

Ka-Band Earth Station – Fort Bragg, NC

Frequency Coordination Report

28 GHz



Prepared on Behalf of
O3b Networks USA, LLC

October 18, 2016



COMSEARCH
A CommScope Company

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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 Fort Bragg, North Carolina, which will transmit at 28 GHz¹. 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 October 17, 2016.

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 on a non-interference basis 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 LTTTS Coordination

In accordance with FCC Rules and Regulations, the Ka-Band earth station in Fort Bragg, North Carolina 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 licensee on September 30, 2016. This licensee is authorized to operate temporary fixed operations from 27.5 to 29.5 GHz on a statewide or nationwide basis.

Licensee	Authorized Geographic Area
Frontier	Continental US

A notification letter and datasheet for the Ka-Band earth station in Fort Bragg, North Carolina were also sent to the following 28 GHz local television transmission licensee on September 30, 2016. 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.

¹ 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 September 30, 2016. 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
Nextlink / XO	BTA074	Charlotte-Gastonia, NC
Verizon ²	BTA074	Charlotte-Gastonia, NC
Straight Path Spectrum	BTA174	Greensboro-Winston-Salem-High Point, NC
Horry Telephone Cooperative	BTA312	Myrtle Beach, SC
Nextlink / XO	BTA368	Raleigh-Durham, NC
Verizon ³	BTA368	Raleigh-Durham, NC
Technautics	BTA478	Wilmington, NC

No objections were received from the LMDS incumbents.

² Verizon Wireless is leasing spectrum from XO Communications in the Charlotte—Gastonia, NC Basic Trading Area (BTA).

³ Verizon Wireless is leasing spectrum from XO Communications in the Raleigh—Durham, NC BTA.



4. Earth Station Coordination Data

This section presents the data pertinent to the proposed Ka-Band earth station in Fort Bragg, North Carolina. 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: 09/29/2016
 Job Number: <PCNJobCode>

Administrative Information

Status ENGINEER PROPOSAL
 Call Sign <PCNCallSign>
 Licensee Code O3BNET
 Licensee Name O3b Networks USA, LLC.

Site Information FORT BRAGG, NC

Venue Name
 Latitude (NAD 83) 35° 9' 48.4" N
 Longitude (NAD 83) 79° 0' 14.3" W
 Climate Zone A
 Rain Zone 1
 Ground Elevation (AMSL) 78.16 m / 256.4 ft

Link Information

Satellite Type Medium Earth Orbit
 Mode TO - Transmit-Only
 Modulation Digital
 Minimum Elevation Angle 10.0°
 Azimuth Range 0.0° to 360°
 Antenna Centerline (AGL) 2.74 m / 9.0 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

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Coordination Values**FORT BRAGG, NC**

Licensee Name O3b Networks USA, LLC.
 Latitude (NAD 83) 35° 9' 48.4" N
 Longitude (NAD 83) 79° 0' 14.3" W
 Ground Elevation (AMSL) 78.16 m / 256.4 ft
 Antenna Centerline (AGL) 2.74 m / 9.0 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 Elevation (°)	Antenna Discrimination (°)	Transmit 28.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
0	0.00	96.39	-10.00	100.00
5	0.00	91.39	-10.00	100.00
10	0.00	86.39	-10.00	100.00
15	0.00	81.39	-10.00	100.00
20	0.00	76.39	-10.00	100.00
25	0.00	71.39	-10.00	100.00
30	0.00	66.39	-10.00	100.00
35	0.00	61.39	-10.00	100.00
40	0.00	56.39	-10.00	100.00
45	0.00	51.39	-10.00	100.00
50	0.00	46.39	-10.00	100.00
55	0.00	41.39	-10.00	100.00
60	0.00	36.39	-9.25	100.00
65	0.00	31.39	-8.00	100.00
70	0.00	26.39	-6.61	100.00
75	0.00	21.39	-5.04	100.00
80	0.00	16.39	-3.23	100.00
85	0.00	11.39	-1.15	100.00
90	0.00	6.39	1.26	100.00
95	0.00	1.41	4.03	100.00
100	0.00	3.62	6.44	100.00
105	0.00	8.62	6.85	100.00
110	0.00	13.62	5.35	100.00
115	0.00	18.61	2.76	100.00
120	0.00	23.61	0.23	100.00
125	0.00	28.61	-1.77	100.00
130	0.00	33.61	-3.44	100.00
135	0.00	38.61	-4.85	100.00
140	0.00	43.61	-6.03	100.00
145	0.00	48.61	-7.00	100.00
150	0.00	53.61	-7.83	100.00
155	0.00	58.61	-8.52	100.00
160	0.00	63.61	-9.11	100.00
165	0.00	68.61	-9.60	100.00
170	0.00	73.61	-9.93	100.00
175	0.00	78.61	-10.00	100.00
180	0.00	83.61	-10.00	100.00
185	0.00	88.61	-9.89	100.00

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 Ground Elevation (AMSL) 78.16 m / 256.4 ft
 Antenna Centerline (AGL) 2.74 m / 9.0 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 Elevation (°)	Antenna Discrimination (°)	Transmit 28.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	93.61	-9.57	100.00
195	0.00	98.61	-9.12	100.00
200	0.00	103.61	-8.55	100.00
205	0.00	108.61	-7.83	100.00
210	0.00	113.61	-6.98	100.00
215	0.00	118.61	-6.01	100.00
220	0.00	123.61	-4.82	100.00
225	0.00	128.61	-3.20	100.00
230	0.00	133.61	-1.50	100.00
235	0.00	138.61	0.54	100.00
240	0.00	143.61	3.12	100.00
245	0.00	148.61	6.13	100.00
250	0.00	153.61	8.25	100.00
255	0.00	158.61	7.43	100.00
260	0.00	163.61	4.70	100.00
265	0.00	168.61	1.73	100.00
270	0.00	173.61	-0.87	100.00
275	0.00	178.59	-3.07	100.00
280	0.00	176.38	-4.93	100.00
285	0.00	171.38	-6.54	100.00
290	0.00	166.38	-7.96	100.00
295	0.00	161.39	-9.21	100.00
300	0.00	156.39	-10.00	100.00
305	0.00	151.39	-10.00	100.00
310	0.00	146.39	-10.00	100.00
315	0.00	141.39	-10.00	100.00
320	0.00	136.39	-10.00	100.00
325	0.00	131.39	-10.00	100.00
330	0.00	126.39	-10.00	100.00
335	0.00	121.39	-10.00	100.00
340	0.00	116.39	-10.00	100.00
345	0.00	111.39	-10.00	100.00
350	0.00	106.39	-10.00	100.00
355	0.00	101.39	-10.00	100.00

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Satellite Type Medium Earth Orbit
 Mode TO - Transmit-Only
 Modulation Digital
 Minimum Elevation Angle 10.0°
 Azimuth Range 0.0° to 360°
 Antenna Centerline (AGL) 2.74 m / 9.0 ft

Antenna Information**Transmit - FCC32**

Manufacturer AVL
 Model 2.4M-03B
 Gain / Diameter 54.7 dBi / 2.4 m
 3-dB / 15-dB Beamwidth 0.14° / 0.32°

Max Available RF Power (dBW/4 kHz) -31.5
 (dBW/MHz) -7.5

Maximum EIRP (dBW/4 kHz) 23.2
 (dBW/MHz) 47.2

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
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			Horizon Gain (dBi)	Coordination Distance (km)
0	0.00	96.39	-10.00	100.00
5	0.00	91.39	-10.00	100.00
10	0.00	86.39	-10.00	100.00
15	0.00	81.39	-10.00	100.00
20	0.00	76.39	-10.00	100.00
25	0.00	71.39	-10.00	100.00
30	0.00	66.39	-10.00	100.00
35	0.00	61.39	-10.00	100.00
40	0.00	56.39	-10.00	100.00
45	0.00	51.39	-10.00	100.00
50	0.00	46.39	-10.00	100.00
55	0.00	41.39	-10.00	100.00
60	0.00	36.39	-9.25	100.00
65	0.00	31.39	-8.00	100.00
70	0.00	26.39	-6.61	100.00
75	0.00	21.39	-5.04	100.00
80	0.00	16.39	-3.23	100.00
85	0.00	11.39	-1.15	100.00
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95	0.00	1.41	4.03	100.00
100	0.00	3.62	6.44	100.00
105	0.00	8.62	6.85	100.00
110	0.00	13.62	5.35	100.00
115	0.00	18.61	2.76	100.00
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125	0.00	28.61	-1.77	100.00
130	0.00	33.61	-3.44	100.00
135	0.00	38.61	-4.85	100.00
140	0.00	43.61	-6.03	100.00
145	0.00	48.61	-7.00	100.00
150	0.00	53.61	-7.83	100.00
155	0.00	58.61	-8.52	100.00
160	0.00	63.61	-9.11	100.00
165	0.00	68.61	-9.60	100.00
170	0.00	73.61	-9.93	100.00
175	0.00	78.61	-10.00	100.00
180	0.00	83.61	-10.00	100.00
185	0.00	88.61	-9.89	100.00

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			Horizon Gain (dBi)	Coordination Distance (km)
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220	0.00	123.61	-4.82	100.00
225	0.00	128.61	-3.20	100.00
230	0.00	133.61	-1.50	100.00
235	0.00	138.61	0.54	100.00
240	0.00	143.61	3.12	100.00
245	0.00	148.61	6.13	100.00
250	0.00	153.61	8.25	100.00
255	0.00	158.61	7.43	100.00
260	0.00	163.61	4.70	100.00
265	0.00	168.61	1.73	100.00
270	0.00	173.61	-0.87	100.00
275	0.00	178.59	-3.07	100.00
280	0.00	176.38	-4.93	100.00
285	0.00	171.38	-6.54	100.00
290	0.00	166.38	-7.96	100.00
295	0.00	161.39	-9.21	100.00
300	0.00	156.39	-10.00	100.00
305	0.00	151.39	-10.00	100.00
310	0.00	146.39	-10.00	100.00
315	0.00	141.39	-10.00	100.00
320	0.00	136.39	-10.00	100.00
325	0.00	131.39	-10.00	100.00
330	0.00	126.39	-10.00	100.00
335	0.00	121.39	-10.00	100.00
340	0.00	116.39	-10.00	100.00
345	0.00	111.39	-10.00	100.00
350	0.00	106.39	-10.00	100.00
355	0.00	101.39	-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:	jlynch@comsearch.com
Web site:	www.comsearch.com