

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 Licens
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

Administrative Information

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

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

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

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%

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
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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) |
| 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

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Coordination Values

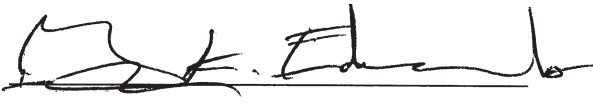
HAGERSTOWN, MD

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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