

# INTERFERENCE ANALYSIS REPORT

Prepared for  
**O3b Networks USA, LLC.**  
**VERNON, TX**  
**(18 GHz Receive)**  
**Satellite Earth Station**

Prepared By:  
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19700 Janelia Farm Boulevard  
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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.

Date: 01/15/2013  
Job Number: 121220COMSGE01

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**Administrative Information**

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

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**Site Information** **VERNON, TX**

Venue Name  
Latitude (NAD 83) 34° 13' 4.7" N  
Longitude (NAD 83) 99° 23' 46.5" W  
Climate Zone A  
Rain Zone 2  
Ground Elevation (AMSL) 390.14 m / 1280.0 ft

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**Link Information**

Satellite Type Low Earth Orbit  
Mode TR - Transmit-Receive  
Modulation Digital  
Minimum Elevation Angle 3.0°  
Azimuth Range 0.0° to 360°  
Antenna Centerline (AGL) 3.66 m / 12.0 ft

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**Antenna Information**

Manufacturer ViaSat  
Model 8073  
Gain / Diameter 61.2 dBi / 7.3 m  
3-dB / 15-dB Beamwidth 0.02° / 0.04°

**Receive - FCC32****Transmit - FCC32**

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

ViaSat  
8073  
65.0 dBi / 7.3 m  
0.01° / 0.02°  
15.7  
39.7  
80.7  
104.7  
-156.0 dBW/MHz 20%  
-146.0 dBW/MHz 0.01%

ViaSat  
8073  
65.0 dBi / 7.3 m  
0.01° / 0.02°  
15.7  
39.7  
80.7  
104.7  
-151.0 dBW/4 kHz 20%  
-128.0 dBW/4 kHz 0.0025%

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

Interference Objectives: Long Term  
Short Term

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**Frequency Information**

Emission / Frequency Range (MHz)

**Receive 18.0 GHz**

24K0G7D - 720MG7D / 17852.0 - 18068.0  
24K0G7D - 720MG7D / 18112.0 - 18328.0  
24K0G7D - 720MG7D / 18372.0 - 18588.0  
24K0G7D - 720MG7D / 18801.0 - 19017.0  
24K0G7D - 720MG7D / 19055.0 - 19271.0  
24K0G7D - 720MG7D / 19296.6 - 19299.6

**Transmit 28.0 GHz**

24K0G7D - 720MG7D / 27652.0 - 27868.0  
24K0G7D - 720MG7D / 27912.0 - 28128.0  
24K0G7D - 720MG7D / 28172.0 - 28388.0  
24K0G7D - 720MG7D / 28601.0 - 28817.0  
24K0G7D - 720MG7D / 28855.0 - 29071.0  
24K0G7D - 720MG7D / 29088.5

Max Great Circle Coordination Distance  
Precipitation Scatter Contour Radius

348.2 km / 216.3 mi  
100.0 km / 62.1 mi

484.9 km / 301.3 mi  
541.4 km / 336.4 mi

**Coordination Values****VERNON, TX**

Licensee Name O3b Networks USA, LLC.  
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 Longitude (NAD 83) 99° 23' 46.5" W  
 Ground Elevation (AMSL) 390.14 m / 1280.0 ft  
 Antenna Centerline (AGL) 3.66 m / 12.0 ft  
 Antenna Model ViaSat 7.3 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 15.7 (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	0.29	84.90	-10.00	130.20	-10.00	169.60
5	0.24	80.11	-10.00	133.20	-10.00	172.60
10	0.00	75.30	-10.00	136.20	-10.00	175.50
15	0.00	70.52	-10.00	136.20	-10.00	175.50
20	0.00	65.75	-10.00	136.20	-10.00	175.50
25	0.00	60.99	-10.00	136.20	-10.00	175.50
30	0.00	56.27	-10.00	136.20	-10.00	175.50
35	0.00	51.57	-10.00	136.20	-10.00	175.50
40	0.00	46.92	-10.00	136.20	-10.00	175.50
45	0.00	42.33	-10.00	136.20	-10.00	175.50
50	0.00	37.82	-10.00	136.20	-10.00	175.50
55	0.00	33.42	-8.95	139.10	-8.95	178.60
60	0.00	29.20	-7.63	142.90	-7.63	182.60
65	0.00	25.24	-6.12	147.40	-6.12	185.10
70	0.00	21.67	-4.38	152.80	-4.38	191.00
75	0.00	18.73	-2.31	160.10	-2.31	198.70
80	0.00	16.76	0.24	168.70	0.24	209.20
85	0.00	16.12	3.55	180.20	3.55	227.10
90	0.00	16.95	8.17	196.90	8.17	247.90
95	0.00	19.06	15.13	224.60	15.13	273.90
100	0.00	22.09	17.68	343.10	17.68	477.90
105	0.00	25.72	10.32	205.10	10.32	257.10
110	0.00	29.72	5.57	187.50	5.57	236.40
115	0.00	33.97	2.32	175.90	2.32	218.50
120	0.00	38.38	-0.16	167.30	-0.16	207.50
125	0.00	42.90	-2.13	160.70	-2.13	199.40
130	0.00	47.50	-3.76	154.80	-3.76	193.30
135	0.00	52.16	-5.13	150.40	-5.13	188.40
140	0.00	56.86	-6.30	146.80	-6.30	184.60
145	0.00	61.59	-7.30	143.90	-7.30	181.40
150	0.00	66.34	-8.16	141.40	-8.16	181.00
155	0.00	71.12	-8.87	139.30	-8.87	178.90
160	0.00	75.90	-9.46	137.70	-9.46	177.10
165	0.00	80.70	-9.92	136.40	-9.92	175.70
170	0.00	85.50	-10.00	136.20	-10.00	175.50
175	0.00	90.30	-10.00	136.20	-10.00	175.50
180	0.00	95.10	-10.00	136.20	-10.00	175.50
185	0.00	99.90	-10.00	136.20	-10.00	175.50

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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			15.7 (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	0.00	104.70	-10.00	136.20	-10.00	175.70
195	0.00	109.48	-9.92	136.40	-9.92	177.10
200	0.00	114.25	-9.46	137.70	-9.46	178.90
205	0.00	119.01	-8.87	139.30	-8.87	181.00
210	0.00	123.73	-8.16	141.40	-8.16	181.40
215	0.00	128.43	-7.30	143.80	-7.30	184.60
220	0.00	133.08	-6.30	146.80	-6.30	188.40
225	0.00	137.67	-5.13	150.40	-5.13	193.30
230	0.00	142.18	-3.76	154.80	-3.76	199.40
235	0.00	146.58	-2.13	160.70	-2.13	207.50
240	0.00	150.80	-0.16	167.30	-0.16	218.50
245	0.00	154.76	2.31	175.90	2.31	236.40
250	0.00	158.33	5.57	187.50	5.57	254.60
255	0.24	161.06	10.51	202.10	10.51	484.90
260	0.35	162.90	18.86	348.20	18.86	264.50
265	0.45	163.44	16.35	208.30	16.35	228.70
270	0.43	162.64	8.56	177.60	8.56	196.80
275	0.52	160.51	3.76	152.80	3.76	185.50
280	0.49	157.56	0.38	143.30	0.38	179.60
285	0.48	153.99	-2.21	136.00	-2.21	173.10
290	0.47	150.04	-4.31	130.50	-4.31	169.40
295	0.44	145.84	-6.07	128.70	-6.07	163.70
300	0.45	141.46	-7.58	124.00	-7.58	159.20
305	0.46	136.96	-8.91	120.50	-8.91	157.40
310	0.43	132.38	-10.00	119.40	-10.00	158.70
315	0.41	127.75	-10.00	120.60	-10.00	157.50
320	0.42	123.06	-10.00	119.50	-10.00	164.90
325	0.35	118.36	-10.00	126.40	-10.00	172.40
330	0.24	113.62	-10.00	133.00	-10.00	172.40
335	0.24	108.86	-10.00	133.00	-10.00	167.50
340	0.30	104.08	-10.00	128.90	-10.00	162.50
345	0.36	99.28	-10.00	124.20	-10.00	160.50
350	0.40	94.49	-10.00	122.30	-10.00	166.10
355	0.32	89.70	-10.00	127.60	-10.00	166.10