Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of Application by	)	
	)	
Hawaii Pacific Teleport, L.P.	)	SES-_____
	)	
For Special Temporary Authority to Communicate with ASTRA 3A to Perform TT&C On-Station at 176.85° W.L.	)	

REQUEST FOR SPECIAL TEMPORARY AUTHORITY

By this submission, Hawaii Pacific Teleport, L.P. ("HPT") respectfully requests earth station special temporary authority ("STA") for a period of 60 days, beginning on or about November 20, 2013, to permit HPT to utilize a new 8.1 meter Ku-band fixed transmit/receive antenna (to be added to the E030115 earth station license) to provide Tracking, Telemetry and Command ("TT&C") services temporarily as the ASTRA 3A spacecraft approaches and arrives on-station at 176.85° W.L. (+/- 0.10° east/west stationkeeping) after the spacecraft's planned relocation from its current position at 23.7° E.L. to 176.85° W.L.[1] In support of this STA request, HPT is also attaching detailed technical information which demonstrates that the operation of the earth station will be compatible with its electromagnetic environment and will not cause harmful interference to any lawfully operating facility.

[1] HPT has also separately filed an application to modify Earth Station License E030115 to add a new 8.1 meter antenna and to perform long-term TT&C of ASTRA 3A once it reaches 176.85° W.L. *See* Submission ID IB2013002279. This new antenna will be located at 21 deg 20' 9.2" N, 158 deg 5' 18.1" W, which is within one arc second of the geographic coordinates of the E030115 license.

The Commission has already granted a number of earth station STAs to relocate and perform TT&C for the ASTRA 3A satellite at 176.85W.[2] Grant of this additional STA will serve the public interest by ensuring safe operation of the satellite en route to and at that orbital location.

I. STA REQUEST

SES Americom, Inc.'s ("SES Americom's") affiliate, SES ASTRA S.A. ("SES ASTRA"),[3] has requested that SES Americom and HPT provide TT&C to support the planned relocation of ASTRA 3A to 176.85° W.L. Upon arrival at the nominal 177° W.L. orbital location, ASTRA 3A will join the NSS-9 spacecraft and will operate in inclined orbit pursuant to an authorization from the Netherlands held by New Skies Satellites B.V. ("New Skies").[4] By separate application,[5] SES Americom has requested STA for Call Sign E920698, which will be used for drift only, and Call Sign KA288, which will be used for drift and on-station TT&C at 176.85° W.L. At that orbital location, ASTRA 3A will provide commercial service in the Ku-

[2] File Nos. SES-STA-20131023-00886, granted October 29, 2013; SES-STA-20130722-00653, granted September 26, 2013; SES-STA-20130722-00654 granted September 26, 2013; and SES-STA-20130912-00800 granted September 26, 2013.

[3] SES ASTRA holds an authorization for the ASTRA 3A Ku-band spacecraft from the Luxembourg Ministry of State, Office of Media and Communications Ministère d'État, Service des Médias et des Communications of the Grand Duchy of Luxembourg.

[4] The U.N. registration of the ASTRA 3A spacecraft will not change at 176.85° W.L. *See* Permanent Mission of Luxembourg, *Note Verbale*, A/AC.105/INF.412 (Dec. 5, 2005) (providing information for ASTRA 3A to the UN Committee on the Peaceful Uses of Outer Space in conformity with General Assembly resolution 1721 B (XVI) by States launching objects into orbit or beyond). SES Americom, SES ASTRA and New Skies are all wholly owned affiliates of SES S.A. ("SES")

[5] File No. SES-STA-20130722-00654 (granted September 26, 2013) ("*SES STA Application*").

band frequencies to eastern Russia.[6] Once ASTRA 3A is on-station at 176.85W, TT&C will be performed by two U.S. earth stations: (1) the KA288 earth station in Somis, California, operated by SES Americom, and (2) an earth station in Kapolei, Hawaii, operated by HPT.

HPT's application is limited to a request for special temporary authority ("STA") to use E030115 to perform TT&C with ASTRA 3A using certain Ku-band frequencies. HPT is not seeking U.S. market access or any other authorization from the Commission in relation to the non-U.S.-licensed ASTRA 3A spacecraft, and therefore is not providing full technical information about the ASTRA 3A satellite as part of this request.[7] However, details regarding the ASTRA 3A TT&C operations, including link budgets and interference analysis, are available in Attachment 1 to SES Americom's STA request application.[8] A basic technical description of the satellite's proposed operations over eastern Russia, and an orbital debris mitigation statement for ASTRA 3A, are also available as Attachment 2 and Attachment 3 of the SES STA Application, respectively, for the Commission's information.[9]

As discussed below, communications with ASTRA 3A will not adversely affect the operation of any adjacent satellites. Relocation of ASTRA 3A is scheduled to begin later this year, and HPT seeks action on this request no later than November 20, 2013, to accommodate that schedule. ASTRA 3A is expected to remain at 176.85° W.L. until its projected end-of-life.

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[6] ASTRA 3A will provide service to eastern Russia using the 11.45-11.7 GHz and 12.5-12.75 GHz space-to-Earth (downlink) bands and the 14.0-14.5 GHz Earth-to-space (uplink) bands.

[7] *See* Waiver Requests, *infra*.

[8] *See SES STA Application.*

[9] *Id.*

Grant of STAs Will Serve the Public Interest. Grant of this STA request is in the public interest. The requested TT&C authority will facilitate the safe operation of ASTRA 3A during relocation of the spacecraft and on-station at 176.85° W.L.

No Harmful Interference to Other Spacecraft. TT&C transmissions during drift of ASTRA 3A will be on a non-harmful interference basis. The drift of the spacecraft will be coordinated with other satellite operators consistent with industry practice.[10]

At 176.85° W.L., the nearest Ku-band satellite (Intelsat 18) is more than three degrees away at 180° W.L. Accordingly, the proposed use of large, two-degree-spacing compliant earth stations to perform TT&C with ASTRA 3A at 176.85° W.L. poses no risk of harmful interference to adjacent satellites.[11]

II. WAIVER REQUESTS

HPT requests limited waivers of the Commission's requirements in connection with the instant STA request. Grant of these waivers is consistent with Commission policy and is consistent with requests made by SES in its STA request:

> The Commission may waive a rule for good cause shown. Waiver is appropriate if special circumstances warrant a deviation from the general rule and such deviation would better serve the public interest than would strict adherence to the general rule. Generally, the Commission may grant a waiver of its rules in a particular case if the relief requested would not undermine the policy objective of the rule in question and would otherwise serve the public interest.[12]

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[10] The 24/7 point of contact for the proposed ASTRA 3A operations is the SES Payload Management Operations Centre (PMOC) in Woodbine, MD, 1-800-772-2363 or 1-410-970-7570; e-mail: PMOC@ses.com.

[11] *See SES STA Application*, Attachment 1.

[12] *PanAmSat Licensee Corp.*, 17 FCC Rcd 10483, 10492 (Sat. Div. 2002) (footnotes omitted).

The Commission has granted identical waivers in connection with SES's earth station STA requests for the relocation of ASTRA 3A to 176.85W after full public notice and opportunity for comment. (File Nos. SES-STA-20131023-00886, granted October 29, 2013; SES-STA-20130722-00653, granted September 26, 2013; SES-STA-20130722-00654 granted September 26, 2013; and SES-STA-20130912-00800 granted September 26, 2013.)

Sections 25.137 and 25.114. HPT requests a waiver of Section 25.137 and the other Commission rules cross-referenced therein. HPT seeks special temporary authority in connection with TT&C for ASTRA 3A, a foreign-licensed spacecraft. Section 25.137 requires that applicants proposing to use U.S.-licensed earth stations to communicate with foreign-licensed spacecraft demonstrate that the Commission's policies for U.S. market access are satisfied. Section 25.137 also incorporates by reference other requirements for Commission-licensed space stations, including the obligation to file detailed technical information as specified in Section 25.114.

By its terms, Section 25.137 is inapplicable to the instant STA request. The rule's requirements come into play only when a non-U.S.-licensed satellite is to be used to "serve the United States."[13] Here, the HPT earth station will be used solely for TT&C, not for commercial operations. Thus, HPT is not seeking to have its earth station communicate with ASTRA 3A for purposes of providing U.S. service within the meaning of Section 25.137.

To the extent the Commission disagrees, HPT requests a waiver of the market access and other requirements imposed by Section 25.137. Grant of a waiver will not undermine the objectives of these requirements. The market access test described in the rule is intended to

[13] 47 C.F.R. § 25.137(a).

ensure that U.S.-licensed systems have "effective competitive opportunities."[14] Because HPT is not seeking authority to provide commercial services in the United States, the requested STA does not raise any concerns about competitive equality.[15]

Strict adherence with Section 25.114's requirements for detailed technical information is also unnecessary and would be unduly burdensome. HPT is proposing only to use the earth station for the limited purpose of TT&C during on-station operations of the spacecraft at 176.85° W.L, and the relevant technical characteristics of those transmissions are described in SES Americom's corresponding application. The planned drift will be coordinated with nearby satellite operators, consistent with industry practice, and transmissions to the spacecraft will be conducted on a non-harmful interference basis. Upon arrival on-station, the spacecraft will be used to provide service outside the United States. In these circumstances, no valid purpose would be served by requiring a complete technical description of the ASTRA 3A spacecraft.

HPT's request is consistent with Commission precedent. In similar cases in which limited communications by U.S. earth stations with a foreign-licensed satellite were proposed, the Commission has granted STA without requiring a market access showing under Section 25.137 or full technical data as required by Section 25.114.[16]

Section 2.106 Footnote NG104 and Section 25.202(a)(1) Footnote 2. To the extent that reception of telemetry at 11450.25 MHz and 11699.50 MHz constitutes a domestic (i.e., non-

[14] *Id.*

[15] In any event, the ASTRA 3A spacecraft at 176.85° W.L. will be operating under the authority of the Netherlands, a WTO member country, and therefore is exempt from the requirement to make a showing of effective competitive opportunities. 47 C.F.R. § 25.137(a)(2).

[16] *See, e.g.,* PanAmSat Licensee Corp., File Nos. SES-STA-20090922-01211 (Call Sign E4132) & SES-STA-20090922-01212 (Call Sign E040125), both grant-stamped Oct. 16, 2009 (granting authority for earth stations to communicate with foreign-licensed NSS-12 spacecraft for purposes of providing launch and early operations services).

international) service, HPT respectfully requests a limited waiver of the international-service-only restriction.[17] Such a waiver is warranted in the circumstances for the limited purpose of TT&C. As the Commission has recognized, TT&C operations generally require uplink and downlink capability from the same earth station. For this reason, the Commission has previously granted waivers of the international service restriction to enable TT&C to be performed in the U.S. using the extended Ku-band frequencies.[18]

Grant of the requested waiver would not undermine the purpose of the restriction, which is to ensure that earth station deployments in the extended Ku-band do not negatively impact the deployment of fixed service ("FS") in the same band or cause interference to such operations. The telemetry downlink from ASTRA 3A in the extended Ku-band is narrow in bandwidth, and will comply with the power flux density limits in the Commission's rules and, thus, will not interfere with FS station operations. Moreover, only a small number of U.S. earth stations will be used to perform TT&C in the extended Ku-band.[19] Once ASTRA 3A is on-station at 176.85W, TT&C will be performed by two U.S. earth stations: (1) the KA288 earth station in South Mountain, California, operated by SES Americom, and (2) the E030115 earth station in Honolulu, Hawaii, operated by HPT pursuant to the instant STA request. As a result, there will be no significant restrictions placed on the deployment of FS in this band.

[17] 47 U.S.C. § 2.106 Footnote NG104; 47 U.S.C. § 25.202(a)(1) Footnote 2.

[18] *See, e.g.*, EchoStar KuX Corporation, 20 FCC Rcd 919 (Int'l Bur. 2004) ("EchoStar 83W Order"); EchoStar Satellite LLC, 20 FCC Rcd 930 (Int'l Bur. 2004) ("EchoStar 109W Order"); EchoStar KuX Corporation, 20 FCC Rcd 942 (2004) ("EchoStar 121W Order").

[19] *See* EchoStar 83W Order at ¶ 16 ("The Commission has waived this [NG104] requirement where the number of potential earth stations in a particular service is inherently small."); EchoStar 109W Order at ¶ 16 (same); EchoStar 121W Order at ¶ 17 (same).

Section 25.210(j). The ASTRA 3A satellite is authorized by the Netherlands to operate at 176.85° W.L. within a +/- 0.10° east/west stationkeeping box. To the extent necessary, HPT respectfully requests a waiver of Section 25.210(j) of the Commission's rules, which requires geostationary space stations to be operated within a +/- 0.05° east/west stationkeeping box. The Commission has previously waived this rule based on a finding that allowing an increased stationkeeping volume would "not adversely affect the operations of other spacecraft, and would conserve fuel for future operations."[20]

The facts here fit squarely within this precedent. Allowing ASTRA 3A to be maintained within an increased stationkeeping volume will not harm other operators. ASTRA 3A's stationkeeping volume will not overlap with that of any other satellites. In addition, allowing ASTRA 3A to be flown at 176.85° W.L. in an expanded east-west stationkeeping volume of +/- 0.1 degrees will result in fuel savings for the spacecraft. This will prolong the time during which ASTRA 3A will be available to provide service to eastern Russia. Under these circumstances, grant of any necessary waiver of Section 25.210(j) will serve the public interest.

III. CERTIFICATION

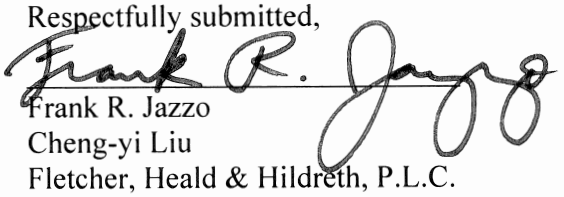
HPT hereby certifies that no party to this application is subject to a denial of federal benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. § 862.

[20] *See* File Nos. SAT-MOD-20080124-00030 & SAT-AMD-20080311-00070, grant-stamped May 19, 2008, Attachment at ¶ 1.

IV. CONCLUSION

For the foregoing reasons, HPT respectfully requests special temporary authority ("STA") for E030115 to communicate with ASTRA 3A for a period of up to 60 days in order to provide TT&C during relocation of the satellite and once it is on-station, as described herein. Grant of the requested authority will promote safe operation of the satellite during its relocation.

Respectfully submitted,



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October 30, 2013

Analysis of Non-Ionizing Radiation for a 8.1-Meter Earth Station System

This report analyzes the non-ionizing radiation levels for a 8.1-meter earth station system. The analysis and calculations performed in this report comply with the methods described in the FCC Office of Engineering and Technology Bulletin, No. 65 first published in 1985 and revised in 1997 in Edition 97-01. The radiation safety limits used in the analysis are in conformance with the FCC R&O 96-326. Bulletin No. 65 and the FCC R&O specifies that there are two separate tiers of exposure limits that are dependant on the situation in which the exposure takes place and/or the status of the individuals who are subject to the exposure. The Maximum Permissible Exposure (MPE) limits for persons in a General Population/Uncontrolled environment are shown in Table 1. The General Population/Uncontrolled MPE is a function of transmit frequency and is for an exposure period of thirty minutes or less. The MPE limits for persons in an Occupational/Controlled environment are shown in Table 2. The Occupational MPE is a function of transmit frequency and is for an exposure period of six minutes or less. The purpose of the analysis described in this report is to determine the power flux density levels of the earth station in the far-field, near-field, transition region, between the subreflector or feed and main reflector surface, at the main reflector surface, and between the antenna edge and the ground and to compare these levels to the specified MPEs.

Table 1. Limits for General Population/Uncontrolled Exposure (MPE)

Frequency Range (MHz)	Power Density (mW/cm^2)
30-300	0.2
300-1500	Frequency (MHz)*(0.8/1200)
1500-100,000	1.0

Table 2. Limits for Occupational/Controlled Exposure (MPE)

Frequency Range (MHz)	Power Density (mW/cm^2)
30-300	1.0
300-1500	Frequency (MHz)*(4.0/1200)
1500-100,000	5.0

Table 3. Formulas and Parameters Used for Determining Power Flux Densities

Parameter	Symbol	Formula	Value	Units
Antenna Diameter	D	Input	8.1	m
Antenna Surface Area	$A_{surface}$	$\pi D^2 / 4$	51.53	m^2
Subreflector Diameter	D_{sr}	Input	105.0	cm
Area of Subreflector	A_{sr}	$\pi D_{sr}^2/4$	8659.01	cm^2
Frequency	F	Input	14250	MHz
Wavelength	λ	300 / F	0.021053	m
Transmit Power	P	Input	350.00	W
Antenna Gain (dBi)	G_{es}	Input	59.7	dBi
Antenna Gain (factor)	G	$10^{Ges/10}$	933254.3	n/a
Pi	π	Constant	3.1415927	n/a
Antenna Efficiency	η	$G\lambda^2/(\pi^2D^2)$	0.64	n/a

1. Far Field Distance Calculation

The distance to the beginning of the far field can be determined from the following equation:

Distance to the Far Field Region

$$R_{ff} = 0.60\ D^2 / \lambda \quad (1)$$
$$= 1869.9\ \text{m}$$

The maximum main beam power density in the far field can be determined from the following equation:

On-Axis Power Density in the Far Field

$$S_{ff} = G\ P / (4\ \pi\ R_{ff}^{\ 2}) \quad (2)$$
$$= 7.434\ \text{W/m}^2$$
$$= 0.743\ \text{mW/cm}^2$$

2. Near Field Calculation

Power flux density is considered to be at a maximum value throughout the entire length of the defined Near Field region. The region is contained within a cylindrical volume having the same diameter as the antenna. Past the boundary of the Near Field region, the power density from the antenna decreases linearly with respect to increasing distance.

The distance to the end of the Near Field can be determined from the following equation:

Extent of the Near Field

$$R_{nf} = D^2 / (4\ \lambda) \quad (3)$$
$$= 779.1\ \text{m}$$

The maximum power density in the Near Field can be determined from the following equation:

Near Field Power Density

$$S_{nf} = 16.0\ \eta\ P / (\pi\ D^2) \quad (4)$$
$$= 17.354\ \text{W/m}^2$$
$$= 1.735\ \text{mW/cm}^2$$

3. Transition Region Calculation

The Transition region is located between the Near and Far Field regions. The power density begins to decrease linearly with increasing distance in the Transition region. While the power density decreases inversely with distance in the Transition region, the power density decreases inversely with the square of the distance in the Far Field region. The maximum power density in the Transition region will not exceed that calculated for the Near Field region. The power density calculated in Section 1 is the highest power density the antenna can produce in any of the regions away from the antenna. The power density at a distance R_t can be determined from the following equation:

Transition Region Power Density

$$S_t = S_{nf}\ R_{nf} / R_t \quad (5)$$
$$= 1.735\ \text{mW/cm}^2$$

4. Region between the Main Reflector and the Subreflector

Transmissions from the feed assembly are directed toward the subreflector surface, and are reflected back toward the main reflector. The most common feed assemblies are waveguide flanges, horns or subreflectors. The energy between the subreflector and the reflector surfaces can be calculated by determining the power density at the subreflector surface. This can be determined from the following equation:

Power Density at the Subreflector

$$S_{sr} = 4000\ P / A_{sr} = 161.681\ mW/cm^2 \quad (6)$$

5. Main Reflector Region

The power density in the main reflector is determined in the same manner as the power density at the subreflector. The area is now the area of the main reflector aperture and can be determined from the following equation:

Power Density at the Main Reflector Surface

$$S_{surface} = 4\ P / A_{surface} = 27.169\ W/m^2 = 2.717\ mW/cm^2 \quad (7)$$

6. Region between the Main Reflector and the Ground

Assuming uniform illumination of the reflector surface, the power density between the antenna and the ground can be determined from the following equation:

Power Density between Reflector and Ground

$$S_g = P / A_{surface} = 6.792\ W/m^2 = 0.679\ mW/cm^2 \quad (8)$$

7. Summary of Calculations

Table 4. Summary of Expected Radiation levels for Uncontrolled Environment

Region	Calculated Maximum Radiation Power Density Level (mW/cm^2)		Hazard Assessment
1. Far Field (R_{ff} = 1869.9 m)	S_{ff}	0.743	Satisfies FCC MPE
2. Near Field (R_{nf} = 779.1 m)	S_{nf}	1.735	Potential Hazard
3. Transition Region ($R_{nf} < R_t < R_{ff}$)	S_t	1.735	Potential Hazard
4. Between Main Reflector and Subreflector	S_{sr}	161.681	Potential Hazard
5. Main Reflector	$S_{surface}$	2.717	Potential Hazard
6. Between Main Reflector and Ground	S_g	0.679	Satisfies FCC MPE

Table 5. Summary of Expected Radiation levels for Controlled Environment

Region	Calculated Maximum Radiation Power Density Level (mW/cm^2)		Hazard Assessment
1. Far Field (R_{ff} = 1869.9 m)	S_{ff}	0.743	Satisfies FCC MPE
2. Near Field (R_{nf} = 779.1 m)	S_{nf}	1.735	Satisfies FCC MPE
3. Transition Region ($R_{nf} < R_t < R_{ff}$)	S_t	1.735	Satisfies FCC MPE
4. Between Main Reflector and Subreflector	S_{sr}	161.681	Potential Hazard
5. Main Reflector	$S_{surface}$	2.717	Satisfies FCC MPE
6. Between Main Reflector and Ground	S_g	0.679	Satisfies FCC MPE

It is the applicant's responsibility to ensure that the public and operational personnel are not exposed to harmful levels of radiation.

8. Conclusions

Based upon the above analysis, it is concluded that harmful levels of radiation may exist in those regions noted for the Uncontrolled (Table 4) Environment.

The antenna will be installed at the Hawaii Pacific Teleport facility in Kapolei, Hawaii. All of the antennas at the facility are fenced in with secured access in and around the antennas. The proposed earth station will be installed within the fenced in area and will be marked with the standard radiation hazard warnings, as well as the area in the vicinity of the earth station to inform those in the general population, who might be working or otherwise present in or near the direct path of the main beam.

The applicant will ensure that the main beam of the antenna will be pointed at least one diameter away from any building, or other obstacles in those areas that exceed the MPE levels. Since one diameter removed from the center of the main beam the levels are down at least 20 dB, or by a factor of 100, these potential hazards do not exist for either the public, or for earth station personnel.

Finally, the earth station's operating personnel will not have access to areas that exceed the MPE levels, while the earth station is in operation. The transmitter will be turned off during periods of maintenance, so that the MPE standard of 5.0 mw/cm**2 will be complied with for those regions in close proximity to the main reflector, which could be occupied by operating personnel.

The applicant agrees to abide by the conditions specified in Condition 5208 provided below:

> *Condition 5208 - The licensee shall take all necessary measures to ensure that the antenna does not create potential exposure of humans to radiofrequency radiation in excess of the FCC exposure limits defined in 47 CFR 1.1307(b) and 1.1310 wherever such exposures might occur. Measures must be taken to ensure compliance with limits for both occupational/controlled exposure and for general population/uncontrolled exposure, as defined in these rule sections. Compliance can be accomplished in most cases by appropriate restrictions such as fencing. Requirements for restrictions can be determined by predictions based on calculations, modeling or by field measurements. The FCC's OET Bulletin 65 (available on-line at www.fcc.gov/oet/rfsafety) provides information on predicting exposure levels and on methods for ensuring compliance, including the use of warning and alerting signs and protective equipment for worker.*

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for

Hawaii Pacific Teleport, L.P.
Kapolei, Hawaii

Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, Virginia 20147
October 21, 2013

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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

None

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 sent to the below listed carriers with a letter dated September 22, 2013, and a modification notice was forwarded on October 7, 2013.

Company

AT&T Corporation
Cellco Parttnership - Hawaii
Clearwire Hawaii Partners Spectrum LLC
Clearwire Spectrum Holdings III, LLC
Coral Wireless Licenses, LLC
HONOLULU CITY & COUNTY
HONOLULU CITY & COUNTY DEPT OF INFO TECH
Harris Corporation - Orlando, FL
Hawaii Direct Telephone STS LLC
Hawaii Electric Light Co Inc
Hawaii State
Hawaiian Electric Co Inc
Hawaiian Telcom, Inc.
Honolulu Board of Water Supply
KAUAI ISLAND UTILITY CO-OP
MAUI ELECTRIC COMPANY LTD
MID PACIFIC COMMUNICATIONS INC
Maui, County of
New Cingular Wireless PCS LLC - Hawaii
Nextel WIP License Corp.
Oceanic Time Warner Cable
Pacific Christian Church
T-Mobile License LLC
Trex Broadband
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:	10/21/2013
Job Number:	131007COMSGE02

Administrative Information

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

Site Information — KAPOLEI, HI

Venue Name	
Latitude (NAD 83)	21° 20' 9.2" N
Longitude (NAD 83)	158° 5' 18.1" W
Climate Zone	B
Rain Zone	4
Ground Elevation (AMSL)	46.39 m / 152.2 ft

Link Information

Satellite Type	Geostationary
Mode	TR - Transmit-Receive
Modulation	Analog and Digital
Satellite Arc	120° W to 188° West Longitude
Azimuth Range	114.9° to 237.7°
Corresponding Elevation Angles	40.6° / 48.0°
Antenna Centerline (AGL)	4.88 m / 16.0 ft

Antenna Information		Receive - FCC32		Transmit - FCC32	
Manufacturer		GD Satcom		GD Satcom	
Model		8.1 Meter		8.1 Meter	
Gain / Diameter		58.0 dBi / 8.1 m		59.7 dBi / 8.1 m	
3-dB / 15-dB Beamwidth		0.22° / 0.41°		0.18° / 0.34°	
Max Available RF Power	(dBW/4 kHz)			-8.0	
	(dBW/MHz)			16.0	
Maximum EIRP	(dBW/4 kHz)			51.7	
	(dBW/MHz)			75.7	
	(dBW)			74.7	
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 11.0 GHz	Transmit 14.0 GHz
Emission / Frequency Range (MHz)	150KF9D / 10950.0 - 11200.0 150KF9D / 11450.0 - 11700.0	800KF9D / 14000.0 - 14500.0
Max Great Circle Coordination Distance	323.0 km / 200.7 mi	150.6 km / 93.5 mi
Precipitation Scatter Contour Radius	100.0 km / 62.1 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' 9.2" N			
Longitude (NAD 83)	158° 5' 18.1" W			
Ground Elevation (AMSL)	46.39 m / 152.2 ft			
Antenna Centerline (AGL)	4.88 m / 16.0 ft			
Antenna Model	GD Satcom 8.1 Meter			
Antenna Mode	Receive 11.0 GHz		Transmit 14.0 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)	

			Receive 11.0 GHz		Transmit 14.0 GHz	
Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
0	7.42	110.65	-10.00	100.00	-10.00	100.00
5	7.05	106.49	-10.00	100.00	-10.00	100.00
10	6.21	102.26	-10.00	100.00	-10.00	100.00
15	4.68	98.01	-10.00	105.70	-10.00	100.00
20	4.52	93.96	-10.00	106.76	-10.00	100.00
25	4.40	89.92	-10.00	107.56	-10.00	100.00
30	4.53	85.88	-10.00	106.71	-10.00	100.00
35	3.94	81.91	-10.00	111.27	-10.00	100.00
40	2.26	78.20	-10.00	142.68	-10.00	100.00
45	1.37	74.55	-10.00	172.21	-10.00	100.00
50	1.09	70.88	-10.00	185.69	-10.00	100.00
55	0.64	67.38	-10.00	231.22	-10.00	105.48
60	0.54	63.87	-10.00	243.26	-10.00	111.54
65	0.54	60.44	-10.00	243.25	-10.00	111.53
70	0.00	57.44	-10.00	307.68	-10.00	143.68
75	0.00	54.35	-10.00	307.68	-10.00	143.68
80	0.00	51.45	-10.00	307.68	-10.00	143.68
85	0.00	48.80	-10.00	307.68	-10.00	143.68
90	0.00	46.43	-9.67	310.42	-9.67	144.88
95	0.00	44.40	-9.19	314.51	-9.19	146.71
100	0.00	42.75	-8.77	318.02	-8.77	148.29
105	0.00	41.54	-8.46	320.72	-8.46	149.52
110	0.00	40.80	-8.27	322.43	-8.27	150.30
115	0.00	40.55	-8.20	323.00	-8.20	150.56
120	0.00	40.81	-8.27	322.38	-8.27	150.28
125	0.00	41.58	-8.47	320.63	-8.47	149.48
130	0.00	42.81	-8.79	317.89	-8.79	148.23
135	0.00	44.47	-9.20	314.36	-9.20	146.64
140	0.00	46.52	-9.69	310.25	-9.69	144.81
145	0.00	48.90	-10.00	307.68	-10.00	143.68
150	0.00	51.56	-10.00	307.68	-10.00	143.68
155	0.00	54.46	-10.00	307.68	-10.00	143.68
160	0.00	57.56	-10.00	307.68	-10.00	143.68
165	0.00	60.55	-10.00	307.68	-10.00	143.68
170	0.00	62.92	-10.00	307.68	-10.00	143.68
175	0.00	64.46	-10.00	307.68	-10.00	143.68
180	0.00	65.00	-10.00	307.68	-10.00	143.68
185	0.00	64.46	-10.00	307.68	-10.00	143.68

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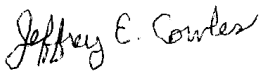
			Receive 11.0 GHz		Transmit 14.0 GHz	
Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	62.92	-10.00	307.68	-10.00	143.68
195	0.00	60.56	-10.00	307.68	-10.00	143.68
200	0.00	58.05	-10.00	307.68	-10.00	143.68
205	0.00	55.75	-10.00	307.68	-10.00	143.68
210	0.00	53.70	-10.00	307.68	-10.00	143.68
215	0.00	51.91	-10.00	307.68	-10.00	143.68
220	0.00	50.43	-10.00	307.68	-10.00	143.68
225	0.00	49.28	-10.00	307.68	-10.00	143.68
230	0.00	48.50	-10.00	307.68	-10.00	143.68
235	0.00	48.10	-10.00	307.68	-10.00	143.68
240	0.00	48.08	-10.00	307.68	-10.00	143.68
245	0.00	48.46	-10.00	307.68	-10.00	143.68
250	0.00	49.21	-10.00	307.68	-10.00	143.68
255	0.00	50.33	-10.00	307.68	-10.00	143.68
260	0.00	51.79	-10.00	307.68	-10.00	143.68
265	0.00	53.55	-10.00	307.68	-10.00	143.68
270	0.00	55.59	-10.00	307.68	-10.00	143.68
275	0.00	57.87	-10.00	307.68	-10.00	143.68
280	0.00	60.37	-10.00	307.68	-10.00	143.68
285	0.00	63.04	-10.00	307.68	-10.00	143.68
290	0.24	65.75	-10.00	298.08	-10.00	141.10
295	0.73	68.52	-10.00	221.42	-10.00	100.76
300	1.34	71.42	-10.00	173.55	-10.00	100.00
305	2.10	74.44	-10.00	145.02	-10.00	100.00
310	2.64	77.68	-10.00	133.77	-10.00	100.00
315	3.24	81.03	-10.00	121.57	-10.00	100.00
320	3.73	84.51	-10.00	114.64	-10.00	100.00
325	4.42	88.05	-10.00	107.45	-10.00	100.00
330	7.16	91.75	-10.00	100.00	-10.00	100.00
335	8.39	95.62	-10.00	100.00	-10.00	100.00
340	7.97	99.39	-10.00	100.00	-10.00	100.00
345	6.58	102.89	-10.00	100.00	-10.00	100.00
350	6.56	106.53	-10.00	100.00	-10.00	100.00
355	6.33	110.03	-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.



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

DATED: October 21, 2013