

**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  
June 28, 2017

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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-only earth station.

Company

Maryland Public Broadcasting Commission

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 06/01/2017.

Company

3G Wireless, LLC  
ACC License, LLC  
AERIAL VIDEO SYSTEMS  
Alascom Inc  
American Broadcasting Companies, Inc.  
Antietam Cable Television  
Ascent Media Network Services, LLC  
Bellsouth Telecommunications, Inc.  
Borgeson, Tom R.  
Broadcast Sports Inc.  
C-Span  
CBS Television Licenses LLC  
CNN America, Inc.  
CTVn Harrisburg, LLC  
Carolina Telephone and Telegraph Co  
Casper, John  
CenturyTel of the Southwest, Inc.  
Channel Communications, LLC (WHVL)  
Chicago Comnet Corp  
Cincinnati Bell Wireless LLC  
Citywide News Network, Inc.  
Cohen, Elena  
Cowboys Stadium LP  
DCI II, INC.  
Direct Broadcast Services, Inc.  
F Corporation  
Frontier California Inc.  
George Mason University Instr Fndtion  
Global Telecom & Technology Americas, In  
Goodyear Tire & Rubber Company  
HF Enterprises, Inc  
Hallco Unlimited, Inc.  
Hawaiian Telcom, Inc.  
Heiden, William  
Howard University Television - (WHUT-TV)  
Illinois Bell Telephone Company  
Indiana Bell Telephone Company  
Information & Display Systems, Inc.  
Information Super Station, LLC  
International Communications Group, Inc.

Kentucky RSA #3 Cellular General Partner  
Kentucky RSA #4 Cellular General Partner  
MERCURY COMMUNICATIONS  
Maryland Public Broadcasting Commission  
Michigan Bell Telephone Company  
Moreen, Steven K  
Multimedia Holdings Corporation  
NBC Telemundo License LLC  
NEW ENGLAND DIGITAL DISTRIBUTION, INC.  
NEW ENGLAND SATELLITE SYSTEMS INC  
NEXSTAR BROADCASTING, INC.  
NSAC, LLC  
NSM Surveillance  
National Cable Satellite Corporation  
Navajo Communications Company  
NorthWest Suburbs Community Access Corp  
Ohio Bell Telephone Company  
Onboard Images  
Pacific Bell Tel Com dba AT&T California  
Penn Service Microwave Co., Inc.  
Pennsylvania Educational Comm Systems  
Plateau Telecommunications, Inc.  
Plum TV, LLC  
Production & Satellite Services, Inc.  
Quick Link Connections Inc.  
Qwest Corporation  
RCC Minnesota Inc. - MN NE ND SD  
REMOTE FACILITIES CONSULTING SERVICES  
RF Central, LLC  
RF Film, Inc  
Radiofone, Inc.  
Randy Hermes Production  
Remote Broadcasts, Inc.  
Southwestern Bell Telephone L.P.  
Speedshotz, Inc  
TTWN Networks, LLC  
Unisat, Inc.  
United Telephone - Southeast  
VERIZON SOUTH 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 Virginia, Inc.  
Verizon Washington DC, Inc.  
Village Video Productions Inc  
Vyvx, LLC  
WBAL Hearst-Argyle TV, Inc. (CA Corp.)  
WDCW, LLC  
WHP Licensee, LLC  
WHYY, Inc.  
WITF Inc.  
WJAC Licensee, LLC

WPXI, LLC  
WUSA-TV, Inc  
Westar Satellite Services LP  
Western Technical Services  
Wexler Video, Inc.  
Winged Vision Inc  
Wire Tele-View Corporation  
Wisconsin Bell Telephone Company  
Wolfe Air Aviation

## **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: 06/01/2017  
Job Number: 170601COMSGE02

### 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' 54.9" N  
Longitude (NAD 83): 77° 45' 10.6" W  
Climate Zone: A  
Rain Zone: 2  
Ground Elevation (AMSL): 163.79 m / 537.4 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): 5.49 m / 18.0 ft

### Antenna Information

#### Receive - FCC32

#### Transmit - FCC32

Manufacturer	ASC Signal	ASC Signal
Model	9.4 meter	9.4 meter
Gain / Diameter	59.4 dBi / 9.4 m	60.6 dBi / 9.4 m
3-dB / 15-dB Beamwidth	0.18° / 0.38°	0.16° / 0.34°
Max Available RF Power	(dBW/4 kHz) (dBW/MHz)	1.8 25.8
Maximum EIRP	(dBW/4 kHz) (dBW/MHz)	62.4 86.4
Interference Objectives:	Long Term	-156.0 dBW/MHz 20%
	Short Term	-146.0 dBW/MHz 0.01%
		-151.0 dBW/4 kHz 20%
		-128.0 dBW/4 kHz 0.0025%

### Frequency Information

#### Receive 11.0 GHz

#### Transmit 13.0 GHz

Emission / Frequency Range (MHz)	1M00G7W - 62M5G7W / 10950.0 - 11200.0	1M00G7W - 62M5G7W / 13000.0 - 13250.0
	1M00G7W - 62M5G7W / 11450.0 - 11950.0	

Max Great Circle Coordination Distance	652.7 km / 405.5 mi	439.9 km / 273.3 mi
Precipitation Scatter Contour Radius	602.1 km / 374.1 mi	205.6 km / 127.8 mi

# COMSEARCH

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<b>Coordination Values</b>	<b>HAGERSTOWN, MD</b>		
Licensee Name	Intelsat License LLC		
Latitude (NAD 83)	39° 35' 54.9" N		
Longitude (NAD 83)	77° 45' 10.6" W		
Ground Elevation (AMSL)	163.79 m / 537.4 ft		
Antenna Centerline (AGL)	5.49 m / 18.0 ft		
Antenna Model	ASC Signal 9.4 meter		
Antenna Mode	Receive 11.0 GHz		Transmit 13.0 GHz
Interference Objectives:	Long Term	-156.0 dBW/MHz    20%	-151.0 dBW/4 kHz    20%
	Short Term	-146.0 dBW/MHz    0.01%	-128.0 dBW/4 kHz    0.0025%
Max Available RF Power	1.8 (dBW/4 kHz)		

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 11.0 GHz		Transmit 13.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
0	0.33	101.83	-10.00	218.86	-10.00	147.72
5	0.34	96.84	-10.00	218.17	-10.00	146.99
10	0.35	91.86	-10.00	217.41	-10.00	146.20
15	0.39	86.88	-10.00	214.05	-10.00	142.69
20	0.72	81.90	-10.00	196.15	-10.00	124.41
25	0.68	76.91	-10.00	198.09	-10.00	126.13
30	0.67	71.93	-10.00	198.62	-10.00	126.59
35	0.49	66.96	-10.00	205.42	-10.00	133.97
40	0.41	61.98	-10.00	211.85	-10.00	140.44
45	0.22	57.02	-10.00	229.78	-10.00	159.45
50	0.32	52.04	-10.00	219.50	-10.00	148.39
55	0.38	47.07	-9.82	215.23	-9.82	143.76
60	0.42	42.10	-8.61	216.57	-8.61	144.01
65	0.44	37.14	-7.25	220.76	-7.25	147.02
70	0.43	32.20	-5.70	228.58	-5.70	153.59
75	0.49	27.27	-3.89	231.34	-3.89	154.59
80	0.51	22.36	-1.74	240.85	-1.74	163.95
85	0.35	17.56	0.89	270.06	0.89	189.98
90	0.00	12.98	4.16	301.95	4.16	216.22
95	0.00	8.67	8.55	332.87	8.55	234.82
100	0.23	5.40	13.69	652.71	13.69	439.90
105	0.21	5.97	12.60	453.91	12.60	302.68
110	0.21	9.46	7.61	324.81	7.61	230.09
115	0.24	13.11	4.06	296.68	4.06	211.93
120	0.24	16.73	1.41	284.64	1.41	201.63
125	0.20	20.27	-0.67	276.81	-0.67	197.77
130	0.00	23.83	-2.43	267.88	-2.43	191.47
135	0.00	27.11	-3.83	260.67	-3.83	186.14
140	0.00	30.23	-5.01	254.75	-5.01	181.65
145	0.00	33.14	-6.01	249.86	-6.01	177.86
150	0.00	35.82	-6.85	245.83	-6.85	174.65
155	0.00	38.20	-7.55	242.41	-7.55	171.99
160	0.00	40.26	-8.12	239.78	-8.12	169.83
165	0.00	41.93	-8.56	237.77	-8.56	168.16
170	0.00	43.16	-8.88	236.35	-8.88	166.96
175	0.00	43.92	-9.07	235.50	-9.07	166.24
180	0.00	44.18	-9.13	235.21	-9.13	166.00
185	0.00	43.92	-9.07	235.50	-9.07	166.24

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Antenna Model		ASC Signal 9.4 meter			
Antenna Mode		Receive 11.0 GHz		Transmit 13.0 GHz	
Interference Objectives:	Long Term	-156.0 dBW/MHz	20%	-151.0 dBW/4 kHz	20%
	Short Term	-146.0 dBW/MHz	0.01%	-128.0 dBW/4 kHz	0.0025%
Max Available RF Power		1.8 (dBW/4 kHz)			

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 11.0 GHz		Transmit 13.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	43.16	-8.88	236.35	-8.88	166.96
195	0.27	41.68	-8.50	231.44	-8.50	159.72
200	0.27	40.02	-8.06	233.02	-8.06	160.99
205	0.31	37.94	-7.48	232.05	-7.48	159.30
210	0.43	35.46	-6.74	223.80	-6.74	149.68
215	0.38	32.84	-5.91	232.33	-5.91	157.86
220	0.38	29.94	-4.91	236.62	-4.91	161.34
225	0.38	26.83	-3.72	242.99	-3.72	168.34
230	0.42	23.53	-2.29	246.46	-2.29	170.26
235	0.53	20.04	-0.55	245.50	-0.55	167.49
240	0.51	16.54	1.54	257.52	1.54	177.48
245	0.60	12.87	4.26	267.85	4.26	184.72
250	0.73	9.12	8.01	282.34	8.01	193.95
255	0.63	5.77	12.97	444.27	12.97	295.59
260	0.64	5.51	13.47	623.78	13.47	419.71
265	0.75	8.73	8.47	283.71	8.47	194.64
270	0.75	13.16	4.02	257.76	4.02	175.46
275	0.61	17.93	0.66	247.67	0.66	168.54
280	0.48	22.78	-1.94	241.93	-1.94	165.30
285	0.44	27.68	-4.05	235.47	-4.05	159.17
290	0.36	32.60	-5.83	235.00	-5.83	160.66
295	0.31	37.54	-7.36	232.22	-7.36	159.36
300	0.37	42.48	-8.71	220.46	-8.71	148.17
305	0.44	47.43	-9.90	209.38	-9.90	137.84
310	0.37	52.40	-10.00	215.65	-10.00	144.36
315	0.28	57.38	-10.00	223.90	-10.00	153.08
320	0.27	62.35	-10.00	224.91	-10.00	154.16
325	0.39	67.32	-10.00	213.53	-10.00	142.16
330	0.42	72.29	-10.00	211.09	-10.00	139.66
335	0.43	77.27	-10.00	210.28	-10.00	138.84
340	0.37	82.25	-10.00	215.56	-10.00	144.26
345	0.36	87.23	-10.00	216.50	-10.00	145.24
350	0.43	92.20	-10.00	209.94	-10.00	138.49
355	0.38	97.18	-10.00	214.30	-10.00	142.96

## 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: June 28, 2017