

# FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for

**Intelsat License LLC  
Hagerstown, Maryland  
(Call Sign: E000296)**

**Satellite Earth Station**

Prepared By:  
COMSEARCH  
19700 Janelia Farm Boulevard  
Ashburn, Virginia 20147  
August 30, 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  
Cellco Partnership – Newark-Dallas Verizon  
County of Frederick  
Eastern Communications, Inc.  
Exelon Generation Company, L.L.C.  
Hardy Cellular Telephone  
MCI Communication Services Inc.  
New Cingular Wireless PCS, LLC – PA  
New Cingular Wireless PCS, LLC – VA/DC.MD  
SCTF Net  
State of Maryland, MIEMSS  
State of WV DHHR/BPH STECS  
USCOC of Cumberland, Inc.  
Washington Gas Light Company

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 April 4, 2011.

#### Company

AB Services LLC  
ALLTEL Communications, LLC  
AMERICAN ELECTRIC POWER SERVICE CORP.  
AT&T COMMUNICATIONS OF MARYLAND INC  
AT&T COMMUNICATIONS OF VIRGINIA INC  
AT&T CORP  
Alltel Communications LLC - SOVA  
Alltel Communications of Petersburg Inc  
Atlantic Broadband (Delmar), LLC  
Atlantic Broadband (Penn), LLC  
Atlantic City Electric Company  
Auburn Data Systems, LLC  
BAY BROADBAND COMMUNICATIONS LLC  
Baltimore County of Maryland  
Baltimore Gas and Electric Company  
Bedford, County of  
Berks, County of  
Borough of Huntingdon  
BringCom Incorporated  
CHESTER, COUNTY OF  
CLEARFIELD, COUNTY OF  
CNG Transmission Corporation  
COLLEGE OF SOUTHERN MARYLAND  
CROWN COMMUNICATION, INC.  
Cambria, County of  
Cellco Partnership - Bridgeville, PA  
Cellco Partnership - Southern Virginia  
Cellco Partnership- PA Region  
Cellco Partnership-Newark-Dallas Verizon  
Cellco Partnership-WA/Baltimore/VA  
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

Company (Continued)

County of Frederick  
County of Stafford  
DAUPHIN COUNTY EMERGENCY MANAGEMENT  
DELAWARE STATE - DTI  
Delmarva Power & Light Company  
Enoch Pratt Free Library  
Exelon Generation Company, L.L.C  
FELHC, Inc.  
FMLD Holdings, LLC  
Fayette, County of  
Frederick County  
Fundamental Broadcasting LLC  
Greene, County of (PA)  
Hardy Cellular Telephone Company  
Harrison County Emergency Services  
Harrisonburg-Rockingham ECC  
International Communications Group, Inc.  
Juniata County Emergency Services  
Kryptic Technologies  
LB Tower Company LLC  
Last Mile Inc.  
Loudoun, County of  
MCI Communications Services Inc.  
METROPOLITAN AREA NETWORKS, INC.  
Maryland Public Broadcasting Commission  
Maryland State Highway Administration  
Maryland, State of - Dept.of Info & Tech  
NTELOS Telephone, Inc.  
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 - Ohio  
New Cingular Wireless PCS LLC - WV/VA/SC  
New Cingular Wireless PCS LLC- DE/NH/RI  
New Cingular Wireless PCS, LLC - PA  
New Jersey, State of -NJ Transit  
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

Company (Continued)

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.  
Verizon Maryland, Inc.  
Virginia Broadband, LLC  
Virginia Cellular 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  
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: 08/30/2011  
Job Number: 110404COMSJC01

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### Administrative Information

Status ENGINEER PROPOSAL  
Call Sign E000296  
Licensee Code INTELS  
Licensee Name Intelsat License LLC

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### Site Information HAGERSTOWN, MARYLAND

Venue Name  
Latitude (NAD 83) 39° 35' 54.0" N  
Longitude (NAD 83) 77° 45' 35.0" W  
Climate Zone A  
Rain Zone 2  
Ground Elevation (AMSL) 173.74 m / 570.0 ft

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### Link Information

Satellite Type Geostationary  
Mode TR - Transmit-Receive  
Modulation Digital  
Satellite Arc 6° W to 149° West Longitude  
Azimuth Range 101.9° to 257.8°  
Corresponding Elevation Angles 5.3° / 5.7°  
Antenna Centerline (AGL) 5.79 m / 19.0 ft

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### Antenna Information

Manufacturer Vertex Comm.  
Model 9 KPC  
Gain / Diameter 50.1 dBi / 9.0 m  
3-dB / 15-dB Beamwidth 0.65° / 1.00°

### Receive

Vertex Comm.  
9 KPC  
50.1 dBi / 9.0 m  
0.65° / 1.00°

### Transmit

Vertex Comm.  
9 KPC  
53.5 dBi / 9.0 m  
0.36° / 0.67°

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

SEE ATTACHMENT 1  
SEE ATTACHMENT 1

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

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%

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### 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 662.2 km / 411.4 mi  
Precipitation Scatter Contour Radius 613.5 km / 381.2 mi

394.4 km / 245.0 mi  
101.4 km / 63.0 mi

# COMSEARCH

## Earth Station Data Sheet

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ATTACHMENT 1

Page 1 of 3

Vertex Commuications:  
Model: 9.0 KPC

6.175 GHz Gain: 53.5 dBi  
3.950 GHz Gain: 50.1 dBi

Satellite Arc: 6.0° to 149.0° West Longitude

Receive Band: 3700.0 to 4200.0 MHz

### Emissions

660KF2D to 1M08F2D  
250KG9D  
800KF9D  
900KF9D  
56K0G7W to 72M0G7W

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Satellite Arc: 6.0° to 149.0° 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>
660KF2D -	73.0	-2.7	50.8
1M08F2D	75.1	-2.7	50.8
800KF9D	73.8	-2.7	50.8
900KF9D	74.3	-2.7	50.8
56K0G7W -	62.3	-2.7	50.8
72M0G7W	86.5	-9.6	43.9

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## Earth Station Data Sheet

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ATTACHMENT 1

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Satellite Arc: 18.0° to 55.5° West Longitude

Receive Band: 3625.0 to 4200.0 MHz

Emissions

800KF9D  
56K0G7W to 72M0G7W

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Satellite Arc: 18.0° to 55.5° 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>
56K0G7W –	62.3	-2.7	50.8
72M0G7W	86.5	-9.6	43.9

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Satellite Arc: 0.0° to 360.0° West Longitude

Receive Band: 3700.0 to 4200.0 MHz

Emissions

660KF2D to 1M08F2D  
250KG9D  
800KF9D  
900KF9D  
56K0G7W to 72M0G7W

# COMSEARCH

## Earth Station Data Sheet

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ATTACHMENT 1

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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>
660KF2D -	73.0	-2.7	50.8
1M08F2D	75.1	-2.7	50.8
800KF9D	73.8	-2.7	50.8
900KF9D	74.3	-2.7	50.8
56K0G7W -	62.3	-2.7	50.8
72M0G7W	86.5	-9.6	43.9

# COMSEARCH

## Earth Station Data Sheet

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

### Coordination Values

### HAGERSTOWN, MD

Licensee Name	Intelsat License LLC			
Latitude (NAD 83)	39° 35' 54.0" N			
Longitude (NAD 83)	77° 45' 35.0" W			
Ground Elevation (AMSL)	173.74 m / 570.0 ft			
Antenna Centerline (AGL)	5.79 m / 19.0 ft			
Antenna Model	Vertex Comm. 9 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	0.00	101.81	-10.00	285.28	-10.00	170.66
5	0.00	96.84	-10.00	285.28	-10.00	170.66
10	0.00	91.86	-10.00	285.28	-10.00	170.66
15	0.00	86.88	-10.00	285.28	-10.00	170.66
20	0.00	81.90	-10.00	285.28	-10.00	170.66
25	0.00	76.92	-10.00	285.28	-10.00	170.66
30	0.00	71.95	-10.00	285.28	-10.00	170.66
35	0.00	66.97	-10.00	285.28	-10.00	170.66
40	0.00	62.00	-10.00	285.28	-10.00	170.66
45	0.00	57.03	-10.00	285.28	-10.00	170.66
50	0.00	52.06	-10.00	285.28	-10.00	170.66
55	0.00	47.09	-9.82	286.40	-9.82	171.34
60	0.00	42.14	-8.62	294.23	-8.62	176.03
65	0.00	37.19	-7.26	303.30	-7.26	181.28
70	0.00	32.26	-5.72	314.62	-5.72	187.24
75	0.00	27.34	-3.92	327.41	-3.92	194.13
80	0.00	22.47	-1.79	343.08	-1.79	202.28
85	0.00	17.65	0.83	362.99	0.83	210.76
90	0.00	12.98	4.17	388.88	4.17	224.77
95	0.00	8.66	8.56	426.09	8.56	245.21
100	0.00	5.61	13.27	662.20	13.27	394.41
105	0.00	6.15	12.28	510.47	12.28	290.85
110	0.00	9.60	7.45	416.37	7.45	239.82
115	0.00	13.27	3.93	387.53	3.93	223.71
120	0.00	16.89	1.31	366.72	1.31	212.69
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	306.09	-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	43.92	-9.07	291.29	-9.07	174.29
180	0.00	44.18	-9.13	290.88	-9.13	174.04
185	0.00	43.92	-9.07	291.28	-9.07	174.28

# COMSEARCH

## Earth Station Data Sheet

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### Coordination Values

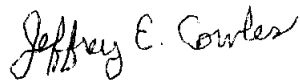
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Interference Objectives: Long Term	-156.0 dBW/MHz	20%	-154.0 dBW/4 kHz 20%
Short Term	-146.0 dBW/MHz	0.01%	-131.0 dBW/4 kHz 0.0025%
Max Available RF Power			-2.7 (dBW/4 kHz)

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	43.16	-8.88	292.52	-8.88	175.02
195	0.00	41.93	-8.56	294.59	-8.56	176.24
200	0.00	40.26	-8.12	297.51	-8.12	177.95
205	0.00	38.20	-7.55	301.32	-7.55	180.15
210	0.00	35.81	-6.85	306.10	-6.85	182.86
215	0.00	33.14	-6.01	311.94	-6.01	186.11
220	0.00	30.22	-5.01	319.62	-5.01	189.96
225	0.00	27.11	-3.83	328.08	-3.83	194.49
230	0.00	23.83	-2.43	338.32	-2.43	199.84
235	0.00	20.42	-0.75	350.90	-0.75	204.61
240	0.00	16.89	1.31	366.75	1.31	212.70
245	0.00	13.28	3.92	387.51	3.92	223.69
250	0.00	9.59	7.46	416.47	7.46	239.87
255	0.00	6.33	11.96	518.47	11.96	295.99
260	0.00	6.11	12.35	641.44	12.35	379.91
265	0.00	9.18	7.93	420.53	7.93	242.12
270	0.00	13.46	3.77	386.29	3.77	223.04
275	0.00	18.11	0.55	360.86	0.55	209.67
280	0.00	22.90	-2.00	341.54	-2.00	201.49
285	0.00	27.76	-4.09	326.22	-4.09	193.50
290	0.00	32.66	-5.85	313.67	-5.85	186.72
295	0.00	37.59	-7.38	302.52	-7.38	180.83
300	0.00	42.53	-8.72	293.57	-8.72	175.64
305	0.00	47.48	-9.91	285.84	-9.91	171.00
310	0.00	52.44	-10.00	285.28	-10.00	170.66
315	0.00	57.40	-10.00	285.28	-10.00	170.66
320	0.00	62.37	-10.00	285.28	-10.00	170.66
325	0.00	67.34	-10.00	285.28	-10.00	170.66
330	0.00	72.31	-10.00	285.28	-10.00	170.66
335	0.00	77.28	-10.00	285.28	-10.00	170.66
340	0.00	82.26	-10.00	285.28	-10.00	170.66
345	0.00	87.23	-10.00	285.28	-10.00	170.66
350	0.00	92.21	-10.00	285.28	-10.00	170.66
355	0.00	97.18	-10.00	285.28	-10.00	170.66

## 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: August 30, 2011