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ALERT

New 60 GHz Rules Offer Flexibility for Radar and WiGig Innovation

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The Federal Communications Commission (FCC) has adopted new technical rules intended to promote unlicensed innovation for applications as diverse as "hot car" child safety and virtual reality gaming. The new rules, which took effect July 24, 2023, require unlicensed radar and other field disturbance sensor (FDS) devices operating in the 57-71 GHz band (60 GHz Band) to comply with technical and operational requirements intended to increase design and operational flexibility. With these new rules, the FCC seeks to enable new and innovative applications—including child detection in hot vehicles—while preserving the band for shared use with other unlicensed technologies, including WiGig technologies supporting Virtual Reality (VR) and Extended Reality (XR) applications.

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On May 18, 2023, the FCC adopted a Report and Order amending Section 15.255 of the agency's rules regarding unlicensed operation in the 60 GHz Band. The new rules, which are now in effect, establish frequency specific technical and operational requirements for unlicensed radar and FDS devices. Below, we summarize the new requirements as well as updates to compliance testing procedures for manufacturers, importers, and others pursuing FCC equipment authorization for 60 GHz Band radar and FDS devices.

Scope and Definitions. The new rules apply to "field disturbance sensors," which are defined in relevant part as a device "that establishes a radio frequency field in its vicinity and detects changes in that field resulting from the movement of persons or objects within its range." *Order*, ¶ 17; *see also* 47 C.F.R. § 15.3(l). Radars are considered a sub-category of FDS. *Order*, ¶ 18.

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The Commission's new rules eliminate the "short-range interactive motion sensing" or "SRIMS" designation, as well as effectively do away with the "fixed" and "mobile" FDS designation by allowing for mobile use throughout the 60 GHz Band (including within the 61.0-61.5 GHz sub-band, where higher powered operations were previously permitted for fixed use only). *Order*, ¶¶ 21-23.

FDS Device Operations in the 57-64 GHz Band. FCC Rule 15.255 has been amended to permit FDS devices to operate up to:

- 20 dBm peak EIRP for indoor operation, and up to 30 dBm peak EIRP for outdoor operation, including all vehicular applications, within the 57.0-59.4 GHz band;
- 3 dBm peak EIRP for all operations within the 57.0-61.56 GHz band;
- 20 dBm peak EIRP for all operations within the 57.0-61.56 GHz band subject to a 50% duty cycle;
- 14 dBm peak EIRP for all operations within the 57-64 GHz band subject to a 22.7% duty cycle; and
- 20 dBm peak EIRP for fixed outdoor operations or vehicular applications (except in-cabin vehicular use cases) within the 57-64 GHz band subject to a 50% duty cycle. *Order*, ¶ 25.

For FDS devices that have a maximum pulse duration of 6 nanoseconds, Section 15.255 now permits operation so long as: (i) "the average EIRP shall not exceed 13 dBm and the transmit duty cycle shall not exceed 10% during any 0.3 μs time window;" (ii) "the average integrated EIRP within the frequency band 61.5-64.0 GHz shall not exceed 5 dBm in any 0.3 μs time window;" and (iii) "peak emissions shall not exceed 20 dB above the maximum permitted average emission limit applicable to the equipment under test." *Order*, ¶ 25.

Operations On-Board Aircraft. FCC Rule 15.255(b) has been amended to permit FDS operation in the 60-64 GHz band on-board unmanned aircraft flying up to 400 ft above ground level with up to 20 dBm peak EIRP subject to a 50% duty cycle. *Order*, ¶ 54. For manned aircraft, the Commission will allow FDS operation in the 59.3-71 GHz band for installations within personal portable electronic devices (e.g., smart phones and laptop computers). *Id.*, ¶ 59.

Compliance Testing. To allow for meaningful compliance measurements, the Commission has exempted frequency-modulated continuous wave (FMCW) and other swept-frequency radar transmitters from the FCC Rule 15.3(c) requirement that measurements be made with the frequency sweep stopped. *Order*, ¶ 62. It has also eliminated the prior FCC Rule 15.255(c)(4) requirement that peak power be measured with an RF detector that has a detection bandwidth that encompasses the 57-71 GHz band and has a video bandwidth of at least 10 megahertz. This requirement has been superseded by newly adopted FCC Rule 15.255(i) allowing for use of any measurement procedure acceptable under FCC Rule 2.947. *Id.* Finally, the FCC exempts FMCW and pulsed radar operations in the 60 GHz Band from the FCC Rule 15.35(c) requirement to calculate average field strength over a complete pulse train or 100 ms, explaining that the rule is intended for low-frequency pulse-code modulated devices. *Id.*

Expiration of Prior FCC Rule 15.255 Waivers. Several parties have received waivers of certain provisions in FCC Rule 15.255 to facilitate radar and other FDS device operation in the 60 GHz Band at power levels above those allowed under the then-existing rules. These waivers will expire on January 24, 2024. While all devices authorized pursuant to waiver may continue to operate so long as they do not cause harmful interference, all new devices authorized after the waiver termination date must comply with the new rules.

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Changes to FCC Rule 15.255 reflect the collaborative effort and engagement by a diverse group of stakeholders from the radar and unlicensed communications industries, as well as input by Federal government users in the 60 GHz Band. This has given the FCC "confidence that the rules [it adopted] will successfully expand unlicensed radar use while promoting compatibility with unlicensed communications operations that have long been permitted in the band." *Order*, ¶ 3.

For more information about the Report and Order, please contact any of the authors listed in this alert.