

# 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  
October 29, 2011

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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  
Cellco Partnership – Washington/Baltimore  
County of Frederick  
Delaware State – DTI  
MCI Communications Services, Inc.  
New Cingular Wireless PCS LLC - DC  
State of Maryland, MIEMSS  
Washington Gas Light Company

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.

Expedited coordination data for this earth station was sent to the below listed carriers with a letter dated March 10, 2011. A notice extending the coordination period for an additional six months was forwarded on October 19, 2011.

#### Company

AT&T COMMUNICATIONS OF MARYLAND INC  
AT&T COMMUNICATIONS OF VIRGINIA INC  
AT&T CORP  
Alltel Communications LLC - SOVA  
Alltel Communications of Petersburg Inc  
Appalachia Engineering Services  
Appalachian Broadcasting  
Atlantic Broadband (Delmar), LLC  
Atlantic Broadband (Penn), LLC  
B20 LLC  
BAY BROADBAND COMMUNICATIONS LLC  
Baltimore County of Maryland  
Baltimore Gas and Electric Company  
Bedford, County of  
Blue Ridge Carriers  
COLLEGE OF SOUTHERN MARYLAND  
Capital Communications of America  
Cellco Partnership- PA Region  
Cellco Partnership-Newark-Dallas Verizon  
Cellco Partnership-WA/Baltimore  
Cellco Prtnrshp - Phil. Tri-State Rgn  
Charles, County of  
Conterra Ultra Broadband, LLC  
County of Frederick  
County of Stafford  
DAUPHIN COUNTY EMERGENCY MANAGEMENT  
DELAWARE STATE - DTI  
Delmarva Power & Light Company  
ECW Wireless, LLC  
Eastern Mlg  
Enoch Pratt Free Library  
Exelon Generation Company, L.L.C  
FELHC, Inc.  
Frederick County

Company (Continued)

Garden State Transmissions  
Hardy Cellular Telephone Company  
Harrisonburg-Rockingham ECC  
Last Mile Inc.  
Loudoun, County of  
MCI Communications Services Inc.  
METROPOLITAN AREA NETWORKS, INC.  
MVC Research. LLC  
Maryland Public Broadcasting Commission  
Maryland State Highway Administration  
Maryland, State of - Dept.of Info & Tech  
National Radio Astronomy Observatory  
New Cingular Wireless PCS - VA/DC/MD  
New Cingular Wireless PCS LLC - DC  
New Cingular Wireless PCS LLC- DE/NH/RI  
New Cingular Wireless PCS, LLC - PA  
Norfolk Southern Railway  
Northern Virginia Electric Cooperative  
Open Range Communications  
PENNSYLVANIA TURNPIKE COMMISSION  
PSEG Services Corporation  
Peco Energy Company  
Prince George's County  
Prince William, County of  
RAPPAHANNOCK ELECTRIC COOPERATIVE  
SCTF NET  
SHENANDOAH VALLEY ELECTRIC COOPERATIVE  
Southern Maryland Electric Cooperative I  
St. Mary's County of  
State of Maryland, MIEMSS  
State of WV DHHR/BPH STECS  
Texas Eastern Communications, Inc.  
USCOC of Cumberland, Inc.  
Verizon Maryland, Inc.  
Virginia Broadband, LLC  
Virginia Department of State Police  
Virginia Electric & Power Company  
Virginia PCS Alliance, L.C.  
WASHINGTON SUBURBAN SANITARY COMMISSION  
WITF Inc.  
Washington D.C. SMSA L.P.  
Washington Gas Light Company  
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: 10/29/2011  
Job Number: 111019COMSJC05

### Administrative Information

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

### Site Information

**WOODBINE, MARYLAND**

Venue Name:  
Latitude (NAD 83): 39° 22' 37.0" N  
Longitude (NAD 83): 77° 4' 46.0" W  
Climate Zone: A  
Rain Zone: 2  
Ground Elevation (AMSL): 192.02 m / 630.0 ft

### Link Information

Satellite Type: Geostationary  
Mode: TR - Transmit-Receive  
Modulation: Digital  
Satellite Arc: 15° W to 142° West Longitude  
Azimuth Range: 108.6° to 253.5°  
Corresponding Elevation Angles: 12.7° / 10.6°  
Antenna Centerline (AGL): 8.53 m / 28.0 ft

### Antenna Information

	Receive	Transmit
Manufacturer	Vertex	Vertex
Model	13 KPC	13 KPC
Gain / Diameter	54.1 dBi / 13.0 m	57.1 dBi / 13.0 m
3-dB / 15-dB Beamwidth	0.34° / 0.64°	0.24° / 0.44°

		1M00G7D	36M0G7W	72M0G7W	
Max Available RF Power	(dBW/4 kHz)	-2.7	-12.5	-15.6	
	(dBW/MHz)	21.3	11.5	8.4	
Maximum EIRP	(dBW/4 kHz)	54.4	44.6	41.5	
	(dBW/MHz)	78.4	68.6	65.5	
	(dBW)	78.4	84.1	84.1	
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%

### Frequency Information

	Receive 4.0 GHz	Transmit 6.1 GHz
Emission / Frequency Range (MHz)	1M00G7D / 3600.0 - 4200.0 36M0G7W / 3600.0 - 4200.0 72M0G7W / 3600.0 - 4200.0	1M00G7D / 5850.0 - 6425.0 36M0G7W / 5850.0 - 6425.0 72M0G7W / 5850.0 - 6425.0

Max Great Circle Coordination Distance	430.4 km / 267.4 mi	241.2 km / 149.9 mi
Precipitation Scatter Contour Radius	537.2 km / 333.8 mi	100.0 km / 62.1 mi



# COMSEARCH

## Earth Station Data Sheet

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### Coordination Values

### WOODBINE, MD

Licensee Name SES Americom, Inc.  
Latitude (NAD 83) 39° 22' 37.0" N  
Longitude (NAD 83) 77° 4' 46.0" W  
Ground Elevation (AMSL) 192.02 m / 630.0 ft  
Antenna Centerline (AGL) 8.53 m / 28.0 ft  
Antenna Model Vertex 13 KPC  
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 -2.7 (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	0.89	106.30	-10.00	226.45	-10.00	122.67
5	0.97	103.29	-10.00	222.03	-10.00	119.07
10	0.84	98.40	-10.00	229.21	-10.00	124.87
15	1.14	93.51	-10.00	216.04	-10.00	114.03
20	0.89	88.62	-10.00	226.02	-10.00	122.32
25	0.88	83.72	-10.00	226.56	-10.00	122.76
30	0.93	78.83	-10.00	224.22	-10.00	120.86
35	1.10	73.93	-10.00	217.12	-10.00	114.94
40	1.01	69.05	-10.00	220.06	-10.00	117.43
45	1.05	64.17	-10.00	218.86	-10.00	116.42
50	1.15	59.29	-10.00	215.55	-10.00	113.60
55	0.86	54.48	-10.00	227.99	-10.00	123.90
60	0.99	49.63	-10.00	220.78	-10.00	118.03
65	0.91	44.85	-9.29	229.06	-9.29	123.89
70	0.97	40.07	-8.07	232.38	-8.07	124.98
75	0.84	35.40	-6.72	247.83	-6.72	133.61
80	0.79	30.79	-5.21	260.52	-5.21	141.03
85	0.73	26.31	-3.50	275.32	-3.50	150.29
90	0.72	22.02	-1.57	289.73	-1.57	159.06
95	0.64	18.11	0.55	310.82	0.55	174.48
100	0.64	14.79	2.75	328.69	2.75	184.30
105	0.78	12.47	4.60	333.72	4.60	185.08
110	0.67	12.15	4.89	344.11	4.89	192.25
115	1.06	13.31	3.90	309.59	3.90	168.14
120	1.19	16.18	1.77	287.49	1.77	152.38
125	0.85	19.94	-0.49	288.18	-0.49	156.20
130	0.57	23.55	-2.30	294.67	-2.30	164.26
135	0.51	26.89	-3.74	289.40	-3.74	162.13
140	0.26	30.19	-5.00	310.81	-5.00	183.52
145	0.00	33.32	-6.07	311.53	-6.07	185.89
150	0.00	36.01	-6.91	305.70	-6.91	182.64
155	0.00	38.41	-7.61	300.93	-7.61	179.93
160	0.46	40.07	-8.07	266.11	-8.07	149.61
165	0.45	41.74	-8.51	264.05	-8.51	148.59
170	0.45	42.97	-8.83	262.76	-8.83	148.00
175	0.65	43.53	-8.97	246.37	-8.97	135.43
180	0.79	43.63	-8.99	237.28	-8.99	129.89
185	0.87	43.30	-8.91	232.98	-8.91	126.49

# COMSEARCH

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### Coordination Values

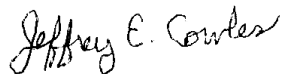
### WOODBINE, MD

Licensee Name	SES Americom, Inc.			
Latitude (NAD 83)	39° 22' 37.0" N			
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Ground Elevation (AMSL)	192.02 m / 630.0 ft			
Antenna Centerline (AGL)	8.53 m / 28.0 ft			
Antenna Model	Vertex 13 KPC			
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			-2.7 (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	0.60	42.83	-8.79	250.65	-8.79	138.36
195	0.69	41.51	-8.45	246.30	-8.45	134.72
200	0.58	39.96	-8.04	256.05	-8.04	141.52
205	0.46	38.02	-7.50	269.08	-7.50	151.17
210	0.61	35.51	-6.76	261.98	-6.76	144.34
215	0.54	32.90	-5.93	272.43	-5.93	151.45
220	0.48	30.03	-4.94	284.43	-4.94	159.86
225	0.53	26.87	-3.73	287.51	-3.73	160.55
230	0.61	23.53	-2.29	292.15	-2.29	162.14
235	0.66	20.07	-0.56	300.96	-0.56	168.32
240	0.75	16.48	1.58	311.02	1.58	172.98
245	0.53	13.10	4.07	347.34	4.07	195.99
250	0.48	10.67	6.30	371.19	6.30	207.42
255	0.41	10.28	6.70	430.43	6.70	241.22
260	0.44	12.04	4.98	364.61	4.98	205.06
265	0.46	15.30	2.38	341.04	2.38	194.07
270	0.45	19.32	-0.15	323.37	-0.15	184.90
275	0.60	23.64	-2.34	292.38	-2.34	162.41
280	0.53	28.25	-4.27	283.95	-4.27	158.43
285	0.49	32.95	-5.95	275.67	-5.95	154.14
290	0.48	37.72	-7.41	267.94	-7.41	150.10
295	0.48	42.53	-8.72	260.15	-8.72	145.73
300	0.89	47.31	-9.87	227.16	-9.87	123.09
305	1.00	52.17	-10.00	220.47	-10.00	117.77
310	1.34	57.03	-10.00	209.96	-10.00	108.69
315	1.88	61.90	-10.00	197.89	-10.00	100.00
320	2.12	66.81	-10.00	191.82	-10.00	100.00
325	1.90	71.76	-10.00	197.35	-10.00	100.00
330	1.55	76.71	-10.00	206.62	-10.00	103.43
335	1.29	81.65	-10.00	211.61	-10.00	110.16
340	1.29	86.58	-10.00	211.61	-10.00	110.16
345	0.81	91.52	-10.00	230.50	-10.00	125.89
350	1.07	96.45	-10.00	218.04	-10.00	115.73
355	1.15	101.38	-10.00	215.55	-10.00	113.60

## 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: October 29, 2011