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FEDERAL COMMUNICATIONS COMMISSION

[ET Docket No. 18-295; GN Docket No. 17-183; DA 21-7; FRS 17404]

Office of Engineering & Technology Seeks Additional Information Regarding Client-To-Client Device Communications in the 6 GHz Band

AGENCY: Federal Communications Commission.

ACTION: Notice.

SUMMARY: In this document, the Office of Engineering and Technology seeks additional information to supplement the record on whether the Commission should permit direct communications between unlicensed 6 GHz band client devices.

DATES: Comments are due on or before **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**, and reply comments are due on or before **[INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.

ADDRESSES: Federal Communications Commission, 45 L Street NE, Washington, DC 20554.

FOR FURTHER INFORMATION CONTACT: Nicholas Oros, Office of Engineering and Technology, 202-418-0636, Nicholas.Oros@fcc.gov.

SUPPLEMENTARY INFORMATION: This is a summary of the Commission's document, Public Notice, DA 21-7, ET Docket No. 18-295, GN Docket No. 17-183, released January 11, 2021. The full text of this document is available for public inspection and can be downloaded at: *https://www.fcc.gov/document/oet-seeks-info-6-ghz-u-nii-client-client-device-communications* or by using the search function for ET Docket No. 18-295 on the Commission's ECFS web page at www.fcc.gov/ecfs.

SYNOPSIS

1. In the *6 GHz Further Notice*, the Commission sought comment on additional actions that it should take to further expand unlicensed operations in the 6 GHz band through revisions to the existing rules for standard-power or low-power indoor operations or by authorizing a third type of operation, very low power operations. Among the comments filed,

unlicensed proponents requested that the Commission modify its low-power indoor device rules to permit client-to-client device communications, which they assert would enable additional types of innovative unlicensed operations in the band. The Fixed Wireless Communications Coalition opposes any such revisions and asserts that there is no record support for permitting client-to-client communications in this band.

2. In the *6 GHz Order*, the Commission prohibited unlicensed client devices from acting as "mobile hotspots" because "[p]ermitting a client device operating under the control of an access point to authorize the operation of additional client devices could potentially increase the distance between these additional client devices and the access point and increase the potential for harmful interference to fixed service receivers or electronic news gathering operations." To avoid this situation, the Commission's rules prohibit 6 GHz U-NII client devices from directly communicating with one another. The Commission did not, however, examine whether a more limited approach to indoor client-to-client communications within the ambit of the *6 GHz Notice* should be permissible—e.g., when a client is *not* acting as a mobile hotspot. Accordingly, Apple, Broadcom et al. suggest that client devices be permitted to directly communicate with each other if they can decode an enabling signal transmitted by a low-power indoor access point within the last four seconds. They suggest that the Commission could further constrain client-to-client communications by requiring that the enabling signal be received at a signal strength of at least -99 dBm/MHz. According to Apple, Broadcom et al., as a client device could communicate at this signal level with a low-power indoor access point in a traditional access-point-to-client topology under the existing rules, this would ensure each individual client participating in client-to-client communications is safely inside the area where a client device is authorized to communicate with an access point

3. The Commission takes this opportunity to invite interested parties to supplement the record, for the Commission's consideration, on whether and under what circumstances client devices could be permitted to directly communicate with each other in a limited manner consistent with the rationale underlying the Commission's decisions in the *6 GHz Order* that were targeted at protecting incumbent licensed services. More specifically, the Commission invites

comment on whether to permit 6 GHz U-NII client devices to directly communicate when they are under the control of or have received an enabling signal from a low-power indoor access point. As an initial matter, commenters should explain how they define an enabling signal, what characteristics it must have, how it is similar or different from signals, such as beacons, that access points already use to connect with client devices, and the degree to which an enabling signal would tether a client device not under the direct control of an access point to that access point. Commenters should also provide information on the types of applications that direct client-to-client communications would enable that cannot be accomplished by communications through an access point. In addition, commenters advocating for rule changes should address whether direct client-to-client communications should be under the current power limits or restricted to lower power limits to reduce the potential for harmful interference to incumbent operations. In this connection, the Commission notes that client devices under the control of a low-power indoor access point are permitted to operate up to 24 dBm EIRP over 320-megahertz channels (or -1 dBm/MHz).

4. As the 6 GHz Order explained, the requirement that 6 GHz U-NII client devices operate under the control of either a standard-power or low-power indoor access point is designed to prevent client devices from causing harmful interference by limiting their operation either to outdoors in areas where the AFC system has determined that interference will not occur or to indoor locations where other factors such as building entry loss prevent harmful interference. In particular, operations under the control of a low-power indoor access point is aimed at restricting operation of the client devices to indoor locations. It may be possible for a client device to receive an enabling signal from an access point even when the enabling signal is too weak to enable the client device to conduct communications with the access point. In such situations, the weak received signal level makes it more likely that the client device could be outdoors. By requiring the enabling signal have a specific signal strength, this problem could be potentially avoided. If the Commission were to adopt rules permitting client-to-client communications, should it require the enabling signal from the low-power indoor access point to be received by the client device with a particular signal level? Apple, Broadcom et al. suggested -99 dBm/MHz: is

this level appropriate? If not, what signal level would be appropriate for this purpose? How can a specific signal level be correlated with the current requirement that the client device be under the control of an access point? For example, under such an approach, should the enabling signal level be of such a strength to effectively require that the signal levels between the access point and client device be sufficiently strong to permit bi-directional communications between the client devices and the access point, thereby ensuring that both client devices are sufficiently close to the access point? How frequently should a client device be required to receive an enabling signal to continue transmitting to another client device?

5. If permitted, should the client devices be limited to receiving an enabling signal from the same access point or could client-to-client communications be permitted so long as each client device receives an enabling signal from any authorized access point? Apple, Broadcom et al.'s suggestion would potentially permit two client devices to communicate even if they receive enabling signals from two different access points. For example, client devices in two different buildings receiving enabling signals from different low-power indoor access points could attempt to communicate with each other. Would permitting this to occur increase the potential for the client devices to cause harmful interference to licensed services? How would a requirement for both devices to receive an enabling signal from the same access point be implemented? Or should other configurations be permitted? For example, could a client device controlled by a standard power access point be permitted to communicate with a client device controlled by a low-power indoor access point? Could client-to-client communications be permitted between devices when both clients are controlled by a standard power access point? If so, are any changes needed to the AFC systems? Must the enabling signal be received on the same channel for each device under any of the scenarios contemplated? Under any envisioned client-to-client communication scenario, commenters should provide detailed descriptions of how such communications can be enabled including how such communications fit under the current rules that limit client devices to operating only under the control of a standard power access point or a low-power indoor access point or whether, and which, rules would need to be modified. Commenters should provide detailed analysis of how any client-to-client communication

configurations they prefer would protect incumbent operations from harmful interference. Finally, commenters should provide any other information they believe relevant to evaluating whether direct client-to-client communications consistent with the rationale of the Commission in the 6 GHz Order should be permitted, including any alternative methods or necessary rule changes not directly noted above.

Federal Communications Commission.

Ronald T. Repasi,

Acting Chief,

Office of Engineering and Technology.

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