HYUNDAI
MOTOR GROUP

Hyundai America Technical Center, Inc.
6800 Geddes Rd - Superior Township, MI - 48198
Phone: (734)337-9499 FAX: (734)337-3168
www.hatci.com

July 07, 2016

Commission's Secretary, Office of the Secretary
Federal Communications Commission
445 12th St., SW
Room TW-A325
Washington, DC 20554

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

On behalf of Hyundai Motor Company, Hyundai America Technical Center, Inc. appreciates the opportunity to comment to Public Notice FCC 16-68 released on June 1, 2016, (ET Docket 13-49), from the Federal Communications Commission regarding the record for "unlicensed national information infrastructure (U-NII) devices in the 5 GHz band."

Hyundai has conducted extensive research into vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) technologies, collectively known as "V2X". The Hyundai America Technical Center, Inc. has been engaged with the U.S. Department of Transportation (USDOT) on many facets of the V2X environment, including:

- V2V Safety Pilot Model Deployment – A demonstration of the safety benefits of V2V
- Security Credential Management System – A V2X security system designed for safety, security, and privacy
- Vehicle-to-Infrastructure safety application designs
- Vehicle Integrated Infrastructure Consortium – A group of 10 automakers working on V2V policy matters

V2V technology will allow a vehicle to detect other vehicles or DSRC-enabled devices such as those carried by pedestrians and bicyclists. Hyundai views DSRC as an important step for enhancing future crash avoidance systems, including autonomous vehicles. For example, an Intersection Movement Assist V2V application can warn the driver when it is not safe to enter an intersection due to high collision probability, even when vehicles are not visible to the driver or onboard vehicle sensors. V2V not only provides information not available from current sensors but it can also provide accurate and precise redundancy for current crash avoidance technologies, such as automatic emergency braking, forward collision warning, blind spot detection, etc.

The refresh of the record considers "detect and avoid" and re-channelization as possible approaches to sharing the 5.9 GHz spectrum. If "detect and avoid" is confirmed to work as designed, Hyundai supports the "detect and avoid" solution over the re-channelization approach. That is because "detect and avoid" does not require a V2X system redesign and has no known impediments

to market introduction. V2X safety-of-life technology requires a high level of accuracy, reliability, and cooperation and the industry is ready to bring the systems to market. This level of accuracy, reliability, and cooperation was a result of the automotive industry and other stakeholders working together to develop interoperable systems and widely-accepted standards. Additionally, Hyundai sees "detect and avoid" as the favorable solution because the unlicensed device would avoid transmitting packets on the spectrum when a DSRC device is detected.

Re-channelization, if confirmed as a sharing method, will likely require redesigns of hardware and software, force costly re-testing of all systems, and necessitate revisions to widely accepted V2V standards. Hyundai has not done a full analysis of all the testing or redesigns required but it is likely that re-channelization will drive new specialized chipsets, new DSRC integration designs, new spectrum mask requirements, and other items that may be found during re-testing of V2X systems. A redesign of the V2X system would likely cause significant delays in implementing the technology in production vehicles.

Hyundai requests the Commission review the sharing proposals and assess them not only on feasibility, but also on how fast the technology can be deployed and the benefits maximized.

Sincerely,

Ed Thai for Deborah Bakker

Deborah Bakker, Director
Regulation & Certification Department