O3b Limited
900 17th Street NW
Suite 300
Washington DC 20006

www.o3bnetworks.com

October 23, 2015

VIA ELECTRONIC FILING

Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, SW
Room TW-A325
Washington, D.C. 20554

Attn: Satellite Division, International Bureau

Re: Update to Waiver Request for up to 30 Foreign Flagged Ships
File No. SES-STA-20151021-00760

Dear Ms. Dortch:

On October 21, 2015, O3b Limited ("O3b") submitted a request for a waiver to provide commercial service, using Ka-band maritime earth stations, on up to thirty additional foreign-flagged ships in U.S. waters.[1]

Please find attached updated information related to O3b's coordination with LMDS operators along the ships' routes, as described below.

- The outstanding Comsearch reports noted in O3b's waiver application. The reports indicate that coordination has been completed pursuant to 47 C.F.R. §25.203(c), and no objections were received from any of the incumbent licensees.

Please direct any questions to the undersigned.

Sincerely,

/s/ Suzanne Malloy
Suzanne Malloy
Vice-President, Regulatory Affairs
O3b Limited
Suzanne.malloy@o3bnetworks.com
202-813-4026

[1] O3b's 30-Ship Waiver Request, FCC File No. SES-STA-20151021-00760 (filed October 21, 2015).

Ka-Band Earth Station – New York, NY

Frequency Coordination Report

28 GHz

Prepared on Behalf of
O3b Networks USA, LLC

October 23, 2015

COMSEARCH
A CommScope Company

Table of Contents

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 Ka-Band Earth Stations on Vessels (ESV) in New York, NY, which will transmit at 28 GHz[1]. 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 22, 2015.

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 ESV system 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, the Ka-Band ESV system in New York, NY was prior-coordinated by Comsearch. A notification letter and datasheets for this system were sent to the following 28 GHz common carrier fixed microwave licensee on August 13, 2015. This licensee is authorized to operate temporary fixed operations from 27.5 to 29.5 GHz on a nationwide basis.

Licensee	Authorized Geographic Area
Verizon	Continental US

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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 ESV system 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 August 13, 2015. 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
Sprint[2]	BTA346	Philadelphia, PA-Wilmington, DE-Trenton, NJ
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T-Mobile[5]	BTA184	Hartford, CT
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4. Earth Station Coordination Data

This section presents the data pertinent to the proposed Ka-Band ESV system in New York, NY. 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:	08/04/2015
Job Number:	<PCNJobCode>

Administrative Information

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

Site Information — NEW YORK, NY

Venue Name	
Latitude (NAD 83)	40° 46' 8.3" N
Longitude (NAD 83)	73° 59' 52.9" W
Climate Zone	B
Rain Zone	2
Ground Elevation (AMSL)	0.0 m / 0.0 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)	15.54 m / 51.0 ft

Antenna Information — Transmit - FCC32

Manufacturer		Orbit
Model		1.2 Meter
Gain / Diameter		48.0 dBi / 1.2 m
3-dB / 15-dB Beamwidth		0.60° / 1.40°
Max Available RF Power	(dBW/4 kHz)	-17.1
	(dBW/MHz)	6.9
Maximum EIRP	(dBW/4 kHz)	30.9
	(dBW/MHz)	54.9
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)	12M0G7D - 216MG7D / 27600.0 - 28350.0
Max Great Circle Coordination Distance	133.6 km / 83.0 mi
Precipitation Scatter Contour Radius	100.0 km / 62.1 mi

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Short Term	-128.0 dBW/4 kHz	0.0025%
Max Available RF Power	-17.1 (dBW/4 kHz)	

Transmit 28.0 GHz

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Horizon Gain (dBi)	Coordination Distance (km)
0	0.00	100.59	-10.00	100.00
5	0.00	95.60	-10.00	100.00
10	0.00	90.61	-10.00	100.00
15	0.00	85.62	-10.00	100.00
20	0.00	80.63	-10.00	100.00
25	0.00	75.63	-10.00	100.00
30	0.00	70.64	-10.00	100.00
35	0.00	65.65	-10.00	100.00
40	0.00	60.67	-10.00	100.00
45	0.00	55.68	-10.00	100.00
50	0.00	50.69	-10.00	100.00
55	0.00	45.71	-10.00	100.00
60	0.00	40.72	-9.97	100.00
65	0.00	35.75	-8.80	100.00
70	0.00	30.78	-7.50	100.00
75	0.00	25.82	-6.03	100.00
80	0.00	20.87	-4.36	100.00
85	0.00	15.96	-2.44	100.00
90	0.00	11.13	-0.19	100.00
95	0.00	6.54	2.41	100.00
100	0.00	3.42	5.15	110.00
105	0.00	5.53	7.06	127.80
110	0.00	9.97	6.68	133.60
115	0.00	14.77	4.39	131.00
120	0.00	19.67	1.67	126.00
125	0.00	24.61	-0.41	119.70
130	0.00	29.57	-2.11	114.20
135	0.00	34.53	-3.51	109.50
140	0.00	39.51	-4.70	105.30
145	0.00	44.49	-5.70	100.00
150	0.00	49.48	-6.54	100.00
155	0.00	54.46	-7.24	100.00
160	0.00	59.45	-7.80	100.00
165	0.00	64.44	-8.24	100.00
170	0.00	69.43	-8.55	100.00
175	0.00	74.42	-8.74	100.00
180	0.00	79.41	-8.80	100.00
185	0.00	84.40	-8.74	100.00

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Coordination Values	**NEW YORK, NY**
Licensee Name	O3b Networks USA, LLC.
Latitude (NAD 83)	40° 46' 8.3" N
Longitude (NAD 83)	73° 59' 52.9" W
Ground Elevation (AMSL)	0.0 m / 0.0 ft
Antenna Centerline (AGL)	15.54 m / 51.0 ft
Antenna Model	Orbit 1.2 Meter
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	-17.1 (dBW/4 kHz)

Transmit 28.0 GHz

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	89.39	-8.55	100.00
195	0.00	94.38	-8.24	100.00
200	0.00	99.37	-7.80	100.00
205	0.00	104.37	-7.24	100.00
210	0.00	109.36	-6.54	100.00
215	0.00	114.35	-5.70	100.00
220	0.00	119.33	-4.70	105.30
225	0.00	124.32	-3.51	109.50
230	0.00	129.31	-2.11	114.20
235	0.00	134.29	-0.32	116.00
240	0.00	139.28	1.85	108.00
245	0.00	144.25	4.59	100.00
250	0.00	149.22	7.20	100.00
255	0.00	154.19	7.72	101.90
260	0.00	159.13	5.61	100.00
265	0.00	164.04	2.60	100.00
270	0.00	168.87	0.00	100.00
275	0.00	173.46	-2.31	100.00
280	0.00	176.58	-4.26	100.00
285	0.00	174.47	-5.96	100.00
290	0.00	170.03	-7.44	100.00
295	0.00	165.23	-8.76	100.00
300	0.00	160.33	-9.93	100.00
305	0.00	155.39	-10.00	100.00
310	0.00	150.43	-10.00	100.00
315	0.00	145.47	-10.00	100.00
320	0.00	140.49	-10.00	100.00
325	0.00	135.51	-10.00	100.00
330	0.00	130.52	-10.00	100.00
335	0.00	125.54	-10.00	100.00
340	0.00	120.55	-10.00	100.00
345	0.00	115.56	-10.00	100.00
350	0.00	110.57	-10.00	100.00
355	0.00	105.58	-10.00	100.00

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

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Latitude (NAD 83)	40° 46' 8.3" N
Longitude (NAD 83)	73° 59' 52.9" W
Climate Zone	B
Rain Zone	2
Ground Elevation (AMSL)	0.0 m / 0.0 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)	15.54 m / 51.0 ft

Antenna Information — Transmit - FCC32

Manufacturer		Orbit
Model		2.2 Meter
Gain / Diameter		52.5 dBi / 2.2 m
3-dB / 15-dB Beamwidth		0.14° / 0.32°
Max Available RF Power	(dBW/4 kHz)	-22.1
	(dBW/MHz)	1.9
Maximum EIRP	(dBW/4 kHz)	30.4
	(dBW/MHz)	54.4
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)	12M0G7D - 216MG7D / 27600.0 - 28350.0
Max Great Circle Coordination Distance	133.6 km / 83.0 mi
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Transmit 28.0 GHz

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Horizon Gain (dBi)	Coordination Distance (km)
0	0.00	100.59	-10.00	100.00
5	0.00	95.60	-10.00	100.00
10	0.00	90.61	-10.00	100.00
15	0.00	85.62	-10.00	100.00
20	0.00	80.63	-10.00	100.00
25	0.00	75.63	-10.00	100.00
30	0.00	70.64	-10.00	100.00
35	0.00	65.65	-10.00	100.00
40	0.00	60.67	-10.00	100.00
45	0.00	55.68	-10.00	100.00
50	0.00	50.69	-10.00	100.00
55	0.00	45.71	-10.00	100.00
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175	0.00	74.42	-8.74	100.00
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350	0.00	110.57	-10.00	100.00
355	0.00	105.58	-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

Ka-Band Earth Station – Cape Liberty, NJ

Frequency Coordination Report

28 GHz

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Towerstream Corporation[3]	BTA321[4]	New York, NY
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T-Mobile[5]	BTA184	Hartford, CT
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Date:	08/04/2015
Job Number:	<PCNJobCode>

Administrative Information

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

Site Information — CAPE LIBERTY, NJ

Venue Name	
Latitude (NAD 83)	40° 39' 53.8" N
Longitude (NAD 83)	74° 4' 15.9" W
Climate Zone	B
Rain Zone	2
Ground Elevation (AMSL)	0.0 m / 0.0 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)	15.54 m / 51.0 ft

Antenna Information — Transmit - FCC32

Manufacturer		Orbit
Model		1.2 Meter
Gain / Diameter		48.0 dBi / 1.2 m
3-dB / 15-dB Beamwidth		0.60° / 1.40°
Max Available RF Power	(dBW/4 kHz)	-17.1
	(dBW/MHz)	6.9
Maximum EIRP	(dBW/4 kHz)	30.9
	(dBW/MHz)	54.9
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)	12M0G7D - 216MG7D / 27600.0 - 28350.0
Max Great Circle Coordination Distance	137.1 km / 85.2 mi
Precipitation Scatter Contour Radius	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	**CAPE LIBERTY, NJ**	
Licensee Name	O3b Networks USA, LLC.	
Latitude (NAD 83)	40° 39' 53.8" N	
Longitude (NAD 83)	74° 4' 15.9" W	
Ground Elevation (AMSL)	0.0 m / 0.0 ft	
Antenna Centerline (AGL)	15.54 m / 51.0 ft	
Antenna Model	Orbit 1.2 meter	
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	-17.1 (dBW/4 kHz)	

Transmit 28.0 GHz

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Horizon Gain (dBi)	Coordination Distance (km)
0	0.00	100.52	-10.00	100.00
5	0.00	95.53	-10.00	100.00
10	0.00	90.54	-10.00	100.00
15	0.00	85.55	-10.00	100.00
20	0.00	80.55	-10.00	100.00
25	0.00	75.56	-10.00	100.00
30	0.00	70.57	-10.00	100.00
35	0.00	65.58	-10.00	100.00
40	0.00	60.59	-10.00	100.00
45	0.00	55.60	-10.00	100.00
50	0.00	50.62	-10.00	100.00
55	0.00	45.63	-10.00	100.00
60	0.00	40.65	-9.96	100.00
65	0.00	35.67	-8.79	100.00
70	0.00	30.70	-7.50	100.00
75	0.00	25.74	-6.04	100.00
80	0.00	20.79	-4.39	106.40
85	0.00	15.88	-2.49	113.00
90	0.00	11.05	-0.29	120.10
95	0.00	6.46	2.35	122.40
100	0.00	3.37	5.06	130.50
105	0.00	5.57	6.73	137.10
110	0.00	10.03	6.72	130.10
115	0.00	14.83	4.37	129.00
120	0.00	19.73	1.64	125.90
125	0.00	24.67	-0.44	119.60
130	0.00	29.63	-2.13	114.10
135	0.00	34.60	-3.54	109.40
140	0.00	39.58	-4.73	105.20
145	0.00	44.56	-5.73	100.00
150	0.00	49.54	-6.57	100.00
155	0.00	54.53	-7.27	100.00
160	0.00	59.52	-7.83	100.00
165	0.00	64.51	-8.27	100.00
170	0.00	69.50	-8.53	100.00
175	0.00	74.49	-8.77	100.00
180	0.00	79.48	-8.83	100.00
185	0.00	84.47	-8.77	100.00

COMSEARCH

Earth Station Data Sheet

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

Coordination Values	**CAPE LIBERTY, NJ**	
Licensee Name	O3b Networks USA, LLC.	
Latitude (NAD 83)	40° 39' 53.8" N	
Longitude (NAD 83)	74° 4' 15.9" W	
Ground Elevation (AMSL)	0.0 m / 0.0 ft	
Antenna Centerline (AGL)	15.54 m / 51.0 ft	
Antenna Model	Orbit 1.2 meter	
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	-17.1 (dBW/4 kHz)	

Transmit 28.0 GHz

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	89.46	-8.53	100.00
195	0.00	94.45	-8.09	100.00
200	0.00	99.45	-7.55	100.00
205	0.00	104.44	-7.04	100.00
210	0.00	109.43	-6.34	100.00
215	0.00	114.42	-5.59	100.00
220	0.00	119.41	-4.63	100.00
225	0.00	124.40	-3.54	109.40
230	0.00	129.38	-2.14	114.10
235	0.00	134.37	-0.44	119.60
240	0.00	139.35	1.64	125.90
245	0.00	144.33	4.19	133.10
250	0.00	149.30	6.34	136.00
255	0.00	154.26	6.60	136.70
260	0.00	159.21	4.74	134.60
265	0.00	164.12	2.13	127.40
270	0.00	168.95	-0.36	119.90
275	0.00	173.54	-2.55	112.80
280	0.00	176.63	-4.44	106.20
285	0.00	174.43	-6.09	100.00
290	0.00	169.97	-7.53	100.00
295	0.00	165.17	-8.82	100.00
300	0.00	160.27	-9.98	100.00
305	0.00	155.33	-10.00	100.00
310	0.00	150.37	-10.00	100.00
315	0.00	145.40	-10.00	100.00
320	0.00	140.42	-10.00	100.00
325	0.00	135.44	-10.00	100.00
330	0.00	130.46	-10.00	100.00
335	0.00	125.47	-10.00	100.00
340	0.00	120.48	-10.00	100.00
345	0.00	115.49	-10.00	100.00
350	0.00	110.50	-10.00	100.00
355	0.00	105.51	-10.00	100.00

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Earth Station Data Sheet

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

Date:	08/04/2015
Job Number:	<PCNJobCode>

Administrative Information

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

Site Information — CAPE LIBERTY, NJ

Venue Name	
Latitude (NAD 83)	40° 39' 53.8" N
Longitude (NAD 83)	74° 4' 15.9" W
Climate Zone	B
Rain Zone	2
Ground Elevation (AMSL)	0.0 m / 0.0 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)	15.54 m / 51.0 ft

Antenna Information — Transmit - FCC32

Manufacturer		Orbit
Model		2.2 Meter
Gain / Diameter		52.5 dBi / 2.2 m
3-dB / 15-dB Beamwidth		0.14° / 0.32°
Max Available RF Power	(dBW/4 kHz)	-22.1
	(dBW/MHz)	1.9
Maximum EIRP	(dBW/4 kHz)	30.4
	(dBW/MHz)	54.4
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)	12M0G7D - 216MG7D / 27600.0 - 28350.0
Max Great Circle Coordination Distance	137.1 km / 85.2 mi
Precipitation Scatter Contour Radius	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	**CAPE LIBERTY, NJ**
Licensee Name	O3b Networks USA, LLC.
Latitude (NAD 83)	40° 39' 53.8" N
Longitude (NAD 83)	74° 4' 15.9" W
Ground Elevation (AMSL)	0.0 m / 0.0 ft
Antenna Centerline (AGL)	15.54 m / 51.0 ft
Antenna Model	Orbit 2.2 Meter
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	-22.1 (dBW/4 kHz)

Transmit 28.0 GHz

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Horizon Gain (dBi)	Coordination Distance (km)
0	0.00	100.52	-10.00	100.00
5	0.00	95.53	-10.00	100.00
10	0.00	90.54	-10.00	100.00
15	0.00	85.55	-10.00	100.00
20	0.00	80.55	-10.00	100.00
25	0.00	75.56	-10.00	100.00
30	0.00	70.57	-10.00	100.00
35	0.00	65.58	-10.00	100.00
40	0.00	60.59	-10.00	100.00
45	0.00	55.60	-10.00	100.00
50	0.00	50.62	-10.00	100.00
55	0.00	45.63	-10.00	100.00
60	0.00	40.65	-9.96	100.00
65	0.00	35.67	-8.79	100.00
70	0.00	30.70	-7.50	100.00
75	0.00	25.74	-6.04	100.00
80	0.00	20.79	-4.39	106.40
85	0.00	15.88	-2.49	113.00
90	0.00	11.05	-0.29	120.10
95	0.00	6.46	2.35	122.40
100	0.00	3.37	5.06	130.50
105	0.00	5.57	6.73	137.10
110	0.00	10.03	6.72	130.10
115	0.00	14.83	4.37	129.00
120	0.00	19.73	1.64	125.90
125	0.00	24.67	-0.44	119.60
130	0.00	29.63	-2.13	114.10
135	0.00	34.60	-3.54	109.40
140	0.00	39.58	-4.73	105.20
145	0.00	44.56	-5.73	100.00
150	0.00	49.54	-6.57	100.00
155	0.00	54.53	-7.27	100.00
160	0.00	59.52	-7.83	100.00
165	0.00	64.51	-8.27	100.00
170	0.00	69.50	-8.53	100.00
175	0.00	74.49	-8.77	100.00
180	0.00	79.48	-8.83	100.00
185	0.00	84.47	-8.77	100.00

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Earth Station Data Sheet

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

Coordination Values	**CAPE LIBERTY, NJ**	
Licensee Name	O3b Networks USA, LLC.	
Latitude (NAD 83)	40° 39' 53.8" N	
Longitude (NAD 83)	74° 4' 15.9" W	
Ground Elevation (AMSL)	0.0 m / 0.0 ft	
Antenna Centerline (AGL)	15.54 m / 51.0 ft	
Antenna Model	Orbit 2.2 Meter	
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	-22.1 (dBW/4 kHz)	

Transmit 28.0 GHz

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	89.46	-8.53	100.00
195	0.00	94.45	-8.09	100.00
200	0.00	99.45	-7.55	100.00
205	0.00	104.44	-7.04	100.00
210	0.00	109.43	-6.34	100.00
215	0.00	114.42	-5.59	100.00
220	0.00	119.41	-4.63	100.00
225	0.00	124.40	-3.54	109.40
230	0.00	129.38	-2.14	114.10
235	0.00	134.37	-0.44	119.60
240	0.00	139.35	1.64	125.90
245	0.00	144.33	4.19	133.10
250	0.00	149.30	6.34	136.00
255	0.00	154.26	6.60	136.70
260	0.00	159.21	4.74	134.60
265	0.00	164.12	2.13	127.40
270	0.00	168.95	-0.36	119.90
275	0.00	173.54	-2.55	112.80
280	0.00	176.63	-4.44	106.20
285	0.00	174.43	-6.09	100.00
290	0.00	169.97	-7.53	100.00
295	0.00	165.17	-8.82	100.00
300	0.00	160.27	-9.98	100.00
305	0.00	155.33	-10.00	100.00
310	0.00	150.37	-10.00	100.00
315	0.00	145.40	-10.00	100.00
320	0.00	140.42	-10.00	100.00
325	0.00	135.44	-10.00	100.00
330	0.00	130.46	-10.00	100.00
335	0.00	125.47	-10.00	100.00
340	0.00	120.48	-10.00	100.00
345	0.00	115.49	-10.00	100.00
350	0.00	110.50	-10.00	100.00
355	0.00	105.51	-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

Ka-Band Earth Station – Baltimore, MD

Frequency Coordination Report

28 GHz

Prepared on Behalf of
O3b Networks USA, LLC

October 23, 2015

COMSEARCH®
A CommScope Company

Table of Contents

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 Ka-Band Earth Stations on Vessels (ESV) in Baltimore, Maryland, which will transmit at 28 GHz[1]. 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 22, 2015.

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 ESV system 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, the Ka-Band ESV system in Baltimore, Maryland was prior-coordinated by Comsearch. A notification letter and datasheets for this system were sent to the following 28 GHz common carrier fixed microwave licensee on August 13, 2015. This licensee is authorized to operate temporary fixed operations from 27.5 to 29.5 GHz on a nationwide basis.

Licensee	Authorized Geographic Area
Verizon	Continental US

A notification letter and datasheets for the Ka-Band ESV system in Baltimore, Maryland were also sent to the following 28 GHz local television transmission licensee on August 13, 2015. 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 ESV system 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 August 13, 2015. 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
Sprint[2]	BTA346	Philadelphia, PA-Wilmington, DE-Trenton, NJ
Nextlink/XO	BTA029[3]	Baltimore, MD
Nextlink/XO	BTA346	Philadelphia, PA-Wilmington, DE-Trenton, NJ
T-Mobile[4]	BTA346	Philadelphia, PA-Wilmington, DE-Trenton, NJ
Nextlink/XO	BTA374	Richmond-Petersburg, VA
Nextlink/XO	BTA461	Washington, DC
Straight Path Spectrum	BTA324	Norfolk-Virginia Beach-Newport, VA

No objections were received from the LMDS incumbents.

[2] Sprint is leasing spectrum from Nextlink/XO in the Philadelphia-Wilmington-Trenton Basic Trading Area (BTA). After reviewing the proposed operations, Sprint provided consent to O3b Networks on October 21, 2015.

[3] The proposed ESV system will be located inside BTA029.

[4] T-Mobile has acquired spectrum from Nextlink/XO in the Philadelphia-Wilmington-Trenton BTA.

4. Earth Station Coordination Data

This section presents the data pertinent to the proposed Ka-Band ESV system in Baltimore, Maryland. 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:	08/03/2015
Job Number:	<PCNJobCode>

Administrative Information

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

Site Information — BALTIMORE, MD

Venue Name	
Latitude (NAD 83)	39° 15' 53.9" N
Longitude (NAD 83)	76° 35' 54.9" W
Climate Zone	B
Rain Zone	2
Ground Elevation (AMSL)	0.0 m / 0.0 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)	15.54 m / 51.0 ft

Antenna Information — Transmit - FCC32

Manufacturer		Orbit
Model		1.2 Meter
Gain / Diameter		48.0 dBi / 1.2 m
3-dB / 15-dB Beamwidth		0.60° / 1.40°
Max Available RF Power	(dBW/4 kHz)	-17.1
	(dBW/MHz)	6.9
Maximum EIRP	(dBW/4 kHz)	30.9
	(dBW/MHz)	54.9
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)	12M0G7D - 216MG7D / 27600.0 - 28350.0
Max Great Circle Coordination Distance	137.4 km / 85.4 mi
Precipitation Scatter Contour Radius	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	**BALTIMORE, MD**	
Licensee Name	O3b Networks USA, LLC.	
Latitude (NAD 83)	39° 15' 53.9" N	
Longitude (NAD 83)	76° 35' 54.9" W	
Ground Elevation (AMSL)	0.0 m / 0.0 ft	
Antenna Centerline (AGL)	15.54 m / 51.0 ft	
Antenna Model	Orbit 1.2 meter	
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	-17.1 (dBW/4 kHz)	

Transmit 28.0 GHz

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Horizon Gain (dBi)	Coordination Distance (km)
0	0.00	98.57	-10.00	100.00
5	0.00	93.58	-10.00	100.00
10	0.00	88.58	-10.00	100.00
15	0.00	83.58	-10.00	100.00
20	0.00	78.58	-10.00	100.00
25	0.00	73.58	-10.00	100.00
30	0.00	68.59	-10.00	100.00
35	0.00	63.59	-10.00	100.00
40	0.00	58.59	-10.00	100.00
45	0.00	53.60	-10.00	100.00
50	0.00	48.60	-10.00	100.00
55	0.00	43.60	-10.00	100.00
60	0.00	38.61	-9.76	100.00
65	0.00	33.61	-8.58	100.00
70	0.00	28.62	-7.26	100.00
75	0.00	23.63	-5.76	100.00
80	0.00	18.65	-4.09	107.50
85	0.00	13.67	-2.15	114.10
90	0.00	8.73	0.11	121.30
95	0.00	3.94	2.67	128.90
100	0.00	2.17	5.26	133.10
105	0.00	6.63	6.85	137.40
110	0.00	11.54	6.12	135.40
115	0.00	16.50	3.76	131.90
120	0.00	21.48	1.21	124.70
125	0.00	26.47	-0.84	118.40
130	0.00	31.46	-2.52	112.90
135	0.00	36.45	-3.92	108.10
140	0.00	41.45	-5.10	100.60
145	0.00	46.44	-6.10	100.00
150	0.00	51.44	-6.94	100.00
155	0.00	56.44	-7.59	100.00
160	0.00	61.44	-8.21	100.00
165	0.00	66.43	-8.65	100.00
170	0.00	71.43	-8.97	100.00
175	0.00	76.43	-9.07	100.00
180	0.00	81.43	-9.13	100.00
185	0.00	86.42	-9.07	100.00

COMSEARCH

Earth Station Data Sheet

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

Coordination Values	**BALTIMORE, MD**	
Licensee Name	O3b Networks USA, LLC.	
Latitude (NAD 83)	39° 15' 53.9" N	
Longitude (NAD 83)	76° 35' 54.9" W	
Ground Elevation (AMSL)	0.0 m / 0.0 ft	
Antenna Centerline (AGL)	15.54 m / 51.0 ft	
Antenna Model	Orbit 1.2 meter	
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	-17.1 (dBW/4 kHz)	

Transmit 28.0 GHz

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	91.42	-8.88	100.00
195	0.00	96.42	-8.57	100.00
200	0.00	101.42	-8.14	100.00
205	0.00	106.42	-7.57	100.00
210	0.00	111.41	-6.88	100.00
215	0.00	116.41	-6.10	100.00
220	0.00	121.41	-5.03	100.00
225	0.00	126.40	-3.92	108.10
230	0.00	131.40	-2.52	112.90
235	0.00	136.40	-0.72	104.30
240	0.00	141.39	1.35	113.50
245	0.00	146.39	3.99	113.00
250	0.00	151.38	6.40	121.90
255	0.00	156.37	7.03	128.60
260	0.00	161.35	5.41	115.70
265	0.00	166.33	2.70	111.60
270	0.00	171.27	0.11	100.00
275	0.00	176.06	-2.18	100.00
280	0.00	177.83	-4.13	100.00
285	0.00	173.37	-5.81	100.00
290	0.00	168.46	-7.29	100.00
295	0.00	163.50	-8.60	100.00
300	0.00	158.52	-9.79	100.00
305	0.00	153.53	-10.00	100.00
310	0.00	148.54	-10.00	100.00
315	0.00	143.55	-10.00	100.00
320	0.00	138.55	-10.00	100.00
325	0.00	133.56	-10.00	100.00
330	0.00	128.56	-10.00	100.00
335	0.00	123.56	-10.00	100.00
340	0.00	118.56	-10.00	100.00
345	0.00	113.57	-10.00	100.00
350	0.00	108.57	-10.00	100.00
355	0.00	103.57	-10.00	100.00

COMSEARCH

Earth Station Data Sheet

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

Date:	08/03/2015
Job Number:	<PCNJobCode>

Administrative Information

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

Site Information — BALTIMORE, MD

Venue Name	
Latitude (NAD 83)	39° 15' 53.9" N
Longitude (NAD 83)	76° 35' 54.9" W
Climate Zone	B
Rain Zone	2
Ground Elevation (AMSL)	0.0 m / 0.0 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)	15.54 m / 51.0 ft

Antenna Information — Transmit - FCC32

Manufacturer		Orbit
Model		2.2 Meter
Gain / Diameter		52.5 dBi / 2.2 m
3-dB / 15-dB Beamwidth		0.14° / 0.32°
Max Available RF Power	(dBW/4 kHz)	-22.1
	(dBW/MHz)	1.9
Maximum EIRP	(dBW/4 kHz)	30.4
	(dBW/MHz)	54.4
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)	12M0G7D - 216MG7D / 27600.0 - 28350.0
Max Great Circle Coordination Distance	137.4 km / 85.4 mi
Precipitation Scatter Contour Radius	100.0 km / 62.1 mi

COMSEARCH

Earth Station Data Sheet

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Coordination Values	**BALTIMORE, MD**
Licensee Name	O3b Networks USA, LLC.
Latitude (NAD 83)	39° 15' 53.9" N
Longitude (NAD 83)	76° 35' 54.9" W
Ground Elevation (AMSL)	0.0 m / 0.0 ft
Antenna Centerline (AGL)	15.54 m / 51.0 ft
Antenna Model	Orbit 2.2 Meter
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	-22.1 (dBW/4 kHz)

Transmit 28.0 GHz

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Horizon Gain (dBi)	Coordination Distance (km)
0	0.00	98.57	-10.00	100.00
5	0.00	93.58	-10.00	100.00
10	0.00	88.58	-10.00	100.00
15	0.00	83.58	-10.00	100.00
20	0.00	78.58	-10.00	100.00
25	0.00	73.58	-10.00	100.00
30	0.00	68.59	-10.00	100.00
35	0.00	63.59	-10.00	100.00
40	0.00	58.59	-10.00	100.00
45	0.00	53.60	-10.00	100.00
50	0.00	48.60	-10.00	100.00
55	0.00	43.60	-10.00	100.00
60	0.00	38.61	-9.76	100.00
65	0.00	33.61	-8.58	100.00
70	0.00	28.62	-7.26	100.00
75	0.00	23.63	-5.76	100.00
80	0.00	18.65	-4.09	107.50
85	0.00	13.67	-2.15	114.10
90	0.00	8.73	0.11	121.30
95	0.00	3.94	2.67	128.90
100	0.00	2.17	5.26	133.10
105	0.00	6.63	6.85	137.40
110	0.00	11.54	6.12	135.40
115	0.00	16.50	3.76	131.90
120	0.00	21.48	1.21	124.70
125	0.00	26.47	-0.84	118.40
130	0.00	31.46	-2.52	112.90
135	0.00	36.45	-3.92	108.10
140	0.00	41.45	-5.10	100.60
145	0.00	46.44	-6.10	100.00
150	0.00	51.44	-6.94	100.00
155	0.00	56.44	-7.59	100.00
160	0.00	61.44	-8.21	100.00
165	0.00	66.43	-8.65	100.00
170	0.00	71.43	-8.97	100.00
175	0.00	76.43	-9.07	100.00
180	0.00	81.43	-9.13	100.00
185	0.00	86.42	-9.07	100.00

COMSEARCH

Earth Station Data Sheet

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Coordination Values	**BALTIMORE, MD**
Licensee Name	O3b Networks USA, LLC.
Latitude (NAD 83)	39° 15' 53.9" N
Longitude (NAD 83)	76° 35' 54.9" W
Ground Elevation (AMSL)	0.0 m / 0.0 ft
Antenna Centerline (AGL)	15.54 m / 51.0 ft
Antenna Model	Orbit 2.2 Meter
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	-22.1 (dBW/4 kHz)

Transmit 28.0 GHz

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	91.42	-8.88	100.00
195	0.00	96.42	-8.57	100.00
200	0.00	101.42	-8.14	100.00
205	0.00	106.42	-7.57	100.00
210	0.00	111.41	-6.88	100.00
215	0.00	116.41	-6.10	100.00
220	0.00	121.41	-5.03	100.00
225	0.00	126.40	-3.92	108.10
230	0.00	131.40	-2.52	112.90
235	0.00	136.40	-0.72	104.30
240	0.00	141.39	1.35	113.50
245	0.00	146.39	3.99	113.00
250	0.00	151.38	6.40	121.90
255	0.00	156.37	7.03	128.60
260	0.00	161.35	5.41	115.70
265	0.00	166.33	2.70	111.60
270	0.00	171.27	0.11	100.00
275	0.00	176.06	-2.18	100.00
280	0.00	177.83	-4.13	100.00
285	0.00	173.37	-5.81	100.00
290	0.00	168.46	-7.29	100.00
295	0.00	163.50	-8.60	100.00
300	0.00	158.52	-9.79	100.00
305	0.00	153.53	-10.00	100.00
310	0.00	148.54	-10.00	100.00
315	0.00	143.55	-10.00	100.00
320	0.00	138.55	-10.00	100.00
325	0.00	133.56	-10.00	100.00
330	0.00	128.56	-10.00	100.00
335	0.00	123.56	-10.00	100.00
340	0.00	118.56	-10.00	100.00
345	0.00	113.57	-10.00	100.00
350	0.00	108.57	-10.00	100.00
355	0.00	103.57	-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
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