

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of

Use of the 5.850-5.925 GHz Band)
)
)
) ET Docket No. 19-138



REPLY COMMENTS OF CONSUMER REPORTS

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Consumer Reports (CR), an independent, non-profit member organization,¹ welcomes the opportunity to submit reply comments to the Federal Communications Commission (FCC) regarding its Notice of Proposed Rulemaking (NPRM) on the use of the 5.850-5.925 GHz band (5.9 GHz band).² The FCC's proposal would take portions of this band, which it currently reserves for transportation and vehicle safety-related communications and other intelligent transportation system (ITS) applications, and reallocate them for other uses.

Much has changed—indeed the world has changed—since our initial comments were filed on March 9, 2020. As for this proceeding, two major developments have occurred in the intervening time. One, the FCC voted in favor of opening up 1200 MHz of spectrum in the 6 GHz band for unlicensed use, a massive boon for WiFi users and telecommunications equipment manufacturers.³ Two, the Alliance for Automotive Innovation pledged to deploy 5 million devices in cars and infrastructure within five years to enable the use of vehicle-to-everything (V2X) communications technologies, provided that the FCC maintains the full 5.9 GHz band for transportation safety and allows the use of cellular V2X within the band.⁴

These recent developments further call into question the wisdom of the FCC's proposal to divvy up the 5.9 GHz band to serve both auto safety and unlicensed spectrum use interests alike. Fundamentally, expanding consumer access to the internet through access to affordable WiFi is important, but that goal must come after auto safety needs are appropriately addressed. We continue to urge the FCC not to move forward with its proceeding on the 5.9 GHz band unless and until it can, jointly with the Department of Transportation, demonstrate that its proposal or an alternative approach is sufficient to ensure the secure and effective application of vehicle-to-vehicle (V2V) and vehicle-to-everything (V2X) communications for transportation safety purposes.

Review of the Record (March 9, 2020 Comments)

¹ Founded in 1936, Consumer Reports uses its dozens of labs, auto test center, and survey research center to rate thousands of products and services annually. CR works together with its more than 6 million members for a fairer, safer, and healthier world, and reaches nearly 20 million people each month across our print and digital media properties.

² *In the Matter of Use of the 5.850-5.925 GHz Band*, FCC, ET Docket No. 19-138, Notice of Proposed Rulemaking (December 17, 2019) (NPRM).

³ News Release, *FCC Opens 6 GHz Band to Wi-Fi and Other Unlicensed Uses*, Federal Communications Commission (April 23, 2020), available at: www.fcc.gov/document/fcc-opens-6-ghz-band-wi-fi-and-other-unlicensed-uses.

⁴ Press Release, *Auto Industry Shows Progress With New Connected Car Pledge, But Much More Needs To Happen For Consumers To Get Full Safety Benefits*, Consumer Reports (Apr. 23, 2020), available at: advocacy.consumerreports.org/press_release/consumer-reports-auto-industry-shows-progress-with-new-connected-car-pledge-but-much-more-needs-to-happen-for-consumers-to-get-full-safety-benefits.

From a review of the public comments on this proceeding, it is clear that there is widespread dissent on the FCC’s proposal, with a broad range of stakeholders urging the FCC not to move forward. Consumer advocates, safety experts, and car companies do not always see eye-to-eye on auto safety issues, but on this proceeding, these strange bedfellows agree: the FCC has not provided clear and convincing data to show its proposal actually will protect the ability to use V2X technology to save lives.

In our March comments to the FCC, CR stressed the enormous life-saving potential of V2X safety applications and the overriding need to protect adequate dedicated spectrum for them. To reiterate: each year, motor vehicle crashes in the U.S. kill almost 40,000 people and send an additional 2.3 million people to hospital emergency departments.⁵ These crashes are the leading cause of death in the first three decades of Americans’ lives,⁶ and they cost the nation \$800 billion in direct and indirect expenses per year.⁷ Motor vehicle deaths, injuries, and crashes must be substantially reduced—and those in positions of leadership must strive for their elimination—for the U.S. to achieve a transportation system in which people can readily get around without fear that they or their loved ones will not make it to their destination.

As CR urges the FCC to reconsider its misguided proposal for reallocation of the 5.9 GHz band, we will continue to press both the U.S. Department of Transportation (DOT) and the auto industry to ensure, within five years, that all new cars and trucks can securely and effectively communicate with one another and critical roadway infrastructure for safety purposes. Already, with final DOT rules for V2V and V2X delayed and on hold, CR has actively engaged with automakers to accelerate their implementation of this life-saving technology. This effort is focused on encouraging automakers to equip all their new vehicles with V2X capabilities as soon as possible. An assurance of dedicated and adequate spectrum is fundamental to begin the widespread installation of V2X communications technology in new vehicles.

The nation’s foremost safety investigator, the National Transportation Safety Board (NTSB), agrees. As NTSB Chairman Robert Sumwalt wrote in March comments to the FCC:

Testing by the DOT shows that the FCC-proposed bandwidth of 30 MHz for transportation safety applications would make V2X applications functionally infeasible.

⁵ Published Report, *CDC Winnable Battles*, Centers for Disease Control and Prevention (December 14, 2017), available at: www.cdc.gov/winnablebattles/report/motor.html.

⁶ *Id.*

⁷ Blincoe, L. J., Miller, T. R., Zaloshnja, E., & Lawrence, B. A., *The Economic and Societal Impact Of Motor Vehicle Crashes, 2010 (Revised)* (May, 2015), available at: crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812013.

Decades of research showing the benefits of CV [connected vehicle] technology, particularly as a complement to vehicle-based sensors, would not be implemented, which could further delay the development of automated vehicle technologies. Although the industry has been slow in adopting CV technology and has not reached a consensus regarding the type of communication technology that should be used (DSRC or cellular), by reducing the available radio spectrum for safety transportation applications to unusable levels, the FCC would hinder future adoption of CV technology for all vehicles.

The NTSB urges the FCC not to allow sharing of the 75-MHz band with unlicensed Wi-Fi devices. Such action would be detrimental to safety and dramatically set back advancements in transportation safety, including automated vehicle technologies.⁸

State and local officials also agree. In urging the FCC to preserve the full 5.9 GHz band for transportation safety purposes, members of the American Association of State Highway and Transportation Officials (AASHTO) representing the departments of transportation of all 50 states, the District of Columbia, and Puerto Rico said that a connected vehicles environment “holds the potential to support a fundamental advancement in ensuring the safety of our nation’s surface transportation system” and further commented:

[T]he current debate among stakeholders in the transportation industry on how best to use the 5.9 GHz spectrum should not be an excuse to open the spectrum for non-transportation safety purposes; rather, by preserving the spectrum, it will facilitate the transportation industry to agree on the best technology solution to broadly deploy V2X applications.⁹

CR agrees with these state-level leaders that preservation of the 5.9 GHz band for transportation safety purposes at this time is critical to industry deployment. The Alliance for Automotive Innovation pledge announced on April 23, 2020, is an example of the progress needed, though it must be just the start. For its part, the National Association of City Transportation Officials has commented that “V2X technologies are deployed in over 25 states and dozens of cities. Connected vehicle technologies offer the U.S. a powerful set of tools to save lives, but this potential can only be realized if these technologies are given the certainty of the 5.9 GHZ Safety Spectrum.”¹⁰

⁸ Comments of the National Transportation Safety Board, *In the Matter of Use of the 5.850-5.925 GHz Band*, FCC, ET Docket No. 19-138, (March 4, 2020), at p. 5.

⁹ Comments of the American Association of State Highway and Transportation Officials, *In the Matter of Use of the 5.850-5.925 GHz Band*, FCC, ET Docket No. 19-138, (August 19, 2020), at p. 1.

¹⁰ Comments of the National Association of City Transportation Officials, *In the Matter of Use of the 5.850-5.925 GHz Band*, FCC, ET Docket No. 19-138, (March 9, 2020), at p. 2.

Various non-profit safety organizations, like CR, also have questioned the basis for the NPRM and suggested that it is insufficient to justify reallocation of spectrum within the 5.9 GHz band for safety. As the Center for Auto Safety has commented:

No compelling technical or commercial rationale has been presented for acting now to reallocate any portion of the reserved safety spectrum, much less a majority of the reserved spectrum, for uses other than its intended use for transportation and automotive safety.¹¹

Similarly, Transportation for America wrote:

In order to support its position, the FCC should provide such data and analysis to indicate that their proposal will not adversely impact these safety technologies before moving forward with implementation of this spectrum reallocation plan. The public deserves proof of the FCC's position. Absent studies, data, and analysis which supports the FCC's position, the FCC should withdraw the NPRM.¹²

And the Intelligent Transportation Society of America commented:

The FCC has advanced this proposal despite providing no analysis or evidence to show that the proposed allocation would allow for the successful operation of V2X technologies in the remaining 30 MHz and without completing research to determine whether the lower 45 MHz of spectrum could be shared between V2X technologies and unlicensed devices. The Commission cannot render a reasoned decision on its proposal in the absence of such record support.¹³

Other non-profit groups weighed in generally with the FCC on the need for V2X technologies to improve safety on our roads. The National Safety Council wrote that it “strongly considers it a grave mistake to limit the amount of spectrum available for safety in the 5.9 GHz band,” in part because “operating a motor vehicle remains one of the deadliest things we do on a daily basis,” and recommended that “the FCC should be part of the solution to saving lives” by rejecting its current proposal.¹⁴ In opposing the FCC’s plan, the League of American Bicyclists and their state and local bicycling and walking partner groups commented that “ensuring safe streets

¹¹ Comments of the Center for Auto Safety, *In the Matter of Use of the 5.850-5.925 GHz Band*, FCC, ET Docket No. 19-138, (March 9, 2020), at p. 2.

¹² Comments of Transportation for America, *In the Matter of Use of the 5.850-5.925 GHz Band*, FCC, ET Docket No. 19-138, (March 2, 2020), at p. 2.

¹³ Comments of the Intelligent Transportation Society of America, *In the Matter of Use of the 5.850-5.925 GHz Band*, FCC, ET Docket No. 19-138, (March 9, 2020), at p. ii.

¹⁴ Comments of the National Safety Council, *In the Matter of Use of the 5.850-5.925 GHz Band*, FCC, ET Docket No. 19-138, (February 27, 2020), at pp. 1-2.

requires a safe systems approach that includes fast and immediate communication through V2X technology.”¹⁵

Auto companies, too, have recognized in their comments that the FCC’s current proposal would be devastating to V2X technologies. Raising the very real concern that the FCC’s proposal would deny V2X safety applications the spectrum necessary to work effectively to save lives, General Motors has commented:

Slashing 60 percent of the 75 megahertz 5.9 GHz band and therefore limiting ITS technologies to only 30 megahertz will strand already-deployed V2X units and users, foreclose advanced safety features of the future, and compromise the technology’s lifesaving potential. In effect, this proposal, which will only marginally benefit commercial, non-safety unlicensed uses, will likely end V2X.¹⁶

In addition, Volvo has commented:

V2X applications designed to use 75 MHz of spectrum cannot be compressed to operate in only 30 MHz. The FCC should not take any action that would risk jeopardizing a revolutionary tool in mitigating fatalities on our roads and loss in our communities, and should support development and deployment of V2X technologies in the full 75 MHz of the 5.9 GHz band.¹⁷

In its comments, Toyota has called the FCC’s proposal “an unexpected and sharp departure” from previous efforts relating to the 5.9 GHz band. The company wrote:

[W]e certainly do not believe that the answer to difficult questions or the alternative to testing that requires considerable time or effort is to unjustly reduce the amount of spectrum available to incumbent transportation uses. We also note that the Commission’s proposal to abandon the testing plan unfairly strands the time, effort, and resources that have already been invested by stakeholders – including automotive stakeholders - in the development and implementation of potential sharing solutions, testing plans, and prototype devices.¹⁸

¹⁵ Comments of the League of American Bicyclists, et al., *In the Matter of Use of the 5.850-5.925 GHz Band*, FCC, ET Docket No. 19-138, (March 9, 2020), at p. 1.

¹⁶ Comments of General Motors, *In the Matter of Use of the 5.850-5.925 GHz Band*, FCC, ET Docket No. 19-138, (March 9, 2020), at p. 1.

¹⁷ Comments of Volvo Group, *In the Matter of Use of the 5.850-5.925 GHz Band*, FCC, ET Docket No. 19-138, (March 9, 2020), at p. 2.

¹⁸ Comments of Toyota Motor Corporation, *In the Matter of Use of the 5.850-5.925 GHz Band*, FCC, ET Docket No. 19-138, (March 9, 2020), at p. 3.

Toyota also rightly noted the strong alignment among numerous stakeholders on the need to preserve the 5.9 GHz band for transportation safety purposes. After including nearly three full pages listing all these stakeholders, Toyota wrote:

Unfortunately, the proposal put forth by the Commission ignores the legitimate concerns of this broad and diverse group of safety-focused stakeholders and instead seeks to satisfy the demands of a vocal group of companies who will directly profit from the use of this spectrum for unlicensed uses, including by providing Wi-Fi to paying customers and for data offloading.¹⁹

Toyota further reported results of recent testing by the CAR 2 CAR Communication Consortium to evaluate the spectrum needs of various already-known ITS safety applications. This analysis concluded that “the minimum basic spectrum needs for these known message types is 67 MHz for urban environments and 72 MHz for suburban and rural environments” and Toyota added that on the basis of the analysis, “any smaller allocation in any of these environments would necessarily mean that some of the known message types could not be supported and that any future innovation with respect to new message types would be precluded.”²⁰

These concerns are shared by the Motor and Equipment Manufacturers Association (MEMA), which has commented:

The second order effects of the Commission’s proposals would be no less detrimental – advanced ITS applications ready for deployment or currently in development would be starved of the spectrum necessary to operate. As a result, the combined effects of the Commission’s plans here would be to jeopardize existing safety-of-life applications, while preventing even more impactful technologies designed to protect motorists and pedestrians from being deployed in the United States. And paradoxically, the Commission’s proposals are in direct conflict with the concerted international efforts currently taking place to increase spectrum availability exclusively for ITS applications in line with the existing 75 MHz of spectrum available on the 5.9 GHz ITS Band in the United States. In a thoroughly global automotive industry, the Commission’s plans will singularly harm our nation’s leadership in autonomous vehicle and ITS development.²¹

Another issue of concern to CR is the potential for WiFi signals to interfere with safety communications in the 5.9 GHz band. We acknowledge the research submitted to the docket by Ford, in which the company conducted a series of tests to measure the impact of WiFi emissions in the lower 45 MHz of the band to C-V2X operations in the upper 30 MHz of the band. As Ford

¹⁹ *Id.* at p. 6.

²⁰ *Id.* at pp. 7-8.

²¹ Comments of the Motor and Equipment Manufacturers Association, *In the Matter of Use of the 5.850-5.925 GHz Band*, FCC, ET Docket No. 19-138, (March 9, 2020), at p. 1.

commented, “the field tests were designed to emulate the circumstances at a typical intersection in a small city with a history of accidents that V2X technology potentially can mitigate.” Ford concluded: “the presence of Wi-Fi signals in the vicinity of ITS stations will pose significant challenges to safety critical communications in the ITS band.”

Ford further concluded:

- Operating Wi-Fi in channels adjacent to the ITS band (U-NII-4) produces out-of-band emissions that render the ITS channels unusable for safety applications.
 - Interference was shown to cause unacceptable outage of critical basic safety message communications preventing the C-V2X system from performing as intended.
- The results of these field tests were validated in the laboratory.
 - We measured the performance of a C-V2X receiver under Wi-Fi interference in controlled lab tests. These measurements were consistent with the field results.
 - The lab results indicate that Wi-Fi interference in highway scenarios involving obstructions such as a truck, would reduce the communication range from 604m to less than 137m, well below the 300m requirement stipulated in the NHTSA V2V NPRM. This would render applications such as Electronic Emergency Electronic Brake Light and Forward Collision Warning ineffective.
 - To limit the pollution of the ITS band by out-of-band Wi-Fi emissions, interference from U-NII-4 operation into the band above 5895 MHz should be less than - 108 dBm/MHz measured at the C-V2X receiver.²²

Other stakeholders not traditionally identified with transportation policy also have shown skepticism of the FCC’s proposal. Cisco Systems expressed particular concern that the FCC’s NPRM may be inconsistent with the intent of Congress with respect to ITS. Cisco recommended to the FCC that “care must be taken to ensure that the transportation sector has a path forward to realize the safety and efficiency benefits so sorely overdue” and said that given specific congressional direction around ITS, “the Commission must explain how its revision of spectrum allocations and technical rules will be consistent with the directives of the law.”²³

²² Comments of Ford Motor Company, *In the Matter of Use of the 5.850-5.925 GHz Band*, FCC, ET Docket No. 19-138, (March 9, 2020), at p. 9.

²³ Comments of Cisco Systems, *In the Matter of Use of the 5.850-5.925 GHz Band*, FCC, ET Docket No. 19-138, (March 9, 2020), at p. 2.

Interestingly, AT&T’s comments adopted an entirely different posture from others in the telecommunications industry, and advocated for the full retention of the 5.9 GHz band for auto safety applications.²⁴ Much like CR, AT&T—though hardly a nonprofit enterprise—has reasons to support both goals at issue in this proceeding: increased auto safety through V2X adoption and improved WiFi services via unlicensed spectrum use.

AT&T is the leading provider of wireless services to vehicles in the United States, is rolling-out the country’s first mobile fifth generation (“5G”) network, owns and maintains a fleet of nearly 65,000 vehicles, employs thousands of AT&T personnel that drive those vehicles, and is a significant user and provider of Wi-Fi services over unlicensed spectrum. *Thus, AT&T is uniquely positioned to understand the tensions and challenges associated with the 5.9 GHz band and to offer unvarnished facts for the Commission to consider in reaching a decision that best serves the public interest.*²⁵ (emphasis added.)

For example, AT&T cited a concern CR raised in our March comments. Amid the chorus of commenters labeling the 5.9 GHz as underutilized and fallow, there is a lack of admission that policy choices made by the FCC and DOT have chilled investment and development of ITS in the band. As a general rule, business ventures abhor uncertainty, and such has been the result of policy choices to freeze ITS licenses or a failure to enact a clear safety mandate for automakers to follow. As AT&T points out: “...the Commission’s inquiries about the future use of the band justifiably caused automobile manufacturers to be hesitant about making long-term investments in technologies using that band.”²⁶ It would be inappropriate to put the spectrum needed for V2X at risk because of previous FCC and DOT decisions that failed to prioritize consumer safety.

In our March comments, CR references the ongoing 6 GHz proceeding that has the potential to release 1200 MHz to be shared with unlicensed uses.²⁷ And, fortuitous timing as it is, the FCC approved an order last week that will do just that, a massive chunk of new spectrum that

²⁴ Comments of AT&T, *In the Matter of Use of the 5.850-5.925 GHz Band*, FCC, ET Docket No. 19-138, (March 9, 2020). (AT&T Comments) See also: Comments of NCTA—The Internet and Television Association, *In the Matter of Use of the 5.850-5.925 GHz Band*, FCC, ET Docket No. 19-138, (March 9, 2020). NCTA’s comments supported the FCC’s NPRM, though it would certainly prefer an outcome where all 75 MHz of the 5.9 GHz band were freed up for unlicensed use to increase spectrum for WiFi use. And like some other commenters, NCTA floated the idea of moving ITS applications to the 4.9 GHz band, but without data to demonstrate the feasibility of this approach (see p. 19).

²⁵ *Id.* at p. 1.

²⁶ *Id.* at p. 3. Several auto manufacturers, including Hyundai, Nissan, and Honda, included similar sentiments in their March comments to the FCC.

²⁷ Comments of Consumer Reports, *In the Matter of Use of the 5.850-5.925 GHz Band*, FCC, ET Docket No. 19-138, (March 9, 2020), at p. 9.

will surely improve WiFi service by the end of the year.²⁸ AT&T also pointed out this proceeding along with a rundown of other potential sources of spectrum for unlicensed use.

The Commission has allocated substantial swaths of spectrum for unlicensed use over the last few years, including in the U-NII-1-3 bands (580 MHz), CBRS band (80-150 MHz), 37 GHz band (600 MHz), 64-71 GHz band (7000 MHz), and the TV White Spaces, and continues to explore additional allocations (e.g., 6 GHz (1200 MHz)). *The 45 MHz of spectrum from the 5.9 GHz band would add only a small fraction of bandwidth to this vast inventory of spectrum dedicated to unlicensed use, with a commensurate incremental public benefit.*²⁹ (emphasis added.)

CR agrees with AT&T’s conclusion, especially in light of the recent adoption of the 6 GHz order and the potential for enormous amounts of unlicensed spectrum from bands other than the 5.9 GHz band.

Finally, CR generally agrees with New America’s Open Technology Institute when it suggests that ITS be limited to non-commercial, safety-related services.³⁰ The auto industry refers to the 5.9 GHz band as the “safety band,” and CR urges both the Commission and DOT to ensure that spectrum allocated for safety is used to the fullest extent possible to improve auto safety and save human lives.

In summary, it is critical for motor vehicle deaths, injuries, and crashes to be substantially reduced, and for those in positions of leadership to strive for their elimination—particularly given the nearly 40,000 road deaths and 2.3 million emergency department-treated injuries from car crashes that occur in the U.S. each year. The FCC should fundamentally reconsider its approach when consumer advocates, safety experts, and auto companies have all expressed serious concerns about the NPRM in its current form. To restate CR’s conclusion from our March comments, safety must come first, and we urge the FCC not to move forward with this proceeding unless and until it can, jointly with the DOT, demonstrate that its current proposal is sufficient to ensure the secure and effective application of V2X for safety purposes.

²⁸ Nicholas DeLeon, *WiFi 6E Could Be the Answer to Your Internet Signal Struggles*, Consumer Reports (April 23, 2020), available at: <https://www.consumerreports.org/internet/wifi-6e-preview/>.

²⁹ AT&T Comments at p. 15.

³⁰ Comments of New America’s Open Technology Institute and Public Knowledge, *In the Matter of Use of the 5.850-5.925 GHz Band*, FCC, ET Docket No. 19-138, (March 9, 2020), at p. 5.