

# FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for  
**Intelsat License LLC**  
**HAGERSTOWN, MD**  
**Satellite Earth Station**

Prepared By:  
COMSEARCH  
19700 Janelia Farm Boulevard  
Ashburn, VA 20147  
July 02, 2019

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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

State of Maryland MIEMSS Communications  
USCOC of Cumberland, Inc.  
Washington Gas Light Company  
WV DHSEM, SIRN System

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 06/03/2019.

#### Company

Adams County Department of Emergency Svc  
Affiniti PA, LLC  
Anne Arundel, County of  
Appalachia Engineering Services  
AQ2AT LLC  
Argos Engineering, LLC  
AT&T Corp.  
Atlantic Broadband (Penn), LLC  
Atlantic City Electric Company  
Atlantic Coast Pipeline, LLC  
Baltimore County of Maryland  
Baltimore Gas and Electric Company  
Beaver Springs Faith Baptist Church, Inc  
Bedford County of  
Believe Wireless, LLC  
Blair County 911  
Calvert Cliffs Nuclear Power Plant  
Calvert, County of  
Cambria, County of  
Capital Communications of America  
Carroll, County of  
Cellco Partnership - Bridgeville, PA/WV  
Cellco Partnership-WDC/Baltimore  
Cellco Prtnrshp - Phil. Tri-State Rgn  
Charles, County of  
Chester, County of  
Columbia Gas Transmission, LLC  
Commonwealth of Pennsylvania  
Commonwealth of Pennsylvania-Radio Proj.  
Comprehensive Wireless LLC  
County of Centre  
County of Culpeper  
County of Fayette  
County of Fayette  
County of Frederick  
County of Orange, VA  
County of York  
Cumberland, County of (PA)  
Dauphin County Emergency Management  
DC2A LLC

Delaware Division of Communications  
Delmarva Power and Light Company  
Dominion Energy Transmission, Inc.  
Eastern MLG LLC  
Egan LLC  
Enoch Pratt Free Library  
Entercom License, LLC  
Equitable Gas Company  
Exelon Generation Company, LLC  
FELHC, Inc.  
Franklin County Dept. of Emergency Servi  
Fulton County PA  
Fundamental Broadcasting LLC  
Garden State Transmissions  
GEORGE WASHINGTON UNIVERSITY  
Getwireless.Net  
GTT America LLC  
Hardy Cellular Telephone Company  
Hardy County OEM/E911  
Harrison County Emergency Services  
Harrisonburg-Rockingham ECC  
Hearst Properties Inc.  
High Voltage Communications LLC (CFN)  
Howard, County of  
Huntingdon, County of  
iSignal  
Juniata County Emergency Services  
Lancaster County-Wide Communications  
Lebanon, County of  
Loudoun, County of  
Maryland Public Broadcasting Commission  
Maryland State Dept of General Services  
Maryland State Highway Administration  
Maryland, State of - Dept.of Info & Tech  
Maryland, State of - DNR  
Maryland, State of - MDOT-MTA  
MCI Communications Services Inc.  
Mifflin County  
Mifflin County  
Montgomery, County of  
Morgan, County of  
Mountain State Communications, llc  
New Cingular Wireless PCS - Maryland  
New Cingular Wireless PCS LLC - DC  
New Cingular Wireless PCS LLC - VA  
New Cingular Wireless PCS LLC - WV,NC,SC  
New Cingular Wireless PCS, LLC - PA  
New Jersey, State of -NJ Transit  
New Line Networks, LLC  
Norfolk Southern Railway  
Peco Energy Company  
Pennsylvania Sports Entertainment Netwo.  
Pennsylvania State Police  
Pennsylvania Turnpike Commission  
Perry, County of  
Pittsburgh SMSA Limited Partnership

Potomac Electric Power Company  
Preston County Office of Emergency Manag  
Prince George's County  
Prince William, County of  
PSEG Services Corporation  
Radio License Holding CBC, LLC  
Radio One Inc  
Rappahannock Electric Cooperative  
RCYM Holdings LLC  
Redi-Call Communications Company  
Rural Broadband, LLC  
Secom Net  
Shenandoah Personal Communications, LLC  
Shenandoah Valley Electric Cooperative  
Snyder, County of  
Somerset, County of  
South Central Task Force (SCTFNET)  
Southern Maryland Electric Cooperative I  
Stafford, County of  
State of Maryland MIEMSS Communications  
Texas Eastern Communications, LLC  
Thought Transmissions, LLC  
T-Mobile License LLC  
Transcontinental Gas Pipeline Corp.  
Triangle Communications, Inc.  
Uniti Fiber PEG, LLC  
Ursa Navigation Solutions, Inc.  
US Cellular Operating Company, LLC (WI)  
USCOC of Cumberland, Inc.  
USOC of Pennsylvania RSA No 10 B2 Inc.  
Verizon Wireless (VAW) LLC - Maryland  
Verizon Wireless (VAW) LLC - W/B/V Mkts  
Verizon Wireless (VAW) LLC-Pennsylvania  
Virginia Department of State Police  
Virginia Electric & Power Company  
Warrenton Fauquier Joint Communications  
Washington Gas Light Company  
Washington Suburban Sanitary Commission  
Westmoreland, County of  
Williamson Enterprise LLC  
Wireless Internetwork LLC  
World Class Wireless, LLC  
WV DHSEM, SIRN System

## **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: 07/02/2019  
Job Number: 190603COMSGE02

### Administrative Information

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

### Site Information HAGERSTOWN, MD

Venue Name:  
Latitude (NAD 83): 39° 35' 54.8" N  
Longitude (NAD 83): 77° 45' 18.6" W  
Climate Zone: A  
Rain Zone: 2  
Ground Elevation (AMSL): 168.65 m / 553.3 ft

### 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

### Antenna Information

Manufacturer:  
Model:  
Gain / Diameter:  
3-dB / 15-dB Beamwidth:

### Receive - FCC32

Gen Dynamics  
Satcom  
53.0 dBi / 13.1 m  
0.38° / 0.76°

### Transmit - FCC32

Gen Dynamics  
Satcom  
56.6 dBi / 13.1 m  
0.26° / 0.52°

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

(1) -11.8 (2) -2.6  
12.2

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

44.8 54.0  
68.8 78.0

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

500KG7D - 72M0G7W / 3400.0 - 4200.0  
500KG7D - 72M0F7W / 3400.0 - 4200.0

### Transmit 6.1 GHz

(1) 6M00F7W - 72M0G7W / 5850.0 - 6425.0  
6425.0 - 6538.0, 6572.0 - 6583.0, 6622.0 - 6628.0  
6701.0 - 6725.0  
(1) 1M00F7D - 1M50F7D / 6172.0 - 6178.0  
  
(2) 1M00F7D - 1M50F7D / 5924.0 - 5927.5,  
6414.25 - 6425.25

Max Great Circle Coordination Distance: 714.8 km / 444.1 mi  
Precipitation Scatter Contour Radius: 613.5 km / 381.1 mi

334.7 km / 208.0 mi  
100.0 km / 62.1 mi

# COMSEARCH

## Earth Station Data Sheet

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### Coordination Values

### HAGERSTOWN, MD

Licensee Name Intelsat License LLC  
Latitude (NAD 83) 39° 35' 54.8" N  
Longitude (NAD 83) 77° 45' 18.6" W  
Ground Elevation (AMSL) 168.65 m / 553.3 ft  
Antenna Centerline (AGL) 5.79 m / 19.0 ft  
Antenna Model Gen Dynamics 13.1 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 -11.8 (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	0.26	101.82	-10.00	278.03	-10.00	134.03
5	0.23	96.84	-10.00	282.07	-10.00	135.50
10	0.21	91.86	-10.00	283.43	-10.00	136.42
15	0.00	86.88	-10.00	285.28	-10.00	137.70
20	0.22	81.90	-10.00	283.11	-10.00	136.21
25	0.00	76.93	-10.00	285.28	-10.00	137.70
30	0.00	71.95	-10.00	285.28	-10.00	137.70
35	0.23	66.96	-10.00	281.82	-10.00	135.32
40	0.00	62.00	-10.00	285.28	-10.00	137.70
45	0.00	57.03	-10.00	285.28	-10.00	137.70
50	0.00	52.06	-10.00	285.28	-10.00	137.70
55	0.00	47.10	-9.82	286.40	-9.82	138.21
60	0.00	42.14	-8.62	294.22	-8.62	141.83
65	0.00	37.19	-7.26	303.29	-7.26	146.09
70	0.00	32.26	-5.72	314.61	-5.72	151.23
75	0.00	27.35	-3.92	327.40	-3.92	157.55
80	0.00	22.47	-1.79	343.07	-1.79	165.56
85	0.00	17.66	0.83	362.97	0.83	177.36
90	0.00	12.98	4.17	388.85	4.17	190.25
95	0.00	8.67	8.55	426.04	8.55	205.38
100	0.00	5.62	13.26	474.76	13.26	234.72
105	0.00	6.15	12.27	528.20	12.27	243.34
110	0.00	9.60	7.45	416.38	7.45	202.80
115	0.00	13.27	3.93	387.53	3.93	189.33
120	0.00	16.89	1.31	366.72	1.31	179.23
125	0.00	20.41	-0.75	350.91	-0.75	171.25
130	0.00	23.83	-2.43	338.33	-2.43	163.11
135	0.00	27.11	-3.83	328.09	-3.83	157.89
140	0.00	30.23	-5.01	319.61	-5.01	153.67
145	0.00	33.14	-6.01	311.94	-6.01	150.23
150	0.00	35.82	-6.85	306.10	-6.85	147.43
155	0.00	38.20	-7.55	301.33	-7.55	145.16
160	0.00	40.26	-8.12	297.51	-8.12	143.36
165	0.00	41.93	-8.56	294.59	-8.56	142.00
170	0.00	43.16	-8.88	292.52	-8.88	141.03
175	0.00	43.92	-9.07	291.29	-9.07	140.46
180	0.00	44.18	-9.13	290.88	-9.13	140.27
185	0.00	43.92	-9.07	291.28	-9.07	140.46

# COMSEARCH

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### Coordination Values

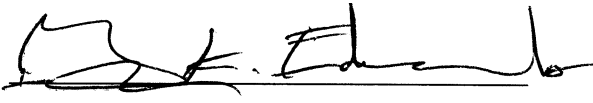
### HAGERSTOWN, MD

Licensee Name	Intelsat License LLC		
Latitude (NAD 83)	39° 35' 54.8" N		
Longitude (NAD 83)	77° 45' 18.6" W		
Ground Elevation (AMSL)	168.65 m / 553.3 ft		
Antenna Centerline (AGL)	5.79 m / 19.0 ft		
Antenna Model	Gen Dynamics 13.1 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			-11.8 (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	141.03
195	0.00	41.93	-8.56	294.59	-8.56	142.00
200	0.00	40.26	-8.12	297.51	-8.12	143.36
205	0.00	38.20	-7.55	301.32	-7.55	145.16
210	0.00	35.81	-6.85	306.10	-6.85	147.43
215	0.21	32.98	-5.96	311.25	-5.96	149.62
220	0.00	30.22	-5.01	319.62	-5.01	153.68
225	0.26	26.92	-3.75	320.23	-3.75	151.63
230	0.30	23.62	-2.33	325.81	-2.33	152.98
235	0.00	20.42	-0.75	350.90	-0.75	171.24
240	0.00	16.89	1.31	366.75	1.31	179.24
245	0.24	13.11	4.06	382.65	4.06	185.18
250	0.25	9.42	7.65	410.95	7.65	198.33
255	0.27	6.09	12.38	536.32	12.38	245.35
260	0.30	5.82	12.87	690.10	12.87	321.20
265	0.28	9.01	8.13	412.05	8.13	197.94
270	0.29	13.34	3.87	374.63	3.87	179.26
275	0.30	18.01	0.61	347.75	0.61	163.78
280	0.28	22.83	-1.96	330.80	-1.96	156.06
285	0.21	27.72	-4.07	325.29	-4.07	156.19
290	0.00	32.66	-5.85	313.67	-5.85	150.77
295	0.00	37.58	-7.38	302.52	-7.38	145.73
300	0.00	42.52	-8.72	293.58	-8.72	141.52
305	0.24	47.45	-9.91	280.72	-9.91	134.44
310	0.00	52.43	-10.00	285.28	-10.00	137.70
315	0.00	57.40	-10.00	285.28	-10.00	137.70
320	0.00	62.36	-10.00	285.28	-10.00	137.70
325	0.00	67.33	-10.00	285.28	-10.00	137.70
330	0.23	72.30	-10.00	281.61	-10.00	135.18
335	0.28	77.27	-10.00	275.05	-10.00	132.04
340	0.28	82.25	-10.00	274.82	-10.00	131.89
345	0.22	87.23	-10.00	282.80	-10.00	135.99
350	0.21	92.20	-10.00	283.72	-10.00	136.62
355	0.29	97.18	-10.00	274.21	-10.00	131.48

## 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: July 02, 2019