

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
April 17, 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.

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 04/03/2019.

Company

APC Realty and Equipment CO LLC
Adams County Department of Emergency Svc
Affiniti PA, LLC
Allegany County Government
Altius Communications
American Type Culture Collection
Arlington County, VA
B.F. SAUL COMPANY
Believe Wireless, LLC
Blaze Broadband
Boeing Company
Business Information Group, Inc.
Business Only Broadband, LLC
CBS Television Licenses LLC
Calvert County Government
Calvert, County of
Cambria, County of
Camp Hill School District
Cape May County, MIS Department
Carlisle Area School District
Chesapeake Television Licensee, LLC
City of Altoona
City of Lebanon Authority
Clearwire Spectrum Holdings III, LLC
Commissioners of Caroline County
Conxx, Inc.
Cumberland County, New Jersey
Cumberland Valley School District
Delaware River & Bay Authority
Delmarva Power and Light Company
Double Dog Communications, Inc
East Pennsboro Area School
Eastern Lancaster County School District
Enoch Pratt Free Library
Entercom License, LLC
Franklin County Dept. of Emergency Servi
Getwireless.Net
Glennville State University
Global Telecom & Technology Americas
Halifax Area School District
Harrison County Emergency Services

Home Sales Company, Inc
Lancaster General Hospital
Loudoun, County of
MLS Engineering
Maryland Port Administration
Maryland, State of - MDOT-MTA
Maryland-National Capital Park & Plannin
Montgomery, County of
NBC Telemundo License LLC
NEXSTAR BROADCASTING, INC.
New Cingular Wireless PCS LLC - AZ
New Cingular Wireless PCS - Maryland
New Cingular Wireless PCS, LLC - PA
Northern York County School District
Pdp Group, Inc.
Pennsylvania Turnpike Commission
PhillieCo, L.P.
Prince William, County of
R. Fritz Enterprises Inc
Radio One Inc
RapidDSL & Wireless, Inc.
Red Rose Transit Authority
Rural Broadband Network Services LLC
Shenandoah Personal Communications, LLC
Somerset, County of
South Western School District
Sprint Spectrum L.P.
Sprintcom, Inc
State of Maryland, MIEMSS
Susquehanna Township School District
T-Mobile License LLC
Telecom Transport Management, Inc
Telegia Communications Inc.
USCOC of Cumberland, Inc.
Virginia Everywhere, LLC
WKYSFM, Inc.
WV DHSEM, SIRN System
Washington Cable Systems Inc.
Windstream D&E Systems, Inc.
Wireless Internetwork LLC
World Class Wireless, LLC
XO Communications, LLC
York Water Co

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: 04/03/2019
Job Number: 190403COMSGE05

Administrative Information

Status: ENGINEER PROPOSAL
Call Sign: KA258
Licensee Code: INTELS
Licensee Name: Intelsat License LLC

Site Information

HAGERSTOWN, MD

Venue Name
Latitude (NAD 83): 39° 35' 54.6" N
Longitude (NAD 83): 77° 45' 32.9" W
Climate Zone: A
Rain Zone: 2
Ground Elevation (AMSL): 175.1 m / 574.5 ft

Link Information

Satellite Type: Geostationary
Mode: TR - Transmit-Receive
Modulation: Analog and 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): 9.45 m / 31.0 ft

Antenna Information

Receive - FCC32

Transmit - FCC32

Manufacturer	TIW	TIW
Model	14.2 meter	14.2 meter
Gain / Diameter	62.0 dBi / 14.2 m	65.4 dBi / 14.2 m
3-dB / 15-dB Beamwidth	0.20° / 0.40°	0.10° / 0.20°
Max Available RF Power (dBW/4 kHz)		-0.5
	(dBW/MHz)	23.5
Maximum EIRP (dBW/4 kHz)		64.9
	(dBW/MHz)	88.9
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 12.0 GHz

Transmit 18.0 GHz

Emission / Frequency Range (MHz)	500KFXD / 12697.0 and 12698.0	1M00FXD / 17789.0 and 17791.0
Max Great Circle Coordination Distance	697.5 km / 433.4 mi	498.4 km / 309.7 mi
Precipitation Scatter Contour Radius	602.2 km / 374.2 mi	223.9 km / 139.1 mi

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Coordination Values	HAGERSTOWN, MD
Licensee Name	Intelsat License LLC
Latitude (NAD 83)	39° 35' 54.6" N
Longitude (NAD 83)	77° 45' 32.9" W
Ground Elevation (AMSL)	175.1 m / 574.5 ft
Antenna Centerline (AGL)	9.45 m / 31.0 ft
Antenna Model	TIW 14.2 meter
Antenna Mode	Receive 12.0 GHz
Interference Objectives: Long Term	-156.0 dBW/MHz 20%
Short Term	-146.0 dBW/MHz 0.01%
Max Available RF Power	-0.5 (dBW/4 kHz)
	Transmit 18.0 GHz
	-154.0 dBW/4 kHz 20%
	-131.0 dBW/4 kHz 0.0025%

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 12.0 GHz		Transmit 18.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
0	0.00	101.81	-10.00	231.37	-10.00	165.46
5	0.00	96.84	-10.00	231.37	-10.00	165.46
10	0.00	91.86	-10.00	231.37	-10.00	165.46
15	0.00	86.88	-10.00	231.37	-10.00	165.46
20	0.00	81.90	-10.00	231.37	-10.00	165.46
25	0.00	76.92	-10.00	231.37	-10.00	165.46
30	0.00	71.95	-10.00	231.37	-10.00	165.46
35	0.00	66.97	-10.00	231.37	-10.00	165.46
40	0.00	62.00	-10.00	231.37	-10.00	165.46
45	0.00	57.03	-10.00	231.37	-10.00	165.46
50	0.00	52.06	-10.00	231.37	-10.00	165.46
55	0.00	47.09	-9.82	232.14	-9.82	166.13
60	0.00	42.14	-8.62	237.52	-8.62	170.72
65	0.00	37.19	-7.26	243.78	-7.26	175.87
70	0.00	32.26	-5.72	251.29	-5.72	181.75
75	0.00	27.34	-3.92	260.19	-3.92	188.56
80	0.00	22.47	-1.79	271.24	-1.79	196.67
85	0.00	17.65	0.83	285.48	0.83	205.81
90	0.00	12.98	4.17	301.98	4.17	219.25
95	0.00	8.66	8.56	332.93	8.56	238.08
100	0.00	5.61	13.27	697.52	13.27	498.42
105	0.00	6.15	12.28	470.23	12.28	329.67
110	0.00	9.60	7.45	324.46	7.45	233.18
115	0.00	13.27	3.93	300.47	3.93	218.25
120	0.00	16.89	1.31	288.17	1.31	207.69
125	0.00	20.41	-0.75	276.81	-0.75	200.62
130	0.00	23.83	-2.43	267.88	-2.43	194.24
135	0.00	27.11	-3.83	260.66	-3.83	188.92
140	0.00	30.23	-5.01	254.75	-5.01	184.43
145	0.00	33.14	-6.01	249.86	-6.01	180.63
150	0.00	35.82	-6.85	245.83	-6.85	177.43
155	0.00	38.20	-7.55	242.41	-7.55	174.77
160	0.00	40.26	-8.12	239.78	-8.12	172.60
165	0.00	41.93	-8.56	237.77	-8.56	170.93
170	0.00	43.16	-8.88	236.35	-8.88	169.73
175	0.00	43.92	-9.07	235.50	-9.07	169.01
180	0.00	44.18	-9.13	235.21	-9.13	168.77
185	0.00	43.92	-9.07	235.49	-9.07	169.01

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Interference Objectives: Long Term	-156.0 dBW/MHz 20%
Short Term	-146.0 dBW/MHz 0.01%
Max Available RF Power	-0.5 (dBW/4 kHz)
	Transmit 18.0 GHz
	-154.0 dBW/4 kHz 20%
	-131.0 dBW/4 kHz 0.0025%

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 12.0 GHz		Transmit 18.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	43.16	-8.88	236.35	-8.88	169.73
195	0.00	41.93	-8.56	237.77	-8.56	170.93
200	0.00	40.26	-8.12	239.78	-8.12	172.60
205	0.00	38.20	-7.55	242.41	-7.55	174.76
210	0.00	35.81	-6.85	245.83	-6.85	177.43
215	0.00	33.14	-6.01	249.87	-6.01	180.63
220	0.00	30.22	-5.01	254.75	-5.01	184.43
225	0.00	27.11	-3.83	260.66	-3.83	188.92
230	0.00	23.83	-2.43	267.87	-2.43	194.23
235	0.00	20.42	-0.75	276.80	-0.75	200.62
240	0.00	16.89	1.31	288.19	1.31	207.71
245	0.00	13.28	3.92	300.45	3.92	218.23
250	0.00	9.59	7.46	324.54	7.46	233.23
255	0.00	6.33	11.96	485.51	11.96	341.25
260	0.00	6.11	12.35	669.65	12.35	477.20
265	0.00	9.18	7.93	328.06	7.93	235.28
270	0.00	13.46	3.77	299.52	3.77	217.62
275	0.00	18.11	0.55	283.95	0.55	204.75
280	0.00	22.90	-2.00	270.15	-2.00	195.88
285	0.00	27.76	-4.09	259.36	-4.09	187.94
290	0.00	32.66	-5.85	250.63	-5.85	181.23
295	0.00	37.59	-7.38	243.24	-7.38	175.44
300	0.00	42.53	-8.72	237.07	-8.72	170.34
305	0.00	47.48	-9.91	231.75	-9.91	165.80
310	0.00	52.44	-10.00	231.37	-10.00	165.46
315	0.00	57.40	-10.00	231.37	-10.00	165.46
320	0.00	62.37	-10.00	231.37	-10.00	165.46
325	0.00	67.34	-10.00	231.37	-10.00	165.46
330	0.00	72.31	-10.00	231.37	-10.00	165.46
335	0.00	77.28	-10.00	231.37	-10.00	165.46
340	0.00	82.26	-10.00	231.37	-10.00	165.46
345	0.00	87.23	-10.00	231.37	-10.00	165.46
350	0.00	92.21	-10.00	231.37	-10.00	165.46
355	0.00	97.18	-10.00	231.37	-10.00	165.46

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 17, 2019