

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)	
)	
Viasat, Inc. Application to Modify Authority to)	File No. SES-MOD-20190212-00172
Operate Ka-band Aeronautical Antennas)	Call Sign E180006

COMMENTS OF O3B LIMITED

O3b Limited (“O3b”) submits these comments on the above-captioned application of Viasat, Inc. (“Viasat”) to modify its license to operate Ka-band aeronautical antennas by adding frequencies, including a request for nonconforming use of the 28.6-29.1 GHz and 18.8-19.3 GHz bands in which non-geostationary orbit (“NGSO”) systems such as O3b’s have sole primary status.¹ As discussed herein, Viasat’s showing confirms that its planned ESIM operations would exceed even the inappropriately generous criterion Viasat uses to determine interference to O3b’s network. Accordingly, to prevent harm to O3b, any grant of the Application must be conditioned to ensure full protection of existing and future NGSO operations by requiring Viasat, pending completion of coordination, to inhibit transmissions in the NGSO-primary spectrum during inline events with O3b.

The instant Application shares many of the same defects O3b identified with a recent Viasat filing seeking a new license for aeronautical terminals using the NGSO-primary bands, and O3b incorporates by reference herein its pleadings regarding that Viasat proposal.² Viasat acknowledges that the Commission has not authorized earth stations in motion (“ESIMs”) to

¹ Viasat, Inc., Call Sign E180006, File No. SES-MOD-20190212-00172 (the “Application”).

² See O3b Limited Petition to Defer, Call Sign E190201, File No. SES-LIC-20190411-00503, filed Aug. 23, 2019 (the “O3b E190201 Petition”); Reply of O3b Limited, Call Sign E190201, File No. SES-LIC-20190411-00503, filed Sept. 17, 2019 (the “O3b E190201 Reply”).

communicate with geostationary orbit (“GSO”) fixed-satellite service (“FSS”) spacecraft in the NGSO-primary bands, meaning a waiver of the U.S. Table of Allocations is currently required for such operations.³ In a pending proceeding, the Commission is considering a rule change to allow ESIMs to operate with GSO FSS satellites in this spectrum, but has not yet acted on that proposal, and any such authorization for GSO FSS ESIMs would be secondary to the primary operations of NGSO FSS networks like O3b’s.⁴ Accordingly, whether under the existing rules or possible future changes to Commission regulations, Viasat’s proposal to use NGSO-primary spectrum can be granted only based upon a persuasive showing that Viasat would not interfere with, and could successfully withstand interference from, current and future NGSO FSS networks.

O3b has emphasized that this compatibility demonstration is essential:

the NGSO Primary Bands are the only FSS frequencies in which NGSO systems have priority over GSO systems in the United States. NGSO systems need anchor bands in which spectrum access cannot be hindered by other services. In designing its system, O3b relied on having access to these frequencies on a primary basis, with protection from harmful interference from GSO operations. Response to the Ka-Band NGSO Processing Round Notice indicates the strong interest in establishing new NGSO systems. It is crucial that the Commission require that prospective GSO users sufficiently demonstrate and ensure that their operations in the NGSO Primary Bands will adequately protect both existing and future NGSO operators from harmful interference.⁵

³ Application, Exhibit A at 2-3.

⁴ *See id.*, Exhibit A at 3 & n.10, citing *Amendment of Parts 2 and 25 of the Commission’s Rules to Facilitate the Use of Earth Stations in Motion Communicating with Geostationary Orbit Space Stations in Frequency Bands Allocated to the Fixed Satellite Service*, Report and Order and Further Notice of Proposed Rulemaking, 33 FCC Rcd 9327 (2018).

⁵ O3b E190201 Petition at 3.

Viasat's showing on this issue is fundamentally flawed. Most significantly, although Viasat performed an evaluation of the impact of its proposed operations on the O3b network and other authorized NGSO systems, Viasat's calculations of the interference-to-noise ("I/N") ratio are premised on a criterion of 6% $\Delta T/T$ that is the trigger for coordination between co-primary operators.⁶ As O3b has explained, this criterion cannot legitimately be used to evaluate the risk of interference from a nonconforming operation into a primary operation.⁷ Viasat's use of this inappropriate interference standard undermines its repeated attempts to downplay the risk that the primary services of O3b or other NGSO operators would be adversely affected.⁸

The Viasat analysis is deficient in other respects as well, as Viasat relies on some assumptions that contribute to underestimating the interference level. For example, O3b has pointed out that it is inaccurate to assume that all O3b transmissions will be 220 MHz, resulting in a significant bandwidth advantage in the interference calculations.⁹ It is not clear from the Application whether Viasat's results here are based on an erroneous bandwidth advantage. Other parameters underlying Viasat's calculations, such as the ESIMs duty cycle, also are unjustified and seem optimistic. The Application states only that Viasat used a "typical" duty cycle for ESIMs in its analysis, without stating what value was employed or explaining how it was determined.¹⁰ Moreover, because the antenna patterns for the Viasat terminals were not readily

⁶ Application, Attachment 1 at 6 (asserting that "a reasonable benchmark to check for the presence of interference is the 6% $\Delta T/T$ coordination trigger . . . equivalent to an I/N of -12.2 dB").

⁷ O3b E190201 Reply at 2.

⁸ See, e.g., Application, Attachment 1 at 6 and Table 2 (listing simulation results for various systems based on whether an I/N of -12.2 dB would be exceeded).

⁹ O3b E190201 Reply, Annex 1 at 1.

¹⁰ Application, Attachment 1 at 5.

available in an electronic format that could be interpreted by the simulation software O3b uses,¹¹ O3b was unable to verify Viasat's results.

In any event, Viasat's own analysis confirms that its proposed use of the NGSO-primary spectrum would cause even the unjustifiably generous -12.2 dB criterion for interference to be exceeded with respect to O3b and several other NGSO networks for short periods of time.¹² Viasat also admits that interference levels could be higher still due to aggregate interference from multiple co-frequency ESIMs transmissions, such as might occur near an airport.¹³ Although Viasat asserts that short-term interference is "typically acceptable,"¹⁴ O3b and the other affected operators, rather than Viasat, are the proper entities to determine the acceptability of any interference to their networks.

In short, the record demonstrates that Viasat's proposed use of the NGSO-primary bands creates a risk of interference to existing and future O3b operations. The appropriate approach to resolve these issues is through coordination between Viasat and O3b. Viasat indicates that its Network Management System has been designed with the ability to inhibit emissions for each ESIM based on the separation angle to a given NGSO system.¹⁵ O3b asks that the Commission condition any grant of Viasat's Application to require use of this capability to protect the O3b

¹¹ O3b obtained PDF versions of the antenna patterns from the Commission's website, but these data are not easily extracted into table form for simulation purposes.

¹² Application, Attachment 1 at 6 and Table 2 (showing exceedances for Leosat, SpaceX, Telesat, and Theia NGSO systems as well as for O3b).

¹³ *Id.*, Attachment 1 at 7.

¹⁴ *Id.*, Attachment 1 at 6.

¹⁵ *Id.*, Attachment 1 at 7-8.

system unless and until Viasat successfully completes coordination of its proposed operations with O3b.

Respectfully submitted,

O3b LIMITED

Of Counsel

Karis A. Hastings
SatCom Law LLC
1317 F Street, NW, Suite 400
Washington, DC 20004

By: /s/ Will Lewis

Will Lewis
Senior Legal Counsel
O3b Limited
1129 20th St., NW, Suite 1000
Washington, DC 20006

October 25, 2019

CERTIFICATE OF SERVICE

I hereby certify that on this 25th day of October, 2019, I caused to be served a true copy of the foregoing "Comments of O3b Limited" by first class mail, postage prepaid, upon the following:

Daryl Hunter
Chief Technical Officer, Regulatory Affairs
Viasat, Inc.
6155 El Camino Real
Carlsbad, CA 92009

/s/_____

Will Lewis