

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

In the Matter of)	
)	
O3b Limited)	SAT-AMD-20161115-00116; Call Sign S2935
)	
Amendment to Application to Modify U.S.)	
Market Access Grant for the O3b Medium Earth)	
Orbit Satellite System)	

OPPOSITION AND RESPONSE OF O3B LIMITED

O3b Limited (“O3b”), hereby opposes the petitions to deny and responds to the comments submitted by other parties regarding the above-captioned O3b Amendment, which seeks U.S. market access for an expansion of O3b’s existing low-latency, high-throughput medium earth orbit (“MEO”) satellite system. As discussed below, the enhanced operations discussed in the O3b Amendment are consistent with Commission policies, and allowing O3b to address U.S. customer demand will serve the public interest. Accordingly, the Commission should grant the O3b Amendment subject to typical conditions regarding compliance with domestic and international regulatory requirements.

I. THE TELESAT PETITION TO DENY IS GROUNDLESS AND CONTRARY TO THE COMMISSION’S PRO-COMPETITIVE POLICIES

Telesat’s petition to deny¹ is unsupported by any precedent and should be dismissed. The foundation of the Telesat filing appears to be twofold: Telesat notes that some of the ITU network filings on which O3b is relying have inferior priority to certain filings

¹ Petition to Deny of Telesat Canada, File No. SAT-AMD-20161115-00116, dated June 26, 2017 (“Telesat Petition”).

underlying the Telesat proposal² and Telesat expresses dissatisfaction with the Commission’s policies for addressing in-line interference events among non-geostationary orbit (“NGSO”) systems.³ Neither of these is justification for denial of the O3b Amendment. To the contrary, withholding market access for the system changes proposed in the O3b Amendment would undermine the Commission’s public interest goals by depriving U.S. customers of the benefits of competition.

Section 25.154 of the Commission’s rules makes clear that a petition to deny a satellite application must contain “specific allegations of fact” sufficient to demonstrate that grant of the subject application “would be prima facie inconsistent with the public interest.”⁴ Telesat clearly does not meet that standard here.

The Telesat Petition implicitly recognizes that ITU priority is not a prerequisite for a grant of U.S. market access.⁵ Specifically, Telesat acknowledges that in its recent grant of authority for the OneWeb NGSO system, the Commission determined that the adoption of standard language requiring compliance with ITU coordination agreements was sufficient to address Telesat’s petition to deny the OneWeb application.⁶ O3b’s existing grant of U.S. market

² *Id.* at 3.

³ *Id.* at 2-3.

⁴ 47 C.F.R. § 25.154(a)(4).

⁵ Tellingly, Telesat acknowledges that it only has ITU priority over some of O3b’s ITU filings but still petitions the Commission to deny O3b’s entire application. *See* Telesat Petition at 3.

⁶ *Id.* at 3-4, *citing WorldVu Satellites Limited Petition for a Declaratory Ruling Granting Access to the U.S. Market for the OneWeb NGSO FSS System*, File No. SAT-LOI-20160428-00041, Order and Declaratory Ruling, FCC 17-77 (rel. June 23, 2017).

access likewise contains an ITU coordination condition,⁷ and O3b has no objection to inclusion of similar language in a Commission grant of the O3b Amendment. As in the OneWeb proceeding, employment of a standard coordination condition will resolve any legitimate Telesat concerns regarding ITU priority matters.

Telesat's complaints about Commission policies for managing in-line interference events among NGSO operators can similarly be addressed with a straightforward condition requiring adherence to rules adopted pursuant to the pending NGSO NPRM.⁸ Telesat repeats here the arguments it made in the NGSO rulemaking that a single separation angle is insufficient to account for all in-line events.⁹ O3b agrees with this observation and in its own NGSO NPRM comments has proposed a range of angular separations for defining in-line events.¹⁰ Telesat fails to substantively address O3b's proposal, or any other sharing methods available, in its Petition.¹¹ Instead, Telesat admits that any grant of the O3b Amendment will likely be conditioned on compliance with the final rules for co-frequency NGSO operations adopted in the NGSO NPRM proceeding.¹² Such a condition will ensure that O3b's future system conforms to Commission policies on NGSO-NGSO spectrum sharing, mooted the concerns Telesat raises on this point.

⁷ See *O3b Limited*, Call Sign S2935, File Nos. SAT-LOI-20141029-00118 & SAT-AMD-20150115-00004, grant-stamped Jan. 22, 2015, corrected and re-issued June 2, 2015, Attachment to Grant at 1, ¶ 2.

⁸ *Update to Parts 2 and 25 Concerning Non-Geostationary, Fixed-Satellite Service Systems and Related Matters*, Notice of Proposed Rulemaking, IB Docket No. 16-408, FCC 16-170 (rel. Dec. 15, 2016) ("NGSO NPRM").

⁹ See Telesat Petition at 3.

¹⁰ Reply Comments of SES S.A. and O3b Limited in IB Docket No. 16-408, filed Apr. 10, 2017 ("SES/O3b NGSO NPRM Reply Comments") at 22-23.

¹¹ Telesat Petition at 3.

¹² *Id.* at 2 n.5.

Granting the O3b Amendment subject to conditions will also facilitate competition among NGSO systems, consistent with long-standing Commission objectives. Indeed, O3b believes that its proposals for spectrum sharing discussed above would resolve Telesat's concerns regarding coordination without requiring the Commission to deny O3b's, or any other operator's, application. In contrast, Telesat has filed a petition to deny not only the O3b Amendment, but every Ka-band processing round application on public notice as well as the triggering OneWeb application. Telesat's apparent view that it should be the only Ka-band NGSO system permitted to serve U.S. customers is clearly contrary to the public interest and is at odds with established Commission policy favoring the competitive deployment of multiple NGSO systems.¹³ To achieve a pro-competitive outcome, the Commission must summarily dismiss the Telesat Petition and take steps to ensure that O3b and other Ka-band NGSO system proponents are given the opportunity to serve U.S. customers.

II. THE COMMISSION SHOULD DECLINE TO IMPOSE ON O3B THE UNREASONABLE CONDITIONS REQUESTED BY SPACEX

The SpaceX Comments¹⁴ provide no rationale for the imposition of onerous conditions on O3b. SpaceX misleadingly suggests that the design of the planned O3b inclined orbit system ("O3bI"), whose MEO altitude and beam steerability enable coverage over a large geographic area, will cause prolonged and frequent in-line events with the planned SpaceX constellation.¹⁵ In fact, however, the number and duration of in-line events between any two

¹³ *Rulemaking to Amend Parts 1, 2, 21, and 25 of the Commission's Rules to Redesignate the 27.5-29.5 GHz 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, CC Docket No. 92-297, 12 FCC Rcd 22310 (1997) at 22328, ¶ 43.

¹⁴ Comments of Space Exploration Technologies Corp., File No. SAT-AMD-20161115-00116, dated June 26, 2017 ("SpaceX Comments").

¹⁵ *Id.* at 2.

systems is a simple function of geometry given each system's design parameters. SpaceX's proposal to deploy 4,425 satellites and selection of low earth orbit ("LEO") altitudes make in-line events with O3bI and other NGSO systems inevitable. SpaceX must accept the consequences of its own design choices and be prepared to coordinate with other systems if it hopes to deploy a constellation of this scale.

In addition to improperly attempting to shift the responsibility for in-line events involving the proposed SpaceX system, SpaceX also mischaracterizes the impact of such events. In particular, SpaceX suggests that during in-line events between a SpaceX satellite and another NGSO system's spacecraft, both operators will routinely need to default to band segmentation.¹⁶ This discussion ignores one of the key spectrum sharing measures that SpaceX touted in its own application – the ability to rely on satellite diversity to avoid a potential in-line event.¹⁷

Moreover, SpaceX relies on worst-case scenario predictions to propose conditions on O3b's operations without taking into account the possibility that SpaceX's concerns can be successfully addressed through coordination.¹⁸ As O3b noted in its Amendment, the downlink equivalent power flux density ("EPFD") and uplink Equivalent Isotropically Radiated Power ("EIRP") levels for both its equatorial and inclined constellations are compliant with Article 22

¹⁶ *Id.* at 2, 4.

¹⁷ *See* Space Exploration Holdings, LLC, File No. SAT-LOA-20161115-00118, Technical Attachment at 36 ("With over 4,400 satellites, the SpaceX System will provide multiple NGSO satellites in the field of view of any given earth station. Where appropriate, the system will have the intelligence to select the specific satellite that would avoid a potential in-line interference event with GSO and other NGSO operations.").

¹⁸ *See* SpaceX Comments at 7 ("The Commission should also consider whether it would be appropriate to impose additional conditions to address this potential interference and enhance the potential for efficient spectrum sharing.").

of the International Telecommunication Union (“ITU”) Radio Regulations.¹⁹ The O3b system meets the Article 22 EPFD limits, and O3b has no objection to imposition of a condition requiring O3b to conform to the rules adopted in the pending NGSO NPRM.²⁰ However, other issues raised by SpaceX – such as the claim that O3b’s earth stations *may* degrade a LEO satellite’s ability to receive uplink signals²¹ – are best addressed through the coordination process rather than by prematurely imposing restrictive conditions as part of a future O3b grant.

The Commission must also reject SpaceX’s suggestion that O3b should provide certain technical and operational characteristics, such as real-time information on the steering angle of O3b’s beams.²² Contrary to SpaceX’s claims, this information is not necessary to complete coordination or for the two systems to share spectrum. SpaceX provides no precedent to justify its request for this information, which is highly commercially sensitive, nor does SpaceX volunteer to provide real-time beam steering information for its own system. Under these circumstances, there is no basis for the Commission to require O3b to share this information with SpaceX or any other NGSO applicant.

III. SPACE NORWAY PROVIDES NO JUSTIFICATION FOR ITS PROPOSED SUPER-PRIMARY STATUS FOR ITS HEO SYSTEM

The Commission should also reject Space Norway’s attempt to evade its sharing obligations with respect to other NGSO systems. Space Norway argues that the inflexibility of its system design, with a single highly elliptical orbit (“HEO”) satellite, should grant it a sort of

¹⁹ O3b Amendment, Technical Annex at 13-19.

²⁰ *See* SpaceX Comments at 7.

²¹ *Id.* at 4.

²² *Id.* at 3.

super-primary status, proposing that O3b and other systems take on the entire burden of avoiding in-line interference events.²³ Space Norway provides no public interest reason why the Commission should shift all of the in-line interference mitigation responsibility burden to O3b, rather than simply relying on inter-system coordination between the parties to develop mutually acceptable sharing techniques. Nor does Space Norway justify its proposal to import EPFD thresholds designed to protect geostationary orbit (“GSO”) spacecraft into the NGSO-NGSO sharing realm and impose them on O3b – Space Norway’s conclusory assertions that this *de facto* super-primary status for its system will benefit MEO operators and the public interest are wholly unsupported.²⁴

The SES/O3b comments in response to the NGSO NPRM demonstrate that the Commission should not adopt coordination rules that favor one system design over another to avoid conferring unfair competitive coordination advantages on specific operators.²⁵ Instead, Commission policies should encourage good faith coordination, with a level playing field for all NGSO operators. O3b urges the Commission to continue to promote such policies and to reject Space Norway’s proposal to subject O3b to additional requirements to protect the Space Norway HEO system.

²³ Comments of Space Norway AS, File No. SAT-AMD-20161115-00116, dated June 26, 2017 (“Space Norway Comments”) at 4. Space Norway made similar arguments in comments on the applications of Audacy Corporation; LeoSat MA, Inc.; Space Exploration Holdings, LLC; Theia Holdings A, Inc.; and ViaSat, Inc.

²⁴ Space Norway Comments at 4.

²⁵ SES/O3b NGSO NPRM Reply Comments at 21-22.

IV. O3B SUPPORTS REASONABLE MEASURES TO ADDRESS THE HUGHES AND VIASAT CONCERNS ABOUT PROTECTING GSO OPERATIONS

O3b agrees with Hughes²⁶ and ViaSat²⁷ that the Commission must develop effective regulatory measures and enforcement mechanisms to protect GSO satellites from the potential for aggregate interference from multiple NGSO systems. O3b and its parent company raised similar concerns in their comments on the applications of other parties in the Ku/Ka-band NGSO processing round and in response to the NGSO NPRM.²⁸ To address these issues, O3b proposes that the Commission include in any grants of these applications conditions that would: 1) incorporate applicable aggregate EPFD limits; 2) require compliance with any rules adopted to address this issue in the pending NGSO NPRM; and 3) make clear that the authorization is subject to modification as necessary to keep aggregate interference levels within the specified limits. This approach is consistent with the measures discussed by Hughes.²⁹

However, the Commission must reject the transparently self-serving ViaSat Petition, which seeks denial of all the Ku/Ka-band NGSO processing round applications except ViaSat's own.³⁰ As SES and others have explained, ViaSat's NGSO system application raises unique and novel interference concerns for GSO systems.³¹ In contrast, ViaSat presents no

²⁶ Hughes Networks Systems, LLC Comments, File Nos. SAT-PDR-20161115-00108 *et al.*, dated June 26, 2017 ("Hughes Comments") at 2-3.

²⁷ Petition to Deny or Impose Conditions of ViaSat, Inc., File Nos. SAT-LOA-20161115-00117, *et al.*, dated June 26, 2017 ("ViaSat Petition") at 8-9.

²⁸ See Comments of SES S.A. and O3b Limited, File Nos. SAT-PDR-20161115-00108 *et al.*, dated June 26, 2017 ("SES/O3b Comments") at 3-6; Comments of SES S.A. and O3b Limited in IB Docket No. 16-408, filed Feb. 27, 2017 at 21; SES/O3b NGSO NPRM Reply Comments at 6 n.21.

²⁹ See Hughes Comments at 3.

³⁰ ViaSat Petition at 1-2, 10.

³¹ See SES/O3b Comments at 5; Hughes Comments at 3-4.

support for its suggestion that the O3b Amendment is subject to denial based on aggregate EPFD compliance issues.

V. CONCLUSION

For the foregoing reasons, the Commission should dismiss the petitions to deny the O3b Amendment and reject requests to impose unduly restrictive and unwarranted conditions on O3b. The Commission should continue to develop regulations and mechanisms to ensure that GSO systems are protected from aggregate interference from multiple NGSO systems and that such NGSO systems can coexist, but must do so without unnecessarily burdening NGSO operators or delaying deployment.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that on this 7th day of July, 2017, I caused to be served a true copy of the foregoing "Opposition and Response of O3b Limited" by first class mail, postage prepaid, to the following:

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