



PUBLIC NOTICE

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WIRELESS TELECOMMUNICATIONS BUREAU SEEKS TO SUPPLEMENT THE RECORD ON 70/80/90 GHZ BANDS NOTICE OF PROPOSED RULEMAKING

WT Docket No. 20-133

Comment Date: 30 days after date of publication in the Federal Register

Reply Comment Date: 60 days after date of publications in the Federal Register

By this Public Notice, the Wireless Telecommunications Bureau (Bureau) seeks to supplement the record in the rulemaking on *Modernizing and Expanding Access to the 70/80/90 GHz Bands*¹ to address the potential for use of the 71-76 GHz, 81-86 GHz, 92-94 GHz, and the 94.1-95 GHz (70/80/90 GHz) bands to provide broadband Internet access to consumers and communities that may otherwise lack robust, consistent connectivity. In particular, we seek comment on whether High Altitude Platform Stations (HAPS) or other stratospheric-based platform services could be deployed for this purpose in the 70/80/90 GHz bands. We also seek additional information regarding the potential use of these bands to provide broadband Internet access to customers on airplanes and aboard ships, as proposed by Aeronet Global Communications, Inc.²

Background. As described in greater detail in the *70/80/90 GHz NPRM*, in the United States, the 70/80/90 GHz bands are allocated on a co-primary basis for Federal and non-Federal use, variously for terrestrial, satellite, radio astronomy and radiolocation uses.³ In 2003, the Commission established a two-step, non-exclusive licensing regime for non-Federal use of the 70/80/90 GHz bands.⁴ Users must first obtain a nationwide, non-exclusive license from the Commission, and then register individual links

¹ *Modernizing and Expanding Access to the 70/80/90 GHz Bands*, WT Docket No. 20-133, Notice of Proposed Rulemaking, 35 FCC Rcd 6039 (2020) (*70/80/90 GHz NPRM*).

² See, e.g., *70/80/90 GHz NPRM* at 6049-6058, paras. 22-45; Petition for Rulemaking of Aeronet Global Communications Inc., RM-11824 (filed Feb. 6, 2019) (Aeronet Aviation Petition); Petition for Rulemaking of Aeronet Global Communications Inc., RM-11825 (filed Feb. 6, 2019) (Aeronet Maritime Petition).

³ 47 CFR § 2.106. See also *70/80/90 GHz NPRM* at 6040-41, para. 2. The adjacent 76-81 GHz band is allocated for, among other uses, Radiolocation and licensed by rule under subpart M of Part 95 (The 76-81 GHz Band Radar Service), which “may operate as vehicular radars, or as fixed or mobile radars in airport air operations areas, including but not limited to [foreign object debris] detection radars and aircraft-mounted radars for ground use.” 47 CFR § 95.3331. The adjacent 86-92 GHz band is allocated for Earth Exploration-Satellite (passive), Space Research (passive), and Radio Astronomy services. See, e.g., *id.*, *70/80/90 GHz NPRM* citing 47 CFR § 2.106 nn.US246, US74.

⁴ *Allocations and Service Rules for 71-76 GHz, 81-86 GHz and 92-95 GHz Bands*, WT Docket No. 02-146, Report and Order, 18 FCC Rcd 23318, 23322, para. 5 (2003) (*70/80/90 GHz Report and Order*).

through a third-party database manager.⁵ Non-Federal licensees may use the 70/80/90 GHz bands for any point-to-point, non-broadcast service.⁶

In June 2020, the Commission adopted the *70/80/90 GHz NPRM*, which sought comment on potential rule changes for non-Federal uses of the bands proposed by interested parties.⁷ Certain of these proposals, such as changes to antenna standards and link registration processes, were aimed at improving efficiency in traditional uses of the bands, such as wireless backhaul.⁸ Other inquiries contemplated use of the bands for new service offerings, such as Aeronet's proposals that the Commission authorize point-to-point links to endpoints in motion to facilitate broadband service to ships and aircraft, provided that they do not cause interference to other authorized uses.⁹ The Commission also sought comment on whether the 70/80/90 GHz bands could accommodate other types of services, such as High Altitude Platform Stations (HAPS) or similar services.¹⁰ In the record received in response to the *70/80/90 GHz NPRM*, several commenters expressed support for the provision of new services in these bands, including bringing broadband Internet access capabilities to areas where such access may not be consistently available.¹¹ Other parties have expressed concerns about the introduction of new services in the bands.¹²

Discussion. In this Notice, we provide an opportunity for commenters to supplement the record regarding the provision of new services in the 70/80/90 GHz bands.¹³ In particular, we are interested in the feasibility of permitting HAPS or other stratospheric-based platform services in these bands and we seek comment on coordinating with incumbents in the band. The Commission's rules define a "High Altitude Platform Station" as "[a] station located on an object at an altitude of 20 to 50 km and at a specified, nominal, fixed point relative to the Earth."¹⁴

⁵ See 47 CFR § 101.1523(b). Coordination of proposed non-Federal fixed links with Federal Government fixed links is accomplished using NTIA's automated, online system. See *generally id.*, § 101.1523(b)(1),(3).

⁶ 47 CFR § 101.1507.

⁷ See *70/80/90 GHz NPRM*. See also Letter from Cheng-yi Liu, Counsel, Fixed Wireless Communications Coalition, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 10-153, GN Docket No. 14-177, IB Docket No. 15-256, RM-11664, WT Docket No. 10-112, IB Docket No. 97-95, at 2 (filed Feb. 13, 2018) (FWCC *Ex Parte*) citing Comments of the Fixed Wireless Communications Coalition in Response to the Commission's Notice Of Inquiry, WT Docket No. 10-153 (filed Oct. 5, 2012), amended by Letter from Mitchell Lazarus, Counsel, FWCC to Marlene H. Dortch, Secretary, FCC in WT Docket No. 10-153 (filed April 4, 2013), further amended by Letter from Mitchell Lazarus, Counsel, FWCC to Marlene H. Dortch, Secretary, FCC, WT Docket No. 10-153 (filed March 24, 2014); Petition for Rulemaking of Aeronet Global Communications Inc., RM-11824 (filed Feb. 6, 2019) (Aeronet Aviation Petition); Petition for Rulemaking of Aeronet Global Communications Inc., RM-11825 (filed Feb. 6, 2019) (Aeronet Maritime Petition).

⁸ *70/80/90 GHz NPRM* at 6045–47, 6048, paras. 11–14, 18–19.

⁹ *70/80/90 GHz NPRM* at 6043–44, para. 7 (citing Aeronet Aviation Petition; Aeronet Maritime Petition).

¹⁰ *70/80/90 GHz NPRM* at 6059, para. 51.

¹¹ See Elefante Comments at 2-3; Loon Comments at 5; IEEE comments at 2; Dynamic Spectrum Alliance comments at 5; L3Harris comments at 1.

¹² See, e.g., SpaceX Reply Comments at 6; National Radio Astronomy Observatory and Green Bank Observatory Reply Comments; Letter from Jennifer A. Manner Senior Vice President, Regulatory Affairs Hughes Network Services, LLC.

¹³ We note that there are other issues raised by the *70/80/90 GHz NPRM* and subsequent record, such as changes to antenna standards and the link registration process, that we do not address here. These issues remain under consideration by the Commission.

¹⁴ 47 CFR § 2.1(c). See also RR 1.66A ("high altitude platform station: A station located on an object at an altitude of 20 to 50 km and at a specified, nominal, fixed point relative to the Earth."). We note that the Elefante Group in

We seek further input on whether we should consider authorizing HAPS or other stratospheric-based platform services in any portion of the 70/80/90 GHz bands.¹⁵ How would HAPS be used in these bands? What sort of services would be provided or supported by these systems? We also seek comment on whether HAPS or other stratospheric-based platform services are likely to be commercially viable.¹⁶ Alternatively, are stratospheric-based platform services likely to be developed to support non-commercial use, either for private, not-for-profit uses, or in support of local, state, or Federal governments?

We also seek comment on the potential for HAPS, or other stratospheric-based platform services, to cause harmful interference to incumbent or potential future services in these, or adjacent, bands including both terrestrial and satellite operations. Advocates for HAPS or similar services assert that they can coexist with incumbent users of the 70 GHz and 80 GHz bands and should be allowed to use these bands without an arbitrary ceiling, e.g., 50,000 feet, for nominally fixed or antennas in motion.¹⁷ If the Commission authorizes HAPS or other stratospheric-based platform services in these bands, are there any limitations or restrictions on the deployment of such services that the Commission should impose in order to guard against the potential for interference into incumbent operations, such as altitude restrictions, power limits, transmitter design considerations, directional constraints, additional emission limits, or other requirements, including new or revised coordination requirements? To aid other stakeholders in the bands, and the adjacent bands, to evaluate potential interference concerns and submit their own analyses, we also seek specific information about anticipated stratospheric-based platform system operating parameters including transmission direction, deployment densities, earth station elevation angles, station heights, antenna characteristics (e.g., antenna polarization, antenna pattern mask), station Equivalent Isotropically Radiated Power (EIRP), and operating bandwidths (including out-of-band performance).

In the *70/80/90 GHz NPRM*, the Commission also sought comment on the international coordination implications of the services proposed.¹⁸ The Bureau now specifically seeks comment on any international implications related to HAPS or other stratospheric-based platform services in the 70/80/90 GHz bands.

2018 sought Commission authorization to operate a stratospheric-based broadband service using platform stations operating just below the 20 km threshold set for HAPS. *See* Petition for Rulemaking of Elefante Group, Inc., RM-11809 (filed May 31, 2018). *See also* *Elefante Group Inc.'s Petition for Rulemaking 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*, Report No. 3093, CG RM-11809 (2018).

¹⁵ Spectrum for HAPS in the frequency bands 47/48 GHz, 2 GHz, 27/31 GHz and 6 GHz was designated at three WRCs – WRC-97, WRC-2000 and WRC-12. After study for WRC-19, additional spectrum was identified: 31-31.3 GHz and 38-39.5 GHz globally, and in Region 2 (including US), 21.4-22 GHz and 24.25-27.5 GHz.

¹⁶ We note that several advocates for HAPS are no longer pursuing their planned operations. *See* Paresh Dave, *Alphabet Shutting Loon, Which Used Balloon Alternative to Cell Towers*, Reuters (Jan. 21, 2021) <https://www.reuters.com/article/us-alphabet-loon/alphabet-shutting-loon-which-used-balloon-alternative-to-cell-towers-idUSKBN29R02U>; Adam Satariano, *Facebook Halts Aquila, Its Internet Drone Project*, New York Times (June 27, 2018) <https://www.nytimes.com/2018/06/27/technology/facebook-drone-internet.html>; Elefante Comments at 2 ("Due to unforeseen developments, Elefante Group is unable to state with certainty its ability at this time to advance its mission consistent with the vision set out in the Elefante Group Petition. Nonetheless, Elefante Group submits that the Commission should strive to preserve maximum flexibility and opportunities in its regulatory framework for the 70/80 GHz Bands.").

¹⁷ *See, e.g.*, Loon Reply Comments at 14-15 (noting that the same stratospheric platform may operate either as a nominally fixed service or as an aeronautical mobile service, depending on its specific operations, that Aeronet and FWCC requested a ceiling of 50,000 feet for aeronautical mobile service, and that from an interference perspective there is no practical difference in interference risk between an aircraft flying at 50,000 feet and an aircraft higher in the stratosphere). *See also supra* note 14 **Error! Bookmark not defined.** (Elefante proposal to operate platform stations just below the 20 km threshold set for HAPS).

¹⁸ *See 70/80/90 GHz NPRM* at 6059, para. 52.

If the Commission does authorize HAPS or other stratospheric-based services in some or all of the 70/80/90 GHz bands, what service rules should apply? Could these new services be registered and coordinated through the existing third-party database manager process? We seek comment on what changes to the registration and coordination process would be necessary to facilitate the deployment of HAPS or other stratospheric-based services. The current 70/80/90 GHz coordination process only considers fixed systems. If HAPS is authorized, should it be limited to nominally fixed stations?

Relatedly, we also seek to further develop the record on Aeronet's proposal to permit the use of "Scheduled Dynamic Datalinks" (SDDLs).¹⁹ In the *70/80/90 GHz NPRM*, the Commission sought comment on how links to endpoints-in-motion could affect existing services in the 70/80/90 GHz bands.²⁰ Several commenters filed comments and technical analyses supporting Aeronet's proposals,²¹ while several commenters express concern about potential interference to incumbents.²² In view of the concerns expressed, we seek further detailed technical studies demonstrating that deployment of SDDLs would not cause harmful interference to incumbents, co-primary users, adjacent band uses or potential future uses of the band, including FS, FSS, HAPS or other stratospheric-based platform services, and the adjacent band EESS (passive) and radio astronomy operations. To aid other stakeholders in the bands, and the adjacent bands, to evaluate potential interference concerns and submit their own analyses, we also seek specific information about anticipated SDDL system operating parameters, including station heights, antenna characteristics (e.g., antenna polarization, antenna pattern mask), station EIRP, operating bandwidths (including out-of-band performance), and ground station gains.²³ In this context, we note that on October 4, 2021, Aeronet filed a coexistence analysis of its proposed SDDL system and the Space X satellite system. We seek comment on this filing, including the extent to which it addresses the questions raised in this paragraph and related stakeholder concerns.²⁴

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Interested parties may file comments and reply comments on or before the dates indicated on the first page of this document. Comments may be filed using the Commission's Electronic Comment Filing System (ECFS). See *Electronic Filing of Documents in Rulemaking Proceedings*, 63 FR 24121 (1998).

- Electronic Filers: Comments may be filed electronically using the Internet by accessing the ECFS: <http://fjallfoss.fcc.gov/ecfs2/>.
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¹⁹ See *70/80/90 GHz NPRM* at 6043–44, 49–58, paras. 7, 22–45.

²⁰ See *70/80/90 GHz NPRM* at 6051, para. 28–29.

²¹ See Letter from Julie M. Kearney, Global Head of Communications Regulation and Policy, Loon, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 20-133 (filed Jan. 14, 2021); L3Harris Comments at Attach. A; Letter from Samuel L. Feder, Jenner & Block, to Marlene H. Dortch, Secretary, FCC, RM-11824, RM-11825 (filed May 10, 2019) at Attach. A (Comsearch Report).

²² See SpaceX Reply Comments at 6; National Radio Astronomy Observatory and Green Bank Observatory Reply Comments; Letter from Jennifer A. Manner Senior Vice President, Regulatory Affairs Hughes Network Services, LLC to Marlene H. Dortch, Secretary, FCC (filed June 21, 2020); FWCC Comments at 6–7; Airbus Comments; Airbus Comments at 2; CTIA Comments.

²³ See Letter from Jennifer Manner, Senior Vice President, Regulatory Affairs, Hughes Network Systems, LLC, to Marlene H. Dortch, Secretary, FCC (filed June 21, 2020).

²⁴ Letter from Roger Sherman, counsel for Aeronet Global Communications, Inc., to Marlene H. Dortch, Secretary, FCC (filed Oct. 4, 2021), Attach. (Aviation-Satellite Coexistence in the 70 and 80 GHz bands).

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Additional Information. For further information, contact Anthony Patrone of the Wireless Telecommunications Bureau, at (202) 418-2428, or Anthony.Patrone@fcc.gov.

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