TEST REPORT

Applicant:	Suunto Sports Technology(Dongguan)Co., Ltd.
Address:	Room 108, No. 5, Longxi Road, Nancheng Street, Dongguan, Guangdong , 523000 China
Equipment Type:	Outdoor Watch
Model Name:	OW243
Brand Name:	SUUNTO
ISED Number:	30733-OW243
FCC ID:	2BBLIOW243
Test Standard:	RSS-102 Issue 6 (refer section 3.1)
Maximum SAR:	WRIST SAR (10 g):0.03 W/kg
Sample Arrival Date:	Mar. 19, 2025
Test Date:	Apr. 17, 2025
Date of Issue:	Jul. 09, 2025

ISSUED BY:

Shenzhen BALUN Technology Co., Ltd.

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Tested by: Xiong Lining

Checked by: Xu Rui

Approved by: Tolan Tu (Testing Director)

Xiong Li Ning

Xu Rui

Tolan Tu

Revision History

Version	Issue Date	Revisions Content
Rev. 01	Jul. 09, 2025	Initial Issue

TABLE OF CONTENTS

1 GENERAL INFORMATION

1.1 Test Laboratory

Name	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Phone Number	+86 755 6685 0100

1.2 Test Location

Name	Shenzhen BALUN Technology Co., Ltd.
Location	☐ Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
	☑ 1/F, Building B, Ganghongji High-tech Intelligent Industrial Park, No. 1008, Songbai Road, Yangguang Community, Xili Sub-district, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Accreditation Certificate	The laboratory is a testing organization accredited by FCC as a accredited testing laboratory. The designation number is CN1196. The laboratory is a testing organization accredited by ISED as a accredited testing laboratory. The company number is 11524A and CAB identifier number is CN0030.

1.3 Test Environment Condition

Ambient Temperature	18℃ to 25℃
Ambient Relative Humidity	30% to 70%

2 PRODUCT INFORMATION

2.1 Applicant Information

Applicant	Suunto Sports Technology(Dongguan)Co., Ltd.
Address	Room 108, No. 5, Longxi Road, Nancheng Street, Dongguan, Guangdong, 523000 China

2.2 Manufacturer Information

Manufacturer	Suunto Oy
Address	Tammiston kauppatie 7 A, FIN-01510 Vantaa, Finland

2.3 General Description for Equipment under Test (EUT)

EUT Name	Outdoor Watch
Model Name Under Test	OW243
Series Model Name	N/A
Description of Model Name Differentiation	N/A
Hardware Version	MB243
Software Version	13.0.1
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A

2.4 Ancillary Equipment

<table>
<tr><td rowspan="8">Ancillary Equipment 1</td><td colspan="2">Li-Polymer Battery 1</td></tr>
<tr><td>Brand Name</td><td>N/A</td></tr>
<tr><td>Model No.</td><td>HT492626H1</td></tr>
<tr><td>Serial No.</td><td>N/A</td></tr>
<tr><td>Capacitance</td><td>515mAh</td></tr>
<tr><td>Rated Voltage</td><td>3.87 V</td></tr>
<tr><td>Limited Voltage</td><td>4.45 V</td></tr>
<tr><td>Manufacturer</td><td>HUIZHOU EVERPOWER TECHNOLOGY CO., LTD.</td></tr>
<tr><td rowspan="8">Ancillary Equipment 2</td><td colspan="2">Li-Polymer Battery 2</td></tr>
<tr><td>Brand Name</td><td>N/A</td></tr>
<tr><td>Model No.</td><td>502726PN5</td></tr>
<tr><td>Serial No.</td><td>N/A</td></tr>
<tr><td>Capacitance</td><td>515mAh</td></tr>
<tr><td>Rated Voltage</td><td>3.87 V</td></tr>
<tr><td>Limited Voltage</td><td>4.45 V</td></tr>
<tr><td>Manufacturer</td><td>Chongqing VDL New Energy Co., Ltd.</td></tr>
<tr><td colspan="3">Note 1: All batteries are tested, only the worst data of HT492626H1 (HUIZHOU EVERPOWER TECHNOLOGY CO., LTD.) shown in this report.</td></tr>
</table>

2.5 Technical Information

Network and Wireless connectivity	Bluetooth (BLE) WIFI 802.11b, 802.11g, 802.11n(HT20) GPS, GLONASS, GALILEO, QZSS, BEIDOU, NFC

The requirement for the following technical information of the EUT was tested in this report:

Operating Mode	2.4G WLAN, Bluetooth	
Frequency Range	802.11b/g/n20	2412 MHz ~ 2462 MHz
	Bluetooth	2402 ~ 2480MHz
Antenna Type	WLAN	Metal Frame Antenna
	Bluetooth	Metal Frame Antenna
Hotspot Function	N/A	
Exposure Category	General Population/Uncontrolled exposure	
EUT Type	☒ Production unit	☐ Identical prototype

3 SUMMARY OF TEST RESULT

3.1 Test Standards

No.	Identity	Document Title
1	RSS-102 Issue 6	Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)
2	RSS-102.SAR.MEAS	Measurement Procedure for Assessing Specific Absorption Rate (SAR) Compliance in Accordance with RSS-102
3	IEC/IEEE 62209-1528:2020	Measurement procedure for the assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Part 1528: Human models, instrumentation, and procedures (Frequency range of 4 MHz to 10 GHz)
4	47 CFR Part 2.1093	Radiofrequency radiation exposure evaluation: portable devices
5	ANSI C95.1-1992	IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz
6	IEEE Std. 1528-2013	Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques
7	KDB 447498 D01 v06	447498 D01 General RF Exposure Guidance
8	KDB 248227 D01 v02r02	SAR Guidance for IEEE 802.11 (Wi-Fi) Transmitters

3.2 Device Category and SAR Limit

This device belongs to portable device category because its radiating structure is allowed to be used within 20 centimeters of the body of the user.

Limit for General Population/Uncontrolled exposure should be applied for this device, it is 1.6 W/kg as averaged over any 1 gram of tissue.

Table of Exposure Limits:

Body Position	SAR Value (W/Kg)	
	General Population/ Uncontrolled Exposure	Occupational/ Controlled Exposure
Whole-Body SAR (averaged over the entire body)	0.08	0.4
Partial-Body SAR (averaged over any 1 gram of tissue)	1.60	8.0
SAR for hands, wrists, feet and ankles (averaged over any 10 grams of tissue)	4.0	20.0

NOTE:

General Population/Uncontrolled Exposure: Locations where there is the exposure of individuals who have no knowledge or control of their exposure. General population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

Occupational/Controlled Exposure: Locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. This exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

3.3 Test Result Summary

3.3.1 Highest SAR

Band	Maximum Scaled 10g SAR (W/kg)
	WRIST SAR (Separation 0 mm)
2.4G WLAN	0.03
Limit (W/kg)	4.0
Verdict	PASS

3.4 Test Uncertainty

3.4.1 Measurement uncertainly evaluation for SAR test

The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in IEC/IEEE 62209-1528 This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

1) System Measurement Uncertainty (frequency range from 300 MHz to 3 GHz)

DASY5 Uncertainty Budget (Frequency band: 300 MHz - 3 GHz range)								
Symbol	Error Description	Uncert. value	Prob. Dist.	Div.	(c_i) 1g	(c_i) 10g	Std. Unc. (1g)	Std. Unc. (10g)
Measurement System Errors								
CF	Probe Calibration	±12.0%	N	2	1	1	±6.0%	±6.0%
CF_{drift}	Probe Calibration Drift	±1.0%	N	1	1	1	±1.0%	±1.0%
LIN	Probe Linearity	±4.7%	R	√3	1	1	±2.7%	±2.7%
BBS	Broadband Signal	±3.0%	N	2	1	1	±1.5%	±1.5%
ISO	Probe Isotropy	±7.6%	R	√3	1	1	±4.4%	±4.4%
DAE	Data Acquisition	±0.3%	N	1	1	1	±0.3%	±0.3%
AMB	RF Ambient	±1.8%	N	1	1	1	±1.8%	±1.8%
Δ_{sys}	Probe Positioning	±0.2%	N	1	0.14	0.14	±0%	±0%
DAT	Data Processing	±1.2%	N	1	1	1	±1.2%	±1.2%
Phantom and Device Errors								
LIQ(σ)	Conductivity (meas.)^{DAK}	±2.5%	N	1	0.78	0.71	±2.0%	±1.8%
LIQ(T_σ)	Conductivity (temp.)^{BB}	±3.3%	R	√3	0.78	0.71	±1.5%	±1.4%
EPS	Phantom Permittivity	±14.0%	R	√3	0	0	±0%	±0%
DAS	Distance DUT - TSL	±2.1%	N	1	2	2	±4.2%	±4.2%
H	Device Holder	±3.8%	N	1	1	1	±3.8%	±3.8%
MOD	DUT Modulation^{m}	±2.4%	R	√3	1	1	±1.4%	±1.4%
TAS	Time-average SAR	±2.6%	R	√3	1	1	±1.5%	±1.5%
RF_{drift}	DUT drift	±5.0%	R	√3	1	1	±2.9%	±2.9%
Correction to the SAR results								
C(ε, σ)	Deviation to Target	±1.9%	N	1	1	0.84	±1.9%	±1.6%
C(R)	SAR scaling^{p}	±0%	R	√3	1	1	±0%	±0%
u(ΔSAR)	Combined Uncertainty	/	/	/	/	/	±11.2%	±11.0%
U	**Expanded Uncertainty**	/	/	/	/	/	±22.3%	±22.2%

2) System Measurement Uncertainty (frequency range from 3 GHz to 6 GHz)

DASY5 Uncertainty Budget (Frequency band: 3 GHz - 6 GHz range)								
Symbol	Error Description	Uncert. value	Prob. Dist.	Div.	(c_i) 1g	(c_i) 10g	Std. Unc. (1g)	Std. Unc. (10g)
Measurement System Errors								
CF	Probe Calibration	±14.0%	N	2	1	1	±7.0%	±7.0%
CF_{drift}	Probe Calibration Drift	±1.0%	N	1	1	1	±1.0%	±1.0%
LIN	Probe Linearity	±4.7%	R	√3	1	1	±2.7%	±2.7%
BBS	Broadband Signal	±3.0%	N	2	1	1	±1.5%	±1.5%
ISO	Probe Isotropy	±7.6%	R	√3	1	1	±4.4%	±4.4%
DAE	Data Acquisition	±0.3%	N	1	1	1	±0.3%	±0.3%
AMB	RF Ambient	±1.8%	N	1	1	1	±1.8%	±1.8%
Δ_{sys}	Probe Positioning	±0.2%	N	1	0.33	0.33	±0.1%	±0.1%
DAT	Data Processing	±2.3%	N	1	1	1	±2.3%	±2.3%
Phantom and Device Errors								
LIQ(σ)	Conductivity (meas.)^{DAK}	±2.5%	N	1	0.78	0.71	±2.0%	±1.8%
LIQ($T_σ$)	Conductivity (temp.)^{BB}	±3.4%	R	√3	0.78	0.71	±1.5%	±1.4%
EPS	Phantom Permittivity	±14.0%	R	√3	0.25	0.25	±2.0%	±2.0%
DAS	Distance DUT - TSL	±2.1%	N	1	2	2	±4.2%	±4.2%
H	Device Holder	±3.8%	N	1	1	1	±3.8%	±3.8%
MOD	DUT Modulation^{m}	±2.4%	R	√3	1	1	±1.4%	±1.4%
TAS	Time-average SAR	±2.6%	R	√3	1	1	±1.5%	±1.5%
RF_{drift}	DUT drift	±5.0%	R	√3	1	1	±2.9%	±2.9%
Correction to the SAR results								
C(ε, σ)	Deviation to Target	±1.9%	N	1	1	0.84	±1.9%	±1.6%
C(R)	SAR scaling^{p}	±0%	R	√3	1	1	±0%	±0%
u(ΔSAR)	Combined Uncertainty	/	/	/	/	/	±12.1%	±12.0%
U	**Expanded Uncertainty**	/	/	/	/	/	±24.2%	±24.0%

4 MEASUREMENT SYSTEM

4.1 Specific Absorption Rate (SAR) Definition

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below:

$$\mathbf{SAR} = \frac{d}{\mathbf{dt}}\left(\frac{\mathbf{dW}}{\mathbf{dm}}\right) = \frac{d}{\mathbf{dt}}\left(\frac{\mathbf{dW}}{\boldsymbol{\rho}\mathbf{dv}}\right)$$

SAR is expressed in units of Watts per kilogram (W/kg) SAR measurement can be related to the electrical field in the tissue by

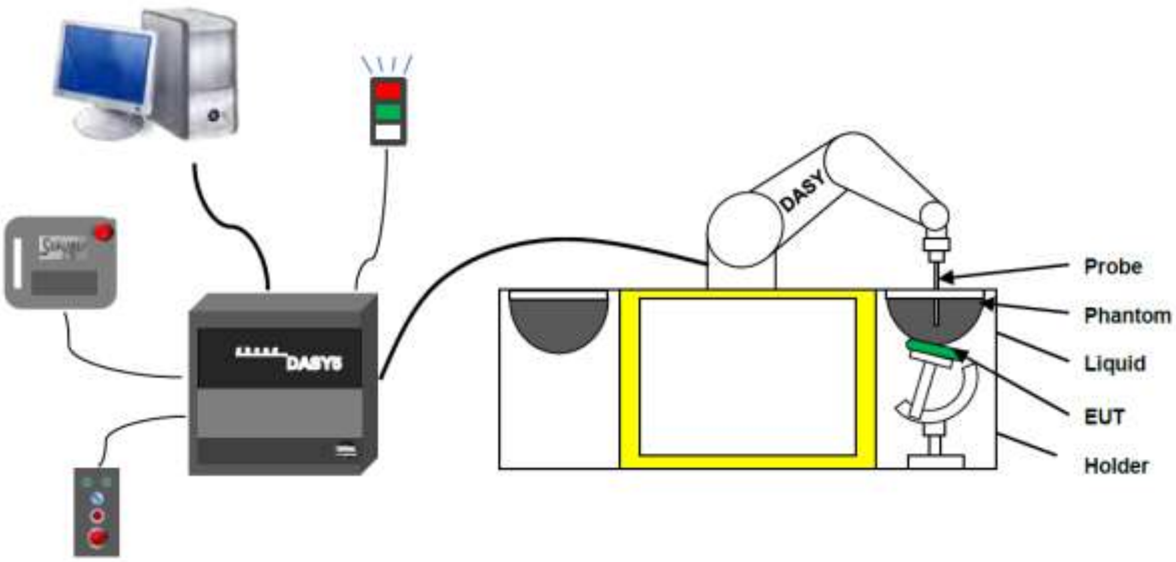
$$\mathbf{SAR} = \frac{\boldsymbol{\sigma}\mathbf{E}^2}{\boldsymbol{\rho}}$$

Where: σ is the conductivity of the tissue,

ρis the mass density of the tissue and E is the RMS electrical field strength.

4.2 DASY SAR System

4.2.1 DASY SAR System Diagram



The DASY5 system for performing compliance tests consists of the following items:

1. A standard high precision 6-axis robot (Stäubli RX family) with controller and software. An arm extension for accommodating the data acquisition electronics (DAE).
2. A dosimetric probe, i.e. an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.
3. A data acquisition electronic (DAE) which performs the signal amplification, 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.
4. A unit to operate the optical surface detector which is connected to the EOC.
5. The Electro-Optical Coupler (EOC) performs the conversion from the optical into a digital electric signal of the DAE. The EOC is connected to the DASY5 measurement server.
6. The DASY5 measurement server, which performs all real-time data evaluation for field measurements and surface detection, controls robot movements and handles safety operation.
7. DASY5 software and SEMCAD data evaluation software.
8. Remote control with teach panel and additional circuitry for robot safety such as warning lamps, etc.
9. The generic twin phantom enabling the testing of left-hand and right-hand usage.
10. The device holder for handheld mobile phones.
11. Tissue simulating liquid mixed according to the given recipes.
12. System validation dipoles allowing to validate the proper functioning of the system.

4.2.2 Robot

The Dasy SAR system uses the high precision robots. Symmetrical design with triangular core Built-in optical fiber for surface detection system For the 6-axis controller system, Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents). The robot series have many features that are important for our application:

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

4.2.3 E-Field Probe

The probe is specially designed and calibrated for use in liquids with high permittivities for the measurements the Specific Dosimetric E-Field Probe EX3DV4 with following specifications is used.

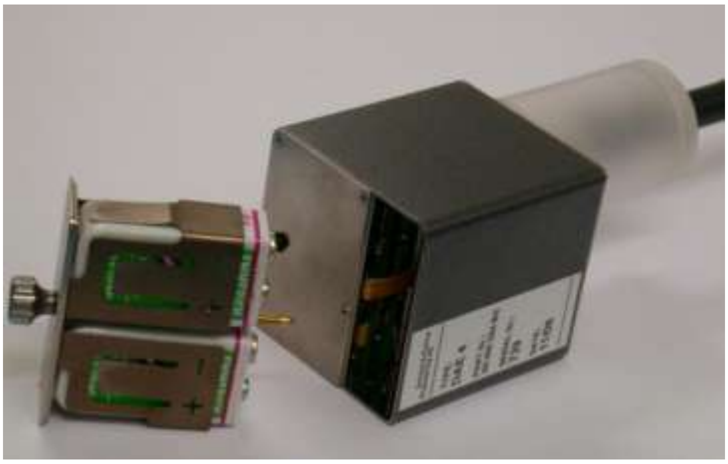
Construction	Symmetrical design with triangular core Built-in optical fiber for surface detection systemBuilt-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., glycolether)
Calibration	ISO/IEC 17025 calibration service available
Frequency	10 MHz to 6 GHz; Linearity: ± 0.2 dB (30 MHz to 6 GHz)
Directivity	± 0.2 dB in HSL (rotation around probe axis) ; ± 0.4 dB in HSL (rotation normal to probe axis)
Dynamic range	5 μW/g to > 100 mW/g; Linearity: ± 0.2 dB
Dimensions	Overall length: 337 mm (Tip: 9 mm) Tip diameter: 2.5 mm (Body: 10 mm) Distance from probe tip to dipole centers: 1.0 mm
Application	General dosimetry up to 3 GHz Compliance tests of mobile phones Fast automatic scanning in arbitrary phantoms (EX3DV4)

E-Field Probe Calibration Process

Probe calibration is realized, in compliance with IEC/IEEE 62209-1528, with CALISAR, Antennessa proprietary calibration system. The calibration is performed with the IEC/IEEE 62209-1528 annexe technique using reference guide at the five frequencies.

4.2.4 Data Acquisition Electronics

The data acquisition electronics (DAE) consist of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converte 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.



- Input Impedance: 200MOhm
- The Inputs: Symmetrical and Floating
- Commom Mode Rejection: Above 80dB

4.2.5 Phantoms

For the measurements the Specific Anthropomorphic Mannequin (SAM) defined by the IEEE SCC-34/SC2 group is used. The phantom is a polyurethane shell integrated in a wooden table. The thickness of the phantom amounts to 2mm +/- 0.2mm. It enables the dosimetric evaluation of left and right phone usage and includes an additional flat phantom part for the simplified performance check. The phantom set-up includes a cover, which prevents the evaporation of the liquid.

- Left hand
- Right hand
- Flat phantom

Photo of Phantom SN1857

Serial Number	Material	Length	Height
SN 1857 SAM	Vinylester, glass fiber reinforced	1000	500

4.2.6 Device Holder

The DASY5 device holder has two scales for device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear openings). The plane between the ear openings and the mouth tip has a rotation angle of 65°. The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. This device holder is used for standard mobile phones or PDA‟s only. If necessary an additional support of polystyrene material is used. Larger DUT‟s (e.g. notebooks) cannot be tested using this device holder. Instead a support of bigger polystyrene cubes and thin polystyrene plates is used to position the DUT in all relevant positions to find and measure spots with maximum SAR values. Therefore those devices are normally only tested at the flat part of the SAM.

The positioning system allows obtaining cheek and tilting position with a very good accuracy. Incompliance with CENELEC, the tilt angle uncertainty is lower than 1°.

4.2.7 Simulating Liquid

For SAR measurement of the field distribution inside the phantom, the phantom must be filled with homogeneous tissue simulating liquid to a depth of at least 15 cm. For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm. The nominal dielectric values of the tissue simulating liquids in the phantom and the tolerance of 5%.

Head Liquid Depth	**Body Liquid Depth**
	

The following table gives the recipes for tissue simulating liquid.

TSL	Manufacturer / Model	Freq Range (MHz)	Main Ingredients
Head WideBand	SPEAG HBBL600-10000V6	600-10000	Ethanediol, Sodium petroleum sulfonate, Hexylene Glycol / 2-Methyl-pentane-2.4-diol, Alkoxylated alcohol

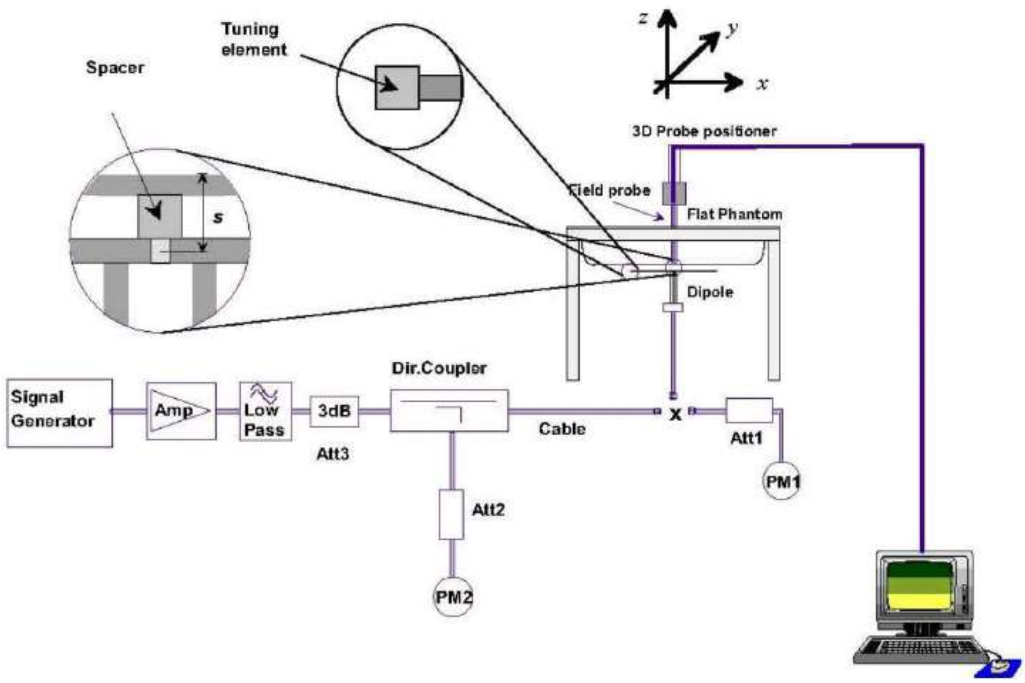
5 SYSTEM VERIFICATION

5.1 Purpose of System Check

The system performance check verifies that the system operates within its specifications. System and operator errors can be detected and corrected. It is recommended that the system performance check be performed prior to any usage of the system in order to guarantee reproducible results. The system performance check uses normal SAR measurements in a simplified setup with a well characterized source. This setup was selected to give a high sensitivity to all parameters that might fail or vary over time. The system check does not intend to replace the calibration of the components, but indicates situations where the system uncertainty is exceeded due to drift or failure.

5.2 System Check Setup

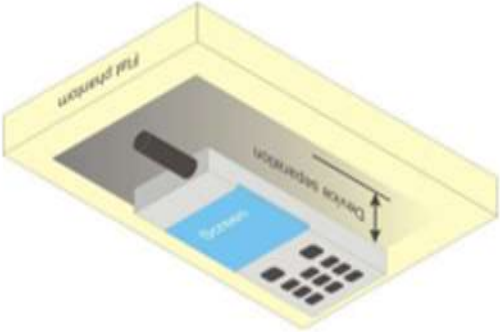
In the simplified setup for system evaluation, the EUT is replaced by a calibrated dipole and the power source is replaced by a continuous wave that comes from a signal generator. The calibrated dipole must be placed beneath the flat phantom section of the SAM twin phantom with the correct distance holder. The distance holder should touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom. The equipment setup is shown below:

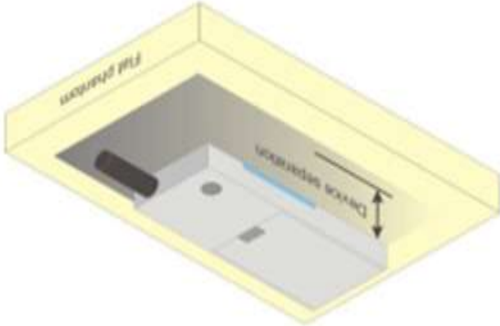


6 TEST POSITION CONFIGURATIONS

6.1 EUT Exposure Condition

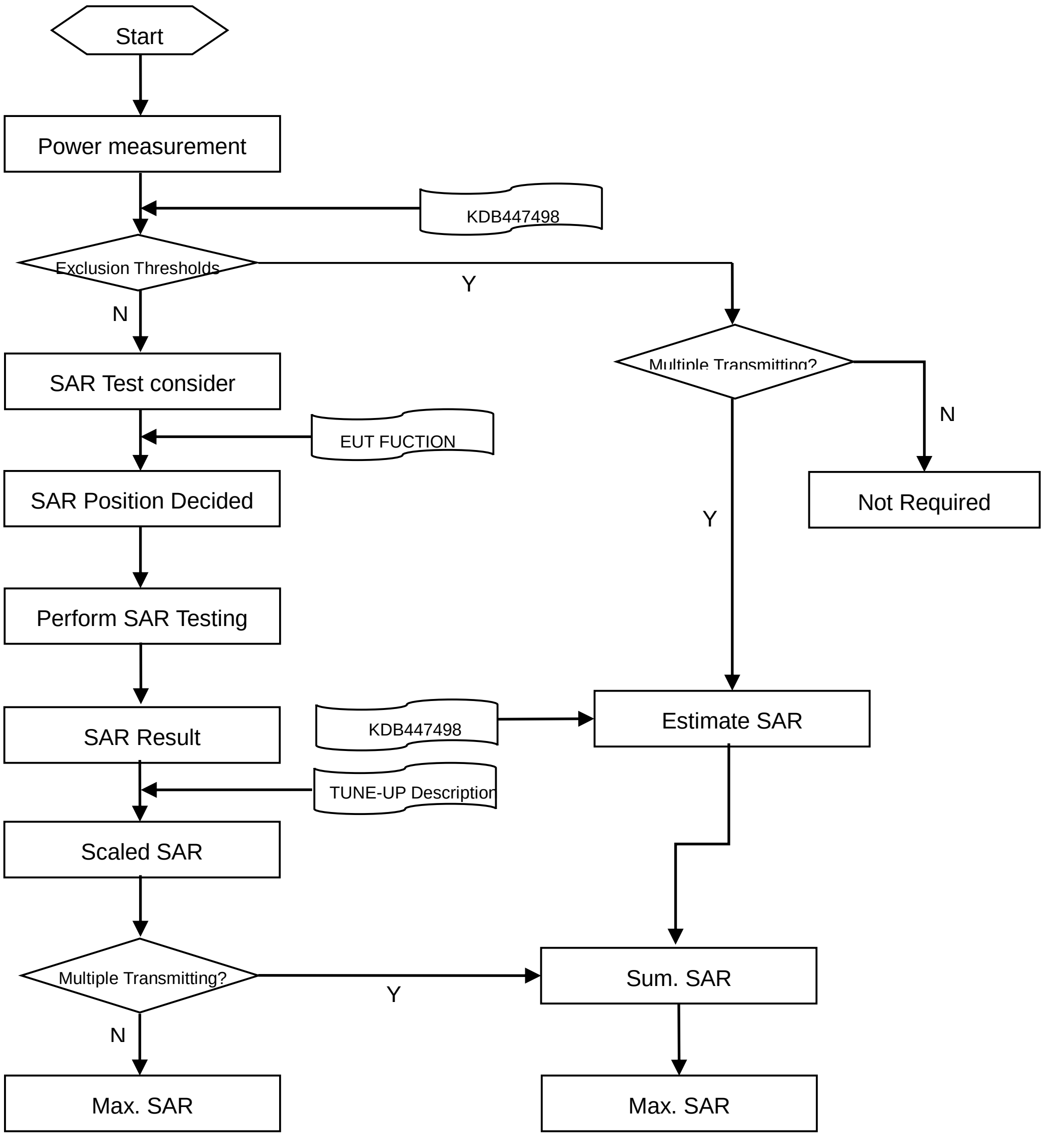
This EUT was tested in six different positions. They are front side ,back side, left side, right side, bottom side and top side in these positions, the surface of DUT is touching with phantom 0mm.





7 MEASUREMENT PROCEDURE

7.1 Measurement Process Diagram



7.2 SAR Scan General Requirement

Probe boundary effect error compensation is required for measurements with the probe tip closer than half a probe tip diameter to the phantom surface. Both the probe tip diameter and sensor offset distance must satisfy measurement protocols; to ensure probe boundary effect errors are minimized and the higher fields closest to the phantom surface can be correctly measured and extrapolated to the phantom surface for computing 1 g or 10 g SAR. Tolerances of the post-processing algorithms must be verified by the test laboratory for the scan resolutions used in the SAR measurements, according to the reference distribution functions specified in IEC/IEEE 62209-1528:2020.

Area scan Parameter	≤3GHz	3 GHz < f ≤ 10 GHz
Maximum distance between the measured points (geometric centre of the sensors) and the inner phantom surface	5±1 mm	½·δ·ln(2)±0.5 mm
Maximum spacing between adjacent measured points in mm	20, or half of the corresponding zoom scan length, whichever is smaller	60 / f, or half of the corresponding zoom scan length, whichever is smaller
Maximum angle between the probe axis and the phantom surface normal	5° (flat phantom only) 30° (other phantoms)	5° (flat phantom only) 20° (other phantoms)
Tolerance in the probe angle	1°	1°
Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium.		

Zoom scan Parameter	≤3GHz	3 GHz < f ≤ 10 GHz
Maximum distance between the closest measured points and the phantom surface	5 mm	½·δ·ln(2) mm
Maximum angle between the probe axis and the phantom surface normal	5° (flat phantom only) 30° (other phantoms)	5° (flat phantom only) 20° (other phantoms)
Maximum spacing between measured points in the x- and y-directions (Δx and Δy, in mm)	8 mm	24 / f mm
For uniform grids: Maximum spacing between measured points in the direction normal to the phantom shell	5 mm	10 / (f − 1)
For graded grids: Maximum spacing between the two closest measured points in the direction normal to the phantom shell	4 mm	12 / f mm
For graded grids: Maximum incremental increase in the spacing between measured points in the direction normal to the phantom shell	1.5 mm	1.5 mm
Minimum edge length of the zoom scan volume in the x- and y-directions	30 mm	22 mm
Minimum edge length of the zoom scan volume in the direction normal to the phantom shell	30 mm	22 mm
Tolerance in the probe angle	1°	1°
Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium.		

7.3 Measurement Procedure

The following steps are used for each test position

a. Establish a call with the maximum output power with a base station simulator. The connection between the mobile and the base station simulator is established via air interface
b. Measurement of the local E-field value at a fixed location. This value serves as a reference value for calculating a possible power drift.
c. Measurement of the SAR distribution with a grid of 8 to 16mm * 8 to16 mm and a constant distance to the inner surface of the phantom. Since the sensors cannot directly measure at the inner phantom surface, the values between the sensors and the inner phantom surface are extrapolated. With these values the area of the maximum SAR is calculated by an interpolation scheme.
d. Around this point, a cube of 30 * 30 * 30 mm or 32 * 32 *32 mm is assessed by measuring 5 or 8 * 5 or 8*4 or 5 mm. With these data, the peak spatial-average SAR value can be calculated.

7.4 Area & Zoom Scan Procedure

First Area Scan is used to locate the approximate location(s) of the local peak SAR value(s). The measurement grid within an Area Scan is defined by the grid extent, grid step size and grid offset. Next, in order to determine the EM field distribution in a three-dimensional spatial extension, Zoom Scan is required. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR-distribution over 1 g. Area scan and zoom scan resolution setting follows IEC/IEEE 62209-1528:2020 quoted below.
When the 1 g SAR of the highest peak is within 2 dB of the SAR limit, additional zoom scans are required for other peaks within 2 dB of the highest peak that have not been included in any zoom scan to ensure there is no increase in SAR.

8 CONDUCTED RF OUPUT POWER

8.1 WIFI

8.1.1 2.4G WIFI

Band (GHz)	Mode	Channel	Freq. (MHz)	Conducted Power (dBm)	Tune-up Power Limit (dBm)	SAR Test Require.
2.4 (2.4~2.4835)	802.11b	1	2412	13.51	14.50	Yes
		6	2437	11.10	12.00	Yes
		11	2462	11.24	12.00	Yes
	802.11g	1	2412	12.29	13.00	No
		6	2437	10.84	12.00	No
		11	2462	10.98	12.00	No
	802.11n(HT20)	1	2412	12.14	13.00	No
		6	2437	10.71	12.00	No
		11	2462	10.85	12.00	No

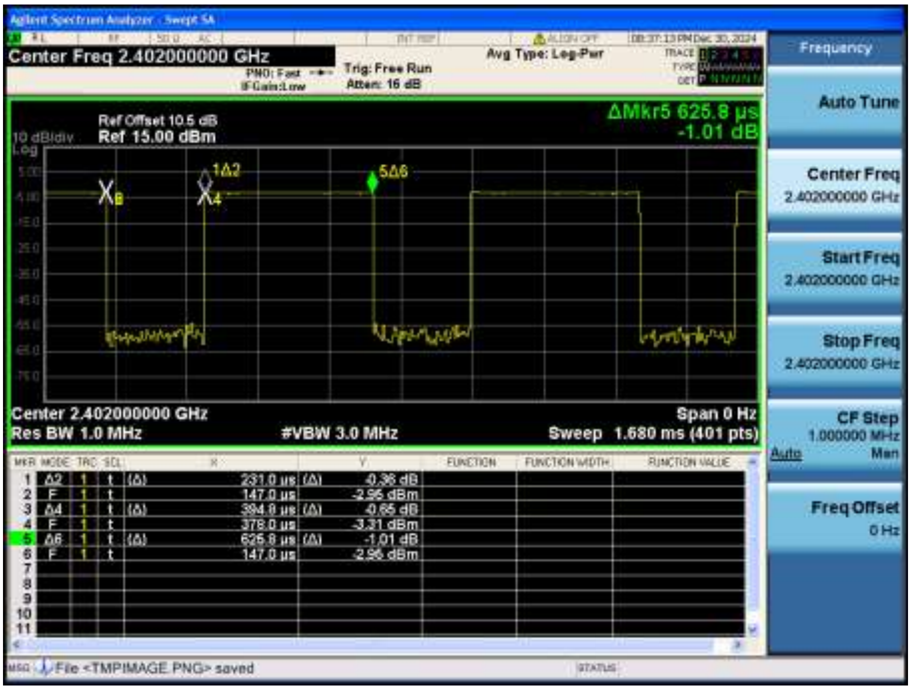
Note：According KDB 248227 D01 SAR is not required for the following 2.4 GHz OFDM conditions. When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ⩽ 1.2 W/kg.
Adjusted SAR = Report SAR * (max power (OFDM)/ max power (DSSS)) = 0.03 * (28.18mw)/(15.85mw) =0.05W/kg, so the 2.4GHz OFDM SAR test is not required.

8.2 Bluetooth

Mode	GFSK （BLE-1Mbps）			GFSK（BLE-2Mbps）		
Channel	0	19	39	1	19	38
Frequency (MHz)	2402	2440	2480	2404	2440	2478
Conducted Power (dBm)	- 3.65	- 4.59	- 3.04	- 3.70	- 4.56	-3.28
Tune-Up Limit (dBm)	-2.50	-3.50	-2.00	-2.50	-3.50	- 2.00
SAR Test Require	NO	NO	NO	NO	NO	NO

Note 1: The EIRP Power of Bluetooth which are below the exempt condition, 1 mW specified in KDB 447498. RF exposure assessment has been performed below to prove that this unit will not generate the harmful EM emission above the reference level as specified 47 CFR Part 2.1093

The Bluetooth duty cycle is 63 % as following figure, according to 2016 Oct. TCB workshop for Bluetooth SAR scaling need further consideration and the maximum duty cycle is 100%, therefore the actual duty cycle will be scaled up to 100% for Bluetooth reported SAR calculation.



9 TEST RESULT

9.1 WIFI 2.4GHz SAR

Test Position	Dist.	Test Mode	Test Channel	Freq.(MHz)	Power Drift(dB)	Measured 10-g SAR (Wkg)	Meas. Power (dBm)	Max. tune-up power(dBm)	Scaling Factor	Duty cycle （%）	Duty cycle Factor	10g Scaled SAR (W/kg)	Meas. No.
WRIST													
Back side	0mm	802.11b 1Mbps	1	2412	0.05	0.022	13.51	14.50	1.256	95.76	1.044	0.029	1
Back side			6	2437	0.01	0.018	11.10	12.00	1.230	95.76	1.044	0.023	/
Back side			11	2462	-0.08	0.011	11.24	12.00	1.191	95.76	1.044	0.014	/

9.2 NFC SAR

According to the ANSI C63.10 clause 11.12.2.2:
The value of maximum peak output power is according to the method described in ANSI C63.10 clause 11.12.2.2 General procedure for conducted measurements in restricted bands:
a) Measure the conducted output power (in dBm) using the detector specified (see guidance regarding measurement procedures for determining quasi-peak, peak, and average conducted output power, respectively).
b) Add the maximum transmit antenna gain (in dBi) to the measured output power level to determine the EIRP level (see guidance on determining the applicable antenna gain)
c) Add the appropriate maximum ground reflection factor to the EIRP level (6 dB for frequencies ≤ 30 MHz, 4.7 dB for frequencies between 30 MHz and 1000 MHz, inclusive and 0 dB for frequencies > 1000 MHz).
d) For devices with multiple antenna-ports, measure the power of each individual chain and sum the EIRP of all chains in linear terms (e.g., Watts, mW).
e) Convert the resultant EIRP level to an equivalent electric field strength using the following relationship: E = EIRP - 20log D + 104.8
where:
E = electric field strength in dBμV/m,
EIRP = equivalent isotropic radiated power in dBm
D = specified measurement distance in meters.

Mode	f (MHz)	Max. E-Field strength (dBuV/m)	D (m)	Ground reflection factor (dB)	ERP (dBm)
NFC (13.56MHz)	13.56	50.56	3	6	-28.24
Note: 1. Add the appropriate maximum ground reflection factor to the EIRP level (6 dB for frequencies ≤ 30 MHz). 2.ERP= 50.56+20*Log(3) - 104.8 + 6 =-28.24 (dBm)					

According to the FCC KDB 447498 D04
Estimated SAR: SAR test =4 · Pant / Pth [W/kg]

Estimated SAR	4 ·Pant / Pth [W/kg]		
Pmeas.(dBm)	-28.24	Pmeas.(mW)	0.001
Pth.(mW)	443.13		
NFC Estimated 10g SAR [W/kg]	＜0.001		

9.3 Highest Total Exposure Ratio of Simultaneous Transmission

NFC multi-transmit requires the use of the TER formula:

$$TER = \sum_{k=1}^{N_S}\left(\frac{SAR_k}{SAR_{\text{lim}}}\right) + \sum_{k=1}^{N_f}\left(\frac{MPE_{field,\,k}}{MPE_{field,\,\text{lim}}}\right)^2 + \sum_{k=1}^{N_{PD}}\left(\frac{MPE_{PD,\,k}}{MPE_{PD,\,\text{lim}}}\right)$$

maximum SAR value for Simultaneous Transmission is 0.03 [W/kg]. Therefore, the worst TER =(0.03+0.001)/4 = 0.008＜1,the NFC SAR transmit simultaneously Pass.

10 TEST EQUIPMENTS LIST

Description	Manufacturer	Model	Serial No./Version	Cal. Date	Cal. Due
PC	Dell	N/A	N/A	N/A	N/A
Test Software	Speag	DASY5	52.8.8.1222	N/A	N/A
2450MHz Validation Dipole	Speag	D2450V2	952	2024/05/07	2027/05/06
Data Acquisition Electronics	Speag	DAE4	1710	2025/1/20	2026/1/19
E-Field Probe	Speag	EX3DV4	7510	2024/06/25	2025/06/24
Signal Generator	R&S	SMB100A	177746	2024/04/24	2025/04/23
Power Meter	R&S	NRVD-B2	835843/014	2024/08/08	2025/08/07
Power Sensor	R&S	NRV-Z4	100381	2024/08/08	2025/08/07
Power Sensor	R&S	NRV-Z2	100211	2024/08/08	2025/08/07
Wireless Communication Test Set	Anritsu	MT8820C	6201144551	2024/05/29	2025/05/28
Network Analyzer	Agilent	E5071C	MY46103472	2024/09/11	2025/09/10
Thermometer	Elitech	RC-4HC	EF7216002985	2024/10/31	2025/10/30
Thermometer	Elitech	RC-4HC	EF7239002655	2024/10/31	2025/10/30
Power Amplifier	SATIMO	6552B	22374	N/A	N/A
Dielectric Probe Kit	Speag	DAK3.5	1312	N/A	N/A
Phantom	Speag	SAM	1857	N/A	N/A
Attenuator	COM-MW	ZA-S1-31	1305003187	N/A	N/A
Directional coupler	AA-MCS	AAMCS-UDC	000272	N/A	N/A

Note: For dipole antennas, BALUN has adopted 3 years as calibration intervals, and on annual basis, every measurement dipole has been evaluated and is in compliance with the following criteria:

1. There is no physical damage on the dipole;
2. System validation with specific dipole is within 10% of calibrated value;
3. Return-loss in within 20% of calibrated measurement.
4. Impedance (real or imaginary parts) in within 5 Ohms of calibrated measurement.

ANNEX A SIMULATING LIQUID VERIFICATION RESULT

The dielectric parameters of the liquids were verified prior to the SAR evaluation using a DAK 3.5 Dielectric Probe Kit.

Date	Fre. (MHz)	Temp. (℃)	Meas. Conductivity (σ) (S/m)	Meas. Permittivity (ε)	Target Conductivity (σ) (S/m)	Target Permittivity (ε)	Conductivity Tolerance (%)	Permittivity Tolerance (%)
2025/4/17	2412	21.3	1.810	38.416	1.760	39.270	2.84	-2.17
2025/4/17	2437	21.3	1.822	39.016	1.790	39.289	1.79	-0.69
2025/4/17	2450	21.3	1.823	38.406	1.800	39.200	1.28	-2.03
2025/4/17	2462	21.2	1.838	38.930	1.810	39.073	1.55	-0.37

ANNEX B SYSTEM CHECK RESULT

Comparing to the original SAR value provided by SPEAG, the validation data should be within its specification of 10 %(for 10g).

Date	Freq. (MHz)	Power (mW)	Measured SAR (W/kg)	Normalized SAR (W/kg)	Dipole SAR (W/kg)	Tolerance (%)
2025.04.17	2450	100	2.490	24.90	24.70	0.81
Note: The tolerance limit of System validation ±10%.						

System Performance Check Data (2450MHz)

Date: 2025.04.17

Communication System Band: D2450 (2450.0 MHz); Frequency: 2450 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2450 MHz; σ = 1.823 S/m; ε_r = 38.406; ρ = 1000 kg/m^3

Phantom section: Flat Section

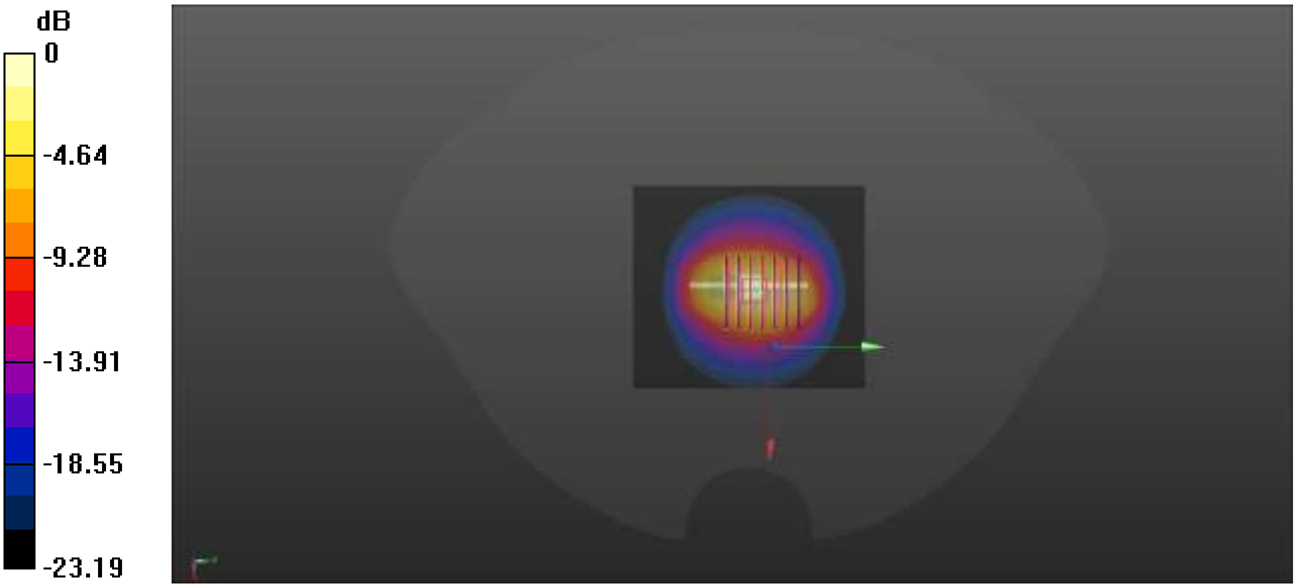
Ambient Temperature:22.7℃ Liquid Temperature:21.3℃

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(7.75, 7.75, 7.75); Calibrated: 2024/6/25
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1710; Calibrated: 2025/1/20
- Phantom: Twin-SAM Right V5.0 (20deg probe tilt); Type: QD 000 P40 CD; Serial: 1857
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

2450/Area Scan (71x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 9.46 W/kg

2450/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 58.18 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 11.4 W/kg
SAR(1 g) = 5.42 W/kg; SAR(10 g) = 2.49 W/kg
Smallest distance from peaks to all points 3 dB below = 8.5 mm
Ratio of SAR at M2 to SAR at M1 = 47.8%
Maximum value of SAR (measured) = 9.10 W/kg



0 dB = 9.10 W/kg

ANNEX C TEST DATA

Meas1.Limb Back Side 0mm WLAN 2.4G Ch6

Date: 2025/4/17

Communication System Band: WLAN(b); Frequency: 2412 MHz;Duty Cycle: 1:1.044

Medium parameters used: f = 2412 MHz; σ = 1.81 S/m; ε_r = 38.416; ρ = 1000 kg/m^3

Phantom section: Flat Section

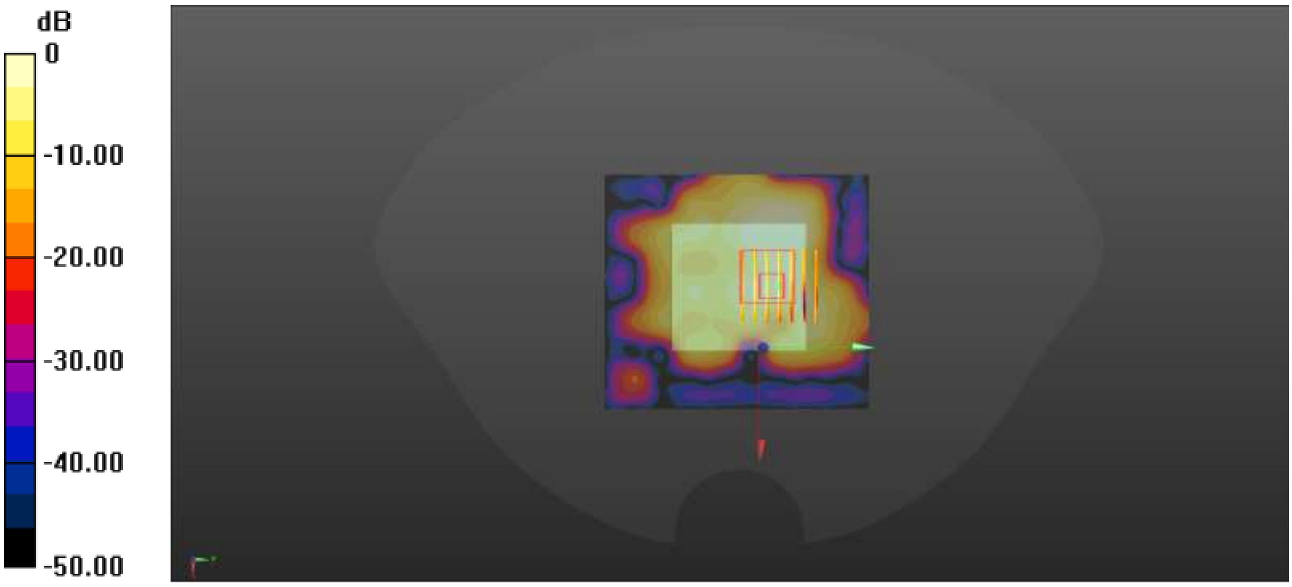
Ambient Temperature:22.7℃ Liquid Temperature:21.3℃

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(7.75, 7.75, 7.75); Calibrated: 2024/6/25
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1710; Calibrated: 2025/1/20
- Phantom: Twin-SAM Right V5.0 (20deg probe tilt); Type: QD 000 P40 CD; Serial: 1857
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Ch1/Area Scan (81x91x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.0930 W/kg

Ch1/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.316 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.113 W/kg
SAR(1 g) = 0.054 W/kg; SAR(10 g) = 0.022 W/kg
Smallest distance from peaks to all points 3 dB below: Larger than measurement grid (> 15 mm)
Ratio of SAR at M2 to SAR at M1 = 50.5%
Maximum value of SAR (measured) = 0.0899 W/kg



0 dB = 0.0899 W/kg

ANNEX D EUT EXTERNAL PHOTOS

Please refer the document “BL-SZ24C0074-AW EUT EXTERNAL PHOTOS.pdf”.

ANNEX E SAR TEST SETUP PHOTOS

Please refer the document “BL-SZ24C0074-AS.pdf”.

ANNEX F CALIBRATION REPORT

Please refer the document “BL-SZ24C0074-AC.pdf”.

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