



SAR Test Report

For

Applicant Name: Shenzhen Qichang Intelligent Technology Co., Ltd
Address: Room 510, Building 7, Yunli Intelligent Park, No. 7, Bantian Street, Longgang, Shenzhen, China
EUT Name: Smart Phone
Brand Name: FOSSIBOT
Model Number: F109
Series Model Number: F109 Pro, F109 P, F109 S, F109 Plus

Issued By

Company Name: BTF Testing Lab (Shenzhen) Co., Ltd.
Address: F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, China

Report Number: BTF240704R01801
Test Standards: FCC 47 CFR§2.1093 IEC/IEEE 62209-1528: 2020 IEEE C95.1-2019 KDB447498 D04 KDB86566c4 D01 KDB865664 D02 KDB941225 D01 KDB941225 D05 KDB248227 D01 KDB941225 D06 KDB648474 D04 KDB690783 D01
FCC ID: 2BAK2-F109

Test Conclusion: Pass
Test Date: 2024-07-08 to 2024-08-20
Date of Issue: 2024-08-21
Tested By: Amenda Zhong

Amenda Zhong / Tester

Prepared By: Zoey Zhang
Zoey Zhang / Project Engineer

Date: 2024-08-21

Approved By: Ryan.CJ
Ryan.CJ / EMC Manager

Date: 2024-08-21



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Revision History		
Version	Issue Date	Revisions Content
R_V0	2024-08-21	Original
Note:		Once the revision has been made, then previous versions reports are invalid.

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1. Introduction

1.1 Identification of Testing Laboratory

Company Name:	BTF Testing Lab (Shenzhen) Co., Ltd.
Address:	F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, China
Phone Number:	+86-0755-23146130
Fax Number:	+86-0755-23146130

1.2 Identification of the Responsible Testing Location

Test Location:	BTF Testing Lab (Shenzhen) Co., Ltd.
Address:	F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, China
Description:	All measurement facilities used to collect the measurement data are located at F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, China
FCC Registration Number	518915
Designation Number	CN1330

1.3 Laboratory Condition

Ambient Temperature:	21°C to 25°C
Ambient Relative Humidity:	48% to 59%
Ambient Pressure:	100 kPa to 102 kPa

1.4 Announcement

- (1) The test report reference to the report template version v0.
- (2) The test report is invalid if not marked with the signatures of the persons responsible for preparing, reviewing and approving the test report.
- (3) The test report is invalid if there is any evidence and/or falsification.
- (4) This document may not be altered or revised in any way unless done so by BTF and all revisions are duly noted in the revisions section.
- (5) Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.
- (6) The laboratory is only responsible for the data released by the laboratory, except for the part provided by the applicant.

2. Product Information

2.1 Application Information

Company Name:	Shenzhen Qichang Intelligent Technology Co., Ltd
Address:	Room 510, Building 7, Yunli Intelligent Park, No. 7, Bantian Street, Longgang, Shenzhen, China

2.2 Manufacturer Information

Company Name:	Shenzhen Qichang Intelligent Technology Co., Ltd
Address:	Room 510, Building 7, Yunli Intelligent Park, No. 7, Bantian Street, Longgang, Shenzhen, China

2.3 Factory Information

Company Name:	Shenzhen Qichang Intelligent Technology Co., Ltd
Address:	Room 510, Building 7, Yunli Intelligent Park, No. 7, Bantian Street, Longgang, Shenzhen, China

2.4 General Description of Equipment under Test (EUT)

EUT Name	Smart phone
Under Test Model Name	F109
Sample No.	BTFSN240704029/6 S1-S2
Series Model Name	F109 Pro, F109 P, F109 S, F109 Plus
Description of Model name differentiation	Only the model name is different, others are the same.
Hardware Version	E393_MAIN_PCB_V1.1
Software Version	FOSSIBOT_F109_E

2.5 Equipment under Test Ancillary Equipment

Ancillary Equipment 1	Rechargeable Battery	
	Capacity	10600mAh
	Nominal Voltage	3.87V

2.6 Technical Information

Network and Wireless connectivity	2G Network GSM/GPRS/EGPRS 850/1900 3G Network WCDMA/HSDPA/HSUPA Band 2/4/5 4G Network FDD LTE Band 2/5/7/12/13 TDD LTE Band 40 5G Network N78 2.4G WIFI 802.11b, 802.11g, 802.11n(HT20/40) 5G WIFI 802.11a, 802.11n(HT20/40), 802.11ac(VHT20/40/80) BT (EDR+BLE) NFC
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The requirement for the following technical information of the EUT was tested in this report:

Operating Mode	GSM, WCDMA, LTE, NR, WLAN, Bluetooth, NFC		
Frequency Range	GSM 850	TX: 824 ~ 849 MHz	RX: 869 ~ 894 MHz
	GSM 1900	TX: 1850 ~ 1910 MHz	RX: 1930 ~ 1990 MHz
	WCDMA Band 2	TX: 1850 ~ 1910 MHz	RX: 1930 ~ 1990 MHz
	WCDMA Band 4	TX: 1710 ~ 1755 MHz	RX: 2110 ~ 2155 MHz
	WCDMA Band 5	TX: 824 ~ 849 MHz	RX: 869 ~ 894 MHz
	LTE Band 2	TX: 1850 ~ 1910 MHz	RX: 1930 ~ 1990 MHz
	LTE Band 5	TX: 824 ~ 849 MHz	RX: 869 ~ 894 MHz
	LTE Band 7	TX: 2500 ~ 2570 MHz	RX: 2620 ~ 2690 MHz
	LTE Band 12	TX: 698 ~ 716 MHz	RX: 728 ~ 746 MHz
	LTE Band 13	TX: 777 ~ 787 MHz	RX: 746 ~ 756 MHz
	LTE Band 40a	2305 ~2315 MHz	
	LTE Band 40b	2350 ~2460 MHz	
	N78	3300 ~ 3800 MHz	
	802.11b/g/n(HT20/40)	2412 ~ 2462 MHz 2422 ~ 2452 MHz	
	802.11a /802.11n(HT20/40) /802.11ac(VHT20/40/80)	5150 ~ 5250 MHz 5725 ~ 5850 MHz	
	Bluetooth	2402 ~ 2480 MHz	
	NFC	13.56 MHz	
Antenna Type	WWAN: PIFA Antenna WLAN: PIFA Antenna BT: PIFA Antenna NFC: PIFA Antenna		
Hotspot Function	Support		
Power Reduction	Not Support		
Exposure Category	General Population/Uncontrolled exposure		
EUT Stage	Portable Device		
Product	Type		
	☐ Production unit	☒ Identical prototype	

3. Summary of Test Results

3.1 Test Standards

No.	Identity	Document Title
1	47 CFR Part 2.1093	Radiofrequency radiation exposure evaluation: portable devices
2	IEC/IEEE 62209-1528: 2020	Measurement procedure for the assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Part 1528: Human models, instrumentation, and procedures (Frequency range of 4 MHz to 10 GHz)
3	IEEE C95.1-2019	IEEE Standard for Safety Levels with Respect to Human Exposure to Electric, Magnetic, and Electromagnetic Fields, 0 Hz to 300 GHz
4	KDB447498 D04	Interim General RF Exposure Guidance v01
5	KDB865664 D01	SAR measurement 100MHz to 6GHz v01r04
6	KDB865664 D02	RF Exposure Reporting v01r02
7	KDB941225 D01	3G SAR Procedures v03r01
8	KDB941225 D05	SAR for LTE Devices v02r05
9	KDB248227 D01	802.11 Wi-Fi SAR v02r02
10	KDB941225 D06	Hotspot Mode v02r01
11	KDB648474 D04	Handset SAR v01r03
12	KDB690783 D01	SAR Listings on Grant v01r03

3.2 Device Category and SAR Limit

This device belongs to portable device category because its radiating structure is allowed to be used within 20 centimeters of the body of the user. Limit for General Population/Uncontrolled exposure should be applied for this device, it is 1.6 W/kg as averaged over any 1 gram of tissue.

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

NOTE:

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

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

3.3 Test Result Summary

The maximum results of Specific Absorption Rate (SAR) found during test as follows:

<Highest Reported standalone SAR Summary>

Exposure Position	Frequency Band	Reported SAR (W/kg)	Equipment Class	Highest Reported SAR (W/kg)
Head 1-g SAR (0 mm Gap)	GSM 850	0.138	PCE	0.996
	GSM 1900	0.107		
	WCDMA Band II	0.253		
	WCDMA Band IV	0.220		
	WCDMA Band V	0.102		
	LTE Band 2	0.286		
	LTE Band 5	0.083		
	LTE Band 7	0.130		
	LTE Band 12	0.185		
	LTE Band 13	0.110		
	LTE Band 40a	0.068		
	NR N78	0.996		
	WLAN 2.4 GHz	0.340	DTS	
	WLAN 5.2 GHz	0.534	NII	
WLAN 5.8 GHz	0.525			
Exposure Position	Frequency Band	Reported SAR (W/kg)	Equipment Class	Highest Reported SAR (W/kg)
Hotspot(Body) 1-g SAR (10 mm Gap)	GSM 850	0.476	PCE	0.979
	GSM 1900	0.218		
	WCDMA Band II	0.636		
	WCDMA Band IV	0.505		
	WCDMA Band V	0.210		
	LTE Band 2	0.767		
	LTE Band 5	0.181		
	LTE Band 7	0.397		
	LTE Band 12	0.121		
	LTE Band 13	0.148		
	LTE Band 40a	0.142		
	NR N78	0.979		
	WLAN 2.4 GHz	0.159	DTS	
	WLAN 5.2 GHz	0.114	NII	
WLAN 5.8 GHz	0.162			

This device is in compliance with Specific Absorption Rate(SAR) for general population/uncontrolled exposure limits (1.6 W/kg) specified in FCC47 CFR part 2(2.1093) and ANSI/IEEE C95.1-2019, and had been tested in accordance with the measurement methods and procedures specified in IEC/IEEE 62209-1528: 2020.

<Highest Reported Simultaneous SAR>

Exposure Position	Simultaneous Configuration	Highest Reported Simultaneous Transmission SAR (W/kg)	Limit (W/kg)	Verdict
Head 1-g SAR (0 mm Gap)	NR N78 + 5G WIFI	1.406	1.6	Pass
Hotspot(Body) 1-g SAR (10 mm Gap)	NR N78 + 5G WIFI	1.141	1.6	Pass

3.4 Test Uncertainty

3.4.1 Measurement uncertainty evaluation for SAR test

Measurement uncertainty evaluation for SAR test (300MHz to 6GHz)

Uncertainty Component	Tol (+-%)	Prob. Dist.	Div.	Ci (1g)	Ci (10g)	1g Ui (+-%)	10 g Ui (+-%)	Vi veff
Measurement System								
Probe calibration	5.8	N	1	1	1	5.80	5.80	∞
Axial Isotropy	3.5	R	$\sqrt{3}$	$\sqrt{0.5}$	$\sqrt{0.5}$	1.43	1.43	∞
Hemispherical Isotropy	5.9	R	$\sqrt{3}$	$\sqrt{0.5}$	$\sqrt{0.5}$	2.41	2.41	∞
Boundary effect	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Linearity	4.7	R	$\sqrt{3}$	1	1	2.71	2.71	∞
System detection limits	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Modulation response	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	∞
Readout Electronics	0.5	N	1	1	1	0.50	0.50	∞
Response Time	0	R	$\sqrt{3}$	1	1	0.00	0.00	∞
Integration Time	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
RF ambient Conditions - Noise	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	∞
RF ambient Conditions - Reflections	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	∞
Probe positioner Mechanical Tolerance	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
Probe positioning with respect to Phantom Shell	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
Extrapolation, interpolation and integration Algorithms for Max. SAR Evaluation	2.3	R	$\sqrt{3}$	1	1	1.33	1.33	∞
Test sample Related								
Test sample positioning	2.6	N	1	1	1	2.60	2.60	11
Device Holder Uncertainty	3.0	N	1	1	1	3.00	3.00	7
Output power Variation - SAR drift measurement	5.0	R	$\sqrt{3}$	1	1	2.89	2.89	∞
SAR scaling	2.0	R	$\sqrt{3}$	1	1	1.15	1.15	∞
Phantom and Tissue Parameters								
Phantom Shell Uncertainty - Shape, Thickness and Permittivity	4	R	$\sqrt{3}$	1	1	2.31	2.31	∞
Uncertainty in SAR correction for deviation in permittivity and conductivity	2.0	N	1	1	0.84	2.00	1.68	∞
Liquid conductivity measurement	4.0	N	1	0.78	0.71	3.12	2.84	5
Liquid permittivity measurement	5.0	N	1	0.23	0.26	1.15	1.30	5
Liquid Conductivity - Temperature Uncertainty	2.5	R	$\sqrt{3}$	0.78	0.71	1.13	1.02	∞
Liquid permittivity - Temperature Uncertainty	2.5	R	$\sqrt{3}$	0.23	0.26	0.33	0.38	∞
Combined Standard Uncertainty		RSS				10.47	10.34	
Expanded Uncertainty (95% Confidence interval)		k				20.95	20.69	

* This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3.4.2 Measurement uncertainty evaluation for system check

Uncertainty Component	Tol (+-%)	Prob. Dist.	Div.	Ci (1g)	Ci (10 g)	1g Ui (+-%)	10 g Ui (+-%)	Vi veff
Measurement System								
Probe calibration	5.8	N	1	1	1	5.80	5.80	∞
Axial Isotropy	3.5	R	$\sqrt{3}$	1	1	2.02	2.02	∞
Hemispherical Isotropy	5.9	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Boundary effect	1	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Linearity	4.7	R	$\sqrt{3}$	1	1	2.71	2.71	∞
System detection limits	1	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Modulation response	0	N	$\sqrt{3}$	0	0	0.00	0.00	∞
Readout Electronics	0.5	N	1	1	1	0.50	0.50	∞
Response Time	0	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Integration Time	1.4	R	$\sqrt{3}$	0	0	0.00	0.00	∞
RF ambient Conditions - Noise	3	R	$\sqrt{3}$	1	1	1.73	1.73	∞
RF ambient Conditions - Reflections	3	R	$\sqrt{3}$	1	1	1.73	1.73	∞
Probe positioner Mechanical Tolerance	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
Probe positioning with respect to Phantom Shell	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
Extrapolation, interpolation and integration Algorithms for Max. SAR Evaluation	2.3	R	$\sqrt{3}$	1	1	1.33	1.33	∞
Dipole								
Deviation of experimental source from numerical source	5	N	1	1	1	5.00	5.00	∞
Input Power and SAR drift measurement	0.5	R	$\sqrt{3}$	1	1	0.29	0.29	∞
Dipole Axis to Liquid Dist.	2.0	R	$\sqrt{3}$	1	1	1.15	1.15	∞
Phantom and Tissue Parameters								
Phantom Shell Uncertainty - Shape, Thickness and Permittivity	4	R	$\sqrt{3}$	1	1	2.31	2.31	∞
Uncertainty in SAR correction for deviation in permittivity and conductivity	2.0	N	1	1	0.84	2.00	1.68	∞
Liquid conductivity measurement	4	N	1	0.78	0.71	3.12	2.84	5
Liquid permittivity measurement	5.0	N	1	0.23	0.26	1.15	1.30	5
Liquid Conductivity - Temperature Uncertainty	2.5	R	$\sqrt{3}$	0.78	0.71	1.13	1.02	∞
Liquid permittivity - Temperature Uncertainty	2.5	R	$\sqrt{3}$	0.23	0.26	0.33	0.38	∞
Combined Standard Uncertainty		RSS				10.16	10.03	
Expanded Uncertainty (95% Confidence interval)		k				20.32	20.06	

4.2.2 Robot



A standard high precision 6-axis robot (Denso) with teaches pendant with Scanning System

- It must be able to scan all the volume of the phantom to evaluate the tridimensional distribution of SAR.
- Must be able to set the probe orthogonal of the surface of the phantom ($\pm 30^\circ$).
- Detects stresses on the probe and stop itself if necessary to keep the integrity of the probe.

4.2.3 E-Field Probe

For the measurements, the Specific Dosimetric SSE2 E-Field Probe with following specifications is used:

- Dynamic range: 0.01-100 W/kg
- Tip diameter: 2mm for SSE2
- Distance between probe tip and sensor centre: 1mm for SSE2
- Distance between sensor centre and the inner phantom surface: 2mm for $f \geq 4\text{GHz}$.
- Probe linearity: $<0.25\text{dB}$.
- Axial Isotropy: $<0.25\text{dB}$.
- Spherical Isotropy: $<0.50\text{dB}$.
- Calibration range: 150 to 6000 MHz for head & body simulating liquid
- Angle between probe axis (evaluation axis) and surface normal line: less than 20° .



4.2.4 Phantoms

SAM Phantom

For the measurements the Specific Anthropomorphic Mannequin (SAM) defined by the IEEE SCC-34/SC2 group is used. The probe scanning of the E-Field is done in the 2 halves of the normalized head. The normalized shape of the phantom corresponds to the dimensions of 90% of an adult head size. It enables the dosimetric evaluation of left and right-hand phone usage and includes an additional flat phantom part for the simplified body performance check. The phantom set-up includes a cover, which prevents the evaporation of the liquid.



SAM Phantom

The thickness of the phantom amounts to $2\text{ mm} \pm 0.2\text{ mm}$. The materials for the phantom do not affect the radiation of the device under test (DUT) : $\epsilon_r' < 5$
The head is filled with tissue simulating liquid. The hand do not have to be modeled.

TWIN SAM phantom

	Mechanical	Electrical	
Overall thickness	$2 \pm 0.2\text{ mm}$ (except ear area)	Relative permittivity	3.4
Dimensions	1000 mm(L) x 500 mm(W) x 200 mm(H)	Loss tangent	0.02
Maximum volume	27 L		
Material	Fiberglass based		

ELLIPTICAL Phantom

The phantom is for Body performance check filled with tissue-equivalent liquid to a depth of at least 150 mm, whose shell material is resistant to damage or reaction with tissue-equivalent liquid chemicals.



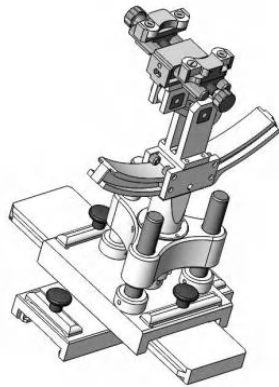
ELLI Phantom

The shape of the phantom is an ellipse with length $600\text{ mm} \pm 5\text{ mm}$ and width $400\text{ mm} \pm 5\text{ mm}$.
The phantom shell is made of low-loss and low-permittivity material, having loss tangent $\tan \delta \leq 0.05$ and relative permittivity:
 $\epsilon_r' \leq 5$ for $f \leq 3\text{ GHz}$
 $3 \leq \epsilon_r' \leq 5$ for $f > 3\text{ GHz}$
The thickness of the bottom-wall of the flat phantom is 2.0 mm with a tolerance of $\pm 0.2\text{ mm}$.

Technical & mechanical characteristics

Shell thickness	$2\text{ mm} \pm 0.2\text{ mm}$
Filling volume	25 L
Dimensions	600 mm x 400 mm x 200 mm
Permittivity	4.4
Loss tangent	0.017

4.2.5 Device Holder



System Material	Permittivity	Loss tangent
Delrin	3.7	0.005

(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
PMMA	2.9	0.028

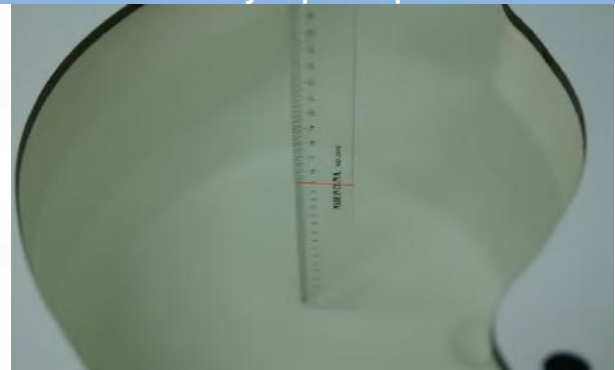
4.2.6 Simulating Liquid

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

Head Liquid Depth



Body Liquid Depth



The following table gives the recipes for tissue simulating liquid and the theoretical Conductivity/Permittivity.

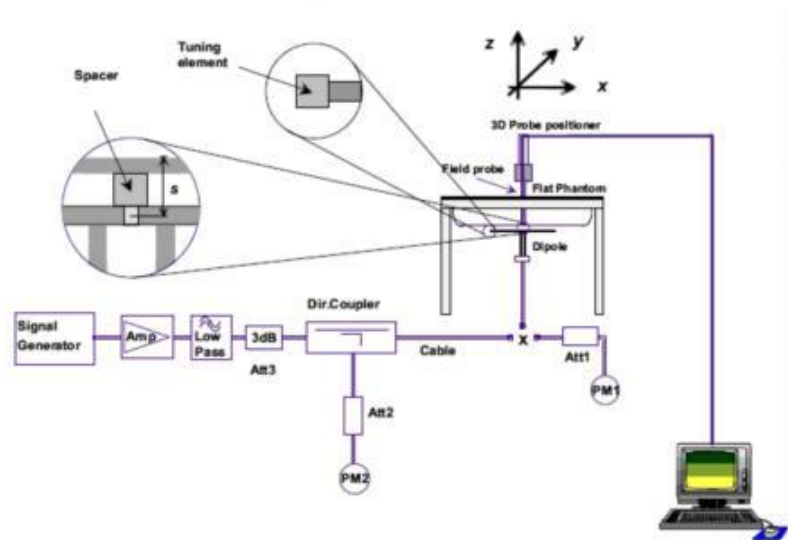
Head (Reference IEEE1528)								
Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity σ (S/m)	Permittivity ϵ
750	41.1	57.0	0.2	1.4	0.2	0	0.89	41.9
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
900	40.3	57.9	0.2	1.4	0.2	0	0.97	41.5
1800, 1900, 2000	55.2	0	0	0.3	0	44.5	1.4	40.0
2450	55.0	0	0	0.1	0	44.9	1.80	39.2
2600	54.9	0	0	0.1	0	45.0	1.96	39.0
Frequency (MHz)	Water (%)	Hexyl Carbitol (%)			Triton X-100 (%)		Conductivity σ (S/m)	Permittivity ϵ
5200	62.52	17.24			17.24		4.66	36.0
5800	62.52	17.24			17.24		5.27	35.3
Body (From instrument manufacturer)								
Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity σ (S/m)	Permittivity ϵ
750	51.7	47.2	0	0.9	0.1	0	0.96	55.5
835	50.8	48.2	0	0.9	0.1	0	0.97	55.2
900	50.8	48.2	0	0.9	0.1	0	1.05	55.0
1800, 1900, 2000	70.2	0	0	0.4	0	29.4	1.52	53.3
2450	68.6	0	0	0.1	0	31.3	1.95	52.7
2600	68.2	0	0	0.1	0	31.7	2.16	52.5
Frequency(MHz)	Water	DGBE (%)			Salt (%)		Conductivity σ (S/m)	Permittivity ϵ
5200	78.60	21.40			/		5.30	49.00
5800	78.50	21.40			0.1		6.00	48.20

5. System Verification

5.1 Purpose of System Check

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

5.2 System Check Setup



6. TEST POSITION CONFIGURATIONS

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

6.1 Head Exposure Conditions

Head exposure is limited to next to the ear voice mode operations. Head SAR compliance is tested according to the test positions defined in IEC IEEE 62209-1528:2020 using the SAM phantom illustrated as below.

6.1.1 Definition of the cheek position

The cheek position is established using steps a) to j) as follows.

- (a) Configure the DUT for voice operation, if necessary. For example, for a DUT with a flip.a)swivel, or slide cover piece, open the cover if this is consistent with voice operation. If the DUT can also be used with the cover closed, both configurations shall be tested.
- (b) Define two imaginary lines on the DUT, the vertical centreline and the horizontal line, relative to the DUT in vertical orientation as shown in Figure 15.
- (c) The vertical centreline passes through two points on the front side of the DUT: the midpoint of the width w of the DUT at the level of the acoustic output (Point A in Figure 15), and the midpoint of the width w_t at the bottom of the DUT (Point B). The horizontal line is perpendicular to the vertical centerline, and passes through the centre of the acoustic output (Figure 15). The two lines intersect at Point A. Note that for many DUTs, Point A coincides with the centre of the acoustic output. However, the acoustic output could be located elsewhere on the horizontal line. Also note that the vertical centreline is not necessarily parallel to the front face of the DUT, especially for clamshell DUTs, DUTs with flip cover pieces, and other irregularly shaped DUTs.
- (d) Position the DUT close to the surface of the phantom such that Point A is on the (virtual) extension of the line passing through points RE (right-ear ear reference point) and LE left-ear ear reference point) on the phantom (see Figure 16a) and Figure 16b)). The plane determined by the vertical centreline and the horizontal line of the DUT shall be parallel to the sagittal plane of the phantom.
- (e) Translate the DUT towards the phantom along the line passing through RE and LE until the DUT touches the ear (see Figure 16c)).
- (f) Rotate the DUT around the (virtual) LE-RE Line until the DUT vertical centreline is in the)reference plane(see Figure 16d)).
- (g) Rotate the DUT around its vertical centreline until the plane established by the DUT vertical centreline and horizontal line is parallel to the N-F line (see Annex G), and then translate the DUT towards the phantom along the LE-RE line until DUT Point A touches the ear at the ERP (ear reference point) (see Figure 16e))
- (h) While keeping Point A on the line passing through RE and LE and maintaining the DUT in contact with the pinna, rotate the DUT about the N-F line until any point on the DUT is in contact with a phantom point below the pinna (cheek) (see Figure 16f)). The physical angles of rotation shall be documented.
- (i) While keeping DUT Point A in contact with the ERP rotate the DUT around a line perpendicular to the plane established by the DUT vertical centreline and horizontal line and passing through DUT Point A, until the DUT vertical centreline is in the reference plane(see Figure 16g)).

- (j) Verify that the cheek position is correct as follows:
- 1) the N-F line is in the plane established by the DUT vertical centreline and horizontal line;
 - 2) DUT Point A touches the pinna at the ERP
 - 3) the DUT vertical centreline is in the reference plane.

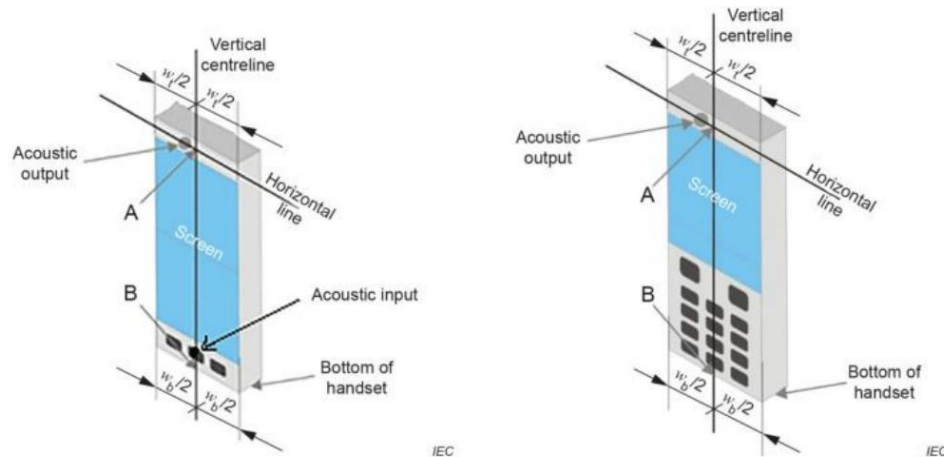
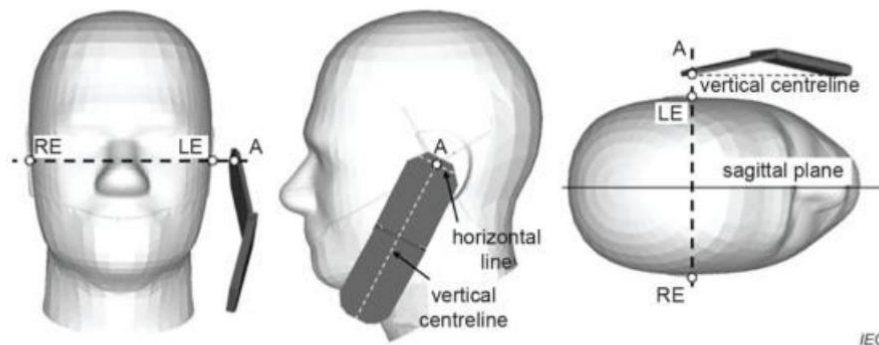


Figure 15 - Vertical and horizontal reference lines and reference points A and B on two example device types: a full touch-screen smart phone (left) and a DUT with a keypad (right)

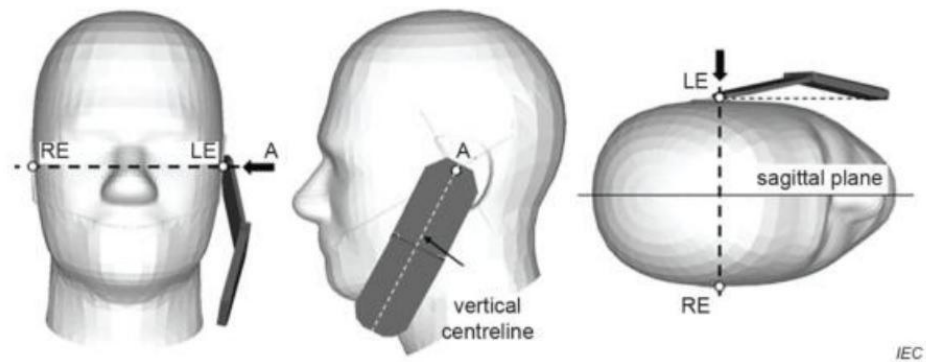


NOTE The reference points for the right-ear ear reference point (RE), left-ear ear reference point (LE), and mouth (M), which establish the reference plane for DUT positioning, are indicated. This device position shall be maintained for the sagittal phantom test set-up shown in Figure G.4.

a) Phone position 1 – cheek position

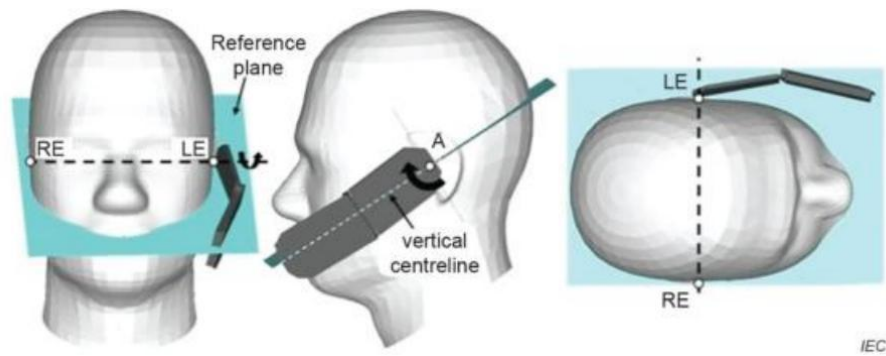


b) One possible DUT position against the head after applying 7.2.4.2.2 c)



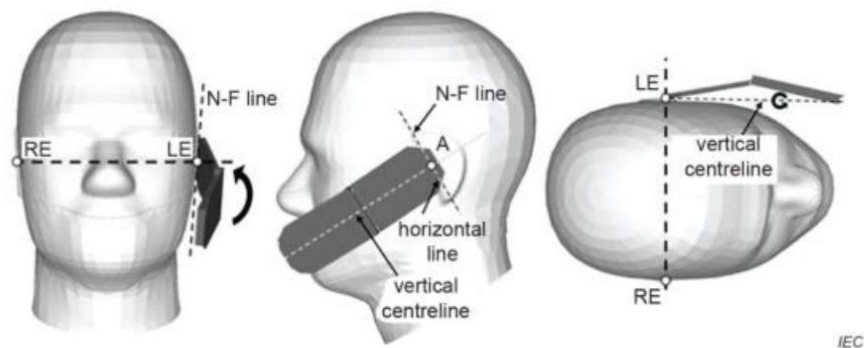
NOTE The black arrows show the direction of translation of the DUT for 7.2.4.2.2 d).

c) DUT position after applying 7.2.4.2.2 d)



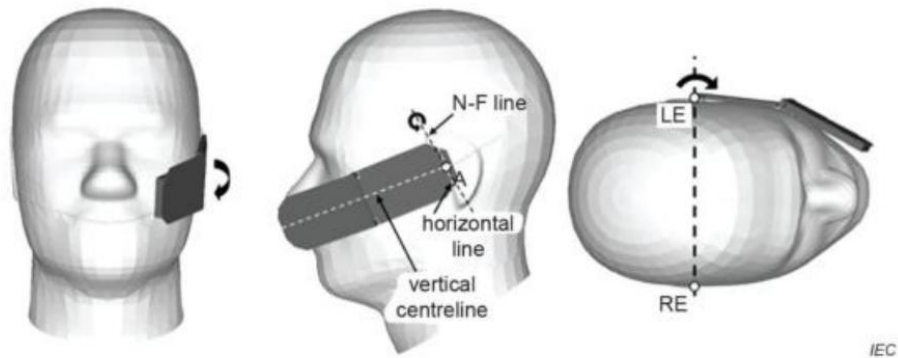
NOTE The curved black arrows show the direction of rotation of the DUT for 7.2.4.2.2 e).

d) DUT position after applying 7.2.4.2.2 e)



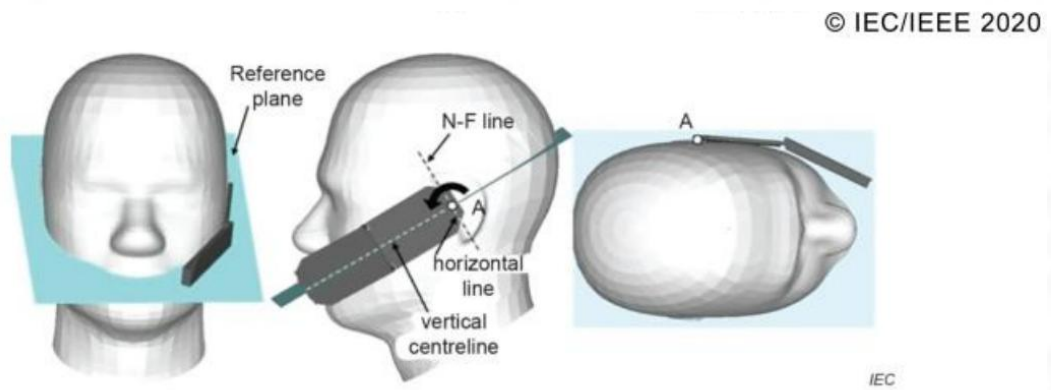
NOTE The curved black arrows show the direction of rotation of the DUT for 7.2.4.2.2 f).

e) DUT position after applying 7.2.4.2.2 f)



NOTE The curved black arrows show the direction of rotation of the DUT for 7.2.4.2.2 g)

f) DUT position after applying 7.2.4.2.2 g)



NOTE The curved black arrows show the direction of rotation of the DUT for 7.2.4.2.2 h).

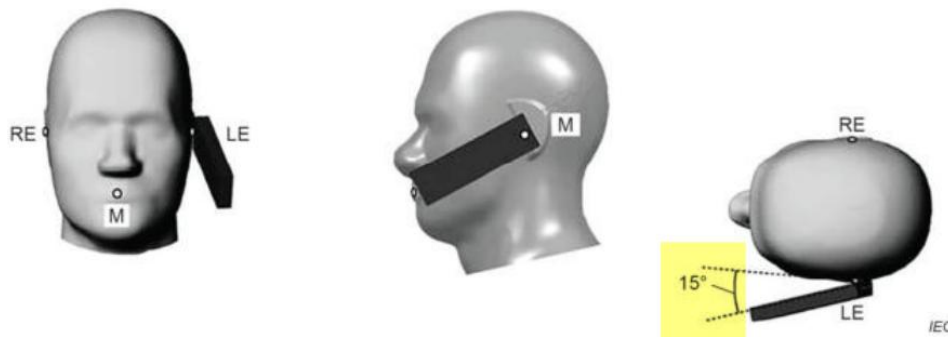
g) DUT position after applying 7.2.4.2.2 h)

Figure 16 – Cheek position of the DUT on the left side of SAM where the device position shall be maintained for the phantom test set-up

6.1.2 Definition of the tilt position

The tilt position is established using steps a) through d) as follows.

- (a) Repeat steps a) through j) of 7.2.4.2.2 to place the DUT in the cheek position)(see Figure16).
- (b) While maintaining the orientation of the DUT, move the DUT away from the pinna along the line passing through RE and LE far enough to allow a rotation of the DUT away from the cheek by 15°.
- (c) Rotate the DUT around the horizontal line by 15°(see Figure 17).
- (d) While maintaining the orientation of the DUT. move the DUT towards the phantom on a line passing through RE and LE until any part of the DUT touches the ear. The tilt position is obtained when the contact is on the pinna. If the contact is at any location other than the pinna, e.g. an extended antenna in contact with the back of the head phantom, the angle of the DUT shall be reduced. in this case, the tilt position is obtained if any part of the DUT is in contact with the pinna and a second point on the DUT is in contact with the phantom,e.g.the antenna in contact with the back of the head.



Key

- M Mouth reference point
- LE Left-ear ear reference point
- RE Right-ear ear reference point

This device position shall be maintained for the phantom test set-up.

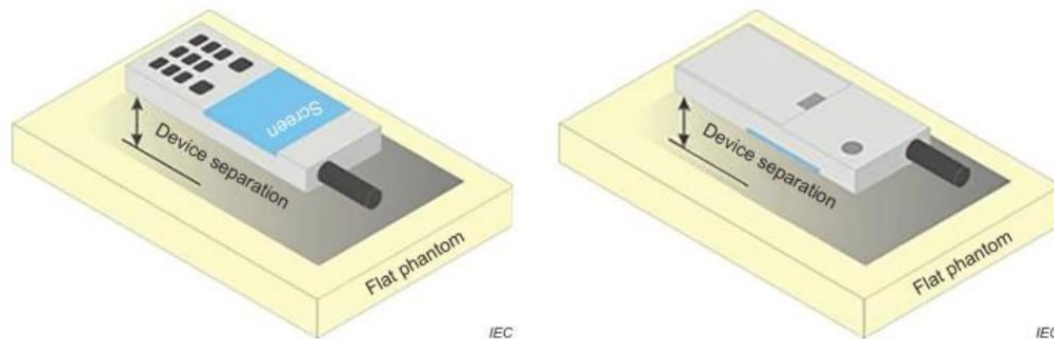
Figure 17 – Tilt position of the DUT on the left side of SAM

6.2 Body-worn Position Conditions

Body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in KDB 447498 are used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode. When the reported SAR for a body-worn accessory.

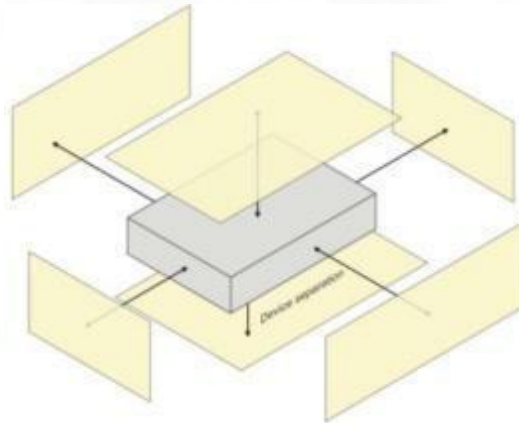
Body-worn accessories that do not contain metallic or conductive components may be tested according to worst-case exposure configurations, typically according to the smallest test separation distance required for the group of body-worn accessories with similar operating and exposure characteristics. All body-worn accessories containing metallic components are tested in conjunction with the host device.

Body-worn accessory SAR compliance is based on a single minimum test separation distance for all wireless and operating modes applicable to each body-worn accessory used by the host, and according to the relevant voice and/or data mode transmissions and operations. If a body-worn accessory supports voice only operations in its normal and expected use conditions, testing of data mode for body-worn compliance is not required. A conservative minimum test separation distance for supporting off-the-shelf body-worn accessories that may be acquired by users of consumer handsets is used to test for body-worn accessory SAR compliance. This distance is determined by the handset manufacturer, according to the requirements of Supplement C 01-01. Devices that are designed to operate on the body of users using lanyards and straps, or without requiring additional body-worn accessories, will be tested using a conservative minimum test separation distance ≤ 5 mm to support compliance.



6.3 Hotspot Mode Exposure Position Conditions

For handsets that support hotspot mode operations, with wireless router capabilities and various web browsing functions, the relevant hand and body exposure conditions are tested according to the hotspot SAR procedures in KDB 941225. A test separation distance of 10 mm is required between the phantom and all surfaces and edges with a transmitting antenna located within 25 mm from that surface or edge. When the form factor of a handset is smaller than 9 cm x 5 cm, a test separation distance of 5 mm (instead of 10 mm) is required for testing hotspot mode. When the separation distance required for body-worn accessory testing is larger than or equal to that tested for hotspot mode, in the same wireless mode 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).



6.4 Product Specific 10g Exposure Consideration

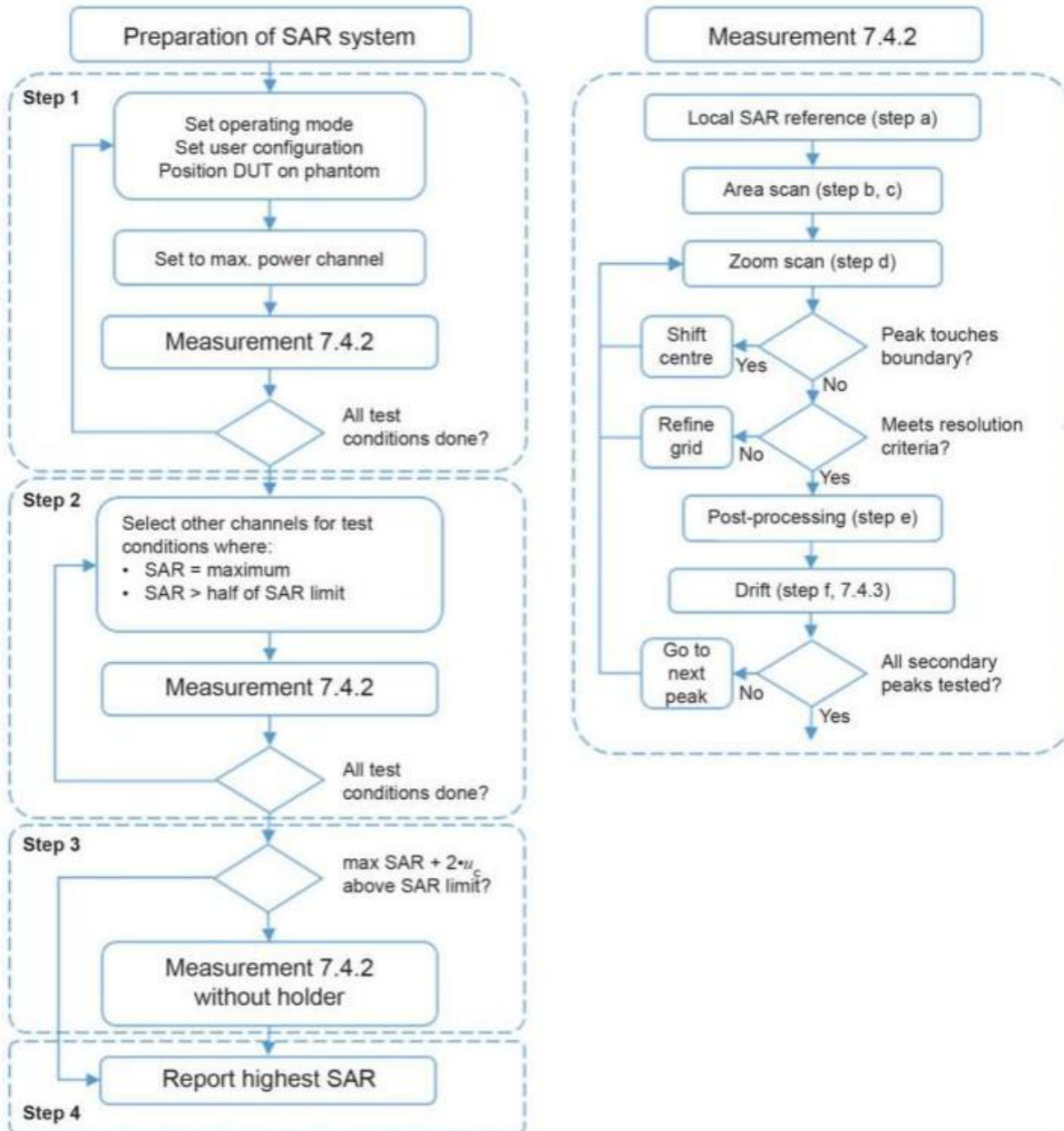
According with FCC KDB 648474 D04, for smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm that provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets that support voice calls next to the ear, unless it is confirmed otherwise through KDB inquiries, the following phablet procedures should be applied to evaluate SAR compliance for each applicable wireless modes and frequency band. Devices marketed as phablets, regardless of form factors and operating characteristics must be tested as a phablet to determine SAR compliance;

The UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna located at ≤ 25 mm from that surface or edge, in direct contact with a flat phantom, for 10-g extremity SAR according to the body-equivalent tissue dielectric parameters in KDB 865664 to address interactive hand use exposure conditions. The UMPC mini-tablet 1-g SAR at 5 mm is not required. 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.

7. Measurement Procedure

7.1 Measurement Process Diagram

Body SAR



IEC

7.2 SAR Scan General Requirement

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

Table 3 – Area scan parameters

Parameter	DUT transmit frequency being tested	
	$f \leq 3$ GHz	3 GHz $< f \leq 10$ GHz
Maximum distance between the measured points (geometric centre of the sensors) and the inner phantom surface (z_{M1} in Figure 20 in mm)	5 ± 1	$\delta \ln(2)/2 \pm 0,5^a$
Maximum spacing between adjacent measured points in mm (see O.8.3.1) ^b	20, or half of the corresponding zoom scan length, whichever is smaller	$60/f$, or half of the corresponding zoom scan length, whichever is smaller
Maximum angle between the probe axis and the phantom surface normal (α in Figure 20) ^c	5° (flat phantom only) 30° (other phantoms)	5° (flat phantom only) 20° (other phantoms)
Tolerance in the probe angle	1°	1°
^a δ is the penetration depth for a plane-wave incident normally on a planar half-space.		
^b See Clause O.8 on how Δx and Δy may be selected for individual area scan requirements.		
^c The probe angle relative to the phantom surface normal is restricted due to the degradation in the measurement accuracy in fields with steep spatial gradients. The measurement accuracy decreases with increasing probe angle and increasing frequency. This is the reason for the tighter probe angle restriction at frequencies above 3 GHz.		

Table 4 – Zoom scan parameters

Parameter	DUT transmit frequency being tested	
	$f \leq 3$ GHz	3 GHz $< f \leq 10$ GHz
Maximum distance between the closest measured points and the phantom surface (z_{M1} in Figure 20 and Table 3, in mm)	5	$\delta \ln(2)/2^a$
Maximum angle between the probe axis and the phantom surface normal (α in Figure 20)	5° (flat phantom only) 30° (other phantoms)	5° (flat phantom only) 20° (other phantoms)
Maximum spacing between measured points in the x- and y-directions (Δx and Δy , in mm)	8	$24/f^b$
For uniform grids: Maximum spacing between measured points in the direction normal to the phantom shell (Δz_1 in Figure 20, in mm)	5	$10/(f-1)$
For graded grids: Maximum spacing between the two closest measured points in the direction normal to the phantom shell (Δz_1 in Figure 20, in mm)	4	$12/f$
For graded grids: Maximum incremental increase in the spacing between measured points in the direction normal to the phantom shell ($R_z = \Delta z_2/\Delta z_1$ in Figure 20)	1,5	1,5
Minimum edge length of the zoom scan volume in the x- and y-directions (L_z in O.8.3.2, in mm)	30	22
Minimum edge length of the zoom scan volume in the direction normal to the phantom shell (L_n in O.8.3.2 in mm)	30	22
Tolerance in the probe angle	1°	1°
^a δ is the penetration depth for a plane-wave incident normally on a planar half-space.		
^b This is the maximum spacing allowed, which might not work for all circumstances.		

7.3 Measurement Procedure

The following steps are used for each test position

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

7.4 Area & Zoom Scan Procedure

First Area Scan is used to locate the approximate location(s) of the local peak SAR value(s). The measurement grid within an Area Scan is defined by the grid extent, grid step size and grid offset. Next, in order to determine the EM field distribution in a three-dimensional spatial extension, Zoom Scan is required. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR-distribution over 10 g. Area scan and zoom scan resolution setting follows KDB 865664 D01v01r04 quoted below.

When the 1 g SAR of the highest peak is within 2 dB of the SAR limit, additional zoom scans are required for other peaks within 2 dB of the highest peak that have not been included in any zoom scan to ensure there is no increase in SAR.

8. Conducted RF Output Power

8.1 GSM

Mode: GSM850		Maximum Tune-up(dBm)	Burst Average Power (dBm)			Division Factors	Frame-Average Power (dBm)		
			CH128	CH190	CH251		CH128	CH190	CH251
			824.2MHz	836.6MHz	848.8MHz		824.2MHz	836.6MHz	848.8MHz
GSM		32.50	32.27	32.22	32.15	-9.03	23.24	23.19	23.12
GPRS (GMSK)	1Tx slot	32.50	32.26	32.16	32.06	-9.03	23.23	23.13	23.03
	2Tx slots	31.50	31.23	31.14	31.05	-6.02	25.21	25.12	25.03
	3Tx slots	29.50	29.05	28.99	28.93	-4.26	24.79	24.73	24.67
	4Tx slots	28.00	27.85	27.81	27.73	-3.01	24.84	24.80	24.72
EGPRS (8PSK)	1Tx slot	26.00	25.68	25.53	25.70	-9.03	16.65	16.50	16.67
	2Tx slots	25.00	24.57	24.55	24.68	-6.02	18.55	18.53	18.66
	3Tx slots	25.00	24.83	22.54	22.50	-4.26	20.57	18.28	18.24
	4Tx slots	22.00	21.59	21.49	21.44	-3.01	18.58	18.48	18.43
Mode: GSM1900		Maximum Tune-up(dBm)	Burst Average Power (dBm)			Division Factors	Frame-Average Power (dBm)		
			CH512	CH661	CH810		CH512	CH661	CH810
			1850.2MHz	1880.0MHz	1909.8MHz		1850.2MHz	1880.0MHz	1909.8MHz
GSM		29.00	28.72	28.27	27.97	-9.03	19.69	19.24	18.94
GPRS (GMSK)	1Tx slot	29.00	28.72	28.22	27.91	-9.03	19.69	19.19	18.88
	2Tx slots	28.00	27.76	27.30	27.00	-6.02	21.74	21.28	20.98
	3Tx slots	26.00	25.68	25.26	24.98	-4.26	21.42	21.00	20.72
	4Tx slots	25.00	24.53	24.17	23.89	-3.01	21.52	21.16	20.88
EGPRS (8PSK)	1Tx slot	25.00	23.91	24.00	24.58	-9.03	14.88	14.97	15.55
	2Tx slots	24.50	22.99	23.01	24.49	-6.02	16.97	16.99	18.47
	3Tx slots	22.00	21.62	20.89	21.36	-4.26	17.36	16.63	17.10
	4Tx slots	20.50	19.52	19.70	20.26	-3.01	16.51	16.69	17.25
Note: 1) Division Factors To average the power, the division factor is as follows: 1Tx-slot = 1 transmit time slot out of 8 time slots=> conducted power divided by (8/1) => -9.03dB 2Tx-slots = 2 transmit time slots out of 8 time slots=> conducted power divided by (8/2) => -6.02dB 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) => -3.01dB									

8.2 WCDMA

Mode		Maximum Tune-up(dBm)	WCDMA Band II		
			Conducted Power (dBm)		
			CH9262	CH9400	CH9538
RMC 12.2K		21.00	1852.4	1880.0	1907.6
HSDPA	Subtest-1	19.00	20.90	20.90	20.91
	Subtest-2	19.00	18.66	18.69	18.76
	Subtest-3	19.00	18.66	18.67	18.76
	Subtest-4	19.00	18.66	18.68	18.75
HSUPA	Subtest-1	19.00	18.65	18.68	18.77
	Subtest-2	17.00	16.53	16.60	16.65
	Subtest-3	17.00	16.57	16.57	16.24
	Subtest-4	17.00	16.57	16.00	16.66
	Subtest-5	17.00	16.54	16.07	16.62
			16.57	16.59	16.66
Mode		Maximum Tune-up(dBm)	WCDMA Band IV		
			Conducted Power (dBm)		
			CH1312	CH1413	CH1513
RMC 12.2K		21.00	1712.4	1732.6	1752.6
HSDPA	Subtest-1	19.00	20.87	20.87	20.92
	Subtest-2	19.00	18.64	18.79	18.74
	Subtest-3	19.00	18.66	18.78	18.74
	Subtest-4	19.00	18.67	18.78	18.75
HSUPA	Subtest-1	19.00	18.65	18.77	18.73
	Subtest-2	17.00	16.44	16.51	16.55
	Subtest-3	17.00	16.03	16.52	16.48
	Subtest-4	16.50	16.46	15.98	16.02
	Subtest-5	17.00	16.46	15.99	16.55
			16.04	16.50	16.56
Mode		Maximum Tune-up(dBm)	WCDMA Band V		
			Conducted Power (dBm)		
			CH4132	CH4183	CH4233
RMC 12.2K		21.50	826.4	836.6	846.6
HSDPA	Subtest-1	19.00	21.15	21.05	21.06
	Subtest-2	19.00	18.94	18.82	18.90
	Subtest-3	19.00	18.93	18.83	18.89
	Subtest-4	19.00	18.93	18.82	18.88
HSUPA	Subtest-1	19.00	18.94	18.83	18.90
	Subtest-2	17.00	16.76	16.60	16.62
	Subtest-3	17.00	16.77	16.63	16.20
	Subtest-4	16.50	16.16	16.09	16.09
	Subtest-5	17.00	16.77	16.64	16.63
			16.74	16.61	16.61
Per KDB 941225 D01, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is $\leq 1/2$ dB 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.					

8.3 LTE

Band 2

LTE-FDD Band 2				Maximum Tune-up(dBm)	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		18607	18900	19193
					1850.7MHz	1880.0MHz	1909.3MHz
1.4MHz	QPSK	1	0	23.00	22.35	22.48	22.60
			2	23.00	22.30	22.47	22.57
			5	23.00	22.35	22.50	22.60
		3	0	23.00	22.45	22.59	22.66
			2	23.00	22.44	22.62	22.68
			3	23.00	22.45	22.59	22.67
		6	0	22.00	21.46	21.49	21.70
	16QAM	1	0	22.00	21.46	21.56	21.87
			2	22.00	21.42	21.54	21.80
			5	22.00	21.46	21.61	21.77
		3	0	22.00	21.64	21.55	21.74
			2	22.00	21.66	21.56	21.63
			3	22.00	21.69	21.56	21.60
		6	0	21.00	20.50	20.44	20.70
Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	18615	18900	19185
					1851.5MHz	1880.0MHz	1908.5MHz
3MHz	QPSK	1	0	22.50	22.43	19.50	19.67
			7	22.50	22.41	19.51	19.69
			14	22.50	22.40	19.49	19.65
		8	0	22.00	21.50	19.54	19.69
			4	21.50	21.48	19.52	19.67
			7	22.00	21.51	19.53	19.68
		15	0	22.00	21.55	19.53	19.68
	16QAM	1	0	22.00	21.58	19.75	20.21
			7	22.00	21.55	19.76	20.23
			14	22.00	21.50	19.70	20.19
		8	0	21.00	20.58	19.52	19.87
			4	21.00	20.56	19.52	19.84
			7	21.00	20.60	19.53	19.85
		15	0	21.00	20.57	19.54	19.77
Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	18625	18900	19175
					1852.5MHz	1880.0MHz	1907.5MHz
5MHz	QPSK	1	0	20.00	19.62	19.65	19.82
			13	20.00	19.58	19.65	19.81
			24	20.00	19.60	19.69	19.83
		12	0	20.00	19.56	19.63	19.78
			6	20.00	19.55	19.62	19.77
			13	20.00	19.55	19.63	19.76
		25	0	20.00	19.60	19.67	19.79
	16QAM	1	0	20.00	19.67	19.87	19.62
			13	20.00	19.61	19.87	19.63
			24	20.00	19.66	19.91	19.64
		12	0	20.00	19.61	19.70	19.83
			6	20.00	19.60	19.69	19.80
			13	20.00	19.61	19.69	19.80
		25	0	20.00	19.63	19.66	19.84

LTE-FDD Band 2				Maximum Tune-up(dBm)	Conducted Power(dBm)			
Bandwidth	Modulation	RB allocation	RB offset		18650	18900	19150	
					1855.0MHz	1880.0MHz	1905.0MHz	
10MHz	QPSK	1	0	20.00	19.55	19.62	19.79	
			25	20.00	19.56	19.63	19.78	
			49	20.00	19.58	19.68	19.79	
		25	0	20.00	19.58	19.65	19.81	
			13	20.00	19.58	19.65	19.80	
			25	20.00	19.58	19.66	19.81	
		50	0	20.00	19.58	19.67	19.81	
		16QAM	1	0	20.50	19.59	19.84	20.27
				25	20.50	19.59	19.84	20.32
	49			20.50	19.60	19.86	20.34	
	25		0	20.00	19.67	19.67	19.87	
			13	20.00	19.64	19.67	19.85	
			25	20.00	19.68	19.68	19.86	
	50	0	20.00	19.61	19.68	19.81		
	Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	18675	18900	19125
1857.5MHz						1880.0MHz	1902.5MHz	
15MHz	QPSK	1	0	20.00	19.58	19.59	19.75	
			38	20.00	19.59	19.69	19.84	
			74	20.00	19.59	19.74	19.86	
		36	0	20.00	19.57	19.67	19.75	
			18	20.00	19.57	19.66	19.78	
			39	20.00	19.60	19.69	19.82	
		75	0	20.00	19.60	19.69	19.79	
		16QAM	1	0	20.50	19.94	19.82	20.25
				38	20.50	19.98	19.93	20.35
	74			20.50	19.93	19.93	20.40	
	36		0	20.00	19.60	19.70	19.82	
			18	20.00	19.59	19.68	19.82	
			39	20.00	19.61	19.72	19.85	
	75	0	20.00	19.63	19.75	19.83		
	Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	18700	18900	19100
1860.0MHz						1880.0MHz	1900.0MHz	
20MHz	QPSK	1	0	23.00	22.53	19.58	19.70	
			50	23.00	22.56	19.75	19.81	
			99	23.00	22.53	19.78	19.83	
		50	0	22.00	21.63	19.68	19.76	
			25	22.00	21.64	19.73	19.83	
			50	22.00	21.67	19.76	19.86	
		100	0	22.00	21.64	19.74	19.79	
		16QAM	1	0	22.00	21.76	19.83	20.30
				50	22.00	21.83	20.00	20.42
	99			21.00	20.79	20.04	20.45	
	50		0	20.00	19.65	19.70	19.76	
			25	20.00	19.65	19.73	19.83	
			50	20.00	19.68	19.77	19.83	
	100	0	20.00	19.65	19.76	19.81		

Band 5

LTE-FDD Band 5				Maximum Tune-up(dBm)	Conducted Power(dBm)				
Bandwidth	Modulation	RB allocation	RB offset		20407	20525	20643		
					824.7MHz	836.5MHz	848.3MHz		
1.4MHz	QPSK	1	0	23.50	23.02	19.98	22.93		
			2	23.00	22.95	19.98	22.89		
			5	23.50	23.00	19.97	22.93		
		3	0	23.00	22.01	19.95	22.91		
			2	22.00	19.96	19.96	21.95		
			3	20.00	19.95	19.97	19.92		
		6	0	20.50	20.00	19.96	19.91		
			16QAM	1	0	20.50	20.00	19.99	19.93
					2	20.00	19.92	19.96	19.89
	5	20.50			19.97	20.02	19.93		
	3	0		20.50	20.17	20.00	19.96		
		2		20.50	20.18	20.00	19.95		
		3		20.50	20.18	20.00	19.95		
	6	0		20.50	20.00	19.85	19.81		
	Bandwidth	Modulation		RB allocation	RB offset	Maximum Tune-up(dBm)	20415	20525	20635
							825.5MHz	836.5MHz	847.5MHz
3MHz	QPSK	1	0	20.50	20.03	20.00	19.89		
			7	20.50	20.01	19.99	19.85		
			14	20.00	19.99	19.96	19.83		
		8	0	20.50	20.00	19.97	19.90		
			4	20.00	19.97	19.92	19.90		
			7	20.00	19.99	19.90	19.91		
		15	0	20.00	19.97	19.94	19.89		
			16QAM	1	0	21.00	20.03	20.14	20.52
					7	21.00	20.01	20.11	20.52
	14	20.50			19.99	20.07	20.45		
	8	0		20.50	20.07	19.96	20.04		
		4		20.50	20.07	19.93	20.06		
		7		20.50	20.07	19.90	20.06		
	15	0		20.50	20.00	19.89	19.99		

LTE-FDD Band 5				Maximum Tune-up(dBm)	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		20425	20525	20625
					826.5MHz	836.5MHz	846.5MHz
5MHz	QPSK	1	0	20.50	20.09	20.09	20.00
			13	20.50	20.02	20.03	19.97
			24	20.50	20.05	20.02	19.96
		12	0	20.50	20.03	20.02	19.95
			6	20.00	19.99	19.99	19.95
			13	20.50	20.00	19.95	19.97
		25	0	20.50	20.04	20.02	19.99
	16QAM	1	0	20.50	20.18	20.17	19.48
			13	20.50	20.13	20.32	19.53
			24	20.50	20.14	20.29	19.59
		12	0	20.50	20.01	20.07	19.96
			6	20.50	19.99	20.06	19.96
			13	20.50	20.00	20.02	20.00
		25	0	20.50	20.05	20.00	20.01

Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	20450	20525	20600
					829.0MHz	836.5MHz	844.0MHz
10MHz	QPSK	1	0	20.50	20.09	19.88	19.82
			25	20.00	19.97	19.98	19.70
			49	20.50	20.14	19.75	19.48
		25	0	20.50	19.96	19.98	20.03
			13	20.00	19.98	19.98	19.95
			25	20.50	20.08	19.94	20.02
	16QAM	50	0	20.50	20.02	19.95	20.02
		1	0	20.50	20.06	19.81	20.14
			25	20.50	19.66	19.82	20.04
			49	20.50	20.11	19.84	20.09
		25	0	20.50	20.00	20.01	20.06
			13	20.50	20.01	19.98	20.00
			25	20.50	20.15	19.92	20.07
		50	0	20.50	20.03	19.95	20.01

Band 7

LTE-FDD Band 7				Maximum Tune-up(dBm)	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		20775	21100	21425
					2502.5MHz	2535.0MHz	2567.5MHz
5MHz	QPSK	1	0	23.50	23.07	19.16	18.84
			12	22.50	22.02	19.11	19.31
			24	20.00	19.95	19.06	18.81
		12	0	20.00	19.97	19.58	19.32
			6	20.00	19.96	19.56	19.27
			13	20.00	19.97	19.54	19.27
		25	0	20.50	20.00	19.59	19.35
	16QAM	1	0	20.00	19.82	19.25	18.93
			12	19.50	19.32	19.21	18.89
			24	19.50	19.32	19.18	18.90
		12	0	20.50	20.00	19.62	19.36
			6	20.00	19.98	19.59	19.32
			13	20.00	19.97	19.56	19.30
		25	0	20.50	20.01	19.59	19.34
Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	20800	21100	21400
					2505.0MHz	2535.0MHz	2565.0MHz
10MHz	QPSK	1	0	20.00	19.98	19.13	18.87
			24	20.00	19.94	19.10	18.82
			49	19.50	19.49	19.01	19.29
		25	0	20.00	19.95	19.62	19.44
			12	20.00	19.93	19.57	19.35
			25	20.00	19.91	19.58	19.33
		50	0	20.00	19.93	19.58	19.38
	16QAM	1	0	20.00	19.49	19.16	19.55
			24	19.50	19.41	19.12	19.49
			49	19.50	19.37	19.05	19.17
		25	0	20.50	20.02	19.71	19.43
			12	20.50	20.01	19.66	19.36
			25	20.50	20.00	19.65	19.33
		50	0	20.00	19.93	19.59	19.39

LTE-FDD Band 7				Maximum Tune-up(dBm)	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		20825	21100	21375
					2507.5MHz	2535.0MHz	2562.5MHz
15MHz	QPSK	1	0	19.97	19.97	19.15	18.92
			38	19.85	19.85	19.10	18.84
			74	19.80	19.80	19.53	18.84
		38	0	19.90	19.90	19.60	19.40
			18	19.85	19.85	19.55	19.33
			37	19.82	19.82	19.54	19.30
		75	0	19.86	19.86	19.57	19.38
	16QAM	1	0	19.87	19.87	19.53	19.29
			38	19.76	19.76	19.50	19.23
			74	19.71	19.71	19.43	19.21
		38	0	19.91	19.91	19.60	19.40
			18	19.84	19.84	19.58	19.33
			37	19.82	19.82	19.55	19.32
		75	0	19.90	19.90	19.58	19.37
Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	20850	21100	21350
					2510.0MHz	2535.0MHz	2560.0MHz
20MHz	QPSK	1	0	20.00	19.99	19.21	19.08
			49	20.00	19.86	19.17	18.95
			99	20.00	19.76	19.54	18.88
		50	0	20.00	19.88	19.68	19.50
			25	20.00	19.88	19.61	19.44
			50	20.00	19.82	19.62	19.35
		100	0	20.00	19.87	19.63	19.41
	16QAM	1	0	20.50	20.07	19.79	19.62
			49	20.00	19.90	19.71	19.51
			99	20.00	19.87	19.65	19.42
		50	0	20.00	19.85	19.68	19.48
			25	20.00	19.87	19.59	19.43
			50	20.00	19.81	19.62	19.35
		100	0	20.00	19.87	19.65	19.43

Band 12

LTE-FDD Band 12				Maximum Tune-up(dBm)	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		23017	23095	23173
					699.7MHz	707.5MHz	715.3MHz
1.4MHz	QPSK	1	0	23.00	22.69	22.74	22.69
			2	23.00	22.64	22.79	22.69
			5	23.00	22.66	22.81	22.72
		3	0	23.00	20.71	22.72	20.70
			2	23.00	19.71	22.77	19.72
			3	23.00	19.70	22.76	19.72
		6	0	22.00	19.74	21.67	19.68
	16QAM	1	0	22.00	19.71	21.70	19.66
			2	22.00	19.67	21.73	19.67
			5	21.00	19.71	20.83	19.75
		3	0	20.00	19.88	19.76	19.73
			2	20.00	19.91	19.78	19.78
			3	20.00	19.90	19.80	19.75
		6	0	20.00	19.70	19.61	19.59

Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	23025	23095	23165
					700.5MHz	707.5MHz	714.5MHz
3MHz	QPSK	1	0	20.00	19.77	19.61	19.14
			7	20.00	19.76	19.56	19.28
			14	20.00	19.79	19.53	19.15
		8	0	20.00	19.78	19.70	19.69
			4	20.00	19.74	19.74	19.64
			7	20.00	19.74	19.79	19.68
		15	0	20.00	19.76	19.70	19.68
			7	20.00	19.77	19.30	19.76
			14	20.00	19.78	19.34	19.76
	16QAM	1	0	20.00	19.77	19.30	19.76
			7	20.00	19.77	19.38	19.73
			14	20.00	19.78	19.34	19.76
		8	0	20.00	19.85	19.66	19.87
			4	20.00	19.79	19.72	19.79
			7	20.00	19.78	19.76	19.82
		15	0	20.00	19.78	19.71	19.76
			7	20.00	19.78	19.71	19.76
			14	20.00	19.78	19.71	19.76
Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	23035	23095	23155
					701.5MHz	707.5MHz	713.5MHz
5MHz	QPSK	1	0	20.00	19.82	19.29	19.23
			13	20.00	19.83	19.29	19.21
			24	20.00	19.83	19.31	19.27
		12	0	20.00	19.80	19.69	19.80
			6	20.00	19.78	19.73	19.73
			13	20.00	19.78	19.80	19.70
		25	0	20.00	19.82	19.78	19.76
			7	20.00	19.82	19.78	19.76
			14	20.00	19.82	19.78	19.76
	16QAM	1	0	20.00	19.38	19.57	19.09
			13	20.00	19.41	19.58	19.06
			24	20.00	19.41	19.59	19.14
		12	0	20.00	19.82	19.75	19.80
			6	20.00	19.80	19.77	19.73
			13	20.00	19.78	19.85	19.69
		25	0	20.00	19.79	19.78	19.77
			7	20.00	19.79	19.78	19.77
			14	20.00	19.79	19.78	19.77
Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	23060	23095	23130
					704.0MHz	707.5MHz	711.0MHz
10MHz	QPSK	1	0	20.00	19.79	19.28	19.20
			25	20.00	19.76	19.25	19.17
			49	20.00	19.83	19.30	19.22
		25	0	20.00	19.77	19.70	19.65
			13	20.00	19.77	19.73	19.73
			25	20.00	19.86	19.77	19.70
		50	0	20.00	19.83	19.73	19.69
			7	20.00	19.83	19.73	19.69
			14	20.00	19.83	19.73	19.69
	16QAM	1	0	20.00	19.28	19.43	19.83
			25	20.00	19.22	19.39	19.82
			49	20.00	19.34	19.44	19.85
		25	0	20.00	19.86	19.72	19.70
			13	20.00	19.82	19.76	19.75
			25	20.00	19.90	19.79	19.73
		50	0	20.00	19.86	19.73	19.69
			7	20.00	19.86	19.73	19.69
			14	20.00	19.86	19.73	19.69

Band 13

LTE-FDD Band 13				Maximum Tune-up(dBm)	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		23205	23230	23255
					779.5MHz	782.0MHz	784.5MHz
5MHz	QPSK	1	0	20.00	19.62	19.59	19.62
			13	20.00	19.58	19.63	19.65
			24	20.00	19.68	19.66	19.69
		12	0	20.50	20.12	20.05	20.05
			6	20.50	20.09	20.07	20.09
			13	20.50	20.14	20.10	20.01
		25	0	20.50	20.15	20.13	20.07
	16QAM	1	0	20.50	19.87	19.45	20.09
			13	20.00	19.85	19.44	19.73
			24	20.00	19.96	19.53	19.76
		12	0	20.50	20.17	20.08	20.03
			6	20.50	20.13	20.10	20.13
			13	20.50	20.21	20.13	20.07
		25	0	20.50	20.13	20.10	20.10
Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	23230		
					782.0MHz		
10MHz	QPSK	1	0	23.50	23.17		
			25	23.50	23.04		
			49	23.50	23.21		
		25	0	22.50	22.08		
			13	22.50	22.07		
			25	22.50	22.14		
		50	0	22.50	22.11		
	16QAM	1	0	23.00	22.62		
			25	23.00	22.61		
			49	23.00	22.67		
		25	0	21.50	21.12		
			13	21.50	21.12		
			25	21.50	21.20		
		50	0	21.50	21.14		

Band 40a

LTE-TDD Band 40a				Maximum Tune-up(dBm)	Conducted Power(dBm)			
Bandwidth	Modulation	RB allocation	RB offset		38725	38750	38775	
					2307.5MHz	2310.0MHz	2312.5MHz	
5MHz	QPSK	1	0	20.50	20.27	20.16	20.26	
			12	20.50	20.27	20.19	20.34	
			24	20.50	20.27	20.17	20.28	
		12	0	19.50	19.11	19.26	19.22	
			6	19.50	19.28	19.38	19.22	
			13	19.50	19.12	19.39	19.24	
		25	0	19.50	19.29	19.41	19.43	
		16QAM	1	0	19.50	19.27	19.20	19.21
				12	19.50	19.24	19.33	19.49
	24			19.50	19.10	19.18	19.17	
	12		0	18.50	18.25	18.42	18.21	
			6	18.50	18.42	18.47	18.40	
			13	18.50	18.07	18.33	18.31	
	25		0	18.50	18.12	18.38	18.39	

Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	38750
					2310.0MHz
10MHz	QPSK	1	0	20.50	20.47
			25	21.00	20.54
			49	20.50	20.37
		25	0	19.50	19.45
			13	19.50	19.46
			25	19.50	19.36
		50	0	19.50	19.35
	16QAM	1	0	19.50	19.42
			25	19.50	19.28
			49	19.50	19.29
		25	0	18.50	18.39
			13	18.50	18.22
			25	18.50	18.41
		50	0	18.50	18.24

Band 40b

LTE-TDD Band 40a				Maximum Tune-up(dBm)	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		39175	39200	39225
					2352.5MHz	2355.0MHz	2357.5MHz
5MHz	QPSK	1	0	20.00	19.87	19.95	19.84
			12	20.50	19.96	19.91	20.09
			24	20.00	19.80	19.76	19.93
		12	0	19.00	18.77	18.87	18.92
			6	19.50	19.00	19.12	19.03
			13	19.50	18.74	19.04	18.92
		25	0	19.50	18.82	19.10	18.92
	16QAM	1	0	19.50	18.99	19.06	19.05
			12	19.50	19.14	19.37	19.32
			24	19.50	18.50	19.01	19.06
		12	0	18.50	17.93	17.91	18.05
			6	18.50	17.79	17.92	18.02
			13	18.50	17.81	17.88	18.10
		25	0	18.00	17.70	17.96	17.93
Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	39200		
					2355.0MHz		
10MHz	QPSK	1	0	20.50	20.11		
			25	20.50	20.25		
			49	20.00	19.98		
		25	0	19.50	19.05		
			13	19.00	18.99		
			25	19.50	19.10		
		50	0	19.50	19.15		
	16QAM	1	0	19.00	18.97		
			25	19.00	18.96		
			49	19.50	19.18		
		25	0	18.50	18.14		
			13	18.00	17.88		
			25	18.50	18.08		
		50	0	18.50	18.05		

8.4 Wi-Fi

Band (GHz)	Mode	Channel	Freq. (MHz)	Average Power (dBm)	Maximum Tune-up(dBm)	SAR Test Require.
2.4g Wifi (2.4~2.4835)	802.11b	1	2412	15.50	16.00	No
		6	2437	15.15	15.50	No
		11	2462	16.25	16.50	Yes
	802.11g	1	2412	15.90	16.00	No
		6	2437	15.32	15.50	No
		11	2462	15.76	16.00	No
	802.11n(HT20)	1	2412	15.65	16.00	No
		6	2437	15.15	15.50	No
		11	2462	15.64	16.00	No
	802.11n(HT40)	3	2422	16.03	16.50	No
		6	2437	15.86	16.00	No
		9	2452	15.84	16.00	No

Note: SAR is not required for the following 2.4 GHz OFDM conditions as the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is $\leq 1.2\text{W/kg}$.

Band (GHz)	Mode	Channel	Freq. (MHz)	Average power (dBm)	Maximum Tune-up(dBm)	SAR Test Require.
U-NII-1 (5.150~5.250)	802.11a	36	5180	12.21	12.50	No
		40	5200	12.90	13.00	No
		48	5240	13.23	13.50	Yes
	802.11n(HT20)	36	5180	12.78	13.00	No
		40	5200	12.41	12.50	No
		48	5240	12.78	13.00	No
	802.11n(HT40)	38	5190	12.45	12.50	No
		46	5230	12.63	13.00	No
	802.11ac(VHT20)	36	5180	12.24	12.50	No
		40	5200	12.35	12.50	No
		48	5240	12.63	13.00	No
	802.11ac(VHT40)	38	5190	12.34	12.50	No
		46	5230	12.52	13.00	No
	802.11ac(VHT80)	42	5210	12.55	13.00	No
Band (GHz)	Mode	Channel	Freq. (MHz)	Average power (dBm)	Maximum Tune-up(dBm)	SAR Test Require.
U-NII-3 (5.725~5.850)	802.11a	149	5745	12.58	13.00	No
		157	5785	12.61	13.00	No
		165	5825	13.28	13.50	Yes
	802.11n(HT20)	149	5745	11.92	12.00	No
		157	5785	12.46	12.50	No
		165	5825	13.06	13.50	No
	802.11n(HT40)	151	5755	12.10	12.50	No
		159	5795	12.71	13.00	No
	802.11ac(VHT20)	149	5745	11.90	12.00	No
		157	5785	12.52	13.00	No
		165	5825	13.10	13.50	No
	802.11ac(VHT40)	151	5755	12.16	12.50	No
		159	5795	12.78	13.00	No
	802.11ac(VHT80)	155	5775	12.00	12.00	No

8.5 NR

Mode	NR 78			
	Channel	Freq. (MHz)	Average Power (dBm)	Maximum Tune-up(dBm)
BW/10MHz	630334	3455.01	27.95	28.00
	633334	3500.01	25.75	26.00
	636332	3544.98	25.68	26.00
BW/15MHz	630500	3457.50	26.64	27.00
	633334	3500.01	25.74	26.00
	636166	3542.49	26.30	26.50
BW/20MHz	630668	3460.02	25.73	26.00
	633334	3500.01	26.01	26.50
	636000	3540.00	25.66	26.00
BW/40MHz	631334	3470.01	25.79	26.00
	633334	3500.01	25.78	26.00
	635332	3529.98	25.92	26.00
BW/50MHz	631668	3475.02	25.85	26.00
	633334	3500.01	25.92	26.00
	635000	3525.00	25.92	26.00
BW/60MHz	632000	3480.00	25.84	26.00
	633334	3500.01	25.86	26.00
	634666	3519.99	25.79	26.00
BW/70MHz	632334	3485.01	25.80	26.00
	633334	3500.01	25.94	26.00
	634332	3514.98	26.07	26.50
BW/80MHz	632668	3490.02	25.88	26.00
	633334	3500.01	24.87	25.00
	634000	3510.00	28.38	28.50
BW/90MHz	633000	3495.00	25.84	26.00
	633334	3500.01	25.84	26.00
	633666	3504.99	25.85	26.00
BW/100MHz	633334	3500.01	25.83	26.00

Note: All data on 5G NR in this report comes from TCT.

8.6 Bluetooth

EDR	Mode	Maximum Tune-up(dBm)	Average Conducted Output Power (dBm)		
			0	39	78
			2402MHz	2441MHz	2480MHz
	GFSK	3.50	2.94	3.47	2.68
	$\pi/4$ QPSK	3.00	2.14	2.69	1.96
	8DPSK	3.00	2.14	2.70	1.96
BLE	Mode	Maximum Tune-up(dBm)	Average Conducted Output Power (dBm)		
			0	20	39
			2402MHz	2440MHz	2480MHz
	1Mbps	1.50	0.95	1.42	0.75
	2Mbps	2.00	1.05	1.54	0.87

8.7 NFC

Maximum Tune-up(dBm)	Average Conducted Output Power (dBm)
	13.56MHz
-21.00	-21.49

Channel	Frequency (GHz)	Max. Tune-up Power (dBm)	Max. Power (mW)	Test distance (mm)	Exclusion thresholds for 1-g SAR(mW)	RF exposure evaluation required
0	2.402	3.50	2.24	0	2.72	No
0	2.402	3.50	2.24	10	10.17	No
/	0.01356	-21.00	0.01	0	71	No

Note

- Per KDB 447498 D04 Interim General RF Exposure Guidance v01, the 1-g SAR test exclusion thresholds for 300 MHz to 6 GHz at *test separation distances* ≤ 40 cm are determined by:

$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases} \quad (\text{B.2})$$

where

$$P_{th} \text{ (mW)} = ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases} \quad (\text{B.1})$$

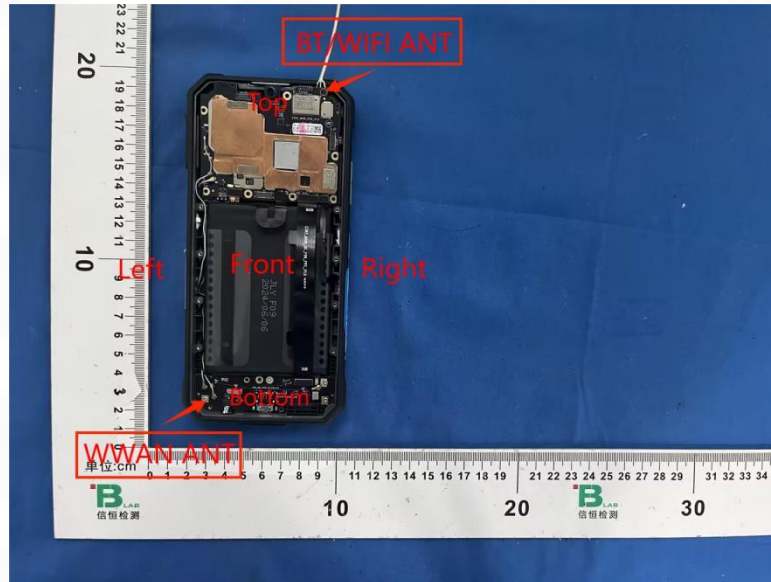
$$x = -\log_{10} \left(\frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right)$$

and f is in GHz, d is the separation distance (cm), and $ERP_{20 \text{ cm}}$ is per Formula (B.1).

- *When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine estimated SAR.
- Per KDB 248227 D01 v02r02, choose the highest output power channel to test SAR and determine further SAR exclusion.
 - The output power of all data rate were prescan, just the worst case (the lowest data rate) of all mode were shown in report.

9. Test Exclusion Consideration

Antenna information:



WWAN Main Antenna	GSM/WCDMA/LTE/NR TX/RX
WLAN/BT Antenna	WLAN/BT TX/RX
Note: 1. KDB 447498 D04v01, particular DUT edges were not required to be evaluated for SAR if the antenna-to-edge distance is greater than 2.5cm. 2. Per KDB648474 D04, 10-g extremity SAR is not required when Body-Worn mode 1-g reported SAR<1.2W/Kg.	

Distance of The Antenna to the EUT surface and edge (mm)						
Antenna	Front Side (mm)	Back Side (mm)	Left Edge (mm)	Right Edge (mm)	Top Edge (mm)	Bottom Edge (mm)
WWAN	<25	<25	<25	68	167	<25
BT/Wifi	<25	<25	70	<25	<25	168
Positions for SAR tests: Hotspot mode						
Antenna	Front Side (mm)	Back Side (mm)	Left Edge (mm)	Right Edge (mm)	Top Edge (mm)	Bottom Edge (mm)
WWAN	Yes	Yes	Yes	No	No	Yes
BT/Wifi	Yes	Yes	No	Yes	Yes	No

9.1 SAR Test Exclusion Consideration Table

Per KDB 447498 requires when the standalone SAR test exclusion of section 4.3.1 is applied to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to the following format to determine simultaneous transmission SAR test exclusion:

$$(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm}) \cdot [\sqrt{f(\text{GHz})} / x]$$

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

Mode	Channel	Frequency (GHz)	Max tune-up power (dBm)	Max. Power (mW)	Exposure Position	Head	Body-worn
					Test Dist.(mm)	0	10
BT	0	2.402	3.50	2.24	Estimated SAR(W/kg)	0.093	0.104
NFC	/	0.01356	-21.00	0.01		0.000	0.000

10. Test Result

Head(0mm gap)												
Mode	Position	Ch.	Freq. (MHz)	Power Drift (%)	1g Meas. SAR (W/kg)	Duty cycle (%)	Duty cycle Factor	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
GSM 850 (voice)	Left Cheek	128	824.2	2.730	0.120	100.00	1.000	32.27	32.50	1.054	0.126	/
	Left Tilt	128	824.2	1.760	0.098	100.00	1.000	32.27	32.50	1.054	0.103	/
	Right Cheek	128	824.2	-2.700	0.131	100.00	1.000	32.27	32.50	1.054	0.138	1#
	Right Tilt	128	824.2	4.580	0.109	100.00	1.000	32.27	32.50	1.054	0.115	/
Body(10mm Gap)												
Mode	Position	Ch.	Freq. (MHz)	Power Drift (%)	1g Meas. SAR (W/kg)	Duty cycle (%)	Duty cycle Factor	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
GSM 850 (voice)	Front	128	824.2	2.160	0.295	100.00	1.000	32.27	32.50	1.054	0.311	/
	Back	128	824.2	-1.220	0.402	100.00	1.000	32.27	32.50	1.054	0.424	/
	Left	128	824.2	1.980	0.212	100.00	1.000	32.27	32.50	1.054	0.223	/
	Bottom	128	824.2	3.740	0.135	100.00	1.000	32.27	32.50	1.054	0.142	/
Body(hotspot open, 10mm Gap)												
Mode	Position	Ch.	Freq. (MHz)	Power Drift (%)	1g Meas. SAR (W/kg)	Duty cycle (%)	Duty cycle Factor	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
GPRS 850+2slots	Front	128	824.2	2.850	0.315	100.00	1.000	31.23	31.50	1.064	0.335	/
	Back	128	824.2	-1.780	0.447	100.00	1.000	31.23	31.50	1.064	0.476	2#
	Left	128	824.2	4.790	0.259	100.00	1.000	31.23	31.50	1.064	0.276	/
	Bottom	128	824.2	3.260	0.176	100.00	1.000	31.23	31.50	1.064	0.187	/

Head(0mm gap)												
Mode	Position	Ch.	Freq. (MHz)	Power Drift (%)	1g Meas. SAR (W/kg)	Duty cycle (%)	Duty cycle Factor	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
GSM 1900 (voice)	Left Cheek	512	1850.2	-0.100	0.091	100.00	1.000	28.72	29.00	1.067	0.097	/
	Left Tilt	512	1850.2	4.530	0.070	100.00	1.000	28.72	29.00	1.067	0.075	/
	Right Cheek	512	1850.2	-3.060	0.100	100.00	1.000	28.72	29.00	1.067	0.107	3#
	Right Tilt	512	1850.2	3.840	0.082	100.00	1.000	28.72	29.00	1.067	0.087	/
Body(hotspot open, 10mm Gap)												
Mode	Position	Ch.	Freq. (MHz)	Power Drift (%)	1g Meas. SAR (W/kg)	Duty cycle (%)	Duty cycle Factor	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
GSM 1900 (voice)	Front	512	1850.2	4.790	0.142	100.00	1.000	28.72	29.00	1.067	0.152	/
	Back	512	1850.2	-2.420	0.187	100.00	1.000	28.72	29.00	1.067	0.200	/
	Left	512	1850.2	3.050	0.082	100.00	1.000	28.72	29.00	1.067	0.087	/
	Bottom	512	1850.2	0.470	0.115	100.00	1.000	28.72	29.00	1.067	0.123	/
Body(hotspot open, 10mm Gap)												
Mode	Position	Ch.	Freq. (MHz)	Power Drift (%)	1g Meas. SAR (W/kg)	Duty cycle (%)	Duty cycle Factor	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
GPRS 1900+2slots	Front	512	1850.2	3.360	0.165	100.00	1.000	27.76	28.00	1.057	0.174	/
	Back	512	1850.2	0.206	0.206	100.00	1.000	27.76	28.00	1.057	0.218	4#
	Left	512	1850.2	-2.770	0.098	100.00	1.000	27.76	28.00	1.057	0.104	/
	Bottom	512	1850.2	2.890	0.130	100.00	1.000	27.76	28.00	1.057	0.137	/

Head(0mm gap)												
Mode	Position	Ch.	Freq. (MHz)	Power Drift (%)	1g Meas. SAR (W/kg)	Duty cycle (%)	Duty cycle Factor	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
WCDMA Band 2 (RMC*)	Left Cheek	9538	1907.6	2.630	0.221	100.00	1.000	20.91	21.00	1.021	0.226	/
	Left Tilt	9538	1907.6	-4.710	0.189	100.00	1.000	20.91	21.00	1.021	0.193	/
	Right Cheek	9538	1907.6	2.190	0.248	100.00	1.000	20.91	21.00	1.021	0.253	5#
	Right Tilt	9538	1907.6	0.700	0.202	100.00	1.000	20.91	21.00	1.021	0.206	/
Body(hotspot open, 10mm Gap)												
Mode	Position	Ch.	Freq. (MHz)	Power Drift (%)	1g Meas. SAR (W/kg)	Duty cycle (%)	Duty cycle Factor	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
WCDMA Band 2 (RMC*)	Front	9538	1907.6	1.620	0.420	100.00	1.000	20.91	21.00	1.021	0.429	/
	Back	9538	1907.6	-1.810	0.623	100.00	1.000	20.91	21.00	1.021	0.636	6#
	Left	9538	1907.6	3.960	0.134	100.00	1.000	20.91	21.00	1.021	0.137	/
	Bottom	9538	1907.6	-0.880	0.275	100.00	1.000	20.91	21.00	1.021	0.281	/

Head(0mm gap)												
Mode	Position	Ch.	Freq. (MHz)	Power Drift (%)	1g Meas. SAR (W/kg)	Duty cycle (%)	Duty cycle Factor	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
WCDMA Band 4 (RMC*)	Left Cheek	1513	1752.6	-2.420	0.184	100.00	1.000	20.92	21.00	1.019	0.187	/
	Left Tilt	1513	1752.6	4.750	0.131	100.00	1.000	20.92	21.00	1.019	0.133	/
	Right Cheek	1513	1752.6	-3.620	0.216	100.00	1.000	20.92	21.00	1.019	0.220	7#
	Right Tilt	1513	1752.6	1.380	0.164	100.00	1.000	20.92	21.00	1.019	0.167	/
Body(hotspot open, 10mm Gap)												
Mode	Position	Ch.	Freq. (MHz)	Power Drift (%)	1g Meas. SAR (W/kg)	Duty cycle (%)	Duty cycle Factor	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
WCDMA Band 4 (RMC*)	Front	1513	1752.6	2.810	0.312	100.00	1.000	20.92	21.00	1.019	0.318	/
	Back	1513	1752.6	-4.230	0.496	100.00	1.000	20.92	21.00	1.019	0.505	8#
	Left	1513	1752.6	0.690	0.197	100.00	1.000	20.92	21.00	1.019	0.201	/
	Bottom	1513	1752.6	-1.790	0.235	100.00	1.000	20.92	21.00	1.019	0.239	/

Head(0mm gap)												
Mode	Position	Ch.	Freq. (MHz)	Power Drift (%)	1g Meas. SAR (W/kg)	Duty cycle (%)	Duty cycle Factor	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
WCDMA Band 5 (RMC*)	Left Cheek	4132	826.4	-1.450	0.081	100.00	1.000	21.15	21.50	1.084	0.088	/
	Left Tilt	4132	826.4	2.480	0.065	100.00	1.000	21.15	21.50	1.084	0.070	/
	Right Cheek	4132	826.4	2.940	0.094	100.00	1.000	21.15	21.50	1.084	0.102	9#
	Right Tilt	4132	826.4	-4.130	0.072	100.00	1.000	21.15	21.50	1.084	0.078	/
Body(hotspot open, 10mm Gap)												
Mode	Position	Ch.	Freq. (MHz)	Power Drift (%)	1g Meas. SAR (W/kg)	Duty cycle (%)	Duty cycle Factor	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
WCDMA Band 5 (RMC*)	Front	4132	826.4	-3.370	0.115	100.00	1.000	21.15	21.50	1.084	0.125	/
	Back	4132	826.4	-1.580	0.194	100.00	1.000	21.15	21.50	1.084	0.210	10#
	Left	4132	826.4	0.320	0.088	100.00	1.000	21.15	21.50	1.084	0.095	/
	Bottom	4132	826.4	-1.550	0.069	100.00	1.000	21.15	21.50	1.084	0.075	/

Head(0mm gap)													
Mode	Channel Type	Position	Ch.	Freq. (MHz)	Power Drift (%)	1g Meas SAR (W/kg)	Duty cycle (%)	Duty cycle Factor	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
Band 2 (BW: 20MHz)	1RB	Left Cheek	18700	1860.0	4.520	0.234	100.00	1.000	22.56	23.00	1.107	0.259	/
		Left Tilt	18700	1860.0	-3.720	0.166	100.00	1.000	22.56	23.00	1.107	0.184	/
		Right Cheek	18700	1860.0	2.800	0.258	100.00	1.000	22.56	23.00	1.107	0.286	11#
		Right Tilt	18700	1860.0	0.240	0.196	100.00	1.000	22.56	23.00	1.107	0.217	/
	50%RB	Left Cheek	18700	1860.0	1.690	0.214	100.00	1.000	21.67	22.00	1.079	0.231	/
		Left Tilt	18700	1860.0	-4.230	0.141	100.00	1.000	21.67	22.00	1.079	0.152	/
		Right Cheek	18700	1860.0	1.850	0.231	100.00	1.000	21.67	22.00	1.079	0.249	/
		Right Tilt	18700	1860.0	2.320	0.180	100.00	1.000	21.67	22.00	1.079	0.194	/
Body(hotspot open, 10mm Gap)													
Mode	Channel Type	Position	Ch.	Freq. (MHz)	Power Drift (%)	1g Meas SAR (W/kg)	Duty cycle (%)	Duty cycle Factor	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
Band 2 (BW: 20MHz)	1RB	Front	18700	1860.0	3.510	0.485	100.00	1.000	22.56	23.00	1.107	0.537	/
		Back	18700	1860.0	-0.950	0.693	100.00	1.000	22.56	23.00	1.107	0.767	12#
		Left	18700	1860.0	-0.870	0.199	100.00	1.000	22.56	23.00	1.107	0.220	/
		Bottom	18700	1860.0	4.420	0.302	100.00	1.000	22.56	23.00	1.107	0.334	/
	50%RB	Front	18700	1860.0	-1.260	0.391	100.00	1.000	21.67	22.00	1.079	0.422	/
		Back	18700	1860.0	3.880	0.587	100.00	1.000	21.67	22.00	1.079	0.633	/
		Left	18700	1860.0	0.790	0.152	100.00	1.000	21.67	22.00	1.079	0.164	/
		Bottom	18700	1860.0	-2.030	0.243	100.00	1.000	21.67	22.00	1.079	0.262	/

Head(0mm gap)													
Mode	Channel Type	Position	Ch.	Freq. (MHz)	Power Drift (%)	1g Meas. SAR (W/kg)	Duty cycle (%)	Duty cycle Factor	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
Band 5 (BW: 10MHz)	1RB	Left Cheek	20450	829.0	4.170	0.063	100.00	1.000	20.14	20.50	1.086	0.068	/
		Left Tilt	20450	829.0	-1.200	0.043	100.00	1.000	20.14	20.50	1.086	0.047	/
		Right Cheek	20450	829.0	-2.710	0.076	100.00	1.000	20.14	20.50	1.086	0.083	13#
		Right Tilt	20450	829.0	0.850	0.052	100.00	1.000	20.14	20.50	1.086	0.056	/
	50%RB	Left Cheek	20450	829.0	-4.980	0.054	100.00	1.000	20.08	20.50	1.102	0.060	/

		Left Tilt	20450	829.0	1.280	0.035	100.00	1.000	20.08	20.50	1.102	0.039	/
		Right Cheek	20450	829.0	4.310	0.065	100.00	1.000	20.08	20.50	1.102	0.072	/
		Right Tilt	20450	829.0	-2.070	0.040	100.00	1.000	20.08	20.50	1.102	0.044	/
Body(hotspot open, 10mm Gap)													
Mode	Channel Type	Position	Ch.	Freq. (MHz)	Power Drift (%)	1g Meas SAR (W/kg)	Duty cycle (%)	Duty cycle Factor	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
Band 5 (BW: 10MHz)	1RB	Front	20450	829.0	1.570	0.122	100.00	1.000	20.14	20.50	1.086	0.132	/
		Back	20450	829.0	-2.900	0.167	100.00	1.000	20.14	20.50	1.086	0.181	14#
		Left	20450	829.0	-4.630	0.078	100.00	1.000	20.14	20.50	1.086	0.085	/
		Bottom	20450	829.0	0.550	0.098	100.00	1.000	20.14	20.50	1.086	0.106	/
	50%RB	Front	20450	829.0	-2.950	0.102	100.00	1.000	20.08	20.50	1.102	0.112	/
		Back	20450	829.0	4.320	0.133	100.00	1.000	20.08	20.50	1.102	0.147	/
		Left	20450	829.0	-1.240	0.061	100.00	1.000	20.08	20.50	1.102	0.067	/
		Bottom	20450	829.0	2.910	0.085	100.00	1.000	20.08	20.50	1.102	0.094	/

Head(0mm gap)													
Mode	Channel Type	Position	Ch.	Freq. (MHz)	Power Drift (%)	1g Meas SAR (W/kg)	Duty cycle (%)	Duty cycle Factor	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
Band 7 (BW: 10MHz)	1RB	Left Cheek	20850	2510.0	2.610	0.115	100.00	1.000	19.99	20.00	1.002	0.115	/
		Left Tilt	20850	2510.0	-4.880	0.092	100.00	1.000	19.99	20.00	1.002	0.092	/
		Right Cheek	20850	2510.0	4.430	0.130	100.00	1.000	19.99	20.00	1.002	0.130	15#
		Right Tilt	20850	2510.0	-1.850	0.101	100.00	1.000	19.99	20.00	1.002	0.101	/
	50%RB	Left Cheek	20850	2510.0	3.690	0.102	100.00	1.000	19.88	20.00	1.028	0.105	/
		Left Tilt	20850	2510.0	-0.420	0.059	100.00	1.000	19.88	20.00	1.028	0.061	/
		Right Cheek	20850	2510.0	1.060	0.118	100.00	1.000	19.88	20.00	1.028	0.121	/
		Right Tilt	20850	2510.0	-2.790	0.086	100.00	1.000	19.88	20.00	1.028	0.088	/

Body(hotspot open, 10mm Gap)													
Mode	Channel Type	Position	Ch.	Freq. (MHz)	Power Drift (%)	1g Meas SAR (W/kg)	Duty cycle (%)	Duty cycle Factor	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
Band 7 (BW: 20MHz)	1RB	Front	20850	2510.0	-1.050	0.287	100.00	1.000	19.99	20.00	1.002	0.288	/
		Back	20850	2510.0	3.730	0.396	100.00	1.000	19.99	20.00	1.002	0.397	16#
		Left	20850	2510.0	2.310	0.113	100.00	1.000	19.99	20.00	1.002	0.113	/
		Bottom	20850	2510.0	4.970	0.186	100.00	1.000	19.99	20.00	1.002	0.186	/
	50%RB	Front	20850	2510.0	-0.220	0.235	100.00	1.000	19.88	20.00	1.028	0.242	/
		Back	20850	2510.0	-3.160	0.324	100.00	1.000	19.88	20.00	1.028	0.333	/
		Left	20850	2510.0	2.590	0.091	100.00	1.000	19.88	20.00	1.028	0.094	/
		Bottom	20850	2510.0	-4.210	0.135	100.00	1.000	19.88	20.00	1.028	0.139	/

Head(0mm gap)													
Mode	Channel Type	Position	Ch.	Freq. (MHz)	Power Drift (%)	1g Meas SAR (W/kg)	Duty cycle (%)	Duty cycle Factor	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
Band 12 (BW: 10MHz)	1RB	Left Cheek	23060	704.0	2.630	0.141	100.00	1.000	19.83	20.00	1.040	0.147	/
		Left Tilt	23060	704.0	-1.350	0.110	100.00	1.000	19.83	20.00	1.040	0.114	/
		Right Cheek	23060	704.0	4.050	0.178	100.00	1.000	19.83	20.00	1.040	0.185	17#
		Right Tilt	23060	704.0	0.790	0.132	100.00	1.000	19.83	20.00	1.040	0.137	/
	50%RB	Left Cheek	23060	704.0	-3.540	0.126	100.00	1.000	19.86	20.00	1.033	0.130	/
		Left Tilt	23060	704.0	-2.330	0.097	100.00	1.000	19.86	20.00	1.033	0.100	/
		Right Cheek	23060	704.0	0.040	0.157	100.00	1.000	19.86	20.00	1.033	0.162	/
		Right Tilt	23060	704.0	-2.230	0.114	100.00	1.000	19.86	20.00	1.033	0.118	/

Body(hotspot open, 10mm Gap)													
Mode	Channel Type	Position	Ch.	Freq. (MHz)	Power Drift (%)	1g Meas SAR (W/kg)	Duty cycle (%)	Duty cycle Factor	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
Band 12 (BW: 10MHz)	1RB	Front	23060	704.0	4.780	0.097	100.00	1.000	19.83	20.00	1.040	0.101	/
		Back	23060	704.0	3.560	0.116	100.00	1.000	19.83	20.00	1.040	0.121	18#
		Left	23060	704.0	-0.350	0.081	100.00	1.000	19.83	20.00	1.040	0.084	/
		Bottom	23060	704.0	2.980	0.073	100.00	1.000	19.83	20.00	1.040	0.076	/
	50%RB	Front	23060	704.0	-3.240	0.082	100.00	1.000	19.86	20.00	1.033	0.085	/
		Back	23060	704.0	0.920	0.100	100.00	1.000	19.86	20.00	1.033	0.103	/
		Left	23060	704.0	-1.370	0.069	100.00	1.000	19.86	20.00	1.033	0.071	/
		Bottom	23060	704.0	2.570	0.048	100.00	1.000	19.86	20.00	1.033	0.050	/

Head(0mm gap)														
Mode	Channel Type	Position	Ch.	Freq. (MHz)	Power Drift (%)	1g Meas SAR (W/kg)	Duty cycle (%)	Duty cycle Factor	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.	
Band 13 (BW: 10MHz)	1RB	Left Cheek	23230	782.0	2.980	0.093	100.00	1.000	23.21	23.50	1.069	0.099	/	
		Left Tilt	23230	782.0	3.450	0.066	100.00	1.000	23.21	23.50	1.069	0.071	/	
		Right Cheek	23230	782.0	-2.470	0.103	100.00	1.000	23.21	23.50	1.069	0.110	19#	
		Right Tilt	23230	782.0	-2.360	0.080	100.00	1.000	23.21	23.50	1.069	0.086	/	
	50%RB	Left Cheek	23230	782.0	0.540	0.079	100.00	1.000	22.14	22.50	1.086	0.086	/	
		Left Tilt	23230	782.0	-3.260	0.041	100.00	1.000	22.14	22.50	1.086	0.045	/	
		Right Cheek	23230	782.0	0.680	0.092	100.00	1.000	22.14	22.50	1.086	0.100	/	
		Right Tilt	23230	782.0	4.550	0.058	100.00	1.000	22.14	22.50	1.086	0.063	/	

Body(hotspot open, 10mm Gap)														
Mode	Channel Type	Position	Ch.	Freq. (MHz)	Power Drift (%)	1g Meas SAR (W/kg)	Duty cycle (%)	Duty cycle Factor	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.	
Band 13 (BW: 10MHz)	1RB	Front	23230	782.0	1.900	0.109	100.00	1.000	23.21	23.50	1.069	0.117	/	
		Back	23230	782.0	-4.770	0.138	100.00	1.000	23.21	23.50	1.069	0.148	20#	
		Left	23230	782.0	2.530	0.083	100.00	1.000	23.21	23.50	1.069	0.089	/	
		Bottom	23230	782.0	-0.350	0.072	100.00	1.000	23.21	23.50	1.069	0.077	/	
	50%RB	Front	23230	782.0	-2.850	0.090	100.00	1.000	22.14	22.50	1.086	0.098	/	
		Back	23230	782.0	1.220	0.116	100.00	1.000	22.14	22.50	1.086	0.126	/	
		Left	23230	782.0	1.080	0.068	100.00	1.000	22.14	22.50	1.086	0.074	/	
		Bottom	23230	782.0	-4.750	0.053	100.00	1.000	22.14	22.50	1.086	0.058	/	

Head(0mm gap)														
Mode	Channel Type	Position	Ch.	Freq. (MHz)	Power Drift (%)	1g Meas SAR (W/kg)	Duty cycle (%)	Duty cycle Factor	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.	
Band 40a (BW: 10MHz)	1RB	Left Cheek	38750	2310.0	0.770	0.052	100.00	1.000	20.54	21.00	1.112	0.058	/	
		Left Tilt	38750	2310.0	4.270	0.039	100.00	1.000	20.54	21.00	1.112	0.043	/	
		Right Cheek	38750	2310.0	0.270	0.061	100.00	1.000	20.54	21.00	1.112	0.068	21#	
		Right Tilt	38750	2310.0	-3.360	0.048	100.00	1.000	20.54	21.00	1.112	0.053	/	
	50%RB	Left Cheek	38750	2310.0	-0.850	0.045	100.00	1.000	19.46	19.50	1.009	0.045	/	
		Left Tilt	38750	2310.0	2.360	0.032	100.00	1.000	19.46	19.50	1.009	0.032	/	
		Right Cheek	38750	2310.0	-1.780	0.050	100.00	1.000	19.46	19.50	1.009	0.050	/	
		Right Tilt	38750	2310.0	2.380	0.041	100.00	1.000	19.46	19.50	1.009	0.041	/	

Body(hotspot open, 10mm Gap)														
Mode	Channel Type	Position	Ch.	Freq. (MHz)	Power Drift (%)	1g Meas SAR (W/kg)	Duty cycle (%)	Duty cycle Factor	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.	
Band 40a (BW: 10MHz)	1RB	Front	38750	2310.0	3.470	0.104	100.00	1.000	20.54	21.00	1.112	0.116	/	
		Back	38750	2310.0	2.490	0.128	100.00	1.000	20.54	21.00	1.112	0.142	22#	
		Left	38750	2310.0	-0.280	0.087	100.00	1.000	20.54	21.00	1.112	0.097	/	
		Bottom	38750	2310.0	4.570	0.064	100.00	1.000	20.54	21.00	1.112	0.071	/	
	50%RB	Front	38750	2310.0	0.110	0.089	100.00	1.000	19.46	19.50	1.009	0.090	/	
		Back	38750	2310.0	-2.070	0.097	100.00	1.000	19.46	19.50	1.009	0.098	/	
		Left	38750	2310.0	4.200	0.078	100.00	1.000	19.46	19.50	1.009	0.079	/	
		Bottom	38750	2310.0	-4.560	0.056	100.00	1.000	19.46	19.50	1.009	0.057	/	

Head(0mm gap)												
Mode	Position	Ch.	Freq. (MHz)	Power Drift (%)	1g Meas SAR (W/kg)	Duty cycle (%)	Duty cycle Factor	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
NR 78	Left Cheek	633334	3500.01	-1.130	0.958	100.00	1.000	25.83	26.00	1.040	0.996	23#
	Left Cheek(repeated)	633334	3500.01	3.480	0.925	100.00	1.000	25.83	26.00	1.040	0.962	/
	Left Tilt	633334	3500.01	2.640	0.742	100.00	1.000	25.83	26.00	1.040	0.772	/
	Right Cheek	633334	3500.01	1.640	0.816	100.00	1.000	25.83	26.00	1.040	0.849	/
	Right Tilt	633334	3500.01	-3.030	0.678	100.00	1.000	25.83	26.00	1.040	0.705	/
Body(hotspot open, 10mm Gap)												
Mode	Position	Ch.	Freq. (MHz)	Power Drift (%)	1g Meas SAR (W/kg)	Duty cycle (%)	Duty cycle Factor	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
NR 78	Front	633334	3500.01	2.380	0.723	100.00	1.000	25.83	26.00	1.040	0.752	/
	Back	633334	3500.01	-1.610	0.941	100.00	1.000	25.83	26.00	1.040	0.979	24#
	Back(repeated)	633334	3500.01	2.679	0.916	100.00	1.000	25.83	26.00	1.040	0.953	/
	Left	633334	3500.01	-0.840	0.539	100.00	1.000	25.83	26.00	1.040	0.561	/
	Bottom	633334	3500.01	2.550	0.411	100.00	1.000	25.83	26.00	1.040	0.427	/

Head(0mm gap)												
Mode	Position	Ch.	Freq. (MHz)	Power Drift (%)	1g Meas SAR (W/kg)	Duty cycle (%)	Duty cycle Factor	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
2.4g (2.4~2.4835) 802.11b	Left Cheek	11	2462	0.590	0.282	100.00	1.000	16.25	16.50	1.059	0.299	/
	Left Tilt	11	2462	2.410	0.240	100.00	1.000	16.25	16.50	1.059	0.254	/
	Right Cheek	11	2462	3.610	0.321	100.00	1.000	16.25	16.50	1.059	0.340	25#
	Right Tilt	11	2462	-4.300	0.265	100.00	1.000	16.25	16.50	1.059	0.281	/
Body(hotspot open, 10mm Gap)												
Mode	Position	Ch.	Freq. (MHz)	Power Drift (%)	1g Meas SAR (W/kg)	Duty cycle (%)	Duty cycle Factor	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
2.4g (2.4~2.4835) 802.11b	Front	11	2462	-1.320	0.125	100.00	1.000	16.25	16.50	1.059	0.132	/
	Back	11	2462	4.370	0.150	100.00	1.000	16.25	16.50	1.059	0.159	26#
	Right	11	2462	3.570	0.086	100.00	1.000	16.25	16.50	1.059	0.091	/
	Top	11	2462	-2.780	0.101	100.00	1.000	16.25	16.50	1.059	0.107	/

Head(0mm gap)												
Mode	Position	Ch.	Freq. (MHz)	Power Drift (%)	1g Meas SAR (W/kg)	Duty cycle (%)	Duty cycle Factor	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
U-NII-1 (5.150~5.250) 802.11a	Left Cheek	48	5240	3.550	0.385	100.00	1.000	13.23	13.50	1.064	0.410	/
	Left Tilt	48	5240	-0.210	0.243	100.00	1.000	13.23	13.50	1.064	0.259	/
	Right Cheek	48	5240	-2.950	0.502	100.00	1.000	13.23	13.50	1.064	0.534	27#
	Right Tilt	48	5240	4.620	0.292	100.00	1.000	13.23	13.50	1.064	0.311	/
Body(hotspot open, 10mm Gap)												
Mode	Position	Ch.	Freq. (MHz)	Power Drift (%)	1g Meas SAR (W/kg)	Duty cycle (%)	Duty cycle Factor	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
U-NII-1 (5.150~5.250) 802.11a	Front	48	5240	-4.500	0.083	100.00	1.000	13.23	13.50	1.064	0.088	/
	Back	48	5240	-2.170	0.107	100.00	1.000	13.23	13.50	1.064	0.114	28#
	Right	48	5240	3.420	0.062	100.00	1.000	13.23	13.50	1.064	0.066	/
	Top	48	5240	0.080	0.071	100.00	1.000	13.23	13.50	1.064	0.076	/

Head(0mm gap)												
Mode	Position	Ch.	Freq. (MHz)	Power Drift (%)	1g Meas SAR (W/kg)	Duty cycle (%)	Duty cycle Factor	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
U-NII-3 (5.725~5.850) 802.11a	Left Cheek	165	5825	4.330	0.337	100.00	1.000	13.28	13.50	1.052	0.355	/
	Left Tilt	165	5825	-0.750	0.301	100.00	1.000	13.28	13.50	1.052	0.317	/
	Right Cheek	165	5825	-3.080	0.499	100.00	1.000	13.28	13.50	1.052	0.525	29#
	Right Tilt	165	5825	2.200	0.374	100.00	1.000	13.28	13.50	1.052	0.393	/
Body(hotspot open, 10mm Gap)												
Mode	Position	Ch.	Freq. (MHz)	Power Drift (%)	1g Meas SAR (W/kg)	Duty cycle (%)	Duty cycle Factor	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
U-NII-3 (5.725~5.850) 802.11a	Front	165	5825	2.420	0.121	100.00	1.000	13.28	13.50	1.052	0.127	/
	Back	165	5825	-3.920	0.154	100.00	1.000	13.28	13.50	1.052	0.162	30#
	Right	165	5825	-0.320	0.084	100.00	1.000	13.28	13.50	1.052	0.088	/
	Top	165	5825	4.780	0.103	100.00	1.000	13.28	13.50	1.052	0.108	/

Note:

- The maximum SAR Value of each test band is marked bold.
- SAR plot is provided only for the highest measured SAR in each exposure configuration, wireless mode and frequency band combination.
- Per KDB 447498 D04 v01, for each exposure position, if the highest output power channel Reported SAR $\leq 0.8\text{W/kg}$, other channels SAR testing is not necessary.
- Per KDB 447498 D04 v01, head/body-worn use is evaluated with the device positioned at 0mm/10 mm from a head/flat phantom respectively filled with head tissue-equivalent medium.
- Per KDB Publication 941225 D06 where SAR test considerations for handsets (L x W $\geq 9\text{ cm} \times 5\text{ cm}$) are based on a composite test separation distance of 10 mm from the front, back and edges of the device with antennas 2.5 cm or closer to the edge of the device, determined from general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-worn accessory SAR tests.
- Per KDB 447498 D04 v01, the report SAR is measured SAR value adjusted for maximum tune-up tolerance. Scaling Factor = $10^{[(\text{tune-up limit power (dBm)} - \text{Ave. power power (dBm)})/10]}$, where tune-up limit is the maximum rated power among all production units.
Reported SAR(W/kg) = Measured SAR (W/kg) * Scaling Factor.

11. SAR Measurement Variability

According to KDB 865664 D01, SAR measurement variability was assessed for each frequency band, which is determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media are required for SAR measurements in a frequency band, the variability measurement procedures should be applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue-equivalent medium. Alternatively, if the highest measured SAR for both head and body tissue-equivalent media are ≤ 1.45 W/kg and the ratio of these highest SAR values, i.e., largest divided by smallest value, is ≤ 1.10 , the highest SAR configuration for either head or body tissue-equivalent medium may be used to perform the repeated measurement. These additional measurements are repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device should be returned to ambient conditions (normal room temperature) with the battery fully charged before it is re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

SAR repeated measurement procedure:

1. When the highest measured SAR is < 0.80 W/kg, repeated measurement is not required.
2. When the highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.
3. If the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 , or when the original or repeated measurement is ≥ 1.45 W/kg, perform a second repeated measurement.
4. If the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 , and the original, first or second repeated measurement is ≥ 1.5 W/kg, perform a third repeated measurement.

Note: For 1g SAR, the highest measured 1g SAR is $0.958 > 0.80$ W/kg, repeated measurement is as below.

Mode	Position	Ch.	Freq. (MHz)	1g Meas SAR (W/kg)	the ratio of largest to smallest SAR for the original and first repeated measurements
NR 78	Left Cheek	633334	3500.01	0.958	1.036
	Left Cheek(repeated)	633334	3500.01	0.925	
NR 78	Back	633334	3500.01	0.941	1.027
	Back(repeated)	633334	3500.01	0.916	

According to the above ratio result, we don't need to perform a second repeated measurement for these bands.

12. Simultaneous Transmission

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

12.1 Simultaneous Transmission Mode Considerations

Simultaneous transmission SAR test exclusion is determined for each operating configuration and exposure condition according to the reported standalone SAR of each applicable simultaneous transmitting antenna. The device has 3 Tx antennas, WWAN main antenna, NFC antenna support NFC, Wifi/BT antenna supports 2.4G/5G Wi-Fi and BT. The 3 antennas can always transmit simultaneously. The work mode combination is showed as below table.

Application Simultaneous Transmission information:

NO.	Configuration	Head	Body-worn
1	WWAN+WIFI(2.4g)	Yes	Yes
2	WWAN+WIFI(5g)	Yes	Yes
3	WWAN+BT	Yes	Yes
4	WWAN+NFC	Yes	Yes

12.2 Sum SAR of Simultaneous Transmission

Head

Band	Test Position	Scaled					Σ SAR (W/kg) WWAN + WIFI 2.4G	Σ SAR (W/kg) WWAN + WIFI 5G	Σ SAR (W/kg) WWAN + BT	Σ SAR (W/kg) WWAN + NFC	SPLSR	Remark
		WWAN	WIFI 2.4G	WIFI 5G	Bluetooth	NFC						
NR 78	Left Cheek	0.996	0.299	0.410	0.093	0.000	1.295	1.406	1.089	0.996	N/A	N/A
	Left Tilt	0.772	0.254	0.259	0.093	0.000	1.026	1.031	0.865	0.772	N/A	N/A
	Right Cheek	0.849	0.340	0.534	0.093	0.000	1.189	1.383	0.942	0.849	N/A	N/A
	Right Tilt	0.705	0.281	0.311	0.093	0.000	0.986	1.016	0.798	0.705	N/A	N/A

Hotspot(body-worn)

Band	Test Position	Scaled					Σ SAR (W/kg) WWAN + WIFI 2.4G	Σ SAR (W/kg) WWAN + WIFI 5G	Σ SAR (W/kg) WWAN + BT	Σ SAR (W/kg) WWAN + NFC	SPLSR	Remark
		WWAN	WIFI 2.4G	WIFI 5G	Bluetooth	NFC						
NR 78	Front	0.752	0.132	0.127	0.104	0.000	0.884	0.879	0.856	0.752	N/A	N/A
	Back	0.979	0.159	0.162	0.104	0.000	1.138	1.141	1.083	0.979	N/A	N/A
	Left	0.561	/	/	/	0.000	0.561	0.561	0.561	0.561	N/A	N/A
	Right	/	0.091	0.088	0.104	0.000	0.091	0.088	0.104	0.000	N/A	N/A
	Top	/	0.107	0.108	0.104	0.000	0.107	0.108	0.104	0.000	N/A	N/A
	Bottom	0.427	/	/	/	0.000	0.427	0.427	0.427	0.427	N/A	N/A

13. Test Equipment List

Description	Manufacturer	Model	Serial No./Version	Cal. Date	Cal. Due
E-Field Probe	MVG	SSE2	04/22 EPGO365	2024/02/06	2025/02/05
6 1/2 Digital Multimeter	Keithley	DMM6500	4527164	2023/11/16	2024/11/15
Wideband Radio Communication Tester	ROHDE & SCHWARZ	CMW500	161997	2023/11/16	2024/11/15
MXG Vector Signal Generator	Agilent	N5182A	MY46240163	2023/11/16	2024/11/15
E-Series Avg. Power Sensor	KEYSIGHT	E9300A	MY55050017	2024/03/20	2025/03/19
EPM Series Power Meter	KEYSIGHT	E4418B	MY41293435	2024/03/20	2025/03/19
10dB Attenuator	MIDWEST MICROWAVE	263-10dB	/	2024/03/20	2025/03/19
Coupler	MERRIMAC	CWM-10R-10.8G	LOT-83391	2024/03/20	2025/03/19
750MHz Validation Dipole	MVG	SID750	07/22 DIP 0G750-655	2023/02/06	2025/02/05
835MHz Validation Dipole	MVG	SID835	07/22 DIP 0G835-656	2023/02/06	2025/02/05
1800MHz Validation Dipole	MVG	SID1800	07/22 DIP 1G800-657	2023/02/06	2025/02/05
1900MHz Validation Dipole	MVG	SID1900	07/22 DIP 1G900-658	2023/02/06	2025/02/05
2300MHz Validation Dipole	MVG	SID2300	07/22 DIP 2G300-661	2023/02/06	2025/02/05
2450MHz Validation Dipole	MVG	SID2450	07/22 DIP 2G450-662	2023/02/06	2025/02/05
2600MHz Validation Dipole	MVG	SID2600	07/22 DIP 2G600-663	2023/02/06	2025/02/05
3500MHz Validation Dipole	MVG	SID3500	07/22 DIP 3G500-664	2023/02/06	2025/02/05
5200MHz-5800MHz Validation Dipole	MVG	SID5000	07/22 DIP5G000-670	2023/02/06	2025/02/05
LIMESAR Dielectric Probe	MVG	SCLMP	06/22 OCPG88	2024/02/02	2025/02/01
ENA Series Network Analyzer	Agilent	E5071B	MY42301221	2023/11/16	2024/11/15
Thermometer	Riters	DT-232	21A11	2024/03/20	2025/03/19
Antenna network emulator	MVG	ANTA 74	07/22 ANTA 74	/	/
SAM Phantom	MVG	SAM	07/22 SAM149	/	/
Mobile Phone Positioning System	MVG	MSH 118	07/22 MSH 118	/	/
Mechanical Calibration Kit	PNA	/	/	2023/11/16	2024/11/15
Open SAR test software	MVG	/	V5.3.5	/	/

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

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

TCT:

Name	Model No.	Manufacturer	Date of Cal.	Due Date
Wireless communication test platform	MT8000A	Anritsu	Feb. 01, 2024	Jan. 31, 2025
Radio communication analyzer	MT8821C	Anritsu	Feb. 01, 2024	Jan. 31, 2025

ANNEX A Simulating Liquid Verification Result

The dielectric parameters of the liquids were verified prior to the SAR evaluation using an SCLMP Dielectric Probe Kit.

Dielectric performance of tissue simulating liquid									
Frequency (MHz)	ϵ_r		σ (s/m)		Delta (ϵ_r)	Delta (σ)	Limit	Temp (°C)	Date
	Target	Measured	Target	Measured					
750	41.90	41.80	0.89	0.86	-0.24%	-3.37%	±5%	20.0	8/7/2024
835	41.50	41.41	0.90	0.87	-0.22%	-3.33%	±5%	20.0	10/7/2024
1800	40.00	39.91	1.40	1.37	-0.23%	-2.14%	±5%	20.0	12/7/2024
1900	40.00	39.88	1.40	1.41	-0.30%	0.71%	±5%	20.0	16/7/2024
2300	39.50	39.30	1.67	1.70	-0.51%	1.85%	±5%	20.0	17/7/2024
2450	39.20	39.08	1.80	1.81	-0.31%	0.56%	±5%	20.0	18/7/2024
2600	39.00	38.88	1.96	1.97	-0.31%	0.51%	±5%	20.0	22/7/2024
3500	37.90	37.84	2.91	2.92	-0.16%	0.34%	±5%	20.0	20/8/2024
5200	36.00	35.88	4.66	4.70	-0.33%	0.86%	±5%	20.0	24/7/2024
5800	35.30	35.18	5.27	5.31	-0.34%	-0.76%	±5%	20.0	25/7/2024

NOTE: The dielectric parameters of the tissue-equivalent liquid should be measured under similar ambient conditions and within 2 °C of the conditions expected during the SAR evaluation to satisfy protocol requirements.

ANNEX B System Check Result

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

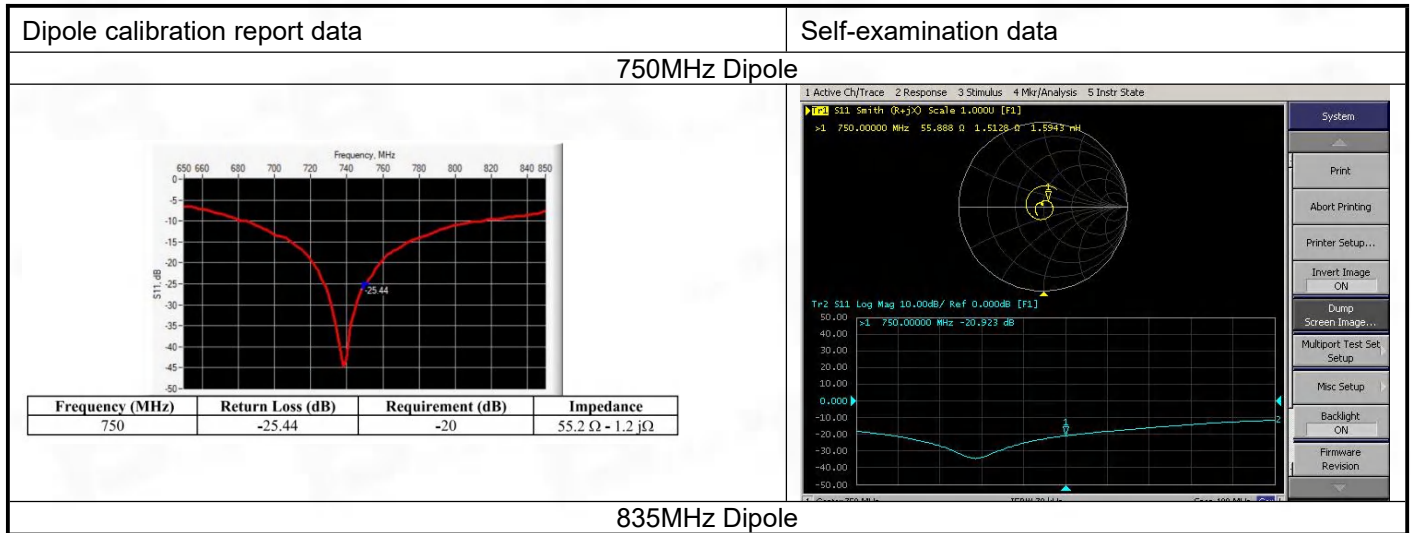
Frequency (MHz)	Input Power (mW)	10g SAR (W/Kg)	1g SAR (W/Kg)	10g SAR 1W input power normalized (W/Kg)	1g SAR 1W input power normalized (W/Kg)	10g SAR Standard target (1W) (W/Kg)	1g SAR Standard target (1W) (W/Kg)	1g SAR Deviation	10g SAR Deviation
750	16	0.092	0.138	5.75	8.63	5.55	8.49	3.60%	1.59%
835	16	0.106	0.163	6.63	10.19	6.17	9.79	7.37%	4.06%
1800	16	0.312	0.588	19.50	36.75	20.61	39.33	-5.39%	-6.56%
1900	16	0.322	0.630	20.13	39.38	20.70	40.97	-2.78%	-3.89%
2300	16	0.749	0.340	46.81	21.25	50.35	22.84	-7.03%	-6.96%
2450	16	0.352	0.793	22.00	49.56	23.86	54.4	-7.80%	-8.89%
2600	16	0.421	0.866	26.31	54.13	24.48	57.14	7.49%	-5.28%
3500	16	0.381	1.038	23.80	64.89	25.71	69.64	-6.82%	-7.43%
5200	13	0.288	1.019	22.15	78.38	21.29	73.88	4.06%	6.10%
5800	13	0.277	0.981	21.31	75.46	21.5	74.21	-0.89%	1.69%

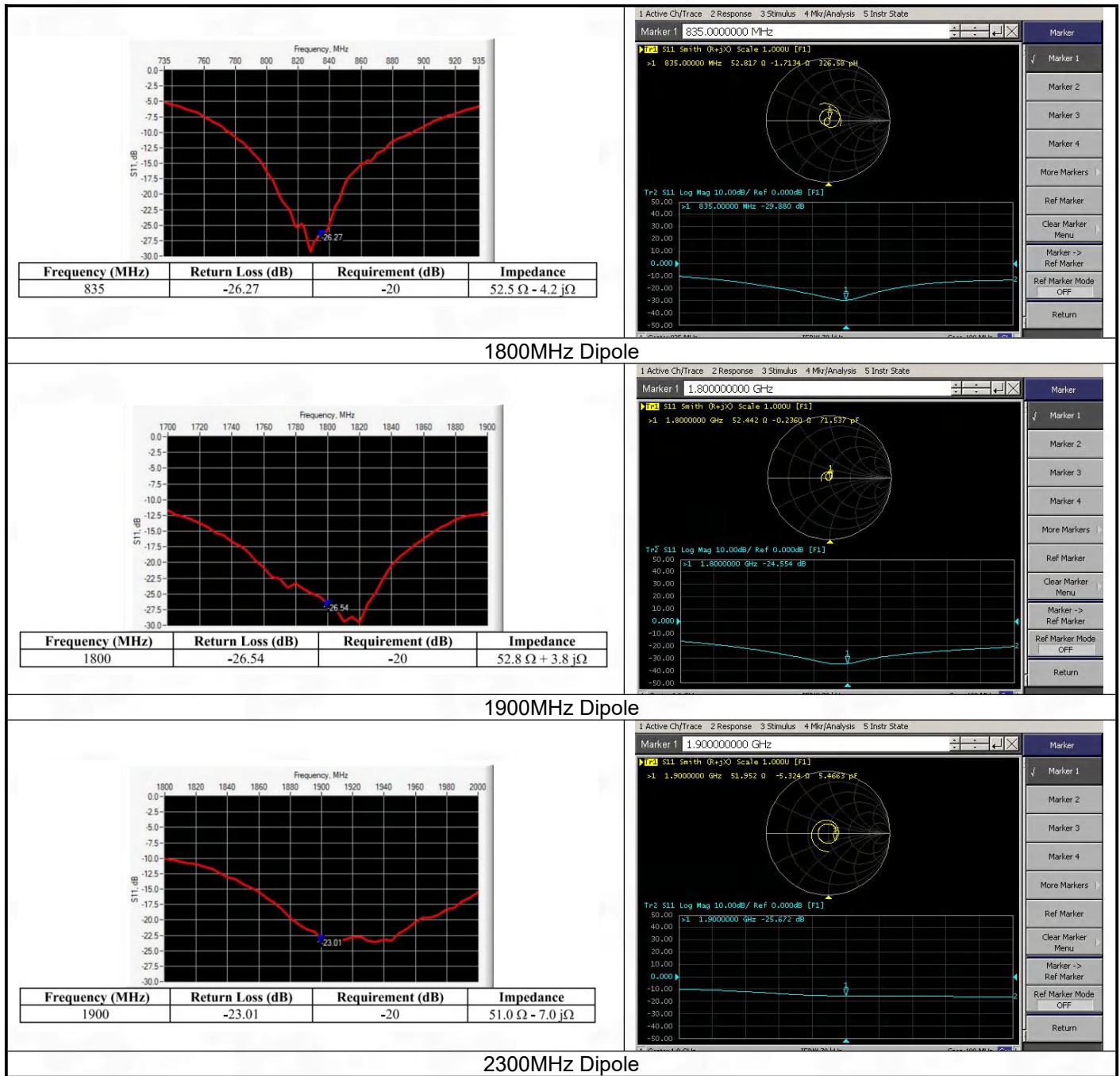
ANNEX C SAR Dipole Calibrations

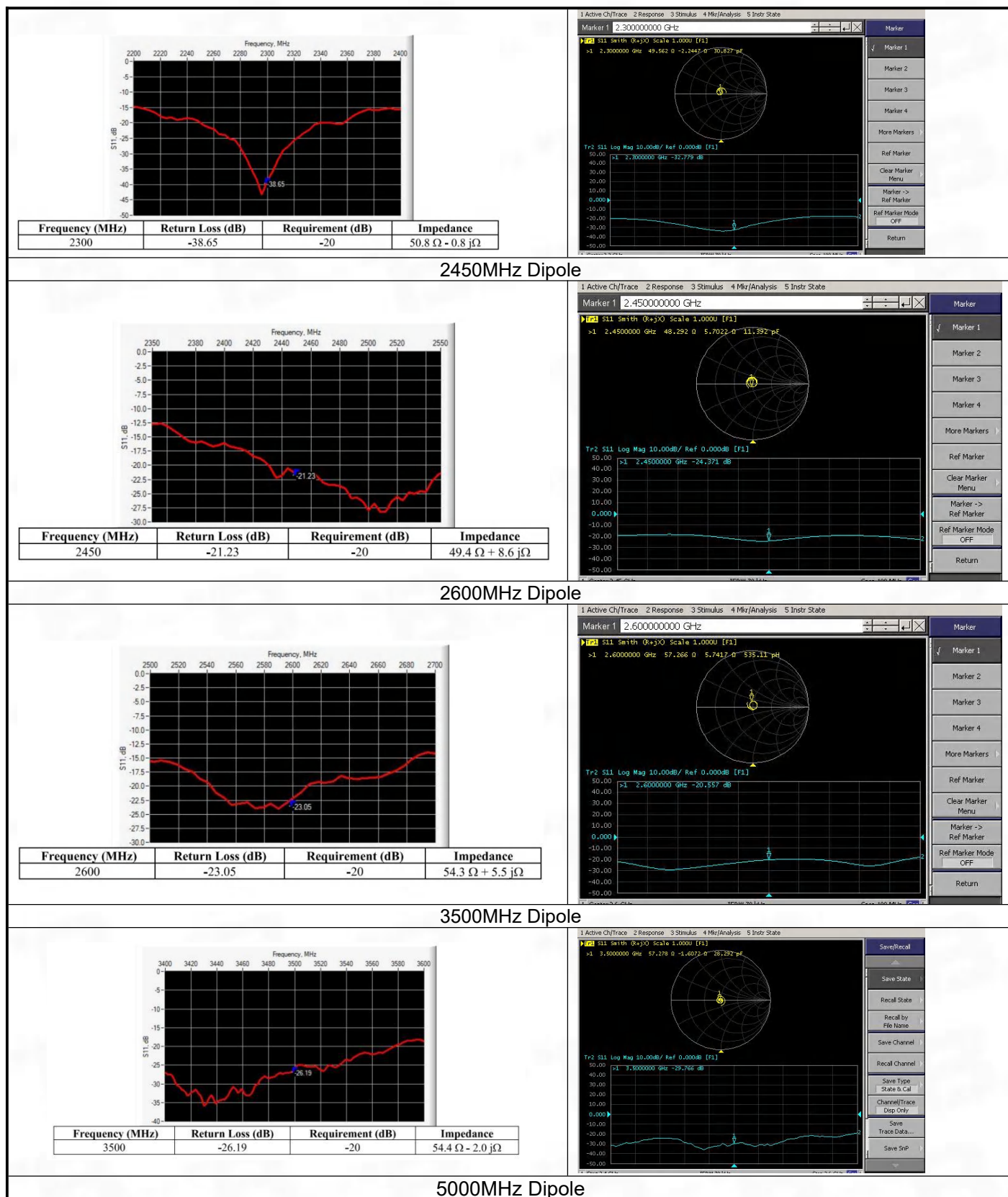
Justification for Extended SAR Dipole Calibrations

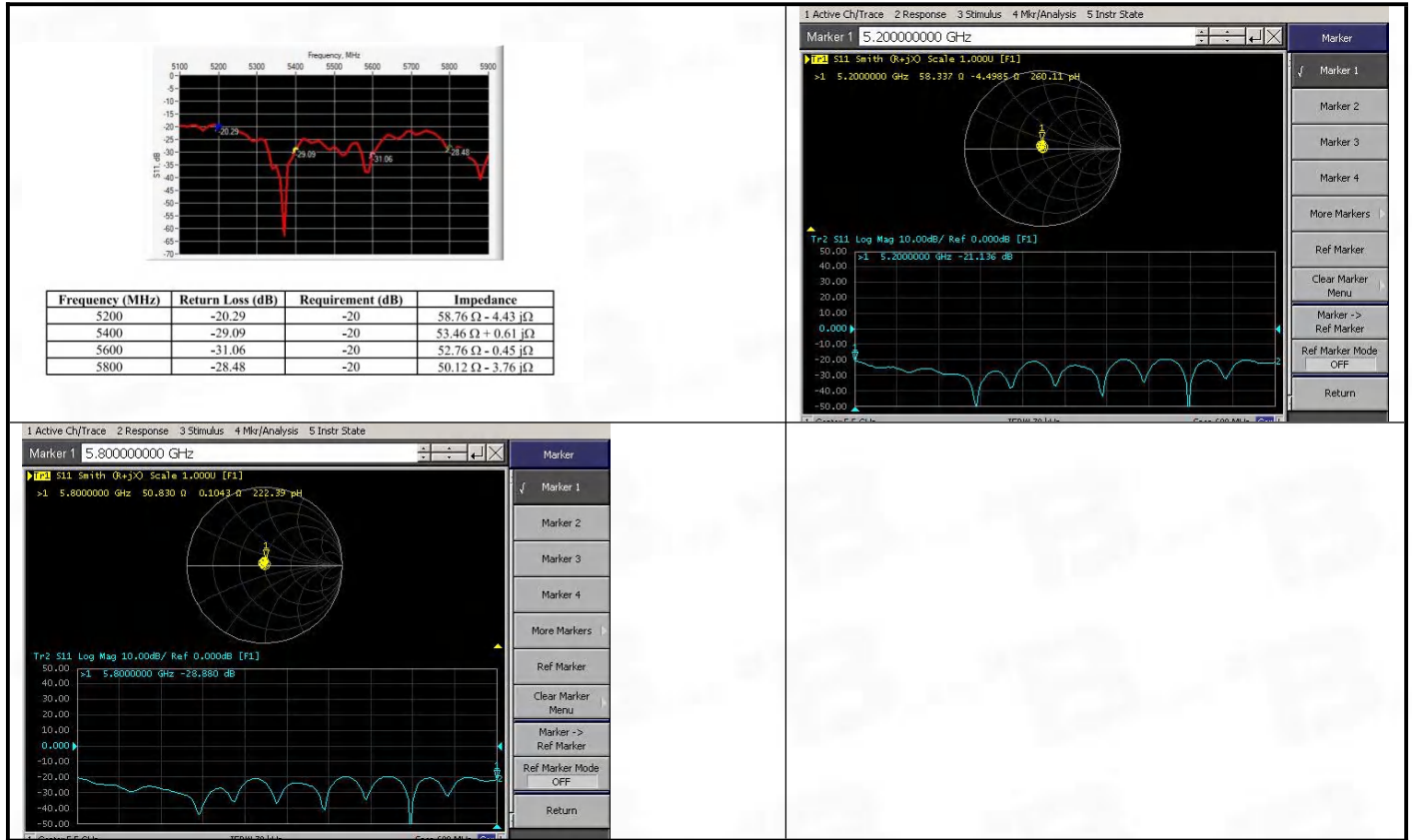
Referring to KDB 865664D01V01r04, if dipoles are verified in return loss ($\leq -20\text{dB}$, within 20% of prior calibration) and in impedance (within 5 ohm of prior calibration), the annual calibration is not necessary and the calibration interval can be extended. While calibration intervals not exceed 3 years.

Frequency (MHz)	Return loss(dB)		Impedance(Ω)				error range (%)		Results	Date of Measure ment
	measurement	target	measurement		target		Return loss(±20%)	Impedance(±5 Ω)	(P/F)	
			real part	imaginary part	real part	imaginary part				
CW750	-20.92	-25.44	55.89	1.5	55.2	-1.2	-17.77%	3.4	P	2/5/2024
CW835	-29.88	-26.27	52.8	-1.7	52.5	-4.2	13.74%	2.8	P	2/5/2024
CW1800	-24.55	-26.54	52.4	-0.2	52.8	+3.8	-7.50%	4.4	P	2/5/2024
CW1900	-25.67	-23.01	51.9	-5.3	51.0	-7.0	11.56%	2.6	P	2/5/2024
CW2300	-32.78	-38.65	49.6	-2.2	50.8	-0.8	-15.19%	2.6	P	2/5/2024
CW2450	-24.37	-21.23	48.3	5.7	49.4	+8.6	14.79%	4.0	P	2/5/2024
CW2600	-20.56	-23.05	57.3	5.7	54.3	+5.5	-10.80%	3.2	P	2/5/2024
CW3500	-29.77	-26.19	57.28	-1.6	54.4	-2.0	13.67%	-3.3	P	2/5/2024
CW5200	-21.14	-20.29	58.4	-4.5	58.76	-4.43	4.19%	0.43	P	2/5/2024
CW5800	-28.88	-28.48	50.8	0.1	50.12	-3.76	1.40%	4.34	P	2/5/2024









System Performance Check Data (750 MHz)

System check at 750 MHz

Date of measurement: 8/7/2024

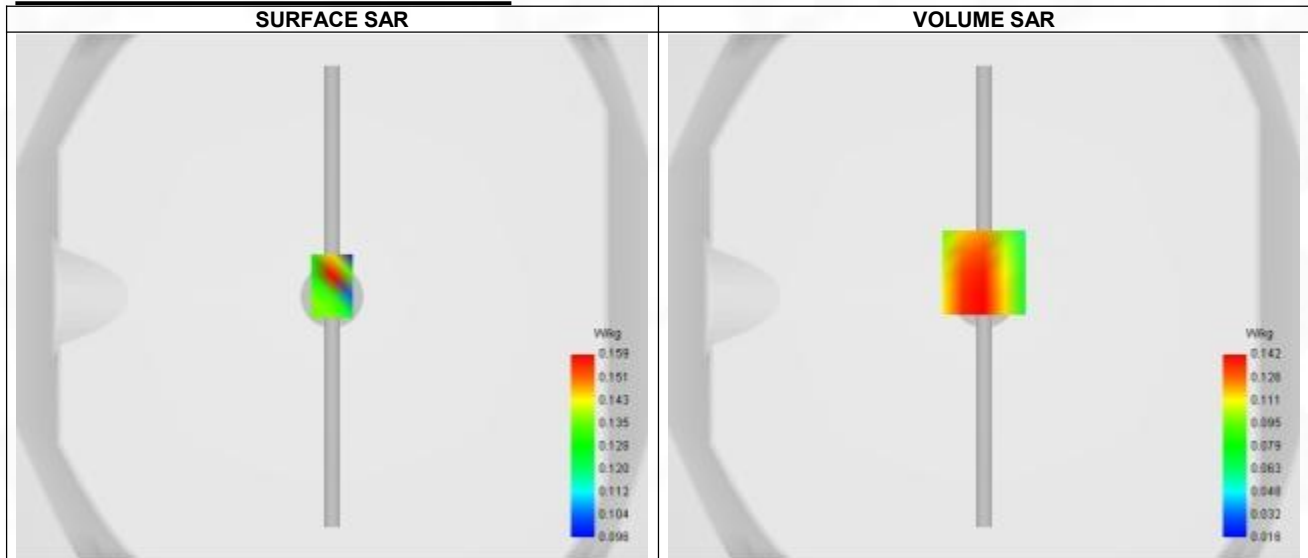
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	1.65
Area Scan	dx=8mm dy=8mm, Adaptive 1 max
Zoom Scan	5x5x7, dx=8mm dy=8mm dz=5mm, Complete
Phantom	Validation plane
Device Position	Dipole
Band	CW750
Channels	Middle
Signal	CW

B. Permittivity

Frequency (MHz)	750.000
Relative permittivity (real part)	41.800
Relative permittivity (imaginary part)	21.460
Conductivity (S/m)	0.860

C. SAR Surface and Volume



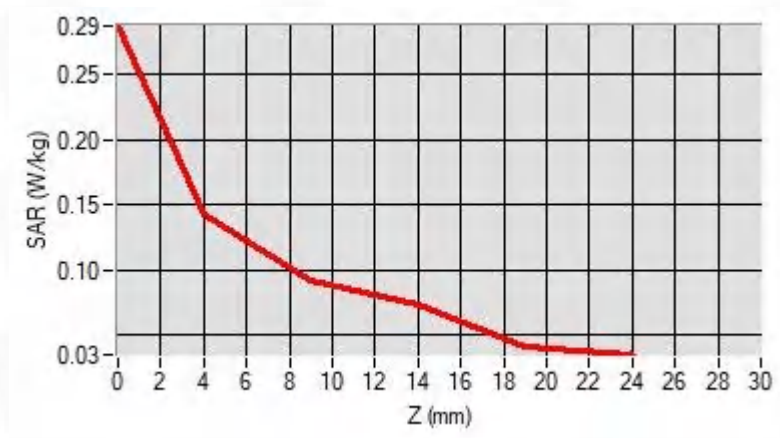
Maximum location: X=0.00, Y=9.00 ; SAR Peak: 0.20 W/kg

D. SAR 1g & 10g

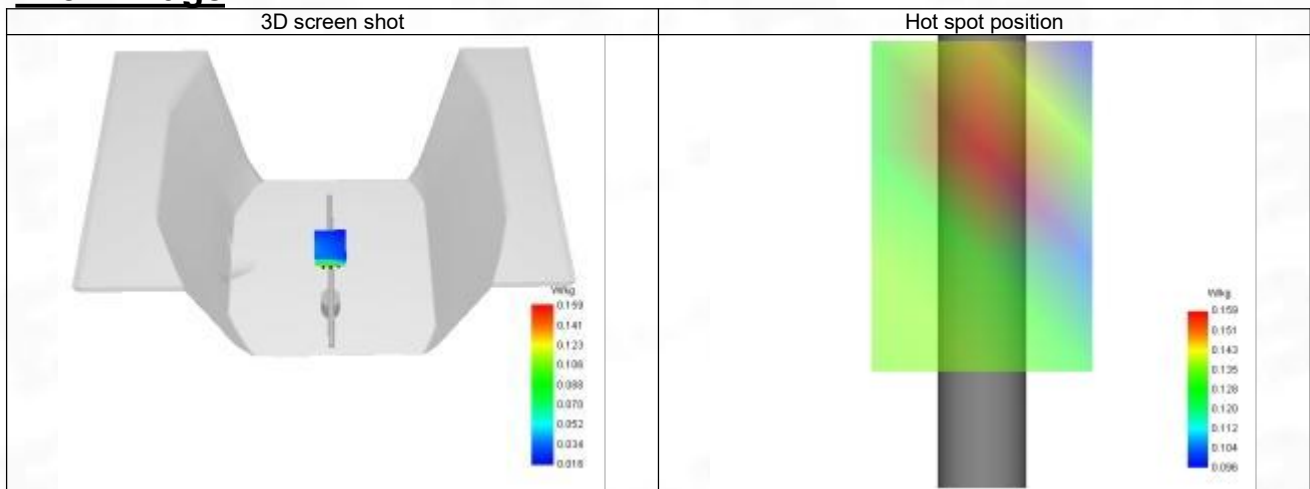
SAR 10g (W/Kg)	0.092
SAR 1g (W/Kg)	0.138
Variation (%)	-2.190
Horizontal validation criteria: minimum distance (mm)	9.285
Vertical validation criteria: SAR ratio M2/M1 (%)	64.79%

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.287	0.142	0.092	0.073	0.042



F. 3D Image



System Performance Check Data (835 MHz)

System check at 835 MHz

Date of measurement: 10/7/2024

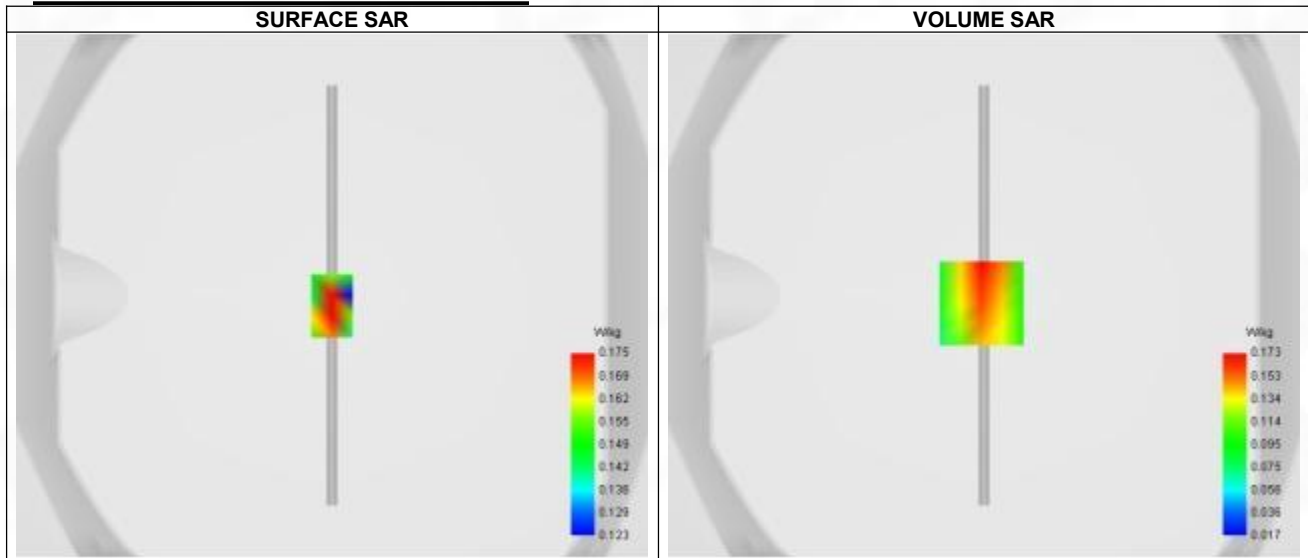
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	1.68
Area Scan	dx=8mm dy=8mm, Adaptive 1 max
Zoom Scan	5x5x7, dx=8mm dy=8mm dz=5mm, Complete
Phantom	Validation plane
Device Position	Dipole
Band	CW835
Channels	Middle
Signal	CW

B. Permittivity

Frequency (MHz)	835.000
Relative permittivity (real part)	41.410
Relative permittivity (imaginary part)	19.490
Conductivity (S/m)	0.870

C. SAR Surface and Volume



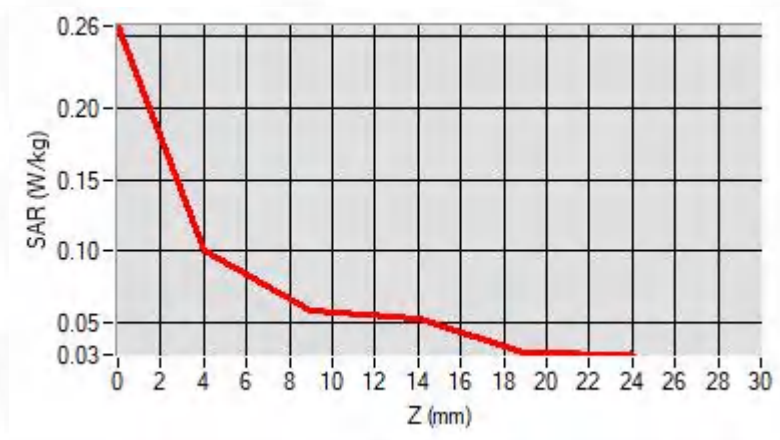
Maximum location: X=-1.00, Y=-3.00 ; SAR Peak: 0.26 W/kg

D. SAR 1g & 10g

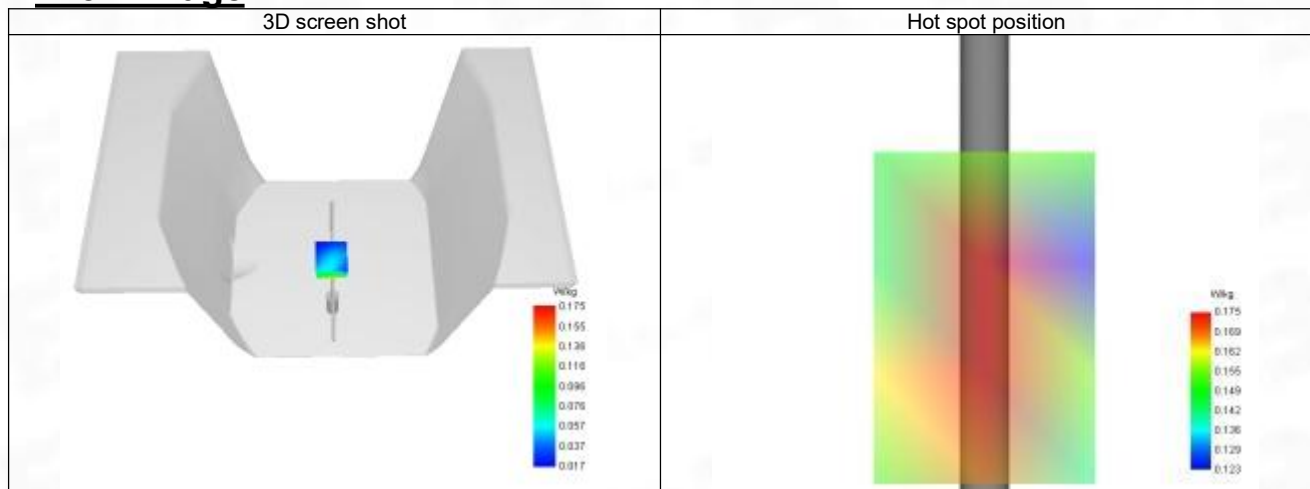
SAR 10g (W/Kg)	0.106
SAR 1g (W/Kg)	0.163
Variation (%)	-3.390
Horizontal validation criteria: minimum distance (mm)	8.487
Vertical validation criteria: SAR ratio M2/M1 (%)	66.47%

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.059	0.173	0.115	0.061	0.072



F. 3D Image



System Performance Check Data (1800 MHz)

System check at 1800 MHz

Date of measurement: 12/7/2024

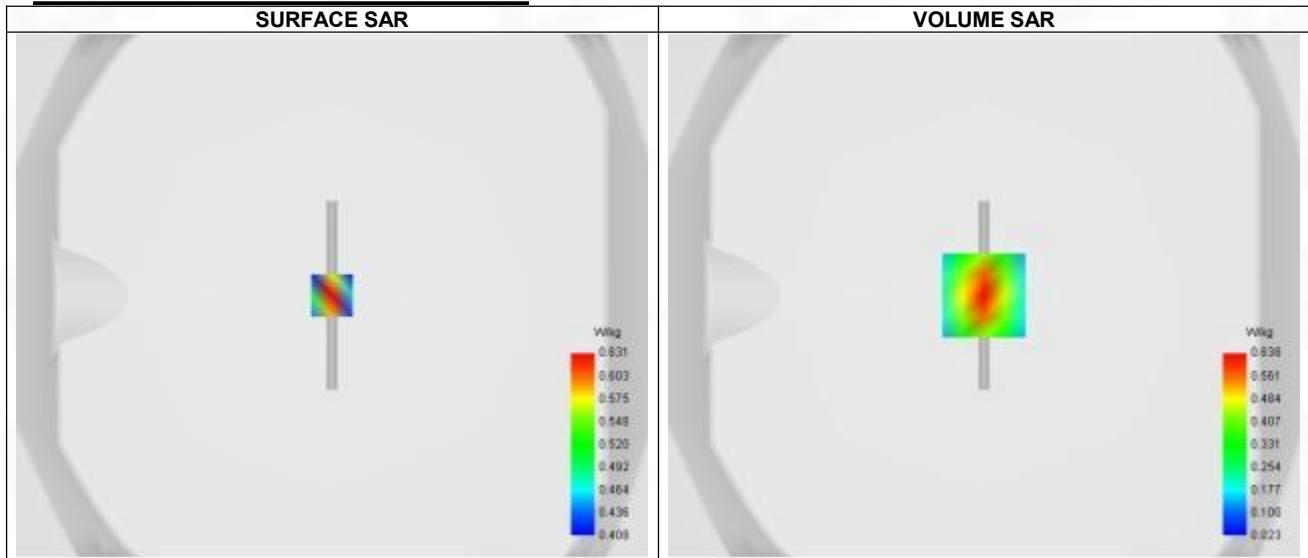
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	1.96
Area Scan	dx=8mm dy=8mm, Adaptive 1 max
Zoom Scan	5x5x7, dx=8mm dy=8mm dz=5mm, Complete
Phantom	Validation plane
Device Position	Dipole
Band	CW1800
Channels	Middle
Signal	CW

B. Permittivity

Frequency (MHz)	1800.000
Relative permittivity (real part)	39.910
Relative permittivity (imaginary part)	14.090
Conductivity (S/m)	1.370

C. SAR Surface and Volume



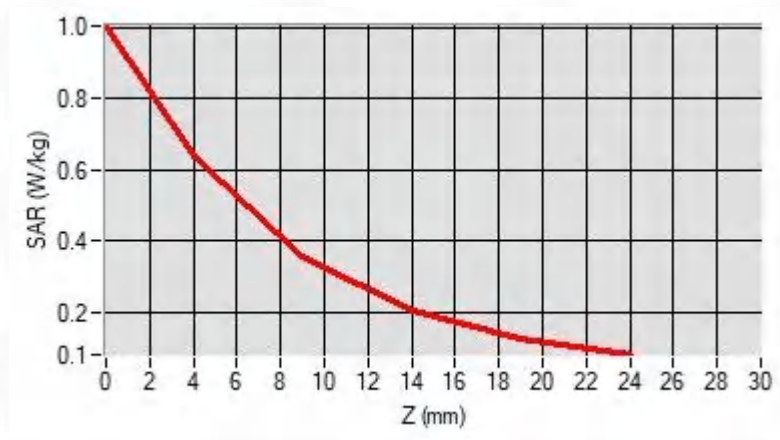
Maximum location: X=0.00, Y=0.00 ; SAR Peak: 1.00 W/kg

D. SAR 1g & 10g

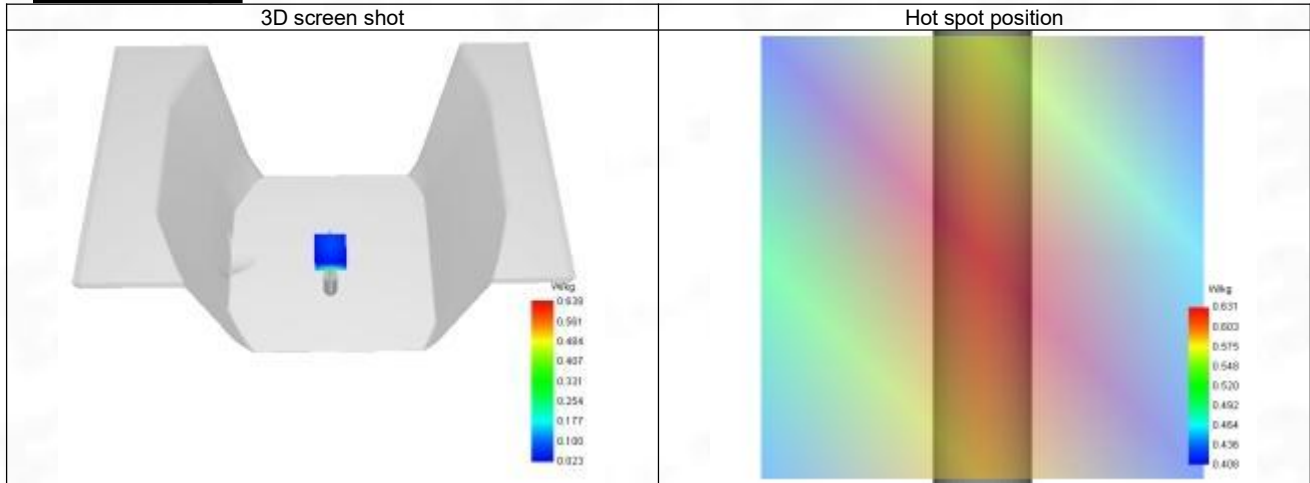
SAR 10g (W/Kg)	0.312
SAR 1g (W/Kg)	0.588
Variation (%)	-0.250
Horizontal validation criteria: minimum distance (mm)	8.698
Vertical validation criteria: SAR ratio M2/M1 (%)	55.80%

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.003	0.638	0.356	0.204	0.127



F. 3D Image



System Performance Check Data (1900 MHz)

System check at 1900 MHz

Date of measurement: 16/7/2024

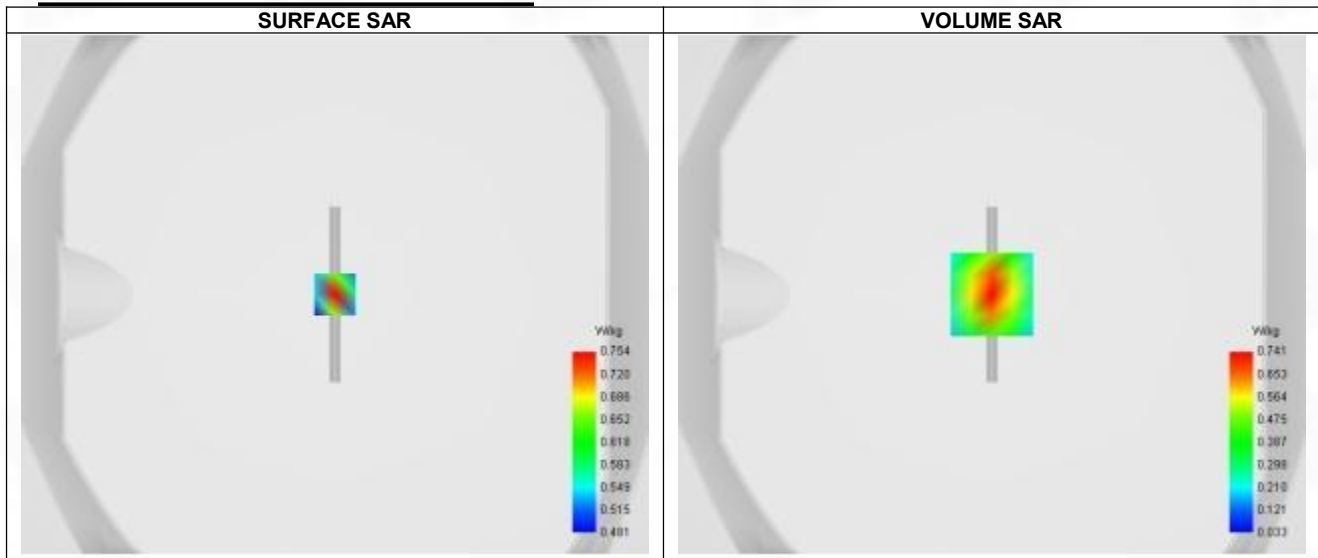
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	2.24
Area Scan	dx=8mm dy=8mm, Adaptive 1 max
Zoom Scan	5x5x7, dx=8mm dy=8mm dz=5mm, Complete
Phantom	Validation plane
Device Position	Dipole
Band	CW1900
Channels	Middle
Signal	CW

B. Permittivity

Frequency (MHz)	1900.000
Relative permittivity (real part)	39.880
Relative permittivity (imaginary part)	13.380
Conductivity (S/m)	1.410

C. SAR Surface and Volume



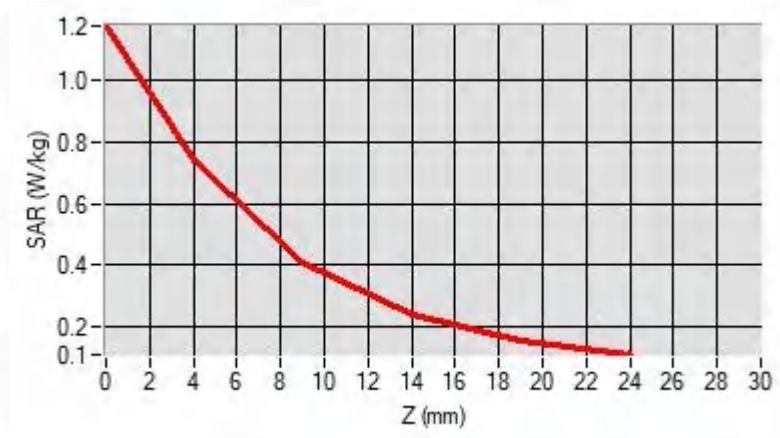
Maximum location: X=0.00, Y=0.00 ; SAR Peak: 1.18 W/kg

D. SAR 1g & 10g

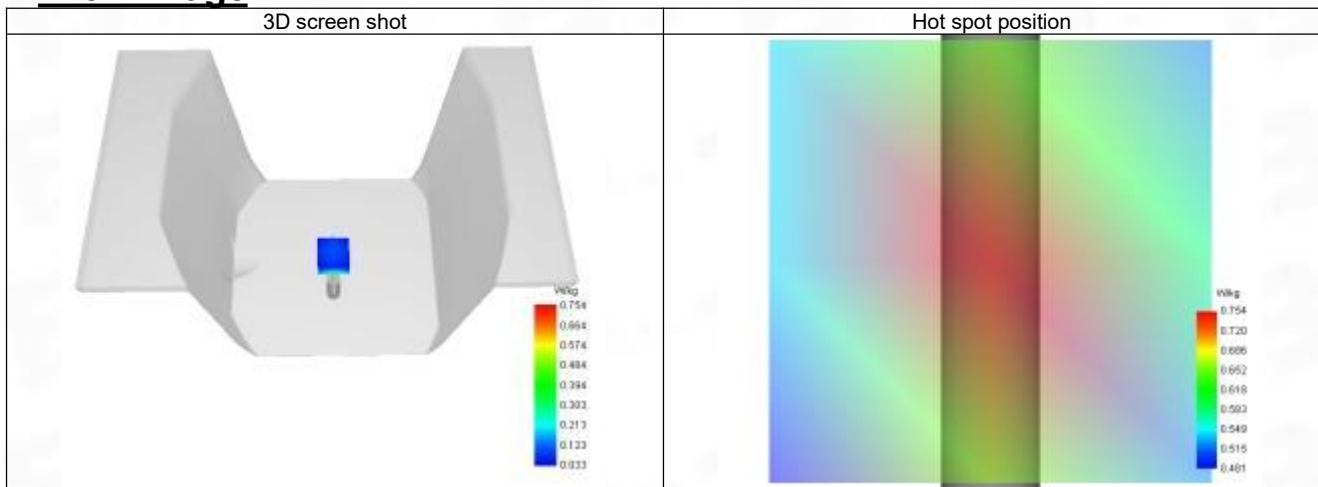
SAR 10g (W/Kg)	0.322
SAR 1g (W/Kg)	0.630
Variation (%)	-2.080
Horizontal validation criteria: minimum distance (mm)	8.699
Vertical validation criteria: SAR ratio M2/M1 (%)	52.96%

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.201	0.759	0.402	0.239	0.156



F. 3D Image



System Performance Check Data (2300 MHz)

System check at 2300 MHz

Date of measurement: 17/7/2024

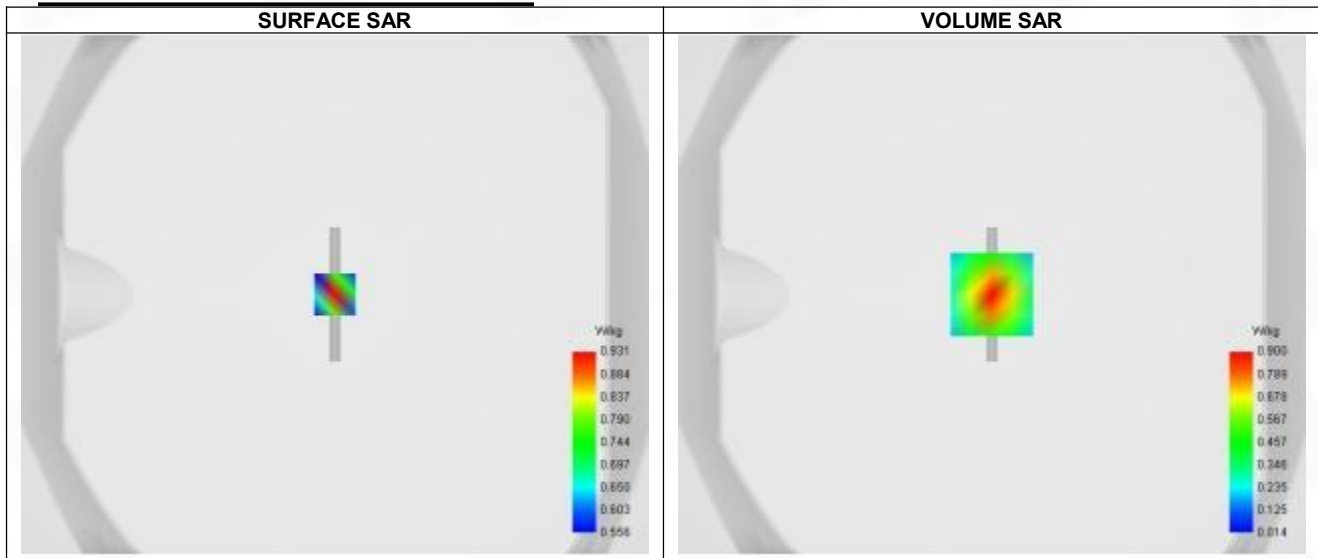
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	2.36
Area Scan	dx=8mm dy=8mm, Adaptive 1 max
Zoom Scan	5x5x7, dx=8mm dy=8mm dz=5mm, Complete
Phantom	Validation plane
Device Position	Dipole
Band	CW2300
Channels	Middle
Signal	CW

B. Permittivity

Frequency (MHz)	2300.000
Relative permittivity (real part)	39.298
Relative permittivity (imaginary part)	13.351
Conductivity (S/m)	1.701

C. SAR Surface and Volume



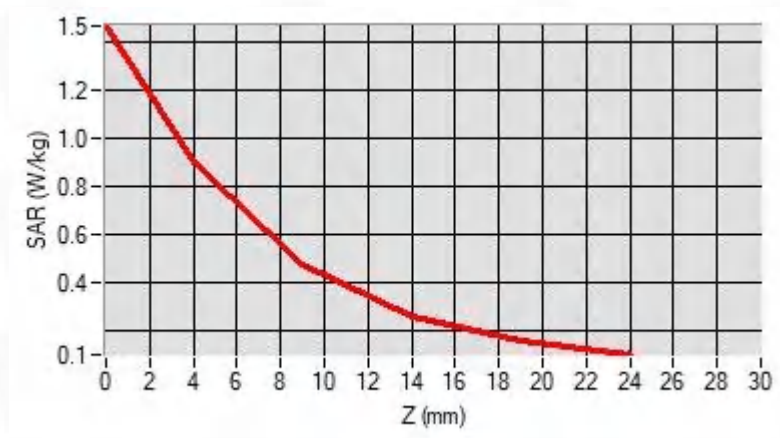
Maximum location: X=0.00, Y=0.00 ; SAR Peak: 1.40 W/kg

D. SAR 1g & 10g

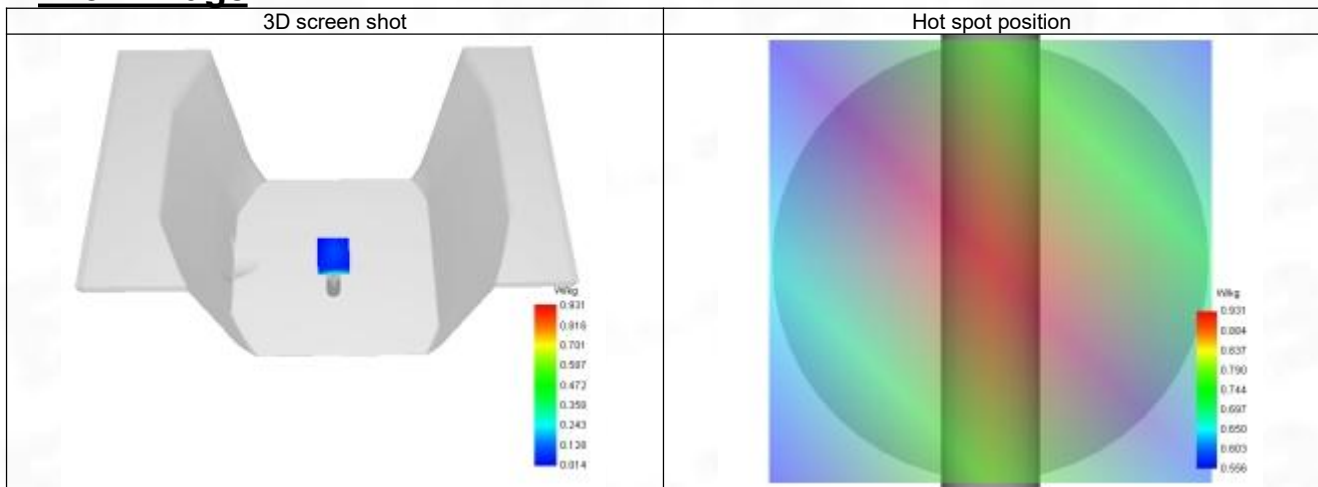
SAR 10g (W/Kg)	0.340
SAR 1g (W/Kg)	0.749
Variation (%)	-2.880
Horizontal validation criteria: minimum distance (mm)	8.474
Vertical validation criteria: SAR ratio M2/M1 (%)	53.00%

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.400	0.900	0.477	0.261	0.150



F. 3D Image



System Performance Check Data (2450 MHz)

System check at 2450 MHz

Date of measurement: 18/7/2024

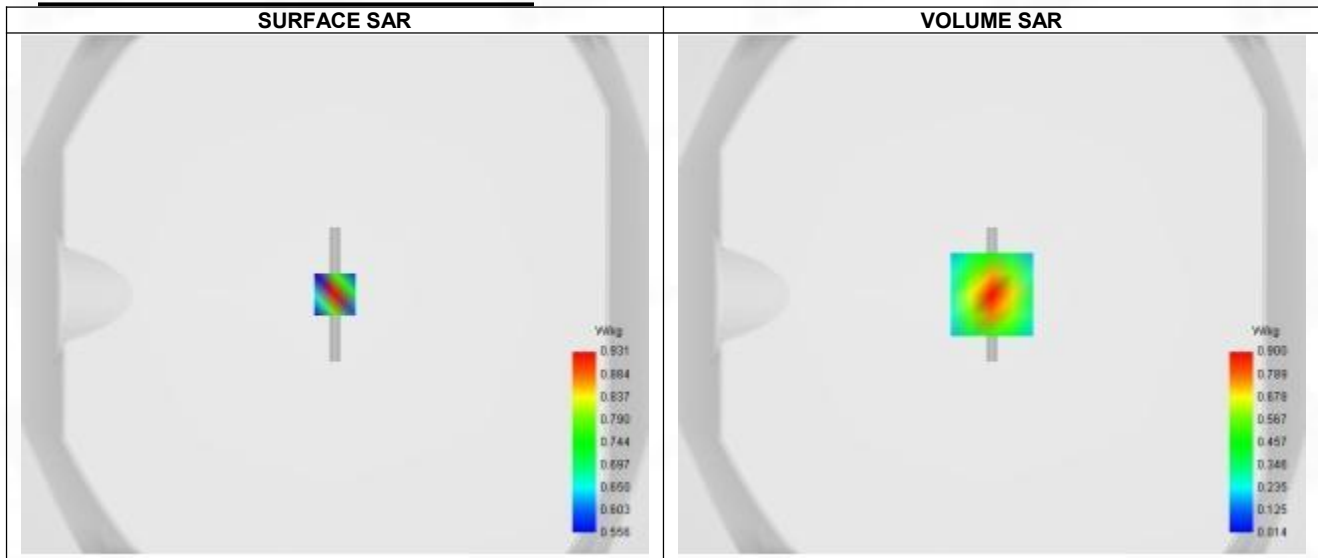
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	2.36
Area Scan	dx=8mm dy=8mm, Adaptive 1 max
Zoom Scan	5x5x7, dx=5mm dy=5mm dz=5mm, Complete
Phantom	Validation plane
Device Position	Dipole
Band	CW2450
Channels	Middle
Signal	CW

B. Permittivity

Frequency (MHz)	2450.000
Relative permittivity (real part)	39.080
Relative permittivity (imaginary part)	13.340
Conductivity (S/m)	1.810

C. SAR Surface and Volume



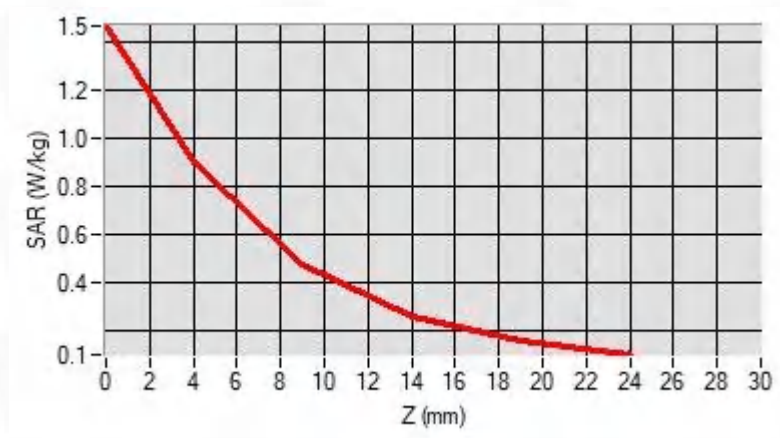
Maximum location: X=0.00, Y=0.00 ; SAR Peak: 1.47 W/kg

D. SAR 1g & 10g

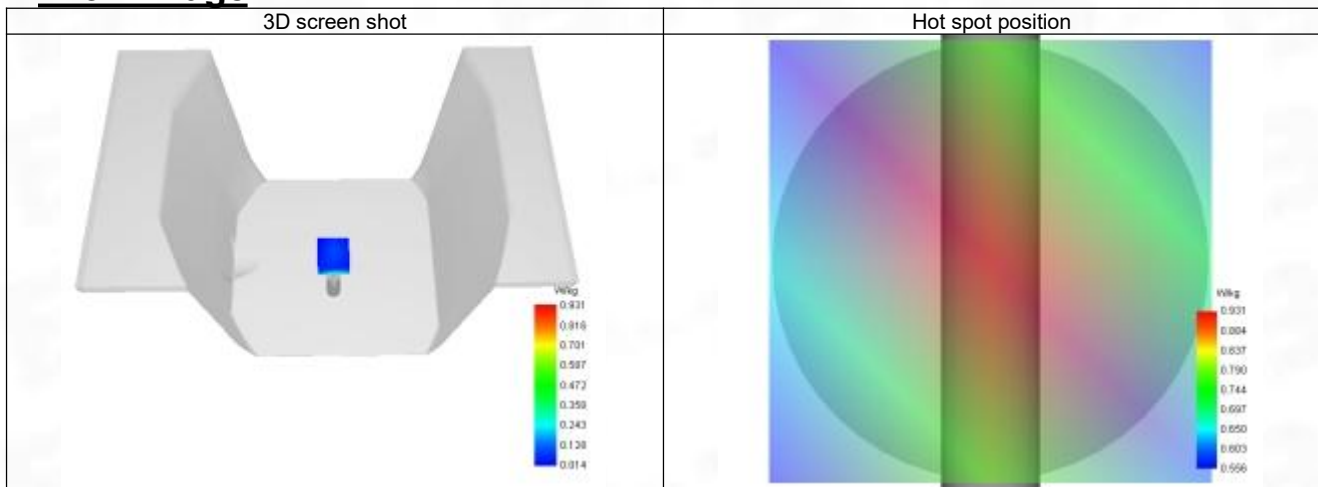
SAR 10g (W/Kg)	0.352
SAR 1g (W/Kg)	0.793
Variation (%)	-2.570
Horizontal validation criteria: minimum distance (mm)	9.787
Vertical validation criteria: SAR ratio M2/M1 (%)	53.00%

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.466	0.900	0.477	0.261	0.158



F. 3D Image



System Performance Check Data (2600 MHz)

System check at 2600 MHz

Date of measurement: 22/7/2024

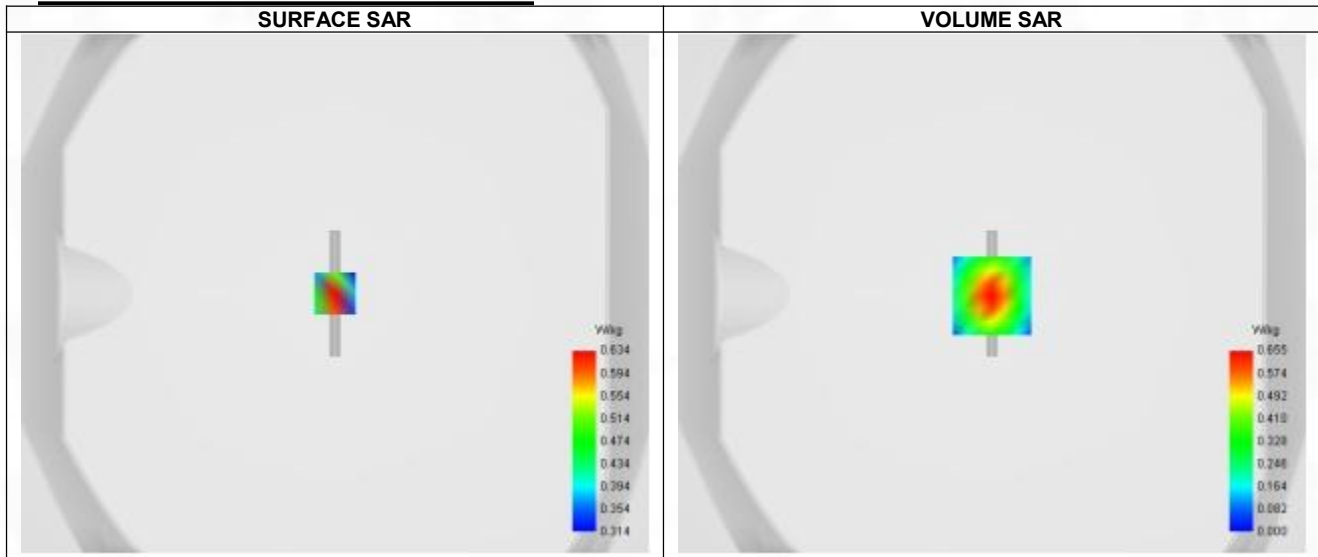
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	2.40
Area Scan	dx=8mm dy=8mm, Adaptive 1 max
Zoom Scan	5x5x7, dx=5mm dy=5mm dz=5mm, Complete
Phantom	Validation plane
Device Position	Dipole
Band	CW2600
Channels	Middle
Signal	CW

B. Permittivity

Frequency (MHz)	2600.000
Relative permittivity (real part)	38.880
Relative permittivity (imaginary part)	12.690
Conductivity (S/m)	1.970

C. SAR Surface and Volume



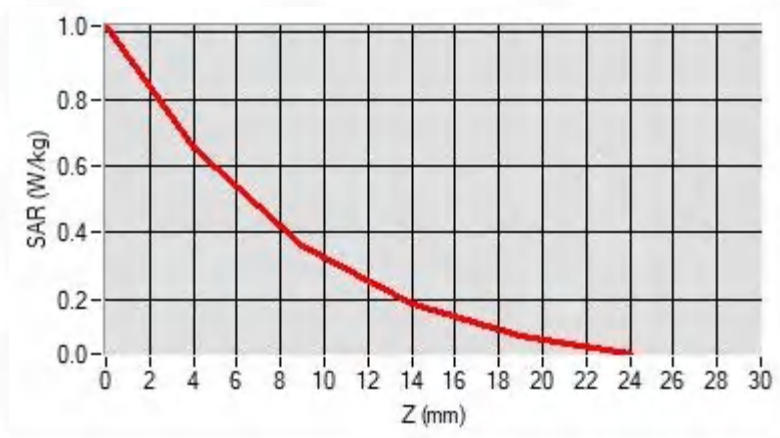
Maximum location: X=0.00, Y=-1.00 ; SAR Peak: 1.02 W/kg

D. SAR 1g & 10g

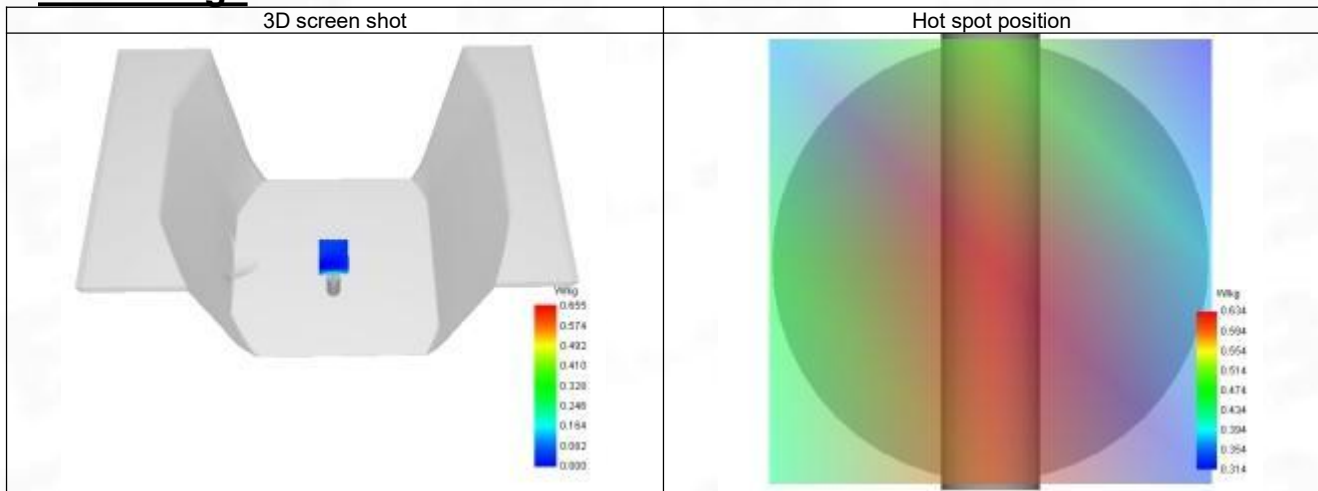
SAR 10g (W/Kg)	0.421
SAR 1g (W/Kg)	0.866
Variation (%)	2.980
Horizontal validation criteria: minimum distance (mm)	9.362
Vertical validation criteria: SAR ratio M2/M1 (%)	54.81%

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.020	0.655	0.359	0.187	0.091



F. 3D Image



System Performance Check Data (3500 MHz)

System check at 3700 MHz

Date of measurement: 20/8/2024

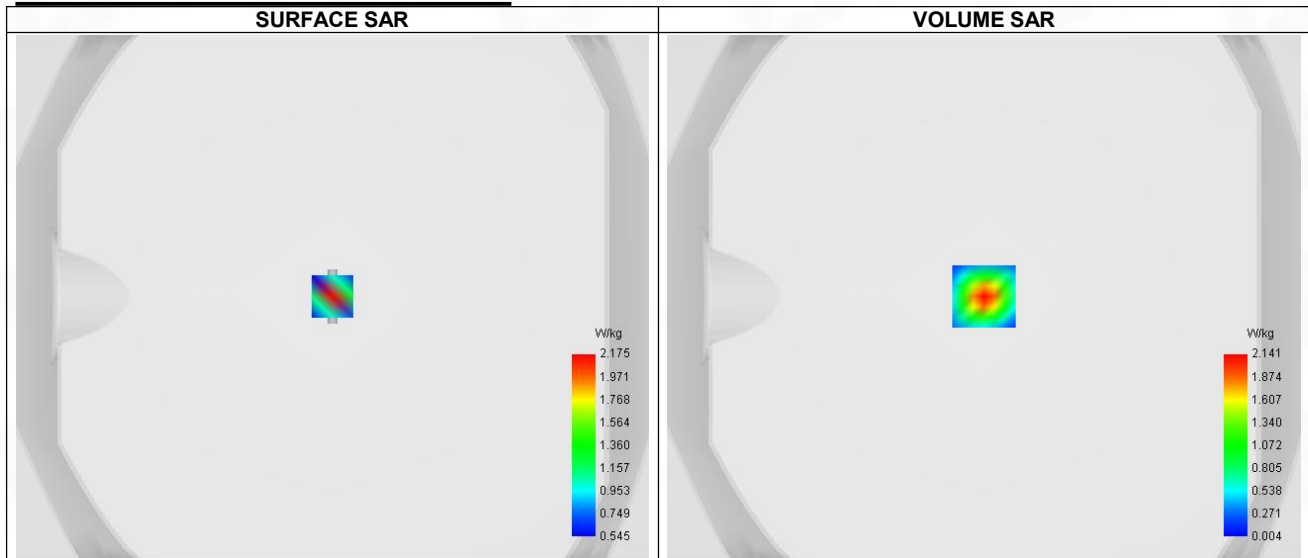
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	2.00
Area Scan	dx=8mm dy=8mm, Adaptive 1 max
Zoom Scan	7x7x12, dx=4mm dy=4mm dz=2mm, Complete
Phantom	Validation plane
Device Position	Dipole
Band	CW3500
Channels	Middle
Signal	CW

B. Permittivity

Frequency (MHz)	3500.000
Relative permittivity (real part)	37.842
Relative permittivity (imaginary part)	13.922
Conductivity (S/m)	2.915

C. SAR Surface and Volume



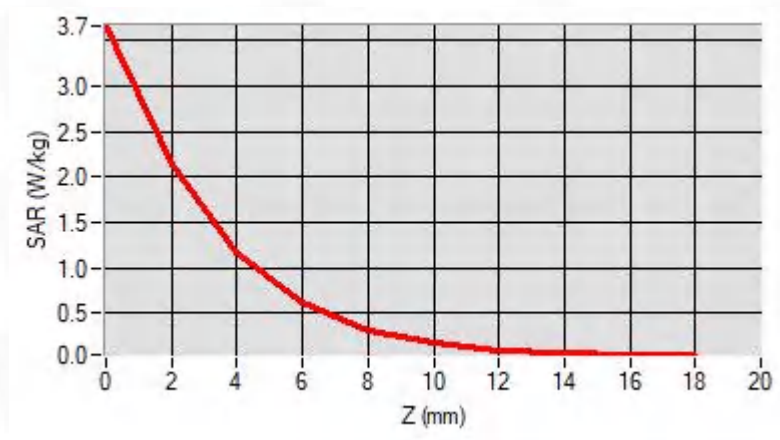
Maximum location: X=0.00, Y=0.00 ; SAR Peak: 3.70 W/kg

D. SAR 1g & 10g

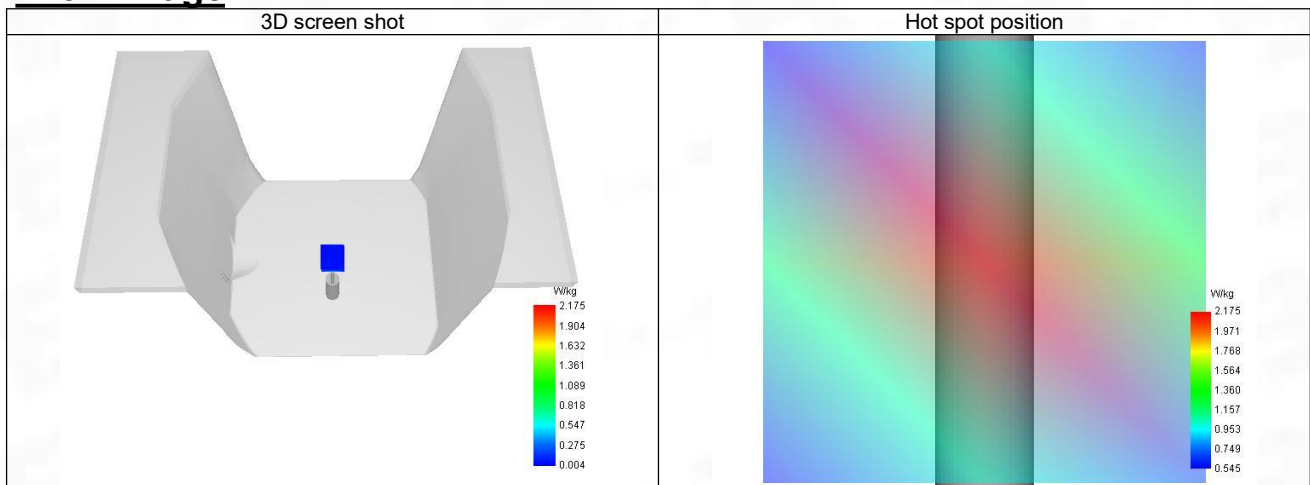
SAR 10g (W/Kg)	0.381
SAR 1g (W/Kg)	1.038
Variation (%)	1.100
Horizontal validation criteria: minimum distance (mm)	5.226
Vertical validation criteria: SAR ratio M2/M1 (%)	54.97%

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)	3.660	2.141	1.177	0.614	0.317	0.169	0.098	0.065	0.050



F. 3D Image



System Performance Check Data (5200 MHz)

System check at 5200 MHz

Date of measurement: 24/7/2024

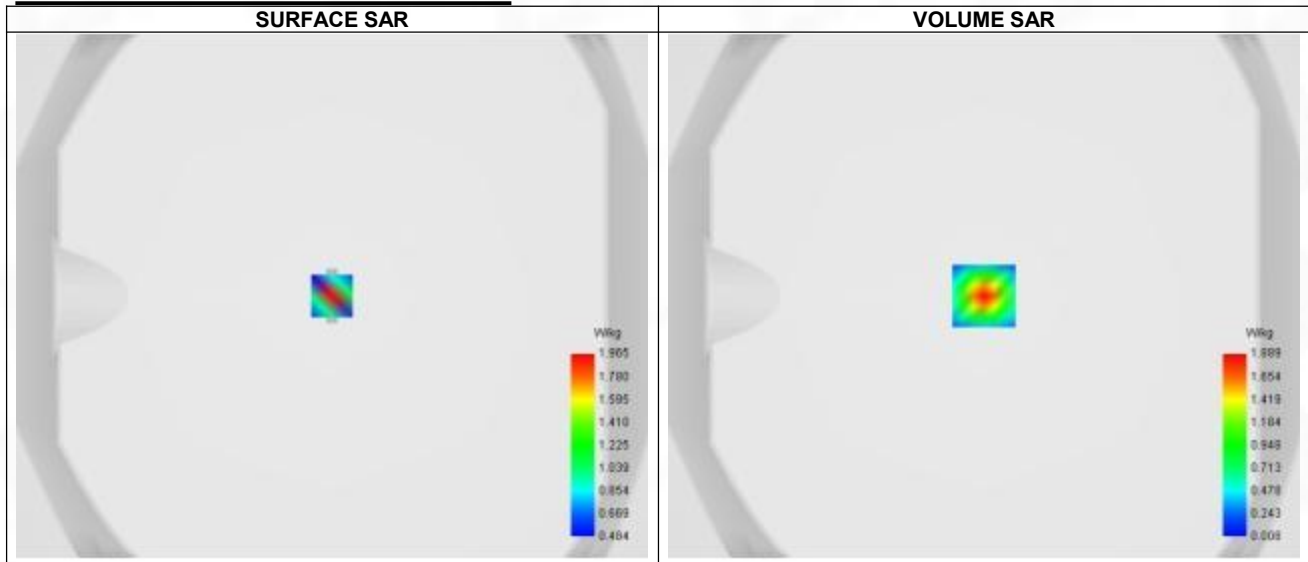
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	2.24
Area Scan	dx=8mm dy=8mm, Adaptive 1 max
Zoom Scan	7x7x12, dx=4mm dy=4mm dz=2mm, Complete
Phantom	Validation plane
Device Position	Dipole
Band	CW5200
Channels	Middle
Signal	CW

B. Permittivity

Frequency (MHz)	5200.000
Relative permittivity (real part)	35.880
Relative permittivity (imaginary part)	16.250
Conductivity (S/m)	4.700

C. SAR Surface and Volume



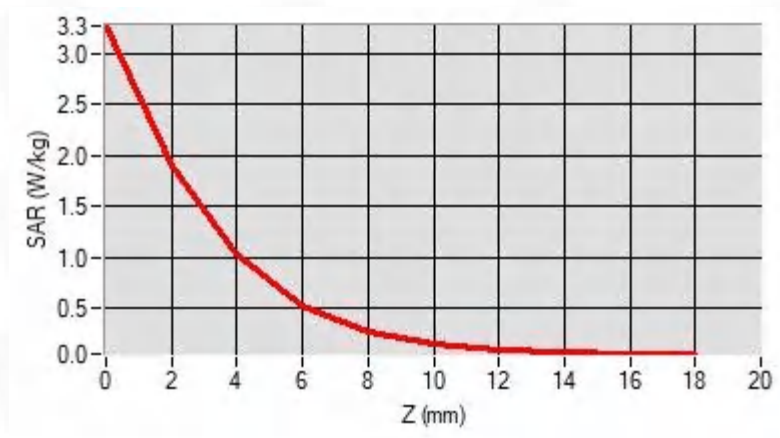
Maximum location: X=0.00, Y=0.00 ; SAR Peak: 3.38 W/kg

D. SAR 1g & 10g

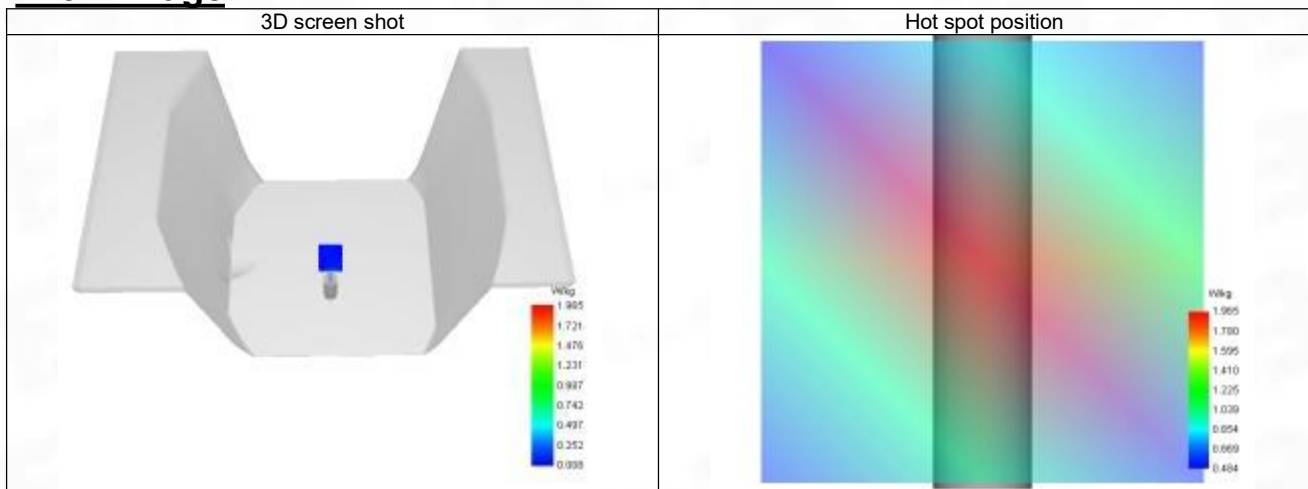
SAR 10g (W/Kg)	0.288
SAR 1g (W/Kg)	1.019
Variation (%)	-3.400
Horizontal validation criteria: minimum distance (mm)	6.287
Vertical validation criteria: SAR ratio M2/M1 (%)	54.05%

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)	3.268	1.889	1.021	0.523	0.266	0.142	0.085	0.060	0.052



F. 3D Image



System Performance Check Data (5800 MHz)

System check at 5800 MHz

Date of measurement: 25/7/2024

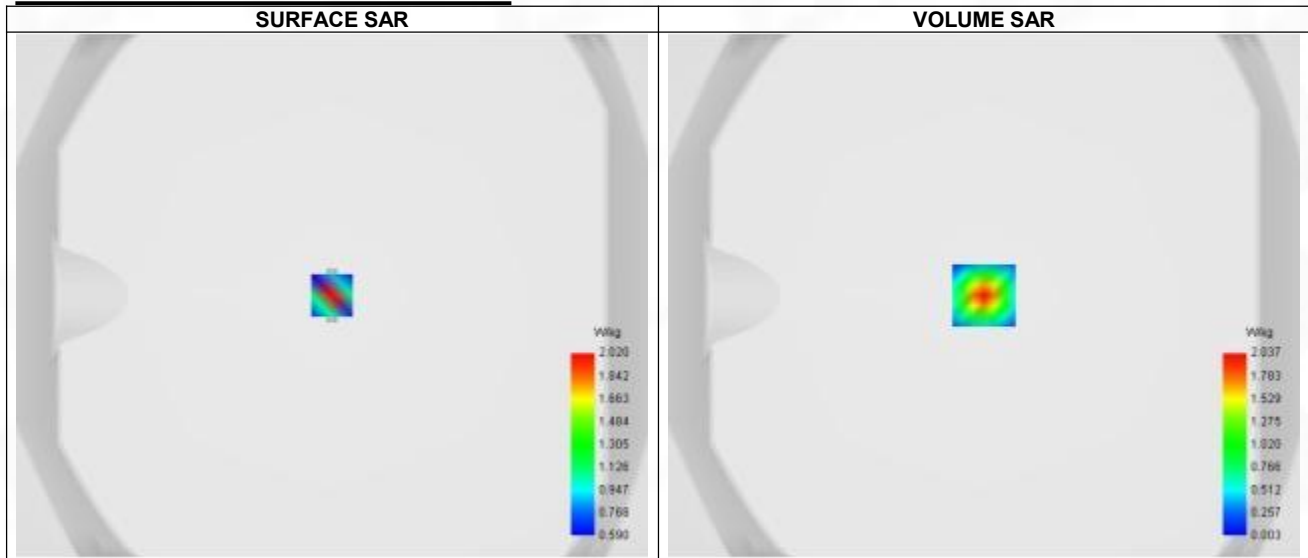
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	2.04
Area Scan	dx=8mm dy=8mm, Adaptive 1 max
Zoom Scan	7x7x12, dx=4mm dy=4mm dz=2mm, Complete
Phantom	Validation plane
Device Position	Dipole
Band	CW5800
Channels	Middle
Signal	CW

B. Permittivity

Frequency (MHz)	5800.000
Relative permittivity (real part)	35.180
Relative permittivity (imaginary part)	16.480
Conductivity (S/m)	5.310

C. SAR Surface and Volume



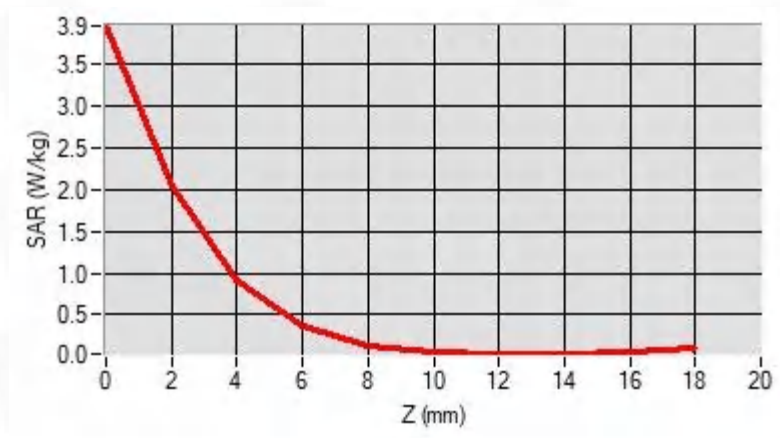
Maximum location: X=0.00, Y=0.00 ; SAR Peak: 4.17 W/kg

D. SAR 1g & 10g

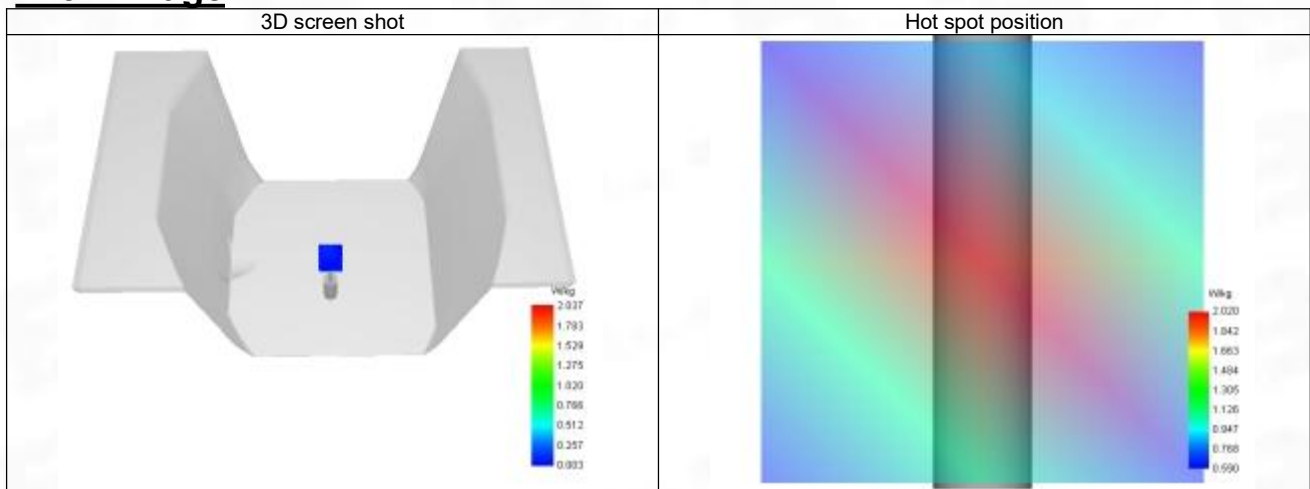
SAR 10g (W/Kg)	0.277
SAR 1g (W/Kg)	0.981
Variation (%)	0.490
Horizontal validation criteria: minimum distance (mm)	7.145
Vertical validation criteria: SAR ratio M2/M1 (%)	44.92%

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)	3.948	2.037	0.915	0.361	0.135	0.055	0.033	0.037	0.059



F. 3D Image



ANNEX D Test Data

1-Head with front position in dist. 0mm on Channel 128 in GSM850 voice

SAR Measurement at GSM850 (Cheek, Right)

Date of measurement: 10/7/2024

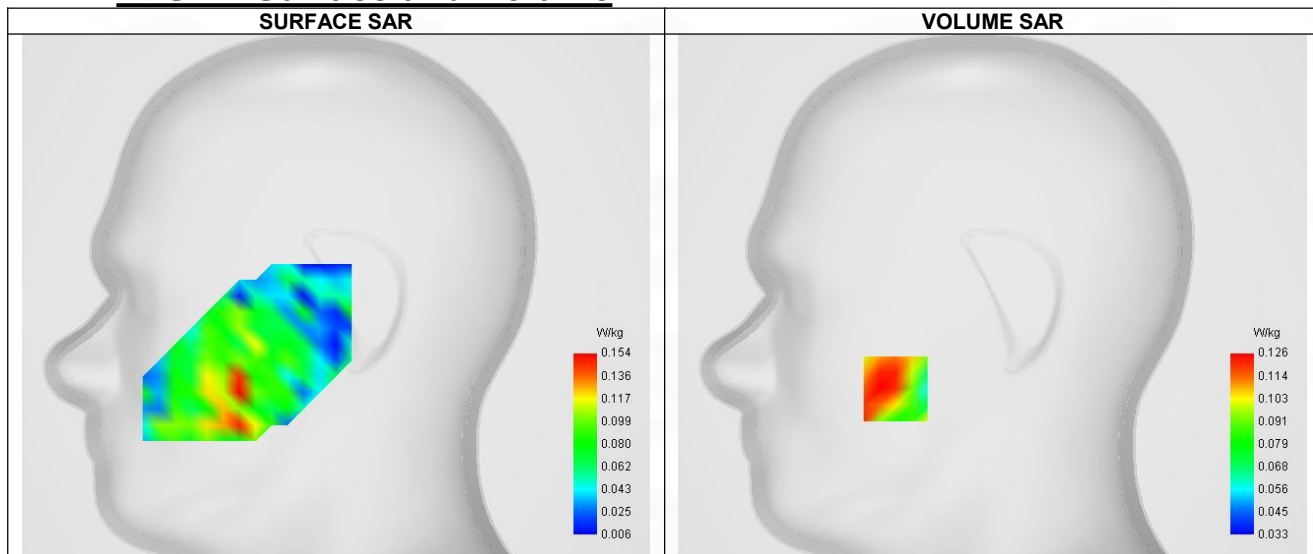
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	1.68
Area Scan	dx=8mm dy=8mm, Adaptive 1 max
Zoom Scan	5x5x7, dx=8mm dy=8mm dz=5mm, Complete
Phantom	Right head
Device Position	Cheek
Band	GSM850
Channels	Lower (128)
Signal	TDMA (GSM)
Modulation	GMSK

B. Permittivity

Frequency (MHz)	824.200
Relative permittivity (real part)	41.460
Relative permittivity (imaginary part)	19.740
Conductivity (S/m)	0.869

C. SAR Surface and Volume



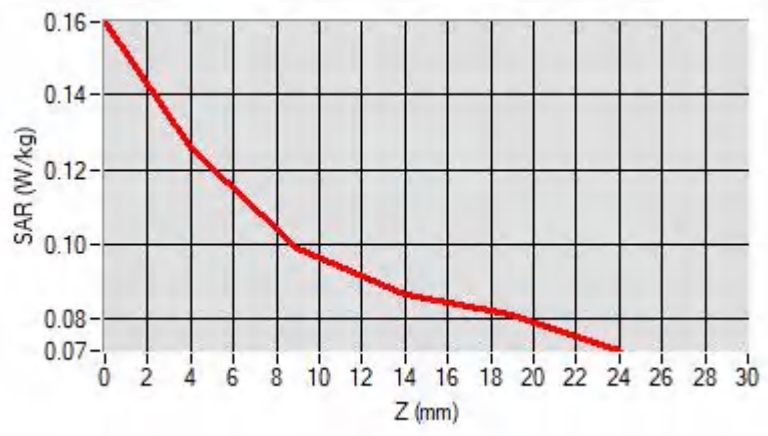
Maximum location: X=-48.00, Y=-46.00 ; SAR Peak: 0.18 W/kg

D. SAR 1g & 10g

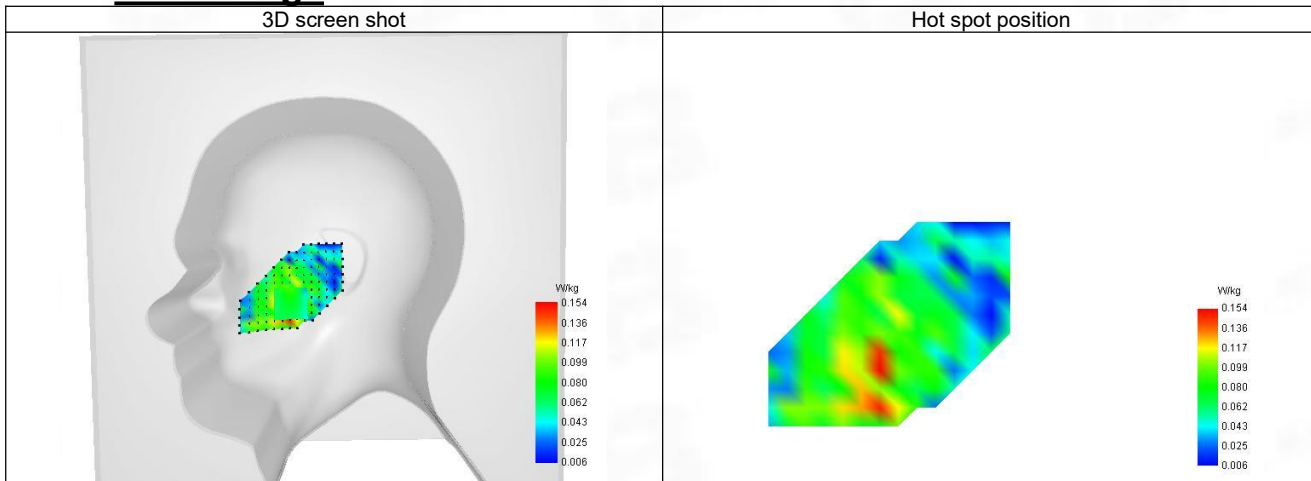
SAR 10g (W/Kg)	0.108
SAR 1g (W/Kg)	0.131
Variation (%)	-2.700
Horizontal validation criteria: minimum distance (mm)	8.426
Vertical validation criteria: SAR ratio M2/M1 (%)	78.57%

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.159	0.126	0.099	0.086	0.081



F. 3D Image



2-Body with back position in dist. 10mm on Channel 128 in GPRS850+2slots

SAR Measurement at GPRS850 (Body, Validation Plane)

Date of measurement: 10/7/2024

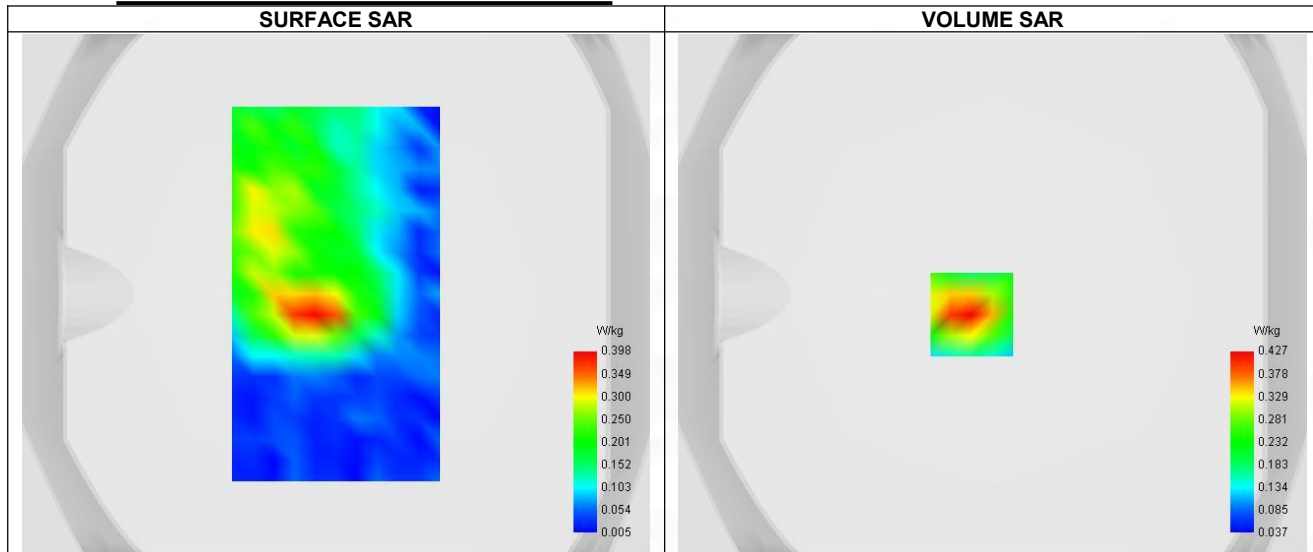
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	1.68
Area Scan	dx=8mm dy=8mm, Adaptive 1 max
Zoom Scan	5x5x7, dx=8mm dy=8mm dz=5mm, Complete
Phantom	Validation plane
Device Position	Body
Band	GPRS850
Channels	Lower (128)
Signal	TDMA (GPRS)
Modulation	GMSK (CS-1)
TX-slots	2

B. Permittivity

Frequency (MHz)	824.200
Relative permittivity (real part)	41.460
Relative permittivity (imaginary part)	19.740
Conductivity (S/m)	0.869

C. SAR Surface and Volume

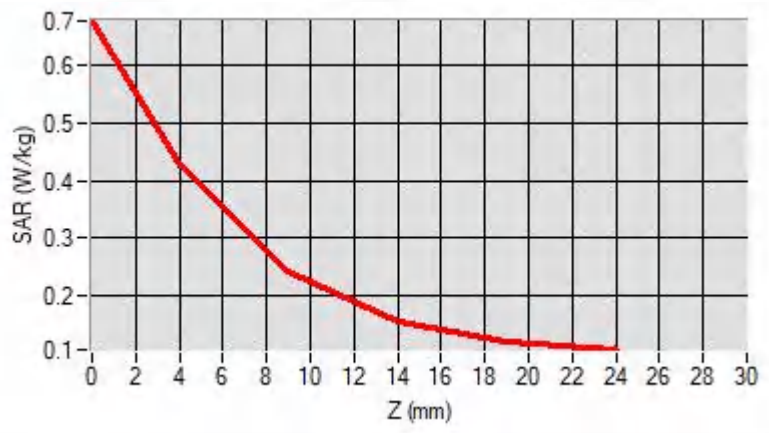


D. SAR 1g & 10g

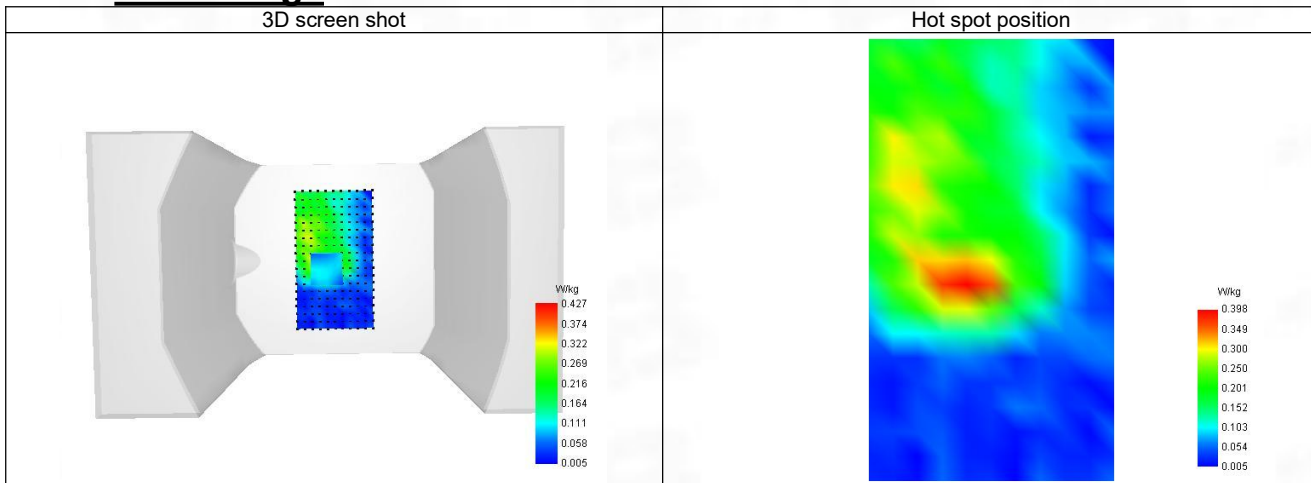
SAR 10g (W/Kg)	0.258
SAR 1g (W/Kg)	0.447
Variation (%)	-1.780
Horizontal validation criteria: minimum distance (mm)	8.522
Vertical validation criteria: SAR ratio M2/M1 (%)	56.91%

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.678	0.427	0.243	0.155	0.120



F. 3D Image



3-Head with front position in dist. 0mm on Channel 512 in GSM1900 voice

SAR Measurement at GSM1900 (Cheek, Right)

Date of measurement: 12/7/2024

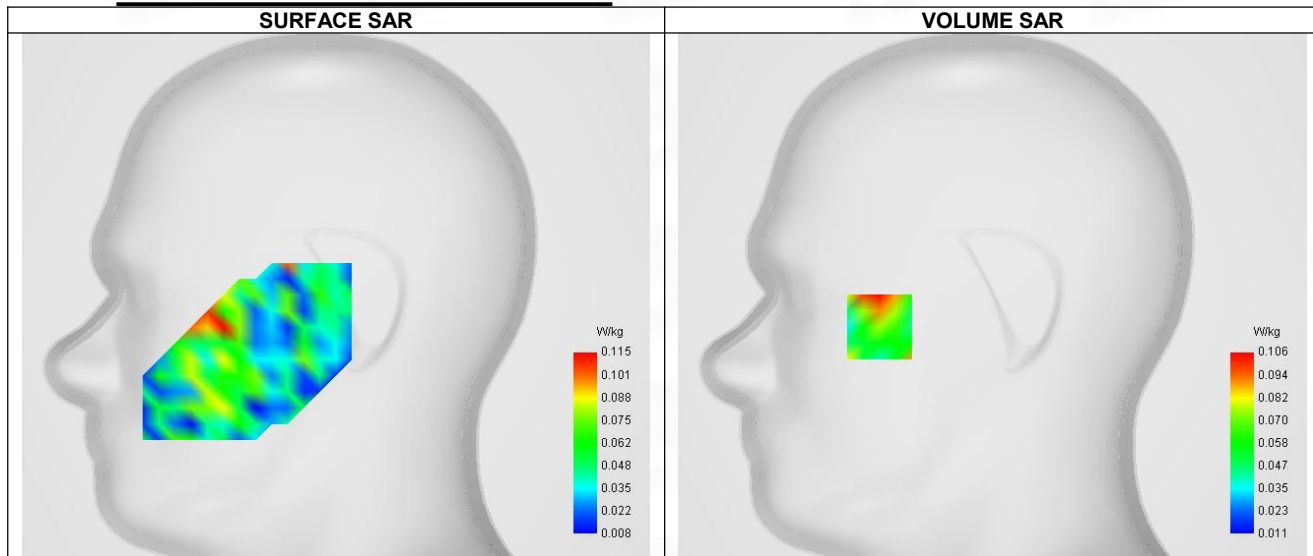
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	1.96
Area Scan	dx=8mm dy=8mm, Adaptive 1 max
Zoom Scan	5x5x7, dx=8mm dy=8mm dz=5mm, Complete
Phantom	Right head
Device Position	Cheek
Band	GSM1900
Channels	Lower (512)
Signal	TDMA (GSM)
Modulation	GMSK

B. Permittivity

Frequency (MHz)	1850.200
Relative permittivity (real part)	39.895
Relative permittivity (imaginary part)	13.734
Conductivity (S/m)	1.390

C. SAR Surface and Volume



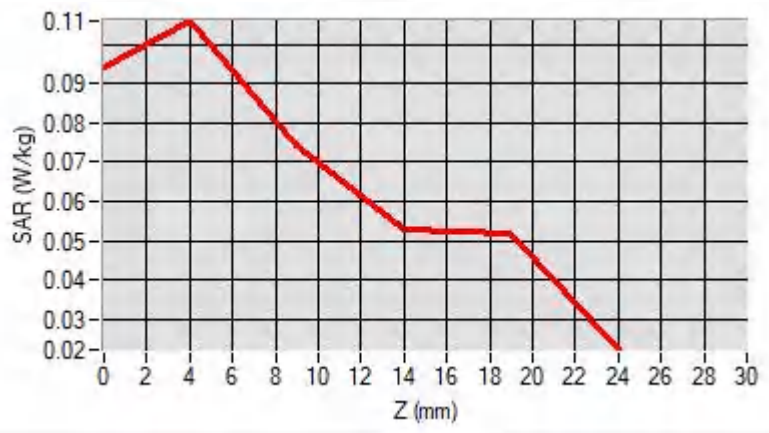
Maximum location: X=-56.00, Y=-16.00 ; SAR Peak: 0.17 W/kg

D. SAR 1g & 10g

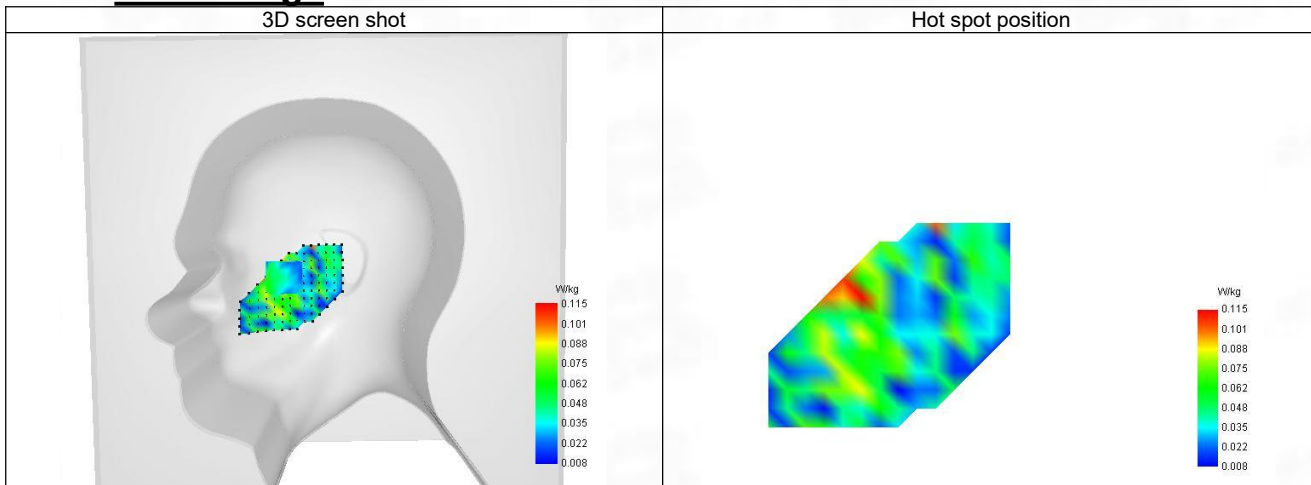
SAR 10g (W/Kg)	0.070
SAR 1g (W/Kg)	0.100
Variation (%)	-3.060
Horizontal validation criteria: minimum distance (mm)	8.316
Vertical validation criteria: SAR ratio M2/M1 (%)	69.81%

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.094	0.106	0.074	0.053	0.052



F. 3D Image



4-Body with back position in dist. 10mm on Channel 512 in GPRS1900+2slots

SAR Measurement at GPRS1900 (Body, Validation Plane)

Date of measurement: 12/7/2024

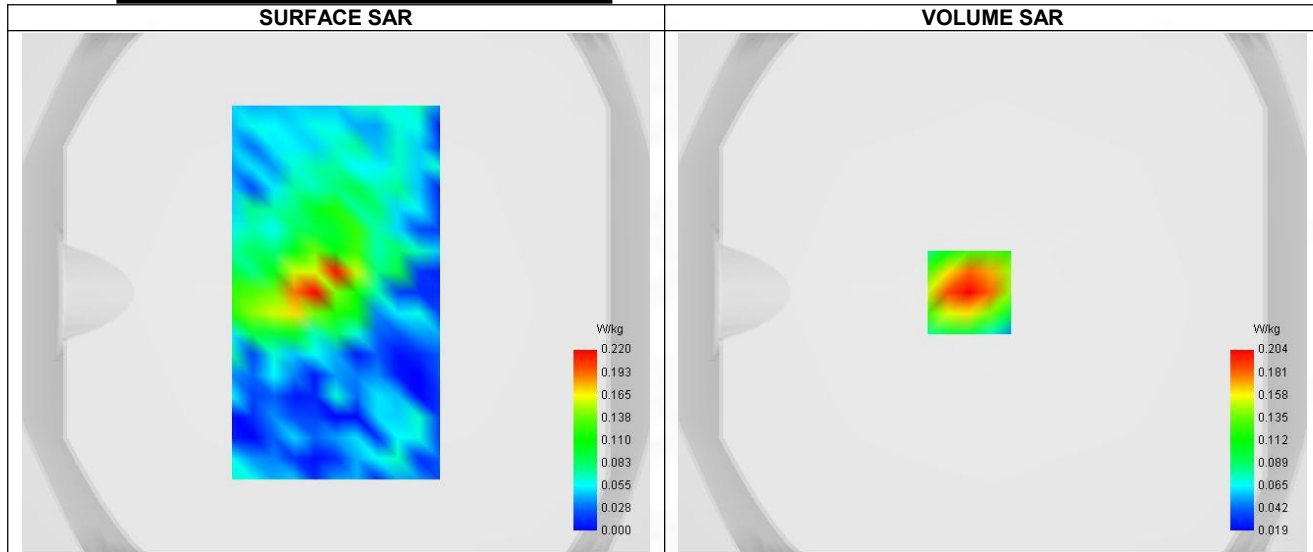
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	1.96
Area Scan	dx=8mm dy=8mm, Adaptive 1 max
Zoom Scan	5x5x7, dx=8mm dy=8mm dz=5mm, Complete
Phantom	Validation plane
Device Position	Body
Band	GPRS1900
Channels	Lower (512)
Signal	TDMA (GPRS)
Modulation	GMSK (CS-1)
TX-slots	2

B. Permittivity

Frequency (MHz)	1850.200
Relative permittivity (real part)	39.895
Relative permittivity (Imaginary part)	13.734
Conductivity (S/m)	1.390

C. SAR Surface and Volume

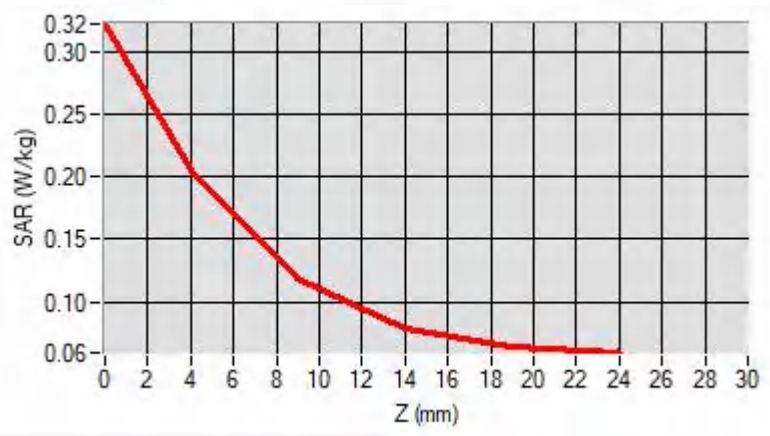


D. SAR 1g & 10g

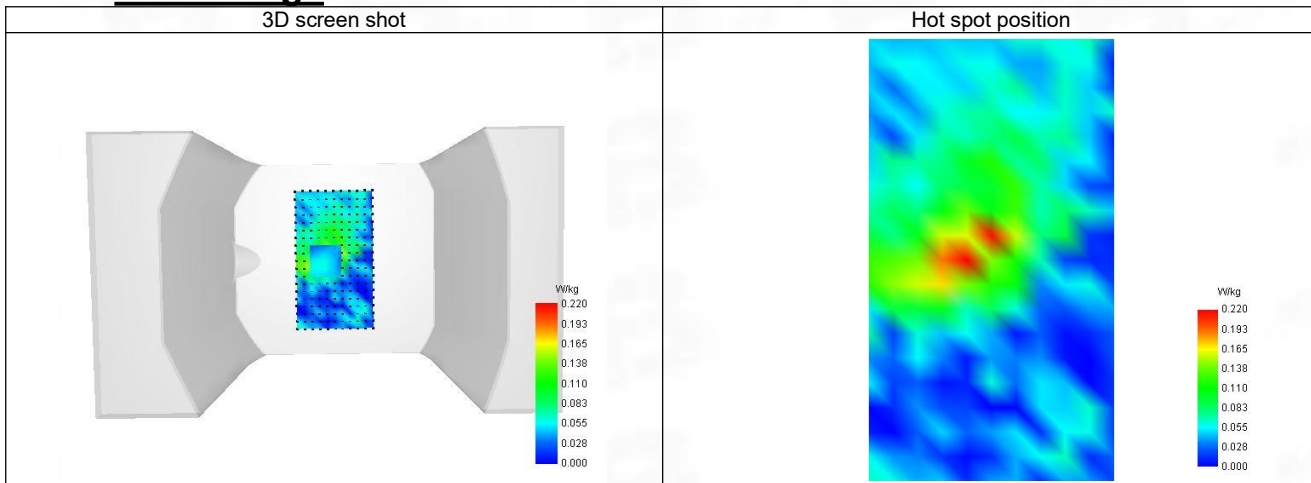
SAR 10g (W/Kg)	0.122
SAR 1g (W/Kg)	0.206
Variation (%)	2.520
Horizontal validation criteria: minimum distance (mm)	8.114
Vertical validation criteria: SAR ratio M2/M1 (%)	58.33%

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.322	0.204	0.119	0.079	0.064



F. 3D Image



5-Head with front position in dist. 0mm on Channel 9538 in WCDMA Band 2

SAR Measurement at Band 2 (1900) (Cheek, Right)

Date of measurement: 16/7/2024

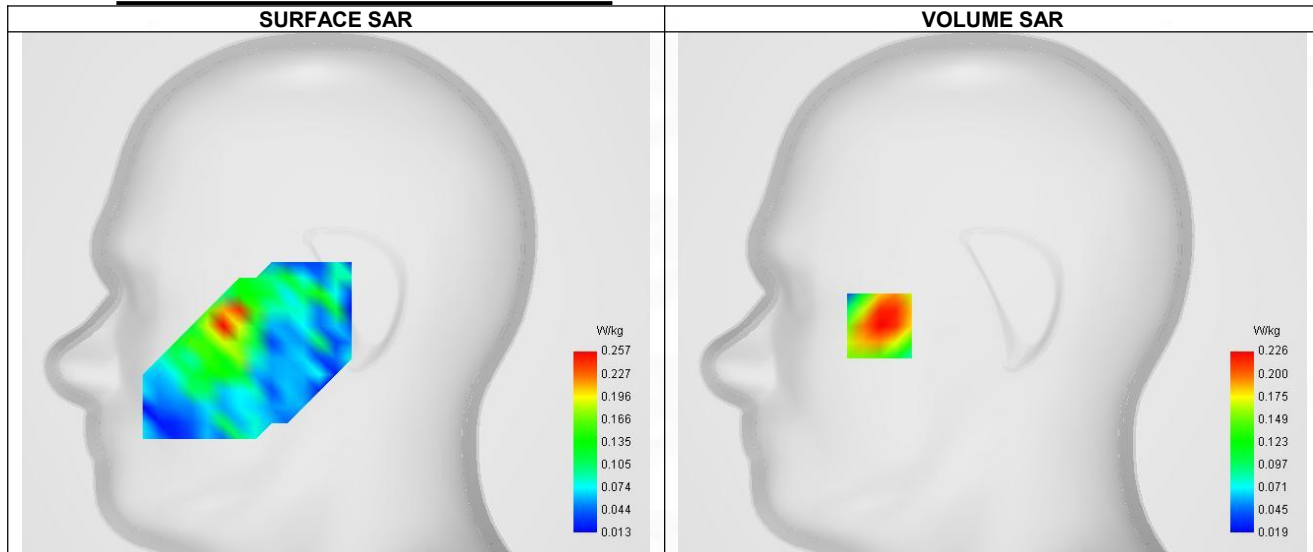
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	2.24
Area Scan	dx=8mm dy=8mm, Adaptive 1 max
Zoom Scan	5x5x7, dx=8mm dy=8mm dz=5mm, Complete
Phantom	Right head
Device Position	Cheek
Band	Band 2 (1900)
Channels	Higher (9538)
Signal	WCDMA
Mode	Release 99
Connection Type	RMC, 12.2 kbps

B. Permittivity

Frequency (MHz)	1907.600
Relative permittivity (real part)	39.869
Relative permittivity (imaginary part)	13.379
Conductivity (S/m)	1.416

C. SAR Surface and Volume



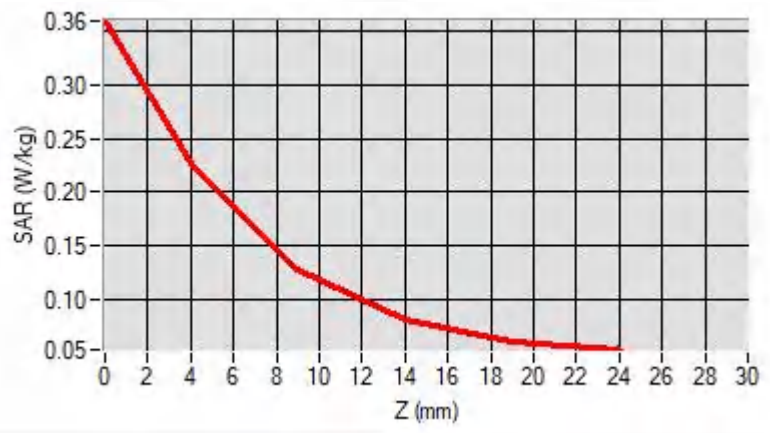
Maximum location: X=-56.00, Y=-16.00 ; SAR Peak: 0.43 W/kg

D. SAR 1g & 10g

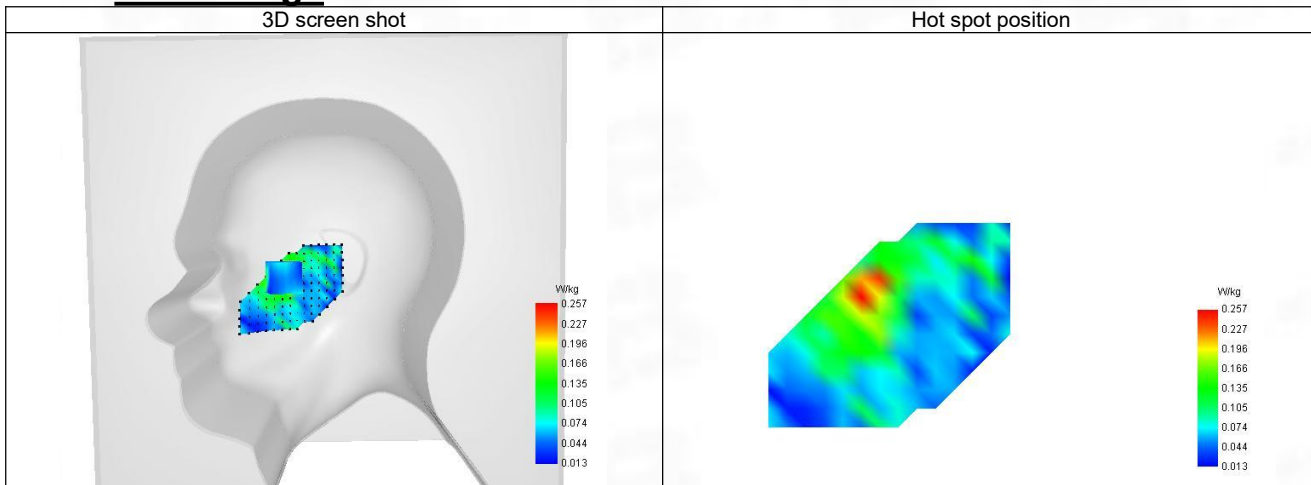
SAR 10g (W/Kg)	0.138
SAR 1g (W/Kg)	0.248
Variation (%)	2.190
Horizontal validation criteria: minimum distance (mm)	8.265
Vertical validation criteria: SAR ratio M2/M1 (%)	57.08%

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.359	0.226	0.129	0.082	0.062



F. 3D Image



6-Body with back position in dist. 10mm on Channel 9538 in WCDMA Band 2

SAR Measurement at Band 2 (1900) (Body, Validation Plane)

Date of measurement: 16/7/2024

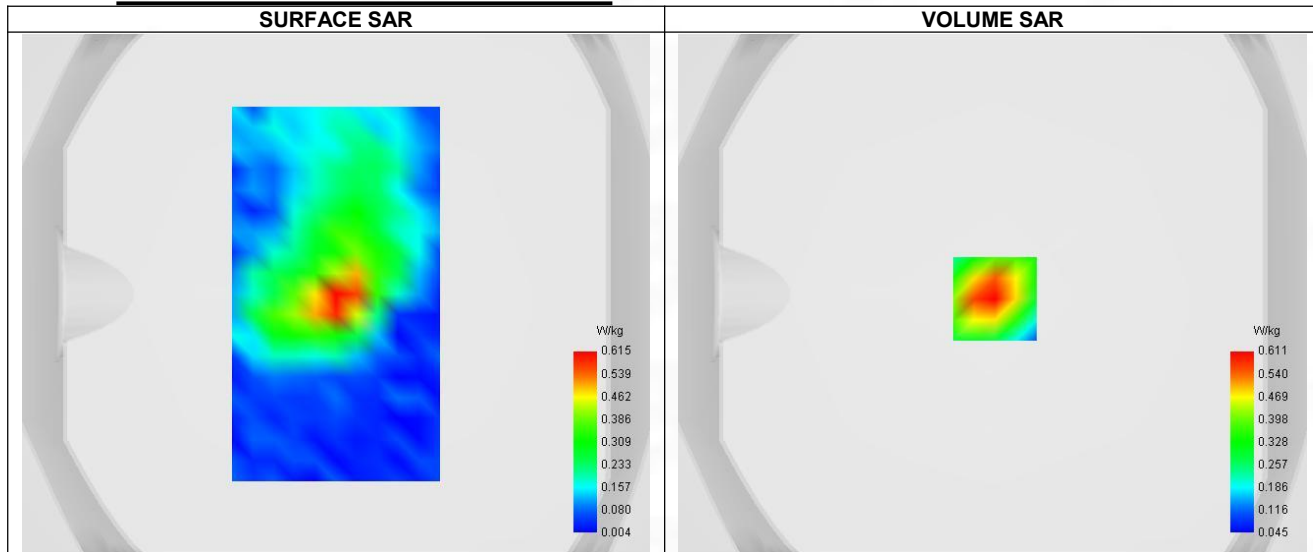
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	2.24
Area Scan	dx=8mm dy=8mm, Adaptive 1 max
Zoom Scan	5x5x7, dx=8mm dy=8mm dz=5mm, Complete
Phantom	Validation plane
Device Position	Body
Band	Band 2 (1900)
Channels	Higher (9538)
Signal	WCDMA
Mode	Release 99
Connection Type	RMC, 12.2 kbps

B. Permittivity

Frequency (MHz)	1907.600
Relative permittivity (real part)	39.869
Relative permittivity (imaginary part)	13.379
Conductivity (S/m)	1.416

C. SAR Surface and Volume



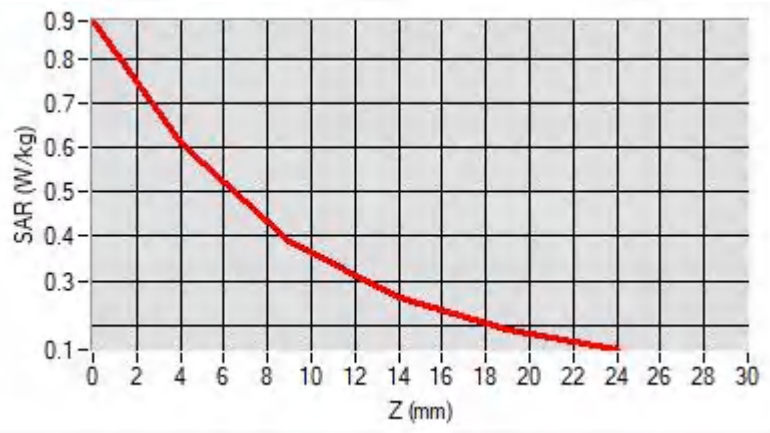
Maximum location: X=1.00, Y=-2.00 ; SAR Peak: 0.90 W/kg

D. SAR 1g & 10g

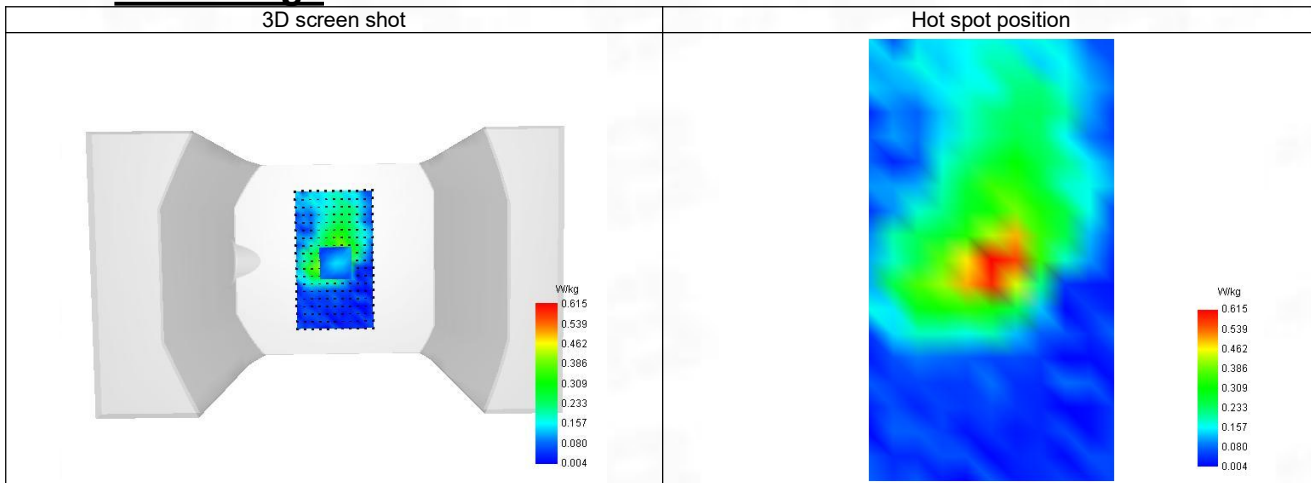
SAR 10g (W/Kg)	0.358
SAR 1g (W/Kg)	0.623
Variation (%)	-1.810
Horizontal validation criteria: minimum distance (mm)	8.749
Vertical validation criteria: SAR ratio M2/M1 (%)	63.50%

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.883	0.611	0.388	0.260	0.190



F. 3D Image



7-Head with front position in dist. 0mm on Channel 1513 in WCDMA Band 4

SAR Measurement at Band 4 (1700) (Cheek, Right)

Date of measurement: 12/7/2024

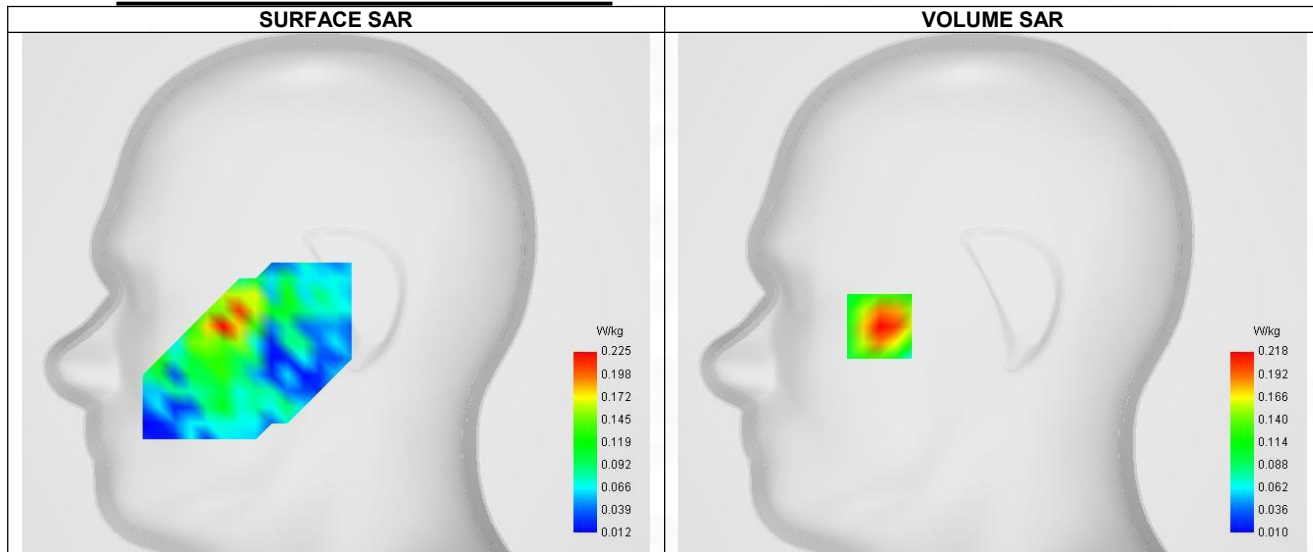
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	1.96
Area Scan	dx=8mm dy=8mm, Adaptive 1 max
Zoom Scan	5x5x7, dx=8mm dy=8mm dz=5mm, Complete
Phantom	Right head
Device Position	Cheek
Band	Band 4 (1700)
Channels	Higher (1513)
Signal	WCDMA
Mode	Release 99
Connection Type	RMC, 12.2 kbps

B. Permittivity

Frequency (MHz)	1752.600
Relative permittivity (real part)	39.984
Relative permittivity (imaginary part)	14.355
Conductivity (S/m)	1.345

C. SAR Surface and Volume



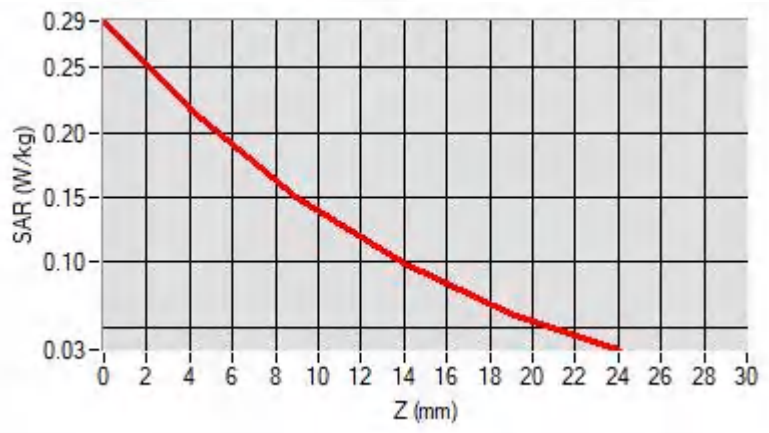
Maximum location: X=-56.00, Y=-16.00 ; SAR Peak: 0.30 W/kg

D. SAR 1g & 10g

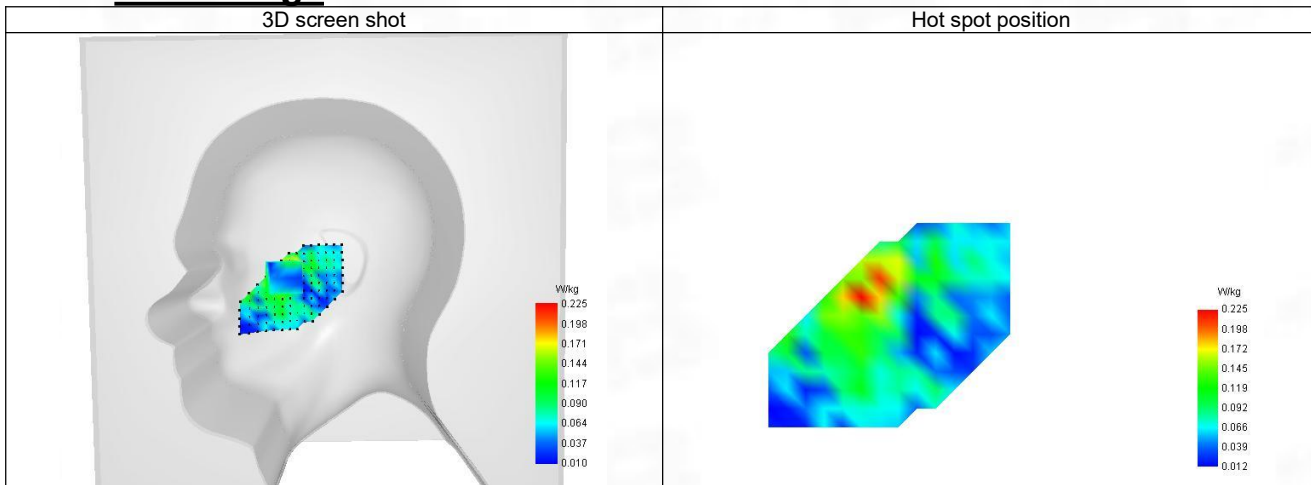
SAR 10g (W/Kg)	0.137
SAR 1g (W/Kg)	0.216
Variation (%)	-3.620
Horizontal validation criteria: minimum distance (mm)	8.551
Vertical validation criteria: SAR ratio M2/M1 (%)	69.27%

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.286	0.218	0.151	0.099	0.061



F. 3D Image



8-Body with back position in dist. 10mm on Channel 1513 in WCDMA Band 4

SAR Measurement at Band 4 (1700) (Body, Validation Plane)

Date of measurement: 12/7/2024

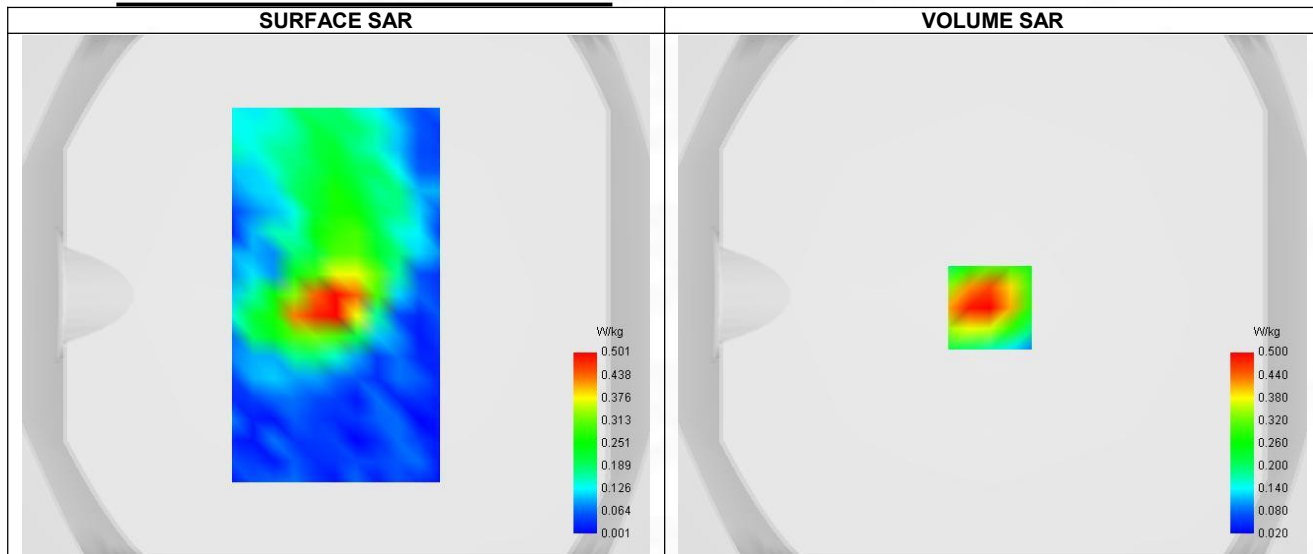
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	1.96
Area Scan	dx=8mm dy=8mm, Adaptive 1 max
Zoom Scan	5x5x7, dx=8mm dy=8mm dz=5mm, Complete
Phantom	Validation plane
Device Position	Body
Band	Band 4 (1700)
Channels	Higher (1513)
Signal	WCDMA
Mode	Release 99
Connection Type	RMC, 12.2 kbps

B. Permittivity

Frequency (MHz)	1752.600
Relative permittivity (real part)	39.984
Relative permittivity (imaginary part)	14.355
Conductivity (S/m)	1.345

C. SAR Surface and Volume



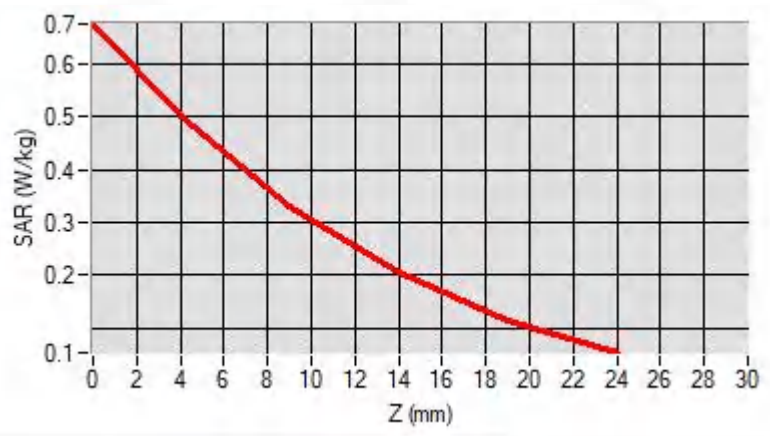
Maximum location: X=-1.00, Y=-5.00 ; SAR Peak: 0.71 W/kg

D. SAR 1g & 10g

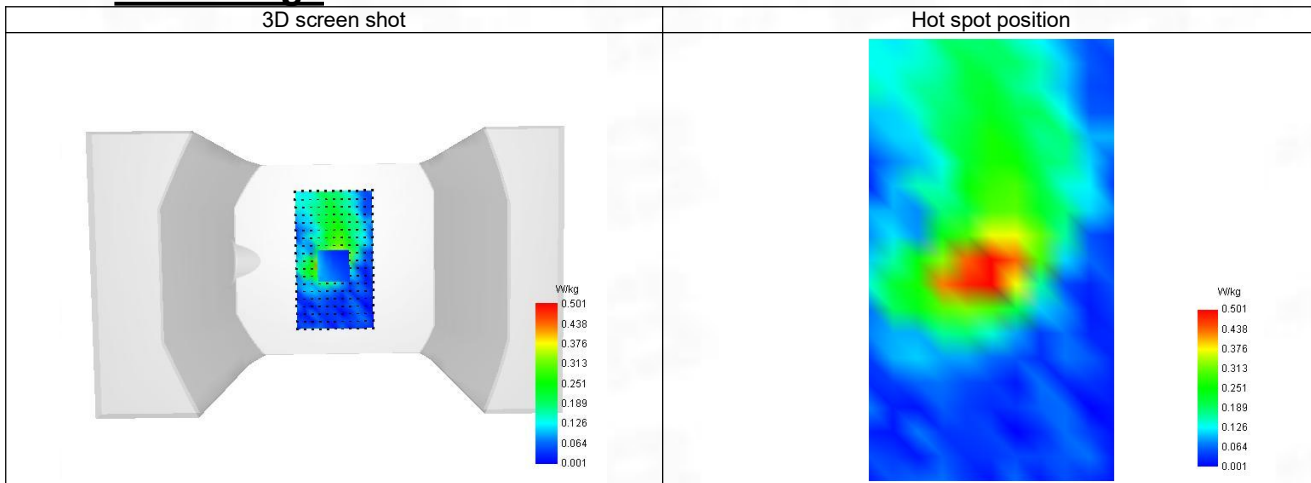
SAR 10g (W/Kg)	0.286
SAR 1g (W/Kg)	0.496
Variation (%)	-4.230
Horizontal validation criteria: minimum distance (mm)	8.259
Vertical validation criteria: SAR ratio M2/M1 (%)	66.00%

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.674	0.500	0.330	0.205	0.116



F. 3D Image



9-Head with front position in dist. 0mm on Channel 4132 in WCDMA Band 5

SAR Measurement at Band 5 (850) (Cheek, Right)

Date of measurement: 10/7/2024

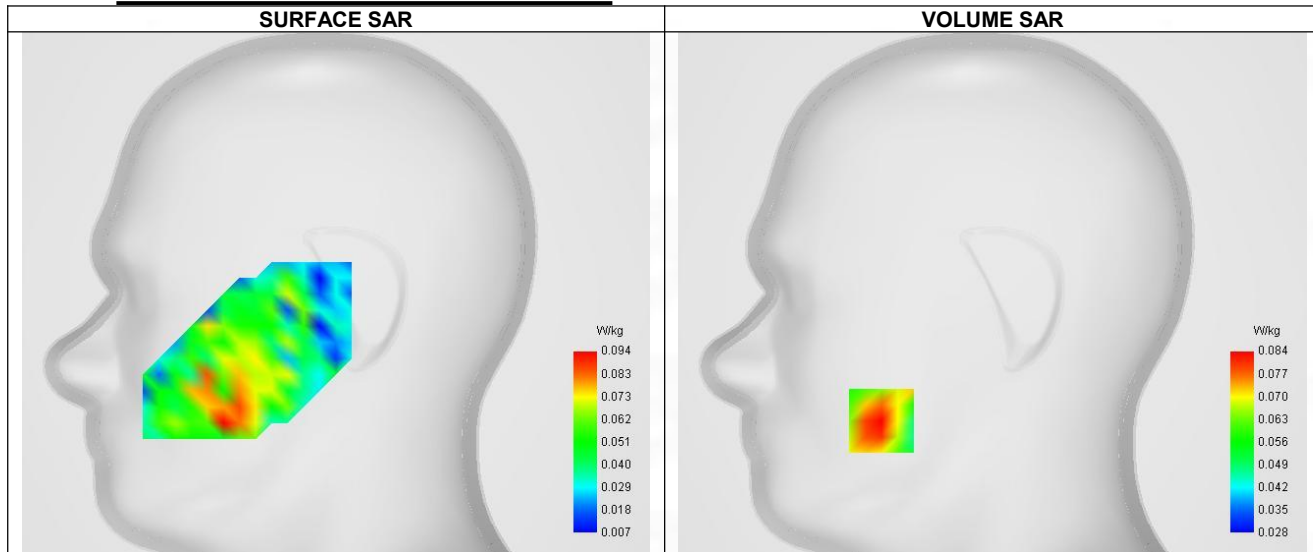
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	1.68
Area Scan	dx=8mm dy=8mm, Adaptive 1 max
Zoom Scan	5x5x7, dx=8mm dy=8mm dz=5mm, Complete
Phantom	Right head
Device Position	Cheek
Band	Band 5 (850)
Channels	Lower (4132)
Signal	WCDMA
Mode	Release 99
Connection Type	RMC, 12.2 kbps

B. Permittivity

Frequency (MHz)	826.400
Relative permittivity (real part)	41.449
Relative permittivity (imaginary part)	19.689
Conductivity (S/m)	0.869

C. SAR Surface and Volume



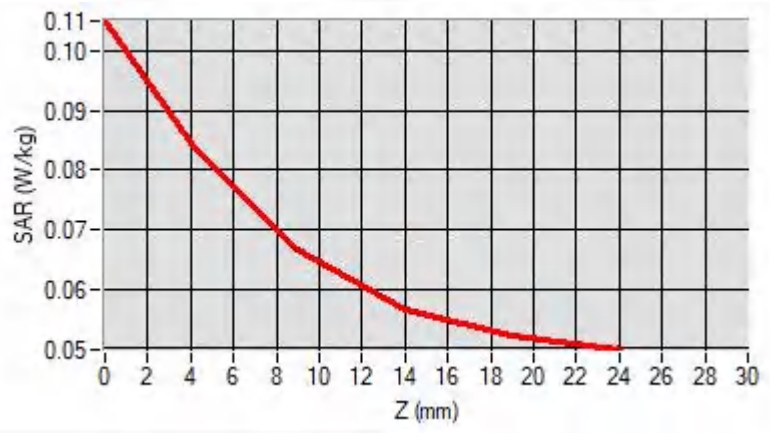
Maximum location: X=-55.00, Y=-63.00 ; SAR Peak: 0.11 W/kg

D. SAR 1g & 10g

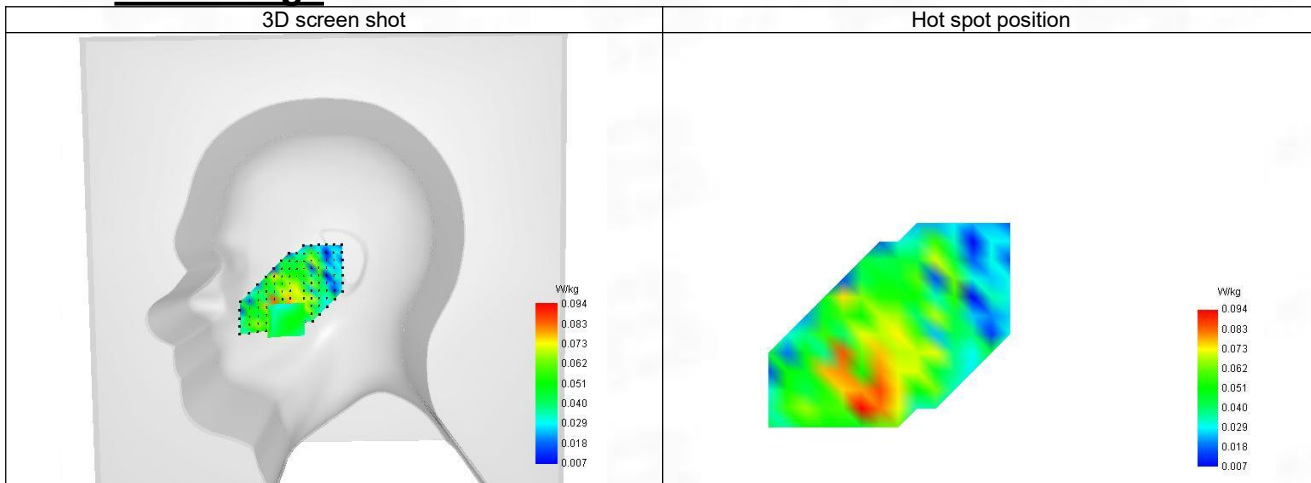
SAR 10g (W/Kg)	0.074
SAR 1g (W/Kg)	0.094
Variation (%)	2.940
Horizontal validation criteria: minimum distance (mm)	8.822
Vertical validation criteria: SAR ratio M2/M1 (%)	79.76%

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.105	0.084	0.067	0.057	0.052



F. 3D Image



10-Body with back position in dist. 10mm on Channel 4132 in WCDMA Band 5

SAR Measurement at Band 5 (850) (Body, Validation Plane)

Date of measurement: 10/7/2024

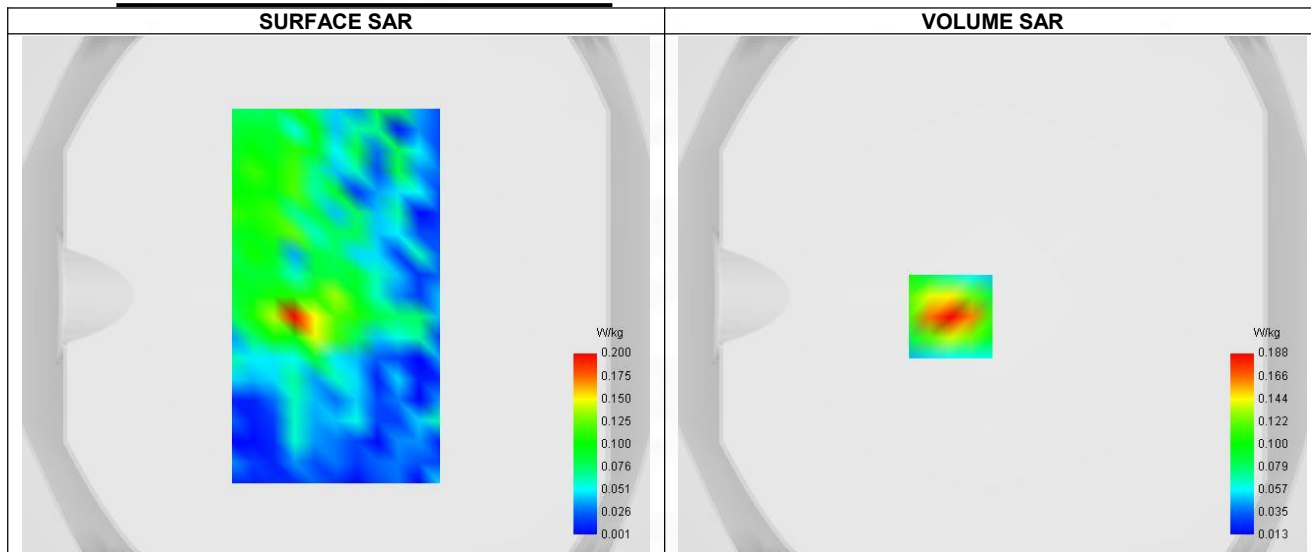
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	1.68
Area Scan	dx=8mm dy=8mm, Adaptive 1 max
Zoom Scan	5x5x7, dx=8mm dy=8mm dz=5mm, Complete
Phantom	Validation plane
Device Position	Body
Band	Band 5 (850)
Channels	Lower (4132)
Signal	WCDMA
Mode	Release 99
Connection Type	RMC, 12.2 kbps

B. Permittivity

Frequency (MHz)	826.400
Relative permittivity (real part)	41.449
Relative permittivity (imaginary part)	19.689
Conductivity (S/m)	0.869

C. SAR Surface and Volume



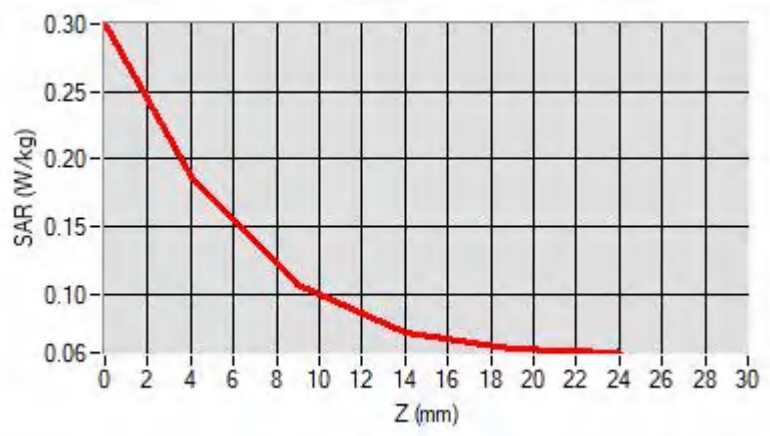
Maximum location: X=-16.00, Y=-8.00 ; SAR Peak: 0.30 W/kg

D. SAR 1g & 10g

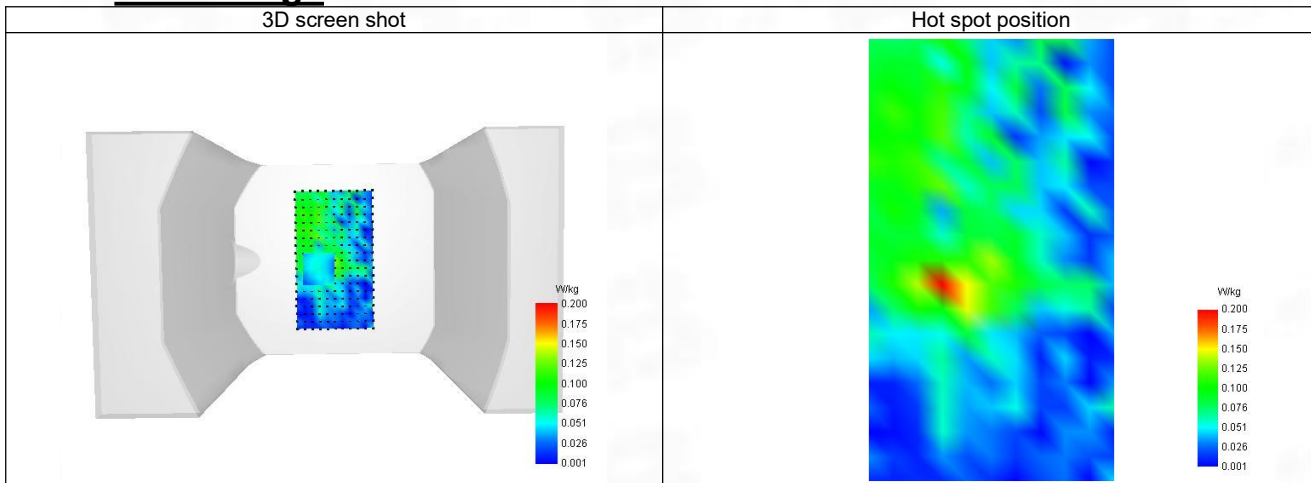
SAR 10g (W/Kg)	0.113
SAR 1g (W/Kg)	0.194
Variation (%)	-1.580
Horizontal validation criteria: minimum distance (mm)	8.297
Vertical validation criteria: SAR ratio M2/M1 (%)	56.91%

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.300	0.188	0.107	0.071	0.059



F. 3D Image



11-Head with front position in dist. 0mm on Channel 18700 in LTE band 2

SAR Measurement at LTE band 2 (Cheek, Right)

Date of measurement: 12/7/2024

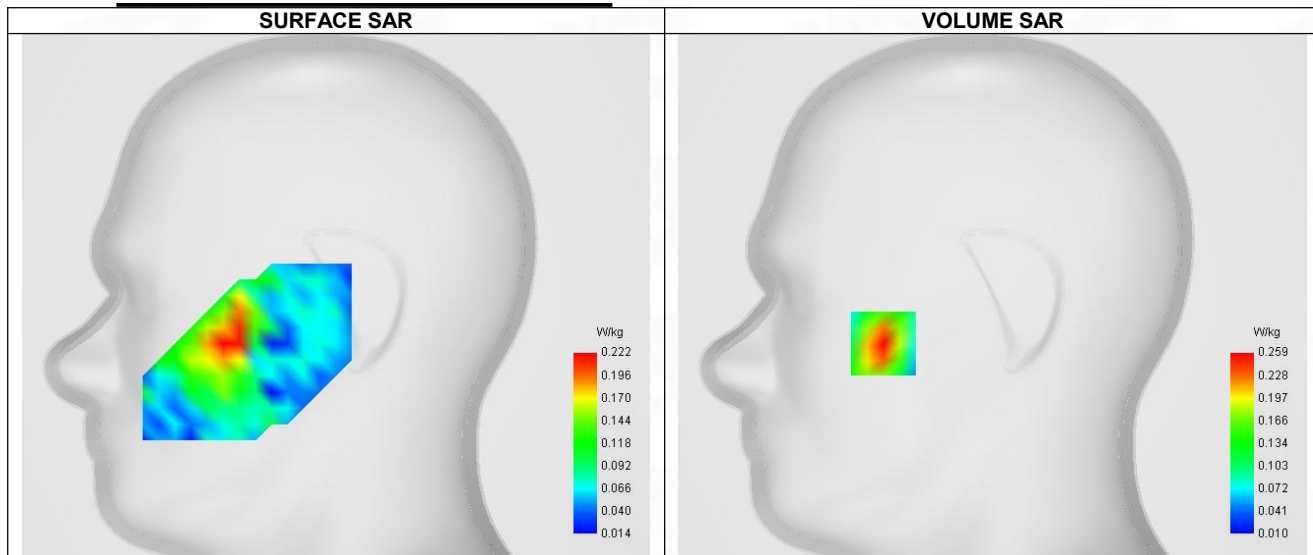
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	1.96
Area Scan	dx=8mm dy=8mm, Adaptive 1 max
Zoom Scan	5x5x7, dx=8mm dy=8mm dz=5mm, Complete
Phantom	Right head
Device Position	Cheek
Band	LTE band 2
Channels	Lower (18700)
Signal	LTE FDD
Cell Bandwidth	20 Mhz
Modulation	SC-OFDM - QPSK
RB offset	50
RB size	1

B. Permittivity

Frequency (MHz)	1860.090
Relative permittivity (real part)	39.892
Relative permittivity (imaginary part)	13.663
Conductivity (S/m)	1.394

C. SAR Surface and Volume



Maximum location: X=-54.00, Y=-24.00 ; SAR Peak: 0.36 W/kg

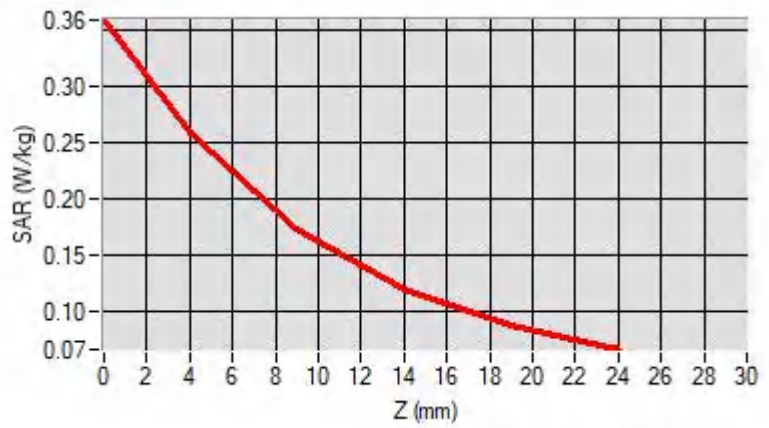
D. SAR 1g & 10g

SAR 10g (W/Kg)	0.158
SAR 1g (W/Kg)	0.258
Variation (%)	2.800
Horizontal validation criteria: minimum distance (mm)	8.523
Vertical validation criteria: SAR ratio M2/M1 (%)	66.80%

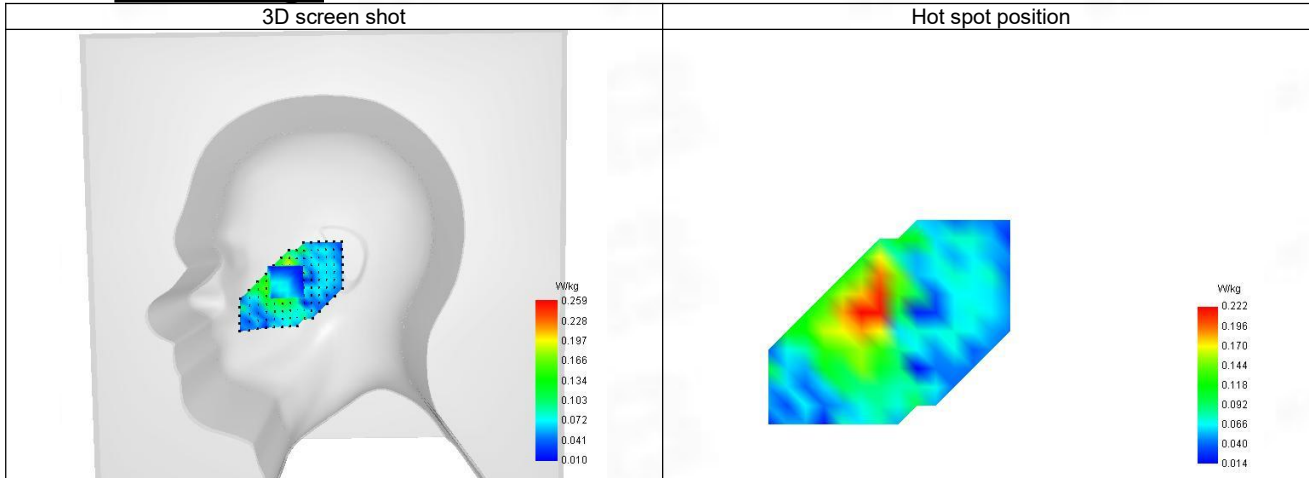
E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
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SAR (W/Kg)	0.359	0.259	0.173	0.120	0.088
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F. 3D Image



12-Body with back position in dist. 10mm on Channel 18700 in LTE band 2

SAR Measurement at LTE band 2 (Body, Validation Plane)

Date of measurement: 12/7/2024

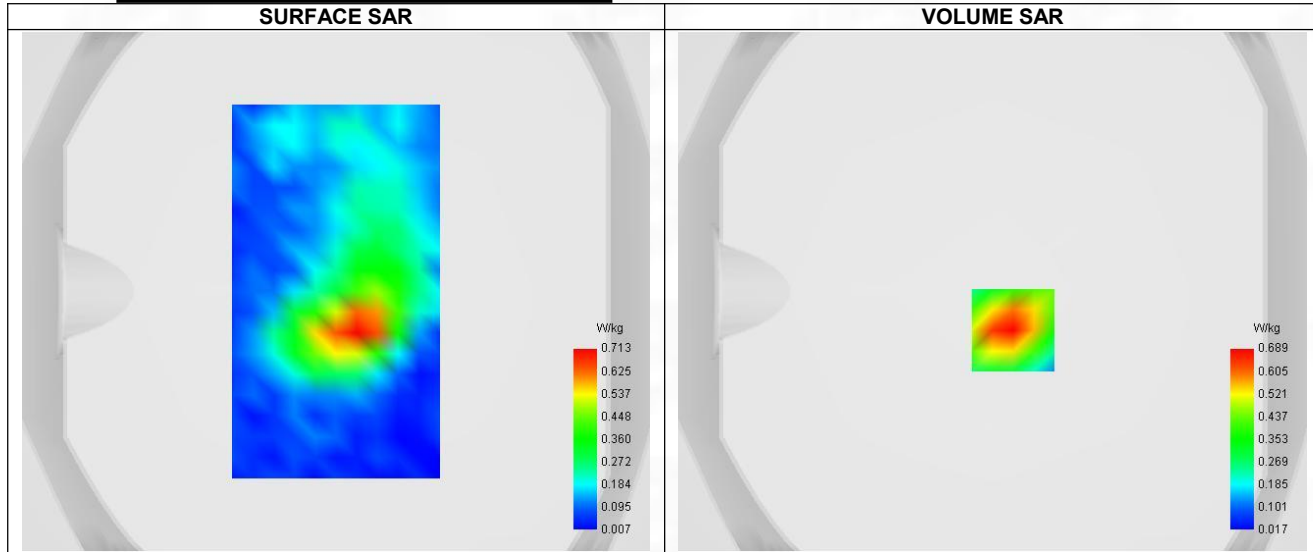
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	1.96
Area Scan	dx=8mm dy=8mm, Adaptive 1 max
Zoom Scan	5x5x7, dx=8mm dy=8mm dz=5mm, Complete
Phantom	Validation plane
Device Position	Body
Band	LTE band 2
Channels	Lower (18700)
Signal	LTE FDD
Cell Bandwidth	20 Mhz
Modulation	SC-OFDM - QPSK
RB offset	50
RB size	1

B. Permittivity

Frequency (MHz)	1860.090
Relative permittivity (real part)	39.892
Relative permittivity (imaginary part)	13.663
Conductivity (S/m)	1.394

C. SAR Surface and Volume



Maximum location: X=8.00, Y=-15.00 ; SAR Peak: 1.08 W/kg

D. SAR 1g & 10g

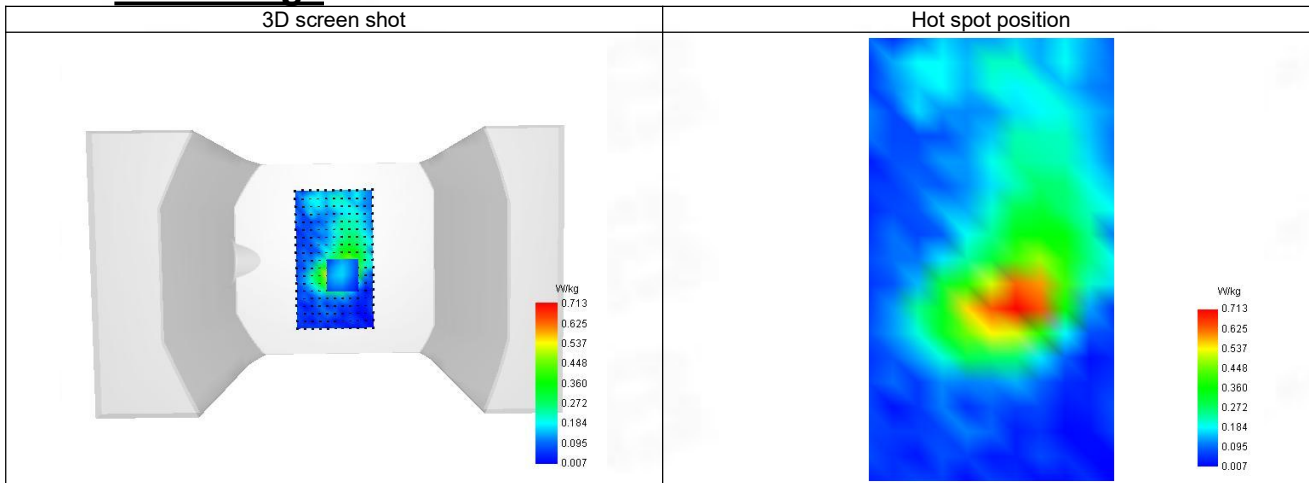
SAR 10g (W/Kg)	0.388
SAR 1g (W/Kg)	0.693
Variation (%)	-0.950
Horizontal validation criteria: minimum distance (mm)	8.539
Vertical validation criteria: SAR ratio M2/M1 (%)	58.78%

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.064	0.689	0.405	0.260	0.195



F. 3D Image



13-Head with front position in dist. 0mm on Channel 20450 in LTE band 5

SAR Measurement at LTE band 5 (Cheek, Right)

Date of measurement: 10/7/2024

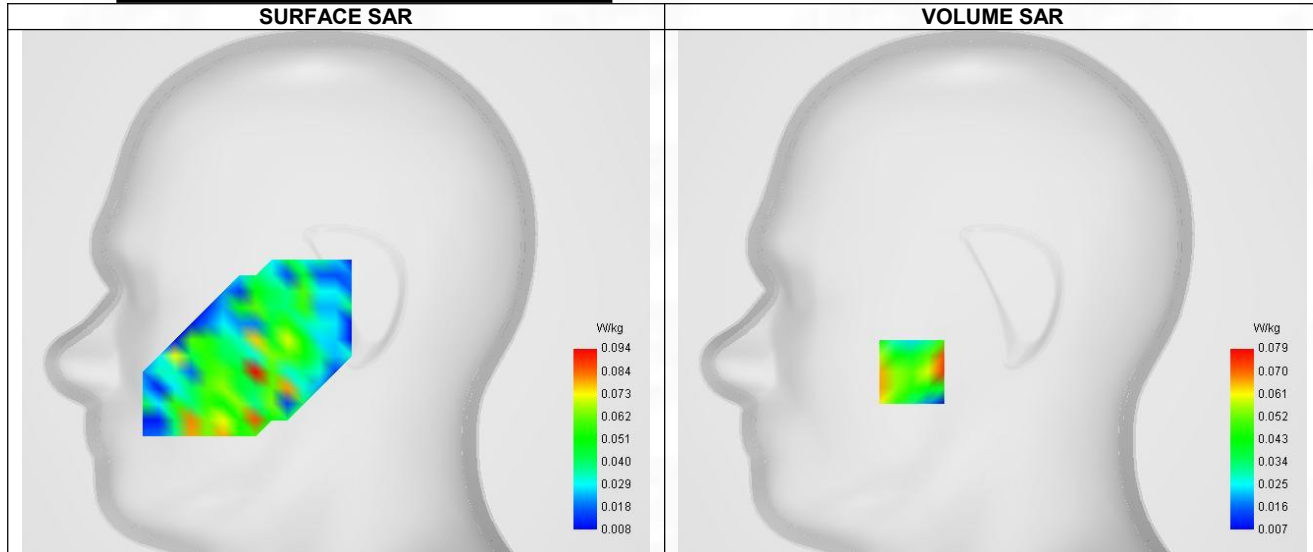
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	1.68
Area Scan	dx=8mm dy=8mm, Adaptive 1 max
Zoom Scan	5x5x7, dx=8mm dy=8mm dz=5mm, Complete
Phantom	Right head
Device Position	Cheek
Band	LTE band 5
Channels	Lower (20450)
Signal	LTE FDD
Cell Bandwidth	10 Mhz
Modulation	SC-OFDM - QPSK
RB offset	49
RB size	1

B. Permittivity

Frequency (MHz)	833.410
Relative permittivity (real part)	41.417
Relative permittivity (imaginary part)	19.527
Conductivity (S/m)	0.870

C. SAR Surface and Volume



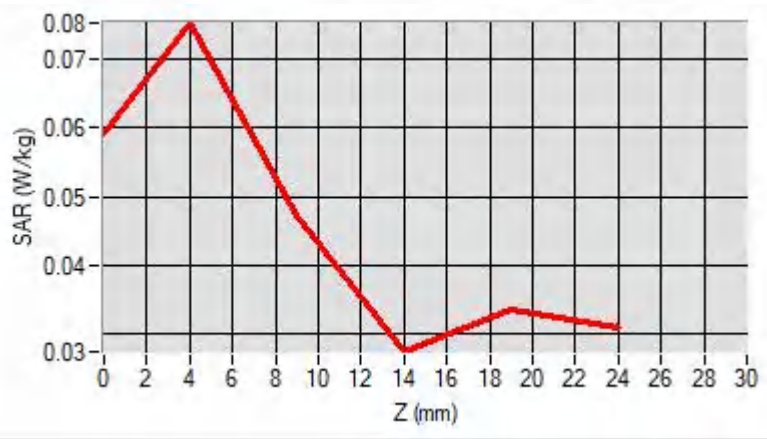
Maximum location: X=-40.00, Y=-40.00 ; SAR Peak: 0.14 W/kg

D. SAR 1g & 10g

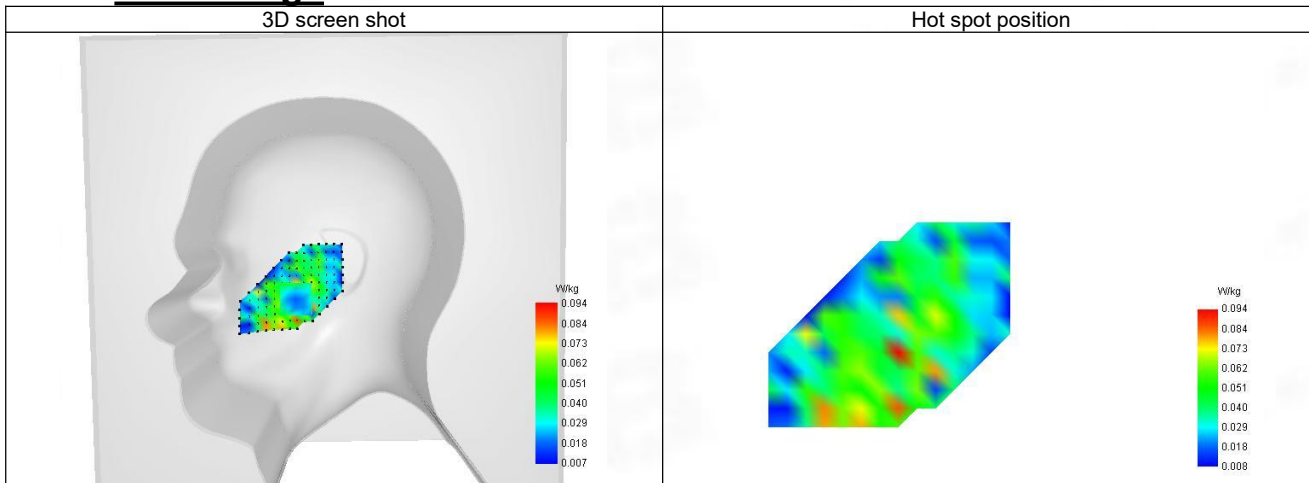
SAR 10g (W/Kg)	0.044
SAR 1g (W/Kg)	0.076
Variation (%)	-2.710
Horizontal validation criteria: minimum distance (mm)	8.238
Vertical validation criteria: SAR ratio M2/M1 (%)	62.67%

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.059	0.075	0.047	0.027	0.033



F. 3D Image



14-Body with back position in dist. 10mm on Channel 20450 in LTE band 5

SAR Measurement at LTE band 5 (Body, Validation Plane)

Date of measurement: 10/7/2024

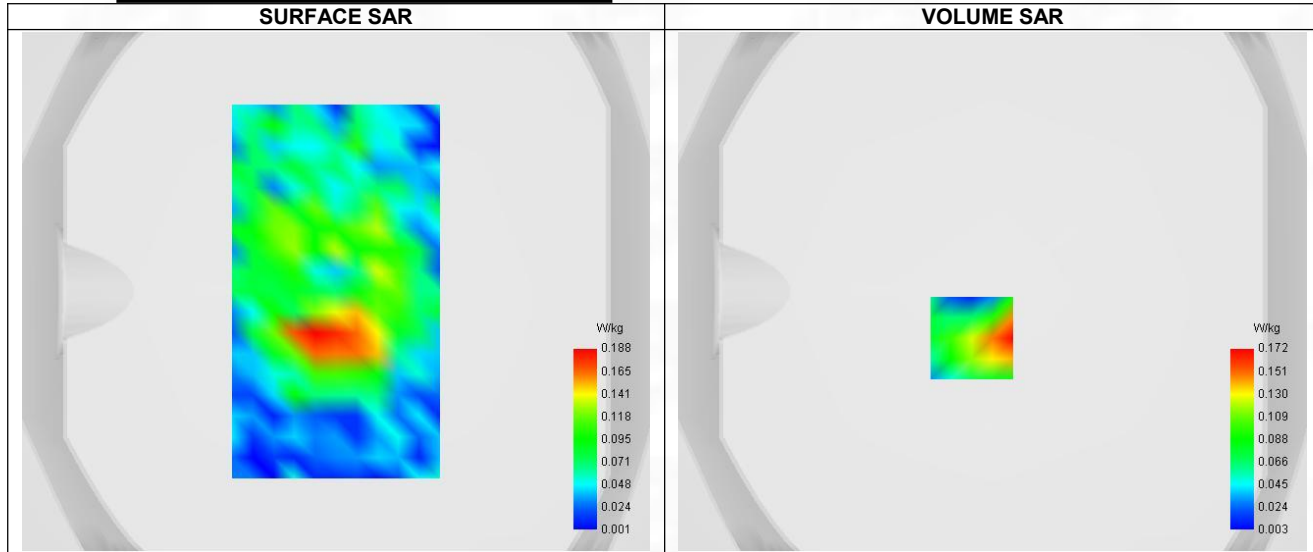
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	1.68
Area Scan	dx=8mm dy=8mm, Adaptive 1 max
Zoom Scan	5x5x7, dx=8mm dy=8mm dz=5mm, Complete
Phantom	Validation plane
Device Position	Body
Band	LTE band 5
Channels	Lower (20450)
Signal	LTE FDD
Cell Bandwidth	10 Mhz
Modulation	SC-OFDM - QPSK
RB offset	49
RB size	1

B. Permittivity

Frequency (MHz)	833.410
Relative permittivity (real part)	41.417
Relative permittivity (imaginary part)	19.527
Conductivity (S/m)	0.870

C. SAR Surface and Volume

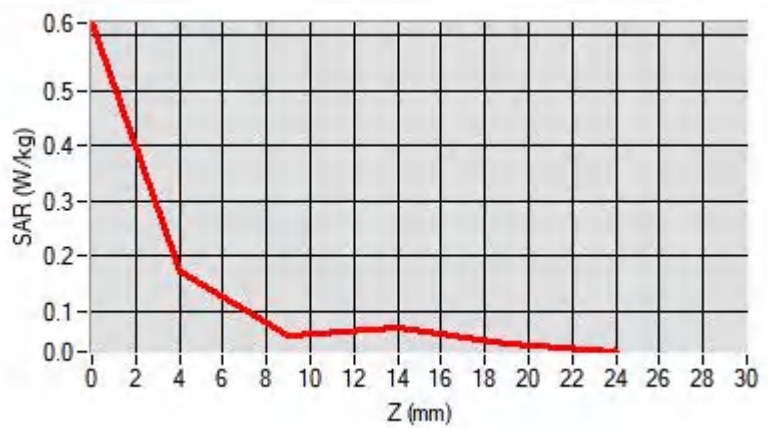


D. SAR 1g & 10g

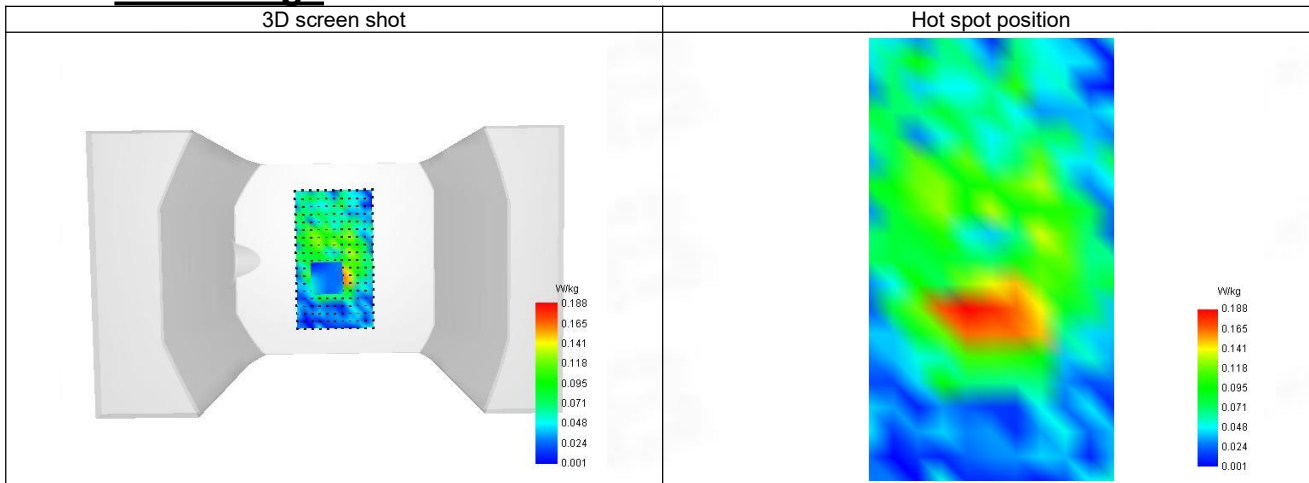
SAR 10g (W/Kg)	0.091
SAR 1g (W/Kg)	0.167
Variation (%)	-2.900
Horizontal validation criteria: minimum distance (mm)	8.648
Vertical validation criteria: SAR ratio M2/M1 (%)	32.56%

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.623	0.172	0.056	0.070	0.042



F. 3D Image



15-Head with front position in dist. 0mm on Channel 20850 in LTE band 7

SAR Measurement at LTE band 7 (Cheek, Right)

Date of measurement: 18/7/2024

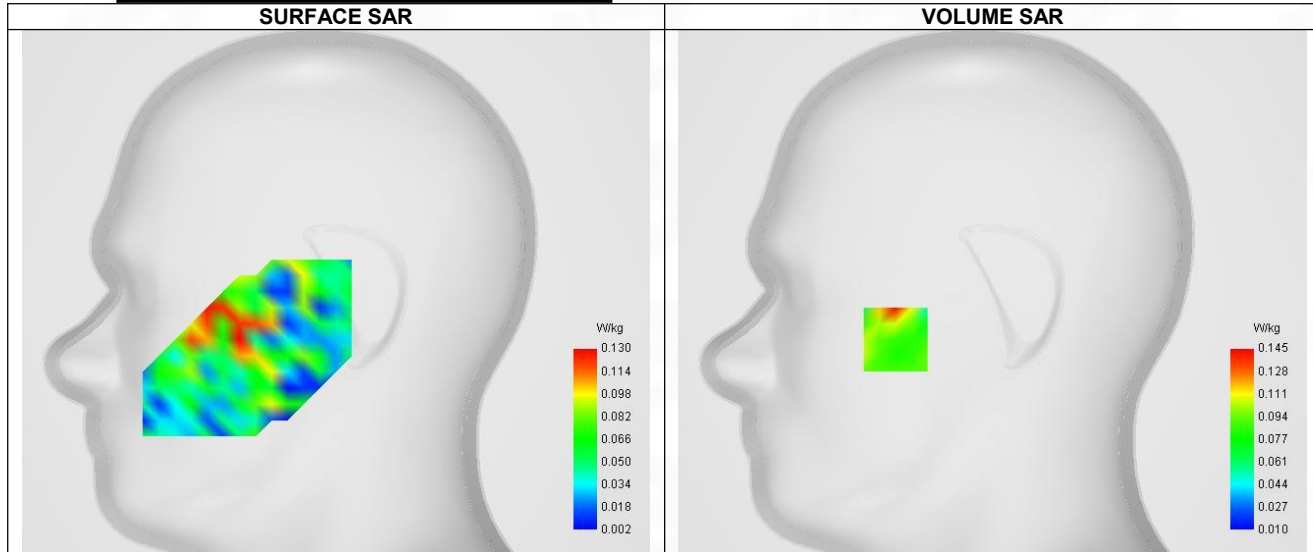
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	2.36
Area Scan	dx=8mm dy=8mm, Adaptive 1 max
Zoom Scan	5x5x7, dx=8mm dy=8mm dz=5mm, Complete
Phantom	Right head
Device Position	Cheek
Band	LTE band 7
Channels	Lower (20850)
Signal	LTE FDD
Cell Bandwidth	20 Mhz
Modulation	SC-OFDM - QPSK
RB offset	0
RB size	1

B. Permittivity

Frequency (MHz)	2501.090
Relative permittivity (real part)	39.012
Relative permittivity (imaginary part)	13.119
Conductivity (S/m)	1.864

C. SAR Surface and Volume



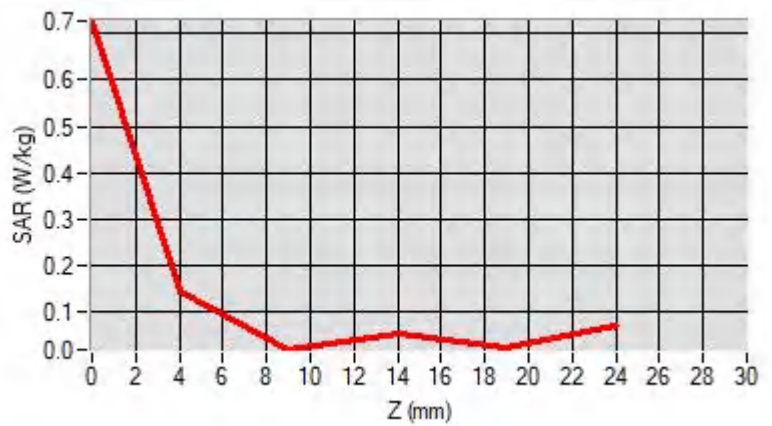
Maximum location: X=-48.00, Y=-24.00 ; SAR Peak: 0.25 W/kg

D. SAR 1g & 10g

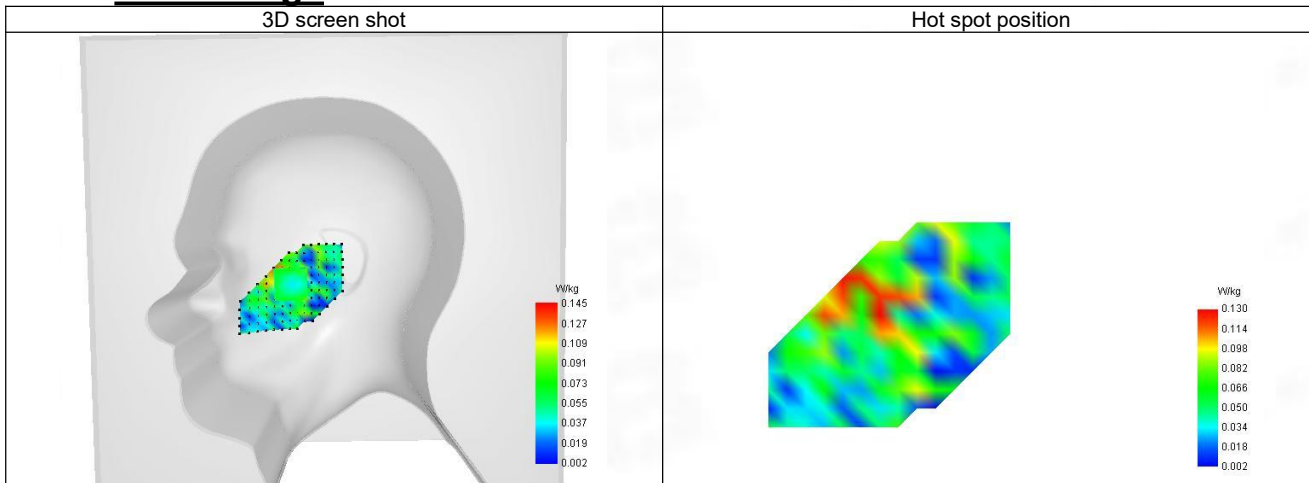
SAR 10g (W/Kg)	0.074
SAR 1g (W/Kg)	0.130
Variation (%)	4.430
Horizontal validation criteria: minimum distance (mm)	8.925
Vertical validation criteria: SAR ratio M2/M1 (%)	13.79%

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.726	0.145	0.020	0.053	0.026



F. 3D Image



16-Body with back position in dist. 10mm on Channel 20850 in LTE band 7

SAR Measurement at LTE band 7 (Body, Validation Plane)

Date of measurement: 18/7/2024

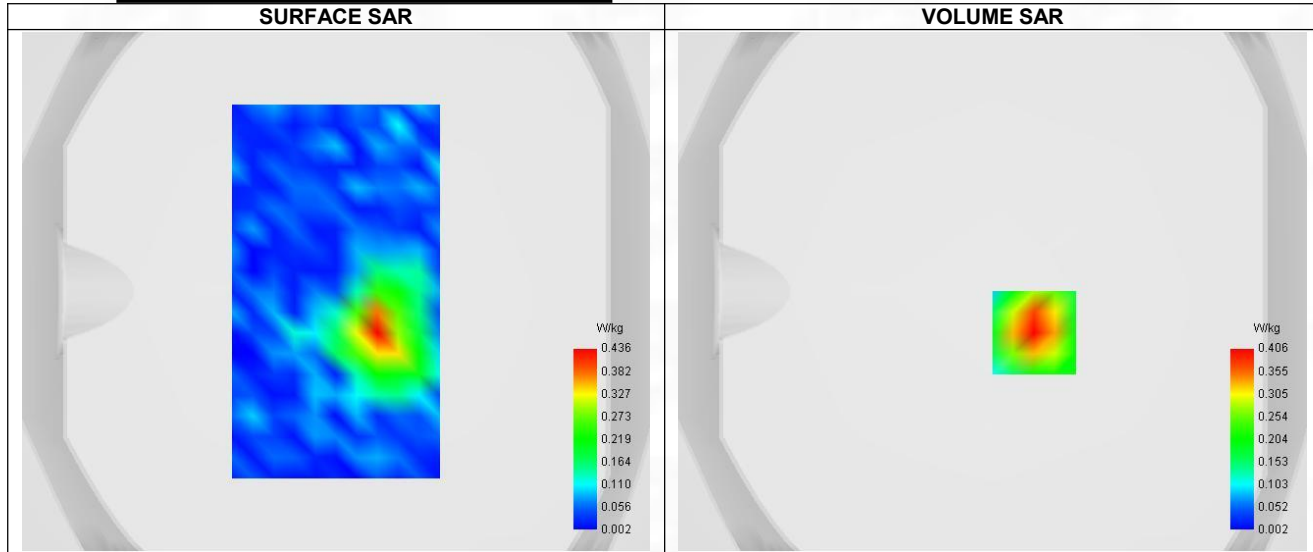
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	2.36
Area Scan	dx=8mm dy=8mm, Adaptive 1 max
Zoom Scan	5x5x7, dx=8mm dy=8mm dz=5mm, Complete
Phantom	Validation plane
Device Position	Body
Band	LTE band 7
Channels	Lower (20850)
Signal	LTE FDD
Cell Bandwidth	20 Mhz
Modulation	SC-OFDM - QPSK
RB offset	0
RB size	1

B. Permittivity

Frequency (MHz)	2501.090
Relative permittivity (real part)	39.012
Relative permittivity (imaginary part)	13.119
Conductivity (S/m)	1.864

C. SAR Surface and Volume

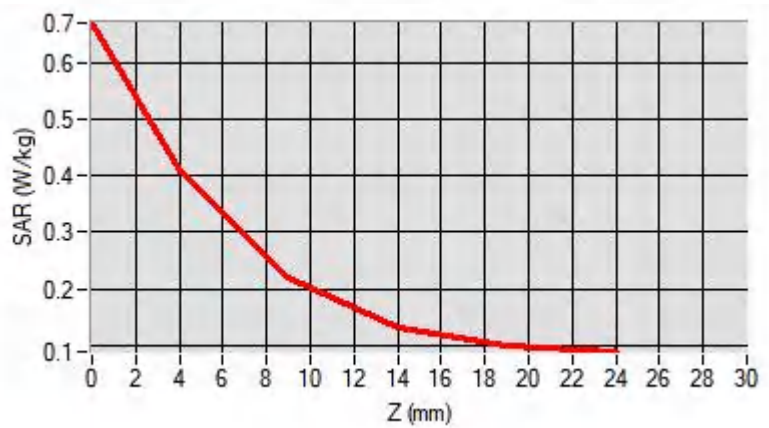


D. SAR 1g & 10g

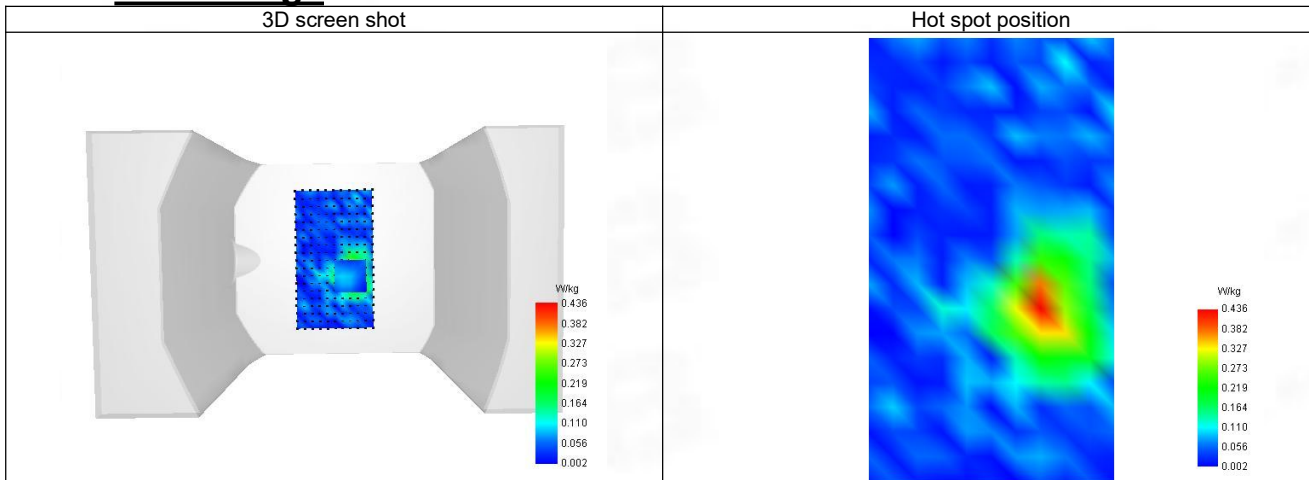
SAR 10g (W/Kg)	0.211
SAR 1g (W/Kg)	0.396
Variation (%)	3.730
Horizontal validation criteria: minimum distance (mm)	8.546
Vertical validation criteria: SAR ratio M2/M1 (%)	53.69%

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.669	0.406	0.218	0.132	0.101



F. 3D Image



17-Head with front position in dist. 0mm on Channel 23060 in LTE band 12

SAR Measurement at LTE band 12 (Cheek, Right)

Date of measurement: 8/7/2024

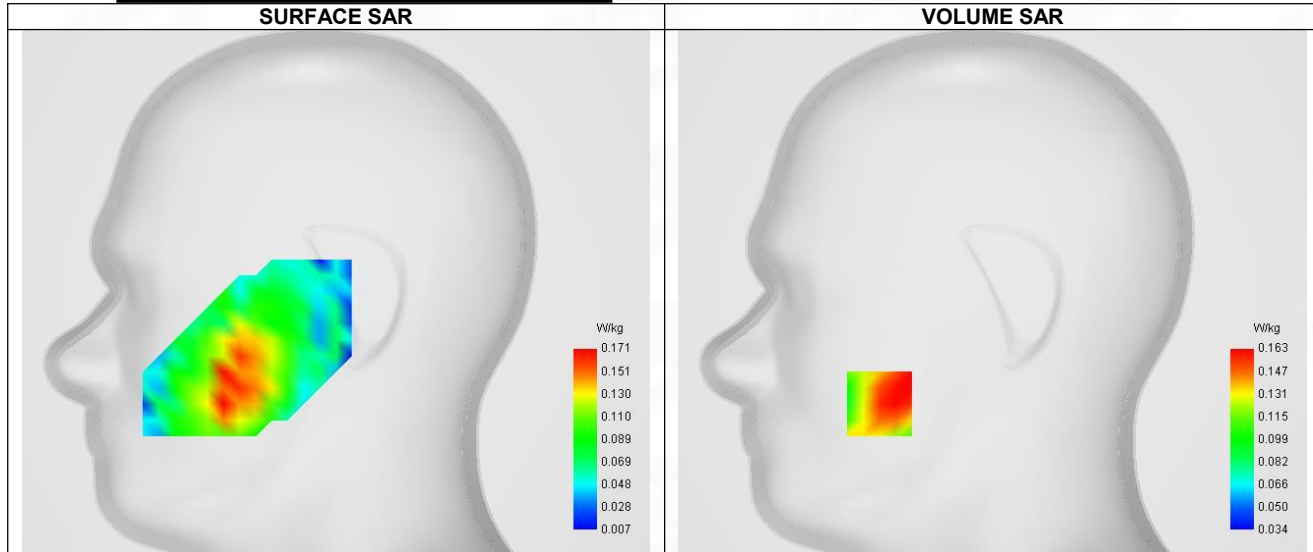
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	1.65
Area Scan	dx=8mm dy=8mm, Adaptive 1 max
Zoom Scan	5x5x7, dx=8mm dy=8mm dz=5mm, Complete
Phantom	Right head
Device Position	Cheek
Band	LTE band 12
Channels	Lower (23060)
Signal	LTE FDD
Cell Bandwidth	10 Mhz
Modulation	SC-OFDM - QPSK
RB offset	49
RB size	1

B. Permittivity

Frequency (MHz)	708.410
Relative permittivity (real part)	41.991
Relative permittivity (imaginary part)	22.424
Conductivity (S/m)	0.855

C. SAR Surface and Volume



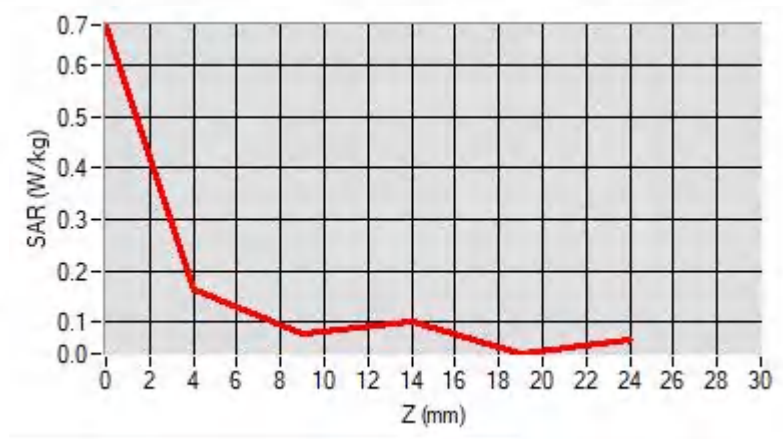
Maximum location: X=-56.00, Y=-56.00 ; SAR Peak: 0.22 W/kg

D. SAR 1g & 10g

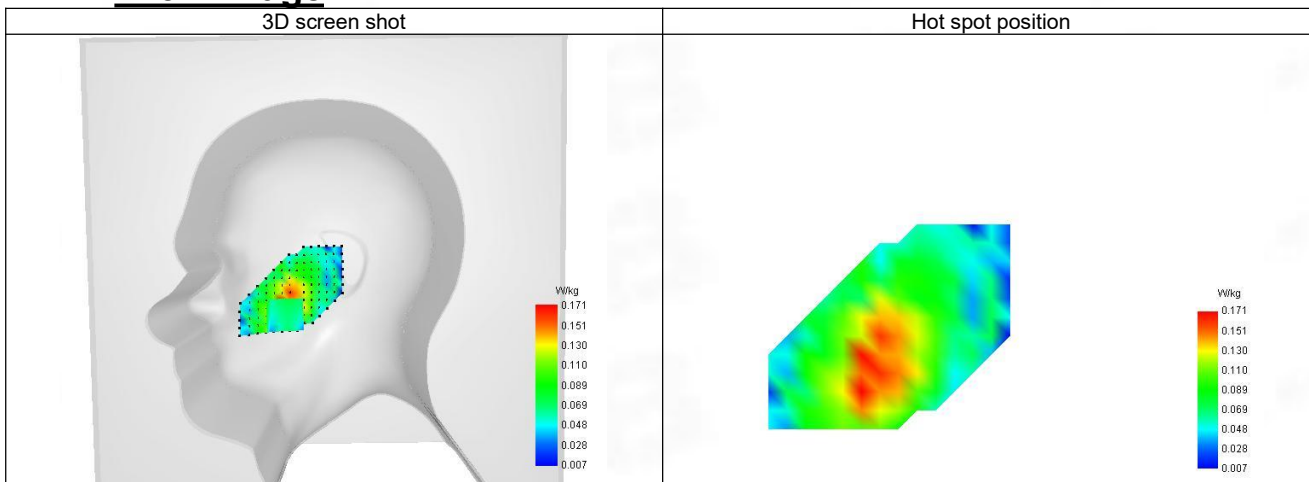
SAR 10g (W/Kg)	0.131
SAR 1g (W/Kg)	0.178
Variation (%)	4.050
Horizontal validation criteria: minimum distance (mm)	8.472
Vertical validation criteria: SAR ratio M2/M1 (%)	47.24%

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.677	0.163	0.077	0.101	0.039



F. 3D Image



18-Body with back position in dist. 10mm on Channel 23060 in LTE band 12

SAR Measurement at LTE band 12 (Body, Validation Plane)

Date of measurement: 8/7/2024

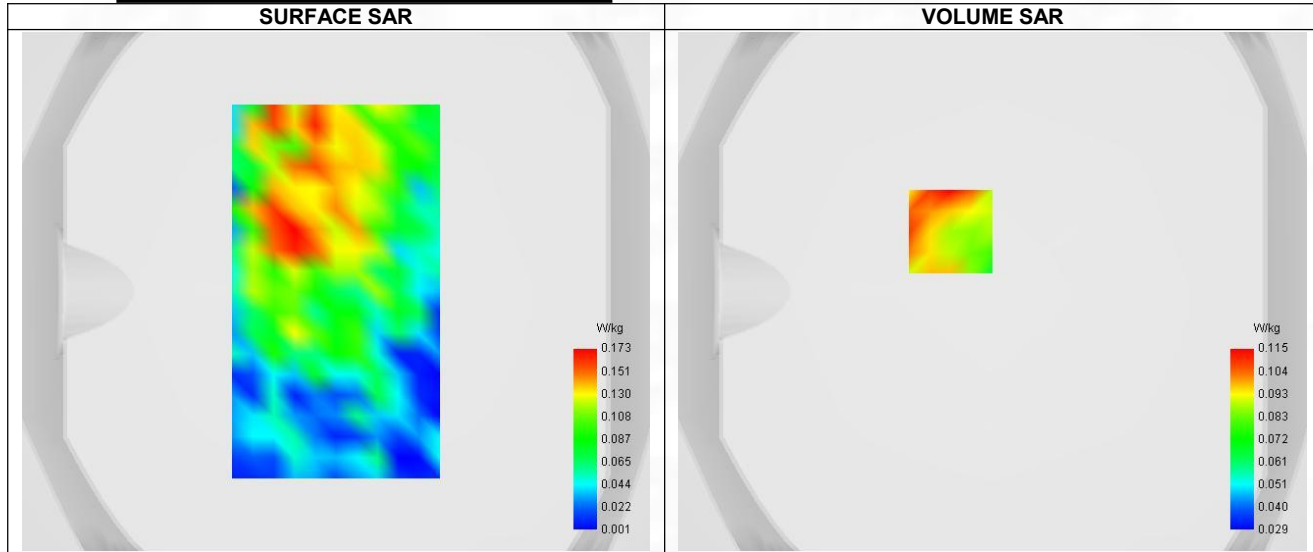
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	1.65
Area Scan	dx=8mm dy=8mm, Adaptive 1 max
Zoom Scan	5x5x7, dx=8mm dy=8mm dz=5mm, Complete
Phantom	Validation plane
Device Position	Body
Band	LTE band 12
Channels	Lower (23060)
Signal	LTE FDD
Cell Bandwidth	10 Mhz
Modulation	SC-OFDM - QPSK
RB offset	49
RB size	1

B. Permittivity

Frequency (MHz)	708.410
Relative permittivity (real part)	41.991
Relative permittivity (imaginary part)	22.424
Conductivity (S/m)	0.855

C. SAR Surface and Volume

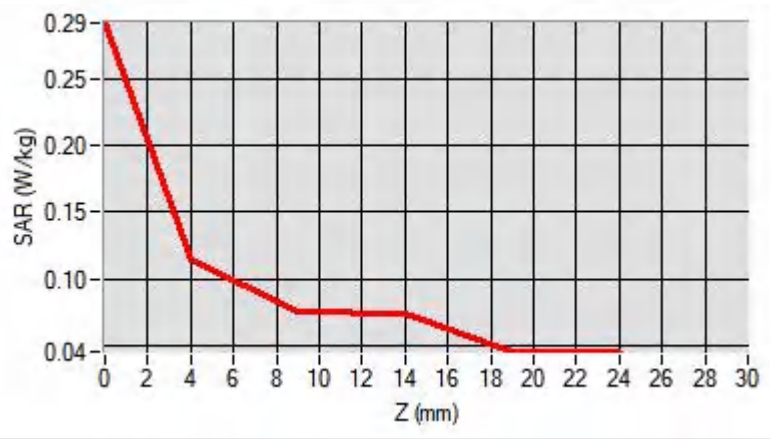


D. SAR 1g & 10g

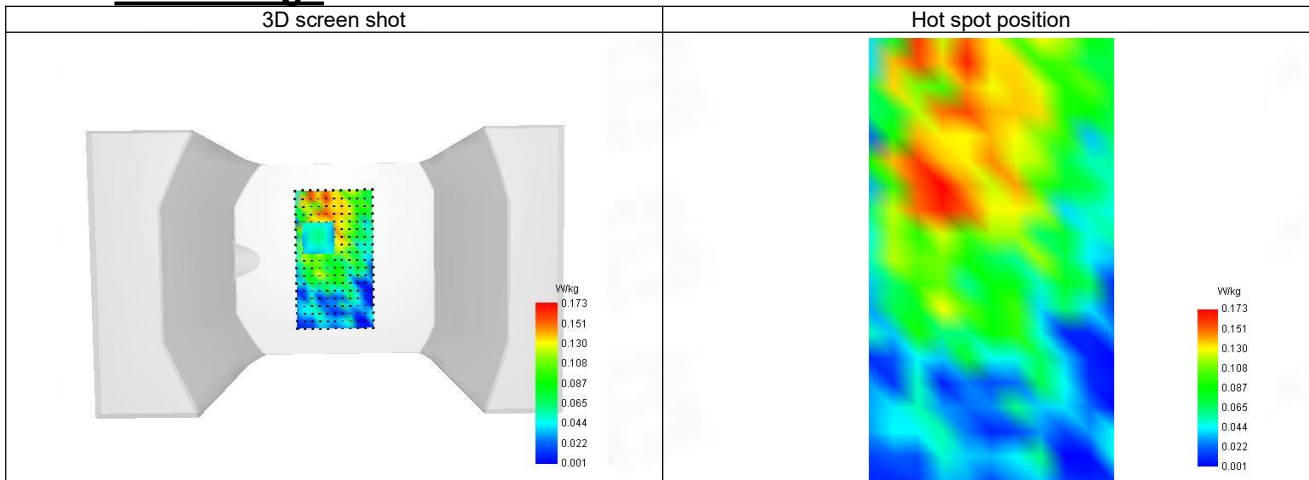
SAR 10g (W/Kg)	0.097
SAR 1g (W/Kg)	0.116
Variation (%)	3.560
Horizontal validation criteria: minimum distance (mm)	8.735
Vertical validation criteria: SAR ratio M2/M1 (%)	65.22%

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.293	0.115	0.075	0.073	0.045



F. 3D Image



19-Head with front position in dist. 0mm on Channel 23230 in LTE band 13

SAR Measurement at LTE band 13 (Cheek, Right)

Date of measurement: 8/7/2024

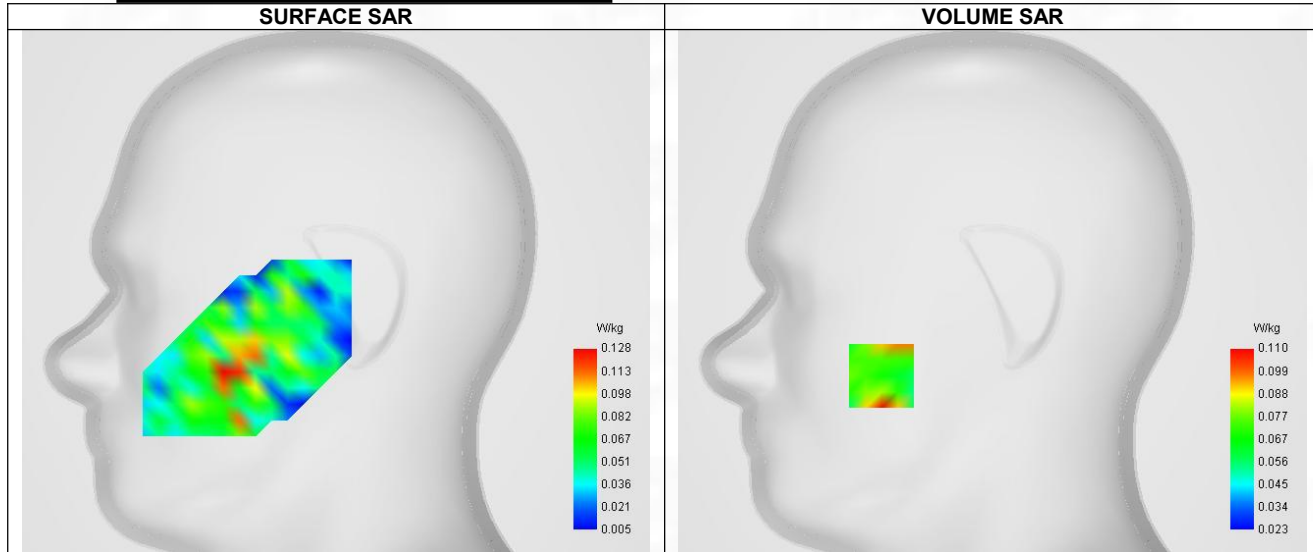
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	1.65
Area Scan	dx=8mm dy=8mm, Adaptive 1 max
Zoom Scan	5x5x7, dx=8mm dy=8mm dz=5mm, Complete
Phantom	Right head
Device Position	Cheek
Band	LTE band 13
Channels	Middle (23230)
Signal	LTE FDD
Cell Bandwidth	10 Mhz
Modulation	SC-OFDM - QPSK
RB offset	49
RB size	1

B. Permittivity

Frequency (MHz)	786.410
Relative permittivity (real part)	41.633
Relative permittivity (imaginary part)	20.616
Conductivity (S/m)	0.864

C. SAR Surface and Volume



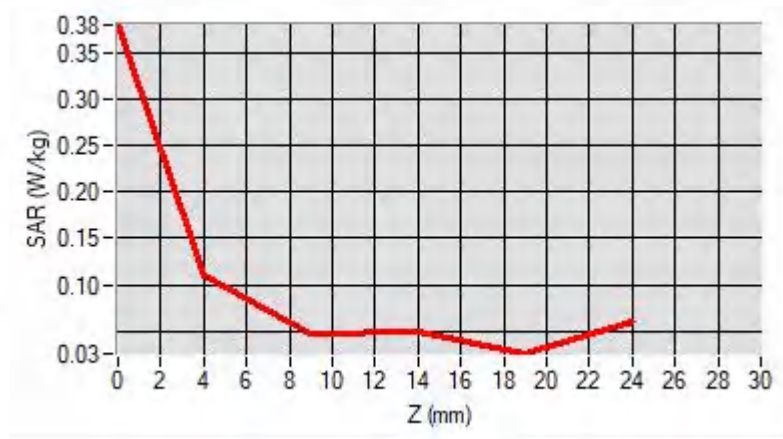
Maximum location: X=-55.00, Y=-42.00 ; SAR Peak: 0.18 W/kg

D. SAR 1g & 10g

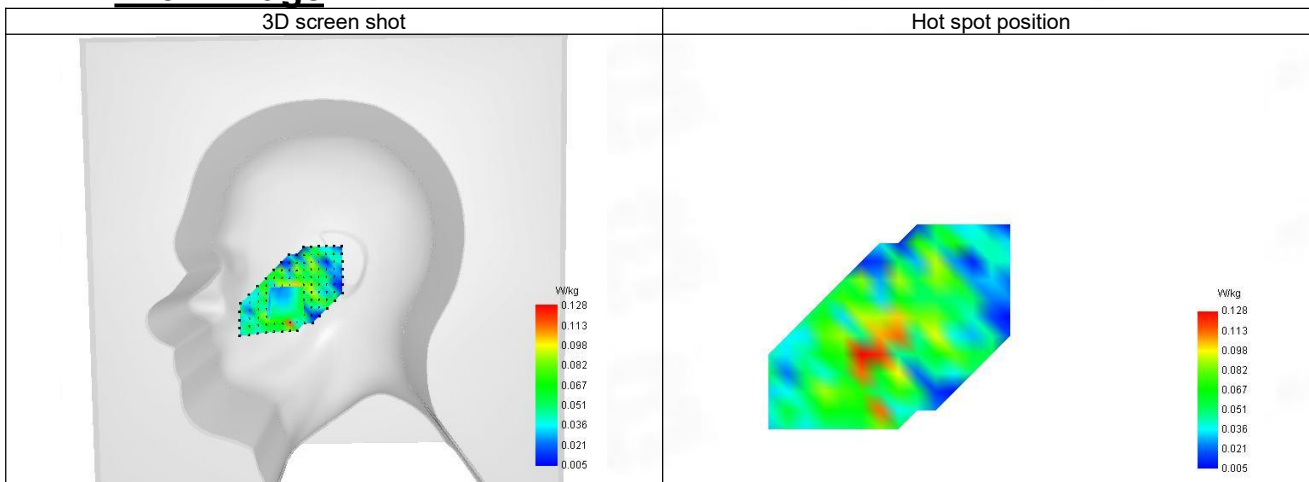
SAR 10g (W/Kg)	0.073
SAR 1g (W/Kg)	0.103
Variation (%)	-2.470
Horizontal validation criteria: minimum distance (mm)	8.682
Vertical validation criteria: SAR ratio M2/M1 (%)	42.73%

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.380	0.110	0.047	0.049	0.025



F. 3D Image



20-Body with back position in dist. 10mm on Channel 23230 in LTE band 13

SAR Measurement at LTE band 13 (Body, Validation Plane)

Date of measurement: 8/7/2024

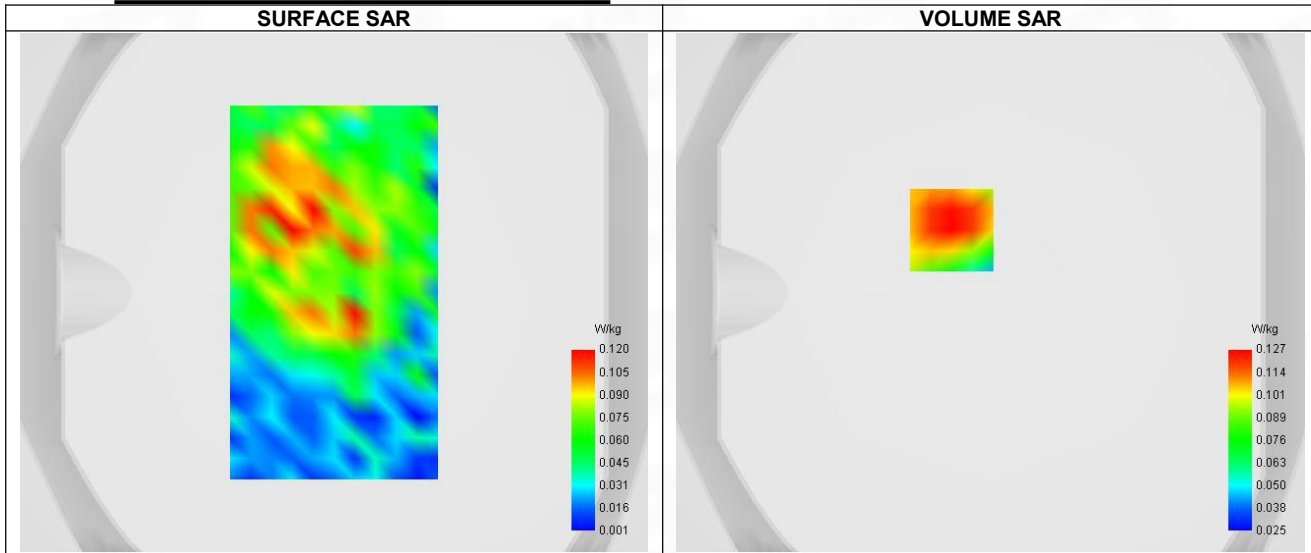
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	1.65
Area Scan	dx=8mm dy=8mm, Adaptive 1 max
Zoom Scan	5x5x7, dx=8mm dy=8mm dz=5mm, Complete
Phantom	Validation plane
Device Position	Body
Band	LTE band 13
Channels	Middle (23230)
Signal	LTE FDD
Cell Bandwidth	10 Mhz
Modulation	SC-OFDM - QPSK
RB offset	49
RB size	1

B. Permittivity

Frequency (MHz)	786.410
Relative permittivity (real part)	41.633
Relative permittivity (imaginary part)	20.616
Conductivity (S/m)	0.864

C. SAR Surface and Volume



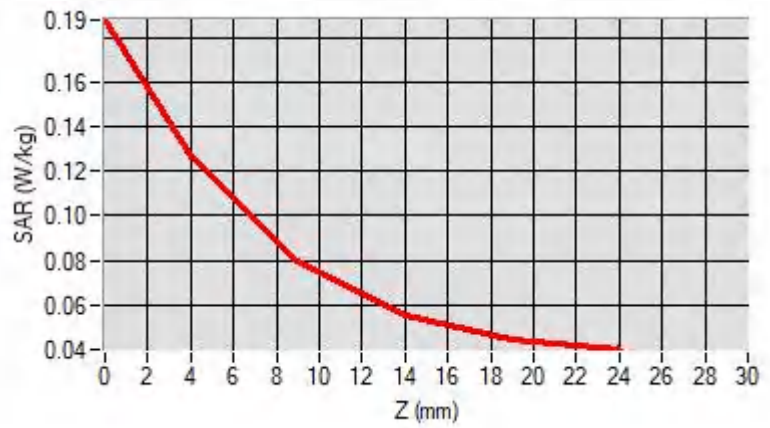
D. SAR 1g & 10g

SAR 10g (W/Kg)	0.092
SAR 1g (W/Kg)	0.138
Variation (%)	-4.770
Horizontal validation criteria: minimum distance (mm)	8.641
Vertical validation criteria: SAR ratio M2/M1 (%)	62.99%

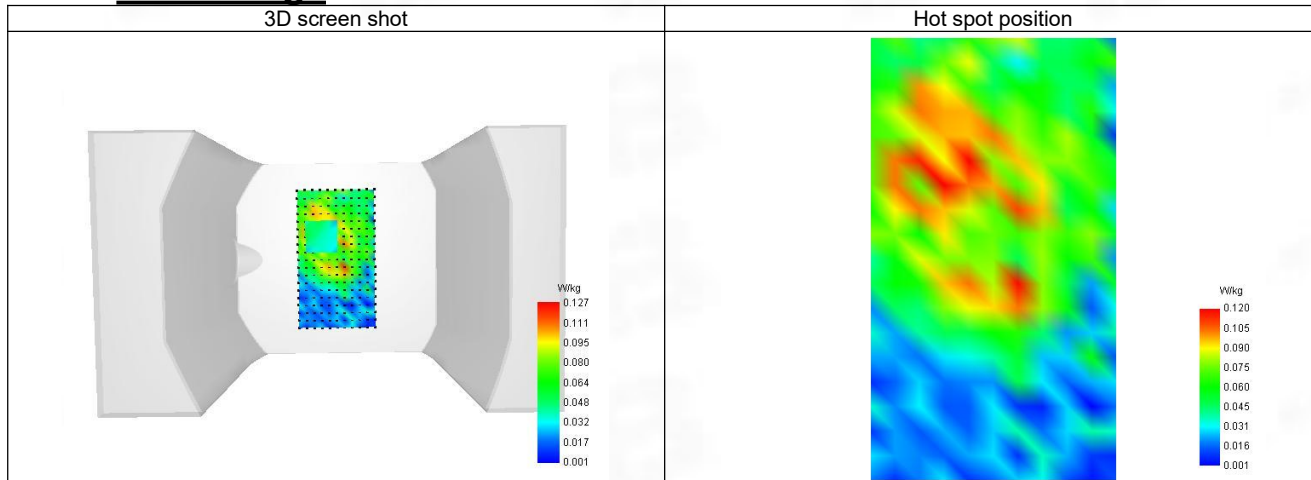
E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
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SAR (W/Kg)	0.188	0.127	0.080	0.055	0.045
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F. 3D Image



21-Head with front position in dist. 0mm on Channel 38750 in LTE band 40

SAR Measurement at LTE band 40 (Cheek, Right)

Date of measurement: 17/7/2024

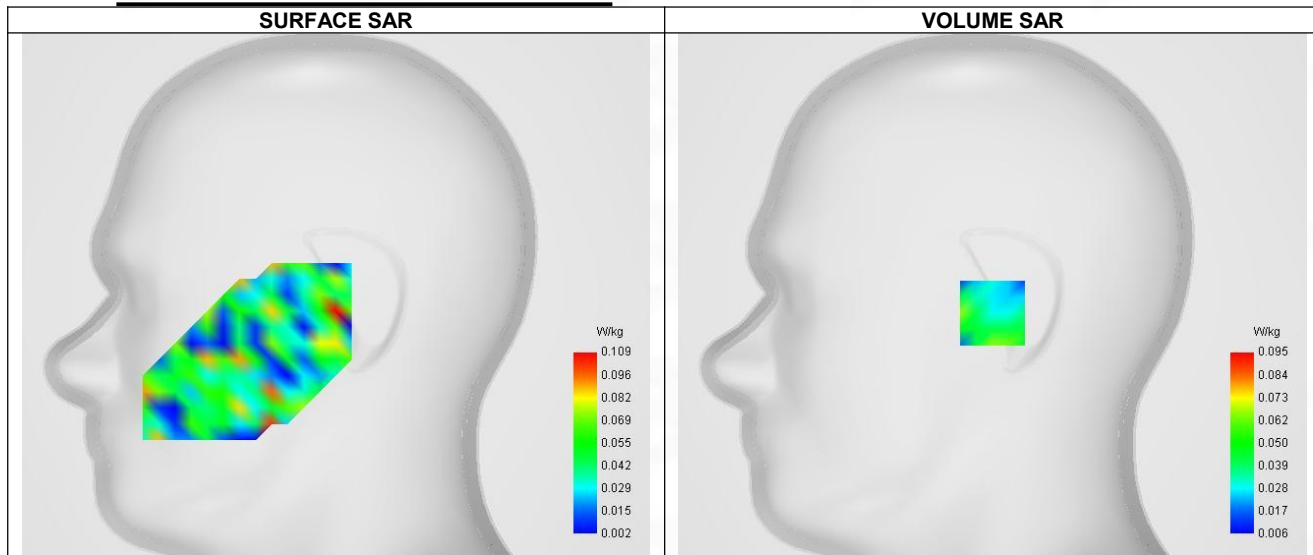
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	2.36
Area Scan	dx=8mm dy=8mm, Adaptive 1 max
Zoom Scan	5x5x7, dx=8mm dy=8mm dz=5mm, Complete
Phantom	Right head
Device Position	Cheek
Band	LTE band 40
Channels	Middle (38750)
Signal	LTE TDD
Cell Bandwidth	10 Mhz
Modulation	SC-OFDM - QPSK
RB offset	25
RB size	1
Subframe configuration	0
Special subframe configuration	0
Cyclic prefix	Normal
Duty Cycle (%)	0.61

B. Permittivity

Frequency (MHz)	2310.910
Relative permittivity (real part)	39.282
Relative permittivity (imaginary part)	13.350
Conductivity (S/m)	1.709

C. SAR Surface and Volume



Maximum location: X=0.00, Y=-9.00 ; SAR Peak: 0.12 W/kg

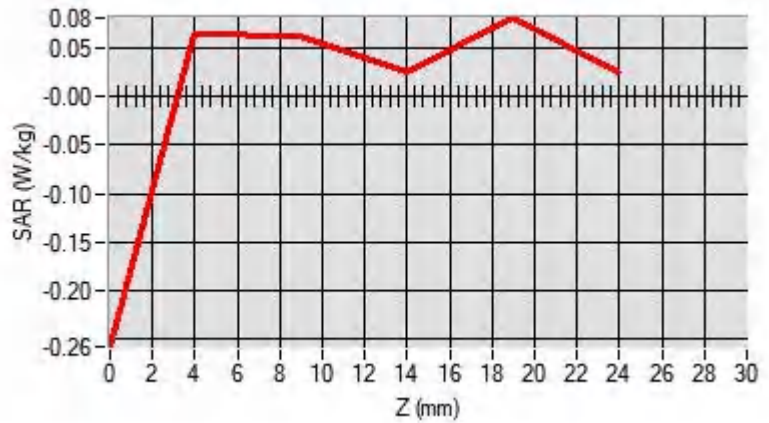
D. SAR 1g & 10g

SAR 10g (W/Kg)	0.053
SAR 1g (W/Kg)	0.061
Variation (%)	0.270
Horizontal validation criteria: minimum distance (mm)	8.779

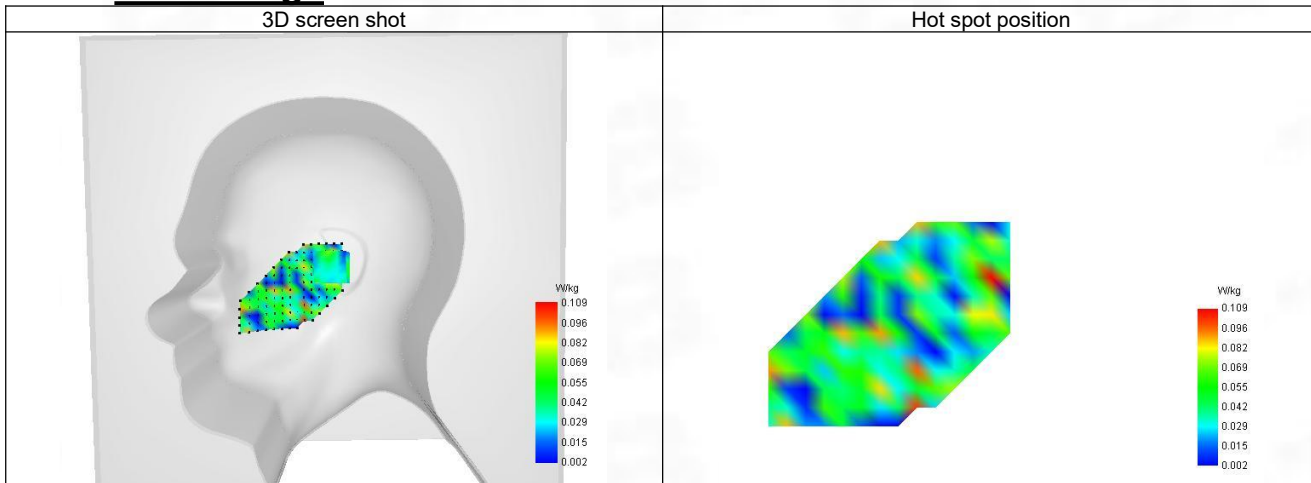
Vertical validation criteria: SAR ratio M2/M1 (%)	96.92%
---	--------

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	-0.258	0.065	0.063	0.026	0.081



F. 3D Image



22-Body with back position in dist. 10mm on Channel 38750 in LTE band 40

SAR Measurement at LTE band 40 (Body, Validation Plane)

Date of measurement: 17/7/2024

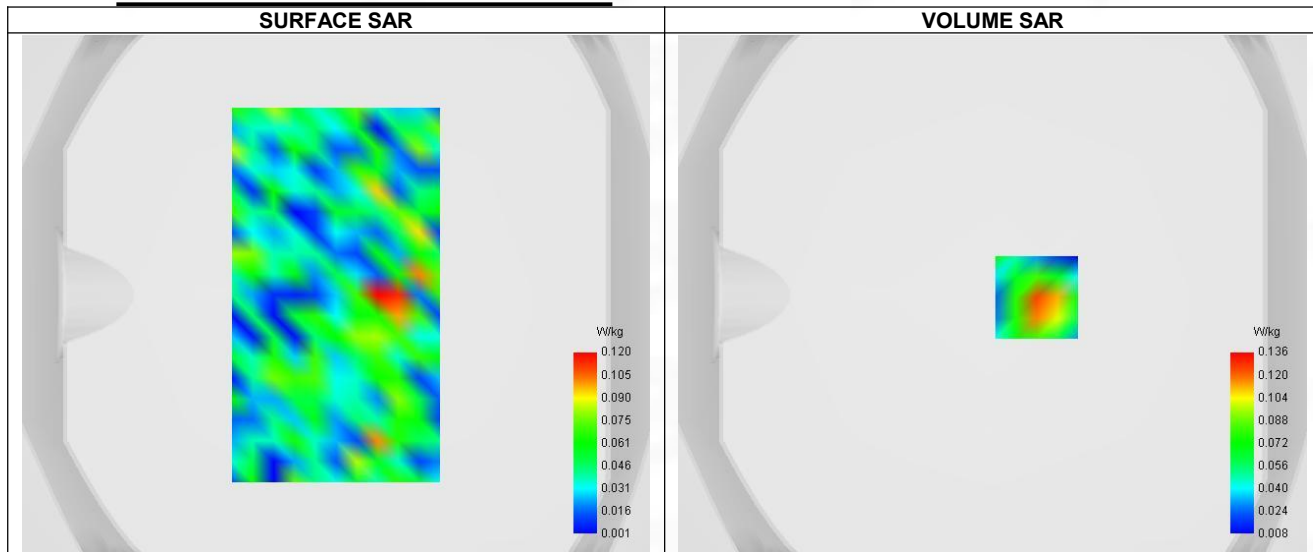
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	2.36
Area Scan	dx=8mm dy=8mm, Adaptive 1 max
Zoom Scan	5x5x7, dx=8mm dy=8mm dz=5mm, Complete
Phantom	Validation plane
Device Position	Body
Band	LTE band 40
Channels	Middle (38750)
Signal	LTE TDD
Cell Bandwidth	10 Mhz
Modulation	SC-OFDM - QPSK
RB offset	25
RB size	1
Subframe configuration	0
Special subframe configuration	0
Cyclic prefix	Normal
Duty Cycle (%)	0.61

B. Permittivity

Frequency (MHz)	2310.910
Relative permittivity (real part)	39.282
Relative permittivity (imaginary part)	13.350
Conductivity (S/m)	1.709

C. SAR Surface and Volume



Maximum location: X=17.00, Y=-1.00 ; SAR Peak: 0.16 W/kg

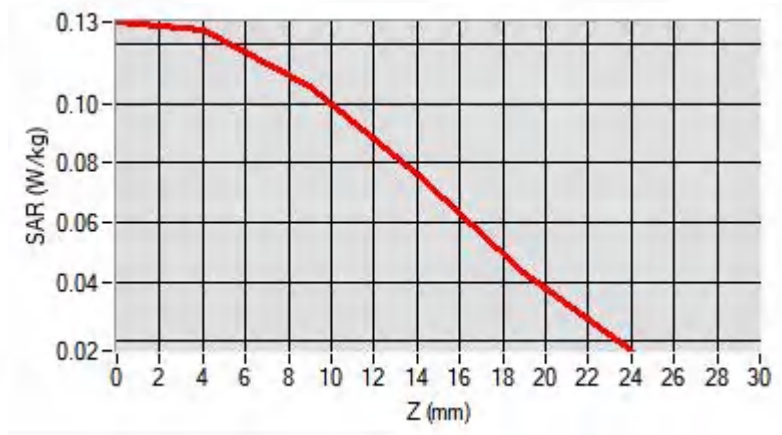
D. SAR 1g & 10g

SAR 10g (W/Kg)	0.078
SAR 1g (W/Kg)	0.128
Variation (%)	2.490
Horizontal validation criteria: minimum distance (mm)	8.427

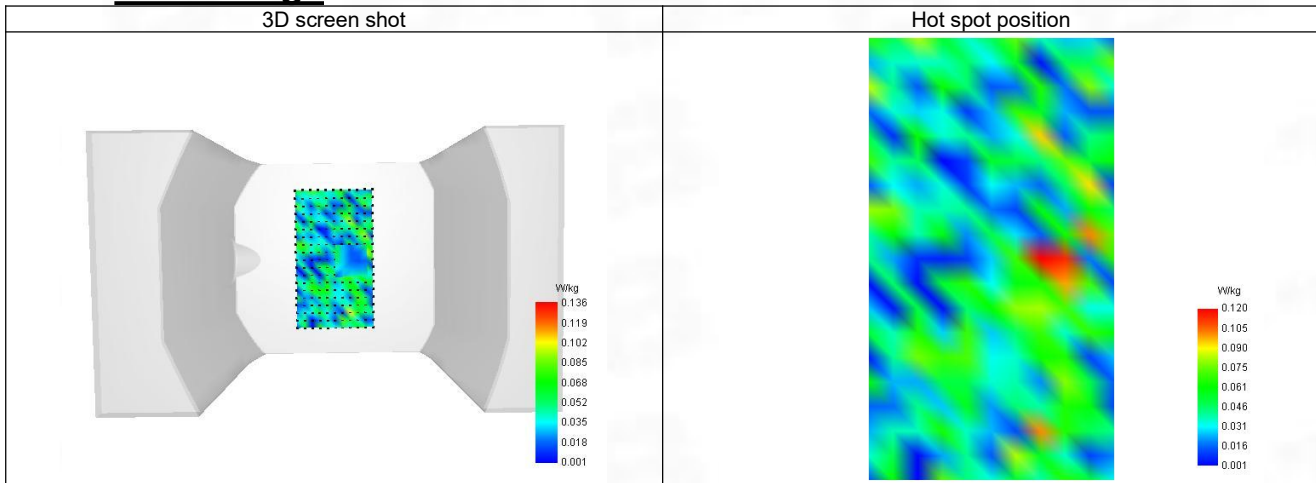
Vertical validation criteria: SAR ratio M2/M1 (%)	84.80%
---	--------

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.128	0.125	0.106	0.076	0.043



F. 3D Image



23-Head with front position in dist. 0mm on Channel 633334 in NR N78

A. Experimental conditions.

Area Scan	<u>dx=8mm dy=8mm, h= 5.00 mm</u>
ZoomScan	<u>5x5x7, dx=8mm dy=8mm dz=5mm, Complete/ndx=8mm</u> <u>dy=8mm, h= 5.00 mm</u>
Phantom	<u>Left head</u>
Device Position	<u>Cheek</u>
Band	<u>N78</u>
Channels	<u>Middle</u>
Signal	<u>LTE (Crest factor: 1.0)</u>

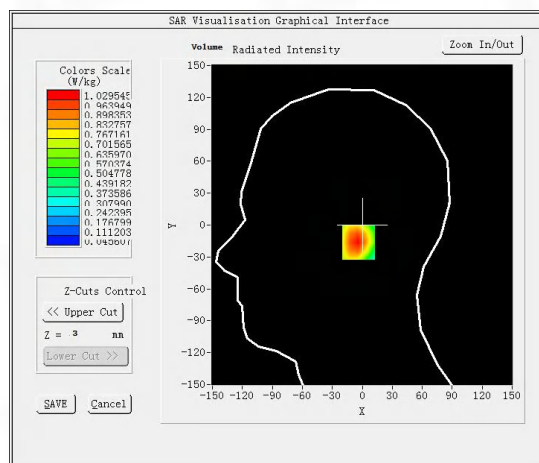
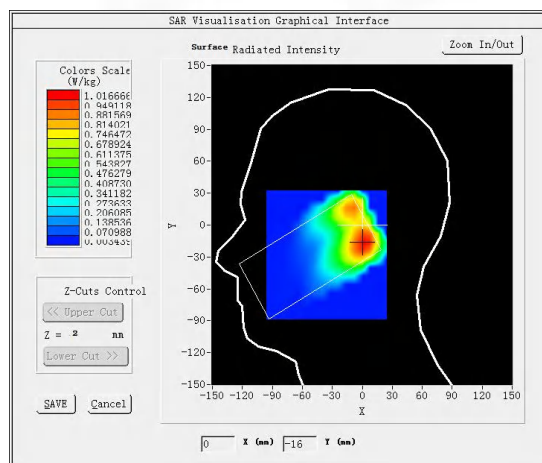
B. SAR Measurement Results

Middle Band SAR (Channel 633334):

Frequency (MHz)	<u>3500.010000</u>
Relative permittivity (real part)	<u>40.000000</u>
Relative permittivity (imaginary part)	<u>13.411700</u>
Conductivity (S/m)	<u>1.400405</u>
Variation (%)	<u>-1.130000</u>

SURFACE SAR

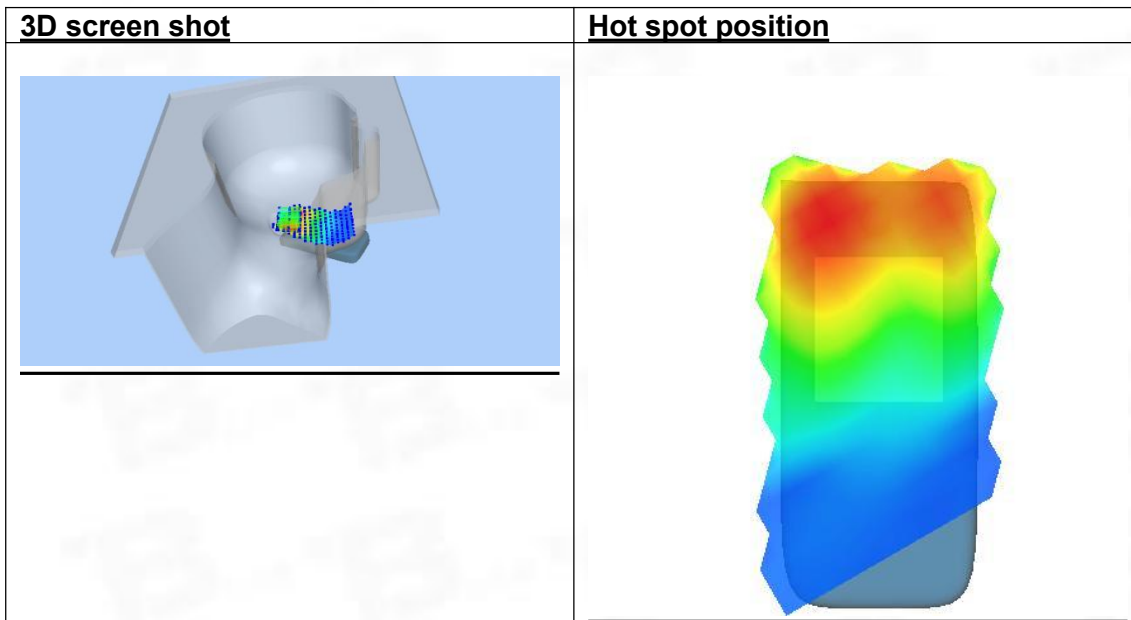
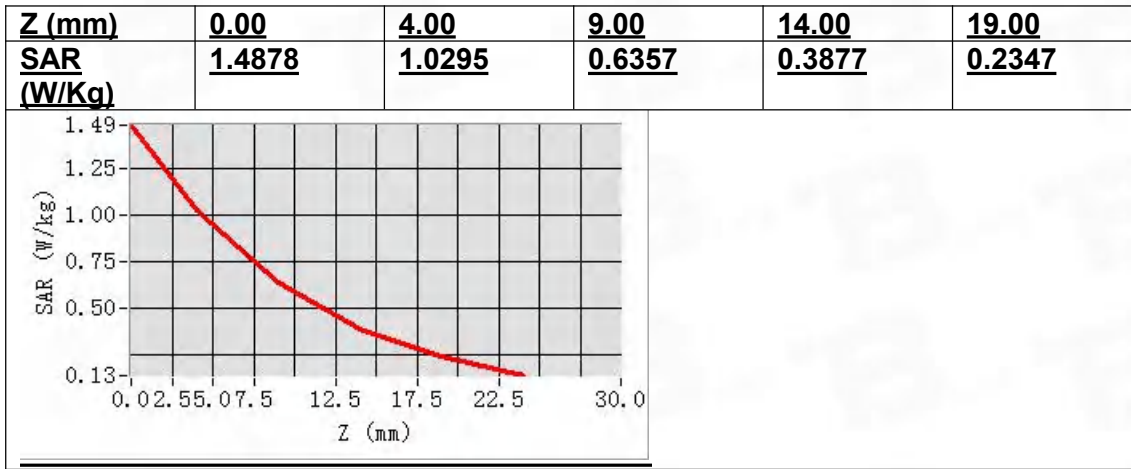
VOLUME SAR



Maximum location: X=2.00, Y=-16.00

SAR Peak: 1.49 W/kg

SAR 10g (W/Kg)	<u>0.582500</u>
SAR 1g (W/Kg)	<u>0.958117</u>



24-Body with back position in dist. 10mm on Channel 633334 in NR N78

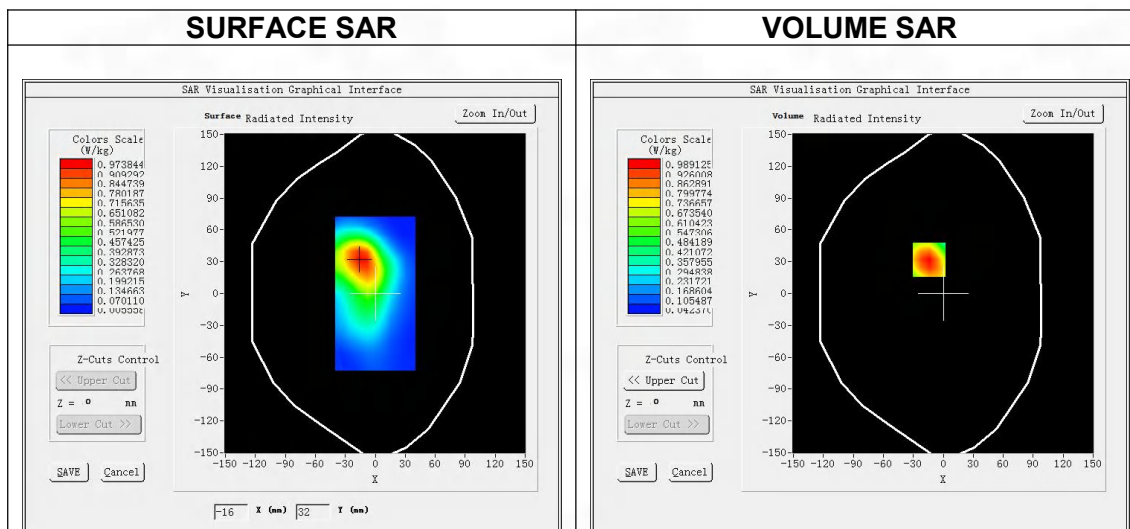
A. Experimental conditions.

Area Scan	<u>dx=8mm dy=8mm, Adaptive 1 max, h= 5.00 mm</u>
ZoomScan	<u>5x5x7, dx=8mm dy=8mm dz=5mm, Complete/ndx=8mm</u> <u>dy=8mm, Adaptive 1 max, h= 5.00 mm</u>
Phantom	<u>Validation plane</u>
Device Position	<u>Body</u>
Band	<u>N78</u>
Channels	<u>Middle</u>
Signal	<u>LTE (Crest factor: 1.0)</u>

C. SAR Measurement Results

Middle Band SAR (Channel 633334):

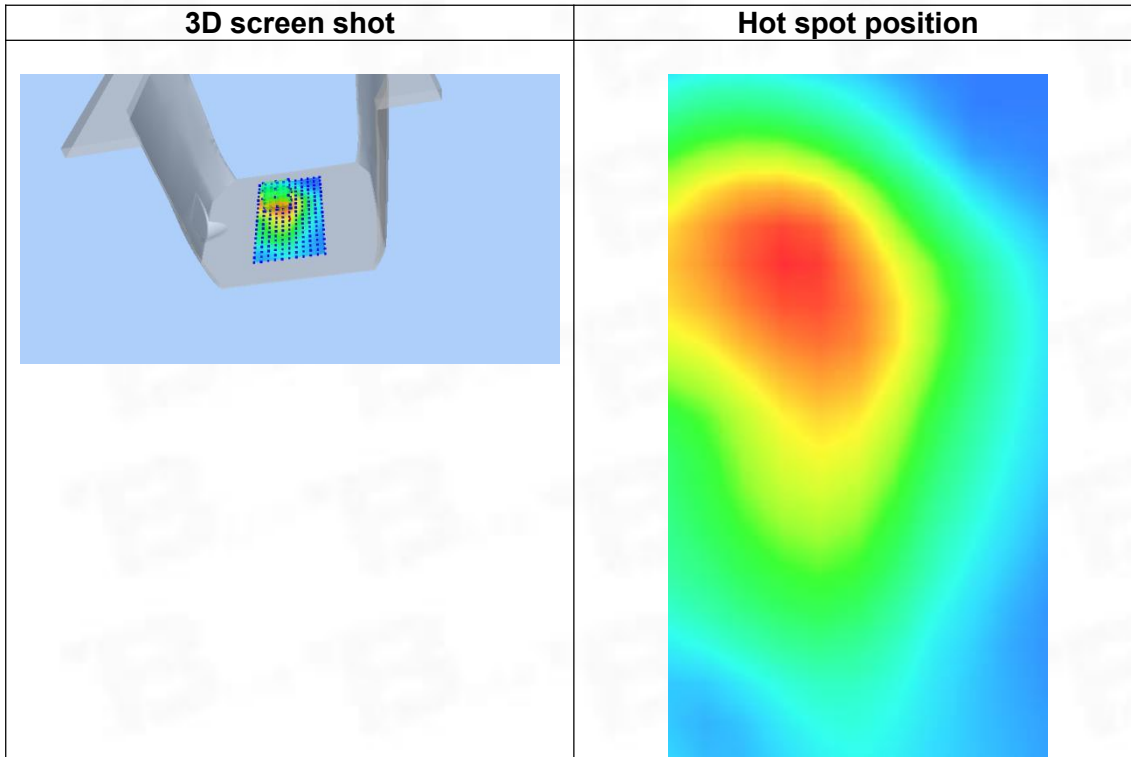
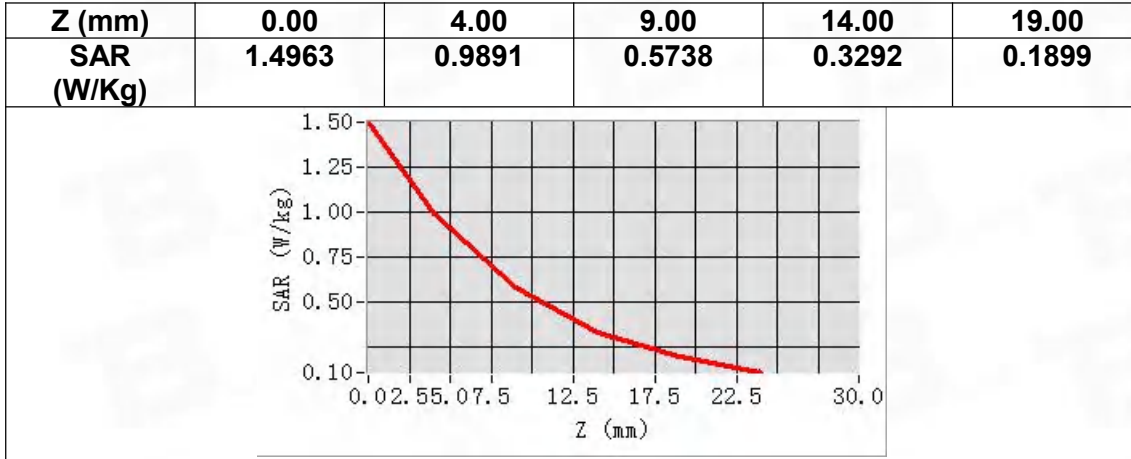
Frequency (MHz)	3500.010000
Relative permittivity (real part)	40.000000
Relative permittivity (imaginary part)	13.411700
Conductivity (S/m)	1.400405
Variation (%)	-1.610000



Maximum location: X=-14.00, Y=32.00

SAR Peak: 1.50 W/kg

SAR 10g (W/Kg)	0.552499
SAR 1g (W/Kg)	0.941201



25-Head with front position in dist. 0mm on Channel 11 in IEEE 802.11b ISM

SAR Measurement at IEEE 802.11b ISM (Cheek, Right)

Date of measurement: 18/7/2024

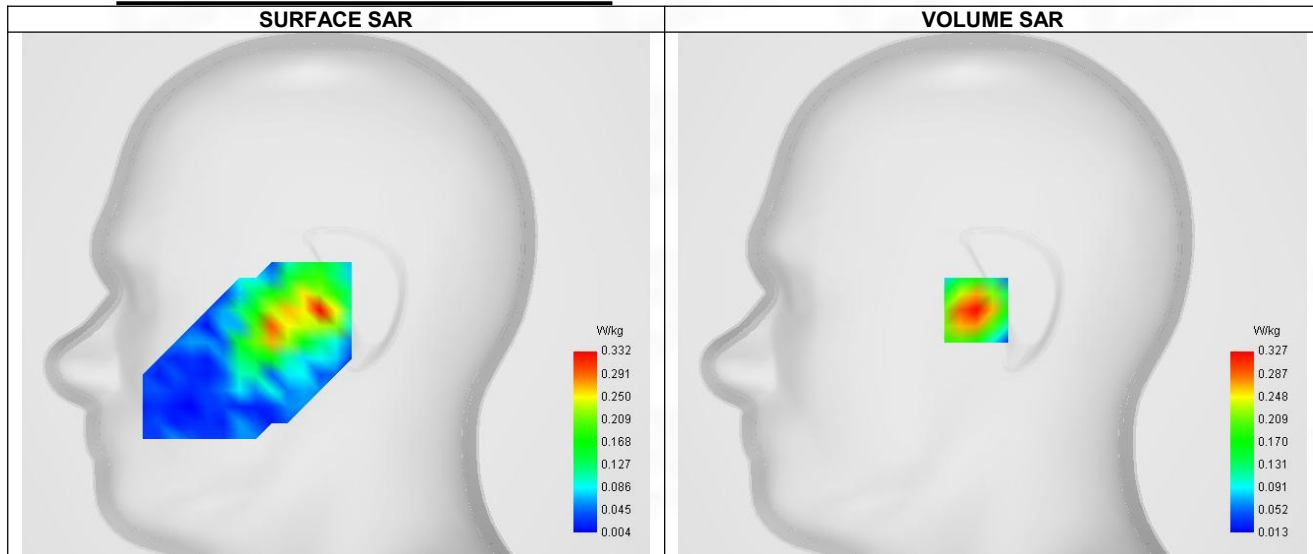
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	2.36
Area Scan	dx=8mm dy=8mm, Adaptive 1 max
Zoom Scan	5x5x7, dx=8mm dy=8mm dz=5mm, Complete
Phantom	Right head
Device Position	Cheek
Band	IEEE 802.11b ISM
Channels	Higher (11)
Signal	IEEE 802.11

B. Permittivity

Frequency (MHz)	2462.000
Relative permittivity (real part)	39.064
Relative permittivity (imaginary part)	13.288
Conductivity (S/m)	1.823

C. SAR Surface and Volume



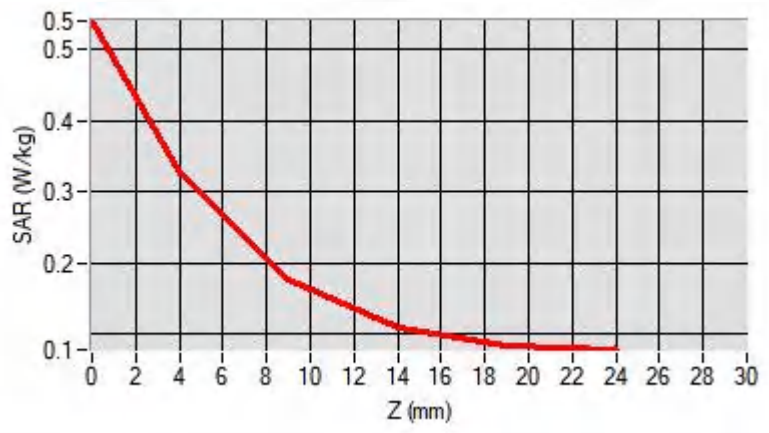
Maximum location: X=-8.00, Y=-8.00 ; SAR Peak: 0.54 W/kg

D. SAR 1g & 10g

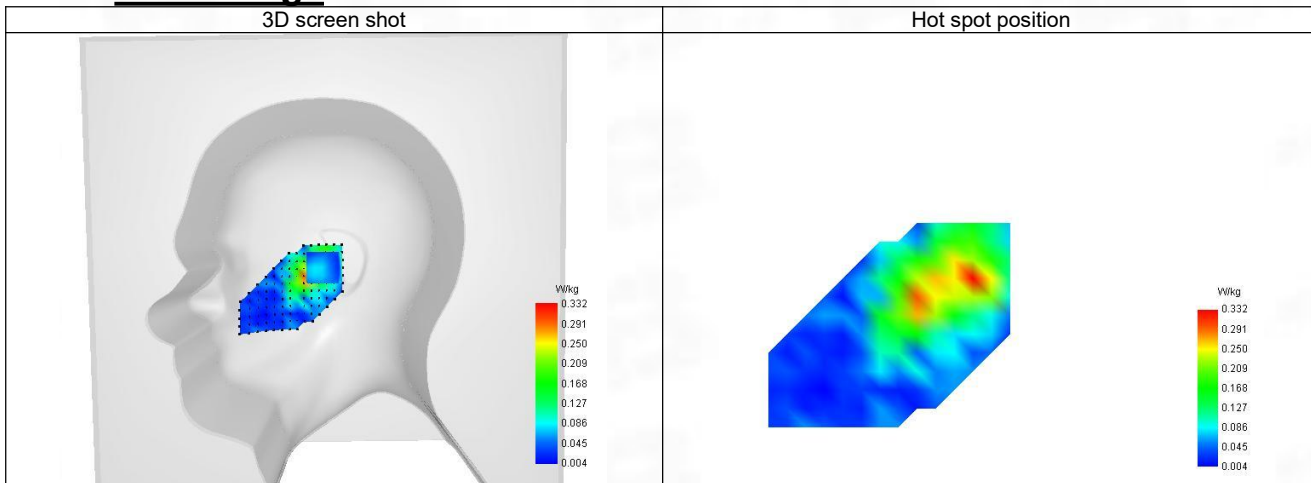
SAR 10g (W/Kg)	0.179
SAR 1g (W/Kg)	0.321
Variation (%)	3.610
Horizontal validation criteria: minimum distance (mm)	8.427
Vertical validation criteria: SAR ratio M2/M1 (%)	53.82%

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.540	0.327	0.176	0.108	0.085



F. 3D Image



26-Body with back position in dist. 10mm on Channel 11 in IEEE 802.11b ISM

SAR Measurement at IEEE 802.11b ISM (Body, Validation Plane)

Date of measurement: 18/7/2024

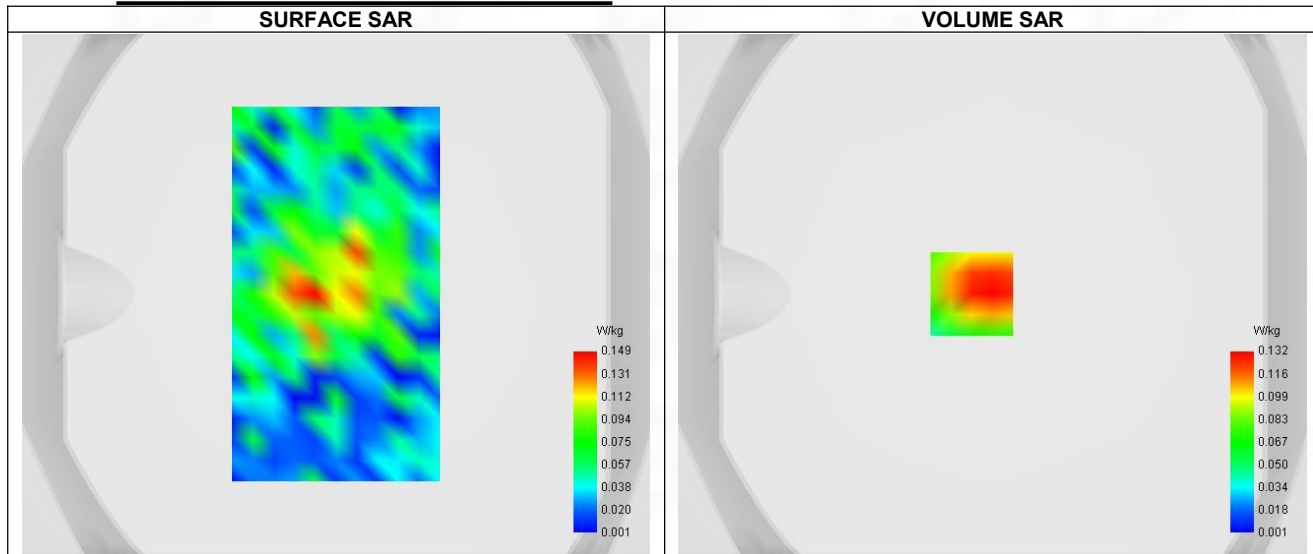
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	2.36
Area Scan	dx=8mm dy=8mm, Adaptive 1 max
Zoom Scan	5x5x7, dx=8mm dy=8mm dz=5mm, Complete
Phantom	Validation plane
Device Position	Body
Band	IEEE 802.11b ISM
Channels	Higher (11)
Signal	IEEE 802.11

B. Permittivity

Frequency (MHz)	2462.000
Relative permittivity (real part)	39.064
Relative permittivity (imaginary part)	13.288
Conductivity (S/m)	1.823

C. SAR Surface and Volume

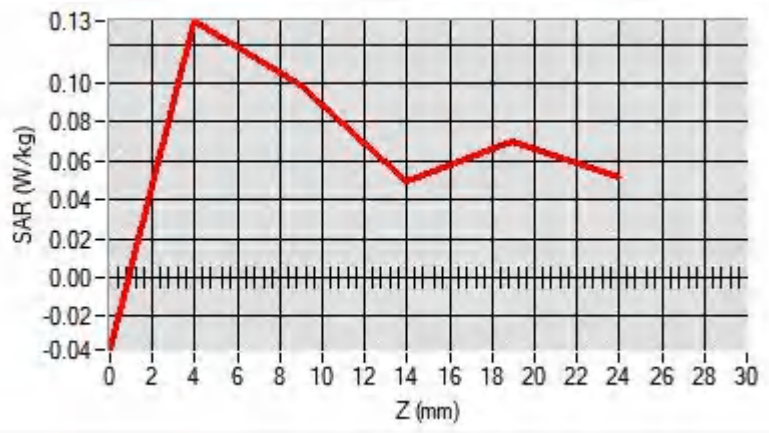


D. SAR 1g & 10g

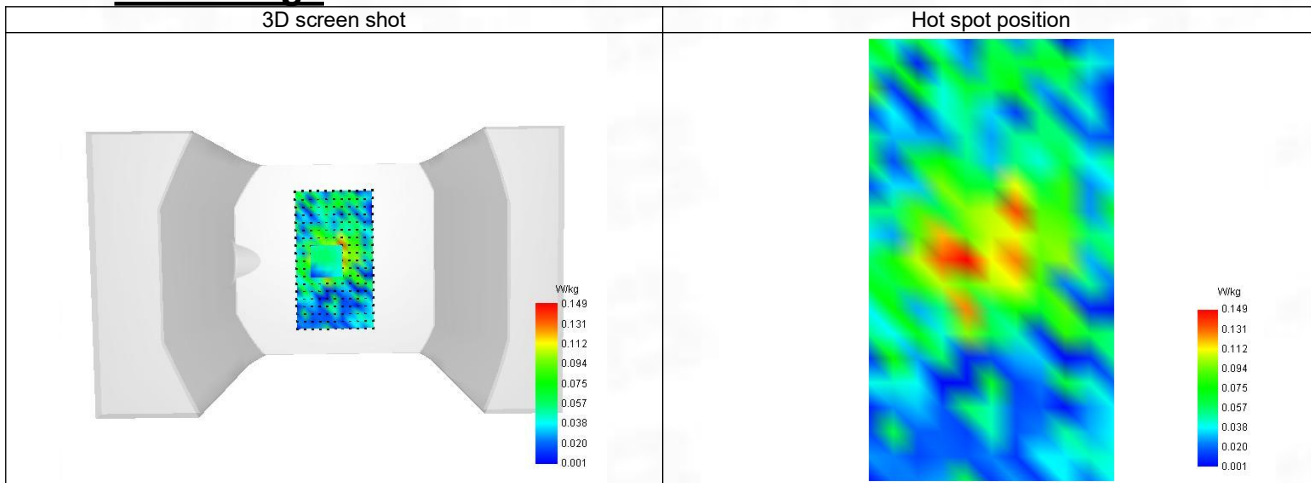
SAR 10g (W/Kg)	0.094
SAR 1g (W/Kg)	0.150
Variation (%)	4.370
Horizontal validation criteria: minimum distance (mm)	8.375
Vertical validation criteria: SAR ratio M2/M1 (%)	75.00%

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	-0.037	0.132	0.099	0.049	0.070



F. 3D Image



27-Head with front position in dist. 0mm on Channel 48 in IEEE 802.11a U-NII

SAR Measurement at IEEE 802.11a U-NII (Cheek, Right)

Date of measurement: 24/7/2024

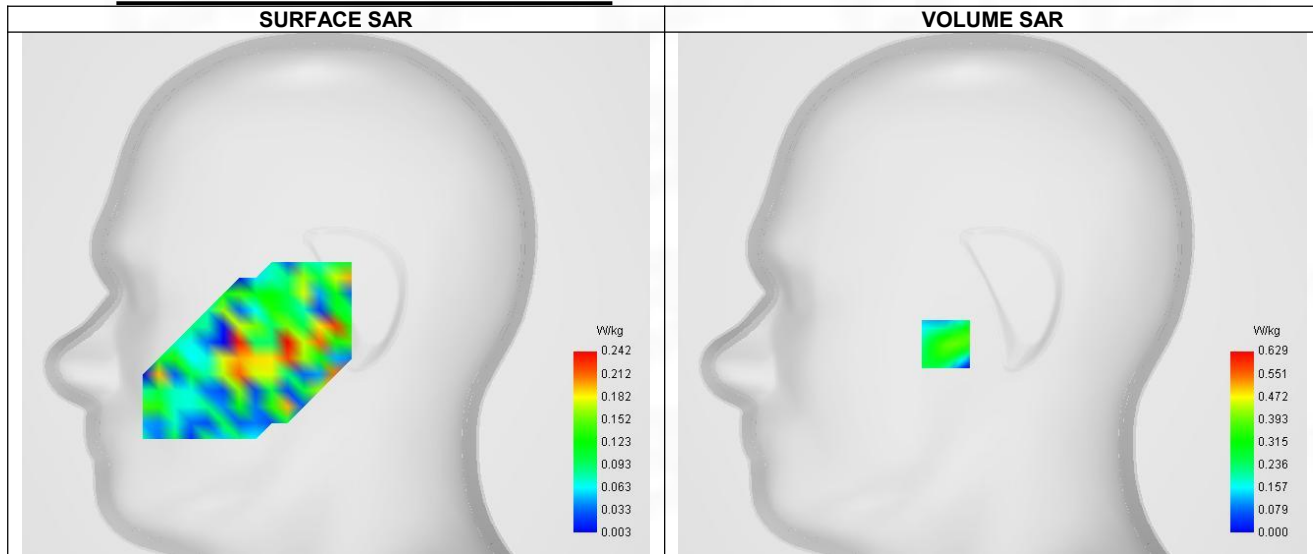
A. Experimental conditions.

Probe	SN 04/22 EPGO365
ConvF	2.24
Area Scan	dx=8mm dy=8mm, Adaptive 1 max
Zoom Scan	7x7x12, dx=4mm dy=4mm dz=5mm, Complete
Phantom	Right head
Device Position	Cheek
Band	IEEE 802.11a U-NII
Channels	Higher (48)
Signal	IEEE 802.11

B. Permittivity

Frequency (MHz)	5240.000
Relative permittivity (real part)	35.840
Relative permittivity (imaginary part)	16.264
Conductivity (S/m)	4.740

C. SAR Surface and Volume



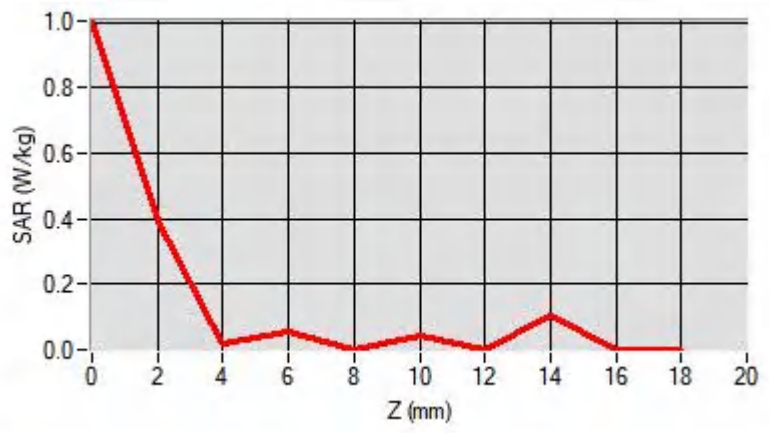
Maximum location: X=-23.00, Y=-25.00 ; SAR Peak: 3.19 W/kg

D. SAR 1g & 10g

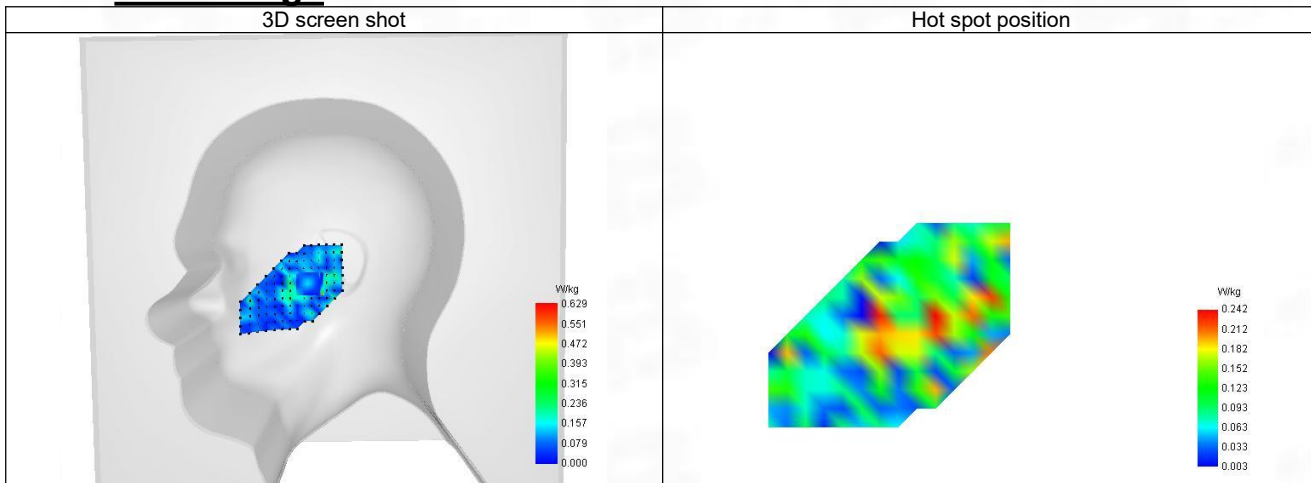
SAR 10g (W/Kg)	0.244
SAR 1g (W/Kg)	0.502
Variation (%)	-2.950
Horizontal validation criteria: minimum distance (mm)	4.662
Vertical validation criteria: SAR ratio M2/M1 (%)	4.83%

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)	1.004	0.393	0.019	0.057	0.001	0.046	0.001	0.106	0.000



F. 3D Image



28-Body with back position in dist. 10mm on Channel 48 in IEEE 802.11a U-NII

SAR Measurement at IEEE 802.11a U-NII (Body, Validation Plane)

Date of measurement: 24/7/2024

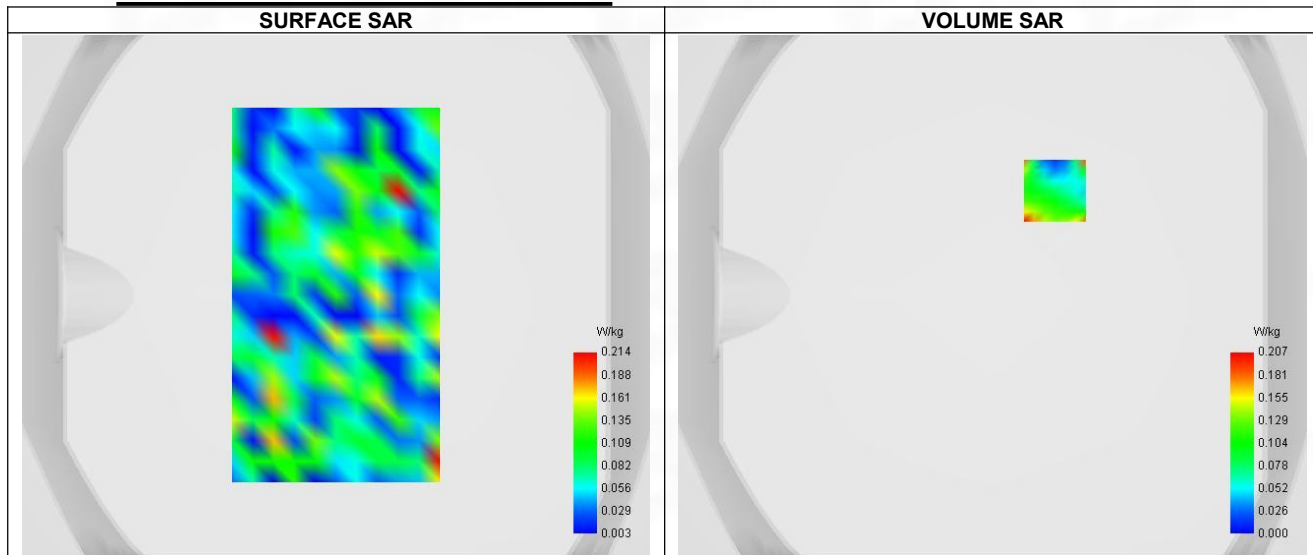
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	2.24
Area Scan	dx=8mm dy=8mm, Adaptive 1 max
Zoom Scan	7x7x12, dx=4mm dy=4mm dz=5mm, Complete
Phantom	Validation plane
Device Position	Body
Band	IEEE 802.11a U-NII
Channels	Higher (48)
Signal	IEEE 802.11

B. Permittivity

Frequency (MHz)	5240.000
Relative permittivity (real part)	35.840
Relative permittivity (imaginary part)	16.264
Conductivity (S/m)	4.740

C. SAR Surface and Volume



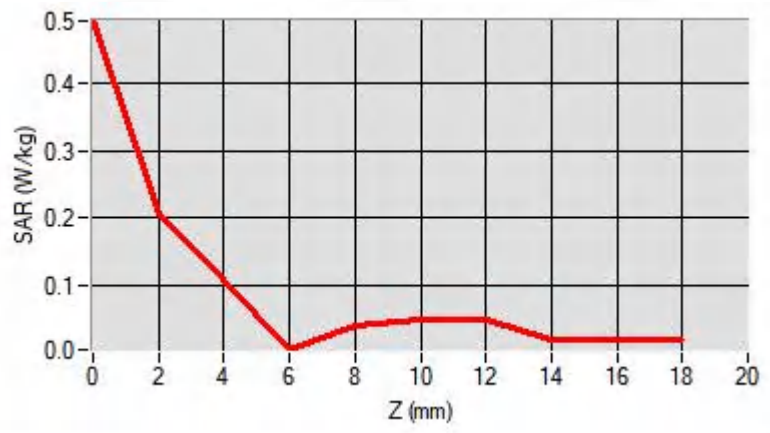
Maximum location: X=24.00, Y=40.00 ; SAR Peak: 0.56 W/kg

D. SAR 1g & 10g

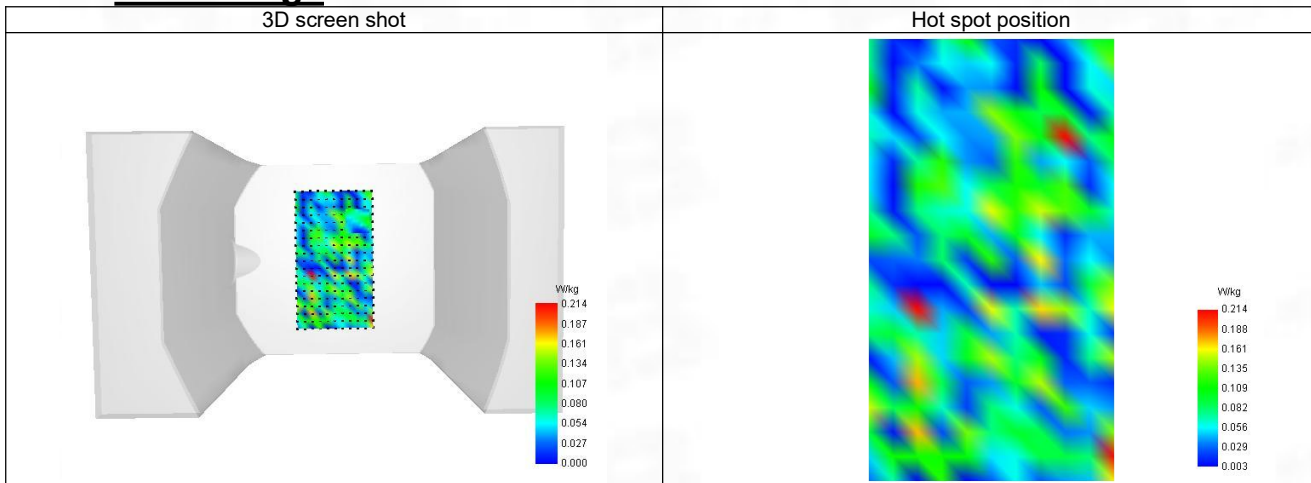
SAR 10g (W/Kg)	0.066
SAR 1g (W/Kg)	0.107
Variation (%)	-2.170
Horizontal validation criteria: minimum distance (mm)	5.116
Vertical validation criteria: SAR ratio M2/M1 (%)	52.17%

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)	0.494	0.207	0.108	0.003	0.040	0.048	0.047	0.017	0.017



F. 3D Image



29-Head with front position in dist. 0mm on Channel 165 in IEEE 802.11a U-NII

SAR Measurement at IEEE 802.11a U-NII (Cheek, Right)

Date of measurement: 25/7/2024

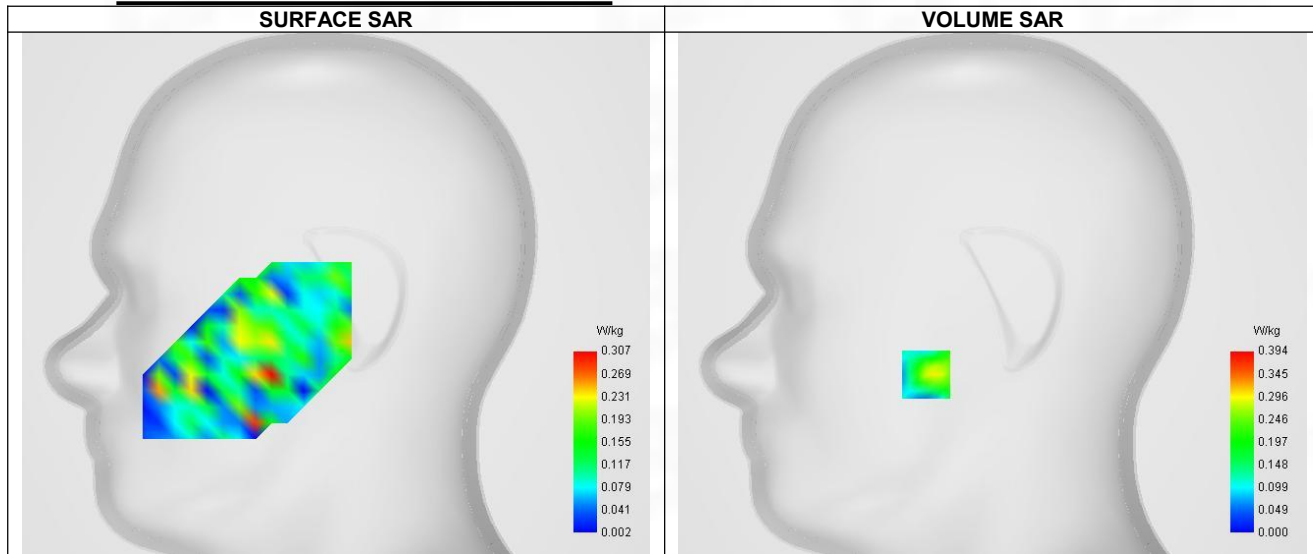
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	2.04
Area Scan	dx=8mm dy=8mm, Adaptive 1 max
Zoom Scan	7x7x12, dx=4mm dy=4mm dz=5mm, Complete
Phantom	Right head
Device Position	Cheek
Band	IEEE 802.11a U-NII
Channels	Higher (165)
Signal	IEEE 802.11

B. Permittivity

Frequency (MHz)	5825.000
Relative permittivity (real part)	35.155
Relative permittivity (imaginary part)	16.488
Conductivity (S/m)	5.335

C. SAR Surface and Volume



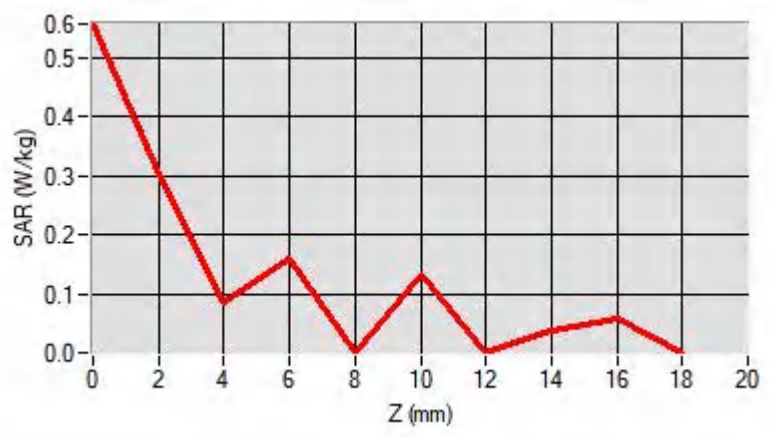
Maximum location: X=-33.00, Y=-40.00 ; SAR Peak: 1.72 W/kg

D. SAR 1g & 10g

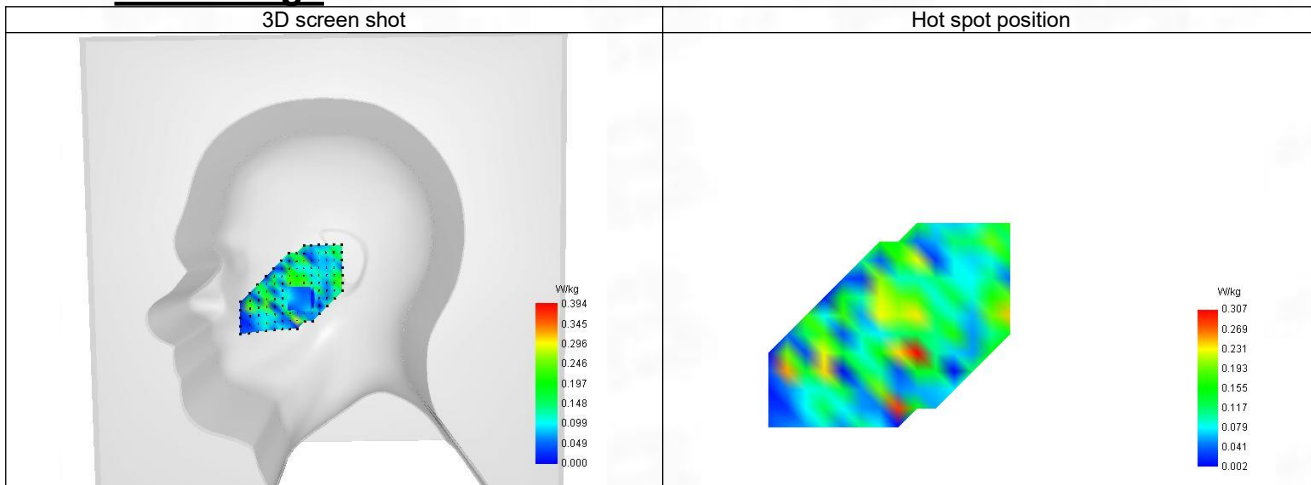
SAR 10g (W/Kg)	0.177
SAR 1g (W/Kg)	0.499
Variation (%)	-3.080
Horizontal validation criteria: minimum distance (mm)	4.975
Vertical validation criteria: SAR ratio M2/M1 (%)	27.81%

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)	0.558	0.302	0.084	0.159	0.000	0.134	0.000	0.037	0.059



F. 3D Image



30-Body with back position in dist. 10mm on Channel 165 in IEEE 802.11a U-NII

SAR Measurement at IEEE 802.11a U-NII (Body, Validation Plane)

Date of measurement: 25/7/2024

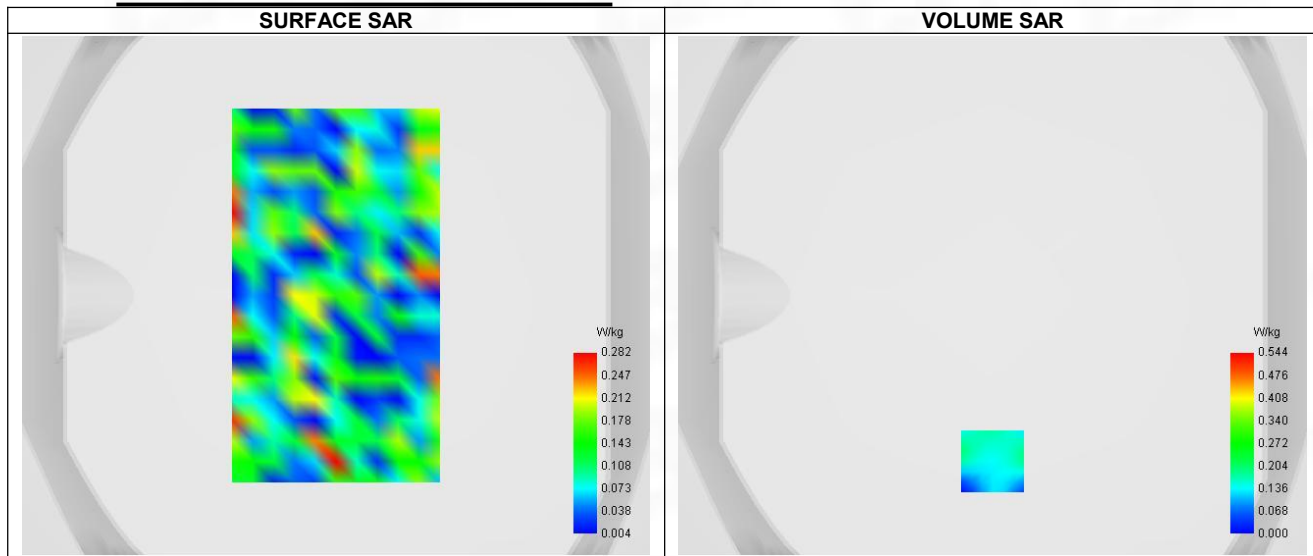
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	2.04
Area Scan	dx=8mm dy=8mm, Adaptive 1 max
Zoom Scan	7x7x12, dx=4mm dy=4mm dz=5mm, Complete
Phantom	Validation plane
Device Position	Body
Band	IEEE 802.11a U-NII
Channels	Higher (165)
Signal	IEEE 802.11

B. Permittivity

Frequency (MHz)	5825.000
Relative permittivity (real part)	35.155
Relative permittivity (imaginary part)	16.488
Conductivity (S/m)	5.335

C. SAR Surface and Volume



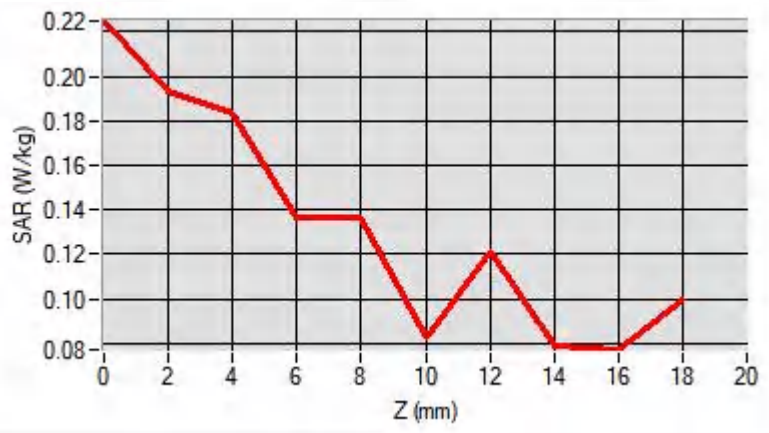
Maximum location: X=0.00, Y=-64.00 ; SAR Peak: 0.45 W/kg

D. SAR 1g & 10g

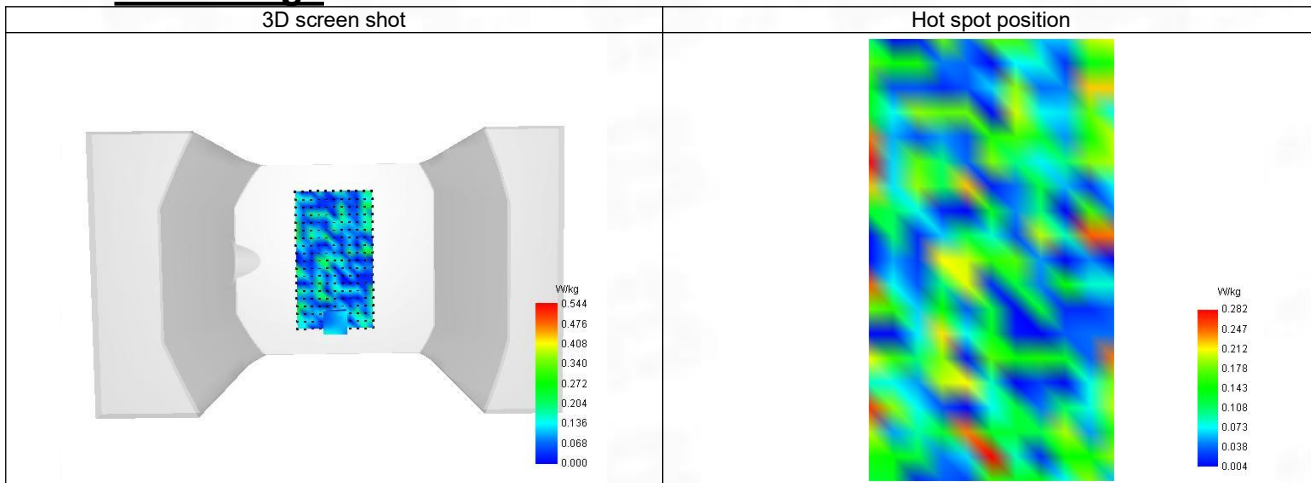
SAR 10g (W/Kg)	0.125
SAR 1g (W/Kg)	0.154
Variation (%)	-3.920
Horizontal validation criteria: minimum distance (mm)	4.498
Vertical validation criteria: SAR ratio M2/M1 (%)	94.82%

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)	0.225	0.193	0.183	0.137	0.136	0.083	0.122	0.079	0.077

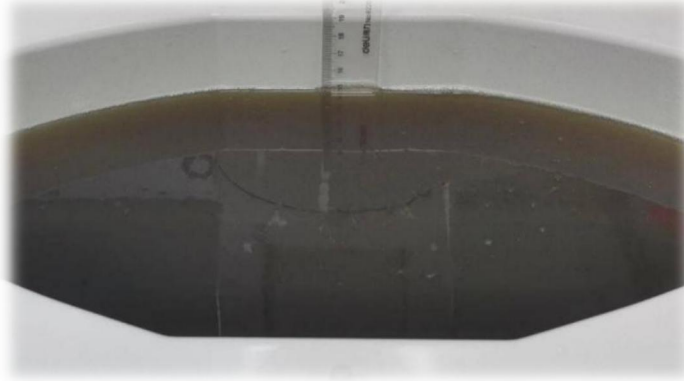


F. 3D Image



ANNEX E SAR Test Setup Photos

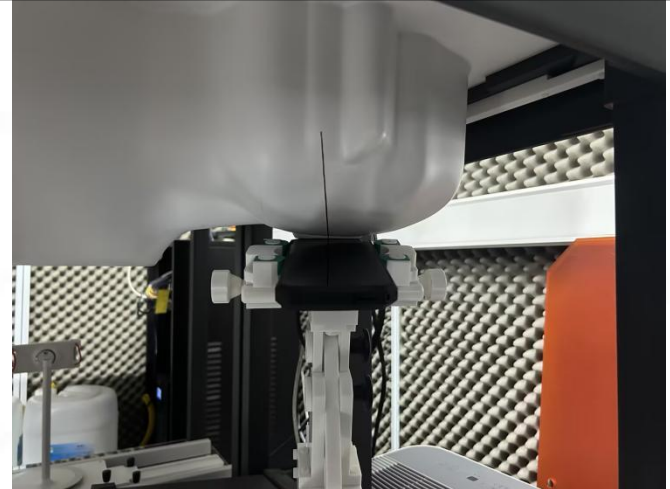
Reference Photo: simulation liquid depth 15cm



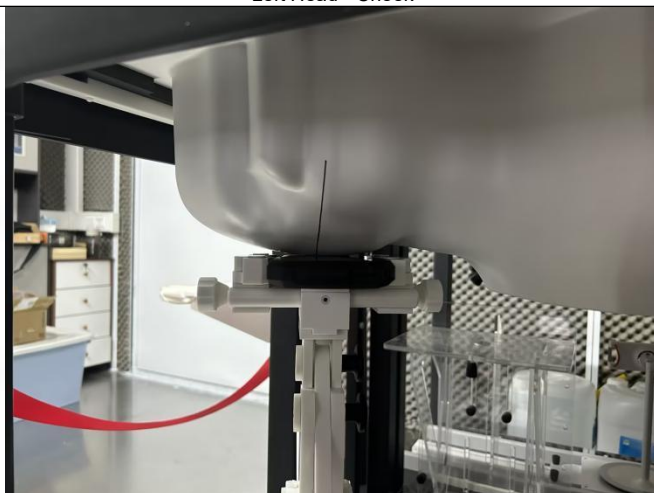
Reference Photos



Left Head - Cheek



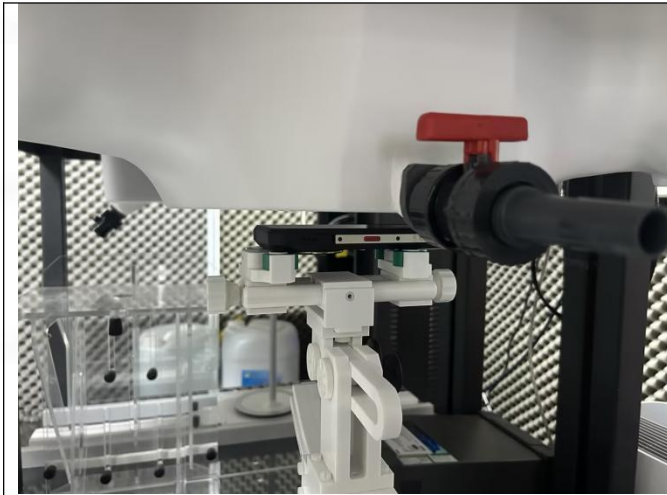
Left Head - Tilt



Right Head - Cheek



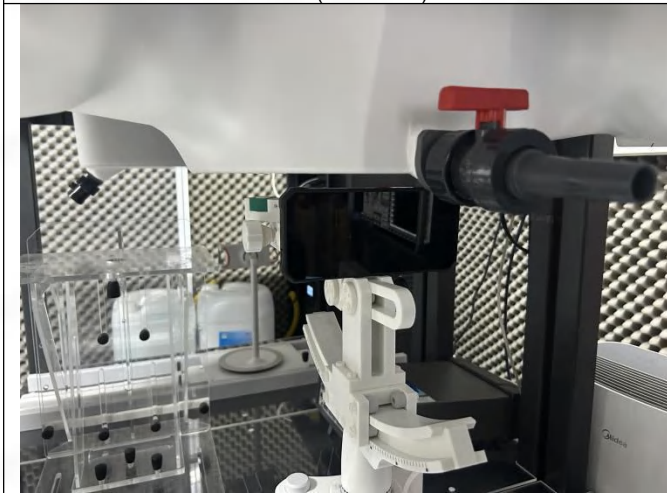
Right Head - Tilt



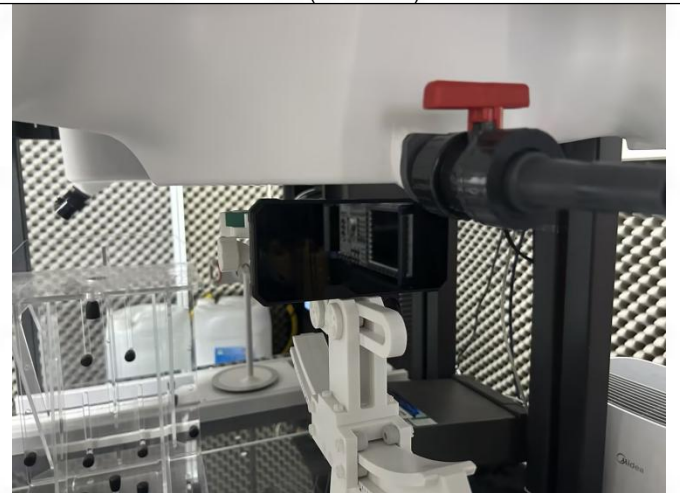
Front (dist. 10mm)



Back (dist. 10mm)



Left (dist. 10mm)



Right (dist. 10mm)



Top (dist. 10mm)



Bottom (dist. 10mm)

ANNEX F EUT External and Internal Photos

Please refer to RF Report.

ANNEX G Calibration Information

Please refer to the document "Calibration.pdf".



BTF Testing Lab (Shenzhen) Co., Ltd.

F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street,
Bao'an District, Shenzhen, China

www.btf-lab.com

--END OF REPORT--