SAR Test Report

For

Applicant Name:	**Shenzhen Konkr Technology Co., Ltd.**
Address:	Room 215, Building 22, Maker Town, No. 4109, Liuxian Avenue, Pingshan Community, Taoyuan Street, Nanshan District, Shenzhen, China
EUT Name:	**tablet computer**
Brand Name:	AYANEO
Model Number:	AYANEO KUN

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:	BTF230927R00201
Test Standards:	47 CFR Part 2.1093 IEEE1528-2013 IEEE C95.1-2019 KDB 447498 D04 KDB 865664 D01 KDB 865664 D02 KDB 941225 D06 KDB 941225 D05 KDB 248227 D01 KDB 616217 D04 KDB 648474 D04 KDB 690783 D01
FCC ID:	2A233-AYANEOKUN
Test Conclusion:	Pass
Test Date:	2023-10-09 to 2023-10-10
Date of Issue:	2023-10-11
Prepared By:	Monica Zhou / Project Engineer
Date:	2023-10-11
Approved By:	Ryan.CJ / EMC Manager
Date:	2023-10-11

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Revision History		
Version	Issue Date	Revisions Content
R_V0	2023-10-11	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:	Shenzhen Konkr Technology Co., Ltd.
Address:	Room 215, Building 22, Maker Town, No. 4109, Liuxian Avenue, Pingshan Community, Taoyuan Street, Nanshan District, Shenzhen, China

2.2 Manufacturer Information

Company Name:	Shenzhen Konkr Technology Co., Ltd.
Address:	Room 215, Building 22, Maker Town, No. 4109, Liuxian Avenue, Pingshan Community, Taoyuan Street, Nanshan District, Shenzhen, China

2.3 Factory Information

Company Name:	Shenzhen Konkr Technology Co., Ltd.
Address:	Room 215, Building 22, Maker Town, No. 4109, Liuxian Avenue, Pingshan Community, Taoyuan Street, Nanshan District, Shenzhen, China

2.4 General Description of Equipment under Test (EUT)

EUT Name	tablet computer
Under Test Model Name	AYANEO KUN
Sample No.	BTFSN230927001-1/2

2.5 Equipment under Test Ancillary Equipment

Power supply	Rechargeable Battery
	Input: DC 20V, 5A DC 11.55V 6500mAh 75.075Wh Rechargeable Li-ion battery

2.6 Technical Information

Network and Wireless connectivity	4G Network FDD LTE Band 2/4/5/7/12/13/14/17/25/26/30/66/71 TDD LTE Band 38/41/48 2.4G WIFI 802.11b, 802.11g, 802.11n(HT20/40), 802.11ax(HE20/40) 5G WIFI 802.11a, 802.11n(HT20/40), 802.11ac(VHT20/40/80), 802.11ax(HE20/40/80) Bluetooth (EDR+BLE)

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The requirement for the following technical information of the EUT was tested in this report:

Operating Mode	LTE, WLAN, Bluetooth	
Frequency Range	LTE Band 2	TX: 1850 ~ 1910 MHz
	LTE Band 4	TX: 1710 ~ 1755 MHz
	LTE Band 5	TX: 824 ~ 849 MHz
	LTE Band 7	TX: 2500 ~ 2570 MHz
	LTE Band 12	TX: 699 ~ 716 MHz
	LTE Band 13	TX: 777 ~ 787 MHz
	LTE Band 14	TX: 788 ~ 798 MHz
	LTE Band 17	TX: 704 ~ 716 MHz
	LTE Band 25	TX: 1850 ~ 1915 MHz
	LTE Band 26	TX: 814 ~ 849 MHz
	LTE Band 30	TX: 2305 ~ 2315 MHz
	LTE Band 38	TX: 2570 ~ 2620 MHz
	LTE Band 41	TX: 2496 ~ 2690 MHz
	LTE Band 48	TX: 3550 ~ 3700 MHz
	LTE Band 66	TX: 1710 ~ 1780 MHz
	LTE Band 71	TX: 663 ~ 698 MHz
	802.11b/g/n(HT20)/ax(HE20)	2412 ~ 2462 MHz
	802.11n(HT40)/ax(HE40)	2422 ~ 2452 MHz
	802.11a /802.11n(HT20/40) /802.11ac(VHT20/40/80) /802.11ax(HE20/40/80)	5180 ~ 5240MHz
		5745 ~ 5825MHz
	Bluetooth	2402 ~ 2480 MHz
Antenna Type	WWAN: FPC Antenna WLAN: FPC Antenna BT: FPC Antenna	
Hotspot Function	Not 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 D06	Hotspot Mode v02r01
8	KDB 941225 D05	SAR for LTE Devices v02r05
9	KDB 248227 D01	802.11 Wi-Fi SAR v02r02
10	KDB 616217 D04	SAR for laptop and tablets v01r02
11	KDB 648474 D04	Handset SAR v01r03
12	KDB 690783 D01	SAR Listings on Grant v01r03

3.2 Device Category and SAR Limit

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

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

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

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

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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)	LTE Band 7	0.479	PCB	**0.660**
	LTE Band 12	0.618		
	LTE Band 13	0.370		
	LTE Band 14	0.348		
	LTE Band 25	**0.660**		
	LTE Band 26	0.307		
	LTE Band 30	0.387		
	LTE Band 41	0.290		
	LTE Band 48	0.291		
	LTE Band 66	0.535		
	LTE Band 71	0.416		
	Bluetooth	0.110	DSS	
	WLAN 2.4 GHz	0.103	DTS	
	WLAN 5.2 GHz	0.113	NII	
	WLAN 5.8 GHz	0.338		

Note:
1. 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.
2. For FDD-LTE Band 2 is full covered by FDD-LTE Band 25, FDD-LTE Band 4 is full covered by FDD-LTE Band 66, FDD-LTE Band 5 is full covered by FDD-LTE Band 26, FDD-LTE Band 17 is full covered by FDD-LTE Band 12 and TDD-LTE Band 38 is full covered by FDD-LTE Band 41, so only B12/B25/B26/B66/B41 were tested with related data shown as above.

<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)	WWAN + WIFI Maximum	0.875	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:

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

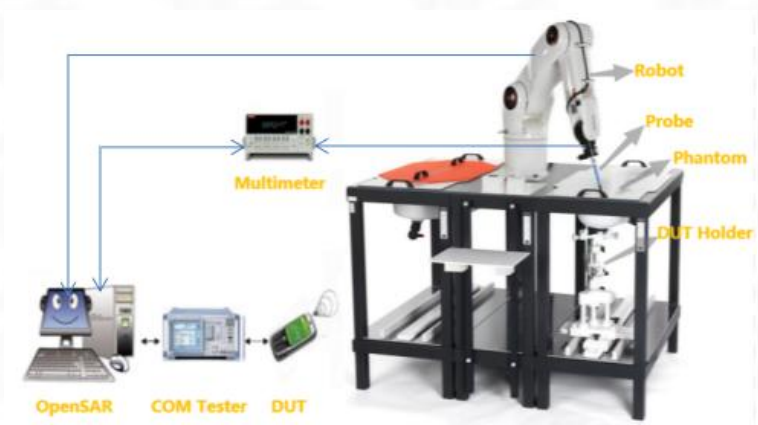
SAR is expressed in units of Watts per kilogram (W/kg) SAR measurement can be related to the electrical field in the tissue by

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

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 back 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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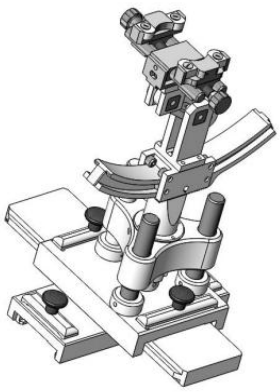
4.2.5 Device Holder



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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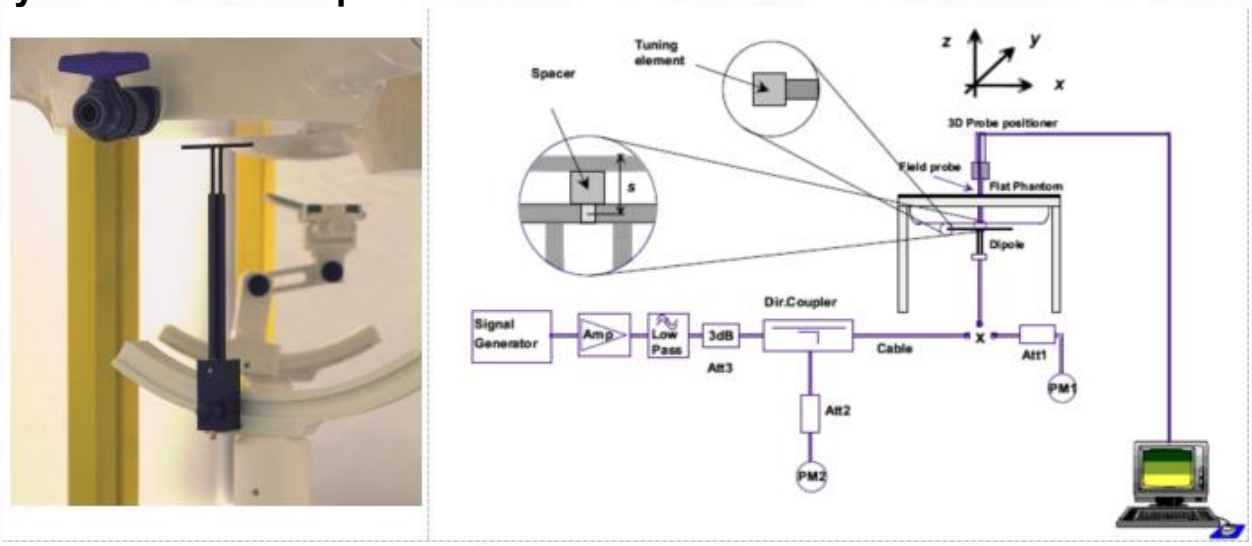
5.2 System Check Setup



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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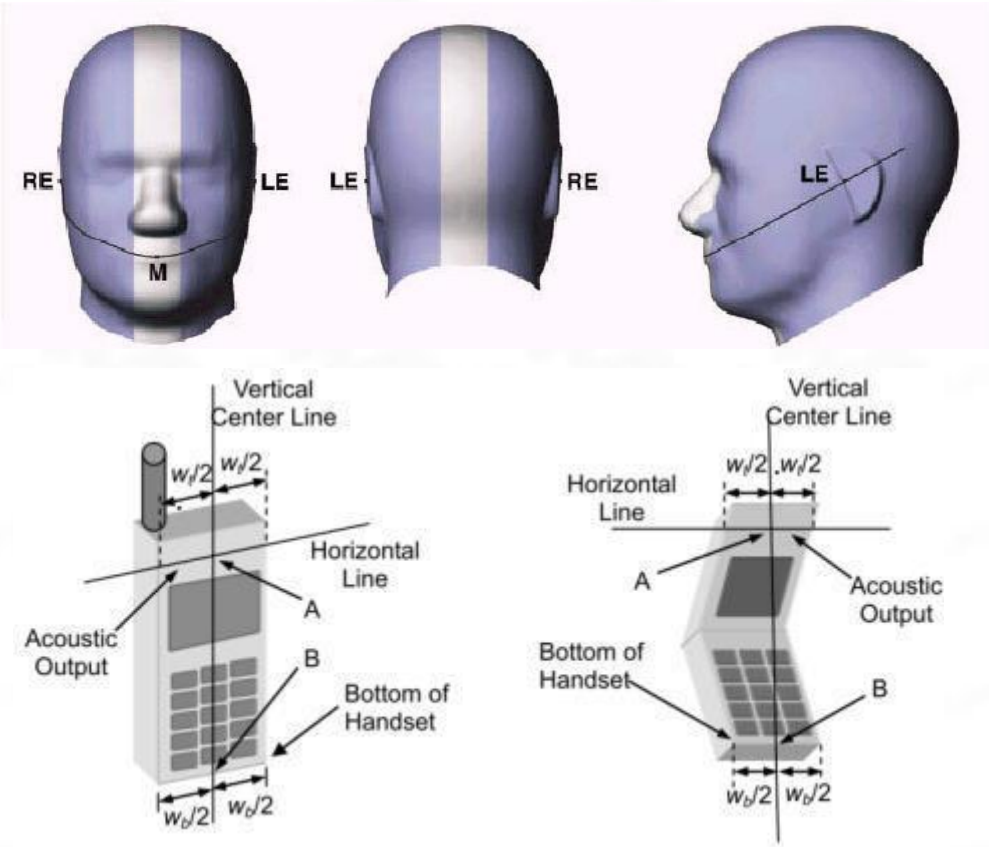


6.1.2 Two Imaginary Lines on the Handset

(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: back 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

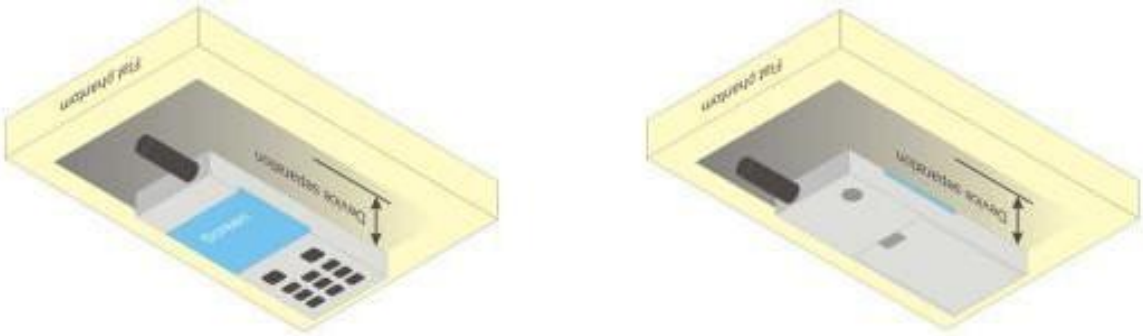
(a) To position the device in the “cheek” position described above.
(b) While maintaining the device the reference plane described above and pivoting against the ear, moves it outward away from the mouth by an angle of 15 degrees or until contact with the ear is lost.

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.

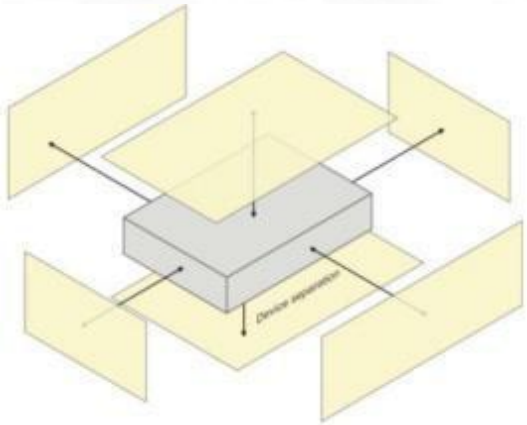
Body-worn accessories that do not contain metallic or conductive components may be tested according to worst-case exposure configurations, typically according to the smallest test separation distance required for the group of body-worn accessories with similar operating and exposure characteristics.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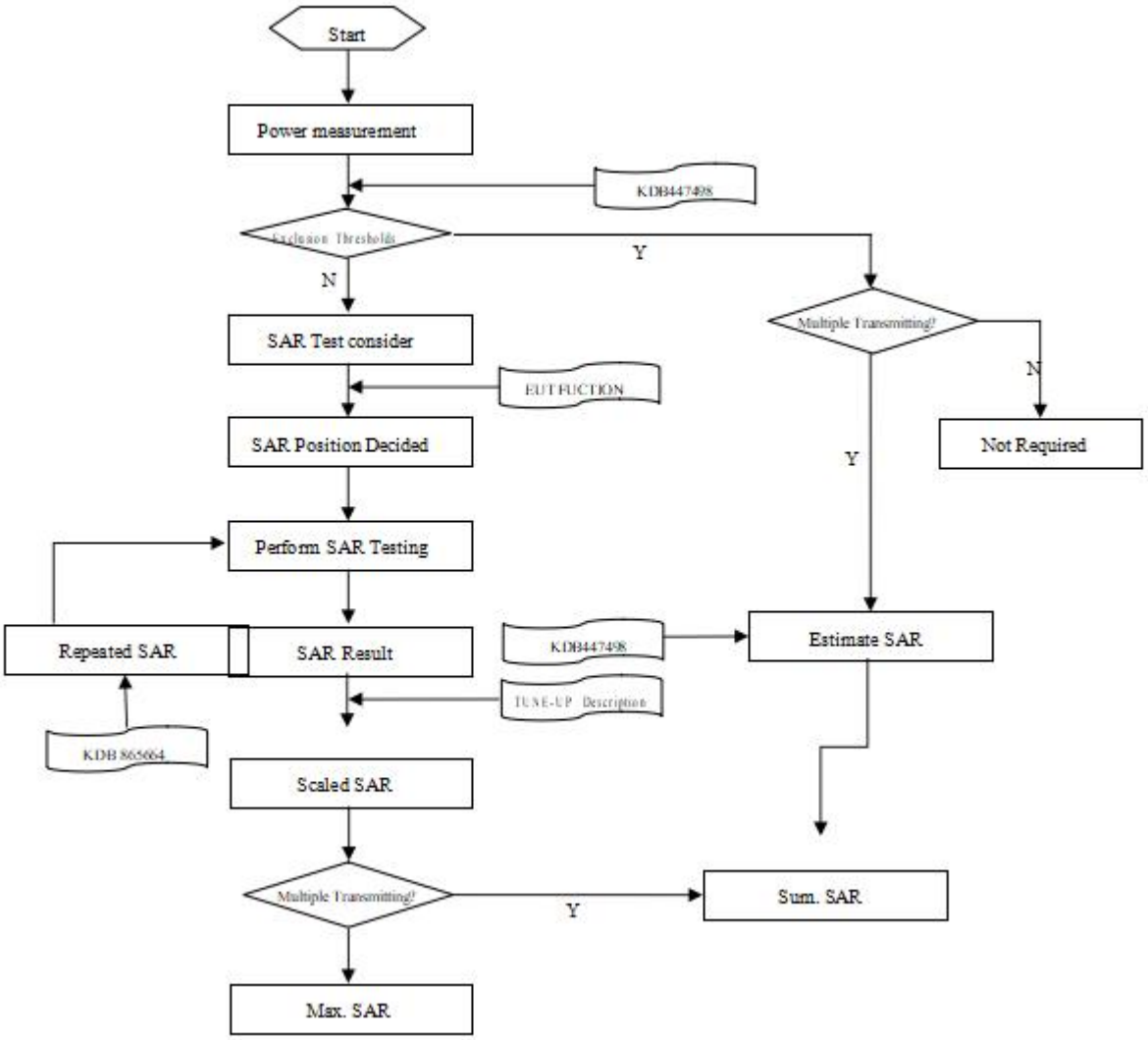
7. Measurement Procedure

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 LTE

Band 7

LTE-FDD Band 7				Maximum Tune-up(dBm)	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		20775	21100	21425
					2502.5MHz	2535MHz	2567.5MHz
5MHz	QPSK	1	0	23.00	22.77	22.95	22.89
			12	23.00	22.68	22.86	22.80
			24	23.00	22.72	22.90	22.84
		12	0	22.50	22.06	22.24	22.18
			6	22.50	21.90	22.07	22.02
			13	22.50	21.83	22.01	21.95
		25	0	22.50	21.98	22.16	22.10
	16QAM	1	0	22.50	22.19	22.36	22.30
			12	22.50	22.10	22.27	22.21
			24	22.50	22.14	22.31	22.25
		12	0	22.00	21.50	21.67	21.61
			6	22.00	21.34	21.51	21.45
			13	21.50	21.28	21.44	21.39
		25	0	22.00	21.42	21.59	21.53
Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	20800	21100	21400
					2505MHz	2535MHz	2565MHz
10MHz	QPSK	1	0	23.00	22.78	22.96	22.90
			24	23.00	22.69	22.87	22.81
			49	23.00	22.73	22.91	22.85
		25	0	22.50	22.07	22.25	22.19
			12	22.50	21.91	22.09	22.03
			25	22.50	21.85	22.02	21.96
		50	0	22.50	21.99	22.17	22.11
	16QAM	1	0	22.50	22.20	22.37	22.31
			24	22.50	22.11	22.28	22.22
			49	22.50	22.15	22.32	22.27
		25	0	22.00	21.51	21.68	21.62
			12	22.00	21.35	21.52	21.46
			25	21.50	21.29	21.45	21.40
		50	0	22.00	21.43	21.60	21.54

LTE-FDD Band 7				Maximum Tune-up(dBm)	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		20825	21100	21375
					2507.5MHz	2535MHz	2562.5MHz
15MHz	QPSK	1	0	23.00	22.74	22.92	22.86
			38	23.00	22.65	22.83	22.77
			74	23.00	22.69	22.87	22.81
		38	0	22.50	22.04	22.21	22.15
			18	22.50	21.87	22.05	21.99
			37	22.00	21.81	21.98	21.92
		75	0	22.50	21.96	22.13	22.07
	16QAM	1	0	22.50	22.16	22.33	22.27
			38	22.50	22.07	22.24	22.19
			74	22.50	22.11	22.28	22.23
		38	0	22.00	21.47	21.64	21.58
			18	21.50	21.31	21.48	21.43
			37	21.50	21.25	21.42	21.36
		75	0	22.00	21.39	21.56	21.51

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Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	20850	21100	21350
					2510MHz	2535MHz	2560MHz
20MHz	QPSK	1	0	**23.00**	22.81	**22.99**	22.93
			49	23.00	22.74	22.79	22.87
			99	23.00	22.92	22.75	22.72
		50	0	22.50	22.10	**22.28**	22.22
			25	22.50	21.94	22.11	22.06
			50	22.50	21.87	22.05	21.99
		100	0	22.50	22.02	22.20	22.14
	16QAM	1	0	22.50	22.23	22.40	22.34
			49	22.50	22.14	22.31	22.25
			99	22.50	22.18	22.35	22.29
		50	0	22.00	21.54	21.71	21.65
			25	22.00	21.38	21.55	21.49
			50	21.50	21.31	21.48	21.43
		100	0	22.00	21.46	21.63	21.57

Band 12

LTE-FDD Band 12(Band 17 included)				**Maximum Tune-up(dBm)**	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		23017	23095	23173
					699.7MHz	707.5MHz	715.3MHz
1.4MHz	QPSK	1	0	23.00	22.92	22.84	22.81
			2	23.00	22.83	22.75	22.72
			5	23.00	22.87	22.79	22.76
		3	0	22.50	22.21	22.13	22.10
			2	22.50	22.05	21.97	21.94
			3	22.00	21.98	21.90	21.88
		6	0	22.50	22.13	22.05	22.02
	16QAM	1	0	22.50	22.33	22.26	22.23
			2	22.50	22.24	22.17	22.14
			5	22.50	22.29	22.21	22.18
		3	0	22.00	21.64	21.57	21.54
			2	21.50	21.48	21.41	21.38
			3	21.50	21.42	21.34	21.32
		6	0	22.00	21.56	21.49	21.46
Bandwidth	Modulation	RB allocation	RB offset	**Maximum Tune-up(dBm)**	23025	23095	23165
					700.5MHz	707.5MHz	714.5MHz
3MHz	QPSK	1	0	23.00	22.86	22.78	22.75
			7	23.00	22.77	22.69	22.66
			14	23.00	22.81	22.74	22.71
		8	0	22.50	22.15	22.08	22.05
			4	22.00	21.99	21.92	21.89
			7	22.00	21.93	21.85	21.82
		15	0	22.50	22.07	22.00	21.97
	16QAM	1	0	22.50	22.28	22.20	22.17
			7	22.50	22.19	22.11	22.08
			14	22.50	22.23	22.15	22.12
		8	0	22.00	21.59	21.51	21.48
			4	21.50	21.43	21.35	21.33
			7	21.50	21.36	21.29	21.26
		15	0	22.00	21.51	21.43	21.41

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LTE-FDD Band 12(Band 17 included)				Maximum Tune-up(dBm)	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		23035	23095	23155
					701.5MHz	707.5MHz	713.5MHz
5MHz	QPSK	1	0	23.00	22.89	22.81	22.78
			13	23.00	22.80	22.72	22.69
			24	23.00	22.84	22.76	22.73
		12	0	22.50	22.18	22.10	22.07
			6	22.50	22.02	21.94	21.91
			13	22.00	21.95	21.87	21.84
		25	0	22.50	22.10	22.02	21.99
	16QAM	1	0	22.50	22.30	22.22	22.19
			13	22.50	22.21	22.13	22.10
			24	22.50	22.25	22.18	22.15
		12	0	22.00	21.61	21.53	21.51
			6	21.50	21.45	21.38	21.35
			13	21.50	21.39	21.31	21.28
		25	0	22.00	21.53	21.46	21.43
Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	23060	23095	23130
					704.0MHz	707.5MHz	711.0MHz
10MHz	QPSK	1	0	**23.00**	**22.97**	22.89	22.86
			25	23.00	22.92	22.87	22.84
			49	23.00	22.89	22.83	22.86
		25	0	22.50	**22.26**	22.18	22.15
			13	22.50	22.09	22.02	21.99
			25	22.50	22.03	21.95	21.92
		50	0	22.50	22.18	22.10	22.07
	16QAM	1	0	22.50	22.38	22.30	22.27
			25	22.50	22.29	22.21	22.18
			49	22.50	22.33	22.26	22.23
		25	0	22.00	21.69	21.61	21.58
			13	22.00	21.53	21.45	21.43
			25	21.50	21.46	21.39	21.36
		50	0	22.00	21.61	21.53	21.51

Band 13

LTE-FDD Band 13				Maximum Tune-up(dBm)	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		23205	23230	23255
					779.5MHz	782.0MHz	784.5MHz
5MHz	QPSK	1	0	23.00	22.75	22.83	22.72
			13	23.00	22.66	22.74	22.63
			24	23.00	22.70	22.78	22.67
		12	0	22.50	22.04	22.12	22.01
			6	22.00	21.88	21.96	21.85
			13	22.00	21.81	21.89	21.79
		25	0	22.50	21.96	22.04	21.93
	16QAM	1	0	22.50	22.16	22.24	22.14
			13	22.50	22.08	22.15	22.05
			24	22.50	22.12	22.19	22.09
		12	0	22.00	21.48	21.55	21.45
			6	21.50	21.32	21.39	21.29
			13	21.50	21.26	21.33	21.23
		25	0	21.50	21.40	21.47	21.37

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Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	23230
					782.0MHz
10MHz	QPSK	1	0	23.00	22.75
			25	23.00	22.77
			49	**23.00**	**22.79**
		25	0	22.50	**22.20**
			13	22.50	22.04
			25	22.00	21.97
		50	0	22.50	21.80
	16QAM	1	0	22.50	22.32
			25	22.50	22.23
			49	22.50	22.28
		25	0	22.00	21.63
			13	21.50	21.47
			25	21.50	21.41
		50	0	22.00	21.55

Band 14

LTE-FDD Band 14				Maximum Tune-up(dBm)	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		23305	23330	23355
					790.5MHz	793.0MHz	795.5MHz
5MHz	QPSK	1	0	23.00	22.89	22.85	22.87
			12	23.00	22.80	22.76	22.78
			24	23.00	22.84	22.80	22.82
		12	0	22.50	22.18	22.14	22.16
			6	22.50	22.02	21.98	22.00
			13	22.00	21.95	21.91	21.93
		25	0	22.50	22.10	22.06	22.08
	16QAM	1	0	22.50	22.30	22.26	22.28
			12	22.50	22.21	22.17	22.19
			24	22.50	22.25	22.21	22.23
		12	0	22.00	21.61	21.57	21.59
			6	21.50	21.45	21.41	21.43
			13	21.50	21.39	21.35	21.37
		25	0	22.00	21.53	21.49	21.51

Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	23330
					793.0MHz
10MHz	QPSK	1	0	**23.00**	**22.87**
			25	23.00	22.84
			49	23.00	22.77
		25	0	22.50	**22.22**
			13	22.50	22.06
			25	22.00	21.99
		50	0	22.50	22.00
	16QAM	1	0	22.50	22.34
			25	22.50	22.25
			49	22.50	22.29
		25	0	22.00	21.65
			13	21.50	21.49
			25	21.50	21.43
		50	0	22.00	21.57

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Band 25

LTE-FDD Band 25(Band 2 included)				Maximum Tune-up(dBm)	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		26047	26365	26683
					1850.7MHz	1882.5MHz	1914.3MHz
1.4MHz	QPSK	1	0	23.00	22.73	22.56	22.63
			2	23.00	22.63	22.47	22.54
			5	23.00	22.68	22.51	22.58
		3	0	22.50	22.02	21.86	21.92
			2	22.00	21.86	21.70	21.76
			3	22.00	21.79	21.63	21.70
		6	0	22.00	21.94	21.78	21.84
	16QAM	1	0	22.50	22.14	21.98	22.05
			2	22.50	22.05	21.89	21.96
			5	22.50	22.10	21.93	22.00
		3	0	21.50	21.46	21.30	21.36
			2	21.50	21.30	21.14	21.21
			3	21.50	21.23	21.08	21.14
		6	0	21.50	21.38	21.22	21.28
Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	26055	26365	26675
					1851.5MHz	1882.5MHz	1913.5MHz
3MHz	QPSK	1	0	23.00	22.79	22.63	22.69
			7	23.00	22.70	22.53	22.60
			14	23.00	22.75	22.58	22.65
		8	0	22.50	22.09	21.92	21.99
			4	22.00	21.93	21.76	21.83
			7	22.00	21.86	21.70	21.76
		15	0	22.50	22.01	21.84	21.91
	16QAM	1	0	22.50	22.21	22.05	22.11
			7	22.50	22.12	21.96	22.02
			14	22.50	22.16	22.00	22.07
		8	0	22.00	21.52	21.36	21.43
			4	21.50	21.36	21.21	21.27
			7	21.50	21.30	21.14	21.21
		15	0	21.50	21.44	21.28	21.35
Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	26065	26365	26665
					1852.5MHz	1882.5MHz	1912.5MHz
5MHz	QPSK	1	0	23.00	22.81	22.64	22.71
			13	23.00	22.72	22.55	22.62
			24	23.00	22.76	22.59	22.66
		12	0	22.50	22.10	21.94	22.00
			6	22.00	21.94	21.78	21.84
			13	22.00	21.87	21.71	21.78
		25	0	22.50	22.02	21.86	21.93
	16QAM	1	0	22.50	22.22	22.06	22.13
			13	22.50	22.14	21.97	22.04
			24	22.50	22.18	22.01	22.08
		12	0	22.00	21.53	21.37	21.44
			6	21.50	21.38	21.22	21.28
			13	21.50	21.31	21.15	21.22
		25	0	21.50	21.46	21.30	21.36

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LTE-FDD Band 25(Band 2 included)				Maximum Tune-up(dBm)	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		26090	26365	26640
					1855.0MHz	1882.5MHz	1910.0MHz
10MHz	QPSK	1	0	23.00	22.82	22.65	22.72
			25	23.00	22.73	22.56	22.63
			49	23.00	22.77	22.60	22.67
		25	0	22.50	22.11	21.95	22.02
			13	22.00	21.95	21.79	21.85
			25	22.00	21.88	21.72	21.79
		50	0	22.50	22.03	21.87	21.94
	16QAM	1	0	22.50	22.24	22.07	22.14
			25	22.50	22.15	21.98	22.05
			49	22.50	22.19	22.02	22.09
		25	0	22.00	21.55	21.38	21.45
			13	21.50	21.39	21.23	21.29
			25	21.50	21.32	21.16	21.23
		50	0	21.50	21.47	21.31	21.37
Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	26115	26365	26615
					1857.5MHz	1882.5MHz	1907.5MHz
15MHz	QPSK	1	0	23.00	22.78	22.61	22.68
			38	23.00	22.69	22.52	22.59
			74	23.00	22.73	22.56	22.63
		36	0	22.50	22.07	21.91	21.98
			18	22.00	21.91	21.75	21.82
			39	22.00	21.85	21.68	21.75
		75	0	22.00	21.99	21.83	21.90
	16QAM	1	0	22.50	22.20	22.03	22.10
			38	22.50	22.11	21.94	22.01
			74	22.50	22.15	21.98	22.05
		36	0	22.00	21.51	21.35	21.41
			18	21.50	21.35	21.19	21.26
			39	21.50	21.29	21.13	21.19
		75	0	21.50	21.43	21.27	21.34
Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	26140	26365	26590
					1860.0MHz	1882.5MHz	1905.0MHz
20MHz	QPSK	1	0	23.00	22.85	22.68	22.75
			50	23.00	22.90	22.85	22.78
			99	**23.00**	**22.93**	22.83	22.85
		50	0	22.50	**22.14**	21.98	22.04
			25	22.00	21.98	21.82	21.88
			50	22.00	21.91	21.75	21.82
		100	0	22.50	22.06	21.90	21.96
	16QAM	1	0	22.50	22.26	22.10	22.17
			50	22.50	22.18	22.01	22.08
			99	22.50	22.22	22.05	22.12
		50	0	22.00	21.57	21.41	21.48
			25	21.50	21.42	21.26	21.32
			50	21.50	21.35	21.19	21.26
		100	0	22.00	21.50	21.34	21.40

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Band 26

LTE-FDD Band 26a				Maximum Tune-up(dBm)	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		26697	26740	26783
					814.7MHz	819.0MHz	823.3MHz
1.4MHz	QPSK	1	0	23.50	23.00	22.81	22.91
			2	23.00	22.91	22.72	22.82
			5	23.00	22.95	22.76	22.86
		3	0	22.50	22.29	22.10	22.20
			2	22.50	22.12	21.94	22.04
			3	22.50	22.06	21.88	21.97
		6	0	22.50	22.21	22.02	22.12
	16QAM	1	0	22.50	22.41	22.23	22.32
			2	22.50	22.32	22.14	22.24
			5	22.50	22.36	22.18	22.28
		3	0	22.00	21.72	21.54	21.63
			2	22.00	21.56	21.38	21.47
			3	21.50	21.49	21.32	21.41
		6	0	22.00	21.64	21.46	21.55
LTE-FDD Band 26b(Band 5 included)				Maximum Tune-up(dBm)	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		26797	26915	27033
					824.7MHz	836.5MHz	848.3MHz
1.4MHz	QPSK	1	0	23.50	22.97	23.02	22.95
			2	23.00	22.88	22.93	22.86
			5	23.00	22.92	22.97	22.90
		3	0	22.50	22.26	22.31	22.24
			2	22.50	22.10	22.15	22.08
			3	22.50	22.03	22.08	22.01
		6	0	22.50	22.18	22.23	22.16
	16QAM	1	0	22.50	22.38	22.43	22.37
			2	22.50	22.30	22.34	22.28
			5	22.50	22.34	22.39	22.32
		3	0	22.00	21.69	21.74	21.67
			2	22.00	21.53	21.58	21.51
			3	22.00	21.47	21.51	21.45
		6	0	22.00	21.61	21.66	21.59

LTE-FDD Band 26a				Maximum Tune-up(dBm)	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		26705	26740	26775
					815.5MHz	819.0MHz	822.5MHz
3MHz	QPSK	1	0	23.00	22.94	22.75	22.85
			7	23.00	22.85	22.66	22.76
			14	23.00	22.89	22.71	22.80
		8	0	22.50	22.23	22.05	22.14
			4	22.50	22.07	21.89	21.98
			7	22.50	22.00	21.82	21.92
		15	0	22.50	22.15	21.97	22.06
	16QAM	1	0	22.50	22.36	22.17	22.27
			7	22.50	22.27	22.08	22.18
			14	22.50	22.31	22.12	22.22
		8	0	22.00	21.66	21.48	21.58
			4	22.00	21.50	21.33	21.42
			7	21.50	21.44	21.26	21.35
		15	0	22.00	21.58	21.41	21.50

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LTE-FDD Band 26b(Band 5 included)				Maximum Tune-up(dBm)	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		26805	26915	27025
					825.5MHz	836.5MHz	847.5MHz
3MHz	QPSK	1	0	23.50	22.99	23.04	22.97
			7	23.00	22.90	22.95	22.88
			14	23.00	22.95	22.99	22.93
		8	0	22.50	22.28	22.33	22.26
			4	22.50	22.12	22.17	22.10
			7	22.50	22.05	22.10	22.03
		15	0	22.50	22.20	22.25	22.18
	16QAM	1	0	22.50	22.40	22.45	22.39
			7	22.50	22.32	22.36	22.30
			14	22.50	22.36	22.41	22.34
		8	0	22.00	21.71	21.76	21.69
			4	22.00	21.55	21.60	21.53
			7	22.00	21.49	21.53	21.47
		15	0	22.00	21.63	21.68	21.61

LTE-FDD Band 26a				Maximum Tune-up(dBm)	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		26715	26740	26765
					816.5MHz	819.0MHz	821.5MHz
5MHz	QPSK	1	0	23.00	22.97	22.78	22.88
			13	23.00	22.87	22.69	22.79
			24	23.00	22.92	22.73	22.83
		12	0	22.50	22.25	22.07	22.17
			6	22.50	22.09	21.91	22.01
			13	22.50	22.02	21.84	21.94
		25	0	22.50	22.17	21.99	22.09
	16QAM	1	0	22.50	22.38	22.19	22.29
			13	22.50	22.29	22.10	22.20
			24	22.50	22.33	22.15	22.24
		12	0	22.00	21.68	21.51	21.60
			6	22.00	21.53	21.35	21.44
			13	21.50	21.46	21.28	21.38
		25	0	22.00	21.61	21.43	21.52
LTE-FDD Band 26b(Band 5 included)				Maximum Tune-up(dBm)	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		26815	26915	27015
					826.5MHz	836.5MHz	846.5MHz
5MHz	QPSK	1	0	23.50	23.01	23.06	22.99
			13	23.00	22.92	22.97	22.90
			24	23.50	22.96	23.01	22.94
		12	0	22.50	22.29	22.34	22.28
			6	22.50	22.13	22.18	22.11
			13	22.50	22.06	22.11	22.05
		25	0	22.50	22.21	22.26	22.20
	16QAM	1	0	22.50	22.42	22.47	22.40
			13	22.50	22.33	22.38	22.31
			24	22.50	22.37	22.42	22.35
		12	0	22.00	21.72	21.77	21.70
			6	22.00	21.56	21.61	21.55
			13	22.00	21.50	21.55	21.48
		25	0	22.00	21.64	21.69	21.63

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LTE-FDD Band 26a				Maximum Tune-up(dBm)	Conducted Power(dBm)
Bandwidth	Modulation	RB allocation	RB offset		26740
					819.0MHz
10MHz	QPSK	1	0	**23.50**	**23.05**
			25	23.00	22.86
			49	23.00	22.96
		25	0	22.50	**22.15**
			13	22.00	21.99
			25	22.00	21.92
		50	0	22.50	22.10
	16QAM	1	0	22.50	22.27
			25	22.50	22.18
			49	22.50	22.23
		25	0	22.00	21.58
			13	21.50	21.43
			25	21.50	21.36
		50	0	22.00	21.51

LTE-FDD Band 26(Band 5 included)				Maximum Tune-up(dBm)	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		26840	26915	26990
					829.0MHz	836.5MHz	844.0MHz
10MHz	QPSK	1	0	23.50	23.02	23.07	23.00
			25	23.00	22.93	22.98	22.91
			49	23.50	22.97	23.02	22.95
		25	0	22.50	22.31	22.35	22.29
			13	22.50	22.14	22.19	22.12
			25	22.50	22.08	22.12	22.06
		50	0	22.50	22.22	22.27	22.21
	16QAM	1	0	22.50	22.43	22.48	22.41
			25	22.50	22.34	22.39	22.32
			49	22.50	22.38	22.43	22.36
		25	0	22.00	21.73	21.78	21.71
			13	22.00	21.58	21.62	21.56
			25	22.00	21.51	21.56	21.49
		50	0	22.00	21.66	21.70	21.64

LTE-FDD Band 26(Band 5 included)				Maximum Tune-up(dBm)	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		26765	26915	26965
					821.5MHz	836.5MHz	841.5MHz
15MHz	QPSK	1	0	**23.50**	22.98	**23.03**	22.96
			38	23.00	22.90	22.91	22.88
			74	23.00	22.85	22.84	22.78
		36	0	22.50	22.27	**22.32**	22.25
			18	22.50	22.10	22.15	22.09
			39	22.50	22.04	22.08	22.02
		75	0	22.50	22.19	22.23	22.17
	16QAM	1	0	22.50	22.39	22.44	22.37
			38	22.50	22.30	22.35	22.28
			74	22.50	22.34	22.39	22.32
		36	0	22.00	21.70	21.74	21.68
			18	22.00	21.54	21.58	21.52
			39	22.00	21.47	21.52	21.45
		75	0	22.00	21.62	21.66	21.60

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Band 30

LTE-FDD Band 30				Maximum Tune-up(dBm)	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		27685	27710	27735
					2307.5MHz	2310.0MHz	2312.5MHz
5MHz	QPSK	1	0	23.50	22.91	23.05	22.94
			12	23.00	22.82	22.95	22.85
			24	23.00	22.86	23.00	22.89
		12	0	22.50	22.20	22.33	22.23
			6	22.50	22.03	22.17	22.06
			13	22.50	21.97	22.10	22.00
		25	0	22.50	22.12	22.25	22.14
	16QAM	1	0	22.50	22.32	22.46	22.35
			12	22.50	22.23	22.37	22.26
			24	22.50	22.27	22.41	22.30
		12	0	22.00	21.63	21.76	21.66
			6	22.00	21.47	21.60	21.50
			13	22.00	21.40	21.53	21.43
		25	0	22.00	21.55	21.68	21.58
Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	27710		
					2310.0MHz		
10MHz	QPSK	1	0	23.50	23.02		
			24	**23.50**	**23.10**		
			49	23.00	22.93		
		25	0	22.50	**22.41**		
			13	22.50	22.25		
			25	22.50	22.18		
		50	0	20.00	19.63		
	16QAM	1	0	23.00	22.54		
			24	22.50	22.45		
			49	22.50	22.49		
		25	0	22.00	21.84		
			13	22.00	21.68		
			25	22.00	21.61		
		50	0	22.00	21.76		

Band 41

LTE-TDD Band 41(Band 38 included)				Maximum Tune-up(dBm)	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		39675	40620	41565
					2498.5MHz	2593.0MHz	2687.5MHz
5MHz	QPSK	1	0	23.50	22.61	23.02	22.89
			13	23.00	22.52	22.93	22.80
			24	23.00	22.56	22.97	22.84
		12	0	22.50	21.91	22.31	22.18
			6	22.50	21.75	22.14	22.02
			13	22.50	21.68	22.08	21.95
		25	0	22.50	21.83	22.23	22.10
	16QAM	1	0	22.50	22.03	22.43	22.30
			13	22.50	21.94	22.34	22.22
			24	22.50	21.99	22.38	22.26
		12	0	22.00	21.35	21.74	21.61
			6	22.00	21.19	21.58	21.45
			13	22.00	21.13	21.51	21.39
		25	0	22.00	21.27	21.66	21.53

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Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	39700	40620	41540
					2501.0MHz	2593.0MHz	2685.0MHz
10MHz	QPSK	1	0	23.00	22.55	22.96	22.83
			25	23.00	22.46	22.87	22.74
			49	23.00	22.51	22.91	22.78
		25	0	22.50	21.85	22.25	22.13
			13	22.50	21.70	22.09	21.96
			25	22.50	21.63	22.02	21.90
		50	0	22.50	21.78	22.17	22.05
	16QAM	1	0	22.50	21.98	22.37	22.25
			25	22.50	21.89	22.28	22.16
			49	22.50	21.93	22.33	22.20
		25	0	22.00	21.29	21.68	21.56
			13	22.00	21.14	21.52	21.40
			25	21.50	21.08	21.46	21.34
		50	0	22.00	21.22	21.60	21.48

LTE-TDD Band 41(Band 38 included)				Maximum Tune-up(dBm)	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		39725	40620	41515
					2503.5MHz	2593.0MHz	2682.5MHz
15MHz	QPSK	1	0	23.00	22.58	22.99	22.86
			38	23.00	22.49	22.89	22.77
			74	23.00	22.53	22.94	22.81
		36	0	22.50	21.88	22.27	22.15
			18	22.50	21.72	22.11	21.99
			39	22.50	21.65	22.04	21.92
		75	0	22.50	21.80	22.19	22.07
	16QAM	1	0	22.50	22.00	22.40	22.27
			38	22.50	21.91	22.31	22.18
			74	22.50	21.95	22.35	22.22
		36	0	22.00	21.32	21.70	21.58
			18	22.00	21.16	21.54	21.42
			39	21.50	21.10	21.48	21.36
		75	0	22.00	21.24	21.62	21.50
Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	39750	40620	41490
					2506.0MHz	2593.0MHz	2680.0MHz
20MHz	QPSK	1	0	**23.50**	22.66	**23.07**	22.94
			50	23.00	22.69	22.86	22.79
			99	23.50	22.82	22.97	22.85
		50	0	22.50	21.96	**22.35**	22.23
			25	22.50	21.80	22.19	22.07
			50	22.50	21.73	22.12	22.00
		100	0	22.50	21.88	22.27	22.15
	16QAM	1	0	22.50	22.08	22.48	22.35
			50	22.50	21.99	22.39	22.26
			99	22.50	22.03	22.43	22.30
		50	0	22.00	21.39	21.78	21.66
			25	22.00	21.24	21.62	21.50
			50	22.00	21.17	21.56	21.43
		100	0	22.00	21.32	21.70	21.58

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Band 48

LTE-FDD Band 48				Maximum Tune-up(dBm)	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		55265	55990	56715
					3552.5MHz	3625.0MHz	3697.5MHz
5MHz	QPSK	1	0	24.00	23.80	23.73	23.90
			12	24.00	23.70	23.63	23.80
			24	24.00	23.75	23.68	23.85
		12	0	23.50	23.06	22.99	23.16
			6	23.00	22.89	22.83	22.99
			13	23.00	22.82	22.76	22.92
		25	0	23.50	22.98	22.91	23.07
	16QAM	1	0	23.50	23.19	23.12	23.29
			12	23.50	23.10	23.03	23.19
			24	23.50	23.14	23.07	23.24
		12	0	23.00	22.47	22.40	22.56
			6	22.50	22.31	22.24	22.40
			13	22.50	22.24	22.17	22.33
		25	0	22.50	22.39	22.32	22.48
Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	55290	55990	56690
					3555.0MHz	3625.0MHz	3695.0MHz
10MHz	QPSK	1	0	24.00	23.74	23.67	23.84
			24	24.00	23.64	23.57	23.74
			49	24.00	23.69	23.62	23.79
		25	0	23.50	23.00	22.94	23.10
			13	23.00	22.83	22.77	22.93
			25	23.00	22.77	22.70	22.86
		50	0	23.50	22.92	22.85	23.02
	16QAM	1	0	23.50	23.13	23.06	23.23
			24	23.50	23.04	22.97	23.13
			49	23.50	23.08	23.01	23.18
		25	0	23.00	22.41	22.35	22.51
			13	22.50	22.25	22.18	22.34
			25	22.50	22.18	22.12	22.27
		50	0	22.50	22.33	22.27	22.43

LTE-FDD Band 48				Maximum Tune-up(dBm)	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		55315	55990	56665
					3557.5MHz	3625.0MHz	3692.5MHz
15MHz	QPSK	1	0	24.00	23.76	23.69	23.86
			37	24.00	23.67	23.60	23.77
			74	24.00	23.71	23.64	23.81
		36	0	23.50	23.03	22.96	23.12
			18	23.00	22.86	22.79	22.95
			39	23.00	22.79	22.72	22.88
		75	0	23.50	22.94	22.88	23.04
	16QAM	1	0	23.50	23.15	23.09	23.25
			37	23.50	23.06	22.99	23.16
			74	23.50	23.11	23.04	23.20
		36	0	23.00	22.44	22.37	22.53
			18	22.50	22.27	22.21	22.37
			39	22.50	22.20	22.14	22.30
		75	0	22.50	22.36	22.29	22.45

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Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	55340	55990	56640
					3560.0MHz	3625.0MHz	3690.0MHz
20MHz	QPSK	1	0	**24.00**	23.85	23.78	**23.95**
			50	24.00	23.36	23.24	23.41
			99	24.00	23.78	23.59	23.61
		50	0	23.50	23.11	23.04	**23.21**
			25	23.50	22.94	22.87	23.04
			50	23.00	22.87	22.80	22.97
		100	0	23.50	23.03	22.96	23.12
	16QAM	1	0	23.50	23.24	23.17	23.34
			50	23.50	23.15	23.08	23.24
			99	23.50	23.19	23.12	23.29
		50	0	23.00	22.52	22.45	22.61
			25	22.50	22.35	22.29	22.45
			50	22.50	22.29	22.22	22.38
		100	0	23.00	22.44	22.37	22.53

Band 66

LTE-FDD Band 66(Band 4 included)				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	22.73	22.67	22.65
			2	23.00	22.64	22.58	22.56
			5	23.00	22.69	22.63	22.61
		3	0	22.50	22.03	21.97	21.95
			2	22.00	21.87	21.81	21.79
			3	22.00	21.80	21.74	21.73
		6	0	22.00	21.95	21.89	21.87
	16QAM	1	0	22.50	22.15	22.09	22.07
			2	22.50	22.06	22.01	21.99
			5	22.50	22.10	22.05	22.03
		3	0	21.50	21.46	21.41	21.39
			2	21.50	21.31	21.25	21.23
			3	21.50	21.24	21.19	21.17
		6	0	21.50	21.39	21.33	21.31
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	22.75	22.69	22.67
			7	23.00	22.66	22.60	22.58
			14	23.00	22.71	22.65	22.63
		8	0	22.50	22.05	21.99	21.97
			4	22.00	21.89	21.83	21.81
			7	22.00	21.82	21.76	21.74
		15	0	22.00	21.97	21.91	21.89
	16QAM	1	0	22.50	22.17	22.11	22.09
			7	22.50	22.08	22.02	22.01
			14	22.50	22.12	22.07	22.05
		8	0	21.50	21.48	21.43	21.41
			4	21.50	21.33	21.27	21.25
			7	21.50	21.26	21.21	21.19
		15	0	21.50	21.41	21.35	21.33

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LTE-FDD Band 66(Band 4 included)				Maximum Tune-up(dBm)	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		131997	132322	132647
					1712.5MHz	1745.0MHz	1777.5MHz
5MHz	QPSK	1	0	23.00	22.77	22.71	22.69
			13	23.00	22.68	22.62	22.60
			24	23.00	22.72	22.66	22.64
		12	0	22.50	22.06	22.00	21.99
			6	22.00	21.90	21.84	21.82
			13	22.00	21.83	21.78	21.76
		25	0	22.00	21.98	21.93	21.91
	16QAM	1	0	22.50	22.19	22.13	22.11
			13	22.50	22.10	22.04	22.02
			24	22.50	22.14	22.08	22.06
		12	0	21.50	21.50	21.44	21.42
			6	21.50	21.34	21.28	21.27
			13	21.50	21.28	21.22	21.20
		25	0	21.50	21.42	21.36	21.34
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	22.78	22.72	22.70
			25	23.00	22.69	22.63	22.61
			49	23.00	22.73	22.67	22.65
		25	0	22.50	22.07	22.02	22.00
			13	22.00	21.91	21.85	21.84
			25	22.00	21.85	21.79	21.77
		50	0	22.00	21.99	21.94	21.92
	16QAM	1	0	22.50	22.20	22.14	22.12
			25	22.50	22.11	22.05	22.03
			49	22.50	22.15	22.09	22.07
		25	0	22.00	21.51	21.45	21.43
			13	21.50	21.35	21.29	21.28
			25	21.50	21.29	21.23	21.21
		50	0	21.50	21.43	21.37	21.35

LTE-FDD Band 66(Band 4 included)				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	22.74	22.68	22.66
			38	23.00	22.65	22.59	22.57
			74	23.00	22.69	22.63	22.61
		36	0	22.50	22.04	21.98	21.96
			18	22.00	21.87	21.82	21.80
			39	22.00	21.81	21.75	21.73
		75	0	22.00	21.96	21.90	21.88
	16QAM	1	0	22.50	22.16	22.10	22.08
			38	22.50	22.07	22.01	21.99
			74	22.50	22.11	22.05	22.03
		36	0	21.50	21.47	21.41	21.39
			18	21.50	21.31	21.26	21.24
			39	21.50	21.25	21.19	21.17
		75	0	21.50	21.39	21.34	21.32

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Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	132072	132322	132572
					1720.0MHz	1745.0MHz	1770.0MHz
20MHz	QPSK	1	0	23.00	22.81	22.75	22.73
			50	23.00	22.86	22.87	22.67
			99	**23.00**	**22.97**	22.83	22.78
		50	0	22.50	**22.10**	22.04	22.02
			25	22.00	21.94	21.88	21.86
			50	22.00	21.87	21.82	21.80
		100	0	22.50	22.02	21.96	21.95
	16QAM	1	0	22.50	22.23	22.17	22.15
			50	22.50	22.14	22.08	22.06
			99	22.50	22.18	22.12	22.10
		50	0	22.00	21.54	21.48	21.46
			25	21.50	21.38	21.32	21.30
			50	21.50	21.31	21.26	21.24
		100	0	21.50	21.46	21.40	21.38

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	22.80	22.89	23.01
			13	23.00	22.71	22.80	22.92
			24	23.00	22.75	22.84	22.96
		12	0	22.50	22.09	22.18	22.30
			6	22.50	21.93	22.02	22.13
			13	22.50	21.87	21.95	22.07
		25	0	22.50	22.01	22.10	22.22
	16QAM	1	0	22.50	22.22	22.30	22.42
			13	22.50	22.13	22.22	22.33
			24	22.50	22.17	22.26	22.37
		12	0	22.00	21.53	21.61	21.73
			6	22.00	21.37	21.45	21.57
			13	22.00	21.31	21.39	21.50
		25	0	22.00	21.45	21.53	21.65
Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	133172	133297	133422
					668.0MHz	680.5MHz	693.0MHz
10MHz	QPSK	1	0	23.00	22.74	22.83	22.95
			25	23.00	22.65	22.74	22.86
			49	23.00	22.70	22.78	22.90
		25	0	22.50	22.04	22.13	22.24
			13	22.50	21.88	21.96	22.08
			25	22.50	21.81	21.90	22.01
		50	0	22.50	21.96	22.05	22.16
	16QAM	1	0	22.50	22.16	22.25	22.36
			25	22.50	22.07	22.16	22.28
			49	22.50	22.11	22.20	22.32
		25	0	22.00	21.47	21.56	21.67
			13	22.00	21.32	21.40	21.51
			25	21.50	21.25	21.34	21.45
		50	0	22.00	21.40	21.48	21.59

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LTE-FDD Band 71				Maximum Tune-up(dBm)	Conducted Power(dBm)		
Bandwidth	Modulation	RB allocation	RB offset		133197	133297	133397
					670.5MHz	680.5MHz	690.5MHz
15MHz	QPSK	1	0	23.00	22.77	22.86	22.98
			38	23.00	22.68	22.77	22.88
			74	23.00	22.72	22.81	22.93
		36	0	22.50	22.06	22.15	22.26
			18	22.50	21.90	21.99	22.10
			39	22.50	21.83	21.92	22.03
		75	0	22.50	21.98	22.07	22.18
	16QAM	1	0	22.50	22.18	22.27	22.39
			38	22.50	22.10	22.18	22.30
			74	22.50	22.14	22.22	22.34
		36	0	22.00	21.50	21.58	21.69
			18	22.00	21.34	21.42	21.53
			39	21.50	21.27	21.36	21.47
		75	0	22.00	21.42	21.50	21.61
Bandwidth	Modulation	RB allocation	RB offset	Maximum Tune-up(dBm)	133222	133322	133372
					673.0MHz	683.0MHz	688.0MHz
20MHz	QPSK	1	0	**23.50**	22.85	22.94	**23.06**
			50	23.00	22.87	22.83	22.93
			99	23.50	22.81	23.04	22.97
		50	0	22.50	22.14	22.23	**22.34**
			25	22.50	21.98	22.07	22.18
			50	22.50	21.91	22.00	22.11
		100	0	22.50	22.06	22.15	22.26
	16QAM	1	0	22.50	22.26	22.35	22.47
			50	22.50	22.18	22.26	22.38
			99	22.50	22.22	22.30	22.42
		50	0	22.00	21.57	21.66	21.77
			25	22.00	21.42	21.50	21.61
			50	22.00	21.35	21.43	21.55
		100	0	22.00	21.50	21.58	21.69

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8.2 Wi-Fi

ANT 1						
Band (GHz)	Mode	Channel	Freq. (MHz)	Average Conducted Output Power (dBm)	Maximum Tune-up(dBm)	SAR Test Required.
2.4g (2.4~2.4835)	802.11b	1	2412	18.88	19.00	No
		6	2437	**18.97**	**19.00**	Yes
		11	2462	18.95	19.00	No
	802.11g	1	2412	16.51	17.00	No
		6	2437	18.49	18.50	No
		11	2462	15.50	16.00	No
	802.11n(HT20)	1	2412	16.42	16.50	No
		6	2437	18.65	19.00	No
		11	2462	15.44	15.50	No
	802.11ax(HE20)	1	2412	9.70	10.00	No
		6	2437	9.49	9.50	No
		11	2462	9.45	9.50	No
	802.11n(HT40)	3	2422	13.14	13.50	No
		6	2437	14.84	15.00	No
		9	2452	12.84	13.00	No
	802.11ax(HE40)	3	2422	9.76	10.00	No
		6	2437	9.69	10.00	No
		9	2452	9.79	10.00	No
ANT 2						
Band (GHz)	Mode	Channel	Freq. (MHz)	Average Conducted Output Power (dBm)	Maximum Tune-up(dBm)	SAR Test Required.
2.4g (2.4~2.4835)	802.11b	1	2412	19.30	19.50	No
		6	2437	**19.61**	**20.00**	Yes
		11	2462	19.41	19.50	No
	802.11g	1	2412	16.59	17.00	No
		6	2437	19.55	20.00	No
		11	2462	15.27	15.50	No
	802.11n(HT20)	1	2412	15.06	15.50	No
		6	2437	19.26	19.50	No
		11	2462	14.30	14.50	No
	802.11ax(HE20)	1	2412	10.34	10.50	No
		6	2437	10.39	10.50	No
		11	2462	10.28	10.50	No
	802.11n(HT40)	3	2422	14.03	14.50	No
		6	2437	15.81	16.00	No
		9	2452	13.74	14.00	No
	802.11ax(HE40)	3	2422	10.63	11.00	No
		6	2437	10.68	11.00	No
		9	2452	10.60	11.00	No
MIMO						
Band (GHz)	Mode	Channel	Freq. (MHz)	Average Conducted Output Power (dBm)	Maximum Tune-up(dBm)	SAR Test Required.
2.4g (2.4~2.4835)	802.11b	1	2412	22.11	22.50	No
		6	2437	**22.31**	**22.50**	Yes
		11	2462	22.20	22.50	No
	802.11g	1	2412	19.56	20.00	No
		6	2437	22.06	22.50	No
		11	2462	18.40	18.50	No
	802.11n(HT20)	1	2412	18.80	19.00	No
		6	2437	21.98	22.00	No
		11	2462	17.92	18.00	No
	802.11ax(HE20)	1	2412	13.04	13.50	No
		6	2437	12.97	13.00	No
		11	2462	12.90	13.00	No
	802.11n(HT40)	3	2422	16.62	17.00	No
		6	2437	18.36	18.50	No
		9	2452	16.32	16.50	No
	802.11ax(HE40)	3	2422	13.23	13.50	No
		6	2437	13.22	13.50	No
		9	2452	13.22	13.50	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.

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ANT 1						
Band (GHz)	Mode	Channel	Freq. (MHz)	Average Conducted Output Power (dBm)	Maximum Tune-up(dBm)	SAR Test Require.
U-NII-1 (5.150~5.250)	802.11a	36	5180	12.91	13.00	No
		40	5200	14.55	15.00	No
		48	5240	14.17	14.50	No
	802.11n(HT20)	36	5180	12.12	12.50	No
		40	5200	12.13	12.50	No
		48	5240	12.09	12.50	No
	802.11ac(VHT20)	36	5180	12.94	13.00	No
		40	5200	14.46	14.50	No
		48	5240	14.02	14.50	No
	802.11ax(HE20)	36	5180	12.69	13.00	No
		40	5200	14.51	15.00	No
		48	5240	14.07	14.50	No
	802.11n(HT40)	38	5190	10.92	11.00	No
		46	5230	**15.49**	**15.50**	Yes
	802.11ac(VHT40)	38	5190	10.71	11.00	No
		46	5230	15.42	15.50	No
	802.11ax(HE40)	38	5190	10.38	10.50	No
		46	5230	7.98	8.00	No
	802.11ac(VHT80)	42	5210	12.75	13.00	No
	802.11ax(HE80)	42	5210	10.92	11.00	No
ANT 2						
Band (GHz)	Mode	Channel	Freq. (MHz)	Average Conducted Output Power (dBm)	Maximum Tune-up(dBm)	SAR Test Require.
U-NII-1 (5.150~5.250)	802.11a	36	5180	13.25	13.50	No
		40	5200	15.10	15.50	No
		48	5240	14.83	15.00	No
	802.11n(HT20)	36	5180	13.08	13.50	No
		40	5200	13.02	13.50	No
		48	5240	12.80	13.00	No
	802.11ac(VHT20)	36	5180	13.36	13.50	No
		40	5200	15.04	15.50	No
		48	5240	14.79	15.00	No
	802.11ax(HE20)	36	5180	13.47	13.50	No
		40	5200	15.35	15.50	No
		48	5240	15.08	15.50	No
	802.11n(HT40)	38	5190	11.66	12.00	No
		46	5230	16.17	16.50	No
	802.11ac(VHT40)	38	5190	11.84	12.00	No
		46	5230	**16.35**	**16.50**	Yes
	802.11ax(HE40)	38	5190	11.73	12.00	No
		46	5230	8.93	9.00	No
	802.11ac(VHT80)	42	5210	13.85	14.00	No
	802.11ax(HE80)	42	5210	12.27	12.50	No
MIMO						
Band (GHz)	Mode	Channel	Freq. (MHz)	Average Conducted Output Power (dBm)	Maximum Tune-up(dBm)	SAR Test Require.
U-NII-1 (5.150~5.250)	802.11a	36	5180	16.09	16.50	No
		40	5200	17.84	18.00	No
		48	5240	17.52	18.00	No
	802.11n(HT20)	36	5180	15.64	16.00	No
		40	5200	15.61	16.00	No
		48	5240	15.47	15.50	No
	802.11ac(VHT20)	36	5180	16.17	16.50	No
		40	5200	17.77	18.00	No
		48	5240	17.43	17.50	No
	802.11ax(HE20)	36	5180	16.11	16.50	No
		40	5200	17.96	18.00	No
		48	5240	17.61	18.00	No
	802.11n(HT40)	38	5190	14.32	14.50	No
		46	5230	18.85	19.00	No
	802.11ac(VHT40)	38	5190	14.32	14.50	No
		46	5230	**18.92**	**19.00**	Yes
	802.11ax(HE40)	38	5190	14.12	14.50	No
		46	5230	11.49	11.50	No
	802.11ac(VHT80)	42	5210	16.35	16.50	No
	802.11ax(HE80)	42	5210	14.66	15.00	No

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ANT 1						
Band (GHz)	Mode	Channel	Freq. (MHz)	Average Conducted Output Power (dBm)	Maximum Tune-up(dBm)	SAR Test Require.
U-NII-3 (5.725~5.850)	802.11a	149	5745	16.14	16.50	No
		157	5785	16.15	16.50	No
		165	5825	16.25	16.50	No
	802.11n(HT20)	149	5745	15.99	16.00	No
		157	5785	16.00	16.00	No
		165	5825	16.17	16.50	No
	802.11ac(VHT20)	149	5745	15.91	16.00	No
		157	5785	15.98	16.00	No
		165	5825	16.11	16.50	No
	802.11ax(HE20)	149	5745	10.61	11.00	No
		157	5785	10.61	11.00	No
		165	5825	10.76	11.00	No
	802.11n(HT40)	151	5755	16.34	16.50	No
		159	5795	**16.71**	**17.00**	Yes
	802.11ac(VHT40)	151	5755	16.18	16.50	No
		159	5795	16.70	17.00	No
	802.11ax(HE40)	151	5755	10.97	11.00	No
		159	5795	11.00	11.00	No
	802.11ac(VHT80)	155	5775	14.51	15.00	No
	802.11ax(HE80)	155	5775	8.68	9.00	No
ANT 2						
Band (GHz)	Mode	Channel	Freq. (MHz)	Average Conducted Output Power (dBm)	Maximum Tune-up(dBm)	SAR Test Require.
U-NII-3 (5.725~5.850)	802.11a	149	5745	17.22	17.50	No
		157	5785	16.90	17.00	No
		165	5825	16.75	17.00	No
	802.11n(HT20)	149	5745	17.10	17.50	No
		157	5785	16.85	17.00	No
		165	5825	16.75	17.00	No
	802.11ac(VHT20)	149	5745	17.15	17.50	No
		157	5785	16.93	17.00	No
		165	5825	16.81	17.00	No
	802.11ax(HE20)	149	5745	11.83	12.00	No
		157	5785	11.66	12.00	No
		165	5825	11.64	12.00	No
	802.11n(HT40)	151	5755	17.23	17.50	No
		159	5795	17.48	17.50	No
	802.11ac(VHT40)	151	5755	17.45	17.50	No
		159	5795	**17.58**	**18.00**	Yes
	802.11ax(HE40)	151	5755	12.12	12.50	No
		159	5795	11.94	12.00	No
	802.11ac(VHT80)	155	5775	15.67	16.00	No
	802.11ax(HE80)	155	5775	9.98	10.00	No
MIMO						
Band (GHz)	Mode	Channel	Freq. (MHz)	Average Conducted Output Power (dBm)	Maximum Tune-up(dBm)	SAR Test Require.
U-NII-3 (5.725~5.850)	802.11a	149	5745	19.72	20.00	No
		157	5785	19.55	20.00	No
		165	5825	19.52	20.00	No
	802.11n(HT20)	149	5745	19.59	20.00	No
		157	5785	19.46	19.50	No
		165	5825	19.48	19.50	No
	802.11ac(VHT20)	149	5745	19.58	20.00	No
		157	5785	19.49	19.50	No
		165	5825	19.48	19.50	No
	802.11ax(HE20)	149	5745	14.27	14.50	No
		157	5785	14.18	14.50	No
		165	5825	14.23	14.50	No
	802.11n(HT40)	151	5755	19.82	20.00	No
		159	5795	20.12	20.50	No
	802.11ac(VHT40)	151	5755	19.87	20.00	No
		159	5795	**20.17**	**20.50**	Yes
	802.11ax(HE40)	151	5755	14.59	15.00	No
		159	5795	14.51	15.00	No
	802.11ac(VHT80)	155	5775	18.14	18.50	No
	802.11ax(HE80)	155	5775	12.39	12.50	No

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8.3 Bluetooth

	Mode	Maximum Tune-up(dBm)	Average Conducted Output Power (dBm)		
EDR			0	39	78
			2402MHz	2441MHz	2480MHz
	GFSK	**9.50**	7.89	8.39	**9.03**
	π/4QPSK	7.50	6.39	7.03	7.16
	8DPSK	7.50	6.44	7.19	7.23
BLE	Mode	Maximum Tune-up(dBm)	Average Conducted Output Power (dBm)		
			0	20	39
			2402MHz	2440MHz	2480MHz
	1Mbps	5.00	4.01	4.37	4.55
	2Mbps	5.00	4.04	4.40	4.55

Channel	Frequency (GHz)	Max. Tune-up Power (dBm)	Max. Power (mW)	Test distance (mm)	Exclusion thresholds for 1-g SAR	RF exposure evaluation required
78	2.480	9.50	8.91	0	2.72	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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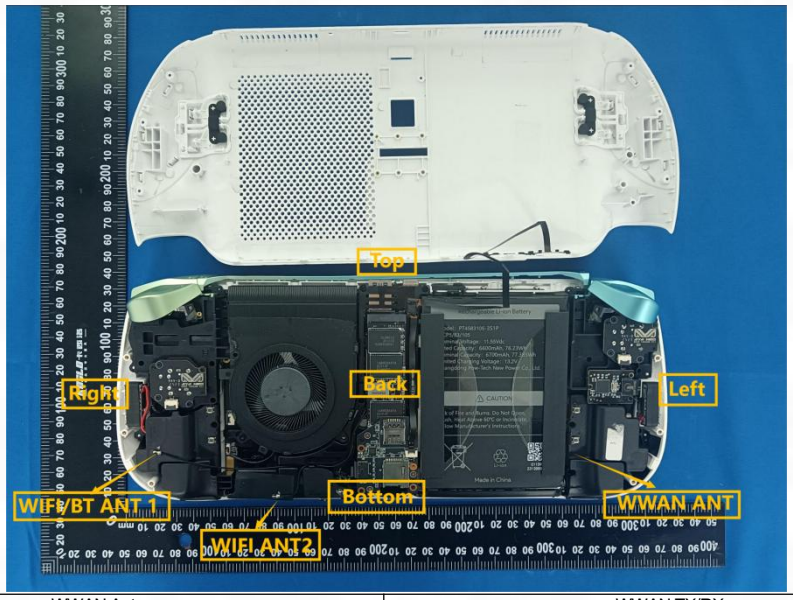
9. Test Exclusion Consideration

Antenna information：



WWAN Antenna	WWAN TX/RX
WLAN/BT Antenna	WLAN/BT TX/RX
WLAN Antenna	WLAN 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)	back Edge (mm)	Right Edge (mm)	Top Edge (mm)	Bottom Edge (mm)
WWAN	<25	<25	31	280	107	<25
BT/Wifi ANT 1	<25	<25	289	<25	100	30
Wifi ANT 2	<25	<25	226	85	127	<25

Positions for SAR tests						
Antenna	Front Side (mm)	Back Side (mm)	back Edge (mm)	Right Edge (mm)	Top Edge (mm)	Bottom Edge (mm)
WWAN	No	Yes	No	No	No	Yes
BT/Wifi ANT 1	No	Yes	No	Yes	No	No
Wifi ANT 2	No	Yes	No	No	No	Yes

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)	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 7	QPSK (20MHz)	Back	21100	2535.0	1	0	22.99	23.00	3.020	0.370	1.002	0.371	/
					50	0	22.28	22.50	2.360	0.157	1.052	0.165	/
		Bottom	21100	2535.0	1	0	22.99	23.00	-0.140	0.478	1.002	**0.479**	1#
					50	0	22.28	22.50	-1.098	0.452	1.052	0.476	/
LTE Band 12	QPSK (10MHz)	Back	23060	704.0	1	0	22.97	23.00	2.065	0.527	1.007	0.531	/
					25	0	22.26	22.50	-1.051	0.503	1.057	0.532	/
		Bottom	23060	704.0	1	0	22.97	23.00	0.480	0.614	1.007	**0.618**	2#
					25	0	22.26	22.50	4.060	0.563	1.057	0.595	/
LTE Band 13	QPSK (10MHz)	Back	23230	782.0	1	49	22.79	23.00	-2.910	0.097	1.050	0.102	/
					25	0	22.20	22.50	1.600	0.091	1.072	0.098	/
		Bottom	23230	782.0	1	49	22.79	23.00	-2.530	0.352	1.050	**0.370**	3#
					25	0	22.20	22.50	3.096	0.339	1.072	0.363	/
LTE Band 14	QPSK (10MHz)	Back	23330	793.0	1	0	22.87	23.00	1.035	0.278	1.030	0.286	/
					25	0	22.22	22.50	-0.308	0.253	1.067	0.270	/
		Bottom	23330	793.0	1	0	22.87	23.00	2.400	0.338	1.030	**0.348**	4#
					25	0	22.22	22.50	1.334	0.311	1.067	0.332	/
LTE Band 25	QPSK (20MHz)	Back	26140	1860.0	1	99	22.93	23.00	-2.486	0.537	1.016	0.546	/
					50	0	22.14	22.50	3.118	0.524	1.086	0.569	/
		Bottom	26140	1860.0	1	99	22.93	23.00	-1.310	0.650	1.016	**0.660**	5#
					50	0	22.14	22.50	2.068	0.605	1.086	0.657	/
LTE Band 26	QPSK (15MHz)	Back	26915	836.5	1	0	23.03	23.50	-3.390	0.091	1.114	0.101	/
					36	0	22.32	22.50	2.035	0.083	1.042	0.086	/
		Bottom	26915	836.5	1	0	23.03	23.50	-1.450	0.276	1.114	**0.307**	6#
					36	0	22.32	22.50	4.023	0.251	1.042	0.262	/
LTE Band 30	QPSK (10MHz)	Back	27710	2310.0	1	24	23.10	23.50	-1.340	0.241	1.096	0.264	/
					25	0	22.41	22.50	2.812	0.224	1.021	0.229	/
		Bottom	27710	2310.0	1	24	23.10	23.50	-1.640	0.353	1.096	**0.387**	7#
					25	0	22.41	22.50	3.645	0.332	1.021	0.339	/
LTE Band 41	QPSK (20MHz)	Back	40620	2593.0	1	0	23.07	23.50	-1.290	0.188	1.104	0.208	/
					50	0	22.35	22.50	2.418	0.172	1.035	0.178	/
		Bottom	40620	2593.0	1	0	23.07	23.50	-2.590	0.263	1.104	**0.290**	8#
					50	0	22.35	22.50	0.991	0.245	1.035	0.254	/
LTE Band 48	QPSK (20MHz)	Back	56640	3690.0	1	0	23.95	24.00	3.370	0.195	1.012	0.197	/
					50	0	23.21	23.50	2.486	0.184	1.069	0.197	/
		Bottom	56640	3690.0	1	0	23.95	24.00	1.620	0.288	1.012	**0.291**	9#
					50	0	23.21	23.50	-0.386	0.273	1.069	0.292	/
LTE Band 66	QPSK (20MHz)	Back	132072	1720.0	1	99	22.97	23.00	2.055	0.446	1.007	0.449	/
					50	0	22.10	22.50	-1.965	0.428	1.096	0.469	/
		Bottom	132072	1720.0	1	99	22.97	23.00	4.640	0.531	1.007	**0.535**	10#
					50	0	22.10	22.50	0.550	0.512	1.096	0.561	/
LTE Band 71	QPSK (20MHz)	Back	133372	688.0	1	0	23.06	23.50	-0.620	0.249	1.107	0.276	/
					50	0	22.34	22.50	1.444	0.226	1.038	0.235	/
		Bottom	133372	688.0	1	0	23.06	23.50	-2.020	0.376	1.107	**0.416**	11#
					50	0	22.34	22.50	0.659	0.352	1.038	0.365	/

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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.
2.4G -ANT 1	802.11b	Back	6	2437	18.97	19.00	0.841	0.083	1.007	0.084	/
		Right	6	2437	18.97	19.00	-1.068	0.071	1.007	0.071	/
2.4G -ANT 2	802.11b	Back	6	2437	19.61	20.00	2.129	0.085	1.094	0.093	/
		Bottom	6	2437	19.61	20.00	1.842	0.076	1.094	0.083	/
2.4G MIMO	802.11b	Back-Ant1side	6	2437	22.31	22.50	-3.130	0.099	1.045	**0.103**	12#
		Back-Ant2side	6	2437	22.31	22.50	0.567	0.096	1.045	0.100	/
		Right	6	2437	22.31	22.50	-2.377	0.079	1.045	0.083	/
		Bottom	6	2437	22.31	22.50	2.364	0.083	1.045	0.087	/
5.2G -ANT 1	802.11n (HT40)	Back	46	5230	15.49	15.50	1.115	0.069	1.002	0.069	/
		Right	46	5230	15.49	15.50	-4.021	0.065	1.002	0.065	/
5.2G -ANT 2	802.11ac (VHT40)	Back	46	5230	16.35	16.50	2.857	0.078	1.035	0.081	/
		Bottom	46	5230	16.35	16.50	1.392	0.075	1.035	0.078	/
5.2G MIMO	802.11ac (VHT40)	Back-Ant1side	46	5230	18.92	19.00	-3.950	0.111	1.019	**0.113**	13#
		Back-Ant2side	46	5230	18.92	19.00	-2.064	0.109	1.019	0.111	/
		Right	46	5230	18.92	19.00	0.978	0.088	1.019	0.090	/
		Bottom	46	5230	18.92	19.00	1.068	0.084	1.019	0.086	/
5.8G -ANT 1	802.11n (HT40)	Back	159	5795	16.71	17.00	-0.284	0.235	1.069	0.251	/
		Right	159	5795	16.71	17.00	-3.127	0.174	1.069	0.186	/
5.8G -ANT 2	802.11ac (VHT40)	Back	159	5795	17.58	18.00	4.029	0.259	1.102	0.285	/
		Bottom	159	5795	17.58	18.00	1.054	0.188	1.102	0.207	/
5.8G MIMO	802.11ac (VHT40)	Back-Ant1side	159	5795	20.17	20.50	-1.610	0.313	1.079	**0.338**	14#
		Back-Ant2side	159	5795	20.17	20.50	1.610	0.305	1.079	0.329	/
		Right	159	5795	20.17	20.50	-3.841	0.281	1.079	0.303	/
		Bottom	159	5795	20.17	20.50	-2.816	0.277	1.079	0.299	/
Bluetooth	Classic	Back	78	2480	9.03	9.50	-3.400	0.099	1.114	**0.110**	15#
		Right	78	2480	9.03	9.50	1.994	0.075	1.114	0.084	/

Note:

1. The maximum SAR Value of each test band is marked bold.
2. SAR plot is provided only for the highest measured SAR in each exposure configuration, wireless mode and frequency band combination.
3. 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.
4. 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.
5. 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. 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 0.650 < 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 3 Tx antennas, WWAN antenna supports LTE, Wifi/BT antenna supports 2.4G/5G Wi-Fi and BT, Wifi antenna only supports 2.4G/5G Wi-Fi. Therefore 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	Yes
2	WIFI + BT	Yes

12.2 Sum SAR of Simultaneous Transmission

Body

Position	Scaled SAR			Σ SARmax (W/kg) WWAN+WIFI Maximum SAR	Σ SARmax (W/kg) WWAN+BT SAR	SPLSR	Remark
	WWAN Maximum SAR	WIFI Maximum SAR	BT SAR				
Back	0.537	**0.338**	**0.110**	**0.875**	0.647	N/A	N/A
Right	/	0.303	0.084	0.303	0.084	N/A	N/A
Bottom	**0.650**	/	/	0.650	0.650	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	2023/03/24	2024/03/23
Wideband Radio Communication Tester	ROHDE & SCHWARZ	CMW500	161997	2023/03/24	2024/03/23
MXG Vector Signal Generator	Agilent	N5182A	MY46240163	2023/03/24	2024/03/23
E-Series Avg. Power Sensor	KEYSIGHT	E9300A	MY55050017	2023/03/24	2024/03/23
EPM Series Power Meter	KEYSIGHT	E4418B	MY41293435	2023/03/24	2024/03/23
10dB Attenuator	MIDWEST MICROWAVE	263-10dB	/	2023/03/24	2024/03/23
Coupler	MERRIMAC	CWM-10R-10.8G	LOT-83391	2023/03/24	2024/03/23
750MHz Validation Dipole	MVG	SID750	07/22 DIP 0G750-655	2023/02/06	2024/02/05
835MHz Validation Dipole	MVG	SID835	07/22 DIP 0G835-656	2023/02/06	2024/02/05
1800MHz Validation Dipole	MVG	SID1800	07/22 DIP 1G800-657	2023/02/06	2024/02/05
1900MHz Validation Dipole	MVG	SID1900	07/22 DIP 1G900-658	2023/02/06	2024/02/05
2300MHz Validation Dipole	MVG	SID2300	07/22 DIP 2G300-661	2023/02/06	2024/02/05
2450MHz Validation Dipole	MVG	SID2450	07/22 DIP 2G450-662	2023/02/06	2024/02/05
2600MHz Validation Dipole	MVG	SID2600	07/22 DIP 2G600-663	2023/02/06	2024/02/05
3700MHz Validation Dipole	MVG	SID3700	07/22 DIP 3G700-665	2023/02/06	2024/02/05
5200MHz-5800MHz Validation Dipole	MVG	SID5000	07/22 DIP5G000-670	2023/02/06	2024/02/05
LIMESAR Dielectric Probe	MVG	SCLMP	06/22 OCPG88	/	/
ENA Series Network Analyzer	Agilent	E5071B	MY42301221	2023/03/24	2024/03/23
Thermometer	Riters	DT-232	21A11	2023/03/24	2024/03/23
Antenna network emulator	MVG	ANTA 74	07/22 ANTA 74	/	/
SAM Phantom	MVG	SAM	07/22 SAM149	/	/
Mobile Phone Positioning System	MVG	MSH 118	07/22 MSH 118	/	/
Mechanical Calibration Kit	PNA	/	/	/	/
Open SAR test software	MVG	/	V5.3.5	/	/

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

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

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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	43.61	0.89	0.86	4.08%	-3.37%	±10%	20.0	9/10/2023
835	41.50	43.25	0.90	0.87	4.22%	-3.33%	±10%	20.0	9/10/2023
1800	40.00	41.53	1.40	1.37	3.83%	-2.14%	±10%	20.0	9/10/2023
1900	40.00	39.88	1.40	1.41	-0.30%	0.71%	±10%	20.0	9/10/2023
2300	39.50	41.42	1.67	1.70	4.86%	1.85%	±10%	20.0	9/10/2023
2450	39.20	41.39	1.80	1.81	5.59%	0.56%	±10%	20.0	10/10/2023
2600	39.00	38.88	1.96	1.97	-0.31%	0.51%	±10%	20.0	10/10/2023
3700	37.70	37.89	3.12	3.13	-0.50%	-0.16%	±10%	20.0	10/10/2023
5200	36.00	35.88	4.66	4.70	-0.33%	0.86%	±10%	20.0	10/10/2023
5800	35.30	32.69	5.27	5.31	-7.39%	0.76%	±10%	20.0	10/10/2023
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 1 g).

Frequency (MHz)	Input Power (mW)	1g SAR (W/Kg)	10g SAR (W/Kg)	1g SAR 1W input power normalized (W/Kg)	10g SAR 1W input power normalized (W/Kg)	1g SAR Standard target (1W) (W/Kg)	10g SAR Standard target (1W) (W/Kg)	1g SAR Deviation	10g SAR Deviation
750	16	0.138	0.092	8.63	5.75	8.25	5.38	4.55%	6.88%
835	16	0.163	0.106	10.19	6.63	9.79	6.17	4.06%	7.37%
1800	16	0.588	0.312	36.75	19.50	39.33	20.61	-6.56%	-5.39%
1900	16	0.630	0.322	39.38	20.13	40.97	20.7	-3.89%	-2.78%
2300	16	0.749	0.340	46.81	21.25	50.35	22.84	-7.03%	-6.96%
2450	16	0.793	0.352	49.56	22.00	54.4	23.86	-8.89%	-7.80%
2600	16	0.866	0.421	54.13	26.31	57.14	24.48	-5.28%	7.49%
3700	16	1.035	0.367	64.70	22.96	69.54	24.89	-6.96%	-7.75%
5200	13	0.998	0.294	76.77	22.62	73.88	21.29	3.91%	6.23%
5800	13	1.023	0.280	78.69	21.54	74.21	21.50	6.04%	0.18%

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System Performance Check Data (750 MHz)

System check at 750 MHz

Date of measurement: 9/10/2023

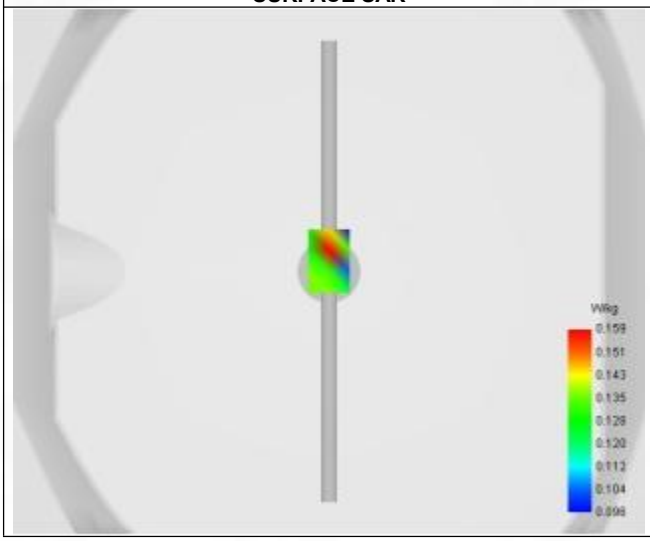
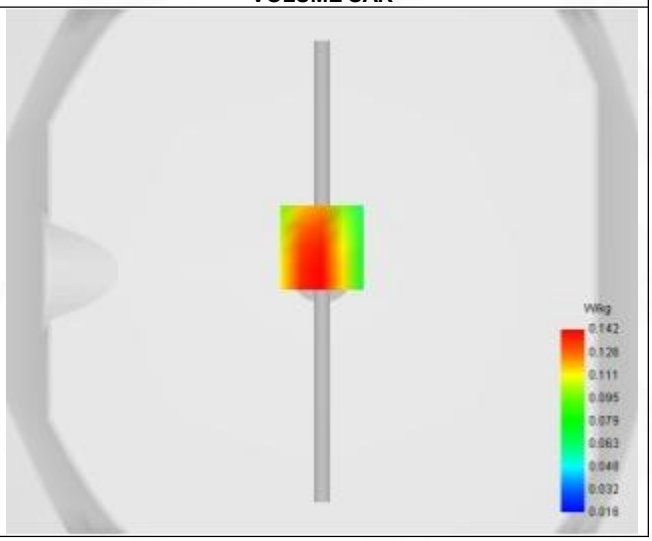
A. Experimental conditions.

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)	43.610
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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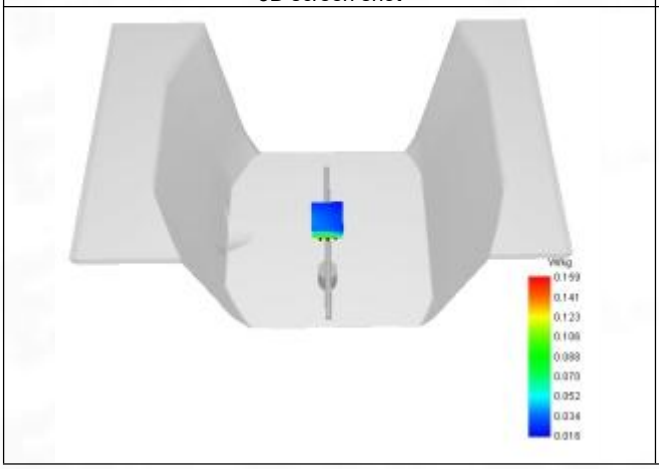
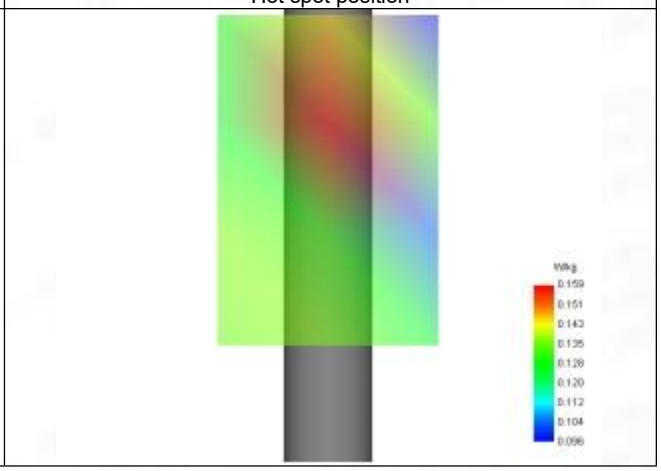
F. 3D Image

3D screen shot	Hot spot position
	

System Performance Check Data (835 MHz)

System check at 835 MHz

Date of measurement: 9/10/2023

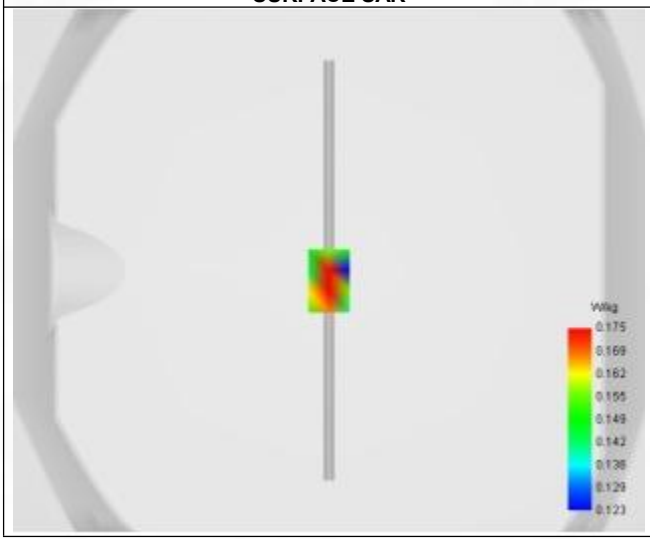
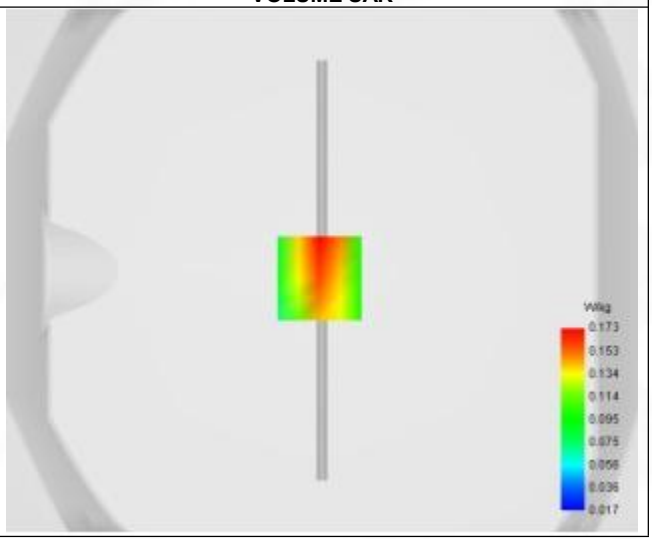
A. Experimental conditions.

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)	43.250
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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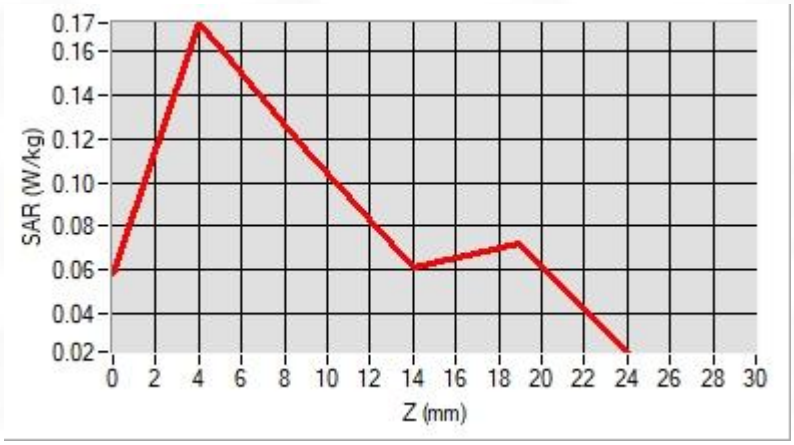
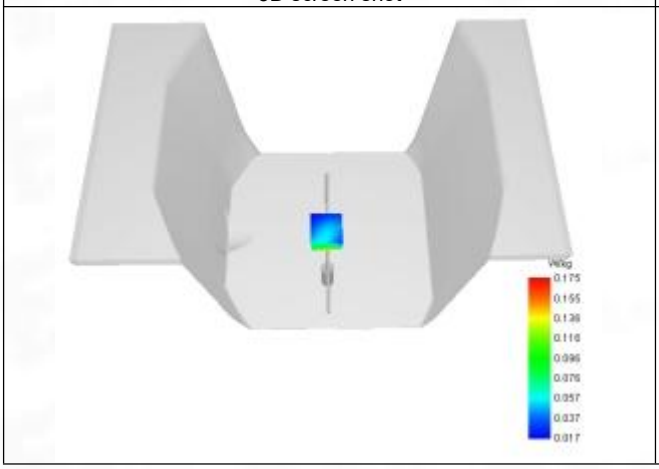
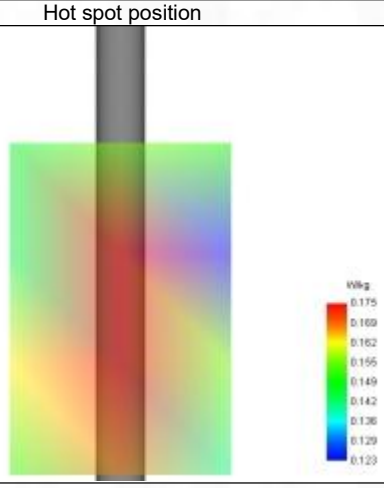


F. 3D Image

3D screen shot	Hot spot position
	

System Performance Check Data (1800 MHz)

System check at 1800 MHz

Date of measurement: 9/10/2023

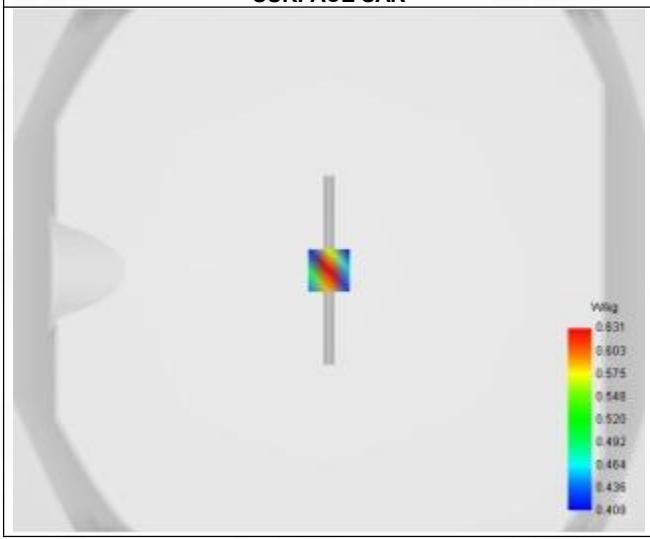
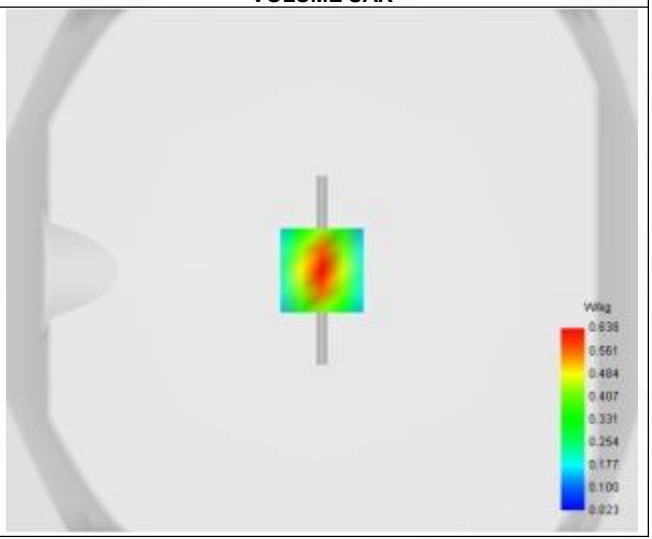
A. Experimental conditions.

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)	41.530
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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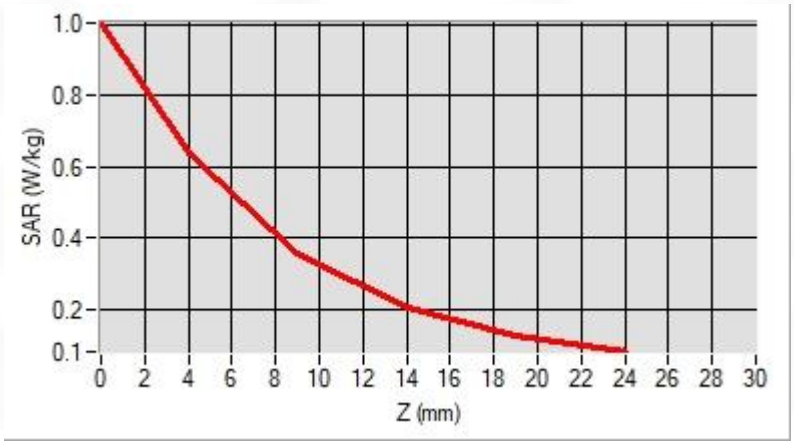
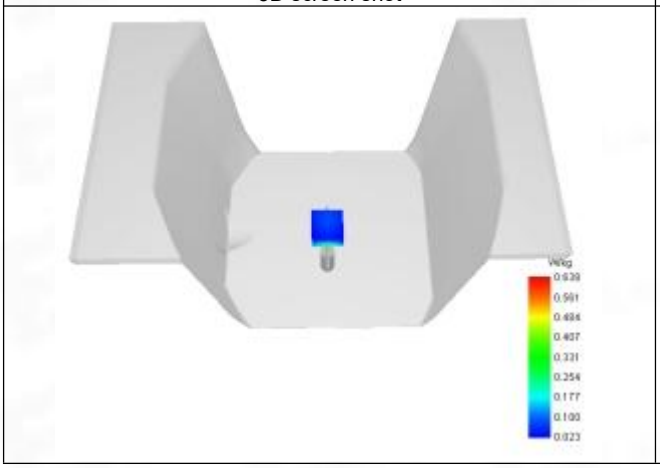
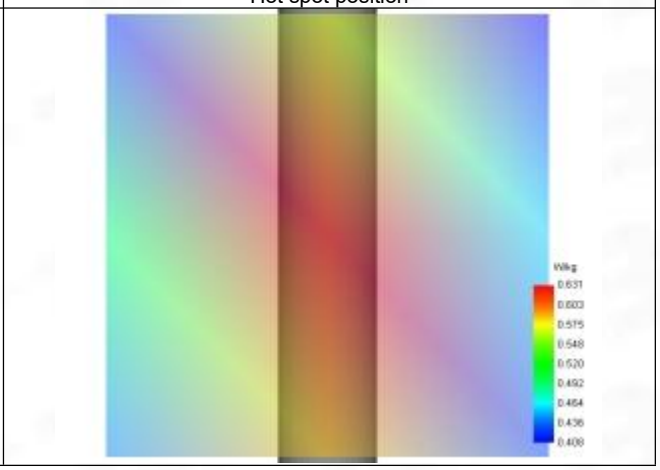


F. 3D Image

3D screen shot	Hot spot position
	

System Performance Check Data (1900 MHz)

System check at 1900 MHz

Date of measurement: 9/10/2023

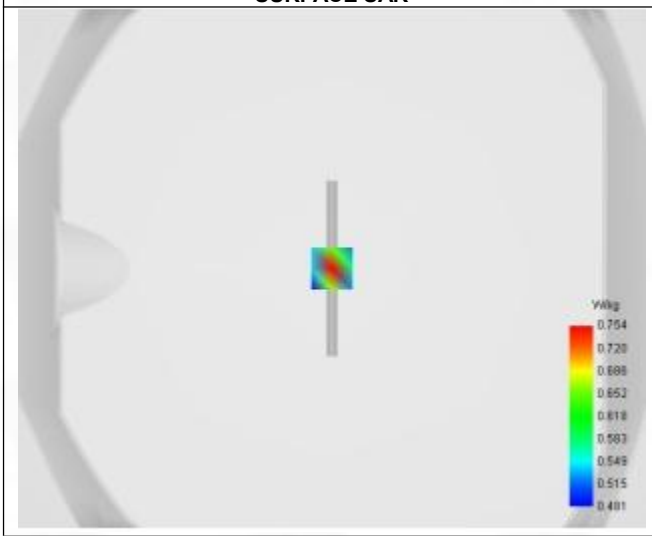
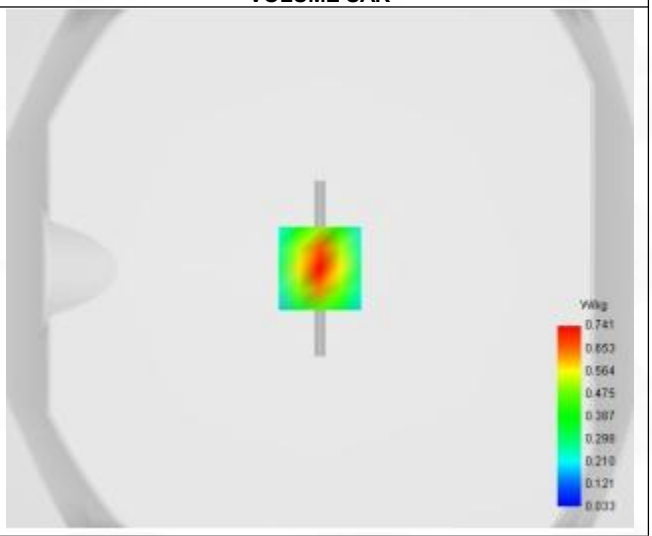
A. Experimental conditions.

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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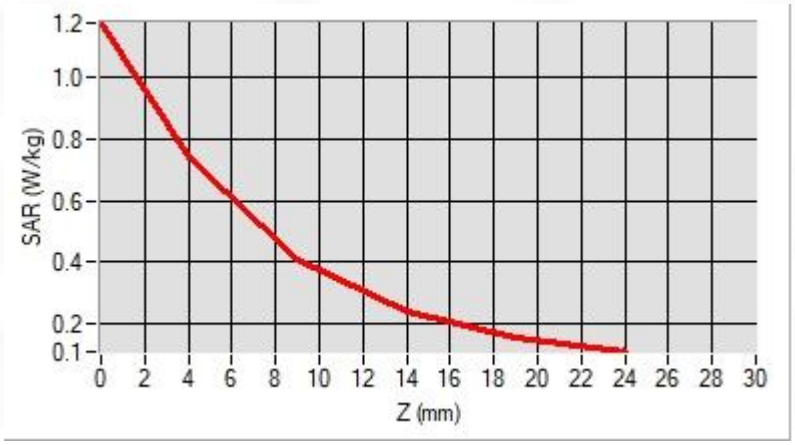
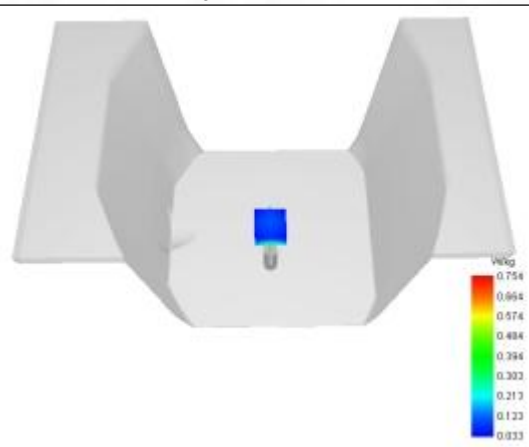
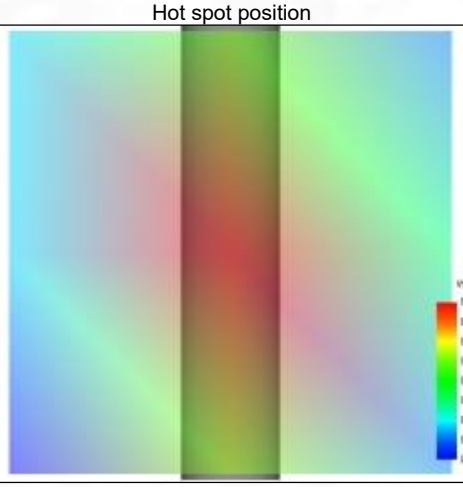


F. 3D Image

3D screen shot	Hot spot position
	

System Performance Check Data (2300 MHz)

System check at 2300 MHz

Date of measurement: 9/10/2023

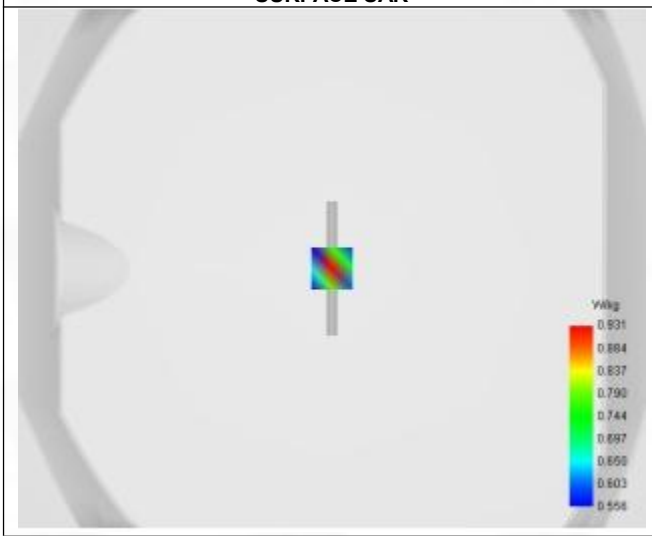
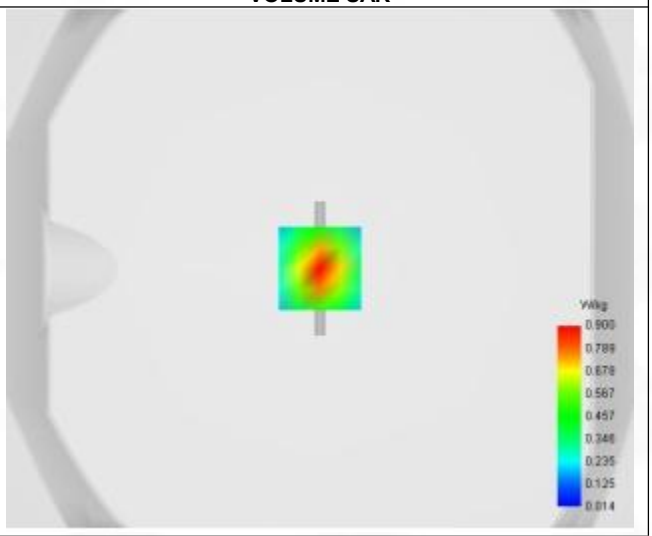
A. Experimental conditions.

Probe	SN 04/22 EPGO365
ConvF	2.36
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	CW2300
Channels	Middle
Signal	CW

B. Permitivity

Frequency (MHz)	2300.000
Relative permitivity (real part)	41.420
Relative permitivity (imaginary part)	13.351
Conductivity (S/m)	1.701

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

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

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.340
SAR 1g (W/Kg)	0.749
Variation (%)	-2.880
Horizontal validation criteria: minimum distance (mm)	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)	1.400	0.900	0.477	0.261	0.150

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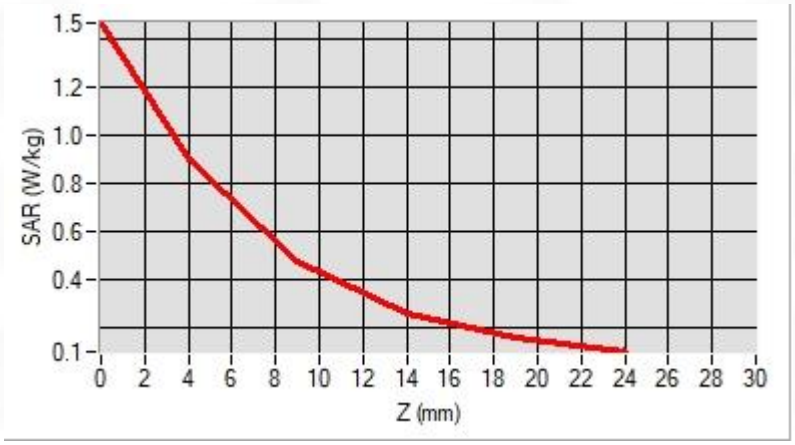
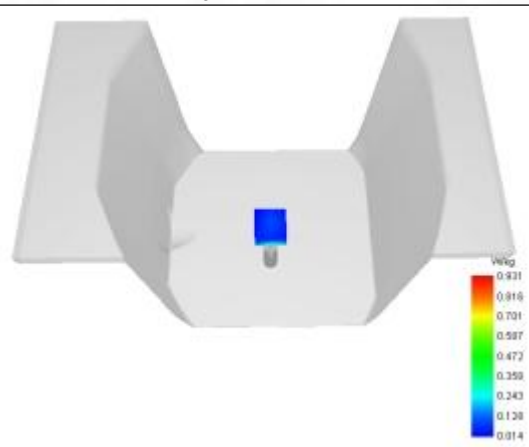
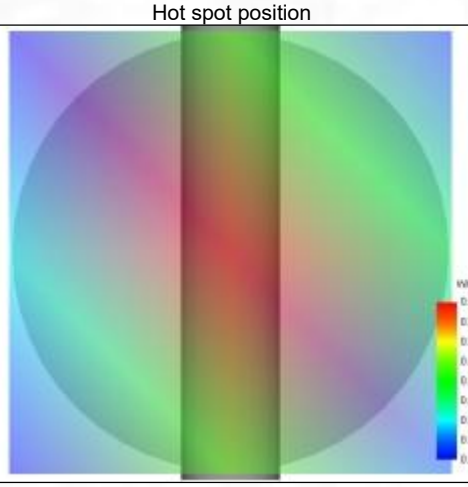


F. 3D Image

3D screen shot	Hot spot position
	

System Performance Check Data (2450 MHz)

System check at 2450 MHz

Date of measurement: 10/10/2023

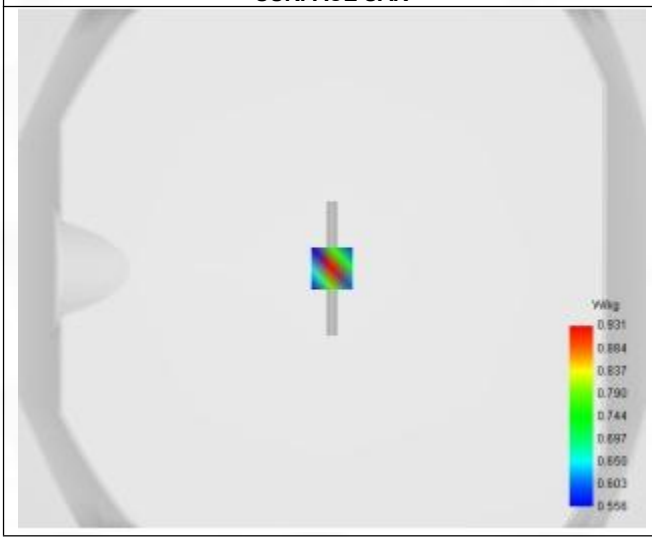
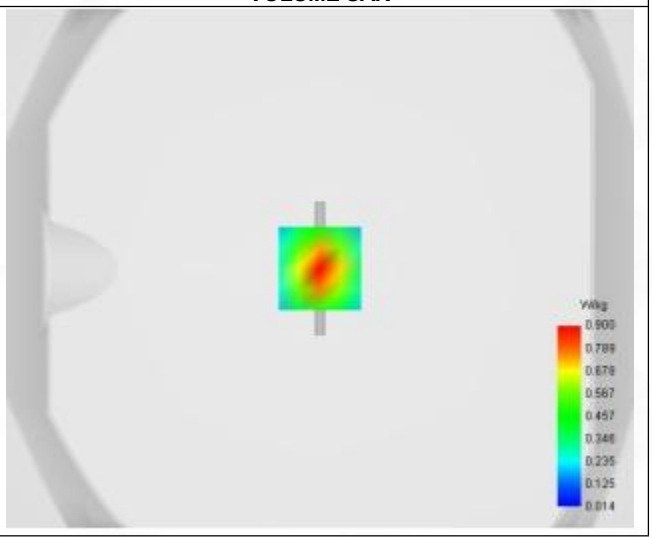
A. Experimental conditions.

Probe	SN 04/22 EPGO365
ConvF	2.36
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	CW2450
Channels	Middle
Signal	CW

B. Permitivity

Frequency (MHz)	2450.000
Relative permitivity (real part)	41.390
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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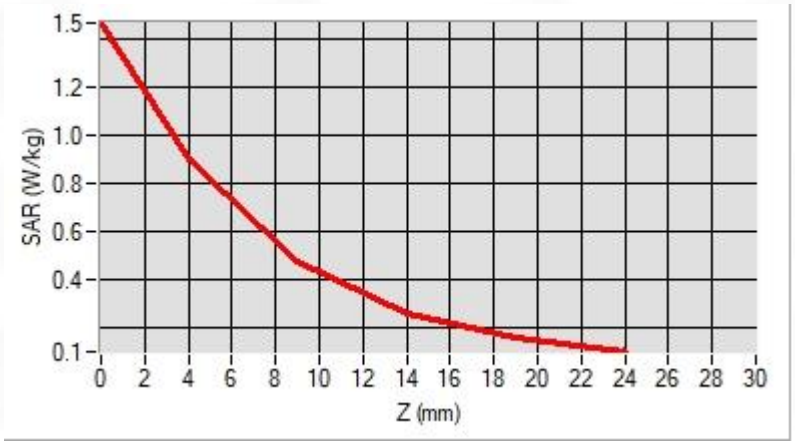
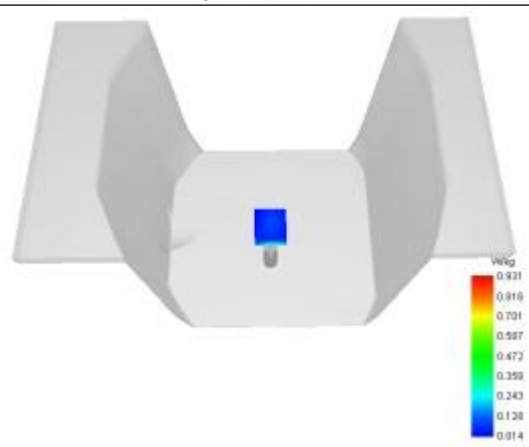
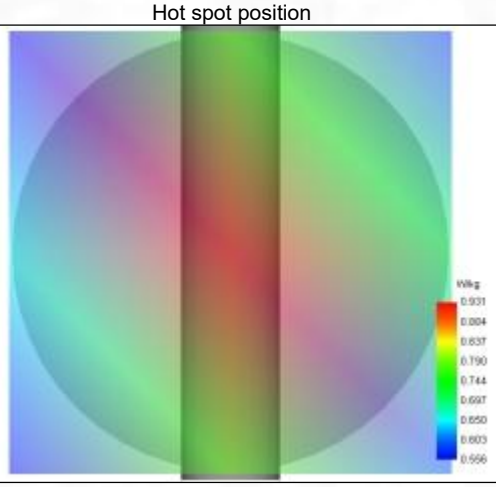


F. 3D Image

3D screen shot	Hot spot position
	

System Performance Check Data (2600 MHz)

System check at 2600 MHz

Date of measurement: 10/10/2023

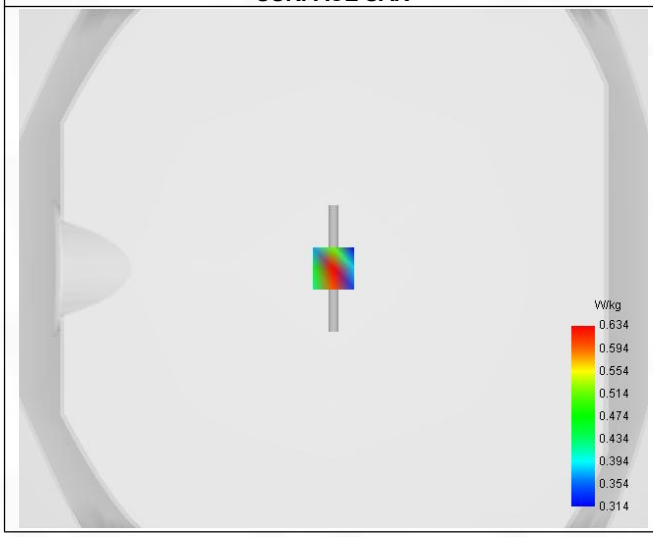
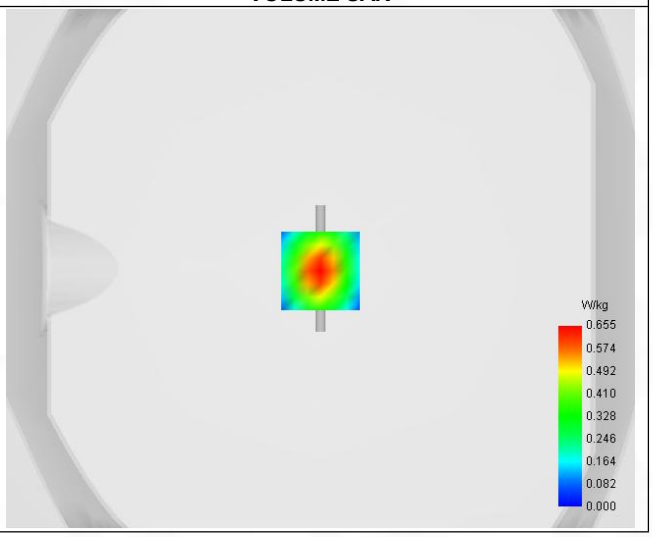
A. Experimental conditions.

Probe	SN 04/22 EPGO365
ConvF	2.40
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	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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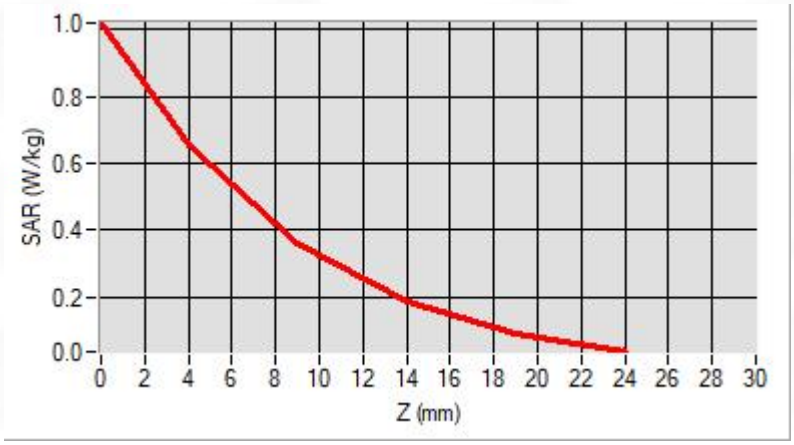
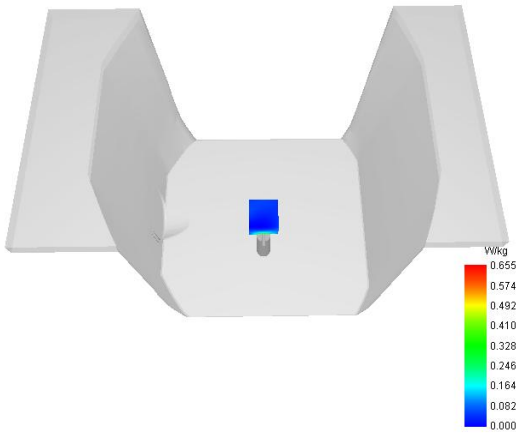
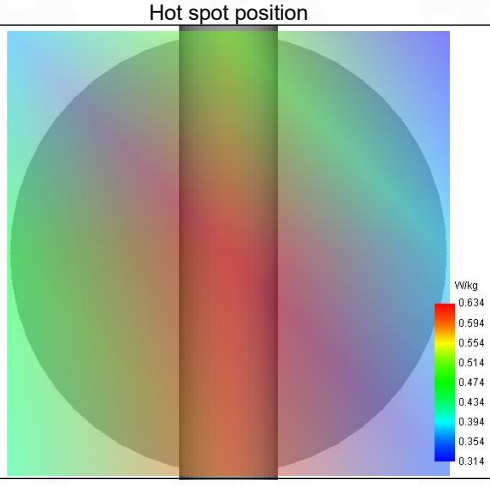


F. 3D Image

3D screen shot	Hot spot position
	

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System Performance Check Data (3700 MHz)

System check at 3700 MHz

Date of measurement: 10/10/2023

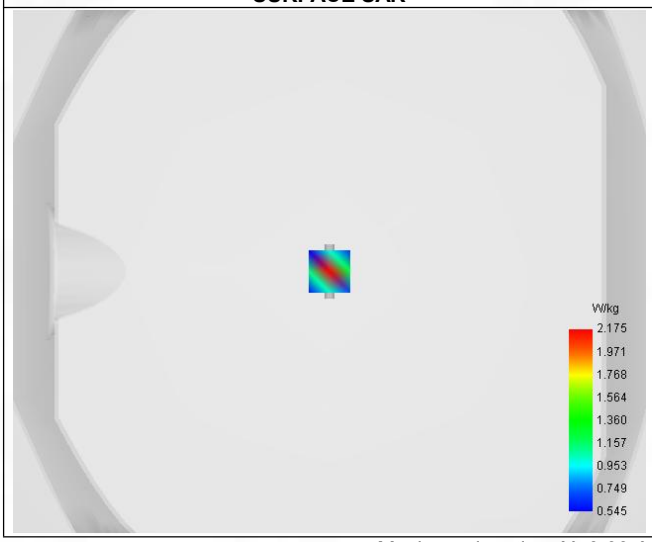
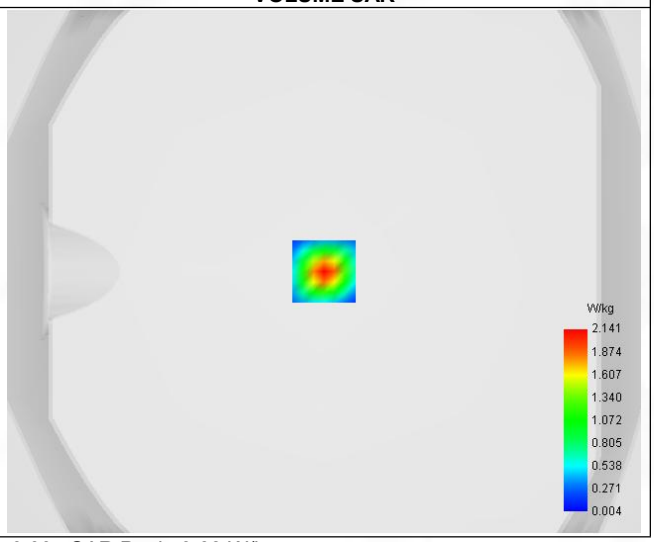
A. Experimental conditions.

Probe	SN 04/22 EPGO365
ConvF	2.02
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	CW3500
Channels	Middle
Signal	CW

B. Permitivity

Frequency (MHz)	3700.000
Relative permitivity (real part)	37.890
Relative permitivity (imaginary part)	14.196
Conductivity (S/m)	3.125

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

Maximum location: X=0.00, Y=0.00 ; SAR Peak: 3.68 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.367
SAR 1g (W/Kg)	1.035
Variation (%)	1.100
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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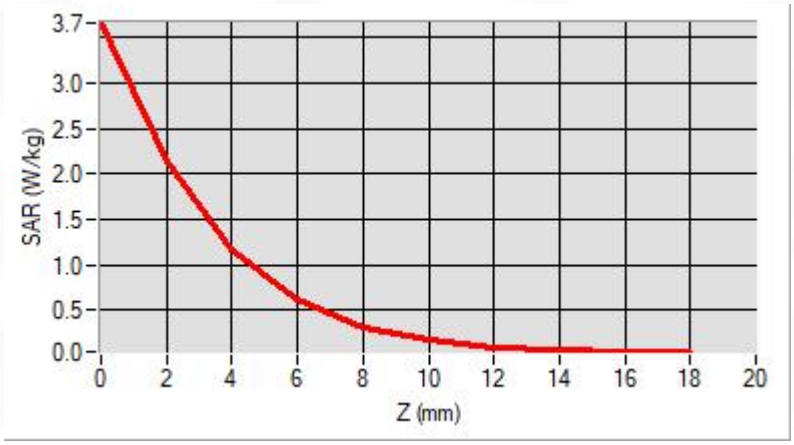
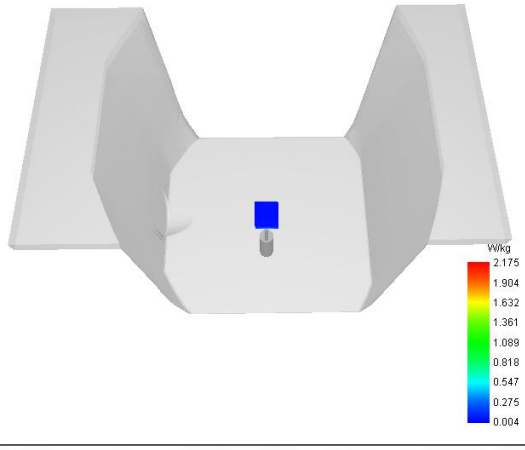
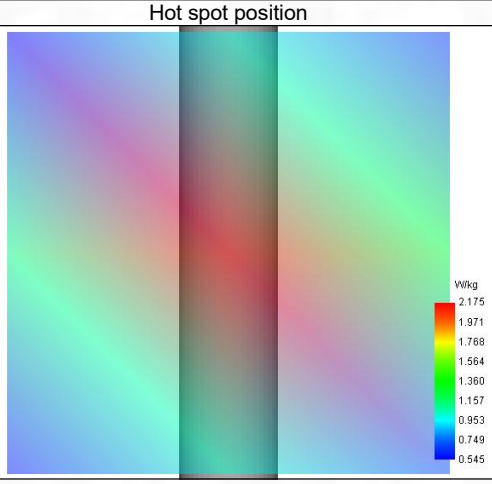


F. 3D Image

3D screen shot	Hot spot position
	

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System Performance Check Data (5200 MHz)

System check at 5200 MHz

Date of measurement:10/10/2023

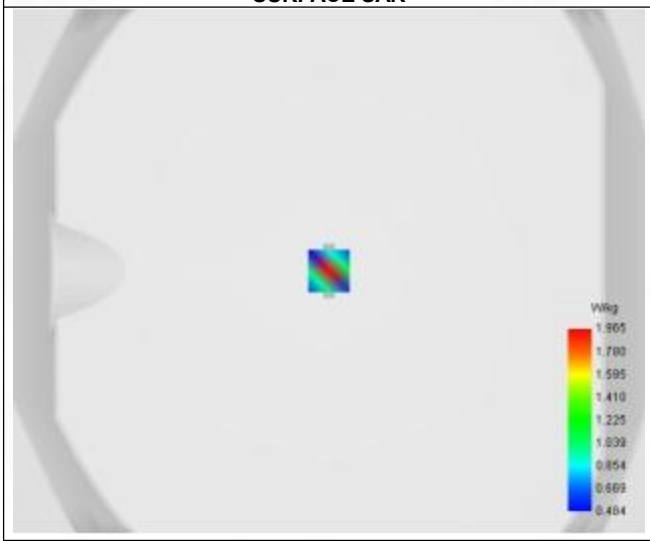
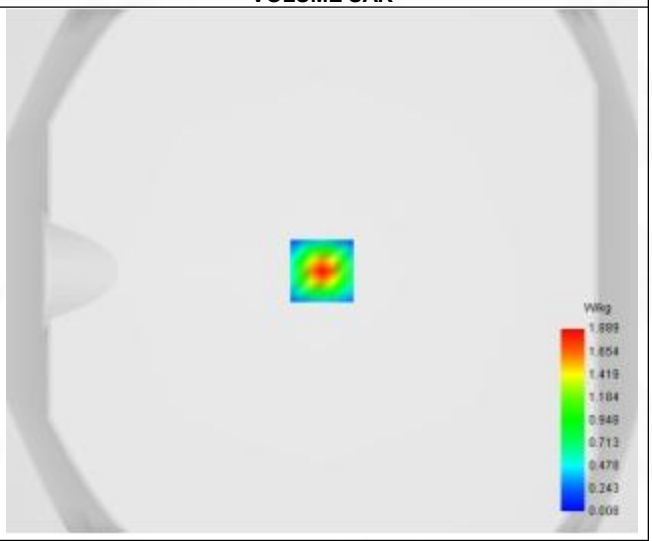
A. Experimental conditions.

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

E. Z Axis Scan

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

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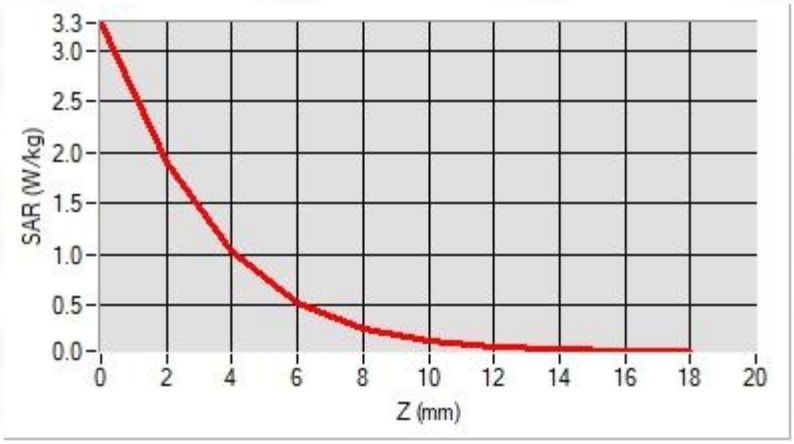
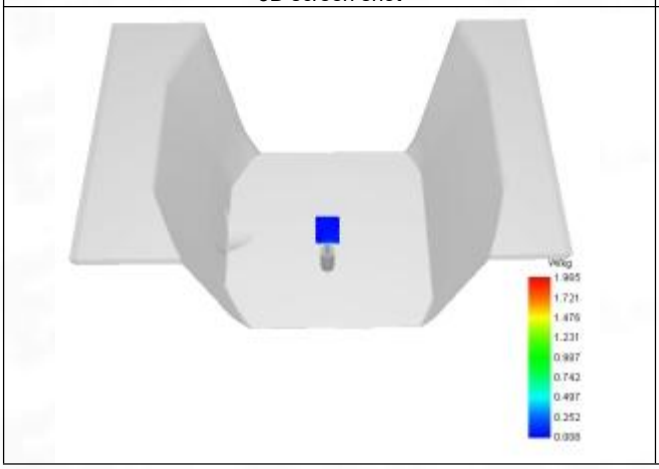
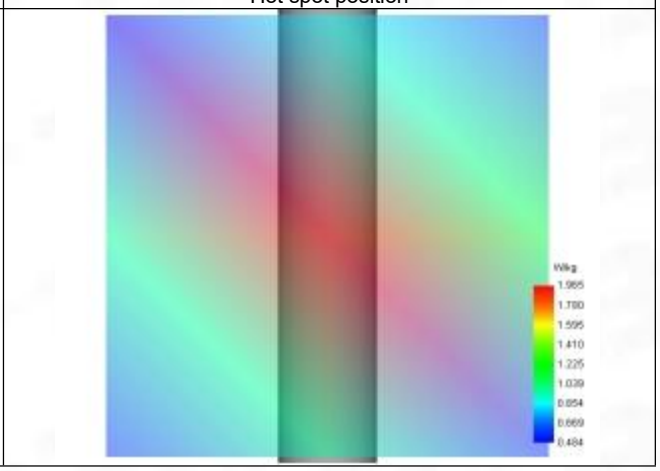


F. 3D Image

3D screen shot	Hot spot position
	

System Performance Check Data (5800 MHz)

System check at 5800 MHz

Date of measurement: 10/10/2023

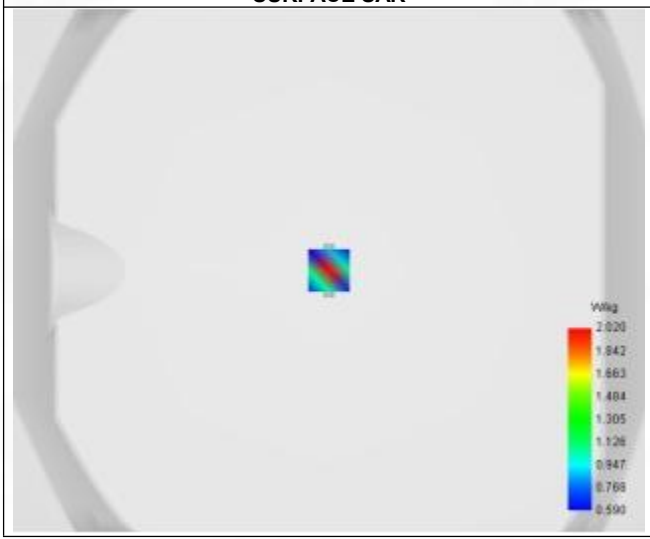
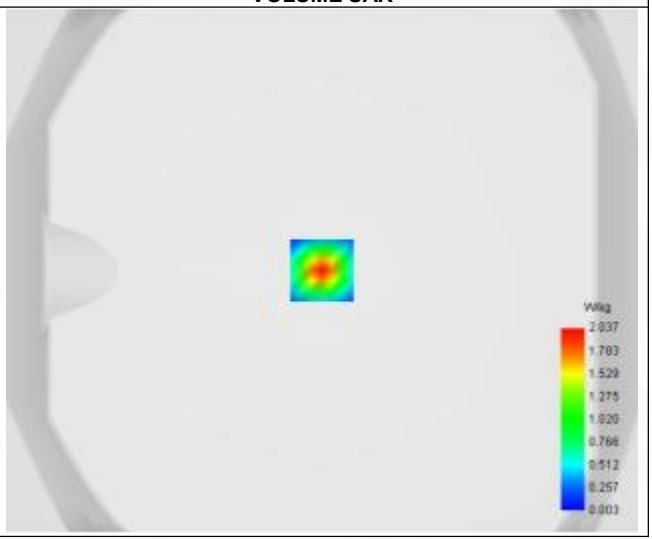
A. Experimental conditions.

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)	32.689
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)	0.280
SAR 1g (W/Kg)	1.023
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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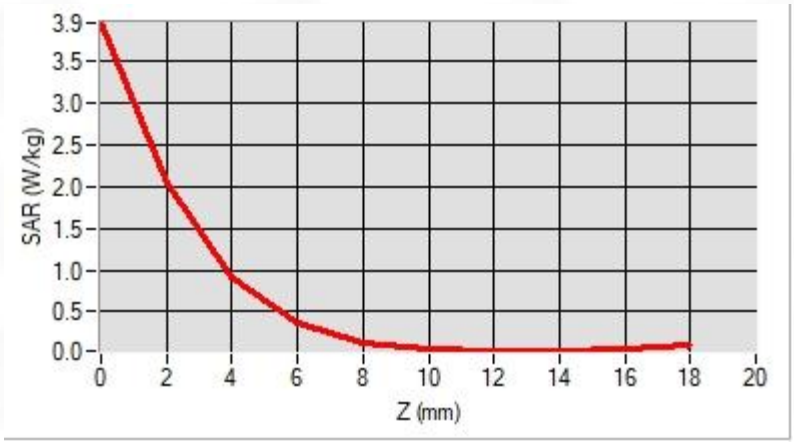
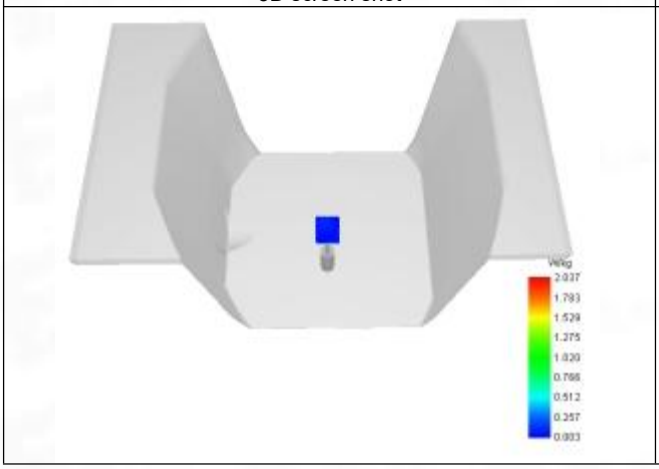
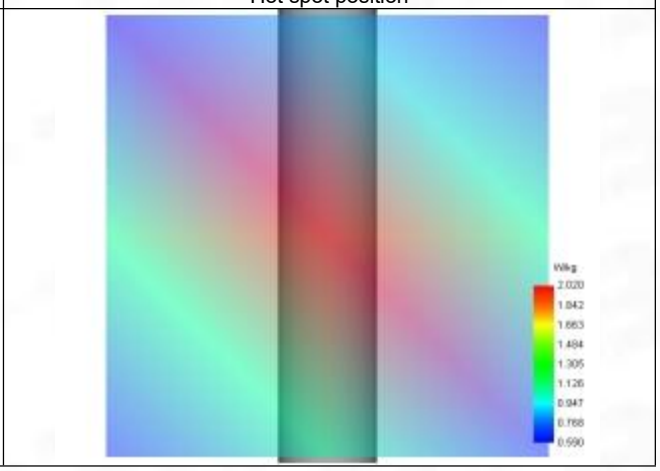


F. 3D Image

3D screen shot	Hot spot position
	

ANNEX C Test Data

1-Body with bottom position in dist. 0mm on Channel 21100 in LTE band 7

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

Date of measurement: 10/10/2023

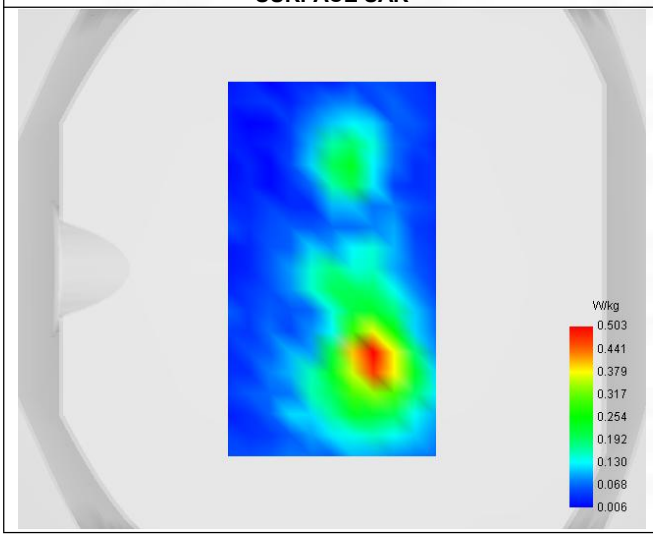
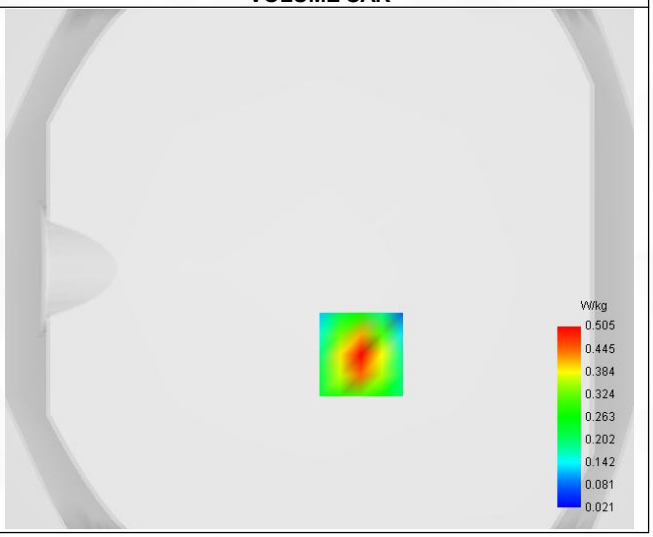
A. Experimental conditions.

Probe	SN 04/22 EPGO365
ConvF	2.40
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	LTE band 7
Channels	Middle (21100)
Signal	LTE FDD
Cell Bandwidth	20 Mhz
Modulation	SC-OFDM - QPSK
RB offset	0
RB size	1

B. Permitivity

Frequency (MHz)	2526.090
Relative permitivity (real part)	41.289
Relative permitivity (imaginary part)	13.010
Conductivity (S/m)	1.891

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

Maximum location: X=16.00, Y=-33.00 ; SAR Peak: 0.76 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.249
SAR 1g (W/Kg)	0.478
Variation (%)	-0.140
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

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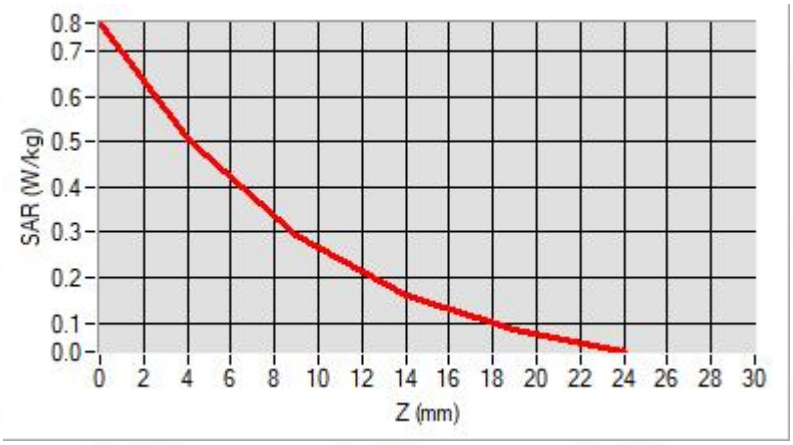
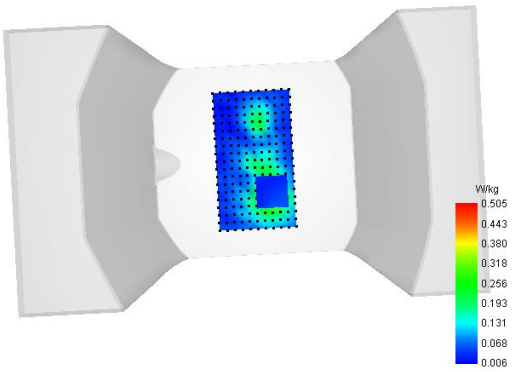
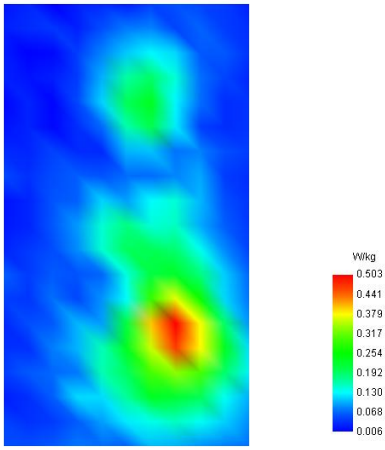
E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.761	0.505	0.291	0.160	0.083



F. 3D Image

3D screen shot	Hot spot position
	

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2-Body with bottom position in dist. 0mm on Channel 23060 in LTE band 12

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

Date of measurement: 9/10/2023

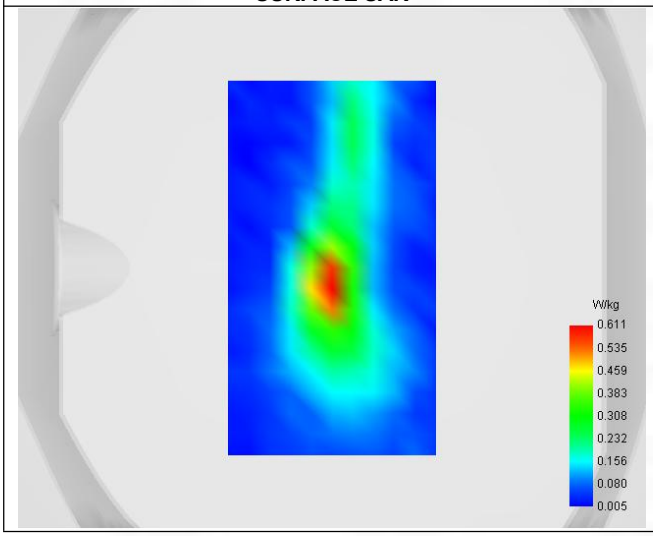
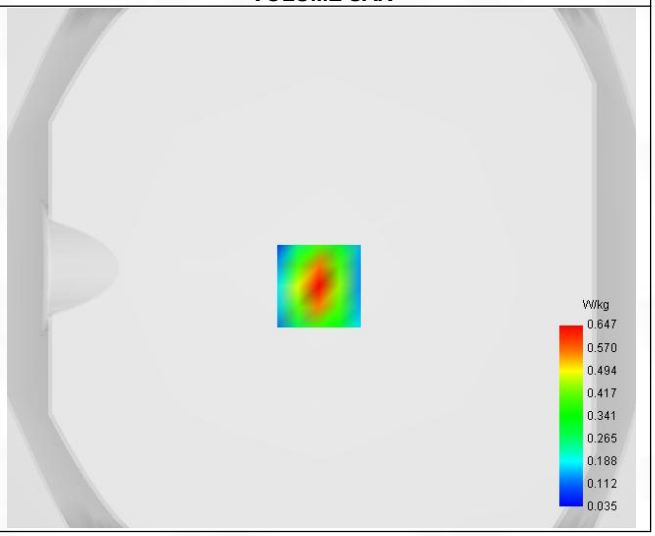
A. Experimental conditions.

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	Lower (23060)
Signal	LTE FDD
Cell Bandwidth	10 Mhz
Modulation	SC-OFDM - QPSK
RB offset	0
RB size	1

B. Permitivity

Frequency (MHz)	704.910
Relative permitivity (real part)	43.801
Relative permitivity (imaginary part)	22.505
Conductivity (S/m)	0.855

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-1.00, Y=-7.00 ; SAR Peak: 1.01 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.314
SAR 1g (W/Kg)	0.614
Variation (%)	0.480
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00

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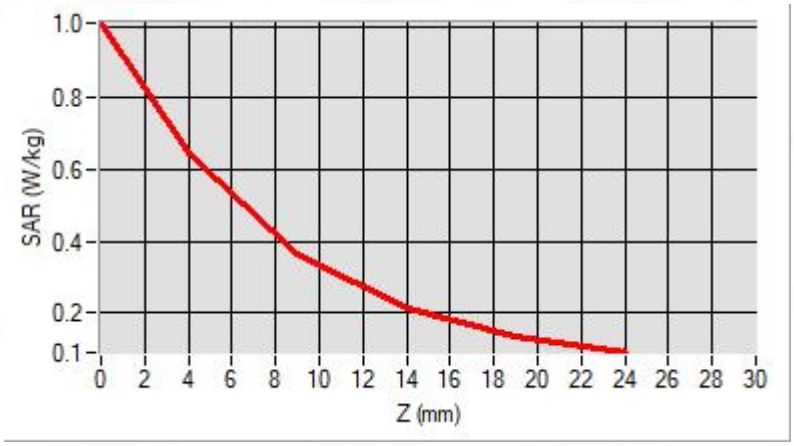
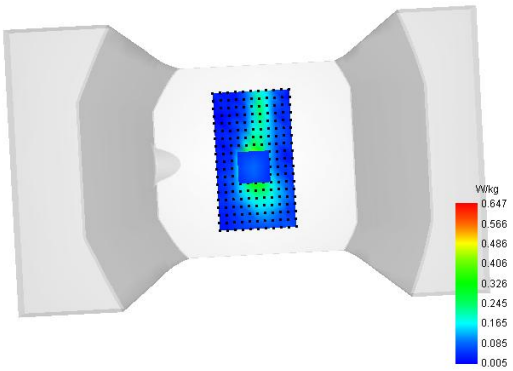
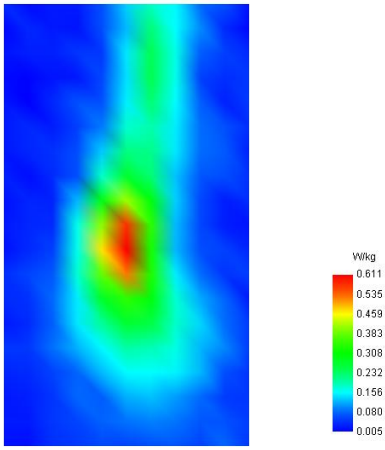
SAR (W/Kg)	1.011	0.647	0.365	0.212	0.134



F. 3D Image

3D screen shot	Hot spot position
	

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3-Body with bottom position in dist. 0mm on Channel 23230 in LTE band 13

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

Date of measurement: 9/10/2023

A. Experimental conditions.

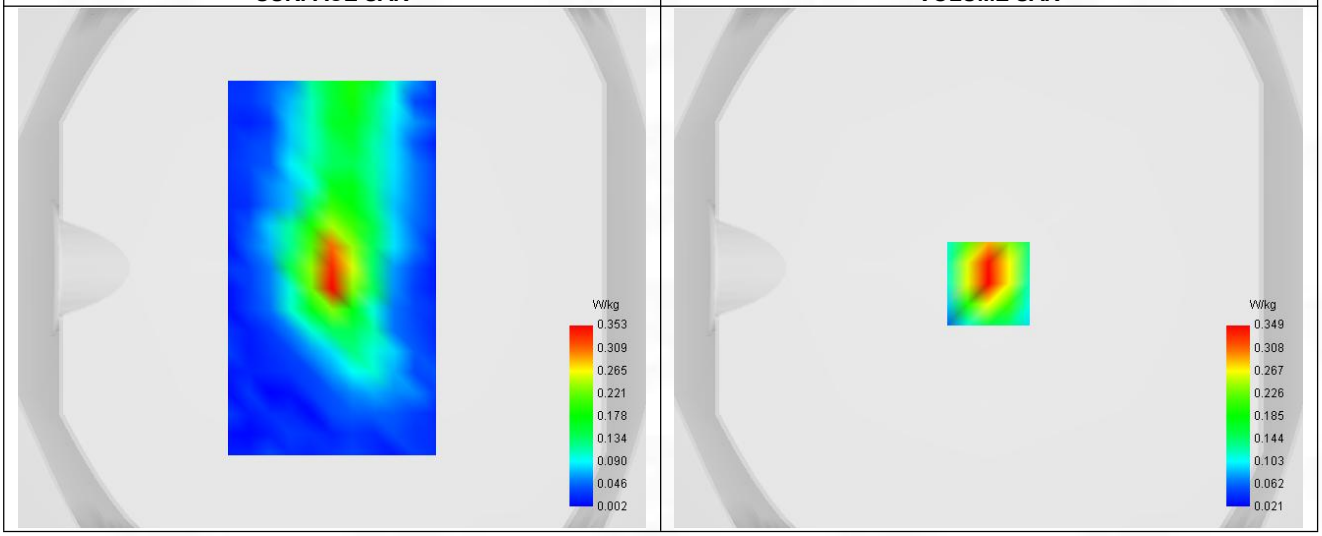
Probe	SN 04/22 EPGO365
ConvF	1.65
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	LTE band 13
Channels	Middle (23230)
Signal	LTE FDD
Cell Bandwidth	10 Mhz
Modulation	SC-OFDM - QPSK
RB offset	49
RB size	1

B. Permitivity

Frequency (MHz)	786.410
Relative permitivity (real part)	43.456
Relative permitivity (imaginary part)	20.616
Conductivity (S/m)	0.864

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR



Maximum location: X=0.00, Y=-6.00 ; SAR Peak: 0.60 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.185
SAR 1g (W/Kg)	0.352
Variation (%)	-2.530
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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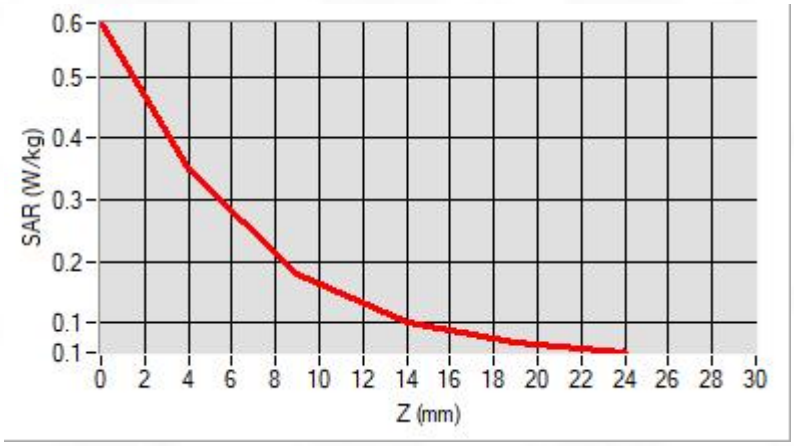
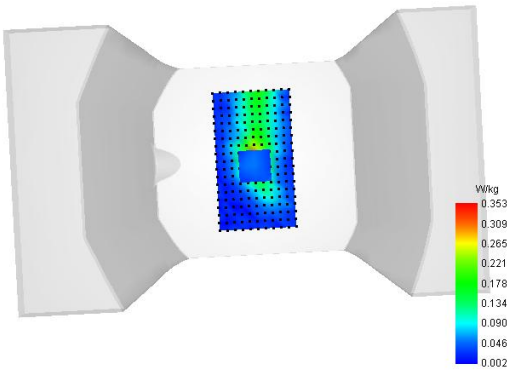
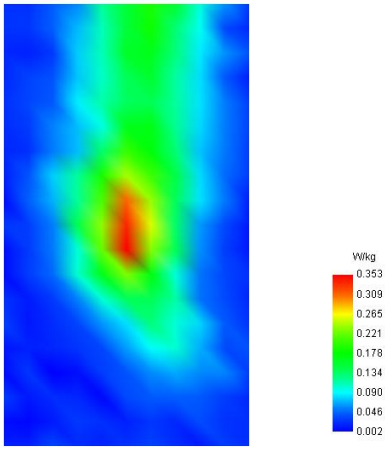
SAR (W/Kg)	0.587	0.349	0.180	0.100	0.068



F. 3D Image

3D screen shot	Hot spot position
	

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4-Body with bottom position in dist. 0mm on Channel 23330 in LTE band 14

SAR Measurement at LTE band 14 (Body, Validation Plane)

Date of measurement: 9/10/2023

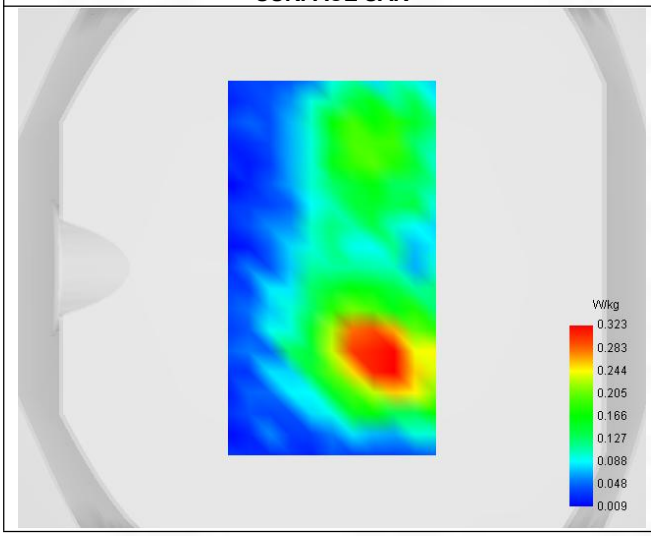
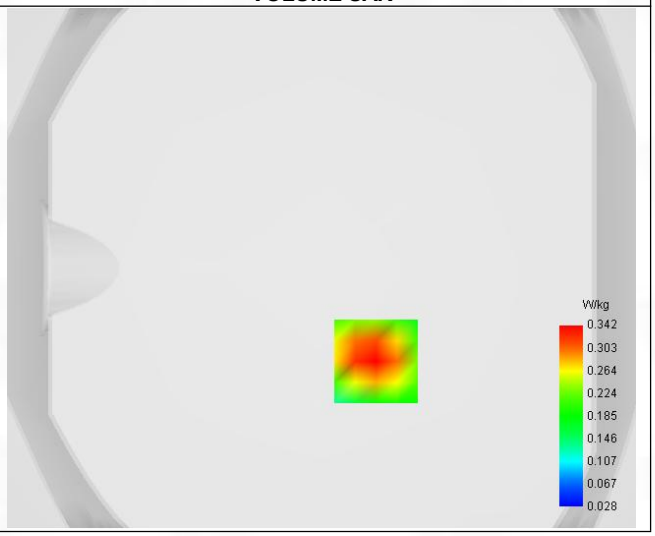
A. Experimental conditions.

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 14
Channels	Middle (23330)
Signal	LTE FDD
Cell Bandwidth	10 Mhz
Modulation	SC-OFDM - QPSK
RB offset	0
RB size	1

B. Permitivity

Frequency (MHz)	788.590
Relative permitivity (real part)	43.447
Relative permitivity (imaginary part)	20.566
Conductivity (S/m)	0.865

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

Maximum location: X=21.00, Y=-36.00 ; SAR Peak: 0.50 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.203
SAR 1g (W/Kg)	0.338
Variation (%)	2.400
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	4.00	9.00	14.00	19.00

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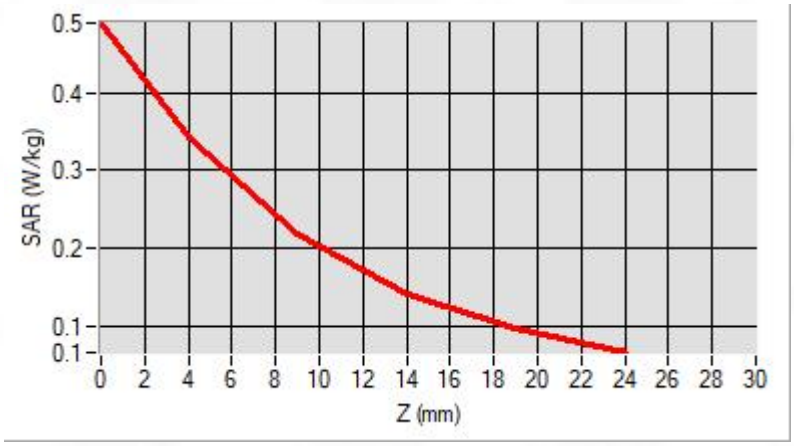
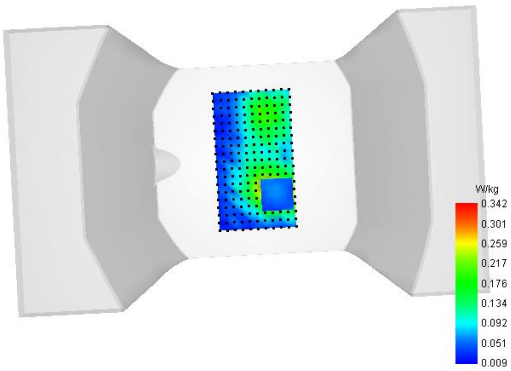
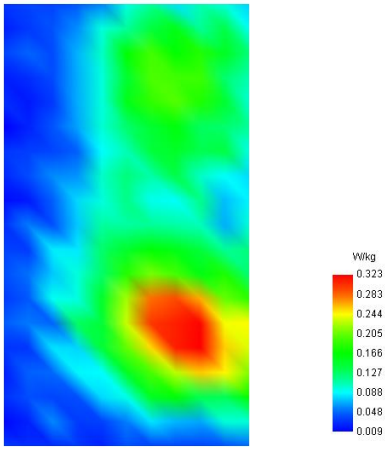
SAR (W/Kg)	0.491	0.342	0.217	0.141	0.096



F. 3D Image

3D screen shot	Hot spot position
	

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5-Body with bottom position in dist. 0mm on Channel 26140 in LTE band 25

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

Date of measurement: 9/10/2023

A. Experimental conditions.

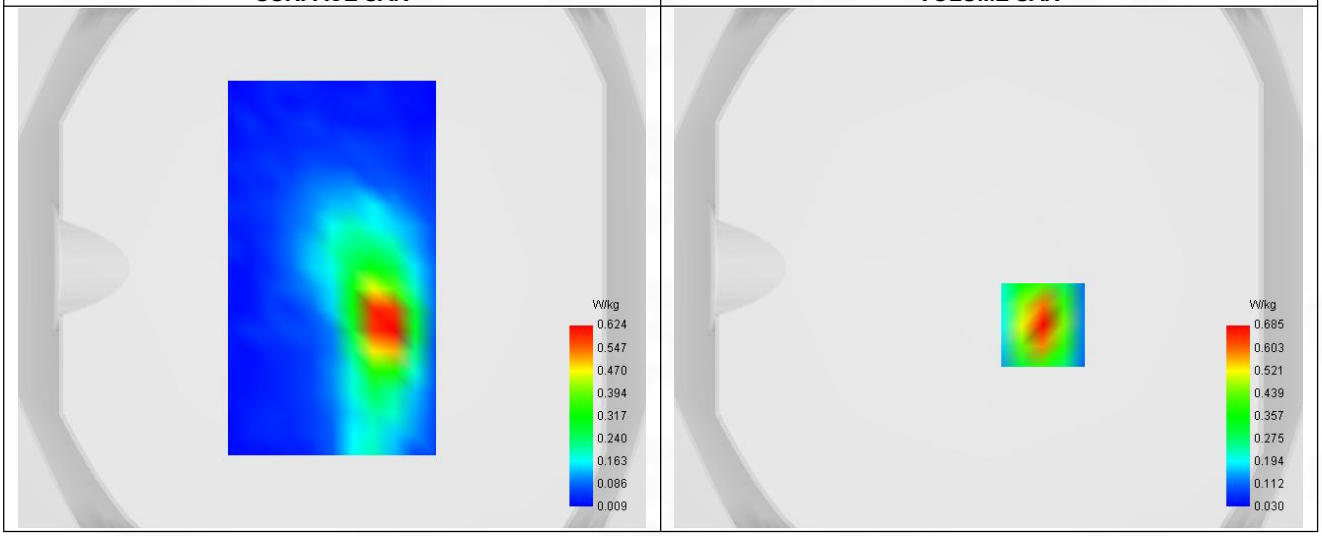
Probe	SN 04/22 EPGO365
ConvF	2.24
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	LTE band 25
Channels	Lower (26140)
Signal	LTE FDD
Cell Bandwidth	20 Mhz
Modulation	SC-OFDM - QPSK
RB offset	99
RB size	1

B. Permitivity

Frequency (MHz)	1868.910
Relative permitivity (real part)	41.509
Relative permitivity (imaginary part)	13.601
Conductivity (S/m)	1.398

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR



Maximum location: X=21.00, Y=-22.00 ; SAR Peak: 1.06 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.335
SAR 1g (W/Kg)	0.650
Variation (%)	-1.310
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00

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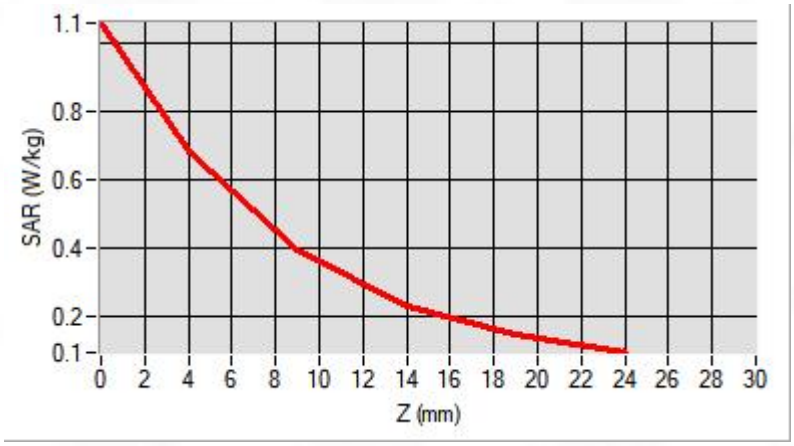
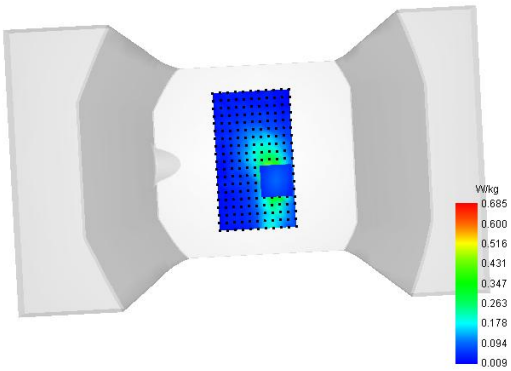
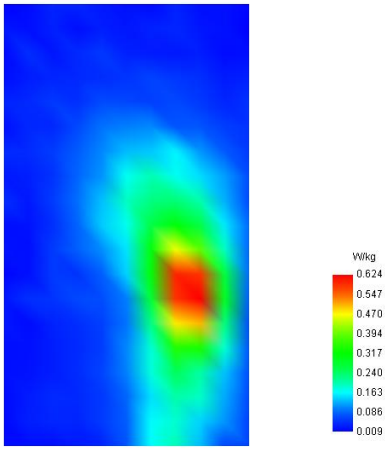
SAR (W/Kg)	1.057	0.685	0.392	0.231	0.147



F. 3D Image

3D screen shot	Hot spot position
	

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6-Body with bottom position in dist. 0mm on Channel 26915 in LTE band 26

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

Date of measurement: 9/10/2023

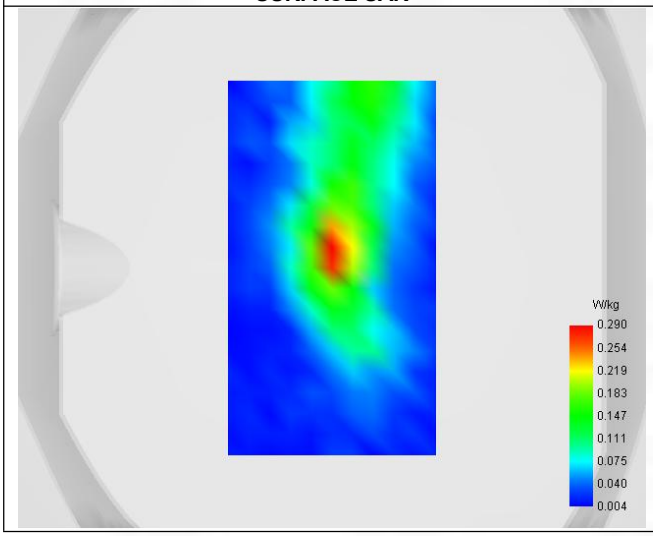
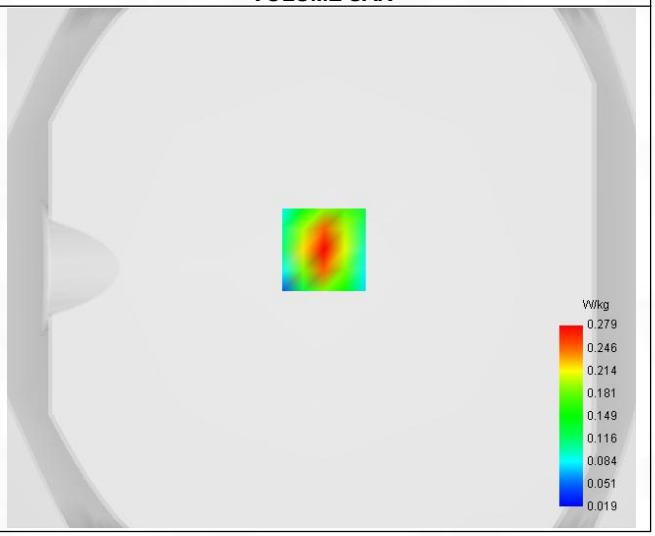
A. Experimental conditions.

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 26
Channels	Middle (26915)
Signal	LTE FDD
Cell Bandwidth	15 Mhz
Modulation	SC-OFDM - QPSK
RB offset	0
RB size	1

B. Permitivity

Frequency (MHz)	814.840
Relative permitivity (real part)	43.335
Relative permitivity (imaginary part)	19.957
Conductivity (S/m)	0.868

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

Maximum location: X=1.00, Y=7.00 ; SAR Peak: 0.45 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.148
SAR 1g (W/Kg)	0.276
Variation (%)	-1.450
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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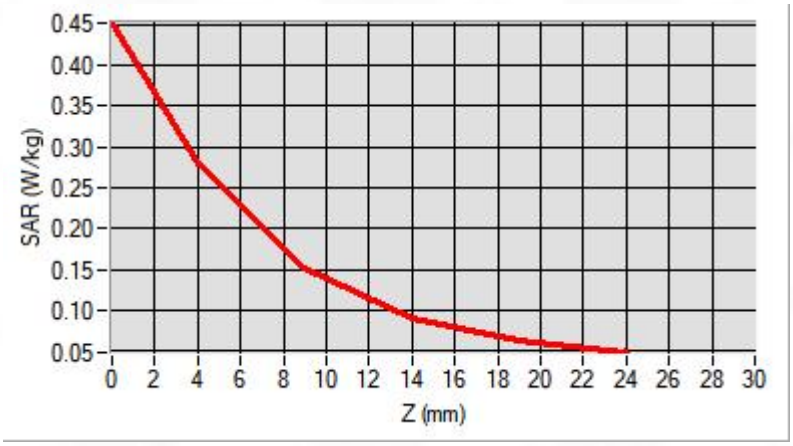
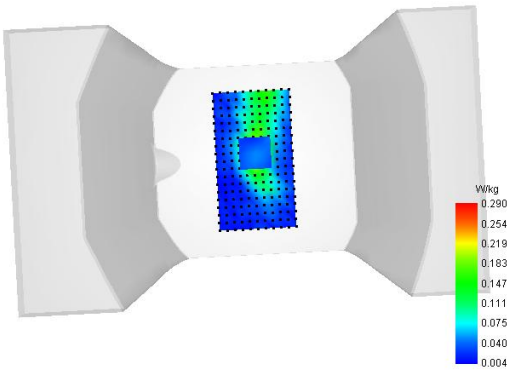
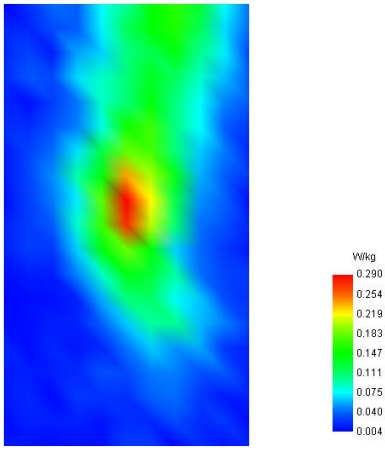
SAR (W/Kg)	0.452	0.279	0.152	0.089	0.062



F. 3D Image

3D screen shot	Hot spot position
	

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7-Body with bottom position in dist. 0mm on Channel 27710 in LTE band 30

SAR Measurement at LTE band 30 (Body, Validation Plane)

Date of measurement: 9/10/2023

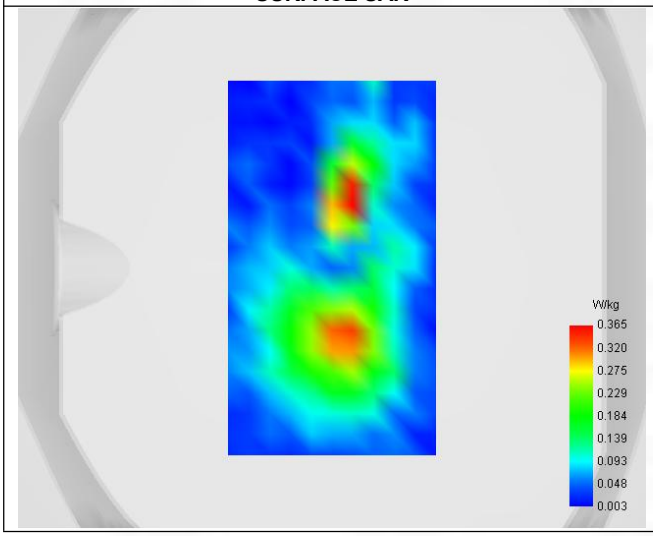
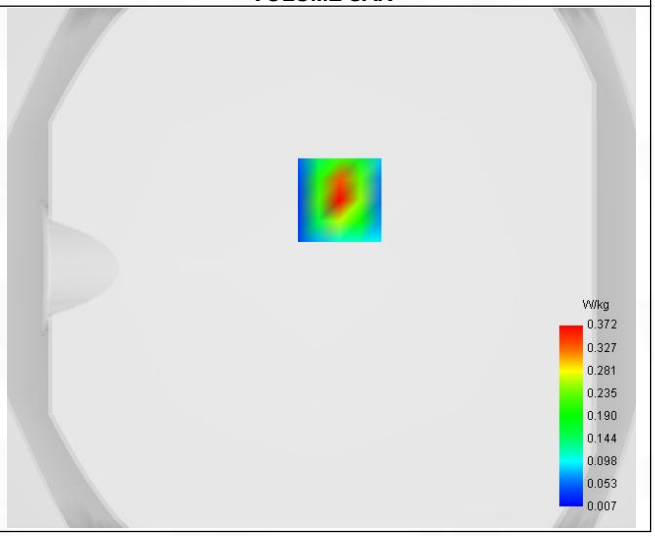
A. Experimental conditions.

Probe	SN 04/22 EPGO365
ConvF	2.36
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	LTE band 30
Channels	Middle (27710)
Signal	LTE FDD
Cell Bandwidth	10 Mhz
Modulation	SC-OFDM - QPSK
RB offset	24
RB size	1

B. Permitivity

Frequency (MHz)	2309.910
Relative permitivity (real part)	41.418
Relative permitivity (imaginary part)	13.350
Conductivity (S/m)	1.708

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

Maximum location: X=7.00, Y=26.00 ; SAR Peak: 0.61 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.165
SAR 1g (W/Kg)	0.353
Variation (%)	-1.640
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00

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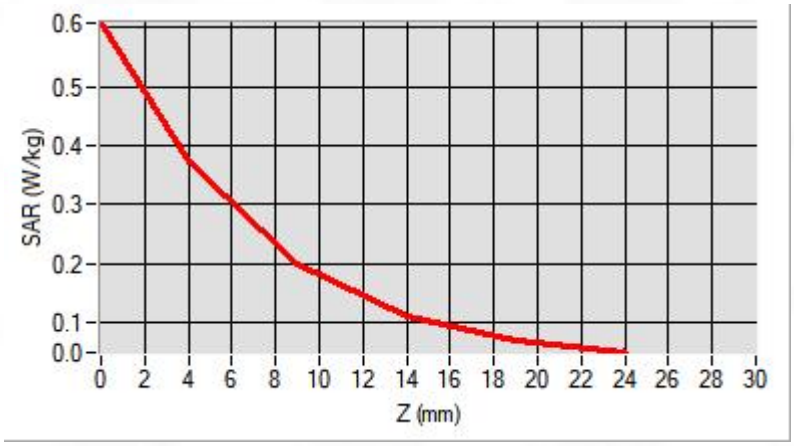
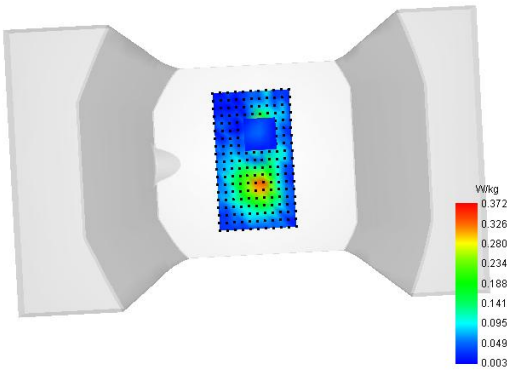
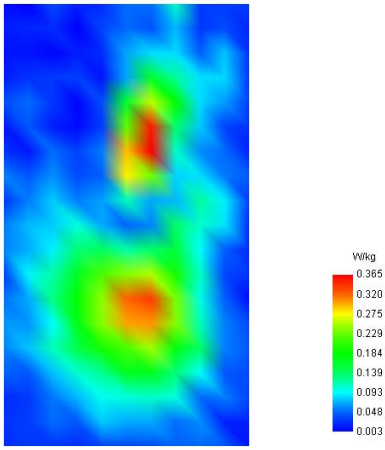
SAR (W/Kg)	0.608	0.372	0.198	0.111	0.071



F. 3D Image

3D screen shot	Hot spot position
	

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8-Body with bottom position in dist. 0mm on Channel 40620 in LTE band 41

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

Date of measurement: 10/10/2023

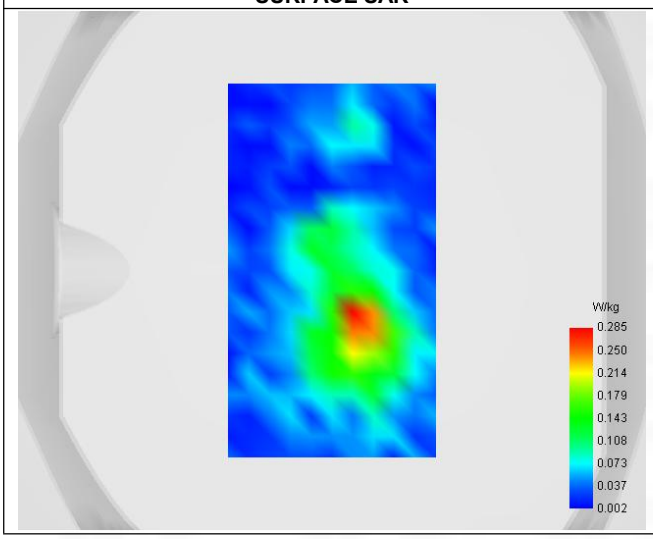
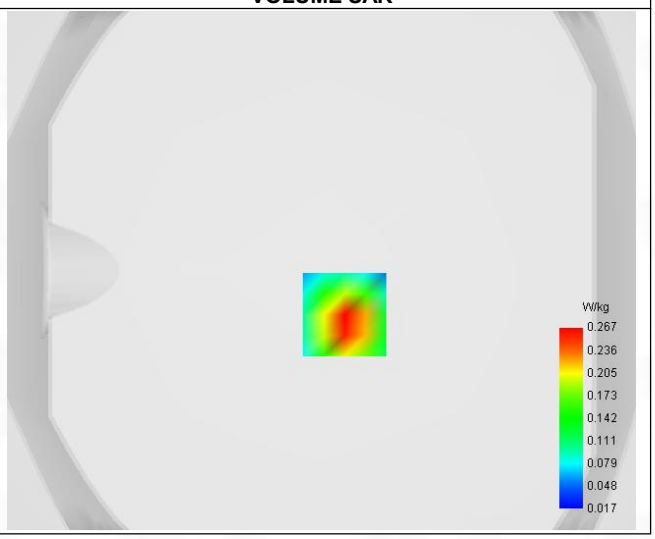
A. Experimental conditions.

Probe	SN 04/22 EPGO365
ConvF	2.40
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	LTE band 41
Channels	Middle (40620)
Signal	LTE TDD
Cell Bandwidth	20 Mhz
Modulation	SC-OFDM - QPSK
RB offset	0
RB size	1
Subframe configuration	0
Special subframe configuration	0
Cyclic prefix	Normal
Duty Cycle (%)	0.61

B. Permitivity

Frequency (MHz)	2584.090
Relative permitivity (real part)	41.211
Relative permitivity (imaginary part)	12.759
Conductivity (S/m)	1.953

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

Maximum location: X=9.00, Y=-17.00 ; SAR Peak: 0.47 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.136
SAR 1g (W/Kg)	0.263
Variation (%)	-2.590
Horizontal validation criteria: minimum distance (mm)	0.000000

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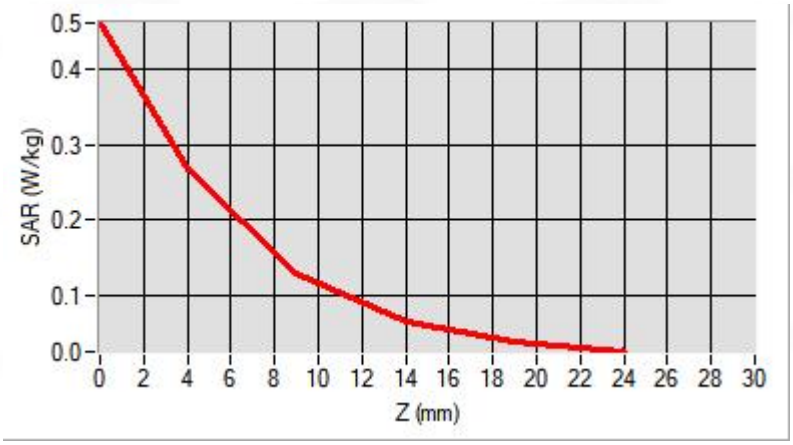
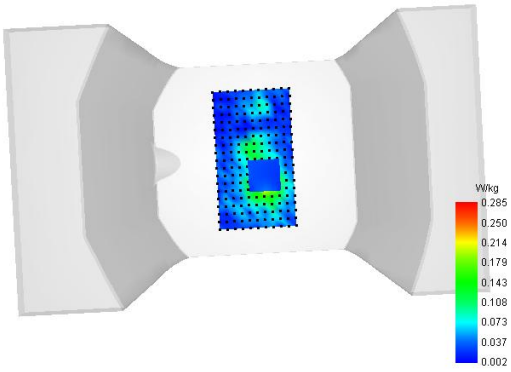
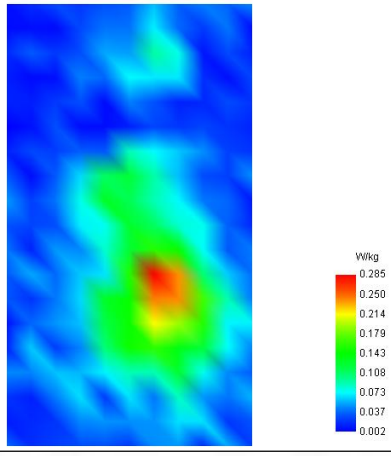
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.460	0.267	0.130	0.066	0.039



F. 3D Image

3D screen shot	Hot spot position
	

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9-Body with bottom position in dist. 0mm on Channel 56640 in LTE band 48

SAR Measurement at LTE band 48 (Body, Validation Plane)

Date of measurement: 10/10/2023

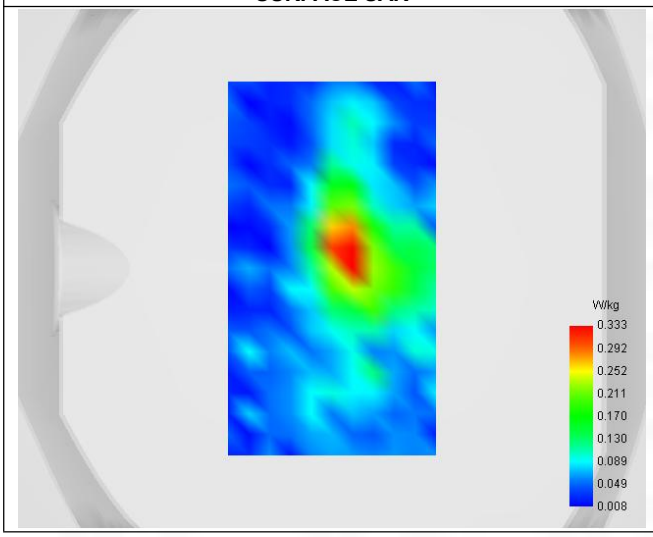
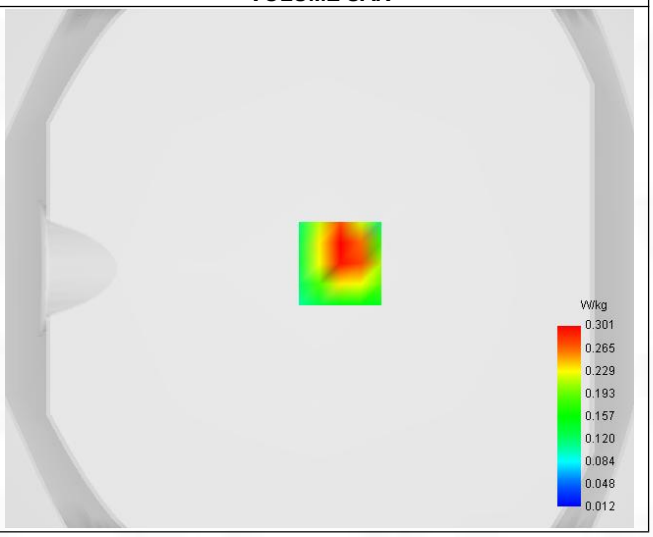
A. Experimental conditions.

Probe	SN 04/22 EPGO365
ConvF	2.00
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 48
Channels	Higher (56640)
Signal	LTE TDD
Cell Bandwidth	20 Mhz
Modulation	SC-OFDM - QPSK
RB offset	0
RB size	1
Subframe configuration	0
Special subframe configuration	0
Cyclic prefix	Normal
Duty Cycle (%)	0.61

B. Permitivity

Frequency (MHz)	3551.090
Relative permitivity (real part)	38.337
Relative permitivity (imaginary part)	13.992
Conductivity (S/m)	2.969

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

Maximum location: X=8.00, Y=2.00 ; SAR Peak: 0.53 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.145
SAR 1g (W/Kg)	0.288
Variation (%)	1.620
Horizontal validation criteria: minimum distance (mm)	0.000000

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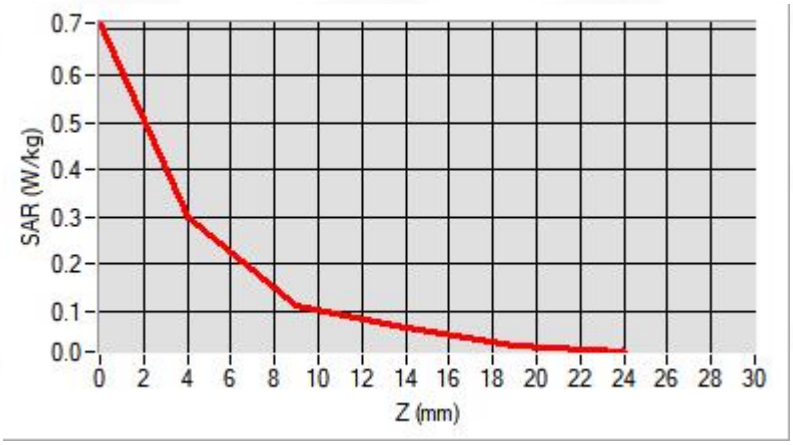
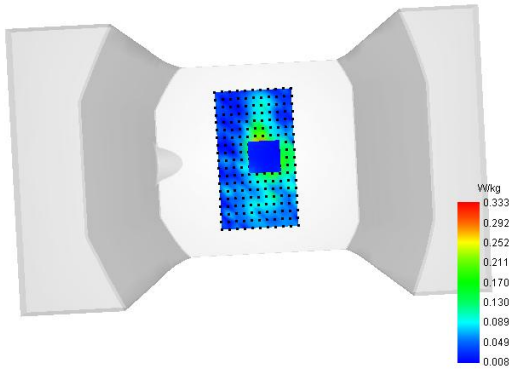
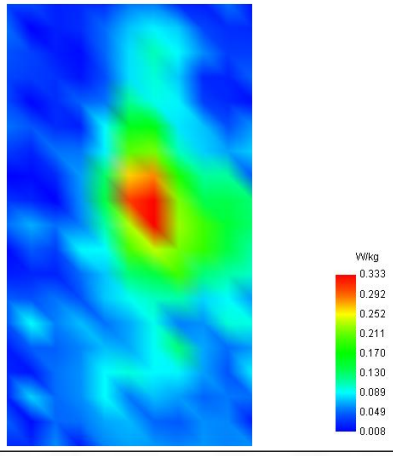
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.712	0.301	0.114	0.064	0.029



F. 3D Image

3D screen shot	Hot spot position
	

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10-Body with bottom position in dist. 0mm on Channel 132072 in LTE band 66

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

Date of measurement: 9/10/2023

A. Experimental conditions.

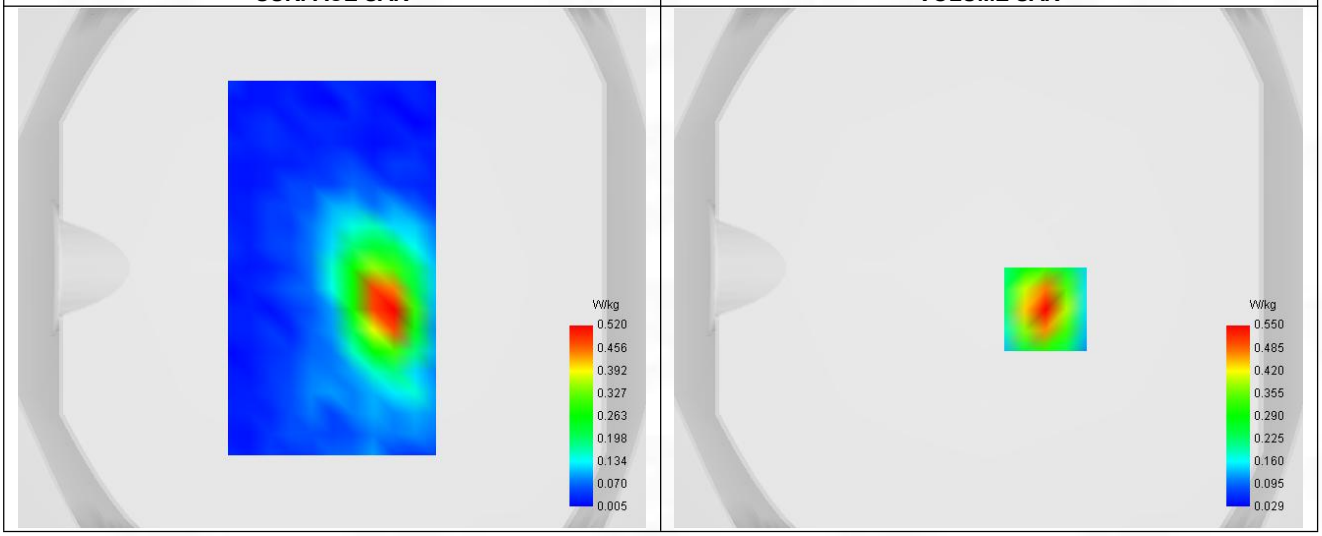
Probe	SN 04/22 EPGO365
ConvF	1.96
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	LTE band 66
Channels	Lower (132072)
Signal	LTE FDD
Cell Bandwidth	20 Mhz
Modulation	SC-OFDM - QPSK
RB offset	99
RB size	1

B. Permitivity

Frequency (MHz)	1728.910
Relative permitivity (real part)	41.657
Relative permitivity (imaginary part)	14.488
Conductivity (S/m)	1.333

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR



Maximum location: X=22.00, Y=-16.00 ; SAR Peak: 0.86 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.282
SAR 1g (W/Kg)	0.531
Variation (%)	4.640
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00

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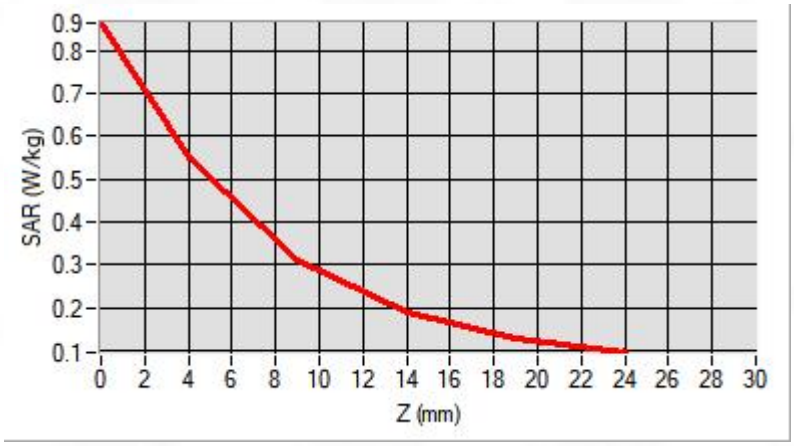
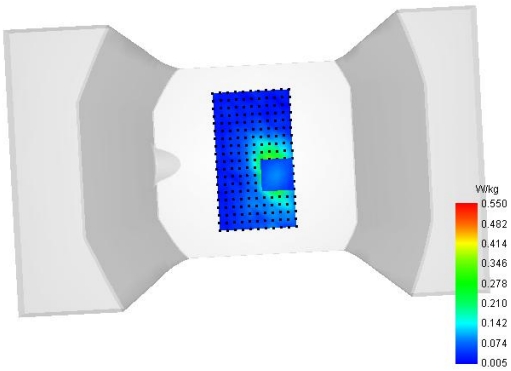
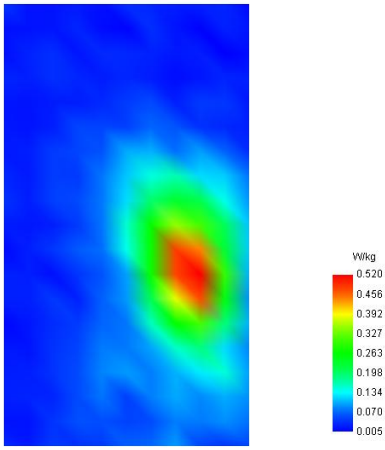
SAR (W/Kg)	0.864	0.550	0.312	0.188	0.128



F. 3D Image

3D screen shot	Hot spot position
	

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11-Body with bottom position in dist. 0mm on Channel 133372 in LTE band 71

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

Date of measurement: 9/10/2023

A. Experimental conditions.

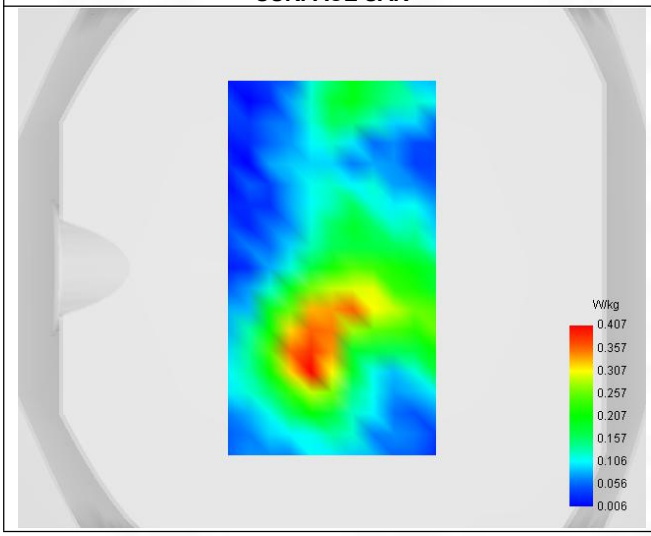
Probe	SN 04/22 EPGO365
ConvF	1.65
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	LTE band 71
Channels	Higher (133372)
Signal	LTE FDD
Cell Bandwidth	20 Mhz
Modulation	SC-OFDM - QPSK
RB offset	0
RB size	1

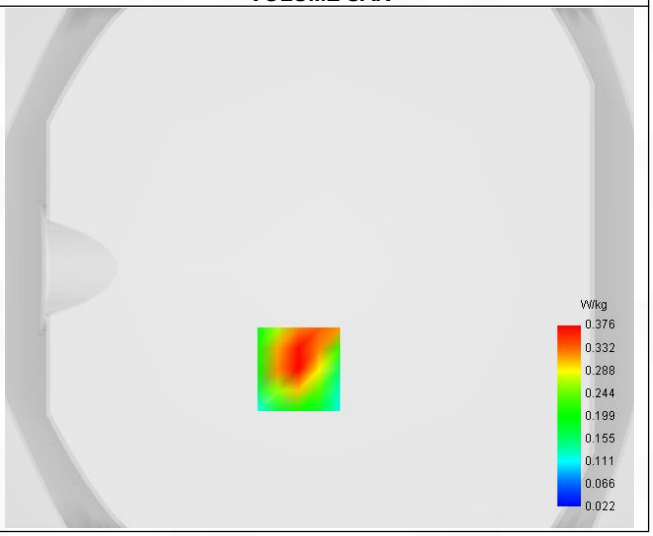
B. Permitivity

Frequency (MHz)	688.910
Relative permitivity (real part)	43.869
Relative permitivity (imaginary part)	22.876
Conductivity (S/m)	0.853

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR





Maximum location: X=-8.00, Y=-39.00 ; SAR Peak: 0.57 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.207
SAR 1g (W/Kg)	0.376
Variation (%)	-2.020
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00

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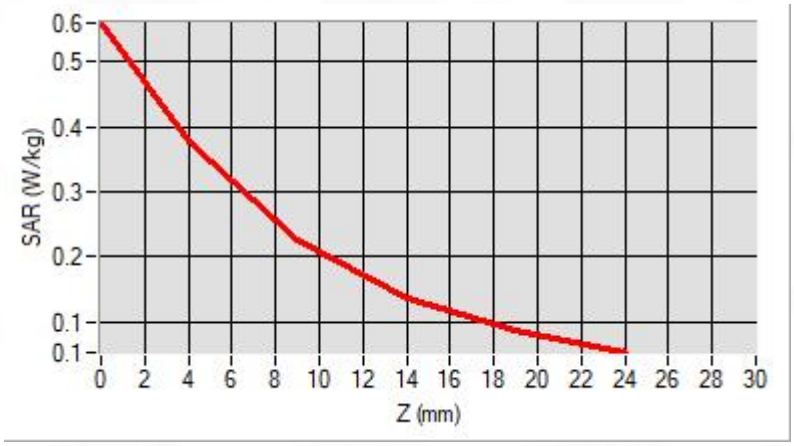
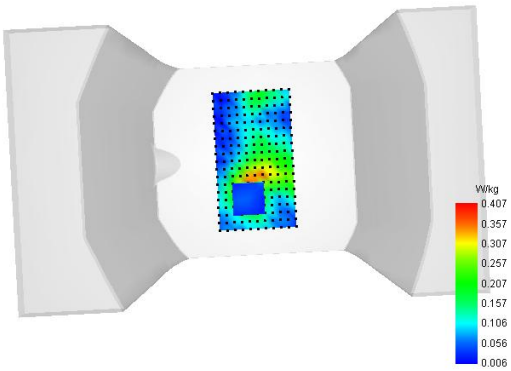
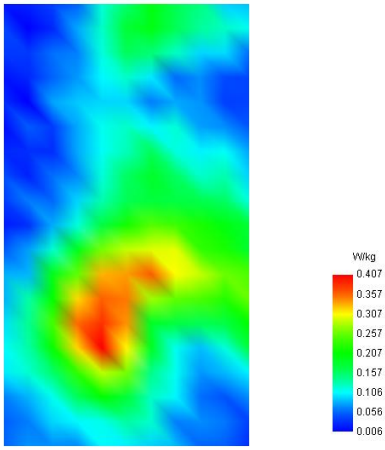
SAR (W/Kg)	0.559	0.376	0.226	0.137	0.086



F. 3D Image

3D screen shot	Hot spot position
	

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

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

Date of measurement: 10/10/2023

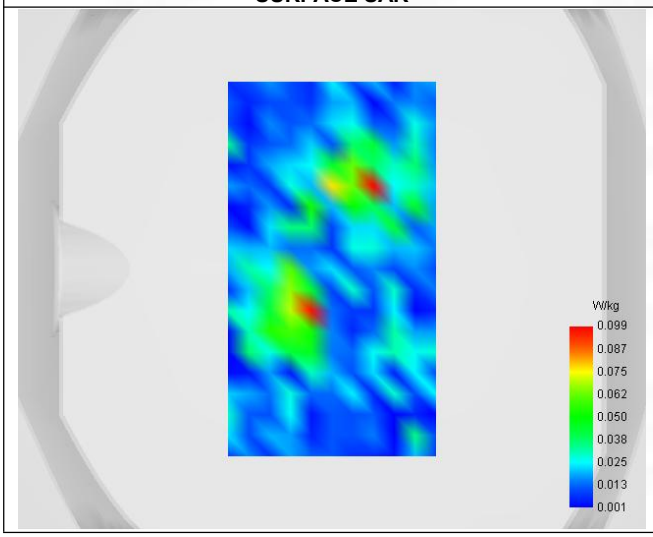
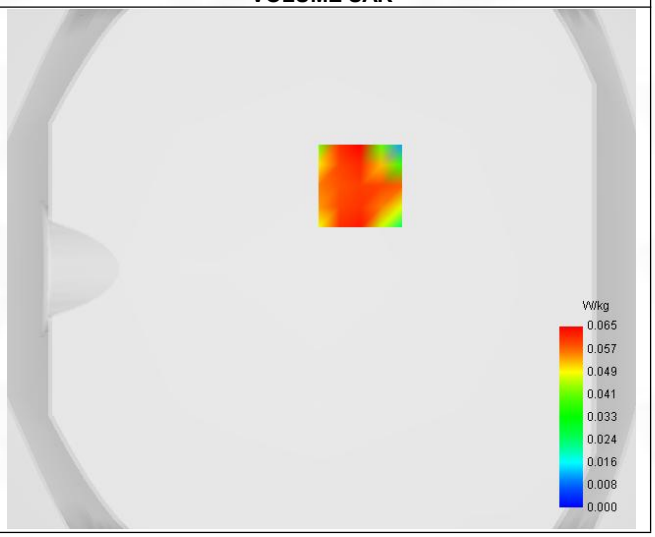
A. Experimental conditions.

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

B. Permitivity

Frequency (MHz)	2437.000
Relative permitivity (real part)	41.393
Relative permitivity (imaginary part)	13.341
Conductivity (S/m)	1.801

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

Maximum location: X=15.00, Y=32.00 ; SAR Peak: 0.21 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.049
SAR 1g (W/Kg)	0.099
Variation (%)	-3.130
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)	0.152	0.065	0.042	0.040	0.022

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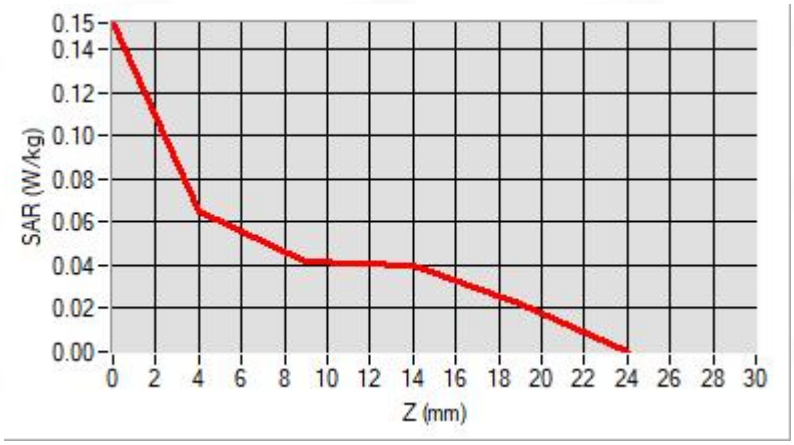
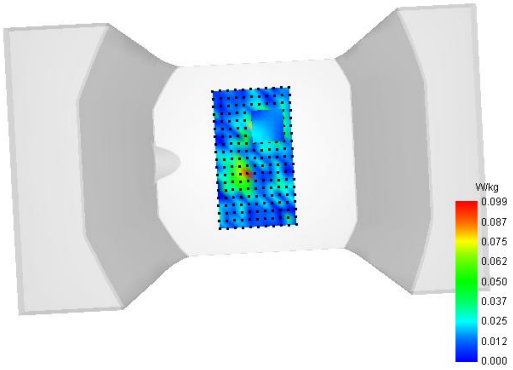
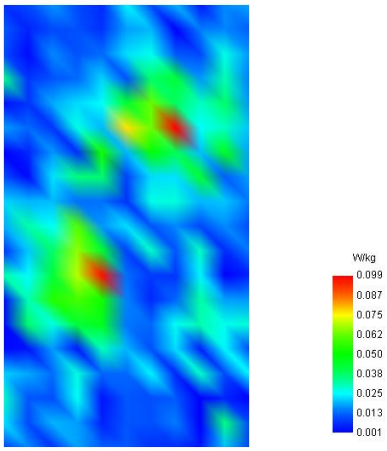


F. 3D Image

3D screen shot	Hot spot position
	

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13-Body with back position in dist. 0mm on Channel 46 in IEEE 802.11ac U-NII

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

Date of measurement: 9/10/2023

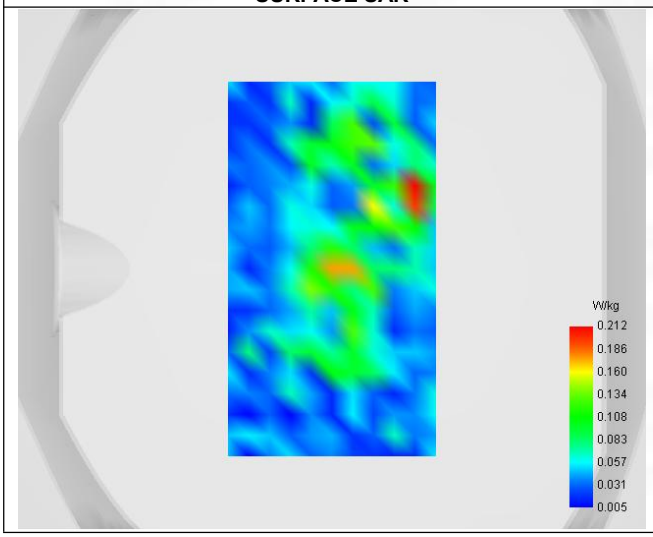
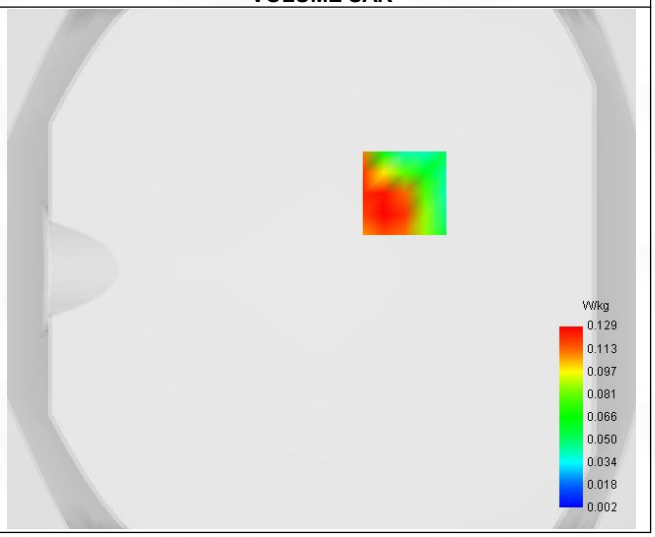
A. Experimental conditions.

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 802.11ac U-NII
Channels	Middle (46)
Signal	IEEE 802.11

B. Permitivity

Frequency (MHz)	5230.000
Relative permitivity (real part)	33.360
Relative permitivity (imaginary part)	16.261
Conductivity (S/m)	4.730

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

Maximum location: X=32.00, Y=29.00 ; SAR Peak: 0.18 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.075
SAR 1g (W/Kg)	0.111
Variation (%)	-3.950
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)	0.271	0.129	0.045	0.068	0.036

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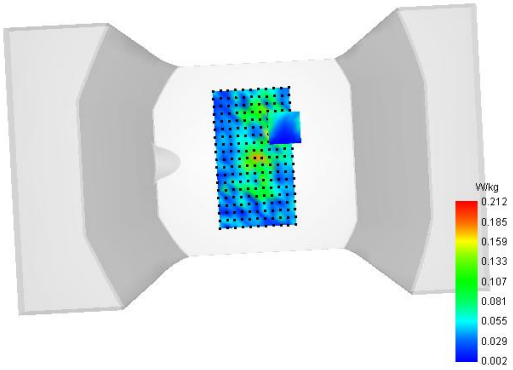
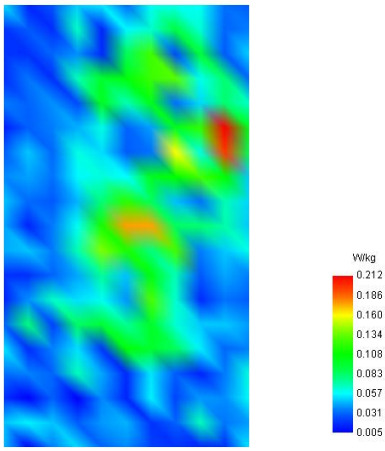
F. 3D Image

3D screen shot	Hot spot position
	

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14-Body with back position in dist. 0mm on Channel 159 in IEEE 802.11ac U-NII

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

Date of measurement: 10/10/2023

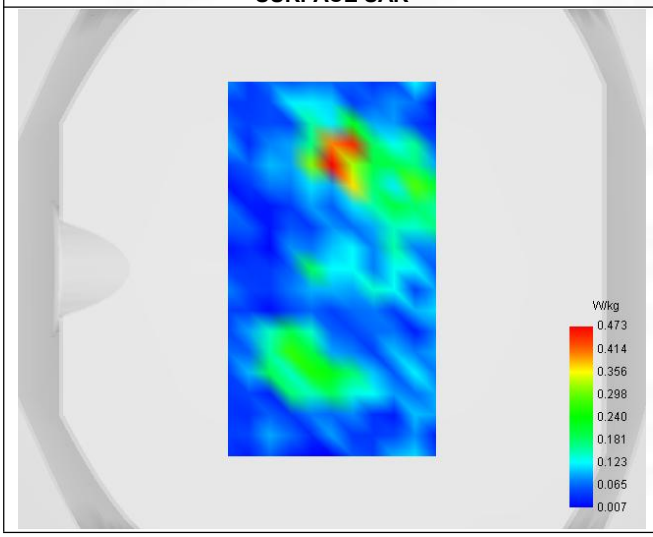
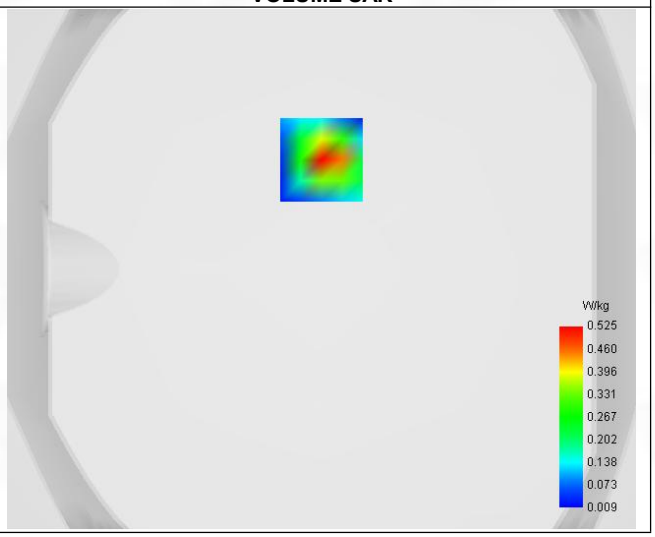
A. Experimental conditions.

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 802.11ac U-NII
Channels	Higher (159)
Signal	IEEE 802.11

B. Permitivity

Frequency (MHz)	5795.000
Relative permitivity (real part)	32.694
Relative permitivity (imaginary part)	16.479
Conductivity (S/m)	5.305

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

Maximum location: X=0.00, Y=42.00 ; SAR Peak: 0.94 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.126
SAR 1g (W/Kg)	0.313
Variation (%)	-1.610
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	2.00	7.00	12.00	17.00
SAR (W/Kg)	0.875	0.525	0.108	0.022	0.023

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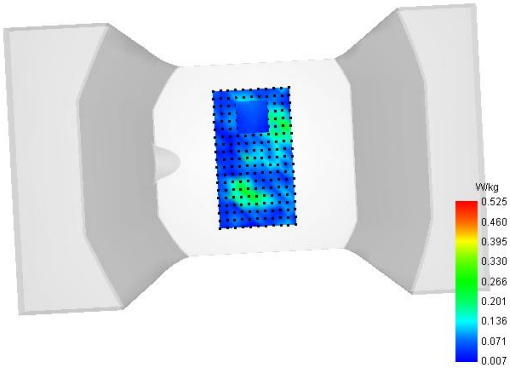
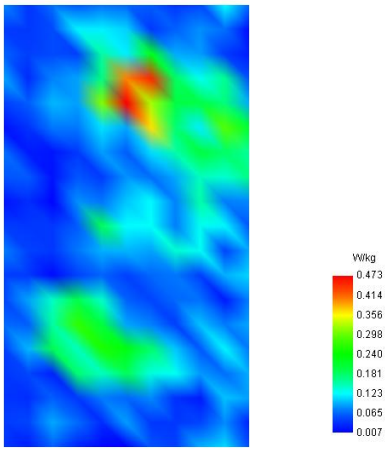
F. 3D Image

3D screen shot	Hot spot position
	

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15-Body with back position in dist. 0mm on Channel 78 in Bluetooth

SAR Measurement at Bluetooth (Body, Validation Plane)

Date of measurement: 10/10/2023

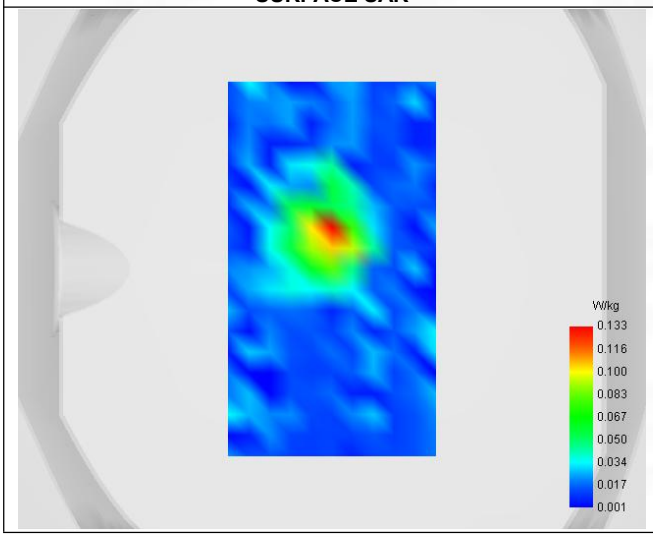
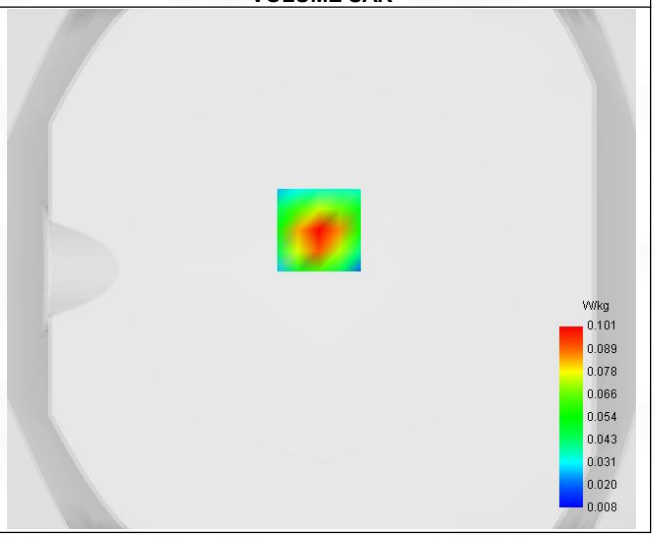
A. Experimental conditions.

Probe	SN 04/22 EPGO365
ConvF	2.36
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	Bluetooth
Channels	Higher (78)
Signal	Bluetooth

B. Permitivity

Frequency (MHz)	2480.000
Relative permitivity (real part)	41.350
Relative permitivity (imaginary part)	13.210
Conductivity (S/m)	1.842

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-1.00, Y=15.00 ; SAR Peak: 0.16 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.054
SAR 1g (W/Kg)	0.099
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	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.156	0.101	0.059	0.036	0.025

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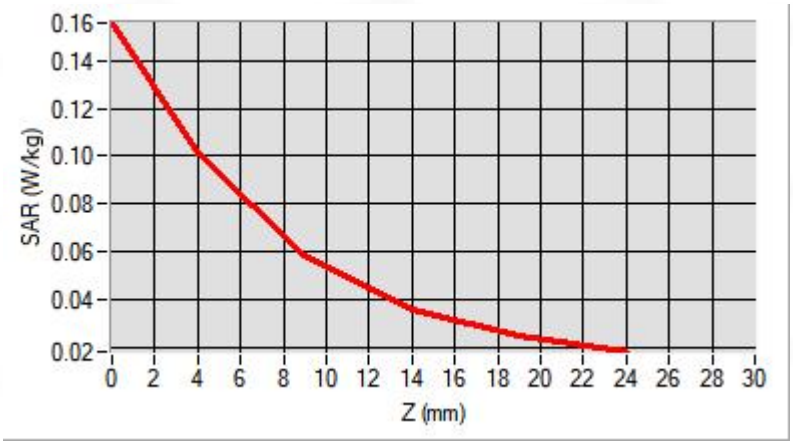
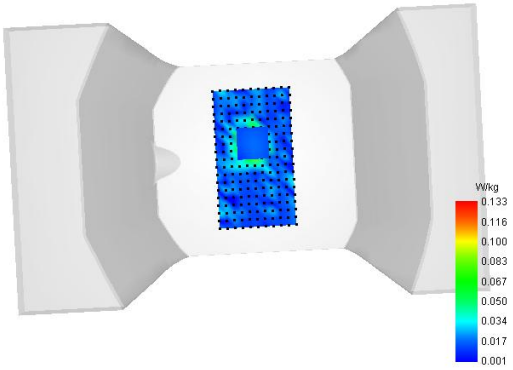
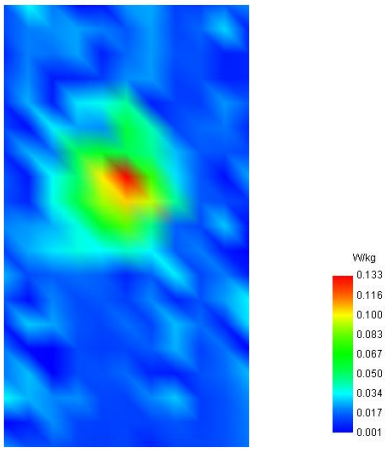


F. 3D Image

3D screen shot	Hot spot position
	

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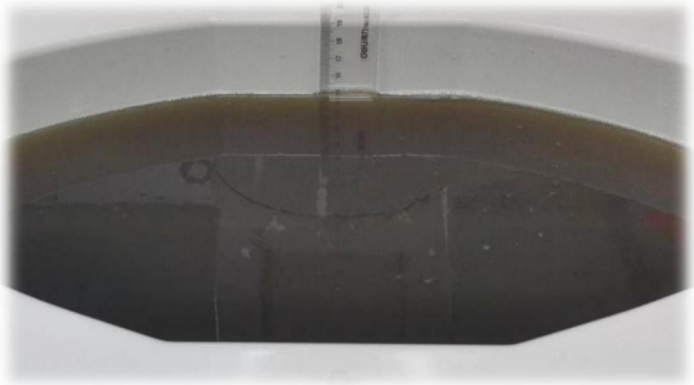
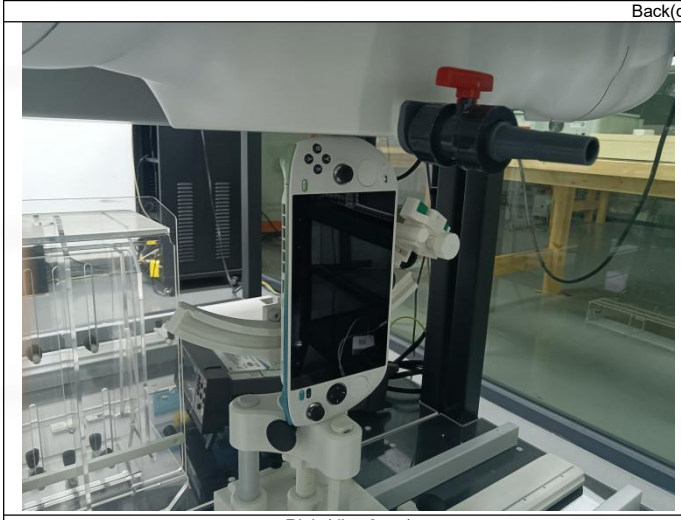
ANNEX D SAR Test Setup Photos

Reference Photo: simulation liquid depth 15cm

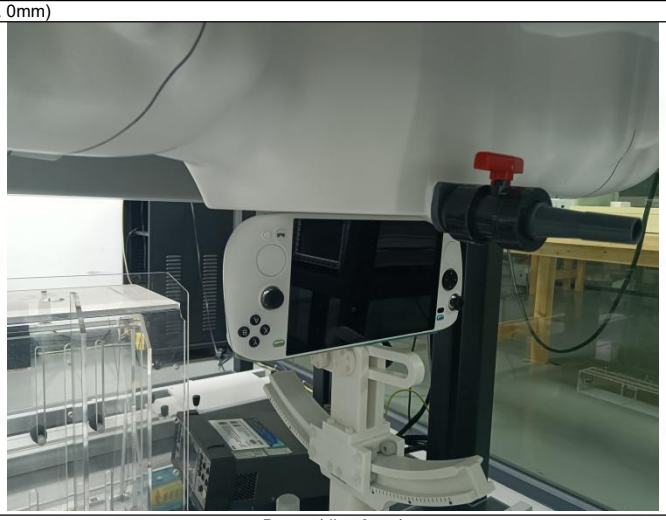


Reference Photos

Back(dist. 0mm)



Right(dist. 0mm)



Bottom(dist. 0mm)

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ANNEX E EUT External and Internal Photos

Please refer to RF Report.

ANNEX F Calibration Report

Please refer to the document “Calibration.pdf”.

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--END OF REPORT--