

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

In the Matter of	)	
	)	
Mitigation of Orbital Debris in the New	)	IB Docket No. 18-313
Space Age	)	
	)	

**COMMENTS OF VIASAT, INC.**

Viasat, Inc. (“Viasat”) submits these comments in response to the Commission’s Notice of Proposed Rulemaking in the above-captioned proceeding reexamining the Commission’s framework for mitigating orbital debris risks.<sup>1</sup>

**I. INTRODUCTION AND SUMMARY**

Viasat is a leading provider of satellite-based broadband services to consumer, enterprise, and government users. Viasat’s innovative Ka band satellite designs have revolutionized the provision of broadband services over satellite by significantly advancing their quality and reducing the “cost per bit” of delivering service, making it possible to provide high-speed satellite broadband connections that are comparable to what consumers have come to expect for terrestrial broadband services. Viasat’s services are provided using its three currently operating GSO satellites—ViaSat-1, ViaSat-2 and WildBlue-1—and Viasat has plans to deploy additional GSO and NGSO spacecraft around the world in the next few years. Viasat has made substantial investments in these operating and planned networks, and thus has a keen interest in the Commission’s vitally important initiatives to preserve safety, and to protect assets and investments, in space.

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<sup>1</sup> See *Mitigation of Orbital Debris in the New Space Age*, IB Docket No. 18-313, Notice of Proposed Rulemaking and Order on Reconsideration, FCC 18-159 (rel. Nov. 19, 2018) (“*Notice*”).

This proceeding represents the Commission’s first comprehensive review of the orbital debris requirements in well over a decade. Since the current rules were adopted in 2004, the operating environment has evolved considerably. As the Commission recognizes, the proposed deployments of large satellite constellations and the proliferation of small satellite constellations materially increase the potential for orbital debris and will have a broad impact on the satellite industry as a whole.<sup>2</sup> Therefore, Viasat agrees that the time is ripe to revisit the Commission’s regulatory framework aimed at mitigating the risks of orbital debris.

Viasat urges the Commission to maintain its rules allowing non-U.S.-licensed satellite operators seeking U.S. market access to demonstrate that the operator’s debris mitigation plans for the satellite are subject to direct and effective oversight by another administration. Any indemnification or insurance requirements that the Commission may consider in this proceeding should not apply to non-U.S.-licensed system operators. Moreover, the Commission should ensure that any new or modified rules adopted in this proceeding are practical and not overly burdensome to implement. For instance, the Commission’s proposal to require encryption of telemetry, tracking and command (“TT&C”) communications should apply narrowly only to those functions and components that serve the purpose of securing satellite control operations. Requiring encryption of more than command transmissions to a satellite would only serve to increase the costs of the satellite without any benefits to debris mitigation.

Further, the Commission’s proposal to adopt a requirement that satellite operators coordinate TT&C operations for orbit raising is consistent with current industry practices, and is unlikely to impose material costs or burdens. Finally, Viasat supports the Commission’s

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<sup>2</sup> See *id.* at ¶¶ 1, 9.

proposal to adopt formal procedures for GSO satellite licensees to seek license term extensions for a period of no more than five years at a time.

## **II. NON-U.S.-LICENSED SATELLITES SHOULD CONTINUE TO BE SUBJECT TO THE CURRENT APPLICATION REQUIREMENTS**

Viasat supports the Commission's proposal to allow non-U.S.-licensed satellite operators seeking U.S. market access to continue to satisfy the orbital debris mitigation disclosure requirements by showing that the satellite system's debris mitigation plans are subject to direct and effective regulatory oversight by another administration.<sup>3</sup> U.S. market access applicants currently can demonstrate that another administration has such oversight by submitting an English language version of the debris mitigation rules or regulations of that administration and indicating the current status of that administration's review of its debris mitigation plans.<sup>4</sup> In addition, the Commission's current practice is to condition grants of market access upon a demonstration that the operator has received a launch and space activities license from that administration.

Viasat urges the Commission to continue to apply these procedures in approving market access by non-U.S.-licensed systems. Where an applicant can demonstrate that another administration has an active space policy and will take responsibility for registering the space object with the United Nations Register of Objects Launched into Outer Space, it is unnecessary for the Commission to expend additional administrative resources to conduct a more detailed review or impose additional requirements.

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<sup>3</sup> *Id.* at ¶ 87; *see also* 47 C.F.R. § 25.114(d)(14)(v).

<sup>4</sup> *See Mitigation of Orbital Debris*, Second Report and Order, 19 FCC Rcd 11567 ¶ 95 (2004) ("2004 Orbital Debris Order").

Furthermore, requiring the operator of a non-U.S.-licensed system to commit to additional undertakings in the U.S. process, on top of the requirements to which that operator will already be subject pursuant to another administration's oversight, would unfairly disadvantage non-U.S. systems, and as a result would impede the deployment of competitive services in the United States. Therefore, Viasat urges the Commission to ensure that any new rules that are adopted in this proceeding would not impose duplicative requirements on non-U.S.-licensees.

For instance, in the *Notice*, the Commission asks whether satellite licensees should indemnify the United States against the costs associated with claims brought against the United States related to the licensed facilities and activities, and asks whether such requirements should be limited to U.S.-licensees.<sup>5</sup> As the Commission acknowledges, other administrations already impose indemnification or insurance requirements on operators of systems within their licensing jurisdiction.<sup>6</sup> Leaving aside whether the Commission has the statutory authority to impose any such indemnification requirements in the first place, applying such requirements to non-U.S.-licensees subject to another administration's oversight would be duplicative in many cases and would unduly burden these operators, which could limit or delay services in the U.S. Therefore, to the extent the Commission adopts an indemnification requirement, it should not apply to non-U.S.-licensed system operators.<sup>7</sup>

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<sup>5</sup> *Notice* at ¶ 78.

<sup>6</sup> *Id.* at ¶ 80 & n.181.

<sup>7</sup> *See id.* at ¶ 79 (seeking comment on whether indemnification requirements should be limited to U.S.-licensees).

### **III. ANY ADDITIONAL REQUIREMENTS SHOULD BE PRACTICAL TO IMPLEMENT AND CONSISTENT WITH PROMOTING CONTINUED INVESTMENT**

In general, Viasat supports the Commission's efforts to update and reinforce its existing disclosure and operational requirements to keep pace with recent advances in satellite technologies and evolving operating challenges in an ever-changing environment. Maintaining suitable orbital debris rules advances the public interest by preserving and protecting investments in space, and maintaining the reliability and availability of critically important satellite services. However, in its assessment of the proposed modifications to the existing regulatory framework for mitigating orbital debris risks, the Commission should consider whether the proposals are practical to implement and ensure that the rules as modified are not unduly burdensome. Further, the benefits of certain satellite design requirements and technical capabilities for avoiding or reducing orbital debris should be carefully balanced against the potential costs.

These considerations inform Viasat comments below on the specific proposals in the *Notice* regarding TT&C encryption, orbit raising maneuvers, and GSO satellite license extensions.

#### **A. TT&C Encryption**

The Commission asks in the *Notice* whether it should adopt encryption requirements for telemetry, tracking and command communications for certain classes of satellites or for satellites with certain capabilities, such as those having propulsion systems.<sup>8</sup> The Commission suggests that adopting such requirements would be unlikely to have a practical impact for most satellite systems because many operators already encrypt satellite communications.<sup>9</sup> Viasat urges that

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<sup>8</sup> *Notice* at ¶ 75.

<sup>9</sup> *Id.*

any encryption requirements considered in this proceeding be narrowly tailored to target risks relating to orbital debris.

As a threshold matter, encryption capabilities that operators may implement on communications links to ensure protection of data and other content delivered over the network may not be directly employed by TT&C links, as these different types of communications utilize different hardware, network equipment and technologies. Therefore, the Commission should not assume that any costs or burdens resulting from the adoption of TT&C encryption requirements would be minimal simply because there are other encryption technologies used within the satellite network.

Furthermore, telemetry, tracking and command are distinct functions, each enabled by separate components of the satellite network, and which do not all need to be encrypted to prevent the spacecraft from being commandeered by unauthorized parties. Viasat agrees that encryption of command signals transmitted to a satellite would directly serve the purpose of securing satellite control operations, which ultimately could reduce the potential for collisions. Therefore, the benefits of such a requirement could justify the costs of implementing such capabilities, and the Commission should continue to explore limited requirements of this nature in this proceeding. In contrast, access to telemetry and tracking data streams from a satellite would not result in any ability to control the physical operations of the spacecraft, and thus, encryption of these communications are unrelated to mitigating the risk of collisions. Indeed, the Commission acknowledges in the *Notice* that telemetry marker signals could be used as an identifier to distinguish a satellite from others,<sup>10</sup> thus recognizing that not all such signals should necessarily be encrypted. Although operators may choose to encrypt some or all telemetry and

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<sup>10</sup> See *id* at ¶ 36.

tracking signals, mandating that these elements of TT&C be encrypted would only serve to increase the costs of designing and building spacecraft without any corresponding public interest benefits.

Similarly, the Commission should assess whether there are risks to flight safety if command signals to satellites without propulsion capabilities were unencrypted. While Viasat does not take a position on that particular aspect of the TT&C encryption proposal at this time, Viasat urges the Commission to weigh carefully the costs and burdens of requiring encryption in such cases, against the potential benefits related to mitigating orbital debris risks.

## **B. Coordination of Orbit Raising Maneuvers**

Currently, the Commission's rules specify that Commission authorizations for GSO satellites include authority for transmissions in the authorized TT&C frequencies "in connection with short-term, transitory maneuvers directly related to post-launch, orbit-raising maneuvers" on a non-interference, non-protected basis.<sup>11</sup> In the *Notice*, the Commission proposes to require TT&C operations during orbit raising to be coordinated between satellite operators as necessary to avoid interference events, rather than on a non-interference, non-protected basis.<sup>12</sup>

As a general matter, satellite operators typically coordinate TT&C operations for both on-station and orbit raising operations. Therefore, the Commission's proposal is consistent with current practices in the industry, and the proposed rule is unlikely to impose any material changes or costs to operators. The Commission should recognize, however, that coordination for orbit raising is usually conducted on an informal basis (*i.e.*, through e-mail correspondence rather than a formal, written agreement). In Viasat's experience, the informal coordination process has

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<sup>11</sup> 47 C.F.R. § 25.282.

<sup>12</sup> *Notice* at ¶ 71.

worked well, and there is no need to impose specific parameters or requirements for the coordination process in this context.

### **C. GSO Satellite License Extensions**

The Commission proposes to adopt a formal process for GSO satellite licensees to seek an extension of a license term.<sup>13</sup> Currently, the Commission's rules do not address GSO satellite license renewals. Instead, in practice, licensees file modification applications seeking to continue to operate the satellite on a short-term basis, and often request successive extensions to allow continued operations of a satellite that is still able to provide service beyond the initial license term. Because the rules do not specify the procedures or informational requirements for such requests, licensees typically consult with Commission staff to confirm the appropriate application processes, and the information and documentation that are needed to support the requested extension.

Viasat supports the Commission's proposal to codify its current practices for extending the license term of GSO satellites. Establishing formal procedures and specifying the necessary information for such filings would provide certainty and clarity to GSO operators, and would be more efficient than the existing *ad hoc* process. License extensions are necessary to allow GSO licensees to continue to meet customer needs and to make efficient use of the satellite's full useful life, which often exceeds both the initial license term and the original design life specified in the satellite manufacturing agreement. Viasat also agrees that the Commission should limit such license extensions to five years per extension request.

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<sup>13</sup> *Id.* at ¶ 63.



#### IV. CONCLUSION

For the foregoing reasons, Viasat urges the Commission to ensure that any rules adopted in this proceeding provide certainty and flexibility to satellite operators in implementing the Commission's orbital debris mitigation requirements. In addition, the Commission should carefully weigh the costs and burdens of any new requirements against their potential for effectively mitigating orbital debris risks.

Respectfully submitted,

/s/

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