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

Office of Engineering and Technology Requests Comment on Phase I Testing of Prototype U-NII-4 Devices	)))	ET Docket No. 13-49

COMMENTS OF PANASONIC CORPORATION OF NORTH AMERICA

I. INTRODUCTION AND SUMMARY

Panasonic Corporation of North America[1] ("Panasonic") provides these comments in response to the Public Notice ("PN") from the Federal Communications Commission ("FCC" or "Commission") Office of Engineering & Technology ("OET") requesting comment on the report for Phase I Testing of Prototype U-NII-4 devices performed to evaluate potential sharing solutions with Dedicated Short-Range Communications ("DSRC").[2] Panasonic, an industry leader in DSRC, and Cellular-V2X ("C-V2X") and other connected vehicle technology, continue to deploy innovative vehicle safety and connected highway solutions in 5.9 GHz spectrum with enormous lifesaving potential.[3]

Panasonic agrees with the U.S. Department of Transportation's ("DOT") National Highway Traffic Safety Administration ("NHTSA") that "preserving the 5.9 GHz band for

[1] Panasonic Corporation of North America is a leading technology partner and integrator to businesses, government agencies and consumers across the region. The company is the principal North American subsidiary of Osaka, Japan-based Panasonic Corporation and leverages its strengths in Immersive Entertainment, Sustainable Energy, Integrated Supply Chains and Mobility Solutions to enable its business-to-business customers. For more about Panasonic V2X technology, visit: https://na.panasonic.com/us/intelligent-transportation

[2] Office of Engineering and Technology Requests Comment on Phase I Testing of Prototype U-NII-4 Devices, Public Notice, ET Docket No. 13-49, DA 18-1111 (rel. Oct. 29, 2018) ("PN").

[3] V2X includes vehicle-to-vehicle ("V2V"), vehicle-to-infrastructure ("V2I") and vehicle-to-pedestrian ("V2P") communications.

transportation communications is essential to public safety today and in the future."[4] This is because 5.9 GHz band V2X communications have "the potential to revolutionize motor vehicle safety."[5] Panasonic therefore urges the Commission to align with DOT's position that "all three phases of research must be completed" – including testing in a range of real-world conditions – "before any decisions about spectrum reallocation can be made."[6] Any unlicensed use of the band, if authorized, should be conditioned on non-interference with incumbent technology or other future intelligent transportation systems technologies. Doing so will continue to unleash lifesaving innovation on American roadways and benefit the public interest.

II. PANASONIC HAS DEEP CAPABILITIES IN VEHICLE COMMUNICATION TECHNOLOGIES AND IS DEPLOYING INNOVATIVE CONNECTED HIGHWAY SOLUTIONS

Panasonic is a leading technology partner and integrator to businesses, government agencies and consumers across the North American region. As the principal North American subsidiary of Osaka, Japan-based Panasonic Corporation, Panasonic provides a wide range of solutions in Immersive Entertainment, Sustainable Energy, Integrated Supply Chains and Mobility Solutions to enable its business-to-business customers. Since its establishment in 1918, Panasonic has operated its business in accordance with its philosophy of "contributing to the progress and development of society and the well-being of people worldwide through its business activities." Consistent with this fundamental philosophy, Panasonic strives to develop

---

[4] U.S. Department of Transportation's National Highway Traffic Safety Administration issues statement on safety value of 5.9 GHz spectrum, NHTSA.gov (Oct. 24, 2018), *available at* https://bit.ly/2PFDD5u.

[5] U.S. Department of Transportation, National Highway Traffic Safety Administration, *Federal Motor Vehicle Safety Standards: V2V Communications*, Notice of Proposed Rulemaking, 82 Fed. Reg. 3854, 3855 (Jan. 12, 2017) ("V2V NPRM").

[6] *See supra* n.4.

technologies and systems that improve vehicle safety and make transportation systems safer and more efficient.

Panasonic is a leading tier 1 supplier of automotive infotainment and vehicle components. In addition, Panasonic has been a leading developer of Intelligent Transportation Systems ("ITS") since the late 1990s, when the ITS Business Development Center was established in Japan to develop solutions such as electronic toll collection ("ETC") systems for roadways in Japan. Panasonic has many years of experience with V2X technologies and the capability to provide both DSRC and C-V2X communications components for Original Equipment Manufacturer ("OEM") vehicles.

The public interest benefit of these technologies and systems is compelling. Vehicle-connected roads are expected to reduce travel times by almost half, and vehicle-to-vehicle communication has the potential to eliminate 89% of Light Vehicle to Light Vehicle crashes and 85% of their associated economic costs.[7] Indeed, NTHSA estimated that by 2051, implementing V2V could prevent almost 600,000 crashes and reduce the costs resulting from these crashes by $53-$71 billion.[8]

Panasonic continues to invest in vehicle connectivity solutions that improve driver and pedestrian safety and save lives. For instance, in 2017, Panasonic Corporation acquired a majority share in Ficosa International, S.A. ("Ficosa"), a global, tier-one supplier of automotive parts and systems. Panasonic and Ficosa are combining their respective technologies to jointly develop products such as electronic mirror systems, next-generation cockpit systems and Advanced Driver Assistance Systems ("ADAS"). Ficosa has focused a large part of its work on developing antenna systems and telematics modules, which enable internal and external

[7] V2V NPRM, at 3863.
[8] *Id.*, at 3858.

connectivity and are crucial for both connected cars and autonomous driving. Deployment of V2X services is a critical step in the progression to higher levels of vehicle autonomy. At the September 2018 ITS World Congress, Ficosa demonstrated its CarCom technology platform. This pioneering development allows integration of different connectivity solutions in a modular manner to enable the vehicle to directly communicate with the new technologies that will define the future of mobility, including C-V2X, high-precision positioning, antennas with digital synchronization, and 5G technology.

In addition, Panasonic and the Colorado Department of Transportation ("CDOT") partnered in 2017 to build a connected transportation program in which real-time data is shared across vehicles, infrastructure and people to improve safety and mobility on the road. This program has progressed significantly, with extensive deployment of V2X systems and roadside units ("RSUs") in a real-world environment along the I-70 Mountain Corridor and other Colorado highways. By the end of 2018, approximately 100 RSUs will be in place – many in places not served by existing cellular infrastructure – and more than 2,500 CDOT and partner vehicles will be equipped with technology that allows them to communicate information to and from the CDOT Traffic Operations Center. By creating this connected system—an "internet of roads"—drivers and traffic managers will receive real-time information about road conditions such as traffic delays, icy conditions, and crashes through continuous and automatic communications between individual vehicles and roadside infrastructure. This allows traffic managers to send messages to connected vehicles via the RSUs, alerting drivers to upcoming roadway hazards—such as a crash or closure ahead—on in-vehicle screens.[9]

[9] *See* CDOT and Panasonic Take First Steps to Turn I-70 into Connected Roadway, CODOT.gov (July 26, 2018), *available at* https://bit.ly/2qT0f3P.

Panasonic's lifesaving innovations do not stop there. During the September 2018 ITS World Congress in Copenhagen, Denmark, Panasonic unveiled "Cirrus," a traffic management center solution for transportation agencies. Cirrus, an open development platform for data sharing and collaboration, is designed to enable traffic managers to leverage the transformative benefits and new capabilities provided by V2X technology.[10] Cirrus was developed using industry V2X standards and supports integration to existing transportation systems. The Cirrus software platform is built to scale for state-wide deployment of V2X technology on all roadways, highways and arterials alike. Collaborating with CDOT, Panasonic is developing Cirrus to allow DOTs to effectively deploy these technologies at scale for all roadways throughout an entire state or region. Roadway operators receive transportation data that can trigger immediate deployment of first responders during emergency conditions or optimize traffic flows in real time.

Finally, in August 2018, Panasonic, along with Ford and Qualcomm, began the first real-world demonstration of C-V2X technology. This project connects C-V2X equipped vehicles and roadways with a regional traffic management center in Denver, enabling a new level of data-driven situational awareness that aims to achieve a dramatic improvement of safety on the road.[11] To conduct this experimental trial, Panasonic is working with Kapsch to provide first-of-their-kind dual mode C-V2X and DSRC RSUs and Ficosa to provide C-V2X onboard units ("OBUs").

Together, these innovations demonstrate Panasonic's commitment to the lifesaving potential of DSRC and C-V2X in a dedicated 5.9 GHz band. Indeed, the auto ecosystem has

---

[10] *Panasonic Unveils 'Cirrus' V2X Traffic Management Solution at ITS World Congress Copenhagen*, Press Release, Panasonic.com (Aug. 15, 2018), *available at*: https://bit.ly/2S4Uf3o.

[11] *Panasonic, Qualcomm and Ford Demo the First Real-World Application of C-V2X in Colorado*, Press Release, Panasonic.com (Aug. 15, 2018), *available at* https://bit.ly/2S7C79n.

unified on the need to preserve the entire 5.9 GHz band for auto safety services.[12] Panasonic and other industry stakeholders need the full 5.9 GHz allocation of unimpaired spectrum for these technologies to be deployed to their fullest potential. These revolutionary technologies are coming online now. Reducing or eliminating the 5.9 GHz spectrum allocation would risk chilling innovation and stranding investment, which would deny safety benefits to consumers and harm the public interest.

III. THE FCC SHOULD COMPLETE ALL THREE PHASES OF THE TEST PLAN AGREED UPON WITH NHTSA TO ENSURE ROADWAY SAFETY

Panasonic wholeheartedly agrees with NHTSA's recent statement regarding preservation of the 5.9 GHz band for transportation communications and the importance of completing the agreed-upon, three-phase test plan. Specifically, NHTSA emphasized just last month that:

> "Preserving the 5.9 GHz band for transportation communications is essential to public safety today and in the future. The automotive industry and municipalities are already deploying V2X technology and actively utilizing all seven channels of the 5.9 GHz band. There are more than 70 active deployments of V2X communications with thousands of vehicles already on the road. This technology has the potential to improve infrastructure, safety and efficiency as the Department works to make road travel and future transportation significantly safer. As noted in the Department's recent AV 3.0 guidance, the three-phase research plan currently underway was developed collaboratively with the [FCC] and the U.S. Department of Commerce to explore spectrum sharing technology that maintains priority use for vehicle communications. The three phases of the test plan are interdependent and ongoing, and the testing will show whether unlicensed devices can safely operate in the 5.9 GHz band. With lifesaving safety capabilities at stake, the Department maintains that all three phases of research must be completed before any decisions about spectrum reallocation can be made. The U.S. DOT will continue to work closely with the FCC and NTIA to utilize the 5.9 GHz band for public safety applications and vehicle safety communications."[13]

NHTSA's statement reinforces the need to complete all three phases of testing prior to any decisions on spectrum sharing or reallocation in the 5.9 GHz band. Specifically, the Phase I report must be supplemented with additional stages because testing took place under laboratory

---

[12] *See* Global Automakers, Press Release, *Global Automakers are Committed to Preserving the 5.9 GHz Safety Spectrum*, Globalautomakers.org (Oct. 16, 2018), *available at* https://bit.ly/2PGfuMu.

[13] *See supra* n.4.

conditions, not in a real-world environment. This should include testing in different weather conditions, terrain variations, and roadway environments (vehicle speeds, obstructions, etc.). Simply put, benchtop testing of devices physically connected by wire is inadequate when driver safety is on the line. Panasonic also recommends that the Commission work with DOT to rapidly complete Phase II real-world testing of interference mitigation. Conclusive proof is needed to determine if sharing is possible without compromising transportation safety.

The Commission should not heed NCTA's suggestion that the FCC take a "fresh look" at the 5.9 GHz Band and DSRC, nor should the Commission give credence to NCTA's claim that DSRC has been a "failure," when Panasonic and other industry stakeholders continue accelerating real national deployment.[14] As described in detail above, Panasonic continues to deploy V2X technologies designed to improve roadway safety. V2X solutions are an important element in making our highway systems intelligent and resilient, improving safety and efficiency, and reducing the need for new highway construction. Even with regulatory uncertainty about the future of the band, twenty-six states have invested in V2X deployments.[15] More than 37,000 individuals died on U.S. roadways last year, and Panasonic agrees with DOT Secretary Elaine Chao that "[a]ll of us need to work together to reduce fatalities on the roads."[16] Connected vehicle technologies offer the U.S. a powerful set of tools to save lives, but only if the FCC removes the cloud of regulatory uncertainty and gives these technologies the ability to flourish fully. Preserving the 5.9 GHz band for these and future DSRC deployments can help avoid many of these deaths, which is plainly in the public interest.

---

[14] Letter from Rick Chessen, NCTA to Marlene H. Dortch, FCC, ET Docket No. 13-49, at 6 (Oct. 16, 2018).

[15] Letter from Coalition for Safety Sooner to The Honorable Ajit Pai, Chairman, FCC, ET Docket No. 13-49, at 1 (Aug. 13, 2018).

[16] U.*S. DOT Announces 2017 Roadway Fatalities Down*, NHTSA.gov (Oct. 3, 2018), *available at* https://bit.ly/2PX9jn8.

Above all, State governments and industry need certainty that the full 75 MHz of the 5.9 GHz band will be available for vehicle safety applications, which require low-latency direct communication that can only be reliably ubiquitous through dedicated spectrum in the 5.9 GHz band.[17] Accordingly, the Commission should not narrowly constrain the use of the band for V2V crash avoidance communications, but it should also consider the benefits of low-latency vV2I communications, including messages that provide warnings for dangers in intersections (e.g. "Red Light Violation Warnings" or "Pedestrian in Signalized Crosswalk").[18] Highway operators can use V2I information derived from even a small number of vehicles to provide roadway information for all drivers (e.g. emergency vehicle operations, work zones, and road/weather conditions, etc.), thus benefiting the safety of the driving public.

Reducing the amount of spectrum available would chill future innovation that would continue to improve vehicle safety, and benefit future autonomous vehicle operation. Indeed, DOT's Automated Vehicle 3.0 report, "Preparing for the Future of Transportation" notes that: "Communication both between vehicles (V2V) and with the surrounding environment (V2X) is an important complementary technology that is expected to enhance the benefits of automation at all levels… Cooperative automation allows automated vehicles to communicate with other vehicles and the infrastructure to coordinate movements and increase efficiency and safety."[19]

The Commission should not consider 5G small cells a substitute for V2I-dedicated RSUs, as roadway operators cannot rely on commercial small cell deployments for critical safety

---

[17] For this reason, the Commission should not consider vehicle-to-network communications as an adequate substitute for DSRC.

[18] *See also* U.S. Dept. of Transportation, *Vehicle-to-Infrastructure (V2I) Message Lexicon*, Technical Report FHWA-JPO-16-264 (Dec. 2016), *available at* https://rosap.ntl.bts.gov/view/dot/32033 (providing examples of V2I safety communications).

[19] U.S. Dept. of Transportation, *Automated Vehicles 3.0: Preparing for the Future of Transportation*, at 13, 16 (Oct. 4, 2018), *available at* https://www.transportation.gov/av/3; *see also id.*, at 16 (providing additional examples of cooperative automation applications).

applications. 5G small cells do not support V2X applications unless also equipped for low-latency communication in the 5.9 GHz band, thus becoming, in effect, an RSU. RSUs augment the benefits of direct V2V safety messages between vehicles and provide roadway operators with situational awareness of roadway conditions so that actions can be taken and messages provided to prevent crashes and help make roadways safer. Thus, the operation of RSUs needs to be under the direct control of roadway operators. RSUs can also be deployed in dangerous areas to extend coverage – such as rural mountain roadways or urban canyons – where commercial cellular or 5G service is unavailable, unreliable or uneconomical for service providers to deploy.

IV. CONCLUSION

Preserving the entire 5.9 GHz band for transportation and vehicle safety applications holds enormous potential to save American lives and enable the deployment of an "internet of roads" to improve the efficiency of transportation infrastructure. Panasonic encourages the Commission to cooperate with DOT to promptly commence Phase II testing to ensure that any unlicensed use in the band occurs without harmful interference to incumbent and future intelligent transportation systems technologies.

Respectfully submitted,

PANASONIC CORPORATION OF NORTH AMERICA

By: /s/ Paul G. Schomburg

Paul G. Schomburg
Director, Government & Public Affairs
Panasonic Corporation of North America
1130 Connecticut Ave NW, Suite 1100
Washington, DC 20036
202.912.3800

November 28, 2018