TEST REPORT

Reference No......	:	WTH24X04096557W005
FCC ID.....	:	2A7HY-DGC3
Applicant	:	Dragonglass Technology (SHENZHEN) Co., Ltd.
Address	:	Floor 4, No. 128, Potou Du West Road, Longxi community, Longgang street, Longgang District, Shenzhen, Guangdong, China
Manufacturer.....		The same as Applicant
Address		The same as Applicant
Product Name	:	Wireless Network Card
Model No......	:	DGC3
Standards	:	FCC Part 2.1093, IEEE Std C95.1: 2019 IEEE Std C95.3: 2002 + Rev. 2008 IEC/IEEE 62209-1528 Ed. 1.0 (2020-10)
Date of Receipt sample....	:	2024-05-10
Date of Test.....	:	2024-05-10 to 2024-05-17
Date of Issue	:	2024-05-17
Test Report Form No.	:	WTX_Part2_1093W
Test Result.....	:	**Pass**

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of approver.

Prepared By:

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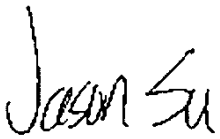
Tested by:

Jack Sun

Approved by:



Jason Su

TABLE OF CONTENTS

Report version

Version No.	Date of issue	Description
Rev.00	2024-05-17	Original
/	/	/

1. General Information

1.1 Product Description for Equipment Under Test (EUT)

General Description of EUT:	
Product Name:	Wireless Network Card
Trade Name:	/
Model No.:	DGC3
Adding Model:	DGC3P
Rated Voltage:	DC5V
Battery Capacity:	/
Power Adapter:	/
Note: The test data is gathered from a production sample, provided by the manufacturer. The appearance of others models listed in the report is different from main-test model DGC3, but the circuit and the electronic construction do not change, declared by the manufacturer.	

Technical Characteristics of EUT:	
WIFI(2.4GHz)	
Support Standards:	802.11b, 802.11g, 802.11n-HT20/40; 802.11ax-HE20/HE40
Frequency Range:	2412-2462MHz for 802.11b/g/n(HT20)/ax-HE20, 2422-2452MHz for 802.11n(HT40)/ax-HE40
RF Output Power:	Antenna 1: 17.91dBm (Conducted) Antenna 2: 17.60dBm (Conducted)
Type of Modulation:	CCK, OFDM, QPSK, BPSK, 16QAM, 64QAM，256QAM, 1024QAM
Quantity of Channels:	11 for 802.11b/g/n(HT20)/ax(EH20) 7 for 802.11n(HT40)/ax(HE40)
Channel Separation:	5MHz
Antenna Type:	External Antenna
Antenna Gain:	Antenna 1: 1.77dBi Antenna 2: 1.77dBi
Bluetooth	
Bluetooth Version:	Bluetooth V5.0
Frequency Range:	2402-2480MHz
RF Output Power:	8.18dBm (Conducted)
Modulation:	GFSK, π/4 DQPSK, 8DPSK
Quantity of Channels:	79/40
Channel Separation:	1MHz/2MHz
Antenna Type:	PCB Antenna
Antenna Gain:	0.75dBi
Wi-Fi(5GHz)	
Support Standards:	802.11a, 802.11n(HT20)/40, 802.11ac-VHT20/40/80 802.11ax-HE20/40/80
Frequency Range:	5180-5240MHz, 5745-5825MHz
RF Output Power:	Antenna 1: 15.80dBm (Conducted) Antenna 2: 17.20dBm (Conducted)
Type of Modulation:	BPSK,QPSK, 16QAM, 64QAM, 256-QAM
Type of Antenna:	External Antenna
Antenna Gain:	Antenna 1: 1.59dBi Antenna 2: 1.59dBi
Note: The Antenna Gain is provided by the customer and can affect the validity of results.	

1.2 Test Standards

The following report is accordance with RSS-102 ISSUE 5 (2015-03), FCC 47 CFR Part 2.1093, IEEE Std C95.1: 2019, IEEE Std C95.3: 2002 + Rev. 2008, IEC/IEEE 62209-1528 Ed. 1.0 (2020-10).

The objective is to determine compliance with FCC Part 2.1093 of the Federal Communication Commissions rules.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with KDB 865664 D01 v01r04 and KDB 865664 D02 v01r02. The public notice KDB 447498 D01 v06 for Mobile and Portable Devices RF Exposure Procedure also. KDB 447498 D02 SAR Procedures for Dongle Xmtr v02r01 SAR MEASUREMENT PROCEDURES FOR USB DONGLE TRANSMITTERS

1.4 Test Facility

Address of the test laboratory
Laboratory: Waltek Testing Group (Shenzhen) Co., Ltd.
Address: 1/F., Room 101, Building 1, Hongwei Industrial Park, Liuxian 2nd Road, Block 70 Bao'an District, Shenzhen, Guangdong, China

FCC – Registration No.: 125990
Waltek Testing Group (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. The Designation Number is CN5010.Test Firm Registration Number is 125990.

Industry Canada (IC) Registration No.: 11464A
The 3m Semi-anechoic chamber of Waltek Testing Group (Shenzhen) Co., Ltd. has been registered by Certifi cation and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A and the CAB identifier is CN0057.

2. Summary of Test Results

The maximum results of Specific Absorption Rate (SAR) have found during testing are as follows:

When the antennas stowed

Frequency Band	Body (0mm Gap) Maximum SAR_{1g} (W/kg)	SAR_{1g} Limit (W/kg)
WLAN(2.4GHz) ANT 1	0.031	1.6
WLAN(2.4GHz) ANT 2	0.077	1.6
WLAN(5GHz) ANT 1	0.113	1.6
WLAN(5GHz) ANT 2	**0.139**	1.6
Bluetooth	0.010	1.6
Simultaneous Transmission	**0.183**	1.6

When the antennas are deployed:

Frequency Band	Body (0mm Gap) Maximum SAR_{1g} (W/kg)	SAR_{1g} Limit (W/kg)
WLAN(2.4GHz) ANT 1	0.054	1.6
WLAN(2.4GHz) ANT 2	0.094	1.6
WLAN(5GHz) ANT 1	0.130	1.6
WLAN(5GHz) ANT 2	**0.166**	1.6
Bluetooth	0.017	1.6
Simultaneous Transmission	**0.239**	1.6

The device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg) specified in RSS-102 ISSUE 5 (2015-03) and FCC 47 CFR Part 2.1093 and IEEE Std C95.1: 2019, and had been tested in accordance with the measurement methods and procedure specified in KDB 865664 D01 v01r04 and KDB 865664 D02 v01r02.

3. Specific Absorption Rate (SAR)

3.1 Introduction

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.

3.2 SAR Definition

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:

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

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

$$\mathbf{SAR} = \mathbf{C}\left(\frac{\boldsymbol{\delta}\mathbf{T}}{\boldsymbol{\delta}\mathbf{t}}\right)$$

Where: C is the specific heat capacity, δ T is the temperature rise and δ t is the exposure duration, or 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, ρ is the mass density of the tissue and E is the RMS electrical field strength.

However for evaluating SAR of low power transmitter, electrical field measurement is typically applied.

4. SAR Measurement System

4.1 The Measurement System

Comosar is a system that is able to determine the SAR distribution inside a phantom of human being according to different standards. The Comosar system consists of the following items:

- Main computer to control all the system
- 6 axis robot
- Data acquisition system
- Miniature E-field probe
- Phone holder
- Head simulating tissue

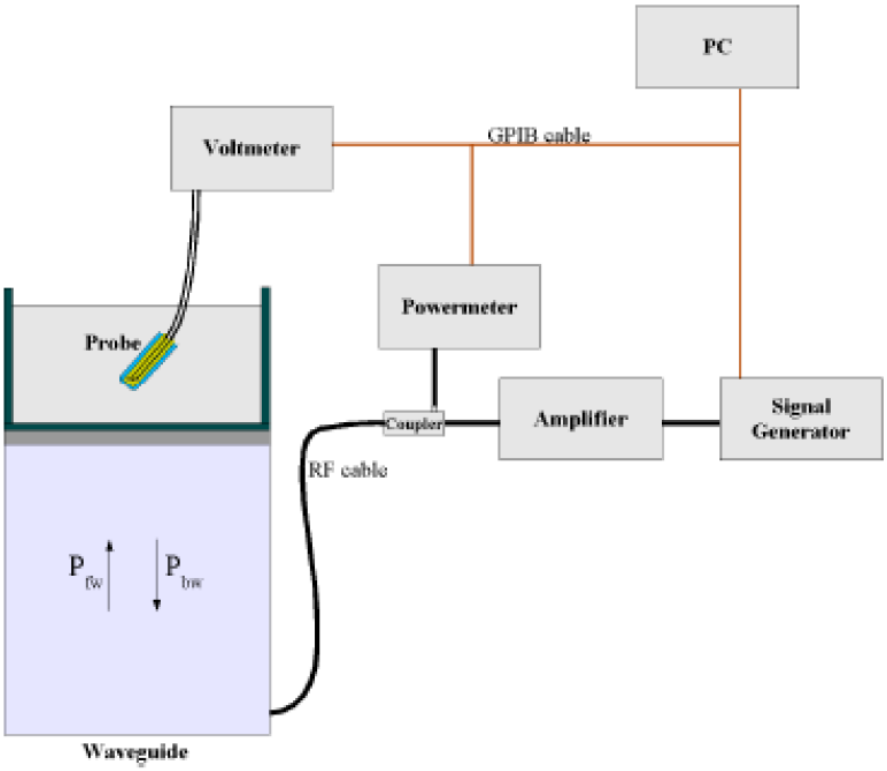
The following figure shows the system.

The EUT under test operating at the maximum power level is placed in the phone holder, under the phantom, which is filled with head simulating liquid. The E-Field probe measures the electric field inside the phantom. The OpenSAR software computes the results to give a SAR value in a 1g or 10g mass.

4.2 Probe

For the measurements the Specific Dosimetric E-Field Probe SSE2 SN 18/21 EPGO356, and refer to the calibration report for probe parameters.

Probe calibration is realized, in compliance with EN 62209-1 and IEC/IEEE 62209-1528 Ed. 1.0 (2020-10) STD, with CALISAR, Antenna proprietary calibration system. The calibration is performed with the EN 62209-1 annexes technique using reference guide at the five frequencies.



$$SAR = \frac{4\left(P_{fw} - P_{bw}\right)}{ab\delta} \cos^2\left(\pi \frac{y}{a}\right) e^{-(2z/\delta)}$$

Where :

Pfw = Forward Power

Pbw = Backward Power

a and b =Waveguide dimensions

I = Skin depth

Keithley configuration:

Rate = Medium; Filter = ON; RDGS = 10; Filter type = Moving Average; Range auto after each calibration, a SAR measurement is performed on a validation dipole and compared with a NPL calibrated probe, to verify it.

The calibration factors, CF(N), for the 3 sensors corresponding to dipole 1, dipole 2 and dipole 3 are:

CF(N)=SAR(N)/Vlin(N) (N=1,2,3)

The linearised output voltage Vlin(N) is obtained from the displayed output voltage V(N) using

Vlin(N)=V(N)*(1+V(N)/DCP(N)) (N=1,2,3)

where DCP is the diode compression point in mV.

4.3 Probe Calibration Process

Dosimetric Assessment Procedure

Each E-Probe/Probe Amplifier combination has unique calibration parameters. SATIMO Probe calibration procedure is conducted to determine the proper amplifier settings to enter in the probe parameters. The amplifier settings are determined for a given frequency by subjecting the probe to a known E-field density (1 mW/cm2) using an with CALISAR, Antenna proprietary calibration system.

Free Space Assessment Procedure

The free space E-field from amplified probe outputs is determined in a test chamber. This calibration can be performed in a TEM cell if the frequency is below 1 GHz and in a waveguide or other methodologies above 1 GHz for free space. For the free space calibration, the probe is placed in the volumetric center of the cavity and at the proper orientation with the field. The probe is rotated 360 degrees until the three channels show the maximum reading. The power density readings equates to 1mW/cm2.

Temperature Assessment Procedure

E-field temperature correlation calibration is performed in a flat phantom filled with the appropriate simulated head tissue. The E-field in the medium correlates with the temperature rise in the dielectric medium. For temperature correlation calibration a RF transparent thermistor-based temperature probe is used in conjunction with the E-field probe.

$$SAR = C\frac{\Delta T}{\Delta t}$$

Where:

Δ t = exposure time (30 seconds),

C = heat capacity of tissue (brain or muscle),

Δ T = temperature increase due to RF exposure.

SAR is proportional to ΔT/Δt, the initial rate of tissue heating, before thermal diffusion takes place. The electric field in the simulated tissue can be used to estimate SAR by equating the thermally derived SAR to that with the E- field component.

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

Where:

σ = simulated tissue conductivity,

ρ = Tissue density (1.25 g/cm3 for brain tissue)

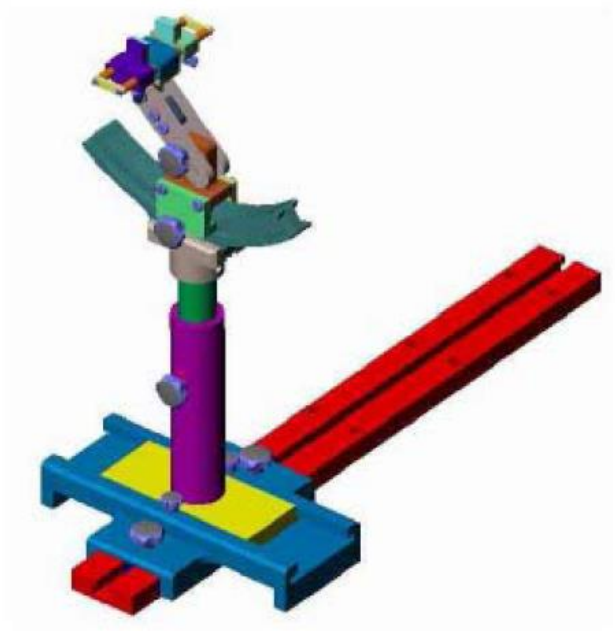
4.4 Phantom

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.

4.5 Device Holder

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



System Material	Permittivity	Loss Tangent
Delrin	3.7	0.005

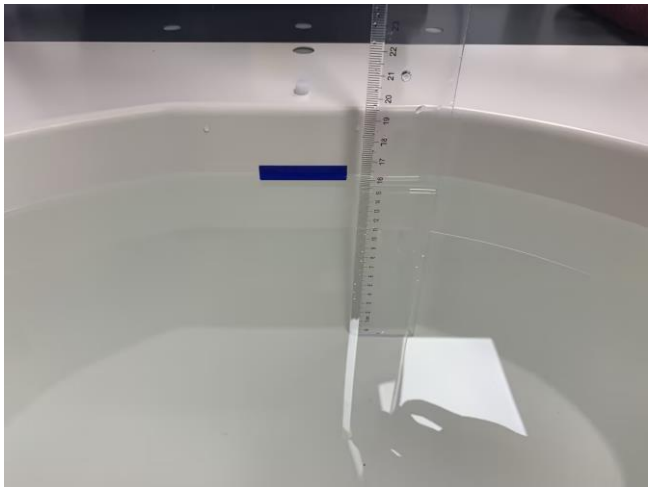
4.6 Test Equipment List

Fixed asset Number	Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
WTXE1053A1006	E-Field Probe	MVG	SSE2	SN 18/21 EPGO356	2023-07-07	2024-07-06
WTXE1053A1001-007	2450MHz Dipole	MVG	SID2450	SN 13/15 DIP 2G450-364	2023-08-20	2026-08-19
WTXE1035A1009	5 GHz Dipole	MVG	SID5000	SN 02/21 DIP 5G000-543	2021-07-21	2024-07-20
WTXE1053A1001-010	Dielectric Probe	SATIMO	SCLMP	SN 47/12 OCPG49	2024-02-24	2025-02-23
WTXE1075A1003	Power meter	Keithley	3500	1232959	2024-02-24	2025-02-23
WTXE1075A1002	Power meter	Keithley	3500	1162591	2024-02-24	2025-02-23
WTXE1104A1003	EXG Analog Signal Generator	KEYSIGHT	N5173B	MY61252892	2024-02-24	2025-02-23
WTXE1022A1002	GSM Tester	Rohde & Schwarz	CMU200	114403	2024-02-27	2025-02-26
WTXE1041A1002	Communications Tester	Rohde & Schwarz	CMW500	148650	2024-03-19	2025-03-18
WTXE1036A1001	Network Analyzer	Rohde & Schwarz	ZVB 8	101353	2023-10-17	2024-10-16

5. Tissue Simulating Liquids

5.1 Composition of Tissue Simulating Liquid

For the measurement of the field distribution inside the SAM phantom with SMTIMO, the phantom must be filled with around 25 liters of homogeneous body tissue simulating liquid. 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. Please see the following photos for the liquid height.



Liquid Height for Body SAR

The Composition of Tissue Simulating Liquid

Frequency (MHz)	Water (%)	Salt (%)	1,2-Propane diol (%)	HEC (%)	Preventol (%)	DGBE (%)
Head						
2450	55.0	0.1	0	0	0	44.9

Frequency (MHz)	Water (%)	Hexyl Carbitol (%)	Triton X-100 (%)
Head			
5000-6000	65.52	17.24	17.24

5.2 Tissue Dielectric Parameters for Head and Body Phantoms

According to FCC KDBs, IEC/IEEE 62209-1528 Ed. 1.0 (2020-10) and CEI/IEC 62209 standards state that the system validation measurements must be performed using a reference dipole meeting the fore mentioned return loss and mechanical dimension requirements. The validation measurement must be performed against a liquid filled flat phantom, with the phantom constructed as outlined in the fore mentioned standards. Per the standards, the dipole shall be positioned below the bottom of the phantom, with the dipole length centered and parallel to the longest dimension of the flat phantom, with the top surface of the dipole at the described distance from the bottom surface of the phantom.

Target Frequency (MHz)	Head		Body	
	Conductivity (σ)	Permittivity (ε_r)	Conductivity (σ)	Permittivity (ε_r)
150	0.76	52.3	0.80	61.9
300	0.87	45.3	0.92	58.2
450	0.87	43.5	0.94	56.7
750	0.89	41.9	0.96	55.5
835	0.90	41.5	0.97	55.2
900	0.97	41.5	1.05	55.0
915	0.98	41.5	1.06	55.0
1450	1.20	40.5	1.30	54.0
1610	1.29	40.3	1.40	53.8
1800-2000	1.40	40.0	1.52	53.3
2100	1.49	39.8	1.62	53.2
2300	1.67	39.5	1.81	52.9
2450	**1.80**	**39.2**	**1.95**	**52.7**
2600	1.96	39.0	2.16	52.5
3000	2.40	38.5	2.73	52.0
5200	**4.66**	**36.0**	**5.30**	**49.0**
5400	4.86	35.8	5.53	48.7
5600	5.07	35.5	5.77	48.5
5800	**5.27**	**35.3**	**6.00**	**48.2**

5.3 Tissue Calibration Result

The dielectric parameters of the liquids were verified prior to the SAR evaluation using COMOSAR Dielectric Probe Kit and an Agilent Network Analyzer.

Calibration Result for Dielectric Parameters of Tissue Simulating Liquid

Head Tissue Simulating Liquid									
Freq. MHz	Temp. (℃)	Conductivity			Permittivity			Limit (%)	Date
		Reading (σ)	Target (σ)	Delta (%)	Reading (ε r)	Target (ε r)	Delta (%)		
2450	22.0	1.84	1.80	2.22	40.35	39.2	2.93	±5	2024-05-17
5200	22.3	4.62	4.66	-0.86	37.21	36.0	3.36	±5	2024-05-15
5800	22.3	5.23	5.27	-0.76	35.88	35.3	1.64	±5	2024-05-16

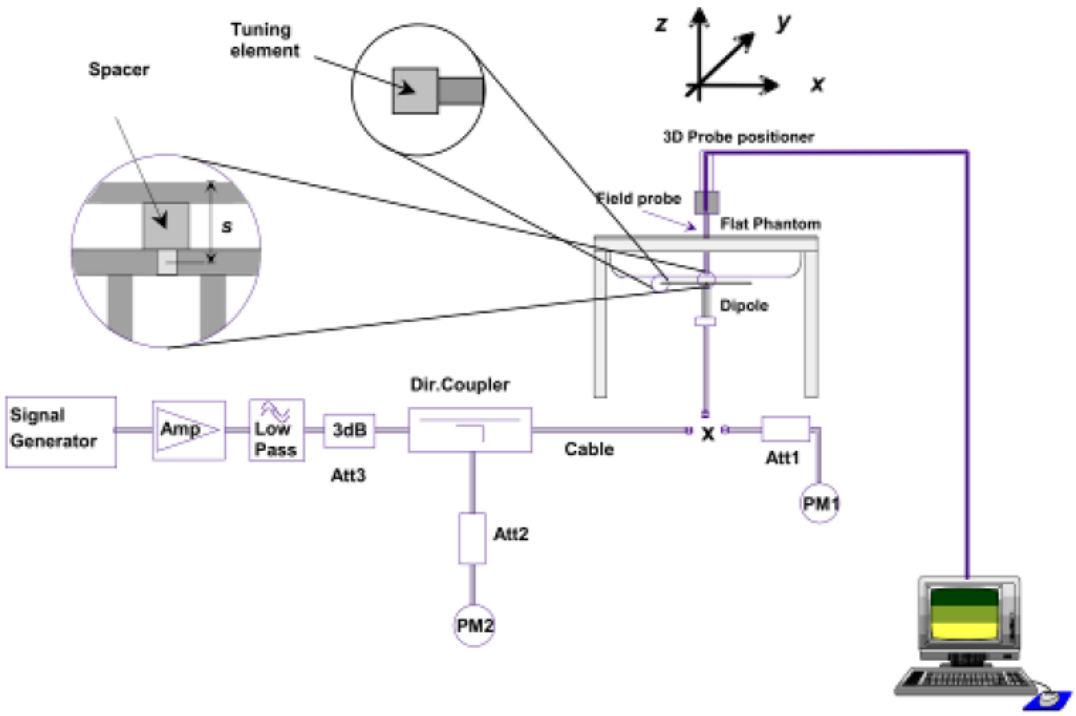
6. SAR Measurement Evaluation

6.1 Purpose of System Performance 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.

6.2 System 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 which comes from a signal generator at frequency 5260MHz, 5280MHz, 5320MHz, 5580 MHz, and 5700MHz. 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.



System Verification Setup Block Diagram

Setup Photo of Dipole Antenna

The output power on dipole port must be calibrated to 24 dBm(250 mW) before dipole is connected.

6.3 Validation Results

Comparing to the original SAR value provided by SATIMO, the validation data should be within its specification of 10 %. Table 6.1 shows the target SAR and measured SAR after normalized to 1W input power. The table below indicates the system performance check can meet the variation criterion.

Frequency	Power	Targeted SAR_{1g}	Measured SAR_{1g}	Normalized SAR_{1g}	Tolerance	Date
MHz	(mw)	(W/kg)	(W/kg)	(W/kg)	(%)	
Head						
2450	250	54.31	13.747	54.988	1.25	2024-05-17
5200	250	75.31	18.567	74.268	-1.38	2024-05-15
5800	250	78.05	18.087	72.348	-7.31	2024-05-16

Targeted and Measurement SAR

Please refer to Annex A for the plots of system performance check.

7. EUT Testing Position

7.1 Body Position

(a) To position the device parallel to the phantom surface with each side.
(b) To adjust the device parallel to the flat phantom.
(c) To adjust the distance between the device surface and the flat phantom to 5mm.

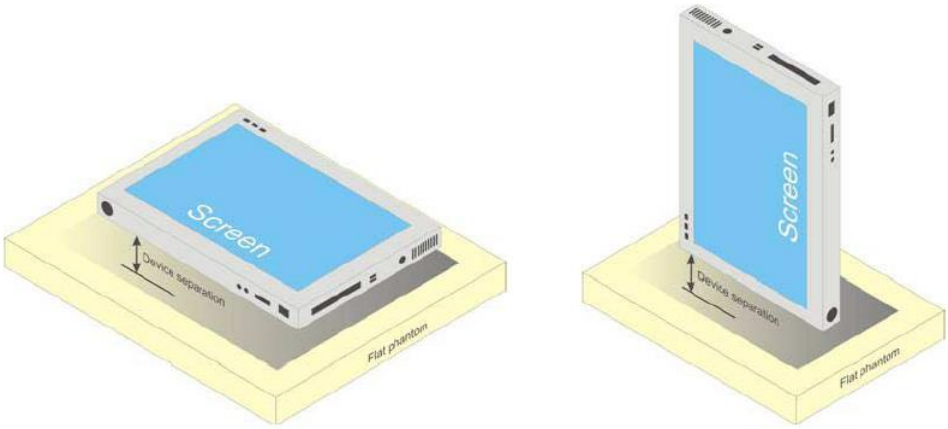


Illustration for Body Position

SIMPLE DONGLE PROCEDURES

Test all USB orientations [see figure below: (A) Horizontal-Up, (B) Horizontal-Down, (C) Vertical-Front, and (D) Vertical-Back] with a device-to-phantom separation distance of 5 mm or less, according to KDB Publication 447498 D01 requirements. These test orientations are intended for the exposure conditions found in typical laptop/notebook/netbook or tablet computers with either horizontal or vertical USB connector configurations at various locations in the keyboard section of the computer. Current generation portable host computers should be used to establish the required SAR measurement separation distance. The same test separation distance must be used to test all frequency bands and modes in each USB orientation. The typical Horizontal-Up USB connection (A), found in the majority of host computers, must be tested using an appropriate host computer. A host computer with either Vertical-Front (C) or Vertical Back (D) USB connection should be used to test one of the vertical USB orientations. If a suitable host computer is not available for testing the Horizontal-Down (B) or the remaining Vertical USB orientation, a high quality USB cable, 12 inches or less, may be used for testing these other orientations. It must be documented that the USB cable does not influence the radiating characteristics and output power of the transmitter.

(A)	(B)	(C)	(D)
Horizontal-Up	**Horizontal-Down**	**Vertical-Front**	**Vertical-Back**

Note: These are USB connector orientations on laptop computers; USB dongles have the reverse configuration for plugging into the corresponding laptop computers.

USB Connector Orientations Implemented on Laptop Computers

DONGLES WITH SWIVEL OR ROTATING CONNECTORS

A swivel or rotating USB connector may enable the dongle to connect in different orientations to host computers. When the antenna is built-in within the housing of a dongle, a swivel or rotating connector may allow the antenna to assume different positions. The combination of these possible configurations must be considered to determine the SAR test requirements. When the antenna is located near the tip of a dongle, it may operate at closer proximity to users in certain connector orientations where dongle tip testing may be required. The 5 mm test separation distance used for testing simple dongles has been established based on the overall host platform (laptop/notebook/netbook) and device variations, and varying user operating configurations and exposure conditions expected for a peripheral device. The same test distance should generally apply to dongles with swivel or rotating connectors. The procedures described for simple dongles should be used to position the four surfaces of the dongle at 5 mm from the phantom to evaluate SAR. At least one of the horizontal and one of the vertical positions should be tested using an applicable host computer. If the antenna is within 1 cm from the tip of the dongle (the end without the USB connector), the tip of the dongle should also be tested at 5 mm perpendicular to the phantom.

7.2 EUT Antenna Position

Please refer to the Annex for SAR

7.3 EUT Testing Position

Please refer to the Annex for SAR

8. SAR Measurement Procedures

8.1 Measurement Procedures

The measurement procedures are as follows:
(a) Use base station simulator (if applicable) or engineering software to transmit RF power continuously (continuous Tx) in the highest power channel.
(b) Keep EUT to radiate maximum output power or 100% factor (if applicable)
(c) Measure output power through RF cable and power meter.
(d) Place the EUT in the positions as Annex D demonstrates.
(e) Set scan area, grid size and other setting on the SATIMO software.
(f) Measure SAR results for the highest power channel on each testing position.
(g) Find out the largest SAR result on these testing positions of each band
(h) Measure SAR results for other channels in worst SAR testing position if the SAR of highest power channel is larger than 0.8 W/kg

According to the test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:
(a) Power reference measurement
(b) Area scan
(c) Zoom scan
(d) Power drift measurement

8.2 Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1g and 10g, as well as for user-specific masses. The SATIMO software includes all numerical procedures necessary to evaluate the spatial peak SAR value.
The base for the evaluation is a "cube" measurement. The measured volume must include the 1g and 10g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.
The entire evaluation of the spatial peak values is performed within the post-processing engine. The system always gives the maximum values for the 1g and 10g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:
(a) Extraction of the measured data (grid and values) from the Zoom Scan
(b) Calculation of the SAR value at every measurement point based on all stored data
(c) Generation of a high-resolution mesh within the measured volume
(d) Interpolation of all measured values form the measurement grid to the high-resolution grid
(e) Extrapolation of the entire 3D field distribution to the phantom surface over the distance from sensor to surface
(f) Calculation of the averaged SAR within masses of 1g and 10g

8.3 Area & Zoom Scan Procedures

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 measures 5x5x7 points with step size 8, 8 and 5 mm for 300 MHz to 3 GHz, and 8x8x8 points with step size 4, 4 and 2.5 mm for 3 GHz to 6 GHz. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR-distribution over 10 g.

8.4 Volume Scan Procedures

The volume scan is used for assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 1g aggregate SAR, the EUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing (step-size is 4, 4 and 2.5 mm). When all volume scan were completed, the software can combine and subsequently superpose these measurement data to calculating the multiband SAR.

8.5 SAR Averaged Methods

The local SAR inside the phantom is measured using small dipole sensing elements inside a probe body. The probe tip must not be in contact with the phantom surface in order to minimize measurements errors, but the highest local SAR will occur at the surface of the phantom.

An extrapolation is using to determinate this highest local SAR values. The extrapolation is based on a fourth-order least-square polynomial fit of measured data. The local SAR value is then extrapolated from the liquid surface with a 1mm step.

The measurements have to be performed over a limited time (due to the duration of the battery) so the step of measurement is high. It could vary between 5 and 8 mm. To obtain an accurate assessment of the maximum SAR averaged over 10g and 1 g requires a very fine resolution in the three dimensional scanned data array.

8.6 Power Drift Monitoring

All SAR testing is under the EUT install full charged battery and transmit maximum output power. In SATIMO measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of EUT during SAR test. Both these procedures measure the field at a specified reference position before and after the SAR testing. The software will calculate the field difference in dB. If the power drift more than 5%, the SAR will be retested.

9. SAR Test Result

9.1 Conducted RF Output Power

WLAN(2.4GHz)-ANT1					
Test Mode	**Data Rate**	**Channel**	**Frequency (MHz)**	**Conducted Power (dBm)**	**Tune-up power (dBm)**
802.11b	1Mbps	CH 01	2412	17.41	18.0
		CH 06	2437	**17.91**	18.0
		CH 11	2462	17.44	18.0
802.11g	6Mbps	CH 01	2412	14.72	18.0
		CH 06	2437	15.15	18.0
		CH 11	2462	15.02	18.0
802.11n-HT20	MCS0	CH 01	2412	15.54	18.0
		CH 06	2437	15.72	18.0
		CH 11	2462	15.51	18.0
802.11n-HT40	MCS0	CH 03	2422	15.20	18.0
		CH 06	2437	15.87	18.0
		CH 09	2452	15.14	18.0
802.11ax-HE20	MCS0	CH 01	2412	15.92	18.0
		CH 06	2437	16.21	18.0
		CH 11	2462	16.36	18.0
802.11ax-HE40	MCS0	CH 03	2422	15.47	18.0
		CH 06	2437	15.66	18.0
		CH 09	2452	15.68	18.0

WLAN(5.2GHz)-ANT1				
Test Mode	**Channel**	**Frequency (MHz)**	**Conducted Power (dBm)**	**Tune-up power (dBm)**
802.11a	36	5180	11.48	14.0
	40	5200	11.18	14.0
	48	5240	10.32	14.0
802.11n-HT20	36	5180	11.59	14.0
	40	5200	10.85	14.0
	48	5240	11.07	14.0
802.11n-HT40	38	5190	12.27	14.0
	46	5230	12.17	14.0
802.11ac-VHT20	36	5180	11.75	14.0
	40	5200	11.41	14.0
	48	5240	11.41	14.0
802.11ac-VHT40	38	5190	12.73	14.0
	46	5230	12.11	14.0
802.11ac-VHT80	42	5210	**13.75**	14.0
802.11ax-HE20	36	5180	11.74	14.0
	40	5200	11.48	14.0
	48	5240	11.01	14.0
802.11ax-HE40	38	5190	13.07	14.0
	46	5230	11.97	14.0
802.11ax-HE80	42	5210	12.52	14.0

WLAN(5.8GHz)-ANT1				
Test Mode	**Channel**	**Frequency (MHz)**	**Conducted Power (dBm)**	**Tune-up power (dBm)**
802.11a	149	5745	13.06	16.0
	157	5785	14.48	16.0
	165	5825	13.57	16.0
802.11n-HT20	149	5745	15.22	16.0
	157	5785	13.32	16.0
	165	5825	14.42	16.0
802.11n-HT40	151	5755	15.17	16.0
	159	5795	15.02	16.0
802.11ac-VHT20	149	5745	14.28	16.0
	157	5785	14.48	16.0
	165	5825	14.72	16.0
802.11ac-VHT40	151	5755	**15.80**	16.0
	159	5795	14.50	16.0
802.11ac-VHT80	155	5775	15.43	16.0
802.11ax-HE20	149	5745	14.06	16.0
	157	5785	14.91	16.0
	165	5825	14.64	16.0
802.11ax-HE40	151	5755	15.05	16.0
	159	5795	14.76	16.0
802.11ax-HE80	155	5775	15.61	16.0

WLAN(2.4GHz)-ANT2					
Test Mode	**Data Rate**	**Channel**	**Frequency (MHz)**	**Conducted Power (dBm)**	**Tune-up power (dBm)**
802.11b	1Mbps	CH 01	2412	17.05	18.0
		CH 06	2437	**17.60**	18.0
		CH 11	2462	16.55	18.0
802.11g	6Mbps	CH 01	2412	14.35	18.0
		CH 06	2437	14.49	18.0
		CH 11	2462	14.28	18.0
802.11n-HT20	MCS0	CH 01	2412	15.31	18.0
		CH 06	2437	14.90	18.0
		CH 11	2462	14.74	18.0
802.11n-HT40	MCS0	CH 03	2422	14.04	18.0
		CH 06	2437	14.05	18.0
		CH 09	2452	14.39	18.0
802.11ax-HE20	MCS0	CH 01	2412	15.22	18.0
		CH 06	2437	15.76	18.0
		CH 11	2462	15.60	18.0
802.11ax-HE40	MCS0	CH 03	2422	14.49	18.0
		CH 06	2437	15.12	18.0
		CH 09	2452	14.62	18.0

WLAN(5.2GHz)-ANT2				
Test Mode	**Channel**	**Frequency (MHz)**	**Conducted Power (dBm)**	**Tune-up power (dBm)**
802.11a	36	5180	14.47	16.5
	40	5200	14.11	16.5
	48	5240	12.37	16.5
802.11n-HT20	36	5180	14.70	16.5
	40	5200	14.13	16.5
	48	5240	13.26	16.5
802.11n-HT40	38	5190	15.55	16.5
	46	5230	14.76	16.5
802.11ac-VHT20	36	5180	14.47	16.5
	40	5200	14.75	16.5
	48	5240	13.36	16.5
802.11ac-VHT40	38	5190	14.85	16.5
	46	5230	14.72	16.5
802.11ac-VHT80	42	5210	13.10	16.5
802.11ax-HE20	36	5180	15.17	16.5
	40	5200	14.71	16.5
	48	5240	12.97	16.5
802.11ax-HE40	38	5190	15.18	16.5
	46	5230	14.50	16.5
802.11ax-HE80	42	5210	**16.20**	16.5

WLAN(5.8GHz)-ANT2				
Test Mode	**Channel**	**Frequency (MHz)**	**Conducted Power (dBm)**	**Tune-up power (dBm)**
802.11a	149	5745	16.28	17.5
	157	5785	15.84	17.5
	165	5825	14.50	17.5
802.11n-HT20	149	5745	16.03	17.5
	157	5785	15.14	17.5
	165	5825	14.88	17.5
802.11n-HT40	151	5755	17.18	17.5
	159	5795	15.99	17.5
802.11ac-VHT20	149	5745	16.59	17.5
	157	5785	**17.20**	17.5
	165	5825	15.07	17.5
802.11ac-VHT40	151	5755	14.84	17.5
	159	5795	16.48	17.5
802.11ac-VHT80	155	5775	16.14	17.5
802.11ax-HE20	149	5745	15.68	17.5
	157	5785	15.88	17.5
	165	5825	14.78	17.5
802.11ax-HE40	151	5755	16.85	17.5
	159	5795	16.25	17.5
802.11ax-HE80	155	5775	16.99	17.5

Remark:

1. Per KDB 248227 D01 v02r02, SAR is not required for the following U-NII-1 and U-NII-2A bands conditions.

a. When the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. If the highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band for that configuration (802.11 mode and exposure condition); otherwise, each band is tested independently for SAR.

b. When different maximum output power is specified for the bands, begin SAR measurement in the band with higher specified maximum output power. The highest reported SAR for the tested configuration is adjusted by the ratio of lower to higher specified maximum output power for the two bands. When the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for the band with lower maximum output power in that test configuration; otherwise, each band is tested independently for SAR.

2. When multiple channel bandwidth configurations in a frequency band have the same specified maximum output power, the initial test configuration is determined by applying the following steps sequentially.

1) The largest channel bandwidth configuration is selected among the multiple configurations in a frequency band with the same specified maximum output power.

2) If multiple configurations have the same specified maximum output power and largest channel bandwidth, the lowest order modulation among the largest channel bandwidth configurations is selected.

3) If multiple configurations have the same specified maximum output power, largest channel bandwidth and lowest order modulation, the lowest data rate configuration among these configurations is selected.

4) When multiple transmission modes (802.11a/g/n/ac) have the same specified maximum output power, largest channel bandwidth, lowest order modulation and lowest data rate, the lowest order 802.11 mode is selected; i.e., 802.11a is chosen over 802.11n then 802.11ac or 802.11g is chosen over 802.11n.

Bluetooth					
Test Mode	**Data Rate**	**Channel**	**Frequency (MHz)**	**Conducted Power (dBm)**	**Tune-up power (dBm)**
GFSK	1Mbps	CH 00	2402	5.07	8.5
		CH 39	2441	5.46	8.5
		CH 78	2480	5.16	8.5
π/4 DQPSK	2Mbps	CH 00	2402	7.64	8.5
		CH 39	2441	7.54	8.5
		CH 78	2480	6.73	8.5
8DPSK	3Mbps	CH 00	2402	**8.18**	8.5
		CH 39	2441	7.99	8.5
		CH 78	2480	7.29	8.5

Bluetooth				
Test Mode	**Data Rate**	**Channel**	**Frequency (MHz)**	**Conducted Power (dBm)**
BLE	1Mbps	CH 00	2402	5.04
		CH 19	2440	5.44
		CH 39	2480	5.11
	2Mbps	CH 00	2402	4.94
		CH 19	2440	5.45
		CH 39	2480	5.08

9.2 Test Results for Standalone SAR Test

When the antennas stowed:

Body SAR

WLAN 2.4GHz ANT 1–Body SAR Test (0mm)									
Plot No.	Mode	Test Position	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
	802.11b	Horizontal-Up	06	2437	17.91	18.0	1.021	0.022	0.022
	802.11b	Horizontal-Down	06	2437	17.91	18.0	1.021	0.024	0.025
	802.11b	Vertical-Front	06	2437	17.91	18.0	1.021	0.008	0.008
1.	802.11b	Vertical-Back	06	2437	17.91	18.0	1.021	0.030	**0.031**
	802.11b	Top side	06	2437	17.91	18.0	1.021	0.011	0.011

WLAN 5.2GHz ANT 1– Body SAR Test (0mm)									
Plot No.	Mode	Test Position	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
	802.11ac-VHT80	Horizontal-Up	42	5210	13.75	14.0	1.059	0.052	0.055
	802.11ac-VHT80	Horizontal-Down	42	5210	13.75	14.0	1.059	0.059	0.062
	802.11ac-VHT80	Vertical-Front	42	5210	13.75	14.0	1.059	0.015	0.016
2.	802.11ac-VHT80	Vertical-Back	42	5210	13.75	14.0	1.059	0.085	**0.090**
	802.11ac-VHT80	Top side	42	5210	13.75	14.0	1.059	0.034	0.036

WLAN 5.8GHz ANT 1– Body SAR Test (0mm)									
Plot No.	Mode	Test Position	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
	802.11ac-VHT40	Horizontal-Up	151	5755	15.80	16.0	1.047	0.063	0.066
	802.11ac-VHT40	Horizontal-Down	151	5755	15.80	16.0	1.047	0.067	0.070
	802.11ac-VHT40	Vertical-Front	151	5755	15.80	16.0	1.047	0.022	0.023
3.	802.11ac-VHT40	Vertical-Back	151	5755	15.80	16.0	1.047	0.108	**0.113**
	802.11ac-VHT40	Top side	151	5755	15.80	16.0	1.047	0.036	0.038

WLAN 2.4GHz ANT 2–Body SAR Test (0mm)									
Plot No.	Mode	Test Position	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
	802.11b	Horizontal-Up	06	2437	17.60	18.0	1.096	0.039	0.043
	802.11b	Horizontal-Down	06	2437	17.60	18.0	1.096	0.041	0.045
4.	802.11b	Vertical-Front	06	2437	17.60	18.0	1.096	0.070	**0.077**
	802.11b	Vertical-Back	06	2437	17.60	18.0	1.096	0.008	0.009
	802.11b	Top side	06	2437	17.60	18.0	1.096	0.022	0.024

WLAN 5.2GHz ANT 2– Body SAR Test (0mm)									
Plot No.	Mode	Test Position	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
	802.11ax-HE80	Horizontal-Up	42	5210	16.20	16.5	1.072	0.085	0.091
	802.11ax-HE80	Horizontal-Down	42	5210	16.20	16.5	1.072	0.089	0.095
5.	802.11ax-HE80	Vertical-Front	42	5210	16.20	16.5	1.072	0.116	**0.124**
	802.11ax-HE80	Vertical-Back	42	5210	16.20	16.5	1.072	0.035	0.038
	802.11ax-HE80	Top side	42	5210	16.20	16.5	1.072	0.054	0.058

WLAN 5.8GHz ANT 2– Body SAR Test (0mm)									
Plot No.	Mode	Test Position	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
	802.11a c-VHT20	Horizontal-Up	157	5785	17.20	17.5	1.072	0.091	0.098
	802.11a c-VHT20	Horizontal-Down	157	5785	17.20	17.5	1.072	0.096	0.103
6.	802.11a c-VHT20	Vertical-Front	157	5785	17.20	17.5	1.072	0.130	**0.139**
	802.11a c-VHT20	Vertical-Back	157	5785	17.20	17.5	1.072	0.049	0.053
	802.11a c-VHT20	Top side	157	5785	17.20	17.5	1.072	0.065	0.070

Bluetooth–Body SAR Test (0mm)									
Plot No.	Mode	Test Position	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
7.	8DPSK	Horizontal-Up	00	2402	8.18	8.5	1.076	0.009	**0.010**
	8DPSK	Horizontal-Down	00	2402	8.18	8.5	1.076	0.009	0.010
	8DPSK	Vertical-Front	00	2402	8.18	8.5	1.076	0.006	0.006
	8DPSK	Vertical-Back	00	2402	8.18	8.5	1.076	0.004	0.004
	8DPSK	Top side	00	2402	8.18	8.5	1.076	0.009	0.010

When the antennas are deployed:

Body SAR

WLAN 2.4GHz ANT 1–Body SAR Test (0mm)									
Plot No.	Mode	Test Position	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
	802.11b	Horizontal-Up	06	2437	17.91	18.0	1.021	0.035	0.036
	802.11b	Horizontal-Down	06	2437	17.91	18.0	1.021	0.034	0.035
	802.11b	Vertical-Front	06	2437	17.91	18.0	1.021	0.011	0.011
8.	802.11b	Vertical-Back	06	2437	17.91	18.0	1.021	0.053	**0.054**
	802.11b	Top side	06	2437	17.91	18.0	1.021	0.019	0.019

WLAN 5.2GHz ANT 1– Body SAR Test (0mm)									
Plot No.	Mode	Test Position	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
	802.11ac-VHT80	Horizontal-Up	42	5210	13.75	14.0	1.059	0.078	0.083
	802.11ac-VHT80	Horizontal-Down	42	5210	13.75	14.0	1.059	0.084	0.089
	802.11ac-VHT80	Vertical-Front	42	5210	13.75	14.0	1.059	0.031	0.033
9.	802.11ac-VHT80	Vertical-Back	42	5210	13.75	14.0	1.059	0.116	**0.123**
	802.11ac-VHT80	Top side	42	5210	13.75	14.0	1.059	0.042	0.044

WLAN 5.8GHz ANT 1– Body SAR Test (0mm)									
Plot No.	Mode	Test Position	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
	802.11ax-HE80	Horizontal-Up	151	5755	15.80	16.0	1.047	0.086	0.090
	802.11ax-HE80	Horizontal-Down	151	5755	15.80	16.0	1.047	0.082	0.086
	802.11ax-HE80	Vertical-Front	151	5755	15.80	16.0	1.047	0.038	0.040
10.	802.11ax-HE80	Vertical-Back	151	5755	15.80	16.0	1.047	0.124	**0.130**
	802.11ax-HE80	Top side	151	5755	15.80	16.0	1.047	0.051	0.053

WLAN 2.4GHz ANT 2–Body SAR Test (0mm)									
Plot No.	Mode	Test Position	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
	802.11b	Horizontal-Up	06	2437	17.60	18.0	1.096	0.042	0.046
	802.11b	Horizontal-Down	06	2437	17.60	18.0	1.096	0.049	0.054
11.	802.11b	Vertical-Front	06	2437	17.60	18.0	1.096	0.086	**0.094**
	802.11b	Vertical-Back	06	2437	17.60	18.0	1.096	0.015	0.016
	802.11b	Top side	06	2437	17.60	18.0	1.096	0.027	0.030

WLAN 5.2GHz ANT 2– Body SAR Test (5mm)									
Plot No.	Mode	Test Position	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
	802.11n-HT40	Horizontal-Up	42	5210	16.20	16.5	1.072	0.098	0.105
	802.11n-HT40	Horizontal-Down	42	5210	16.20	16.5	1.072	0.093	0.100
12.	802.11n-HT40	Vertical-Front	42	5210	16.20	16.5	1.072	0.144	**0.154**
	802.11n-HT40	Vertical-Back	42	5210	16.20	16.5	1.072	0.042	0.045
	802.11n-HT40	Top side	42	5210	16.20	16.5	1.072	0.061	0.065

WLAN 5.8GHz ANT 2– Body SAR Test (0mm)									
Plot No.	Mode	Test Position	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
	802.11a c-VHT20	Horizontal-Up	157	5785	17.20	17.5	1.072	0.124	0.133
	802.11a c-VHT20	Horizontal-Down	157	5785	17.20	17.5	1.072	0.119	0.128
13.	802.11a c-VHT20	Vertical-Front	157	5785	17.20	17.5	1.072	0.155	**0.166**
	802.11a c-VHT20	Vertical-Back	157	5785	17.20	17.5	1.072	0.053	0.057
	802.11a c-VHT20	Top side	157	5785	17.20	17.5	1.072	0.069	0.074

Bluetooth–Body SAR Test (0mm)									
Plot No.	Mode	Test Position	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
	8DPSK	Horizontal-Up	00	2402	8.18	8.5	1.076	0.015	0.016
14.	8DPSK	Horizontal-Down	00	2402	8.18	8.5	1.076	0.016	**0.017**
	8DPSK	Vertical-Front	00	2402	8.18	8.5	1.076	0.012	0.013
	8DPSK	Vertical-Back	00	2402	8.18	8.5	1.076	0.006	0.006
	8DPSK	Top side	00	2402	8.18	8.5	1.076	0.015	0.016

Remark:

1. Per KDB 447498 D01 v06, if the highest output channel SAR for each exposure position ≤ 0.8 W/kg other channels SAR tests are not necessary.
2. For the horizontal up test position, both the DUT directly connected to the computer and the DUT connected to the computer via an extension cable were tested, but only the worst case was recorded in the report.

9.3 Simultaneous Multi-band Transmission SAR Analysis

List of Mode for Simultaneous Multi-band Transmission

No.	Configurations	Body SAR
1	**WLAN(5GHz/2.4GHz)ANT1(Data) + WLAN(5GHz/2.4GHz)ANT2(Data)+ Bluetooth(Data)**	Yes

Remark:

One way of determining the threshold power level available to the secondary transmitter ($P_{available}$) is to calculate it from the measured peak spatial-average SAR of the primary transmitter (SAR_1) according to the equation:

$$P_{available} = P_{th,m} \times (SAR_{lim} - SAR_1) / SAR_{lim}$$

where $P_{th,m}$ is the threshold exclusion power level taken from Annex B of IEC 62479[7] for the frequency of the secondary transmitter at the separation distance used in the testing.

When the antennas stowed:

Body SAR

	WLAN(2.4GHz) ANT 1	WLAN(2.4GHz) ANT 2	Bluetooth	Summed SAR (W/kg)
Position	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	
Horizontal-Up	0.022	0.043	**0.010**	0.075
Horizontal-Down	0.025	0.045	0.010	0.080
Vertical-Front	0.008	**0.077**	0.006	**0.091**
Vertical-Back	**0.031**	0.009	0.004	0.044
Top side	0.011	0.024	0.010	0.045

	WLAN(5GHz) ANT 1	WLAN(2.4GHz) ANT 2	Bluetooth	Summed SAR (W/kg)
Position	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	
Horizontal-Up	0.066	0.043	**0.010**	0.119
Horizontal-Down	0.070	0.045	0.010	0.125
Vertical-Front	0.023	**0.077**	0.006	0.106
Vertical-Back	**0.113**	0.009	0.004	**0.126**
Top side	0.038	0.024	0.010	0.072

	WLAN(2.4GHz) ANT 1	WLAN(5GHz) ANT 2	Bluetooth	Summed SAR (W/kg)
Position	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	
Horizontal-Up	0.022	0.098	**0.010**	0.130
Horizontal-Down	0.025	0.103	0.010	0.138
Vertical-Front	0.008	**0.139**	0.006	**0.153**
Vertical-Back	**0.031**	0.053	0.004	0.088
Top side	0.011	0.070	0.010	0.091

	WLAN(5GHz) ANT 1	WLAN(5GHz) ANT 2	Bluetooth	Summed SAR (W/kg)
Position	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	
Horizontal-Up	0.066	0.098	**0.010**	0.174
Horizontal-Down	0.070	0.103	0.010	**0.183**
Vertical-Front	0.023	**0.139**	0.006	0.168
Vertical-Back	**0.113**	0.053	0.004	0.170
Top side	0.038	0.070	0.010	0.118

When the antennas are deployed:

Body SAR

	WLAN(2.4GHz) ANT 1	WLAN(2.4GHz) ANT 2	Bluetooth	Summed SAR (W/kg)
Position	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	
Horizontal-Up	0.036	0.046	0.016	0.098
Horizontal-Down	0.035	0.054	**0.017**	0.106
Vertical-Front	0.011	**0.094**	0.013	**0.118**
Vertical-Back	**0.054**	0.016	0.006	0.076
Top side	0.019	0.030	0.016	0.065

	WLAN(5GHz) ANT 1	WLAN(2.4GHz) ANT 2	Bluetooth	Summed SAR (W/kg)
Position	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	
Horizontal-Up	0.090	0.046	0.016	0.152
Horizontal-Down	0.089	0.054	**0.017**	**0.160**
Vertical-Front	0.040	**0.094**	0.013	0.147
Vertical-Back	**0.130**	0.016	0.006	0.152
Top side	0.053	0.030	0.016	0.099

	WLAN(2.4GHz) ANT 1	WLAN(5GHz) ANT 2	Bluetooth	Summed SAR (W/kg)
Position	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	
Horizontal-Up	0.036	0.133	0.016	0.185
Horizontal-Down	0.035	0.128	**0.017**	0.180
Vertical-Front	0.011	**0.166**	0.013	**0.190**
Vertical-Back	**0.054**	0.057	0.006	0.117
Top side	0.019	0.074	0.016	0.109

	WLAN(5GHz) ANT 1	WLAN(5GHz) ANT 2	Bluetooth	Summed SAR (W/kg)
Position	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	
Horizontal-Up	0.090	0.133	0.016	**0.239**
Horizontal-Down	0.089	0.128	**0.017**	0.234
Vertical-Front	0.040	**0.166**	0.013	0.219
Vertical-Back	**0.130**	0.057	0.006	0.193
Top side	0.053	0.074	0.016	0.143

Remark: According to the test results, it is found that the SAR test results are worst when the antennas deployed.

10. Measurement Uncertainty

10.1 Uncertainty for SAR Test

Input quantity X_i (source of uncertainty)	Ref.	Prob. Dist PDF_i	Unc. $a(x_i)$	Div. q_i	$u(x_i) = a(x_i)/q_i$	c_i (1 g; 10 g)	$u(y) = c_i \cdot u(x_i)$	v_i or v_{eff}
Measurement System errors								
Probe calibration	8.4.1.1	N	7.00	2	3.5	1	3.5	∝
Probe calibration drift	8.4.1.2	R	0	√3	0	1	0	∝
Probe linearity and detection limit	8.4.1.3	R	5.00	√3	2.89	1	2.89	∝
Broadband signal	8.4.1.4	R	0	√3	0	1	0	∝
Probe isotropy	8.4.1.5	R	2.50	√3	1.44	1	1.44	∝
Other probe and data acquisition errors	8.4.1.6	N	0.02	1	0.02	1	0.02	∝
RF ambient and noise	8.4.1.7	N	0	1	0	1	0	∝
Probe positioning errors	8.4.1.8	N	1.40	1	1.40	2/™	0.70	
Data processing errors	8.4.1.9	N	0.05	1	0.05	1	0.05	∝
Phantom and device (DUT or validation antenna) errors								
Measurement of phantom conductivity(σ)	8.4.2.1	N	4.00	1	4.00	c_ε, c_σ	4.00	∝
Temperature effects (medium)	8.4.2.2	R	2.50	√3	1.44	c_ε, c_σ	1.44	∝
Shell permittivity	8.4.2.3	R	5.00	√3	2.88	See 8.4.2.3	2.88	∝
Distance between the radiating element of the DUT and the phantom medium	8.4.2.4	N	0.03	1	0.03	2	0.02	∝
Repeatability of positioning the DUT or source against the phantom	8.4.2.5	N	0.05	1	0.05	1	0.05	5
Device holder effects	8.4.2.6	N	5.00	1	5.00	1	5.00	
Effect of operating mode on probe sensitivity	8.4.2.7	R	0	√3	0	1	0	∝
Time-average SAR	8.4.2.8	R	0	√3	0	1	0	∝
Variation in SAR due to drift in output of DUT	8.4.2.9	N	5.00	1	5.00	1	5.00	
Validation antenna uncertainty (validation measurement only)	8.4.2.10	N	0	1	0	1	0	

Uncertainty in accepted power (validation measurement only)	8.4.2.11	N	0	1	0	1	0	
Corrections to the SAR result								
Phantom deviation from target (ε′,σ)	8.4.3.1	N	0.05	1	0.05	1	0.05	
SAR scaling	8.4.3.2	R	2.00	√3	1.15	1	1.15	
Combined Standard Uncertainty		RSS			10.11		10.11	ν_{eff}=
Expanded uncertainty, U		K=2			20.23		20.23	

Annex A. Plots of System Performance Check

MEASUREMENT 1

Type: Validation measurement (Fast, 75.00 %)
Date of measurement: 2024-05-17
Measurement duration: 12 minutes 21 seconds
E-field Probe: SSE2 - SN 18/21 EPGO356; ConvF: 2.29; Calibrated: 2023-07-07

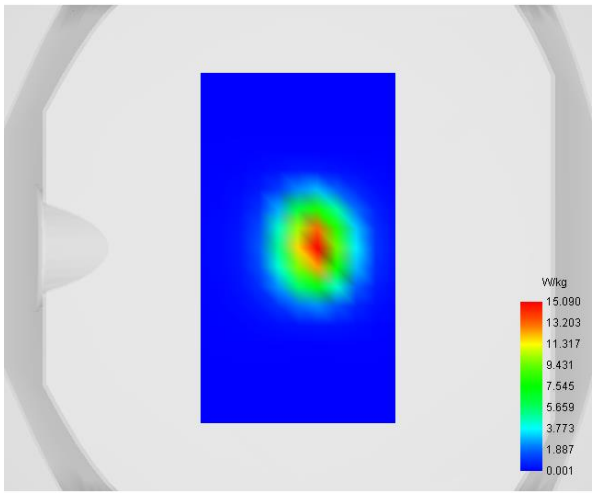
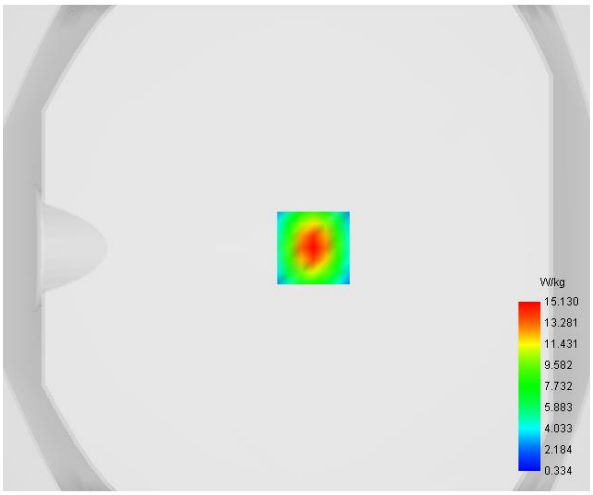
A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=5mm dy=5mm dz=4mm
Phantom	Validation plane
Device Position	Dipole
Band	CW2450
Signal	CW (Crest factor: 1.0)

B. SAR Measurement Results

Frequency (MHz)	2450.000000
Relative Permittivity (real part)	40.35222
Conductivity (S/m)	1.841828
Power Variation (%)	1.475200
Ambient Temperature	22.0
Liquid Temperature	22.0

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

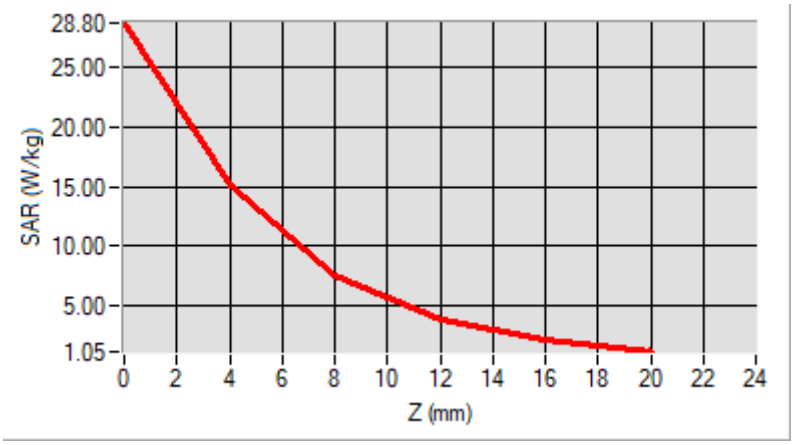
Maximum location: X=7.00, Y=0.00

D. SAR 1g & 10g

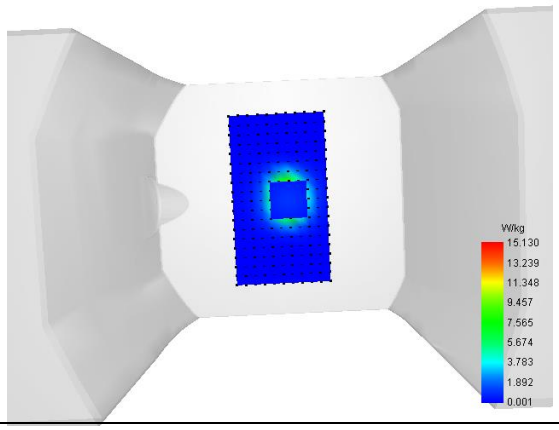
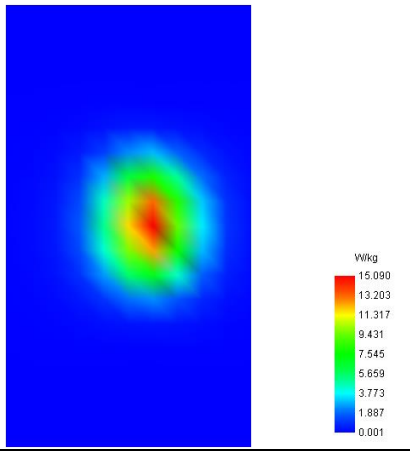
SAR 10g (W/Kg)	**6.149024**
SAR 1g (W/Kg)	**13.746586**

E. Z Axis Scan

Z (mm)	**0.00**	**4.00**	**8.00**	**12.00**	**16.00**
SAR (W/Kg)	**28.7959**	**15.1301**	**7.5430**	**3.7436**	**1.9810**



F. 3D Image

3D screen shot	**Hot spot position**
	

MEASUREMENT 2

Type: Validation measurement (Fast, 75.00 %)
Date of measurement: 2024-05-15
Measurement duration: 12 minutes 21 seconds
E-field Probe: SSE2 - SN 18/21 EPGO356; ConvF: 1.91; Calibrated: 2023-07-07

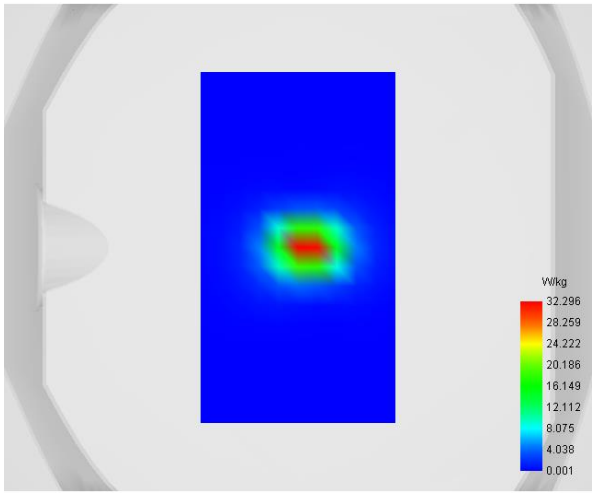
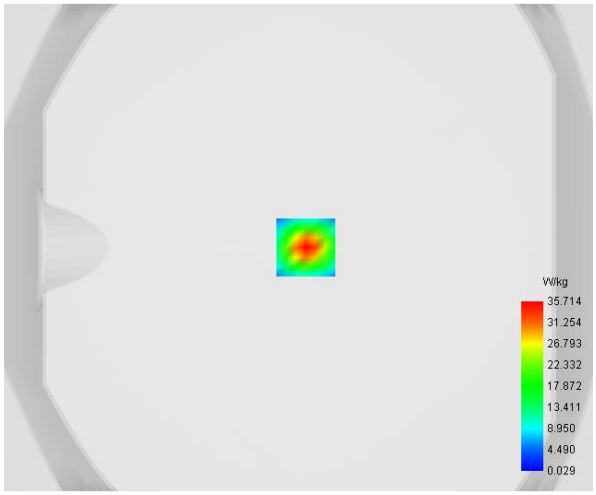
A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=4mm dy=4mm dz=2mm
Phantom	Validation plane
Device Position	Dipole
Band	CW5200
Signal	CW (Crest factor: 1.0)

B. SAR Measurement Results

Frequency (MHz)	5200.000000
Relative Permittivity (real part)	37.213547
Conductivity (S/m)	4.622614
Power Variation (%)	2.345100
Ambient Temperature	22.3
Liquid Temperature	22.3

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

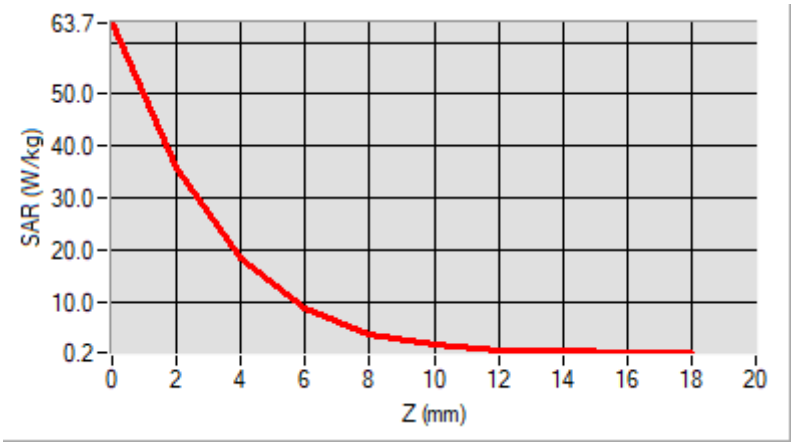
Maximum location: X=3.00, Y=0.00

D. SAR 1g & 10g

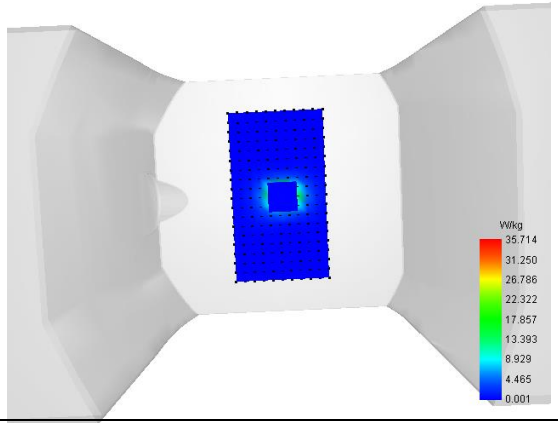
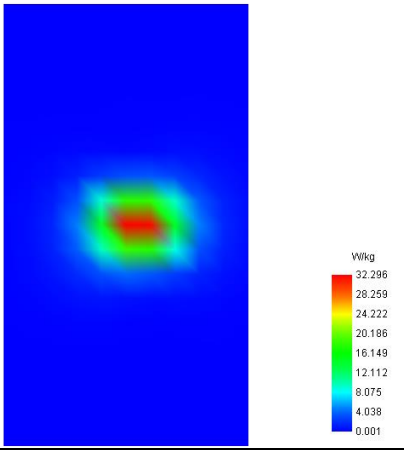
SAR 10g (W/Kg)	**5.214336**
SAR 1g (W/Kg)	**18.566732**

E. Z Axis Scan

Z (mm)	**0.00**	**2.00**	**4.00**	**6.00**	**8.00**	**10.00**	**12.00**	**14.00**	**16.00**
SAR (W/Kg)	**63.6940**	**35.7143**	**18.3619**	**8.6368**	**3.8326**	**1.6405**	**0.7180**	**0.3557**	**0.2183**



F. 3D Image

3D screen shot	**Hot spot position**
	

MEASUREMENT 3

Type: Validation measurement (Fast, 75.00 %)
Date of measurement: 2024-05-16
Measurement duration: 12 minutes 21 seconds
E-field Probe: SSE2 - SN 18/21 EPGO356; ConvF: 2.15; Calibrated: 2023-07-07

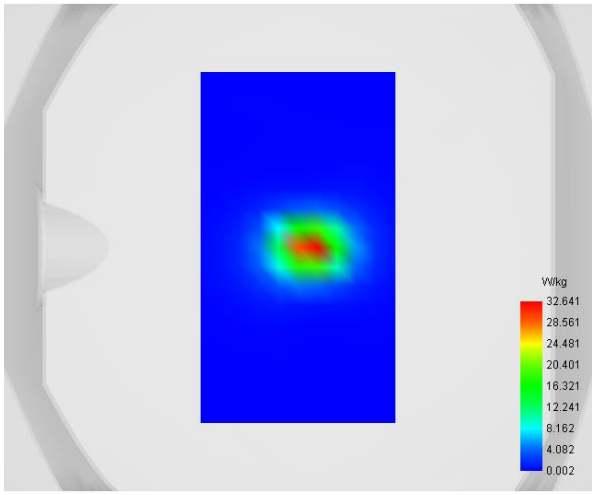
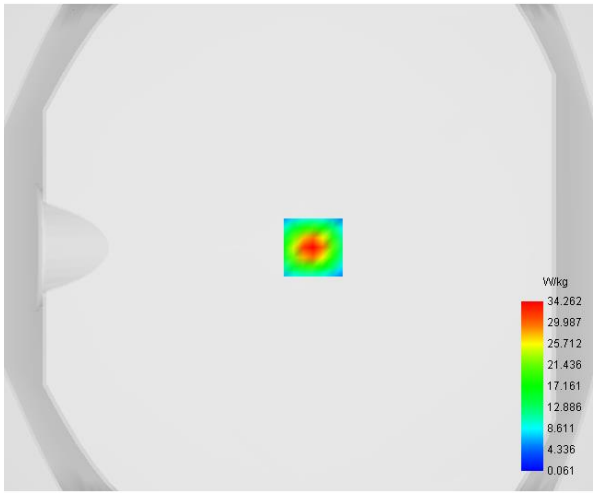
A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=4mm dy=4mm dz=2mm
Phantom	Validation plane
Device Position	Dipole
Band	CW5800
Signal	CW (Crest factor: 1.0)

B. SAR Measurement Results

Frequency (MHz)	5800.000000
Relative Permittivity (real part)	35.883471
Conductivity (S/m)	5.232958
Power Variation (%)	-1.432500
Ambient Temperature	22.3
Liquid Temperature	22.3

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

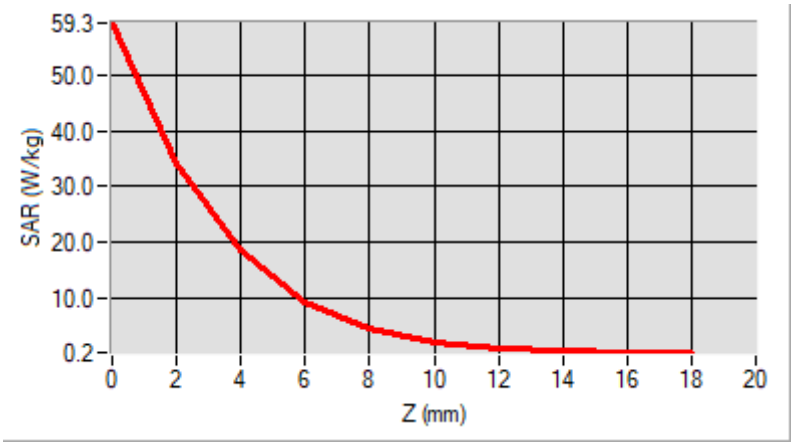
Maximum location: X=6.00, Y=0.00

D. SAR 1g & 10g

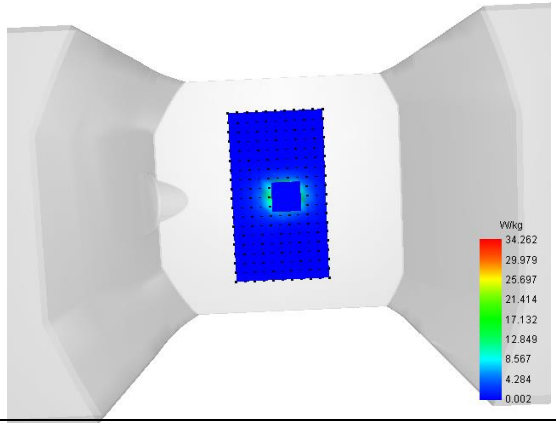
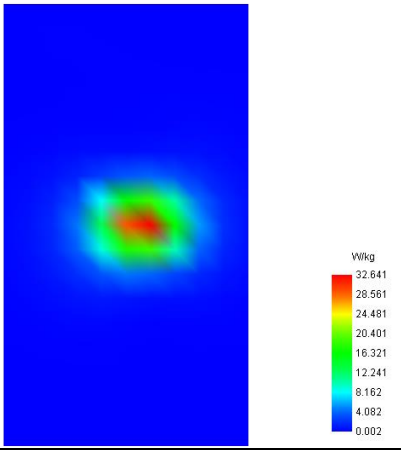
SAR 10g (W/Kg)	**5.385932**
SAR 1g (W/Kg)	**18.087402**

E. Z Axis Scan

Z (mm)	**0.00**	**2.00**	**4.00**	**6.00**	**8.00**	**10.00**	**12.00**	**14.00**	**16.00**
SAR (W/Kg)	**59.3203**	**34.2617**	**18.4347**	**9.2545**	**4.4822**	**2.1439**	**1.0586**	**0.5728**	**0.3524**



F. 3D Image

3D screen shot	**Hot spot position**
	

Annex B. Plots of SAR Measurement

MEASUREMENT 1

Type: Measurement (Complete)
Date of measurement: 2024-05-17
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE2 - SN 18/21 EPGO356; ConvF: 2.29; Calibrated: 2023-07-07

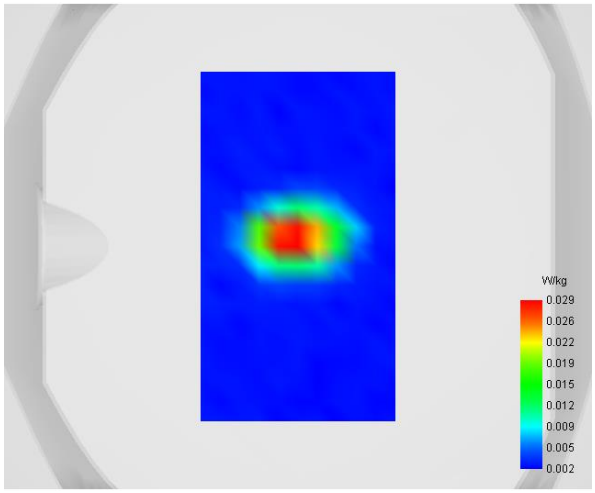
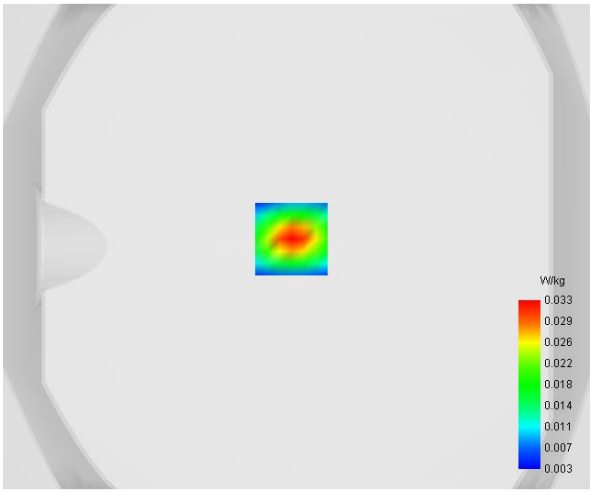
A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=5mm dy=5mm dz=4mm
Phantom	Flat Plane
Device Position	Vertical-Back
Band	WiFi_802.11b
Channels	Middle
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	2437.000000
Relative Permittivity (real part)	40.352685
Conductivity (S/m)	1.841572
Power Variation (%)	-0.452700
Ambient Temperature	22.0
Liquid Temperature	22.0

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

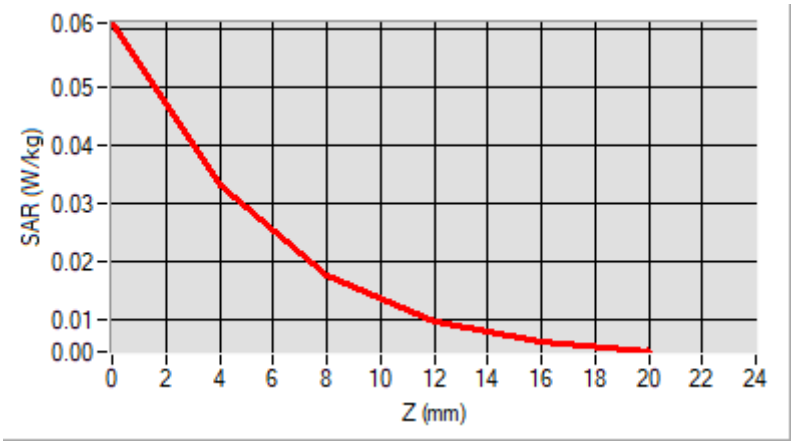
Maximum location: X=-2.00, Y=3.00

D. SAR 1g & 10g

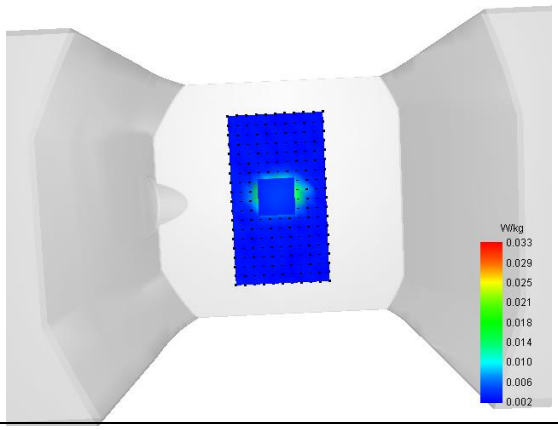
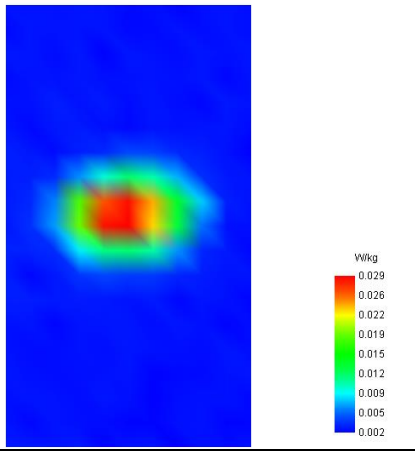
SAR 10g (W/Kg)	**0.014323**
SAR 1g (W/Kg)	**0.029899**

E. Z Axis Scan

Z (mm)	**0.00**	**4.00**	**8.00**	**12.00**	**16.00**
SAR (W/Kg)	**0.0609**	**0.0330**	**0.0176**	**0.0099**	**0.0065**



F. 3D Image

3D screen shot	**Hot spot position**
	

MEASUREMENT 2

Type: Measurement (Complete)
Date of measurement: 2024-05-15
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE2 - SN 18/21 EPGO356; ConvF: 1.91; Calibrated: 2023-07-07

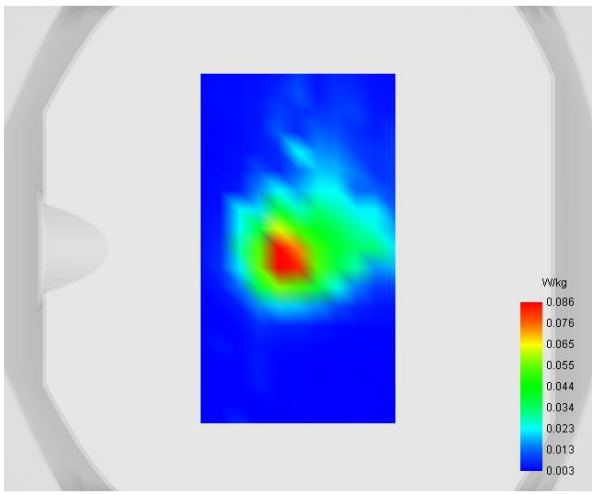
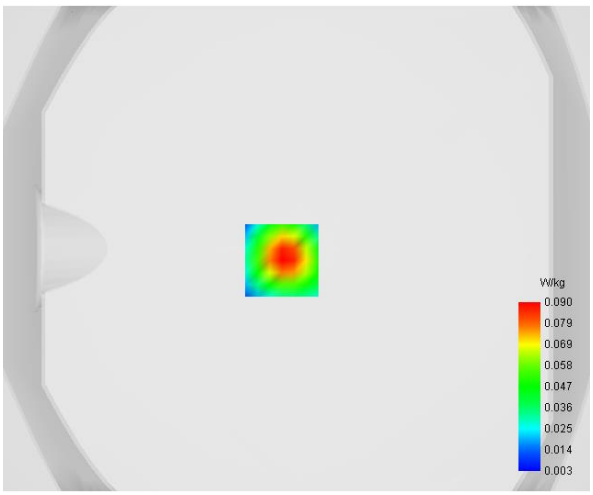
A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=4mm dy=4mm dz=2mm
Phantom	Flat Plane
Device Position	Vertical-Back
Band	WiFi(5.2GHz)_ 802.11ac-VHT80
Channels	Middle
Signal	Duty Cycle: 1:1

B. SAR Measurement Results

Frequency (MHz)	5210.000000
Relative Permittivity (real part)	37.212993
Conductivity (S/m)	4.624146
Power Variation (%)	-1.621700
Ambient Temperature	22.3
Liquid Temperature	22.3

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

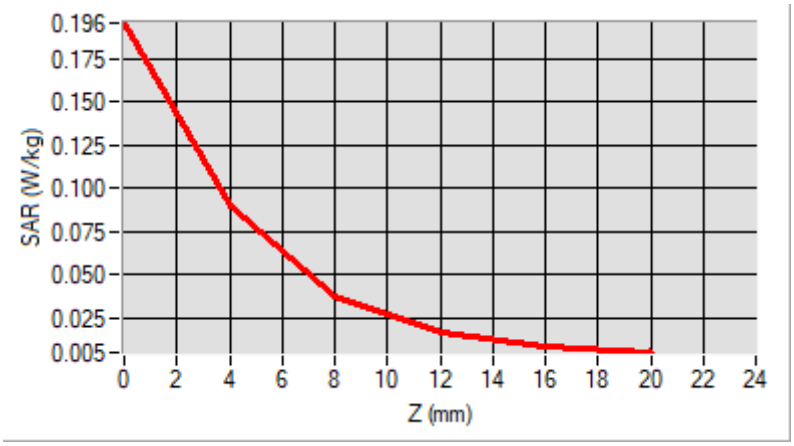
Maximum location: X=-6.00, Y=-5.00

D. SAR 1g & 10g

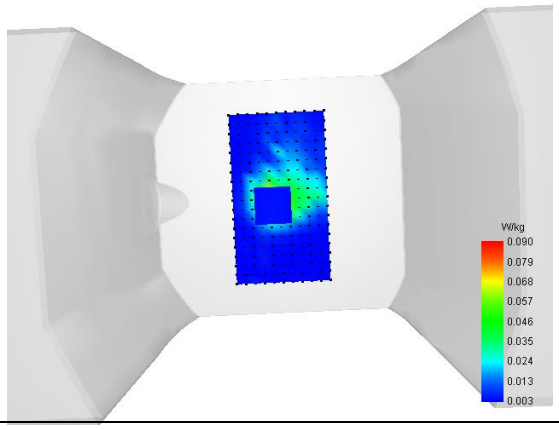
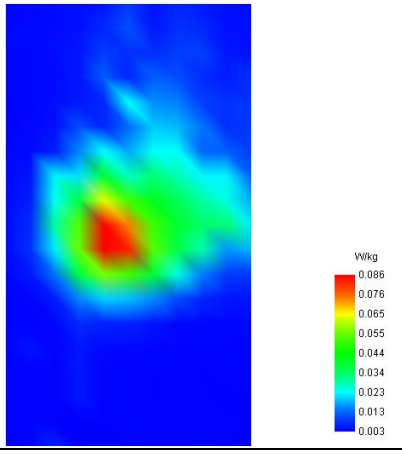
SAR 10g (W/Kg)	**0.036718**
SAR 1g (W/Kg)	**0.085510**

E. Z Axis Scan

Z (mm)	**0.00**	**4.00**	**6.00**	**8.00**	**10.00**	**12.00**	**14.00**	**16.00**	**18.00**
SAR (W/Kg)	**0.1961**	**0.0902**	**0.0738**	**0.0378**	**0.0215**	**0.0158**	**0.0105**	**0.0080**	**0.0046**



F. 3D Image

3D screen shot	Hot spot position
	

MEASUREMENT 3

Type: Measurement (Complete)
Date of measurement: 2024-05-16
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE2 - SN 18/21 EPGO356; ConvF: 2.15; Calibrated: 2023-07-07

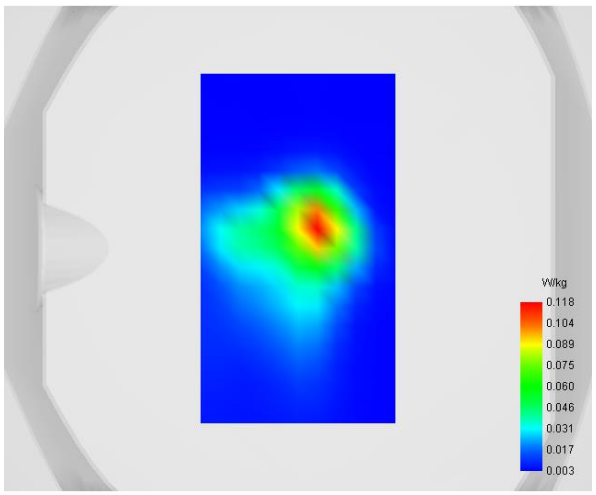
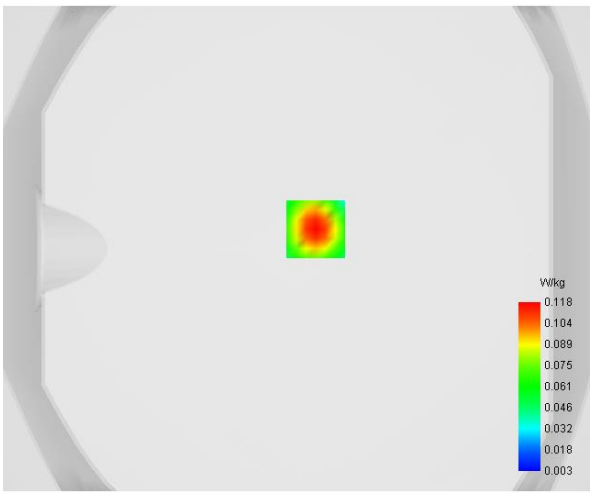
A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=4mm dy=4mm dz=2mm
Phantom	Flat Plane
Device Position	Vertical-Back
Band	WiFi(5.8GHz)_ 802.11ac-VHT40
Channels	Low
Signal	Duty Cycle: 1:1

B. SAR Measurement Results

Frequency (MHz)	5755.000000
Relative Permittivity (real part)	35.881617
Conductivity (S/m)	5.233421
Power Variation (%)	-1.831700
Ambient Temperature	22.3
Liquid Temperature	22.3

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

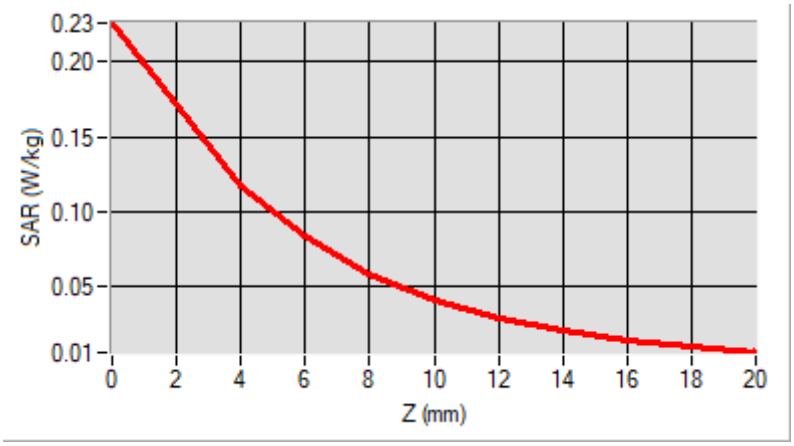
Maximum location: X=8.00, Y=8.00

D. SAR 1g & 10g

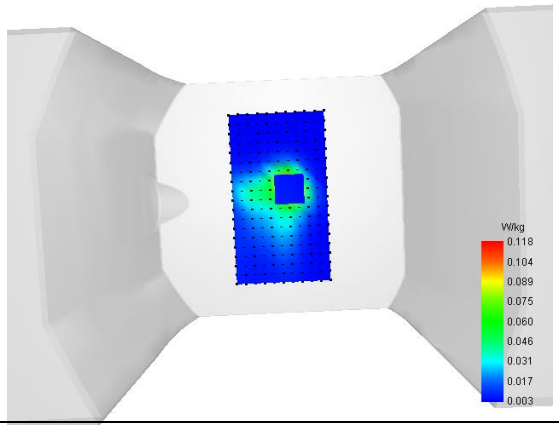
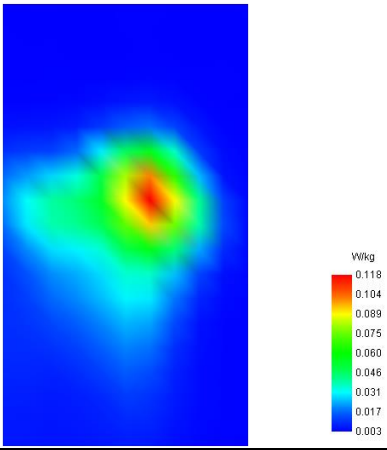
SAR 10g (W/Kg)	**0.048461**
SAR 1g (W/Kg)	**0.108190**

E. Z Axis Scan

Z (mm)	**0.00**	**4.00**	**6.00**	**8.00**	**10.00**	**12.00**	**14.00**	**16.00**	**18.00**
SAR (W/Kg)	**0.2260**	**0.1179**	**0.0838**	**0.0589**	**0.0415**	**0.0292**	**0.0205**	**0.0142**	**0.0096**



F. 3D Image

3D screen shot	**Hot spot position**
	

MEASUREMENT 4

Type: Measurement (Complete)
Date of measurement: 2024-05-17
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE2 - SN 18/21 EPGO356; ConvF: 2.29; Calibrated: 2023-07-07

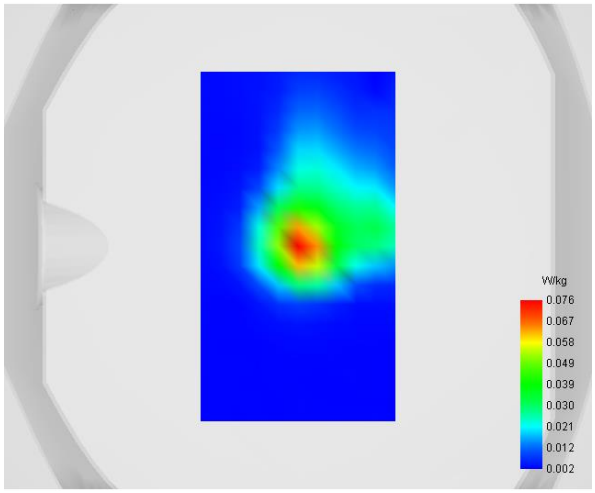
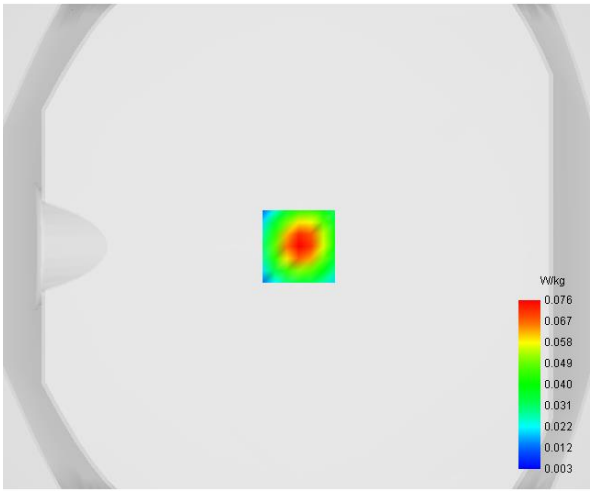
A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=5mm dy=5mm dz=4mm
Phantom	Flat Plane
Device Position	Vertical-Front
Band	WiFi_802.11b
Channels	High
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	2437.000000
Relative Permittivity (real part)	40.352685
Conductivity (S/m)	1.841572
Power Variation (%)	-0.417500
Ambient Temperature	22.0
Liquid Temperature	22.0

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

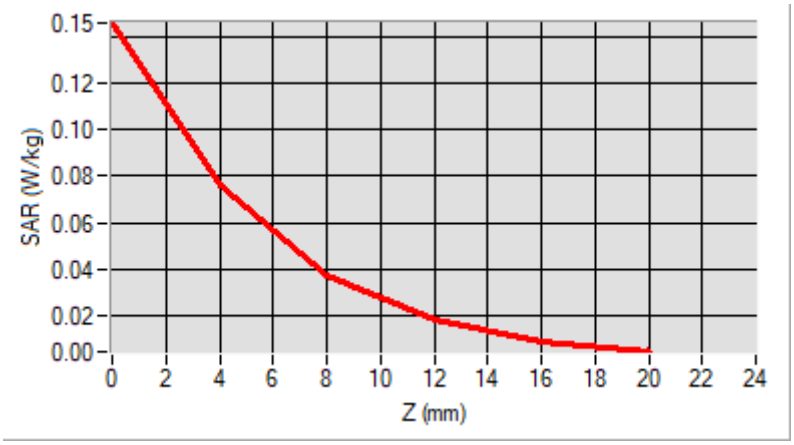
Maximum location: X=1.00, Y=0.00

D. SAR 1g & 10g

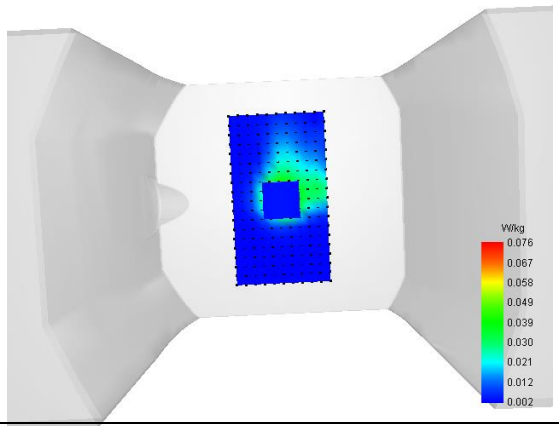
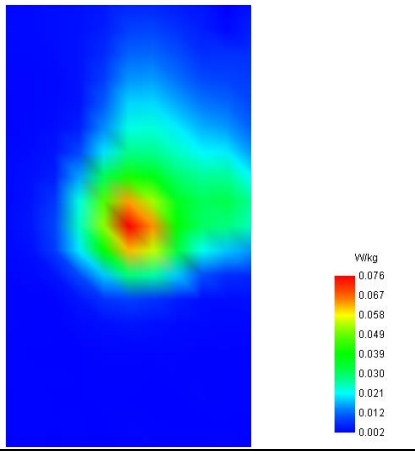
SAR 10g (W/Kg)	**0.031955**
SAR 1g (W/Kg)	**0.070297**

E. Z Axis Scan

Z (mm)	**0.00**	**4.00**	**8.00**	**12.00**	**16.00**
SAR (W/Kg)	**0.1462**	**0.0763**	**0.0375**	**0.0180**	**0.0090**



F. 3D Image

3D screen shot	**Hot spot position**
	

MEASUREMENT 5

Type: Measurement (Complete)
Date of measurement: 2024-05-15
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE2 - SN 18/21 EPGO356; ConvF: 1.91; Calibrated: 2023-07-07

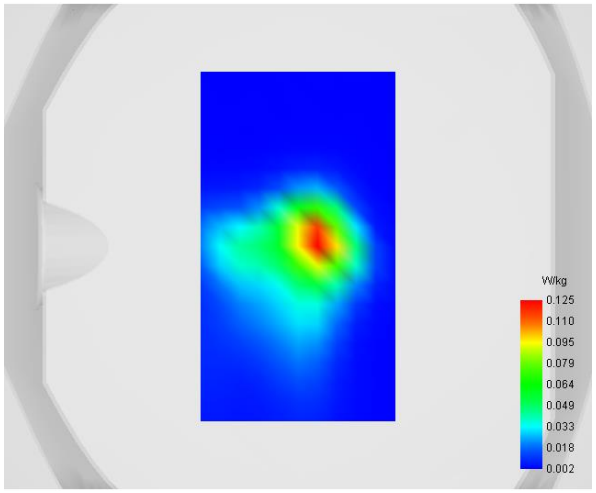
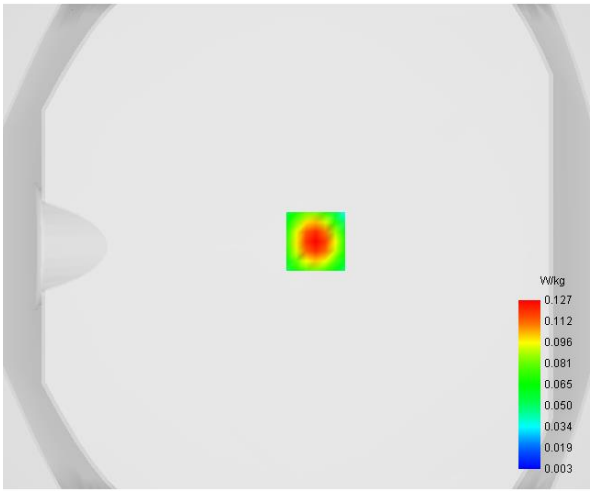
A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=4mm dy=4mm dz=2mm
Phantom	Flat Plane
Device Position	Vertical-Front
Band	WiFi(5.2GHz)_802.11 a
Channels	Middle
Signal	Duty Cycle: 1:1

B. SAR Measurement Results

Frequency (MHz)	5210.000000
Relative Permittivity (real part)	37.212993
Conductivity (S/m)	4.624146
Power Variation (%)	-1.621700
Ambient Temperature	22.3
Liquid Temperature	22.3

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

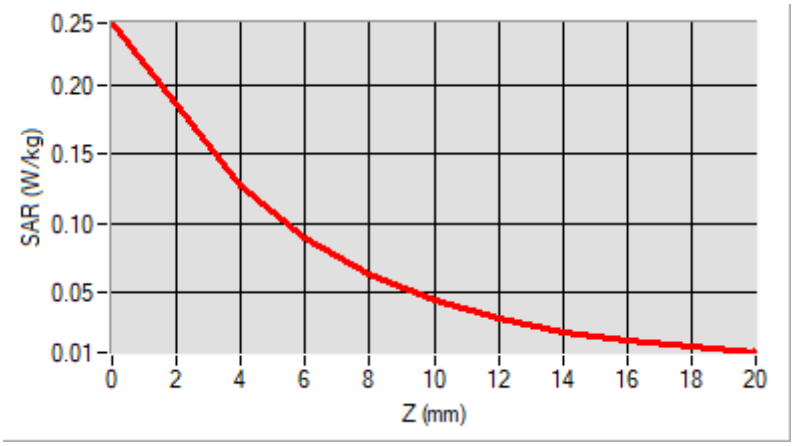
Maximum location: X=8.00, Y=2.00

D. SAR 1g & 10g

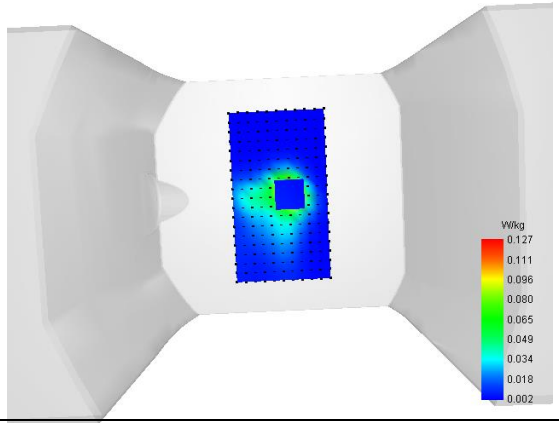
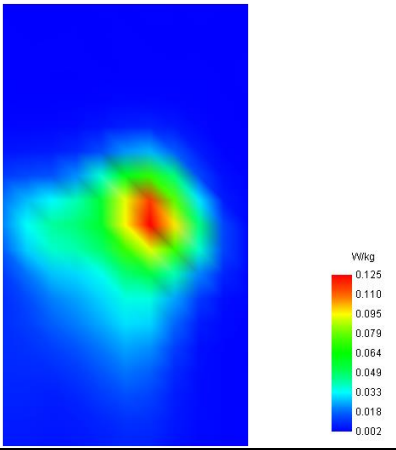
SAR 10g (W/Kg)	**0.051856**
SAR 1g (W/Kg)	**0.116452**

E. Z Axis Scan

Z (mm)	**0.00**	**4.00**	**6.00**	**8.00**	**10.00**	**12.00**	**14.00**	**16.00**	**18.00**
SAR (W/Kg)	**0.2452**	**0.1270**	**0.0899**	**0.0629**	**0.0441**	**0.0309**	**0.0216**	**0.0150**	**0.0101**



F. 3D Image

3D screen shot	**Hot spot position**
	

MEASUREMENT 6

Type: Measurement (Complete)
Date of measurement: 2024-05-16
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE2 - SN 18/21 EPGO356; ConvF: 2.15; Calibrated: 2023-07-07

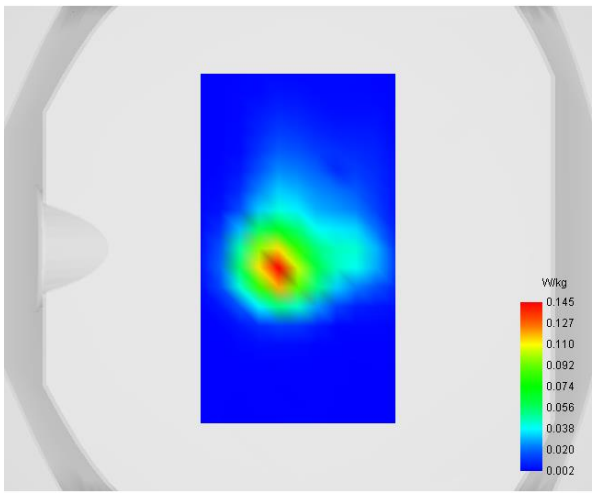
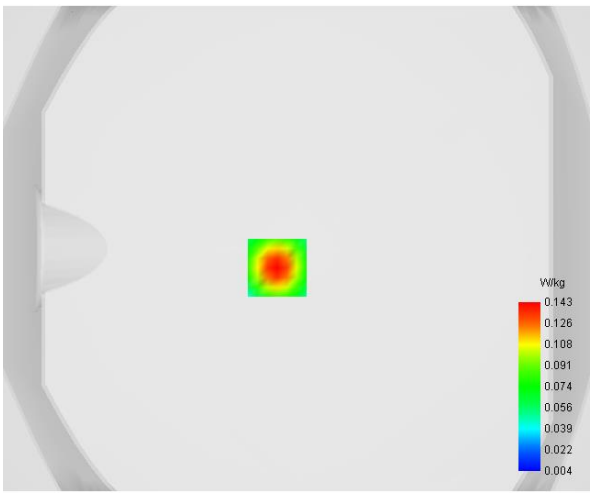
A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=4mm dy=4mm dz=2mm
Phantom	Flat Plane
Device Position	Vertical-Front
Band	WiFi(5.8GHz)_ 802.11ac-VHT20
Channels	Middle
Signal	Duty Cycle: 1:1

B. SAR Measurement Results

Frequency (MHz)	5785.000000
Relative Permittivity (real part)	35.882172
Conductivity (S/m)	5.234218
Power Variation (%)	-1.181700
Ambient Temperature	22.3
Liquid Temperature	22.3

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

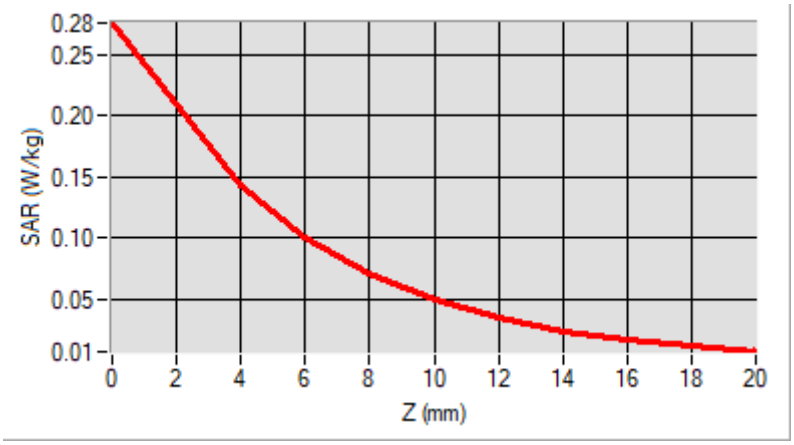
Maximum location: X=-8.00, Y=-8.00

D. SAR 1g & 10g

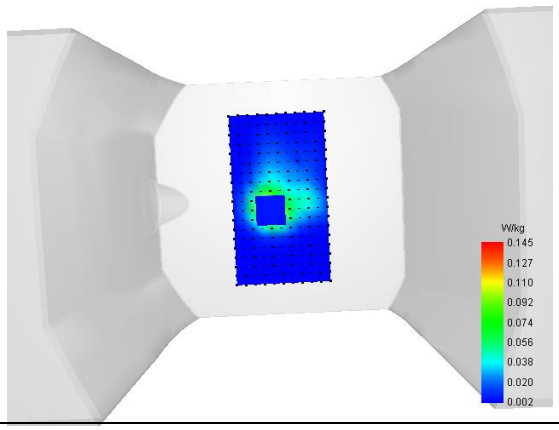
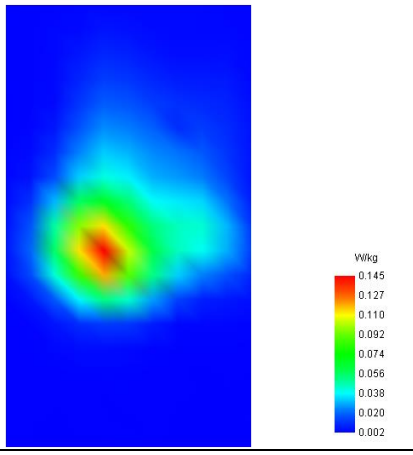
SAR 10g (W/Kg)	**0.056849**
SAR 1g (W/Kg)	**0.130197**

E. Z Axis Scan

Z (mm)	**0.00**	**4.00**	**6.00**	**8.00**	**10.00**	**12.00**	**14.00**	**16.00**	**18.00**
SAR (W/Kg)	**0.2757**	**0.1428**	**0.1011**	**0.0708**	**0.0496**	**0.0348**	**0.0243**	**0.0168**	**0.0113**



F. 3D Image

3D screen shot	**Hot spot position**
	

MEASUREMENT 7

Type: Measurement (Complete)
Date of measurement: 2024-05-17
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE2 - SN 18/21 EPGO356; ConvF: 2.29; Calibrated: 2023-07-07

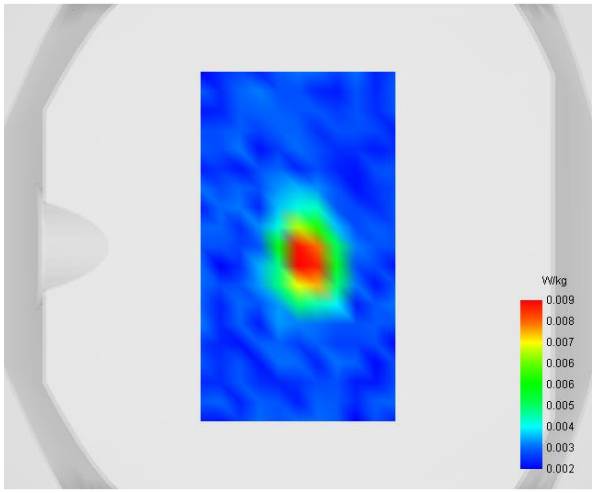
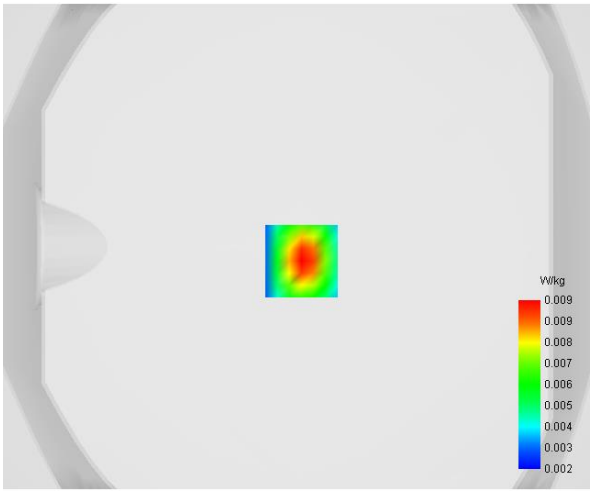
A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=5mm dy=5mm dz=4mm
Phantom	Flat Plane
Device Position	Horizontal-Up
Band	Bluetooth_8DPSK
Channels	Low
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	2402.000000
Relative Permittivity (real part)	40.350839
Conductivity (S/m)	1.843192
Power Variation (%)	-0.774400
Ambient Temperature	22.0
Liquid Temperature	22.0

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

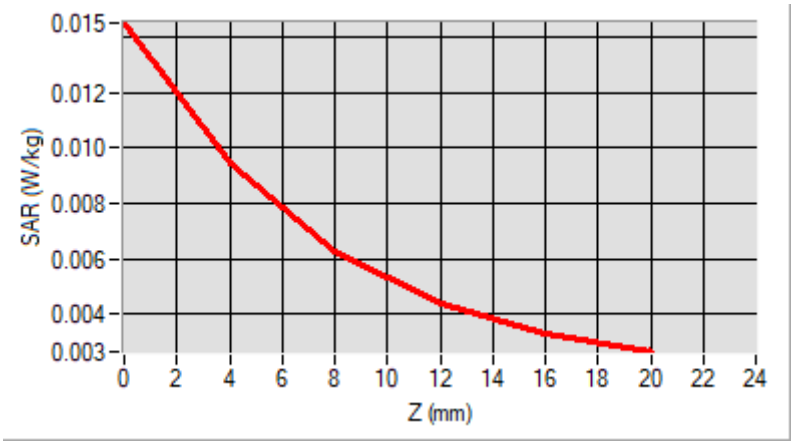
Maximum location: X=2.00, Y=-6.00

D. SAR 1g & 10g

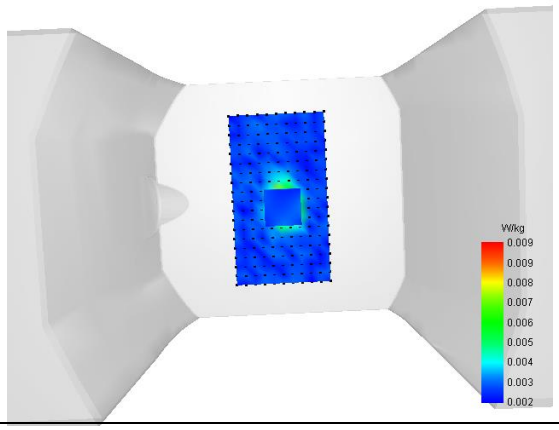
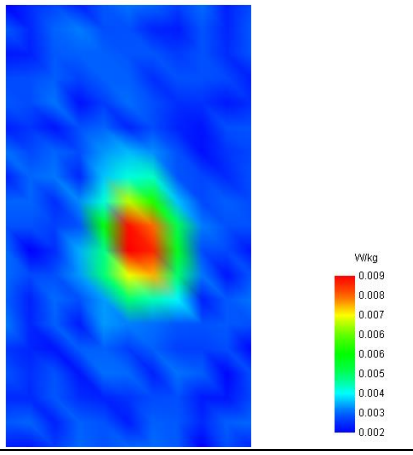
SAR 10g (W/Kg)	**0.005257**
SAR 1g (W/Kg)	**0.008735**

E. Z Axis Scan

Z (mm)	**0.00**	**4.00**	**8.00**	**12.00**	**16.00**
SAR (W/Kg)	**0.0145**	**0.0095**	**0.0063**	**0.0044**	**0.0033**



F. 3D Image

3D screen shot	**Hot spot position**
	

MEASUREMENT 8

Type: Measurement (Complete)
Date of measurement: 2024-05-17
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE2 - SN 18/21 EPGO356; ConvF: 2.29; Calibrated: 2023-07-07

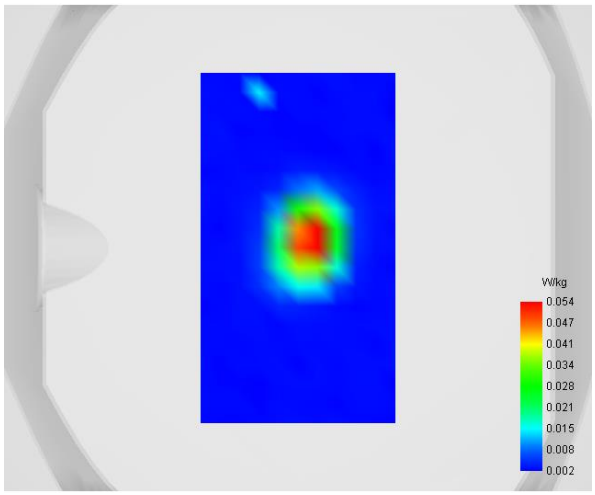
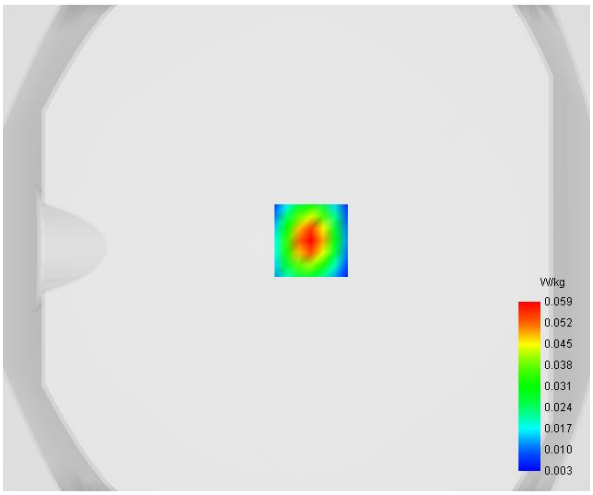
A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=5mm dy=5mm dz=4mm
Phantom	Flat Plane
Device Position	Vertical-Back
Band	WiFi(2.4GHz)_ 802.11b
Channels	Middle
Signal	Duty Cycle: 1:1

B. SAR Measurement Results

Frequency (MHz)	2437.000000
Relative Permittivity (real part)	40.352685
Conductivity (S/m)	1.841572
Power Variation (%)	-1.217400
Ambient Temperature	22.0
Liquid Temperature	22.0

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

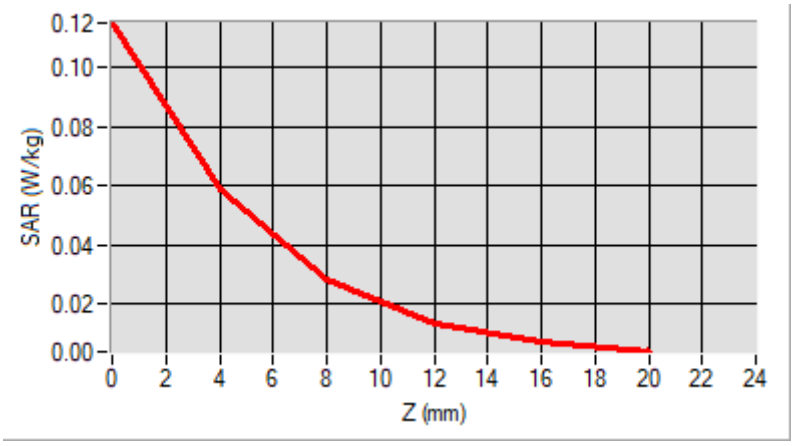
Maximum location: X=6.00, Y=3.00

D. SAR 1g & 10g

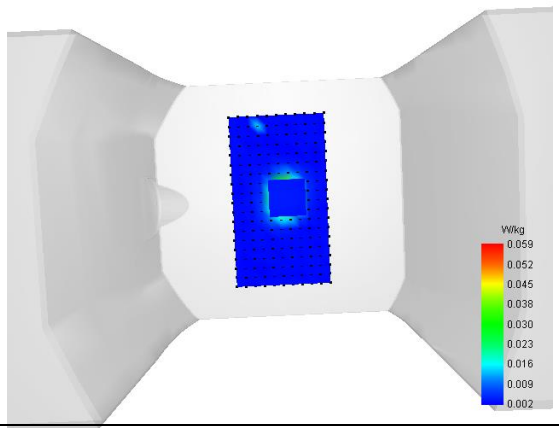
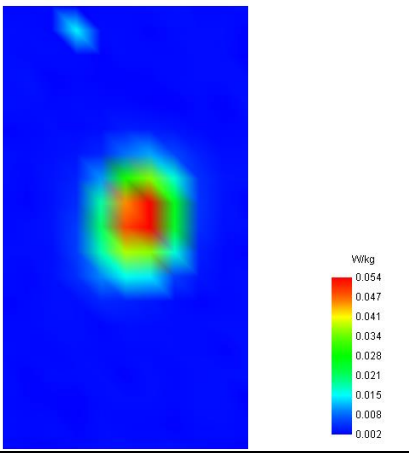
SAR 10g (W/Kg)	**0.023100**
SAR 1g (W/Kg)	**0.053035**

E. Z Axis Scan

Z (mm)	**0.00**	**4.00**	**8.00**	**12.00**	**16.00**
SAR (W/Kg)	**0.1151**	**0.0590**	**0.0285**	**0.0138**	**0.0074**



F. 3D Image

3D screen shot	**Hot spot position**
	

MEASUREMENT 9

Type: Measurement (Complete)
Date of measurement: 2024-05-15
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE2 - SN 18/21 EPGO356; ConvF: 1.91; Calibrated: 2023-07-07

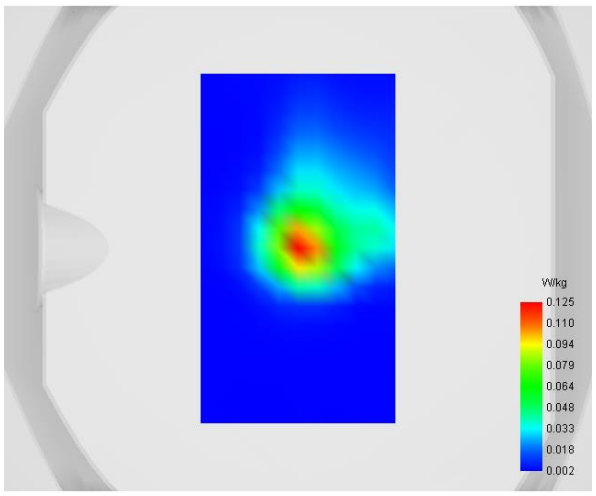
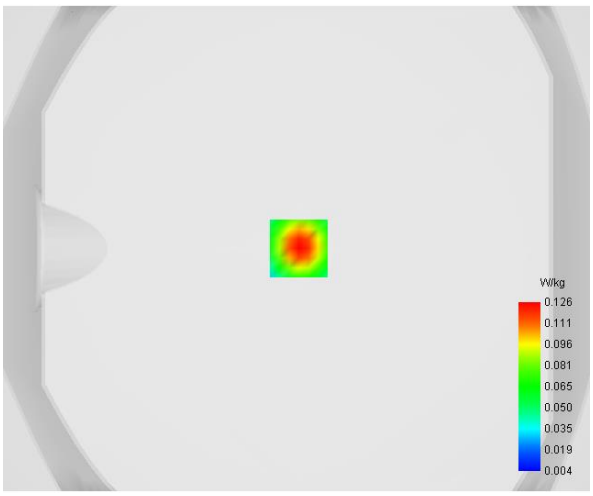
A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=4mm dy=4mm dz=2mm
Phantom	Flat Plane
Device Position	Vertical-Back
Band	WiFi(5.2GHz)_ 802.11ac-VHT80
Channels	Middle
Signal	Duty Cycle: 1:1

B. SAR Measurement Results

Frequency (MHz)	5210.000000
Relative Permittivity (real part)	37.212993
Conductivity (S/m)	4.624146
Power Variation (%)	1.951700
Ambient Temperature	22.3
Liquid Temperature	22.3

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

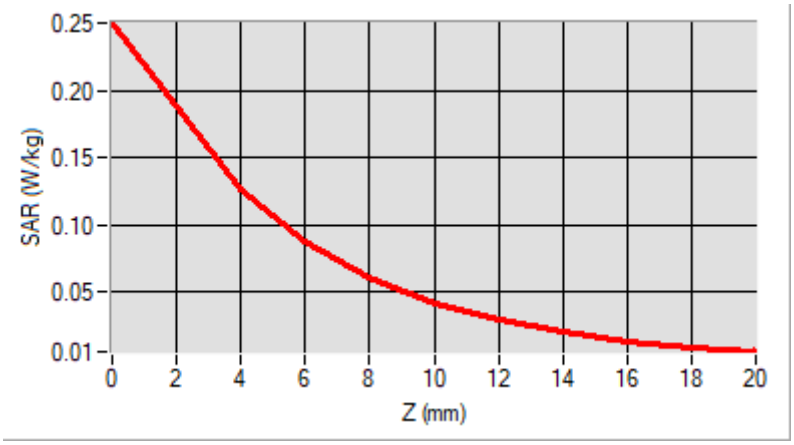
Maximum location: X=1.00, Y=0.00

D. SAR 1g & 10g

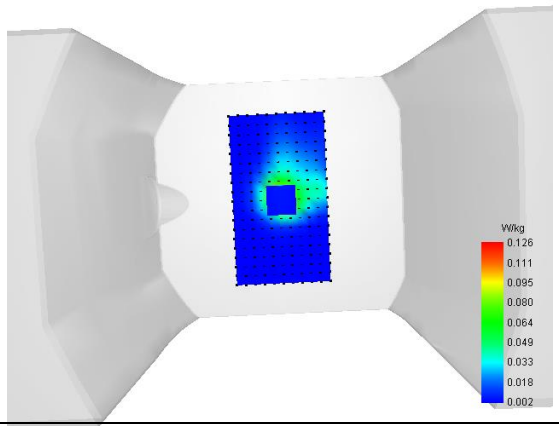
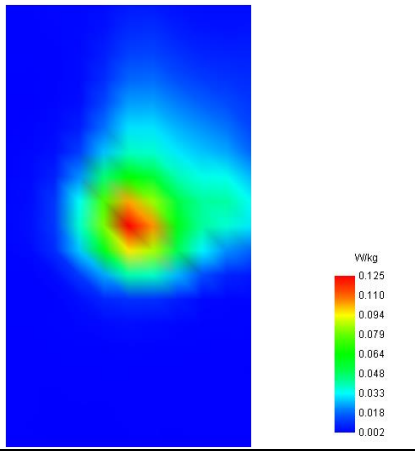
SAR 10g (W/Kg)	**0.050019**
SAR 1g (W/Kg)	**0.116107**

E. Z Axis Scan

Z (mm)	**0.00**	**4.00**	**6.00**	**8.00**	**10.00**	**12.00**	**14.00**	**16.00**	**18.00**
SAR (W/Kg)	**0.2504**	**0.1264**	**0.0881**	**0.0607**	**0.0418**	**0.0289**	**0.0200**	**0.0137**	**0.0091**



F. 3D Image

3D screen shot	**Hot spot position**
	

MEASUREMENT 10

Type: Measurement (Complete)
Date of measurement: 2024-05-16
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE2 - SN 18/21 EPGO356; ConvF: 2.15; Calibrated: 2023-07-07

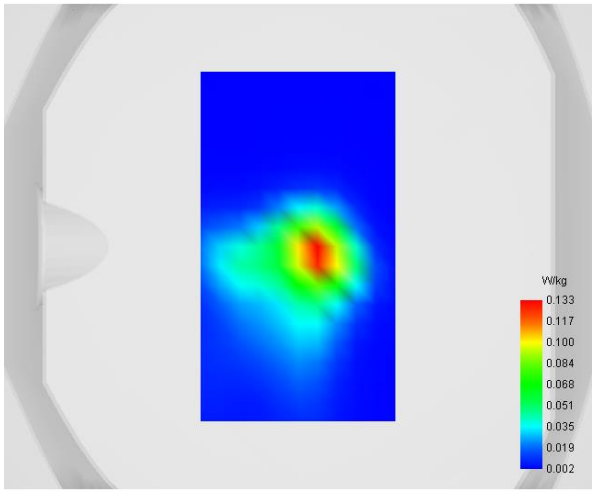
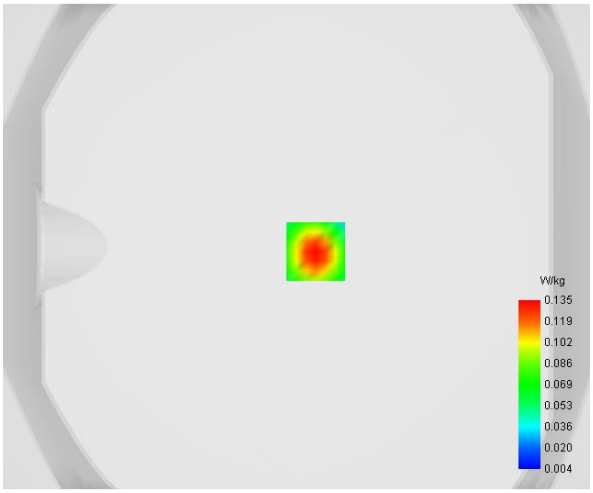
A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=4mm dy=4mm dz=2mm
Phantom	Flat Plane
Device Position	Vertical-Back
Band	WiFi(5.8GHz)_802.11ax-HE80
Channels	Low
Signal	Duty Cycle: 1:1

B. SAR Measurement Results

Frequency (MHz)	5755.000000
Relative Permittivity (real part)	35.881617
Conductivity (S/m)	5.233421
Power Variation (%)	1.111700
Ambient Temperature	22.3
Liquid Temperature	22.3

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

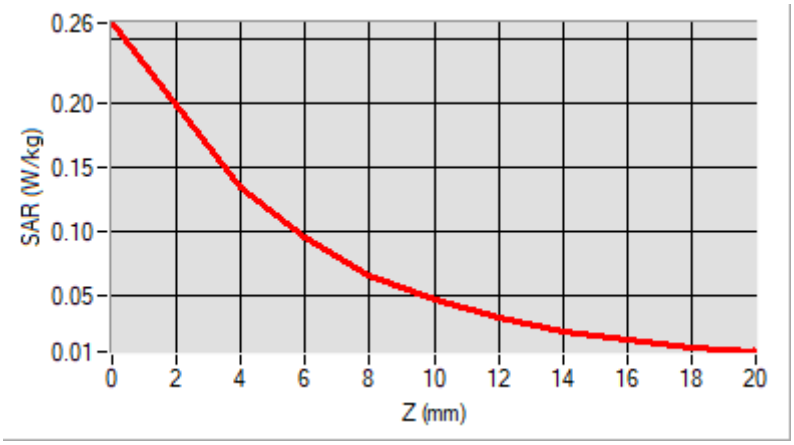
Maximum location: X=8.00, Y=-2.00

D. SAR 1g & 10g

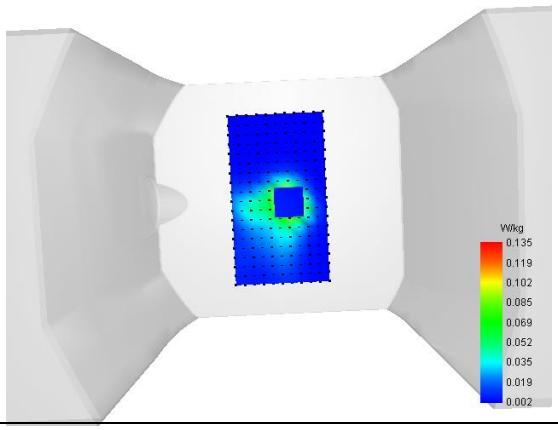
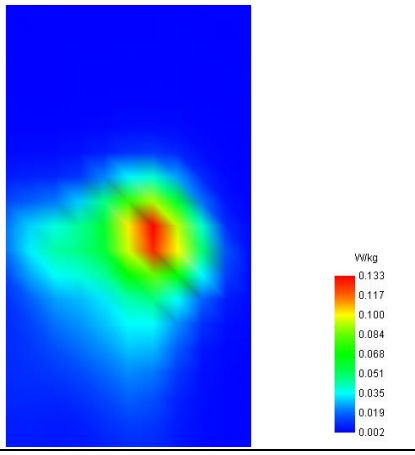
SAR 10g (W/Kg)	**0.055089**
SAR 1g (W/Kg)	**0.124229**

E. Z Axis Scan

Z (mm)	**0.00**	**4.00**	**6.00**	**8.00**	**10.00**	**12.00**	**14.00**	**16.00**	**18.00**
SAR (W/Kg)	**0.2623**	**0.1352**	**0.0953**	**0.0665**	**0.0464**	**0.0324**	**0.0226**	**0.0156**	**0.0104**



F. 3D Image

3D screen shot	**Hot spot position**
	

MEASUREMENT 11

Type: Measurement (Complete)
Date of measurement: 2024-05-17
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE2 - SN 18/21 EPGO356; ConvF: 2.29; Calibrated: 2023-07-07

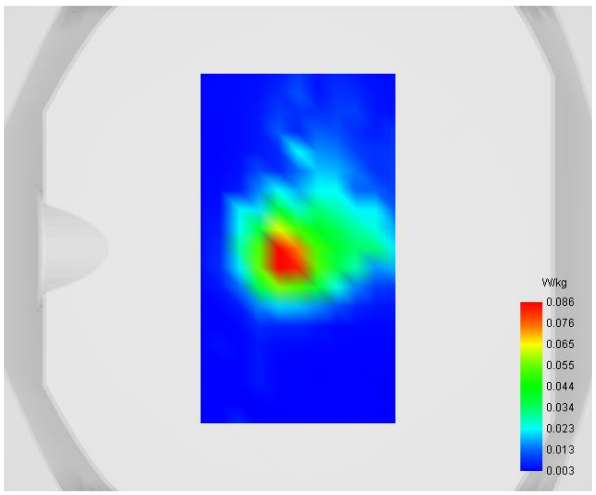
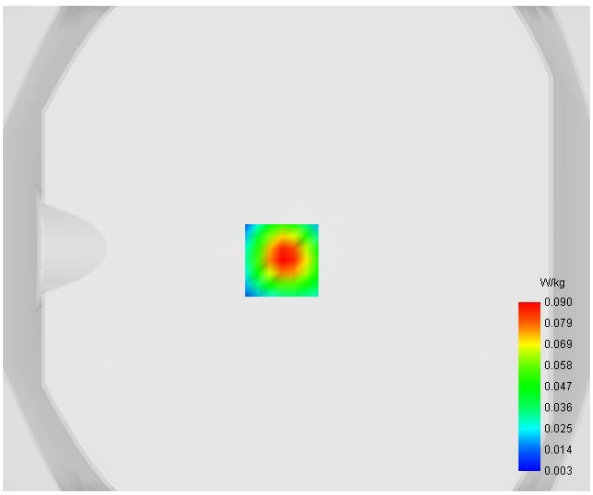
A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=5mm dy=5mm dz=4mm
Phantom	Flat Plane
Device Position	Vertical-Front
Band	WiFi(2.4GHz)_ 802.11b
Channels	Middle
Signal	Duty Cycle: 1:1

B. SAR Measurement Results

Frequency (MHz)	2437.000000
Relative Permittivity (real part)	40.352685
Conductivity (S/m)	1.841572
Power Variation (%)	1.751400
Ambient Temperature	22.0
Liquid Temperature	22.0

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

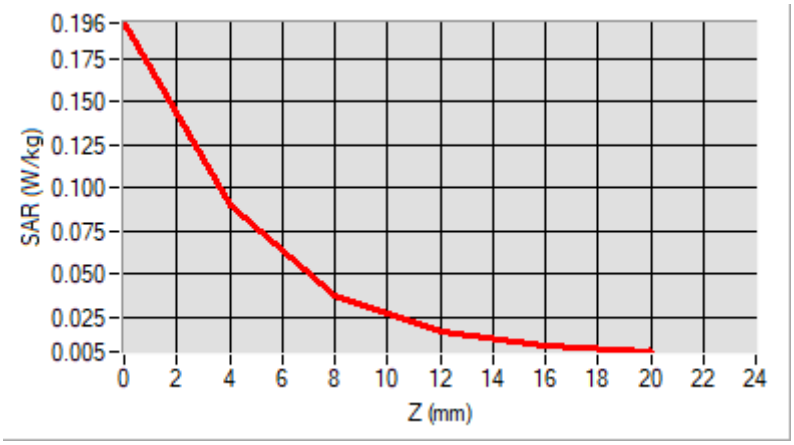
Maximum location: X=-6.00, Y=-5.00

D. SAR 1g & 10g

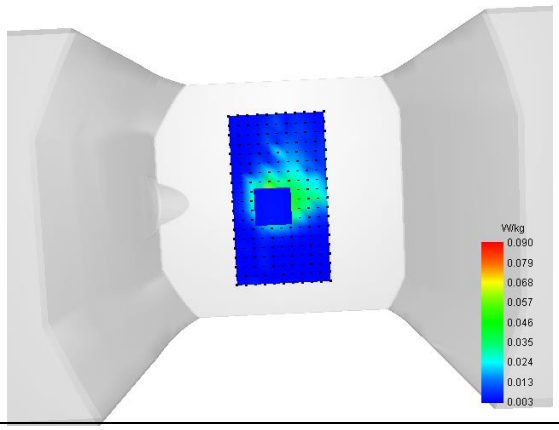
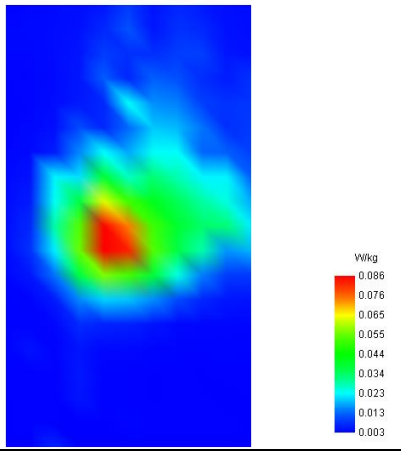
SAR 10g (W/Kg)	**0.036718**
SAR 1g (W/Kg)	**0.085510**

E. Z Axis Scan

Z (mm)	**0.00**	**4.00**	**8.00**	**12.00**	**16.00**
SAR (W/Kg)	**0.1961**	**0.0902**	**0.0378**	**0.0158**	**0.0080**



F. 3D Image

3D screen shot	**Hot spot position**
	

MEASUREMENT 12

Type: Measurement (Complete)
Date of measurement: 2024-05-15
Measurement duration: 12 minutes 21 seconds
E-field Probe: SSE2 - SN 18/21 EPGO356; ConvF: 1.91; Calibrated: 2023-07-07

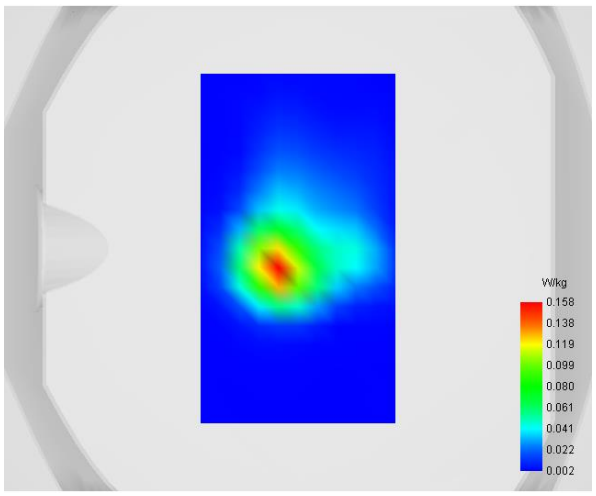
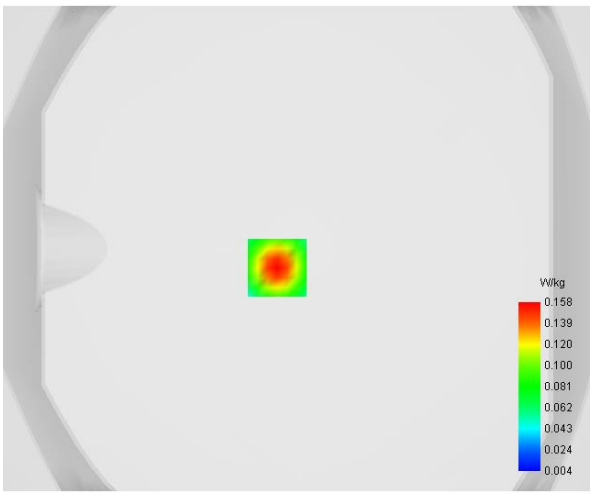
A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=4mm dy=4mm dz=2mm
Phantom	Flat Plane
Device Position	Vertical-Front
Band	WiFi(5.2GHz)_ 802.11n-HT40
Channels	Middle
Signal	Duty Cycle: 1:1

B. SAR Measurement Results

Frequency (MHz)	5210.000000
Relative Permittivity (real part)	37.212993
Conductivity (S/m)	4.624146
Power Variation (%)	-1.331700
Ambient Temperature	22.3
Liquid Temperature	22.3

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

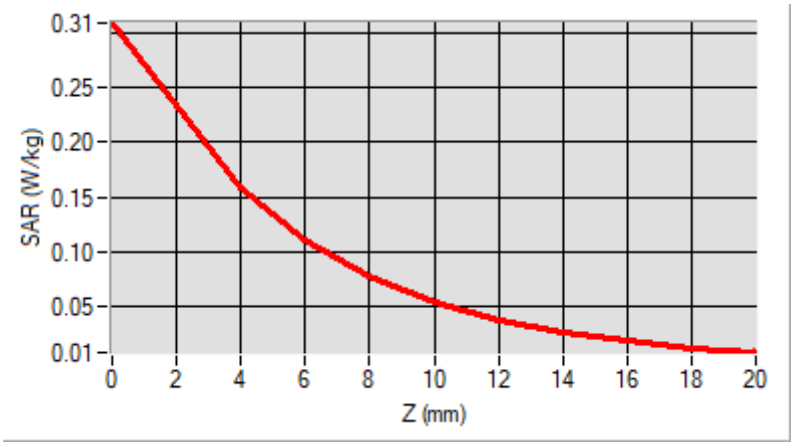
Maximum location: X=-8.00, Y=-8.00

D. SAR 1g & 10g

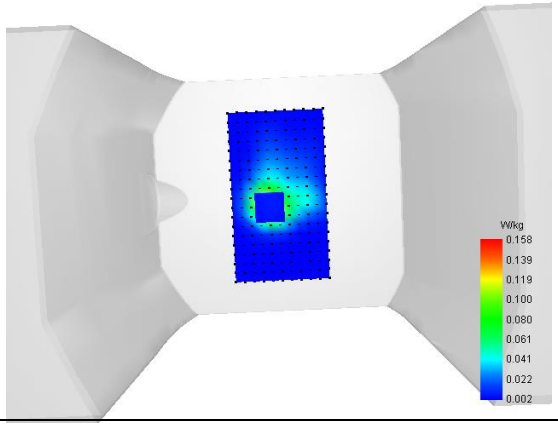
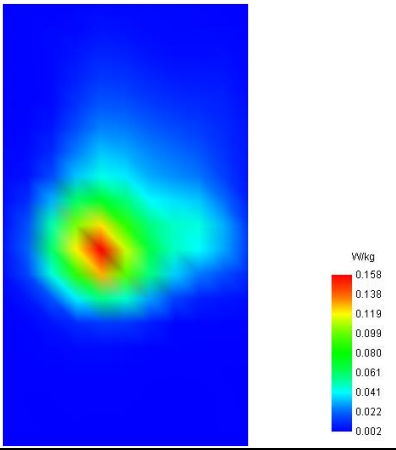
SAR 10g (W/Kg)	**0.062513**
SAR 1g (W/Kg)	**0.144247**

E. Z Axis Scan

Z (mm)	**0.00**	**4.00**	**6.00**	**8.00**	**10.00**	**12.00**	**14.00**	**16.00**	**18.00**
SAR (W/Kg)	**0.3091**	**0.1580**	**0.1110**	**0.0772**	**0.0538**	**0.0376**	**0.0263**	**0.0183**	**0.0124**



F. 3D Image

3D screen shot	**Hot spot position**
	

MEASUREMENT 13

Type: Measurement (Complete)
Date of measurement: 2024-05-16
Measurement duration: 12 minutes 21 seconds
E-field Probe: SSE2 - SN 18/21 EPGO356; ConvF: 2.15; Calibrated: 2023-07-07

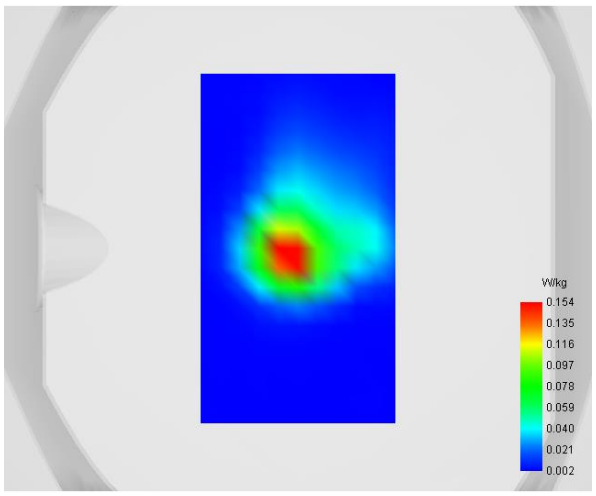
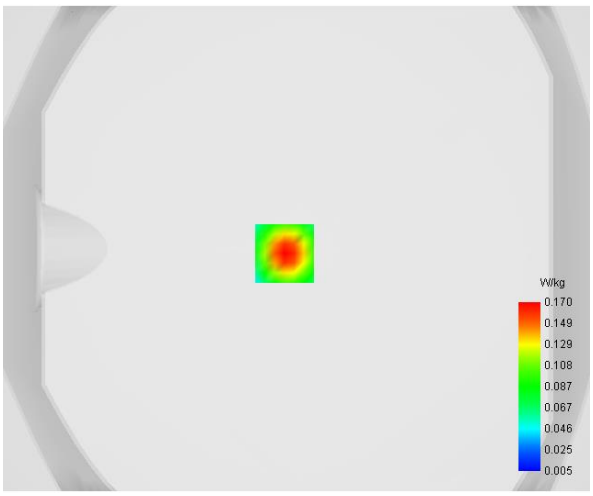
A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=4mm dy=4mm dz=2mm
Phantom	Flat Plane
Device Position	Vertical-Front
Band	WiFi(5.8GHz)_ 802.11ac-VHT20
Channels	High
Signal	Duty Cycle: 1:1

B. SAR Measurement Results

Frequency (MHz)	5785.000000
Relative Permittivity (real part)	35.882172
Conductivity (S/m)	5.234218
Power Variation (%)	0.137500
Ambient Temperature	22.3
Liquid Temperature	22.3

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

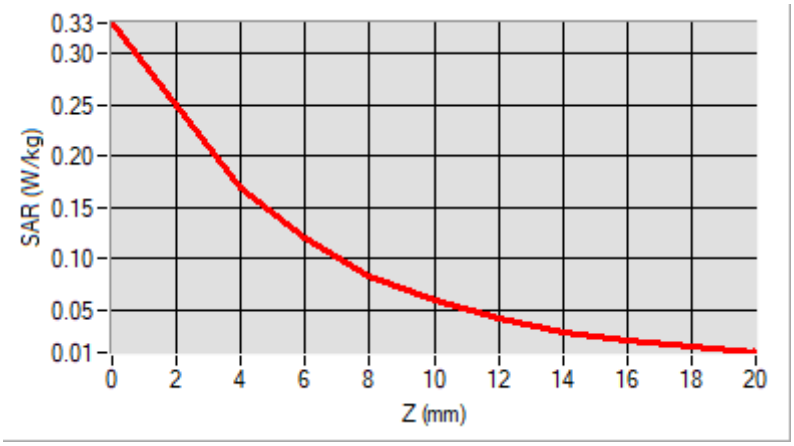
Maximum location: X=-5.00, Y=-2.00

D. SAR 1g & 10g

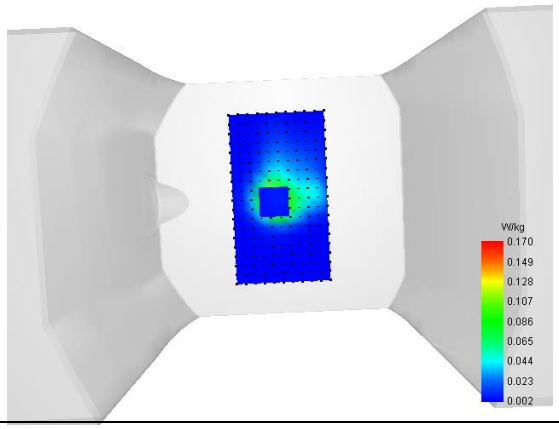
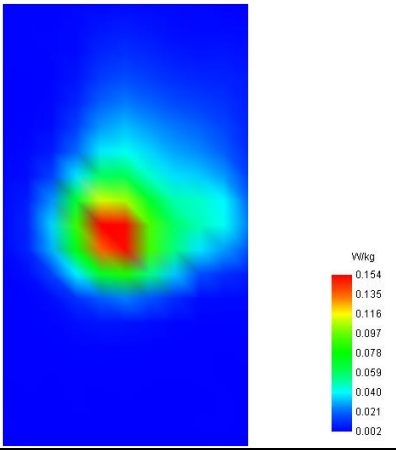
SAR 10g (W/Kg)	**0.067267**
SAR 1g (W/Kg)	**0.155337**

E. Z Axis Scan

Z (mm)	**0.00**	**4.00**	**6.00**	**8.00**	**10.00**	**12.00**	**14.00**	**16.00**	**18.00**
SAR (W/Kg)	**0.3296**	**0.1699**	**0.1199**	**0.0837**	**0.0585**	**0.0409**	**0.0286**	**0.0198**	**0.0133**



F. 3D Image

3D screen shot	**Hot spot position**
	

MEASUREMENT 14

Type: Measurement (Complete)
Date of measurement: 2024-05-17
Measurement duration: 12 minutes 21 seconds
E-field Probe: SSE2 - SN 18/21 EPGO356; ConvF: 2.29; Calibrated: 2023-07-07

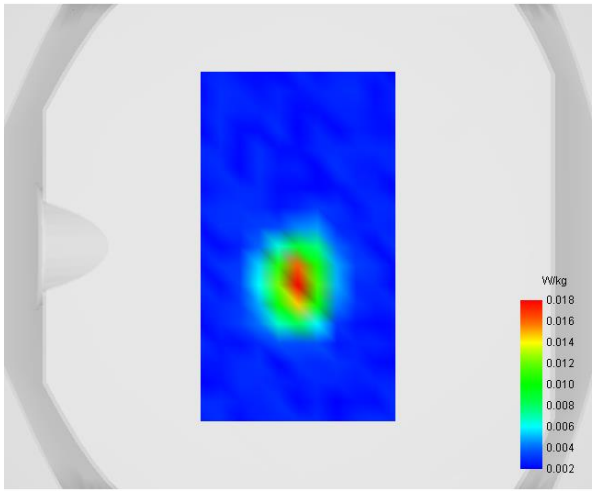
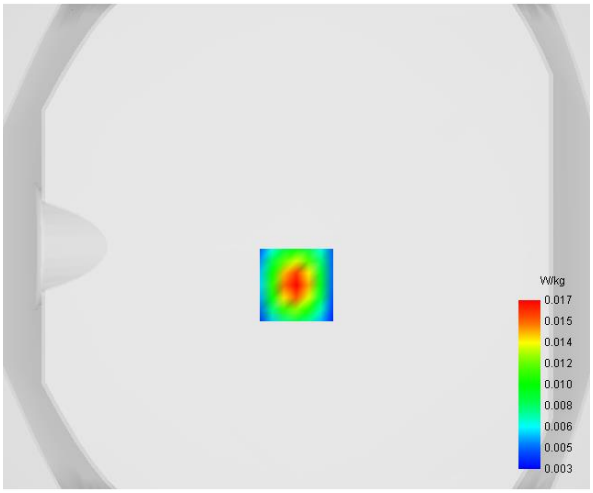
A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=5mm dy=5mm dz=4mm
Phantom	Flat Plane
Device Position	Horizontal-Down
Band	Bluetooth_8DPSK
Channels	Low
Signal	Duty Cycle: 1:1

B. SAR Measurement Results

Frequency (MHz)	2402.000000
Relative Permittivity (real part)	40.350839
Conductivity (S/m)	1.843192
Power Variation (%)	0.204800
Ambient Temperature	22.0
Liquid Temperature	22.0

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

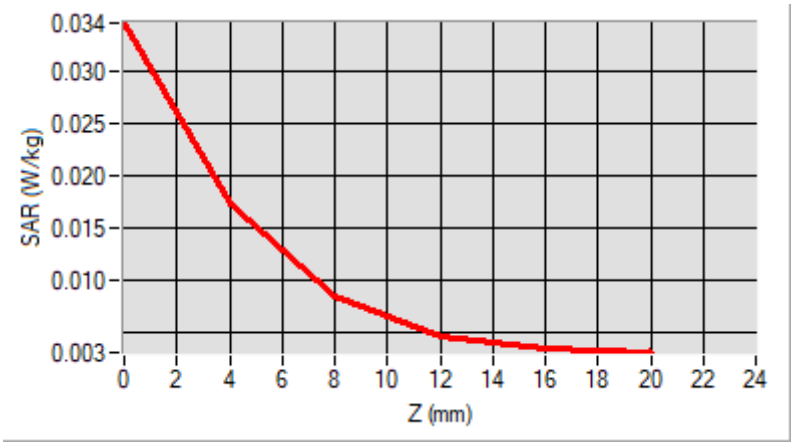
Maximum location: X=0.00, Y=-16.00

D. SAR 1g & 10g

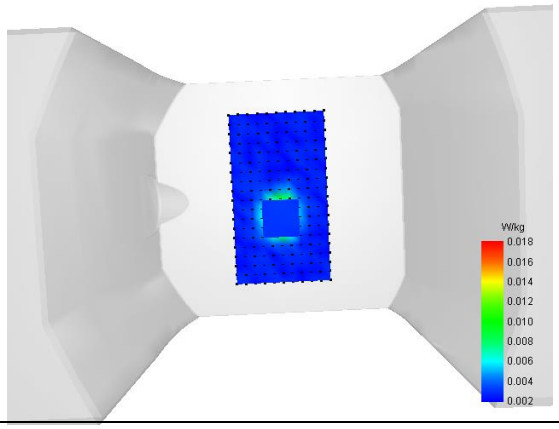
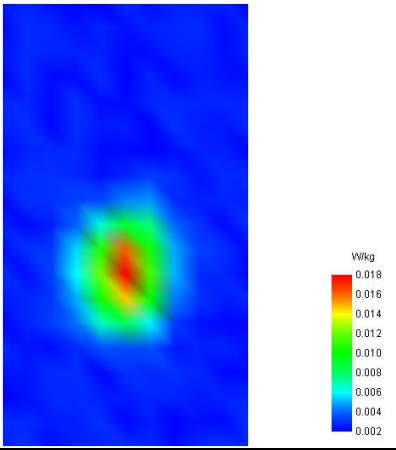
SAR 10g (W/Kg)	**0.007861**
SAR 1g (W/Kg)	**0.015807**

E. Z Axis Scan

Z (mm)	**0.00**	**4.00**	**8.00**	**12.00**	**16.00**
SAR (W/Kg)	**0.0345**	**0.0172**	**0.0084**	**0.0047**	**0.0035**



F. 3D Image

3D screen shot	**Hot spot position**
	

Annex C. EUT Photos

Please refer to the Annex for SAR

Annex D. Test Setup Photos

Please refer to the Annex for SAR

Annex E. Calibration Certificate

Please refer to the exhibit for the calibration certificate

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