

# FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for  
**SES Americom, Inc.**  
**WOODBINE, MD**  
**Satellite Earth Station**

Prepared By:  
COMSEARCH  
19700 Janelia Farm Boulevard  
Ashburn, VA 20147  
July 18, 2017

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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.

### 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 06/13/2017.

#### Company

APC Realty and Equipment CO LLC  
Adams County Department of Emergency Svc  
Affiniti PA, LLC  
Altius Communications  
Arlington County, VA  
B.F. SAUL COMPANY  
Believe Wireless, LLC  
Blaze Broadband  
Business Information Group, Inc.  
CBS Radio Stations Inc.  
CBS Television Licenses LLC  
Calvert County Government  
Calvert, County of  
Camp Hill School District  
Carlisle Area School District  
Cecil County Public Schools  
Chesapeake Television Licensee, LLC  
Clearwire Spectrum Holdings III, LLC  
Commissioners of Caroline County  
Cumberland Valley School District  
Dover Area School District  
ECW Wireless, LLC  
Enoch Pratt Free Library  
Franklin County Dept. of Emergency Servi  
George Washington University  
Global Telecom & Technology Americas  
Home Sales Company, Inc  
Lancaster General Hospital  
Loudoun, County of  
Maryland Port Administration  
Maryland, State of - MDOT-MTA  
NBC Telemundo License LLC  
New Cingular Wireless PCS - Maryland  
New Cingular Wireless PCS, LLC - PA  
Northern York County School District  
Pdp Group, Inc.  
PhillieCo, L.P.  
Prince William, County of  
Radio One Inc  
RapidDSL & Wireless, Inc.

Red Rose Transit Authority  
Red Zebra Broadcasting Licensee, LLC  
Shenandoah Personal Communications, LLC  
Shippensburg Area School District  
South Western School District  
Sprint Communications Company, LP  
Sprint Spectrum L.P.  
T-Mobile License LLC  
Telecom Transport Management, Inc  
Telegia Communications Inc.  
Virginia Everywhere, LLC  
WKYSFM, Inc.  
Washington Cable Systems Inc.  
World Class Wireless, LLC  
XO Communications, LLC  
York Water Co

## **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: 07/18/2017  
Job Number: 170613COMSGE01

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### Administrative Information

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

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### Site Information

**WOODBINE, MD**  
Venue Name  
Latitude (NAD 83) 39° 22' 40.0" N  
Longitude (NAD 83) 77° 4' 52.4" W  
Climate Zone A  
Rain Zone 2  
Ground Elevation (AMSL) 203.02 m / 666.1 ft

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### Link Information

Satellite Type Geostationary  
Mode TR - Transmit-Receive  
Modulation Digital  
Satellite Arc 12° W to 142° West Longitude  
Azimuth Range 106.4° to 253.5°  
Corresponding Elevation Angles 10.5° / 10.6°  
Antenna Centerline (AGL) 3.66 m / 12.0 ft

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### Antenna Information

	<b>Receive - FCC32</b>	<b>Transmit - FCC32</b>
Manufacturer	GD Satcom	GD Satcom
Model	6.3 meter	6.3 meter
Gain / Diameter	59.5 dBi / 6.3 m	62.8 dBi / 6.3 m
3-dB / 15-dB Beamwidth	0.16° / 0.32°	0.11° / 0.22°
Max Available RF Power	(dBW/4 kHz) (dBW/MHz)	-20.5 3.5
Maximum EIRP	(dBW/4 kHz) (dBW/MHz)	42.3 66.3
Interference Objectives:	Long Term Short Term	-156.0 dBW/MHz 20% -146.0 dBW/MHz 0.01%
		-151.0 dBW/4 kHz 20% -128.0 dBW/4 kHz 0.0025%

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### Frequency Information

	<b>Receive 18.0 GHz</b>	<b>Transmit 28.0 GHz</b>
Emission / Frequency Range (MHz)	NON - 250MG7W / 18550.0 - 18800.0 NON - 250MG7W / 19700.0 - 20200.0	NON - 250MG7W / 28350.0 - 28600.0 NON - 250MG7W / 29500.0 - 30000.0
Max Great Circle Coordination Distance	194.8 km / 121.1 mi	118.7 km / 73.7 mi
Precipitation Scatter Contour Radius	100.0 km / 62.1 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' 40.0" N  
Longitude (NAD 83) 77° 4' 52.4" W  
Ground Elevation (AMSL) 203.02 m / 666.1 ft  
Antenna Centerline (AGL) 3.66 m / 12.0 ft  
Antenna Model GD Satcom 6.3 meter  
Antenna Mode Receive 18.0 GHz Transmit 28.0 GHz  
Interference Objectives: Long Term -156.0 dBW/MHz 20% -151.0 dBW/4 kHz 20%  
Short Term -146.0 dBW/MHz 0.01% -128.0 dBW/4 kHz 0.0025%  
Max Available RF Power -20.5 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 18.0 GHz		Transmit 28.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
0	3.08	106.29	-10.00	100.00	-10.00	100.00
5	2.77	101.32	-10.00	100.00	-10.00	100.00
10	2.66	96.37	-10.00	100.00	-10.00	100.00
15	2.23	91.41	-10.00	100.00	-10.00	100.00
20	1.83	86.47	-10.00	100.00	-10.00	100.00
25	1.20	81.54	-10.00	100.00	-10.00	100.00
30	0.82	76.62	-10.00	100.91	-10.00	100.00
35	0.64	71.71	-10.00	108.42	-10.00	100.00
40	0.74	66.78	-10.00	104.20	-10.00	100.00
45	0.85	61.86	-10.00	100.00	-10.00	100.00
50	0.92	56.95	-10.00	100.00	-10.00	100.00
55	0.62	52.09	-10.00	109.20	-10.00	100.00
60	0.56	47.23	-9.86	111.84	-9.86	100.00
65	0.60	42.37	-8.68	113.03	-8.68	100.00
70	0.61	37.55	-7.37	116.22	-7.37	100.00
75	0.65	32.77	-5.89	118.46	-5.89	100.00
80	0.54	28.10	-4.22	127.63	-4.22	100.00
85	0.49	23.53	-2.29	134.84	-2.29	100.00
90	0.44	19.17	-0.06	145.66	-0.06	100.00
95	0.43	15.16	2.48	155.18	2.48	100.00
100	0.41	11.90	5.11	166.37	5.11	102.10
105	0.44	10.11	6.88	192.59	6.88	116.07
110	0.31	10.75	6.21	180.11	6.21	112.87
115	0.00	13.49	3.75	180.95	3.75	114.83
120	0.30	16.79	1.37	163.64	1.37	101.88
125	0.30	20.32	-0.70	155.45	-0.70	100.00
130	0.00	23.96	-2.49	159.48	-2.49	100.00
135	0.00	27.26	-3.89	154.40	-3.89	100.00
140	0.00	30.39	-5.07	150.65	-5.07	100.00
145	0.00	33.32	-6.07	147.56	-6.07	100.00
150	0.00	36.01	-6.91	145.02	-6.91	100.00
155	0.00	38.41	-7.61	142.95	-7.61	100.00
160	0.00	40.48	-8.18	141.29	-8.18	100.00
165	0.23	41.94	-8.57	137.74	-8.57	100.00
170	0.28	43.13	-8.87	133.05	-8.87	100.00
175	0.32	43.85	-9.05	129.19	-9.05	100.00
180	0.41	44.01	-9.09	122.81	-9.09	100.00
185	0.38	43.79	-9.03	125.67	-9.03	100.00

# COMSEARCH

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### Coordination Values

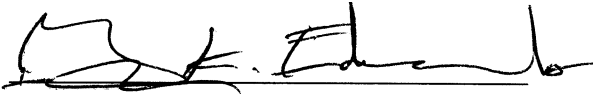
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Antenna Mode	Receive 18.0 GHz		Transmit 28.0 GHz
Interference Objectives: Long Term	-156.0 dBW/MHz	20%	-151.0 dBW/4 kHz 20%
Short Term	-146.0 dBW/MHz	0.01%	-128.0 dBW/4 kHz 0.0025%
Max Available RF Power			-20.5 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 18.0 GHz		Transmit 28.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
190	0.42	42.99	-8.83	122.71	-8.83	100.00
195	0.39	41.79	-8.53	125.73	-8.53	100.00
200	0.30	40.21	-8.11	132.87	-8.11	100.00
205	0.30	38.16	-7.54	134.82	-7.54	100.00
210	0.25	35.80	-6.85	140.54	-6.85	100.00
215	0.00	33.32	-6.07	147.56	-6.07	100.00
220	0.00	30.39	-5.07	150.65	-5.07	100.00
225	0.32	27.02	-3.79	143.73	-3.79	100.00
230	0.54	23.58	-2.31	131.95	-2.31	100.00
235	0.57	20.14	-0.60	135.85	-0.60	100.00
240	0.41	16.71	1.43	152.82	1.43	100.00
245	0.31	13.27	3.93	170.94	3.93	106.62
250	0.38	10.76	6.20	173.43	6.20	107.35
255	0.37	10.32	6.66	194.84	6.66	118.67
260	0.38	12.10	4.93	169.00	4.93	104.43
265	0.37	15.36	2.34	159.72	2.34	100.00
270	0.37	19.36	-0.17	150.88	-0.17	100.00
275	0.49	23.68	-2.36	134.55	-2.36	100.00
280	0.52	28.25	-4.28	128.36	-4.28	100.00
285	0.51	32.95	-5.95	124.42	-5.95	100.00
290	0.46	37.73	-7.42	123.62	-7.42	100.00
295	0.33	42.56	-8.73	128.96	-8.73	100.00
300	0.57	47.36	-9.89	111.43	-9.89	100.00
305	1.17	52.15	-10.00	100.00	-10.00	100.00
310	1.42	57.02	-10.00	100.00	-10.00	100.00
315	1.61	61.92	-10.00	100.00	-10.00	100.00
320	1.67	66.84	-10.00	100.00	-10.00	100.00
325	2.47	71.73	-10.00	100.00	-10.00	100.00
330	2.63	76.67	-10.00	100.00	-10.00	100.00
335	3.22	81.61	-10.00	100.00	-10.00	100.00
340	3.31	86.57	-10.00	100.00	-10.00	100.00
345	3.56	91.53	-10.00	100.00	-10.00	100.00
350	3.46	96.49	-10.00	100.00	-10.00	100.00
355	3.24	101.44	-10.00	100.00	-10.00	100.00

## 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.

BY: 

Gary K. Edwards  
Senior Manager  
COMSEARCH  
19700 Janelia Farm Boulevard  
Ashburn, VA 20147

DATED: July 18, 2017