**Via Electronic Filing**

Marlene H. Dortch, Secretary

Federal Communications Commission

445 12th Street, SW

Washington, DC 20554

Re: The Office of Engineering and Technology seeks comments on Google’s request for Waiver of section 15.255(c)(3) of the commission’s rules for radars used for interactive motion sensing in the 57-64 GHz band.

ET Docket No. 18-70

Dear Ms. Dortch:

In ET Docket No. 18-70, The Office of Engineering and Technology seeks comments on Google’s request for Waiver of section 15.255(c)(3) of the commission’s rules for radars used for interactive motion sensing in the 57-64 GHz band. The request is unsupported by data to show the impact of this service on other unlicensed users using the band, such as those using IEEE 802 technologies. IEEE 802, the LAN/MAN Standards Committee has reviewed the information, and has several comments about the request.

**Sharing Mechanisms**

In reviewing Google’s request for waiver and the supporting analysis, it is not clear whether the Google’s proposed technology incorporates sharing mechanisms for fair co-existence with other devices including the IEEE 802.11ad and the upcoming IEEE P802.11ay standards. Both IEEE 802.11 standards utilize LBT, Listen Before Talk, spectrum sharing mechanisms for sharing in the 57-64 GHz unlicensed spectrum band. Furthermore, it is not clear whether a device operating at 100% duty cycle would not cause harmful interference to the IEEE 802.11 devices such as the “WiGig” while operating at the proposed power levels, i.e. 10 dBm (max.) conducted and 20 dBm EIRP. The proposed power levels represent 10x increase in EIRP (and 100x increase in conducted power) from the maximum allowed by the FCC based on the FCC docket ET Docket No. 18-70 which states that the current FCC rules for operating short range devices for interactive motion sensing permit a maximum conducted power of -10 dBm and an EIRP of 10 dBm.

The FCC rules for operation in the 57-64 GHz band, which were introduced in 1995 (First Round R&O, ET Docket No. 94-124), were designed with the understanding that multiple technologies that may be introduced in the future for operation in this band can share the spectrum without causing harmful interference to other devices operating in the vicinity. Therefore, it is important to understand and demonstrate whether the proposed Google technology with increased power will share the spectrum fairly, that it incorporates sharing mechanisms and does not disturb the balance of power and applications of the original rules.

**Current IEEE 802.11 modulation not used**

Even though the IEEE 802.11ad amendment supports both OFDM and single carrier modulation, a majority, if not all, of the existing 802.11ad devices in the market support only single carrier modulation. Further, IEEE 802.11-2020 standard that is under development, which incorporates the 802.11ad amendment, has removed the support of OFDM modulations for 802.11ad devices. Therefore, the analysis needs to be updated to reflect this important change, especially single-carrier modulation is not as capable as OFDM counterpart to deal with interference.

**Shared in end device**

The potential for impact to 60 GHz 802 technologies seems significant given that the target application is handheld devices like smart phones, which are rolling out with proximity communications based on 802.15.3 now and which may have 802.11 mmWave technologies in the near future. The Google waiver request and referenced report considers only "60 GHz WiFi" and does not mention proximity communications such as 802.15.3e which is being deployed widely and avoids scenarios where the 60 GHz WiFi transceiver (victim) is physically located in the same device as the Soli system. Their conclusion of no interference appears to depend on physical separation of the miniature radar transmitter and WiFi receiver. The most probable application of 802 60 GHz technologies emerging today is where one end of the link is in the phone, tablet, etc.

**Summary**

Considering the points mentioned above, we therefore ask that before granting the waiver, the Commission request Google to do further analysis on impact to at least current IEEE 802 unlicensed technologies. Without this further analysis, the Commission should not proceed until such a study is done, reviewed and evaluated.

Regards,

By: /ss/ .

Paul Nikolich

IEEE 802 LAN/MAN Standards Committee Chairman

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