FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
SES Americom, Inc.
SOUTH MTN, CA
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
March 30, 2016

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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-only earth station.

Company

California, State of
Los Angeles County FCC Licensing Section
Los Angeles SMSA Ltd. Partnership
Southern California Edison Company
Southern California Gas Company
Union Pacific Railroad 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 02/24/2016.

Company
3G Wireless, LLC
AERIAL VIDEO SYSTEMS
Alascom Inc
Area Energy LLC
Ascent Media Network Services, LLC
Bellsouth Telecommunications, Inc.
BNSF Railway Company
Boeing Company
Borgeson, Tom R.
Broadcast Sports Inc.
California, State of
Carolina Telephone and Telegraph Co
Casper, John
CBS Broadcasting Inc
CBS Communication Services Inc
CenturyTel of the Southwest, Inc.
Chicago Comnet Corp
Cincinnati Bell Wireless LLC
City of Glendale
City of Los Angeles Dept Water & Power
City of Pomona
City of Torrance
Citywide News Network, Inc.
Cohen, Elena
County of Ventura - Sheriffs Office
Cowboys Stadium LP
DCI II, INC.
Direct Broadcast Services, Inc.
Freeport-McMoRan Oil & Gas LLC
Fresno MSA Limited Partnership
Glendale, City of
Global Telecom & Technology Americas, In
Goodyear Tire & Rubber Company
GSN News, Inc
GTE Mobilnet of Santa Barbara LTD Ptnsh
Hallco Unlimited, Inc.
Hawaiian Telcom, Inc.
Heiden, William
HF Enterprises, Inc
Illinois Bell Telephone Company

INCOMM DIVISION CHURCH OF SCIENTOLOGY
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
KTLA, LLC
Long Beach City Wireless Comm Div
Los Angeles City Info Technology Agency
Los Angeles County Dept of Public Works
Los Angeles County FCC Licensing Section
Los Angeles County Metro Transit Auth
Los Angeles SMSA Ltd. Partnership
LOS ANGELES TELEVISION STATION KCAL LLC
LOS ANGELES UNIFIED SCHOOL DISTRICT
Los Angeles, City of
MERCURY COMMUNICATIONS
Metro Networks Communications, Inc.
Metropolitan Water Dist of So California
MHO Networks
Michigan Bell Telephone Company
MOBILE RELAY ASSOCIATES INC
Moreen, Steven K
Navajo Communications Company
NBC Telemundo License LLC
New Cingular Wireless PCS LLC - N CAL
NEW ENGLAND DIGITAL DISTRIBUTION, INC.
NEW ENGLAND SATELLITE SYSTEMS INC
NorthWest Suburbs Community Access Corp
NSM Surveillance
OHIO BELL TELEPHONE COMPANY
Olympic Wireless, LLC
Onboard Images
Pacific Bell Tel Com dba AT&T California
Pacific Gas and Electric Company
PACIFIC PIPELINE SYSTEM LLC
Penn Service Microwave Co., Inc.
Plateau Telecommunications, Inc.
Plum TV, LLC
Production & Satellite Services, Inc.
Public Television Communications Center
QUICK LINK CONNECTIONS INC
Qwest Corporation
Radiofone, Inc.
Randy Hermes Production
RCC Minnesota Inc. - MN NE ND SD
Regulus Media Services, Inc.
Remote Broadcasts, Inc.
REMOTE FACILITIES CONSULTING SERVICES
RF Central, LLC
RF Film, Inc
Santa Barbara, County of
South Bay Regional Public Comm Authority
Southern California Edison Company
Southern California Gas Company

Southern California License, LLC
Southwestern Bell Telephone L.P.
Speedshotz, Inc
Time Warner Cable Pacific West LLC
Total RF Marketing Inc
Union Pacific Railroad Company
Unisat, Inc.
United Telephone - Southeast
VENOCO, INC.
Ventura, County of
Verizon California Inc.
Verizon Maryland, Inc.
Verizon New England Inc.
Verizon New Jersey, Inc.
Verizon New York, Inc.
Verizon North Inc.
Verizon Northwest Inc.
Verizon Pennsylvania, Inc.
VERIZON SOUTH INC.
Verizon Virginia, Inc.
Verizon Washington DC, Inc.
Verizon Wireless (VAW) LLC-N CA/NV
Village Video Productions Inc
Vyvx, LLC
Westar Satellite Services LP
Western Technical Services
Wexler Video, Inc.
Winged Vision Inc
Wisconsin Bell Telephone Company
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:	02/24/2016
Job Number:	<PCNJobCode>

Administrative Information	
Status	ENGINEER PROPOSAL
Call Sign	<PCNCallSign>
Licensee Code	P3210
Licensee Name	SES Americom, Inc.

Site Information	**SOUTH MTN, CA**
Venue Name	
Latitude (NAD 83)	34° 19' 32.0" N
Longitude (NAD 83)	118° 59' 44.0" W
Climate Zone	A
Rain Zone	4
Ground Elevation (AMSL)	311.59 m / 1022.3 ft

Link Information	
Satellite Type	Geostationary
Mode	TR - Transmit-Receive
Modulation	Digital
Satellite Arc	115° W to 137° West Longitude
Azimuth Range	172.9° to 210.0°
Corresponding Elevation Angles	49.9° / 45.7°
Antenna Centerline (AGL)	5.49 m / 18.0 ft

Antenna Information		**Receive - FCC32**		**Transmit - FCC32**
Manufacturer		General Dynamics		General Dynamics
Model		11.1 meter		11.1 meter
Gain / Diameter		52.0 dBi / 11.1 m		55.7 dBi / 11.1 m
3-dB / 15-dB Beamwidth		0.44° / 0.92°		0.28° / 0.59°
Max Available RF Power	(dBW/4 kHz)			(1) -9.5 (2) 0.5
	(dBW/MHz)			14.5 24.5
Maximum EIRP	(dBW/4 kHz)			46.2 56.2
	(dBW/MHz)			70.2 80.2
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)	N0N - 30M0G7W / 3700.0 - 4200.0	(1) N0N - 30M0G7W / 5925.0 - 6425.0 (2) N0N - 30M0G7W / 6425.0 – 6650.27 (2) N0N - 30M0G7W / 6679.42 - 6710.0
Max Great Circle Coordination Distance	285.3 km / 177.2 mi	144.7 km / 89.9 mi
Precipitation Scatter Contour Radius	100.0 km / 62.1 mi	100.0 km / 62.1 mi

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Coordination Values	**SOUTH MTN, CA**			
Licensee Name	SES Americom, Inc.			
Latitude (NAD 83)	34° 19' 32.0" N			
Longitude (NAD 83)	118° 59' 44.0" W			
Ground Elevation (AMSL)	311.59 m / 1022.3 ft			
Antenna Centerline (AGL)	5.49 m / 18.0 ft			
Antenna Model	General Dynamics 11.1 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/ -9.5 (dBW/4 kHz)		

			Receive 4.0 GHz		Transmit 6.1 GHz	
Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
0	14.31	137.70	-10.00	100.00	-10.00	100.00
5	14.37	140.76	-10.00	100.00	-10.00	100.00
10	14.18	140.92	-10.00	100.00	-10.00	100.00
15	12.43	137.38	-10.00	100.00	-10.00	100.00
20	14.37	136.47	-10.00	100.00	-10.00	100.00
25	13.05	132.72	-10.00	100.00	-10.00	100.00
30	11.07	128.45	-10.00	100.00	-10.00	100.00
35	11.28	125.47	-10.00	100.00	-10.00	100.00
40	10.44	121.74	-10.00	100.00	-10.00	100.00
45	9.40	117.88	-10.00	100.00	-10.00	100.00
50	8.08	113.92	-10.00	103.05	-10.00	100.00
55	8.31	110.52	-10.00	101.07	-10.00	100.00
60	9.25	107.21	-10.00	100.00	-10.00	100.00
65	10.48	103.77	-10.00	100.00	-10.00	100.00
70	12.78	100.29	-10.00	100.00	-10.00	100.00
75	14.02	96.43	-10.00	100.00	-10.00	100.00
80	13.13	92.36	-10.00	100.00	-10.00	100.00
85	12.53	88.36	-10.00	100.00	-10.00	100.00
90	11.48	84.47	-10.00	100.00	-10.00	100.00
95	10.34	80.73	-10.00	100.00	-10.00	100.00
100	9.74	77.04	-10.00	100.00	-10.00	100.00
105	10.12	73.22	-10.00	100.00	-10.00	100.00
110	9.23	69.81	-10.00	100.00	-10.00	100.00
115	8.32	66.60	-10.00	100.97	-10.00	100.00
120	7.08	63.76	-10.00	113.48	-10.00	100.00
125	6.48	60.87	-10.00	119.93	-10.00	100.00
130	7.44	57.30	-10.00	109.65	-10.00	100.00
135	8.09	53.98	-10.00	102.96	-10.00	100.00
140	9.06	50.57	-10.00	100.00	-10.00	100.00
145	9.08	48.03	-10.00	100.00	-10.00	100.00
150	8.39	46.38	-9.66	101.66	-9.66	100.00
155	8.26	44.67	-9.25	104.47	-9.25	100.00
160	7.94	43.53	-8.97	108.49	-8.97	100.00
165	6.92	43.54	-8.97	119.22	-8.97	100.00
170	5.02	44.94	-9.32	136.14	-9.32	100.00
175	1.96	47.95	-10.00	195.49	-10.00	100.00
180	0.99	49.12	-10.00	220.77	-10.00	100.00
185	0.84	48.98	-10.00	229.34	-10.00	105.42

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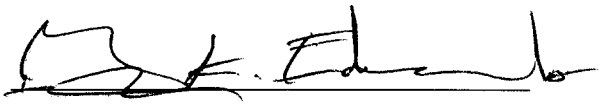
Max Available RF Power		0.5/ -9.5 (dBW/4 kHz)		

			Receive 4.0 GHz		Transmit 6.1 GHz	
Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	48.89	-10.00	285.28	-10.00	144.69
195	0.96	46.67	-9.72	224.07	-9.72	100.78
200	2.19	44.41	-9.19	194.14	-9.19	100.00
205	2.69	43.23	-8.90	184.13	-8.90	100.00
210	3.05	42.64	-8.75	176.64	-8.75	100.00
215	3.93	42.02	-8.59	156.07	-8.59	100.00
220	3.36	43.29	-8.91	166.94	-8.91	100.00
225	1.19	46.47	-9.68	216.05	-9.68	100.00
230	2.23	47.02	-9.81	190.30	-9.81	100.00
235	3.70	47.68	-9.96	154.28	-9.96	100.00
240	4.34	49.47	-10.00	142.68	-10.00	100.00
245	6.13	50.87	-10.00	123.83	-10.00	100.00
250	7.44	53.05	-10.00	109.61	-10.00	100.00
255	7.81	56.11	-10.00	105.73	-10.00	100.00
260	8.19	59.38	-10.00	102.15	-10.00	100.00
265	7.16	63.37	-10.00	112.63	-10.00	100.00
270	8.45	66.58	-10.00	100.00	-10.00	100.00
275	9.64	70.06	-10.00	100.00	-10.00	100.00
280	11.86	73.53	-10.00	100.00	-10.00	100.00
285	11.98	77.61	-10.00	100.00	-10.00	100.00
290	10.22	81.91	-10.00	100.00	-10.00	100.00
295	10.14	85.97	-10.00	100.00	-10.00	100.00
300	10.96	90.04	-10.00	100.00	-10.00	100.00
305	12.39	94.22	-10.00	100.00	-10.00	100.00
310	13.59	98.50	-10.00	100.00	-10.00	100.00
315	12.97	102.61	-10.00	100.00	-10.00	100.00
320	13.44	106.85	-10.00	100.00	-10.00	100.00
325	13.14	110.91	-10.00	100.00	-10.00	100.00
330	14.88	115.47	-10.00	100.00	-10.00	100.00
335	13.46	119.06	-10.00	100.00	-10.00	100.00
340	13.50	122.99	-10.00	100.00	-10.00	100.00
345	14.68	127.34	-10.00	100.00	-10.00	100.00
350	16.12	131.81	-10.00	100.00	-10.00	100.00
355	17.30	136.14	-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: March 30, 2016