

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
Intelsat License LLC
HAGERSTOWN, MD
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
July 02, 2019

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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

State of Maryland MIEMSS Communications
USCOC of Cumberland, Inc.
Washington Gas Light Company
WV DHSEM, SIRN System

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 06/03/2019.

Company

Adams County Department of Emergency Svc
Affiniti PA, LLC
Anne Arundel, County of
Appalachia Engineering Services
AQ2AT LLC
Argos Engineering, LLC
AT&T Corp.
Atlantic Broadband (Penn), LLC
Atlantic City Electric Company
Atlantic Coast Pipeline, LLC
Baltimore County of Maryland
Baltimore Gas and Electric Company
Beaver Springs Faith Baptist Church, Inc
Bedford County of
Believe Wireless, LLC
Blair County 911
Calvert Cliffs Nuclear Power Plant
Calvert, County of
Cambria, County of
Capital Communications of America
Carroll, County of
Cellco Partnership - Bridgeville, PA/WV
Cellco Partnership-WDC/Baltimore
Cellco Prtnrshp - Phil. Tri-State Rgn
Charles, County of
Chester, County of
Columbia Gas Transmission, LLC
Commonwealth of Pennsylvania
Commonwealth of Pennsylvania-Radio Proj.
Comprehensive Wireless LLC
County of Centre
County of Culpeper
County of Fayette
County of Fayette
County of Frederick
County of Orange, VA
County of York
Cumberland, County of (PA)
Dauphin County Emergency Management
DC2A LLC

Delaware Division of Communications
Delmarva Power and Light Company
Dominion Energy Transmission, Inc.
Eastern MLG LLC
Egan LLC
Enoch Pratt Free Library
Entercom License, LLC
Equitable Gas Company
Exelon Generation Company, LLC
FELHC, Inc.
Franklin County Dept. of Emergency Servi
Fulton County PA
Fundamental Broadcasting LLC
Garden State Transmissions
GEORGE WASHINGTON UNIVERSITY
Getwireless.Net
GTT America LLC
Hardy Cellular Telephone Company
Hardy County OEM/E911
Harrison County Emergency Services
Harrisonburg-Rockingham ECC
Hearst Properties Inc.
High Voltage Communications LLC (CFN)
Howard, County of
Huntingdon, County of
iSignal
Juniata County Emergency Services
Lancaster County-Wide Communications
Lebanon, County of
Loudoun, County of
Maryland Public Broadcasting Commission
Maryland State Dept of General Services
Maryland State Highway Administration
Maryland, State of - Dept.of Info & Tech
Maryland, State of - DNR
Maryland, State of - MDOT-MTA
MCI Communications Services Inc.
Mifflin County
Mifflin County
Montgomery, County of
Morgan, County of
Mountain State Communications, llc
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 - PA
New Jersey, State of -NJ Transit
New Line Networks, LLC
Norfolk Southern Railway
Peco Energy Company
Pennsylvania Sports Entertainment Netwo.
Pennsylvania State Police
Pennsylvania Turnpike Commission
Perry, County of
Pittsburgh SMSA Limited Partnership

Potomac Electric Power Company
Preston County Office of Emergency Manag
Prince George's County
Prince William, County of
PSEG Services Corporation
Radio License Holding CBC, LLC
Radio One Inc
Rappahannock Electric Cooperative
RCYM Holdings LLC
Redi-Call Communications Company
Rural Broadband, LLC
Secom Net
Shenandoah Personal Communications, LLC
Shenandoah Valley Electric Cooperative
Snyder, County of
Somerset, County of
South Central Task Force (SCTFNET)
Southern Maryland Electric Cooperative I
Stafford, County of
State of Maryland MIEMSS Communications
Texas Eastern Communications, LLC
Thought Transmissions, LLC
T-Mobile License LLC
Transcontinental Gas Pipeline Corp.
Triangle Communications, Inc.
Uniti Fiber PEG, LLC
Ursa Navigation Solutions, Inc.
US Cellular Operating Company, LLC (WI)
USCOC of Cumberland, Inc.
USOC of Pennsylvania RSA No 10 B2 Inc.
Verizon Wireless (VAW) LLC - Maryland
Verizon Wireless (VAW) LLC - W/B/V Mkts
Verizon Wireless (VAW) LLC-Pennsylvania
Virginia Department of State Police
Virginia Electric & Power Company
Warrenton Fauquier Joint Communications
Washington Gas Light Company
Washington Suburban Sanitary Commission
Westmoreland, County of
Williamson Enterprise LLC
Wireless Internetwork LLC
World Class Wireless, LLC
WV DHSEM, SIRN System

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: 07/02/2019
Job Number: 190603COMSGE02

Administrative Information

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

Site Information HAGERSTOWN, MD

Venue Name:
Latitude (NAD 83): 39° 35' 54.8" N
Longitude (NAD 83): 77° 45' 18.6" W
Climate Zone: A
Rain Zone: 2
Ground Elevation (AMSL): 168.65 m / 553.3 ft

Link Information

Satellite Type: Geostationary
Mode: TR - Transmit-Receive
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

Manufacturer:
Model:
Gain / Diameter:
3-dB / 15-dB Beamwidth:

Receive - FCC32

Gen Dynamics
Satcom
53.0 dBi / 13.1 m
0.38° / 0.76°

Transmit - FCC32

Gen Dynamics
Satcom
56.6 dBi / 13.1 m
0.26° / 0.52°

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

(1) -11.8 (2) -2.6
12.2

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

44.8 54.0
68.8 78.0

Interference Objectives: Long Term -156.0 dBW/MHz 20%
Short Term -146.0 dBW/MHz 0.01%

-154.0 dBW/4 kHz 20%
-131.0 dBW/4 kHz 0.0025%

Frequency Information

Emission / Frequency Range (MHz)

Receive 4.0 GHz

500KG7D - 72M0G7W / 3400.0 - 4200.0
500KG7D - 72M0F7W / 3400.0 - 4200.0

Transmit 6.1 GHz

(1) 6M00F7W - 72M0G7W / 5850.0 - 6425.0
6425.0 - 6538.0, 6572.0 - 6583.0, 6622.0 - 6628.0
6701.0 - 6725.0
(1) 1M00F7D - 1M50F7D / 6172.0 - 6178.0

(2) 1M00F7D - 1M50F7D / 5924.0 - 5927.5,
6414.25 - 6425.25

Max Great Circle Coordination Distance: 714.8 km / 444.1 mi
Precipitation Scatter Contour Radius: 613.5 km / 381.1 mi

334.7 km / 208.0 mi
100.0 km / 62.1 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' 54.8" N
Longitude (NAD 83): 77° 45' 18.6" W
Ground Elevation (AMSL): 168.65 m / 553.3 ft
Antenna Centerline (AGL): 5.79 m / 19.0 ft
Antenna Model: Gen Dynamics 13.1 meter
Antenna Mode: Receive 4.0 GHz
Interference Objectives: Long Term: -156.0 dBW/MHz 20%
Short Term: -146.0 dBW/MHz 0.01%
Transmit 6.1 GHz: -154.0 dBW/4 kHz 20%
-131.0 dBW/4 kHz 0.0025%
Max Available RF Power: -11.8 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 4.0 GHz		Transmit 6.1 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
0	0.26	101.82	-10.00	278.03	-10.00	134.03
5	0.23	96.84	-10.00	282.07	-10.00	135.50
10	0.21	91.86	-10.00	283.43	-10.00	136.42
15	0.00	86.88	-10.00	285.28	-10.00	137.70
20	0.22	81.90	-10.00	283.11	-10.00	136.21
25	0.00	76.93	-10.00	285.28	-10.00	137.70
30	0.00	71.95	-10.00	285.28	-10.00	137.70
35	0.23	66.96	-10.00	281.82	-10.00	135.32
40	0.00	62.00	-10.00	285.28	-10.00	137.70
45	0.00	57.03	-10.00	285.28	-10.00	137.70
50	0.00	52.06	-10.00	285.28	-10.00	137.70
55	0.00	47.10	-9.82	286.40	-9.82	138.21
60	0.00	42.14	-8.62	294.22	-8.62	141.83
65	0.00	37.19	-7.26	303.29	-7.26	146.09
70	0.00	32.26	-5.72	314.61	-5.72	151.23
75	0.00	27.35	-3.92	327.40	-3.92	157.55
80	0.00	22.47	-1.79	343.07	-1.79	165.56
85	0.00	17.66	0.83	362.97	0.83	177.36
90	0.00	12.98	4.17	388.85	4.17	190.25
95	0.00	8.67	8.55	426.04	8.55	205.38
100	0.00	5.62	13.26	714.76	13.26	334.72
105	0.00	6.15	12.27	528.20	12.27	243.34
110	0.00	9.60	7.45	416.38	7.45	202.80
115	0.00	13.27	3.93	387.53	3.93	189.33
120	0.00	16.89	1.31	366.72	1.31	179.23
125	0.00	20.41	-0.75	350.91	-0.75	171.25
130	0.00	23.83	-2.43	338.33	-2.43	163.11
135	0.00	27.11	-3.83	328.09	-3.83	157.89
140	0.00	30.23	-5.01	319.61	-5.01	153.67
145	0.00	33.14	-6.01	311.94	-6.01	150.23
150	0.00	35.82	-6.85	306.10	-6.85	147.43
155	0.00	38.20	-7.55	301.33	-7.55	145.16
160	0.00	40.26	-8.12	297.51	-8.12	143.36
165	0.00	41.93	-8.56	294.59	-8.56	142.00
170	0.00	43.16	-8.88	292.52	-8.88	141.03
175	0.00	43.92	-9.07	291.29	-9.07	140.46
180	0.00	44.18	-9.13	290.88	-9.13	140.27
185	0.00	43.92	-9.07	291.28	-9.07	140.46

COMSEARCH

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Coordination Values

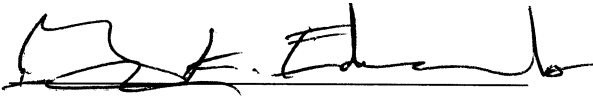
HAGERSTOWN, MD

Licensee Name	Intelsat License LLC		
Latitude (NAD 83)	39° 35' 54.8" N		
Longitude (NAD 83)	77° 45' 18.6" W		
Ground Elevation (AMSL)	168.65 m / 553.3 ft		
Antenna Centerline (AGL)	5.79 m / 19.0 ft		
Antenna Model	Gen Dynamics 13.1 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			-11.8 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 4.0 GHz		Transmit 6.1 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	43.16	-8.88	292.52	-8.88	141.03
195	0.00	41.93	-8.56	294.59	-8.56	142.00
200	0.00	40.26	-8.12	297.51	-8.12	143.36
205	0.00	38.20	-7.55	301.32	-7.55	145.16
210	0.00	35.81	-6.85	306.10	-6.85	147.43
215	0.21	32.98	-5.96	311.25	-5.96	149.62
220	0.00	30.22	-5.01	319.62	-5.01	153.68
225	0.26	26.92	-3.75	320.23	-3.75	151.63
230	0.30	23.62	-2.33	325.81	-2.33	152.98
235	0.00	20.42	-0.75	350.90	-0.75	171.24
240	0.00	16.89	1.31	366.75	1.31	179.24
245	0.24	13.11	4.06	382.65	4.06	185.18
250	0.25	9.42	7.65	410.95	7.65	198.33
255	0.27	6.09	12.38	536.32	12.38	245.35
260	0.30	5.82	12.87	690.10	12.87	321.20
265	0.28	9.01	8.13	412.05	8.13	197.94
270	0.29	13.34	3.87	374.63	3.87	179.26
275	0.30	18.01	0.61	347.75	0.61	163.78
280	0.28	22.83	-1.96	330.80	-1.96	156.06
285	0.21	27.72	-4.07	325.29	-4.07	156.19
290	0.00	32.66	-5.85	313.67	-5.85	150.77
295	0.00	37.58	-7.38	302.52	-7.38	145.73
300	0.00	42.52	-8.72	293.58	-8.72	141.52
305	0.24	47.45	-9.91	280.72	-9.91	134.44
310	0.00	52.43	-10.00	285.28	-10.00	137.70
315	0.00	57.40	-10.00	285.28	-10.00	137.70
320	0.00	62.36	-10.00	285.28	-10.00	137.70
325	0.00	67.33	-10.00	285.28	-10.00	137.70
330	0.23	72.30	-10.00	281.61	-10.00	135.18
335	0.28	77.27	-10.00	275.05	-10.00	132.04
340	0.28	82.25	-10.00	274.82	-10.00	131.89
345	0.22	87.23	-10.00	282.80	-10.00	135.99
350	0.21	92.20	-10.00	283.72	-10.00	136.62
355	0.29	97.18	-10.00	274.21	-10.00	131.48

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 02, 2019