

# Ka-Band Earth Station – Bristow, VA

## Frequency Coordination Report

28 GHz



Prepared on Behalf of  
O3b Networks USA, LLC

May 28, 2013



**COMSEARCH**  
A CommScope Company



## **Table of Contents**

<b>1. Summary of Results</b>	<b>- 1 -</b>
<b>2. 28 GHz Common Carrier and LTTS Coordination</b>	<b>- 1 -</b>
<b>3. 28 GHz LMDS Coordination</b>	<b>- 2 -</b>
<b>4. Earth Station Coordination Data</b>	<b>- 3 -</b>
<b>5. Contact Information</b>	<b>- 7 -</b>

## 1. Summary of Results

On behalf of O3b Networks' proposed earth station transmitting at 28 GHz<sup>1</sup>, Comsearch performed a coordination notice for all existing and proposed terrestrial licenses within the coordination contours of the Ka-Band station in Bristow, VA. 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 May 22, 2013.

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 secondary basis to LMDS Block A operations and 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, a Ka-Band earth station in Bristow, VA 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 April 22, 2013. These licensees are 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	Continental US
Verizon	Statewide: VA, MD, and DC

A notification letter and datasheet for the Ka-Band earth station in Bristow, VA was also sent to the following 28 GHz local television transmission licensee on April 22, 2013. 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

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 – 29.1 GHz portion of the Ka-Band.

### 3. 28 GHz LMDS Coordination

Notification letters were sent to the following 28 GHz LMDS licensees and lessees on April 22, 2013. 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
Clearwire <sup>2</sup>	BTA029	Baltimore, MD
Nextlink Wireless / XO	BTA029	Baltimore, MD
Verizon	BTA116	Dover, DE
Nextlink Wireless / XO	BTA374	Richmond-Petersburg, VA
Verizon	BTA398	Salisbury, MD
Nextlink Wireless / XO	BTA461 <sup>3</sup>	Washington, DC

No objections were received from the LMDS incumbents.

<sup>2</sup> Clearwire is leasing LMDS spectrum from Nextlink Wireless / XO in the Baltimore, MD Basic Trading Area (BTA).

<sup>3</sup> The proposed Bristow, VA earth station will be located inside BTA461.



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

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

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

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

Date: 04/17/2013  
Job Number: <PCNJobCode>

**Administrative Information**

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

**Site Information****BRISTOW, VA**

Venue Name  
Latitude (NAD 83) 38° 47' 0.0" N  
Longitude (NAD 83) 77° 34' 25.8" W  
Climate Zone A  
Rain Zone 2  
Ground Elevation (AMSL) 86.56 m / 284.0 ft

**Link Information**

Satellite Type Medium Earth Orbit  
Mode TR - Transmit-Receive  
Modulation Digital  
Minimum Elevation Angle 7.0°  
Azimuth Range 122.2° to 239°  
Antenna Centerline (AGL) 2.74 m / 9.0 ft

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

Manufacturer		GD Satcom		GD Satcom	
Model		2.4 Meter		2.4 Meter	
Gain / Diameter		52.6 dBi / 2.4 m		55.8 dBi / 2.4 m	
3-dB / 15-dB Beamwidth		0.23° / 0.60°		0.14° / 0.32°	
Max Available RF Power	(dBW/4 kHz)			-14.0	
	(dBW/MHz)			10.0	
Maximum EIRP	(dBW/4 kHz)			41.8	
	(dBW/MHz)			65.8	
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%

**Frequency Information****Receive 18.0 GHz****Transmit 29.0 GHz**

Emission / Frequency Range (MHz)	1M00G7D - 216MG7D / 17852.0 - 18068.0	1M00G7D - 216MG7D / 27652.0 - 27868.0
	1M00G7D - 216MG7D / 18112.0 - 18328.0	1M00G7D - 216MG7D / 27912.0 - 28128.0
	1M00G7D - 216MG7D / 18372.0 - 18588.0	1M00G7D - 216MG7D / 28172.0 - 28388.0
	1M00G7D - 216MG7D / 18801.0 - 19017.0	1M00G7D - 216MG7D / 28601.0 - 28817.0
	1M00G7D - 216MG7D / 19055.0 - 19271.0	1M00G7D - 216MG7D / 28855.0 - 29071.0
Max Great Circle Coordination Distance	198.5 km / 123.3 mi	136.7 km / 84.9 mi
Precipitation Scatter Contour Radius	100.0 km / 62.1 mi	100.0 km / 62.1 mi

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

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

**Coordination Values****BRISTOW, VA**

Licensee Name	O3b Networks USA, LLC.		
Latitude (NAD 83)	38° 47' 0.0" N		
Longitude (NAD 83)	77° 34' 25.8" W		
Ground Elevation (AMSL)	86.56 m / 284.0 ft		
Antenna Centerline (AGL)	2.74 m / 9.0 ft		
Antenna Model	GD Satcom 2.4 Meter		
Antenna Mode	Receive 18.0 GHz		Transmit 29.0 GHz
Interference Objectives: Long Term	-156.0 dBW/MHz	20%	-151.0 dBW/4 kHz
Short Term	-146.0 dBW/MHz	0.01%	-128.0 dBW/4 kHz
Max Available RF Power			-14.0 (dBW/4 kHz)
			20%
			0.0025%

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 18.0 GHz		Transmit 29.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
0	0.00	97.86	-10.00	100.90	-10.00	100.00
5	0.00	92.86	-10.00	100.00	-10.00	100.00
10	0.00	87.86	-10.00	100.00	-10.00	100.00
15	0.00	82.86	-10.00	100.00	-10.00	100.00
20	0.00	77.86	-10.00	100.00	-10.00	100.00
25	0.00	72.86	-10.00	102.20	-10.00	100.00
30	0.00	67.86	-10.00	103.10	-10.00	100.00
35	0.00	62.86	-10.00	108.30	-10.00	100.00
40	0.00	57.87	-10.00	111.90	-10.00	100.00
45	0.00	52.87	-10.00	107.60	-10.00	100.00
50	0.00	47.87	-10.00	112.00	-10.00	100.00
55	0.00	42.87	-10.00	116.00	-10.00	100.00
60	0.00	37.87	-8.98	138.00	-8.98	100.00
65	0.00	32.87	-7.69	142.70	-7.69	102.20
70	0.00	27.88	-6.23	147.10	-6.23	105.80
75	0.00	22.88	-4.54	152.30	-4.54	109.80
80	0.00	17.89	-2.58	159.20	-2.58	114.50
85	0.00	12.90	-0.16	153.40	-0.16	109.50
90	0.00	7.92	2.89	139.80	2.89	100.00
95	0.00	3.02	6.69	147.40	6.69	100.50
100	0.00	2.34	10.98	158.20	10.98	106.50
105	0.00	7.20	11.99	185.10	11.99	124.70
110	0.00	12.18	7.90	144.30	7.89	100.00
115	0.00	17.17	4.32	127.60	4.33	100.00
120	0.00	22.16	1.61	118.50	1.61	100.00
125	0.00	27.16	-0.49	110.90	-0.49	100.00
130	0.00	32.15	-2.17	102.30	-2.17	100.00
135	0.00	37.15	-3.58	100.00	-3.58	100.00
140	0.00	42.15	-4.79	100.00	-4.79	100.00
145	0.00	47.15	-5.83	100.00	-5.83	100.00
150	0.00	52.15	-6.84	104.50	-6.84	100.00
155	0.00	57.14	-7.55	103.10	-7.55	100.00
160	0.00	62.14	-8.18	110.70	-8.18	100.00
165	0.00	67.14	-8.62	110.30	-8.62	100.00
170	0.00	72.14	-8.94	110.00	-8.94	100.00
175	0.00	77.14	-9.13	109.10	-9.13	100.00
180	0.00	82.14	-9.22	114.60	-9.22	100.00
185	0.00	87.14	-9.11	106.60	-9.11	100.00

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

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

**Coordination Values****BRISTOW, VA**

Licensee Name	O3b Networks USA, LLC.				
Latitude (NAD 83)	38° 47' 0.0" N				
Longitude (NAD 83)	77° 34' 25.8" W				
Ground Elevation (AMSL)	86.56 m / 284.0 ft				
Antenna Centerline (AGL)	2.74 m / 9.0 ft				
Antenna Model	GD Satcom 2.4 Meter				
Antenna Mode	Receive 18.0 GHz			Transmit 29.0 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				-14.0 (dBW/4 kHz)	

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 18.0 GHz		Transmit 29.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	92.14	-8.93	107.10	-8.92	100.00
195	0.00	97.14	-8.70	129.70	-8.70	100.00
200	0.00	102.14	-8.36	130.90	-8.26	100.00
205	0.00	107.14	-7.77	142.50	-7.77	102.00
210	0.00	112.14	-7.01	143.00	-7.01	102.30
215	0.00	117.14	-6.15	139.70	-6.15	100.00
220	0.00	122.13	-5.13	138.80	-5.13	100.00
225	0.00	127.13	-3.95	142.30	-3.95	101.00
230	0.00	132.13	-2.55	148.90	-2.55	106.60
235	0.00	137.13	-0.84	147.30	-0.84	104.50
240	0.00	142.13	1.29	144.40	1.29	101.30
245	0.00	147.13	3.94	152.30	3.94	106.80
250	0.00	152.12	7.53	166.60	7.53	116.20
255	0.00	157.12	10.91	198.50	10.91	136.70
260	0.00	162.11	10.18	175.90	10.18	122.30
265	0.00	167.10	6.38	158.70	6.38	110.30
270	0.00	172.08	2.76	143.10	2.76	100.00
275	0.00	176.98	-0.17	133.50	-0.17	100.00
280	0.00	177.66	-2.56	128.90	-2.56	100.00
285	0.00	172.80	-4.52	113.50	-4.52	100.00
290	0.00	167.82	-6.22	112.80	-6.22	100.00
295	0.00	162.83	-7.69	109.00	-7.69	100.00
300	0.00	157.84	-8.98	100.00	-7.95	100.00
305	0.00	152.85	-10.00	100.00	-9.24	100.00
310	0.00	147.85	-10.00	100.00	-10.00	100.00
315	0.00	142.85	-10.00	100.00	-10.00	100.00
320	0.00	137.85	-10.00	100.00	-10.00	100.00
325	0.00	132.85	-10.00	100.00	-10.00	100.00
330	0.00	127.85	-10.00	100.00	-10.00	100.00
335	0.00	122.86	-10.00	100.00	-10.00	100.00
340	0.00	117.86	-10.00	100.00	-10.00	100.00
345	0.00	112.86	-10.00	100.00	-10.00	100.00
350	0.00	107.86	-10.00	100.00	-10.00	100.00
355	0.00	102.86	-10.00	100.00	-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](mailto:jlynch@comsearch.com)  
Web site: [www.comsearch.com](http://www.comsearch.com)