

# FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for

**Intelsat License LLC  
Hagerstown, Maryland  
Call Sign: KA258**

**Satellite Earth Station**

Prepared By:  
COMSEARCH  
19700 Janelia Farm Boulevard  
Ashburn, Virginia 20147  
July 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

Clearwire Spectrum Holdings III, LLC

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 8, 2011.

#### Company

ALLEGANY COLLEGE OF MARYLAND  
ART Licensing Corp.  
AT&T COMMUNICATIONS OF MARYLAND INC  
AT&T COMMUNICATIONS OF VIRGINIA INC  
AT&T CORP  
Airband Communications Inc  
Albermarle, County of, Virginia  
Allegheny County  
Allentown SMSA Limited Partnership  
Alltel Communications LLC - Verizon SOVA  
Alltel Communications of Petersburg Inc  
Atlantic Broadband (Delmar), LLC  
Atlantic Broadband (Penn), LLC  
Auburn Data Systems, LLC  
BALTIMORE CITY DEPARTMENT OF PUBLIC WORK  
BAY BROADBAND COMMUNICATIONS LLC  
Baltimore County of Maryland  
Baltimore Gas and Electric Company  
Bedford, County of  
Believe Wireless, LLC  
Berks, County of  
Blaze Broadband  
Blue Ridge Carriers  
Bucks, County of  
CABELL COUNTY 911  
CAMDEN COUNTY  
CHESTER, COUNTY OF  
CROWN COMMUNICATION, INC.  
Cambria, County of  
Cape May County Municipal Utilities Auth  
Cape May County, MIS Department  
Cellco Partnership - Bridgeville, PA  
Cellco Partnership - Southern Virginia  
Cellco Partnership- PA Region  
Cellco Partnership-Newark-Dallas Verizon  
Cellco Partnership-Washington/Baltimore  
Cellco Prtnrshp - Phil. Tri-State Rgn

Company (Continued)

Chesterfield, County of  
City of Laurel  
City of Ocean City, MD  
Clearwire Spectrum Holdings II, LLC  
Clearwire Spectrum Holdings III, LLC  
Clearwire Spectrum Holdings LLC  
Commonwealth of Pennsylvania-Radio Proj.  
Conterra Ultra Broadband, LLC  
County of Burlington  
County of Nelson  
County of Stafford  
Cumberland, County of  
D&E Communications, Inc.  
DAUPHIN COUNTY EMERGENCY MANAGEMENT  
DELAWARE STATE - DTI  
Eduro Networks LLC  
Enoch Pratt Free Library  
Exelon Generation Company, L.L.C  
FELHC, Inc.  
FiberTower Network Services Corp.  
Fleet Systems, LLC  
Franklin County Dept. of Emergency Servi  
Frederick County  
GEORGE MASON UNIVERSITY INSTR FNDTION  
GETWIRELESS.NET  
GRAY TELEVISION LICENSEE, LLC (KWTX-KBTX  
Gannett Company, Inc.  
Garden State Transmissions  
Globecom Systems, Inc.  
Greene, County of (PA)  
HENRICO COUNTY  
Hanover County Emergency Communications  
Hardy Cellular Telephone Company  
Harrison County Emergency Services  
Harrisonburg-Rockingham ECC  
Huntingdon County of  
JEFFERSON, COUNTY OF  
Jefferson Microwave, LLC  
Johns Hopkins University  
Juniata County Emergency Services  
Kent County Levy Court  
Kentucky Commonwealth of KY Emerg Warnin  
King George County  
Kryptic Technologies  
LANCASTER COUNTY OF  
LOWER SHORE BROADBAND COOPERATIVE  
LYCOMING COUNTY  
Last Mile Inc.  
Lehigh, County of  
Loudoun County Public Schools  
Loudoun Wireless LLC  
Loudoun, County of

Company (Continued)

M&T Bank  
MB Microwave, LLC  
MCI Communications Services Inc.  
METROPOLITAN AREA NETWORKS, INC.  
MIT LINCOLN LABORATORY  
Maryland Port Administration  
Maryland Public Broadcasting Commission  
Maryland State Highway Administration  
Maryland, State of - Dept.of Info & Tech  
Middle East Broadcasting Networks, Inc.  
Mifflin County  
Millersburg Area School District  
Mobile Satellite Communications Inc  
Montgomery, County of  
NEW JERSEY STATE DEPT OF TRANSPORTATION  
NEW JERSEY STATE POLICE  
NOROC Broadband LLC  
National Radio Astronomy Observatory  
Netrepid, Inc.  
New Cingular Wireless PCS - VA/DC/MD  
New Cingular Wireless PCS LLC - AL, MS,  
New Cingular Wireless PCS LLC - DC  
New Cingular Wireless PCS LLC - WV/VA/SC  
New Cingular Wireless PCS of PA LLC  
New Cingular Wireless PCS, LLC - PA  
New Cingular Wireless PCS LLC -NE Reg  
New Jersey Turnpike Authority  
New Jersey Turnpike Authority-Pkwy Div  
New Jersey, State of -NJ Transit  
Nextlink Wireless, Inc  
Northern Virginia Electric Cooperative  
Open Range Communications  
PENNSYLVANIA COMMONWEALTH MEDIA SERVICES  
PENNSYLVANIA MICROWAVE NETWORK INC.  
PENNSYLVANIA TURNPIKE COMMISSION  
Pennsylvania 3 Sector 2, L.P.  
Philly Sports Wireless  
Pitt Power  
Pittsburgh, City of (PA)  
Pontis Communications, Inc.  
Port Networks, LLC  
Public Broadcasting Service  
QUALCOMM INC.  
RAYTHEON COMPANY  
Radio One of Boston, Inc.  
RapidDSL & Wireless, Inc.  
Roadstar Internet, Inc.  
Rural Broadband Network Services LLC  
SCHUYLKILL, COUNTY OF  
SCTF NET

Company (Continued)

SECOM NET  
SOMERSET COUNTY  
SOUTHEASTERN PENNSYLVANIA TRANSIT AUTH  
Salem County Information Technology  
Shenandoah Personal Communications Co  
Somerset County, Maryland  
State of Maryland, MIEMSS  
State of WV DHHR/BPH STECS  
Sullivan, County of  
Synergy Telecommunications Corp  
THE HERSHEY COMPANY  
Telecom Transport Management, Inc  
UNION, COUNTY OF  
UNIVERSITY OF MARYLAND  
USCOC of Cumberland, Inc.  
USCOC of Virginia RSA #3, Inc.  
Verizon New Jersey, Inc.  
Verizon Virginia, Inc.  
Virginia Broadband, LLC  
Virginia Electric & Power Company  
Virginia RSA #7, Inc.  
WASHINGTON SUBURBAN SANITARY COMMISSION  
WEST VIRGINIA RADIO CORPORATION  
WHYY, INC.  
WICOMICO BOARD OF EDUCATION  
WPNT, Inc.  
Warrenton Fauquier Joint Communications  
Washington Gas Light Company  
Western PA Internet Access, Inc.  
York County Dept of Emergency Services  
ACC License, LLC  
ACCELACOM-BALTIMORE LLC  
ADAMS COUNTY EMERGENCY MANAGEMENT AGENCY  
ALLEGANY COUNTY GOVERNMENT  
APC Realty and Equipment CO LLC  
ARLINGTON COUNTY EMERGENCY COMM CTR  
ART Licensing Corp.  
AT&T CORP  
Airband Communications Inc  
BUSINESS INFORMATION GROUP, INC.  
CAMP HILL SCHOOL DISTRICT  
CBS Broadcasting Inc  
CECIL COUNTY PUBLIC SCHOOLS  
CRISPUS ATTUCKS ASSOCIATION  
Cape May County Municipal Utilities Auth  
Cape May County, MIS Department  
Carlisle Area School District  
City of Altoona  
Commissioners of Caroline County  
Cumberland Valley School District  
DOVER AREA SCHOOL DISTRICT



Company (Continued)

East Pennsboro Area School  
Fixed Wireless Holdings, LLC  
Franklin County Dept. of Emergency Servi  
George Washington University  
HALIFAX AREA SCHOOL DISTRICT  
LANCASTER GENERAL HOSPITAL  
MARYLAND, STATE OF - MDOT - MTA  
NBC TELEMUNDO LICENSE CO.  
NEXSTAR BROADCASTING, INC.  
New Cingular Wireless PCS LLC -NE Reg  
Northern York County School District  
Open Range Communications  
Prince William, County of  
Red Rose Transit Authority  
Red Zebra Broadcasting Licensee, LLC  
Roadstar Internet, Inc.  
SHIPPENSBURG AREA SCHOOL DISTRICT  
SUSQUEHANNA TOWNSHIP SCHOOL DISTRICT  
Steelton-Highspire School District  
THE HERSHEY COMPANY  
Telecom Transport Management, Inc  
WASHINGTON CABLE SYSTEMS INC  
WINEMILLER COMMUNICATIONS, INC.  
WKYSFM, INC  
Washington Metro Area Transit Police Dep  
York Water Co

## **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: 07/30/2011  
Job Number: 110708COMSJC03

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### Administrative Information

Status ENGINEER PROPOSAL  
Call Sign KA258  
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' 33.0" W  
Climate Zone A  
Rain Zone 2  
Ground Elevation (AMSL) 174.65 m / 573.0 ft

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### Link Information

Satellite Type Geostationary  
Mode TR - Transmit-Receive  
Modulation Analog and 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) 9.45 m / 31.0 ft

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### Antenna Information

	Receive	Transmit
Manufacturer	TIW	TIW
Model	14.2 Meter	14.2 Meter
Gain / Diameter	62.0 dBi / 14.2 m	65.1 dBi / 14.2 m
3-dB / 15-dB Beamwidth	0.20° / 0.40°	0.10° / 0.20°
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%	-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 11.0 GHz	Transmit 14.0 GHz
Emission / Frequency Range (MHz)	SEE ATTACHMENT 1	SEE ATTACHMENT 1
Max Great Circle Coordination Distance	697.5 km / 433.4 mi	487.3 km / 302.7 mi
Precipitation Scatter Contour Radius	602.2 km / 374.2 mi	200.9 km / 124.8 mi

**COMSEARCH**  
**Earth Station Data Sheet**  
19700 Janelia Farm Boulevard, Ashburn, VA 20147  
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ATTACHMENT 1  
Page 1 of 2

TIW  
Model 14.2 Meter

14.25 GHz Gain: 65.1 dBi  
11.45 GHz Gain: 62.0 dBi

Satellite Arc: 6.0° to 149.0° West Longitude

Receive Band: 10950.0 to 11200.0 MHz  
11450.0 to 12200.0 MHz

Emissions

N0N  
200KF3N to 2M00F3N  
800KF9D  
800KG9D

11700.0 to 12200.0 MHz

Emissions

56K0G7W to 72M0G7W

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Satellite Arc: 6.0° to 149.0° West Longitude

Transmit Band: 13246.5 MHz  
13750.0 to 14000.0 MHz

<u>Emission</u>	<u>EIRP (dBW)</u>	<u>RF Power Density (dBW/4 kHz)</u>	<u>EIRP Density (dBW/ 4 kHz)</u>
850KF9D	87.0	-1.4	63.7

# COMSEARCH

## Earth Station Data Sheet

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### ATTACHMENT 1

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Transmit Band: 14000.0 to 14500.0 MHz

<u>Emission</u>	<u>EIRP (dBW)</u>	<u>RF Power Density (dBW/4 kHz)</u>	<u>EIRP Density (dBW/ 4 kHz)</u>
N0N	51.1	-14.0	51.1
400KF9D to	71.1	-14.0	51.1
2M00F9D	78.1	-14.0	51.1
56K0G7W to	62.6	-14.0	51.1
72M0G7W	88.0	-19.7	45.4

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Satellite Arc: 6.0° to 149.0° West Longitude

Receive Band: 12200.0 to 12700.0 MHz

#### Emissions

400KF2D to  
2M00F2D

Transmit Band: 17300.0 to 17800.0 MHz

<u>Emission</u>	<u>EIRP (dBW)</u>	<u>RF Power Density (dBW/4 kHz)</u>	<u>EIRP Density (dBW/ 4 kHz)</u>
400KF2D to	76.3	- 8.8	56.3
2M00F2D	83.3	- 8.8	56.3

# 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' 33.0" W			
Ground Elevation (AMSL)	174.65 m / 573.0 ft			
Antenna Centerline (AGL)	9.45 m / 31.0 ft			
Antenna Model	TIW 14.2 METER			
Antenna Mode	Receive 11.0 GHz		Transmit 14.0 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			-1.4 (dBW/4 kHz)	

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 11.0 GHz		Transmit 14.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
0	0.00	101.81	-10.00	231.37	-10.00	160.44
5	0.00	96.84	-10.00	231.37	-10.00	160.44
10	0.00	91.86	-10.00	231.37	-10.00	160.44
15	0.00	86.88	-10.00	231.37	-10.00	160.44
20	0.00	81.90	-10.00	231.37	-10.00	160.44
25	0.00	76.92	-10.00	231.37	-10.00	160.44
30	0.00	71.95	-10.00	231.37	-10.00	160.44
35	0.00	66.97	-10.00	231.37	-10.00	160.44
40	0.00	62.00	-10.00	231.37	-10.00	160.44
45	0.00	57.03	-10.00	231.37	-10.00	160.44
50	0.00	52.06	-10.00	231.37	-10.00	160.44
55	0.00	47.09	-9.82	232.14	-9.82	161.10
60	0.00	42.14	-8.62	237.52	-8.62	167.19
65	0.00	37.19	-7.26	243.78	-7.26	172.34
70	0.00	32.26	-5.72	251.29	-5.72	178.21
75	0.00	27.34	-3.92	260.19	-3.92	185.03
80	0.00	22.47	-1.79	271.24	-1.79	193.13
85	0.00	17.65	0.83	285.48	0.83	202.21
90	0.00	12.98	4.17	301.98	4.17	215.43
95	0.00	8.66	8.56	332.93	8.56	233.98
100	0.00	5.61	13.27	697.52	13.27	487.26
105	0.00	6.15	12.28	470.23	12.28	322.48
110	0.00	9.60	7.45	324.46	7.45	229.15
115	0.00	13.27	3.93	300.47	3.93	214.44
120	0.00	16.89	1.31	288.17	1.31	204.06
125	0.00	20.41	-0.75	276.81	-0.75	197.09
130	0.00	23.83	-2.43	267.88	-2.43	190.71
135	0.00	27.11	-3.83	260.66	-3.83	185.38
140	0.00	30.23	-5.01	254.75	-5.01	180.89
145	0.00	33.14	-6.01	249.86	-6.01	177.10
150	0.00	35.82	-6.85	245.83	-6.85	173.89
155	0.00	38.20	-7.55	242.41	-7.55	171.23
160	0.00	40.26	-8.12	239.78	-8.12	169.07
165	0.00	41.93	-8.56	237.77	-8.56	167.39
170	0.00	43.16	-8.88	236.35	-8.88	166.20
175	0.00	43.92	-9.07	235.50	-9.07	165.48
180	0.00	44.18	-9.13	235.21	-9.13	165.24
185	0.00	43.92	-9.07	235.49	-9.07	165.48

# COMSEARCH

## Earth Station Data Sheet

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

### Coordination Values

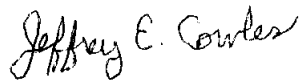
### HAGERSTOWN, MD

Licensee Name	Intelsat License LLC			
Latitude (NAD 83)	39° 35' 54.0" N			
Longitude (NAD 83)	77° 45' 33.0" W			
Ground Elevation (AMSL)	174.65 m / 573.0 ft			
Antenna Centerline (AGL)	9.45 m / 31.0 ft			
Antenna Model	TIW 14.2 METER			
Antenna Mode	Receive 11.0 GHz		Transmit 14.0 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			-1.4 (dBW/4 kHz)	

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 11.0 GHz		Transmit 14.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	43.16	-8.88	236.35	-8.88	166.20
195	0.00	41.93	-8.56	237.77	-8.56	167.39
200	0.00	40.26	-8.12	239.78	-8.12	169.07
205	0.00	38.20	-7.55	242.41	-7.55	171.23
210	0.00	35.81	-6.85	245.83	-6.85	173.90
215	0.00	33.14	-6.01	249.87	-6.01	177.10
220	0.00	30.22	-5.01	254.75	-5.01	180.90
225	0.00	27.11	-3.83	260.66	-3.83	185.38
230	0.00	23.83	-2.43	267.87	-2.43	190.70
235	0.00	20.42	-0.75	276.80	-0.75	197.08
240	0.00	16.89	1.31	288.19	1.31	204.08
245	0.00	13.28	3.92	300.45	3.92	214.43
250	0.00	9.59	7.46	324.54	7.46	229.20
255	0.00	6.33	11.96	485.51	11.96	333.73
260	0.00	6.11	12.35	669.65	12.35	466.48
265	0.00	9.18	7.93	328.06	7.93	231.22
270	0.00	13.46	3.77	299.52	3.77	213.82
275	0.00	18.11	0.55	283.95	0.55	201.16
280	0.00	22.90	-2.00	270.15	-2.00	192.35
285	0.00	27.76	-4.09	259.36	-4.09	184.40
290	0.00	32.66	-5.85	250.63	-5.85	177.70
295	0.00	37.59	-7.38	243.24	-7.38	171.90
300	0.00	42.53	-8.72	237.07	-8.72	166.81
305	0.00	47.48	-9.91	231.75	-9.91	160.77
310	0.00	52.44	-10.00	231.37	-10.00	160.44
315	0.00	57.40	-10.00	231.37	-10.00	160.44
320	0.00	62.37	-10.00	231.37	-10.00	160.44
325	0.00	67.34	-10.00	231.37	-10.00	160.44
330	0.00	72.31	-10.00	231.37	-10.00	160.44
335	0.00	77.28	-10.00	231.37	-10.00	160.44
340	0.00	82.26	-10.00	231.37	-10.00	160.44
345	0.00	87.23	-10.00	231.37	-10.00	160.44
350	0.00	92.21	-10.00	231.37	-10.00	160.44
355	0.00	97.18	-10.00	231.37	-10.00	160.44

## 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: July 30, 2011