



November 10, 2021

BY ELECTRONIC FILING

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
45 L Street NE
Washington, DC 20554

Re: Viasat, Inc., *Ex Parte* Presentation
Long-Form Application of Starlink Services, LLC, Auction 904 File Number
0009395128, *et al.*;
Rural Digital Opportunity Fund (Auction 904), AU Docket No. 20-34;
Rural Digital Opportunity Fund, WC Docket No. 19-126;
*Petition of Starlink Services, LLC for Designation as an Eligible
Telecommunications Carrier*, WC Docket No. 09-197;
Expanding Flexible Use of the 12.2-12.7 GHz Band, WT Docket No. 20-443

Dear Ms. Dortch:

Over the course of this year, numerous stakeholders, including Members of Congress¹ and industry participants,² have raised serious concerns with respect to SpaceX's ability to meet its RDOF service commitments. Viasat, for its part, has submitted extensive technical analyses demonstrating that even if SpaceX were to deploy a full, 4,408-satellite Starlink system, that system would fall short in satisfying SpaceX's RDOF commitments in a number of material respects.³ Among other things, Viasat has shown that even under a "best-case scenario in which

¹ See, e.g., Letter from the Honorable James E. Clyburn, Member of Congress, *et al.*, to the Honorable Ajit Pai, Chairman, Federal Communications Commission, at 1 (Jan. 19, 2021), at <https://walberg.house.gov/sites/walberg.house.gov/files/WalbergFCCRDOFletter.pdf>.

² See, e.g., Fiber Broadband Association & NTCA, Starlink RDOF Assessment Final Report (Feb. 8, 2021) (appended to Letter from Fiber Broadband Association & NTCA to FCC, AU Docket No. 20-34 *et al.* (Feb. 8, 2021)); Letter of the Competitive Carriers Association, AU Docket No. 20-34 *et al.* (May 6, 2021); Letter of the Computer & Communications Industry Association, AU Docket No. 20-34 *et al.* (June 16, 2021).

³ See Letter from Viasat to FCC, Auction 904 File Number 0009149922 *et al.*, AU Docket No. 20-34 *et al.* (Apr. 5, 2021) ("Viasat Apr. 5 Letter"); Letter from Viasat to FCC, Auction 904 File Number 0009395128 *et al.*, AU Docket No. 20-34 *et al.* (June 1, 2021); see also Letter from Viasat to FCC, Auction 904 File Number 0009395128 *et al.*, AU Docket No. 20-34 *et al.* (May 10, 2021); Letter from Viasat to FCC, Auction 904 File Number 0009395128 *et al.*,

SpaceX has absolutely zero non-RDOF-based demands for Starlink capacity,” there “is not enough Starlink capacity (bandwidth) available in the specific geographic locations that SpaceX bid for and provisionally won” to meet its RDOF service commitments.⁴

Third parties have echoed this key finding and identified characteristics of SpaceX’s proposed operations that will further reduce the capacity available for RDOF purposes and Starlink’s ability to satisfy RDOF performance requirements. For example, RKF Engineering has demonstrated that SpaceX’s decision to operate Starlink with lower minimum elevation angles than previously authorized (*i.e.*, as low as 25°) will significantly reduce the capacity available for use by the Starlink system. As RKF shows, “going from an average look angle of 45° to 25° could diminish capacity by 80%.”⁵

Other parties have observed that SpaceX’s ability to meet its RDOF obligations will become even more impaired as its network becomes more fully loaded.⁶ For example, Professor Michael Fitch of the University of Surrey has explained that “not very many [Starlink] users can have the top speed at the same time in a given area.”⁷ Thus, “[t]he average bit-rate that individual users experience will reduce as the number of nearby users increases, since the system has a finite capacity that it can provide over any given area.”⁸

SpaceX has failed to provide any meaningful response to these analyses or to demonstrate that it will be able to overcome its inherent capacity limitations. At the same time, SpaceX has actually *confirmed* that the Starlink network is inherently capacity-constrained. Among other things, the Starlink website now explicitly discloses that potential customers will be able to receive service *only* “where [Starlink has] coverage and capacity” available.⁹ Although SpaceX has vaguely promised that other households *may* be able to obtain service in the future as it “increase[s] the number of satellites in orbit,”¹⁰ it has never demonstrated that the additional satellites it is authorized to launch—and which formed the basis for its participation in the RDOF auction—would provide capacity sufficient to satisfy SpaceX’s RDOF obligations. In stark contrast, Viasat has demonstrated that this would *not* be the case.

AU Docket No. 20-34 *et al.* (June 30, 2021); Letter from Viasat to FCC, Auction 904 File Number 0009395128 *et al.*, AU Docket No. 20-34 *et al.* (July 20, 2021); Letter from Viasat to FCC, Auction 904, File Number 0009395128 *et al.*, AU Docket No. 20-34 *et al.* (Aug. 2, 2021).

⁴ Viasat Apr. 5 Letter at 13-17.

⁵ Letter from RKF Engineering to FCC, WT Docket No. 20-443 (Aug. 9, 2021).

⁶ Viasat Apr. 5 Letter at 12.

⁷ Chris Vallance, *Why Pigeons Mean Peril for Satellite Broadband*, BBC (Aug. 29, 2021), <https://www.bbc.com/news/technology-58061230>.

⁸ *Id.*

⁹ See “Account, Billing & Orders: When will I receive my Starlink?”, support.starlink.com (last visited Nov. 10, 2021).

¹⁰ *Id.*

Nor has SpaceX provided a cogent explanation of why it has delayed the anticipated dates on which many potential customers would be able to access Starlink service, even as it has removed references to “beta” mode from its website. Indeed, press reports indicate that SpaceX has significantly delayed in-service estimates for many areas into early 2023¹¹—a delay attributable to inherent limitations of the Starlink system, as opposed to any alleged “chip shortage,” as variance in service availability “is explained by satellite capacity and demand in each region.”¹²

Instead of explaining how Starlink will be able to overcome its inherent capacity limitations, SpaceX has had the temerity to attempt to leverage those limitations to generate near-term demand for its still-unproven service. Notably, on October 7, 2021 SpaceX’s Chief Executive Officer, Elon Musk, explained in a tweet that “Starlink is designed for low to medium population density, **which means we can hit max users in some areas fast.**” He then exhorted potential customers to “**sign up early to ensure a spot.**”¹³

But RDOF support is intended to ensure that *all* consumers in a supported area have meaningful opportunities to access broadband service, as opposed to the lucky few that are able to “sign up early to ensure a spot.” The Commission should not award *any* amount of RDOF support—let alone the approximately \$890 million provisionally awarded to SpaceX—to fund a network that the operator itself admits will be incapable of meeting consumer demand. Consumers, and particularly those without the connections necessary to access SpaceX’s website to “sign up early,” deserve better.

The Commission should compel SpaceX to address the serious, unresolved concerns on the record with respect to SpaceX’s eligibility and ability to satisfy its RDOF performance obligations. The existing record provides no rational basis upon which the Commission could grant SpaceX’s long-form application.

¹¹ See Michael Kan, *SpaceX Pushes Wait Times for Starlink to ‘Late 2022, Early 2023’ for More Areas*, PC MAGAZINE (Oct. 27, 2021), <https://www.pcmag.com/news/spacex-pushes-wait-times-for-starlink-to-late-2022-early-2023-for-more>.

¹² See Jon Brodtkin, *SpaceX: Chip shortage is impacting “our ability to fulfill” Starlink orders*, ARS TECHNICA (Nov. 1, 2021), <https://arstechnica.com/information-technology/2021/11/starlink-exits-beta-but-spacex-says-orders-are-delayed-due-to-chip-shortage/>.

¹³ See <https://twitter.com/elonmusk/status/1446125877494833162> (Oct. 7, 2021) (emphasis added). Also on October 7, 2021, Mr. Musk announced in a tweet that SpaceX would supposedly be ending the “beta” phase of its deployment by the end of the month. In doing so, he clarified that the “non-beta” service would “still [be] limited by peak number of users in [the] same area.” See <https://twitter.com/elonmusk/status/1446125039447777282> (Oct. 7, 2021).

Respectfully submitted,

/s/

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