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VIA ELECTRONIC DELIVERY

January 31, 2017

Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street SW
Room TWA325
Washington, DC 20554

Re: *Ex Parte* Notice

ET 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*

Dear Ms. Dortch:

This is to inform you that on Friday, January 27, 2017, Hilary Cain and John Kenney of Toyota (collectively the "Toyota Representatives") met with representatives of the Office of Engineering and Technology, including Julius Knapp, Ira Keltz, Howard Griboff, Matthew Hussey, Bill Hurst, Geraldine Matise, Reza Biazaran, Rashmi Doshi, Steve Jones, and Dusmantha Tennakoon.

The Toyota Representatives noted that there were clear limitations to the testing that can be accomplished with the re-channelization prototype devices that have been supplied. The re-channelization devices submitted for testing do not fully support the re-channelization proposal because they do not implement any sharing mechanism for the portion of the band that is expected to be shared between U-NII and DSRC. As a result, while the devices can be used to test cross-channel interference from U-NII to DSRC, they cannot be used to test co-channel U-NII-to-DSRC interference.

The Toyota Representatives also reiterated concerns about the degradation of DSRC communications throughout the band that would likely occur following the redefinition of DSRC operations under the re-channelization proposal. Under the proposal, safety communications that are currently spread across seven channels would be consolidated into three channels. In addition, DSRC communications in the overlapping portion of the band would be required to use 20 MHz channels, which has been shown to be inferior to 10 MHz channels for DSRC services. Toyota Representatives stressed the importance of testing baseline DSRC degradation under re-channelization, and expressed interest in working with the Commission and other stakeholders on this.

Toyota Representatives also noted that a channel usage plan under development by SAE International includes provisions to mitigate DSRC-to-DSRC interference under the existing channel configuration, and that the flexibility needed to mitigate such interference would be lost under the re-channelization proposal.

Toyota Representatives further expressed disappointment over some aspects of an Ex Parte filing by advocates of the re-channelization proposal.[1]

- In the filing, an assertion was made that no testing would be required in the overlapping portion of the band because licensed DSRC services would have no "preferential interference rights" compared to unlicensed emissions. This assertion is inconsistent with previous commitments and assurances that re-channelization would provide some protection to DSRC in the overlapping portion of the band, including comments by Qualcomm Incorporated that DSRC and unlicensed devices would share on a "completely non-interfering basis" or "absolutely non-interfering basis".[2] It also appears to be inconsistent with the Commission's Part 15 rules which require that unlicensed devices not harmfully interfere with licensed uses.

- The filing made a distinction between latency-sensitive and non-latency-sensitive communication. Toyota Representatives noted that since almost all DSRC communication will be latency-sensitive, this distinction is not likely to prove any more helpful than previous attempts to distinguish between safety and non-safety DSRC communication. Under this construct, some latency-sensitive non-safety communications may be forced into the upper part of the band, which would already be over-subscribed with latency-sensitive safety communications consolidated under the re-channelization proposal. The addition of latency-sensitive non-safety communication would only exacerbate the congestion and result in greater degradation of DSRC services in the upper part of the band.

- The filing incorrectly classified DSRC "mapping" applications as non-latency-sensitive, and claimed that they had no rights relative to unlicensed traffic. This seems to reflect a fundamental misunderstanding of the types of mapping applications that would be done using DSRC. Cooperative mapping – which is enabled by gathering inferential data from other vehicles and information from roadside units – will be very useful to autonomous driving and collision avoidance applications.

- The filing downplayed the possibility of DSRC self-interference with the Basic Safety Message (BSM). However, if the BSM is transmitted in one of the upper three channels of the band along with all of the other high-priority communication that is currently distributed over seven channels, there will inevitably be degradation in performance of the BSM. Furthermore, if all communication in the upper part of the band is high-priority communication, the channel prioritization schemes that are currently used to prioritize high-priority traffic over lower-priority traffic will no longer be functionally effective. Moreover,

[1] Letter from Paul Margie, Counsel for NCTA – The Internet & Television Association, to Marlene Dortch, Secretary, Federal Communications Commission (December 1, 2016)
[2] Comments of Qualcomm Incorporated, ET Docket 13-49 (May 28, 2013)

the BSM will be spectrally closer to high-power communication at Channel 184.

- The filing also downplayed the possibility of cross-band interference from U-NII-4 to the BSM under the re-channelization proposal, arguing that it would be no worse than the interference from U-NII-3 that currently occurs with the BSM at Channel 172. However, under the current Wi-Fi channelization plan, which all U-NII-3 technologies are likely to use, there is at least 20 MHz between the BSM and the closest U-NII-3 channel and at least 40 MHz from popular wide-bandwidth U-NII-3 channels. Under the re-channelization proposal, the majority of critical safety communication would be within 10 MHz of U-NII-4 traffic, and no DSRC traffic would be separated from U-NII-4 by more than 20 MHz. Toyota Representatives also noted that, under the Detect and Vacate proposal, the minimum separation between the BSM and U-NII would be 40 MHz.

- Finally, the filing provided an example of how re-channelization prototypes could prioritize DSRC in the overlapping portion of the band by always mapping Wi-Fi to "background-class traffic".[3] The suggestion that all U-NII-4 traffic would be in the "background-class," which represents the least important traffic, always and everywhere and not just when DSRC is present, seems to run counter to prior claims that the opening of the band to unlicensed devices will create expansive economic growth and innovation.

Finally, Toyota Representatives discussed growing interest in the possibility of opening up the 6 GHz band for unlicensed use, and potential interference with DSRC if such use was permitted as low as 5.925 GHz, and the possibility that modifications to Dynamic Frequency Selection might make unlicensed use of spectrum in currently available bands less challenging.

/s/Hilary M. Cain
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[3] *Id.*