

18 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:

On 14 June 2018, Maureen C. McLaughlin, Vice President of Public Policy for Iridium Communications, Inc. ("Iridium"), Brandon Hinton of Wiley Rein LLP, Joe Godles of Goldberg, Godles, Weiner & Wright LLP, and Shiva Goel and I met with Julius Knapp, Ron Repasi, Bruce Romano, Michael Ha, Nicholas Oros, and Bahman Badipour of the Office of Engineering and Technology to discuss this proceeding. In this meeting, Iridium urged the Commission to exclude the 29.25-29.3 GHz band from its proposal to create more spectrum for earth stations in motion ("ESIMs").

We explained that the 29.25-29.3 GHz band poses unique coexistence challenges that are not present in other proposed ESIM spectrum, or in other bands that require spectrum sharing more generally. We also explained that the solution floated in this proceeding—to have operators guess the coordinates of exclusion zones that are a function of unknowns—would be especially irresponsible in light of recent pleadings about planned ESIM deployments.¹ Those pleadings contradict the rosy assumptions ESIM operators previously made to argue that the risk of interference to Iridium would be manageable. They also demonstrate that ESIM operators simply have no need for this spectrum.

Unlike other proposed ESIM bands, the 29.25-29.3 GHz band is licensed for NGSO MSS feeder uplinks to Iridium. These feeder uplinks carry every user communication handled by Iridium's network, which our military, first responders, and the commercial sector use as critical infrastructure. They also transmit the telemetry, tracking, and control communications that keep Iridium satellites safely in orbit.

¹ See Letter from John P. Janka and Elizabeth R. Park, Counsel to Viasat, Inc., to Marlene H. Dortch, Secretary, FCC, at 1, IB Docket No. 17-95 (filed Apr. 26, 2018) ("Viasat Apr. 26, 2018 Response"); Letter from Elizabeth R. Park, Counsel to Viasat, Inc., to Marlene H. Dortch, Secretary, FCC, at 2, IB Docket No. 17-95 (filed Apr. 26, 2018) ("Viasat Apr. 26, 2018 Notice of Ex Parte"); Letter from John P. Janka and Elizabeth R. Park, Counsel to Viasat, Inc., to Marlene H. Dortch, Secretary, FCC, IB Docket No. 17-95 (filed Mar. 26, 2018).

No one disputes that ESIMs would create interference into Iridium's feeder uplinks. With orbital altitudes around 480 miles, Iridium satellites are located in between the planes, trucks, and ships that will host ESIMs and the geostationary satellites with which ESIMs will communicate.

The only question is whether interference can be managed so that ESIMs safely can share the band with Iridium. ESIM operators propose to reduce interference to acceptable levels by muting their terminals whenever they enter exclusion zones around Iridium's feeder-link earth stations. Those exclusion zones would be defined as areas within which aggregate ESIM transmissions breach the Iridium network's protection criteria and thus cause unacceptable interference. The problem with this approach is that the coordinates of each exclusion zone are a function of the number of terminals in operation and their locations in time. With ESIMs, which are mobile, these variables are unknown and cannot be determined *a priori*. This problem is even worse with ESIMs that are on aircraft and move in three dimensions. An ESIM operator cannot determine where an ESIM can safely transmit if the area within which harmful interference occurs depends on where all other ESIM terminals are, have been, and will be in the future. This is why, after years of trying, the only ESIM sharing study that the ITU has not been able to complete is sharing between ESIMs and NGSOs.

We explained that the record does not contain any method for defining exclusion zones that account for the interference created by ESIM terminals that are in constant and unpredictable motion. The two interference models submitted in this proceeding, one by Viasat and one by Inmarsat, did not seriously address the issue, and only underscored the magnitude of the interference problem under any plausible deployment scenarios.

Last November, Viasat submitted an ex parte purporting to show the interference impact on Iridium's feeder links if relatively few ESIMs operating at low duty cycles traversed handpicked flight paths passing an Iridium earth station.² In late April, however, Viasat claimed that its ESIMs would support 250,000 users in 50 megahertz bandwidth—an estimate possible only with very high duty cycles and many terminals deployed.³ Viasat has not explained why it gave the Commission conflicting information or how these changed parameters affect its original aggregate interference assessment from last fall. Nor has Viasat accounted for the fact that ESIM paths are not constant. Flight paths and times, truck routes and times, and maritime routes and times are subject to change, as is the number and mix of routes served by an ESIM operator.

Inmarsat filed an interference analysis that only modeled a small handful of ESIMs that are fixed in location—and still concluded that the interference problem is so serious that exclusion zones

² Letter from John P. Janka and Elizabeth R. Park, Counsel to Viasat, Inc., and M. Ethan Lucarelli and Giselle Creeser, Inmarsat, Inc., to Marlene H. Dortch, Secretary, FCC, IB Docket No. 17-95 (filed Nov. 6, 2017) ("Viasat/Inmarsat Nov. 6, 2017 Ex Parte").

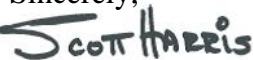
³ Viasat Apr. 26, 2018 Response at 2; Viasat Apr. 26, 2018 Ex Parte at Attachment; *see also* Letter from Scott Blake Harris, Counsel to Iridium Communications, Inc., to Marlene H. Dortch, Secretary, FCC, at 2 n.7 & accompanying text, IB Docket No. 17-95 (June 11, 2018); Letter from Scott Blake Harris, Counsel to Iridium Communications, Inc., to Marlene H. Dortch, Secretary, FCC, at 7, IB Docket No. 17-95 (filed Jan. 18, 2018) ("Iridium Jan. 18, 2018 Ex Parte").

covering millions of square miles would be necessary to protect Iridium's feeder-link operations.⁴ In the real world, that area would expand by an unpredictable size and in unpredictable directions because ESIMs are mobile, not fixed, and because ESIM operators—by their own account—plan to deploy a large number of ESIM terminals, not a handful.

We also explained that when evaluating interference, the Commission cannot consider the number of licensed Iridium feeder-link earth stations without also considering the dynamic link geometry used by each one. To track Iridium's sixty-six satellites, all of which are in motion relative to the Earth, Iridium's feeder uplinks transmit almost from horizon to horizon in both azimuth and elevation directions. They do not transmit to a fixed point in space, a feature of GSO uplinks that greatly facilitates sharing among multiple GSO ESIM networks. Thus, even ESIMs transmitting far away from an Iridium feeder-link earth station can cause unacceptable interference. Again, the interference environment in the 29.25-29.3 GHz band truly is unique.

Finally, we explained that there would be no reward to outweigh the risks described above according to Viasat's own pleadings. In recent submissions Viasat claimed that it needs access to the 29.25-29.3 GHz band to ensure sufficient bandwidth for streaming video on airplanes.⁵ Because the 29.25-29.3 GHz band is an *uplink* band, however—and streaming video to end users is a service provided on the *downlink* to the aircraft—the availability of the 29.25-29.3 GHz band would have no impact whatsoever on Viasat's ability to stream video to passengers.⁶ Viasat also claimed it could support 250,000 users in the 50 megahertz of bandwidth available in the 29.25-29.3 GHz band. Given that the Commission has proposed to provide 2,000 megahertz of Ka-band spectrum for ESIMs, Viasat would have much more spectrum than it could ever need even without access to the 29.25-29.3 GHz band. According to Viasat's math, that 2,000 megahertz of bandwidth would support 10 million users simultaneously. But there are only 5,000 flights over the United States at any given time, and 2 million tractor-trailer trucks. Thus, even assuming Viasat had an ESIM serving 100 simultaneous users on each and every flight, plus an ESIM on each and every tractor-trailer truck in America, it would need just a quarter of the spectrum the Commission is prepared to give it in this proceeding.

Please contact me if you have any questions.

Sincerely,


Scott Blake Harris
Counsel to Iridium Communications, Inc.

cc: Meeting Attendees

⁴ See Viasat/Inmarsat Nov. 6, 2017 Ex Parte at Attachment pp. 16-18; *see also* Iridium Jan. 18, 2018 Ex Parte at 1, 8-9.

⁵ See Viasat Apr. 26, 2018 Response at 1-2; Viasat Apr. 26, 2018 Notice of Ex Parte at 2.

⁶ To the extent Viasat needs uplink spectrum to transmit streaming video from a gateway to a satellite for transmission back down to the end user, the 29.25-29.3 GHz remains available for such fixed-earth-station operations regardless the outcome of the ESIMs proceeding.