

# Ka-Band Earth Station – Twentynine Palms, CA

## Frequency Coordination Report

### 28 GHz



Prepared on Behalf of  
O3b Networks USA, LLC

August 10, 2017



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## 1. Summary of Results

On behalf of O3b Networks, Comsearch performed a coordination notice for all existing and proposed terrestrial licenses within the coordination contours of their proposed experimental Ka-Band earth station in Twentynine Palms, California, which will transmit at 28 GHz<sup>1</sup>. Prior-notification letters were sent to the licensees and a copy of the notification data is provided in section four of this report. The earth station coordination was finalized on August 9, 2017.

No objections were received from any of the incumbent 28 GHz licensees. Our notification to the LMDS incumbents was performed under the assumption that the earth station would be operating under secondary status in relation to primary LMDS Block A operations. A contact at O3b Networks has been provided in case any concerns may arise in the future.

## 2. 28 GHz Common Carrier and LTTS Coordination

In accordance with FCC Rules and Regulations, the Ka-Band earth station in Twentynine Palms, California was prior-coordinated by Comsearch. A notification letter and datasheets for this earth station were sent to the following 28 GHz common carrier fixed microwave licensees on July 21, 2017. These licensees are authorized to operate temporary fixed operations from 27.5 to 29.5 GHz on a statewide or nationwide basis.

| Licensee           | Authorized Geographic Area |
|--------------------|----------------------------|
| Crosslink Networks | Statewide: California      |
| Frontier           | Continental US             |

A notification letter and datasheets for the Ka-Band earth station in Twentynine Palms, California were also sent to the following 28 GHz local television transmission licensee on July 21, 2017. This licensee is authorized to operate temporary fixed operations from 27.5 to 29.5 GHz on a nationwide basis.

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

No objections were received from the common carrier or local television transmission service incumbents.

<sup>1</sup> The proposed earth station will operate in the 27.6 – 28.35 GHz portion of the Ka-Band.

### 3. 28 GHz LMDS Coordination

A Notification letter was sent to the following 28 GHz LMDS licensees on July 21, 2017. The proposed earth station will operate on frequencies that overlap Block A of the LMDS service. The total frequency allocation for Block A of the LMDS spectrum appears below.

**Block A:** 27.500-28.350 GHz  
29.100-29.250 GHz  
31.075-31.225 GHz

| Licensee                                | Market              | Market Name     |
|-----------------------------------------|---------------------|-----------------|
| DISH Network                            | BTA402              | San Diego, CA   |
| Nextlink Wireless                       | BTA262 <sup>2</sup> | Los Angeles, CA |
| Nextlink Wireless <sup>3</sup>          | BTA402              | San Diego, CA   |
| TelePacific Communications <sup>4</sup> | BTA262              | Los Angeles, CA |
| T-Mobile                                | BTA262              | Los Angeles, CA |
| Verizon <sup>5</sup>                    | BTA262              | Los Angeles, CA |

No objections were received from the LMDS incumbents.

<sup>2</sup> The proposed earth station will be located inside BTA262. This market has been partitioned between Nextlink Wireless and T-Mobile.

<sup>3</sup> Nextlink Wireless is leasing spectrum from DISH Network in the San Diego, CA Basic Trading Area (BTA).

<sup>4</sup> TelePacific Communications is leasing spectrum from Nextlink Wireless in the Los Angeles, CA BTA.

<sup>5</sup> Verizon is leasing spectrum from Nextlink Wireless in the Los Angeles, CA BTA.



## **4. Earth Station Coordination Data**

This section presents the data pertinent to the proposed Ka-Band earth station in Twentynine Palms, California. This data was circulated to all incumbent licensees in the shared 28 GHz frequency ranges.

**COMSEARCH****Earth Station Data Sheet**

19700 Janelia Farm Boulevard, Ashburn, VA 20147  
 (703)726-5662 <http://www.comsearch.com>

Date: 07/21/2017  
 Job Number: <PCNJobCode>

**Administrative Information**

Status: TEMPORARY (Operation from 08/15/2017 to 09/15/2017)  
 Call Sign: <PCNCallSign>  
 Licensee Code: O3BNET  
 Licensee Name: O3b Networks USA, LLC.

**Site Information****TWENTYNINE PALMS, CA**

Venue Name  
 Latitude (NAD 83): 34° 14' 42.5" N  
 Longitude (NAD 83): 116° 3' 53.4" W  
 Climate Zone: A  
 Rain Zone: 4  
 Ground Elevation (AMSL): 573.02 m / 1880.0 ft

**Link Information**

Satellite Type: Medium Earth Orbit  
 Mode: TO - Transmit-Only  
 Modulation: Digital  
 Minimum Elevation Angle: 24.2°  
 Azimuth Range: 0.0° to 360°  
 Antenna Centerline (AGL): 3.66 m / 12.0 ft

**Antenna Information****Transmit - FCC32**

Manufacturer: AVL  
 Model: 85cm-O3B  
 Gain / Diameter: 46.0 dBi / 0.8 m  
 3-dB / 15-dB Beamwidth: 0.90° / 2.10°

Max Available RF Power (dBW/4 kHz): -34.6  
 (dBW/MHz): -10.6

Maximum EIRP (dBW/4 kHz): 11.4  
 (dBW/MHz): 35.4

Interference Objectives: Long Term: -151.0 dBW/4 kHz 20%  
 Short Term: -128.0 dBW/4 kHz 0.0025%

**Frequency Information****Transmit 28.0 GHz**

Emission / Frequency Range (MHz): 216MG7D / 27600.0 - 28350.0

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

**COMSEARCH****Earth Station Data Sheet**

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|                                    |                             |
|------------------------------------|-----------------------------|
| <b>Coordination Values</b>         | <b>TWENTYNINE PALMS, CA</b> |
| Licensee Name                      | O3b Networks USA, LLC.      |
| Latitude (NAD 83)                  | 34° 14' 42.5" N             |
| Longitude (NAD 83)                 | 116° 3' 53.4" W             |
| Ground Elevation (AMSL)            | 573.02 m / 1880.0 ft        |
| Antenna Centerline (AGL)           | 3.66 m / 12.0 ft            |
| Antenna Model                      | AVL 0.85m                   |
| Antenna Mode                       | Transmit 28.0 GHz           |
| Interference Objectives: Long Term | -151.0 dBW/4 kHz 20%        |
| Short Term                         | -128.0 dBW/4 kHz 0.0025%    |
| Max Available RF Power             | -34.6 (dBW/4 kHz)           |

| Azimuth (°) | Horizon<br>Elevation (°) | Antenna<br>Discrimination (°) | Transmit 28.0 GHz     |                               |
|-------------|--------------------------|-------------------------------|-----------------------|-------------------------------|
|             |                          |                               | Horizon<br>Gain (dBi) | Coordination<br>Distance (km) |
| 0           | 0.00                     | 76.57                         | -10.00                | 100.00                        |
| 5           | 0.00                     | 72.24                         | -10.00                | 100.00                        |
| 10          | 0.00                     | 67.96                         | -10.00                | 100.00                        |
| 15          | 0.00                     | 63.72                         | -10.00                | 100.00                        |
| 20          | 0.00                     | 59.54                         | -10.00                | 100.00                        |
| 25          | 0.00                     | 55.44                         | -10.00                | 100.00                        |
| 30          | 0.00                     | 51.45                         | -10.00                | 100.00                        |
| 35          | 0.00                     | 47.59                         | -10.00                | 100.00                        |
| 40          | 0.00                     | 43.91                         | -10.00                | 100.00                        |
| 45          | 0.00                     | 40.44                         | -10.00                | 100.00                        |
| 50          | 0.00                     | 37.26                         | -10.00                | 100.00                        |
| 55          | 0.00                     | 34.45                         | -10.00                | 100.00                        |
| 60          | 0.00                     | 32.10                         | -10.00                | 100.00                        |
| 65          | 0.00                     | 30.33                         | -10.00                | 100.00                        |
| 70          | 0.00                     | 29.24                         | -10.00                | 100.00                        |
| 75          | 0.00                     | 28.91                         | -9.16                 | 100.00                        |
| 80          | 0.00                     | 29.36                         | -8.04                 | 100.00                        |
| 85          | 0.00                     | 30.56                         | -6.81                 | 100.00                        |
| 90          | 0.00                     | 32.43                         | -5.57                 | 100.00                        |
| 95          | 0.00                     | 34.86                         | -4.18                 | 100.00                        |
| 100         | 0.00                     | 37.73                         | -3.28                 | 100.00                        |
| 105         | 0.00                     | 40.96                         | -2.21                 | 100.00                        |
| 110         | 0.00                     | 44.46                         | -1.47                 | 100.00                        |
| 115         | 0.00                     | 48.18                         | -1.78                 | 100.00                        |
| 120         | 0.00                     | 52.06                         | -2.21                 | 100.00                        |
| 125         | 0.00                     | 56.07                         | -2.92                 | 100.00                        |
| 130         | 0.00                     | 60.18                         | -3.91                 | 100.00                        |
| 135         | 0.00                     | 64.37                         | -4.87                 | 100.00                        |
| 140         | 0.00                     | 68.62                         | -6.03                 | 100.00                        |
| 145         | 0.00                     | 72.91                         | -7.30                 | 100.00                        |
| 150         | 0.00                     | 77.24                         | -8.15                 | 100.00                        |
| 155         | 0.00                     | 81.59                         | -8.87                 | 100.00                        |
| 160         | 0.00                     | 85.96                         | -9.46                 | 100.00                        |
| 165         | 0.00                     | 90.34                         | -9.92                 | 100.00                        |
| 170         | 0.00                     | 94.71                         | -10.00                | 100.00                        |
| 175         | 0.00                     | 99.08                         | -10.00                | 100.00                        |
| 180         | 0.00                     | 103.43                        | -10.00                | 100.00                        |
| 185         | 0.00                     | 107.76                        | -10.00                | 100.00                        |

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|                                    |                             |
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| Antenna Centerline (AGL)           | 3.66 m / 12.0 ft            |
| Antenna Model                      | AVL 0.85m                   |
| Antenna Mode                       | Transmit 28.0 GHz           |
| Interference Objectives: Long Term | -151.0 dBW/4 kHz 20%        |
| Short Term                         | -128.0 dBW/4 kHz 0.0025%    |
| Max Available RF Power             | -34.6 (dBW/4 kHz)           |

| Azimuth (°) | Horizon<br>Elevation (°) | Antenna<br>Discrimination (°) | Transmit 28.0 GHz     |                               |
|-------------|--------------------------|-------------------------------|-----------------------|-------------------------------|
|             |                          |                               | Horizon<br>Gain (dBi) | Coordination<br>Distance (km) |
| 190         | 0.00                     | 112.04                        | -10.00                | 100.00                        |
| 195         | 0.00                     | 116.28                        | -9.92                 | 100.00                        |
| 200         | 0.00                     | 120.46                        | -9.46                 | 100.00                        |
| 205         | 0.00                     | 124.56                        | -8.81                 | 100.00                        |
| 210         | 0.00                     | 128.55                        | -8.07                 | 100.00                        |
| 215         | 0.00                     | 132.41                        | -7.20                 | 100.00                        |
| 220         | 0.00                     | 136.09                        | -6.18                 | 100.00                        |
| 225         | 0.00                     | 139.56                        | -5.01                 | 100.00                        |
| 230         | 0.00                     | 142.74                        | -3.83                 | 100.00                        |
| 235         | 0.00                     | 145.55                        | -2.75                 | 100.00                        |
| 240         | 0.00                     | 147.90                        | -1.96                 | 100.00                        |
| 245         | 0.00                     | 149.67                        | -1.54                 | 100.00                        |
| 250         | 0.00                     | 150.76                        | -1.63                 | 100.00                        |
| 255         | 0.00                     | 151.09                        | -2.23                 | 100.00                        |
| 260         | 0.00                     | 150.64                        | -3.20                 | 100.00                        |
| 265         | 0.00                     | 149.44                        | -4.36                 | 100.00                        |
| 270         | 0.00                     | 147.57                        | -5.58                 | 100.00                        |
| 275         | 0.00                     | 145.14                        | -6.79                 | 100.00                        |
| 280         | 0.00                     | 142.27                        | -7.94                 | 100.00                        |
| 285         | 0.00                     | 139.04                        | -9.01                 | 100.00                        |
| 290         | 0.00                     | 135.54                        | -10.00                | 100.00                        |
| 295         | 0.00                     | 131.82                        | -10.00                | 100.00                        |
| 300         | 0.00                     | 127.94                        | -10.00                | 100.00                        |
| 305         | 0.00                     | 123.93                        | -10.00                | 100.00                        |
| 310         | 0.00                     | 119.82                        | -10.00                | 100.00                        |
| 315         | 0.00                     | 115.63                        | -10.00                | 100.00                        |
| 320         | 0.00                     | 111.38                        | -10.00                | 100.00                        |
| 325         | 0.00                     | 107.09                        | -10.00                | 100.00                        |
| 330         | 0.00                     | 102.76                        | -10.00                | 100.00                        |
| 335         | 0.00                     | 98.41                         | -10.00                | 100.00                        |
| 340         | 0.00                     | 94.04                         | -10.00                | 100.00                        |
| 345         | 0.00                     | 89.66                         | -10.00                | 100.00                        |
| 350         | 0.00                     | 85.29                         | -10.00                | 100.00                        |
| 355         | 0.00                     | 80.92                         | -10.00                | 100.00                        |





## **5. Contact Information**

For questions or information regarding the 28 GHz 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:          | <a href="mailto:jlynch@comsearch.com">jlynch@comsearch.com</a> |
| Web site:       | <a href="http://www.comsearch.com">www.comsearch.com</a>       |