TEST REPORT

Report No.:	BCTC2504491259E
Applicant:	Shenzhen Qichang Intelligent Technology Co., Ltd
Product Name:	Smart Phone
Test Model:	F110 Pro
Tested Date:	2025-05-19 to 2025-06-06
Issued Date:	2025-06-06

Shenzhen BCTC Testing Co., Ltd.

FCC ID: 2BAK2-F110PRO

Product Name:	Smart Phone
Trademark:	FOSSiBOT
Model/Type Reference:	F110 Pro F110, F110 Plus, F110 Ultra, F110 P, iHunt Titan Music P11001 ULTRA, iHunt Titan Music P11001 ULTRA 5G
Prepared For:	Shenzhen Qichang Intelligent Technology Co., Ltd
Address:	Room 510, Building 7, Yunli Intelligent Park, No. 7, Bantian Street, Longgang , Shenzhen
Manufacturer:	Shenzhen Qichang Intelligent Technology Co., Ltd
Address:	Room 510, Building 7, Yunli Intelligent Park, No. 7, Bantian Street, Longgang , Shenzhen
Prepared By:	Shenzhen BCTC Testing Co., Ltd.
Address:	1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Zhancheng, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Sample Received Date:	2025-04-07
Sample tested Date:	2025-05-019 to 2025-06-06
Issue Date:	2025-06-06
Test Standards:	IEEE Std C95.1-2019 IEEE Std 1528-2013 FCC Part 2.1093
Test Results:	PASS
Remark:	This is SAR test report

Tested by:

Min Zhi Cheng / Project Handler

Approved by:

Zero Zhou / Reviewer

The test report is effective only with both signature and specialized stamp. This result(s) shown in this report refer only to the sample(s) tested. Without written approval of Shenzhen BCTC Testing Co., Ltd, this report can't be reproduced except in full. The tested sample(s) and the sample information are provided by the client.

Table Of Content

(Note: N/A Means Not Applicable)

1. Version

Report No.	Issue Date	Description	Approved
BCTC2504491259E	2025-06-06	Original	Valid

2. Test Standards

IEEE Std C95.1-2019: IEEE Standard for Safety Levels with Respect to Human Exposure to Electric, Magnetic, and Electromagnetic Fields, 0Hz to 300GHz. It specifies the maximum exposure limit of 1.6W/kg as averaged over any 1gram of tissue for portable devices being used within 20cm of the user in the uncontrolled environment.
IEEE Std 1528-2013: IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques.
FCC Part 2.1093 Radiofrequency Radiation Exposure Evaluation: Portable Devices
KDB 447498 D01 General RF Exposure Guidance v06: Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies
KDB 865664 D01 SAR Measurement 100MHz to 6GHz v01r04: SAR Measurement Requirements for 100MHz to 6GHz
KDB 865664 D02 RF Exposure Reporting v01r02: RF Exposure Compliance Reporting and Documentation Considerations
KDB 248227 D01 802.11 Wi-Fi SAR v02r02: SAR GUIDANCE FOR IEEE 802.11 (Wi-Fi) TRANSMITTERS
KDB 941225 D01 3G SAR Procedures: 3G SAR MEAUREMENT PROCEDURES
KDB 941225 D05 SAR for LTE Devices: SAR EVALUATION CONSIDERATIONS FOR LTE DEVICES
KDB 941225 D06 Hotspot Mode v02r01: SAR EVALUATION PROCEDURES FOR PORTABLE DEVICES WITH WIRELESS ROUTER CAPABILITIES
KDB 648474 D04 Handset SAR v01r03: SAR EVALUATION CONSIDERATIONS FOR WIRELESS HANDSETS

3. Test Summary

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

Frequency Band	Maximum SAR_{1g} (W/kg)			Limit SAR_{1g} (W/kg)
	Head	Body (10mm Gap)	Hotspot (10mm Gap)	
Bluetooth	0.053	0.053	/	1.6
WIFI 2.4G	0.239	0.147	0.182	
WIFI 5G	0.531	0.447	0.444	
GSM	0.198	0.744	1.103	
WCDMA	0.190	0.659	1.008	
LTE	0.216	1.080	1.052	
5G NR N78	0.305	0.339	0.208	
Simultaneous Transmission	0.762	1.410	1.103	

The device in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-2019, and had been tested in accordance with the measurement methods and procedure specified in IEEE 1528-2013.

The data of 5G NR N78 is derived from the report "WTX25X04091864W002".

4. SAR Limits

FCC Limit (1g Tissue)

EXPOSURE LIMITS	SAR (W/kg)	
	(General Population / Uncontrolled Exposure Environment)	(Occupational / Controlled Exposure Environment)
Spatial Average (averaged over the whole body)	0.08	0.4
Spatial Peak (averaged over any 1 g of tissue)	1.6	8.0
Spatial Peak (hands/wrists/feet/anklesaveraged over 10 g)	4.0	20.0

Population/Uncontrolled Environments are defined as locations where there is the exposure of individual who have no knowledge or control of their exposure.
Occupational/Controlled Environments are defined as locations where there is exposure that may be incurred by people who are aware of the potential for exposure (i.e. as a result of employment or occupation).

5. Measurement Uncertainty

Per KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg and the measured 10-g SAR within a frequency band is <3.75 W/kg. The expanded SAR measurement uncertainty must be ≤ 30%, for a confidence interval of k=2. If these conditions are met, extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval.

Therefore, the measurement uncertainty is not required.

6. Product Information and Test Setup

6.1 Product Information

Model/Type reference:	F110 Pro F110, F110 Plus, F110 Ultra, F110 P, iHunt Titan Music P11001 ULTRA, iHunt Titan Music P11001 ULTRA 5G
Model differences:	All the model are the same circuit and RF module, except model names.
Bluetooth Version:	5.2
Hardware Version:	E393_F2_MB_V1.2
Software Version:	FOSSiBOT_F110 Pro_F
Ratings:	DC 9V from adapter/DC 3.87V from battery
Adapter Information:	Model: QZ-0180AA2H Input: 100-240V~50/60Hz 0.5A Output: DC 5.0V 3.0A 15.0W or DC 9.0V 2.22A 20.0W Max. or DC 12.0V 1.67A 20.0W Max.

BDR, EDR

Operation Frequency:	2402-2480MHz
Type of Modulation:	GFSK, π/ 4 DQPSK, 8DPSK
Number Of Channel	79CH
Antenna installation:	Internal antenna
Antenna Gain:	0.22 dBi Remark: ☐ The antenna gain of the product comes from the antenna report provided by the customer, and the test data is affected by the customer information. ☒ The antenna gain of the product is provided by the customer, and the test data is affected by the customer information.

BLE

Operation Frequency:	2402-2480MHz
Type of Modulation:	GFSK
Number Of Channel	40CH
Antenna installation:	Internal antenna
Antenna Gain:	0.22 dBi Remark: ☐ The antenna gain of the product comes from the antenna report provided by the customer, and the test data is affected by the customer information. ☒ The antenna gain of the product is provided by the customer, and the test data is affected by the customer information.

WIFI 2.4G

Operation Frequency:	802.11b/g/n20MHz:2412~2462 MHz 802.11n40MHz:2422~2452 MHz
Bit Rate of Transmitter	802.11b:11/5.5/2/1 Mbps 802.11g:54/48/36/24/18/12/9/6Mbps 802.11n Up to 150Mbps
Type of Modulation:	OFDM/DSSS
Number Of Channel	802.11b/g/n20MHz:11 CH 802.11n40MHz: 7 CH
Antenna installation:	Internal antenna
Antenna Gain:	0.22 dBi Remark: ☐ The antenna gain of the product comes from the antenna report provided by the customer, and the test data is affected by the customer information. ☒ The antenna gain of the product is provided by the customer, and the test data is affected by the customer information.

WIFI 5G

IEEE 802.11 WLAN Mode Supported	802.11a/n/ac(20MHz channel bandwidth) 802.11n/ac(40MHz channel bandwidth) 802.11ac(80MHz channel bandwidth)
Operation Frequency:	5180-5240MHz for 802.11a/n(HT20); 5190-5230MHz for 802.11n(HT40); 5210MHz for 802.11 ac80; 5745-5825 MHz for 802.11a/n(HT20); 5755-5795 MHz for 802.11n(HT40); 5775MHz for 802.11 ac80;
Data Rate	802.11a: 6,9,12,18,24,36,48,54Mbps; 802.11n(HT20/HT40):MCS0-MCS15; 802.11ac(VHT20): NSS1, MCS0-MCS8 802.11ac(VHT40/VHT80):NSS1, MCS0-MCS
Type of Modulation:	OFDM with BPSK/QPSK/16QAM/64QAM/256QAM for 802.11a/n/ac;
Number Of Channel	4 channels for 802.11a/n20 in the 5180-5240MHz band ; 2 channels for 802.11 n40 in the 5190-5230MHz band ; 1 channels for 802.11 ac80 in the 5210MHz band ; 5 channels for 802.11a/n20 in the 5745-5825MHz band ; 2 channels for 802.11 n40 in the 5755-5795MHz band ; 1 channels for 802.11 ac80 in the 5775MHz band
Antenna installation:	Internal antenna
Antenna Gain:	0.22 dBi Remark: ☐ The antenna gain of the product comes from the antenna report provided by the customer, and the test data is affected by the customer information. ☒ The antenna gain of the product is provided by the customer, and the test data is affected by the customer information.

2G, 3G

Operation Frequency:	GSM/GPRS/EGPRS 850: TX: 824~849MHz; RX: 869~894MHz; GSM/GPRS/EGPRS 1900: TX:1850~1910MHz; RX:1930~1990MHz; WCDMA Band II: TX: 1852.40~1907.60MHz; Rx: 1932.60~1987.40MHz; WCDMA Band IV: TX: 1712.40~1752.60MHz; RX: 2112.60 – 2452.40MHz WCDMA Band V: TX: 826.40~846.60MHz; RX: 871.40~ 891.60MHz;
GPRS Class:	Class 12
Max RF Output Power:	GSM/GPRS/EGPRS 850: 33.81 dBm, GSM/GPRS/EGPRS 1900: 30.69 dBm WCDMA Band II: 23.65 dBm WCDMA Band IV: 23.40 dBm WCDMA Band V: 23.45 dBm
Type of Modulation:	GSM with GMSK Modulation WCDMA Mode with BPSK Modulation HSDPA Mode with QPSK, 16QAM Modulation HSUPA Mode with QPSK, 16QAM Modulation
Type of Emission:	GSM/GPRS 850: 256KGXW EGPRS 850:260KGXW GSM/GPRS 1900: 248KGXW EGPRS 1900:255KGXW WCDMA Band II: 4M16F9W WCDMA Band IV: 4M17F9W WCDMA Band V: 4M15F9W
Antenna installation:	Internal antenna
Antenna Gain:	GSM850: -0.27 dBi GSM1900: 0.15 dBi WCDMA Band II: 0.15 dBi WCDMA Band IV: 0.06 dBi WCDMA Band V: -0.27 dBi

Remark:

☐ The antenna gain of the product comes from the antenna report provided by the customer, and the test data is affected by the customer information.

☒ The antenna gain of the product is provided by the customer, and the test data is affected by the customer information.

4G

Tx Frequency:	LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500MHz-2570MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 17: 704MHz ~ 716MHz
Rx Frequency:	LTE Band 2: 1930 MHz ~ 1990 MHz LTE Band 4: 2110 MHz ~ 2155 MHz LTE Band 5: 869 MHz ~ 894 MHz LTE Band 7: 2620MHz ~ 2690MHz LTE Band 12: 729 MHz ~ 746 MHz LTE Band 17: 734MHz ~ 746MHz
Bandwidth:	LTE Band 2: 1.4MHz /3MHz /5MHz /10MHz /15MHz /20MHz LTE Band 4: 1.4MHz /3MHz /5MHz /10MHz /15MHz /20MHz LTE Band 5: 1.4MHz /3MHz /5MHz /10MHz LTE Band 7: 5MHz /10MHz /15MHz /20MHz LTE Band 12: 1.4MHz /3MHz /5MHz /10MHz LTE Band 17: 5MHz /10MHz
The Max RF Output Power (EIRP/ERP)	LTE Band 2: 24.78 dBm LTE Band 4: 24.36 dBm LTE Band 5: 22.12 dBm LTE Band 7: 24.74 dBm LTE Band 12: 21.76 dBm LTE Band 17: 22.03 dBm
99% Occupied Bandwidth:	LTE Band 2: 18M0G7D LTE Band 4: 18M0W7D LTE Band 5: 9M03W7D LTE Band 7: 18M0G7D LTE Band 12: 9M02W7D LTE Band 17: 8M99W7D
Type of Modulation:	QPSK/16QAM
Antenna Type:	Internal Antenna
Antenna Gain:	LTE Band 2: 0.15 dBi LTE Band 4: 0.06 dBi LTE Band 5: -0.27 dBi LTE Band 7: 0.20 dBi LTE Band 12: -0.55 dBi LTE Band 17: -0.54 dBi

Remark:

☐ The antenna gain of the product comes from the antenna report provided by the customer, and the test data is affected by the customer information.

☒ The antenna gain of the product is provided by the customer, and the test data is affected by the customer information.

6.2 Test Setup Configuration

See test photographs attached in EUT TEST SETUP PHOTOGRAPHS for the actual connections between Product and support equipment.

6.3 Support Equipment

Cable of Product

No.	Cable Type	Quantity	Provider	Length (m)	Shielded	Note
1	--	--	Applicant	---	Yes/No	--
2	--	--	BCTC	--	Yes/No	--

No.	Device Type	Brand	Model	Series No.	Note
1.	---	---	---	---	---
2.	--	--	--	--	--

Notes:
1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

6.4 Test Environment

1. Normal Test Conditions:

Humidity(%):	35-75
Atmospheric Pressure(kPa):	95-105
Temperature(℃):	18-25

2. Extreme Test Conditions:
N/A

7. Test Facility and Test Instrument Used

7.1 Test Facility

All measurement facilities used to collect the measurement data are located at Shenzhen BCTC Testing Co., Ltd. Address: 1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Zhancheng, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1-1 other equivalent standards.

FCC Test Firm Registration Number: 712850
A2LA certificate registration number is: CN1212
ISED Registered No.: 23583
ISED CAB identifier: CN0017

7.2 Test Instrument Used

Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
PC	DELL	\	\	N/A	N/A
SAR Measurement system	SATIMO	\	\	N/A	N/A
Signal Generator	Keysight	83711B	US37100131	May 14, 2025	May 13, 2026
Multimeter	Keithley	1160271	\	Nov. 10, 2024	Nov 09, 2025
S-parameter Network Analyzer	R&S	ZVB 8	101353	Dec. 07, 2024	Dec. 06, 2025
Wideband Radio Communication Tester	R&S	CMW500	\	Nov. 10, 2024	Nov 09, 2025
E SAR PROBE 6GHz	MVG	SSE2	2623-EPGO-420	July 18, 2024	July 17, 2025
DIPOLE 750	SATIMO	SID 750	SN 47/21 DIP 0G750-620	Nov. 25, 2024	Nov. 24, 2027
DIPOLE 835	SATIMO	SID 835	SN 47/21 DIP 0G835-621	Nov. 25, 2024	Nov. 24, 2027
DIPOLE 1800	SATIMO	SID 1800	SN 47/21 DIP 1G800-623	Nov. 25, 2024	Nov. 24, 2027
DIPOLE 1900	SATIMO	SID 1900	SN 47/21 DIP 1G900-624	Nov. 25, 2024	Nov. 24, 2027
DIPOLE 2450	SATIMO	SID 2450	SN 47/21 DIP 2G450-627	Nov. 25, 2024	Nov. 24, 2027
DIPOLE 2600	SATIMO	SID 2600	SN 47/21 DIP 2G600-628	Nov. 25, 2024	Nov. 24, 2027
DIPOLE 5000	SATIMO	SID 5000	SN 47/21 DIP 5G000-629	Nov. 25, 2024	Nov. 24, 2027
COMOSAR OPEN Coaxial Probe	SATIMO	\	\	Nov. 18, 2024	Nov. 17, 2025
SAR Locator	SATIMO	\	\	Nov. 18, 2024	Nov. 17, 2025
Communication Antenna	SATIMO	\	\	Nov. 18, 2024	Nov. 17, 2025
FEATURE PHONEPOSITIONING DEVICE	SATIMO	\	\	N/A	N/A
DUMMY PROBE	SATIMO	\	\	N/A	N/A
SAM Phantom	MVG	\	SN 13/09 SAM68	N/A	N/A
Liquid measurement Kit	HP	85033D	3423A08186	N/A	N/A
Power meter	Keysight	E4419	A00065	May 14, 2025	May 13, 2026
Power sensor	Keysight	E9300A	US39211659	May 14, 2025	May 13, 2026
Power sensor	Keysight	E9300A	US39211305	May 14, 2025	May 13, 2026
Directional Coupler	Krytar 158020	131467	\	Nov. 10, 2024	Nov 09, 2025
Thermometer	BTE	\	\	Dec. 02, 2024	Dec. 01, 2025
Broad Band Tissue Simulation Liquid	Schmid	\	\	N/A	N/A

Note:
Per KDB865664D01 requirements for dipole calibration, the test laboratory has adopted three year extended calibration interval. Each measured dipole is expected to evalute with following criteria at least on annual interval.

1. There is no physical damage on the dipole;
2. System check with specific dipole is within 10% of calibrated values;
3. The most recent return-loss results, measued at least annually, deviates by no more than 20% from the previous measurement;
4. The most recent measurement of the real or imaginary parts of the impedance, measured at least annually is within 5Ω from the provious measurement.

8. Specific Absorption Rate (SAR)

8.1 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 techiques 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.

8.2 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.

9. SAR Measurement System

9.1 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

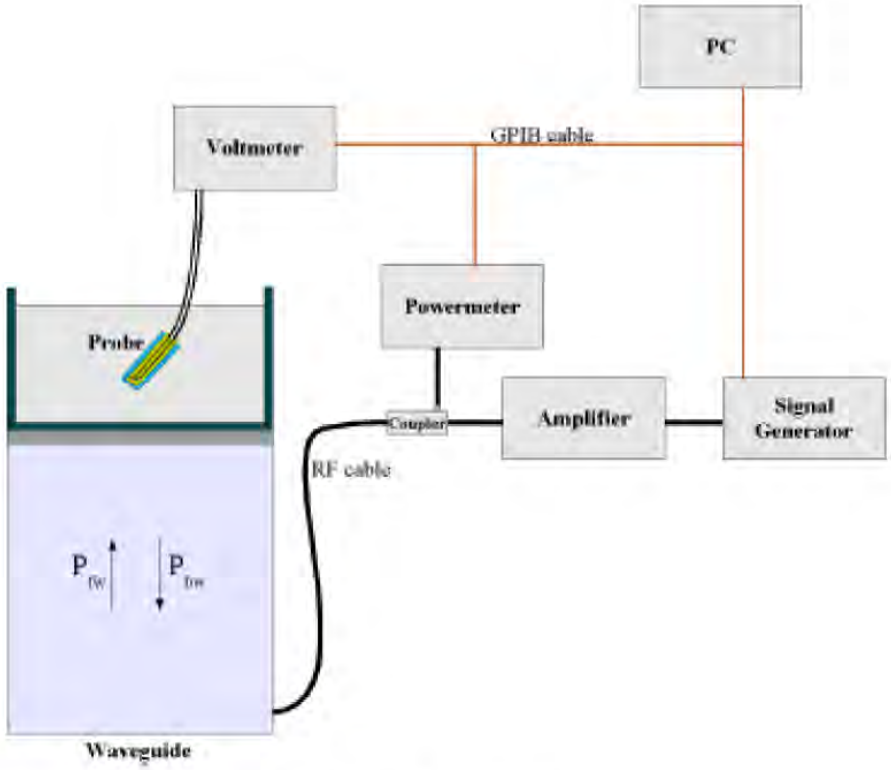
The following figure shows the system.

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.

9.2 Probe

For the measurements the Specific Dosimetric E-Field Probe SN 46/21 EPGO362 with following specifications is used
- Dynamic range: 0.01-100 W/kg
- Tip Diameter : 5 mm
- Distance between probe tip and sensor center: 2.10mm
- Distance between sensor center and the inner phantom surface: 4 mm (repeatability better than +/- 1mm)
- Probe linearity: ＜0.25 dB
- Axial Isotropy: ＜0.25 dB
- Spherical Isotropy: ＜0.50 dB
- Calibration range: 835 to 2500MHz for head & body simulating liquid.

Angle between probe axis (evaluation axis) and surface normal line:1ess than 30°
Probe calibration is realized, in compliance with EN 62209-1 and IEEE 1528 STD, with CALISAR, Antennessa proprietary calibration system. The calibration is performed with the EN 62209-1 annex technique using reference guide at the five frequencies.



$$SAR = \frac{4(p_{\int w} - p_{Pbw})}{ab\delta} cos^2 \left(\pi \frac{y}{a}\right) c^{(2\pi/\delta)}$$

Where :
Pfw = Forward Power
Pbw = Backward Power
a and b =Waveguide dimensions
l = 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.

9.3 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:
Δt = exposure time (30 seconds),
C = heat capacity of tissue (brain or muscle),
ΔT = temperature increase due to RF exposure.

SAR is proportional to $\Delta T/\Delta t$, 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.

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

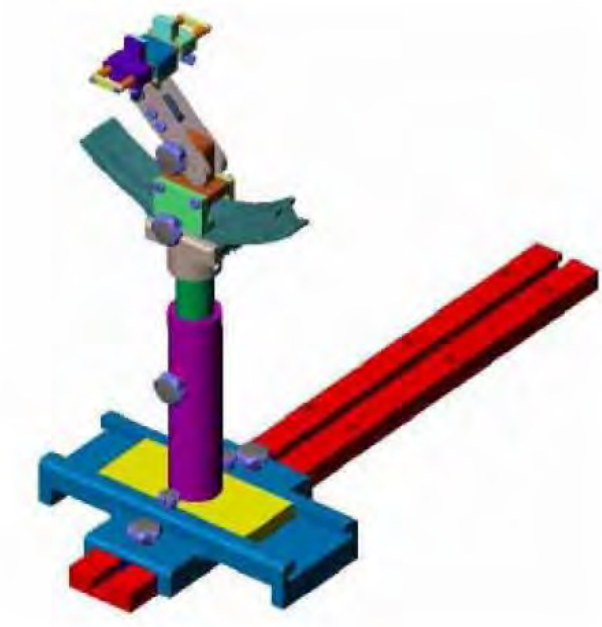
Where:
σ = simulated tissue conductivity,
ρ = Tissue density (1.25 g/cm3 for brain tissue)

9.4 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.

9.5 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

10. Tissue Simulating Liquids

10.1 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/Body						
835	40.3	1.4	57.9	0.2	0.2	0
900	40.3	1.4	57.9	0.2	0.2	0
1800-2000	55.2	0.3	0	0	0	44.5
2450	55.0	0.1	0	0	0	44.9
2600	54.9	0.1	0	0	0	45.0

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

10.2 Limit

The head tissue dielectric parameters recommended by the IEEE SCC-34/SC-2 in P1528 have been incorporated in the following table. These head parameters are derived from planar layer models simulating the highest expected SAR for the dielectric properties and tissue thickness variations in a human head. Other head and body tissue parameters that have not been specified in P1528 are derived from the tissue dielectric parameters

computed from the 4-Cole-Cole equations described in Reference [12] and extrapolated according to the head parameters specified in P1528.

Target Frequency (MHz)	Head	
	Conductivity (σ)	Permittivity (ε_r)
150	0.76	52.3
300	0.87	45.3
450	0.87	43.5
750	0.89	41.9
835	0.90	41.5
900	0.97	41.5
915	0.98	41.5
1450	1.20	40.5
1610	1.29	40.3
1800-2000	1.40	40.0
2450	1.80	39.2
2600	1.96	39.0
3000	2.40	38.5
5200	4.66	36.0
5400	4.86	35.8
5600	5.07	35.5
5800	5.27	35.3

10.3 Tissue Calibration Result

The dielectric parameters of the liquids were verified prior to the SAR evaluation using an R&S ZVB 8. Dielectric Probe Kit and an Agilent Network Analyzer.

Calibration Result for Dielectric Parameters of Tissue Simulating Liquid

Frequency (MHz)	Liquid	Target (σ)	Target (εr)	Measured (σ)	Measured (εr)	Delta (σ)%	Delta (εr)%	Limit (%)	Air (°C)	Date
750	Head	0.89	41.90	0.896	43.073	0.67	2.80	±5	22.9	26/5/2025
835	Head	0.90	41.50	0.919	40.202	2.11	-3.13	±5	23.2	28/5/2025
1800	Head	1.40	40.00	1.382	41.233	-1.29	3.08	±5	22.9	26/5/2025
1900	Head	1.40	40.00	1.433	40.955	2.36	2.39	±5	23.3	29/5/2025
2450	Head	1.80	39.20	1.847	39.897	2.61	1.78	±5	23.2	28/5/2025
2600	Head	1.96	39.00	1.920	38.558	-2.04	-1.13	±5	23.2	28/5/2025
5200	Head	4.66	36.00	4.785	35.785	2.68	-0.60	±5	23.3	29/5/2025
5800	Head	5.27	35.30	5.458	35.715	3.57	1.18	±5	23.3	29/5/2025

Remark:

1. The temperature of the tissue-equivalent medium used during measurement must also be within 18°C to 25°C and within ± 2°C of the temperature when the tissue parameters are characterized.
2. The dielectric parameters must be measured before the tissue-equivalent medium is used in a series of SAR measurements. The parameters should be re-measured after each 3 – 4 days of use; or earlier if the dielectric parameters can become out of tolerance; for example, when the parameters are marginal at the beginning of the measurement series.

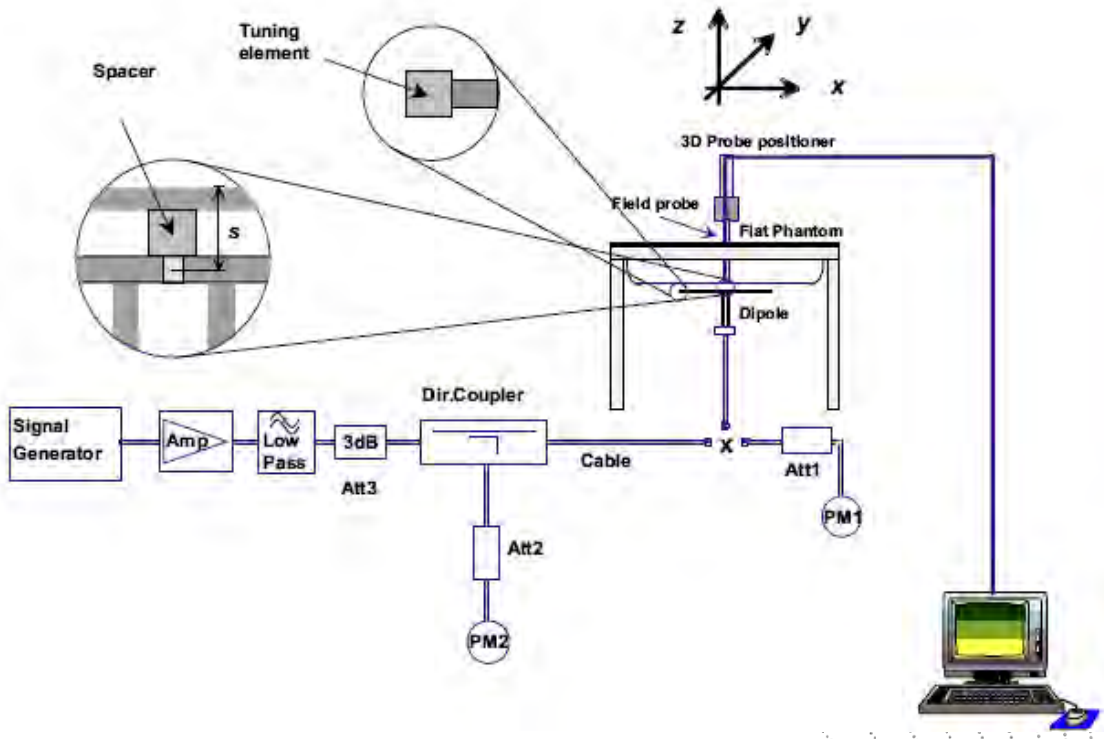
11. System Check

11.1 Purpose of System Performance Check

At the device test frequencies. System check verifies the measurement repeatability of a SAR system before compliance testing and is not a validation of all system specifications. The latter is not required for testing a device but is mandatory before the system is deployed. The system check detects possible short-term drift and unacceptable measurement errors or uncertainties in the system.

11.2 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 600MHz-6000MHz. 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 output power on dipole port must be calibrated to 20 dBm (100 mW) before dipole is connected.



System Verification Setup Block Diagram

Setup Photo of Dipole Antenna

11.3 Validation Results

Comparing to the original SAR value provided by SATIMO, the validation data should be within its specification of 10 %. The following table 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 (MHz)	Power	Measured SAR_{1g} (W/Kg)	Normalize to 1 Watt	Drift (%)	1W Target SAR_{1g} (W/Kg)	Difference Percentage (%)	Limit (%)	Liquid (°C)	Date
750	250mW	2.128	8.510	0.449	8.58	-0.816	±10	23.1	26/5/2025
835	250mW	2.378	9.511	2.399	10.01	-4.985	±10	23.3	28/5/2025
1800	250mW	9.643	38.571	3.378	39.74	-2.942	±10	23.1	26/5/2025
1900	250mW	10.614	42.454	1.328	41.26	2.894	±10	23.5	29/5/2025
2450	250mW	13.150	52.601	-1.671	55.16	-4.639	±10	23.3	28/5/2025
2600	250mW	13.613	54.453	-3.812	56.50	-3.623	±10	23.3	28/5/2025
5200	250mW	18.455	73.821	-0.068	76.41	-3.388	±10	23.5	29/5/2025
5800	250mW	19.335	77.338	3.092	76.49	1.109	±10	23.5	29/5/2025

12. EUT Testing Position

12.1 Define Two Imaginary Lines on the Handset

(a) The vertical centerline passes through two points on the front side of the handset - the midpoint of the width wt of the handset at the level of the acoustic output, and the midpoint of the width wb of the bottom of the handset.

(b) The horizontal line is perpendicular to the vertical centerline and passes through the center of the acoustic
output. The horizontal line is also tangential to the face of the handset at point A.

(c) The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centerline is not necessarily parallel to the front face of the handset, especially for clamshell handsets, handsets with flip covers, and other irregularly shaped handsets.

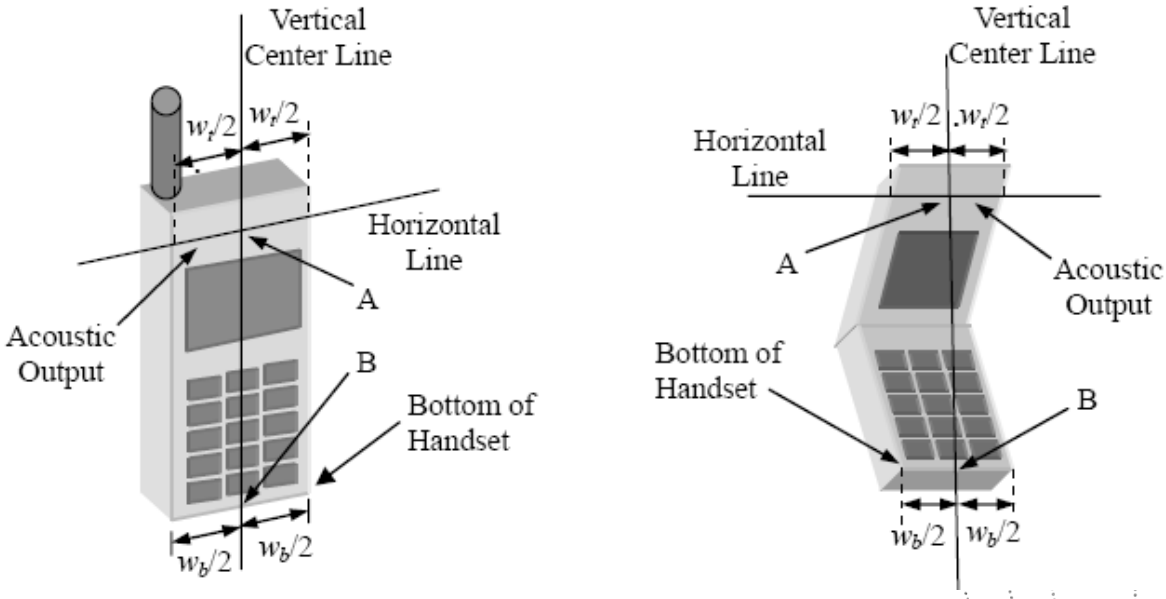


Illustration for Handset Vertical and Horizontal Reference Lines

12.2 Cheek Position

(a) To position the device with the vertical center line of the body of the device and the horizontal line crossing the center piece in a plane parallel to the sagittal plane of the phantom. While maintaining the device in this plane, align the vertical center line with the reference plane containing the three ear and mouth reference point (M: Mouth, RE: Right Ear, and LE: Left Ear) and align the center of the ear piece with the line RE-LE.
(b) To move the device towards the phantom with the ear piece aligned with the line LE-RE until the phone touched the ear. While maintaining the device in the reference plane and maintaining the phone contact with the ear, move the bottom of the phone until any point on the front side is in contact with the cheek of the phantom or until contact with the ear is lost (see below).

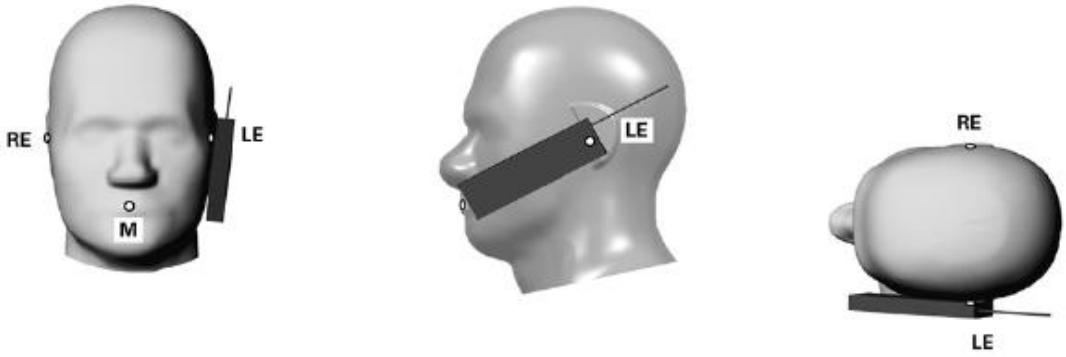


Illustration for Cheek Position

12.3 Tilted Position

(a) To position the device in the “cheek” position described above.

(b) While maintaining the device the reference plane described above and pivoting against the ear, moves it outward away from the mouth by an angle of 15 degrees or until contact with the ear is lost (see below).

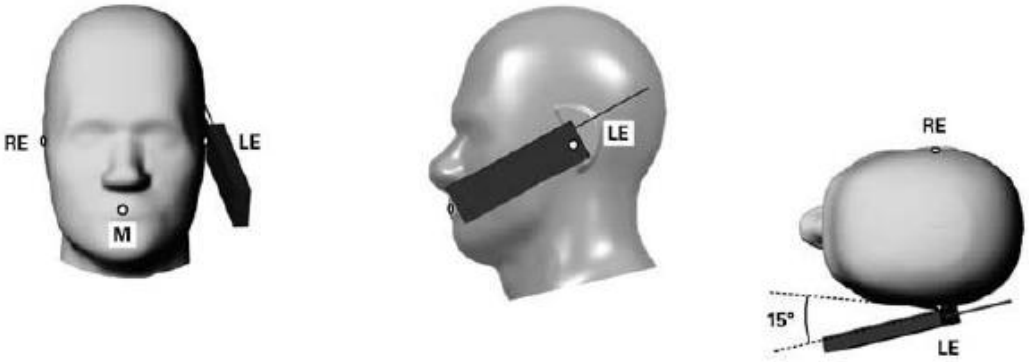
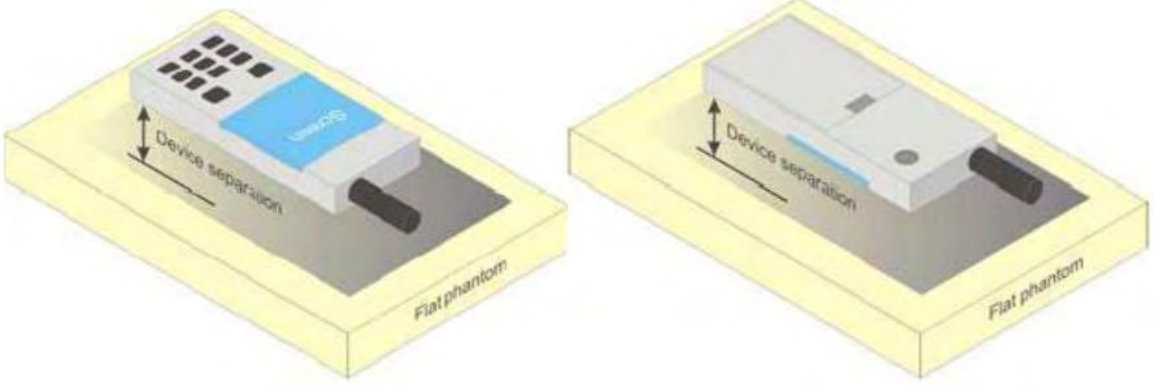


Illustration for Tilted Position

12.4 Body Position

A typical example of a body-worn device is a Mobile Phone , wireless enabled PDA or other battery operated wireless device with the ability to transmit while mounted on a person’s body using a carry accessory approved by the wireless device manufacturer.



Test positions for body-worn devices

13. SAR Measurement Procedures

13.1 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

13.2 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

13.3 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 5mm for 300MHz to 3GHz, and 8x8x8 points with step size 4, 4 and 2.5 mm for 3GHz to 6GHz. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR-distribution over 10g.

<table>
<tr><td colspan="3"></td><td>≤ 3 GHz</td><td>> 3 GHz</td></tr>
<tr><td colspan="3">Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface</td><td>5 mm ± 1 mm</td><td>½·δ·ln(2) mm ± 0.5 mm</td></tr>
<tr><td colspan="3">Maximum probe angle from probe axis to phantom surface normal at the measurement location</td><td>30° ± 1°</td><td>20° ± 1°</td></tr>
<tr><td colspan="3" rowspan="2">Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}</td><td>≤ 2 GHz: ≤ 15 mm
2 – 3 GHz: ≤ 12 mm</td><td>3 – 4 GHz: ≤ 12 mm
4 – 6 GHz: ≤ 10 mm</td></tr>
<tr><td colspan="2">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.</td></tr>
<tr><td colspan="3">Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}</td><td>≤ 2 GHz: ≤ 8 mm
2 – 3 GHz: ≤ 5 mm*</td><td>3 – 4 GHz: ≤ 5 mm*
4 – 6 GHz: ≤ 4 mm*</td></tr>
<tr><td rowspan="3">Maximum zoom scan spatial resolution, normal to phantom surface</td><td colspan="2">uniform grid: $\Delta z_{Zoom}(n)$</td><td>≤ 5 mm</td><td>3 – 4 GHz: ≤ 4 mm
4 – 5 GHz: ≤ 3 mm
5 – 6 GHz: ≤ 2 mm</td></tr>
<tr><td rowspan="2">graded grid</td><td>$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface</td><td>≤ 4 mm</td><td>3 – 4 GHz: ≤ 3 mm
4 – 5 GHz: ≤ 2.5 mm
5 – 6 GHz: ≤ 2 mm</td></tr>
<tr><td>$\Delta z_{Zoom}(n>1)$: between subsequent points</td><td colspan="2">≤ 1.5·$\Delta z_{Zoom}(n-1)$ mm</td></tr>
<tr><td>Minimum zoom scan volume</td><td colspan="2">x, y, z</td><td>≥ 30 mm</td><td>3 – 4 GHz: ≥ 28 mm
4 – 5 GHz: ≥ 25 mm
5 – 6 GHz: ≥ 22 mm</td></tr>
<tr><td colspan="5">Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see IEEE Std 1528-2013 for details.
* When zoom scan is required and the reported SAR from the area scan based 1-g SAR estimation procedures of KDB Publication 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.</td></tr>
</table>

13.4 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.

13.5 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.

13.6 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.

14. SAR Test Result

14.1 Conducted RF Output Power

Bluetooth			
Modulation	**Frequency (MHz)**	**Conducted Power (dBm)**	**Tune-up power (dBm)**
1-DH1	2402	0.45	1.0
	2441	0.95	
	2480	-0.04	
2-DH1	2402	-0.30	0.5
	2441	0.14	
	2480	-0.86	
3-DH1	2402	-0.49	0.0
	2441	-0.02	
	2480	-1.11	

BLE			
Mode	**Frequency (MHz)**	**Conducted Power (dBm)**	**Tune-up power (dBm)**
BLE 1M	2402	-2.88	-2.0
	2440	-2.50	
	2480	-3.42	

Note:
Per KDB 447498 D01v06, the 1-g and 10-g SAR test exclusion thresholds for 100MHz to 6GHz at test separation distances ≤ 50mm are determined by:
[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)]*[√f(GHz)] ≤ 3.0 for1-g SAR and ≤ 7.5 for 10-g extremity SAR
f(GHz) is the RF channel transmit frequency in GHz
Power and distance are rounded to the nearest mW and mm before calculation
The result is rounded to one decimal place for comparison

Turn up Power (dBm)	Turn up Power (mW)	Separation Distance (mm)	Frequency (GHz)	Result	Exclusion Thresholds
1.0	1.26	5	2.480	0.40	3

Per KDB 447498 D01v06, when the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.
According to the calculation results in the table above, Bluetooth SAR does not need to be tested.

NFC								
Modulation	Frequency (MHz)	Output Power (dBuV/m)	Output Power (dBm)	Tune-up (dBm)	Tune-up (mW)	Separation Distance (mm)	Result	exclusion thresholds for 1-g SAR
ASK	13.5599	54.76	-45.14	-45.0	0.00003	⩽5.0	0.00001	3.0

Note:
Per KDB 447498 D01v06, when the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.
According to the calculation results in the table above, NFC SAR does not need to be tested.

WIFI 2.4G			
Mode	**Frequency (MHz)**	**Conducted Power (dBm)**	**Tune-up power (dBm)**
b	2412	13.73	14.0
b	2437	13.72	
b	2462	13.45	
g	2412	12.93	13.5
g	2437	13.04	
g	2462	12.86	
n20	2412	11.61	12.0
n20	2437	11.95	
n20	2462	11.77	
n40	2422	10.94	12.5
n40	2437	12.04	
n40	2452	12.09	

WIFI 5.1G			
Mode	Frequency (MHz)	Conducted Power (dBm)	Tune-up power (dBm)
a	5180	13.16	13.5
a	5200	13.04	
a	5240	11.81	
n20	5180	12.19	12.5
n20	5200	11.68	
n20	5240	10.29	
n40	5190	10.75	11.0
n40	5230	9.19	
ac20	5180	12.16	12.5
ac20	5200	11.80	
ac20	5240	10.49	
ac40	5190	10.74	11.0
ac40	5230	9.37	
ac80	5210	8.67	9.0

WIFI 5.8G			
Mode	Frequency (MHz)	Conducted Power (dBm)	Tune-up power (dBm)
a	5745	12.04	12.5
a	5785	11.31	
a	5825	10.35	
n20	5745	10.90	11.0
n20	5785	10.00	
n20	5825	9.24	
n40	5755	9.97	10.0
n40	5795	8.96	
ac20	5745	10.92	11.0
ac20	5785	10.36	
ac20	5825	9.29	
ac40	5755	10.04	10.5
ac40	5795	8.99	
ac80	5775	9.23	9.5

GSM - Burst Average Power (dBm)								
Band	**GSM850**				**GSM1900**			
Channel	**128**	**190**	**251**	**Tune-up**	**512**	**661**	**810**	**Tune-up**
Frequency (MHz)	**824.2**	**836.6**	**848.8**		**1850.2**	**1880**	**1909.8**	
GSM	33.54	33.64	33.44	34.0	30.13	30.25	30.46	30.5
GPRS slots-1	33.71	**33.81**	33.61	34.0	30.37	30.48	**30.69**	31.0
GPRS slots-2	32.74	32.85	32.65	33.0	29.43	29.56	29.51	30.0
GPRS slots-3	30.65	30.76	30.61	31.0	29.42	27.57	27.88	29.5
GPRS slots-4	29.47	29.64	29.50	30.0	26.32	26.48	26.80	27.0
EGPRS slots-1	26.61	27.25	27.15	27.5	26.90	27.10	26.62	27.5
EGPRS slots-2	25.79	26.34	26.14	26.5	26.18	26.05	25.99	26.5
EGPRS slots-3	24.05	24.40	24.28	24.5	23.61	24.07	24.21	24.5
EGPRS slots-4	22.75	23.07	22.82	23.5	22.62	22.62	23.07	23.5

GSM - Source-Based Time-Average Power (dBm)						
Band	**GSM850**			**GSM1900**		
Channel	**128**	**190**	**251**	**512**	**661**	**810**
Frequency (MHz)	**824.2**	**836.6**	**848.8**	**1850.2**	**1880**	**1909.8**
GSM	24.54	24.64	24.44	21.13	21.25	21.46
GPRS slots-1	24.71	24.81	24.61	21.37	21.48	21.69
GPRS slots-2	26.74	**26.85**	26.65	23.43	23.56	23.51
GPRS slots-3	26.40	26.51	26.36	**25.17**	23.32	23.63
GPRS slots-4	26.47	26.64	26.50	23.32	23.48	23.80
EGPRS slots-1	17.61	18.25	18.15	17.90	18.10	17.62
EGPRS slots-2	19.79	20.34	20.14	20.18	20.05	19.99
EGPRS slots-3	19.80	20.15	20.03	19.36	19.82	19.96
EGPRS slots-4	19.75	20.07	19.82	19.62	19.62	20.07

Notes:
Division Factors
To average the power, the division factor is as follows:
1TX-slots = 1 transmit time slots out of 8 time slots=> conducted power divided by (8/1) => -9.00dB
2TX-slots = 2 transmit time slots out of 8 time slots=> conducted power divided by (8/2) => -6.00dB
3TX-slots = 3 transmit time slots out of 8 time slots=> conducted power divided by (8/3) => -4.26dB
4TX-slots = 4 transmit time slots out of 8 time slots=> conducted power divided by (8/4) => -3.00dB

Band	WCDMA Band II				WCDMA Band IV			
Channel	9262	9400	9538	Tune-up	1312	1450	1513	Tune-up
Frequency (MHz)	1852.4	1880.0	1907.6		1712.4	1740	1752.6	
RMC 12.2K	23.40	**23.65**	23.63	24.0	**23.40**	23.36	23.24	23.5
HSDPA Subtest-1	22.46	22.68	22.70	23.0	22.43	22.41	22.30	22.5
HSDPA Subtest-2	22.11	22.11	22.40		21.88	21.99	21.86	
HSDPA Subtest-3	20.94	21.28	21.24		20.60	20.50	20.51	
HSDPA Subtest-4	21.07	20.97	21.27		20.63	21.07	20.79	
HSUPA Subtest-1	21.50	22.54	22.52	23.0	20.72	22.31	22.08	22.5
HSUPA Subtest-2	22.43	22.53	22.66		22.28	22.31	22.16	
HSUPA Subtest-3	20.67	21.56	21.62		20.44	21.03	21.04	
HSUPA Subtest-4	22.45	22.69	22.69		22.44	22.41	22.28	
HSUPA Subtest-5	21.06	22.11	22.13		20.79	21.77	21.60	

Band	WCDMA Band V				/			
Channel	4132	4182	4233	Tune-up	/	/	/	/
Frequency (MHz)	826.4	836.4	846.6		/	/	/	
RMC 12.2K	**23.45**	23.43	23.37	23.5	/	/	/	/
HSDPA Subtest-1	22.48	22.45	22.40	22.5	/	/	/	/
HSDPA Subtest-2	22.14	21.95	22.03		/	/	/	
HSDPA Subtest-3	20.77	20.83	20.68		/	/	/	
HSDPA Subtest-4	20.97	21.22	20.71		/	/	/	
HSUPA Subtest-1	21.14	22.30	22.26	22.5	/	/	/	/
HSUPA Subtest-2	22.34	22.46	22.35		/	/	/	
HSUPA Subtest-3	20.76	21.20	21.37		/	/	/	
HSUPA Subtest-4	22.46	22.45	22.39		/	/	/	
HSUPA Subtest-5	20.85	21.83	21.86		/	/	/	

Note:
1. Per KDB 941225 D01 v03, the 12.2kbps RMC mode was selected for SAR testing (the primary mode).
2. When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤1/4dB higher than the primary mode (RMC12.2kbps) or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode.

See Appendix 1 for RF conduction data for LTE.

14.2 Transmit Antennas and SAR Measurement Position

EUT Antenna Location:

Antennas	Support Band
WWAN	GSM 850/1900 + WCDMA Band 2/4/5 + LTE Band 2/4/5/7/12/17
WCN	Bluetooth + WIFI

Distance of The Antenna to the EUT surface and edge (mm)						
Antennas	Front	Back	Top Side	Bottom Side	Left Side	Right Side
WWAN	<25	<25	158	<25	<25	<25
WCN	<25	<25	<25	160	55	<25

Body mode: Positions for SAR tests						
Antennas	Front	Back	Top Side	Bottom Side	Left Side	Right Side
WWAN	Yes	Yes	No	Yes	Yes	Yes
WCN	Yes	Yes	Yes	No	No	Yes

14.3 Measured and Reported (Scaled) SAR Results

The calculated SAR is obtained by the following formula:

1. Reported SAR for WWAN=Measured SAR * Tune-up Scaling factor
2. Reported SAR for WLAN and Bluetooth=Measured SAR * Tune-up Scaling factor * Duty Cycle Scaling factor
3. Duty Cycle Scaling factor=1/ Duty Cycle (%)

KDB 447498 D01 General RF Exposure Guidance:

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

KDB 648474 D04 Handset SAR v01r03:

1. When the *reported* SAR for a body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest *reported* SAR configuration for that wireless mode and frequency band should be repeated for the body-worn accessory with a headset attached to the handset.
2. when the separation distance required for body-worn accessory testing is larger than or equal to that tested for hotspot mode, using the same wireless mode test configuration for voice and data, such as UMTS, LTE and Wi-Fi, and for the same surface of the phone, the hotspot mode SAR data may be used to support body-worn accessory SAR compliance for that particular configuration (surface)
3. For Smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm, when hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg.

KDB 941225 D01 3G SAR Procedures:

When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤1/4dB higher than the primary mode (RMC12.2kbps) or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode.

KDB 941225 D05 SAR for LTE Devices:

1. Start with the largest channel bandwidth and measure SAR for QPSK with 1 RB, and 50% RB allocation, using the RB offset and required test channel combination with the highest maximum output power among RB offsets at the upper edge, middle and lower edge of each required test channel.
2. When the reported SAR is > 0.8 W/kg, testing for other Channels is performed at the highest output power level for 1RB, and 50% RB configuration for that channel.
3. Testing for 100% RB configuration is performed at the highest output power level for 100% RB configuration across the Low, Mid and High Channel when the highest reported SAR for 1 RB and 50% RB are > 0.8 W/kg. Testing for the remaining required channels is not needed because the reported SAR for 100% RB Allocation < 1.45 W/kg.
4. SAR measurement is not required for the 16QAM and 64QAM. When the highest maximum output power for 16QAM and 64QAM is ≤ ½ dB higher than the QPSK or when the reported SAR for the QPSK configuration is ≤ 1.45 W/kg.
5. Testing for the other channel bandwidths is not required because the reported SAR for the highest channel bandwidth is < 1.45 W/Kg and its output power is not more than 0.5 dB higher than that of the highest channel bandwidth.

WIFI 2.4G									
RF Exposure Conditions	Mode	Test Position	Freq. (MHz)	Power (dBm)		Scaling Factor	SAR_{1g} (W/kg)		Plot No.
				Meas.	Tuen-up		Meas.	Scaled	
Head	802.11b	Left Cheek	2412	13.73	14.0	1.064	0.176	0.187	
		Left Tilt	2412	13.73	14.0	1.064	0.225	**0.239**	**1**
		Right Cheek	2412	13.73	14.0	1.064	0.208	0.221	
		Right Tilt	2412	13.73	14.0	1.064	0.190	0.202	
Body & Hotspot	802.11b	Front Face	2412	13.73	14.0	1.064	0.087	0.093	
		Back Face	2412	13.73	14.0	1.064	0.138	0.147	
Hotspot	802.11b	Right Side	2412	13.73	14.0	1.064	0.171	0.182	
		Top Side	2412	13.73	14.0	1.064	0.137	0.146	

WIFI 5.1G									
RF Exposure Conditions	Mode	Test Position	Freq. (MHz)	Power (dBm)		Scaling Factor	SAR_{1g} (W/kg)		Plot No.
				Meas.	Tuen-up		Meas.	Scaled	
Head	802.11a	Left Cheek	5180	13.16	13.5	1.081	0.276	0.298	
		Left Tilt	5180	13.16	13.5	1.081	0.225	0.243	
		Right Cheek	5180	13.16	13.5	1.081	0.491	**0.531**	**2**
		Right Tilt	5180	13.16	13.5	1.081	0.371	0.401	
Body & Hotspot	802.11a	Front Face	5180	13.16	13.5	1.081	0.361	0.390	
		Back Face	5180	13.16	13.5	1.081	0.305	0.330	
Hotspot	802.11a	Right Side	5180	13.16	13.5	1.081	0.411	0.444	
		Top Side	5180	13.16	13.5	1.081	0.401	0.434	

WIFI 5.8G									
RF Exposure Conditions	Mode	Test Position	Freq. (MHz)	Power (dBm)		Scaling Factor	SAR_{1g} (W/kg)		Plot No.
				Meas.	Tuen-up		Meas.	Scaled	
Head	802.11a	Left Cheek	5745	12.04	12.5	1.112	0.343	0.381	
		Left Tilt	5745	12.04	12.5	1.112	0.322	0.358	
		Right Cheek	5745	12.04	12.5	1.112	0.456	**0.507**	**3**
		Right Tilt	5745	12.04	12.5	1.112	0.443	0.492	
Body & Hotspot	802.11a	Front Face	5745	12.04	12.5	1.112	0.402	0.447	
		Back Face	5745	12.04	12.5	1.112	0.278	0.309	
Hotspot	802.11a	Right Side	5745	12.04	12.5	1.112	0.370	0.411	
		Top Side	5745	12.04	12.5	1.112	0.394	0.438	

GSM 850									
RF Exposure Conditions	Mode	Test Position	Freq. (MHz)	Power (dBm)		Scaling Factor	SAR_{1g} (W/kg)		Plot No.
				Meas.	Tuen-up		Meas.	Scaled	
Head	GSM	Left Cheek	836.6	33.64	34.0	1.086	0.126	0.137	
		Left Tilt	836.6	33.64	34.0	1.086	0.182	0.198	
		Right Cheek	836.6	33.64	34.0	1.086	0.156	0.169	
		Right Tilt	836.6	33.64	34.0	1.086	0.173	0.188	
Body & Hotspot	GSM	Front Face	836.6	33.64	34.0	1.086	0.253	0.275	
		Back Face	836.6	33.64	34.0	1.086	0.671	0.729	
	GPRS slots-2	Front Face	836.6	32.85	33.0	1.035	0.254	0.263	
		Back Face	836.6	32.85	33.0	1.035	0.719	0.744	
Hotspot	GPRS slots-2	Left Side	836.6	32.85	33.0	1.035	0.288	0.298	
		Right Side	836.6	32.85	33.0	1.035	0.102	0.106	
		Bottom Side	836.6	32.85	33.0	1.035	1.021	1.057	
		Bottom Side	824.2	31.74	33.0	1.337	0.825	**1.103**	**4**
		Bottom Side	846.6	32.65	33.0	1.084	0.943	1.022	

GSM 1900									
RF Exposure Conditions	Mode	Test Position	Freq. (MHz)	Power (dBm)		Scaling Factor	SAR_{1g} (W/kg)		Plot No.
				Meas.	Tuen-up		Meas.	Scaled	
Head	GSM	Left Cheek	1909.8	30.46	30.5	1.009	0.170	0.172	
		Left Tilt	1909.8	30.46	30.5	1.009	0.158	0.159	
		Right Cheek	1909.8	30.46	30.5	1.009	0.108	0.109	
		Right Tilt	1909.8	30.46	30.5	1.009	0.154	0.155	
Body & Hotspot	GSM	Front Face	1909.8	30.46	30.5	1.009	0.132	0.133	
		Back Face	1909.8	30.46	30.5	1.009	0.269	0.271	
	GPRS slots-2	Front Face	1850.2	29.42	29.5	1.019	0.163	0.166	
		Back Face	1850.2	29.42	29.5	1.019	0.333	0.339	
Hotspot	GPRS slots-3	Left Side	1850.2	29.42	29.5	1.019	0.206	0.210	
		Right Side	1850.2	29.42	29.5	1.019	0.089	0.091	
		Bottom Side	1850.2	29.42	29.5	1.019	0.377	**0.384**	**5**

WCDMA Band 2									
RF Exposure Conditions	Mode	Test Position	Freq. (MHz)	Power (dBm)		Scaling Factor	SAR_{1g} (W/kg)		Plot No.
				Meas.	Tuen-up		Meas.	Scaled	
Head	RMC	Left Cheek	1880	23.65	24.0	1.084	0.150	0.163	
		Left Tilt	1880	23.65	24.0	1.084	0.175	0.190	
		Right Cheek	1880	23.65	24.0	1.084	0.149	0.162	
		Right Tilt	1880	23.65	24.0	1.084	0.145	0.157	
Body & Hotspot	RMC	Front Face	1880	23.65	24.0	1.084	0.162	0.176	
		Back Face	1880	23.65	24.0	1.084	0.482	0.522	
Hotspot	RMC	Left Side	1880	23.65	24.0	1.084	0.152	0.165	
		Right Side	1880	23.65	24.0	1.084	0.059	0.064	
		Bottom Side	1880	23.65	24.0	1.084	0.738	**0.800**	**6**

WCDMA Band 4									
RF Exposure Conditions	Mode	Test Position	Freq. (MHz)	Power (dBm)		Scaling Factor	SAR_{1g} (W/kg)		Plot No.
				Meas.	Tuen-up		Meas.	Scaled	
Head	RMC	Left Cheek	1712.4	23.40	23.5	1.023	0.139	0.142	
		Left Tilt	1712.4	23.40	23.5	1.023	0.096	0.098	
		Right Cheek	1712.4	23.40	23.5	1.023	0.094	0.096	
		Right Tilt	1712.4	23.40	23.5	1.023	0.101	0.103	
Body & Hotspot	RMC	Front Face	1712.4	23.40	23.5	1.023	0.275	0.281	
		Back Face	1712.4	23.40	23.5	1.023	0.428	0.438	
Hotspot	RMC	Left Side	1712.4	23.40	23.5	1.023	0.172	0.176	
		Right Side	1712.4	23.40	23.5	1.023	0.088	0.090	
		Bottom Side	1712.4	23.40	23.5	1.023	0.985	**1.008**	**7**
		Bottom Side	1740	23.36	23.5	1.033	0.860	0.888	
		Bottom Side	1752.6	23.24	23.5	1.062	0.888	0.943	

WCDMA Band 5									
RF Exposure Conditions	Mode	Test Position	Freq. (MHz)	Power (dBm)		Scaling Factor	SAR_{1g} (W/kg)		Plot No.
				Meas.	Tuen-up		Meas.	Scaled	
Head	RMC	Left Cheek	826.4	23.45	23.5	1.012	0.155	0.157	
		Left Tilt	826.4	23.45	23.5	1.012	0.162	0.164	
		Right Cheek	826.4	23.45	23.5	1.012	0.151	0.153	
		Right Tilt	826.4	23.45	23.5	1.012	0.117	0.118	
Body & Hotspot	RMC	Front Face	826.4	23.45	23.5	1.012	0.165	0.167	
		Back Face	826.4	23.45	23.5	1.012	0.651	**0.659**	**8**
Hotspot	RMC	Left Side	826.4	23.45	23.5	1.012	0.215	0.217	
		Right Side	826.4	23.45	23.5	1.012	0.042	0.042	
		Bottom Side	826.4	23.45	23.5	1.012	0.280	0.283	

LTE Band 2 (20MHz Bandwidth)									
RF Exposure Conditions	Mode	Test Position	Freq. (MHz)	Power (dBm)		Scaling Factor	SAR_{1g} (W/kg)		Plot No.
				Meas.	Tuen-up		Meas.	Scaled	
Head	QPSK, 1RB	Left Cheek	1860	24.63	25.0	1.089	0.135	0.147	
		Left Tilt	1860	24.63	25.0	1.089	0.097	0.106	
		Right Cheek	1860	24.63	25.0	1.089	0.106	0.115	
		Right Tilt	1860	24.63	25.0	1.089	0.153	0.167	
	QPSK, 50%RB	Left Cheek	1880	23.59	24.0	1.099	0.119	0.131	
		Left Tilt	1880	23.59	24.0	1.099	0.095	0.104	
		Right Cheek	1880	23.59	24.0	1.099	0.102	0.112	
		Right Tilt	1880	23.59	24.0	1.099	0.144	0.158	
Body & Hotspot	QPSK, 1RB	Front Face	1860	24.63	25.0	1.089	0.218	0.237	
		Back Face	1860	24.63	25.0	1.089	0.446	0.486	
	QPSK, 50%RB	Front Face	1880	23.59	24.0	1.099	0.122	0.134	
		Back Face	1880	23.59	24.0	1.099	0.407	0.447	
Hotspot	QPSK, 1RB	Left Side	1860	24.63	25.0	1.089	0.146	0.159	
		Right Side	1860	24.63	25.0	1.089	0.066	0.072	
		Bottom Side	1860	24.63	25.0	1.089	0.557	**0.607**	**9**
	QPSK, 50%RB	Left Side	1880	23.59	24.0	1.099	0.096	0.106	
		Right Side	1880	23.59	24.0	1.099	0.052	0.057	
		Bottom Side	1880	23.59	24.0	1.099	0.477	0.524	

LTE Band 4 (20MHz Bandwidth)									
RF Exposure Conditions	Mode	Test Position	Freq. (MHz)	Power (dBm)		Scaling Factor	SAR_{1g} (W/kg)		Plot No.
				Meas.	Tuen-up		Meas.	Scaled	
Head	QPSK, 1RB	Left Cheek	1732.5	21.40	21.5	1.023	0.135	0.138	
		Left Tilt	1732.5	21.40	21.5	1.023	0.093	0.095	
		Right Cheek	1732.5	21.40	21.5	1.023	0.097	0.099	
		Right Tilt	1732.5	21.40	21.5	1.023	0.114	0.117	
	QPSK, 50%RB	Left Cheek	1732.5	21.30	21.5	1.047	0.089	0.093	
		Left Tilt	1732.5	21.30	21.5	1.047	0.063	0.066	
		Right Cheek	1732.5	21.30	21.5	1.047	0.075	0.079	
		Right Tilt	1732.5	21.30	21.5	1.047	0.085	0.089	
Body & Hotspot	QPSK, 1RB	Front Face	1732.5	21.40	21.5	1.023	0.347	0.355	
		Back Face	1732.5	21.40	21.5	1.023	0.696	0.712	
	QPSK, 50%RB	Front Face	1732.5	21.30	21.5	1.047	0.225	0.236	
		Back Face	1732.5	21.30	21.5	1.047	0.599	0.627	
Hotspot	QPSK, 1RB	Left Side	1732.5	21.40	21.5	1.023	0.254	0.260	
		Right Side	1732.5	21.40	21.5	1.023	0.107	0.109	
		Bottom Side	1732.5	21.40	21.5	1.023	1.028	**1.052**	**10**
		Bottom Side	1720	21.30	21.5	1.047	0.896	0.938	
		Bottom Side	1745	21.25	21.5	1.059	0.989	1.048	
	QPSK, 50%RB	Left Side	1732.5	21.30	21.5	1.047	0.225	0.236	
		Right Side	1732.5	21.30	21.5	1.047	0.056	0.059	
		Bottom Side	1732.5	21.30	21.5	1.047	0.780	0.817	
		Bottom Side	1720	21.23	21.5	1.064	0.730	0.777	
		Bottom Side	1745	21.27	21.5	1.054	0.832	0.877	
	QPSK, 100%RB	Bottom Side	1732.5	21.30	21.5	1.047	0.710	0.743	

LTE Band 5 (10MHz Bandwidth)									
RF Exposure Conditions	Mode	Test Position	Freq. (MHz)	Power (dBm)		Scaling Factor	SAR_{1g} (W/kg)		Plot No.
				Meas.	Tuen-up		Meas.	Scaled	
Head	QPSK, 1RB	Left Cheek	829	24.47	25.0	1.130	0.186	0.210	
		Left Tilt	829	24.47	25.0	1.130	0.150	0.169	
		Right Cheek	829	24.47	25.0	1.130	0.101	0.114	
		Right Tilt	829	24.47	25.0	1.130	0.156	0.176	
	QPSK, 50%RB	Left Cheek	836.5	23.49	24.0	1.125	0.125	0.141	
		Left Tilt	836.5	23.49	24.0	1.125	0.110	0.124	
		Right Cheek	836.5	23.49	24.0	1.125	0.086	0.097	
		Right Tilt	836.5	23.49	24.0	1.125	0.102	0.115	
Body & Hotspot	QPSK, 1RB	Front Face	829	24.47	25.0	1.130	0.263	0.297	
		Back Face	829	24.47	25.0	1.130	0.904	1.021	
		Back Face	836.5	24.43	25.0	1.140	0.929	1.059	
		Back Face	844	24.43	25.0	1.140	0.947	**1.080**	**11**
	QPSK, 50%RB	Front Face	836.5	23.49	24.0	1.125	0.259	0.291	
		Back Face	836.5	23.49	24.0	1.125	0.773	0.869	
Hotspot	QPSK, 1RB	Left Side	829	24.47	25.0	1.130	0.183	0.207	
		Right Side	829	24.47	25.0	1.130	0.125	0.141	
		Bottom Side	829	24.47	25.0	1.130	0.417	0.471	
	QPSK, 50%RB	Left Side	836.5	23.49	24.0	1.125	0.180	0.202	
		Right Side	836.5	23.49	24.0	1.125	0.069	0.078	
		Bottom Side	836.5	23.49	24.0	1.125	0.317	0.356	

LTE Band 7 (20MHz Bandwidth)									
RF Exposure Conditions	Mode	Test Position	Freq. (MHz)	Power (dBm)		Scaling Factor	SAR_{1g} (W/kg)		Plot No.
				Meas.	Tuen-up		Meas.	Scaled	
Head	QPSK, 1RB	Left Cheek	2510	24.52	25.0	1.117	0.140	0.156	
		Left Tilt	2510	24.52	25.0	1.117	0.123	0.137	
		Right Cheek	2510	24.52	25.0	1.117	0.193	0.216	
		Right Tilt	2510	24.52	25.0	1.117	0.117	0.131	
	QPSK, 50%RB	Left Cheek	2510	23.47	24.0	1.130	0.120	0.136	
		Left Tilt	2510	23.47	24.0	1.130	0.088	0.099	
		Right Cheek	2510	23.47	24.0	1.130	0.137	0.155	
		Right Tilt	2510	23.47	24.0	1.130	0.082	0.093	
Body & Hotspot	QPSK, 1RB	Front Face	2510	24.52	25.0	1.117	0.306	0.342	
		Back Face	2510	24.52	25.0	1.117	0.278	0.310	
	QPSK, 50%RB	Front Face	2510	23.47	24.0	1.130	0.252	0.285	
		Back Face	2510	23.47	24.0	1.130	0.274	0.310	
Hotspot	QPSK, 1RB	Left Side	2510	24.52	25.0	1.117	0.307	0.343	
		Right Side	2510	24.52	25.0	1.117	0.069	0.077	
		Bottom Side	2510	24.52	25.0	1.117	0.396	**0.442**	**12**
	QPSK, 50%RB	Left Side	2510	23.47	24.0	1.130	0.248	0.280	
		Right Side	2510	23.47	24.0	1.130	0.045	0.051	
		Bottom Side	2510	23.47	24.0	1.130	0.283	0.320	

LTE Band 12 (10MHz Bandwidth)									
RF Exposure Conditions	Mode	Test Position	Freq. (MHz)	Power (dBm)		Scaling Factor	SAR_{1g} (W/kg)		Plot No.
				Meas.	Tuen-up		Meas.	Scaled	
Head	QPSK, 1RB	Left Cheek	704	24.46	25.0	1.132	0.100	0.113	
		Left Tilt	704	24.46	25.0	1.132	0.118	0.134	
		Right Cheek	704	24.46	25.0	1.132	0.110	0.125	
		Right Tilt	704	24.46	25.0	1.132	0.094	0.106	
	QPSK, 50%RB	Left Cheek	704	23.45	24.0	1.135	0.075	0.085	
		Left Tilt	704	23.45	24.0	1.135	0.055	0.062	
		Right Cheek	704	23.45	24.0	1.135	0.064	0.073	
		Right Tilt	704	23.45	24.0	1.135	0.039	0.044	
Body & Hotspot	QPSK, 1RB	Front Face	704	24.46	25.0	1.132	0.175	0.198	
		Back Face	704	24.46	25.0	1.132	0.375	**0.425**	**13**
	QPSK, 50%RB	Front Face	704	23.45	24.0	1.135	0.127	0.144	
		Back Face	704	23.45	24.0	1.135	0.259	0.294	
Hotspot	QPSK, 1RB	Left Side	704	24.46	25.0	1.132	0.123	0.139	
		Right Side	704	24.46	25.0	1.132	0.066	0.075	
		Bottom Side	704	24.46	25.0	1.132	0.161	0.182	
	QPSK, 50%RB	Left Side	704	23.45	24.0	1.135	0.121	0.137	
		Right Side	704	23.45	24.0	1.135	0.038	0.043	
		Bottom Side	704	23.45	24.0	1.135	0.097	0.110	

LTE Band 17 (10MHz Bandwidth)									
RF Exposure Conditions	Mode	Test Position	Freq. (MHz)	Power (dBm)		Scaling Factor	SAR_{1g} (W/kg)		Plot No.
				Meas.	Tuen-up		Meas.	Scaled	
Head	QPSK, 1RB	Left Cheek	711	24.67	25.0	1.079	0.108	0.117	
		Left Tilt	711	24.67	25.0	1.079	0.104	0.112	
		Right Cheek	711	24.67	25.0	1.079	0.113	0.122	
		Right Tilt	711	24.67	25.0	1.079	0.084	0.091	
	QPSK, 50%RB	Left Cheek	710	23.57	24.0	1.104	0.094	0.104	
		Left Tilt	710	23.57	24.0	1.104	0.090	0.099	
		Right Cheek	710	23.57	24.0	1.104	0.104	0.115	
		Right Tilt	710	23.57	24.0	1.104	0.082	0.091	
Body & Hotspot	QPSK, 1RB	Front Face	711	24.67	25.0	1.079	0.126	0.136	
		Back Face	711	24.67	25.0	1.079	0.256	0.276	
	QPSK, 50%RB	Front Face	710	23.57	24.0	1.104	0.100	0.110	
		Back Face	710	23.57	24.0	1.104	0.255	**0.282**	**14**
Hotspot	QPSK, 1RB	Left Side	711	24.67	25.0	1.079	0.097	0.105	
		Right Side	711	24.67	25.0	1.079	0.025	0.027	
		Bottom Side	711	24.67	25.0	1.079	0.124	0.134	
	QPSK, 50%RB	Left Side	710	23.57	24.0	1.104	0.093	0.103	
		Right Side	710	23.57	24.0	1.104	0.012	0.013	
		Bottom Side	710	23.57	24.0	1.104	0.095	0.105	

14.4 SAR Measurement Variability

According to KDB865664, Repeated measurements are required only when the measured SAR is ≥ 0.80 W/kg. If the measured SAR value of the initial repeated measurement is < 1.45 W/kg with ≤ 20% variation, only one repeated measurement is required to reaffirm that the results are not expected to have substantial variations, which may introduce significant compliance concerns. A second repeated measurement is required only if the measured result for the initial repeated measurement is within 10% of the SAR limit and vary by more than 20%, which are often related to device and measurement setup difficulties. The following procedures are applied to determine if repeated measurements are required. The same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.19 The repeated measurement results must be clearly identified in the SAR report. All measured SAR, including the repeated results, must be considered to determine compliance and for reporting according to KDB 690783.Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg; steps 2) through 4) do not apply.

1) When the original highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.
2) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit).
3) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.
4) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20

Test Mode	Frequency (MHz)	RF Exposure Configuration	Test Position	Repeated SAR (yes/no)	Highest Measured SAR1-g (W/Kg)	First Repeated	
						Measured SAR1-g (W/Kg)	Largest to Smallest SAR Ratio
GSM 850	836.6	Hotspot	Bottom Side	Yes	1.021	0.987	1.034
WCDMA Band 4	1712.4	Hotspot	Bottom Side	Yes	0.985	0.911	1.081
LTE Band 4	1732.5	Hotspot	Bottom Side	Yes	1.028	0.941	1.092
LTE Band 5	844	Body&Hotspot	Back Face	Yes	0.947	0.890	1.064

14.5 Simultaneous Transmission Evaluation

Simultaneous transmission SAR test exclusion is determined for each operating configuration and exposure condition according to the reported standalone SAR of each applicable simultaneous transmiting antenna.

Application Simultaneous Transmission information:

No.	Configurations	Head SAR	Body SAR	Hotspot SAR
1	WWAN+WIFI	Yes	Yes	Yes
2	WWAN+Bluetooth	Yes	Yes	Yes
3	WIFI+Bluetooth	No	No	No

Remark:
1. WWAN cannot transmit simultaneously.
2. Bluetooth and WIFI share the same antenna and cannot transmit data at the same time.
3. According to the KDB 447498 D01 v06, when standalone SAR test exclusion applies to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to following to determine simultaneous transmission SAR test exclusion:
● (max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)]·[$\sqrt{}$ f(GHz)/x] W/kg for test separation distances ≤ 50 mm;
where x = 7.5 for 1-g SAR, and x = 18.75 for 10-g SAR.
● 0.4 W/kg for 1-g SAR and 1.0 W/kg for 10-g SAR, when the test separation distances is > 50 mm

Estimated stand alone SAR						
Mode	**Frequency (MHz)**	**Maximum Power (dBm)**	**Maximum Power (mW)**	**Separation Distance (mm)**	**X**	**Estimated SAR1-g (W/kg)**
Bluetooth	2480	1.0	1.26	5	3	0.053

Note:
1. Bluetooth*- Including Lower power Bluetooth
2. Maximum average power including tune-up tolerance;
3. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion

4. Per FCC KD B447498 D01, simultaneous transmission SAR test exclusion may be applied when the sum of the 1-g SAR for all the transmitting antenna in a specific a physical test configuration is ≤1.6 W/Kg. When the sum is greater than the SAR limit, SAR test exclusion is determined by the SAR to peak location separation ratio.

$$\text{Ratio}=\frac{(SAR_1+SAR_2)^{1.5}}{(\text{peak location separation,mm})}<0.04$$

5. Simultaneous transmission of maximum SAR sum calculation.

RF Exposure Conditions	Test Position	Scaled SAR_{1g} (W/kg)		Summed SAR_{1g} (W/kg)	Limit SAR_{1g} (W/kg)
		WWAN	BT/WIFI		
Head	Left Cheek	0.210	0.381	0.591	1.6
	Left Tilt	0.198	0.358	0.556	1.6
	Right Cheek	0.216	0.507	**0.723**	1.6
	Right Tilt	0.188	0.492	0.680	1.6
Body& Hotspot	Front Face	0.355	0.447	0.802	1.6
	Back Face	1.080	0.330	**1.410**	1.6
Hotspot	Left Side	0.343	/	0.343	1.6
	Right Side	0.141	0.444	0.585	1.6
	Top Side	/	0.438	0.438	1.6
	Bottom Side	1.103	/	**1.103**	1.6

RF Exposure Conditions	Test Position	Scaled SAR_{1g} (W/kg)		Summed SAR_{1g} (W/kg)	Limit SAR_{1g} (W/kg)
		5G NR N78	BT/WIFI		
Head	Left Cheek	0.305	0.381	0.686	1.6
	Left Tilt	0.296	0.358	0.654	1.6
	Right Cheek	0.255	0.507	**0.762**	1.6
	Right Tilt	0.246	0.492	0.738	1.6
Body& Hotspot	Front Face	0.184	0.447	0.631	1.6
	Back Face	0.339	0.330	**0.669**	1.6
Hotspot	Left Side	0.208	/	0.208	1.6
	Right Side	/	0.444	**0.444**	1.6
	Top Side	/	0.438	0.438	1.6
	Bottom Side	/	/	**/**	1.6

Note:
The data of 5G NR N78 is derived from the report "WTX25X04091864W002".
2G,3G,4G,5G all belong to WWAN functions, so data cannot be transmitted simultaneously.

15. Test Plots

15.1 System Performance Check

System check at 750 MHz
Date of measurement: 26/5/2025

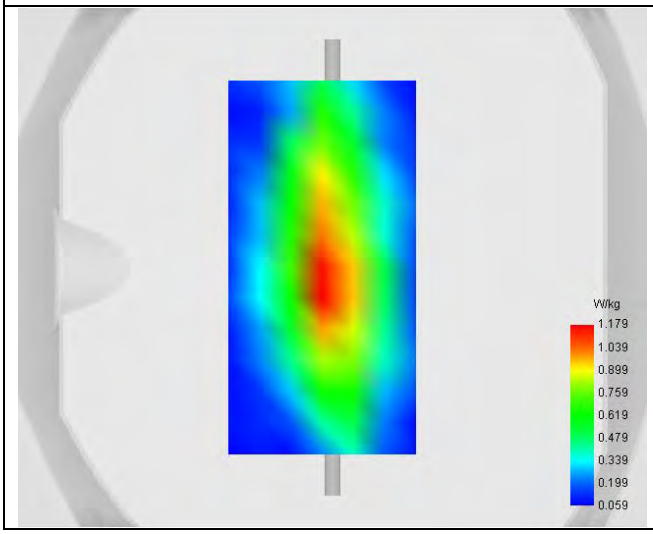
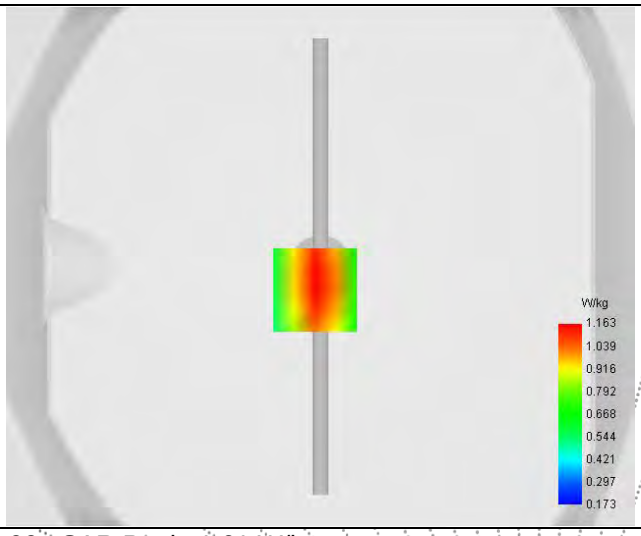
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	0.80
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5.0mm
Phantom	Validation plane
Device Position	Dipole
Band	CW750
Signal	CW

B. Permitivity

Frequency (MHz)	750.000
Relative permitivity (real part)	43.073
Relative permitivity (imaginary part)	24.595
Conductivity (S/m)	0.896

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

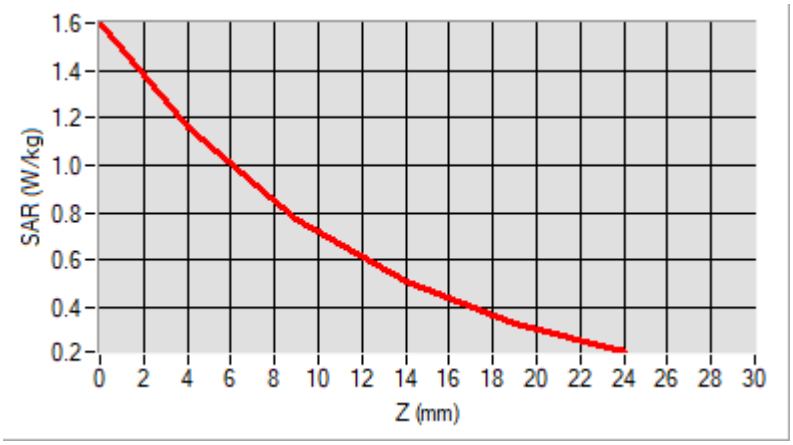
Maximum location: X=-2.00, Y=-9.00 ; SAR Peak: 1.61 W/kg

D. SAR 1g & 10g

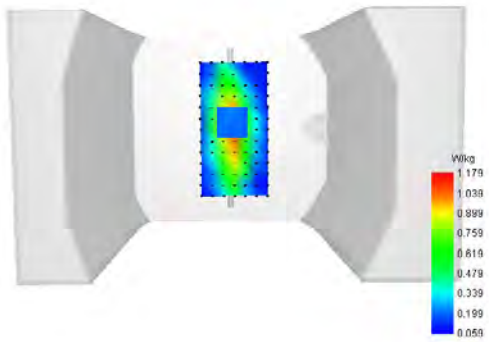
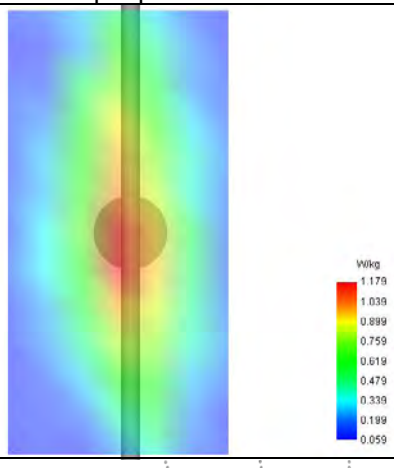
SAR 10g (W/Kg)	1.333
SAR 1g (W/Kg)	2.128
Variation (%)	0.449
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.603	1.163	0.769	0.506	0.333



F. 3D Image

3D screen shot	Hot spot position
	

System check at 835 MHz
Date of measurement: 28/5/2025

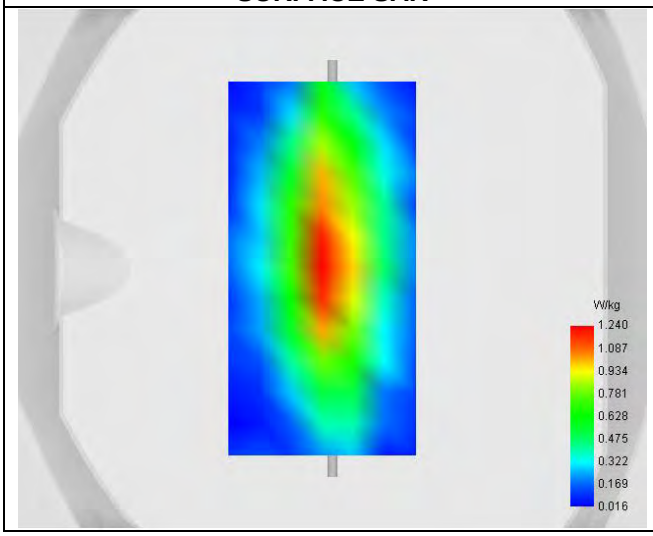
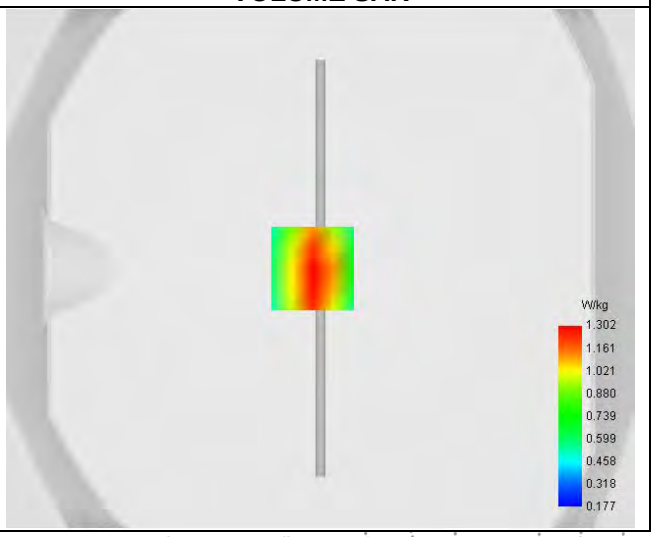
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	0.81
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5.0mm
Phantom	Validation plane
Device Position	Dipole
Band	CW835
Signal	CW

B. Permitivity

Frequency (MHz)	835.000
Relative permitivity (real part)	40.202
Relative permitivity (imaginary part)	20.910
Conductivity (S/m)	0.919

C. SAR Surface and Volume

SURFACE SAR	**VOLUME SAR**
	

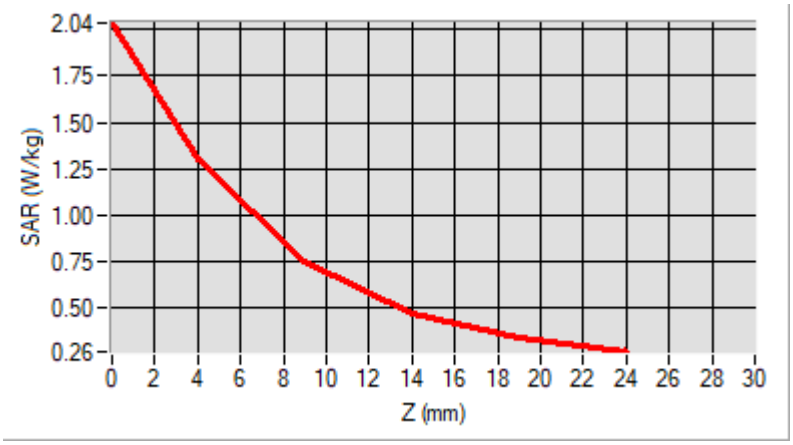
Maximum location: X=-3.00, Y=0.00 ; SAR Peak: 2.06 W/kg

D. SAR 1g & 10g

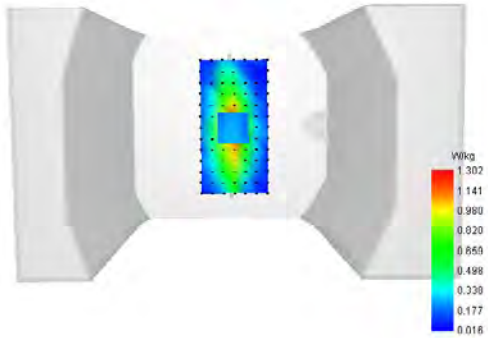
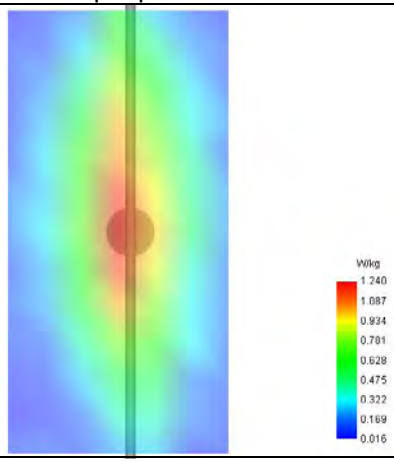
SAR 10g (W/Kg)	1.629
SAR 1g (W/Kg)	2.378
Variation (%)	2.399
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	2.036	1.302	0.747	0.462	0.331



F. 3D Image

3D screen shot	Hot spot position
	

System check at 1800 MHz

Date of measurement: 26/5/2025

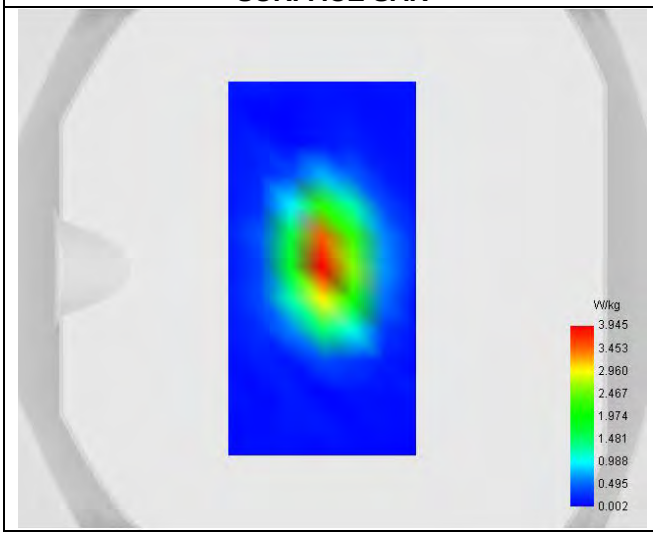
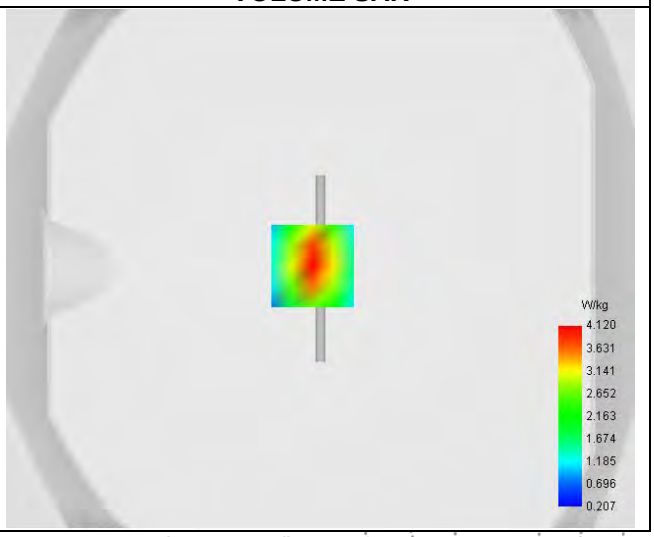
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	0.96
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5.0mm
Phantom	Validation plane
Device Position	Dipole
Band	CW1800
Signal	CW

B. Permitivity

Frequency (MHz)	1800.000
Relative permitivity (real part)	41.233
Relative permitivity (imaginary part)	15.200
Conductivity (S/m)	1.382

C. SAR Surface and Volume

SURFACE SAR	**VOLUME SAR**
	

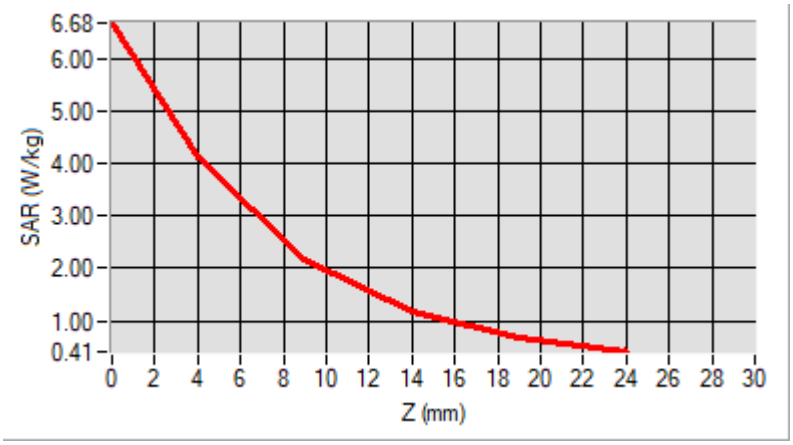
Maximum location: X=-3.00, Y=1.00 ; SAR Peak: 6.69 W/kg

D. SAR 1g & 10g

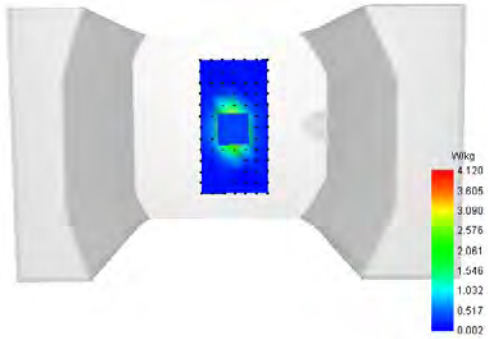
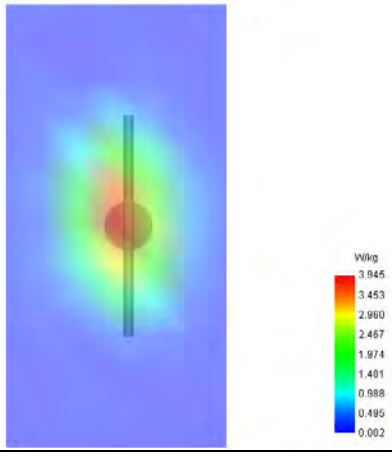
SAR 10g (W/Kg)	5.304
SAR 1g (W/Kg)	9.643
Variation (%)	3.378
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	6.684	4.120	2.184	1.177	0.685



F. 3D Image

3D screen shot	Hot spot position
	

System check at 1900 MHz
Date of measurement: 29/5/2025

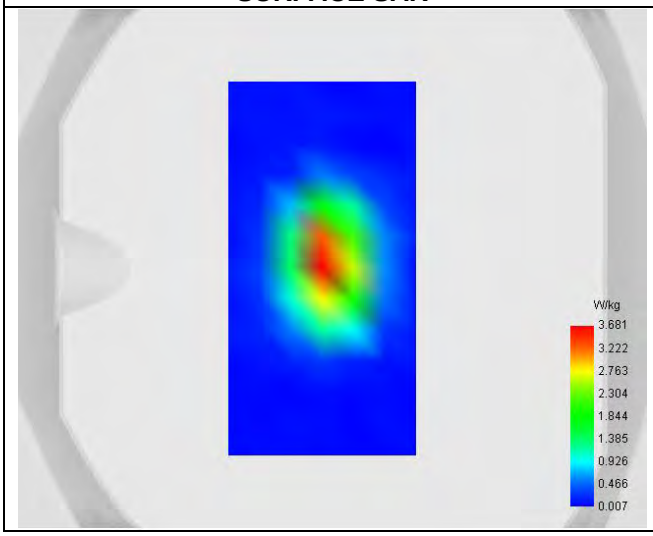
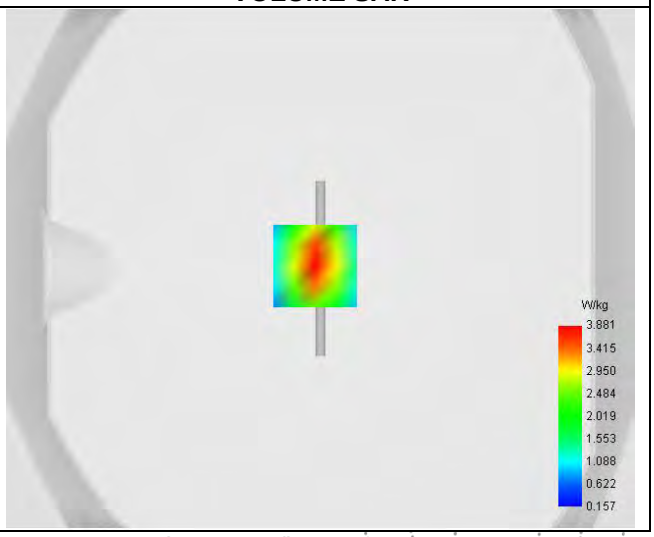
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	1.04
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5.0mm
Phantom	Validation plane
Device Position	Dipole
Band	CW1900
Signal	CW

B. Permitivity

Frequency (MHz)	1900.000
Relative permitivity (real part)	40.955
Relative permitivity (imaginary part)	14.400
Conductivity (S/m)	1.433

C. SAR Surface and Volume

SURFACE SAR	**VOLUME SAR**
	

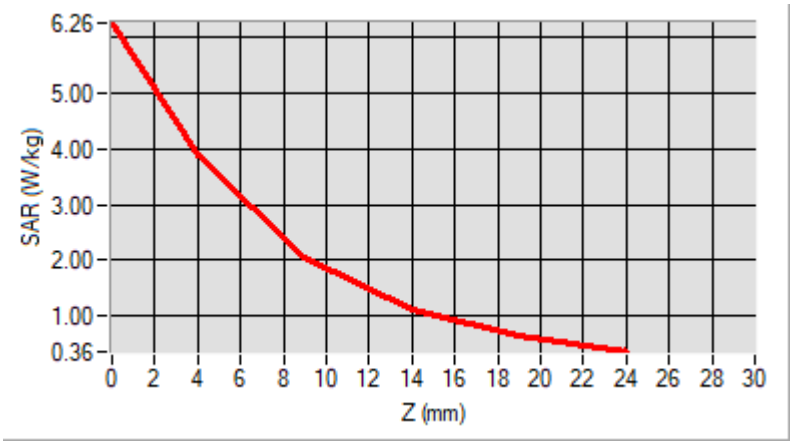
Maximum location: X=-2.00, Y=1.00 ; SAR Peak: 6.27 W/kg

D. SAR 1g & 10g

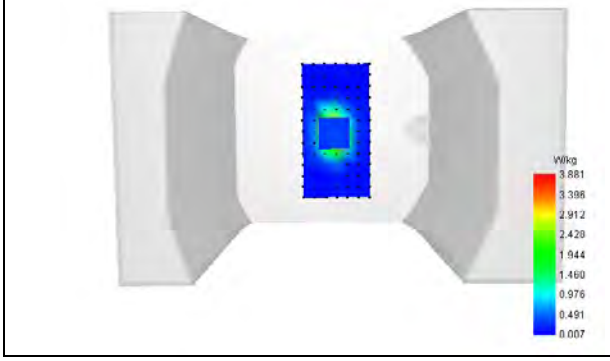
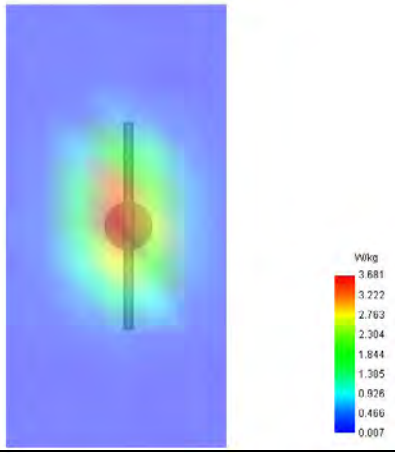
SAR 10g (W/Kg)	5.451
SAR 1g (W/Kg)	10.614
Variation (%)	1.328
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	6.259	3.881	2.069	1.111	0.634



F. 3D Image

3D screen shot	Hot spot position
	

System check at 2450 MHz
Date of measurement: 28/5/2025

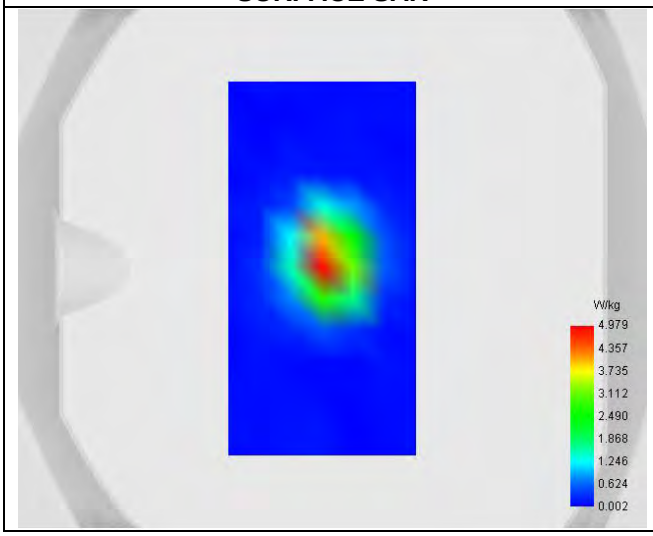
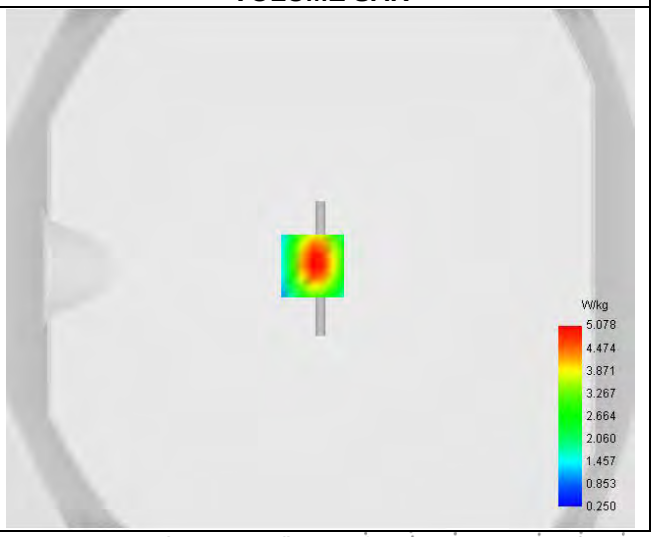
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	1.11
Area Scan	surf_sam_plan.txt
Zoom Scan	7x7x12,dx=4mm dy=4mm dz=5.0mm
Phantom	Validation plane
Device Position	Dipole
Band	CW2450
Signal	CW

B. Permitivity

Frequency (MHz)	2450.000
Relative permitivity (real part)	39.897
Relative permitivity (imaginary part)	14.330
Conductivity (S/m)	1.847

C. SAR Surface and Volume

SURFACE SAR	**VOLUME SAR**
	

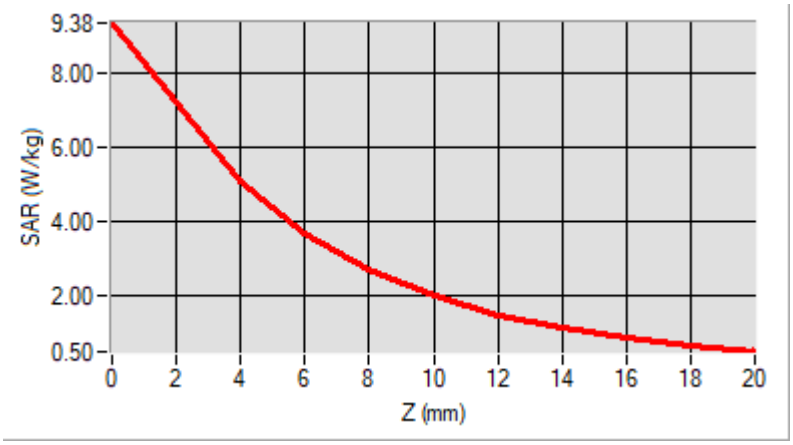
Maximum location: X=-3.00, Y=1.00 ; SAR Peak: 9.50 W/kg

D. SAR 1g & 10g

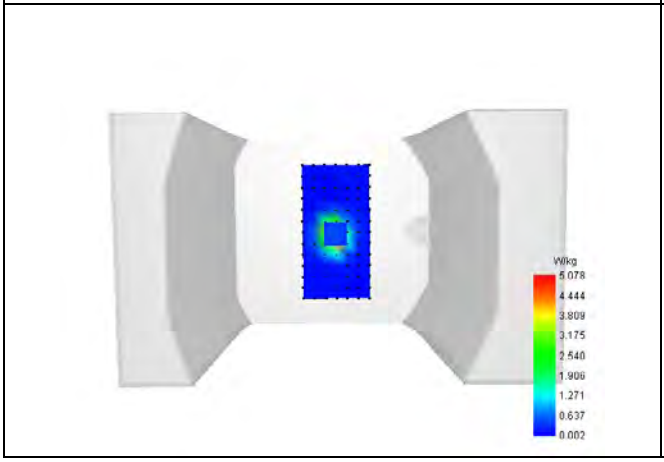
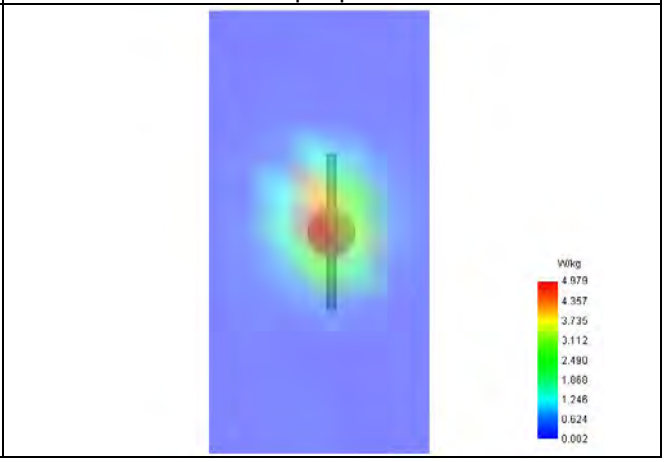
SAR 10g (W/Kg)	6.332
SAR 1g (W/Kg)	13.150
Variation (%)	-1.671
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

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)	9.380	5.078	3.712	2.709	2.001	1.499	1.138	0.871	0.667



F. 3D Image

3D screen shot	Hot spot position
	

System check at 2600 MHz

Date of measurement: 28/5/2025

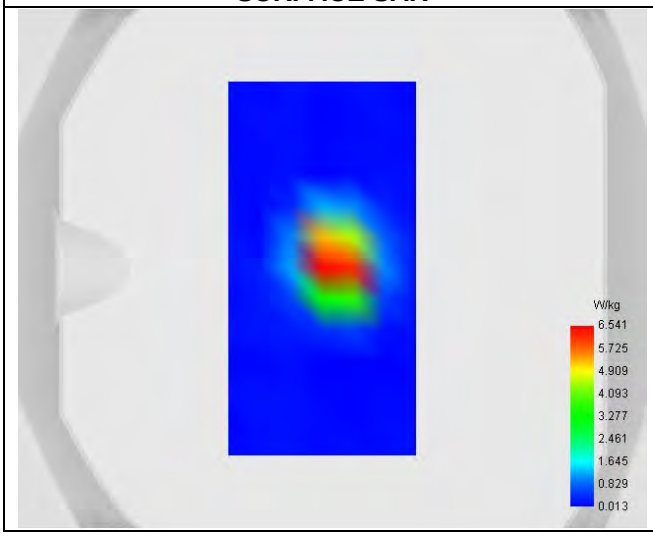
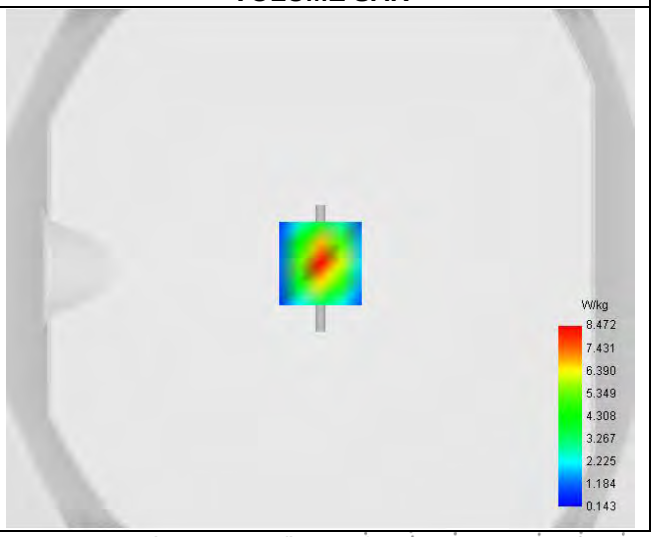
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	1.03
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5.0mm
Phantom	Validation plane
Device Position	Dipole
Band	CW2600
Signal	CW

B. Permitivity

Frequency (MHz)	2600.000
Relative permitivity (real part)	38.558
Relative permitivity (imaginary part)	14.889
Conductivity (S/m)	1.920

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

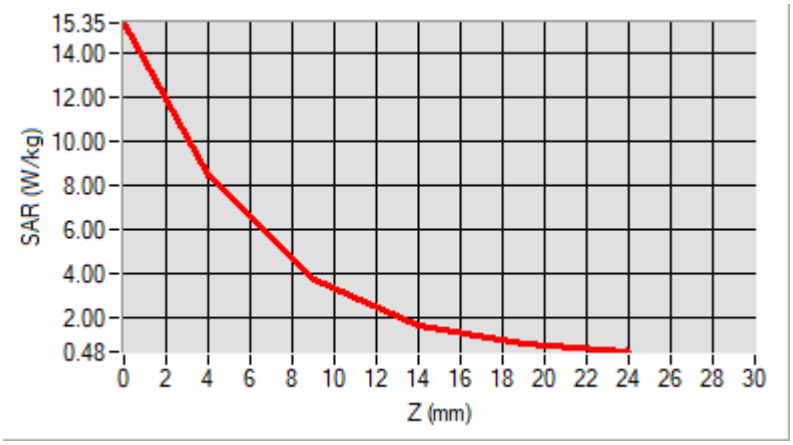
Maximum location: X=0.00, Y=2.00 ; SAR Peak: 15.35 W/kg

D. SAR 1g & 10g

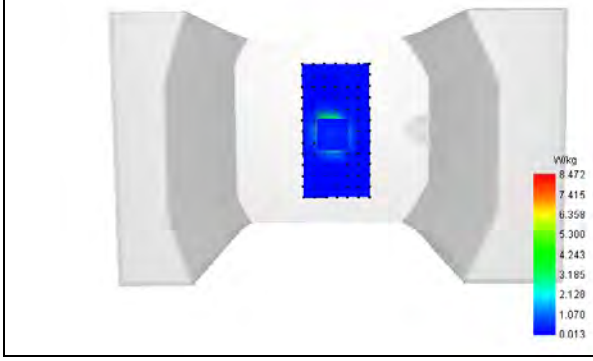
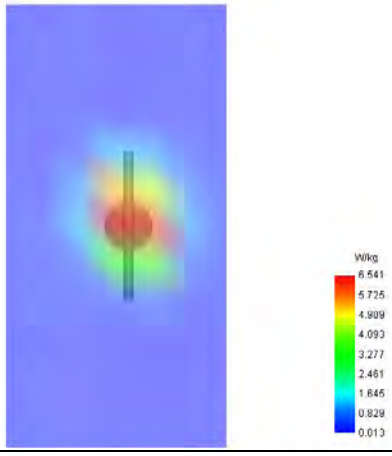
SAR 10g (W/Kg)	6.295
SAR 1g (W/Kg)	13.613
Variation (%)	-3.812
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	15.347	8.472	3.768	1.677	0.856



F. 3D Image

3D screen shot	Hot spot position
	

System check at 5200 MHz
Date of measurement: 29/5/2025

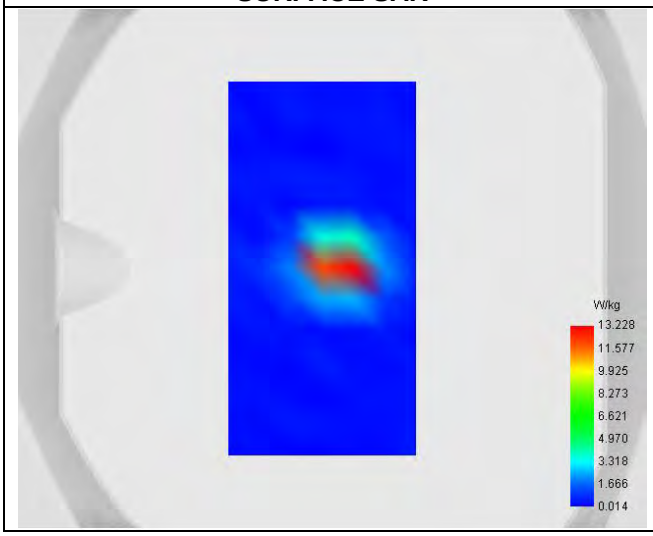
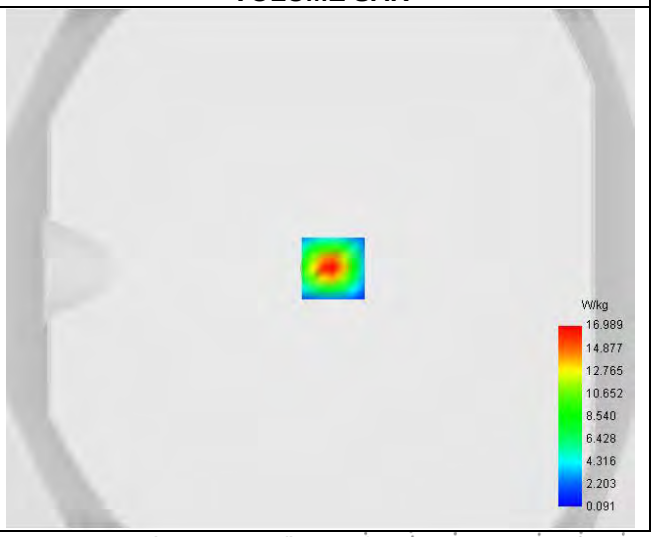
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	1.18
Area Scan	surf_sam_plan.txt
Zoom Scan	7x7x12,dx=4mm dy=4mm dz=2.0mm
Phantom	Validation plane
Device Position	Dipole
Band	CW5200
Signal	CW

B. Permitivity

Frequency (MHz)	5200.000
Relative permitivity (real part)	35.785
Relative permitivity (imaginary part)	18.140
Conductivity (S/m)	4.785

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

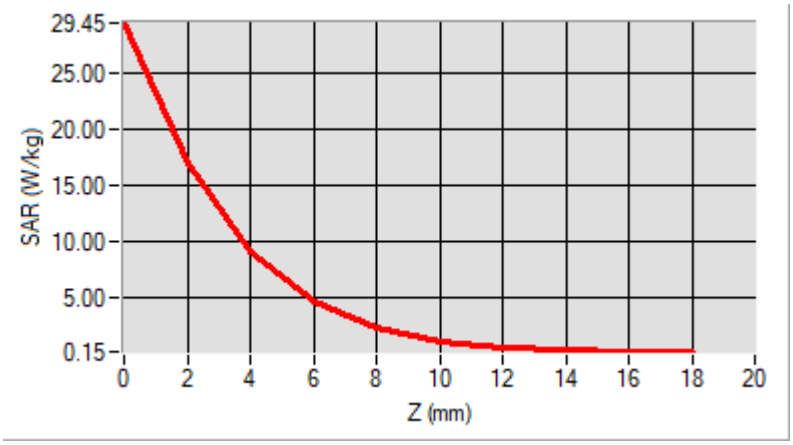
Maximum location: X=5.00, Y=0.00 ; SAR Peak: 30.79 W/kg

D. SAR 1g & 10g

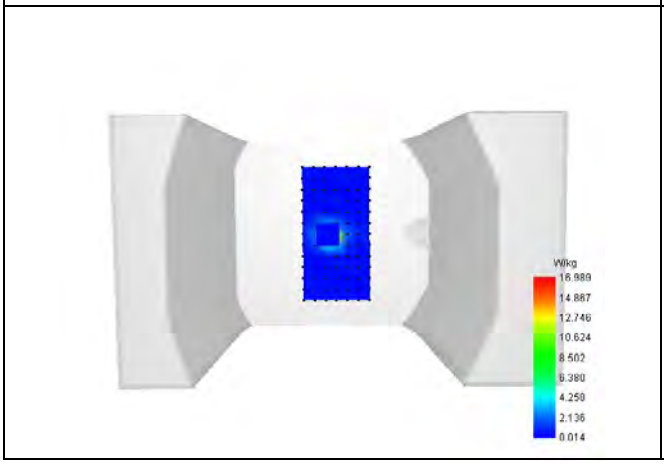
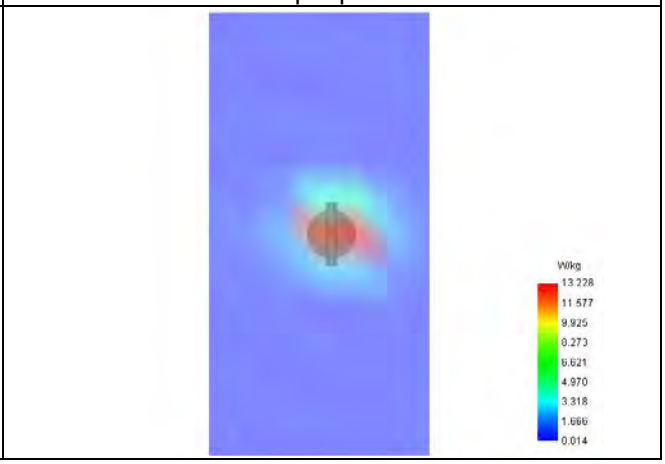
SAR 10g (W/Kg)	5.589
SAR 1g (W/Kg)	18.455
Variation (%)	-0.068
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

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)	29.452	16.989	9.130	4.585	2.232	1.083	0.552	0.315	0.209



F. 3D Image

3D screen shot	Hot spot position
	

System check at 5800 MHz

Date of measurement: 29/5/2025

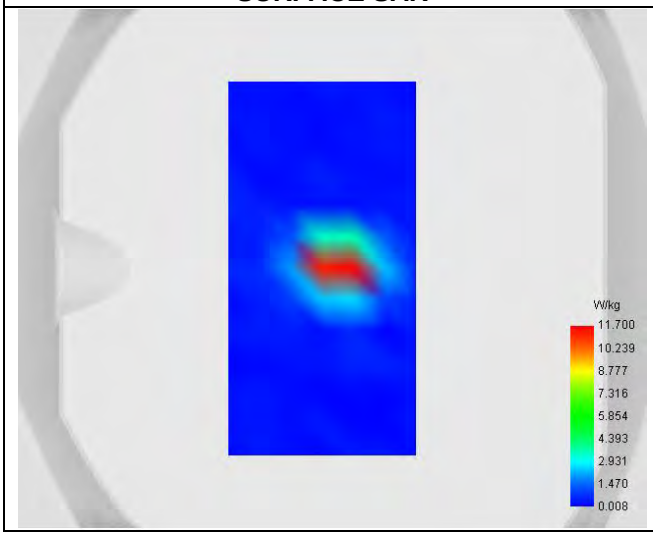
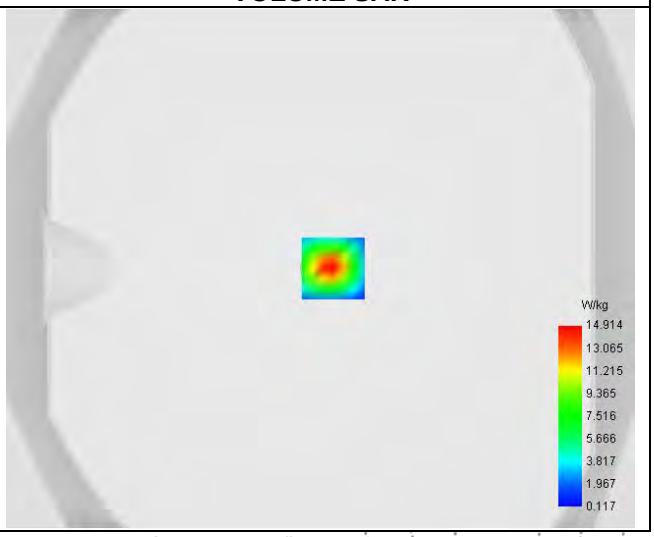
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	1.15
Area Scan	surf_sam_plan.txt
Zoom Scan	7x7x12,dx=4mm dy=4mm dz=2.0mm
Phantom	Validation plane
Device Position	Dipole
Band	CW5800
Signal	CW

B. Permitivity

Frequency (MHz)	5800.000
Relative permitivity (real part)	35.715
Relative permitivity (imaginary part)	18.620
Conductivity (S/m)	5.458

C. SAR Surface and Volume

SURFACE SAR	**VOLUME SAR**
	

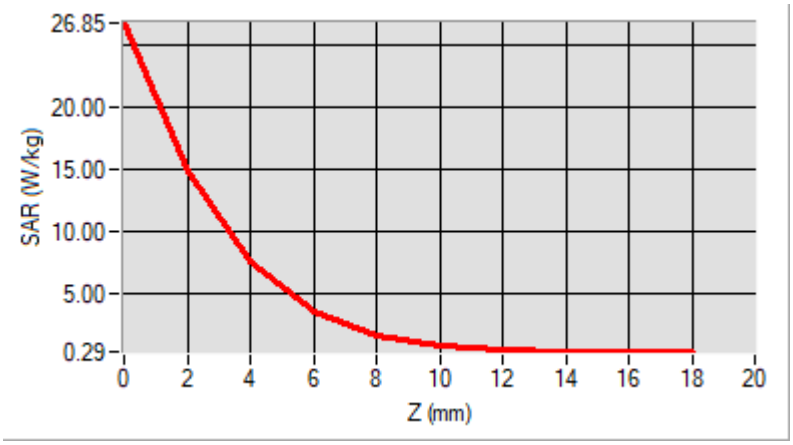
Maximum location: X=5.00, Y=0.00 ; SAR Peak: 28.22 W/kg

D. SAR 1g & 10g

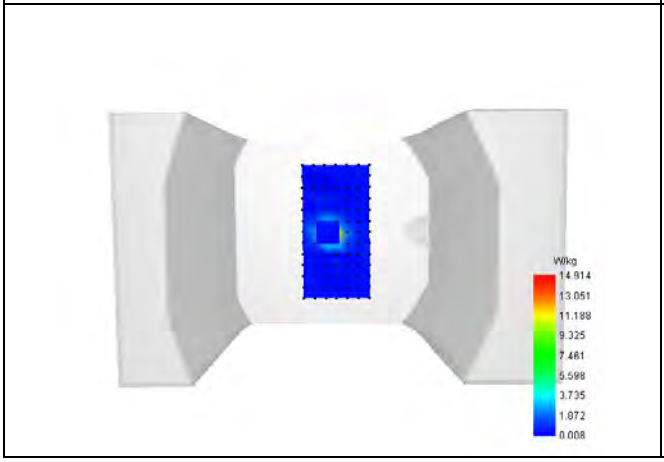
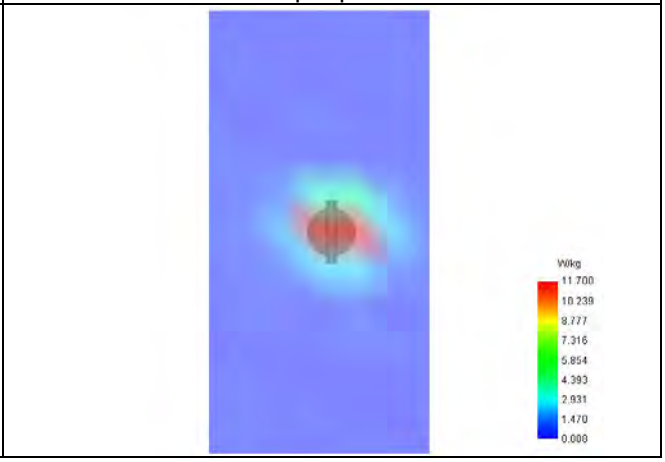
SAR 10g (W/Kg)	5.692
SAR 1g (W/Kg)	19.335
Variation (%)	3.092
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

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)	26.852	14.914	7.581	3.559	1.627	0.770	0.423	0.303	0.288



F. 3D Image

3D screen shot	Hot spot position
	

15.2 SAR Test Graph Results

Plot 1
Date of measurement: 28/5/2025

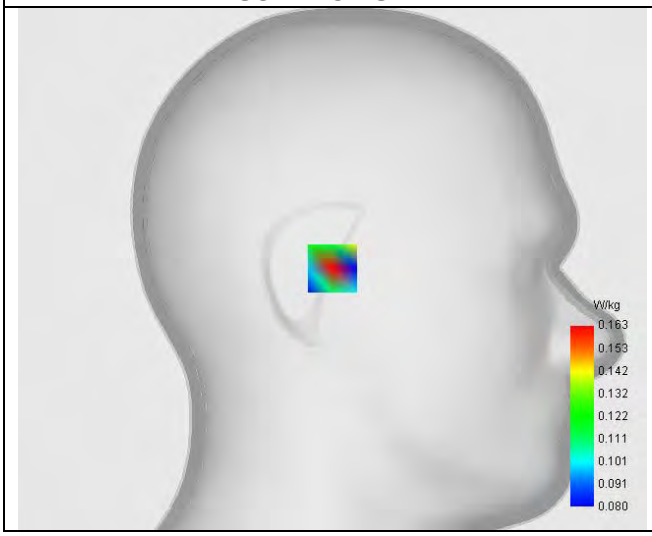
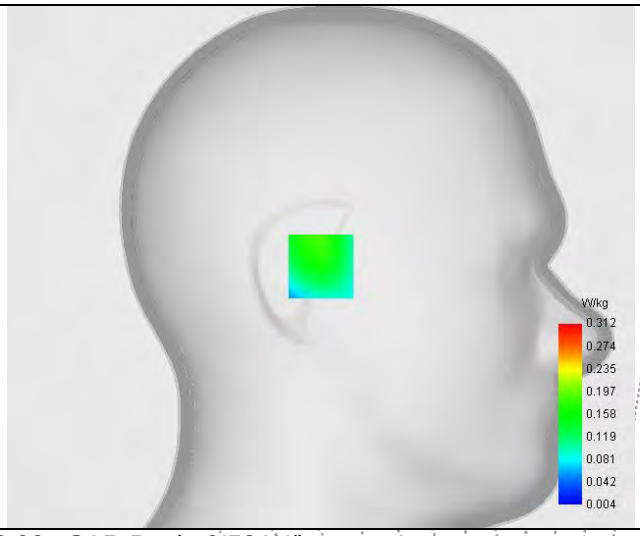
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	1.11
Area Scan	dx=12mm dy=12mm, Adaptative 1 max
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5.0mm
Phantom	Left head
Device Position	Tilt
Band	ISM
Signal	IEEE 802.11 b

B. Permitivity

Frequency (MHz)	2412.000
Relative permitivity (real part)	39.897
Relative permitivity (imaginary part)	13.207
Conductivity (S/m)	1.847

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

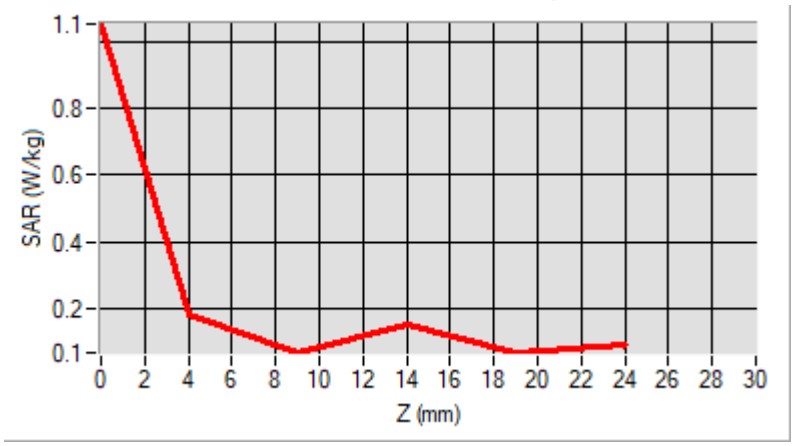
Maximum location: X=0.00, Y=0.00 ; SAR Peak: 0.53 W/kg

D. SAR 1g & 10g

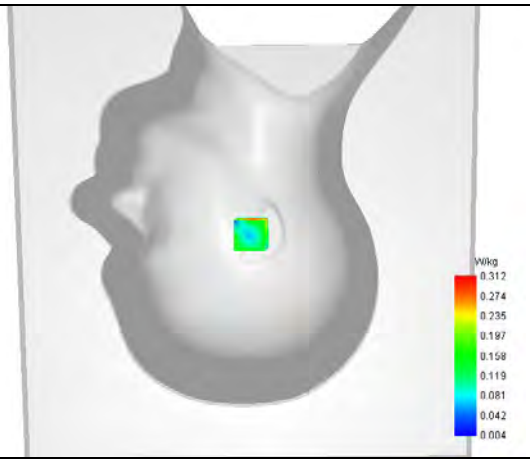
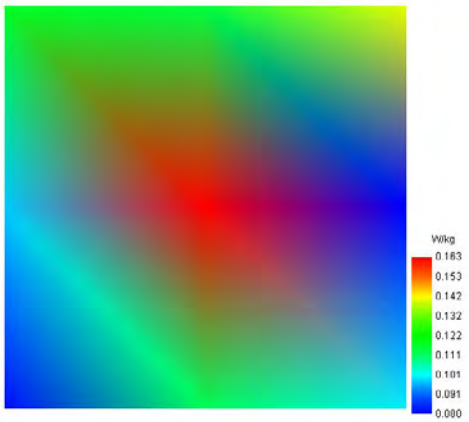
SAR 10g (W/Kg)	0.133
SAR 1g (W/Kg)	0.225
Variation (%)	-1.600
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	-1.261	0.190	0.246	0.064	0.257



F. 3D Image

3D screen shot	Hot spot position
	

Plot 2
Date of measurement: 29/5/2025

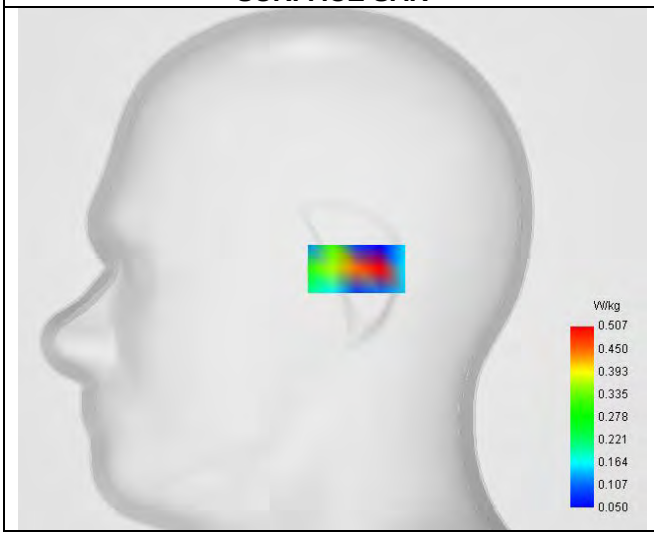
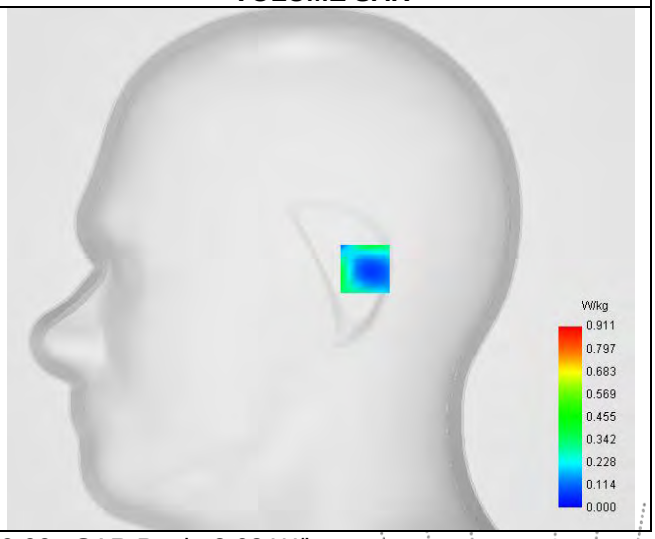
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	1.18
Area Scan	dx=12mm dy=12mm, Adaptative 1 max
Zoom Scan	7x7x12,dx=4mm dy=4mm dz=2.0mm
Phantom	Right head
Device Position	Cheek
Band	5200
Signal	--

B. Permitivity

Frequency (MHz)	5180.000
Relative permitivity (real part)	35.785
Relative permitivity (imaginary part)	16.130
Conductivity (S/m)	4.785

C. SAR Surface and Volume

SURFACE SAR	**VOLUME SAR**
	

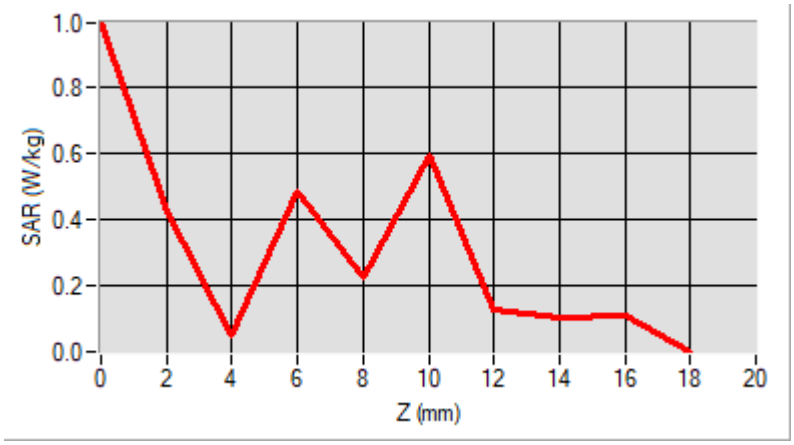
Maximum location: X=22.00, Y=0.00 ; SAR Peak: 2.68 W/kg

D. SAR 1g & 10g

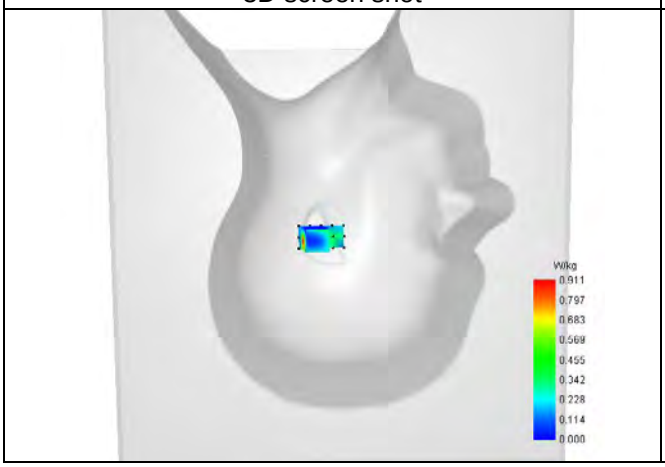
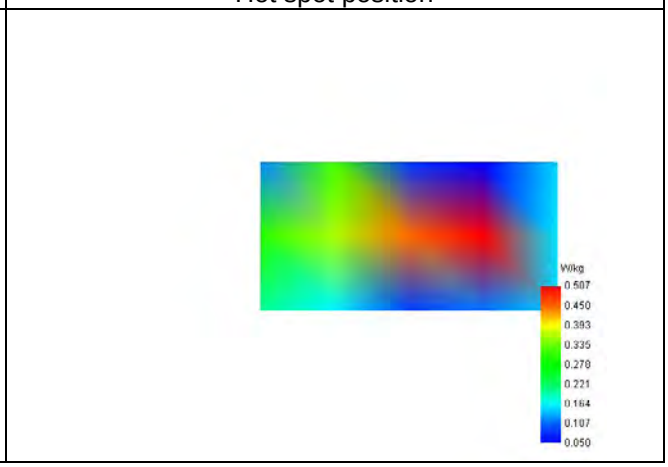
SAR 10g (W/Kg)	0.229
SAR 1g (W/Kg)	0.491
Variation (%)	-1.460
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

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)	0.990	0.425	0.050	0.482	0.224	0.590	0.128	0.102	0.106



F. 3D Image

3D screen shot	Hot spot position
	

Plot 3
Date of measurement: 29/5/2025

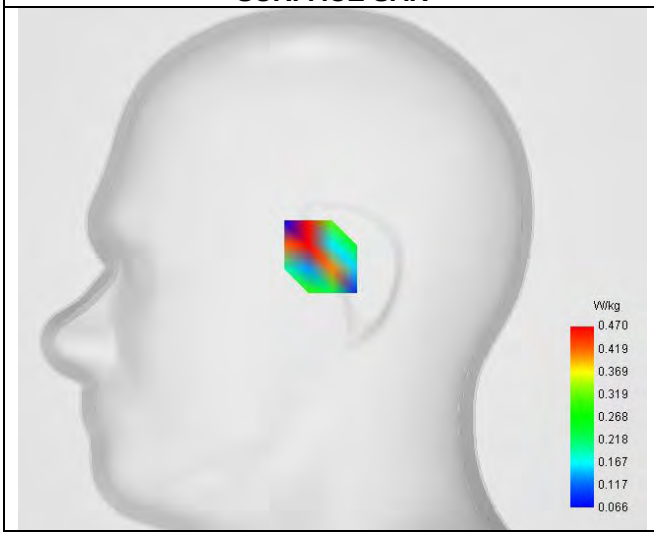
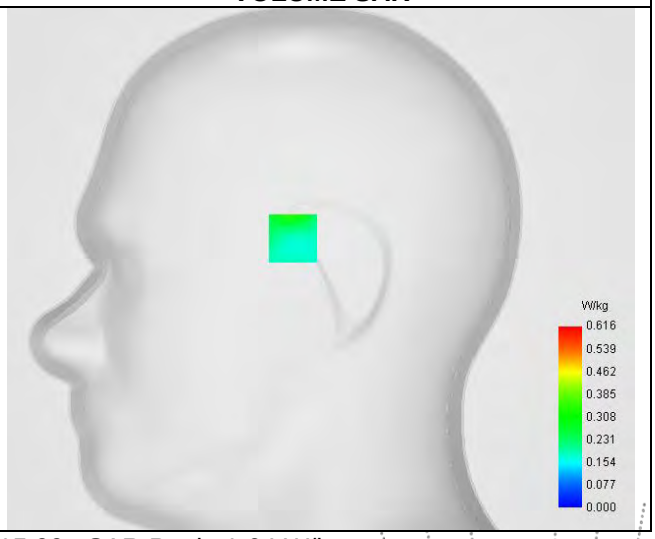
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	1.15
Area Scan	dx=12mm dy=12mm, Adaptative 1 max
Zoom Scan	7x7x12,dx=4mm dy=4mm dz=2.0mm
Phantom	Right head
Device Position	Cheek
Band	5800
Signal	--

B. Permitivity

Frequency (MHz)	5745.000
Relative permitivity (real part)	35.715
Relative permitivity (imaginary part)	16.355
Conductivity (S/m)	5.458

C. SAR Surface and Volume

SURFACE SAR	**VOLUME SAR**
	

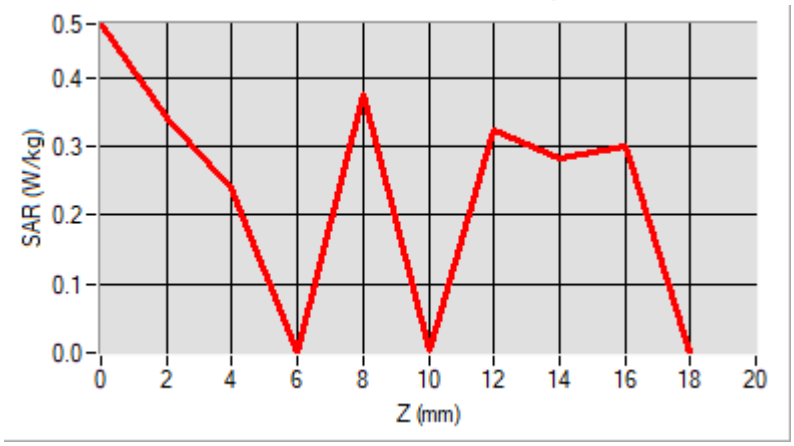
Maximum location: X=-14.00, Y=15.00 ; SAR Peak: 1.64 W/kg

D. SAR 1g & 10g

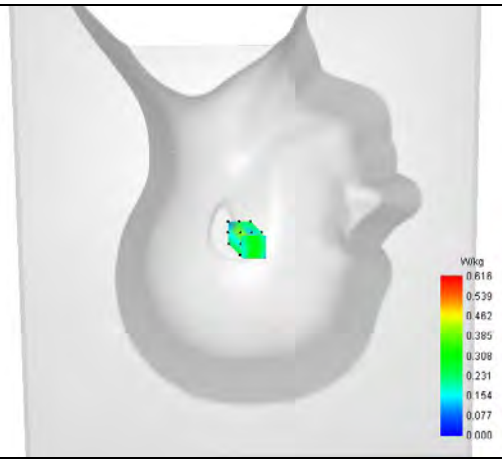
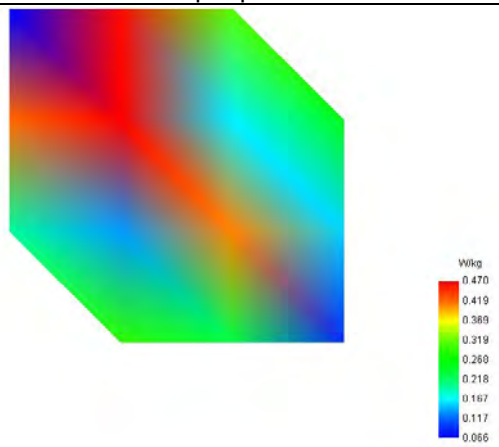
SAR 10g (W/Kg)	0.281
SAR 1g (W/Kg)	0.456
Variation (%)	-3.560
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

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)	0.479	0.342	0.239	0.001	0.377	0.003	0.323	0.283	0.300



F. 3D Image

3D screen shot	Hot spot position
	

Plot 4
Date of measurement: 28/5/2025

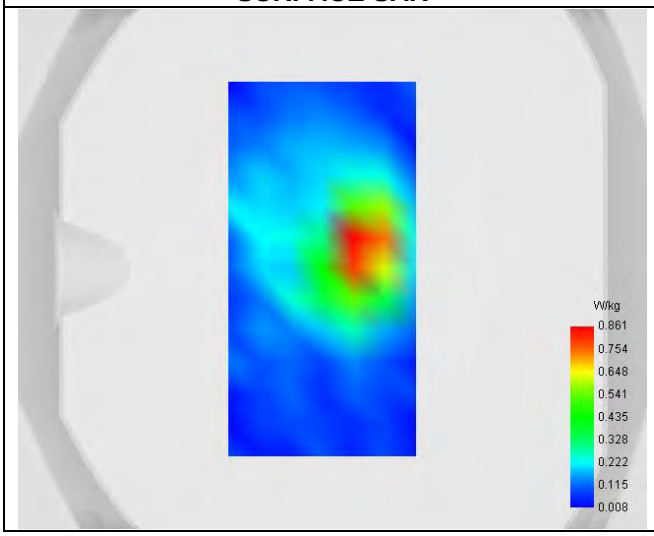
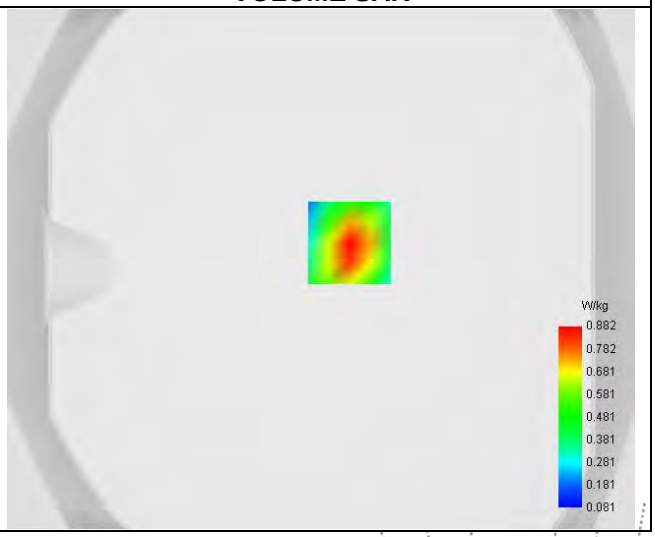
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	0.81
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5.0mm
Phantom	Validation plane
Device Position	Body
Band	GPRS850
Signal	TDMA (GPRS)

B. Permitivity

Frequency (MHz)	824.200
Relative permitivity (real part)	40.202
Relative permitivity (imaginary part)	19.649
Conductivity (S/m)	0.919

C. SAR Surface and Volume

SURFACE SAR	**VOLUME SAR**
	

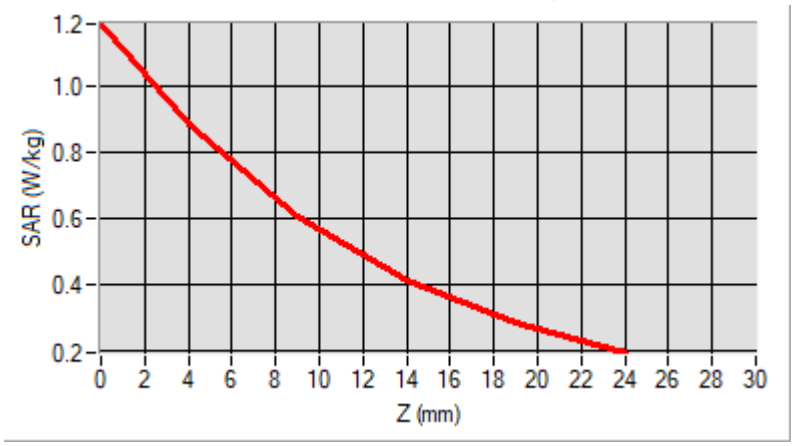
Maximum location: X=11.00, Y=10.00 ; SAR Peak: 1.19 W/kg

D. SAR 1g & 10g

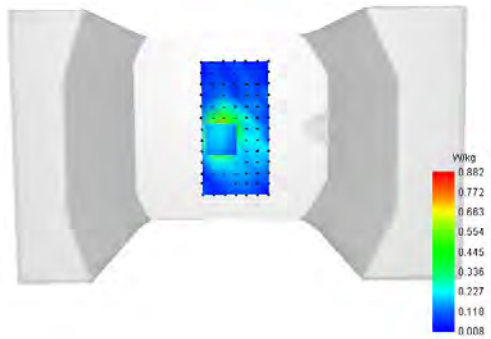
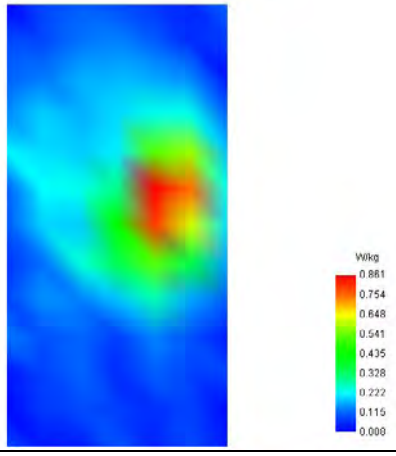
SAR 10g (W/Kg)	0.507
SAR 1g (W/Kg)	0.825
Variation (%)	-0.670
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.187	0.882	0.604	0.415	0.288



F. 3D Image

3D screen shot	Hot spot position
	

Plot 5
Date of measurement: 29/5/2025

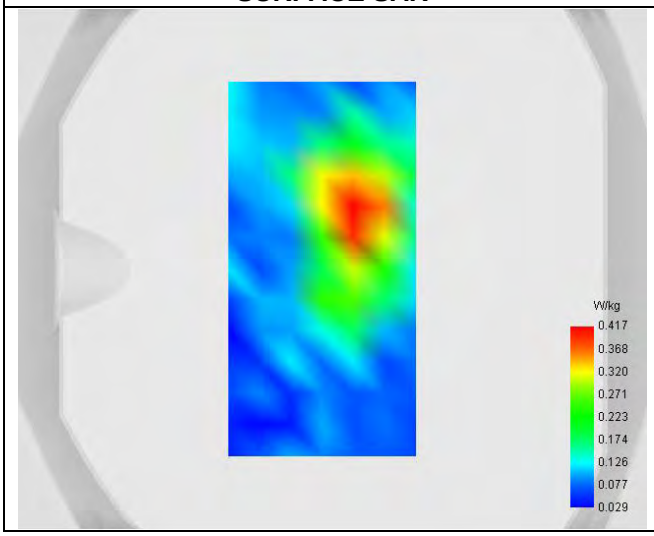
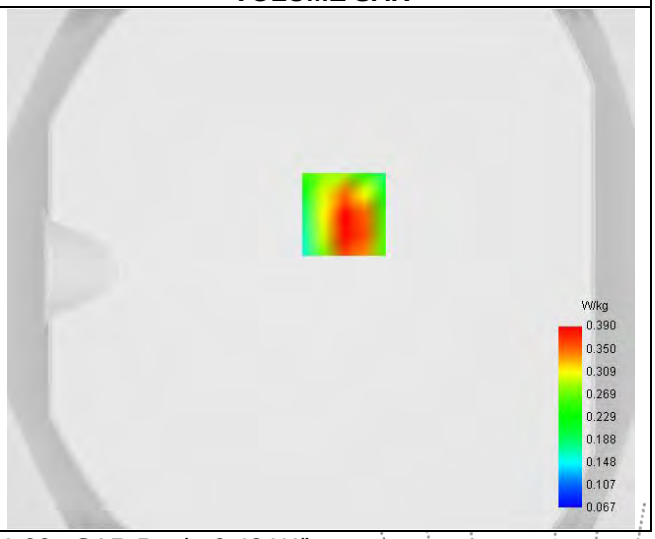
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	1.04
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5.0mm
Phantom	Validation plane
Device Position	Body
Band	GPRS1900
Signal	TDMA (GPRS)

B. Permitivity

Frequency (MHz)	1850.200
Relative permitivity (real part)	40.955
Relative permitivity (imaginary part)	13.408
Conductivity (S/m)	1.433

C. SAR Surface and Volume

SURFACE SAR	**VOLUME SAR**
	

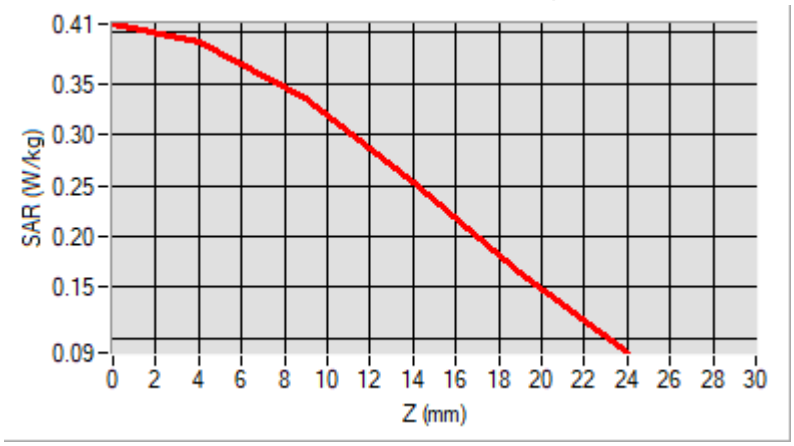
Maximum location: X=9.00, Y=21.00 ; SAR Peak: 0.43 W/kg

D. SAR 1g & 10g

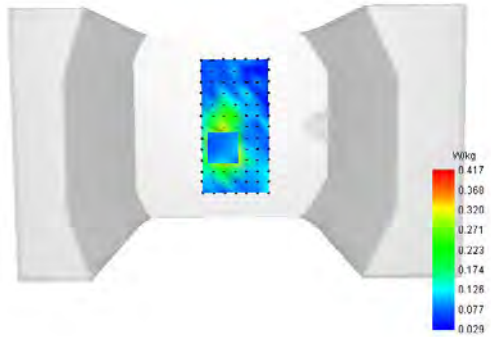
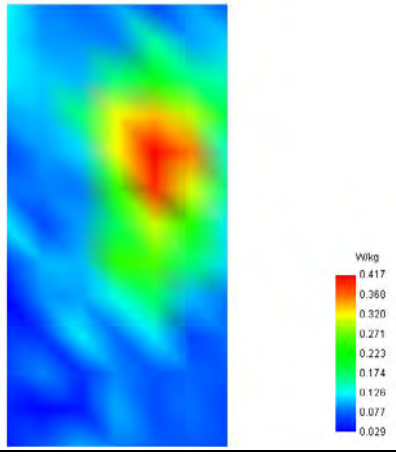
SAR 10g (W/Kg)	0.252
SAR 1g (W/Kg)	0.377
Variation (%)	-4.290
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.409	0.390	0.335	0.254	0.164



F. 3D Image

3D screen shot	Hot spot position
	

Plot 6
Date of measurement: 29/5/2025

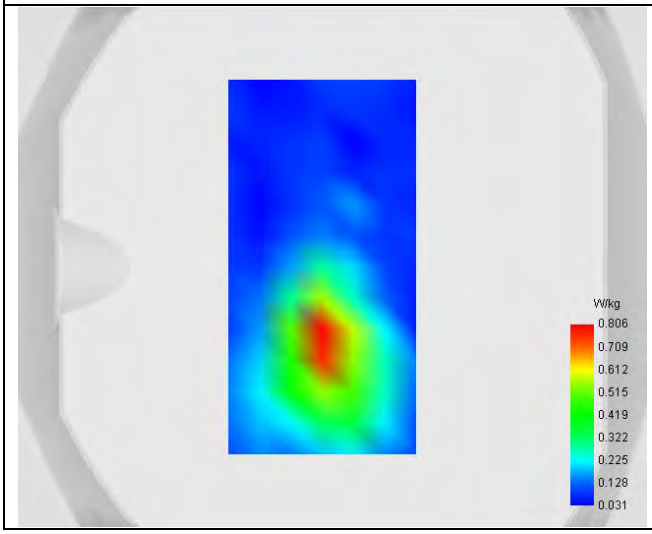
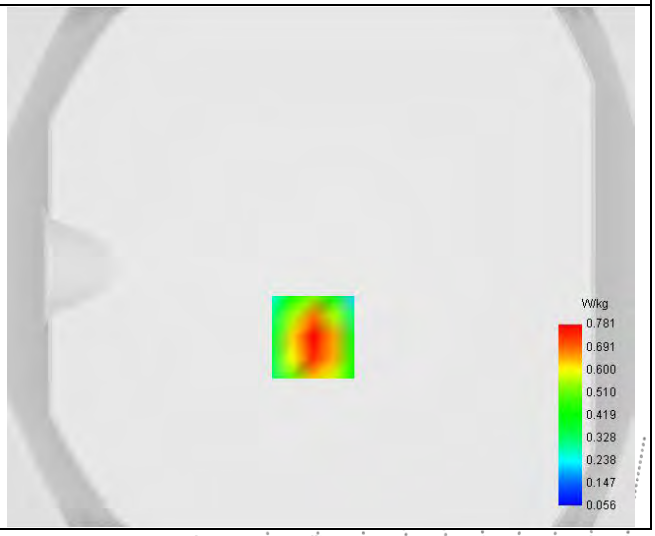
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	1.04
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5.0mm
Phantom	Validation plane
Device Position	Body
Band	Band 2 (1900)
Signal	WCDMA
Mode	Release 99
Connection Type	RMC, 12.2 kbps

B. Permitivity

Frequency (MHz)	1880.000
Relative permitivity (real part)	40.955
Relative permitivity (imaginary part)	13.408
Conductivity (S/m)	1.433

C. SAR Surface and Volume

SURFACE SAR	**VOLUME SAR**
	

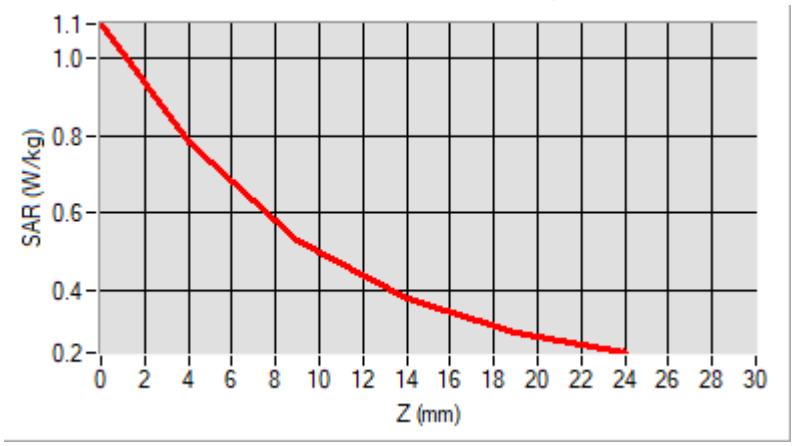
Maximum location: X=-3.00, Y=-27.00 ; SAR Peak: 1.09 W/kg

D. SAR 1g & 10g

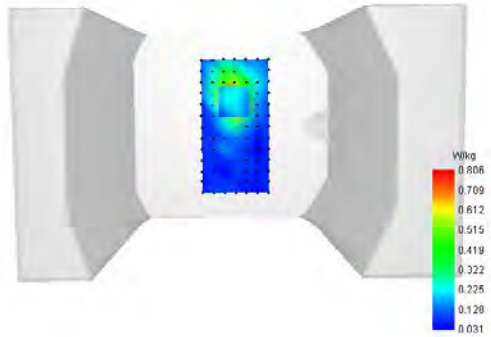
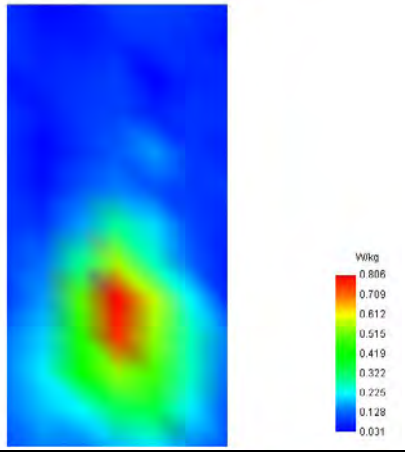
SAR 10g (W/Kg)	0.477
SAR 1g (W/Kg)	0.738
Variation (%)	-2.600
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.088	0.781	0.526	0.376	0.292



F. 3D Image

3D screen shot	Hot spot position
	

Plot 7
Date of measurement: 26/5/2025

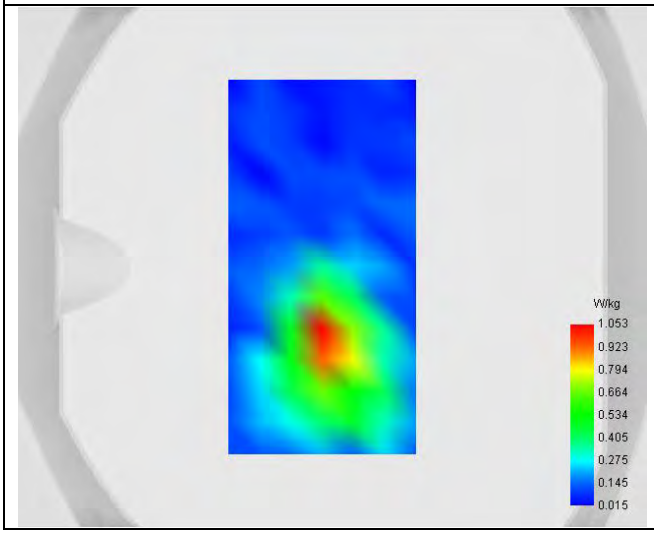
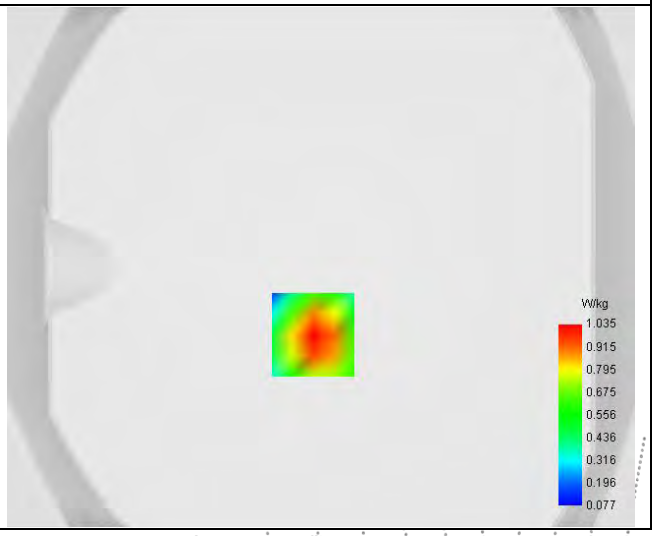
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	0.96
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5.0mm
Phantom	Validation plane
Device Position	Body
Band	Band 4 (1700)
Signal	WCDMA
Mode	Release 99
Connection Type	RMC, 12.2 kbps

B. Permitivity

Frequency (MHz)	1712.400
Relative permitivity (real part)	41.233
Relative permitivity (imaginary part)	14.136
Conductivity (S/m)	1.382

C. SAR Surface and Volume

SURFACE SAR	**VOLUME SAR**
	

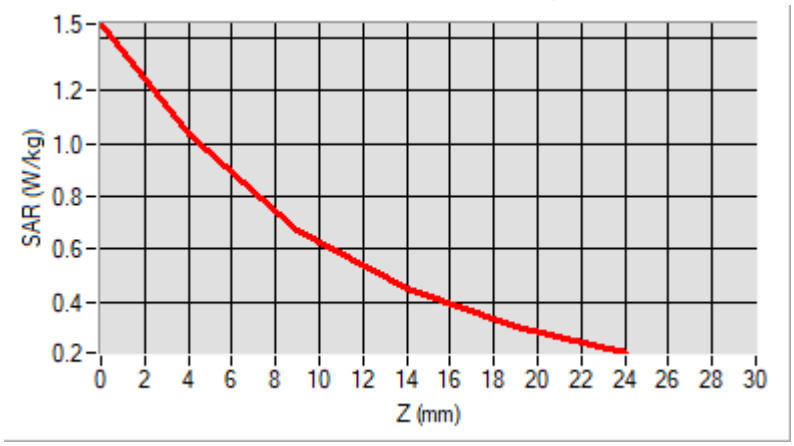
Maximum location: X=-3.00, Y=-26.00 ; SAR Peak: 1.47 W/kg

D. SAR 1g & 10g

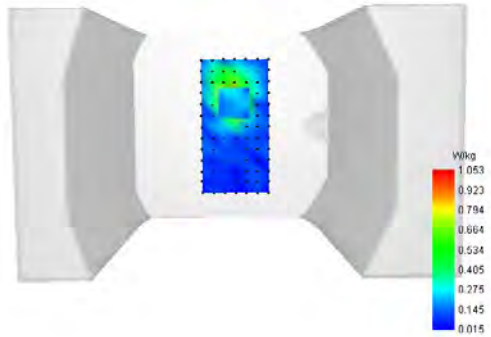
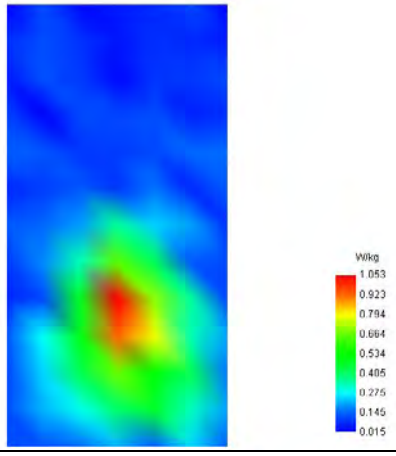
SAR 10g (W/Kg)	0.585
SAR 1g (W/Kg)	0.985
Variation (%)	-1.290
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.451	1.035	0.675	0.449	0.308



F. 3D Image

3D screen shot	Hot spot position
	

Plot 8
Date of measurement: 28/5/2025

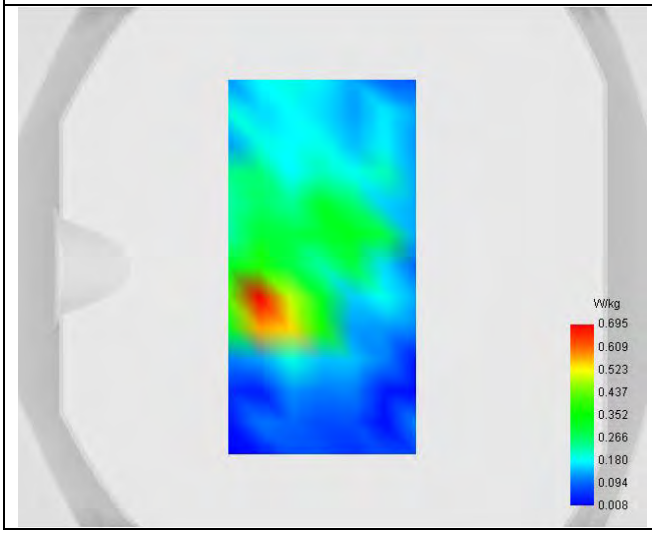
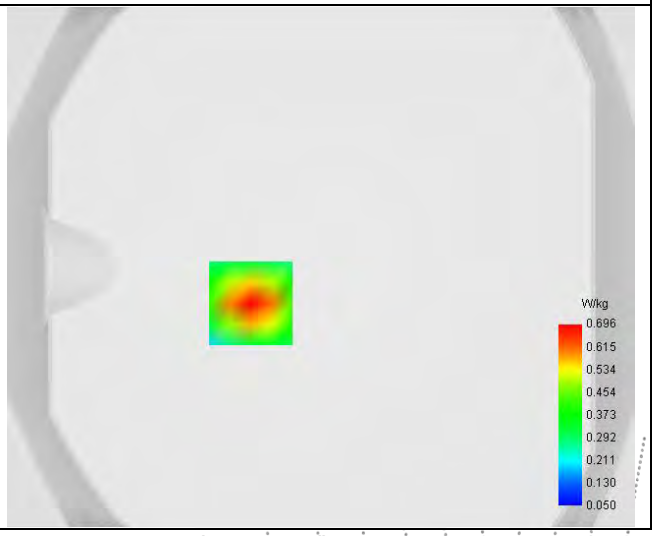
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	0.81
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5.0mm
Phantom	Validation plane
Device Position	Body
Band	Band 5 (850)
Signal	WCDMA
Mode	Release 99
Connection Type	RMC, 12.2 kbps

B. Permitivity

Frequency (MHz)	826.400
Relative permitivity (real part)	40.202
Relative permitivity (imaginary part)	19.400
Conductivity (S/m)	0.919

C. SAR Surface and Volume

SURFACE SAR	**VOLUME SAR**
	

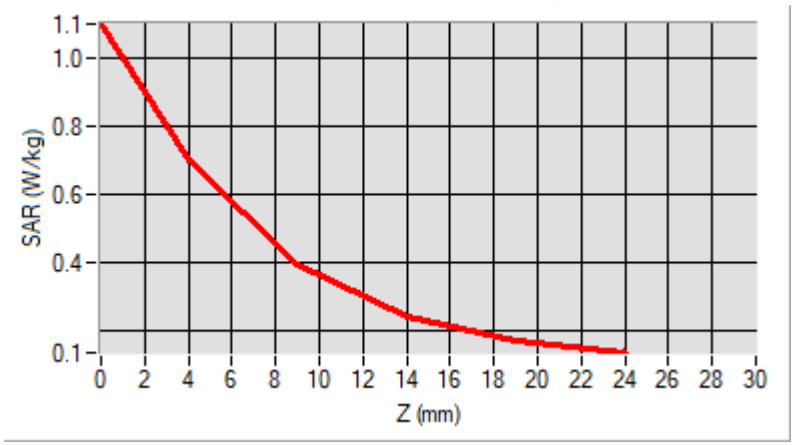
Maximum location: X=-27.00, Y=-14.00 ; SAR Peak: 1.10 W/kg

D. SAR 1g & 10g

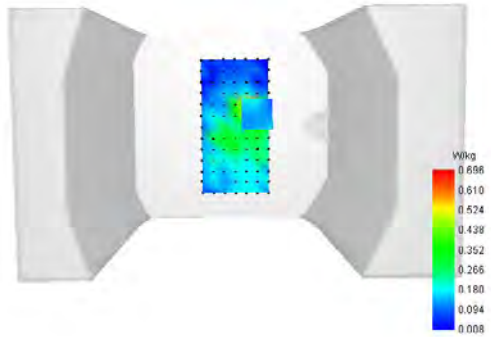
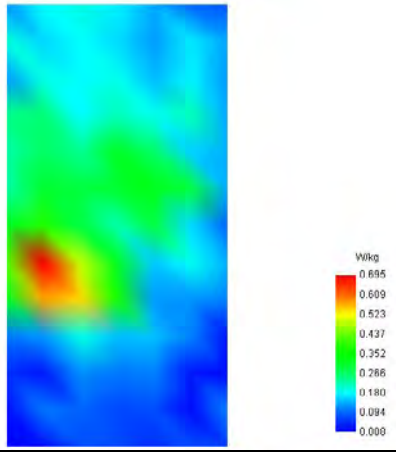
SAR 10g (W/Kg)	0.352
SAR 1g (W/Kg)	0.651
Variation (%)	-1.690
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.097	0.696	0.394	0.241	0.170



F. 3D Image

3D screen shot	Hot spot position
	

Plot 9
Date of measurement: 29/5/2025

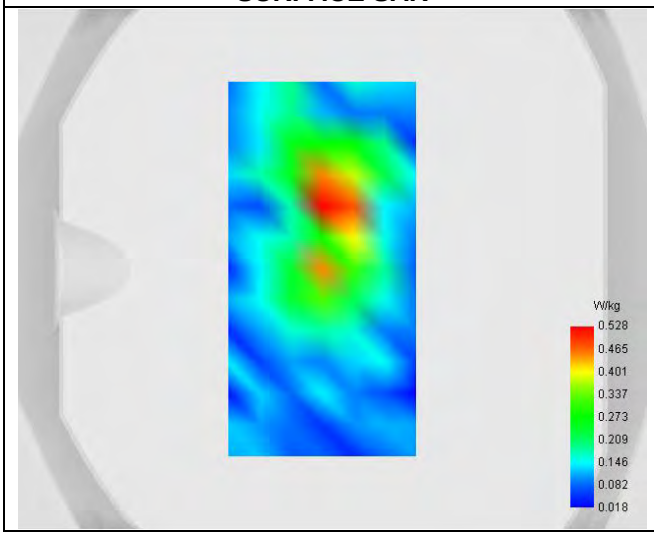
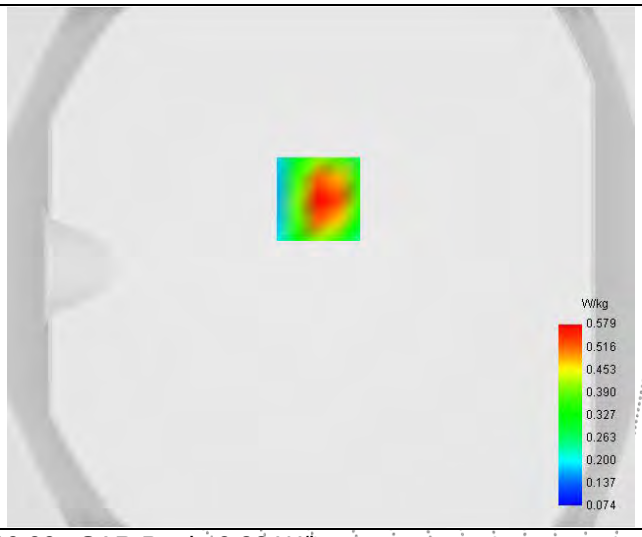
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	1.04
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5.0mm
Phantom	Validation plane
Device Position	Body
Band	LTE band 2
Signal	LTE FDD
Cell Bandwidth	20 Mhz
Modulation	SC-OFDM - QPSK
RB offset	5
RB size	20

B. Permitivity

Frequency (MHz)	1860.000
Relative permitivity (real part)	40.955
Relative permitivity (imaginary part)	13.455
Conductivity (S/m)	1.433

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

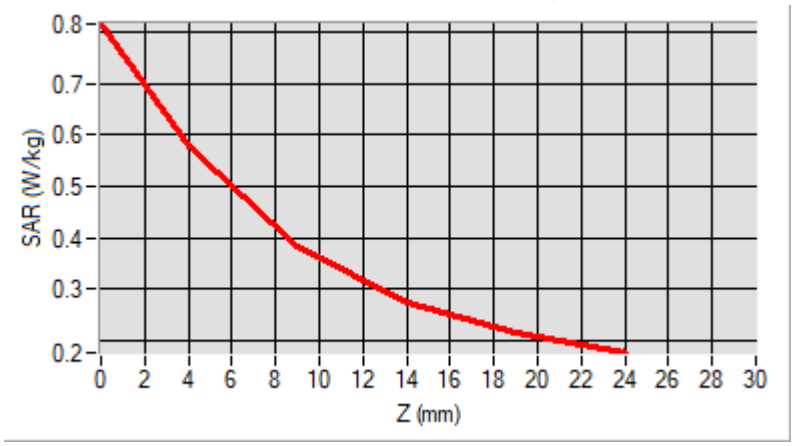
Maximum location: X=-1.00, Y=26.00 ; SAR Peak: 0.88 W/kg

D. SAR 1g & 10g

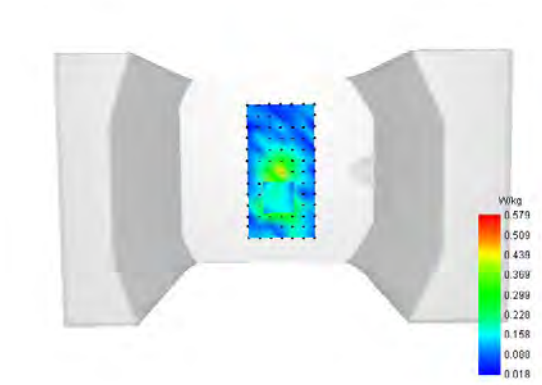
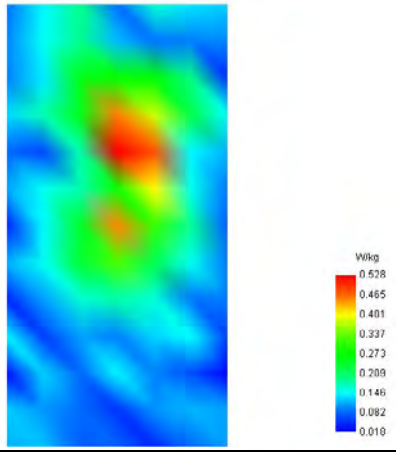
SAR 10g (W/Kg)	0.339
SAR 1g (W/Kg)	0.557
Variation (%)	1.270
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.816	0.579	0.385	0.274	0.214



F. 3D Image

3D screen shot	Hot spot position
	

Plot 10
Date of measurement: 26/5/2025

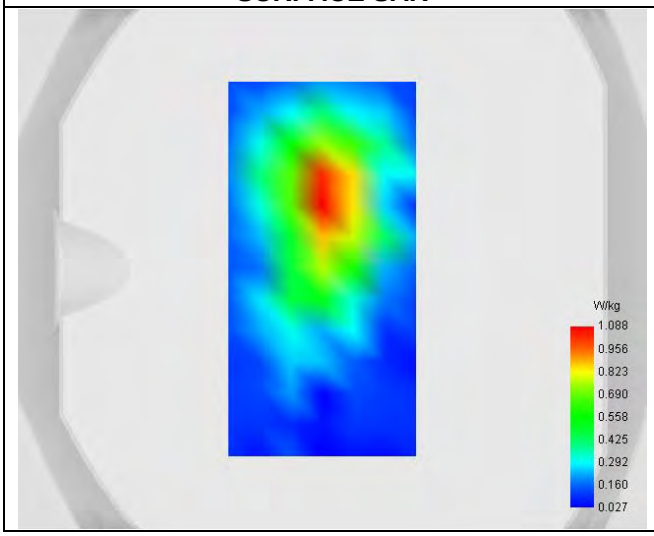
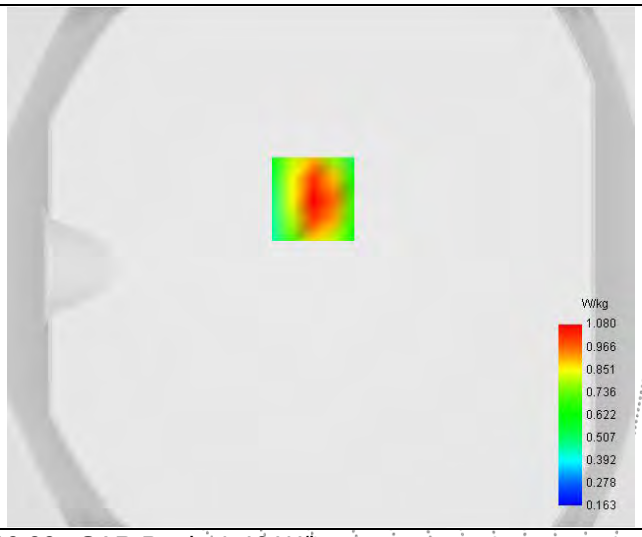
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	0.96
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5.0mm
Phantom	Validation plane
Device Position	Body
Band	LTE band 4
Signal	LTE FDD
Cell Bandwidth	20 Mhz
Modulation	SC-OFDM - QPSK
RB offset	5
RB size	20

B. Permitivity

Frequency (MHz)	1732.500
Relative permitivity (real part)	41.233
Relative permitivity (imaginary part)	14.153
Conductivity (S/m)	1.382

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

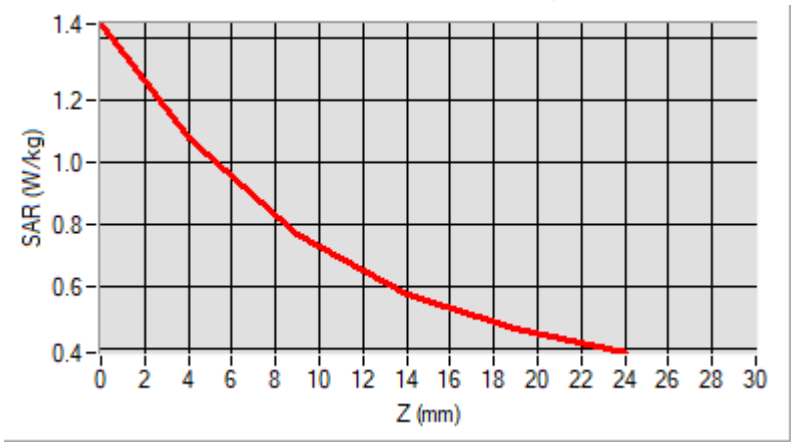
Maximum location: X=-3.00, Y=26.00 ; SAR Peak: 1.46 W/kg

D. SAR 1g & 10g

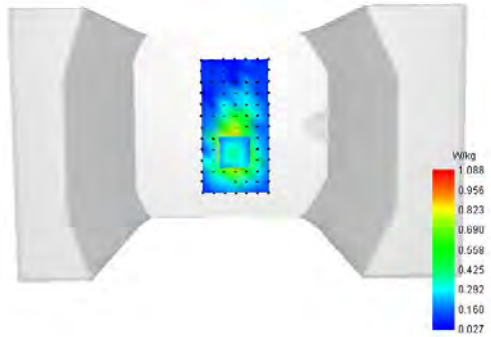
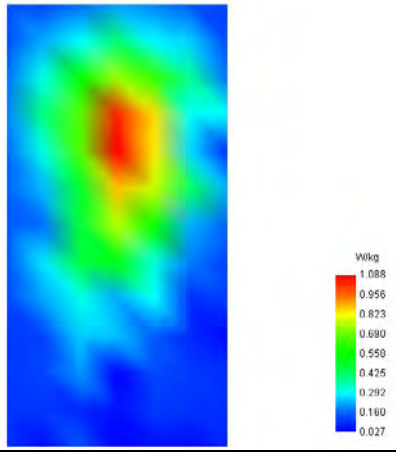
SAR 10g (W/Kg)	0.686
SAR 1g (W/Kg)	1.028
Variation (%)	-1.600
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.445	1.080	0.767	0.575	0.463



F. 3D Image

3D screen shot	Hot spot position
	

Plot 11
Date of measurement: 28/5/2025

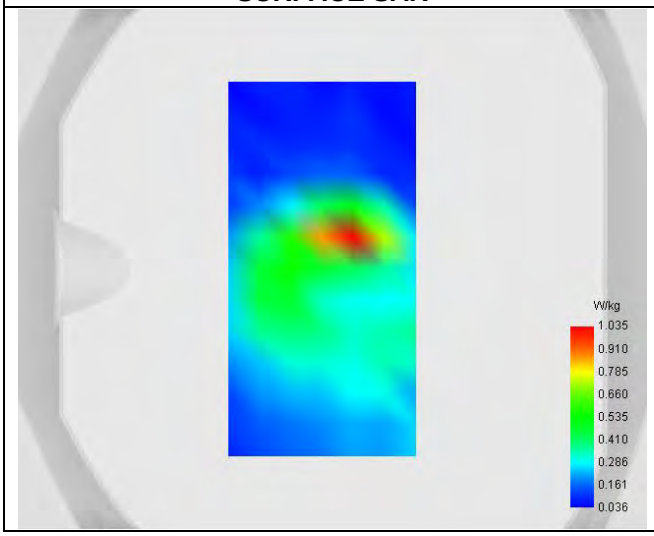
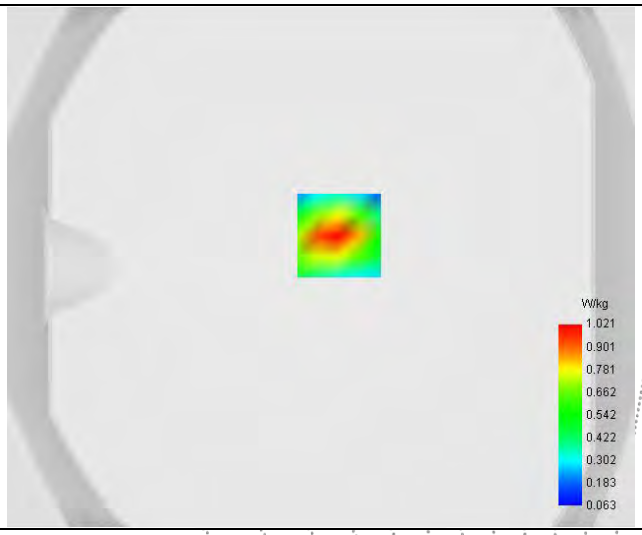
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	0.81
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5.0mm
Phantom	Validation plane
Device Position	Body
Band	LTE band 5
Signal	LTE FDD
Cell Bandwidth	10 Mhz
Modulation	SC-OFDM - QPSK
RB offset	5
RB size	20

B. Permitivity

Frequency (MHz)	844.000
Relative permitivity (real part)	40.202
Relative permitivity (imaginary part)	19.400
Conductivity (S/m)	0.919

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

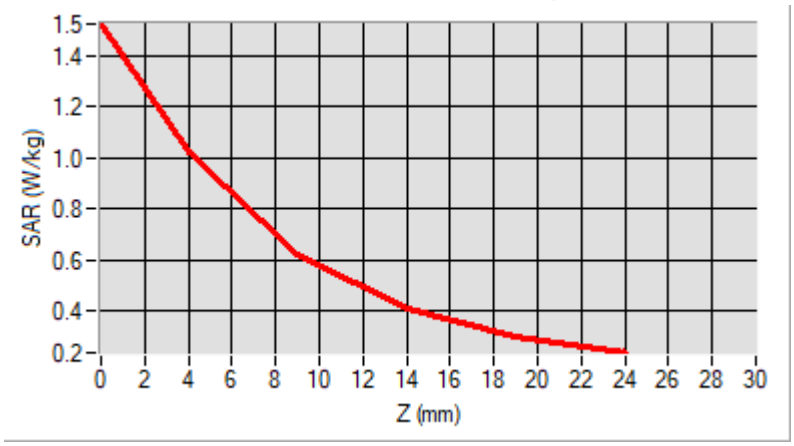
Maximum location: X=7.00, Y=12.00 ; SAR Peak: 1.54 W/kg

D. SAR 1g & 10g

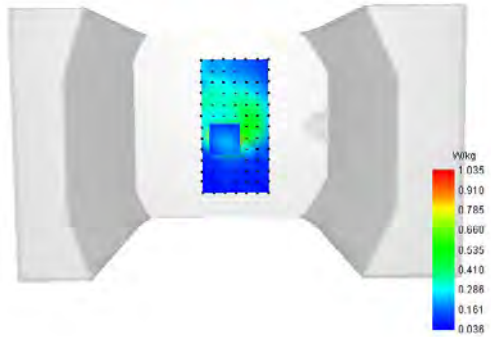
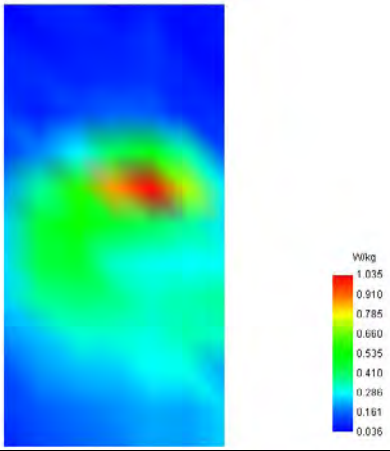
SAR 10g (W/Kg)	0.539
SAR 1g (W/Kg)	0.947
Variation (%)	1.200
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.527	1.021	0.623	0.407	0.298



F. 3D Image

3D screen shot	Hot spot position
	

Plot 12
Date of measurement: 28/5/2025

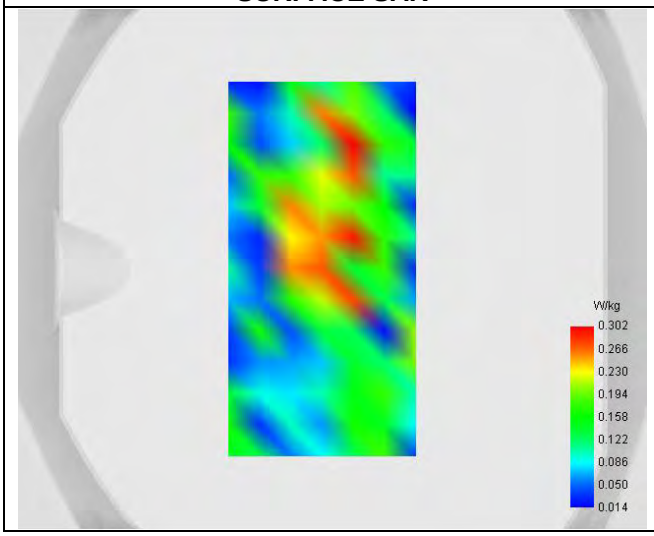
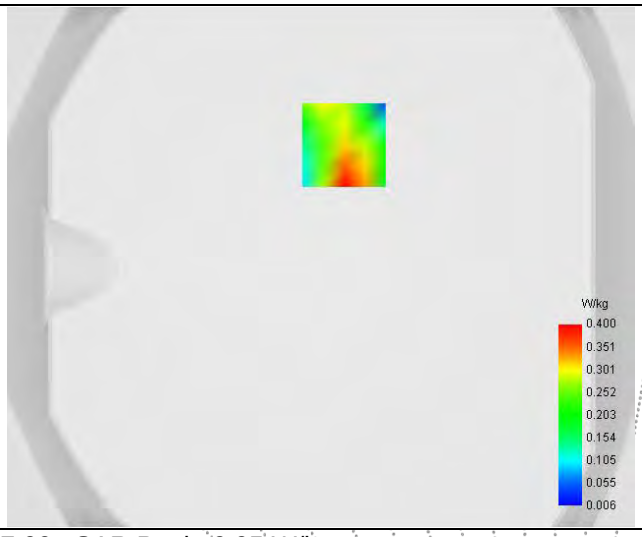
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	1.03
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5.0mm
Phantom	Validation plane
Device Position	Body
Band	LTE band 7
Signal	LTE FDD
Cell Bandwidth	20 Mhz
Modulation	SC-OFDM - QPSK
RB offset	5
RB size	20

B. Permitivity

Frequency (MHz)	2510.000
Relative permitivity (real part)	38.558
Relative permitivity (imaginary part)	13.404
Conductivity (S/m)	1.920

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

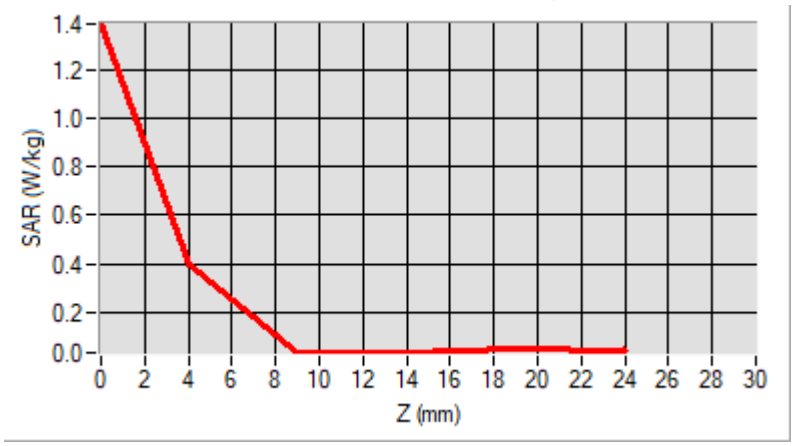
Maximum location: X=9.00, Y=47.00 ; SAR Peak: 0.95 W/kg

D. SAR 1g & 10g

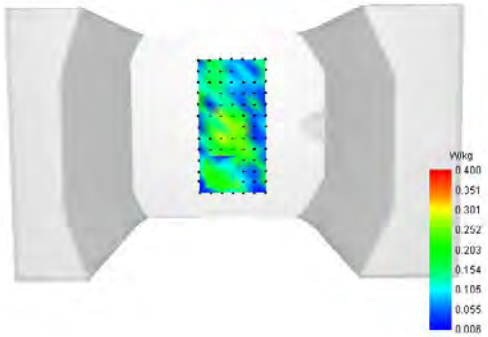
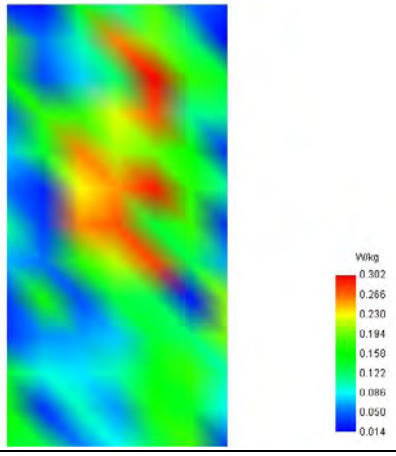
SAR 10g (W/Kg)	0.222
SAR 1g (W/Kg)	0.396
Variation (%)	4.160
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.394	0.400	0.030	0.030	0.047



F. 3D Image

3D screen shot	Hot spot position
	

Plot 13

Date of measurement: 26/5/2025

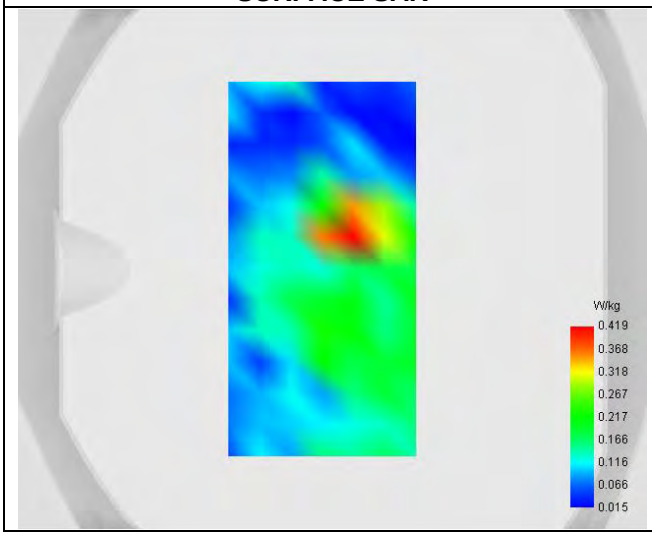
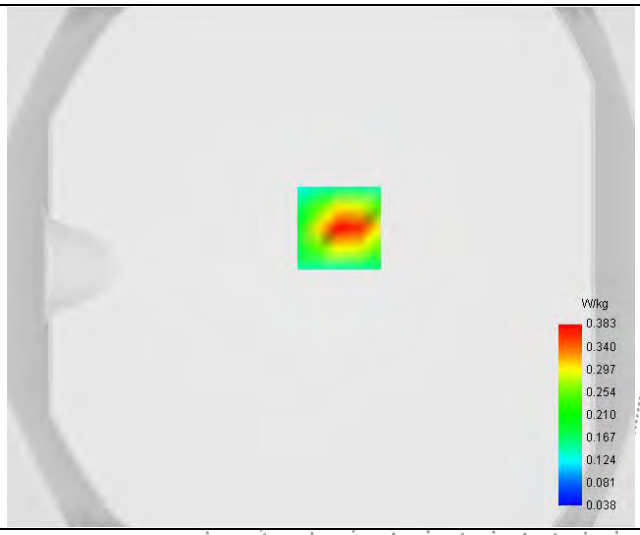
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	0.80
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5.0mm
Phantom	Validation plane
Device Position	Body
Band	LTE band 12
Signal	LTE FDD
Cell Bandwidth	10 Mhz
Modulation	SC-OFDM - QPSK
RB offset	5
RB size	20

B. Permitivity

Frequency (MHz)	704.000
Relative permitivity (real part)	43.073
Relative permitivity (imaginary part)	23.345
Conductivity (S/m)	0.896

C. SAR Surface and Volume

SURFACE SAR	**VOLUME SAR**
	

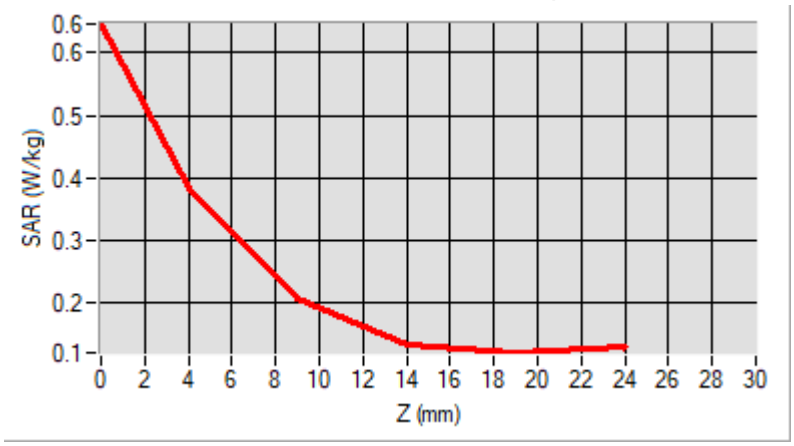
Maximum location: X=7.00, Y=15.00 ; SAR Peak: 0.65 W/kg

D. SAR 1g & 10g

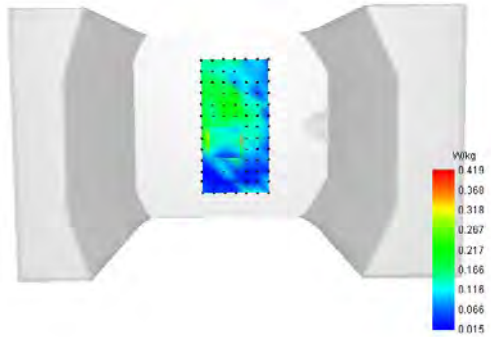
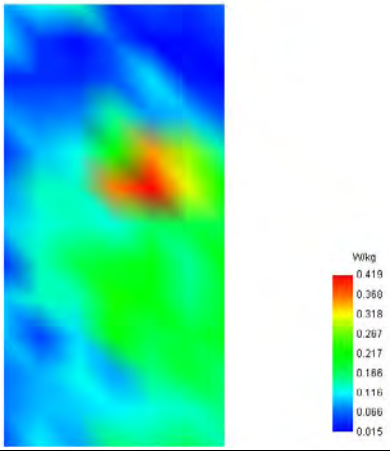
SAR 10g (W/Kg)	0.211
SAR 1g (W/Kg)	0.375
Variation (%)	-3.770
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.647	0.383	0.204	0.132	0.118



F. 3D Image

3D screen shot	Hot spot position
	

Plot 14
Date of measurement: 26/5/2025

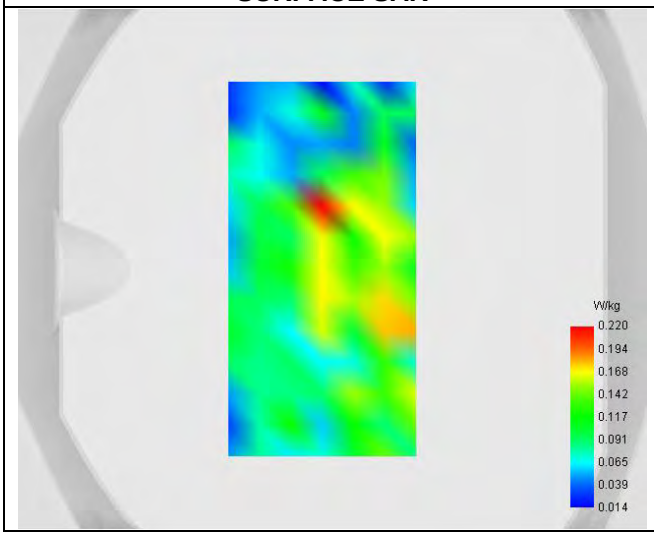
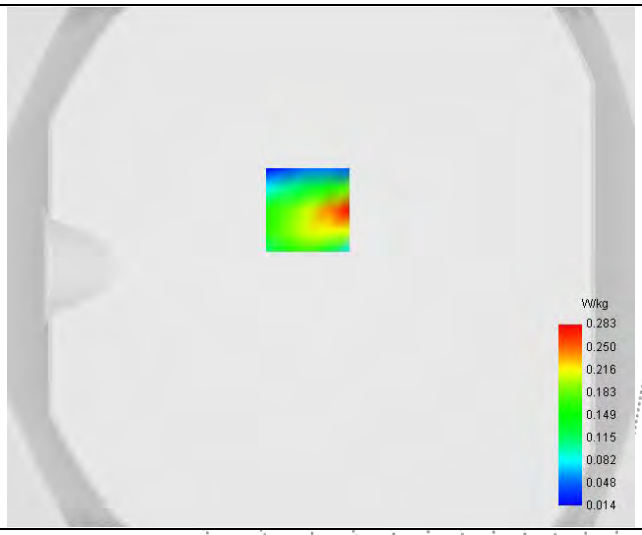
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	0.80
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5.0mm
Phantom	Validation plane
Device Position	Body
Band	LTE band 17
Signal	LTE FDD
Cell Bandwidth	10 Mhz
Modulation	SC-OFDM - QPSK
RB offset	5
RB size	20

B. Permitivity

Frequency (MHz)	710.000
Relative permitivity (real part)	43.073
Relative permitivity (imaginary part)	23.233
Conductivity (S/m)	0.896

C. SAR Surface and Volume

SURFACE SAR	**VOLUME SAR**
	

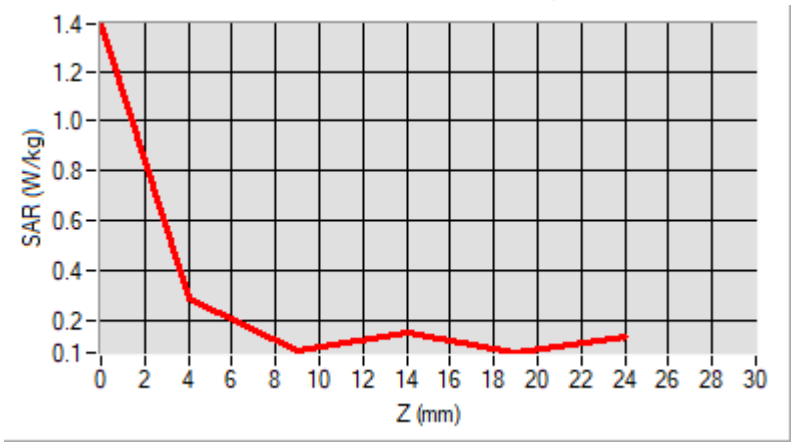
Maximum location: X=-5.00, Y=22.00 ; SAR Peak: 0.42 W/kg

D. SAR 1g & 10g

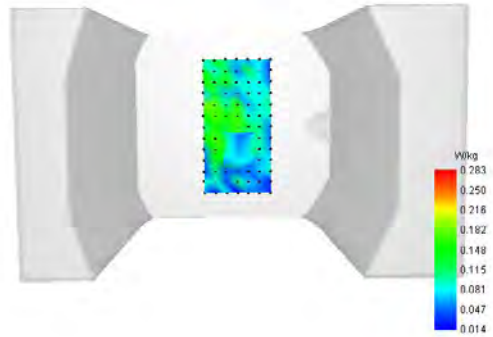
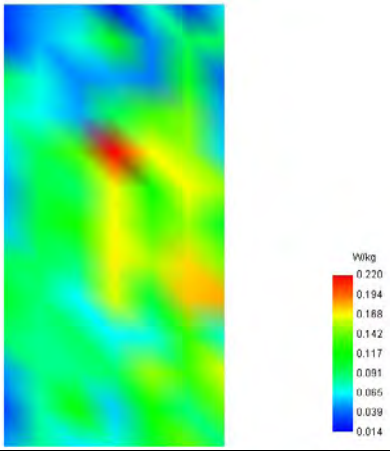
SAR 10g (W/Kg)	0.140
SAR 1g (W/Kg)	0.255
Variation (%)	1.690
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.391	0.283	0.075	0.145	0.067



F. 3D Image

3D screen shot	Hot spot position
	

16. CALIBRATION CERTIFICATES

Probe-EPGO420 Calibration Certificate
SID750Dipole Calibration Ceriticate
SID835Dipole Calibration Ceriticate
SID1800Dipole Calibration Ceriticate
SID1900Dipole Calibration Ceriticate
SID2450Dipole Calibration Ceriticate
SID2600Dipole Calibration Ceriticate
SID5000Dipole Calibration Ceriticate

COMOSAR E-Field Probe Calibration Report

Ref : ACR.199.1.24.BES.A

SHENZHEN BCTC TECHNOLOGY CO., LTD.
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MVG COMOSAR DOSIMETRIC E-FIELD PROBE

SERIAL NO.: 2623-EPGO-420

Calibrated at MVG
Z.I. de la pointe du diable
Technopôle Brest Iroise – 295 avenue Alexis de Rochon
29280 PLOUZANE - FRANCE

Calibration date: 7/18/2024

Accreditations #2-6789
Scope available on www.cofrac.fr

Summary:

This document presents the method and results from an accredited COMOSAR Dosimetric E-Field Probe calibration performed at MVG, using the CALIPROBE test bench, for use with a MVG COMOSAR system only. The test results covered by accreditation are traceable to the International System of Units (SI).

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