

Pantelis Michalopoulos
202 429 6494
pmichalo@steptoe.com

Steptoe

1330 Connecticut Avenue, NW
Washington, DC 20036-1795
202 429 3000 main
www.steptoe.com

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BY ELECTRONIC FILING

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

Re: Starlink Unauthorized Mobile Operations, SES-LIC-20210803-01361, Call Sign E210310; SES-LIC-20210803-01360, E210309; 0190-EX-CN-2022, WM2XNK; WT Docket No. 20-443; GN Docket No. 17-183

Dear Ms. Dortch:

SpaceX has been encouraging Starlink users everywhere to operate their terminals when moving on planes, boats, and recreational vehicles. In the United States, this is against the law for a simple reason: SpaceX has not received approval from the Commission for such Earth Station in Motion (“ESIM”) operations; nor has it obtained the necessary waiver of the Commission’s prohibition on both ESIM and “temporary fixed” operations in the 12.2-12.7 GHz (“12 GHz”) band.¹ DISH Network Corporation (“DISH”) wrote to Starlink about these activities on May 27, 2022, asking it to stop and retract.² SpaceX neither retracted nor responded, forcing DISH to ask for the Commission’s intervention.³ SpaceX finally deigned to respond on June 8, 12 days after DISH’s letter.⁴ The response still does not answer any of DISH’s questions about SpaceX’s practices. Instead, it brims with incredible claims, outright inaccuracies, and tacit

¹ Letter from Pantelis Michalopoulos, Counsel for DISH, to David Harris, SpaceX, at 2 (May 27, 2022) (“DISH May 27, 2022 Letter”), attached to Letter from Pantelis Michalopoulos, Counsel for DISH, to Marlene Dortch, FCC, File Nos. SES-LIC-20210803-01361, Call Sign E210310; SES-LIC-20210309-00698, Call Sign E210092; SES-AMD-20210731-01295, E210092; SES-LIC-20210803-01360, E210309; 0190-EX-CN-2022, WM2XNK (May 31, 2022) (“DISH May 31, 2022 Letter”).

² See DISH May 27, 2022 Letter.

³ See DISH May 31, 2022 Letter; Letter from Pantelis Michalopoulos, Counsel for DISH, to Marlene Dortch, FCC, File Nos. SES-LIC-20210803-01361, Call Sign E210310; SES-LIC-20210803-01360, E210309; 0190-EX-CN-2022, WM2XNK, WT Docket No. 20-443, GN Docket No. 17-183 (June 7, 2022) (“DISH June 7, 2022 Letter”).

⁴ Letter from David Goldman, SpaceX, to Marlene Dortch, FCC IBFS File Nos. SES-LIC-20210803-01360 and SES-LIC-20210803-01361; ELS File No. 0190-EX-CN-2022; WT Docket No. 20-443 and GN Docket No. 17-183 (June 8, 2022) (“SpaceX June 8, 2022 Letter”).

admissions, including a near-frivolous attempt to justify its actions based on the tragic war in Ukraine.

The recent statements of SpaceX and its Chief Executive Officer speak for themselves:

- “Starlink for RVs can be used **anywhere Starlink provides service** and is ideal for camping and other activities in rural or remote locations where internet access has been unreliable or completely unavailable.”⁵
- “It’s ideal for travel or camping to **any location** internet access has been unreliable or completely unavailable.”⁶
- “Starlink for RVs is available now **wherever** Starlink has coverage, and users can check the availability map for service areas before hitting the road.”⁷
- “Yeah, should be fully mobile later this year, so you can move it **anywhere** or use it on an RV or truck in motion. We need a few more satellite launches to achieve complete coverage & some key software upgrades.”⁸
- “Starlink now available for RVs, campers & other large vehicle users (note, antenna too big for cars).”⁹
- “Starlink does work on vehicles in motion, including planes, but not yet reliably.”¹⁰
- “Mobile roaming enabled, so phased array antenna can maintain signal while on moving vehicle.”¹¹

⁵ SpaceX (@SpaceX), Twitter (May 23, 2022, 5:11 PM ET)
<https://twitter.com/SpaceX/status/1528846007148363776> (emphasis added).

⁶ SpaceX (@SpaceX), Twitter (May 24, 2022, 12:17 PM ET)
<https://twitter.com/SpaceX/status/1529134554543366146> (emphasis added).

⁷ SpaceX (@SpaceX), Twitter (May 24, 2022, 3:51 PM ET)
<https://twitter.com/SpaceX/status/1529188236781793280> (emphasis added).

⁸ Elon Musk (@elonmusk), Twitter (Apr. 15, 2021 7:44 PM ET),
<https://twitter.com/elonmusk/status/1382842277719003136> (emphasis added).

⁹ Elon Musk (@ElonMusk), Twitter (May 23, 2022, 7:11 PM ET)
<https://twitter.com/elonmusk/status/1528876319362240514>.

¹⁰ Elon Musk (@ElonMusk), Twitter (May 24, 2022, 9:18 AM ET)
<https://twitter.com/elonmusk/status/1529089543969943553>.

¹¹ Elon Musk (@elonmusk), Twitter (Mar. 3, 2022 12:50 PM ET),
<https://twitter.com/elonmusk/status/1499442132402130951>.

In defending its conduct, SpaceX focuses primarily on “keep[ing] Starlinks & life-saving services online *in Ukraine*.”¹² But only the last of the foregoing tweets was made in response to a question about the use of the Starlink system in Ukraine, and that response was not limited geographically. All of the other statements have nothing to do with Ukraine. In fact, all but two of them emphasize explicitly that there is *no* geographic limitation to the supposed ability of SpaceX terminals to work in motion: “anywhere Starlink provides service”; “any location”; “wherever”; “anywhere.” That includes the United States.

Rather than address its conduct, SpaceX shamefully invokes the tragic invasion of a country to shield itself from liability for violating the Commission’s rules. To be clear, DISH does not object to ESIM use of Starlink terminals in Ukraine. Indeed, DISH takes no exception to ESIM use in any band for which SpaceX receives the necessary approvals and ESIM use is not prohibited. The Commission has ruled that ESIMs “may be authorized” to operate in other spectrum including the 11.7-12.2 GHz and 14-14.5 GHz bands.¹³ SpaceX still needs authorization to use these bands, which it has requested and not yet received. DISH does not object to the grant of that authorization. But ESIM use **is** prohibited in the 12 GHz band in the United States, and it should be urgently stopped.

SpaceX admits, as it must, that “mobile use is not allowed.”¹⁴ Whether or not Mr. Musk tweets from “molehills,”¹⁵ as SpaceX claims, he has 97 million followers. Tens of millions of them are doubtless American. And the tweets are understood and acted upon by American consumers. Below are some of comments from Starlink users in North America:

- “Starlink Speedtest on a Sailboat in Motion.”¹⁶
- “Works wonderfully on my boat in motion.”¹⁷

¹² SpaceX June 8, 2022 Letter at 1 (internal quotes omitted, emphasis in original).

¹³ 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, *Second Report and Order*, 35 FCC Rcd 5137, 5147 ¶ 29 (2020); *see also* 47 C.F.R. § 25.202(a)(10)(ii).

¹⁴ SpaceX June 8, 2022 Letter at 4.

¹⁵ *Id.* at 6.

¹⁶ NdiliTechnologies, *Starlink Speedtest on a Sailboat in Motion*, YouTube (Mar. 25, 2022), <https://www.youtube.com/watch?v=ISCt2U5VKrc> (50,403 views as of June 7, 2022).

¹⁷ Comment by u/Person_reddit (May 24, 2022), u/PositiveSplit6483, *Starlink works in motion*, Reddit (May 24, 2022), <https://www.reddit.com/r/Starlink/comments/uwroll/comment/i9uedl9>.

- “Does StarLink work on a boat in motion? Why yes. Yes it does.”¹⁸
- “Dishy on a boat. Travelling at 9 knots.”¹⁹
- “Starlink Storm Chasing - Mobility/Portability ultimate test” (noting “[t]his however confirms Elon Musk's tweet that in-motion use works, and I figured as a reviewer of Starlink, I need to test his claims.”)²⁰
- “Enjoying Starlink while driving my Tesla”²¹
- “[T]hese were the numbers I was getting with my Starlink while I was driving through Vermont”²²
- “I’ve had Starlink (standard service) mounted on my van for last couple months. It works when driving. Even at highway speeds.”²³
- User noting that he has been watching streaming video using Starlink “since Shelby, North Carolina all the way to Newton . . . it is like 44 miles through country roads.”²⁴

None of the users seems to be located in Ukraine. All but one appear to be located in the U.S., one in Canada.

And even in the short time since DISH alerted the Commission to these issues, additional examples of Starlink customers using their service while in motion surfaced: “Starlink portability

¹⁸ u/eggplant_zoo, *Does StarLink work on a boat in motion? Why yes. Yes it does.*, Reddit (May 12, 2022), https://www.reddit.com/r/Starlink/comments/uo81t3/does_starlink_work_on_a_boat_in_motion_why_yes

¹⁹ u/juniorbomber, *Dishy on a boat. Travelling at 9 knots.*, Reddit (May 30, 2022), https://www.reddit.com/r/Starlink/comments/v1fns/dishy_on_a_boat_travelling_at_9_knots.

²⁰ TheNSTew, *Starlink Storm Chasing - Mobility/Portability ultimate test*, YouTube (June 2, 2022), <https://www.youtube.com/watch?v=kOOI6-D-gs0>; see also Jason Hughes (@wk057), Twitter (May 5, 2022 9:49 AM ET), <https://twitter.com/wk057/status/1522212009483415552> (“Am I the only one that reads this [Starlink terms of service] as, “We’re not saying it _won’t work_ in motion... we just don’t really want you to do that right now.” ? Guess I’ll have to test this.”).

²¹ Anthony Cornrod (@TWIT_ANTHONY), Twitter (Apr. 25, 2022 8:43PM ET), https://twitter.com/TWIT_ANTHONY/status/1518752581891284994.

²² Matt Carroll (@cherball1890), Twitter (May 6, 2022 7:42PM ET), <https://twitter.com/cherball1890/status/1522723554856427520>.

²³ Comment by u/geoffreyhuntley (May 23, 2022), u/Responsible_Half2856, *Starlink for RV’s*, Reddit (May 23, 2022), https://www.reddit.com/r/Starlink/comments/uw8yix/starlink_for_rvs/i9r5764/.

²⁴ Matt Carroll (@cherball1890), Twitter (May 4, 2022 7:53PM ET), <https://twitter.com/cherball1890/status/1522001398208114692>.

on the water is a game changer! We are currently boating in the Pacific Northwest on Desolation Sound & our connection is amazing!”²⁵ Another user observed, “starlink works flawlessly while underway on our boat.”²⁶ This user, too, seems to be based in the U.S.

Troublingly, another user has suggested silence to evade enforcement: “In-motion had already been demonstrated. Motors-disabled had been tried, before it was declared a TOS violation. You’re not covering any new territory, or expressing any ‘freedoms’, you’re just providing discovery material for anti-Starlink legal teams.”²⁷ And here is another comment in the same vein: “As an engineer who has seen the FCC levy a fine on the company I was working for (*a five-digit fine!*), for a *record-keeping lapse*... don’t feed DISH Networks legal team. Seriously.”²⁸

While SpaceX attempts to make much of the prohibition on “in-motion use” in its own user agreement, that nominal prohibition does little to exonerate its conduct. In fact, DISH pointed to this provision of SpaceX’s user agreement from the start, as proof that SpaceX knows what the rules are and has still proceeded with its reckless statements.²⁹ The problem is that SpaceX observes its own agreement in the breach, as its own statements are irreconcilable with its own prohibition. The fact that some users are aware of the prohibition, as SpaceX goes to some lengths to establish,³⁰ is cold comfort when many users are either unaware of it or know it and flout it based on the winking “go-aheads” by SpaceX and its CEO. In fact, through one of the user statements it quotes, SpaceX is endorsing another untruth. SpaceX quotes a user saying: “The latest press release says that the internet service would be inactive when the RV is in motion as it hits the road.”³¹ The implication is that the statement is true. But there appears to be no SpaceX press release that makes this claim. In fact, SpaceX does not deactivate service

²⁵ Heather Rideout (@HERideout), Twitter, (June 11, 2022, 12:59 PM), <https://twitter.com/HERideout/status/1535668173445296128>.

²⁶ Comment by u/Person_reddit, u/JaywalkingTheWorld, *Starlink... on a boat*, Reddit (June 1, 2022), https://www.reddit.com/r/Starlink/comments/v32a8s/starlink_on_a_boat/iaxavwa.

²⁷ Comment by u/FarmingBytes, u/[deleted], *No starlink in motion. Can someone provide proof it's because of the FCC? Elon says it just voids warranty.*, Reddit (June 5, 2022), https://www.reddit.com/r/Starlink/comments/v5j8yw/no_starlink_in_motion_can_someone_provide_proof/ibbura6. This comment was in response to a deleted post that was entitled “No starlink in motion. Can someone provide proof it's because of the FCC? Elon says it just voids warranty.” Please see the discussion of the supposed voiding of the equipment warranty below.

²⁸ Comment by u/SpaceBytes, u/crazyhorse991, *Dish Feuds With SpaceX Over Starlink Dishes Being Used on Moving Boats, Cars*, Reddit (June 10, 2022), https://www.reddit.com/r/Starlink/comments/v8tiph/dish_feuds_with_spacex_over_starlink_dishes_being (emphasis in original).

²⁹ DISH May 27, 2022 Letter at 3.

³⁰ See SpaceX June 8, 2022 Letter at 4-5.

³¹ *Id.* at 5.

when the RV is in motion. If SpaceX announces that it will deactivate ESIM operations and in fact does so, this will go a long way towards addressing DISH's concerns.

In another effort to obfuscate, SpaceX quotes statements by others (not SpaceX itself) that SpaceX will void the limited warranty of the terminal if it is used in motion.³² But, SpaceX itself provides no proof that it actually takes any such action. Does it actually void warranties in these cases? Has it voided the warranties of any of its users who have proclaimed they use the terminals in motion on Reddit or Twitter? Has it voided even one warranty for this reason? SpaceX does not say.

Indeed, while SpaceX lodges hyperbolic attacks, nowhere in its six-page letter does SpaceX actually respond to the relevant questions DISH raised in its May 27 letter: What systems does Starlink have in place to monitor mobile use by customers? Is SpaceX actively checking for such use? How many customers have received warnings or account terminations for unauthorized mobile use?

SpaceX's U.S. operations are not above U.S. law. The Commission should make clear to SpaceX that continued unauthorized mobile use of Starlink terminals will not be tolerated. Specifically, SpaceX should be ordered to: disclose whether and how it can identify operations in motion on its system; demonstrably deactivate accounts that use its antennas when in motion; and, if it receives ESIM authority for bands the Commission has made available for such authority, demonstrably **not** use the 12 GHz band, which is unavailable for such use under the Commission's rules.

Respectfully submitted,

/s/ Pantelis Michalopoulos
Pantelis Michalopoulos
Counsel to DISH Network Corporation

cc: William M. Wiltshire, Counsel for SpaceX
David Goldman, Director, Satellite Policy, SpaceX
Tom Sullivan, Chief, International Bureau
Joel Taubenblatt, Acting Chief, Wireless Bureau
Loyaan Egal, Acting Chief, Enforcement Bureau

³² *See id.*