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

In the Matter of	)	
	)	
Promoting Efficient Use of Spectrum through Improved Receiver Interference Immunity Performance	)	ET Docket No. 22-137

COMMENTS OF THE ALLIANCE FOR AUTOMOTIVE INNOVATION

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The Alliance for Automotive Innovation ("Auto Innovators"), which represents the automotive ecosystem in the U.S., including automakers, suppliers, and technology companies, hereby submits comments on the Federal Communications Commission's ("Commission" or "FCC") *Notice of Inquiry* ("*NOI*") in the above-captioned proceeding.[1] Auto Innovators is supportive of the *NOI*'s goal to "continuously promote more efficient spectrum use to enable the introduction of valuable new wireless services that benefit the American people,"[2] but urges the Commission to proceed cautiously before adopting new receiver performance parameters, particularly one-size-fits-all requirements that would be onerous to implement.

I. INTRODUCTION AND SUMMARY

The Commission's inquiry in this proceeding should start by evaluating whether, and in what circumstances, receiver performance parameters can promote spectrum efficiency, optimization, and technological innovation. Should the Commission determine that receiver performance specifications are necessary, Auto Innovators encourages the agency to work collaboratively with industry stakeholders to craft such specifications using a spectrum band-by-

[1] Promoting Efficient Use of Spectrum through Improved Receiver Interference Immunity Performance, Notice of Inquiry, ET Docket No. 22-137, at ¶ 1 (2022) ("*NOI*").

[2] *Id.*

spectrum band approach that accounts for the varying characteristics and uses of a given band. If necessary, the FCC should focus on establishing receiver parameters that provide opportunities for innovative spectrum uses while protecting users from harmful interference rather than pursue rigid mandates across all bands.

If the Commission moves forward with establishing receiver performance parameters, it should account for the following considerations. *First*, receiver performance guidance should be promulgated as voluntary industry-led standards or Commission policies or guidance rather than inflexible rules. *Second*, the Commission should carefully think through implementation issues and timelines—particularly for receivers used in the automotive sector, where manufacturers have lengthy production timeframes and operate at narrow equipment cost margins. *Third*, the Commission should draw upon other nations' and standards bodies' experiences on working through receiver performance issues to inform its decisions, and work with its international counterparts to pursue an approach that is harmonized to drive global innovation and economies of scale. Keeping these factors in mind will help ensure that the Commission's next steps in this proceeding promote effective spectrum management while not unduly burdening industry with unworkable mandates that may delay the wireless innovations that benefit American consumers.

II. IF RECEIVER PERFORMANCE PARAMETERS ARE NECESSARY, THEY SHOULD BE TAILORED FOR SPECIFIC FREQUENCY BANDS.

Maximizing efficient spectrum use while protecting users from harmful interference is critical for continued beneficial use of the airwaves. As the agency observes, wireless services across RF environments are becoming "packed more closely together."[3] Auto Innovators has experience with incorporating innovative wireless technologies into spectral environments with

[3] *Id.*

varying types of users and equipment in the same and adjacent bands. For example, some auto companies are preparing to deploy cutting edge Cellular Vehicle-to-Everything ("C-V2X") technology in the 5.895-5.925 GHz band ("Upper 5.9 GHz Band"), which will bring automotive safety applications to the market.[4] Additionally, some auto companies are developing rear seat occupant detection applications relying on spectrum in the 57-64 GHz band.[5] Commission efforts to promote spectrum efficiency and prevent harmful interference will aid in delivering the benefits of wireless technologies to American consumers.

A gating question in this proceeding is if receiver performance parameters are necessary, and if so, in which bands. The FCC has historically relied on several tools for resolving harmful interference among users of the same and adjacent spectrum bands, including the establishment of meaningful performance and technical standards and imposition of emissions limits. In some bands, these tools may be effective for reduction of harmful interference and receiver performance parameters would therefore be superfluous. In more congested environments, receiver performance parameters may be an additional mechanism for allowing operation of devices as intended and increasing operational efficiency.

If the Commission determines that receiver performance parameters are needed for certain bands, it should tailor such parameters for the characteristics of such band's services and use cases. In crafting band-specific parameters, a key consideration should be the type of receivers involved. Since varying use cases will almost certainly dictate different receiver requirements and technologies to increase resiliency against possible interference, a one-size-fits-all approach is inappropriate. The FCC should also evaluate the likely sources of harmful

[4] *See, e.g.*, Notice of Ex Parte Meeting of the Alliance for Automotive Innovation, ET Docket Nos. 19-138, 21-264, at 2 (filed June 1, 2022) ("June 1, 2022 Ex Parte").

[5] *Id.*

signal interference in a given segment of spectrum, which may be caused by a multitude of in-band and out-of-band interference factors.[6] Any new receiver performance parameters should be narrowly tailored to specific bands, the technologies used therein, and the intended use-cases. Engagement with industry stakeholders can—and should—help inform these issues.

III. THE COMMISSION SHOULD ENGAGE WITH INDUSTRY ON THIS ISSUE AND REFRAIN FROM REGULATORY MANDATES.

Should the Commission determine that receiver performance parameters are necessary for any spectrum bands, Auto Innovators encourages the agency to 1) engage with impacted industry on development of appropriate parameters and 2) endorse voluntary guidelines or FCC policies or guidance as opposed to mandates.[7] Auto Innovators agrees with the FCC that "the development and implementation of various voluntary approaches, taken together throughout the wireless sector, in many situations can provide the best and most effective means of promoting interference immunity in the most efficient and effective way."[8]

Industry input will be critical for developing effective and achievable voluntary receiver standards. Engagement with the automotive industry, in particular, will be important as vehicles house numerous types of receivers that may be impacted by new standards. As the growth of connected and automated driving systems continues to accelerate, the number of RF devices used on vehicles does as well. Vehicles are equipped with numerous connected technologies, including Bluetooth, Wi-Fi, Ultra-Wideband (sensors and tracking devices), short-range radar, long-range radar, telematics, hands-free calling, satellite radio, and ITS.[9] In addition, the auto

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[6] *NOI* ¶ 143.

[7] *Id.* ¶¶ 86-87, 93.

[8] *Id.* ¶ 82.

[9] *See Use of the 5.850-5.925 GHz Band*, ET Docket No. 19-138, at ¶ 7 (2020) ("[N]umerous technologies that operate outside the 5.9 GHz band have been or are being developed and

industry has committed to install rear seat reminder systems as standard equipment by Model Year 2025, some of which will rely on 57-64 GHz radars.[10] Interested industry stakeholders, including automotive manufacturers and component suppliers, should be at the table to assist the Commission in encouraging use of workable voluntary standards, where necessary, that will improve efficiency and reduce interference without impeding innovation.

The Commission in any event should refrain from adopting rigid rules. Given the current pace of technological innovation, rules may quickly become outdated or be surpassed by innovations in receiver technology or other methods of spectrum management. Encouraging use of voluntary standards or guidance, developed with industry input, will be most responsive to operators' needs while promoting efficient spectrum use and fostering innovation to the benefit of the American public.

Further, regardless of the mechanism the FCC uses, any new receiver parameters should apply to both public and private sector receivers. Although the *NOI* "does not seek comment on or address the interagency process" between the FCC and the National Telecommunications Information Administration ("NTIA"), promoting use of mechanisms for federal government receivers that foster resilience to interference is in the interest of all parties.[11] Indeed, as Commissioner Starks correctly noted, the development of receiver performance parameters will

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deployed to improve transportation safety and efficiency, such as long-range and short-range radar systems in the 76-81 GHz band, safety and convenience features integrated into cellphone apps and connected to on-board displays through unlicensed spectrum protocols, optical cameras, sonar, and LiDAR (light detection and ranging).").

[10] *See* June 1, 2022 Ex Parte at 2.

[11] *NOI* ¶ 3, n.1.

only be a success if the FCC acts "in collaboration with NTIA" and if there is "buy-in from all the key actors, including our Federal partners."[12]

IV. IF NEW PARAMETERS ARE ESTABLISHED, THE COMMISSION SHOULD BUILD IN APPROPRIATE IMPLEMENTATION TIMELINES.

The Commission should be aware of the complexities in implementing new receiver performance parameters, particularly with respect to existing receivers in the market. Should the Commission proceed with developing receiver performance parameters, it should set realistic and achievable expectations for integration of these changes—both for new and in-use products. Naturally, the need for a pragmatic timeline would only be heightened if the Commission proceeded with codified rules rather than a voluntary approach.

The Commission should take into account the timeline and costs of implementation of new performance parameters on the manufacturing end. As Auto Innovators has previously explained, automotive manufacturers face "especially long and complex production cycles."[13] Specifically, it "typically takes 5 years to bring new technology to market for a single product platform and up to 10 years to phase technology in across the entire product portfolio."[14] New receiver performance parameters could not be integrated into designs and delivered to consumers overnight.

Another important consideration is the fact that automobile original equipment manufacturers, like other manufacturers, operate at low equipment margins and are very sensitive to cost increases resulting from new regulatory obligations. New performance

[12] *Id.*, Statement of Commissioner Geoffrey Starks.

[13] Comments of the Alliance for Automotive Innovation, GN Docket No. 21-140, at 3 (filed June 7, 2021).

[14] *Id.* at 3.

parameters may result in increased equipment costs to automakers and those costs may be passed onto consumers. It would also be contrary to the public benefit if the cost of incorporating new performance parameters deprived consumers of new services and features.[15]

Should the Commission apply new performance parameters to *in-use* devices, it should take a pragmatic approach on the timeline. As the *NOI* correctly notes, there are "many billions of receivers currently in use in various different radio services for a multitude of purposes."[16] Certain types of receivers are housed in devices that are "replaced fairly quickly" over the course of a "few years" and others, such as those in automobiles, have an extended lifecycle.[17] Indeed, receivers within vehicles are designed to account for the reasonably foreseeable spectrum environment over the course of a decade, given that many will be used in the same vehicle for ten years or more without the possibility of being upgraded. According to a 2022 study by S&P Global Mobility, the average lifespan of a car in the U.S. is 12.2 years.[18] As such, proposed retrofitting and upgrading measures for preinstalled legacy RF devices in vehicles would be both exceedingly difficult and impractically costly.

All told, new regulatory obligations necessitating the development of new receiver technologies, coupled with the replacement of legacy technology, could result in long redeployment timelines of up to 20 years or more.[19] Accordingly, the auto industry will require

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[15] *NOI* ¶ 162.

[16] *Id.* ¶ 156.

[17] *Id.*

[18] *Average Age of Vehicles in the US Increases to 12.2 years, according to S&P Global Mobility*, S&P Global (May 23, 2022), https://news.ihsmarkit.com/prviewer/release_only/id/5018053.

[19] Letter from Scott Delacourt, Counsel for the Alliance for Automotive Innovation, to Marlene H. Dortch, Secretary, Federal Communications Commission, at 5-6 (filed Oct. 19, 2020).

an extended transition window to replace or upgrade older receivers already deployed in the marketplace.[20]

V. THE COMMISSION SHOULD DRAW ON THE WORK OF INTERNATIONAL COUNTERPARTS.

As part of a potential receiver parameters development process, the Commission should draw lessons from its international counterparts who have evaluated these issues. There may be things that worked—or did not work—in similar proceedings around the world. Building on these lessons will serve the dual purposes of giving the Commission a head start on thinking through the issues surrounding receiver performance parameters and helping ensure that any new standards are consistent with those enacted around the world.

If the Commission determines that receiver parameters are needed in certain spectrum bands or use cases, the agency should look to international regulatory bodies' previous experiences regarding receiver performance to determine whether such approaches have been successful. For example, the FCC may find it useful to draw from the experience of Ofcom, the FCC's counterpart in the United Kingdom, which recently published a spectrum management policy that discussed receiver resiliency.[21] The Ofcom policy takes a non-regulatory approach, encouraging spectrum users "to ensure their equipment is as resilient to interference as possible,"[22] agreeing to work with equipment manufacturers "to raise awareness of the impact of receiver performance," and also acknowledging that "costs and the lifetime of equipment" are important factors to consider.[23] Another useful example may be EU Radio Equipment Directive

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[20] *NOI* ¶¶ 160-61.

[21] *Supporting the UK's wireless future*, Ofcom, at 58 (July 19, 2021), *available at* https://www.ofcom.org.uk/__data/assets/pdf_file/0017/222173/spectrum-strategy-statement.pdf.

[22] *Id.*

[23] *Id.* at 58, 90.

2014/53/EU, which requires that transmitter and receiver equipment be "so constructed that it both effectively uses and supports the efficient use of radio spectrum in order to avoid harmful interference."[24] Likewise, the European Conference of Postal and Telecommunications Administration Electronic Communications Committee has published a technical review of the receiver parameters promulgated by the European Telecommunications Standards Institute.[25] Without endorsing any of the conclusions in these documents, Auto Innovators suggests the FCC review these existing efforts to inform this proceeding.

In addition, if the FCC decides to pursue establishing receiver parameters, it should be conscious of the fact that radio receivers – including those installed in vehicles – are often manufactured for the global market. Accordingly, the Commission should work with its international counterparts to ensure that any new receiver parameters are globally harmonized to the greatest extent possible.[26] Doing so will promote harmonization of technical characteristics and performance of receivers across counties, thereby creating manufacturing efficiencies and encouraging economies of scale.

VI. CONCLUSION

Auto Innovators urges the Commission to proceed cautiously in considering receiver performance parameters as it has many existing tools for spectrum management. If, following this inquiry and fulsome engagement with industry, the Commission moves forward with developing receiver parameters, they should be tailored to those specific frequency bands where they would be the most useful and appropriate. If new parameters are established, they should be

[24] EU Radio Equipment Directive 2014/53/EU, at Article 3.2 (Apr. 16, 2014).

[25] CEPT ECC, ECC Report 310 (Draft), https://docdb.cept.org/document/13606.

[26] *NOI* ¶ 57.

voluntary rather than mandatory, and stakeholders should have a realistic, manageable timeframe for incorporating those changes into new products or updating receivers in use. Finally, the Commission should draw on lessons learned from other bodies on how improving receiver performance may be pursued and determine the proper approach for the U.S. It will greatly benefit industry and consumers if any new parameters can be globally harmonized.

Respectfully submitted,

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