

February 8, 2019

VIA ECFS

Marlene H. Dortch  
Secretary  
Federal Communications Commission  
445 12<sup>th</sup> Street, S.W.  
Washington, DC 20554

**Re: Office of Engineering and Technology and Wireless Telecommunications Bureau Seek Comment on 5GAA Petition for Waiver to Allow Deployment of Cellular Vehicle-to-Everything (C-V2X) Technology in the 5.9 GHz Band, GN Docket No. 18-357**

Dear Ms. Dortch:

The Intelligent Transportation Society of America (“ITS America”) hereby submits its Comments in response to the Petition for Waiver submitted by the 5G-Automobile Association (“5GAA”) to the Federal Communications Commission (“FCC” or “Commission”) in GN Docket No. 18-357.<sup>1</sup>

ITS America’s members include state, county and city departments of transportation, metropolitan planning organizations, automotive manufacturers and suppliers, technology companies, engineering firms, and research universities, all united around a shared vision of a better future transformed by intelligent mobility that is safer, greener, and smarter. Our members include private and public entities that are developing and deploying both Dedicated Short Range Communications (“DSRC”) and Cellular Vehicle to Everything (“C-V2X”) technologies to provide V2X services.

In 1997, ITS America petitioned the FCC to allocate 5850-5925 MHz (“5.9 GHz Band”) to the Intelligent Transportation Systems Radio Service (ITS-RS). Since that time, ITS America has been at the center of the development of V2X Communications and the development of Dedicated Short Range Communications (DSRC) Service in the ITS-RS in the 5.9 GHz band. ITS America has played a key role in facilitating the development and deployment of V2X equipment, services and applications, in partnership with the U.S. Department of Transportation (USDOT), state departments of transportation (state DOTs), and its many private sector, academic and other members. ITS America, its members, USDOT, and others worked with the Commission to develop the appropriate licensing and service rules for DSRC in the 5.9 GHz Band, culminating in the release of a Report and Order adopting those rules in 2004. Following that time, standards development occurred to create V2X application and services.<sup>2</sup>

---

<sup>1</sup> Petition for Waiver to Allow Deployment of Intelligent Transportation Cellular Vehicle to Everything (C-V2X) Technology, Petition for Waiver, GN Docket No. 18-357 (filed Nov. 21, 2018) (“5GAA Waiver Petition”).

<sup>2</sup> At that time, DSRC was undergoing standard developments by American Society for Testing and Materials (ASTM), which referred development to the Institute of Electrical and Electronics Engineers international (IEEE), which developed the 802.11p standard which is along with a related family of standards referred to Wireless Access in Vehicular Environments (WAVE), which is conflated with DSRC. In 2017, the 3rd Generation Partnership

The FCC's allocation of the 5.9 GHz band to the ITS-RS was visionary, anticipating the significant changes to come and establishing U.S. leadership in an important and emerging marketplace. The incremental pace of automotive technologies over the last fifty years has given way to a race to transform transportation through wireless technologies and robotics. Global investors are investing money in autonomous driving-related companies at a fast growing pace according to data from CB Insights. In the first three quarters of 2018, they committed \$4.2 billion to the effort.<sup>3</sup> Research and development in connected vehicle technology based upon 5.9 GHz is estimated to be one billion dollars and has been done in collaborative efforts to develop standards to ensure application interoperability, security and privacy and to facilitate the development of an eco-system of suppliers and services to support V2X. The FCC's rules were also prescient in allowing vehicle automation to take advantage of cooperative applications that coordinate automated vehicle movements in platoons along highways and in intersections on a level unachievable before with conventional intelligent transportation systems.

The FCC's allocation decision spurred the development of V2X services and cooperative crash avoidance and vehicle automation reliant upon the 5.9 GHz band. ITS America members have been active in the development of networking and applications standards that were built upon the FCC's technical and service rules for 5.9 GHz in the Institute of Electrical and Electronics Engineers ("IEEE") and Society of Automotive Engineers ("SAE") and multiple proof-of-concept and operational testing activities between 2006 and 2014. This includes vehicle-to-vehicle ("V2V") applications that are described and referenced in the National Highway Traffic Safety Administration's ("NHTSA") draft Federal Motor Vehicle Safety Standard (FMVSS 150)<sup>4</sup>, or vehicle-to-infrastructure ("V2I") or vehicle-to-pedestrian ("V2P") systems that have been deployed by road infrastructure operators or developed in aftermarket or mobile devices.

In its most recent Automated Vehicle Policy ("AV 3.0"), the US DOT found that there are over 70 active deployments of V2X communications utilizing the 5.9 GHz band in the United States. US DOT estimated that by the end of 2018 there would be over 18,000 vehicles deployed with aftermarket V2X communications devices and over 1,000 infrastructure V2X devices installed at the roadside. All seven channels in the 5.9 GHz band are actively utilized in these deployments.<sup>5</sup> ITS America member New York City will soon field the largest V2X deployment in the world, with nearly 1,000 FCC registered V2I sites.

In 2017, ITS America member General Motors Company ("General Motors") introduced DSRC-based V2V technology in one Cadillac vehicle model. In 2018, General Motors announced its intention to deploy V2X technology in all Cadillac models beginning in 2023. In 2018, Toyota Motor Corporation ("Toyota") announced plans to deploy DSRC-enabled vehicles in the United States by 2021 and that its commitment builds upon "significant investment" by transportation departments across the United States. This year, Ford Motor Company ("Ford") announced its commitment to deploy C-V2X technology in all new vehicle models in the United States beginning in 2022. In that announcement, Ford stated, "a conducive regulatory environment must be in place for C-V2X to be deployed, which is why we are

---

Project (3GPP)2, standards body incorporated into its specifications a newer technology, called Cellular Vehicle to Everything, or C-V2X. 3GPP is the world's preeminent standards body for cellular technologies.

<sup>3</sup> <https://www.cbinsights.com/research/auto-tech-startup-investment-trends/>

<sup>4</sup> "Federal Motor Vehicle Safety Standards (FMVSS) No. 150: Vehicle-ToVehicle (V2V) Communication Technology for Light Vehicles;" Docket No. NHTSA-2016-0126

<sup>5</sup> Automated Vehicles 3.0 Preparing for the Future of Transportation, October, 4, 2018

working just as much with industry and government organizations to create such a technology-neutral environment.” The Commission should take note of the dramatic changes in store for vehicle technology and personal mobility services. In 2017, Mary Barra, the CEO of General Motors suggested that, “the auto industry is poised for more change in the next five to ten years than it’s seen in the past 50.”<sup>6</sup> The auto industry will likely see significant change in relation to the sharing economy, where individual car ownership gives significant way to access to shared fleets of vehicles, managed and operated to optimize mobility connectivity, availability, accessibility and most importantly, safety.

The technical and service rules that the FCC adopted reflect a “priority framework” that defines V2X communications. The FCC adopted a multi-level priority framework for DSRC that provides that communications involving an imminent threat to safety-of-life must have access priority over all other communications on any channel. Public safety communications, whether by traditional public safety entities or other qualifying entities, must have priority access over all other DSRC communications except those dealing with safety-of-life.<sup>7</sup>

This priority framework provides for any road user, no matter the make, model and size of the vehicle, motorcycle or bicycle he or she is operating, to communicate with any other road user during critical movements on roadways to avoid crashes.<sup>8</sup> The priority framework also intended for road operators and first responders to use next-generation traffic management systems that can report when and where congestion occurs, and also adaptively direct traffic to mitigate congestion or manage emergency operations where disruptions may not be immediately life threatening but nonetheless very consequential. The FCC provided specific channel assignments for V2V communications and longer range “public safety” service in 2006.<sup>9</sup> ITS America, along with the American Association of State Transportation Officials and the Satellite Industry Association worked together to develop a spectrum sharing protocol between DSRC and Fixed Satellite Earth stations operating in the 5.9 GHz Band.<sup>10</sup> These rules and others provided assurances to industry that standards and technology development could proceed without interference from other co-primary, secondary and unlicensed services.

---

<sup>6</sup> <https://www.mobileworldlive.com/apple-says-car-ultimate-mobile-device>.

<sup>7</sup> Communications by the following entities are presumed to be public safety: State and local governments, possessions, territories, districts, and authorities including mass transit and toll authorities, among others. Another possible category is Safety/Public Safety vs. Another Safety/Public Safety. Determining priority of communications among entities within the safety and/or public safety priority levels is to be determined by Federal, State, or local transportation agencies working in coordination. This is done through auto industry cooperation and aftermarket device manufacturers and road operators and is facilitated by licensing requirements as part of the technical and service rules.

<sup>8</sup> The FCC authorized both public safety and non-public safety services to utilize the 5.9 GHz Band. The FCC also adopted a priority message scheme to ensure that safety and public safety communication services receive priority status which may be implemented by higher level standards. To this end, the FCC technical and service rules promote coordination between multiple entities that play a role in traffic safety and would be potential communications partners- public safety entities such road operators, police, fire and emergency medical services, and non-public safety, public and private operators that might operator such as transit, over-the-road bus and freight fleets, as well as personally owned vehicles, among others.

<sup>9</sup> *Amendment of the Commission’s Rules Regarding Dedicated Short-Range Communication Services in the 5.850-5.925 GHz Band (5.9 GHz Band), Amendment of Parts 2 and 90 of the Commission’s Rules to Allocate the 5.850-5.925 GHz Band to the Mobile Service for Dedicated Short Range Communications of Intelligent Transportation Services*, WT Docket No. 01-90, ET Docket No. 98-95, Memorandum Opinion and Order, 21 FCC Rcd 8961 (2006).

<sup>10</sup> Letter from Carlos M. Nalda, Counsel to Satellite Industry Association, to Marlene H. Dortch, Secretary, Federal Communications Commission, WT Docket No. 01-90, ET Docket No. 98-95 (filed Feb. 18, 2008).

The FCC's rules were designed to allow V2X to scale to 300 million or more road users, incorporating millions of infrastructure elements and even potentially hundreds of millions of pedestrians on a national basis. Automakers must design quality products that can last for more than a decade and can operate under an immense variety of conditions – from challenging weather to numerous road configurations and interactive environments. Automotive systems must be robust and resilient, and require special consideration from the Commission – and not just from the traditional point of view related to public safety, homeland security or critical infrastructure. The Commission must consider the need to protect the spectrum allocated for V2X in the 5.9 GHz band from well-meaning but misguided recommendations and petitions from those suggesting that unlicensed consumer broadband devices should, with the fewest constraints possible, share spectrum with safety-of-life critical systems.

With this background, the Commission now has two proceedings open regarding potential changes to the 5.9 GHz band allocation—ET Docket No. 13-49 related to the sharing of the band with unlicensed U-NII devices, and the instant docket regarding the introduction of C-V2X into the band. In addition to seeking waiver of the Commission's rules, 5GAA has stated its intention to petition the FCC "in the near future" for further rulemaking regarding further introduction of C-V2X applications that "will need to access much more spectrum in the 5.9 GHz band than the 20MHz" that is the subject of the above captioned waiver request.

ITS America urges that the FCC act quickly to ensure the continued availability of the 5.9 GHz band for life saving V2X services, protect the rights and investments of incumbent licensees and provide regulatory certainty to all those deploying V2X. Many of the goals of 5GAA and ITS America are common ones— maintain spectrum and provide regulatory certainty so that investment can continue in V2X technology. In a multi-stakeholder statement, ITS America, along with 5GAA and others stated: "Connected vehicle technologies offer the U.S. a powerful set of tools to save lives, but only if these technologies are given the ability to progress. We support protecting the entire 5.9 GHz band for transportation safety applications. Any unlicensed use in the band should be done without harmful interference to the incumbent technology or other intelligent transportation systems technologies."

5GAA's petition reflects that some stakeholders wish to provide an alternative for DSRC-based V2X communications.<sup>11</sup> The above captioned 5GAA waiver seeks that "cellular technology" be permitted in the band by a blanket waiver of the FCC's rules.<sup>12</sup> In particular, it seeks waiver of the rule requiring conformance to the "ASTM-DSRC standard." Based partly on advocacy by ITS America, the FCC found that adopting a standard "is appropriate for four reasons: interoperability, robust safety/public safety communications, to promote deployment of DSRC while reducing costs, and consistency with

---

<sup>11</sup> 5GAA's petition seeks waiver of the ASTM standard, adopted to ensure interoperability between all road users. To ensure interoperability and robust deployment, the FCC adopted a single communications standard known as the "ASTM-DSRC Standard." All licensees must conform their operations and equipment to this standard as a rule.

<sup>12</sup> See generally, *Amendment of the Commission's Rules Regarding Dedicated Short-Range Communication Services in the 5.850-5.925 GHz Band (5.9 GHz Band)*; *Amendment of Parts 2 and 90 of the Commission's Rules to Allocate the 5.850-5.925 GHz Band to the Mobile Service for Dedicated Short Range Communications of Intelligent transportation Services, Report and Order*, FCC 03-324, WT Docket No. 01-90, ET Docket No. 98-95, RM-9096, 19 FCC Rcd 2458 (2004).

Congressional intent.”<sup>13</sup> The waiver request also seeks that “DSRC operations will be prohibited” in 5905-5925 MHz.

ITS America views new deployment of interoperable cooperative ITS technologies that are proven, deployable and can save lives, as a positive outcome. As such, ITS America recognizes that the question of whether deployment of C-V2X disturbs existing V2X users (and priority of use among them in reference to the current priority framework/channel assignments) warrants further exploration.

ITS America affirms that the issue of interoperability, which is being discussed in the recent US DOT request for comments and IEEE 802.11 NextGen V2X efforts, is a foundation upon which V2X and the original FCC designation was based.<sup>14</sup> As it may require time to address, though, ITS America also recognizes that holding one technology in favor of the other may inhibit the deployment of potentially life saving technology and achieving critical mass.

ITS America has launched a V2X Task Force co-chaired by Toyota and the Colorado Department of Transportation. As noted, Toyota plans to deploy DSRC-enabled vehicles in the United States by 2021 that builds upon significant investment by transportation departments across the United States. Colorado is in the process of deploying a commercial scale V2X system including over 600 miles of connected infrastructure by 2022 collaborating with ITS America members Panasonic, Ford, Qualcomm and Kapsch TrafficCom North America to move forward a pilot of C-V2X installing infrastructure and a data ecosystem capable of working with both DSRC and C-V2X. The goals of the V2X task force are to ensure that V2X has adequate spectrum, free from harmful interference; that V2X development is market-driven; that V2X is interoperable; and that deployment of V2X be accelerated. ITS America will participate in consensus building efforts on this issue within its membership and keep the FCC informed on the status of this work.

---

<sup>13</sup> *Amendment of the Commission’s Rules Regarding Dedicated Short-Range Communication Services in the 5.850-5.925 GHz Band (5.9 GHz Band), Amendment of Parts 2 and 90 of the Commission’s Rules to Allocate the 5.850-5.925 GHz Band to the Mobile Service for Dedicated Short Range Communications of Intelligent Transportation Services*, WT Docket No. 01-90, ET Docket No. 98-95, Report and Order, 19 FCC Rcd 2458, 2468 (2003).

<sup>14</sup> Request for Comments: V2X Communications, US Department of Transportation December 26, 2018 [DOT-OST-2018-0210](#) and IEEE NGV SG developed PAR and CSD documents PAR: 11-18-0861-09 CSD: 11-18-0862-03 Approved by SG, [802.11 WG](#), and EC

ITS America looks forward to working with all stakeholders, including 5GAA, the Commission and other interested organizations to resolve any potential challenges that may arise in this and related proceedings. The FCC's decision to allocate the 5.9 GHz Band to Intelligent Transportation was far-sighted—a wireless interoperable network that connects cars, buses, trucks, motorcycles, bikes, pedestrians and traffic signals to reduce congestion and save lives. As hoped,<sup>15</sup> that decision spurred the investment and energies of both the public and private sectors in developing needed standards, prototypes, testing and in deploying infrastructure and vehicle systems. Without that decision, the state of development of life saving transportation technologies relying upon wireless communications would be far behind where it is today, and the United States would be far behind global developments.

Sincerely,

/s/ Steven H. Bayless  
Steven H. Bayless  
Vice President, Public Policy and Regulatory Affairs  
Intelligent Transportation Society of America

Robert B. Kelly, Esq.  
Squire Patton Boggs (US) LLP  
2550 M Street, N.W.  
Washington, D.C. 20037  
Of Counsel

---

<sup>15</sup> Petition of the Intelligent Transportation Society of America for Amendment of the Commission's Rules to Add Intelligent Transportation Services (ITS) as a New Mobile Service With Co-Primary Status in the 5.850-5.925 GHz Band, Petition for Rulemaking, RM-9096, at 8 (May 19, 1997).