

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
Incorporated Research Institutions for Seismology
FORD ISLAND, HI
(E020017)
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
November 21, 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

Hawaii State
Hawaiian Telcom, Inc.
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.

Coordination data for this earth station was sent to the below listed carriers with a letter dated 11/10/2014.

Company

AT&T Corporation
HONOLULU CITY & COUNTY DEPT OF INFO TECH
Harmer Radio and Electronics, Inc.
Hawaii Electric Light Co Inc
Hawaii State
Hawaiian Telcom, Inc.
LIN License Company, LLC
Maui, County of
New Cingular Wireless PCS LLC - Hawaii
Oceanic Time Warner Cable LLC
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: 11/18/2014
Job Number: 141110COMSGE01

Administrative Information

Status ENGINEER PROPOSAL
Call Sign E020017
Licensee Code INCRIS
Licensee Name Incorporated Research Inst. Seismology

Site Information FORD ISLAND, HI

Venue Name
Latitude (NAD 83) 21° 21' 57.6" N
Longitude (NAD 83) 157° 57' 46.8" W
Climate Zone B
Rain Zone 4
Ground Elevation (AMSL) 4.0 m / 13.1 ft

Link Information

Satellite Type Geostationary
Mode TR - Transmit-Receive
Modulation Digital
Satellite Arc 180° W to 186° West Longitude
Azimuth Range 228.0° to 235.6°
Corresponding Elevation Angles 54.7° / 49.7°
Antenna Centerline (AGL) 17.98 m / 59.0 ft

Antenna Information

Receive - FCC32

Transmit - FCC32

Manufacturer	Prodelin	Prodelin	
Model	1383	1383	
Gain / Diameter	41.8 dBi / 3.8 m	46.2 dBi / 3.8 m	
3-dB / 15-dB Beamwidth	1.40° / 2.80°	1.00° / 2.00°	
Max Available RF Power (dBW/4 kHz)		-13.2	
(dBW/MHz)		10.8	
Maximum EIRP (dBW/4 kHz)		33.0	
(dBW/MHz)		57.0	
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)	100KG7D / 3700.0 - 4200.0	100KG7D / 5925.0 - 5929.0
		100KG7D / 6021.0 - 6037.0
		100KG7D / 6095.0 - 6181.0
		100KG7D / 6214.0 - 6255.0
		100KG7D / 6347.0 - 6366.0
		100KG7D / 6384.0 - 6425.0
Max Great Circle Coordination Distance	412.2 km / 256.1 mi	149.1 km / 92.6 mi
Precipitation Scatter Contour Radius	100.0 km / 62.1 mi	100.0 km / 62.1 mi

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Coordination Values

FORD ISLAND, HI

Licensee Name Incorporated Research Inst. Seismology
Latitude (NAD 83) 21° 21' 57.6" N
Longitude (NAD 83) 157° 57' 46.8" W
Ground Elevation (AMSL) 4.0 m / 13.1 ft
Antenna Centerline (AGL) 17.98 m / 59.0 ft
Antenna Model Prodelin 3.8 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 -13.2 (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	1.27	112.02	-10.00	237.91	-10.00	100.00
5	1.32	114.94	-10.00	234.92	-10.00	100.00
10	1.54	117.83	-10.00	222.81	-10.00	100.00
15	1.88	120.48	-10.00	205.40	-10.00	100.00
20	1.96	122.34	-10.00	201.34	-10.00	100.00
25	2.10	124.02	-10.00	195.67	-10.00	100.00
30	2.30	125.50	-10.00	188.11	-10.00	100.00
35	2.45	126.65	-10.00	182.94	-10.00	100.00
40	2.47	127.38	-10.00	182.01	-10.00	100.00
45	2.75	128.03	-10.00	172.52	-10.00	100.00
50	1.92	127.22	-10.00	203.70	-10.00	100.00
55	2.18	127.19	-10.00	192.64	-10.00	100.00
60	2.33	126.71	-10.00	187.04	-10.00	100.00
65	2.04	125.49	-10.00	198.06	-10.00	100.00
70	1.71	123.96	-10.00	214.04	-10.00	100.00
75	1.77	122.52	-10.00	210.80	-10.00	100.00
80	1.07	120.23	-10.00	249.40	-10.00	100.00
85	1.18	118.38	-10.00	242.91	-10.00	100.00
90	1.05	116.16	-10.00	250.70	-10.00	100.00
95	0.73	113.67	-10.00	287.94	-10.00	108.41
100	0.36	111.06	-10.00	360.34	-10.00	130.76
105	0.63	108.66	-10.00	301.89	-10.00	113.04
110	0.57	105.98	-10.00	311.17	-10.00	115.98
115	0.00	103.07	-10.00	412.20	-10.00	149.12
120	0.00	100.30	-10.00	412.20	-10.00	149.12
125	0.00	97.48	-10.00	412.20	-10.00	149.12
130	0.00	94.62	-10.00	412.20	-10.00	149.12
135	0.00	91.74	-10.00	412.20	-10.00	149.12
140	0.00	88.85	-10.00	412.20	-10.00	149.12
145	0.00	85.96	-10.00	412.20	-10.00	149.12
150	0.00	83.10	-10.00	412.20	-10.00	149.12
155	0.00	80.27	-10.00	412.20	-10.00	149.12
160	0.00	77.49	-10.00	412.20	-10.00	149.12
165	0.00	74.78	-10.00	412.20	-10.00	149.12
170	0.00	72.16	-10.00	412.20	-10.00	149.12
175	0.00	69.64	-10.00	412.20	-10.00	149.12
180	0.00	67.24	-10.00	412.20	-10.00	149.12
185	0.00	64.98	-10.00	412.20	-10.00	149.12

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Coordination Values

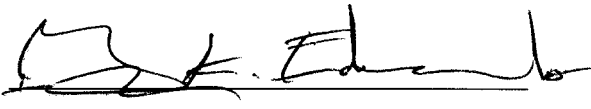
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Short Term -146.0 dBW/MHz 0.01% -131.0 dBW/4 kHz 0.0025%
Max Available RF Power -13.2 (dBW/4 kHz)

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)
190	0.00	62.89	-10.00	412.20	-10.00	149.12
195	0.00	60.58	-10.00	412.20	-10.00	149.12
200	0.00	58.26	-10.00	412.20	-10.00	149.12
205	0.00	56.15	-10.00	412.20	-10.00	149.12
210	0.00	54.30	-10.00	412.20	-10.00	149.12
215	0.00	52.72	-10.00	412.20	-10.00	149.12
220	0.00	51.44	-10.00	412.20	-10.00	149.12
225	0.00	50.50	-10.00	412.20	-10.00	149.12
230	0.00	49.90	-10.00	412.20	-10.00	149.12
235	0.00	49.67	-10.00	412.20	-10.00	149.12
240	0.00	49.81	-10.00	412.20	-10.00	149.12
245	0.00	50.31	-10.00	412.20	-10.00	149.12
250	0.00	51.17	-10.00	412.20	-10.00	149.12
255	0.00	52.37	-10.00	412.20	-10.00	149.12
260	0.00	53.88	-10.00	412.20	-10.00	149.12
265	0.00	55.67	-10.00	412.20	-10.00	149.12
270	0.00	57.71	-10.00	412.20	-10.00	149.12
275	0.00	59.98	-10.00	412.20	-10.00	149.12
280	0.00	62.45	-10.00	412.20	-10.00	149.12
285	0.35	64.89	-10.00	363.55	-10.00	131.87
290	0.53	67.60	-10.00	316.71	-10.00	115.82
295	0.58	70.51	-10.00	309.33	-10.00	115.41
300	0.68	73.52	-10.00	294.72	-10.00	110.69
305	0.69	76.63	-10.00	292.81	-10.00	110.05
310	0.49	79.86	-10.00	323.09	-10.00	117.81
315	0.72	83.05	-10.00	288.43	-10.00	108.58
320	0.69	86.31	-10.00	293.19	-10.00	110.18
325	0.80	89.59	-10.00	277.53	-10.00	104.78
330	0.85	92.88	-10.00	271.02	-10.00	102.42
335	0.85	96.16	-10.00	271.52	-10.00	102.60
340	1.00	99.44	-10.00	254.05	-10.00	100.00
345	1.03	102.67	-10.00	252.25	-10.00	100.00
350	1.21	105.89	-10.00	241.64	-10.00	100.00
355	1.27	109.01	-10.00	238.10	-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: November 21, 2014