

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554**

In the Matter of:	)	
	)	
Office of Engineering and Technology Seeks	)	ET Docket No. 18-70
Comment 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	)	

**NCTA – THE INTERNET & TELEVISION ASSOCIATION  
REPLIES TO COMMENTS ON REQUEST FOR WAIVER**

NCTA – The Internet & Television Association agrees with IEEE 802 and Facebook, Inc. that Google should expand its interference analysis to further consider how its interactive motion sensors, operating at the proposed higher power levels in the 57-64 GHz band, will coexist with IEEE 802 unlicensed technologies.<sup>1</sup> As NCTA has noted in other filings, unlicensed products have already been developed for the 57-64 GHz millimeter wave band. “Products using the 802.11ad standard (also known as WiGig) are expected to facilitate high speed ‘video streaming, wireless docking, huge file transfers, [and] instantaneous wireless backups,’ while the WirelessHD standard ‘enables wireless streaming of High-Definition (HD) audio, video and data between source devices (e.g., DVRs and gaming consoles) and displays (e.g., HDTVs and monitors).’”<sup>2</sup> Forecasts predict that these technologies will add significant value to the economy

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<sup>1</sup> See generally Comments of IEEE 802, ET Docket No. 18-70 (filed Apr. 11, 2018) (IEEE 802 Comments); Comments of Facebook, Inc., ET Docket No. 18-70 (filed Apr. 11, 2018).

<sup>2</sup> Comments of NCTA – The Internet & Television Association, GN Docket No. 14-177, et al., at 6 (filed Sept. 30, 2016) (quoting Wi-Fi Alliance, *WiGig® and Health/Safety*, at 4 (2015), <https://www.wi->

in the next few years. According to Mordor Intelligence, “[t]he global WiGig market was valued at USD 1.3 billion in 2017 and is expected to reach USD 93.09 billion by 2023, at a CAGR of 103.78%.”<sup>3</sup>

Existing IEEE 802 technologies like WiGig were not designed with operations like Google’s Project Soli sensors in mind. The interactive sensor transmission is a frequency-modulated continuous wave signal that sweeps from 57 to 64 GHz every 600 microseconds.<sup>4</sup> The Google study considers interference power, but does not address the frequency-sweeping nature of the radar signal and how it might impact existing IEEE 802 technologies like WiGig.<sup>5</sup>

Google also appears to request authorization to operate at power levels higher than what was actually analyzed in the appended technical report, raising questions regarding how Soli

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fi.org/download.php?file=/sites/default/files/private/WiGig\_and\_Health\_Brochure\_2015.pdf, and WIRELESSHD CONSORTIUM, *About, Technology, Introduction to WirelessHD™ Technology* (2016), <http://www.wirelesshd.org/about/technology>).

- <sup>3</sup> Mordor Intelligence, *WiGig Market - Segmented by Devices (Network Infrastructure Devices, Communication/Display Devices), Applications (Point-to-point IP Applications, HDMI Data Streaming, Cordless Computing, Internet Support), Usage Models (Instant Wireless Sync, Wireless Display, Wireless Docking, Networking), End User (Retail, BFSI, Industrial), and Region - Growth, Trends, and Forecast (2018 - 2023)* (Apr. 2018), <https://www.mordorintelligence.com/industry-reports/global-wigig-market-industry>.
- <sup>4</sup> Request by Google LLC for Waiver of Section 15.255(c)(3) of the Commission’s Rules, ET Docket No. 18-70, Attachment at 10-11 (filed Mar. 7, 2018) (Google Waiver Request) (Attachment entitled Dr. Stefan Mangold, Lovefield Wireless GmbH, *Assessing the Interference of Miniature Radar on Millimeter Wave 60 GHz Wi-Fi* (Feb. 21, 2018) (Mangold Analysis)).
- <sup>5</sup> Moreover, although the Mangold Analysis looked only at a single sweep time, the ETSI standard does not disallow other sweep times. Different sweep times could have a different interference impact on IEEE 802 and other unlicensed technologies and, should the Commission receive other requests for waiver for mobile radars with different sweep rates, further technical analysis would be required.

devices operating at the requested power levels might impact IEEE 802 device operations.<sup>6</sup> And, as IEEE 802 pointed out in its comments, the study also does not consider: (1) in-device coexistence; (2) that at higher power levels, when one device can hear another, a time-sharing mechanism such as CDMA, TDMA, or CSMA-CA is typically needed to promote coexistence; and (3) that most IEEE 802 devices support Single Carrier modulation rather than OFDM, so the study incorrectly assumes a higher peak to average ratio than most deployed IEEE 802 devices.<sup>7</sup>

To enable robust growth of existing millimeter wave unlicensed technologies, and facilitate future innovations in 57-64 GHz, the Commission must ensure that any waiver request it grants promotes fair coexistence. Prior to granting Google's request for waiver, the Commission should require that Google conduct further studies on the potential impact of its sensors, operating at the higher power levels requested, on existing unlicensed technologies operating at 57-64 GHz.

Respectfully submitted,

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<sup>6</sup> Compare Google Waiver Request at 8-9 (requesting a waiver to permit operations at up to a mean EIRP of +20 dBm) with Mangold Analysis at 10-11 (studying a maximum radar power level of +10 dBm with 6 dBi transmitter antenna gain).

<sup>7</sup> See IEEE 802 Comments at 1-2.