

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
Comcast Cable Communications, LLC
BATTLEMENT, CO
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
July 25, 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

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.

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 07/25/2018.

Company

Qwest Corporation

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: 07/25/2018
Job Number: 180725COMSTW09

Administrative Information

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

Site Information

BATTLEMENT, CO

Venue Name
Latitude (NAD 83) 39° 25' 30.0" N
Longitude (NAD 83) 108° 2' 7.0" W
Climate Zone A
Rain Zone 5
Ground Elevation (AMSL) 1641.16 m / 5384.4 ft

Link Information

Satellite Type Geostationary
Mode RO - Receive-Only
Modulation Digital
Satellite Arc 70° W to 140° West Longitude
Azimuth Range 129.1° to 224.5°
Corresponding Elevation Angles 29.9° / 33.7°
Antenna Centerline (AGL) 2.74 m / 9.0 ft

Antenna Information

Receive - FCC32

Manufacturer FCC REFERENCE
Model 32-25LOG(THETA)
Gain / Diameter 42.4 dBi / 4.0 m
3-dB / 15-dB Beamwidth 1.30° / 3.00°

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 295.6 km / 183.6 mi
Precipitation Scatter Contour Radius 386.7 km / 240.3 mi

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Coordination Values

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Longitude (NAD 83) 108° 2' 7.0" W
Ground Elevation (AMSL) 1641.16 m / 5384.4 ft
Antenna Centerline (AGL) 2.74 m / 9.0 ft
Antenna Model FCC Reference 32-25LOG(THETA)
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	2.63	124.06	-10.00	180.10
5	2.48	119.81	-10.00	183.50
10	2.68	115.59	-10.00	178.83
15	2.75	111.27	-10.00	177.22
20	2.61	106.87	-10.00	180.61
25	2.54	102.47	-10.00	182.18
30	2.30	98.03	-10.00	187.56
35	2.54	93.61	-10.00	182.25
40	2.71	89.18	-10.00	178.17
45	2.94	84.72	-10.00	172.94
50	3.01	80.27	-10.00	171.23
55	3.17	75.82	-10.00	165.63
60	3.60	71.33	-10.00	156.20
65	3.84	66.88	-10.00	151.08
70	4.65	62.31	-10.00	138.24
75	5.98	57.58	-10.00	125.38
80	6.62	53.02	-10.00	118.42
85	6.92	48.61	-10.00	115.19
90	7.83	44.01	-9.09	109.12
95	8.67	39.48	-7.91	106.24
100	9.23	35.16	-6.65	106.48
105	9.38	31.26	-5.37	110.49
110	11.40	26.36	-3.52	103.39
115	10.27	24.03	-2.52	115.51
120	10.54	21.34	-1.23	119.22
125	11.20	19.16	-0.06	120.01
130	10.58	19.38	-0.19	123.70
135	11.81	19.05	0.00	116.22
140	11.81	21.08	-1.10	111.19
145	11.42	23.98	-2.49	107.66
150	10.12	27.44	-3.96	110.35
155	9.62	29.94	-4.91	110.45
160	9.39	31.87	-5.58	109.52
165	8.90	33.70	-6.19	111.24
170	9.10	34.49	-6.44	108.51
175	8.93	35.25	-6.68	109.02
180	9.98	34.38	-6.41	101.09
185	10.31	33.87	-6.25	100.00

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Coordination Values

BATTLEMENT, CO

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Latitude (NAD 83) 39° 25' 30.0" N
Longitude (NAD 83) 108° 2' 7.0" W
Ground Elevation (AMSL) 1641.16 m / 5384.4 ft
Antenna Centerline (AGL) 2.74 m / 9.0 ft
Antenna Model FCC Reference 32-25LOG(THETA)
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	10.54	33.07	-5.99	100.00
195	10.34	32.31	-5.73	101.35
200	10.03	31.28	-5.38	105.01
205	9.49	30.05	-4.95	111.31
210	8.42	28.92	-4.53	122.37
215	7.17	28.08	-4.21	134.88
220	5.58	28.46	-4.36	152.62
225	4.74	28.98	-4.55	162.87
230	3.89	30.29	-5.03	177.36
235	2.60	32.67	-5.85	200.82
240	1.25	35.61	-6.79	229.28
245	0.85	38.12	-7.53	242.08
250	0.00	41.35	-8.41	295.59
255	0.68	43.76	-9.03	243.85
260	2.63	45.80	-9.52	182.35
265	4.65	48.35	-10.00	138.32
270	4.26	52.39	-10.00	143.96
275	5.66	55.86	-10.00	128.48
280	6.81	59.67	-10.00	116.39
285	7.92	63.69	-10.00	104.68
290	7.35	68.19	-10.00	110.60
295	6.55	72.73	-10.00	119.16
300	4.20	77.42	-10.00	144.84
305	2.27	81.91	-10.00	188.47
310	1.16	86.21	-10.00	215.33
315	0.40	90.42	-10.00	261.04
320	0.64	94.61	-10.00	240.59
325	0.98	98.82	-10.00	221.51
330	3.04	103.29	-10.00	170.44
335	2.62	107.45	-10.00	180.34
340	1.87	111.45	-10.00	198.02
345	1.80	115.52	-10.00	199.80
350	3.52	120.13	-10.00	157.94
355	4.54	124.55	-10.00	139.91

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 25, 2018

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Date: 07/25/2018
Job Number: 180725COMSTW10

Administrative Information

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

Site Information

BATTLEMENT, CO
Venue Name
Latitude (NAD 83) 39° 25' 30.0" N
Longitude (NAD 83) 108° 2' 7.0" W
Climate Zone A
Rain Zone 5
Ground Elevation (AMSL) 1641.16 m / 5384.4 ft

Link Information

Satellite Type Geostationary
Mode RO - Receive-Only
Modulation Digital
Satellite Arc 70° W to 140° West Longitude
Azimuth Range 129.1° to 224.5°
Corresponding Elevation Angles 29.9° / 33.7°
Antenna Centerline (AGL) 2.74 m / 9.0 ft

Antenna Information

Receive - S40463
Manufacturer SCIENTIFIC-ATLANTA, INC
Model 8346PF 4.6-M R/O
Gain / Diameter 43.0 dBi / 4.6 m
3-dB / 15-dB Beamwidth 2.20° / 2.20°

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 294.7 km / 183.1 mi
Precipitation Scatter Contour Radius 386.7 km / 240.3 mi

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125	11.20	19.16	-0.50	118.01
130	10.58	19.38	-0.63	121.66
135	11.81	19.05	-0.43	114.23
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150	10.12	27.44	-3.98	110.28
155	9.62	29.94	-4.98	110.16
160	9.39	31.87	-5.75	108.84
165	8.90	33.70	-6.48	110.04
170	9.10	34.49	-6.80	107.05
175	8.93	35.25	-7.05	107.50
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255	0.68	43.76	-9.50	241.14
260	2.63	45.80	-10.00	179.99
265	4.65	48.35	-10.00	138.32
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