

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for

**Brigham Young University
Rexburg, Idaho
(Call Sign: E130184)**

Satellite Earth Station

Prepared By:
COMSEARCH

19700 Janelia Farm Boulevard
Ashburn, Virginia 20147
July 18, 2014

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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, based upon the restrictions noted in the Summary of Results (Section 2).

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 most cases.

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 and frequency separation are considered on the interfering paths, sufficient losses exist to negate harmful interference from occurring with the transmit-receive earth station. Further, the transmit spectrum will be limited to frequencies 5925.0 to 6107.0 MHz and 6140.0 MHz to 6425.0 MHz.

Company

Idaho 6 Clark Limited Partnership
Teton Communications
WWC License LLC – Mountain Region

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.

Expedited coordination data for this earth station was emailed and sent to the below listed carriers with a letter dated June 25, 2014.

Company

AT&T COMMUNICATIONS OF MOUNTAIN STATES
Cellular, Inc. Financial Corporation
Digis LLC
Fremont Telcom Co
Idaho 6 Clark Limited Partnership
LP Broadband, Inc.
New Cingular Wireless PCS-ID & WY Mkts
PacifiCorp
Qwest Corporation
Riverbend Communications, LLC
State of Idaho
State of Montana
TETON COMMUNICATIONS
Union Telephone Company, Inc.
Verizon Wireless (VAW) LLC -CO/ID/MT/WY
WWC License LLC-Mountain Region

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: 07/18/2014
Job Number: 140625COMSJC03

Administrative Information

Status: ENGINEER PROPOSAL
Call Sign: E130184
Licensee Code: BYUBRD
Licensee Name: Brigham Young University

Site Information REXBURG, IDAHO

Venue Name:
Latitude (NAD 83): 43° 49' 0.3" N
Longitude (NAD 83): 111° 46' 42.4" W
Climate Zone: A
Rain Zone: 5
Ground Elevation (AMSL): 1524.61 m / 5002.0 ft

Link Information

Satellite Type: Geostationary
Mode: TR - Transmit-Receive
Modulation: Digital
Satellite Arc: 90° W to 92° West Longitude
Azimuth Range: 150.0° to 152.6°
Corresponding Elevation Angles: 35.0° / 35.7°
Antenna Centerline (AGL): 3.05 m / 10.0 ft

Antenna Information

Manufacturer: ASC Signal
Model: 4.5 Meter
Gain / Diameter: 43.8 dBi / 4.5 m
3-dB / 15-dB Beamwidth: 1.10° / 2.10°

Receive

Transmit

ASC Signal
4.5 Meter
46.6 dBi / 4.5 m
0.80° / 1.50°

5M06G7W - 30M0G7W

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

-16.3 -16.3
7.7 7.7

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

30.3 30.3
54.3 54.3
61.3 69.05

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

-154.0 dBW/4 kHz 20%
-131.0 dBW/4 kHz 0.0025%

Frequency Information

Receive 4.0 GHz

Emission / Frequency Range (MHz) 5M06G7W - 30M0G7W / 3700.0 - 4200.0

Transmit 6.1 GHz

5M06G7W - 30M0G7W / 5925.0 - 6107.0
5M06G7W - 30M0G7W / 6140.0 - 6425.0

Max Great Circle Coordination Distance: 285.3 km / 177.2 mi
Precipitation Scatter Contour Radius: 384.6 km / 239.0 mi

126.7 km / 78.7 mi
100.0 km / 62.1 mi

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Coordination Values

REXBURG, ID

Licensee Name Brigham Young University
Latitude (NAD 83) 43° 49' 0.3" N
Longitude (NAD 83) 111° 46' 42.4" W
Ground Elevation (AMSL) 1524.61 m / 5002.0 ft
Antenna Centerline (AGL) 3.05 m / 10.0 ft
Antenna Model ASC Signal 4.5 Meter
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 -16.3 (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	0.00	135.23	-10.00	285.28	-10.00	126.71
5	0.00	132.19	-10.00	285.28	-10.00	126.71
10	0.00	128.90	-10.00	285.28	-10.00	126.71
15	0.00	125.43	-10.00	285.28	-10.00	126.71
20	0.00	121.80	-10.00	285.28	-10.00	126.71
25	0.00	118.05	-10.00	285.28	-10.00	126.71
30	0.00	114.20	-10.00	285.28	-10.00	126.71
35	0.00	110.28	-10.00	285.28	-10.00	126.71
40	0.00	106.29	-10.00	285.28	-10.00	126.71
45	0.00	102.26	-10.00	285.28	-10.00	126.71
50	0.00	98.19	-10.00	285.28	-10.00	126.71
55	0.00	94.11	-10.00	285.28	-10.00	126.71
60	0.00	90.01	-10.00	285.28	-10.00	126.71
65	0.47	85.89	-10.00	252.83	-10.00	104.86
70	0.74	81.76	-10.00	234.93	-10.00	100.00
75	1.06	77.61	-10.00	218.50	-10.00	100.00
80	1.29	73.47	-10.00	211.44	-10.00	100.00
85	1.67	69.32	-10.00	203.39	-10.00	100.00
90	1.90	65.24	-10.00	197.35	-10.00	100.00
95	2.16	61.18	-10.00	190.87	-10.00	100.00
100	2.42	57.20	-10.00	184.88	-10.00	100.00
105	2.69	53.29	-10.00	178.70	-10.00	100.00
110	2.87	49.54	-10.00	174.38	-10.00	100.00
115	3.08	45.93	-9.55	171.83	-9.55	100.00
120	3.28	42.53	-8.72	171.59	-8.72	100.00
125	3.31	39.51	-7.92	174.94	-7.92	100.00
130	3.41	36.80	-7.15	176.82	-7.15	100.00
135	3.44	34.57	-6.47	179.65	-6.47	100.00
140	3.37	32.97	-5.95	183.79	-5.95	100.00
145	3.18	32.12	-5.67	189.32	-5.67	100.00
150	2.90	32.05	-5.65	195.47	-5.65	100.00
155	2.62	32.67	-5.85	200.40	-5.85	100.00
160	2.50	33.79	-6.22	201.32	-6.22	100.00
165	2.48	35.23	-6.67	199.60	-6.67	100.00
170	2.24	37.27	-7.28	201.80	-7.28	100.00
175	2.07	39.70	-7.97	202.44	-7.97	100.00
180	1.87	42.52	-8.71	203.95	-8.71	100.00

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Coordination Values

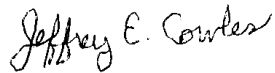
REXBURG, ID

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Antenna Model	ASC Signal 4.5 Meter				
Antenna Mode	Receive 4.0 GHz				
Interference Objectives: Long Term	-156.0 dBW/MHz	20%	Transmit 6.1 GHz	-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	-16.3 (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)
185	1.62	45.66	-9.49	204.72	-9.49	100.00
190	1.48	48.97	-10.00	206.16	-10.00	100.00
195	1.22	52.54	-10.00	213.44	-10.00	100.00
200	0.91	56.27	-10.00	225.17	-10.00	100.00
205	0.64	60.07	-10.00	240.73	-10.00	100.00
210	0.46	63.93	-10.00	254.80	-10.00	106.24
215	0.24	67.87	-10.00	280.31	-10.00	123.47
220	0.00	71.85	-10.00	285.28	-10.00	126.71
225	0.00	75.82	-10.00	285.28	-10.00	126.71
230	0.00	79.83	-10.00	285.28	-10.00	126.71
235	0.00	83.87	-10.00	285.28	-10.00	126.71
240	0.00	87.92	-10.00	285.28	-10.00	126.71
245	0.00	91.98	-10.00	285.28	-10.00	126.71
250	0.00	96.04	-10.00	285.28	-10.00	126.71
255	0.00	100.08	-10.00	285.28	-10.00	126.71
260	0.00	104.09	-10.00	285.28	-10.00	126.71
265	0.00	108.06	-10.00	285.28	-10.00	126.71
270	0.00	111.98	-10.00	285.28	-10.00	126.71
275	0.00	115.82	-10.00	285.28	-10.00	126.71
280	0.00	119.58	-10.00	285.28	-10.00	126.71
285	0.00	123.23	-10.00	285.28	-10.00	126.71
290	0.00	126.73	-10.00	285.28	-10.00	126.71
295	0.00	130.07	-10.00	285.28	-10.00	126.71
300	0.00	133.19	-10.00	285.28	-10.00	126.71
305	0.00	136.04	-10.00	285.28	-10.00	126.71
310	0.00	138.58	-10.00	285.28	-10.00	126.71
315	0.00	140.73	-10.00	285.28	-10.00	126.71
320	0.00	142.42	-10.00	285.28	-10.00	126.71
325	0.00	143.60	-10.00	285.28	-10.00	126.71
330	0.00	144.21	-10.00	285.28	-10.00	126.71
335	0.00	144.22	-10.00	285.28	-10.00	126.71
340	0.00	143.62	-10.00	285.28	-10.00	126.71
345	0.00	142.35	-10.00	285.28	-10.00	126.71
350	0.00	140.38	-10.00	285.28	-10.00	126.71
355	0.00	137.98	-10.00	285.28	-10.00	126.71

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.



Jeffrey E. Cowles
Engineer III, Telecommunications
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19700 Janelia Farm Boulevard
Ashburn, Va. 20147

DATED: July 18, 2014