-3.15	164.52
230	5.75	21.67	-1.40	166.58
235	5.09	18.61	0.26	186.04
240	4.84	15.20	2.45	201.79
245	4.77	12.50	4.58	212.35
250	4.47	11.66	5.34	221.94
255	5.14	11.96	5.06	209.94
260	5.29	14.54	2.94	198.72
265	2.53	19.96	-0.51	228.28
270	0.34	25.09	-2.99	316.38
275	0.67	28.92	-4.53	272.62
280	0.48	33.28	-6.05	277.08
285	0.78	37.60	-7.38	247.54
290	0.98	42.09	-8.60	228.49
295	0.39	46.88	-9.77	263.95
300	0.00	51.63	-10.00	285.28
305	0.00	56.33	-10.00	285.28
310	0.60	60.96	-10.00	243.28
315	1.10	65.67	-10.00	217.35
320	2.83	70.32	-10.00	175.52
325	4.48	75.07	-10.00	140.72
330	5.49	79.93	-10.00	130.14
335	7.76	84.81	-10.00	106.27
340	10.83	89.75	-10.00	100.00
345	12.56	94.74	-10.00	100.00
350	13.64	99.74	-10.00	100.00
355	13.90	104.74	-10.00	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.

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Date: 07/16/2018
Job Number: 180716COMSTW03

Administrative Information

Status ENGINEER PROPOSAL
Call Sign
Licensee Code ZCATEC
Licensee Name Comcast Cable Communications, LLC

Site Information

ADAMS, TN
Venue Name
Latitude (NAD 83) 36° 34' 52.0" N
Longitude (NAD 83) 84° 4' 0.0" W
Climate Zone A
Rain Zone 1
Ground Elevation (AMSL) 420.09 m / 1378.3 ft

Link Information

Satellite Type Geostationary
Mode RO - Receive-Only
Modulation Digital
Satellite Arc 60° W to 143° West Longitude
Azimuth Range 143.2° to 250.2°
Corresponding Elevation Angles 40.6° / 16.1°
Antenna Centerline (AGL) 0.91 m / 3.0 ft

Antenna Information

Manufacturer PATRIOT
Model 3.4 METER
Gain / Diameter 41.7 dBi / 3.4 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 316.4 km / 196.6 mi
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5	13.44	114.72	-10.00	100.00
10	13.82	119.73	-10.00	100.00
15	14.43	123.69	-10.00	100.00
20	13.77	119.22	-10.00	100.00
25	14.86	115.16	-10.00	100.00
30	15.71	110.90	-10.00	100.00
35	18.67	106.80	-10.00	100.00
40	22.80	102.52	-10.00	100.00
45	26.72	97.92	-10.00	100.00
50	26.10	93.05	-10.00	100.00
55	24.88	88.22	-10.00	100.00
60	26.38	83.36	-10.00	100.00
65	27.32	78.47	-10.00	100.00
70	27.51	73.60	-10.00	100.00
75	26.16	68.87	-10.00	100.00
80	24.68	64.26	-10.00	100.00
85	23.07	59.79	-10.00	100.00
90	22.16	55.32	-10.00	100.00
95	18.38	51.85	-10.00	100.00
100	17.74	47.75	-9.97	100.00
105	17.17	43.80	-9.04	100.00
110	16.61	40.08	-8.07	100.00
115	13.76	38.10	-7.52	100.00
120	10.50	37.27	-7.28	100.00
125	9.46	35.55	-6.77	104.07
130	7.74	35.08	-6.63	120.02
135	4.32	37.02	-7.21	156.02
140	4.44	36.23	-6.98	155.18
145	4.29	36.31	-7.00	157.56
150	4.38	36.74	-7.13	155.54
155	5.78	36.50	-7.06	137.87
160	4.27	39.51	-7.92	153.31
165	5.58	39.93	-8.03	135.80
170	5.53	41.12	-8.35	134.98
175	6.70	40.64	-8.23	124.61
180	7.28	40.28	-8.13	118.81
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210	5.73	33.86	-6.24	141.97
215	6.34	30.70	-5.18	139.96
220	6.05	27.99	-4.17	148.23
225	5.13	25.48	-3.15	164.52
230	5.75	21.67	-1.40	166.58
235	5.09	18.61	0.26	186.04
240	4.84	15.20	2.45	201.79
245	4.77	12.50	4.58	212.35
250	4.47	11.66	5.34	221.94
255	5.14	11.96	5.06	209.94
260	5.29	14.54	2.94	198.72
265	2.53	19.96	-0.51	228.28
270	0.34	25.09	-2.99	316.38
275	0.67	28.92	-4.53	272.62
280	0.48	33.28	-6.05	277.08
285	0.78	37.60	-7.38	247.54
290	0.98	42.09	-8.60	228.49
295	0.39	46.88	-9.77	263.95
300	0.00	51.63	-10.00	285.28
305	0.00	56.33	-10.00	285.28
310	0.60	60.96	-10.00	243.28
315	1.10	65.67	-10.00	217.35
320	2.83	70.32	-10.00	175.52
325	4.48	75.07	-10.00	140.72
330	5.49	79.93	-10.00	130.14
335	7.76	84.81	-10.00	106.27
340	10.83	89.75	-10.00	100.00
345	12.56	94.74	-10.00	100.00
350	13.64	99.74	-10.00	100.00
355	13.90	104.74	-10.00	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.

BY: _____

Twila Meyer
DB Technician IV
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147

DATED: July 16, 2018