Exhibit C

RF Exposure Analysis of 1.2 m, 0.6 m, and 0.65 m Earth Station Antenna Systems

1. Introduction

This report analyzes the non-ionizing radiation levels of the three classes of Viasat, Inc (Viasat) earth station (ES) terminals that are the subject of the instant Application – 1.2 m Hawkeye™ III Lite (Hawkeye), 0.6 m Manual/Motorized FlyAway Antenna (MMT), and 0.65 m Taranis AutoAQYR™ (Taranis).

The FCC's Office of Engineering and Technology's (OET) Bulletin No. 65 specifies two separate tiers of exposure limits, based on the situation in which the exposure takes place and/or the status of the individuals who are subject to the exposure. The two tiers are General Population/Uncontrolled environment and an Occupational/Controlled environment. The operations covered by the Application would take place within a controlled environment, and any potential exposure would be of a transitory nature. Accordingly, the limits for Occupational/Controlled exposures are assumed to apply and this analysis discusses only the Maximum Permissible Exposure (MPE) limit for those types of exposures, which is a power density equal to 5 mW/cm^2 averaged over a six-minute period.

2. Earth Station Terminal Description

The ES terminals described in the Application would operate in connection with two separate Viasat networks: Surfbeam and Afterburner. Both networks employ an MF-TDMA system where any given Earth-to-space (uplink) return link channel used by user terminals to transmit data to the satellite is shared among the population of users in that beam. There are many users potentially needing to transmit data to the satellite within a given beam. Each transmitting user is scheduled a small time slot to transmit a portion of their traffic to the satellite and then in the next time slot another user transmits their data. Depending on the utilization of return channels, users may be directed to transmit in an available time slot on a different frequency channel from burst to burst.

Earth stations operating in the Surfbeam network transmit a certain percentage of time ("duty cycle") dependent on user traffic requirements. When idle, the terminal transmits only timing and system information to the network with an average duty cycle of 0.06%. During normal traffic usage the ES terminal could burst with a nominal duty cycle of up to 10% during an averaging period of six minutes. To support heavy data upload requirements such as file transfer, current network configuration allows terminals to increase their transmit duty cycle up to 30% during an averaging period of six minutes.

In the Afterburner network ES operate with variable duty cycle values dependent on traffic demands. When idle, the terminal transmits only timing and system information to the network with a duty cycle of 0.06%. In normal operation, the ES terminal transmits burst traffic to the network with a nominal duty cycle of less than 1% over an averaging period of 6 minutes. Out of an abundance of caution this analysis considers a higher duty cycle of 6.25% to demonstrate compliance with exposure limits.

In both networks, when the receive signal is lost by the ES terminal due to signal blockage, the transmitter is shut down until the receive downlink is restored. The transmitter is shutdown in less than 40 milliseconds of the loss of the downlink. Since the areas of high field strength near the reflector and the feed are very sensitive to blockage of the downlink, this “fail safe" feature minimizes the potential for human exposure in the area between the feed and reflector. If the blockage due to human exposure occurs in these areas, the downlink will be interrupted causing the transmitter to turn off almost immediately and it will remain off until the blockage is removed. After the blockage is removed, the ES terminal will have to reacquire the receive downlink and wait to be invited back into the network before the transmitter will be enabled. The complete downlink recovery time is 10 seconds. Accordingly, the average power value would be multiplied by 0.004 because the transmitter cannot transmit more than 0.4% of any rolling 30-minute period (the period over which the power density is averaged) with significant blockage near the sub reflector and between the sub-reflector and the feed.

3. Explanation of Analysis

The calculated values in Table 1, Table 2, and Table 3 (*i.e.,* those that are shaded) show how RF exposure rates are calculated using the formulae from the Office of Engineering and Technology Bulletin Number 65 (Edition 97-01) for a system with continuous (100% transmit duty cycle) transmission. The Viasat networks, however, are based on so-called “shared pipes". As described above, terminals transmit short bursts of data periodically as instructed by the network and are neither designed for nor capable of continuous transmission. Therefore, to compute the effective radiated energy of a Viasat ES terminal, the terminals’ transmitter duty cycle has been used to adjust the values calculated in accordance with Bulletin Number 65. To do this, the average power during the averaging period is calculated as the maximum transmitter peak transmit power output adjusted by the duty cycle of each mode of operation. The MPE level calculations for the area labeled “at antenna surface" are calculated based on the “fail safe" features of the Viasat ES Terminal described above.

Viasat has stated in other proceedings before the FCC a typical duty cycle of an earth station operating on a Viasat network of approximately 1%. This 1% duty cycle value is used for long-term sharing scenarios for fixed user terminals since in an MF-TDMA system user return link bursts may be directed to hop to different return channels from burst to burst depending on traffic demands to level traffic across all return link carriers. Given that the simulations are run over a long period of time, much longer than the 6 minute or 30-minute averaging window consistent with analyses using OET Bulletin No.65, the average duty cycle percentage of time bursting on any given frequency is very low and the one percent value well justified for those purposes.

4. Analysis

The following tables present the results from the radiation hazard analysis for the Hawkeye, MMT, and Taranis antennas. Yellow shaded values indicate calculated fields.

Table 1. Hawkeye Antenna

Parameter	Unit	6.25% Duty Cycle	10% Duty Cycle	30% Duty Cycle

Diameter of antenna	m	1.20	1.20	1.20
Frequency	GHz	29.00	29.00	29.00
λ (wavelength)	m	0.01	0.01	0.01
Far Field length	m	83.52	83.52	83.52
Near Field length	m	34.80	34.80	34.80
Efficiency		<1.00	<1.00	<1.00
Transmitter Gain	dBi	51.23	51.23	51.23
Max Transmitter power (at slant)	W	25.00	25.00	25.00
Min Transmitter power (at boresite)	W	25.00	25.00	25.00
Duty Cycle	%	6.25	10.00	30.00
Min Transmitter Gain (at slant)	dBi	51.23	51.23	51.23
Physical Area of the Aperture Antenna	m^2	1.10	1.10	1.10
Power Density in Far Field (Boresight Direction)	mW/cm^2	0.24	0.38	1.14
Power Density in Near Field	mW/ cm^2	<0.55	<0.88	<2.65
Power Density at Antenna Surface	mW/ cm^2	0.55	0.88	2.65

Table 2. MMT Antenna

Parameter	Unit	6.25% Duty Cycle	10% Duty Cycle	30% Duty Cycle
Diameter of antenna	m	0.60	0.60	0.60
Frequency	GHz	28.72	28.72	28.72
λ (wavelength)	m	0.01	0.01	0.01
Far Field length	m	20.68	20.68	20.68
Near Field length	m	8.62	8.62	8.62
Efficiency		<1.00	<1.00	<1.00
Transmitter Gain	dBi	45.13	45.13	45.13
Max Transmitter power (at slant)	W	25.00	25.00	25.00
Min Transmitter power (at boresite)	W	25.00	25.00	25.00
Duty Cycle	%	6.25	10.00	30.00
Min Transmitter Gain (at slant)	dBi	45.13	45.13	45.13
Physical Area of the Aperture Antenna	m^2	0.30	0.30	0.30
Power Density in Far Field (Boresight Direction)	mW/ cm^2	0.95	1.52	4.54
Power Density in Near Field	mW/ cm^2	<0.95	<1.52	<4.54
Power Density at Antenna Surface	mW/ cm^2	2.21	3.54	10.61

Table 3. Taranis Antenna

Parameter	Unit	6.25% Duty Cycle	10% Duty Cycle	30% Duty Cycle
Diameter of antenna	m	0.65	0.65	0.65
Frequency	GHz	28.20 (+/-8.95 cents)	28.20 (+/-8.95 cents)	28.20 (+/-8.95 cents)
λ (wavelength)	m	0.01	0.01	0.01
Far Field length	m	23.83	23.83	23.83
Near Field length	m	9.93	9.93	9.93
Efficiency		<1.00	<1.00	<1.00
Transmitter Gain	dBi	45.66	45.66	45.66
Max Transmitter power (at slant)	W	25.00	25.00	25.00
Min Transmitter power (at boresite)	W	25.00	25.00	25.00
Duty Cycle	%	6.25	10.00	30.00
Min Transmitter Gain (at slant)	dBi	45.66	45.66	45.66
Physical Area of the Aperture Antenna	m^2	0.30	0.30	0.30
Power Density in Far Field (Boresight Direction)	mW/ cm^2	0.81	1.29	3.87
Power Density in Near Field	mW/ cm^2	<0.81	<1.29	<3.87
Power Density at Antenna Surface	mW/ cm^2	1.88	3.01	9.04

5. Results & Conclusions

The proposed ES terminals will be located in an environment with controlled access and operated and serviced by trained personnel. During operations, the users will display cautionary signs to warn against exposure at the antenna surface and surrounding areas, no access to the reflector/feed area will be permitted when the transmitter is turned on. The above analyses demonstrate Viasat ES terminals meet the Occupational/Controlled MPE limit (5 mW/ cm^2 over 6-minute period) and will not result in exposure levels exceeding the allowable radiation exposure limits. Based on the analyses it is concluded that no hazard exists for the public when the terminals are in operation.