

# FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for  
**Intelsat License LLC**  
**HAGERSTOWN, MD**  
**(E140121) (K78)**  
**Satellite Earth Station**

Prepared By:  
COMSEARCH  
19700 Janelia Farm Boulevard  
Ashburn, VA 20147  
February 02, 2016

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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 receive-only earth station.

### Company

Maryland Public Broadcasting Commission  
Shenandoah Personal Communications, LLC  
Sprint Spectrum L.P.  
State of Maryland, MIEMSS  
USCOC of Cumberland, Inc.

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 12/18/2015.

Company

256Q Networks  
ALLEGANY COLLEGE OF MARYLAND  
ALLEGANY COUNTY GOVERNMENT  
AT&T Communications of Virginia, LLC  
AT&T Corporation  
AT&T Wireless Services 3 LLC (NM, N TX)  
AWC Networks  
Access MLP Operating LLC  
Adams County Department of Emergency Svc  
Affiniti PA, LLC  
Agile Network Builders LLC  
Albermarle, County of, Virginia  
Allegheny County Dept of Emergency Svcs  
Allentown SMSA Limited Partnership  
Allfirst Bank  
American Electric Power Service Co  
Americell PA-3 LTD  
Anadarko Petroleum Corporation  
Argos Engineering, LLC  
Atlantic Broadband (Penn), LLC  
Atlantic, County of  
Auburn Data Systems, LLC  
BALTIMORE CITY DEPARTMENT OF PUBLIC WORK  
BAY BROADBAND COMMUNICATIONS LLC  
BLAIR COUNTY 911  
Baltimore County of Maryland  
Baltimore Gas and Electric Company  
Bedford, County of  
Believe Wireless, LLC  
Berkeley, County of  
Berks County Department of Emergency Ser  
Blaze Broadband  
Blue Ridge Carriers  
Blueline Communications  
Buckeye Partners  
Bucks County Dept. of Emergency Comm  
Buggs Island Telephone Cooperative, Inc.  
Business Only Broadband, LLC  
CABELL COUNTY 911  
CBS Communication Services Inc

CNG Transmission Corporation  
CROWN COMMUNICATION, INC.  
Cambria, County of  
Cape May County Municipal Utilities Auth  
Cape May County, MIS Department  
Caroline County, VA  
Cellco Partnership - Bridgeville, PA/WV  
Cellco Partnership - Southern Virginia  
Cellco Partnership- PA Region  
Cellco Prtnrshp - Phil. Tri-State Rgn  
Central Virginia Electric Cooperative  
Chester, County of  
Chesterfield, County of  
China Cat Productions LLC  
City of Bethlehem  
City of Laurel  
City of Ocean City, MD  
Citynet  
Clearwire Spectrum Holdings II, LLC  
Clearwire Spectrum Holdings III, LLC  
Clearwire Spectrum Holdings LLC  
Columbia, County  
Commonwealth of Pennsylvania-Radio Proj.  
Comprehensive Wireless LLC  
Conterra Ultra Broadband, LLC  
Converge Towers LLC  
Coralinks  
County of Burlington  
County of Burlington, Public Safety Cntr  
County of Camden  
County of Lycoming  
County of York  
Cumberland, County of  
D&E Communications, Inc.  
DAUPHIN COUNTY EMERGENCY MANAGEMENT  
Delaware County (PA) Emergency Services  
Delaware Division of Communications  
ECW Wireless, LLC  
Eastern MLG LLC  
Eduro Networks LLC  
Egg Harbor Township Board of Education  
Electric Railroad, LLC  
Enoch Pratt Free Library  
Exelon Generation Company, LLC  
FELHC, INC  
FiberTower Network Services Corp.-DIP  
Forest, County of  
Franklin County Dept. of Emergency Servi  
Frederick County  
Fundamental Broadcasting LLC  
GEORGE MASON UNIVERSITY INSTR FNDTION  
GETWIRELESS.NET  
GWETA, Inc.  
Garden State Transmissions  
Global Telecom & Technology Americas  
Globecomm License Sub LLC

Gloucester Township  
Gloucester, County of  
Grant, County of  
Gray Television Licensee LLC (Gray TV)  
Gray Television Licensee, LLC  
Greater Philadelphia Radio, Inc.  
Greene, County of (PA)  
Hanover, County of  
Hardy Cellular Telephone Company  
Hardy Telecommunications  
Harrisonburg-Rockingham ECC  
Henrico County  
High Voltage Communications LLC (CFN)  
Hilltower Tower Leasing, Inc  
Huntingdon County of  
Indiana, County of  
JEFFERSON COUNTY OF PENNSYLVANIA  
JEFFERSON, COUNTY OF  
Jefferson Microwave, LLC  
Juniata County Emergency Services  
Kent County Levy Court  
Kentucky Commonwealth of KY Emerg Warnin  
King George County  
Kryptick Technologies  
LOWER SHORE BROADBAND COOPERATIVE  
Lancaster County-Wide Communications  
Lehigh, County of  
Limitless Mobile, LLC  
Local Media TV Philadelphia  
Loudoun County Public Schools  
Loudoun, County of  
MB Microwave, LLC  
MIT LINCOLN LABORATORY  
MLS Engineering  
Maryland Port Administration  
Maryland Public Broadcasting Commission  
Maryland State Highway Administration  
Maryland, State Of - MDOT-MTA  
Maryland, State of - DNR  
Maryland, State of - Dept.of Info & Tech  
Micrologic, Inc  
Middle East Broadcasting Networks, Inc.  
Mifflin County  
Millersburg Area School District  
Mobile Satellite Communications Inc  
Montgomery County Of  
Montgomery, County of  
Morgan, County of  
NOROC Broadband LLC  
National Tower Company LLC  
Nelson, County of  
Netrepid, Inc.  
New Cingular Wireless PCS LLC -NJ  
New Cingular Wireless PCS - Maryland  
New Cingular Wireless PCS LLC - DC  
New Cingular Wireless PCS LLC - Georgia

New Cingular Wireless PCS LLC - KY  
New Cingular Wireless PCS LLC - Ohio  
New Cingular Wireless PCS LLC - VA  
New Cingular Wireless PCS LLC- WV/NC/SC  
New Cingular Wireless PCS LLC-DE/NH/RI  
New Cingular Wireless PCS of PA LLC  
New Cingular Wireless PCS, LLC - PA  
New Jersey State Police  
New Jersey Turnpike Authority-Pkwy Div  
New Jersey, State of -NJ Transit  
New Line Networks, LLC  
Nextlink Wireless, LLC  
Norfolk Southern Railway  
Northern Virginia Electric Cooperative  
Northumberland, County of  
Ohio County Commission  
Old Dominion LLC  
PEG Bandwidth, LLC  
Page County Broadband Authority  
Peco Energy Company  
Pennsylvania 3 Sector 2, L.P. - PA Regn  
Pennsylvania 4 Sector 2 LP- PA Region  
Pennsylvania Sports Entertainment Netwo.  
Pennsylvania Turnpike Commission  
Peoples Natural Gas Company LLC  
PhillieCo, L.P.  
Pitt Power  
Pitt Power  
Pittsburgh, City of (PA)  
Pontis Communications, Inc.  
Port Networks, LLC  
Prince William, County of  
Public Broadcasting Service  
QUALCOMM INC.  
R. Fritz Enterprises Inc  
RADIO ONE, INC - MD  
Radio One Inc  
RapidDSL & Wireless, Inc.  
Rendezvous Communications LLC  
River Valley Internet LLC  
Rural Broadband Network Services LLC  
SCHUYLKILL, COUNTY OF  
SECOM NET  
SOUTHERN OHIO COMM. SERVICES INC  
Salem County Information Technology  
Shenandoah Personal Communications, LLC  
Somerset County, Maryland  
Somerset, County of  
South Central Task Force (SCTFNET)  
Southeastern Pennsylvania Transit Auth  
Southern Maryland Electric Cooperative I  
Spotsylvania, County of  
Sprint Spectrum L.P.  
Sprintcom, Inc  
St. Mary's County of (MD)  
Stafford, County of



Standard Backhaul Communications LLC  
State of Maryland, MIEMSS  
State of New Jersey  
Sullivan, County of  
Sussex County Council  
Synergy Telecommunications Corp  
T-Mobile License LLC  
TWO WAY RADIO INC.  
Telecom Transport Management, Inc  
Telegia Communications Inc.  
Thought Transmissions, LLC  
Towerstream Corp.  
Townsquare Media Atlantic City III Licen  
Turtle Networks 6559  
Turtle Networks 6562  
USCOC of Cumberland, Inc.  
USCOC of Virginia RSA #3, Inc.  
Union, County Of  
Valley Rural Electric Cooperative, Inc.  
Verizon New Jersey, Inc.  
Verizon Virginia, Inc.  
Verizon Wireless (VAW) LLC - Maryland  
Verizon Wireless (VAW) LLC - W/B/V Mkts  
Verizon Wireless (VAW) LLC- IN & KY Mkt  
Verizon Wireless (VAW) LLC-Pennsylvania  
Verizon Wireless VAW LLC - West Virginia  
Verizon Wireless VAW LLC-Southern VA  
Virginia Broadband, LLC  
Virginia Electric & Power Company  
Virginia Everywhere, LLC  
Virginia PCS Alliance, L.C.  
Virginia Tech Foundation , Inc.  
WEST VIRGINIA RADIO CORPORATION  
WHYY, Inc.  
WICOMICO BOARD OF EDUCATION  
WPNT Media Subsidiary, LLC  
WV DHHR BPH, Office of EMS, Com. Div.  
Warrenton Fauquier Joint Communications  
Washington County Board of Education  
Washington Gas Light Company  
Washington Suburban Sanitary Commission  
Washington, County of  
Weblin Holdings LLC  
West Virginia PCS Alliance, L.C.  
Williams Energy Services  
Winchester, City of  
Wireless Internetwork LLC  
World Class Wireless, LLC  
iSignal  
xWave Engineering 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: 02/02/2016  
Job Number: 151218COMSGE02

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### Administrative Information

Status ENGINEER PROPOSAL  
Call Sign E140121  
Licensee Code INTELS  
Licensee Name Intelsat License LLC

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### Site Information HAGERSTOWN, MD

Venue Name  
Latitude (NAD 83) 39° 35' 53.1" N  
Longitude (NAD 83) 77° 45' 22.3" W  
Climate Zone A  
Rain Zone 2  
Ground Elevation (AMSL) 170.08 m / 558.0 ft

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### Link Information

Satellite Type Geostationary  
Mode RO - Receive-Only  
Modulation Digital  
Satellite Arc 5.6° W to 149.7° West Longitude  
Azimuth Range 101.6° to 258.3°  
Corresponding Elevation Angles 5.0° / 5.2°  
Antenna Centerline (AGL) 8.66 m / 28.4 ft

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### Antenna Information Receive - FCC32

Manufacturer ViaSat  
Model 13.3 Meter  
Gain / Diameter 63.1 dBi / 13.3 m  
3-dB / 15-dB Beamwidth 0.12° / 0.24°

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

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### Frequency Information Receive 11.0 GHz

Emission / Frequency Range (MHz)  
250KG7D - 1M00G7W / 10700.0 - 10950.0  
250KG7D - 1M00G7W / 10950.0 - 11200.0  
250KG7D - 1M00G7W / 11200.0 - 11450.0  
250KG7D - 1M00G7W / 11450.0 - 11700.0

Max Great Circle Coordination Distance 736.0 km / 457.3 mi  
Precipitation Scatter Contour Radius 608.9 km / 378.3 mi

# 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' 53.1" N  
Longitude (NAD 83) 77° 45' 22.3" W  
Ground Elevation (AMSL) 170.08 m / 558.0 ft  
Antenna Centerline (AGL) 8.66 m / 28.4 ft  
Antenna Model ViaSat 13.3 meter  
Antenna Mode Receive 11.0 GHz  
Interference Objectives: Long Term -156.0 dBW/MHz 20%  
Short Term -146.0 dBW/MHz 0.01%

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 11.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
0	0.00	101.55	-10.00	231.37
5	0.00	96.57	-10.00	231.37
10	0.00	91.59	-10.00	231.37
15	0.00	86.61	-10.00	231.37
20	0.00	81.63	-10.00	231.37
25	0.00	76.65	-10.00	231.37
30	0.00	71.67	-10.00	231.37
35	0.00	66.69	-10.00	231.37
40	0.00	61.72	-10.00	231.37
45	0.00	56.74	-10.00	231.37
50	0.00	51.77	-10.00	231.37
55	0.00	46.80	-9.76	232.43
60	0.00	41.84	-8.54	237.87
65	0.00	36.89	-7.17	244.32
70	0.00	31.95	-5.61	251.79
75	0.00	27.03	-3.80	260.83
80	0.00	22.14	-1.63	272.08
85	0.00	17.31	1.04	286.67
90	0.00	12.61	4.48	303.95
95	0.00	8.27	9.07	336.95
100	0.00	5.24	14.02	736.04
105	0.00	6.04	12.48	493.32
110	0.00	9.59	7.46	324.53
115	0.00	13.27	3.93	300.45
120	0.00	16.89	1.31	288.19
125	0.00	20.42	-0.75	276.80
130	0.00	23.83	-2.43	267.87
135	0.00	27.11	-3.83	260.66
140	0.00	30.22	-5.01	254.75
145	0.00	33.14	-6.01	249.87
150	0.00	35.81	-6.85	245.83
155	0.00	38.20	-7.55	242.41
160	0.00	40.26	-8.12	239.78
165	0.00	41.93	-8.56	237.77
170	0.00	43.16	-8.88	236.35
175	0.00	43.92	-9.07	235.50
180	0.00	44.18	-9.13	235.21
185	0.00	43.92	-9.07	235.50

# COMSEARCH

## Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147  
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### Coordination Values

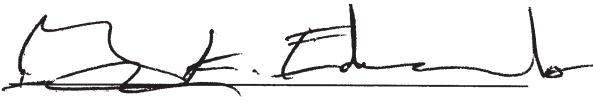
### HAGERSTOWN, MD

Licensee Name                   Intelsat License LLC  
Latitude (NAD 83)            39° 35' 53.1" N  
Longitude (NAD 83)           77° 45' 22.3" W  
Ground Elevation (AMSL)     170.08 m / 558.0 ft  
Antenna Centerline (AGL)    8.66 m / 28.4 ft  
Antenna Model                ViaSat 13.3 meter  
Antenna Mode                 Receive 11.0 GHz  
Interference Objectives: Long Term   -156.0 dBW/MHz   20%  
                                  Short Term       -146.0 dBW/MHz   0.01%

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 11.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	43.16	-8.88	236.35
195	0.00	41.93	-8.56	237.77
200	0.00	40.26	-8.12	239.78
205	0.00	38.20	-7.55	242.41
210	0.00	35.82	-6.85	245.83
215	0.00	33.14	-6.01	249.86
220	0.00	30.23	-5.01	254.75
225	0.00	27.11	-3.83	260.66
230	0.00	23.83	-2.43	267.88
235	0.00	20.41	-0.75	276.81
240	0.00	16.89	1.31	288.16
245	0.00	13.27	3.93	300.47
250	0.00	9.60	7.45	324.45
255	0.00	6.10	12.37	481.27
260	0.00	5.44	13.61	724.86
265	0.00	8.48	8.79	334.77
270	0.00	12.81	4.31	302.89
275	0.00	17.49	0.93	286.03
280	0.00	22.31	-1.71	271.63
285	0.00	27.20	-3.86	260.49
290	0.00	32.11	-5.67	251.52
295	0.00	37.05	-7.22	243.97
300	0.00	42.00	-8.58	237.68
305	0.00	46.96	-9.79	232.28
310	0.00	51.92	-10.00	231.37
315	0.00	56.89	-10.00	231.37
320	0.00	61.87	-10.00	231.37
325	0.00	66.84	-10.00	231.37
330	0.00	71.82	-10.00	231.37
335	0.00	76.80	-10.00	231.37
340	0.00	81.77	-10.00	231.37
345	0.00	86.75	-10.00	231.37
350	0.00	91.73	-10.00	231.37
355	0.24	96.72	-10.00	227.58

## 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.

BY: 

Gary K. Edwards  
Senior Manager  
COMSEARCH  
19700 Janelia Farm Boulevard  
Ashburn, VA 20147

DATED: February 02, 2016