

# FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for

**SES Americom, Inc.  
Woodbine, Maryland**

**Satellite Earth Station**

Prepared By:  
COMSEARCH  
19700 Janelia Farm Boulevard  
Ashburn, VA 20147  
May 29, 2014

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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

Baltimore County of Maryland  
Baltimore Gas and Electric Company  
Carroll, County of  
County of Frederick  
Maryland Public Broadcasting Commission  
New Cingular Wireless PCS LLC – VA  
State of Maryland, MIEMSS  
Washington Gas Light Company  
Washington Suburban Sanitary 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 March 26, 2014.

#### Company

AT&T COMMUNICATIONS OF MARYLAND INC  
AT&T Communications of Virginia, LLC  
AT&T Corporation  
Adams County Department of Emergency Svc  
Affiniti PA, LLC  
Alltel Communications LLC-Southern VA  
Alltel Communications of Petersburg Inc  
Appalachia Engineering Services  
Appalachian Broadcasting  
Atlantic Broadband (Penn), LLC  
B20 LLC  
BAY BROADBAND COMMUNICATIONS LLC  
Baltimore County of Maryland  
Baltimore Gas and Electric Company  
Believe Wireless, LLC  
Blue Ridge Carriers  
Capital Communications of America  
Carroll, County of  
Cellco Partnership - Bridgeville, PA/WV  
Cellco Partnership - Southern Virginia  
Cellco Partnership-Newark-Dallas Verizon  
Cellco Partnership-WDC/Baltimore  
Cellco Prtnrshp - Phil. Tri-State Rgn  
Charles, County of  
Chester, County of  
Columbia Gas Transmission Corporation  
Commonwealth of Pennsylvania-Radio Proj.  
Comprehensive Wireless LLC  
Conterra Ultra Broadband, LLC  
County of Frederick  
DAUPHIN COUNTY EMERGENCY MANAGEMENT  
Delaware Division of Communications  
ECW Wireless, LLC  
Eastern MLG LLC  
Enoch Pratt Free Library  
Exelon Generation Company, LLC

Company (Continued)

FELHC  
Firstlevel Networks  
Frederick County  
Fundamental Broadcasting LLC  
Garden State Transmissions  
Hardy Cellular Telephone Company  
Harrisonburg-Rockingham ECC  
Lancaster County-Wide Communications  
Loudoun, County of  
MCI Communications Services Inc.  
MVC Research. LLC  
Maryland Public Broadcasting Commission  
Maryland State Highway Administration  
Maryland, State of - Dept.of Info & Tech  
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  
Norfolk Southern Railway  
Old Dominion LLC  
Open Line Communications  
PA Communications  
PEG Bandwidth, LLC  
PENNSYLVANIA TURNPIKE COMMISSION  
Peco Energy Company  
Prince George's County  
Prince William, County of  
RAPPAHANNOCK ELECTRIC COOPERATIVE  
Radio One Inc  
Rural Broadband Network Services LLC  
SCTF NET  
SHENANDOAH VALLEY ELECTRIC COOPERATIVE  
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  
US Cellular Operating Company, LLC (WI)  
USCOC of Cumberland, Inc.  
Verizon Maryland, Inc.  
Verizon Wireless (VAW) LLC - Delaware/NJ  
Verizon Wireless (VAW) LLC - Maryland  
Verizon Wireless (VAW) LLC-Pennsylvania  
Verizon Wireless VAW LLC-Southern VA  
Virginia Broadband, LLC  
Virginia Department of State Police  
Virginia Electric & Power Company  
Virginia PCS Alliance, L.C.

Company (Continued)

WITF Inc.  
WV DHHR BPH, Office of EMS, Com. Div.  
Washington D.C. SMSA L.P.  
Washington Gas Light Company  
Washington Suburban Sanitary Commission  
World Class Wireless, LLC  
York County Dept of Emergency Services  
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: 05/29/2014  
Job Number: 140326COMSJC09

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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, MARYLAND**  
Venue Name C15  
Latitude (NAD 83) 39° 22' 38.0" N  
Longitude (NAD 83) 77° 4' 45.0" W  
Climate Zone A  
Rain Zone 2  
Ground Elevation (AMSL) 194.86 m / 639.3 ft

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### Link Information

Satellite Type Geostationary  
Mode TR - Transmit-Receive  
Modulation Analog and Digital  
Satellite Arc 60° W to 144° West Longitude  
Azimuth Range 154.2° to 254.9°  
Corresponding Elevation Angles 41.1° / 9.0°  
Antenna Centerline (AGL) 4.88 m / 16.0 ft

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### Antenna Information

	Receive	Transmit
Manufacturer	ASC Signal	ASC Signal
Model	7.6 Meter	7.6 Meter
Gain / Diameter	48.8 dBi / 7.6 m	52.4 dBi / 7.6 m
3-dB / 15-dB Beamwidth	0.62° / 1.18°	0.41° / 0.78°

Max Available RF Power	(dBW/4 kHz)	0.5
	(dBW/MHz)	24.5

Maximum EIRP	(dBW/4 kHz)	52.9
	(dBW/MHz)	76.9

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

	Receive 4.0 GHz	Transmit 6.1 GHz
Emission / Frequency Range (MHz)	N0N / 3700.0 - 4200.0	N0N / 5925.0 - 6425.0
	500KG9D / 3700.0 - 4200.0	1M00F9D / 5925.0 - 6425.0
	100KD7W - 36M0D7W / 3700.0 - 4200.0	100KD7W - 36M0D7W / 5925.0 - 6425.0
	100KG7W - 36M0G7W / 3700.0 - 4200.0	100KG7W - 36M0G7W / 5925.0 - 6425.0

Max Great Circle Coordination Distance	474.4 km / 294.8 mi	288.9 km / 179.5 mi
Precipitation Scatter Contour Radius	551.1 km / 342.4 mi	180.1 km / 111.9 mi

# COMSEARCH

## Earth Station Data Sheet

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(703)726-5500 <http://www.comsearch.com>

### Coordination Values

### WOODBINE, MD

Licensee Name SES Americom, Inc.  
Latitude (NAD 83) 39° 22' 38.0" N  
Longitude (NAD 83) 77° 4' 45.0" W  
Ground Elevation (AMSL) 194.86 m / 639.3 ft  
Antenna Centerline (AGL) 4.88 m / 16.0 ft  
Antenna Model ASC Signal 7.6 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	1.67	105.00	-10.00	203.42	-10.00	110.13
5	1.46	109.95	-10.00	206.67	-10.00	115.39
10	1.00	114.87	-10.00	220.46	-10.00	127.46
15	0.78	119.78	-10.00	232.46	-10.00	135.89
20	1.10	122.26	-10.00	217.22	-10.00	124.73
25	0.89	118.84	-10.00	226.36	-10.00	132.27
30	1.24	115.54	-10.00	213.08	-10.00	121.16
35	1.45	112.04	-10.00	206.99	-10.00	115.69
40	1.42	108.36	-10.00	207.87	-10.00	116.49
45	0.89	104.52	-10.00	226.37	-10.00	132.28
50	0.88	100.77	-10.00	226.65	-10.00	132.51
55	0.92	96.99	-10.00	224.86	-10.00	131.07
60	1.09	93.19	-10.00	217.64	-10.00	125.09
65	1.15	89.36	-10.00	215.53	-10.00	123.29
70	1.20	85.52	-10.00	214.14	-10.00	122.08
75	1.01	81.73	-10.00	220.10	-10.00	127.16
80	1.03	77.94	-10.00	219.29	-10.00	126.48
85	0.93	74.23	-10.00	223.93	-10.00	130.31
90	0.91	70.55	-10.00	225.04	-10.00	131.21
95	0.92	66.94	-10.00	224.34	-10.00	130.64
100	1.08	63.36	-10.00	217.88	-10.00	125.29
105	0.83	60.07	-10.00	229.66	-10.00	133.65
110	0.71	56.88	-10.00	236.59	-10.00	139.25
115	0.76	53.77	-10.00	233.59	-10.00	136.81
120	1.03	50.71	-10.00	219.27	-10.00	126.46
125	1.14	47.98	-10.00	216.01	-10.00	123.70
130	1.14	45.62	-9.48	218.55	-9.48	125.28
135	1.02	43.72	-9.02	224.83	-9.02	129.93
140	0.94	42.18	-8.63	230.77	-8.63	133.04
145	0.53	41.41	-8.43	257.12	-8.43	154.51
150	0.00	41.27	-8.39	295.73	-8.39	189.26
155	0.00	41.10	-8.35	296.02	-8.35	189.43
160	0.00	41.43	-8.43	295.44	-8.43	189.09
165	0.24	42.03	-8.59	289.75	-8.59	184.71
170	0.33	43.09	-8.86	276.82	-8.86	174.17
175	0.44	43.73	-9.02	262.68	-9.02	160.16
180	0.53	43.90	-9.06	253.68	-9.06	152.34

# COMSEARCH

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### Coordination Values

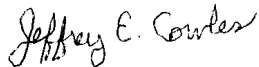
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Antenna Mode	Receive 4.0 GHz		Transmit 6.1 GHz
Interference Objectives: Long Term	-156.0 dBW/MHz	20%	-154.0 dBW/4 kHz 20%
Short Term	-146.0 dBW/MHz	0.01%	-131.0 dBW/4 kHz 0.0025%
Max Available RF Power	0.5 (dBW/4 kHz)		

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)
185	0.56	43.61	-8.99	251.67	-8.99	150.50
190	0.54	42.88	-8.81	254.09	-8.81	152.36
195	0.56	41.64	-8.49	255.06	-8.49	152.80
200	0.44	40.09	-8.07	268.06	-8.07	163.66
205	0.40	38.07	-7.52	276.82	-7.52	172.25
210	0.52	35.59	-6.78	268.35	-6.78	162.15
215	0.52	32.91	-5.93	273.42	-5.93	165.44
220	0.51	30.01	-4.93	281.21	-4.93	172.44
225	0.41	26.96	-3.77	300.27	-3.77	186.38
230	0.49	23.62	-2.33	301.39	-2.33	185.33
235	0.67	20.07	-0.56	300.73	-0.56	182.53
240	0.59	16.58	1.51	322.45	1.51	195.52
245	0.49	13.04	4.12	351.39	4.12	210.58
250	0.42	9.90	7.11	385.82	7.11	231.41
255	0.36	8.69	8.53	474.44	8.53	288.92
260	0.65	9.83	7.19	364.80	7.19	215.43
265	0.45	13.26	3.94	355.55	3.94	213.86
270	0.47	17.34	1.02	329.76	1.02	201.44
275	0.60	21.76	-1.44	299.13	-1.44	182.43
280	0.69	26.40	-3.54	277.87	-3.54	167.73
285	0.91	31.11	-5.32	251.72	-5.32	146.32
290	1.22	35.88	-6.87	229.68	-6.87	131.83
295	1.50	40.72	-8.24	213.85	-8.24	120.05
300	1.90	45.57	-9.47	199.73	-9.47	106.14
305	2.48	50.44	-10.00	183.52	-10.00	100.00
310	2.92	55.36	-10.00	173.31	-10.00	100.00
315	3.14	60.30	-10.00	166.49	-10.00	100.00
320	2.97	65.28	-10.00	172.23	-10.00	100.00
325	2.80	70.25	-10.00	176.06	-10.00	100.00
330	2.57	75.23	-10.00	181.54	-10.00	100.00
335	2.42	80.20	-10.00	185.01	-10.00	100.00
340	2.35	85.16	-10.00	186.59	-10.00	100.00
345	2.11	90.13	-10.00	191.95	-10.00	100.00
350	1.96	95.09	-10.00	195.65	-10.00	103.03
355	1.83	100.05	-10.00	199.10	-10.00	106.15

## 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.



Jeffrey E. Cowles  
Engineer III, Telecommunications  
COMSEARCH  
19700 Janelia Farm Boulevard  
Ashburn, Va. 20147

DATED: May 29, 2014