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September 19, 2017

**VIA ELECTRONIC FILING**

Marlene H. Dortch  
Secretary  
Federal Communications Commission  
445 12th Street, SW  
Washington, DC 20554

**Re: ViaSat, Inc., *Ex Parte* Submission, Update to Parts 2 and 25 Concerning Non-Geostationary, Fixed-Satellite Service Systems and Related Matters, IB Docket No. 16-408**

Dear Ms. Dortch:

ViaSat, Inc. writes to express concerns with respect to portions of the draft order circulated by the Commission on September 7, 2017 in this proceeding (the “*Draft Order*”).<sup>1</sup>

The *Draft Order* would update the service and technical rules applicable to non-geostationary-satellite orbit (“NGSO”) operations in the Ka band in order to facilitate the introduction of a new class of NGSO systems. While ViaSat appreciates the Commission’s efforts in this regard, certain aspects of the *Draft Order* are problematic. In particular, the effective power flux density (“EPFD”) limits reflected in the *Draft Order* would afford inadequate protection to geostationary-satellite orbit (“GSO”) networks and leave them vulnerable to harmful interference.

As the Commission has consistently recognized, NGSO systems and GSO networks can coexist successfully, but only if they operate within a technical framework that is appropriately designed to facilitate such coexistence. EPFD limits play a central role in achieving this objective by limiting the unwanted energy created by co-frequency NGSO operations. Notably, EPFD limits are the *only* mechanism proposed by the *Draft Order* to ensure that GSO networks are protected from NGSO operations. For this reason, it is especially important that the Commission adopt EPFD limits that are effective in managing the interference environment that is created both by individual NGSO systems, as well as by aggregate co-frequency use by multiple NGSO systems. No aggregate EPFD limits currently exist at the ITU in the uplink direction in the Ka band, and nothing in the *Draft Order* fills this void.

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<sup>1</sup> See FCC-CIRC1709-04 (“*Draft Order*”).

Moreover, the *Draft Order* would adopt ineffective and outdated individual EPFD limits that would leave modern GSO networks unprotected from at least some types of harmful interference caused by NGSO operations. More specifically, the *Draft Order* would apply the individual (a/k/a “single entry”) EPFD limits found in Article 22 of the ITU Radio Regulations to the Ka band, adopted by the ITU almost 20 years ago, and not even remotely developed with reference to the number and nature of NGSO systems that are now contemplated. Indeed, as ViaSat has explained previously, those individual limits were adopted at a time when very different GSO and NGSO technologies were prevalent, and very different assumptions about the nature and extent of NGSO operations were made.<sup>2</sup>

There is no basis on which to conclude that those same limits would be effective—or that the lack of aggregate EPFD limits will be tolerable—in today’s expected Ka-band operating environment. Currently before the Commission are proposals for ten Ka-band NGSO systems, in addition to OneWeb’s recently authorized system, incorporating *thousands* of satellites—all operating simultaneously, with their emissions combining in ways that are difficult to fully anticipate. Tellingly, the Commission itself recognizes that the Article 22 EPFD limits may not appropriately account for the evolution of GSO technologies and operating conditions; as the *Draft Order* explicitly recognizes, “these limits were not developed with the most advanced modern GSO networks in mind.”<sup>3</sup> Indeed, nor were they developed with modern NGSO systems in mind.

Under these circumstances, the decision reflected in the *Draft Order*—namely, to adopt Article 22 EPFD limits that have not been substantiated—is not sustainable. That decision is particularly troubling given record submissions underscoring the critical need to establish effective EPFD limits at the outset, given the central role that such limits necessarily will play in protecting GSO networks from NGSO operations. In addition to the analysis ViaSat has placed on the record during the formal comment cycle, in just the past few weeks:

- EchoStar and Hughes Network Systems explained that the ITU’s limits “will likely be insufficient to protect GSO FSS operations” and stressing the need for the Commission to develop aggregate EPFD limits for the Ka band to address anticipated interference issues in the Ka band.<sup>4</sup>

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<sup>2</sup> Comments of ViaSat, Inc., IB Docket No. 16-408, at 12, 18 (Feb. 27, 2017) (“ViaSat Comments”); Reply Comments of ViaSat, Inc., IB Docket No. 16-408, at 7-8, 13-18 (Apr. 10, 2017) (“ViaSat Reply Comments”).

<sup>3</sup> *Draft Order* ¶ 35; *see also* ViaSat Comments at 12; ViaSat Reply Comments at 2.

<sup>4</sup> *See* Letter from EchoStar Satellite Operating Corporation and Hughes Network Systems, LLC to FCC, IB Docket No. 16-408 (Sept. 1, 2017).

- Intelsat urged the Commission to adopt procedures to independently verify whether NGSO applicants have complied with applicable EPFD limits, instead of simply relying on the ITU's conclusions with respect to such compliance, given identified flaws in the ITU's evaluation procedures and the critical role that EPFD compliance plays in protecting GSO operations.<sup>5</sup>
- OneWeb filed an *ex parte* letter identifying issues with the EPFD compliance showing submitted by certain NGSO applicants and expressing concerns that if even "one NGSO FSS system is allowed to exceed applicable single-entry EPFD limits . . . GSO systems [could] be negatively impacted."<sup>6</sup> This statement, and OneWeb's letter more generally, demonstrate that even NGSO proponents that support the adoption of the existing ITU Article 22 EPFD limits (like OneWeb) acknowledge the challenges inherent in applying those limits.
- OneWeb's *ex parte* letter also highlights the critical importance of establishing appropriate EPFD limits *now*, before NGSO systems are fully designed and implemented. As OneWeb observes, "[s]ystem design for EPFD compliance is one of the first steps an NGSO operator must undertake and it will be very hard to re-engineer into systems at a later date."<sup>7</sup>

Notwithstanding the well-documented flaws in the decades-old ITU Article 22 EPFD limits for the Ka band, and the Commission's own acknowledgment that those limits do not account for the characteristics of modern GSO networks, the *Draft Order* would adopt those limits without any attempt to correct or supplement them (*e.g.*, to address issues related to managing aggregate uplink interference). The *Draft Order* suggests that reliance on flawed Article 22 EPFD limits is appropriate because: (i) ViaSat has not proposed any new EPFD limits; and (ii) in the Commission's view, it would not be advisable to remain without Ka-band EPFD limits pending the development of better limits.<sup>8</sup> Neither explanation bears scrutiny.

As an initial matter, the Communications Act charges the *Commission* with managing the use of the radiofrequency spectrum—including through the adoption of appropriate service and technical rules—so as to minimize the potential for harmful interference.<sup>9</sup> The Commission has fulfilled this responsibility by requiring applicants to demonstrate their ability to function within the expected operating environment without causing harmful interference to other operators.

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<sup>5</sup> See Letter from Intelsat License LLC to FCC, IB Docket No. 16-408 (Sept. 15, 2017).

<sup>6</sup> Letter from WorldVu Satellites Limited to FCC, IB Docket No. 16-408 (Sept. 10, 2017).

<sup>7</sup> *Id.*

<sup>8</sup> *Id.*

<sup>9</sup> See, *e.g.*, 47 U.S.C. § 303(f).

Thus, for example, GSO applicants are required to demonstrate compliance with the Commission's two-degree spacing policies. The Commission's obligations are no less pronounced in the NGSO context.

To the extent that suitable EPFD limits do not yet exist for the "next-generation" NGSO systems that are the subject of this rulemaking proceeding, it is the Commission's obligation to develop them (including through a rulemaking proceeding, as ViaSat and other parties have suggested<sup>10</sup>). The Commission cannot sidestep this obligation by asserting that ViaSat (or any other operator) has failed to do solve the problem, particularly where, as here, the Commission acknowledges the very real concerns raised by ViaSat and others with respect to the inadequacy of the ITU EPFD limits. *Nothing* compels the Commission to authorize NGSO systems to operate under flawed EPFD limits simply because no other limits have been developed yet. The Commission has many other options. For example, the Commission could authorize NGSO systems subject to the outcome of a rulemaking proceeding where suitable EPFD limits—including aggregate EPFD limits and an appropriate means of applying, apportioning, and enforcing such aggregate limits—are adopted.

Regardless of the EPFD limits ultimately adopted by the Commission, it is essential that the *Commission* evaluate whether the currently proposed Ka-band NGSO systems would comply with those limits. Similarly, the Commission should allow other interested parties an opportunity to confirm such compliance, using appropriate technical data furnished by the applicant, as part of the system authorization process. The Commission should *not* rely on the ITU to evaluate EPFD compliance—the approach reflected in the *Draft Order*. This would be tantamount to "outsourcing" a critical regulatory function assigned to the Commission by the Communications Act, and would be particularly problematic given the documented flaws with the existing ITU EPFD limits and the ITU's means for applying those limits, and the total absence of any mechanism for addressing aggregate EPFD uplink emissions.

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<sup>10</sup> ViaSat urged the Commission to initiate a process to develop more robust EPFD limits, and a means to effectively apply those limits to all NGSO systems it allows to serve the United States—including limits that address the potential for *aggregate* interference into GSO operations. *See* ViaSat Comments at 13-15; ViaSat Reply Comments at 13-15.

For these reasons, ViaSat urges the Commission to revise the *Draft Order* in a manner consistent with these views and those in ViaSat's prior submissions in this proceeding.

Respectfully submitted,

/s/

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