

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
Iridium Constellation LLC
FAIRBANKS, AK
(E060300)
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
July 28, 2016

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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.

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 are considered on the interfering paths, sufficient blockage exists to negate harmful interference from occurring with the proposed transmit-receive earth station.

Company

Alaska Wireless Network, LLC

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.

Coordination data for this earth station was sent to the below listed carriers with a letter dated 06/23/2016.

Company

ACS of Anchorage License Sub, Inc.
AT&T Mobility Spectrum LLC - AK
Ace Tekk
AlasConnect, Inc.
Alaska Wireless Network, LLC
FAIRBANKS NORTH STAR BOROUGH
FAIRBANKS POLICE DEPARTMENT
GCI Communications Corp.
State of Alaska

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.

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Earth Station Data Sheet

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

Date: 07/28/2016
Job Number: 160623COMSGE04

Administrative Information

Status: ENGINEER PROPOSAL
Call Sign: E060300
Licensee Code: IRICON
Licensee Name: Iridium Constellation LLC

Site Information FAIRBANKS, AK

Venue Name:
Latitude (NAD 83): 64° 49' 3.2" N
Longitude (NAD 83): 147° 43' 29.8" W
Climate Zone: A
Rain Zone: 2
Ground Elevation (AMSL): 128.02 m / 420.0 ft

Link Information

Satellite Type: Low Earth Orbit
Mode: TR - Transmit-Receive
Modulation: Digital
Minimum Elevation Angle: 5.0°
Azimuth Range: 0.0° to 360°
Antenna Centerline (AGL): 6.1 m / 20.0 ft

Antenna Information

	Receive - FCC32	Transmit - FCC32
Manufacturer	Scientific-Atlanta	Scientific-Atlanta
Model	3.0 meter	3.0 meter
Gain / Diameter	54.0 dBi / 3.0 m	57.4 dBi / 3.0 m
3-dB / 15-dB Beamwidth	0.40° / 0.70°	0.24° / 0.45°
Max Available RF Power (dBW/4 kHz) (dBW/MHz)		(1) -12.3 (2) -23.7 11.7 0.3
Maximum EIRP (dBW/4 kHz) (dBW/MHz)		45.1 33.7 69.1 57.7
Interference Objectives:	Long Term: -156.0 dBW/MHz 20% Short Term: -150.2 dBW/MHz 0.01%	-151.0 dBW/4 kHz 20% -128.0 dBW/4 kHz 0.0025%

Frequency Information

	Receive 18.0 GHz	Transmit 28.0 GHz
Emission / Frequency Range (MHz)	200KF9D / 19400.2 - 19405.0 14M0G7W / 19400.0 - 19600.0	(1) 1M00F9D / 29102.0 (1) 1M00F9D / 29298.0 (2) 14M0G7W / 29100.0 - 29300.0
Max Great Circle Coordination Distance	226.0 km / 140.4 mi	100.0 km / 62.1 mi
Precipitation Scatter Contour Radius	120.8 km / 75.1 mi	100.0 km / 62.1 mi

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Coordination Values

FAIRBANKS, AK

Licensee Name Iridium Constellation LLC
Latitude (NAD 83) 64° 49' 3.2" N
Longitude (NAD 83) 147° 43' 29.8" W
Ground Elevation (AMSL) 128.02 m / 420.0 ft
Antenna Centerline (AGL) 6.1 m / 20.0 ft
Antenna Model Scientific-Atlanta 3 meter
Antenna Mode Receive 18.0 GHz Transmit 28.0 GHz
Interference Objectives: Long Term -156.0 dBW/MHz 20% -151.0 dBW/4 kHz 20%
Short Term -150.2 dBW/MHz 0.01% -128.0 dBW/4 kHz 0.0025%
Max Available RF Power -23.7 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 18.0 GHz		Transmit 28.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
0	0.36	44.21	2.60	226.00	11.50	100.00
5	0.36	40.75	2.60	226.00	11.50	100.00
10	0.36	37.56	2.60	226.00	11.50	100.00
15	0.36	34.74	2.60	226.00	11.50	100.00
20	0.36	32.37	2.60	226.00	11.50	100.00
25	0.39	30.60	2.60	226.00	11.50	100.00
30	1.09	30.17	2.60	226.00	11.50	100.00
35	1.60	30.31	2.60	226.00	11.50	100.00
40	1.31	30.41	2.60	226.00	11.50	100.00
45	0.94	31.17	2.60	226.00	11.50	100.00
50	0.46	32.53	2.60	226.00	11.50	100.00
55	0.36	34.83	2.60	226.00	11.50	100.00
60	0.36	37.66	2.60	226.00	11.50	100.00
65	0.36	40.86	2.60	226.00	11.50	100.00
70	0.36	44.34	2.60	226.00	11.50	100.00
75	0.36	48.03	2.60	226.00	11.50	100.00
80	0.36	51.89	2.60	226.00	11.50	100.00
85	0.36	55.89	2.60	226.00	11.50	100.00
90	0.36	59.98	2.60	226.00	11.50	100.00
95	0.36	64.16	2.60	226.00	11.50	100.00
100	0.36	68.40	2.60	226.00	11.50	100.00
105	0.36	72.68	2.60	226.00	11.50	100.00
110	0.36	77.00	2.60	226.00	11.50	100.00
115	0.36	81.34	2.60	226.00	11.50	100.00
120	0.36	85.71	2.60	226.00	11.50	100.00
125	0.36	90.07	2.60	226.00	11.50	100.00
130	0.36	94.44	2.60	226.00	11.50	100.00
135	0.36	98.80	2.60	226.00	11.50	100.00
140	0.36	103.15	2.60	226.00	11.50	100.00
145	0.36	107.47	2.60	226.00	11.50	100.00
150	0.36	111.75	2.60	226.00	11.50	100.00
155	0.36	115.99	2.60	226.00	11.50	100.00
160	0.36	120.16	2.60	226.00	11.50	100.00
165	0.36	124.25	2.60	226.00	11.50	100.00
170	0.36	128.24	2.60	226.00	11.50	100.00
175	0.36	132.10	2.60	226.00	11.50	100.00
180	0.36	135.79	2.60	226.00	11.50	100.00
185	0.36	139.25	2.60	226.00	11.50	100.00

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Coordination Values

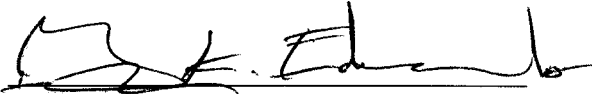
FAIRBANKS, AK

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Ground Elevation (AMSL)	128.02 m / 420.0 ft		
Antenna Centerline (AGL)	6.1 m / 20.0 ft		
Antenna Model	Scientific-Atlanta 3 meter		
Antenna Mode	Receive 18.0 GHz		Transmit 28.0 GHz
Interference Objectives: Long Term	-156.0 dBW/MHz	20%	-151.0 dBW/4 kHz 20%
Short Term	-150.2 dBW/MHz	0.01%	-128.0 dBW/4 kHz 0.0025%
Max Available RF Power			-23.7 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 18.0 GHz		Transmit 28.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
190	0.36	142.44	2.60	226.00	11.50	100.00
195	0.36	145.26	2.60	226.00	11.50	100.00
200	0.36	147.63	2.60	226.00	11.50	100.00
205	0.36	149.43	2.60	226.00	11.50	100.00
210	0.36	150.56	2.60	226.00	11.50	100.00
215	0.36	150.93	2.60	226.00	11.50	100.00
220	0.36	150.53	2.60	226.00	11.50	100.00
225	0.36	149.38	2.60	226.00	11.50	100.00
230	0.36	147.56	2.60	226.00	11.50	100.00
235	0.36	145.17	2.60	226.00	11.50	100.00
240	0.36	142.34	2.60	226.00	11.50	100.00
245	0.36	139.14	2.60	226.00	11.50	100.00
250	0.36	135.66	2.60	226.00	11.50	100.00
255	0.36	131.97	2.60	226.00	11.50	100.00
260	0.36	128.11	2.60	226.00	11.50	100.00
265	0.36	124.11	2.60	226.00	11.50	100.00
270	0.36	120.02	2.60	226.00	11.50	100.00
275	0.36	115.84	2.60	226.00	11.50	100.00
280	0.36	111.61	2.60	226.00	11.50	100.00
285	0.36	107.32	2.60	226.00	11.50	100.00
290	0.36	103.00	2.60	226.00	11.50	100.00
295	0.36	98.66	2.60	226.00	11.50	100.00
300	0.36	94.29	2.60	226.00	11.50	100.00
305	0.36	89.93	2.60	226.00	11.50	100.00
310	0.41	85.56	2.60	226.00	11.50	100.00
315	0.36	81.20	2.60	226.00	11.50	100.00
320	0.36	76.85	2.60	226.00	11.50	100.00
325	0.36	72.53	2.60	226.00	11.50	100.00
330	0.36	68.25	2.60	226.00	11.50	100.00
335	0.36	64.01	2.60	226.00	11.50	100.00
340	0.36	59.84	2.60	226.00	11.50	100.00
345	0.36	55.75	2.60	226.00	11.50	100.00
350	0.36	51.76	2.60	226.00	11.50	100.00
355	0.36	47.90	2.60	226.00	11.50	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: July 28, 2016