SAR Test Report

For

Applicant Name:	**GO MD USA LLC**
Address:	3385 Airways Blvd STE 201 Memphis Tennessee 38116 USA
EUT Name:	TABLET
Brand Name:	GOMDUSA
Model Number:	X23TAB

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:	BTF240108R00401
Test Standards:	47 CFR Part 2.1093 IEEE1528-2013 IEEE C95.1-2019 KDB 447498 D04 KDB 865664 D01 KDB 865664 D02 KDB 941225 D01 KDB 941225 D05 KDB 941225 D06 KDB 248227 D01 KDB 616217 D04 KDB 648474 D04 KDB 690783 D01
FCC ID:	2BD6M-X23TAB
Test Conclusion:	Pass
Test Date:	2024-01-11 to 2024-01-12
Date of Issue:	2024-02-02

Prepared By:	Amenda Zhong Amenda Zhong / Project Engineer
Date:	2024-02-02
Approved By:	Ryan.CJ Ryan.CJ / EMC Manager
Date:	2024-02-02

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Revision History		
Version	Issue Date	Revisions Content
R_V0	2024-02-02	Original
Note:	*Once the revision has been made, then previous versions reports are invalid.*	

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1. Introduction

1.1 Identification of Testing Laboratory

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

1.2 Identification of the Responsible Testing Location

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

1.3 Laboratory Condition

Ambient Temperature:	21℃ to 25℃
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.

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2. Product Information

2.1 Application Information

Company Name:	GO MD USA LLC
Address:	3385 Airways Blvd STE 201 Memphis Tennessee 38116 USA

2.2 Manufacturer Information

Company Name:	LHPI Group Ince
Address:	Piso 8 Torre Universal, Federico Boyd, Panama City, Panama

2.3 General Description of Equipment under Test (EUT)

EUT Name	TABLET
Under Test Model Name	X23TAB
Hardware Version	M863YAR330
Sample No.	BTFSN240108010 1/1

2.4 Equipment under Test Ancillary Equipment

Ancillary Equipment 1	Rechargeable Battery	
	Capacity	4000mAh
	Rated Voltage	3.8V

2.5 Technical Information

Network and Wireless connectivity	2G Network GSM/GPRS/EGPRS 850/1900 MHz 3G Network WCDMA/HSDPA/HSUPA Band 2/4/5 4G Network FDD LTE Band 2/4/5/12/17/66/71 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	GSM, WCDMA, LTE, WLAN, Bluetooth		
Frequency Range	GSM 850	TX: 824 ~ 849 MHz	RX: 869 ~ 894 MHz
	GSM 1900	TX: 1850 ~ 1910 MHz	RX: 1930 ~ 1990 MHz
	WCDMA Band 2	TX: 1850 ~ 1910 MHz	RX: 1930 ~ 1990 MHz
	WCDMA Band 4	TX: 1710 ~ 1755 MHz	RX: 2110 ~ 2155 MHz
	WCDMA Band 5	TX: 824 ~ 849 MHz	RX: 869 ~ 894 MHz
	LTE Band 2	TX: 1850 ~ 1910 MHz	RX: 1930 ~ 1990 MHz
	LTE Band 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 66	TX: 1710 ~ 1780 MHz	RX: 2110 ~ 2200 MHz
	LTE Band 71	TX: 663 ~ 698 MHz	RX: 617 ~ 652 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 5250 ~ 5350 MHz 5725 ~ 5850 MHz	
	Bluetooth	2402 ~ 2480 MHz	
Antenna Type	WWAN: PIFA Antenna WLAN: PIFA Antenna BT: PIFA Antenna		
Hotspot Function	Support		
Power Reduction	Not Support		
Exposure Category	General Population/Uncontrolled exposure		
EUT Stage	Portable Device		
Product	Type		
	☐ Production unit	☒ Identical prototype	

3. Summary of Test Results

3.1 Test Standards

No.	Identity	Document Title
1	47 CFR Part 2.1093	Radiofrequency radiation exposure evaluation: portable devices
2	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 D04	Interim General RF Exposure Guidance v01
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 941225 D06	Hotspot Mode v02r01
10	KDB 248227 D01	802.11 Wi-Fi SAR v02r02
11	KDB 616217 D04	SAR for laptop and tablets v01r02
12	KDB 648474 D04	Handset SAR v01r03
13	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.

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3.3 Test Result Summary

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

<Highest Reported standalone SAR Summary>

Exposure Position	Frequency Band	Reported SAR (W/kg)	Equipment Class	Highest Reported SAR (W/kg)
Body 1-g SAR (0 mm Gap)	GSM 850	0.614	PCB	**0.797**
	GSM 1900	0.439		
	WCDMA Band II	0.491		
	WCDMA Band IV	**0.797**		
	WCDMA Band V	0.697		
	LTE Band 2	0.306		
	LTE Band 4	0.382		
	LTE Band 5	0.521		
	LTE Band 12	0.416		
	LTE Band 17	0.414		
	LTE Band 41	0.351		
	LTE Band 66	0.338		
	LTE Band 71	0.196		
	WLAN 2.4 GHz	0.597	DTS	
	Bluetooth	0.054	DSS	
	WLAN 5.2 GHz	0.183	NII	
	WLAN 5.4 GHz	0.135		
	WLAN 5.8 GHz	0.216		

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
Body 1-g SAR (0 mm Gap)	WCDMA Band IV + 2.4G WIFI	1.394	1.6	Pass

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3.4 Test Uncertainty

3.4.1 Measurement uncertainly evaluation for SAR test

Measurement uncertainly 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.

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3.4.2 Measurement uncertainly 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 driftmeasurement	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	

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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:

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

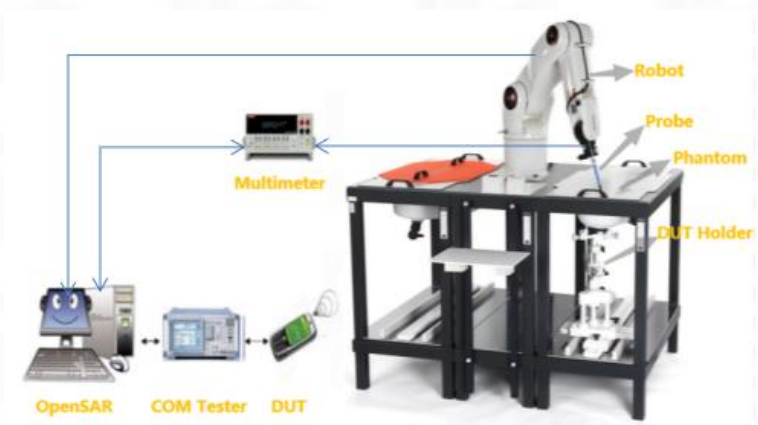
SAR is expressed in units of Watts per kilogram (W/kg) SAR measurement can be related to the electrical field in the tissue by

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

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 (±30°).
· 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>=4GHz.
- Probe linearity: <0.25dB.
- Axial Isotropy: <0.25dB.
- Spherical Isotropy: <0.50dB.
- 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.

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SAM Phantom

The thickness of the phantom amounts to 2 mm±0.2 mm. The materials for the phantom do not affect the radiation of the device under test (DUT) : εr' <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±0.2 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 600mm±5mm and width 400mm±5mm.
The phantom shell is made of low-loss and low-permittivity material, having loss tangent tanδ ≤ 0.05 and relative permittivity:
εr' ≤ 5 for f ≤ 3 GHz
3 ≤εr' ≤ 5 for f > 3 GHz
The thickness of the bottom-wall of the flat phantom is 2.0 mm with a tolerance of ± 0.2 mm.

Technical & mechanical characteristics	
Shell thickness	2 mm ± 0.2 mm
Filling volume	25 L
Dimensions	600 mm x 400 mm x 200mm
Permittivity	4.4
Loss tangent	0.017

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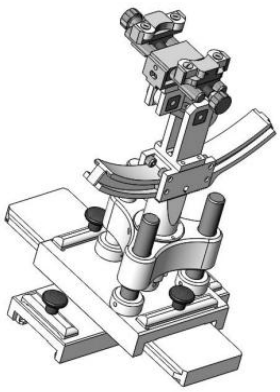
4.2.5 Device Holder



System Material	Permittivity	Loss tangent
Delrin	3.7	0.005

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

System Material	Permittivity	Loss tangent
PMMA	2.9	0.028

4.2.6 Simulating Liquid

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

Head Liquid Depth	Body Liquid Depth

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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.

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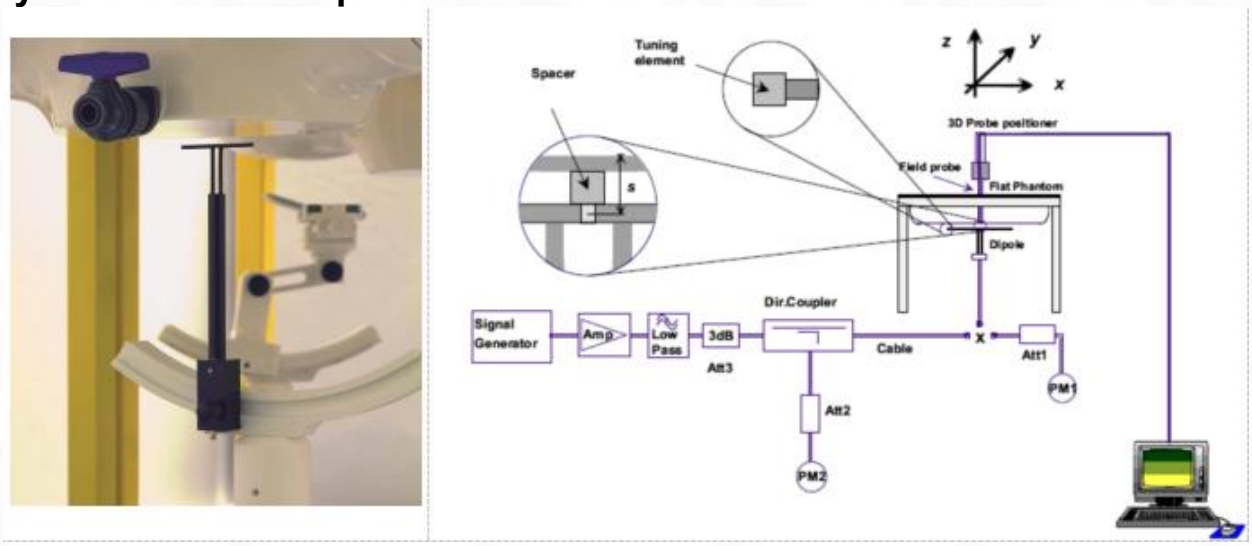
5.2 System Check Setup



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

(a) 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.

(b) 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.

(c) The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical 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.

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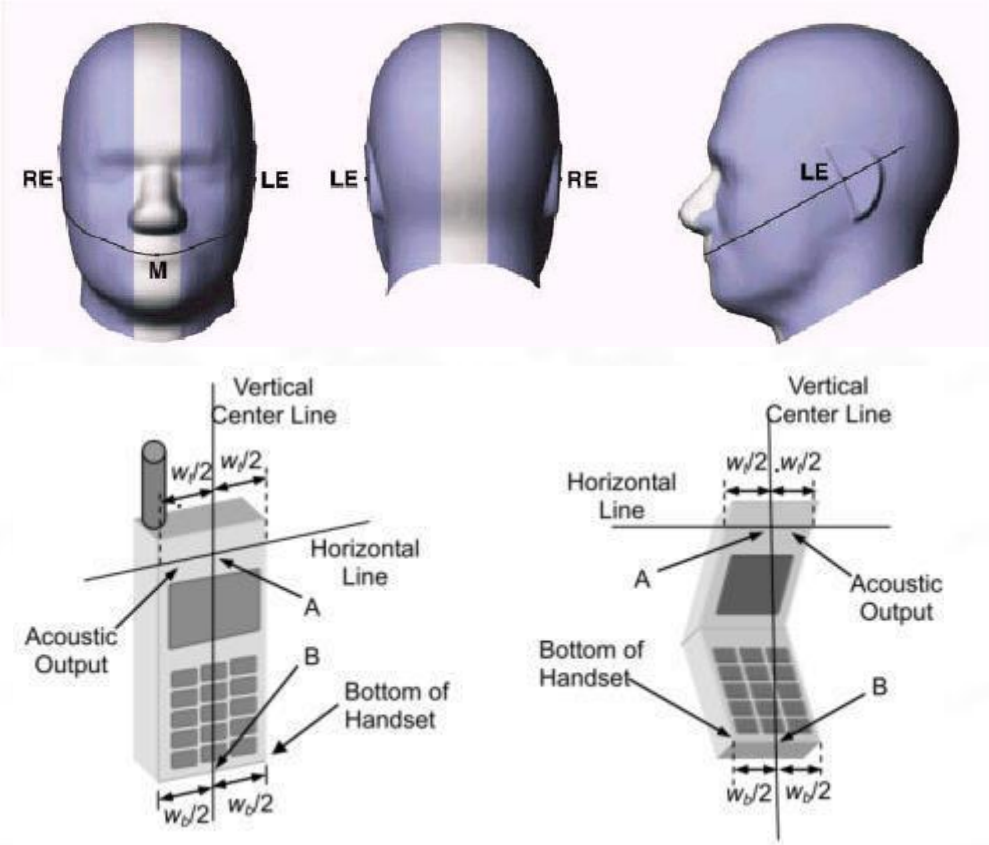


6.1.2 Two Imaginary Lines on the Handset

(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

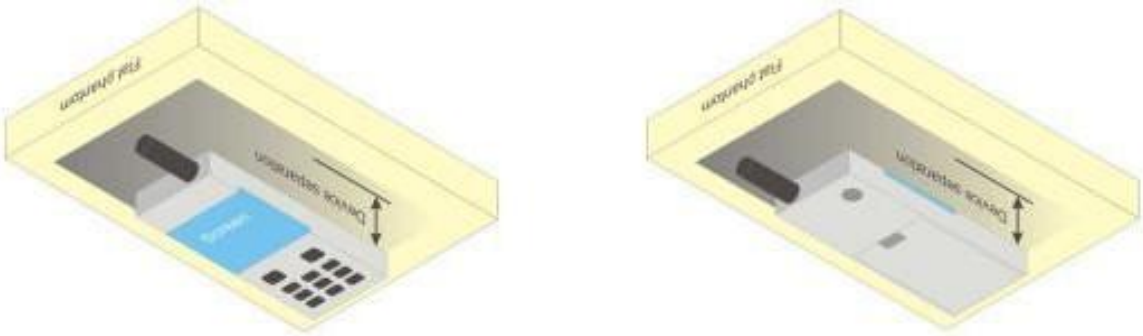
(a) To position the device in the “cheek” position described above.
(b) While maintaining the device the reference plane described above and pivoting against the ear, moves it outward away from the mouth by an angle of 15 degrees or until contact with the ear is lost.

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.

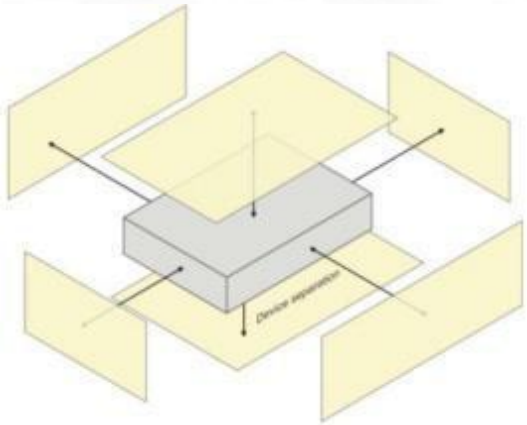
Body-worn accessories that do not contain metallic or conductive components may be tested according to worst-case exposure configurations, typically according to the smallest test separation distance required for the group of body-worn accessories with similar operating and exposure characteristics.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

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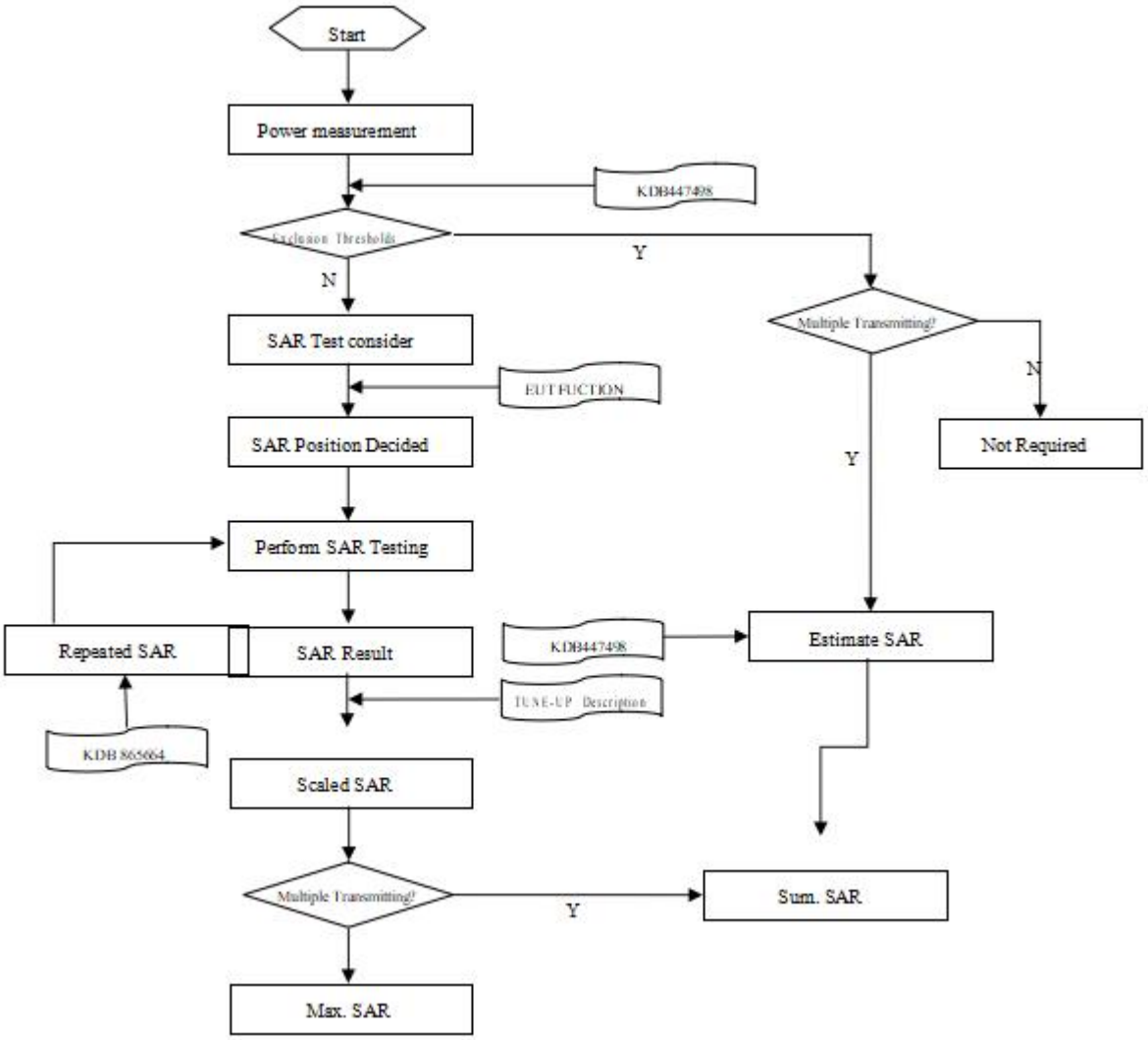
7. Measurement Procedure

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	½·δ·ln(2)±0.5 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
				5–6 GHz: ≤ 2 mm
	graded grid	Δz Zoom (1): between 1st two points closest to phantom surface	≤ 4 mm	3–4 GHz: ≤ 3 mm
				4–5 GHz: ≤ 2.5 mm
				5–6 GHz: ≤ 2 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.

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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 to16 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.

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8. Conducted RF Output Power

8.1 GSM

Mode: GSM850		Maximum Tune-up(dBm)	Burst Average Power (dBm)			Division Factors	Frame-Average Power (dBm)		
			CH128	CH190	CH251		CH128	CH190	CH251
			824.2MHz	836.6MHz	848.8MHz		824.2MHz	836.6MHz	848.8MHz
GPRS (GMSK)	1Tx slot	32.50	32.36	32.19	32.31	-9.03	23.33	23.16	23.28
	2Tx slots	32.00	31.63	31.42	31.53	-6.02	25.61	25.40	25.51
	3Tx slots	30.00	29.98	29.68	29.77	-4.26	25.72	25.42	25.51
	4Tx slots	**29.00**	**28.98**	28.66	28.71	-3.01	**25.97**	25.65	25.70
EGPRS (8PSK)	1Tx slot	27.50	27.21	26.81	27.43	-9.03	18.18	17.78	18.40
	2Tx slots	26.50	26.18	25.63	26.08	-6.02	20.16	19.61	20.06
	3Tx slots	24.50	24.03	23.71	24.26	-4.26	19.77	19.45	20.00
	4Tx slots	23.00	22.98	22.85	22.98	-3.01	19.97	19.84	19.97
Mode: GSM1900		**Maximum Tune-up(dBm)**	**Burst Average Power (dBm)**			Division Factors	**Frame-Average Power (dBm)**		
			CH512	CH661	CH810		CH512	CH661	CH810
			1850.2MHz	1880.0MHz	1909.8MHz		1850.2MHz	1880.0MHz	1909.8MHz
GPRS (GMSK)	1Tx slot	28.50	28.27	28.41	28.25	-9.03	19.24	19.38	19.22
	2Tx slots	28.00	27.54	27.68	27.49	-6.02	21.52	21.66	21.47
	3Tx slots	26.00	25.82	25.94	25.74	-4.26	21.56	21.68	21.48
	4Tx slots	**25.00**	24.77	**24.87**	24.66	-3.01	21.76	**21.86**	21.65
EGPRS (8PSK)	1Tx slot	26.00	25.53	25.60	25.32	-9.03	16.50	16.57	16.29
	2Tx slots	25.50	25.03	25.09	25.10	-6.02	19.01	19.07	19.08
	3Tx slots	23.50	22.98	23.10	23.41	-4.26	18.72	18.84	19.15
	4Tx slots	22.50	22.14	22.15	21.64	-3.01	19.13	19.14	18.63

Note:
1) Division Factors
To average the power, the division factor is as follows:
1Tx-slot = 1 transmit time slot out of 8 time slots=> conducted power divided by (8/1) => -9.03dB
2Tx-slots = 2 transmit time slots out of 8 time slots=> conducted power divided by (8/2) => -6.02dB
3Tx-slots = 3 transmit time slots out of 8 time slots=> conducted power divided by (8/3) => -4.26dB
4Tx-slots = 4 transmit time slots out of 8 time slots=> conducted power divided by (8/4) => -3.01dB

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8.2 WCDMA

Mode		Maximum Tune-up(dBm)	WCDMA Band II		
			Conducted Power (dBm)		
			CH9262	CH9400	CH9538
			1852.4	1880.0	1907.6
RMC 12.2K		**24.00**	23.43	**23.57**	23.33
HSDPA	Subtest-1	23.00	22.47	22.67	22.38
	Subtest-2	22.50	21.98	22.37	21.96
	Subtest-3	21.50	21.00	20.77	21.05
	Subtest-4	21.50	21.03	21.29	20.81
HSUPA	Subtest-1	23.00	21.52	22.50	22.19
	Subtest-2	22.50	22.26	22.48	22.28
	Subtest-3	21.50	20.73	21.40	20.87
	Subtest-4	23.00	22.43	22.65	22.39
	Subtest-5	22.50	21.03	22.04	21.72
Mode		Maximum Tune-up(dBm)	WCDMA Band IV		
			Conducted Power (dBm)		
			CH1312	CH1450	CH1513
			1712.4	1740.0	1752.6
RMC 12.2K		**23.50**	**23.05**	22.68	22.97
HSDPA	Subtest-1	22.50	22.09	21.76	22.05
	Subtest-2	22.00	21.63	21.47	21.48
	Subtest-3	21.00	20.54	19.78	20.52
	Subtest-4	21.00	20.29	20.34	20.65
HSUPA	Subtest-1	22.00	21.19	21.45	21.79
	Subtest-2	22.00	21.98	21.58	21.95
	Subtest-3	21.00	20.40	20.44	20.68
	Subtest-4	22.50	22.07	21.72	22.01
	Subtest-5	21.50	20.45	20.96	21.19
Mode		Maximum Tune-up(dBm)	WCDMA Band V		
			Conducted Power (dBm)		
			CH4132	CH4183	CH4233
			826.4	836.6	846.6
RMC 12.2K		**24.00**	23.57	**23.73**	23.53
HSDPA	Subtest-1	23.00	22.61	22.76	22.56
	Subtest-2	22.50	22.30	22.20	21.99
	Subtest-3	21.50	21.22	21.26	20.57
	Subtest-4	21.50	20.79	21.12	21.19
HSUPA	Subtest-1	23.00	21.53	22.59	22.36
	Subtest-2	23.00	22.62	22.74	22.46
	Subtest-3	21.50	20.76	21.36	21.37
	Subtest-4	23.00	22.64	22.75	22.55
	Subtest-5	22.50	21.16	22.21	21.83
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.					

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8.3 LTE

Band 2

LTE-FDD Band 2				Maximum Tune-up(dBm)	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		18607	18900	19193
					1850.7MHz	1880.0MHz	1909.3MHz
1.4MHz	QPSK	1	0	23.50	23.15	23.07	22.94
			2	23.50	23.28	23.23	23.08
			5	23.50	23.11	23.04	22.94
		3	0	23.50	23.04	23.18	22.92
			2	23.50	23.06	23.15	22.92
			3	23.50	23.06	23.10	22.92
		6	0	22.50	22.12	22.15	21.96
	16QAM	1	0	22.50	22.17	22.24	21.74
			2	22.50	22.29	22.33	21.94
			5	22.50	22.14	22.21	21.74
		3	0	22.50	22.20	22.28	22.02
			2	22.50	22.19	22.29	22.01
			3	22.50	22.16	22.29	22.04
		6	0	21.50	21.19	21.29	21.07
Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	18615	18900	19185
					1851.5MHz	1880.0MHz	1908.5MHz
3MHz	QPSK	1	0	23.50	23.09	23.21	22.90
			7	24.00	23.26	23.52	23.19
			14	23.50	23.12	23.21	22.93
		8	0	22.50	22.04	22.15	21.92
			4	22.50	22.09	22.19	21.96
			7	22.50	22.08	22.12	21.97
		15	0	22.50	22.04	22.10	21.89
	16QAM	1	0	22.50	22.22	22.02	22.27
			7	23.00	22.62	22.27	22.60
			14	22.50	22.20	21.95	22.28
		8	0	21.50	21.06	21.13	20.95
			4	21.50	21.07	21.14	20.97
			7	21.50	21.03	21.09	20.94
		15	0	21.50	20.96	21.12	20.88
Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	18625	18900	19175
					1852.5MHz	1880.0MHz	1907.5MHz
5MHz	QPSK	1	0	23.50	22.99	23.02	22.81
			13	23.50	23.36	23.12	23.29
			24	23.00	22.95	22.96	22.86
		12	0	22.50	21.97	22.17	21.88
			6	22.50	22.06	22.20	21.97
			13	22.50	22.05	22.12	21.94
		25	0	22.50	22.01	22.15	21.95
	16QAM	1	0	22.50	22.24	22.29	22.26
			13	23.00	22.49	22.59	22.67
			24	22.50	22.22	22.27	22.32
		12	0	21.50	20.91	21.14	20.87
			6	21.50	21.00	21.18	20.95
			13	21.50	20.97	21.11	20.91
		25	0	21.50	20.99	21.12	20.88

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LTE-FDD Band 2				Maximum Tune-up(dBm)	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		18650	18900	19150
					1855.0MHz	1880.0MHz	1905.0MHz
10MHz	QPSK	1	0	23.50	23.12	23.17	22.86
			25	23.50	23.21	23.24	23.00
			49	23.50	23.34	23.08	22.92
		25	0	22.50	21.99	22.27	22.00
			13	22.50	22.07	22.18	21.89
			25	22.50	22.06	22.19	22.06
		50	0	22.50	22.03	22.21	21.98
	16QAM	1	0	22.50	21.91	22.49	21.98
			25	23.00	22.02	22.61	22.14
			49	22.50	22.01	22.40	22.03
		25	0	21.50	20.96	21.28	20.97
			13	21.50	21.03	21.16	20.92
			25	21.50	21.05	21.17	21.01
		50	0	21.50	20.96	21.17	20.98
Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	18675	18900	19125
					1857.5MHz	1880.0MHz	1902.5MHz
15MHz	QPSK	1	0	23.50	22.99	23.15	22.75
			38	24.00	23.33	23.50	23.00
			74	23.50	23.08	23.01	22.83
		36	0	22.50	22.02	22.32	21.97
			18	22.50	22.11	22.25	21.98
			39	22.50	22.11	22.18	22.03
		75	0	22.50	22.09	22.26	22.02
	16QAM	1	0	22.50	22.10	22.17	22.17
			38	22.50	22.31	22.49	22.46
			74	22.50	22.10	22.03	22.18
		36	0	21.50	21.03	21.23	20.91
			18	21.50	21.12	21.15	20.97
			39	21.50	21.15	21.07	20.98
		75	0	21.50	21.01	21.24	20.93
Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	18700	18900	19100
					1860.0MHz	1880.0MHz	1900.0MHz
20MHz	QPSK	1	0	23.00	22.81	22.98	22.73
			50	**23.50**	23.16	**23.37**	23.01
			99	23.00	22.92	22.83	22.74
		50	0	22.50	21.96	**22.33**	21.92
			25	22.50	22.07	22.17	21.89
			50	22.50	22.03	22.19	21.90
		100	0	22.50	21.97	22.26	21.97
	16QAM	1	0	22.50	22.06	22.12	21.88
			50	22.50	22.43	22.41	22.23
			99	22.50	22.19	22.01	21.94
		50	0	21.50	21.00	21.27	20.95
			25	21.50	21.09	21.12	20.90
			50	21.50	21.08	21.13	20.94
		100	0	21.50	20.99	21.25	20.94

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Band 4

LTE-FDD Band 4				Maximum Tune-up(dBm)	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		19957	20175	20393
					1710.7MHz	1732.5MHz	1754.3MHz
1.4MHz	QPSK	1	0	23.00	22.55	21.94	22.47
			2	23.00	22.75	22.17	22.65
			5	23.00	22.56	21.98	22.52
		3	0	23.00	22.46	22.04	22.52
			2	23.00	22.52	22.07	22.53
			3	23.00	22.53	22.04	22.46
		6	0	22.00	21.57	20.99	21.49
	16QAM	1	0	22.00	21.66	21.17	21.28
			2	22.00	21.78	21.30	21.50
			5	22.00	21.70	21.16	21.30
		3	0	22.00	21.72	21.21	21.61
			2	22.00	21.72	21.24	21.64
			3	22.00	21.68	21.21	21.63
		6	0	21.00	20.73	20.18	20.68
Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	19965	20175	20385
					1711.5MHz	1732.5MHz	1753.5MHz
3MHz	QPSK	1	0	22.50	22.49	22.00	22.49
			7	23.00	22.68	22.29	22.58
			14	23.00	22.60	21.98	22.48
		8	0	21.50	21.48	20.99	21.45
			4	22.00	21.55	21.03	21.47
			7	22.00	21.50	21.01	21.47
		15	0	21.50	21.45	20.94	21.44
	16QAM	1	0	22.00	21.40	21.43	21.66
			7	22.00	21.73	21.63	21.94
			14	22.00	21.43	21.37	21.61
		8	0	20.50	20.48	20.01	20.48
			4	21.00	20.53	20.04	20.49
			7	20.50	20.49	20.01	20.45
		15	0	21.00	20.54	19.96	20.37
Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	19975	20175	20375
					1712.5MHz	1732.5MHz	1752.5MHz
5MHz	QPSK	1	0	22.50	22.43	21.88	22.33
			13	23.00	22.80	22.41	22.73
			24	22.50	22.36	21.90	22.39
		12	0	21.50	21.45	20.96	21.44
			6	22.00	21.54	21.04	21.52
			13	21.50	21.47	20.98	21.44
		25	0	21.50	21.47	20.96	21.44
	16QAM	1	0	22.00	21.75	21.24	21.85
			13	22.50	22.28	21.53	22.13
			24	22.00	21.75	21.23	21.89
		12	0	20.50	20.39	19.95	20.38
			6	20.50	20.46	20.03	20.48
			13	20.50	20.43	19.97	20.40
		25	0	20.50	20.46	19.91	20.37

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LTE-FDD Band 4				Maximum Tune-up(dBm)	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		20000	20175	20350
					1715.0MHz	1732.5MHz	1750.0MHz
10MHz	QPSK	1	0	23.00	22.53	22.11	22.28
			25	23.00	22.68	22.19	22.51
			49	22.50	22.45	22.08	22.21
		25	0	21.50	21.49	21.02	21.39
			13	22.00	21.51	21.02	21.45
			25	21.50	21.46	21.01	21.43
		50	0	21.50	21.48	21.01	21.40
	16QAM	1	0	22.00	21.62	20.91	21.67
			25	22.00	21.86	20.99	21.91
			49	22.00	21.54	20.91	21.88
		25	0	20.50	20.47	20.00	20.39
			13	21.00	20.52	19.99	20.42
			25	20.50	20.46	20.04	20.46
		50	0	21.00	20.53	19.95	20.40
Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	20025	20175	20325
					1717.5MHz	1732.5MHz	1747.5MHz
15MHz	QPSK	1	0	22.50	22.42	22.09	22.04
			38	23.00	22.80	22.20	22.60
			74	22.50	22.05	22.04	22.33
		36	0	22.00	21.50	21.08	21.32
			18	22.00	21.50	21.08	21.43
			39	21.50	21.38	21.06	21.49
		75	0	21.50	21.42	21.07	21.41
	16QAM	1	0	22.00	21.56	21.26	21.43
			38	22.50	22.01	21.44	21.99
			74	22.00	21.28	21.12	21.81
		36	0	21.00	20.56	20.01	20.30
			18	21.00	20.52	20.04	20.41
			39	20.50	20.43	20.02	20.48
		75	0	20.50	20.43	20.05	20.33
Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	20050	20175	20300
					1720.0MHz	1732.5MHz	1745.0MHz
20MHz	QPSK	1	0	22.50	22.26	21.95	21.72
			50	**23.00**	**22.59**	22.17	22.39
			99	22.50	21.91	21.98	22.26
		50	0	22.00	**21.50**	21.04	21.20
			25	21.50	21.37	21.04	21.31
			50	21.50	21.27	21.06	21.44
		100	0	21.50	21.45	21.08	21.32
	16QAM	1	0	22.00	21.51	21.18	21.05
			50	22.00	21.79	21.39	21.82
			99	22.00	21.08	21.20	21.57
		50	0	20.50	20.49	20.07	20.23
			25	20.50	20.34	20.07	20.35
			50	21.00	20.24	20.10	20.51
		100	0	20.50	20.40	20.04	20.30

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Band 5

LTE-FDD Band 5				Maximum Tune-up(dBm)	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		20407	20525	20643
					824.7MHz	836.5MHz	848.3MHz
1.4MHz	QPSK	1	0	23.50	23.09	23.43	22.87
			2	24.00	23.29	23.53	23.07
			5	23.50	23.13	23.38	22.87
		3	0	23.50	23.12	23.38	23.03
			2	23.50	23.17	23.42	22.98
			3	23.50	23.15	23.43	23.00
		6	0	22.50	22.16	22.39	21.98
	16QAM	1	0	23.00	21.91	22.58	22.08
			2	23.00	22.10	22.67	22.21
			5	23.00	21.96	22.58	22.09
		3	0	23.00	22.26	22.61	22.19
			2	23.00	22.26	22.59	22.23
			3	23.00	22.28	22.58	22.19
		6	0	22.00	21.31	21.56	21.14
Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	20415	20525	20635
					825.5MHz	836.5MHz	847.5MHz
3MHz	QPSK	1	0	23.50	23.10	23.38	23.02
			7	24.00	23.45	23.67	23.24
			14	23.50	23.25	23.32	22.93
		8	0	22.50	22.10	22.37	22.00
			4	22.50	22.14	22.37	22.05
			7	22.50	22.09	22.36	21.98
		15	0	22.50	22.08	22.36	21.97
	16QAM	1	0	23.00	21.96	22.81	22.20
			7	23.00	22.32	22.91	22.40
			14	23.00	22.02	22.80	22.18
		8	0	21.50	21.10	21.43	21.04
			4	21.50	21.13	21.44	21.01
			7	21.50	21.12	21.42	20.97
		15	0	21.50	21.18	21.41	20.90

LTE-FDD Band 5				Maximum Tune-up(dBm)	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		20425	20525	20625
					826.5MHz	836.5MHz	846.5MHz
5MHz	QPSK	1	0	23.50	22.98	23.25	23.05
			13	24.00	23.45	23.65	23.32
			24	23.50	23.22	23.22	22.90
		12	0	22.50	22.11	22.30	22.12
			6	22.50	22.19	22.43	22.09
			13	22.50	22.22	22.33	21.97
		25	0	22.50	22.18	22.37	22.05
	16QAM	1	0	23.00	22.30	22.61	22.55
			13	23.50	22.73	23.00	22.65
			24	23.00	22.49	22.58	22.38
		12	0	21.50	21.05	21.37	21.15
			6	21.50	21.18	21.44	21.13
			13	21.50	21.19	21.33	20.97
		25	0	21.50	21.25	21.34	21.05

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Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	20450	20525	20600
					829.0MHz	836.5MHz	844.0MHz
10MHz	QPSK	1	0	23.50	23.06	23.39	23.26
			25	**24.00**	23.36	**23.58**	23.21
			49	23.50	23.41	23.36	22.95
		25	0	22.50	22.21	22.44	22.26
			13	22.50	22.22	22.38	22.17
			25	23.00	22.37	**22.52**	22.03
		50	0	22.50	22.27	22.45	22.20
	16QAM	1	0	23.00	22.21	22.24	22.72
			25	23.00	22.53	22.42	22.64
			49	23.00	22.58	22.19	22.36
		25	0	21.50	21.24	21.43	21.34
			13	21.50	21.26	21.37	21.22
			25	22.00	21.43	21.51	21.10
		50	0	21.50	21.34	21.42	21.24

Band 12

LTE-FDD Band 12				Maximum Tune-up(dBm)	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		23017	23095	23173
					699.7MHz	707.5MHz	715.3MHz
1.4MHz	QPSK	1	0	23.50	23.31	23.38	23.46
			2	24.00	23.50	23.52	23.62
			5	23.50	23.34	23.39	23.46
		3	0	23.50	23.28	23.46	23.49
			2	23.50	23.29	23.45	23.49
			3	23.50	23.31	23.44	23.46
		6	0	22.50	22.34	22.41	22.49
	16QAM	1	0	23.00	22.50	22.60	22.37
			2	23.00	22.62	22.70	22.53
			5	23.00	22.59	22.62	22.38
		3	0	23.00	22.53	22.69	22.70
			2	23.00	22.54	22.70	22.70
			3	23.00	22.53	22.71	22.72
		6	0	22.00	21.49	21.60	21.68
Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	23025	23095	23165
					700.5MHz	707.5MHz	714.5MHz
3MHz	QPSK	1	0	23.50	23.29	23.41	23.48
			7	24.50	23.72	24.01	23.54
			14	24.00	23.30	23.48	23.50
		8	0	23.00	22.24	22.38	22.51
			4	23.00	22.28	22.43	22.51
			7	23.00	22.25	22.42	22.50
		15	0	22.50	22.24	22.35	22.46
	16QAM	1	0	23.00	22.46	22.36	22.96
			7	23.50	22.78	22.63	23.32
			14	23.00	22.50	22.28	22.95
		8	0	22.00	21.27	21.34	21.53
			4	22.00	21.27	21.39	21.54
			7	22.00	21.23	21.40	21.51
		15	0	21.50	21.20	21.41	21.49

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Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	23035	23095	23155
					701.5MHz	707.5MHz	713.5MHz
5MHz	QPSK	1	0	23.50	23.16	23.22	23.31
			13	24.00	23.60	23.76	23.85
			24	23.50	23.26	23.36	23.37
		12	0	23.00	22.27	22.39	22.52
			6	23.00	22.33	22.44	22.53
			13	23.00	22.41	22.43	22.52
		25	0	23.00	22.30	22.40	22.52
	16QAM	1	0	23.00	22.80	22.63	22.73
			13	23.50	23.14	23.24	22.95
			24	23.00	22.88	22.73	22.85
		12	0	21.50	21.23	21.31	21.49
			6	22.00	21.30	21.37	21.53
			13	21.50	21.40	21.36	21.49
		25	0	22.00	21.25	21.41	21.53
Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	23060	23095	23130
					704.0MHz	707.5MHz	711.0MHz
10MHz	QPSK	1	0	23.50	23.27	23.30	23.36
			25	**24.00**	23.53	23.48	**23.60**
			49	24.00	23.48	23.51	23.56
		25	0	23.00	22.23	22.41	**22.53**
			13	23.00	22.42	22.46	22.51
			25	23.00	22.48	22.54	22.53
		50	0	22.50	22.40	22.42	22.49
	16QAM	1	0	23.00	22.19	22.81	22.60
			25	23.00	22.41	22.98	22.77
			49	23.00	22.39	22.96	22.77
		25	0	22.00	21.29	21.43	21.51
			13	22.00	21.38	21.50	21.49
			25	22.00	21.46	21.53	21.50
		50	0	21.50	21.35	21.47	21.48

Band 17

LTE-FDD Band 17				Maximum Tune-up(dBm)	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		23755	23790	23825
					706.5MHz	710MHz	713.5MHz
5MHz	QPSK	1	0	23.50	23.20	23.24	23.25
			13	24.00	23.74	23.63	23.72
			24	23.50	23.31	23.39	23.36
		12	0	22.50	22.33	22.35	22.47
			6	23.00	22.40	22.47	22.52
			13	22.50	22.35	22.38	22.44
		25	0	22.50	22.37	22.37	22.48
	16QAM	1	0	23.00	22.83	22.61	22.68
			13	23.50	23.31	23.02	23.13
			24	23.00	22.94	22.75	22.78
		12	0	22.00	21.32	21.30	21.53
			6	22.00	21.38	21.36	21.52
			13	21.50	21.36	21.32	21.44
		25	0	21.50	21.33	21.40	21.48

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Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	23780	23790	23800
					709MHz	710MHz	711MHz
10MHz	QPSK	1	0	23.50	23.28	23.31	23.32
			25	**24.00**	23.51	23.50	**23.54**
			49	24.00	23.51	23.46	23.54
		25	0	22.50	22.38	22.45	22.46
			13	23.00	22.40	22.42	**22.50**
			25	23.00	22.42	22.40	22.50
		50	0	22.50	22.37	22.42	22.42
	16QAM	1	0	23.00	22.21	22.76	22.52
			25	23.00	22.43	22.95	22.68
			49	23.00	22.39	22.96	22.71
		25	0	21.50	21.40	21.43	21.42
			13	21.50	21.40	21.41	21.45
			25	22.00	21.42	21.38	21.50
		50	0	21.50	21.37	21.38	21.46

Band 41

LTE-TDD Band 41				Maximum Tune-up(dBm)	Conducted Power(dBm)				
Bandwidth	Modulation	RB allocation	RB offset		39675	40148	40620	41093	41565
					2498.5MHz	2545.8MHz	2593.0MHz	2640.3MHz	2687.5MHz
5MHz	QPSK	1	0	25.50	25.18	25.07	24.70	24.61	24.51
			13	26.00	25.51	25.45	24.89	24.79	24.83
			24	25.50	25.23	25.17	24.70	24.67	24.58
		12	0	25.50	25.20	25.20	24.74	24.64	24.66
			6	25.50	25.30	25.23	24.80	24.69	24.78
			13	25.50	25.25	25.18	24.71	24.68	24.70
		25	0	25.50	25.25	25.19	24.83	24.82	24.75
	16QAM	1	0	26.00	25.67	25.60	24.99	24.92	24.84
			13	26.00	25.92	25.82	25.13	25.09	25.09
			24	26.00	25.73	25.72	24.95	24.88	24.86
		12	0	25.50	25.21	25.16	24.79	24.77	24.80
			6	25.50	25.28	25.16	24.86	24.84	24.90
			13	25.50	25.25	25.14	24.77	24.75	24.81
		25	0	25.50	25.23	25.13	24.95	24.88	24.82
Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	39700	40160	40620	41080	41540
					2501.0MHz	2547.0MHz	2593.0MHz	2639.0MHz	2685.0MHz
10MHz	QPSK	1	0	25.50	25.24	25.12	24.86	24.78	24.66
			25	25.50	25.45	25.39	25.02	24.98	24.88
			49	25.50	25.29	25.26	24.65	24.59	24.74
		25	0	25.50	25.28	25.28	24.96	24.92	24.77
			13	25.50	25.29	25.28	24.85	24.79	24.77
			25	25.50	25.36	25.34	24.74	24.67	24.78
		50	0	25.50	25.36	25.25	24.93	24.88	24.90
	16QAM	1	0	26.00	25.61	25.56	25.01	24.93	24.69
			25	26.00	25.80	25.74	25.14	25.06	24.86
			49	26.00	25.67	25.65	24.87	24.80	24.72
		25	0	25.50	25.33	25.33	25.00	24.89	24.95
			13	25.50	25.34	25.22	24.95	24.94	24.90
			25	25.50	25.36	25.26	24.90	24.80	24.88
		50	0	25.50	25.37	25.27	25.03	24.98	24.98

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LTE-TDD Band 41				Maximum Tune-up(dBm)	Conducted Power(dBm)				
Bandwidth	Modulation	RB allocation	RB offset		39725	40173	40620	41068	41515
					2503.5MHz	2548.3MHz	2593.0MHz	2637.8MHz	2682.5MHz
15MHz	QPSK	1	0	25.50	25.15	25.13	24.83	24.81	24.67
			38	26.00	25.53	25.46	24.97	24.85	24.98
			74	25.50	25.22	25.11	24.56	24.56	24.73
		36	0	25.50	25.39	25.36	24.88	24.82	24.86
			18	25.50	25.47	25.43	24.80	24.77	24.86
			39	25.50	25.45	25.38	24.71	24.60	24.89
		75	0	25.50	25.49	25.49	24.83	24.71	24.92
	16QAM	1	0	26.00	25.54	25.47	25.00	24.98	24.93
			38	26.00	25.87	25.75	25.18	25.07	25.19
			74	26.00	25.62	25.51	24.76	24.70	24.91
		36	0	25.50	25.43	25.35	24.98	24.92	24.92
			18	26.00	25.50	25.48	24.95	24.87	24.92
			39	25.50	25.47	25.39	24.82	24.77	24.89
		75	0	25.50	25.47	25.38	24.92	24.90	25.04
Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	39750	40185	40620	41055	41490
					2506.0MHz	2549.5MHz	2593.0MHz	2636.5MHz	2680.0MHz
20MHz	QPSK	1	0	25.00	24.98	24.88	24.73	24.66	24.50
			50	**25.50**	**25.42**	25.41	24.98	24.92	24.89
			99	25.50	25.01	25.01	24.37	24.34	24.47
		50	0	25.50	25.28	25.22	24.98	24.86	24.90
			25	25.50	25.34	25.30	24.84	24.82	24.88
			50	25.50	**25.42**	25.31	24.82	24.72	24.85
		100	0	25.50	25.31	25.30	24.87	24.80	24.84
	16QAM	1	0	25.50	25.15	25.05	24.92	24.88	24.76
			50	26.00	25.55	25.48	25.12	25.07	25.03
			99	25.50	25.24	25.20	24.67	24.66	24.71
		50	0	25.50	25.35	25.34	25.06	25.00	25.11
			25	25.50	25.45	25.42	24.97	24.96	25.06
			50	26.00	25.50	25.39	24.89	24.79	25.02
		100	0	25.50	25.36	25.32	24.96	24.90	24.96

Band 66

LTE-FDD Band 66				Maximum Tune-up(dBm)	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		131979	132322	132665
					1710.7MHz	1745.0MHz	1779.3MHz
1.4MHz	QPSK	1	0	23.00	22.62	22.32	22.10
			2	23.00	22.81	22.51	22.31
			5	23.00	22.66	22.33	22.10
		3	0	23.00	22.57	22.39	22.16
			2	23.00	22.58	22.39	22.15
			3	23.00	22.60	22.40	22.17
		6	0	22.00	21.60	21.37	21.18
	16QAM	1	0	22.00	21.74	21.52	20.99
			2	22.00	21.89	21.62	21.10
			5	22.00	21.77	21.56	21.01
		3	0	22.00	21.75	21.54	21.25
			2	22.00	21.78	21.61	21.27
			3	22.00	21.76	21.59	21.32
		6	0	21.00	20.78	20.51	20.32

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Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	131987	132322	132657
					1711.5MHz	1745.0MHz	1778.5MHz
3MHz	QPSK	1	0	23.00	22.60	22.35	22.10
			7	23.00	22.92	22.65	22.42
			14	23.00	22.70	22.45	22.19
		8	0	22.00	21.53	21.31	21.09
			4	22.00	21.61	21.36	21.14
			7	22.00	21.57	21.40	21.12
		15	0	22.00	21.54	21.32	21.07
	16QAM	1	0	22.00	21.50	21.75	21.28
			7	22.50	21.77	22.02	21.56
			14	22.00	21.53	21.83	21.34
		8	0	21.00	20.55	20.36	20.11
			4	21.00	20.59	20.37	20.13
			7	21.00	20.56	20.39	20.13
		15	0	21.00	20.62	20.32	20.02
Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	131997	132322	132647
					1712.5MHz	1745.0MHz	1777.5MHz
5MHz	QPSK	1	0	23.00	22.52	22.19	21.97
			13	23.00	22.81	22.66	22.28
			24	23.00	22.54	22.35	22.09
		12	0	22.00	21.55	21.29	21.08
			6	22.00	21.61	21.43	21.10
			13	22.00	21.59	21.35	21.07
		25	0	22.00	21.57	21.34	21.06
	16QAM	1	0	22.00	21.82	21.56	21.46
			13	22.50	22.18	21.90	21.92
			24	22.00	21.89	21.70	21.63
		12	0	21.00	20.53	20.31	20.08
			6	21.00	20.54	20.41	20.09
			13	21.00	20.58	20.36	20.09
		25	0	21.00	20.59	20.34	20.02
Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	132022	132322	132622
					1715.0MHz	1745.0MHz	1775.0MHz
10MHz	QPSK	1	0	23.00	22.51	22.21	22.05
			25	23.00	22.76	22.54	22.24
			49	23.00	22.42	22.53	22.20
		25	0	22.00	21.59	21.34	21.12
			13	22.00	21.61	21.44	21.08
			25	22.00	21.50	21.47	21.08
		50	0	22.00	21.57	21.34	21.04
	16QAM	1	0	22.00	21.93	21.34	20.91
			25	22.50	22.20	21.60	21.04
			49	22.00	21.83	21.66	21.05
		25	0	21.00	20.64	20.32	20.12
			13	21.00	20.63	20.41	20.08
			25	21.00	20.55	20.43	20.04
		50	0	21.00	20.58	20.40	20.02

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LTE-FDD Band 66				Maximum Tune-up(dBm)	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		132047	132322	132597
					1717.5MHz	1745.0MHz	1772.5MHz
15MHz	QPSK	1	0	23.00	22.52	22.15	22.24
			38	23.00	22.91	22.74	22.41
			74	23.00	22.22	22.53	22.14
		36	0	22.00	21.59	21.34	21.19
			18	22.00	21.55	21.48	21.14
			39	22.00	21.45	21.53	21.13
		75	0	22.00	21.50	21.41	21.14
	16QAM	1	0	22.00	21.63	21.21	21.22
			38	22.50	22.08	21.82	21.41
			74	22.00	21.37	21.61	21.26
		36	0	21.00	20.64	20.24	20.12
			18	21.00	20.60	20.39	20.08
			39	20.50	20.47	20.47	20.06
		75	0	21.00	20.50	20.41	20.12
Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	132072	132322	132572
					1720.0MHz	1745.0MHz	1770.0MHz
20MHz	QPSK	1	0	22.50	22.38	21.89	22.14
			50	**23.00**	22.56	**22.56**	22.30
			99	22.50	22.06	22.38	21.99
		50	0	22.00	21.60	21.32	21.28
			25	21.50	21.48	21.45	21.13
			50	22.00	21.40	**21.58**	20.99
		100	0	22.00	21.52	21.41	21.14
	16QAM	1	0	22.00	21.60	21.17	21.30
			50	22.00	21.88	21.88	21.44
			99	22.00	21.19	21.66	21.22
		50	0	21.00	20.64	20.34	20.25
			25	20.50	20.48	20.48	20.07
			50	21.00	20.42	20.60	19.97
		100	0	21.00	20.52	20.42	20.12

Band 71

LTE-FDD Band 71				Maximum Tune-up(dBm)	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		133147	133297	133447
					665.5MHz	680.5MHz	695.5MHz
5MHz	QPSK	1	0	23.50	22.99	23.34	23.11
			13	24.00	23.47	23.74	23.62
			24	23.50	23.14	23.32	23.19
		12	0	22.50	22.01	22.39	22.25
			6	23.00	22.23	22.52	22.34
			13	22.50	22.17	22.43	22.35
		25	0	22.50	22.13	22.42	22.31
	16QAM	1	0	23.00	22.59	22.65	22.50
			13	23.50	23.01	23.10	22.94
			24	23.00	22.71	22.67	22.57
		12	0	21.50	20.96	21.32	21.24
			6	21.50	21.16	21.44	21.34
			13	21.50	21.13	21.35	21.33
		25	0	21.50	21.05	21.41	21.26

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Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	133172	133297	133422
					668.0MHz	680.5MHz	693.0MHz
10MHz	QPSK	1	0	23.50	23.09	23.43	23.29
			25	24.00	23.34	23.58	23.38
			49	23.50	23.41	23.48	23.31
		25	0	22.50	22.10	22.48	22.47
			13	22.50	22.22	22.40	22.34
			25	23.00	22.38	22.55	22.34
		50	0	22.50	22.15	22.45	22.40
	16QAM	1	0	23.00	22.22	22.29	22.71
			25	23.00	22.46	22.44	22.83
			49	23.00	22.55	22.33	22.81
		25	0	21.50	21.01	21.45	21.46
			13	21.50	21.18	21.40	21.31
			25	21.50	21.30	21.46	21.36
		50	0	21.50	21.13	21.44	21.37
Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	133197	133297	133397
					670.5MHz	680.5MHz	690.5MHz
15MHz	QPSK	1	0	23.50	23.07	23.30	23.30
			38	24.00	23.71	23.66	23.61
			74	24.00	23.50	23.34	23.30
		36	0	22.50	22.20	22.49	22.41
			18	23.00	22.38	22.52	22.43
			39	23.00	22.51	22.53	22.42
		75	0	22.50	22.33	22.47	22.40
	16QAM	1	0	23.00	22.16	22.72	22.51
			38	23.50	22.72	23.14	22.73
			74	23.00	22.57	22.76	22.50
		36	0	21.50	21.10	21.45	21.43
			18	21.50	21.29	21.48	21.45
			39	22.00	21.45	21.51	21.45
		75	0	21.50	21.35	21.45	21.40
Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	133222	133297	133372
					673.0MHz	680.5MHz	688.0MHz
20MHz	QPSK	1	0	23.50	22.86	23.14	23.20
			50	**24.00**	23.50	**23.62**	23.47
			99	23.50	23.25	23.20	23.15
		50	0	22.50	22.19	22.43	22.36
			25	22.50	22.43	22.47	22.39
			50	23.00	22.51	**22.53**	22.29
		100	0	22.50	22.39	22.47	22.35
	16QAM	1	0	22.50	22.15	22.36	22.43
			50	23.00	22.81	22.83	22.60
			99	23.00	22.59	22.43	22.44
		50	0	21.50	21.22	21.36	21.42
			25	21.50	21.42	21.43	21.42
			50	22.00	21.53	21.48	21.27
		100	0	21.50	21.36	21.44	21.35

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8.4 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	**15.25**	**15.50**	Yes
		6	2437	14.80	15.00	No
		11	2462	14.50	15.00	No
	802.11g	1	2412	13.28	13.50	No
		6	2437	12.83	13.00	No
		11	2462	12.30	12.50	No
	802.11n(HT20)	1	2412	11.08	11.50	No
		6	2437	11.00	11.00	No
		11	2462	10.50	11.00	No
	802.11n(HT40)	3	2422	11.35	11.50	No
		6	2437	12.99	13.00	No
		9	2452	11.33	11.50	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	**6.33**	**6.50**	Yes
		40	5200	5.03	5.50	No
		48	5240	4.10	4.50	No
	802.11n(HT20)	36	5180	4.72	5.00	No
		40	5200	4.28	4.50	No
		48	5240	3.55	4.00	No
	802.11ac(VHT20)	36	5180	3.93	4.00	No
		40	5200	3.38	3.50	No
		48	5240	2.02	2.50	No
	802.11n(HT40)	38	5190	3.51	4.00	No
		46	5230	2.88	3.00	No
	802.11ac(VHT40)	38	5190	3.27	3.50	No
		46	5230	2.65	3.00	No
	802.11ac(VHT80)	42	5210	3.22	3.50	No
Band (GHz)	Mode	Channel	Freq. (MHz)	Average Power (dBm)	Maximum Tune-up(dBm)	SAR Test Require.
U-NII-2a (5.250~5.350)	802.11a	52	5260	**4.50**	**5.00**	Yes
		60	5300	4.16	4.50	No
		64	5320	4.24	4.50	No
	802.11n(HT20)	52	5260	3.96	4.00	No
		60	5300	3.86	4.00	No
		64	5320	3.70	4.00	No
	802.11ac(VHT20)	52	5260	3.08	3.50	No
		60	5300	3.14	3.50	No
		64	5320	2.97	3.00	No
	802.11n(HT40)	54	5270	3.19	3.50	No
		62	5310	2.75	3.00	No
	802.11ac(VHT40)	54	5270	3.08	3.50	No
		62	5310	2.87	3.00	No
	802.11ac(VHT80)	58	5290	2.77	3.00	No

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Band (GHz)	Mode	Channel	Freq. (MHz)	Average Power (dBm)	Maximum Tune-up(dBm)	SAR Test Require.
U-NII-3 (5.725~5.850)	802.11a	149	5745	7.51	8.00	No
		157	5785	**7.62**	**8.00**	Yes
		165	5825	7.04	7.50	No
	802.11n(HT20)	149	5745	5.29	5.50	No
		157	5785	5.48	5.50	No
		165	5825	4.97	5.00	No
	802.11ac(VHT20)	149	5745	5.29	5.50	No
		157	5785	5.43	5.50	No
		165	5825	5.05	5.50	No
	802.11n(HT40)	151	5755	5.49	5.50	No
		159	5795	5.37	5.50	No
	802.11ac(VHT40)	151	5755	5.58	6.00	No
		159	5795	5.25	5.50	No
	802.11ac(VHT80)	155	5775	5.41	5.50	No

8.5 Bluetooth

	Mode	Maximum Tune-up(dBm)	Average Conducted Output Power (dBm)		
EDR			0	39	78
			2402MHz	2441MHz	2480MHz
	GFSK	**6.50**	4.44	**6.18**	5.62
	π/4QPSK	6.00	4.39	5.93	4.82
	8DPSK	6.50	4.44	6.06	4.98
BLE	Mode	Maximum Tune-up(dBm)	Average Conducted Output Power (dBm)		
			0	20	39
			2402MHz	2440MHz	2480MHz
	1Mbps	1.50	0.32	1.49	0.97
	2Mbps	1.50	0.33	1.42	0.73

Channel	Frequency (GHz)	Max. Tune-up Power (dBm)	Max. Power (mW)	Test distance (mm)	Exclusion thresholds for 1-g SAR	RF exposure evaluation required
39	2.441	6.50	4.47	0	2.75	Yes

Note

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

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

where

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

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

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

*When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine estimated SAR.

2. Per KDB 248227 D01 v02r02, choose the highest output power channel to test SAR and determine further SAR exclusion.
3. The output power of all data rate were prescan, just the worst case (the lowest data rate) of all mode were shown in report.

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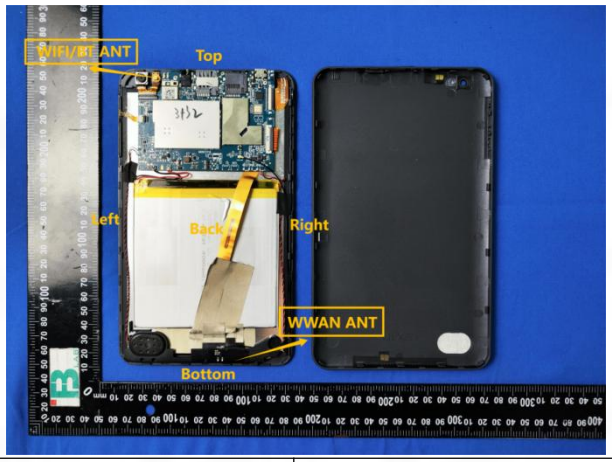
9. Test Exclusion Consideration

Antenna information：



WWAN Main Antenna	GSM/WCDMA/LTE TX/RX
WLAN/BT Antenna	WLAN/BT TX/RX

Note:
1. KDB 447498 D04v01, particular DUT edges were not required to be evaluated for SAR if the antenna-to-edge distance is greater than 2.5cm.
2. KDB 616217 D04 SAR for laptop and tablets v01r02, it doesn't require SAR evaluation for the front surface of a tablet.
3. Per KDB648474 D04,10-g extremity SAR is not required when Body-Worn mode 1-g reported SAR<1.2W/Kg.

Distance of The Antenna to the EUT surface and edge (mm）						
Antenna	Front Side (mm)	Back Side (mm)	Left Edge (mm)	Right Edge (mm)	Top Edge (mm)	Bottom Edge (mm)
WWAN	5	5	50	73	193	15
Wifi /BT	5	5	88	35	7	201

Mode	Tune-Up Limit (dBm)	Front Side (mm)	Back Side (mm)	Left Edge (mm)	Right Edge (mm)	Top Edge (mm)	Bottom Edge (mm)
GSM850	29.00	No	Yes	Yes	Yes	No	Yes
GSM1900	25.00	No	Yes	Yes	Yes	No	Yes
WCDMA Band II	24.00	No	Yes	Yes	Yes	No	Yes
WCDMA Band IV	23.50	No	Yes	Yes	Yes	No	Yes
WCDMA Band V	24.00	No	Yes	Yes	Yes	No	Yes
LTE Band 2	23.50	No	Yes	Yes	Yes	No	Yes
LTE Band 4	23.00	No	Yes	Yes	Yes	No	Yes
LTE Band 5	24.00	No	Yes	Yes	Yes	No	Yes
LTE Band 12	24.00	No	Yes	Yes	Yes	No	Yes
LTE Band 17	24.00	No	Yes	Yes	No	No	Yes
LTE Band 41	25.50	No	Yes	Yes	Yes	No	Yes
LTE Band 66	23.00	No	Yes	Yes	Yes	No	Yes
LTE Band 71	24.00	No	Yes	Yes	Yes	No	Yes
BT	6.5	No	Yes	No	No	Yes	No
2.4G WIFI	15.50	No	Yes	No	No	Yes	No
5.2G WIFI	6.50	No	Yes	No	No	Yes	No
5.4G WIFI	5.00	No	Yes	No	No	Yes	No
5.8G WIFI	8.00	No	Yes	No	No	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:

(max.power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)] · [√f(GHz) / x] W/kg for test separation distances ≤ 50 mm;
where x = 7.5 for 1-g SAR, and x= 18.75 for 10-g SAR.

0.4 W/Kg for 1-g SAR and 1.0 W/kg for 10-g SAR, when the test separation distances is > 50 mm

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10. Test Result

Body 1g SAR Data

Band	Mode	Test Position with 0 mm	CH.	Freq. (MHz)	Ave. Power (dBm)	Tune-Up Limit (dBm)	Power Drift (%)	Meas. SAR1g (W/kg)	Scaling Factor	Reported SAR1g (W/kg)	Meas. No.
GSM 850	GPRS 4slots	Back	128	824.2	28.98	29.00	-2.760	0.611	1.005	**0.614**	1#
		Left	128	824.2	28.98	29.00	0.260	0.234	1.005	0.235	/
		Right	128	824.2	28.98	29.00	4.160	0.201	1.005	0.202	/
		Bottom	128	824.2	28.98	29.00	1.260	0.536	1.005	0.539	/
GSM 1900	GPRS 4slots	Back	661	1880.0	24.87	25.00	-3.750	0.426	1.030	**0.439**	2#
		Left	661	1880.0	24.87	25.00	-0.590	0.186	1.030	0.192	/
		Right	661	1880.0	24.87	25.00	2.510	0.162	1.030	0.167	/
		Bottom	661	1880.0	24.87	25.00	0.780	0.353	1.030	0.364	/
WCDMA Band II	RMC	Back	9400	1880.0	23.57	24.00	3.290	0.445	1.104	**0.491**	3#
		Left	9400	1880.0	23.57	24.00	1.580	0.197	1.104	0.217	/
		Right	9400	1880.0	23.57	24.00	-0.360	0.165	1.104	0.182	/
		Bottom	9400	1880.0	23.57	24.00	-1.420	0.379	1.104	0.418	/
WCDMA Band IV	RMC	Back	1312	1712.4	23.05	23.50	-2.830	0.719	1.109	**0.797**	4#
		Left	1312	1712.4	23.05	23.50	4.950	0.326	1.109	0.362	/
		Right	1312	1712.4	23.05	23.50	1.620	0.304	1.109	0.337	/
		Bottom	1312	1712.4	23.05	23.50	-0.560	0.662	1.109	0.734	/
WCDMA Band V	RMC	Back	4183	836.6	23.73	24.00	-3.270	0.655	1.064	**0.697**	5#
		Left	4183	836.6	23.73	24.00	2.060	0.258	1.064	0.275	/
		Right	4183	836.6	23.73	24.00	-0750	0.213	1.064	0.227	/
		Bottom	4183	836.6	23.73	24.00	1.680	0.586	1.064	0.624	/
2.4G	802.11b	Back	1	2412	15.25	15.50	0.190	0.564	1.059	**0.597**	6#
		Top	1	2412	15.25	15.50	2.480	0.503	1.059	0.533	/
5.2G	802.11a	Back	36	5180	6.33	6.50	-1.800	0.176	1.040	**0.183**	7#
		Top	36	5180	6.33	6.50	2.740	0.125	1.040	0.130	/
5.4G	802.11a	Back	52	5260	4.50	5.00	3.540	0.120	1.122	**0.135**	8#
		Top	52	5260	4.50	5.00	-1.030	0.101	1.122	0.113	/
5.8G	802.11a	Back	157	5785	7.62	8.00	2.040	0.198	1.091	**0.216**	9#
		Top	157	5785	7.62	8.00	-0.690	0.165	1.091	0.180	/
Bluetooth	Bluetooth	Back	39	2441	6.18	6.50	-1.250	0.050	1.076	**0.054**	10#
		Top	39	2441	6.18	6.50	3.620	0.045	1.076	0.048	/

Band	Mode	Test Position with 0 mm	CH.	Freq. (MHz)	RB allocation	RB offset	Ave. Power (dBm)	Tune-Up Limit (dBm)	Power Drift (%)	Meas. SAR1g (W/kg)	Scaling Factor	Reported SAR1g (W/kg)	Meas. No.
LTE Band 2	QPSK (20MHz)	Back	18900	1880.0	1	50	23.37	23.50	-3.690	0.297	1.030	**0.306**	11#
					50	50	22.33	22.50	1.230	0.237	1.040	0.246	/
		Left	18900	1880.0	1	50	23.37	23.50	-1.240	0.152	1.030	0.157	/
					50	50	22.33	22.50	1.930	0.121	1.040	0.126	/
		Right	18900	1880.0	1	50	23.37	23.50	-1.110	0.130	1.030	0.134	/
					50	50	22.33	22.50	-1.000	0.091	1.040	0.095	/
		Bottom	18900	1880.0	1	50	23.37	23.50	0.630	0.243	1.030	0.250	/
					50	50	22.33	22.50	-1.410	0.203	1.040	0.211	/
LTE Band 4	QPSK (20MHz)	Back	20050	1720.0	1	50	22.59	23.00	4.240	0.348	1.099	**0.382**	12#
					50	25	21.50	22.00	2.150	0.298	1.122	0.334	/
		Left	20050	1720.0	1	50	22.59	23.00	0.420	0.261	1.099	0.287	/
					50	25	21.50	22.00	-1.520	0.223	1.122	0.250	/

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		Right	20050	1720.0	1	50	22.59	23.00	3.820	0.232	1.099	0.255	/
					50	25	21.50	22.00	2.400	0.195	1.122	0.219	/
		Bottom	20050	1720.0	1	50	22.59	23.00	-3.020	0.310	1.099	0.341	/
					50	25	21.50	22.00	1.080	0.268	1.122	0.301	/
LTE Band 5	QPSK (10MHz)	Back	20525	836.5	1	25	23.58	24.00	0.690	0.473	1.102	**0.521**	13#
					25	25	22.52	23.00	2.740	0.437	1.117	0.488	/
		Left	20525	836.5	1	25	23.58	24.00	-3.230	0.295	1.102	0.325	/
					25	25	22.52	23.00	0.970	0.245	1.117	0.274	/
		Right	20525	836.5	1	25	23.58	24.00	0.270	0.264	1.102	0.291	/
					25	25	22.52	23.00	2.990	0.230	1.117	0.257	/
		Bottom	20525	836.5	1	25	23.58	24.00	1.350	0.435	1.102	0.479	/
					25	25	22.52	23.00	-3.250	0.401	1.117	0.448	/
LTE Band 12	QPSK (10MHz)	Back	23130	711.0	1	25	23.60	24.00	-0.240	0.380	1.096	**0.416**	14#
					25	0	22.53	23.00	-1.600	0.345	1.114	0.384	/
		Left	23130	711.0	1	25	23.60	24.00	1.140	0.213	1.096	0.233	/
					25	0	22.53	23.00	-3.360	0.186	1.114	0.207	/
		Right	23130	711.0	1	25	23.60	24.00	-0.660	0.194	1.096	0.213	/
					25	0	22.53	23.00	-1.350	0.167	1.114	0.186	/
		Bottom	23130	711.0	1	25	23.60	24.00	2.460	0.335	1.096	0.367	/
					25	0	22.53	23.00	-1.520	0.291	1.114	0.324	/
LTE Band 17	QPSK (10MHz)	Back	23800	711.0	1	25	23.54	24.00	0.190	0.372	1.112	**0.414**	15#
					25	13	22.50	23.00	-4.110	0.336	1.122	0.377	/
		Left	23800	711.0	1	25	23.54	24.00	2.250	0.236	1.112	0.262	/
					25	13	22.50	23.00	-1.630	0.204	1.122	0.229	/
		Right	23800	711.0	1	25	23.54	24.00	-0.230	0.206	1.112	0.229	/
					25	13	22.50	23.00	-3.860	0.176	1.122	0.197	/
		Bottom	23800	711.0	1	25	23.54	24.00	2.790	0.351	1.112	0.390	/
					25	13	22.50	23.00	-1.850	0.315	1.122	0.353	/
LTE Band 41	QPSK (20MHz)	Back	39750	2506.0	1	50	25.42	25.50	-2.490	0.344	1.019	**0.351**	16#
					50	50	25.42	25.50	-0.950	0.286	1.019	0.291	/
		Back	40185	2549.5	1	50	25.41	25.50	1.490	0.341	1.021	0.348	/
					50	50	25.31	25.50	2.950	0.283	1.045	0.296	/
		Back	40620	2593.0	1	50	25.31	25.50	0.890	0.335	1.045	0.350	/
					50	50	24.82	25.00	-3.090	0.267	1.042	0.278	/
		Back	41055	2636.5	1	50	24.92	25.00	1.410	0.312	1.019	0.318	/
					50	50	24.72	25.00	2.600	0.258	1.067	0.275	/
		Back	41490	2680.0	1	50	24.89	25.00	0.490	0.305	1.026	0.313	/
					50	50	24.85	25.00	1.770	0.266	1.035	0.275	/
		Left	39750	2506.0	1	50	25.42	25.50	2.580	0.311	1.019	0.317	/
					50	50	25.42	25.50	-1.960	0.252	1.019	0.257	/
		Left	40185	2549.5	1	50	25.41	25.50	-2.910	0.301	1.021	0.307	/
					50	50	25.31	25.50	-0.700	0.247	1.045	0.258	/
		Left	40620	2593.0	1	50	25.31	25.50	0.670	0.296	1.045	0.309	/
					50	50	24.82	25.00	2.130	0.243	1.042	0.253	/
		Left	41055	2636.5	1	50	24.92	25.00	0.070	0.291	1.019	0.297	/
					50	50	24.72	25.00	-3.910	0.238	1.067	0.254	/
		Left	41490	2680.0	1	50	24.89	25.00	0.590	0.288	1.026	0.295	/
					50	50	24.85	25.00	1.780	0.237	1.035	0.245	/
		Right	39750	2506.0	1	50	25.42	25.50	1.250	0.298	1.019	0.304	/
					50	50	25.42	25.50	-2.170	0.243	1.019	0.248	/
		Right	40185	2549.5	1	50	25.41	25.50	-2.510	0.291	1.021	0.297	/
					50	50	25.31	25.50	1.830	0.235	1.045	0.246	/

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		Right	40620	2593.0	1	50	25.31	25.50	-0.130	0.288	1.045	0.301	/
					50	50	24.82	25.00	-4.470	0.236	1.042	0.246	/
		Right	41055	2636.5	1	50	24.92	25.00	3.290	0.279	1.019	0.284	/
					50	50	24.72	25.00	-3.430	0.221	1.067	0.236	/
		Right	41490	2680.0	1	50	24.89	25.00	0.680	0.271	1.026	0.278	/
					50	50	24.85	25.00	1.860	0.220	1.035	0.228	/
		Bottom	39750	2506.0	1	50	25.42	25.50	1.460	0.311	1.019	0.317	/
					50	50	25.42	25.50	-2.060	0.274	1.019	0.279	/
		Bottom	40185	2549.5	1	50	25.41	25.50	-2.090	0.308	1.021	0.314	/
					50	50	25.31	25.50	1.580	0.261	1.045	0.273	/
		Bottom	40620	2593.0	1	50	25.31	25.50	0.690	0.293	1.045	0.306	/
					50	50	24.82	25.00	-3.650	0.242	1.042	0.252	/
		Bottom	41055	2636.5	1	50	24.92	25.00	4.110	0.284	1.019	0.289	/
					50	50	24.72	25.00	-2.610	0.228	1.067	0.243	/
		Bottom	41490	2680.0	1	50	24.89	25.00	1.500	0.276	1.026	0.283	/
					50	50	24.85	25.00	2.680	0.231	1.035	0.239	/
LTE Band 66	QPSK (20MHz)	Back	132322	1745.0	1	50	22.56	23.00	3.790	0.305	1.107	**0.338**	17#
					50	50	21.58	22.00	0.590	0.251	1.102	0.277	/
		Left	132322	1745.0	1	50	22.56	23.00	-2.100	0.263	1.107	0.291	/
					50	50	21.58	22.00	-3.070	0.224	1.102	0.247	/
		Right	132322	1745.0	1	50	22.56	23.00	-1.530	0.230	1.107	0.255	/
					50	50	21.58	22.00	4.780	0.199	1.102	0.219	/
		Bottom	132322	1745.0	1	50	22.56	23.00	-1.790	0.276	1.107	0.306	/
					50	50	21.58	22.00	-2.960	0.238	1.102	0.262	/
LTE Band 71	QPSK (20MHz)	Back	133297	680.5	1	50	23.62	24.00	-3.110	0.180	1.091	**0.196**	18#
					50	50	22.53	23.00	4.530	0.142	1.114	0.158	/
		Left	133297	680.5	1	50	23.62	24.00	3.580	0.143	1.091	0.156	/
					50	50	22.53	23.00	0.480	0.116	1.114	0.129	/
		Right	133297	680.5	1	50	23.62	24.00	-2.520	0.125	1.091	0.136	/
					50	50	22.53	23.00	-2.820	0.103	1.114	0.115	/
		Bottom	133297	680.5	1	50	23.62	24.00	-1.630	0.167	1.091	0.182	/
					50	50	22.53	23.00	0.960	0.135	1.114	0.150	/

Note:

1. Per KDB 447498 D04 v01, for each exposure position, if the highest output power channel Reported SAR ≤ 0.8W/kg, other channels SAR testing is not necessary.
2. Per KDB 447498 D04 v01, body use is evaluated with the device positioned at 0mm from a flat phantom respectively filled with body tissue-equivalent medium.
3. Per KDB 616217 D04 where SAR test considerations for tablets are based on a composite test separation distance of 0 mm from the back and edges of the device with antennas 2.5 cm or closer to the edge of the device, determined from general mixed use conditions for this type of devices.
4. Per KDB 447498 D04 v01, the report SAR is measured SAR value adjusted for maximum tune-up tolerance. Scaling Factor=10^[(tune-up limit power(dBm) - Ave.power power (dBm))/10], where tune-up limit is the maximum rated power among all production units.
   Reported SAR(W/kg)=Measured SAR (W/kg)*Scaling Factor.
4. Per KDB865664D01 v01r04 perform a second repeated measurement only the ratio of largest to smallest SAR for the original and first repeated measurement is >1.20 or when the original or repeated measurement is ≥ 1.45W/kg.
5. Perform a second measurement only if the original, first and second repeated measurement is ≥1.5w/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurement is >1.20.
6. 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).

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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 0.719 < 0.80 W/kg, repeated measurement is not required.

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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 2.4G/5G Wi-Fi & 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

Body

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 IV	Back	**0.797**	**0.597**	**0.216**	**0.054**	**1.394**	1.013	0.851	N/A	N/A
	Left	0.362	/	/	/	0.362	0.362	0.362	N/A	N/A
	Right	0.337	/	/	/	0.337	0.337	0.337	N/A	N/A
	Top	/	0.533	0.180	0.048	0.533	0.180	0.048	N/A	N/A
	Bottom	0.734	/	/	/	0.734	0.734	0.734	N/A	N/A

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13. Test Equipment List

Description	Manufacturer	Model	Serial No./Version	Cal. Date	Cal. Due
E-Field Probe	MVG	SSE2	04/22 EPGO365	2023/02/06	2024/02/05
6 1/2 Digital Multimeter	Keithley	DMM6500	4527164	2023/11/16	2024/11/15
Wideband Radio Communication Tester	ROHDE & SCHWARZ	CMW500	161997	2023/11/16	2024/11/15
MXG Vector Signal Generator	Agilent	N5182A	MY46240163	2023/11/16	2024/11/15
E-Series Avg. Power Sensor	KEYSIGHT	E9300A	MY55050017	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 0750-655	2023/02/06	2025/02/05
835MHz Validation Dipole	MVG	SID835	07/22 DIP 0G835-656	2023/02/06	2025/02/05
1800MHz Validation Dipole	MVG	SID1800	07/22 DIP 1G800-657	2023/02/06	2025/02/05
1900MHz Validation Dipole	MVG	SID1900	07/22 DIP 1G900-658	2023/02/06	2025/02/05
2450MHz Validation Dipole	MVG	SID2450	07/22 DIP 2G450-662	2023/02/06	2025/02/05
2600MHz Validation Dipole	MVG	SID2600	07/22 DIP 2G600-663	2023/02/06	2025/02/05
5200MHz-5800MHz Validation Dipole	MVG	SID5000	07/22 DIP5G000-670	2023/02/06	2025/02/05
LIMESAR Dielectric Probe	MVG	SCLMP	06/22 OCPG88	/	/
ENA Series Network Analyzer	Agilent	E5071B	MY42301221	2023/11/16	2024/11/15
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.

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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)	εr		σ(s/m)		Delta (εr)	Delta (σ)	Limit	Temp (℃)	Date
	Target	Measured	Target	Measured					
750	41.90	41.80	0.89	0.86	0.24%	3.37%	±5%	20.0	11/1/2024
835	41.50	41.41	0.90	0.87	0.22%	3.33%	±5%	20.0	11/1/2024
1800	40.00	39.91	1.40	1.37	0.23%	2.14%	±5%	20.0	11/1/2024
1900	40.00	39.88	1.40	1.41	0.30%	-0.71%	±5%	20.0	11/1/2024
2450	39.20	39.08	1.80	1.81	0.31%	-0.56%	±5%	20.0	12/1/2024
2600	39.00	38.88	1.96	1.97	0.31%	-0.51%	±5%	20.0	12/1/2024
5200	36.00	35.88	4.66	4.70	0.33%	-0.86%	±5%	20.5	12/1/2024
5400	35.80	35.68	4.86	4.90	-0.34%	0.82%	±5%	20.5	12/1/2024
5800	35.30	35.18	5.27	5.31	0.34%	-0.76%	±5%	20.5	12/1/2024
NOTE: The dielectric parameters of the tissue-equivalent liquid should be measured under similar ambient conditions and within 2 ℃ 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	5.75	8.63	5.38	8.25	6.88%	4.61%
835	16	0.106	0.163	6.63	10.19	6.17	9.79	7.46%	4.09%
1800	16	0.312	0.588	19.50	36.75	20.61	39.33	-5.39%	-6.56%
1900	16	0.322	0.630	20.13	39.38	20.70	40.97	-2.75%	-3.88%
2450	16	0.352	0.793	22.00	49.56	23.86	54.40	-7.80%	-8.89%
2600	16	0.421	0.866	26.31	54.13	24.48	57.14	7.48%	-5.27%
5200	13	0.288	1.019	22.15	78.38	21.29	73.88	4.05%	6.09%
5400	13	0.299	1.051	23.00	80.84	23.23	81.47	-0.99%	-0.77%
5800	13	0.277	0.981	21.31	75.46	21.5	74.21	-0.90%	1.68%

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System Performance Check Data (750 MHz)

System check at 750 MHz

Date of measurement: 11/1/2024

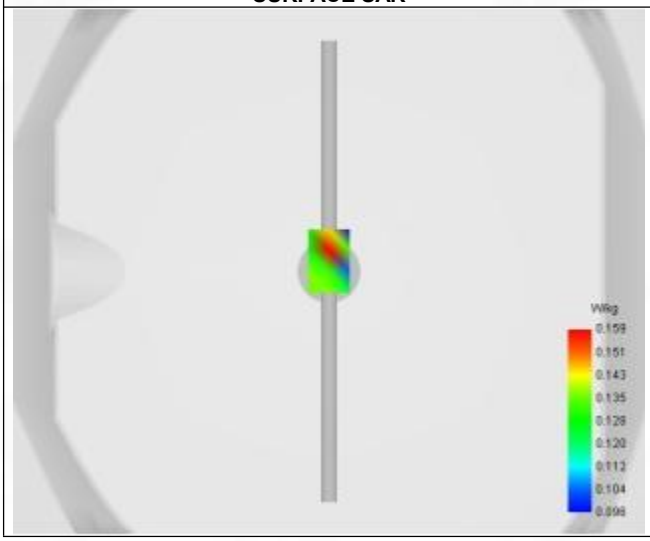
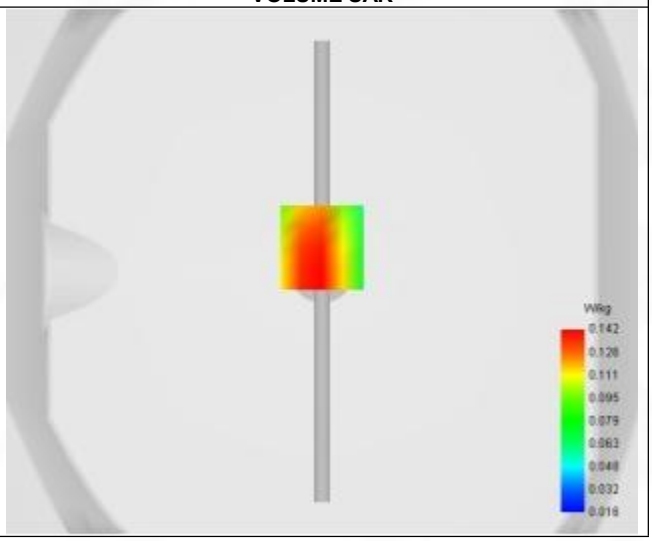
A. Experimental conditions.

Probe	SN 04/22 EPGO365
ConvF	1.65
Area Scan	dx=8mm dy=8mm, Adaptative 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. Permitivity

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

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

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

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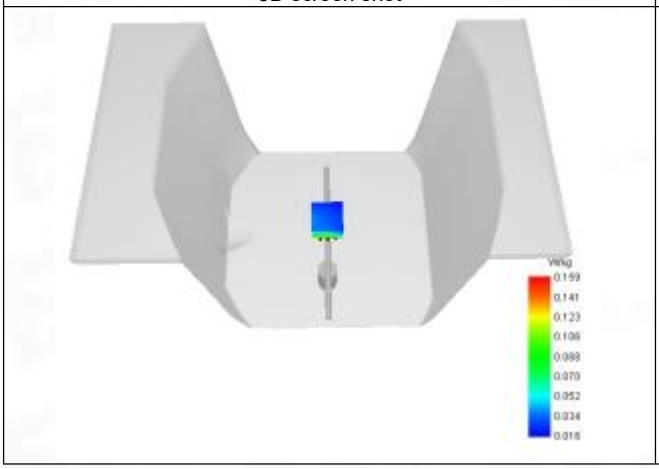
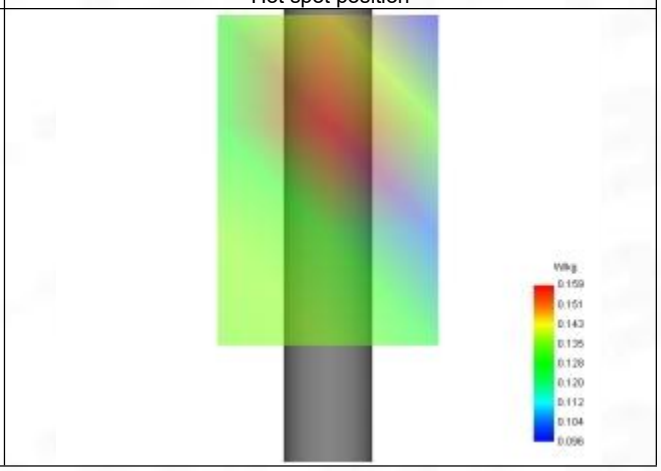
F. 3D Image

3D screen shot	Hot spot position
	

System Performance Check Data (835 MHz)

System check at 835 MHz

Date of measurement: 11/1/2024

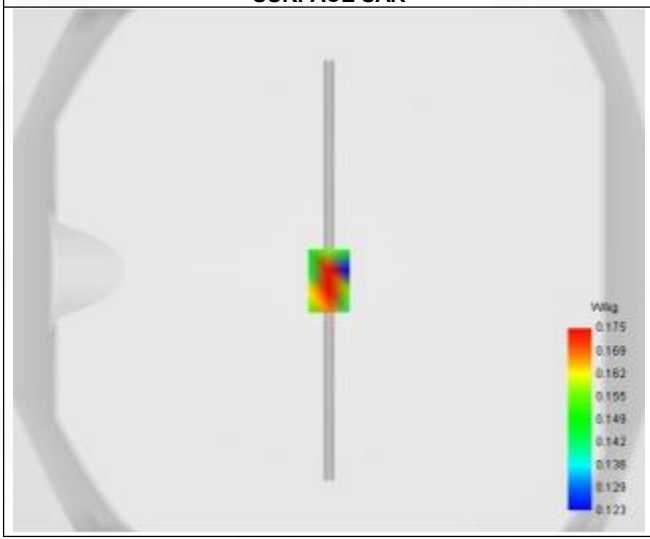
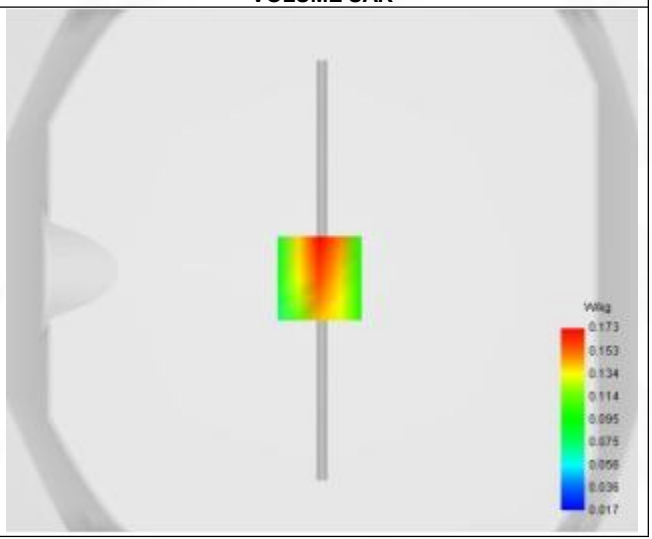
A. Experimental conditions.

Probe	SN 04/22 EPGO365
ConvF	1.68
Area Scan	dx=8mm dy=8mm, Adaptative 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. Permitivity

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

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

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

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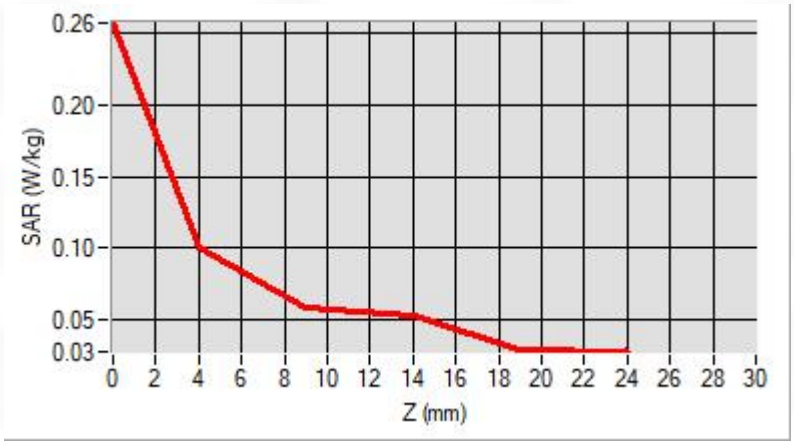
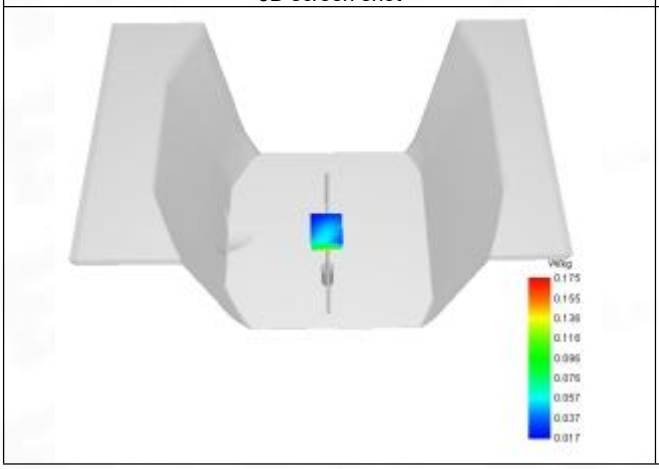
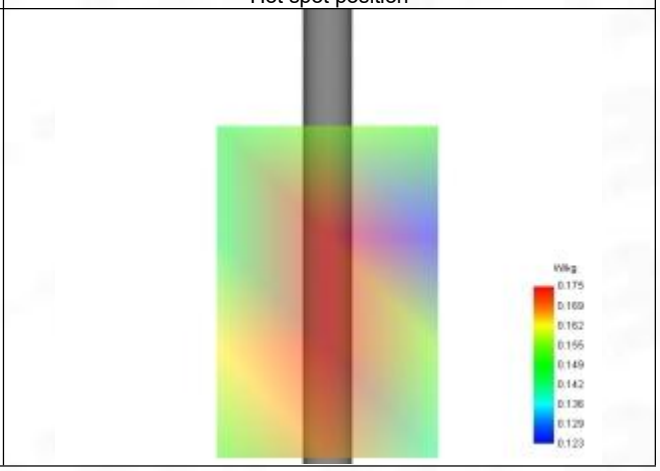


F. 3D Image

3D screen shot	Hot spot position
	

System Performance Check Data (1800 MHz)

System check at 1800 MHz

Date of measurement: 11/1/2024

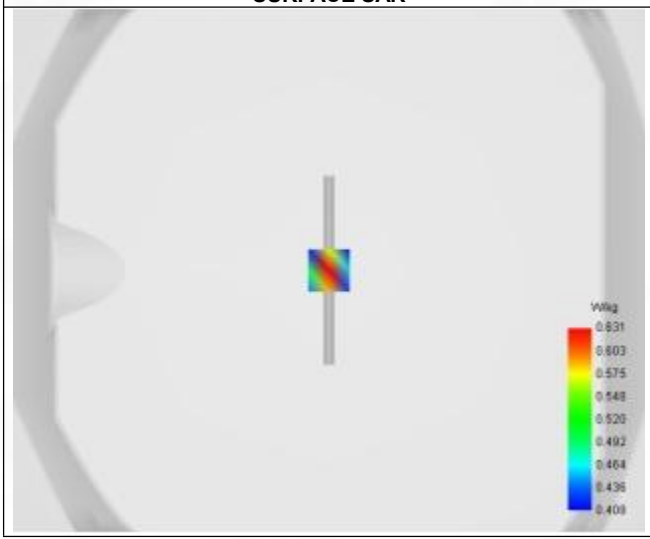
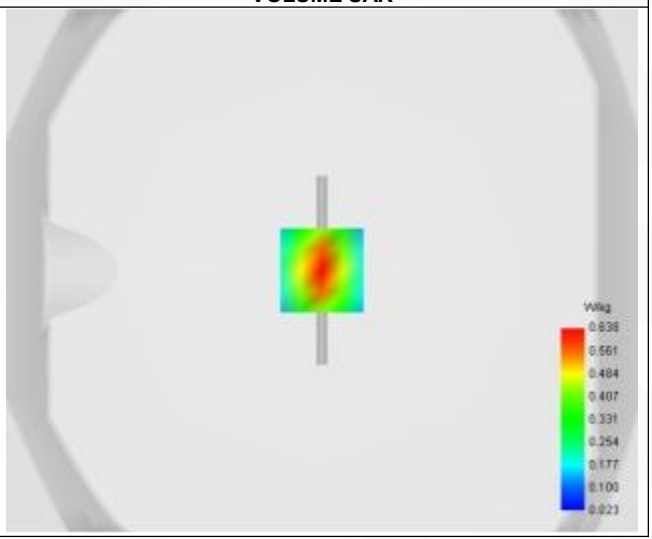
A. Experimental conditions.

Probe	SN 04/22 EPGO365
ConvF	1.96
Area Scan	dx=8mm dy=8mm, Adaptative 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. Permitivity

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

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

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

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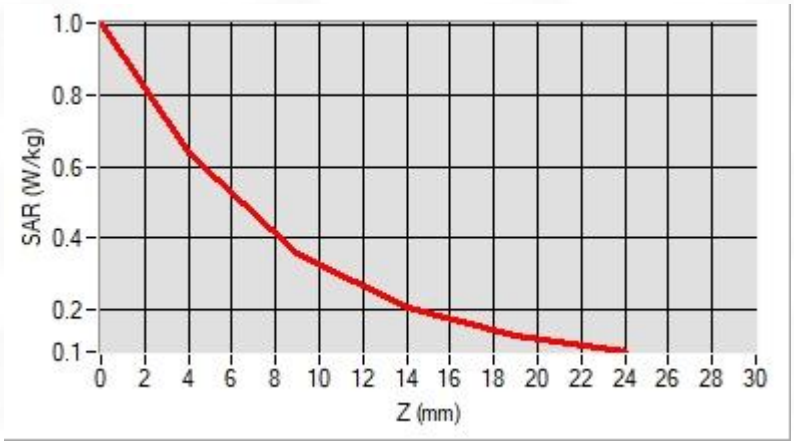
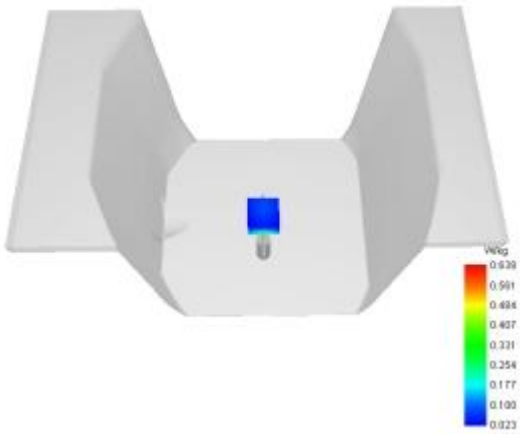
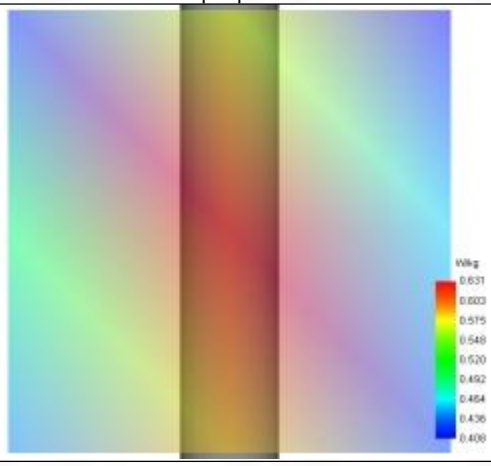


F. 3D Image

3D screen shot	Hot spot position
	

System Performance Check Data (1900 MHz)

System check at 1900 MHz

Date of measurement: 11/1/2024

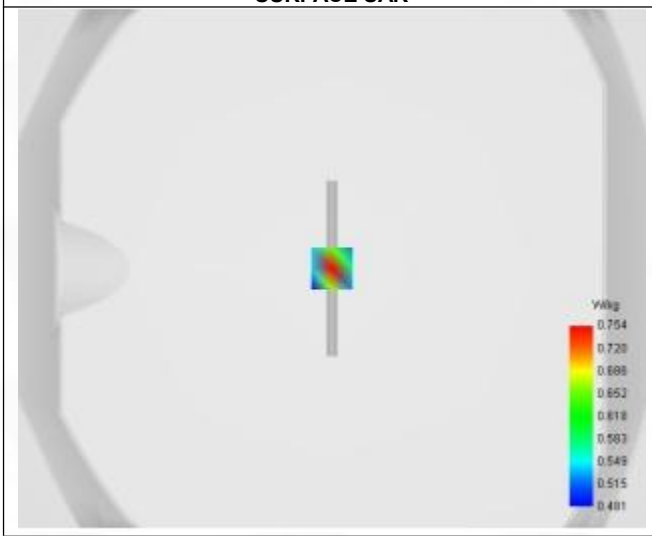
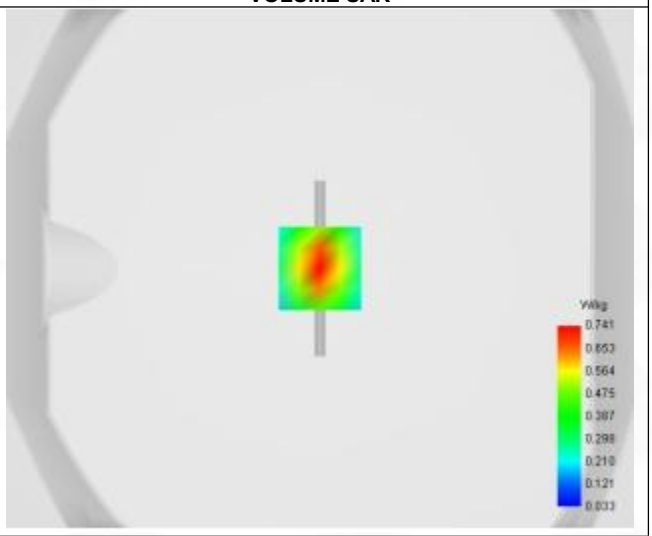
A. Experimental conditions.

Probe	SN 04/22 EPGO365
ConvF	2.24
Area Scan	dx=8mm dy=8mm, Adaptative 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. Permitivity

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

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

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

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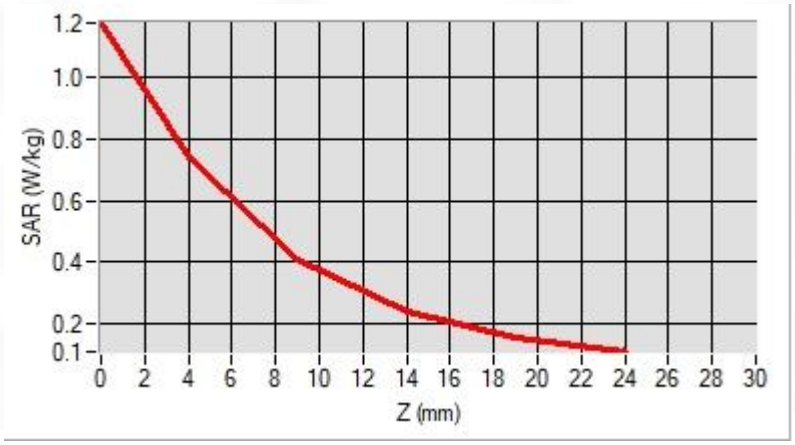
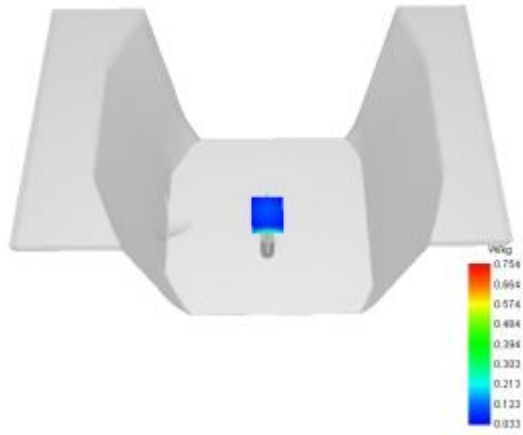
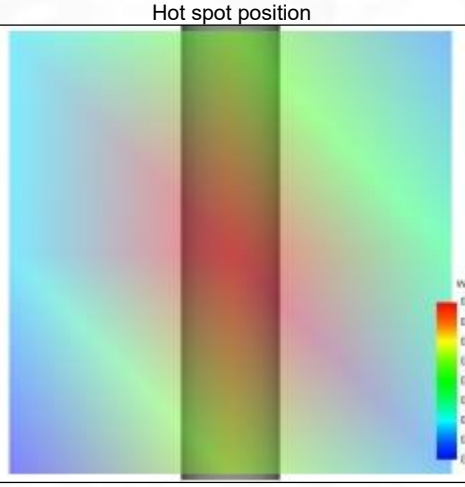


F. 3D Image

3D screen shot	Hot spot position
	

System Performance Check Data (2450 MHz)

System check at 2450 MHz

Date of measurement: 12/1/2024

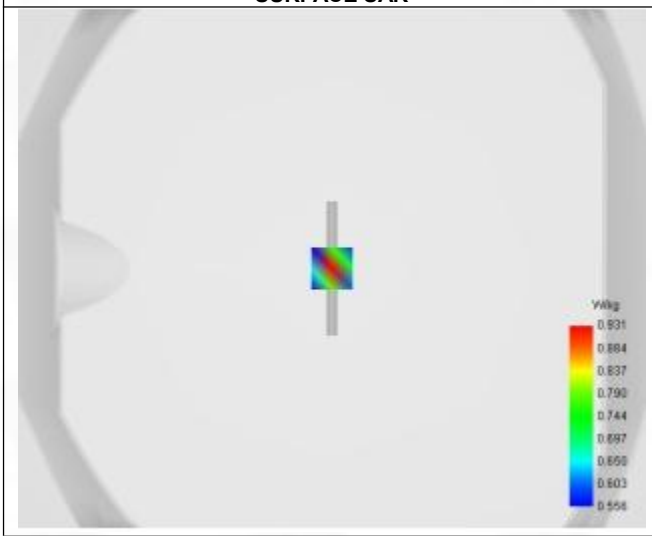
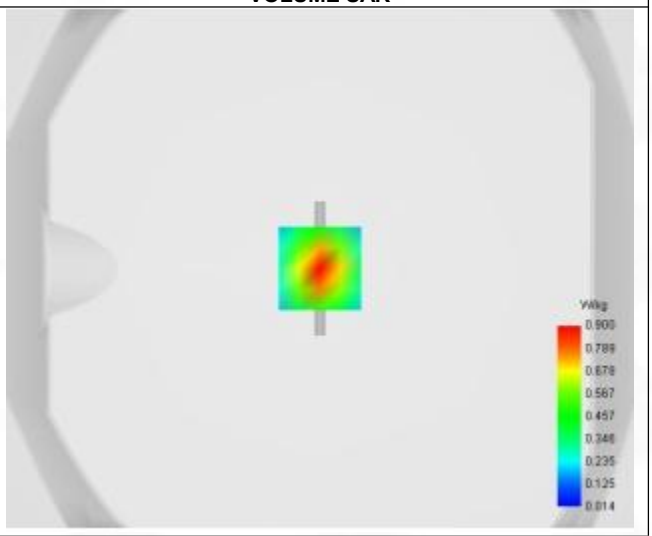
A. Experimental conditions.

Probe	SN 04/22 EPGO365
ConvF	2.36
Area Scan	dx=8mm dy=8mm, Adaptative 1 max
Zoom Scan	5x5x7,dx=5mm dy=5mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Dipole
Band	CW2450
Channels	Middle
Signal	CW

B. Permitivity

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

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

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

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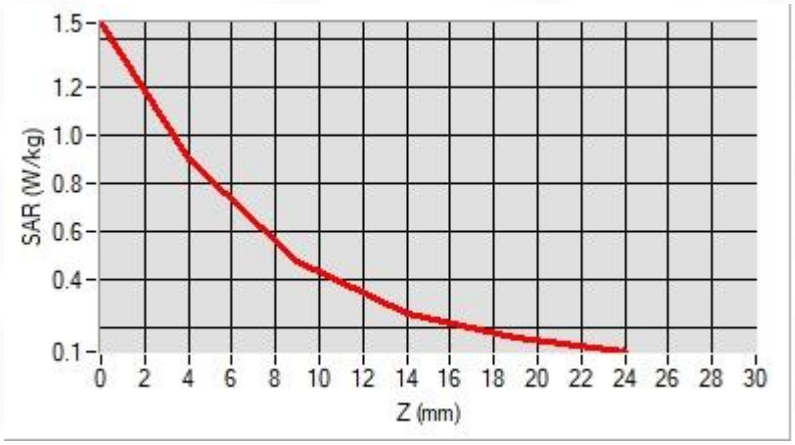
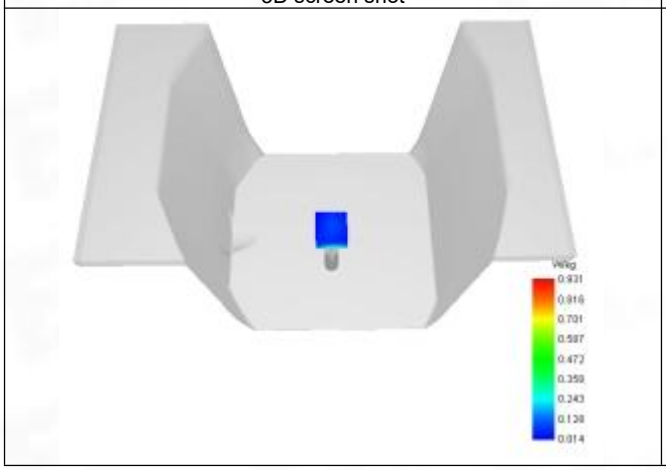
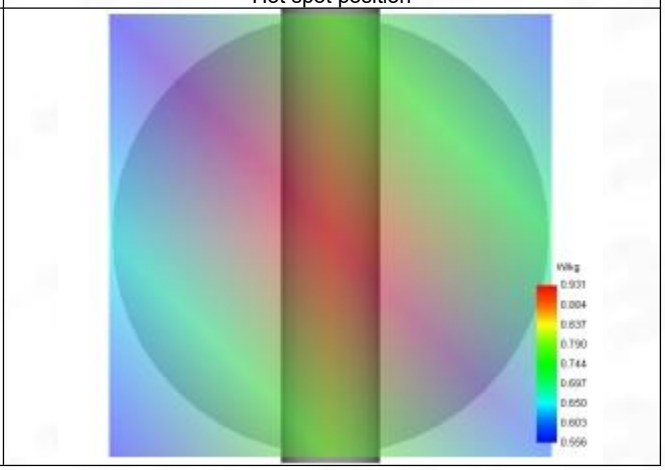


F. 3D Image

3D screen shot	Hot spot position
	

System Performance Check Data (2600 MHz)

System check at 2600 MHz

Date of measurement: 12/1/2024

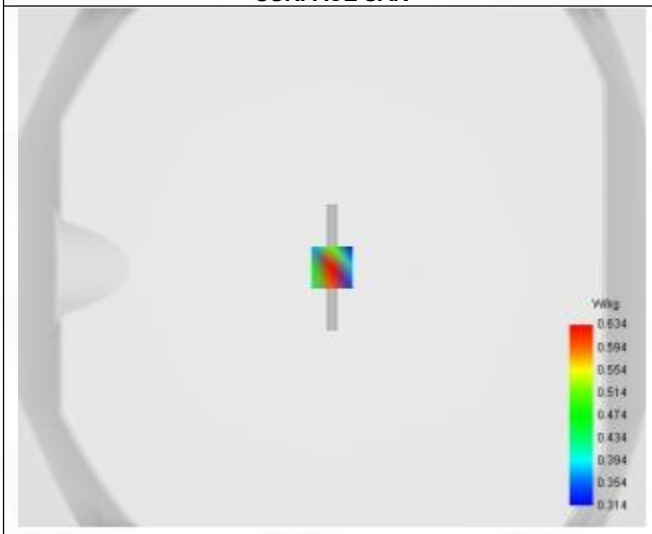
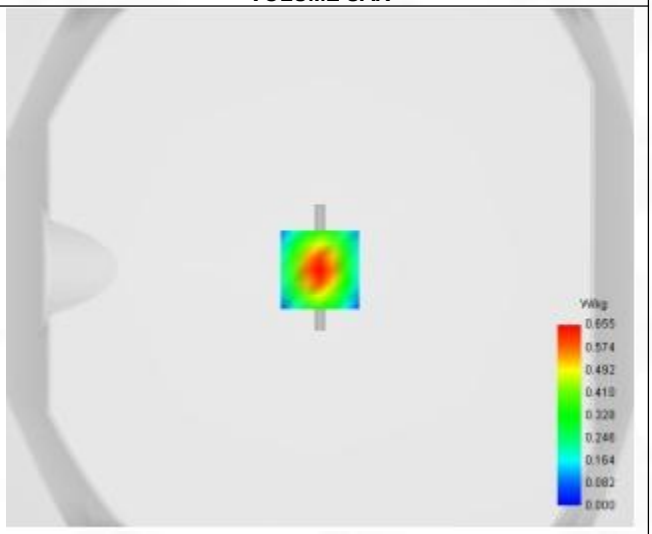
A. Experimental conditions.

Probe	SN 04/22 EPGO365
ConvF	2.40
Area Scan	dx=8mm dy=8mm, Adaptative 1 max
Zoom Scan	5x5x7,dx=5mm dy=5mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Dipole
Band	CW2600
Channels	Middle
Signal	CW

B. Permitivity

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

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

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

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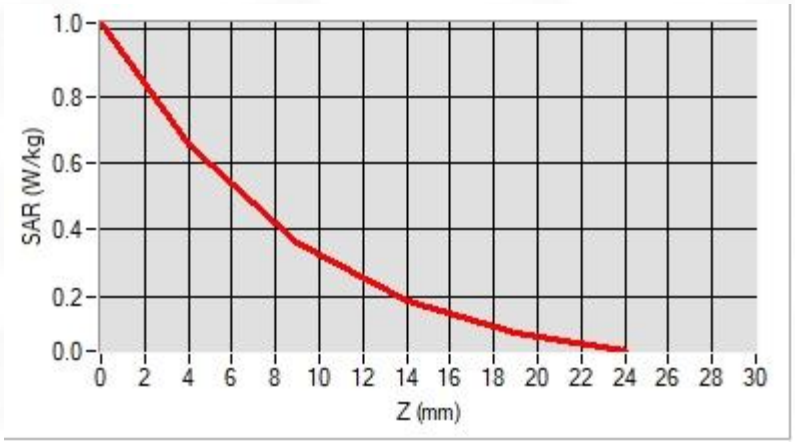
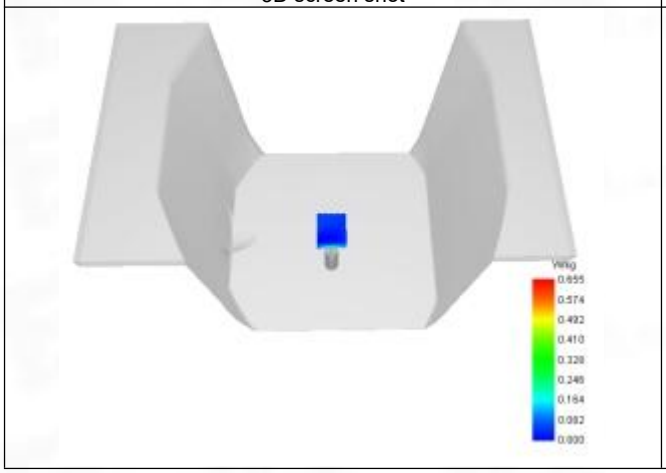
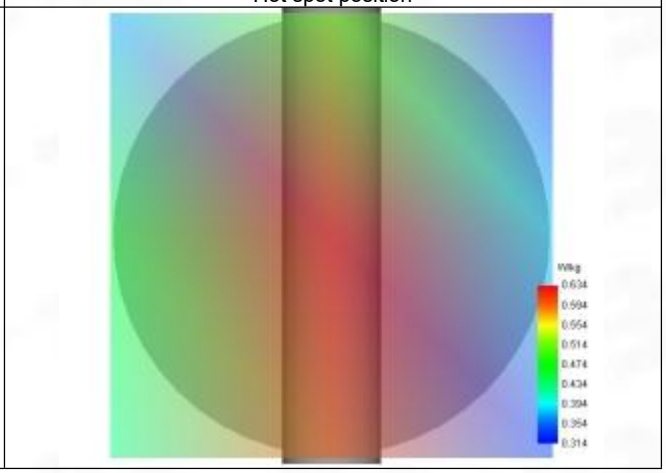


F. 3D Image

3D screen shot	Hot spot position
	

System Performance Check Data (5200 MHz)

System check at 5200 MHz

Date of measurement: 12/1/2024

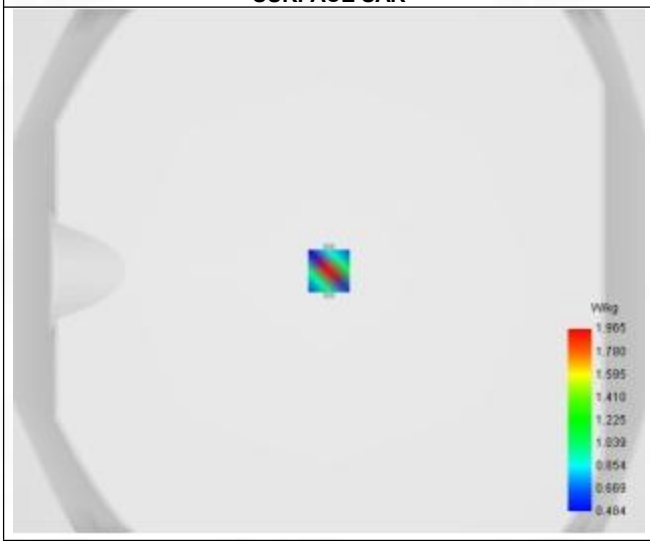
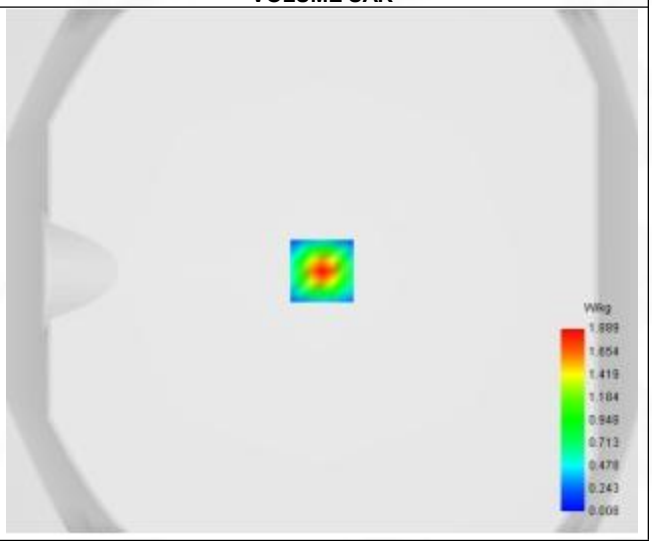
A. Experimental conditions.

Probe	SN 04/22 EPGO365
ConvF	2.24
Area Scan	dx=8mm dy=8mm, Adaptative 1 max
Zoom Scan	7x7x12,dx=4mm dy=4mm dz=2mm,Complete
Phantom	Validation plane
Device Position	Dipole
Band	CW5200
Channels	Middle
Signal	CW

B. Permitivity

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

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

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

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.288
SAR 1g (W/Kg)	1.019
Variation (%)	-3.400
Horizontal validation criteria: minimum distance (mm)	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

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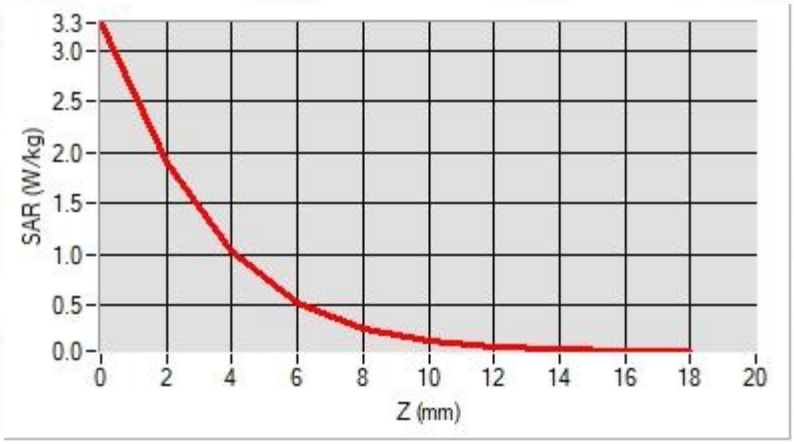
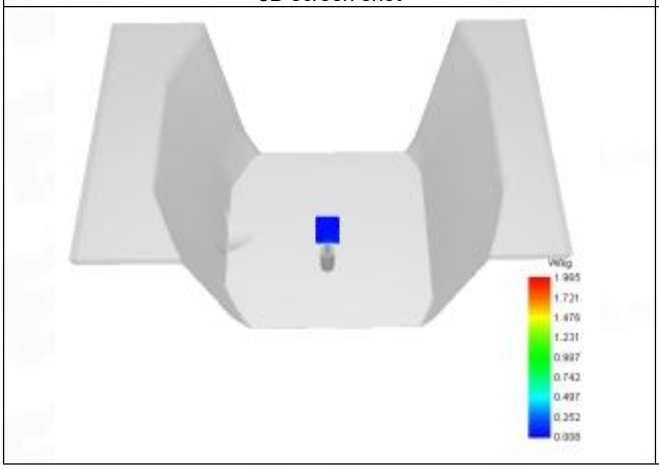
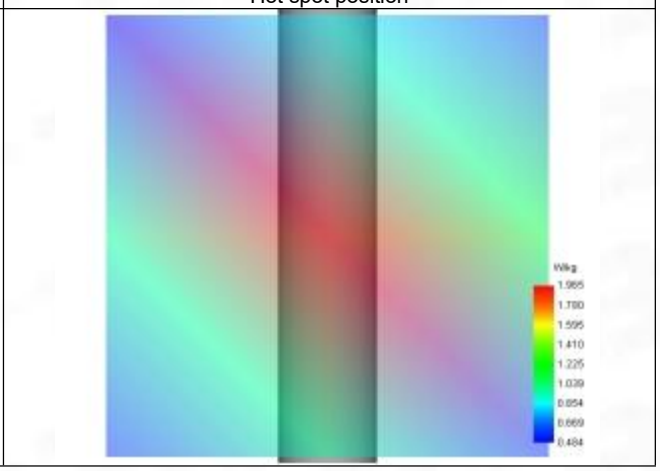


F. 3D Image

3D screen shot	Hot spot position
	

System Performance Check Data (5400 MHz)

System check at 5400 MHz

Date of measurement: 12/1/2024

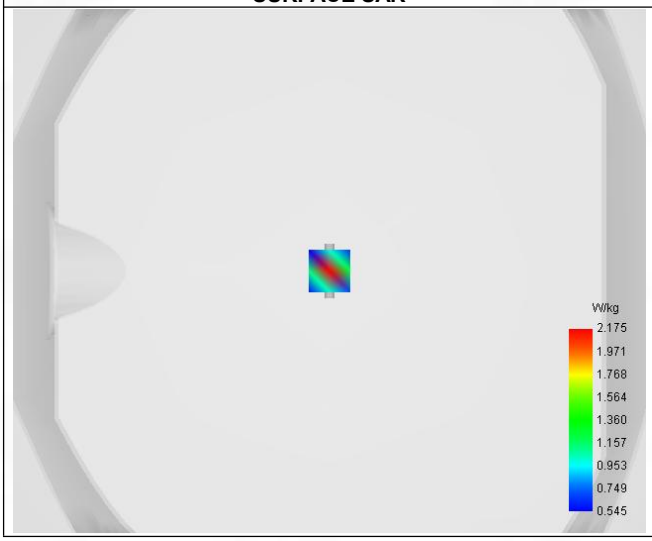
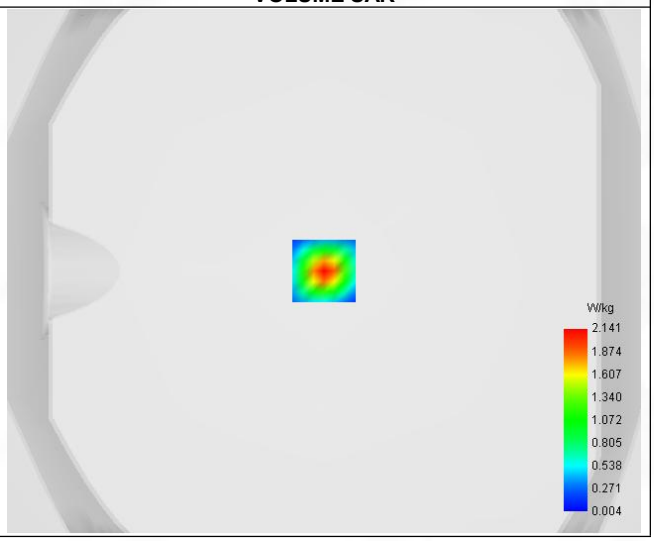
A. Experimental conditions.

Probe	SN 04/22 EPGO365
ConvF	2.12
Area Scan	dx=8mm dy=8mm, Adaptative 1 max
Zoom Scan	7x7x12,dx=4mm dy=4mm dz=2mm,Complete
Phantom	Validation plane
Device Position	Dipole
Band	CW5400
Channels	Middle
Signal	CW

B. Permitivity

Frequency (MHz)	5400.000
Relative permitivity (real part)	35.680
Relative permitivity (imaginary part)	16.320
Conductivity (S/m)	4.900

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

Maximum location: X=0.00, Y=0.00 ; SAR Peak: 3.78 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.299
SAR 1g (W/Kg)	1.051
Variation (%)	-4.610
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	2.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00
SAR (W/Kg)	3.660	2.141	1.177	0.614	0.317	0.169	0.098	0.065	0.050

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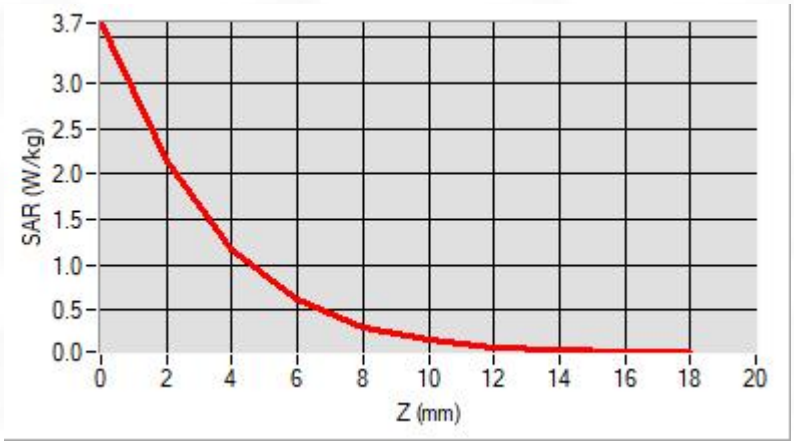
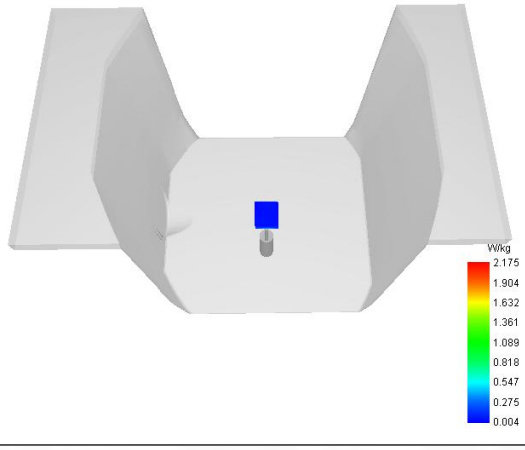
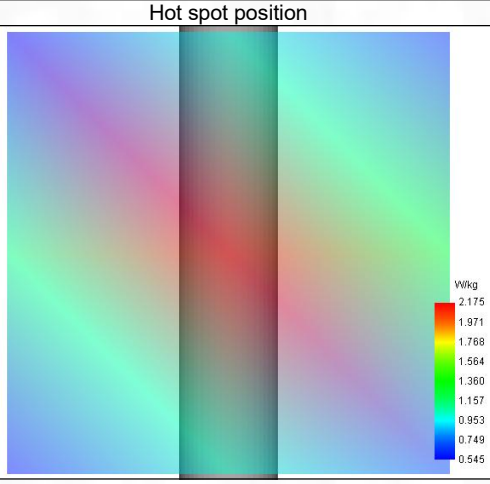


F. 3D Image

3D screen shot	Hot spot position
	

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System Performance Check Data (5800 MHz)

System check at 5800 MHz

Date of measurement: 12/1/2024

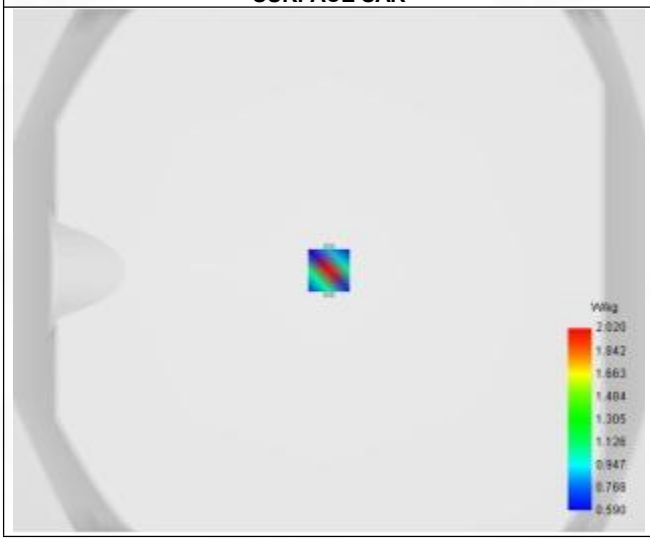
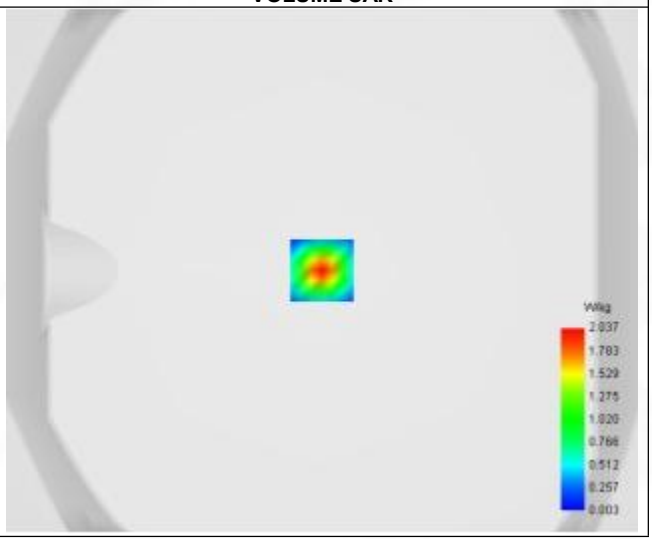
A. Experimental conditions.

Probe	SN 04/22 EPGO365
ConvF	2.04
Area Scan	dx=8mm dy=8mm, Adaptative 1 max
Zoom Scan	7x7x12,dx=4mm dy=4mm dz=2mm,Complete
Phantom	Validation plane
Device Position	Dipole
Band	CW5800
Channels	Middle
Signal	CW

B. Permitivity

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

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

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

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.277
SAR 1g (W/Kg)	0.981
Variation (%)	0.490
Horizontal validation criteria: minimum distance (mm)	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)	3.948	2.037	0.915	0.361	0.135	0.055	0.033	0.037	0.059

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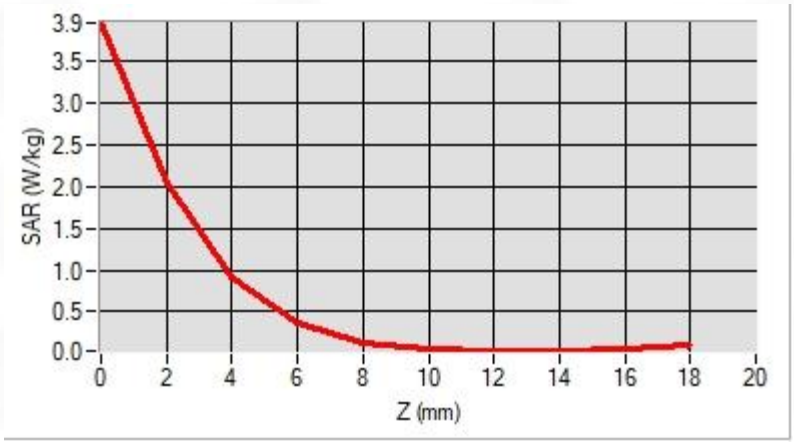
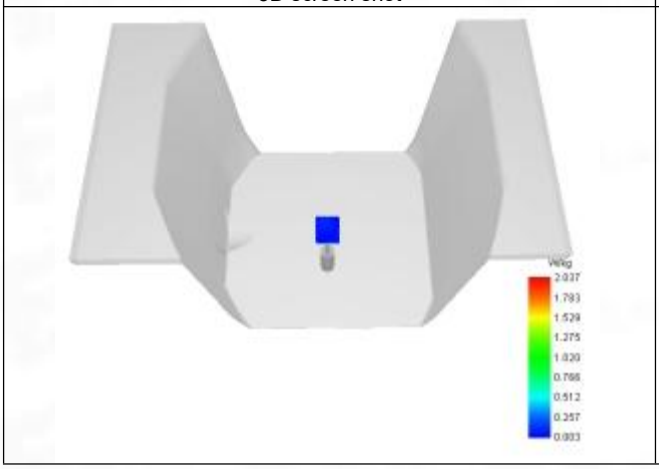
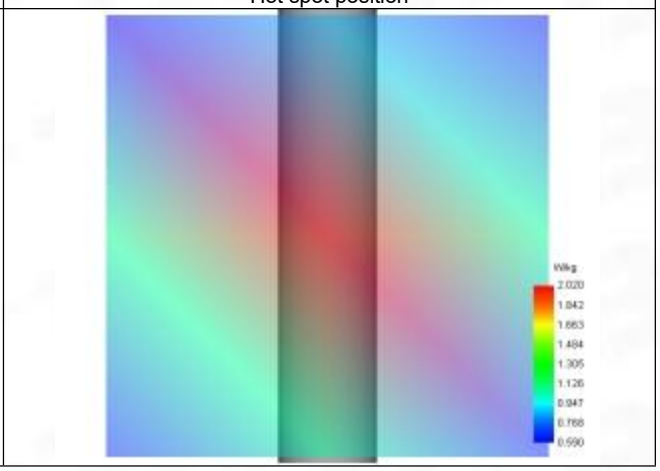


F. 3D Image

3D screen shot	Hot spot position
	

ANNEX C Test Data

1-Body with back position in dist. 0mm on Channel 128 in GPRS850+4slots

SAR Measurement at GPRS850 (Body, Validation Plane)

Date of measurement: 11/1/2024

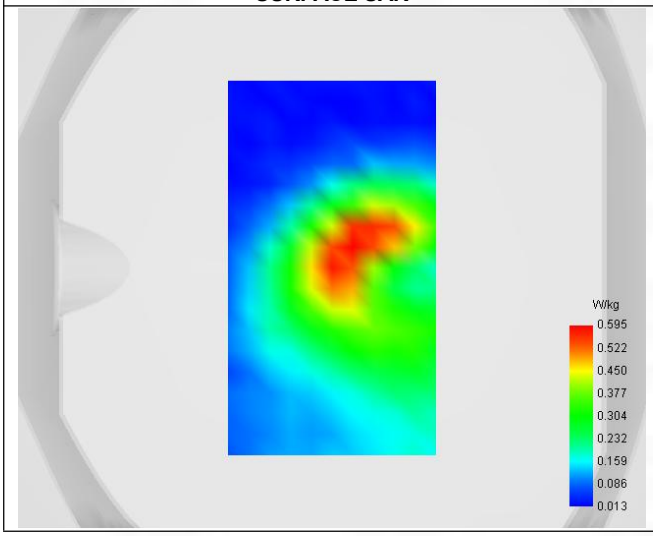
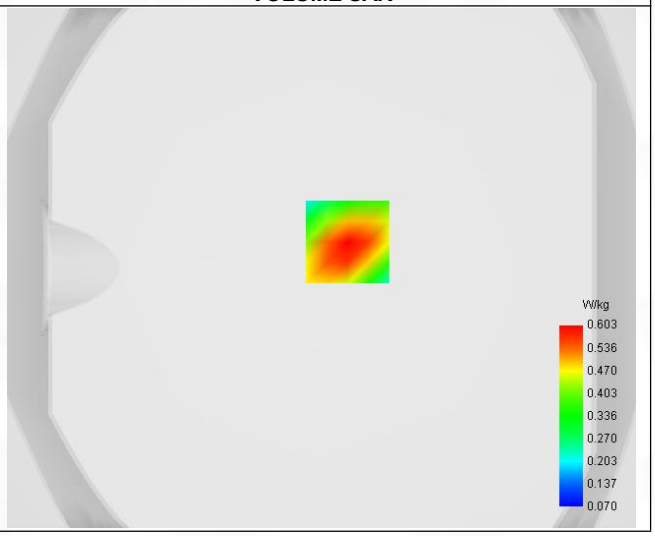
A. Experimental conditions.

Probe	SN 04/22 EPGO365
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	GPRS850
Channels	Lower (128)
Signal	TDMA (GPRS)
Modulation	GMSK (CS-1)
TX-slots	4

B. Permitivity

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

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

Maximum location: X=10.00, Y=10.00 ; SAR Peak: 0.88 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.371
SAR 1g (W/Kg)	0.611
Variation (%)	-2.760
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

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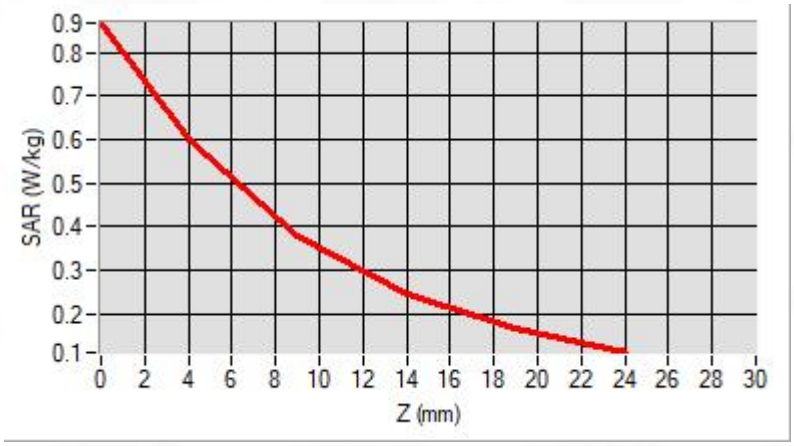
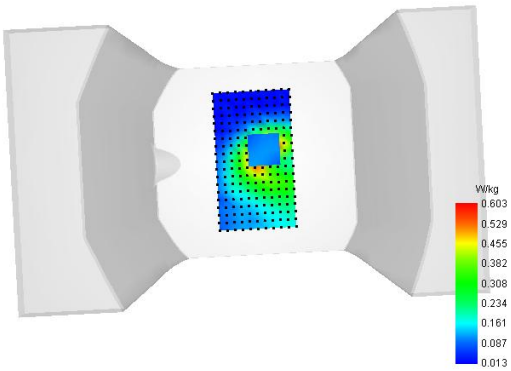
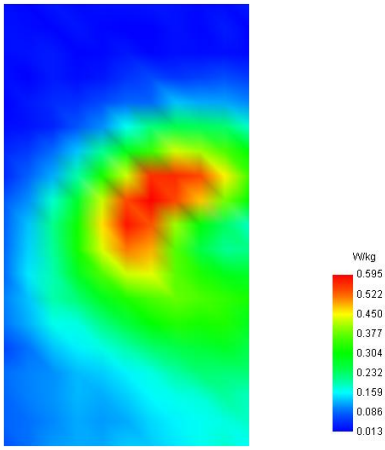
SAR (W/Kg)	0.868	0.603	0.380	0.245	0.165



F. 3D Image

3D screen shot	Hot spot position
	

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2-Body with back position in dist. 0mm on Channel 661 in GPRS1900+4slots

SAR Measurement at GPRS1900 (Body, Validation Plane)

Date of measurement: 11/1/2024

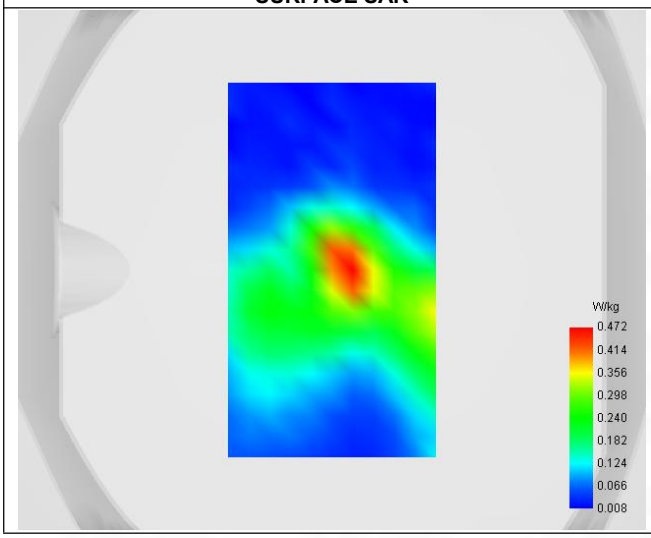
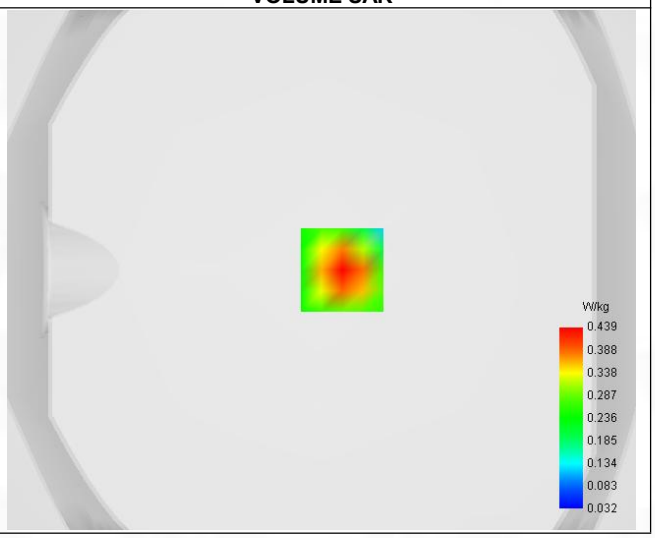
A. Experimental conditions.

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	GPRS1900
Channels	Middle (661)
Signal	TDMA (GPRS)
Modulation	GMSK (CS-1)
TX-slots	4

B. Permitivity

Frequency (MHz)	1880.000
Relative permitivity (real part)	39.886
Relative permitivity (imaginary part)	13.522
Conductivity (S/m)	1.402

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

Maximum location: X=8.00, Y=0.00 ; SAR Peak: 0.62 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.251
SAR 1g (W/Kg)	0.426
Variation (%)	-3.750
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)	0.620	0.439	0.283	0.184	0.123

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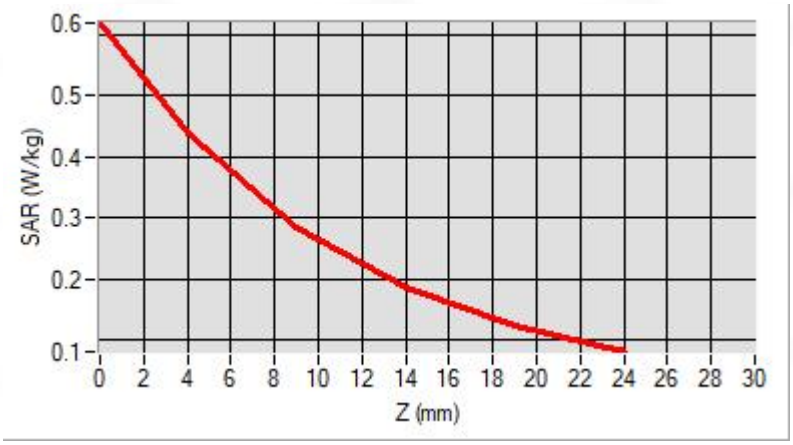
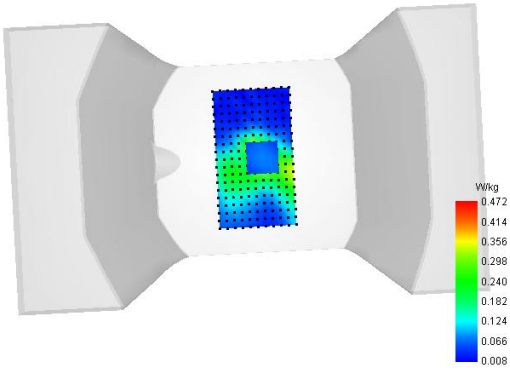
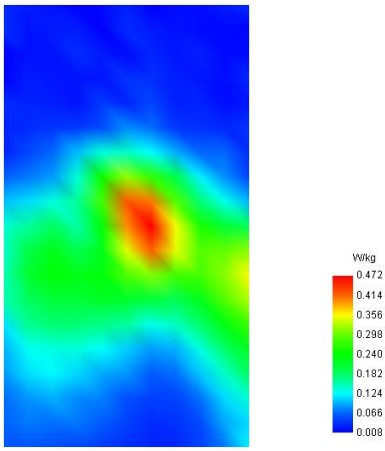


F. 3D Image

3D screen shot	Hot spot position
	

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3-Body with back position in dist. 0mm on Channel 9400 in WCDMA Band 2

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

Date of measurement: 11/1/2024

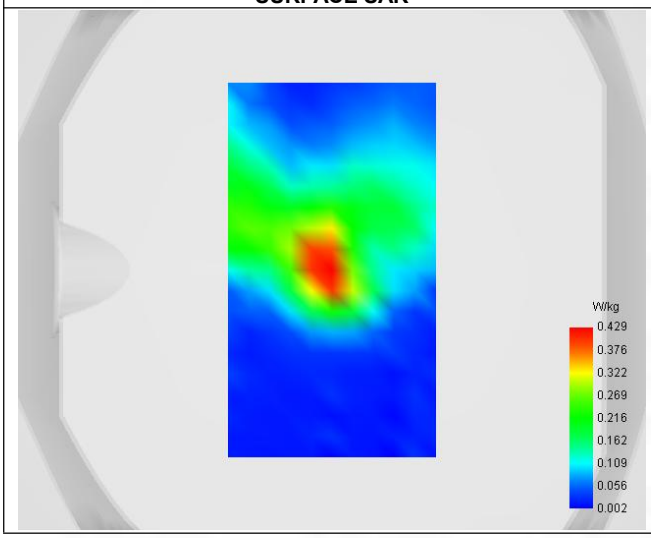
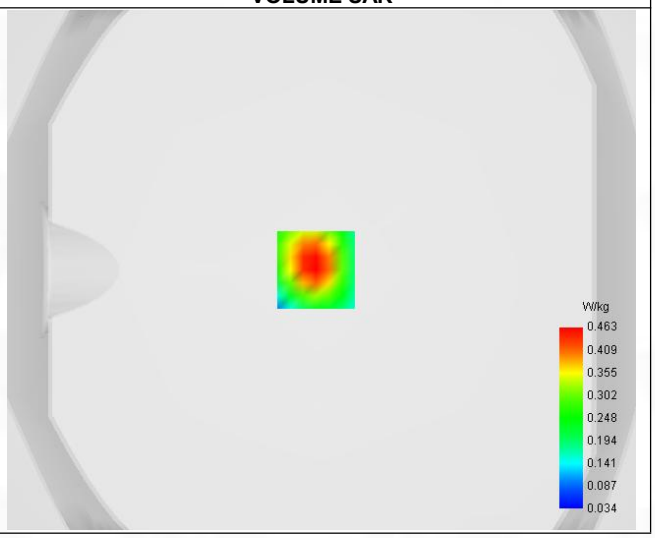
A. Experimental conditions.

Probe	SN 04/22 EPGO365
ConvF	2.24
Area Scan	surf_sam_plan.txt
Zoom Scan	7x7x7,dx=5mm dy=5mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	Band 2 (1900)
Channels	Middle (9400)
Signal	WCDMA
Mode	Release 99
Connection Type	RMC, 12.2 kbps

B. Permitivity

Frequency (MHz)	1880.000
Relative permitivity (real part)	39.886
Relative permitivity (imaginary part)	13.522
Conductivity (S/m)	1.402

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-2.00, Y=0.00 ; SAR Peak: 0.72 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.241
SAR 1g (W/Kg)	0.445
Variation (%)	3.290
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.714	0.463	0.263	0.152	0.093

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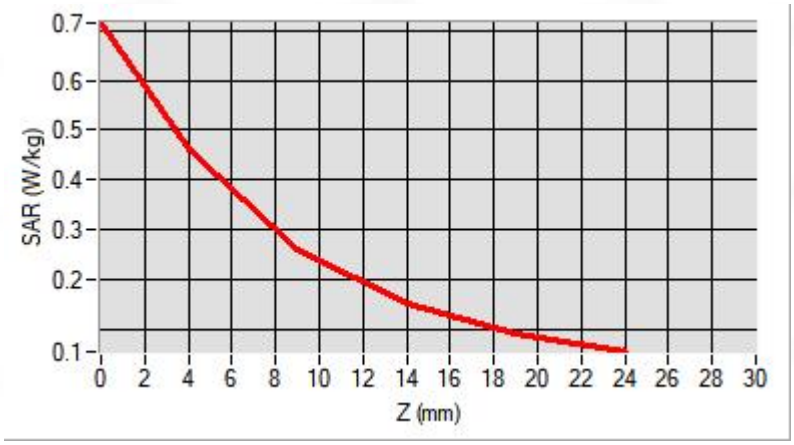
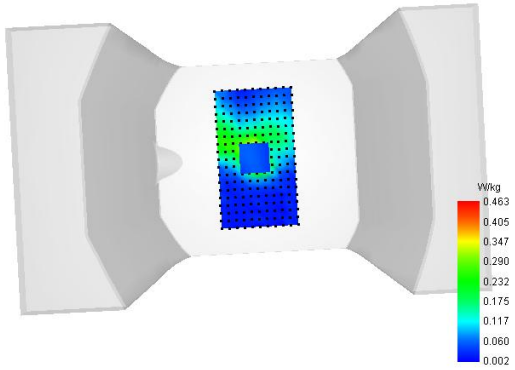
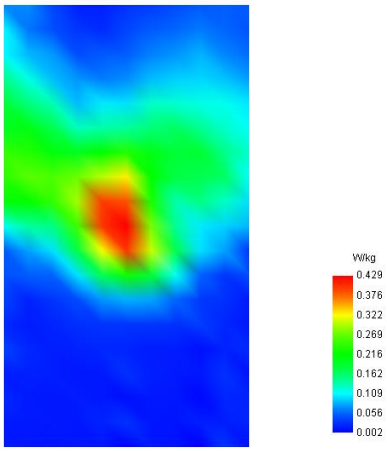


F. 3D Image

3D screen shot	Hot spot position
	

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4-Body with back position in dist. 0mm on Channel 1312 in WCDMA Band 4

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

Date of measurement: 11/1/2024

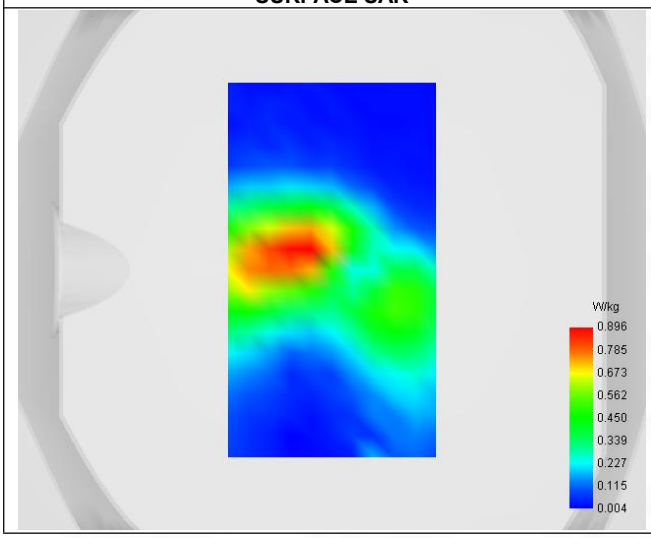
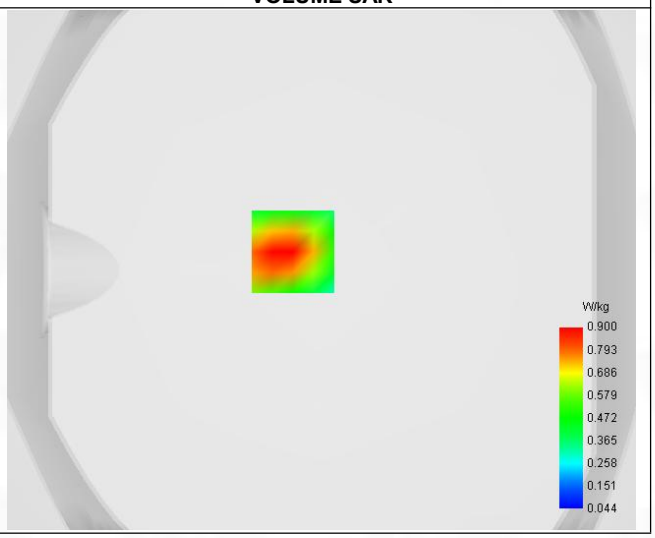
A. Experimental conditions.

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	Lower (1312)
Signal	WCDMA
Mode	Release 99
Connection Type	RMC, 12.2 kbps

B. Permitivity

Frequency (MHz)	1712.400
Relative permitivity (real part)	40.046
Relative permitivity (imaginary part)	14.580
Conductivity (S/m)	1.325

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-11.00, Y=7.00 ; SAR Peak: 1.30 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.359
SAR 1g (W/Kg)	0.719
Variation (%)	-2.830
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)	1.277	0.900	0.572	0.361	0.228

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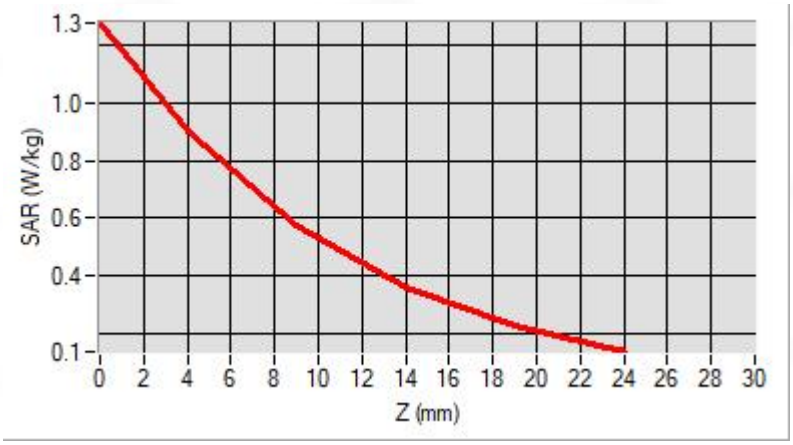
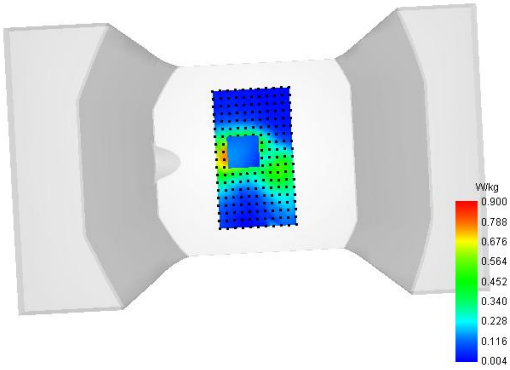
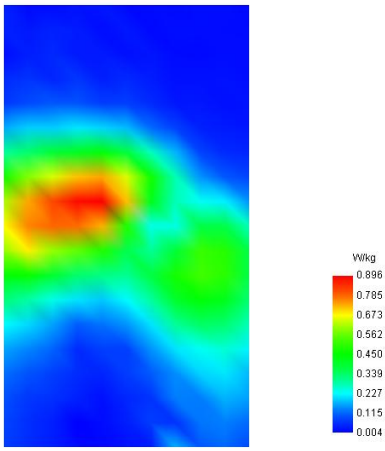


F. 3D Image

3D screen shot	Hot spot position
	

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5-Body with back position in dist. 0mm on Channel 4183 in WCDMA Band 5

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

Date of measurement: 11/1/2024

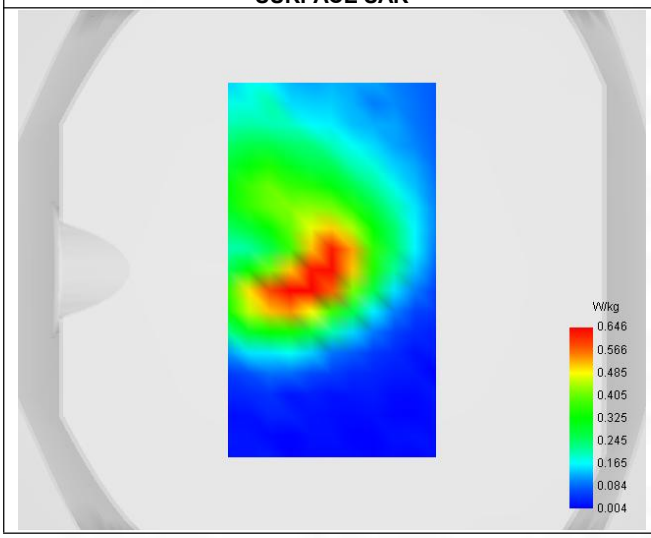
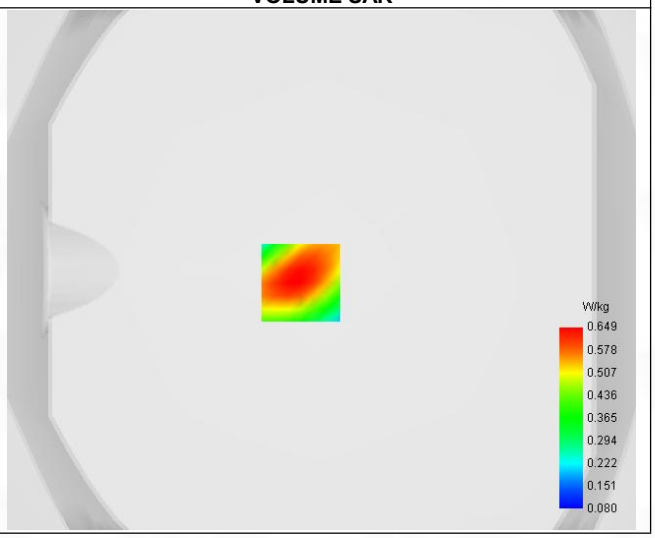
A. Experimental conditions.

Probe	SN 04/22 EPGO365
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	Middle (4183)
Signal	WCDMA
Mode	Release 99
Connection Type	RMC, 12.2 kbps

B. Permitivity

Frequency (MHz)	836.600
Relative permitivity (real part)	41.408
Relative permitivity (imaginary part)	19.481
Conductivity (S/m)	0.871

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-8.00, Y=-5.00 ; SAR Peak: 0.92 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.401
SAR 1g (W/Kg)	0.655
Variation (%)	-3.270
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.904	0.649	0.422	0.273	0.177

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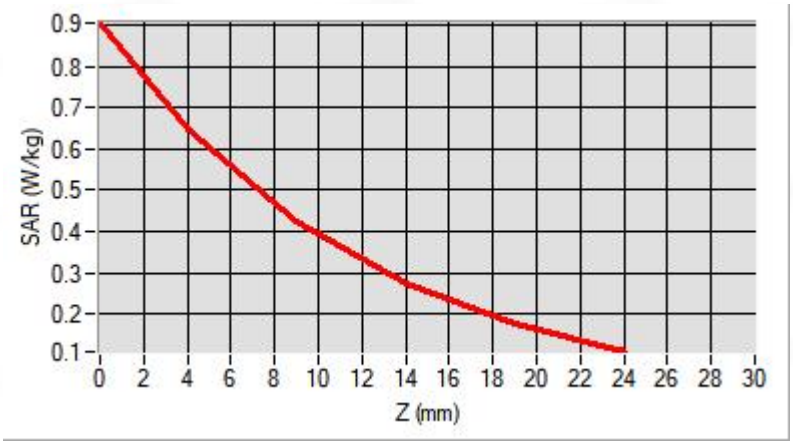
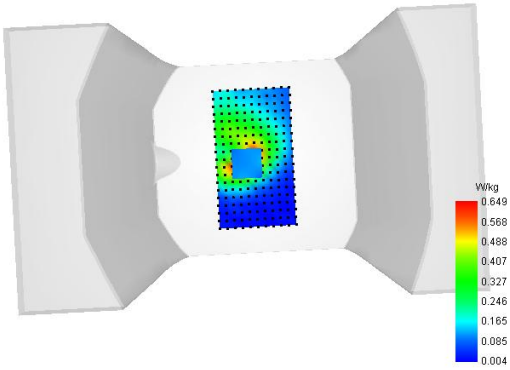
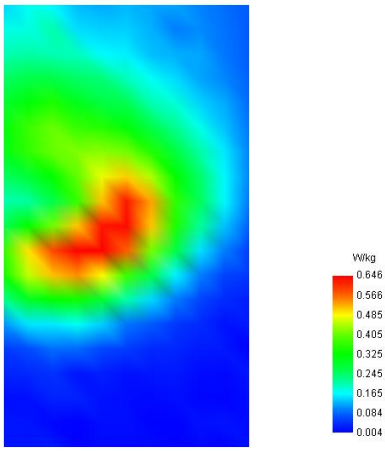


F. 3D Image

3D screen shot	Hot spot position
	

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6-Body with back position in dist. 0mm on Channel 1 in IEEE 802.11b ISM

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

Date of measurement: 12/1/2024

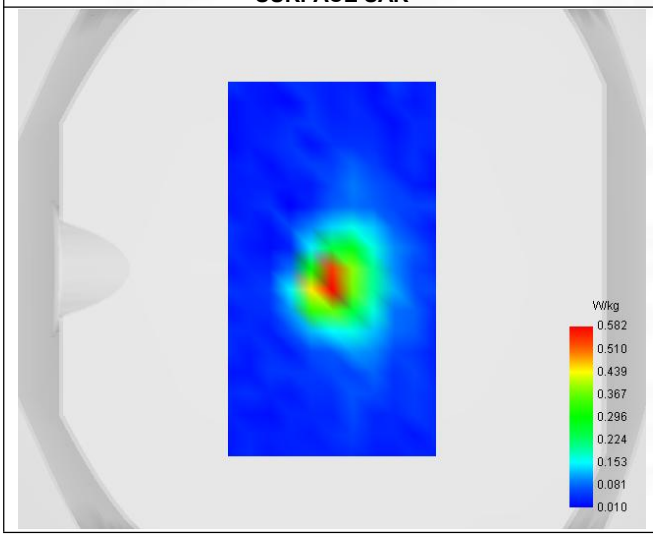
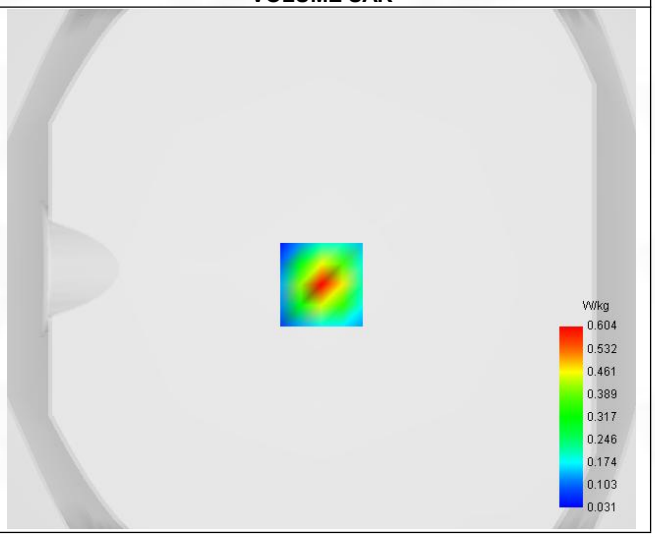
A. Experimental conditions.

Probe	SN 04/22 EPGO365
ConvF	2.36
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=5mm dy=5mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	IEEE 802.11b ISM
Channels	Lower (1)
Signal	IEEE 802.11

B. Permitivity

Frequency (MHz)	2412.000
Relative permitivity (real part)	39.135
Relative permitivity (imaginary part)	13.343
Conductivity (S/m)	1.782

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

Maximum location: X=0.00, Y=-6.00 ; SAR Peak: 1.15 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.254
SAR 1g (W/Kg)	0.564
Variation (%)	0.190
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)	1.150	0.604	0.254	0.117	0.077

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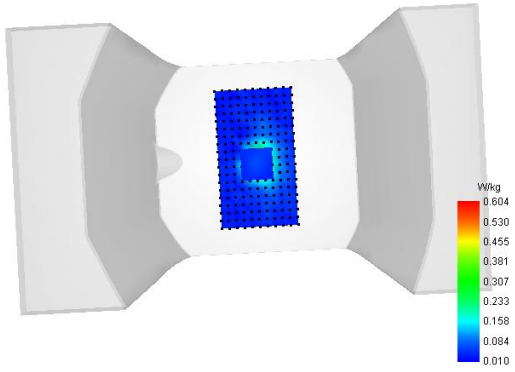
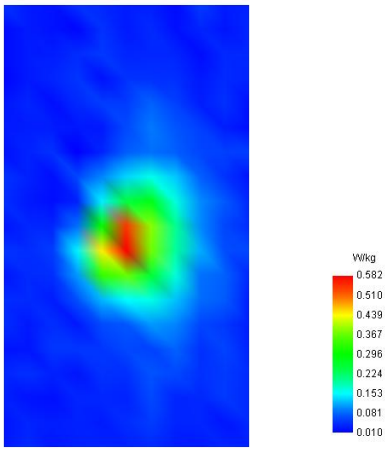
F. 3D Image

3D screen shot	Hot spot position
	

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7-Body with back position in dist. 0mm on Channel 36 in IEEE 802.11a U-NII

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

Date of measurement: 12/1/2024

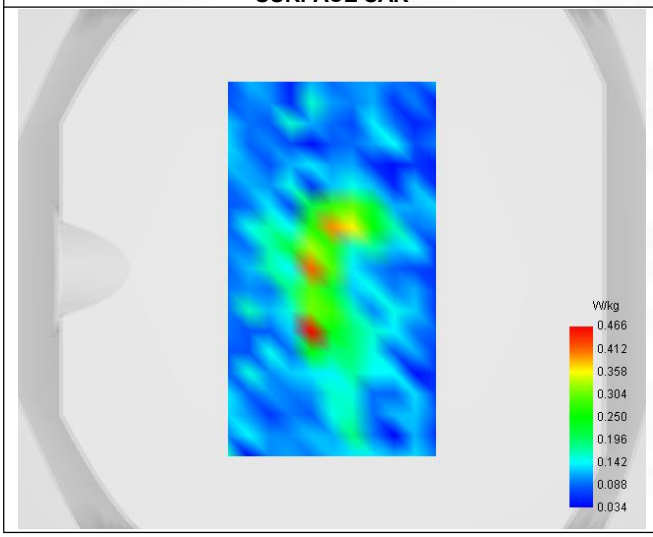
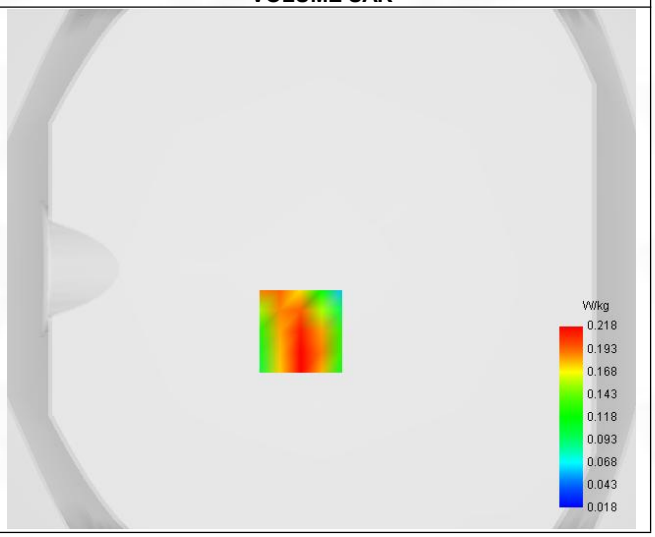
A. Experimental conditions.

Probe	SN 04/22 EPGO365
ConvF	2.24
Area Scan	surf_sam_plan.txt
Zoom Scan	7x7x12,dx=4mm dy=4mm dz=2mm,Complete
Phantom	Validation plane
Device Position	Body
Band	IEEE 802.11a U-NII
Channels	Lower (36)
Signal	IEEE 802.11

B. Permitivity

Frequency (MHz)	5180.000
Relative permitivity (real part)	35.903
Relative permitivity (imaginary part)	16.223
Conductivity (S/m)	4.679

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-8.00, Y=-24.00 ; SAR Peak: 0.39 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.115
SAR 1g (W/Kg)	0.176
Variation (%)	-1.800
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)	0.212	0.218	0.122	0.051	0.084

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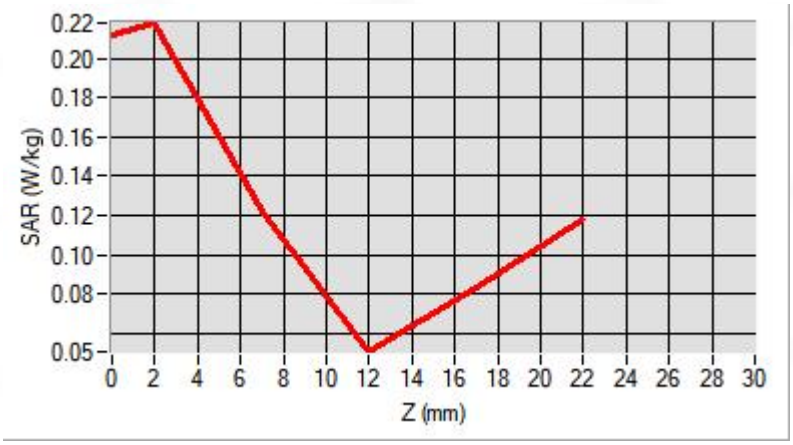
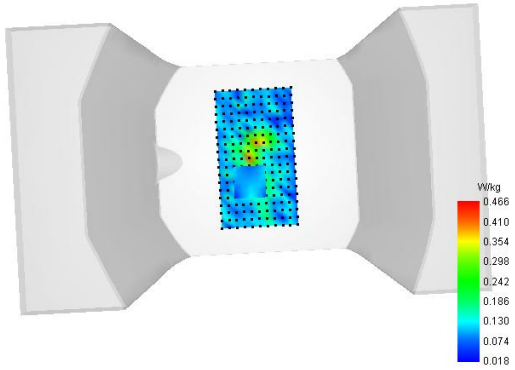
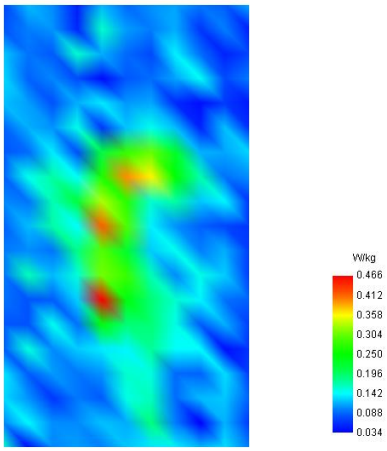


F. 3D Image

3D screen shot	Hot spot position
	

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8-Body with back position in dist. 0mm on Channel 52 in IEEE 802.11a U-NII

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

Date of measurement: 12/1/2024

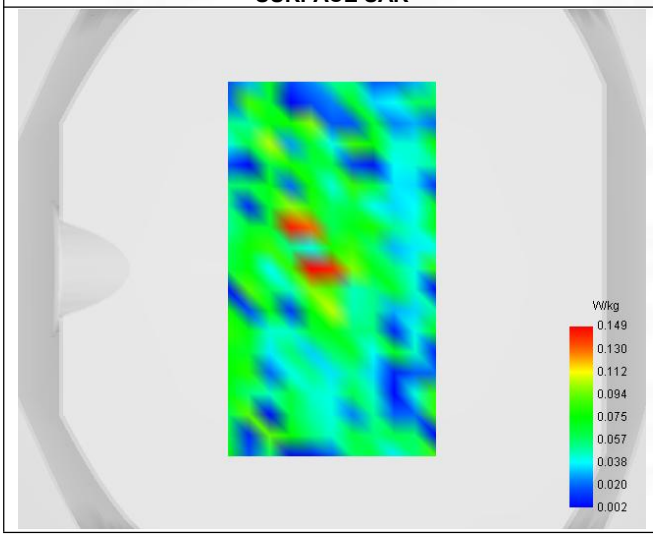
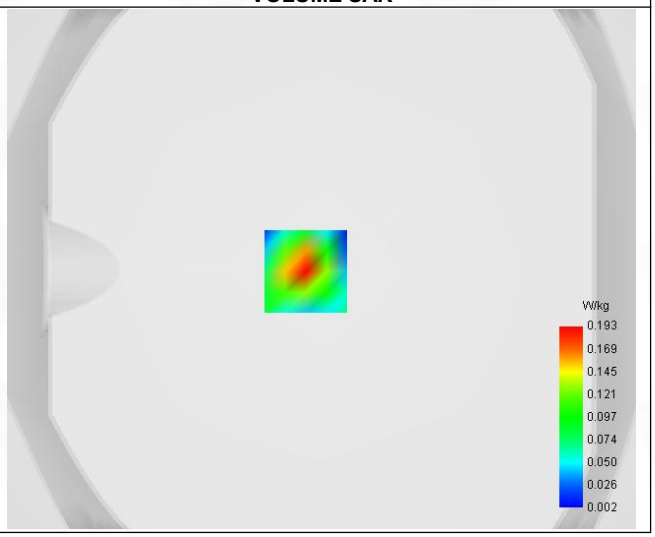
A. Experimental conditions.

Probe	SN 04/22 EPGO365
ConvF	2.24
Area Scan	surf_sam_plan.txt
Zoom Scan	7x7x12,dx=4mm dy=4mm dz=2mm,Complete
Phantom	Validation plane
Device Position	Body
Band	IEEE 802.11a U-NII
Channels	Lower (52)
Signal	IEEE 802.11

B. Permitivity

Frequency (MHz)	5260.000
Relative permitivity (real part)	35.820
Relative permitivity (imaginary part)	16.271
Conductivity (S/m)	4.760

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-6.00, Y=-1.00 ; SAR Peak: 0.33 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.054
SAR 1g (W/Kg)	0.120
Variation (%)	3.540
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	2.00	7.00	12.00	17.00
SAR (W/Kg)	0.302	0.193	0.053	0.017	0.015

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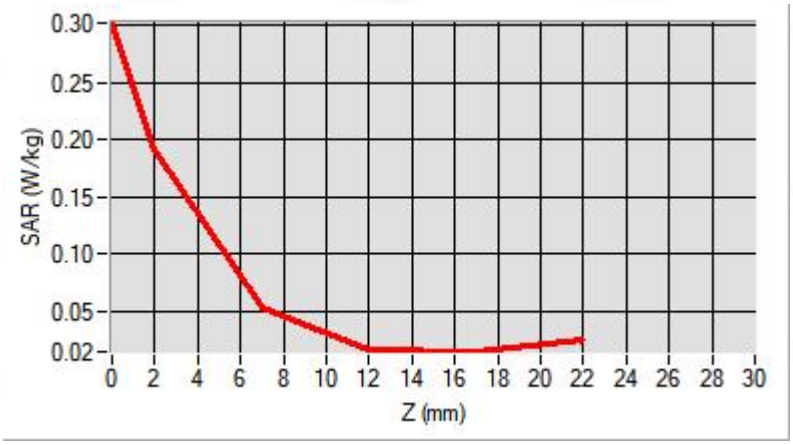
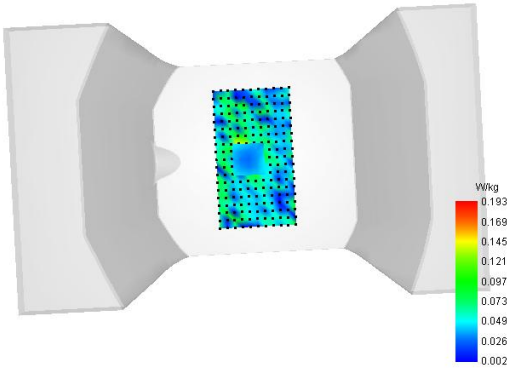
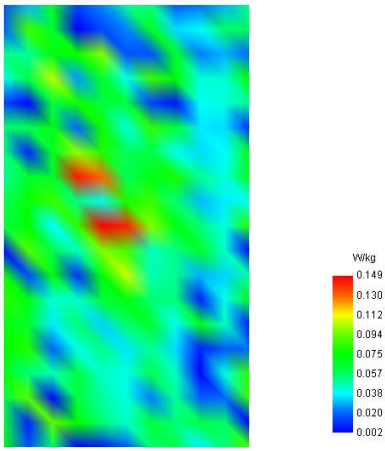


F. 3D Image

3D screen shot	Hot spot position
	

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9-Body with back position in dist. 0mm on Channel 157 in IEEE 802.11a U-NII

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

Date of measurement: 12/1/2024

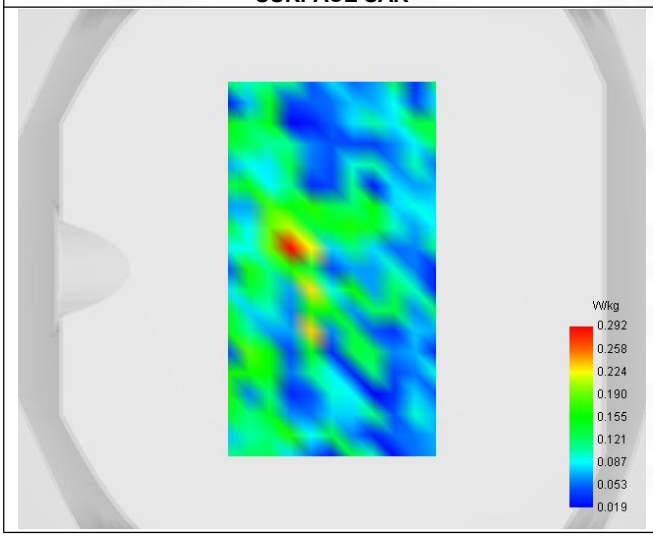
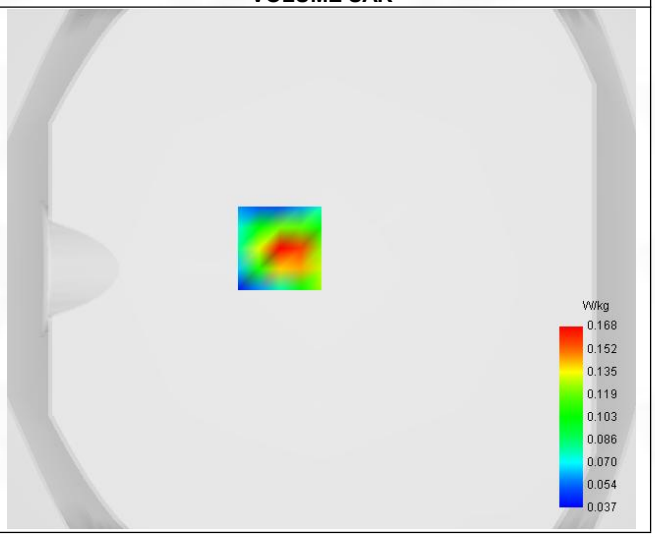
A. Experimental conditions.

Probe	SN 04/22 EPGO365
ConvF	2.04
Area Scan	surf_sam_plan.txt
Zoom Scan	7x7x12,dx=4mm dy=4mm dz=2mm,Complete
Phantom	Validation plane
Device Position	Body
Band	IEEE 802.11a U-NII
Channels	Middle (157)
Signal	IEEE 802.11

B. Permitivity

Frequency (MHz)	5785.000
Relative permitivity (real part)	35.195
Relative permitivity (imaginary part)	16.476
Conductivity (S/m)	5.295

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-16.00, Y=8.00 ; SAR Peak: 0.23 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.088
SAR 1g (W/Kg)	0.198
Variation (%)	2.040
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)	0.222	0.168	0.088	0.060	0.060

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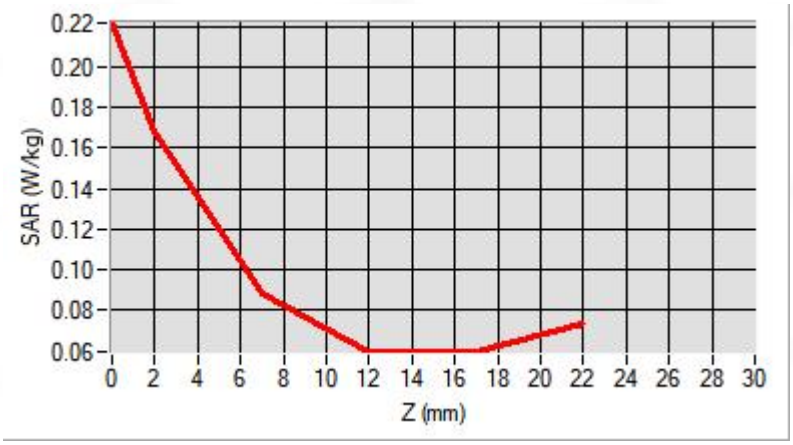
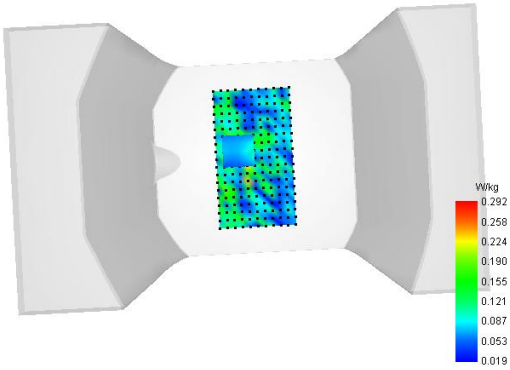
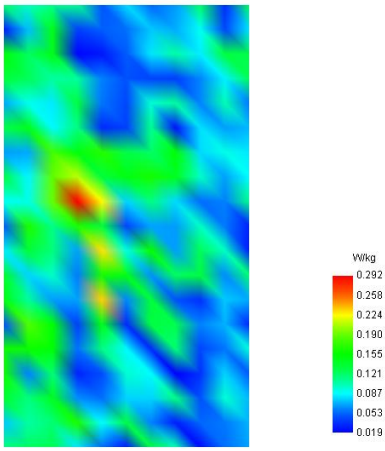


F. 3D Image

3D screen shot	Hot spot position
	

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10-Body with back position in dist. 0mm on Channel 39 in Bluetooth

SAR Measurement at Bluetooth (Body, Validation Plane)

Date of measurement: 12/1/2024

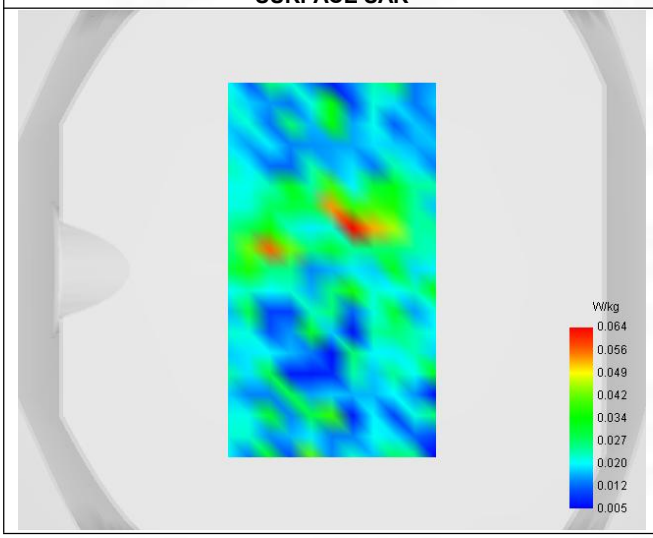
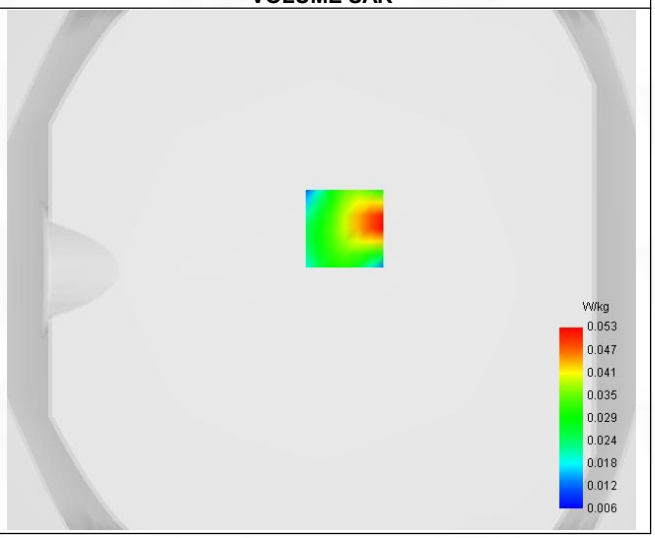
A. Experimental conditions.

Probe	SN 04/22 EPGO365
ConvF	2.36
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=5mm dy=5mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	Bluetooth
Channels	Middle (39)
Signal	Bluetooth

B. Permitivity

Frequency (MHz)	2441.000
Relative permitivity (real part)	39.093
Relative permitivity (imaginary part)	13.341
Conductivity (S/m)	1.803

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

Maximum location: X=9.00, Y=16.00 ; SAR Peak: 0.11 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.030
SAR 1g (W/Kg)	0.050
Variation (%)	-1.250
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)	0.186	0.053	0.016	0.016	0.011

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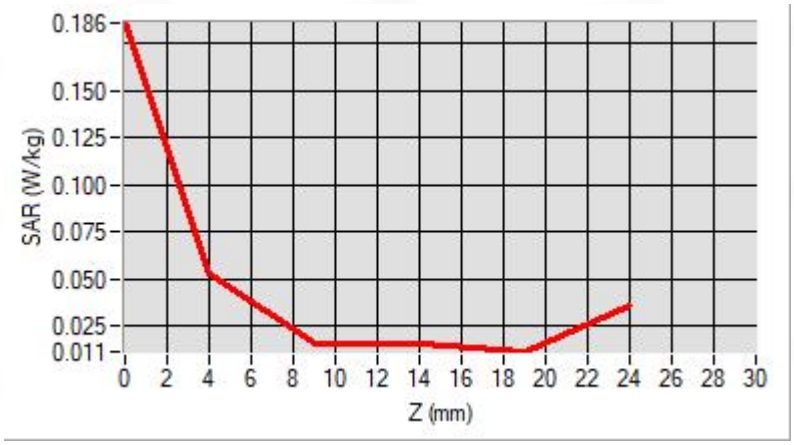
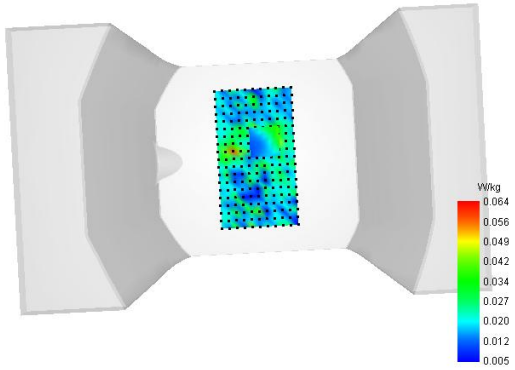
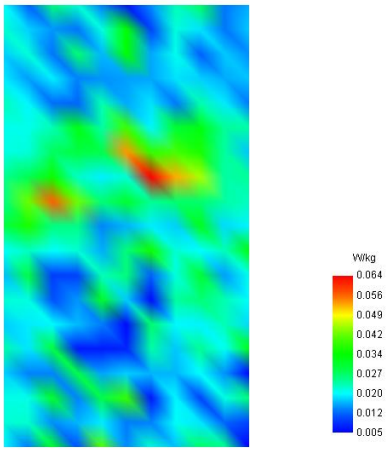


F. 3D Image

3D screen shot	Hot spot position
	

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11-Body with back position in dist. 0mm on Channel 18900 in LTE band 2

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

Date of measurement: 11/1/2024

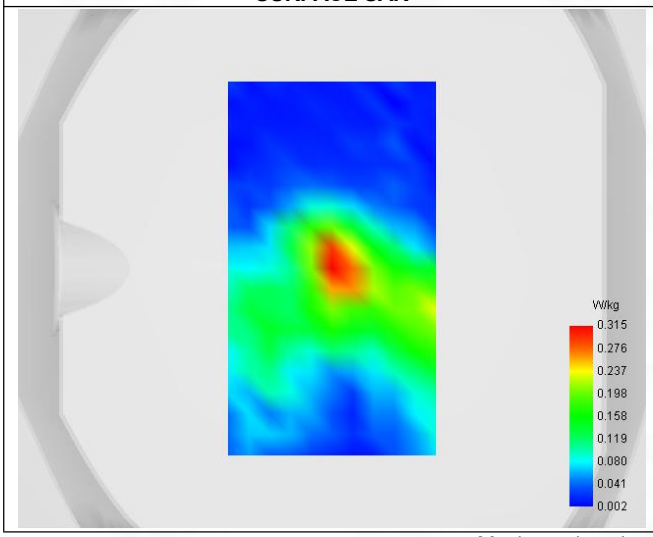
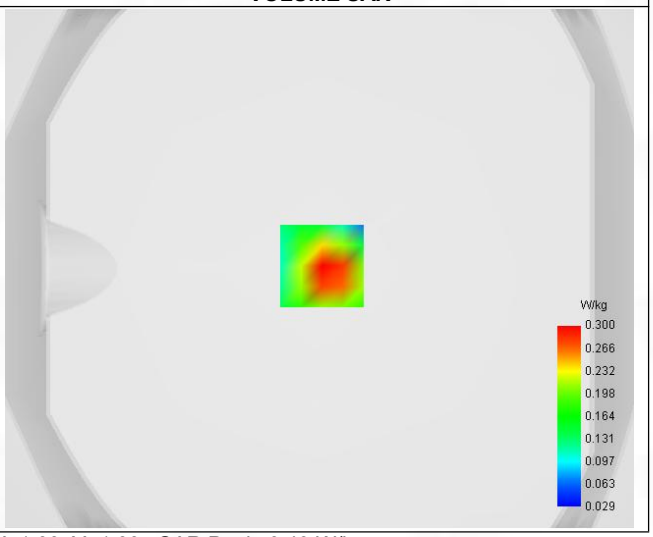
A. Experimental conditions.

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	LTE band 2
Channels	Middle (18900)
Signal	LTE FDD
Cell Bandwidth	20 Mhz
Modulation	SC-OFDM - QPSK
RB offset	50
RB size	1

B. Permitivity

Frequency (MHz)	1880.090
Relative permitivity (real part)	39.886
Relative permitivity (imaginary part)	13.522
Conductivity (S/m)	1.402

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

Maximum location: X=1.00, Y=1.00 ; SAR Peak: 0.49 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.165
SAR 1g (W/Kg)	0.297
Variation (%)	-3.690
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

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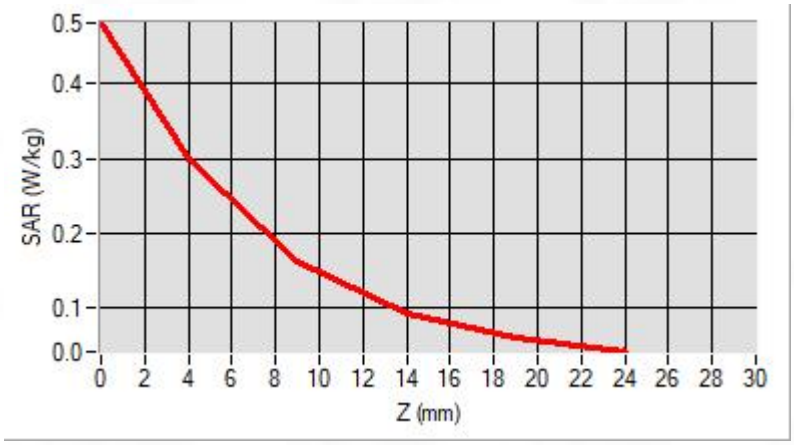
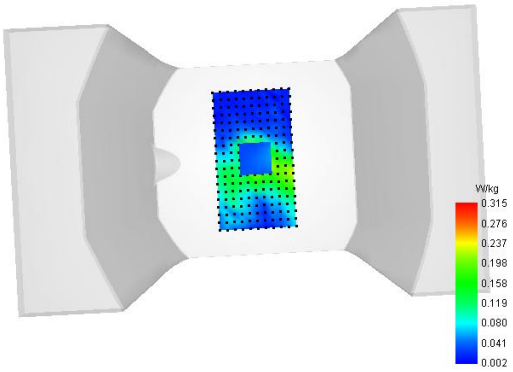
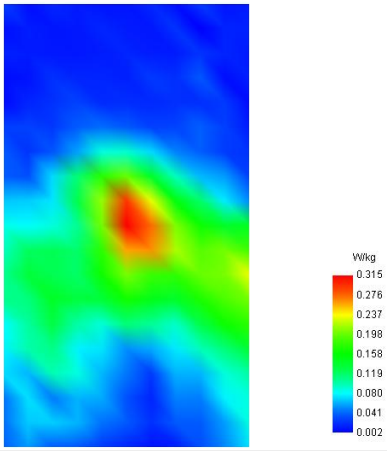
Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.481	0.300	0.163	0.093	0.060



F. 3D Image

3D screen shot	Hot spot position
	

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12-Body with back position in dist. 0mm on Channel 20050 in LTE band 4

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

Date of measurement: 11/1/2024

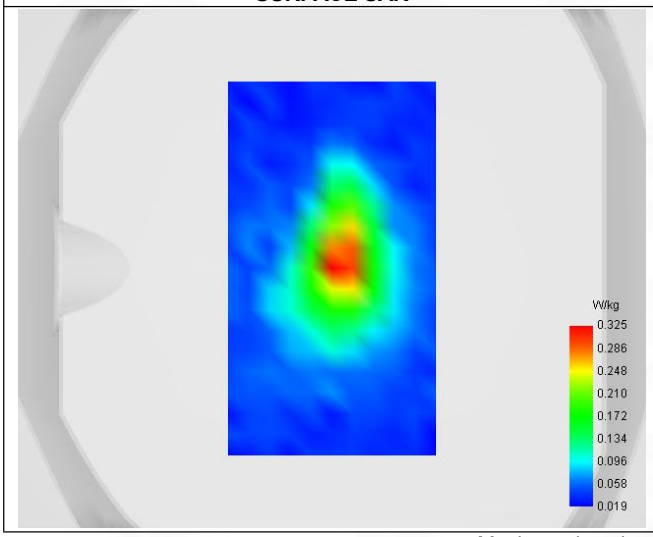
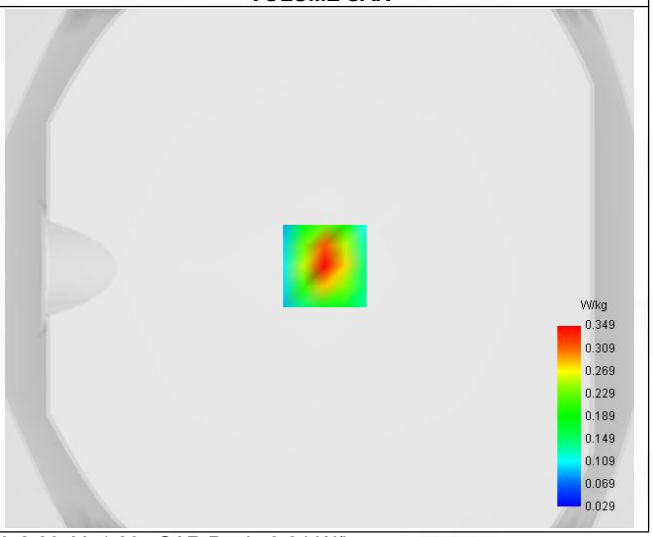
A. Experimental conditions.

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	LTE band 4
Channels	Lower (20050)
Signal	LTE FDD
Cell Bandwidth	20 Mhz
Modulation	SC-OFDM - QPSK
RB offset	50
RB size	1

B. Permitivity

Frequency (MHz)	1720.090
Relative permitivity (real part)	40.034
Relative permitivity (imaginary part)	14.537
Conductivity (S/m)	1.329

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

Maximum location: X=2.00, Y=1.00 ; SAR Peak: 0.64 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.175
SAR 1g (W/Kg)	0.348
Variation (%)	4.240
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

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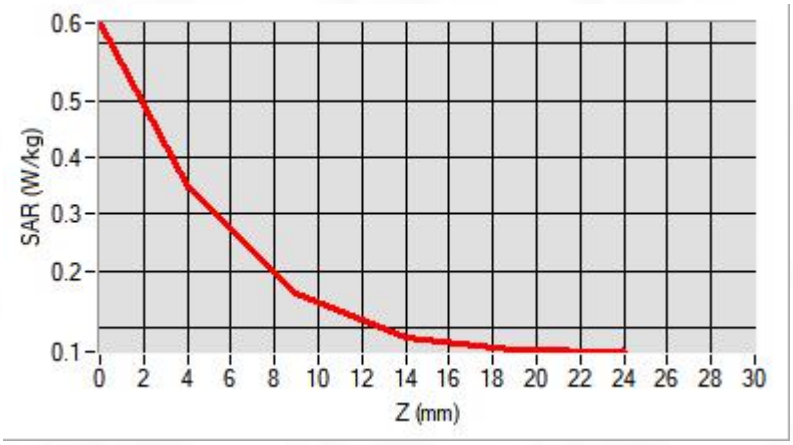
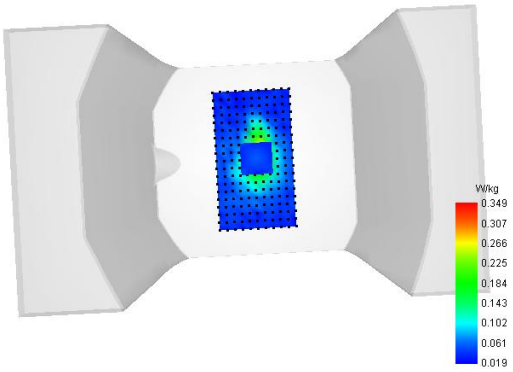
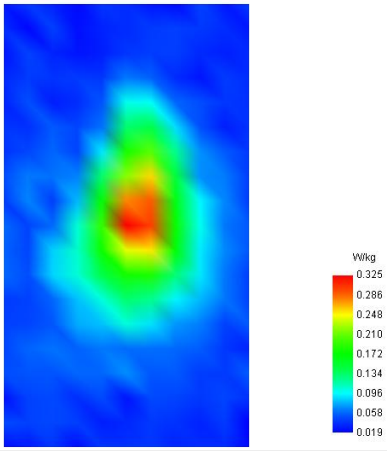
Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.637	0.349	0.160	0.084	0.061



F. 3D Image

3D screen shot	Hot spot position
	

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13-Body with back position in dist. 0mm on Channel 20525 in LTE band 5

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

Date of measurement: 11/1/2024

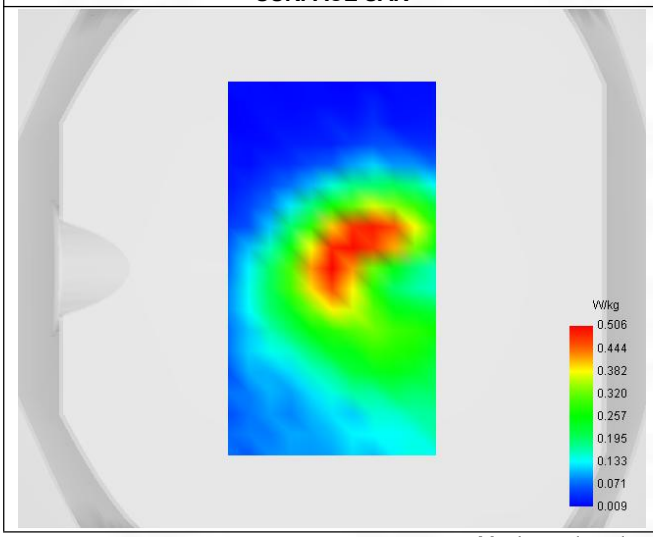
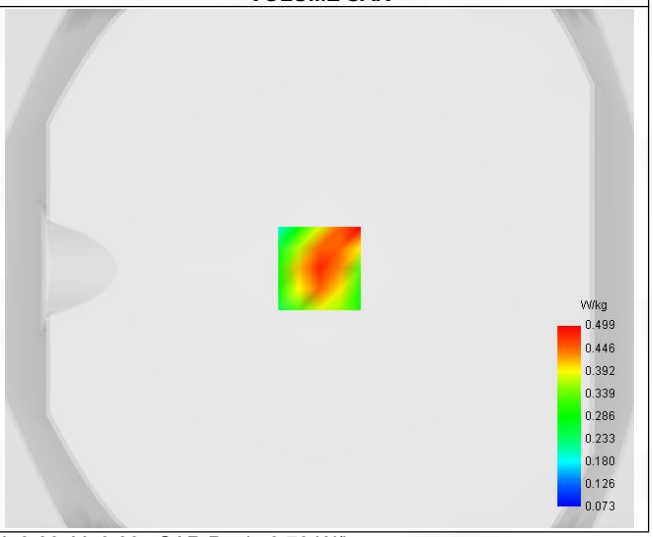
A. Experimental conditions.

Probe	SN 04/22 EPGO365
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	Middle (20525)
Signal	LTE FDD
Cell Bandwidth	10 Mhz
Modulation	SC-OFDM - QPSK
RB offset	25
RB size	1

B. Permitivity

Frequency (MHz)	836.590
Relative permitivity (real part)	41.408
Relative permitivity (imaginary part)	19.481
Conductivity (S/m)	0.871

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

Maximum location: X=0.00, Y=0.00 ; SAR Peak: 0.73 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.308
SAR 1g (W/Kg)	0.473
Variation (%)	0.690
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

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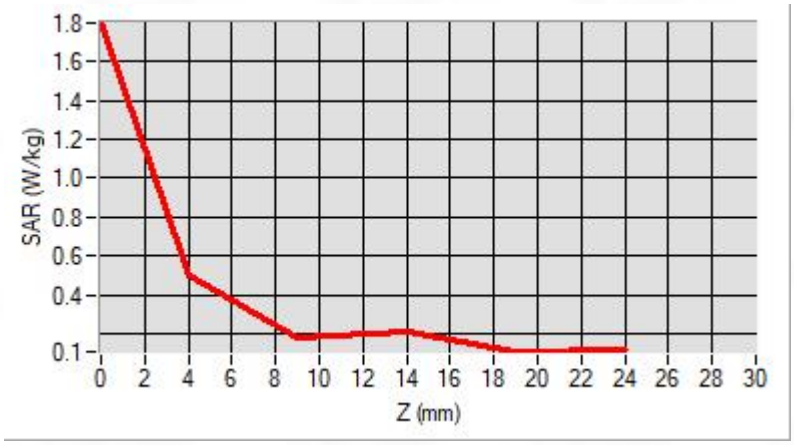
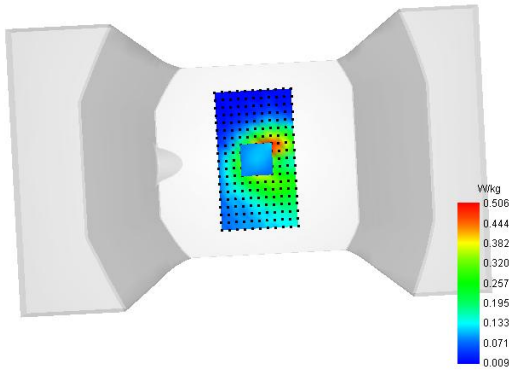
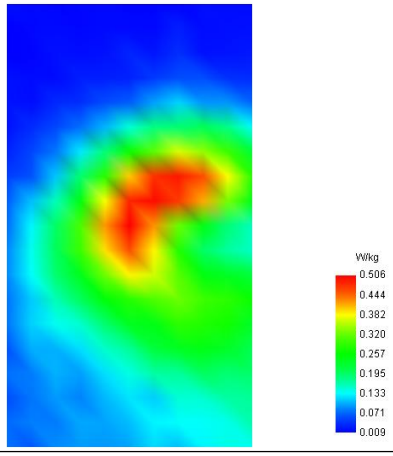
Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.798	0.499	0.177	0.208	0.106



F. 3D Image

3D screen shot	Hot spot position
	

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14-Body with back position in dist. 0mm on Channel 23130 in LTE band 12

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

Date of measurement: 11/1/2024

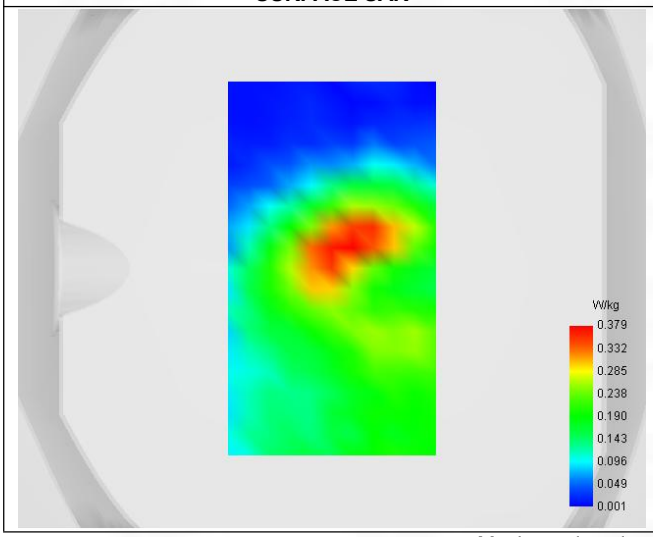
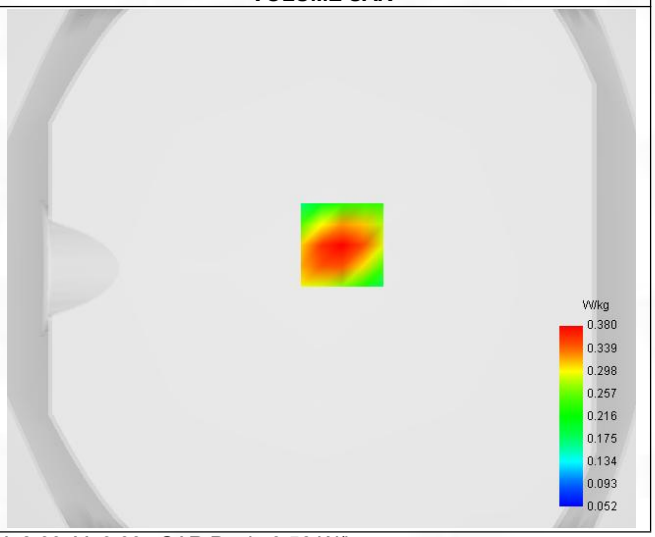
A. Experimental conditions.

Probe	SN 04/22 EPGO365
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	Higher (23130)
Signal	LTE FDD
Cell Bandwidth	10 Mhz
Modulation	SC-OFDM - QPSK
RB offset	25
RB size	1

B. Permitivity

Frequency (MHz)	711.090
Relative permitivity (real part)	41.979
Relative permitivity (imaginary part)	22.362
Conductivity (S/m)	0.855

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

Maximum location: X=8.00, Y=9.00 ; SAR Peak: 0.56 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.235
SAR 1g (W/Kg)	0.380
Variation (%)	-0.240
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

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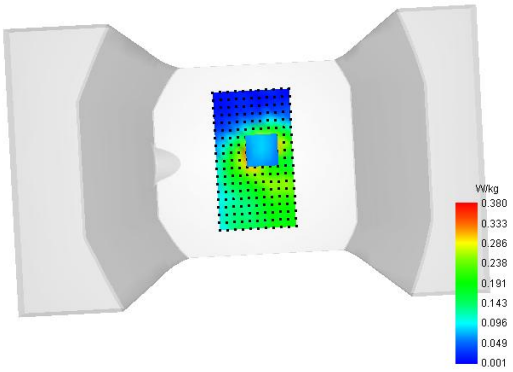
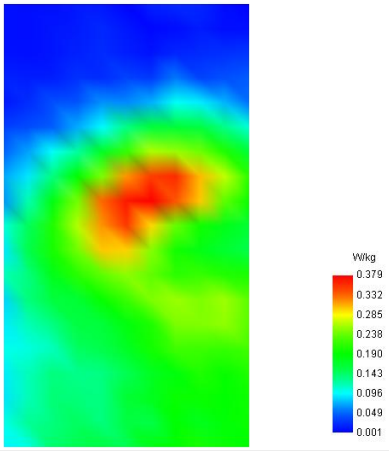
Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.560	0.380	0.236	0.154	0.110

F. 3D Image

3D screen shot	Hot spot position
	

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15-Body with back position in dist. 0mm on Channel 23800 in LTE band 17

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

Date of measurement: 11/1/2024

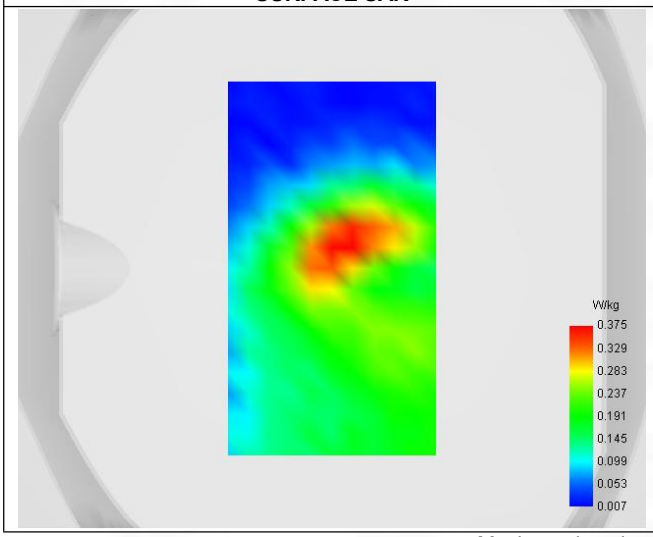
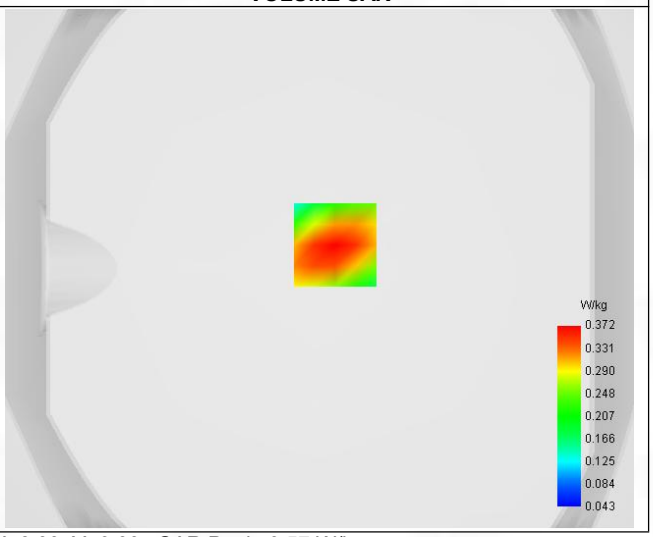
A. Experimental conditions.

Probe	SN 04/22 EPGO365
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	Higher (23800)
Signal	LTE FDD
Cell Bandwidth	10 Mhz
Modulation	SC-OFDM - QPSK
RB offset	25
RB size	1

B. Permitivity

Frequency (MHz)	711.090
Relative permitivity (real part)	41.979
Relative permitivity (imaginary part)	22.362
Conductivity (S/m)	0.855

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

Maximum location: X=6.00, Y=9.00 ; SAR Peak: 0.57 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.228
SAR 1g (W/Kg)	0.372
Variation (%)	0.190
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

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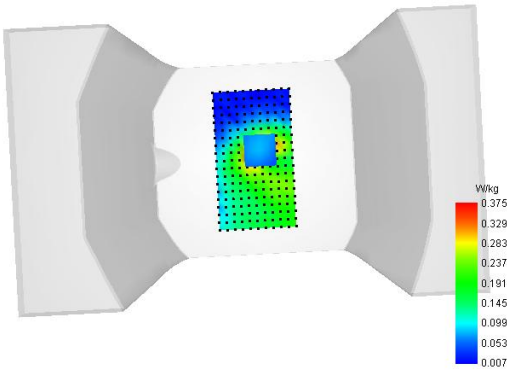
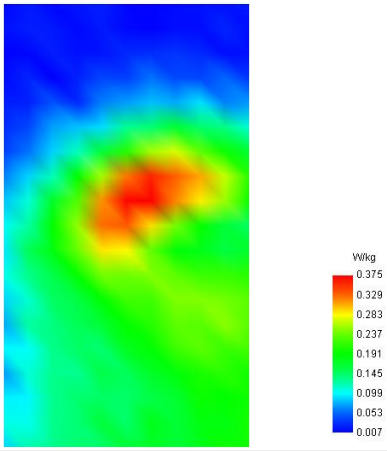
Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.564	0.372	0.223	0.142	0.103

F. 3D Image

3D screen shot	Hot spot position
	

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16-Body with back position in dist. 0mm on Channel 39750 in LTE band 41

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

Date of measurement: 12/1/2024

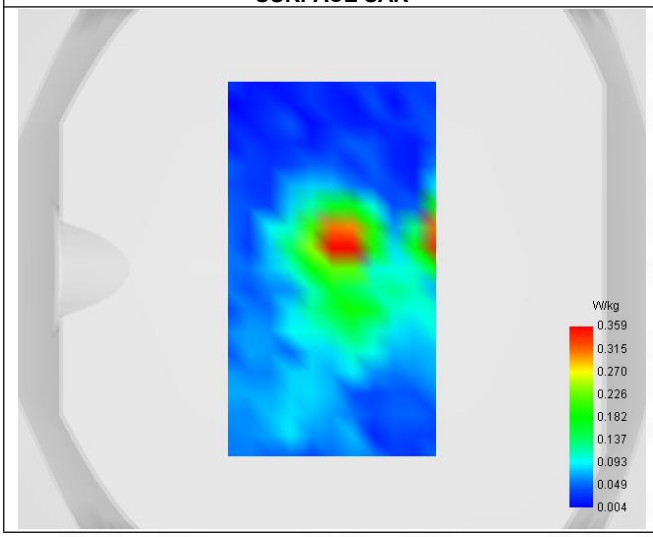
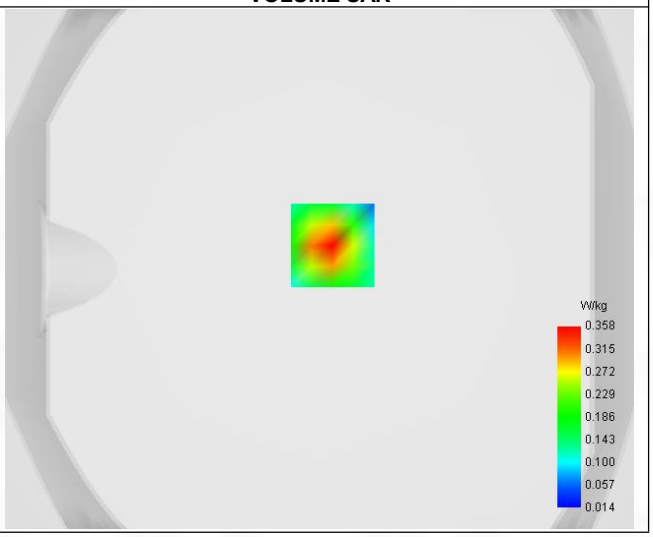
A. Experimental conditions.

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	LTE band 41
Channels	Lower (39750)
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. Permitivity

Frequency (MHz)	2506.090
Relative permitivity (real part)	39.005
Relative permitivity (imaginary part)	13.097
Conductivity (S/m)	1.870

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

Maximum location: X=5.00, Y=9.00 ; SAR Peak: 0.57 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.173
SAR 1g (W/Kg)	0.344
Variation (%)	-2.490
Horizontal validation criteria: minimum distance (mm)	0.000000

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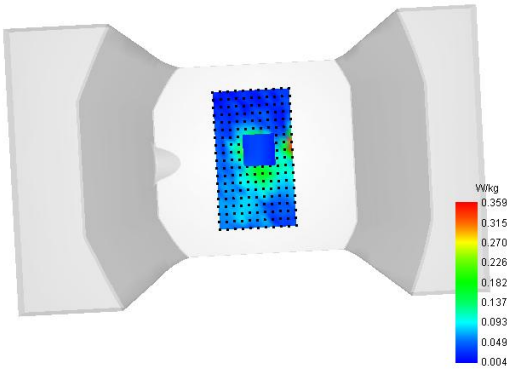
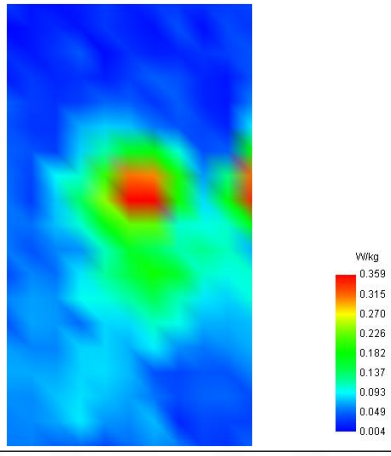
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.569	0.358	0.195	0.108	0.063

F. 3D Image

3D screen shot	Hot spot position
	

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17-Body with back position in dist. 0mm on Channel 132322 in LTE band 66

SAR Measurement at LTE band 66 (Body, Validation Plane)

Date of measurement: 11/1/2024

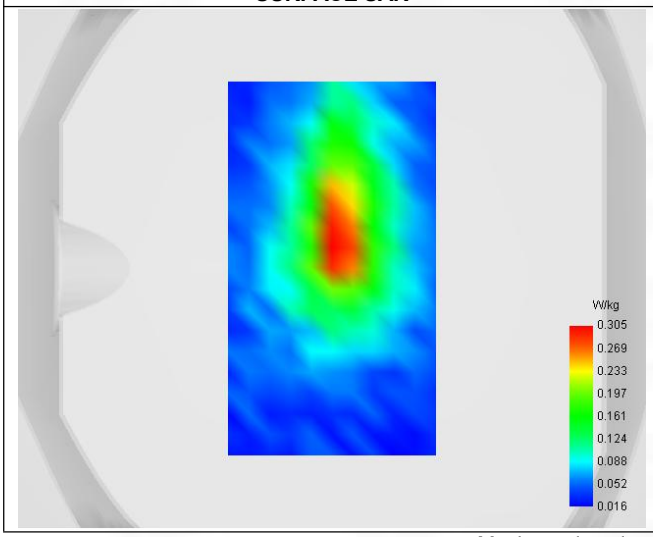
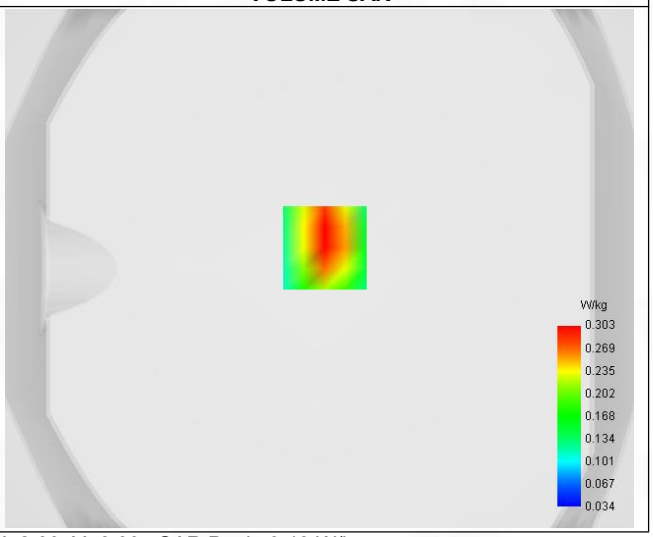
A. Experimental conditions.

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	LTE band 66
Channels	Middle (132322)
Signal	LTE FDD
Cell Bandwidth	20 Mhz
Modulation	SC-OFDM - QPSK
RB offset	50
RB size	1

B. Permitivity

Frequency (MHz)	1745.090
Relative permitivity (real part)	39.995
Relative permitivity (imaginary part)	14.397
Conductivity (S/m)	1.342

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

Maximum location: X=2.00, Y=8.00 ; SAR Peak: 0.48 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.178
SAR 1g (W/Kg)	0.305
Variation (%)	3.790
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

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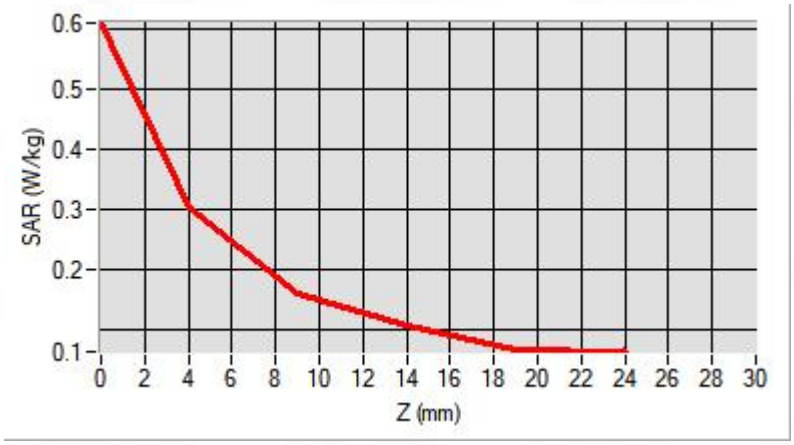
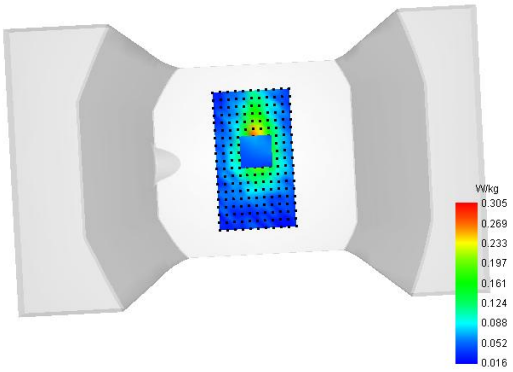
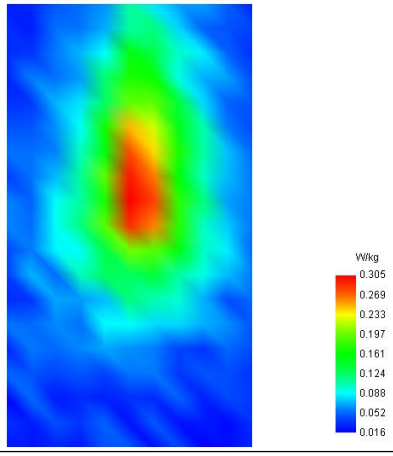
Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.610	0.303	0.159	0.108	0.067



F. 3D Image

3D screen shot	Hot spot position
	

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18-Body with back position in dist. 0mm on Channel 133297 in LTE band 71

SAR Measurement at LTE band 71 (Body, Validation Plane)

Date of measurement: 11/1/2024

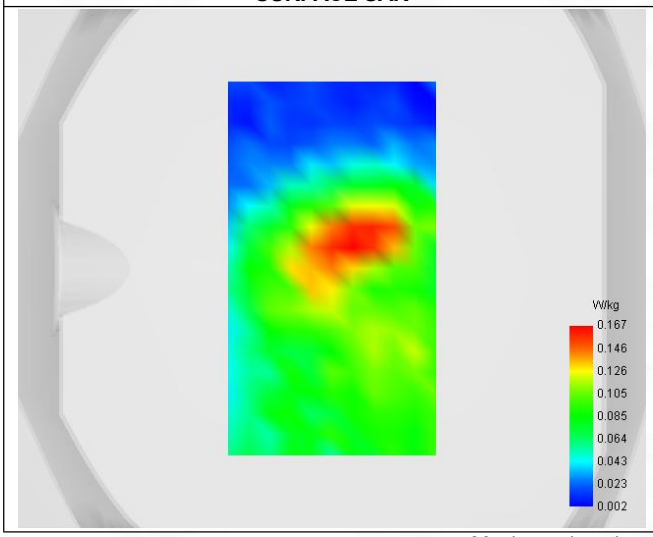
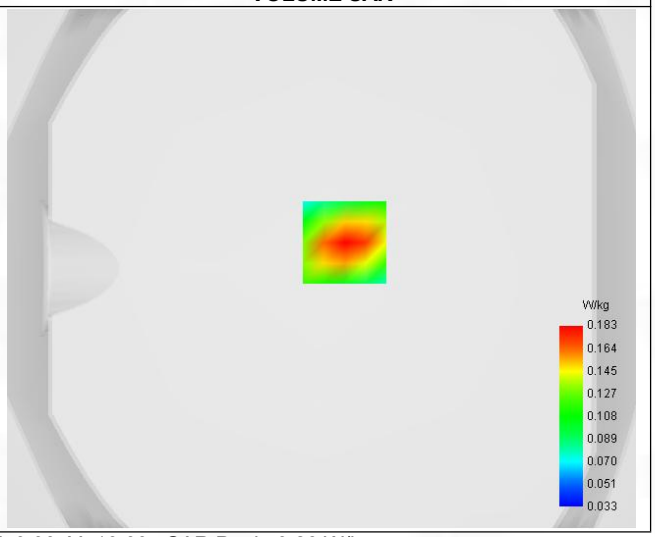
A. Experimental conditions.

Probe	SN 04/22 EPGO365
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 71
Channels	Middle (133297)
Signal	LTE FDD
Cell Bandwidth	20 Mhz
Modulation	SC-OFDM - QPSK
RB offset	50
RB size	1

B. Permitivity

Frequency (MHz)	680.590
Relative permitivity (real part)	42.118
Relative permitivity (imaginary part)	23.069
Conductivity (S/m)	0.852

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

Maximum location: X=9.00, Y=10.00 ; SAR Peak: 0.26 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.113
SAR 1g (W/Kg)	0.180
Variation (%)	-3.110
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

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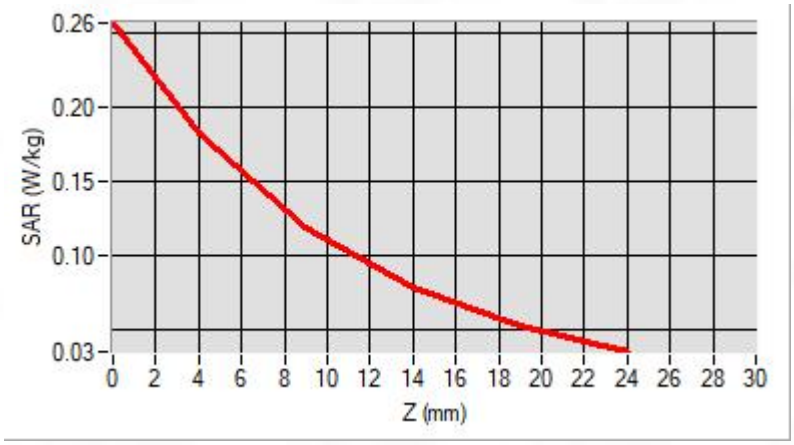
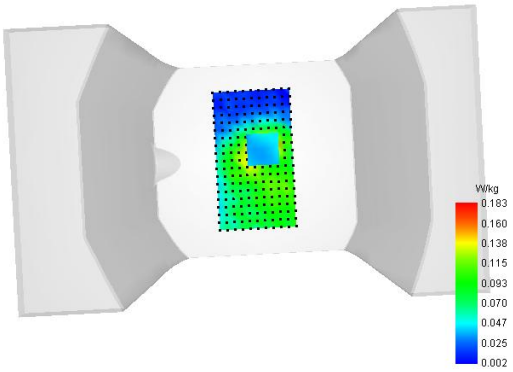
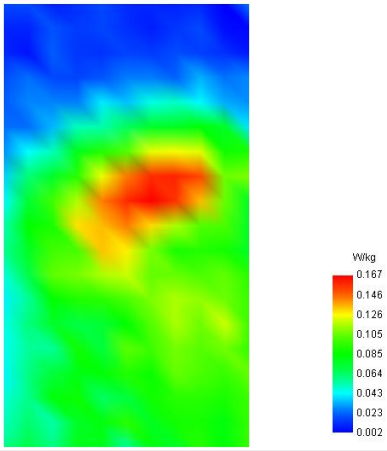
Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.257	0.183	0.118	0.078	0.052



F. 3D Image

3D screen shot	Hot spot position
	

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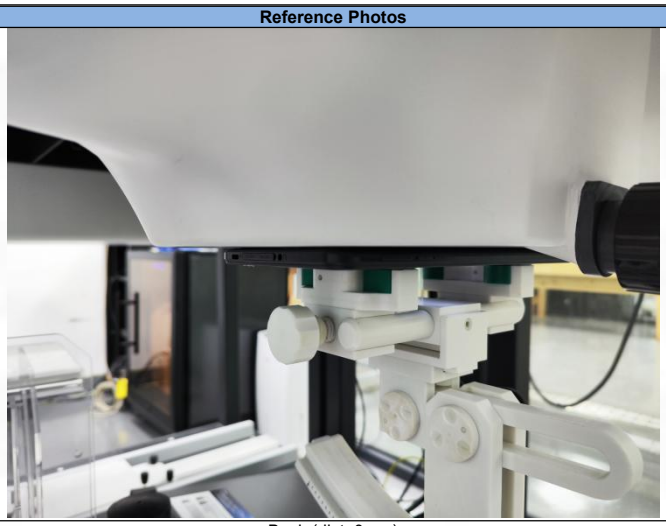
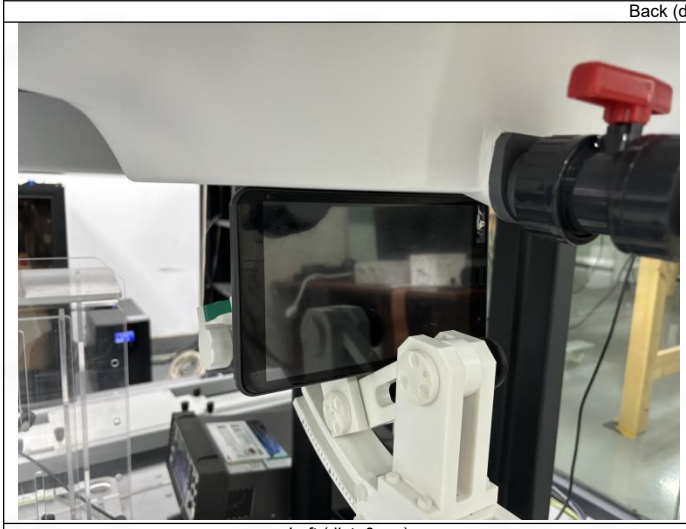
ANNEX D SAR Test Setup Photos

Reference Photo: simulation liquid depth 15cm

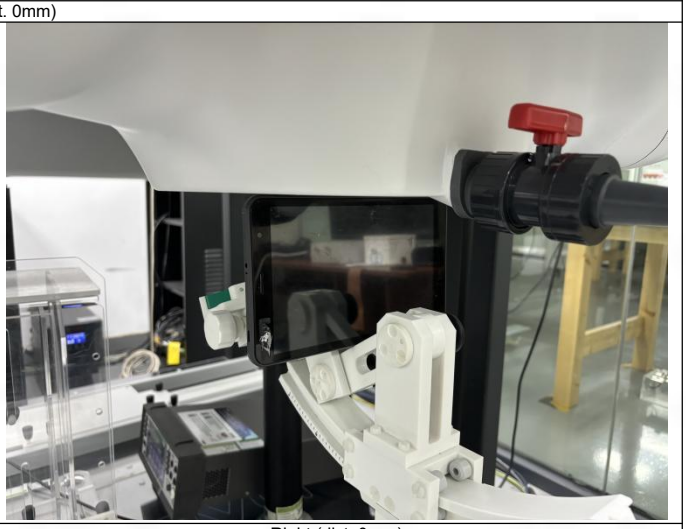
Reference Photos



Back (dist. 0mm)



Left (dist. 0mm)



Right (dist. 0mm)

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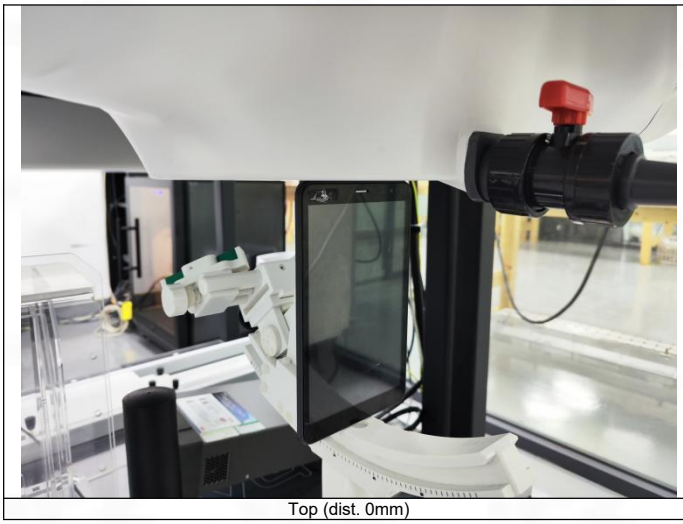	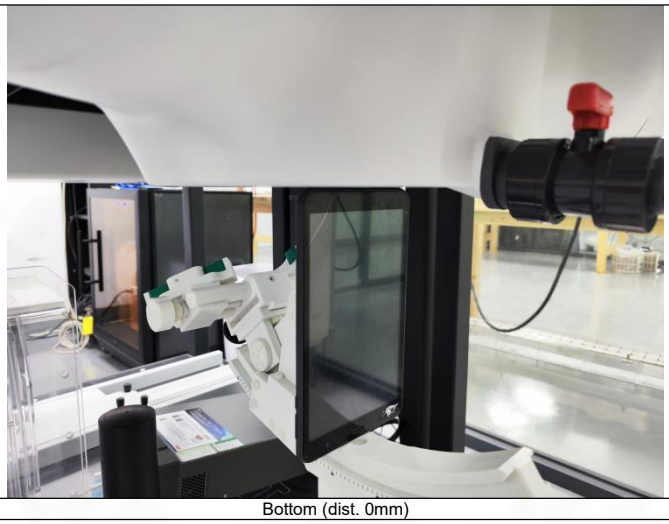
Top (dist. 0mm)	Bottom (dist. 0mm)

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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