

Updates

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FCC Paves the Way for New Broadband Wi-Fi Services in the 6 GHz Band

In response to great interest from Silicon Valley, Federal Communications Commission Chairman Ajit Pai has released [draft rules](#) that would make valuable spectrum available for unlicensed wireless broadband services (i.e., Wi-Fi) in the 6 GHz band (5.925-7.125 GHz). The FCC believes mobile traffic data will more than double by 2022, with an increasingly large proportion of that traffic being offloaded on an unlicensed basis to Wi-Fi. The draft final rules are intended to advance the FCC's goal of making broadband connectivity available to all Americans, especially those in rural and underserved areas, by dramatically expanding the number and types of connected wireless broadband devices. The FCC is expected to adopt these rules in substantially similar form during its April 23, 2020, Open Meeting.

The 6 GHz band is currently allocated for fixed services, mobile services, and fixed satellite services. The band supports a number of important incumbent operations, including point-to-point microwave links for utilities, commercial and private entities, as well as public safety agencies. The band also provides important backhaul for commercial wireless providers, as well as links for coordination of railroad train movements, control of gas and oil pipelines, and electrical grid management. While largely supportive of the FCC's stated goals of increasing broadband connectivity to underserved areas, these incumbents have raised concerns regarding potential interference from unlicensed devices in the band, which could have harmful consequences to the public.

In response, the FCC has enacted certain safeguards it believes will minimize the potential for harmful interference. Specifically, as discussed below, the FCC would permit two types of unlicensed operations in the 6 GHz band: (1) standard power operations with both indoor and outdoor access points in certain sub-bands, subject to an automated frequency control (AFC) system, and (2) low power operations across the entire band, without an AFC system but subject to various requirements that the devices operate only indoors.

Standard Power Use. For unlicensed devices operating with standard power both indoors and outdoors in the 5.925-6.425 GHz and 6.525-6.875 GHz sub-bands, the FCC asserts that it will protect incumbent operations from harmful interference with an AFC system, which uses information from the FCC database to calculate and establish exclusion zones. The FCC will update the information from its database onto the AFC system daily to ensure that the AFC system is relying on accurate data.

Low Power Use. The draft rules will permit low power indoor access points to operate across the entire 1,200 megahertz of the 6 GHz band, without an AFC system. But the FCC will adopt three restrictions designed to prevent harmful interference. The FCC asserts that, given these three restrictions, the potential for these low power unlicensed devices to cause harmful interference is minimal.

1. *Indoor Operations Only.* Unlicensed low power devices will be limited to indoor operation for the time being. The FCC believes that the signals will be greatly reduced when they pass through walls, preventing harmful interference. To ensure that the equipment stays indoors, the FCC is requiring that these devices cannot be weather resistant, must have integrated antennas that cannot connect to antennas of other devices, and cannot be battery powered. To inform consumers, the FCC is requiring that access points be marketed as "for indoor use only" and include a label attached to the equipment stating, "FCC regulations restrict to indoor use." As discussed below, however, the FCC plans to continue its rulemaking process with respect to the indoor use limitation of low power devices.
2. *Contention-Based Protocol.* Unlicensed low power devices will be required to use a contention-based protocol, which allows multiple users to share the same spectrum by defining the events that must occur when multiple transmitters attempt to operate at the same time and establishing rules by which a transmitter provides reasonable opportunities for other transmitters to operate.

3. *Technical Limitations for Low Power.* Unlicensed devices will be subject to low power operation as described in the draft rules, which will also be specified in the amendments to Part 15. The FCC finds that these low power levels permit an adequate level of power for indoor unlicensed devices to be useful to the public while also protecting the incumbent licensed services from harmful interference. As also discussed below, the FCC will continue to review these technical limitations, however, as part of its ongoing rulemaking process.

Further Notice of Proposed Rulemaking for Low Power Devices. It remains to be seen whether the FCC's proposed mitigation measures will be sufficient to safeguard important incumbent operations in the band, and parties concerned about interference risks have remained active in the docket in advance of the Open Meeting. Moreover, in addition to the draft rules, the FCC also will issue a Further Notice of Proposed Rulemaking, which seeks comment on two options for expanding unlicensed operations in the 6 GHz band.

First, the FCC proposes to authorize "very low power" operations for outdoor use in addition to the planned indoor use. The FCC seeks comment on the appropriate level for very low power unlicensed devices without causing harmful interference, and whether a protocol such as the contention-based protocol should be required. The FCC's request for comment on this matter may be an outgrowth of commenters suggesting that notice must be given before FCC allows for very low power operations in this band.

Second, the FCC seeks comment on increasing the power levels set forth in the technical limitations for low power use. The FCC specifically asks incumbents about the risk of interference to their operations if this change is made. These proposals suggest that the interference protections in the draft rules related to low power unlicensed devices could be further weakened over time, and both incumbents and proponents of unlicensed use are expected to follow the further rulemaking activities closely.

If the FCC approves the Further Notice, it will submit the approved version to be published in the Federal Register. Public comments will be due 30 days following publication, likely sometime in early June, with reply comments likely due in July.

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