

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
GCI Communications Corp.
SHUNGNAK, AK
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
May 21, 2021

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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

There were no great circle interference cases identified during the interference study of the proposed earth station.

No 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 05/20/2021.

Company

DRS Global Enterprise Solutions, Inc.

DRS Technical Services, Inc.

Unicom, 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: 05/21/2021
Job Number: 210520COMSTC06

Administrative Information

Licensee Code P3203
Licensee Name GCI Communications Corp.

Site Information

SHUNGNAK, AK

Latitude (NAD 83) 66° 53' 13.3" N
Longitude (NAD 83) 157° 8' 22.6" W
Climate Zone A
Rain Zone 2
Ground Elevation (AMSL) 56.3 m / 184.7 ft

Link Information

Satellite Type Geostationary
Mode TR - Transmit-Receive
Modulation Digital
Satellite Arc 105° W to 206° West Longitude
Azimuth Range 125.6° to 231.2°
Corresponding Elevation Angles 5.3° / 6.3°
Antenna Centerline (AGL) 3.08 m / 10.1 ft

Antenna Information

Receive

Transmit

| | | |
|------------------------|------------------|------------------|
| Manufacturer | GD Satcom | GD Satcom |
| Model | 3.8M | 3.8M |
| Gain / Diameter | 42.3 dBi / 3.8 m | 46.2 dBi / 3.8 m |
| 3-dB / 15-dB Beamwidth | 1.40° / 3.00° | 0.90° / 1.70° |

| | | | | | |
|--------------------------|-------------|--------------------------|--------|------------------|---------|
| | | 45K0G7W - 36M0G7W | | | |
| | | <u>45K0D7W - 36M0D7W</u> | | | |
| Max Available RF Power | (dBW/4 kHz) | -2.7 | -13.52 | | |
| | (dBW/MHz) | 21.3 | 10.46 | | |
| Maximum EIRP | (dBW/4 kHz) | 43.5 | 32.68 | | |
| | (dBW/MHz) | 54.57 | 56.66 | | |
| | (dBW) | 54.57 | 72.22 | | |
| | | 0.0 | | | |
| 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% |

Frequency Information

Receive 4.0 GHz

Transmit 6.1 GHz

| | | |
|----------------------------------|-------------------------------------|-------------------------------------|
| Emission / Frequency Range (MHz) | 45K0G7W - 36M0G7W / 3700.0 - 4200.0 | 45K0G7W - 36M0G7W / 5925.0 - 6425.0 |
| | 45K0D7W - 36M0D7W / 3700.0 - 4200.0 | 45K0D7W - 36M0D7W / 5925.0 - 6425.0 |

| | | |
|--|---------------------|---------------------|
| Max Great Circle Coordination Distance | 562.5 km / 349.5 mi | 325.9 km / 202.5 mi |
| Precipitation Scatter Contour Radius | 613.9 km / 381.4 mi | 109.3 km / 67.9 mi |

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Coordination Values

SHUNGNAK, AK

Licensee Name GCI Communications Corp.
Latitude (NAD 83) 66° 53' 13.3" N
Longitude (NAD 83) 157° 8' 22.6" W
Ground Elevation (AMSL) 56.3 m / 184.7 ft
Antenna Centerline (AGL) 3.08 m / 10.1 ft
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 | 0.49 | 125.42 | -10.00 | 250.46 | -10.00 | 139.82 |
| 5 | 0.66 | 120.46 | -10.00 | 239.85 | -10.00 | 133.07 |
| 10 | 0.66 | 115.48 | -10.00 | 239.84 | -10.00 | 133.07 |
| 15 | 0.66 | 110.50 | -10.00 | 239.85 | -10.00 | 133.07 |
| 20 | 0.66 | 105.51 | -10.00 | 239.84 | -10.00 | 133.06 |
| 25 | 0.33 | 100.53 | -10.00 | 269.50 | -10.00 | 155.35 |
| 30 | 0.27 | 95.55 | -10.00 | 276.89 | -10.00 | 161.69 |
| 35 | 0.00 | 90.56 | -10.00 | 285.28 | -10.00 | 170.66 |
| 40 | 0.00 | 85.59 | -10.00 | 285.28 | -10.00 | 170.66 |
| 45 | 0.00 | 80.61 | -10.00 | 285.28 | -10.00 | 170.66 |
| 50 | 0.00 | 75.63 | -10.00 | 285.28 | -10.00 | 170.66 |
| 55 | 0.00 | 70.65 | -10.00 | 285.28 | -10.00 | 170.66 |
| 60 | 0.00 | 65.68 | -10.00 | 285.28 | -10.00 | 170.66 |
| 65 | 0.00 | 60.70 | -10.00 | 285.28 | -10.00 | 170.66 |
| 70 | 0.00 | 55.73 | -10.00 | 285.28 | -10.00 | 170.66 |
| 75 | 0.00 | 50.77 | -10.00 | 285.28 | -10.00 | 170.66 |
| 80 | 0.00 | 45.80 | -9.52 | 288.33 | -9.52 | 172.51 |
| 85 | 0.00 | 40.85 | -8.28 | 296.46 | -8.28 | 177.34 |
| 90 | 0.00 | 35.90 | -6.88 | 305.91 | -6.88 | 182.76 |
| 95 | 0.00 | 30.98 | -5.28 | 317.73 | -5.28 | 188.93 |
| 100 | 0.00 | 26.07 | -3.40 | 331.17 | -3.40 | 196.11 |
| 105 | 0.00 | 21.20 | -1.16 | 347.79 | -1.16 | 204.67 |
| 110 | 0.00 | 16.42 | 1.62 | 369.14 | 1.62 | 213.95 |
| 115 | 0.00 | 11.80 | 5.20 | 397.37 | 5.20 | 229.38 |
| 120 | 0.00 | 7.67 | 9.89 | 437.95 | 9.89 | 251.23 |
| 125 | 0.00 | 5.31 | 13.87 | 562.49 | 13.87 | 325.87 |
| 130 | 0.00 | 6.41 | 11.83 | 512.81 | 11.83 | 290.25 |
| 135 | 0.00 | 7.87 | 9.61 | 470.53 | 9.61 | 263.92 |
| 140 | 0.00 | 9.22 | 7.89 | 443.14 | 7.89 | 249.49 |
| 145 | 0.00 | 10.44 | 6.53 | 418.53 | 6.53 | 237.99 |
| 150 | 0.00 | 11.54 | 5.45 | 401.08 | 5.45 | 230.79 |
| 155 | 0.00 | 12.48 | 4.59 | 392.33 | 4.59 | 226.64 |
| 160 | 0.00 | 13.27 | 3.93 | 387.55 | 3.93 | 223.71 |
| 165 | 0.00 | 13.89 | 3.43 | 383.54 | 3.43 | 221.56 |
| 170 | 0.00 | 14.34 | 3.09 | 380.77 | 3.09 | 220.08 |
| 175 | 0.00 | 14.61 | 2.88 | 379.15 | 2.88 | 219.22 |
| 180 | 0.00 | 14.70 | 2.82 | 378.61 | 2.82 | 218.93 |
| 185 | 0.00 | 14.61 | 2.88 | 379.14 | 2.88 | 219.21 |

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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) |
| 190 | 0.00 | 14.34 | 3.08 | 380.75 | 3.08 | 220.07 |
| 195 | 0.00 | 13.90 | 3.43 | 383.51 | 3.43 | 221.54 |
| 200 | 0.00 | 13.28 | 3.92 | 387.50 | 3.92 | 223.69 |
| 205 | 0.00 | 12.49 | 4.59 | 392.28 | 4.59 | 226.61 |
| 210 | 0.00 | 11.54 | 5.44 | 400.64 | 5.44 | 230.68 |
| 215 | 0.00 | 10.45 | 6.52 | 417.83 | 6.52 | 237.85 |
| 220 | 0.00 | 9.22 | 7.89 | 442.00 | 7.89 | 248.94 |
| 225 | 0.54 | 7.35 | 10.34 | 459.00 | 10.34 | 253.73 |
| 230 | 0.54 | 5.91 | 12.71 | 511.08 | 12.71 | 287.90 |
| 235 | 0.35 | 7.07 | 10.77 | 426.25 | 10.77 | 240.58 |
| 240 | 0.33 | 10.62 | 6.35 | 389.53 | 6.35 | 221.20 |
| 245 | 0.33 | 15.00 | 2.59 | 359.39 | 2.59 | 205.26 |
| 250 | 0.33 | 19.68 | -0.35 | 336.41 | -0.35 | 195.05 |
| 255 | 0.00 | 24.56 | -2.76 | 335.91 | -2.76 | 198.59 |
| 260 | 0.00 | 29.41 | -4.71 | 321.73 | -4.71 | 191.10 |
| 265 | 0.00 | 34.30 | -6.38 | 309.33 | -6.38 | 184.67 |
| 270 | 0.00 | 39.21 | -7.84 | 299.42 | -7.84 | 179.06 |
| 275 | 0.00 | 44.15 | -9.12 | 290.93 | -9.12 | 174.07 |
| 280 | 0.25 | 49.06 | -10.00 | 278.83 | -10.00 | 163.39 |
| 285 | 0.25 | 54.02 | -10.00 | 278.84 | -10.00 | 163.39 |
| 290 | 0.25 | 58.98 | -10.00 | 278.84 | -10.00 | 163.39 |
| 295 | 0.25 | 63.94 | -10.00 | 278.84 | -10.00 | 163.39 |
| 300 | 0.25 | 68.91 | -10.00 | 278.84 | -10.00 | 163.39 |
| 305 | 0.25 | 73.88 | -10.00 | 278.83 | -10.00 | 163.39 |
| 310 | 0.54 | 78.84 | -10.00 | 247.46 | -10.00 | 137.59 |
| 315 | 0.54 | 83.81 | -10.00 | 247.47 | -10.00 | 137.59 |
| 320 | 0.54 | 88.79 | -10.00 | 247.47 | -10.00 | 137.59 |
| 325 | 0.25 | 93.76 | -10.00 | 278.84 | -10.00 | 163.39 |
| 330 | 0.25 | 98.73 | -10.00 | 278.84 | -10.00 | 163.39 |
| 335 | 0.25 | 103.70 | -10.00 | 278.84 | -10.00 | 163.39 |
| 340 | 0.25 | 108.67 | -10.00 | 278.83 | -10.00 | 163.39 |
| 345 | 0.00 | 113.63 | -10.00 | 285.28 | -10.00 | 170.66 |
| 350 | 0.00 | 118.59 | -10.00 | 285.28 | -10.00 | 170.66 |
| 355 | 0.49 | 123.59 | -10.00 | 250.46 | -10.00 | 139.82 |

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.



Timothy O. Crutcher
Frequency Planner
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147

DATED: May 21, 2021