

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

In the Matter of

Request for Waiver of 5.9 GHz Band Rules to
Permit Deployments of Cellular Vehicle-to-
Everything Technology

ET Docket No. 19-138

REQUEST FOR WAIVER

Pursuant to Section 1.925(b)(3)(i) of the rules of the Federal Communications Commission (“Commission” or “FCC”), The Regents of the University of Michigan (the “Applicant”) respectfully requests waiver of the Commission’s rules to permit deployment and operation of Cellular Vehicle-to-Everything (“C-V2X”) safety technology for on-board units and roadside units.¹

The Applicant specifically seeks a waiver of 47 C.F.R. § 2.106, NG160 to allow use of the 5.905-5.925 GHz band for C-V2X safety systems operating in the Intelligent Transportation System radio service.² The Applicant requests this waiver as it is prepared to deploy and operate C-V2X on-board units and roadside units to improve roadway safety, but cannot do so absent a

¹ This waiver request is filed pursuant to Section 1.925(b)(3) of the Commission’s rules, 47 C.F.R. § 1.925(b)(3), and paragraphs 55-56 and 95 of the *First Report and Order, Further Notice of Proposed Rulemaking, and Order of Proposed Modification* in the above-captioned docket, *Use of the 5.850-5.925 GHz Band*, First Report and Order, Further Notice of Proposed Rulemaking and Order of Proposed Modification, 35 FCC Rcd 13440, 13464-5 ¶¶ 55-56, 95 (2020).

² To the extent appropriate or necessary, the Applicant also seeks to waive these Part 90 and Part 95 rules (*i.e.*, Sections 90.375, 90.377, 90.379, 95.3159, 95.3163, 95.3167, 95.3189), and any other rules the Commission views as barriers to C-V2X deployment. *See* 47 C.F.R. §§ 90.375, 90.377, 90.379, 95.3159, 95.3163, 95.3167 & 95.3189.

waiver that permits such deployment. A group of public and private transportation stakeholders, the C-V2X Joint Waiver Parties, recently petitioned the Commission for these same purposes, and the Commission has sought public comment on this request.³ The Applicant agrees to meet the same technical and operational conditions as the C-V2X Joint Waiver Parties have identified in their filings.⁴ And as the C-V2X Joint Waiver Parties have addressed, these technical and operating conditions are consistent with current FCC rules in Part 90 and Part 95 for Dedicated Short Range Communications (DSRC)-based technologies with respect to both transmit power and out-of-band emissions limits.⁵

A team of public and private partners led by University of Michigan researchers will be deploying 21 C-V2X roadside units (RSUs) as well as 200 onboard units (OBUs) throughout Ann Arbor, MI. These C-V2X devices will be deployed as part of the ATCMTD project, Smart Intersections: Paving the Way for a National CAV Deployment. This network of smart intersections will allow vehicles and infrastructure to interact in a connected environment using state of the art technology. This project will not only build upon the existing Ann Arbor

³ See Request for Waiver filed by Ford Motor Company, Audi of America, Inc., Jaguar Land Rover, Utah Department of Transportation, Virginia Department of Transportation, AAEON Technology Inc., Advantech Co., Ltd., Applied Information, Inc., Cohda Wireless Pty Ltd, Commsignia, Inc., Danlaw Inc., HARMAN International Industries, Inc., Kapsch TrafficCom USA Inc., and Panasonic Corporation of North America, ET Docket No. 19-138 (filed December 13, 2021), https://www.fcc.gov/ecfs/file/download/DOC-5f6d7d2ef3400000-A.pdf?file_name=C-V2X%20Waiver%20Request%2012-%2013%202021.pdf (“C-V2X Joint Waiver Request”); *Wireless Telecommunications Bureau and Public Safety and Homeland Security Bureau Seek Comment on a Request For Waiver of Intelligent Transportation System Rules to Use C-V2X Technology in the 5.895-5.925 GHz Band*, Public Notice, DA 22-611 (rel. Jun. 7, 2022). See also Letter from the C-V2X Joint Waiver Parties to Marlene H. Dortch, Secretary, FCC, ET Docket No. 19-138 (filed Apr. 20, 2022), <https://www.fcc.gov/ecfs/search/search-filings/filing/104201266008794> (“C-V2X Joint Waiver Supplement”).

⁴ See generally C-V2X Joint Waiver Request; C-V2X Joint Waiver Supplement.

⁵ See C-V2X Joint Waiver Request at Appendix 1; C-V2X Joint Waiver Supplement at 3.

connected environment, but also on the on-going work on connected intersections by UMTRI/Mcity, CAMP, and the Connected Vehicle Pooled Fund Study to develop a nationally consistent connected intersections for interoperability with production vehicles.

For each intersection along an arterial corridor, advanced infrastructure sensors including radars and cameras are installed at each approach. The sensors are able to detect and track the status of road objects within their field of view in real-time. The detection and tracking information are transmitted to an edge-computing device for data fusion and processing. Then the edge-computing device encodes the detected objects into standard SAE messages such as a pseudo basic safety message (BSM) or a sensor data sharing messages (SDSM) which are then broadcast through a roadside unit (RSU) over C-V2X.

This creates a connected environment that ensures wide scale benefits even for early adopters of connected vehicle technologies. Supported by the smart intersections, the following five applications will be implemented: vehicle safety warnings (FCW, EEB, IMA, RLVW), vulnerable road user protection (PSMs), transit signal priority, emergency vehicle preemption, and dynamic signal optimization.

Under Section 1.925(b)(3)(i), the Commission may grant a waiver request if it is shown that “the underlying purpose of the rule(s) would not be served or would be frustrated by application to the instant case, and that a grant of the requested waiver would be in the public interest,” or if “in view of unique or unusual factual circumstances of the instant case, application of the rule(s) would be inequitable, unduly burdensome or contrary to the public

interest, or the applicant has no reasonable alternative.”⁶ In short, the Commission may waive its rules when it is in the public interest to do so.

In the C-V2X Joint Waiver Request, the public and private signatories explained that their requested relief met the Commission’s waiver standard under Section 1.925.⁷ For similar reasons, the instant waiver request also satisfies this standard. The safety-related purposes of Commission’s Intelligent Transportation System Service rules would be frustrated by continuing to apply the existing rules to the circumstances described here.⁸ The Applicant seeks authority to operate C-V2X safety equipment at power and emission levels consistent with or below those in effect for DSRC.⁹ And no reasonable alternative exists—the Applicant cannot obtain the relief requested herein to deploy C-V2X technology now except through the Commission’s waiver process.¹⁰

The Regents of the University of Michigan therefore urges the Commission to expeditiously issue the requested waiver consistent with the showing set forth herein.

Respectfully submitted,

The Regents of the University of Michigan

By: *James R. Sayer, Ph.D.*

Director, UMTRI

The Regents of the University of Michigan

3003 S. State St.

Ann Arbor, MI 48109

jimsayer@umich.edu; 734-764-4159

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⁶ 47 CFR § 1.925(b)(3)(i)-(ii).

⁷ C-V2X Joint Waiver Request at 6-7 (incorporated herein by reference).

⁸ Id. at 6.

⁹ Id. at 7.

¹⁰ Id. at 7.