

# FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for

**SES Americom, Inc.  
Bristow, Virginia  
(Call Sign: E000152)**

**Satellite Earth Station**

Prepared By:  
COMSEARCH  
19700 Janelia Farm Boulevard  
Ashburn, Virginia 20147  
December 1, 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

Fairfax County Police Department  
ECW Wireless, LLC

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 October 15, 2014.

#### Company

AT&T COMMUNICATIONS OF MARYLAND INC  
AT&T Communications of Virginia, LLC  
AT&T Corporation  
Alltel Communications LLC-Southern VA  
Alltel Communications of Petersburg Inc  
Appalachia Engineering Services  
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 - Southern Virginia  
Cellco Partnership-WDC/Baltimore  
Charles, County of  
Chesterfield, County of  
City of Richmond (VA)  
Columbia Gas Transmission Corporation  
Comprehensive Wireless LLC  
Conterra Ultra Broadband, LLC  
County of Frederick  
County of King William, Virginia  
Delaware Division of Communications  
ECW Wireless, LLC  
Eastern MLG LLC  
Enoch Pratt Free Library  
FELHC  
Frederick County  
Fundamental Broadcasting LLC  
Garden State Transmissions  
Goochland County

Company (Continued)

HENRICO COUNTY  
Hanover, County of  
Hardy Cellular Telephone Company  
Harrisonburg-Rockingham ECC  
King and Queen County  
Loudoun, County of  
MCI Communications Services Inc.  
MGW Networks, LLC  
MVC Research. LLC  
Maryland Public Broadcasting Commission  
Maryland State Highway Administration  
Maryland, State of - Dept.of Info & Tech  
Motorola Solutions, Inc.  
New Cingular Wireless PCS - Maryland  
New Cingular Wireless PCS LLC - VA  
New Cingular Wireless PCS LLC- WV/NC/SC  
New Kent County  
Norfolk Southern Railway  
Old Dominion LLC  
PA Communications  
PEG Bandwidth, LLC  
Prince George's County  
Prince William, County of  
RAPPAHANNOCK ELECTRIC COOPERATIVE  
Radio One Inc  
Rural Broadband Network Services LLC  
SHENANDOAH VALLEY ELECTRIC COOPERATIVE  
Southern Maryland Electric Cooperative I  
Spotsylvania, County of  
Sprintcom, Inc  
St. Mary's County of (MD)  
Stafford, County of  
State of Maryland, MIEMSS  
Thought Transmissions, LLC  
USCOC of Cumberland, Inc.  
USCOC of Virginia RSA #3, Inc.  
Verizon Maryland, Inc.  
Verizon Wireless (VAW) LLC - W/B/V Mkts  
Verizon Wireless VAW LLC-Southern VA  
Virginia Broadband, LLC  
Virginia Cellular LLC  
Virginia Department of State Police  
Virginia Electric & Power Company  
Virginia PCS Alliance, L.C.  
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  
YAB Mobile  
iSignal

Company (Continued)

Albermarle, County of, Virginia  
Anne Arundel, County of  
CBS Communication Services Inc  
CTAB Holdings LLC  
Calvert Cliffs Nuclear Power Plant  
Calvert, County of  
Conectiv Communications, Inc.  
County of Culpeper  
County of Louisa, VA  
Egan LLC  
George Washington University  
Howard, 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  
Nelson, County of  
Potomac Electric Power Company  
RCTC Wholesale Corporation  
RCYM Holdings LLC  
Redi-Call Communications Company  
Transcontinental Gas Pipeline Corp.  
Warrenton Fauquier Joint Communications  
Waterleaf International LLC  
3G Wireless, LLC  
AERIAL VIDEO SYSTEMS  
AT&T California  
Alascom Inc  
Anne Arundel, County of  
Ascent Media Network Services, LLC  
Bellsouth Telecommunications, Inc.  
BFI Licenses LLC  
Borgeson, Tom R.  
Broadcast Sports Inc.  
C-SPAN  
CBS Broadcasting Inc  
CBS TELEVISION LICENSES LLC  
CISLUNAR NETWORKS CORPORATION  
CNG Communications, Inc.  
CP Communications, LLC  
Carolina Telephone and Telegraph Co  
Casper, John  
CenturyTel of the Southwest, Inc.  
Chicago Comnet Corp  
Cincinnati Bell Wireless LLC  
Citywide News Network, Inc.  
Cohen, Elena  
County of Fairfax, Virginia  
Cowboys Stadium LP

Company (Continued)

DCI II, INC.  
Direct Broadcast Services, Inc.  
GOODYEAR TIRE AND RUBBER COMPANY  
GSN New, Inc  
Global Microwave Systems Inc  
HF Enterprises, Inc  
Hallco Unlimited, Inc.  
Hawaiian Telcom, Inc.  
Heiden, William  
Henrico County Police  
Illinois Bell Telephone Company  
Indiana Bell Telephone Company  
Information & Display Systems, Inc.  
Information Super Station, LLC  
International Communications Group, Inc.  
Kentucky RSA #3 Cellular General Partner  
Kentucky RSA #4 Cellular General Partner  
Loop, Inc.  
MERCURY COMMUNICATIONS  
Metro Networks Communications, Inc.  
Metrosat Communications Inc.  
Michigan Bell Telephone Company  
Microwave Video Systems, LLC  
Moreen, Steven K  
NBC Telemundo License LLC  
NEW ENGLAND DIGITAL DISTRIBUTION, INC.  
NEW ENGLAND SATELLITE SYSTEMS INC  
NSM Surveillance  
National Cable Satellite Corporation  
Navajo Communications Company  
NorthWest Suburbs Community Access Corp  
On Scene Video Production  
Onboard Images  
Pacific Television Center  
Penn Service Microwave Co., Inc.  
Plateau Telecommunications, Inc.  
Plum TV, LLC  
Production & Satellite Services, Inc.  
Proxy Aviation  
Public Television Communications Center  
QUICK LINK CONNECTIONS INC  
Qwest Corporation  
RCC Minnesota Inc. - MN NE ND SD  
REMOTE FACILITIES CONSULTING SERVICES  
RF Central, LLC  
RF Film, Inc  
RF Technology, LLC  
Radiofone, Inc.  
Randy Hermes Production  
Regulus Media Services, Inc.  
Remote Broadcasts, Inc.



Company (Continued)

Southwestern Bell Telephone L.P.  
Speedshotz, Inc  
Texas A&M University, Athletic Department  
The City of Baltimore, Police Department  
Total RF Marketing Inc  
Unisat, Inc.  
United Telephone - Southeast  
VERIZON SOUTH INC.  
Verizon California Inc.  
Verizon New England Inc.  
Verizon New Jersey, Inc.  
Verizon New York, Inc.  
Verizon North Inc.  
Verizon Northwest Inc.  
Verizon Pennsylvania, Inc.  
Verizon Virginia, Inc.  
Verizon Washington DC, Inc.  
Village Video Productions Inc  
Vitec Broadcast Services, Inc,  
Vyvx, LLC  
Westar Satellite Services LP  
Western Technical Services  
Wexler Video, Inc.  
Winged Vision Inc  
Wisconsin Bell, Inc.  
Wolfe Air Aviation

## **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: 12/01/2014  
Job Number: 141015COMSJC04

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### Administrative Information

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

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### 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

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### Link Information

Satellite Type Geostationary  
Mode TR - Transmit-Receive  
Modulation 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) 6.71 m / 22.0 ft

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### Antenna Information

**Receive**  
Manufacturer Vertex Corporation  
Model 9.0 Meter  
Gain / Diameter 50.1 dBi / 9.0 m  
3-dB / 15-dB Beamwidth 0.53° / 1.00°

### Transmit

Vertex Corporation  
9.0 Meter  
53.2 dBi / 9.0 m  
0.38° / 0.72°

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 471.4 km / 292.9 mi  
Precipitation Scatter Contour Radius 555.5 km / 345.1 mi

198.7 km / 123.4 mi  
100.0 km / 62.1 mi

# COMSEARCH

## Earth Station Data Sheet

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ATTACHMENT 1

Page 1 of 2

Vertex Corporation:  
Model: 9 Meter KPC  
Call Sign: E000152

4 GHz Gain: 50.1 dBi  
6 GHz Gain: 53.2 dBi

Satellite Arc: 10.0 to 139.0 West Longitude

Receive Band: 3700.0 to 4200.0 MHz

### Emissions

20M0G7W – 72M0G7W

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Satellite Arc: 10.0 to 60.0 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>
20M0G7W to	-14.9	75.3	38.3
72M0G7W	-14.9	80.9	38.3

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>
20M0G7W to	-14.9	75.3	38.3
72M0G7W	-14.9	80.9	38.3

# COMSEARCH

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ATTACHMENT 1

Page 2 of 2

Satellite Arc: 10.0 to 60.0 West Longitude

Transmit Band: 6491.0 to 6650.0 MHz

<u>Emission</u>	<u>RF Power Density (dBW/4 kHz)</u>	<u>EIRP/Carrier (dBW)</u>	<u>EIRP Density (dBW/ 4 kHz)</u>
20M0G7W to	-14.9	75.3	38.3
72M0G7W	-14.9	80.9	38.3

# 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' 1.6" N  
Longitude (NAD 83) 77° 34' 24.3" W  
Ground Elevation (AMSL) 86.47 m / 283.7 ft  
Antenna Centerline (AGL) 6.71 m / 22.0 ft  
Antenna Model Vertex Corporation 9.0 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 -14.9 (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	0.63	104.35	-10.00	241.41	-10.00	100.37
5	0.72	99.40	-10.00	236.16	-10.00	100.00
10	0.64	94.45	-10.00	240.58	-10.00	100.00
15	0.73	89.50	-10.00	235.58	-10.00	100.00
20	0.59	84.55	-10.00	244.24	-10.00	102.44
25	0.61	79.60	-10.00	242.72	-10.00	101.33
30	0.44	74.66	-10.00	255.95	-10.00	110.69
35	0.32	69.73	-10.00	270.82	-10.00	120.88
40	0.33	64.79	-10.00	269.50	-10.00	119.99
45	0.39	59.85	-10.00	261.82	-10.00	114.76
50	0.32	54.93	-10.00	269.97	-10.00	120.31
55	0.00	50.06	-10.00	285.28	-10.00	130.43
60	0.00	45.16	-9.37	289.32	-9.37	132.12
65	0.00	40.29	-8.13	297.45	-8.13	134.22
70	0.00	35.45	-6.74	306.87	-6.74	138.17
75	0.00	30.64	-5.16	318.56	-5.16	142.94
80	0.00	25.91	-3.34	331.67	-3.34	148.80
85	0.00	21.28	-1.20	347.49	-1.20	156.19
90	0.00	16.86	1.33	366.88	1.33	165.64
95	0.00	12.85	4.27	389.72	4.27	178.71
100	0.21	9.60	7.45	414.34	7.45	189.39
105	0.32	8.39	8.90	471.41	8.90	198.67
110	0.56	9.82	7.20	371.79	7.20	153.86
115	0.52	13.25	3.94	347.35	3.94	144.04
120	0.56	16.90	1.31	323.61	1.31	133.79
125	0.68	20.38	-0.73	298.56	-0.73	123.45
130	0.74	23.79	-2.41	282.04	-2.41	115.69
135	0.84	27.04	-3.80	265.84	-3.80	107.18
140	0.88	30.16	-4.99	255.85	-4.99	102.36
145	0.82	33.16	-6.01	253.10	-6.01	102.22
150	0.52	36.10	-6.94	266.89	-6.94	113.39
155	0.58	38.48	-7.63	259.08	-7.63	109.15
160	0.49	40.64	-8.22	261.69	-8.22	111.91
165	0.00	42.78	-8.78	293.16	-8.78	133.71
170	0.31	43.75	-9.02	277.78	-9.02	124.05
175	0.32	44.50	-9.21	274.80	-9.21	122.35
180	0.21	44.88	-9.30	288.80	-9.30	131.68

# COMSEARCH

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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 -14.9 (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	0.00	44.83	-9.29	289.85	-9.29	132.34
190	0.00	44.04	-9.10	291.09	-9.10	132.85
195	0.00	42.77	-8.78	293.16	-8.78	133.71
200	0.00	41.06	-8.34	296.08	-8.34	133.66
205	0.00	38.96	-7.77	299.89	-7.77	135.24
210	0.00	36.52	-7.06	304.65	-7.06	137.23
215	0.00	33.79	-6.22	310.47	-6.22	139.70
220	0.00	30.82	-5.22	318.12	-5.22	142.75
225	0.00	27.65	-4.04	326.54	-4.04	146.48
230	0.00	24.31	-2.65	336.72	-2.65	151.13
235	0.21	20.70	-0.90	347.96	-0.90	155.85
240	0.32	17.16	1.14	350.05	1.14	152.70
245	0.35	14.44	3.01	361.04	3.01	156.58
250	0.27	13.21	3.97	378.84	3.97	170.11
255	0.29	13.68	3.60	372.65	3.60	164.38
260	0.37	15.72	2.09	349.92	2.09	150.34
265	0.43	18.90	0.09	327.20	0.09	138.60
270	0.45	22.74	-1.92	308.94	-1.92	132.27
275	0.47	26.95	-3.77	293.78	-3.77	125.81
280	0.44	31.40	-5.42	285.13	-5.42	123.06
285	0.47	35.96	-6.90	272.58	-6.90	117.19
290	0.46	40.62	-8.22	264.89	-8.22	114.11
295	0.49	45.33	-9.41	254.37	-9.41	108.69
300	0.48	50.10	-10.00	251.66	-10.00	107.68
305	0.46	54.90	-10.00	253.75	-10.00	109.15
310	0.48	59.72	-10.00	251.55	-10.00	107.59
315	0.43	64.56	-10.00	257.73	-10.00	111.94
320	0.45	69.40	-10.00	255.63	-10.00	110.47
325	0.46	74.26	-10.00	254.21	-10.00	109.47
330	0.47	79.13	-10.00	253.61	-10.00	109.05
335	0.49	84.00	-10.00	250.49	-10.00	106.85
340	0.45	88.87	-10.00	255.09	-10.00	110.09
345	0.48	93.74	-10.00	251.75	-10.00	107.74
350	0.60	98.62	-10.00	243.29	-10.00	101.75
355	0.51	103.48	-10.00	248.80	-10.00	105.73

## 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: December 1, 2014