Exhibit A

Description of Application

ViaSat, Inc. ("ViaSat") seeks authority to operate a 7.3 meter Model VA-73-KA gateway-type antenna in the Ka-band in the vicinity of Honolulu, Hawaii to communicate with the VIASAT-1 satellite, which is expected to be launched this summer. The antenna will operate in the 18.3-19.3 GHz and 19.7-20.2 GHz downlink bands and the 28.1-29.1 GHz and 29.5-30.0 GHz uplink bands, each of which has been approved for service over VIASAT-1 (FCC Call Sign S2747). ViaSat intends to use this antenna for gateway operations and to provide TT&C for VIASAT-1. To the extent necessary, ViaSat requests a waiver of the U.S. Table of Frequency Allocations to allow the gateway earth station to receive communicates from VIASAT-1 in the 18.8-19.3 GHz frequencies on a non-conforming basis.[1] ViaSat also requests a partial waiver of the requirement in Section 25.138(d) to provide antenna patterns for angles to +/- 180 degrees. ViaSat includes in this application antenna patterns for angles to +/- 45 degrees which demonstrate that the antenna performance complies with the off-axis power density limits in Section 25.138.

Consistency with GSO, NGSO and Terrestrial Operations

As a general matter, the proposed operation of this antenna is compatible with the operation of adjacent GSO systems, NGSO systems and primary terrestrial users in the 18.3-19.3 GHz and 19.7-20.2 GHz downlink bands and the 28.1-29.1 GHz and 29.5-30.0 GHz uplink bands. The Commission has approved the VIASAT-1 satellite for operation on these frequency bands.[2] The VIASAT-1 Authorization allows the spacecraft to operate (i) in the 28.6-29.1 GHz band on a secondary basis, (ii) in the 28.10-28.35 GHz on a secondary basis, and (iii) in the 18.8-19.3 GHz band on a non-conforming basis pursuant to a grant of a waiver of Section 2.106 of the Commission's rules, and specifically footnote NG165 thereto.

Section 25.132(a)(2) provides that transmitting earth stations operating in the 20/30 GHz band must demonstrate compliance with Section 25.138.[3] The antenna meets the performance requirements in Section 25.138(a) in the direction of the GSO arc, as well as in all other directions, as illustrated by the off-axis EIRP spectral density plots attached hereto as Exhibit B. Further, as established in the Commission's authorization for the VIASAT-1 satellite, the power flux-density at the earth's surface produced by emissions from VIASAT-1 are within the -118 dBW/m2/MHz limit set forth in Section 25.138(a)(6). In addition, to the extent required for protection of received satellite signals pursuant to Section 25.138(e), the proposed earth station conforms to the antenna performance standards in Section 25.209, as demonstrated by the antenna gain patterns attached hereto as Exhibit C. ViaSat includes all patterns in digitized and

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[1] 47 C.F.R. § 2.106, n.NG165.

[2] *See* File Nos. SAT-LOI-20080107-00006, SAT-AMD-20080623-00131, and SAT-AMD-20090213-00023 (granted by date stamp, with conditions, on Aug. 18, 2009) ("VIASAT-1 Authorization").

[3] 47 C.F.R. § 25.132(a)(2).

tabular format for all angles up to +/-45 degrees, including the off-axis EIRP density envelope superimposed on the plots. For angles between 45 degrees and 180 degrees, ViaSat includes a set of non-digitized antenna gain patterns from the antenna test report to illustrate that the side or backlobes of the antenna beyond +/- 45 degrees are consistently below the Section 25.209 mask. Digitized versions of the patterns for angles beyond +/- 45 degrees were not produced because the power levels in the backlobes were negligible and could not be detected by the testing equipment used to generate the patterns. Thus, ViaSat requests a waiver of the requirement in Section 25.138(d) to provide off-axis EIRP density patterns for angles beyond +/- 45 degrees.

There is good cause to grant the requested waiver.[4] Section 25.138 was intended to address blanket licensing of small, mass-produced antennas and to ensure that such antennas do not cause harmful interference to neighboring satellites. The rule requires a wide range of measurement parameters of the production antenna in order to account for the potentially wide variation in the installation of such antennas, as well as the fact that not every blanket-licensed antenna will be tested after installation. Instead, the gateway antenna is subject to individual installation and is highly calibrated. Thus, the non-digitized antenna gain patterns submitted with this application provide a high degree of assurance that there is no variation in the antenna's performance across all planes and angles, including those beyond ±45 degrees. Specifically, the non-digitized patterns indicate that the off-axis EIRP density in the backlobes of the antenna would also consistently be below the envelope, and thus, the antenna complies with Section 25.138.

Pursuant to the terms of the VIASAT-1 Authorization, that GSO FSS system may operate in the 28.6-29.1 GHz band on a secondary basis, and in the 18.8-19.3 GHz band on a non-conforming basis.[5] The same NGSO sharing technique approved in the VIASAT-1 Authorization will be employed with the proposed gateway antenna.[6] As detailed in the VIASAT-1 Authorization, the satellite network will cease operations in the 18.8-19.3 GHz downlink band and the associated 28.6-29.1 GHz uplink band in any spot beams where the predicted physical alignment of such beams would fall within a specified minimum separation angle of an NGSO operational link. In that case, and for the short duration of the event, the affected VIASAT-1 satellite spot beam will continue providing service in other authorized bands. Therefore, operation of the proposed antenna will not cause harmful interference into NGSO systems.

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4 47 C.F.R. § 1.3; *see also WAIT Radio v. FCC*, 418 F.2d 1153 (D.C. Cir. 1969); *Northeast Cellular Tel. Co. v. FCC*, 897 F.2d 1166 (D.C. Cir. 1990). Waiver is appropriate if (1) special circumstances warrant a deviation from the general rule, and (2) 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 only if the relief requested would not undermine the policy objective of the rule in question, and would otherwise serve the public interest.

5 To the extent necessary, and for the same reasons specified in the VIASAT-1 Authorization, ViaSat requests a waiver of NG165 to allow GSO FSS operations in the 18.8-19.3 GHz band on a non-conforming basis.

6 VIASAT-1 Authorization at Attach. ¶ 4.

ViaSat will operate in the 28.10-28.35 GHz band in a manner that will protect Local Multipoint Distribution Service ("LMDS") operations, which are designated as the primary use of the band, from harmful interference.[7] Consistent with the conditions in ViaSat's authorization for VIASAT-1 and the secondary nature of the GSO FSS allocation in this band, ViaSat's use of the 28.10-28.35 GHz frequency band for gateway earth stations will be on a non-harmful interference basis relative to LMDS.[8] As demonstrated in the Technical Analysis attached hereto, the proposed gateway antenna is capable of operating on a non-interference basis with existing or future LMDS stations.

When the Commission adopted allocations for the Ka-band, it established sunset provisions for the co-primary status of certain terrestrial users in certain FSS downlink bands (for purposes of this application, 19.26-19.3 GHz and 18.3-18.58 GHz) in order to protect and facilitate deployment of FSS operations.[9] ViaSat has the choice to either accept any potential for interference from any such users until the relevant sunset date or relocate such users. ViaSat will accept the potential for interference from co-primary terrestrial microwave users during the relevant sunset period.[10]

Radiation Hazard Analysis

A radiation hazard analysis for the proposed antenna is attached hereto as Exhibit D. As demonstrated by the results of the analysis, harmful levels will not be present in areas occupied by the general population, and the antenna does not present a risk to trained personnel in the controlled area in the immediate vicinity of the antenna.

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7 *See Rulemaking to Amend Parts 1, 2, 21, and 25 of the Commission's Rules to Redesignate the 27.5-29.5 GHz Frequency Band, to Reallocate the 29.5-30.0 GHz Frequency Band, to Establish Rules and Policies for Local Multipoint Distribution Service and for Fixed Satellite Services*, Third Report and Order, 12 FCC Rcd 22310 ¶ 42 (1997).

8 VIASAT-1 Authorization at Attach. ¶ 2. *See also*, *Rulemaking to Amend Parts 1, 2, 21, and 25 of the Commission's Rules to Redesignate the 27.5-29.5 GHz Frequency Band, to Reallocate the 29.5-30.0 GHz Frequency Band, to Establish Rules and Policies for Local Multipoint Distribution Service and for Fixed Satellite Services*, First Report and Order, FCC 96-311, ¶ 45 (1996) ("At 27.5-28.35 GHz we designate 850 MHz for LMDS on a primary basis. GSO/FSS . . . will be permitted on a non-interference basis . . . for the purpose of providing limited gateway-type services.").

9 *See, e.g., Redesignation of the 17.7-19.7 GHz Frequency Band, Blanket Licensing of Satellite Earth Stations in the 17.7-20.2 GHz and 27.5-30.0 GHz Frequency Bands, and the Allocation of Additional Spectrum in the 17.3-17.8 GHz and 24.75-25.25 GHz Frequency Bands for Broadcast Satellite-Serv. Use*, 16 FCC Rcd 19808 ¶ 23 (2001).

10 *See* 47 C.F.R. § 101.147(r).

Technical Analysis

As discussed in the narrative above, the Commission's rules and the VIASAT-1 space station letter of intent authorization permit GSO FSS use of the 28.1-28.35 GHz band on a secondary basis for gateway earth stations. ViaSat submits the following showing to demonstrate that the proposed gateway antenna is capable of operating on a non-interference basis with existing or future LMDS stations, in accordance with the secondary allocation in this band.

ViaSat has implemented measures to ensure that the proposed earth station will operate in a manner that will protect LMDS stations from harmful interference. ViaSat has located the gateway antenna in a remote area where LMDS is unlikely to be deployed. The proposed Ka-band gateway antenna is located approximately 24 km northwest of Honolulu, Hawaii. In selecting this site, which is an existing teleport facility, ViaSat relied on RF measurement surveys conducted by Comsearch at the actual earth station location. The field measurements showed no measurable presence of LMDS activity. Further, prior to commencement of the proposed operations, ViaSat will notify any LMDS licensees in the vicinity and provide them with a point of contact with respect to the operation of this earth station so that they can notify ViaSat should they plan to deploy an LMDS facility in the vicinity of this earth station in the future. Such notice would allow ViaSat to protect those LMDS stations by erecting shielding around the gateway.

ViaSat conducted a technical analysis to determine a "worst case" potential required separation distance from an LMDS terminal, assuming no shielding were employed at the gateway earth station. Because no sharing criteria exist, ViaSat relied on research available in technical papers discussing LMDS systems and link budgets,[11] and also obtained LMDS equipment specifications from a major LMDS equipment manufacturer.[12] Based on the available research, ViaSat selected a $\Delta T/T$ of 6% as the basis for calculating the potential separation distance with no shielding at the gateway. This threshold results in a I/N ratio of -12.2 dB and yields an effective increase to the LMDS receiver's noise floor of 0.27 dB. These levels are not assumed to be, and should not be construed as, the basis for assessing what would constitute "harmful interference" into the LMDS facility.

The analysis considers both hub-type and user-type LMDS terminals. However, the higher antenna gain and the better receiving performance of the user-type LMDS terminals make these terminals more sensitive than the hub-type terminals, and thus, more susceptible to interference. Therefore, only the results of the analysis from the LMDS user terminals are presented here.

The analysis assumes the LMDS terminal has an antenna gain of 31 dBi and a receiver noise figure of 6 dB, which are included in the technical specifications provided for sample LMDS equipment. Based on these assumptions, ViaSat calculated the required separation distance

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11 Robert Duhamel, "Local Multipoint Distribution Service (LMDS) Cell Sizing and Availability," IEEE P802.16 Broadband Wireless Access Working Group (June 9, 1999), *available at* http://wirelessman.org/sysreq/contributions/80216sc-99_17.pdf.

12 DragonWave Packet Microwave Systems, Product Link: http://www.dragonwaveinc.com/products-wireless-ethernet.asp.

between the ViaSat gateway and the LMDS terminal under a worst-case alignment scenario. This calculation assumes that the LMDS hub terminal is co-sited with the ViaSat gateway, and the LMDS user terminal is located along a line on the same bearing as the satellite and pointed directly at the ViaSat gateway antenna.

Parameters	**ViaSat**	**LMDS**	
Frequency (GHz)	28.3	28.3	GHz
On-axis EIRP Density	42.8		dBW/MHz
On-axis Transmit Antenna Gain	64.6		dBi
Off-axis Angle	41.0	0.0	deg
Off-axis Transmit Antenna Gain	-15.4		dBi
Off-Axis EIRP density	-37.2		dBW/MHz
Circular to Linear Polarization Reduction		3.0	dB
Distance between sites		9.5	km
Path Loss		141.0	dB
On-axis Receive Antenna Gain		31.0	dBi
Off-axis Receive Antenna Gain Reduction		0.0	dB
System Noise Figure		6.0	dB
Thermal Noise Density		-138.0	dBW/MHz
Interference Noise Density		-150.2	dBW/MHz
I/N		-12.2	dB
Noise Floor Degradation		0.2687	dB
ΔT/T		6.0000	%
Received Carrier Level		-117.0	dBW/MHz
Received Noise Plus Interference		-137.7	dBW/MHz
C/(N+I)		20.71	dB
Reduction due to Interference Noise		0.25	dB

Table 1 System Parameters and Results

The results in Table 1 indicate that the required separation distance between an LMDS terminal and the ViaSat gateway for the worst case alignment is 9.5 km. This is the minimum distance between an LMDS terminal and the ViaSat gateway that may require ViaSat to take measures to mitigate interference into that LMDS terminal. The actual required separation distance may be smaller depending on the characteristics of the surrounding terrain and variations in the LMDS system from the assumptions used in this analysis.

ViaSat conducted further analyses using Visualise software to perform an area analysis that accounts for the effect of the terrain surrounding ViaSat's proposed gateway antenna. The Visualise simulations determine the level of interference into an LMDS user terminal at all locations surrounding the ViaSat gateway for a given LMDS hub location. In this area analysis, the LMDS user terminal is moved in small steps to each location within the area, and the analysis is performed in successive iterations with the results recorded. Using these recorded results, Visualise generates the figures shown below to illustrate the contour boundary where the interference level from the ViaSat gateway into the LMDS user terminal exceeds the assumed 6% $\Delta T/T$ threshold.

Analyses were conducted under two separate scenarios. The first scenario is similar to the worst case analysis above in which that the LMDS hub terminal is co-sited with the ViaSat gateway, causing the LMDS user terminal to point directly at the ViaSat antenna from all locations within the area analysis. The second (and more realistic scenario) places the LMDS hub terminal at various distances away from the ViaSat gateway. In this second case, the LMDS user terminal does not point at the ViaSat gateway except for a small percentage of the locations in the area analysis, and accordingly, the affected area in each of the figures for second scenario represents a small subset of the results for the worst case of scenario 1.

Figure 1 depicts Visualise scenario 1, where the LMDS hub is co-sited with the ViaSat gateway and the LMDS user terminal always points towards the ViaSat gateway antenna. Under this scenario, the results show that the worst case required separation distance is 7.75 km.

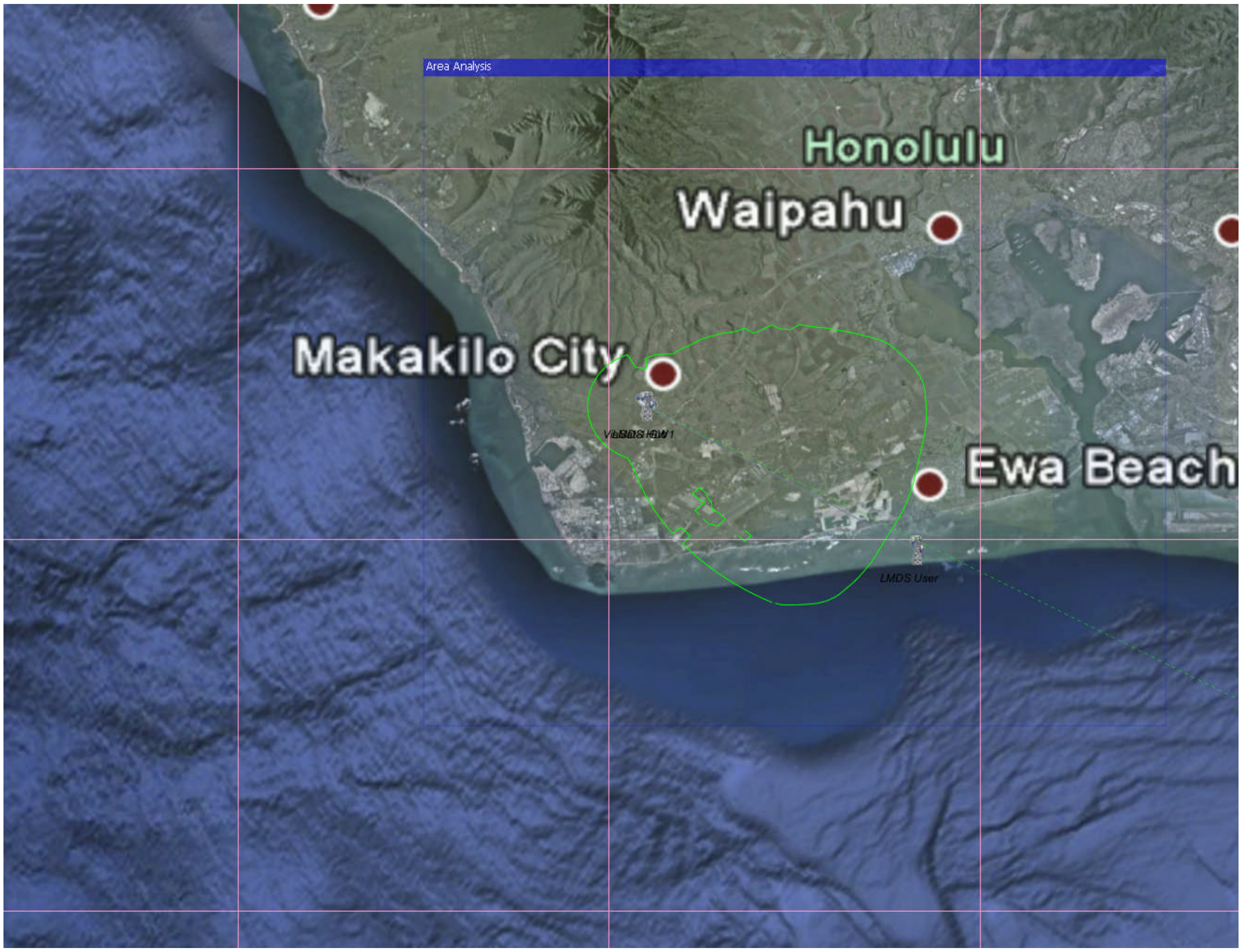

Figure 1 Visualise Scenario 1

Figure 2 depicts Visualise scenario 2a, where the LMDS hub is 0.5 km due West of the ViaSat gateway. In this scenario, the worst case required separation is 7.75 km, but due to terrain, the affected area is reduced considerably from Scenario 1.

Figure 2 Visualise Scenario 2a

Figures 3-5 illustrate variations on the second scenario in which other assumed LMDS hub locations were selected.

In figure 3, Visualise scenario 2b, the LMDS hub is located 4 km north of the ViaSat gateway and the area where the 6% ΔT/T threshold is exceeded is constrained to a narrow corridor that extends 1.7 km south of the ViaSat gateway.

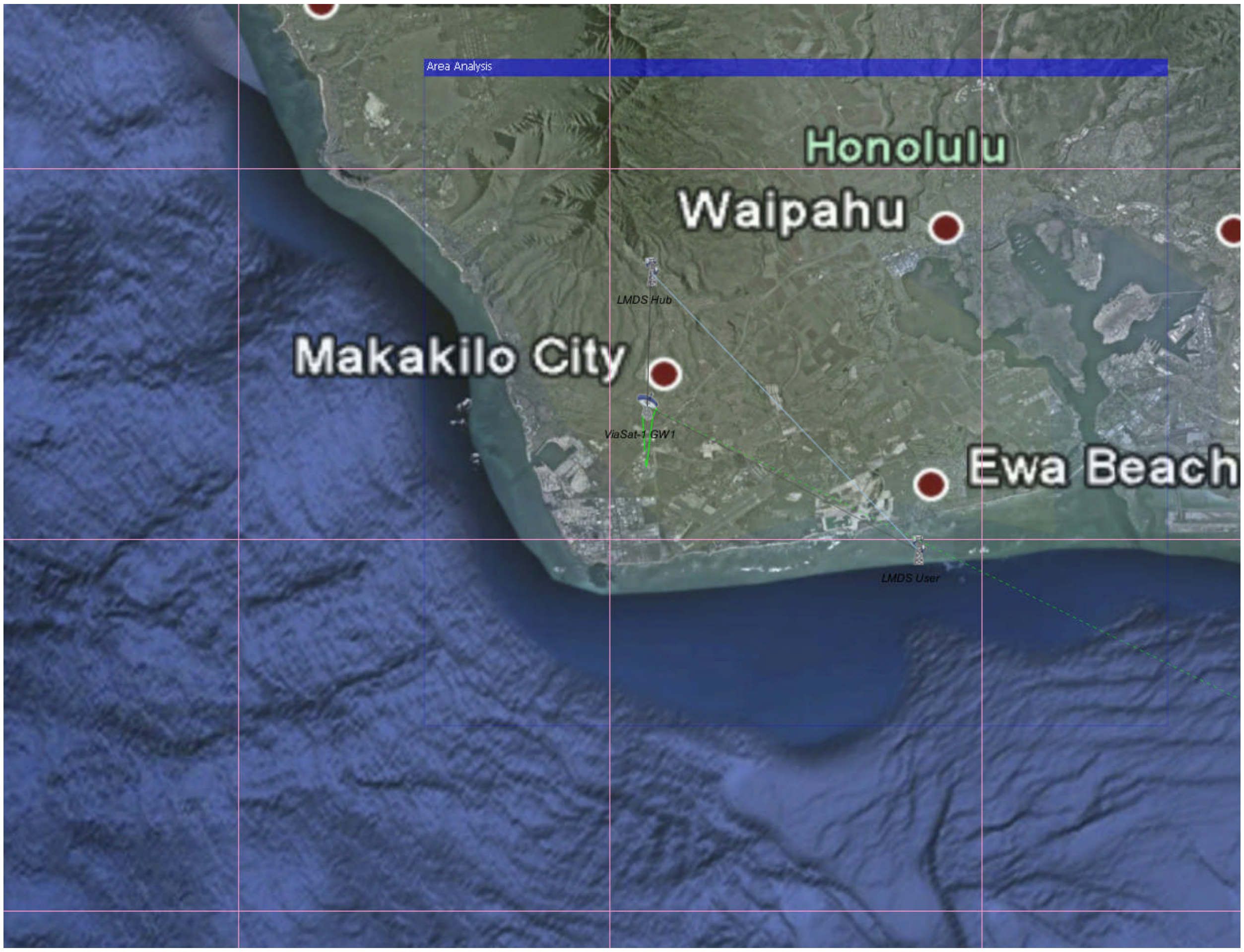

Figure 3 Visualise Scenario 2b

In figure 4, Visualise scenario 2c, the LMDS hub is located 5 km south east of the ViaSat gateway. In this case, the area where the 6% $\Delta T/T$ threshold is exceeded is virtually nonexistent.

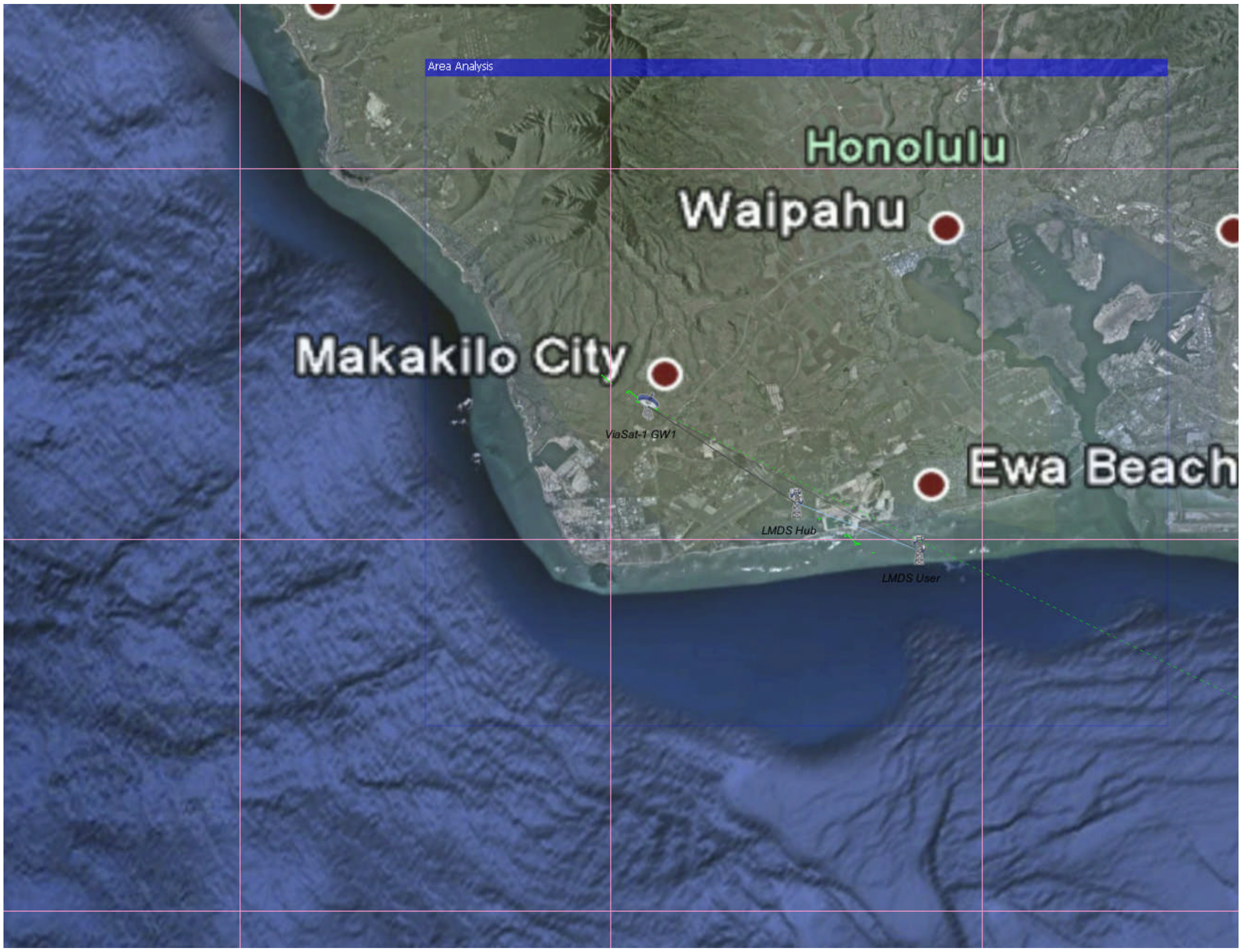

Figure 4 Visualise Scenario 2c

In figure 5, Visualise scenario 2d, the LMDS hub is located 3 km northeast of the ViaSat gateway. In this case, the area where the 6% ΔT/T threshold is exceeded consists of a very narrow sliver extending to the southwest for less than 1 km.

Figure 5 Visualise Scenario 2d