

# FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for  
**Alascom Inc**  
**MANOKOTAK, AK**  
**Satellite Earth Station**

Prepared By:  
COMSEARCH  
21515 Ridgetop Circle, Suite 300  
Sterling, VA 20166  
September 21, 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.

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### 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 08/22/2022.

Company

Bristol Bay Cellular Partnership  
Nushagak Electric & Telephone Coop  
United Utilities, Inc.  
United2, 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: 09/21/2022  
Job Number: 220822COMSPI03

### Administrative Information

Status: ENGINEER PROPOSAL  
Call Sign: E5423  
Licensee Code: P1040  
Licensee Name: Alascom Inc

### Site Information

Venue Name: MANOKOTAK, AK  
Latitude (NAD 83): 58° 58' 43.2" N  
Longitude (NAD 83): 159° 3' 18.1" W  
Climate Zone: A  
Rain Zone: 2  
Ground Elevation (AMSL): 13.1 m / 43.0 ft

### Link Information

Satellite Type: Geostationary  
Mode: TR - Transmit-Receive  
Modulation: Digital  
Satellite Arc: 97° W to 221° West Longitude  
Azimuth Range: 114.4° to 245.5°  
Corresponding Elevation Angles: 5.3° / 5.4°  
Antenna Centerline (AGL): 4.57 m / 15.0 ft

### Antenna Information

Manufacturer: ANDREW CORPORATION  
Model: ESA45-46A  
Gain / Diameter: 43.9 dBi / 4.5 m  
3-dB / 15-dB Beamwidth: 1.20° / 2.40°

### Receive - A40451

### Transmit - A60451

ANDREW CORPORATION  
ESA45-46A  
45.0 dBi / 4.5 m  
0.96° / 1.90°

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

-2.7  
21.3

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

42.3  
66.3

Interference Objectives: Long Term -164.0 dBW/MHz 20%  
Short Term -142.0 dBW/MHz 0.01%

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

### Frequency Information

Emission / Frequency Range (MHz): 29K0G7W - 4M50G7W / 3700.0 - 4200.0

### Receive 4.0 GHz

### Transmit 6.1 GHz

29K0G7W - 4M50G7W / 5925.0 - 6425.0

Max Great Circle Coordination Distance: 529.2 km / 328.8 mi  
Precipitation Scatter Contour Radius: 607.0 km / 377.2 mi

312.5 km / 194.1 mi  
101.4 km / 63.0 mi

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### Coordination Values

### MANOKOTAK, AK

Licensee Name Alascom Inc  
Latitude (NAD 83) 58° 58' 43.2" N  
Longitude (NAD 83) 159° 3' 18.1" W  
Ground Elevation (AMSL) 13.1 m / 43.0 ft  
Antenna Centerline (AGL) 4.57 m / 15.0 ft  
Antenna Model Andrew Corporation ESA45-46A  
Antenna Mode Receive 4.0 GHz Transmit 6.1 GHz  
Interference Objectives: Long Term -164.0 dBW/MHz 20% -154.0 dBW/4 kHz 20%  
Short Term -142.0 dBW/MHz 0.01% -131.0 dBW/4 kHz 0.0025%  
Max Available RF Power -2.7 (dBW/4 kHz)

| Azimuth (°) | Horizon<br>Elevation (°) | Antenna<br>Discrimination (°) | Receive 4.0 GHz       |                               | Transmit 6.1 GHz      |                               |
|-------------|--------------------------|-------------------------------|-----------------------|-------------------------------|-----------------------|-------------------------------|
|             |                          |                               | Horizon<br>Gain (dBi) | Coordination<br>Distance (km) | Horizon<br>Gain (dBi) | Coordination<br>Distance (km) |
| 0           | 0.00                     | 114.34                        | -11.84                | 250.89                        | -18.34                | 139.95                        |
| 5           | 0.00                     | 109.36                        | -9.59                 | 263.48                        | -13.49                | 155.86                        |
| 10          | 0.00                     | 104.39                        | -6.10                 | 284.64                        | -10.00                | 170.66                        |
| 15          | 0.49                     | 99.42                         | -6.10                 | 250.04                        | -10.00                | 139.94                        |
| 20          | 2.78                     | 94.45                         | -6.10                 | 176.02                        | -10.00                | 100.00                        |
| 25          | 3.48                     | 89.45                         | -6.10                 | 158.32                        | -10.00                | 100.00                        |
| 30          | 4.93                     | 84.45                         | -6.10                 | 134.16                        | -10.00                | 100.00                        |
| 35          | 6.48                     | 79.45                         | -6.10                 | 119.56                        | -10.00                | 100.00                        |
| 40          | 7.50                     | 74.46                         | -6.10                 | 108.62                        | -10.00                | 100.00                        |
| 45          | 7.13                     | 69.46                         | -6.10                 | 112.58                        | -10.00                | 100.00                        |
| 50          | 7.67                     | 64.47                         | -6.10                 | 106.83                        | -10.00                | 100.00                        |
| 55          | 8.32                     | 59.50                         | -6.10                 | 100.62                        | -10.00                | 100.00                        |
| 60          | 8.91                     | 54.53                         | -6.10                 | 100.00                        | -10.00                | 100.00                        |
| 65          | 10.25                    | 49.63                         | -6.10                 | 100.00                        | -10.00                | 100.00                        |
| 70          | 10.64                    | 44.70                         | -6.10                 | 100.00                        | -10.00                | 100.00                        |
| 75          | 10.98                    | 39.79                         | -6.10                 | 100.00                        | -10.00                | 100.00                        |
| 80          | 12.27                    | 35.06                         | -6.10                 | 100.00                        | -10.00                | 100.00                        |
| 85          | 12.27                    | 30.19                         | -5.18                 | 100.00                        | -5.19                 | 100.00                        |
| 90          | 12.27                    | 25.36                         | -4.17                 | 100.00                        | -4.07                 | 100.00                        |
| 95          | 14.97                    | 21.63                         | -2.75                 | 100.00                        | -2.65                 | 100.00                        |
| 100         | 15.69                    | 17.72                         | -1.19                 | 100.00                        | -1.54                 | 100.00                        |
| 105         | 14.60                    | 13.22                         | -0.10                 | 100.00                        | -1.00                 | 100.00                        |
| 110         | 14.47                    | 10.17                         | -0.10                 | 100.00                        | -1.00                 | 100.00                        |
| 115         | 14.47                    | 7.92                          | 6.07                  | 480.16                        | 3.17                  | 285.68                        |
| 120         | 13.67                    | 5.01                          | 11.89                 | 327.03                        | 9.99                  | 194.46                        |
| 125         | 13.67                    | 2.96                          | 18.08                 | 241.51                        | 17.18                 | 133.99                        |
| 130         | 11.92                    | 0.70                          | 35.12                 | 324.61                        | 38.83                 | 191.55                        |
| 135         | 6.13                     | 7.94                          | 6.03                  | 183.67                        | 3.13                  | 100.00                        |
| 140         | 3.13                     | 12.50                         | -0.10                 | 198.19                        | -1.00                 | 100.15                        |
| 145         | 3.13                     | 14.14                         | -0.10                 | 198.19                        | -1.00                 | 100.15                        |
| 150         | 2.40                     | 16.32                         | -0.63                 | 208.68                        | -1.26                 | 113.16                        |
| 155         | 0.00                     | 19.92                         | -2.07                 | 311.53                        | -1.98                 | 201.54                        |
| 160         | 0.00                     | 21.01                         | -2.51                 | 308.48                        | -2.41                 | 199.93                        |
| 165         | 0.00                     | 21.88                         | -2.85                 | 306.09                        | -2.75                 | 198.60                        |
| 170         | 0.00                     | 22.51                         | -3.11                 | 304.36                        | -3.01                 | 197.64                        |
| 175         | 0.00                     | 22.89                         | -3.26                 | 303.32                        | -3.16                 | 197.05                        |
| 180         | 0.00                     | 23.02                         | -3.31                 | 302.98                        | -3.21                 | 196.86                        |
| 185         | 0.00                     | 22.90                         | -3.26                 | 303.32                        | -3.16                 | 197.05                        |

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Max Available RF Power -2.7 (dBW/4 kHz)

| Azimuth (°) | Horizon<br>Elevation (°) | Antenna<br>Discrimination (°) | Receive 4.0 GHz       |                               | Transmit 6.1 GHz      |                               |
|-------------|--------------------------|-------------------------------|-----------------------|-------------------------------|-----------------------|-------------------------------|
|             |                          |                               | Horizon<br>Gain (dBi) | Coordination<br>Distance (km) | Horizon<br>Gain (dBi) | Coordination<br>Distance (km) |
| 190         | 0.00                     | 22.51                         | -3.11                 | 304.36                        | -3.01                 | 197.64                        |
| 195         | 0.00                     | 21.88                         | -2.85                 | 306.09                        | -2.75                 | 198.60                        |
| 200         | 0.00                     | 21.01                         | -2.51                 | 308.48                        | -2.41                 | 199.93                        |
| 205         | 0.00                     | 19.92                         | -2.07                 | 311.52                        | -1.98                 | 201.54                        |
| 210         | 0.00                     | 18.61                         | -1.55                 | 315.82                        | -1.72                 | 202.53                        |
| 215         | 0.00                     | 17.11                         | -0.94                 | 320.08                        | -1.42                 | 203.68                        |
| 220         | 0.00                     | 15.43                         | -0.27                 | 324.90                        | -1.09                 | 204.96                        |
| 225         | 0.00                     | 13.58                         | -0.10                 | 326.12                        | -1.00                 | 205.28                        |
| 230         | 0.00                     | 11.60                         | -0.10                 | 326.12                        | -1.00                 | 205.28                        |
| 235         | 0.00                     | 9.49                          | 1.44                  | 359.90                        | 0.03                  | 215.81                        |
| 240         | 0.00                     | 7.27                          | 7.35                  | 433.13                        | 4.45                  | 249.83                        |
| 245         | 0.00                     | 5.39                          | 11.13                 | 529.16                        | 9.23                  | 312.48                        |
| 250         | 0.00                     | 7.03                          | 7.84                  | 386.81                        | 4.94                  | 228.18                        |
| 255         | 0.32                     | 10.79                         | -0.10                 | 309.40                        | -1.00                 | 193.42                        |
| 260         | 0.81                     | 15.23                         | -0.19                 | 265.60                        | -1.05                 | 156.26                        |
| 265         | 0.94                     | 20.03                         | -2.11                 | 245.32                        | -2.01                 | 145.55                        |
| 270         | 0.00                     | 25.09                         | -4.12                 | 297.53                        | -4.02                 | 193.76                        |
| 275         | 0.00                     | 29.99                         | -5.10                 | 291.08                        | -5.00                 | 190.00                        |
| 280         | 0.00                     | 34.91                         | -6.10                 | 284.64                        | -9.91                 | 171.00                        |
| 285         | 0.00                     | 39.85                         | -6.10                 | 284.64                        | -10.00                | 170.66                        |
| 290         | 0.00                     | 44.80                         | -6.10                 | 284.64                        | -10.00                | 170.66                        |
| 295         | 0.00                     | 49.76                         | -6.10                 | 284.64                        | -10.00                | 170.66                        |
| 300         | 0.00                     | 54.73                         | -6.10                 | 284.64                        | -10.00                | 170.66                        |
| 305         | 0.00                     | 59.70                         | -6.10                 | 284.64                        | -10.00                | 170.66                        |
| 310         | 0.00                     | 64.67                         | -6.10                 | 284.64                        | -10.00                | 170.66                        |
| 315         | 0.00                     | 69.64                         | -6.10                 | 284.64                        | -10.00                | 170.66                        |
| 320         | 0.00                     | 74.62                         | -6.10                 | 284.64                        | -10.00                | 170.66                        |
| 325         | 0.00                     | 79.60                         | -6.10                 | 284.64                        | -10.00                | 170.66                        |
| 330         | 0.00                     | 84.57                         | -6.10                 | 284.64                        | -10.00                | 170.66                        |
| 335         | 0.00                     | 89.55                         | -6.10                 | 284.64                        | -10.00                | 170.66                        |
| 340         | 0.00                     | 94.53                         | -6.10                 | 284.64                        | -10.00                | 170.66                        |
| 345         | 0.00                     | 99.51                         | -6.10                 | 284.64                        | -10.00                | 170.66                        |
| 350         | 0.00                     | 104.48                        | -6.10                 | 284.64                        | -10.00                | 170.66                        |
| 355         | 0.00                     | 109.46                        | -9.67                 | 263.03                        | -13.57                | 155.59                        |

## 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 Ebadirad*

Pirouz Ebadirad  
Microwave Engineer I  
COMSEARCH  
21515 Ridgetop Circle, Suite 300  
Sterling, VA 20166

DATED: September 21, 2022