

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 23, 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 11/18/2015.

Company

256Q Networks
3G Wireless, LLC
AB Services LLC
Adams County Department of Emergency Svc
AERIAL VIDEO SYSTEMS
Affiniti PA, LLC
Alascom Inc
Anne Arundel, County of
Appalachia Engineering Services
Appalachian Broadcasting
Argos Engineering, LLC
Ascent Media Network Services, LLC
AT&T COMMUNICATIONS OF MARYLAND INC
AT&T Communications of Virginia, LLC
AT&T Corporation
Atlantic Broadband (Penn), LLC
Auburn Data Systems, LLC
Baltimore County of Maryland
Baltimore Gas and Electric Company
BAY BROADBAND COMMUNICATIONS LLC
Beaver Springs Faith Baptist Church, Inc
Bedford, County of
Believe Wireless, LLC
Bellsouth Telecommunications, Inc.
Berks County Department of Emergency Ser
BLAIR COUNTY 911
Blueline Communications
Borgeson, Tom R.
Broadcast Sports Inc.
Cambria, County of
Capital Communications of America
Carolina Telephone and Telegraph Co
Caroline County, VA
Carroll, County of
Casper, John
CBS Broadcasting Inc
CBS TELEVISION LICENSES LLC
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
CenturyTel of the Southwest, Inc.
Charles, County of
Chicago Comnet Corp
Cincinnati Bell Wireless LLC
Citywide News Network, Inc.
CLEARFIELD, COUNTY OF
CNG Transmission Corporation
Cohen, Elena
Columbia Gas Transmission Corporation
COMMONWEALTH OF PENNSYLVANIA
Commonwealth of Pennsylvania-Radio Proj.
Comprehensive Wireless LLC
Conterra Ultra Broadband, LLC
Coralinks
County of Fairfax, Virginia
County of Fayette
County of Frederick
County of York
Cowboys Stadium LP
CROWN COMMUNICATION, INC.
C-SPAN
DAUPHIN COUNTY EMERGENCY MANAGEMENT
DCI II, INC.
Direct Broadcast Services, Inc.
Eastern MLG LLC
ECW Wireless, LLC
EG Broadcast Newco Corp
Enoch Pratt Free Library
Exelon Generation Company, LLC
FELHC, INC
Frederick County
Fundamental Broadcasting LLC
Garden State Transmissions
Geodesic Networks LLC
Global Telecom & Technology Americas, In
Goodyear Tire & Rubber Company
Greene, County of (PA)
GSN News, Inc
Hallco Unlimited, Inc.
Hardy Cellular Telephone Company
Harrisonburg-Rockingham ECC
Hawaiian Telcom, Inc.
Heiden, William
HF Enterprises, Inc
High Voltage Communications LLC (CFN)
Huntingdon, County of
Illinois Bell Telephone Company
Indiana Bell Telephone Company
Indiana, County of
Information & Display Systems, Inc.
Information Super Station, LLC
International Communications Group, Inc.
iSignal

Jefferson Microwave, LLC
Juniata County Emergency Services
Kentucky RSA #3 Cellular General Partner
Kentucky RSA #4 Cellular General Partner
Kryptick Technologies
Lancaster County-Wide Communications
Limitless Mobile, LLC
Loudoun, County of
Maryland Public Broadcasting Commission
Maryland State Highway Administration
Maryland, State of - Dept.of Info & Tech
MERCURY COMMUNICATIONS
Metro Networks Communications, Inc.
Michigan Bell Telephone Company
Moreen, Steven K
MVC Research. LLC
National Cable Satellite Corporation
National Tower Company LLC
Navajo Communications Company
NBC Telemundo License LLC
New Cingular Wireless PCS - Maryland
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 ENGLAND DIGITAL DISTRIBUTION, INC.
NEW ENGLAND SATELLITE SYSTEMS INC
New Line Networks, LLC
Norfolk Southern Railway
Northumberland, County of
NorthWest Suburbs Community Access Corp
NSM Surveillance
OHIO BELL TELEPHONE COMPANY
Old Dominion LLC
Onboard Images
PA Communications
Pacific Bell Tel Com dba AT&T California
PEG Bandwidth, LLC
Penn Service Microwave Co., Inc.
Pennsylvania Turnpike Commission
Pitt Power
Pittsburgh SMSA Limited Partnership
Plateau Telecommunications, Inc.
Plum TV, LLC
Prince George's County
Prince William, County of
Production & Satellite Services, Inc.
Proxy Aviation
Public Television Communications Center
QUICK LINK CONNECTIONS INC
Qwest Corporation
Radio One Inc
Radiofone, Inc.
Randy Hermes Production
RAPPAHANNOCK ELECTRIC COOPERATIVE
RCC Minnesota Inc. - MN NE ND SD

Regulus Media Services, Inc.
Remote Broadcasts, Inc.
REMOTE FACILITIES CONSULTING SERVICES
Rendezvous Communications LLC
RF Central, LLC
RF Film, Inc
Rural Broadband Network Services LLC
SCTF NET
SHENANDOAH VALLEY ELECTRIC COOPERATIVE
Somerset, County of
Southern Maryland Electric Cooperative I
Southwestern Bell Telephone L.P.
Speedshotz, Inc
Spotsylvania, County of
St. Mary's County of (MD)
Stafford, County of
Standard Backhaul Communications LLC
State of Maryland, MIEMSS
SW Networks
Texas Eastern Communications, LLC
The City of Baltimore, Police Department
Thought Transmissions, LLC
Total RF Marketing Inc
Transcontinental Gas Pipeline Corp.
Turtle Networks 6562
Unisat, Inc.
United Telephone - Southeast
US Cellular Operating Company, LLC (WI)
USCOC of Cumberland, Inc.
USOC of Pennsylvania RSA No 10 B2 Inc.
Verizon California Inc.
Verizon Maryland, Inc.
Verizon New England Inc.
Verizon New Jersey, Inc.
Verizon New York, Inc.
Verizon North Inc.
Verizon Northwest Inc.
Verizon Pennsylvania, Inc.
VERIZON SOUTH INC.
Verizon Virginia, Inc.
Verizon Washington DC, 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
Village Video Productions Inc
Virginia Broadband, LLC
Virginia Cellular LLC
Virginia Department of State Police
Virginia Electric & Power Company
Virginia PCS Alliance, L.C.
Vyvx, LLC
Washington D.C. SMSA L.P.
Washington Gas Light Company
Washington Suburban Sanitary Commission
Weblin Holdings LLC

Westar Satellite Services LP
Western Technical Services
Wexler Video, Inc.
Winged Vision Inc
Wireless Internetwork LLC
Wisconsin Bell, Inc.
WITF Inc.
Wolfe Air Aviation
World Class Wireless, LLC
WV DHHR BPH, Office of EMS, Com. Div.
xWave Engineering LLC
YAB Mobile

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: 12/23/2015
Job Number: 151118COMSGE02

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 Analog and Digital
Satellite Arc 49° W to 51° West Longitude
Azimuth Range 139.3° to 141.7°
Corresponding Elevation Angles 35.4° / 36.5°
Antenna Centerline (AGL) 10.67 m / 35.0 ft

Antenna Information Transmit - FCC32

Manufacturer Vertex
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) -2.7
(dBW/MHz) 21.3

Maximum EIRP (dBW/4 kHz) 56.3
(dBW/MHz) 80.3

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

Frequency Information Transmit 6.0 GHz

Emission / Frequency Range (MHz) 850KFXD - 1M20FXD / 6421.0 - 6426.0

Max Great Circle Coordination Distance 183.3 km / 113.9 mi
Precipitation Scatter Contour Radius 100.0 km / 62.1 mi

COMSEARCH

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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		Vertex 16.4 meter
Antenna Mode		Transmit 6.0 GHz
Interference Objectives: Long Term		-154.0 dBW/4 kHz 20%
Short Term		-131.0 dBW/4 kHz 0.0025%
Max Available RF Power		-2.7 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 6.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
0	0.00	128.14	-10.00	170.66
5	0.00	124.68	-10.00	170.66
10	0.00	121.06	-10.00	170.66
15	0.00	117.32	-10.00	170.66
20	0.00	113.49	-10.00	170.66
25	0.00	109.58	-10.00	170.66
30	0.00	105.61	-10.00	170.66
35	0.00	101.59	-10.00	170.66
40	0.00	97.55	-10.00	170.66
45	0.00	93.48	-10.00	170.66
50	0.00	89.41	-10.00	170.66
55	0.00	85.34	-10.00	170.66
60	0.00	81.28	-10.00	170.66
65	0.00	77.24	-10.00	170.66
70	0.00	73.24	-10.00	170.66
75	0.00	69.28	-10.00	170.66
80	0.00	65.39	-10.00	170.66
85	0.00	61.59	-10.00	170.66
90	0.00	57.88	-10.00	170.66
95	0.00	54.30	-10.00	170.66
100	0.00	50.88	-10.00	170.66
105	0.00	47.67	-9.96	170.83
110	0.00	44.69	-9.26	173.55
115	0.00	42.02	-8.59	176.15
120	0.00	39.71	-7.97	178.53
125	0.00	37.83	-7.45	180.56
130	0.00	36.45	-7.04	182.12
135	0.00	35.64	-6.80	183.07
140	0.00	35.42	-6.73	183.33
145	0.00	35.81	-6.85	182.86
150	0.00	36.80	-7.15	181.73
155	0.00	38.33	-7.59	180.02
160	0.00	40.26	-8.12	177.95
165	0.00	42.43	-8.69	175.74
170	0.00	44.96	-9.32	173.30
175	0.00	47.81	-9.99	170.71
180	0.00	50.91	-10.00	170.66
185	0.00	54.22	-10.00	170.66

COMSEARCH

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19700 Janelia Farm Boulevard, Ashburn, VA 20147
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Coordination Values

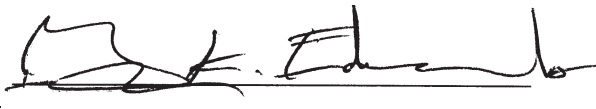
HAGERSTOWN, MD

Licensee Name Intelsat License LLC
Latitude (NAD 83) 39° 35' 53.5" N
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Antenna Model Vertex 16.4 meter
Antenna Mode Transmit 6.0 GHz
Interference Objectives: Long Term -154.0 dBW/4 kHz 20%
Short Term -131.0 dBW/4 kHz 0.0025%
Max Available RF Power -2.7 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 6.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	57.70	-10.00	170.66
195	0.00	61.32	-10.00	170.66
200	0.00	65.04	-10.00	170.66
205	0.00	68.86	-10.00	170.66
210	0.00	72.74	-10.00	170.66
215	0.00	76.68	-10.00	170.66
220	0.00	80.65	-10.00	170.66
225	0.00	84.65	-10.00	170.66
230	0.00	88.67	-10.00	170.66
235	0.00	92.69	-10.00	170.66
240	0.00	96.70	-10.00	170.66
245	0.00	100.69	-10.00	170.66
250	0.00	104.65	-10.00	170.66
255	0.00	108.57	-10.00	170.66
260	0.00	112.44	-10.00	170.66
265	0.00	116.22	-10.00	170.66
270	0.00	119.92	-10.00	170.66
275	0.00	123.49	-10.00	170.66
280	0.00	126.92	-10.00	170.66
285	0.00	130.16	-10.00	170.66
290	0.00	133.18	-10.00	170.66
295	0.00	135.93	-10.00	170.66
300	0.00	138.35	-10.00	170.66
305	0.00	140.37	-10.00	170.66
310	0.00	141.94	-10.00	170.66
315	0.00	142.99	-10.00	170.66
320	0.00	143.48	-10.00	170.66
325	0.00	143.38	-10.00	170.66
330	0.00	142.70	-10.00	170.66
335	0.00	141.47	-10.00	170.66
340	0.00	139.66	-10.00	170.66
345	0.00	137.24	-10.00	170.66
350	0.00	134.47	-10.00	170.66
355	0.00	131.42	-10.00	170.66

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 23, 2015