



SAR Test Report

For

Applicant Name: Dongguan Sunhans Technology Company Limited
Address: Room 1103, Building 8, Gemdale Wisdom Park, No. 95 Jiaoping Road, 523722 Tangxia, Dongguan, China
EUT Name: eSIM 4G portable router
Brand Name: eSunFi
Model Number: SHFiEL40
Series Model Number: Refer to section 2

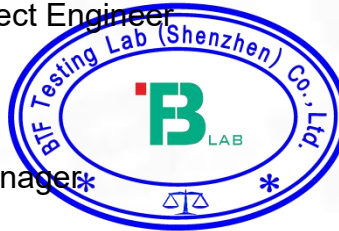
Issued By

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: BTF230719R01001
Test Standards: 47 CFR Part 2.1093 IEEE1528-2013 IEEE C95.1-2019
KDB 447498 D01 KDB 865664 D01 KDB 865664 D02
KDB 941225 D01 KDB 941225 D05 KDB 248227 D01
KDB 941225 D06 KDB 648474 D04 KDB 690783 D01
FCC ID: 2AYN6-SHFiEL40
Test Conclusion: Pass
Test Date: 2023-07-17 to 2023-07-19
Date of Issue: 2023-07-20

Prepared By: 
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Date: 2023-07-20

Approved By: 
Ryan.CJ / EMC Manager
Date: 2023-07-20



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Revision History		
Version	Issue Date	Revisions Content
R_V0	2023-07-20	Original
<i>Note:</i>	<i>Once the revision has been made, then previous versions reports are invalid.</i>	

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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:	Dongguan Sunhans Technology Company Limited
Address:	Room 1103, Building 8, Gemdale Wisdom Park, No. 95 Jiaoping Road, 523722 Tangxia, Dongguan, China

2.2 Manufacturer Information

Company Name:	Dongguan Sunhans Technology Company Limited
Address:	Room 1103, Building 8, Gemdale Wisdom Park, No. 95 Jiaoping Road, 523722 Tangxia, Dongguan, China

2.3 Factory Information

Company Name:	Dongguan Sunhans Technology Company Limited
Address:	Room 1103, Building 8, Gemdale Wisdom Park, No. 95 Jiaoping Road, 523722 Tangxia, Dongguan, China

2.4 General Description of Equipment under Test (EUT)

EUT Name	eSIM 4G portable router
Under Test Model Name	SHFiEL40
Series Model Name	SHFiEL40X, SHFiEL40Pro, SHFiE SIMX, SHFi9X6
Description of Model name differentiation	Only the model name is different, others are the same.
Sample No.	BTF SN230627E008-1/1

2.5 Equipment under Test Ancillary Equipment

Ancillary Equipment 1	Rechargeable Battery	
	Capacity	3060mAh
	Rated Voltage	3.7V

2.6 Technical Information

Network and Wireless connectivity	3G Network WCDMA/HSDPA/HSUPA Band 2/4/5 4G Network FDD LTE Band 2/4/5/12/17/25/26 TDD LTE Band 41 2.4G WIFI 802.11b, 802.11g, 802.11n(HT20/40) 5G WIFI 802.11a, 802.11n(HT20/40), 802.11ac(VHT20/40/80) Bluetooth (EDR+BLE)
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The requirement for the following technical information of the EUT was tested in this report:

Operating Mode	WCDMA, LTE, WLAN, Bluetooth		
Frequency Range	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 4	TX: 1710 ~ 1755 MHz	RX: 2110 ~ 2155 MHz
	LTE Band 5	TX: 824 ~ 849 MHz	RX: 869 ~ 894 MHz
	LTE Band 12	TX: 698 ~ 716 MHz	RX: 728 ~ 746 MHz
	LTE Band 17	TX: 704 ~ 716 MHz	RX: 734 ~ 746 MHz
	LTE Band 25	TX: 1850 ~ 1915MHz	RX: 1930 ~ 1995 MHz
	LTE Band 26	TX: 814 ~ 849 MHz	RX: 859 ~ 894 MHz
	LTE Band 41	2496 ~ 2690 MHz	
	802.11b/g/n(HT20)	2412 ~ 2462 MHz	
	802.11n(HT40)	2422 ~ 2452 MHz	
	802.11a/802.11n(HT20/40)/802.11ac(VHT20/40/80)	5150 ~ 5250 MHz	
Bluetooth	2402 ~ 2480 MHz		
Antenna Type	WWAN: PIFA Antenna WLAN: PIFA Antenna		
Hotspot Function	Support		
Power Reduction	Not Support		
Exposure Category	General Population/Uncontrolled exposure		
EUT Stage	Portable Device		
Product	Type		
	<input type="checkbox"/> Production unit		<input checked="" type="checkbox"/> 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	IEEE1528-2013	Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate in the Human Head from Wireless Communications Devices: Measurement Techniques
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	KDB 447498 D01	General RF Exposure Guidance v06
5	KDB 865664 D01	SAR measurement 100MHz to 6GHz v01r04
6	KDB 865664 D02	RF Exposure Reporting v01r02
7	KDB 941225 D01	3G SAR Procedures v03r01
8	KDB 941225 D05	SAR for LTE Devices v02r05
9	KDB 248227 D01	802.11 Wi-Fi SAR v02r02
10	KDB 941225 D06	Hotspot Mode v02r01
11	KDB 648474 D04	Handset SAR v01r03
12	KDB 690783 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)
Hotspot(Body) 1-g SAR (0 mm Gap)	WCDMA Band II	0.776	PCB	0.785
	WCDMA Band IV	0.592		
	WCDMA Band V	0.392		
	LTE Band 2	0.785		
	LTE Band 4	0.493		
	LTE Band 5	0.170		
	LTE Band 12	0.153		
	LTE Band 17	0.270		
	LTE Band 25	0.792		
	LTE Band 26	0.112		
	LTE Band 41	0.408		
	WLAN 2.4 GHz	0.471	DTS	
WLAN 5.2 GHz	0.410	NII		

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 IEEE 1528-2013.

<Highest Reported Simultaneous SAR>

Exposure Position	Simultaneous Configuration	Highest Reported Simultaneous Transmission SAR (W/kg)	Limit (W/kg)	Verdict
Hotspot(Body) 1-g SAR (0 mm Gap)	LTE Band 25 + 2.4G WIFI	1.236	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	√3	√0.5	√0.5	1.43	1.43	∞
Hemispherical Isotropy	5.9	R	√3	√0.5	√0.5	2.41	2.41	∞
Boundary effect	1.0	R	√3	1	1	0.58	0.58	∞
Linearity	4.7	R	√3	1	1	2.71	2.71	∞
System detection limits	1.0	R	√3	1	1	0.58	0.58	∞
Modulation response	3.0	R	√3	1	1	1.73	1.73	∞
Readout Electronics	0.5	N	1	1	1	0.50	0.50	∞
Response Time	0	R	√3	1	1	0.00	0.00	∞
Integration Time	1.4	R	√3	1	1	0.81	0.81	∞
RF ambient Conditions - Noise	3.0	R	√3	1	1	1.73	1.73	∞
RF ambient Conditions - Reflections	3.0	R	√3	1	1	1.73	1.73	∞
Probe positioner Mechanical Tolerance	1.4	R	√3	1	1	0.81	0.81	∞
Probe positioning with respect to Phantom Shell	1.4	R	√3	1	1	0.81	0.81	∞
Extrapolation, interpolation and integration Algorithms for Max. SAR Evaluation	2.3	R	√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	√3	1	1	2.89	2.89	∞
SAR scaling	2.0	R	√3	1	1	1.15	1.15	∞
Phantom and Tissue Parameters								
Phantom Shell Uncertainty - Shape, Thickness and Permittivity	4	R	√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	√3	0.78	0.71	1.13	1.02	∞
Liquid permittivity - Temperature Uncertainty	2.5	R	√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	√3	1	1	2.02	2.02	∞
Hemispherical Isotropy	5.9	R	√3	0	0	0.00	0.00	∞
Boundary effect	1	R	√3	1	1	0.58	0.58	∞
Linearity	4.7	R	√3	1	1	2.71	2.71	∞
System detection limits	1	R	√3	1	1	0.58	0.58	∞
Modulation response	0	N	√3	0	0	0.00	0.00	∞
Readout Electronics	0.5	N	1	1	1	0.50	0.50	∞
Response Time	0	R	√3	0	0	0.00	0.00	∞
Integration Time	1.4	R	√3	0	0	0.00	0.00	∞
RF ambient Conditions - Noise	3	R	√3	1	1	1.73	1.73	∞
RF ambient Conditions - Reflections	3	R	√3	1	1	1.73	1.73	∞
Probe positioner Mechanical Tolerance	1.4	R	√3	1	1	0.81	0.81	∞
Probe positioning with respect to Phantom Shell	1.4	R	√3	1	1	0.81	0.81	∞
Extrapolation, interpolation and integration Algorithms for Max. SAR Evaluation	2.3	R	√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	√3	1	1	0.29	0.29	∞
Dipole Axis to Liquid Dist.	2.0	R	√3	1	1	1.15	1.15	∞
Phantom and Tissue Parameters								
Phantom Shell Uncertainty - Shape, Thickness and Permittivity	4	R	√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	√3	0.78	0.71	1.13	1.02	∞
Liquid permittivity - Temperature Uncertainty	2.5	R	√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. Measurement System

4.1 Specific Absorption Rate (SAR) Definition

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below:

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

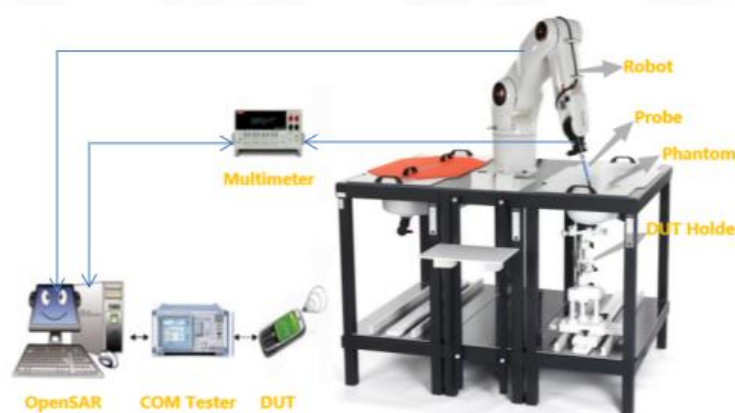
SAR is expressed in units of Watts per kilogram (W/kg) SAR measurement can be related to the electrical field in the tissue by

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

Where: σ is the conductivity of the tissue,
 ρ is the mass density of the tissue and E is the RMS electrical field strength.

4.2 MVG SAR System

4.2.1 SAR system diagram



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.



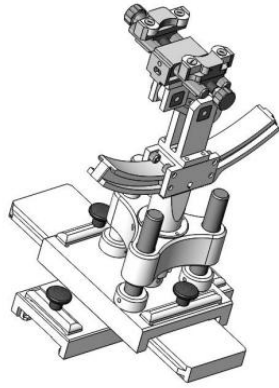
ELLI Phantom

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 200mm
Permittivity	4.4
Loss tangent	0.017

4.2.5 Device Holder



System Material	Permittivity	Loss tangent
Delrin	3.7	0.005

System Material	Permittivity	Loss tangent
PMMA	2.9	0.028

(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°.)

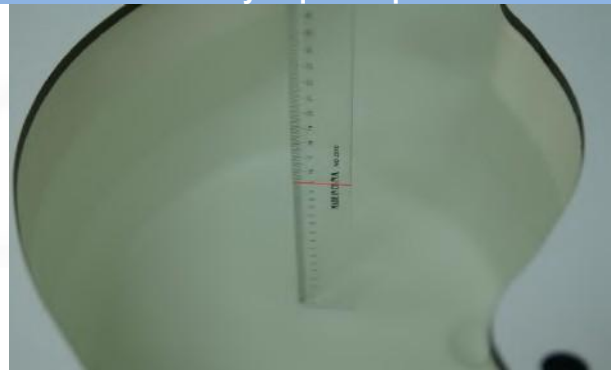
4.2.6 Simulating Liquid

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.

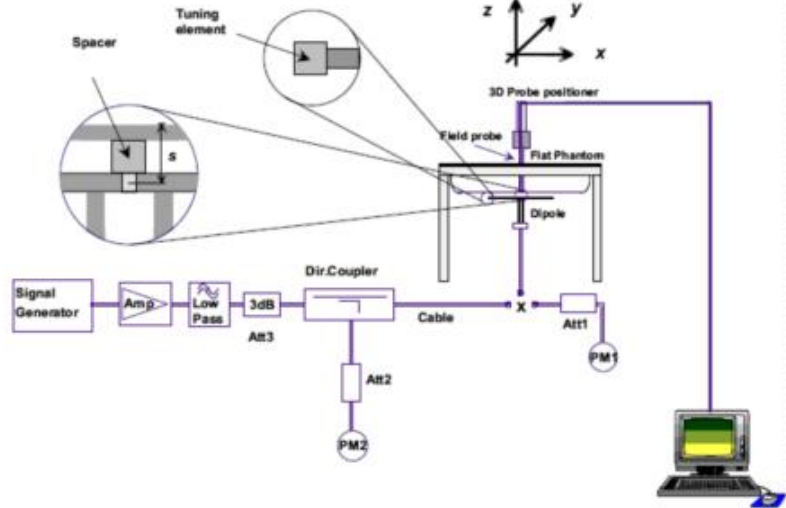
Head (Reference IEEE1528)								
Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity σ (S/m)	Permittivity ϵ
750	41.1	57.0	0.2	1.4	0.2	0	0.89	41.9
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
900	40.3	57.9	0.2	1.4	0.2	0	0.97	41.5
1800, 1900, 2000	55.2	0	0	0.3	0	44.5	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

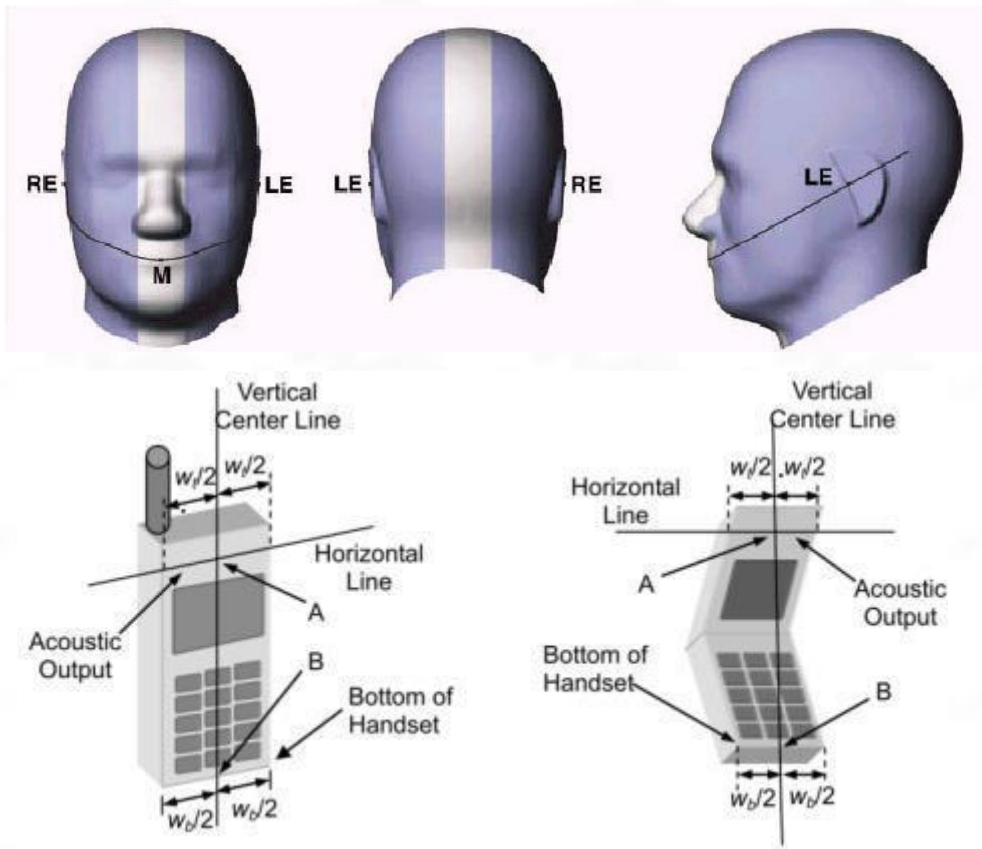
According to KDB 648474 D04 Handset, handsets are tested for SAR compliance in head, body-worn accessory and other use configurations described in the following subsections.

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 IEEE Std 1528-2013 using the SAM phantom illustrated as below.

6.1.1 Two Imaginary Lines on the Handset

- The vertical center line passes through two points on the front side of the handset - the midpoint of the width w_t of the handset at the level of the acoustic output, and the midpoint of the width w_b of the bottom of the handset.
- The horizontal line is perpendicular to the vertical center line and passes through the center of the acoustic output. The horizontal line is also tangential to the face of the handset at point A.
- The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical center line is not necessarily parallel to the front face of the handset, especially for clamshell handsets, handsets with flip covers, and other irregularly shaped handsets.



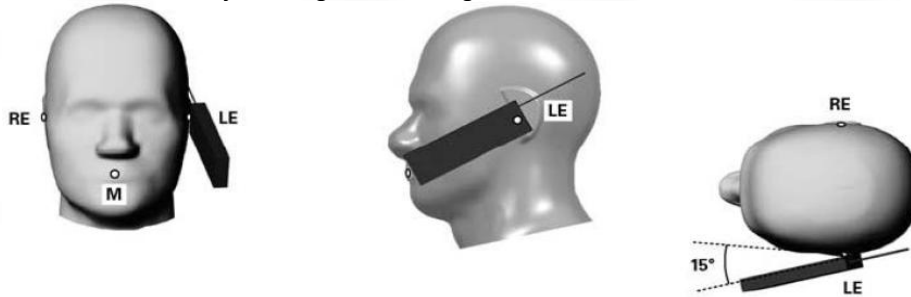
6.1.2 Two Imaginary Lines on the Handset

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



6.1.3 Titled Position

- (a) To position the device in the “cheek” position described above.
- (b) While maintaining the device the reference plane described above and pivoting against the ear, moves it outward away from the mouth by an angle of 15 degrees or until contact with the ear is lost.

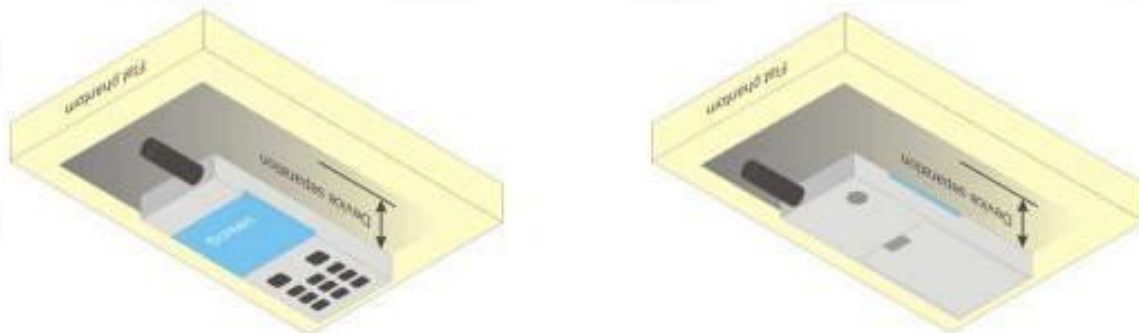


6.2 Body-worn Position Conditions

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.

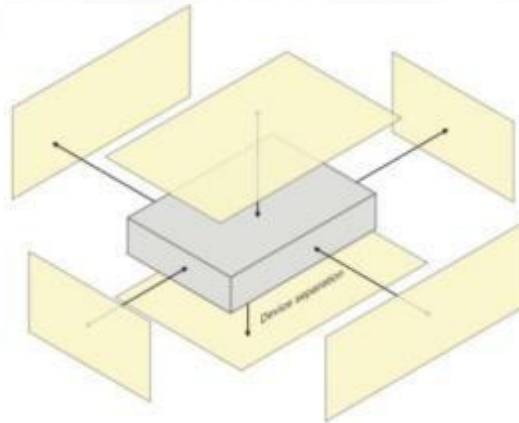
Body-worn accessories that do not contain metallic or conductive components may be tested according to worst-case exposure configurations, typically according to the smallest test separation distance required for the group of body-worn accessories with similar operating and exposure characteristics.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

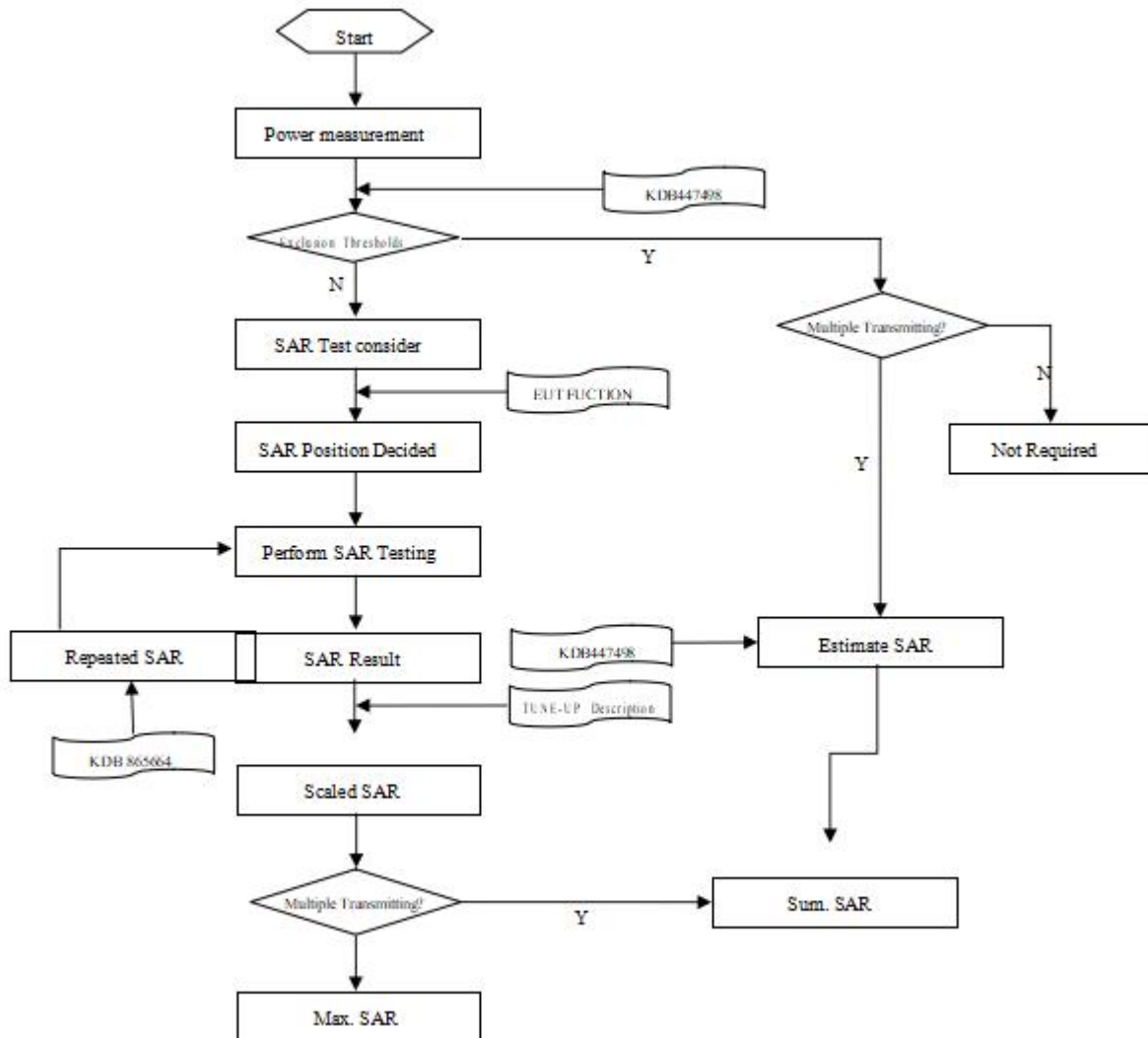
According with FCC KDB 648474 D04, for smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm that provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets that support voice calls next to the ear, unless it is confirmed 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



7.2 SAR Scan General Requirement

Probe boundary effect error compensation is required for measurements with the probe tip closer than half a probe tip diameter to the phantom surface. Both the probe tip diameter and sensor offset distance must satisfy measurement protocols; to ensure probe boundary effect errors are minimized and the higher fields closest to the phantom surface can be correctly measured and extrapolated to the phantom surface for computing 1 g SAR. Tolerances of the post-processing algorithms must be verified by the test laboratory for the scan resolutions used in the SAR measurements, according to the reference distribution functions specified in IEEE Std 1528-2013.

		≤3GHz	>3GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface		5±1 mm	$\frac{1}{2} \delta \cdot \ln(2) \pm 0.5 \text{ mm}$
Maximum probe angle from probe axis to phantom surface normal at the measurement location		30°±1°	20°±1°
Maximum area scan spatial resolution: Δx Area , Δy Area		≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3–4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
		When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	
Maximum zoom scan spatial resolution: Δx Zoom , Δy Zoom		≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3–4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: Δz Zoom (n)	≤ 5 mm	3–4 GHz: ≤ 4 mm
			4–5 GHz: ≤ 3 mm
	graded grid	Δz Zoom (1): between 1st two points closest to phantom surface	5–6 GHz: ≤ 2 mm
			3–4 GHz: ≤ 3 mm 4–5 GHz: ≤ 2.5 mm
Δz Zoom (n>1): between subsequent points		≤ 1.5·Δz Zoom (n-1)	
Minimum zoom scan volume	x, y, z	≥30 mm	3–4 GHz: ≥ 28 mm
			4–5 GHz: ≥ 25 mm
			5–6 GHz: ≥ 22 mm
Note: 1. δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528- 2011 for details. 2. * When zoom scan is required and the reported SAR from the area scan based 1 g SAR estimation procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.			

7.3 Measurement Procedure

The following steps are used for each test position

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

7.4 Area & Zoom Scan Procedure

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

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

8. Conducted RF Output Power

WCDMA

Mode		Maximum Tune-up(dBm)	WCDMA Band II		
			Conducted Power (dBm)		
			CH9262	CH9400	CH9538
RMC 12.2K		22.50	1852.4	1880.0	1907.6
			21.71	21.98	22.05
HSDPA	Subtest-1	20.00	19.52	19.73	19.80
	Subtest-2	20.00	19.48	19.77	19.81
	Subtest-3	20.00	19.47	19.72	19.80
	Subtest-4	20.00	19.50	19.72	19.79
HSUPA	Subtest-1	18.00	17.46	17.50	17.81
	Subtest-2	18.00	17.30	17.50	17.80
	Subtest-3	18.00	17.51	17.22	17.31
	Subtest-4	18.00	17.29	17.70	17.27
Subtest-5	18.00	17.55	17.70	17.80	
Mode		Maximum Tune-up(dBm)	WCDMA Band IV		
			Conducted Power (dBm)		
			CH1312	CH1413	CH1513
RMC 12.2K		22.50	1712.4	1732.6	1752.6
			22.01	22.08	21.74
HSDPA	Subtest-1	20.00	19.86	19.88	19.53
	Subtest-2	20.00	19.91	19.86	19.52
	Subtest-3	20.00	19.90	19.89	19.54
	Subtest-4	20.00	19.87	19.85	19.53
HSUPA	Subtest-1	18.00	17.56	17.66	17.41
	Subtest-2	18.00	17.78	17.38	16.93
	Subtest-3	18.00	17.61	17.32	17.28
	Subtest-4	18.00	17.54	17.86	17.41
Subtest-5	18.00	17.26	17.79	17.42	
Mode		Maximum Tune-up(dBm)	WCDMA Band V		
			Conducted Power (dBm)		
			CH4132	CH4183	CH4233
RMC 12.2K		25.50	826.4	836.6	846.6
			24.99	25.19	25.20
HSDPA	Subtest-1	23.00	22.63	22.85	22.83
	Subtest-2	23.00	22.63	22.89	22.82
	Subtest-3	23.00	22.63	22.86	22.82
	Subtest-4	23.00	22.65	22.83	22.80
HSUPA	Subtest-1	21.00	20.66	20.93	20.96
	Subtest-2	21.00	20.36	20.78	20.74
	Subtest-3	21.00	20.40	20.71	20.97
	Subtest-4	21.00	20.71	20.76	20.48
Subtest-5	21.00	20.87	20.70	20.97	

Per KDB 941225 D01, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤1/2dB 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.

LTE

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	21.00	20.74	20.62	20.91	
			2	21.50	20.84	20.70	21.07	
			5	21.00	20.77	20.61	20.95	
		3	0	21.50	20.83	20.71	21.00	
			2	21.50	20.88	20.74	21.00	
			3	21.50	20.84	20.73	21.02	
		16QAM	6	0	20.00	19.82	19.70	19.97
				0	20.00	19.88	19.62	19.87
				2	20.50	20.01	19.69	20.03
	1		5	20.00	19.85	19.60	19.95	
			0	20.50	19.82	19.88	20.08	
			2	20.50	19.80	19.92	20.10	
	3	3	20.50	19.86	19.89	20.06		
		0	19.00	18.90	18.77	18.98		
		6	19.00	18.90	18.77	18.98		
	Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	18615	18900	19185
						1851.5MHz	1880.0MHz	1908.5MHz
	3MHz	QPSK	1	0	21.50	20.89	20.77	21.03
7				21.50	21.04	20.93	21.19	
14				21.50	20.89	20.79	21.05	
8			0	20.50	19.88	19.78	20.03	
			4	20.50	19.89	19.81	20.11	
			7	20.50	19.84	19.77	20.07	
16QAM			15	0	20.50	19.86	19.77	20.03
				0	21.00	19.90	19.91	20.57
				7	21.00	20.04	20.06	20.75
		1	14	21.00	19.86	19.93	20.60	
			0	19.50	19.01	18.81	19.28	
			4	19.50	19.03	18.86	19.36	
8		7	19.50	18.97	18.81	19.31		
		0	19.50	18.98	18.82	19.20		
		15	19.50	18.98	18.82	19.20		
Bandwidth		Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	18625	18900	19175
						1852.5MHz	1880.0MHz	1907.5MHz
5MHz		QPSK	1	0	21.00	20.75	20.61	20.84
	13			21.50	20.82	20.74	21.02	
	24			21.00	20.68	20.65	20.96	
	12		0	20.00	19.75	19.67	19.91	
			6	20.00	19.76	19.69	19.99	
			13	20.00	19.64	19.63	19.94	
	16QAM		25	0	20.00	19.73	19.66	19.96
				0	20.00	19.79	19.81	19.66
				13	20.00	19.86	19.99	19.85
		1	24	20.00	19.72	19.93	19.78	
			0	19.50	18.86	18.80	19.05	
			6	19.50	18.87	18.86	19.09	
	12	13	19.50	18.78	18.76	19.04		
		0	19.50	18.82	18.74	19.07		
		25	19.50	18.82	18.74	19.07		
	Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	18650	18900	19150
						1855.0MHz	1880.0MHz	1905.0MHz
	10MHz	QPSK	1	0	21.00	20.76	20.61	20.89
25				21.50	20.95	20.90	21.11	
49				21.00	20.70	20.74	20.98	
25			0	20.00	19.88	19.80	19.99	
			13	20.00	19.78	19.78	19.94	
			25	20.00	19.73	19.73	19.97	
16QAM			50	0	20.00	19.86	19.76	19.98
				0	20.50	19.72	19.74	20.19
				25	21.00	19.92	20.04	20.54
		1	49	21.00	19.63	19.88	20.50	
			0	19.50	19.04	18.89	19.08	
			13	19.50	18.94	18.86	19.09	
25		25	19.50	18.91	18.84	19.09		
		0	19.50	18.90	18.84	19.06		
		50	19.50	18.90	18.84	19.06		

LTE-FDD Band 2				Maximum Tune-up(dBm)	Conducted Power(dBm)				
Bandwidth	Modulation	RB allocation	RB offset		18675	18900	19125		
					1857.5MHz	1880.0MHz	1902.5MHz		
15MHz	QPSK	1	0	21.00	20.56	20.46	20.75		
			38	21.00	20.74	20.73	20.92		
			74	21.00	20.48	20.57	20.80		
		36	0	20.00	19.75	19.72	19.96		
			18	20.50	19.73	19.73	20.00		
			39	20.00	19.76	19.68	19.90		
			75	20.00	19.77	19.73	19.93		
			16QAM	1	0	20.50	20.00	19.51	20.00
					38	20.50	20.06	19.85	20.32
	74	20.50			19.65	19.70	20.38		
	36	0		19.00	18.81	18.81	18.95		
		18		19.50	18.80	18.81	19.05		
		39		19.00	18.78	18.80	18.99		
	75	19.00	18.77	18.80	18.93				
	Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	18700	18900	19100	
20MHz	QPSK	1	0	20.50	20.39	20.30	20.44		
			50	21.50	20.82	20.89	21.07		
			99	21.00	20.29	20.47	20.66		
		50	0	20.00	19.77	19.71	19.71		
			25	20.00	19.67	19.68	19.84		
			50	20.00	19.74	19.67	19.81		
			100	20.00	19.76	19.73	19.81		
			16QAM	1	0	20.00	19.94	19.36	19.64
					50	20.50	20.25	20.02	20.16
	99	20.00			19.66	19.60	19.93		
	50	0		19.00	18.86	18.76	18.75		
		25		19.00	18.71	18.75	18.86		
		50		19.00	18.73	18.77	18.87		
	100	19.00	18.80	18.75	18.86				
	Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	1860.0MHz	1880.0MHz	1900.0MHz	

LTE-FDD Band 4				Maximum Tune-up(dBm)	Conducted Power(dBm)			
Bandwidth	Modulation	RB allocation	RB offset		19957	20176	20393	
					1710.7MHz	1732.5MHz	1754.3MHz	
1.4MHz	QPSK	1	0	21.50	21.20	21.05	20.75	
			2	21.50	21.38	21.13	20.87	
			5	21.50	21.19	20.94	20.76	
		3	0	21.50	21.06	21.06	20.58	
			2	21.50	21.03	21.08	20.65	
			3	21.50	21.05	21.04	20.57	
		6	20.50	20.29	20.07	19.95		
		16QAM	1	0	20.50	20.06	20.19	19.57
				2	20.50	20.18	20.30	19.69
	5			20.50	20.11	20.17	19.59	
	3		0	20.50	20.10	20.16	19.73	
			2	20.50	20.10	20.16	19.79	
			3	20.50	20.08	20.15	19.76	
	6	19.50	19.06	19.08	18.72			
	Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	19965	20176	20385
3MHz	QPSK	1	0	21.50	21.31	21.05	21.31	
			7	21.50	21.38	21.20	21.44	
			14	21.50	21.26	21.04	21.39	
		8	0	20.50	20.28	20.16	20.37	
			4	20.50	20.32	20.17	20.44	
			7	20.50	20.30	20.10	20.42	
		15	20.50	20.19	20.17	20.29		
		16QAM	1	0	21.00	20.18	20.34	20.65
				7	21.00	20.28	20.43	20.73
	14			21.00	20.11	20.29	20.61	
	8		0	19.50	19.19	19.14	19.35	
			4	19.50	19.21	19.13	19.39	
			7	19.50	19.18	19.07	19.37	
	15	19.50	19.11	19.10	19.24			
	Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	1711.5MHz	1732.5MHz	1753.5MHz

LTE-FDD Band 4				Maximum Tune-up(dBm)	19976	20176	20375	
Bandwidth	Modulation	RB allocation	RB offset		1712.5MHz	1732.5MHz	1752.5MHz	
5MHz	QPSK	1	0	22.00	21.51	21.41	21.06	
			13	22.00	21.63	21.45	21.24	
			24	21.50	21.49	21.34	21.18	
		12	0	21.00	20.47	20.51	20.12	
			6	21.00	20.60	20.57	20.21	
			13	21.00	20.56	20.45	20.18	
	25	0	21.00	20.50	20.54	20.13		
		16QAM	1	0	21.00	20.52	20.76	19.90
				13	21.00	20.63	20.84	20.01
	24			21.00	20.52	20.70	19.92	
	12		0	20.00	19.37	19.58	19.06	
			6	20.00	19.50	19.64	19.14	
			13	20.00	19.46	19.51	19.09	
	25	0	20.00	19.43	19.54	19.09		
	Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	20000	20176	20350
10MHz	QPSK	1	0	22.00	21.63	21.46	21.11	
			25	22.00	21.86	21.63	21.40	
			49	22.00	21.55	21.30	21.26	
		25	0	21.00	20.55	20.72	20.24	
			13	21.00	20.64	20.63	20.25	
			25	21.00	20.61	20.56	20.26	
	50	0	21.00	20.55	20.65	20.25		
		16QAM	1	0	21.00	20.51	20.69	20.69
				25	21.00	20.74	20.89	20.77
	49			21.00	20.50	20.55	20.49	
	25		0	20.00	19.48	19.73	19.29	
			13	20.00	19.61	19.66	19.22	
			25	20.00	19.61	19.57	19.23	
	50	0	20.00	19.49	19.62	19.21		
	Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	20025	20176	20325
15MHz	QPSK	1	0	21.50	21.47	21.34	21.01	
			38	22.00	21.61	21.47	21.20	
			74	21.50	21.30	21.09	21.08	
		36	0	21.00	20.67	20.64	20.26	
			18	21.00	20.74	20.55	20.29	
			39	21.00	20.58	20.41	20.31	
	75	0	21.00	20.62	20.56	20.31		
		16QAM	1	0	21.00	20.62	20.56	20.74
				38	21.00	20.80	20.71	20.69
	74			21.00	20.76	20.36	20.35	
	36		0	20.00	19.51	19.63	19.32	
			18	20.00	19.58	19.57	19.31	
			39	19.50	19.48	19.43	19.24	
	75	0	20.00	19.47	19.52	19.26		
	Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	20050	20176	20300
20MHz	QPSK	1	0	21.50	21.24	21.17	21.02	
			50	22.00	21.67	21.61	21.32	
			99	21.50	21.14	20.96	20.91	
		50	0	21.00	20.50	20.75	20.35	
			25	21.00	20.57	20.55	20.22	
			50	20.50	20.39	20.42	20.23	
	100	0	21.00	20.49	20.58	20.29		
		16QAM	1	0	21.00	20.64	20.43	20.46
				50	21.50	21.16	20.90	20.72
	99			21.00	20.79	20.25	20.01	
	50		0	20.00	19.41	19.74	19.36	
			25	20.00	19.50	19.54	19.31	
			50	19.50	19.38	19.38	19.21	
	100	0	20.00	19.42	19.58	19.27		

LTE-FDD Band 5				Maximum Tune-up(dBm)	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		20407	20252	20643
					824.7MHz	836.5MHz	848.3MHz
1.4MHz	QPSK	1	0	24.00	23.85	23.69	23.62
			2	24.00	23.99	23.73	23.81
			5	24.00	23.88	23.66	23.79
		3	0	24.00	23.71	23.73	23.63
			2	24.00	23.74	23.75	23.62
			3	24.00	23.71	23.66	23.54
	16QAM	6	0	23.00	22.88	22.72	22.74
			0	23.00	22.63	22.76	22.49
			2	23.00	22.74	22.87	22.56
		1	5	23.00	22.69	22.75	22.44
			0	23.00	22.65	22.68	22.74
			2	23.00	22.66	22.70	22.71
3	3	23.00	22.60	22.69	22.63		
	0	22.00	21.73	21.79	21.68		
	0	22.00	21.73	21.79	21.68		
Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	20415	20252	20635
					825.5MHz	836.5MHz	847.5MHz
3MHz	QPSK	1	0	24.50	24.01	23.75	23.77
			7	24.50	24.09	23.90	23.88
			14	24.50	24.04	23.76	23.95
		8	0	23.00	22.87	22.77	22.72
			4	23.00	22.94	22.79	22.79
			7	23.00	22.89	22.74	22.76
		15	0	23.00	22.75	22.75	22.72
			0	23.50	22.78	22.91	23.19
			7	23.50	22.85	23.05	23.27
	16QAM	1	14	23.00	22.73	22.85	22.97
			0	22.00	21.87	21.81	21.94
			4	22.50	21.92	21.85	22.01
		8	7	22.00	21.86	21.77	21.91
			0	22.00	21.79	21.78	21.84
			0	22.00	21.79	21.78	21.84
Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	20425	20252	20625
					826.5MHz	836.5MHz	846.5MHz
5MHz	QPSK	1	0	24.00	23.70	23.58	23.60
			13	24.00	23.87	23.66	23.64
			24	24.00	23.74	23.58	23.66
		12	0	23.00	22.64	22.66	22.55
			6	23.00	22.69	22.68	22.63
			13	23.00	22.61	22.56	22.51
		25	0	23.00	22.64	22.60	22.56
			0	23.00	22.59	22.80	22.25
			13	23.00	22.71	22.87	22.44
	16QAM	1	24	23.00	22.61	22.69	22.27
			0	22.00	21.64	21.77	21.60
			6	22.00	21.70	21.81	21.70
		12	13	22.00	21.60	21.69	21.62
			0	22.00	21.64	21.67	21.65
			0	22.00	21.64	21.67	21.65
Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	20450	20252	20600
					829.0MHz	836.5MHz	844.0MHz
10MHz	QPSK	1	0	24.00	23.83	23.64	23.68
			25	24.50	23.99	23.83	24.08
			49	24.00	23.68	23.74	23.71
		25	0	23.00	22.73	22.72	22.70
			13	23.00	22.70	22.74	22.65
			25	23.00	22.67	22.60	22.58
		50	0	23.00	22.66	22.66	22.66
			0	23.00	22.59	22.73	22.93
			25	23.50	22.78	22.95	23.08
	16QAM	1	49	23.00	22.64	22.65	22.89
			0	22.00	21.78	21.79	21.71
			13	22.00	21.75	21.81	21.67
		25	25	22.00	21.80	21.66	21.71
			0	22.00	21.72	21.71	21.72
			0	22.00	21.72	21.71	21.72

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	24.00	23.77	23.85	23.99
			2	24.50	23.88	23.97	24.16
			5	24.50	23.80	23.87	24.06
		3	0	24.00	23.71	23.87	23.92
			2	24.00	23.75	23.91	23.93
			3	24.00	23.69	23.86	23.86
	16QAM	6	0	23.50	22.74	22.95	23.09
			0	23.00	22.61	22.90	22.78
			2	23.50	22.75	23.02	22.87
		1	5	23.00	22.72	22.90	22.76
			0	23.00	22.71	22.77	22.97
			2	23.00	22.74	22.79	22.99
3	3	23.00	22.75	22.77	22.95		
	0	22.00	21.61	21.84	21.90		
	0	22.00	21.61	21.84	21.90		
Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	23025	23095	23165
					700.5MHz	707.5MHz	714.5MHz
3MHz	QPSK	1	0	24.50	23.90	23.97	24.04
			7	24.50	24.05	24.09	24.26
			14	24.50	23.94	24.00	24.21
		8	0	23.50	22.85	22.94	23.06
			4	23.50	22.88	23.02	23.13
			7	23.50	22.82	23.01	23.11
	16QAM	15	0	23.50	22.82	22.91	23.01
			0	23.50	22.77	23.01	23.43
			7	24.00	22.96	23.16	23.54
		1	14	23.50	22.87	23.04	23.33
			0	22.50	21.82	21.81	22.14
			4	22.50	21.88	21.90	22.16
		8	7	22.50	21.84	21.87	22.11
			0	22.00	21.80	21.84	21.99
			0	22.00	21.80	21.84	21.99
Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	23035	23095	23155
					701.5MHz	707.5MHz	713.5MHz
5MHz	QPSK	1	0	24.00	23.65	23.74	23.80
			13	24.50	23.85	23.93	24.02
			24	24.00	23.79	23.83	23.98
		12	0	23.50	22.79	22.70	23.06
			6	23.00	22.78	22.84	22.97
			13	23.00	22.61	22.92	22.84
	16QAM	25	0	23.00	22.71	22.85	22.98
			0	23.00	22.62	22.92	22.56
			13	23.50	22.87	23.01	22.78
		1	24	23.00	22.82	22.93	22.64
			0	22.50	21.76	21.75	22.02
			6	22.00	21.79	21.83	21.93
		12	13	22.00	21.62	21.92	21.74
			0	22.00	21.69	21.78	21.95
			0	22.00	21.69	21.78	21.95
Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	23060	23095	23130
					704.0MHz	707.5MHz	711.0MHz
10MHz	QPSK	1	0	24.00	23.72	23.71	23.82
			25	24.50	23.96	24.17	24.10
			49	24.50	23.95	23.91	24.07
		25	0	23.50	23.06	22.78	22.66
			13	23.00	22.88	22.89	22.88
			25	23.50	23.09	22.94	22.68
	16QAM	50	0	23.50	23.07	22.90	22.72
			0	23.50	22.59	22.81	23.19
			25	23.50	22.97	23.12	23.48
		1	49	23.50	22.79	23.00	23.28
			0	22.50	22.05	21.74	21.63
			13	22.00	21.91	21.87	21.87
		25	25	22.50	22.12	21.92	21.68
			0	22.50	22.04	21.85	21.65
			0	22.50	22.04	21.85	21.65

LTE-FDD Band 17				Maximum Tune-up(dBm)	Conducted Power(dBm)			
Bandwidth	Modulation	RB allocation	RB offset		23755	23790	23825	
					706.5MHz	710.0MHz	713.5MHz	
5MHz	QPSK	1	0	23.50	23.14	23.21	23.20	
			13	23.50	23.41	23.36	23.35	
			24	23.50	23.29	23.20	23.28	
		12	0	22.50	22.19	22.09	22.32	
			6	22.50	22.21	22.28	22.31	
			13	22.50	22.41	22.29	22.31	
	25	0	22.50	22.30	22.26	22.34		
	16QAM	1	0	22.50	22.26	22.29	22.39	
			13	23.00	22.45	22.40	22.59	
			24	23.00	22.43	22.34	22.50	
		12	0	21.50	21.23	21.10	21.41	
			6	21.50	21.27	21.28	21.34	
13			21.50	21.38	21.33	21.35		
25	0	21.50	21.36	21.30	21.34			
Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	23780	23790	23800	
					709.0MHz	710.0MHz	711.0MHz	
10MHz	QPSK	1	0	23.50	23.11	23.20	23.20	
			25	23.50	23.29	23.31	23.28	
			49	23.50	23.26	23.36	23.31	
		25	0	22.50	22.04	21.93	22.00	
			13	22.50	22.34	22.29	22.35	
			25	22.50	22.33	22.18	22.17	
		50	0	22.50	22.20	22.12	22.09	
		16QAM	1	0	22.50	22.36	22.13	22.48
				25	23.00	22.53	22.24	22.50
	49			23.00	22.48	22.27	22.59	
	25		0	21.50	21.09	21.03	21.04	
			13	21.50	21.37	21.35	21.35	
			25	21.50	21.37	21.21	21.15	
	50		0	21.50	21.23	21.11	21.09	

LTE-FDD Band 25				Maximum Tune-up(dBm)	Conducted Power(dBm)			
Bandwidth	Modulation	RB allocation	RB offset		26047	26365	26683	
					1850.7MHz	1882.5MHz	1914.3MHz	
1.4MHz	QPSK	1	0	21.50	20.91	20.85	21.34	
			2	22.00	21.04	20.96	21.51	
			5	21.50	20.93	20.89	21.39	
		3	0	21.50	21.03	20.97	21.25	
			2	21.50	21.06	21.01	21.28	
			3	21.50	21.04	20.98	21.25	
	6	0	20.50	19.99	19.94	20.39		
	16QAM	1	0	20.50	20.07	19.84	20.16	
			2	20.50	20.18	19.96	20.29	
			5	20.50	20.07	19.86	20.21	
		3	0	20.50	20.02	20.14	20.21	
			2	20.50	20.04	20.19	20.23	
3			20.50	20.04	20.18	20.17		
6	0	19.50	19.08	19.04	19.26			
Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	26055	26365	26675	
					1851.5MHz	1882.5MHz	1913.5MHz	
3MHz	QPSK	1	0	21.50	21.16	21.06	21.44	
			7	22.00	21.21	21.21	21.52	
			14	22.00	21.13	21.09	21.55	
		8	0	20.50	20.08	20.06	20.40	
			4	21.00	20.09	20.08	20.51	
			7	20.50	20.04	20.05	20.48	
		15	0	20.50	20.05	20.05	20.40	
		16QAM	1	0	21.00	20.11	20.19	20.83
				7	21.00	20.15	20.35	20.88
	14			21.00	20.08	20.24	20.75	
	8		0	20.00	19.22	19.12	19.55	
			4	20.00	19.19	19.13	19.62	
			7	20.00	19.17	19.10	19.59	
	15	0	19.50	19.17	19.08	19.47		

LTE-FDD Band 25				Maximum Tune-up(dBm)	Conducted Power(dBm)			
Bandwidth	Modulation	RB allocation	RB offset		26065	26365	26665	
					1852.5MHz	1882.5MHz	1912.5MHz	
5MHz	QPSK	1	0	21.50	20.96	20.87	21.21	
			13	21.50	21.07	21.02	21.35	
			24	21.50	20.92	20.93	21.33	
		12	0	20.50	19.99	19.96	20.24	
			6	20.50	20.00	19.99	20.30	
			13	20.50	19.93	19.95	20.29	
	25	0	20.50	19.93	19.93	20.26		
		0	20.50	19.99	20.13	20.01		
		0	20.50	20.09	20.29	20.09		
	16QAM	1	13	24	20.50	19.97	20.16	20.02
				0	19.50	19.07	19.13	19.36
				6	19.50	19.09	19.14	19.37
		12	13	13	19.50	19.00	19.06	19.33
				0	19.50	19.06	19.05	19.32
				0	19.50	19.06	19.05	19.32
25		0	0	19.50	19.06	19.05	19.32	
			0	19.50	19.06	19.05	19.32	
			0	19.50	19.06	19.05	19.32	
10MHz	QPSK	1	0	21.50	20.97	20.89	21.16	
			25	21.50	21.22	21.18	21.45	
			49	21.50	20.98	20.96	21.41	
		25	0	20.50	20.08	20.08	20.42	
			13	20.50	20.02	20.05	20.33	
			25	20.50	19.99	20.03	20.36	
	50	0	20.50	20.06	20.04	20.38		
		0	21.00	19.94	20.04	20.68		
		0	21.00	20.17	20.33	20.99		
	16QAM	1	25	49	21.00	19.88	20.12	20.63
				0	20.00	19.25	19.17	19.52
				13	19.50	19.22	19.14	19.43
		25	25	25	19.50	19.16	19.14	19.45
				0	19.50	19.20	19.18	19.49
				0	19.50	19.20	19.18	19.49
50		0	0	19.50	19.20	19.18	19.49	
			0	19.50	19.20	19.18	19.49	
			0	19.50	19.20	19.18	19.49	
15MHz	QPSK	1	0	21.50	20.80	20.77	21.05	
			38	21.50	21.04	21.01	21.25	
			74	21.50	20.77	20.87	21.21	
		36	0	20.50	19.98	20.04	20.31	
			18	20.50	20.03	20.03	20.28	
			39	20.50	20.03	19.99	20.32	
	75	0	20.50	20.05	20.06	20.37		
		0	20.50	20.21	19.88	20.34		
		0	20.50	20.32	20.17	20.80		
	16QAM	1	38	74	21.00	19.94	20.01	20.50
				0	19.50	19.04	19.09	19.36
				18	19.50	19.05	19.10	19.39
		36	39	39	19.50	19.03	19.09	19.40
				0	19.50	19.04	19.11	19.38
				0	19.50	19.04	19.11	19.38
75		0	0	19.50	19.04	19.11	19.38	
			0	19.50	19.04	19.11	19.38	
			0	19.50	19.04	19.11	19.38	
20MHz	QPSK	1	0	21.00	20.64	20.60	20.78	
			50	21.50	21.10	21.17	21.35	
			99	21.50	20.54	20.76	21.04	
		50	0	20.50	20.03	20.09	20.13	
			25	20.50	19.94	19.98	20.21	
			50	20.50	20.01	19.99	20.17	
	100	0	20.50	20.02	20.04	20.22		
		0	20.50	20.15	19.67	19.85		
		0	20.50	20.52	20.32	20.61		
	16QAM	1	99	99	20.50	19.92	19.88	20.15
				0	19.50	19.14	19.13	19.16
				25	19.50	18.99	19.06	19.25
		50	50	50	19.50	19.04	19.05	19.25
				0	19.50	19.04	19.05	19.25
				0	19.50	19.07	19.12	19.25
100		0	0	19.50	19.07	19.12	19.25	
			0	19.50	19.07	19.12	19.25	
			0	19.50	19.07	19.12	19.25	

LTE-FDD Band 26a				Maximum Tune-up(dBm)	Conducted Power(dBm)			
Bandwidth	Modulation	RB allocation	RB offset		26697	26740	26783	
					814.7MHz	819.0MHz	823.3MHz	
1.4MHz	QPSK	1	0	24.00	23.92	23.80	23.93	
			2	24.00	23.95	23.89	23.98	
			5	24.00	23.85	23.89	23.91	
		3	0	24.00	23.80	23.85	23.82	
			2	24.00	23.84	23.91	23.87	
			3	24.00	23.88	23.87	23.83	
	6	0	23.00	22.88	22.87	22.95		
		16QAM	1	0	23.00	22.65	22.92	22.69
				2	23.00	22.78	22.85	22.87
	5			23.00	22.78	22.70	22.91	
	3		0	23.00	22.92	22.78	22.83	
			2	23.00	22.76	22.89	22.97	
			3	23.50	22.81	23.02	22.84	
	6	0	22.00	21.84	21.92	21.93		

LTE-FDD Band 26b				Maximum Tune-up(dBm)	Conducted Power(dBm)			
Bandwidth	Modulation	RB allocation	RB offset		26797	26915	27033	
					824.7MHz	836.5MHz	848.3MHz	
1.4MHz	QPSK	1	0	24.00	23.90	23.79	23.82	
			2	24.50	24.10	23.81	24.07	
			5	24.00	23.92	23.77	23.97	
		3	0	24.00	23.83	23.83	23.86	
			2	24.00	23.84	23.85	23.84	
			3	24.00	23.79	23.85	23.77	
	6	0	23.50	23.00	22.80	22.96		
		16QAM	1	0	23.00	22.91	22.73	22.73
				2	23.00	22.84	22.99	22.89
	5			23.00	22.88	22.79	22.67	
	3		0	23.50	22.79	23.00	22.77	
			2	23.50	22.93	22.83	23.05	
			3	23.00	22.77	22.87	22.79	
	6	0	22.00	21.96	21.86	21.88		

LTE-FDD Band 26a				Maximum Tune-up(dBm)	Conducted Power(dBm)			
Bandwidth	Modulation	RB allocation	RB offset		26705	26740	26775	
					815.5MHz	819.0MHz	822.5MHz	
3MHz	QPSK	1	0	24.50	24.11	23.98	24.01	
			7	24.50	24.11	24.11	24.12	
			14	24.50	23.97	23.97	24.11	
		8	0	23.00	22.97	22.94	22.95	
			4	23.50	23.01	22.98	23.00	
			7	23.00	22.99	22.92	22.97	
	15	0	23.00	22.90	22.89	22.92		
		16QAM	1	0	23.50	23.31	22.93	23.07
				7	24.00	23.14	23.51	23.02
	14			23.50	22.91	23.08	23.27	
	8		0	22.50	22.09	22.04	21.95	
			4	22.50	21.98	22.19	22.07	
			7	22.50	22.02	21.96	22.10	
	15	0	22.50	22.01	22.03	21.91		

LTE-FDD Band 26b				Maximum Tune-up(dBm)	Conducted Power(dBm)			
Bandwidth	Modulation	RB allocation	RB offset		26805	26915	27025	
					825.5MHz	836.5MHz	847.5MHz	
3MHz	QPSK	1	0	24.50	24.06	23.88	23.97	
			7	24.50	24.24	24.04	24.08	
			14	24.50	24.11	23.94	24.12	
		8	0	23.00	22.99	22.87	22.95	
			4	23.50	23.04	22.91	22.97	
			7	23.50	23.02	22.90	22.96	
	15	0	23.00	22.89	22.91	22.88		
		16QAM	1	0	23.50	22.93	23.03	23.39
				7	23.50	23.38	23.05	23.21
	14			23.50	23.01	23.37	22.87	
	8		0	22.50	22.01	21.95	22.16	
			4	22.50	22.11	22.06	22.01	
			7	22.50	21.93	22.13	22.03	
	15	0	22.50	21.94	21.95	22.03		

LTE-FDD Band 26a				Maximum Tune-up(dBm)	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		26715	26740	26765
					816.5MHz	819.0MHz	821.5MHz
5MHz	QPSK	1	0	24.00	23.78	23.73	23.75
			13	24.00	23.85	23.87	23.91
			24	24.00	23.75	23.77	23.82
		12	0	23.00	22.71	22.66	22.78
			6	23.00	22.78	22.83	22.82
			13	23.00	22.74	22.77	22.75
	25	0	23.00	22.75	22.75	22.79	
	16QAM	1	0	23.00	22.47	22.72	22.92
			13	23.00	22.99	22.64	22.88
			24	23.00	22.79	22.92	22.52
		12	0	22.00	21.77	21.81	21.93
			6	22.00	21.91	21.90	21.90
			13	22.00	21.84	21.86	21.82
		25	0	22.00	21.83	21.85	21.82

LTE-FDD Band 26b				Maximum Tune-up(dBm)	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		26815	26915	27015
					826.5MHz	836.5MHz	846.5MHz
5MHz	QPSK	1	0	24.00	23.83	23.69	23.75
			13	24.00	23.99	23.82	23.82
			24	24.00	23.84	23.75	23.90
		12	0	23.00	22.73	22.73	22.70
			6	23.00	22.83	22.82	22.79
			13	23.00	22.72	22.73	22.68
	25	0	23.00	22.71	22.77	22.72	
	16QAM	1	0	23.00	22.72	22.92	22.38
			13	23.50	22.59	22.87	23.04
			24	23.00	22.86	22.50	22.72
		12	0	22.00	21.76	21.89	21.77
			6	22.00	21.84	21.93	21.94
			13	22.00	21.80	21.82	21.84
		25	0	22.00	21.75	21.82	21.81

LTE-FDD Band 26a				Maximum Tune-up(dBm)	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		26740		
					819.0MHz		
10MHz	QPSK	1	0	24.00	23.88		
			25	24.50	24.04		
			49	24.00	23.87		
		25	0	23.00	22.78		
			13	23.00	22.88		
			25	23.00	22.81		
	50	0	23.00	22.84			
	16QAM	1	0	23.50	23.15		
			25	23.50	23.14		
			49	23.00	22.75		
		25	0	22.00	21.90		
			13	22.00	21.97		
			25	22.00	21.99		
		50	0	22.00	21.92		

LTE-FDD Band 26b				Maximum Tune-up(dBm)	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		26840	26915	26990
					829.0MHz	836.5MHz	844.0MHz
10MHz	QPSK	1	0	24.00	23.92	23.75	23.78
			25	24.50	24.20	24.01	24.09
			49	24.00	23.81	23.92	23.91
		25	0	23.00	22.86	22.85	22.85
			13	23.00	22.85	22.89	22.81
			25	23.00	22.87	22.78	22.81
	50	0	23.00	22.83	22.85	22.81	
	16QAM	1	0	23.50	23.15	22.73	22.79
			25	23.50	23.33	23.49	22.99
			49	23.50	23.28	22.80	22.87
		25	0	22.50	21.89	22.03	21.82
			13	22.50	21.90	22.00	21.83
			25	22.00	21.99	21.84	21.89
		50	0	22.00	21.87	21.96	21.87

LTE-FDD Band 26c				Maximum Tune-up(dBm)	Conducted Power(dBm)			
Bandwidth	Modulation	RB allocation	RB offset		26765	26865	26965	
					821.5MHz	831.5MHz	841.5MHz	
15MHz	QPSK	1	0	24.00	23.70	23.78	23.60	
			38	24.00	23.91	23.86	23.94	
			74	24.00	23.79	23.62	23.71	
		36	0	23.00	22.83	22.94	22.84	
			18	23.00	22.94	22.91	22.93	
			39	23.00	22.94	22.80	22.92	
	75	0	23.00	22.95	22.88	22.88		
		16QAM	1	0	23.50	23.03	22.79	22.74
				38	23.50	23.26	23.04	22.83
	74			23.00	22.95	22.87	22.75	
	36		0	22.00	21.89	21.86	21.87	
			18	22.50	22.00	21.90	21.87	
			39	22.00	21.92	21.85	21.87	
	75	0	22.00	21.93	21.87	21.87		

LTE-TDD Band 41				Maximum Tune-up(dBm)	Conducted Power(dBm)			
Bandwidth	Modulation	RB allocation	RB offset		39675	40620	41565	
					2498.5MHz	2593.0MHz	2687.5MHz	
5MHz	QPSK	1	0	24.50	22.29	23.44	24.24	
			13	24.50	22.35	23.59	24.48	
			24	24.50	22.25	23.57	24.26	
		12	0	23.50	21.39	22.43	23.34	
			6	23.50	21.37	22.47	23.34	
			13	23.50	21.28	22.48	23.21	
	25	0	23.50	21.34	22.48	23.35		
		16QAM	1	0	23.50	21.23	22.34	23.47
				13	23.50	21.42	22.51	23.07
	24			23.50	21.53	22.44	23.26	
	12		0	22.50	20.26	21.36	22.34	
			6	22.50	20.32	21.41	22.23	
			13	22.50	20.21	21.41	22.25	
	25	0	22.50	20.28	21.40	22.31		
	10MHz	QPSK	1	0	24.50	22.35	23.45	24.38
25				25.00	22.67	23.85	24.62	
49				24.50	22.43	23.62	24.36	
25			0	24.00	21.46	22.58	23.55	
			13	24.00	21.44	22.59	23.50	
			25	23.50	21.38	22.53	23.33	
50		0	23.50	21.42	22.46	23.46		
		16QAM	1	0	23.50	21.47	22.13	23.41
				25	24.00	21.29	22.54	23.66
49				23.50	21.50	22.45	23.37	
25			0	22.50	20.37	21.50	22.45	
			13	22.50	20.29	21.54	22.40	
			25	22.50	20.31	21.48	22.31	
50		0	22.50	20.37	21.48	22.40		
15MHz		QPSK	1	0	24.50	22.28	23.27	24.31
	38			24.50	22.34	23.61	24.48	
	74			24.50	22.34	23.48	24.17	
	36		0	23.50	21.35	22.54	23.45	
			18	23.50	21.44	22.58	23.44	
			39	23.50	21.39	22.54	23.38	
	75	0	23.50	21.39	22.63	23.45		
		16QAM	1	0	23.50	21.11	22.10	23.06
				38	23.50	21.32	22.46	23.49
	74			23.50	21.22	22.16	23.09	
	36		0	22.50	20.30	21.43	22.47	
			18	22.50	20.28	21.48	22.38	
			39	22.50	20.33	21.50	22.25	
	75	0	22.50	20.37	21.44	22.40		

Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	39750	40620	41490
					2506.0MHz	2593.0MHz	2680.0MHz
20MHz	QPSK	1	0	24.50	21.99	23.02	24.17
			50	25.00	22.55	23.72	24.64
			99	24.50	22.17	23.37	24.03
		50	0	24.00	21.36	22.50	23.55
			25	23.50	21.34	22.55	23.38
			50	23.50	21.30	22.51	23.25
	100	0	23.50	21.40	22.49	23.39	
	16QAM	1	0	23.50	20.61	21.81	23.32
			50	24.00	21.41	22.42	23.54
			99	23.00	21.24	22.39	22.88
		50	0	23.00	20.41	21.36	22.52
			25	22.50	20.32	21.50	22.35
			50	22.50	20.31	21.41	22.17
		100	0	22.50	20.34	21.43	22.34

Wi-Fi

Band (GHz)	Mode	Channel	Freq. (MHz)	Average Power (dBm)	Maximum Tune-up(dBm)	SAR Test Require.
2.4 (2.4~2.4835)	802.11b	1	2412	18.52	19.00	No
		6	2437	18.55	19.00	Yes
		11	2462	18.44	18.50	No
	802.11g	1	2412	18.61	19.00	No
		6	2437	18.50	19.00	No
		11	2462	18.51	19.00	No
	802.11n(HT20)	1	2412	18.34	18.50	No
		6	2437	18.25	18.50	No
		11	2462	18.22	18.50	No
	802.11n(HT40)	3	2422	19.39	19.50	No
		6	2437	18.90	19.00	No
		9	2452	18.84	19.00	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 ≤ 1.2W/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	14.00	14.00	No
		40	5200	14.66	15.00	No
		48	5240	14.70	15.00	No
	802.11n(HT20)	36	5180	14.48	14.50	No
		40	5200	14.51	15.00	No
		48	5240	14.58	15.00	No
	802.11ac(VHT20)	36	5180	14.50	15.00	No
		40	5200	14.48	14.50	No
		48	5240	14.61	15.00	No
	802.11n(HT40)	38	5190	14.68	15.00	No
		46	5230	14.76	15.00	No
	802.11ac(VHT40)	38	5190	14.70	15.00	No
		46	5230	14.73	15.00	No
	802.11ac(VHT80)	42	5210	14.77	15.00	Yes

Bluetooth

EDR	Mode	Maximum Tune-up(dBm)	Average Conducted Output Power (dBm)		
			0	39	78
			2402MHz	2441MHz	2480MHz
GFSK	8.00	6.47	7.06	7.85	
π/4QPSK	7.50	6.71	6.96	7.12	
8DPSK	7.00	6.68	6.88	7.00	

BLE	Mode	Maximum Tune-up(dBm)	Average Conducted Output Power (dBm)		
			0	20	39
			2402MHz	2440MHz	2480MHz
1Mbps	-1.00	-1.52	-1.36	-1.43	
2Mbps	-1.00	-1.46	-1.29	-1.36	

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
78	2.480	8.00	6.31	0	10	No

Note

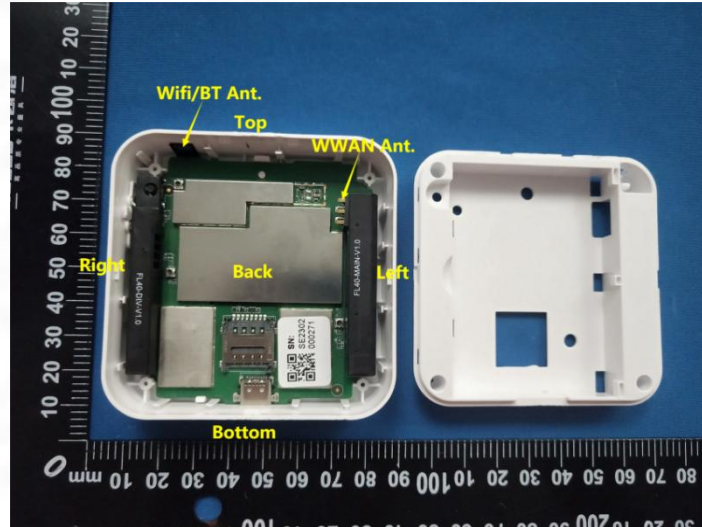
- Per KDB 447498 D01 General RF Exposure Guidance v06, the 1-g SAR test exclusion thresholds for 300 MHz to 6 GHz at *test separation distances* ≤ 40 cm are determined by:

MHz	5	10	15	20	25	mm
150	39	77	116	155	194	SAR Test Exclusion Threshold (mW)
300	27	55	82	110	137	
450	22	45	67	89	112	
835	16	33	49	66	82	
900	16	32	47	63	79	
1500	12	24	37	49	61	
1900	11	22	33	44	54	
2450	10	19	29	38	48	
3600	8	16	24	32	40	
5200	7	13	20	26	33	
5400	6	13	19	26	32	
5800	6	12	19	25	31	

- *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	WCDMA/LTE TX/RX
WLAN/BT Antenna	WLAN/BT TX/RX
<p>Note:</p> <ol style="list-style-type: none"> 1. KDB 447498 D01v06, body-worn devices that are designed to operate on the body of users using lanyards and straps or without requiring additional body-worn accessories must be tested for SAR compliance using a conservative minimum test separation distance ≤ 5 mm to support compliance. 2. KDB 941225 D06 Hot Spot SAR v02r01, the SAR test separation distance for hotspot mode is determined according to device form factor. When the overall length and width of a device is < 9 cm x 5 cm ($\sim 3.5''$ x 2''), a test separation distance of 5 mm or less is required for smaller devices. 3. Per KDB648474 D04, 10-g extremity SAR is not required when Body-Worn mode 1-g reported SAR < 1.2 W/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	66	<25	57
BT/Wifi	<25	<25	56	<25	<25	85
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	Yes	No
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

Channel	Frequency (GHz)	Max. Tune-up Power (dBm)	Max. Power (mW)	Test distance (mm)	Estimated SAR (W/Kg)
78	2.480	8.00	6.31	0	0.265

10. Test Result

Body(hotspot open, 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*)	Front	9538	1907.6	-1.020	0.700	100.00	1.000	22.05	22.50	1.109	0.776	1#
	Back	9538	1907.6	-2.730	0.657	100.00	1.000	22.05	22.50	1.109	0.729	/
	Left	9538	1907.6	1.200	0.602	100.00	1.000	22.05	22.50	1.109	0.668	/
	Top	9538	1907.6	-1.650	0.337	100.00	1.000	22.05	22.50	1.109	0.374	/
Body(hotspot open, 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*)	Front	1413	1732.6	-3.390	0.537	100.00	1.000	22.08	22.50	1.102	0.592	2#
	Back	1413	1732.6	1.660	0.489	100.00	1.000	22.08	22.50	1.102	0.539	/
	Left	1413	1732.6	-0.200	0.420	100.00	1.000	22.08	22.50	1.102	0.463	/
	Top	1413	1732.6	-0.030	0.248	100.00	1.000	22.08	22.50	1.102	0.273	/
Body(hotspot open, 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*)	Front	4233	846.6	2.680	0.366	100.00	1.000	25.20	25.50	1.072	0.392	3#
	Back	4233	846.6	-3.290	0.262	100.00	1.000	25.20	25.50	1.072	0.281	/
	Left	4233	846.6	-2.120	0.228	100.00	1.000	25.20	25.50	1.072	0.244	/
	Top	4233	846.6	2.710	0.177	100.00	1.000	25.20	25.50	1.072	0.190	/

Body(hotspot open, 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	Front	19100	1900.0	-2.420	0.711	100.00	1.000	21.07	21.50	1.104	0.785	4#
		Back	19100	1900.0	0.590	0.633	100.00	1.000	21.07	21.50	1.104	0.699	/
		Left	19100	1900.0	-4.310	0.592	100.00	1.000	21.07	21.50	1.104	0.654	/
		Top	19100	1900.0	3.000	0.283	100.00	1.000	21.07	21.50	1.104	0.312	/
	50%RB	Front	19100	1900.0	2.315	0.516	100.00	1.000	19.84	20.00	1.038	0.536	/
		Back	19100	1900.0	-1.023	0.209	100.00	1.000	19.84	20.00	1.038	0.217	/
		Left	19100	1900.0	0.653	0.200	100.00	1.000	19.84	20.00	1.038	0.208	/
		Top	19100	1900.0	-0.322	0.114	100.00	1.000	19.84	20.00	1.038	0.118	/
Body(hotspot open, 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 4 (BW: 20MHz)	1RB	Front	20050	1720.0	-1.610	0.457	100.00	1.000	21.67	22.00	1.079	0.493	5#
		Back	20050	1720.0	-3.170	0.310	100.00	1.000	21.67	22.00	1.079	0.334	/
		Left	20050	1720.0	0.090	0.285	100.00	1.000	21.67	22.00	1.079	0.308	/
		Top	20050	1720.0	-2.220	0.198	100.00	1.000	21.67	22.00	1.079	0.214	/
	50%RB	Front	20050	1720.0	-4.510	0.322	100.00	1.000	20.57	21.00	1.104	0.355	/
		Back	20050	1720.0	0.653	0.220	100.00	1.000	20.57	21.00	1.104	0.243	/
		Left	20050	1720.0	-1.023	0.188	100.00	1.000	20.57	21.00	1.104	0.208	/
		Top	20050	1720.0	-0.322	0.101	100.00	1.000	20.57	21.00	1.104	0.112	/
Body(hotspot open, 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	Front	20600	844.0	1.720	0.154	100.00	1.000	24.08	24.50	1.102	0.170	6#
		Back	20600	844.0	0.860	0.116	100.00	1.000	24.08	24.50	1.102	0.128	/
		Left	20600	844.0	4.340	0.107	100.00	1.000	24.08	24.50	1.102	0.118	/
		Top	20600	844.0	-4.290	0.080	100.00	1.000	24.08	24.50	1.102	0.088	/
	50%RB	Front	20600	844.0	0.653	0.110	100.00	1.000	22.70	23.00	1.072	0.118	/
		Back	20600	844.0	0.350	0.078	100.00	1.000	22.70	23.00	1.072	0.084	/
		Left	20600	844.0	2.315	0.070	100.00	1.000	22.70	23.00	1.072	0.075	/
		Top	20600	844.0	-0.322	0.060	100.00	1.000	22.70	23.00	1.072	0.064	/

Body(hotspot open, 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	Front	23095	707.5	-1.440	0.142	100.00	1.000	24.17	24.50	1.079	0.153	7#
		Back	23095	707.5	-1.960	0.109	100.00	1.000	24.17	24.50	1.079	0.118	/
		Left	23095	707.5	2.110	0.095	100.00	1.000	24.17	24.50	1.079	0.103	/
		Top	23095	707.5	-2.040	0.072	100.00	1.000	24.17	24.50	1.079	0.078	/
	50%RB	Front	23095	707.5	0.653	0.100	100.00	1.000	22.94	23.00	1.014	0.101	/
		Back	23095	707.5	-1.023	0.070	100.00	1.000	22.94	23.00	1.014	0.071	/
		Left	23095	707.5	2.315	0.068	100.00	1.000	22.94	23.00	1.014	0.069	/
		Top	23095	707.5	-0.322	0.055	100.00	1.000	22.94	23.00	1.014	0.056	/
Body(hotspot open, 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 17 (BW: 10MHz)	1RB	Front	23790	710.0	-2.380	0.261	100.00	1.000	23.36	23.50	1.033	0.270	8#
		Back	23790	710.0	-4.650	0.211	100.00	1.000	23.36	23.50	1.033	0.218	/
		Left	23790	710.0	2.320	0.188	100.00	1.000	23.36	23.50	1.033	0.194	/
		Top	23790	710.0	-2.340	0.152	100.00	1.000	23.36	23.50	1.033	0.157	/
	50%RB	Front	23790	710.0	0.653	0.203	100.00	1.000	22.29	22.50	1.050	0.213	/
		Back	23790	710.0	-1.023	0.152	100.00	1.000	22.29	22.50	1.050	0.160	/
		Left	23790	710.0	2.315	0.133	100.00	1.000	22.29	22.50	1.050	0.140	/
		Top	23790	710.0	-0.322	0.097	100.00	1.000	22.29	22.50	1.050	0.102	/
Body(hotspot open, 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 25 (BW: 20MHz)	1RB	Front	26590	1905.0	0.870	0.765	100.00	1.000	21.35	21.50	1.035	0.792	9#
		Back	26590	1905.0	0.240	0.680	100.00	1.000	21.35	21.50	1.035	0.704	/
		Left	26590	1905.0	-1.550	0.657	100.00	1.000	21.35	21.50	1.035	0.680	/
		Top	26590	1905.0	1.940	0.366	100.00	1.000	21.35	21.50	1.035	0.379	/
	50%RB	Front	26590	1905.0	-4.510	0.625	100.00	1.000	20.21	20.50	1.069	0.668	/
		Back	26590	1905.0	0.653	0.536	100.00	1.000	20.21	20.50	1.069	0.573	/
		Left	26590	1905.0	-1.023	0.521	100.00	1.000	20.21	20.50	1.069	0.557	/
		Top	26590	1905.0	-0.322	0.245	100.00	1.000	20.21	20.50	1.069	0.262	/
Body(hotspot open, 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 26 (BW: 15MHz)	1RB	Front	26965	841.5	-1.310	0.115	100.00	1.000	23.94	24.00	1.014	0.112	10#
		Back	26965	841.5	2.260	0.107	100.00	1.000	23.94	24.00	1.014	0.108	/
		Left	26965	841.5	-4.250	0.090	100.00	1.000	23.94	24.00	1.014	0.091	/
		Top	26965	841.5	1.260	0.066	100.00	1.000	23.94	24.00	1.014	0.067	/
	50%RB	Front	26965	841.5	0.653	0.095	100.00	1.000	22.93	23.00	1.016	0.097	/
		Back	26965	841.5	-1.023	0.090	100.00	1.000	22.93	23.00	1.016	0.091	/
		Left	26965	841.5	-0.322	0.085	100.00	1.000	22.93	23.00	1.016	0.086	/
		Top	26965	841.5	-4.510	0.070	100.00	1.000	22.93	23.00	1.016	0.071	/
Body(hotspot open, 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 41 (BW: 20MHz)	1RB	Front	41490	2680.0	-1.260	0.376	100.00	1.000	24.64	25.00	1.086	0.408	11#
		Back	41490	2680.0	-1.660	0.240	100.00	1.000	24.64	25.00	1.086	0.261	/
		Left	41490	2680.0	2.200	0.232	100.00	1.000	24.64	25.00	1.086	0.252	/
		Top	41490	2680.0	-2.930	0.188	100.00	1.000	24.64	25.00	1.086	0.204	/
	50%RB	Front	41490	2680.0	2.315	0.284	100.00	1.000	23.55	24.00	1.109	0.315	/
		Back	41490	2680.0	0.653	0.193	100.00	1.000	23.55	24.00	1.109	0.214	/
		Left	41490	2680.0	-1.023	0.180	100.00	1.000	23.55	24.00	1.109	0.200	/
		Top	41490	2680.0	-0.322	0.128	100.00	1.000	23.55	24.00	1.109	0.142	/

Body(hotspot open, 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	Front	6	2437	-1.819	0.400	100.00	1.000	18.55	19.00	1.109	0.444	/	
	Back	6	2437	3.426	0.356	100.00	1.000	18.55	19.00	1.109	0.395	/	
	Right	6	2437	1.764	0.280	100.00	1.000	18.55	19.00	1.109	0.311	/	
	Top	6	2437	-1.240	0.425	100.00	1.000	18.55	19.00	1.109	0.471	12#	
Body(hotspot open, 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) 802.11ac(VHT80)	Front	42	5210	2.560	0.350	100.00	1.000	14.77	15.00	1.054	0.369	/	
	Back	42	5210	-1.380	0.302	100.00	1.000	14.77	15.00	1.054	0.318	/	
	Right	42	5210	0.430	0.246	100.00	1.000	14.77	15.00	1.054	0.259	/	
	Top	42	5210	1.180	0.389	100.00	1.000	14.77	15.00	1.054	0.410	13#	

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 $0.765 < 0.80$ W/kg, repeated measurement is not required.

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 2 Tx antennas, WWAN main antenna, Wifi/BT antenna supports 2.4/5G Wi-Fi and BT. The 2 antennas can always transmit simultaneously. The work mode combination is showed as below table.

Application Simultaneous Transmission information:

NO.	Configuration	Body
1	WWAN+WIFI(2.4g)	Yes
2	WWAN+WIFI(5g)	Yes
3	WWAN+BT	Yes

12.2 Sum SAR of Simultaneous Transmission

Hotspot(body-worn)

Band	Test Position	Scaled SAR				Σ SAR (W/kg) WWAN + WIFI 2.4G	Σ SAR (W/kg) WWAN + WIFI 5G	Σ SAR (W/kg) WWAN + BT	SPLSR	Remark
		WWAN	WIFI 2.4G	WIFI 5G	BT					
WCDMA Band II	Front	0.776	0.444	0.369	0.265	1.220	1.145	1.041	N/A	N/A
	Back	0.729	0.395	0.318	0.265	1.124	1.047	0.994	N/A	N/A
	Left	0.668	/	/	/	0.668	0.668	0.668	N/A	N/A
	Right	/	0.311	0.259	0.265	0.311	0.259	0.265	N/A	N/A
	Top	0.374	0.471	0.410	0.265	0.845	0.784	0.639	N/A	N/A
WCDMA Band VI	Front	0.592	0.444	0.369	0.265	1.036	0.961	0.857	N/A	N/A
	Back	0.539	0.395	0.318	0.265	0.934	0.857	0.804	N/A	N/A
	Left	0.463	/	/	/	0.463	0.463	0.463	N/A	N/A
	Right	/	0.311	0.259	0.265	0.311	0.259	0.265	N/A	N/A
	Top	0.273	0.471	0.410	0.265	0.744	0.683	0.538	N/A	N/A
WCDMA Band V	Front	0.392	0.444	0.369	0.265	0.836	0.761	0.657	N/A	N/A
	Back	0.281	0.395	0.318	0.265	0.676	0.599	0.546	N/A	N/A
	Left	0.244	/	/	/	0.244	0.244	0.244	N/A	N/A
	Right	/	0.311	0.259	0.265	0.311	0.259	0.265	N/A	N/A
	Top	0.190	0.471	0.410	0.265	0.661	0.600	0.455	N/A	N/A

Band	RB allocation	Test Position	Scaled				Σ SAR (W/kg) WWAN + WIFI 2.4G	Σ SAR (W/kg) WWAN + WIFI 5G	Σ SAR (W/kg) WWAN + BT	SPLSR	Remark
			WWAN	WIFI 2.4G	WIFI 5G	Bluetooth					
LTE Band 2 QPSK (20MHz)	1	Front	0.785	0.444	0.369	0.265	1.229	1.154	1.050	N/A	N/A
		Back	0.699	0.395	0.318	0.265	1.094	1.017	0.964	N/A	N/A
		Left	0.654	/	/	/	0.654	0.654	0.654	N/A	N/A
		Right	/	0.311	0.259	0.265	0.311	0.259	0.265	N/A	N/A
		Top	0.312	0.471	0.410	0.265	0.783	0.722	0.577	N/A	N/A
	50%	Front	0.536	0.444	0.369	0.265	0.980	0.905	0.801	N/A	N/A
		Back	0.217	0.395	0.318	0.265	0.612	0.535	0.482	N/A	N/A
		Left	0.208	/	/	/	0.208	0.208	0.208	N/A	N/A
		Right	/	0.311	0.259	0.265	0.311	0.259	0.265	N/A	N/A
		Top	0.118	0.471	0.410	0.265	0.589	0.528	0.383	N/A	N/A
LTE Band 4 QPSK (20MHz)	1	Front	0.493	0.444	0.369	0.265	0.937	0.862	0.758	N/A	N/A
		Back	0.334	0.395	0.318	0.265	0.729	0.652	0.599	N/A	N/A
		Left	0.308	/	/	/	0.308	0.308	0.308	N/A	N/A
		Right	/	0.311	0.259	0.265	0.311	0.259	0.265	N/A	N/A
		Top	0.214	0.471	0.410	0.265	0.685	0.624	0.479	N/A	N/A



	50%	Front	0.355	0.444	0.369	0.265	0.799	0.724	0.620	N/A	N/A
		Back	0.243	0.395	0.318	0.265	0.638	0.561	0.508	N/A	N/A
		Left	0.208	/	/	/	0.208	0.208	0.208	N/A	N/A
		Right	/	0.311	0.259	0.265	0.311	0.259	0.265	N/A	N/A
		Top	0.112	0.471	0.410	0.265	0.583	0.522	0.377	N/A	N/A
LTE Band 5 QPSK (10MHz)	1	Front	0.170	0.444	0.369	0.265	0.614	0.539	0.435	N/A	N/A
		Back	0.128	0.395	0.318	0.265	0.523	0.446	0.393	N/A	N/A
		Left	0.118	/	/	/	0.118	0.118	0.118	N/A	N/A
		Right	/	0.311	0.259	0.265	0.311	0.259	0.265	N/A	N/A
		Top	0.088	0.471	0.410	0.265	0.559	0.498	0.353	N/A	N/A
	50%	Front	0.118	0.444	0.369	0.265	0.562	0.487	0.383	N/A	N/A
		Back	0.084	0.395	0.318	0.265	0.479	0.402	0.349	N/A	N/A
		Left	0.075	/	/	/	0.075	0.075	0.075	N/A	N/A
		Right	/	0.311	0.259	0.265	0.311	0.259	0.265	N/A	N/A
		Top	0.064	0.471	0.410	0.265	0.535	0.474	0.329	N/A	N/A
LTE Band 12 QPSK (10MHz)	1	Front	0.153	0.444	0.369	0.265	0.597	0.522	0.418	N/A	N/A
		Back	0.118	0.395	0.318	0.265	0.513	0.436	0.383	N/A	N/A
		Left	0.103	/	/	/	0.103	0.103	0.103	N/A	N/A
		Right	/	0.311	0.259	0.265	0.311	0.259	0.265	N/A	N/A
		Top	0.078	0.471	0.410	0.265	0.549	0.488	0.343	N/A	N/A
	50%	Front	0.101	0.444	0.369	0.265	0.545	0.470	0.366	N/A	N/A
		Back	0.071	0.395	0.318	0.265	0.466	0.389	0.336	N/A	N/A
		Left	0.069	/	/	/	0.069	0.069	0.069	N/A	N/A
		Right	/	0.311	0.259	0.265	0.311	0.259	0.265	N/A	N/A
		Top	0.056	0.471	0.410	0.265	0.527	0.466	0.321	N/A	N/A
LTE Band 17 QPSK (10MHz)	1	Front	0.270	0.444	0.369	0.265	0.714	0.639	0.535	N/A	N/A
		Back	0.218	0.395	0.318	0.265	0.613	0.536	0.483	N/A	N/A
		Left	0.194	/	/	/	0.194	0.194	0.194	N/A	N/A
		Right	/	0.311	0.259	0.265	0.311	0.259	0.265	N/A	N/A
		Top	0.157	0.471	0.410	0.265	0.628	0.567	0.422	N/A	N/A
	50%	Front	0.213	0.444	0.369	0.265	0.657	0.582	0.478	N/A	N/A
		Back	0.160	0.395	0.318	0.265	0.555	0.478	0.425	N/A	N/A
		Left	0.140	/	/	/	0.140	0.140	0.140	N/A	N/A
		Right	/	0.311	0.259	0.265	0.311	0.259	0.265	N/A	N/A
		Top	0.102	0.471	0.410	0.265	0.573	0.512	0.367	N/A	N/A
LTE Band 25 QPSK (20MHz)	1	Front	0.792	0.444	0.369	0.265	1.236	1.161	1.057	N/A	N/A
		Back	0.704	0.395	0.318	0.265	1.099	1.022	0.969	N/A	N/A
		Left	0.680	/	/	/	0.680	0.680	0.680	N/A	N/A
		Right	/	0.311	0.259	0.265	0.311	0.259	0.265	N/A	N/A
		Top	0.379	0.471	0.410	0.265	0.850	0.789	0.644	N/A	N/A
	50%	Front	0.668	0.444	0.369	0.265	1.112	1.037	0.933	N/A	N/A
		Back	0.573	0.395	0.318	0.265	0.968	0.891	0.838	N/A	N/A
		Left	0.557	/	/	/	0.557	0.557	0.557	N/A	N/A
		Right	/	0.311	0.259	0.265	0.311	0.259	0.265	N/A	N/A
		Top	0.262	0.471	0.410	0.265	0.733	0.672	0.527	N/A	N/A
LTE Band 26 QPSK (15MHz)	1	Front	0.112	0.444	0.369	0.265	0.556	0.481	0.377	N/A	N/A
		Back	0.108	0.395	0.318	0.265	0.503	0.426	0.373	N/A	N/A
		Left	0.091	/	/	/	0.091	0.091	0.091	N/A	N/A
		Right	/	0.311	0.259	0.265	0.311	0.259	0.265	N/A	N/A
		Top	0.067	0.471	0.410	0.265	0.538	0.477	0.332	N/A	N/A
	50%	Front	0.097	0.444	0.369	0.265	0.541	0.466	0.362	N/A	N/A
		Back	0.091	0.395	0.318	0.265	0.486	0.409	0.356	N/A	N/A
		Left	0.086	/	/	/	0.086	0.086	0.086	N/A	N/A
		Right	/	0.311	0.259	0.265	0.311	0.259	0.265	N/A	N/A
		Top	0.071	0.471	0.410	0.265	0.542	0.481	0.336	N/A	N/A
LTE Band 41 QPSK (20MHz)	1	Front	0.408	0.444	0.369	0.265	0.852	0.777	0.673	N/A	N/A
		Back	0.261	0.395	0.318	0.265	0.656	0.579	0.526	N/A	N/A
		Left	0.252	/	/	/	0.252	0.252	0.252	N/A	N/A
		Right	/	0.311	0.259	0.265	0.311	0.259	0.265	N/A	N/A
		Top	0.204	0.471	0.410	0.265	0.675	0.614	0.469	N/A	N/A
	50%	Front	0.315	0.444	0.369	0.265	0.759	0.684	0.580	N/A	N/A
		Back	0.214	0.395	0.318	0.265	0.609	0.532	0.479	N/A	N/A
		Left	0.200	/	/	/	0.200	0.200	0.200	N/A	N/A
		Right	/	0.311	0.259	0.265	0.311	0.259	0.265	N/A	N/A
		Top	0.142	0.471	0.410	0.265	0.613	0.552	0.407	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 EPG0365	2023/02/06	2024/02/05
6 1/2 Digital Multimeter	Keithley	DMM6500	4527164	2022/11/24	2023/11/23
Wideband Radio Communication Tester	ROHDE & SCHWARZ	CmW500	161997	2022/11/24	2023/11/23
MXG Vector Signal Generator	Agilent	N5182A	MY46240163	2022/11/24	2023/11/23
E-Series Avg. Power Sensor	KEYSIGHT	E9300A	MY55050017	2023/03/24	2024/03/23
EPM Series Power Meter	KEYSIGHT	E4418B	MY41293435	2023/03/24	2024/03/23
10dB Attenuator	MIDWEST MICROWAVE	263-10dB	/	2023/03/24	2024/03/23
Coupler	MERRIMAC	CWM-10R-10.8G	LOT-83391	2023/03/24	2024/03/23
750MHz Validation Dipole	MVG	SID750	07/22 DIP 0G835-655	2023/02/06	2024/02/05
835MHz Validation Dipole	MVG	SID835	07/22 DIP 0G835-656	2023/02/06	2024/02/05
1800MHz Validation Dipole	MVG	SID1800	07/22 DIP 1G800-657	2023/02/06	2024/02/05
1900MHz Validation Dipole	MVG	SID1900	07/22 DIP 1G900-658	2023/02/06	2024/02/05
2450MHz Validation Dipole	MVG	SID2450	07/22 DIP 2G450-662	2023/02/06	2024/02/05
2600MHz Validation Dipole	MVG	SID2600	07/22 DIP 2G600-663	2023/02/06	2024/02/05
5200MHz-5800MHz Validation Dipole	MVG	SID5000	07/22 DIP5G000-670	2023/02/06	2024/02/05
LIMESAR Dielectric Probe	MVG	SCLMP	06/22 OCPG88	/	/
ENA Series Network Analyzer	Agilent	E5071B	MY42301221	2022/11/24	2023/11/23
Thermometer	Riters	DT-232	21A11	2023/03/24	2024/03/23
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	/	/	/	/
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.

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	17/7/2023
835	41.50	41.41	0.90	0.87	0.22%	3.33%	±5%	20.0	17/7/2023
1800	40.00	39.91	1.40	1.37	0.23%	2.14%	±5%	20.0	18/7/2023
1900	40.00	39.88	1.40	1.41	0.30%	-0.71%	±5%	20.0	18/7/2023
2450	39.20	39.08	1.80	1.81	0.31%	-0.56%	±5%	20.0	19/7/2023
2600	39.00	38.88	1.96	1.97	0.31%	-0.51%	±5%	20.5	19/7/2023
5200	36.00	35.88	4.66	4.70	0.33%	-0.86%	±5%	20.5	19/7/2023

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)	10g SAR Deviation	1g SAR Deviation
750	16	0.092	0.138	5.80	8.70	5.55	8.49	-4.50%	-2.47%
835	16	0.106	0.163	6.68	10.28	6.22	9.56	-7.40%	-7.53%
1800	16	0.312	0.588	19.68	37.10	20.10	38.40	2.09%	3.39%
1900	16	0.322	0.630	20.32	39.75	20.50	39.70	0.88%	-0.13%
2450	16	0.352	0.793	22.21	50.03	24.00	52.40	7.46%	4.52%
2600	16	0.421	0.866	26.56	54.64	24.60	55.30	-0.08%	0.01%
5200	13	0.294	0.998	23.35	79.27	21.60	76.50	-7.97%	1.19%

System Performance Check Data (750 MHz)

System check at 750 MHz

Date of measurement: 17/7/2023

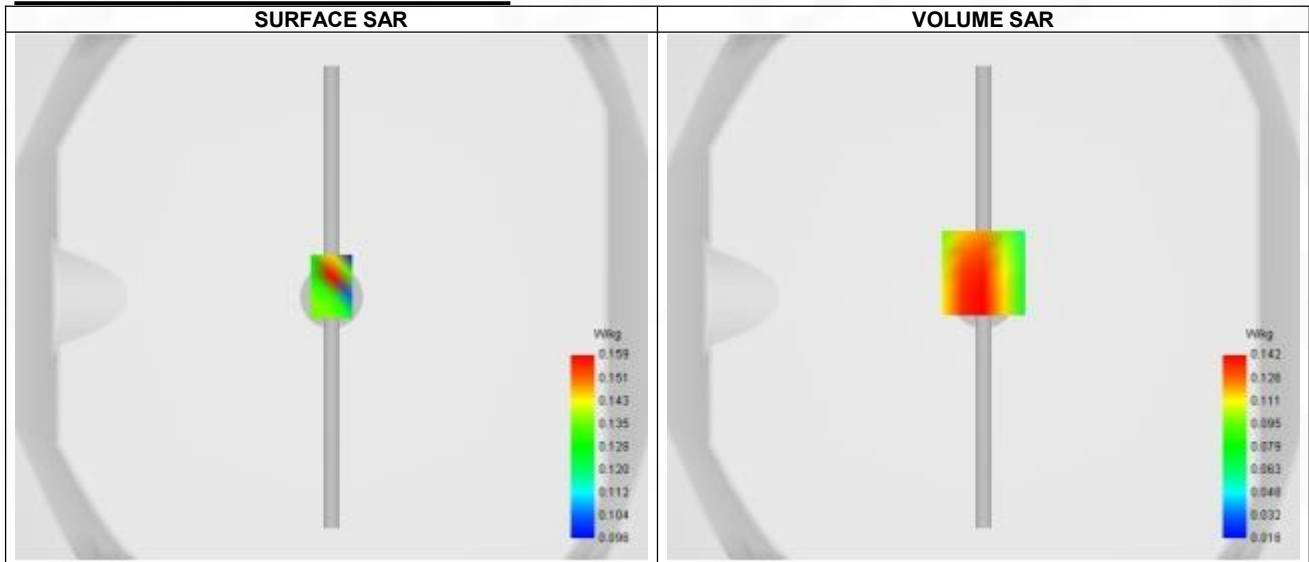
A. Experimental conditions.

Probe	SN 04/22 EPGO365
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



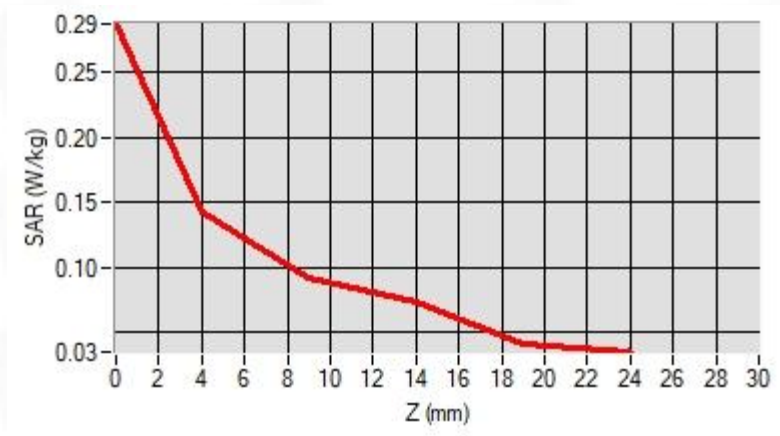
Maximum location: X=0.00, Y=9.00 ; SAR Peak: 0.20 W/kg

D. SAR 1g & 10g

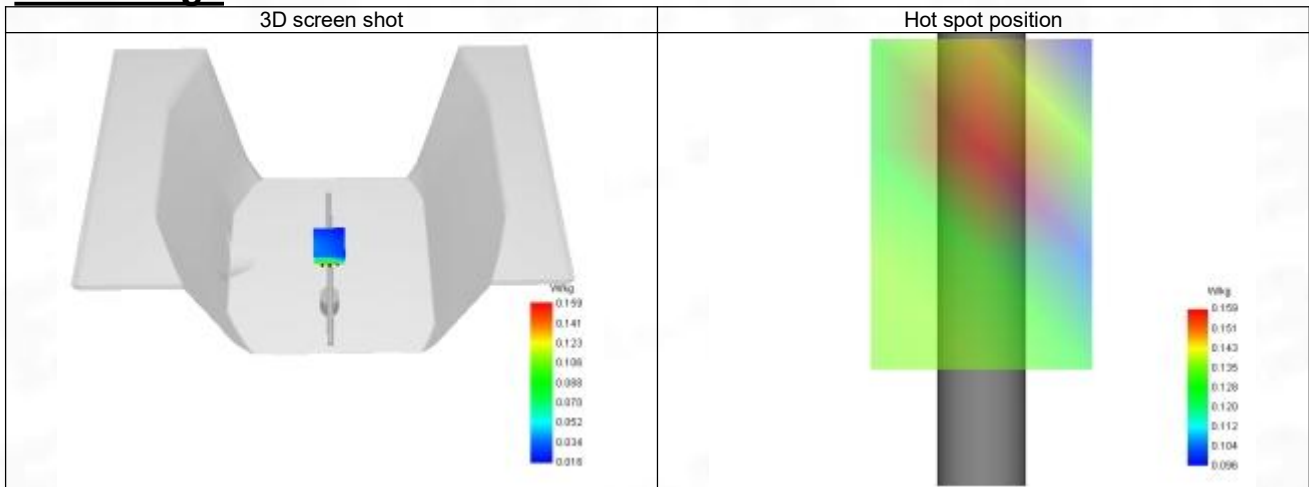
SAR 10g (W/Kg)	0.092
SAR 1g (W/Kg)	0.138
Variation (%)	-2.190
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.287	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: 17/7/2023

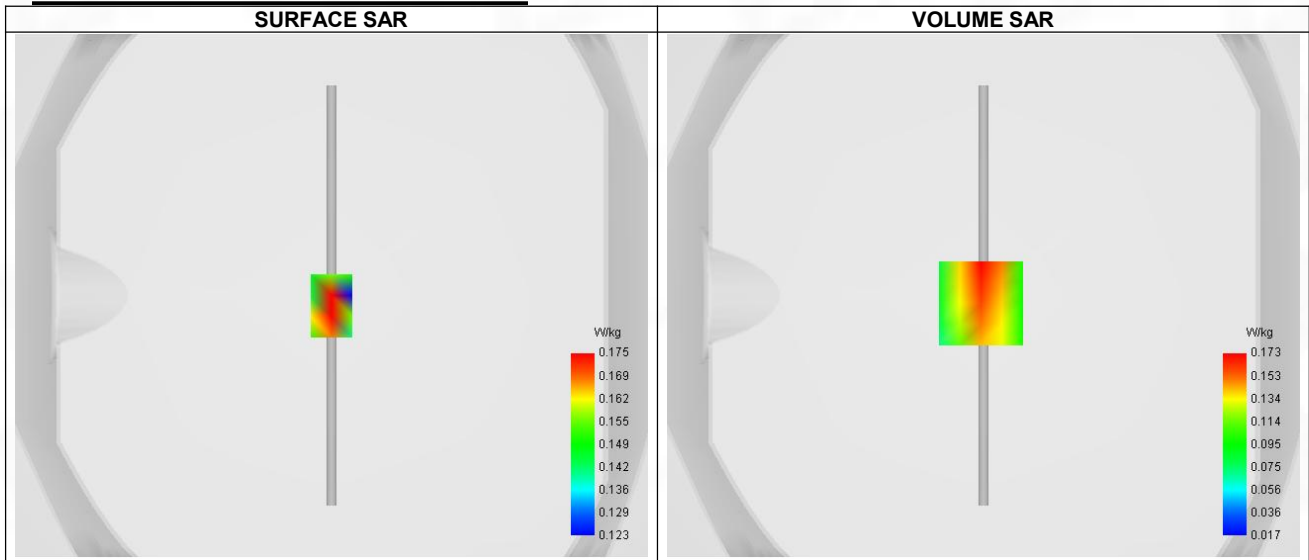
A. Experimental conditions.

Probe	SN 04/22 EPGO365
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



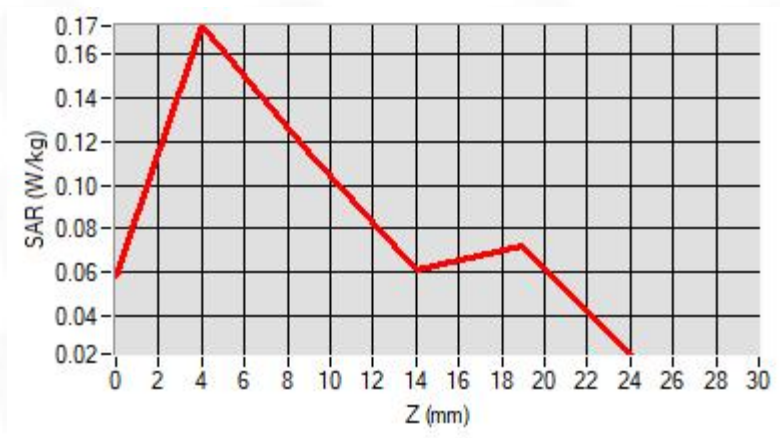
Maximum location: X=-1.00, Y=-3.00 ; SAR Peak: 0.26 W/kg

D. SAR 1g & 10g

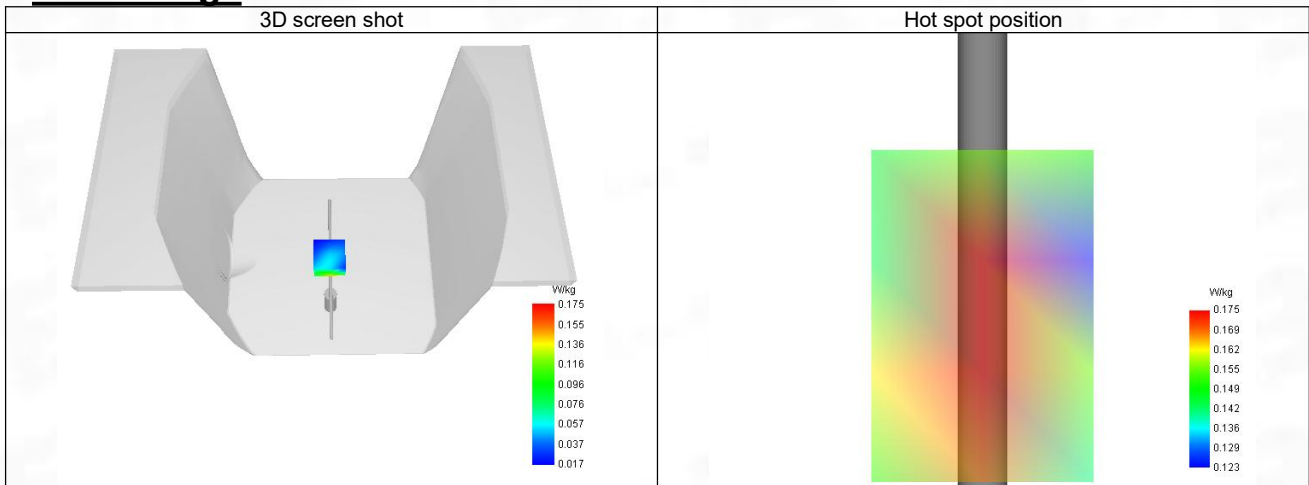
SAR 10g (W/Kg)	0.106
SAR 1g (W/Kg)	0.163
Variation (%)	-3.390
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.059	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: 18/7/2023

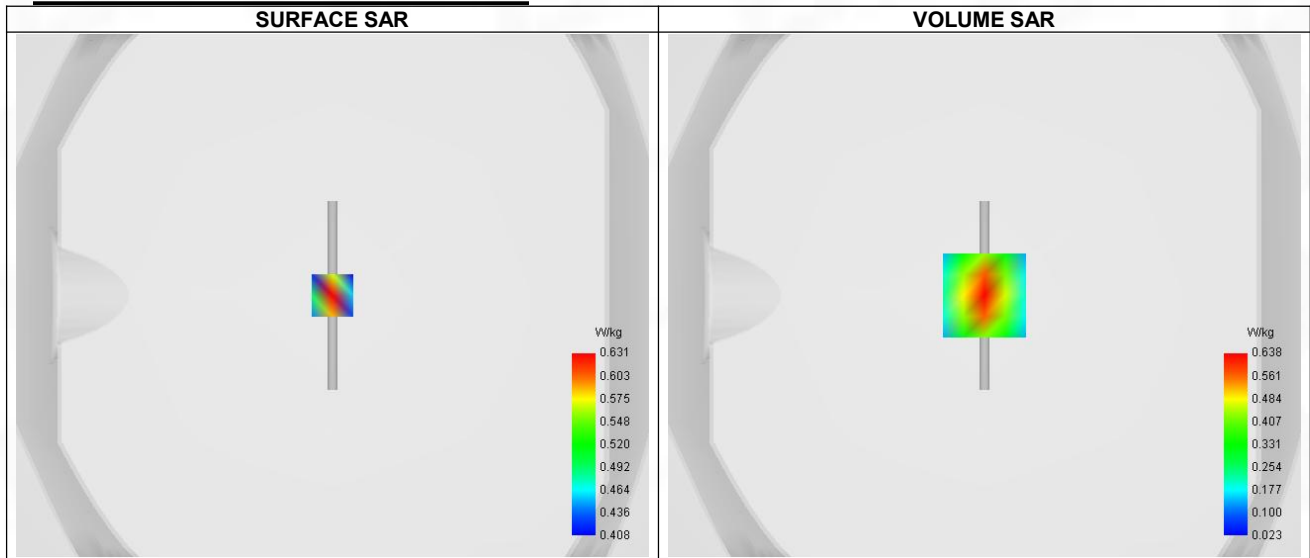
A. Experimental conditions.

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



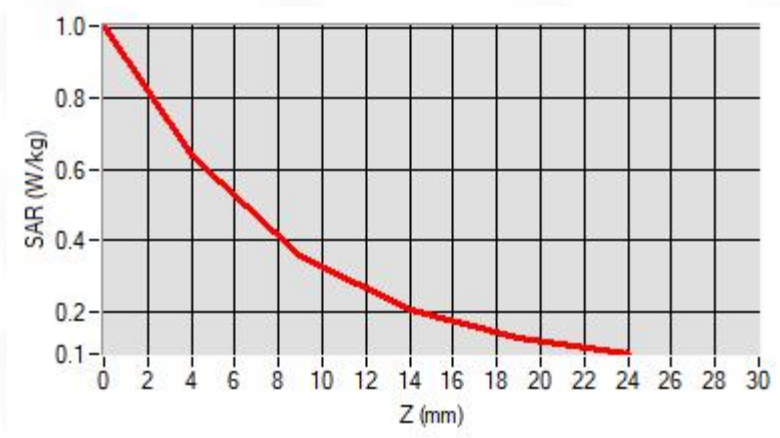
Maximum location: X=0.00, Y=0.00 ; SAR Peak: 1.00 W/kg

D. SAR 1g & 10g

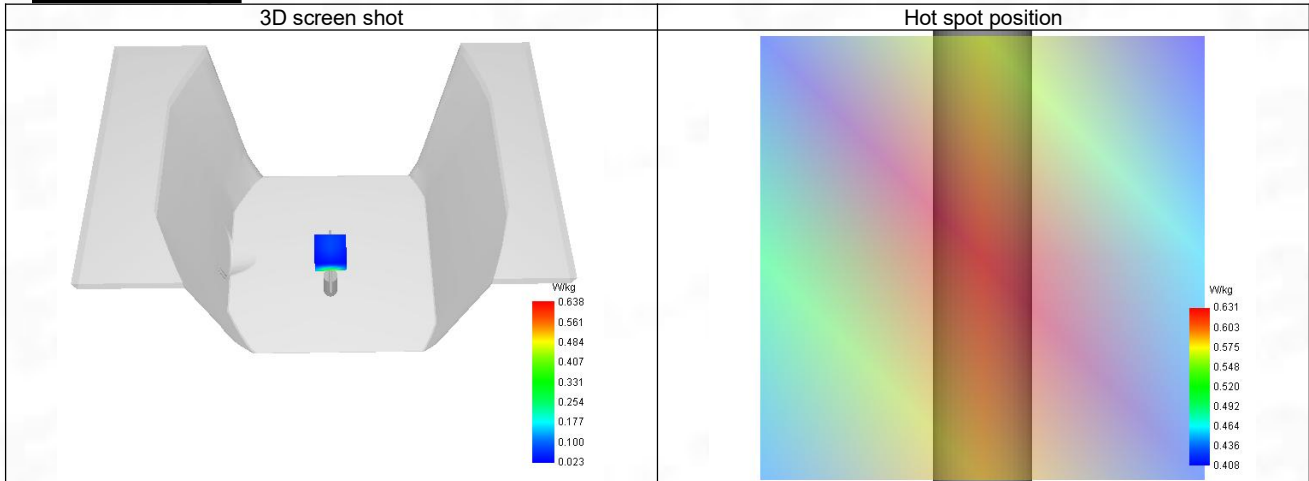
SAR 10g (W/Kg)	0.312
SAR 1g (W/Kg)	0.588
Variation (%)	-0.250
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.003	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: 18/7/2023

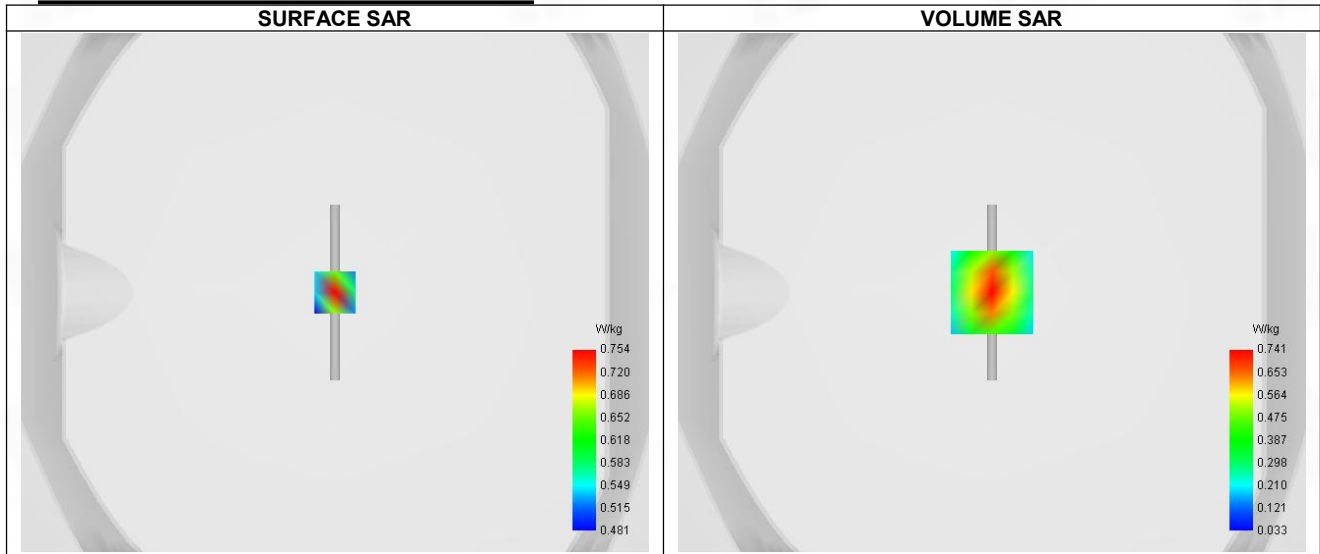
A. Experimental conditions.

Probe	SN 04/22 EPGO365
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



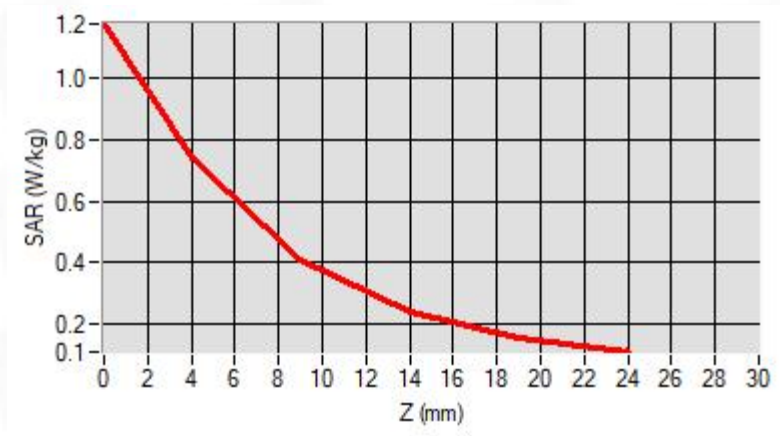
Maximum location: X=0.00, Y=0.00 ; SAR Peak: 1.18 W/kg

D. SAR 1g & 10g

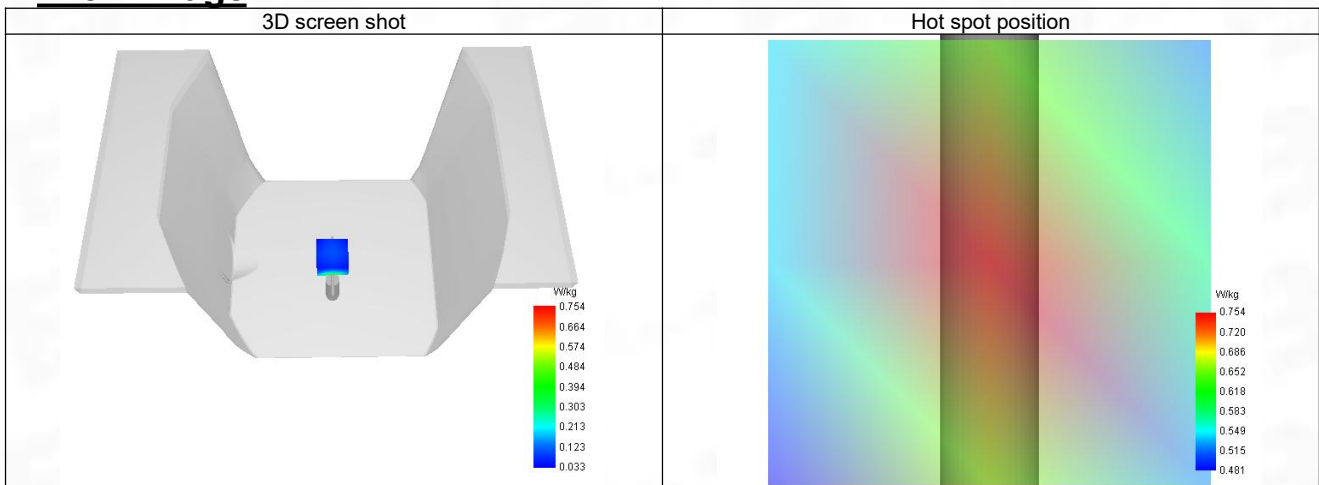
SAR 10g (W/Kg)	0.322
SAR 1g (W/Kg)	0.630
Variation (%)	-2.080
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

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



F. 3D Image



System Performance Check Data (2450 MHz)

System check at 2450 MHz

Date of measurement: 19/7/2023

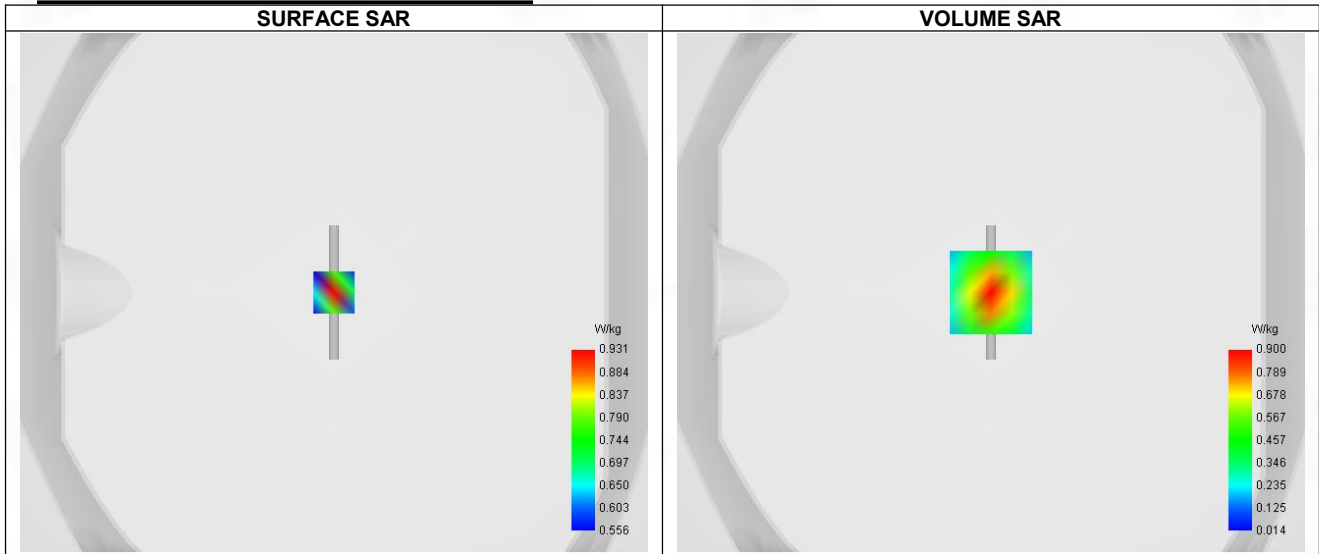
A. Experimental conditions.

Probe	SN 04/22 EPGO365
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	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



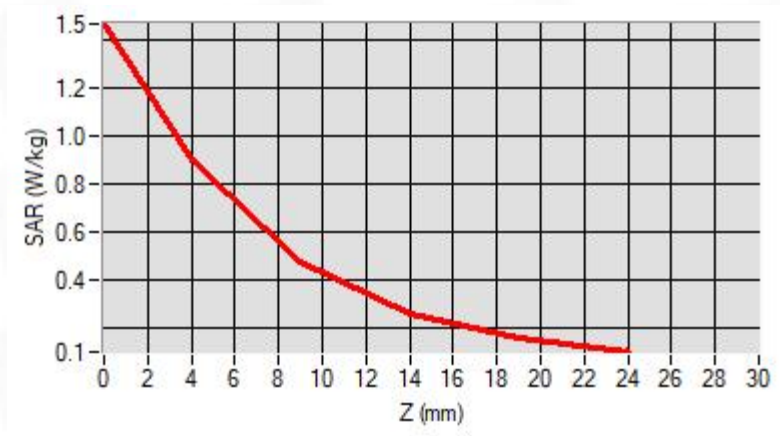
Maximum location: X=0.00, Y=0.00 ; SAR Peak: 1.47 W/kg

D. SAR 1g & 10g

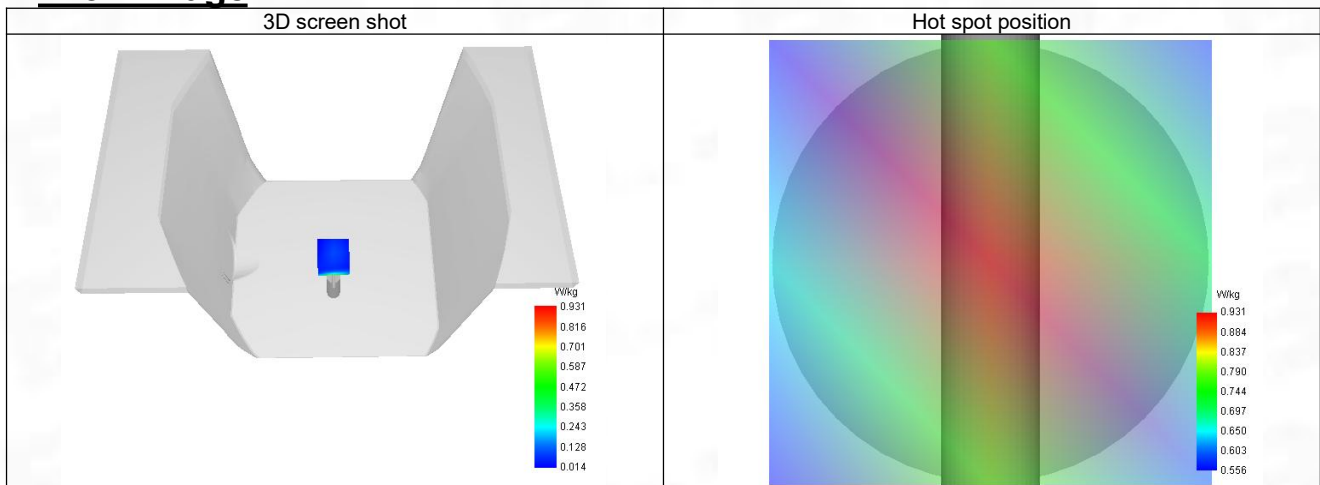
SAR 10g (W/Kg)	0.352
SAR 1g (W/Kg)	0.793
Variation (%)	-2.570
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.466	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: 19/7/2023

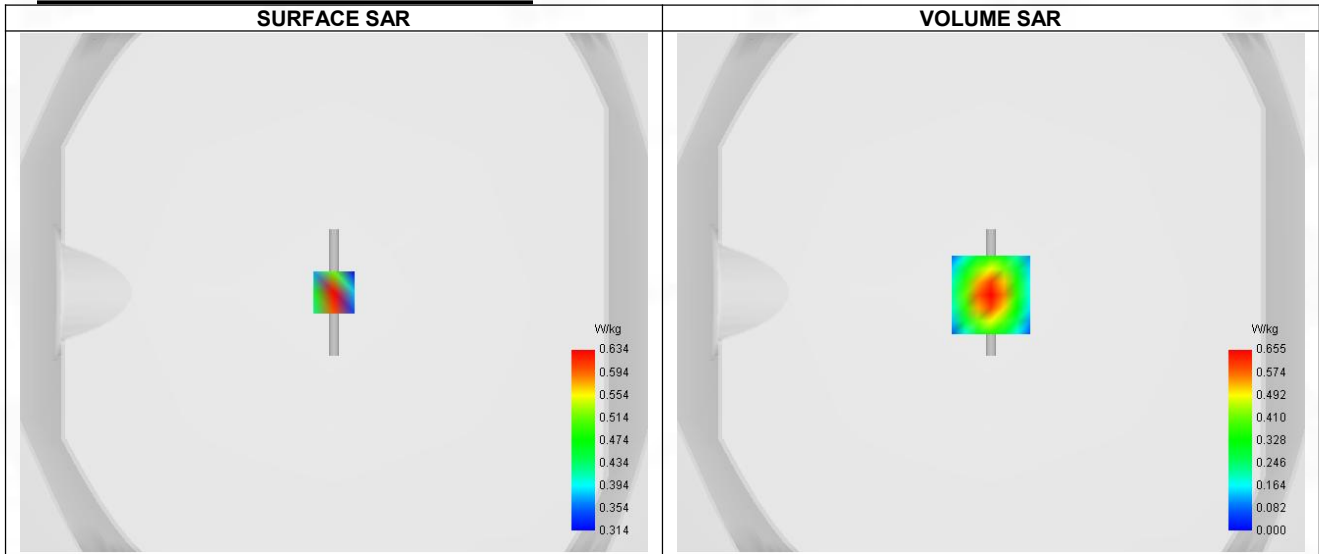
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	2.40
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	CW2600
Channels	Middle
Signal	CW

B. Permittivity

Frequency (MHz)	2600.000
Relative permittivity (real part)	39.880
Relative permittivity (imaginary part)	12.690
Conductivity (S/m)	1.970

C. SAR Surface and Volume



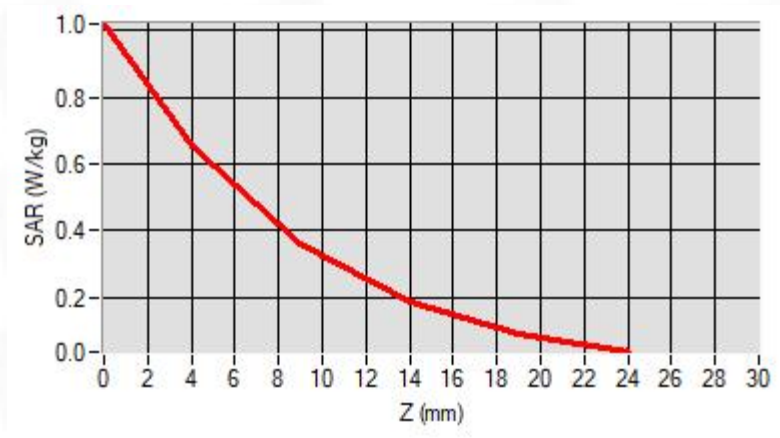
Maximum location: X=0.00, Y=-1.00 ; SAR Peak: 1.02 W/kg

D. SAR 1g & 10g

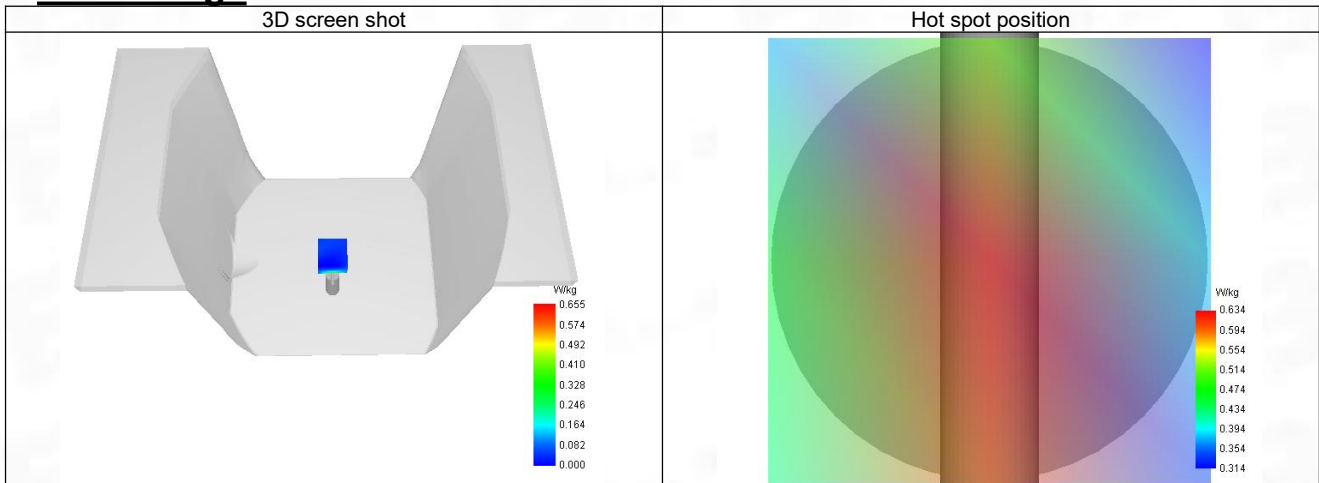
SAR 10g (W/Kg)	0.421
SAR 1g (W/Kg)	0.866
Variation (%)	2.980
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

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



F. 3D Image



System Performance Check Data (5200 MHz)

System check at 5200 MHz

Date of measurement: 19/7/2023

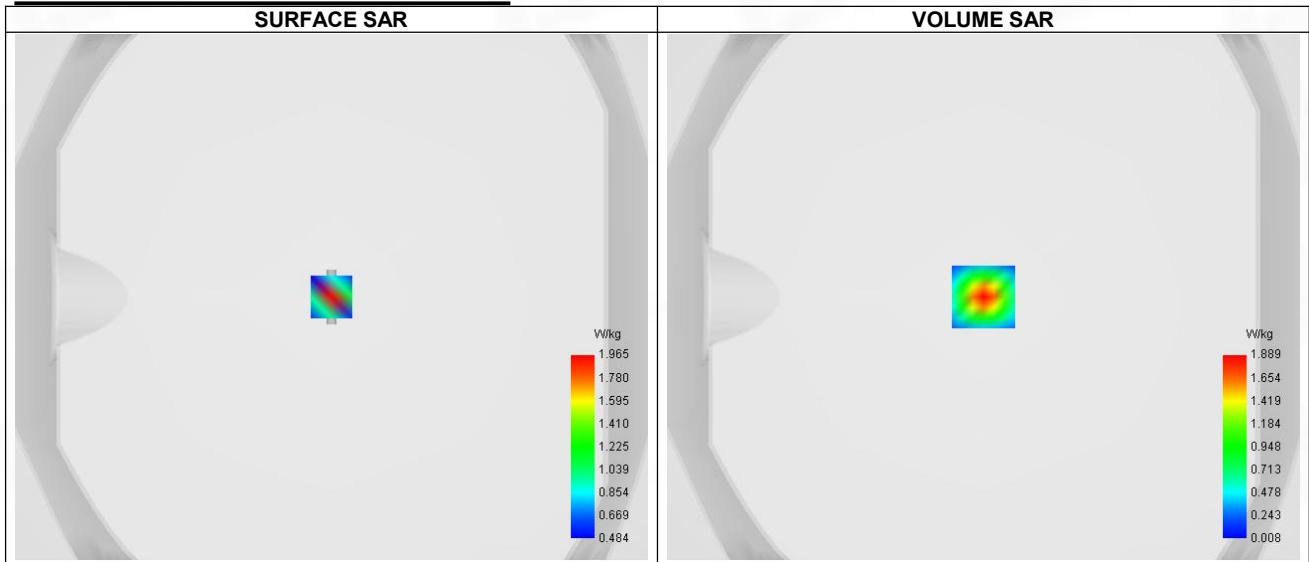
A. Experimental conditions.

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	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



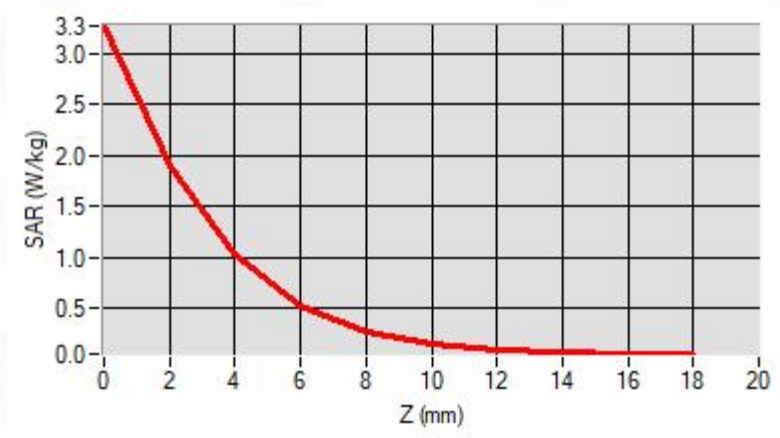
Maximum location: X=0.00, Y=0.00 ; SAR Peak: 3.38 W/kg

D. SAR 1g & 10g

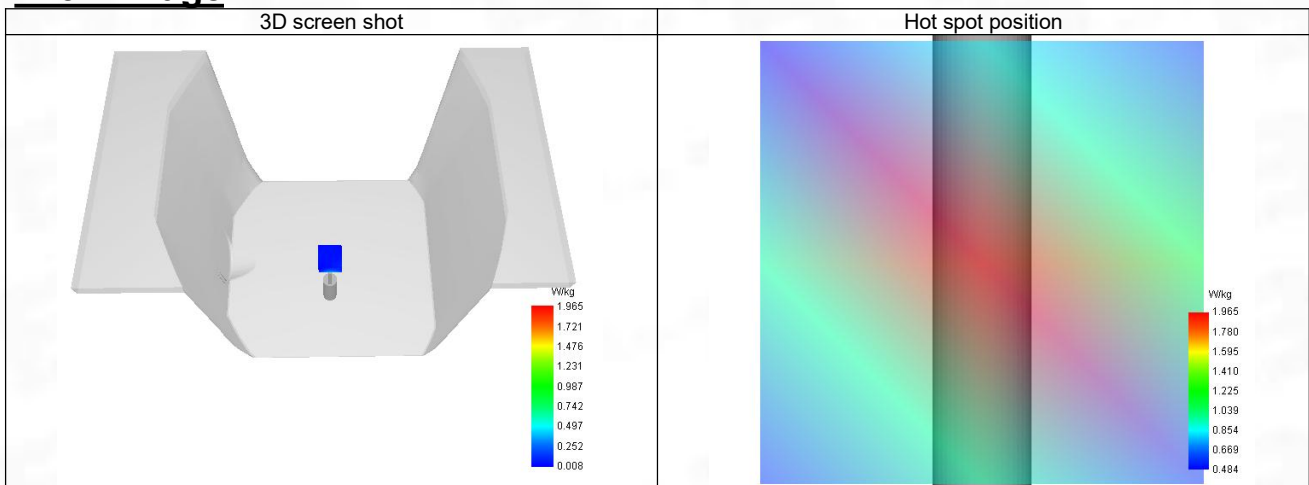
SAR 10g (W/Kg)	0.294
SAR 1g (W/Kg)	0.998
Variation (%)	-3.400
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	2.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00
SAR (W/Kg)	3.268	1.889	1.021	0.523	0.266	0.142	0.085	0.060	0.052



F. 3D Image



ANNEX C Test Data

1-Body with front position in dist. 0mm on Channel 9538 in WCDMA Band 2

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

Date of measurement: 18/7/2023

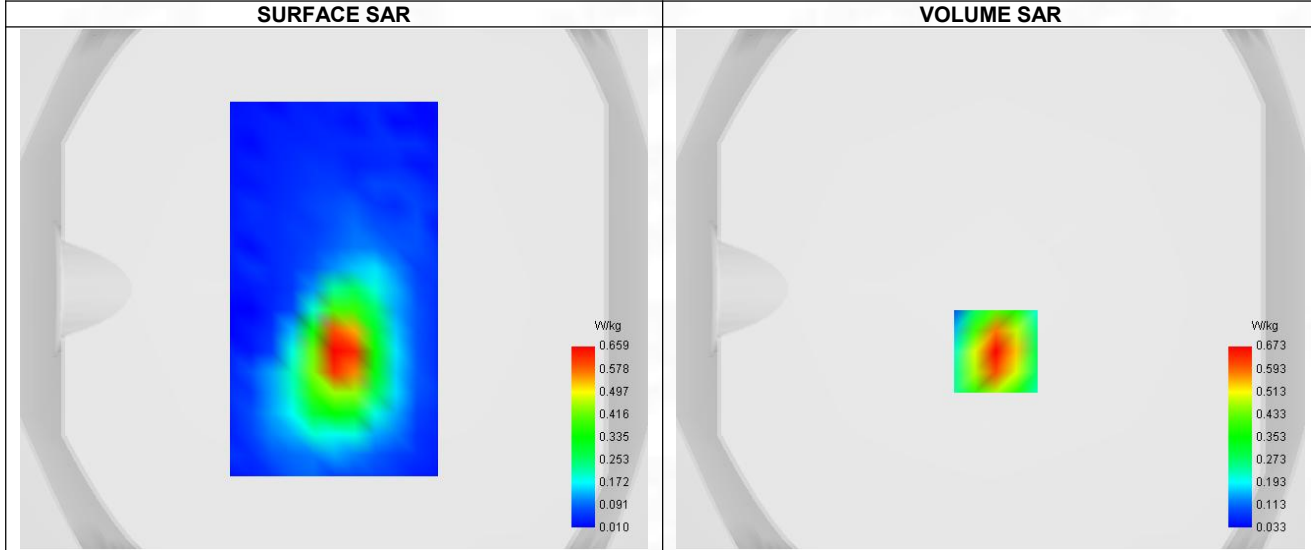
A. Experimental conditions.

Probe	SN 04/22 EPGO365
ConvF	2.24
Area Scan	surf_sam_plan.txt
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)	13.391
Conductivity (S/m)	1.416

C. SAR Surface and Volume



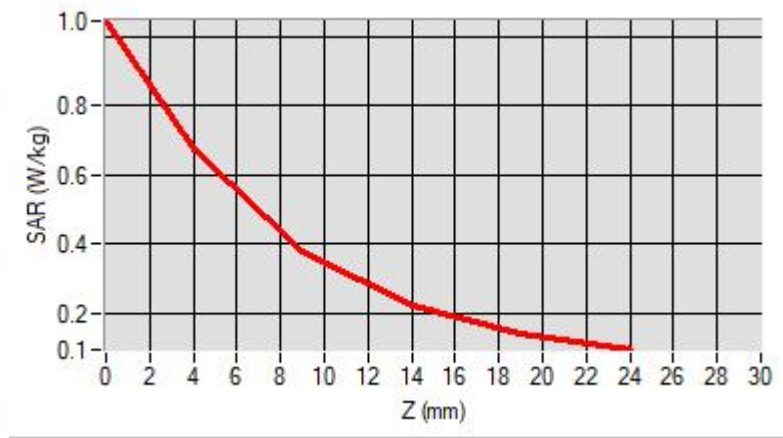
Maximum location: X=2.00, Y=-24.00 ; SAR Peak: 1.05 W/kg

D. SAR 1g & 10g

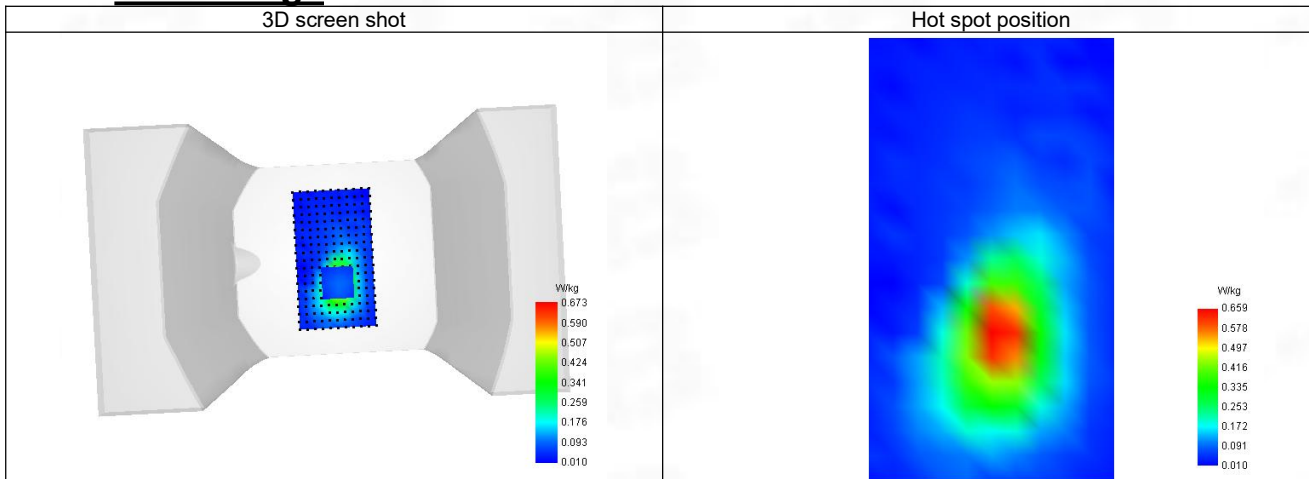
SAR 10g (W/Kg)	0.360
SAR 1g (W/Kg)	0.700
Variation (%)	-1.020
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.046	0.673	0.382	0.225	0.144



F. 3D Image



2-Body with front position in dist. 0mm on Channel 1413 in WCDMA Band 4

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

Date of measurement: 18/7/2023

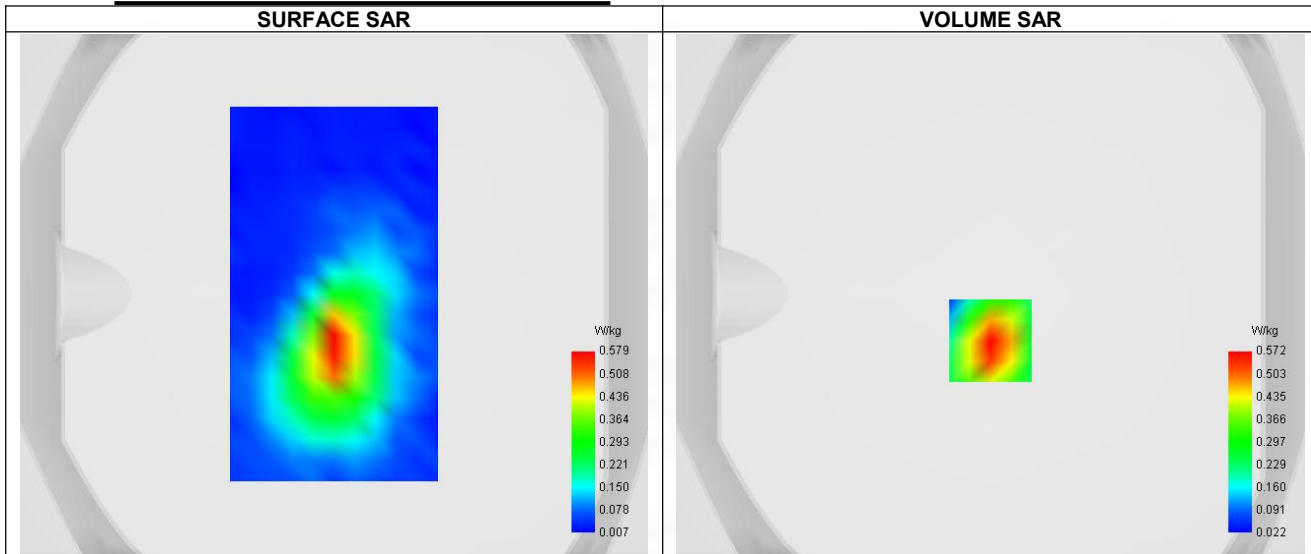
A. Experimental conditions.

Probe	SN 04/22 EPGO365
ConvF	1.96
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	Band 4 (1700)
Channels	Middle (1413)
Signal	WCDMA
Mode	Release 99
Connection Type	RMC, 12.2 kbps

B. Permittivity

Frequency (MHz)	1732.600
Relative permittivity (real part)	40.015
Relative permittivity (imaginary part)	13.985
Conductivity (S/m)	1.335

C. SAR Surface and Volume



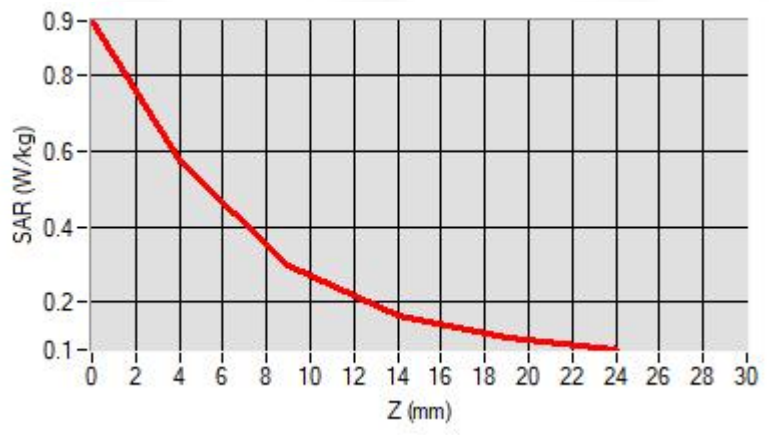
Maximum location: X=0.00, Y=-18.00 ; SAR Peak: 0.95 W/kg

D. SAR 1g & 10g

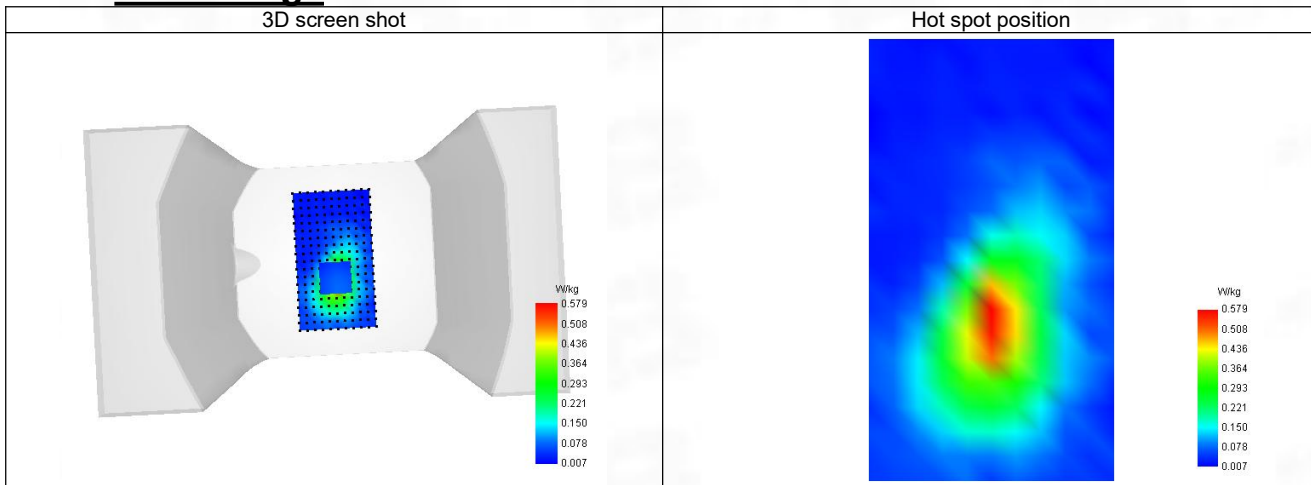
SAR 10g (W/Kg)	0.292
SAR 1g (W/Kg)	0.537
Variation (%)	-3.390
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.946	0.572	0.299	0.165	0.105



F. 3D Image



3-Body with front position in dist. 0mm on Channel 4233 in WCDMA Band 5

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

Date of measurement: 17/7/2023

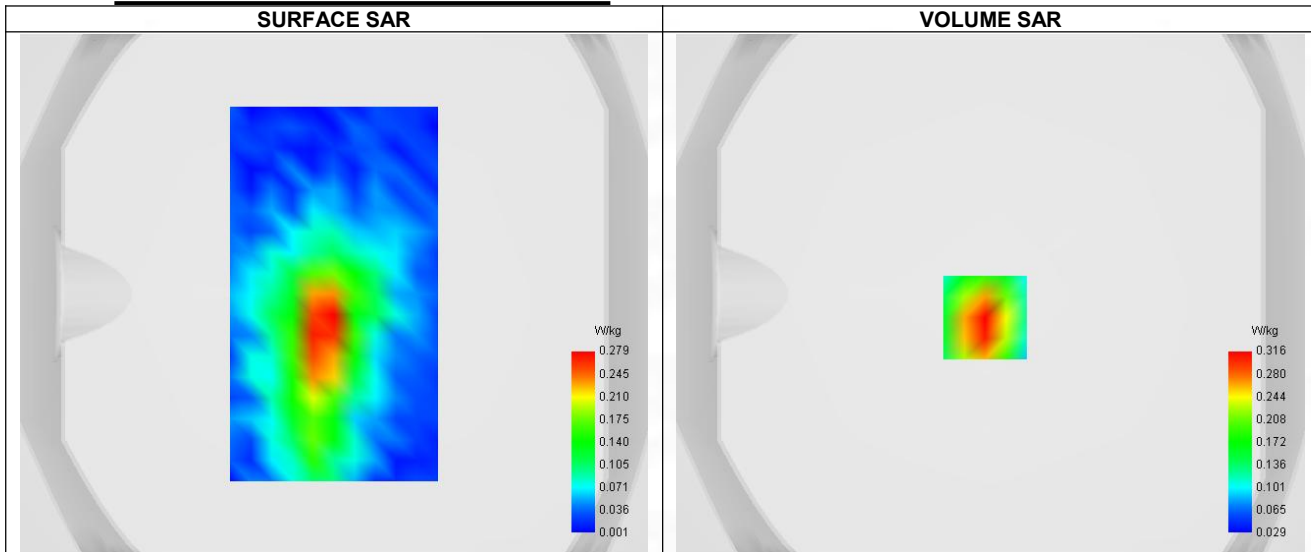
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	1.68
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	Band 5 (850)
Channels	Higher (4233)
Signal	WCDMA
Mode	Release 99
Connection Type	RMC, 12.2 kbps

B. Permittivity

Frequency (MHz)	846.600
Relative permittivity (real part)	41.392
Relative permittivity (imaginary part)	19.508
Conductivity (S/m)	0.876

C. SAR Surface and Volume



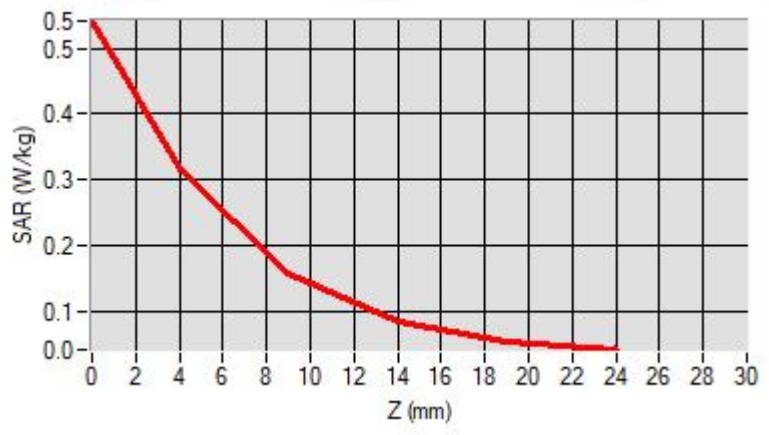
Maximum location: X=-2.00, Y=-9.00 ; SAR Peak: 0.55 W/kg

D. SAR 1g & 10g

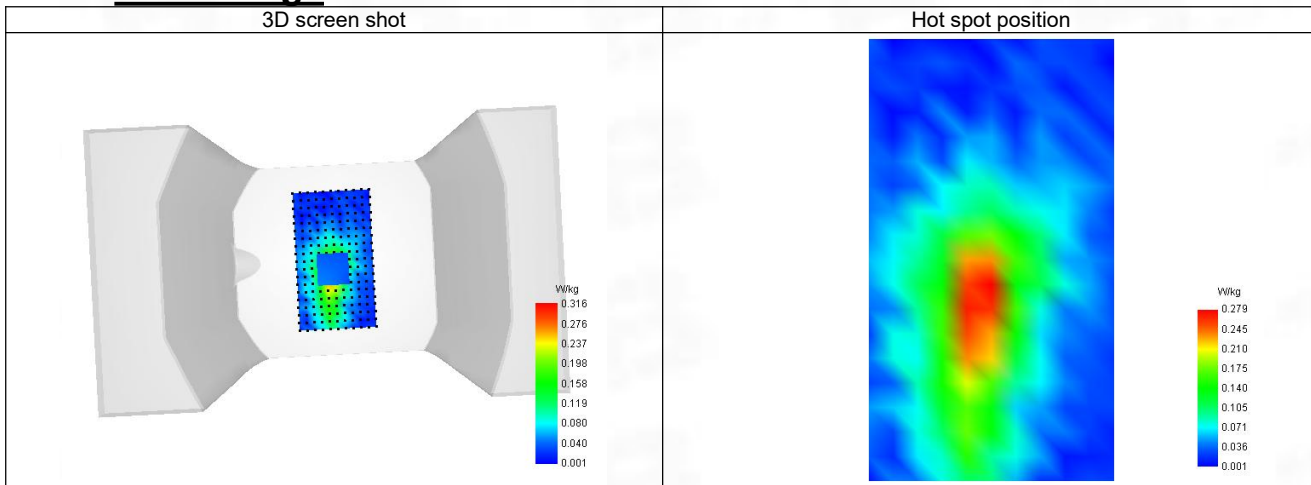
SAR 10g (W/Kg)	0.270
SAR 1g (W/Kg)	0.366
Variation (%)	2.680
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.542	0.316	0.157	0.083	0.054



F. 3D Image



4-Body with front position in dist. 0mm on Channel 19100 in LTE band 2

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

Date of measurement: 18/7/2023

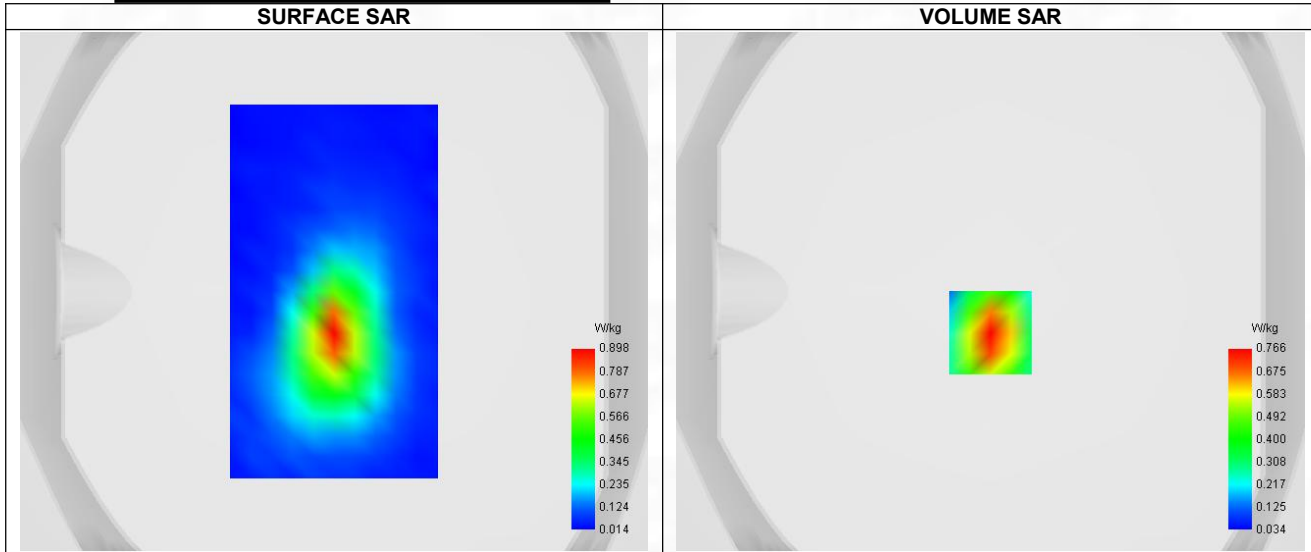
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	2.24
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	LTE band 2
Channels	Higher (19100)
Signal	LTE FDD
Cell Bandwidth	20 Mhz
Modulation	SC-OFDM - QPSK
RB offset	50
RB size	1

B. Permittivity

Frequency (MHz)	1900.090
Relative permittivity (real part)	39.880
Relative permittivity (imaginary part)	13.380
Conductivity (S/m)	1.410

C. SAR Surface and Volume



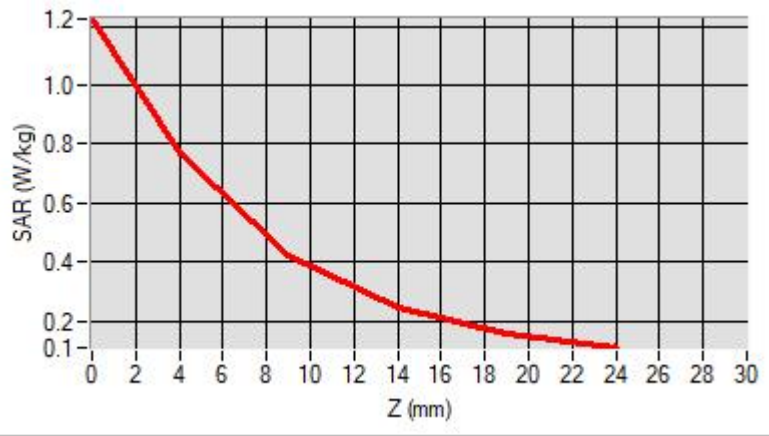
Maximum location: X=0.00, Y=-16.00 ; SAR Peak: 1.23 W/kg

D. SAR 1g & 10g

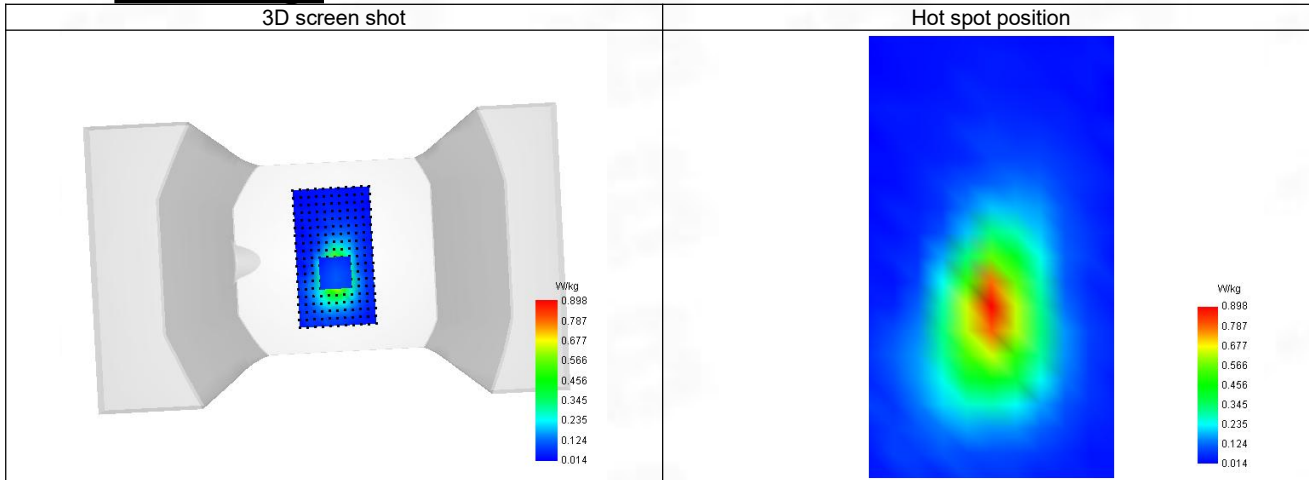
SAR 10g (W/Kg)	0.384
SAR 1g (W/Kg)	0.711
Variation (%)	-2.420
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.224	0.766	0.421	0.242	0.157



F. 3D Image



5-Body with front position in dist. 0mm on Channel 20050 in LTE band 4

SAR Measurement at LTE band 4 (Body, Validation Plane)

Date of measurement: 18/7/2023

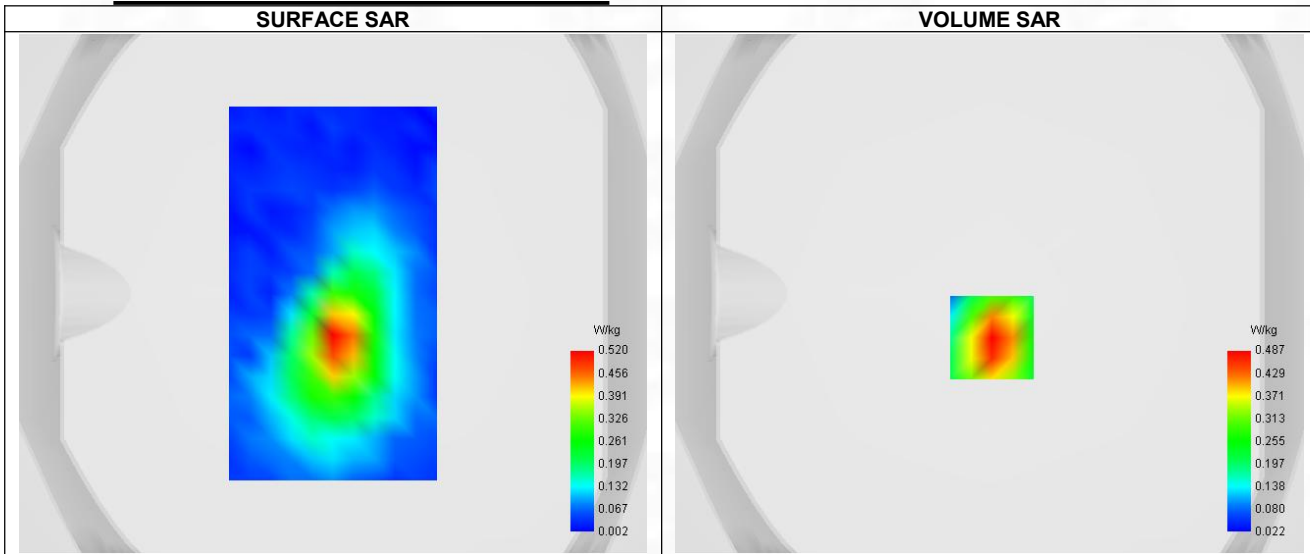
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	1.96
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	LTE band 4
Channels	Lower (20050)
Signal	LTE FDD
Cell Bandwidth	20 Mhz
Modulation	SC-OFDM - QPSK
RB offset	50
RB size	1

B. Permittivity

Frequency (MHz)	1720.090
Relative permittivity (real part)	40.034
Relative permittivity (imaginary part)	13.966
Conductivity (S/m)	1.329

C. SAR Surface and Volume



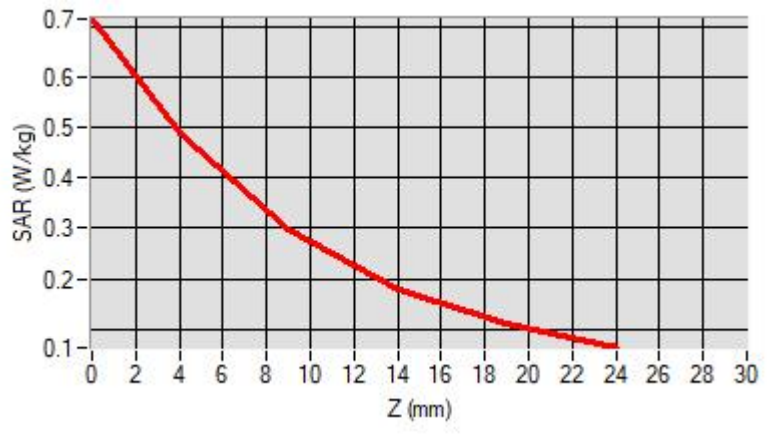
Maximum location: X=1.00, Y=-17.00 ; SAR Peak: 0.72 W/kg

D. SAR 1g & 10g

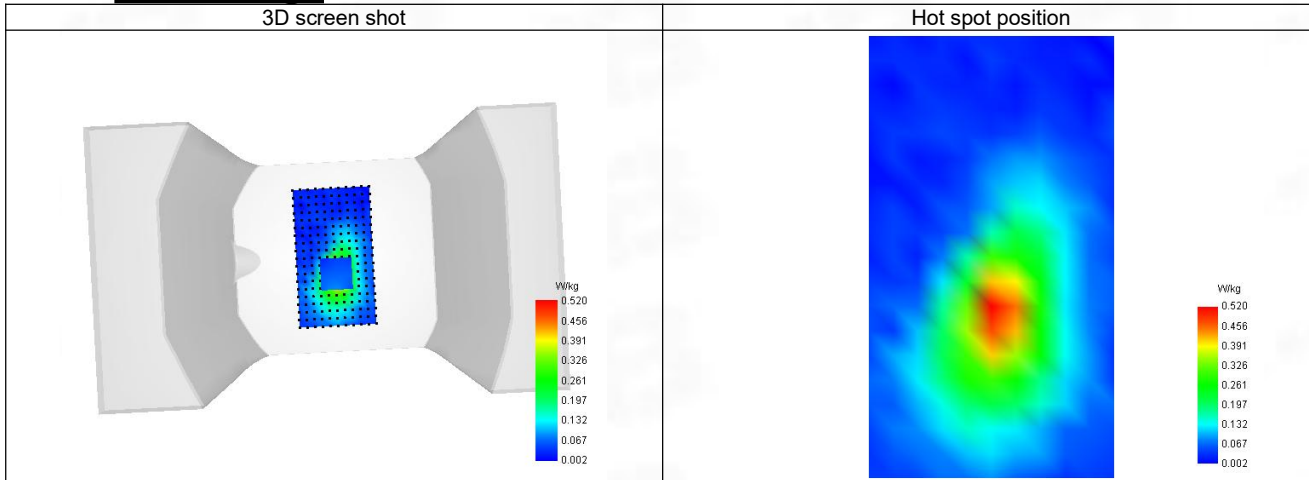
SAR 10g (W/Kg)	0.263
SAR 1g (W/Kg)	0.457
Variation (%)	-1.610
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.714	0.487	0.296	0.179	0.109



F. 3D Image



6-Body with front position in dist. 0mm on Channel 20600 in LTE band 5

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

Date of measurement: 17/7/2023

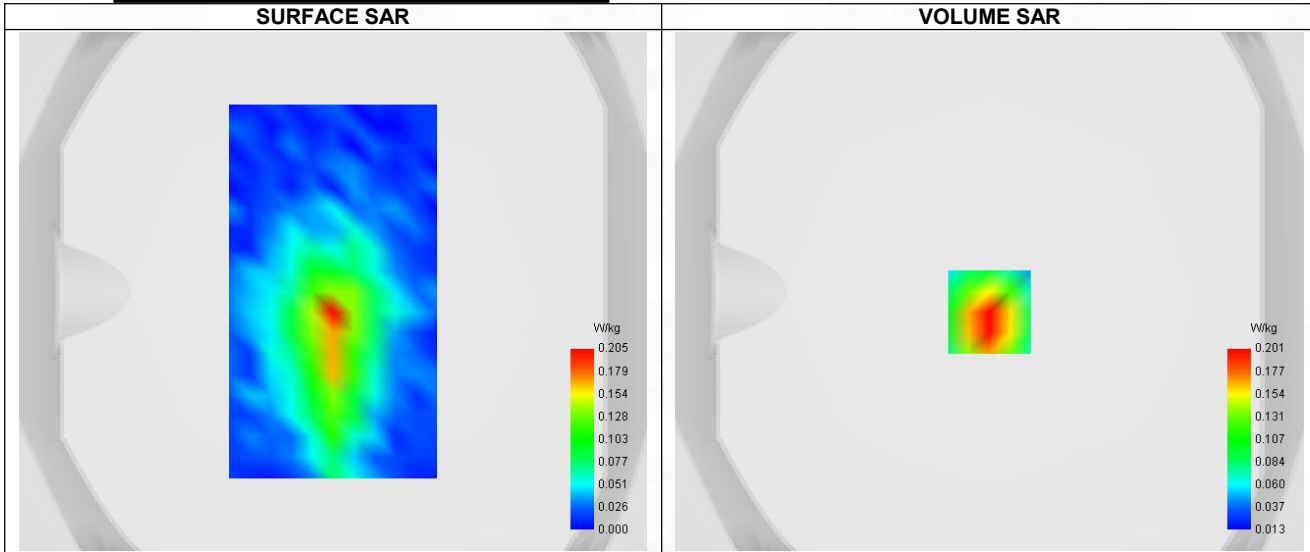
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	1.68
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	LTE band 5
Channels	Higher (20600)
Signal	LTE FDD
Cell Bandwidth	10 Mhz
Modulation	SC-OFDM - QPSK
RB offset	25
RB size	1

B. Permittivity

Frequency (MHz)	844.000
Relative permittivity (real part)	41.396
Relative permittivity (imaginary part)	19.504
Conductivity (S/m)	0.875

C. SAR Surface and Volume

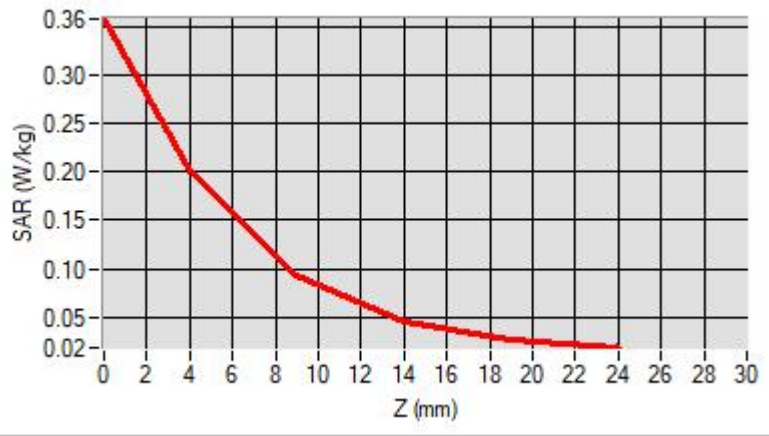


D. SAR 1g & 10g

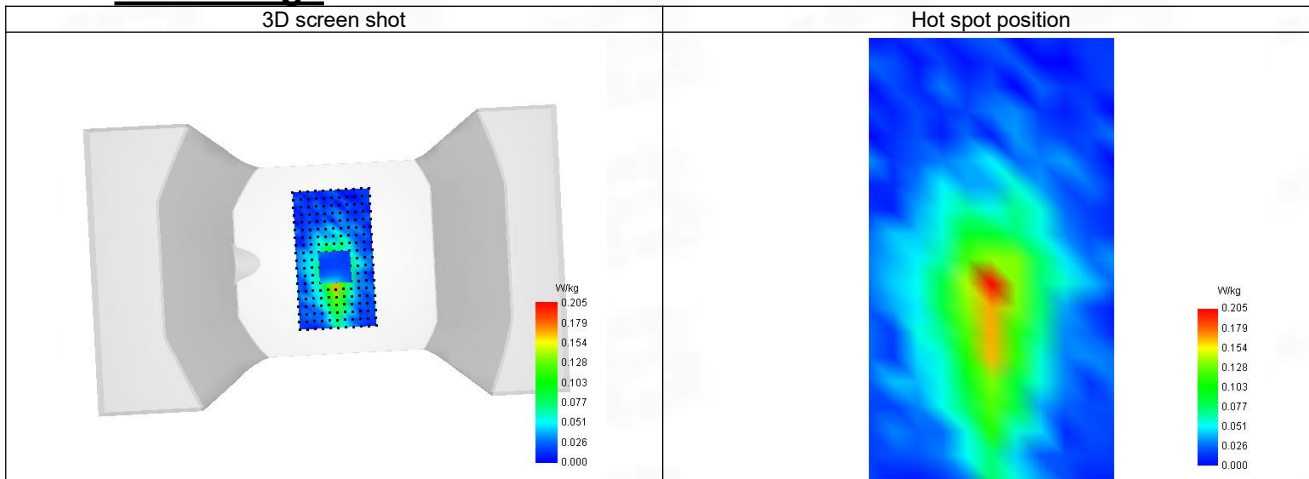
SAR 10g (W/Kg)	0.101
SAR 1g (W/Kg)	0.154
Variation (%)	1.720
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.358	0.201	0.093	0.045	0.027



F. 3D Image



7-Body with front position in dist. 0mm on Channel 23095 in LTE band 12

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

Date of measurement: 17/7/2023

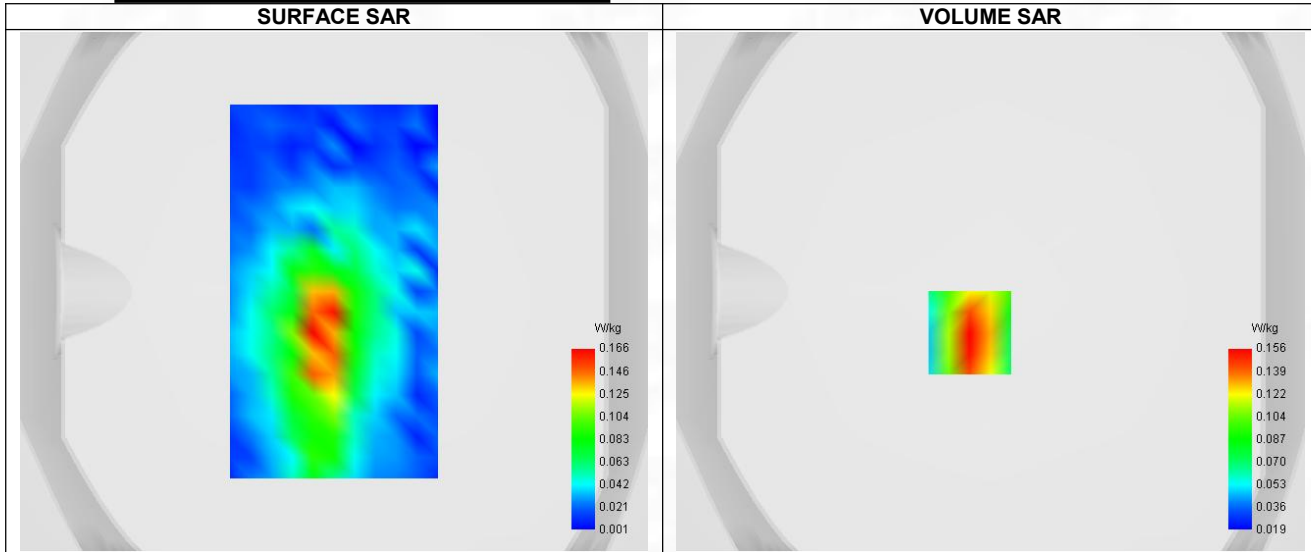
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	1.65
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	LTE band 12
Channels	Middle (23095)
Signal	LTE FDD
Cell Bandwidth	10 Mhz
Modulation	SC-OFDM - QPSK
RB offset	25
RB size	1

B. Permittivity

Frequency (MHz)	707.500
Relative permittivity (real part)	42.002
Relative permittivity (imaginary part)	21.258
Conductivity (S/m)	0.855

C. SAR Surface and Volume



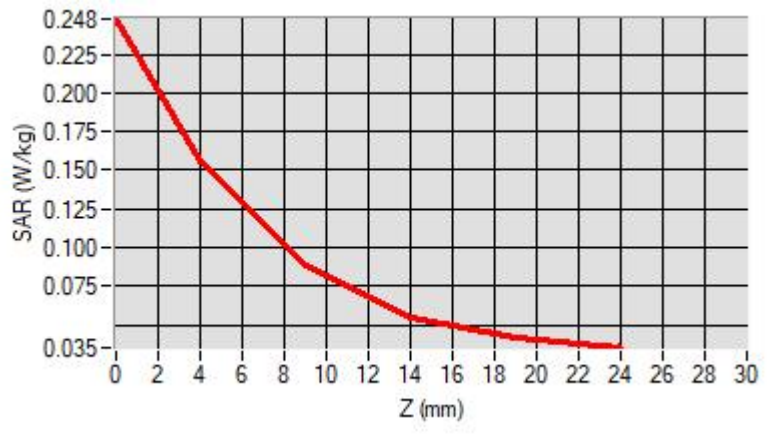
Maximum location: X=-8.00, Y=-16.00 ; SAR Peak: 0.25 W/kg

D. SAR 1g & 10g

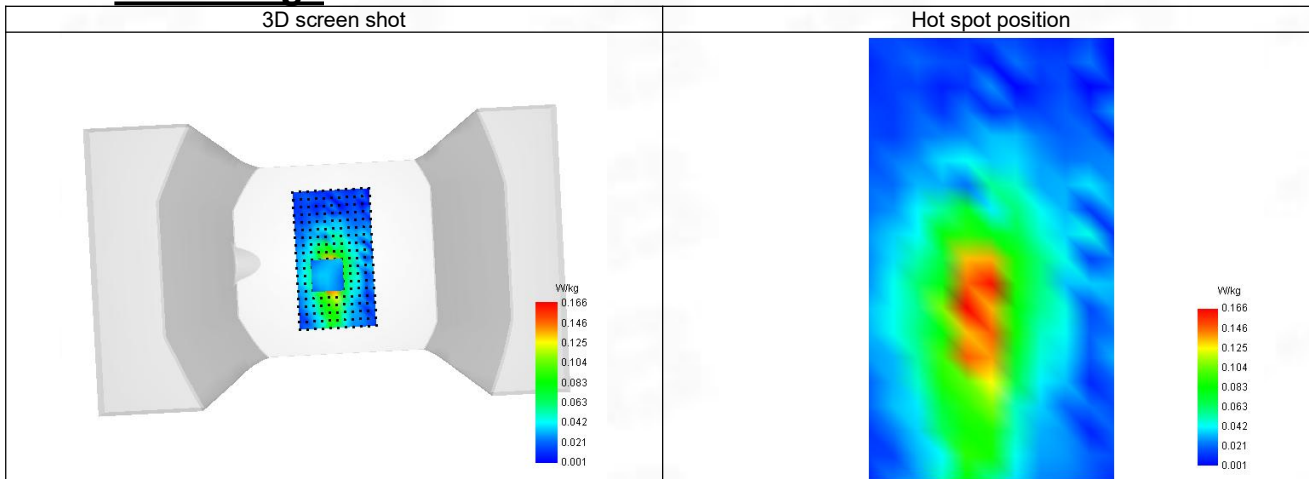
SAR 10g (W/Kg)	0.108
SAR 1g (W/Kg)	0.142
Variation (%)	-1.440
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.248	0.156	0.088	0.055	0.042



F. 3D Image



8-Body with front position in dist. 0mm on Channel 23790 in LTE band 17

SAR Measurement at LTE band 17 (Body, Validation Plane)

Date of measurement: 17/7/2023

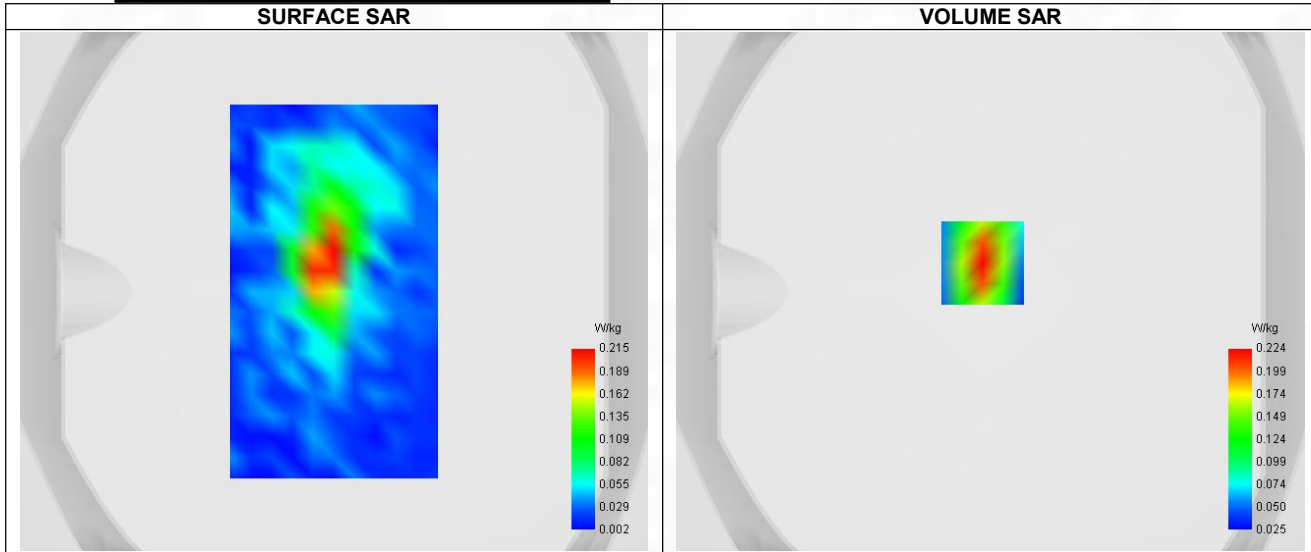
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	1.65
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	LTE band 17
Channels	Middle (23790)
Signal	LTE FDD
Cell Bandwidth	10 Mhz
Modulation	SC-OFDM - QPSK
RB offset	49
RB size	1

B. Permittivity

Frequency (MHz)	710.000
Relative permittivity (real part)	41.990
Relative permittivity (imaginary part)	21.270
Conductivity (S/m)	0.855

C. SAR Surface and Volume



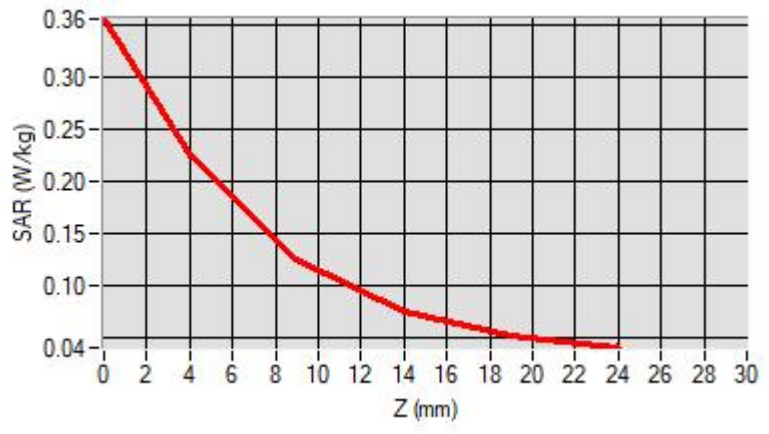
Maximum location: X=-3.00, Y=11.00 ; SAR Peak: 0.35 W/kg

D. SAR 1g & 10g

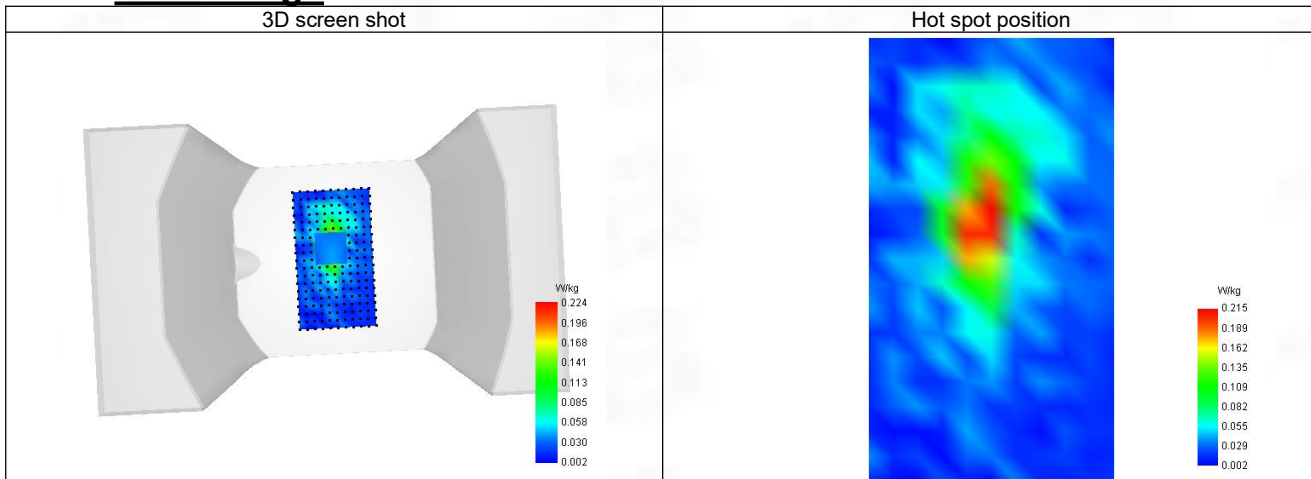
SAR 10g (W/Kg)	0.187
SAR 1g (W/Kg)	0.261
Variation (%)	-2.380
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.355	0.224	0.125	0.075	0.052



F. 3D Image



9-Body with front position in dist. 0mm on Channel 26590 in LTE band 25

SAR Measurement at LTE band 25 (Body, Validation Plane)

Date of measurement: 18/7/2023

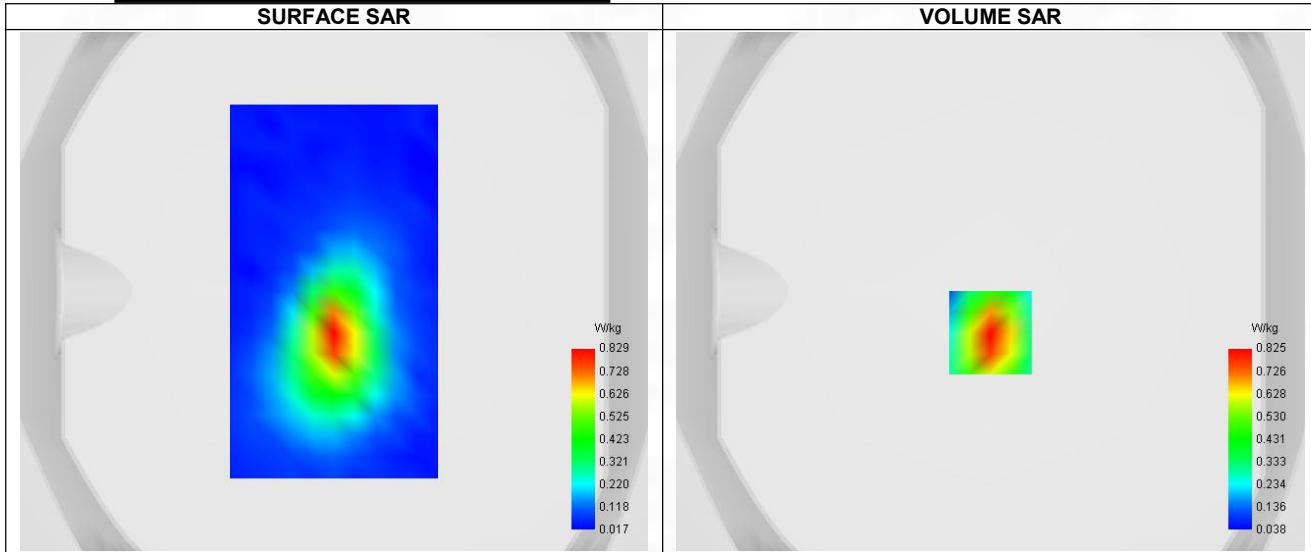
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	2.24
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	LTE band 25
Channels	Higher (26590)
Signal	LTE FDD
Cell Bandwidth	20 Mhz
Modulation	SC-OFDM - QPSK
RB offset	50
RB size	1

B. Permittivity

Frequency (MHz)	1905.000
Relative permittivity (real part)	39.873
Relative permittivity (imaginary part)	13.387
Conductivity (S/m)	1.414

C. SAR Surface and Volume



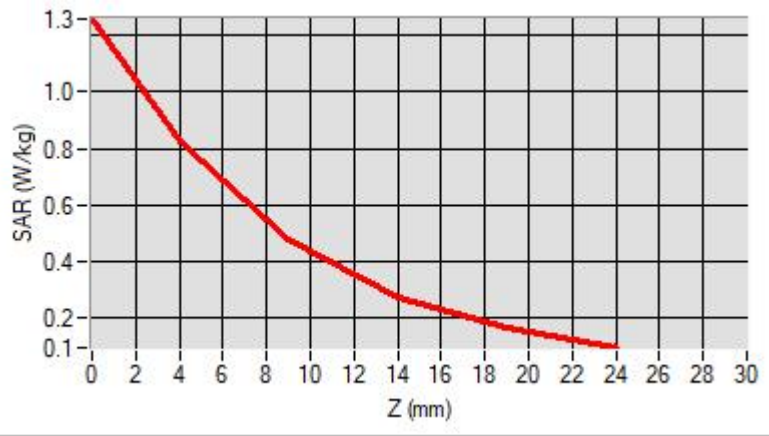
Maximum location: X=0.00, Y=-16.00 ; SAR Peak: 1.27 W/kg

D. SAR 1g & 10g

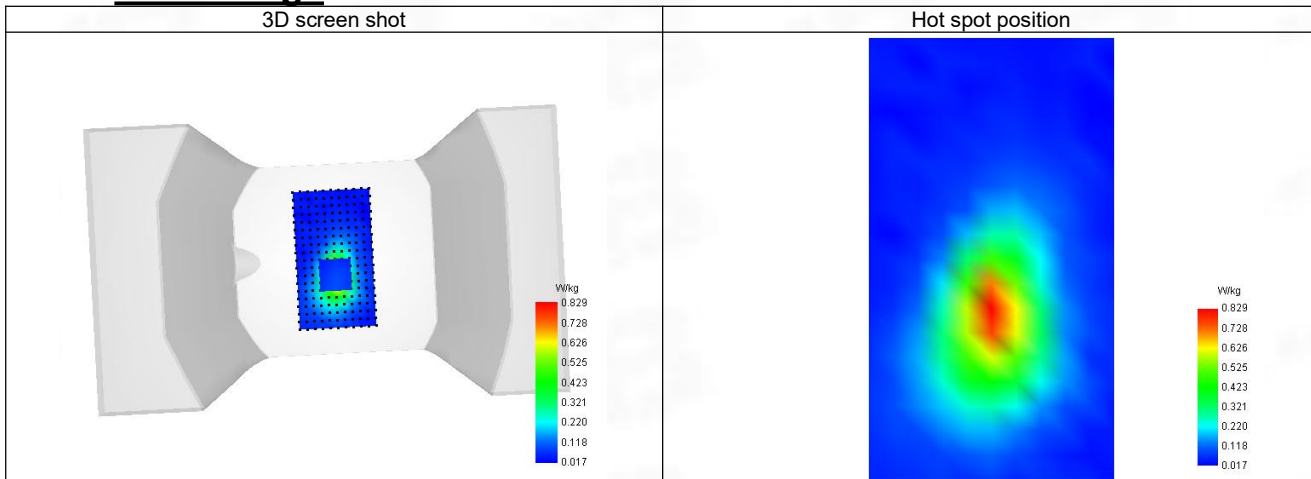
SAR 10g (W/Kg)	0.410
SAR 1g (W/Kg)	0.765
Variation (%)	0.870
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.259	0.825	0.475	0.273	0.162



F. 3D Image



10-Body with front position in dist. 0mm on Channel 26965 in LTE band26

SAR Measurement at LTE band 26 (Body, Validation Plane)

Date of measurement: 17/7/2023

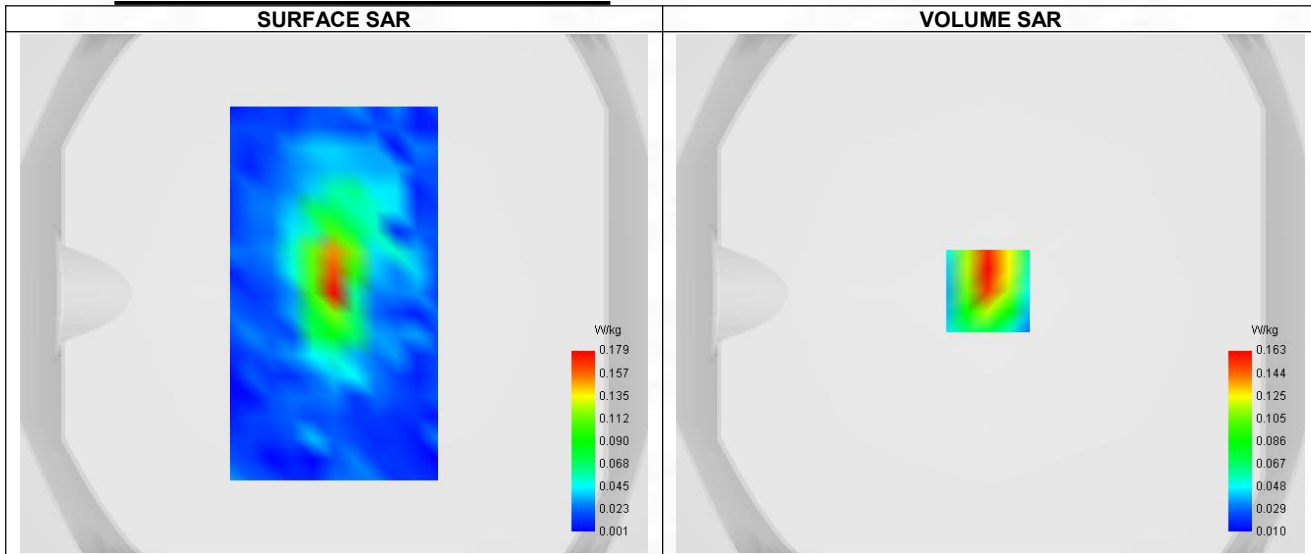
A. Experimental conditions.

Probe	SN 04/22 EPG0365
ConvF	1.68
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	LTE band 26
Channels	Higher (26965)
Signal	LTE FDD
Cell Bandwidth	15 Mhz
Modulation	SC-OFDM - QPSK
RB offset	38
RB size	1

B. Permittivity

Frequency (MHz)	841.500
Relative permittivity (real part)	41.400
Relative permittivity (imaginary part)	19.500
Conductivity (S/m)	0.873

C. SAR Surface and Volume

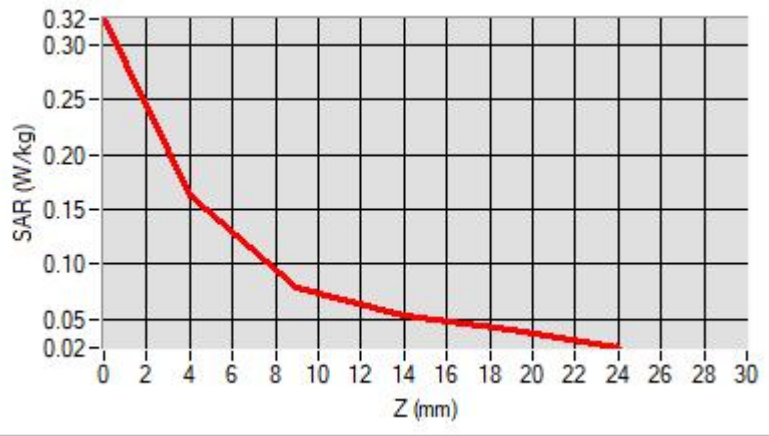


D. SAR 1g & 10g

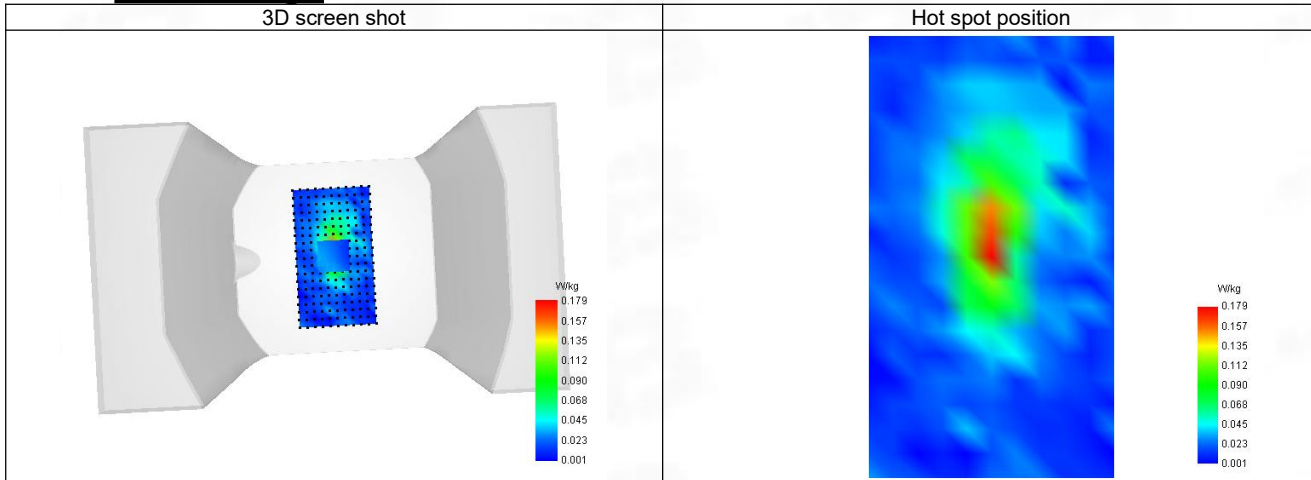
SAR 10g (W/Kg)	0.085
SAR 1g (W/Kg)	0.115
Variation (%)	-1.310
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.323	0.163	0.079	0.053	0.040



F. 3D Image



11-Body with front position in dist. 0mm on Channel 41490 in LTE band 41

SAR Measurement at LTE band 41 (Body, Validation Plane)

Date of measurement: 19/7/2023

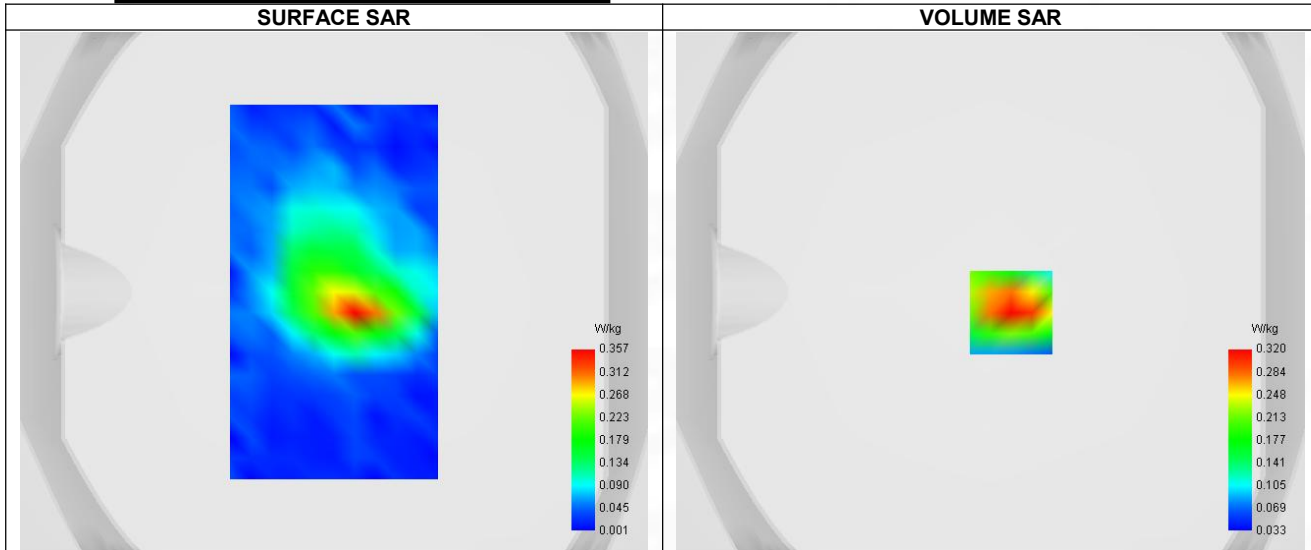
A. Experimental conditions.

Probe	SN 04/22 EPGO365
ConvF	2.40
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	LTE band 41
Channels	Higher (41490)
Signal	LTE TDD
Cell Bandwidth	20 Mhz
Modulation	SC-OFDM - QPSK
RB offset	50
RB size	1
Subframe configuration	0
Special subframe configuration	0
Cyclic prefix	Normal
Duty Cycle (%)	0.61

B. Permittivity

Frequency (MHz)	2680.000
Relative permittivity (real part)	38.773
Relative permittivity (imaginary part)	12.797
Conductivity (S/m)	2.055

C. SAR Surface and Volume



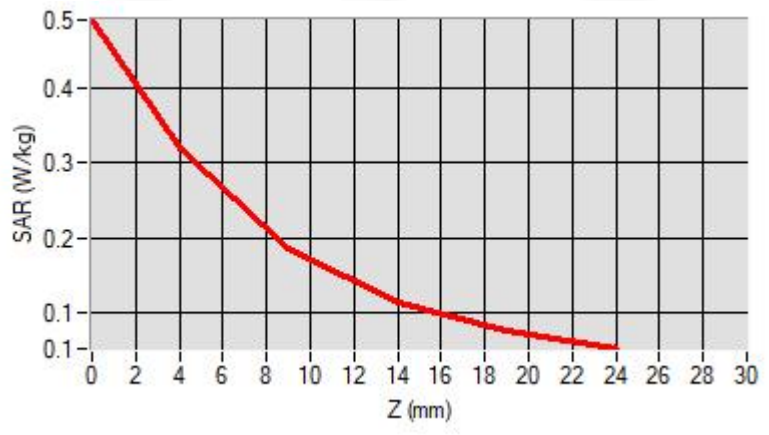
Maximum location: X=8.00, Y=-8.00 ; SAR Peak: 0.50 W/kg

D. SAR 1g & 10g

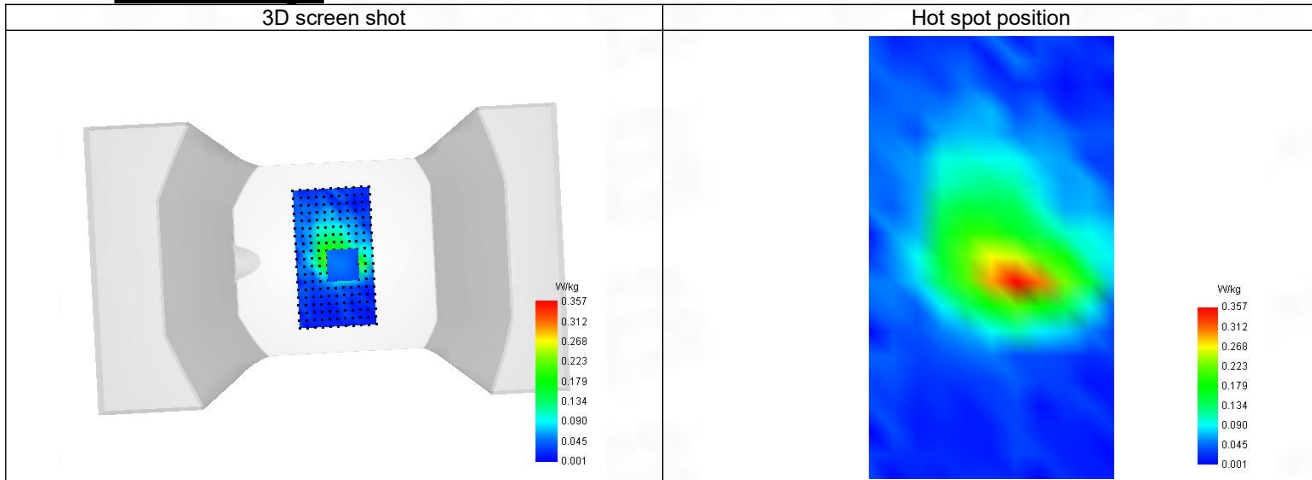
SAR 10g (W/Kg)	0.199
SAR 1g (W/Kg)	0.376
Variation (%)	-1.260
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.490	0.320	0.187	0.114	0.075



F. 3D Image



12-Body with top position in dist. 0mm on Channel 6 in IEEE 802.11b ISM

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

Date of measurement: 19/7/2023

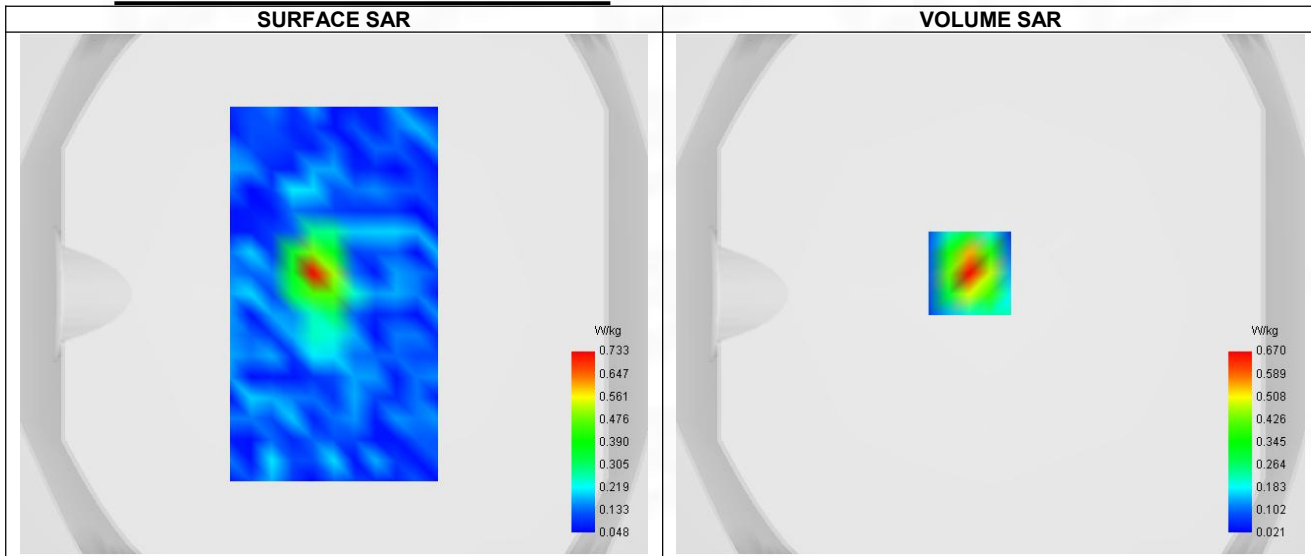
A. Experimental conditions.

Probe	SN 04/22 EPGO365
ConvF	2.36
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	IEEE 802.11b ISM
Channels	Middle (6)
Signal	IEEE 802.11

B. Permittivity

Frequency (MHz)	2437.000
Relative permittivity (real part)	39.097
Relative permittivity (imaginary part)	13.396
Conductivity (S/m)	1.796

C. SAR Surface and Volume



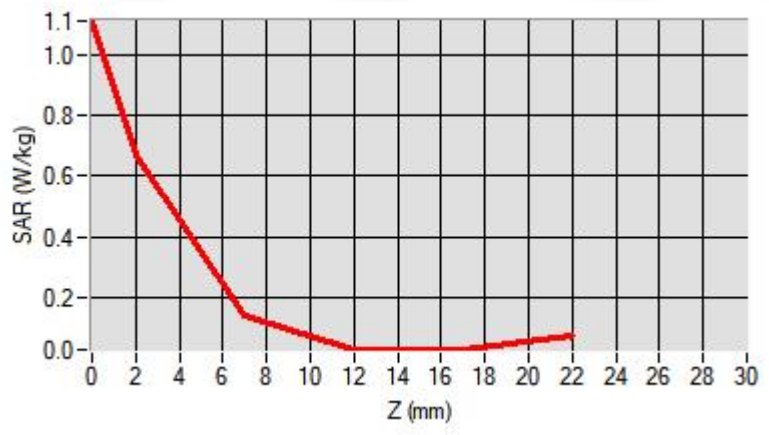
Maximum location: X=-8.00, Y=8.00 ; SAR Peak: 1.16 W/kg

D. SAR 1g & 10g

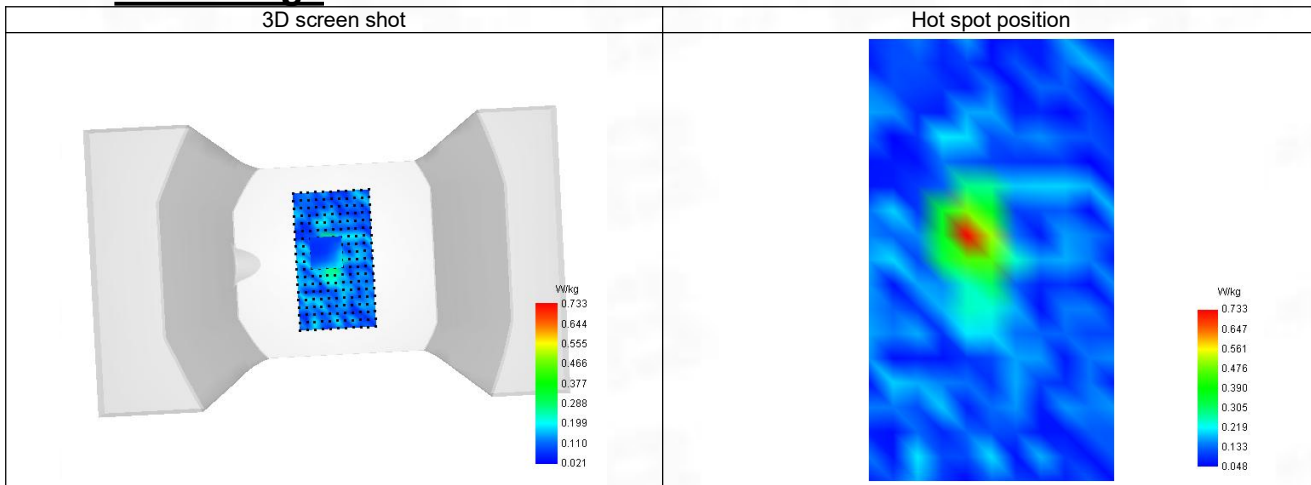
SAR 10g (W/Kg)	0.208
SAR 1g (W/Kg)	0.425
Variation (%)	-1.240
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	2.00	7.00	12.00	17.00
SAR (W/Kg)	1.110	0.670	0.142	0.030	0.029



F. 3D Image



13-Body with front position in dist. 0mm on Channel 42 in IEEE 802.11ac U-NII

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

Date of measurement: 19/7/2023

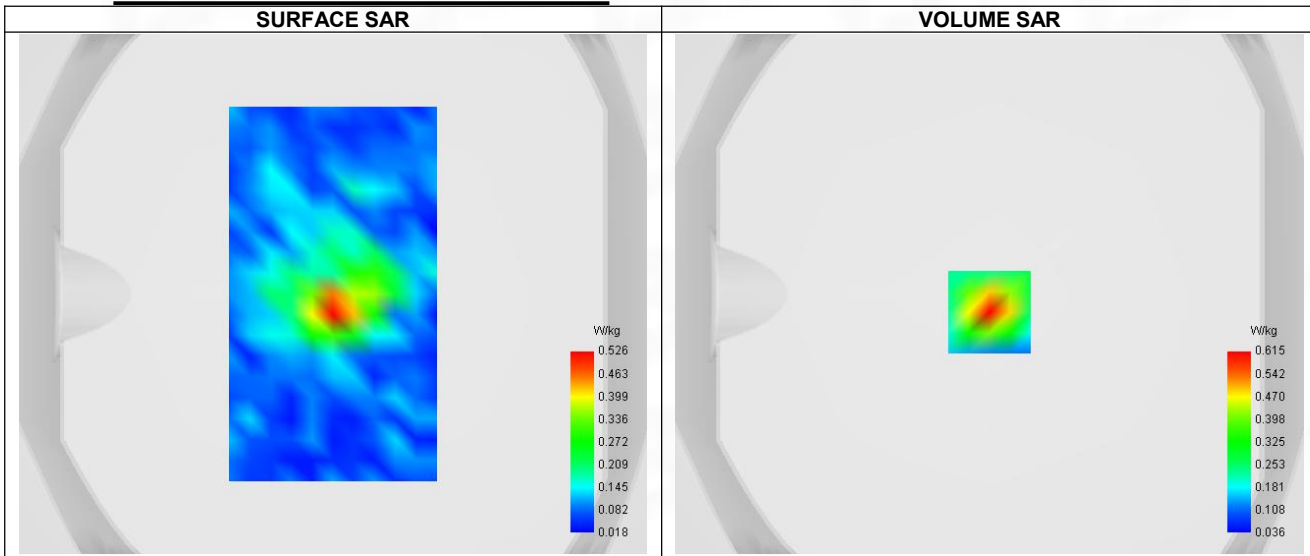
A. Experimental conditions.

Probe	SN 04/22 EPGO365
ConvF	2.24
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	IEEE 802.11ac U-NII
Channels	Middle (42)
Signal	IEEE 802.11

B. Permittivity

Frequency (MHz)	5210.000
Relative permittivity (real part)	35.870
Relative permittivity (imaginary part)	16.260
Conductivity (S/m)	4.710

C. SAR Surface and Volume



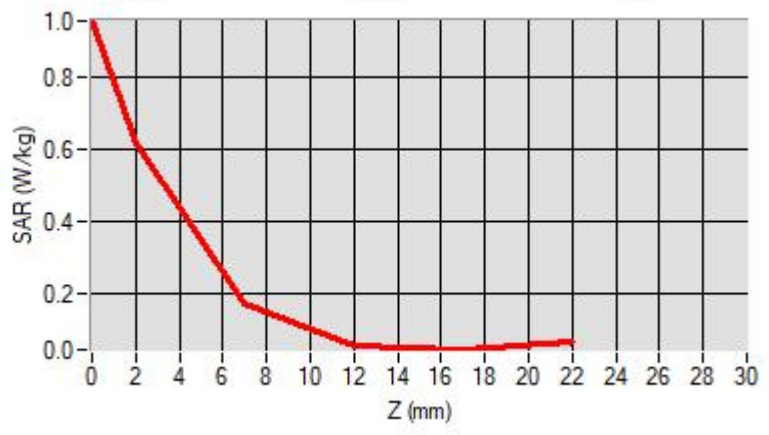
Maximum location: X=0.00, Y=-7.00 ; SAR Peak: 0.99 W/kg

D. SAR 1g & 10g

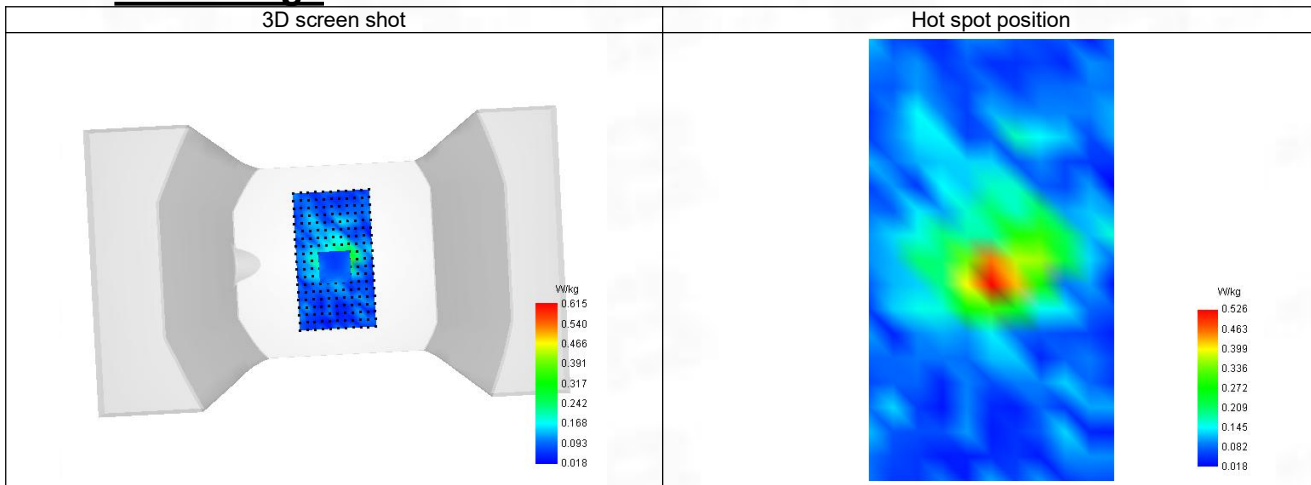
SAR 10g (W/Kg)	0.187
SAR 1g (W/Kg)	0.389
Variation (%)	1.180
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	2.00	7.00	12.00	17.00
SAR (W/Kg)	0.958	0.615	0.172	0.053	0.041

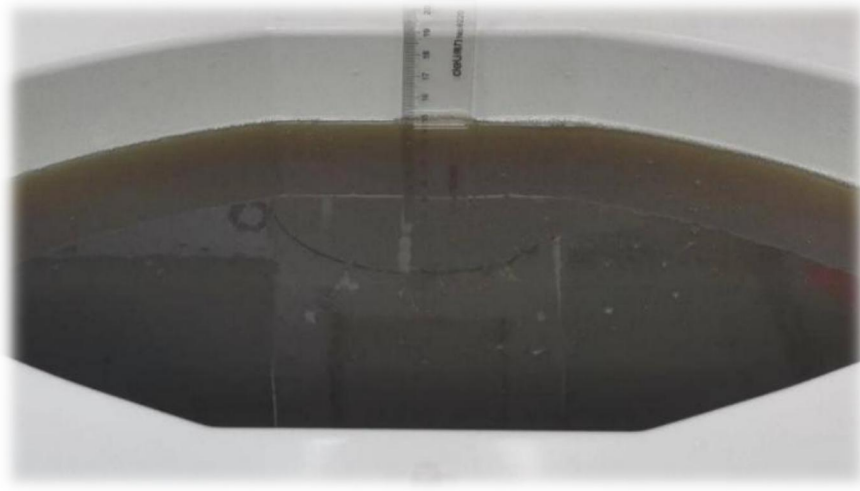


F. 3D Image



ANNEX D SAR Test Setup Photos

Reference Photo: simulation liquid depth 15cm



Test positions



Front (dist. 0mm)



Back (dist. 0mm)



Left (dist. 0mm)



Right (dist. 0mm)



ANNEX E EUT External and Internal Photos

Please refer to RF Report.

ANNEX F Calibration Information

Please refer to the document "Calibration.pdf".



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--END OF REPORT--