



Via Electronic Comment Filing System

September 17, 2019

Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Re: *Notice of ex parte filing of iRobot Related to
Unlicensed Use of the 6GHz Band, Expanding Flexible Use in the Mid-
Band Spectrum Between 3.7 and 24 GHz, ET Docket No. 18-295, GN
Docket No. 17-183*

Dear Ms. Dortch:

By this letter, and pursuant to Sections 1.1206 of the Commission's rules,¹ iRobot files this notice supplementing its initial comments to discuss changes proposed in the record since the Commission's release of the Notice of Proposed Rulemaking in this docket. iRobot files this letter to reiterate its concerns about the deployment of unlicensed devices under the technical parameters proposed in the Commission's NPRM in this proceeding² but also to reiterate its willingness to work with stakeholders on finding technical solutions to address interference and other concerns.³ As detailed below in this letter, iRobot encourages the Commission to delay action until the full impact of the proposed rules is better understood. The Commission's actions at this juncture have significant ramifications across a host of industries, including the country's most critical public safety and infrastructure industries.

Delay is Warranted as the Proposed Rules May Have Far-Reaching Impact to Critical Industries

iRobot remains concerned with the potential deployment of unlicensed devices under the technical parameters proposed in the Commission's NPRM in this proceeding. Recent filings citing studies presented in the European Union further underscore iRobot's concerns that the proposed changes to the 6GHz band would greatly inhibit use of the band by iRobot and other stakeholders that have relied on the current technical rules of the 6GHz band to develop innovative products for businesses, governments and consumers.⁴ As the record in this

¹ 47 C.F.R. § 1.1206.

² *Unlicensed Use of the 6GHz Band, Expanding Flexible Use in the Mid-Band Spectrum Between 3.7 and 24 GHz*, ET Docket No. 18-295, GN Docket No. 17-183; Notice of Proposed Rulemaking.

³ Reply Comments of iRobot Corp., ET Docket No. 18-295, filed Feb. 12, 2019.

⁴ Letter from E. Austin Bonner, Counsel to Broadcom, Inc., Harris Wiltshire & Grannis, to Marlene H. Dortch, Secretary, Federal Communications Commission, ET Docket No. 18-295 (filed Aug. 13, 2019) (*citing* European Communications Committee, European Conference on Postal and Telecommunications (CEPT), ECC Report 302: Sharing and compatibility studies related to Wireless Access Systems including Radio Local Area Networks



proceeding continues to evolve, it is clear that the transition of the 6GHz band from its current uses to allow much higher power use by unlicensed devices is fraught with technical and policy issues. Use of the 6GHz band by a full and diverse range of stakeholders, including public safety, critical infrastructure, telecommunications, automotive, rail, municipalities, and wideband devices, has demonstrated its importance and the wide array of entities that have relied on the Commission's current service rules in the band.⁵ The recent filing by proponents of altering the current rules to accommodate unlicensed broadband use underscore the concerns raised by many in the band, but particularly those entities that are deploying ultra wide band (UWB) technologies in the 6GHz band. Specifically, as the *ECC Report* noted, UWB technologies not only "provide safe and secure wireless access services," but also UWB is "unique in that it provides the most precise location capability using the least energy of any wireless technology."⁶ The ECC acknowledges the growth of this technology from the current installed base of greater than 2 million (some at the 6.5GHz band) with projected growth to 3.1 billion devices by 2025.⁷ The *ECC Report* is clear, however, that WAS/RLAN systems would have an impact on UWB systems⁸ and that "if any Wi-Fi transmissions occur inside the UWB band, the impact on UWB would be severe."⁹

Delay is Warranted as Studies Regarding the Impact of the Proposed Rules to UWB Systems are Ongoing

iRobot currently uses the 6240 - 6740 MHz frequency range for its Terra robotic lawn mower.¹⁰ iRobot, as noted in its reply comments, selected the UWB technology for its robotic lawn mower because of its high bandwidth and high accuracy and moved forward with its investments in research and development only after receiving a waiver from the Commission.¹¹ iRobot has introduced the Terra robot lawn mower in Germany and had planned to introduce it to the U.S. market in the spring of 2020. While we continue our development for the U.S. market, we have not set a specific date for such an introduction as we continue to investigate the potential impact to our product by the proposed rulemaking. Because UWB systems are extremely sensitive to transmit duty cycles and power levels,¹² iRobot has commissioned a technical study to determine specifically the effects of 6 GHz Wi-Fi routers on iRobot's UWB

(WAS/RLAN) in the frequency band 5925-6425MHz, available at <https://www.ecodocdb.dk/download/cc03c766-35f8/ECC%20Report%20302.pdf> (*ECC Report*).

⁵ See e.g., American Assn. of State Highway and Transportation Officials Comments, APCO Comments, AT&T Comments, American Electric Power Comments, Assn. of American Railroads, Boeing Co. Reply Comments, City of Austin, Texas Comments, Decawave Comments, Imperial Irrigation Dist. Comments, Intelligent Transportation Society Comments, Natl. Public Safety Telecommunications Council Comments, Riverbend Communications, LLC Comments, Utilities Technology Council Comments, UWB Alliance Comments, Xcel Energy Services, Inc. Comments, and Zebra Comments; ET Docket No. 18-295, GN Docket No. 17-183.

⁶ *ECC Report* at 134.

⁷ *Id.*

⁸ *Id.* at 147.

⁹ *Id.* at 138.

¹⁰ iRobot Reply Comments at 2.

¹¹ *Id.* at 2-3.

¹² iRobot Reply Comments at 3.



system (i.e. impact of in band emissions). That study should be completed in the next few weeks. We encourage the Commission to study thoroughly the technical impact of its decision on the viability of the 6240 - 6740 MHz portion of the 6GHz band and potential technical solutions to address the significant interference concerns raised by parties in the record.¹³ The *ECC Report* would indicate great caution is warranted.¹⁴

Because of the uncertainty created by the Commission's proposed revisions to the 6GHz band and the desire to work with stakeholders on finding technical solutions to address interference and other concerns, iRobot is in the process of performing a second set of testing to determine the impact of out of band emissions from Wi-Fi on a hypothetical Terra system operating in the U-NII-5 portion of the 6 GHz band assuming Wi-Fi devices were disallowed from the U-NII-5 band. As noted above, many incumbent users have already raised concerns with permitting Wi-Fi broadband devices in the U-NII-5 portion of the band due to sensitivity of their operations. Should our analysis demonstrate that the U-NII-5 band offers a viable alternative and given the record of concerns raised by incumbent licensed users of this portion of the band, we believe the Commission should protect the U-NII-5 band from higher-powered Wi-Fi devices. A number of parties in the proceeding appear to be undertaking similar efforts to determine what is technically feasible for their particular technology needs and have urged the Commission to delay action until further research is done to mitigate interference.¹⁵ We agree with that approach.

As the Commission continues to seek guidance on modifications to its initial proposal, iRobot hopes to engage with the Commission and stakeholders to help develop a path forward. Please direct any questions to the undersigned.

A handwritten signature in blue ink, appearing to read "Tonya Drake".

Tonya Drake
VP & Assistant General Counsel
iRobot Corporation
8 Crosby Drive, 10-2, Bedford, MA 01730
(781) 430-3675

¹³ See e.g., Letter from Timothy Harrington, Executive Director, UWB Alliance to Marlene H. Dortch, Secretary, Federal Communications Commission, ET Docket No. 18-295 (filed May. 4, 2019).

¹⁴ iRobot would note that as the recent *Annual Report on the Status of Spectrum Repurposing* notes, approximately 14,689.5 MHz of spectrum has been made available across a mix of frequency bands for unlicensed use. This is more than twice the amount that is available for licensed use and excludes the 6 GHz band under consideration in this proceeding. *Annual Report on the Status of Spectrum Repurposing*, Dept. of Commerce, available at https://www.ntia.doc.gov/files/ntia/publications/spectrum_repurposing_report_august_2019.pdf (Sept. 3, 2019).

¹⁵ See e.g., Letter from Jeff Cohen, Chief Counsel, APCO Intl., to Marlene H. Dortch, Secretary, Federal Communications Commission, ET Docket No. 18-295 (filed Aug. 7, 2019); Letter from Michael Goggin, AT&T, to Marlene H. Dortch, Secretary, Federal Communications Commission, ET Docket No. 18-295 (filed Aug. 8, 2019); Letter from Brett Kilbourne, Utilities Technologies Council, to Marlene H. Dortch, Secretary, Federal Communications Commission, ET Docket No. 18-295 (filed July 28, 2019); Letter from Timothy Harrington, Executive Director, UWB Alliance, to Marlene H. Dortch, Secretary, Federal Communications Commission, ET Docket No. 18-295 (filed May 4, 2019).