

Initial Comments on 6 GHz KDB Guidance

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Mobile Client Devices

The General Summary Table in Page 13 of the draft KDB guidance references footnote “d” for “Indoor Clients,” which states “Indoor only, powered by wired connection, has an integrated antenna, is not battery powered, and does not have a weatherized enclosure.” We believe citing to this footnote is a typographical error because mobile client devices like smartphones and laptop PCs, which will associate with LPI APs, do not meet the requirements of footnote “d.” Please correct this typo.

Client Certification

The 6 GHz Report and Order defines a client device as “A U-NII device whose transmissions are generally under the control of an access point and is not capable of initiating a network”. It is our understanding that 6 GHz client devices will associate with different types of APs and thus will operate across different types of AP devices. This understanding is inconsistent with the definition of client device categories in the draft KDB guidance which include “standard clients,” “indoor clients,” and “dual clients.”

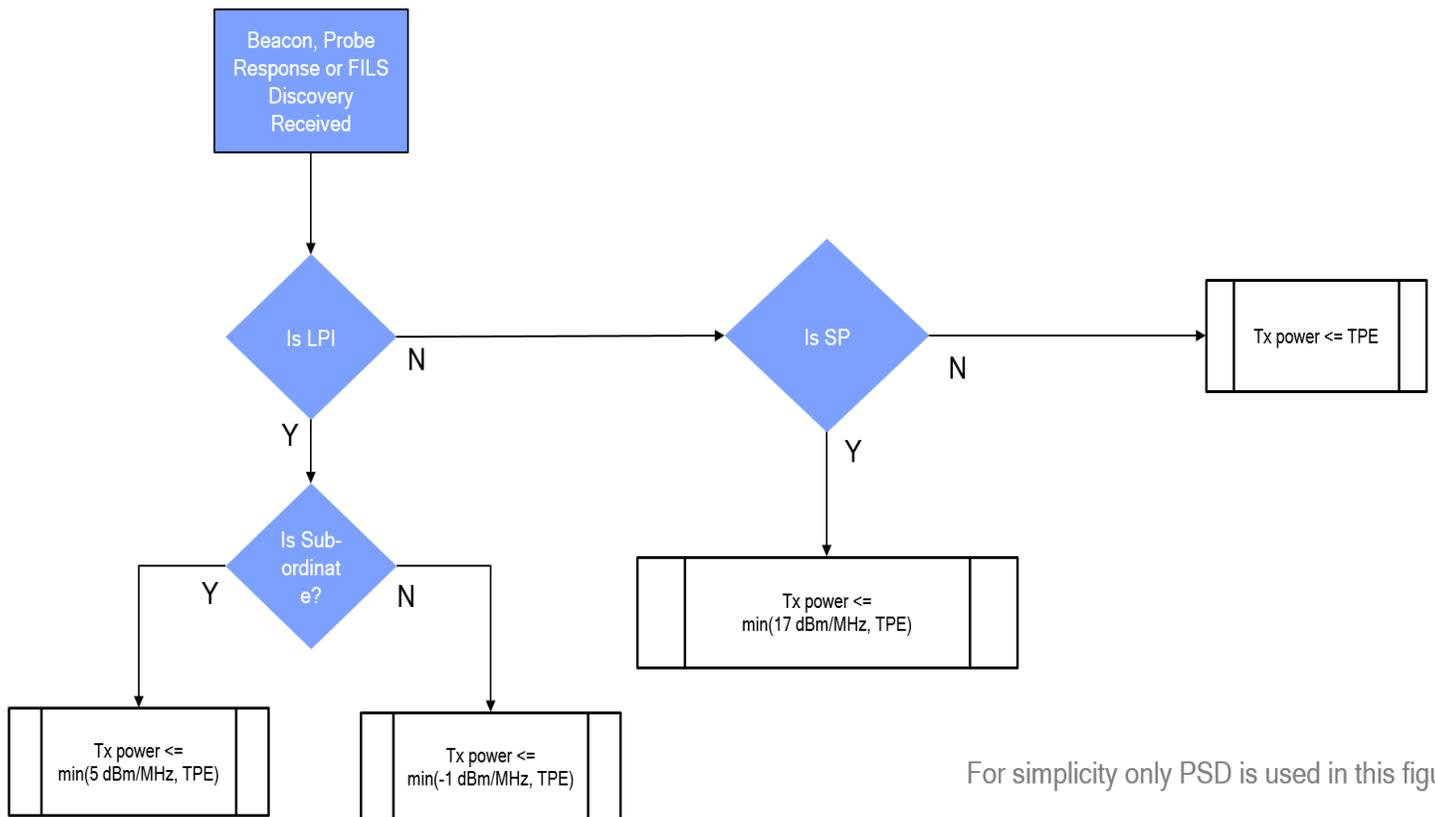
We respectfully request that the FCC permit a client device to be certified under a single category at a maximum power level (such as that permitted when the client is under the control of a Standard Power AP) so long as the device manufacturer ensures the client will not operate above the regulatory limits permitted when under the control of an AP category that authorizes a lower power level, such as an LPI AP. This would simplify the certification process and accomplish the FCC’s objective of ensuring that a client device operates below the regulatory maximum for each approved AP class.

For devices that use the IEEE 802.11 standard and its amendments, like Wi-Fi 6E devices, there is a mechanism to ensure client devices operate within the permissible levels for AP equipment classes when they associate with those AP device classes. IEEE 802.11 protocol requires AP devices to signal maximum transmit power levels that clients and subordinate devices can use via a Transmit Power Envelope (“TPE”) element. This requirement allows client devices to determine the appropriate power level regardless of the AP category and ensures clients will still abide by the regulatory requirements even if a new AP category is added in the future. Furthermore, the IEEE 802.11 standard requires AP devices to indicate their category of operation in their beacons. Using this information, client devices will perform an additional sanity check on top of the TPE element transmitted by the AP for the AP categories they recognize. For example, when associating to an LPI AP, the client can double check that the TPE element from the AP indicates a maximum power level less than the regulatory maximum for regular clients of LPI APs, i.e., less than -1 dBm/MHz.

If a client device does not recognize the AP category or the AP signaling does not include TPE, a client device operating under the 802.11 standard will not associate with that AP.

We respectfully request that the FCC accept an applicant’s written declaration of how a client device will ensure its power level does not exceed the applicable regulatory limit, such as by using TPE defined in the IEEE 802.11 standard and its amendments or a similar mechanism available in 5G NR-U. This proposal provides important forward compatibility for client devices by allowing them to associate with existing and future AP categories¹ while ensuring a client’s transmit power remains below allowable levels for the clients of each AP category. This proposal also would simplify the client device certification process.

The following flow diagram shows how client devices could determine their allowed transmit power based on the IEEE 802.11 protocol. For simplicity only PSD limits are used. Note that the IEEE 802.11 protocol also signals total power for different channel bandwidths.



¹ The 6 GHz Report and Order provides LPI and SP operating parameters, and the FNPRM proposes to allow a very low power (VLP) device category and a mobile SP category. Additional categories may be added in the future and operational parameters for existing categories may be modified.

Contention Based Protocol

We request that the FCC OET lab accept a device manufacturer's statement of compliance with the FCC's 6 GHz band contention-based protocol requirement by specifying, in its application for equipment authorization, that the standard implemented by the device requires a contention-based protocol (e.g., one based on 802.11 protocol). Requiring a new conformance test is unnecessary, and it would be unduly burdensome on manufacturers and test labs and delay the introduction of 6 GHz products in the market.

Out of Band Emission Measurement

The 6 GHz Report and Order specifies that Out of Band Emissions may be verified using an RMS detector. The draft KDB guidance simply refers to KDB 789033 in Table 1 and Section II.G without a clarifying the usage of RMS detector for 6 GHz emission measurements. We request clarifying the use of RMS detector for the relevant testing.

Channels to Test

The requirement to test three LMH channels in each 6 GHz U-NII sub-band for LPI equipment is not warranted. There are no power or other material differences across the entire 6 GHz band. This is unnecessary testing on top of the growing list of additional tests for future 6 GHz devices. We request that the FCC require testing of LMH channels across the entire 6 GHz frequency range, i.e., 5925 MHz - 7125 MHz.