



March 27, 2024

Via ECFS

Marlene H. Dortch
Secretary
Federal Communications Commission
Washington, DC 20554

Re: ET Docket No. 18-295, *Unlicensed Use of the 6 GHz Band*, GN Docket No. 17-183, *Expanding Flexible use in Mid-Band Spectrum Between 3.7 and 24 GHz*

The Computer & Communications Industry Association (CCIA) is pleased to provide comment in this ongoing Federal Communications Commission (FCC) proceeding to consider “6 GHz rules to foster unlicensed innovation.”¹

CCIA supports the FCC’s proposal to expand Very Low-Power (VLP) wireless devices (1) to operate in the U-NII-6 and U-NII-8 bands, (2) to allow these devices on an unlicensed basis at a higher power level subject to geofencing, *2d FNPRM* ¶ 104, and (3) to enable direct LPI Client-to-Client communications, *id.* ¶¶ 187-194. Enabling such expanded use of the 6 GHz band will foster innovation, competition, and the efficient use of scarce spectrum resources.

VLP devices are useful for enjoying many applications, particularly augmented-reality and virtual-reality (A/R and V/R) technologies used for gaming, education, healthcare, and workforce development. In the educational context, virtual classrooms powered by A/R are a valuable tool for enabling collaborative study and in-depth experiences.² Workforce training has been amplified by V/R technology that put employees in real-world scenarios and simulate hands-on customer interaction.³ For the hearing-impaired, A/R devices used in conjunction with traditional hearing aids create “multimodal sensor integration” to super-charge auditory inputs.⁴

For VLP devices to operate in a dense environment, they will require additional WiFi channels. VLP technologies require low latency, high throughput, and reliable connectivity. The 6 GHz band affords these benefits. The Commission’s proposal to permit operations in the U-NII-6 and U-NII-8 bands would create a new and necessary spectrum option for A/R and V/R services. Further, the Commission’s proposal to permit higher-power operations throughout

¹ ET Docket No. 18-295, GN Docket No. 22-270, *Second Report and Order, Second Further Notice of Proposed Rulemaking, and Memorandum Opinion and Order on Remand*, FCC 23-86 ¶ 2 (rel. [Nov. 1, 2023](#)), published at 89 Fed. Reg. 14015 (Feb. 26, 2024). CCIA will refer to the request for comment portion of this document as the “*2d FNPRM*”.

² *E.g.*, Steve Grubbs, *The Education Metaverse Has Arrived: Get Sucked In*, Medium (Sept. 18, 2020), <https://steve-grubbs.medium.com/the-advantages-of-a-digital-twin-virtual-reality-campus-563b77c951cc/>.

³ *E.g.*, Nicole Lewis, *Wal-Mart Revolutionizes Its Training with Virtual Reality* (July 22, 2019), <https://www.shrm.org/topics-tools/news/technology/walmart-revolutionizes-training-virtual-reality>.

⁴ Ravish Mehra, *et al.*, *Potential of Augmented Reality Platforms to Improve Individual Hearing Aids and to Support More Ecologically Valid Research* (Nov./Dec. 2020), <https://pubmed.ncbi.nlm.nih.gov/33105268/>.

the band, subject to geofencing, will permit unlicensed operations at higher power levels when they are not located near incumbent facilities. Studies submitted in this record demonstrate that these proposed improvements will not result in a significant risk of harmful interference to incumbent licensees.⁵

The Commission would be on solid legal ground if it adopted the proposed rules in reliance on these studies, which use the same assumptions and methods as the studies that the Commission relied on in its earlier 6 GHz orders, including the 2020 Order that authorized unlicensed devices in the 6 GHz band⁶ and survived appellate review.⁷ As to the 2020 Order, the D.C. Circuit found that the Commission’s assessment and treatment of potential interference “align[ed] perfectly with existing Commission regulations.”⁸

LPI Client-to-Client (C2C) Communications allow for peer-to-peer (P2P) communications when clients of indoor access points communicate directly with each other using the already agreed upon and established protection criteria for indoor operation (*i.e.*, LPI mode). LPI C2C enables applications and use cases with stringent latency-throughput performance requirements while introducing the potential for improving spectral efficiency. In addition, LPI C2C lowers contention and emission to other unlicensed users without any additional risk of harmful interference. Some examples of emerging use cases that would benefit from LPI C2C include immersive XR (Artificial/Virtual/Mix Reality), ranging/proximity applications, and high-resolution sensing-based use-cases. A significant record exists supporting the LPI C2C mode both from the 2020 *Report and Order and FNPRM* and in conjunction with the 2021 C2C Public Notice.⁹

With the Commission’s auction authority having lapsed over a year ago, the need to expand permissible uses of existing spectrum is acute. And the services for which U.S. companies are ready, today, to put U-NII-6 and U-NII-8 to use are significant and multifaceted. Faced with this exigent need and the credible engineering evidence in the record, the Commission should adopt its proposal to authorize VLP devices operating up to 1 dBm/MHz EIRP for use in the 6 GHz band. We also recommend that the Commission authorize LPI C2C at a minimum enabling signal threshold of -82 dBm/20MHz when clients are receiving and decoding that signal from

⁵ See VLP/FS Interaction Study: Monte Carlo Simulation of the San Francisco Metro Area, *as attached to* ET Docket No. 18-295, GN Docket No. 17-183, Letter from Paul Caritj, Counsel to Apple Inc., Broadcom Inc., *et al.*, to Marlene H. Dortch, Sec’y, FCC (filed [Feb. 28, 2023](#)); Analysis of FS-VLP Interactions: Houston, TX, *as attached to* ET Docket No. 18-295, GN Docket No. 17-183, Letter from Paul Margie, Counsel to Apple Inc., to Marlene H. Dortch, Sec’y, FCC (filed [Feb. 9, 2023](#)); ET Docket No. 18-295, GN Docket No. 17-183, Letter from Christopher Szymanski, Dir., Prod. Mktg, Tech. Strategy, Wireless Commc’ns and Connectivity Div., Broadcom Inc., and Thomas Derham, Principal Scientist, Broadcom Inc., to Marlene H. Dortch, Sec’y, FCC (filed [Sept. 11, 2023](#)); ET Docket No. 18-295, GN Docket No. 17-183, Letter from Paul Margie, Counsel to Apple Inc., Broadcom Inc., *et al.*, to Marlene H. Dortch, Sec’y, FCC (filed [Sept. 11, 2023](#)).

⁶ ET Docket No. 18-295 and GN Docket No. 17-183, Report and Order and Further Notice of Proposed Rulemaking, FCC 20-51 (rel. [Apr. 24, 2020](#)) (“*Report and Order and FNPRM*”).

⁷ *AT&T Servs., Inc. v. FCC*, [21 F.4th 841](#) (D.C. Cir. 2021).

⁸ *Id.* at 846.

⁹ See, e.g., ET Docket No. 18-295, *Report and Order and Further Notice of Proposed Rulemaking; The Office of Engineering & Technology Seeks Additional Information Regarding Client-to-Client Device Communications in the 6 GHz Band*, Public Notice, DA 21-7 (rel. Jan. 11, 2021).



indoor access points.

CCIA appreciates the opportunity to participate in this proceeding and is available to provide any additional information that might be helpful to the Commission.

Sincerely,

Stephanie Joyce
Chief of Staff and Senior Vice President
CCIA