

TEST REPORT

Applicant: OnePlus Technology (Shenzhen) Co., Ltd.
Address: 18C02, 18C03, 18C04, and 18C05, Shum Yip Terra Building, Binhe Avenue North, Futian District, Shenzhen, Guangdong, P.R. China
Equipment Type: Watch
Model Name: OPWWE231
Brand Name: ONEPLUS
FCC ID: 2ABZ2-OPWWE231
Test Standard: FCC 47 CFR Part 2.1093 (refer to section 3.1)
Maximum SAR: Front of Face (1 g@10mm): 0.33 W/kg
Extremity (10 g@0mm): 0.67 W/kg
Sample Arrival Date: Sep. 15, 2023
Test Date: Sep. 19, 2023 - Oct. 09, 2023
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ISSUED BY:

Shenzhen BALUN Technology Co., Ltd.

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Revision History		
Version	Issue Date	Revisions Content
<u>Rev. 01</u>	<u>Nov. 23, 2023</u>	<u>Initial Issue</u>

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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	<input checked="" type="checkbox"/> Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
	<input type="checkbox"/> 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.

1.3 Test Environment Condition

Ambient Temperature	18°C to 25°C
Ambient Relative Humidity	30% to 70%

2 PRODUCT INFORMATION

2.1 Applicant Information

Applicant	OnePlus Technology (Shenzhen) Co., Ltd.
Address	18C02, 18C03, 18C04, and 18C05, Shum Yip Terra Building, Binhe Avenue North, Futian District, Shenzhen, Guangdong, P.R. China

2.2 Manufacturer Information

Manufacturer	OnePlus Technology (Shenzhen) Co., Ltd.
Address	18C02, 18C03, 18C04, and 18C05, Shum Yip Terra Building, Binhe Avenue North, Futian District, Shenzhen, Guangdong, P.R. China

2.3 General Description for Equipment under Test (EUT)

EUT Name	Watch
Model Name Under Test	OPWWE231
Series Model Name	N/A
Description of Model name differentiation	N/A
Hardware Version	XJ909
Software Version	OPWWE231_11_A.02
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A

2.4 Ancillary Equipment

Ancillary Equipment 1	Battery	
	Brand Name	OPPO
	Model No.	BLW013
	Serial No.	N/A
	Capacitance	500 mAh
	Rated Voltage	3.89 V
	Limited Voltage	4.48 V
	Manufacturer	Brich Electronic (Dong Guan) Limited

2.5 Technical Information

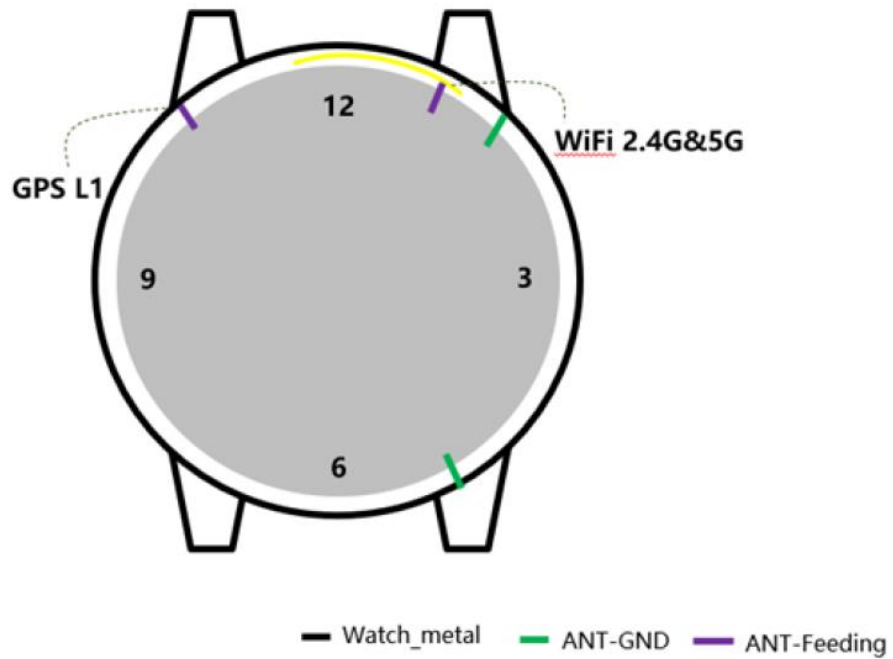
Network and Wireless connectivity	Bluetooth (BR+EDR+BLE) 2.4G WIFI 802.11b, 802.11g, 802.11n(HT20) 5G WIFI 802.11a, 802.11n(HT20) U-NII-1/2A/2C/3 GPS, GLONASS, Galileo, BDS, NFC
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The requirement for the following technical information of the EUT was tested in this report:

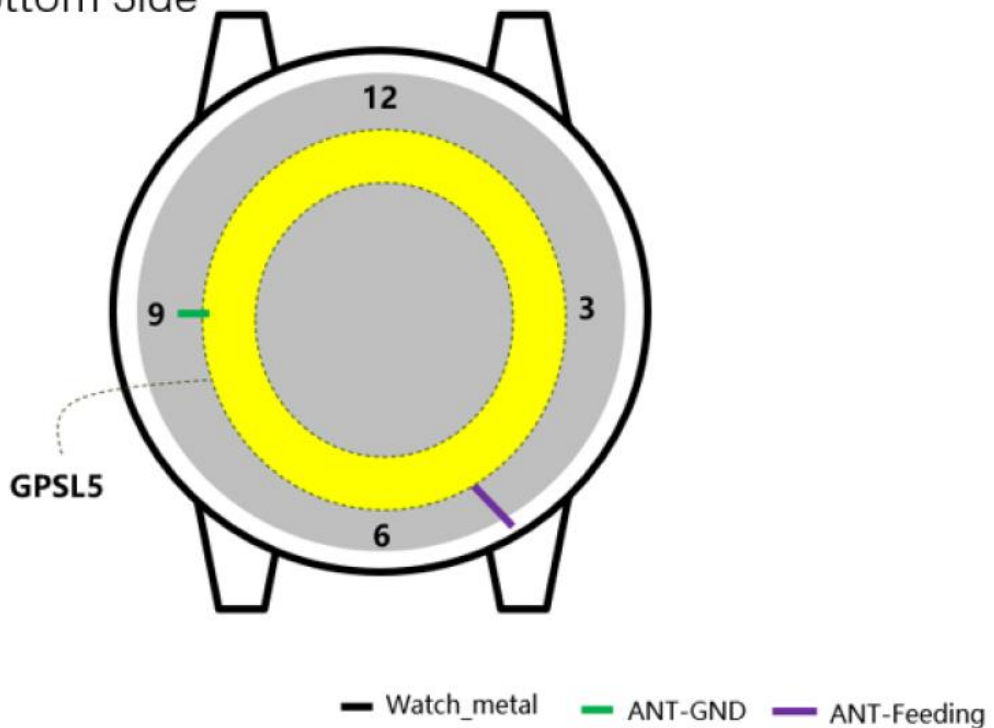
Operating Mode	2.4G WLAN, 5G WLAN, Bluetooth	
Frequency Range	802.11b/g/n(HT20)	2412 MHz ~ 2462 MHz
	802.11a/n(HT20)	5150 MHz ~ 5250 MHz
		5250 MHz ~ 5350 MHz
		5470 MHz ~ 5725 MHz
		5725 MHz ~ 5850 MHz
Bluetooth	2402 MHz ~ 2480 MHz	
Antenna Type	WLAN: LDS Antenna Bluetooth: LDS Antenna	
Hotspot Function	N/A	
Exposure Category	General Population/Uncontrolled exposure	
Product Type	Portable Device	
EUT Type	<input checked="" type="checkbox"/> Production unit	<input type="checkbox"/> Identical prototype

2.6 Antenna Location Sketch

Top side



Bottom Side



3 SUMMARY OF TEST RESULT

3.1 Test Standards

No.	Identity	Document Title
1	47 CFR Part 2.1093	Radiofrequency radiation exposure evaluation: portable devices
2	ANSI C95.1-1992	IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz
3	KDB 447498 D04 v01	447498 D04 Interim General RF Exposure Guidance v01
4	KDB 865664 D01 v01r04	SAR Measurement 100 MHz to 6 GHz
5	KDB 865664 D02 v01r02	RF Exposure Reporting
6	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

Equipment Class	Frequency Band	Maximum Scaled SAR 1 g (W/kg)	Maximum Scaled SAR 10 g (W/kg)
		Front of Face	Extremity
		(Separation 10mm)	(Separation 0mm)
DTS	2.4G WLAN	0.33	0.67
U-NII	5G WLAN	0.23	0.39
DSSS	Bluetooth	0.25	0.48
Maximum Report SAR (W/kg)		0.33	0.67
Limit (W/kg)		1.60	4.00
Verdict		Pass	Pass

3.3.2 Highest Simultaneous Transmission SAR Values

Equipment Class	Maximum Scaled SAR 1 g (W/kg)	Maximum Scaled SAR 10 g (W/kg)
	Front of Face	Extremity
	(Separation 10mm)	(Separation 0mm)
U-NII	0.47	0.87
DSSS	0.47	0.87
Verdict	Pass	Pass
Note: The highest simultaneous SAR please refer section 11.3.		

3.4 Test Uncertainty

According to KDB 865664 D01, when the highest measured 1 g SAR within a frequency band is < 1.5 W/kg, the extensive SAR measurement uncertainty analysis is not required in SAR reports submitted for equipment approval.

The maximum 1 g SAR for the EUT in this report is 0.33 W/kg, which is lower than 1.5 W/kg, so the extensive SAR measurement uncertainty analysis is not required in this report.

The maximum 10 g SAR for the EUT in this report is 0.67 W/kg, which is lower than 3.75 W/kg, so the extensive SAR measurement uncertainty analysis is not required in this report.

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:

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

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

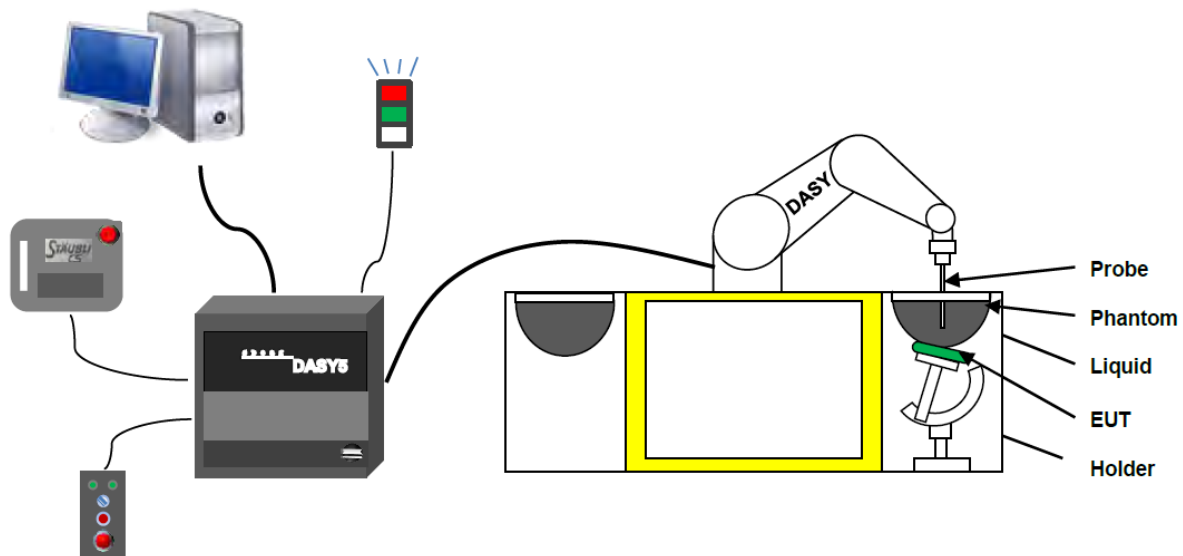
$$SAR = \frac{\sigma E^2}{\rho}$$

Where: σ is the conductivity of the tissue,

ρ is 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 DASYS5 measurement server.
6. The DASYS5 measurement server, which performs all real-time data evaluation for field measurements and surface detection, controls robot movements and handles safety operation.
7. DASYS5 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-SN: 7510 with following specifications is used.

Construction	Symmetrical design with triangular core Built-in optical fiber for surface detection system Built-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 μ W/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 CENELEC EN 62209-1/-2 and IEEE 1528 std, with CALISAR, Antennassa proprietary calibration system. The calibration is performed with the EN 62209-1/2 annexe technique using reference guide at the five frequencies.

4.2.4 Data Acquisition Electronics

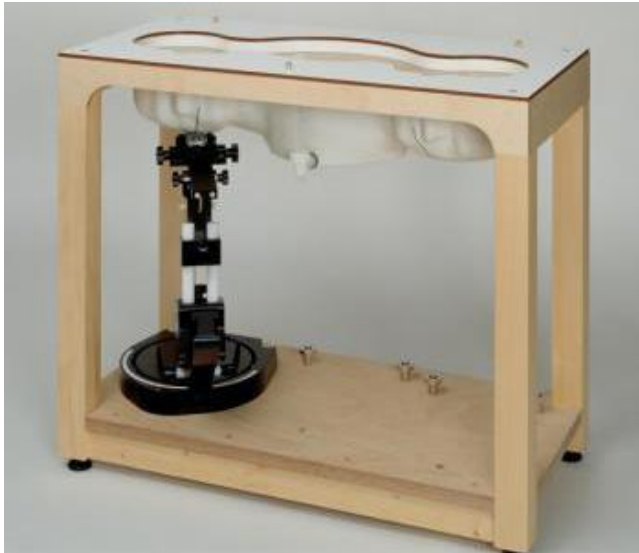
The data acquisition electronics (DAE) consist of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder with a control logic unit. Transmission to the measurement server is accomplished through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



- Input Impedance: 200M Ω
- The Inputs: Symmetrical and Floating
- Common 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

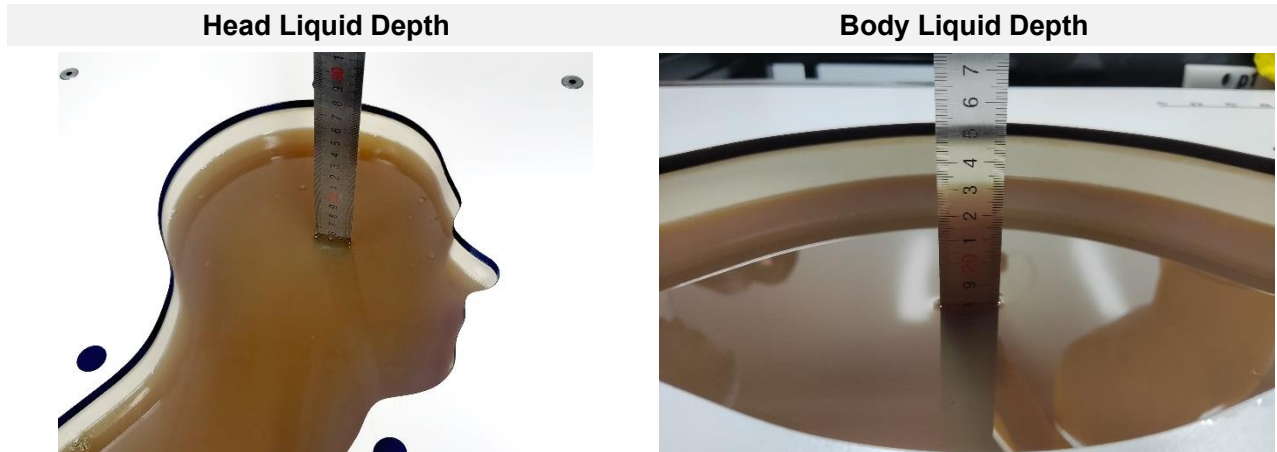
The DASY5 device holder has two scales for device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear openings). The plane between the ear openings and the mouth tip has a rotation angle of 65° . The bottom plate contains three pair of bolts for 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%.



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	Ethenediol, Sodium petroleum sulfonate, Hexylene Glycol / 2-Methyl-pentane-2.4-diol, Alkoxylated alcohol

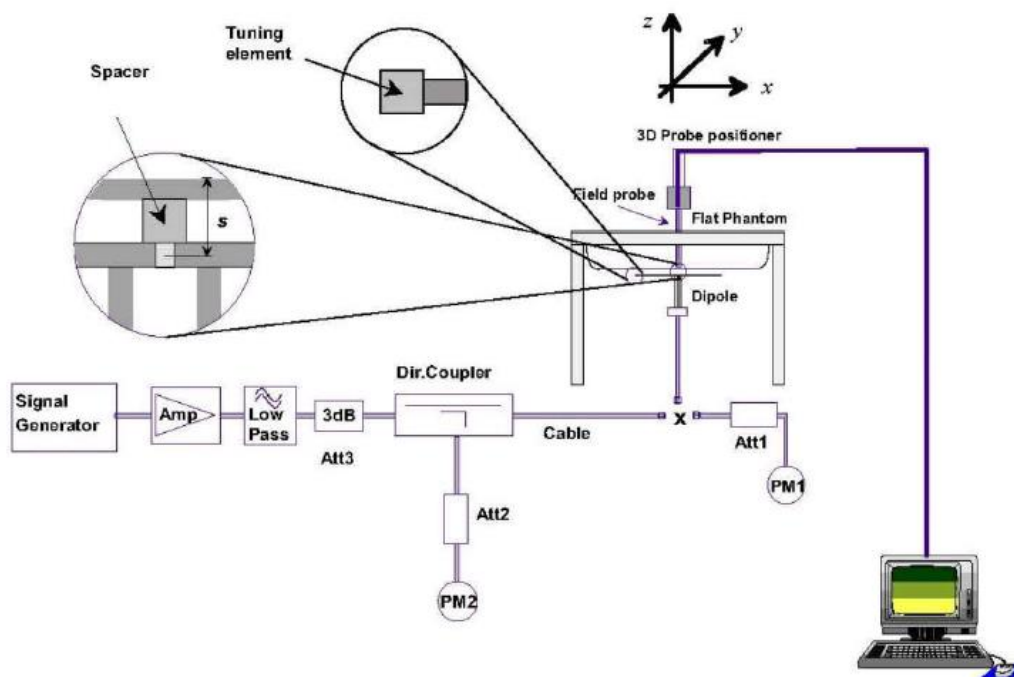
5 SYSTEM VERIFICATION

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

According to KDB 648474 D04 Handset, handsets are tested for SAR compliance in head, body-worn accessory and other use configurations described in the following subsections.

6.1 Front-of-face device

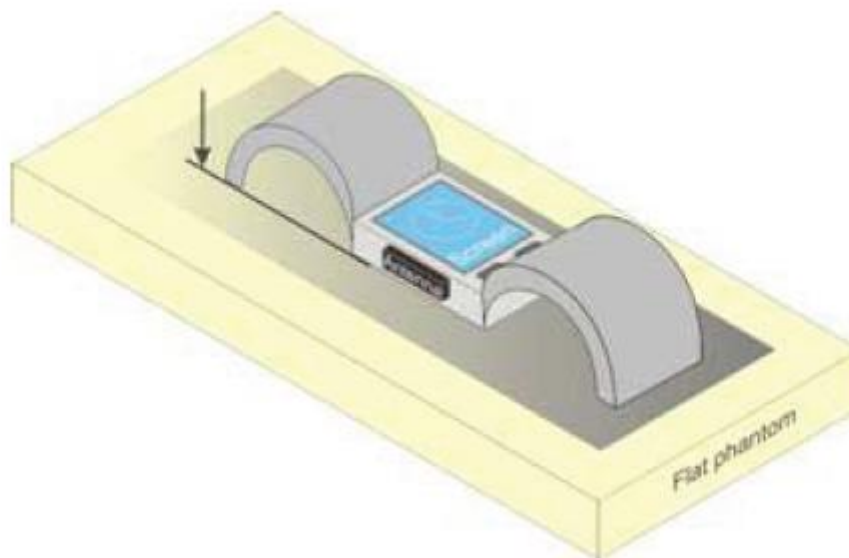
In these cases the device under test shall be positioned at the distance to the phantom surface that corresponds to the intended use as specified by the manufacturer in the user instructions. If the intended use is not specified, a separation distance of 25 mm between the phantom surface and the device shall be used.

This distance corresponds to the 95 % percentile of the nose protrusion distance obtained in the anthropomorphic survey of Gordon et al.

6.2 Limb-worn device

A limb-worn device is a unit whose intended use includes being strapped to the arm or leg of the user while transmitting (except in idle mode). It is similar to a body-worn device. Therefore, the test positions of 6.1.4.4 also apply. The strap shall be opened so that it is divided into two parts as shown in Figure 10. The device shall be positioned directly against the phantom surface with the strap straightened as much as possible and the back of the device towards the phantom.

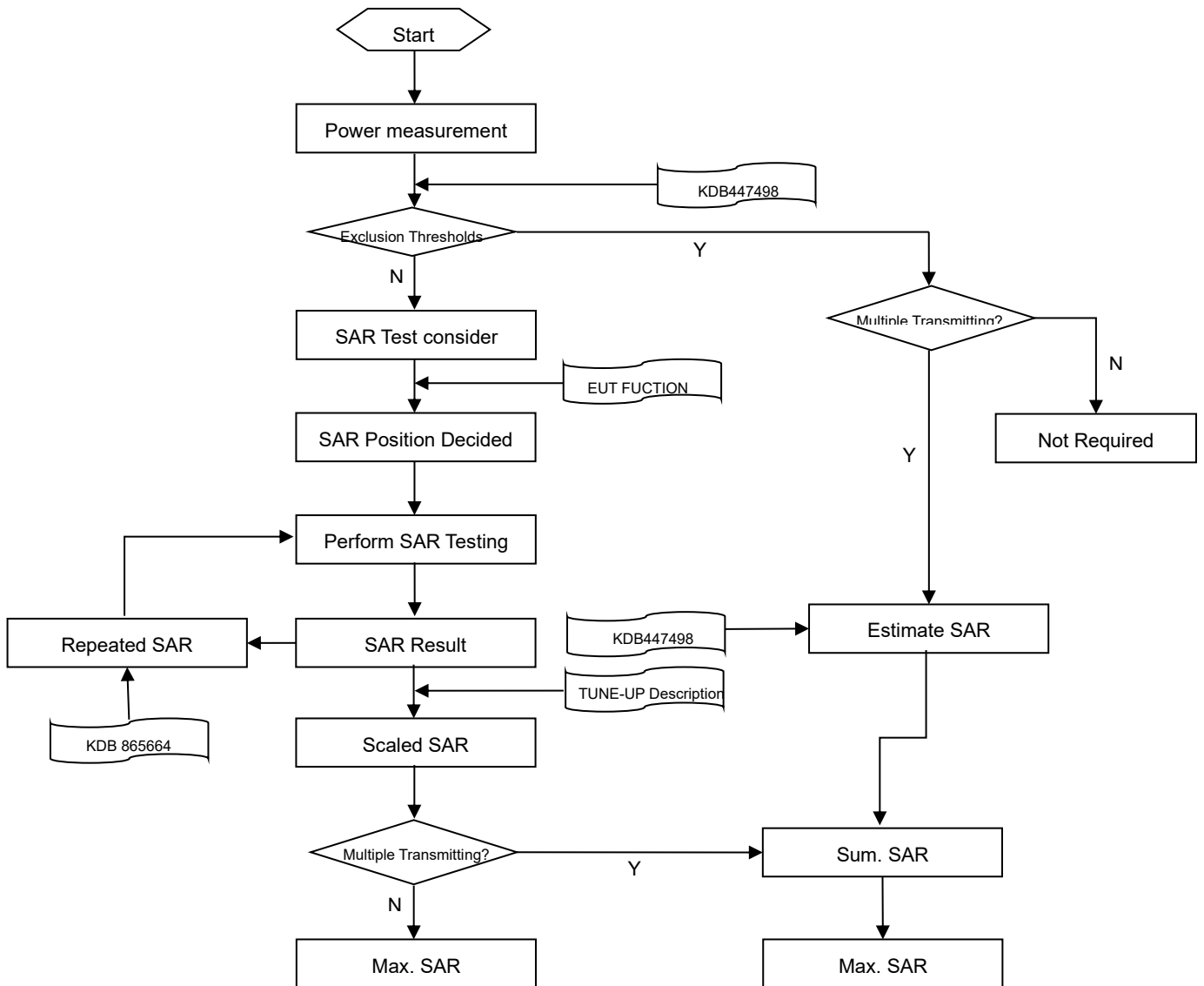
If the strap cannot normally be opened to allow placing in direct contact with the phantom surface, it may be necessary to break the strap of the device but ensuring to not damage the antenna.



Test position for limb-worn devices

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 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 IEEE Std 1528-2013.

		≤3GHz	>3GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface		5±1 mm	$\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5$ mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location		30°±1°	20°±1°
Maximum area scan spatial resolution: Δx Area , Δy Area		≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3–4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
		When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	
Maximum zoom scan spatial resolution: Δx Zoom , Δy Zoom		≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3–4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: Δz Zoom (n)	≤ 5 mm	3–4 GHz: ≤ 4 mm
			4–5 GHz: ≤ 3 mm
			5–6 GHz: ≤ 2 mm
	graded grid	Δz Zoom (1): between 1st two points closest to phantom surface	≤ 4 mm
4–5 GHz: ≤ 2.5 mm			
	Δz Zoom (n>1): between subsequent points	≤ 1.5· Δz Zoom (n-1)	
Minimum zoom scan volume	x, y, z	≥30 mm	3–4 GHz: ≥ 28 mm
			4–5 GHz: ≥ 25 mm
			5–6 GHz: ≥ 22 mm

Note:

- δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.
- * When zoom scan is required and the reported SAR from the area scan based 1 g SAR estimation procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.

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 to 16 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 10 g. Area scan and zoom scan resolution setting follows KDB 865664 D01v01r04 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)	Average Power (dBm)	Tune-up Power Limit (dBm)	SAR Test Require.
2.4 (2.4~2.4835)	802.11b	1	2412	17.67	18.00	Yes
		6	2437	17.81	18.00	Yes
		11	2462	17.49	18.00	Yes
	802.11g	1	2412	16.80	17.50	No
		6	2437	16.88	17.50	No
		10	2457	16.41	17.50	No
		11	2462	14.38	14.50	No
	802.11n(HT20)	1	2412	16.61	17.00	No
		6	2437	16.85	17.00	No
		10	2457	16.79	17.00	No
		11	2462	12.89	13.00	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)) = 0.328 * (56.23 mw)/(63.10 mw) =0.292 W/kg, so the 2.4GHz OFDM SAR test is not required.

8.1.2 5G WIFI

Band (GHz)	Mode	Channel	Freq. (MHz)	Average Power (dBm)	Tune-up Power Limit (dBm)	SAR Test Require.
5.2 (5.15~5.25)	802.11a	36	5180	15.28	15.50	No
		40	5200	16.56	17.00	Yes
		44	5220	16.59	17.00	Yes
		48	5240	16.82	17.00	Yes
	802.11n(HT20)	36	5180	15.08	15.50	No
		40	5200	16.54	17.00	No
		44	5220	16.52	17.00	No
		48	5240	16.66	17.00	No
5.3 (5.25~5.35)	802.11a	52	5260	16.83	17.00	Yes
		60	5300	16.89	17.00	Yes
		64	5320	15.62	16.00	Yes
	802.11n(HT20)	52	5260	16.83	17.00	No
		60	5300	16.48	17.00	No
		64	5320	15.12	15.50	No
5.6 (5.47~5.725)	802.11a	100	5500	14.08	14.50	No
		104	5520	16.40	17.00	Yes
		116	5580	16.49	17.00	Yes
		140	5700	16.37	17.00	Yes
	802.11n(HT20)	100	5500	13.69	14.00	No
		104	5520	16.35	17.00	No
		116	5580	16.52	17.00	No
		136	5680	16.47	17.00	No
5.8 (5.725~5.850)	802.11a	149	5745	16.71	17.00	Yes
		157	5785	16.52	17.00	Yes
		165	5825	16.63	17.00	Yes
	802.11n(HT20)	149	5745	16.73	17.00	No
		157	5785	16.85	17.00	No
		165	5825	16.54	17.00	No

8.2 Bluetooth

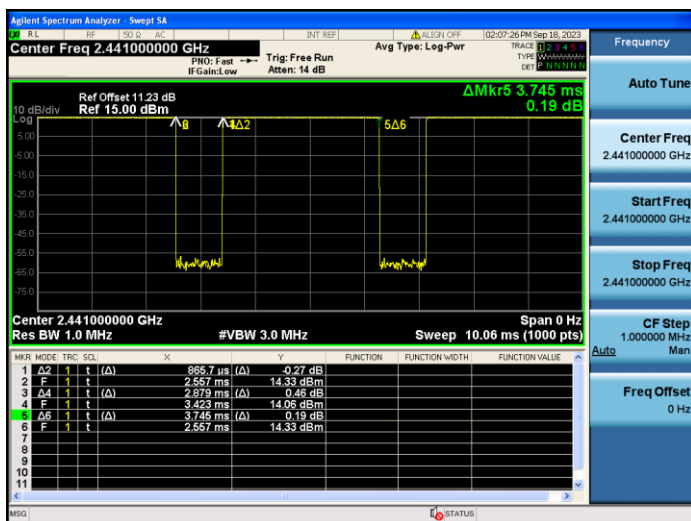
Mode	GFSK			π/4-DQPSK		
Channel	0	39	78	0	39	78
Frequency (MHz)	2402	2441	2480	2402	2441	2480
Average Power (dBm)	15.51	14.25	14.72	11.13	11.41	10.92
Tune-Up Limit (dBm)	16.00	16.00	16.00	9.00	9.00	9.00
SAR Test Require	Yes	Yes	Yes	No	No	No
Mode	8-DPSK			/		
Channel	0	39	78	/	/	/
Frequency (MHz)	2402	2441	2480	/	/	/
Average Power (dBm)	11.20	11.69	11.19	/	/	/
Tune-Up Limit (dBm)	9.00	9.00	9.00	/	/	/
SAR Test Require	No	No	No	/	/	/
Mode	BLE-1Mbps			BLE-2Mbps		
Channel	0	19	39	0	19	39
Frequency (MHz)	2402	2440	2480	2402	2440	2480
Average Power (dBm)	10.13	10.85	9.76	10.35	11.04	10.16
Tune-Up Limit (dBm)	12.00	12.00	11.00	12.00	12.00	12.00
SAR Test Require	No	No	No	No	No	No

Note: Since Bluetooth BR mode is the maximum output power mode, SAR measurements were performed with test software using DH5 modulation, and SAR measurement is not required for the EDR and LE. When the secondary mode is $\leq \frac{1}{4}$ dB higher than the primary mode.

Note: The Bluetooth duty cycle is 76.88% 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.

Duty Cycle

Bluetooth-GFSK



9 TEST RESULT

1. The reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
 - a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
 - b. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)".
 - c. For WLAN/Bluetooth: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor.
2. Per KDB 447498 D04, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:
 - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
 - ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
 - ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
3. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥ 0.8 W/kg.

9.1 WIFI 2.4GHZ

9.1.1 WIFI 2.4GHz Front of Face SAR

Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Drift (dB)	1g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	Duty cycle (%)	Duty cycle Factor	1g Scaled SAR (W/kg)	Meas. No.
Front of Face													
802.11b	Front Side	10	6	2437	0.04	0.254	17.81	18.00	1.045	98.92	1.011	0.268	/
		10	1	2412	0.11	0.275	17.67	18.00	1.079	98.92	1.011	0.300	/
		10	11	2462	-0.05	0.288	17.49	18.00	1.125	98.92	1.011	0.328	1#
Note: Refer to ANNEX C for the detailed test data for each test configuration.													

9.1.2 WIFI 2.4GHz Extremity SAR

Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Drift (dB)	10g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	Duty cycle (%)	Duty cycle Factor	10g Scaled SAR (W/kg)	Meas. No.
Extremity													
802.11b	Back Side	0	6	2437	0.06	0.461	17.81	18.00	1.045	98.92	1.011	0.487	/
		0	1	2412	-0.06	0.489	17.67	18.00	1.079	98.92	1.011	0.533	/
		0	11	2462	-0.08	0.587	17.49	18.00	1.125	98.92	1.011	0.668	2#
Note: Refer to ANNEX C for the detailed test data for each test configuration.													

9.2 WIFI 5GHz

9.2.1 WIFI 5GHz Front of Face SAR

Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Drift (dB)	1g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	Duty cycle (%)	Duty cycle Factor	1g Scaled SAR (W/kg)	Meas. No.
Front of Face													
802.11a	Front Side	10	48	5240	0.08	0.091	16.82	17.00	1.042	93.15	1.074	0.102	3#
		10	40	5200	-0.02	0.085	16.56	17.00	1.107	93.15	1.074	0.101	/
		10	44	5220	-0.13	0.083	16.59	17.00	1.099	93.15	1.074	0.098	/
802.11a	Front Side	10	60	5300	0.03	0.143	16.89	17.00	1.026	93.15	1.074	0.158	4#
		10	52	5260	-0.06	0.140	16.83	17.00	1.040	93.15	1.074	0.156	/
		10	64	5320	0.08	0.103	15.62	16.00	1.091	93.15	1.074	0.121	/
802.11a	Front Side	10	116	5580	-0.03	0.178	16.49	17.00	1.125	93.15	1.074	0.215	/
		10	104	5520	0.10	0.175	16.40	17.00	1.148	93.15	1.074	0.216	/
		10	140	5700	0.01	0.184	16.37	17.00	1.156	93.15	1.074	0.228	5#
802.11a	Front Side	10	149	5745	0.03	0.045	16.71	17.00	1.069	93.15	1.074	0.052	6#
		10	157	5785	-0.12	0.036	16.52	17.00	1.117	93.15	1.074	0.043	/
		10	165	5825	0.06	0.042	16.63	17.00	1.089	93.15	1.074	0.049	/
Note: Refer to ANNEX C for the detailed test data for each test configuration.													

9.2.2 WIFI 5GHz Extremity SAR

Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Drift (dB)	10g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	Duty cycle (%)	Duty cycle Factor	10g Scaled SAR (W/kg)	Meas. No.
Extremity													
802.11a	Back Side	0	48	5240	0.15	0.199	16.82	17.00	1.042	93.15	1.074	0.223	7#
		0	40	5200	0.05	0.150	16.56	17.00	1.107	93.15	1.074	0.178	/
		0	44	5220	-0.01	0.124	16.59	17.00	1.099	93.15	1.074	0.146	/
802.11a	Back Side	0	60	5300	0.04	0.261	16.89	17.00	1.026	93.15	1.074	0.288	8#
		0	52	5260	0.03	0.246	16.83	17.00	1.040	93.15	1.074	0.275	/
		0	64	5320	-0.05	0.193	15.62	16.00	1.091	93.15	1.074	0.226	/
802.11a	Back Side	0	116	5580	0.02	0.216	16.49	17.00	1.125	93.15	1.074	0.261	/
		0	104	5520	-0.08	0.235	16.40	17.00	1.148	93.15	1.074	0.290	/
		0	140	5700	0.02	0.314	16.37	17.00	1.156	93.15	1.074	0.390	9#
802.11a	Back Side	0	149	5745	0.06	0.218	16.71	17.00	1.069	93.15	1.074	0.250	10#
		0	157	5785	0.03	0.142	16.52	17.00	1.117	93.15	1.074	0.170	/
		0	165	5825	0.02	0.209	16.63	17.00	1.089	93.15	1.074	0.244	/
Note: Refer to ANNEX C for the detailed test data for each test configuration.													

9.3 Bluetooth

9.3.1 Bluetooth Front of Face SAR

Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Drift (dB)	1g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune- up power (dBm)	Scaling Factor	Duty cycle (%)	Duty cycle Factor	1g Scaled SAR (W/kg)	Meas. No.
Front of Face													
DH5	Front Side	10	0	2402	0.04	0.135	15.51	16.00	1.119	76.88	1.301	0.197	/
		10	39	2441	0.11	0.113	14.25	16.00	1.496	76.88	1.301	0.220	/
		10	78	2480	0.05	0.140	14.72	16.00	1.343	76.88	1.301	0.245	11#
Note: Refer to ANNEX C for the detailed test data for each test configuration.													

9.3.2 Bluetooth Extremity SAR

Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Drift (dB)	10g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune- up power (dBm)	Scaling Factor	Duty cycle (%)	Duty cycle Factor	10g Scaled SAR (W/kg)	Meas. No.
Extremity													
DH5	Back Side	0	0	2402	-0.07	0.225	15.51	16.00	1.119	76.88	1.301	0.328	/
		0	39	2441	0.12	0.190	14.25	16.00	1.496	76.88	1.301	0.370	/
		0	78	2480	0.04	0.276	14.72	16.00	1.343	76.88	1.301	0.482	12#
Note: Refer to ANNEX C for the detailed test data for each test configuration.													

10 SAR Measurement Variability

According to KDB 865664 D01, SAR measurement variability was assessed for each frequency band, which is determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media are required for SAR measurements in a frequency band, the variability measurement procedures should be applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue-equivalent medium. Alternatively, if the highest measured SAR for both head and body tissue-equivalent media are ≤ 1.45 W/kg and the ratio of these highest SAR values, i.e., largest divided by smallest value, is ≤ 1.10 , the highest SAR configuration for either head or body tissue-equivalent medium may be used to perform the repeated measurement. 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.

SAR repeated measurement procedure:

1. When the highest measured SAR is < 0.80 W/kg, repeated measurement is not required.
2. When the highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.
3. 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, perform a second repeated measurement.
4. If the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 , and the original, first or second repeated measurement is ≥ 1.5 W/kg, perform a third repeated measurement.

Note: For product specific 1g SAR, the highest measured 1g SAR is $0.29 < 0.80$ W/kg, repeated measurement is not required.

Note: For product specific 10g SAR, the highest measured 10g SAR is $0.59 < 2.00$ W/kg, repeated measurement is not required.

11 SIMULTANEOUS TRANSMISSION

Simultaneous transmission SAR test exclusion is determined for each operating configuration and exposure condition according to the reported standalone SAR of each applicable simultaneous transmitting antenna. When the sum of SAR 1g of all simultaneously transmitting antennas in an operating mode and exposure condition combination is within the SAR limit (SAR 1g 1.6 W/kg), the simultaneous transmission SAR is not required. When the sum of SAR 1g is greater than the SAR limit (SAR 1g 1.6 W/kg), SAR test exclusion is determined by the SAR to Peak Location Ratio (SPLSR).

According KDB 447498 D04, simultaneous transmission:

- a) $SPLSR = (SAR1 + SAR2)^{1.5} / R_i$ (min. separation distance, mm), and the peak separation distance is determined from the square root of $[(x1-x2)^2 + (y1-y2)^2 + (z1-z2)^2]$, where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.
SAR1 is the highest reported or estimated SAR for the first of a pair of simultaneous transmitting antennas, in a specific test operating mode and exposure condition.
SAR2 is the highest reported or estimated SAR for the second of a pair of simultaneous transmitting antennas, in a specific test operating mode and exposure condition as the first.
- b) If $SPLSR \leq 0.04$, simultaneously transmission SAR measurement is not necessary.
- c) Simultaneously transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg.

11.1 Simultaneous Transmission Mode Considerations

No.	Simultaneous Transmission Configurations	Portable	
		Front of Face	Extremity
1	WLAN 5GHz + BT	Yes	Yes

11.2 NFC SAR test instructions

1.1 According to the 2022.04 TCBC Workshop meeting, the power threshold is $\leq 100\text{MHz}$, refer to P6s.

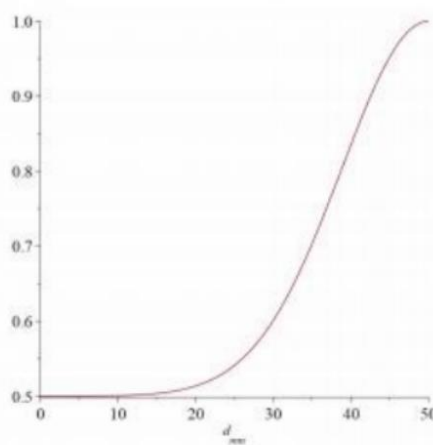
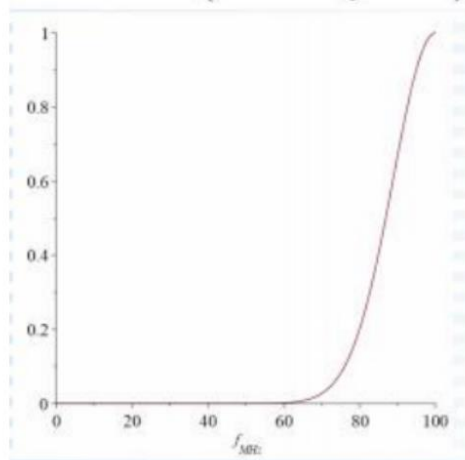
$$P_{7X}(d_{mm}, f_{MHz}) := \begin{cases} P_{6S}(d_{mm}, f_{MHz}) & f_{MHz} \leq 100 \\ P_{6to7}(d_{mm}, f_{MHz}) & 100 < f_{MHz} \leq 300 \\ P_7(d_{mm}, f_{MHz}) & 300 < f_{MHz} \end{cases}$$

1.2 For portable products, when using a distance of $\leq 50\text{mm}$, such as mobile phone NFC, P6s is calculated with the following formula calculate.

$$S_f(f_{MHz}) \cdot P_{431a}(d_{mm}, f_{MHz}) + (1 - S_f(f_{MHz})) \cdot S_d(d_{mm}) \cdot P_{431b1}(50., 100.) \cdot \left(1 + \log_{10}\left(\frac{100.}{f_{MHz}}\right)\right) \quad d_{mm} \leq 50 \text{ and } f_{MHz} \leq 100$$

1.3 The smoothing functions Sf and Sd in P6s calculate the limits based on KDB 447498 V06 and are calculated as follows.

$$S_f(f_{MHz}) := \exp\left(-10 \frac{(f_{MHz} - f_{max})^2}{\Delta f^2}\right) \quad S_d(d_{mm}) := 0.5 + 0.5 \cdot \exp\left(-10 \frac{(d_{mm} - d_{max})^2}{\Delta d^2}\right)$$



d≤50mm			
f Max(MHz)	100	d Max(mm)	50
f MHz	13.56	d(mm)	5
Δf(MHz)	100	Δd	50
Sf(fMHz)	0.000568861	Sd (dmm)	0.50015177
P6s(mW)	443.1257378		
Note: SAR testing is required when the distance is 5mm and the power is greater than 443.13mW.			

2. 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 ERP 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 ERP of all chains in linear terms (e.g., Watts, mW).
- e) Convert the resultant ERP level to an equivalent electric field strength using the following relationship:
 $E = \text{EIRP} - 20\log D + 104.8$

where:

E = electric field strength in dBμV/m,

ERP = 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)	EIRP (dBm)
NFC (13.56MHz)	13.56	55.91	3	6	-33.35

Note:

- 1. Add the appropriate maximum ground reflection factor to the EIRP level (6 dB for frequencies ≤ 30 MHz).
- 2. $\text{EIRP} = 55.91 + 20 \cdot \log(3) - 104.8 + 6 = -33.35$ (dBm)

According to the FCC KDB 447498 D04

Estimated SAR: $\text{SAR}_{\text{rest}} = 1.6 \cdot \text{P}_{\text{ant}} / \text{P}_{\text{th}}$ [W/kg]

Estimated SAR	1.6 P _{ant} / P _{th} [W/kg]		
P _{meas.} (dBm)	-33.35	P _{meas.} (mW)	0.0005
P _{th.} (mW)	443.13		
NFC Estimated 1g SAR [W/kg]	<0.001		

Results:

1. The NFC power is -33.35dBm, the power threshold is $P_{6s}=443.13\text{mW}$, Therefore, the NFC SAR test is excluded.

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

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

The maximum SAR value for WLAN and BT is 0.328 [W/kg], Therefore, the worst TER

$= (0.473 + 0.001) / 1.6 = 0.296 < 1$, the NFC SAR transmit simultaneously Pass.

11.3 Sum SAR of Simultaneous Transmission

11.3.1 Highest Bluetooth and WLAN Sum Front of Face SAR of Simultaneous Transmission

Test Mode	Position	Simultaneous Mode	Mode	Max. 1g SAR (W/kg)	1g Sum SAR (W/kg)	SPLSR (Yes/No)	SPLSR Num.	Limit 1g (W/Kg)
Front of Face (Separation 10 mm)								
Front of Face	Front Side	5 G WLAN + Bluetooth	5 G WLAN	0.228	0.473	No	/	1.6
			Bluetooth	0.245				

11.3.2 Highest Bluetooth and WLAN Sum Extremity SAR of Simultaneous Transmission

Test Mode	Position	Simultaneous Mode	Mode	Max. 10g SAR (W/kg)	10g Sum SAR (W/kg)	SPLSR (Yes/No)	SPLSR Num.	Limit 10g (W/Kg)
Extremity (0 mm)								
Extremity	Back Side	5 G WLAN + Bluetooth	5 G WLAN	0.390	0.872	No	/	4.0
			Bluetooth	0.482				

12 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	SN: 952	2021/05/19	2024/05/18
5GHz Validation Dipole	Speag	D5GHzV2	SN: 1200	2021/05/18	2024/05/17
E-Field Probe	Speag	EX3DV4	SN: 7510	2023/01/19	2024/01/18
Data Acquisition Electronicsr	Speag	DAE4	SN: 1454	2023/03/20	2024/03/19
Signal Generator	R&S	SMB100A	177746	2023/05/10	2024/05/09
Power Meter	R&S	NRVD-B2	7250BJ-0112/2011	2023/09/05	2024/09/04
Power Sensor	R&S	NRV-Z4	100381	2023/09/05	2024/09/04
Power Sensor	R&S	NRV-Z2	100211	2023/09/05	2024/09/04
Network Analyzer	Agilent	E5071C	MY46103472	2022/12/06	2023/12/05
Thermometer	Elitech	RC-4HC	EF7225003029	2023/07/14	2024/07/13
Thermometer	Elitech	RC-4HC	EF720B004820	2022/11/25	2023/11/24
Power Amplifier	SATIMO	6552B	22374	N/A	N/A
Dielectric Probe Kit	Speag	DAK3.5	SN: 1312	N/A	N/A
Phantom	Speag	SAM	SN: 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 DAK3.5 Dielectric Probe Kit.

Head Liquid

Date	Liquid Type	Fre. (MHz)	Temp. (°C)	Meas. Conductivity (σ) (S/m)	Meas. Permittivity (ϵ)	Target Conductivity (σ) (S/m)	Target Permittivity (ϵ)	Conductivity Tolerance (%)	Permittivity Tolerance (%)
2023/9/19	Head	2450	21.3	1.76	39.78	1.80	39.20	-2.22	1.48
2023/9/19	Head	5250	21.4	4.80	36.90	4.71	35.93	1.91	2.70
2023/10/7	Head	5250	21.5	4.76	36.11	4.71	35.93	1.06	0.50
2023/10/7	Head	5600	21.6	4.94	35.49	5.07	35.53	-2.56	-0.11
2023/9/19	Head	5750	21.4	5.21	35.19	5.22	35.36	-0.19	-0.48

Note: The tolerance limit of Conductivity and Permittivity is $\pm 5\%$.

ANNEX B SYSTEM CHECK RESULT

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

Head liquid 1g

Date	Liquid Type	Freq. (MHz)	Power (mW)	Measured SAR (W/kg)	Normalized SAR (W/kg)	Dipole SAR (W/kg)	Tolerance (%)
2023/9/19	Head	2450	100	5.44	54.40	53.00	2.64
2023/9/19	Head	5250	100	7.66	76.60	77.80	-1.54
2023/10/7	Head	5250	100	7.75	77.50	77.80	-0.39
2023/10/7	Head	5600	100	8.19	81.90	81.20	0.86
2023/9/19	Head	5750	100	7.88	78.80	77.20	2.07

Note: The tolerance limit of System validation $\pm 10\%$.

Head liquid 10g

Date	Liquid Type	Freq. (MHz)	Power (mW)	Measured SAR (W/kg)	Normalized SAR (W/kg)	Dipole SAR (W/kg)	Tolerance (%)
2023/9/19	Head	2450	100	2.46	24.60	24.10	2.07
2023/9/19	Head	5250	100	2.17	21.70	22.10	-1.81
2023/10/7	Head	5250	100	2.17	21.70	22.10	-1.81
2023/10/7	Head	5600	100	2.37	23.70	23.10	2.60
2023/9/19	Head	5750	100	2.21	22.10	21.70	1.84

Note: The tolerance limit of System validation $\pm 10\%$.

System Performance Check Data (2450MHz)

Date: 2023.09.19

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

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.759$ S/m; $\epsilon_r = 39.78$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 22.5°C Liquid Temperature: 21.3°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(7.78, 7.78, 7.78); Calibrated: 2023.01.19;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2023.03.20
- Phantom: SAM (20deg probe tilt) with CRP v5.0 Right 1857; Type: QD000P40CC; Serial: TP1857
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

CW2450 100mw/Area Scan (101x101x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 6.65 W/kg

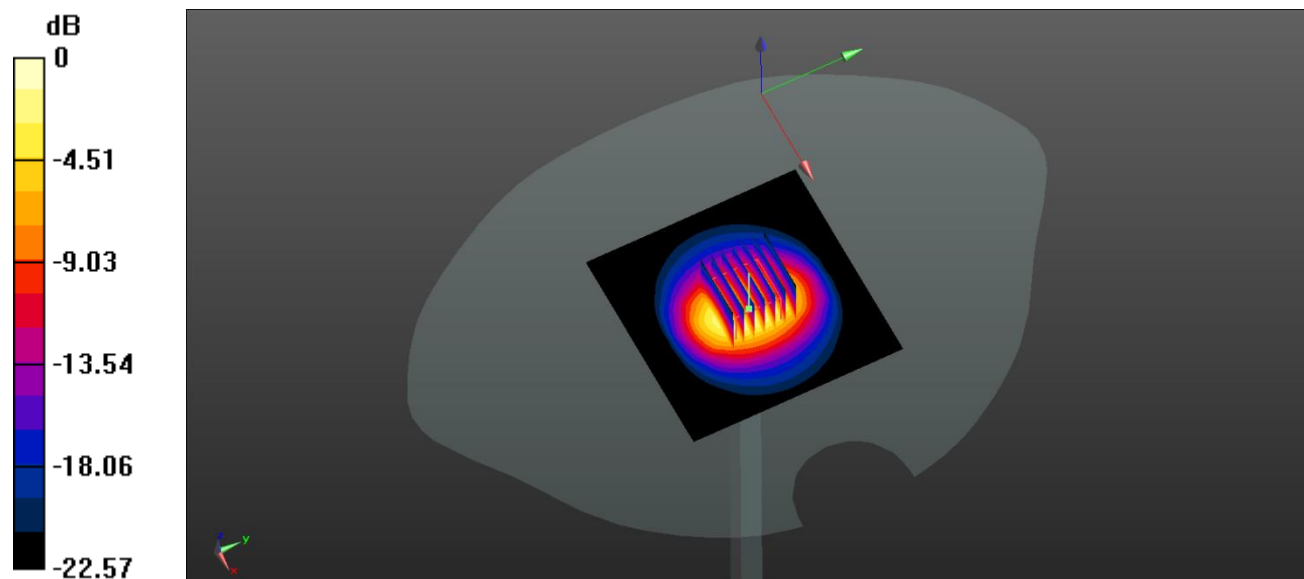
CW2450 100mw/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 52.22 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 11.1 W/kg

SAR(1 g) = 5.44 W/kg; SAR(10 g) = 2.46 W/kg

Maximum value of SAR (measured) = 6.55 W/kg



0 dB = 6.55 W/kg

System Performance Check Data (5250MHz)

Date: 2023.09.19

Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5250 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 5250$ MHz; $\sigma = 4.8$ S/m; $\epsilon_r = 36.902$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 22.2°C Liquid Temperature: 21.4°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(5.67, 5.67, 5.67); Calibrated: 2023.01.19;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2023.03.20
- Phantom: SAM (20deg probe tilt) with CRP v5.0 Right 1857; Type: QD00P40CC; Serial: TP1857
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

CW 5250/Area Scan (81x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 8.33 W/kg

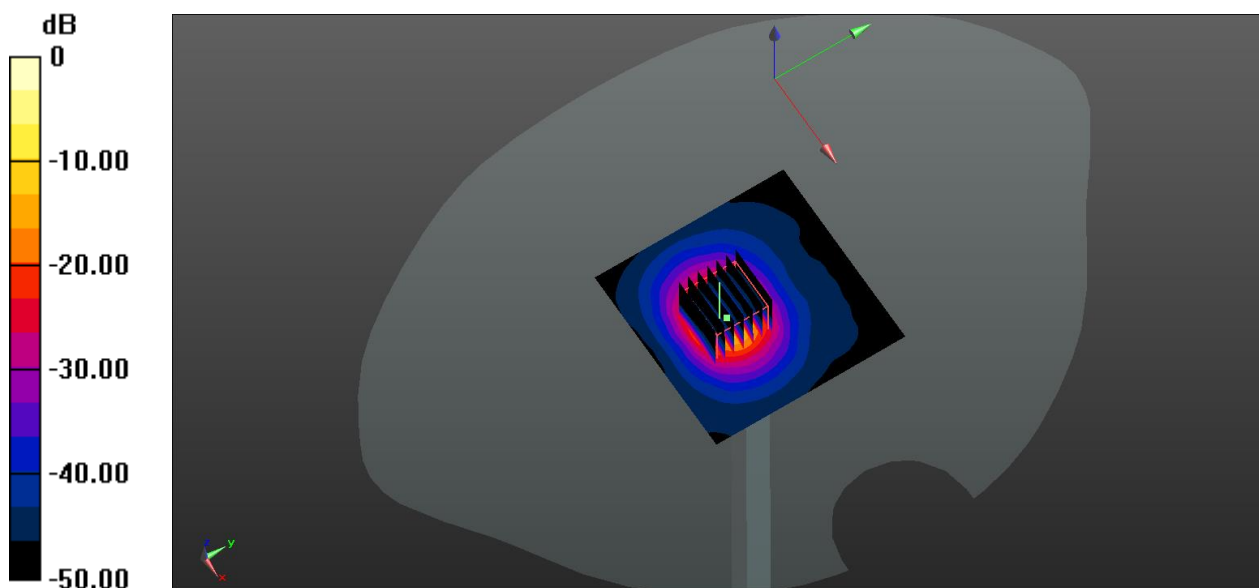
CW 5250/Zoom Scan (7x7x15)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 34.29 V/m; Power Drift = -0.14 dB

Peak SAR (extrapolated) = 31.2 W/kg

SAR(1 g) = 7.66 W/kg; SAR(10 g) = 2.17 W/kg

Maximum value of SAR (measured) = 14.5 W/kg



0 dB = 14.5 W/kg

System Performance Check Data (5250MHz)

Date: 2023.10.09

Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5250 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 5250$ MHz; $\sigma = 4.758$ S/m; $\epsilon_r = 36.11$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 22.8°C Liquid Temperature: 21.5°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(5.67, 5.67, 5.67); Calibrated: 2023.01.19;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2023.03.20
- Phantom: SAM (20deg probe tilt) with CRP v5.0 Right 1857; Type: QD000P40CC; Serial: TP1857
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

CW 5250 100mW/Area Scan (101x101x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 12.8 W/kg

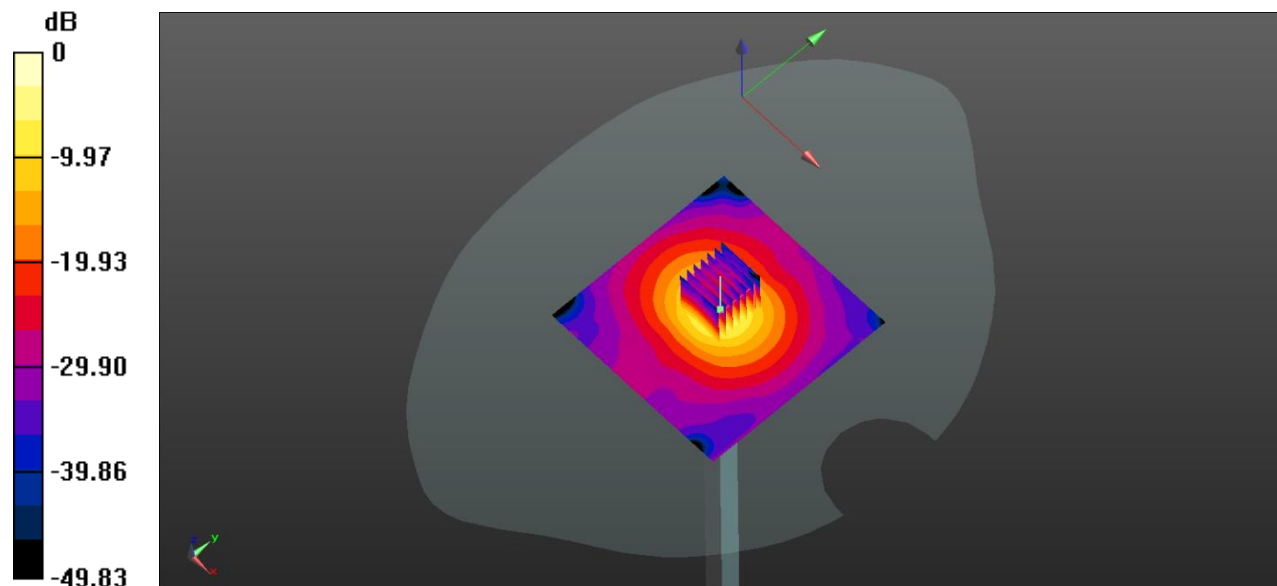
CW 5250 100mW/Zoom Scan (7x7x21)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 34.36 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 30.4 W/kg

SAR(1 g) = 7.75 W/kg; SAR(10 g) = 2.17 W/kg

Maximum value of SAR (measured) = 17.6 W/kg



0 dB = 17.6 W/kg

System Performance Check Data (5600MHz)

Date: 2023.10.09

Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5600 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 5600$ MHz; $\sigma = 4.938$ S/m; $\epsilon_r = 35.487$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 23.7°C Liquid Temperature: 21.6°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(4.88, 4.88, 4.88); Calibrated: 2023.01.19;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2023.03.20
- Phantom: SAM (20deg probe tilt) with CRP v5.0 Right 1857; Type: QD000P40CC; Serial: TP1857
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

CW 5600 100mw/Area Scan (81x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 9.22 W/kg

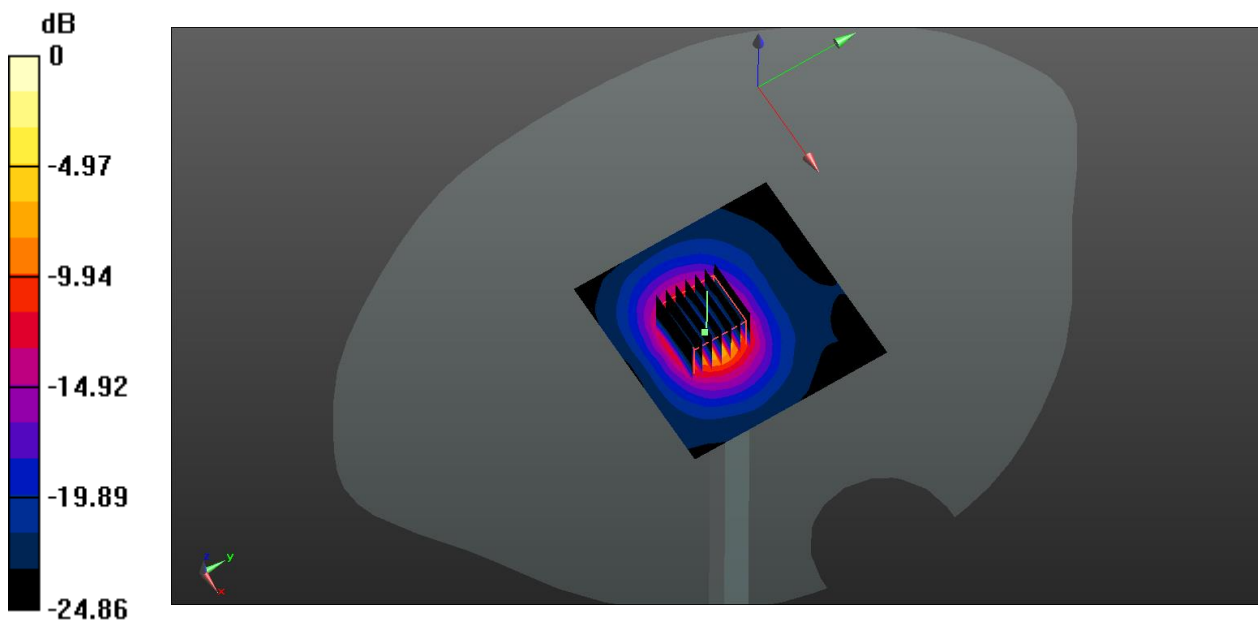
CW 5600 100mw /Zoom Scan (7x7x21)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 22.01 V/m; Power Drift = 0.15 dB

Peak SAR (extrapolated) = 36.39 W/kg

SAR(1 g) = 8.19 W/kg; SAR(10 g) = 2.37 W/kg

Maximum value of SAR (measured) = 15.4 W/kg



0 dB = 15.4 W/kg

System Performance Check Data (5750MHz)

Date: 2023.09.19

Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5750 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 5750 \text{ MHz}$; $\sigma = 5.208 \text{ S/m}$; $\epsilon_r = 35.188$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient Temperature: 22.6°C Liquid Temperature: 21.4°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(4.83, 4.83, 4.83); Calibrated: 2023.01.19;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2023.03.20
- Phantom: SAM (20deg probe tilt) with CRP v5.0 Right 1857; Type: QD000P40CC; Serial: TP1857
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

CW 5750 100mw/Area Scan (81x81x1): Interpolated grid: $dx=1.000 \text{ mm}$, $dy=1.000 \text{ mm}$

Maximum value of SAR (interpolated) = 8.35 W/kg

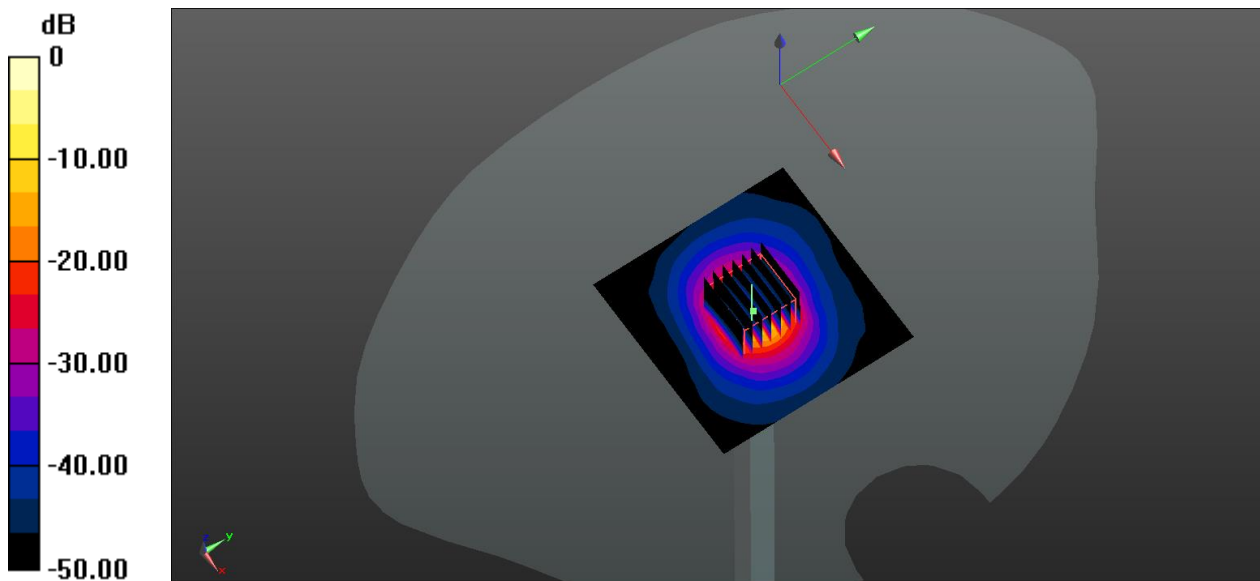
CW 5750 100mw/Zoom Scan (7x7x15)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=2\text{mm}$

Reference Value = 32.64 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 31.5 W/kg

SAR(1 g) = 7.88 W/kg; SAR(10 g) = 2.21 W/kg

Maximum value of SAR (measured) = 14.8 W/kg



0 dB = 14.8 W/kg

ANNEX C TEST DATA

Meas.1 Body Plane with Front Side 10mm on 11 Channel in IEEE802.11b mode

Date: 2023.09.19

Communication System Band: WLAN(b); Frequency: 2462 MHz; Duty Cycle: 1:1.011

Medium parameters used (interpolated): $f = 2462$ MHz; $\sigma = 1.776$ S/m; $\epsilon_r = 39.541$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 22.5°C Liquid Temperature: 21.3°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(7.78, 7.78, 7.78); Calibrated: 2023.01.19;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2023.03.20
- Phantom: SAM (20deg probe tilt) with CRP v5.0 Right 1857; Type: QD000P40CC; Serial: TP1857
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch11/Area Scan (71x71x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.368 W/kg

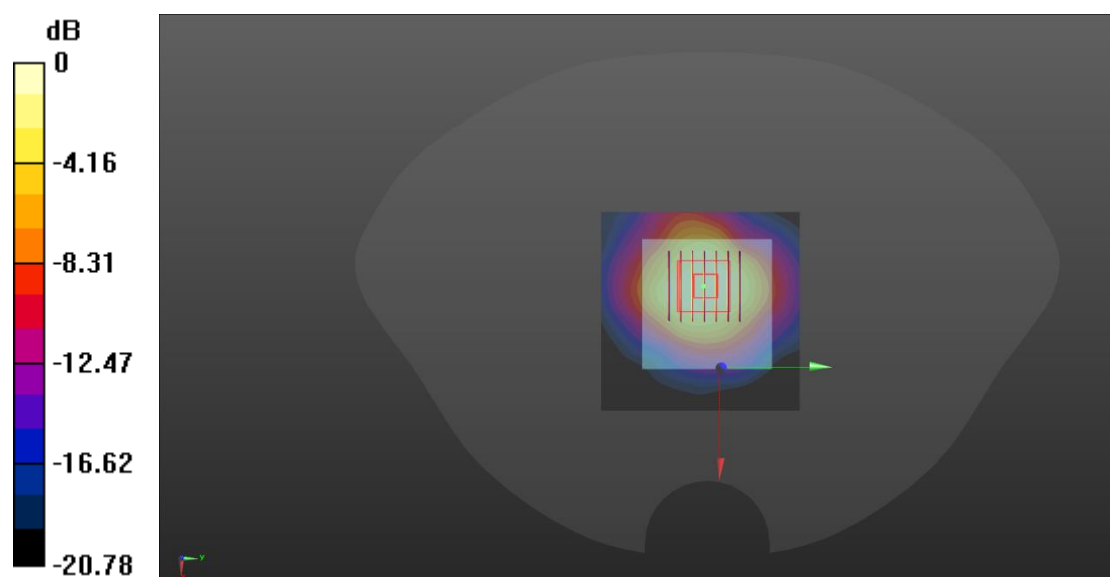
Ch11/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 12.69 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 0.476 W/kg

SAR(1 g) = 0.288 W/kg; SAR(10 g) = 0.155 W/kg

Maximum value of SAR (measured) = 0.317 W/kg



0 dB = 0.317 W/kg

Meas.2 Body Plane with Bask Side 0mm on 11 Channel in IEEE802.11b mode

Date: 2023.09.19

Communication System Band: WLAN(b); Frequency: 2462 MHz; Duty Cycle: 1:1.011

Medium parameters used (interpolated): $f = 2462$ MHz; $\sigma = 1.776$ S/m; $\epsilon_r = 39.541$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 22.5°C Liquid Temperature: 21.3°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(7.78, 7.78, 7.78); Calibrated: 2023.01.19;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2023.03.20
- Phantom: SAM (20deg probe tilt) with CRP v5.0 Right 1857; Type: QD000P40CC; Serial: TP1857
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch11/Area Scan (71x71x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 1.77 W/kg

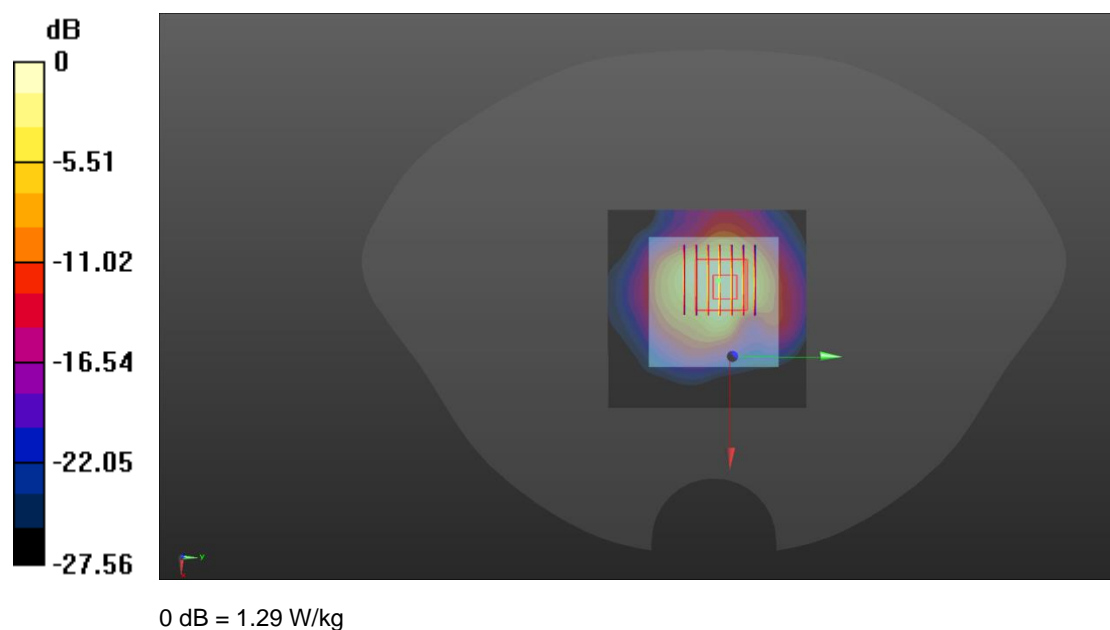
Ch11/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 23.63 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 2.02 W/kg

SAR(1 g) = 1.17 W/kg; SAR(10 g) = 0.587 W/kg

Maximum value of SAR (measured) = 1.29 W/kg



Meas.3 Body Plane with Front Side 10mm on 48 Channel in IEEE802.11a mode

Date: 2023.09.19

Communication System Band: WLAN(a); Frequency: 5240 MHz; Duty Cycle: 1:1.074

Medium parameters used (interpolated): $f = 5240$ MHz; $\sigma = 4.785$ S/m; $\epsilon_r = 36.976$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 22.2°C Liquid Temperature: 21.4°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(5.67, 5.67, 5.67); Calibrated: 2023.01.19;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2023.03.20
- Phantom: SAM (20deg probe tilt) with CRP v5.0 Right 1857; Type: QD000P40CC; Serial: TP1857
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch48/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.173 W/kg

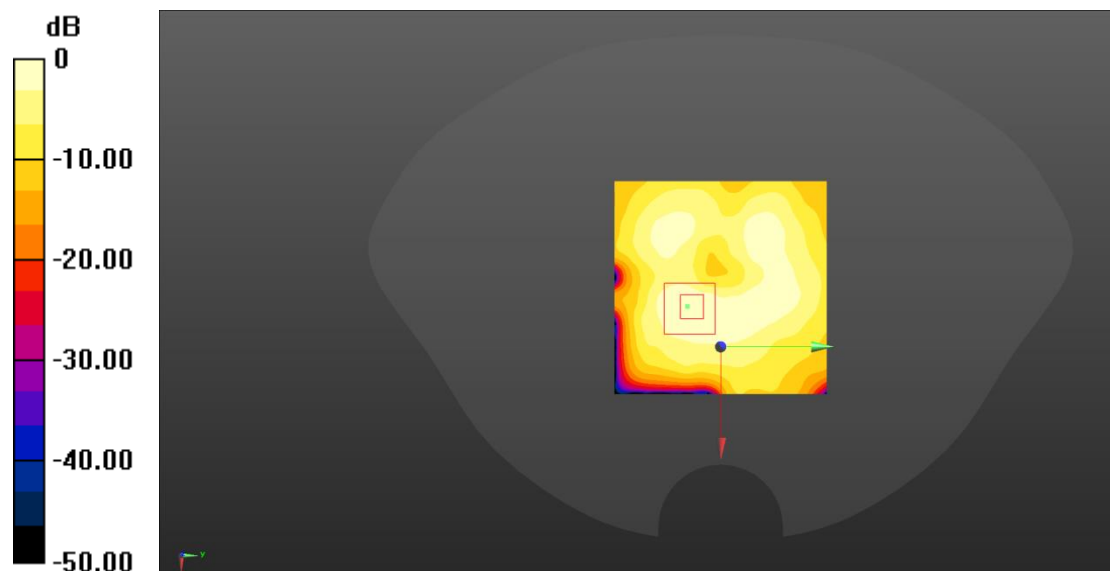
Ch48/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 1.170 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 0.323 W/kg

SAR(1 g) = 0.091 W/kg; SAR(10 g) = 0.035 W/kg

Maximum value of SAR (measured) = 0.165 W/kg



0 dB = 0.165 W/kg

Meas.4 Body Plane with Front Side 10mm on 60 Channel in IEEE802.11a mode

Date: 2023.10.09

Communication System Band: 5.3G; Frequency: 5300 MHz; Duty Cycle: 1:1.074

Medium parameters used: $f = 5300$ MHz; $\sigma = 4.844$ S/m; $\epsilon_r = 35.713$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 22.8°C Liquid Temperature: 21.5°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(5.37, 5.37, 5.37); Calibrated: 2023.01.19;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2023.03.20
- Phantom: SAM (20deg probe tilt) with CRP v5.0 Right 1857; Type: QD000P40CC; Serial: TP1857
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch60/Area Scan (81x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.235 W/kg

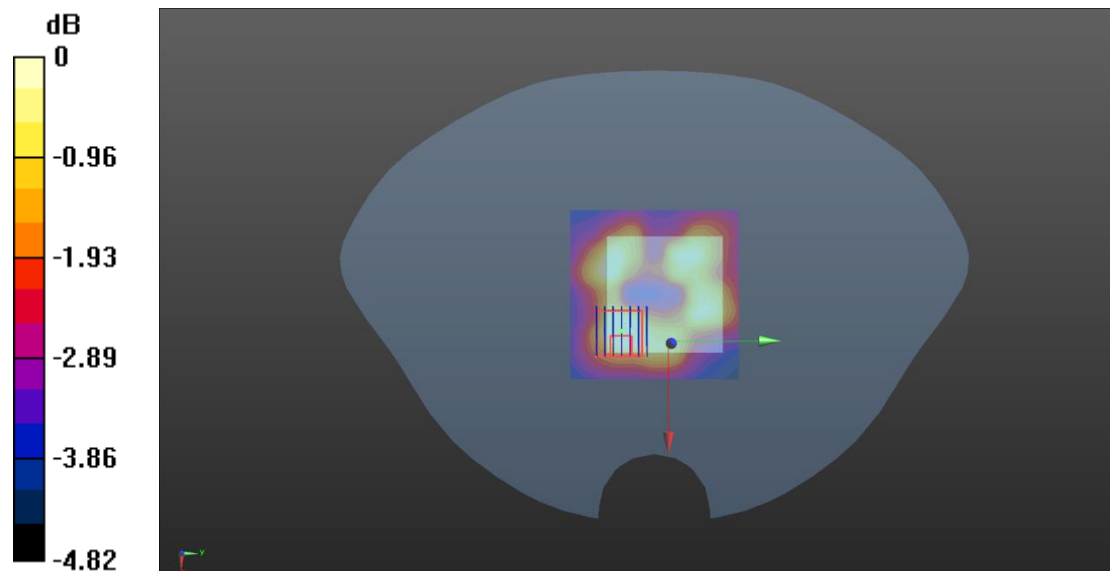
Ch60/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 3.973 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.442 W/kg

SAR(1 g) = 0.143 W/kg; SAR(10 g) = 0.093 W/kg

Maximum value of SAR (measured) = 0.202 W/kg



0 dB = 0.202 W/kg

Meas.5 Body Plane with Front Side 10mm on 140 Channel in IEEE802.11a mode

Date: 2023.10.09

Communication System Band: 5.6G; Frequency: 5700 MHz; Duty Cycle: 1:1.074

Medium parameters used: $f = 5700$ MHz; $\sigma = 5.059$ S/m; $\epsilon_r = 34.955$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 23.7°C Liquid Temperature: 21.6°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(4.88, 4.88, 4.88); Calibrated: 2023.01.19;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2023.03.20
- Phantom: SAM (20deg probe tilt) with CRP v5.0 Right 1857; Type: QD000P40CC; Serial: TP1857
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch140/Area Scan (81x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.193 W/kg

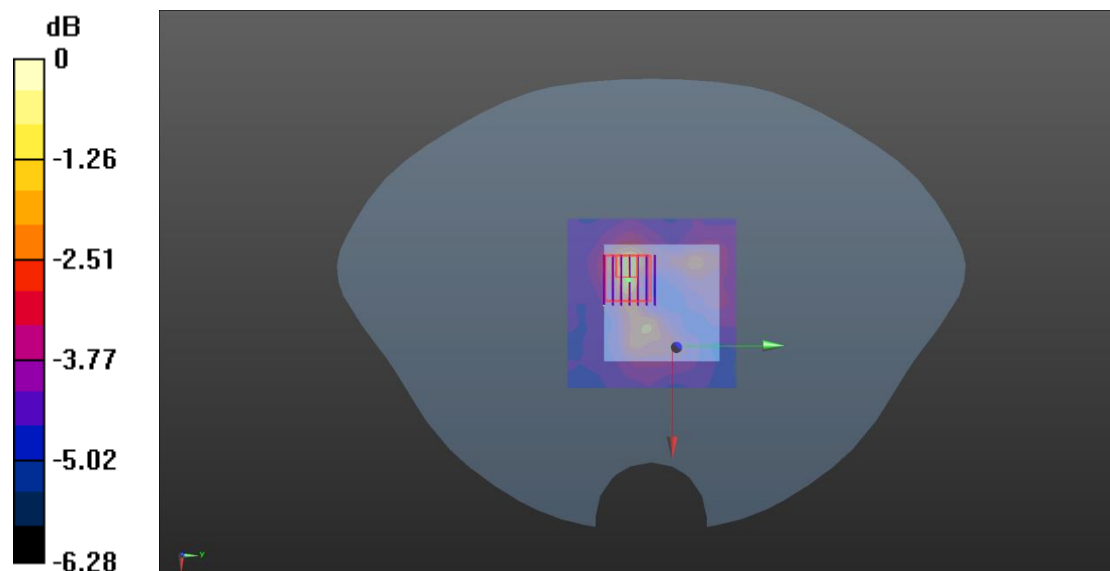
Ch140/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 4.268 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.416 W/kg

SAR(1 g) = 0.184 W/kg; SAR(10 g) = 0.126 W/kg

Maximum value of SAR (measured) = 0.280 W/kg



0 dB = 0.280 W/kg

Meas.6 Body Plane with Front Side 10mm on 149 Channel in IEEE802.11a mode

Date: 2023.09.19

Communication System Band: WLAN(a); Frequency: 5745 MHz; Duty Cycle: 1:1.074

Medium parameters used (interpolated): $f = 5745$ MHz; $\sigma = 5.198$ S/m; $\epsilon_r = 35.294$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 22.6°C Liquid Temperature: 21.4°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(4.83, 4.83, 4.83); Calibrated: 2023.01.19;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2023.03.20
- Phantom: SAM (20deg probe tilt) with CRP v5.0 Right 1857; Type: QD000P40CC; Serial: TP1857
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch149/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.125 W/kg

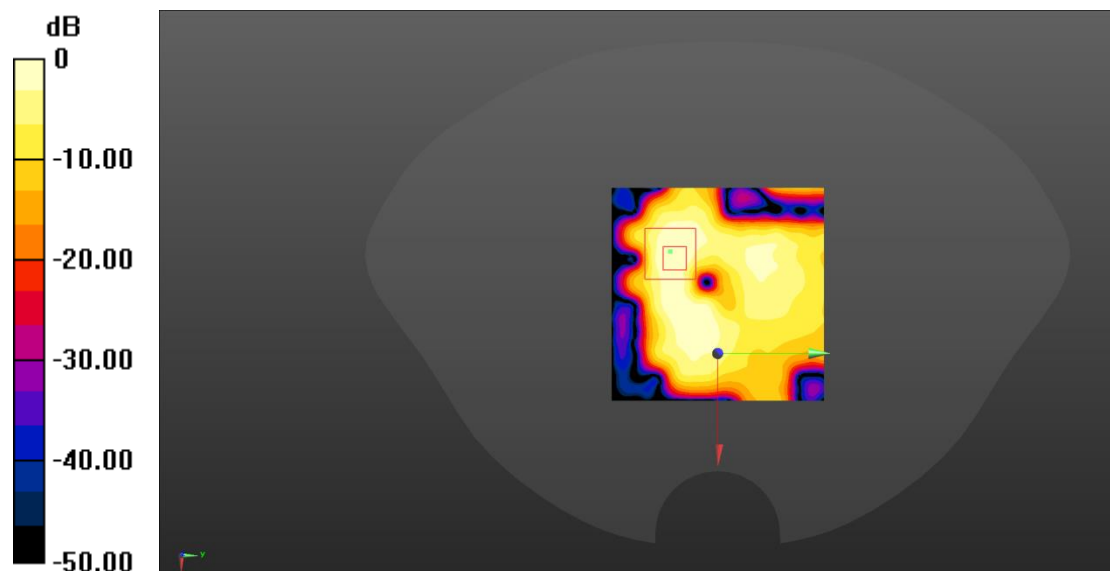
Ch149/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 0 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.200 W/kg

SAR(1 g) = 0.045 W/kg; SAR(10 g) = 0.013 W/kg

Maximum value of SAR (measured) = 0.103 W/kg



0 dB = 0.103 W/kg

Meas.7 Body Plane with Bask Side 0mm on 48 Channel in IEEE802.11a mode

Date: 2023.09.19

Communication System Band: WLAN(a); Frequency: 5240 MHz; Duty Cycle: 1:1.074

Medium parameters used (interpolated): $f = 5240$ MHz; $\sigma = 4.785$ S/m; $\epsilon_r = 36.976$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 22.2°C Liquid Temperature: 21.4°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(5.67, 5.67, 5.67); Calibrated: 2023.01.19;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2023.03.20
- Phantom: SAM (20deg probe tilt) with CRP v5.0 Right 1857; Type: QD000P40CC; Serial: TP1857
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch48/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.995 W/kg

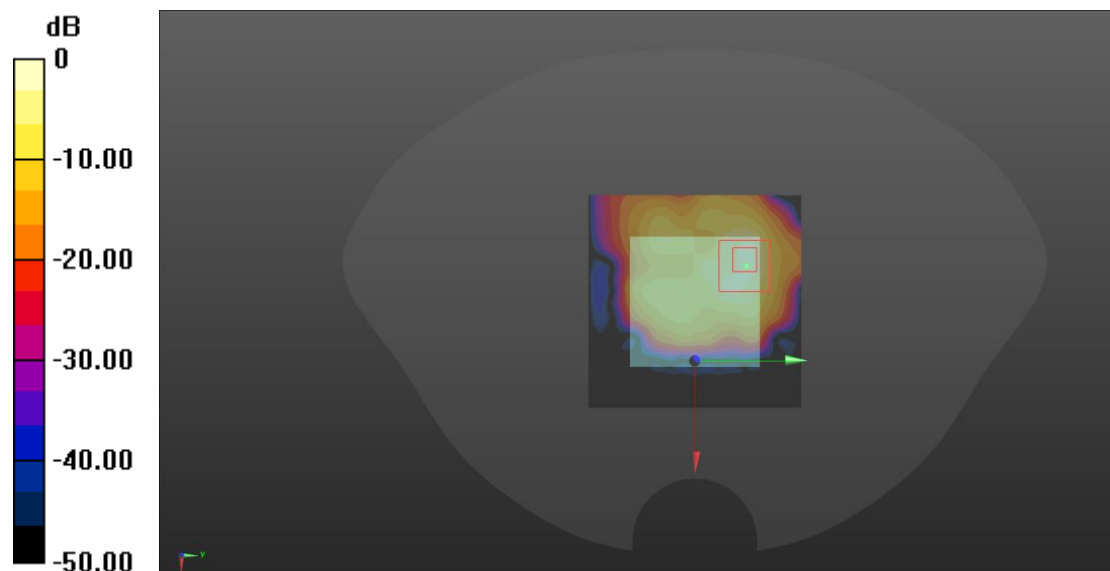
Ch48/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 5.521 V/m; Power Drift = 0.15 dB

Peak SAR (extrapolated) = 3.75 W/kg

SAR(1 g) = 0.729 W/kg; SAR(10 g) = 0.199 W/kg

Maximum value of SAR (measured) = 1.53 W/kg



0 dB = 1.53 W/kg

Meas.8 Body Plane with Back Side 0mm on 60 Channel in IEEE802.11a mode

Date: 2023.10.09

Communication System Band: 5.3G; Frequency: 5300 MHz; Duty Cycle: 1:1.074

Medium parameters used: $f = 5300$ MHz; $\sigma = 4.844$ S/m; $\epsilon_r = 35.713$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 22.8°C Liquid Temperature: 21.5°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(5.37, 5.37, 5.37); Calibrated: 2023.01.19;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2023.03.20
- Phantom: SAM (20deg probe tilt) with CRP v5.0 Right 1857; Type: QD000P40CC; Serial: TP1857
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch60/Area Scan (81x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.695 W/kg

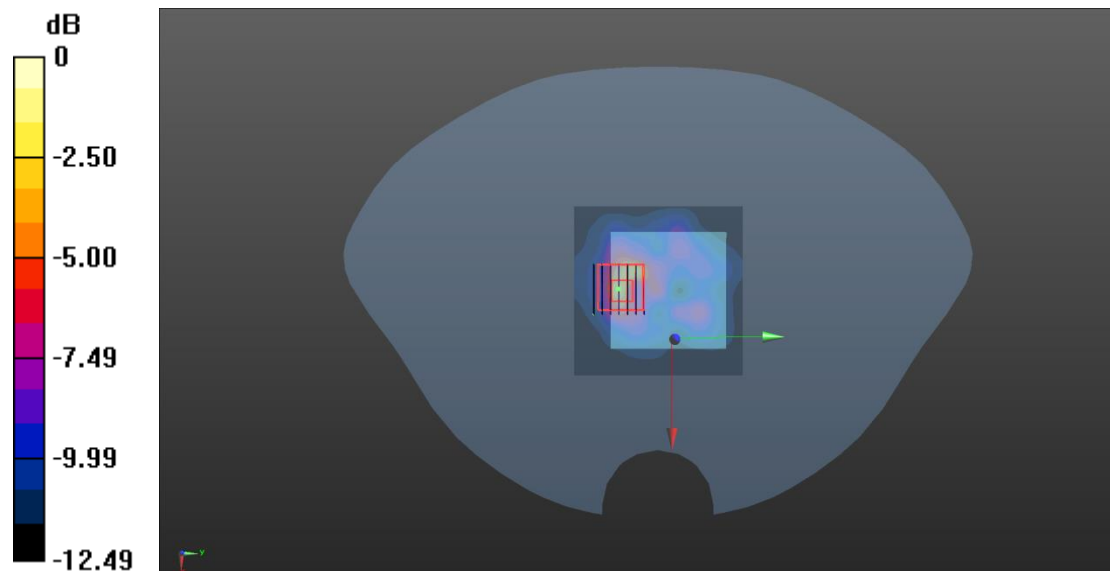
Ch60/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 8.335 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 3.11 W/kg

SAR(1 g) = 0.708 W/kg; SAR(10 g) = 0.261 W/kg

Maximum value of SAR (measured) = 1.37 W/kg



0 dB = 1.37 W/kg

Meas.9 Body Plane with Back Side 0mm on 140 Channel in IEEE802.11a mode

Date: 2023.10.09

Communication System Band: 5.6G; Frequency: 5700 MHz; Duty Cycle: 1:1.074

Medium parameters used: $f = 5700$ MHz; $\sigma = 5.059$ S/m; $\epsilon_r = 34.955$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 23.7°C Liquid Temperature: 21.6°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(4.88, 4.88, 4.88); Calibrated: 2023.01.19;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2023.03.20
- Phantom: SAM (20deg probe tilt) with CRP v5.0 Right 1857; Type: QD000P40CC; Serial: TP1857
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch140/Area Scan (81x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 1.20 W/kg

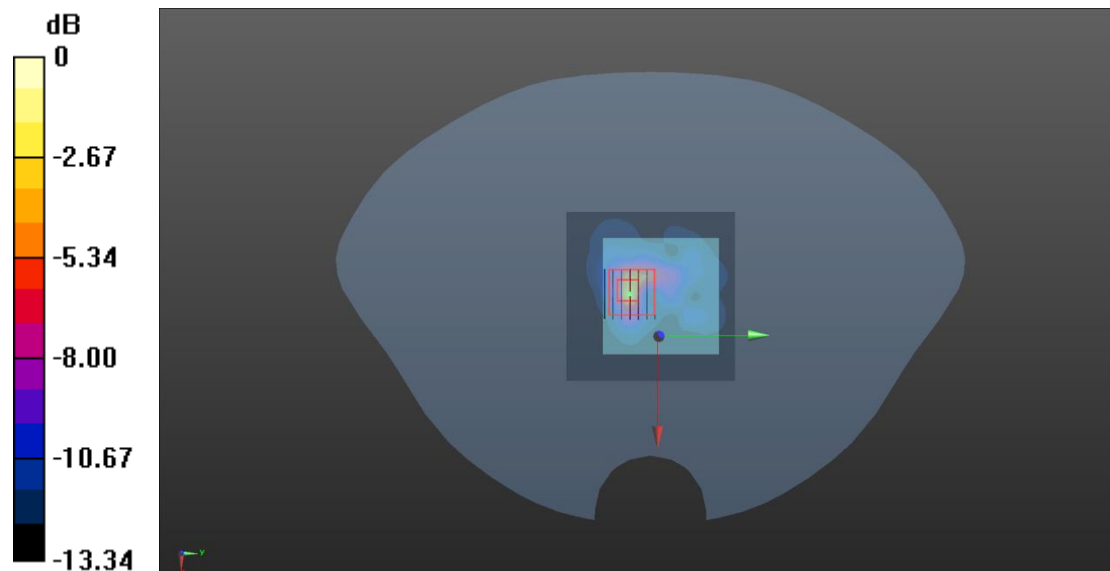
Ch140/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 5.126 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 4.42 W/kg

SAR(1 g) = 0.960 W/kg; SAR(10 g) = 0.314 W/kg

Maximum value of SAR (measured) = 2.01 W/kg



0 dB = 2.01 W/kg

Meas.10 Body Plane with Bask Side 0mm on 149 Channel in IEEE802.11a mode

Date: 2023.09.19

Communication System Band: WLAN(a); Frequency: 5745 MHz; Duty Cycle: 1:1.074

Medium parameters used (interpolated): $f = 5745$ MHz; $\sigma = 5.198$ S/m; $\epsilon_r = 35.294$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 22.6°C Liquid Temperature: 21.4°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(4.83, 4.83, 4.83); Calibrated: 2023.01.19;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2023.03.20
- Phantom: SAM (20deg probe tilt) with CRP v5.0 Right 1857; Type: QD000P40CC; Serial: TP1857
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch149/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 2.11 W/kg

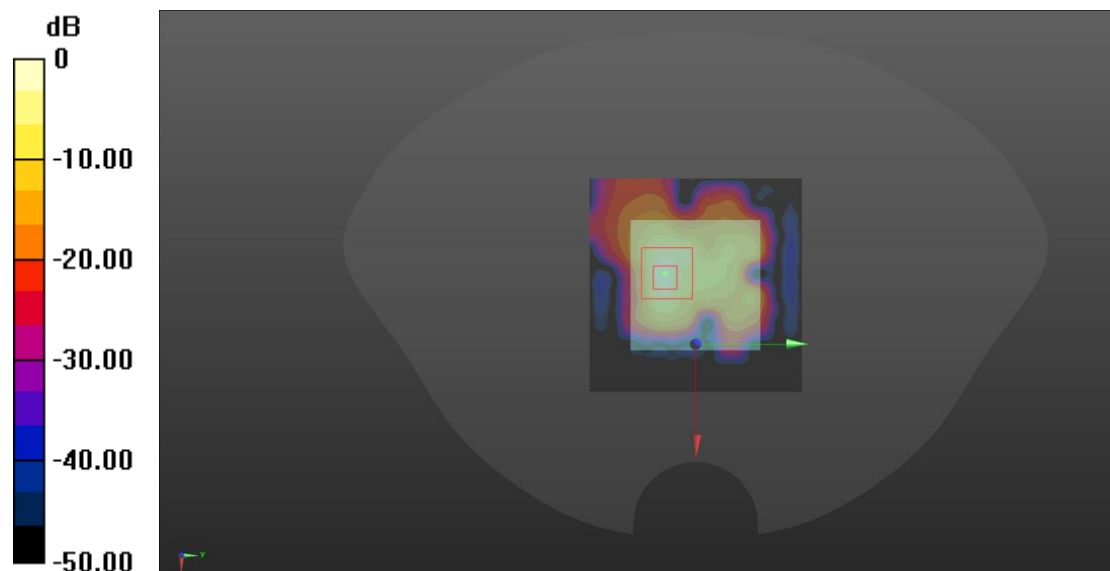
Ch149/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 4.692 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 5.14 W/kg

SAR(1 g) = 0.926 W/kg; SAR(10 g) = 0.218 W/kg

Maximum value of SAR (measured) = 2.19 W/kg



0 dB = 2.19 W/kg

Meas.11 Body Plane with Front Side 10mm on 78 Channel in Bluetooth mode

Date: 2023.09.19

Communication System Band: BT; Frequency: 2480 MHz; Duty Cycle: 1:1.301

Medium parameters used (interpolated): $f = 2480$ MHz; $\sigma = 1.797$ S/m; $\epsilon_r = 39.422$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 22.5°C Liquid Temperature: 21.3°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(7.78, 7.78, 7.78); Calibrated: 2023.01.19;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2023.03.20
- Phantom: SAM (20deg probe tilt) with CRP v5.0 Right 1857; Type: QD000P40CC; Serial: TP1857
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch78/Area Scan (71x71x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.171 W/kg

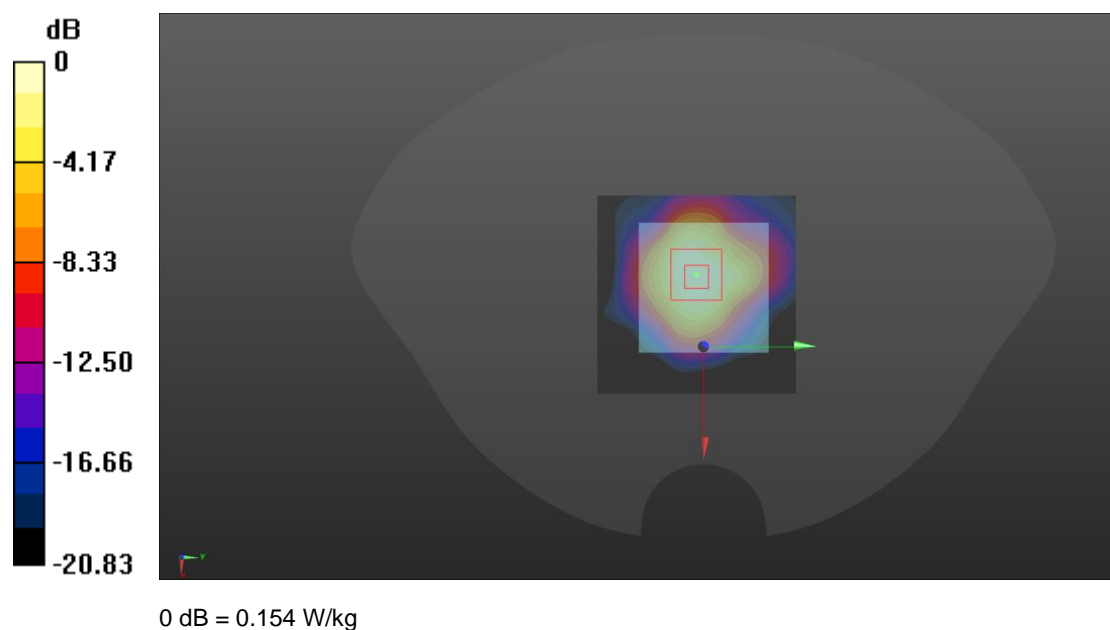
Ch78/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 9.036 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 0.231 W/kg

SAR(1 g) = 0.140 W/kg; SAR(10 g) = 0.076 W/kg

Maximum value of SAR (measured) = 0.154 W/kg



Meas.12 Body Plane with Bask Side 0mm on 78 Channel in Bluetooth mode

Date: 2023.09.19

Communication System Band: BT; Frequency: 2480 MHz; Duty Cycle: 1:1.301

Medium parameters used (interpolated): $f = 2480$ MHz; $\sigma = 1.797$ S/m; $\epsilon_r = 39.422$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 22.5°C Liquid Temperature: 21.3°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(7.78, 7.78, 7.78); Calibrated: 2023.01.19;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2023.03.20
- Phantom: SAM (20deg probe tilt) with CRP v5.0 Right 1857; Type: QD000P40CC; Serial: TP1857
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch78/Area Scan (71x71x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.680 W/kg

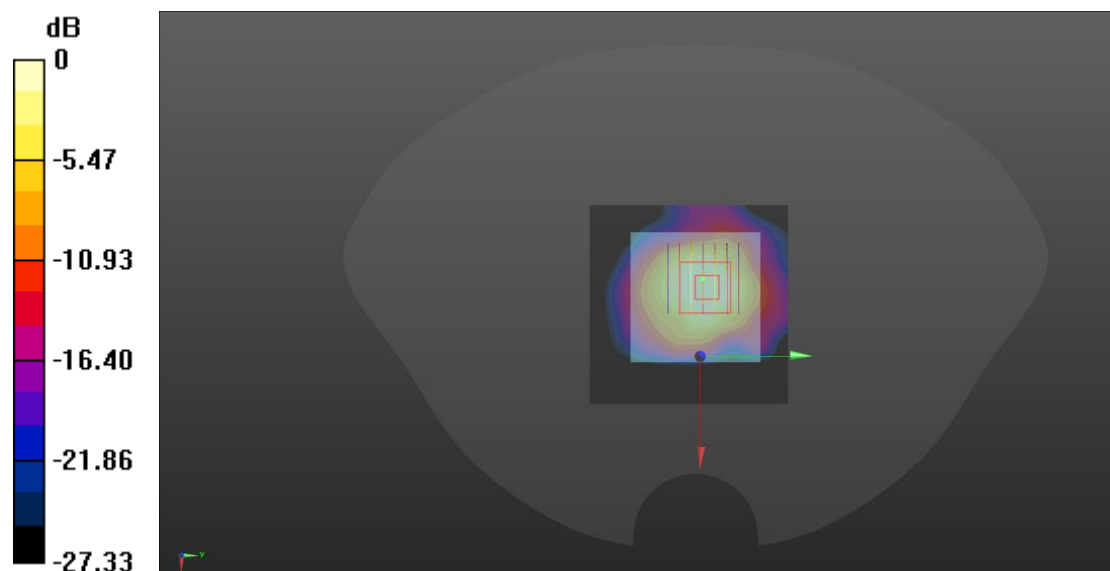
Ch78/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 17.05 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.912 W/kg

SAR(1 g) = 0.545 W/kg; SAR(10 g) = 0.276 W/kg

Maximum value of SAR (measured) = 0.599 W/kg



0 dB = 0.599 W/kg

ANNEX D EUT EXTERNAL PHOTOS

Please refer the document “BL-SZ2390637-AW-1.pdf”.

ANNEX E SAR TEST SETUP PHOTOS

Please refer the document “BL-SZ2390637-AS.pdf”.

ANNEX F CALIBRATION REPORT

Please refer the document “BL-SZ2390637-AC.pdf”.

ANNEX G TUNE-UP PROCEDURE

Please refer the document “BL-SZ2390637-AT.pdf”.

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