February 8, 2019

Federal Communications Commission

445 12th Street, SW

Washington, D.C. 20554

**Re: 5GAA Petition for Waiver to Allow Deployment of Cellular Vehicle-to-Everything (C-V2X) Technology in the 5.9 GHz Band**

Volvo Group North America (VGNA) respectfully submits its comments on the Federal Communications Commission’s (“FCC’s”) Public Notice on 5GAA Petition for Waiver to Allow Deployment of Cellular Vehicle-To-Everything (“C-V2X”) Technology in the 5.9 GHz Band, dated December 6, 2018. According to the notice, the 5GAA waiver petition claims that operating C-V2X in this band is consistent with the purpose and policy of allocating the 5.9 GHz band for short-range Intelligent Transportation System (“ITS”) services.

* VGNA supports **preserving the 5.9 GHz band for V2X communications** and requests **additional testing of the C-V2X technology for short-range safety applications to provide clarity on the subject.**
* VGNA has concerns on how the 5GAA waiver could **affect incumbent Dedicated Short-Range Communication (“DSRC”) operations today**.
* The waiver request calls for a major change to the use of the 5.9 GHz band. We request that that be addressed by **a petition, full comment period and rulemaking process**.
* Given the significant concerns noted below and the need for a full process to properly address these matters, the FCC should consider **rejecting a permanent waiver request until it can be proven that no harmful interference occurs between the two competing technologies.**

The Volvo Group is one of the world’s leading manufacturers of trucks, buses, construction equipment and marine and industrial engines. Volvo Group develops, manufactures, and sells heavy-duty trucks, buses and motor coaches and their powertrains in the U.S. under the brand names of Volvo Trucks, Mack Trucks, Volvo Bus, Nova Bus, and Prevost. The Volvo Group has been manufacturing in the U.S. since 1903 and directly employs nearly 15,000 Americans. We indirectly employ tens of thousands more Americans through our supply chain. Our major facilities are in North Carolina, Pennsylvania, Virginia, Maryland, and New York. We have invested nearly $2 billion in our nine manufacturing facilities since 2002 and spend more than $250 million in R&D in the U.S. every year.

**Volvo Group activities related to connectivity and automated transport solutions**

Vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) communications (collectively known as V2X) have received much attention during the last decade worldwide since V2X enables new types of services in the fields of active safety, fuel efficiency, and to enable higher levels of automated driving. V2X technologies using the 5.9 GHz frequency band are referred to as cooperative intelligent transport systems (C-ITS) in Europe, and connected vehicle technology in the U.S. A minimum set of protocols for supporting initial deployment of C-ITS have been developed, approved, and published. Volvo Group is contributing actively to ETSI and SAE, and follows the work within CEN/ISO.

Real-time connectivity allows vehicles to become connected to one other, to the infrastructure, and to other parts of the transportation network, thereby enhancing awareness of the surroundings. In addition to what drivers can immediately see around them, and what vehicle sensors can detect, all parts of the transport system will increasingly be able to exchange information to improve decision-making. Thus, connectivity can improve road safety by detecting and acting on risks beyond the capability of the driver based on his direct line of sight. Deployment of these technologies will not only improve safety by avoiding collisions, but also by reducing congestion and improving traffic flow, while also reducing environmental impacts.

With the belief that connectivity and automated driving will allow for cleaner and safer cities to grow and prosper, the group has engaged in many flagship projects, both globally and in the U.S. Volvo Group is a member of an automotive consortium funded by the U.S. Department of Transportation (DOT) to pre-competitively assess, design, develop, and demonstrate advanced prototype vehicle-to-infrastructure (V2I) applications to enhance safety at intersections, on an approaching curve, and at work zones with lane closures. In 2016 and 2017, Volvo Group demonstrated three V2I safety applications – curve speed warning, red light violation warning, and reduced speed zone warning – using data from the infrastructure to increase driver awareness of the approaching hazard. Along with the largest light duty automobile manufacturers in the world, Volvo Group is the sole heavy-duty truck manufacturer involved in this important DOT partnership. The consortium has also been investigating other V2I applications to provide real-time traffic information, remote monitoring, and communication between vehicles that can be used to reduce vehicle congestion and emissions.

Volvo Group has long supported truck platooning because it benefits freight companies and professional drivers alike through safer, more fuel-efficient operations. In fact, platooning presents the best near-term opportunity for leveraging any level of autonomous technology for on-highway operations, where a skilled professional driver remains vitally important. In the past two years, the Volvo Group and PATH teams have successfully demonstrated truck platooning in real traffic on public roads that has inspired dialogue between policymakers, law enforcement officials, and the entire trucking community. The technology development was sponsored by the Federal Highway Administration (FHWA) Advanced Research Program and Caltrans, and the other project partners included Cambridge Systematics, Inc., the Los Angeles County Metropolitan Transportation Authority, and Gateway Cities Council of Governments. Volvo Group has been engaged in several other truck platooning initiatives around the world.

On the heels of the European Truck Platooning Challenge (of which the Volvo Group was a part), the same truck OEMs (including the Volvo Group) are part of the EU-funded ENSEMBLE project to bring multi-brand truck platooning to European roads. With the possibility of multi-brand platooning available for trucks driving on European roads, a single truck can form a platoon with any other truck. This could result in fuel savings for a large group of vehicles on today’s roads. Moreover, it will influence traffic flow, especially on highly congested corridors. In a Swedish public agency-funded Sweden4Platooning project, Volvo Group has teamed up with DB Schenker, Scania, the Royal Institute of Technology, Research Institutes of Sweden (RISE) and the Swedish Transport Administration to demonstrate multi-brand truck platooning in customer operations. In early 2018, UD Trucks (part of the Volvo Group) was a part of Japan’s first truck-platooning operation test on a section of the Shin-Tomei Expressway in Shizuoka Prefecture. In the U.S., in the FHWA-funded CAMP V2I CACC SST project, the Volvo Group teamed up with eight other light duty OEMs, Tier-1 suppliers, and academic institutions for systematically extending the capabilities of a common adaptive cruise control (ACC) to cooperative adaptive cruise control (CACC) performance using vehicles of different makes and models. Phase 2 of the project is ongoing to conduct more road trials and develop messaging standards. Most recently, together with FedEx and the North Carolina Turnpike Authority, Volvo Trucks demonstrated advanced driver assistance system (ADAS) technology to conduct on-highway truck platooning as part of ongoing research collaboration.

We continue preparing for deployment of trucks with greater V2X capabilities that support higher levels of ADAS. We know these technologies will be part of our future, but exact timing depends on many things, namely regulations, infrastructure, safety standards, and market demand. Furthermore, increasing momentum around technology policies and deployment guidelines is needed for widescale deployment. With this in mind below are our comments.

**Volvo Group comments on 5GAA Waiver Request**

The Volvo Group would like to take this opportunity to stress some important points responsive to the request for comments.

* **DSRC has the potential to enhance situational awareness and can greatly enhance vehicle safety. DSRC is currently a key component of our vehicle automation plans. Advances in radar/lidar/cameras do not render DSRC moot.**
* The rate of DSRC technology development (i.e., affordable chipsets, portable communication kits, etc.) and deployment (e.g., efforts undertaken by Federal, State, and many regional public agencies) has tremendously increased over the last few years. Harmful interferences or any unexpected channel reassignment strategies as a result of any **waivers could significantly disrupt the ongoing deployments and innovations within the current established FCC framework.** This could impact the Day 1 and Day 1.5 applications that are being developed and tested **today.**
* Keeping in mind the many ongoing DSRC-based initiatives across our nation, in allowing other V2X technologies to operate in the 5.9 GHz band, rules should be structured to support device interoperability, including backward compatibility, **so that safety data can freely be exchanged among V2X-equipped vehicles**, regardless of which V2X communications technology is on each vehicle. By design, **C-V2X and DSRC are not interoperable.** When considering proposals to allow new V2X technologies to utilize the 5.9 GHz band, potential rule changes should ensure compatibility with V2X systems developed under the existing FCC spectrum framework.
* Furthermore, we request that the FCC not grant a permanent request for C-V2X exclusive use of any portion of the 5.9 GHz band until there is a verifiable way to assure that there are no safety comprising impacts (e.g., channel interference) to DSRC operation.
* We agree with NHTSA that the entire band should be protected, and that no decision on re-allocating any portion of the band should be made until the entire 3-phase test plan is completed[[1]](#footnote-1).
* We encourage the FCC and DOT to work together toward completing the 3-phase test plan.
* VGNA is encouraged by the work being done by the IEEE 802 LAN/MAN Standards Committee[[2]](#footnote-2) to produce a Next Generation V2X (NGV) standard to provide a seamless evolution path for DSRC that guarantees device interoperability, same-channel coexistence, and backward compatibility. **This will stimulate further near-term investments in DSRC by ensuring that those investments will be protected and enhanced in the years to come.** By avoiding band fragmentation this achieves evolution that is both spectrally efficient (no duplicated services) and cost efficient (no need to invest in multiple technologies).

Volvo Group North America appreciates the opportunity to submit these comments, and looks forward to working with the FCC and other government agencies, as well as industry partners and other stakeholders, in the development of safe and reliable practices associated with the application of the 5.9GHz DSRC band.

Please do not hesitate to contact us if additional information is needed.

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1. <https://www.nhtsa.gov/press-releases/us-department-transportations-national-highway-traffic-safety-administration-issues> [↑](#footnote-ref-1)
2. See comments of IEEE 802 LAN/MAN Standards Committee submitted to this docket dated January 17 2019. [↑](#footnote-ref-2)