

# INTERFERENCE ANALYSIS REPORT

Prepared for  
**O3b Networks USA, LLC.**  
**ASHEVILLE, NC**  
**(0.85 Meter)**  
**Satellite Earth Station**

Prepared By:  
COMSEARCH  
19700 Janelia Farm Boulevard  
Ashburn, VA 20147  
July 29, 2014



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# 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 18 GHz common carrier microwave environment. Further, there will be no restrictions of its operation due to interference considerations.

## **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.

### 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 06/25/2014.

Company

ACSinc.Net, LLC

Buncombe County

Cherokee Broadband Enterprises

Conterra Ultra Broadband, LLC

New Cingular Wireless PCS LLC- WV/NC/SC

PTA-FLA, Inc.

Professional Network Consultants, Inc.

Quickrelay Wireless Communications

SC Educational Television Commission

Sprintcom, Inc

## **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.

# COMSEARCH

## Earth Station Data Sheet

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

Date: 07/29/2014  
Job Number: 140625COMSGE04

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### Administrative Information

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

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### Site Information ASHEVILLE, NC

Venue Name  
Latitude (NAD 83) 35° 38' 24.0" N  
Longitude (NAD 83) 82° 34' 30.0" W  
Climate Zone A  
Rain Zone 1  
Ground Elevation (AMSL) 639.94 m / 2099.5 ft

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### Link Information

Satellite Type Medium Earth Orbit  
Mode TR - Transmit-Receive  
Modulation Digital  
Minimum Elevation Angle 15.0°  
Azimuth Range 0.0° to 360°  
Antenna Centerline (AGL) 2.74 m / 9.0 ft

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### Antenna Information

#### Receive - FCC32

#### Transmit - FCC32

Manufacturer	AVL	AVL	
Model	2.4 Meter	2.4 Meter	
Gain / Diameter	42.6 dBi / 0.8 m	46.0 dBi / 0.8 m	
3-dB / 15-dB Beamwidth	1.30° / 3.20°	0.90° / 2.10°	
Max Available RF Power (dBW/4 kHz)		-11.8	
(dBW/MHz)		12.2	
Maximum EIRP (dBW/4 kHz)		34.2	
(dBW/MHz)		58.2	
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%

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### Frequency Information

#### Receive 18.0 GHz

#### Transmit 28.0 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
Max Great Circle Coordination Distance	158.8 km / 98.7 mi	124.7 km / 77.5 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  
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### Coordination Values

### ASHEVILLE, NC

Licensee Name O3b Networks USA, LLC.  
Latitude (NAD 83) 35° 38' 24.0" N  
Longitude (NAD 83) 82° 34' 30.0" W  
Ground Elevation (AMSL) 639.94 m / 2099.5 ft  
Antenna Centerline (AGL) 2.74 m / 9.0 ft  
Antenna Model AVL 0.85 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 -11.8 (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	6.41	94.29	-10.00	100.00	-10.00	100.00
5	6.78	89.35	-10.00	100.00	-10.00	100.00
10	7.72	84.44	-10.00	100.00	-10.00	100.00
15	9.24	79.58	-10.00	100.00	-10.00	100.00
20	10.70	74.78	-10.00	100.00	-10.00	100.00
25	12.34	70.08	-10.00	100.00	-10.00	100.00
30	12.56	65.31	-10.00	100.00	-10.00	100.00
35	11.10	60.31	-10.00	100.00	-10.00	100.00
40	9.09	55.20	-10.00	100.00	-10.00	100.00
45	8.25	50.23	-10.00	100.00	-10.00	100.00
50	8.64	45.47	-10.00	100.00	-10.00	100.00
55	7.59	40.45	-10.00	100.00	-10.00	100.00
60	5.93	35.27	-10.00	100.00	-10.00	100.00
65	4.61	30.15	-9.14	100.00	-9.14	100.00
70	3.87	25.15	-7.94	100.00	-7.94	100.00
75	3.84	20.37	-6.56	100.00	-6.56	100.00
80	3.47	15.57	-5.05	100.00	-5.05	100.00
85	3.69	11.28	-3.26	100.00	-3.26	100.00
90	3.79	7.77	-1.23	100.00	-1.23	100.00
95	3.75	6.44	1.01	100.00	1.01	100.00
100	4.06	8.78	3.54	100.00	3.54	100.00
105	4.41	12.77	5.78	100.00	5.78	100.00
110	4.16	17.04	5.84	100.00	5.84	100.00
115	4.40	21.78	4.41	100.00	4.41	100.00
120	4.24	26.51	1.89	100.00	1.89	100.00
125	4.15	31.33	-0.41	100.00	-0.41	100.00
130	3.94	36.18	-2.29	100.00	-2.29	100.00
135	3.58	41.05	-3.88	100.00	-3.58	100.00
140	3.23	45.95	-5.21	100.00	-5.21	100.00
145	2.90	50.88	-6.33	100.00	-6.33	100.00
150	2.39	55.81	-7.31	100.00	-7.31	100.00
155	2.18	60.77	-8.08	100.00	-8.08	100.00
160	1.67	65.73	-8.77	100.00	-8.77	100.00
165	1.82	70.72	-9.19	100.00	-9.19	100.00
170	0.95	75.68	-9.70	100.00	-9.70	100.00
175	0.78	80.67	-9.94	104.60	-9.94	100.00
180	0.94	85.66	-9.96	100.00	-9.96	100.00
185	0.94	90.65	-9.89	100.00	-9.89	100.00



# COMSEARCH

## Earth Station Data Sheet

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

### Coordination Values

### ASHEVILLE, NC

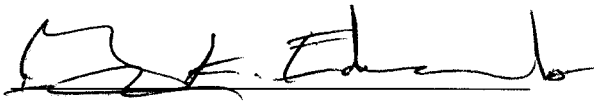
Licensee Name O3b Networks USA, LLC.  
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Antenna Mode Receive 18.0 GHz Transmit 28.0 GHz  
Interference Objectives: Long Term -156.0 dBW/MHz 20% -151.0 dBW/4 kHz 20%  
Short Term -146.0 dBW/MHz 0.01% -128.0 dBW/4 kHz 0.0025%  
Max Available RF Power -11.8 (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	1.30	95.64	-9.62	100.00	-9.62	100.00
195	0.68	100.64	-9.44	107.80	-9.44	100.00
200	0.95	105.62	-8.93	100.00	-8.93	100.00
205	0.84	110.61	-8.37	104.10	-8.37	100.00
210	1.54	115.58	-7.50	100.00	-7.50	100.00
215	2.20	120.53	-6.49	100.00	-6.49	100.00
220	1.83	125.53	-5.55	100.00	-5.55	100.00
225	1.16	130.55	-4.52	103.60	-4.52	100.00
230	1.55	135.50	-3.00	100.00	-3.00	100.00
235	1.69	140.45	-1.25	100.20	-1.25	100.00
240	1.72	145.41	0.73	104.90	0.73	100.00
245	0.76	150.47	1.93	134.90	1.93	103.50
250	0.56	155.46	2.74	146.90	2.74	114.20
255	0.54	160.40	2.54	146.90	2.54	114.30
260	0.37	165.35	1.24	156.00	1.24	122.40
265	0.28	170.21	-0.49	158.80	-0.49	124.70
270	0.27	174.76	-2.27	153.00	-2.27	120.80
275	0.52	176.75	-3.92	128.50	-3.92	100.00
280	0.92	173.31	-5.44	108.10	-5.44	100.00
285	1.06	168.72	-6.87	100.00	-6.87	100.00
290	1.82	163.73	-8.12	100.00	-8.12	100.00
295	2.36	158.77	-9.29	100.00	-9.29	100.00
300	3.04	153.76	-10.00	100.00	-10.00	100.00
305	3.61	148.77	-10.00	100.00	-10.00	100.00
310	3.27	143.92	-10.00	100.00	-10.00	100.00
315	2.98	139.02	-10.00	100.00	-10.00	100.00
320	2.39	134.13	-10.00	100.00	-10.00	100.00
325	2.24	129.17	-10.00	100.00	-10.00	100.00
330	2.20	124.20	-10.00	100.00	-10.00	100.00
335	2.67	119.21	-10.00	100.00	-10.00	100.00
340	3.17	114.21	-10.00	100.00	-10.00	100.00
345	3.36	109.23	-10.00	100.00	-10.00	100.00
350	4.72	104.22	-10.00	100.00	-10.00	100.00
355	5.39	99.25	-10.00	100.00	-10.00	100.00

## 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: July 30, 2014

# COMSEARCH

## Earth Station Data Sheet

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

# INTERFERENCE ANALYSIS REPORT

Prepared for  
**O3b Networks USA, LLC.**  
**ASHEVILLE, NC**  
**(2.4 Meter)**  
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## 2. SUMMARY OF RESULTS

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## **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.



# COMSEARCH

## Earth Station Data Sheet

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

Date: 07/29/2014  
Job Number: 140625COMSGE02

### Administrative Information

Status: ENGINEER PROPOSAL  
Call Sign:  
Licensee Code: O3BNET  
Licensee Name: O3b Networks USA, LLC.

### Site Information ASHEVILLE, NC

Venue Name:  
Latitude (NAD 83): 35° 38' 24.0" N  
Longitude (NAD 83): 82° 34' 30.0" W  
Climate Zone: A  
Rain Zone: 1  
Ground Elevation (AMSL): 639.94 m / 2099.5 ft

### Link Information

Satellite Type: Medium Earth Orbit  
Mode: TR - Transmit-Receive  
Modulation: Digital  
Minimum Elevation Angle: 15.0°  
Azimuth Range: 0.0° to 360°  
Antenna Centerline (AGL): 2.74 m / 9.0 ft

### Antenna Information

	Receive - FCC32	Transmit - FCC32
Manufacturer	AVL	AVL
Model	2.4 Meter	2.4 Meter
Gain / Diameter	51.3 dBi / 2.4 m	54.7 dBi / 2.4 m
3-dB / 15-dB Beamwidth	0.23° / 0.60°	0.14° / 0.32°
Max Available RF Power (dBW/4 kHz) (dBW/MHz)		-9.8 14.2
Maximum EIRP (dBW/4 kHz) (dBW/MHz)		44.9 68.9
Interference Objectives:	Long Term Short Term	-156.0 dBW/MHz 20% -146.0 dBW/MHz 0.01%
		-151.0 dBW/4 kHz 20% -128.0 dBW/4 kHz 0.0025%

### Frequency Information

	Receive 18.0 GHz	Transmit 28.0 GHz
Emission / Frequency Range (MHz)	1M00G7D - 216MG7D / 17852.0 - 18068.0 1M00G7D - 216MG7D / 18112.0 - 18328.0 1M00G7D - 216MG7D / 18372.0 - 18588.0	1M00G7D - 216MG7D / 27652.0 - 27868.0 1M00G7D - 216MG7D / 27912.0 - 28128.0 1M00G7D - 216MG7D / 28172.0 - 28388.0
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Precipitation Scatter Contour Radius	100.0 km / 62.1 mi	100.0 km / 62.1 mi

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40	9.09	55.20	-10.00	100.00	-10.00	100.00
45	8.25	50.23	-10.00	100.00	-10.00	100.00
50	8.64	45.47	-10.00	100.00	-10.00	100.00
55	7.59	40.45	-10.00	100.00	-10.00	100.00
60	5.93	35.27	-10.00	100.00	-10.00	100.00
65	4.61	30.15	-9.14	100.00	-9.14	100.00
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160	1.67	65.73	-8.77	100.00	-8.77	100.00
165	1.82	70.72	-9.19	100.00	-9.19	100.00
170	0.95	75.68	-9.70	100.00	-9.70	100.00
175	0.73	80.67	-9.94	104.60	-9.94	100.00
180	0.94	85.66	-9.96	100.00	-9.96	100.00
185	0.94	90.65	-9.89	100.00	-9.89	100.00

# COMSEARCH

## Earth Station Data Sheet

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200	0.95	105.62	-8.93	100.00	-8.93	100.00
205	0.84	110.61	-8.37	104.10	-8.37	100.00
210	1.54	115.58	-7.50	100.00	-7.50	100.00
215	2.20	120.53	-6.49	100.00	-6.49	100.00
220	1.83	125.53	-5.55	100.00	-5.55	100.00
225	1.16	130.55	-4.52	103.60	-4.52	100.00
230	1.55	135.50	-3.00	100.00	-3.00	100.00
235	1.69	140.45	-1.25	100.20	-1.25	100.00
240	1.72	145.41	0.73	104.90	0.73	100.00
245	0.76	150.47	1.93	134.90	1.93	103.50
250	0.56	155.46	2.74	146.90	2.74	114.20
255	0.54	160.40	2.54	146.90	2.54	114.30
260	0.37	165.35	1.24	156.00	1.24	122.40
265	0.28	170.21	-0.49	158.80	-0.49	124.70
270	0.27	174.76	-2.27	153.00	-2.27	120.80
275	0.52	176.75	-3.92	128.50	-3.92	100.00
280	0.92	173.31	-5.44	108.10	-5.44	100.00
285	1.06	168.72	-6.87	100.00	-6.87	100.00
290	1.82	163.73	-8.12	100.00	-8.12	100.00
295	2.36	158.77	-9.29	100.00	-9.29	100.00
300	3.04	153.76	-10.00	100.00	-10.00	100.00
305	3.61	148.77	-10.00	100.00	-10.00	100.00
310	3.27	143.92	-10.00	100.00	-10.00	100.00
315	2.98	139.02	-10.00	100.00	-10.00	100.00
320	2.39	134.13	-10.00	100.00	-10.00	100.00
325	2.24	129.17	-10.00	100.00	-10.00	100.00
330	2.20	124.20	-10.00	100.00	-10.00	100.00
335	2.67	119.21	-10.00	100.00	-10.00	100.00
340	3.17	114.21	-10.00	100.00	-10.00	100.00
345	3.36	109.23	-10.00	100.00	-10.00	100.00
350	4.72	104.22	-10.00	100.00	-10.00	100.00
355	5.39	99.25	-10.00	100.00	-10.00	100.00

## 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: July 30, 2014