# SAR EVALUATION REPORT

For

# ACSL Ltd

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**FCC ID: 2A8JK-GS5US-FALCON**

| | | |
|---|---|---|
| **Report Type:** Original Report | **Product Type:** Smart Controller | |
| **Project Engineer:** | Bard Liu | |
| **Report Number:** | RSHA240424001-20B | |
| **Report Date:** | 2024-07-12 | |
| **Reviewed By:** | Oscar Ye<br>EMC Manager | |
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<tr><td colspan="4">Note: This wireless device has been shown to be capable of compliance for localized specific absorption rate (SAR) for General Population/Uncontrolled Exposure limits specified in FCC 47 CFR part 2.1093 and has been tested in accordance with the measurement procedures specified in IEEE 1528-2013 and RF exposure KDB procedures.<br>The results and statements contained in this report pertain only to the device(s) evaluated.</td></tr>
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# DOCUMENT REVISION HISTORY

| Revision Number | Report Number | Description of Revision | Date of Revision |
|---|---|---|---|
| 1.0 | RSHA240424001-20B | Original Report | 2024-07-12 |

# EUT DESCRIPTION

**All measurement and test data in this report was gathered from production sample serial number: : RSHA240424001-1Assigned by BACL(kunshan).The EUT supplied by the applicant was received on 2024-04-24.*

## Technical Specification

| | |
|---|---|
| **Device Type:** | Portable |
| **Exposure Category:** | Population / Uncontrolled |
| **Antenna Type(s):** | Omin Antenna |
| **Body-Worn Accessories:** | None |
| **Face-Head Accessories:** | None |
| **Operation Mode :** | WLAN2.4G/WLAN 5G<br>Bluetooth<br>BLE<br>SRD |
| **Frequency Band:** | 2.4G Wi-Fi: 2412-2462 MHz(802.11b/g/n20), 2422-2452 MHz(802.11n40)<br>BT/BLE(1Mbps): 2402 -2480 MHz<br>5G WIFI:Band 1: 5150~5250 MHz, Band 2: 5250-5350 MHz,<br>Band 3: 5470-5725 MHz, Band 4: 5725~5850 MHz<br>2.4G SRD:2412~2467 MHz |
| **Power Source:** | DC 3.7V |
| **Normal Operation:** | Body Supported |

# REFERENCE, STANDARDS, AND GUIDELINES

**FCC:**

The Report and Order requires routine SAR evaluation prior to equipment authorization of portable transmitter devices, including portable telephones. For consumer products, the applicable limit is 1.6 mW/g as recommended by the ANSI/IEEE standard C95.1-1992 [6] for an uncontrolled environment (Paragraph 65). According to the Supplement C of OET Bulletin 65 “Evaluating Compliance with FCC Guide-lines for Human Exposure to Radio frequency Electromagnetic Fields", released on Jun 29, 2001 by the FCC, the device should be evaluated at maximum output power (radiated from the antenna) under “worst-case” conditions for normal or intended use, incorporating normal antenna operating positions, device peak performance frequencies and positions for maximum RF energy coupling.

This report describes the methodology and results of experiments performed on wireless data terminal. The objective was to determine if there is RF radiation and if radiation is found, what is the extent of radiation with respect to safety limits. SAR (Specific Absorption Rate) is the measure of RF exposure determined by the amount of RF energy absorbed by human body (or its parts) – to determine how the RF energy couples to the body or head which is a primary health concern for body worn devices. The limit below which the exposure to RF is considered safe by regulatory bodies in North America is 1.6 mW/g average over 1 gram of tissue mass.

## SAR Limits

**FCC Limit**

| EXPOSURE LIMITS | SAR (W/kg) | |
|---|---|---|
| | (General Population / Uncontrolled Exposure Environment) | (Occupational / Controlled Exposure Environment) |
| Spatial Average (averaged over the whole body) | 0.08 | 0.4 |
| Spatial Peak (averaged over any 1 g of tissue) | 1.60 | 8.0 |
| Spatial Peak (hands/wrists/feet/ankles averaged over 10 g) | 4.0 | 20.0 |

Population/Uncontrolled Environments are defined as locations where there is the exposure of individual who have no knowledge or control of their exposure.

Occupational/Controlled Environments are defined as locations where there is exposure that may be incurred by people who are aware of the potential for exposure (i.e. as a result of employment or occupation).

General Population/Uncontrolled environments Spatial Peak limit 1.6W/kg for 1g Body SAR and 4.0 W/kg for 10g Extremity SAR applied to the EUT.

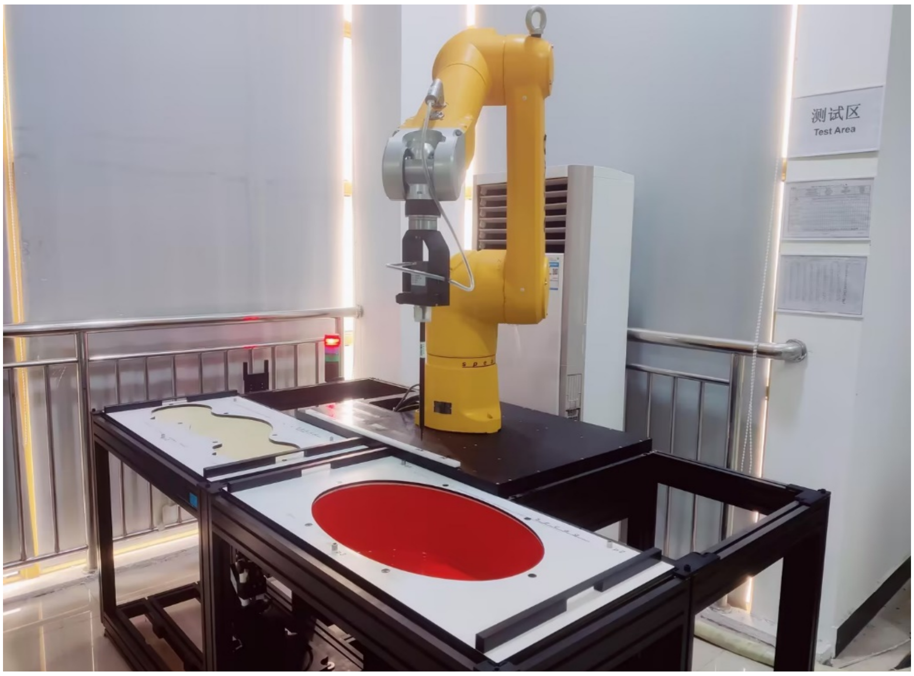
# FACILITIES

The test site used by Bay Area Compliance Laboratories Corp. (Kunshan) to collect test data is located on the No.248 Chenghu Road, Kunshan, Jiangsu province, China.

Bay Area Compliance Laboratories Corp. (Kunshan) is accredited in accordance with ISO/IEC 17025:2017 by NVLAP (Lab code: 600338-0), and the lab has been recognized as the FCC accredited lab under the KDB 974614 D01, the FCC Designation No. : CN5055.

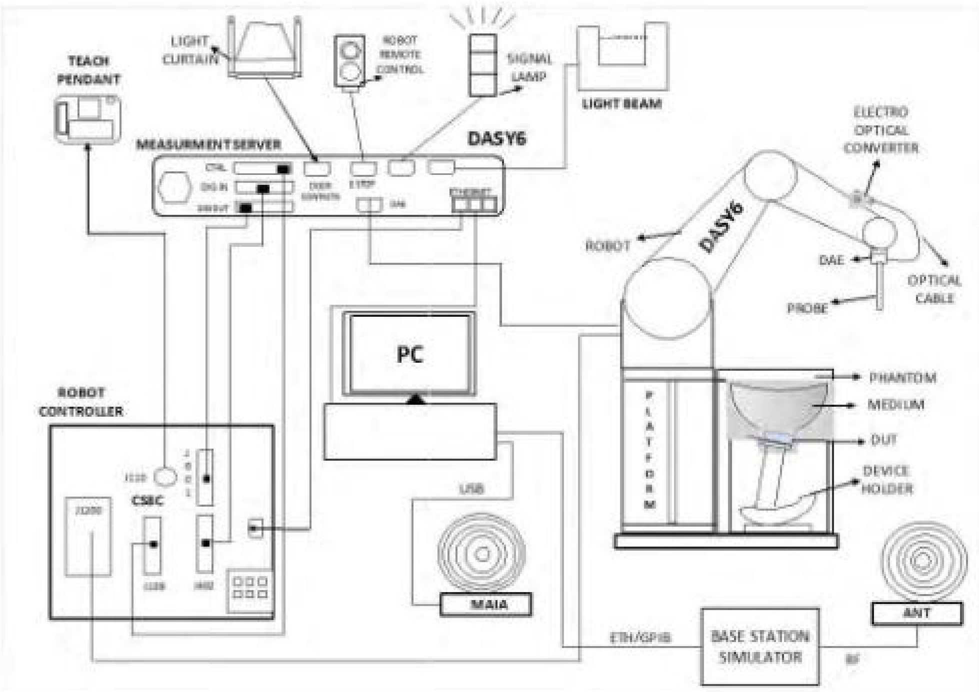
# DESCRIPTION OF TEST SYSTEM

These measurements were performed with the automated near-field scanning system DASY6 from Schmid & Partner Engineering AG (SPEAG) which is the Fifth generation of the system shown in the figure hereinafter:




**DASY6 System Description**

The DASY6 system for performing compliance tests consists of the following items:



- A standard high precision 6-axis robot (Staubli TX=RX family) with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal application, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running Win7 professional operating system and the DASY52 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

**DASY6 Measurement Server**

The DASY6 measurement server is based on a PC/104 CPU board with a 400 MHz Intel ULV Celeron, 128 MB chip-disk and 128 MB RAM. The necessary circuits for communication with the DAE4 (or DAE3) electronics box, as well as the 16-bit AD converter system for optical detection and digital I/O interface are contained on the DASY6 I/O board, which is directly connected to the PC/104 bus of the CPU board.


The measurement server performs all real-time data evaluations of field measurements and surface detection, controls robot movements, and handles safety operations. The PC operating system cannot interfere with these time-critical processes. All connections are supervised by a watchdog, and disconnection of any of the cables to the measurement server will automatically disarm the robot and disable all program- controlled robot movements. Furthermore, the measurement server is equipped with an expansion port, which is reserved for future applications. Please note that this expansion port does not have a standardized pinout, and therefore only devices provided by SPEAG can be connected. Connection of devices from any other supplier could seriously damage the measurement server.

**Data Acquisition Electronics**

The data acquisition electronics (DAE4) consist of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder with a control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information, as well as an optical uplink for commands and the clock.

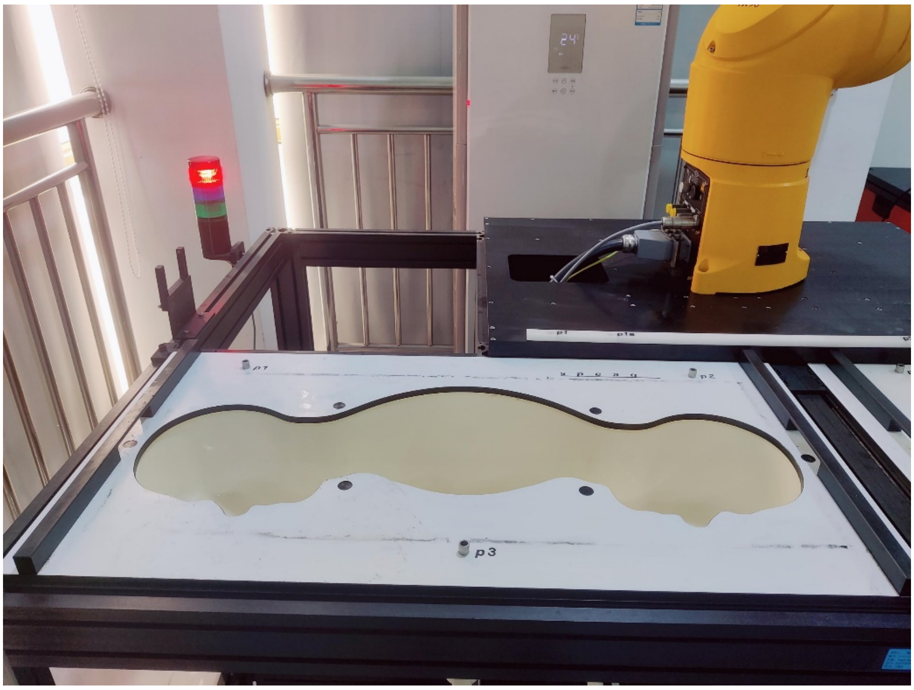
The mechanical probe mounting device includes two different sensor systems for frontal and sideways probe contacts. They are used for mechanical surface detection and probe collision detection.

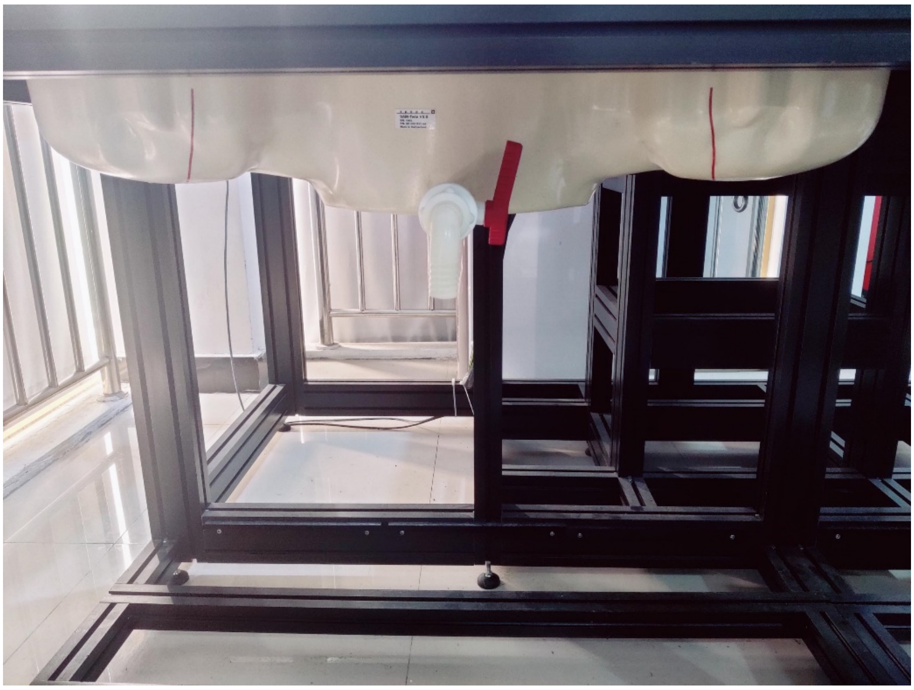
The input impedance of both the DAE4 as well as of the DAE3 box is 200MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

**EX3DV4 E-Field Probes**

| | |
|---|---|
| **Frequency** | 10 MHz to > 6 GHz<br>Linearity: ± 0.2 dB (30 MHz to 6 GHz) |
| **Directivity** | ± 0.3 dB in TSL (rotation around probe axis)<br>± 0.5 dB in TSL (rotation normal to probe axis) |
| **Dynamic Range** | 10 µW/g to > 100 mW/g<br>Linearity: ± 0.2 dB (noise: typically < 1 µW/g) |
| **Dimensions** | Overall length: 337 mm (Tip: 9 mm)<br>Tip diameter: 2.5 mm (Body: 10 mm)<br>Typical distance from probe tip to dipole centers: 1 mm |
| **Application** | High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields); the only probe that enables compliance testing for frequencies up to 6 GHz with precision of better 30%. |
| **Compatibility** | DASY3, DASY4, DASY52 SAR and higher, EASY4/MRI |

**SAM Twin Phantom**

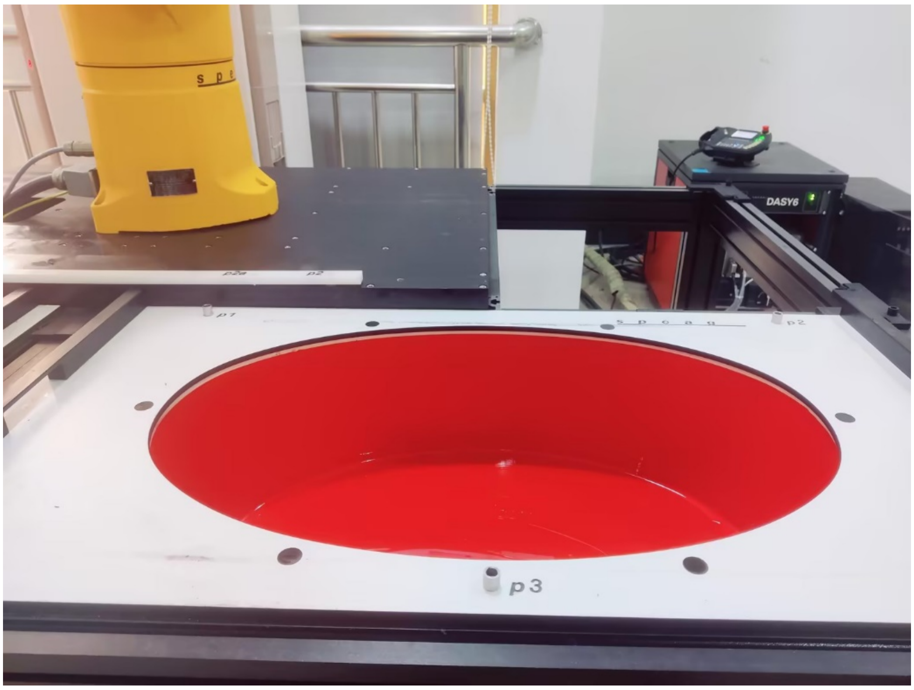




The SAM Twin Phantom (shown in front of DASY6) is a fiberglass shell phantom with shell thickness 2 mm, except in the ear region where the thickness is increased to 6 mm. The phantom has three measurement areas: 1) Left Head, 2) Right Head, and 3) Flat Section. For larger devices, the use of the ELI-Phantom (shown behind DASY6) is required. For devices such as glasses with a wireless link, the Face Down Phantom is the most suitable (between the SAM Twin and ELI phantoms).
When the phantom is mounted inside allocated slot of the DASY6 platform, phantom reference points can be taught directly in the DASY5 V5.2 software. When the DASY6 platform is used to mount the Phantom, some of the phantom teaching points cannot be reached by the robot in DASY5 V5.2. A special tool called P1a-P2aX-Former is provided to transform two of the three points, P1 and P2, to reachable locations. To use these new teaching points, a revised phantom configuration file is required.

In addition to our standard broadband liquids, the phantom can be used with the following tissue simulating liquids:
Sugar-water-based liquids can be left permanently in the phantom. Always cover the liquid when the system is not in use to prevent changes in liquid parameters due to water evaporation.
DGBE-based liquids should be used with care. As DGBE is a softener for most plastics, the liquid should be taken out of the phantom, and the phantom should be dried when the system is not in use (desirable at least once a week).
Do not use other organic solvents without previously testing the solvent resistivity of the phantom.
Approximately 25 liters of liquid is required to fill the SAM Twin phantom.

**ELI Phantom**



The ELI phantom is intended for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30MHz to 6 GHz. ELI is fully compatible with the latest draft of the standard IEEE 1528:2013 and the use of all known tissue simulating liquids. ELI has been optimized for performance and can be integrated into a SPEAG standard phantom table. A cover is provided to prevent evaporation of water and changes in liquid parameters. Reference markings on the phantom allow installation of the complete setup, including all predefined phantom positions and measurement grids, by teaching three points.

The phantom can be used with the following tissue simulating liquids:

- Sugar-water-based liquids can be left permanently in the phantom. Always cover the liquid when the system is not in use to prevent changes in liquid parameters due to water evaporation.

- DGBE-based liquids should be used with care. As DGBE is a softener for most plastics, the liquid should be taken out of the phantom, and the phantom should be dried when the system is not in use (desirable at least once a week).

- Do not use other organic solvents without previously testing the solvent resistivity of the phantom.

Approximately 25 liters of liquid is required to _fill the ELI phantom.

**Robots**

The DASY6 system uses the high-precision industrial robots TX60L, TX90XL, and RX160L from St aubli SA (France). The TX robot family - the successor of the well-known RX robot family - continues to offer the features important for DASY6 applications:

- High precision (repeatability 0.02mm)
- High reliability (industrial design)
- Low maintenance costs (virtually maintenance free due to direct drive gears; no belt drives)
- Jerk-free straight movements (brushless synchrony motors; no stepper motors)
- Low ELF interference (motor control fields shielded via the closed metallic construction shields)

The robots are controlled by the Staubli CS8c robot controllers. All information regarding the use and maintenance of the robot arm and the robot controller is provided

**Area Scans**

Area scans are defined prior to the measurement process being executed with a user defined variable spacing between each measurement point (integral) allowing low uncertainty measurements to be conducted. Scans defined for FCC applications utilize a 15mm 2 step integral, with 1.5mm interpolation used to locate the peak SAR area used for zoom scan assessments.

Where the system identifies multiple SAR peaks (which are within 25% of peak value) the system will provide the user with the option of assessing each peak location individually for zoom scan averaging.

**Zoom Scan (Cube Scan Averaging)**

The averaging zoom scan volume utilized in the DASY5 software is in the shape of a cube and the side dimension of a 1 g or 10 g mass is dependent on the density of the liquid representing the simulated tissue. A density of 1000 $kg/m^3$ is used to represent the head and body tissue density and not the phantom liquid density, in order to be consistent with the definition of the liquid dielectric properties, i.e. the side length of the 1g cube is 10mm,with the side length of the 10g cube is 21.5mm.

When the cube intersects with the surface of the phantom, it is oriented so that 3 vertices touch the surface of the shell or the center of a face is tangent to the surface. The face of the cube closest to the surface is modified in order to conform to the tangent surface.

The zoom scan integer steps can be user defined so as to reduce uncertainty, but normal practice for typical test applications (including FCC) utilize a physical step of 7 x7 x 7 (5mmx5mmx5mm) providing a volume of 30 mm in the X & Y & Z axis.

## Tissue Dielectric Parameters for Head and Body Phantoms

The head tissue dielectric parameters recommended by the IEEE 1528:2013

**Recommended Tissue Dielectric Parameters for Head liquid**

Table 2 – Dielectric properties of the tissue-equivalent medium

| Frequency<br>MHz | Real part of the complex relative permittivity, $\varepsilon_r'$ | Conductivity, $\sigma$<br>S/m | Penetration depth (E-field), $\delta$<br>mm |
|---|---|---|---|
| 4 | 55,0 | 0,75 | 293,0 |
| 13 | 55,0 | 0,75 | 165,5 |
| 30 | 55,0 | 0,75 | 112,8 |
| 150 | 52,3 | 0,76 | 62,0 |
| 300 | 45,3 | 0,87 | 46,1 |
| 450 | 43,5 | 0,87 | 43,0 |
| 750 | 41,9 | 0,89 | 39,8 |
| 835 | 41,5 | 0,90 | 39,0 |
| 900 | 41,5 | 0,97 | 36,2 |
| 1 450 | 40,5 | 1,20 | 28,6 |
| 1 800 | 40,0 | 1,40 | 24,3 |
| 1 900 | 40,0 | 1,40 | 24,3 |
| 1 950 | 40,0 | 1,40 | 24,3 |
| 2 000 | 40,0 | 1,40 | 24,3 |
| 2 100 | 39,8 | 1,49 | 22,8 |
| 2 450 | 39,2 | 1,80 | 18,7 |
| 2 600 | 39,0 | 1,96 | 17,2 |
| 3 000 | 38,5 | 2,40 | 14,0 |
| 3 500 | 37,9 | 2,91 | 11,4 |
| 4 000 | 37,4 | 3,43 | 10,0 |
| 4 500 | 36,8 | 3,94 | 9,7 |

| Frequency<br>MHz | Real part of the complex relative permittivity, $\varepsilon_r'$ | Conductivity, $\sigma$<br>S/m | Penetration depth (E-field), $\delta$<br>mm |
|---|---|---|---|
| *5 000* | *36,2* | *4,45* | 1,5 |
| *5 200* | *36,0* | *4,66* | 8,4 |
| *5 400* | *35,8* | *4,86* | 8,1 |
| *5 600* | *35,5* | *5,07* | 7,5 |
| 5 800 | 35,3 | 5,27 | 7,3 |
| *6 000* | *35,1* | *5,48* | 7,0 |
| *6 500* | *34,5* | *6,07* | 6,7 |
| *7 000* | *33,9* | *6,65* | 6,4 |
| *7 500* | *33,3* | *7,24* | 6,1 |
| *8 000* | *32,7* | *7,84* | 5,9 |
| *8 500* | *32,1* | *8,46* | 5,3 |
| *9 000* | *31,6* | *9,08* | 4,8 |
| *9 500* | *31,0* | *9,71* | 4,4 |
| *10 000* | *30,4* | *10,40* | 4,0 |
| NOTE For convenience, permittivity and conductivity values are linearly interpolated for frequencies that are not a part of the original data from Drossos et al. [2]. They are shown in italics in Table 2. The italicized values are linearly interpolated (below 5 800 MHz) or extrapolated (above 5 800 MHz) from the non-italicized values that are immediately above and below these values. | | | |

**Note:**

1, Effective February 19, 2019, FCC has permitted the use of single head-tissue simulating liquid specified in IEEE 1528:2013 for all SAR tests.
2, Mix and Match of traditional FCC SAR TSLs and IEEE 1528:2013 TSL in a single application is not permitted TSL can be changed in a Permissive Change.
3, If SAR increases and original SAR > 1.2 W/kg, additional SAR measurements will be required IEEE 1528:2013 TSL is an alternative, not mandatory at this time.
4, If FCC parameters are used, ±5% tolerance. If IEC parameters, ±10%.
5, In this case, IEC parameters applied.

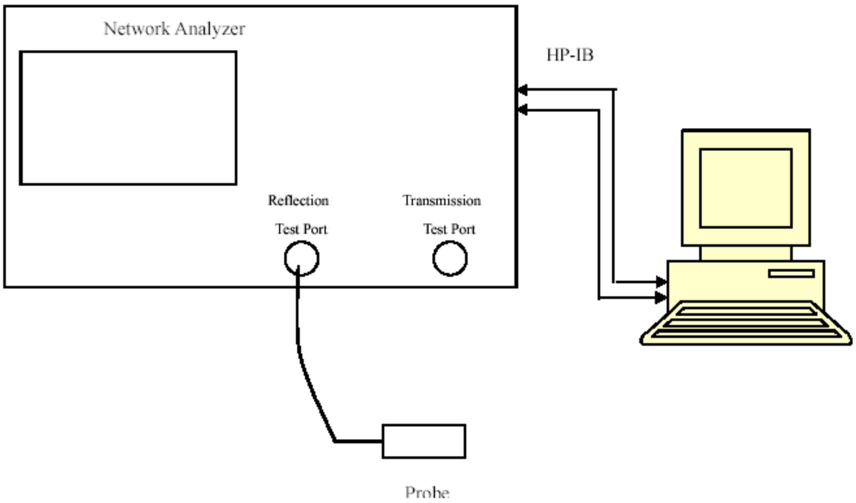
# EQUIPMENT LIST AND CALIBRATION

## Equipments List & Calibration Information

| Equipment | Model | S/N | Calibration Date | Calibration Due Date |
|---|---|---|---|---|
| DASY5 Test Software | DASY52 52.10.2 | N/A | N/A | N/A |
| DASY6 Measurement Server | DASY6 6.0.31 | N/A | N/A | N/A |
| Data Acquisition Electronics | DAE4 | 527 | 2024/03/26 | 2025/03/25 |
| E-Field Probe | EX3DV4 | 7557 | 2024/03/26 | 2025/03/25 |
| Mounting Device | MD4HHTV5 | SD 000 H01 KA | N/A | N/A |
| ELI V8.0 Phantom | QD OVA 004 Ax | 2095 | N/A | N/A |
| Dipole, 750MHz | D750V3 | 1166 | 2021/08/31 | 2024/08/30 |
| Dipole, 835MHz | D835V2 | 445 | 2023/02/10 | 2026/02/09 |
| Dipole,1750MHz | D1750V2 | 1140 | 2021/06/29 | 2024/06/28 |
| Dipole,1900MHz | D1900V2 | 5d206 | 2021/09/01 | 2024/08/31 |
| Dipole,2300MHz | D2300V2 | 1098 | 2022/08/23 | 2025/08/22 |
| Dipole,2450MHz | D2450V2 | 970 | 2021/06/28 | 2024/06/27 |
| Dipole,2600MHz | D2600V2 | 1162 | 2022/08/22 | 2025/08/21 |
| Dipole,5GHz | D5GHzV2 | 1296 | 2022/08/17 | 2025/08/16 |
| Simulated Tissue LiquidHead | HBBL600-6000V6 | 180611-3 | Each Time | |
| Network Analyzer | E5071B | SG42400155 | 2023/05/23 | 2024/05/22 |
| Dielectric Assessment Kit | DAK-3.5 | SM DAK 300AB | N/A | N/A |
| Signal Generator | N5182B | MY53051592 | 2023/05/23 | 2024/05/22 |
| Power Amplifier | 5S1G4 | 71377 | N/A | N/A |
| Directional Coupler | 4242-10 | 3307 | N/A | N/A |
| Attenuator | 3dB | 5402 | N/A | N/A |
| Attenuator | 10dB | AU 3842 | N/A | N/A |
| Radio Communication Analyzer | MT8820C | 6200930956 | 2023/06/15 | 2024/06/14 |
| Hygrothermograph | HTC-1 | N/A | 2023/5/22 | 2024/5/21 |
| Thermometer | UL-IL01 | N/A | 2023/5/22 | 2024/5/21 |
| Power Meter | E4419B | MY41291878 | 2023/05/23 | 2024/05/22 |

# SAR MEASUREMENT SYSTEM VERIFICATION

## Liquid Verification




Liquid Verification Setup Block Diagram

**Liquid Verification Results**

| Frequency (MHz) | Liquid Type | Liquid Parameter | | Target Value | | Delta (%) | | Tolerance (%) |
|---|---|---|---|---|---|---|---|---|
| | | Ơ (S/m) | $\varepsilon_r$ | Ơ (S/m) | $\varepsilon_r$ | Δ Ơ | Δ $\varepsilon_r$ | |
| 2450 | Head | 1.877 | 38.346 | 1.800 | 39.200 | 4.28 | -2.18 | ±5 |
| 2437 | Head | 1.862 | 38.403 | 1.788 | 39.219 | 4.14 | -2.08 | ±5 |
| 2412 | Head | 1.833 | 38.511 | 1.765 | 39.256 | 3.85 | -1.90 | ±5 |
| 2462 | Head | 1.891 | 38.296 | 1.812 | 39.183 | 4.36 | -2.26 | ±5 |
| 2442 | Head | 1.868 | 38.382 | 1.793 | 39.212 | 4.36 | -2.11 | ±5 |
| 2467 | Head | 1.897 | 38.277 | 1.816 | 39.176 | 4.23 | -2.30 | ±5 |

**Liquid Verification above was performed on 2024/05/15*

| Frequency (MHz) | Liquid Type | Liquid Parameter | | Target Value | | Delta (%) | | Tolerance (%) |
|---|---|---|---|---|---|---|---|---|
| | | Ơ (S/m) | $\varepsilon_r$ | Ơ (S/m) | $\varepsilon_r$ | Δ Ơ | Δ $\varepsilon_r$ | |
| 5250 | Head | 4.730 | 37.477 | 4.710 | 35.900 | 0.42 | 4.39 | ±5 |
| 5200 | Head | 4.68 | 37.551 | 4.640 | 36.020 | 0.86 | 4.25 | ±5 |
| 5180 | Head | 4.661 | 37.577 | 4.660 | 36.000 | 0.02 | 4.38 | ±5 |
| 5240 | Head | 4.723 | 37.491 | 4.701 | 35.960 | 0.47 | 4.26 | ±5 |
| 5280 | Head | 4.762 | 37.435 | 4.740 | 35.920 | 0.46 | 4.22 | ±5 |
| 5260 | Head | 4.74 | 37.467 | 4.721 | 35.940 | 0.40 | 4.25 | ±5 |
| 5320 | Head | 4.802 | 37.379 | 4.780 | 35.880 | 0.46 | 4.18 | ±5 |

**Liquid Verification above was performed on 2024/05/16*

| Frequency (MHz) | Liquid Type | Liquid Parameter | | Target Value | | Delta (%) | | Tolerance (%) |
|---|---|---|---|---|---|---|---|---|
| | | Ơ (S/m) | $\varepsilon_r$ | Ơ (S/m) | $\varepsilon_r$ | Δ Ơ | Δ $\varepsilon_r$ | |
| 5600 | Head | 5.088 | 36.996 | 5.070 | 35.500 | 0.36 | 4.21 | ±5 |
| 5500 | Head | 4.981 | 37.14 | 4.965 | 35.650 | 0.22 | 4.18 | ±5 |
| 5700 | Head | 5.195 | 36.858 | 5.170 | 35.400 | 0.48 | 4.12 | ±5 |
| 5580 | Head | 5.066 | 37.03 | 5.049 | 35.523 | 0.32 | 4.25 | ±5 |

**Liquid Verification above was performed on 2024/05/16*

| Frequency (MHz) | Liquid Type | Liquid Parameter | | Target Value | | Delta (%) | | Tolerance (%) |
|---|---|---|---|---|---|---|---|---|
| | | Ơ (S/m) | $\varepsilon_r$ | Ơ (S/m) | $\varepsilon_r$ | Δ Ơ | Δ $\varepsilon_r$ | |
| 5750 | Head | 5.249 | 36.792 | 5.220 | 35.400 | 0.56 | 3.93 | ±5 |
| 5785 | Head | 5.282 | 36.752 | 5.255 | 35.315 | 0.51 | 4.07 | ±5 |
| 5745 | Head | 5.242 | 36.799 | 5.215 | 35.355 | 0.52 | 4.08 | ±5 |
| 5825 | Head | 5.326 | 36.699 | 5.296 | 35.275 | 0.57 | 4.04 | ±5 |

**Liquid Verification above was performed on 2024/05/16*

## System Accuracy Verification

Prior to the assessment, the system validation kit was used to test whether the system was operating within its specifications of ±10%. The validation results are tabulated below. And also the corresponding SAR plot is attached as well in the SAR plots files.

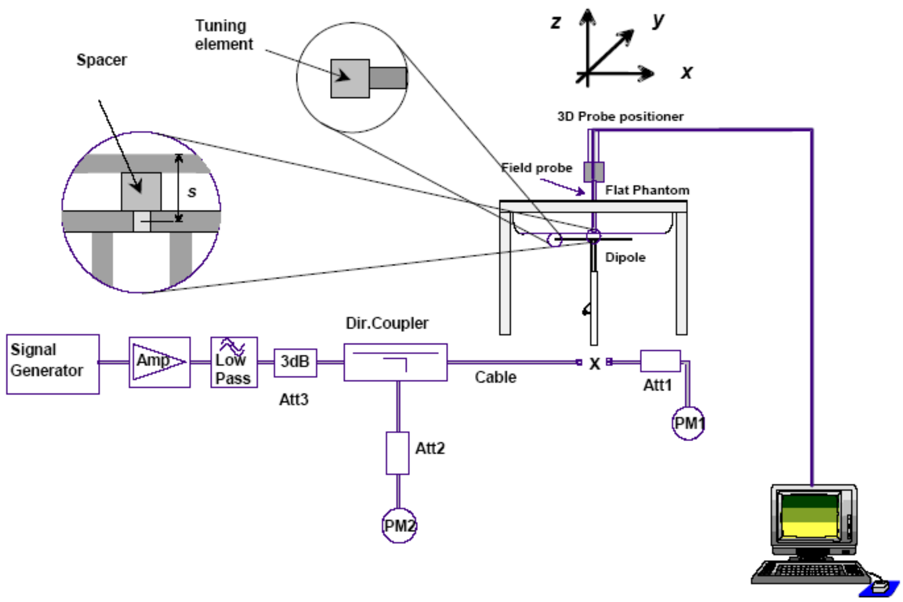
The spacing distances *s* in the **System Verification Setup Block Diagram** is given by the following:

a) s = 15 mm ± 0,2 mm for 300 MHz ≤ f ≤ 1 000 MHz;

b) s = 10 mm ± 0,2 mm for 1 000 MHz < f ≤ 3 000 MHz;

c) s = 10 mm ± 0,2 mm for 3 000 MHz < f ≤ 6 000 MHz.

### System Verification Setup Block Diagram



**System Accuracy Check Results**

| Date | Frequency Band | Liquid Type | Input Power (mW) | Measured SAR (W/kg) | | Normalized to 1W (W/kg) | Target Value (W/kg) | Delta (%) | Tolerance (%) |
|---|---|---|---|---|---|---|---|---|---|
| 2024/05/15 | 2450 MHz | Head | 250 | 1g | 13.3 | 53.2 | 53.1 | 0.19 | ±10 |
| 2024/05/16 | 5250 MHz | Head | 100 | 1g | 7.79 | 77.9 | 79.40 | -1.89 | ±10 |
| 2024/05/16 | 5600MHz | Head | 100 | 1g | 8.46 | 84.6 | 81.50 | 3.80 | ±10 |
| 2024/05/16 | 5750 MHz | Head | 100 | 1g | 8.51 | 85.1 | 79.00 | 7.72 | ±10 |

*The SAR values above are normalized to 1 Watt forward power.

## SAR SYSTEM VALIDATION DATA

System Check_Head_2450MHz
DUT: Dipole 2450 MHz D2450V2; Type: D2450V2; Serial: D2450V2 - SN:970

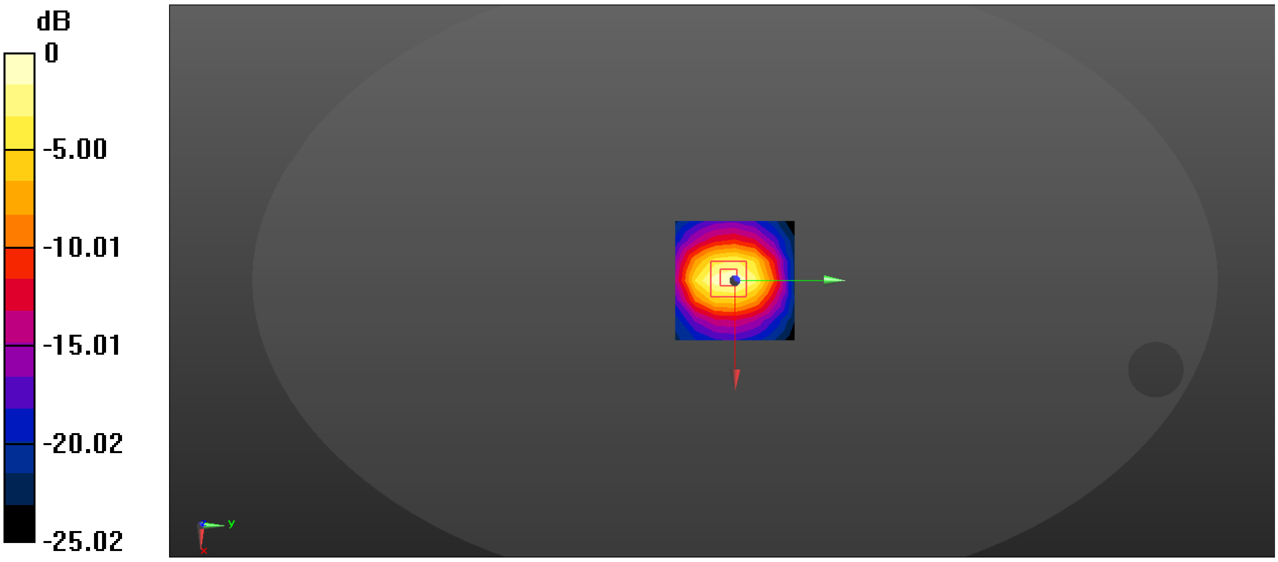
Communication System: UID 0, CW (0); Frequency: 2450 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.877 S/m; $\varepsilon_r$ = 38.346; ρ = 1000 kg/$m^3$

DASY5 Configuration:

- Probe: EX3DV4 - SN7557; ConvF(7.27, 7.27, 7.27); Calibrated: 3/26/2024;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn527; Calibrated: 3/26/2024
- Phantom: ELI V8.0; Type: QD OVA 004 Ax; Serial: 2095
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7437)

**Pin=250mW/Area Scan (7x7x1):** Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 16.6 W/kg

**Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 94.57 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 27.5 W/kg
**SAR(1 g) = 13.3 W/kg; SAR(10 g) = 6.25 W/kg**
Maximum value of SAR (measured) = 17.5 W/kg




0 dB = 17.5 W/kg = 12.43 dBW/kg

System Check_Head_5250MHz
DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1296

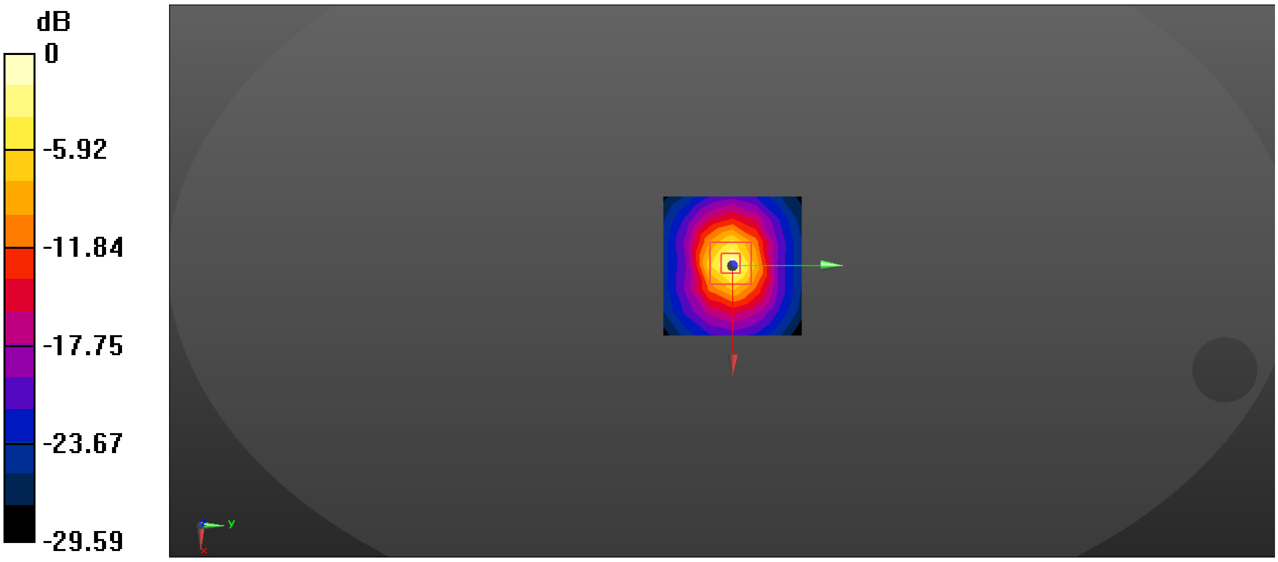
Communication System: UID 0, CW (0); Frequency: 5250 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5250 MHz; $\sigma = 4.73$ S/m; $\varepsilon_r = 37.477$; $\rho = 1000$ kg/m$^3$

DASY5 Configuration:

- Probe: EX3DV4 - SN7557; ConvF(5.25, 5.25, 5.25); Calibrated: 3/26/2024;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn527; Calibrated: 3/26/2024
- Phantom: ELI V8.0; Type: QD OVA 004 Ax; Serial: 2095
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7437)

**Pin=100mW/Area Scan (7x7x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 19.6 W/kg

**Pin=100mW/Zoom Scan (7x7x17)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 70.10 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 32.5 W/kg
**SAR(1 g) = 7.79 W/kg; SAR(10 g) = 2.23 W/kg**
Maximum value of SAR (measured) = 19.5 W/kg




0 dB = 19.6 W/kg = 12.92 dBW/kg

System Check_Head_5600MHz

DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1296

Communication System: UID 0, CW (0); Frequency: 5600 MHz;Duty Cycle: 1:1

Medium parameters used: f = 5600 MHz; σ = 5.088 S/m; $\varepsilon_r$ = 36.996; ρ = 1000 kg/m$^3$

DASY5 Configuration:

- Probe: EX3DV4 - SN7557; ConvF(4.63, 4.63, 4.63); Calibrated: 3/26/2024;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn527; Calibrated: 3/26/2024
- Phantom: ELI V8.0; Type: QD OVA 004 Ax; Serial: 2095
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7437)

**Pin=100mW/Area Scan (8x8x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 15.9 W/kg

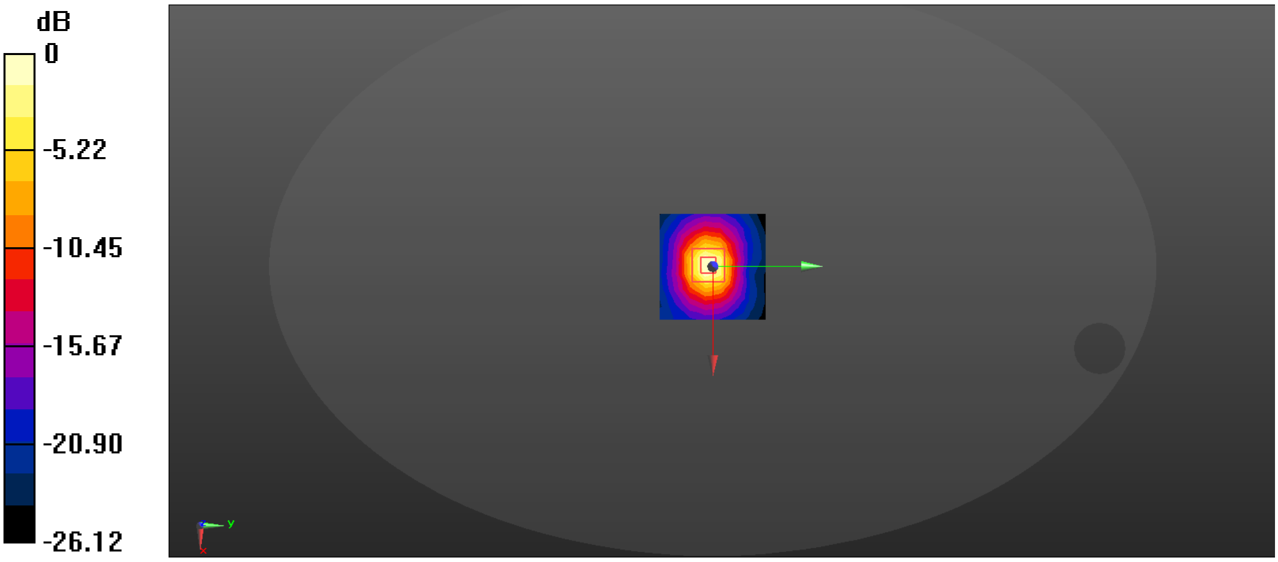
**Pin=100mW/Zoom Scan (8x8x17)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 68.33 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 34.9 W/kg

**SAR(1 g) = 8.46 W/kg; SAR(10 g) = 2.5 W/kg**

Maximum value of SAR (measured) = 20.2 W/kg




0 dB = 20.2 W/kg = 13.05 dBW/kg

System Check_Head_5750MHz

DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1296

Communication System: UID 0, CW (0); Frequency: 5750 MHz;Duty Cycle: 1:1

Medium parameters used: f = 5750 MHz; σ = 5.249 S/m; $\varepsilon_r$ = 36.792; ρ = 1000 kg/m$^3$

DASY5 Configuration:

- Probe: EX3DV4 - SN7557; ConvF(4.78, 4.78, 4.78); Calibrated: 3/26/2024;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn527; Calibrated: 3/26/2024
- Phantom: ELI V8.0; Type: QD OVA 004 Ax; Serial: 2095
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7437)

**Pin=100mW/Area Scan (8x8x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 19.0 W/kg

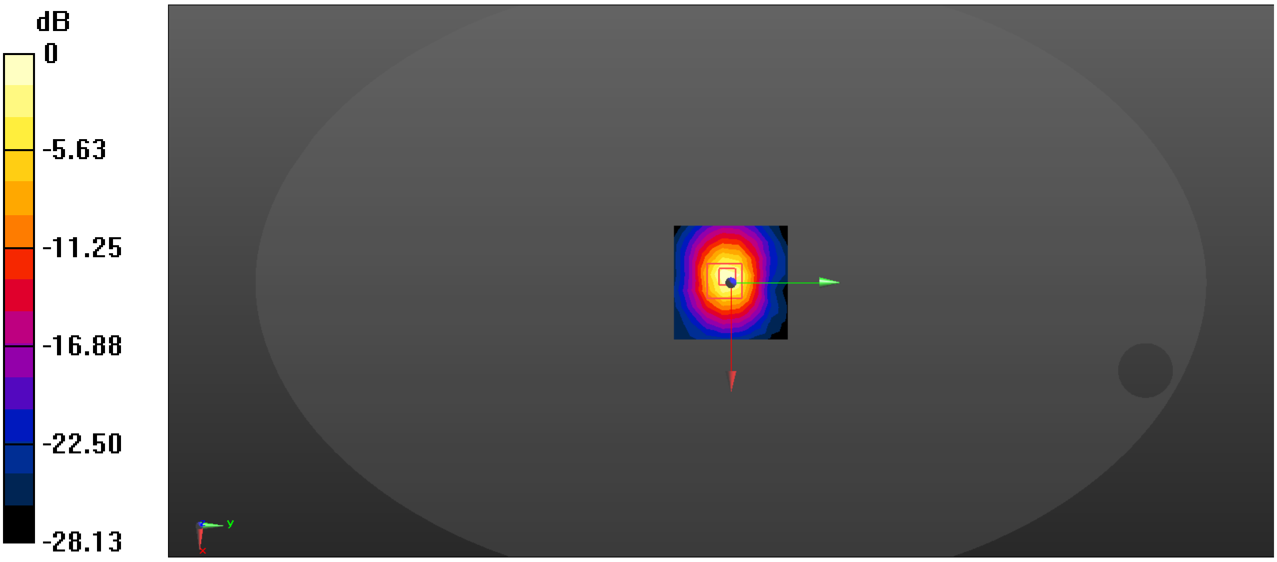
**Pin=100mW/Zoom Scan (7x7x17)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 64.90 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 38.2 W/kg

**SAR(1 g) = 8.51 W/kg; SAR(10 g) = 2.44 W/kg**

Maximum value of SAR (measured) = 21.7 W/kg




0 dB = 21.7 W/kg = 13.36 dBW/kg

# EUT TEST STRATEGY AND METHODOLOGY

## Test positions for body-worn and other configurations

Body-worn operating configurations should be tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in normal use configurations. Devices with a headset output should be tested with a headset connected to the device. When multiple accessories that do not contain metallic components are supplied with the device, the device may be tested with only the accessory that dictates the closest spacing to the body. When multiple accessories that contain metallic components are supplied with the device, the device must be tested with each accessory that contains a unique metallic component. If multiple accessories share an identical metallic component (e.g., the same metallic belt-clip used with different holsters with no other metallic components), only the accessory that dictates the closest spacing to the body must be tested.

Body-worn accessories may not always be supplied or available as options for some devices that are intended to be authorized for body-worn use. A separation distance of 1.5 cm between the back of the device and a flat phantom is recommended for testing body-worn SAR compliance under such circumstances. Other separation distances may be used, but they should not exceed 2.5 cm. In these cases, the device may use body-worn accessories that provide a separation distance greater than that tested for the device provided however that the accessory contains no metallic components.

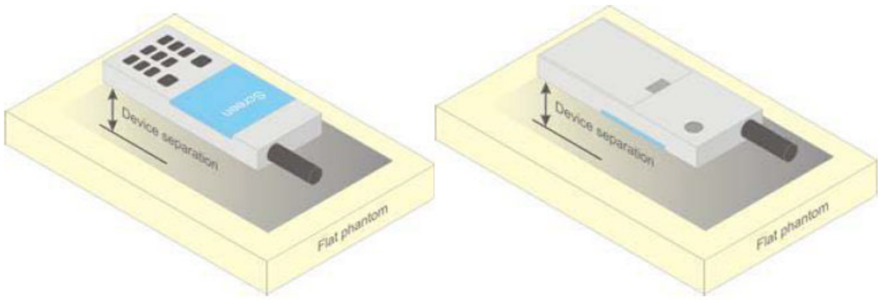



Figure 5 – Test positions for body-worn devices

## Test Distance for SAR Evaluation

In this case the EUT (Equipment under Test) is set against from the phantom, the test distance is 0mm(Body supported)

## SAR Evaluation Procedure

The evaluation was performed with the following procedure:

Step 1: Measurement of the SAR value at a fixed location above the ear point or central position was used as a reference value for assessing the power drop. The SAR at this point is measured at the start of the test and then again at the end of the testing.

Step 2: The SAR distribution at the exposed side of the head was measured at a distance of 4 mm from the inner surface of the shell. The area covered the entire dimension of the head or radiating structures of the EUT, the horizontal grid spacing was 15 mm x 15 mm, and the SAR distribution was determined by integrated grid of 1.5mm x 1.5mm. Based on these data, the area of the maximum absorption was determined by spline interpolation. The first Area Scan covers the entire dimension of the EUT to ensure that the hotspot was correctly identified.

Step 3: Around this point, a volume of 30 mm x 30 mm x 30 mm was assessed by measuring 7x 7 x 7 points. On the basis of this data set, the spatial peak SAR value was evaluated under the following procedure:

1) The data at the surface were extrapolated, since the center of the dipoles is 1.2 mm away from the tip of the probe and the distance between the surface and the lowest measuring point is 1.3 mm. The extrapolation was based on a least square algorithm. A polynomial of the fourth order was calculated through the points in z-axes. This polynomial was then used to evaluate the points between the surface and the probe tip.

2) The maximum interpolated value was searched with a straightforward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1 g or 10 g) were computed by the 3D-Spline interpolation algorithm. The 3D-Spline is composed of three one dimensional splines with the "Not a knot"-condition (in x, y and z-directions). The volume was integrated with the trapezoidal-algorithm. One thousand points (10 x 10 x 10) were interpolated to calculate the averages.

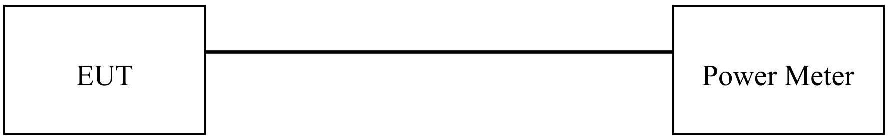
All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.

Step 4: Re-measurement of the SAR value at the same location as in Step 1. If the value changed by more than 5%, the evaluation was repeated.

# CONDUCTED OUTPUT POWER MEASUREMENT

## Test Procedure

The RF output of the transmitter was connected to the input of the Communication Test Set and Power Meter through Connector.




**WLAN/Bluetooth/SRD**

## Maximum Target Output Power

### Full Power Target power

| Max Target Power(dBm) | | | |
|---|---|---|---|
| Mode/Band | Channel | | |
| | Low | Middle | High |
| 2.4G WLAN (802.11b) | 14.8 | 14.8 | 14.8 |
| 2.4G WLAN (802.11g) | 14.5 | 14.5 | 11.5 |
| 2.4G WLAN (802.11n HT20) | 14 | 14 | 12 |
| 2.4G WLAN (802.11n HT40) | 11.5 | 11.5 | 11.5 |
| Bluetooth(BDR GFSK) | 7 | 7 | 4.5 |
| Bluetooth(EDR π/4-DQPSK) | 6 | 6 | 3 |
| Bluetooth(BDR 8DPSK) | 6.5 | 6 | 4 |
| BLE(1Mbps) | -1.5 | -2 | -3 |
| 5.2G WLAN (802.11a) | 19.2 | 19.2 | 19.2 |
| 5.2G WLAN (802.11ac20) | 18.5 | 18.5 | 18.5 |
| 5.2G WLAN G(802.11ac40) | 19 | / | 19 |
| 5.2G WLAN (802.11n20) | 18.5 | 18.5 | 18.5 |
| 5.2G WLAN G(802.11n40) | 19 | / | 19 |
| 5.2G WLAN G(802.11ac80) | / | 18 | / |
| 5.3G WLAN (802.11a) | 19.2 | 19.2 | 19.2 |
| 5.3G WLAN (802.11ac20) | 19 | 19 | 19 |
| 5.3G WLAN G(802.11ac40) | 19.1 | / | 19.1 |
| 5.3G WLAN (802.11n20) | 19 | 19 | 19 |
| 5.3G WLAN G(802.11n40) | 19.1 | / | 19.1 |
| 5.3G WLAN G(802.11ac80) | / | 19 | / |
| 5.6G WLAN (802.11a) | 20.4 | 19 | 19 |
| 5.6G WLAN (802.11ac20) | 19.5 | 19.5 | 19.5 |
| 5.6G WLAN G(802.11ac40) | 20.3 | 20.3 | 20.3 |
| 5.6G WLAN (802.11n20) | 19.5 | 19.5 | 19.5 |
| 5.6G WLAN G(802.11n40) | 20.3 | 20.3 | 20.3 |
| 5.6G WLAN G(802.11ac80) | 19 | 19 | 19 |
| 5.8G WLAN (802.11a) | 19.7 | 19.5 | 19.5 |
| 5.8G WLAN (802.11ac20) | 19 | 19 | 19 |
| 5.8G WLAN (802.11ac40) | 19.5 | / | 19.5 |
| 5.8G WLAN (802.11n20) | 19 | 19 | 19 |
| 5.8G WLAN (802.11n40) | 19.5 | / | 19.5 |
| 5.8G WLAN (802.11ac80) | / | 19.6 | / |
| 2.4G SRD | 19.2 | 18.95 | 19.2 |

## Test Results:

### WLAN 2.4G:

| Mode | Channel frequency (MHz) | Data Rate | Conducted Average Output Power(dBm) |
|---|---|---|---|
| 802.11b | 2412 | 1Mbps | 14.47 |
| | 2437 | | 14.31 |
| | 2462 | | 14.06 |
| 802.11g | 2412 | 6Mbps | 13.97 |
| | 2437 | | 13.79 |
| | 2462 | | 10.76 |
| 802.11n HT20 | 2412 | MCS0 | 13.72 |
| | 2437 | | 13.63 |
| | 2462 | | 11.53 |
| 802.11n HT40 | 2422 | MCS0 | 11.03 |
| | 2437 | | 10.96 |
| | 2452 | | 11.03 |

**Note:**
2.4G wifi duty cycle is 98.45%. Refer to the report for details RKSA240424001-00B

### WLAN 5.2G:

| Test mode | Band | Frequency (MHz) | Average Conducted Output Power (dBm) |
|---|---|---|---|
| 802.11a | 5150-5250 MHz | 5180 | 17.93 |
| | | 5200 | 17.96 |
| | | 5240 | 18.16 |
| 802.11ac20 | 5150-5250 MHz | 5180 | 17.97 |
| | | 5200 | 18.01 |
| | | 5240 | 18.23 |
| 802.11ac40 | 5150-5250 MHz | 5190 | 18.18 |
| | | 5230 | 18.76 |
| 802.11n20 | 5150-5250 MHz | 5180 | 17.84 |
| | | 5200 | 17.96 |
| | | 5240 | 18.11 |
| 802.11n40 | 5150-5250 MHz | 5190 | 18.11 |
| | | 5230 | 18.64 |
| 802.11ac80 | 5150-5250 MHz | 5210 | 17.15 |

**Note:**
5.2G wifi duty cycle is 94.78%. Refer to the report for details RKSA240424001-00E

**WLAN 5.3G:**

| Test mode | Band | Frequency (MHz) | Average Conducted Output Power (dBm) |
|---|---|---|---|
| 802.11a | 5250-5350 MHz | 5260 | 18.16 |
| | | 5280 | 18.22 |
| | | 5320 | 18.45 |
| 802.11ac20 | 5250-5350 MHz | 5260 | 18.33 |
| | | 5280 | 18.29 |
| | | 5320 | 18.55 |
| 802.11ac40 | 5250-5350 MHz | 5270 | 19.08 |
| | | 5310 | 18.07 |
| 802.11n20 | 5250-5350 MHz | 5260 | 18.21 |
| | | 5280 | 18.14 |
| | | 5320 | 18.51 |
| 802.11n40 | 5250-5350 MHz | 5270 | 19.04 |
| | | 5310 | 18.01 |
| 802.11ac80 | 5250-5350 MHz | 5290 | 18.12 |

**Note:**
5.3G wifi duty cycle is 94.32%. Refer to the report for details RKSA240424001-00E

**WLAN 5.6G:**

| Test mode | Band | Frequency (MHz) | Average Conducted Output Power (dBm) |
|---|---|---|---|
| 802.11a | 5470-5725 MHz | 5500 | 19.17 |
| | | 5580 | 18.37 |
| | | 5700 | 18.32 |
| 802.11ac20 | 5470-5725 MHz | 5500 | 19.29 |
| | | 5580 | 19.11 |
| | | 5700 | 18.52 |
| | | 5720 | 18.42 |
| 802.11ac40 | 5470-5725 MHz | 5510 | 20.22 |
| | | 5550 | 20.19 |
| | | 5670 | 19.63 |
| | | 5710 | 19.36 |
| 802.11n20 | 5470-5725 MHz | 5500 | 19.21 |
| | | 5580 | 19.08 |
| | | 5700 | 18.48 |
| | | 5720 | 18.39 |
| 802.11n40 | 5470-5725 MHz | 5510 | 20.13 |
| | | 5550 | 20.14 |
| | | 5670 | 19.58 |
| | | 5710 | 19.31 |
| 802.11ac80 | 5470-5725 MHz | 5530 | 18.86 |
| | | 5610 | 18.47 |
| | | 5690 | 18.14 |

**Note:**
5.6G wifi duty cycle is 93.85%. Refer to the report for details RKSA240424001-00E

**WLAN 5.8G:**

| Test mode | Band | Frequency (MHz) | Average Conducted Output Power (dBm) |
|---|---|---|---|
| 802.11a | 5725-5850 MHz | 5745 | 18.33 |
| | | 5785 | 18.29 |
| | | 5825 | 18.26 |
| 802.11ac20 | 5725-5850 MHz | 5745 | 18.47 |
| | | 5785 | 18.46 |
| | | 5825 | 18.32 |
| 802.11ac40 | 5725-5850 MHz | 5755 | 19.36 |
| | | 5795 | 19.31 |
| 802.11n20 | 5725-5850 MHz | 5745 | 18.44 |
| | | 5785 | 18.41 |
| | | 5825 | 18.14 |
| 802.11n40 | 5725-5850 MHz | 5755 | 19.14 |
| | | 5795 | 19.17 |
| 802.11ac80 | 5725-5850 MHz | 5775 | 19.54 |

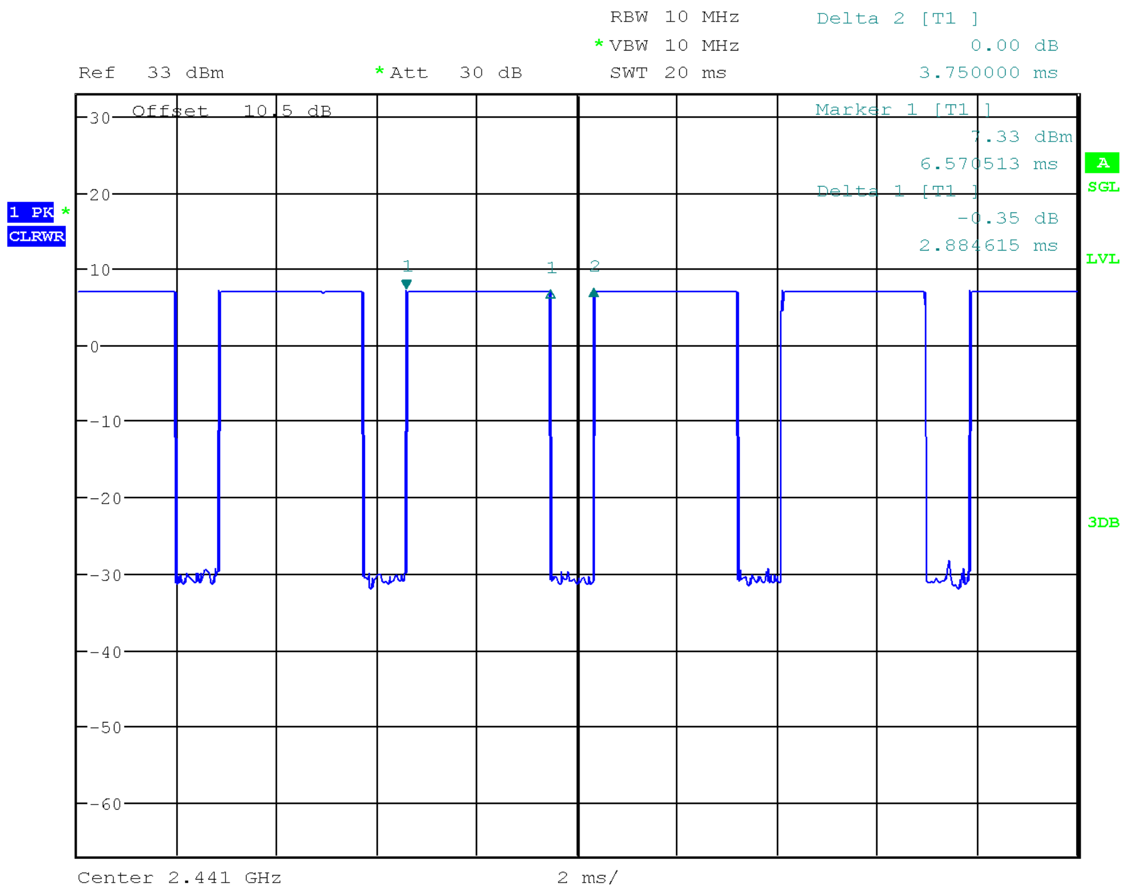
**Note:**
5.8G wifi duty cycle is 94.72%. Refer to the report for details RKSA240424001-00E

`

**Bluetooth:**

| Mode | Channel frequency (MHz) | RF Output Power (dBm) |
|---|---|---|
| BDR(GFSK) | 2402 | 6.65 |
| | 2441 | 6.03 |
| | 2480 | 3.80 |
| EDR(π/4-DQPSK) | 2402 | 5.70 |
| | 2441 | 5.03 |
| | 2480 | 2.76 |
| EDR(8DPSK) | 2402 | 6.00 |
| | 2441 | 5.34 |
| | 2480 | 3.11 |

**Note:**
Bluetooth duty cycle is76.8 %，as shown below




ProjectNo.:RSHA240424001 Tester:Bard Liu

Date: 10.JUL.2024 16:34:56

**BLE:**

| Channel | Frequency (MHz) | Max Conducted Peak Output Power (dBm) |
|---|---|---|
| BLE(1Mbps) Mode | | |
| Low | 2402 | -1.77 |
| Middle | 2440 | -2.24 |
| High | 2480 | -3.81 |

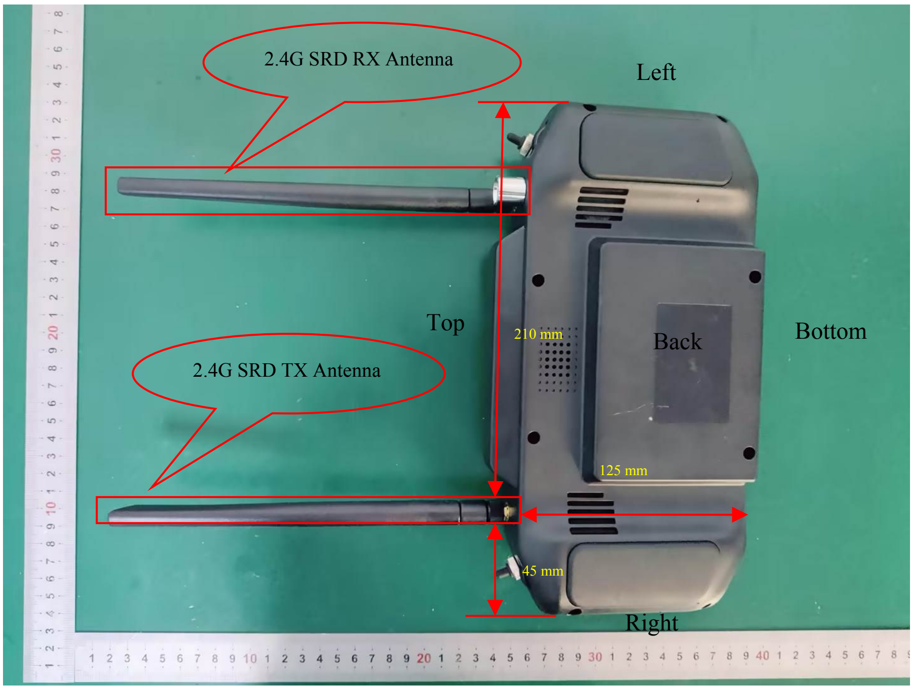
**2.4G SRD**

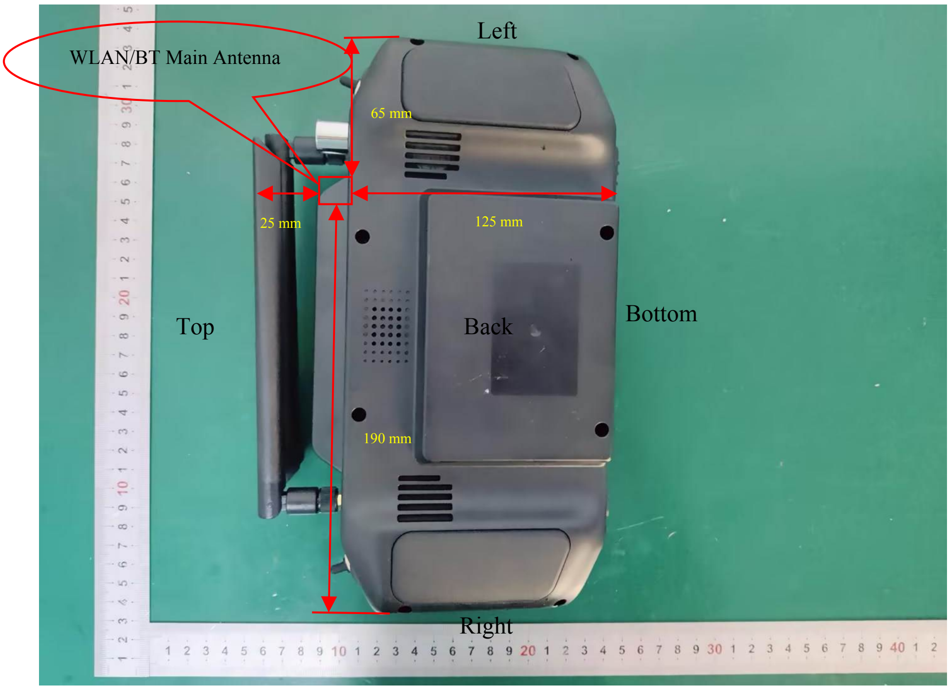
| Channel | Frequency (MHz) | Max Conducted Average Output Power (dBm) |
|---|---|---|
| Low | 2412 | 19.01 |
| Middle | 2442 | 18.89 |
| High | 2467 | 19.05 |

**Note:**
2.4G SRD duty cycle is 89.44%. Refer to the report for details RKSA240424001-00D

# Standalone SAR test exclusion considerations

**Antennas Location:**




Antenna Distance To Edge

| | Antenna Distance To Edge(mm) | | | | | |
|---|---|---|---|---|---|---|
| **Antenna** | **Back** | **Front** | **Left** | **Right** | **Top** | **Bottom** |
| **WlAN/BT Main** | <5 | <5 | 65 | 190 | 25 | 125 |
| **SRD** | <5 | <5 | 210 | 45 | <5 | 125 |

## Standalone SAR Test Exclusion Considerations

| Mode | Frequency (MHz) | Output Power (dBm) | Output Power (mW) | Distance (mm) | Calculated value | Threshold (1-g) | SAR Test Exclusion |
|---|---|---|---|---|---|---|---|
| WLAN 2.4G | 2462 | 14.8 | 30.20 | 0 | 9.48 | 3 | No |
| WLAN 5.2G | 5240 | 19.2 | 83.18 | 0 | 38.08 | 3 | No |
| WLAN 5.3G | 5320 | 19.2 | 83.18 | 0 | 38.37 | 3 | No |
| WLAN 5.6G | 5500 | 20.4 | 109.65 | 0 | 51.43 | 3 | No |
| WLAN 5.8G | 5825 | 19.7 | 93.33 | 0 | 45.05 | 3 | No |
| Bluetooth | 2480 | 7 | 5.01 | 0 | 1.58 | 3 | YES |
| BLE | 2480 | -1.5 | 0.71 | 0 | 0.22 | 3 | YES |

**NOTE:**
The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:
[( max. power of channel, including tune-up tolerance, mW )/( min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤7.5 for 10-g extremity SAR, where
1. f(GHz) is the RF channel transmit frequency in GHz.
2. Power and distance are rounded to the nearest mW and mm before calculation.
3. The result is rounded to one decimal place for comparison.
4. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test Exclusion.

**Standalone SAR estimation:**

| Mode | Frequency (MHz) | Pavg (dBm) | Pavg (mW) | Distance (mm) | Estimated 1-g (W/kg) |
|---|---|---|---|---|---|
| BT Body | 2480 | 7 | 5.01 | 0 | 0.21 |
| BLE Body | 2480 | -1.5 | 0.71 | 0 | 0.03 |

***Note:*** *The bluetooth based Peak power for calculation.*

When standalone SAR test exclusion applies to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to following to determine simultaneous transmission SAR test exclusion:
[( max. power of channel, including tune-up tolerance , mW)/( min. test separation distance,mm)] · [√f(GHz)/x ]
W/kg for test separation distances ≤50 mm;
where x = 7.5 for 1-g SAR. and x= 18.75 for 10-g SAR.
When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test Exclusion

Standalone SAR test exclusion considerations

| Mode | Frequency (MHz) | Pavg (dBm) | Pavg (mW) | Test Exclusion Distance(mm) |
|---|---|---|---|---|
| WLAN 2.4G Antenna | 2462 | 14.8 | 30.20 | 15.80 |
| WLAN 5.2G Antenna | 5240 | 19.2 | 83.18 | 51.76 |
| WLAN 5.3G Antenna | 5320 | 19.2 | 83.18 | 51.81 |
| WLAN 5.6G Antenna | 5500 | 20.4 | 109.65 | 54.56 |
| WLAN 5.8G Antenna | 5825 | 19.7 | 93.33 | 53.11 |
| Bluetooth | 2480 | 7 | 5.01 | 2.63 |
| BLE | 2480 | -1.5 | 0.71 | 0.37 |
| 2.4G SRD | 2467 | 19.2 | 83.18 | 43.55 |

**SAR test exclusion for the EUT edge considerations Result**

| Mode | Back | Front | Left | Right | Top | Bottom |
|---|---|---|---|---|---|---|
| WLAN 2.4G Antenna | **Required** | **Required** | Exclusion | Exclusion | Exclusion | Exclusion |
| WLAN 5.2G Antenna | **Required** | **Required** | Exclusion | Exclusion | **Required** | Exclusion |
| WLAN 5.3G Antenna | **Required** | **Required** | Exclusion | Exclusion | **Required** | Exclusion |
| WLAN 5.6G Antenna | **Required** | **Required** | Exclusion | Exclusion | **Required** | Exclusion |
| WLAN 5.8G Antenna | **Required** | **Required** | Exclusion | Exclusion | **Required** | Exclusion |
| Bluetooth | Exclusion | Exclusion | Exclusion | Exclusion | Exclusion | Exclusion |
| BLE | Exclusion | Exclusion | Exclusion | Exclusion | Exclusion | Exclusion |
| 2.4G SRD | **Required** | **Required** | Exclusion | Exclusion | **Required** | Exclusion |

**Distance< 50mm(To Edges)**

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:
[( max. power of channel, including tune-up tolerance, mW )/( min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤7.5 for 10-g extremity SAR, where
1. f(GHz) is the RF channel transmit frequency in GHz.
2. Power and distance are rounded to the nearest mW and mm before calculation.
3. The result is rounded to one decimal place for comparison.
4. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test Exclusion.
5. The Time based average Power is used for calculation

**Distance> 50mm(To Edges)**

At 100 MHz to 6 GHz and for *test separation distances* > 50 mm, the SAR test exclusion threshold is determined according to the following:

a) [Power allowed at numeric threshold for 50 mm in step 1) + (test separation distance - 50 mm)·( f(MHz)/150)] mW, at 100 MHz to 1500 MHz

b) [Power allowed at numeric threshold for 50 mm in step 1) + (test separation distance - 50 mm)·10] mW at > 1500 MHz and ≤ 6 GHz.

# SAR MEASUREMENT RESULTS

This page summarizes the results of the performed dosimetric evaluation.

## SAR Test Data

### Environmental Conditions

| | | |
|---|---|---|
| **Temperature:** | 22.5-23.8 ℃ | 22.5-23.6 ℃ |
| **Relative Humidity:** | 55 % | 52 % |
| **Test Date:** | 2024/05/15 | 2024/05/16 |

*Testing was performed by Jason and Allen*

**WLAN 2.4G:**

| Band | EUT Position | Freq. (MHz) | Test Mode | Max. Meas. Power (dBm) | Max. Rated Power (dBm) | Scaled Factor | Duct cycle Factor | Meas. (W/Kg) | Scaled SAR (W/Kg) | Limit (W/Kg) | Plot |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WLAN2.4G | Front(0mm) | 2437 | 802.11b 1Mbps | 14.31 | 14.80 | 1.119 | 1.016 | 0.063 | 0.072 | 1.6 | **1#** |
| WLAN2.4G | Back(0mm) | 2437 | 802.11b 1Mbps | 14.31 | 14.80 | 1.119 | 1.016 | 0.164 | 0.187 | 1.6 | **2#** |
| WLAN2.4G | Back(0mm) | 2412 | 802.11b 1Mbps | 14.47 | 14.80 | 1.079 | 1.016 | 0.156 | 0.171 | 1.6 | **3#** |
| WLAN2.4G | Back(0mm) | 2462 | 802.11b 1Mbps | 14.06 | 14.80 | 1.186 | 1.016 | 0.077 | 0.093 | 1.6 | **4#** |
| WLAN2.4G | Left Side(0mm) | 2437 | 802.11b 1Mbps | / | / | / | / | / | / | 1.6 | / |
| WLAN2.4G | Right Side(0mm) | 2437 | 802.11b 1Mbps | / | / | / | / | / | / | 1.6 | / |
| WLAN2.4G | Top Side(0mm) | 2437 | 802.11b 1Mbps | / | / | / | / | / | / | 1.6 | / |
| WLAN2.4G | Bottom Side(0mm) | 2437 | 802.11b 1Mbps | / | / | / | / | / | / | 1.6 | / |

**WLAN 5.2G:**

| Band | EUT Position | Freq. (MHz) | Test Mode | Max. Meas. Power (dBm) | Max. Rated Power (dBm) | Scaled Factor | Duct cycle Factor | Meas. (W/Kg) | Scaled SAR (W/Kg) | Limit (W/Kg) | Plot |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WLAN5.2G | Front(0mm) | 5200 | 802.11a 6Mbps | 17.96 | 19.20 | 1.330 | 1.055 | 0.110 | 0.154 | 1.6 | **5#** |
| WLAN5.2G | Back(0mm) | 5200 | 802.11a 6Mbps | 17.96 | 19.20 | 1.330 | 1.055 | 0.115 | 0.161 | 1.6 | **6#** |
| WLAN5.2G | Back(0mm) | 5180 | 802.11a 6Mbps | 17.93 | 19.20 | 1.340 | 1.055 | 0.117 | 0.165 | 1.6 | **7#** |
| WLAN5.2G | Back(0mm) | 5240 | 802.11a 6Mbps | 18.16 | 19.20 | 1.271 | 1.055 | 0.137 | 0.184 | 1.6 | **8#** |
| WLAN5.2G | Left Side(0mm) | 5200 | 802.11a 6Mbps | / | / | / | / | / | / | 1.6 | / |
| WLAN5.2G | Right Side(0mm) | 5200 | 802.11a 6Mbps | / | / | / | / | / | / | 1.6 | / |
| WLAN5.2G | Top Side(0mm) | 5200 | 802.11a 6Mbps | 17.96 | 19.20 | 1.330 | 1.055 | 0.040 | 0.056 | 1.6 | **40#** |
| WLAN5.2G | Bottom Side(0mm) | 5200 | 802.11a 6Mbps | / | / | / | / | / | / | 1.6 | / |

**WLAN 5.3G:**

| Band | EUT Position | Freq. (MHz) | Test Mode | Max. Meas. Power (dBm) | Max. Rated Power (dBm) | Scaled Factor | Duct cycle Factor | Meas. (W/Kg) | Scaled SAR (W/Kg) | Limit (W/Kg) | Plot |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WLAN5.3G | Front(0mm) | 5280 | 802.11a 6Mbps | 18.22 | 19.20 | 1.253 | 1.060 | 0.057 | 0.076 | 1.6 | **9#** |
| WLAN5.3G | Back(0mm) | 5280 | 802.11a 6Mbps | 18.22 | 19.20 | 1.253 | 1.060 | 0.063 | 0.084 | 1.6 | **10#** |
| WLAN5.3G | Back(0mm) | 5260 | 802.11a 6Mbps | 18.16 | 19.20 | 1.271 | 1.060 | 0.073 | 0.099 | 1.6 | **11#** |
| WLAN5.3G | Back(0mm) | 5320 | 802.11a 6Mbps | 18.45 | 19.20 | 1.189 | 1.060 | 0.053 | 0.067 | 1.6 | **12#** |
| WLAN5.3G | Left Side(0mm) | 5280 | 802.11a 6Mbps | / | / | / | / | / | / | 1.6 | / |
| WLAN5.3G | Right Side(0mm) | 5280 | 802.11a 6Mbps | / | / | / | / | / | / | 1.6 | / |
| WLAN5.3G | Top Side(0mm) | 5280 | 802.11a 6Mbps | 18.22 | 19.20 | 1.253 | 1.060 | 0.029 | 0.038 | 1.6 | **41#** |
| WLAN5.3G | Bottom Side(0mm) | 5280 | 802.11a 6Mbps | / | / | / | / | / | / | 1.6 | / |

**WLAN 5.6G:**

| Band | EUT Position | Freq. (MHz) | Test Mode | Max. Meas. Power (dBm) | Max. Rated Power (dBm) | Scaled Factor | Duct cycle Factor | Meas. (W/Kg) | Scaled SAR (W/Kg) | Limit (W/Kg) | Plot |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WLAN5.6G | Front(0mm) | 5580 | 802.11a 6Mbps | 18.37 | 19.00 | 1.156 | 1.066 | 0.086 | 0.106 | 1.6 | **13#** |
| WLAN5.6G | Back(0mm) | 5580 | 802.11a 6Mbps | 18.37 | 19.00 | 1.156 | 1.066 | 0.140 | 0.173 | 1.6 | **14#** |
| WLAN5.6G | Back(0mm) | 5500 | 802.11a 6Mbps | 19.17 | 20.40 | 1.327 | 1.066 | 0.095 | 0.135 | 1.6 | **15#** |
| WLAN5.6G | Back(0mm) | 5700 | 802.11a 6Mbps | 18.32 | 19.00 | 1.169 | 1.066 | 0.168 | 0.209 | 1.6 | **16#** |
| WLAN5.6G | Left Side(0mm) | 5580 | 802.11a 6Mbps | / | / | / | / | / | / | 1.6 | / |
| WLAN5.6G | Right Side(0mm) | 5580 | 802.11a 6Mbps | / | / | / | / | / | / | 1.6 | / |
| WLAN5.6G | Top Side(0mm) | 5580 | 802.11a 6Mbps | 18.37 | 19.00 | 1.156 | 1.066 | 0.069 | 0.085 | 1.6 | **42#** |
| WLAN5.6G | Bottom Side(0mm) | 5580 | 802.11a 6Mbps | / | / | / | / | / | / | 1.6 | / |

**WLAN 5.8G:**

| Band | EUT Position | Freq. (MHz) | Test Mode | Max. Meas. Power (dBm) | Max. Rated Power (dBm) | Scaled Factor | Duct cycle Factor | Meas. (W/Kg) | Scaled SAR (W/Kg) | Limit (W/Kg) | Plot |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WLAN5.8G | Front(0mm) | 5785 | 802.11a 6Mbps | 18.29 | 19.50 | 1.321 | 1.056 | 0.232 | 0.324 | 1.6 | **17#** |
| WLAN5.8G | Back(0mm) | 5785 | 802.11a 6Mbps | 18.29 | 19.50 | 1.321 | 1.056 | 0.287 | 0.400 | 1.6 | **18#** |
| WLAN5.8G | Back(0mm) | 5745 | 802.11a 6Mbps | 18.33 | 19.70 | 1.371 | 1.056 | 0.229 | 0.332 | 1.6 | **19#** |
| WLAN5.8G | Back(0mm) | 5825 | 802.11a 6Mbps | 18.26 | 19.50 | 1.330 | 1.056 | 0.318 | 0.447 | 1.6 | **20#** |
| WLAN5.8G | Left Side(0mm) | 5785 | 802.11a 6Mbps | / | / | / | / | / | / | 1.6 | / |
| WLAN5.8G | Right Side(0mm) | 5785 | 802.11a 6Mbps | / | / | / | / | / | / | 1.6 | / |
| WLAN5.8G | Top Side(0mm) | 5785 | 802.11a 6Mbps | 18.29 | 19.50 | 1.321 | 1.056 | 0.174 | 0.243 | 1.6 | **43#** |
| WLAN5.8G | Bottom Side(0mm) | 5785 | 802.11a 6Mbps | / | / | / | / | / | / | 1.6 | / |

**SRD 2.4G:**

| Band | EUT Position | Freq. (MHz) | Test Mode | Max. Meas. Power (dBm) | Max. Rated Power (dBm) | Scaled Factor | Duct cycle Factor | Meas. (W/Kg) | Scaled SAR (W/Kg) | Limit (W/Kg) | Plot |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SRD | Front(0mm)-Z | 2442 | 2.4G | 18.89 | 18.95 | 1.014 | 1.118 | 0.962 | 1.090 | 1.6 | **44#** |
| SRD | Front(0mm) -Z | 2412 | 2.4G | 19.01 | 19.20 | 1.045 | 1.118 | 0.866 | 1.011 | 1.6 | **45#** |
| SRD | Front(0mm)-Z | 2467 | 2.4G | 19.05 | 19.20 | 1.035 | 1.118 | 1.010 | 1.169 | 1.6 | **46#** |
| SRD | Front(0mm)-Y | 2442 | 2.4G | 18.89 | 18.95 | 1.014 | 1.118 | 0.704 | 0.798 | 1.6 | **47#** |
| SRD | Front(0mm)-X | 2442 | 2.4G | 18.89 | 18.95 | 1.014 | 1.118 | 0.005 | 0.005 | 1.6 | **48#** |
| SRD | Back(0mm)-Z | 2442 | 2.4G | 18.89 | 18.95 | 1.014 | 1.118 | 0.990 | 1.122 | 1.6 | **49#** |
| SRD | Back(0mm)-Z | 2412 | 2.4G | 19.01 | 19.20 | 1.045 | 1.118 | 0.974 | 1.138 | 1.6 | **50#** |
| SRD | Back(0mm)-Z | 2467 | 2.4G | 19.05 | 19.20 | 1.035 | 1.118 | 0.887 | 1.027 | 1.6 | **51#** |
| SRD | Back(0mm)-Y | 2442 | 2.4G | 18.89 | 18.95 | 1.014 | 1.118 | 0.129 | 0.146 | 1.6 | **52#** |
| SRD | Back(0mm)-X | 2442 | 2.4G | 18.89 | 18.95 | 1.014 | 1.118 | 0.004 | 0.004 | 1.6 | **53#** |
| SRD | Top Side(0mm)-Z | 2442 | 2.4G | 18.89 | 18.95 | 1.014 | 1.118 | 0.003 | 0.003 | 1.6 | **54#** |
| SRD | Top Side(0mm)-Y | 2442 | 2.4G | 18.89 | 18.95 | 1.014 | 1.118 | 0.976 | 1.106 | 1.6 | **55#** |
| SRD | Top Side(0mm)-Y | 2412 | 2.4G | 19.01 | 19.20 | 1.045 | 1.118 | 1.020 | 1.191 | 1.6 | **56#** |
| SRD | Top Side(0mm)-Y | 2467 | 2.4G | 19.05 | 19.20 | 1.035 | 1.118 | 0.894 | 1.035 | 1.6 | **57#** |
| SRD | Top Side(0mm)-X | 2442 | 2.4G | 18.89 | 18.95 | 1.014 | 1.118 | 0.968 | 1.097 | 1.6 | **58#** |
| SRD | Top Side(0mm)-X | 2412 | 2.4G | 19.01 | 19.20 | 1.045 | 1.118 | 0.891 | 1.041 | 1.6 | **59#** |
| SRD | Top Side(0mm)-X | 2467 | 2.4G | 19.05 | 19.20 | 1.035 | 1.118 | 0.980 | 1.134 | 1.6 | **60#** |

**Note:**

1. When the SAR Value is less than half of the limit, testing for other channels are optional.

2.When SAR or MPE is not measured at the maximum power level allowed for production units, the results must be scaled to the maximum tune-up tolerance limit according to the power applied to the individual channels
tested to determine compliance.

3. When the maximum output power variation across the required test channels is > ½ dB, instead of the middle
channel, the highest output power channel must be used.

4.According to IEEE 1528:2013, If the correction ΔSAR is within ± 5%, the measured SAR results should not be corrected.

5 X,Y, and Z in EUT Position refer to the direction of the 2.4GSRD antenna

In accordance with published RF Exposure KDB procedure 865664 D01 SAR measurement 100 MHz to 6 GHz v01. These additional measurements are repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device should be returned to ambient conditions (normal room temperature) with the battery fully charged before it is re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results

1) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg; steps 2) through 4) do not apply.
2) When the original highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.
3) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit).
4) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.

*Note: The same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.*

**The Highest Measured SAR Configuration in Each Frequency Band**

**Body**

| **SAR probe calibration point** | Frequency Band | Freq.(MHz) | EUT Position | Meas. SAR (W/kg) | | Largest to Smallest SAR Ratio |
|---|---|---|---|---|---|---|
| | | | | Original | Repeated | |
| 2450MHz (2400~2550MHz) | 2.4G SRD | 2412 | Body TOP | 1.02 | 0.98 | 1.04 |

**Note:**

1. Second Repeated Measurement is not required since the ratio of the largest to smallest SAR for the original and first repeated measurement is not > 1.20.
2. The measured SAR results **do not** have to be scaled to the maximum tune-up tolerance to determine if repeated measurements are required.
3. SAR measurement variability must be assessed for each frequency band, which is determined by the **SAR probe calibration point and tissue-equivalent medium** used for the device measurements..

# SAR SIMULTANEOUS TRANSMISSION DESCRIPTION

**Simultaneous Transmission:**

| Description of Simultaneous Transmit Capabilities | | |
|---|---|---|
| **Transmitter Combination** | **Simultaneous?** | **Hotspot** |
| 2.4GSRD+ 2.4GWLAN | √ | √ |
| 2.4GSRD + 5GWLAN | √ | √ |
| 2.4GSRD+ Bluetooth | √ | X |
| 2.4G/5GWLAN + Bluetooth | X | X |

Note:
5G bnad 1/2/3 does not support hotspot mode, only 5G bnad 4 supports hotspot

**Simultaneous Transmission Consideration Detail**

| Transmitter Combination | Position | Max SAR(W/kg) | | ∑SAR< 1.6W/kg |
|---|---|---|---|---|
| | | SAR1(WWAN) | SAR2(WLAN) | |
| 2.4GSRD + 2.4GWLAN | Front Side | 1.169 | 0.072 | 1.241 |
| | Back Side | 1.138 | 0.187 | 1.325 |
| | Left Side | / | / | / |
| | Right Side | / | / | / |
| | Top Side | 1.191 | / | 1.191 |
| | Bottom Side | / | / | / |

| Transmitter Combination | Position | Max SAR(W/kg) | | ∑SAR< 1.6W/kg |
|---|---|---|---|---|
| | | SAR1(WWAN) | SAR2(WLAN) | |
| 2.4GSRD + 5GWLAN | Front Side | 1.169 | 0.324 | 1.493 |
| | Back Side | 1.138 | 0.447 | 1.585 |
| | Left Side | / | / | / |
| | Right Side | / | / | / |
| | Top Side | 1.191 | 0.243 | 1.434 |
| | Bottom Side | / | / | / |

| Transmitter Combination | Position | Max SAR(W/kg) | | ∑SAR< 1.6W/kg |
|---|---|---|---|---|
| | | SAR1(WWAN) | SAR2(WLAN) | |
| 2.4GSRD + Bluetooth | Top Side | 1.191 | 0.21 | 1.401 |

**Conclusion:**

Sum of SAR: **ΣSAR ≤1.6 W/kg** therefore simultaneous transmission SAR result is **Compliance**.

# APPENDIX A SAR PLOTS OF SAR MEASUREMENT

**Please Refer to the Attachment.**

# APPENDIX B MEASUREMENT UNCERTAINTY

The uncertainty budget has been determined for the measurement system and is given in the following Table.

**Measurement uncertainty evaluation for IEEE 1528:2013 SAR test**

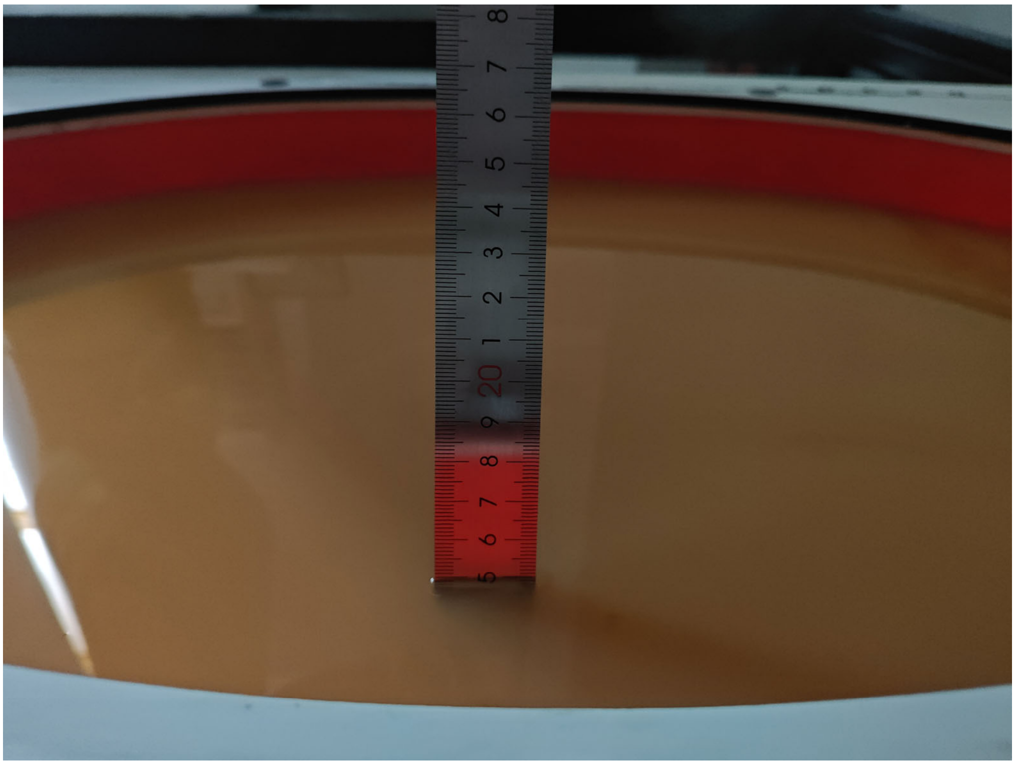
| Source of uncertainty | Tolerance/ uncertainty ± % | Probability distribution | Divisor | ci (1 g) | ci (10 g) | Standard uncertainty ± %, (1 g) | Standard uncertainty ± %, (10 g) |
|---|---|---|---|---|---|---|---|
| **Measurement system** | | | | | | | |
| Probe calibration | 6.55 | N | 1 | 1 | 1 | 6.6 | 6.6 |
| Axial Isotropy | 4.7 | R | √3 | 1 | 1 | 2.7 | 2.7 |
| Hemispherical Isotropy | 9.6 | R | √3 | 0 | 0 | 0.0 | 0.0 |
| Boundary effect | 1.0 | R | √3 | 1 | 1 | 0.6 | 0.6 |
| Linearity | 4.7 | R | √3 | 1 | 1 | 2.7 | 2.7 |
| Detection limits | 1.0 | R | √3 | 1 | 1 | 0.6 | 0.6 |
| Readout electronics | 0.3 | N | 1 | 1 | 1 | 0.3 | 0.3 |
| Response time | 0.0 | R | √3 | 1 | 1 | 0.0 | 0.0 |
| Integration time | 0.0 | R | √3 | 1 | 1 | 0.0 | 0.0 |
| RF ambient conditions – noise | 1.0 | R | √3 | 1 | 1 | 0.6 | 0.6 |
| RF ambient conditions–reflections | 1.0 | R | √3 | 1 | 1 | 0.6 | 0.6 |
| Probe positioner mech. Restrictions | 0.8 | R | √3 | 1 | 1 | 0.5 | 0.5 |
| Probe positioning with respect to phantom shell | 6.7 | R | √3 | 1 | 1 | 3.9 | 3.9 |
| Post-processing | 2.0 | R | √3 | 1 | 1 | 1.2 | 1.2 |
| **Test sample related** | | | | | | | |
| Test sample positioning | 2.8 | N | 1 | 1 | 1 | 2.8 | 2.8 |
| Device holder uncertainty | 6.3 | N | 1 | 1 | 1 | 6.3 | 6.3 |
| Drift of output power | 5.0 | R | √3 | 1 | 1 | 2.9 | 2.9 |
| **Phantom and set-up** | | | | | | | |
| Phantom uncertainty (shape and thickness tolerances) | 4.0 | R | √3 | 1 | 1 | 2.3 | 2.3 |
| Liquid conductivity target) | 5.0 | R | √3 | 0.64 | 0.43 | 1.8 | 1.2 |
| Liquid conductivity meas.) | 2.5 | N | 1 | 0.64 | 0.43 | 1.6 | 1.1 |
| Liquid permittivity target) | 5.0 | R | √3 | 0.6 | 0.49 | 1.7 | 1.4 |
| Liquid permittivity meas.) | 2.5 | N | 1 | 0.6 | 0.49 | 1.5 | 1.2 |
| Combined standard uncertainty | | RSS | | | | 12.2 | 12.0 |
| Expanded uncertainty 95 % confidence interval) | | | | | | 24.3 | 23.9 |

**Measurement uncertainty evaluation for IEC 62209-2 SAR test**

| Source of uncertainty | Tolerance/ uncertainty ± % | Probability distribution | Divisor | ci (1 g) | ci (10 g) | Standard uncertainty ± %, (1 g) | Standard uncertainty ± %, (10 g) |
|---|---|---|---|---|---|---|---|
| **Measurement system** | | | | | | | |
| Probe calibration | 6.55 | N | 1 | 1 | 1 | 6.6 | 6.6 |
| Axial Isotropy | 4.7 | R | √3 | 1 | 1 | 2.7 | 2.7 |
| Hemispherical Isotropy | 9.6 | R | √3 | 0 | 0 | 0.0 | 0.0 |
| Linearity | 4.7 | R | √3 | 1 | 1 | 2.7 | 2.7 |
| Modulation Response | 0.0 | R | √3 | 1 | 1 | 0.0 | 0.0 |
| Detection limits | 1.0 | R | √3 | 1 | 1 | 0.6 | 0.6 |
| Boundary effect | 1.0 | R | √3 | 1 | 1 | 0.6 | 0.6 |
| Readout electronics | 0.3 | N | 1 | 1 | 1 | 0.3 | 0.3 |
| Response time | 0.0 | R | √3 | 1 | 1 | 0.0 | 0.0 |
| Integration time | 0.0 | R | √3 | 1 | 1 | 0.0 | 0.0 |
| RF ambient conditions – noise | 1.0 | R | √3 | 1 | 1 | 0.6 | 0.6 |
| RF ambient conditions–reflections | 1.0 | R | √3 | 1 | 1 | 0.6 | 0.6 |
| Probe positioner mech. Restrictions | 0.8 | R | √3 | 1 | 1 | 0.5 | 0.5 |
| Probe positioning with respect to phantom shell | 6.7 | R | √3 | 1 | 1 | 3.9 | 3.9 |
| Post-processing | 2.0 | R | √3 | 1 | 1 | 1.2 | 1.2 |
| **Test sample related** | | | | | | | |
| Device holder Uncertainty | 6.3 | N | 1 | 1 | 1 | 6.3 | 6.3 |
| Test sample positioning | 2.8 | N | 1 | 1 | 1 | 2.8 | 2.8 |
| Power scaling | 4.5 | R | √3 | 1 | 1 | 2.6 | 2.6 |
| Drift of output power | 5.0 | R | √3 | 1 | 1 | 2.9 | 2.9 |
| **Phantom and set-up** | | | | | | | |
| Phantom uncertainty (shape and thickness tolerances) | 4.0 | R | √3 | 1 | 1 | 2.3 | 2.3 |
| Algorithm for correcting SAR for deviations in permittivity and conductivity | 1.9 | N | 1 | 1 | 0.84 | 1.1 | 0.9 |
| Liquid conductivity (meas.) | 2.5 | N | 1 | 0.64 | 0.43 | 1.6 | 1.1 |
| Liquid permittivity (meas.) | 2.5 | N | 1 | 0.6 | 0.49 | 1.5 | 1.2 |
| Temp. unc. - Conductivity | 1.7 | R | √3 | 0.78 | 0.71 | 0.8 | 0.7 |
| Temp. unc. - Permittivity | 0.3 | R | √3 | 0.23 | 0.26 | 0.0 | 0.0 |
| Combined standard uncertainty | | RSS | | | | 12.2 | 12.1 |
| Expanded uncertainty 95 % confidence interval) | | | | | | 24.5 | 24.2 |

# APPENDIX C EUT TEST POSITION PHOTOS

**Liquid depth ≥ 15cm**



WLAN Front(0mm)

WLAN Back(0mm)

WLAN Top(0mm)


2.4GSRD Front(0mm)-X

2.4GSRD Front(0mm)-Y

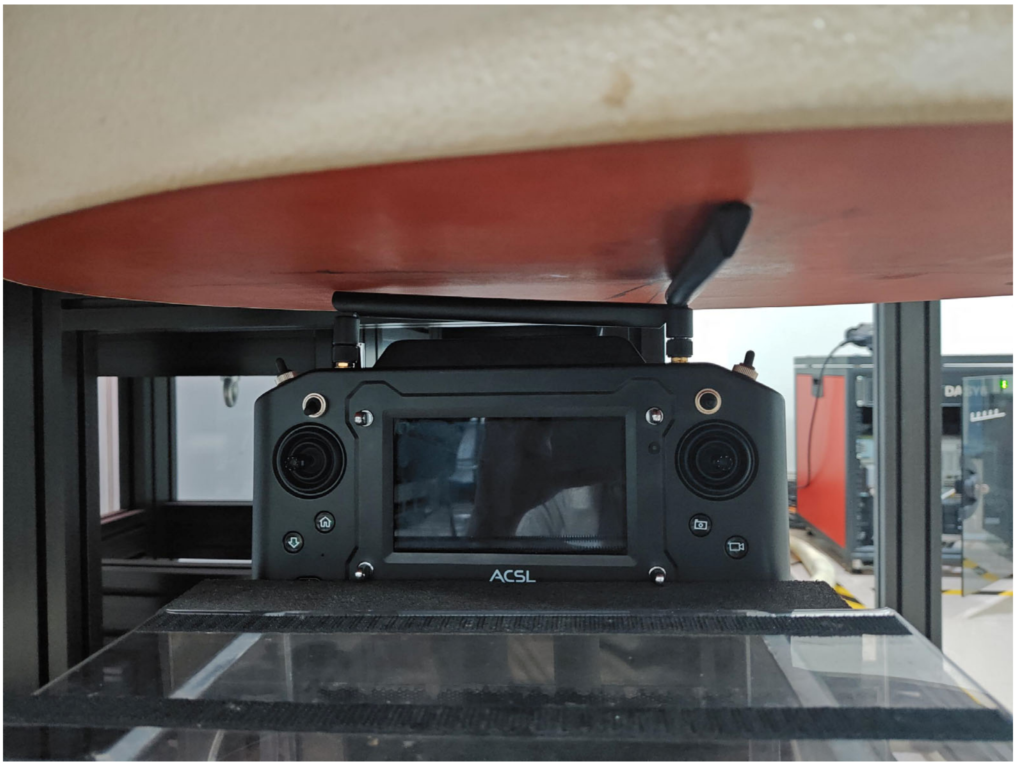
2.4GSRD Front(0mm)-Z

2.4GSRD Back(0mm)-X

2.4GSRD Back(0mm)-Y

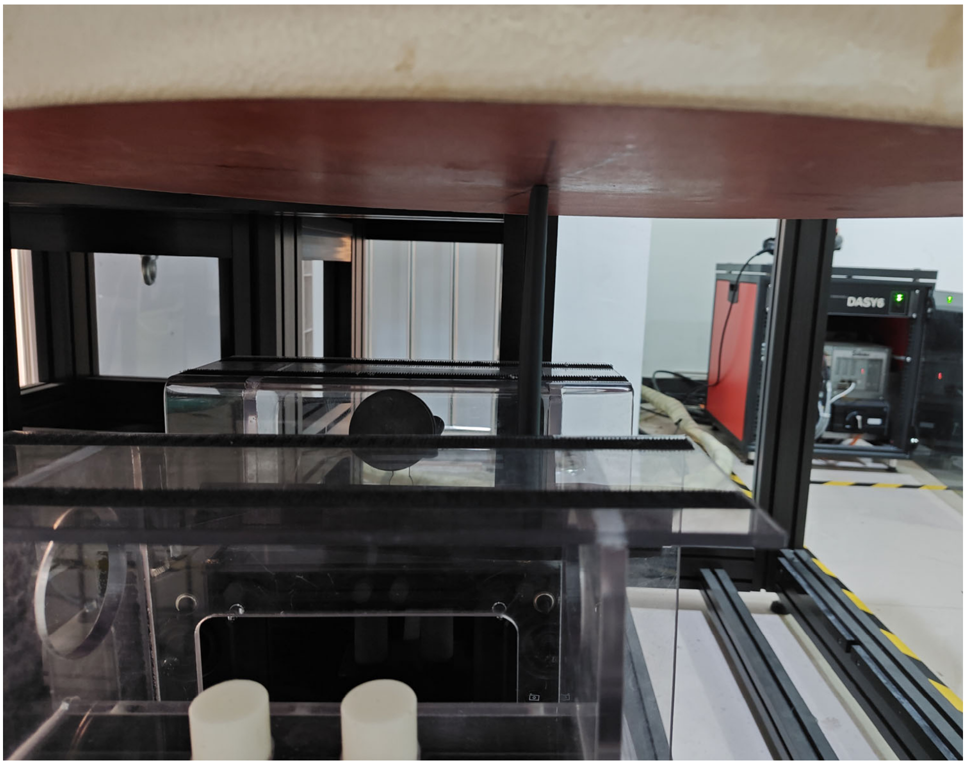
2.4GSRD Back(0mm)-Z

2.4GSRD Top (0mm)-X



2.4GSRD Top (0mm)-Y

2.4GSRD Top (0mm)-Z



# APPENDIX D CALIBRATION CERTIFICATES

**Please Refer to the Attachment.**

## Declarations

1. The laboratory is not responsible for the authenticity of any information provided by the applicant. Information from the applicant that may affect test results is marked with “★”.

2. The test data was only valid for the test sample(s).

3. This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.

4. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

5. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor k=2 with the 95.45% confidence interval.

******* END OF REPORT *******