SAR Testing for Non-Standard Form Factor Devices

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Watches and Wrist Worn Devices

- KDB Publication 447498 D01, Section 6.2 gives general guidance
- For devices with high curvature, parts of head phantom may be used
- Do not use areas near ear pinna, nose, eye, or mouth
- If rigid wristband or testing would require device modification submit a KDB Inquiry
Head Worn Devices

- May have to use body phantom filled with head tissue simulating liquids
- If head phantom is used do not use area near ear pinna, nose, eye, or mouth
- If device modification is required submit a KDB Inquiry
DO NOT submit general inquiry asking How do I test? with no supporting information. Helpful to propose test configurations based on existing KDB Guidance, sound engineering judgement with justification.

Info to provide: wireless modes, power, antenna info and location, use conditions, distances, dimensions, etc.

May need to include a statement in SAR report saying a non-standard test setup was used.

- DO NOT put KDB Inquiry numbers in SAR Reports.
Handsets and Modules

The transmitters inside cellphones cannot be approved as modules
- Due to potential RF energy coupling concerns with close proximity, among transmitters and antennas within the device, and to users

Similarly, when high SAR can be expected for an end product due to close proximity between antennas and users, transmitters may not be approved as modules
- Due to difficulties to ensure compliance for all host configurations that may not be easily identified in advance

These considerations apply, for example, for smartphones and portable PTT two-way radio handsets

See section 5.1 of FCC KDB Publication 447498 D01 for more information
Occupational/Controlled SAR Limits

As described in KDB Publication 447498 D01, occupational/controlled SAR limits do not apply for:

- Consumer devices
- Radio services intended for supporting public networks (e.g., CMRS)
- Part 15 unlicensed operations

The SAR test exclusion thresholds given in KDB Publication 447498 D01:

- Are based on General-Population/Uncontrolled SAR limits
- Do not apply, by extrapolation or other means, for devices qualified to operate under Occupational/Controlled limits

FCC RF exposure limits are in terms of “occupational/controlled environment,” not “occupational/controlled device”*

- Operating only in an occupational/controlled environment may be expected and ensured, e.g., for part 90 PLMRS*

Fully aware of and able to control exposure*

Supporting information on training and awareness to qualify for operating in Occupational/Controlled environment is not needed for devices that meet General-Population/Uncontrolled SAR limits

*Updated after presentation
Please do not apply the “generic device” six-face SAR test method of IEC 62209-2:2010 (or similar)

- As stated in previous TCB notes, FCC has not adopted the IEC 62209 documents in their entireties
- Instead, acceptable methods from the IEC 62209 documents have already been adapted into the published RF exposure KDB procedures

Each device “face” that is tested must qualify as an intended, or a reasonably-expected, normal-use condition
- Also, appropriate associated explanations must be given in test reports

Typically, test only the surfaces and side edges that have transmitting antenna located ≤ 25 mm from that surface or edge
Questions?

Thank You!