

Toyota Advises Congress on Connected-Car Future Technology

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WASHINGTON, D.C. (Nov. 13, 2013) – Imagine your car can see around the corner to determine whether there's a pedestrian or bicyclist in the road. Or perhaps it notifies you when an emergency vehicle is approaching or there's ice on the road. The good news is the technology already exists and Toyota and other car companies are testing it for future implementation.

Using dedicated short-range communication (DSRC) technology cars can communicate with each other and roadside infrastructure to notify drivers of potential hazards. Innovative technology like DSRC presents the next major opportunity to reduce injuries and fatalities from traffic accidents.

John Kenney, Principal Researcher at Toyota InfoTechnology Center in Silicon Valley addressed the opportunities and challenges associated with DSRC today before the House Committee on Energy and Commerce's Subcommittee on Communications and Technology.

"Toyota recognizes and fully appreciates the need to find new and innovative ways to maximize the effective use of the limited spectrum that is available," said Kenney who leads Toyota's vehicular networking research team and represents Toyota before vehicle communication standards bodies in the United States and Europe.

"We have been – and continue to be – generally supportive of efforts to open up more spectrum for unlicensed uses. We are not conceptually opposed to sharing the 5.9 GHz spectrum with unlicensed devices. However, we also believe that the creation of a sharing framework, or the implementation of sharing rules, should not occur unless and until a viable spectrum sharing technology is identified and testing verifies that there is no harmful interference."

Kenney cautioned that interference could result in delayed or missed driver warnings, which will undermine the system's entire foundation, rendering it essentially useless and putting the future of DSRC technology at risk.

"Toyota is committed to helping validate a technical sharing solution once one has been identified. But we're not there yet and it's going to take a bit more time to see if we can get there."

Additional Excerpts from John Kenney's Testimony

On The Potential For New Technology To Prevent Accidents:

Toyota and the automobile industry firmly believe that the next great opportunity to reduce injuries and fatalities from traffic accidents rests with the deployment of innovative new technologies that will prevent crashes in the first place.

Companies like Toyota are leading the way by outfitting vehicles with top-of-the-line sensors, radars, and cameras that can identify and notify drivers of potential hazards. However, these existing technologies have important limitations with respect to range, field-of-view, and line-of-sight. Vehicle-to-vehicle and vehicle-to-infrastructure communication is the technology that will allow us to overcome these challenges.

On Dedicated Short-Range Communication (DSRC):

DSRC-equipped vehicles broadcast precise information – such as their location, speed, and acceleration – several times per second over a range of a few hundred meters. Other vehicles outfitted with DSRC technology receive these “messages” and use them to compute the trajectory of each neighboring vehicle, compare these with their own predicted path, and determine if any of the neighboring vehicles pose a collision threat.

This DSRC-enabled vehicle-to-vehicle communication capability paves the way for the next-generation of lane departure and forward collision warnings, sudden braking ahead warnings, do not pass warnings, intersection collision avoidance systems, and approaching emergency vehicle notifications.

On The Potential Of DSRC Technology:

Just as the Internet has moved far beyond its original limited email and file transfer applications, DSRC is also likely to unleash creative and innovative connected car applications that go far beyond the immediate safety benefits.

DSRC will save lives, improve the environment, create jobs, and help the United States to maintain technical leadership in a field that will be an important contributor to economic growth in the future.

On Toyota’s Commitment To DSRC Technology:

Toyota believes in and is committed to DSRC as a critical safety technology. In fact, we have already commercialized first-generation DSRC technology, and recently announced plans to commercialize second-generation DSRC, in other markets and would like to bring this technology to drivers of our vehicles here in the near future.

On The FCC Notice of Proposed Rulemaking To Open 5.9 GHz Band:

Toyota is not conceptually opposed to sharing the 5.9 GHz spectrum with unlicensed devices and believes that it may be possible for DSRC and unlicensed devices to co-exist in the band. However, we also believe that the creation of a sharing framework, or the implementation of sharing rules, should not occur unless and until: (1) a viable spectrum sharing technology is identified; and (2) testing verifies that there is no harmful interference from unlicensed devices.

Interference that results in delayed or missed driver warnings will undermine the system’s entire foundation, rendering it essentially useless and putting the entire future of DSRC technology in the United States at risk.

Although we are strongly committed to the technology, the automobile industry cannot responsibly deploy “safety-of-life” DSRC technology unless the possibility of harmful interference from unlicensed devices is ruled out.

On Toyota’s Commitment To Working With All Stakeholders:

Toyota is committed to helping validate a technical sharing solution in the 5.9 GHz band once one has been identified. We have been actively engaged with the Wi-Fi community and other stakeholders who are exploring possible sharing solutions that will alleviate any risk of harmful interference from unlicensed devices. We are also active and engaged members of the recently established Tiger Team through IEEE that is working on

possible paths forward on this issue.

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