

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
Hawaii Pacific Teleport, L.P.
KAPOLEI, HI
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
September 17, 2018

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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

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 08/30/2018.

Company

AT&T Corp.
Harmer Radio and Electronics, Inc.
Hawaii Electric Light Co Inc
Hawaii State
Hawaiian Electric Company, Inc
Hawaiian Telcom, Inc.
Honolulu City & County Dept of Info Tech
Maui, County of
NEXSTAR BROADCASTING, INC.
Oceanic Time Warner Cable LLC
Olympic Wireless, LLC
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: 09/17/2018
Job Number: 180830COMSTC06

Administrative Information

Call Sign E010016
Licensee Code HAWPAC
Licensee Name Hawaii Pacific Teleport, L.P.

Site Information

KAPOLEI, HI

Latitude (NAD 83) 21° 20' 8.0" N
Longitude (NAD 83) 158° 5' 25.0" W
Climate Zone C
Rain Zone 4
Ground Elevation (AMSL) 36.57 m / 120.0 ft

Link Information

Satellite Type Geostationary
Mode TR - Transmit-Receive
Modulation Digital
Satellite Arc 222° W to 222° West Longitude
Azimuth Range 259.9° to 259.9°
Corresponding Elevation Angles 15.8° / 15.8°
Antenna Centerline (AGL) 7.31 m / 24.0 ft

Antenna Information

Receive - A40931

Manufacturer ANDREW CORPORATION
Model ESA9.3-46
Gain / Diameter 50.7 dBi / 9.3 m
3-dB / 15-dB Beamwidth 0.52° / 1.00°

Transmit - A60931

Manufacturer ANDREW CORPORATION
Model ESA9.3-46
Gain / Diameter 53.9 dBi / 9.3 m
0.30° / 0.60°

		<u>100KG1D - 72M0G1D</u>			
Max Available RF Power	(dBW/4 kHz)	-14.0	-22.55		
	(dBW/MHz)	10.0	1.45		
Maximum EIRP	(dBW/4 kHz)	39.9	31.35		
	(dBW/MHz)	63.9	55.35		
	(dBW)	53.88	73.9		
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

Receive 4.0 GHz

Emission / Frequency Range (MHz) 100KG1D - 72M0G1D / 3700.0 - 4200.0

Transmit 6.1 GHz

100KG1D - 72M0G1D / 5925.0 - 6425.0

Max Great Circle Coordination Distance 891.0 km / 553.6 mi 288.4 km / 179.2 mi
Precipitation Scatter Contour Radius 375.5 km / 233.3 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

KAPOLEI, HI

Licensee Name Hawaii Pacific Teleport, L.P.
Latitude (NAD 83) 21° 20' 8.0" N
Longitude (NAD 83) 158° 5' 25.0" W
Ground Elevation (AMSL) 36.57 m / 120.0 ft
Antenna Centerline (AGL) 7.31 m / 24.0 ft
Antenna Model Andrew Corporation ESA9.3-46
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 -14.0 (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	9.18	100.04	-10.30	100.00	-10.10	100.00
5	8.78	104.99	-10.30	102.67	-10.10	100.00
10	8.53	109.93	-10.30	106.23	-10.10	100.00
15	8.52	114.89	-13.23	100.00	-13.03	100.00
20	7.95	119.79	-15.22	100.00	-16.93	100.00
25	7.46	124.68	-15.30	100.00	-17.10	100.00
30	6.89	129.52	-15.30	100.63	-17.10	100.00
35	6.31	134.32	-15.30	106.21	-17.10	100.00
40	5.43	138.99	-15.30	121.49	-17.10	100.00
45	4.91	143.65	-15.30	131.73	-17.10	100.00
50	4.39	148.18	-15.30	137.43	-17.10	100.00
55	4.07	152.63	-15.30	140.98	-17.10	100.00
60	3.90	156.93	-15.30	145.27	-17.10	100.00
65	3.38	160.69	-15.30	163.61	-17.10	100.00
70	2.23	163.25	-15.30	224.71	-17.10	100.00
75	0.00	163.46	-15.30	604.01	-17.10	177.47
80	0.69	164.88	-15.30	396.74	-17.10	100.00
85	0.00	163.40	-15.30	604.01	-17.10	177.47
90	0.00	161.30	-15.30	604.01	-17.10	177.47
95	0.00	158.26	-15.30	604.01	-17.10	177.47
100	0.00	154.62	-15.30	604.01	-17.10	177.47
105	0.00	150.61	-15.30	604.01	-17.10	177.47
110	0.00	146.34	-15.30	604.01	-17.10	177.47
115	0.00	141.92	-15.30	604.01	-17.10	177.47
120	0.00	137.39	-15.30	604.01	-17.10	177.47
125	0.00	132.77	-15.30	604.01	-17.10	177.47
130	0.00	128.11	-15.30	604.01	-17.10	177.47
135	0.00	123.40	-15.30	604.01	-17.10	177.47
140	0.00	118.66	-14.76	614.40	-16.03	184.62
145	0.00	113.89	-12.64	656.52	-12.44	208.89
150	0.00	109.11	-10.30	704.61	-10.10	225.03
155	0.00	104.32	-10.30	704.61	-10.10	225.03
160	0.00	99.52	-10.30	704.61	-10.10	225.03
165	0.00	94.71	-10.30	704.61	-10.10	225.03
170	0.00	89.90	-10.30	704.61	-10.10	225.03
175	0.00	85.09	-10.30	704.61	-10.10	225.03
180	0.00	80.28	-10.30	704.61	-10.10	225.03
185	0.00	75.48	-10.30	704.61	-10.10	225.03

COMSEARCH

Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147
(703)726-5500 <http://www.comsearch.com>

Coordination Values

KAPOLEI, HI

Licensee Name Hawaii Pacific Teleport, L.P.
Latitude (NAD 83) 21° 20' 8.0" N
Longitude (NAD 83) 158° 5' 25.0" W
Ground Elevation (AMSL) 36.57 m / 120.0 ft
Antenna Centerline (AGL) 7.31 m / 24.0 ft
Antenna Model Andrew Corporation ESA9.3-46
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 -14.0 (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	70.69	-10.30	704.61	-10.10	225.03
195	0.00	65.91	-10.30	704.61	-10.10	225.03
200	0.00	61.15	-10.30	704.61	-10.10	225.03
205	0.00	56.41	-10.30	704.61	-10.10	225.03
210	0.00	51.70	-10.30	704.61	-10.10	225.03
215	0.00	47.03	-9.71	717.13	-9.51	229.18
220	0.00	42.42	-8.27	747.95	-8.58	233.23
225	0.00	37.89	-6.88	778.48	-7.26	243.03
230	0.00	33.48	-6.00	795.10	-5.80	254.35
235	0.00	29.22	-5.30	810.90	-5.10	259.92
240	0.00	25.22	-5.30	810.90	-5.10	259.92
245	0.00	21.60	-5.30	810.90	-5.10	259.92
250	0.00	18.59	-4.17	837.14	-3.97	269.21
255	0.00	16.54	-2.53	876.68	-2.33	283.30
260	0.00	15.82	-1.95	890.97	-1.75	288.41
265	0.00	16.60	-2.58	875.48	-2.38	282.87
270	0.00	18.70	-4.26	835.09	-4.06	268.48
275	0.00	21.74	-5.30	810.90	-5.10	259.92
280	0.00	25.38	-5.30	810.90	-5.10	259.92
285	0.00	29.39	-5.30	810.90	-5.10	259.92
290	0.00	33.66	-6.03	797.42	-5.83	254.06
295	0.67	37.84	-6.87	516.42	-7.24	152.33
300	1.30	42.23	-8.19	370.67	-8.55	100.00
305	1.80	46.78	-9.66	305.17	-9.46	100.00
310	2.68	51.35	-10.30	231.91	-10.10	100.00
315	3.27	56.05	-10.30	200.20	-10.10	100.00
320	3.64	60.84	-10.30	185.19	-10.10	100.00
325	4.22	65.65	-10.30	168.55	-10.10	100.00
330	4.83	70.48	-10.30	161.37	-10.10	100.00
335	5.31	75.36	-10.30	151.91	-10.10	100.00
340	5.86	80.25	-10.30	139.36	-10.10	100.00
345	6.64	85.17	-10.30	129.13	-10.10	100.00
350	7.77	90.10	-10.30	117.19	-10.10	100.00
355	9.60	95.07	-10.30	100.00	-10.10	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.



Timothy O. Crutcher
Frequency Planner
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147

DATED: September 17, 2018

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
Hawaii Pacific Teleport, L.P.
KAPOLEI, HI
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
September 21, 2018

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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

There were no great circle interference cases identified during the interference study of the proposed earth station.

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 09/04/2018.

Company

3G Wireless, LLC
AERIAL VIDEO SYSTEMS
Alascom Inc
Ascent Media Network Services, LLC
Bellsouth Telecommunications, Inc.
Borgeson, Tom R.
Broadcast Sports Inc.
Carolina Telephone and Telegraph Co
Casper, John
CenturyTel of the Southwest, Inc.
Chicago Comnet Corp
Cincinnati Bell Wireless LLC
Citywide News Network, Inc.
Cowboys Stadium LP
DCI II, INC.
Direct Broadcast Services, Inc.
Frontier California Inc.
Global Telecom & Technology Americas, In
HF Enterprises, Inc
Hallco Unlimited, Inc.
Hawaiian Telcom, Inc.
Heiden, William
Illinois Bell Telephone Company
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
MERCURY COMMUNICATIONS
Michigan Bell Telephone Company
Moreen, Steven K
NEW ENGLAND DIGITAL DISTRIBUTION, INC.
NSM Surveillance
Navajo Communications Company
NorthWest Suburbs Community Access Corp
Ohio Bell Telephone Company
Onboard Images
Pacific Bell Tel Com dba AT&T California
Penn Service Microwave Co., Inc.

Plateau Telecommunications, Inc.
Plum TV, LLC
Production & Satellite Services, Inc.
Quick Link Connections Inc.
Qwest Corporation
RCC Minnesota Inc. - MN NE ND SD
REMOTE FACILITIES CONSULTING SERVICES
RF Central, LLC
RF Film, Inc
Radiofone, Inc.
Randy Hermes Production
Remote Broadcasts, Inc.
Southwestern Bell Telephone L.P.
Speedshotz, Inc
TTWN Networks, LLC
Unisat, Inc.
United Telephone - Southeast
VERIZON SOUTH 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 Virginia, Inc.
Verizon Washington DC, Inc.
Vyvx, LLC
Westar Satellite Services LP
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: 09/21/2018
Job Number: 180904COMSTC03

Administrative Information

Status ENGINEER PROPOSAL
Call Sign E010016
Licensee Code HAWPAC
Licensee Name Hawaii Pacific Teleport, L.P.

Site Information KAPOLEI, HI

Venue Name
Latitude (NAD 83) 21° 20' 8.0" N
Longitude (NAD 83) 158° 5' 25.0" W
Climate Zone C
Rain Zone 4
Ground Elevation (AMSL) 36.57 m / 120.0 ft

Link Information

Satellite Type Geostationary
Mode TO - Transmit-Only
Modulation Digital
Satellite Arc 222° W to 222° West Longitude
Azimuth Range 259.9° to 259.9°
Corresponding Elevation Angles 15.8° / 15.8°
Antenna Centerline (AGL) 6.1 m / 20.0 ft

Antenna Information Transmit - A60932

Manufacturer ANDREW CORPORATION
Model ESA93-46
Gain / Diameter 53.9 dBi / 9.3 m
3-dB / 15-dB Beamwidth 0.32° / 0.65°

Max Available RF Power (dBW/4 kHz) -4.8
(dBW/MHz) 19.2

Maximum EIRP (dBW/4 kHz) 49.1
(dBW/MHz) 73.1
(dBW) 0.0

Interference Objectives: Long Term -154.0 dBW/4 kHz 20%
Short Term -131.0 dBW/4 kHz 0.0025%

Frequency Information Transmit 6.0 GHz

Emission / Frequency Range (MHz) 1M00G1D / 6425.0 - 6425.3
1M00G1D / 6647.0
1M00G1D / 6649.0

Max Great Circle Coordination Distance 353.5 km / 219.6 mi
Precipitation Scatter Contour Radius 100.0 km / 62.1 mi

COMSEARCH

Earth Station Data Sheet

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Coordination Values

KAPOLEI, HI

Licensee Name Hawaii Pacific Teleport, L.P.
Latitude (NAD 83) 21° 20' 8.0" N
Longitude (NAD 83) 158° 5' 25.0" W
Ground Elevation (AMSL) 36.57 m / 120.0 ft
Antenna Centerline (AGL) 6.1 m / 20.0 ft
Antenna Model Andrew Corporation ESA93-46
Antenna Mode Transmit 6.0 GHz
Interference Objectives: Long Term -154.0 dBW/4 kHz 20%
Short Term -131.0 dBW/4 kHz 0.0025%
Max Available RF Power -4.8 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 6.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
0	9.30	100.04	-10.10	100.00
5	8.94	104.99	-10.10	100.00
10	8.77	109.95	-10.10	100.00
15	8.76	114.90	-15.00	100.00
20	8.20	119.81	-19.91	100.00
25	7.70	124.70	-20.10	100.00
30	7.13	129.55	-20.10	100.00
35	6.55	134.36	-20.10	100.00
40	5.61	139.03	-20.10	100.00
45	5.15	143.71	-20.10	100.00
50	4.63	148.26	-20.10	100.00
55	4.32	152.73	-20.10	100.00
60	4.14	157.05	-20.10	100.00
65	3.62	160.84	-20.10	100.00
70	2.48	163.44	-20.10	100.00
75	0.21	163.66	-20.10	216.66
80	0.86	165.04	-20.10	109.67
85	0.00	163.40	-20.10	219.47
90	0.00	161.30	-20.10	219.47
95	0.00	158.26	-20.10	219.47
100	0.00	154.62	-20.10	219.47
105	0.00	150.61	-20.10	219.47
110	0.00	146.34	-20.10	219.47
115	0.00	141.92	-20.10	219.47
120	0.00	137.39	-20.10	219.47
125	0.00	132.77	-20.10	219.47
130	0.00	128.11	-20.10	219.47
135	0.00	123.40	-20.10	219.47
140	0.00	118.66	-18.76	228.83
145	0.00	113.89	-13.99	262.41
150	0.00	109.11	-10.10	296.12
155	0.00	104.32	-10.10	296.12
160	0.00	99.52	-10.20	295.24
165	0.00	94.71	-11.16	286.59
170	0.00	89.90	-12.14	277.99
175	0.00	85.09	-14.06	261.84
180	0.00	80.28	-15.04	253.97
185	0.00	75.48	-14.20	260.76

COMSEARCH

Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147
(703)726-5500 <http://www.comsearch.com>

Coordination Values

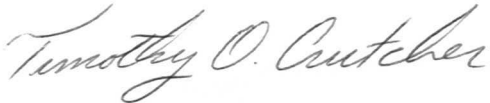
KAPOLEI, HI

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Latitude (NAD 83) 21° 20' 8.0" N
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Antenna Centerline (AGL) 6.1 m / 20.0 ft
Antenna Model Andrew Corporation ESA93-46
Antenna Mode Transmit 6.0 GHz
Interference Objectives: Long Term -154.0 dBW/4 kHz 20%
Short Term -131.0 dBW/4 kHz 0.0025%
Max Available RF Power -4.8 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 6.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	70.69	-12.38	275.96
195	0.00	65.91	-11.28	285.49
200	0.00	61.15	-10.33	294.03
205	0.00	56.41	-10.10	296.12
210	0.00	51.70	-10.10	296.12
215	0.00	47.03	-10.10	296.12
220	0.00	42.42	-10.10	296.12
225	0.00	37.89	-10.10	296.12
230	0.00	33.48	-10.10	296.12
235	0.00	29.22	-10.10	296.12
240	0.00	25.22	-10.10	296.12
245	0.00	21.60	-10.10	296.12
250	0.00	18.59	-8.13	312.44
255	0.00	16.54	-5.25	342.18
260	0.00	15.82	-4.24	353.49
265	0.00	16.60	-5.34	341.25
270	0.00	18.70	-8.28	310.97
275	0.00	21.74	-10.10	296.12
280	0.00	25.38	-10.10	296.12
285	0.00	29.39	-10.10	296.12
290	0.21	33.57	-10.10	291.89
295	0.70	37.83	-10.10	192.34
300	1.33	42.22	-10.10	130.69
305	1.82	46.78	-10.10	102.65
310	2.70	51.34	-10.10	100.00
315	3.28	56.05	-10.10	100.00
320	3.66	60.84	-10.27	100.00
325	4.24	65.64	-11.23	100.00
330	4.84	70.48	-12.29	100.00
335	5.33	75.36	-14.17	100.00
340	5.87	80.25	-15.05	100.00
345	6.65	85.17	-14.03	100.00
350	7.89	90.10	-12.08	100.00
355	9.72	95.08	-11.08	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.

A handwritten signature in cursive script that reads "Timothy O. Crutcher".

Timothy O. Crutcher
Frequency Planner
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147

DATED: September 21, 2018

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
Hawaii Pacific Teleport, L.P.
KAPOLEI, HI
Satellite Earth Station

Prepared By:
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September 21, 2018

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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

Hawaiian Electric Company, Inc

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 09/04/2018.

Company

Aeronautical Radio Inc.
County of Kauai Department of Police
First Wind
Harmer Radio and Electronics, Inc.
Hawaii State
Hawaiian Electric Company, Inc
Hawaiian Telcom, Inc.
Honolulu City & County Dept of Info Tech
Kailua Television, LLC
Maui Electric Company Ltd
Maui, County of
NPCR, Inc.
Oceanic Time Warner Cable LLC
Ohana Broadcast Company LLC
Olympic Wireless, LLC
Sandwich Isles Communications, 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: 09/21/2018
Job Number: 180904COMSTC04

Administrative Information

Call Sign E010016
Licensee Code HAWPAC
Licensee Name Hawaii Pacific Teleport, L.P.

Site Information **KAPOLEI, HI**

Venue Name
Latitude (NAD 83) 21° 20' 8.0" N
Longitude (NAD 83) 158° 5' 25.0" W
Climate Zone C
Rain Zone 4
Ground Elevation (AMSL) 36.57 m / 120.0 ft

Link Information

Satellite Type Geostationary
Mode TO - Transmit-Only
Modulation Digital
Satellite Arc 222° W to 222° West Longitude
Azimuth Range 259.9° to 259.9°
Corresponding Elevation Angles 15.8° / 15.8°
Antenna Centerline (AGL) 6.1 m / 20.0 ft

Antenna Information **Transmit - A60932**

Manufacturer ANDREW CORPORATION
Model ESA93-46
Gain / Diameter 53.9 dBi / 9.3 m
3-dB / 15-dB Beamwidth 0.32° / 0.65°

Max Available RF Power (dBW/4 kHz) -4.8
(dBW/MHz) 19.2

Maximum EIRP (dBW/4 kHz) 49.1
(dBW/MHz) 73.1
(dBW) 73.1

Interference Objectives: Long Term -154.0 dBW/4 kHz 20%
Short Term -131.0 dBW/4 kHz 0.0025%

Frequency Information **Transmit 6.7 GHz**

Emission / Frequency Range (MHz) 1M00G1D / 6647.0
1M00G1D / 6649.0

Max Great Circle Coordination Distance 353.5 km / 219.6 mi
Precipitation Scatter Contour Radius 100.0 km / 62.1 mi

COMSEARCH

Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147
(703)726-5500 <http://www.comsearch.com>

Coordination Values

KAPOLEI, HI

Licensee Name Hawaii Pacific Teleport, L.P.
Latitude (NAD 83) 21° 20' 8.0" N
Longitude (NAD 83) 158° 5' 25.0" W
Ground Elevation (AMSL) 36.57 m / 120.0 ft
Antenna Centerline (AGL) 6.1 m / 20.0 ft
Antenna Model Andrew Corporation ESA93-46
Antenna Mode Transmit 6.7 GHz
Interference Objectives: Long Term -154.0 dBW/4 kHz 20%
Short Term -131.0 dBW/4 kHz 0.0025%
Max Available RF Power -4.8 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 6.7 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
0	9.30	100.04	-10.10	100.00
5	8.94	104.99	-10.10	100.00
10	8.77	109.95	-10.10	100.00
15	8.76	114.90	-15.00	100.00
20	8.20	119.81	-19.91	100.00
25	7.70	124.70	-20.10	100.00
30	7.13	129.55	-20.10	100.00
35	6.55	134.36	-20.10	100.00
40	5.61	139.03	-20.10	100.00
45	5.15	143.71	-20.10	100.00
50	4.63	148.26	-20.10	100.00
55	4.32	152.73	-20.10	100.00
60	4.14	157.05	-20.10	100.00
65	3.62	160.84	-20.10	100.00
70	2.48	163.44	-20.10	100.00
75	0.21	163.66	-20.10	216.66
80	0.86	165.04	-20.10	109.67
85	0.00	163.40	-20.10	219.47
90	0.00	161.30	-20.10	219.47
95	0.00	158.26	-20.10	219.47
100	0.00	154.62	-20.10	219.47
105	0.00	150.61	-20.10	219.47
110	0.00	146.34	-20.10	219.47
115	0.00	141.92	-20.10	219.47
120	0.00	137.39	-20.10	219.47
125	0.00	132.77	-20.10	219.47
130	0.00	128.11	-20.10	219.47
135	0.00	123.40	-20.10	219.47
140	0.00	118.66	-18.76	228.83
145	0.00	113.89	-13.99	262.41
150	0.00	109.11	-10.10	296.12
155	0.00	104.32	-10.10	296.12
160	0.00	99.52	-10.20	295.24
165	0.00	94.71	-11.16	286.59
170	0.00	89.90	-12.14	277.99
175	0.00	85.09	-14.06	261.84
180	0.00	80.28	-15.04	253.97
185	0.00	75.48	-14.20	260.76

COMSEARCH

Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147
(703)726-5500 <http://www.comsearch.com>

Coordination Values

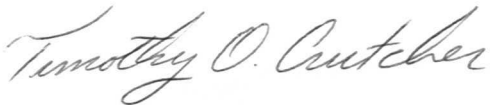
KAPOLEI, HI

Licensee Name Hawaii Pacific Teleport, L.P.
Latitude (NAD 83) 21° 20' 8.0" N
Longitude (NAD 83) 158° 5' 25.0" W
Ground Elevation (AMSL) 36.57 m / 120.0 ft
Antenna Centerline (AGL) 6.1 m / 20.0 ft
Antenna Model Andrew Corporation ESA93-46
Antenna Mode Transmit 6.7 GHz
Interference Objectives: Long Term -154.0 dBW/4 kHz 20%
Short Term -131.0 dBW/4 kHz 0.0025%
Max Available RF Power -4.8 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 6.7 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	70.69	-12.38	275.96
195	0.00	65.91	-11.28	285.49
200	0.00	61.15	-10.33	294.03
205	0.00	56.41	-10.10	296.12
210	0.00	51.70	-10.10	296.12
215	0.00	47.03	-10.10	296.12
220	0.00	42.42	-10.10	296.12
225	0.00	37.89	-10.10	296.12
230	0.00	33.48	-10.10	296.12
235	0.00	29.22	-10.10	296.12
240	0.00	25.22	-10.10	296.12
245	0.00	21.60	-10.10	296.12
250	0.00	18.59	-8.13	312.44
255	0.00	16.54	-5.25	342.18
260	0.00	15.82	-4.24	353.49
265	0.00	16.60	-5.34	341.25
270	0.00	18.70	-8.28	310.97
275	0.00	21.74	-10.10	296.12
280	0.00	25.38	-10.10	296.12
285	0.00	29.39	-10.10	296.12
290	0.21	33.57	-10.10	291.89
295	0.70	37.83	-10.10	192.34
300	1.33	42.22	-10.10	130.69
305	1.82	46.78	-10.10	102.65
310	2.70	51.34	-10.10	100.00
315	3.28	56.05	-10.10	100.00
320	3.66	60.84	-10.27	100.00
325	4.24	65.64	-11.23	100.00
330	4.84	70.48	-12.29	100.00
335	5.33	75.36	-14.17	100.00
340	5.87	80.25	-15.05	100.00
345	6.65	85.17	-14.03	100.00
350	7.89	90.10	-12.08	100.00
355	9.72	95.08	-11.08	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.



Timothy O. Crutcher
Frequency Planner
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147

DATED: September 21, 2018

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
Hawaii Pacific Teleport, L.P.
KAPOLEI, HI
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
September 17, 2018

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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.

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 08/30/2018.

Company

AT&T Corp.
County of Kauai Department of Police
Harmer Radio and Electronics, Inc.
Hawaii Electric Light Co Inc
Hawaii State
Hawaiian Electric Company, Inc
Hawaiian Telcom, Inc.
Honolulu City & County Dept of Info Tech
Maui, County of
NEXSTAR BROADCASTING, INC.
New Cingular Wireless PCS LLC - Hawaii
Oceanic Time Warner Cable LLC
Olympic Wireless, LLC
Sandwich Isles Communications, Inc
University of Hawaii
Verizon Wireless VAW LLC - (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: 09/17/2018
Job Number: 180830COMSTC12

Administrative Information

Status ENGINEER PROPOSAL
Call Sign E010016
Licensee Code HAWPAC
Licensee Name Hawaii Pacific Teleport, L.P.

Site Information

KAPOLEI, HI
Venue Name
Latitude (NAD 83) 21° 20' 8.0" N
Longitude (NAD 83) 158° 5' 25.0" W
Climate Zone C
Rain Zone 4
Ground Elevation (AMSL) 36.57 m / 120.0 ft

Link Information

Satellite Type Geostationary
Mode TR - Transmit-Receive
Modulation Digital
Satellite Arc 222° W to 222° West Longitude
Azimuth Range 259.9° to 259.9°
Corresponding Elevation Angles 15.8° / 15.8°
Antenna Centerline (AGL) 7.31 m / 24.0 ft

Antenna Information

		Receive - A40931	Transmit - A60931		
Manufacturer		ANDREW CORPORATION	ANDREW CORPORATION		
Model		ESA9.3-46	ESA9.3-46		
Gain / Diameter		50.7 dBi / 9.3 m	53.9 dBi / 9.3 m		
3-dB / 15-dB Beamwidth		0.52° / 1.00°	0.30° / 0.60°		
Max Available RF Power	(dBW/4 kHz) (dBW/MHz)		-4.8 19.2		
Maximum EIRP	(dBW/4 kHz) (dBW/MHz)		49.1 73.1		
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)	600KF2D / 4199.0	600KF2D / 6423.0 - 6425.0
Max Great Circle Coordination Distance	891.0 km / 553.6 mi	383.2 km / 238.1 mi
Precipitation Scatter Contour Radius	375.5 km / 233.3 mi	100.0 km / 62.1 mi

COMSEARCH

Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147
(703)726-5500 <http://www.comsearch.com>

Coordination Values

KAPOLEI, HI

Licensee Name Hawaii Pacific Teleport, L.P.
Latitude (NAD 83) 21° 20' 8.0" N
Longitude (NAD 83) 158° 5' 25.0" W
Ground Elevation (AMSL) 36.57 m / 120.0 ft
Antenna Centerline (AGL) 7.31 m / 24.0 ft
Antenna Model Andrew Corporation ESA9.3-46
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 -4.8 (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	9.18	100.04	-10.30	100.00	-10.10	100.00
5	8.78	104.99	-10.30	102.67	-10.10	100.00
10	8.53	109.93	-10.30	106.23	-10.10	100.00
15	8.52	114.89	-13.23	100.00	-13.03	100.00
20	7.95	119.79	-15.22	100.00	-16.93	100.00
25	7.46	124.68	-15.30	100.00	-17.10	100.00
30	6.89	129.52	-15.30	100.63	-17.10	100.00
35	6.31	134.32	-15.30	106.21	-17.10	100.00
40	5.43	138.99	-15.30	121.49	-17.10	100.00
45	4.91	143.65	-15.30	131.73	-17.10	100.00
50	4.39	148.18	-15.30	137.43	-17.10	100.00
55	4.07	152.63	-15.30	140.98	-17.10	100.00
60	3.90	156.93	-15.30	145.27	-17.10	100.00
65	3.38	160.69	-15.30	163.61	-17.10	100.00
70	2.23	163.25	-15.30	224.71	-17.10	100.00
75	0.00	163.46	-15.30	604.01	-17.10	238.23
80	0.69	164.88	-15.30	396.74	-17.10	145.57
85	0.00	163.40	-15.30	604.01	-17.10	238.23
90	0.00	161.30	-15.30	604.01	-17.10	238.23
95	0.00	158.26	-15.30	604.01	-17.10	238.23
100	0.00	154.62	-15.30	604.01	-17.10	238.23
105	0.00	150.61	-15.30	604.01	-17.10	238.23
110	0.00	146.34	-15.30	604.01	-17.10	238.23
115	0.00	141.92	-15.30	604.01	-17.10	238.23
120	0.00	137.39	-15.30	604.01	-17.10	238.23
125	0.00	132.77	-15.30	604.01	-17.10	238.23
130	0.00	128.11	-15.30	604.01	-17.10	238.23
135	0.00	123.40	-15.30	604.01	-17.10	238.23
140	0.00	118.66	-14.76	614.40	-16.03	246.32
145	0.00	113.89	-12.64	656.52	-12.44	275.44
150	0.00	109.11	-10.30	704.61	-10.10	296.12
155	0.00	104.32	-10.30	704.61	-10.10	296.12
160	0.00	99.52	-10.30	704.61	-10.10	296.12
165	0.00	94.71	-10.30	704.61	-10.10	296.12
170	0.00	89.90	-10.30	704.61	-10.10	296.12
175	0.00	85.09	-10.30	704.61	-10.10	296.12
180	0.00	80.28	-10.30	704.61	-10.10	296.12
185	0.00	75.48	-10.30	704.61	-10.10	296.12

COMSEARCH

Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147
(703)726-5500 <http://www.comsearch.com>

Coordination Values

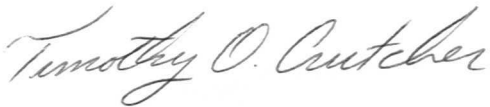
KAPOLEI, HI

Licensee Name Hawaii Pacific Teleport, L.P.
Latitude (NAD 83) 21° 20' 8.0" N
Longitude (NAD 83) 158° 5' 25.0" W
Ground Elevation (AMSL) 36.57 m / 120.0 ft
Antenna Centerline (AGL) 7.31 m / 24.0 ft
Antenna Model Andrew Corporation ESA9.3-46
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 -4.8 (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	70.69	-10.30	704.61	-10.10	296.12
195	0.00	65.91	-10.30	704.61	-10.10	296.12
200	0.00	61.15	-10.30	704.61	-10.10	296.12
205	0.00	56.41	-10.30	704.61	-10.10	296.12
210	0.00	51.70	-10.30	704.61	-10.10	296.12
215	0.00	47.03	-9.71	717.13	-9.51	301.59
220	0.00	42.42	-8.27	747.95	-8.58	308.01
225	0.00	37.89	-6.88	778.48	-7.26	321.05
230	0.00	33.48	-6.00	795.10	-5.80	336.30
235	0.00	29.22	-5.30	810.90	-5.10	343.87
240	0.00	25.22	-5.30	810.90	-5.10	343.87
245	0.00	21.60	-5.30	810.90	-5.10	343.87
250	0.00	18.59	-4.17	837.14	-3.97	356.60
255	0.00	16.54	-2.53	876.68	-2.33	376.09
260	0.00	15.82	-1.95	890.97	-1.75	383.22
265	0.00	16.60	-2.58	875.48	-2.38	375.49
270	0.00	18.70	-4.26	835.09	-4.06	355.60
275	0.00	21.74	-5.30	810.90	-5.10	343.87
280	0.00	25.38	-5.30	810.90	-5.10	343.87
285	0.00	29.39	-5.30	810.90	-5.10	343.87
290	0.00	33.66	-6.03	797.42	-5.83	335.91
295	0.67	37.84	-6.87	516.42	-7.24	216.95
300	1.30	42.23	-8.19	370.67	-8.55	142.21
305	1.80	46.78	-9.66	305.17	-9.46	107.29
310	2.68	51.35	-10.30	231.91	-10.10	100.00
315	3.27	56.05	-10.30	200.20	-10.10	100.00
320	3.64	60.84	-10.30	185.19	-10.10	100.00
325	4.22	65.65	-10.30	168.55	-10.10	100.00
330	4.83	70.48	-10.30	161.37	-10.10	100.00
335	5.31	75.36	-10.30	151.91	-10.10	100.00
340	5.86	80.25	-10.30	139.36	-10.10	100.00
345	6.64	85.17	-10.30	129.13	-10.10	100.00
350	7.77	90.10	-10.30	117.19	-10.10	100.00
355	9.60	95.07	-10.30	100.00	-10.10	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.



Timothy O. Crutcher
Frequency Planner
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147

DATED: September 17, 2018