



**Federal Communications Commission  
Office of Engineering and Technology  
Laboratory Division**

Oct 13, 2020

**PRE-APPROVAL GUIDANCE LIST**

**I. INTRODUCTION**

In establishing the requirements for the Telecommunications Certification Body (TCB) program, the Commission stated that while it intended to allow TCBs to certify a broad range of equipment, certain functions should continue to be performed by the Commission. To certify certain types of equipment for which the Commission has not yet established specific guidelines, where a new technology or new rule part is integral, where there is an obligation by the Commission to approve an authorization, or where there is a need to provide case-by-case guidance, the Commission has adopted the Pre-Approval Guidance (PAG) procedure described in KDB Publication 388624 D01.

In general a TCB needs to follow the PAG procedure when the required test procedures, test equipment, or requirements necessary to configure, support or test a device have not been established.<sup>1</sup> This may be the case when: the available test procedures do not readily support the modulation or radio parameters of a device, such as for multiple transmissions or wideband waveforms; the required test procedures need modification for testing a device; or an alternative measurement procedure is proposed. This document provides guidance indicating which types of devices are subject to PAG requirements.

**II. PRE-APPROVAL GUIDANCE LIST**

There are three classes of applications for equipment authorization subject to a PAG review, prior to approval by a TCB:

- A. Devices subject to special conditions where the authorization procedures to be used must be approved by the FCC *prior* to approval by a TCB:
  - 1. RF exposure limits are not fully established or when the FCC has determined that Sections 1.1307 (c) or (d) applies.<sup>1</sup>
  - 2. When Section 2.1091(d)(4) of the FCC rules applies and SAR or MPE (above 6 GHz) evaluation is required.
  - 3. RF exposure evaluations using numerical simulations or computational modeling techniques.
  - 4. Portable transmitters operating at frequencies below 100 MHz and SAR evaluation is required per *published RF exposure KDB procedures*; or portable transmitters operating at frequencies above 6 GHz and routine RF exposure evaluation is required.<sup>2</sup>

---

<sup>1</sup> Specified items on the PAG list may be approved using the PAG Reuse procedures outlined in KDB Publication 388624 D01 when applicable. PAG list items authorized to use the PAG Reuse procedures include DFS, HAC, and dynamic antenna tuning related applications.

<sup>2</sup> In some circumstances when interim KDB guidance is available or when it is determined that RF exposure evaluation is not necessary, such as low power or low exposure conditions, and after consultation with the FCC,

(continued....)

5. Portable transmitters operating with source-based, time-averaged maximum output power according to wireless network or infrastructure requirements and separation distance requirements exceeding the “SAR Exclusion Threshold” in KDB Publication 447498 by either: (a) 8 times or more, for compliance with general population exposure requirements; or (b) 20 times or more, for compliance with occupational exposure requirements; and, when published RF exposure KDB procedures are not established for SAR testing or when SAR data is not provided to support compliance.
  6. Mobile and portable devices incorporating mechanisms to actively control the output power, transmission intervals, transmission durations, transmission duty factors or other relevant parameters in a dynamic or non-systematic manner to mitigate the potential of RF exposure according to time-averaging considerations that may or may not contain a source-based time-averaged equivalent component to determine RF exposure compliance.
- B. Devices for which a sample must be submitted to the FCC for pre-approval testing prior to approval by a TCB:<sup>3</sup>
1. Unlicensed National Information Infrastructure (U-NII) devices with Dynamic Frequency Selection (DFS) capability (Part 15 Subpart E), including client devices operating in the DFS bands that have radar detection capability.<sup>4</sup>
- C. Devices for which there are new or unique operation or installation issues which are subject to FCC review prior to approval by a TCB:
1. RF Exposure Evaluation
    - a. When SAR measurement is required, for all Time-Division Duplex (TDD) implementations, except when guidance is available in the *published RF exposure KDB procedures*.<sup>5</sup>
    - b. When simultaneous transmission SAR measurement is required (see enlarged zoom scan measurement and volume scan post-processing in KDB Publication 865664 D01). Regardless of SAR test exclusion or measurement requirements, when the simultaneously transmitted signals are coherent.<sup>6</sup>
    - c. When the *published RF exposure KDB procedures* do not readily support the form factor, design or implementation of a product or exposure condition, or when non-standard phantom configurations or test procedures are used for SAR testing. Devices requiring, or tested with, a phantom or test configurations that are not specified in the *published RF exposure KDB procedures*. For example, when a flat phantom is not used for testing extremity SAR in hands, wrists, feet or ankles or when the SAM phantom or other specific phantoms (described in IEEE/IEC SAR measurement standards) is used for testing other exposure conditions, such as wrist-worn, head-worn devices or other use conditions that may require field

---

permission may be given for a TCB to approve devices that are subject to these conditions without submitting a PAG request.

<sup>3</sup> Test samples are not to be submitted until requested via the FCC Equipment Authorization System (EAS). For any individual application, the FCC may waive sample submittal at its discretion.

<sup>4</sup> Certain devices may be approved using the PAG reuse procedure.

<sup>5</sup> See KDB Publication 447498 for *published RF exposure KDB procedures*.

<sup>6</sup> See KDB Publication 865664 D01 and KDB Publication 447498 D01 for additional information on coherent signal conditions.

reconstruction techniques or non-standard post-processing procedures to determine the 1-g SAR.

- d. When SAR test reduction is applied not in accordance with KDB Publication 643646 to occupational handheld push-to-talk (PTT) radios, or when KDB Publication 643646 is applied and the highest reported SAR is  $> 6.0$  W/kg.
- e. When *published RF exposure KDB procedures* are not available or applicable for testing any uplink MIMO or transmit antenna diversity configurations, including all 3G/4G/5G technologies.
- f. When dynamic antenna tuning is applied to optimize transmission efficiency for wide range frequency operations or other operating requirements.<sup>7</sup>
- g. When a power reduction feature is used to reduce the transmit power; except:
  - (i) when the power reduction is implemented using a single fixed level of reduction through static table look-up for all exposure test configurations in a single wireless operating mode of a frequency band and it is triggered by a single event or operation; or
  - (ii) when simultaneous transmission requires power reduction and it is not implemented for satisfying SAR compliance requirements, where simultaneous transmission SAR test exclusion is applied according to the *reported* standalone SAR tested at the maximum output power level without any power reduction.
- h. When power increase feature is applied to selectively boost the maximum conducted output power in specific wireless modes or operating configurations without exceeding the maximum output (*e.g.*, radiated output, allowed by the equipment certification).
- i. When proximity, device tilt, movement detection or other sensing features are used to reduce the transmit power; except when *published RF exposure KDB procedures* are applicable to the specific implementation and applied for testing (*e.g.*, KDB Publication 616217).<sup>8</sup>
- j. When a low duty factor analysis report is required to qualify for SAR test exclusion or reduction without a prior KDB inquiry confirming acceptance of the analysis.

---

<sup>7</sup> A PAG is not required, provided it is fully explained in the SAR report, when the antenna tuning and operating parameters are implemented using a fixed table look-up mechanism that is fully contained within the approved transmitter; therefore, antenna tuning is static and remains unchanged for the same device operating configurations. The same set of parameters and components must be active for each condition regardless of when and how the device is used. When antenna tuning conditions may change for the same operating conditions and exposure conditions, a PAG is required to determine SAR test requirements according to the individual implementations.

<sup>8</sup> If a PAG is not required for power reduction based on the application of the *published RF exposure KDB procedures* for the specific proximity sensing implementation this must be fully explained in the SAR report. When the antenna and sensor are near the corner of a tablet or similar devices, a KDB inquiry is necessary to determine if additional SAR tests are required.

(continued...)

- k. When *published RF exposure KDB procedures* are not applicable for mobile and portable devices designed to transmit simultaneously using multiple channels in single or multiple frequency bands, or transmit using “carrier aggregation techniques” for contiguous or non-contiguous channels. For example, devices using these techniques in 3GPP or 3GPP2 operations, or not in accordance with IEEE Std 802.11ac-2013 or KDB Publication 248227.<sup>9</sup>
  - l. Technologies operating with wide channel bandwidths or transmission bands where the SAR probe calibration and tissue-equivalent dielectric medium may not fully support such wide band measurements or when specific KDB procedures are not applicable (*e.g.* IEEE Std 802.11ac-2013 in KDB Publication 248227).<sup>10</sup>
  - m. When sensor-array and vector measurement-based SAR systems are used for testing wireless technologies, products, exposure configurations or other conditions where KDB guidance are unavailable or insufficient.<sup>11</sup>
  - n. Wireless power transfer (WPT) applications, except for those applications that meet the established criteria in KDB Publication 680106 D01.
2. Other Conditions
- a. For EMC and radio parameter evaluation of certain devices designed for transmitting:
    - (i) Using massive MIMO techniques, unless specific guidance has been provided (KDB Publication 662911).
    - (ii) Where directional gain of antenna systems is measured in lieu of calculations. Directional antenna gain measurement procedure and measurement test results should be provided as described in publication 662911 D03. \* New v16r10
  - b. Requests for permanent confidentiality under exceptional circumstances for exhibits that are not typically held confidential. Requests for keeping external photos, or other exhibits which are normally not eligible for “Long Term Confidentiality” as noted in KDB Publication 726920 D03, require a submission of PAG.<sup>12</sup>
  - c. Devices requesting approval or Class III permissive change for Software Defined Radio (SDR) subject to Section 2.944 (KDB Publication 442812).<sup>13</sup>

---

<sup>9</sup> When routine evaluation is not required for mobile exposure conditions, the PAG requirement may be waived when issues relating to estimating MPE compliance for multiple carrier simultaneous transmission are fully addressed in a KDB inquiry.

<sup>10</sup> See KDB Publication 865664 D01 for SAR probe calibration and tissue dielectric parameter requirements.

<sup>11</sup> It is expected that KDB guidance for SAR measurements using sensor-array vector measurement-based systems will be considered in a progressive and incremental manner according to on-going considerations in relevant SAR measurement standards development work and continued progress in implementation improvements by system manufacturers.

<sup>12</sup> As discussed in KDB Publication 726920, if a non-disclosure agreement (NDA) or some similar arrangements are required between the user and the grantee, and a sample NDA is included in the application, such applications are not subject to PAG.

<sup>13</sup> Certain devices may be approved under the PAG reuse procedure if the software implementation is identical to the previously approved device.

(continued...)

- d. Class II permissive changes for devices that have not been approved as Software Defined Radio (SDR), but the grantee intends either under their control or to authorize certain approved third parties to change the circumstances under which the transmitter operates by distribution of the software to field deployed devices (KDB Publications 178919 and 594280).<sup>14</sup>
- e. Transmitters operating under the special provisions of spectral efficiency specified in Section 90.203(j)(8) for slower data rate where case-by-case consideration is necessary (KDB Publication 579009).
- f. Handsets subject to Section 20.19 - Hearing Aid Compatible (HAC) mobile handsets - demonstrating T-coil compliance:
  - (i) for devices manufactured with Over-The-TOP (OTT) Voice over IP transport<sup>15</sup> in accordance with KDB Publication 285076 D02 T-Coil testing for CMRS IP and KDB Publication 285076 D03 HAC FAQ Question 8.
  - (ii) when interim procedures as defined in KDB Publication 285076 D03 HAC FAQ Question 9 are used for testing VoLTE calls for 5G Sub 6 bands when call boxes do not support 5G calling.
- g. Split modular transmitters authorized under Section 15.212 (KDB Publication 996369).
- h. Implanted transmitters with maximum total available output power > 1.0 mW, except Part 95 MedRadio.
- i. MedRadio transmitters designed to operate in 413-419 MHz, 426-432 MHz, 438-444 MHz, 451-457 MHz, and 2360-2400 MHz bands (Part 95 Subpart I).
- j. Devices restricted to use by only State, Local, or Federal law enforcement agencies.
- k. Ultra-wideband devices operating under Part 15 Subpart F.
- l. Devices certified under Part 30 Upper Microwave Flexible Use Service.
- m. White Space Devices (WSD) operating under Part 15 Subpart H.
- n. U-NII devices authorized in U-NII Bands 5.925-7.125 GHz under guidance of KDB Publication 987594.

### III. PAG REUSE LIST

The following items from the PAG list (Section II of this document) may be approved using the PAG Reuse procedures outlined in KDB Publication 388624 D01; PAG Reuse is allowed only for the following PAG list items:

- A. DFS reuse, PAG list item II B 1, will be allowed only if the device has the same DFS sensing hardware and software of a previously approved DFS PAG.

---

<sup>14</sup> Certain devices may be approved under the PAG Reuse procedure if the software control mechanisms are identical to previously approved PAG for the same Grantee.

<sup>15</sup> PAG is required for OTT Voice Services included as a feature offered by the manufacture such as Android Duo and Apple FaceTime. PAG is not required for WI-FI calling feature utilizing the same call set procedures as VoLTE over WI-FI. See KDB Publication 285076 D03 HAC FAQ Question 8.

B. HAC, PAG list item II C 2 f. For reuse approval, use a PAG formatted in accordance with KDB Publication 285076 D03 HAC FAQ Question 8 & 9.

C. Dynamic Antenna Tuning, PAG list item II C 1 f.

#### CHANGE NOTICE

**06/26/2015:** 388624 D02 Pre-Approval Guidance List v16 replaces 388624 D02 Permit But Ask List v15r03. The document has been revised to address the changes to the new Pre-Approval Guidance procedure established in Report and Order FCC 14-208. Added new items for Citizens Broadband Radio Service, LTE-U and massive MIMO.

**10/16/2015:** 388624 D02 Pre-Approval Guidance List v16r01 replaces 388624 D02 Permit But Ask List v16. Clarified II.C.2.a. to better align with II.C.1.o.

**04/08/2016:** 388624 D02 Pre-Approval Guidance List v16r02 replaces 388624 D02 Pre-Approval Guidance List v16r01. Removed requirements to submit PAG samples for UWB devices; clarified EMC simultaneous transmission requirements; clarified confidentiality issues; removed VoLTE HAC but kept VoWiFi; removed signal boosters; removed UNII-1 and Wi-Fi client peer-peer applications.

**04/09/2018:** 388624 D02 Pre-Approval Guidance List v16r03 replaces 388624 D02 Pre-Approval Guidance List v16r02. Removed requirements to submit PAG for LTE-U and LAA devices. Added new item for Part 30 devices. Clarification on when inquiry is needed for WPT devices.

**09/28/2018:** 388624 D02 Pre-Approval Guidance List v16r04 replaces 388624 D02 Pre-Approval Guidance List v16r03. Changes to requirement to submit PAG for White Space Device (WSD) and some technologies under the RF Exposure list.

**04/25/2019:** 388624 D02 Pre-Approval Guidance List v16r05 replaces 388624 D02 Pre-Approval Guidance List v16r04. Added reference to the use of PAG reuse procedures for certain applications..

**04/06/2020:** 388624 D02 Pre-Approval Guidance List v16r06 replaces 388624 D02 Pre-Approval Guidance List v16r05. Added clarification to the list of items for reuse.

**07/29/2020** 388624 D02 Pre-Approval Guidance List v16r07 replaces 388624 D02 Pre-Approval Guidance List v16r06. Added to the PAG list item 2. Other Conditions f (ii) for HAC testing 5G sub 6 GHz. Update Reuse List (b) SDR reuse. SDR, PAG item C 2 is removed from PAG reuse procedure due to a EAS system design that automatically sets the application to a PAG status.

**08/14/2020** 388624 D02 Pre-Approval Guidance List v16r08 replaces 388624 D02 Pre-Approval Guidance List v16r07. Added to the PAG: U-NII Devices authorized in U-NII Bands 5.925-7.125 GHz under guidance of KDB Publication 987594.

**08/28/2020** 388624 D02 Pre-Approval Guidance List v16r09 replaces 388624 D02 Pre-Approval Guidance List v16r08. Corrected section III. PAG REUSE LIST subsection B to include Question 9 from KDB Publication 285076 D03 HAC FAQ.

**10/13/2020** 388624 D02 Pre-Approval Guidance List v16r10 replaces 388624 D02 Pre-Approval Guidance List v16r09. (ii) added Pag item when directional gain of antenna systems is measured in lieu of calculations section 2. Other Conditions (a) (ii).