TEST REPORT

Report No.:	BCTC2503758420E
Applicant:	SHENZHEN YUNJI INTELLIGENT TECHNOLOGY CO.,LTD
Product Name:	Smart Phone
Test Model:	C62
Tested Date:	2025-03-24 to 2025-04-28
Issued Date:	2025-04-28

Shenzhen BCTC Testing Co., Ltd.

FCC ID: 2ANMU-25156

Product Name:	Smart Phone
Trademark:	OUKITEL
Model/Type Reference:	C62 C62 E, C62 S, C62 Pro, C62 Plus, C62 Ultra, C62 GT
Prepared For:	SHENZHEN YUNJI INTELLIGENT TECHNOLOGY CO.,LTD
Address:	A2 2F BUILDING ENET NEW INDUSTRIAL PARK, DAFU INDUSTRIAL ZONE, GUANLAN, LONGHUA SHENZHEN, 518XXX China
Manufacturer:	SHENZHEN YUNJI INTELLIGENT TECHNOLOGY CO.,LTD
Address:	A2 2F BUILDING ENET NEW INDUSTRIAL PARK, DAFU INDUSTRIAL ZONE, GUANLAN, LONGHUA SHENZHEN, 518XXX China
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:	2025-03-24
Sample tested Date:	2025-03-24 to 2025-04-28
Issue Date:	2025-04-28
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
BCTC2503758420E	2025-04-28	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, 0 Hz to 300 GHz. It specifies the maximum exposure limit of 1.6 W/kg as averaged over any 1 gram of tissue for portable devices being used within 20 cm 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 100 MHz to 6 GHz v01r04: SAR Measurement Requirements for 100 MHz to 6 GHz
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	Report SAR_{1g} (W/kg)			SAR_{1g} Limit (W/kg)
	Head	Body (10mm Gap)	Hotspot (10mm Gap)	
Bluetooth	0.059	0.059	/	1.6
WIFI 2.4G	0.255	0.395	0.696	
WIFI 5G	0.581	0.401	0.679	
GSM	0.207	0.931	0.463	
WCDMA	0.145	0.487	0.310	
LTE	0.230	0.659	0.415	
Simultaneous Transmission	0.806	1.326	1.052	

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.

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 1g of tissue)	1.6	8.0
Spatial Peak (hands/wrists/feet/anklesaveraged over 10g)	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:	C62 C62 E, C62 S, C62 Pro, C62 Plus, C62 Ultra, C62 GT
Model differences:	All the model are the same circuit and RF module, except model names.
Bluetooth Version:	5.0
Hardware Version:	SC6030_U_MB_V1.0.1
Software Version:	V04
Ratings:	DC 5V from adapter/DC 3.87V from battery
Adapter Information:	Model: HJ-0502000N2-US Input: 100-240V~ 50/60Hz 0.3A Output: 5.0V ⎓ 2.0A 10.0W

BDR, EDR

Operation Frequency:	2402-2480MHz
Type of Modulation:	GFSK, π/ 4 DQPSK, 8DPSK
Number Of Channel	79CH
Antenna installation:	Internal antenna
Antenna Gain:	1.03 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:	1.03 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:	1.03 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:	0.71 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: 34.15 dBm, GSM/GPRS/EGPRS 1900: 31.4 dBm WCDMA Band II: 25.23 dBm WCDMA Band IV: 25.23 dBm WCDMA Band V: 24.40 dBm
Type of Modulation:	GSM Mode with GMSK,8PSK Modulation WCDMA Mode with BPSK Modulation HSDPA Mode with QPSK, 16QAM Modulation HSUPA Mode with QPSK, 16QAM Modulation
Type of Emission:	GSM/GPRS 850: 251KGXW EGPRS 850:250KG7W GSM/GPRS 1900: 250KGXW EGPRS 1900:246KG7W WCDMA Band II: 4M17F9W WCDMA Band IV: 4M17F9W WCDMA Band V: 4M15F9W
Antenna installation:	Internal antenna
Antenna Gain:	GSM850: -3.17 dBi GSM1900: 2.09 dBi WCDMA Band II: 2.09 dBi WCDMA Band IV: 1.09 dBi WCDMA Band V: -3.17 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 LTE Band 25: 1850MHz~1915MHz LTE Band 26: 814MHz ~ 824MHz 824MHz ~ 849MHz LTE Band 66: 1710MHz ~ 1780MHz
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 LTE Band 25: 1930MHz~1995MHz LTE Band 26: 859MHz ~ 869MHz 869MHz ~ 894MHz LTE Band 66: 2110MHz ~ 2200MHz
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 LTE Band 25: 1.4MHz /3MHz /5MHz /10MHz /15MHz /20MHz LTE Band 26: 1.4MHz /3MHz /5MHz /10MHz 1.4MHz /3MHz /5MHz /10MHz /15MHz LTE Band 66: 1.4MHz /3MHz /5MHz /10MHz /15MHz /20MHz
The Max RF Output Power (EIRP/ERP)	LTE Band 2: 27.91 dBm LTE Band 4: 26.94 dBm LTE Band 5: 19.84 dBm LTE Band 7: 27.88 dBm LTE Band 12: 17.54 dBm LTE Band 17: 17.36 dBm LTE Band 25: 28.08 dBm LTE Band 26: 20.63 dBm 20.78 dBm LTE Band 66: 27.23 dBm
99% Occupied Bandwidth:	LTE Band 2: 18M0W7D LTE Band 4: 18M0G7D LTE Band 5: 9M01G7D LTE Band 7: 18M0W7D LTE Band 12: 8M99G7D LTE Band 17: 9M01W7D LTE Band 25: 18M0G7D LTE Band 26: 8M97W7D 13M5G7D LTE Band 66: 18M0W7D
Type of Modulation:	QPSK/16QAM
Antenna Type:	Internal Antenna
Antenna Gain:	LTE Band 2: 2.09 dBi LTE Band 4: 1.09 dBi LTE Band 5: -3.17 dBi

LTE Band 7: 2.41 dBi
LTE Band 12: -4.94 dBi
LTE Band 17: -4.94 dBi
LTE Band 25: 2.09 dBi
LTE Band 26:-3.17 dBi
LTE Band 66: 1.09 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 16, 2024	May 15, 2025
Multimeter	Keithley	1160271	\	Nov. 10, 2024	Nov 09, 2025
S-parameter Network Analyzer	R&S	ZVB 8	101353	Dec. 07, 2024	Dec. 06, 2025
Communication test set	R&S	CMW500	126173	May 16, 2024	May 15, 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 16, 2024	May 15, 2025
Power sensor	Keysight	E9300A	US39211659	May 16, 2024	May 15, 2025
Power sensor	Keysight	E9300A	US39211305	May 16, 2024	May 15, 2025
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

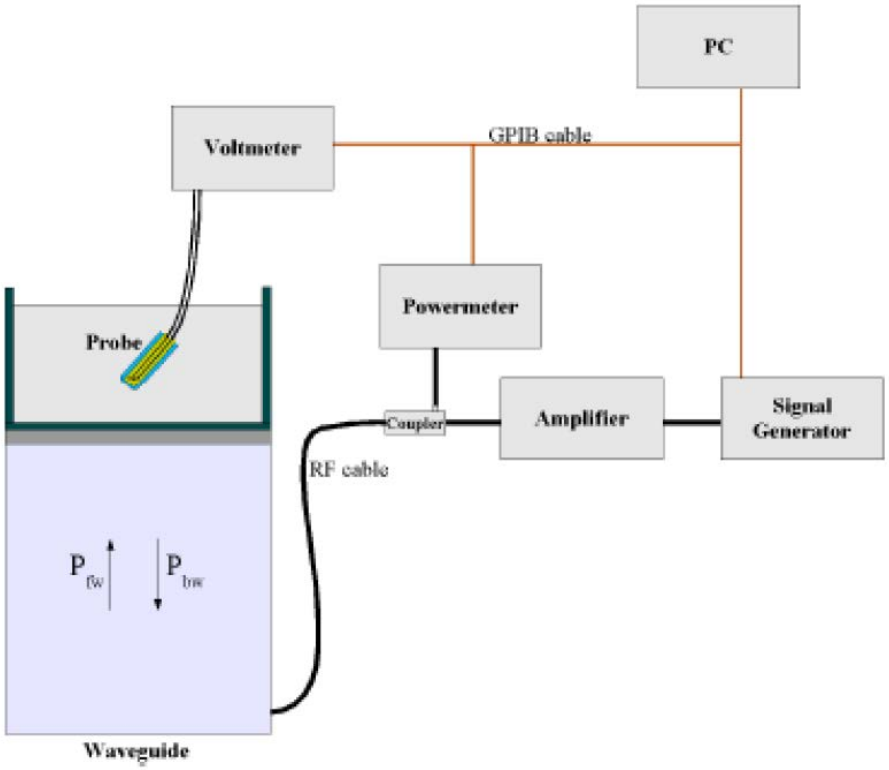
The following figure shows the system.

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 26/23 EPGO420 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.

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

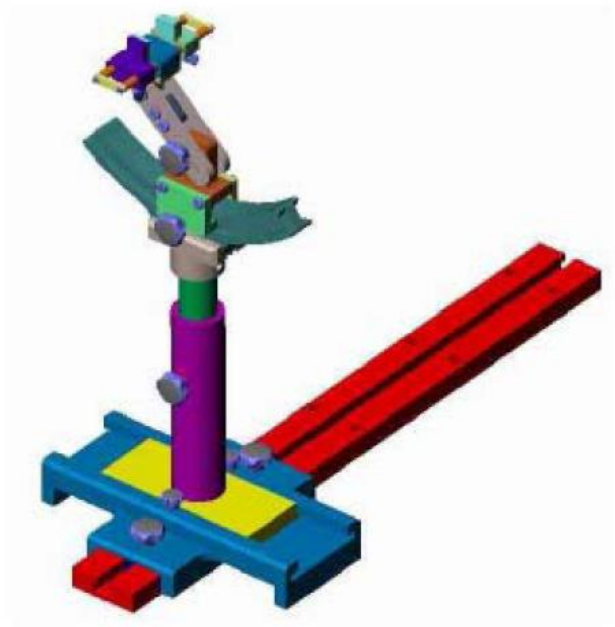
Where:
σ = simulated tissue conductivity,
ρ = Tissue density (1.25 g/cm3 for brain tissue)

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 Temp (°C)	Date
750	Head	0.89	41.90	0.891	40.605	0.11	-3.09	±5	23.5	11/4/2025
835	Head	0.90	41.50	0.899	40.786	-0.11	-1.72	±5	23.4	12/4/2025
1800	Head	1.40	40.00	1.382	38.776	-1.29	-3.06	±5	23.4	14/4/2025
1900	Head	1.40	40.00	1.367	40.449	-2.36	1.12	±5	22.9	15/4/2025
2450	Head	1.80	39.20	1.822	39.939	1.22	1.89	±5	23.4	25/4/2025
2600	Head	1.96	39.00	1.935	38.114	-1.28	-2.27	±5	23.5	11/4/2025
5200	Head	4.66	36.00	4.642	35.799	-0.39	-0.56	±5	23.4	25/4/2025
5800	Head	5.27	35.30	5.471	36.354	3.81	2.99	±5	23.4	25/4/2025

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.

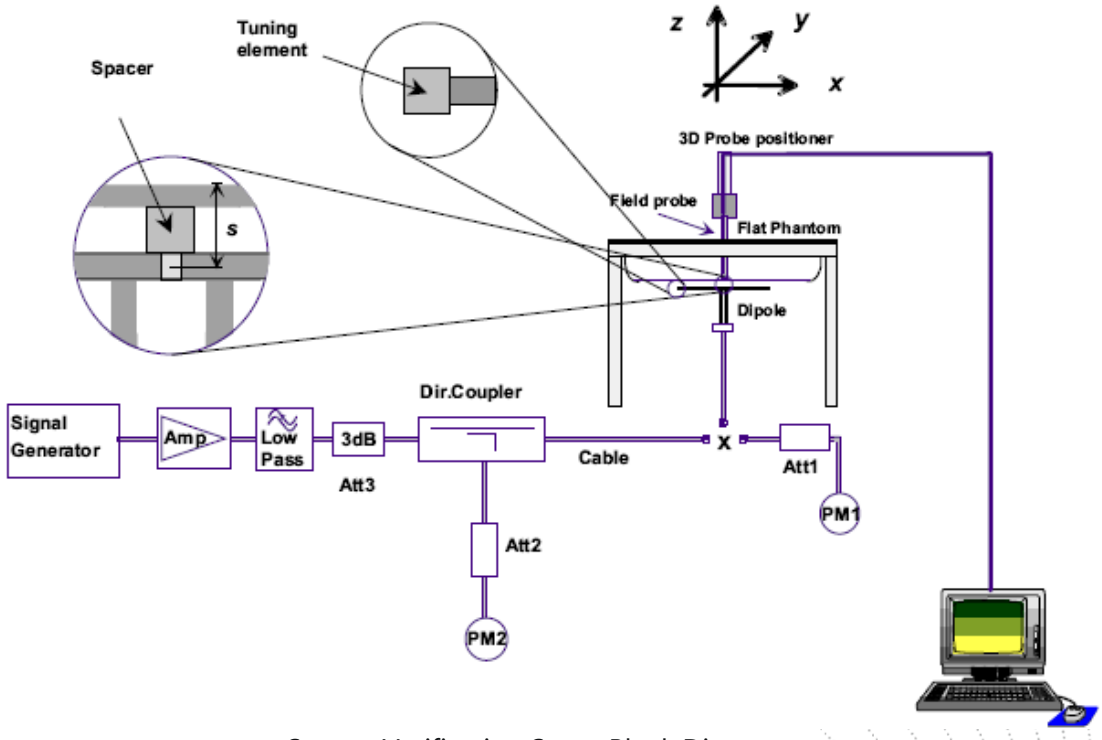
11. System Check

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	Measured Drift (%)	1W Target SAR_{1g} (W/Kg)	Difference Percentage (%)	Limit (%)	Liquid Temp (°C)	Date
750	250mW	2.251	9.002	1.911	8.58	4.918	±10	23.3	11/4/2025
835	250mW	2.416	9.665	1.370	10.01	-3.447	±10	23.3	12/4/2025
1800	250mW	9.541	38.164	-2.188	39.74	-3.966	±10	23.1	14/4/2025
1900	250mW	10.159	40.636	2.491	41.26	-1.512	±10	23.1	15/4/2025
2450	250mW	13.486	53.943	-2.148	55.16	-2.206	±10	23.1	25/4/2025
2600	250mW	14.652	58.607	-2.431	56.50	3.729	±10	23.3	11/4/2025
5200	250mW	18.934	75.736	-2.541	76.41	-0.882	±10	23.1	25/4/2025
5800	250mW	18.985	75.940	-3.804	76.49	-0.719	±10	23.1	25/4/2025

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.

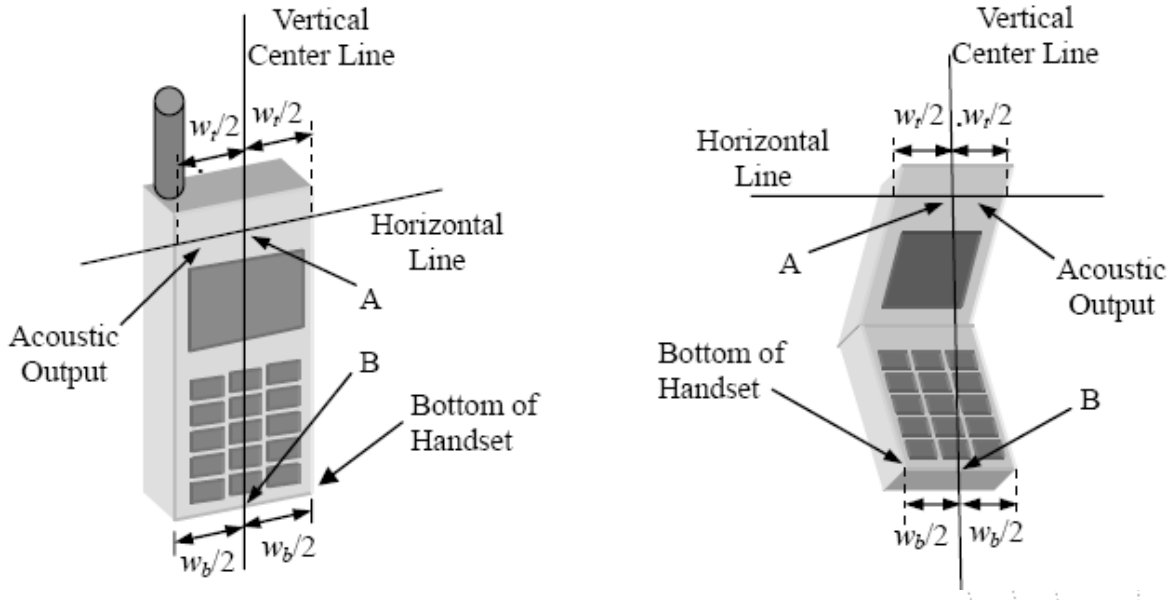


Illustration for Handset Vertical and Horizontal Reference Lines

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).

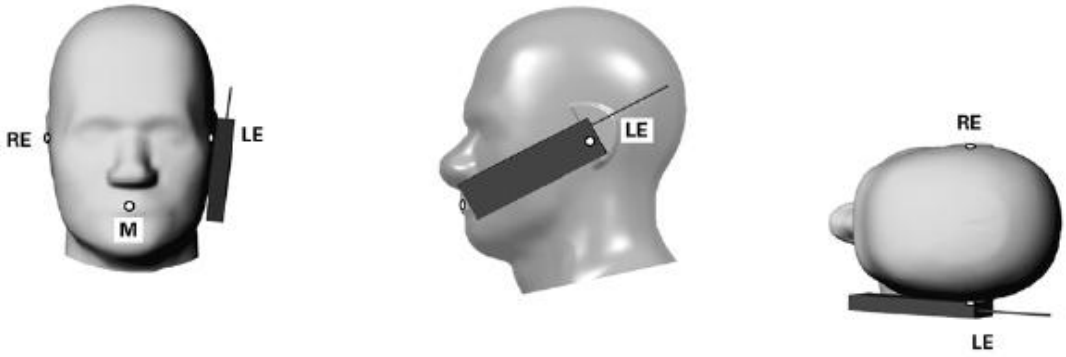


Illustration for Cheek Position

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).

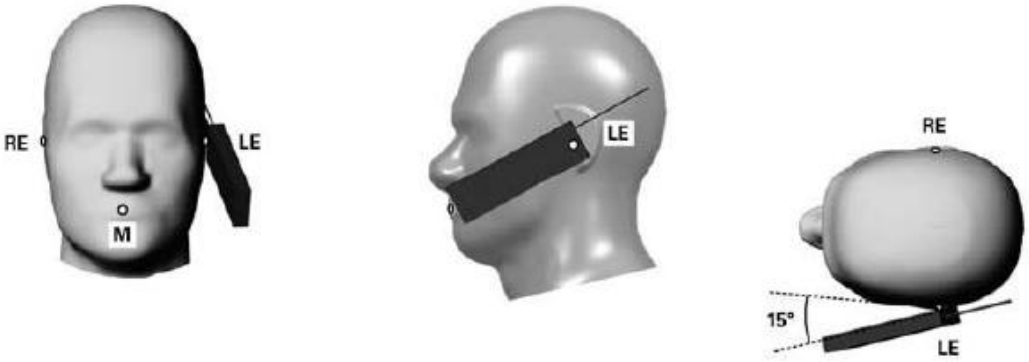
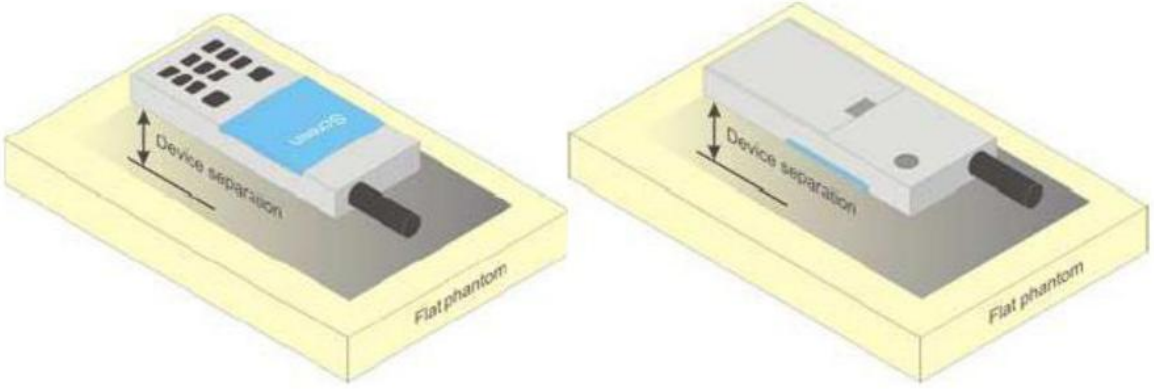


Illustration for Tilted Position

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

<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	-2.16	-1.5
	2441	-1.97	
	2480	-3.61	
2-DH1	2402	-1.95	-1.0
	2441	-1.02	
	2480	-3.35	
3-DH1	2402	-1.64	-0.5
	2441	-0.70	
	2480	-3.01	

BLE			
Mode	**Frequency (MHz)**	**Conducted Power (dBm)**	**Tune-up power (dBm)**
GFSK BLE 1M	2402	0.61	1.5
	2440	1.16	
	2480	-0.52	
GFSK BLE 2M	2402	0.26	1.0
	2440	0.83	
	2480	-0.82	

Note:
Per KDB 447498 D01v06, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:
[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] •[√f(GHz)] ≤ 3.0 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
1.5	1.41	5	2.480	0.44	3.0

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.

WIFI 2.4G			
Mode	**Frequency (MHz)**	**Conducted Power (dBm)**	**Tune-up power (dBm)**
b	2412	13.65	15.0
b	2437	14.62	
b	2462	12.68	
g	2412	12.26	14.0
g	2437	13.93	
g	2462	10.91	
n20	2412	10.74	13.0
n20	2437	12.70	
n20	2462	10.05	
n40	2422	9.76	11.5
n40	2437	11.01	
n40	2452	7.72	

WIFI 5.1G			
Mode	Frequency (MHz)	Conducted Power (dBm)	Tune-up power (dBm)
a	5180	11.59	12.0
a	5200	11.81	
a	5240	11.81	
n20	5180	10.70	11.0
n20	5200	10.93	
n20	5240	10.82	
n40	5190	8.52	10.0
n40	5230	9.94	
ac20	5180	9.72	11.5
ac20	5200	9.61	
ac20	5240	11.46	
ac40	5190	8.55	9.5
ac40	5230	9.49	
ac80	5210	7.66	8.0

WIFI 5.8G			
Mode	Frequency (MHz)	Conducted Power (dBm)	Tune-up power (dBm)
a	5745	11.12	11.5
a	5785	10.77	
a	5825	10.97	
n20	5745	10.28	10.5
n20	5785	9.86	
n20	5825	9.98	
n40	5755	9.00	9.5
n40	5795	9.00	
ac20	5745	10.21	10.5
ac20	5785	10.04	
ac20	5825	10.26	
ac40	5755	8.66	9.0
ac40	5795	8.84	
ac80	5775	6.87	7.0

GSM - Burst Average Power (dBm)								
Band	**GSM850**			**Tune-up**	**GSM1900**			**Tune-up**
Channel	**128**	**190**	**251**		**512**	**661**	**810**	
Frequency (MHz)	**824.2**	**836.6**	**848.8**		**1850.2**	**1880**	**1909.8**	
GSM	31.95	31.94	31.90	32.0	29.14	29.17	29.13	29.5
GPRS slots-1	34.09	**34.15**	33.67	34.5	31.29	**31.40**	31.31	31.5
GPRS slots-2	31.53	31.16	31.13	32.0	28.84	28.85	28.53	29.0
GPRS slots-3	29.69	29.32	29.26	30.0	27.35	27.28	26.94	27.5
GPRS slots-4	27.52	27.11	27.08	28.0	25.25	25.19	24.84	25.5
EGPRS slots-1	26.79	26.53	26.61	27.0	27.88	27.63	27.86	28.0
EGPRS slots-2	25.75	25.09	25.78	26.0	25.83	26.30	25.64	26.5
EGPRS slots-3	23.11	22.79	23.19	23.5	23.67	23.47	23.57	24.0
EGPRS slots-4	20.74	20.78	20.68	21.0	22.05	22.11	21.56	22.5

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	22.95	22.94	22.90	20.14	20.17	20.13
GPRS slots-1	25.09	25.15	24.67	22.29	22.40	22.31
GPRS slots-2	**25.53**	25.16	25.13	22.84	22.85	22.53
GPRS slots-3	25.44	25.07	25.01	**23.10**	23.03	22.69
GPRS slots-4	24.52	24.11	24.08	22.25	22.19	21.84
EGPRS slots-1	17.79	17.53	17.61	18.88	18.63	18.86
EGPRS slots-2	19.75	19.09	19.78	19.83	20.30	19.64
EGPRS slots-3	18.86	18.54	18.94	19.42	19.22	19.32
EGPRS slots-4	17.74	17.78	17.68	19.05	19.11	18.56

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	24.88	**25.23**	25.13	25.5	24.90	25.14	**25.23**	25.5
HSDPA Subtest-1	24.89	24.56	24.60	25.0	24.71	24.67	24.84	25.0
HSDPA Subtest-2	24.43	24.37	24.32		24.39	24.39	24.65	
HSDPA Subtest-3	24.17	24.12	24.15		23.86	23.99	24.05	
HSDPA Subtest-4	24.18	23.95	23.86		23.61	23.97	24.18	
HSUPA Subtest-1	24.60	24.34	24.44	25.0	24.51	24.44	24.65	25.0
HSUPA Subtest-2	24.77	24.53	24.53		24.61	24.67	24.71	
HSUPA Subtest-3	24.59	24.38	23.95		24.20	24.49	24.30	
HSUPA Subtest-4	24.76	24.50	24.51		24.59	24.66	24.82	
HSUPA Subtest-5	24.48	24.42	24.08		24.21	24.36	24.22	

Band	WCDMA Band V				/			
Channel	4132	4182	4233	Tune-up	/	/	/	/
Frequency (MHz)	826.4	836.4	846.6		/	/	/	
RMC 12.2K	24.29	**24.40**	24.22	24.5	/	/	/	/
HSDPA Subtest-1	23.68	24.05	23.87	24.5	/	/	/	/
HSDPA Subtest-2	23.38	23.73	23.51		/	/	/	
HSDPA Subtest-3	22.83	23.46	23.31		/	/	/	
HSDPA Subtest-4	22.89	23.49	23.33		/	/	/	
HSUPA Subtest-1	23.65	23.86	23.74	24.5	/	/	/	/
HSUPA Subtest-2	23.59	24.05	23.81		/	/	/	
HSUPA Subtest-3	23.23	23.73	23.78		/	/	/	
HSUPA Subtest-4	23.55	24.01	23.87		/	/	/	
HSUPA Subtest-5	23.46	23.73	23.94		/	/	/	

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
Main	GSM 850/1900 + WCDMA Band 2/4/5 + LTE Band 2/4/5/7/12/17/25/26/66 TX
DIV	GSM 850/1900 + WCDMA Band 2/4/5 + LTE Band 2/4/5/7/12/17/25/26/66 RX
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
Main	<5	<5	155	<5	<5	<5
WCN	<5	<5	<5	153	50	<5

Body mode: Positions for SAR tests						
Antennas	Front	Back	Top Side	Bottom Side	Left Side	Right Side
Main	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	2437	14.62	15.0	1.091	0.195	0.213	
		Left Tilt	2437	14.62	15.0	1.091	0.234	0.255	
		Right Cheek	2437	14.62	15.0	1.091	0.148	0.162	
		Right Tilt	2437	14.62	15.0	1.091	0.138	0.151	
Body & Hotspot	802.11b	Front Face	2437	14.62	15.0	1.091	0.218	0.238	
		Back Face	2437	14.62	15.0	1.091	0.362	0.395	
Hotspot	802.11b	Right Side	2437	14.62	15.0	1.091	0.118	0.129	
		Top Side	2437	14.62	15.0	1.091	0.638	**0.696**	**1**

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	5200	11.81	12.0	1.045	0.535	0.559	
		Left Tilt	5200	11.81	12.0	1.045	0.449	0.469	
		Right Cheek	5200	11.81	12.0	1.045	0.284	0.297	
		Right Tilt	5200	11.81	12.0	1.045	0.498	0.520	
Body & Hotspot	802.11a	Front Face	5200	11.81	12.0	1.045	0.299	0.312	
		Back Face	5200	11.81	12.0	1.045	0.308	0.322	
Hotspot	802.11a	Right Side	5200	11.81	12.0	1.045	0.650	**0.679**	**2**
		Top Side	5200	11.81	12.0	1.045	0.269	0.281	

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	11.12	11.5	1.091	0.532	**0.581**	**3**
		Left Tilt	5745	11.12	11.5	1.091	0.431	0.470	
		Right Cheek	5745	11.12	11.5	1.091	0.361	0.394	
		Right Tilt	5745	11.12	11.5	1.091	0.506	0.552	
Body & Hotspot	802.11a	Front Face	5745	11.12	11.5	1.091	0.367	0.401	
		Back Face	5745	11.12	11.5	1.091	0.265	0.289	
Hotspot	802.11a	Right Side	5745	11.12	11.5	1.091	0.354	0.386	
		Top Side	5745	11.12	11.5	1.091	0.443	0.484	

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	824.2	31.95	32.0	1.012	0.111	0.112	
		Left Tilt	824.2	31.95	32.0	1.012	0.205	0.207	
		Right Cheek	824.2	31.95	32.0	1.012	0.115	0.116	
		Right Tilt	824.2	31.95	32.0	1.012	0.158	0.160	
Body & Hotspot	GSM	Front Face	824.2	31.95	32.0	1.012	0.277	0.280	
		Back Face	824.2	31.95	32.0	1.012	0.670	**0.678**	**4**
	GPRS slots-2	Front Face	824.2	31.53	32.0	1.114	0.282	0.314	
		Back Face	824.2	31.53	32.0	1.114	0.553	0.616	
Hotspot	GSM	Left Side	824.2	31.95	32.0	1.012	0.184	0.186	
		Right Side	824.2	31.95	32.0	1.012	0.112	0.113	
		Bottom Side	824.2	31.95	32.0	1.012	0.392	0.397	

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	1880	29.17	29.5	1.079	0.188	0.203	
		Left Tilt	1880	29.17	29.5	1.079	0.145	0.156	
		Right Cheek	1880	29.17	29.5	1.079	0.110	0.119	
		Right Tilt	1880	29.17	29.5	1.079	0.150	0.162	
Body & Hotspot	GSM	Front Face	1880	29.17	29.5	1.079	0.164	0.177	
		Back Face	1880	29.17	29.5	1.079	0.863	**0.931**	**5**
		Back Face	1850.2	29.14	29.5	1.086	0.641	0.696	
		Back Face	1909.8	29.13	29.5	1.089	0.682	0.743	
	GPRS slots-3	Front Face	1850.2	27.35	27.5	1.035	0.164	0.170	
		Back Face	1850.2	27.35	27.5	1.035	0.686	0.710	
Hotspot	GSM	Left Side	1880	29.17	29.5	1.079	0.232	0.250	
		Right Side	1880	29.17	29.5	1.079	0.218	0.235	
		Bottom Side	1880	29.17	29.5	1.079	0.429	0.463	

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	25.23	25.5	1.064	0.086	0.092	
		Left Tilt	1880	25.23	25.5	1.064	0.110	0.117	
		Right Cheek	1880	25.23	25.5	1.064	0.124	0.132	
		Right Tilt	1880	25.23	25.5	1.064	0.118	0.126	
Body & Hotspot	RMC	Front Face	1880	25.23	25.5	1.064	0.114	0.121	
		Back Face	1880	25.23	25.5	1.064	0.458	**0.487**	**6**
Hotspot	RMC	Left Side	1880	25.23	25.5	1.064	0.179	0.190	
		Right Side	1880	25.23	25.5	1.064	0.134	0.143	
		Bottom Side	1880	25.23	25.5	1.064	0.291	0.310	

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	1752.6	25.23	25.5	1.064	0.136	0.145	
		Left Tilt	1752.6	25.23	25.5	1.064	0.094	0.100	
		Right Cheek	1752.6	25.23	25.5	1.064	0.102	0.109	
		Right Tilt	1752.6	25.23	25.5	1.064	0.119	0.127	
Body & Hotspot	RMC	Front Face	1752.6	25.23	25.5	1.064	0.090	0.096	
		Back Face	1752.6	25.23	25.5	1.064	0.264	**0.281**	**7**
Hotspot	RMC	Left Side	1752.6	25.23	25.5	1.064	0.077	0.082	
		Right Side	1752.6	25.23	25.5	1.064	0.121	0.129	
		Bottom Side	1752.6	25.23	25.5	1.064	0.236	0.251	

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	836.4	24.40	25.5	1.288	0.101	0.130	
		Left Tilt	836.4	24.40	25.5	1.288	0.102	0.131	
		Right Cheek	836.4	24.40	25.5	1.288	0.100	0.129	
		Right Tilt	836.4	24.40	25.5	1.288	0.104	0.134	
Body & Hotspot	RMC	Front Face	836.4	24.40	25.5	1.288	0.085	0.110	
		Back Face	836.4	24.40	25.5	1.288	0.345	**0.444**	**8**
Hotspot	RMC	Left Side	836.4	24.40	25.5	1.288	0.139	0.179	
		Right Side	836.4	24.40	25.5	1.288	0.121	0.156	
		Bottom Side	836.4	24.40	25.5	1.288	0.115	0.148	

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	1880	25.82	26.0	1.042	0.185	0.193	
		Left Tilt	1880	25.82	26.0	1.042	0.140	0.146	
		Right Cheek	1880	25.82	26.0	1.042	0.129	0.134	
		Right Tilt	1880	25.82	26.0	1.042	0.089	0.093	
	QPSK, 50%RB	Left Cheek	1900	24.71	25.0	1.069	0.156	0.167	
		Left Tilt	1900	24.71	25.0	1.069	0.111	0.119	
		Right Cheek	1900	24.71	25.0	1.069	0.127	0.136	
		Right Tilt	1900	24.71	25.0	1.069	0.081	0.087	
Body & Hotspot	QPSK, 1RB	Front Face	1880	25.82	26.0	1.042	0.129	0.134	
		Back Face	1880	25.82	26.0	1.042	0.298	**0.311**	**9**
	QPSK, 50%RB	Front Face	1900	24.71	25.0	1.069	0.102	0.109	
		Back Face	1900	24.71	25.0	1.069	0.286	0.306	
Hotspot	QPSK, 1RB	Left Side	1880	25.82	26.0	1.042	0.120	0.125	
		Right Side	1880	25.82	26.0	1.042	0.189	0.197	
		Bottom Side	1880	25.82	26.0	1.042	0.255	0.266	
	QPSK, 50%RB	Left Side	1900	24.71	25.0	1.069	0.081	0.087	
		Right Side	1900	24.71	25.0	1.069	0.167	0.179	
		Bottom Side	1900	24.71	25.0	1.069	0.246	0.263	

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	25.74	26.0	1.062	0.129	0.137	
		Left Tilt	1732.5	25.74	26.0	1.062	0.123	0.131	
		Right Cheek	1732.5	25.74	26.0	1.062	0.136	0.144	
		Right Tilt	1732.5	25.74	26.0	1.062	0.115	0.122	
	QPSK, 50%RB	Left Cheek	1745	24.67	25.0	1.079	0.107	0.115	
		Left Tilt	1745	24.67	25.0	1.079	0.089	0.096	
		Right Cheek	1745	24.67	25.0	1.079	0.110	0.119	
		Right Tilt	1745	24.67	25.0	1.079	0.089	0.096	
Body & Hotspot	QPSK, 1RB	Front Face	1732.5	25.74	26.0	1.062	0.185	0.196	
		Back Face	1732.5	25.74	26.0	1.062	0.273	**0.290**	**10**
	QPSK, 50%RB	Front Face	1745	24.67	25.0	1.079	0.124	0.134	
		Back Face	1745	24.67	25.0	1.079	0.225	0.243	
Hotspot	QPSK, 1RB	Left Side	1732.5	25.74	26.0	1.062	0.145	0.154	
		Right Side	1732.5	25.74	26.0	1.062	0.119	0.126	
		Bottom Side	1732.5	25.74	26.0	1.062	0.210	0.223	
	QPSK, 50%RB	Left Side	1745	24.67	25.0	1.079	0.081	0.087	
		Right Side	1745	24.67	25.0	1.079	0.107	0.115	
		Bottom Side	1745	24.67	25.0	1.079	0.136	0.147	

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	836.5	24.82	25.0	1.042	0.089	0.093	
		Left Tilt	836.5	24.82	25.0	1.042	0.146	0.152	
		Right Cheek	836.5	24.82	25.0	1.042	0.090	0.094	
		Right Tilt	836.5	24.82	25.0	1.042	0.125	0.130	
	QPSK, 50%RB	Left Cheek	836.5	23.80	24.0	1.047	0.078	0.082	
		Left Tilt	836.5	23.80	24.0	1.047	0.142	0.149	
		Right Cheek	836.5	23.80	24.0	1.047	0.102	0.107	
		Right Tilt	836.5	23.80	24.0	1.047	0.106	0.111	
Body & Hotspot	QPSK, 1RB	Front Face	836.5	24.82	25.0	1.042	0.211	0.220	
		Back Face	836.5	24.82	25.0	1.042	0.321	**0.335**	**11**
	QPSK, 50%RB	Front Face	836.5	23.80	24.0	1.047	0.175	0.183	
		Back Face	836.5	23.80	24.0	1.047	0.272	0.285	
Hotspot	QPSK, 1RB	Left Side	836.5	24.82	25.0	1.042	0.164	0.171	
		Right Side	836.5	24.82	25.0	1.042	0.238	0.248	
		Bottom Side	836.5	24.82	25.0	1.042	0.227	0.237	
	QPSK, 50%RB	Left Side	836.5	23.80	24.0	1.047	0.099	0.104	
		Right Side	836.5	23.80	24.0	1.047	0.216	0.226	
		Bottom Side	836.5	23.80	24.0	1.047	0.213	0.223	

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	2535	25.47	25.5	1.007	0.165	0.166	
		Left Tilt	2535	25.47	25.5	1.007	0.173	0.174	
		Right Cheek	2535	25.47	25.5	1.007	0.134	0.135	
		Right Tilt	2535	25.47	25.5	1.007	0.177	0.178	
	QPSK, 50%RB	Left Cheek	2560	24.11	24.5	1.094	0.139	0.152	
		Left Tilt	2560	24.11	24.5	1.094	0.146	0.160	
		Right Cheek	2560	24.11	24.5	1.094	0.117	0.128	
		Right Tilt	2560	24.11	24.5	1.094	0.162	0.177	
Body & Hotspot	QPSK, 1RB	Front Face	2535	25.47	25.5	1.007	0.161	0.162	
		Back Face	2535	25.47	25.5	1.007	0.274	**0.276**	**12**
	QPSK, 50%RB	Front Face	2560	24.11	24.5	1.094	0.154	0.168	
		Back Face	2560	24.11	24.5	1.094	0.252	0.276	
Hotspot	QPSK, 1RB	Left Side	2535	25.47	25.5	1.007	0.176	0.177	
		Right Side	2535	25.47	25.5	1.007	0.128	0.129	
		Bottom Side	2535	25.47	25.5	1.007	0.160	0.161	
	QPSK, 50%RB	Left Side	2560	24.11	24.5	1.094	0.174	0.190	
		Right Side	2560	24.11	24.5	1.094	0.115	0.126	
		Bottom Side	2560	24.11	24.5	1.094	0.127	0.139	

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	711	24.48	25.0	1.127	0.200	0.225	
		Left Tilt	711	24.48	25.0	1.127	0.204	0.230	
		Right Cheek	711	24.48	25.0	1.127	0.154	0.174	
		Right Tilt	711	24.48	25.0	1.127	0.191	0.215	
	QPSK, 50%RB	Left Cheek	711	23.46	23.5	1.009	0.198	0.200	
		Left Tilt	711	23.46	23.5	1.009	0.159	0.160	
		Right Cheek	711	23.46	23.5	1.009	0.153	0.154	
		Right Tilt	711	23.46	23.5	1.009	0.132	0.133	
Body & Hotspot	QPSK, 1RB	Front Face	711	24.48	25.0	1.127	0.137	0.154	
		Back Face	711	24.48	25.0	1.127	0.413	**0.466**	**13**
	QPSK, 50%RB	Front Face	711	23.46	23.5	1.009	0.132	0.133	
		Back Face	711	23.46	23.5	1.009	0.374	0.377	
Hotspot	QPSK, 1RB	Left Side	711	24.48	25.0	1.127	0.245	0.276	
		Right Side	711	24.48	25.0	1.127	0.331	0.373	
		Bottom Side	711	24.48	25.0	1.127	0.164	0.185	
	QPSK, 50%RB	Left Side	711	23.46	23.5	1.009	0.215	0.217	
		Right Side	711	23.46	23.5	1.009	0.307	0.310	
		Bottom Side	711	23.46	23.5	1.009	0.100	0.101	

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	24.45	24.5	1.012	0.186	0.188	
		Left Tilt	711	24.45	24.5	1.012	0.191	0.193	
		Right Cheek	711	24.45	24.5	1.012	0.152	0.154	
		Right Tilt	711	24.45	24.5	1.012	0.161	0.163	
	QPSK, 50%RB	Left Cheek	709	23.44	23.5	1.014	0.168	0.170	
		Left Tilt	709	23.44	23.5	1.014	0.169	0.171	
		Right Cheek	709	23.44	23.5	1.014	0.131	0.133	
		Right Tilt	709	23.44	23.5	1.014	0.159	0.161	
Body & Hotspot	QPSK, 1RB	Front Face	711	24.45	24.5	1.012	0.231	0.234	
		Back Face	711	24.45	24.5	1.012	0.370	**0.374**	**14**
	QPSK, 50%RB	Front Face	709	23.44	23.5	1.014	0.167	0.169	
		Back Face	709	23.44	23.5	1.014	0.367	0.372	
Hotspot	QPSK, 1RB	Left Side	711	24.45	24.5	1.012	0.196	0.198	
		Right Side	711	24.45	24.5	1.012	0.249	0.252	
		Bottom Side	711	24.45	24.5	1.012	0.219	0.222	
	QPSK, 50%RB	Left Side	709	23.44	23.5	1.014	0.162	0.164	
		Right Side	709	23.44	23.5	1.014	0.208	0.211	
		Bottom Side	709	23.44	23.5	1.014	0.177	0.179	

LTE Band 25 (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	1905	25.99	26.5	1.125	0.136	0.153	
		Left Tilt	1905	25.99	26.5	1.125	0.123	0.138	
		Right Cheek	1905	25.99	26.5	1.125	0.095	0.107	
		Right Tilt	1905	25.99	26.5	1.125	0.161	0.181	
	QPSK, 50%RB	Left Cheek	1905	24.87	25.0	1.030	0.103	0.106	
		Left Tilt	1905	24.87	25.0	1.030	0.089	0.092	
		Right Cheek	1905	24.87	25.0	1.030	0.088	0.091	
		Right Tilt	1905	24.87	25.0	1.030	0.127	0.131	
Body & Hotspot	QPSK, 1RB	Front Face	1905	25.99	26.5	1.125	0.137	0.154	
		Back Face	1905	25.99	26.5	1.125	0.316	**0.355**	**15**
	QPSK, 50%RB	Front Face	1905	24.87	25.0	1.030	0.118	0.122	
		Back Face	1905	24.87	25.0	1.030	0.209	0.215	
Hotspot	QPSK, 1RB	Left Side	1905	25.99	26.5	1.125	0.211	0.237	
		Right Side	1905	25.99	26.5	1.125	0.198	0.223	
		Bottom Side	1905	25.99	26.5	1.125	0.155	0.174	
	QPSK, 50%RB	Left Side	1905	24.87	25.0	1.030	0.107	0.110	
		Right Side	1905	24.87	25.0	1.030	0.176	0.181	
		Bottom Side	1905	24.87	25.0	1.030	0.175	0.180	

LTE Band 26 (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	819	25.66	26.0	1.081	0.195	0.211	
		Left Tilt	819	25.66	26.0	1.081	0.116	0.125	
		Right Cheek	819	25.66	26.0	1.081	0.126	0.136	
		Right Tilt	819	25.66	26.0	1.081	0.179	0.194	
	QPSK, 50%RB	Left Cheek	819	23.64	24.0	1.086	0.182	0.198	
		Left Tilt	819	23.64	24.0	1.086	0.115	0.125	
		Right Cheek	819	23.64	24.0	1.086	0.123	0.134	
		Right Tilt	819	23.64	24.0	1.086	0.131	0.142	
Body & Hotspot	QPSK, 1RB	Front Face	819	25.66	26.0	1.081	0.295	0.319	
		Back Face	819	25.66	26.0	1.081	0.609	**0.659**	**16**
	QPSK, 50%RB	Front Face	819	23.64	24.0	1.086	0.251	0.273	
		Back Face	819	23.64	24.0	1.086	0.594	0.645	
Hotspot	QPSK, 1RB	Left Side	819	25.66	26.0	1.081	0.169	0.183	
		Right Side	819	25.66	26.0	1.081	0.123	0.133	
		Bottom Side	819	25.66	26.0	1.081	0.234	0.253	
	QPSK, 50%RB	Left Side	819	23.64	24.0	1.086	0.118	0.128	
		Right Side	819	23.64	24.0	1.086	0.110	0.120	
		Bottom Side	819	23.64	24.0	1.086	0.222	0.241	

LTE Band 26 (15MHz 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	821.5	25.93	26.5	1.140	0.179	0.204	
		Left Tilt	821.5	25.93	26.5	1.140	0.177	0.202	
		Right Cheek	821.5	25.93	26.5	1.140	0.146	0.166	
		Right Tilt	821.5	25.93	26.5	1.140	0.178	0.203	
	QPSK, 50%RB	Left Cheek	831.5	24.34	24.5	1.038	0.158	0.164	
		Left Tilt	831.5	24.34	24.5	1.038	0.155	0.161	
		Right Cheek	831.5	24.34	24.5	1.038	0.105	0.109	
		Right Tilt	831.5	24.34	24.5	1.038	0.125	0.130	
Body & Hotspot	QPSK, 1RB	Front Face	821.5	25.93	26.5	1.140	0.250	0.285	
		Back Face	821.5	25.93	26.5	1.140	0.572	**0.652**	**17**
	QPSK, 50%RB	Front Face	831.5	24.34	24.5	1.038	0.232	0.241	
		Back Face	831.5	24.34	24.5	1.038	0.541	0.561	
Hotspot	QPSK, 1RB	Left Side	821.5	25.93	26.5	1.140	0.256	0.292	
		Right Side	821.5	25.93	26.5	1.140	0.189	0.216	
		Bottom Side	821.5	25.93	26.5	1.140	0.364	0.415	
	QPSK, 50%RB	Left Side	831.5	24.34	24.5	1.038	0.184	0.191	
		Right Side	831.5	24.34	24.5	1.038	0.163	0.169	
		Bottom Side	831.5	24.34	24.5	1.038	0.316	0.328	

LTE Band 66 (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	1745	26.14	26.5	1.086	0.109	0.118	
		Left Tilt	1745	26.14	26.5	1.086	0.149	0.162	
		Right Cheek	1745	26.14	26.5	1.086	0.105	0.114	
		Right Tilt	1745	26.14	26.5	1.086	0.138	0.150	
	QPSK, 50%RB	Left Cheek	1745	24.89	25.0	1.026	0.098	0.101	
		Left Tilt	1745	24.89	25.0	1.026	0.121	0.124	
		Right Cheek	1745	24.89	25.0	1.026	0.101	0.104	
		Right Tilt	1745	24.89	25.0	1.026	0.091	0.093	
Body & Hotspot	QPSK, 1RB	Front Face	1745	26.14	26.5	1.086	0.132	0.143	
		Back Face	1745	26.14	26.5	1.086	0.187	**0.203**	**18**
	QPSK, 50%RB	Front Face	1745	24.89	25.0	1.026	0.107	0.110	
		Back Face	1745	24.89	25.0	1.026	0.179	0.184	
Hotspot	QPSK, 1RB	Left Side	1745	26.14	26.5	1.086	0.141	0.153	
		Right Side	1745	26.14	26.5	1.086	0.128	0.139	
		Bottom Side	1745	26.14	26.5	1.086	0.157	0.171	
	QPSK, 50%RB	Left Side	1745	24.89	25.0	1.026	0.117	0.120	
		Right Side	1745	24.89	25.0	1.026	0.119	0.122	
		Bottom Side	1745	24.89	25.0	1.026	0.152	0.156	

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 1900	1880	Body & Hotspot	Back Face	Yes	0.863	0.830	1.040

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)]·[√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	1.5	1.41	5	3	0.059

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	0.225	0.581	**0.806**	1.6
	Left Tilt	0.230	0.470	0.700	1.6
	Right Cheek	0.174	0.394	0.568	1.6
	Right Tilt	0.215	0.552	0.767	1.6
Body& Hotspot	Front Face	0.319	0.401	0.720	1.6
	Back Face	0.931	0.395	**1.326**	1.6
Hotspot	Left Side	0.292	/	0.292	1.6
	Right Side	0.373	0.679	**1.052**	1.6
	Top Side	/	0.696	0.696	1.6
	Bottom Side	0.463	/	0.463	1.6

15. Test Plots

15.1 System Performance Check

System check at 750 MHz
Date of measurement: 12/4/2025

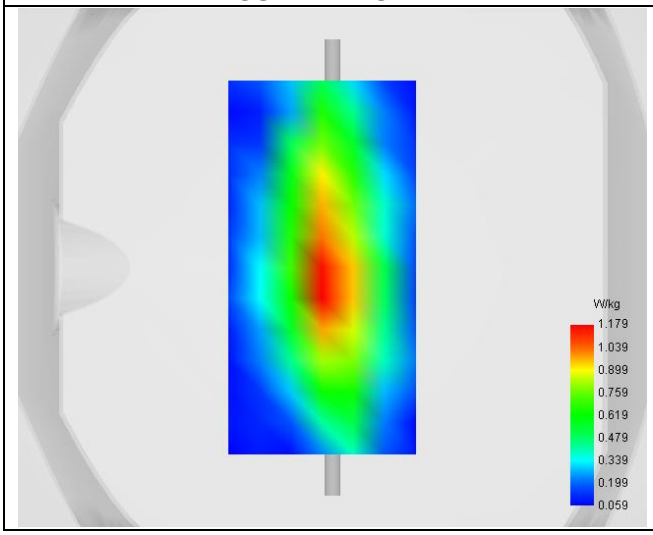
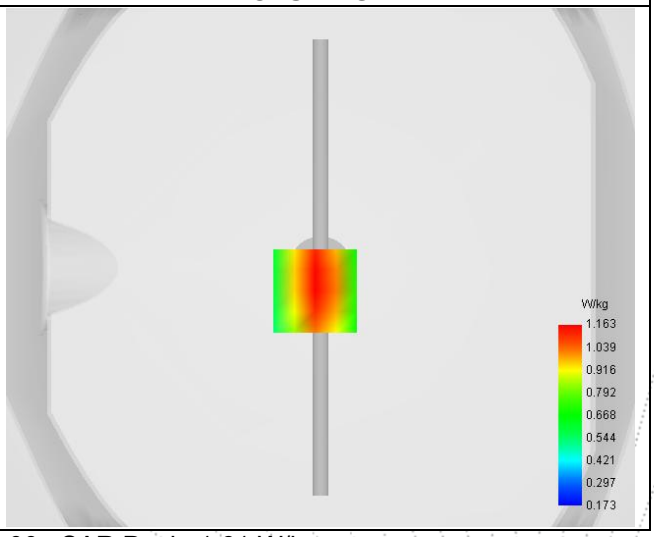
A. Experimental conditions.

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)	40.605
Relative permitivity (imaginary part)	24.595
Conductivity (S/m)	0.891

C. SAR Surface and Volume

SURFACE SAR	**VOLUME SAR**
	

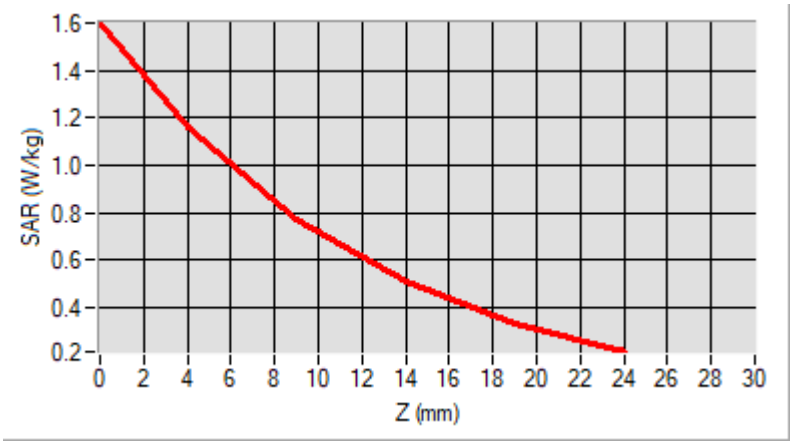
Maximum location: X=-2.00, Y=-9.00 ; SAR Peak: 1.61 W/kg

D. SAR 1g & 10g

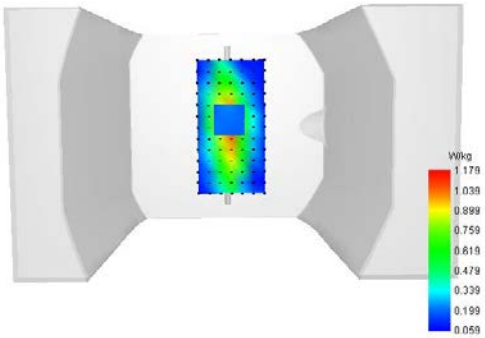
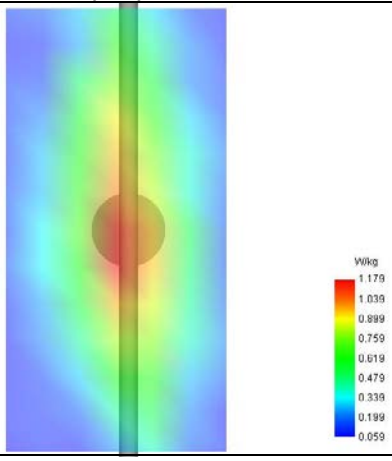
SAR 10g (W/Kg)	1.445
SAR 1g (W/Kg)	2.251
Variation (%)	1.911
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

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: 12/4/2025

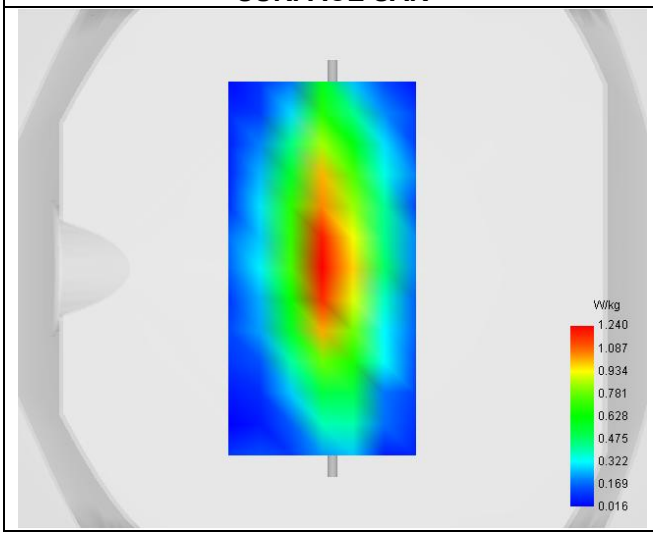
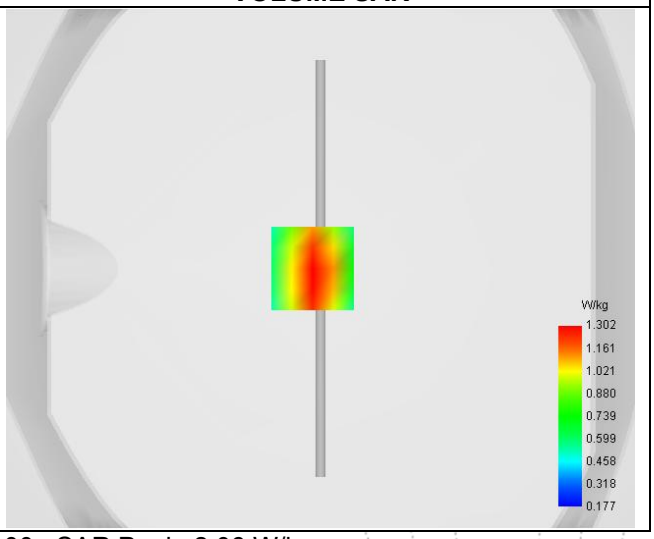
A. Experimental conditions.

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)	40.786
Relative permitivity (imaginary part)	20.910
Conductivity (S/m)	0.899

C. SAR Surface and Volume

SURFACE SAR	**VOLUME SAR**
	

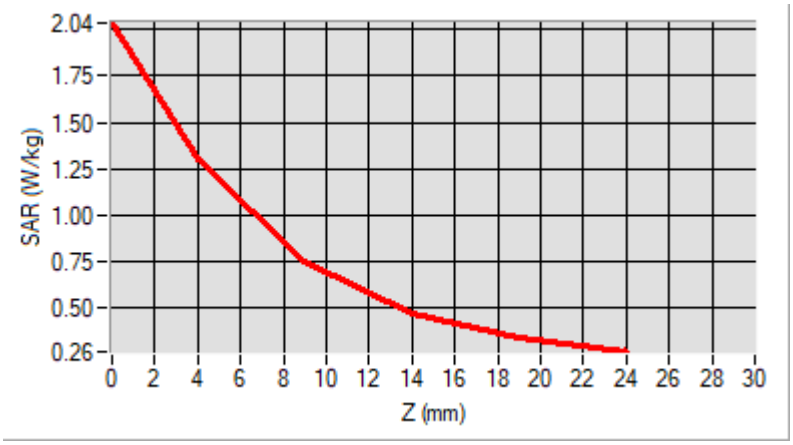
Maximum location: X=-3.00, Y=0.00 ; SAR Peak: 2.06 W/kg

D. SAR 1g & 10g

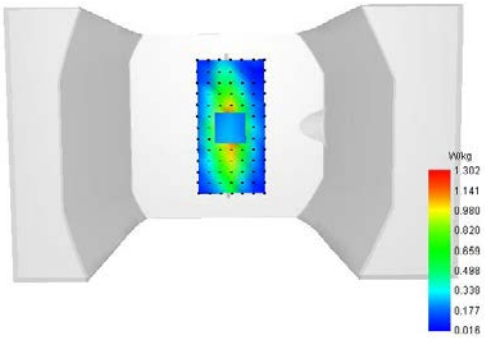
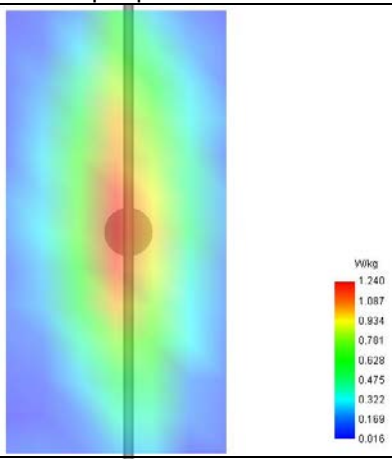
SAR 10g (W/Kg)	1.600
SAR 1g (W/Kg)	2.416
Variation (%)	1.370
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

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: 14/4/2025

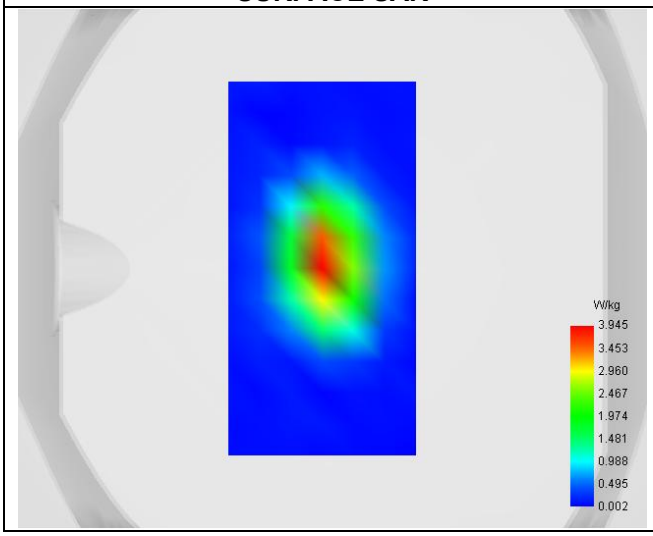
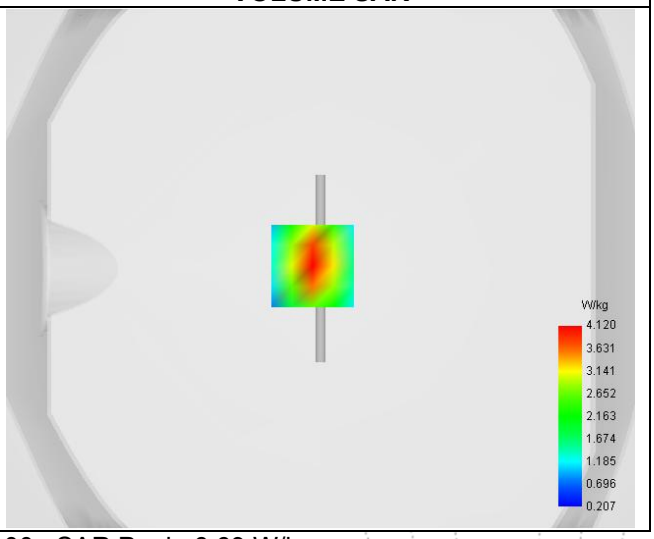
A. Experimental conditions.

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)	38.776
Relative permitivity (imaginary part)	15.200
Conductivity (S/m)	1.382

C. SAR Surface and Volume

SURFACE SAR	**VOLUME SAR**
	

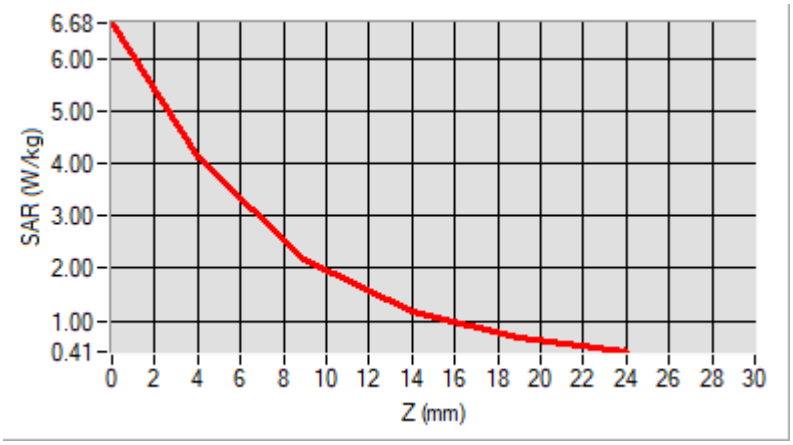
Maximum location: X=-3.00, Y=1.00 ; SAR Peak: 6.69 W/kg

D. SAR 1g & 10g

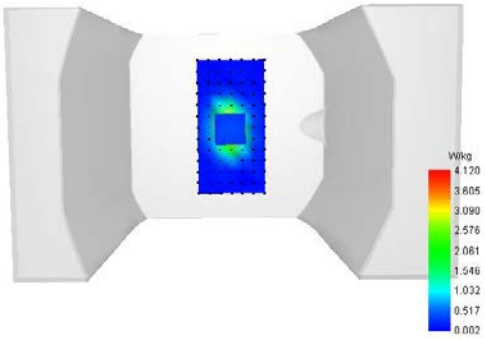
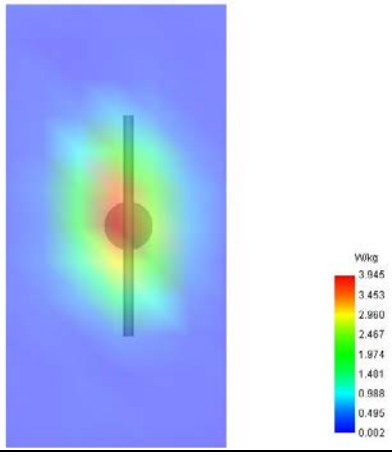
SAR 10g (W/Kg)	5.371
SAR 1g (W/Kg)	9.541
Variation (%)	-2.188
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

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: 15/4/2025

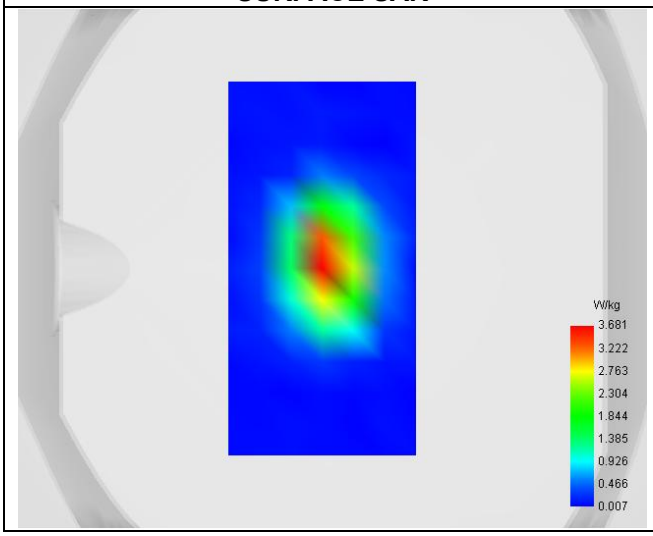
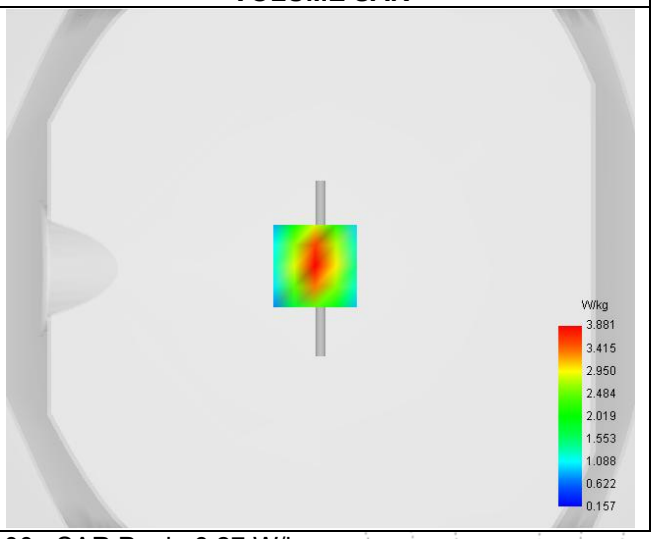
A. Experimental conditions.

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)	40.449
Relative permitivity (imaginary part)	14.400
Conductivity (S/m)	1.367

C. SAR Surface and Volume

SURFACE SAR	**VOLUME SAR**
	

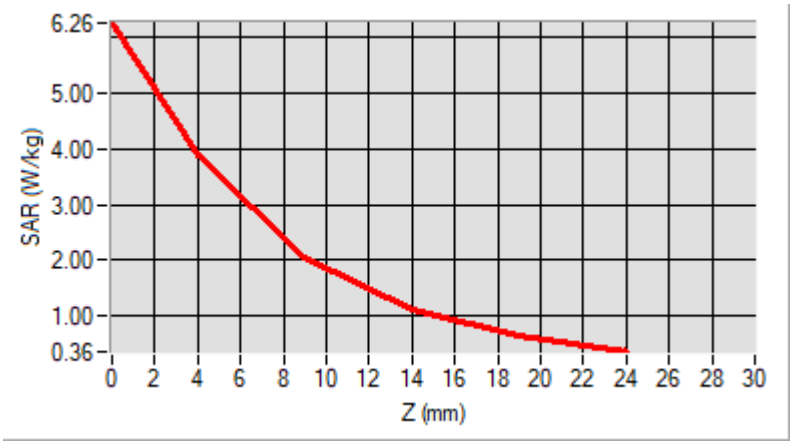
Maximum location: X=-2.00, Y=1.00 ; SAR Peak: 6.27 W/kg

D. SAR 1g & 10g

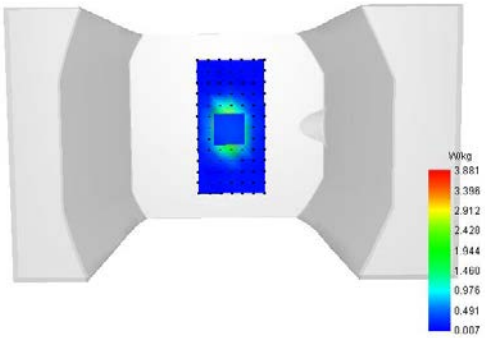
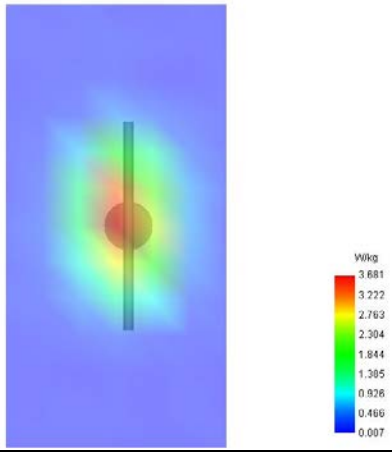
SAR 10g (W/Kg)	5.170
SAR 1g (W/Kg)	10.159
Variation (%)	2.491
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

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: 25/4/2025

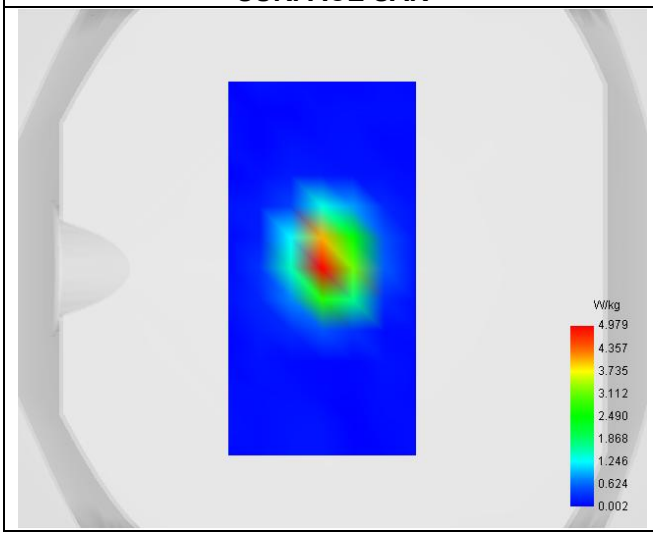
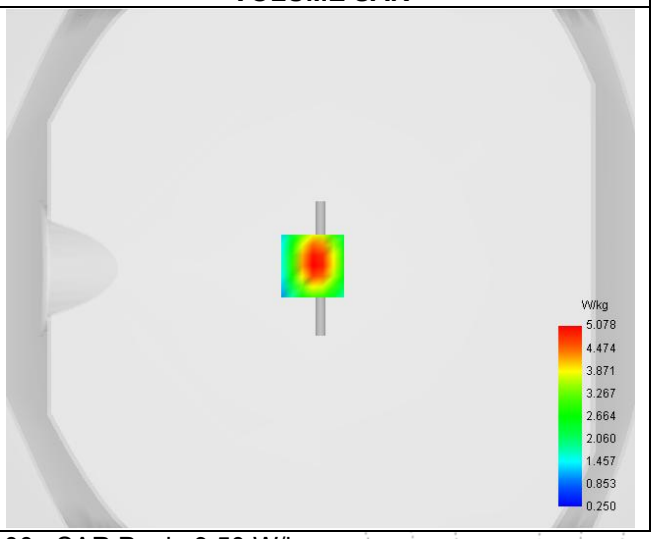
A. Experimental conditions.

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)	39.939
Relative permitivity (imaginary part)	14.330
Conductivity (S/m)	1.822

C. SAR Surface and Volume

SURFACE SAR	**VOLUME SAR**
	

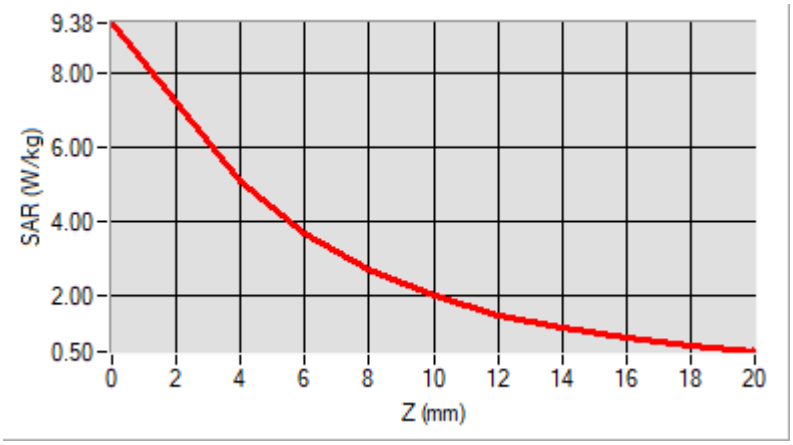
Maximum location: X=-3.00, Y=1.00 ; SAR Peak: 9.50 W/kg

D. SAR 1g & 10g

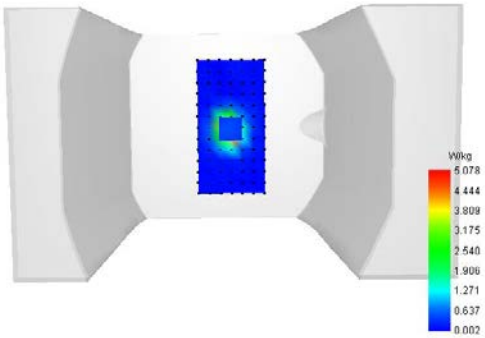
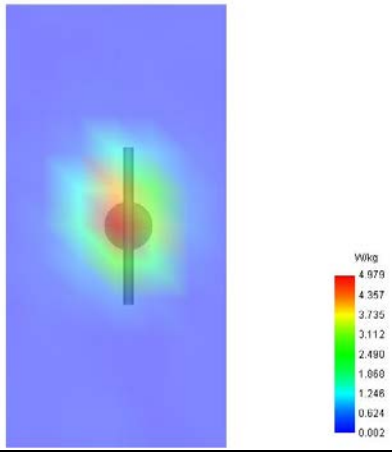
SAR 10g (W/Kg)	5.752
SAR 1g (W/Kg)	13.486
Variation (%)	-2.148
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

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: 11/4/2025

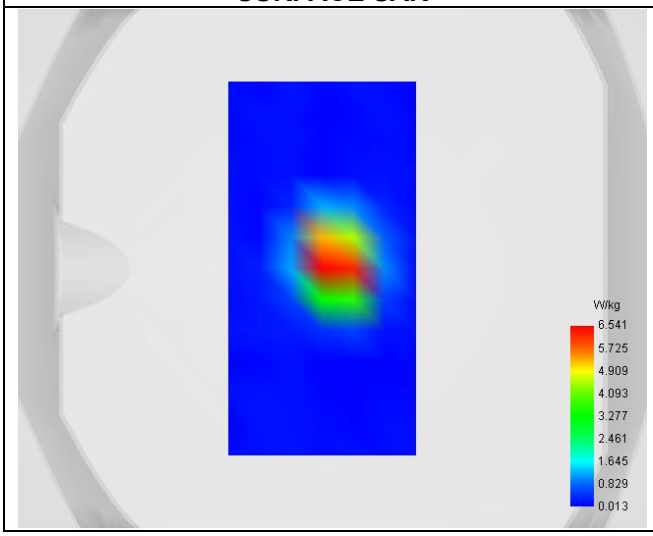
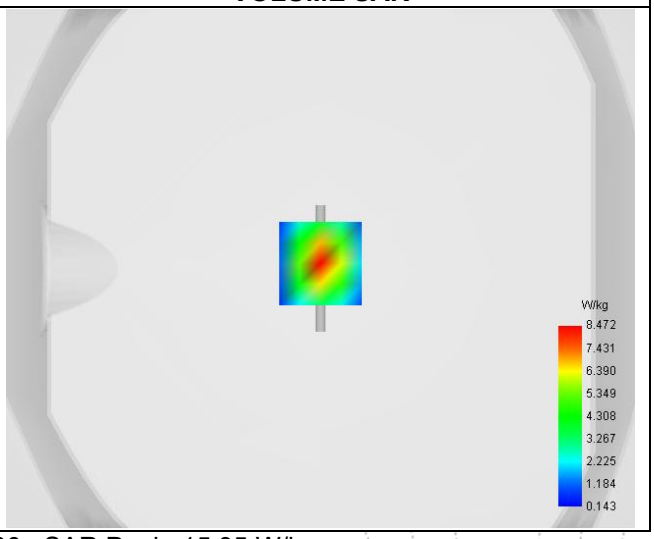
A. Experimental conditions.

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)	38.114
Relative permitivity (imaginary part)	14.889
Conductivity (S/m)	1.935

C. SAR Surface and Volume

SURFACE SAR	**VOLUME SAR**
	

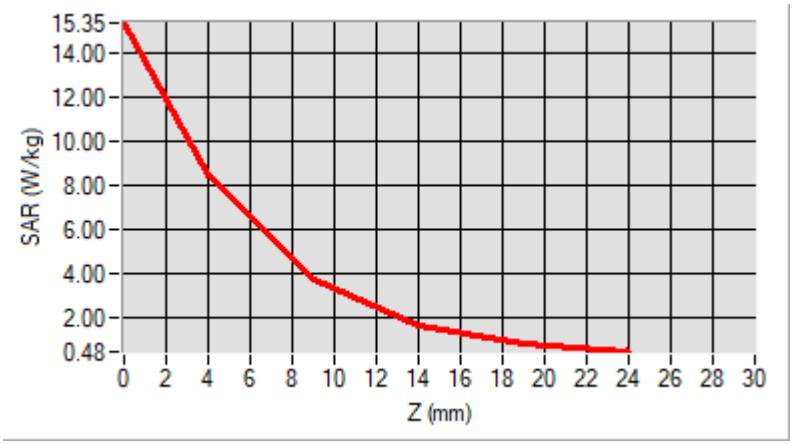
Maximum location: X=0.00, Y=2.00 ; SAR Peak: 15.35 W/kg

D. SAR 1g & 10g

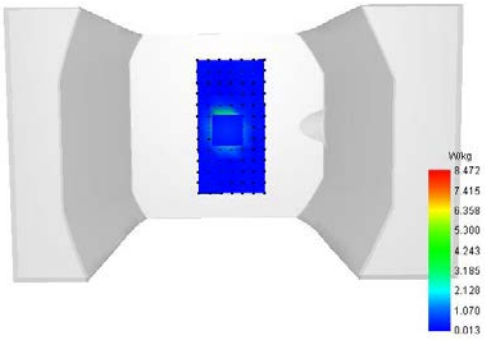
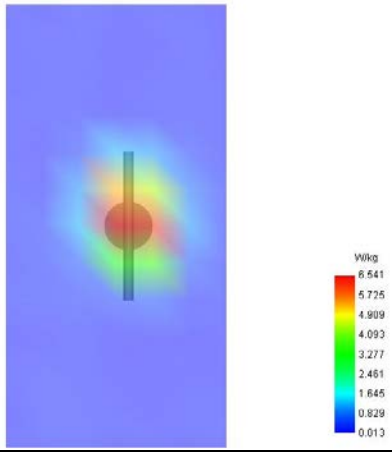
SAR 10g (W/Kg)	6.010
SAR 1g (W/Kg)	14.652
Variation (%)	-2.431
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

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: 25/4/2025

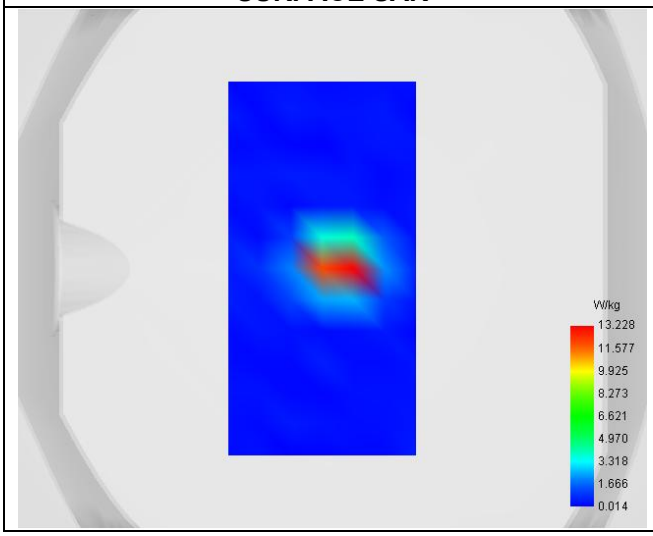
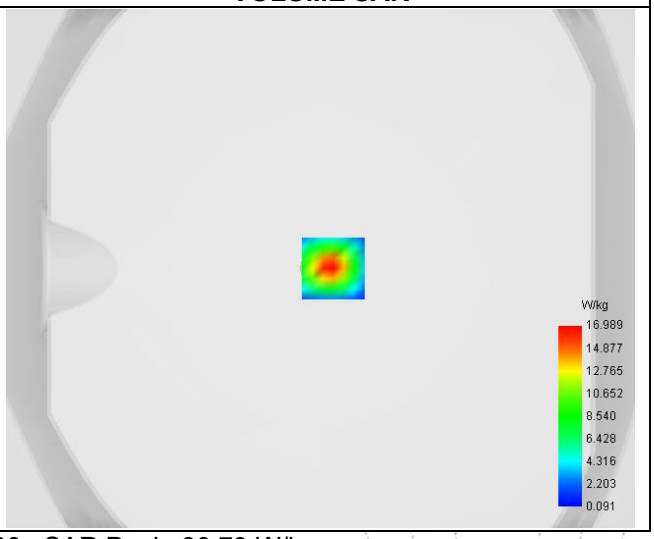
A. Experimental conditions.

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)	35.799
Relative permitivity (imaginary part)	18.140
Conductivity (S/m)	4.642

C. SAR Surface and Volume

SURFACE SAR	**VOLUME SAR**
	

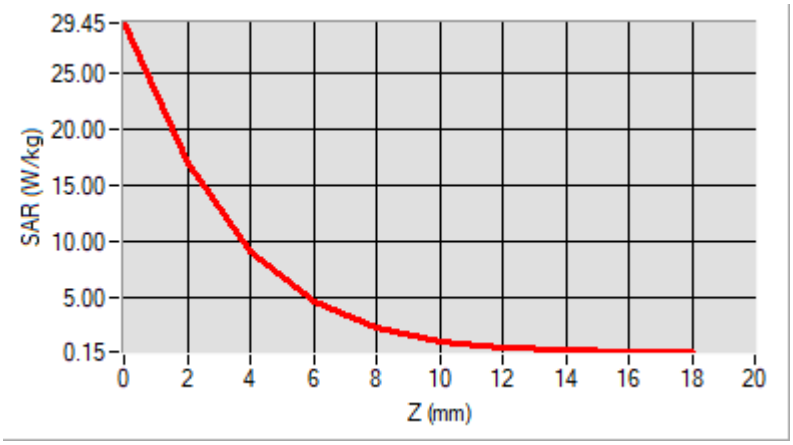
Maximum location: X=5.00, Y=0.00 ; SAR Peak: 30.79 W/kg

D. SAR 1g & 10g

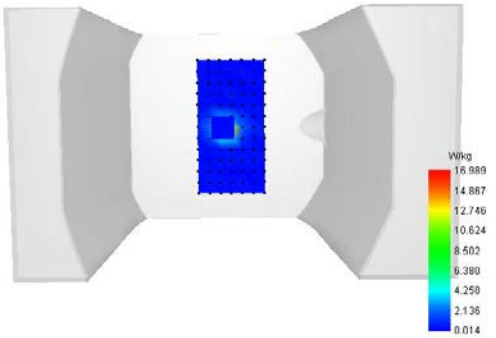
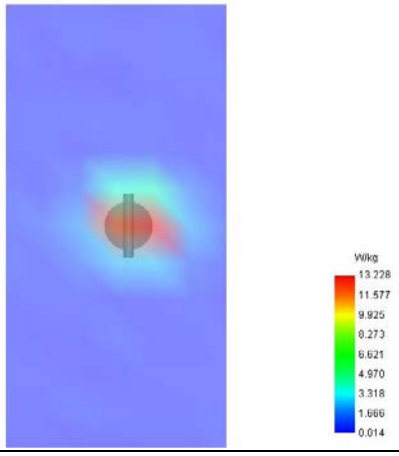
SAR 10g (W/Kg)	5.643
SAR 1g (W/Kg)	18.934
Variation (%)	-2.541
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

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: 25/4/2025

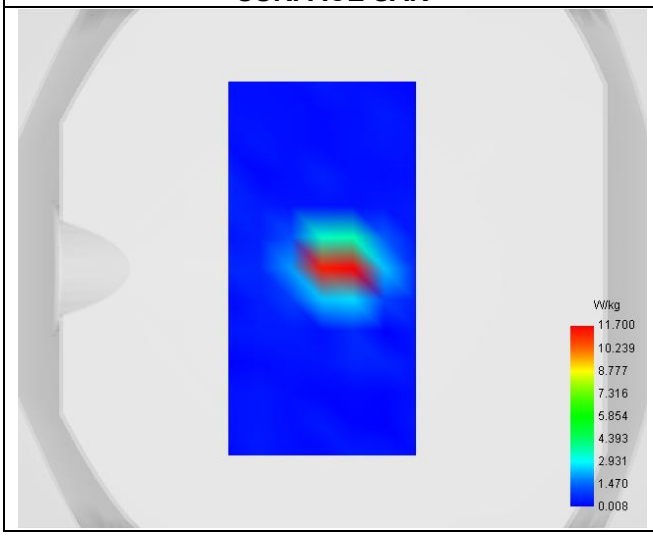
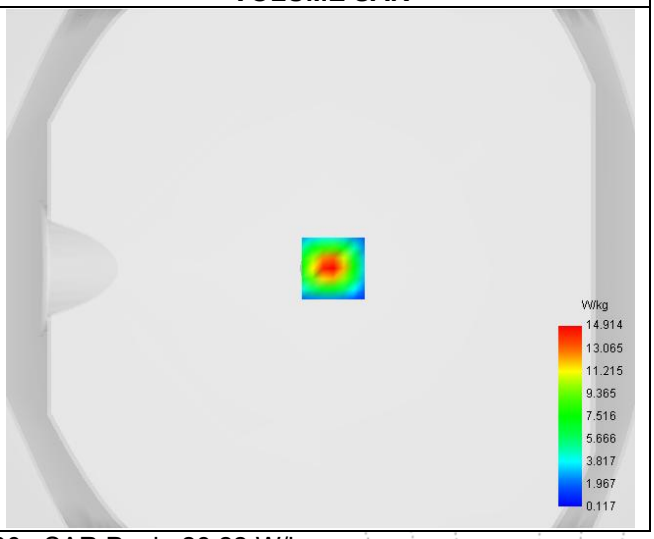
A. Experimental conditions.

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)	36.354
Relative permitivity (imaginary part)	18.620
Conductivity (S/m)	5.471

C. SAR Surface and Volume

SURFACE SAR	**VOLUME SAR**
	

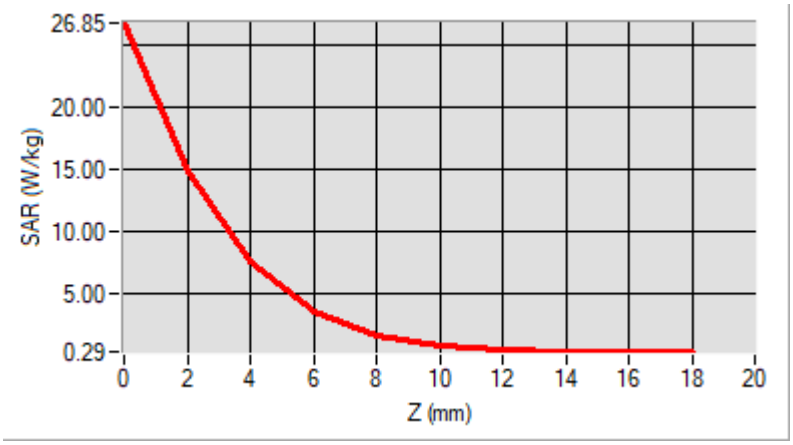
Maximum location: X=5.00, Y=0.00 ; SAR Peak: 28.22 W/kg

D. SAR 1g & 10g

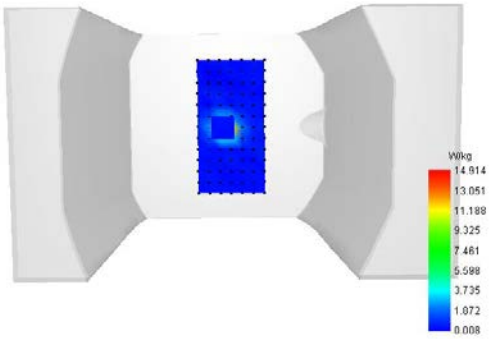
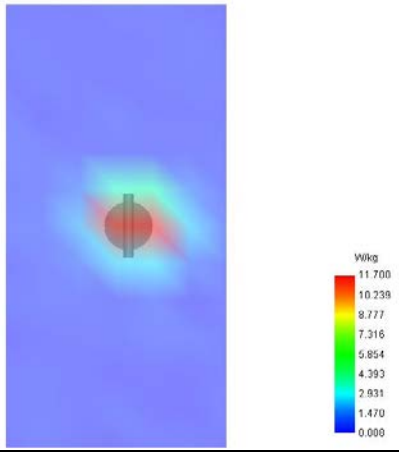
SAR 10g (W/Kg)	5.440
SAR 1g (W/Kg)	18.985
Variation (%)	-3.804
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

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: 25/4/2025

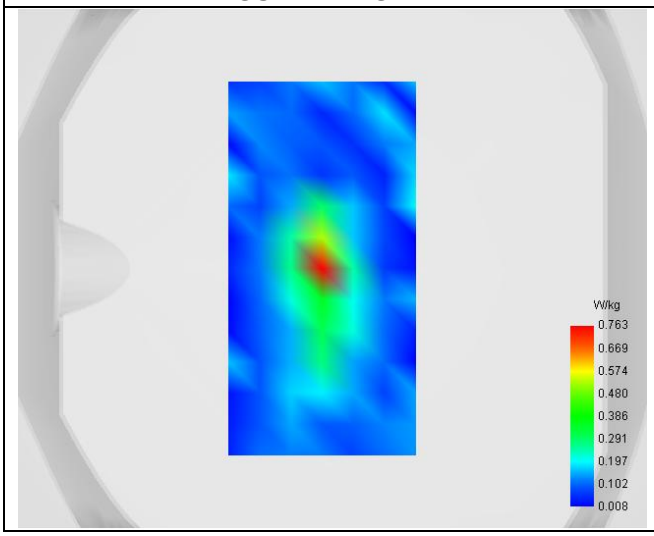
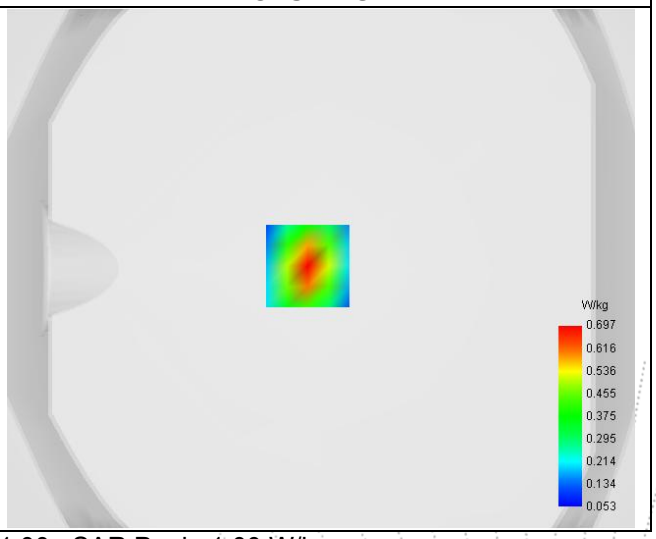
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	1.11
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5.0mm
Phantom	Validation plane
Device Position	Body
Band	ISM
Signal	IEEE 802.11 b

B. Permitivity

Frequency (MHz)	2437.000
Relative permitivity (real part)	39.939
Relative permitivity (imaginary part)	13.207
Conductivity (S/m)	1.822

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

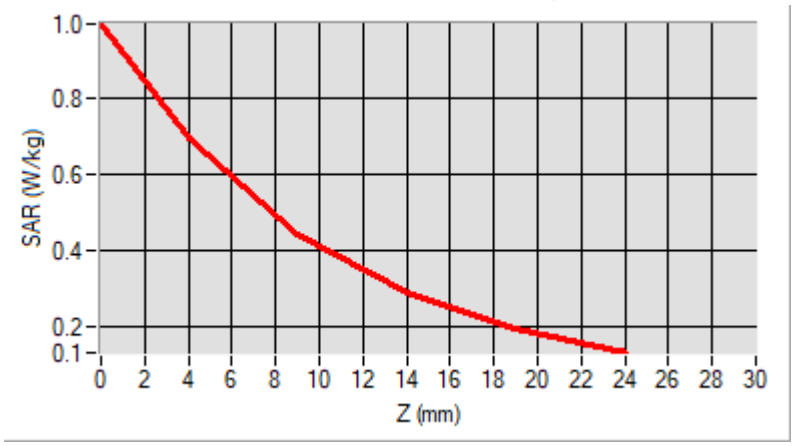
Maximum location: X=-5.00, Y=1.00 ; SAR Peak: 1.00 W/kg

D. SAR 1g & 10g

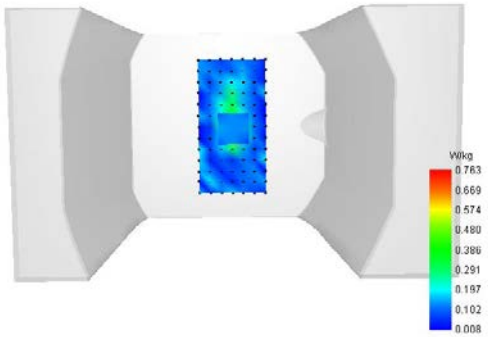
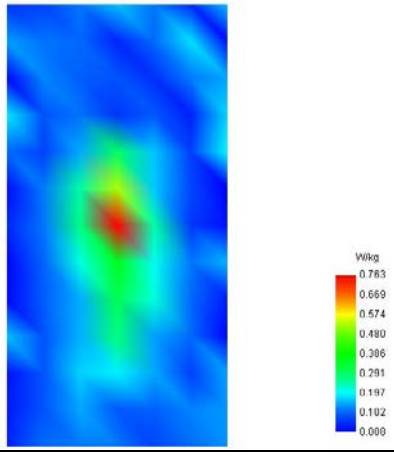
SAR 10g (W/Kg)	0.355
SAR 1g (W/Kg)	0.638
Variation (%)	9.820
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.996	0.697	0.443	0.287	0.193



F. 3D Image

3D screen shot	Hot spot position
	

Plot 2
Date of measurement: 25/4/2025

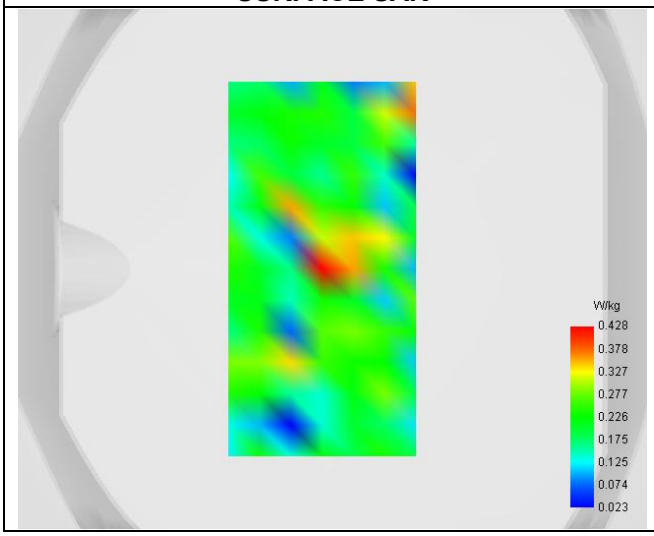
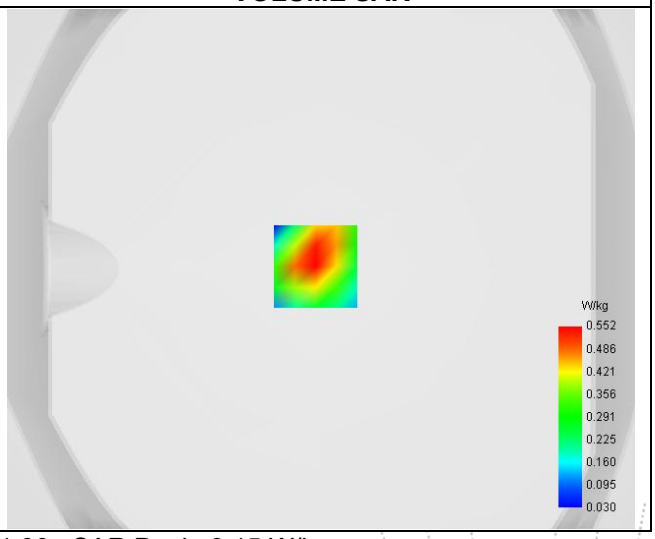
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	1.18
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5.0mm
Phantom	Validation plane
Device Position	Body
Band	5200
Signal	--

B. Permitivity

Frequency (MHz)	5200.000
Relative permitivity (real part)	35.799
Relative permitivity (imaginary part)	16.119
Conductivity (S/m)	4.642

C. SAR Surface and Volume

SURFACE SAR	**VOLUME SAR**
	

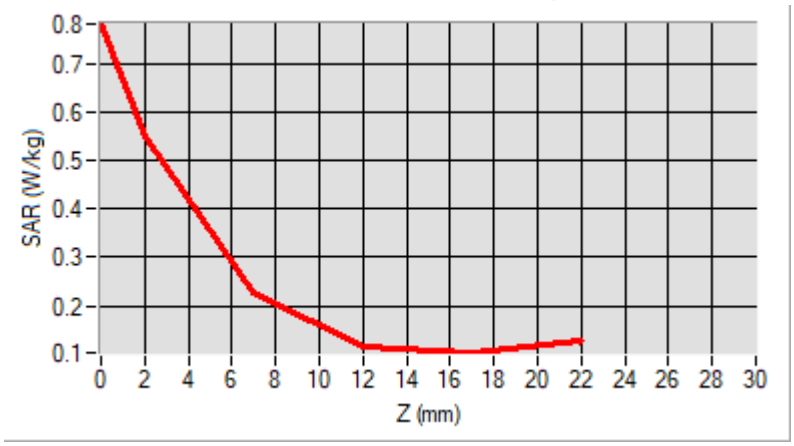
Maximum location: X=-2.00, Y=1.00 ; SAR Peak: 0.15 W/kg

D. SAR 1g & 10g

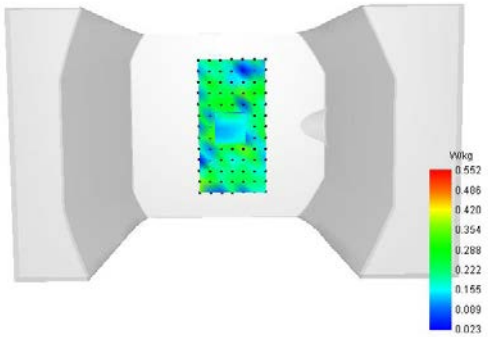
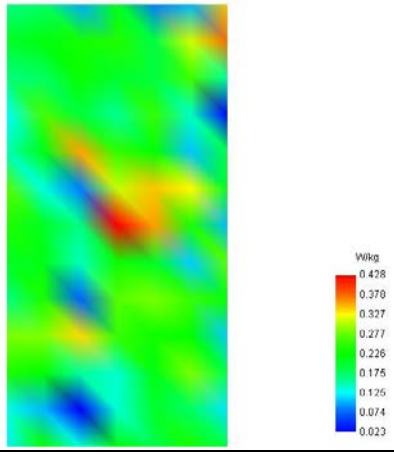
SAR 10g (W/Kg)	0.372
SAR 1g (W/Kg)	0.650
Variation (%)	-0.690
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	2.00	7.00	12.00	17.00
SAR (W/Kg)	0.781	0.552	0.226	0.117	0.104



F. 3D Image

3D screen shot	Hot spot position
	

Plot 3
Date of measurement: 25/4/2025

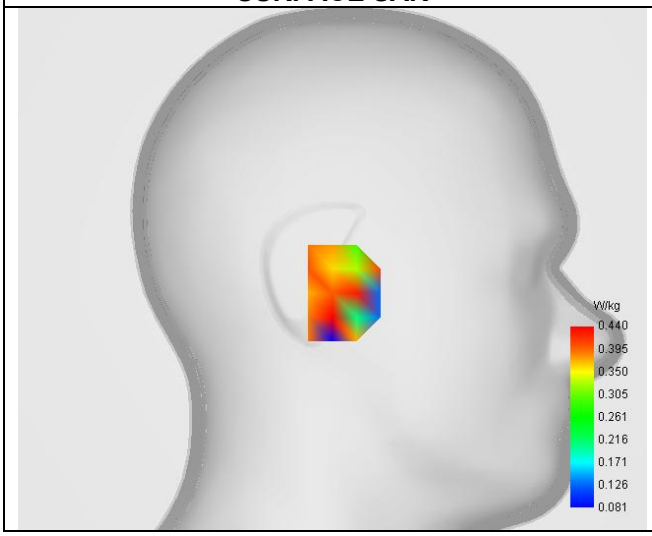
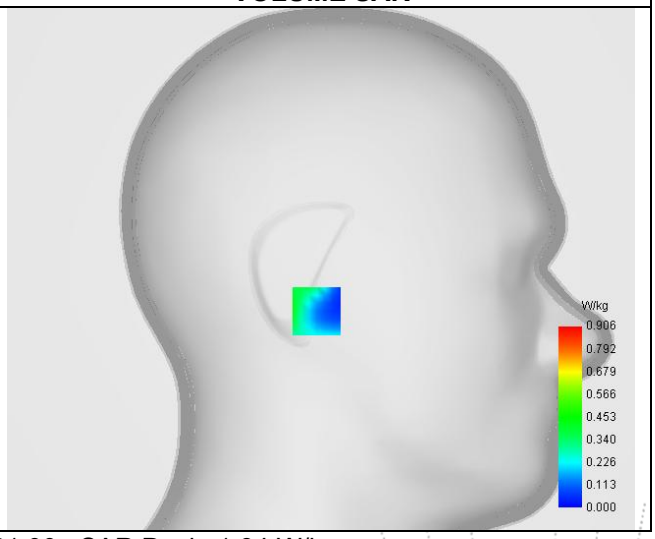
A. Experimental conditions.

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	Left head
Device Position	Cheek
Band	5800
Signal	--

B. Permitivity

Frequency (MHz)	5745.000
Relative permitivity (real part)	36.354
Relative permitivity (imaginary part)	16.355
Conductivity (S/m)	5.471

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

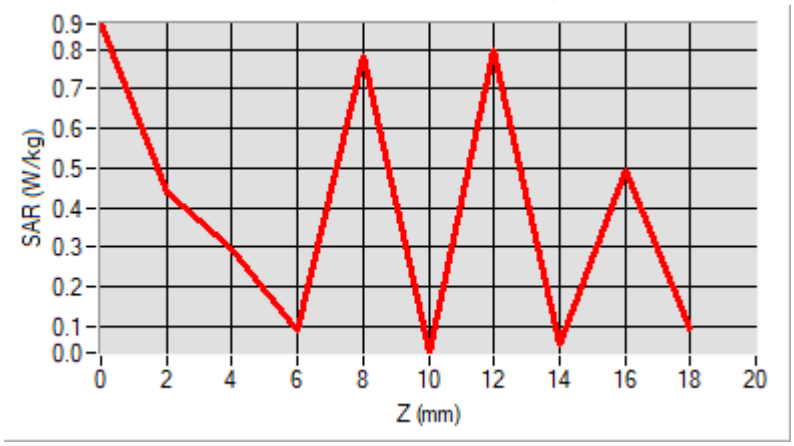
Maximum location: X=2.00, Y=-21.00 ; SAR Peak: 1.84 W/kg

D. SAR 1g & 10g

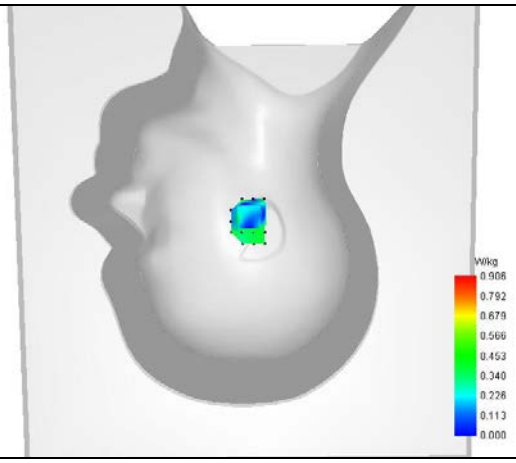
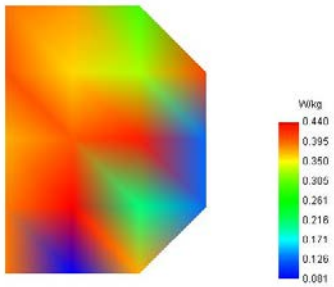
SAR 10g (W/Kg)	0.230
SAR 1g (W/Kg)	0.532
Variation (%)	-4.610
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

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)	0.864	0.437	0.295	0.092	0.784	0.034	0.799	0.055	0.493



F. 3D Image

3D screen shot	Hot spot position
	

Plot 4
Date of measurement: 12/4/2025

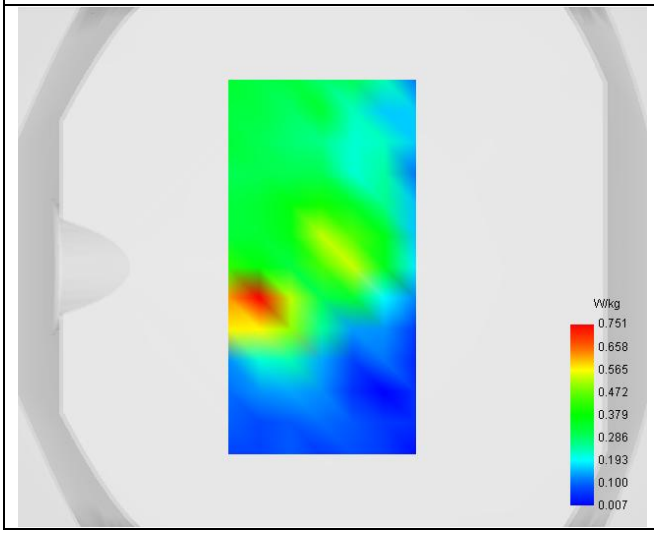
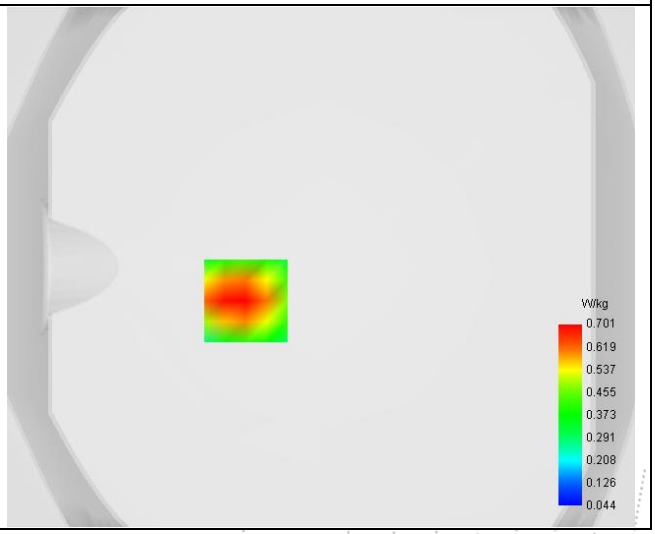
A. Experimental conditions.

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	GSM850
Signal	TDMA (GSM)
Modulation	GMSK

B. Permitivity

Frequency (MHz)	824.200
Relative permitivity (real part)	40.786
Relative permitivity (imaginary part)	19.400
Conductivity (S/m)	0.899

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

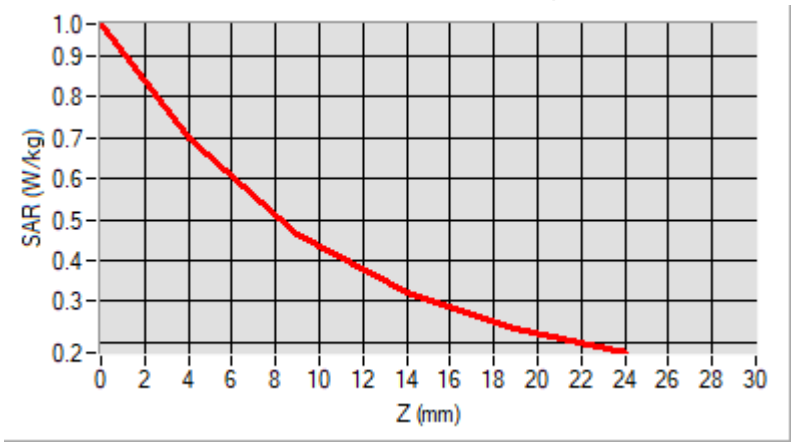
Maximum location: X=-29.00, Y=-13.00 ; SAR Peak: 1.00 W/kg

D. SAR 1g & 10g

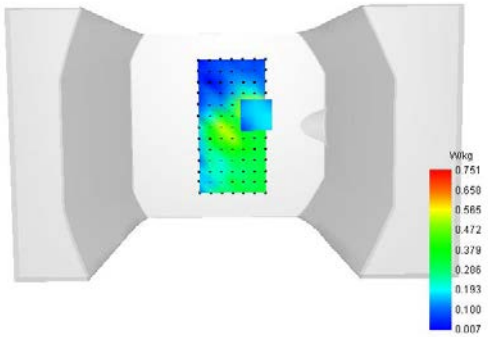
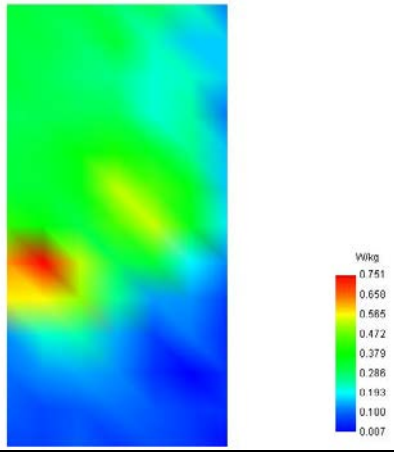
SAR 10g (W/Kg)	0.425
SAR 1g (W/Kg)	0.670
Variation (%)	-1.090
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.978	0.701	0.465	0.320	0.234



F. 3D Image

3D screen shot	Hot spot position
	

Plot 5
Date of measurement: 14/4/2025

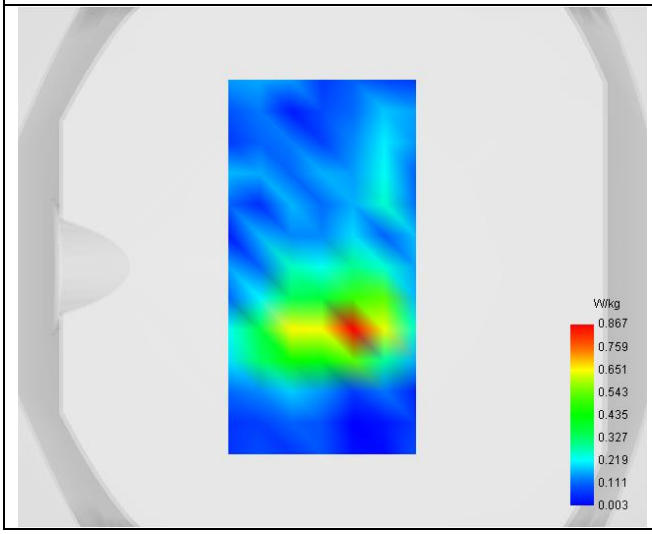
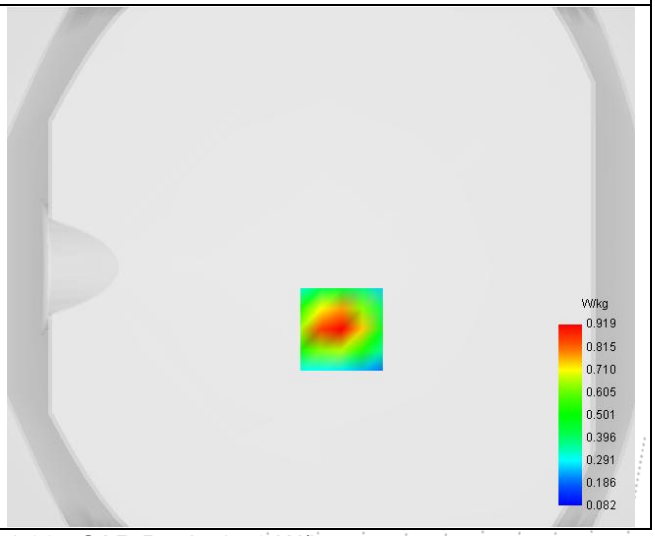
A. Experimental conditions.

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	GSM1900
Channels	Middle (661)
Signal	TDMA (GSM)
Modulation	GMSK

B. Permitivity

Frequency (MHz)	1880.000
Relative permitivity (real part)	38.776
Relative permitivity (imaginary part)	13.408
Conductivity (S/m)	1.382

C. SAR Surface and Volume

SURFACE SAR	**VOLUME SAR**
	

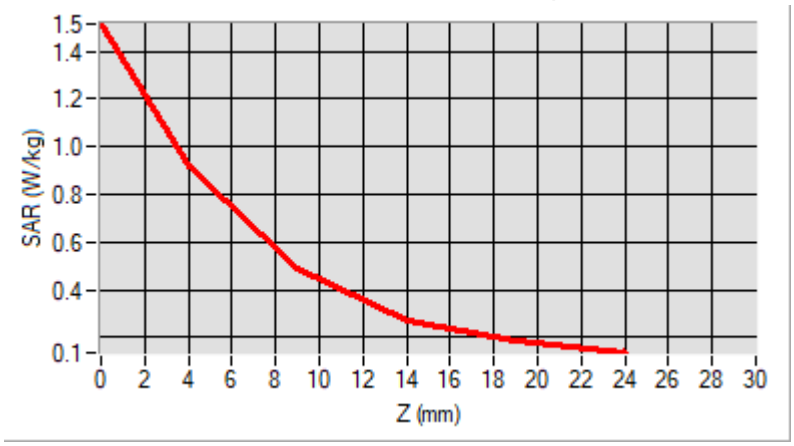
Maximum location: X=8.00, Y=-24.00 ; SAR Peak: 1.53 W/kg

D. SAR 1g & 10g

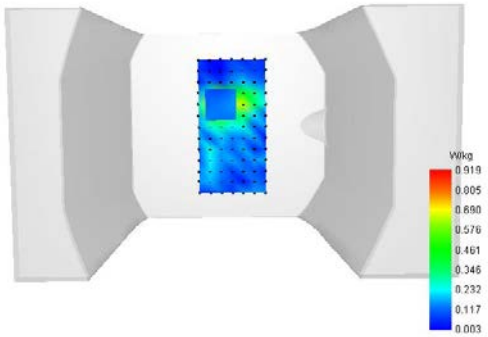
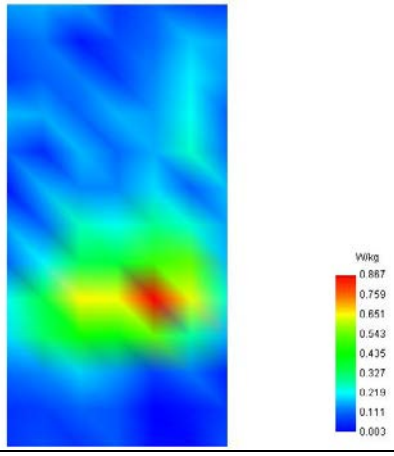
SAR 10g (W/Kg)	0.443
SAR 1g (W/Kg)	0.863
Variation (%)	-0.910
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.515	0.919	0.486	0.275	0.183



F. 3D Image

3D screen shot	Hot spot position
	

Plot 6
Date of measurement: 15/4/2025

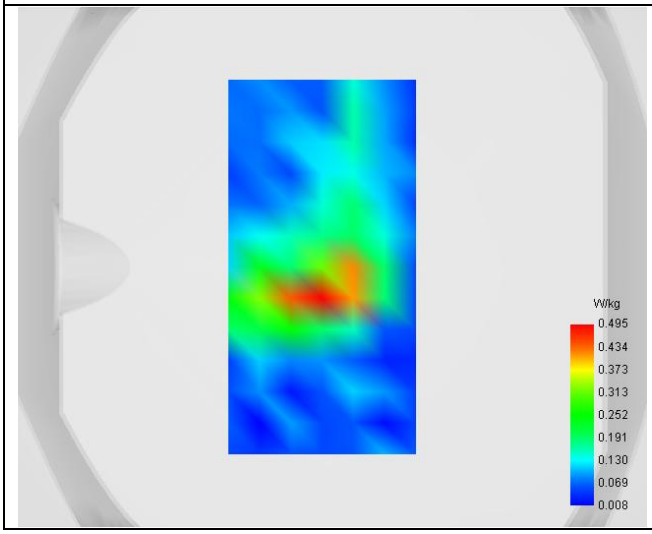
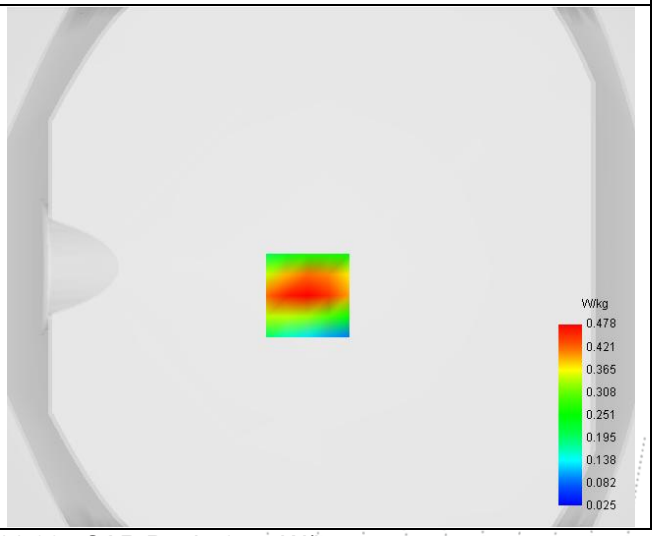
A. Experimental conditions.

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)	40.449
Relative permitivity (imaginary part)	13.408
Conductivity (S/m)	1.367

C. SAR Surface and Volume

SURFACE SAR	**VOLUME SAR**
	

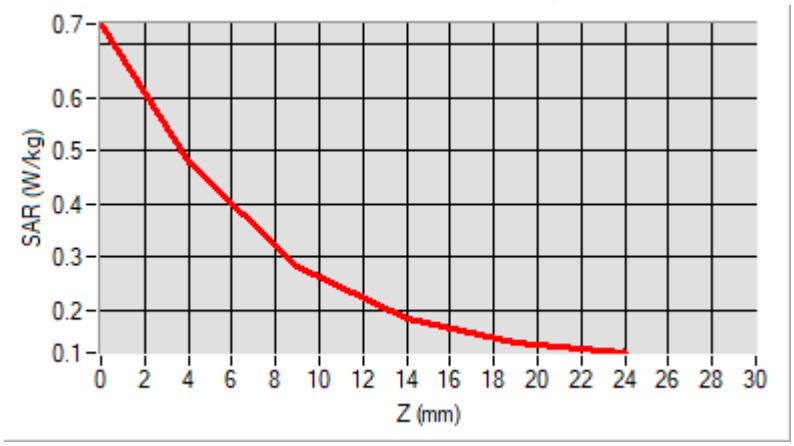
Maximum location: X=-5.00, Y=-11.00 ; SAR Peak: 0.77 W/kg

D. SAR 1g & 10g

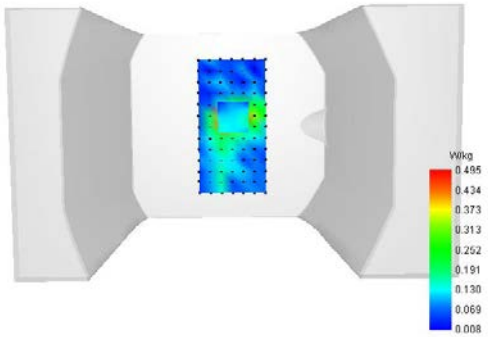
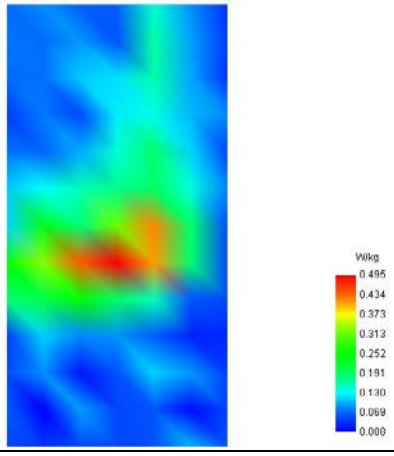
SAR 10g (W/Kg)	0.250
SAR 1g (W/Kg)	0.458
Variation (%)	-1.840
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.738	0.478	0.282	0.184	0.141



F. 3D Image

3D screen shot	Hot spot position
	

Plot 7
Date of measurement: 14/4/2025

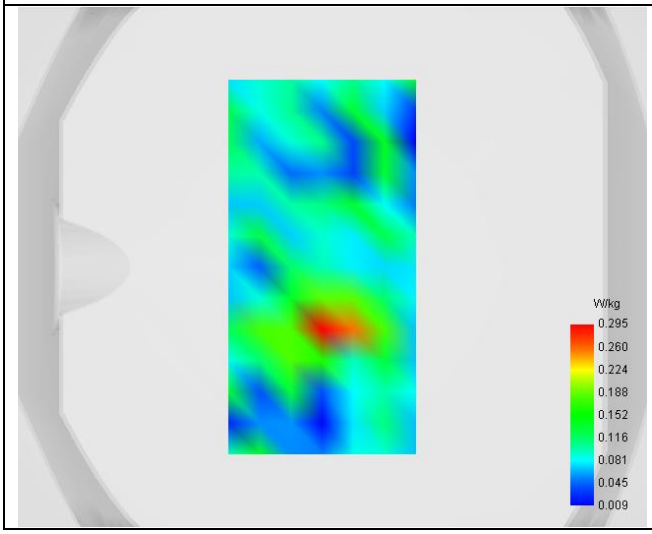
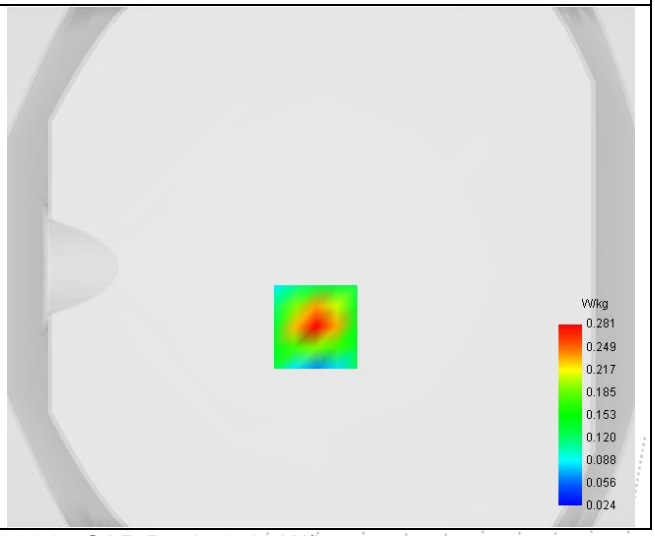
A. Experimental conditions.

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)	1752.600
Relative permitivity (real part)	38.776
Relative permitivity (imaginary part)	14.136
Conductivity (S/m)	1.382

C. SAR Surface and Volume

SURFACE SAR	**VOLUME SAR**
	

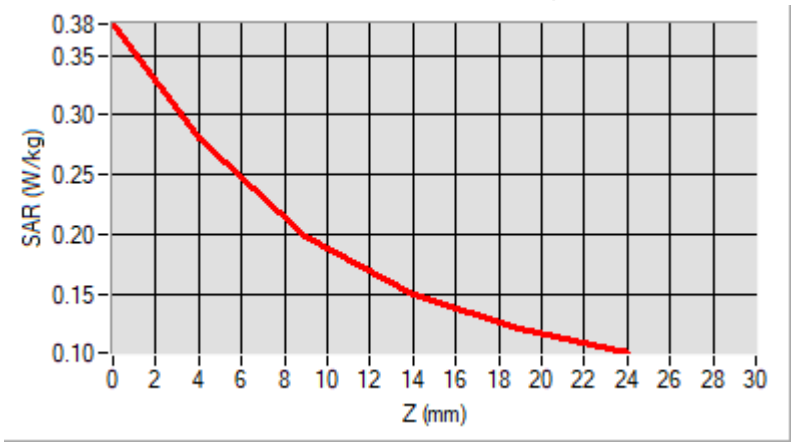
Maximum location: X=-2.00, Y=-23.00 ; SAR Peak: 0.40 W/kg

D. SAR 1g & 10g

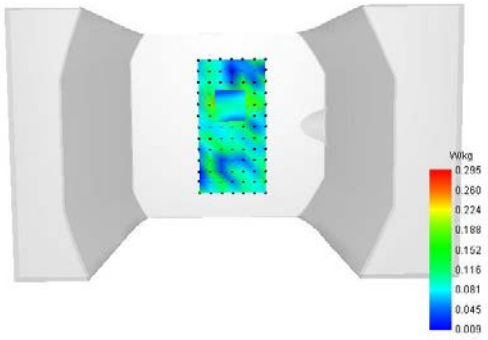
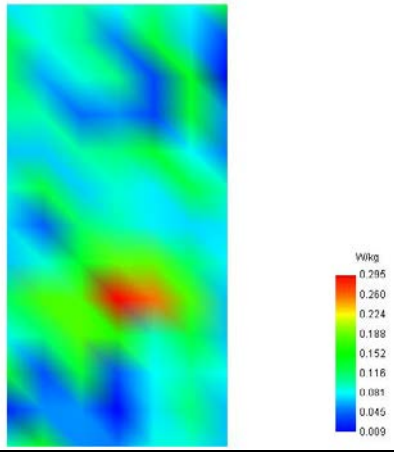
SAR 10g (W/Kg)	0.164
SAR 1g (W/Kg)	0.264
Variation (%)	-2.540
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.376	0.281	0.199	0.149	0.120



F. 3D Image

3D screen shot	Hot spot position
	

Plot 8
Date of measurement: 12/4/2025

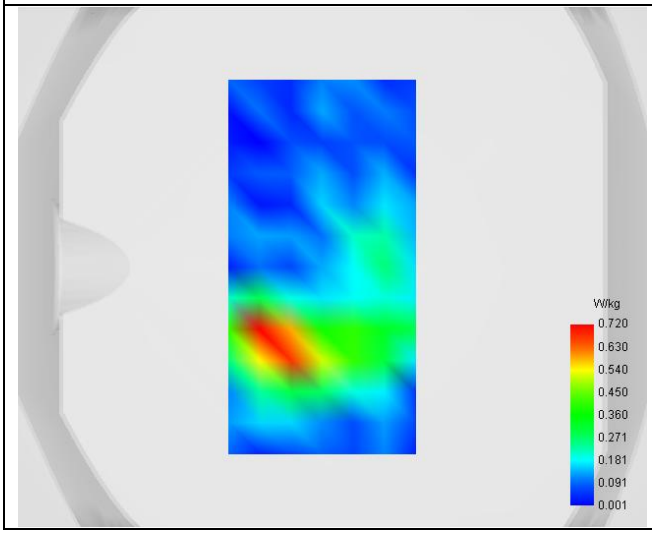
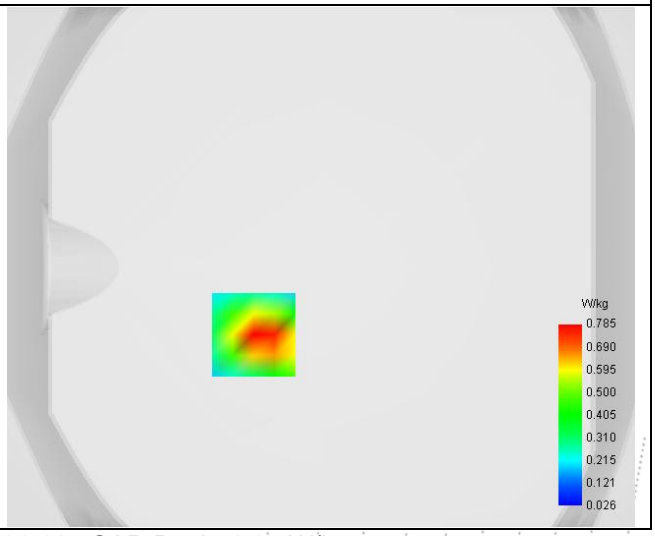
A. Experimental conditions.

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)	836.400
Relative permitivity (real part)	40.786
Relative permitivity (imaginary part)	19.400
Conductivity (S/m)	0.899

C. SAR Surface and Volume

SURFACE SAR	**VOLUME SAR**
	

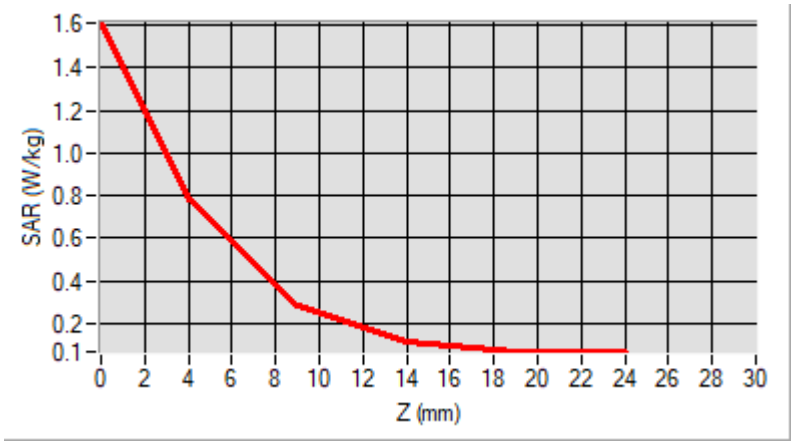
Maximum location: X=-26.00, Y=-26.00 ; SAR Peak: 1.65 W/kg

D. SAR 1g & 10g

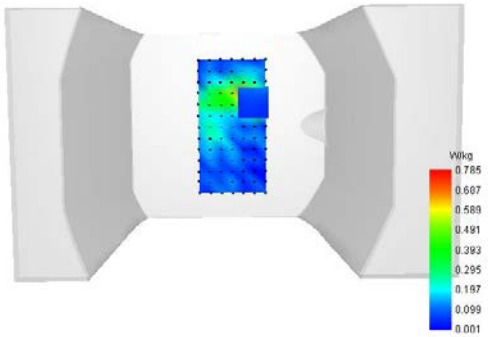
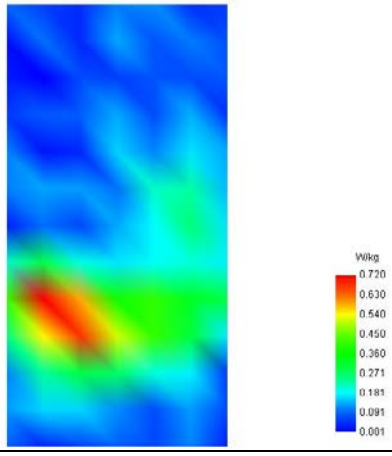
SAR 10g (W/Kg)	0.139
SAR 1g (W/Kg)	0.345
Variation (%)	1.310
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.611	0.785	0.287	0.113	0.070



F. 3D Image

3D screen shot	Hot spot position
	

Plot 9
Date of measurement: 15/4/2025

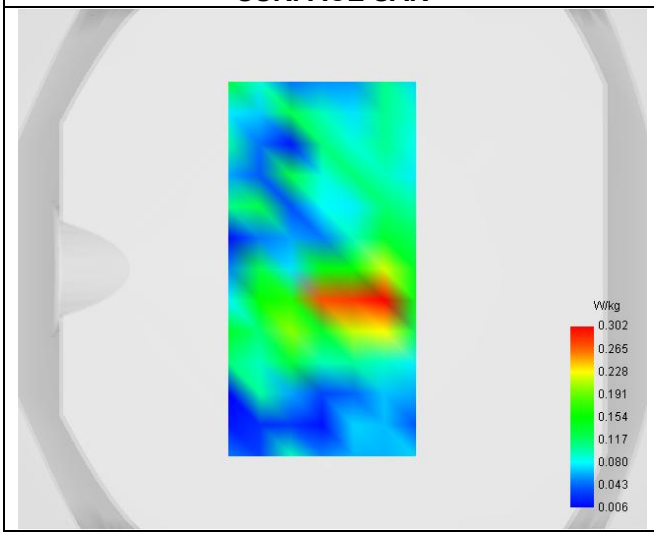
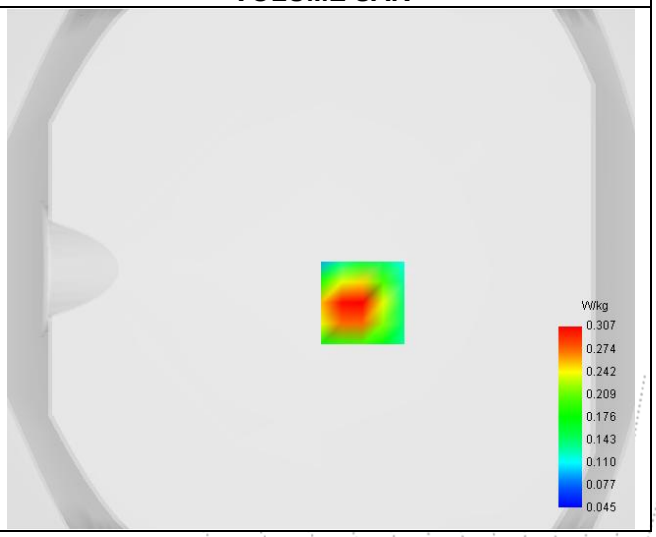
A. Experimental conditions.

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)	1880.000
Relative permitivity (real part)	40.449
Relative permitivity (imaginary part)	13.455
Conductivity (S/m)	1.367

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

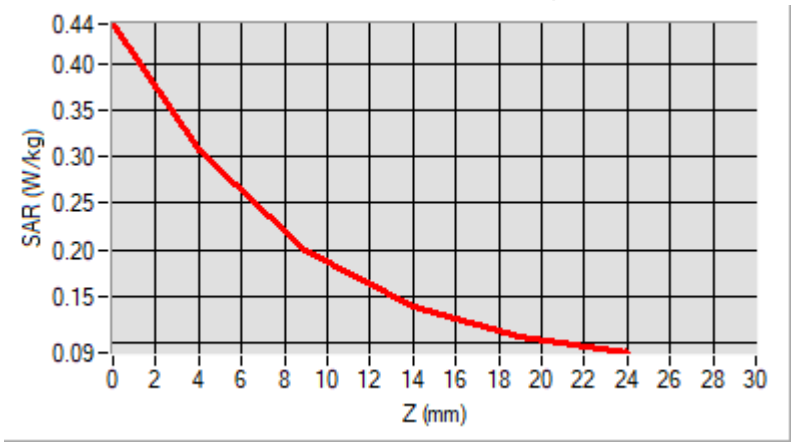
Maximum location: X=16.00, Y=-13.00 ; SAR Peak: 0.47 W/kg

D. SAR 1g & 10g

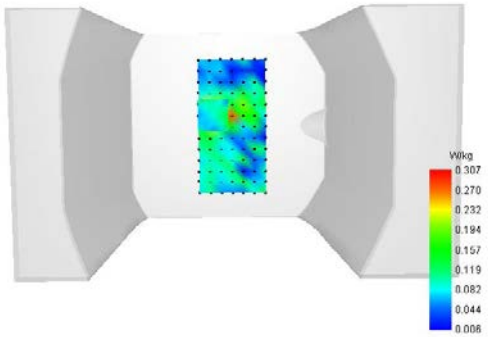
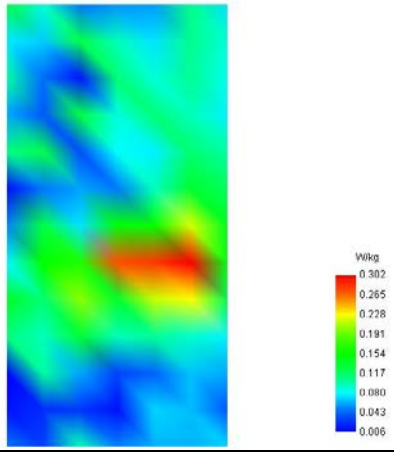
SAR 10g (W/Kg)	0.173
SAR 1g (W/Kg)	0.298
Variation (%)	1.640
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.442	0.307	0.199	0.139	0.108



F. 3D Image

3D screen shot	Hot spot position
	

Plot 10

Date of measurement: 14/4/2025

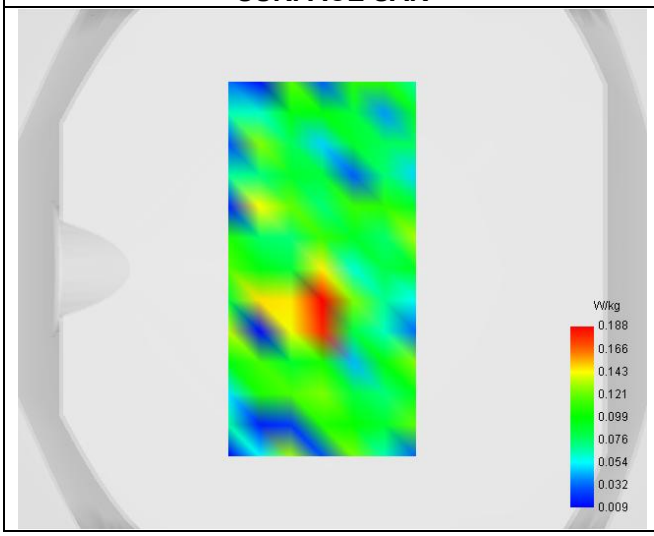
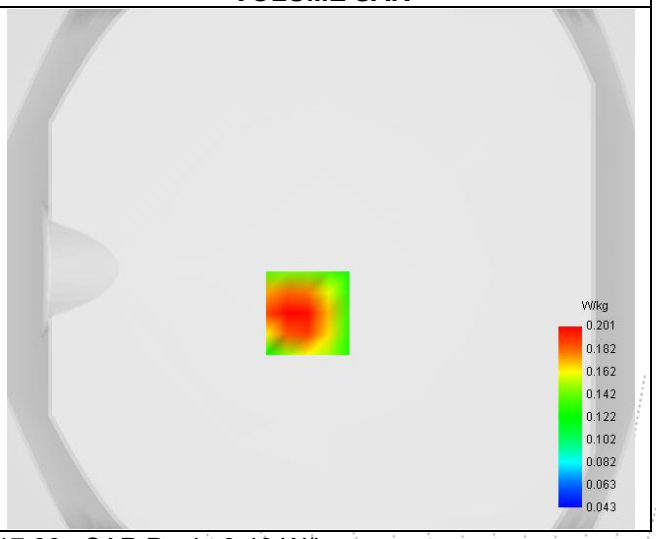
A. Experimental conditions.

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)	38.776
Relative permitivity (imaginary part)	14.153
Conductivity (S/m)	1.382

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

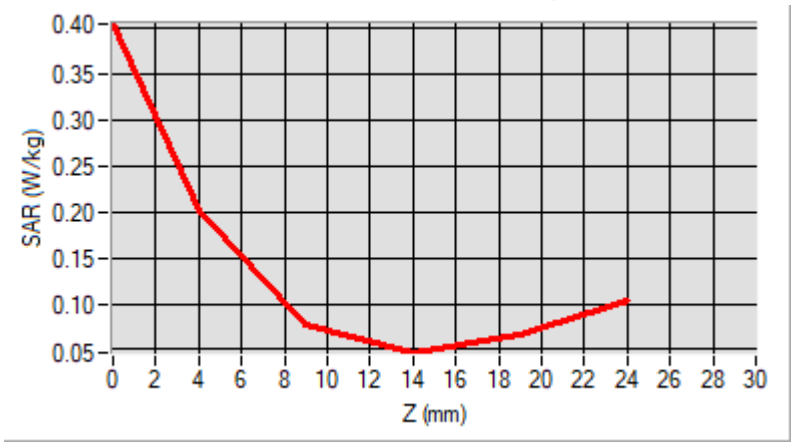
Maximum location: X=-5.00, Y=-17.00 ; SAR Peak: 0.43 W/kg

D. SAR 1g & 10g

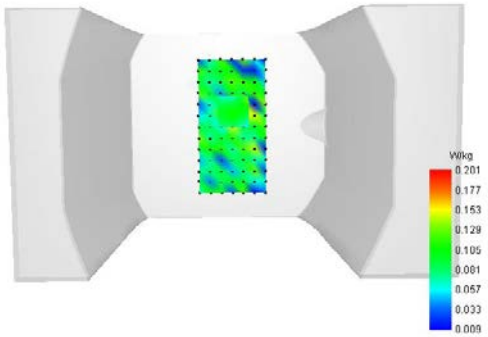
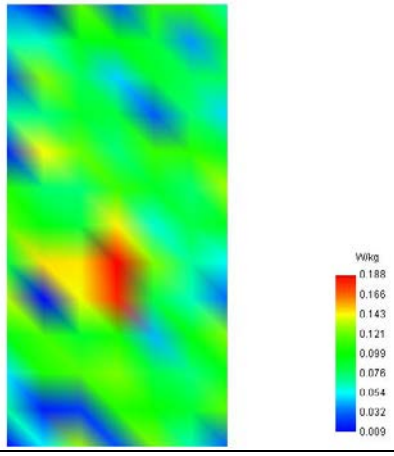
SAR 10g (W/Kg)	0.103
SAR 1g (W/Kg)	0.273
Variation (%)	3.780
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.404	0.201	0.077	0.047	0.066



F. 3D Image

3D screen shot	Hot spot position
	

Plot 11
Date of measurement: 12/4/2025

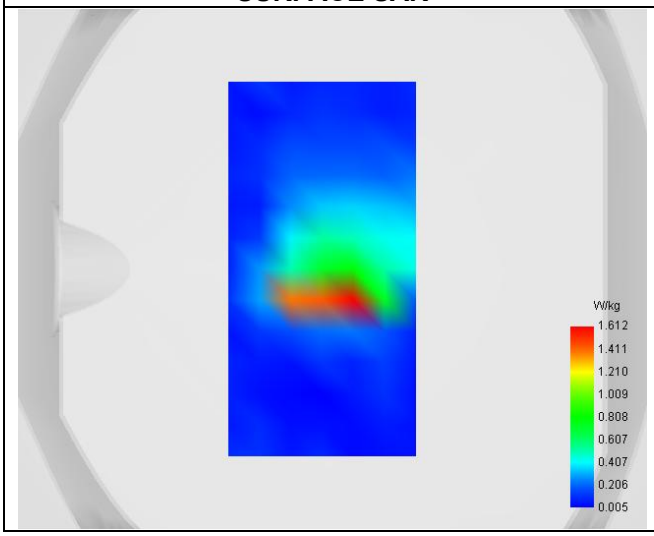
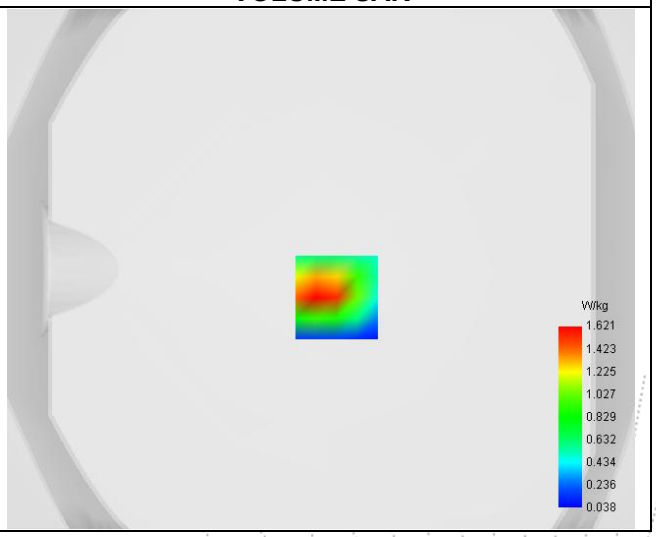
A. Experimental conditions.

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)	836.500
Relative permitivity (real part)	40.786
Relative permitivity (imaginary part)	19.407
Conductivity (S/m)	0.899

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

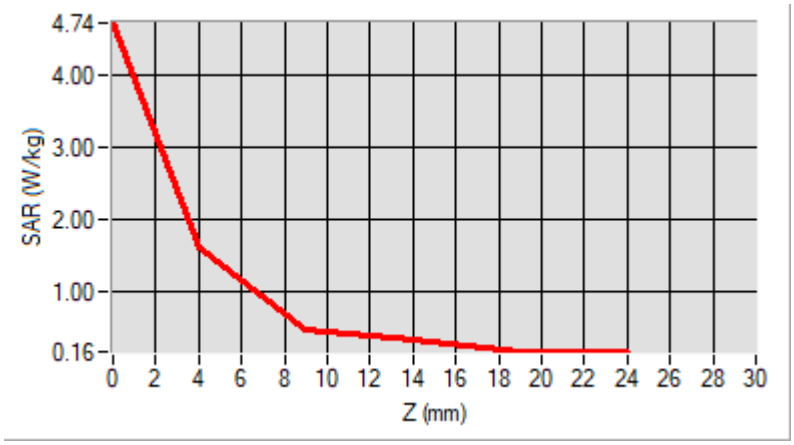
Maximum location: X=6.00, Y=-11.00 ; SAR Peak: 3.11 W/kg

D. SAR 1g & 10g

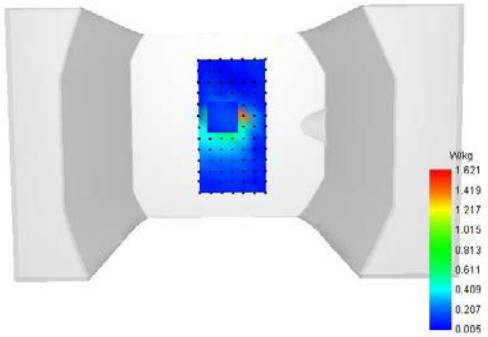
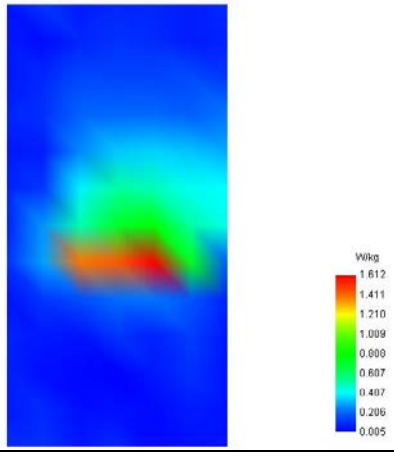
SAR 10g (W/Kg)	0.162
SAR 1g (W/Kg)	0.321
Variation (%)	-2.300
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	4.738	1.621	0.468	0.324	0.160



F. 3D Image

3D screen shot	Hot spot position
	

Plot 12
Date of measurement: 11/4/2025

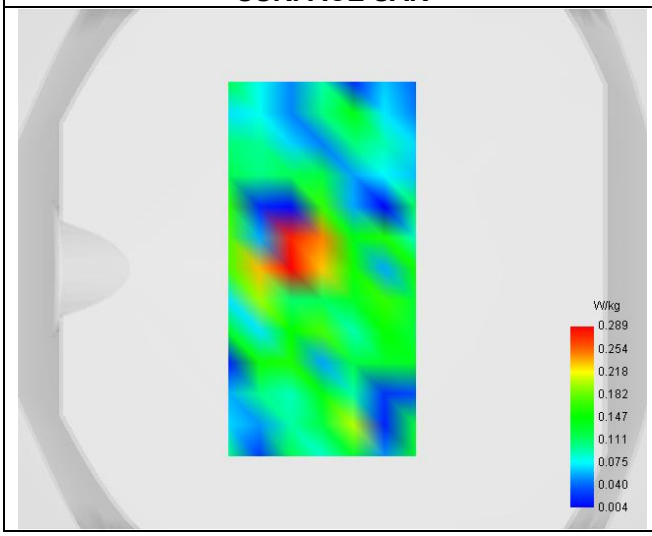
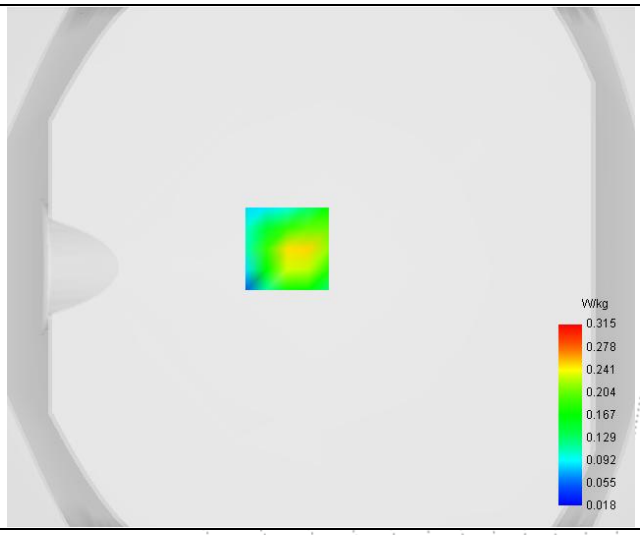
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	1.11
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)	2535.000
Relative permitivity (real part)	38.114
Relative permitivity (imaginary part)	13.345
Conductivity (S/m)	1.935

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

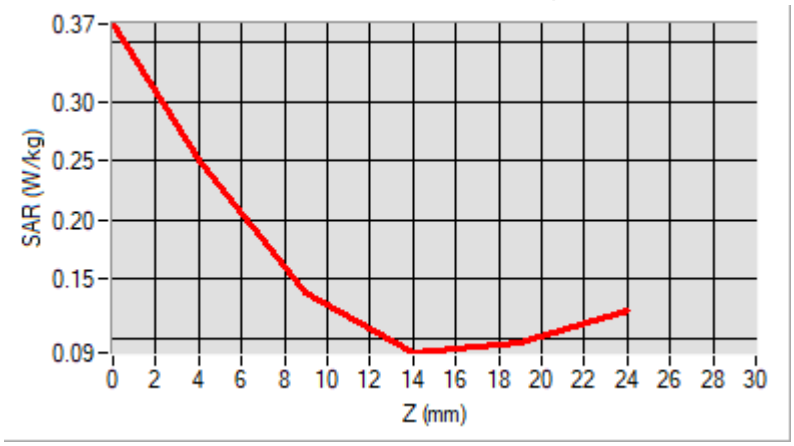
Maximum location: X=-13.00, Y=7.00 ; SAR Peak: 0.45 W/kg

D. SAR 1g & 10g

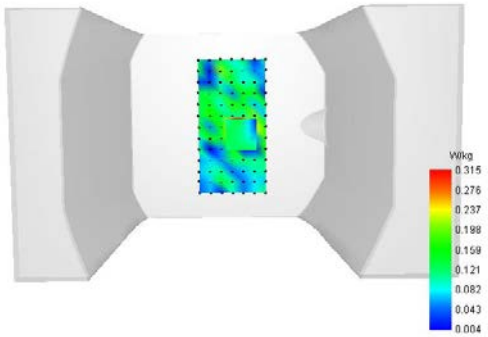
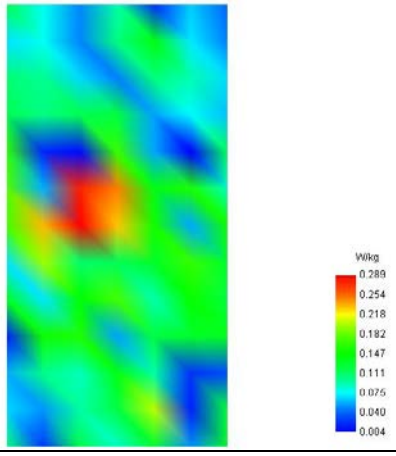
SAR 10g (W/Kg)	0.165
SAR 1g (W/Kg)	0.274
Variation (%)	-3.240
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.365	0.250	0.138	0.088	0.096



F. 3D Image

3D screen shot	Hot spot position
	

Plot 13
Date of measurement: 11/4/2025

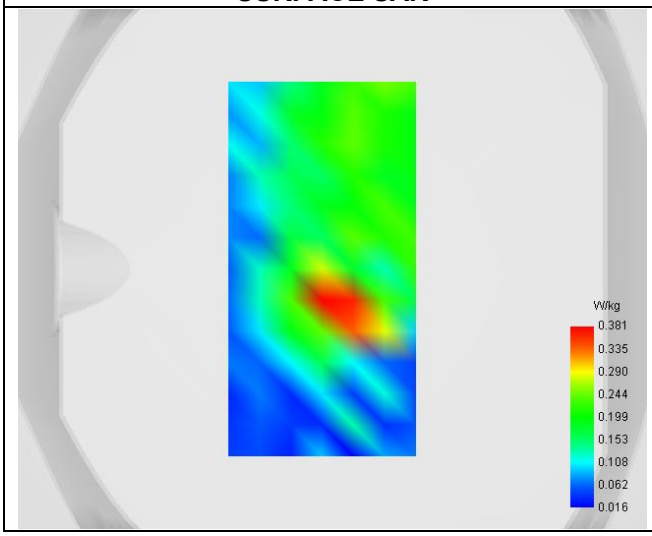
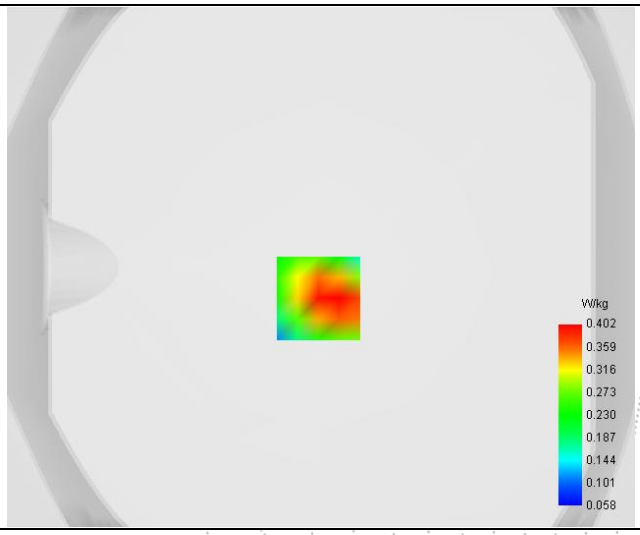
A. Experimental conditions.

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)	711.000
Relative permitivity (real part)	40.605
Relative permitivity (imaginary part)	23.188
Conductivity (S/m)	0.891

C. SAR Surface and Volume

SURFACE SAR	**VOLUME SAR**
	

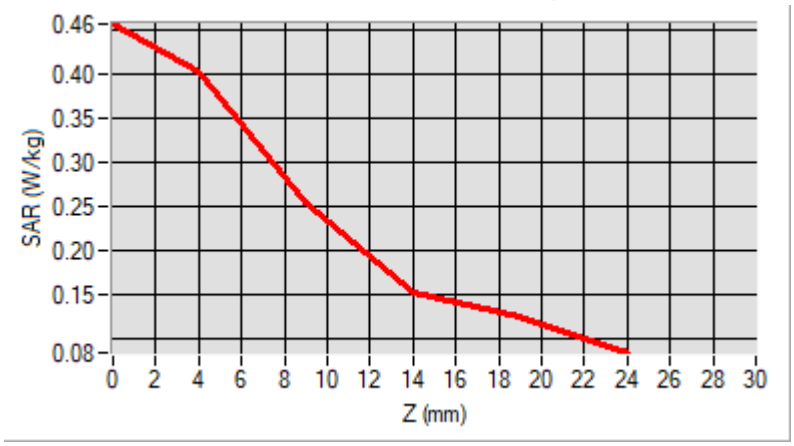
Maximum location: X=-1.00, Y=-12.00 ; SAR Peak: 0.71 W/kg

D. SAR 1g & 10g

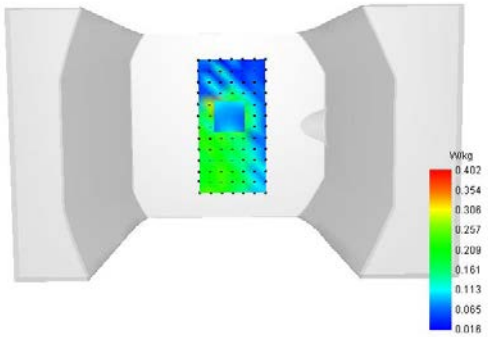
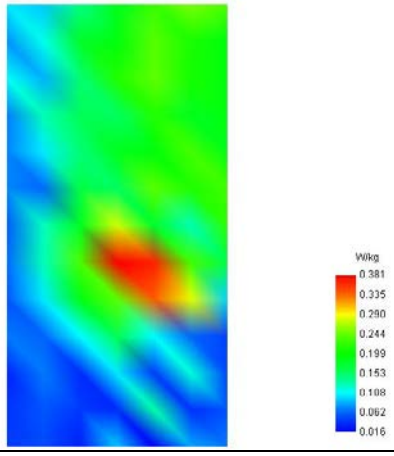
SAR 10g (W/Kg)	0.232
SAR 1g (W/Kg)	0.413
Variation (%)	-3.790
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.457	0.402	0.255	0.152	0.123



F. 3D Image

3D screen shot	Hot spot position
	

Plot 14
Date of measurement: 11/4/2025

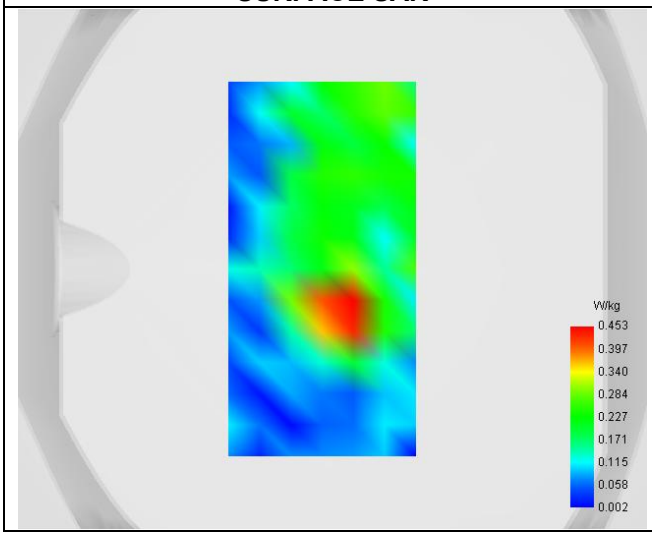
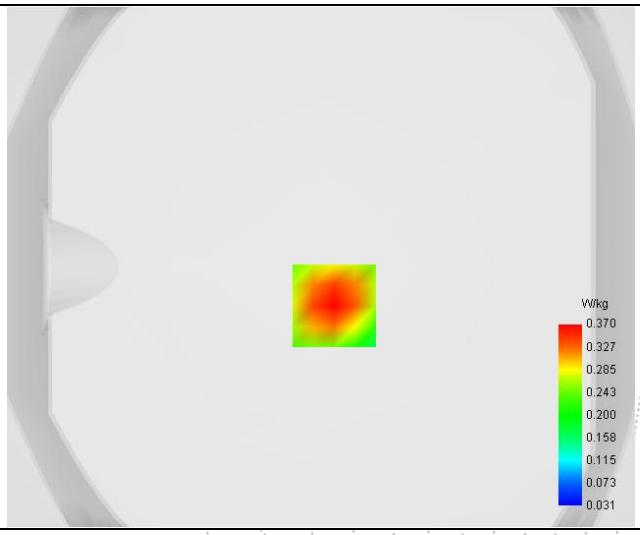
A. Experimental conditions.

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)	711.000
Relative permitivity (real part)	40.605
Relative permitivity (imaginary part)	23.277
Conductivity (S/m)	0.891

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

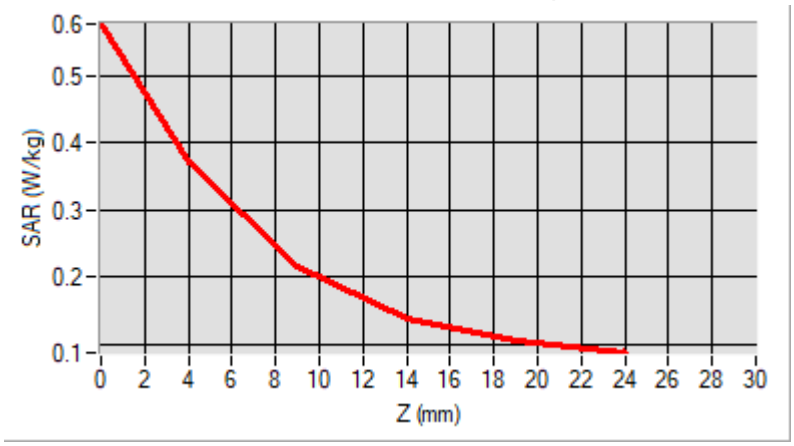
Maximum location: X=5.00, Y=-15.00 ; SAR Peak: 0.59 W/kg

D. SAR 1g & 10g

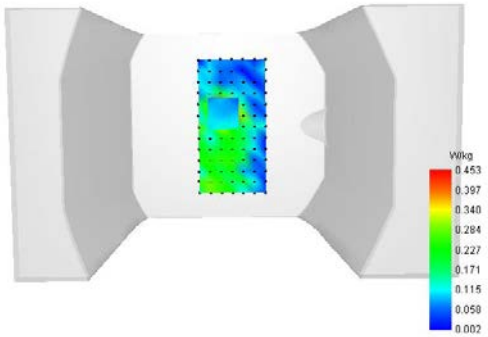
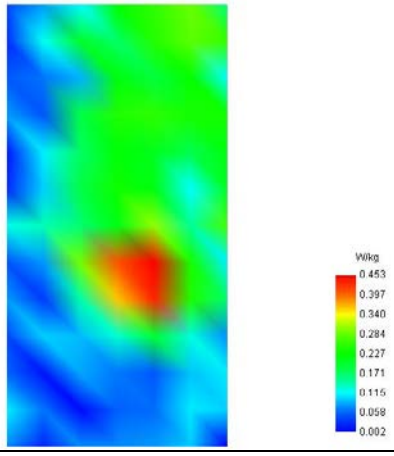
SAR 10g (W/Kg)	0.214
SAR 1g (W/Kg)	0.370
Variation (%)	4.200
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.576	0.370	0.215	0.137	0.103



F. 3D Image

3D screen shot	Hot spot position
	

Plot 15
Date of measurement: 15/4/2025

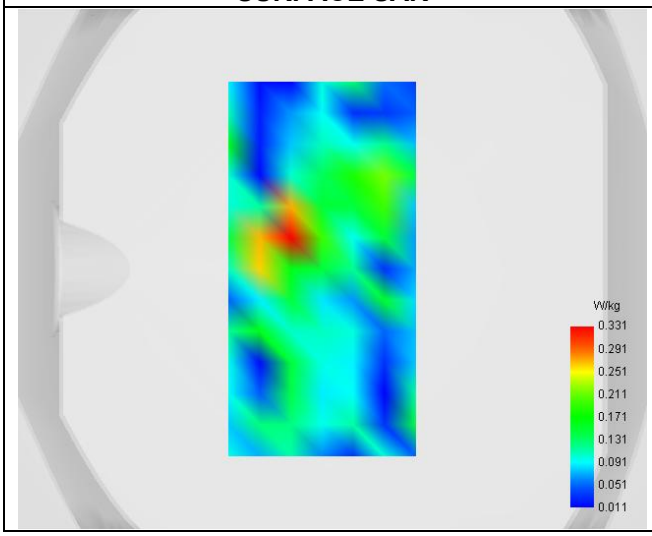
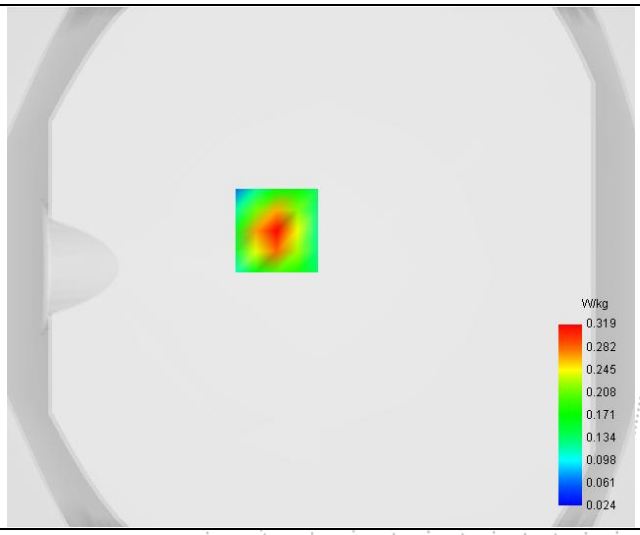
A. Experimental conditions.

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 25
Signal	LTE FDD
Cell Bandwidth	20 Mhz
Modulation	SC-OFDM - QPSK
RB offset	5
RB size	20

B. Permitivity

Frequency (MHz)	1905.000
Relative permitivity (real part)	40.449
Relative permitivity (imaginary part)	13.270
Conductivity (S/m)	1.367

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

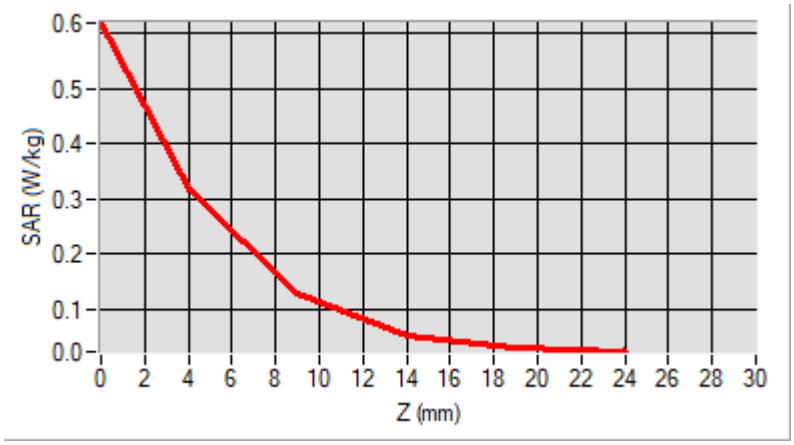
Maximum location: X=-17.00, Y=14.00 ; SAR Peak: 0.62 W/kg

D. SAR 1g & 10g

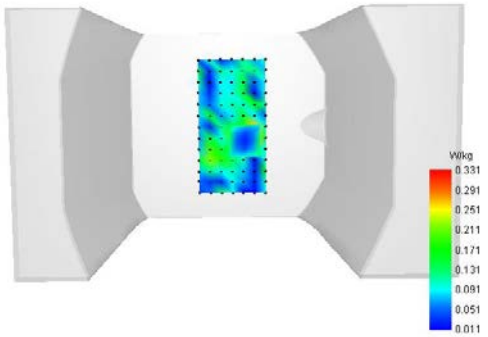
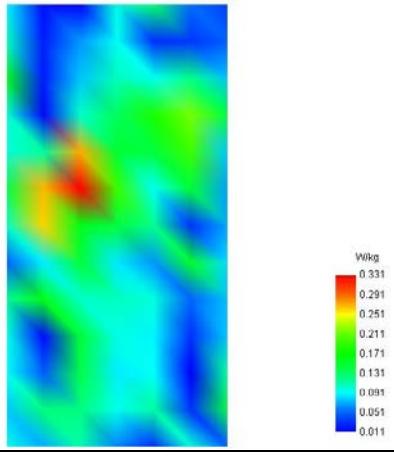
SAR 10g (W/Kg)	0.165
SAR 1g (W/Kg)	0.316
Variation (%)	3.480
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.619	0.319	0.128	0.054	0.031



F. 3D Image

3D screen shot	Hot spot position
	

Plot 16
Date of measurement: 12/4/2025

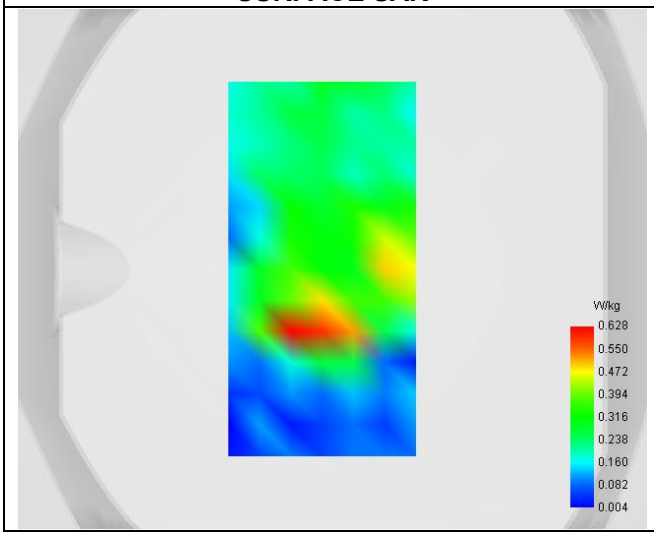
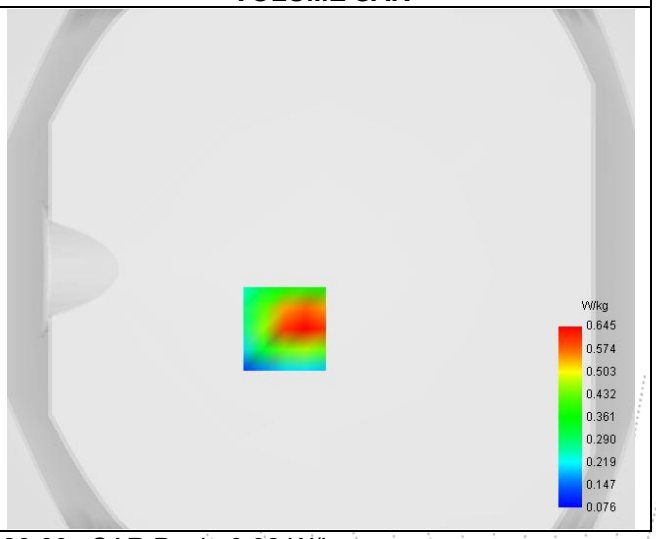
A. Experimental conditions.

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 26
Signal	LTE FDD
Cell Bandwidth	10 Mhz
Modulation	SC-OFDM - QPSK
RB offset	5
RB size	20

B. Permitivity

Frequency (MHz)	819.000
Relative permitivity (real part)	40.786
Relative permitivity (imaginary part)	19.810
Conductivity (S/m)	0.899

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

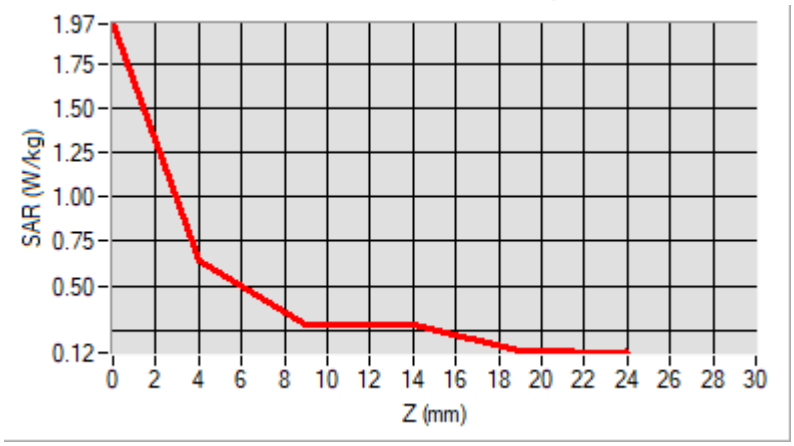
Maximum location: X=-14.00, Y=-23.00 ; SAR Peak: 0.92 W/kg

D. SAR 1g & 10g

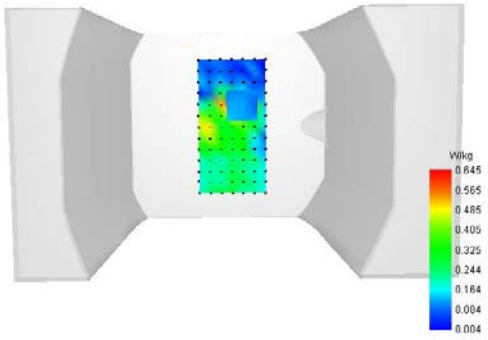
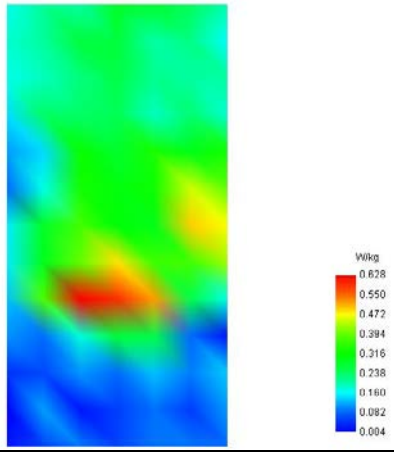
SAR 10g (W/Kg)	0.357
SAR 1g (W/Kg)	0.609
Variation (%)	-3.240
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.973	0.645	0.286	0.276	0.136



F. 3D Image

3D screen shot	Hot spot position
	

Plot 17
Date of measurement: 12/4/2025

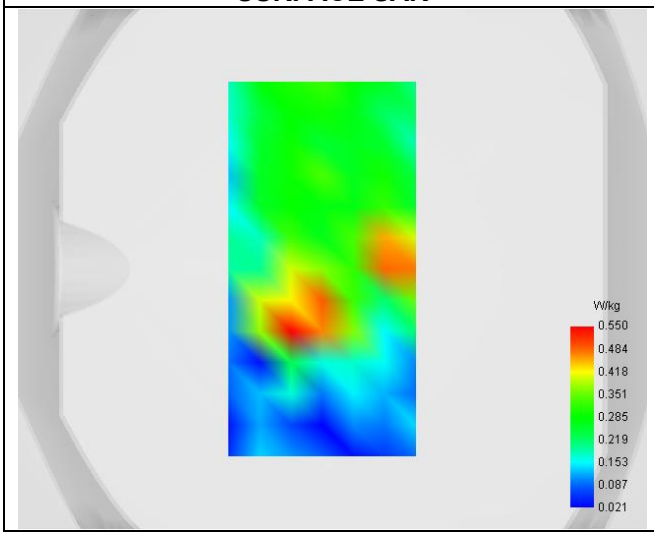
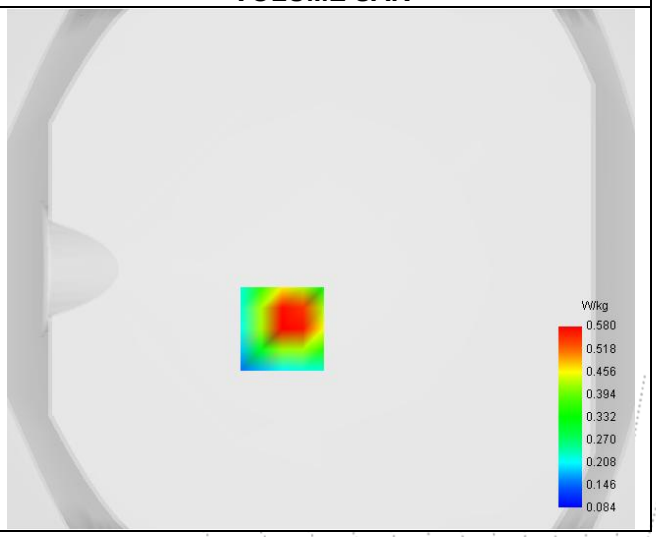
A. Experimental conditions.

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 26
Signal	LTE FDD
Cell Bandwidth	15 Mhz
Modulation	SC-OFDM - QPSK
RB offset	5
RB size	20

B. Permitivity

Frequency (MHz)	821.500
Relative permitivity (real part)	40.786
Relative permitivity (imaginary part)	19.459
Conductivity (S/m)	0.899

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

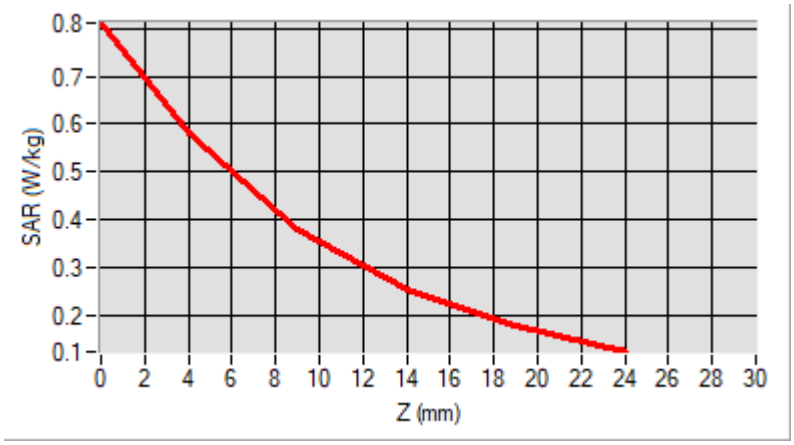
Maximum location: X=-15.00, Y=-23.00 ; SAR Peak: 0.86 W/kg

D. SAR 1g & 10g

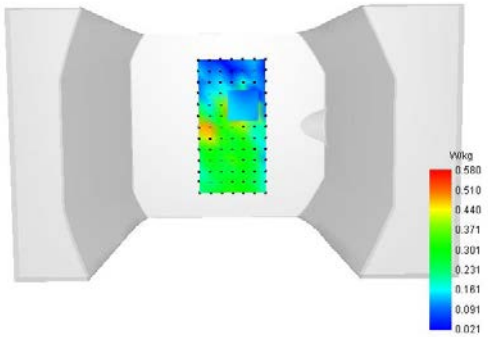
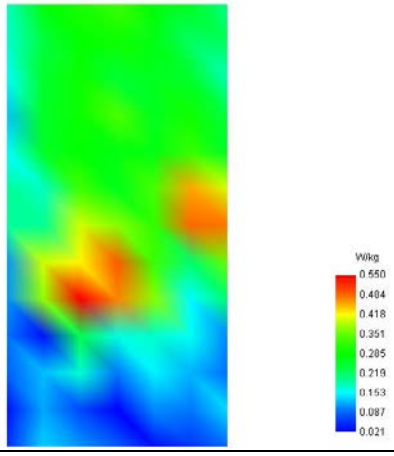
SAR 10g (W/Kg)	0.341
SAR 1g (W/Kg)	0.572
Variation (%)	-1.180
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.811	0.580	0.382	0.257	0.180



F. 3D Image

3D screen shot	Hot spot position
	

Plot 18
Date of measurement: 14/4/2025

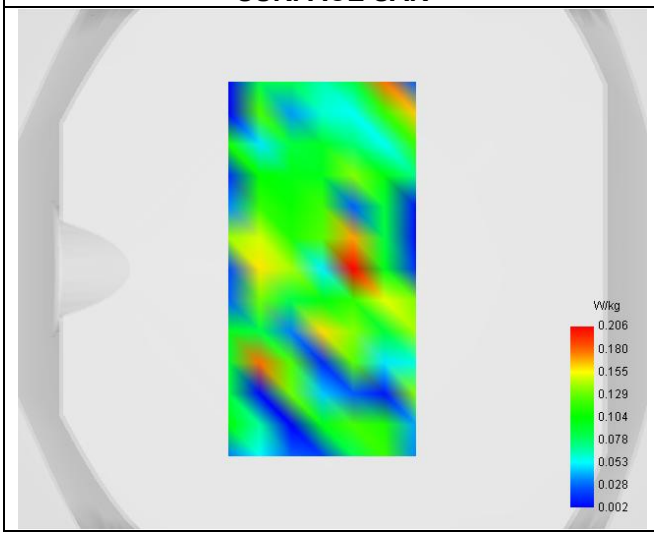
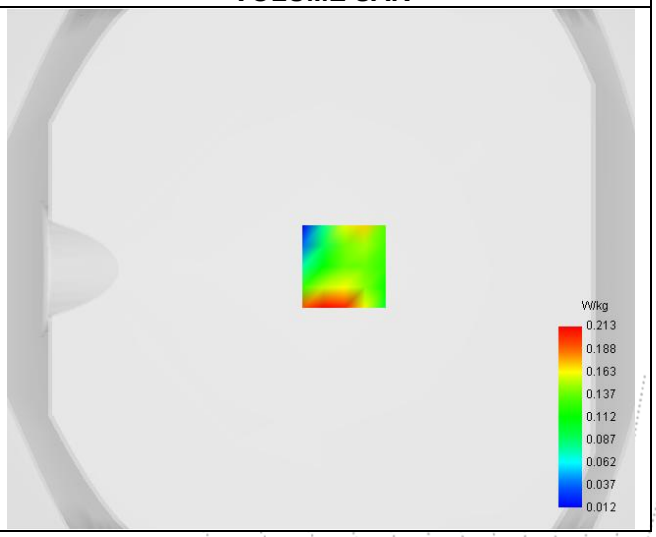
A. Experimental conditions.

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 66
Signal	LTE FDD
Cell Bandwidth	20 Mhz
Modulation	SC-OFDM - QPSK
RB offset	5
RB size	20

B. Permitivity

Frequency (MHz)	1745.000
Relative permitivity (real part)	38.776
Relative permitivity (imaginary part)	14.186
Conductivity (S/m)	1.382

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

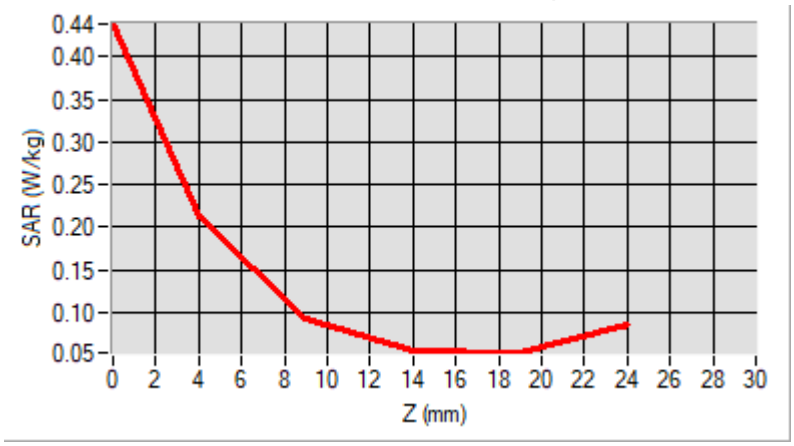
Maximum location: X=9.00, Y=1.00 ; SAR Peak: 0.43 W/kg

D. SAR 1g & 10g

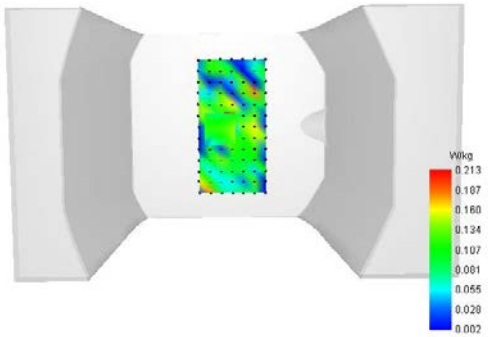
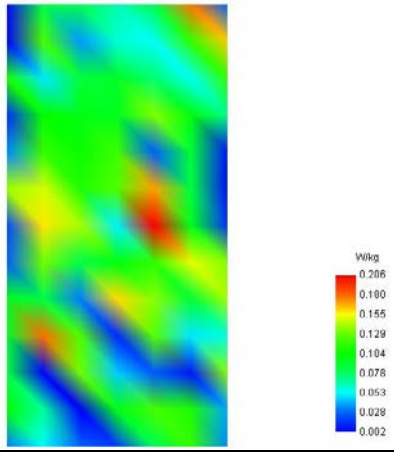
SAR 10g (W/Kg)	0.103
SAR 1g (W/Kg)	0.187
Variation (%)	1.740
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.439	0.213	0.093	0.056	0.053



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.
1 ~2/ F, NO. B FACTORY BUILDING, PENGZHOU INDUSTRIAL PARK, FUYUAN 1ST ROAD, TANGWEI COMMUNITY, FUHAI STREET, BAO'AN DISTRICT, SHENZHEN, GUANGDONG,CHINA

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

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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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COMOSAR E-FIELD PROBE CALIBRATION REPORT

Ref: ACR.199.1.24.BES.A

	Name	*Function*	*Date*	*Signature*
Prepared by :	Cyrille ONNEE	Measurement Responsible	7/18/2024	
Checked & approved by:	Jérôme Luc	Technical Manager	7/18/2024	
Authorized by:	Yann Toutain	Laboratory Director	7/18/2024	

Yann Toutain ID Signature numérique de Yann Toutain ID Date: 2024.07.18 10:38:49 +02'00'

	Customer Name
Distribution :	Shenzhen BCTC Technology Co., Ltd.

Issue	*Name*	*Date*	*Modifications*
A	Cyrille ONNEE	7/18/2024	Initial release

TABLE OF CONTENTS

1 DEVICE UNDER TEST

Device Under Test	
Device Type	COMOSAR DOSIMETRIC E FIELD PROBE
Manufacturer	MVG
Model	SSE2
Serial Number	2623-EPGO-420
Product Condition (new / used)	New
Frequency Range of Probe	0.15 GHz-7.5GHz
Resistance of Three Dipoles at Connector	Dipole 1: R1=0.228 MΩ Dipole 2: R2=0.238 MΩ Dipole 3: R3=0.230 MΩ

2 PRODUCT DESCRIPTION

2.1 GENERAL INFORMATION

MVG's COMOSAR E field Probes are built in accordance to the IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards.

Figure 1 – *MVG COMOSAR Dosimetric E field Probe*

Probe Length	330 mm
Length of Individual Dipoles	24.5 mm
Maximum external diameter	8 mm
Probe Tip External Diameter	2.55 mm
Distance between dipoles / probe extremity	12.7 mm

3 MEASUREMENT METHOD

The IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards provide recommended practices for the probe calibrations, including the performance characteristics of interest and methods by which to assess their effect. All calibrations / measurements performed meet the fore-mentioned standards.

3.1 SENSITIVITY

The sensitivity factors of the three dipoles were determined using a two step calibration method (air and tissue simulating liquid) using waveguides as outlined in the standards for frequency range 600-7500MHz and using the calorimeter cell method (transfer method) as outlined in the standards for frequency 150-450 MHz.

3.2 LINEARITY

The evaluation of the linearity was done in free space using the waveguide, performing a power sweep to cover the SAR range 0.01W/kg to 100W/kg.

3.3 ISOTROPY

The axial isotropy was evaluated by exposing the probe to a reference wave from a standard dipole with the dipole mounted under the flat phantom in the test configuration suggested for system validations and checks. The probe was rotated along its main axis from 0 to 360 degrees in 15-degree steps. The hemispherical isotropy is determined by inserting the probe in a thin plastic box filled with tissue-equivalent liquid, with the plastic box illuminated with the fields from a half wave dipole. The dipole is rotated about its axis (0°–180°) in 15° increments. At each step the probe is rotated about its axis (0°–360°).

3.4 BOUNDARY EFFECT

The boundary effect is defined as the deviation between the SAR measured data and the expected exponential decay in the liquid when the probe is oriented normal to the interface. To evaluate this effect, the liquid filled flat phantom is exposed to fields from either a reference dipole or waveguide. With the probe normal to the phantom surface, the peak spatial average SAR is measured and compared to the analytical value at the surface.

The boundary effect uncertainty can be estimated according to the following uncertainty approximation formula based on linear and exponential extrapolations between the surface and $d_{be} + d_{step}$ along lines that are approximately normal to the surface:

$$\mathrm{SAR}_{\mathrm{uncertainty}}[\%] = \delta\mathrm{SAR}_{be}\,\frac{(d_{be}+d_{step})^2}{2d_{step}}\,\frac{\left(e^{-d_{be}/(\delta/2)}\right)}{\delta/2} \quad \text{for } (d_{be}+d_{step}) < 10\ \mathrm{mm}$$

where

$\mathrm{SAR}_{\mathrm{uncertainty}}$	is the uncertainty in percent of the probe boundary effect
d_{be}	is the distance between the surface and the closest *zoom-scan* measurement point, in millimetre
Δ_{step}	is the separation distance between the first and second measurement points that are closest to the phantom surface, in millimetre, assuming the boundary effect at the second location is negligible
δ	is the minimum penetration depth in millimetres of the head tissue-equivalent liquids defined in this standard, i.e., $\delta \approx 14$ mm at 3 GHz;
$\Delta\mathrm{SAR}_{be}$	in percent of SAR is the deviation between the measured SAR value, at the distance d_{be} from the boundary, and the analytical SAR value.

The measured worst case boundary effect SARuncertainty[%] for scanning distances larger than 4mm is 1.0% Limit ,2%).

4 MEASUREMENT UNCERTAINTY

The guidelines outlined in the IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards were followed to generate the measurement uncertainty associated with a SAR probe calibration using the waveguide or calorimetric cell technique depending on the frequency.

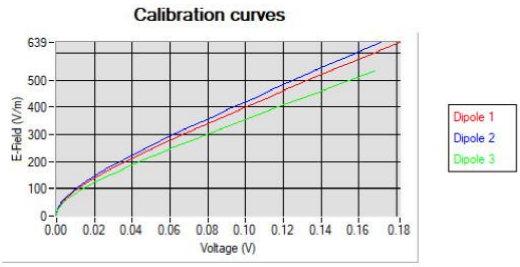
The estimated expanded uncertainty (k=2) in calibration for SAR (W/kg) is +/-11% for the frequency range 150-450MHz.
The estimated expanded uncertainty (k=2) in calibration for SAR (W/kg) is +/-14% for the frequency range 600-7500MHz.

5 CALIBRATION RESULTS

Ambient condition	
Liquid Temperature	20 +/- 1 °C
Lab Temperature	20 +/- 1 °C
Lab Humidity	30-70 %

5.1 CALIBRATION IN AIR

The following curve represents the measurement in waveguide of the voltage picked up by the probe toward the E-field generated inside the waveguide.



From this curve, the sensitivity in air is calculated using the below formula.

$$E^2 = \sum_{i=1}^{3} \frac{V_i \left(1 + {V_i}/{DCP_i}\right)}{Norm_i}$$

where
Vi=voltage readings on the 3 channels of the probe
DCPi=diode compression point given below for the 3 channels of the probe
Normi=dipole sensitivity given below for the 3 channels of the probe

Normx dipole 1 (μV/(V/m)^2)	Normy dipole 2 (μV/(V/m)^2)	Normz dipole 3 (μV/(V/m)^2)
1.21	1.09	1.56

DCP dipole 1 (mV)	DCP dipole 2 (mV)	DCP dipole 3 (mV)
106	109	103

5.2 CALIBRATION IN LIQUID

The calorimeter cell or the waveguide is used to determine the calibration in liquid using the formula below.

$$ConvF = \frac{E_{liquid}^2}{E_{air}^2}$$

The E-field in the liquid is determined from the SAR measurement according to the below formula.

$$E_{liquid}^2 = \frac{\rho\, SAR}{\sigma}$$

where
σ=the conductivity of the liquid
ρ=the volumetric density of the liquid
SAR=the SAR measured from the formula that depends on the setup used. The SAR formulas are given below

For the calorimeter cell (150-450 MHz), the formula is:

$$SAR = c\frac{dT}{dt}$$

where
c=the specific heat for the liquid
dT/dt=the temperature rises over the time

For the waveguide setup (600-75000 MHz), the formula is:

$$SAR = \frac{4P_W}{ab\delta} e^{\frac{-2z}{\delta}}$$

where
a=the larger cross-sectional of the waveguide
b=the smaller cross-sectional of the waveguide
δ=the skin depth for the liquid in the waveguide
Pw=the power delivered to the liquid

The below table summarize the ConvF for the calibrated liquid. The curves give examples for the measured SAR depending on the voltage in some liquid.

Liquid	Frequency (MHz*)	ConvF
HL450	450	0.86
BL450	450	0.78
HL750	750	0.80
BL750	750	0.87
HL850	835	0.81
BL850	835	0.80
HL900	900	0.76
BL900	900	0.87
HL1800	1800	0.96
BL1800	1800	1.01
HL1900	1900	1.04
BL1900	1900	1.11
HL2100	2100	1.00
BL2100	2100	1.16
HL2300	2300	1.11
BL2300	2300	1.23
HL2450	2450	1.11
BL2450	2450	1.32
HL2600	2600	1.03
BL2600	2600	1.19
HL5200	5200	1.18
BL5200	5200	0.97
HL5400	5400	1.17
BL5400	5400	1.00
HL5600	5600	1.20
BL5600	5600	0.95
HL5800	5800	1.15
BL5800	5800	1.05

(*) Frequency validity is +/-50MHz below 600MHz, +/-100MHz from 600MHz to 6GHz and +/-700MHz above 6GHz