

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.¹

Sharing Mechanisms

In reviewing Google's request for waiver and the supporting analysis, it is not clear whether Google's proposed "Soli" technology incorporates sharing mechanisms for fair coexistence with other devices including the IEEE Std. 802.11ad ("WiGig") and the upcoming IEEE P802.11ay standards. Both IEEE 802.11 standards utilize Listen Before Talk (LBT) 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 cause harmful interference to IEEE 802.11 devices while operating at the proposed power levels, i.e., 10 dBm (maximum) 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 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. Therefore, it is important to understand and demonstrate whether the proposed

¹ This document represents the views of IEEE 802. It does not necessarily represent the views of the IEEE as a whole or the IEEE Standards Association as a whole.

Google technology with increased power will share the spectrum fairly, that it incorporates sharing mechanisms and does not disturb the balance of the original rules.

IEEE 802.11ad OFDM Modulation Not Common in Commercial Products

Even though the IEEE 802.11ad amendment supports both OFDM and Single Carrier modulations, a majority, if not all, of the existing IEEE 802.11ad devices in the market support only Single Carrier modulation. Therefore, the analysis needs to be updated to reflect this important fact, especially as OFDM modulation has better receive performance with respect to frequency selective interference than Single Carrier modulation.

In-device coexistence

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

Summary

Considering the points mentioned above, we therefore ask the Commission to request Google do further analysis on the impact to current IEEE 802 unlicensed technologies. Without this further analysis, the record is incomplete, and we recommend that the Commission not act until such a study is done, published and opened for comments by interested parties such as IEEE 802.

Regards,

By: /s/ Paul Nikolich

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