

# FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for

**SES Americom, Inc.  
Bristow, Virginia**

**Satellite Earth Station**

Prepared By:  
COMSEARCH  
19700 Janelia Farm Boulevard  
Ashburn, Virginia 20147  
August 16, 2012

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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

Capital Communications of America  
ECW Wireless, LLC  
Northern Virginia Electric Cooperative  
Prince William, County of  
Washington DC SMSA L.P.

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 emailed and sent to the below listed carriers with a letter dated June 15, 2012.

#### Company

AT&T COMMUNICATIONS OF MARYLAND INC  
AT&T COMMUNICATIONS OF VIRGINIA INC  
AT&T CORP  
Alltel Communications LLC-Southern VA  
Alltel Communications of Petersburg Inc  
Appalachia Engineering Services  
Atlantic Broadband (Delmar), LLC  
Atlantic Broadband (Penn), LLC  
B20 LLC  
BAY BROADBAND COMMUNICATIONS LLC  
Baltimore County of Maryland  
Baltimore Gas and Electric Company  
Blue Ridge Carriers  
COLLEGE OF SOUTHERN MARYLAND  
Capital Communications of America  
Cellco Partnership - Southern Virginia  
Cellco Partnership- PA Region  
Cellco Partnership-Newark-Dallas Verizon  
Cellco Partnership-WA/Baltimore  
Cellco Prtnrshp - Phil. Tri-State Rgn  
Charles, County of  
Chesterfield, County of  
Comprehensive Wireless LLC  
Conterra Ultra Broadband, LLC  
County of Frederick  
County of Stafford  
DELAWARE STATE - DTI  
ECW Wireless, LLC  
Eastern MLG LLC  
Enoch Pratt Free Library  
FELHC, Inc.  
Frederick County  
Fundamental Broadcasting LLC  
Garden State Transmissions  
Goochland County  
HENRICO COUNTY

Company (Continued)

Hanover, County of  
Hardy Cellular Telephone Company  
Harrisonburg-Rockingham ECC  
King and Queen County  
Loudoun, County of  
MCI Communications Services Inc.  
METROPOLITAN AREA NETWORKS, INC.  
Maryland Public Broadcasting Commission  
Maryland State Highway Administration  
Maryland, State of - Dept.of Info & Tech  
National Radio Astronomy Observatory  
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  
New Kent County  
Norfolk Southern Railway  
Northern Virginia Electric Cooperative  
Petersburg Cellular Partnership  
Prince George's County  
Prince William, County of  
RAPPAHANNOCK ELECTRIC COOPERATIVE  
RCTC Wholesale Corporation  
RICHMOND, CITY OF  
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.  
Thought Transmissions, LLC  
US Cellular Operating Company, LLC (WI)  
USCOC of Cumberland, Inc.  
USCOC of Virginia RSA #2, Inc.  
USCOC of Virginia RSA #3, Inc.  
Verizon Maryland, Inc.  
Verizon Wireless VAW LLC-Southern VA  
Verizon Wireless(VAW) LLC-AZ/CO/NM/NV/UT  
Virginia RSA 5 Limited Partnership  
Virginia Broadband, LLC  
Virginia Cellular LLC  
Virginia Department of State Police  
Virginia Electric & Power Company  
Virginia PCS Alliance, L.C.  
WASHINGTON SUBURBAN SANITARY COMMISSION  
Washington D.C. SMSA L.P.  
Washington Gas Light Company  
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: 08/16/2012  
Job Number: 120615COMSJC03

### Administrative Information

Status ENGINEER PROPOSAL  
Call Sign E000152  
Licensee Code P3210  
Licensee Name SES Americom, Inc.

### Site Information BRISTOW, VIRGINIA

Venue Name  
Latitude (NAD 83) 38° 47' 1.6" N  
Longitude (NAD 83) 77° 34' 24.3" W  
Climate Zone A  
Rain Zone 2  
Ground Elevation (AMSL) 86.47 m / 283.7 ft

### Link Information

Satellite Type Geostationary  
Mode TR - Transmit-Receive  
Modulation Analog and Digital  
Satellite Arc 10° W to 139° West Longitude  
Azimuth Range 104.5° to 251.2°  
Corresponding Elevation Angles 8.7° / 13.4°  
Antenna Centerline (AGL) 4.0 m / 13.1 ft

### Antenna Information

	Receive	Transmit
Manufacturer	Andrew Corporation	Andrew Corporation
Model	ES65-1	ES65-1
Gain / Diameter	47.4 dBi / 6.5 m	51.0 dBi / 6.5 m
3-dB / 15-dB Beamwidth	0.68° / 1.32°	0.42° / 0.84°

1M00F8D, 77M0G7W, 43K8G7D to 4M80G7D

Max Available RF Power	(dBW/4 kHz)	-0.5	-16.0	-2.7	-4.0
	(dBW/MHz)	23.5	8.0	7.7	20.0
Maximum EIRP	(dBW/4 kHz)	50.5	35.0	48.3	47.0
	(dBW/MHz)	74.5	59.0	58.7	71.0
	(dBW)	74.5	77.8	58.7	77.8
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)	43K8G7W - 4M80G7W / 3700.0 - 4200.0 1M00F8D / 3700.0 - 4200.0 77M0G7W / 3700.0 - 4200.0	43K8G7D - 4M80G7D / 5925.0 - 6425.0 1M00F8D / 5925.0 - 6425.0 77M0G7W / 5925.0 - 6425.0
Max Great Circle Coordination Distance	440.1 km / 273.4 mi	255.7 km / 158.9 mi
Precipitation Scatter Contour Radius	555.5 km / 345.1 mi	153.6 km / 95.5 mi



# COMSEARCH

## Earth Station Data Sheet

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### Coordination Values

### BRISTOW, VA

Licensee Name SES Americom, Inc.  
Latitude (NAD 83) 38° 47' 1.6" N  
Longitude (NAD 83) 77° 34' 24.3" W  
Ground Elevation (AMSL) 86.47 m / 283.7 ft  
Antenna Centerline (AGL) 4.0 m / 13.1 ft  
Antenna Model Andrew Corporation ES65-1  
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	0.78	104.36	-10.00	232.78	-10.00	133.03
5	0.90	99.41	-10.00	225.64	-10.00	128.64
10	0.82	94.45	-10.00	230.46	-10.00	132.48
15	0.87	89.50	-10.00	227.64	-10.00	130.25
20	0.81	84.55	-10.00	231.00	-10.00	132.90
25	0.83	79.60	-10.00	229.62	-10.00	131.81
30	0.67	74.65	-10.00	239.13	-10.00	138.05
35	0.59	69.71	-10.00	243.89	-10.00	141.90
40	0.48	64.78	-10.00	251.52	-10.00	148.13
45	0.53	59.84	-10.00	248.03	-10.00	145.32
50	0.51	54.91	-10.00	249.29	-10.00	146.36
55	0.31	50.02	-10.00	271.51	-10.00	165.56
60	0.00	45.16	-9.37	289.32	-9.37	181.63
65	0.00	40.29	-8.13	297.45	-8.13	186.41
70	0.00	35.45	-6.74	306.87	-6.74	191.76
75	0.00	30.64	-5.16	318.56	-5.16	197.82
80	0.00	25.91	-3.34	331.67	-3.34	204.77
85	0.00	21.28	-1.20	347.49	-1.20	211.45
90	0.00	16.86	1.33	366.88	1.33	221.98
95	0.29	12.66	4.44	380.04	4.44	226.88
100	0.58	9.28	7.82	375.42	7.82	217.52
105	0.69	8.03	9.39	440.12	9.39	255.68
110	0.92	9.52	7.54	348.27	7.54	200.35
115	0.89	13.01	4.14	322.37	4.14	187.14
120	0.92	16.64	1.47	297.99	1.47	173.05
125	1.05	20.13	-0.60	275.79	-0.60	156.11
130	1.11	23.54	-2.29	261.69	-2.29	146.90
135	1.21	26.77	-3.69	248.81	-3.69	138.56
140	1.25	29.89	-4.89	240.22	-4.89	133.31
145	1.19	32.87	-5.92	236.15	-5.92	132.50
150	0.84	35.85	-6.86	246.98	-6.86	140.52
155	0.85	38.25	-7.56	241.97	-7.56	137.34
160	0.76	40.39	-8.16	243.76	-8.16	139.43
165	0.43	42.38	-8.68	265.94	-8.68	158.61
170	0.49	43.57	-8.98	256.67	-8.98	151.07
175	0.51	44.32	-9.17	254.26	-9.17	149.30
180	0.39	44.70	-9.26	266.62	-9.26	160.08
185	0.00	44.83	-9.29	289.85	-9.29	181.95

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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	0.00	44.04	-9.10	291.09	-9.10	182.69
195	0.30	42.50	-8.71	280.49	-8.71	173.12
200	0.00	41.06	-8.34	296.08	-8.34	185.62
205	0.00	38.96	-7.77	299.89	-7.77	187.82
210	0.20	36.35	-7.01	304.34	-7.01	190.20
215	0.23	33.61	-6.16	306.89	-6.16	190.91
220	0.27	30.62	-5.15	308.88	-5.15	190.94
225	0.24	27.47	-3.97	321.50	-3.97	198.26
230	0.26	24.13	-2.56	328.93	-2.56	201.67
235	0.34	20.61	-0.85	332.16	-0.85	201.57
240	0.44	17.07	1.20	334.80	1.20	200.58
245	0.46	14.34	3.09	346.72	3.09	204.61
250	0.39	13.09	4.08	363.81	4.08	215.29
255	0.41	13.56	3.69	357.63	3.69	211.42
260	0.48	15.63	2.15	336.47	2.15	200.44
265	0.54	18.83	0.13	315.78	0.13	188.16
270	0.56	22.68	-1.89	298.59	-1.89	178.19
275	0.56	26.91	-3.75	285.66	-3.75	170.18
280	0.53	31.36	-5.41	276.01	-5.41	162.65
285	0.55	35.93	-6.89	265.71	-6.89	155.86
290	0.54	40.60	-8.21	257.88	-8.21	151.00
295	0.57	45.31	-9.41	248.35	-9.41	144.80
300	0.57	50.08	-10.00	245.37	-10.00	143.12
305	0.54	54.89	-10.00	247.30	-10.00	144.71
310	0.55	59.71	-10.00	246.31	-10.00	143.89
315	0.67	64.53	-10.00	239.26	-10.00	138.15
320	0.76	69.38	-10.00	233.44	-10.00	133.55
325	0.82	74.24	-10.00	230.27	-10.00	132.33
330	0.83	79.11	-10.00	229.35	-10.00	131.60
335	0.74	83.99	-10.00	234.78	-10.00	134.60
340	0.78	88.87	-10.00	232.25	-10.00	133.87
345	0.75	93.75	-10.00	234.08	-10.00	134.05
350	0.72	98.62	-10.00	235.84	-10.00	135.43
355	0.68	103.49	-10.00	238.58	-10.00	137.61

## 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: August 16, 2012