



SAR Testing for Handheld RFID/Barcode Scanners

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Handheld RFID/Barcode Scanners

- Often have a pistol grip form factor
- Primarily used in the hands but sometimes they support belt-clips, lanyards, or other body-worn accessories that may be used while transmitting
- Often contain Bluetooth, Wi-Fi, and/or RFID/NFC Antennas
- Often have a low duty cycle or highly directional antenna



Handheld RFID/Barcode Scanner Form Factors





Handheld Devices KDB Guidance

- KDB Publication 447498 D01 gives general guidance including extremity SAR
- KDB Publications 941225 D01, D05, D07 provide guidance related to 3G/4G devices, if applicable
- KDB Publication 248227 D01 gives guidance on Wi-Fi, if applicable



General Testing Guidance

- Due to low-duty cycle, often may be excluded from SAR testing. See section 6.3 of KDB 447498 D01. If duty cycle is not fixed, additional information may be required.
- May be excluded from SAR testing due to large distance between fingers and antenna. See section 4.3.1 of KDB 447498 D01. 10-g Extremity SAR exclusion criteria should be used.



General Testing Guidance Continued

- Depending on form factor, use conditions, support for body-worn accessories, and other criteria, both 10-g extremity and 1-g Body-Worn SAR may have to be addressed
- In general, do not test surface that faces away from user or user's hands unless there is an exposure concern
- If they contain multiple transmitters, simultaneous SAR should be addressed



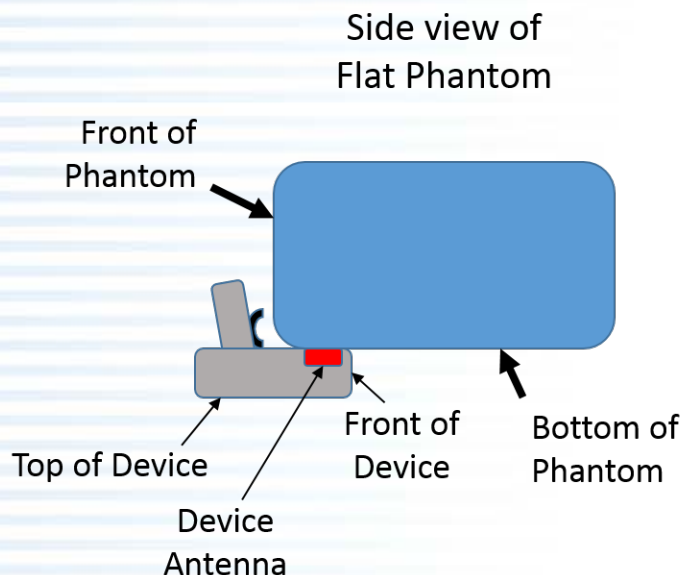
Common Testing Problems

- High powered antenna causes high SAR Values
- Pistol grip gets in the way of positioning
- Large Front antenna gets in the way of positioning



Testing Solutions

- Test exclusion is preferred. Several methods of SAR test exclusion. See slide 5.
- Invert the barcode scanner so the pistol grip is facing upwards but outside the front of the flat phantom (near the spigot)





Testing Solutions Continued

- May have trouble capturing hotspot since it is close to front edge of phantom. Submit a KDB Inquiry with sample scans if hotspot is unable to be captured
- Last resort, may have to modify hardware to find reasonable test position. Submit a KDB Inquiry **BEFORE** device modification.



KDB Inquiries

- When submitting inquiries for guidance, please provide specific information
- Propose test configurations based on existing KDB guidance, sound engineering judgement with justification
- Provide information about: wireless modes, power, antenna info and location, use conditions, distances, dimensions, etc.



Questions?

Thank You!