

# FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for

**SES Americom, Inc.  
BRISTOW, VIRGINIA  
(11.0 Meter)**

**Satellite Earth Station**

Prepared By:  
COMSEARCH  
19700 Janelia Farm Boulevard  
Ashburn, Virginia 20147  
June 3, 2013

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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

Adams County Emergency Management Agency  
Alltel communications of Petersburg, Inc.  
Appalachia Engineering Services  
Baltimore County of Maryland  
Baltimore Gas and Electric Company  
Calvert Cliffs Nuclear Power Plant  
Capital Communications of America  
Cellco Partnership – Southern Virginia  
Eastern MLG, LLC  
ECW Wireless, LLC  
Garden State Transmissions  
Hardy Cellular Telephone Company  
iSignal  
MVC Research, LLC  
New Cingular Wireless PCS LLC - DC  
New Cingular Wireless PCS LLC – WV/NC/SC  
Norfolk Southern Railway  
PEG Bandwidth  
Potomac Electric Power Company  
Prince William, County of  
Southern Maryland Electric Cooperative, Inc.  
St. Mary's County of (MD)  
State of Maryland, MIEMSS  
Transcontinental Gas Pipeline Corporation

Company (Continued)

Verizon Maryland, Inc.  
Virginia Cellular LLC  
Virginia Department of State Police  
Virginia Electric & Power Company  
Virginia PCS Alliance, L.C.  
Washington DC SMSA L.P.  
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.

Coordination data for this earth station was sent to the below listed carriers with a letter dated September 3, 2012. A minor revision was forwarded on October 24, 2012, and modifications were forwarded on January 18, 2013 and April 19, 2013.

#### Company

ADAMS COUNTY EMERGENCY MANAGEMENT AGENCY  
AT&T COMMUNICATIONS OF MARYLAND INC  
AT&T Communications of Virginia, LLC  
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  
Bedford, County of  
Believe Wireless, LLC  
Blue Ridge Carriers  
COLLEGE OF SOUTHERN MARYLAND  
Capital Communications of America  
Cellco Partnership - Bridgeville, PA/WV  
Cellco Partnership - Southern Virginia  
Cellco Partnership- PA Region  
Cellco Partnership-Newark-Dallas Verizon  
Cellco Partnership-WDC/Baltimore  
Cellco Prtnrshp - Phil. Tri-State Rgn  
Charles City County Sheriffs Office  
Charles, County of  
Chesterfield, County of  
Comprehensive Wireless LLC  
Conterra Ultra Broadband, LLC  
County of Frederick  
Delaware Division of Communications

Company (Continued)

ECW Wireless, LLC  
Eastern MLG LLC  
Enoch Pratt Free Library  
Exelon Generation Company, L.L.C  
FELHC, Inc.  
Firstlevel Networks  
Frederick County  
Fundamental Broadcasting LLC  
Garden State Transmissions  
Goochland County  
HENRICO COUNTY  
Hanover, County of  
Hardy Cellular Telephone Company  
Harrisonburg-Rockingham ECC  
Huntingdon, County of  
King and Queen County  
Last Mile Inc.  
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  
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  
Open Line Communications  
PA Communications  
PEG Bandwidth  
PENNSYLVANIA TURNPIKE COMMISSION  
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  
Sprint Spectrum, LP  
St. Mary's County of (MD)  
Stafford, County of  
State of Maryland, MIEMSS  
State of WV DHHR/BPH STECS

Company (Continued)

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 Virginia, Inc.  
Verizon Wireless (VAW) LLC - Delaware  
Verizon Wireless (VAW) LLC - Maryland  
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 D.C. SMSA L.P.  
Washington Gas Light Company  
Washington Suburban Sanitary Commission  
World Class Wireless LLC  
York County Dept of Emergency Services  
iSignal  
ANNE ARUNDEL, COUNTY OF  
Albermarle, County of, Virginia  
American Electric Power Service Corp.  
CARROLL COUNTY  
CBS Communications Services Inc.  
CTAB Holdings LLC  
Calvert Cliffs Nuclear Power Plant  
Calvert County Government  
City of Richmond  
Columbia Gas Transmission Corporation  
Commonwealth of Pennsylvania  
Commonwealth of Pennsylvania-Radio Proj.  
County of Culpeper  
County of Louisa, VA  
County of Nelson  
Egan LLC  
Franklin County Dept. of Emergency Servi  
George Washington University  
Howard, County of  
Lancaster County of  
M&T Bank  
MARYLAND EMERG MANAGEMENT AGENCY COMM  
MARYLAND STATE DEPT OF GENERAL SERVICES  
Maryland, State Of - MDOT - MTA  
Maryland, State of - DNR  
Montgomery, County of  
Morgan, County of



Company (Continued)

PENNSYLVANIA MICROWAVE NETWORK INC.  
Potomac Electric Power Company  
Powhatan, County of  
RCYM Holdings LLC  
Redi-Call Communications Company  
SPOTSYLVANIA COUNTY  
Southside Electric Cooperative  
Transcontinental Gas Pipeline Corp.  
Warrenton Fauquier Joint Communications

## **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: 06/03/2013  
Job Number: 130419COMSJC04

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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 BRISTOW, VIRGINIA

Venue Name  
Latitude (NAD 83) 38° 47' 3.2" N  
Longitude (NAD 83) 77° 34' 21.7" W  
Climate Zone A  
Rain Zone 2  
Ground Elevation (AMSL) 87.78 m / 288.0 ft

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### 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) 7.32 m / 24.0 ft

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### Antenna Information

**Receive**  
Manufacturer GD Satcom  
Model 11 Meter  
Gain / Diameter 53.1 dBi / 11.0 m  
3-dB / 15-dB Beamwidth 0.38° / 0.72°

### Transmit

GD Satcom  
11 Meter  
55.6 dBi / 11.0 m  
0.28° / 0.59°

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

SEE ATTACHMENT 1  
SEE ATTACHMENT 1

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

SEE ATTACHMENT 1  
SEE ATTACHMENT 1  
SEE ATTACHMENT 1

Interference Objectives: Long Term -156.0 dBW/MHz 20%  
Short Term -146.0 dBW/MHz 0.01%

-154.0 dBW/4 kHz 20%  
-131.0 dBW/4 kHz 0.0025%

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### Frequency Information

Emission / Frequency Range (MHz)

### Receive 4.0 GHz

SEE ATTACHMENT 1

### Transmit 6.1 GHz

SEE ATTACHMENT 1

Max Great Circle Coordination Distance 495.6 km / 307.9 mi  
Precipitation Scatter Contour Radius 555.5 km / 345.1 mi

295.2 km / 183.4 mi  
153.6 km / 95.5 mi

# COMSEARCH

## Earth Station Data Sheet

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ATTACHMENT 1

Page 1 of 2

GD SATCOM Technologies:  
Model: 11 meter

4 GHz Gain: 53.1 dBi  
6 GHz Gain: 55.6 dBi

Satellite Arc: 10.0 to 55.5 West Longitude

Receive Band: 3625.0 to 3700.0 MHz

### Emissions

100KN0N  
1M00F8D  
15K2G7W – 72M0G7W

Satellite Arc: 10.0 to 139.0 West Longitude

Receive Band: 3700.0 to 4200.0 MHz

### Emissions

100KN0N  
1M00F8D  
15K2G7W – 72M0G7W

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Satellite Arc: 10.0 to 55.5 West Longitude

Transmit Band: 5850.0 to 5925.0 MHz

<u>Emission</u>	<u>RF Power Density (dBW/4 kHz)</u>	<u>EIRP/Carrier (dBW)</u>	<u>EIRP Density (dBW/ 4 kHz)</u>
100KN0N	0.5	70.1	56.1
1M00F8D	0.5	80.1	56.1
15K2G7W to	-2.7	58.7	52.9
72M0G7W	-15.7	82.5	39.9

# COMSEARCH

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ATTACHMENT 1

Page 2 of 2

Satellite Arc: 10.0 to 139.0 West Longitude

Transmit Band: 5925.0 to 6425.0 MHz

<u>Emission</u>	<u>RF Power Density (dBW/4 kHz)</u>	<u>EIRP/Carrier (dBW)</u>	<u>EIRP Density (dBW/ 4 kHz)</u>
100KN0N	-0.5	69.1	55.1
1M00F8D	-0.5	79.1	55.1
15K2G7W to 72M0G7W	-2.7	58.7	52.9
	-15.7	82.5	39.9

Satellite Arc: 40.0 to 48.0 West Longitude

Transmit Band: 6725.0 to 6874.0 MHz

<u>Emission</u>	<u>RF Power Density (dBW/4 kHz)</u>	<u>EIRP/Carrier (dBW)</u>	<u>EIRP Density (dBW/ 4 kHz)</u>
100KN0N	-2.7	66.9	52.9
1M00F8D	-2.7	76.9	52.9
15K2G7W to 72M0G7W	-2.7	58.7	52.9
	-15.7	82.5	39.9

# COMSEARCH

## Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147  
(703)726-5500 <http://www.comsearch.com>

### Coordination Values

### BRISTOW, VA

Licensee Name SES Americom, Inc.  
Latitude (NAD 83) 38° 47' 3.2" N  
Longitude (NAD 83) 77° 34' 21.7" W  
Ground Elevation (AMSL) 87.78 m / 288.0 ft  
Antenna Centerline (AGL) 7.32 m / 24.0 ft  
Antenna Model GD Satcom 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	0.71	104.35	-10.00	236.38	-10.00	135.86
5	0.78	99.41	-10.00	232.34	-10.00	133.94
10	0.74	94.45	-10.00	234.89	-10.00	134.69
15	0.67	89.50	-10.00	238.74	-10.00	137.73
20	0.52	84.55	-10.00	248.55	-10.00	145.75
25	0.37	79.61	-10.00	264.10	-10.00	158.97
30	0.26	74.67	-10.00	277.88	-10.00	172.84
35	0.00	69.74	-10.00	285.28	-10.00	179.20
40	0.25	64.79	-10.00	278.46	-10.00	173.34
45	0.37	59.85	-10.00	264.29	-10.00	159.14
50	0.00	54.97	-10.00	285.28	-10.00	179.20
55	0.00	50.06	-10.00	285.28	-10.00	179.20
60	0.00	45.17	-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	318.55	-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	211.44
90	0.00	16.86	1.33	366.87	1.33	221.98
95	0.00	12.86	4.27	389.72	4.27	235.21
100	0.00	9.79	7.23	414.51	7.23	248.93
105	0.00	8.72	8.49	495.55	8.49	295.16
110	0.00	10.29	6.69	409.91	6.69	246.87
115	0.00	13.61	3.65	385.34	3.65	232.35
120	0.00	17.26	1.07	364.88	1.07	220.87
125	0.37	20.59	-0.84	327.75	-0.84	198.36
130	0.40	24.03	-2.52	310.32	-2.52	188.23
135	0.47	27.31	-3.91	292.02	-3.91	175.72
140	0.55	30.41	-5.07	276.96	-5.07	162.99
145	0.63	33.30	-6.06	265.00	-6.06	154.16
150	0.70	35.96	-6.90	255.77	-6.90	147.55
155	0.59	38.46	-7.63	257.89	-7.63	150.22
160	0.43	40.69	-8.24	268.22	-8.24	159.93
165	0.46	42.35	-8.67	261.70	-8.67	154.92
170	0.00	44.04	-9.10	291.09	-9.10	182.69
175	0.22	44.61	-9.23	287.59	-9.23	179.98
180	0.23	44.86	-9.30	286.33	-9.30	179.02
185	0.00	44.83	-9.29	289.85	-9.29	181.95

# COMSEARCH

## Earth Station Data Sheet

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### Coordination Values

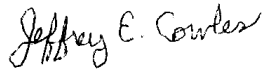
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Interference Objectives: Long Term -156.0 dBW/MHz 20% -154.0 dBW/4 kHz 20%  
Short Term -146.0 dBW/MHz 0.01% -131.0 dBW/4 kHz 0.0025%  
Max Available RF Power -0.5 (dBW/4 kHz)

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	0.00	42.77	-8.78	293.16	-8.78	183.91
200	0.00	41.06	-8.34	296.08	-8.34	185.62
205	0.00	38.96	-7.76	299.89	-7.76	187.82
210	0.00	36.52	-7.06	304.65	-7.06	190.52
215	0.00	33.79	-6.22	310.47	-6.22	193.76
220	0.00	30.82	-5.22	318.12	-5.22	197.58
225	0.00	27.65	-4.04	326.54	-4.04	202.08
230	0.00	24.31	-2.65	336.72	-2.65	205.77
235	0.00	20.85	-0.98	349.18	-0.98	212.35
240	0.22	17.23	1.09	362.57	1.09	219.10
245	0.26	14.52	2.95	371.84	2.95	223.12
250	0.24	13.24	3.95	382.07	3.95	229.28
255	0.26	13.71	3.57	376.67	3.57	225.76
260	0.31	15.78	2.05	357.75	2.05	214.06
265	0.36	18.95	0.06	336.44	0.06	203.34
270	0.39	22.78	-1.94	317.43	-1.94	192.30
275	0.37	27.00	-3.78	305.75	-3.78	186.53
280	0.38	31.42	-5.43	292.66	-5.43	178.46
285	0.40	35.98	-6.90	280.02	-6.90	169.94
290	0.42	40.63	-8.22	269.91	-8.22	161.39
295	0.45	45.34	-9.41	259.38	-9.41	154.00
300	0.42	50.11	-10.00	258.72	-10.00	154.28
305	0.43	54.90	-10.00	257.20	-10.00	152.97
310	0.45	59.72	-10.00	255.36	-10.00	151.39
315	0.40	64.56	-10.00	260.58	-10.00	155.89
320	0.45	69.40	-10.00	255.59	-10.00	151.58
325	0.47	74.26	-10.00	252.75	-10.00	149.17
330	0.46	79.13	-10.00	254.73	-10.00	150.85
335	0.41	84.00	-10.00	259.70	-10.00	155.13
340	0.37	88.87	-10.00	263.98	-10.00	158.86
345	0.55	93.74	-10.00	246.78	-10.00	144.28
350	0.50	98.61	-10.00	249.52	-10.00	146.56
355	0.54	103.48	-10.00	246.91	-10.00	144.39

## 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, Virginia 20147

DATED: June 3, 2013