

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
Intelsat License LLC
HAGERSTOWN, MD
(E150002)
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
December 24, 2015

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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.

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 11/30/2015.

Company

256Q Networks
AB Services LLC
AT&T COMMUNICATIONS OF MARYLAND INC
AT&T Communications of Virginia, LLC
AT&T Corporation
AT&T Wireless Services 3 LLC (PA)
AWC Networks
Access MLP Operating LLC
Adams County Department of Emergency Svc
Affiniti PA, LLC
Agile Network Builders LLC
Allentown SMSA Limited Partnership
Alltel Communications LLC - Ohio Region
Alltel Communications LLC - Western PA
Alltel Communications LLC-E OH WV
Alltel Communications LLC-Southern VA
Alltel Communications LLC-TriState Rgn
American Electric Power Service Co
Appalachia Engineering Services
Appalachian Broadcasting
Argos Engineering, LLC
Atlantic Broadband (Penn), LLC
Atlantic City Electric Company
Atlantic, County of
Auburn Data Systems, LLC
Augusta, County of
BAY BROADBAND COMMUNICATIONS LLC
BLAIR COUNTY 911
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
Blue Ridge Carriers
Blueline Communications
CLEARFIELD, COUNTY OF
CNG Transmission Corporation
CROWN COMMUNICATION, INC.
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, County of
Charles, County of
Chester, County of
China Cat Productions LLC
Citynet
Clinton, County of
Columbia Gas Transmission Corporation
Commonwealth of Pennsylvania
Commonwealth of Pennsylvania-Radio Proj.
Comprehensive Wireless LLC
Conterra Ultra Broadband, LLC
Coral Reef Technologies Ltd
Coralinks
County of Burlington, Public Safety Cntr
County of Camden
County of Fayette
County of Frederick
County of Lycoming
County of York
DAUPHIN COUNTY EMERGENCY MANAGEMENT
Delaware County (PA) Emergency Services
Delaware Division of Communications
Delmarva Broadcasting Company
Delmarva Power and Light Company
ECW Wireless, LLC
EG Broadcast Newco Corp
Eastern MLG LLC
Electric Railroad, LLC
Enoch Pratt Free Library
Exelon Generation Company, LLC
FELHC, INC
Frederick County
Fundamental Broadcasting LLC
GREAT SCOTT BROADCASTING
GW Networks
Garden State Transmissions
Geodesic Networks LLC
Gloucester, County of
Greene, County of (PA)
Hanover, County of
Hardy Cellular Telephone Company
Harrisonburg-Rockingham ECC
High Voltage Communications LLC (CFN)
Huntingdon, County of
Indiana, County of
JEFFERSON COUNTY OF PENNSYLVANIA
Jefferson Microwave, LLC
Juniata County Emergency Services

Kentucky Power Company
King and Queen County
Kryptick Technologies
Lancaster County-Wide Communications
Limitless Mobile, LLC
Live Mobile Group
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
National Tower Company LLC
New Cingular Wireless PCS LLC -NJ
New Cingular Wireless PCS - Maryland
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, LLC - PA
New Jersey Turnpike Authority-Pkwy Div
New Jersey, State of -NJ Transit
New Line Networks, LLC
Norfolk Southern Railway
Northumberland, County of
OHIO POWER COMPANY
OHIO VALLEY ELECTRIC COMPANY
Old Dominion LLC
PA Communications
PEG Bandwidth, LLC
PRESTON COUNTY OFFICE OF EMERGENCY MANAG
PSEG Services Corporation
Peco Energy Company
Penn Service Microwave Co., Inc.
Pennsylvania Turnpike Commission
Peoples Natural Gas Company LLC
Pitt Power
Pittsburgh SMSA Limited Partnership
Prince George's County
Prince William, County of
RAPPAHANNOCK ELECTRIC COOPERATIVE
Radio One Inc
Rendezvous Communications LLC
Rural Broadband Network Services LLC
SCS Networks
SCTF NET
SHENANDOAH VALLEY ELECTRIC COOPERATIVE
SW Networks
Somerset, County of
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
Texas Eastern Communications, LLC
Thought Transmissions, LLC
Torellco LLC
Transcontinental Gas Pipeline Corp.
Turtle Networks 6562
US Cellular Operating Company, LLC (WI)
USCOC of Cumberland, Inc.
USCOC of Virginia RSA #3, Inc.
USOC of Pennsylvania RSA No 10 B2 Inc.
Verizon Maryland, Inc.
Verizon Wireless (VAW) LLC - Delaware/NJ
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 RSA 5 Limited Partnership
Virginia Broadband, LLC
Virginia Cellular LLC
Virginia Department of State Police
Virginia Electric & Power Company
Virginia PCS Alliance, L.C.
WHEELING POWER COMPANY
WITF Inc.
WV DHHR BPH, Office of EMS, Com. Div.
Washington D.C. SMSA L.P.
Washington Gas Light Company
Washington Suburban Sanitary Commission
Washington, County of
Weblin Holdings LLC
West Virginia Educational Broadcasting
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: 12/24/2015
Job Number: 151130COMSGE08

Administrative Information

Status ENGINEER PROPOSAL
Call Sign E150002
Licensee Code INTELS
Licensee Name Intelsat License LLC

Site Information HAGERSTOWN, MD

Venue Name
Latitude (NAD 83) 39° 35' 53.5" N
Longitude (NAD 83) 77° 45' 23.0" W
Climate Zone A
Rain Zone 2
Ground Elevation (AMSL) 169.99 m / 557.7 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) 10.67 m / 35.0 ft

Antenna Information Transmit - FCC32

Manufacturer General Dynamics
Model 16.4 meter
Gain / Diameter 59.0 dBi / 16.4 m
3-dB / 15-dB Beamwidth 0.19° / 0.40°

Max Available RF Power (dBW/4 kHz) 7.2
(dBW/MHz) 31.2

Maximum EIRP (dBW/4 kHz) 66.2
(dBW/MHz) 90.2

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 - 1M20FXD / 6422.0 - 6424.5

Max Great Circle Coordination Distance 567.8 km / 352.8 mi
Precipitation Scatter Contour Radius 432.7 km / 268.8 mi

COMSEARCH

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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' 53.5" N
Longitude (NAD 83) 77° 45' 23.0" W
Ground Elevation (AMSL) 169.99 m / 557.7 ft
Antenna Centerline (AGL) 10.67 m / 35.0 ft
Antenna Model General Dynamics 16.4 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 7.2 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 6.1 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
0	0.00	101.82	-10.00	207.22
5	0.00	96.84	-10.00	207.22
10	0.00	91.86	-10.00	207.22
15	0.00	86.88	-10.00	207.22
20	0.00	81.90	-10.00	207.22
25	0.00	76.92	-10.00	207.22
30	0.00	71.95	-10.00	207.22
35	0.00	66.97	-10.00	207.22
40	0.00	62.00	-10.00	207.22
45	0.00	57.03	-10.00	207.22
50	0.00	52.06	-10.00	207.22
55	0.00	47.10	-9.82	207.90
60	0.00	42.14	-8.62	212.71
65	0.00	37.19	-7.26	218.31
70	0.00	32.26	-5.72	224.96
75	0.00	27.35	-3.92	233.05
80	0.00	22.47	-1.79	243.16
85	0.00	17.66	0.83	255.75
90	0.00	12.98	4.17	274.27
95	0.00	8.67	8.55	301.48
100	0.00	5.62	13.26	367.78
105	0.00	6.15	12.27	400.30
110	0.00	9.60	7.45	294.31
115	0.00	13.27	3.93	272.88
120	0.00	16.89	1.31	258.30
125	0.00	20.41	-0.75	248.30
130	0.00	23.83	-2.43	240.08
135	0.00	27.11	-3.83	233.48
140	0.00	30.23	-5.01	228.10
145	0.00	33.14	-6.01	223.68
150	0.00	35.82	-6.85	220.05
155	0.00	38.20	-7.55	217.09
160	0.00	40.26	-8.12	214.73
165	0.00	41.93	-8.56	212.93
170	0.00	43.16	-8.88	211.66
175	0.00	43.92	-9.07	210.90
180	0.00	44.18	-9.13	210.65
185	0.00	43.92	-9.07	210.90

COMSEARCH

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19700 Janelia Farm Boulevard, Ashburn, VA 20147
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Coordination Values

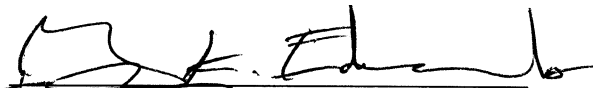
HAGERSTOWN, MD

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Latitude (NAD 83) 39° 35' 53.5" N
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Max Available RF Power 7.2 (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	211.66
195	0.00	41.93	-8.56	212.93
200	0.00	40.26	-8.12	214.73
205	0.00	38.20	-7.55	217.09
210	0.00	35.81	-6.85	220.05
215	0.00	33.14	-6.01	223.68
220	0.00	30.22	-5.01	228.11
225	0.00	27.11	-3.83	233.48
230	0.00	23.83	-2.43	240.07
235	0.00	20.42	-0.75	248.29
240	0.00	16.89	1.31	258.32
245	0.00	13.28	3.92	272.86
250	0.00	9.59	7.46	294.38
255	0.00	6.33	11.96	411.68
260	0.00	6.10	12.36	549.87
265	0.00	9.18	7.93	297.41
270	0.00	13.46	3.78	272.01
275	0.00	18.10	0.56	254.33
280	0.00	22.90	-1.99	242.17
285	0.00	27.76	-4.09	232.30
290	0.00	32.66	-5.85	224.37
295	0.00	37.59	-7.38	217.83
300	0.00	42.53	-8.72	212.31
305	0.00	47.48	-9.91	207.56
310	0.00	52.43	-10.00	207.22
315	0.00	57.40	-10.00	207.22
320	0.00	62.36	-10.00	207.22
325	0.00	67.33	-10.00	207.22
330	0.00	72.31	-10.00	207.22
335	0.00	77.28	-10.00	207.22
340	0.00	82.25	-10.00	207.22
345	0.00	87.23	-10.00	207.22
350	0.00	92.20	-10.00	207.22
355	0.00	97.18	-10.00	207.22

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: December 24, 2015