

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
GCI Communications Corp
BIRCH CREEK, AK
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
June 06, 2022

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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 05/02/2022.

Company

ACS of the Northland License Sub, LLC
AT&T Mobility Spectrum LLC - AK
Alascom Inc
Alaska Railroad Corporation
Alaska State of
DRS Global Enterprise Solutions, Inc.
Golden Valley Electric Association
New Cingular Wireless PCS LLC - Alaska
Northern Star (Pogo) LLC
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: 06/06/2022
Job Number: 220502COMSPI09

Administrative Information

Status: ENGINEER PROPOSAL
Call Sign:
Licensee Code: P3203
Licensee Name: GCI Communications Corp

Site Information

BIRCH CREEK, AK
Venue Name: BIRCH CREEK
Latitude (NAD 83): 66° 15' 46.2" N
Longitude (NAD 83): 145° 49' 4.2" W
Climate Zone: A
Rain Zone: 2
Ground Elevation (AMSL): 128.0 m / 420.0 ft

Link Information

Satellite Type: Geostationary
Mode: TR - Transmit-Receive
Modulation: Digital
Satellite Arc: 92° W to 199° West Longitude
Azimuth Range: 123.8° to 235.6°
Corresponding Elevation Angles: 5.1° / 5.3°
Antenna Centerline (AGL): 2.74 m / 9.0 ft

Antenna Information

Receive - FCC32
Manufacturer: CPI High Wind
Model: 2385
Gain / Diameter: 42.0 dBi / 3.8 m
3-dB / 15-dB Beamwidth: 1.40° / 2.80°

Transmit - FCC32

CPI High Wind
2385
46.5 dBi / 3.8 m
1.00° / 2.00°

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

-2.7
21.3

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

43.8
67.8

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): 45K0G7W - 108MG7W / 3700.0 - 4200.0
60K0D7W - 108MD7W / 3700.0 - 4200.0

Transmit 6.1 GHz

45K0G7W - 108MG7W / 5925.0 - 6425.0
45K0D7W - 108MD7W / 5925.0 - 6425.0

Max Great Circle Coordination Distance: 554.9 km / 344.7 mi
Precipitation Scatter Contour Radius: 618.2 km / 384.1 mi

325.1 km / 202.0 mi
101.6 km / 63.1 mi

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Coordination Values

BIRCH CREEK, AK

Licensee Name GCI Communications Corp
Latitude (NAD 83) 66° 15' 46.2" N
Longitude (NAD 83) 145° 49' 4.2" W
Ground Elevation (AMSL) 128.0 m / 420.0 ft
Antenna Centerline (AGL) 2.74 m / 9.0 ft
Antenna Model CPI High Wind 2385
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 -2.7 (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	0.45	123.68	-10.00	255.53	-10.00	143.83
5	0.36	118.70	-10.00	265.95	-10.00	152.37
10	0.30	113.72	-10.00	273.22	-10.00	158.52
15	0.27	108.74	-10.00	276.16	-10.00	161.06
20	0.00	103.75	-10.00	285.28	-10.00	170.66
25	0.00	98.77	-10.00	285.28	-10.00	170.66
30	0.00	93.79	-10.00	285.28	-10.00	170.66
35	0.00	88.81	-10.00	285.28	-10.00	170.66
40	0.00	83.83	-10.00	285.28	-10.00	170.66
45	0.00	78.85	-10.00	285.28	-10.00	170.66
50	0.00	73.87	-10.00	285.28	-10.00	170.66
55	0.00	68.89	-10.00	285.28	-10.00	170.66
60	0.00	63.92	-10.00	285.28	-10.00	170.66
65	0.00	58.94	-10.00	285.28	-10.00	170.66
70	0.27	53.95	-10.00	276.09	-10.00	161.00
75	0.27	48.98	-10.00	277.05	-10.00	161.83
80	0.00	44.04	-9.10	291.09	-9.10	174.17
85	0.21	39.06	-7.79	297.87	-7.79	177.71
90	0.00	34.14	-6.33	309.68	-6.33	184.87
95	0.00	29.21	-4.64	322.25	-4.64	191.38
100	0.00	24.31	-2.65	336.72	-2.65	199.01
105	0.00	19.46	-0.23	354.87	-0.23	206.61
110	0.00	14.70	2.82	378.65	2.82	218.95
115	0.00	10.16	6.83	411.06	6.83	236.88
120	0.00	6.35	11.94	456.81	11.94	262.07
125	0.23	5.00	14.53	554.88	14.53	325.10
130	0.44	6.39	11.86	495.57	11.86	281.12
135	0.48	7.85	9.63	445.32	9.63	248.14
140	0.47	9.25	7.85	408.66	7.85	226.95
145	0.43	10.56	6.41	385.80	6.41	215.88
150	0.32	11.79	5.21	382.00	5.21	217.20
155	0.00	13.07	4.09	388.23	4.09	224.42
160	0.00	13.88	3.44	383.58	3.44	221.59
165	0.00	14.52	2.95	379.66	2.95	219.49
170	0.00	14.98	2.61	376.97	2.61	218.06
175	0.00	15.26	2.41	375.39	2.41	217.23
180	0.00	15.35	2.35	374.87	2.35	216.96
185	0.00	15.26	2.41	375.41	2.41	217.24

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Coordination Values

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Latitude (NAD 83)	66° 15' 46.2" N				
Longitude (NAD 83)	145° 49' 4.2" W				
Ground Elevation (AMSL)	128.0 m / 420.0 ft				
Antenna Centerline (AGL)	2.74 m / 9.0 ft				
Antenna Model	CPI High Wind 2385				
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				-2.7 (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)
190	0.00	14.98	2.61	377.00	2.61	218.08
195	0.00	14.52	2.95	379.71	2.95	219.52
200	0.00	13.88	3.44	383.63	3.44	221.61
205	0.00	13.07	4.10	388.28	4.10	224.45
210	0.00	12.09	4.94	395.15	4.94	228.17
215	0.23	10.74	6.22	405.11	6.22	231.60
220	0.00	9.71	7.32	428.22	7.32	243.56
225	0.00	8.32	9.00	457.90	9.00	259.24
230	0.31	6.52	11.65	494.43	11.65	280.61
235	0.40	4.93	14.67	546.67	14.67	318.59
240	0.51	6.51	11.65	413.99	11.65	229.32
245	0.88	10.40	6.57	343.49	6.57	188.79
250	1.02	15.03	2.57	300.65	2.57	161.47
255	1.02	19.87	-0.46	277.93	-0.46	148.17
260	0.86	24.80	-2.86	271.20	-2.86	146.20
265	0.64	29.76	-4.84	272.57	-4.84	149.98
270	0.32	34.74	-6.52	292.30	-6.52	170.86
275	0.27	39.69	-7.97	289.01	-7.97	170.52
280	0.27	44.65	-9.25	280.85	-9.25	163.92
285	0.26	49.61	-10.00	278.28	-10.00	162.90
290	0.23	54.58	-10.00	281.16	-10.00	165.42
295	0.24	59.56	-10.00	280.13	-10.00	164.52
300	0.28	64.53	-10.00	275.00	-10.00	160.06
305	0.34	69.50	-10.00	268.57	-10.00	154.56
310	0.00	74.49	-10.00	285.28	-10.00	170.66
315	0.35	79.46	-10.00	267.31	-10.00	153.51
320	0.51	84.44	-10.00	248.87	-10.00	138.67
325	0.56	89.43	-10.00	245.64	-10.00	136.19
330	0.56	94.41	-10.00	245.64	-10.00	136.19
335	0.60	99.39	-10.00	243.39	-10.00	134.48
340	0.60	104.37	-10.00	243.39	-10.00	134.48
345	0.53	109.35	-10.00	248.04	-10.00	138.03
350	0.57	114.34	-10.00	245.18	-10.00	135.83
355	0.54	119.31	-10.00	247.29	-10.00	137.45

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: 

Pirouz Ebadi
Microwave Engineer I
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19700 Janelia Farm Boulevard
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DATED: June 06, 2022