SES SATELLITES
(GIBRALTAR) LIMITED

17 June 2009

Federal Communications Commission
International Bureau
445 12th Street, S.W.
Washington, DC 20554

Subject: Engineering Certification of SES Satellites (Gibraltar) Ltd.

To whom it may concern:

ViaSat, Inc. ("ViaSat"), using capacity leased to our customer KVH Industries, Inc. ("KVH"),[1] is seeking authority to operate 1000 transmit/receive steerable antennas with our SES Gibraltar-licensed AMC-21 satellite at 125° W.L. for an aeronautical mobile-satellite service ("AMSS") using certain Ku-band Fixed-Satellite Service ("FSS") frequencies on a non-conforming, non-interference basis pursuant to ITU RR 5.504A. ViaSat is already authorized to operate this type of antenna for AMSS using the AMC-6 satellite at 72° W.L. (*see* File Nos. SES-LIC-20051028-01494, SES-AMD-20060314-00440, and SES-AMD-20070309-00325; Call Sign E050318) and is seeking to operate a similar network of such antennas with the AMC-21 satellite. Viasat will be operating transmit/receive ESV antennas with AMC-21 within the frequency range having center downlink frequency 11.72 GHz, center uplink frequency 14.020 GHz, 36 MHz bandwidth, horizontal polarization in the downlink, and vertical polarization in the uplink).

We understand that, as described in ViaSat's modification application, ViaSat proposes to add a new antenna type that is very similar to the currently authorized antenna. This Certification/Coordination letter covers both antenna types. Each transmit/receive reflector antenna is an aeronautical mobile-satellite service steerable antenna manufactured by ViaSat. The aperture dimensions of the reflector antenna are 29.2 cm by 29.2 cm with a transmit gain of 31.83 dBi at 14.25 GHz and a receive gain of 29.62 dBi at 11.95 GHz. These antennas will actively point to the intended satellite using a method

[1] ViaSat is the system developer, and will operate the system on behalf of KVH Industries Inc .which is the overall service provider.

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resistant to capturing and tracking adjacent satellites in conformance with Recommendation ITU-R M.1643.

When communicating with the AMC-21 satellite, we understand that ViaSat will operate its reflector antenna within the 14.0 -14.5 GHz FSS uplink band with a maximum e.i.r.p. of 39.5 dBW, and a corresponding maximum power spectral density at the antenna flange of -31.87 dBW/4 kHz (downlink band is 11.7-12.2 GHz). The sub-meter antenna is a non-conforming antenna because the off-axis gain exceeds the §25.209 antenna performance standard by a maximum of 10.25 dB in the main-lobe region. To compensate, we understand that ViaSat will reduce the effective power spectral density into each individual antenna flange such that the aggregate off-axis EIRP density is equivalent to that of a single antenna having at its flange a power density of -24.25 dBW/4 kHz, or 10.25 dB below the -14.0 dBW/4 kHz limit provided for in the FCC's rules. The nominal individual antenna flange density will be -34.64 dBW/4 kHz.

We understand that ViaSat will operate using direct sequence spread spectrum so that the aggregate off-axis e.i.r.p. transmissions, from all co-frequency AES terminals within the footprint of the satellite, are always equal to or less than that of routinely authorized VSAT transmissions. Specifically, we understand that ViaSat will operate its system so that the co-frequency aggregate off axis e.i.r.p from all AES antenna transmissions towards the intended geostationary satellite shall not exceed:

Angle off-axis	Maximum e.i.r.p. in any 4 kHz band
$1.25° \leq \Theta \leq 7.0°$	$15 - 25 \log \Theta$, dBW
$7.0° < \Theta \leq 9.2°$	-6 dBW
$9.2° < \Theta \leq 48°$	$18-25 \log \Theta$, dBW
$48° < \Theta \leq 180°$	-24 dBW

In addition, we understand that the forward downlink (hub to AES) maximum EIRP density will be 10.0 dBW/4 kHz. ViaSat will maintain the forward downlink EIRP density and the aggregate off-axis EIRP values, by maintaining tight control of the system operation, which includes:

1) maintaining antenna pointing to the intended satellite in a manor consistent with ITU-R M.1643;

2) network management that inhibits transmission within 1 second of receive link loss from same transponder;

3) a fault detection system that terminates transmissions when out of tolerance conditions (including the antenna pointing error) are detected;

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4) continuous monitoring/oversight by ground network operations center; and

5) the continuous monitoring of the number of simultaneous co-frequency transmissions made by the remote terminals, and thereby the resulting aggregate return-uplink EIRP. The congestion control algorithm manages and controls both the aggregate EIRP and the CDMA multiple access to maintain the aggregate off-axis EIRP density to within prescribed limits.

If the FCC authorizes the operations proposed by ViaSat in its application, we will include the antenna, as described above, in all future satellite network coordinations. ViaSat shall comply with all such coordination agreements reached by the satellite operators

In order to prevent unacceptable interference into adjacent satellites, we have been informed and ViaSat acknowledges that the antennas will be installed and operated in accordance with the above conditions and/or any other operational requirements specified in the FCC authority granted to ViaSat. Furthermore, ViaSat agrees that it will accept interference from adjacent satellites to the degree to which harmful interference would not be expected to be caused to an earth station employing an antenna conforming to the reference patterns defined in Section 25.209 of FCC rules. If the use of this antenna should cause unacceptable interference into other systems, ViaSat has agreed that it will terminate transmissions immediately upon notice from the affected parties.

We and ViaSat acknowledge that the use of the above non-conforming antennas has the potential to cause unacceptable interference into adjacent satellites in accordance with the FCC's 2-degree spacing policy. However, under the conditions defined above, satellites at 2° spacing or more should not experience unacceptable interference.

Sincerely,

K. Jonnalagadda 6/18/09

Krish Jonnalagadda
Manager, Spectrum Development
SES Americom
4 Research Way
Princeton NJ 08540
Tel: (609) 987 4194

Date

Acceptance by KVH Industries, Inc.

KVH testifies that the information provided to SES Gibraltar and reflected in this Affidavit letter is true and accurate to best of KVH's knowledge.

Felise Feingold

6/23/09
Date

Felise Feingold
Vice President, General Counsel
KVH Industries, Inc

Acceptance by Viasat, Inc.

ViaSat testifies that the information provided to SES Gibraltar and reflected in this Affidavit letter is true and accurate to best of ViaSat's knowledge.

Daryl Hunter

6/19/09
Date

Daryl Hunter, P.E
Director, Regulatory Affairs
ViaSat, Inc.

Acceptance by INTELSAT:

INTELSAT agrees to operation of the above antenna with the technical parameters described herein with respect to Galaxy-18 at 123°W, and Galaxy-27 at 129°W longitudes which have a nominal geocentric separation of two (2) degrees, and four (4) degrees, respectively, from AMC-21.

Jose Albuquerque

Date: 19 June 2009

Jose Albuquerque
Senior Director, Spectrum Engineering
INTELSAT

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