

**FREQUENCY COORDINATION AND INTERFERENCE
ANALYSIS REPORT**

Prepared for
Intelsat License LLC
CASTLE ROCK, CO
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
June 05, 2017

TABLE OF CONTENTS

1. CONCLUSIONS	3
2. SUMMARY OF RESULTS	4
3. SUPPLEMENTAL SHOWING	5
4. EARTH STATION COORDINATION DATA	7
5. CERTIFICATION	11

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 04/26/2017.

Company

AC BidCO LLC
AT&T Mobility Spectrum LLC - CO
AT&T Mobility Spectrum LLC - KS, MO
AirLife Denver
Arvada Police Dept.
BNSF Railway Company
Black Hawk Police Department
Black Hills Power and Light
Boulder, County of
CBS Communications Services Inc
CBS Television Stations
Cellular Inc. Network Corporation
City of Aurora
City of Colorado Springs
City of Lakewood, CO
Colorado Interstate Gas Company
Colorado Springs Utilities
County of Pueblo
Directlink, LLC
Douglas County Sheriff's Office
Entravision Holdings, LLC
Fones West Digital Systems Inc.
Gilpin County Sheriff's Office
Gray Television Licensee, LLC
Intermountain Rural Electric Association
KSE Radio Ventures, LLC
Kellin Communications
LP Broadband, Inc.
Live Wire Networks, Inc.
MHO Networks
Mountain Broadband LLC
Multimedia Holdings Corporation
NE Colorado Cellular, Inc.
New Cingular Wireless PCS LLC -Colorado
Nex-Tech Wireless, LLC
Olympic Wireless, LLC
Qwest Corporation
Roggen Telephone Enterprises, Inc.
Sangre de Cristo Communications, LLC
Sprint Communications Company, LP

Sprint Spectrum L.P.
Sprint Spectrum LP DBA Sprint PCS
State of Colorado
Tallgrass Operations, LLC
Tri-State Generation & Transmission Assn
Tribune Broadcasting Denver License, LLC
University Corp for Atmospheric Research
Verizon Wireless (VAW) LLC -CO/ID/MT/WY
Xcel Energy Services, Inc.
Y-W Electric Association, 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: 06/05/2017
Job Number: 170426COMSGE01

Administrative Information

Status ENGINEER PROPOSAL
Call Sign E040174
Licensee Code INTELS
Licensee Name Intelsat License LLC

Site Information

CASTLE ROCK, CO
Venue Name
Latitude (NAD 83) 39° 16' 33.0" N
Longitude (NAD 83) 104° 48' 34.0" W
Climate Zone A
Rain Zone 2
Ground Elevation (AMSL) 2088.0 m / 6850.4 ft

Link Information

Satellite Type Geostationary
Mode TO - Transmit-Only
Modulation Analog and Digital
Satellite Arc 33° W to 150° West Longitude
Azimuth Range 101.8° to 237.8°
Corresponding Elevation Angles 5.3° / 25.2°
Antenna Centerline (AGL) 5.49 m / 18.0 ft

Antenna Information

Transmit - FCC32
Manufacturer Vertex
Model 9 Meter
Gain / Diameter 53.8 dBi / 9.0 m
3-dB / 15-dB Beamwidth 0.20° / 0.40°

Max Available RF Power (dBW/4 kHz) 3.7
(dBW/MHz) 27.7

Maximum EIRP (dBW/4 kHz) 57.5
(dBW/MHz) 81.5

Interference Objectives: Long Term -154.0 dBW/4 kHz 20%
Short Term -131.0 dBW/4 kHz 0.0025%

Frequency Information

Transmit 6.1 GHz
Emission / Frequency Range (MHz) 850KFXD - 1M20FXD / 5853.0 and 6424.5

Max Great Circle Coordination Distance 468.3 km / 290.9 mi
Precipitation Scatter Contour Radius 298.3 km / 185.4 mi

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Coordination Values

CASTLE ROCK, CO

Licensee Name Intelsat License LLC
Latitude (NAD 83) 39° 16' 33.0" N
Longitude (NAD 83) 104° 48' 34.0" W
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Antenna Centerline (AGL) 5.49 m / 18.0 ft
Antenna Model Vertex 9 meter
Antenna Mode Transmit 6.1 GHz
Interference Objectives: Long Term -154.0 dBW/4 kHz 20%
 Short Term -131.0 dBW/4 kHz 0.0025%
Max Available RF Power 3.7 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 6.1 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
0	5.33	101.75	-10.00	100.00
5	4.79	96.75	-10.00	100.00
10	3.89	91.75	-10.00	100.00
15	4.01	86.75	-10.00	100.00
20	3.85	81.76	-10.00	100.00
25	3.58	76.76	-10.00	100.00
30	3.74	71.76	-10.00	100.00
35	3.35	66.77	-10.00	100.00
40	2.87	61.78	-10.00	100.00
45	2.58	56.80	-10.00	101.35
50	2.50	51.81	-10.00	102.77
55	1.71	46.86	-9.77	120.66
60	1.36	41.91	-8.56	133.51
65	0.54	37.02	-7.21	174.30
70	0.00	32.15	-5.68	210.33
75	0.00	27.24	-3.88	217.69
80	0.00	22.36	-1.74	226.94
85	0.00	17.56	0.89	239.06
90	0.00	12.89	4.25	255.17
95	0.23	8.45	8.82	277.55
100	0.00	5.60	13.29	468.28
105	0.00	6.23	12.13	340.17
110	0.00	9.71	7.32	272.10
115	0.28	13.21	3.97	245.64
120	0.36	16.79	1.37	224.87
125	0.30	20.38	-0.73	220.99
130	0.52	23.66	-2.35	196.73
135	0.43	27.02	-3.79	198.43
140	0.55	30.04	-4.94	183.61
145	1.02	32.60	-5.83	152.33
150	1.54	34.84	-6.55	134.84
155	1.39	37.33	-7.30	136.03
160	1.46	39.28	-7.85	133.39
165	1.44	40.92	-8.30	132.32
170	1.53	42.03	-8.59	129.10
175	1.93	42.37	-8.68	119.17
180	2.33	42.21	-8.64	111.10
185	2.57	41.73	-8.51	106.70

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Coordination Values

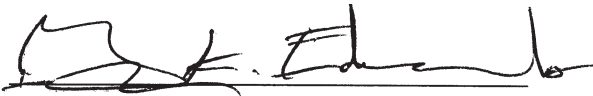
CASTLE ROCK, CO

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Max Available RF Power 3.7 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 6.1 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
190	2.96	40.65	-8.23	100.38
195	3.16	39.31	-7.86	100.00
200	3.18	37.74	-7.42	100.00
205	2.89	36.04	-6.92	106.43
210	2.65	33.93	-6.26	113.42
215	2.70	31.28	-5.38	115.74
220	3.32	27.95	-4.16	109.05
225	3.28	25.23	-3.05	113.97
230	3.48	23.02	-2.05	114.31
235	3.42	21.96	-1.54	117.36
240	3.40	21.90	-1.51	117.76
245	3.51	22.79	-1.94	114.20
250	3.53	24.71	-2.82	110.52
255	3.67	27.27	-3.89	103.70
260	3.61	30.56	-5.13	100.05
265	3.77	34.09	-6.31	100.00
270	3.98	37.90	-7.46	100.00
275	4.00	42.02	-8.59	100.00
280	4.02	46.28	-9.63	100.00
285	4.64	50.46	-10.00	100.00
290	5.69	54.68	-10.00	100.00
295	5.86	59.23	-10.00	100.00
300	5.20	63.97	-10.00	100.00
305	5.01	68.64	-10.00	100.00
310	5.30	73.26	-10.00	100.00
315	5.39	77.94	-10.00	100.00
320	4.95	82.65	-10.00	100.00
325	4.63	87.35	-10.00	100.00
330	4.54	92.03	-10.00	100.00
335	4.47	96.70	-10.00	100.00
340	5.31	101.43	-10.00	100.00
345	5.69	106.15	-10.00	100.00
350	5.73	110.84	-10.00	100.00
355	5.67	106.75	-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: 

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

DATED: June 05, 2017