

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
Intelsat License LLC
HAGERSTOWN, MD
E000296
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
August 21, 2017

TABLE OF CONTENTS

| | |
|---|----|
| 1. CONCLUSIONS | 3 |
| 2. SUMMARY OF RESULTS | 4 |
| 3. SUPPLEMENTAL SHOWING | 5 |
| 4. EARTH STATION COORDINATION DATA..... | 9 |
| 5. CERTIFICATION | 13 |

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.

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.
AT&T Wireless Services 3 LLC - PA
AWC Networks
Adams County Department of Emergency Svc
Affiniti PA, LLC
Albermarle, County of, Virginia
Alltel Communications LLC-E OH WV
American Electric Power Service Corp
Appalachia Engineering Services
Appalachian Power Company
Aratika LLC
Argos Engineering, LLC
Atlantic Broadband (Penn), LLC
Atlantic City Electric Company
Atlantic, County of
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
Blue Ridge Carriers
Blueline Communications
CNG Transmission Corporation
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
Citynet
Clearfield, County of
Clinton, County of
Columbia Gas Transmission, LLC
Columbia, County
Commonwealth of Pennsylvania
Commonwealth of Pennsylvania-Radio Proj.
Comprehensive Wireless LLC
Conterra Ultra Broadband, LLC
Coralinks
County of Augusta
County of Camden
County of Culpeper
County of Fayette
County of Frederick
County of Lycoming
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
Electric Railroad, LLC
Enoch Pratt Free Library
Essex, County of
Exelon Generation Company, LLC
FELHC, Inc.
Frederick County
Fulton County of (PA)
Fundamental Broadcasting LLC
Garden State Transmissions
Getwireless.Net
Gloucester, County of
Great Scott Broadcasting
Greene, County of (PA)
Hanover, County of
Hardy Cellular Telephone Company
Hardy County OEM/E911
Harrisonburg-Rockingham ECC
High Voltage Communications LLC (CFN)
Huntingdon County, Pa
Indiana, County of
Jackson County West Virginia
Jefferson County of Pennsylvania
Jefferson Microwave, LLC
Juniata County Emergency Services
King and Queen County
Kryptick Technologies
Lancaster County-Wide Communications

Limitless Mobile, LLC
Loudoun, County of
MGW Networks, LLC
MVC Research. LLC
Maryland Public Broadcasting Commission
Maryland State Highway Administration
Maryland, State of - Dept.of Info & Tech
Montgomery County Of
Montgomery, County of
National Tower Company II, 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 Turnpike Authority-Pkwy Div
New Jersey, State of -NJ Transit
New Line Networks, LLC
Norfolk Southern Railway
Northumberland County DPS/911
Old Dominion LLC
PA Communications
PSEG Services Corporation
Peco Energy Company
Pennsylvania Turnpike Commission
Peoples Natural Gas Company LLC
Pepco Holdings Inc.
Perry, County of
Perseus Technology Holdings USA Inc.
Pittsburgh SMSA Limited Partnership
Preston County Office of Emergency Manag
Prince George's County
Prince William, County of
Radio One Inc
Rappahannock Electric Cooperative
Rockbridge Reg. Pub Safety Comm Ctr
Rural Broadband Network Services LLC
SCS Networks
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
Torellco LLC
Transcontinental Gas Pipeline Corp.

US Cellular Operating Company, LLC (WI)
USCOC of Cumberland, Inc.
USCOC of Virginia RSA #3, 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 - West Virginia
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
Washington, County of
Weblin Holdings LLC
Westmoreland, County of
Wicomico County
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: 08/21/2017
Job Number: 170713COMSGE06

Administrative Information

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

Site Information HAGERSTOWN, MD

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

Link Information

Satellite Type Geostationary
Mode TO - Transmit-Only
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 Transmit - FCC32

Manufacturer GD Satcom
Model 9 meter
Gain / Diameter 53.5 dBi / 9.0 m
3-dB / 15-dB Beamwidth 0.36° / 0.67°

Max Available RF Power (dBW/4 kHz) 4.5
(dBW/MHz) 28.5

Maximum EIRP (dBW/4 kHz) 58.0
(dBW/MHz) 82.0

Interference Objectives: Long Term -154.0 dBW/4 kHz 20%
Short Term -131.0 dBW/4 kHz 0.0025%

Frequency Information Transmit 6.1 GHz

Emission / Frequency Range (MHz) 850KFXD / 6173.7
850KFXD / 6176.3

Max Great Circle Coordination Distance 475.4 km / 295.4 mi
Precipitation Scatter Contour Radius 328.0 km / 203.8 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' 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 | | GD Satcom 9 meter |
| Antenna Mode | | Transmit 6.1 GHz |
| Interference Objectives: Long Term | | -154.0 dBW/4 kHz 20% |
| Short Term | | -131.0 dBW/4 kHz 0.0025% |
| Max Available RF Power | | 4.5 (dBW/4 kHz) |

| Azimuth (°) | Horizon Elevation (°) | Antenna Discrimination (°) | Transmit 6.1 GHz | |
|-------------|-----------------------|----------------------------|--------------------|----------------------------|
| | | | Horizon Gain (dBi) | Coordination Distance (km) |
| 0 | 0.00 | 101.81 | -10.00 | 198.42 |
| 5 | 0.00 | 96.84 | -10.00 | 198.42 |
| 10 | 0.00 | 91.86 | -10.00 | 198.42 |
| 15 | 0.00 | 86.88 | -10.00 | 198.42 |
| 20 | 0.00 | 81.90 | -10.00 | 198.42 |
| 25 | 0.00 | 76.92 | -10.00 | 198.42 |
| 30 | 0.00 | 71.95 | -10.00 | 198.42 |
| 35 | 0.00 | 66.97 | -10.00 | 198.42 |
| 40 | 0.00 | 62.00 | -10.00 | 198.42 |
| 45 | 0.00 | 57.03 | -10.00 | 198.42 |
| 50 | 0.00 | 52.06 | -10.00 | 198.42 |
| 55 | 0.00 | 47.09 | -9.82 | 199.09 |
| 60 | 0.00 | 42.14 | -8.62 | 203.70 |
| 65 | 0.00 | 37.19 | -7.26 | 207.26 |
| 70 | 0.00 | 32.26 | -5.72 | 213.41 |
| 75 | 0.00 | 27.34 | -3.92 | 220.90 |
| 80 | 0.00 | 22.47 | -1.79 | 230.32 |
| 85 | 0.00 | 17.65 | 0.83 | 242.62 |
| 90 | 0.00 | 12.98 | 4.17 | 259.01 |
| 95 | 0.00 | 8.66 | 8.56 | 284.19 |
| 100 | 0.00 | 5.61 | 13.27 | 475.43 |
| 105 | 0.00 | 6.15 | 12.28 | 347.23 |
| 110 | 0.00 | 9.60 | 7.45 | 277.50 |
| 115 | 0.00 | 13.27 | 3.93 | 257.71 |
| 120 | 0.00 | 16.89 | 1.31 | 244.96 |
| 125 | 0.00 | 20.41 | -0.75 | 235.11 |
| 130 | 0.00 | 23.83 | -2.43 | 227.44 |
| 135 | 0.00 | 27.11 | -3.83 | 221.30 |
| 140 | 0.00 | 30.23 | -5.01 | 216.31 |
| 145 | 0.00 | 33.14 | -6.01 | 212.22 |
| 150 | 0.00 | 35.82 | -6.85 | 208.86 |
| 155 | 0.00 | 38.20 | -7.55 | 206.13 |
| 160 | 0.00 | 40.26 | -8.12 | 205.58 |
| 165 | 0.00 | 41.93 | -8.56 | 203.90 |
| 170 | 0.00 | 43.16 | -8.88 | 202.70 |
| 175 | 0.00 | 43.92 | -9.07 | 201.98 |
| 180 | 0.00 | 44.18 | -9.13 | 201.74 |
| 185 | 0.00 | 43.92 | -9.07 | 201.98 |

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 GD Satcom 9 meter
Antenna Mode Transmit 6.1 GHz
Interference Objectives: Long Term -154.0 dBW/4 kHz 20%
Short Term -131.0 dBW/4 kHz 0.0025%
Max Available RF Power 4.5 (dBW/4 kHz)

| Azimuth (°) | Horizon Elevation (°) | Antenna Discrimination (°) | Transmit 6.1 GHz | |
|-------------|-----------------------|----------------------------|--------------------|----------------------------|
| | | | Horizon Gain (dBi) | Coordination Distance (km) |
| 190 | 0.00 | 43.16 | -8.88 | 202.70 |
| 195 | 0.00 | 41.93 | -8.56 | 203.90 |
| 200 | 0.00 | 40.26 | -8.12 | 205.58 |
| 205 | 0.00 | 38.20 | -7.55 | 206.13 |
| 210 | 0.00 | 35.81 | -6.85 | 208.86 |
| 215 | 0.00 | 33.14 | -6.01 | 212.22 |
| 220 | 0.00 | 30.22 | -5.01 | 216.31 |
| 225 | 0.00 | 27.11 | -3.83 | 221.30 |
| 230 | 0.00 | 23.83 | -2.43 | 227.43 |
| 235 | 0.00 | 20.42 | -0.75 | 235.10 |
| 240 | 0.00 | 16.89 | 1.31 | 244.98 |
| 245 | 0.00 | 13.28 | 3.92 | 257.69 |
| 250 | 0.00 | 9.59 | 7.46 | 277.57 |
| 255 | 0.00 | 6.33 | 11.96 | 353.95 |
| 260 | 0.00 | 6.11 | 12.35 | 458.19 |
| 265 | 0.00 | 9.18 | 7.93 | 280.36 |
| 270 | 0.00 | 13.46 | 3.77 | 256.89 |
| 275 | 0.00 | 18.11 | 0.55 | 241.29 |
| 280 | 0.00 | 22.90 | -2.00 | 229.38 |
| 285 | 0.00 | 27.76 | -4.09 | 220.20 |
| 290 | 0.00 | 32.66 | -5.85 | 212.85 |
| 295 | 0.00 | 37.59 | -7.38 | 206.81 |
| 300 | 0.00 | 42.53 | -8.72 | 203.31 |
| 305 | 0.00 | 47.48 | -9.91 | 198.76 |
| 310 | 0.00 | 52.44 | -10.00 | 198.42 |
| 315 | 0.00 | 57.40 | -10.00 | 198.42 |
| 320 | 0.00 | 62.37 | -10.00 | 198.42 |
| 325 | 0.00 | 67.34 | -10.00 | 198.42 |
| 330 | 0.00 | 72.31 | -10.00 | 198.42 |
| 335 | 0.00 | 77.28 | -10.00 | 198.42 |
| 340 | 0.00 | 82.26 | -10.00 | 198.42 |
| 345 | 0.00 | 87.23 | -10.00 | 198.42 |
| 350 | 0.00 | 92.21 | -10.00 | 198.42 |
| 355 | 0.00 | 97.18 | -10.00 | 198.42 |

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: August 21, 2017