

# FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for

**Global Crossing Americas Solutions, Inc  
Arecibo, Puerto Rico**

**Satellite Earth Station**

Prepared By:  
COMSEARCH

19700 Janelia Farm Boulevard  
Ashburn, Virginia 20147  
September 5, 2011

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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 common carrier microwave environment, based upon the restrictions noted in the Summary of Results (Section 2).

## 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 most cases.

The following companies reported potential great circle interference conflicts that did not meet the objectives on a line-of-sight basis. When over-the-horizon losses and frequency separation are considered on the interfering paths, sufficient losses exist to negate harmful interference from occurring with the proposed transmit-receive earth station. Further, the transmit spectrum will be limited to frequencies 6094.0 to 6124.0 MHz and 6382.0 to 6423.0 MHz.

### Company

AT&T Mobility Puerto Rico  
Neptuno Media

No other carriers reported potential interference cases.

### 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.

Expedited coordination data for this earth station was sent to the below listed carriers with a letter dated July 22, 2011.

#### Company

ALL AMERICAN CABLE AND RADIO INC  
AT&T Mobility Puerto Rico  
Aeronet Wireless Broadband Corp.  
CCPR of the Virgin Islands, Inc.  
CROWN CASTLE INT CORP DE PUERTO RICO  
EVERTEC, INC  
INTERISLAND TELEPHONE CORPORATION  
Iniciativa Tecnologica Centro Oriental  
Interference Office, Arecibo Observatory  
Neptuno Media  
PRWireless, Inc.  
PUERTO RICO ELECTRIC POWER AUTHORITY  
PUERTO RICO HIGHWAY AUTHORITY  
Puerto Rico Commonwealth of State Police  
Puerto Rico Telephone Company  
Sprintcom, Inc. Puerto Rico  
T-Mobile Puerto Rico LLC

## **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: 09/05/2011  
Job Number: 110722COMSJC01

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### Administrative Information

Status ENGINEER PROPOSAL  
Call Sign  
Licensee Code GLOAME  
Licensee Name Global Crossing Americas Solutions, Inc

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### Site Information

**ARECIBO, PUERTO RICO**  
Venue Name MIRAMAR ARECIBO  
Latitude (NAD 83) 18° 28' 37.8" N  
Longitude (NAD 83) 66° 45' 16.3" W  
Climate Zone B  
Rain Zone 1  
Ground Elevation (AMSL) 16.15 m / 53.0 ft

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### Link Information

Satellite Type Geostationary  
Mode TR - Transmit-Receive  
Modulation Digital  
Satellite Arc 45° W to 56° West Longitude  
Azimuth Range 128.5° to 149.1°  
Corresponding Elevation Angles 57.0° / 65.1°  
Antenna Centerline (AGL) 6.4 m / 21.0 ft

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### Antenna Information

	Receive	Transmit
Manufacturer	Prodelin	Prodelin
Model	2.4 Meter	2.4 Meter
Gain / Diameter	38.0 dBi / 2.4 m	42.0 dBi / 2.4 m
3-dB / 15-dB Beamwidth	2.30° / 4.60°	1.50° / 3.00°

Max Available RF Power	(dBW/4 kHz)	-17.3
	(dBW/MHz)	6.7

Maximum EIRP	(dBW/4 kHz)	24.7
	(dBW/MHz)	48.7

Interference Objectives:	Long Term	-156.0 dBW/MHz	20%	-154.0 dBW/4 kHz	20%
	Short Term	-146.0 dBW/MHz	0.01%	-131.0 dBW/4 kHz	0.0025%

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### Frequency Information

	Receive 4.0 GHz	Transmit 6.1 GHz
Emission / Frequency Range (MHz)	230KG7D - 2M23G7D / 3700.0 - 4200.0	230KG7D - 1M30G7D / 6094.0 - 6124.0 230KG7D - 1M30G7D / 6382.0 - 6423.0

Max Great Circle Coordination Distance	412.2 km / 256.1 mi	133.9 km / 83.2 mi
Precipitation Scatter Contour Radius	100.0 km / 62.1 mi	100.0 km / 62.1 mi

# COMSEARCH

## Earth Station Data Sheet

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### Coordination Values

### ARECIBO, PR

Licensee Name Global Crossing Americas Solutions, Inc  
Latitude (NAD 83) 18° 28' 37.8" N  
Longitude (NAD 83) 66° 45' 16.3" W  
Ground Elevation (AMSL) 16.15 m / 53.0 ft  
Antenna Centerline (AGL) 6.4 m / 21.0 ft  
Antenna Model Prodelin 2.4 Meter  
Antenna Mode Receive 4.0 GHz Transmit 6.1 GHz  
Interference Objectives: Long Term -156.0 dBW/MHz 20% -154.0 dBW/4 kHz 20%  
Short Term -146.0 dBW/MHz 0.01% -131.0 dBW/4 kHz 0.0025%  
Max Available RF Power -17.3 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 4.0 GHz		Transmit 6.1 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
0	0.00	109.78	-10.00	412.20	-10.00	133.93
5	0.00	107.46	-10.00	412.20	-10.00	133.93
10	0.00	105.03	-10.00	412.20	-10.00	133.93
15	0.00	102.51	-10.00	412.20	-10.00	133.93
20	0.00	99.92	-10.00	412.20	-10.00	133.93
25	0.00	97.28	-10.00	412.20	-10.00	133.93
30	0.00	94.59	-10.00	412.20	-10.00	133.93
35	0.00	91.88	-10.00	412.20	-10.00	133.93
40	0.00	89.16	-10.00	412.20	-10.00	133.93
45	0.00	86.45	-10.00	412.20	-10.00	133.93
50	0.00	83.75	-10.00	412.20	-10.00	133.93
55	0.00	81.09	-10.00	412.20	-10.00	133.93
60	0.00	78.47	-10.00	412.20	-10.00	133.93
65	0.00	75.93	-10.00	412.20	-10.00	133.93
70	0.00	73.46	-10.00	412.20	-10.00	133.93
75	0.00	71.10	-10.00	412.20	-10.00	133.93
80	0.00	68.85	-10.00	412.20	-10.00	133.93
85	0.00	66.73	-10.00	412.20	-10.00	133.93
90	0.00	64.78	-10.00	412.20	-10.00	133.93
95	0.00	63.00	-10.00	412.20	-10.00	133.93
100	0.00	61.42	-10.00	412.20	-10.00	133.93
105	0.00	60.05	-10.00	412.20	-10.00	133.93
110	0.94	58.05	-10.00	261.22	-10.00	100.00
115	0.94	57.14	-10.00	261.30	-10.00	100.00
120	1.47	55.98	-10.00	226.63	-10.00	100.00
125	1.89	55.21	-10.00	204.94	-10.00	100.00
130	1.98	55.07	-10.00	200.48	-10.00	100.00
135	2.20	55.09	-10.00	191.83	-10.00	100.00
140	2.53	55.33	-10.00	180.15	-10.00	100.00
145	3.07	55.67	-10.00	162.62	-10.00	100.00
150	3.88	56.09	-10.00	143.00	-10.00	100.00
155	3.52	57.86	-10.00	151.23	-10.00	100.00
160	3.56	59.52	-10.00	150.24	-10.00	100.00
165	3.56	61.43	-10.00	150.26	-10.00	100.00
170	3.59	63.37	-10.00	149.84	-10.00	100.00
175	3.19	64.91	-10.00	159.39	-10.00	100.00
180	2.81	66.46	-10.00	170.74	-10.00	100.00
185	2.81	67.85	-10.00	170.74	-10.00	100.00



# COMSEARCH

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### Coordination Values

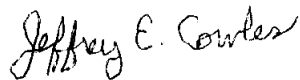
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Antenna Centerline (AGL)	6.4 m / 21.0 ft		
Antenna Model	Prodelin 2.4 Meter		
Antenna Mode	Receive 4.0 GHz		Transmit 6.1 GHz
Interference Objectives: Long Term	-156.0 dBW/MHz	20%	-154.0 dBW/4 kHz 20%
Short Term	-146.0 dBW/MHz	0.01%	-131.0 dBW/4 kHz 0.0025%
Max Available RF Power			-17.3 (dBW/4 kHz)

Azimuth (°)	Receive 4.0 GHz		Transmit 6.1 GHz			
	Horizon Elevation (°)	Antenna Discrimination (°)	Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
190	2.81	69.41	-10.00	170.74	-10.00	100.00
195	2.75	71.15	-10.00	172.75	-10.00	100.00
200	2.73	72.99	-10.00	173.41	-10.00	100.00
205	2.73	74.92	-10.00	173.42	-10.00	100.00
210	2.73	76.96	-10.00	173.43	-10.00	100.00
215	2.12	79.31	-10.00	195.02	-10.00	100.00
220	2.38	81.38	-10.00	185.52	-10.00	100.00
225	2.85	83.49	-10.00	169.43	-10.00	100.00
230	2.81	85.79	-10.00	170.49	-10.00	100.00
235	2.71	88.11	-10.00	173.95	-10.00	100.00
240	2.55	90.43	-10.00	179.45	-10.00	100.00
245	3.15	92.79	-10.00	160.63	-10.00	100.00
250	2.88	95.08	-10.00	168.38	-10.00	100.00
255	2.23	97.20	-10.00	190.75	-10.00	100.00
260	1.44	99.13	-10.00	228.56	-10.00	100.00
265	1.06	101.05	-10.00	250.22	-10.00	100.00
270	0.95	102.97	-10.00	259.89	-10.00	100.00
275	0.95	104.85	-10.00	259.86	-10.00	100.00
280	0.70	106.47	-10.00	290.94	-10.00	100.00
285	0.49	107.97	-10.00	323.24	-10.00	109.23
290	0.00	109.11	-10.00	412.20	-10.00	133.93
295	0.00	110.44	-10.00	412.20	-10.00	133.93
300	0.28	111.86	-10.00	385.68	-10.00	125.83
305	0.20	112.83	-10.00	410.58	-10.00	133.43
310	0.00	113.49	-10.00	412.20	-10.00	133.93
315	0.00	114.14	-10.00	412.20	-10.00	133.93
320	0.00	114.61	-10.00	412.20	-10.00	133.93
325	0.00	114.87	-10.00	412.20	-10.00	133.93
330	0.00	114.94	-10.00	412.20	-10.00	133.93
335	0.00	114.80	-10.00	412.20	-10.00	133.93
340	0.00	114.46	-10.00	412.20	-10.00	133.93
345	0.00	113.92	-10.00	412.20	-10.00	133.93
350	0.00	113.19	-10.00	412.20	-10.00	133.93
355	0.00	111.98	-10.00	412.20	-10.00	133.93

## 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.



Jeffrey E. Cowles  
Engineer III, Telecommunications  
COMSEARCH  
19700 Janelia Farm Boulevard  
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DATED: September 5, 2011