

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for

**SES Americom, Inc.
Sunset Beach, Hawaii
(Call Sign: E090060)**

Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, Virginia 20147
September 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-receive earth station.

Company

AT&T Corporation
Hawaii State
Hawaii Telcom, Inc
New Cingular Wireless PCS LLC – Hawaii
University of Hawaii

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.

Expedited coordination data for this earth station was emailed and sent to the below listed carriers with a letter dated August 21, 2014.

Company

AT&T Corporation
County of Kauai Department of Police
HONOLULU CITY & COUNTY DEPT OF INFO TECH
Hawaii State
Hawaiian Telcom, Inc.
LIN License Company, LLC
New Cingular Wireless PCS LLC - Hawaii
Servpac, Inc
University of Hawaii

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: 09/22/2014
Job Number: 140821COMSJC07

Administrative Information

Status ENGINEER PROPOSAL
Call Sign E090060
Licensee Code P3210
Licensee Name SES Americom, Inc.

Site Information

SUNSET BEACH, HAWAII
Venue Name
Latitude (NAD 83) 21° 40' 14.0" N
Longitude (NAD 83) 158° 1' 56.0" W
Climate Zone C
Rain Zone 4
Ground Elevation (AMSL) 139.3 m / 457.0 ft

Link Information

Satellite Type Geostationary
Mode TR - Transmit-Receive
Modulation Analog and Digital
Satellite Arc 83° W to 233° West Longitude
Azimuth Range 95.6° to 264.3°
Corresponding Elevation Angles 5.2° / 5.3°
Antenna Centerline (AGL) 6.1 m / 20.0 ft

Antenna Information

Receive
Manufacturer Vertex
Model 9.0 Meter
Gain / Diameter 50.5 dBi / 9.0 m
3-dB / 15-dB Beamwidth 0.74° / 1.13°

Transmit

Vertex
9.0 Meter
53.4 dBi / 9.0 m
0.36° / 0.76°

Max Available RF Power (dBW/4 kHz) 0.5
(dBW/MHz) 24.5

Maximum EIRP (dBW/4 kHz) 53.9
(dBW/MHz) 77.9

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

Emission / Frequency Range (MHz)

Receive 4.0 GHz

N0N / 3700.0 - 4200.0
500KG9D / 3700.0 - 4200.0
36M0F7D / 3700.0 - 4200.0
36M0F8W / 3700.0 - 4200.0
100KD7W - 36M0D7W / 3700.0 - 4200.0
100KG7W - 36M0G7W / 3700.0 - 4200.0

Transmit 6.1 GHz

N0N / 5925.0 - 6425.0
1M00F9D / 5925.0 - 6425.0
36M0F7D / 5925.0 - 6425.0
36M0F8W / 5925.0 - 6425.0
100KD7W - 36M0D7W / 5925.0 - 6425.0
100KG7W - 36M0G7W / 5925.0 - 6425.0

Max Great Circle Coordination Distance 1361.2 km / 845.7 mi 705.0 km / 438.0 mi
Precipitation Scatter Contour Radius 430.6 km / 267.6 mi 128.4 km / 79.8 mi

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Coordination Values

SUNSET BEACH, HI

Licensee Name SES Americom, Inc.
Latitude (NAD 83) 21° 40' 14.0" N
Longitude (NAD 83) 158° 1' 56.0" W
Ground Elevation (AMSL) 139.3 m / 457.0 ft
Antenna Centerline (AGL) 6.1 m / 20.0 ft
Antenna Model Vertex 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 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	0.00	95.62	-10.00	710.92	-10.00	348.32
5	0.00	90.64	-10.00	710.92	-10.00	348.32
10	0.00	85.66	-10.00	710.92	-10.00	348.32
15	0.00	80.68	-10.00	710.92	-10.00	348.32
20	0.00	75.70	-10.00	710.92	-10.00	348.32
25	0.00	70.72	-10.00	710.92	-10.00	348.32
30	0.00	65.75	-10.00	710.92	-10.00	348.32
35	0.00	60.77	-10.00	710.92	-10.00	348.32
40	0.24	55.79	-10.00	681.97	-10.00	333.08
45	0.33	50.81	-10.00	624.76	-10.00	306.72
50	0.71	45.81	-9.52	465.07	-9.52	231.40
55	0.59	40.86	-8.28	520.97	-8.28	258.92
60	0.72	35.89	-6.87	501.75	-6.87	250.05
65	1.03	30.90	-5.25	439.08	-5.25	222.41
70	1.38	25.91	-3.34	416.75	-3.34	209.89
75	1.42	20.97	-1.04	437.28	-1.04	223.49
80	1.57	16.05	1.86	452.16	1.86	230.41
85	1.52	11.26	5.71	515.25	5.71	263.36
90	2.16	6.42	11.82	496.96	11.82	259.09
95	2.37	2.93	20.33	676.63	20.33	430.84
100	2.80	4.99	14.55	446.65	14.55	235.90
105	3.39	9.34	7.75	329.06	7.75	166.67
110	3.22	13.99	3.36	303.36	3.36	144.13
115	3.83	18.31	0.43	249.76	0.43	108.39
120	3.73	22.87	-1.98	237.28	-1.98	100.00
125	3.66	27.38	-3.93	226.65	-3.93	100.00
130	3.33	31.94	-5.61	229.72	-5.61	100.00
135	3.31	36.29	-6.99	220.61	-6.99	100.00
140	2.74	40.78	-8.26	242.23	-8.26	100.00
145	2.67	44.92	-9.31	239.21	-9.31	100.00
150	2.22	49.05	-10.00	265.88	-10.00	112.09
155	2.48	52.58	-10.00	247.33	-10.00	100.61
160	2.23	56.01	-10.00	265.28	-10.00	111.72
165	2.55	58.57	-10.00	242.67	-10.00	100.00
170	2.73	60.42	-10.00	231.02	-10.00	100.00
175	2.47	61.79	-10.00	248.34	-10.00	101.22
180	2.03	62.59	-10.00	280.61	-10.00	121.29

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Coordination Values

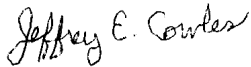
SUNSET BEACH, HI

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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)
185	2.49	61.77	-10.00	246.83	-10.00	100.31
190	2.61	60.52	-10.00	238.23	-10.00	100.00
195	2.23	58.79	-10.00	265.14	-10.00	111.63
200	2.03	56.13	-10.00	280.14	-10.00	120.99
205	1.80	52.94	-10.00	301.54	-10.00	134.59
210	1.78	49.26	-10.00	303.66	-10.00	135.95
215	1.18	45.60	-9.47	371.26	-9.47	181.62
220	0.55	41.73	-8.51	529.30	-8.51	262.88
225	0.71	37.39	-7.32	496.43	-7.32	247.34
230	0.50	33.11	-6.00	593.82	-6.00	292.69
235	0.56	28.64	-4.42	602.23	-4.42	297.16
240	0.00	24.36	-2.67	873.32	-2.67	445.46
245	0.00	19.82	-0.43	929.74	-0.43	477.16
250	0.00	15.24	2.42	1005.82	2.42	518.46
255	0.00	10.72	6.25	1115.12	6.25	568.98
260	0.00	6.83	11.14	1269.30	11.14	652.13
265	0.00	5.33	13.84	1361.16	13.84	705.05
270	0.00	7.74	9.78	1224.89	9.78	627.39
275	0.00	11.89	5.12	1081.72	5.12	558.61
280	0.00	16.51	1.55	982.11	1.55	505.75
285	0.00	21.30	-1.21	909.64	-1.21	465.98
290	0.00	26.17	-3.44	854.46	-3.44	434.64
295	0.00	31.07	-5.31	810.67	-5.31	405.63
300	0.00	36.00	-6.91	777.83	-6.91	385.03
305	0.00	40.95	-8.31	747.17	-8.31	367.93
310	0.00	45.90	-9.55	720.54	-9.55	353.45
315	0.00	50.86	-10.00	710.92	-10.00	348.32
320	0.00	55.83	-10.00	710.92	-10.00	348.32
325	0.00	60.80	-10.00	710.92	-10.00	348.32
330	0.00	65.78	-10.00	710.92	-10.00	348.32
335	0.00	70.75	-10.00	710.92	-10.00	348.32
340	0.00	75.73	-10.00	710.92	-10.00	348.32
345	0.00	80.71	-10.00	710.92	-10.00	348.32
350	0.00	85.68	-10.00	710.92	-10.00	348.32
355	0.00	90.66	-10.00	710.92	-10.00	348.32

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
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DATED: September 22, 2014