

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, DC 20554**

In the Matter of )  
 )  
Use of the 5.850-5.925 GHz Band ) ET Docket No. 19-138  
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**REPLY COMMENTS OF WI-FI ALLIANCE**

Wi-Fi Alliance<sup>1/</sup> submits these reply comments in response to the comments of other parties in the above-referenced proceeding, in which the Commission proposes changes to the rules governing the 5.850-5.925 GHz (“5.9 GHz”) band.<sup>2/</sup> The record supports Wi-Fi Alliance’s request that the Commission adopt its proposal to allow unlicensed operations in the lower 45 megahertz of the band<sup>3/</sup> and adopt out of band emission (“OOBE”) limits and other technical rules that ensure the 5.9 GHz band can be used for unlicensed operations while still providing the

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<sup>2/</sup> *Use of the 5.850-5.925 GHz Band*, Notice of Proposed Rulemaking, 34 FCC Rcd 12603 (2019) (“*NPRM*”).

<sup>3/</sup> *NPRM* ¶ 11.

same level of protection currently available for Intelligent Transportation System (“ITS”) operations.<sup>4/</sup>

## **I. THE RECORD SUPPORTS THE NEED FOR ADDITIONAL SPECTRUM FOR WI-FI**

Commenters agreed that there is an urgent need for more unlicensed spectrum, and that the 5.9 GHz band is ideally positioned to help meet this demand. For example, NCTA explained that demand for Wi-Fi will become even more acute as the U.S. progresses toward 5G, and the 5.9 GHz band can meet this need because it is adjacent to the workhorse U-NII-3 band and will allow for existing Wi-Fi devices to access a contiguous 160-megahertz channel for Wi-Fi 6.<sup>5/</sup> Likewise, the Free State Foundation explained that Wi-Fi is a victim of its own “widescale and well-documented success,” and existing Wi-Fi bands such as the 2.4 GHz band are already too congested to support enterprise applications effectively.<sup>6/</sup>

In contrast, some commenters claim that no additional spectrum is required for Wi-Fi.<sup>7/</sup> But those claims overlook both the urgent need for more spectrum for Wi-Fi and the

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<sup>4/</sup> See Comments of Wi-Fi Alliance, ET Docket No. 19-138 (filed Mar. 9, 2020) (“Wi-Fi Alliance Comments”).

<sup>5/</sup> Comments of NCTA – The Internet and Television Association, ET Docket No. 19-138, at 4-11 (filed Mar. 9, 2020) (“NCTA Comments”).

<sup>6/</sup> Comments of the Free State Foundation, ET Docket No. 19-138, at 6-10 (filed Mar. 9, 2020) (“Free State Foundation Comments”) (Also citing two studies that indicate we are headed for a Wi-Fi spectrum crisis by 2025). See also, e.g., Joint Comments of Broadcom, Inc. and Facebook, Inc., ET Docket No. 19-138, at 1-2 (filed Mar. 9, 2020) (“Broadcom and Facebook Joint Comments”) (“Demand for unlicensed spectrum has been explosive. . . . When combined with the existing, adjacent spectrum available in U-NII-3, the U-NII-4 band will allow next generation Wi-Fi standards, such as Wi-Fi 6 to be deployed in the band” supporting gigabit connectivity, lower latency, improved coverage and power efficiency.); Comments of Comcast Corp., ET Docket No. 19-138, at 2-10 (filed Mar. 9, 2020) (“Comcast Comments”) (Explaining that “[e]very year, as it designs wireless routers and brings Internet connections to additional customers, Comcast sees more connected devices in congested environments,” and this *NPRM* can help address this challenge.).

<sup>7/</sup> See, e.g., Comments of 5G Automotive Association, ET Docket No. 19-138, at 1-2 (filed Mar. 9, 2020) (explaining that due to the Commission’s efforts to make other spectrum available for Wi-Fi, the Commission need not compromise transportation safety); Comments of American Association of State Highway and Transportation Officials, ET Docket No. 19-138, at 5 (filed Mar. 3, 2020) (“The

Commission’s own assessment of Wi-Fi requirements in the NPRM.<sup>8/</sup> Americans are tele-working, distance learning, receiving medical care and keeping in touch with loved ones – all through Wi-Fi. Without Wi-Fi, America would be at a standstill today. For many living in rural and remote parts of the country, a telehealth visit with a medical professional may be the only medical care they can receive. And even hospitals in urban areas are encouraging patients with non-life-threatening symptoms to turn to telehealth to avoid further burdening crowded hospital waiting rooms and exposing healthcare workers.<sup>9/</sup>

The Commission should similarly reject the claims of some commenters that suggest the Commission should not designate any part of the 5.9 GHz band for unlicensed operations, either because the 6 GHz band – which the Commission has designated for unlicensed operations – will meet the needs for unlicensed spectrum, or because 45 megahertz is a “small sliver” of spectrum.<sup>10/</sup> The record reflects that both actions – designating the full 6 GHz band *and* a portion

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development and deployment of connected vehicle technologies is not even remotely comparable to that of faster and better Wi-Fi service.”); Comments of Securing America’s Future Energy, ET Docket No. 19-138 (filed Mar. 9, 2020); Comments of National Public Safety Telecommunications Council, ET Docket No. 19-138 (filed Mar. 9, 2020) (“NPSTC Comments”); Comments of Toyota Motor Corp., ET Docket No. 19-138, at 20-21 (filed Mar. 9, 2020); Comments of Amateur Television Network, ET Docket No. 19-138, at 1 (filed Mar. 5, 2020) (“There is plenty of current spectrum for [unlicensed] use as well as a pending NPRM to add part 15 WiFi in the 6 GHz band.”).

<sup>8/</sup> NPRM ¶¶ 13-17.

<sup>9/</sup> See Dr. Delaram J. Taghipour, *How telehealth can help fight novel coronavirus*, ABC NEWS (Mar. 6, 2020, 1:07 PM) <https://abcnews.go.com/US/telehealth-fight-coronavirus/story?id=69429151>.

<sup>10/</sup> See, e.g., Comments of AT&T, ET Docket No. 19-138, at 4 (filed Mar. 9, 2020) (Arguing that “45 MHz would represent a small sliver of the large unlicensed spectrum pie available to developers, but that 45 MHz controls the fate of ITS development in the 5.9 GHz band.”) (“AT&T Comments”); Comments of National Electrical Manufacturers Association, ET Docket No. 19-138, at 3-4 (filed Mar. 9, 2020); Comments of Consumer Reports, ET Docket No. 19-138, at 9 (filed Mar. 9, 2020) (calling the reallocation of 45 megahertz in the 5.9 GHz band “a drop in the bucket compared to what might be available in the adjacent band.”).

of the 5.9 GHz band for unlicensed use – are necessary.<sup>11/</sup> Existing devices can be upgraded *now* to use the additional 5 GHz band capacity while the 6 GHz band can offer longer-term relief.<sup>12/</sup>

The Commission must reject the claims of those – including NTIA<sup>13/</sup> – that advocate for the status quo for the entire 5.9 GHz band – retaining an exclusive designation for DSRC. The urgent need for spectrum means that the Commission cannot give “one more chance” to make use of the full 5.9 GHz band for ITS applications.<sup>14/</sup> The Commission assigned the 5.9 GHz band for DSRC in 2000, and adopted licensing and service rules in 2003,<sup>15/</sup> yet, after almost two decades, the promise of DSRC has not been realized and much of the band still remains unutilized. The Commission’s choice is starkly obvious – provide more capacity to a technology that has unlocked revolutionary innovation, wireless connectivity and economic growth or continue to reserve spectrum for technology that has not lived up to its promises.<sup>16/</sup>

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<sup>11/</sup> See, e.g., Broadcom and Facebook Joint Comments at 2 (“Although access to the 6 GHz band will be critical to relieving spectrum congestion, the U-NII-4 band is also important as it can enhance the existing 5 GHz U-NII ecosystem.”); Comments of New America’s Open Technology Institute and Public Knowledge, ET Docket No. 19-138, at 11 (filed Mar. 9, 2020) (“That’s why the contiguous and wide channels at the top of the 5 GHz band and across the 6 GHz band are essential to actually realize the potential of the fiber backhaul that the Commission’s E-rate program and local school districts are deploying.”); NCTA Comments at 1 (“The continued success of Wi-Fi depends on the Commission’s opening additional midband spectrum for unlicensed use, particularly in the 5.9 GHz and 6 GHz bands.”).

<sup>12/</sup> See Wi-Fi Alliance Comments at 5-6.

<sup>13/</sup> Letter from Charles Cooper, Associate Administrator for Spectrum Management, NTIA, to Marlene H. Dortch, Secretary, FCC, ET Docket No. 19-138 (filed Mar. 13, 2020); Letter from Steven G. Bradbury, General Counsel, Dep’t of Transportation, to Douglas Kinkoph, Associate Administrator, NTIA, ET Docket No. 19-138 (dated Mar. 9, 2020); Letter from Steven G. Bradbury, General Counsel, Dep’t of Transportation, to the Honorable Ajit Pai, Chairman, FCC, ET Docket No. 19-138 (dated Mar. 9, 2020).

<sup>14/</sup> *NPRM ¶¶ 9-11* (Explaining that, “Given the limited scope of DSRC deployment within the U.S. to date and the complexities that sharing entails, we are skeptical that delays to accommodate further testing are warranted.”).

<sup>15/</sup> *Amendment of the Commission’s Rules Regarding Dedicated Short Range Communications Services in the 5.850- 5.925 GHz Band (5.9 Band)*, Report and Order, 19 FCC Rcd 2458, ¶¶ 13-16 (2004).

<sup>16/</sup> See Free State Foundation Comments at 7 (“During the intervening two decades, DSRC has been incorporated into at most a few thousand vehicles in the United States, primarily a single Cadillac model. By contrast, there were 13 billion Wi-Fi capable devices as of June 2019.”).

As Commissioner O’Rielly observed in his statement approving the *Notice of Proposed Rulemaking*, two decades have passed since the band was first allocated for DSRC, yet “this spectrum still remains – at least by any rational person’s estimation – highly underutilized.”<sup>17/</sup> Instead of the promise of DSRC, all that has been deployed are “a few localized systems and limited equipment in a discontinued car line.” Others agree.<sup>18/</sup> For example, the Wireless Internet Service Providers Association explained that the 5.9 GHz band has been “profoundly underutilized for two decades” and a change in the status quo regarding the 5.9 GHz band will provide “significant economic and public interest benefits.”<sup>19/</sup> Numerous recent economic studies also supported this conclusion.<sup>20/</sup>

Even some automotive commenters acknowledge the sparse use of the spectrum by asking the Commission to implement a Time Horizon to allow them to demonstrate the spectrum is sufficiently utilized.<sup>21/</sup> But after nearly two decades, the argument that most of that time was taken up by research and testing—whereas deployments are finally happening now—is no longer credible.<sup>22/</sup> This is especially true now that much of the ITS ecosystem is coalescing around C-

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<sup>17/</sup> Statement of Commissioner Michael O’Rielly, *Use of the 5.850-5.925 GHz Band*, ET Docket No. 19-138 (Dec. 12, 2019).

<sup>18/</sup> See, e.g., Wi-Fi Alliance Comments; Comments of the Wireless Internet Service Providers Association, ET Docket No. 19-138, at 7-8 (filed Mar. 9, 2020) (“WISPA Comments”); Comments of R Street Institute, ET Docket No. 19-138 (filed Mar. 9, 2020); Comments of the Free State Foundation, ET Docket No. 19-138, at 1, 4-5 (filed Mar. 9, 2020) (Describing the 5.9 GHz band as a “grievously underutilized resource.”).

<sup>19/</sup> WISPA Comments at 7-8.

<sup>20/</sup> *Id.* at 8, n.24.

<sup>21/</sup> Comments of NEMA, ET Docket No. 19-138, at 5 (filed Mar. 9, 2020) (proposing a Time Horizon of seven additional years) (“NEMA Comments”); Comments of Applied Information, Inc., ET Docket No. 19-138, at 3, 8-9 (filed Mar. 9, 2020) (also proposing a Time Horizon of seven additional years).

<sup>22/</sup> NEMA Comments at 5.

V2X rather than DSRC. Spectrum is a precious national resource that must be utilized for the maximum public benefit and cannot be under- or unemployed in perpetuity.

## II. TECHNICAL RULES MUST PERMIT ROBUST WI-FI OPERATIONS

Some DSRC and C-V2X proponents argue that U-NII-4 devices should provide greater interference protection to ITS operations in the adjacent (5895-5925 MHz) band than what is already provided under the existing U-NII-3 band (5725-5850 MHz) rules.<sup>23/</sup> The Commission should reject these arguments. Imposing prohibitively burdensome and unnecessary adjacent band coexistence measures on U-NII-4 devices would preclude commercial viability of this band and would defeat the objective of making additional spectrum available for Wi-Fi.

An unlicensed device's unwanted emissions interference to ITS is a function of power, regardless of the source (*i.e.*, either U-NII-3 or U-NII-4 device). The current OOBE limits for the U-NII-3 band have proven to be effective for the protection of ITS, and no commenting party has asserted to the contrary. Therefore, there is no basis for imposing more stringent OOBE limits on operations from the U-NII-4 band. The Commission already affirmed that U-NII-3 OOBE limits afford sufficient level of protection to DSRC systems,<sup>24/</sup> and no party has

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<sup>23/</sup> See, *e.g.*, Comments of Toyota, ET Docket No. 19-138, at 18 (filed Mar. 9, 2020) (stating that emissions at or above 5.895 GHz should not exceed an EIRP of -27 dBm/MHz, and suggesting that a 10 megahertz guard band would still be useful to protect transportation safety communications); Comments of Panasonic, ET Docket No. 19-138, at 16 (filed Mar. 9, 2020) (asking the Commission to tighten emissions masks, consider a guard band, or require Wi-Fi equipment to employ sensing equipment); Comments of General Motors, ET Docket No. 19-138, at 11 (filed Mar. 9, 2020) (arguing for an OOBE limit of “-17 dBm/MHz for the first 10 megahertz from the band edge and -27 dBm/MHz thereafter so long as the power emissions are limited.”); Comments of US Technical Advisory Group, ET Docket No. 19-138, at 10-11 (filed Mar. 9, 2020); Comments of OmniAir Consortium®, ET Docket No. 19-138, at 10 (filed Mar. 10, 2020) (arguing that all unlicensed transmissions in the lower 45 megahertz should be limited to indoor only, and the -27 dBm/MHz spectrum mask is not sufficient to protect V2X in vehicles if there is a Wi-Fi hotspot in that same vehicle operating in these frequencies.).

<sup>24/</sup> *Revision of Part 15 of the Commission's Rules to Permit Unlicensed National Information Infrastructure (U-NII) Devices in the 5 GHz Band*, First Report and Order, 29 FCC Rcd 4127 (2014) (*U-NII 5 GHz Report and Order*) (adding 5.825-5.850 GHz to the 5.725-5.825 GHz (U-NII-3) band and deferring a decision on whether to allow unlicensed devices to use the 5.350-5.470 GHz U-NII-2B and 5.850-5.925 GHz U-NII-4 bands), *recon. denied*; *Revision of Part 15 of the Commission's Rules to Permit*

demonstrated that C-V2X exhibits characteristics requiring greater protection than do DSRC operations in the band. To the contrary, C-V2X proponents state that C-V2X consistently outperforms DSRC on reliability and resiliency.<sup>25/</sup>

As Wi-Fi Alliance highlighted in its comments, ITS devices will operate in the vicinity of roadways and automobiles – always outdoors. Some U-NII-4 devices will operate exclusively indoors, separated from ITS by distance, structures and obstacles, thereby, providing additional interference mitigation to ITS receivers. Based on this fact, the Commission should differentiate OOB limits for U-NII-4 devices that may operate outdoors, as opposed to devices that are designed exclusively for indoor operations. In particular, for U-NII-4 devices that may operate outdoors, as discussed above, the Commission should apply the existing U-NII-3 OOB limit mask of  $-27$  dBm/MHz at 5.925 GHz increasing linearly to  $-5$  dBm/MHz at 5.895 GHz.

As noted above, U-NII-4 indoor devices will be physically separated from ITS. Most of the signal energy of these devices will be contained by the building structure. And the limited amount of U-NII OOB signal energy that may propagate outside of a building structure will be further attenuated by separation distance and obstacles between the U-NII transmitter and ITS systems in street vehicles.<sup>26/</sup> Under most conservative assumptions, the aggregate attenuation value of all these losses will exceed 20 dB. Consequently, U-NII-4 indoor devices can achieve

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*Unlicensed National Information Infrastructure (U-NII) Devices in the 5 GHz Band*, Memorandum Opinion and Order, 31 FCC Rcd 2317, 2324, ¶ 23 (2016).

<sup>25/</sup> See, e.g., *5GAA Petition for Waiver*, Petition For Waiver to Allow Deployment of Intelligent Transportation System Cellular Vehicle to Everything (C-V2X) Technology, ET Docket 19-138, GN Docket No. 18-357, at 3, 8-16 (filed Nov. 21, 2018) (explaining that C-V2X is significantly more reliable over a greater communications distance, better at non-line-of-sight performance, and has superior resiliency against interference as compared to DSRC).

<sup>26/</sup> See also Comcast Comments at 11 (Explaining that “A balanced approach to U-NII-4 OOB limits should also account for the natural separation and propagation losses between vehicular communication systems and the devices mostly (sic) likely to operate under U-NII-4 rules, such as residential, commercial, and enterprise Wi-Fi systems.”).

equivalent protection of ITS services in the adjacent portion of the 5.9 GHz band with OOB levels that are 20 dB higher than currently required for U-NII-3 devices. For devices operating indoors, building entry losses and separation from ITS devices mean that the OOB limit can be -7 dBm/MHz increasing linearly to 15 dBm/MHz at 5.895 GHz and still sufficiently protect ITS operations.

As Wi-Fi Alliance proposed in its comments, devices certified to operate in the 5.725-5.85 GHz band within two years after the effective date of the new rules should be permitted to demonstrate compliance with the OOB limits for indoor devices. However, the rules can require that manufacturing, marketing and importing of devices certified under this alternative cease within five years.<sup>27/</sup> No commenters disagreed with this proposal.

### **III. CONCLUSION**

The record confirms that the Commission's plan to segment the band between ITS and unlicensed use will provide much-needed spectrum to satisfy surging Wi-Fi demands, while also protecting ITS from potential interference. In order to ensure the maximum benefit of reallocating some of the 5.9 GHz band for unlicensed use, the Commission should modify the proposed OOB rules in order to allow effective Wi-Fi deployments that can take advantage of this newly allocated spectrum.

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<sup>27/</sup> Wi-Fi Alliance Comments at 8-9.



Respectfully submitted,  
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