

FCC Issues Waiver for In-Cabin Vehicle Radar in 60 GHz Band

April 20, 2021

On April 14, 2021, the Federal Communications Commission (FCC or Commission) issued an Order waiving its Section 15.255 technical and service rules for unlicensed operation in the 57-71 GHz band to permit six equipment manufacturers to operate radar-based vehicle cabin monitors. Specifically, Vayyar Imaging Ltd., Valeo North America Inc., Infineon Technologies Americas Corp., Tesla Inc., IEE Sensing Inc., and Brose North America Inc. (the Requestors) sought to use in-vehicle radar to provide vehicular passenger safety and theft prevention applications. The Order has significant implications for next generation connected and automated vehicle technologies.

The Part 15 Waiver Requests

The Part 15 rules, which are designed to permit the operation of unlicensed low-power devices, establish power limits to prevent harmful interference to authorized users of the radio spectrum. As the Commission notes in its Order, general mobile radar operations were historically prohibited because the rule's original intent "was to foster the potential of the 60 GHz band for allowing the development of short-range wireless radio systems with communications capabilities approaching those . . . achievable only with coaxial and optical fiber cable." However, the FCC noted that it was "prepared to allow the 'narrow application of mobile radars for short-range interactive motion sensing' but at reduced power levels" to protect authorized spectrum users. In 2018, the Commission authorized a waiver for Google to deploy its Soli sensor technology which allows touchless operation of a mobile phone interface using hand gestures—at the same higher power level granted by waiver for automotive in-cabin applications, *i.e.*, +13 dBm EIRP, +13 dBm/MHz power spectral density, and 10% duty cycle. The FCC formally granted the Requestors'

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applications, determining that the use cases described constitute a reasonable and narrowly crafted exception to these rules.

The Order Will Facilitate Applications Designed to Protect Life and Property

Among other innovative applications, the millimeter-wave radar sensors, which are designed to operate at higher power levels than allowed under existing rules, would detect a child inadvertently left unattended in the rear of a vehicle. The Requestors cited to—and the Commission found compelling—National Highway Traffic Safety Administration (NHTSA) data that indicate that since 2018 over 90 children have died from heatstroke in cars, either because they were left behind or became trapped. The automobile industry has made a commitment to deploy rear seat reminder systems in most new cars by 2025 as a lifesaving mechanism. The technology also enables other automated vehicular functions, such as passenger presence detection, seatbelt alarm/airbag deployment, driver inattention detection, and vehicle intrusion detection.

While the FCC's Order grants welcome relief, there is considerable interest in the Commission providing further relief – including through rulemaking – that would allow additional innovation in the 60 GHz band. The FCC's Order granted only a subset of the 60 GHz waivers that have been filed and, even with respect to the six waivers granted, limited the scope of relief to in-cabin radars in new vehicles. A number of manufacturers have requested additional relief for higher powered 60 GHz radars that will not be deployed in vehicles and for new use cases, such as healthcare.

In addition, the Commission pushed off thorny legal questions such as what constitutes a “fixed” field disturbance sensor and whether the definition of Short Range Interactive Motion Sensor should be expanded. While the FCC acknowledged the importance of these questions, it was not comfortable with addressing them in the waiver context. Without committing to the Commission, the Office of Engineering and Technology (OET) indicated that these matters are “ripe” for review in a rulemaking, which would include coordination with the National Telecommunications and Information Administration (NTIA) given co-primary federal allocations in the 57-71 GHz band. While this language strongly signals a future rulemaking, the timing of such a proceeding was not specified.

The Commission was clear that its objectives in the April 14 Order were narrow: to provide limited waiver relief to address a pressing public interest concern – preventing “hot car” infant deaths – without promoting widespread radar deployments that operate at higher power than permitted in its Part 15.255 rules. At the same time, the Commission signaled an intent to initiate a broader 60 GHz rulemaking in the future. In the near term, the window is open for “me too” waiver requests consistent with the April 14 Order. And it is reasonable to anticipate that innovators will continue to press for broader flexibility via additional waiver requests and a future rulemaking.