

**BEFORE THE  
FEDERAL COMMUNICATIONS COMMISSION  
WASHINGTON, D.C. 20554**

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In the Matter of

Petition to Modify Parts 2 and 101  
of the Commission's Rules to Enable Timely  
Deployment of Fixed Stratospheric-Based  
Communications Services in the 21.5-23.6, 25.25-  
27.5, 71-76, and 81-86 GHz Bands

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**COMMENTS OF AERONET GLOBAL COMMUNICATIONS INC.**

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## INTRODUCTION AND SUMMARY

Aeronet Global Communications Inc. hereby submits these comments on Elefante Group, Inc.’s petition for rulemaking.<sup>1</sup> Aeronet supports the Commission’s efforts to make additional spectrum available for innovative uses in the 70/80/90-GHz Band (“E Band”). As the Commission has recognized, numerous companies—including Aeronet, Google, Facebook, and others—have proposed different uses for spectrum in this band, none of which fits “the traditional mobile broadband [l]or fixed link models.”<sup>2</sup> Accordingly, the Commission should engage in a careful inquiry to ensure that Elefante’s plan does not foreclose other innovative uses of the E Band.

Aeronet appreciates Elefante’s assurance that its proposed deployment of Stratospheric-Based Communications Services (“SBCS”) is intended to “exhibit compatibility by design” and to “maximize[] utilization of encumbered [spectrum] bands in a way that permits future growth of all users.”<sup>3</sup> Aeronet is also encouraged by Elefante’s projection that “[o]nly a limited number of feeder links are required [in the 71-76 and 81-86 GHz bands] for the Elefante Group SBCS system” to operate.<sup>4</sup> But more study is necessary to determine whether Elefante’s proposed deployment would be consistent with the proposed use of E Band spectrum by Aeronet and others. Aeronet thus asks that the Commission develop a robust record and proceed with

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<sup>1</sup> *In re Petition to Modify Parts 2 and 101 of the Commission’s Rules to Enable Timely Deployment of Fixed Stratospheric-Based Communications Services in the 21.5-23.6, 25.25-27.5, 71-76, and 81-86 GHz Bands*, Elefante Petition for Rulemaking, RM - 11809 (filed May 31, 2018) (“Petition”).

<sup>2</sup> *In re Use of Spectrum Bands Above 24 GHz for Mobile Radio Services*, Second Report and Order, Second Further Notice of Proposed Rulemaking, Order on Reconsideration, and Memorandum Opinion and Order, 32 FCC Rcd 10,988, 11,053 ¶ 201 (2017) (“*Spectrum Frontiers Order*”); see also *In re Use of Spectrum BANDS Above 24 GHz for Mobile Radio Services*, GN Docket No. 14-177, Comments of Facebook, Inc. 4-5 (Sept. 30, 2016).

<sup>3</sup> Petition at 2.

<sup>4</sup> Petition at 4. Aeronet does not currently contemplate any use for the other spectrum bands identified by Elefante’s Petition.

caution. Consistent with its prior decisions, any action the Commission takes on the Petition should promote industry-wide rules that allow for innovative uses and coexistence among users “to provide an opportunity for future growth . . . in these bands.”<sup>5</sup>

**I. AERONET HAS DEVELOPED AN INNOVATIVE AVIATION AND MARITIME BROADBAND SOLUTION THAT WILL DELIVER CLEAR BENEFITS TO CONSUMERS AND TRANSPORTATION PROVIDERS.**

Aeronet has developed an innovative technology to provide true high-speed broadband service in the air and on the sea.<sup>6</sup> Consumers want, and increasingly expect, an “in home” equivalent broadband experience wherever they are, as evidenced by burgeoning consumer demand for in-flight and on-ship connectivity.<sup>7</sup> This growth in demand is compounded by on-board crew connectivity needs and IoT safety requirements of ships and aircraft, such as engine monitors, weather sensors, remote storage, and service-crew tablets.

Aeronet addresses these demands by harnessing the kind of point-to-point links used successfully for years to carry heavy data traffic—with special adaptations to address the unique challenges that are present in the aviation and maritime contexts—all while coexisting with existing users. Specifically, Aeronet’s architecture takes advantage of the fact that planes and ships, while mobile, are following predetermined routes at known times. This allows for an architecture that is more like a fixed network in many ways, including coordination with fixed links.<sup>8</sup> In March 2017, Aeronet successfully achieved 1 Gbps download and upload speeds to its

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<sup>5</sup> *Spectrum Frontiers Order*, 32 FCC Rcd at 11,054 ¶ 200.

<sup>6</sup> Aeronet is also using its technology to develop a high-speed broadband solution for rural areas.

<sup>7</sup> See, e.g., *Inmarsat Survey Shows 60% Believe In-Flight Wi-Fi is a Necessity*, Avionics (July 31, 2017), <https://www.aviationtoday.com/2017/07/31/inmarsat-survey-shows-60-believe-inflight-wi-fi-necessity/>.

<sup>8</sup> See Letter from Brian Russell, Aeronet Global Communications Inc., to Marlene H. Dortch, Secretary, FCC, GN Docket No. 14-177 (Oct. 5, 2017).

test aircraft in Ireland,<sup>9</sup> and Aeronet has achieved similar results in maritime tests.

## **II. THE COMMISSION SHOULD PRESERVE THE E BAND'S UNIQUE ENVIRONMENT FOR INNOVATIVE SERVICES.**

There are several characteristics of the E Band that make it uniquely suitable for innovative high-speed broadband services to locations that are essentially fixed like Elefante's proposed service or follow a scheduled trajectory like that of Aeronet. First, the technical characteristics of the band are ideal for the type of networks—mesh point-to-point data link networks—that such services utilize. The highly directional narrow beam widths in the band support angular separation mechanisms, allowing for the creation of separated 3D polygons for terrestrial fixed-link uses, ground-ocean vehicle datalinks and ground-aerial vehicle datalinks. Additionally, the highly directional beams in this band are appropriate for aviation and maritime needs, because they support the delivery of targeted bandwidth to those individual customer locations (*i.e.*, an airplane or a ship).

Second, the regulatory approach to the E Band in the United States—a light license regime that supports federal and non-federal uses based on link registrations—is streamlined, and results in only minimal administrative refinements by third party database managers to facilitate innovative uses of this spectrum. As Google explained in the Commission's *Spectrum Frontiers* proceeding, more than “400 national licensees collectively have registered tens of thousands of links in the[se] bands, and new entrants readily can participate in the registration process.”<sup>10</sup> Further, the Commission's light-touch approach to the E Band generally is mirrored

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<sup>9</sup> Mary Kirby, *Irish Firm Eyes New ATG and Mesh Network Tech for Broadband IFC*, Runway Girl Network (July 5, 2017), <https://runwaygirlnetwork.com/2017/07/05/irish-firm-touts-new-atg-and-mesh-network-tech-for-broadband-ifc/>.

<sup>10</sup> *In re Use of Spectrum Bands Above 24 GHz for Mobile Radio Services*, GN Docket No. 14-177, Comments of Google Inc. and Google Fiber Inc. at 2 (Sept. 30, 2016) (“Comments of Google Inc. and Google Fiber Inc.”).

by light license regimes across the globe.<sup>11</sup> If the Commission exercises leadership in permitting new innovative uses of the E Band, there is a tremendous opportunity for harmonization with, and replication by, other countries. This harmonization will ultimately expand the delivery of in-flight and on-ship broadband connectivity for global passengers.

Third, there is ample spectrum in the E Band to support multiple innovative uses. The Band is currently uncongested: incumbent fixed-link user volume is low (although it is expected to rise in dense population areas as 5G services come online) and spatially separated from Aeronet's innovative uses through terrestrial usage patterns.<sup>12</sup>

Given the unique characteristics of the E Band, it is essential that the Commission proceed with caution. There are multiple providers like Aeronet and Elefante that seek to offer novel services in the band.<sup>13</sup> Indeed, Aeronet hopes to use the E Band to bring a fast, high-quality broadband service to markets where broadband service historically has lagged. Given this, and other innovative offerings that may be possible in the E Band, the Commission must be careful not to take any action that would either harm incumbent users *or* foreclose innovative uses by new entrants.

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<sup>11</sup> See Mario Giovanni Luigi Frecassetti, *E-Band and V-Band - Survey on Status of Worldwide Regulation* 23 (ETSI White Paper No. 9, June 2015), [https://www.etsi.org/images/files/ETSIWhitePapers/etsi\\_wp9\\_e\\_band\\_and\\_v\\_band\\_survey\\_20150629.pdf](https://www.etsi.org/images/files/ETSIWhitePapers/etsi_wp9_e_band_and_v_band_survey_20150629.pdf) (noting that the UK, Australia, and others regulate the E-Band with a "light-licensing" regime).

<sup>12</sup> Elefante recognizes this fact, emphasizing that its proposed use was designed to be compatible with incumbent and new users alike, and projecting that relatively few links will be necessary in the 70/80/90-GHz band.

<sup>13</sup> For example, Google has registered 70/80 GHz links for diverse purposes, including developing Project Loon's use of high altitude balloons to offer broadband access where deployment of terrestrial networks is uneconomic. See Comments of Google Inc. and Google Fiber Inc. at 2-3; *In re Use of Spectrum Bands Above 24 GHz for Mobile Radio Services*, GN Docket No. 14-177, Comments of Google Inc. at 5 (Jan. 28, 2016).

## CONCLUSION

For the reasons stated above, Aeronet asks that the Commission proceed carefully, based on a robust record, in this proceeding.

Respectfully submitted,

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