

Ka-Band Earth Station – Honolulu, HI

Frequency Coordination Report

28 GHz



Prepared on Behalf of
PEACESAT/TIPG,
University of Hawaii

March 28, 2012



COMSEARCH
A CommScope Company

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1. Summary of Results

On behalf of PEACESAT/TIPG, University of Hawaii's proposed earth station transmitting at 28 GHz¹, Comsearch performed a frequency search considering all existing and proposed incumbent licenses within the coordination contours of the Ka-Band station in Honolulu, Hawaii. The search results identified licensees in the common carrier fixed microwave service and local television transmission service (LTTS). Prior notification letters were sent to the licensees and a copy of the notification data is provided in section three of this report. The earth station coordination will be finalized on April 6, 2012.

To date, we have received no objections to the deployment of the earth station and we do not anticipate any future objections.

¹ The proposed earth station will operate in the 28,446.5 – 28,553.5 MHz portion of the Ka-Band.

2. Supplemental Showing

Pursuant to Part 25.203(c) of the FCC Rules and Regulations, a Ka-Band earth station in Honolulu, HI was prior coordinated by Comsearch. The notification letters and datasheet for this earth station were sent to the following 28 GHz common carrier fixed microwave licensees on March 20, 2012. These licensees are typically authorized to operate temporary fixed operations from 27.5 – 29.5 GHz on a statewide or nationwide basis.

| Licensee | Authorized Geographic Area |
|---|--------------------------------|
| GTE Southwest Inc. dba Verizon Southwest | Continental US |
| Hawaiian Telcom, Inc. | Statewide: HI |
| Princeton Scientific Capital Management Corp. | Fixed Location in Honolulu, HI |

A notification letter and datasheet for the Ka-Band earth station in Honolulu, HI was also sent to the following 28 GHz local television transmission licensee on March 20, 2012. This licensee is authorized to operate temporary fixed operations from 27.5 – 29.5 GHz on a nationwide basis.

| Licensee | Authorized Geographic Area |
|--------------------------------|----------------------------|
| Information Super Station, LLC | Continental US |

3. Earth Station Coordination Data

Administrative Information

| | |
|---------------|--------------------------------|
| Status | ENGINEER PROPOSAL |
| Call Sign | |
| Licensee Code | PEASAT |
| Licensee Name | PEACESAT/TIPG, Univ. of Hawaii |

Site Information **HONOLULU, HI**

| | |
|-------------------------|-------------------|
| Venue Name | |
| Latitude (NAD 83) | 21° 17' 49.9" N |
| Longitude (NAD 83) | 157° 49' 19.8" W |
| Climate Zone | B |
| Rain Zone | 4 |
| Ground Elevation (AMSL) | 16.76 m / 55.0 ft |

Link Information

| | |
|--------------------------------|-------------------------------|
| Satellite Type | Geostationary |
| Mode | TR - Transmit-Receive |
| Modulation | Digital |
| Satellite Arc | 217° W to 217° West Longitude |
| Azimuth Range | 257.8° to 257.8° |
| Corresponding Elevation Angles | 20.4° / 20.4° |
| Antenna Centerline (AGL) | 11.58 m / 38.0 ft |

Antenna Information

| | Receive - FCC32 | Transmit - FCC32 |
|---|------------------------|--|
| Manufacturer | GD Satcom | GD Satcom |
| Model | Series 3120 | Series 3120 |
| Gain / Diameter | 44.5 dBi / 1.2 m | 48.4 dBi / 1.2 m |
| 3-dB / 15-dB Beamwidth | 0.83° / 1.86° | 0.56° / 1.26° |
| Max Available RF Power (dBW/4 kHz) (dBW/MHz) | | -0.6 23.4 |
| Maximum EIRP (dBW/4 kHz) (dBW/MHz) | | 47.8 71.8 |
| Interference Objectives: Long Term | -156.0 dBW/MHz | 20% |
| Short Term | -146.0 dBW/MHz | 0.01% |
| 0.0025% | | -151.0 dBW/4 kHz 20% -128.0 dBW/4 kHz |

Frequency Information

| | Receive 18.0 GHz | Transmit 28.0 GHz |
|--|-----------------------------------|-----------------------------------|
| Emission / Frequency Range (MHz) | N0N - 53M3G7W / 18646.5 - 18753.5 | N0N - 53M3G7W / 28446.5 - 28553.5 |
| Max Great Circle Coordination Distance | 182.5 km / 113.4 mi | 168.2 km / 104.5 mi |
| Precipitation Scatter Contour Radius | 100.0 km / 62.1 mi | 100.0 km / 62.1 mi |



Coordination Values

HONOLULU, HI

Licensee Name PEACESAT/TIPG, Univ. of Hawaii
 Latitude (NAD 83) 21° 17' 49.9" N
 Longitude (NAD 83) 157° 49' 19.8" W
 Ground Elevation (AMSL) 16.76 m / 55.0 ft
 Antenna Centerline (AGL) 11.58 m / 38.0 ft
 Antenna Model GD Satcom 1.2 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 -146.0 dBW/MHz 0.01% -128.0 dBW/4 kHz 0.0025%
 Max Available RF Power -0.6 (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 | 8.63 | 101.97 | -10.00 | 100.00 | -10.00 | 100.00 |
| 5 | 8.49 | 106.85 | -10.00 | 100.00 | -10.00 | 100.00 |
| 10 | 8.87 | 111.76 | -10.00 | 100.00 | -10.00 | 100.00 |
| 15 | 7.87 | 116.53 | -10.00 | 100.00 | -10.00 | 100.00 |
| 20 | 6.61 | 121.20 | -10.00 | 100.00 | -10.00 | 100.00 |
| 25 | 5.69 | 125.82 | -10.00 | 100.00 | -10.00 | 100.00 |
| 30 | 6.79 | 130.79 | -10.00 | 100.00 | -10.00 | 100.00 |
| 35 | 6.46 | 135.44 | -10.00 | 100.00 | -10.00 | 100.00 |
| 40 | 5.43 | 139.80 | -10.00 | 100.00 | -10.00 | 100.00 |
| 45 | 6.16 | 144.60 | -10.00 | 100.00 | -10.00 | 100.00 |
| 50 | 5.72 | 148.88 | -10.00 | 100.00 | -10.00 | 100.00 |
| 55 | 5.84 | 153.20 | -10.00 | 100.00 | -10.00 | 100.00 |
| 60 | 5.51 | 157.00 | -10.00 | 100.00 | -10.00 | 100.00 |
| 65 | 6.82 | 161.47 | -10.00 | 100.00 | -10.00 | 100.00 |
| 70 | 6.48 | 164.13 | -10.00 | 100.00 | -10.00 | 100.00 |
| 75 | 6.02 | 165.39 | -10.00 | 100.00 | -10.00 | 100.00 |
| 80 | 5.13 | 164.61 | -10.00 | 100.00 | -10.00 | 100.00 |
| 85 | 4.61 | 162.70 | -10.00 | 100.00 | -10.00 | 100.00 |
| 90 | 4.23 | 159.86 | -10.00 | 100.00 | -10.00 | 100.00 |
| 95 | 3.91 | 156.35 | -10.00 | 100.00 | -10.00 | 100.00 |
| 100 | 3.49 | 152.35 | -10.00 | 100.00 | -10.00 | 100.00 |
| 105 | 2.35 | 147.73 | -10.00 | 100.00 | -10.00 | 100.00 |
| 110 | 1.62 | 143.23 | -10.00 | 100.00 | -10.00 | 100.00 |
| 115 | 1.02 | 138.70 | -10.00 | 100.00 | -10.00 | 100.00 |
| 120 | 0.83 | 134.25 | -10.00 | 100.00 | -10.00 | 100.00 |
| 125 | 0.51 | 129.69 | -10.00 | 117.06 | -10.00 | 100.00 |
| 130 | 0.72 | 125.23 | -10.00 | 101.13 | -10.00 | 100.00 |
| 135 | 0.87 | 120.68 | -10.00 | 100.00 | -10.00 | 100.00 |
| 140 | 0.71 | 116.03 | -10.00 | 101.63 | -10.00 | 100.00 |
| 145 | 0.43 | 111.34 | -10.00 | 125.15 | -10.00 | 118.30 |
| 150 | 1.47 | 106.78 | -10.00 | 100.00 | -10.00 | 100.00 |
| 155 | 1.42 | 102.07 | -10.00 | 100.00 | -10.00 | 100.00 |
| 160 | 1.36 | 97.34 | -10.00 | 100.00 | -10.00 | 100.00 |
| 165 | 2.35 | 92.64 | -10.00 | 100.00 | -10.00 | 100.00 |
| 170 | 0.36 | 87.91 | -10.00 | 132.51 | -10.00 | 124.80 |
| 175 | 0.00 | 83.22 | -10.00 | 151.57 | -10.00 | 136.40 |
| 180 | 0.00 | 78.55 | -10.00 | 151.57 | -10.00 | 136.40 |
| 185 | 0.00 | 73.88 | -10.00 | 151.57 | -10.00 | 136.40 |



Coordination Values

HONOLULU, HI

Licensee Name PEACESAT/TIPG, Univ. of Hawaii
 Latitude (NAD 83) 21° 17' 49.9" N
 Longitude (NAD 83) 157° 49' 19.8" W
 Ground Elevation (AMSL) 16.76 m / 55.0 ft
 Antenna Centerline (AGL) 11.58 m / 38.0 ft
 Antenna Model GD Satcom 1.2 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 -146.0 dBW/MHz 0.01% -128.0 dBW/4 kHz 0.0025%
 Max Available RF Power -0.6 (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 | 0.00 | 69.23 | -10.00 | 151.57 | -10.00 | 136.40 |
| 195 | 0.00 | 64.60 | -10.00 | 151.57 | -10.00 | 136.40 |
| 200 | 0.00 | 60.00 | -10.00 | 151.57 | -10.00 | 136.40 |
| 205 | 0.00 | 55.45 | -10.00 | 151.57 | -10.00 | 136.40 |
| 210 | 0.00 | 50.94 | -10.00 | 151.57 | -10.00 | 136.40 |
| 215 | 0.00 | 46.51 | -9.69 | 152.69 | -9.69 | 137.30 |
| 220 | 0.00 | 42.18 | -8.63 | 156.51 | -8.63 | 140.40 |
| 225 | 0.00 | 37.97 | -7.49 | 160.61 | -7.49 | 143.80 |
| 230 | 0.00 | 33.95 | -6.27 | 164.99 | -6.27 | 147.70 |
| 235 | 0.00 | 30.18 | -4.99 | 169.59 | -4.99 | 152.00 |
| 240 | 0.00 | 26.78 | -3.69 | 174.27 | -3.69 | 156.60 |
| 245 | 0.00 | 23.89 | -2.46 | 176.00 | -2.46 | 161.20 |
| 250 | 0.00 | 21.74 | -1.43 | 179.92 | -1.43 | 165.60 |
| 255 | 0.00 | 20.54 | -0.82 | 182.37 | -0.82 | 168.10 |
| 260 | 0.00 | 20.48 | -0.78 | 182.51 | -0.78 | 168.20 |
| 265 | 0.00 | 21.56 | -1.34 | 180.27 | -1.34 | 166.00 |
| 270 | 0.00 | 23.62 | -2.33 | 176.46 | -2.33 | 161.70 |
| 275 | 0.00 | 26.44 | -3.55 | 174.77 | -3.55 | 157.10 |
| 280 | 0.00 | 29.79 | -4.85 | 170.10 | -4.85 | 152.50 |
| 285 | 0.00 | 33.53 | -6.14 | 165.48 | -6.14 | 148.20 |
| 290 | 0.00 | 37.53 | -7.36 | 161.08 | -7.36 | 144.30 |
| 295 | 0.53 | 41.50 | -8.45 | 120.76 | -8.45 | 114.20 |
| 300 | 1.91 | 45.38 | -9.42 | 100.00 | -9.42 | 100.00 |
| 305 | 1.73 | 49.95 | -10.00 | 100.00 | -10.00 | 100.00 |
| 310 | 1.82 | 54.50 | -10.00 | 100.00 | -10.00 | 100.00 |
| 315 | 1.04 | 59.28 | -10.00 | 100.00 | -10.00 | 100.00 |
| 320 | 1.85 | 63.78 | -10.00 | 100.00 | -10.00 | 100.00 |
| 325 | 2.62 | 68.37 | -10.00 | 100.00 | -10.00 | 100.00 |
| 330 | 3.10 | 73.05 | -10.00 | 100.00 | -10.00 | 100.00 |
| 335 | 4.09 | 77.75 | -10.00 | 100.00 | -10.00 | 100.00 |
| 340 | 4.42 | 82.53 | -10.00 | 100.00 | -10.00 | 100.00 |
| 345 | 5.58 | 87.32 | -10.00 | 100.00 | -10.00 | 100.00 |
| 350 | 7.12 | 92.17 | -10.00 | 100.00 | -10.00 | 100.00 |
| 355 | 8.75 | 97.08 | -10.00 | 100.00 | -10.00 | 100.00 |



4. Contact Information

For questions or information regarding this Frequency Coordination Report, please contact:

Contact person: Joanna Lynch
Title: Manager, Spectrum & Data Solutions
Company: Comsearch
Address: 19700 Janelia Farm Blvd., Ashburn, VA 20147
Telephone: 703-726-5711
Fax: 703-726-5599
Email: jlynch@comsearch.com
Web site: www.comsearch.com

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
**PEACESAT/TIPG, Univ. of Hawaii
HONOLULU, HI
Satellite Earth Station**

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
March 28, 2012

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5. 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.

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

Company

New Cingular Wireless PCS LLC - Hawaii

No other carriers reported potential interference cases.



7. 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 03/19/2012.

Company

Cellco Partnership - Hawaii
Clearwire Hawaii Partners Spectrum LLC
Coral Wireless Licenses, LLC
HONOLULU CITY & COUNTY
HONOLULU CITY & COUNTY DEPT OF INFO TECH
Hawaii State
Hawaiian Telcom, Inc.
Honolulu Board of Water Supply
MID PACIFIC COMMUNICATIONS INC
New Cingular Wireless PCS LLC - Hawaii
T-MOBILE LIC LLC - VOICESTREAM PCS BTA I
T-Mobile License LLC
Trex Broadband
US Internet Wireless



8. 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.

1.
2. COMSEARCH

Earth Station Data Sheet

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

Date: 03/26/2012
 Job Number: 120319COMSGE03

Administrative Information

Status ENGINEER PROPOSAL
 Call Sign
 Licensee Code PEASAT
 Licensee Name PEACESAT/TIPG, Univ. of Hawaii

Site Information HONOLULU, HI

Venue Name
 Latitude (NAD 83) 21° 17' 49.9" N
 Longitude (NAD 83) 157° 49' 19.8" W
 Climate Zone B
 Rain Zone 4
 Ground Elevation (AMSL) 16.76 m / 55.0 ft

Link Information

Satellite Type Geostationary
 Mode TR - Transmit-Receive
 Modulation Digital
 Satellite Arc 217° W to 217° West Longitude
 Azimuth Range 257.8° to 257.8°
 Corresponding Elevation Angles 20.4° / 20.4°
 Antenna Centerline (AGL) 11.58 m / 38.0 ft

Antenna Information

Manufacturer
 Model
 Gain / Diameter
 3-dB / 15-dB Beamwidth

Receive - FCC32

GD Satcom
 Series 3120
 44.5 dBi / 1.2 m
 0.83° / 1.86°

Transmit - FCC32

GD Satcom
 Series 3120
 48.4 dBi / 1.2 m
 0.56° / 1.26°

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

-0.6
 23.4

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

47.8
 71.8

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

-151.0 dBW/4 kHz 20%
 -128.0 dBW/4 kHz 0.0025%

Frequency Information

Emission / Frequency Range (MHz)

Receive 18.0 GHz

N0N - 53M3G7W / 18646.5 - 18753.5

Transmit 28.0 GHz

N0N - 53M3G7W / 28446.5 - 28553.5

Max Great Circle Coordination Distance 182.5 km / 113.4 mi
 Precipitation Scatter Contour Radius 100.0 km / 62.1 mi

168.2 km / 104.5 mi
 100.0 km / 62.1 mi

1.
2. COMSEARCH

Earth Station Data Sheet

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

Coordination Values

HONOLULU, HI

| | | | |
|--------------------------|--------------------------------|----------------------|--------------------------|
| Licensee Name | PEACESAT/TIPG, Univ. of Hawaii | | |
| Latitude (NAD 83) | 21° 17' 49.9" N | | |
| Longitude (NAD 83) | 157° 49' 19.8" W | | |
| Ground Elevation (AMSL) | 16.76 m / 55.0 ft | | |
| Antenna Centerline (AGL) | 11.58 m / 38.0 ft | | |
| Antenna Model | GD Satcom 1.2 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 | -146.0 dBW/MHz 0.01% | -128.0 dBW/4 kHz 0.0025% |
| Max Available RF Power | -0.6 (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 | 8.63 | 101.97 | -10.00 | 100.00 | -10.00 | 100.00 |
| 5 | 8.49 | 106.85 | -10.00 | 100.00 | -10.00 | 100.00 |
| 10 | 8.87 | 111.76 | -10.00 | 100.00 | -10.00 | 100.00 |
| 15 | 7.87 | 116.53 | -10.00 | 100.00 | -10.00 | 100.00 |
| 20 | 6.61 | 121.20 | -10.00 | 100.00 | -10.00 | 100.00 |
| 25 | 5.69 | 125.82 | -10.00 | 100.00 | -10.00 | 100.00 |
| 30 | 6.79 | 130.79 | -10.00 | 100.00 | -10.00 | 100.00 |
| 35 | 6.46 | 135.44 | -10.00 | 100.00 | -10.00 | 100.00 |
| 40 | 5.43 | 139.80 | -10.00 | 100.00 | -10.00 | 100.00 |
| 45 | 6.16 | 144.60 | -10.00 | 100.00 | -10.00 | 100.00 |
| 50 | 5.72 | 148.88 | -10.00 | 100.00 | -10.00 | 100.00 |
| 55 | 5.84 | 153.20 | -10.00 | 100.00 | -10.00 | 100.00 |
| 60 | 5.51 | 157.00 | -10.00 | 100.00 | -10.00 | 100.00 |
| 65 | 6.82 | 161.47 | -10.00 | 100.00 | -10.00 | 100.00 |
| 70 | 6.48 | 164.13 | -10.00 | 100.00 | -10.00 | 100.00 |
| 75 | 6.02 | 165.39 | -10.00 | 100.00 | -10.00 | 100.00 |
| 80 | 5.13 | 164.61 | -10.00 | 100.00 | -10.00 | 100.00 |
| 85 | 4.61 | 162.70 | -10.00 | 100.00 | -10.00 | 100.00 |
| 90 | 4.23 | 159.86 | -10.00 | 100.00 | -10.00 | 100.00 |
| 95 | 3.91 | 156.35 | -10.00 | 100.00 | -10.00 | 100.00 |
| 100 | 3.49 | 152.35 | -10.00 | 100.00 | -10.00 | 100.00 |
| 105 | 2.35 | 147.73 | -10.00 | 100.00 | -10.00 | 100.00 |
| 110 | 1.62 | 143.23 | -10.00 | 100.00 | -10.00 | 100.00 |
| 115 | 1.02 | 138.70 | -10.00 | 100.00 | -10.00 | 100.00 |
| 120 | 0.83 | 134.25 | -10.00 | 100.00 | -10.00 | 100.00 |
| 125 | 0.51 | 129.69 | -10.00 | 117.06 | -10.00 | 110.67 |
| 130 | 0.72 | 125.23 | -10.00 | 101.13 | -10.00 | 100.00 |
| 135 | 0.87 | 120.68 | -10.00 | 100.00 | -10.00 | 100.00 |
| 140 | 0.71 | 116.03 | -10.00 | 101.63 | -10.00 | 100.00 |
| 145 | 0.43 | 111.34 | -10.00 | 125.15 | -10.00 | 118.34 |
| 150 | 1.47 | 106.78 | -10.00 | 100.00 | -10.00 | 100.00 |
| 155 | 1.42 | 102.07 | -10.00 | 100.00 | -10.00 | 100.00 |
| 160 | 1.36 | 97.34 | -10.00 | 100.00 | -10.00 | 100.00 |
| 165 | 2.35 | 92.64 | -10.00 | 100.00 | -10.00 | 100.00 |
| 170 | 0.36 | 87.91 | -10.00 | 132.51 | -10.00 | 124.77 |
| 175 | 0.00 | 83.22 | -10.00 | 151.57 | -10.00 | 136.42 |
| 180 | 0.00 | 78.55 | -10.00 | 151.57 | -10.00 | 136.42 |
| 185 | 0.00 | 73.88 | -10.00 | 151.57 | -10.00 | 136.42 |

1.
2. COMSEARCH

Earth Station Data Sheet

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

Coordination Values

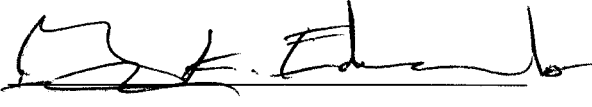
HONOLULU, HI

| | | | |
|--------------------------|--------------------------------|----------------------|--------------------------|
| Licensee Name | PEACESAT/TIPG, Univ. of Hawaii | | |
| Latitude (NAD 83) | 21° 17' 49.9" N | | |
| Longitude (NAD 83) | 157° 49' 19.8" W | | |
| Ground Elevation (AMSL) | 16.76 m / 55.0 ft | | |
| Antenna Centerline (AGL) | 11.58 m / 38.0 ft | | |
| Antenna Model | GD Satcom 1.2 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 | -146.0 dBW/MHz 0.01% | -128.0 dBW/4 kHz 0.0025% |
| Max Available RF Power | -0.6 (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 | 0.00 | 69.23 | -10.00 | 151.57 | -10.00 | 136.42 |
| 195 | 0.00 | 64.60 | -10.00 | 151.57 | -10.00 | 136.42 |
| 200 | 0.00 | 60.00 | -10.00 | 151.57 | -10.00 | 136.42 |
| 205 | 0.00 | 55.45 | -10.00 | 151.57 | -10.00 | 136.42 |
| 210 | 0.00 | 50.94 | -10.00 | 151.57 | -10.00 | 136.42 |
| 215 | 0.00 | 46.51 | -9.69 | 152.69 | -9.69 | 137.29 |
| 220 | 0.00 | 42.18 | -8.63 | 156.51 | -8.63 | 140.38 |
| 225 | 0.00 | 37.97 | -7.49 | 160.61 | -7.49 | 143.85 |
| 230 | 0.00 | 33.95 | -6.27 | 164.99 | -6.27 | 147.74 |
| 235 | 0.00 | 30.18 | -4.99 | 169.59 | -4.99 | 152.04 |
| 240 | 0.00 | 26.78 | -3.69 | 174.27 | -3.69 | 156.62 |
| 245 | 0.00 | 23.89 | -2.46 | 176.00 | -2.46 | 161.20 |
| 250 | 0.00 | 21.74 | -1.43 | 179.92 | -1.43 | 165.64 |
| 255 | 0.00 | 20.54 | -0.82 | 182.37 | -0.82 | 168.05 |
| 260 | 0.00 | 20.48 | -0.78 | 182.51 | -0.78 | 168.18 |
| 265 | 0.00 | 21.56 | -1.34 | 180.27 | -1.34 | 165.99 |
| 270 | 0.00 | 23.62 | -2.33 | 176.46 | -2.33 | 161.67 |
| 275 | 0.00 | 26.44 | -3.55 | 174.77 | -3.55 | 157.13 |
| 280 | 0.00 | 29.79 | -4.85 | 170.10 | -4.85 | 152.52 |
| 285 | 0.00 | 33.53 | -6.14 | 165.48 | -6.14 | 148.19 |
| 290 | 0.00 | 37.53 | -7.36 | 161.08 | -7.36 | 144.25 |
| 295 | 0.53 | 41.50 | -8.45 | 120.76 | -8.45 | 114.23 |
| 300 | 1.91 | 45.38 | -9.42 | 100.00 | -9.42 | 100.00 |
| 305 | 1.73 | 49.95 | -10.00 | 100.00 | -10.00 | 100.00 |
| 310 | 1.82 | 54.50 | -10.00 | 100.00 | -10.00 | 100.00 |
| 315 | 1.04 | 59.28 | -10.00 | 100.00 | -10.00 | 100.00 |
| 320 | 1.85 | 63.78 | -10.00 | 100.00 | -10.00 | 100.00 |
| 325 | 2.62 | 68.37 | -10.00 | 100.00 | -10.00 | 100.00 |
| 330 | 3.10 | 73.05 | -10.00 | 100.00 | -10.00 | 100.00 |
| 335 | 4.09 | 77.75 | -10.00 | 100.00 | -10.00 | 100.00 |
| 340 | 4.42 | 82.53 | -10.00 | 100.00 | -10.00 | 100.00 |
| 345 | 5.58 | 87.32 | -10.00 | 100.00 | -10.00 | 100.00 |
| 350 | 7.12 | 92.17 | -10.00 | 100.00 | -10.00 | 100.00 |
| 355 | 8.75 | 97.08 | -10.00 | 100.00 | -10.00 | 100.00 |

9. 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: March 28, 2012