

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for

**Intelsat License LLC
Hagerstown, Maryland
(Call Sign: KA261)**

Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, Virginia 20147
November 4, 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. 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.

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 are considered on the interfering paths, sufficient blockage exists to negate harmful interference from occurring with the proposed transmit-receive earth station.

Company

AT&T Communications of Maryland, Inc.
Baltimore County of Maryland
Baltimore Gas and Electric Company
Blue Ridge Carriers
Cellco Partnership – Newark-Dallas Verizon
Cellco Partnership – PA Region
County of Frederick
Garden State Transmissions
New Cingular Wireless PCS, LLC - PA
State of Maryland, MIEMSS
Texas Eastern Communications, Inc.
USCOC of Cumberland, Inc.
Washington Gas Light Company
State of WV DHHR/BPH STECS

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.

Coordination data for this earth station was sent to the below listed carriers with a letter dated July 14, 2011.

Company

AB Services LLC
 AT&T COMMUNICATIONS OF MARYLAND INC
 AT&T COMMUNICATIONS OF VIRGINIA INC
 AT&T CORP
 Alltel Communications LLC - SOVA
 Alltel Communications of Petersburg Inc
 Appalachia Engineering Services
 Appalachian Broadcasting
 Atlantic Broadband (Delmar), LLC
 Atlantic Broadband (Penn), LLC
 Auburn Data Systems, LLC
 BAY BROADBAND COMMUNICATIONS LLC
 Baltimore County of Maryland
 Baltimore Gas and Electric Company
 Bedford, County of
 Blue Ridge Carriers
 Borough of Huntingdon
 CHESTER, COUNTY OF
 CNG Transmission Corporation
 COLLEGE OF SOUTHERN MARYLAND
 CROWN COMMUNICATION, INC.
 Cambria, County of
 Capital Communications of America
 Cellco Partnership - Bridgeville, PA
 Cellco Partnership - Southern Virginia
 Cellco Partnership- PA Region
 Cellco Partnership-Newark-Dallas Verizon
 Cellco Partnership-WA/Baltimore
 Cellco Prtnrshp - Phil. Tri-State Rgn
 Charles, County of
 Commonwealth of Pennsylvania-Radio Proj.
 Comprehensive Wireless LLC
 Conterra Ultra Broadband, LLC
 Coral Reef Technologies Ltd
 County of Frederick
 County of Stafford

Company (Continued)

DAUPHIN COUNTY EMERGENCY MANAGEMENT
 DELAWARE STATE - DTI
 Delmarva Power & Light Company
 Enoch Pratt Free Library
 Exelon Generation Company, L.L.C
 FELHC, Inc.
 Fayette, County of
 Fibertrack, LLC
 Frederick County
 Fundamental Broadcasting LLC
 Garden State Transmissions
 Greene, County of (PA)
 Hardy Cellular Telephone Company
 Harrisonburg-Rockingham ECC
 Jefferson Microwave, LLC
 Juniata County Emergency Services
 Kryptic Technologies
 Last Mile Inc.
 Loudoun, County of
 MB Microwave, LLC
 MCI Communications Services Inc.
 METROPOLITAN AREA NETWORKS, INC.
 Maryland Public Broadcasting Commission
 Maryland State Highway Administration
 Maryland, State of - Dept.of Info & Tech
 National Radio Astronomy Observatory
 New Cingular Wireless PCS LLC -NJ
 New Cingular Wireless PCS - VA/DC/MD
 New Cingular Wireless PCS LLC - DC
 New Cingular Wireless PCS LLC- DE/NH/RI
 New Cingular Wireless PCS, LLC - PA
 Norfolk Southern Railway
 Northern Virginia Electric Cooperative
 Open Range Communications
 PENNSYLVANIA TURNPIKE COMMISSION
 PSEG Services Corporation
 Peco Energy Company
 Penn Service Microwave Co., Inc.
 Pittsburgh SMSA Limited Partnership
 Prince George's County
 Prince William, County of
 RAPPAHANNOCK ELECTRIC COOPERATIVE
 SCTF NET
 SHENANDOAH VALLEY ELECTRIC COOPERATIVE
 SOMERSET COUNTY
 Southern Maryland Electric Cooperative I
 St. Mary's County of
 State of Maryland, MIEMSS
 State of WV DHHR/BPH STECS
 Texas Eastern Communications, Inc.
 Thought Transmissions, LLC
 USCOC of Cumberland, Inc.

Company (Continued)

Verizon Maryland, Inc.
Virginia Broadband, LLC
Virginia Department of State Police
Virginia Electric & Power Company
Virginia PCS Alliance, L.C.
WASHINGTON SUBURBAN SANITARY COMMISSION
WITF Inc.
Washington D.C. SMSA L.P.
Washington Gas Light Company
Weblin Holdings LLC
York County Dept of Emergency Services

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: 11/04/2011
Job Number: 110714COMSJC02

Administrative Information

Status ENGINEER PROPOSAL
Call Sign KA261
Licensee Code INTELS
Licensee Name Intelsat License LLC

Site Information HAGERSTOWN, MARYLAND

Venue Name
Latitude (NAD 83) 39° 35' 57.0" N
Longitude (NAD 83) 77° 45' 22.0" W
Climate Zone A
Rain Zone 2
Ground Elevation (AMSL) 166.0 m / 544.6 ft

Link Information

Satellite Type Geostationary
Mode TR - Transmit-Receive
Modulation Digital
Satellite Arc 18° W to 65° West Longitude
Azimuth Range 110.4° to 160.4°
Corresponding Elevation Angles 14.4° / 42.3°
Antenna Centerline (AGL) 9.75 m / 32.0 ft

Antenna Information

Receive
Manufacturer Vertex
Model 15.2 KPC
Gain / Diameter 55.0 dBi / 15.2 m
3-dB / 15-dB Beamwidth 0.32° / 0.57°

Transmit

Vertex
15.2 KPC
58.4 dBi / 15.2 m
0.21° / 0.39°

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

SEE ATTACHMENT 1
SEE ATTACHMENT 1

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

SEE ATTACHMENT 1
SEE ATTACHMENT 1
SEE ATTACHMENT 1

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

-154.0 dBW/4 kHz 20%
-131.0 dBW/4 kHz 0.0025%

Frequency Information

Emission / Frequency Range (MHz)

Receive 4.0 GHz

SEE ATTACHMENT 1

Transmit 6.1 GHz

SEE ATTACHMENT 1

Max Great Circle Coordination Distance 380.3 km / 236.3 mi
Precipitation Scatter Contour Radius 520.9 km / 323.6 mi

219.8 km / 136.6 mi
100.0 km / 62.1 mi

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ATTACHMENT 1

Page 1 of 2

Vertex Communications:

Model: 15.2 KPC

Call Sign: KA261

6.175 GHz Gain: 58.4 dBi

3.950 GHz Gain: 55.0 dBi

Satellite Arc: 24.0° to 25.0° West Longitude (Intelsat-905)

Receive Band: 3625.0 to 3700.0 MHz

Emissions

56K0G7W to 72M0G7W

Satellite Arc: 24.0° to 25.0° West Longitude (Intelsat-905)

Transmit Band: 5850.0 to 5925.0 MHz

<u>Emission</u>	<u>EIRP (dBW)</u>	<u>RF Power Density (dBW/4 kHz)</u>	<u>EIRP Density (dBW/ 4 kHz)</u>
56K0G7W –	67.2	-2.7	55.7
72M0G7W	88.0	-13.0	45.4

Satellite Arc: 18.0° to 65.0° West Longitude

Receive Band: 3700.0 to 4200.0 MHz

Emissions

NON
200KF2D to 1M00F2D
56K0G7W to 72M0G7W

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ATTACHMENT 1

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Satellite Arc: 18.0° to 65.0° West Longitude

Transmit Band: 5925.0 to 6425.0 MHz

<u>Emission</u>	<u>EIRP (dBW)</u>	<u>RF Power Density (dBW/4 kHz)</u>	<u>EIRP Density (dBW/ 4 kHz)</u>
N0N	55.7	-2.7	55.7
200KF2D -	72.7	-2.7	55.7
1M00F2D	79.7	-2.7	55.7
56K0G7W -	67.2	-2.7	55.7
72M0G7W	88.0	-13.0	45.4

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Coordination Values

HAGERSTOWN, MD

Licensee Name Intelsat License LLC
Latitude (NAD 83) 39° 35' 57.0" N
Longitude (NAD 83) 77° 45' 22.0" W
Ground Elevation (AMSL) 166.0 m / 544.6 ft
Antenna Centerline (AGL) 9.75 m / 32.0 ft
Antenna Model Vertex 15.2 KPC
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 -2.7 (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	0.22	109.74	-10.00	282.38	-10.00	168.12
5	0.22	104.91	-10.00	283.03	-10.00	168.70
10	0.00	100.06	-10.00	285.28	-10.00	170.66
15	0.35	95.23	-10.00	267.38	-10.00	153.57
20	0.00	90.38	-10.00	285.28	-10.00	170.66
25	0.00	85.53	-10.00	285.28	-10.00	170.66
30	0.00	80.69	-10.00	285.28	-10.00	170.66
35	0.00	75.86	-10.00	285.28	-10.00	170.66
40	0.00	71.03	-10.00	285.28	-10.00	170.66
45	0.00	66.21	-10.00	285.28	-10.00	170.66
50	0.00	61.41	-10.00	285.28	-10.00	170.66
55	0.00	56.62	-10.00	285.28	-10.00	170.66
60	0.00	51.87	-10.00	285.28	-10.00	170.66
65	0.00	47.14	-9.84	286.33	-9.84	171.30
70	0.00	42.47	-8.70	293.68	-8.70	175.70
75	0.00	37.85	-7.45	302.00	-7.45	180.54
80	0.00	33.34	-6.07	311.49	-6.07	185.86
85	0.00	28.96	-4.54	322.93	-4.54	191.74
90	0.00	24.79	-2.86	335.17	-2.86	198.20
95	0.00	20.97	-1.04	348.72	-1.04	205.14
100	0.00	17.70	0.80	362.76	0.80	210.64
105	0.00	15.37	2.33	374.79	2.33	216.91
110	0.00	14.42	3.03	380.29	3.03	219.83
115	0.00	15.12	2.51	376.20	2.51	217.65
120	0.00	17.27	1.07	364.86	1.07	211.73
125	0.00	20.41	-0.75	350.91	-0.75	204.62
130	0.00	23.83	-2.43	338.33	-2.43	199.84
135	0.00	27.11	-3.83	328.09	-3.83	194.49
140	0.00	30.23	-5.01	319.61	-5.01	189.96
145	0.00	33.14	-6.01	311.94	-6.01	186.11
150	0.00	35.82	-6.85	306.10	-6.85	182.86
155	0.00	38.20	-7.55	301.33	-7.55	180.15
160	0.00	40.26	-8.12	297.51	-8.12	177.95
165	0.00	41.93	-8.56	294.59	-8.56	176.24
170	0.00	43.16	-8.88	292.52	-8.88	175.02
175	0.00	44.28	-9.16	290.71	-9.16	173.94
180	0.00	45.81	-9.52	288.32	-9.52	172.51
185	0.00	47.72	-9.97	285.49	-9.97	170.78

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Coordination Values

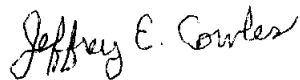
HAGERSTOWN, MD

Licensee Name	Intelsat License LLC			
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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			-2.7 (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)
190	0.00	49.95	-10.00	285.28	-10.00	170.66
195	0.00	52.47	-10.00	285.28	-10.00	170.66
200	0.00	55.23	-10.00	285.28	-10.00	170.66
205	0.00	58.19	-10.00	285.28	-10.00	170.66
210	0.00	61.32	-10.00	285.28	-10.00	170.66
215	0.00	64.60	-10.00	285.28	-10.00	170.66
220	0.28	67.88	-10.00	274.82	-10.00	159.91
225	0.22	71.40	-10.00	282.76	-10.00	168.46
230	0.00	75.02	-10.00	285.28	-10.00	170.66
235	0.00	78.64	-10.00	285.28	-10.00	170.66
240	0.00	82.29	-10.00	285.28	-10.00	170.66
245	0.00	85.97	-10.00	285.28	-10.00	170.66
250	0.00	89.67	-10.00	285.28	-10.00	170.66
255	0.00	93.36	-10.00	285.28	-10.00	170.66
260	0.00	97.05	-10.00	285.28	-10.00	170.66
265	0.25	100.75	-10.00	278.38	-10.00	162.99
270	0.24	104.39	-10.00	279.63	-10.00	164.08
275	0.29	107.98	-10.00	274.11	-10.00	159.30
280	0.22	111.47	-10.00	282.68	-10.00	168.39
285	0.00	114.80	-10.00	285.28	-10.00	170.66
290	0.00	118.10	-10.00	285.28	-10.00	170.66
295	0.00	121.26	-10.00	285.28	-10.00	170.66
300	0.00	124.25	-10.00	285.28	-10.00	170.66
305	0.20	127.19	-10.00	285.26	-10.00	170.64
310	0.00	129.62	-10.00	285.28	-10.00	170.66
315	0.00	131.90	-10.00	285.28	-10.00	170.66
320	0.00	133.87	-10.00	285.28	-10.00	170.66
325	0.00	135.47	-10.00	285.28	-10.00	170.66
330	0.00	136.67	-10.00	285.28	-10.00	170.66
335	0.30	133.66	-10.00	272.82	-10.00	158.18
340	0.27	128.93	-10.00	277.01	-10.00	161.80
345	0.24	124.16	-10.00	280.72	-10.00	165.04
350	0.00	119.34	-10.00	285.28	-10.00	170.66
355	0.30	114.57	-10.00	273.07	-10.00	158.40

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
Ashburn, Va. 20147

DATED: November 4, 2011