Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of

Revision of Part 15 of the Commission's Rules to Permit Unlicensed National Infrastructure (U-NII) Devices in the 5 GHz Band	))))	ET Docket No. 13-49

COMMENTS OF OMNIAIR CONSORTIUM

David Kristick, Chair of the Board of Directors
Suzanne Murtha, Interim Executive Director
OmniAir Consortium
(202) 689-4802

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To: The Commission

OmniAir is a non-profit trade association created to enable the deployment of interoperable advanced transportation technologies and applications. OmniAir serves as a catalyst for the deployment of cooperative technologies by building certification programs. All OmniAir programs are responses to requests from the intelligent transportation industry to add value via certification. Our members are deeply concerned with the FCC's reconsideration of non-licensed use of the 5.9 GHz Band currently allocated specficially for use of vehicle communications.

OmniAir's Roles in the connected vehicle industry include:

•Provide independent verification of standards compliance and performance to assure the technology's integrity, functionality, and interoperability.

- Promote open standards and test compliance to those standards that enable transportation system interoperability.
- Support the market benefits of open standards: choice, competition and scalability.
- Demonstrate that open-standards-based technologies are a versatile and secure solution to the safety and efficiency issues our highways suffer from today due to stove-piped technologies, applications and protocols.

OmniAir and its members believe that interference with vehicle communications equipment using this band could possibly be life threatening to drivers and pedestrians whose lives will depend on the applications currently under development for use in the DSRC band. We implore you to not act on this topic of sharing spectrum in the 5.9 GHz range until substantial testing has been completed that proves that additional non-licensed use of this space will not interfere with soon to be deployed live saving technologies.

OmniAir respectfully requests the Commission protect DSRC's primary status allocation, which is especially important given the critical safety applications available with DSRC. The *NPRM* has created significant regulatory uncertainty that is threatening to derail the progress DSRC is making toward nationwide deployment. The proposal to permit sharing of the 5.9 GHz Band with unlicensed devices is at best premature and cannot form the basis for a Report and Order permitting sharing of the 5.9 GHz Band by U-NII devices.

OmniAir and its members would like to remind FCC of the deployments that transportation industry constituents have completed to date using 5.9 GHz –based

equipment. Interference from non-licensed use of the 5.9 GHz spectrum will likely negatively impact the performance of all of the deployments.

1. NY City – Roughly 20 road side units are installed around the Jacob Javits Center in Manhattan and are currently being used for urban applications.
2. Long Island, NY – Roughly 20 roadside units are installed along the Long Island Expressway and are currently being used by New York State DOT for their traffic management center.
3. New York State - DOT and FMCSA awarded Kapsch, Volvo and several other project members funding to develop and verify eScreening application for commercial vehicles. eScreening uses commercial grade 5.9 GHz DSRC to perform verification of vehicle and driver credentials and validate commercial vehicle compliance with the federal and state administered credentialing systems. This project has advanced usage of the open communication technology 5.9GHz DSRC and communication standards to support needs of the commercial vehicle operators and state authorities.
4. VA DOT installation on 495 and 66 – The Test Bed, located in Merrifield, Virginia, Fairfax County is equipped with 44 Roadside Equipment Units. The Test Bed area encompasses portions of I-66, I-495, Route 29, Route 50, two metro stations, a fire department, a hospital, and a good mix of residential, educational and commercial areas. The vehicles in the Test Bed fleet are equipped with automation systems ranging from Levels one through three as well as VTTI Data Acquisition Systems and DSRC on-board units. The fleet currently consists of six light vehicles, two motorcycles, one Tractor-trailer and one motor coach.

5. Florida installation – In the Orlando area, FDOT has deployed 26 roadside equipment (RSE) units in an area around the Orange County Convention Center. These RSE will interface with onboard equipment (OBE) and connect to the FDOT District Five SunGuide® advanced transportation management system production software through the District's fiber optic network.

6. Lee County, Florida - Kapsch TrafficCom has worked closely with Lee County, Florida's Lee Way (electronic toll collection system) to develop and host North America's first fully integrated 5.9 GHz DSRC WAVE open road tolling system with vehicle enforcement. The customized tolling system was mounted on the first west-bound toll gantry at the Midpoint toll plaza in Cape Coral, Florida and covers two west-bound travel lanes, as well as two shoulders. It includes a high-performance automatic license plate recognition system using both infrared and white light cameras for each lane, as well as a laser vehicle classification system based on FHWA's axle estimation Scheme F. Three overview cameras provide a high-resolution color reference image. The dedicated 5.9 GHz DSRC WAVE transceivers provide a variety of service options in addition to toll transactions. A fleet of voluntary users provide daily 5.9 GHz DSRC WAVE transactions for system testing and tuning.

7. Novi Test Bed - Located in Novi, Michigan and opened in 2010, this test bed is specifically designed to support DSRC testing in the 5.9 GHz Band. The Michigan Test Bed covers 45 square miles, comprising 75 center-line miles consisting of 32 interstate and divided highway and 43 arterial miles, and covering signalized and un-

signalized intersections. In addition, there are 50 DSRC roadside units installed along the Test Bed network.

8. Safety Pilot installation - US DOT's Connected Vehicle program, in conjunction with its partners, is conducting a Safety Pilot Program to examine connected vehicle technologies and real-world applications. This effort is intended to enable US DOT to gather supporting information it needs to determine whether connected vehicle technologies are mature and effective to continue with this research and consider possible regulatory actions.[1] The Safety Pilot Program is divided into two phases: Phase One – Driver Acceptance Clinics; and Phase 2 – Model Deployment.

Phase One – Driver Acceptance Clinics. Starting in August 2011 and continuing through January 2012, US DOT and its research partners conducted a series of six "driver clinics" to assess driver acceptance of V2V safety systems and using DSRC. Specifically, the driver clinics had three objectives:[2]

- Obtain feedback on connected vehicle technology and safety applications from a representative sample of drivers;
- Assess the performance and reliability of 5.9 GHz DSRC communications and GPS in diverse geographic locations and environmental conditions; and
- Promote V2V-safety technology and potential safety benefits.

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[1] *See* U.S. Department of Transportation, Safety Pilot Connected Vehicle Technology, Fact Sheet: "Improving Safety and Mobility Through Connected Vehicle Technology" (2012) (available at http://icsw.nhtsa.gov/safercar/ConnectedVehicles/pages/resources.html) ("Safety Pilot Fact Sheet")

[2] *See* M. Lukuc, National Highway Traffic Safety Administration, U.S. Department of Transportation, Light Vehicle Driver Acceptance Clinics, Preliminary Results (May 21, 2012) (available at http://icsw.nhtsa.gov/safercar/ConnectedVehicles/pages/resources.html).

16 vehicles from the OEM partners were equipped with six different V2V safety systems: forward collision warning, emergency electronic brake lights, blind spot warning/lane change warning, left turn assist, intersection movement assist and do not pass warning. Over 700 persons were able to experience these safety systems in scenarios run by professional drivers as well as by driving some of the vehicles themselves. US DOT reports that there was overwhelming support (9 out of 10) from participants who indicated that they would like to have these safety applications in their vehicles and believe the technology would be useful in improving vehicle safety.[3]

Phase Two – Model Deployment. Starting in August 2012 in Ann Arbor, Michigan, with support from US DOT, the University of Michigan's Transportation Research Institute ("UMTRI") is leading a 30-month safety model deployment pilot program of V2V and V2I safety applications.[4] The Model Deployment is designed to determine the effectiveness of these applications to reduce vehicle crashes and to learn how real-world drivers respond to these devices and applications in their vehicles. The testing phase will occur over 12 months and involves almost 3000 private, commercial and fleet vehicles (cars, trucks and buses) across 75 miles of local roads instrumented with roadside transmitters. The vehicles have been outfit with a mix of DSRC communications devices: vehicle awareness devices,[5] retrofit safety devices,[6] and

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[3] Safety Pilot Fact Sheet at 3.

[4] *See generally* RITA, Intelligent Transportation Systems Joint Program Office, Fact Sheet: "Connected Vehicle Safety Pilot Program" (viewable at http://www.its.dot.gov/factsheets/pdf/SafetyPilot_final.pdf); University of Michigan Transportation Research Institution, "Safety Pilot Model Deployment" (viewed on May 21, 2013 at http://www.umtri.umich.edu/divisionPage.php?pageID=505).

[5] A "vehicle awareness device" is an aftermarket electronic device installed in a vehicle without connection to vehicle systems. This device does not generate warnings, but

integrated safety systems[7] or aftermarket safety devices, all of which enable wireless communications between vehicles and the roadside infrastructure. All the communications devices transmit a "basic safety message" 10 times per second that other vehicles use, along with the vehicle's own data, to determine whether a potential traffic hazard exits.[8] Four safety applications are being studied.

Overall, the Model Deployment's research goals are:

- Demonstrate connected vehicle technologies in a real-world, multi-modal environment;
- Determine driver acceptance of vehicle-based safety systems;
- Evaluate feasibility, scalability, security, and interoperability of DSRC technology; and
- Assess options to accelerate safety benefits.[9]

9. PrePass Pilot I-70 Corridor - Kapsch, in collaboration with Help Inc., and Xerox, kicked off an e-screening Pilot Corridor with the objective of demonstrating the power of automated e-screening utilizing 5.9 GHz DSRC. (HELP's current

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transmits only a vehicle's speed and location. U.S. Department of Transportation, Safety Pilot Connected Vehicle Technology, Questions & Answers About DOT's Safety Pilot "Model Deployment," 2 (2012) (available at http://icsw.nhtsa.gov/safercar/ConnectedVehicles/pages/resources.html) ("Model Deployment Questions & Answers").

[6] A "retrofit safety device" is an electronic device installed in a truck or bus by an authorized service provider after the vehicle has completed the manufacturing process. The device is integrated into the vehicle bus and in-vehicle sensors. *Id.*

[7] "Integrated safety systems" are electronic devices during vehicle production and are connected to the vehicle bus and in-vehicle sensors. Available for both light vehicles and trucks. *Id.*

[8] Safety Pilot Fact Sheet at 4.

[9] University of Michigan Transportation Research Institute, Brochure: "Safety Pilot Model Deployment" (viewable at http://www.umtri.umich.edu/content/SafetyPilot_brochure_v3.pdf).

preclearance system uses Kapsh supplied 915MHz transponders and includes over 420,000 enrolled trucks with preclearance capability at over 300 weigh stations in 31 states across the U.S.). Help Inc. has recruited a number of industry leading commercial vehicle carriers to participate in the pilot and has outfit over 50 trucks to date. At the roadside are six inspection stations equipped with RSE in the I-70 corridor. Drivers log onto the system with an NFC based smartcard. As they near a 5.9 equipped weigh station, carrier and driver data are downloaded to the PrePass database. A clearance decision is then made based on this data and sent to the transponder in the vehicle where the driver sees a green light (bypass) or redlight (pull-in). Carrier credential data and the weight results are also uploaded to the device for later interrogation by enforcement officials in the field. The goal of the project is to work towards a paperless credential system in the U.S. where all data is stored digitally on the truck with no need for binders full of credentials.

10. Commercial Vehicle Technology - Michigan DOT (MDOT) is installing a truck parking connected-vehicle system at five sites along the I-94 corridor in Michigan. The solution consists of a 5.9 GHz Dedicated Short Range Communications (DSRC) in-vehicle unit and roadside equipment with customized application software that together provide drivers with real-time truck parking availability information from MDOT facilities and private truck stops.
11. Northern California installations in Palo Alto are equipped to work with the automobile manufacturers and researchers located in that region.
12. Arizona DOT has erected a series of 5.9 GHz installations focused on improving flow of emergency vehicles and ramp metering.

13. San Francisco Airport landside applications – in 2013, SFO is planning to install a 5.9 GHz based system to enhance its throughput of taxis and and to improve the accuracy of distance based fare charging to the taxi systems. The system is designed to be extended to Oakland and San Jose airports.
14. Oak Ridge, TN – Oak Ridge National Laboratories has deployed an Enterprise Network Operations Center Services Delivery Node in support of research and analysis associated with transportation-related DSRC.
15. Hood River Bridge – The Port of Hood River. Kapsch manages the toll plaza operations for vehicles north bound from the Oregon side to Washington State. The toll plaza processes around 12,000 vehicles per day. There are approximately two hundred 5.9 GHz DSRC transponders currently in circulation in and around the Hood River Bridge o provide test data for the system. As part of an agreement between Kapsch TrafficCom and the Port of Hood River Kapsch has installed and continues to test and support the operation of 5.9 GHz DSRC transponder and Automated Vehicle Identification (AVI) system. Kapsch recently demonstrated the functionality of the system, and thousands of 5.9 GHz based tolling transactions were processed over the course of the event and the multi-application power of 5.9 GHz was observed by hundreds of guests including dignitaries such as Secretary of Transportation, Ray LaHood.

Currently, 42 entities hold DSRC licenses from the Commission. Licensees include state DOTs; local governments (counties, cities, towns); transit, thruway, bridge, tunnel and port authorities; commercial DSRC service providers, research and testing organizations, and others, many of whom are members of OmniAir.

In support of the on-going Connected Vehicle Safety Pilot Model Deployment, discussed above, in 2010 US DOT provided grants to eight entities to develop prototype DSRC radio devices. The devices were to be capable of generating and transmitting "Here I Am" basic safety messages to other vehicles and devices using DSRC. In 2011, US DOT provided grants to three vendors to develop DSRC-based, "After Market Safety Devices," which are capable of supporting V2V applications. Then, in 2012, US DOT invited four companies to provide DSRC roadside units. US DOT further advised that

those entities whose devices pass the certification testing process would be placed on a "Qualified Product List" and, accordingly, be eligible for use in the Model Deployment. Subsequently, US DOT selected four companies to provide DSRC roadside equipment for the Model Deployment. OmniAir completed the device qualification testing for this equipment. As an effort to faciliotiate the increased use and adoption of DSRC equipment, to save lives and incease roadway mobility, OmniAir has been helping the connected vehicle industry work together to develop programs for certification and then developing and conducting certification and qualification tests on this equipment.

Members of OmniAir such as Kapsch TrafficCom and Arada Systems have spent almost a decade of R&D and raised millions of dollars to develop DSRC-based technology. We would respectfully ask that the Commission not act on this topic of sharing spectrum in the 5.9 GHz range until substantial testing has been completed that proves that additional non-licensed use of this space will not interfere with soon to be deployed live saving technologies.

OmniAir members include: 3M, AECOM, Xerox Company, Arada Systems, Inc., Concurrent Technologies Corporation, E-470 PHA, E-Z Pass Group, HNTB, IBI Group, Jafa Technologies, Inc., Kapsch TraffiCom, Met Labs, MTA B&T, North Texas Tollway Authority, Port Authority of New York and New Jersey, ATKINS, Raytheon, HTMS, Security Innovation, Southwest Research Institute, TransCore and TUV Rheinland North America.

Respectfully submitted,

Suzanne J. Murtha

Interim Director, OmniAir Consortium

OmniAir Consortuim

P.O. Box 965,

Falls Church, VA 22040

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