

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
Intelsat License LLC
HAGERSTOWN, MD
(KA261)
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
April 03, 2018

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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 03/19/2018.

Company

AB Services LLC
AT&T Corp.
AT&T Wireless Services 3 LLC - PA
Adams County Department of Emergency Svc
Affiniti PA, LLC
Albemarle, County of, Virginia
Appalachia Engineering Services
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
Berk County Department of Emergency Ser
Blair County 911
Blue Ridge Carriers
Blueline Communications
CBS Radio of Maryland, LLC
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.
Charles, County of
Chester, County of
City of Fredericksburg
Clearfield, County of
Clinton, County of
Columbia Gas Transmission, LLC
Columbia, County
Commonwealth of Pennsylvania-Radio Proj.
Comprehensive Wireless LLC

Conterra Ultra Broadband, LLC
Coralinks
County of Augusta
County of Centre
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
Enoch Pratt Free Library
Essex, County of
Exelon Generation Company, LLC
FELHC, Inc.
Frederick County
Fulton County of (PA)
Fundamental Broadcasting LLC
GTT America LLC
Garden State Transmissions
Getwireless.Net
Gloucester, County of
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
Huntingdon, County of
Indiana, County of
Jefferson County of Pennsylvania
Jefferson Microwave, LLC
Juniata County Emergency Services
King and Queen County
Kryptick Technologies
Lancaster County-Wide Communications
Loudoun, County of
MCI Communications Services Inc.
Maryland Public Broadcasting Commission
Maryland State Highway Administration
Maryland, State of - Dept.of Info & Tech
Mifflin County
Montgomery County Of
Montgomery, County of
Mountain State Communications, Ilc
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
 PSEG Services Corporation
 Peco Energy Company
 Pennsylvania Turnpike Commission
 Perry, County of
 Pittsburgh SMSA Limited Partnership
 Preston County Office of Emergency Manag
 Prince George's County
 Prince William, County of
 Radio One Inc
 Rappahannock Electric Cooperative
 Rural Broadband Network Services LLC
 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
 The Voice Radio, 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
 Ursa Navigation Solutions, Inc.
 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-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
 Weblin Holdings LLC

Westmoreland, County of
Wicomico County
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: 04/03/2018
Job Number: 180319COMSGE04

Administrative Information

Status: ENGINEER PROPOSAL
Call Sign: KA261
Licensee Code: INTELS
Licensee Name: Intelsat License LLC

Site Information HAGERSTOWN, MD

Venue Name
Latitude (NAD 83): 39° 35' 57.0" N
Longitude (NAD 83): 77° 45' 22.0" W
Climate Zone: A
Rain Zone: 2
Ground Elevation (AMSL): 166.0 m / 544.6 ft

Link Information

Satellite Type: Geostationary
Mode: TR - Transmit-Receive
Modulation: Digital
Satellite Arc: 6° W to 65° West Longitude
Azimuth Range: 101.9° to 160.4°
Corresponding Elevation Angles: 5.3° / 42.3°
Antenna Centerline (AGL): 9.75 m / 32.0 ft

Antenna Information

Receive - FCC32

Transmit - FCC32

Manufacturer	Vertex	Vertex
Model	15.2 KPC	15.2 KPC
Gain / Diameter	55.0 dBi / 15.2 m	58.4 dBi / 15.2 m
3-dB / 15-dB Beamwidth	0.32° / 0.57°	0.21° / 0.39°
Max Available RF Power (dBW/4 kHz)	3.0	3.0
(dBW/MHz)	27.0	27.0
Maximum EIRP (dBW/4 kHz)	61.4	61.4
(dBW/MHz)	85.4	85.4
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

Receive 4.0 GHz

Transmit 6.1 GHz

Emission / Frequency Range (MHz)	500KG7W / 3700.0 - 4200.0	850KFXD / 6173.7 - 6173.7
		850KFXD / 6176.3 - 6176.3
Max Great Circle Coordination Distance	748.9 km / 465.3 mi	513.7 km / 319.2 mi
Precipitation Scatter Contour Radius	613.5 km / 381.2 mi	269.5 km / 167.4 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' 57.0" N			
Longitude (NAD 83)		77° 45' 22.0" W			
Ground Elevation (AMSL)		166.0 m / 544.6 ft			
Antenna Centerline (AGL)		9.75 m / 32.0 ft			
Antenna Model		Vertex 15.2 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				3.0 (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	0.23	101.82	-10.00	281.47	-10.00	189.60
5	0.23	96.84	-10.00	282.05	-10.00	190.07
10	0.00	91.86	-10.00	285.28	-10.00	192.68
15	0.29	86.88	-10.00	274.54	-10.00	183.84
20	0.00	81.90	-10.00	285.28	-10.00	192.68
25	0.00	76.93	-10.00	285.28	-10.00	192.68
30	0.00	71.95	-10.00	285.28	-10.00	192.68
35	0.00	66.97	-10.00	285.28	-10.00	192.68
40	0.00	62.00	-10.00	285.28	-10.00	192.68
45	0.00	57.03	-10.00	285.28	-10.00	192.68
50	0.00	52.06	-10.00	285.28	-10.00	192.68
55	0.00	47.10	-9.82	286.40	-9.82	193.35
60	0.00	42.14	-8.62	294.23	-8.62	197.97
65	0.00	37.19	-7.26	303.30	-7.26	203.14
70	0.00	32.26	-5.72	314.61	-5.72	207.43
75	0.00	27.35	-3.92	327.40	-3.92	214.60
80	0.00	22.47	-1.79	343.07	-1.79	223.63
85	0.00	17.66	0.83	362.98	0.83	235.46
90	0.00	12.98	4.17	388.85	4.17	251.14
95	0.00	8.67	8.55	426.05	8.55	275.19
100	0.00	5.62	13.26	748.92	13.26	513.70
105	0.00	6.15	12.28	541.99	12.28	357.46
110	0.00	9.60	7.45	416.38	7.45	268.81
115	0.00	13.27	3.93	387.54	3.93	249.92
120	0.00	16.89	1.31	366.72	1.31	237.73
125	0.00	20.41	-0.75	350.91	-0.75	228.25
130	0.00	23.83	-2.43	338.33	-2.43	220.88
135	0.00	27.11	-3.83	328.09	-3.83	214.99
140	0.00	30.23	-5.01	319.61	-5.01	210.21
145	0.00	33.14	-6.01	311.94	-6.01	206.30
150	0.00	35.82	-6.85	306.10	-6.85	204.71
155	0.00	38.20	-7.55	301.33	-7.55	202.04
160	0.00	40.26	-8.12	297.51	-8.12	199.87
165	0.00	41.93	-8.56	294.59	-8.56	198.19
170	0.00	43.16	-8.88	292.52	-8.88	196.98
175	0.00	44.28	-9.16	290.71	-9.16	195.91
180	0.00	45.81	-9.52	288.32	-9.52	194.50
185	0.00	47.72	-9.97	285.49	-9.97	192.81

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Coordination Values

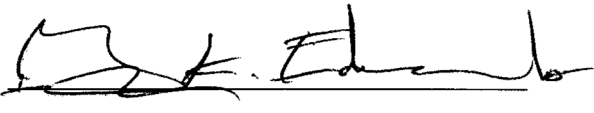
HAGERSTOWN, MD

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Latitude (NAD 83)	39° 35' 57.0" N
Longitude (NAD 83)	77° 45' 22.0" W
Ground Elevation (AMSL)	166.0 m / 544.6 ft
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Antenna Model	Vertex 15.2 meter
Antenna Mode	Receive 4.0 GHz
Interference Objectives: Long Term	-156.0 dBW/MHz 20%
Short Term	-146.0 dBW/MHz 0.01%
Max Available RF Power	Transmit 6.1 GHz -154.0 dBW/4 kHz 20% -131.0 dBW/4 kHz 0.0025% 3.0 (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	49.95	-10.00	285.28	-10.00	192.68
195	0.00	52.47	-10.00	285.28	-10.00	192.68
200	0.00	55.23	-10.00	285.28	-10.00	192.68
205	0.00	58.19	-10.00	285.28	-10.00	192.68
210	0.00	61.32	-10.00	285.28	-10.00	192.68
215	0.00	64.60	-10.00	285.28	-10.00	192.68
220	0.32	67.87	-10.00	270.05	-10.00	180.00
225	0.23	71.40	-10.00	281.23	-10.00	189.39
230	0.00	75.02	-10.00	285.28	-10.00	192.68
235	0.00	78.64	-10.00	285.28	-10.00	192.68
240	0.00	82.29	-10.00	285.28	-10.00	192.68
245	0.00	85.97	-10.00	285.28	-10.00	192.68
250	0.00	89.67	-10.00	285.28	-10.00	192.68
255	0.00	93.36	-10.00	285.28	-10.00	192.68
260	0.00	97.05	-10.00	285.28	-10.00	192.68
265	0.25	100.75	-10.00	279.20	-10.00	187.73
270	0.25	104.39	-10.00	278.72	-10.00	187.33
275	0.29	107.98	-10.00	274.02	-10.00	183.39
280	0.21	111.47	-10.00	284.23	-10.00	191.83
285	0.00	114.80	-10.00	285.28	-10.00	192.68
290	0.00	118.10	-10.00	285.28	-10.00	192.68
295	0.00	121.26	-10.00	285.28	-10.00	192.68
300	0.00	124.25	-10.00	285.28	-10.00	192.68
305	0.20	127.19	-10.00	284.85	-10.00	192.33
310	0.00	129.62	-10.00	285.28	-10.00	192.68
315	0.00	131.90	-10.00	285.28	-10.00	192.68
320	0.00	133.87	-10.00	285.28	-10.00	192.68
325	0.00	135.47	-10.00	285.28	-10.00	192.68
330	0.00	131.65	-10.00	285.28	-10.00	192.68
335	0.30	126.71	-10.00	272.66	-10.00	182.24
340	0.26	121.73	-10.00	277.79	-10.00	186.56
345	0.23	116.75	-10.00	281.95	-10.00	189.98
350	0.00	111.77	-10.00	285.28	-10.00	192.68
355	0.31	106.80	-10.00	271.84	-10.00	181.55

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: April 03, 2018