



Updates to *Mobile and Portable Device RF Exposure Equipment Authorization Procedures*

**Tim Harrington
Electronics Engineer
Equipment Authorization Branch**

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



Overview

- Discuss highlights of update being prepared for Mar. 2004 *Mobile and Portable Device RF Exposure Equipment Authorization Procedures*¹ (aka *KDB RFX*)
- Final updated document(s) to be distributed after this FCC-TCB session
- Due to ongoing rulemaking proceedings and other activities, some topics remain deferred for separate future update or procedures documents, e.g., various co-location and module items

¹ FCC *Mobile and Portable Device RF Exposure Equipment Authorization Procedures*, March 2004
html (<https://gullfoss2.fcc.gov/prod/oet/cf/kdb/forms/FTSSearchResultPage.cfm?id=20676&switch=P>)



NOTE: Because of cross-reference scheme used herein, please have existing Mar. 2004 *Procedures*¹ document at hand for context when viewing this presentation

¹ FCC *Mobile and Portable Device RF Exposure Equipment Authorization Procedures*, March 2004 html (<https://gullfoss2.fcc.gov/prod/oet/cf/kdb/forms/FTSSearchResultPage.cfm?id=20676&switch=P>)



Overview (cont.)

- Adjustments for errata identified in previous FCC-TCB notes
 - VHF PTT SAR exclusion
 - Multiple-host procedure & threshold
- Incorporate additional uniform procedures, based on questions received and issues identified in past few years
 - Co-location – network-handovers, network-gateway mobile products
 - SAR – 3-6 GHz SAR, tablet PCs, VoWLAN devices, handset used with earpiece, hand etc SAR for portables
- Preliminary new uniform procedures – see other Harrington presentation this meeting



Presentation Format Key

- List numbers in { } herein are items in Mar04 *KDB RFx*
- Underlines are revised, replaced, or amended text
- {rev}, {amd} are preliminary placeholders for updates – numbering or placement may change in final version(s)
- For some items, only abbreviated excerpts but not complete unchanged existing text is shown
- NOTE: When released, final update document(s)
 - May have some wordings changed slightly
 - May have other minor updates not discussed herein



Portable Push-to-Talk {1}

- {1 amd} FCC and TCB filings do not request SAR for typical VHF portable PTT (walkie-talkie) devices (e.g., 150 MHz band)
 - SAR data if voluntarily submitted can be considered and reviewed by FCC not TCB
 - For VHF portable PTT with $P \geq 7$ W, please contact FCC Lab for guidance



15.247, 15.407 Portable Devices {3}

- {3)b)ii) rev} TCB SAR evaluation $f > 3$ GHz
 - TCB – SAR requested for devices with $P >$ (low threshold) in TCB Exclusion List
 - TCB filings must apply Oct06 FCC 3-6 GHz SAR procedures
- NOTE: SAR routine evaluation is required for 15.407 (e.g., 802.11a) devices for any power level
 - TCB Exclusion List thresholds do not apply for devices subject to SAR routine evaluation



Modules in Portable Devices {4}

- {4)b)i) rev} PCMCIA cards and similar integral-antenna packages tested in three representative host products may be used in multiple notebooks and lap-held or body-worn PDAs
 - {(1)} 3-host tests requested for licensed-service devices, e.g., parts 22H, 24E, 27, 90-SMR
 - {(2)} 3-host tests requested for 15.247 with $f < 3$ GHz and with output power > 100 mW; no test is requested if output $<$ low thresholds in the July02 TCB Exclusion List; otherwise test in one host



Modules in Portable Devices {4}

● {4)b)i) rev} cont.

- {(3)} 3-host tests are requested for 15.247 devices operating at frequencies > 3 GHz and with output power > 50 mW; no test is requested if output < low thresholds in the July02 TCB Exclusion List; otherwise test in one host
- {(4)} 3-host tests are requested for 15.407, 90Y devices (routine evaluation) with output power > 50 mW; otherwise test in one host; for 1-host test, if output power < low thresholds in the July02 TCB Exclusion List, for each frequency band test only the channel with maximum averaged output power



Co-location/co-transmission {5}

- {5)d) amd1} TCBs may approve co-located mobile devices
 - in accordance with {5)b)}, {5)c)}, except for the following new {5)d) amd2}
- {5)d) amd2} For WLAN-to-WWAN network gateway (backbone) desktop, wall-mount, etc., products
 - Contains one built-in part 15 transmitter (WLAN)
 - Intended to always be used with one end-user plug-in integral-antenna licensed-service radio card, e.g., part 22/24 PCMCIA (WWAN)
 - Grantee for the part 15 gateway-product is responsible to ensure compliance with FCC rules for intended and expected end-use co-located multi-transmitter product



Co-location/co-transmission {5}

{5)d) amd2 cont.

- Gateway-product certification filings to include:
 - Detailed intended end-use configuration conditions
 - Specific intended radio cards (or at least typical)
 - Measurement data where appropriate, to ensure compliance with applicable part 15, licensed-service, and RF exposure requirements, e.g., for specified card(s)

- End-user plug-in card used in gateway-product:
 - Most integral-antenna PCMCIA-type cards can be used in portable RF exposure conditions when certified using procedures described elsewhere in this document
 - For the radio card and final product configurations described in this procedure, FCC Lab is not requesting permissive change filings to amend certification contents and grant remarks



Co-location/co-transmission {5}

- {5)e) amd1} TCBs may process co-located portable device final-product configurations as listed in 5)e)i)-iii); see also {5)e) amd2}
- {5)e) amd2}² TCBs may process multi-transmitter final products with highest output transmitter (dominant) subject to SAR routine evaluation, and other (non-dominant) transmitter with P > 5 mW, for conditions:
 - Co-transmission has relatively short duration (<< 30 seconds), serving as handover (handoff) between two networks
 - Filing must include details about maximum handover time, and how handover co-transmission time is restricted

² FCC *TCB Exclusions List*, July 2002, Transmitter Category II)e),
html (<https://gullfoss2.fcc.gov/prod/oet/cf/kdb/forms/FTSSearchResultPage.cfm?id=20247&switch=P>)



SAR Test Procedures {6}

- {6)a) rev} Equipment certification for portable devices operating at:
 - Frequencies < 300 MHz are submitted to the FCC if SAR evaluation is required; TCBs may process equipment certifications when SAR evaluation is not required
 - Frequencies > 3 GHz may be processed by TCBs when SAR evaluation has applied Oct06 FCC 3-6 GHz SAR Procedures



Portable Devices {7}

- {7)d)ii) amd} SAR test procedures for tablet computers
 - For both one-section (slate) and two-section-hinged (convertible) types
 - Tablets may have up to four user-selectable display orientations – 0deg-portrait, 0deg-landscape, 180deg-portrait, 180deg-landscape
 - Similarly as for notebooks with antenna(s) in the keyboard section, for lap-held use configuration SAR is tested with tablet bottom-face against a flat phantom



Portable Devices {7}

- {7)d)ii) rev} cont.

- SAR is tested with edges of the tablet computer in direct contact against a flat phantom (display face perpendicular to phantom) for:

- Each edge containing antenna(s), unless final-product firmware prevents radio transmissions for position having antenna-edge in contact with phantom and 0deg relative-to-phantom display orientation
- Each edge not containing antenna(s) that is adjacent to an edge containing antenna(s), where adjacent-edge antenna(s) are within 10 cm from the phantom



Portable Devices {7}

- {7)d)iv) amd} For PDAs with voice-over-WLAN (VoWLAN, VoFi) capabilities, and product features supporting held-to-ear and body-worn configurations
 - SAR is tested using applicable Supplement C procedures
 - TCBs and/or applicants should contact FCC Lab to request review & approval guidance before processing applications
- {7)d)v) amd} SAR data is requested for handsets designed to be used with a headset or wireless earpiece while worn next to the body using a neck-strap or lanyard; device should be tested with front and back sides in contact with a flat phantom



Portable Devices {7}

- { 7)d) amd Concerning SAR in hands, wrists, feet, and ankles:
 - Compliance issues are not expected, and SAR testing is not requested, for most present handsets and transmitters in consumer notebook and tablet computers
 - Higher SAR limit
 - Devices typically have SAR compliance info for other normal-use positions
 - Uniform SAR test and TCB review & approval procedures have not been established for hands, wrists, feet, ankles exposures
 - TCBs and/or applicants should contact FCC Lab before submitting new or evolved types of product configurations and technologies which have only hands, wrists, feet, or ankles normal-use position



Wrap-up

- Jul02 TCB Excl List still in effect
- Updated *KDB RFX* document planned to be released soon after this FCC-TCB session
- TCBs continue to use practices and procedures described in existing documents
 - For example, most filings that include RF exposure info still use some type of grant remark/note
- For best consistency, before completing device reviews and approvals, please review recent or applicable previous grants for similar devices
- Please ask for guidance from OET/Lab whenever anything is unclear, whatever the issue³

³ 47 CFR 2.962(c)(4), 2.962(f)(1), 2.962(f)(5)(i)