**EXHIBIT A**

# FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
**Intelsat License LLC**
**HAGERSTOWN, MD**
**(KA261)**
**Satellite Earth Station**

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
July 31, 2017

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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 Corp.
State of Maryland, MIEMSS

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 07/13/2017.

Company
256Q Networks
AB Services LLC
AT&T Communications of Virginia, LLC
AT&T Corp.
Adams County Department of Emergency Svc
Affiniti PA, LLC
Albermarle, County of, Virginia
Appalachia Engineering Services
Argos Engineering, LLC
Atlantic Broadband (Penn), LLC
Atlantic City Electric Company
Baltimore County of Maryland
Baltimore Gas and Electric Company
Beaver Springs Faith Baptist Church, Inc
Bedford County of
Believe Wireless, LLC
Berks County Department of Emergency Ser
Blair County 911
Blueline Communications
Calvert, County of
Cambria, County of
Capital Communications of America
Caroline County, VA
Carroll, County of
Cellco Partnership - Bridgeville, PA/WV
Cellco Partnership - Southern Virginia
Cellco Partnership- PA Region
Cellco Partnership-WDC/Baltimore
Cellco Prtnrshp - Phil. Tri-State Rgn
Centre Communications Inc.
Centre, County of
Charles, County of
Chester, County of
City of Fredericksburg
Columbia Gas Transmission, LLC
Commonwealth of Pennsylvania-Radio Proj.
Comprehensive Wireless LLC
Conterra Ultra Broadband, LLC
Coralinks
County of Augusta

County of Culpeper
County of Fayette
County of Frederick
County of York
DSRC Networks
Dauphin County Emergency Management
Delaware County (PA) Emergency Services
Delaware Division of Communications
Delmarva Broadcasting Company
Delmarva Power and Light Company
Dominion Energy Transmission, Inc.
ECW Wireless, LLC
Eastern MLG LLC
Enoch Pratt Free Library
Exelon Generation Company, LLC
FELHC, Inc.
Frederick County
Fulton County of (PA)
Fundamental Broadcasting LLC
Garden State Transmissions
Getwireless.Net
Gloucester, County of
Greene, County of (PA)
Hardy Cellular Telephone Company
Hardy County OEM/E911
Harrisonburg-Rockingham ECC
High Voltage Communications LLC (CFN)
Huntingdon County, Pa
Indiana, County of
Juniata County Emergency Services
Kryptick Technologies
Lancaster County-Wide Communications
Limitless Mobile, LLC
Loudoun, County of
MCI Communications Services Inc.
MVC Research. LLC
Maryland Public Broadcasting Commission
Maryland State Highway Administration
Maryland, State of - Dept.of Info & Tech
Montgomery, County of
Mountain State Communications, llc
National Tower Company LLC
New Cingular Wireless PCS  LLC - NJ
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-DE/NH/RI
New Cingular Wireless PCS, LLC - PA
New Jersey, State of -NJ Transit
New Line Networks, LLC
Norfolk Southern Railway
Northumberland County DPS/911
PA Communications
PSEG Services Corporation
Peco Energy Company

Pennsylvania Turnpike Commission
Pepco Holdings Inc.
Perry, County of
Perseus Technology Holdings USA Inc.
Pittsburgh SMSA Limited Partnership
Prince George's County
Prince William, County of
Radio One Inc
Rappahannock Electric Cooperative
Rural Broadband Network Services LLC
SW Networks
Shenandoah Personal Communications, LLC
Shenandoah Valley Electric Cooperative
Somerset, County of
South Central Task Force (SCTFNET)
Southern Maryland Electric Cooperative I
Spotsylvania, County of
St. Mary's County of (MD)
Stafford, County of
State of Maryland, MIEMSS
T-Mobile License LLC
Texas Eastern Communications, LLC
Thought Transmissions, LLC
Transcontinental Gas Pipeline Corp.
US Cellular Operating Company, LLC (WI)
USCOC of Cumberland, Inc.
USOC of Pennsylvania RSA No 10 B2 Inc.
Uniti Fiber PEG, LLC
Verizon Maryland, Inc.
Verizon Wireless (VAW) LLC - Maryland
Verizon Wireless (VAW) LLC - W/B/V Mkts
Verizon Wireless (VAW) LLC-Pennsylvania
Verizon Wireless VAW LLC-Southern VA
Virginia Broadband, LLC
Virginia Department of State Police
Virginia Electric & Power Company
WV DHHR BPH, Office of Ems, Com. Div.
Warrenton Fauquier Joint Communications
Washington Gas Light Company
Washington Suburban Sanitary Commission
Webline Holdings LLC
Westmoreland, County of
Wireless Internetwork LLC
World Class Wireless, LLC
YAB Mobile
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: 07/31/2017
Job Number: 170713COMSGE03

### Administrative Information

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

### Site Information — HAGERSTOWN, MD

| | |
|---|---|
| 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 | 6° W to 65° West Longitude |
| Azimuth Range | 101.9° to 160.4° |
| Corresponding Elevation Angles | 5.3° / 42.3° |
| Antenna Centerline (AGL) | 9.75 m / 32.0 ft |

| Antenna Information | | Receive - FCC32 | | Transmit - FCC32 | |
|---|---|---|---|---|---|
| Manufacturer | | Vertex | | Vertex | |
| Model | | 15.2 KPC | | 15.2 KPC | |
| Gain / Diameter | | 55.0 dBi / 15.2 m | | 58.4 dBi / 15.2 m | |
| 3-dB / 15-dB Beamwidth | | 0.32° / 0.57° | | 0.21° / 0.39° | |
| Max Available RF Power | (dBW/4 kHz) | | | -2.7 | |
| | (dBW/MHz) | | | 21.3 | |
| Maximum EIRP | (dBW/4 kHz) | | | 55.7 | |
| | (dBW/MHz) | | | 79.7 | |
| 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% |

| Frequency Information | Receive 4.0 GHz | Transmit 6.1 GHz |
|---|---|---|
| Emission / Frequency Range (MHz) | 56K0G7W - 72M0G7W / 3625.0 - 3700.0<br>N0N / 3700.0 - 4200.0<br>200KF2D - 1M00F2D / 3700.0 - 4200.0<br>56K0G7W - 72M0G7W / 3700.0 - 4200.0 | 56K0G7W - 72M0G7W / 5850.0 - 5925.0<br>N0N / 5925.0 - 6425.0<br>200KF2D - 1M00F2D / 5925.0 - 6425.0<br>56K0G7W - 72M0G7W / 5925.0 - 6425.0 |
| Max Great Circle Coordination Distance | 748.9 km / 465.3 mi | 445.9 km / 277.0 mi |
| Precipitation Scatter Contour Radius | 613.5 km / 381.2 mi | 101.4 km / 63.0 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' 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 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 | | | -2.7 (dBW/4 kHz) | |

| | | | Receive 4.0 GHz | | Transmit 6.1 GHz | |
|---|---|---|---|---|---|---|
| Azimuth (°) | Horizon Elevation (°) | Antenna Discrimination (°) | Horizon Gain (dBi) | Coordination Distance (km) | Horizon Gain (dBi) | Coordination Distance (km) |
| 0 | 0.23 | 101.82 | -10.00 | 281.47 | -10.00 | 165.70 |
| 5 | 0.23 | 96.84 | -10.00 | 282.05 | -10.00 | 167.84 |
| 10 | 0.00 | 91.86 | -10.00 | 285.28 | -10.00 | 170.66 |
| 15 | 0.29 | 86.88 | -10.00 | 274.54 | -10.00 | 159.66 |
| 20 | 0.00 | 81.90 | -10.00 | 285.28 | -10.00 | 170.66 |
| 25 | 0.00 | 76.93 | -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 | 47.10 | -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 | 314.61 | -5.72 | 187.24 |
| 75 | 0.00 | 27.35 | -3.92 | 327.40 | -3.92 | 194.13 |
| 80 | 0.00 | 22.47 | -1.79 | 343.07 | -1.79 | 202.27 |
| 85 | 0.00 | 17.66 | 0.83 | 362.98 | 0.83 | 210.75 |
| 90 | 0.00 | 12.98 | 4.17 | 388.85 | 4.17 | 224.76 |
| 95 | 0.00 | 8.67 | 8.55 | 426.05 | 8.55 | 245.19 |
| 100 | 0.00 | 5.62 | 13.26 | 748.92 | 13.26 | 445.87 |
| 105 | 0.00 | 6.15 | 12.28 | 541.99 | 12.28 | 310.90 |
| 110 | 0.00 | 9.60 | 7.45 | 416.38 | 7.45 | 239.82 |
| 115 | 0.00 | 13.27 | 3.93 | 387.54 | 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 | 306.10 | -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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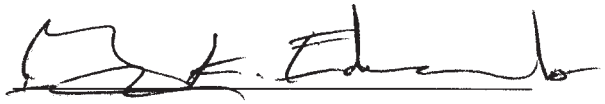
| Antenna Model | Vertex 15.2 meter | | | |
| Antenna Mode | Receive 4.0 GHz | | Transmit 6.1 GHz | |
| Interference Objectives: Long Term | -156.0 dBW/MHz | 20% | -154.0 dBW/4 kHz | 20% |
| Short Term | -146.0 dBW/MHz | 0.01% | -131.0 dBW/4 kHz | 0.0025% |
| Max Available RF Power | | | -2.7 (dBW/4 kHz) | |

| | | | Receive 4.0 GHz | | Transmit 6.1 GHz | |
|---|---|---|---|---|---|---|
| Azimuth (°) | Horizon Elevation (°) | Antenna Discrimination (°) | 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 | 0.32 | 67.87 | -10.00 | 270.05 | -10.00 | 155.82 |
| 225 | 0.23 | 71.40 | -10.00 | 281.23 | -10.00 | 165.48 |
| 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 | 279.20 | -10.00 | 163.71 |
| 270 | 0.25 | 104.39 | -10.00 | 278.72 | -10.00 | 163.29 |
| 275 | 0.29 | 107.98 | -10.00 | 274.02 | -10.00 | 159.21 |
| 280 | 0.21 | 111.47 | -10.00 | 284.23 | -10.00 | 169.74 |
| 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 | 284.85 | -10.00 | 170.28 |
| 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 | 131.65 | -10.00 | 285.28 | -10.00 | 170.66 |
| 335 | 0.30 | 126.71 | -10.00 | 272.66 | -10.00 | 158.04 |
| 340 | 0.26 | 121.73 | -10.00 | 277.79 | -10.00 | 162.47 |
| 345 | 0.23 | 116.75 | -10.00 | 281.95 | -10.00 | 167.75 |
| 350 | 0.00 | 111.77 | -10.00 | 285.28 | -10.00 | 170.66 |
| 355 | 0.31 | 106.80 | -10.00 | 271.84 | -10.00 | 157.35 |

# 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 31, 2017