

Motor & Equipment Manufacturers Association

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July 7, 2016

Marlene H. Dortch, Secretary
Federal Communications Commission
Office of the Secretary
445 12th Street, SW Room TW-B204
Washington, DC 20554

RE: Proposed Rule; Unlicensed National Information Infrastructure (U-NII) Devices in the 5 GHz Band [ET Docket No. 13-49, FCC 16-88]

Dear Ms. Dortch:

The Motor & Equipment Manufacturers Association (MEMA)¹ represents vehicle suppliers that manufacture and remanufacture components and systems for use in passenger cars and heavy trucks providing original equipment (OE) to new vehicles as well as aftermarket parts to service, maintain and repair over 256 million vehicles on the road today. Our members lead the way in developing advanced, transformative technologies that enable safer, smarter and more efficient vehicles, all within a rapidly growing global marketplace with increased regulatory and customer demands.

Introduction

Vehicle suppliers play a key role in the motor vehicle industry particularly in developing and deploying a whole host of Advanced Driver Assistance Systems (ADAS) and other advanced vehicle safety technologies. Suppliers are critical in the ongoing development and implementation of vehicle-to-vehicle (V2V), vehicle-to-infrastructure (V2I) and vehicle-to-pedestrian (V2P) technologies (collectively referred to as V2X). Moreover, suppliers need to meet the needs of their customers – the vehicle manufacturers – to support the market demands and future standards and regulations related to V2X communications. V2X technology is an important first step towards fully automated vehicles being able to reach their full potential.

MEMA appreciates the opportunity to comment on the Federal Communications Commission (FCC or Commission) notice, which invites public comments “to update and refresh the record on the status of potential sharing solutions” on the use of U-NII devices in or near the 5.9 GHz band.² MEMA urges the Commission to preserve the 5.9 GHz band and its channelization as designed for Dedicated Short Range Communications (DSRC).

¹ MEMA represents vehicle suppliers through the following four divisions: Automotive Aftermarket Suppliers Association (AASA), Heavy Duty Manufacturers Association (HDMA), Motor & Equipment Remanufacturers Association (MERA) and Original Equipment Suppliers Association (OESA). About two-thirds of the value of today’s vehicles come from suppliers. Suppliers are the largest employers of manufacturing jobs in the U.S. directly employing over 734,000 Americans with a total employment impact of 3.6 million jobs. For more information on the motor vehicle component supplier industry, visit www.mema.org.

² 81 Fed. Reg. at 36501, June 7, 2016.



Development of DSRC safety and mobility applications has been under way for well over a decade. MEMA underscores that V2X technologies have undergone rigorous years of research and validation. Fundamental industry standards have been developed to a common framework to assure reliability and establish protocols. From proof of concept to production – V2V is not only ready now but are integrated into in-production vehicles, such as the Cadillac CTS launching at the end of this year. Also, several states have worked with their federal and industry partners and invested heavily in V2I deployments and roadside equipment installations (e.g. Arizona, California, Colorado, Florida, Michigan, Utah). DSRC-based technology is not only critical to vehicle safety now, but also is a significant and necessary step to enabling automated vehicles in the future.

Before any sharing protocols can be permitted, they must be thoroughly examined, tested, validated and ensured to be safe under the current and future deployments. Any call for re-channelization of the 5.9 GHz band would significantly interrupt the future of safer mobility, hinder developments in transportation safety, and result in massive financial losses to the vehicle industry, government agencies, technical standards development organizations, academia and scores of research entities.

DSRC is Essential Technology for Safety of Life V2X Communications

DSRC technology provides secure, reliable and immediate transmissions that are the basis for “safety of life” communications, between vehicles, infrastructure and other road users to avoid or mitigate vehicle crashes. Moreover, DSRC has the potential to address upwards of 80 percent of all non-impaired light vehicle accidents, significantly reducing fatalities, injuries and costs to society.³

The 5.9 GHz spectrum offers a low-cost way for vehicles to virtually “see” and “talk” with other surrounding vehicles and infrastructure that are similarly equipped with DSRC devices. Also, this technology can communicate with intersections (e.g. traffic signals) and roadway infrastructure (e.g. detecting dangerous curves). The 5.9 GHz spectrum has excellent propagation characteristics with the ability to penetrate structures and other vehicles. DSRC performs well in all weather conditions, day or night, and on different roadway types. Through low-latency communications, DSRC provides 360-degree situational awareness for all road users that no other sensor technology can match. The DSRC technology is, by design, a range-limited system (from 300 m to 1000 m depending on the environment) in which vehicles can only communicate with the nearest surrounding vehicles. This prevents the vehicle from dissipating system resources and bandwidth by communicating with vehicles that are too far away to be a potential risk factor.

Those advocates for sharing the 5.9 GHz band have argued that the vehicle industry should simply wait for 5G Cellular Systems or LTE Direct or 5G Direct Systems. However, there is a substantial difference between how a cellular phone works and a vehicle DSRC works. The DSRC communications protocols are designed for very low latency communication and network congestion management, permitting the rapid transfer of information used for collision warning and avoidance among nearby vehicles. Cellular-

³ National Highway Traffic Safety Administration, Fact Sheet “Vehicle-to-Vehicle Communication Technology” 11078-101414-v2a at Page 3, 2014.

based technology has too many delays to be effective for this function. Any system that uses a cellular tower has latencies that are too long to use for collision warning systems. This has been demonstrated repeatedly in testing. As for the 5G direct systems, these do not exist yet and are not validated or tested.

Additionally, V2X information can be used to augment current ADAS technologies, which use radar, camera and LIDAR sensors.⁴ Basically, V2X offers a way to seamlessly integrate with other vehicle sensors to expand the threat-sensing range around the vehicle. By adding a longer range capability to “see” around obstacles than that provided by existing vehicle sensors (e.g. camera, radar, LIDAR), potential threats can be identified earlier, thus allowing greater warning time and improved vehicle safety (for example, detecting a car braking ahead of the truck that is directly in front of your vehicle). There is also the potential for aftermarket DSRC devices installed in existing vehicles to help bridge and accelerate market saturation rate of DSRC-equipped vehicles in the nation’s fleet.

As the Commission is aware, the National Highway Traffic Safety Administration (NHTSA) began the rulemaking process in 2014, issuing an Advanced Notice of Proposed Rulemaking; in 2015, submitting a Notice of Proposed Rulemaking to the Office of Management and Budget for Executive Branch review. This proposed rule would create a new Federal Motor Vehicle Safety Standard (FMVSS) requiring all new vehicles to be equipped with DSRC technology. As such, federal and private sector testing has been rigorous. In addition, production deployments are on the horizon, with one automaker delivering tens of thousands of MY2017 vehicles furnished with DSRC later this year.

There has been a substantial effort in this country to support the development of DSRC and ensure its utility in meeting the near- and long-term goals for vehicle safety and transportation mobility. Any interruption in this process would be overwhelmingly detrimental.

DSRC is Result of Demanding R&D and Validation to Ensure Safety

Over the past decade, the U.S. Department of Transportation’s (DOT) Intelligent Transportation Systems Joint Program Office (ITS-JPO) has conducted extensive research and tested pilot deployments. The results have demonstrated the potential significant safety benefits of V2V-V2X communications. Testing, validating, developing standards and many more steps have been involved in getting V2V to where it is today and – more importantly – to be efficient and effective. Concurrently, industry stakeholders – automakers and suppliers alike – have invested millions of dollars in research and development based on the FCC’s channel plan of 10 MHz wide channels that accommodate the requirements for very low latency, stability and reliability.

Several Connected Vehicle Test Beds⁵ have been established in Arizona, California, Florida, Michigan, New York and Virginia with roadside equipment installed covering

⁴ In 2015, [MEMA commissioned a study](#) to evaluate an ADAS roadmap and the anticipated costs-benefits. Collectively, that study showed that ADAS features could save almost 10,000 lives by preventing 2.3 million accidents and approximately \$251 billion in costs to society annually in the United States. Compounded with V2X, the safety benefits of both groups of technologies are significant.

⁵ Research and Innovative Technology Administration, ITS-JPO “The Connected Vehicle Test Bed: Available for Device and Application Development” FHWA-JPO-11-141

hundreds of square miles. The features of the test beds offer safety, mobility and environmental applications and information. Supported by the ITS-JPO, the Test Beds provide the ability for users to test applications that have the potential to save lives and provide continuous real-time connectivity. The federal and state governments as well as the private sector have heavily invested in these test bed projects. New York City, Tampa and Wyoming plan to use common elements in their DSRC deployments that will include well over 10,000 vehicles.

MEMA member companies have dedicated considerable financial, products, materials and personnel resources to support these R&D projects within their companies, within their own supply chain and, of course, with their vehicle manufacturer customers and government partners. Many suppliers have already entered into agreements with various federal and state agencies for research, testing and deployment.

Deployment of DSRC is very much a public-private project for which both sides have invested substantially. Therefore, the FCC must protect 5.9 GHz band and its current channel plan to capitalize on all the investment, research, development, testing and progress. Re-channelization the 5.9 GHz band would nullify the investments already made under the current channelization and delay DSRC's benefits by several years.

No sharing of the spectrum should be allowed unless it can be convincingly demonstrated that sharing will not interfere with or negatively affect DSRC communications and their critical safety-of-life functions.

Any Proposal of Re-Channelization Will Delay and Limit the Safety Benefits of V2X

All of the government-industry development and planning thus far have been firmly rooted in the Commission's current channel plan. While the channel currently designated for the Basic Safety Message (BSM) is slated under Channel 172, safety-critical communications will occur throughout the 5.9 GHz DSRC bandwidth, which is why the full spectrum must be preserved. These other safety-critical communications include, without limitation, the following:⁶

- V2V collision warnings and controls
- Vulnerable road user safety (e.g. pedestrians)
- Cooperative adaptive cruise control and platooning
- Red light violation warning
- Curve speed warning
- Emergency vehicle alert
- Signal preemption
- Cooperative merging⁷

⁶ See, U.S. Department of Transportation, Connected Vehicle Applications: Safety (FHWA-JPO-16-241), <http://ntl.bts.gov/lib/56000/56200/56237/FHWA-JPO-16-241.pdf>, (2016) (describes 14 V2V applications, 14 different V2I applications and a separate V2P application for DSRC).

⁷ See, U.S. Department of Transportation, [Connected Vehicle Applications: Safety \(FHWA-JPO-16-241\)](http://ntl.bts.gov/lib/56000/56200/56237/FHWA-JPO-16-241.pdf), 2016. (Describes 14 V2V applications, 14 different V2I applications and a separate V2P application for DSRC).

These channels were created to support the applications' performance, reliability and low latency requirements as well as future development needs. Any compression of what is intended for the current channels into the upper 30 MHz would drastically restrict the functionality of the DSRC applications for V2X. More importantly, placing certain channels' functions in closer proximity, as the re-channelization plan proposes, would degrade and endanger passenger safety.

All messages that are part of the DSRC 5.9 GHz ecosystem have safety-implications. And while all channels have a safety application and corresponding benefit, the benefits go far beyond life safety. The broad technological revolution DSRC will launch will not only dramatically enhance safety, but also will revolutionize transportation, making it safer and more efficient. Limiting the utility of this spectrum by allowing harmful interference or re-channelization of the band to benefit Wi-Fi will significantly set back the efforts to modernize American mobility.

Re-channelization would also result in significant re-design, re-testing and re-validation – making all of the progress made so far futile. Such a set-back is unacceptable and would thwart all of the R&D and planned deployments.

At the very moment when the transportation sector is about to unleash revolutionary technologies that will make transportation safer and more efficient, it makes no sense for the FCC to issue a new channel plan for 5.9 GHz. To do so reduces the availability of this critical spectrum for improving the safety and efficiency of transportation that will ultimately usher-in the autonomous vehicle revolution

Any Spectrum Sharing Must Be Proven to be Safe Without Interference

The FCC should reject efforts to re-channel the 5.9 GHz band for the purposes of obtaining more Wi-Fi spectrum and it should not allow spectrum sharing without iron-clad evidence that there would be no harmful system interference of safety-of-life applications. An inclusion of unlicensed devices would also increase the risk of system interference. Introducing unlicensed devices into an existing framework established through previous public-private cooperation would further delay rulemaking and deployment of available safety-of-life technology.

The industry cannot risk interference of the signal because of the implications on vehicle safety. MEMA supports its industry's commitment to fully evaluating and addressing these concerns. However, for the interim, sharing the bandwidth and re-channelization must be more fully understood and preserved until safety can be proven and assured. The burden to demonstrate that sharing can be done safely lies with the parties that seek to access the spectrum.

Conclusion

Each year, there are over 32,000 fatalities and over 2 million injuries annually in the United States.⁸ The DSRC technologies for V2V/V2X communications offer significant safety

⁸ NHTSA Traffic Safety Facts, "2014 Motor Vehicle Crashes: Overview" DOT HS 812 246, March 2016

benefits addressing upwards of 80 percent of unimpaired crash scenarios. Furthermore, these technologies are needed to allow automated vehicles reach their full potential.

MEMA strongly urges the FCC to preserve the 5.9 GHz spectrum per the Commission's current channel plan. Any alteration or variance of this channel plan quite literally throws out over a decade of R&D data and analysis as well as millions in public-private partnership investments. Any action by the FCC to share and reassign 5.9 GHz spectrum channels would severely impact technology deployment and delay expected safety benefits. Any significant changes or delays impact not only vehicle and supplier production decisions, but also – and more importantly – the safety of U.S. citizens.

For questions or more information, please contact Ann Wilson, senior vice president of government affairs (202) 312-9246, awilson@mema.org or Leigh Merino, senior director of regulatory affairs at (202) 312-9249 lmerino@mema.org.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "S. Handschuh", with a long horizontal flourish extending to the right.

Steve Handschuh
President & CEO