

INTERFERENCE ANALYSIS REPORT

Prepared for
O3b Networks USA, LLC.
BRISTOW, VA
(18 GHz Receive)
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
May 28, 2013

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.

Date: 05/24/2013
 Job Number: 130417COMSGE01

Administrative Information

Status ENGINEER PROPOSAL
 Call Sign
 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 Low Earth Orbit
 Mode TR - Transmit-Receive
 Modulation Digital
 Minimum Elevation Angle 7.0°
 Azimuth Range 0.0° to 360°
 Antenna Centerline (AGL) 2.74 m / 9.0 ft

Antenna Information

Manufacturer
 Model
 Gain / Diameter
 3-dB / 15-dB Beamwidth

Receive - FCC32

GD Satcom
 2.4 Meter
 52.6 dBi / 2.4 m
 0.23° / 0.60°

Transmit - FCC32

GD Satcom
 2.4 Meter
 55.8 dBi / 2.4 m
 0.14° / 0.32°

Max Available RF Power (dBW/4 kHz)
 (dBW/MHz)

-14.0
 10.0

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

41.8
 65.8

Interference Objectives: Long Term -156.0 dBW/MHz 20%
 Short Term -146.0 dBW/MHz 0.01%

-151.0 dBW/4 kHz 20%
 -128.0 dBW/4 kHz 0.0025%

Frequency Information

Emission / Frequency Range (MHz)

Receive 18.0 GHz

1M00G7D - 216MG7D / 17852.0 - 18068.0
 1M00G7D - 216MG7D / 18112.0 - 18328.0
 1M00G7D - 216MG7D / 18372.0 - 18588.0
 1M00G7D - 216MG7D / 18801.0 - 19017.0
 1M00G7D - 216MG7D / 19055.0 - 19271.0

Transmit 29.0 GHz

1M00G7D - 216MG7D / 27652.0 - 27868.0
 1M00G7D - 216MG7D / 27912.0 - 28128.0
 1M00G7D - 216MG7D / 28172.0 - 28388.0
 1M00G7D - 216MG7D / 28601.0 - 28817.0
 1M00G7D - 216MG7D / 28855.0 - 29071.0

Max Great Circle Coordination Distance 198.5 km / 123.3 mi
 Precipitation Scatter Contour Radius 100.0 km / 62.1 mi

136.7 km / 84.9 mi
 100.0 km / 62.1 mi

Coordination Values**BRISTOW, VA**

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 Antenna Centerline (AGL) 2.74 m / 9.0 ft
 Antenna Model GD Satcom 2.4 Meter

Antenna Mode
 Interference Objectives: Long Term Receive 18.0 GHz 20% Transmit 29.0 GHz
 -156.0 dBW/MHz -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		Coordination Distance (km)
			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	

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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		Coordination Distance (km)
			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	