

# FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for  
**SES Americom, Inc.**  
**WOODBINE, MD**  
**Satellite Earth Station**

Prepared By:  
COMSEARCH  
19700 Janelia Farm Boulevard  
Ashburn, VA 20147  
December 20, 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-receive earth station.

Company

State of Maryland, MIEMSS

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 12/01/2017.

Company

AT&T Corp.  
Adams County Department of Emergency Svc  
Affiniti PA, LLC  
Argos Engineering, LLC  
Baltimore County of Maryland  
Baltimore Gas and Electric Company  
Believe Wireless, LLC  
CBS Radio Inc. of Maryland  
Calvert, County of  
Capital Communications of America  
Caroline County, VA  
Carroll, County of  
Cellco Partnership - Southern Virginia  
Cellco Partnership-WDC/Baltimore  
Cellco Prtnrshp - Phil. Tri-State Rgn  
Charles, County of  
City of Fredericksburg  
Columbia Gas Transmission, LLC  
Commonwealth of Pennsylvania-Radio Proj.  
Comprehensive Wireless LLC  
County of Culpeper  
County of Frederick  
County of York  
Dauphin County Emergency Management  
ECW Wireless, LLC  
Eastern MLG LLC  
Enoch Pratt Free Library  
Exelon Generation Company, LLC  
FELHC, Inc.  
Frederick County  
Fulton County of (PA)  
Fundamental Broadcasting LLC  
GTT America LLC  
Garden State Transmissions  
Hardy Cellular Telephone Company  
Hardy County OEM/E911  
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  
Montgomery, County of  
New Cingular Wireless PCS LLC - VA  
New Cingular Wireless PCS LLC - WV,NC,SC  
Norfolk Southern Railway  
Pennsylvania Turnpike Commission  
Prince George's County  
Prince William, County of  
Radio One Inc  
Rappahannock Electric Cooperative  
Rural Broadband Network Services LLC  
Shenandoah Personal Communications, LLC  
Shenandoah Valley Electric Cooperative  
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  
Texas Eastern Communications, LLC  
Thought Transmissions, LLC  
Transcontinental Gas Pipeline Corp.  
USCOC of Cumberland, Inc.  
Uniti Fiber PEG, LLC  
Ursa Navigation Solutions, Inc.  
Verizon Wireless (VAW) LLC - Maryland  
Verizon Wireless (VAW) LLC - W/B/V Mkts  
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  
World Class Wireless, LLC  
iSignal

## **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: 12/20/2017  
Job Number: 171201COMSGE03

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### Administrative Information

Status ENGINEER PROPOSAL  
Call Sign  
Licensee Code P3210  
Licensee Name SES Americom, Inc.

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### Site Information

**WOODBINE, MD**  
Venue Name  
Latitude (NAD 83) 39° 22' 36.7" N  
Longitude (NAD 83) 77° 4' 50.8" W  
Climate Zone A  
Rain Zone 2  
Ground Elevation (AMSL) 183.26 m / 601.2 ft

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### Link Information

Satellite Type Geostationary  
Mode TR - Transmit-Receive  
Modulation Digital  
Satellite Arc 37.5° W to 139° West Longitude  
Azimuth Range 127.5° to 251.3°  
Corresponding Elevation Angles 29.0° / 12.9°  
Antenna Centerline (AGL) 5.49 m / 18.0 ft

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### Antenna Information

		<b>Receive - FCC32</b>		<b>Transmit - FCC32</b>	
Manufacturer		Vertex		Vertex	
Model		11 meter		11 meter	
Gain / Diameter		51.8 dBi / 11.0 m		55.7 dBi / 11.0 m	
3-dB / 15-dB Beamwidth		0.40° / 0.90°		0.30° / 0.60°	
Max Available RF Power	(dBW/4 kHz) (dBW/MHz)			0.5 24.5	
Maximum EIRP	(dBW/4 kHz) (dBW/MHz)			56.2 80.2	
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%

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### Frequency Information

	<b>Receive 4.0 GHz</b>	<b>Transmit 6.1 GHz</b>
Emission / Frequency Range (MHz)	100KG7D - 72M0G7D / 3700.0 - 4200.0	100KG7D - 72M0G7D / 5925.0 - 6425.0
Max Great Circle Coordination Distance	305.2 km / 189.6 mi	177.0 km / 110.0 mi
Precipitation Scatter Contour Radius	527.0 km / 327.4 mi	177.0 km / 110.0 mi



# COMSEARCH

## Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147  
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### Coordination Values

### WOODBINE, MD

Licensee Name SES Americom, Inc.  
Latitude (NAD 83) 39° 22' 36.7" N  
Longitude (NAD 83) 77° 4' 50.8" W  
Ground Elevation (AMSL) 183.26 m / 601.2 ft  
Antenna Centerline (AGL) 5.49 m / 18.0 ft  
Antenna Model Vertex 11 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 0.5 (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	6.78	108.59	-10.00	116.68	-10.00	100.00
5	6.12	113.53	-10.00	123.85	-10.00	100.00
10	5.77	115.12	-10.00	127.38	-10.00	100.00
15	5.10	110.49	-10.00	133.92	-10.00	100.00
20	4.85	105.94	-10.00	135.53	-10.00	100.00
25	4.81	101.40	-10.00	136.07	-10.00	100.00
30	4.89	96.85	-10.00	134.98	-10.00	100.00
35	5.05	92.29	-10.00	134.32	-10.00	100.00
40	5.13	87.72	-10.00	133.61	-10.00	100.00
45	5.14	83.15	-10.00	133.53	-10.00	100.00
50	5.01	78.60	-10.00	134.74	-10.00	100.00
55	4.70	74.09	-10.00	137.67	-10.00	100.00
60	4.56	69.61	-10.00	139.51	-10.00	100.00
65	4.19	65.22	-10.00	145.01	-10.00	100.00
70	3.79	60.91	-10.00	152.08	-10.00	100.00
75	3.65	56.62	-10.00	155.04	-10.00	100.00
80	3.47	52.43	-10.00	158.87	-10.00	100.00
85	3.48	48.28	-10.00	158.69	-10.00	100.00
90	3.45	44.28	-9.15	163.57	-9.15	100.00
95	3.35	40.49	-8.18	172.69	-8.18	100.00
100	3.27	36.94	-7.19	179.75	-7.19	100.00
105	3.14	33.74	-6.20	187.55	-6.20	100.00
110	2.96	31.00	-5.28	195.95	-5.28	100.00
115	2.84	28.77	-4.47	202.49	-4.47	104.64
120	2.81	27.14	-3.84	206.22	-3.84	107.59
125	2.75	26.33	-3.51	206.77	-3.51	110.02
130	2.55	26.52	-3.59	210.58	-3.59	113.45
135	2.24	27.68	-4.06	215.25	-4.06	117.80
140	1.81	29.69	-4.81	222.36	-4.81	124.26
145	1.21	32.43	-5.77	236.18	-5.77	134.59
150	0.91	35.27	-6.69	243.62	-6.69	141.32
155	0.64	37.87	-7.46	255.91	-7.46	152.26
160	0.47	40.06	-8.07	264.27	-8.07	160.29
165	0.61	41.59	-8.48	251.72	-8.48	149.92
170	0.79	42.64	-8.75	238.76	-8.75	139.53
175	0.74	43.43	-8.95	240.64	-8.95	141.29
180	0.85	43.57	-8.98	233.76	-8.98	135.74
185	0.76	43.41	-8.94	239.35	-8.94	140.22

# COMSEARCH

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### Coordination Values

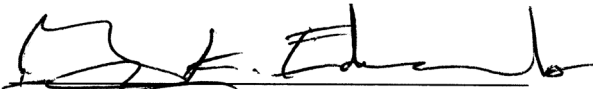
### WOODBINE, MD

Licensee Name	SES Americom, Inc.			
Latitude (NAD 83)	39° 22' 36.7" N			
Longitude (NAD 83)	77° 4' 50.8" W			
Ground Elevation (AMSL)	183.26 m / 601.2 ft			
Antenna Centerline (AGL)	5.49 m / 18.0 ft			
Antenna Model	Vertex 11 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			0.5 (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	0.82	42.61	-8.74	237.01	-8.74	138.11
195	0.69	41.52	-8.46	246.85	-8.46	145.90
200	0.74	39.82	-8.00	246.28	-8.00	144.91
205	1.10	37.48	-7.34	230.99	-7.34	133.27
210	1.22	35.02	-6.61	231.23	-6.61	132.80
215	1.43	32.20	-5.70	229.29	-5.70	130.49
220	1.27	29.43	-4.72	240.40	-4.72	136.85
225	0.73	26.73	-3.67	274.32	-3.67	163.23
230	1.03	23.23	-2.15	265.76	-2.15	154.24
235	1.05	19.81	-0.42	276.93	-0.42	161.39
240	1.14	16.22	1.75	289.25	1.75	170.29
245	1.34	13.11	4.06	299.36	4.06	174.80
250	1.50	11.44	5.54	305.20	5.54	177.00
255	1.92	11.54	5.44	288.10	5.44	161.91
260	2.50	13.50	3.75	257.37	3.75	140.75
265	2.71	16.99	1.24	234.63	1.24	128.74
270	2.87	21.12	-1.12	216.65	-1.12	116.76
275	2.88	25.60	-3.21	205.44	-3.21	108.59
280	2.80	30.27	-5.03	200.61	-5.03	103.35
285	3.07	34.93	-6.58	187.27	-6.58	100.00
290	3.41	39.66	-7.96	172.43	-7.96	100.00
295	3.65	44.47	-9.20	158.99	-9.20	100.00
300	3.89	49.31	-10.00	150.14	-10.00	100.00
305	4.12	54.19	-10.00	146.05	-10.00	100.00
310	4.28	59.09	-10.00	143.61	-10.00	100.00
315	4.51	64.00	-10.00	140.29	-10.00	100.00
320	4.64	68.93	-10.00	138.50	-10.00	100.00
325	5.12	73.85	-10.00	133.69	-10.00	100.00
330	5.42	78.80	-10.00	130.76	-10.00	100.00
335	6.46	83.74	-10.00	120.22	-10.00	100.00
340	7.09	88.71	-10.00	113.39	-10.00	100.00
345	7.29	93.68	-10.00	111.29	-10.00	100.00
350	7.28	98.66	-10.00	111.31	-10.00	100.00
355	7.05	103.63	-10.00	113.81	-10.00	100.00

## 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:   
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Gary K. Edwards  
Senior Manager  
COMSEARCH  
19700 Janelia Farm Boulevard  
Ashburn, VA 20147

DATED: December 20, 2017