

11 June 2018

Ex Parte

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

Re: 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, IB Docket No. 17-95

Dear Ms. Dortch:

During the course of this proceeding, Iridium and Viasat have debated whether it was in the public interest to include, in the 2,000 MHz of spectrum under consideration for use by ESIMs, the 50 MHz (29.25-29.3 GHz) used by Iridium for feeder links. But Viasat has recently made a number of increasingly odd and inconsistent claims that need to be addressed.

For example, Viasat claimed that the Commission would create a “donut hole” in the middle of ESIM spectrum if it did not permit ESIMs in the 29.25-29.3 GHz band segment.¹ Viasat was straining to argue that the 50 MHz at issue is essential to the company's planned operations, even though it accounts for just 2.5 percent of the 2,000 MHz in proposed ESIM spectrum.

The problem is that if one looks at the band plan proposed by the Commission, no “donut hole” would be created at all.² The 29.25-29.3 GHz band is at the edge of one of the bands proposed for ESIMs, not the middle of the band. Pressed on the issue, Viasat finally abandoned its “donut hole” argument.³ Instead, it now claims that the 50 MHz is critical to its plans to offer streaming video on board airplanes,⁴ and that it would lose the ability to serve 250,000 users without this spectrum.⁵

These arguments are even more imaginative than Viasat's made-up “donut hole.” They also reflect a level of usage that presents an interference problem in the 29.25-29.3 GHz band far more serious than Viasat previously has been willing to admit.

¹ Letter from Viasat, Inc. to Marlene H. Dortch, Secretary, FCC, IB Docket No. 17-95 (filed Mar. 26, 2018) (“Viasat March 26, 2018 Ex Parte”).

² Letter from Iridium Satellite, LLC to Marlene H. Dortch, Secretary, FCC, IB Docket No. 17-95 (filed Apr. 11, 2018).

³ Letter from Viasat, Inc. to Marlene H. Dortch, Secretary, FCC, IB Docket No. 17-95, at 1 (Apr. 26, 2018) (“Viasat Apr. 26, 2018 Ex Parte”).

⁴ *Id.* at 1, 2.

⁵ *Id.* at 2.

Streaming video does not consume uplink capacity. Viasat claims that it needs the 50 MHz to ensure sufficient capacity for streaming video services on airplanes.⁶ There is a fatal flaw in this argument: the 29.25-29.3 GHz band is an *uplink* band, and streaming video to end users is a service provided on the *downlink* to the ESIM-equipped aircraft.

Iridium's proposal would not reduce the amount of downlink spectrum available to ESIMs. Nor would it reduce the amount of uplink spectrum available for *fixed* earth stations that transmit streaming video from a gateway to a satellite for transmission back down to the end user. It thus would have no impact—*none*—on Viasat's ability to stream video content to airline passengers.

Viasat's 250,000-user estimate is fiction. Viasat claims that the number of simultaneous users supported by its network would decrease by 250,000 without the additional 50 MHz in uplink spectrum.⁷ Even assuming ESIM users consume significant amounts of uplink bandwidth, this estimate is wildly off base.

Viasat claims that 50 MHz will support 250,000 simultaneous users. Viasat also proposes to use 2,000 MHz for ESIMs. Viasat thus apparently is asserting its ESIMs will support 10 million simultaneous users. *But to serve 10 million users at the same time, it would take something like 100,000 flights*, each with 100 simultaneous users on board, operating in the air at the same time. *Yet recent FAA data show that the peak number of flights in U.S. air space at any time is about 5,000*, not 100,000.⁸ Even if Viasat served each and every one of those 5,000 flights, and each of those flights had 100 simultaneous users, Viasat's own math suggests that the 2,000 MHz of spectrum proposed for ESIMs would provide *twenty times* more capacity than it would need.⁹ Viasat could corner the market entirely, and the unavailability of the 29.25-29.3 GHz band still would pose no constraint at all.

Viasat contradicts itself on ESIM duty cycles. In an earlier attempt to minimize the impact of interference to Iridium satellites, Viasat claimed ESIM duty cycles would be “typically no more than one percent,”¹⁰ reaching six percent under “heavy terminal usage.”¹¹ But low duty cycles necessarily mean far fewer users simultaneously transmitting. If Viasat can support 250,000 simultaneous users in 50 MHz as it now claims (or, similarly, 10 million simultaneous users in 2,000 MHz), then it cannot possibly operate ESIMs on average duty cycles as low as it

⁶ *Id.* at 1, 2.

⁷ *Id.* at 2.

⁸ Federal Aviation Administration, Air Traffic by the Numbers, at 9 (Oct. 2017), https://www.faa.gov/air_traffic/by_the_numbers/media/Air_Traffic_by_the_Numbers_2017_Final.pdf.

⁹ If 100 users on each of 5,000 airplanes are operating simultaneously on ESIMs, that makes for 500,000 users in total. If 50 MHz supports 250,000 simultaneous users, as Viasat claims, then it would take 100 MHz to support 500,000 simultaneous users. Viasat seeks 20 times that.

¹⁰ Viasat March 26, 2018 Ex Parte at 3 (“MF-TDMA networks use low duty cycles (*i.e.*, they are not always transmitting—typically no more than one percent of the time.)”).

¹¹ Letter from Viasat, Inc. and Inmarsat, Inc. to Marlene H. Dortch, Secretary, FCC, IB Docket No. 17-95, at attachment pp. 3-7 (filed Nov. 6, 2017).

previously claimed. The two assumptions – that Viasat will serve 10 million simultaneous users, and that each ESIM is only active for a very low percentage of time – are mutually exclusive.¹²

Viasat concedes a massive interference problem. Clearly, Viasat is trying to have it both ways. It is assuming an extremely high number of terminals and extremely high terminal usage to claim that it needs the 50 MHz for network capacity. At the same time, it is assuming an extremely low number of terminals and extremely low terminal usage to claim that its ESIMs will not interfere with Iridium.

The odd thing is that both of Viasat's contradictory positions are – according to its own analysis wrong. Even with 5,000 ESIMs (*i.e.*, one aboard every flight¹³) and very high terminal usage, Viasat's own calculations demonstrate that it would have an enormous margin of unused capacity. At the same time, Viasat's dubious claim of no harmful interference relies on a model of fewer terminals operating just *six percent* of the time, an assumption that Viasat's latest analysis shows is completely out of step with its plans for ESIM deployment. That is to say, there is no tradeoff between providing ESIMs with the capacity they need, on the one hand, and protecting Iridium's co-primary network on the other. Viasat's submissions demonstrate that the 50 of spectrum at issue is entirely unnecessary, *and* that ESIMs will operate far too often to prevent harmful interference with Iridium.

* * *

Viasat has grossly overstated its need for spectrum in the 29.25-29.3 GHz band, going so far as to base its argument on an end-user application – streaming video – that cannot be delivered using the spectrum at issue. Along the way, Viasat's analysis revealed that the core assumptions it made to minimize the impact of ESIMs on Iridium's feeder links were complete fiction. The risk-reward here could not be clearer. The Commission should proceed with an order that gives Viasat and others 97.5 percent of the spectrum they are seeking. But on this record, it must decline their proposal to allow ESIMs in the 29.25-29.3 GHz band.

Sincerely,

A handwritten signature in black ink that reads "SCOTT HARRIS". The signature is stylized with a large, sweeping "S" and a distinct "H".

Scott Blake Harris
Counsel to Iridium Communications, Inc.

¹² See Letter from Iridium Communications, Inc. to Marlene H. Dortch, Secretary, FCC, IB Docket No. 17-95 (filed Jan. 18, 2018) (observing that “if ESIMs will transmit at most 6% of the time, it strongly suggests that the vast 2,000 MHz of spectrum requested for ESIMs may exceed the actual need—and reducing that 2,000 MHz by the 50 MHz at issue here would not be a problem for prospective ESIM operators”).

¹³ ESIMs are large terminals, and a single ESIM typically supports all users on an airplane.