

# 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



# KDB Inquiries

- 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



# SAR for Generic / Blackbox Device

- 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 entirety
  - 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  $\leq 25$  mm from that surface or edge

62209-2 © IEC:2010

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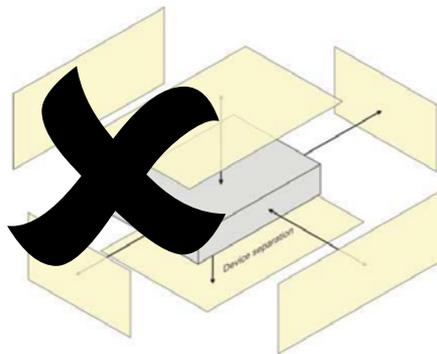


Figure 4 – Test positions for a generic device



**Questions?**

**Thank You!**