

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for

**SES Americom, Inc.
Woodbine, Maryland**

Satellite Earth Station

Prepared By:
COMSEARCH

19700 Janelia Farm Boulevard
Ashburn, Virginia 20147
April 22, 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 and receive earth station.

Company

None

No 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 March 21, 2014.

Company

APC Realty and Equipment CO LLC
Adams County Department of Emergency Svc
Affiniti PA, LLC
Airband Communications Inc
Arlington County Emergency Comm Ctr
B.F. SAUL COMPANY
BUSINESS INFORMATION GROUP, INC.
Believe Wireless, LLC
Blaze Broadband
Blue Ridge Carriers
CAMP HILL SCHOOL DISTRICT
CBS Broadcasting Inc
CBS Communications Services Inc.
CRISPUS ATTUCKS ASSOCIATION
Calvert, County of
Carlisle Area School District
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
Home Sales Company, Inc
LANCASTER GENERAL HOSPITAL
Loudoun Wireless LLC
Loudoun, County of
Maryland Port Administration
Maryland, State Of - MDOT - MTA
NBC Telemundo License LLC
Netrepid, Inc.
New Cingular Wireless PCS - Maryland
New Cingular Wireless PCS, LLC - PA
Northern York County School District

Company (Continued)

Old Dominion LLC
PEG Bandwidth, LLC
Plexicomm, LLC
Prince William, County of
Radio One Inc
RapidDSL & Wireless, Inc.
Red Rose Transit Authority
Red Zebra Broadcasting Licensee, LLC
Roadstar Internet, Inc.
SHIPPENSBURG AREA SCHOOL DISTRICT
Shenandoah Personal Communications, LLC
Sprint Spectrum L.P
Steelton-Highspire School District
T-Mobile License LLC
THE HERSHEY COMPANY
Telecom Transport Management, Inc
Telegia Communications Inc.
WASHINGTON CABLE SYSTEMS INC
WKYSFM, INC
Washington Metro Area Transit Police Dep
World Class Wireless, LLC
York County Dept of Emergency Services
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: 04/22/2014
Job Number: 140321COMSJC02

Administrative Information

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

Site Information

WOODBINE, MARYLAND
Venue Name K9
Latitude (NAD 83) 39° 22' 40.3" N
Longitude (NAD 83) 77° 4' 51.4" W
Climate Zone A
Rain Zone 2
Ground Elevation (AMSL) 200.35 m / 657.3 ft

Link Information

Satellite Type Geostationary
Mode TR - Transmit-Receive
Modulation Analog and Digital
Satellite Arc 60° W to 144° West Longitude
Azimuth Range 154.2° to 254.9°
Corresponding Elevation Angles 41.1° / 9.1°
Antenna Centerline (AGL) 8.53 m / 28.0 ft

Antenna Information

	Receive	Transmit
Manufacturer	GD Satcom	GD Satcom
Model	13 Meter	13 Meter
Gain / Diameter	62.2 dBi / 13.0 m	63.7 dBi / 13.0 m
3-dB / 15-dB Beamwidth	0.13° / 0.25°	0.11° / 0.21°

Max Available RF Power	(dBW/4 kHz)	-8.0
	(dBW/MHz)	16.0

Maximum EIRP	(dBW/4 kHz)	55.7
	(dBW/MHz)	79.7

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%

Frequency Information

	Receive 12.2 GHz	Transmit 18.0 GHz
Emission / Frequency Range (MHz)	N0N / 12200.0 - 12700.0	N0N / 17300.0 - 17800.0
	500KG9D / 12200.0 - 12700.0	1M00F9D / 17300.0 - 17800.0
	100KD7W - 36M0D7W / 12200.0 - 12700.0	100KD7W - 24M0D7W / 17300.0 - 17800.0
	100KG7W - 36M0G7W / 12200.0 - 12700.0	100KG7W - 24M0G7W / 17300.0 - 17800.0

Max Great Circle Coordination Distance	434.8 km / 270.1 mi	214.4 km / 133.2 mi
Precipitation Scatter Contour Radius	538.4 km / 334.5 mi	100.0 km / 62.1 mi

COMSEARCH

Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147
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Coordination Values

WOODBINE, MD

Licensee Name SES Americom, Inc.
Latitude (NAD 83) 39° 22' 40.3" N
Longitude (NAD 83) 77° 4' 51.4" W
Ground Elevation (AMSL) 200.35 m / 657.3 ft
Antenna Centerline (AGL) 8.53 m / 28.0 ft
Antenna Model GD Satcom 13 Meter
Antenna Mode Receive 12.2 GHz Transmit 18.0 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 -8.0 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 12.2 GHz		Transmit 18.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
0	1.77	105.01	-10.00	149.85	-10.00	100.00
5	1.38	109.94	-10.00	162.10	-10.00	100.00
10	1.16	114.88	-10.00	171.81	-10.00	100.00
15	0.64	119.77	-10.00	195.88	-10.00	100.00
20	0.40	121.89	-10.00	208.32	-10.00	108.90
25	0.50	118.65	-10.00	203.13	-10.00	102.30
30	0.78	115.35	-10.00	188.73	-10.00	100.00
35	0.60	111.75	-10.00	197.71	-10.00	100.00
40	0.62	108.14	-10.00	196.72	-10.00	100.00
45	0.70	104.48	-10.00	192.73	-10.00	100.00
50	0.85	100.76	-10.00	185.27	-10.00	100.00
55	0.57	96.95	-10.00	199.35	-10.00	100.00
60	0.54	93.16	-10.00	200.92	-10.00	100.40
65	0.57	89.36	-10.00	199.38	-10.00	100.00
70	0.53	85.57	-10.00	201.33	-10.00	100.70
75	0.60	81.78	-10.00	197.85	-10.00	100.00
80	0.48	78.04	-10.00	202.19	-10.00	103.60
85	0.40	74.35	-10.00	208.29	-10.00	108.90
90	0.39	70.71	-10.00	209.44	-10.00	109.80
95	0.35	67.15	-10.00	213.11	-10.00	112.90
100	0.27	63.70	-10.00	220.37	-10.00	118.80
105	0.27	60.34	-10.00	220.49	-10.00	118.90
110	0.00	57.27	-10.00	227.19	-10.00	124.10
115	0.00	54.24	-10.00	227.19	-10.00	124.10
120	0.00	51.42	-10.00	227.19	-10.00	124.10
125	0.20	48.69	-10.00	226.74	-10.00	123.80
130	0.00	46.56	-9.70	228.50	-9.70	124.90
135	0.00	44.61	-9.24	230.54	-9.24	126.00
140	0.00	43.05	-8.85	232.27	-8.85	127.00
145	0.00	41.92	-8.56	233.56	-8.56	127.70
150	0.00	41.27	-8.39	234.34	-8.39	128.10
155	0.00	41.10	-8.35	234.54	-8.35	128.20
160	0.00	41.43	-8.43	234.14	-8.43	128.00
165	0.00	42.25	-8.65	233.18	-8.65	127.50
170	0.21	43.20	-8.89	230.84	-8.89	125.90
175	0.24	43.93	-9.07	227.29	-9.07	123.40
180	0.37	44.05	-9.10	214.99	-9.10	113.60

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Coordination Values

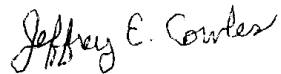
WOODBINE, MD

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Short Term	-146.0 dBW/MHz	0.01%	-128.0 dBW/4 kHz 0.0025%
Max Available RF Power	-8.0 (dBW/4 kHz)		

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 12.2 GHz		Transmit 18.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
185	0.32	43.85	-9.05	219.76	-9.05	117.40
190	0.37	43.04	-8.85	215.96	-8.85	114.10
195	0.36	41.83	-8.54	218.56	-8.54	115.90
200	0.28	40.23	-8.11	228.06	-8.11	123.00
205	0.25	38.20	-7.55	232.95	-7.55	126.20
210	0.26	35.80	-6.85	235.77	-6.85	127.70
215	0.00	33.32	-6.07	245.76	-6.07	133.30
220	0.00	30.39	-5.07	250.64	-5.07	136.00
225	0.23	27.09	-3.82	253.52	-3.82	136.80
230	0.47	23.63	-2.34	236.75	-2.34	123.30
235	0.53	20.17	-0.62	240.90	-0.62	124.40
240	0.39	16.73	1.41	264.89	1.41	139.10
245	0.30	13.16	4.02	288.48	4.02	154.80
250	0.36	9.95	7.05	297.28	7.05	160.30
255	0.35	8.71	8.50	434.77	8.50	214.40
260	0.36	10.08	6.91	296.23	6.91	159.70
265	0.35	13.32	3.89	281.91	3.89	149.40
270	0.35	17.41	0.98	266.69	0.98	141.10
275	0.46	21.82	-1.47	241.73	-1.47	126.00
280	0.49	26.46	-3.56	228.65	-3.56	118.50
285	0.46	31.22	-5.36	222.70	-5.36	115.90
290	0.38	36.05	-6.92	223.53	-6.92	118.30
295	0.31	40.91	-8.30	223.93	-8.30	120.00
300	0.69	45.73	-9.51	195.60	-9.51	100.00
305	0.92	50.61	-10.00	181.47	-10.00	100.00
310	1.13	55.51	-10.00	172.82	-10.00	100.00
315	1.25	60.43	-10.00	168.83	-10.00	100.00
320	1.87	65.34	-10.00	146.90	-10.00	100.00
325	2.33	70.27	-10.00	136.12	-10.00	100.00
330	2.42	75.23	-10.00	134.13	-10.00	100.00
335	2.67	80.19	-10.00	130.71	-10.00	100.00
340	2.57	85.16	-10.00	131.29	-10.00	100.00
345	2.38	90.13	-10.00	135.11	-10.00	100.00
350	2.23	95.09	-10.00	138.25	-10.00	100.00
355	1.89	100.05	-10.00	146.43	-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.



Jeffrey E. Cowles
Engineer III, Telecommunications
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, Va. 20147

DATED: April 22, 2014