FCC SAR EVALUATION REPORT

In accordance with the requirements of
FCC 47 CFR Part 2(2.1093), ANSI/IEEE C95.1-1992 and
IEEE Std 1528-2013

Product Name：	Quamtum HotSpot HS2
Trademark：	QUAMTUM CONNECTIVITY DE MÉXICO, S.A. DE C.V.
Model Name：	HotSpot HS2
Family Model：	N/A
Report No.：	S23051505401001
FCC ID：	2A3WD-HS2

Prepared for

QUAMTUM CONNECTIVITY DE MEXICO, S.A. DE C.V.
Torcuato Tasso #245, Despacho 403, Oficina 21 Col. Polanco V sección
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Prepared by

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TEST RESULT CERTIFICATION

Applicant's name.....:	QUAMTUM CONNECTIVITY DE MEXICO, S.A. DE C.V.
Address.....:	Torcuato Tasso #245, Despacho 403, Oficina 21 Col. Polanco V sección Alcaldía Miguel Hidalgo C.P. 11560, Ciudad de México
Manufacturer's Name.....:	QUAMTUM CONNECTIVITY DE MEXICO, S.A. DE C.V.
Address.....:	Torcuato Tasso #245, Despacho 403, Oficina 21 Col. Polanco V sección Alcaldía Miguel Hidalgo C.P. 11560, Ciudad de México

Product description

Product name.....:	Quamtum HotSpot HS2
Trademark .....:	QUAMTUM CONNECTIVITY DE MÉXICO, S.A. DE C.V.
Model Name .....:	HotSpot HS2
Family Model.....:	N/A
Standards.....:	FCC 47 CFR Part 2(2.1093) ANSI/IEEE C95.1-1992 IEEE Std 1528-2013 Published RF exposure KDB procedures

This device described above has been tested by Shenzhen NTEK. In accordance with the measurement methods and procedures specified in IEEE Std 1528-2013 and KDB 865664 D01. Testing has shown that this device is capable of compliance with localized specific absorption rate (SAR) specified in FCC 47 CFR Part 2(2.1093) and ANSI/IEEE C95.1-1992. The test results in this report apply only to the tested sample of the stated device/equipment. Other similar device/equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

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Test Sample Number S230515054001

Date of Test

Date (s) of performance of tests..... :	May 22, 2023 ~ May 30, 2023
Date of Issue ..... :	Jun. 06, 2023
Test Result ..... :	**Pass**

Prepared By (Test Engineer) : Jack Li

(Jack Li)

Approved By (Lab Manager) : Alex

(Alex Li)

※ ※ Revision History ※ ※

REV.	DESCRIPTION	ISSUED DATE	REMARK
Rev.1.0	Initial Test Report Release	Jun. 06, 2023	Jack Li

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1. General Information

1.1. RF exposure limits

(A).Limits for Occupational/Controlled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.4	8.0	20.0

(B).Limits for General Population/Uncontrolled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.08	1.6	4.0

NOTE: ***Whole-Body SAR*** is averaged over the entire body, ***partial-body SAR*** is averaged over any 1 gram of tissue defined as a tissue volume in the shape of a cube. ***SAR for hands, wrists, feet and ankles*** is averaged over any 10 grams of tissue defined as a tissue volume in the shape of a cube.

Occupational/Controlled Environments:

Are defined as locations where there is exposure that may be incurred by people who are aware of the potential for exposure, (i.e. as a result of employment or occupation).

General Population/Uncontrolled Environments:

Are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure.

NOTE

TRUNK LIMIT

1.6 W/kg

APPLIED TO THIS EUT

1.2. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for HotSpot HS2 are as follows.

RF Exposure Conditions		Max. Reported SAR Value(W/kg)
1-g Body-Worn (Separation distance of 10mm)		0.979
1-g Hotspot (Separation distance of 10mm)		0.979
Max Simultaneous Tx	Body-Worn	1.160
	Hotspot	1.160

Note: This device is in compliance with Specific Absorption Rate (SAR) for general population / uncontrolled exposure limits (1.6 W/kg) specified in FCC 47 CFR Part 2(2.1093) and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement methods and procedures specified in IEEE Std 1528-2013 & KDB 865664 D01.

1.3. EUT Description

Device Information			
Product Name	Quamtum HotSpot HS2		
Brand Name	QUAMTUM CONNECTIVITY DE MÉXICO, S.A. DE C.V.		
Model Name	HotSpot HS2		
Family Model	N/A		
Model Difference	N/A		
FCC ID	2A3WD-HS2		
Device Phase	Identical Prototype		
Exposure Category	General population / Uncontrolled environment		
Antenna Type	Internal Antenna		
Battery Information	3000mAh		
HW Version	HotSpot HS2_TELCEL Ver 1.0		
SW Version	V1.0		
Device Operating Configurations			
Supporting Mode(s)	WCDMABand2/5,LTEBand2/4/5/7/66, WLAN 2.4G		
Test Modulation	WCDMA(QPSK), LTE(QPSK/16QAM), WLAN(DSSS/OFDM)		
Device Class	B		
Operating Frequency Range(s)	Band	Tx (MHz)	Rx (MHz)
	WCDMA Band 2	1850-1910	1930-1990
	WCDMA Band 5	824-849	869-894
	LTE Band 2	1850-1910	1930-1990
	LTE Band 4	1710-1755	2110-2155
	LTE Band 5	824-849	869-894
	LTE Band 7	2500-2570	2620-2690

	LTE Band 66	1710-1780	2110-2180
	WLAN 2.4G	2412-2462	
Power Class	3, tested with power control “all 1”(WCDMA Band 2)		
	3, tested with power control “all 1”(WCDMA Band 5)		
	3, tested with power control all Max.(LTE Band 2)		
	3, tested with power control all Max.(LTE Band 4)		
	3, tested with power control all Max.(LTE Band 5)		
	3, tested with power control all Max.(LTE Band 7)		
	3, tested with power control all Max.(LTE Band 66)		

1.4. Test specification(s)

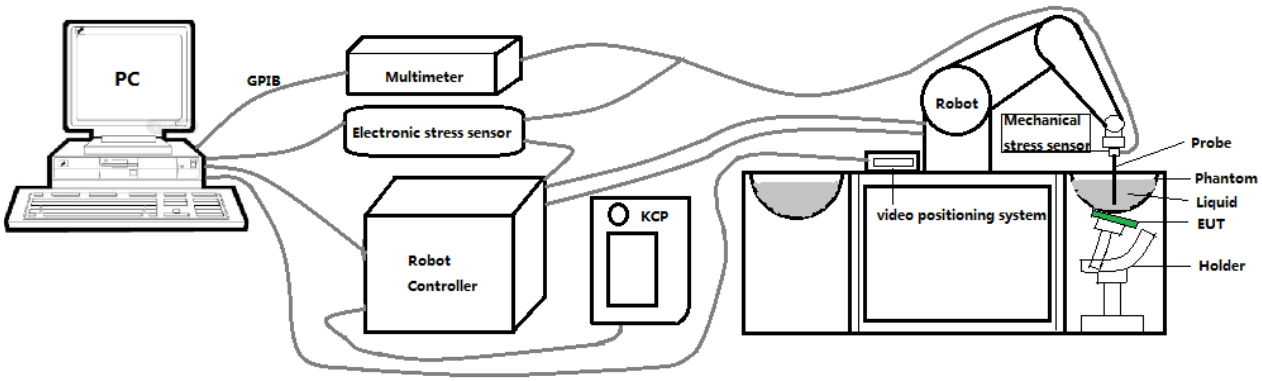
FCC 47 CFR Part 2(2.1093)
ANSI/IEEE C95.1-1992
IEEE Std 1528-2013
KDB 865664 D01 SAR measurement 100 MHz to 6 GHz
KDB 865664 D02 RF Exposure Reporting
KDB 447498 D01 General RF Exposure Guidance
KDB 248227 D01 802.11 Wi-Fi SAR
KDB 941225 D01 3G SAR Procedures
KDB 941225 D05 SAR for LTE Devices
KDB 941225 D06 Hotspot SAR
KDB 648474 D04 Handset SAR

1.5. Ambient Condition

Ambient temperature	20°C – 24°C
Relative Humidity	30% – 70%

2. SAR Measurement System

2.1. SATIMO SAR Measurement Set-up Diagram



These measurements were performed with the automated near-field scanning system OPENSAR from SATIMO. The system is based on a high precision robot (working range: 901 mm), which positions the probes with a positional repeatability of better than ±0.03 mm. The SAR measurements were conducted with dosimetric probe (manufactured by SATIMO), designed in the classical triangular configuration and optimized for dosimetric evaluation.

The first step of the field measurement is the evaluation of the voltages induced on the probe by the device under test. Probe diode detectors are nonlinear. Below the diode compression point, the output voltage is proportional to the square of the applied E-field; above the diode compression point, it is linear to the applied E-field. The compression point depends on the diode, and a calibration procedure is necessary for each sensor of the probe.

The Keithley multimeter reads the voltage of each sensor and send these three values to the PC. The corresponding E field value is calculated using the probe calibration factors, which are stored in the working directory. This evaluation includes linearization of the diode characteristics. The field calculation is done separately for each sensor. Each component of the E field is displayed on the "Dipole Area Scan Interface" and the total E field is displayed on the "3D Interface"

2.2. Robot

The SATIMO SAR system uses the high precision robots from KUKA. For the 6-axis controller system, the robot controller version (KUKA) from KUKA is used. The KUKA robot series have many features that are important for our application:

- High precision (repeatability ±0.03 mm)
- High reliability (industrial design)
- Jerk-free straight movements
- Low ELF interference (the closed metallic construction shields against motor control fields)

2.3. E-Field Probe

This E-field detection probe is composed of three orthogonal dipoles linked to special Schottky diodes with low detection thresholds. The probe allows the measurement of electric fields in liquids such as the one defined in the IEEE and CENELEC standards.

For the measurements the Specific Dosimetric E-Field Probe SN 08/16 EPGO287 with following specifications is used

- Dynamic range: 0.01-100 W/kg
- Tip Diameter : 2.5 mm
- Distance between probe tip and sensor center: 1 mm
- Distance between sensor center and the inner phantom surface: 2 mm (repeatability better than ±1 mm).
- Probe linearity: ±0.08 dB
- Axial isotropy: ±0.01 dB
- Hemispherical Isotropy: ±0.01 dB
- Calibration range: 650MHz to 5900MHz for head & body simulating liquid.
- Lower detection limit: 8mW/kg

Angle between probe axis (evaluation axis) and surface normal line: less than 30°.

2.3.1. E-Field Probe Calibration

Each probe needs to be calibrated according to a dosimetric assessment procedure with accuracy better than ±10%. The spherical isotropy shall be evaluated and within ±0.25dB. The sensitivity parameters (Norm X, Norm Y, and Norm Z), the diode compression parameter (DCP) and the conversion factor (Conv F) of the probe are tested. The calibration data can be referred to appendix D of this report.

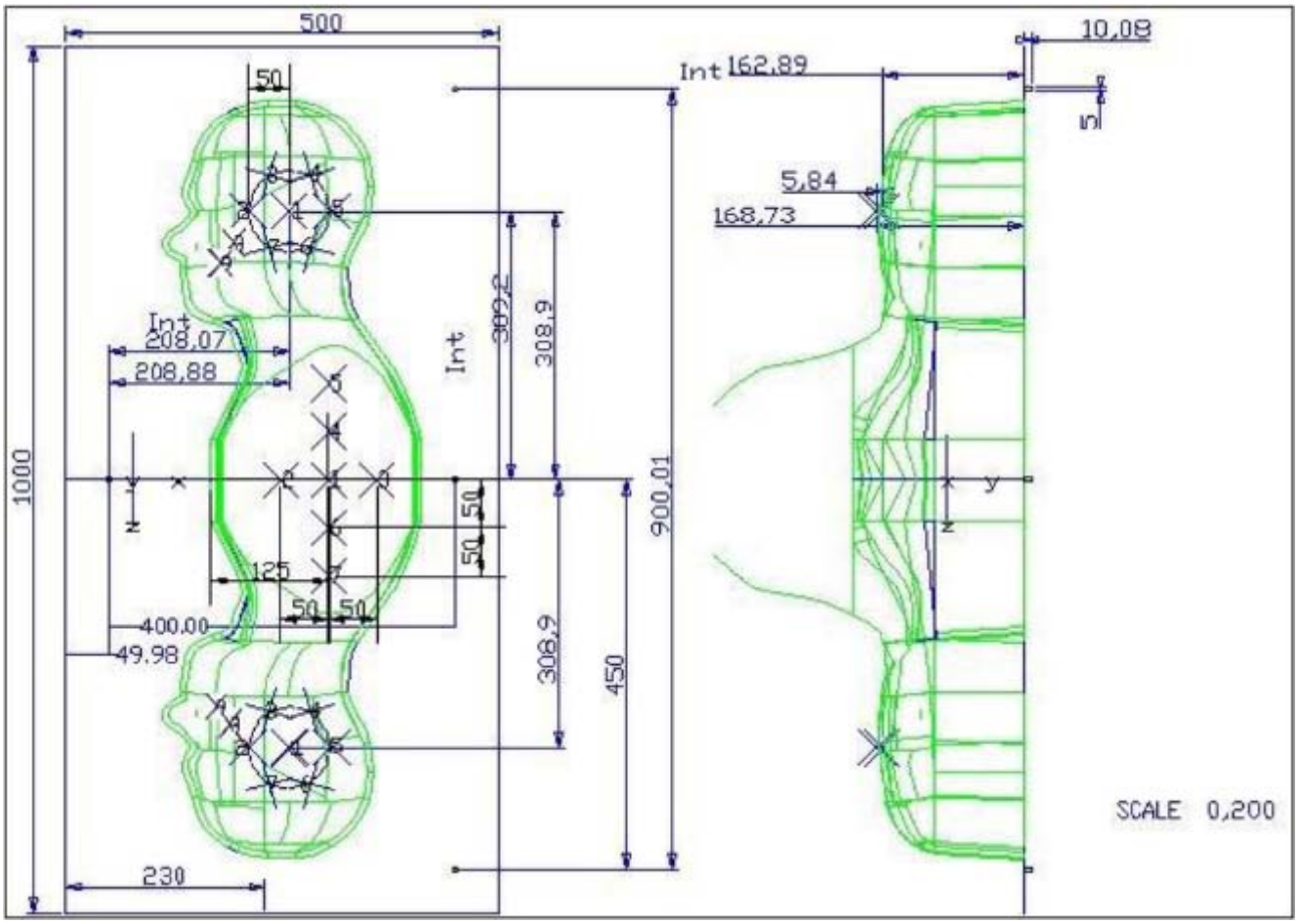
2.4. SAM phantoms

Photo of SAM phantom SN 16/15 SAM119

The SAM phantom is used to measure the SAR relative to people exposed to electro-magnetic field radiated by mobile phones.

2.4.1. Technical Data

Serial Number	Shell thickness	Filling volume	Dimensions	Positionner Material	Permittivity	Loss Tangent
SN 16/15 SAM119	2 mm ±0.2 mm	27 liters	Length:1000 mm Width:500 mm Height:200 mm	Gelcoat with fiberglass	3.4	0.02

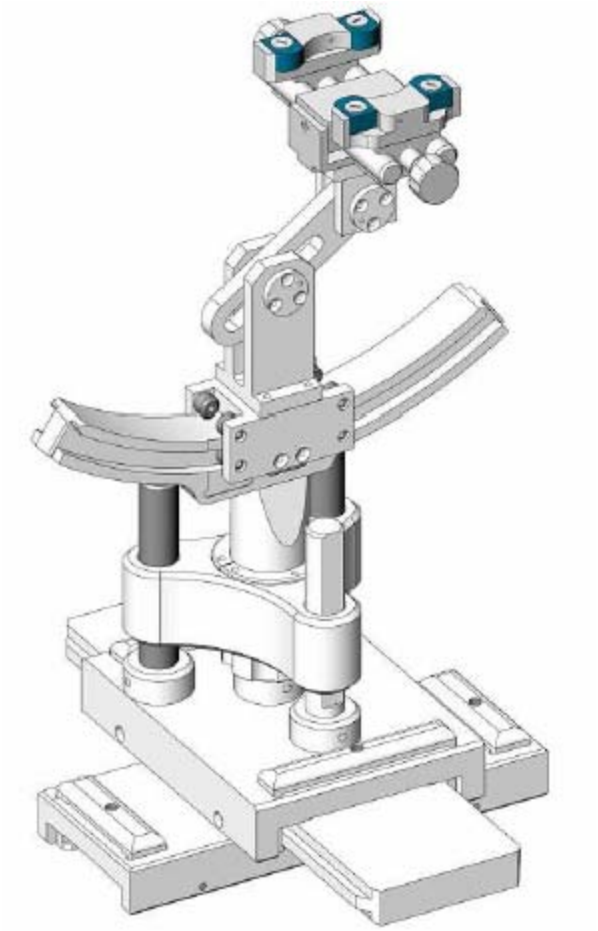


Serial Number	Left Head(mm)		Right Head(mm)		Flat Part(mm)	
SN 16/15 SAM119	2	2.02	2	2.08	1	2.09
	3	2.05	3	2.06	2	2.06
	4	2.07	4	2.07	3	2.08
	5	2.08	5	2.08	4	2.10
	6	2.05	6	2.07	5	2.10
	7	2.05	7	2.05	6	2.07
	8	2.07	8	2.06	7	2.07
	9	2.08	9	2.06	-	-

The test, based on ultrasonic system, allows measuring the thickness with an accuracy of 10 µm.

2.5. Device Holder

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



Serial Number	Holder Material	Permittivity	Loss Tangent
SN 16/15 MSH100	Delrin	3.7	0.005

2.6. Test Equipment List

This table gives a complete overview of the SAR measurement equipment.

Devices used during the test described are marked ☒

	Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
					Last Cal.	Due Date
☒	MVG	E FIELD PROBE	SSE2	SN 08/16 EPGO287	Jan. 10, 2023	Jan. 09, 2024
☐	MVG	750 MHz Dipole	SID750	SN 03/15 DIP 0G750-355	Mar. 01, 2021	Feb. 28, 2024
☒	MVG	835 MHz Dipole	SID835	SN 03/15 DIP 0G835-347	Mar. 01, 2021	Feb. 28, 2024
☐	MVG	900 MHz Dipole	SID900	SN 03/15 DIP 0G900-348	Mar. 01, 2021	Feb. 28, 2024
☒	MVG	1800 MHz Dipole	SID1800	SN 03/15 DIP 1G800-349	Mar. 01, 2021	Feb. 28, 2024
☒	MVG	1900 MHz Dipole	SID1900	SN 03/15 DIP 1G900-350	Mar. 01, 2021	Feb. 28, 2024
☐	MVG	2000 MHz Dipole	SID2000	SN 03/15 DIP 2G000-351	Mar. 01, 2021	Feb. 28, 2024
☐	MVG	2300 MHz Dipole	SID2300	SN 03/16 DIP 2G300-358	Mar. 01, 2021	Feb. 28, 2024
☒	MVG	2450 MHz Dipole	SID2450	SN 03/15 DIP 2G450-352	Mar. 01, 2021	Feb. 28, 2024
☒	MVG	2600 MHz Dipole	SID2600	SN 03/15 DIP 2G600-356	Mar. 01, 2021	Feb. 28, 2024
☐	MVG	3500 MHz Dipole	SID3500	SN 09/12 DIP 3G500-360	Oct. 15, 2022	Oct. 14, 2025
☐	MVG	5000 MHz Dipole	SWG5500	SN 13/14 WGA 33	Mar. 01, 2021	Feb. 28, 2024
☒	MVG	Liquid measurement Kit	SCLMP	SN 21/15 OCPG 72	NCR	NCR
☒	MVG	Power Amplifier	N.A	AMPLISAR_28/14_003	NCR	NCR
☒	KEITHLEY	Millivoltmeter	2000	4072790	NCR	NCR
☒	R&S	Universal radio communication tester	CMU200	117858	Jun. 17, 2022	Jun. 16, 2023
☒	R&S	Wideband radio communication	CMW500	103917	Jun. 17, 2022	Jun. 16, 2023

		tester				
☒	HP	Network Analyzer	8753D	3410J01136	Jun. 17, 2022	Jun. 16, 2023
☒	Agilent	MXG Vector Signal Generator	N5182A	MY47070317	Jun. 16, 2022	Jun. 15, 2023
☒	Agilent	Power meter	E4419B	MY45102538	Jun. 17, 2022	Jun. 16, 2023
☒	Agilent	Power sensor	E9301A	MY41495644	Jun. 17, 2022	Jun. 16, 2023
☒	Agilent	Power sensor	E9301A	US39212148	Jun. 17, 2022	Jun. 16, 2023
☒	MCLI/USA	Directional Coupler	CB11-20	0D2L51502	Jul. 17, 2020	Jul. 16, 2023
☒	N/A	Thermometer	N/A	LES-085	Mar. 27, 2023	Mar. 26, 2026
☒	MVG	SAM Phantom	SSM2	SN 16/15 SAM119	NCR	NCR
☒	MVG	Device Holder	SMPPD	SN 16/15 MSH100	NCR	NCR
☒	Shenzhen Tianxu Communication Technology Co., Ltd.	Human Simulating Liquid	Head 835	Head 835	NCR	NCR
☒	Shenzhen Tianxu Communication Technology Co., Ltd.	Human Simulating Liquid	Head 1800	Head 1800	NCR	NCR
☒	Shenzhen Tianxu Communication Technology Co., Ltd.	Human Simulating Liquid	Head 1900	Head 1900	NCR	NCR
☒	Shenzhen Tianxu Communication Technology Co., Ltd.	Human Simulating Liquid	Head 2450	Head 2450	NCR	NCR
☒	Shenzhen Tianxu Communication Technology	Human Simulating Liquid	Head 2600	Head 2600	NCR	NCR

	Co., Ltd.					

3. SAR Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

(a) For WWAN power measurement, use base station simulator to configure EUT WWAN transmission in conducted connection with RF cable, at maximum power in each supported wireless interface and frequency band.

(b) Read the WWAN RF power level from the base station simulator.

(c) For WLAN/Bluetooth power measurement, use engineering software to configure EUT WLAN/Bluetooth continuously transmission, at maximum RF power in each supported wireless interface and frequency band.

(d) Connect EUT RF port through RF cable to the power meter, and measure WLAN/Bluetooth output power.

<SAR measurement>

(a) Use base station simulator to configure EUT WWAN transmission in radiated connection, and engineering software to configure EUT WLAN/Bluetooth continuously transmission, at maximum RF power, in the highest power channel.

(b) Place the EUT in the positions as Appendix A demonstrates.

(c) Set scan area, grid size and other setting on the OPENSAR software.

(d) Measure SAR results for the highest power channel on each testing position.

(e) Find out the largest SAR result on these testing positions of each band.

(f) Measure SAR results for other channels in worst SAR testing position if the reported SAR of highest power channel is larger than 0.8 W/kg.

According to the test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:

(a) Power reference measurement

(b) Area scan

(c) Zoom scan

(d) Power drift measurement

3.1. Power Reference

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

3.2. Area scan & Zoom scan

The area scan is a 2D scan to find the hot spot location on the DUT. The zoom scan is a 3D scan above the hot spot to calculate the 1g and 10g SAR value.

Measurement of the SAR distribution with a grid of 8 to 16 mm * 8 to 16 mm and a constant distance to the inner surface of the phantom. Since the sensors cannot directly measure at the inner phantom surface, the values between the sensors and the inner phantom surface are extrapolated. With these values the area of the maximum SAR is calculated by an interpolation scheme. 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.

From the scanned SAR distribution, identify the position of the maximum SAR value, in addition identify the positions of any local maxima with SAR values within 2 dB of the maximum value that will not be within the zoom scan of other peaks; additional peaks shall be measured only when the primary peak is within 2 dB of the SAR compliance limit (e.g., 1 W/kg for 1,6 W/kg 1 g limit, or 1,26 W/kg for 2 W/kg, 10 g limit).

Area scan & Zoom scan scan parameters extracted from FCC KDB 865664 D01 SAR measurement 100 MHz to 6 GHz.

<table>
<tr><td colspan="3"></td><td>≤ 3 GHz</td><td>> 3 GHz</td></tr>
<tr><td colspan="3">Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface</td><td>5 ± 1 mm</td><td>½·δ·ln(2) ± 0.5 mm</td></tr>
<tr><td colspan="3">Maximum probe angle from probe axis to phantom surface normal at the measurement location</td><td>30° ± 1°</td><td>20° ± 1°</td></tr>
<tr><td colspan="3" rowspan="2">Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}</td><td>≤ 2 GHz: ≤ 15 mm
2 – 3 GHz: ≤ 12 mm</td><td>3 – 4 GHz: ≤ 12 mm
4 – 6 GHz: ≤ 10 mm</td></tr>
<tr><td colspan="2">When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.</td></tr>
<tr><td colspan="3">Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}</td><td>≤ 2 GHz: ≤ 8 mm
2 – 3 GHz: ≤ 5 mm*</td><td>3 – 4 GHz: ≤ 5 mm*
4 – 6 GHz: ≤ 4 mm*</td></tr>
<tr><td rowspan="3">Maximum zoom scan spatial resolution, normal to phantom surface</td><td colspan="2">uniform grid: $\Delta z_{Zoom}(n)$</td><td>≤ 5 mm</td><td>3 – 4 GHz: ≤ 4 mm
4 – 5 GHz: ≤ 3 mm
5 – 6 GHz: ≤ 2 mm</td></tr>
<tr><td rowspan="2">graded grid</td><td>$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface</td><td>≤ 4 mm</td><td>3 – 4 GHz: ≤ 3 mm
4 – 5 GHz: ≤ 2.5 mm
5 – 6 GHz: ≤ 2 mm</td></tr>
<tr><td>$\Delta z_{Zoom}(n>1)$: between subsequent points</td><td colspan="2">≤ 1.5·$\Delta z_{Zoom}(n-1)$</td></tr>
<tr><td>Minimum zoom scan volume</td><td colspan="2">x, y, z</td><td>≥ 30 mm</td><td>3 – 4 GHz: ≥ 28 mm
4 – 5 GHz: ≥ 25 mm
5 – 6 GHz: ≥ 22 mm</td></tr>
<tr><td colspan="5">Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.
* 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 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.</td></tr>
</table>

3.3. Description of interpolation/extrapolation scheme

The local SAR inside the phantom is measured using small dipole sensing elements inside a probe body. The probe tip must not be in contact with the phantom surface in order to minimise measurements errors, but the highest local SAR will occur at the surface of the phantom.
An extrapolation is using to determinate this highest local SAR values. The extrapolation is based on a fourth-order least-square polynomial fit of measured data. The local SAR value is then extrapolated from the liquid surface with a 1 mm step.
The measurements have to be performed over a limited time (due to the duration of the battery) so the step of measurement is high. It could vary between 5 and 8 mm. To obtain an accurate assessment of the maximum SAR averaged over 10 grams and 1 gram requires a very fine resolution in the three dimensional scanned data array.

3.4. Volumetric Scan

The volumetric scan consists to a full 3D scan over a specific area. This 3D scan is useful form multi Tx SAR measurement. Indeed, it is possible with OpenSAR to add, point by point, several volumetric scan to calculate the SAR value of the combined measurement as it is define in the standard IEEE1528 and IEC62209.

3.5. Power Drift

All SAR testing is under the EUT install full charged battery and transmit maximum output power. In OpenSAR measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of EUT during SAR test. Both these procedures measure the field at a specified reference position before and after the SAR testing. The software will calculate the field difference in V/m. If the power drifts more than ±5%, the SAR will be retested.

4. System Verification Procedure

4.1. Tissue Verification

The following tissue formulations are provided for reference only as some of the parameters have not been thoroughly verified. The composition of ingredients may be modified accordingly to achieve the desired target tissue parameters required for routine SAR evaluation.

Ingredients (% of weight)	Head Tissue									
Frequency Band (MHz)	750	835	900	1800	1900	2000	2450	2600	5200	5800
Water	34.40	34.40	34.40	55.36	55.36	57.87	57.87	57.87	65.53	65.53
NaCl	0.79	0.79	0.79	0.35	0.35	0.16	0.16	0.16	0.00	0.00
1,2-Propanediol	64.81	64.81	64.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triton X-100	0.00	0.00	0.00	30.45	30.45	19.97	19.97	19.97	24.24	24.24
DGBE	0.00	0.00	0.00	13.84	13.84	22.00	22.00	22.00	10.23	10.23

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 depth from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm.

Photo of Liquid depth for Head Position	Photo of Liquid depth for Body Position
	

4.1.1. Tissue Dielectric Parameter Check Results

The simulating liquids should be checked at the beginning of a series of SAR measurements to determine of the dielectric parameter are within the tolerances of the specified target values. The measured conductivity and relative permittivity should be within ±5% of the target values.

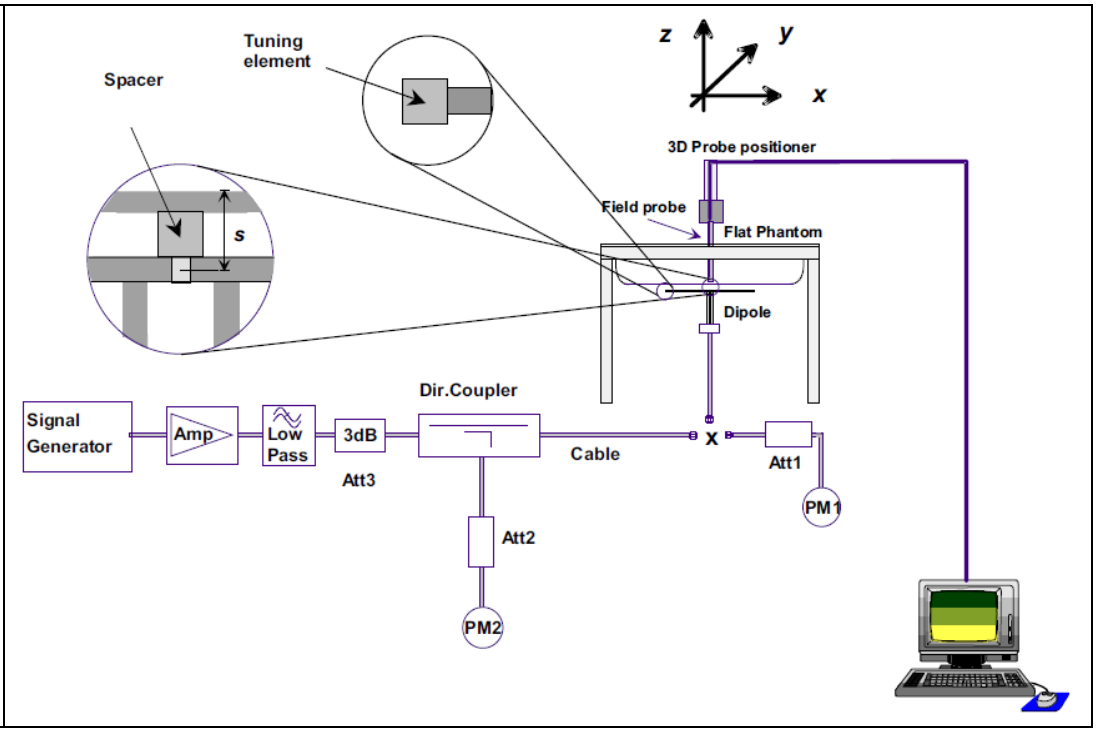
Tissue Type	Measured Frequency (MHz)	Target Tissue		Measured Tissue		Liquid Temp.	Test Date
		εr (±5%)	σ (S/m) (±5%)	εr	σ (S/m)		
Head 850	835	41.50 (39.43~43.58)	0.90 (0.86~0.95)	40.85	0.91	21.2 °C	May. 22, 2023
Head 1800	1800	40.00 (38.00~42.00)	1.40 (1.33~1.47)	38.82	1.40	21.6 °C	May. 26, 2023
Head 1900	1900	40.00 (38.00~42.00)	1.40 (1.33~1.47)	38.26	1.46	21.4 °C	May. 23, 2023
Head 2450	2450	39.20 (37.24~41.16)	1.80 (1.71~1.89)	37.78	1.80	21.3 °C	May. 30, 2023
Head 2600	2600	39.01 (37.06~40.96)	1.96 (1.86~2.06)	37.96	1.97	21.8 °C	May. 29, 2023

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

4.2. System Verification Procedure

The system verification is performed for verifying the accuracy of the complete measurement system and performance of the software. The dipole is connected to the signal source consisting of signal generator and amplifier via a directional coupler, N-connector cable and adaption to SMA. It is fed with a power of 100mW (below 5GHz) or 100mW (above 5GHz). To adjust this power a power meter is used. The power sensor is connected to the cable before the system verification to measure the power at this point and do adjustments at the signal generator. At the outputs of the directional coupler both return loss as well as forward power are controlled during the system verification to make sure that emitted power at the dipole is kept constant. This can also be checked by the power drift measurement after the test (result on plot).

The system verification is shown as below picture:



4.2.1. System Verification Results

Comparing to the original SAR value provided by SATIMO, the verification data should be within its specification of ±10%. Below table shows the target SAR and measured SAR after normalized to 1W input power. The table below indicates the system performance verification can meet the variation criterion and the plots can be referred to Appendix B of this report.

System Verification	Target SAR (1W) (±10%)		Measured SAR (Normalized to 1W)		Liquid Temp.	Delta (%)		Test Date
	1-g (W/Kg)	10-g (W/Kg)	1-g (W/Kg)	10-g (W/Kg)		1-g (±10%)	10-g (±10%)	
835MHz	9.84 (8.86~10.82)	6.22 (5.60~6.84)	10.34	6.31	21.2 °C	5.08%	1.45%	May. 22, 2023
1800MHz	37.96 (34.17~41.75)	19.81 (17.83~21.79)	37.05	20.89	21.6 °C	-2.40%	5.45%	May. 26, 2023
1900MHz	40.37 (36.34~44.40)	20.48 (18.44~22.52)	43.72	20.82	21.4 °C	8.30%	1.66%	May. 23, 2023
2450MHz	53.69 (48.33~59.05)	23.94 (21.55~26.33)	49.44	25.89	21.3 °C	-7.92%	8.15%	May. 30, 2023
2600MHz	55.83 (50.25~61.41)	24.19 (21.78~26.60)	58.24	23.32	21.8 °C	4.32%	-3.60%	May. 29, 2023

5. SAR Measurement variability and uncertainty

5.1. SAR measurement variability

Per KDB865664 D01 SAR measurement 100 MHz to 6 GHz, SAR measurement variability must be assessed for each frequency band, which is determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. The 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.

1) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg; steps 2) through 4) do not apply.
2) When the original highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.
3) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit).
4) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.

5.2. SAR measurement uncertainty

Per KDB865664 D01 SAR Measurement 100 MHz to 6 GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg, the extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval. The equivalent ratio (1.5/1.6) is applied to extremity and occupational exposure conditions.

6. RF Exposure Positions

6.1. Generic device

The SAR evaluation shall be performed for surface of the DUT that are accessible during intended use, as indicated in Figure 6.1. Adjust the distance between the device surface and the flat phantom to 10mm.

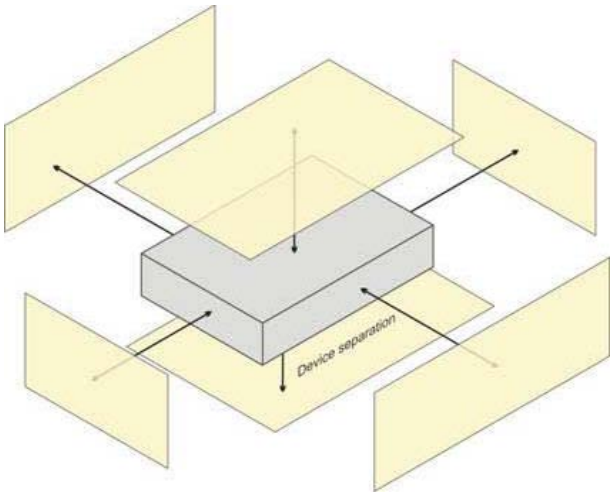


Figure 6.1 – Test positions for generic device

7. RF Output Power

7.1. WCDMA Conducted Power

WCDMA Band 2	Burst-Averaged output Power (dBm)			
Tx Channel	Tune-up (dBm)	9262	9400	9538
Frequency (MHz)		1852.4	1880	1907.6
RMC12.2K	23.00	21.85	22.50	22.71
HSDPA Sub 1	23.50	22.42	23.31	23.36
HSDPA Sub 2	23.00	21.90	22.74	22.73
HSDPA Sub 3	23.00	21.91	22.70	22.72
HSDPA Sub 4	22.50	21.50	22.33	22.35
HSUPA Sub 1	20.50	19.06	20.13	20.11
HSUPA Sub 2	20.50	19.04	19.85	20.02
HSUPA Sub 3	21.50	20.10	21.16	21.40
HSUPA Sub 4	20.50	18.81	19.87	20.14
HSUPA Sub 5	22.50	20.78	21.88	22.01
WCDMA Band 5	Burst-Averaged output Power (dBm)			
Tx Channel	Tune-up (dBm)	4132	4182	4233
Frequency (MHz)		826.4	836.4	846.6
RMC12.2K	22.50	21.72	21.93	22.43
HSDPA Sub 1	24.00	23.17	23.15	23.66
HSDPA Sub 2	23.50	22.67	22.73	23.13
HSDPA Sub 3	23.00	22.63	22.46	23.00
HSDPA Sub 4	23.00	22.30	22.15	22.54
HSUPA Sub 1	21.00	20.51	20.27	20.63
HSUPA Sub 2	21.00	20.29	20.27	20.59
HSUPA Sub 3	22.00	21.39	21.38	21.70
HSUPA Sub 4	20.50	19.92	20.06	20.14
HSUPA Sub 5	22.50	21.82	22.23	22.33

7.2. LTE Conducted Power

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		18607/1850.7	18900/1880	19193/1909.3
LTE Band 2	1.4MHz	QPSK	1	0	23.00	21.71	22.38	22.60
			1	2	23.00	21.43	22.20	22.41
			1	5	23.00	21.50	22.29	22.50
			3	0	22.50	21.38	22.20	22.38
			3	1	22.50	21.33	22.20	22.36
			3	2	22.50	21.35	22.17	22.38
			6	0	22.00	20.47	21.37	21.66
		16QAM	1	0	22.00	20.98	21.69	21.74
			1	2	22.00	20.70	21.40	21.67
			1	5	22.00	20.94	21.65	21.77
			3	0	22.00	20.80	21.46	21.61
			3	1	22.00	20.72	21.56	21.54
			3	2	22.00	20.75	21.51	21.67
			6	0	21.00	19.82	20.53	20.83
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		18615/1851.5	18900/1880	19185/1908.5
LTE Band 2	3MHz	QPSK	1	0	22.50	20.60	21.82	21.88
			1	7	22.50	20.13	21.13	21.49
			1	14	22.50	20.79	21.80	22.02
			8	0	21.50	19.63	20.63	20.79
			8	4	21.50	19.63	20.65	20.81
			8	7	21.50	19.73	20.73	21.08
			15	0	21.00	19.62	20.62	20.89
		16QAM	1	0	21.50	20.17	20.86	20.84
			1	7	21.50	19.70	20.43	20.73
			1	14	21.50	20.05	21.18	21.17
			8	0	20.50	18.89	19.87	20.02
			8	4	20.50	18.89	19.89	20.06
			8	7	20.50	18.98	19.94	20.39
			15	0	20.50	18.91	19.75	20.17
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		

			RB Size	RB Offset		18625/1852.5	18900/1880	19175/1907.5
LTE Band 2	5MHz	QPSK	1	0	22.00	20.45	21.76	21.32
			1	12	22.00	20.20	21.15	21.32
			1	24	22.00	20.96	21.19	21.86
			12	0	21.00	19.52	20.52	20.36
			12	6	21.00	19.55	20.53	20.38
			12	11	21.00	19.81	20.68	20.92
			25	0	21.00	19.70	20.61	20.65
		16QAM	1	0	21.50	19.91	21.17	20.63
			1	12	21.50	19.53	20.59	20.63
			1	24	21.50	20.19	20.74	21.37
			12	0	20.50	18.82	19.70	19.68
			12	6	20.50	18.83	19.74	19.71
			12	11	20.50	19.08	19.89	20.19
			25	0	20.00	18.98	19.80	19.92
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		18650/1855	18900/1880	19150/1905
LTE Band 2	10MHz	QPSK	1	0	22.50	20.87	22.32	21.83
			1	24	22.50	20.31	20.85	20.53
			1	49	22.50	21.69	21.84	22.25
			25	0	21.00	19.62	20.62	20.06
			25	12	21.00	19.64	20.64	20.13
			25	24	21.00	20.00	20.21	20.59
			50	0	21.00	20.02	20.62	20.38
		16QAM	1	0	22.00	20.22	21.61	20.93
			1	24	22.00	19.71	20.18	19.92
			1	49	22.00	21.03	21.12	21.67
			25	0	20.00	18.91	19.94	19.42
			25	12	20.00	18.91	19.93	19.43
			25	24	20.00	19.33	19.51	19.86
			50	0	20.00	19.27	19.79	19.65
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		18675/1857.5	18900/1880	19125/1902.5
LTE Band	15MHz	QPSK	1	0	22.50	20.78	22.13	21.57
			1	37	22.50	20.42	20.87	20.58

2			1	74	22.50	21.87	21.64	22.18
			36	0	21.00	20.03	20.64	20.51
			36	18	21.00	20.04	20.63	20.55
			36	37	21.00	20.04	20.64	20.55
			75	0	21.00	20.04	20.63	20.55
		16QAM	1	0	22.00	20.28	21.22	21.00
			1	37	22.00	19.96	20.25	19.89
			1	74	22.00	21.14	20.89	21.50
			36	0	21.00	20.04	20.63	20.56
			36	18	21.00	20.04	20.63	20.55
			36	37	21.00	20.04	20.63	20.55
			75	0	20.00	19.34	19.82	19.83

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		18700/1860	18900/1880	19100/1900
LTE Band 2	20MHz	QPSK	1	0	22.50	20.79	22.11	21.75
			1	49	22.50	21.04	21.13	21.00
			1	99	22.50	22.18	21.97	22.11
			50	0	21.00	20.05	20.78	20.15
			50	24	21.00	20.06	20.79	20.26
			50	49	21.00	20.61	20.41	20.37
			100	0	21.00	20.29	20.70	20.91
		16QAM	1	0	22.00	20.19	21.50	21.18
			1	49	22.00	20.46	20.68	20.27
			1	99	22.00	21.56	21.50	21.37
			50	0	20.50	19.32	20.07	19.50
			50	24	20.50	19.31	20.06	19.54
			50	49	20.50	19.90	19.70	19.61
			100	0	20.50	19.56	19.87	20.18

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		19957/1710.7	20175/1732.5	20393/1754.3
LTE Band 4	1.4MHz	QPSK	1	0	22.50	21.37	21.76	21.73
			1	2	22.50	22.31	21.48	21.45
			1	5	22.50	22.41	21.65	21.57
			3	0	22.50	22.22	21.52	21.54
			3	1	22.50	22.23	21.56	21.57

			3	2	22.50	22.29	21.61	21.52
			6	0	21.50	21.28	20.72	20.84
		16QAM	1	0	22.00	21.52	20.87	21.08
			1	2	22.00	21.41	20.80	20.91
			1	5	22.00	21.55	20.75	20.85
			3	0	21.50	21.29	20.74	20.94
			3	1	21.50	21.27	20.64	20.94
			3	2	21.50	21.41	20.87	20.84
			6	0	21.00	20.51	20.01	20.06
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		19965/1711.5	20175/1732.5	20385/1753.5
LTE Band 4	3MHz	QPSK	1	0	23.00	22.31	21.89	21.82
			1	7	23.00	21.75	20.88	20.91
			1	14	23.00	22.63	21.64	21.56
			8	0	21.50	21.00	20.34	20.66
			8	4	21.50	21.02	20.35	20.67
			8	7	21.50	21.25	20.48	20.62
			15	0	21.50	21.08	20.35	20.60
		16QAM	1	0	22.00	21.29	20.99	21.00
			1	7	22.00	21.04	20.04	20.49
			1	14	22.00	21.97	21.17	20.80
			8	0	21.00	20.24	19.73	20.00
			8	4	21.00	20.24	19.73	19.99
			8	7	21.00	20.54	19.83	19.91
			15	0	20.50	20.31	19.74	19.81
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		19975/1712.5	20175/1732.5	20375/1752.5
LTE Band 4	5MHz	QPSK	1	0	23.00	22.21	21.52	21.77
			1	12	23.00	22.16	21.10	21.26
			1	24	23.00	22.64	21.64	21.52
			12	0	21.50	21.12	20.57	20.77
			12	6	21.50	21.13	20.58	20.79
			12	11	21.50	21.45	20.55	20.70
			25	0	21.50	21.31	20.48	20.81
		16QAM	1	0	22.00	21.25	21.01	21.10
			1	12	22.00	21.31	20.74	20.66

			1	24	22.00	21.77	21.16	21.17
			12	0	21.00	20.33	19.99	20.08
			12	6	21.00	20.34	20.01	20.12
			12	11	21.00	20.71	20.00	20.09
			25	0	21.00	20.54	19.86	20.08
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		20000/1715	20175/1732.5	20350/1750
LTE Band 4	10MHz	QPSK	1	0	23.50	23.15	22.15	22.51
			1	24	23.50	22.11	20.96	21.14
			1	49	23.50	22.69	22.22	22.16
			25	0	21.50	21.46	20.54	20.96
			25	12	21.50	21.46	20.56	20.98
			25	24	21.50	21.17	20.76	20.84
			50	0	22.00	21.67	20.59	20.96
		16QAM	1	0	22.50	22.05	21.30	21.67
			1	24	22.50	21.37	20.42	20.52
			1	49	22.50	22.03	21.52	21.39
			25	0	21.00	20.67	19.96	20.23
			25	12	21.00	20.67	19.95	20.25
			25	24	21.00	20.41	20.17	20.11
			50	0	21.00	20.84	19.95	20.21
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		20025/1717.5	20175/1732.5	20325/1747.5
LTE Band 4	15MHz	QPSK	1	0	23.00	22.90	22.00	22.47
			1	37	23.00	21.69	20.94	21.28
			1	74	23.00	21.78	22.13	22.04
			36	0	21.50	21.24	20.60	20.98
			36	18	21.50	21.22	20.61	20.98
			36	37	21.50	21.22	20.61	20.99
			75	0	21.50	21.22	20.61	20.98
		16QAM	1	0	22.00	21.89	21.30	21.54
			1	37	22.00	20.90	20.44	20.58
			1	74	22.00	20.99	21.54	21.16
			36	0	21.50	21.23	20.60	20.98
			36	18	21.50	21.22	20.60	20.98
			36	37	21.50	21.21	20.61	20.98

			75	0	20.50	20.47	20.01	20.23

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		20050/1720	20175/1732.5	20300/1745
LTE Band 4	20MHz	QPSK	1	0	23.00	22.75	22.04	22.19
			1	49	23.00	21.91	21.27	21.50
			1	99	23.00	22.13	22.32	21.95
			50	0	22.00	21.72	20.36	20.96
			50	24	22.00	21.69	20.37	20.97
			50	49	22.00	20.36	20.82	20.90
			100	0	21.50	21.28	20.62	21.00
		16QAM	1	0	22.00	21.87	21.42	21.41
			1	49	22.00	21.25	20.82	20.92
			1	99	22.00	21.39	21.72	21.31
			50	0	21.00	20.91	19.75	20.21
			50	24	21.00	20.89	19.75	20.22
			50	49	21.00	19.72	20.05	20.15
			100	0	20.50	20.41	19.98	20.22

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		20407/824.7	20525/836.5	20643/848.3
LTE Band 5	1.4MHz	QPSK	1	0	23.50	21.04	22.12	23.08
			1	2	23.50	21.70	21.82	22.90
			1	5	23.50	21.91	21.89	23.00
			3	0	23.00	21.73	21.92	23.00
			3	1	23.00	21.72	21.92	23.00
			3	2	23.00	21.82	21.85	22.96
			6	0	22.50	21.00	21.12	22.21
		16QAM	1	0	22.50	21.25	21.31	22.45
			1	2	22.50	21.23	21.22	22.09
			1	5	22.50	21.46	21.22	22.15
			3	0	22.50	21.10	21.36	22.18
			3	1	22.50	20.99	21.36	22.21
			3	2	22.50	21.10	21.15	22.16
			6	0	22.00	20.30	20.35	21.58

Band	Band Width	Modulation	RB Configuration	Tune-up (dBm)	Channel/Frequency(MHz)

			RB Size	RB Offset		20415/825.5	20525/836.5	20635/847.5
LTE Band 5	3MHz	QPSK	1	0	23.00	21.69	21.99	22.80
			1	7	23.00	21.33	21.31	22.34
			1	14	23.00	22.14	21.70	22.86
			8	0	22.00	20.72	20.94	21.83
			8	4	22.00	20.75	20.96	21.85
			8	7	22.00	21.05	20.84	21.92
			15	0	22.00	20.84	20.84	21.83
		16QAM	1	0	22.50	21.19	21.32	22.07
			1	7	22.50	20.52	20.74	21.64
			1	14	22.50	21.44	21.21	22.21
			8	0	21.50	20.14	20.32	21.19
			8	4	21.50	20.15	20.20	21.20
			8	7	21.50	20.45	20.10	21.26
			15	0	21.50	20.16	20.13	21.13
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		20425/826.5	20525/836.5	20625/846.5
LTE Band 5	5MHz	QPSK	1	0	23.00	21.63	22.03	22.29
			1	12	23.00	21.75	21.47	22.44
			1	24	23.00	22.31	21.83	22.86
			12	0	22.00	20.86	21.06	21.53
			12	6	22.00	20.88	21.08	21.52
			12	11	22.00	21.31	20.83	21.92
			25	0	22.00	21.12	20.96	21.74
		16QAM	1	0	22.50	21.04	21.33	21.68
			1	12	22.50	21.12	20.79	21.89
			1	24	22.50	21.76	21.27	22.36
			12	0	21.50	20.23	20.39	20.88
			12	6	21.50	20.22	20.41	20.87
			12	11	21.50	20.65	20.15	21.28
			25	0	21.50	20.46	20.26	21.06
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		20450/829	20525/836.5	20600/844
LTE Band	10MHz	QPSK	1	0	23.50	22.11	22.57	22.70
			1	24	23.50	21.61	21.24	21.53

5			1	49	23.50	22.38	22.02	23.24
			25	0	22.00	21.06	20.88	21.04
			25	12	22.00	21.09	20.92	21.04
			25	24	22.00	21.11	21.01	21.65
			50	0	21.50	21.15	21.03	21.30
		16QAM	1	0	23.00	21.34	21.88	21.90
			1	24	23.00	20.90	20.59	20.90
			1	49	23.00	21.74	21.50	22.62
			25	0	21.00	20.41	20.23	20.37
			25	12	21.00	20.42	20.22	20.37
			25	24	21.00	20.43	20.29	20.98
			50	0	21.00	20.47	20.31	20.62

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		20775/2502.5	21100/2535	21425/2567.5
LTE Band 7	5MHz	QPSK	1	0	22.50	22.01	21.84	21.94
			1	12	22.50	21.59	21.17	20.82
			1	24	22.50	21.87	20.99	20.50
			12	0	21.00	20.86	20.67	20.72
			12	6	21.00	20.87	20.73	20.76
			12	11	21.00	20.79	20.29	20.03
			25	0	21.00	20.82	20.57	20.42
		16QAM	1	0	21.50	21.21	21.08	21.36
			1	12	21.50	20.74	20.33	20.34
			1	24	21.50	21.06	20.20	19.89
			12	0	20.50	20.23	19.96	20.07
			12	6	20.50	20.22	20.00	20.08
			12	11	20.50	20.12	19.79	19.36
			25	0	20.50	20.14	20.06	19.73
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		20800/2505	21100/2535	21400/2565
LTE Band 7	10MHz	QPSK	1	0	23.50	22.58	21.83	23.01
			1	24	23.50	21.19	20.74	21.21
			1	49	23.50	22.82	21.91	20.98
			25	0	21.50	20.72	20.81	21.22
			25	12	21.50	20.75	20.91	21.29

			25	24	21.50	20.80	19.95	21.17
			50	0	21.50	20.87	20.58	21.19
		16QAM	1	0	22.00	21.48	21.40	21.76
			1	24	22.00	20.53	20.32	20.53
			1	49	22.00	21.74	20.87	20.25
			25	0	21.00	20.05	20.18	20.51
			25	12	21.00	20.06	20.19	20.52
			25	24	21.00	19.86	19.44	19.96
			50	0	20.50	20.16	20.01	20.37

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		20825/2507.5	21100/2535	21375/2562.5
LTE Band 7	15MHz	QPSK	1	0	23.50	23.11	22.88	22.08
			1	37	23.50	21.68	21.35	21.87
			1	74	23.50	22.74	21.86	21.38
			36	0	22.00	21.56	21.11	21.16
			36	18	22.00	21.50	21.14	21.14
			36	37	22.00	21.46	21.12	21.13
			75	0	21.50	21.42	21.10	21.12
		16QAM	1	0	22.50	22.17	22.04	21.24
			1	37	22.50	21.03	20.78	21.33
			1	74	22.50	21.81	20.89	20.53
			36	0	22.00	21.53	21.14	21.15
			36	18	22.00	21.48	21.12	21.13
			36	37	22.00	21.44	21.12	21.12
			75	0	21.00	20.49	20.58	20.39

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		20850/2510	21100/2535	21350/2560
LTE Band 7	20MHz	QPSK	1	0	22.50	22.32	22.39	21.24
			1	49	22.50	22.20	21.50	22.06
			1	99	22.50	22.36	21.60	21.27
			50	0	21.50	21.23	20.87	20.80
			50	24	21.50	21.16	21.04	20.77
			50	49	21.50	21.30	20.90	21.23
			100	0	22.00	21.78	21.12	20.87
		16QAM	1	0	22.00	21.97	21.77	20.48
			1	49	22.00	21.53	20.78	21.45

			1	99	22.00	21.82	20.76	20.47
			50	0	21.00	20.48	20.31	20.21
			50	24	21.00	20.44	20.37	20.21
			50	49	21.00	20.50	19.91	20.53
			100	0	21.00	20.81	20.58	20.16

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		131979/1710.7	132322/1745	132665/1779.3
LTE Band 66	1.4MHz	QPSK	1	0	23.00	22.79	22.61	22.63
			1	2	23.00	22.73	22.29	22.22
			1	5	23.00	22.89	22.37	22.25
			3	0	23.00	22.67	22.36	22.22
			3	1	23.00	22.64	22.35	22.20
			3	2	23.00	22.71	22.30	22.10
			6	0	22.00	21.66	21.64	21.12
		16QAM	1	0	22.50	22.26	21.83	21.69
			1	2	22.50	22.18	21.61	21.42
			1	5	22.50	22.34	21.73	21.44
			3	0	22.00	21.76	21.76	21.11
			3	1	22.00	21.72	21.83	21.19
			3	2	22.00	21.83	21.78	21.15
			6	0	21.00	20.67	20.88	20.40

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		131987/1711.5	132322/1745	132657/1778.5
LTE Band 66	3MHz	QPSK	1	0	23.50	22.71	22.48	22.61
			1	7	23.50	22.23	21.65	21.49
			1	14	23.50	23.05	22.21	22.13
			8	0	22.00	21.35	21.31	20.93
			8	4	22.00	21.37	21.32	20.93
			8	7	22.00	21.62	21.29	20.85
			15	0	21.50	21.44	21.25	20.82
		16QAM	1	0	22.50	21.55	21.75	21.47
			1	7	22.50	21.02	21.00	20.71
			1	14	22.50	22.30	21.78	21.31

			8	0	21.00	20.38	20.61	20.22
			8	4	21.00	20.35	20.60	20.29
			8	7	21.00	20.66	20.48	20.23
			15	0	21.00	20.36	20.50	20.13
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		131997/1712.5	132322/1745	132647/1777.5
LTE Band 66	5MHz	QPSK	1	0	23.50	22.58	22.30	22.43
			1	12	23.50	22.54	21.74	21.94
			1	24	23.50	23.06	22.13	22.06
			12	0	22.00	21.50	21.34	20.88
			12	6	22.00	21.51	21.35	20.88
			12	11	22.00	21.87	21.30	20.90
			25	0	22.00	21.70	21.33	20.90
		16QAM	1	0	22.50	21.78	21.86	21.38
			1	12	22.50	21.85	21.39	21.06
			1	24	22.50	22.40	21.62	21.27
			12	0	21.00	20.44	20.65	20.24
			12	6	21.00	20.43	20.65	20.23
			12	11	21.00	20.80	20.60	20.27
			25	0	21.00	20.60	20.57	20.25
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		132022/1715	132322/1745	132622/1775
LTE Band 66	10MHz	QPSK	1	0	24.50	24.16	23.60	23.22
			1	24	24.50	23.36	22.33	22.04
			1	49	24.50	24.10	23.19	23.29
			25	0	23.00	22.50	22.00	21.16
			25	12	23.00	22.48	22.00	21.17
			25	24	23.00	22.06	21.92	21.60
			50	0	23.00	22.69	21.99	21.49
		16QAM	1	0	23.50	23.27	22.82	22.26
			1	24	23.50	22.53	21.70	21.45
			1	49	23.50	23.27	22.64	22.23
			25	0	21.50	21.42	21.26	20.56
			25	12	21.50	21.41	21.26	20.55

			25	24	21.50	21.26	21.20	20.91
			50	0	22.00	21.61	21.19	20.76
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		132047/1717.5	132322/1745	132597/1772.5
LTE Band 66	15MHz	QPSK	1	0	23.50	23.39	22.85	22.44
			1	37	23.50	22.21	21.82	21.49
			1	74	23.50	22.85	22.53	22.80
			36	0	22.00	21.58	21.48	21.01
			36	18	22.00	21.56	21.48	20.99
			36	37	22.00	21.55	21.47	20.97
			75	0	22.00	21.55	21.46	20.95
		16QAM	1	0	22.50	22.48	22.02	21.58
			1	37	22.50	21.31	21.12	20.61
			1	74	22.50	21.78	21.78	21.92
			36	0	22.00	21.57	21.48	21.01
			36	18	22.00	21.55	21.47	20.98
			36	37	22.00	21.55	21.47	20.96
			75	0	21.00	20.73	20.72	20.30
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		132072/1720	132322/1745	132572/1770
LTE Band 66	20MHz	QPSK	1	0	23.50	23.17	22.50	22.07
			1	49	23.50	22.79	22.00	21.65
			1	99	23.50	22.28	22.21	22.83
			50	0	22.50	22.21	21.43	20.25
			50	24	22.50	22.19	21.44	20.32
			50	49	22.50	21.14	21.35	21.15
			100	0	22.00	21.76	21.45	21.03
		16QAM	1	0	22.50	22.47	21.80	21.65
			1	49	22.50	21.88	21.55	21.05
			1	99	22.50	21.78	21.71	22.15
			50	0	21.50	21.15	20.68	19.57
			50	24	21.50	21.13	20.68	19.58
			50	49	21.50	20.46	20.61	20.39
			100	0	21.00	20.89	20.70	20.39

7.3. WLAN & Bluetooth Output Power

Mode	Channel	Frequency (MHz)	Tune-up (dBm)	Output Power (dBm) ANT1	Tune-up (dBm)	Output Power (dBm) ANT2	Tune-up (dBm)	Output Power (dBm) Total
802.11b	1	2412	20.50	18.68	18.50	17.81	N/A	N/A
	6	2437	20.50	20.05	18.50	18.47	N/A	N/A
	11	2462	20.50	19.12	18.50	17.40	N/A	N/A
802.11g	1	2412	23.50	21.92	23.00	21.99	N/A	N/A
	6	2437	23.50	23.35	23.00	22.88	N/A	N/A
	11	2462	23.50	22.47	23.00	21.74	N/A	N/A
802.11n HT20	1	2412	21.50	21.37	21.50	21.15	24.50	24.27
	6	2437	21.50	20.84	21.50	20.36	24.50	23.61
	11	2462	21.50	20.71	21.50	20.01	24.50	23.38
802.11n HT40	3	2422	22.00	21.51	21.50	21.04	24.50	24.29
	6	2437	22.00	21.41	21.50	20.87	24.50	24.16
	9	2452	22.00	21.07	21.50	20.39	24.50	23.75

NOTE: Power measurement results of WLAN 2.4G.

8. SAR Results

8.1. SAR measurement results

The calculated SAR is obtained by the following formula:

Reported SAR=Measured SAR*10(Ptarget-Pmeasured))/10

Scaling factor=10(Ptarget-Pmeasured))/10

Reported SAR= Measured SAR* Scaling factor

Where

Ptarget is the power of manufacturing upper limit;

Pmeasured is the measured power;

Measured SAR is measured SAR at measured power which including power drift)

Reported SAR which including Power Drift and Scaling factor

Duty Cycle

Test Mode	Duty Cycle
UMTS	1:1
LTE	1:1
WLAN2450	1:1

8.1.1. SAR measurement Result of WCDMA Band 2

Test Position of Hotspot with 10mm	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
Front Side	9400/1880	RMC12.2K	0.342	0.185	1.19	22.50	23.00	0.384	2023/5/23	
Back Side	9400/1880	RMC12.2K	0.523	0.292	-1.58	22.50	23.00	0.587	2023/5/23	1#
Left Side	9400/1880	RMC12.2K	0.162	0.088	-0.89	22.50	23.00	0.182	2023/5/23	
Right Side	9400/1880	RMC12.2K	0.171	0.091	-0.46	22.50	23.00	0.192	2023/5/23	
Top Side	9400/1880	RMC12.2K	0.122	0.074	0.15	22.50	23.00	0.137	2023/5/23	
Bottom Side	9400/1880	RMC12.2K	0.270	0.151	-0.43	22.50	23.00	0.303	2023/5/23	

NOTE: Hotspot SAR test results of WCDMA Band 2

8.1.2. SAR measurement Result of WCDMA Band 5

Test Position of Hotspot with 10mm	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
Front Side	4182/836.4	RMC12.2K	0.312	0.245	3.54	21.93	22.50	0.356	2023/5/22	
Back Side	4182/836.4	RMC12.2K	0.470	0.377	-0.11	21.93	22.50	0.536	2023/5/22	2#
Left Side	4182/836.4	RMC12.2K	0.156	0.119	-3.85	21.93	22.50	0.178	2023/5/22	
Right Side	4182/836.4	RMC12.2K	0.153	0.117	1.66	21.93	22.50	0.174	2023/5/22	
Top Side	4182/836.4	RMC12.2K	0.132	0.084	3.20	21.93	22.50	0.151	2023/5/22	
Bottom Side	4182/836.4	RMC12.2K	0.245	0.197	3.33	21.93	22.50	0.279	2023/5/22	

NOTE: Hotspot SAR test results of WCDMA Band 5

8.1.3. SAR measurement Result of WIFI 2.4G

ANT1

Test Position of Hotspot with 10mm	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
Front Side	6/2437	802.11g	0.126	0.062	1.32	23.35	23.50	0.130	2023/5/30	
Back Side	6/2437	802.11g	0.175	0.089	-0.36	23.35	23.50	0.181	2023/5/30	3#
Left Side	6/2437	802.11g	0.066	0.033	-2.25	23.35	23.50	0.068	2023/5/30	
Right Side	6/2437	802.11g	0.042	0.025	0.21	23.35	23.50	0.043	2023/5/30	

Top Side	6/2437	802.11g	0.032	0.020	0.02	23.35	23.50	0.033	2023/5/30	
Bottom Side	6/2437	802.11g	0.057	0.028	1.40	23.35	23.50	0.059	2023/5/30	

ANT2

Test Position of Hotspot with 10mm	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
Front Side	6/2437	802.11g	0.048	0.024	3.35	22.88	23.00	0.049	2023/5/30	
Back Side	6/2437	802.11g	0.043	0.022	-3.02	22.88	23.00	0.044	2023/5/30	4#
Left Side	6/2437	802.11g	0.021	0.010	-1.09	22.88	23.00	0.022	2023/5/30	
Right Side	6/2437	802.11g	0.018	0.009	-3.96	22.88	23.00	0.019	2023/5/30	
Top Side	6/2437	802.11g	0.014	0.007	-3.02	22.88	23.00	0.014	2023/5/30	
Bottom Side	6/2437	802.11g	0.015	0.013	3.75	22.88	23.00	0.015	2023/5/30	

MIMO

Test Position of Hotspot with 10mm	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
Front Side	1/2412	802.11n HT20	0.024	0.013	-0.05	24.27	24.50	0.025	2023/5/30	
Back Side	1/2412	802.11n HT20	0.035	0.019	-0.12	24.27	24.50	0.037	2023/5/30	5#
Left Side	1/2412	802.11n HT20	0.012	0.010	1.46	24.27	24.50	0.013	2023/5/30	
Right Side	1/2412	802.11n HT20	0.010	0.008	0.54	24.27	24.50	0.011	2023/5/30	
Top Side	1/2412	802.11n HT20	0.011	0.007	1.52	24.27	24.50	0.012	2023/5/30	

Bottom Side	1/2412	802.11n HT20	0.015	0.013	2.85	24.27	24.50	0.016	2023/5/30	

NOTE: Hotspot SAR test results of WIFI 2.4G

8.1.4. SAR measurement Result of LTE Band 2

Test Position of Hotspot with 10mm	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
1RB										
Front Side	18900/1880	20M QPSK(1,99)	0.216	0.099	-2.68	21.97	22.50	0.244	2023/5/23	
Back Side	18900/1880	20M QPSK(1,99)	0.312	0.148	-1.84	21.97	22.50	0.352	2023/5/23	6#
Left Side	18900/1880	20M QPSK(1,99)	0.096	0.043	0.82	21.97	22.50	0.108	2023/5/23	
Right Side	18900/1880	20M QPSK(1,99)	0.105	0.049	-1.84	21.97	22.50	0.119	2023/5/23	
Top Side	18900/1880	20M QPSK(1,99)	0.087	0.042	2.01	21.97	22.50	0.098	2023/5/23	
Bottom Side	18900/1880	20M QPSK(1,99)	0.175	0.080	-0.71	21.97	22.50	0.198	2023/5/23	
50%RB										
Front Side	18900/1880	20M QPSK(50,24)	0.118	0.052	-1.86	21.97	22.50	0.133	2023/5/23	
Back Side	18900/1880	20M QPSK(50,24)	0.178	0.074	-2.58	21.97	22.50	0.201	2023/5/23	
Left Side	18900/1880	20M QPSK(50,24)	0.054	0.024	-4.89	21.97	22.50	0.061	2023/5/23	
Right Side	18900/1880	20M QPSK(50,24)	0.055	0.025	3.38	21.97	22.50	0.062	2023/5/23	
Top Side	18900/1880	20M QPSK(50,24)	0.035	0.020	2.12	21.97	22.50	0.040	2023/5/23	
Bottom Side	18900/1880	20M QPSK(50,24)	0.099	0.044	0.13	21.97	22.50	0.112	2023/5/23	

NOTE: Hotspot SAR test results of LTE Band 2

8.1.5. SAR measurement Result of LTE Band 4

Test Position of Hotspot with 10mm	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
1RB										
Front Side	20175/1732.5	20M QPSK(1,0)	0.288	0.138	-2.42	22.04	23.00	0.359	2023/5/26	
Back Side	20175/1732.5	20M QPSK(1,0)	0.451	0.222	-0.70	22.04	23.00	0.563	2023/5/26	7#
Left Side	20175/1732.5	20M QPSK(1,0)	0.147	0.069	1.75	22.04	23.00	0.183	2023/5/26	
Right Side	20175/1732.5	20M QPSK(1,0)	0.141	0.067	-1.14	22.04	23.00	0.176	2023/5/26	
Top Side	20175/1732.5	20M QPSK(1,0)	0.125	0.052	3.20	22.04	23.00	0.156	2023/5/26	
Bottom Side	20175/1732.5	20M QPSK(1,0)	0.245	0.119	2.17	22.04	23.00	0.306	2023/5/26	
50%RB										
Front Side	20175/1732.5	20M QPSK(50,0)	0.149	0.078	-2.62	20.36	22.00	0.217	2023/5/26	
Back Side	20175/1732.5	20M QPSK(50,0)	0.236	0.124	2.91	20.36	22.00	0.344	2023/5/26	
Left Side	20175/1732.5	20M QPSK(50,0)	0.075	0.041	-3.55	20.36	22.00	0.109	2023/5/26	
Right Side	20175/1732.5	20M QPSK(50,0)	0.077	0.034	-2.05	20.36	22.00	0.112	2023/5/26	
Top Side	20175/1732.5	20M QPSK(50,0)	0.052	0.030	0.14	20.36	22.00	0.076	2023/5/26	
Bottom Side	20175/1732.5	20M QPSK(50,0)	0.144	0.064	2.82	20.36	22.00	0.210	2023/5/26	

NOTE: Hotspot SAR test results of LTE Band 4

8.1.6. SAR measurement Result of LTE Band 5

Test Position of Hotspot with 10mm	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
1RB										
Front Side	20525/836.5	10M QPSK(1,49)	0.420	0.331	3.69	22.02	23.50	0.591	2023/5/22	
Back Side	20525/836.5	10M QPSK(1,49)	0.696	0.548	-2.84	22.02	23.50	0.979	2023/5/22	8#
Left Side	20525/836.5	10M QPSK(1,49)	0.213	0.163	0.46	22.02	23.50	0.299	2023/5/22	
Right Side	20525/836.5	10M QPSK(1,49)	0.219	0.171	-3.08	22.02	23.50	0.308	2023/5/22	
Top Side	20525/836.5	10M QPSK(1,49)	0.370	0.291	0.59	22.02	23.50	0.520	2023/5/22	
Bottom Side	20525/836.5	10M QPSK(1,49)	0.290	0.187	1.83	22.02	23.50	0.408	2023/5/22	
Back Side	20450/829	10M QPSK(1,49)	0.546	0.387	0.12	22.38	23.50	0.707	2023/5/22	
Back Side	20600/844	10M QPSK(1,49)	0.512	0.345	2.54	23.24	23.50	0.544	2023/5/22	
BackSide Repeated	20525/836.5	10M QPSK(1,49)	0.675	0.524	1.20	22.02	23.50	0.949	2023/5/22	
50%RB										
Front Side	20525/836.5	10M QPSK(25,24)	0.242	0.193	4.14	21.01	22.00	0.304	2023/5/22	
Back Side	20525/836.5	10M QPSK(25,24)	0.413	0.318	-0.09	21.01	22.00	0.519	2023/5/22	
Left Side	20525/836.5	10M QPSK(25,24)	0.108	0.094	-4.16	21.01	22.00	0.136	2023/5/22	
Right Side	20525/836.5	10M QPSK(25,24)	0.118	0.101	-4.70	21.01	22.00	0.148	2023/5/22	
Top Side	20525/836.5	10M QPSK(25,24)	0.078	0.042	0.85	21.01	22.00	0.098	2023/5/22	
Bottom Side	20525/836.5	10M QPSK(25,24)	0.203	0.169	-2.15	21.01	22.00	0.255	2023/5/22	

NOTE: Hotspot SAR test results of LTE Band 5

8.1.7. SAR measurement Result of LTE Band 7

Test Position of Hotspot with 10mm	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
1RB										
Front Side	21100/2535	20M QPSK(1,0)	0.276	0.111	-2.49	22.39	22.50	0.283	2023/5/29	
Back Side	21100/2535	20M QPSK(1,0)	0.435	0.179	-4.46	22.39	22.50	0.446	2023/5/29	9#
Left Side	21100/2535	20M QPSK(1,0)	0.135	0.054	2.35	22.39	22.50	0.138	2023/5/29	
Right Side	21100/2535	20M QPSK(1,0)	0.141	0.055	0.21	22.39	22.50	0.145	2023/5/29	
Top Side	21100/2535	20M QPSK(1,0)	0.102	0.047	0.36	22.39	22.50	0.105	2023/5/29	
Bottom Side	21100/2535	20M QPSK(1,0)	0.235	0.095	-0.70	22.39	22.50	0.241	2023/5/29	
50%RB										
Front Side	21100/2535	20M QPSK(50,49)	0.138	0.059	-0.63	20.90	21.50	0.158	2023/5/29	
Back Side	21100/2535	20M QPSK(50,49)	0.235	0.102	2.96	20.90	21.50	0.270	2023/5/29	
Left Side	21100/2535	20M QPSK(50,49)	0.080	0.029	0.97	20.90	21.50	0.092	2023/5/29	
Right Side	21100/2535	20M QPSK(50,49)	0.073	0.029	2.40	20.90	21.50	0.084	2023/5/29	
Top Side	21100/2535	20M QPSK(50,49)	0.062	0.024	0.02	20.90	21.50	0.071	2023/5/29	
Bottom Side	21100/2535	20M QPSK(50,49)	0.134	0.053	-0.76	20.90	21.50	0.154	2023/5/29	

NOTE: Hotspot SAR test results of LTE Band 7

8.1.8. SAR measurement Result of LTE Band 66

Test Position of	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g	Date	Plot
			1-g	10-g						

Hotspot with 10mm								(W/Kg)		
1RB										
Front Side	132322/1745	20M QPSK(1,0)	0.300	0.148	-3.12	22.50	23.50	0.378	2023/5/26	
Back Side	132322/1745	20M QPSK(1,0)	0.469	0.231	-2.69	22.50	23.50	0.590	2023/5/26	10#
Left Side	132322/1745	20M QPSK(1,0)	0.147	0.071	-3.60	22.50	23.50	0.185	2023/5/26	
Right Side	132322/1745	20M QPSK(1,0)	0.144	0.070	2.95	22.50	23.50	0.181	2023/5/26	
Top Side	132322/1745	20M QPSK(1,0)	0.112	0.062	0.12	22.50	23.50	0.141	2023/5/26	
Bottom Side	132322/1745	20M QPSK(1,0)	0.240	0.113	-4.00	22.50	23.50	0.302	2023/5/26	
50%RB										
Front Side	132322/1745	20M QPSK(50,0)	0.160	0.087	0.50	21.43	22.50	0.205	2023/5/26	
Back Side	132322/1745	20M QPSK(50,0)	0.240	0.133	-3.84	21.43	22.50	0.307	2023/5/26	
Left Side	132322/1745	20M QPSK(50,0)	0.084	0.041	4.62	21.43	22.50	0.107	2023/5/26	
Right Side	132322/1745	20M QPSK(50,0)	0.084	0.041	2.33	21.43	22.50	0.107	2023/5/26	
Top Side	132322/1745	20M QPSK(50,0)	0.062	0.030	1.25	21.43	22.50	0.079	2023/5/26	
Bottom Side	132322/1745	20M QPSK(50,0)	0.130	0.067	1.94	21.43	22.50	0.166	2023/5/26	

NOTE: Hotspot SAR test results of LTE Band 66

8.2. SAR Summation Scenario

Per KDB 447498 D01, simultaneous transmission SAR is compliant if,

1) Scalar SAR summation < 1.6W/kg.

2) SPLSR = $(SAR_1 + SAR_2)^{1.5}$ / (min. separation distance, mm), and the peak separation distance is determined from the square root of $[(x_1-x_2)^2 + (y_1-y_2)^2 + (z_1-z_2)^2]$, where (x_1, y_1, z_1) and (x_2, y_2, z_2) are the coordinates of the extrapolated peak SAR locations in the zoom scan. If SPLSR ≤ 0.04, simultaneously transmission SAR measurement is not necessary.

Test Position	Scaled SAR_{MAX}	∑1-g SAR	SPLSR	Remark

		WWAN	DTS	(W/Kg)		
Hotspot& Body-Worn	Front Side	0.591	0.130	0.721	N/A	N/A
	Back Side	0.979	0.181	1.160	N/A	N/A
	Left Side	0.299	0.068	0.367	N/A	N/A
	Right Side	0.308	0.043	0.351	N/A	N/A
	Top Side	0.520	0.033	0.553	N/A	N/A
	Bottom Side	0.408	0.059	0.467	N/A	N/A

9. Appendix A. Photo documentation

Refer to appendix Test Setup photo---SAR

10. Appendix B. System Check Plots

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MEASUREMENT 2 System Performance Check - 1800MHz
MEASUREMENT 3 System Performance Check - 1900MHz
MEASUREMENT 4 System Performance Check - 2450MHz
MEASUREMENT 5 System Performance Check - 2600MHz

MEASUREMENT 1

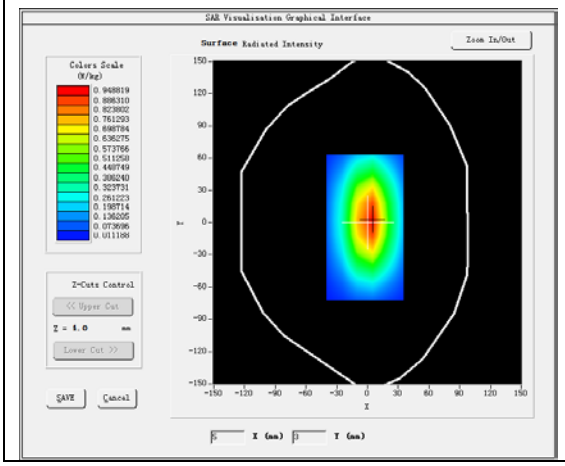
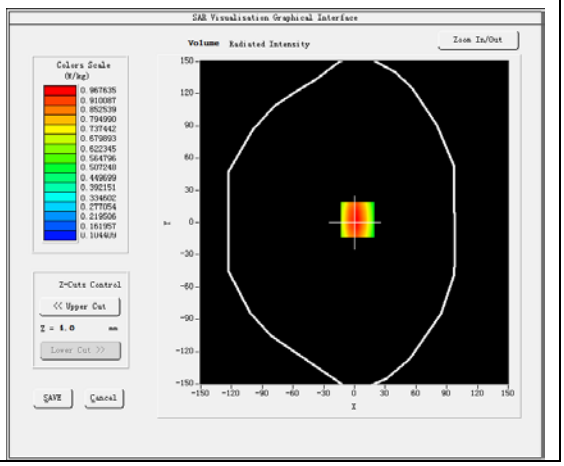
Date of measurement: 22/5/2023

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Dipole
Band	CW835
Channels	Middle
Signal	CW (Crest factor: 1.0)
ConvF	1.50

B. SAR Measurement Results

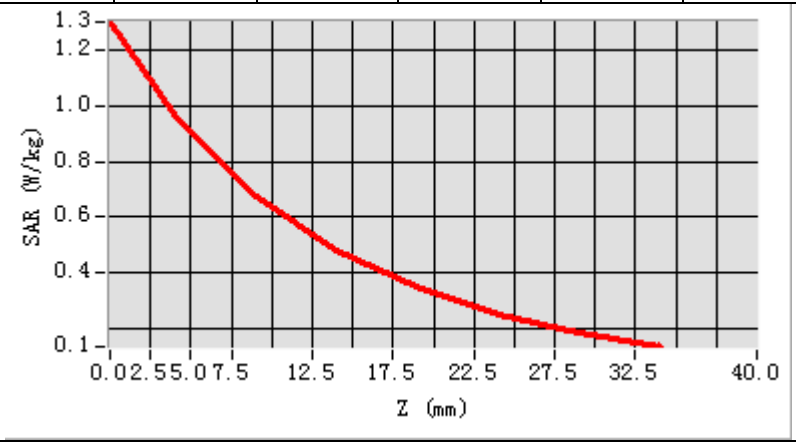
Frequency (MHz)	835.000000
Relative permittivity (real part)	40.851013
Relative permittivity (imaginary part)	19.567467
Conductivity (S/m)	0.907713
Variation (%)	-3.920000

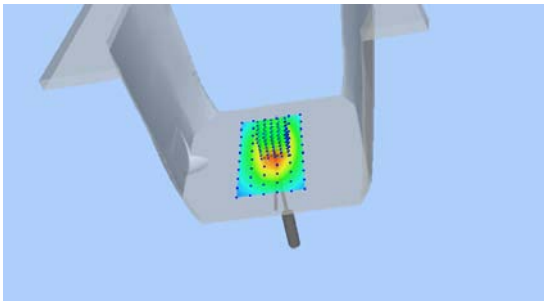
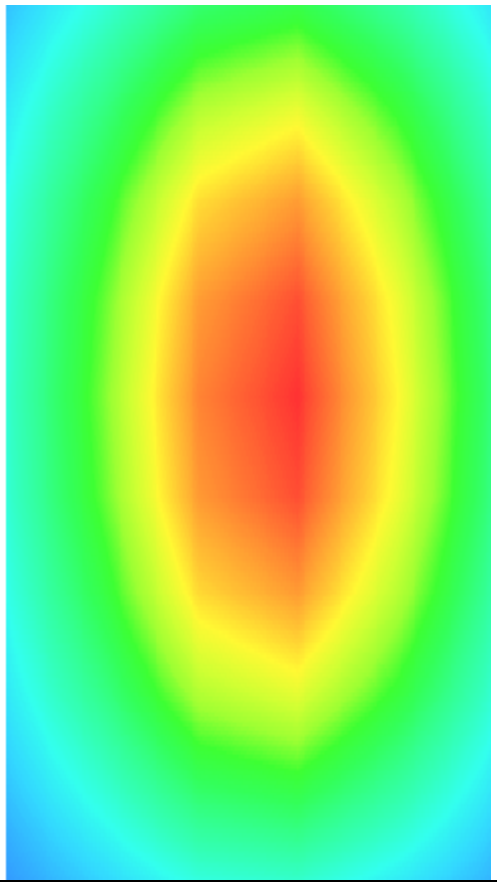
SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=3.00, Y=3.00
SAR Peak: 1.30 W/kg

SAR 10g (W/Kg)	0.631158
SAR 1g (W/Kg)	1.034222

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	1.3013	0.9619	0.6785	0.4871	0.3420	0.2587	0.1873



3D screen shot	Hot spot position
	

MEASUREMENT 2

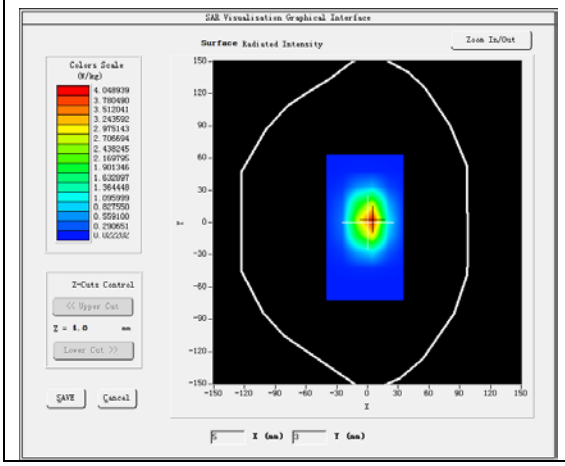
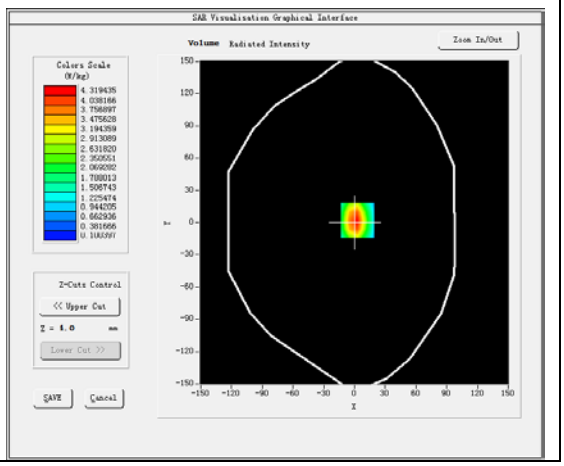
Date of measurement: 26/5/2023

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Dipole
Band	CW1800
Channels	Middle
Signal	CW (Crest factor: 1.0)
ConvF	1.73

B. SAR Measurement Results

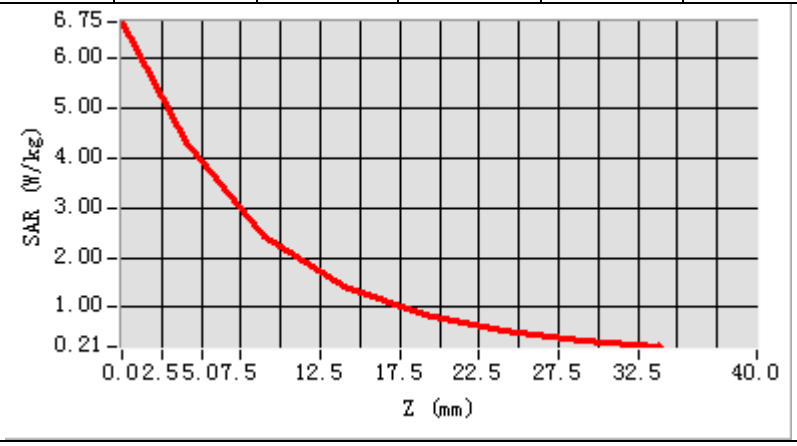
Frequency (MHz)	1800.000000
Relative permittivity (real part)	38.822042
Relative permittivity (imaginary part)	13.963804
Conductivity (S/m)	1.396380
Variation (%)	-1.080000

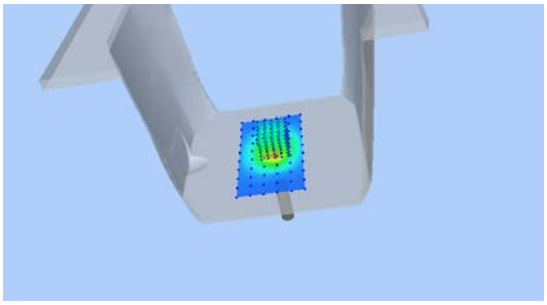
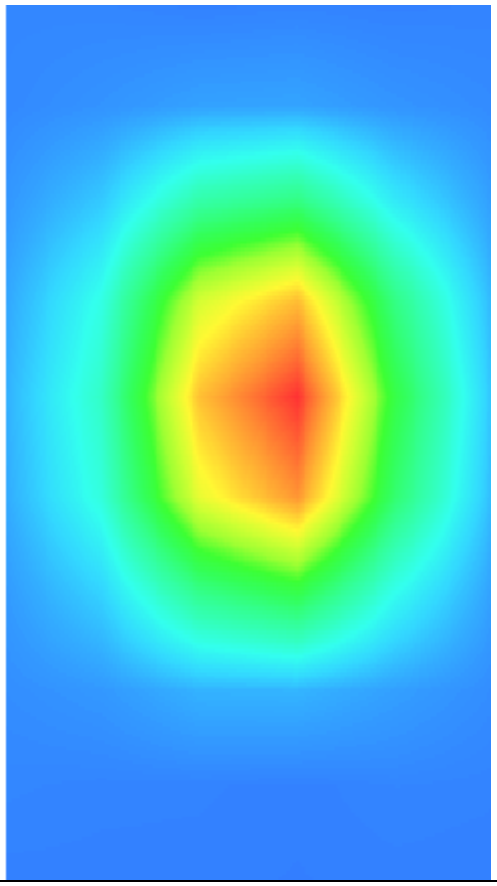
SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=3.00, Y=2.00
SAR Peak: 6.82 W/kg

SAR 10g (W/Kg)	2.089321
SAR 1g (W/Kg)	3.705203

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	6.7453	4.3154	2.4350	1.4252	0.8599	0.5298	0.3248



3D screen shot	Hot spot position
	

MEASUREMENT 3

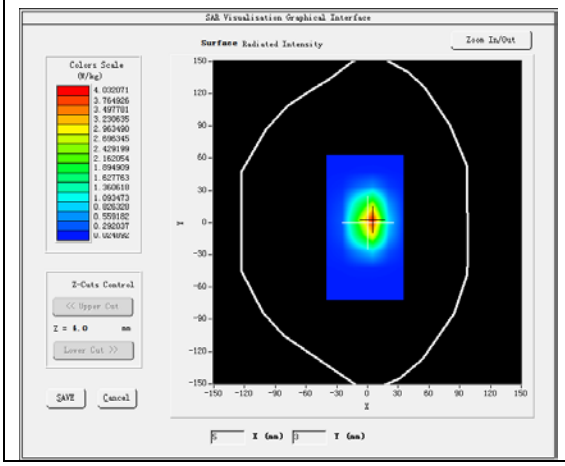
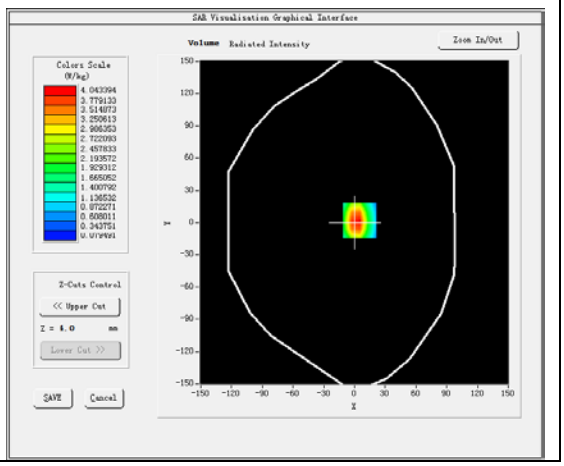
Date of measurement: 23/5/2023

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Dipole
Band	CW1900
Channels	Middle
Signal	CW (Crest factor: 1.0)
ConvF	1.91

B. SAR Measurement Results

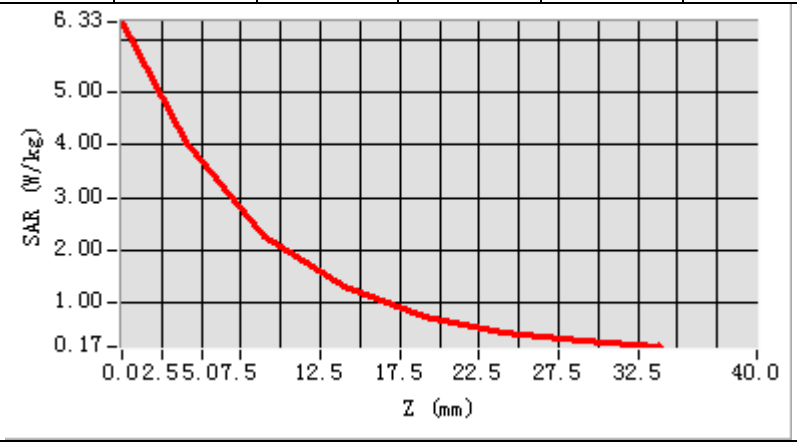
Frequency (MHz)	1900.000000
Relative permittivity (real part)	38.255627
Relative permittivity (imaginary part)	13.812378
Conductivity (S/m)	1.457973
Variation (%)	1.540000

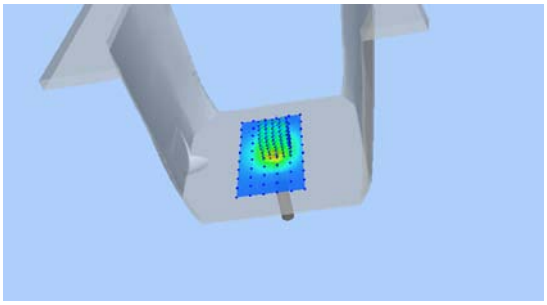
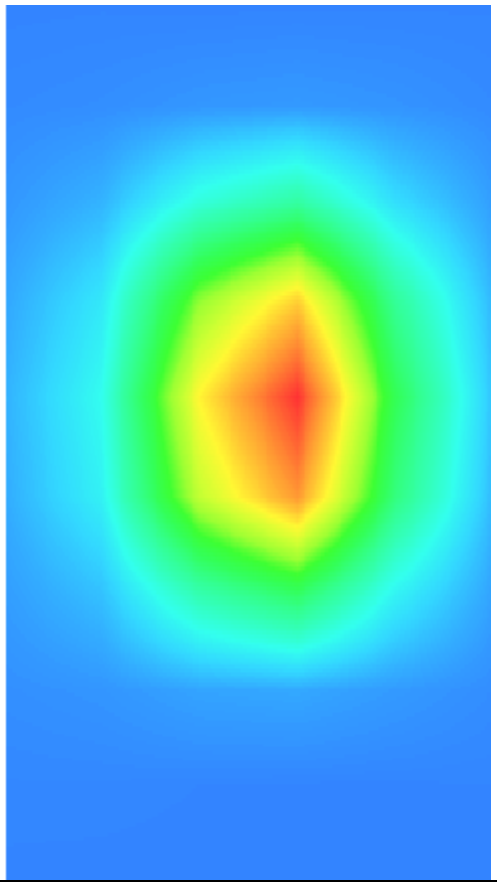
SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=5.00, Y=2.00
SAR Peak: 6.70 W/kg

SAR 10g (W/Kg)	2.082249
SAR 1g (W/Kg)	4.372252

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	6.3211	4.0423	2.2653	1.3028	0.7633	0.4548	0.2747



3D screen shot	Hot spot position
	

MEASUREMENT 4

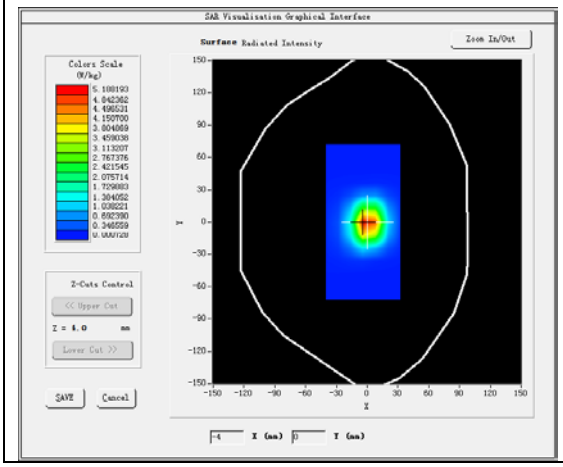
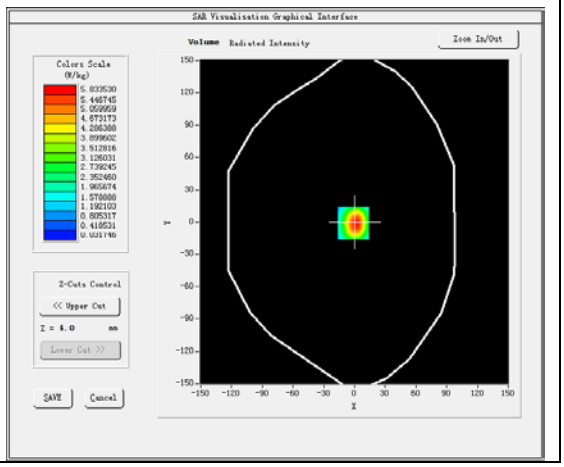
Date of measurement: 30/5/2023

A. Experimental conditions.

Area Scan	dx=12mm dy=12mm, h= 5.00 mm
ZoomScan	7x7x7,dx=5mm dy=5mm dz=5mm
Phantom	Validation plane
Device Position	Dipole
Band	CW2450
Channels	Middle
Signal	CW (Crest factor: 1.0)
ConvF	1.98

B. SAR Measurement Results

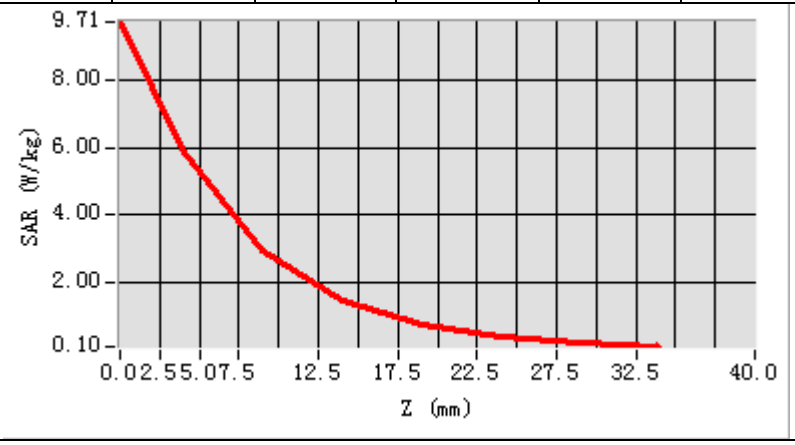
Frequency (MHz)	2450.000000
Relative permittivity (real part)	37.775371
Relative permittivity (imaginary part)	13.261121
Conductivity (S/m)	1.804986
Variation (%)	0.660000

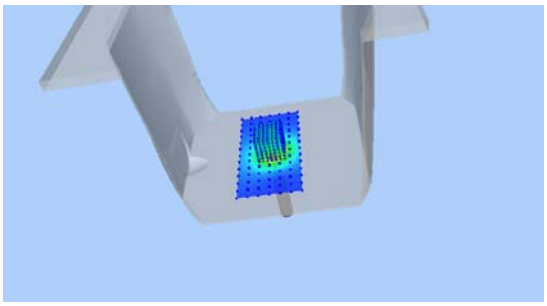
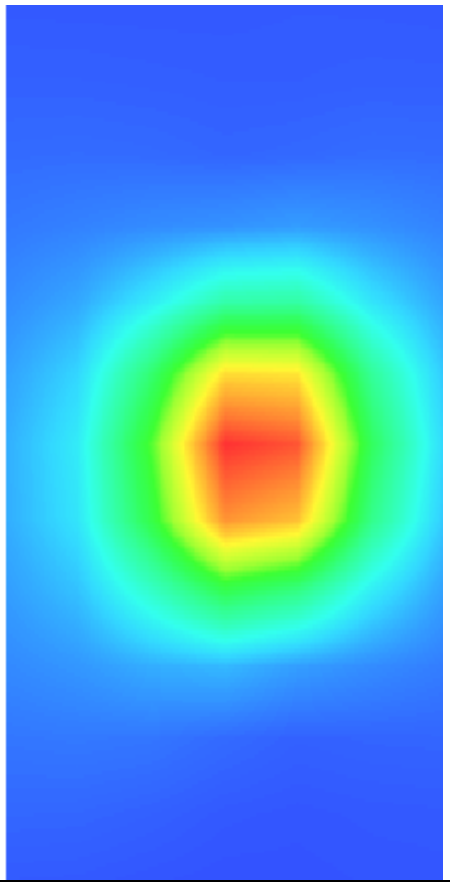
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-1.00, Y=-1.00
SAR Peak: 9.83 W/kg

SAR 10g (W/Kg)	2.589157
SAR 1g (W/Kg)	4.944305

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	9.7174	5.8392	2.9268	1.4623	0.7402	0.3797	0.1956



3D screen shot	Hot spot position
	

MEASUREMENT 5

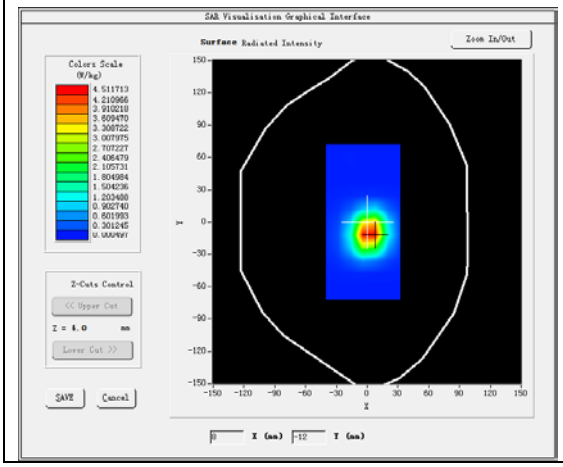
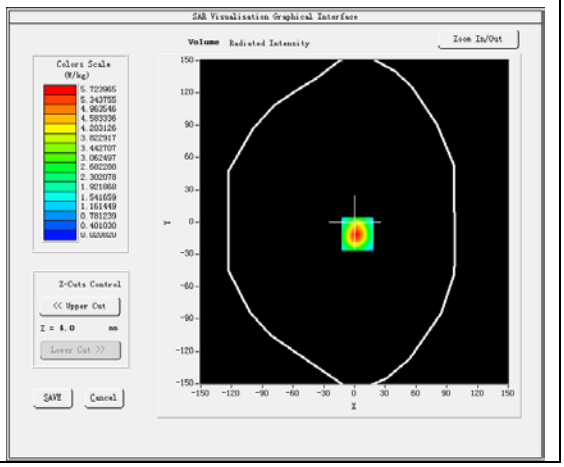
Date of measurement: 29/5/2023

A. Experimental conditions.

Area Scan	dx=12mm dy=12mm, h= 5.00 mm
ZoomScan	7x7x7,dx=5mm dy=5mm dz=5mm
Phantom	Validation plane
Device Position	Dipole
Band	CW2600
Channels	Middle
Signal	CW (Crest factor: 1.0)
ConvF	1.87

B. SAR Measurement Results

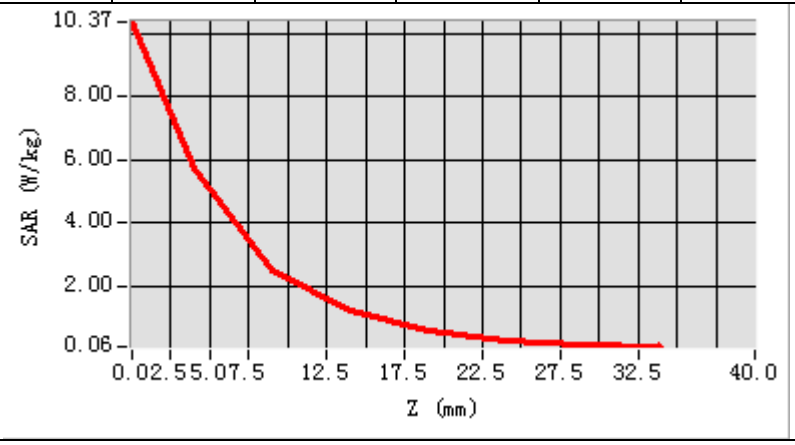
Frequency (MHz)	2600.000000
Relative permittivity (real part)	37.956221
Relative permittivity (imaginary part)	13.662449
Conductivity (S/m)	1.973465
Variation (%)	-0.680000

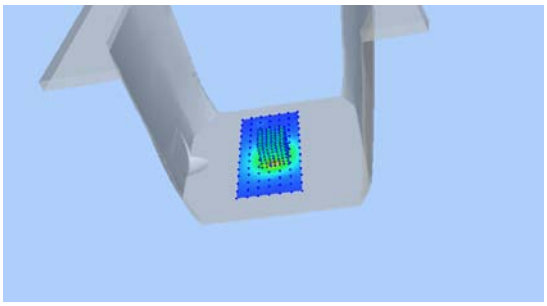
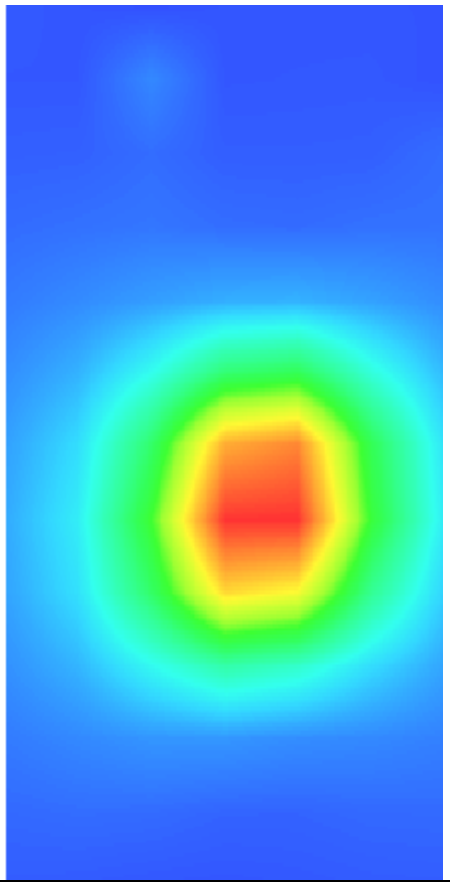
SURFACE SAR	VOLUME SAR
	

Maximum location: X=3.00, Y=-11.00
SAR Peak: 10.29 W/kg

SAR 10g (W/Kg)	2.332045
SAR 1g (W/Kg)	5.824270

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	10.304	5.7264	2.5049	1.1795	0.5756	0.2601	0.1220



3D screen shot	Hot spot position
	

11. Appendix C. Plots of High SAR Measurement

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MEASUREMENT 1 WCDMA Band 2 Body
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MEASUREMENT 6 LTE Band 2 Body
MEASUREMENT 7 LTE Band 4 Body
MEASUREMENT 8 LTE Band 5 Body
MEASUREMENT 9 LTE Band 7 Body
MEASUREMENT 10 LTE Band 66 Body

MEASUREMENT 1

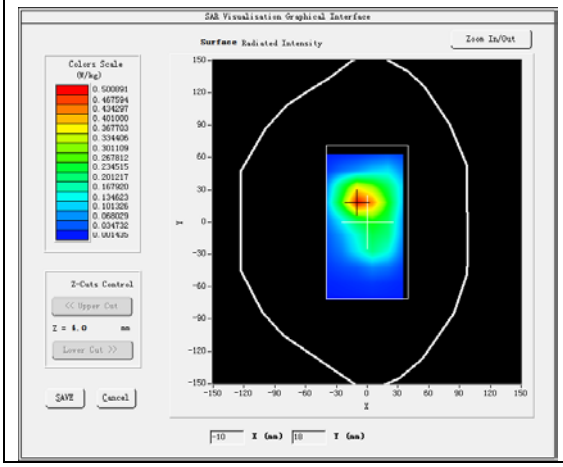
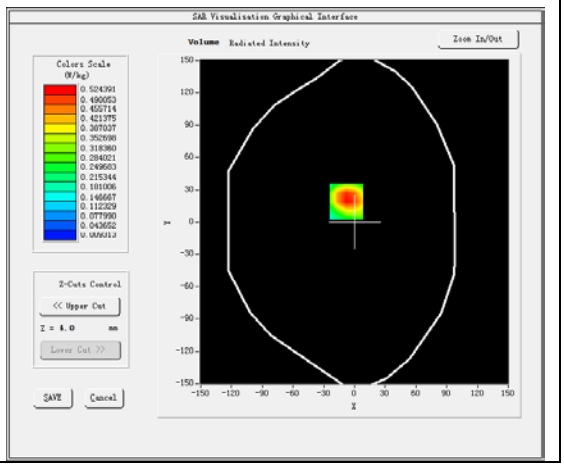
Date of measurement: 23/5/2023

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	Band2_WCDMA1900
Channels	Middle
Signal	WCDMA (Crest factor: 1.0)
ConvF	1.91

B. SAR Measurement Results

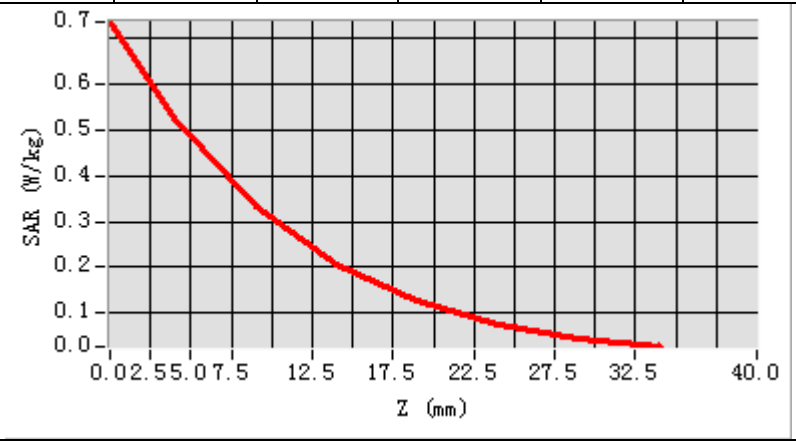
Frequency (MHz)	1880.000000
Relative permittivity (real part)	38.342026
Relative permittivity (imaginary part)	13.830178
Conductivity (S/m)	1.444485
Variation (%)	-1.580000

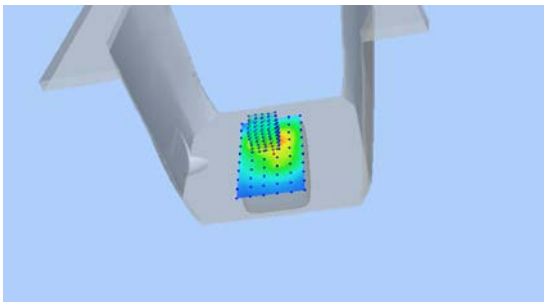
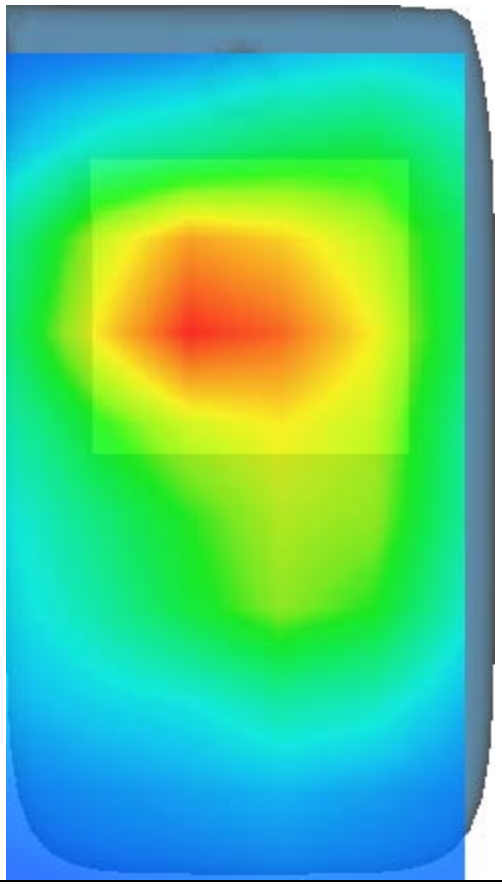
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-8.00, Y=19.00
SAR Peak: 0.80 W/kg

SAR 10g (W/Kg)	0.292392
SAR 1g (W/Kg)	0.522813

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.7370	0.5244	0.3335	0.2068	0.1250	0.0745	0.0442



3D screen shot	Hot spot position
	

MEASUREMENT 2

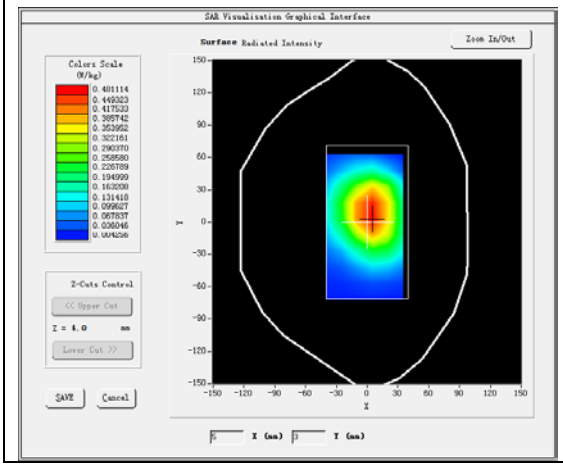
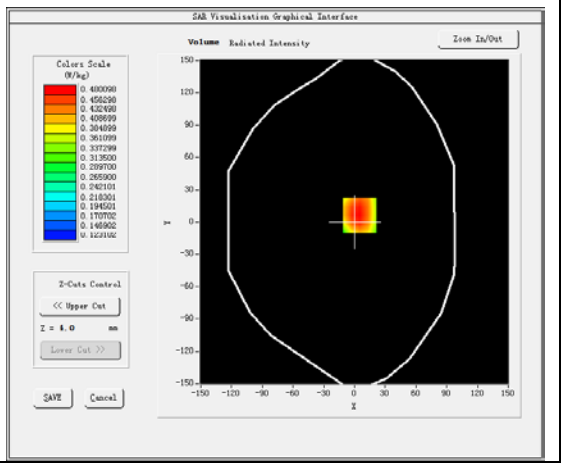
Date of measurement: 22/5/2023

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	Band5_WCDMA850
Channels	Middle
Signal	WCDMA (Crest factor: 1.0)
ConvF	1.50

B. SAR Measurement Results

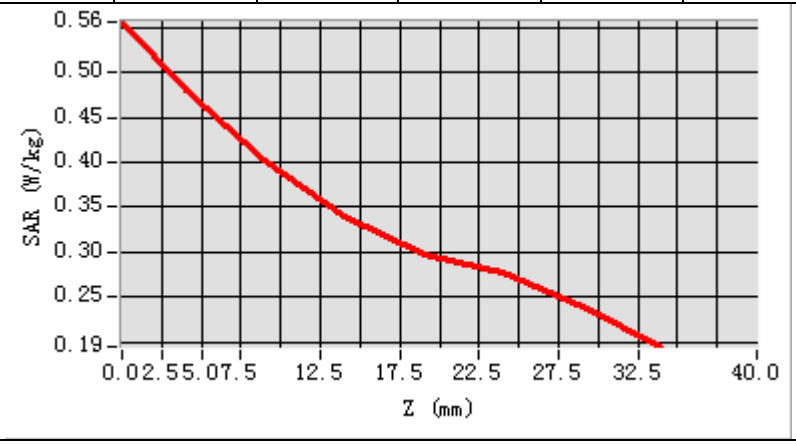
Frequency (MHz)	836.400000
Relative permittivity (real part)	40.766674
Relative permittivity (imaginary part)	19.593307
Conductivity (S/m)	0.910436
Variation (%)	-0.110000

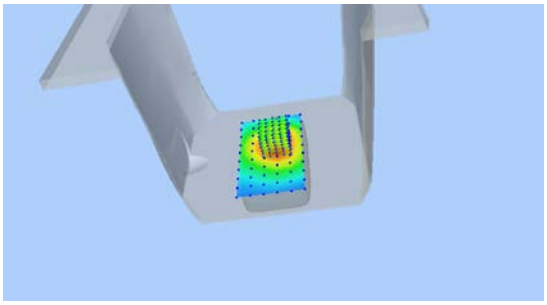
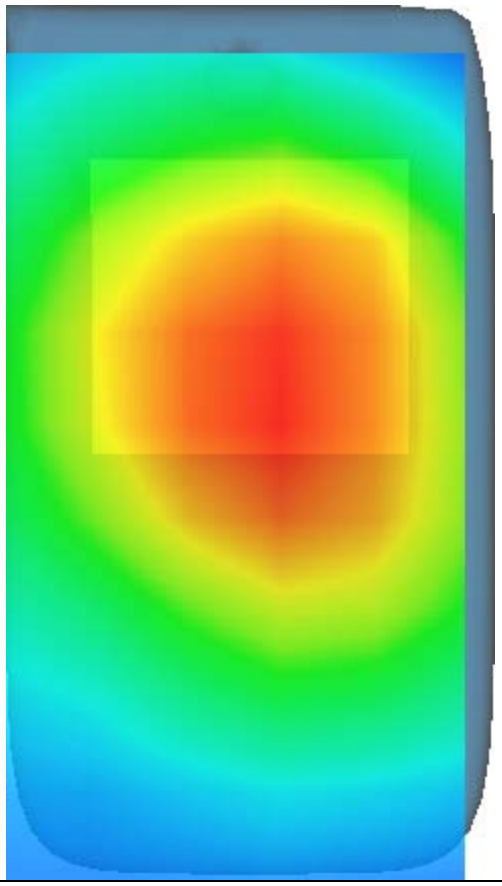
SURFACE SAR	VOLUME SAR
	

Maximum location: X=5.00, Y=6.00
SAR Peak: 0.56 W/kg

SAR 10g (W/Kg)	0.377118
SAR 1g (W/Kg)	0.469746

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.5561	0.4801	0.4021	0.3394	0.2974	0.2780	0.2401



3D screen shot	Hot spot position
	

MEASUREMENT 3

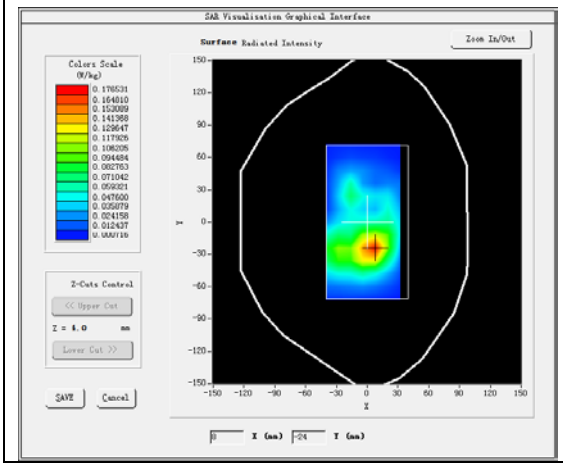
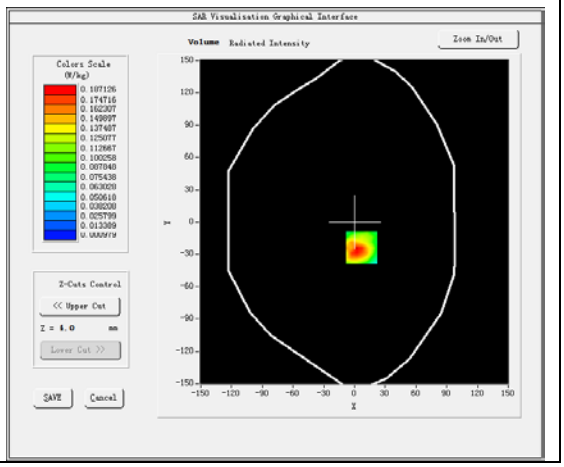
Date of measurement: 30/5/2023

A. Experimental conditions.

Area Scan	dx=12mm dy=12mm, h= 5.00 mm
ZoomScan	7x7x7,dx=5mm dy=5mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	IEEE 802.11b ISM
Channels	Middle
Signal	IEEE802.11b (Crest factor: 1.0)
ConvF	1.98

B. SAR Measurement Results

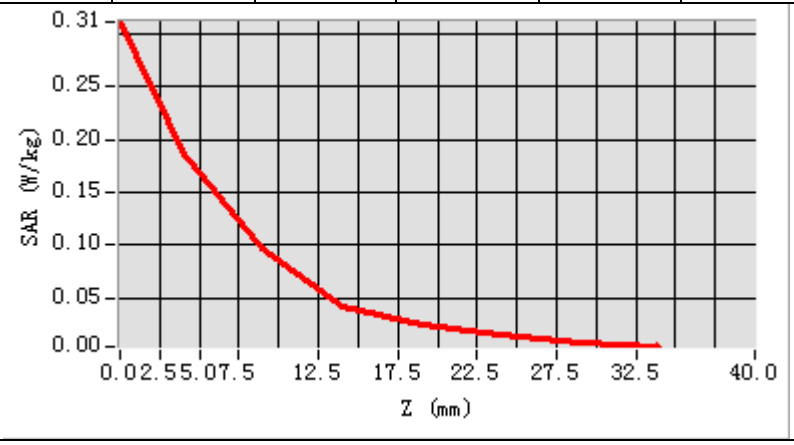
Frequency (MHz)	2437.000000
Relative permittivity (real part)	37.827473
Relative permittivity (imaginary part)	13.179621
Conductivity (S/m)	1.784374
Variation (%)	-0.360000

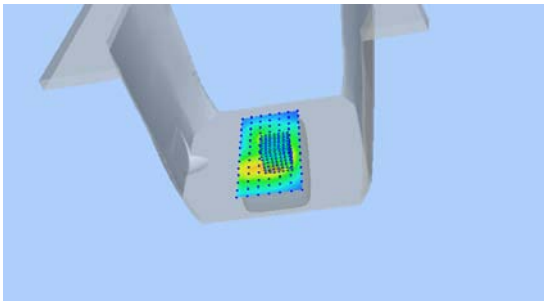
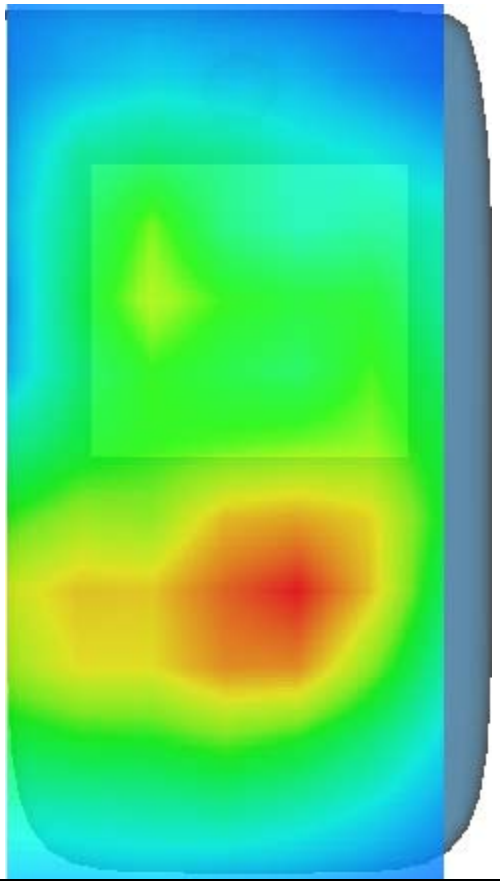
SURFACE SAR	VOLUME SAR
	

Maximum location: X=7.00, Y=-24.00
SAR Peak: 0.33 W/kg

SAR 10g (W/Kg)	0.088923
SAR 1g (W/Kg)	0.174777

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.3115	0.1871	0.0965	0.0412	0.0248	0.0162	0.0072



3D screen shot	Hot spot position
	

MEASUREMENT 4

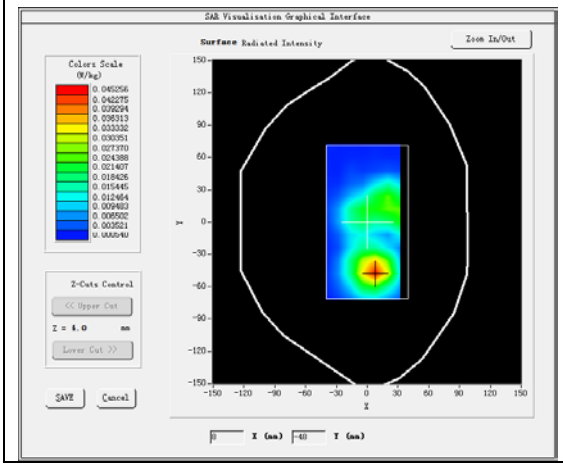
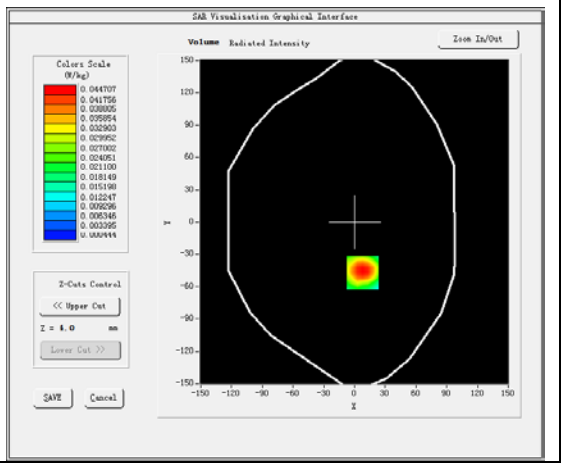
Date of measurement: 30/5/2023

A. Experimental conditions.

Area Scan	dx=12mm dy=12mm, h= 5.00 mm
ZoomScan	7x7x7,dx=5mm dy=5mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	IEEE 802.11b ISM
Channels	Middle
Signal	IEEE802.11b (Crest factor: 1.0)
ConvF	1.98

B. SAR Measurement Results

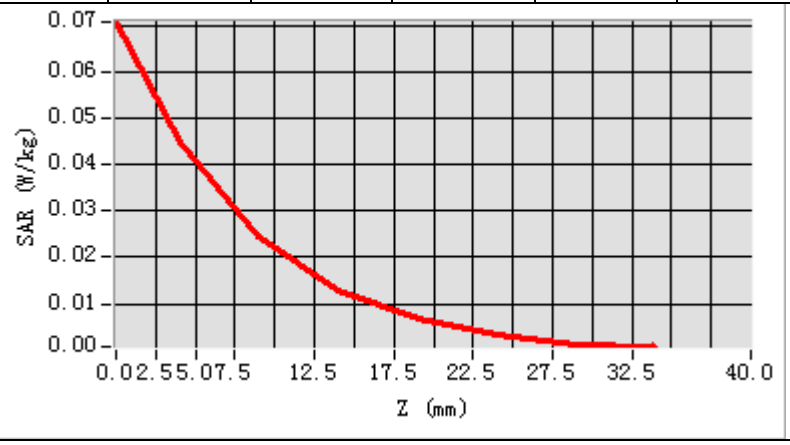
Frequency (MHz)	2437.000000
Relative permittivity (real part)	37.827473
Relative permittivity (imaginary part)	13.179621
Conductivity (S/m)	1.784374
Variation (%)	-3.020000

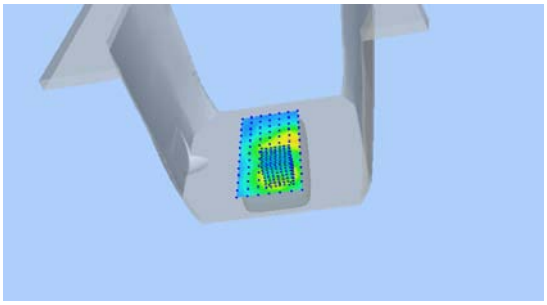
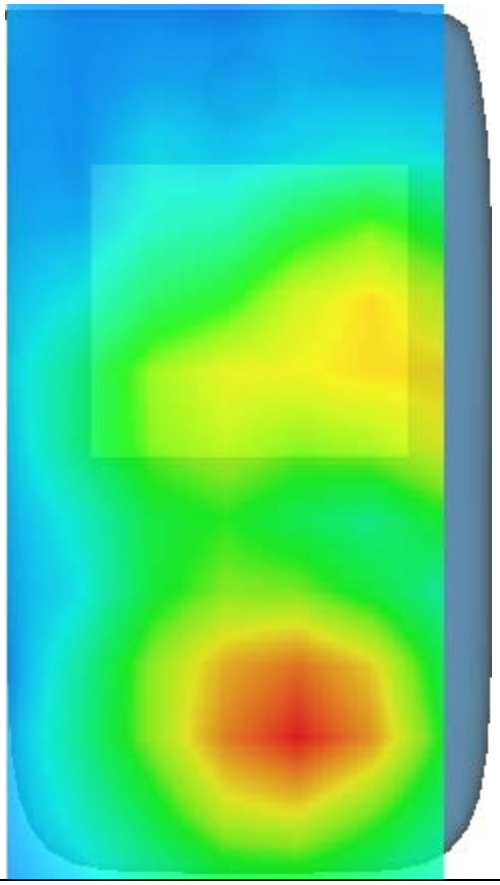
SURFACE SAR	VOLUME SAR
	

Maximum location: X=8.00, Y=-47.00
SAR Peak: 0.07 W/kg

SAR 10g (W/Kg)	0.022318
SAR 1g (W/Kg)	0.043006

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0708	0.0447	0.0243	0.0129	0.0067	0.0035	0.0013



3D screen shot	Hot spot position
	

MEASUREMENT 5

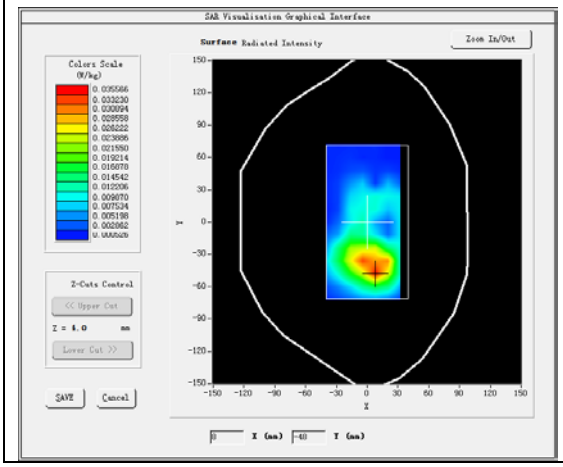
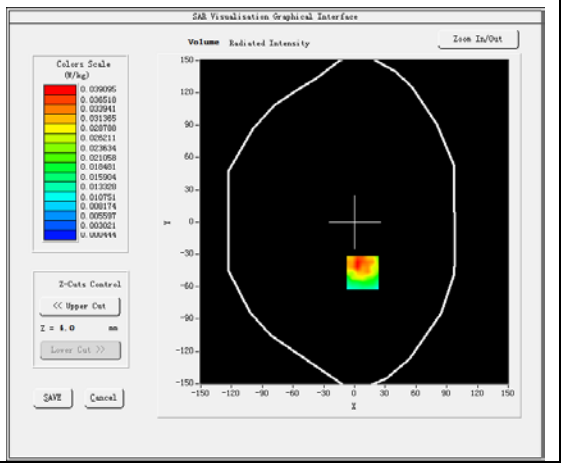
Date of measurement: 30/5/2023

A. Experimental conditions.

Area Scan	dx=12mm dy=12mm, h= 5.00 mm
ZoomScan	7x7x7,dx=5mm dy=5mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	IEEE 802.11b ISM
Channels	Middle
Signal	IEEE802.11b (Crest factor: 1.0)
ConvF	1.98

B. SAR Measurement Results

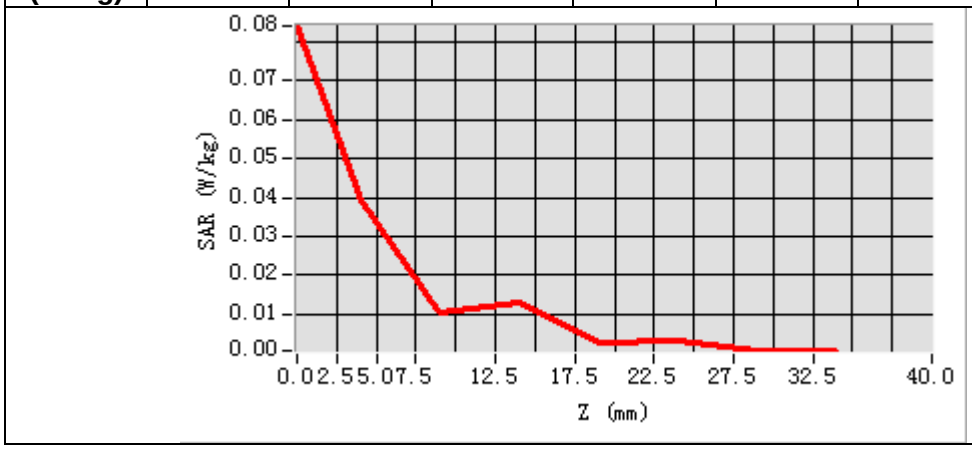
Frequency (MHz)	2437.000000
Relative permittivity (real part)	37.827473
Relative permittivity (imaginary part)	13.179621
Conductivity (S/m)	1.784374
Variation (%)	-0.120000

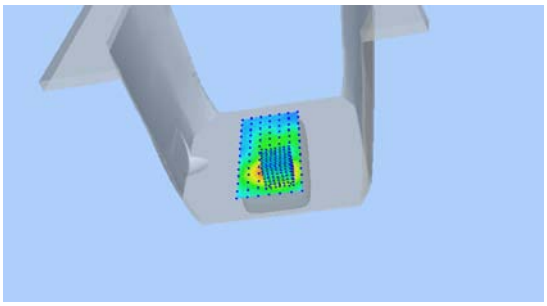
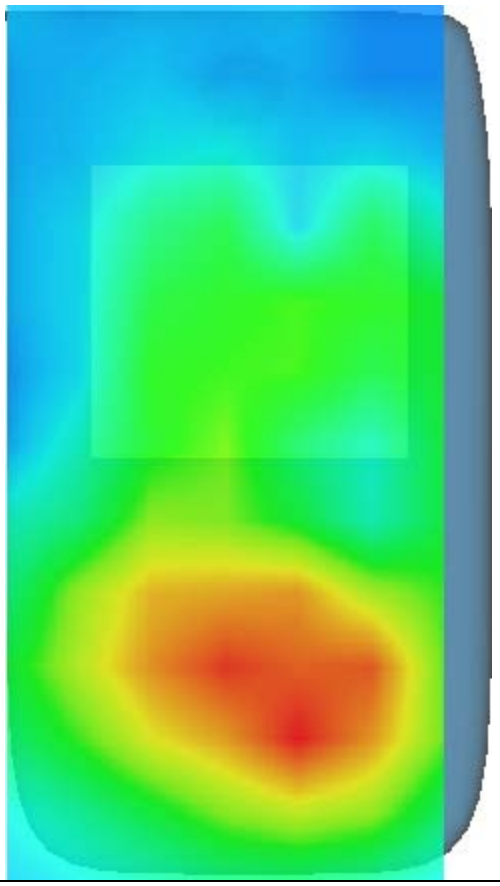
SURFACE SAR	VOLUME SAR
	

Maximum location: X=8.00, Y=-47.00
SAR Peak: 0.06 W/kg

SAR 10g (W/Kg)	0.018801
SAR 1g (W/Kg)	0.035205

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0841	0.0391	0.0106	0.0131	0.0027	0.0033	0.0006



3D screen shot	Hot spot position
	

MEASUREMENT 6

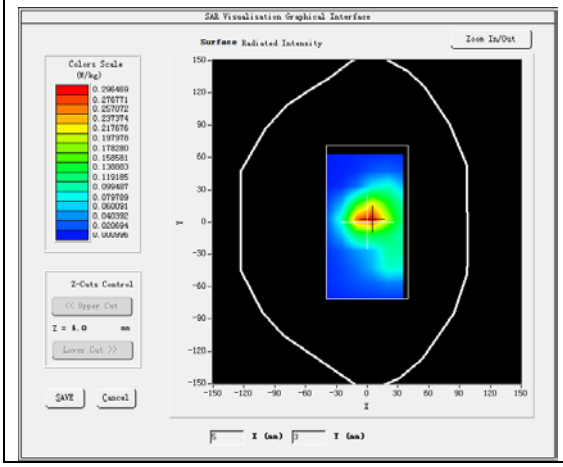
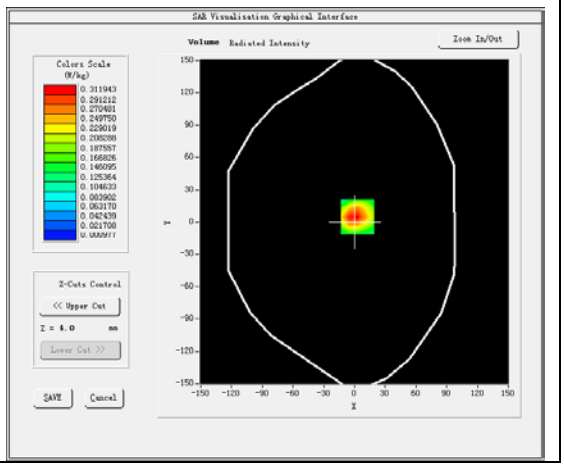
Date of measurement: 23/5/2023

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	LTE band 2
Channels	Middle
Signal	LTE (Crest factor: 1.0)
ConvF	1.91

B. SAR Measurement Results

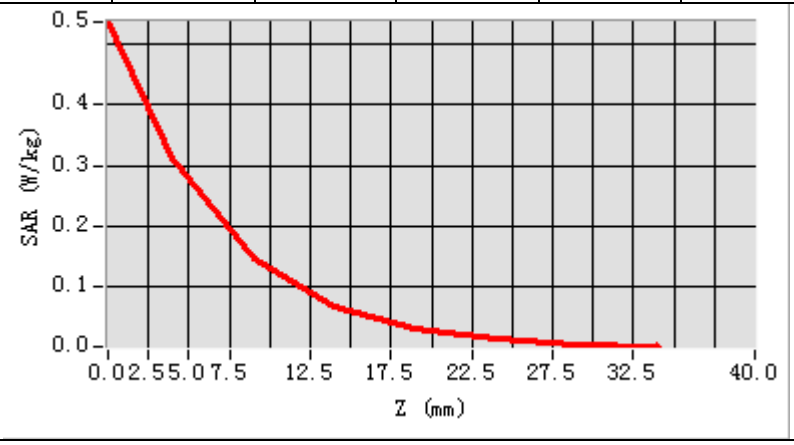
Frequency (MHz)	1880.000000
Relative permittivity (real part)	38.342026
Relative permittivity (imaginary part)	13.830178
Conductivity (S/m)	1.444485
Variation (%)	-1.840000

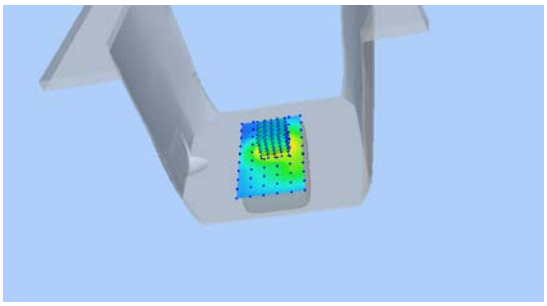
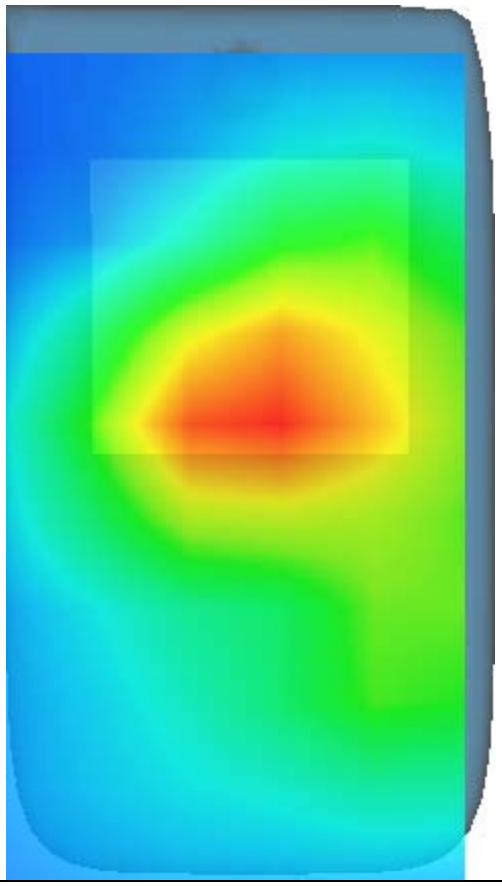
SURFACE SAR	VOLUME SAR
	

Maximum location: X=3.00, Y=5.00
SAR Peak: 0.55 W/kg

SAR 10g (W/Kg)	0.147623
SAR 1g (W/Kg)	0.312217

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.5364	0.3119	0.1471	0.0679	0.0310	0.0139	0.0059



3D screen shot	Hot spot position
	

MEASUREMENT 7

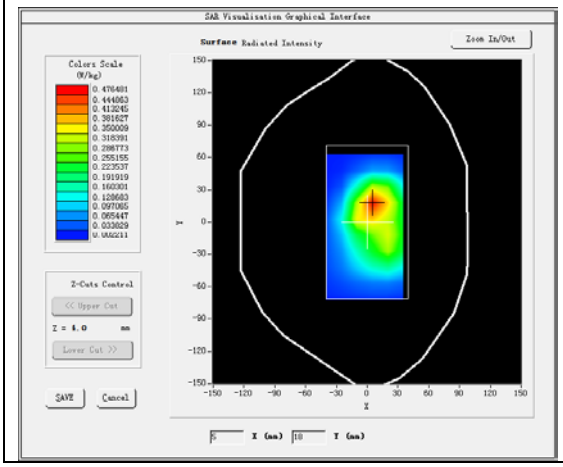
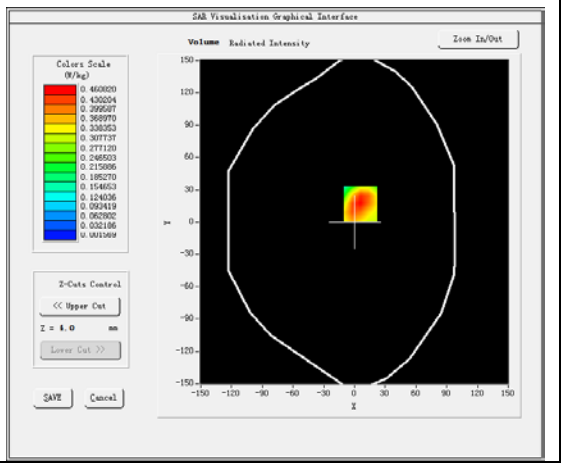
Date of measurement: 26/5/2023

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	LTE band 4
Channels	Middle
Signal	LTE (Crest factor: 1.0)
ConvF	1.73

B. SAR Measurement Results

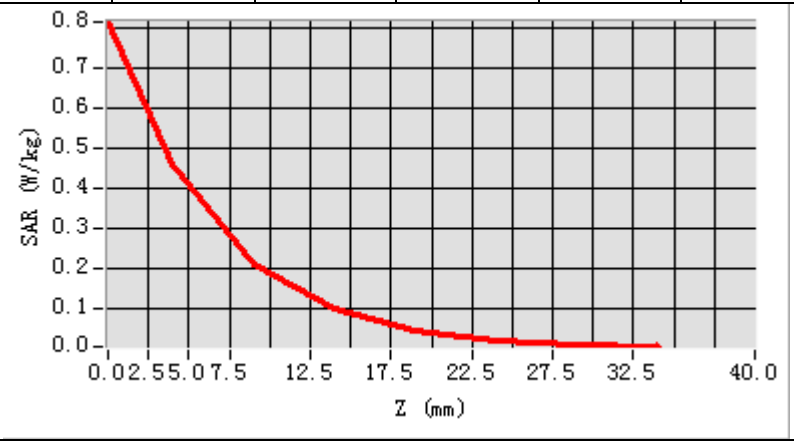
Frequency (MHz)	1732.500000
Relative permittivity (real part)	39.289642
Relative permittivity (imaginary part)	13.900954
Conductivity (S/m)	1.337967
Variation (%)	-0.700000

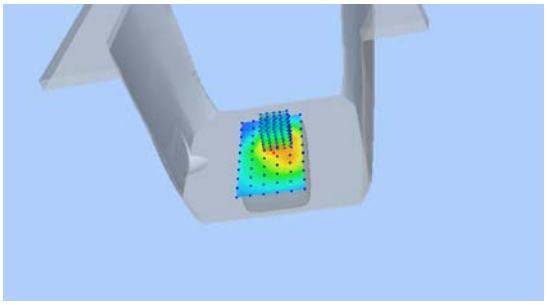
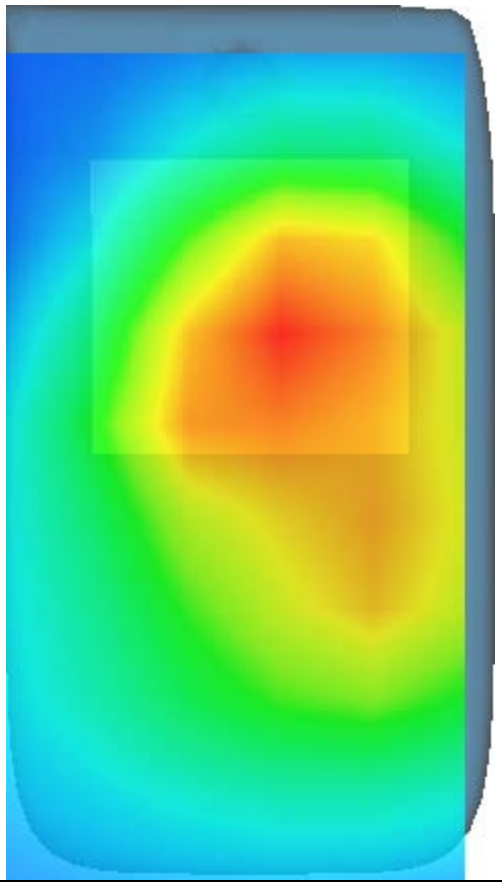
SURFACE SAR	VOLUME SAR
	

Maximum location: X=6.00, Y=17.00
SAR Peak: 0.83 W/kg

SAR 10g (W/Kg)	0.222106
SAR 1g (W/Kg)	0.451039

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.8129	0.4608	0.2094	0.0977	0.0458	0.0214	0.0100



3D screen shot	Hot spot position
	

MEASUREMENT 8

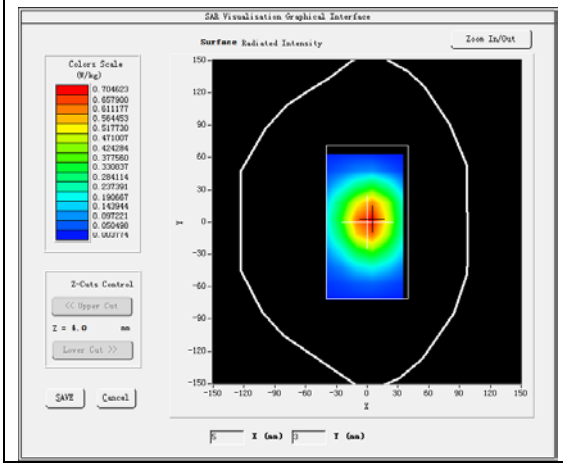
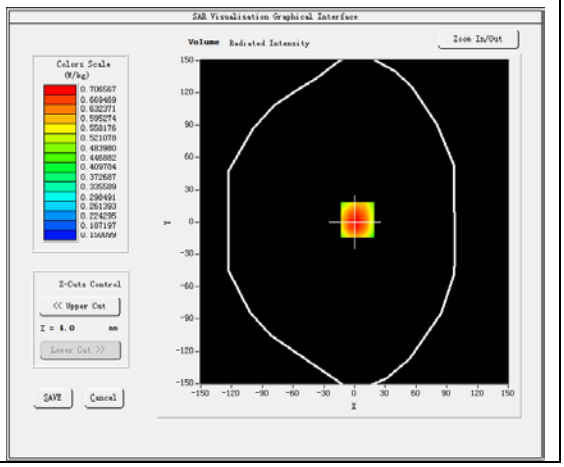
Date of measurement: 22/5/2023

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	LTE band 5
Channels	Middle
Signal	LTE (Crest factor: 1.0)
ConvF	1.50

B. SAR Measurement Results

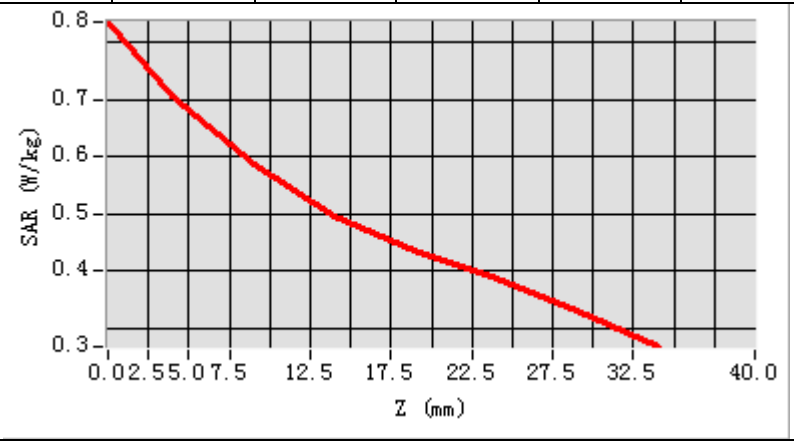
Frequency (MHz)	836.500000
Relative permittivity (real part)	40.769264
Relative permittivity (imaginary part)	19.591967
Conductivity (S/m)	0.910482
Variation (%)	-2.840000

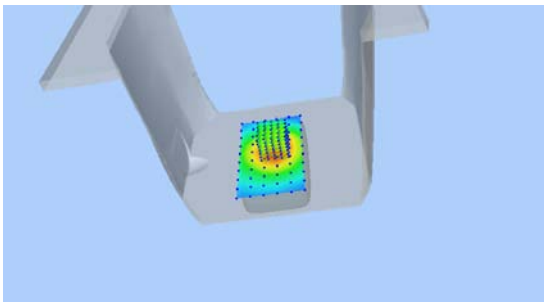
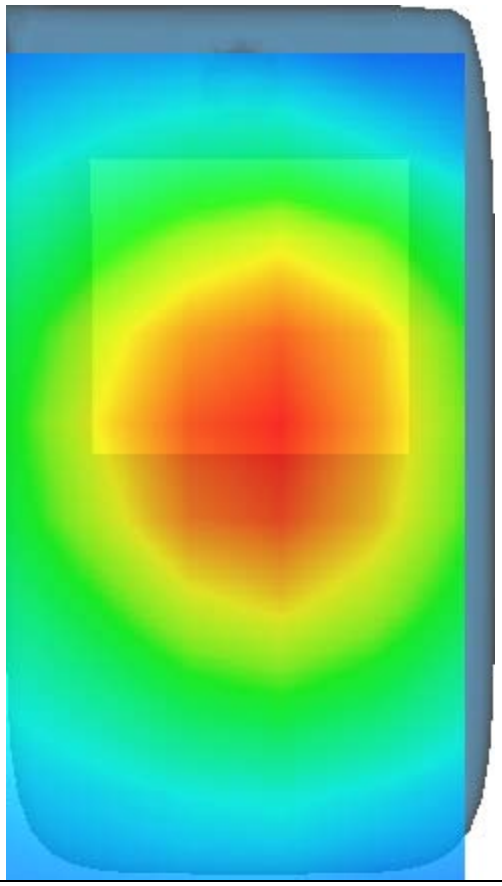
SURFACE SAR	VOLUME SAR
	

Maximum location: X=3.00, Y=2.00
SAR Peak: 0.84 W/kg

SAR 10g (W/Kg)	0.547578
SAR 1g (W/Kg)	0.696042

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.8368	0.7066	0.5876	0.4961	0.4376	0.3878	0.3327



3D screen shot	Hot spot position
	

MEASUREMENT 9

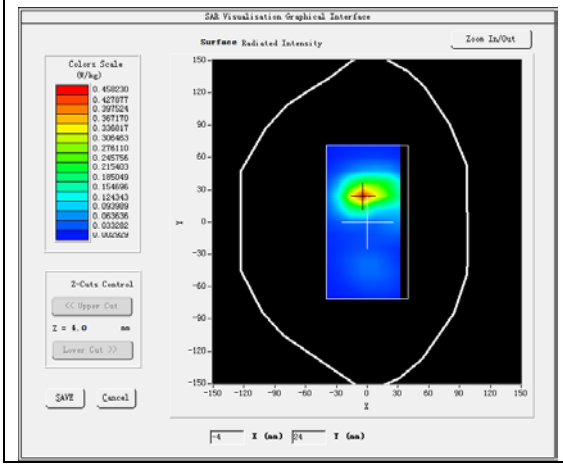
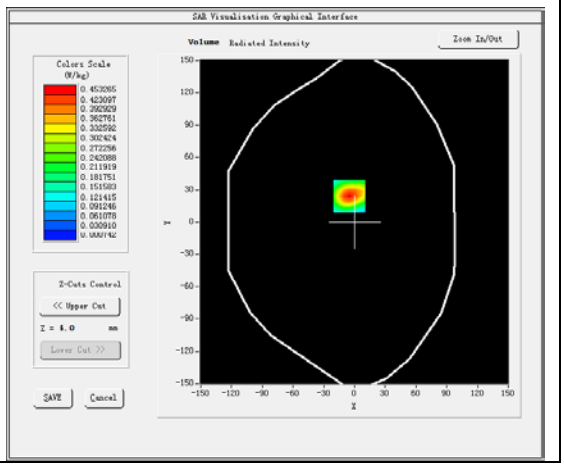
Date of measurement: 29/5/2023

A. Experimental conditions.

Area Scan	dx=12mm dy=12mm, h= 5.00 mm
ZoomScan	7x7x7,dx=5mm dy=5mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	LTE band 7
Channels	Middle
Signal	LTE (Crest factor: 1.0)
ConvF	1.87

B. SAR Measurement Results

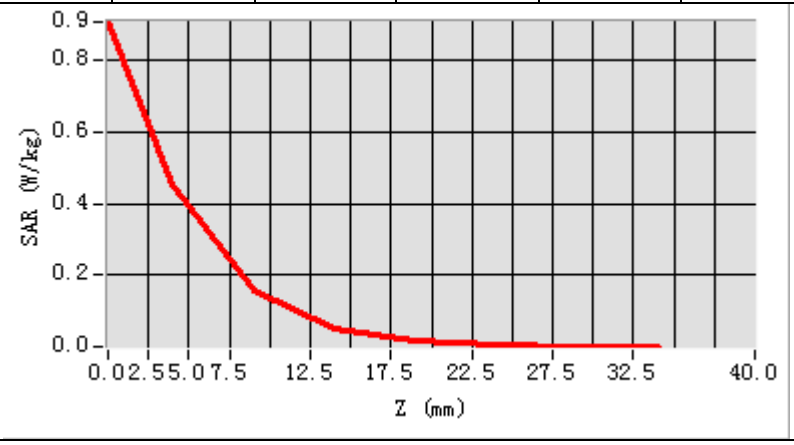
Frequency (MHz)	2535.000000
Relative permittivity (real part)	38.291519
Relative permittivity (imaginary part)	13.530349
Conductivity (S/m)	1.905524
Variation (%)	-4.460000

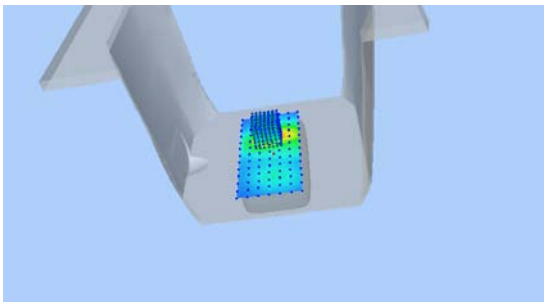
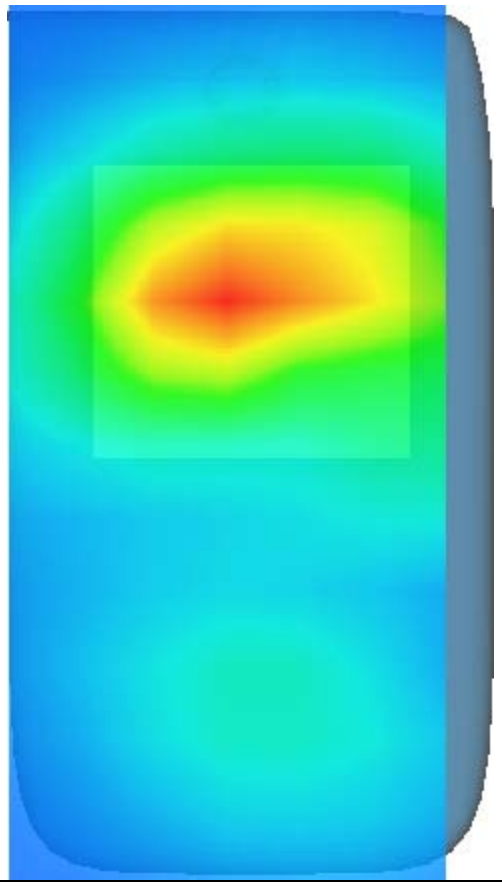
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-5.00, Y=24.00
SAR Peak: 0.89 W/kg

SAR 10g (W/Kg)	0.178530
SAR 1g (W/Kg)	0.434961

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.9057	0.4533	0.1569	0.0535	0.0178	0.0052	0.0018



3D screen shot	Hot spot position
	

MEASUREMENT 10

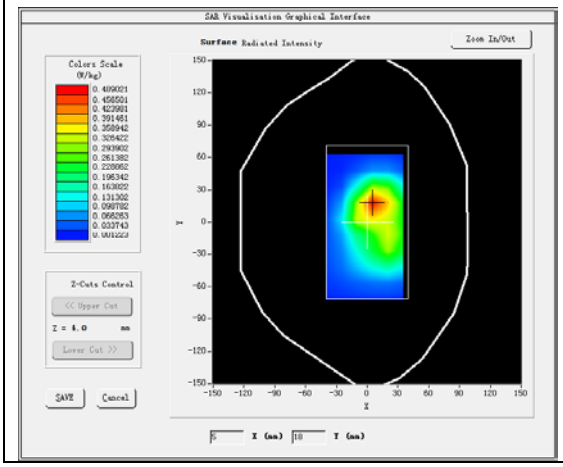
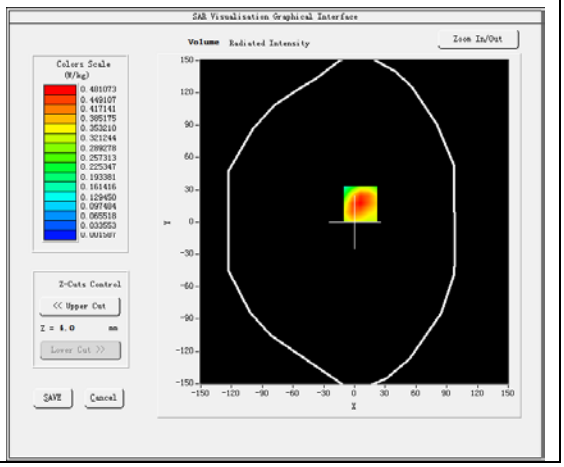
Date of measurement: 26/5/2023

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	FDDBand66
Channels	Middle
Signal	(Crest factor: 1.0)
ConvF	1.73

B. SAR Measurement Results

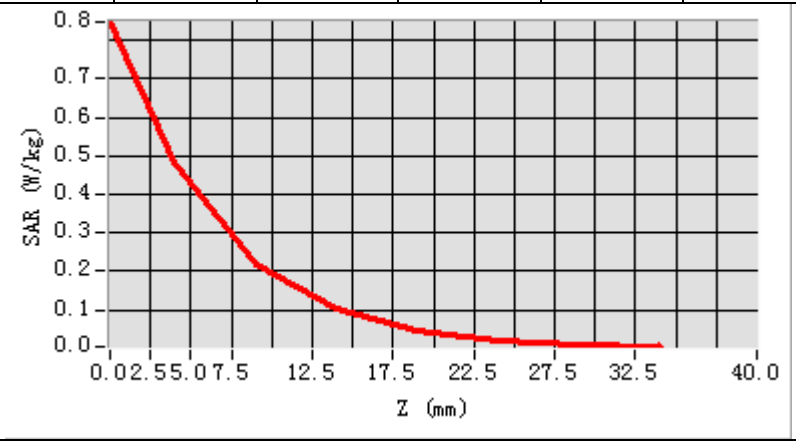
Frequency (MHz)	1745.000000
Relative permittivity (real part)	39.217842
Relative permittivity (imaginary part)	13.898504
Conductivity (S/m)	1.347383
Variation (%)	-2.690000

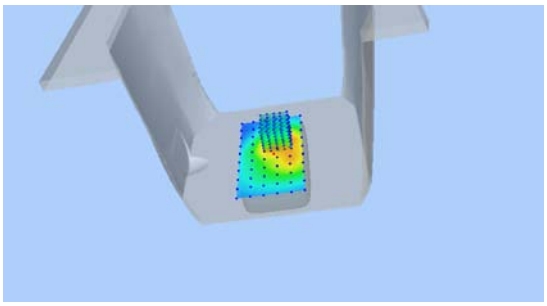
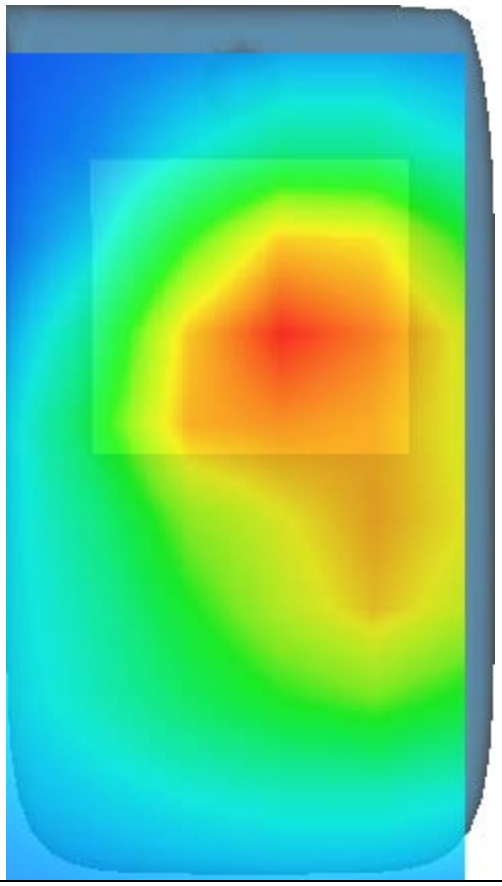
SURFACE SAR	VOLUME SAR
	

Maximum location: X=6.00, Y=17.00
SAR Peak: 0.86 W/kg

SAR 10g (W/Kg)	0.231036
SAR 1g (W/Kg)	0.469267

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.8474	0.4811	0.2192	0.1016	0.0478	0.0225	0.0106



3D screen shot	Hot spot position
	

12. Appendix D. Calibration Certificate

Table of contents
E Field Probe - SN 08/16 EPGO287
835 MHz Dipole - SN 03/15 DIP 0G835-347
1800 MHz Dipole - SN 03/15 DIP 1G800-349
1900 MHz Dipole - SN 03/15 DIP 1G900-350
2450 MHz Dipole - SN 03/15 DIP 2G450-352
2600 MHz Dipole - SN 03/15 DIP 2G600-356
Extended Calibration Certificate