FCC SAR EVALUATION REPORT

In accordance with the requirements of
FCC 47 CFR Part 2(2.1093) and
IEEE Std 1528-2013

Product Name:	POC radio/4G Network intercom
Model No.:	CJ-1UV
Serial Model:	N/A
Brand Name:	ComJoTRadios
Report No.:	AiTSZ-250903048FW1
FCC ID:	2BQFO-CJ-1UV

Prepared for

ComJoT LLC

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Prepared by

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TEST RESULT CERTIFICATION

Applicant's name	:	ComJoT LLC
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Manufacturer's Name	:	Shenzhen Anysecu Technology Co., Ltd.
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Product description

Product name	:	POC radio/4G Network intercom
Trademark	:	ComJoTRadios
Model and/or type reference	:	CJ-1UV
Serial Model	:	N/A
Standards	:	FCC 47 CFR Part 2(2.1093) IEEE Std 1528-2013 Published RF exposure KDB procedures

This device described above has been tested by Guangdong Asia Hongke Test Technology Limited. 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). 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..... : AiTSZ-250903048-1

Date of Test

Date (s) of performance of tests	:	Jul. 28, 2025 ~ Aug. 15, 2025
Date of Issue	:	Sep. 10, 2025
Test Result	:	**Pass**

Reviewed by: Ken Zou Ken Zou **Approved by:** Jack Li Jack Li

※ ※ Revision History ※ ※

REV.	DESCRIPTION	ISSUED DATE	REMARK
Rev.1.0	Initial Test Report Release	Sep. 10, 2025	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

HEAD AND TRUNK LIMIT

1.6 W/kg AND PTT LIMIT 8.0 W/kg

APPLIED TO THIS EUT

1.2. Statement of Compliance

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

Band	Max SAR Value Reported(W/kg)		
	1-g Head (Separation distance of 0mm)	1-g Body&Hotspot (Separation distance of 0mm)	Max SAR Summation
GSM850	0.242	0.427	Head: 1.224 Body: 1.094 Hotspot: 1.094
GSM1900	0.224	0.500	
WCDMA Band II	0.620	0.564	
WCDMA Band IV	0.378	0.580	
WCDMA Band V	0.218	0.166	
LTE band 2	0.682	0.463	
LTE band 4	0.591	0.337	
LTE band 5	0.242	0.143	
LTE band 7	0.271	0.655	
LTE band 12	0.263	0.269	
LTE band 17	0.286	0.255	
LTE band 66	0.700	0.675	
2.4GHz WLAN	0.496	0.251	
5.8GHz WLAN	0.524	0.419	

Band	Max SAR Value Reported(W/kg)	
	1-g Front of face (Separation distance of 25mm)	1-g Body worn (Separation distance of 0mm)
WALKIETALKIE	1.317	1.933

Exposure Position	WWAN Band+ NII/DTS/DSS	WALKIETALKIE	Simultaneous Tx SAR(W/Kg)
	SAR(W/Kg)	SAR(W/Kg)	
Body	1.094	1.933	3.027

NOTE: The Max SAR Summation is calculated based on the same configuration and test position.

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg, PTT LIMIT 8.0 W/kg) specified in FCC 47 CFR Part 2(2.1093), 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	POC radio/4G Network intercom		
Model Name	CJ-1UV		
Family Model	N/A		
Model Declaration	N/A		
Device Phase	Identical Prototype		
Exposure Category	General population / Uncontrolled environment		
Antenna Type	PIFA Antenna		
Power rating:	DC 7.6V 3000mAh by Rechargeable Li-ion battery		
Hardware version	H18_6762_4XE254_V1.1		
Software version	H18V__V1.1		
Device Operating Configurations			
Supporting Mode(s)	GSM850/1900,WCDMABand2/4/5,LTEBand2/4/5/7/12/17/66, WLAN 2.4G/5.8G, Bluetooth, NFC		
Test Modulation	GSM(GMSK/8PSK), WCDMA(QPSK), LTE(QPSK/16QAM), WLAN(DSSS/OFDM), Bluetooth(GFSK, π/4-DQPSK, 8DPSK), NFC(ASK)		
Device Class	B		
Operating Frequency Range(s)	Band	Tx (MHz)	Rx (MHz)
	GSM 850	824-849	869-894
	GSM 1900	1850-1910	1930-1990
	WCDMA Band 2	1850-1910	1930-1990
	WCDMA Band 4	1710-1755	2110-2155
	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 12	699-716	729-746
	LTE Band 17	704-716	734-746
	LTE Band 66	1710-1780	2110-2200
	WLAN 2.4G	2412-2462	
	WLAN 5.8G	5745-5825	
	Bluetooth	2402-2480	
	NFC	13.56	
GPRS Multislot Class(12)	Max Number of Timeslots in Uplink		4
	Max Number of Timeslots in Downlink		4
	Max Total Timeslot		5

EGPRS Multislot Class(12)	Max Number of Timeslots in Uplink	4
	Max Number of Timeslots in Downlink	4
	Max Total Timeslot	5
Power Class	4, tested with power level 5(GSM 850)	
	1, tested with power level 0(GSM 1900)	
	3, tested with power control “all 1”(WCDMA Band 2)	
	3, tested with power control “all 1”(WCDMA Band 4)	
	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 12)	
	3, tested with power control all Max.(LTE Band 17)	
	3, tested with power control all Max.(LTE Band 66)	
PMR		
Exposure Category	Occupational /Controlled Exposure	
Antenna Type	External antenna	
Test Modulation	4FSK/FM	
Channel Separation	12.5KHz	
Operating Frequency Range(s)	400~470 (2W/1W)	

1.4. Test specification(s)

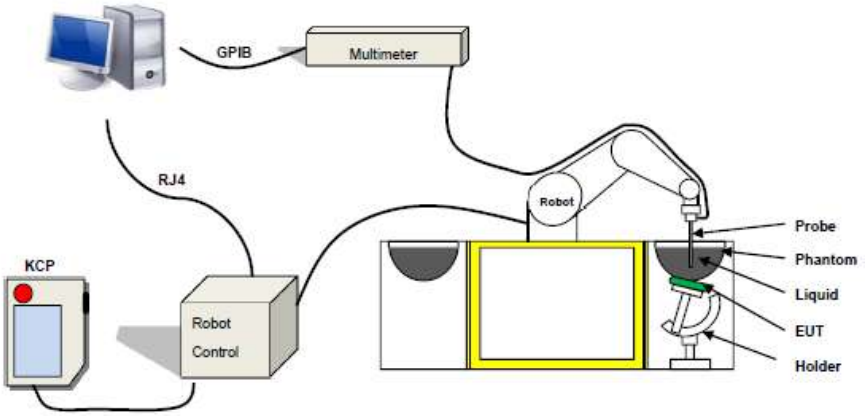
FCC 47 CFR Part 2(2.1093)
IEEE Std 1528-2013
KDB 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04
KDB 865664 D02 RF Exposure Reporting v01r02
KDB 447498 D01 General RF Exposure Guidance v06
KDB 248227 D01 802.11 Wi-Fi SAR v02r02
KDB 941225 D01 3G SAR Procedures v03r01
KDB 941225 D05 SAR for LTE Devices v02r05
KDB 941225 D06 Hotspot SAR v02r01
KDB 648474 D04 Handset SAR v01r03
KDB 643646 D01 SAR Test for PTT Radios v01r03

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. 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 EPGO 0523-403 with following specifications is used.

- Probe Length: 330 mm
- Length of Individual Dipoles: 2 mm
- Maximum external diameter: 8 mm
- Probe Tip External Diameter: 2.5 mm
- Distance between dipole/probe extremity: 1 mm
- Dynamic range: 0.01-100 W/kg
- Probe linearity: 3%
- Axial Isotropy: < 0.10 dB
- Spherical Isotropy: < 0.10 dB
- Calibration range: 150 MHz to 6 GHz for head & body simulating liquid.
- 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.

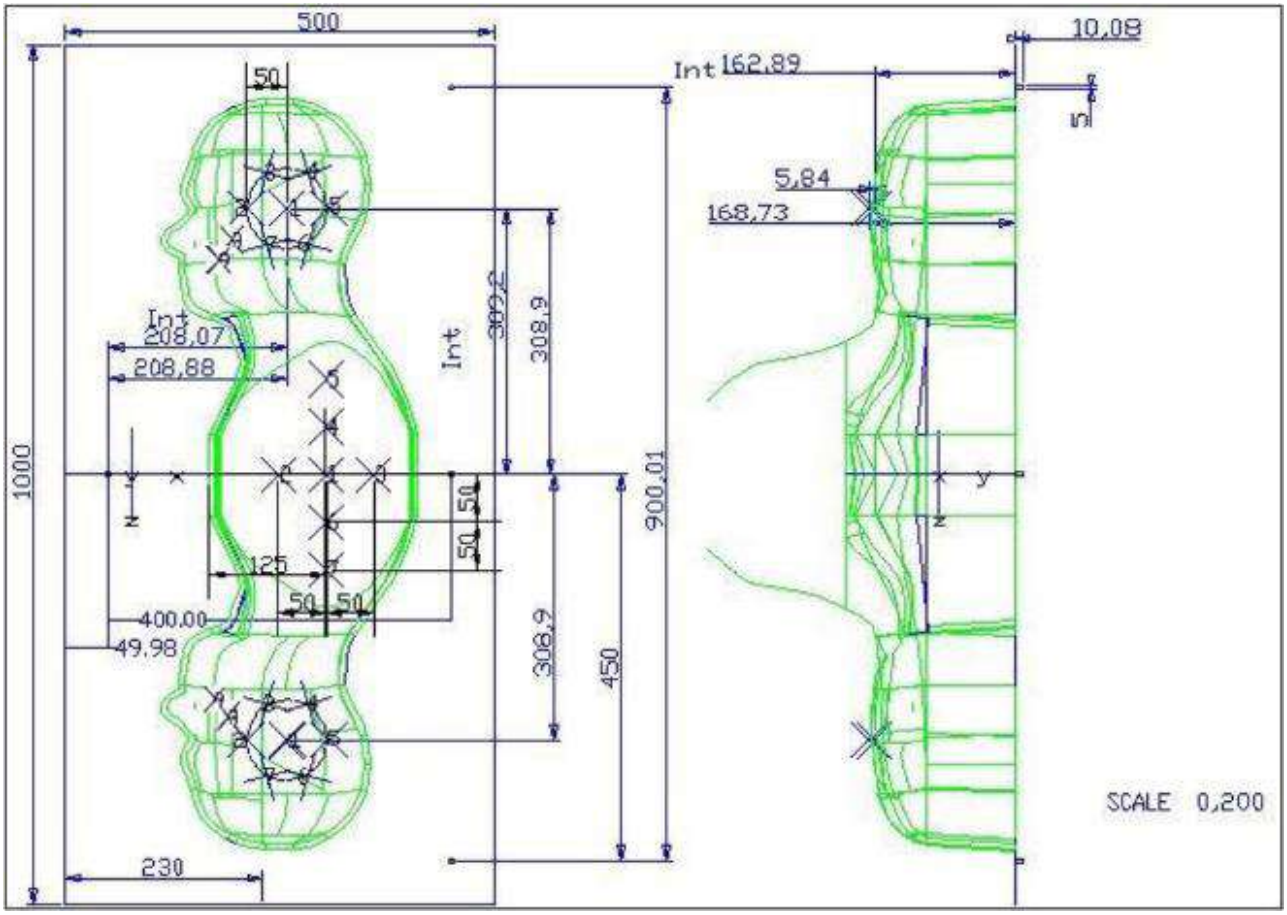
2.4. Phantoms

For the measurements the Specific Anthropomorphic Mannequin (SAM) and Elliptical defined by the IEEE SCC-34/SC2 group is used. The phantoms are a polyurethane shell integrated in a wooden table. The thickness of the phantom amounts to 2mm +/- 0.2mm. For SAM, It enables the dosimetric evaluation of left and right phone usage and includes an additional flat phantom part for the simplified performance check. The Elliptical phantom has elliptic shape. The Elliptical phantom provide one reference point on its top part to position the probe tip correctly. The phantoms set-up includes a cover, which prevents the evaporation of the liquid.

SAM

Elliptical

2.5. Technical Data

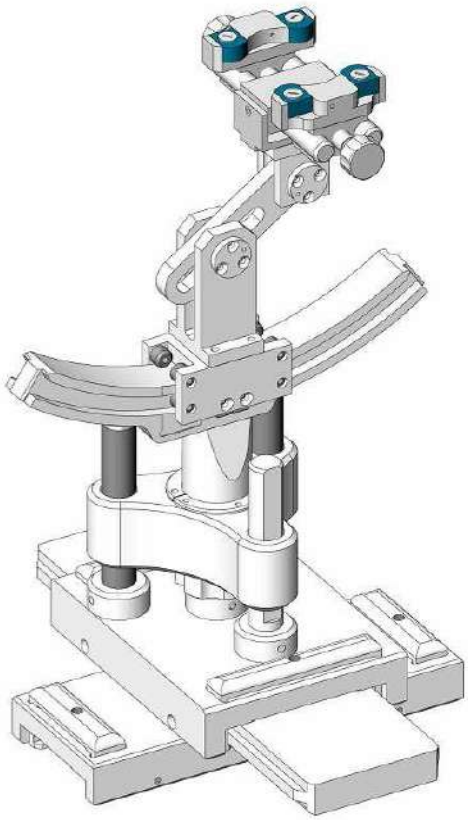


Left Head(mm)		Right Head(mm)		Flat Part(mm)	
2	2.02	2	2.08	1	2.09
3	2.05	3	2.06	2	2.06
4	2.07	4	2.07	3	2.08
5	2.08	5	2.08	4	2.10
6	2.05	6	2.07	5	2.10
7	2.05	7	2.05	6	2.07
8	2.07	8	2.06	7	2.07
9	2.08	9	2.06	-	-

Overall thickness	2±0.2mm
Internal Dimensions (Bottom part)	600 mm (L) x 400 mm (W) 170 mm (H)
External Dimensions	1000 mm (L) x 500 mm (W) x 280 mm (H)
Maximum volume	35 L
Material	Fiberglass based
Relative permittivity	3.4
Loss tangent	0.02

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

2.6. Device Holder



The SAR in the phantom is approximately inversely proportional to the square of the distance between the source and the liquid surface. For a source at 5 mm distance, a positioning uncertainty of ± 0.5 mm would produce a SAR uncertainty of ± 20 %. Accurate device positioning is therefore crucial for accurate and repeatable measurements. The positions in which the devices must be measured are defined by the standards.

The SAR in the phantom is approximately inversely proportional to the square of the distance between the source and the liquid surface.

Material properties: the positioning system is made of PETP. This material offers a low permittivity of 3.2 and low loss, with a loss tangent of 0.005 to minimize the influence of the DUT on measurement results.

Mechanical properties: 2 rows of rail to cover easily the surface of the phantom. The fixing plate is perfectly adapted to larger devices, such as a PC which can be positioned in all configurations.

Accuracy and precision: graduated scale available on each axis. The DUT is fixed with a specific adaptable grip.

2.7. 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 31/17 EPGO324	Sep. 11, 2024	Sep. 10, 2025
☒	MVG	450 MHz Dipole	SID450	SN 38/18 DIP 0G450-465	Sep. 22, 2024	Sep. 21, 2027
☒	MVG	750 MHz Dipole	SID750	SN 07/14 DIP 0G750-302	Feb. 21, 2025	Feb. 20, 2028
☒	MVG	835 MHz Dipole	SID835	SN 07/14 DIP 0G835-303	Feb. 21, 2025	Feb. 20, 2028
☐	MVG	900 MHz Dipole	SID900	SN 03/15 DI P 0G900-348	Feb. 21, 2025	Feb. 20, 2028
☒	MVG	1800 MHz Dipole	SID1800	SN 07/14 DIP 1G800-301	Feb. 21, 2025	Feb. 20, 2028
☒	MVG	1900 MHz Dipole	SID1900	SN 38/18 DIP 1G900-466	Feb. 21, 2025	Feb. 20, 2028
☐	MVG	2000 MHz Dipole	SID2000	SN 03/15 DIP 2G000-351	Feb. 21, 2025	Feb. 20, 2028
☐	MVG	2300 MHz Dipole	SID2300	SN 03/16 DIP 2G300-358	Feb. 21, 2025	Feb. 20, 2028
☒	MVG	2450 MHz Dipole	SID2450	SN 07/14 DIP 2G450-306	Feb. 21, 2025	Feb. 20, 2028
☒	MVG	2600 MHz Dipole	SID2600	SN 38/18 DIP 2G600-468	Feb. 21, 2025	Feb. 20, 2028
☒	MVG	5000 MHz Dipole	SWG5500	SN 49/16 WGA 43	Feb. 21, 2025	Feb. 20, 2028
☒	MVG	Liquid measurement Kit	SCLMP	SN 21/15 OCPG 72	Sep. 23, 2024	Sep. 22, 2025
☒	SCHAFFNER	Power Amplifier	CBA9429	T43605	NCR	NCR
☒	KEITHLEY	Millivoltmeter	2000	4072790	Sep. 23, 2024	Sep. 22, 2025
☒	R&S	Wideband radio communication tester	CMW500	116581	Sep. 23, 2024	Sep. 22, 2025
☒	HP	Network Analyzer	8753D	3410J01136	Sep. 23, 2024	Sep. 22, 2025
☒	Agilent	PSG Analog	N5182A	MY50143009	Sep. 23,	Sep. 22,

		Signal Generator			2024	2025
☒	Agilent	Power meter	E4419B	MY45102079	Sep. 25, 2024	Sep. 24, 2025
☒	Agilent	Power meter	E4419B	MY45102140	Sep. 25, 2024	Sep. 24, 2025
☒	Agilent	Power meter	E4419B	MY45102215	Sep. 25, 2024	Sep. 24, 2025
☒	JFW	attenuator	50FPE-006	4360846-494-4	Sep. 25, 2024	Sep. 24, 2025
☒	JFW	attenuator	50FPE-006	4360846-492-1	Sep. 25, 2024	Sep. 24, 2025
☒	JFW	attenuator	50FPE-006	4360846-490-6	Sep. 25, 2024	Sep. 24, 2025
☒	Agilent	Power sensor	8481A	MY41097697	Sep. 25, 2024	Sep. 24, 2025
☒	Agilent	Power sensor	8481A	MY41097696	Sep. 25, 2024	Sep. 24, 2025
☒	MCLI/USA	Directional Coupler	CB11-20	0D2L51502	Sep. 23, 2024	Sep. 22, 2025
☒	MVG	SAR Phantom	SSM2	SN 24/11 SAM87	NCR	NCR
☒	MVG	Device Holder	SMPPD	SN 24/11 MSH73	NCR	NCR
☒	MVG	Elliptical Phantom	SSM2	SN 20/11 ELLI20	NCR	NCR
☒	MVG	Device Holder	SMPPD	SN 24/11 LSH15	NCR	NCR

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 Wi-Fi/BT power measurement, use engineering software to configure EUT Wi-Fi/BT 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 Wi-Fi/BT output power.

<SAR measurement>
(a) Use base station simulator to configure EUT WWAN transmission in radiated connection, and engineering software to configure EUT Wi-Fi/BT 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.

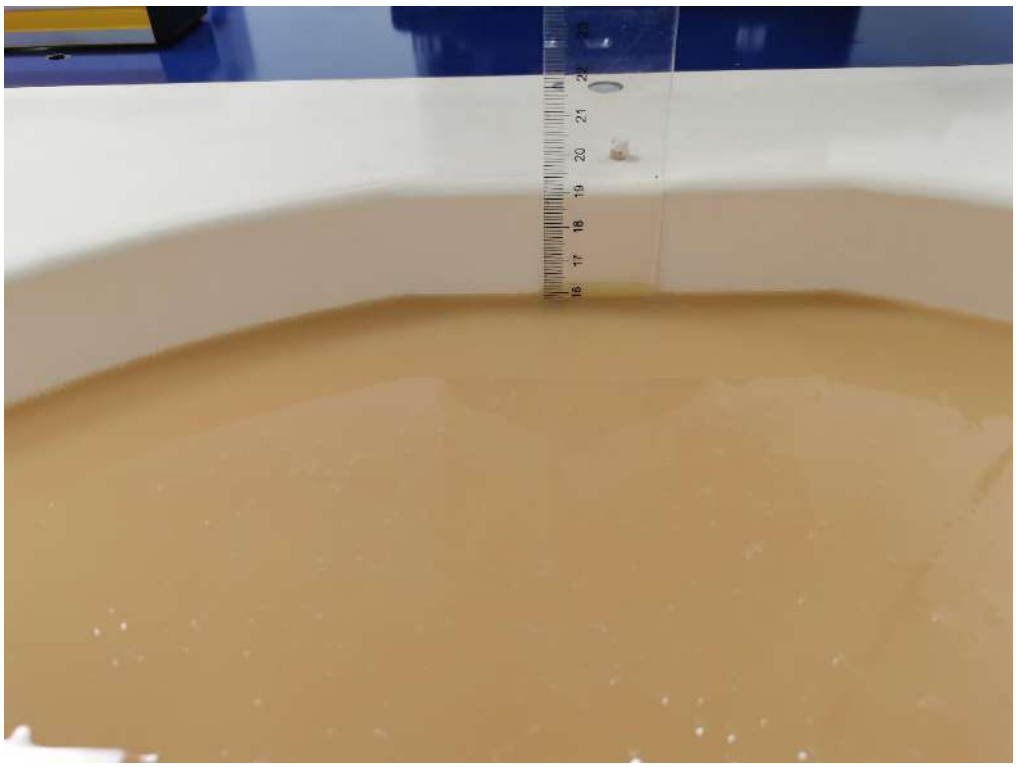
4. System Verification Procedure

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)	450	750	835	900	1800	1900	2000	2450	2600	5200	5800
Water	34.40	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	0.79	0.35	0.35	0.16	0.16	0.16	0.00	0.00
1,2-Propanediol	64.81	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	0.00	30.45	30.45	19.97	19.97	19.97	24.24	24.24
DGBE	0.00	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.



4.1.1. Tissue Dielectric Parameter Check Results

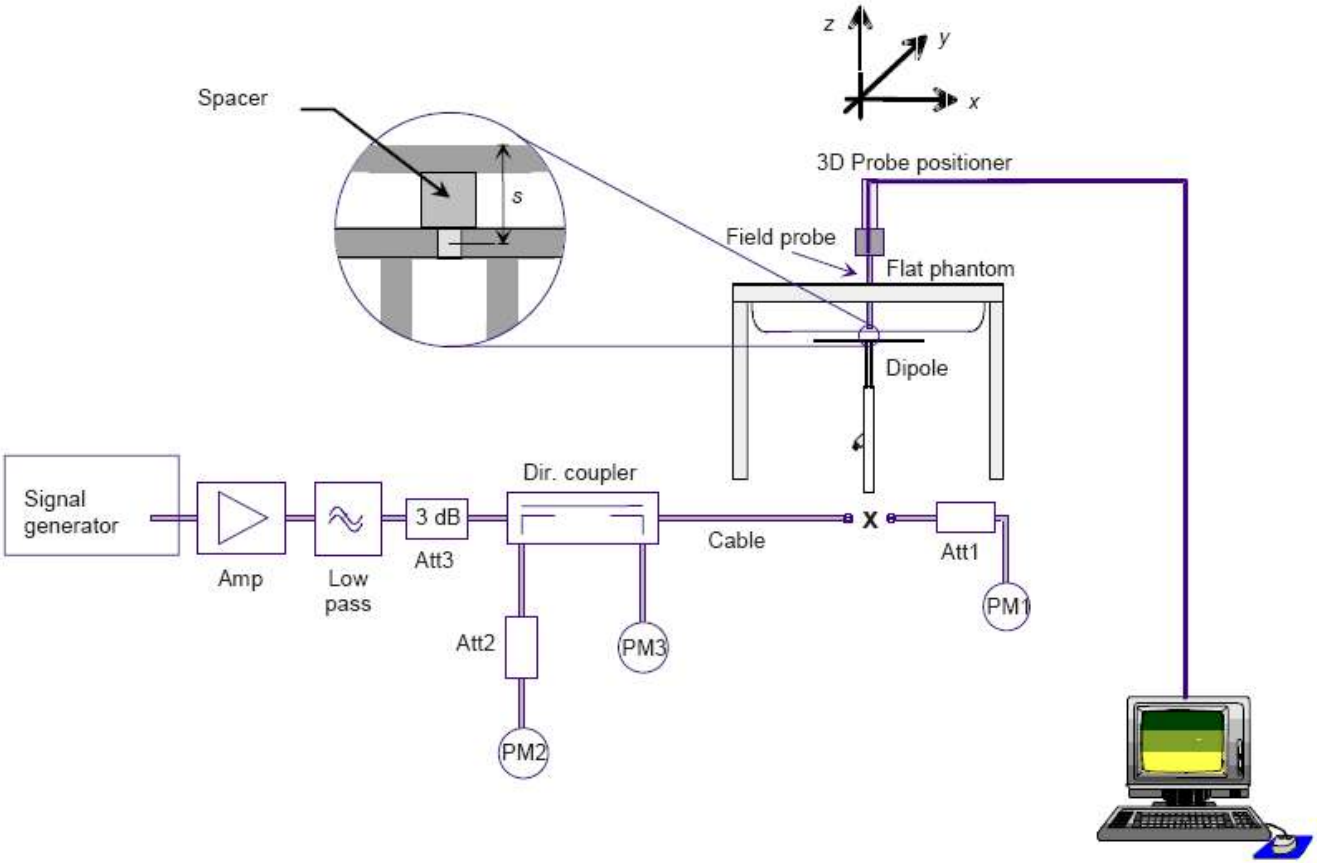
The simulating liquids should be checked at the beginning of a series of SAR measurements to determine of the dielectric parameter are within the tolerances of the specified target values. The measured conductivity and relative permittivity should be within ±5% of the target values.

Tissue Type	Measured Frequency (MHz)	Target Tissue		Measured Tissue		Liquid Temp.	Test Date
		εr (±5%)	σ (S/m) (±5%)	εr	σ (S/m)		
Head 450	450	43.50 (41.33~45.68)	0.87 (0.83~0.91)	44.56	0.85	21.0 °C	Jul. 28, 2025
Head 750	750	41.96 (39.86~44.06)	0.89 (0.85~0.93)	42.56	0.91	21.2 °C	Jul. 29, 2025
Head 850	835	41.50 (39.43~43.58)	0.90 (0.86~0.95)	42.01	0.94	21.1 °C	Jul. 30, 2025
Head 1800	1800	40.00 (38.00~42.00)	1.40 (1.33~1.47)	39.61	1.41	21.3 °C	Aug. 11, 2025
Head 1900	1900	40.00 (38.00~42.00)	1.40 (1.33~1.47)	41.42	1.39	21.4 °C	Aug. 12, 2025
Head 2450	2450	39.20 (37.24~41.16)	1.80 (1.71~1.89)	40.41	1.82	21.5 °C	Aug. 13, 2025
Head 2600	2600	39.01 (37.06~40.96)	1.96 (1.86~2.06)	39.43	1.99	21.6 °C	Aug. 14, 2025
Head 5800	5800	35.30 (33.54~37.07)	5.27 (5.01~5.53)	35.30	5.27	21.7 °C	Aug. 15, 2025

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	Power fed to reference dipole (mW)	Measured SAR Value		Measured SAR (Normalized to 1W)		Target SAR Value (1W)		Deviation (%)		Test Date
		1-g (W/Kg)	10-g (W/Kg)	1-g (W/Kg)	10-g (W/Kg)	1-g (W/Kg)	10-g (W/Kg)	1-g (W/Kg)	10-g (W/Kg)	
450MHz	100	0.516	0.328	5.16	3.28	4.70	3.01	9.79%	8.97%	Jul. 28, 2025
750MHz	100	0.920	0.608	9.20	6.08	8.38	5.53	9.79%	8.97%	Jul. 29, 2025
835MHz	100	1.011	0.612	10.11	6.12	9.60	6.20	9.79%	9.95%	Jul. 30, 2025
1800MHz	100	3.832	2.025	38.32	20.25	38.13	20.20	5.31%	-1.29%	Aug. 11, 2025
1900MHz	100	4.154	2.153	41.54	21.53	40.03	20.55	0.50%	0.25%	Aug. 12, 2025
2450MHz	100	5.184	2.359	51.84	23.59	53.89	24.15	3.77%	4.77%	Aug. 13, 2025
2600MHz	100	5.433	2.523	54.33	25.23	56.91	24.69	-3.80%	-2.32%	Aug. 14, 2025
5800MHz	100	16.821	5.723	168.21	57.23	186.77	62.84	-9.94%	-8.93%	Aug. 15, 2025

5. SAR measurement variabilit

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.

6. SAR Measurement Uncertainty

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

Symbol	Uncertainty Component	Prob. Dist.	Unc. $a(x_i)$	Div. q_i	$u(x_i) = a(x_i)/q_i$	C_i	$u(y) = C_i * u(x_i)$	v_i
Measurement system errors								
CF	Probe calibration	N (k = 2)	5.72	2	2.86	1	2.86	∞
CF_{drift}	Probe calibration drift	R	0.15	√3	0.09	1	0.09	∞
LIN	Probe linearity and detection limit	R	1.27	√3	0.73	1	0.73	∞
BBS	Broadband signal	R	0.12	√3	0.07	1	0.07	∞
ISO	Probe isotropy	R	0.16	√3	0.09	1	0.09	∞
DAE	Other probe and data acquisition errors	N	2.4	1	2.40	1	2.40	∞
AMB	RF ambient and noise	N	3.51	1	3.51	1	3.51	∞
Δ_{xyz}	Probe positioning errors	N	1.2	1	1.20	2/δ	1.20	
DAT	Data processing errors	N	2.1	1	2.10	1	2.10	∞
Phantom and device (DUT or validation antenna) errors								
LIQ(σ)	Measurement of phantom conductivity(σ)	N	4.1	1	4.1	c_ε, c_σ	4.10	∞
$LIQ(T_c)$	Temperature effects (medium)	R	2.7	√3	1.56	c_ε, c_σ	1.56	∞
EPS	Shell permittivity	R	2.1	√3	1.21	See 8.4.2.3	0.30	∞
DIS	Distance between the radiating element of the DUT and the phantom medium	N	0.7	1	0.7	2	1.40	∞
D_{xyz}	Repeatability of positioning the DUT or source against the phantom	N	1.2	1	1.2	1	1.20	5
H	Device holder effects	N	3.8	1	3.8	1	3.80	
MOD	Effect of operating mode on probe sensitivity	R	3.42	√3	1.97	1	1.97	∞
TAS	Time-average SAR	R	1.8	√3	1.04	1	1.04	∞
RF_{drift}	Variation in SAR due to drift in output of DUT	N	4.5	1	4.5	1	4.50	
VAL	Validation antenna uncertainty (validation measurement only)	N	1.4	1	1.4	1	1.40	
P_{in}	Uncertainty in accepted power (validation measurement only)	N	2.4	1	2.4	1	2.40	
Corrections to the SAR result (if applied)								
$C(\varepsilon',\sigma)$	Phantom deviation from target $(\varepsilon',\sigma))$	N	3.7	1	3.7	1	3.70	
C(R)	SAR scaling	R	1.8	√3	1.04	1	1.04	
u(ΔSAR)	Combined uncertainty						10.84	
U	Expanded uncertainty and effective degrees of freedom					U =	21.68	

Uncertainty Budget for System Validation (dipole & flat phantom) for 300 MHz to 800MHz

a	b	c	d	e = f(d,k)	f	g	h = c×f/e	i = c×g/e	k
Uncertainty Component	IEEE 1528 section	Tol. (±%)	Prob. Dist.	Div.	c_i (1 g)	c_i (10 g)	1g u_i (±%)	10g u_i (±%)	v_i
Measurement System									
Probe Calibration	E.2.1	6.7	N	1.00	1	1	6.7	6.7	∞
Axial Isotropy	E.2.2	4.7	R	1.73	1	1	2.7	2.7	∞
Spherical Isotropy	E.2.2	9.6	R	1.73	0	0	0.0	0.0	∞
Boundary Effect	E.2.3	1.0	R	1.73	1	1	0.6	0.6	∞
Linearity	E.2.4	4.7	R	1.73	1	1	2.7	2.7	∞
System Detection Limits	E.2.5	1.0	R	1.73	1	1	0.6	0.6	∞
Readout Electronics	E.2.6	0.3	N	1.00	1	1	0.3	0.3	∞
Response Time	E.2.7	1.1	R	1.73	1	1	0.6	0.6	∞
Integration Time	E.2.8	0.0	R	1.73	1	1	0.0	0.0	∞
RF Ambient Conditions - Noise	E.6.1	3.0	R	1.73	1	1	1.7	1.7	∞
RF Ambient Conditions - Reflections	E.6.1	0.0	R	1.73	1	1	0.0	0.0	∞
Probe Positioner Mechanical Tolerance	E.6.2	0.4	R	1.73	1	1	0.2	0.2	∞
Probe Positioning w.r.t. Phantom	E.6.3	1.4	R	1.73	1	1	0.8	0.8	∞
Max. SAR Evaluation (ext., int., avg.)	E.5	3.4	R	1.73	1	1	2.0	2.0	∞
Dipole									
Dipole Axis to Liquid Distance	8, E.4.2	2.0	R	1.73	1	1	1.2	1.2	∞
Input Power and SAR Drift Measurement	8,6.6.2	5.0	R	1.73	1	1	2.9	2.9	∞
Phantom and Tissue Parameters									
Phantom Uncertainty	E.3.1	4.0	R	1.73	1	1	2.3	2.3	∞
Liquid Conductivity (target)	E.3.2	5.0	R	1.73	0.64	0.43	1.8	1.2	∞

Liquid Conductivity (measurement)	E.3.3	3.3	R	1.73	0.64	0.43	1.2	0.8	∞
Liquid Permittivity (target)	E.3.2	5.0	R	1.73	0.6	0.49	1.7	1.4	∞
Liquid Permittivity (measurement)	E.3.3	1.9	R	1.73	0.6	0.49	0.6	0.5	∞
Combined Standard Uncertainty			RSS				10	9	99999
Expanded Uncertainty (95% CONFIDENCE LEVEL)			k=2				19	18	

7. RF Exposure Positions

7.1. Ear and handset reference point

Figure 7.1.1 shows the front, back, and side views of the SAM phantom. The center-of-mouth reference point is labeled "M", the left ear reference point (ERP) is marked "LE", and the right ERP is marked "RE".

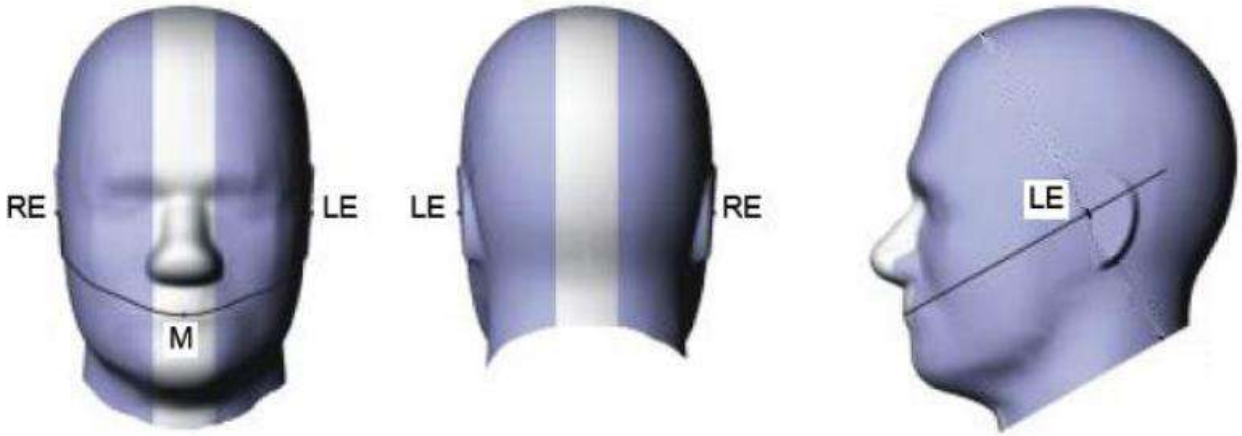


Fig 7.1.1 Front, back, and side views of SAM phantom

7.2. Definition of the cheek position

1. Define two imaginary lines on the handset, the vertical centerline and the horizontal line. The vertical centerline passes through two points on the front side of the handset: the midpoint of the width wt of the handset at the level of the acoustic output (point A in Figure 7.2.1 and Figure 7.2.2), and the midpoint of the width wb of the bottom of the handset (point B). The horizontal line is perpendicular to the vertical centerline and passes through the center of the acoustic output (see Figure 7.2.1). 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 centerline is not necessarily parallel to the front face of the handset (see Figure 7.2.2), especially for clamshell handsets, handsets with flip covers, and other irregularly-shaped handsets.
2. Position the handset close to the surface of the phantom such that point A is on the (virtual) extension of the line passing through points RE and LE on the phantom (see Figure 7.2.3), such that the plane defined by the vertical centerline and the horizontal line of the handset is approximately parallel to the sagittal plane of the phantom.
3. Translate the handset towards the phantom along the line passing through RE and LE until handset point A touches the pinna at the ERP
4. While maintaining the handset in this plane, rotate it around the LE-RE line until the vertical centerline is in the plane normal to the plane containing B-M and N-F lines, i.e., the Reference Plane.
5. Rotate the handset around the vertical centerline until the handset (horizontal line) is parallel to the N-F line.
6. While maintaining the vertical centerline in the Reference Plane, keeping point A on the line

passing through RE and LE, and maintaining the handset contact with the pinna, rotate the handset about the N-F line until any point on the handset is in contact with a phantom point below the pinna on the cheek. See Figure 7.2.3. The actual rotation angles should be documented in the test report.

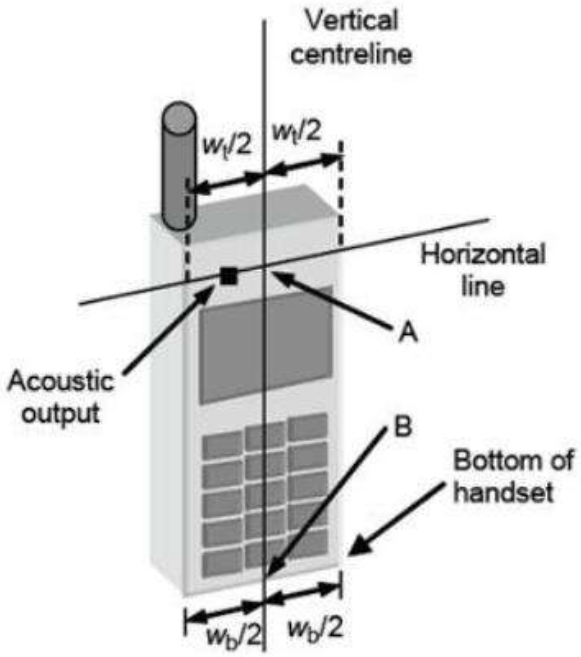


Fig 7.2.1 Handset vertical and horizontal reference lines——fixed case

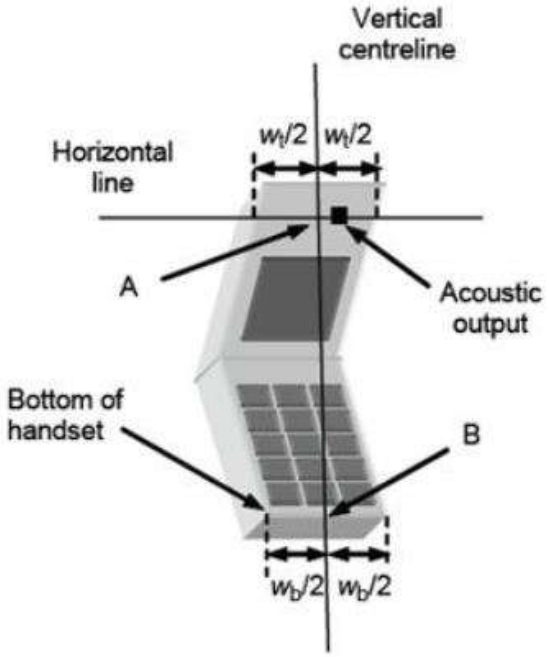


Fig 7.2.2 Handset vertical and horizontal reference lines—“clam-shell case”

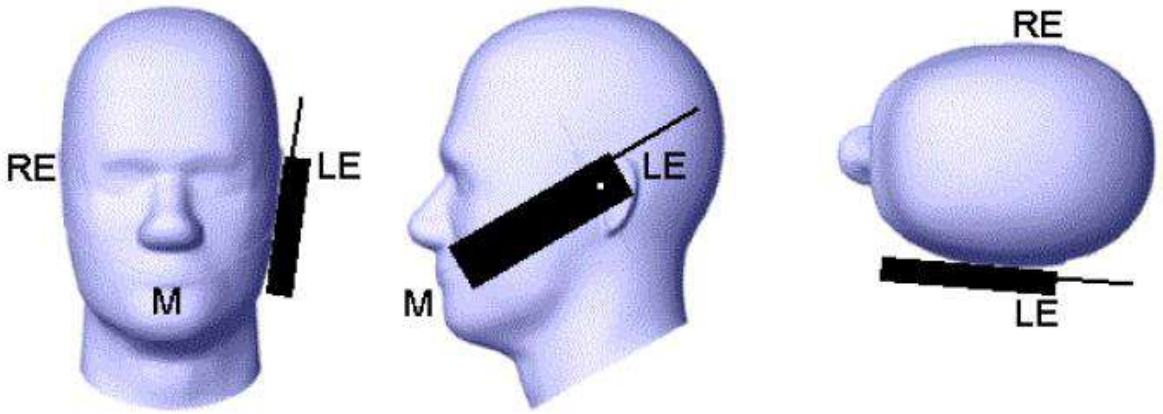


Fig 7.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

7.3. Definition of the tilt position

1. While maintaining the orientation of the handset, retract the handset parallel to the reference plane far enough away from the phantom to enable a rotation of the device by 15 degree.
2. Rotate the Handset around the horizontal line by 15 degree (see Figure 7.3.1).
3. While maintaining the orientation of the handset, move the handset towards the phantom on a line passing through RE and LE until any part of the handset touches the ear. The tilt position is obtained when the contact is on the pinna. If the contact is at any location other than the pinna, e.g., the antenna with the back of the phantom head, the angle of the handset shall be reduced. In this case, the tilt position is obtained if any part of the handset is in contact with the pinna as well as a second part of the handset is in contact with the phantom, e.g., the antenna with the back of the head.

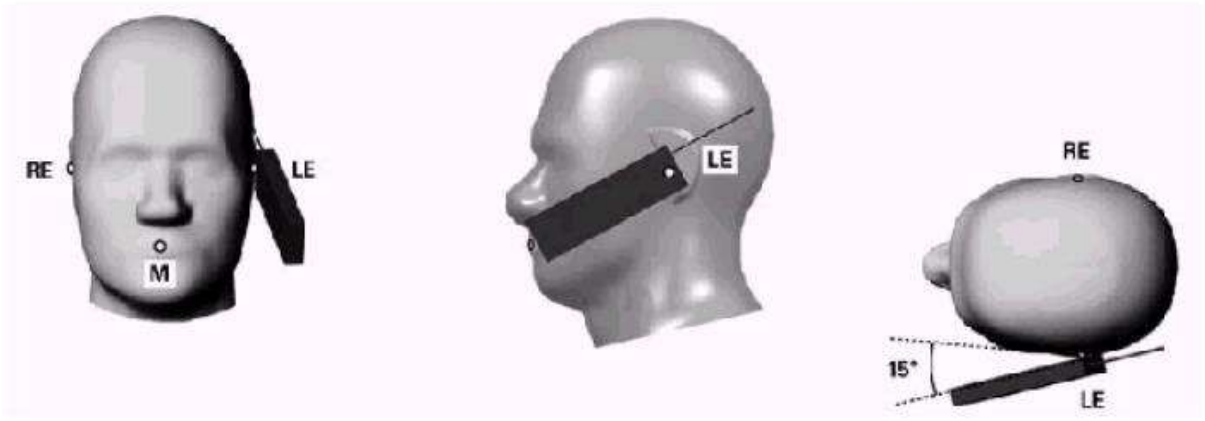


Figure 7.3.1 – Tilt position of the wireless device on the left side of SAM

7.4. Body Worn Accessory

1. Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration (see Figure 7.4.1). Per KDB 648474 D04, 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 FCC KDB 447498 D01 should be 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 applicable. When the reported SAR for body-worn accessory, measured without a headset connected to the handset is < 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a handset attached to the handset.
2. Accessories for body-worn operation configurations are divided into two categories: those that do

not contain metallic components and those that do contain metallic components and those that do contain metallic components. When multiple accessories that do not contain metallic components are supplied with the device, the device is tested with only the accessory that dictates the closest spacing to the body. Then multiple accessories that contain metallic components are test with the device with each accessory. If multiple accessories share an identical metallic component (i.e. the same metallic belt-chip used with different holsters with no other metallic components) only the accessory that dictates the closest spacing to the body is tested.

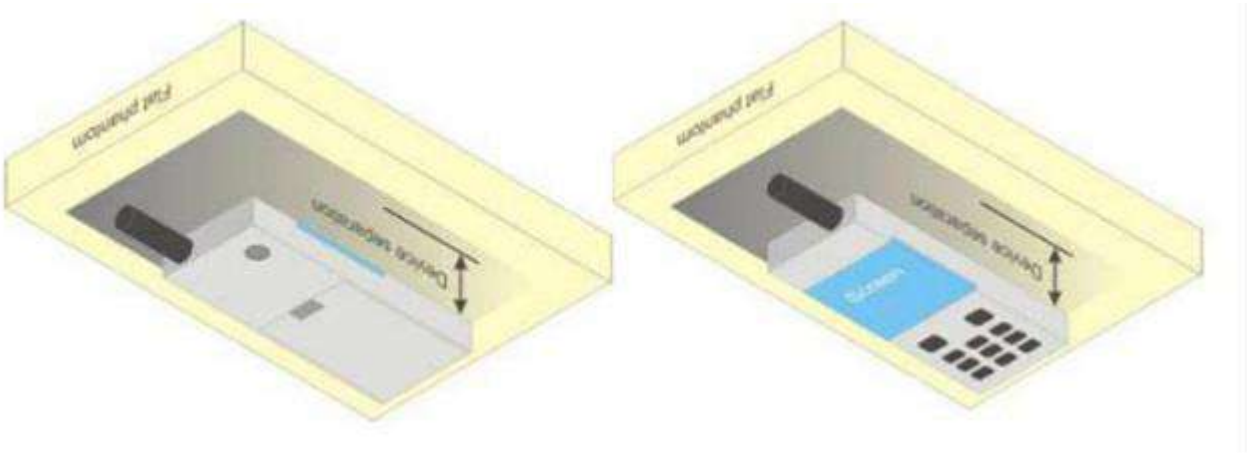


Figure 7.4.1 – Test positions for body-worn devices

7.5. Wireless Router Devices

Some battery-operated handsets have the capability to transmit and receive user through simultaneous transmission of WLAN simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06 where SAR test considerations for handsets (L x W ≥ 9 cm x 5 cm) are based on a composite test separation distance of 10mm from the front, back and edges of the device containing transmitting antennas within 2.5cm of their edges, determined form general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-worn accessory SAR tests.

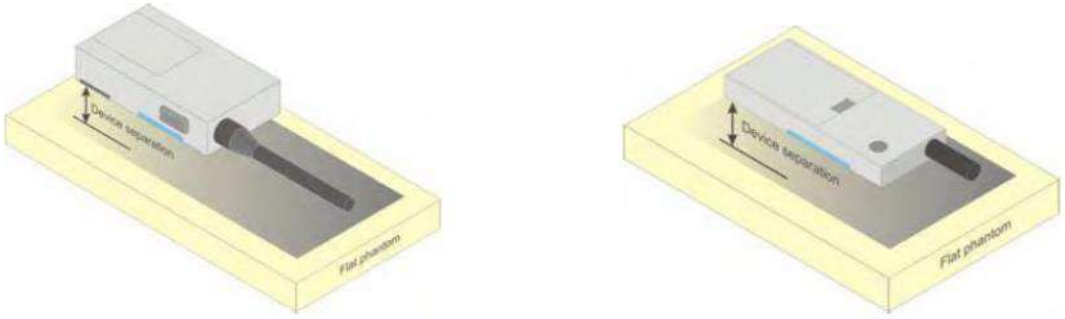
When the user enables the personal wireless router functions for the handset, actual operations include simultaneous transmission of both the WLAN transmitter and another licensed transmitter. Both transmitters often do not transmit at the same transmitting frequency and thus cannot be evaluated for SAR under actual use conditions due to the limitations of the SAR assessment probes. Therefore, SAR must be evaluated for each frequency transmission and mode separately and spatially summed with the WLAN transmitter according to FCC KDB Publication 447498 D01 publication procedures. The —Portable Hotspot‖ feature on the handset was NOT activated during SAR assessments, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal at a time.

7.6. Generic device

The measurement procedures are as follows:

Front -of-face device

A typical example of a front-of-face device is a two-way radio that is held at a distance from the face of the user when transmitting. In these cases the device under test shall be positioned at the distance to the phantom surface that corresponds to the intended use as specified by the manufacturer in the user instructions (Figure 7.1). If the intended use is not specified, a separation distance of 25 mm between the phantom surface and the device shall be used.



(Figure 7.1) Two-way radios

1. Head SAR Test Considerations

Passive body-worn and audio accessories generally do not apply to the head SAR of PTT radios. Head SAR is measured with the front surface of the radio positioned at 2.5 cm parallel to a flat phantom. A phantom shell thickness of 2 mm is required. When the front of the radio has a contour or non-uniform surface with a variation of 1.0 cm or more, the average distance of such variations is used to establish the 2.5 cm test separation from the phantom.

2. Body SAR Test Considerations for Body-worn Accessories

Body SAR is measured with the radio placed in a body-worn accessory, positioned against a flat phantom, representative of the normal operating conditions expected by users and typically with a standard default audio accessory supplied with the radio. Since audio accessories, including any default audio accessories supplied with a radio, may be designed to operate with a subset of the combinations of antennas, batteries and body-worn accessories, when a default audio accessory does not fully support all the test configurations required in this section for body-worn accessories testing an alternative audio accessory must be selected to be the default audio accessory for body-worn accessories testing.9 If an alternative audio accessory cannot be identified, body-worn accessories should be tested without any audio accessory.10 In general, all sides of the radio that may be positioned facing the user when using a body-worn accessory must be considered for SAR compliance.

8. RF Output Power

8.1. GSM Conducted Power

Band GSM850	Burst-Averaged output Power (dBm)				Factor	Frame-Averaged output Power (dBm)			
Tx Channel	Tune-up (dBm)	128	189	251		Tune-up	128	189	251
Frequency (MHz)		824.2	836.4	848.8			824.2	836.4	848.8
GSM (GMSK)	33.00	32.69	32.71	32.68	/	/	/	/	/
GPRS(GMSK,1 Tx slot)	33.00	32.51	32.58	32.53	-9.03	23.97	23.48	23.55	23.50
GPRS(GMSK,2 Tx slot)	31.50	30.97	31.01	30.97	-6.02	25.48	24.95	24.99	24.95
GPRS(GMSK,3 Tx slot)	30.00	29.51	29.49	29.47	-4.26	25.74	25.25	25.23	25.21
GPRS(GMSK,4 Tx slot)	28.00	27.97	27.97	27.96	-3.01	24.99	24.96	24.96	24.95
GPRS(EDGE,1 Tx slot)	26.50	25.95	26.02	25.98	-9.03	17.47	16.92	16.99	16.95
GPRS(EDGE,2 Tx slot)	25.00	24.50	24.49	24.43	-6.02	18.98	18.48	18.47	18.41
GPRS(EDGE,3 Tx slot)	23.50	22.98	23.01	22.94	-4.26	19.24	18.72	18.75	18.68
GPRS(EDGE,4 Tx slot)	22.00	21.46	21.53	21.45	-3.01	18.99	18.45	18.52	18.44

Band GSM1900	Burst-Averaged output Power (dBm)				Factor	Frame-Averaged output Power (dBm)			
Tx Channel	Tune-up (dBm)	512	661	810		Tune-up	512	661	810
Frequency (MHz)		1850.2	1880	1909.8			1850.2	1880	1909.8
GSM (GMSK)	30.00	29.69	29.69	29.65	/	/	/	/	/
GPRS(GMSK,1 Tx slot)	30.00	29.50	29.57	29.52	-9.03	20.97	20.47	20.54	20.49
GPRS(GMSK,2 Tx slot)	28.50	27.96	28.02	27.95	-6.02	22.48	21.94	22.00	21.93
GPRS(GMSK,3 Tx slot)	26.50	26.49	26.47	26.43	-4.26	22.24	22.23	22.21	22.17
GPRS(GMSK,4 Tx slot)	25.00	24.97	24.98	24.98	-3.01	21.99	21.96	21.97	21.97
GPRS(EDGE,1 Tx slot)	25.50	25.47	25.48	25.47	-9.03	16.47	16.44	16.45	16.44
GPRS(EDGE,2 Tx slot)	24.50	23.95	24.03	23.92	-6.02	18.48	17.93	18.01	17.90
GPRS(EDGE,3 Tx slot)	23.00	22.46	22.50	22.44	-4.26	18.74	18.20	18.24	18.18
GPRS(EDGE,4 Tx slot)	21.00	20.96	20.98	20.97	-3.01	17.99	17.95	17.97	17.96

Note:

Remark: GPRS, CS4 coding scheme. EGPRS, MCS5 coding scheme.
Multi-Slot Class 8, Support Max 4 downlink, 1 uplink, 5 working link
Multi-Slot Class 10, Support Max 4 downlink, 2 uplink, 5 working link
Multi-Slot Class 12, Support Max 4 downlink, 4 uplink, 5 working link

SAR testing was performed on the maximum frame-averaged power mode.

The frame-averaged power is linearly proportion to the slot number configured and it is linearly scaled the maximum

Burst-averaged power based on time slots. The calculated method is shown as below:

Frame-averaged power = Burst averaged power (1 TX Slot) – 9.03 dB

Frame-averaged power = Burst averaged power (2 TX Slots) – 6.02 dB

Frame-averaged power = Burst averaged power (3 TX Slots) - 4.26 dB

Frame-averaged power = Burst averaged power (4 TX Slots) – 3.01 dB

8.2. WCDMA Conducted Power

The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification. A summary of these settings are illustrated below:

1. Release99 Setup Configuration

Mode	Subtest	Rel99
WCDMA General Settings	Loopback Mode	Test Mode 1
	Rel99 RMC	12.2kbps RMC
	Power Control Algorithm	Algorithm1
	βc/βd	8/15

2. HSDPA Setup Configuration

	Mode	HSDPA	HSDPA	HSDPA	HSDPA
	Subtest	1	2	3	4
WCDMA General Settings	Loopback Mode	Test Mode 1			
	Rel99 RMC	12.2kbps RMC			
	HSDPA FRC	H-Set1			
	Power Control Algorithm	Algorithm 2			
	βc	2/15	12/15	15/15	15/15
	βd	15/15	15/15	8/15	4/15
	Bd (SF)	64			
	βc/βd	2/15	12/15	15/8	15/4
	βhs	4/15	24/15	30/15	30/15
HSDPA Specific Settings	D_{ACK}	8			
	D_{NAK}	8			
	DCQI	8			
	Ack-Nack repetition factor	3			
	CQI Feedback (Table 5.2B.4)	4ms			
	CQI Repetition Factor (Table 5.2B.4)	2			
	Ahs =βhs/βc	30/15			

3. HSUPA Setup Configuration

	Mode	HSUPA	HSUPA	HSUPA	HSUPA	HSUPA
	Subtest	1	2	3	4	5
WCDMA General Settings	Loopback Mode	Test Mode 1				
	Rel99 RMC	12.2kbps RMC				
	HSDPA FRC	H-Set1				
	HSUPA Test	HSUPA Loopback				
	Power Control Algorithm	Algorithm1				
	βc	11/15	6/15	15/15	2/15	15/15
	βd	15/15	15/15	9/15	15/15	15/15
	βec	209/225	12/15	30/15	2/15	24/15
	βc/βd	11/15	6/15	15/9	2/15	15/15
	βhs	22/15	12/15	30/15	4/15	30/15
	βed	1309/225	94/75	47/15 47/15	56/75	134/15
	CM (dB)	1.0	3.0	2.0	3.0	1.0
HSDPA Specific Settings	D_{ACK}	8				
	D_{NAK}	8				
	DCQI	8				
	Ack-Nack repetition factor	3				
	CQI Feedback (Table 5.2B.4)	4ms				

	CQI Repetition Factor (Table 5.2B.4)	2				
	Ahs = βhs/βc	30/15				
HSUPA Specific Settings	D E-DPCCH	6	8	8	5	7
	DHARQ	0	0	0	0	0
	AG Index	20	12	15	17	21
	ETFCI (from 34.121 Table C.11.1.3)	75	67	92	71	81
	Associated Max UL Data Rate kbps	242.1	174.9	482.8	205.8	308.9

4. WCDMA Conducted Power Results

Choose the highest output power mode RMC 12.2Kbps for Band V/VI/II at middle channel to test SAR and determine the worst configuration for further high/low channel test.

WCDMA Band II	Burst-Averaged output Power (dBm)			
Tx Channel	Tune-up (dBm)	9262	9400	9538
Frequency (MHz)		1852.4	1880	1907.6
RMC12.2K	23.50	23.30	23.34	23.20
HSDPA Sub 1	23.00	22.62	22.84	22.70
HSDPA Sub 2	23.00	22.54	22.66	22.60
HSDPA Sub 3	23.00	22.51	22.63	22.58
HSDPA Sub 4	23.00	22.59	22.49	22.66
HSUPA Sub 1	23.00	22.49	22.55	22.43
HSUPA Sub 2	23.00	22.51	22.58	22.47
HSUPA Sub 3	23.00	22.55	22.45	22.32
HSUPA Sub 4	22.50	22.38	22.28	22.37
HSUPA Sub 5	22.00	21.52	21.55	21.49

WCDMA Band IV	Burst-Averaged output Power (dBm)			
Tx Channel	Tune-up (dBm)	1312	1413	1513
Frequency (MHz)		1712.4	1732.6	1752.6
RMC12.2K	23.50	23.21	23.22	23.12
HSDPA Sub 1	23.00	22.65	22.71	22.65
HSDPA Sub 2	22.50	22.42	22.49	22.37
HSDPA Sub 3	23.00	22.60	22.70	22.49
HSDPA Sub 4	23.00	22.45	22.58	22.53
HSUPA Sub 1	23.00	22.36	22.58	22.42
HSUPA Sub 2	23.00	22.49	22.78	22.61
HSUPA Sub 3	23.00	22.45	22.57	22.39
HSUPA Sub 4	23.00	22.56	22.44	22.55
HSUPA Sub 5	21.50	21.20	21.46	21.38

WCDMA Band V	Burst-Averaged output Power (dBm)			
Tx Channel	Tune-up (dBm)	4132	4182	4233
Frequency (MHz)		826.4	836.4	846.6
RMC12.2K	23.00	22.75	22.93	22.75
HSDPA Sub 1	23.00	22.56	22.84	22.67
HSDPA Sub 2	23.00	22.62	22.77	22.57
HSDPA Sub 3	23.00	22.49	22.79	22.56
HSDPA Sub 4	23.00	22.63	22.59	22.67
HSUPA Sub 1	23.00	22.62	22.57	22.42
HSUPA Sub 2	23.00	22.42	22.72	22.59
HSUPA Sub 3	23.00	22.39	22.51	22.58
HSUPA Sub 4	22.00	21.55	21.73	21.54
HSUPA Sub 5	22.00	21.66	20.92	21.76

8.3. LTE Conducted Power

1. The following tests were conducted according to the test requirements outlines in 3GPP TS 36.521-1 specification. A summary of these configurations are illustrated below:

Test Parameters for Channel Bandwidths				
	Downlink Configuration	Uplink Configuration		
Ch BW	N/A for Max UE output power testing	Mod'n	RB allocation	
			FDD	TDD
1.4MHz		QPSK	1	1
1.4MHz		QPSK	5	5
3MHz		QPSK	1	1
3MHz		QPSK	4	4
5MHz		QPSK	1	1
5MHz		QPSK	8	8
10MHz		QPSK	1	1
10MHz		QPSK	12	12
15MHz		QPSK	1	1
15MHz		QPSK	16	16
20MHz		QPSK	1	1
20MHz		QPSK	18	18

Note 1: Test Channel Bandwidths are checked separately for each E-UTRA band, the applicable channel bandwidths are specified in Table 5.4.2.1-1.

Note 2: For E-UTRA bands not applied with Note 2 in Table 6.2.2.3-1:

- The 1 RB allocation shall be tested at RB#0 for low and mid range, RB #max for high range test frequency.
- The RBstart of non-1RB allocation shall be RB #0 for low and mid range, RB# (max +1 - RB allocation) for high range test frequency.

Note 3: For E-UTRA bands applied with Note 2 in Table 6.2.2.3-1:

- If the test channel bandwidth is larger than 4MHz, then the 1 RB allocation shall be tested at both RB #0 and RB #max.
- If the test channel bandwidth is smaller or equal to 4MHz, then the 1 RB allocation shall be tested at RB #0.
- If the test channel bandwidth = (FUL_high - FUL_low) specified by the operating band, then only one frequency range shall be tested and the 1 RB allocation shall be tested at RB #0, RB #$\lceil N_{RB}^{UL}/2 \rceil$ and RB #max.
- For non-1RB allocation, test frequency is middle range, and the RBstart shall be RB #0.

2. LTE Conducted Power Results

LTE output list

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	23.50	23.33	21.51	22.51
			1	2	23.50	23.28	21.53	22.57
			1	5	23.50	23.28	21.66	22.55
			3	0	23.50	23.11	21.64	22.68
			3	1	23.50	23.08	21.63	22.56
			3	2	23.50	23.12	21.72	22.44
			6	0	22.50	22.15	20.74	21.56
		16QAM	1	0	23.00	22.48	21.22	21.94
			1	2	23.00	22.40	21.31	22.01
			1	5	23.00	22.84	21.49	22.53
			3	0	22.50	22.00	20.62	21.64
			3	1	22.50	22.05	20.63	21.37
			3	2	22.50	22.36	20.57	21.21
			6	0	22/20/21	21.54	19.86	20.71
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	23.00	21.18	21.36	22.37
			1	7	23.00	21.10	21.51	22.50
			1	14	23.00	21.13	21.57	22.42
			8	0	22.00	20.23	20.52	21.56
			8	4	22.00	20.24	20.52	21.57
			8	7	22.00	20.19	20.59	21.53
			15	0	22.00	20.21	20.66	21.56
		16QAM	1	0	22.00	20.35	20.60	21.54
			1	7	22.00	20.32	20.68	21.60
			1	14	22.00	20.39	20.70	21.61
			8	0	21.00	19.48	19.84	20.88
			8	4	21.00	19.48	19.84	20.88
			8	7	21.00	19.43	20.01	20.83
			15	0	21.00	19.43	19.71	20.74
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	22.50	21.30	21.47	22.44
			1	12	22.50	21.23	21.61	22.43
			1	24	22.50	21.27	21.69	22.48
			12	0	22.00	20.24	20.59	21.53
			12	6	22.00	20.25	20.60	21.55
			12	11	22.00	20.12	20.68	21.60
			25	0	22.00	20.20	20.49	21.59
		16QAM	1	0	21.50	19.83	20.12	21.09
			1	12	21.50	19.78	20.22	21.15
			1	24	21.50	19.76	20.25	21.13
			12	0	21.00	19.35	19.64	20.62

			12	6	21.00	19.36	19.64	20.62
			12	11	21.00	19.32	19.71	20.69
			25	0	21.00	19.43	19.83	20.79
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	21.15	21.23	22.08
			1	24	22.50	21.06	21.40	22.32
			1	49	22.50	21.14	21.59	22.39
			25	0	22.00	20.28	20.47	21.37
			25	12	22.00	20.19	20.47	21.37
			25	24	22.00	20.17	20.72	21.59
			50	0	21.50	20.18	20.61	21.47
		16QAM	1	0	22.00	20.40	20.67	21.30
			1	24	22.00	20.26	20.88	21.51
			1	49	22.00	20.36	20.93	21.65
			25	0	21.00	19.29	19.57	20.41
			25	12	21.00	19.30	19.58	20.41
			25	24	21.00	19.28	19.76	20.62
			50	0	21.00	19.31	19.73	20.64
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 2	15MHz	QPSK	1	0	22.50	21.10	21.24	21.92
			1	37	22.50	21.14	21.45	22.16
			1	74	22.50	21.06	21.65	22.39
			36	0	21.50	20.15	20.60	21.37
			36	18	21.50	20.15	20.60	21.29
			36	37	21.50	20.15	20.60	21.28
			75	0	21.50	20.15	20.60	21.28
		16QAM	1	0	22.00	20.42	20.57	21.22
			1	37	22.00	20.26	20.82	21.40
			1	74	22.00	20.22	20.80	21.66
			36	0	21.50	20.21	20.60	21.37
			36	18	21.50	20.15	20.60	21.29
			36	37	21.50	20.15	20.60	21.29
			75	0	20.50	19.34	19.71	20.44
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	23.00	21.72	21.41	22.05
			1	49	23.00	21.72	21.70	22.28
			1	99	23.00	21.17	21.85	22.67
			50	0	21.50	20.24	20.55	21.18
			50	24	21.50	20.35	20.56	21.04
			50	49	21.50	20.27	20.75	21.43
			100	0	21.50	20.31	20.62	21.32
		16QAM	1	0	22.00	20.42	20.72	21.33
			1	49	22.00	20.28	20.87	21.52
			1	99	22.00	20.29	21.20	21.82
			50	0	21.00	19.53	19.67	20.33

			50	24	21.00	19.53	19.68	20.33
			50	49	21.00	19.50	19.97	20.70
			100	0	20.50	19.44	19.73	20.47

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	21.50	20.29	20.31	21.06
			1	2	21.50	20.21	20.42	20.95
			1	5	21.50	20.29	20.40	21.04
			3	0	21.50	20.03	20.44	21.16
			3	1	21.50	20.02	20.40	21.15
			3	2	21.50	20.05	20.46	21.22
			6	0	20.50	20.24	19.60	20.26
		16QAM	1	0	21.00	20.24	19.09	20.53
			1	2	21.00	20.20	19.03	20.59
			1	5	21.00	20.03	19.86	20.69
			3	0	20.50	20.03	19.79	20.19
			3	1	20.50	20.00	19.87	20.20
			3	2	20.50	20.15	19.44	19.99
			6	0	20.50	20.14	18.94	19.57
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	22.50	22.42	22.35	22.29
			1	7	22.50	22.39	22.36	22.34
			1	14	22.50	22.32	22.30	22.30
			8	0	22.00	21.75	21.52	21.58
			8	4	22.00	21.75	21.50	21.59
			8	7	22.00	21.59	21.50	21.60
			15	0	22.00	21.63	21.45	21.58
		16QAM	1	0	22.00	21.81	21.04	21.81
			1	7	22.00	21.75	20.90	21.77
			1	14	22.00	21.75	21.00	21.86
			8	0	21.50	21.20	21.01	21.01
			8	4	21.50	21.07	21.00	20.96
			8	7	21.50	21.03	21.02	20.94
			15	0	21.00	20.97	20.68	20.86
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	22.52	22.15	22.38
			1	12	23.00	22.53	22.14	22.36
			1	24	23.00	22.52	22.48	22.57
			12	0	22.00	21.70	21.55	21.68
			12	6	22.00	21.71	21.55	21.70
			12	11	22.00	21.67	21.57	21.63
			25	0	22.00	21.59	21.55	21.66
		16QAM	1	0	22.00	21.27	21.99	21.25
			1	12	22.00	21.18	21.53	21.50
			1	24	22.00	21.16	21.53	21.54

			12	0	21.50	20.97	20.91	20.87
			12	6	21.50	20.97	21.01	20.82
			12	11	21.50	20.94	20.97	20.83
			25	0	21.50	21.01	20.87	20.85
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	22.50	22.33	22.37	22.09
			1	24	22.50	22.22	22.35	22.10
			1	49	22.50	22.27	22.25	22.21
			25	0	22.00	21.61	21.56	21.53
			25	12	22.00	21.54	21.55	21.54
			25	24	22.00	21.52	21.48	21.63
			50	0	22.00	21.54	21.45	21.61
		16QAM	1	0	22.50	21.76	21.73	22.14
			1	24	22.50	21.65	21.61	22.09
			1	49	22.50	21.65	21.57	22.17
			25	0	21.50	20.83	20.88	20.85
			25	12	21.50	20.83	21.01	20.86
			25	24	21.50	20.81	20.92	20.88
			50	0	21.00	20.86	20.80	20.92
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	22.50	22.34	21.77	22.09
			1	37	22.50	22.33	21.81	22.08
			1	74	22.50	22.23	22.48	22.20
			36	0	22.00	21.58	21.53	21.54
			36	18	22.00	21.58	21.51	21.55
			36	37	22.00	21.57	21.51	21.55
			75	0	22.00	21.57	21.50	21.55
		16QAM	1	0	22.00	21.72	21.55	21.96
			1	37	22.00	21.62	21.90	21.94
			1	74	22.00	21.66	21.85	21.78
			36	0	22.00	21.58	21.52	21.54
			36	18	22.00	21.58	21.51	21.55
			36	37	22.00	21.57	21.50	21.55
			75	0	21.00	20.86	20.87	20.92
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	22.50	22.32	22.37	22.48
			1	49	22.50	22.26	22.23	22.37
			1	99	22.50	22.15	22.27	22.42
			50	0	22.00	21.57	21.57	21.50
			50	24	22.00	21.58	21.56	21.49
			50	49	22.00	21.54	21.58	21.57
			100	0	22.00	21.63	21.55	21.64
		16QAM	1	0	22.50	21.62	22.42	21.20
			1	49	22.50	21.52	22.26	21.16
			1	99	22.50	21.42	22.19	21.18

			50	0	21.50	21.01	20.90	20.85
			50	24	21.50	20.94	20.90	20.85
			50	49	21.50	20.87	20.90	20.86
			100	0	21.00	20.88	20.86	20.89

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	23.42	23.02	22.71
			1	2	23.50	23.36	23.02	22.60
			1	5	23.50	23.15	23.13	22.74
			3	0	23.50	23.20	22.94	22.75
			3	1	23.50	23.41	22.98	23.14
			3	2	23.50	23.40	23.09	22.78
			6	0	23.50	23.40	22.31	22.23
		16QAM	1	0	23.50	23.35	22.78	22.94
			1	2	23.50	23.19	22.79	22.93
			1	5	23.50	23.18	23.17	22.64
			3	0	23.50	23.20	22.35	22.26
			3	1	23.50	23.43	22.36	22.12
			3	2	23.50	23.43	22.54	22.14
			6	0	23.50	23.18	22.05	21.98
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	22.88	22.88	22.80
			1	7	23.00	22.86	22.67	22.76
			1	14	23.00	22.66	22.84	22.52
			8	0	22.50	22.10	21.87	22.18
			8	4	22.50	22.07	21.85	22.14
			8	7	22.50	22.06	21.99	21.96
			15	0	22.50	21.94	21.99	22.02
		16QAM	1	0	23.50	22.43	21.78	23.39
			1	7	23.50	22.42	21.70	23.06
			1	14	23.50	22.49	21.83	22.65
			8	0	22.00	21.65	21.68	21.65
			8	4	22.00	21.71	21.60	21.65
			8	7	22.00	21.72	21.65	21.56
			15	0	22.00	21.42	21.38	21.52
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	22.89	22.50	22.92
			1	12	23.00	22.86	22.67	22.86
			1	24	23.00	22.82	22.63	22.60
			12	0	22.50	21.93	21.93	22.01
			12	6	22.50	21.88	21.94	22.03
			12	11	22.50	21.93	21.95	22.01
			25	0	22.00	21.88	21.88	21.98
		16QAM	1	0	23.00	21.75	22.81	22.38
			1	12	23.00	21.83	22.87	22.41
			1	24	23.00	21.66	22.51	22.44

			12	0	22.00	21.40	21.44	21.68
			12	6	22.00	21.41	21.40	21.65
			12	11	22.00	21.44	21.43	21.35
			25	0	22.00	21.51	21.28	21.53
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 5	10MHz	QPSK	1	0	23.00	22.84	22.77	22.77
			1	24	23.00	22.77	22.89	22.84
			1	49	23.00	22.71	22.78	22.64
			25	0	22.50	22.16	21.90	21.96
			25	12	22.50	22.02	21.90	21.97
			25	24	22.50	21.99	22.04	21.97
			50	0	22.50	21.79	21.87	22.03
		16QAM	1	0	23.50	22.66	22.56	22.96
			1	24	23.50	22.64	21.64	23.01
			1	49	23.50	22.61	21.80	22.78
			25	0	22.00	21.28	21.53	21.62
			25	12	22.00	21.33	21.54	21.63
			25	24	22.00	21.35	21.49	21.62
			50	0	22.00	21.43	21.47	21.64

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	22.00	21.54	21.77	21.60
			1	12	22.00	21.58	21.71	21.55
			1	24	22.00	21.56	21.75	21.58
			12	0	21.00	20.61	20.65	20.51
			12	6	21.00	20.60	20.65	20.50
			12	11	21.00	20.73	20.72	20.43
			25	0	21.00	20.65	20.53	20.41
		16QAM	1	0	21.00	20.74	20.32	19.78
			1	12	21.00	20.79	20.33	19.79
			1	24	21.00	20.92	20.37	19.74
			12	0	20.50	19.90	20.01	19.44
			12	6	20.50	19.81	19.83	19.44
			12	11	20.50	19.77	19.86	19.43
			25	0	20.00	19.78	19.79	19.57
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	22.00	21.65	21.67	21.43
			1	24	22.00	21.62	21.71	21.36
			1	49	22.00	21.67	21.63	21.40
			25	0	21.00	20.62	20.63	20.38
			25	12	21.00	20.62	20.63	20.40
			25	24	21.00	20.97	20.61	20.38
			50	0	21.00	20.79	20.62	20.39
		16QAM	1	0	21.00	20.46	20.02	20.12
			1	24	21.00	20.66	20.01	20.10

			1	49	21.00	20.39	19.98	20.14
			25	0	20.00	19.77	19.82	19.44
			25	12	20.00	19.76	19.90	19.43
			25	24	20.00	19.67	19.79	19.48
			50	0	20.00	19.95	19.84	19.55
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	22.00	21.52	21.61	21.50
			1	37	22.00	21.51	21.64	21.41
			1	74	22.00	21.51	21.57	21.46
			36	0	21.00	20.65	20.59	20.41
			36	18	21.00	20.65	20.58	20.43
			36	37	21.00	20.65	20.58	20.43
			75	0	21.00	20.64	20.58	20.45
		16QAM	1	0	21.50	20.45	20.93	20.61
			1	37	21.50	20.42	20.92	20.59
			1	74	21.50	20.37	21.03	20.65
			36	0	21.00	20.64	20.59	20.42
			36	18	21.00	20.64	20.58	20.43
			36	37	21.00	20.65	20.58	20.45
			75	0	20.00	19.81	19.93	19.53
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	22.00	21.73	21.80	21.59
			1	49	22.00	21.76	21.85	21.55
			1	99	22.00	21.61	21.77	21.44
			50	0	21.00	20.76	20.65	20.43
			50	24	21.00	20.77	20.81	20.44
			50	49	21.00	20.65	20.60	20.35
			100	0	21.00	20.60	20.71	20.42
		16QAM	1	0	21.50	20.04	21.21	20.47
			1	49	21.50	20.24	21.13	20.35
			1	99	21.50	20.05	21.06	20.35
			50	0	20.00	19.98	19.79	19.43
			50	24	20.00	19.99	19.80	19.42
			50	49	20.00	19.81	19.68	19.55
			100	0	20.00	19.78	19.95	19.58

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		23017/699.7	23095/707.5	23173/715.3
LTE Band 12	1.4MHz	QPSK	1	0	23.50	23.36	22.92	22.85
			1	2	23.50	23.32	23.04	22.85
			1	5	23.50	23.31	22.91	22.95
			3	0	23.50	23.09	23.19	23.00
			3	1	23.50	23.30	23.04	22.95
			3	2	23.50	23.38	23.04	22.94
			6	0	22.50	22.38	22.25	22.12
		16QAM	1	0	23.00	22.11	22.45	22.49

			1	2	23.00	22.11	22.68	22.86
			1	5	23.00	22.49	22.61	22.80
			3	0	22.50	22.48	22.11	22.06
			3	1	22.50	22.21	22.04	21.90
			3	2	22.50	22.16	22.02	21.86
			6	0	22.00	21.70	21.35	21.56
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		23025/700.5	23095/707.5	23165/714.5
LTE Band 12	3MHz	QPSK	1	0	23.50	23.16	23.02	22.92
			1	7	23.50	23.04	23.00	22.89
			1	14	23.50	22.98	23.20	22.86
			8	0	22.50	22.19	22.05	21.95
			8	4	22.50	22.19	22.03	21.95
			8	7	22.50	22.18	22.01	21.93
			15	0	22.50	22.17	22.05	22.02
		16QAM	1	0	23.00	21.98	21.81	22.51
			1	7	23.00	22.19	22.13	22.42
			1	14	23.00	22.12	22.11	22.41
			8	0	22.00	21.58	21.41	21.34
			8	4	22.00	21.42	21.53	21.33
			8	7	22.00	21.40	21.47	21.33
			15	0	21.50	21.41	21.09	21.22
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		23035/701.5	23095/707.5	23155/713.5
LTE Band 12	5MHz	QPSK	1	0	23.50	23.14	22.80	23.21
			1	12	23.50	23.01	22.81	23.16
			1	24	23.50	23.03	22.78	23.12
			12	0	22.50	22.20	22.01	22.03
			12	6	22.50	22.20	22.01	22.03
			12	11	22.50	22.05	22.03	21.93
			25	0	22.50	22.16	22.11	22.03
		16QAM	1	0	22.50	21.85	22.34	21.98
			1	12	22.50	21.80	22.39	21.93
			1	24	22.50	21.56	22.35	22.02
			12	0	21.50	21.36	21.26	21.12
			12	6	21.50	21.36	21.24	21.10
			12	11	21.50	21.24	21.24	21.26
			25	0	21.50	21.43	21.25	21.27
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		23060/704	23095/707.5	23130/711
LTE Band 12	10MHz	QPSK	1	0	23.50	23.02	23.26	22.85
			1	24	23.50	22.87	23.08	22.78
			1	49	23.50	22.89	23.07	22.92
			25	0	22.50	22.05	22.08	21.94
			25	12	22.50	22.08	22.09	21.95
			25	24	22.50	22.04	22.06	21.94
			50	0	22.50	22.04	22.12	22.06
		16QAM	1	0	23.00	22.01	22.18	22.80

			1	24	23.00	21.89	22.14	22.19
			1	49	23.00	21.86	22.09	22.31
			25	0	21.50	21.27	21.36	21.28
			25	12	21.50	21.23	21.34	21.16
			25	24	21.50	21.16	21.34	21.25
			50	0	21.50	21.36	21.33	21.26

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		23755/706.5	23790/710	23825/713.5
LTE Band 17	5MHz	QPSK	1	0	23.50	23.29	22.92	23.10
			1	12	23.50	23.16	23.00	23.06
			1	24	23.50	23.11	23.08	23.07
			12	0	22.50	22.25	22.20	22.16
			12	6	22.50	22.24	22.20	22.16
			12	11	22.50	22.28	22.19	22.18
			25	0	22.50	22.18	22.16	22.14
		16QAM	1	0	23.00	21.99	21.81	21.77
			1	12	23.00	22.02	21.77	21.66
			1	24	23.00	22.51	21.74	21.65
			12	0	21.50	21.46	21.23	21.41
			12	6	21.50	21.45	21.26	21.31
			12	11	21.50	21.38	21.27	21.32
			25	0	21.50	21.22	21.43	21.47
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		23780/709	23790/710	23800/711
LTE Band 17	10MHz	QPSK	1	0	23.50	23.07	23.02	22.92
			1	24	23.50	23.01	22.86	22.86
			1	49	23.50	23.16	23.09	23.03
			25	0	22.50	22.14	22.20	22.20
			25	12	22.50	22.18	22.19	22.20
			25	24	22.50	22.14	22.03	22.22
			50	0	22.50	22.13	22.20	22.15
		16QAM	1	0	23.00	22.11	22.97	22.46
			1	24	23.00	21.52	22.31	22.25
			1	49	23.00	21.45	22.29	22.27
			25	0	21.50	21.34	21.40	21.34
			25	12	21.50	21.40	21.39	21.34
			25	24	21.50	21.36	21.34	21.27
			50	0	21.50	21.33	21.40	21.31

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	21/21/22	20.00	20.55	21.86
			1	2	21/21/22	20.03	20.64	21.84
			1	5	21/21/22	20.26	20.57	21.78
			3	0	21/21/23	20.09	20.60	22.00
			3	1	21/21/23	20.06	20.59	21.98
			3	2	21/21/23	20.15	20.54	22.03

			6	0	20/20/22	19.29	19.75	21.30
		16QAM	1	0	20/21/22	19.89	20.58	21.35
			1	2	20/21/22	19.50	20.60	21.35
			1	5	20/21/22	19.88	20.94	21.71
			3	0	20/20/22	19.05	19.93	21.08
			3	1	20/20/22	19.11	19.93	21.07
			3	2	20/20/22	19.45	19.91	20.99
			6	0	19/20/21	18.72	19.04	20.51
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	22.50	22.23	22.18	21.94
			1	7	22.50	22.22	22.18	21.98
			1	14	22.50	22.15	22.15	21.87
			8	0	22.00	21.60	21.34	21.37
			8	4	22.00	21.49	21.35	21.37
			8	7	22.00	21.47	21.41	21.36
			15	0	21.50	21.49	21.41	21.26
		16QAM	1	0	22.00	21.62	21.15	21.24
			1	7	22.00	21.55	21.21	21.30
			1	14	22.00	21.53	21.24	21.28
			8	0	21.00	20.94	20.84	20.76
			8	4	21.00	20.95	20.84	20.76
			8	7	21.00	20.92	20.90	20.63
			15	0	21.00	20.85	20.52	20.56
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	22.50	22.39	21.92	22.07
			1	12	22.50	22.39	22.02	22.01
			1	24	22.50	22.35	22.20	21.98
			12	0	22.00	21.55	21.33	21.34
			12	6	22.00	21.54	21.34	21.33
			12	11	22.00	21.49	21.38	21.28
			25	0	21.50	21.46	21.44	21.24
		16QAM	1	0	22.00	21.14	21.53	20.91
			1	12	22.00	21.08	21.14	20.87
			1	24	22.00	21.12	21.18	20.81
			12	0	21.00	20.78	20.69	20.57
			12	6	21.00	20.78	20.70	20.56
			12	11	21.00	20.75	20.73	20.59
			25	0	21.00	20.91	20.57	20.64
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	22.50	22.27	22.13	22.06
			1	24	22.50	22.15	22.12	22.00
			1	49	22.50	22.17	22.08	21.91
			25	0	22.00	21.50	21.30	21.38
			25	12	22.00	21.51	21.45	21.36
			25	24	22.00	21.41	21.39	21.26

			50	0	22.00	21.52	21.37	21.34
		16QAM	1	0	22.00	21.63	21.22	21.53
			1	24	22.00	21.52	20.77	21.32
			1	49	22.00	21.55	20.81	21.23
			25	0	21.00	20.70	20.76	20.53
			25	12	21.00	20.78	20.74	20.61
			25	24	21.00	20.72	20.78	20.51
			50	0	21.00	20.74	20.73	20.61
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	22.50	22.26	21.90	22.19
			1	37	22.50	22.20	21.91	22.03
			1	74	22.50	22.08	22.01	21.90
			36	0	21.50	21.47	21.33	21.36
			36	18	21.50	21.47	21.33	21.34
			36	37	21.50	21.47	21.33	21.34
			75	0	21.50	21.47	21.34	21.33
		16QAM	1	0	22.00	21.63	21.48	21.55
			1	37	22.00	21.54	21.44	21.25
			1	74	22.00	21.47	21.50	21.19
			36	0	21.50	21.47	21.32	21.35
			36	18	21.50	21.47	21.33	21.34
			36	37	21.50	21.47	21.33	21.33
			75	0	21.00	20.78	20.67	20.59
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	23.00	22.63	22.08	22.64
			1	49	23.00	22.57	22.17	22.56
			1	99	23.00	22.49	22.27	22.24
			50	0	22.00	21.51	21.34	21.54
			50	24	22.00	21.42	21.32	21.54
			50	49	22.00	21.28	21.49	21.27
			100	0	21.50	21.47	21.45	21.43
		16QAM	1	0	22.50	21.58	22.05	21.48
			1	49	22.50	21.51	21.87	21.39
			1	99	22.50	21.46	21.89	21.25
			50	0	21.00	20.86	20.66	20.79
			50	24	21.00	20.87	20.65	20.79
			50	49	21.00	20.74	20.74	20.63
			100	0	21.00	20.69	20.77	20.65

8.4. Wi-Fi & BT Output Power

Mode	Channel	Frequency (MHz)	Tune-up (dBm)	Output Power (dBm)
802.11b	1	2412	15.50	14.93
	6	2437	15.50	14.44
	11	2462	15.50	15.03
802.11g	1	2412	15.00	14.08
	6	2437	15.00	14.83
	11	2462	15.00	14.50
802.11n (HT20)	1	2412	14.00	13.59
	6	2437	14.00	12.95
	11	2462	14.00	13.75

Mode	Frequency (MHz)	Tune-up (dBm)	Output Power (dBm)
802.11A	5745	12.50	12.40
	5785	12.50	12.13
	5825	12.50	11.50
802.11N20SISO	5745	12.50	12.14
	5785	12.50	11.45
	5825	12.50	10.85
802.11AC20SISO	5745	11.50	11.28
	5785	11.50	10.49
	5825	11.50	9.94

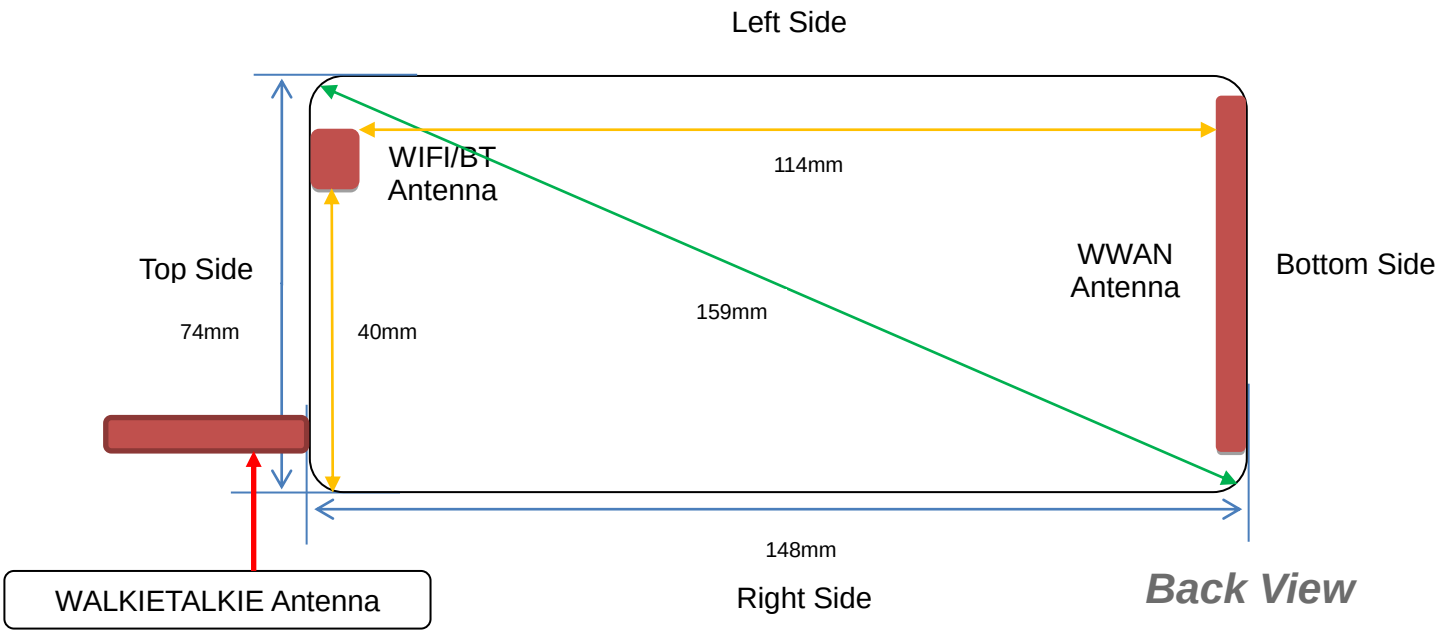
	Output Power (dBm)				
	Channel	Tune-up (dBm)	Data Rates		
			1M	2M	3M
BR+EDR	0CH	1.00	-0.24	0.34	0.77
	39CH	1.00	0.01	0.47	0.99
	78CH	-1.00	-1.52	-0.65	-0.19

Mode	Channel	Tune-up (dBm)	Output Power (dBm)
BLE1M	CH00	1.00	0.07
	CH19	0.00	-0.22
	CH39	-1.00	-1.27

8.5. Walkie Talkie Output Power

Modulation Type	Frequency (MHz)	Test Results (dBm)	Tune-Up(dBm)
FM	406.1125	32.498	33.00
	430.1125	32.652	33.00
	453.2125	31.863	33.00
	459.625	31.581	33.00
	465.625	31.280	33.00
	469.9875	31.108	33.00
Digital 4FSK	406.1125	31.298	33.00
	430.1125	32.090	33.00
	453.2125	32.838	33.00
	459.625	32.734	33.00
	465.625	32.589	33.00
	469.9875	32.298	33.00

9. Antenna Location



Antenna information:

Distance of The Antenna to the EUT surface and edge (mm)						
Antennas	Front Side	Back Side	Left Side	Right Side	Top Side	Bottom Side
BT/WLAN	≤25mm	≤25mm	≤25mm	>25mm	≤25mm	>25mm
WWAN	≤25mm	≤25mm	≤25mm	≤25mm	>25mm	≤25mm

Positions for SAR tests						
Antennas	Front Side	Back Side	Left Side	Right Side	Top Side	Bottom Side
BT/WLAN	Yes	Yes	Yes	NO	Yes	NO
WWAN	Yes	Yes	Yes	Yes	NO	Yes

Note:
1). Per KDB648474 D04, because the overall diagonal distance of this devices is 159mm<160mm, it is considered as “Front-of-face “ device.
2). Per KDB648474 D04, 10-g extremity SAR is not required when Body-Worn mode 1-g reported SAR < 1.2 W/kg.

10. Stand-alone SAR test exclusion

Refer to FCC KDB 447498D01, the 1-g SAR and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)]·[√f(GHZ)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where:

- f(GHZ) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison

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

Mode	Pmax (dBm)	Pmax (mW)	Distance (mm)	f (GHz)	Calculation Result	SAR Exclusion threshold	SAR test exclusion
Bluetooth	1.00	1.26	5	2.480	0.4	3	Yes

NOTE: Standalone SAR test exclusion for Bluetooth.

When standalone SAR test exclusion applies to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to following 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 ≤ 50mm, where x = 7.5 for 1-g SAR and x = 18.75 for 10-g SAR.

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

Mode	Position	Pmax (dBm)	Pmax (mW)	Distance (mm)	f (GHz)	x	Estimated SAR (W/kg)
Bluetooth	Head	1.00	1.26	5	2.480	7.5	0.053
Bluetooth	Body	1.00	1.26	5	2.480	7.5	0.053
Bluetooth	Hotspot	1.00	1.26	5	2.480	7.5	0.053

NOTE: Estimated SAR calculation for Bluetooth.

11. Duty Cycle

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
GSM	3:8
WCDMA	1:1
LTE	1:1
WLAN	1:1
Bluetooth	1:1
WALKIETALKIE	50%

12. SAR Measurement Results

< GSM 850>

Test Position	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
Left Cheek	189/836.4	GPRS(GMSK 3TS)	0.215	0.166	2.96	29.49	30.00	0.242	2025/7/30	1#
Left Tilt 15 Degree	189/836.4	GPRS(GMSK 3TS)	0.126	0.095	-2.97	29.49	30.00	0.142	2025/7/30	
Right Cheek	189/836.4	GPRS(GMSK 3TS)	0.197	0.148	3.83	29.49	30.00	0.222	2025/7/30	
Right Tilt 15 Degree	189/836.4	GPRS(GMSK 3TS)	0.099	0.073	-0.20	29.49	30.00	0.111	2025/7/30	

Test Position of Hotspot with 0mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
Front Side	189/836.4	GPRS(GMSK 3TS)	0.258	0.196	0.67	29.49	30.00	0.290	2025/7/30	
Back Side	189/836.4	GPRS(GMSK 3TS)	0.380	0.297	0.25	29.49	30.00	0.427	2025/7/30	2#
Left Side	189/836.4	GPRS(GMSK 3TS)	0.129	0.101	3.91	29.49	30.00	0.145	2025/7/30	
Right Side	189/836.4	GPRS(GMSK 3TS)	0.120	0.093	-1.35	29.49	30.00	0.135	2025/7/30	
Bottom Side	189/836.4	GPRS(GMSK 3TS)	0.190	0.144	-0.61	29.49	30.00	0.214	2025/7/30	

< GSM 1900>

Test Position	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
Left Cheek	661/1880	GPRS(GMSK 3TS)	0.222	0.141	1.82	26.47	26.50	0.224	2025/8/12	3#

Left Tilt 15 Degree	661/1880	GPRS(GMSK 3TS)	0.120	0.072	3.36	26.47	26.50	0.121	2025/8/12	
Right Cheek	661/1880	GPRS(GMSK 3TS)	0.209	0.126	-0.21	26.47	26.50	0.210	2025/8/12	
Right Tilt 15 Degree	661/1880	GPRS(GMSK 3TS)	0.103	0.062	0.54	26.47	26.50	0.104	2025/8/12	

Test Position of Hotspot with 0mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
Front Side	661/1880	GPRS(GMSK 3TS)	0.324	0.133	-3.31	26.47	26.50	0.326	2025/8/12	
Back Side	661/1880	GPRS(GMSK 3TS)	0.497	0.210	0.90	26.47	26.50	0.500	2025/8/12	4#
Left Side	661/1880	GPRS(GMSK 3TS)	0.162	0.067	3.49	26.47	26.50	0.163	2025/8/12	
Right Side	661/1880	GPRS(GMSK 3TS)	0.159	0.065	0.47	26.47	26.50	0.160	2025/8/12	
Bottom Side	661/1880	GPRS(GMSK 3TS)	0.255	0.105	1.65	26.47	26.50	0.257	2025/8/12	

< WCDMA Band 2>

Test Position	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
Left Cheek	9400/1880	RMC12.2K	0.598	0.434	-4.37	23.34	23.50	0.620	2025/8/12	5#
Left Tilt 15 Degree	9400/1880	RMC12.2K	0.314	0.216	1.16	23.34	23.50	0.326	2025/8/12	
Right Cheek	9400/1880	RMC12.2K	0.510	0.363	2.83	23.34	23.50	0.529	2025/8/12	
Right Tilt 15 Degree	9400/1880	RMC12.2K	0.231	0.166	3.68	23.34	23.50	0.240	2025/8/12	

Test Position of Hotspot with 0mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
Front Side	9400/1880	RMC12.2K	0.330	0.202	2.73	23.34	23.50	0.342	2025/8/12	
Back Side	9400/1880	RMC12.2K	0.544	0.336	-0.76	23.34	23.50	0.564	2025/8/12	6#
Left Side	9400/1880	RMC12.2K	0.178	0.112	-3.21	23.34	23.50	0.185	2025/8/12	
Right Side	9400/1880	RMC12.2K	0.174	0.107	-1.06	23.34	23.50	0.181	2025/8/12	
Bottom Side	9400/1880	RMC12.2K	0.275	0.161	-1.85	23.34	23.50	0.285	2025/8/12	

< WCDMA Band 4>

Test Position	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
Left Cheek	1413/1732.6	RMC12.2K	0.354	0.256	-0.09	23.22	23.50	0.378	2025/8/11	7#
Left Tilt 15 Degree	1413/1732.6	RMC12.2K	0.199	0.140	-3.90	23.22	23.50	0.212	2025/8/11	
Right Cheek	1413/1732.6	RMC12.2K	0.304	0.211	-0.04	23.22	23.50	0.324	2025/8/11	
Right Tilt 15 Degree	1413/1732.6	RMC12.2K	0.156	0.113	1.42	23.22	23.50	0.166	2025/8/11	

Test Position of Hotspot with 0mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
Front	1413/1732.6	RMC12.2K	0.348	0.242	0.00	23.22	23.50	0.371	2025/8/11	

Side										
Back Side	1413/1732.6	RMC12.2K	0.544	0.399	-1.96	23.22	23.50	0.580	2025/8/11	8#
Left Side	1413/1732.6	RMC12.2K	0.174	0.123	-0.42	23.22	23.50	0.186	2025/8/11	
Right Side	1413/1732.6	RMC12.2K	0.171	0.120	-3.92	23.22	23.50	0.182	2025/8/11	
Bottom Side	1413/1732.6	RMC12.2K	0.285	0.203	-0.27	23.22	23.50	0.304	2025/8/11	

< WCDMA Band 5>

Test Position	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
Left Cheek	4182/836.4	RMC12.2K	0.215	0.163	-0.02	22.93	23.00	0.218	2025/7/30	9#
Left Tilt 15 Degree	4182/836.4	RMC12.2K	0.120	0.089	-3.90	22.93	23.00	0.122	2025/7/30	
Right Cheek	4182/836.4	RMC12.2K	0.190	0.143	-0.95	22.93	23.00	0.193	2025/7/30	
Right Tilt 15 Degree	4182/836.4	RMC12.2K	0.090	0.066	-1.44	22.93	23.00	0.091	2025/7/30	

Test Position of Hotspot with 0mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
Front Side	4182/836.4	RMC12.2K	0.126	0.102	0.79	22.93	23.00	0.128	2025/7/30	
Back Side	4182/836.4	RMC12.2K	0.163	0.134	-3.06	22.93	23.00	0.166	2025/7/30	10#
Left Side	4182/836.4	RMC12.2K	0.063	0.051	0.68	22.93	23.00	0.064	2025/7/30	
Right Side	4182/836.4	RMC12.2K	0.060	0.049	3.86	22.93	23.00	0.061	2025/7/30	

Bottom Side	4182/836.4	RMC12.2K	0.100	0.079	-1.32	22.93	23.00	0.102	2025/7/30	

< LTE Band 2>

Test Position	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
1RB										
Left Cheek	18900/1880	20M QPSK(1,99)	0.523	0.340	4.26	21.85	23.00	0.682	2025/8/12	15#
Left Tilt 15 Degree	18900/1880	20M QPSK(1,99)	0.265	0.164	2.20	21.85	23.00	0.345	2025/8/12	
Right Cheek	18900/1880	20M QPSK(1,99)	0.450	0.293	1.33	21.85	23.00	0.586	2025/8/12	
Right Tilt 15 Degree	18900/1880	20M QPSK(1,99)	0.216	0.133	2.81	21.85	23.00	0.281	2025/8/12	
50%RB										
Left Cheek	18900/1880	20M QPSK(50,49)	0.311	0.172	-0.70	20.75	21.50	0.370	2025/8/12	
Left Tilt 15 Degree	18900/1880	20M QPSK(50,49)	0.147	0.083	-4.89	20.75	21.50	0.175	2025/8/12	
Right Cheek	18900/1880	20M QPSK(50,49)	0.267	0.165	4.21	20.75	21.50	0.317	2025/8/12	
Right Tilt 15 Degree	18900/1880	20M QPSK(50,49)	0.124	0.076	-1.16	20.75	21.50	0.147	2025/8/12	

Test Position of Hotspot with 0mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
1RB										
Front Side	18900/1880	20M QPSK(1,99)	0.222	0.142	1.36	21.85	23.00	0.289	2025/8/12	

Back Side	18900/1880	20M QPSK(1,99)	0.355	0.234	0.09	21.85	23.00	0.463	2025/8/12	16#
Left Side	18900/1880	20M QPSK(1,99)	0.120	0.076	-1.74	21.85	23.00	0.156	2025/8/12	
Right Side	18900/1880	20M QPSK(1,99)	0.117	0.074	0.57	21.85	23.00	0.152	2025/8/12	
Bottom Side	18900/1880	20M QPSK(1,99)	0.200	0.128	3.42	21.85	23.00	0.261	2025/8/12	
50%RB										
Front Side	18900/1880	20M QPSK(50,49)	0.126	0.079	3.99	20.75	21.50	0.150	2025/8/12	
Back Side	18900/1880	20M QPSK(50,49)	0.197	0.125	-4.86	20.75	21.50	0.234	2025/8/12	
Left Side	18900/1880	20M QPSK(50,49)	0.065	0.043	3.01	20.75	21.50	0.077	2025/8/12	
Right Side	18900/1880	20M QPSK(50,49)	0.063	0.042	0.48	20.75	21.50	0.075	2025/8/12	
Bottom Side	18900/1880	20M QPSK(50,49)	0.117	0.071	-2.65	20.75	21.50	0.139	2025/8/12	

< LTE Band 4>

Test Position	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
1RB										
Left Cheek	20175/1732.5	20M QPSK(1,0)	0.574	0.367	2.04	22.37	22.50	0.591	2025/8/11	17#
Left Tilt 15 Degree	20175/1732.5	20M QPSK(1,0)	0.289	0.176	0.25	22.37	22.50	0.298	2025/8/11	
Right Cheek	20175/1732.5	20M QPSK(1,0)	0.541	0.336	-0.63	22.37	22.50	0.557	2025/8/11	
Right Tilt 15 Degree	20175/1732.5	20M QPSK(1,0)	0.275	0.171	2.33	22.37	22.50	0.283	2025/8/11	
50%RB										
Left Cheek	20175/1732.5	20M QPSK(50,49)	0.303	0.218	4.19	21.58	22.00	0.334	2025/8/11	
Left Tilt	20175/1732.5	20M	0.173	0.102	1.74	21.58	22.00	0.191	2025/8/11	

15 Degree		QPSK(50,49)								
Right Cheek	20175/1732.5	20M QPSK(50,49)	0.290	0.198	-3.70	21.58	22.00	0.319	2025/8/11	
Right Tilt 15 Degree	20175/1732.5	20M QPSK(50,49)	0.156	0.093	-1.55	21.58	22.00	0.172	2025/8/11	

Test Position of Hotspot with 0mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
1RB										
Front Side	20175/1732.5	20M QPSK(1,0)	0.216	0.144	2.88	22.37	22.50	0.223	2025/8/11	
Back Side	20175/1732.5	20M QPSK(1,0)	0.327	0.222	-4.42	22.37	22.50	0.337	2025/8/11	18#
Left Side	20175/1732.5	20M QPSK(1,0)	0.106	0.072	-2.52	22.37	22.50	0.109	2025/8/11	
Right Side	20175/1732.5	20M QPSK(1,0)	0.102	0.069	-2.35	22.37	22.50	0.105	2025/8/11	
Bottom Side	20175/1732.5	20M QPSK(1,0)	0.165	0.110	-3.19	22.37	22.50	0.170	2025/8/11	
50%RB										
Front Side	20175/1732.5	20M QPSK(50,49)	0.122	0.085	-1.02	21.58	22.00	0.134	2025/8/11	
Back Side	20175/1732.5	20M QPSK(50,49)	0.172	0.132	1.41	21.58	22.00	0.189	2025/8/11	
Left Side	20175/1732.5	20M QPSK(50,49)	0.063	0.038	-1.77	21.58	22.00	0.069	2025/8/11	
Right Side	20175/1732.5	20M QPSK(50,49)	0.059	0.035	-4.35	21.58	22.00	0.065	2025/8/11	
Bottom Side	20175/1732.5	20M QPSK(50,49)	0.095	0.063	1.12	21.58	22.00	0.105	2025/8/11	

< LTE Band 5>

Test Position	Test channel /Freq.	Test Mode	SAR Value (W/kg)	Power Drift	Conducted power	Tune-up power	Scaled SAR	Date	Plot

			1g	10g	(±5%)	(dBm)	(dBm)	1g (W/Kg)		
1RB										
Left Cheek	20525/836.5	10M QPSK(1,24)	0.236	0.168	0.51	22.89	23.00	0.242	2025/7/30	19#
Left Tilt 15 Degree	20525/836.5	10M QPSK(1,24)	0.141	0.098	-3.88	22.89	23.00	0.145	2025/7/30	
Right Cheek	20525/836.5	10M QPSK(1,24)	0.221	0.157	-0.27	22.89	23.00	0.227	2025/7/30	
Right Tilt 15 Degree	20525/836.5	10M QPSK(1,24)	0.116	0.083	-1.23	22.89	23.00	0.119	2025/7/30	
50%RB										
Left Cheek	20525/836.5	10M QPSK(25,0)	0.129	0.094	1.74	21.90	22.50	0.148	2025/7/30	
Left Tilt 15 Degree	20525/836.5	10M QPSK(25,0)	0.077	0.053	4.98	21.90	22.50	0.088	2025/7/30	
Right Cheek	20525/836.5	10M QPSK(25,0)	0.125	0.094	-3.96	21.90	22.50	0.144	2025/7/30	
Right Tilt 15 Degree	20525/836.5	10M QPSK(25,0)	0.060	0.044	0.28	21.90	22.50	0.069	2025/7/30	

Test Position of Hotspot with 0mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
1RB										
Front Side	20525/836.5	10M QPSK(1,24)	0.084	0.069	3.49	22.89	23.00	0.086	2025/7/30	
Back Side	20525/836.5	10M QPSK(1,24)	0.139	0.116	1.55	22.89	23.00	0.143	2025/7/30	20#
Left Side	20525/836.5	10M QPSK(1,24)	0.050	0.042	2.05	22.89	23.00	0.051	2025/7/30	
Right Side	20525/836.5	10M QPSK(1,24)	0.048	0.040	1.56	22.89	23.00	0.049	2025/7/30	
Bottom	20525/836.5	10M	0.085	0.069	-1.34	22.89	23.00	0.087	2025/7/30	

Side		QPSK(1,24)								
50%RB										
Front Side	20525/836.5	10M QPSK(25,0)	0.045	0.040	0.17	21.90	22.50	0.052	2025/7/30	
Back Side	20525/836.5	10M QPSK(25,0)	0.074	0.069	1.13	21.90	22.50	0.085	2025/7/30	
Left Side	20525/836.5	10M QPSK(25,0)	0.029	0.025	-3.55	21.90	22.50	0.033	2025/7/30	
Right Side	20525/836.5	10M QPSK(25,0)	0.026	0.023	2.31	21.90	22.50	0.030	2025/7/30	
Bottom Side	20525/836.5	10M QPSK(25,0)	0.050	0.037	4.29	21.90	22.50	0.057	2025/7/30	

< LTE Band 7>

Test Position	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
1RB										
Left Cheek	21100/2535	20M QPSK(1,49)	0.262	0.160	4.16	21.85	22.00	0.271	2025/8/14	21#
Left Tilt 15 Degree	21100/2535	20M QPSK(1,49)	0.156	0.095	-0.80	21.85	22.00	0.161	2025/8/14	
Right Cheek	21100/2535	20M QPSK(1,49)	0.248	0.151	0.67	21.85	22.00	0.257	2025/8/14	
Right Tilt 15 Degree	21100/2535	20M QPSK(1,49)	0.136	0.080	2.21	21.85	22.00	0.141	2025/8/14	
50%RB										
Left Cheek	21100/2535	20M QPSK(50,24)	0.136	0.084	2.54	20.81	21.00	0.142	2025/8/14	
Left Tilt 15 Degree	21100/2535	20M QPSK(50,24)	0.084	0.057	1.75	20.81	21.00	0.088	2025/8/14	
Right Cheek	21100/2535	20M QPSK(50,24)	0.130	0.082	1.12	20.81	21.00	0.136	2025/8/14	
Right Tilt 15 Degree	21100/2535	20M QPSK(50,24)	0.069	0.045	-0.95	20.81	21.00	0.072	2025/8/14	

Test Position of Hotspot with 0mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
1RB										
Front Side	21100/2535	20M QPSK(1,49)	0.390	0.258	0.86	21.85	22.00	0.404	2025/8/14	
Back Side	21100/2535	20M QPSK(1,49)	0.633	0.440	-0.99	21.85	22.00	0.655	2025/8/14	22#
Left Side	21100/2535	20M QPSK(1,49)	0.198	0.138	-3.60	21.85	22.00	0.205	2025/8/14	
Right Side	21100/2535	20M QPSK(1,49)	0.192	0.133	0.36	21.85	22.00	0.199	2025/8/14	
Bottom Side	21100/2535	20M QPSK(1,49)	0.325	0.217	0.43	21.85	22.00	0.336	2025/8/14	
50%RB										
Front Side	21100/2535	20M QPSK(50,24)	0.210	0.148	-3.11	20.81	21.00	0.219	2025/8/14	
Back Side	21100/2535	20M QPSK(50,24)	0.369	0.240	-4.11	20.81	21.00	0.386	2025/8/14	
Left Side	21100/2535	20M QPSK(50,24)	0.116	0.076	1.61	20.81	21.00	0.121	2025/8/14	
Right Side	21100/2535	20M QPSK(50,24)	0.115	0.072	1.05	20.81	21.00	0.120	2025/8/14	
Bottom Side	21100/2535	20M QPSK(50,24)	0.181	0.123	-2.12	20.81	21.00	0.189	2025/8/14	

< LTE Band 12>

Test Position	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
1RB										
Left Cheek	23095/707.5	10M QPSK(1,0)	0.249	0.178	1.13	23.26	23.50	0.263	2025/7/29	23#
Left Tilt 15 Degree	23095/707.5	10M QPSK(1,0)	0.148	0.101	2.94	23.26	23.50	0.156	2025/7/29	

Right Cheek	23095/707.5	10M QPSK(1,0)	0.233	0.162	1.56	23.26	23.50	0.246	2025/7/29	
Right Tilt 15 Degree	23095/707.5	10M QPSK(1,0)	0.125	0.086	2.68	23.26	23.50	0.132	2025/7/29	
50%RB										
Left Cheek	23095/707.5	10M QPSK(25,12)	0.134	0.107	-4.24	22.09	22.50	0.147	2025/7/29	
Left Tilt 15 Degree	23095/707.5	10M QPSK(25,12)	0.082	0.052	1.89	22.09	22.50	0.090	2025/7/29	
Right Cheek	23095/707.5	10M QPSK(25,12)	0.119	0.088	0.52	22.09	22.50	0.131	2025/7/29	
Right Tilt 15 Degree	23095/707.5	10M QPSK(25,12)	0.063	0.047	1.29	22.09	22.50	0.069	2025/7/29	

Test Position of Hotspot with 5mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
1RB										
Front Side	23095/707.5	10M QPSK(1,0)	0.156	0.115	3.70	23.26	23.50	0.165	2025/7/29	
Back Side	23095/707.5	10M QPSK(1,0)	0.255	0.198	3.63	23.26	23.50	0.269	2025/7/29	24#
Left Side	23095/707.5	10M QPSK(1,0)	0.087	0.066	-2.32	23.26	23.50	0.092	2025/7/29	
Right Side	23095/707.5	10M QPSK(1,0)	0.084	0.065	2.41	23.26	23.50	0.089	2025/7/29	
Bottom Side	23095/707.5	10M QPSK(1,0)	0.145	0.113	2.83	23.26	23.50	0.153	2025/7/29	
50%RB										
Front Side	23095/707.5	10M QPSK(25,12)	0.088	0.060	1.57	22.09	22.50	0.097	2025/7/29	
Back Side	23095/707.5	10M QPSK(25,12)	0.138	0.117	-3.83	22.09	22.50	0.152	2025/7/29	
Left Side	23095/707.5	10M QPSK(25,12)	0.047	0.040	1.81	22.09	22.50	0.052	2025/7/29	

Right Side	23095/707.5	10M QPSK(25,12)	0.043	0.038	3.83	22.09	22.50	0.047	2025/7/29	
Bottom Side	23095/707.5	10M QPSK(25,12)	0.086	0.063	0.04	22.09	22.50	0.095	2025/7/29	

< LTE Band 17>

Test Position	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
1RB										
Left Cheek	23790/710	10M QPSK(1,49)	0.260	0.182	4.19	23.09	23.50	0.286	2025/7/29	25#
Left Tilt 15 Degree	23790/710	10M QPSK(1,49)	0.138	0.092	0.45	23.09	23.50	0.152	2025/7/29	
Right Cheek	23790/710	10M QPSK(1,49)	0.235	0.165	1.29	23.09	23.50	0.258	2025/7/29	
Right Tilt 15 Degree	23790/710	10M QPSK(1,49)	0.119	0.080	1.88	23.09	23.50	0.131	2025/7/29	
50%RB										
Left Cheek	23790/710	10M QPSK(25,24)	0.156	0.101	0.25	22.03	22.50	0.174	2025/7/29	
Left Tilt 15 Degree	23790/710	10M QPSK(25,24)	0.079	0.052	4.44	22.03	22.50	0.088	2025/7/29	
Right Cheek	23790/710	10M QPSK(25,24)	0.127	0.089	4.81	22.03	22.50	0.142	2025/7/29	
Right Tilt 15 Degree	23790/710	10M QPSK(25,24)	0.061	0.047	-1.71	22.03	22.50	0.068	2025/7/29	

Test Position of Hotspot with 0mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
1RB										

Front Side	23790/710	10M QPSK(1,49)	0.162	0.125	0.50	23.09	23.50	0.178	2025/7/29	
Back Side	23790/710	10M QPSK(1,49)	0.232	0.189	1.09	23.09	23.50	0.255	2025/7/29	26#
Left Side	23790/710	10M QPSK(1,49)	0.075	0.059	-2.17	23.09	23.50	0.082	2025/7/29	
Right Side	23790/710	10M QPSK(1,49)	0.072	0.056	-0.79	23.09	23.50	0.079	2025/7/29	
Bottom Side	23790/710	10M QPSK(1,49)	0.140	0.114	-1.91	23.09	23.50	0.154	2025/7/29	
50%RB										
Front Side	23790/710	10M QPSK(25,24)	0.087	0.064	0.99	22.03	22.50	0.097	2025/7/29	
Back Side	23790/710	10M QPSK(25,24)	0.121	0.097	-1.61	22.03	22.50	0.135	2025/7/29	
Left Side	23790/710	10M QPSK(25,24)	0.045	0.033	4.38	22.03	22.50	0.050	2025/7/29	
Right Side	23790/710	10M QPSK(25,24)	0.042	0.031	2.32	22.03	22.50	0.047	2025/7/29	
Bottom Side	23790/710	10M QPSK(25,24)	0.074	0.067	-2.61	22.03	22.50	0.082	2025/7/29	

< LTE Band 66>

Test Position	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
1RB										
Left Cheek	132322/1745	20M QPSK(1,0)	0.566	0.377	3.69	22.08	23.00	0.700	2025/8/11	27#
Left Tilt 15 Degree	132322/1745	20M QPSK(1,0)	0.290	0.187	-1.83	22.08	23.00	0.358	2025/8/11	
Right Cheek	132322/1745	20M QPSK(1,0)	0.501	0.324	3.99	22.08	23.00	0.619	2025/8/11	
Right Tilt 15 Degree	132322/1745	20M QPSK(1,0)	0.237	0.150	-2.97	22.08	23.00	0.293	2025/8/11	
50%RB										
Left	132322/1745	20M	0.323	0.206	-0.58	21.34	22.00	0.376	2025/8/11	

Cheek		QPSK(50,0)								
Left Tilt 15 Degree	132322/1745	20M QPSK(50,0)	0.169	0.102	2.63	21.34	22.00	0.197	2025/8/11	
Right Cheek	132322/1745	20M QPSK(50,0)	0.270	0.175	-2.22	21.34	22.00	0.314	2025/8/11	
Right Tilt 15 Degree	132322/1745	20M QPSK(50,0)	0.121	0.088	3.56	21.34	22.00	0.141	2025/8/11	

Test Position of Hotspot with 5mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
1RB										
Front Side	132322/1745	20M QPSK(1,0)	0.342	0.259	0.46	22.08	23.00	0.423	2025/8/11	
Back Side	132322/1745	20M QPSK(1,0)	0.546	0.413	-3.05	22.08	23.00	0.675	2025/8/11	28#
Left Side	132322/1745	20M QPSK(1,0)	0.168	0.126	-0.81	22.08	23.00	0.208	2025/8/11	
Right Side	132322/1745	20M QPSK(1,0)	0.165	0.121	1.28	22.08	23.00	0.204	2025/8/11	
Bottom Side	132322/1745	20M QPSK(1,0)	0.275	0.208	2.13	22.08	23.00	0.340	2025/8/11	
50%RB										
Front Side	132322/1745	20M QPSK(50,0)	0.175	0.144	-1.87	21.34	22.00	0.204	2025/8/11	
Back Side	132322/1745	20M QPSK(50,0)	0.280	0.247	4.83	21.34	22.00	0.326	2025/8/11	
Left Side	132322/1745	20M QPSK(50,0)	0.098	0.065	3.90	21.34	22.00	0.114	2025/8/11	
Right Side	132322/1745	20M QPSK(50,0)	0.097	0.063	3.24	21.34	22.00	0.113	2025/8/11	
Bottom Side	132322/1745	20M QPSK(50,0)	0.143	0.104	1.03	21.34	22.00	0.166	2025/8/11	

< WiFi 2.4G>

Test Position	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
Left Cheek	11/2462	802.11b	0.445	0.266	-4.45	15.03	15.50	0.496	2025/8/13	13#
Left Tilt 15 Degree	11/2462	802.11b	0.239	0.139	-3.28	15.03	15.50	0.266	2025/8/13	
Right Cheek	11/2462	802.11b	0.400	0.232	-3.89	15.03	15.50	0.446	2025/8/13	
Right Tilt 15 Degree	11/2462	802.11b	0.188	0.110	-0.66	15.03	15.50	0.209	2025/8/13	

Test Position of Hotspot with 0mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
Front Side	11/2462	802.11b	0.162	0.099	-1.43	15.03	15.50	0.181	2025/8/13	
Back Side	11/2462	802.11b	0.225	0.143	1.53	15.03	15.50	0.251	2025/8/13	14#
Left Side	11/2462	802.11b	0.078	0.048	3.34	15.03	15.50	0.087	2025/8/13	
Top Side	11/2462	802.11b	0.072	0.045	-2.55	15.03	15.50	0.080	2025/8/13	

< WiFi 5.8G>

Test Position	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
Left Cheek	149/5745	802.11a	0.512	0.273	-4.17	12.40	12.50	0.524	2025/8/15	11#
Left Tilt 15	149/5745	802.11a	0.298	0.153	0.38	12.40	12.50	0.305	2025/8/15	

Degree										
Right Cheek	149/5745	802.11a	0.464	0.247	2.72	12.40	12.50	0.475	2025/8/15	
Right Tilt 15 Degree	149/5745	802.11a	0.239	0.121	3.26	12.40	12.50	0.245	2025/8/15	

Test Position of Hotspot with 0mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
Front Side	149/5745	802.11a	0.270	0.120	2.85	12.40	12.50	0.276	2025/8/15	
Back Side	149/5745	802.11a	0.409	0.182	-4.74	12.40	12.50	0.419	2025/8/15	12#
Left Side	149/5745	802.11a	0.135	0.060	0.93	12.40	12.50	0.138	2025/8/15	
Top Side	149/5745	802.11a	0.123	0.054	1.22	12.40	12.50	0.126	2025/8/15	

< WALKIETALKIE >

Test Position	Test Freq.	Test Mode	Separation distance (mm)	Measured 1g SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
				100% duty cycle	50% duty cycle						
Front of face	453.2125	Digital 4FSK	25	2.538	1.269	0.17	32.84	33.00	1.317	2025/7/28	29#
Front of face	406.1125	Digital 4FSK	25	1.765	0.883	0.12	31.30	33.00	1.305	2025/7/28	
Front of face	430.1125	Digital 4FSK	25	1.988	0.994	2.87	32.09	33.00	1.226	2025/7/28	
Front of face	459.625	Digital 4FSK	25	2.228	1.114	1.06	32.73	33.00	1.185	2025/7/28	
Front of face	465.625	Digital 4FSK	25	2.218	1.109	-3.48	32.59	33.00	1.219	2025/7/28	
Body	453.2125	Digital	0	3.727	1.864	-1.87	32.84	33.00	1.933	2025/7/28	30#

worn		4FSK									
Body worn	406.1125	Digital 4FSK	0	2.556	1.278	2.07	31.30	33.00	1.890	2025/7/28	
Body worn	430.1125	Digital 4FSK	0	3.005	1.503	3.29	32.09	33.00	1.853	2025/7/28	
Body worn	459.625	Digital 4FSK	0	3.359	1.680	1.53	32.73	33.00	1.787	2025/7/28	
Body worn	465.625	Digital 4FSK	0	3.321	1.661	0.77	32.59	33.00	1.825	2025/7/28	

Note:

1. When the 1-g SAR is≤3.5W/kg, testing for other channels are optional.
2. For a PTT, only simplex communication technology was supported, so the SAR value need to be corrected by Multiplying 50%.
3. Passive body-worn and audio accessories generally do not apply to the head SAR of PTT radios.
4. The whole antenna and radiating structures that may contribute to the measured SAR or influence the SAR distribution has been included in the area scan.
5. The UHF bands in this device operate in a half duplex system. A half duplex system only allows the user to transmit or receive. This device cannot transmit and receive simultaneously. The user must stop transmitting in order to receive a signal or listen for a response, regardless of PTT button or with a VOX(Voice Activated Transmit) capacity. This type of operation, along with the RF safety booklet, which instructs the user to transmit no more than 50% of the time, justifies the use of 50% duty factor for this device.

13. Simultaneous Transmission Analysis

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.

No.	Simultaneous Tx	Head	Body-worn	Hotspot
1	WWAN+WLAN	Yes	Yes	Yes
2	WWAN+Bluetooth	Yes	Yes	Yes

Note：WiFi and Bluetooth use the same antenna and cannot be transmitted at the same time.

Exposure Position		WWAN Band	NII/DTS/DSS	Simultaneous Tx SAR(W/Kg)
		SAR(W/Kg)	SAR(W/Kg)	
Head	Left Cheek	0.700	0.524	1.224
	Left Tilt 15 Degree	0.358	0.305	0.663
	Right Cheek	0.619	0.475	1.094
	Right Tilt 15 Degree	0.293	0.245	0.538
Body&Hotspot	Front Side	0.423	0.276	0.699
	Back Side	0.675	0.419	1.094
	Left Side	0.208	0.138	0.346
	Right Side	0.204	/	0.204
	Top Side	/	0.126	0.126
	Bottom Side	0.340	/	0.340

Note：The Simultaneous Tx is calculated based on the same configuration and test position.

No.	Simultaneous Tx	Front of face/ Body worn
1	WALKIETALKIE+WWAN	Yes
2	WALKIETALKIE+WLAN	Yes
3	WALKIETALKIE+Bluetooth	Yes

Note：WiFi and Bluetooth use the same antenna and cannot be transmitted at the same time.

Exposure Position	WWAN Band+ NII/DTS/DSS	WALKIETALKIE	Simultaneous Tx SAR(W/Kg)
	SAR(W/Kg)	SAR(W/Kg)	
Body	1.094	1.933	3.027

Note：The Simultaneous Tx is calculated based on the same configuration and test position.

Appendix A. Photo documentation

Refer to appendix Test Setup photo---SAR

Appendix B. System Check Plots

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MEASUREMENT 1 System Performance Check - 450MHz
MEASUREMENT 2 System Performance Check - 750MHz
MEASUREMENT 3 System Performance Check - 850MHz
MEASUREMENT 4 System Performance Check - 1800MHz
MEASUREMENT 5 System Performance Check - 1900MHz
MEASUREMENT 6 System Performance Check - 2450MHz
MEASUREMENT 7 System Performance Check - 2600MHz
MEASUREMENT 8 System Performance Check - 5800MHz

MEASUREMENT 1

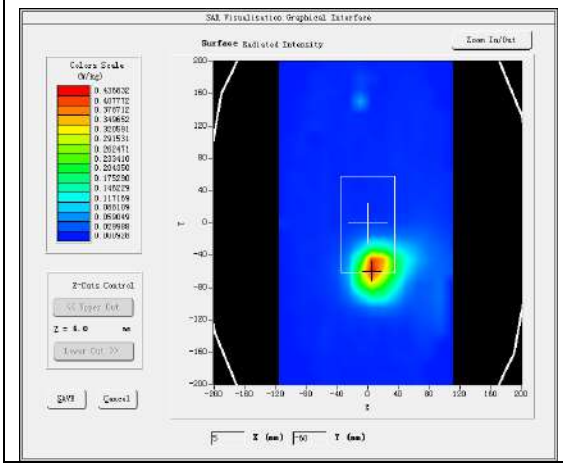
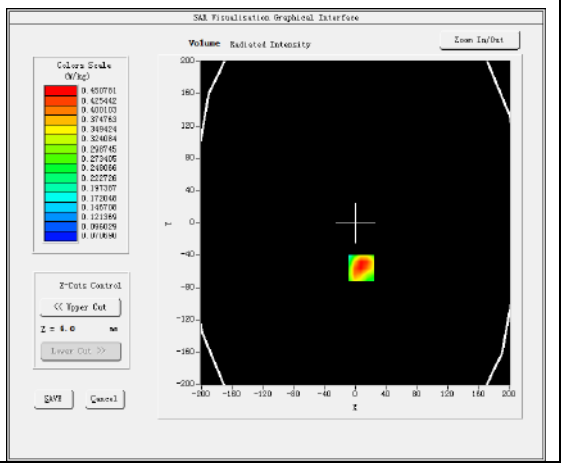
Date of measurement: 28/7/2025

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	ELLI
Device Position	Dipole
Band	CW450
Channels	Middle
Signal	CW (Crest factor: 1.0)
ConvF	1.56

B. SAR Measurement Results

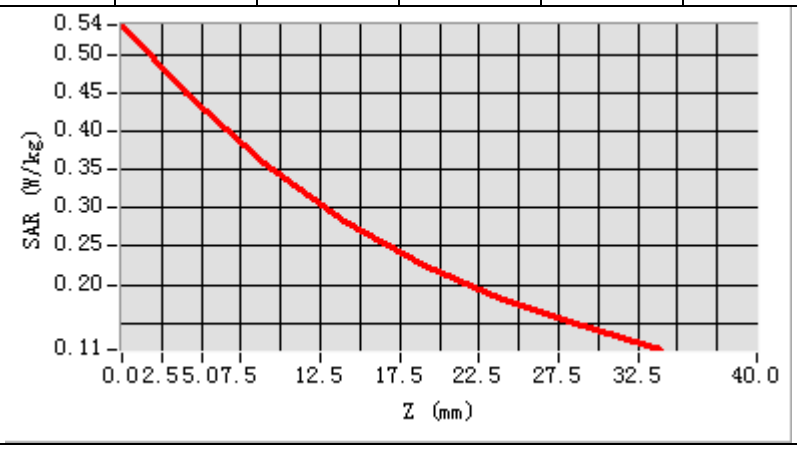
Frequency (MHz)	450.000000
Relative permittivity (real part)	44.562010
Relative permittivity (imaginary part)	34.102740
Conductivity (S/m)	0.852569
Variation (%)	0.210000

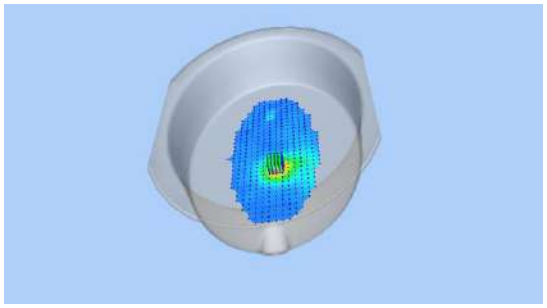
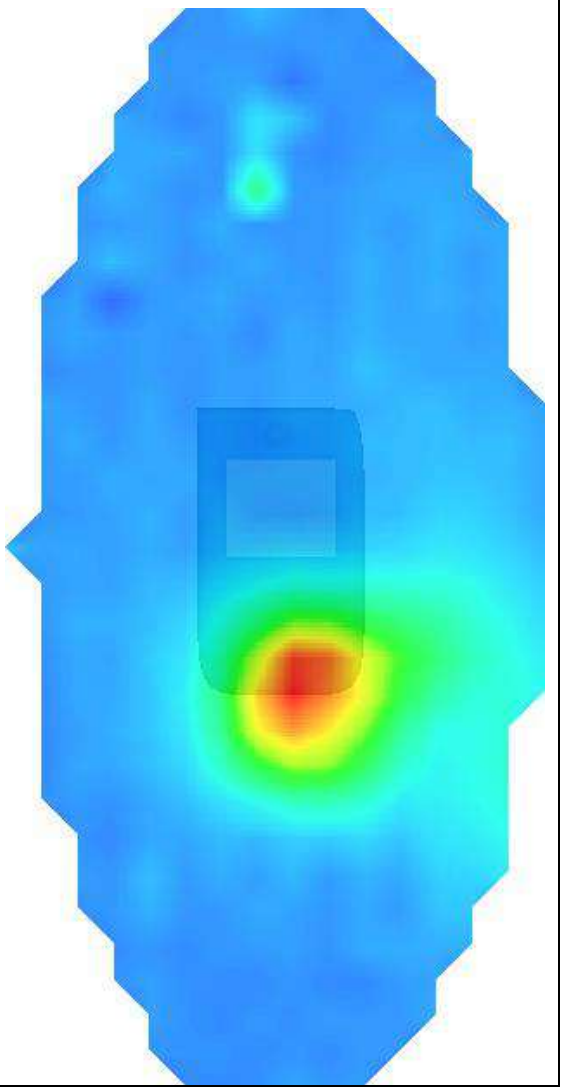
SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=7.00, Y=-56.00
SAR Peak: 0.56 W/kg

SAR 10g (W/Kg)	0.328031
SAR 1g (W/Kg)	0.516125

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.5388	0.4508	0.3572	0.2821	0.2260	0.1793	0.1475



3D screen shot	Hot spot position
	

MEASUREMENT 2

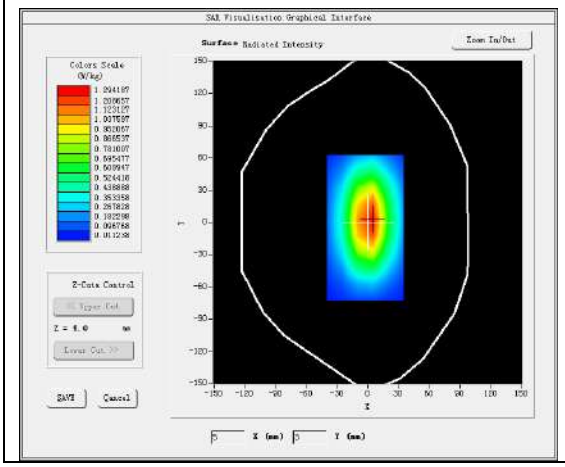
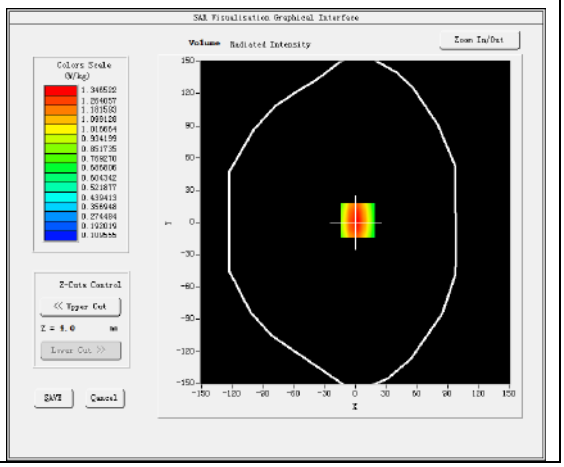
Date of measurement: 29/7/2025

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	CW750
Channels	Middle
Signal	CW (Crest factor: 1.0)
ConvF	1.45

B. SAR Measurement Results

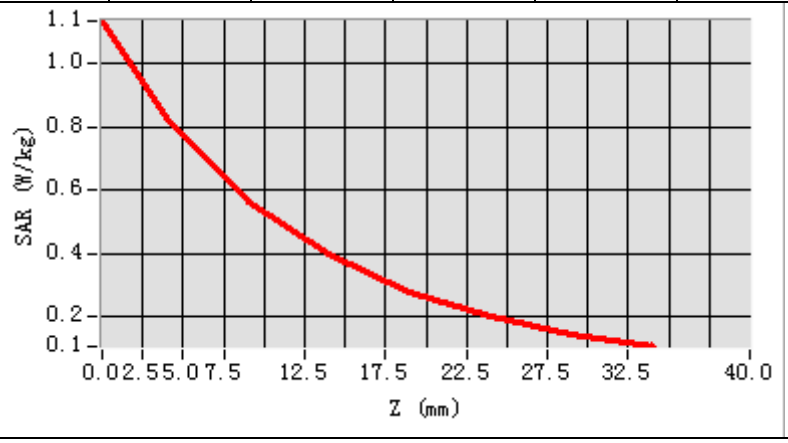
Frequency (MHz)	750.000000
Relative permittivity (real part)	42.562010
Relative permittivity (imaginary part)	19.132740
Conductivity (S/m)	0.912054
Variation (%)	0.210000

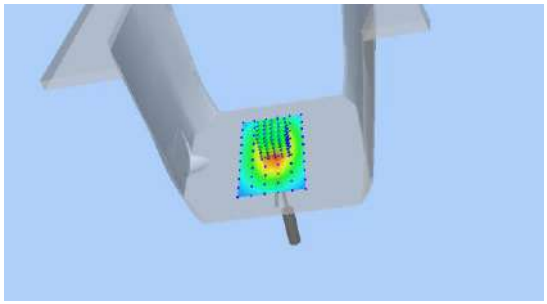
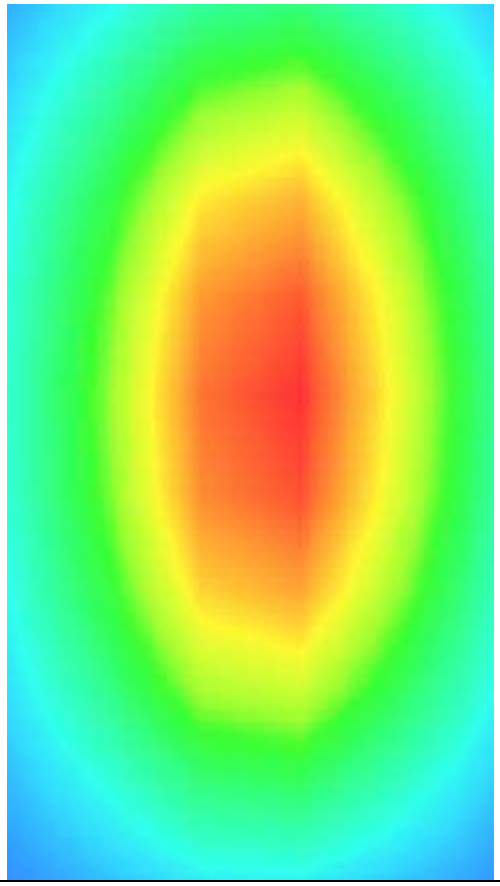
SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=2.00, Y=2.00
SAR Peak: 1.87 W/kg

SAR 10g (W/Kg)	0.608031
SAR 1g (W/Kg)	0.920125

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	1.1392	0.8317	0.5683	0.3987	0.2835	0.2035	0.1445



3D screen shot	Hot spot position
	

MEASUREMENT 3

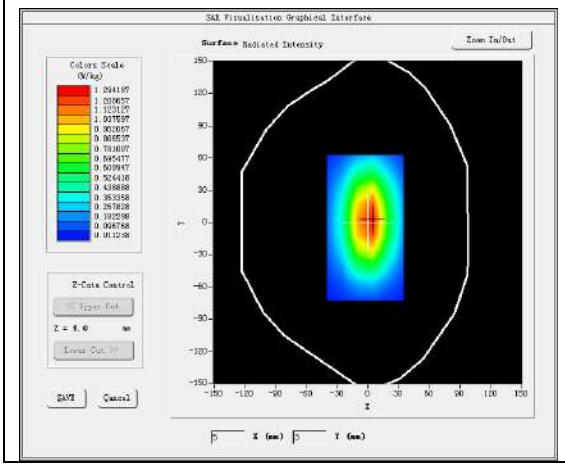
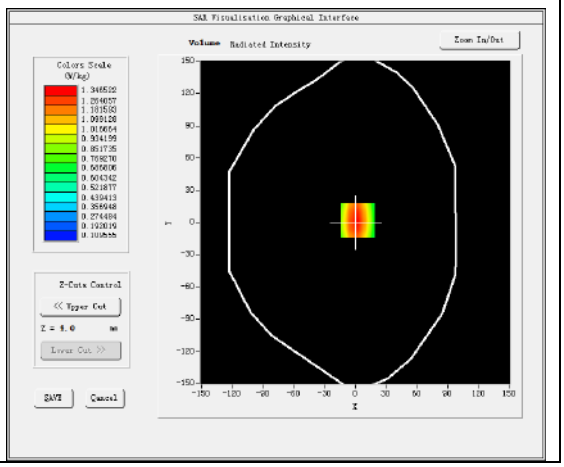
Date of measurement: 30/7/2025

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	1.55

B. SAR Measurement Results

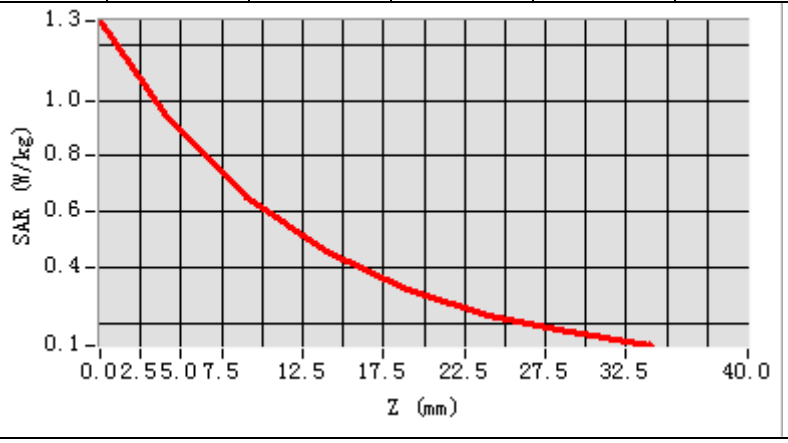
Frequency (MHz)	835.000000
Relative permittivity (real part)	42.012031
Relative permittivity (imaginary part)	19.131021
Conductivity (S/m)	0.941030
Variation (%)	0.310000

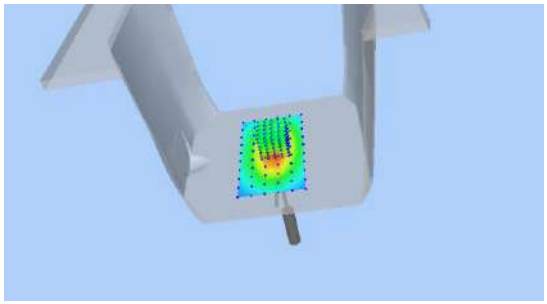
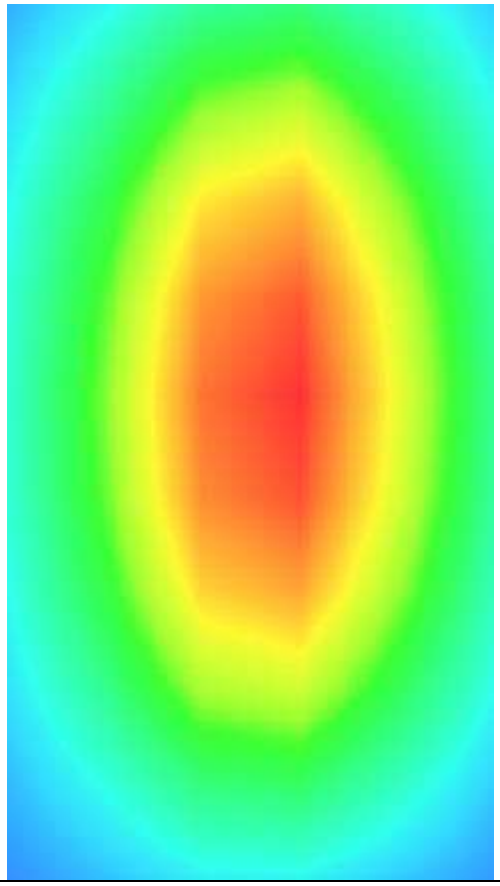
SURFACE SAR	VOLUME SAR
	

Maximum location: X=2.00, Y=2.00
SAR Peak: 1.87 W/kg

SAR 10g (W/Kg)	0.612031
SAR 1g (W/Kg)	1.011231

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	1.2821	0.9559	0.6532	0.4562	0.3263	0.2309	0.1726



3D screen shot	Hot spot position
	

MEASUREMENT 4

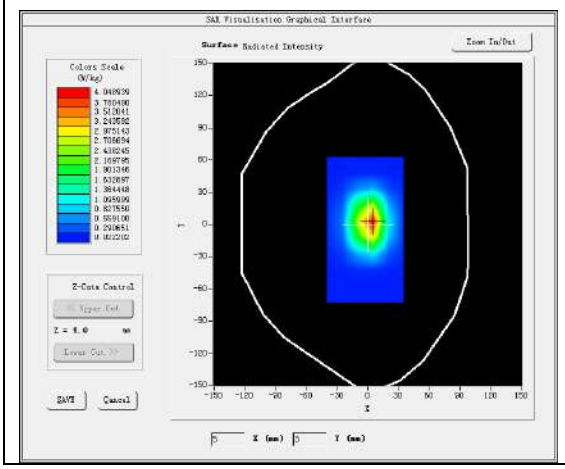
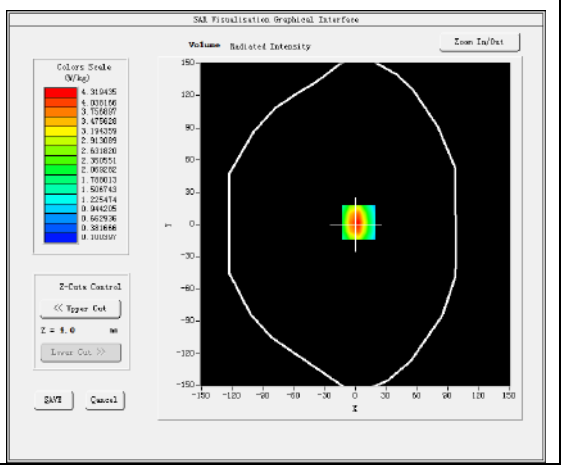
Date of measurement: 11/8/2025

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	1.65

B. SAR Measurement Results

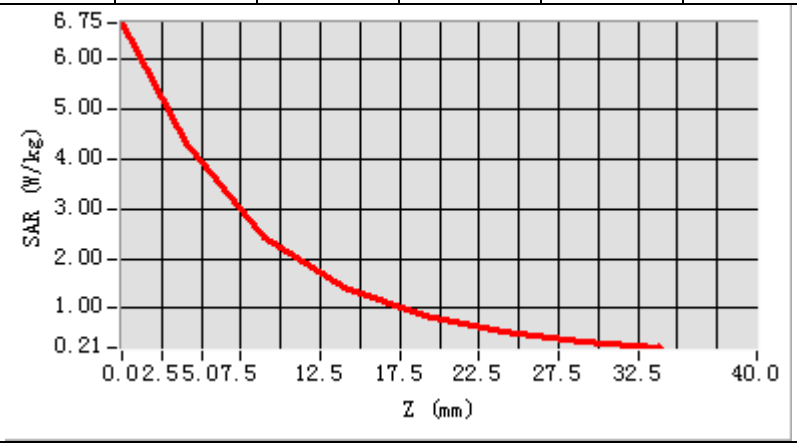
Frequency (MHz)	1800.000000
Relative permittivity (real part)	39.606403
Relative permittivity (imaginary part)	14.067180
Conductivity (S/m)	1.406718
Variation (%)	-0.140000

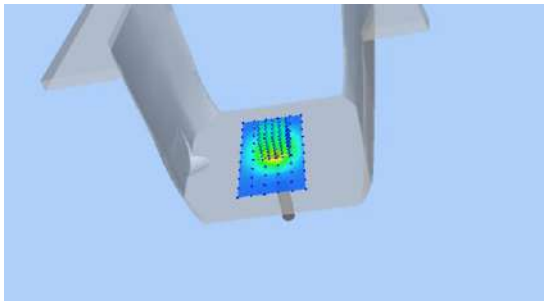
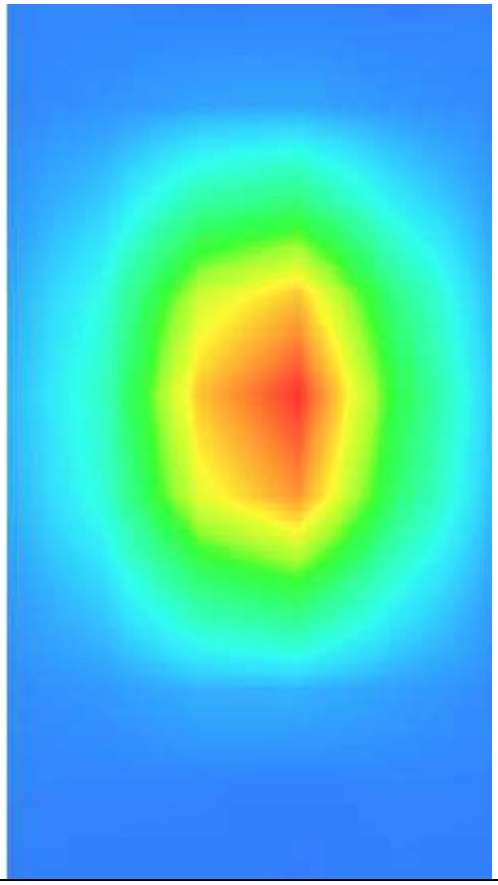
SURFACE SAR	VOLUME SAR
	

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

SAR 10g (W/Kg)	2.024557
SAR 1g (W/Kg)	3.832112

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	6.7448	4.3176	2.4344	1.4222	0.8541	0.5203	0.3261



3D screen shot	Hot spot position
	

MEASUREMENT 5

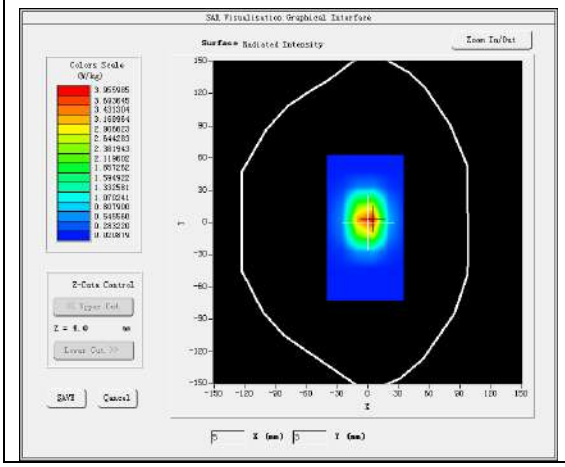
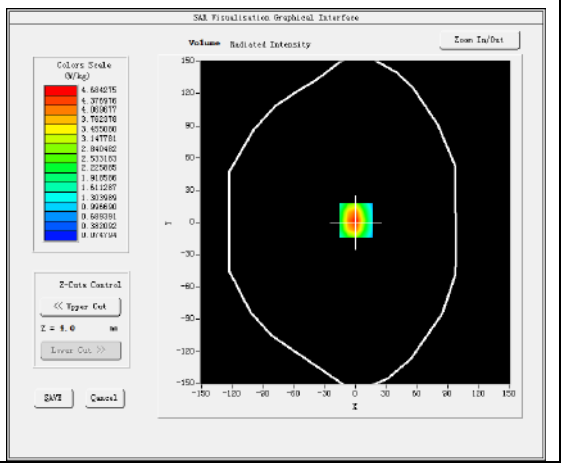
Date of measurement: 12/8/2025

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	1.86

B. SAR Measurement Results

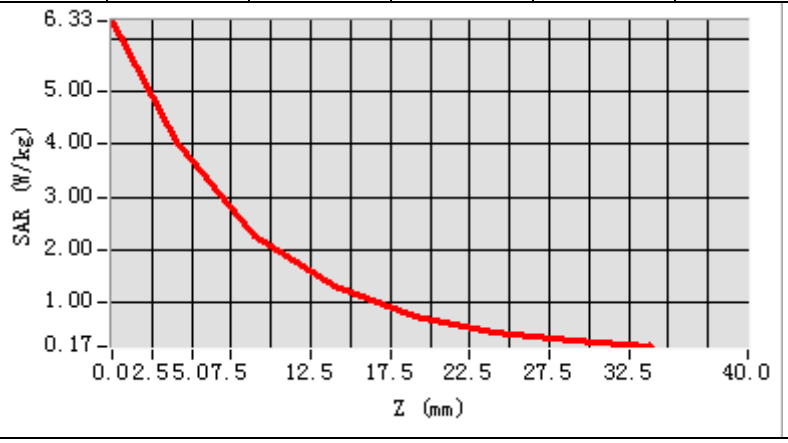
Frequency (MHz)	1900.000000
Relative permittivity (real part)	41.420140
Relative permittivity (imaginary part)	12.570123
Conductivity (S/m)	1.390503
Variation (%)	-0.440000

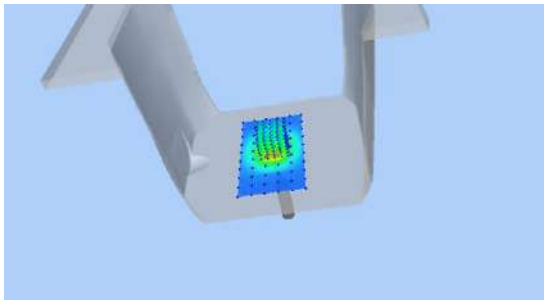
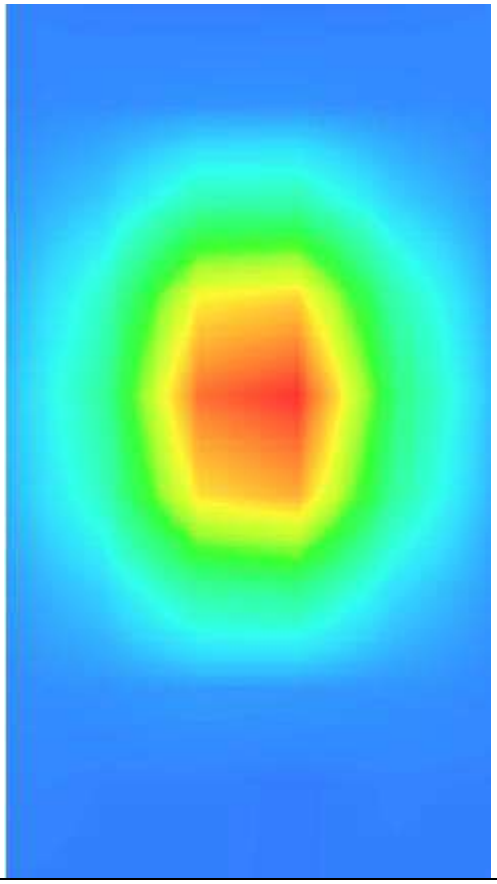
SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=1.00, Y=2.00
SAR Peak: 7.65 W/kg

SAR 10g (W/Kg)	2.153165
SAR 1g (W/Kg)	4.153568

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	6.3247	4.0419	2.2630	1.3026	0.7618	0.4514	0.2794



3D screen shot	Hot spot position
	

MEASUREMENT 6

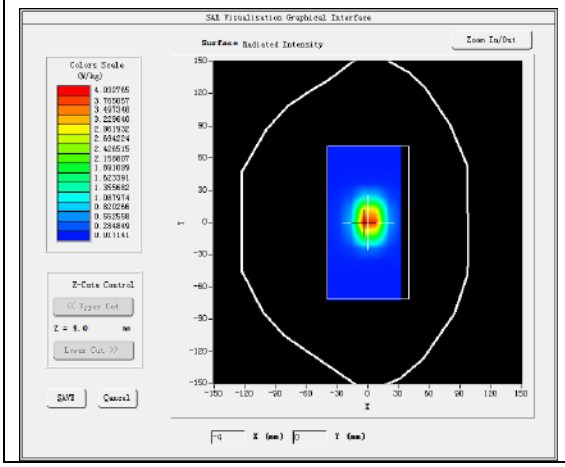
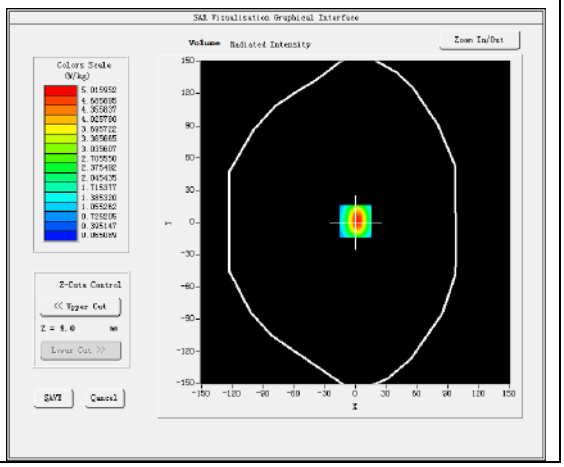
Date of measurement: 13/8/2025

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	1.91

B. SAR Measurement Results

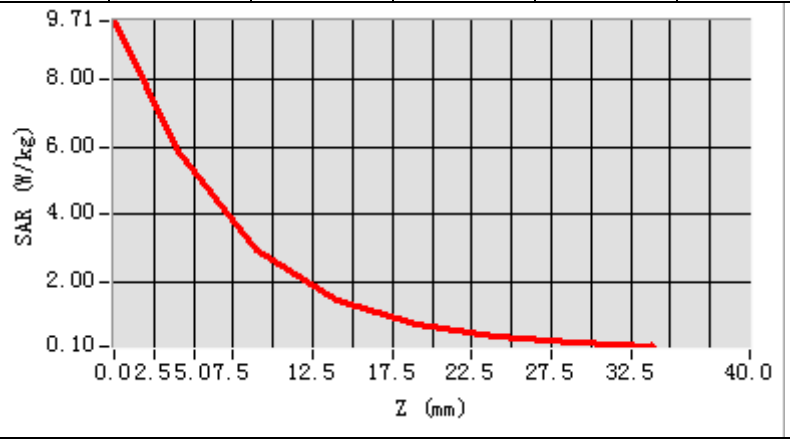
Frequency (MHz)	2450.000000
Relative permittivity (real part)	40.408511
Relative permittivity (imaginary part)	13.399264
Conductivity (S/m)	1.823789
Variation (%)	-1.250000

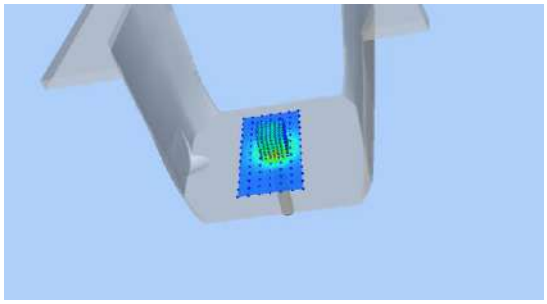
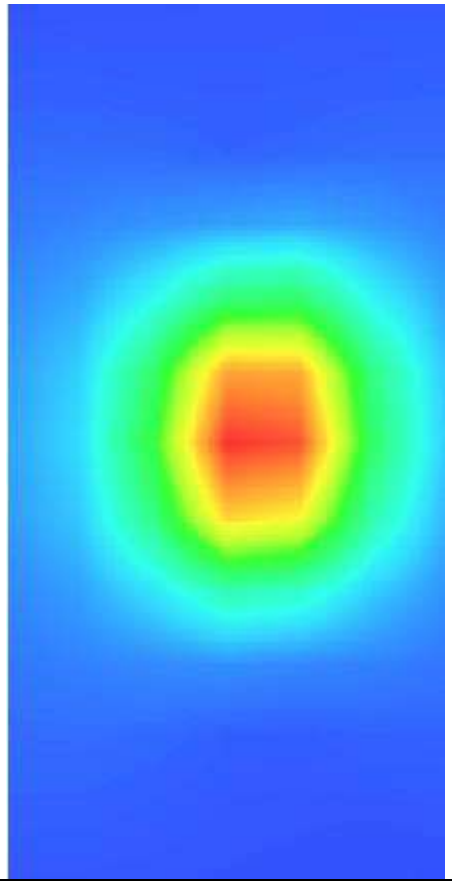
SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=0.00, Y=1.00
SAR Peak: 8.14 W/kg

SAR 10g (W/Kg)	2.359425
SAR 1g (W/Kg)	5.183642

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	9.7199	5.8365	2.9272	1.4664	0.7453	0.3732	0.1948



3D screen shot	Hot spot position
	

MEASUREMENT 7

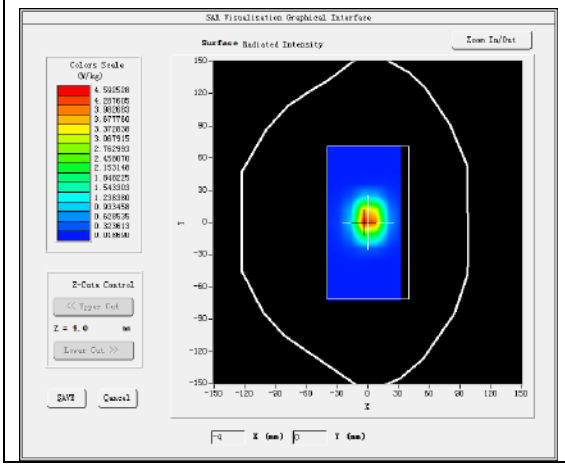
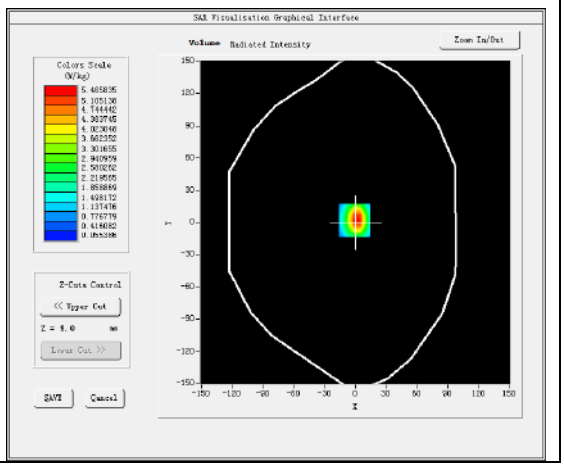
Date of measurement: 14/8/2025

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	1.89

B. SAR Measurement Results

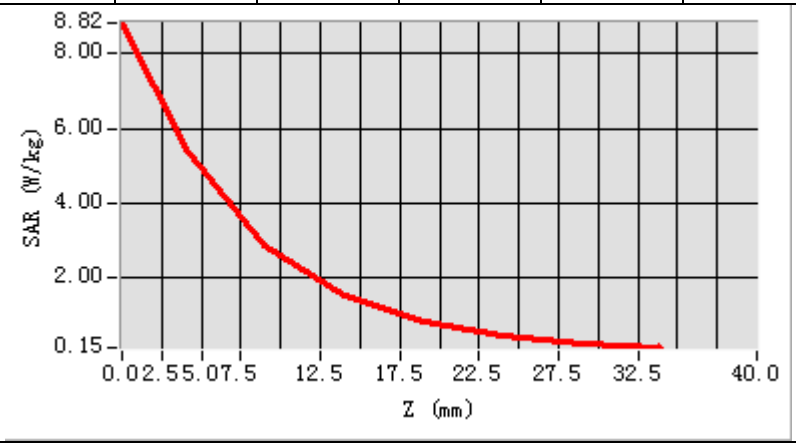
Frequency (MHz)	2600.000000
Relative permittivity (real part)	39.432362
Relative permittivity (imaginary part)	13.768602
Conductivity (S/m)	1.988798
Variation (%)	-3.980000

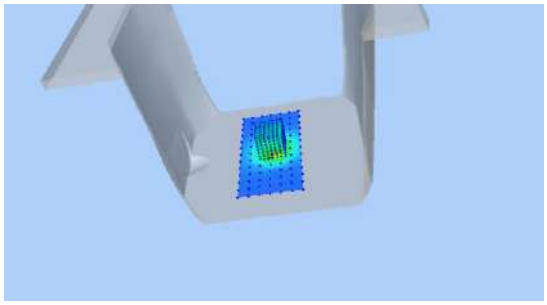
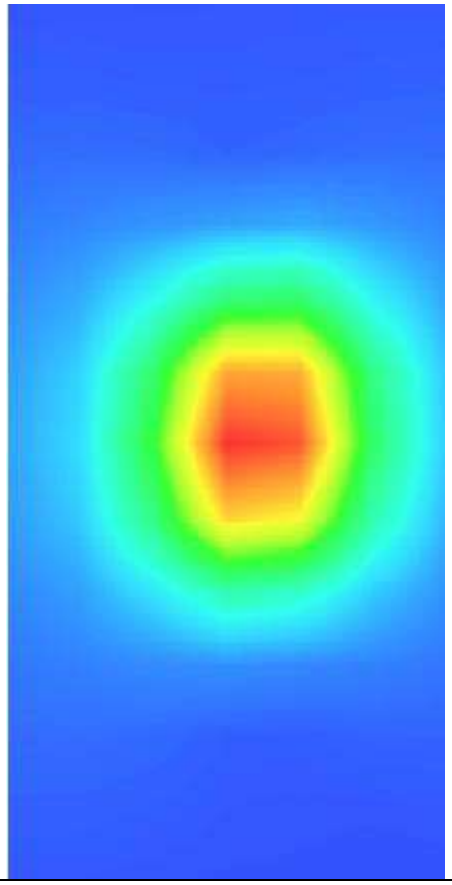
SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=-1.00, Y=2.00
SAR Peak: 9.07 W/kg

SAR 10g (W/Kg)	2.523157
SAR 1g (W/Kg)	5.432595

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	8.8184	5.4635	2.8983	1.5672	0.8594	0.4716	0.2634



3D screen shot	Hot spot position
	

MEASUREMENT 8

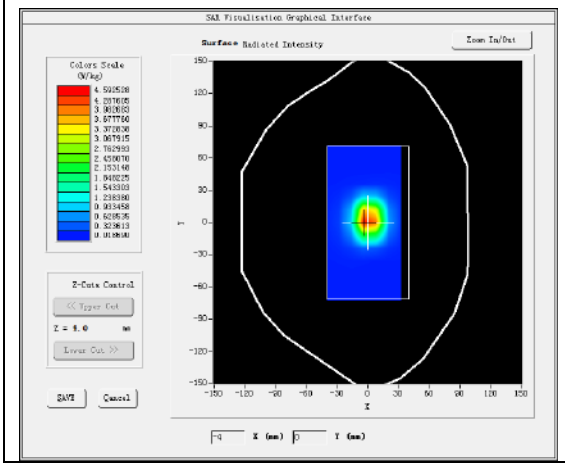
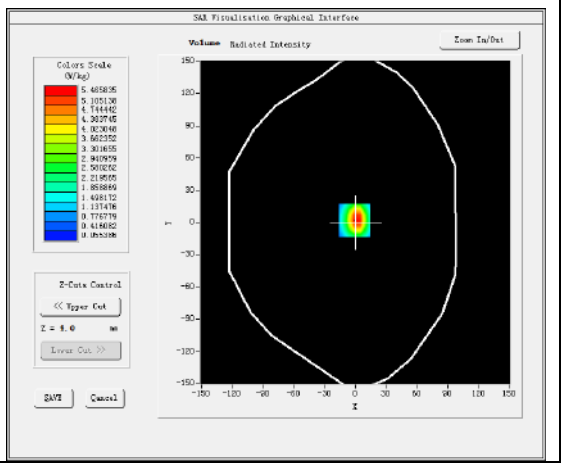
Date of measurement: 15/8/2025

A. Experimental conditions.

Area Scan	dx=10mm dy=10mm, h= 2.00 mm
ZoomScan	7x7x12,dx=4mm dy=4mm dz=2mm
Phantom	Validation plane
Device Position	Dipole
Band	CW5800
Channels	Middle
Signal	CW (Crest factor: 1.0)
ConvF	2.27

B. SAR Measurement Results

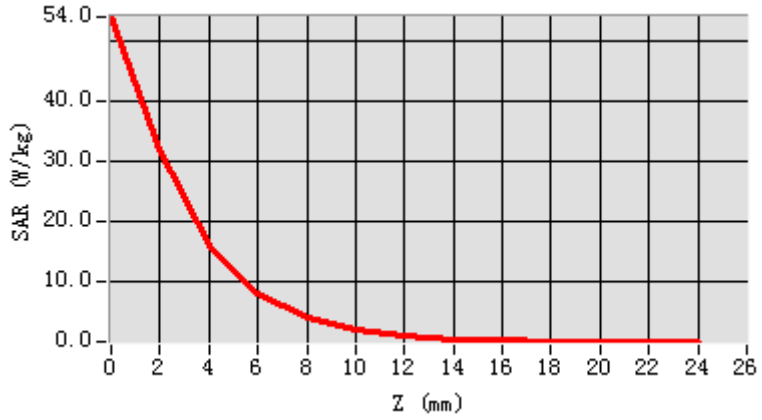
Frequency (MHz)	5800.000000
Relative permittivity (real part)	35.299999
Relative permittivity (imaginary part)	16.360001
Conductivity (S/m)	5.271556
Variation (%)	-2.480000

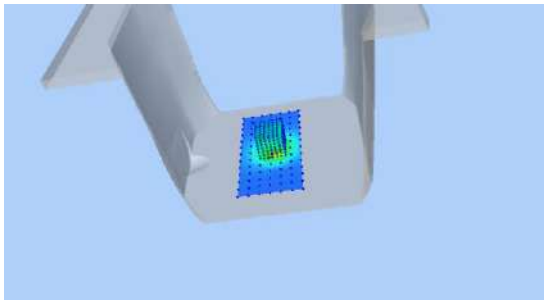
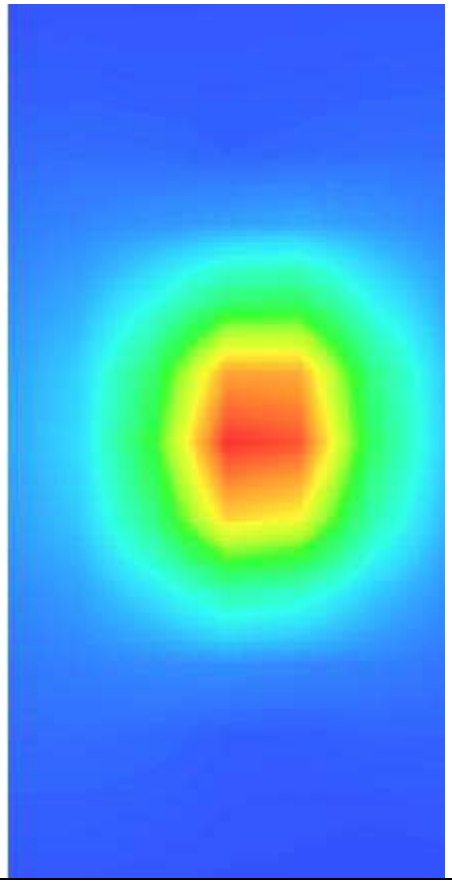
SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=-1.00, Y=2.00
SAR Peak: 17.07 W/kg

SAR 10g (W/Kg)	5.723106
SAR 1g (W/Kg)	16.821035

Z (mm)	0.00	2.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00	18.00	20.00	22.00
SAR (W/Kg)	54.079	31.947	16.161	8.1718	4.0865	2.0574	1.0333	0.5137	0.2776	0.1540	0.0732	0.0464



3D screen shot	Hot spot position
	

Appendix C. SAR Test Plots

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MEASUREMENT 1 GSM 850 Head
MEASUREMENT 2 GSM 850 Body
MEASUREMENT 3 GSM 1900 Head
MEASUREMENT 4 GSM 1900 Body
MEASUREMENT 5 WCDMA Band 2 Head
MEASUREMENT 6 WCDMA Band 2 Body
MEASUREMENT 7 WCDMA Band 4 Head
MEASUREMENT 8 WCDMA Band 4 Body
MEASUREMENT 9 WCDMA Band 5 Head
MEASUREMENT 10 WCDMA Band 5 Body
MEASUREMENT 11 WALN 5.8G Head
MEASUREMENT 12 WALN 5.8G Body
MEASUREMENT 13 WALN 2.4G Head
MEASUREMENT 14 WALN 2.4G Body
MEASUREMENT 15 LTE Band 2 Head
MEASUREMENT 16 LTE Band 2 Body
MEASUREMENT 17 LTE Band 4 Head
MEASUREMENT 18 LTE Band 4 Body
MEASUREMENT 19 LTE Band 5 Head
MEASUREMENT 20 LTE Band 5 Body
MEASUREMENT 21 LTE Band 7 Head
MEASUREMENT 22 LTE Band 7 Body
MEASUREMENT 21 LTE Band 12 Head
MEASUREMENT 22 LTE Band 12 Body
MEASUREMENT 23 LTE Band 17 Head
MEASUREMENT 24 LTE Band 17 Body
MEASUREMENT 25 LTE Band 66 Head
MEASUREMENT 26 LTE Band 66 Body
MEASUREMENT 29 WALKIETALKIE Front of face
MEASUREMENT 30 WALKIETALKIE Body worn

MEASUREMENT 1

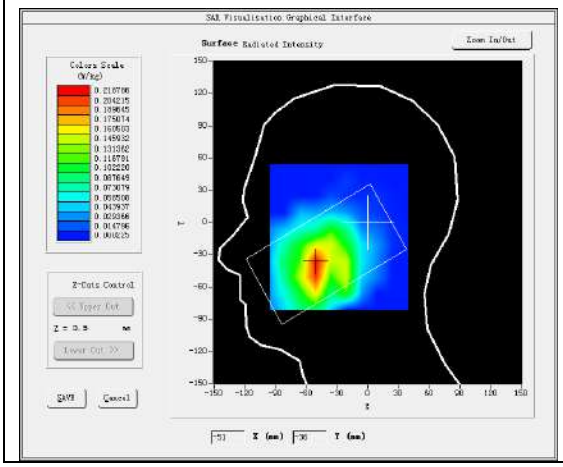
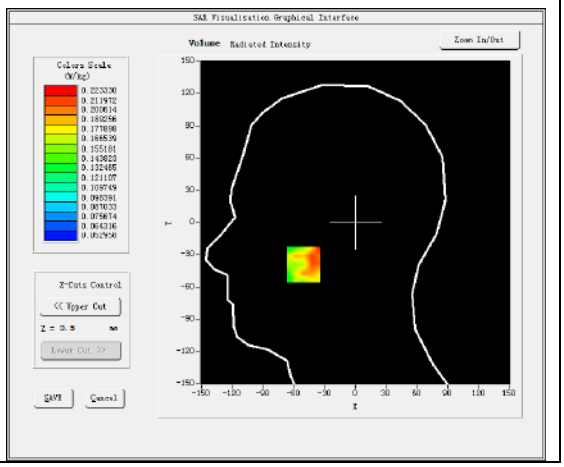
Date of measurement: 30/7/2025

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Left head
Device Position	Body
Band	GSM850
Channels	Middle
Signal	TDMA (Crest factor: 2.7)
ConvF	1.55

B. SAR Measurement Results

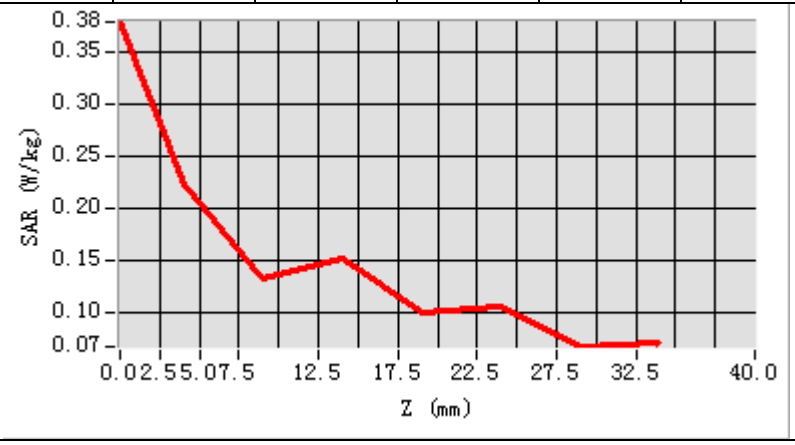
Frequency (MHz)	836.400024
Relative permittivity (real part)	41.500000
Relative permittivity (imaginary part)	19.400000
Conductivity (S/m)	0.901453
Variation (%)	2.960000

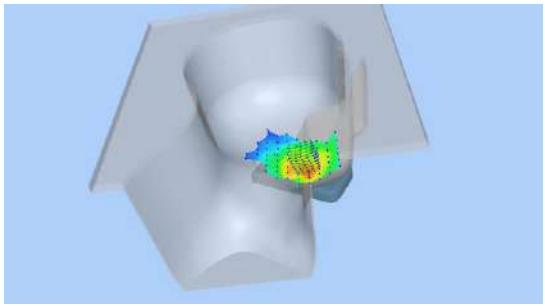
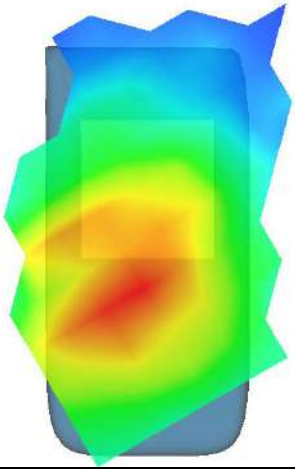
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-51.00, Y=-39.00
SAR Peak: 0.31 W/kg

SAR 10g (W/Kg)	0.165504
SAR 1g (W/Kg)	0.214575

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.3783	0.2233	0.1329	0.1514	0.0986	0.1046	0.0665



3D screen shot	Hot spot position
	

MEASUREMENT 2

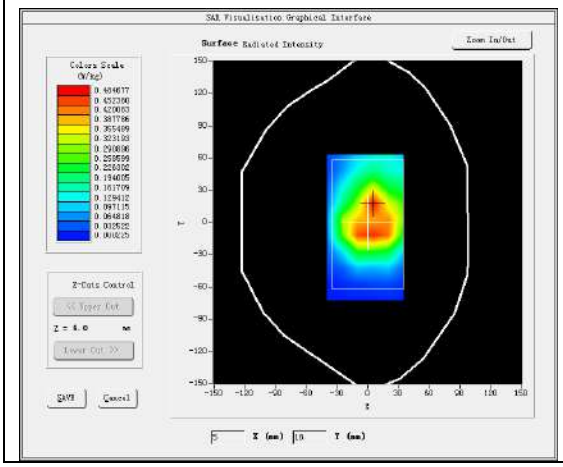
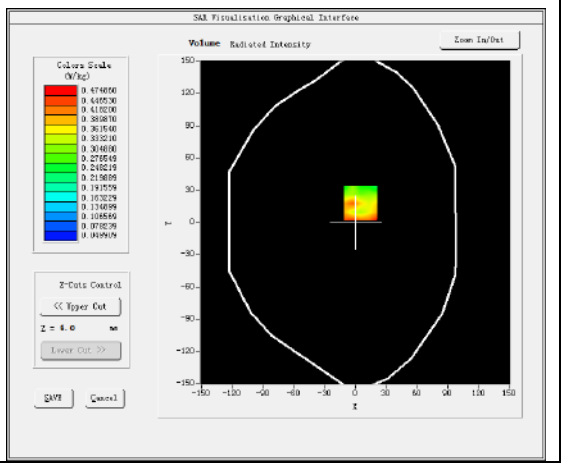
Date of measurement: 30/7/2025

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	GSM850
Channels	Middle
Signal	TDMA (Crest factor: 2.7)
ConvF	1.55

B. SAR Measurement Results

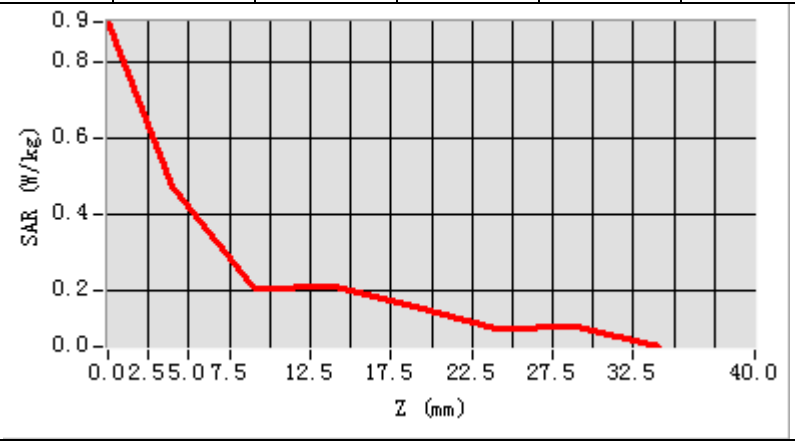
Frequency (MHz)	836.400024
Relative permittivity (real part)	41.500000
Relative permittivity (imaginary part)	19.400000
Conductivity (S/m)	0.901453
Variation (%)	0.250000

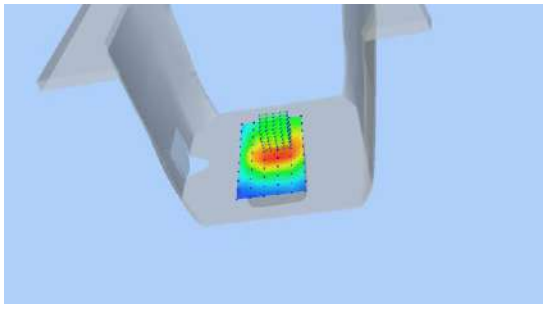
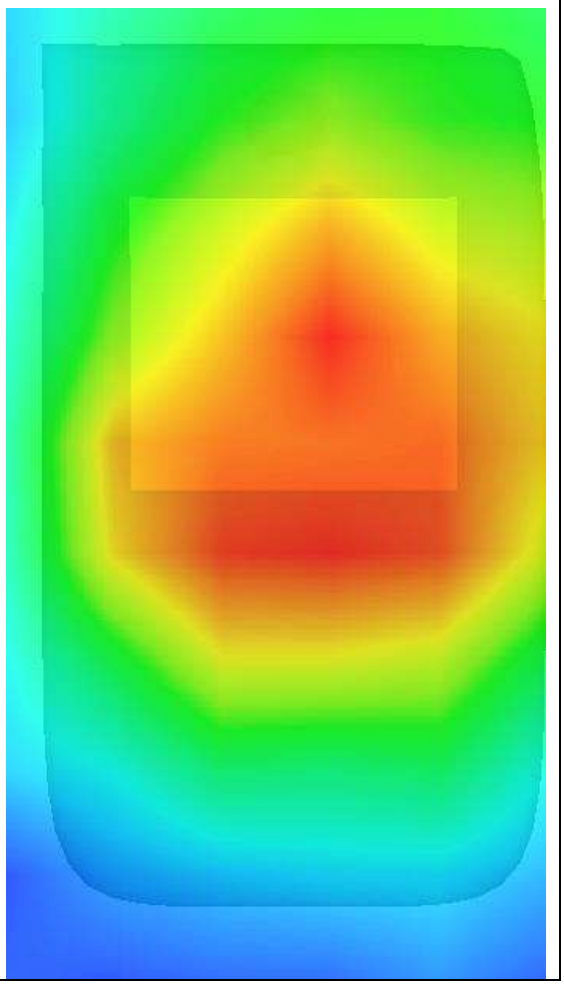
SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=5.00, Y=18.00
SAR Peak: 0.74 W/kg

SAR 10g (W/Kg)	0.297073
SAR 1g (W/Kg)	0.379756

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.9053	0.4749	0.2057	0.2063	0.1576	0.0965	0.1024



3D screen shot	Hot spot position
	

MEASUREMENT 3

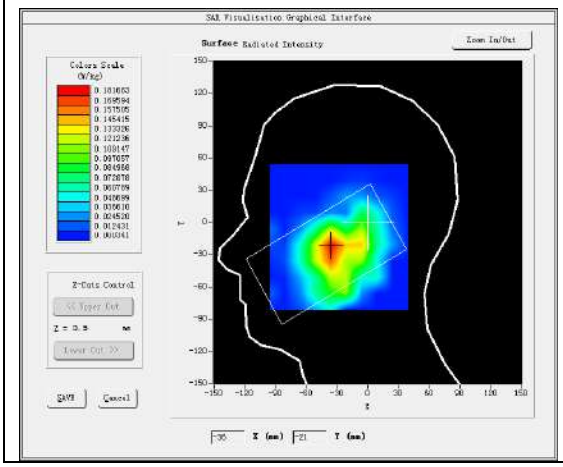
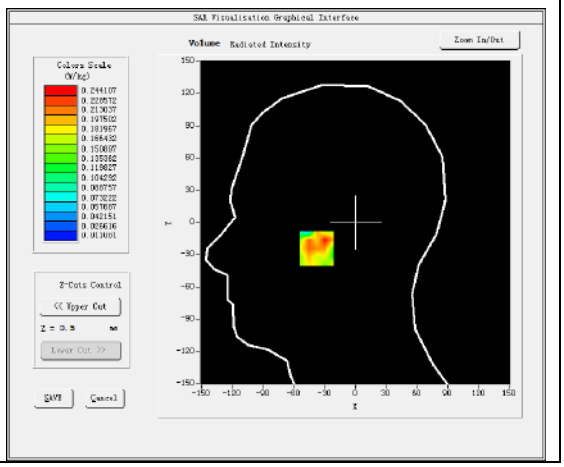
Date of measurement: 12/8/2025

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Left head
Device Position	Body
Band	GSM1900
Channels	Middle
Signal	TDMA (Crest factor: 2.7)
ConvF	1.86

B. SAR Measurement Results

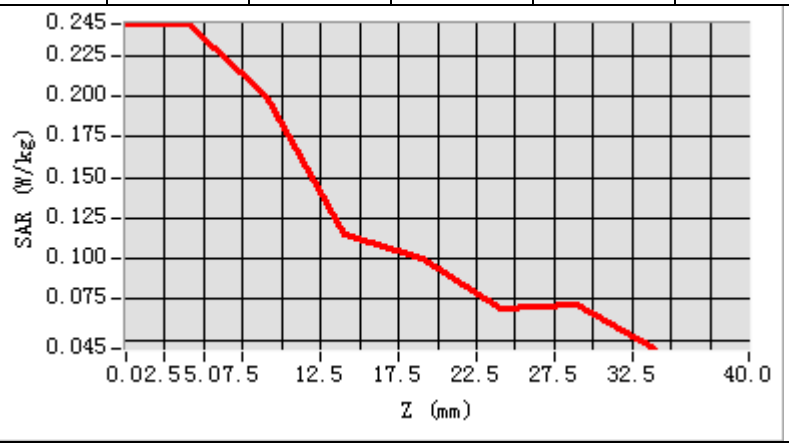
Frequency (MHz)	1880.000000
Relative permittivity (real part)	40.000000
Relative permittivity (imaginary part)	13.408000
Conductivity (S/m)	1.400391
Variation (%)	1.820000

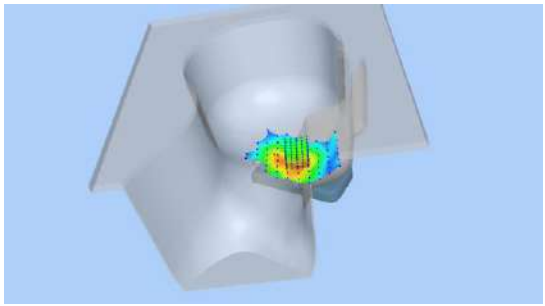
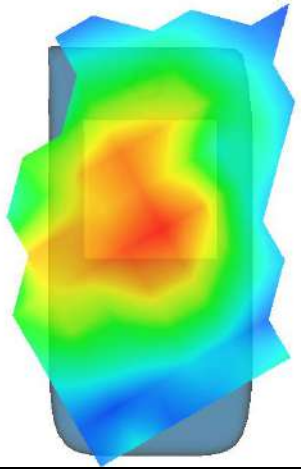
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-35.00, Y=-24.00
SAR Peak: 0.39 W/kg

SAR 10g (W/Kg)	0.140993
SAR 1g (W/Kg)	0.221990

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.2447	0.2441	0.2007	0.1147	0.1003	0.0688	0.0724



3D screen shot	Hot spot position
	

MEASUREMENT 4

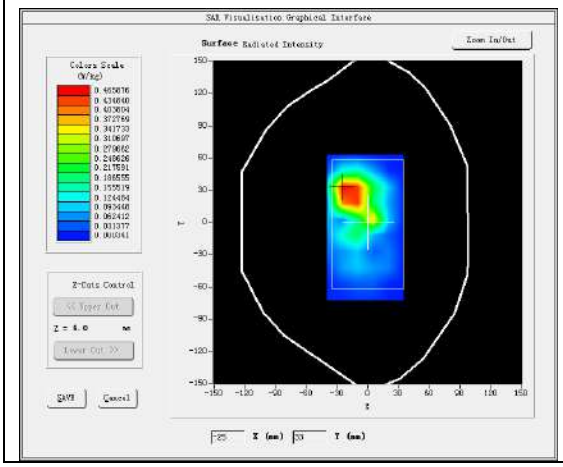
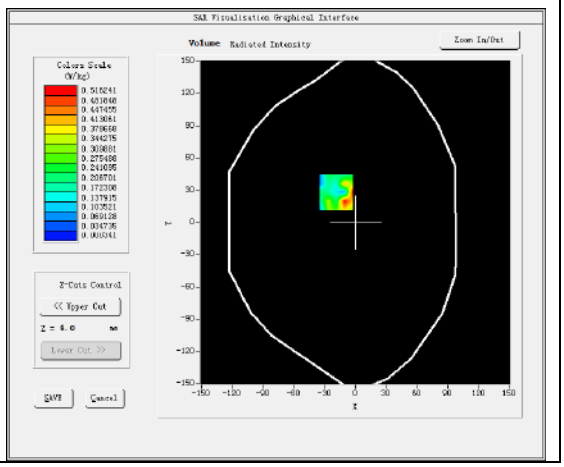
Date of measurement: 12/8/2025

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	GSM1900
Channels	Middle
Signal	TDMA (Crest factor: 2.7)
ConvF	1.86

B. SAR Measurement Results

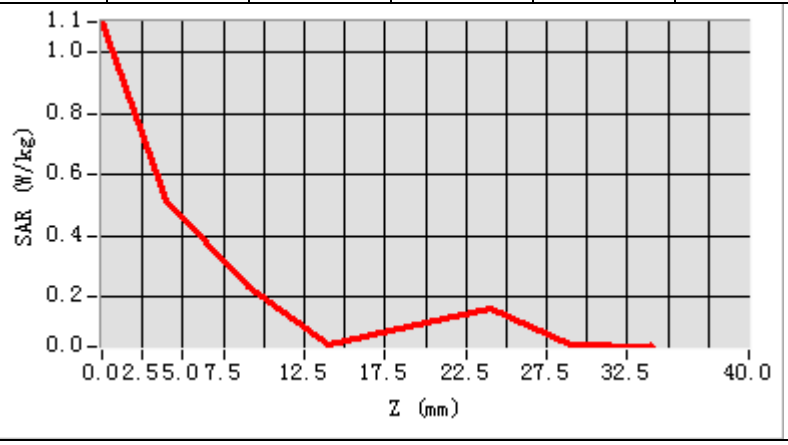
Frequency (MHz)	1880.000000
Relative permittivity (real part)	40.000000
Relative permittivity (imaginary part)	13.408000
Conductivity (S/m)	1.400391
Variation (%)	0.900000

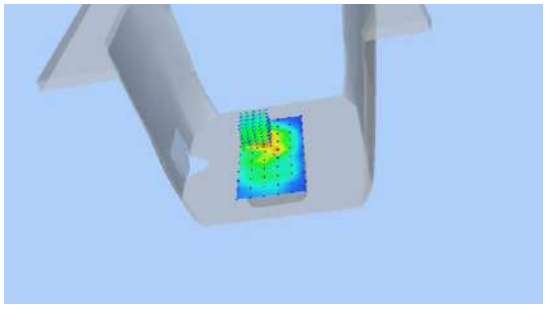
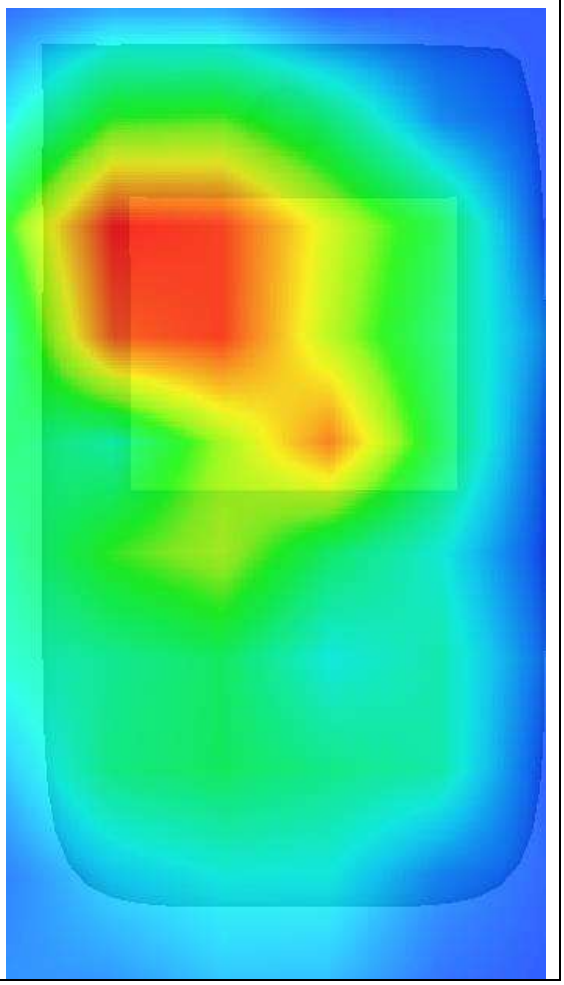
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-19.00, Y=28.00
SAR Peak: 1.46 W/kg

SAR 10g (W/Kg)	0.209815
SAR 1g (W/Kg)	0.497046

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	1.0986	0.5162	0.2329	0.0425	0.1065	0.1594	0.0455



3D screen shot	Hot spot position
	

MEASUREMENT 5

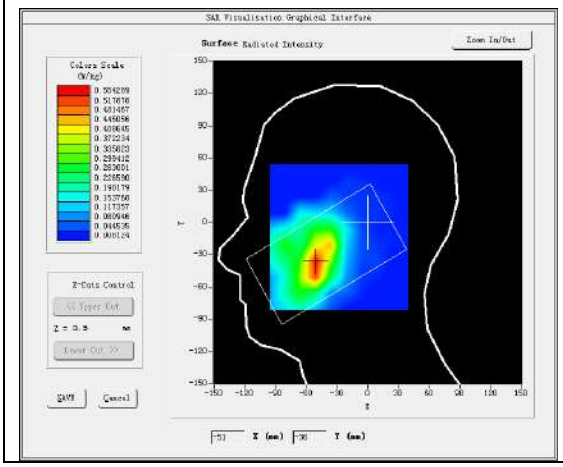
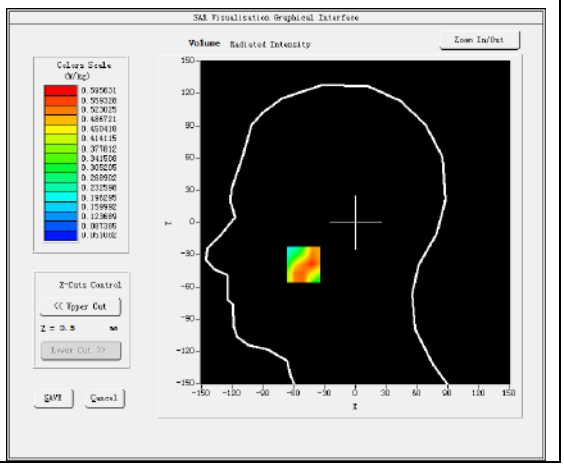
Date of measurement: 12/8/2025

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Left head
Device Position	Body
Band	Band2_WCDMA1900
Channels	Middle
Signal	WCDMA (Crest factor: 1.0)
ConvF	1.86

B. SAR Measurement Results

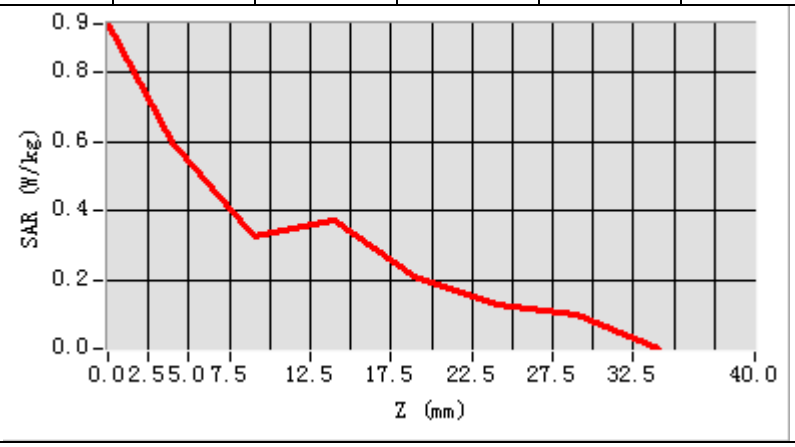
Frequency (MHz)	1880.000000
Relative permittivity (real part)	40.000000
Relative permittivity (imaginary part)	13.408000
Conductivity (S/m)	1.400391
Variation (%)	-4.370000

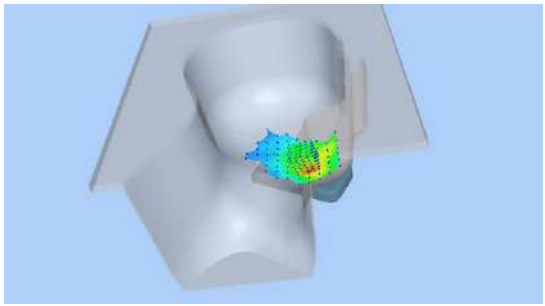
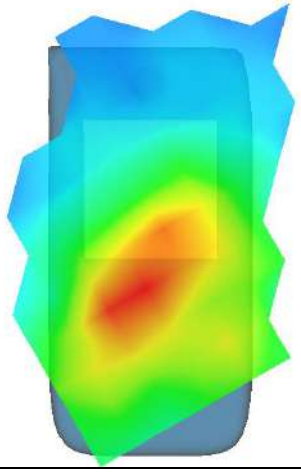
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-51.00, Y=-39.00
SAR Peak: 0.95 W/kg

SAR 10g (W/Kg)	0.433589
SAR 1g (W/Kg)	0.597880

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.9400	0.5956	0.3236	0.3695	0.2076	0.1255	0.0979



3D screen shot	Hot spot position
	

MEASUREMENT 6

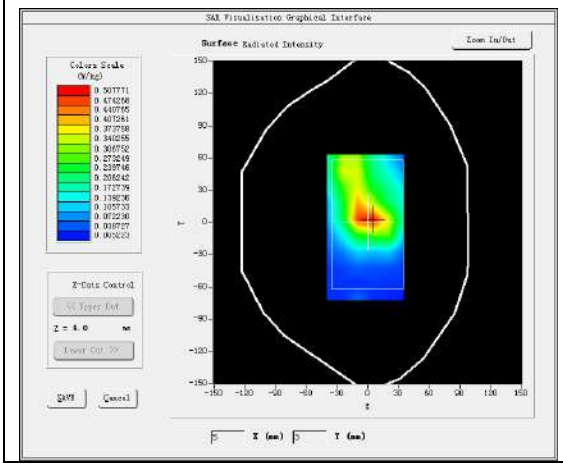
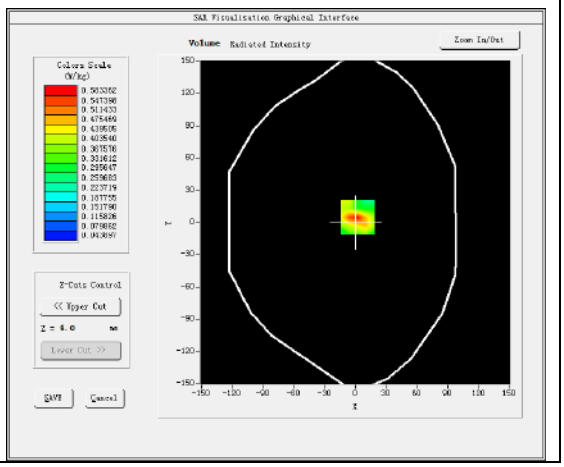
Date of measurement: 12/8/2025

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	1.86

B. SAR Measurement Results

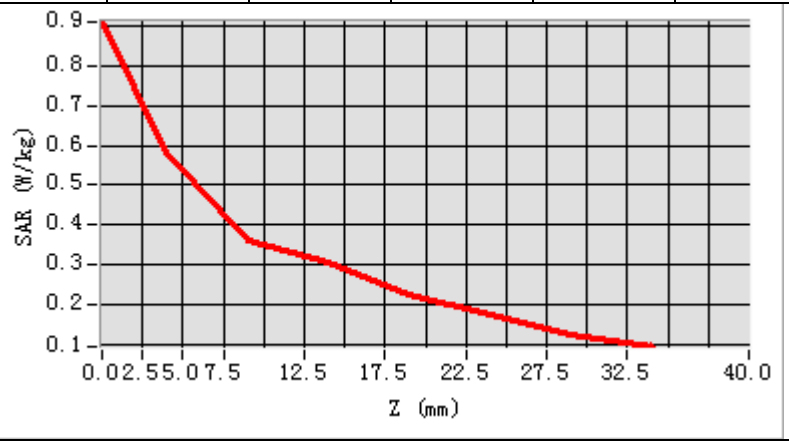
Frequency (MHz)	1880.000000
Relative permittivity (real part)	40.000000
Relative permittivity (imaginary part)	13.408000
Conductivity (S/m)	1.400391
Variation (%)	-0.760000

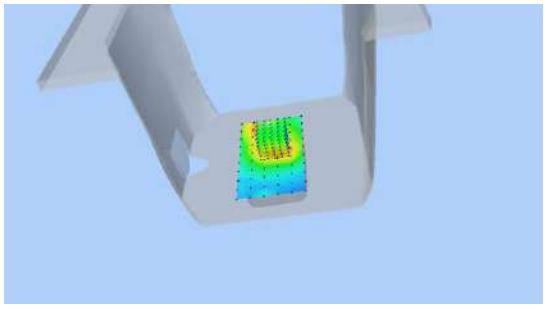
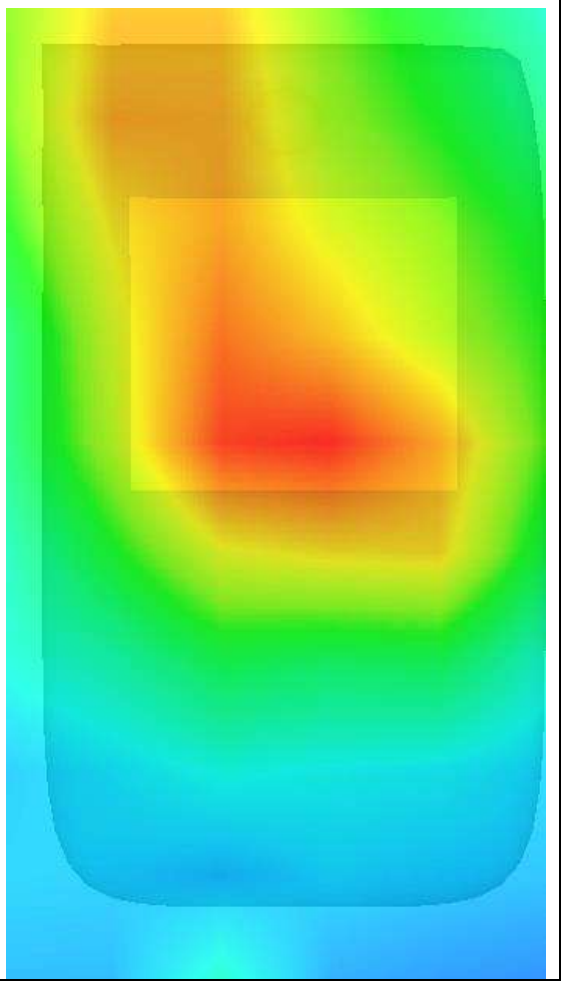
SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=2.00, Y=5.00
SAR Peak: 0.90 W/kg

SAR 10g (W/Kg)	0.336082
SAR 1g (W/Kg)	0.544170

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.9116	0.5834	0.3618	0.3054	0.2221	0.1756	0.1228



3D screen shot	Hot spot position
	

MEASUREMENT 7

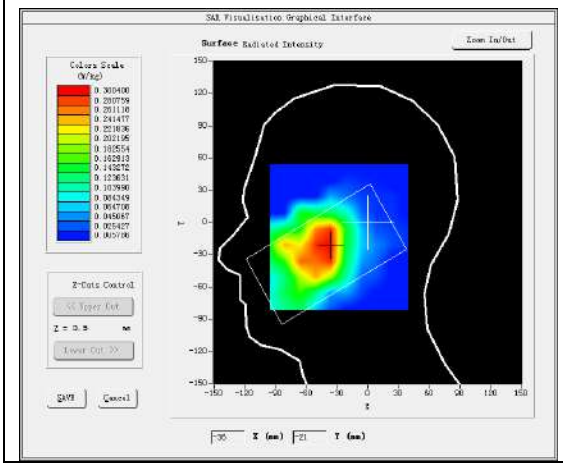
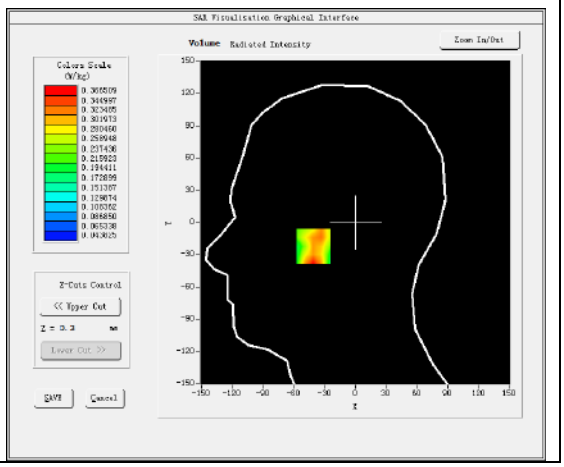
Date of measurement: 11/8/2025

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Left head
Device Position	Body
Band	Band4_WCDMA1700
Channels	Middle
Signal	WCDMA (Crest factor: 1.0)
ConvF	1.65

B. SAR Measurement Results

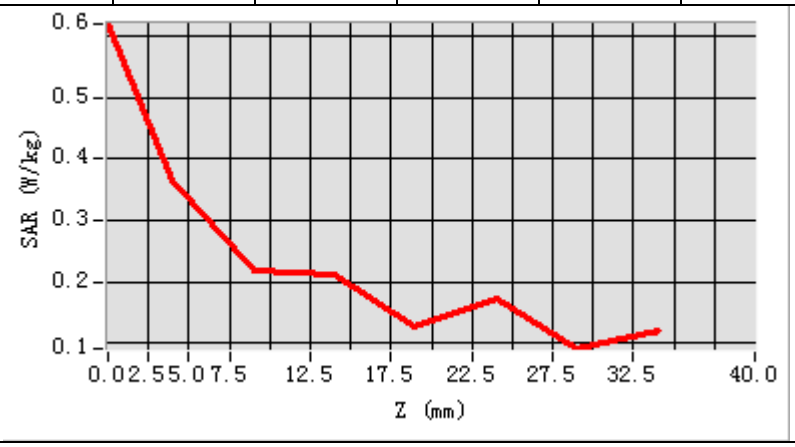
Frequency (MHz)	1732.600000
Relative permittivity (real part)	40.116364
Relative permittivity (imaginary part)	14.137455
Conductivity (S/m)	1.360809
Variation (%)	-0.090000

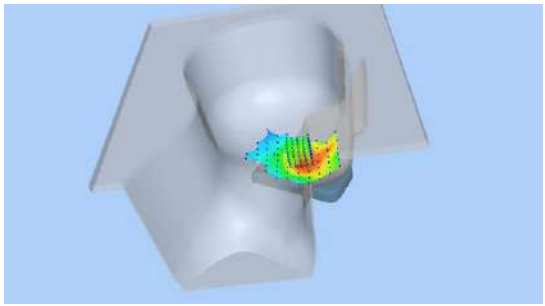
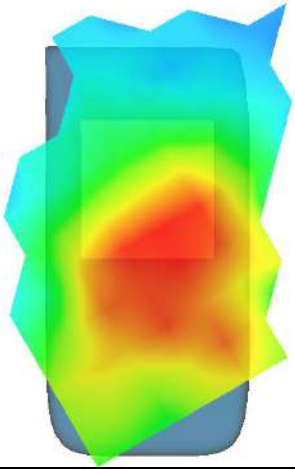
SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=-41.00, Y=-22.00
SAR Peak: 0.69 W/kg

SAR 10g (W/Kg)	0.255654
SAR 1g (W/Kg)	0.353824

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.6200	0.3665	0.2192	0.2134	0.1287	0.1731	0.0914



3D screen shot	Hot spot position
	

MEASUREMENT 8

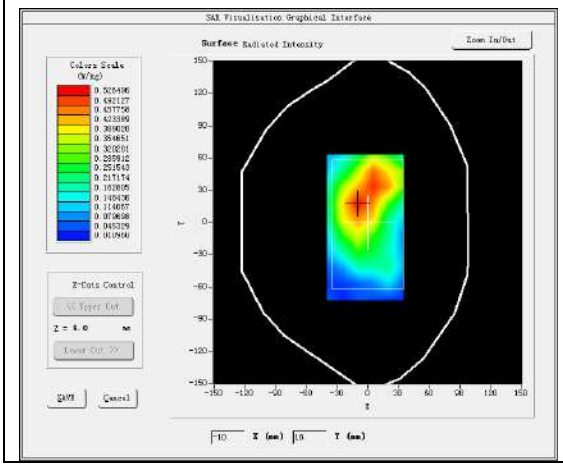
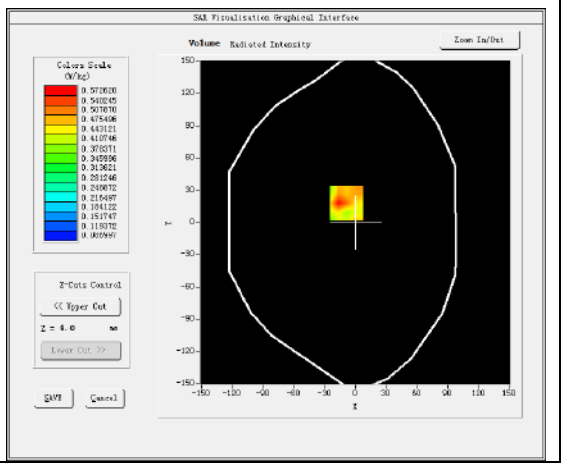
Date of measurement: 11/8/2025

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	Band4_WCDMA1700
Channels	Middle
Signal	WCDMA (Crest factor: 1.0)
ConvF	1.65

B. SAR Measurement Results

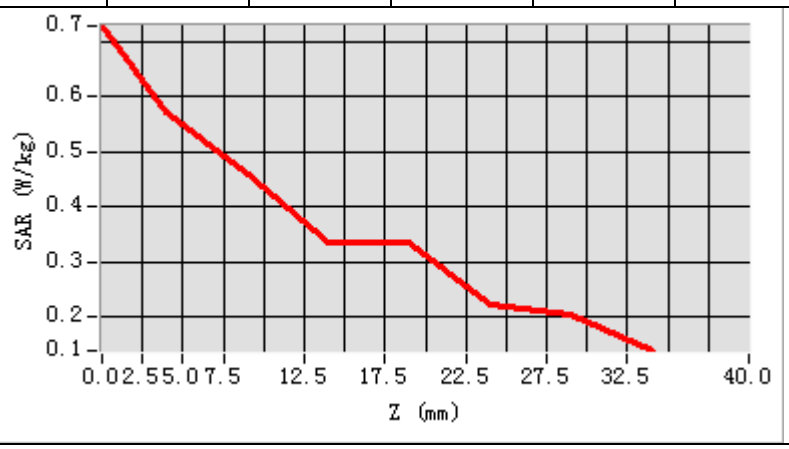
Frequency (MHz)	1732.600000
Relative permittivity (real part)	40.116364
Relative permittivity (imaginary part)	14.137455
Conductivity (S/m)	1.360809
Variation (%)	-1.960000

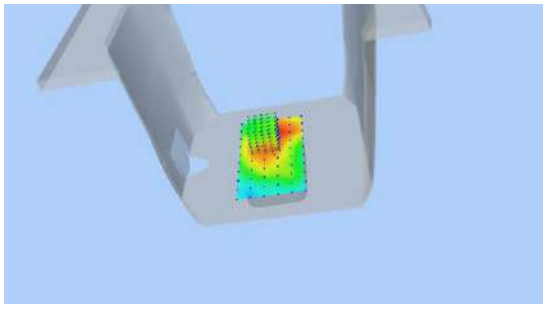
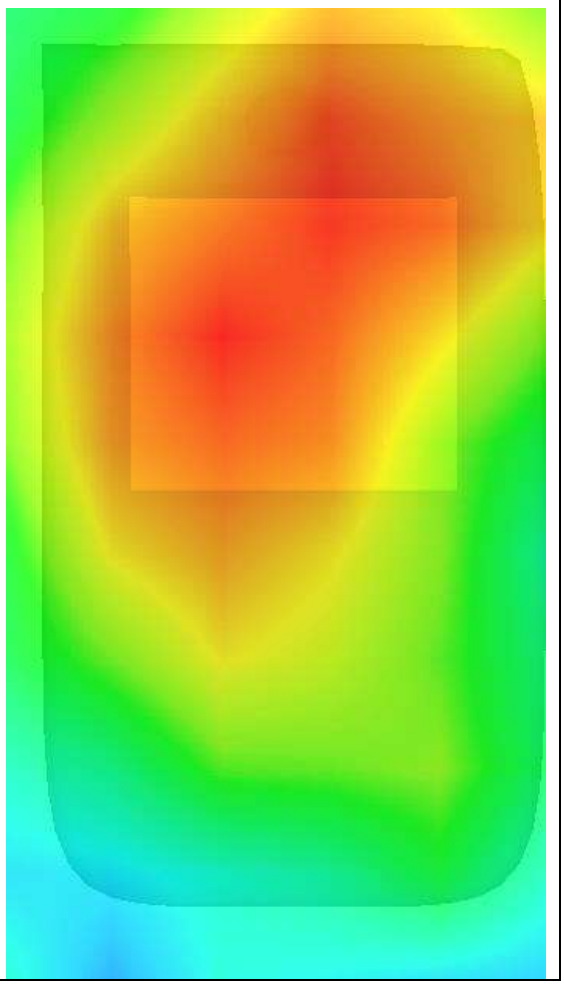
SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=-9.00, Y=18.00
SAR Peak: 0.80 W/kg

SAR 10g (W/Kg)	0.398754
SAR 1g (W/Kg)	0.543623

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.7289	0.5726	0.4591	0.3349	0.3374	0.2245	0.2037



3D screen shot	Hot spot position
	

MEASUREMENT 9

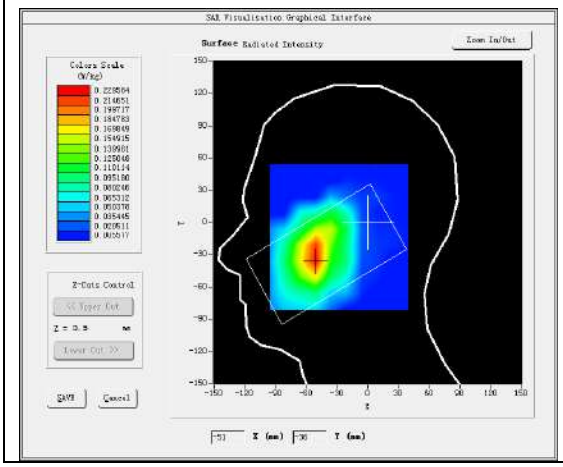
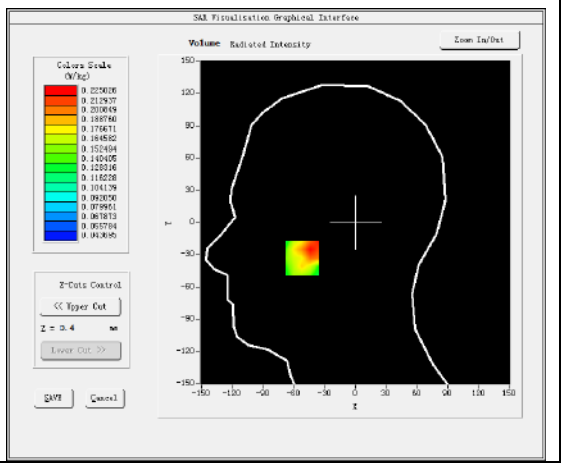
Date of measurement: 30/7/2025

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Left head
Device Position	Body
Band	Band5_WCDMA850
Channels	Middle
Signal	WCDMA (Crest factor: 1.0)
ConvF	1.55

B. SAR Measurement Results

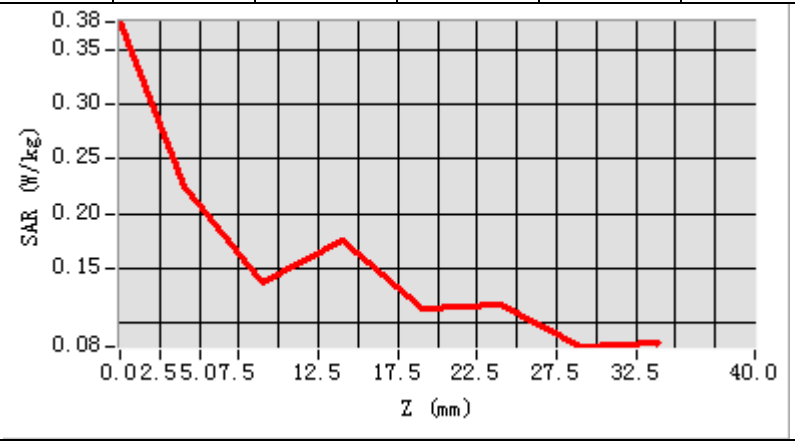
Frequency (MHz)	836.400024
Relative permittivity (real part)	41.500000
Relative permittivity (imaginary part)	19.400000
Conductivity (S/m)	0.901453
Variation (%)	-0.020000

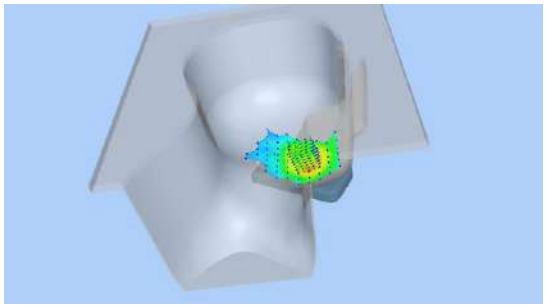
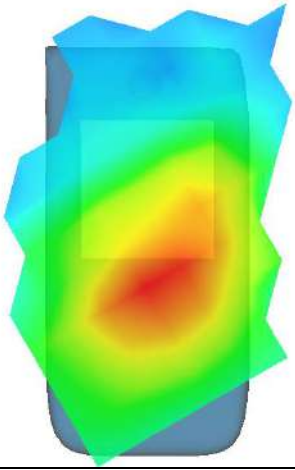
SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=-52.00, Y=-33.00
SAR Peak: 0.27 W/kg

SAR 10g (W/Kg)	0.162802
SAR 1g (W/Kg)	0.215347

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.3755	0.2250	0.1372	0.1765	0.1124	0.1165	0.0785



3D screen shot	Hot spot position
	

MEASUREMENT 10

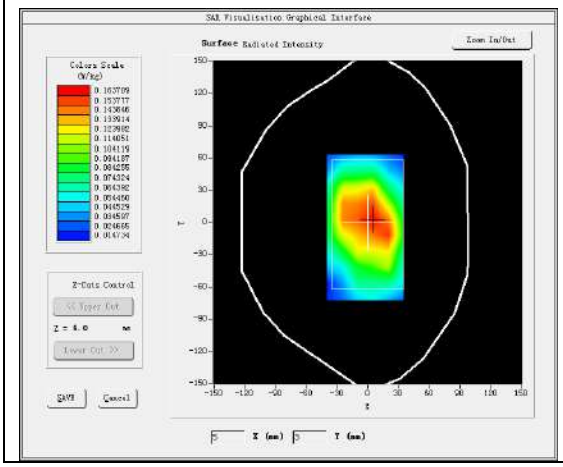
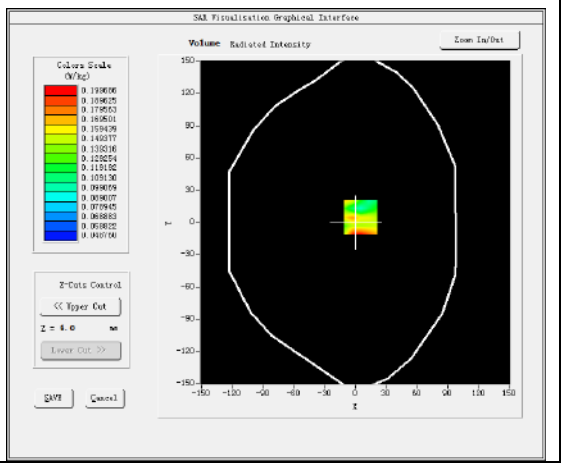
Date of measurement: 30/7/2025

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	1.55

B. SAR Measurement Results

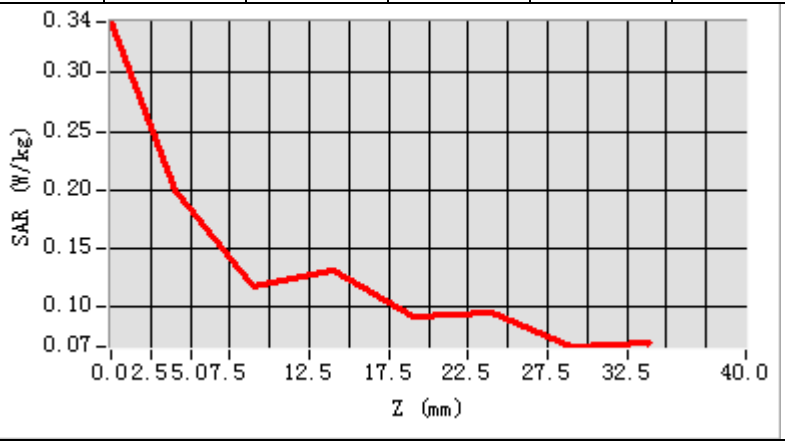
Frequency (MHz)	836.400024
Relative permittivity (real part)	41.500000
Relative permittivity (imaginary part)	19.400000
Conductivity (S/m)	0.901453
Variation (%)	-3.060000

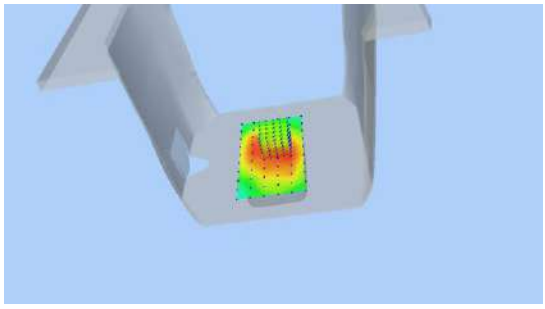
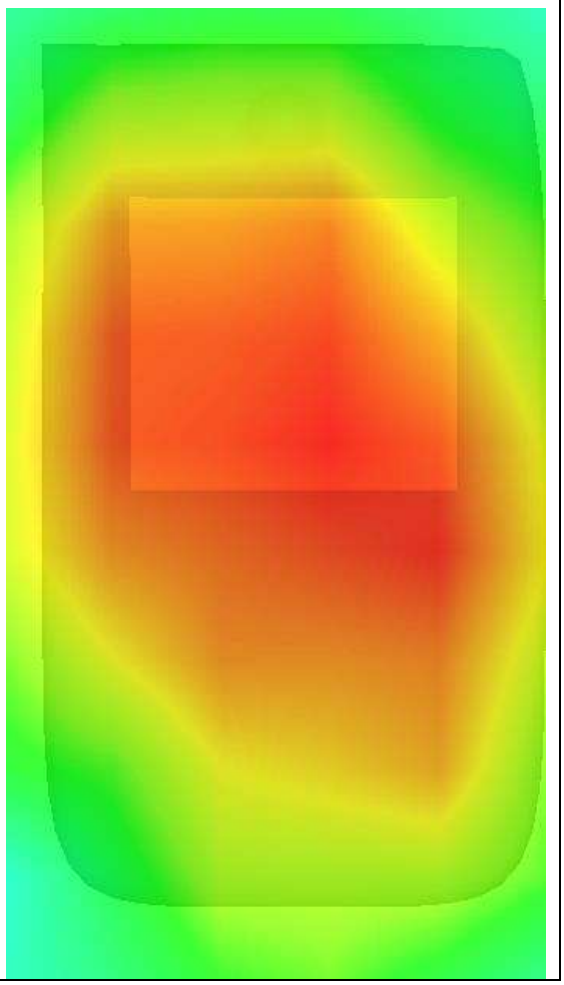
SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=5.00, Y=5.00
SAR Peak: 0.32 W/kg

SAR 10g (W/Kg)	0.134050
SAR 1g (W/Kg)	0.162714

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.3434	0.1997	0.1178	0.1304	0.0913	0.0946	0.0658



3D screen shot	Hot spot position
	

MEASUREMENT 11

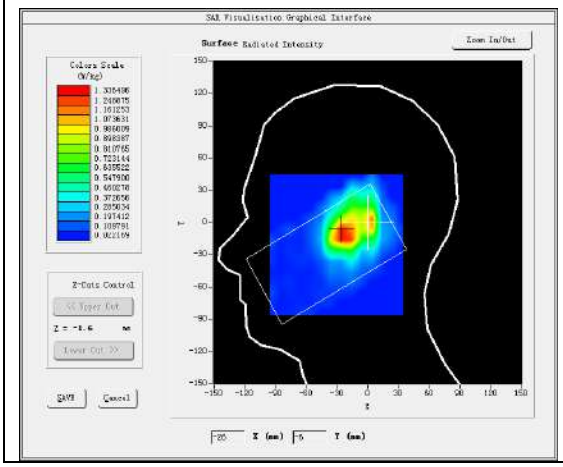
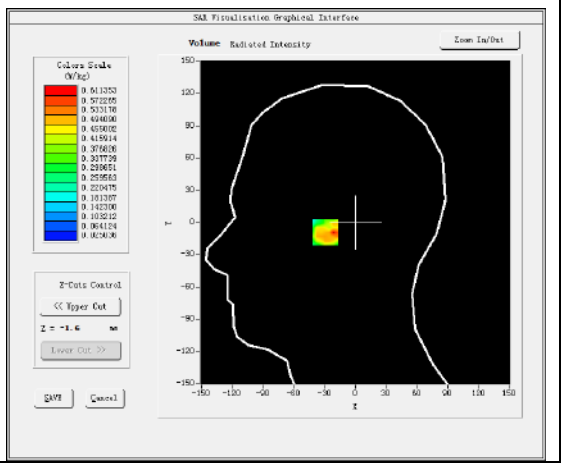
Date of measurement: 15/8/2025

A. Experimental conditions.

Area Scan	dx=10mm dy=10mm, h= 2.00 mm
ZoomScan	7x7x12,dx=4mm dy=4mm dz=2mm
Phantom	Left head
Device Position	Body
Band	IEEE 802.11a U-NII
Channels	Low
Signal	IEEE802.a (Crest factor: 1.0)
ConvF	1.50

B. SAR Measurement Results

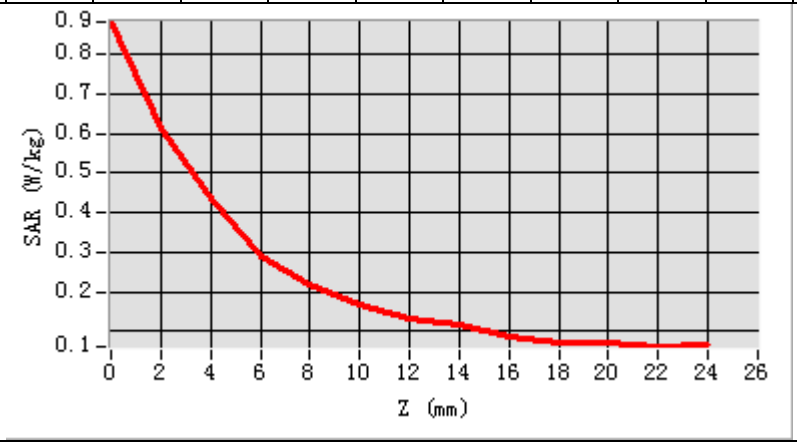
Frequency (MHz)	5745.000000
Relative permittivity (real part)	35.313888
Relative permittivity (imaginary part)	16.355388
Conductivity (S/m)	5.220095
Variation (%)	-4.169998

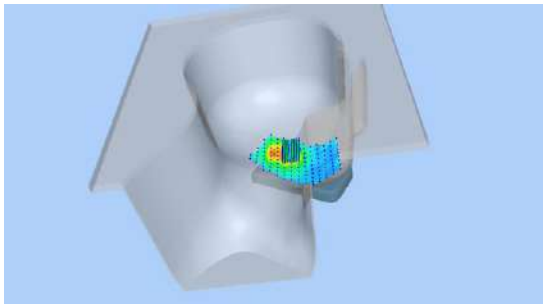
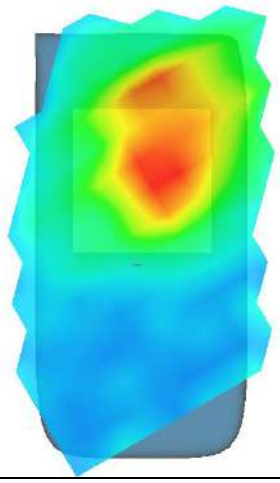
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-25.00, Y=-9.00
SAR Peak: 1.23 W/kg

SAR 10g (W/Kg)	0.272745
SAR 1g (W/Kg)	0.511969

Z (mm)	0.00	2.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00	18.00	20.00	22.00
SAR (W/Kg)	0.8809	0.6114	0.4341	0.2886	0.2184	0.1681	0.1332	0.1148	0.0857	0.0716	0.0718	0.0613



3D screen shot	Hot spot position
	

MEASUREMENT 12

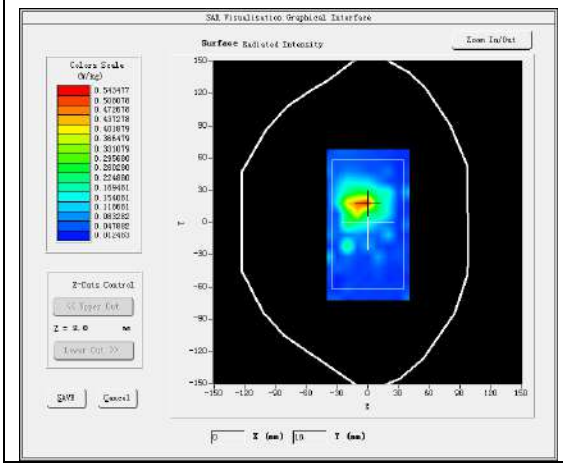
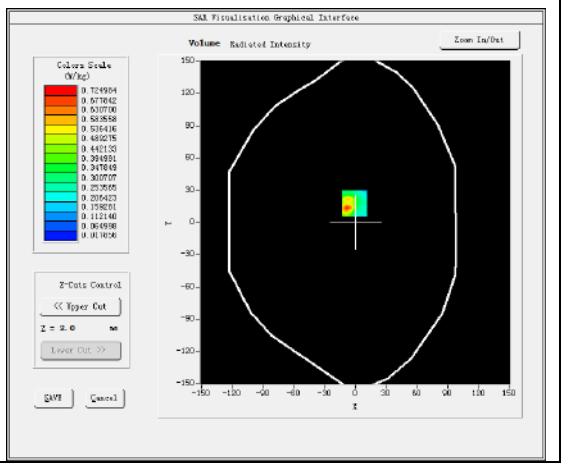
Date of measurement: 15/8/2025

A. Experimental conditions.

Area Scan	dx=10mm dy=10mm, h= 2.00 mm
ZoomScan	7x7x12,dx=4mm dy=4mm dz=2mm
Phantom	Validation plane
Device Position	Body
Band	IEEE 802.11a U-NII
Channels	Low
Signal	IEEE802.a (Crest factor: 1.0)
ConvF	1.50

B. SAR Measurement Results

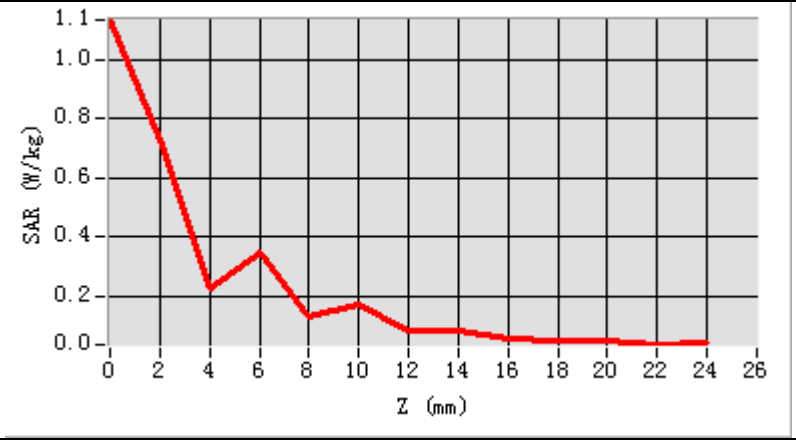
Frequency (MHz)	5745.000000
Relative permittivity (real part)	35.313888
Relative permittivity (imaginary part)	16.355388
Conductivity (S/m)	5.220095
Variation (%)	-4.740000

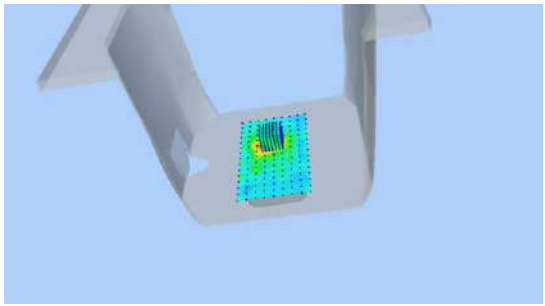
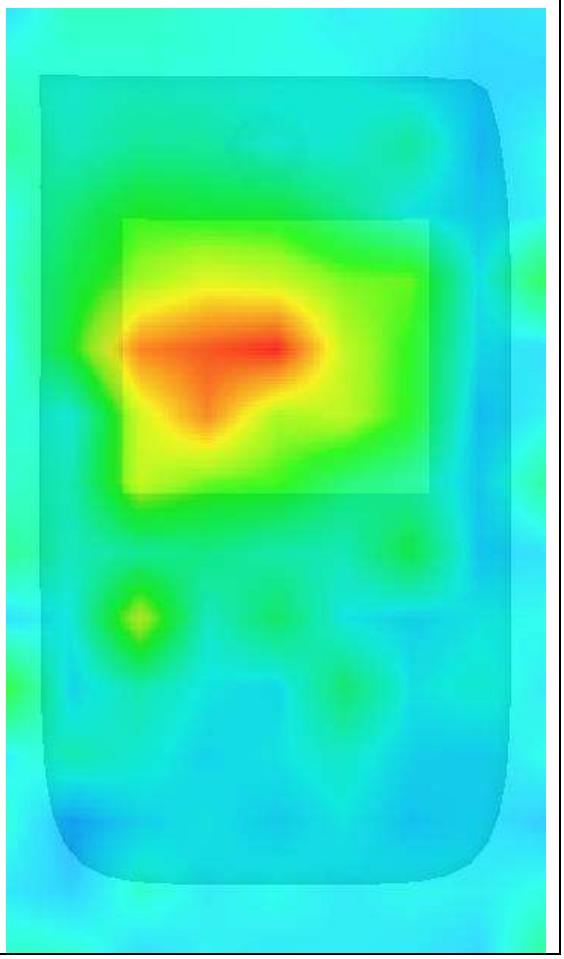
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-1.00, Y=18.00
SAR Peak: 1.12 W/kg

SAR 10g (W/Kg)	0.181502
SAR 1g (W/Kg)	0.409400

Z (mm)	0.00	2.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00	18.00	20.00	22.00
SAR (W/Kg)	1.1343	0.7250	0.2239	0.3488	0.1287	0.1702	0.0844	0.0817	0.0565	0.0505	0.0455	0.0347



3D screen shot	Hot spot position
	

MEASUREMENT 13

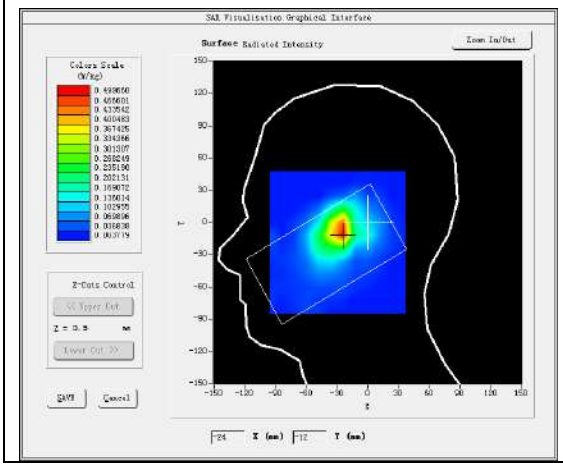
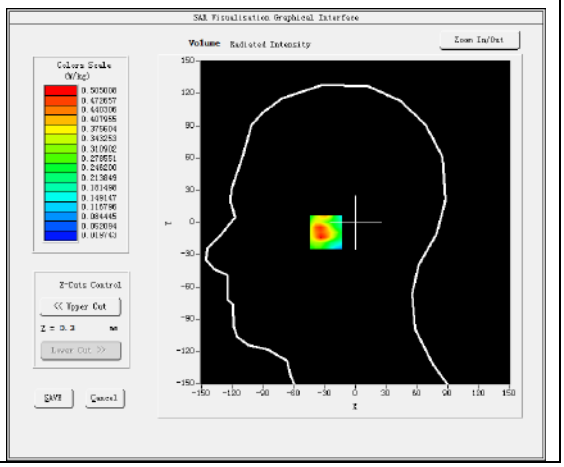
Date of measurement: 13/8/2025

A. Experimental conditions.

Area Scan	dx=12mm dy=12mm, h= 5.00 mm
ZoomScan	7x7x7,dx=5mm dy=5mm dz=5mm
Phantom	Left head
Device Position	Body
Band	IEEE 802.11b ISM
Channels	High
Signal	IEEE802.b (Crest factor: 1.0)
ConvF	1.91

B. SAR Measurement Results

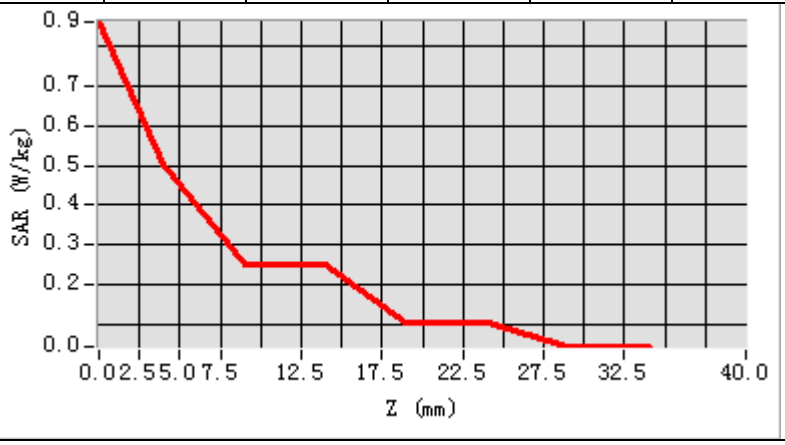
Frequency (MHz)	2462.000000
Relative permittivity (real part)	39.227000
Relative permittivity (imaginary part)	13.207000
Conductivity (S/m)	1.806424
Variation (%)	-4.450000

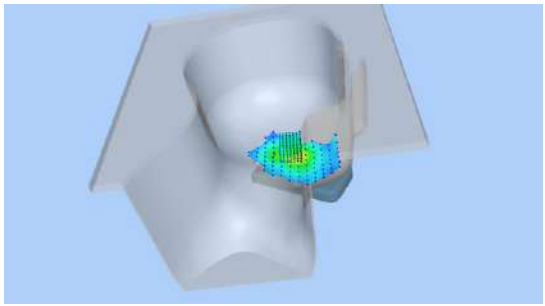
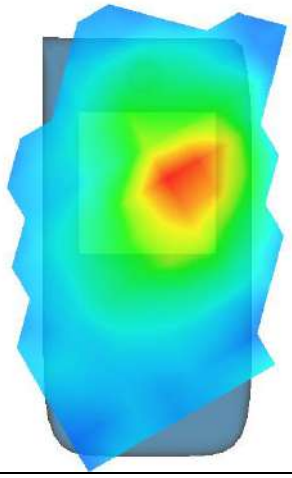
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-26.00, Y=-9.00
SAR Peak: 0.76 W/kg

SAR 10g (W/Kg)	0.265814
SAR 1g (W/Kg)	0.444811

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.8624	0.5050	0.2509	0.2495	0.1043	0.1043	0.0452



3D screen shot	Hot spot position
	

MEASUREMENT 14

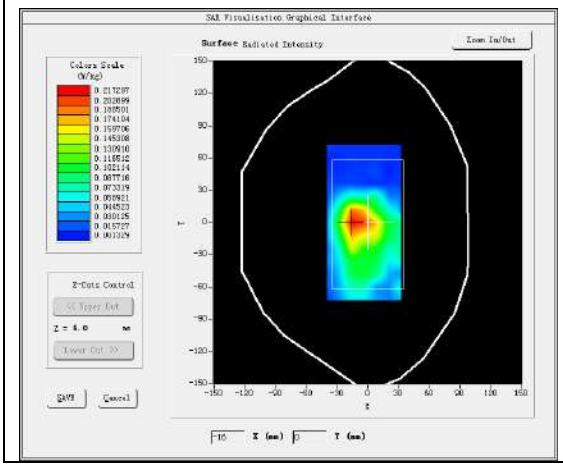
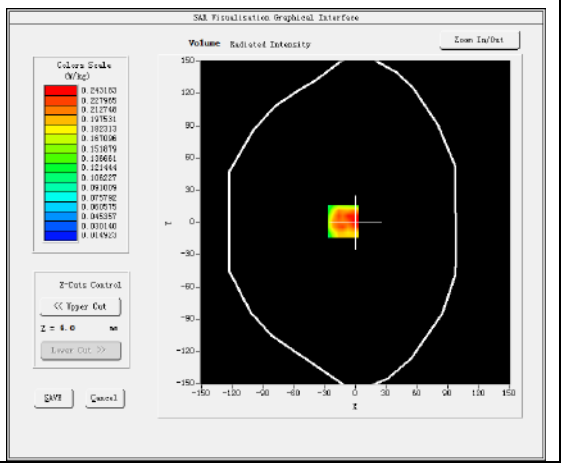
Date of measurement: 13/8/2025

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	High
Signal	IEEE802.b (Crest factor: 1.0)
ConvF	1.91

B. SAR Measurement Results

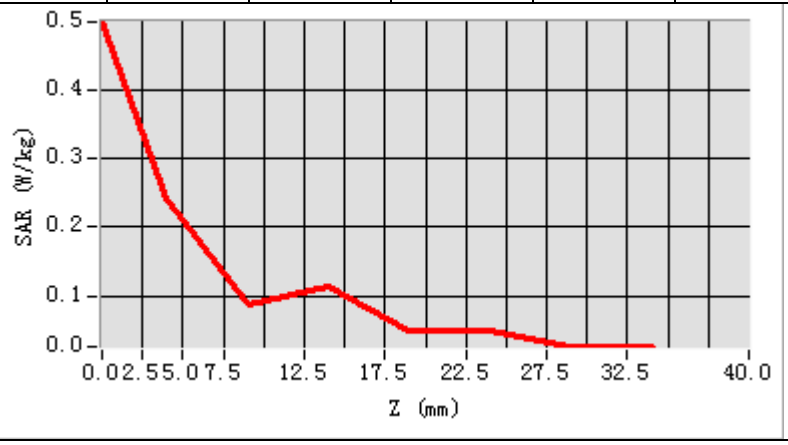
Frequency (MHz)	2462.000000
Relative permittivity (real part)	39.227000
Relative permittivity (imaginary part)	13.207000
Conductivity (S/m)	1.806424
Variation (%)	1.530000

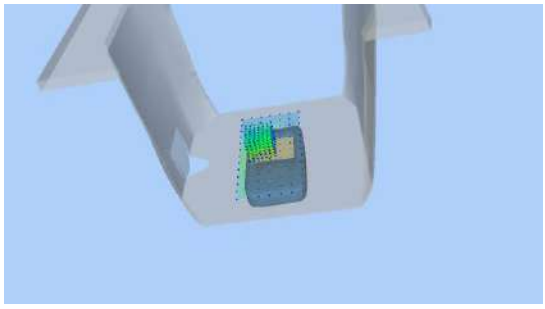
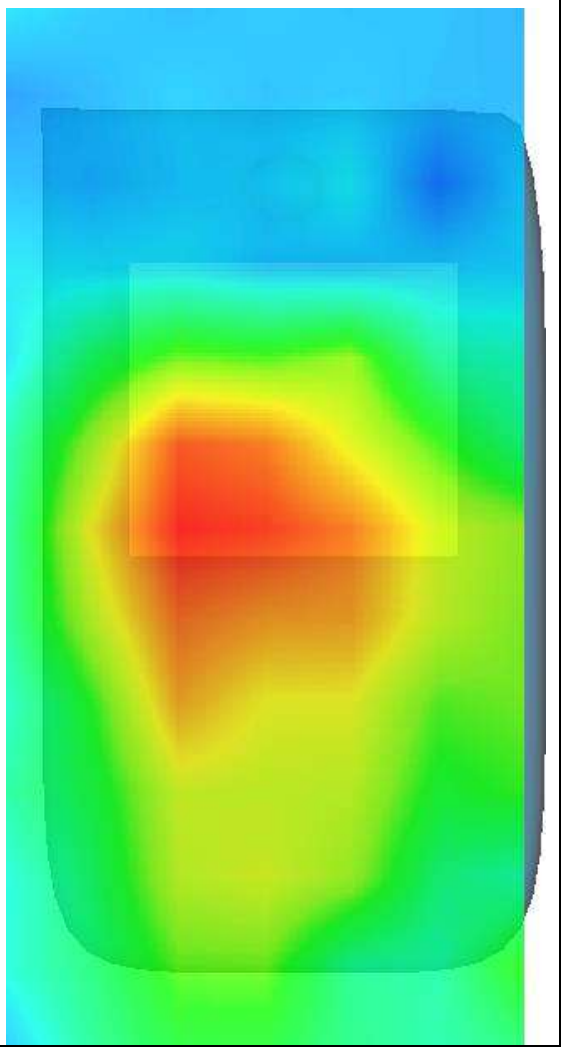
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-12.00, Y=1.00
SAR Peak: 0.37 W/kg

SAR 10g (W/Kg)	0.143097
SAR 1g (W/Kg)	0.225338

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.4995	0.2432	0.0872	0.1129	0.0499	0.0504	0.0260



3D screen shot	Hot spot position
	

MEASUREMENT 15

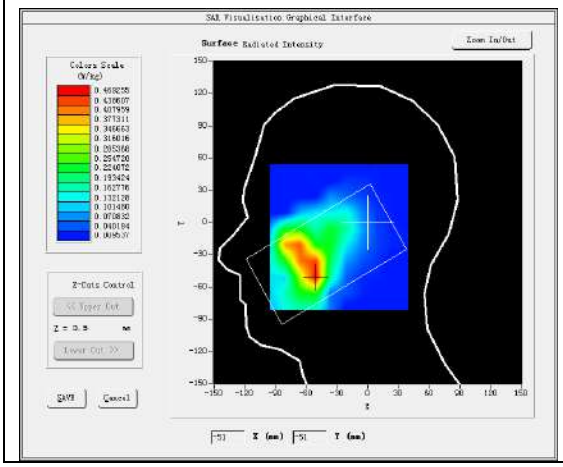
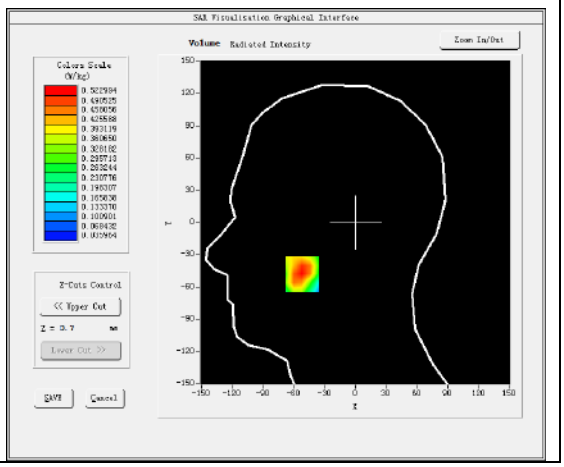
Date of measurement: 12/8/2025

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Left head
Device Position	Body
Band	LTE band 2
Channels	Middle
Signal	LTE (Crest factor: 1.0)
ConvF	1.86

B. SAR Measurement Results

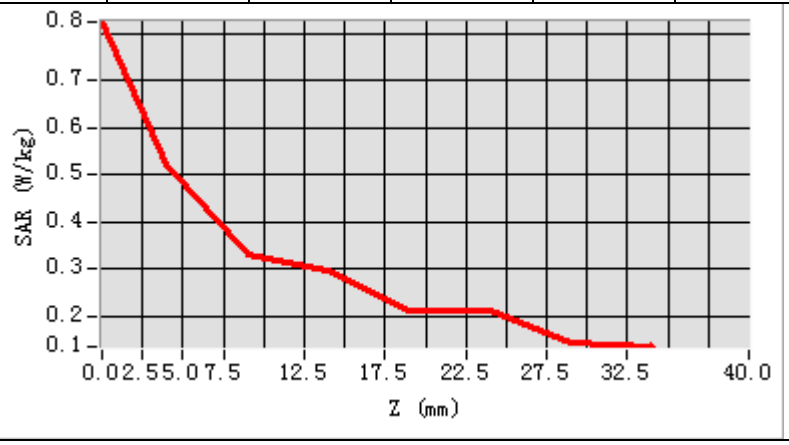
Frequency (MHz)	1879.500000
Relative permittivity (real part)	40.000000
Relative permittivity (imaginary part)	13.411700
Conductivity (S/m)	1.400405
Variation (%)	4.260000

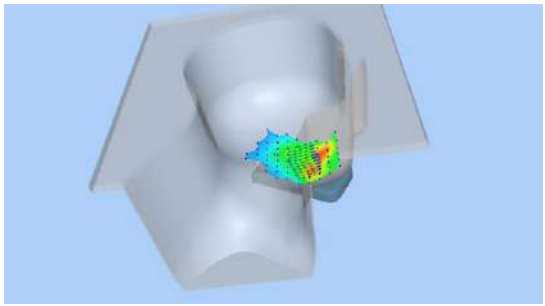
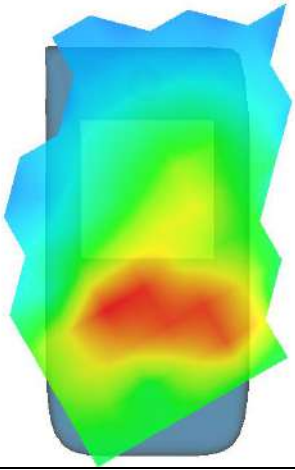
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-52.00, Y=-48.00
SAR Peak: 0.81 W/kg

SAR 10g (W/Kg)	0.339633
SAR 1g (W/Kg)	0.523120

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.8250	0.5230	0.3318	0.2951	0.2131	0.2137	0.1429



3D screen shot	Hot spot position
	

MEASUREMENT 16

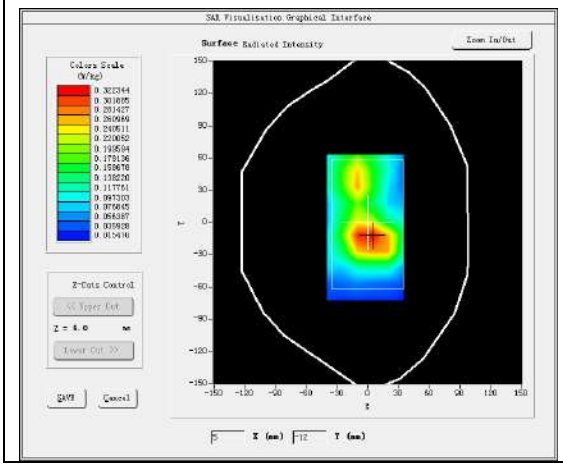
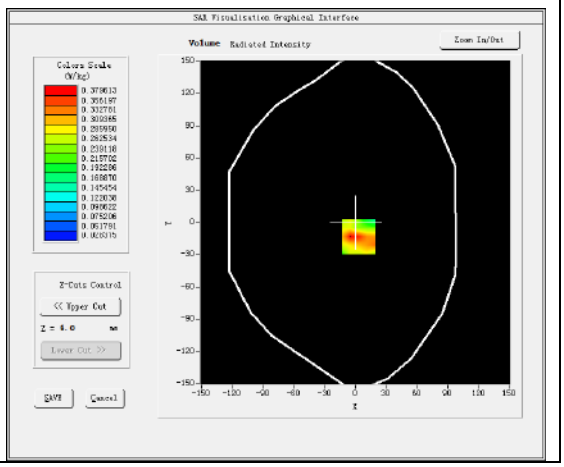
Date of measurement: 12/8/2025

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	1.86

B. SAR Measurement Results

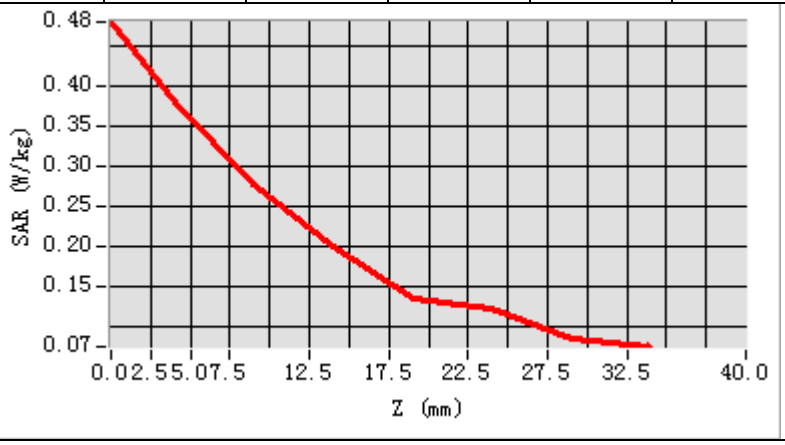
Frequency (MHz)	1879.500000
Relative permittivity (real part)	40.000000
Relative permittivity (imaginary part)	13.411700
Conductivity (S/m)	1.400405
Variation (%)	0.090000

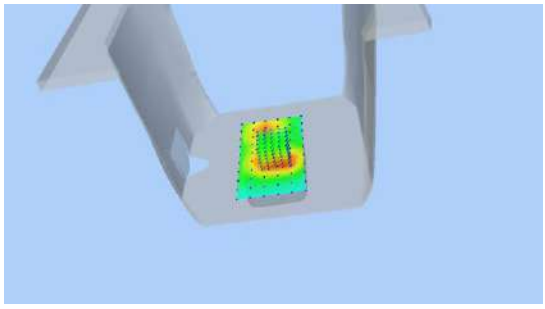
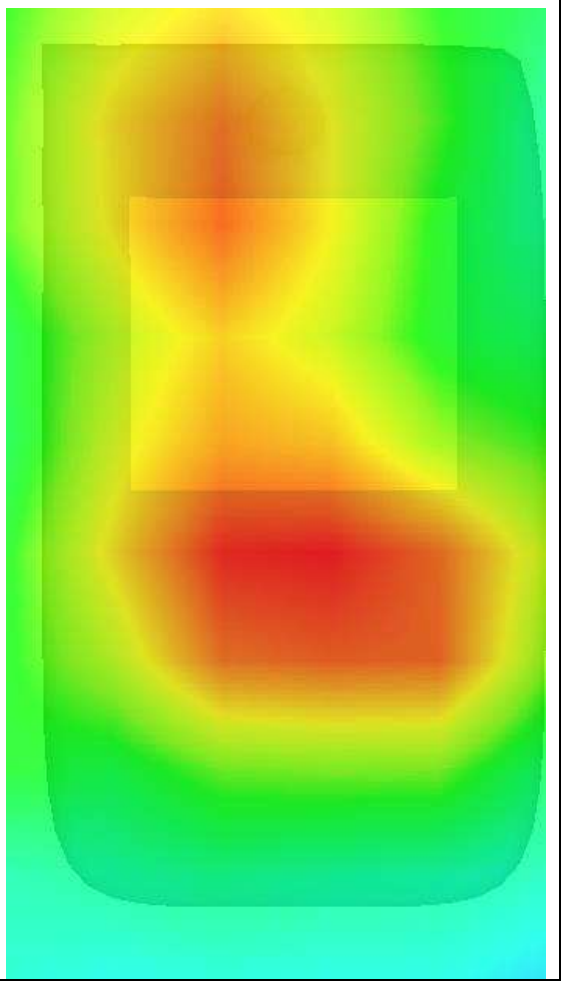
SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=3.00, Y=-13.00
SAR Peak: 0.57 W/kg

SAR 10g (W/Kg)	0.233776
SAR 1g (W/Kg)	0.355065

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.4811	0.3796	0.2766	0.2005	0.1343	0.1229	0.0839



3D screen shot	Hot spot position
	

MEASUREMENT 17

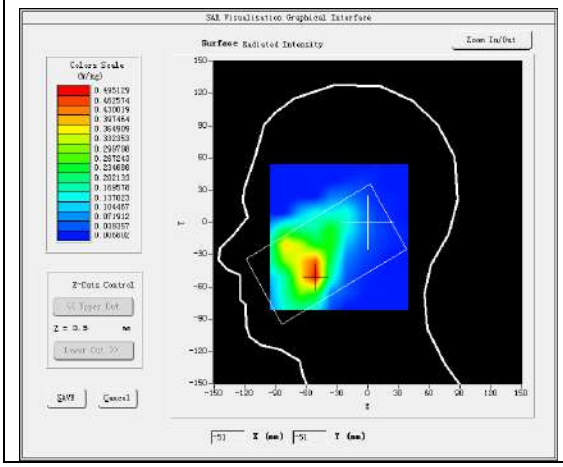
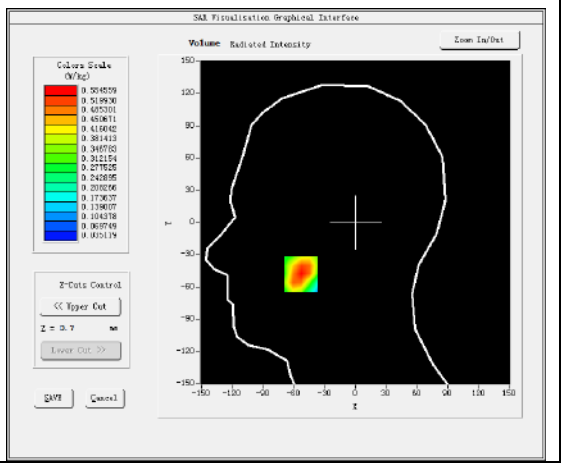
Date of measurement: 11/8/2025

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Left head
Device Position	Body
Band	LTE band 4
Channels	Middle
Signal	LTE (Crest factor: 1.0)
ConvF	1.65

B. SAR Measurement Results

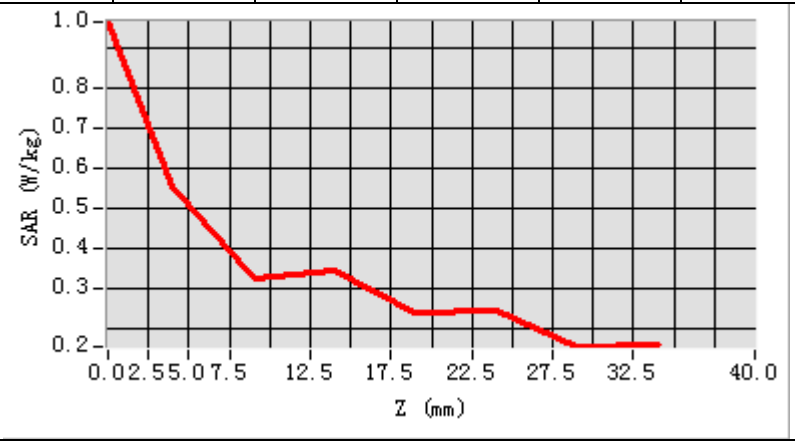
Frequency (MHz)	1732.500000
Relative permittivity (real part)	40.115910
Relative permittivity (imaginary part)	14.136136
Conductivity (S/m)	1.360603
Variation (%)	2.040000

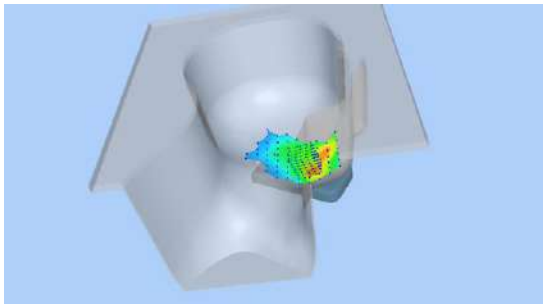
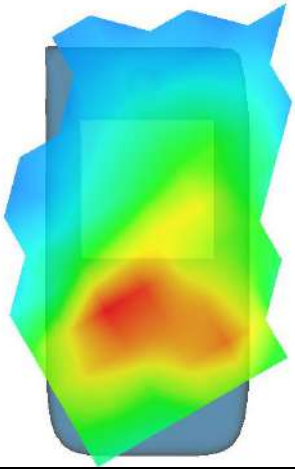
SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=-53.00, Y=-48.00
SAR Peak: 0.94 W/kg

SAR 10g (W/Kg)	0.366804
SAR 1g (W/Kg)	0.573751

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.9654	0.5546	0.3224	0.3465	0.2401	0.2439	0.1544



3D screen shot	Hot spot position
	

MEASUREMENT 18

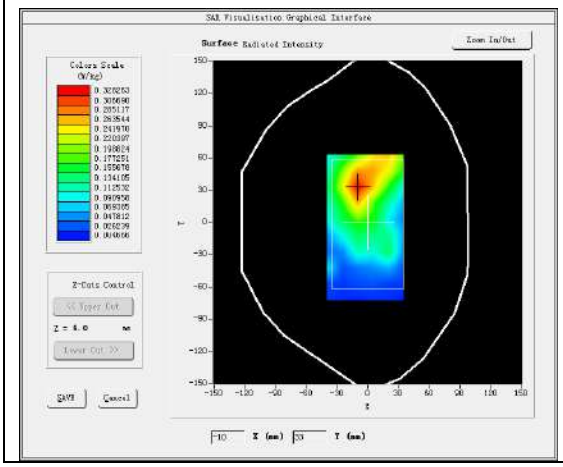
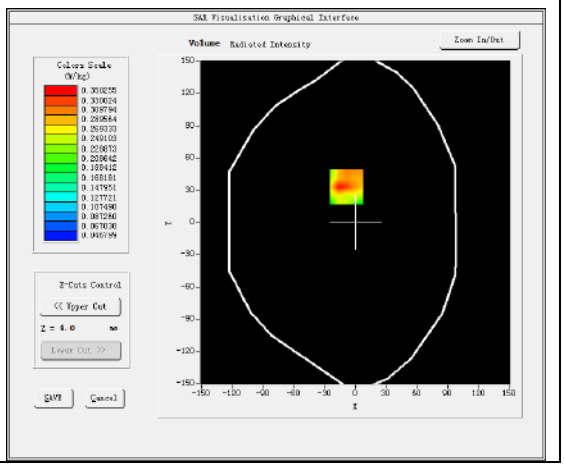
Date of measurement: 11/8/2025

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	1.65

B. SAR Measurement Results

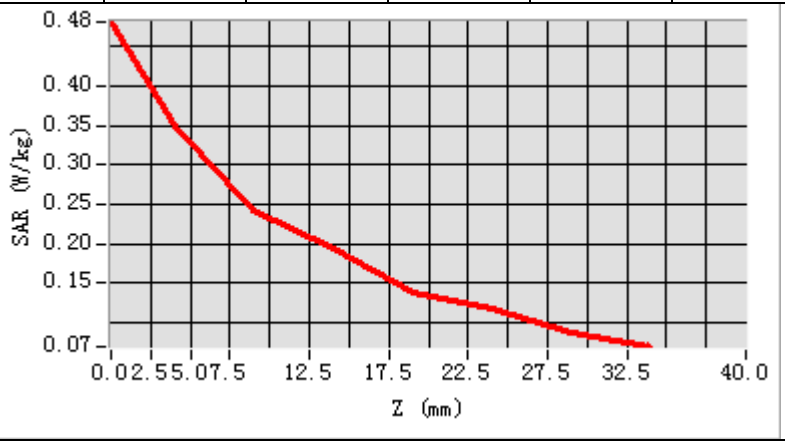
Frequency (MHz)	1732.500000
Relative permittivity (real part)	40.115910
Relative permittivity (imaginary part)	14.136136
Conductivity (S/m)	1.360603
Variation (%)	-4.420000

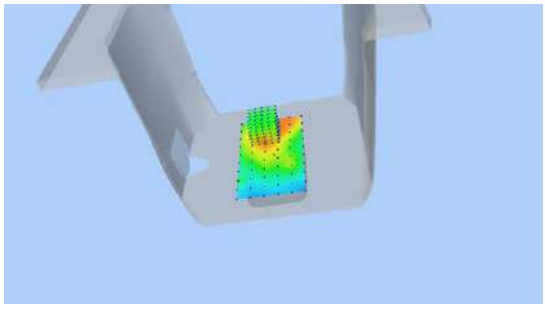
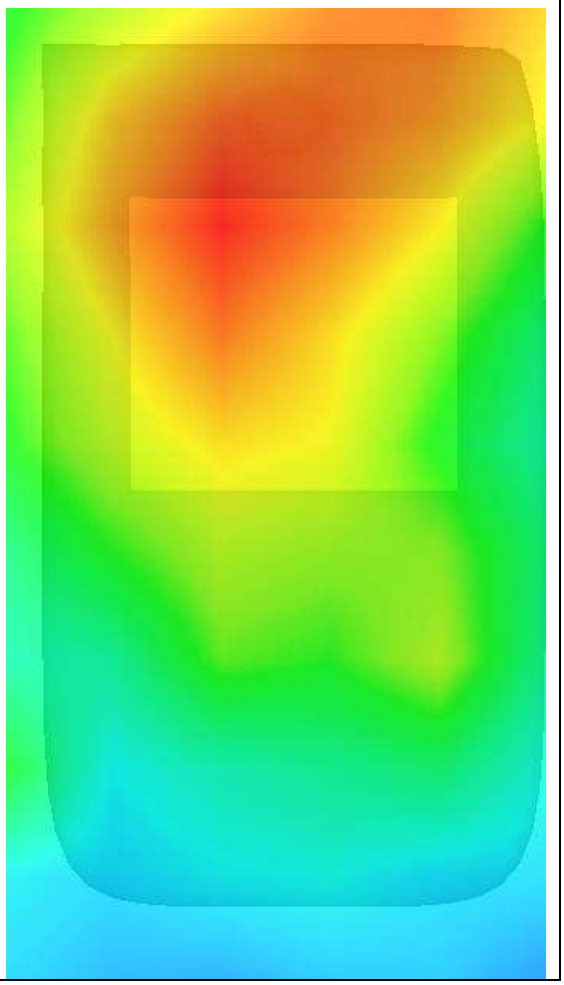
SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=-9.00, Y=33.00
SAR Peak: 0.49 W/kg

SAR 10g (W/Kg)	0.222217
SAR 1g (W/Kg)	0.327124

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.4816	0.3503	0.2412	0.1927	0.1370	0.1170	0.0878



3D screen shot	Hot spot position
	

MEASUREMENT 19

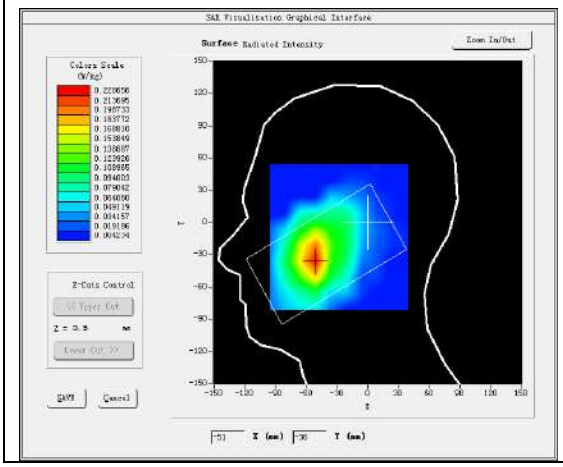
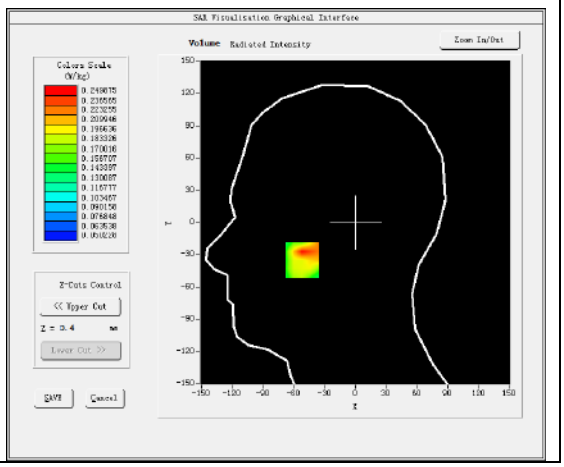
Date of measurement: 30/7/2025

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Left head
Device Position	Body
Band	LTE band 5
Channels	Middle
Signal	LTE (Crest factor: 1.0)
ConvF	1.55

B. SAR Measurement Results

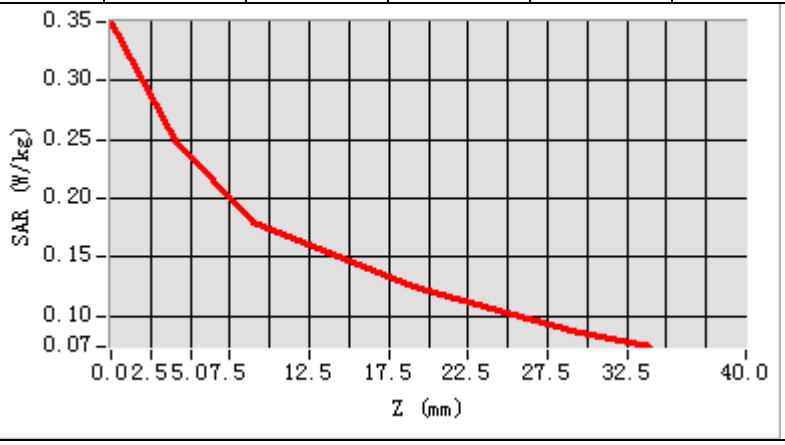
Frequency (MHz)	836.500000
Relative permittivity (real part)	41.500000
Relative permittivity (imaginary part)	19.400000
Conductivity (S/m)	0.901561
Variation (%)	0.510000

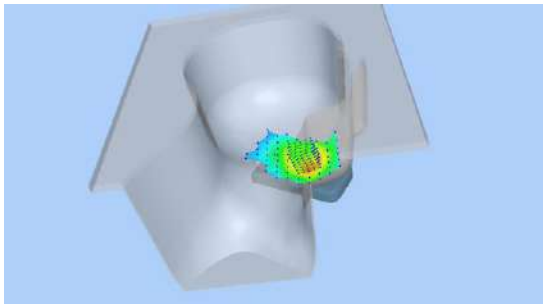
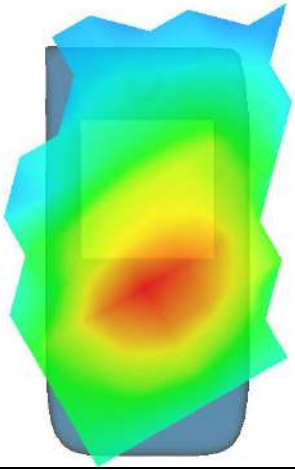
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-52.00, Y=-35.00
SAR Peak: 0.36 W/kg

SAR 10g (W/Kg)	0.168256
SAR 1g (W/Kg)	0.236122

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.3493	0.2499	0.1790	0.1531	0.1256	0.1060	0.0879



3D screen shot	Hot spot position
	

MEASUREMENT 20

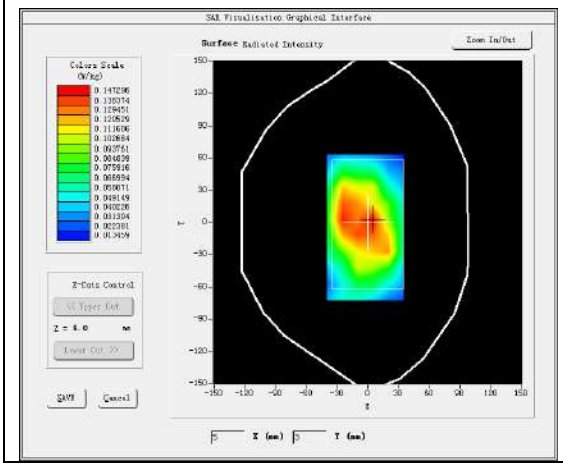
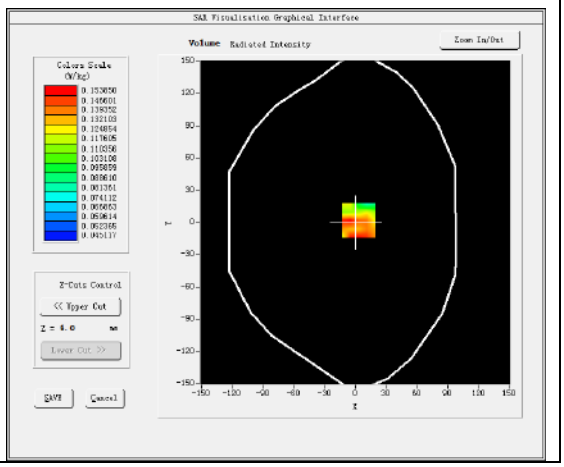
Date of measurement: 30/7/2025

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	1.55

B. SAR Measurement Results

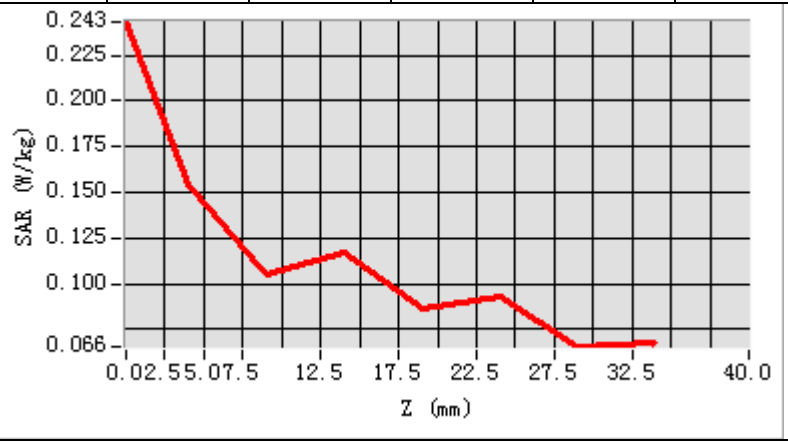
Frequency (MHz)	836.500000
Relative permittivity (real part)	41.500000
Relative permittivity (imaginary part)	19.400000
Conductivity (S/m)	0.901561
Variation (%)	1.550000

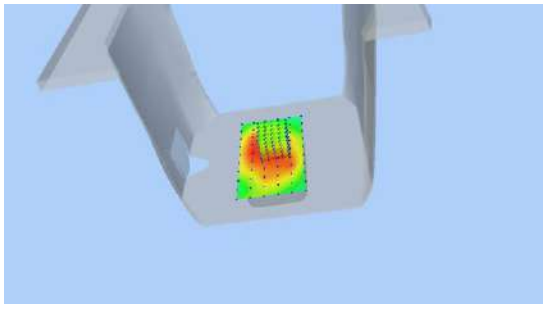
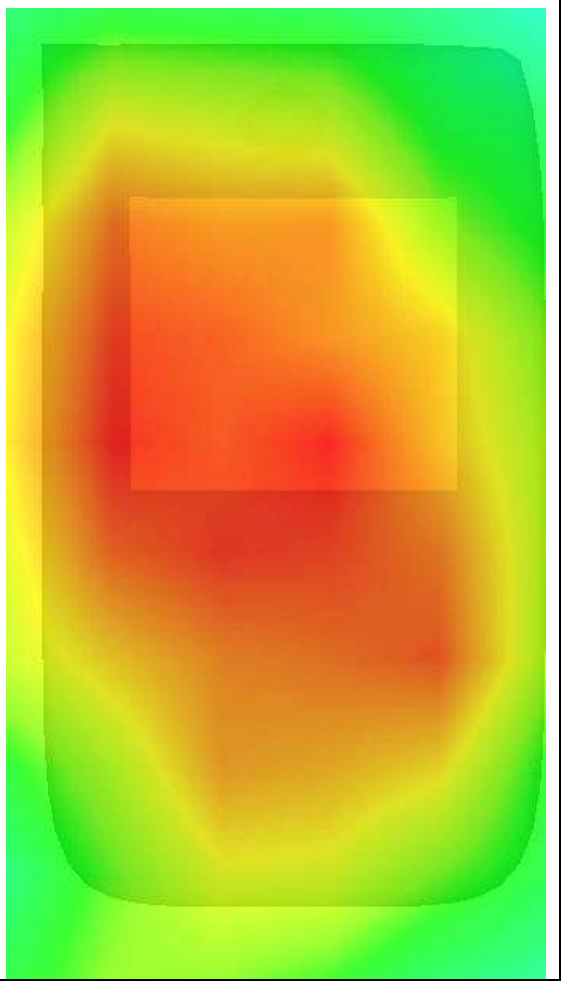
SURFACE SAR	VOLUME SAR
	

Maximum location: X=3.00, Y=2.00
SAR Peak: 0.22 W/kg

SAR 10g (W/Kg)	0.116469
SAR 1g (W/Kg)	0.138722

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.2431	0.1538	0.1047	0.1175	0.0864	0.0932	0.0656



3D screen shot	Hot spot position
	

MEASUREMENT 21

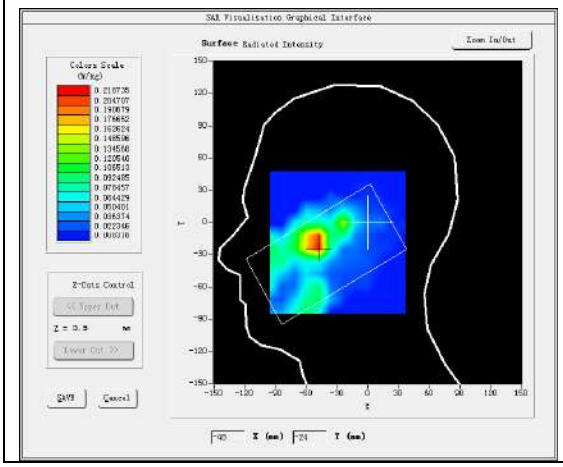
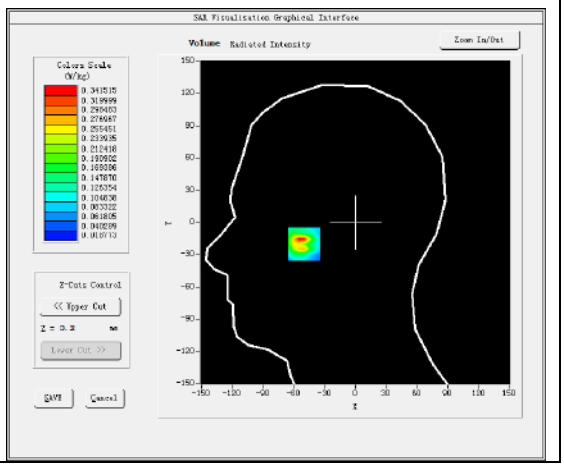
Date of measurement: 14/8/2025

A. Experimental conditions.

Area Scan	dx=12mm dy=12mm, h= 5.00 mm
ZoomScan	7x7x7,dx=5mm dy=5mm dz=5mm
Phantom	Left head
Device Position	Body
Band	LTE band 7
Channels	Middle
Signal	LTE (Crest factor: 1.0)
ConvF	1.89

B. SAR Measurement Results

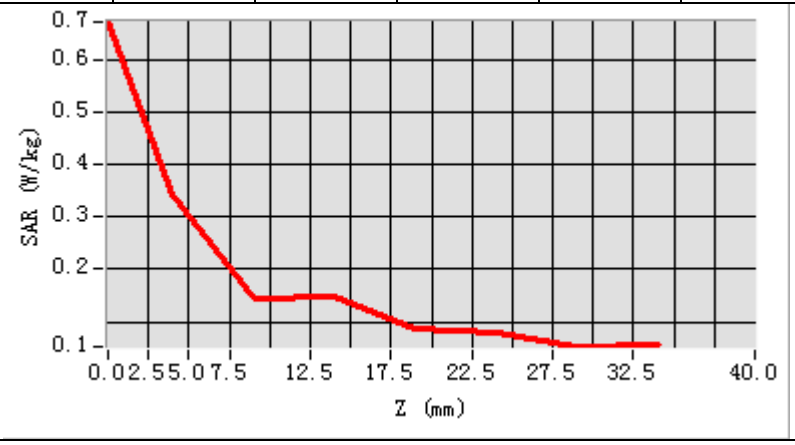
Frequency (MHz)	2535.000000
Relative permittivity (real part)	39.086666
Relative permittivity (imaginary part)	13.418333
Conductivity (S/m)	1.889749
Variation (%)	4.160000

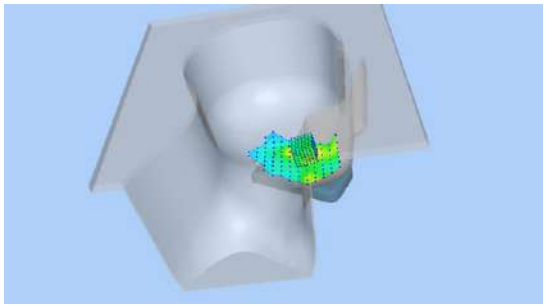
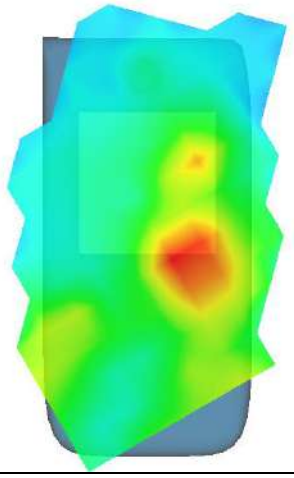
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-50.00, Y=-20.00
SAR Peak: 0.60 W/kg

SAR 10g (W/Kg)	0.160167
SAR 1g (W/Kg)	0.262260

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.6714	0.3415	0.1428	0.1497	0.0854	0.0811	0.0527



3D screen shot	Hot spot position
	

MEASUREMENT 22

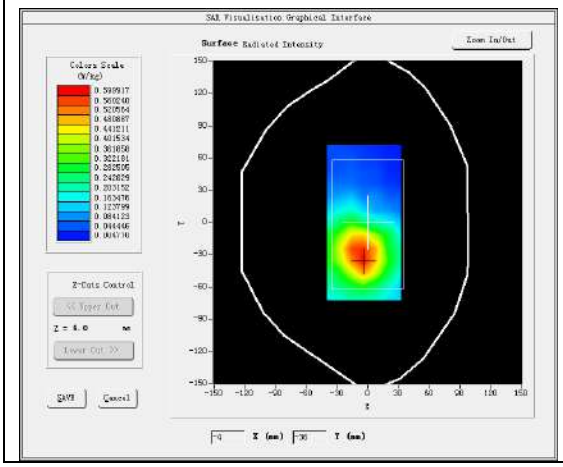
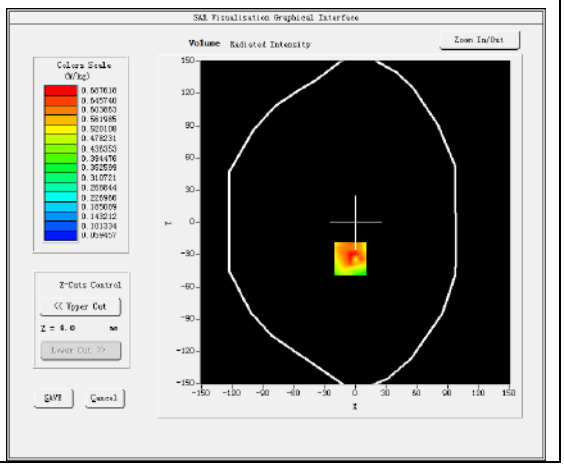
Date of measurement: 14/8/2025

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	1.89

B. SAR Measurement Results

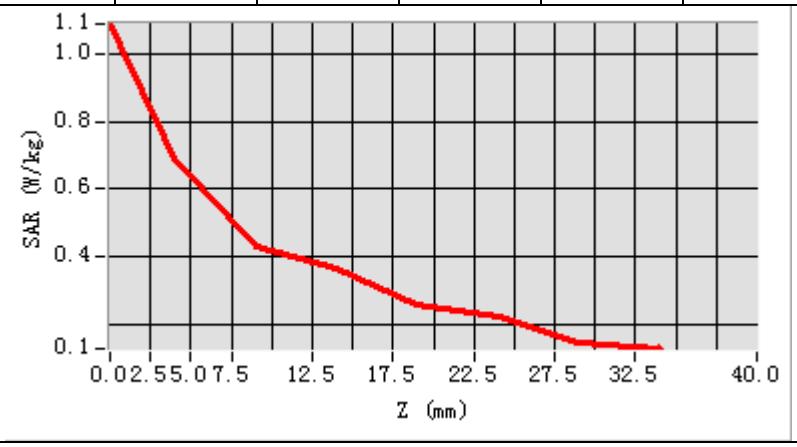
Frequency (MHz)	2535.000000
Relative permittivity (real part)	39.086666
Relative permittivity (imaginary part)	13.418333
Conductivity (S/m)	1.889749
Variation (%)	-0.990000

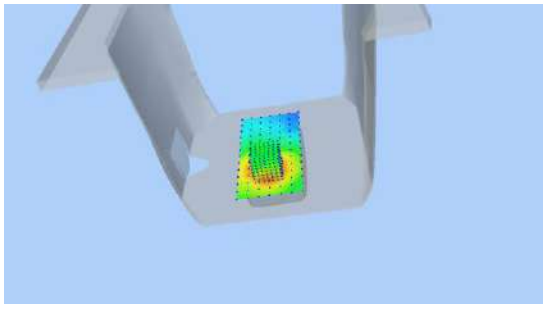
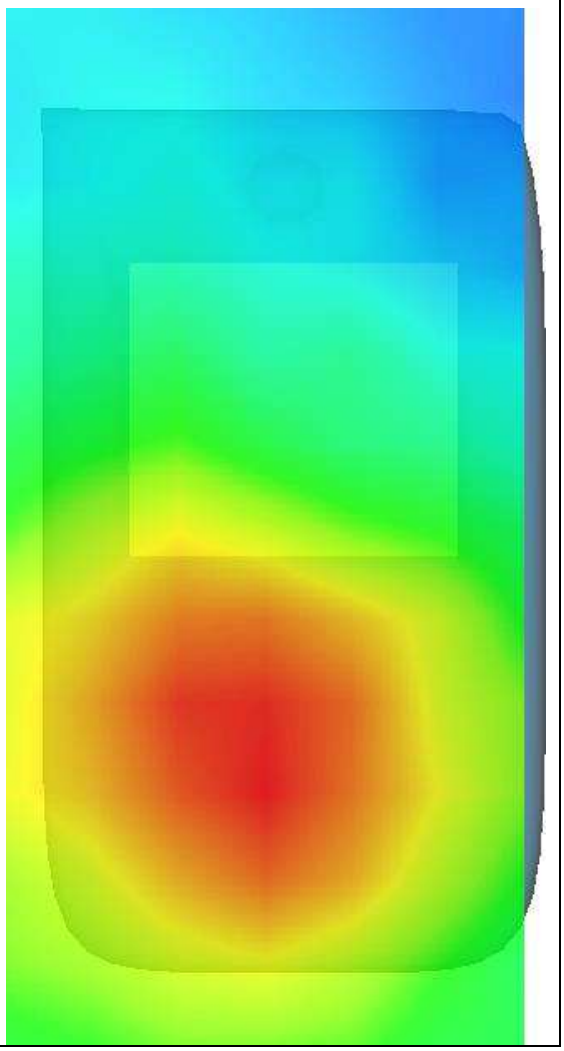
SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=-5.00, Y=-34.00
SAR Peak: 1.04 W/kg

SAR 10g (W/Kg)	0.440374
SAR 1g (W/Kg)	0.633484

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	1.0880	0.6876	0.4285	0.3611	0.2594	0.2208	0.1417



3D screen shot	Hot spot position
	

MEASUREMENT 23

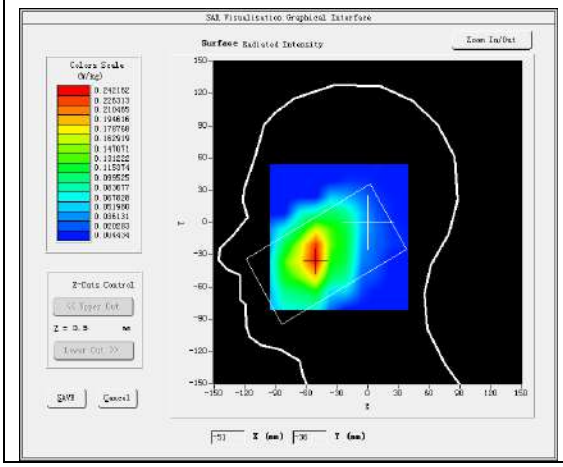
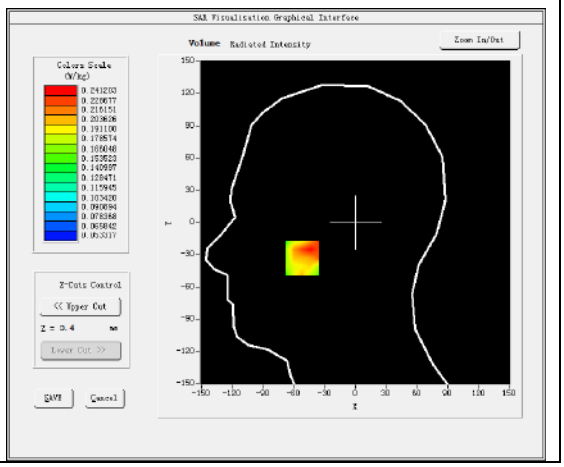
Date of measurement: 29/7/2025

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Left head
Device Position	Body
Band	LTE band 12
Channels	Middle
Signal	LTE (Crest factor: 1.0)
ConvF	1.45

B. SAR Measurement Results

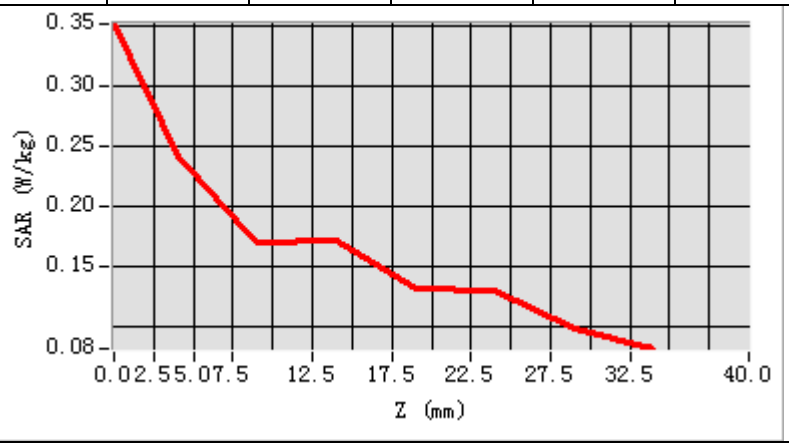
Frequency (MHz)	707.500000
Relative permittivity (real part)	42.126667
Relative permittivity (imaginary part)	23.264000
Conductivity (S/m)	0.914404
Variation (%)	1.130000

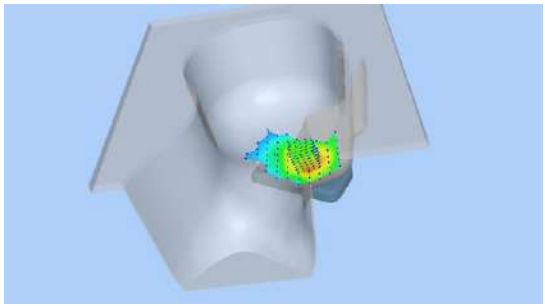
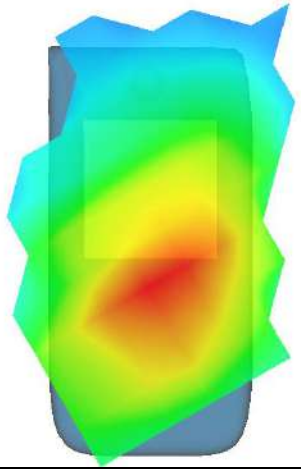
SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=-52.00, Y=-33.00
SAR Peak: 0.37 W/kg

SAR 10g (W/Kg)	0.177667
SAR 1g (W/Kg)	0.249419

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.3514	0.2412	0.1703	0.1719	0.1328	0.1296	0.0984



3D screen shot	Hot spot position
	

MEASUREMENT 24

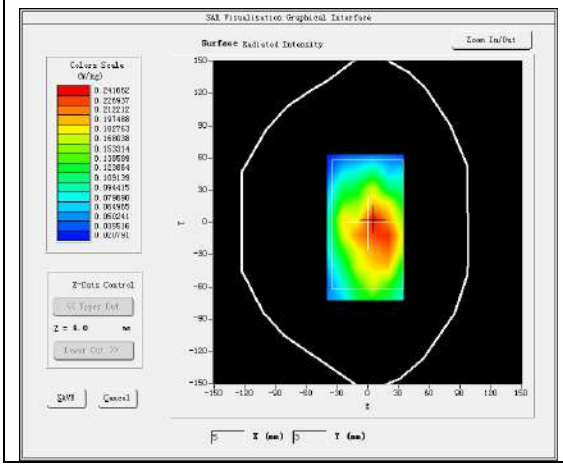
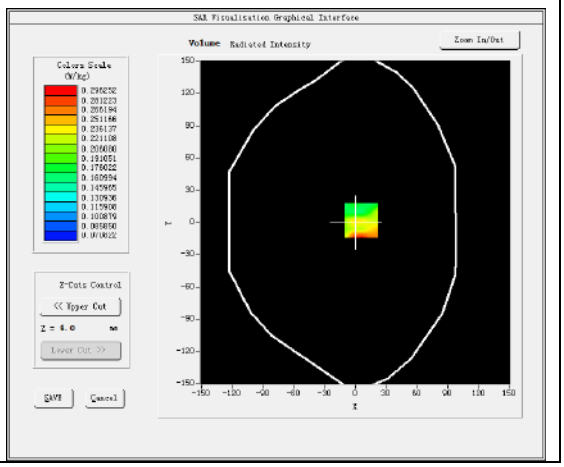
Date of measurement: 29/7/2025

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 12
Channels	Middle
Signal	LTE (Crest factor: 1.0)
ConvF	1.45

B. SAR Measurement Results

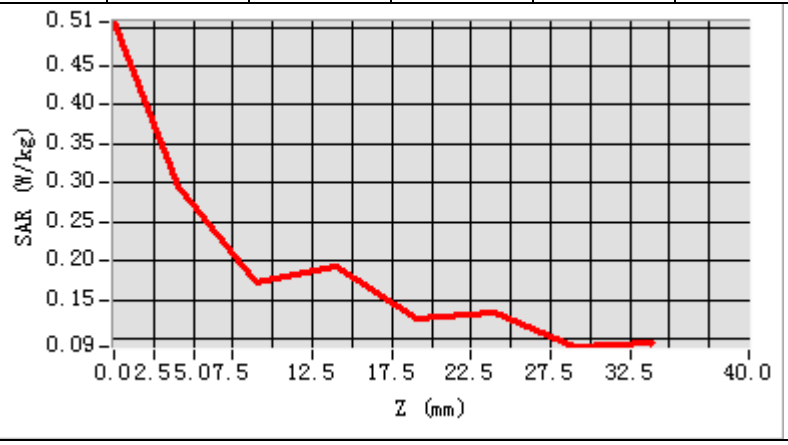
Frequency (MHz)	707.500000
Relative permittivity (real part)	42.126667
Relative permittivity (imaginary part)	23.264000
Conductivity (S/m)	0.914404
Variation (%)	3.630000

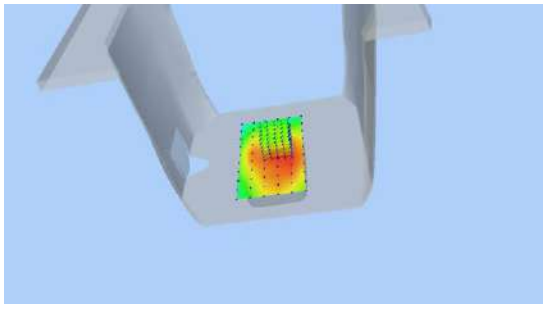
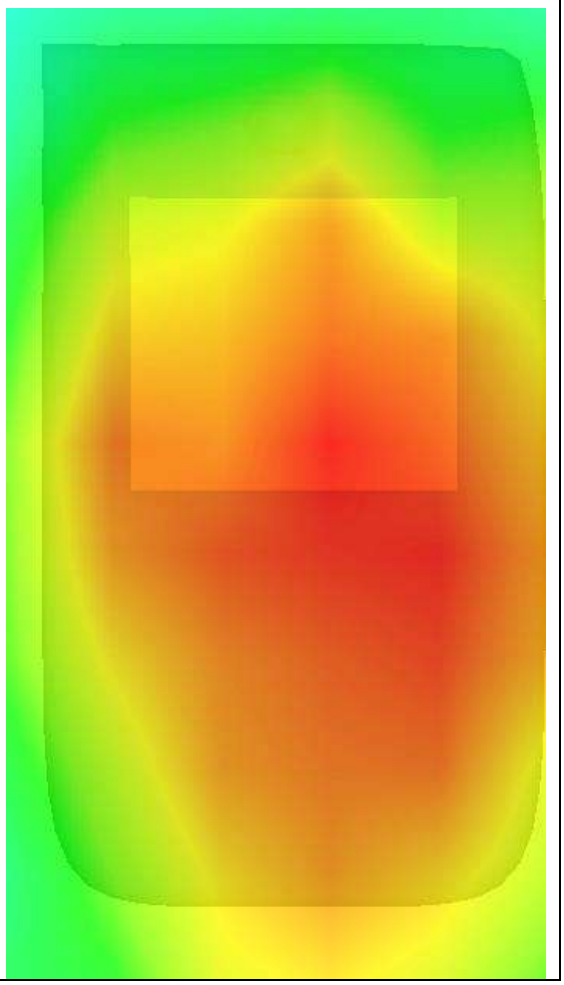
SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=6.00, Y=2.00
SAR Peak: 0.48 W/kg

SAR 10g (W/Kg)	0.198376
SAR 1g (W/Kg)	0.254811

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.5067	0.2963	0.1715	0.1926	0.1269	0.1323	0.0898



3D screen shot	Hot spot position
	

MEASUREMENT 25

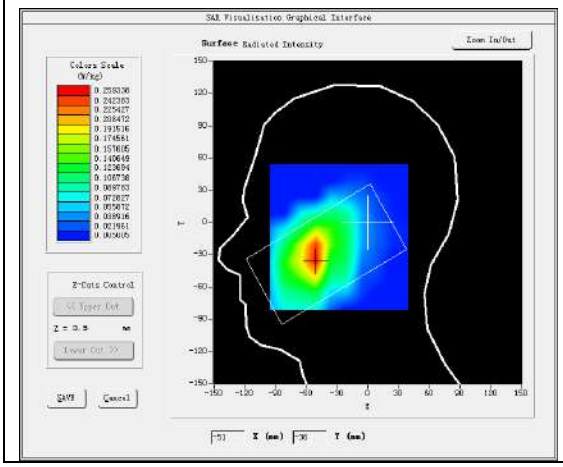
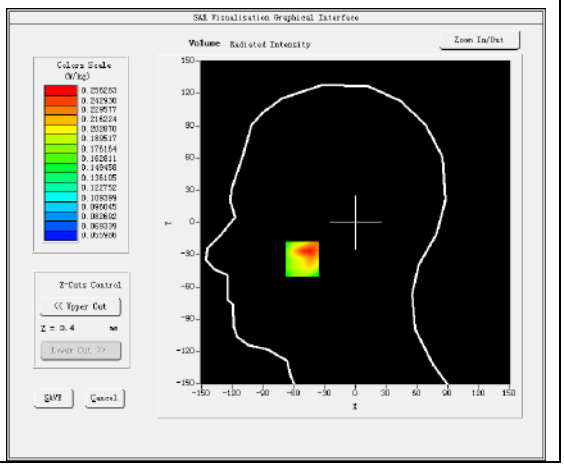
Date of measurement: 29/7/2025

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Left head
Device Position	Body
Band	LTE band 17
Channels	Middle
Signal	LTE (Crest factor: 1.0)
ConvF	1.45

B. SAR Measurement Results

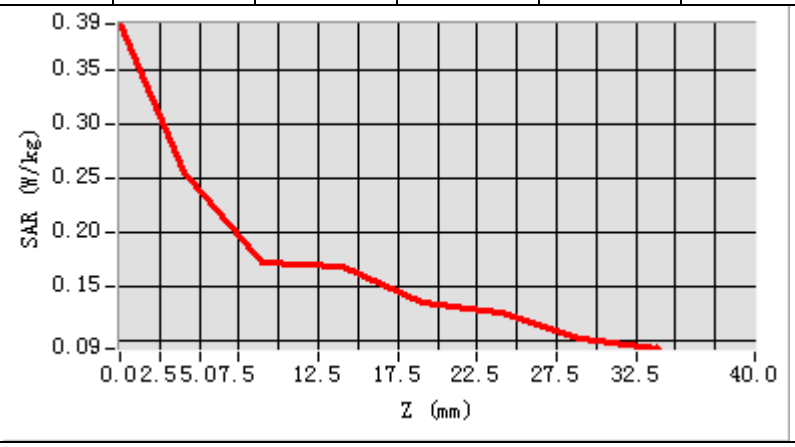
Frequency (MHz)	710.000000
Relative permittivity (real part)	42.113335
Relative permittivity (imaginary part)	23.152000
Conductivity (S/m)	0.913218
Variation (%)	4.190000

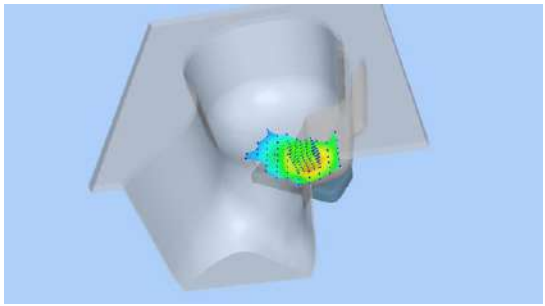
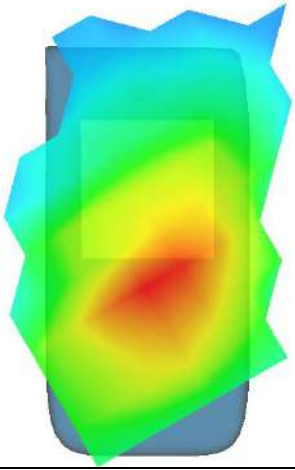
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-52.00, Y=-34.00
SAR Peak: 0.39 W/kg

SAR 10g (W/Kg)	0.182158
SAR 1g (W/Kg)	0.259739

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.3934	0.2563	0.1719	0.1685	0.1351	0.1247	0.1010



3D screen shot	Hot spot position
	

MEASUREMENT 26

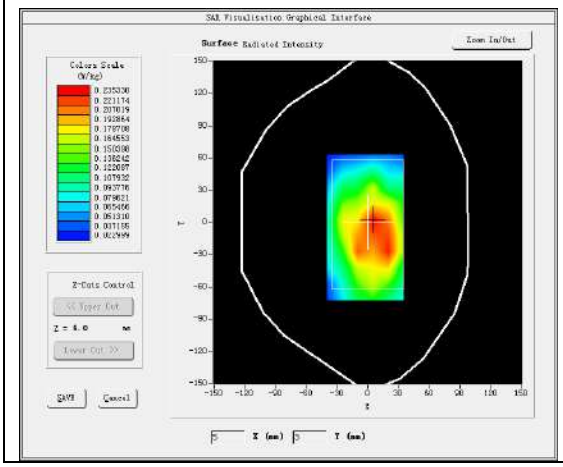
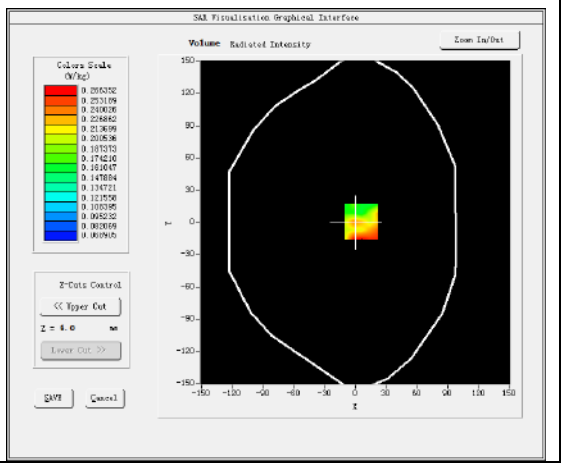
Date of measurement: 29/7/2025

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 17
Channels	Middle
Signal	LTE (Crest factor: 1.0)
ConvF	1.45

B. SAR Measurement Results

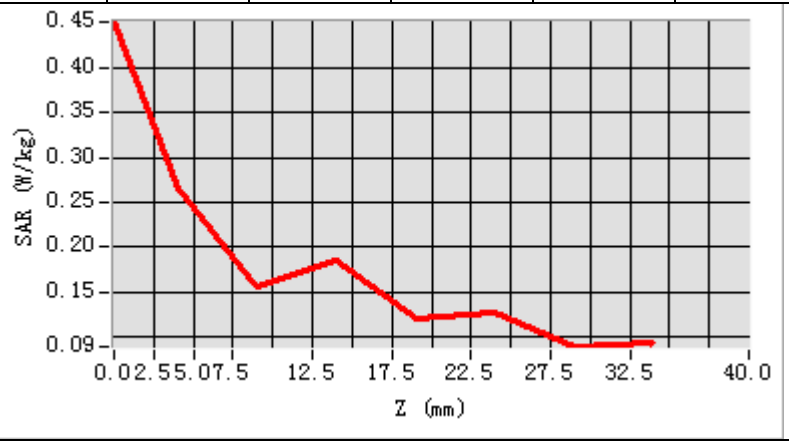
Frequency (MHz)	710.000000
Relative permittivity (real part)	42.113335
Relative permittivity (imaginary part)	23.152000
Conductivity (S/m)	0.913218
Variation (%)	1.090000

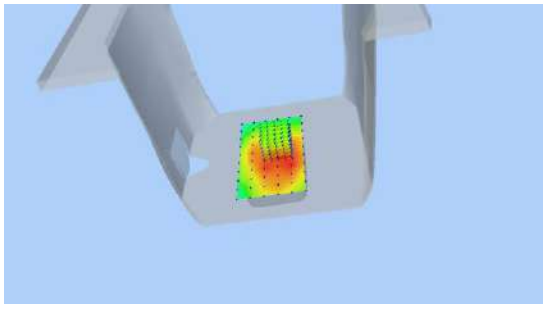
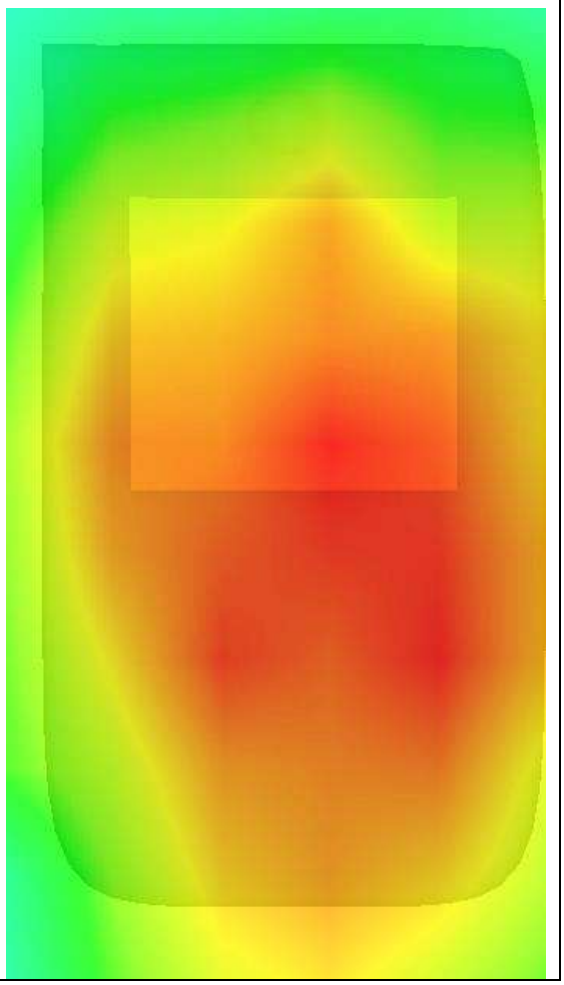
SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=6.00, Y=1.00
SAR Peak: 0.41 W/kg

SAR 10g (W/Kg)	0.188543
SAR 1g (W/Kg)	0.232208

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.4507	0.2664	0.1564	0.1842	0.1207	0.1272	0.0893



3D screen shot	Hot spot position
	

MEASUREMENT 27

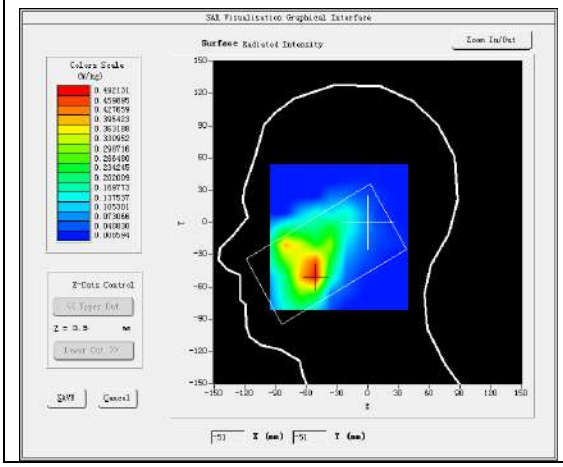
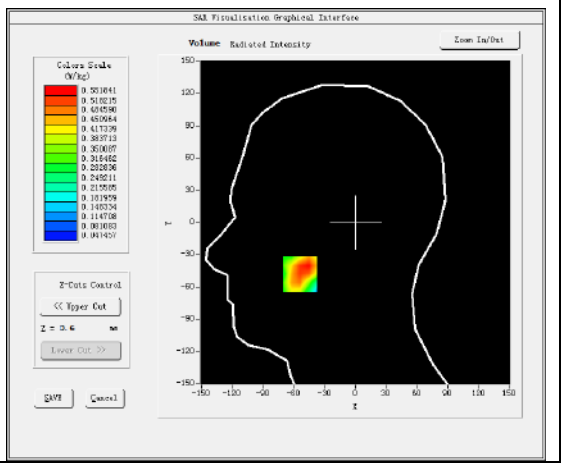
Date of measurement: 11/8/2025

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Left head
Device Position	Body
Band	CUSTOM (LTEBand66)
Channels	Middle
Signal	(Crest factor: 1.0)
ConvF	1.65

B. SAR Measurement Results

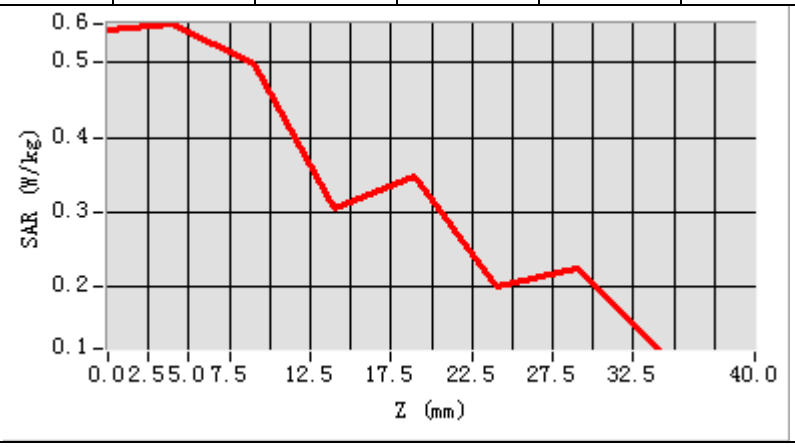
Frequency (MHz)	1745.000000
Relative permittivity (real part)	40.104546
Relative permittivity (imaginary part)	14.103182
Conductivity (S/m)	1.367225
Variation (%)	3.690000

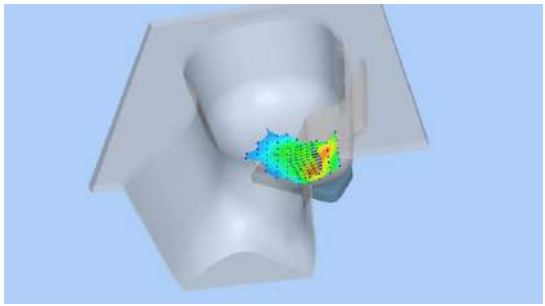
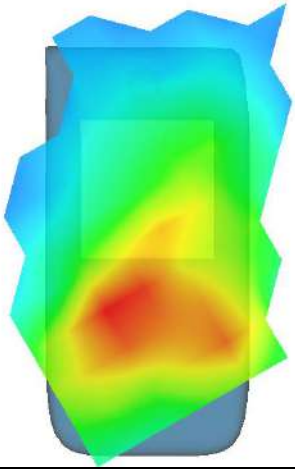
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-54.00, Y=-48.00
SAR Peak: 0.89 W/kg

SAR 10g (W/Kg)	0.376979
SAR 1g (W/Kg)	0.565909

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.5443	0.5518	0.4991	0.3044	0.3484	0.2012	0.2246



3D screen shot	Hot spot position
	

MEASUREMENT 28

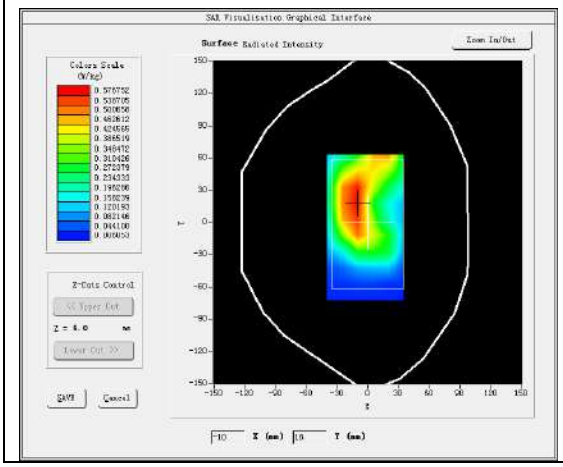
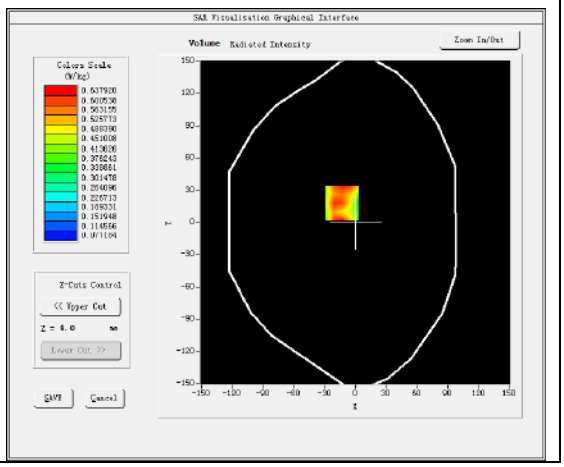
Date of measurement: 11/8/2025

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	CUSTOM (LTEBand66)
Channels	Middle
Signal	(Crest factor: 1.0)
ConvF	1.65

B. SAR Measurement Results

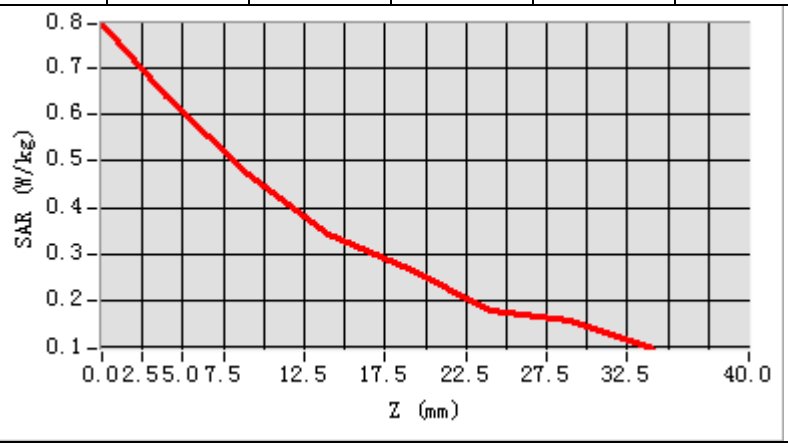
Frequency (MHz)	1745.000000
Relative permittivity (real part)	40.104546
Relative permittivity (imaginary part)	14.103182
Conductivity (S/m)	1.367225
Variation (%)	-3.050000

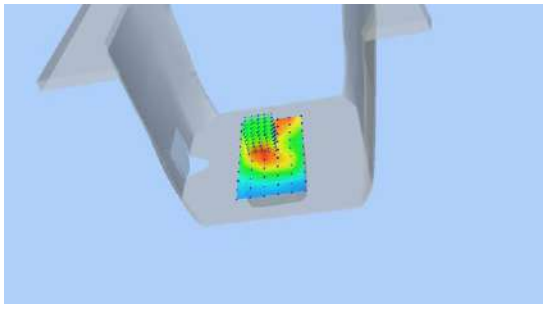
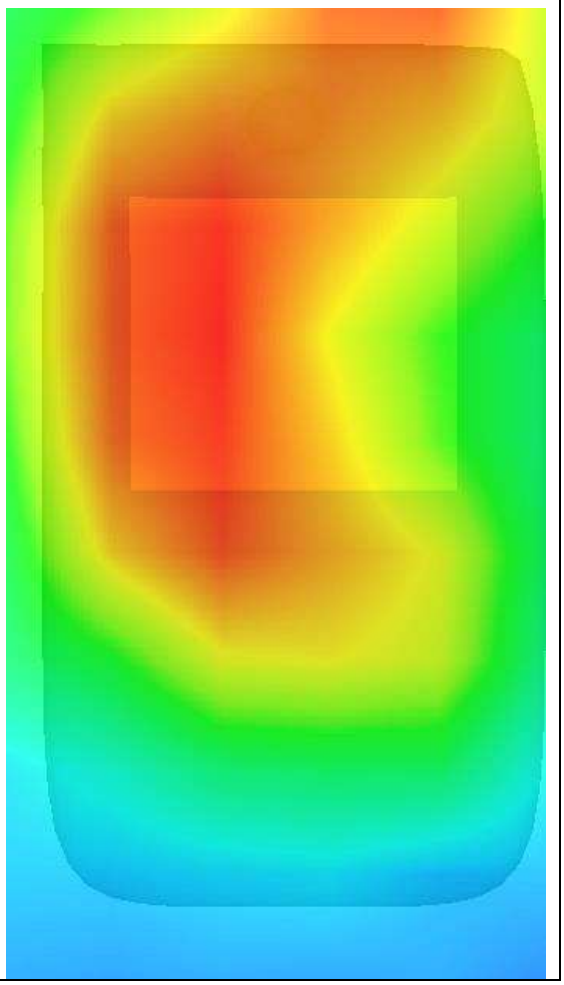
SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=-13.00, Y=18.00
SAR Peak: 0.95 W/kg

SAR 10g (W/Kg)	0.412872
SAR 1g (W/Kg)	0.545595

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.7936	0.6379	0.4707	0.3441	0.2690	0.1795	0.1592



3D screen shot	Hot spot position
	

MEASUREMENT 29

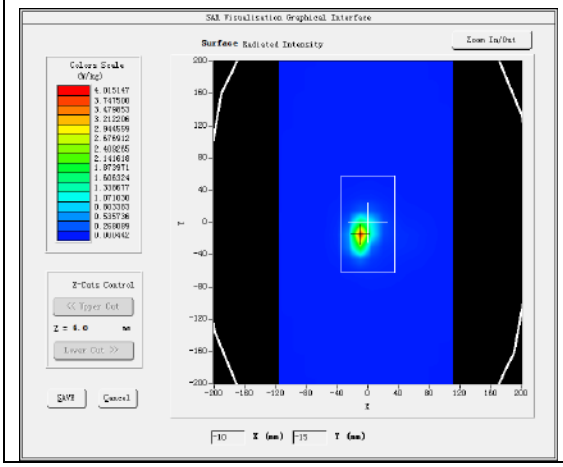
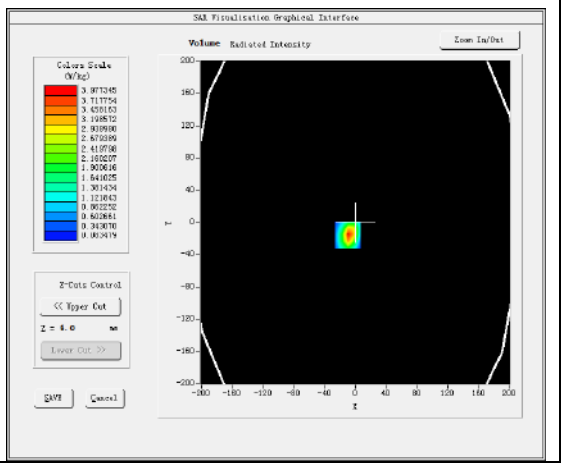
Date of measurement: 28/7/2025

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	ELLI
Device Position	Body
Band	WALKIETALKIE
Channels	Middle
Signal	(Crest factor: 1.0)
ConvF	1.56

B. SAR Measurement Results

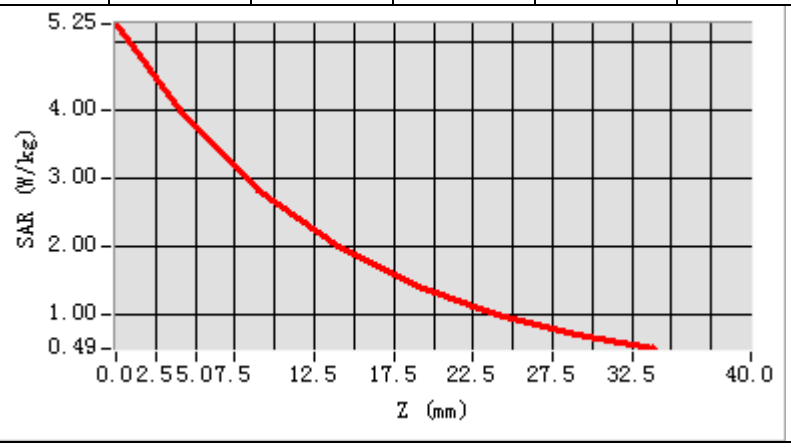
Frequency (MHz)	453.212500
Relative permittivity (real part)	43.482868
Relative permittivity (imaginary part)	34.656101
Conductivity (S/m)	0.872587
Variation (%)	-1.870000

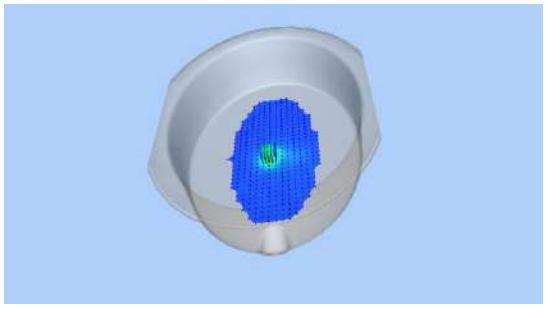
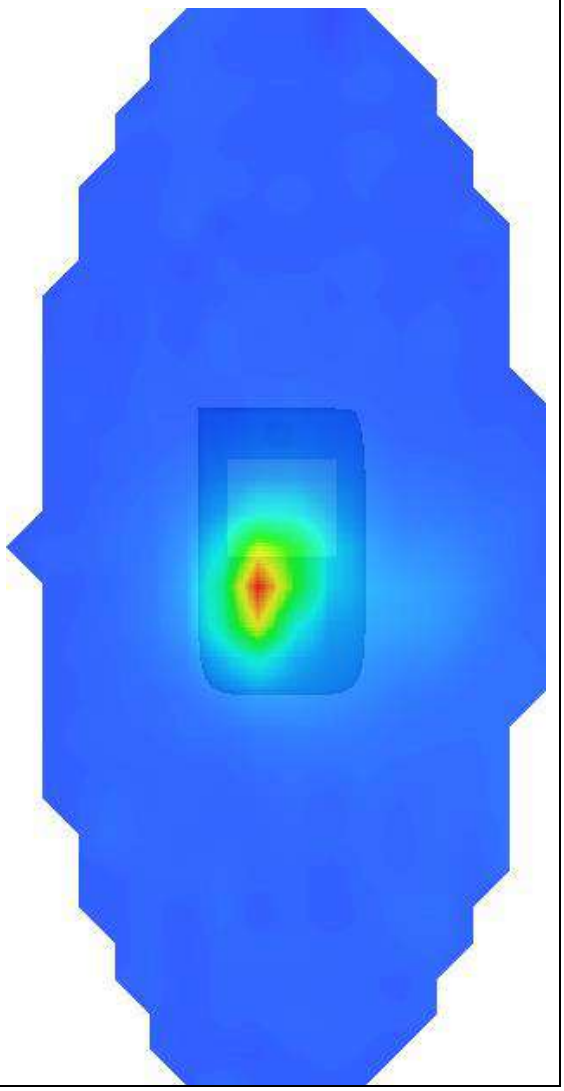
SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=-10.00, Y=-15.00
SAR Peak: 5.47 W/kg

SAR 10g (W/Kg)	2.023472
SAR 1g (W/Kg)	3.727058

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	5.2504	3.9773	2.8094	1.9736	1.4029	0.9813	0.6866



3D screen shot	Hot spot position
	

MEASUREMENT 30

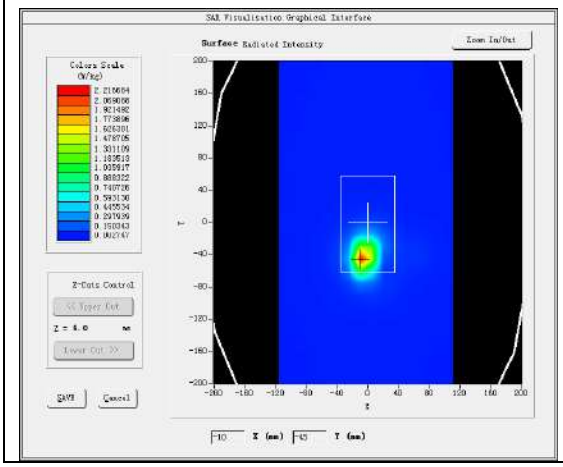
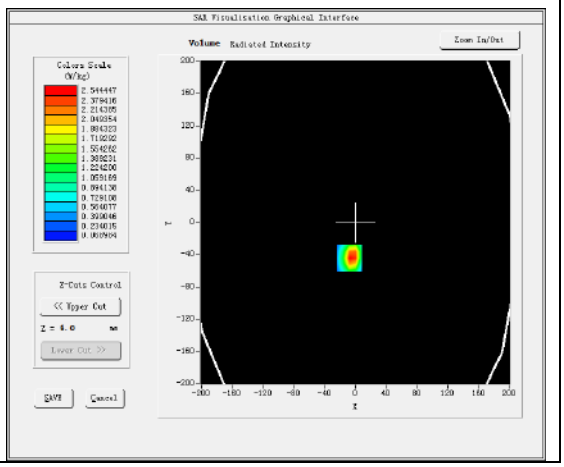
Date of measurement: 28/7/2025

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	ELLI
Device Position	Body
Band	WALKIETALKIE
Channels	Middle
Signal	(Crest factor: 1.0)
ConvF	1.56

B. SAR Measurement Results

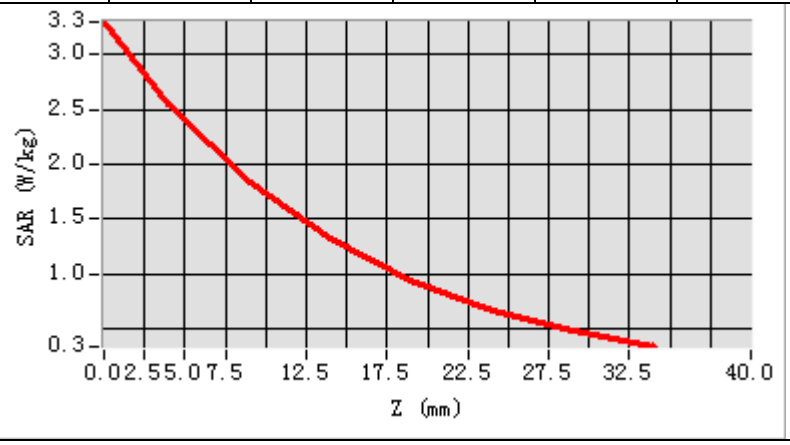
Frequency (MHz)	453.212500
Relative permittivity (real part)	43.482868
Relative permittivity (imaginary part)	34.656101
Conductivity (S/m)	0.872587
Variation (%)	0.170000

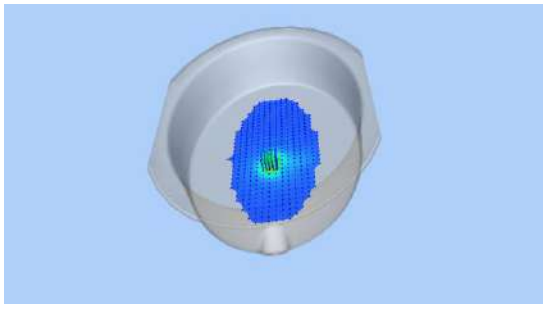
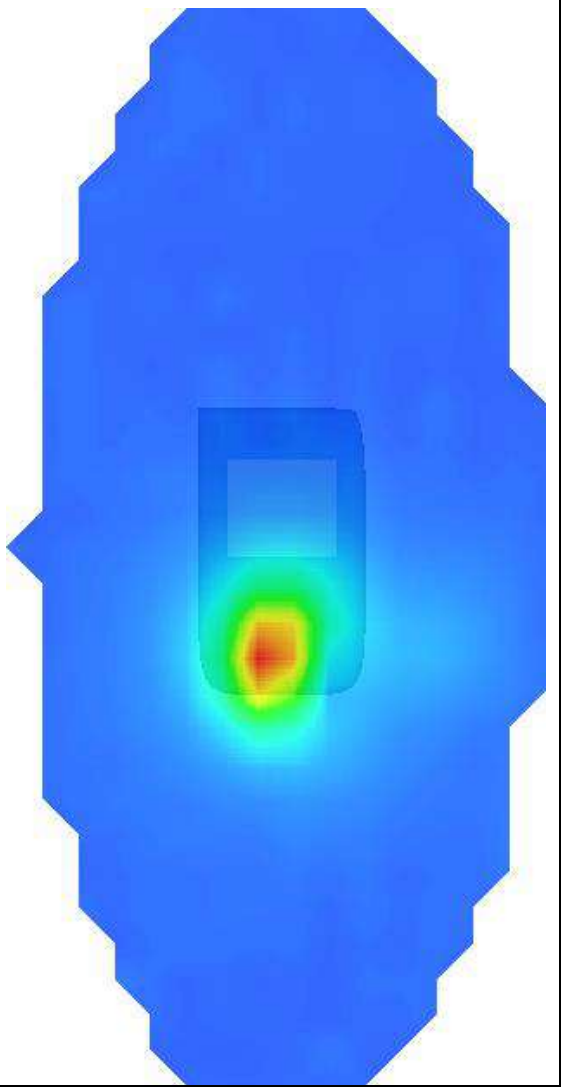
SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=-8.00, Y=-44.00
SAR Peak: 3.71 W/kg

SAR 10g (W/Kg)	1.423751
SAR 1g (W/Kg)	2.537740

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	3.2972	2.5444	1.8317	1.3194	0.9434	0.6721	0.4775



3D screen shot	Hot spot position
	

Appendix D. Calibration Certificate

Table of contents
E Field Probe - SN 31/17 EPGO324
450 MHz Dipole - SN 38/18 DIP 0G450-465
750 MHz Dipole - SN 07/14 DIP 0G750-302
835 MHz Dipole - SN 07/14 DIP 0G835-303
1800 MHz Dipole - SN 07/14 DIP 1G800-301
1900 MHz Dipole - SN 38/18 DIP 1G900-466
2450 MHz Dipole - SN 07/14 DIP 2G450-306
2600 MHz Dipole - SN 38/18 DIP 2G600-468
5000-6000 MHz Dipole - SN 49/36 WGA 43

COMOSAR E-Field Probe Calibration Report

Ref : ACR.180.4.42.BES.A

GUANGDONG ASIA HONGKE TEST TECHNOLOGY CO., LTD
NO.1/F,BUILDING B1, JUNFENG INDUSTRIAL PARK, CHONGQING ROAD, HEPING COMMUNITY, FUHAIHAI STREET, BAO'AN DISTRICT,SHENZHEN, GUANGDONG 518055, P.R.CHINA

MVG COMOSAR DOSIMETRIC E-FIELD PROBE

SERIAL NO.: SN 31/17 EPGO324

Calibrated at MVG US

2105 Barrett Park Dr. - Kennesaw, GA 30144

Calibration Date: 09/11/2024

Summary:

This document presents the method and results from an accredited COMOSAR Dosimetric E-Field Probe calibration performed in MVG USA using the CALISAR / CALIBAIR test bench, for use with a COMOSAR system only. All calibration results are traceable to national metrology institutions.

	Name	Function	Date	Signature
Prepared by :	Jérôme LUC	Product Manager	9/10/2024	
Checked by :	Jérôme LUC	Product Manager	9/10/2024	
Approved by :	Kim RUTKOWSKI	Quality Manager	9/10/2024	

	Customer Name
Distribution :	Shenzhen Asia Hongke

Issue	Date	Modifications
A	9/11/2024	Initial release

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1 DEVICE UNDER TEST

Device Under Test	
Device Type	COMOSAR DOSIMETRIC E FIELD PROBE
Manufacturer	MVG
Model	SSE2
Serial Number	SN 31/17 EPGO324
Product Condition (new / used)	New
Frequency Range of Probe	0.15 GHz-6GHz
Resistance of Three Dipoles at Connector	Dipole 1: R1=0.189 MΩ Dipole 2: R2=0.203 MΩ Dipole 3: R3=0.218 MΩ

A yearly calibration interval is recommended.

2 PRODUCT DESCRIPTION

2.1 GENERAL INFORMATION

MVG's COMOSAR E field Probes are built in accordance to the IEEE 1528, OET 65 Bulletin C and CEI/IEC 62209 standards.

Figure 1 – *MVG COMOSAR Dosimetric E field Dipole*

Probe Length	330 mm
Length of Individual Dipoles	2 mm
Maximum external diameter	8 mm
Probe Tip External Diameter	2.5 mm
Distance between dipoles / probe extremity	1 mm

3 MEASUREMENT METHOD

The IEEE 1528, OET 65 Bulletin C, CENELEC EN50361 and CEI/IEC 62209 standards provide recommended practices for the probe calibrations, including the performance characteristics of interest and methods by which to assess their affect. All calibrations / measurements performed meet the fore mentioned standards.

3.1 LINEARITY

The evaluation of the linearity was done in free space using the waveguide, performing a power sweep to cover the SAR range 0.01W/kg to 100W/kg.

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3.2 SENSITIVITY

The sensitivity factors of the three dipoles were determined using a two step calibration method (air and tissue simulating liquid) using waveguides as outlined in the standards.

3.3 LOWER DETECTION LIMIT

The lower detection limit was assessed using the same measurement set up as used for the linearity measurement. The required lower detection limit is 10 mW/kg.

3.4 ISOTROPY

The axial isotropy was evaluated by exposing the probe to a reference wave from a standard dipole with the dipole mounted under the flat phantom in the test configuration suggested for system validations and checks. The probe was rotated along its main axis from 0 - 360 degrees in 15 degree steps. The hemispherical isotropy is determined by inserting the probe in a thin plastic box filled with tissue-equivalent liquid, with the plastic box illuminated with the fields from a half wave dipole. The dipole is rotated about its axis (0°–180°) in 15° increments. At each step the probe is rotated about its axis (0°–360°).

3.5 BOUNDARY EFFECT

The boundary effect is defined as the deviation between the SAR measured data and the expected exponential decay in the liquid when the probe is oriented normal to the interface. To evaluate this effect, the liquid filled flat phantom is exposed to fields from either a reference dipole or waveguide. With the probe normal to the phantom surface, the peak spatial average SAR is measured and compared to the analytical value at the surface.

4 MEASUREMENT UNCERTAINTY

The guidelines outlined in the IEEE 1528, OET 65 Bulletin C, CENELEC EN50361 and CEI/IEC 62209 standards were followed to generate the measurement uncertainty associated with an E-field probe calibration using the waveguide technique. All uncertainties listed below represent an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2, traceable to the Internationally Accepted Guides to Measurement Uncertainty.

Uncertainty analysis of the probe calibration in waveguide					
ERROR SOURCES	**Uncertainty value (%)**	**Probability Distribution**	**Divisor**	**ci**	**Standard Uncertainty (%)**
Incident or forward power	3.00%	Rectangular	$\sqrt{3}$	1	1.732%
Reflected power	3.00%	Rectangular	$\sqrt{3}$	1	1.732%
Liquid conductivity	5.00%	Rectangular	$\sqrt{3}$	1	2.887%
Liquid permittivity	4.00%	Rectangular	$\sqrt{3}$	1	2.309%
Field homogeneity	3.00%	Rectangular	$\sqrt{3}$	1	1.732%
Field probe positioning	5.00%	Rectangular	$\sqrt{3}$	1	2.887%

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Field probe linearity	3.00%	Rectangular	$\sqrt{3}$	1	1.732%
Combined standard uncertainty					5.831%
Expanded uncertainty 95 % confidence level k = 2					12.0%

5 CALIBRATION MEASUREMENT RESULTS

Calibration Parameters	
Liquid Temperature	21 °C
Lab Temperature	21 °C
Lab Humidity	45 %

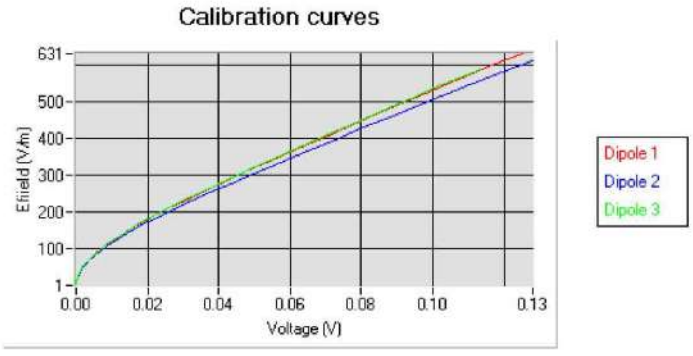
5.1 SENSITIVITY IN AIR

Normx dipole 1 (μV/(V/m)²)	Normy dipole 2 (μV/(V/m)²)	Normz dipole 3 (μV/(V/m)²)
0.80	0.83	0.68

DCP dipole 1 (mV)	DCP dipole 2 (mV)	DCP dipole 3 (mV)
95	90	93

Calibration curves ei=f(V) (i=1,2,3) allow to obtain H-field value using the formula:

$$E = \sqrt{E_1^2 + E_2^2 + E_3^2}$$



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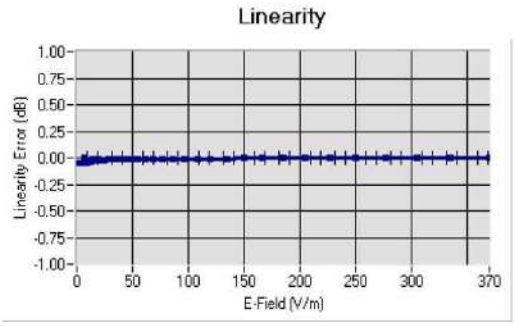
5.2 LINEARITY



Linearity: +/-1.13% (+/-0.05dB)

5.3 SENSITIVITY IN LIQUID

Liquid	Frequency (MHz +/- 100MHz)	Permittivity	Epsilon (S/m)	ConvF
HL450	450	42.17	0.86	1.56
BL450	450	57.65	0.95	1.60
HL750	750	40.03	0.93	1.45
BL750	750	56.83	1.00	1.50
HL850	835	42.19	0.90	1.55
BL850	835	54.67	1.01	1.59
HL900	900	42.08	1.01	1.54
BL900	900	55.25	1.08	1.60
HL1800	1800	41.68	1.46	1.65
BL1800	1800	53.86	1.46	1.68
HL1900	1900	38.45	1.45	1.86
BL1900	1900	53.32	1.56	1.93
HL2000	2000	38.26	1.38	1.83
BL2000	2000	52.70	1.51	1.89
HL2300	2300	39.44	1.62	1.95
BL2300	2300	54.52	1.77	2.01
HL2450	2450	37.50	1.80	1.91
BL2450	2450	53.22	1.89	1.95
HL2600	2600	39.80	1.99	1.89
BL2600	2600	52.52	2.23	1.94
HL5200	5200	35.64	4.67	1.50
BL5200	5200	48.64	5.51	1.56
HL5400	5400	36.44	4.87	1.44
BL5400	5400	46.52	5.77	1.47
HL5600	5600	36.66	5.17	1.48
BL5600	5600	46.79	5.77	1.53
HL5800	5800	35.31	5.31	1.50
BL5800	5800	47.04	6.10	1.55

LOWER DETECTION LIMIT: 9mW/kg

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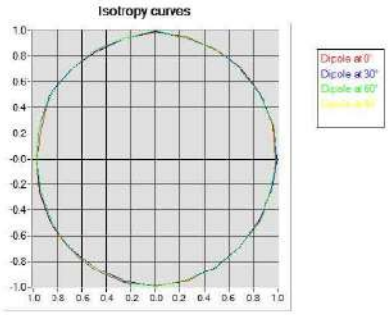
5.4 ISOTROPY

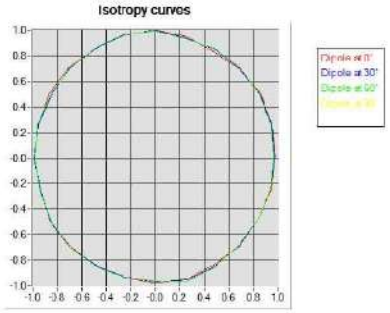
HL900 MHz

- Axial isotropy: 0.05 dB
- Hemispherical isotropy: 0.07 dB



HL1800 MHz

- Axial isotropy: 0.06 dB
- Hemispherical isotropy: 0.07 dB



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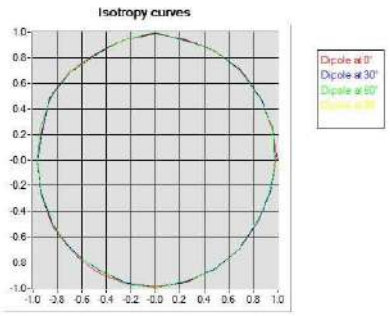
HL5600 MHz

- Axial isotropy: 0.06 dB
- Hemispherical isotropy: 0.10 dB



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6 LIST OF EQUIPMENT

Equipment Summary Sheet				
Equipment Description	**Manufacturer / Model**	**Identification No.**	**Current Calibration Date**	**Next Calibration Date**
Flat Phantom	MVG	SN-20/09-SAM71	Validated. No cal required.	Validated. No cal required.
COMOSAR Test Bench	Version 3	NA	Validated. No cal required.	Validated. No cal required.
Network Analyzer	Rhode & Schwarz ZVA	SN100132	02/2022	02/2025
Reference Probe	MVG	EP 94 SN 37/08	10/2023	10/2025
Multimeter	Keithley 2000	1188656	01/2022	01/2025
Signal Generator	Agilent E4438C	MY49070581	01/2022	01/2025
Amplifier	Aethercomm	SN 046	Characterized prior to test. No cal required.	Characterized prior to test. No cal required.
Power Meter	HP E4418A	US38261498	01/2022	01/2025
Power Sensor	HP ECP-E26A	US37181460	01/2022	01/2025
Directional Coupler	Narda 4216-20	01386	Characterized prior to test. No cal required.	Characterized prior to test. No cal required.
Waveguide	Mega Industries	069Y7-158-13-712	Validated. No cal required.	Validated. No cal required.
Waveguide Transition	Mega Industries	069Y7-158-13-701	Validated. No cal required.	Validated. No cal required.
Waveguide Termination	Mega Industries	069Y7-158-13-701	Validated. No cal required.	Validated. No cal required.
Temperature / Humidity Sensor	Control Company	150798832	11/2022	11/2025

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SAR Reference Dipole Calibration Report

Ref : ACR.273.1.18.SATU.A

GUANGDONG ASIA HONGKE TEST TECHNOLOGY CO., LTD
NO.1/F,BUILDING B1, JUNFENG INDUSTRIAL PARK, CHONGQING ROAD, HEPING COMMUNITY , FUHAIHAI STREET, BAO'AN DISTRICT,SHENZHEN, GUANGDONG 518055, P.R.CHINA

MVG COMOSAR REFERENCE DIPOLE
FREQUENCY: 450 MHZ
SERIAL NO.: SN 38/18 DIP 0G450-465

Calibrated at MVG US
2105 Barrett Park Dr. - Kennesaw, GA 30144

Calibration Date: 09/22/2024

Summary:

This document presents the method and results from an accredited SAR reference dipole calibration performed in MVG USA using the COMOSAR test bench. All calibration results are traceable to national metrology institutions.

SAR REFERENCE DIPOLE CALIBRATION REPORT Ref: ACR.273.1.18.SATU.A

	Name	Function	Date	Signature
Prepared by :	Jérôme LUC	Product Manager	09/28/2024	
Checked by :	Jérôme LUC	Product Manager	09/28/2024	
Approved by :	Kim RUTKOWSKI	Quality Manager	09/28/2024	

	Customer Name
Distribution :	Shenzhen Asia Hongke

Issue	Date	Modifications
A	09/28/2024	Initial release

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1 INTRODUCTION

This document contains a summary of the requirements set forth by the IEEE 1528, FCC KDBs and CE/IEC 62209 standards for reference dipoles used for SAR measurement system validations and the measurements that were performed to verify that the product complies with the fore mentioned standards.

2 DEVICE UNDER TEST

Device Under Test	
Device Type	COMOSAR 450 MHz REFERENCE DIPOLE
Manufacturer	MVG
Model	SID450
Serial Number	SN 38/18 DIP 0G450-465
Product Condition (new / used)	Used

A yearly calibration interval is recommended.

3 PRODUCT DESCRIPTION

3.1 GENERAL INFORMATION

MVG's COMOSAR Validation Dipoles are built in accordance to the IEEE 1528, FCC KDBs and CE/IEC 62209 standards. The product is designed for use with the COMOSAR test bench only.

Figure 1 – *MVG COMOSAR Validation Dipole*

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4 MEASUREMENT METHOD

The IEEE 1528, FCC KDBs and CEI/IEC 62209 standards provide requirements for reference dipoles used for system validation measurements. The following measurements were performed to verify that the product complies with the fore mentioned standards.

4.1 RETURN LOSS REQUIREMENTS

The dipole used for SAR system validation measurements and checks must have a return loss of -20 dB or better. The return loss measurement shall be performed against a liquid filled flat phantom, with the phantom constructed as outlined in the fore mentioned standards.

4.2 MECHANICAL REQUIREMENTS

The IEEE Std. 1528 and CEI/IEC 62209 standards specify the mechanical components and dimensions of the validation dipoles, with the dimensions frequency and phantom shell thickness dependent. The COMOSAR test bench employs a 2 mm phantom shell thickness therefore the dipoles sold for use with the COMOSAR test bench comply with the requirements set forth for a 2 mm phantom shell thickness.

5 MEASUREMENT UNCERTAINTY

All uncertainties listed below represent an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2, traceable to the Internationally Accepted Guides to Measurement Uncertainty.

5.1 RETURN LOSS

The following uncertainties apply to the return loss measurement:

Frequency band	Expanded Uncertainty on Return Loss
400-6000MHz	0.1 dB

5.2 DIMENSION MEASUREMENT

The following uncertainties apply to the dimension measurements:

Length (mm)	Expanded Uncertainty on Length
3 - 300	0.05 mm

5.3 VALIDATION MEASUREMENT

The guidelines outlined in the IEEE 1528, FCC KDBs, CENELEC EN50361 and CEI/IEC 62209 standards were followed to generate the measurement uncertainty for validation measurements.

Scan Volume	Expanded Uncertainty
1 g	20.3 %

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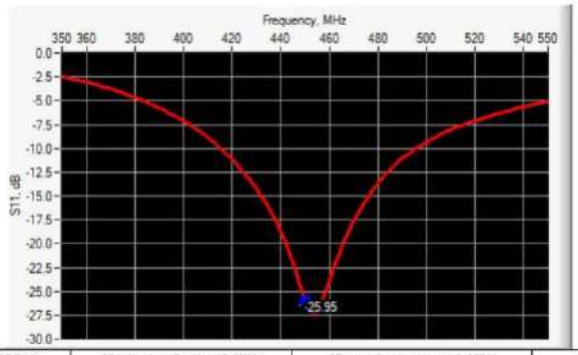
10 g	20.1 %

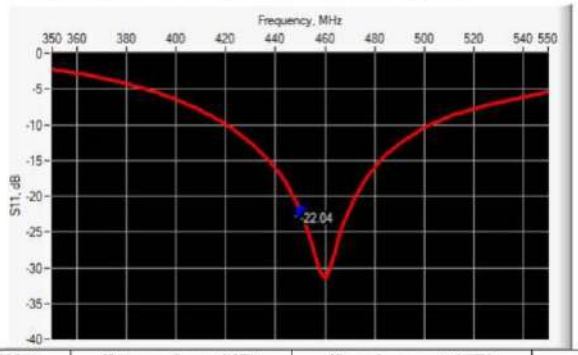
6 CALIBRATION MEASUREMENT RESULTS

6.1 RETURN LOSS AND IMPEDANCE IN HEAD LIQUID



Frequency (MHz)	Return Loss (dB)	Requirement (dB)	Impedance
450	-25.95	-20	45.0 Ω - 0.5 jΩ

6.2 RETURN LOSS AND IMPEDANCE IN BODY LIQUID



Frequency (MHz)	Return Loss (dB)	Requirement (dB)	Impedance
450	-22.04	-20	42.9 Ω + 3.4 jΩ

6.3 MECHANICAL DIMENSIONS

Frequency MHz	L mm		h mm		d mm	
	required	measured	required	measured	required	measured
300	420.0 ±1 %.		250.0 ±1 %.		6.35 ±1 %.	

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450	290.0 ±1 %.	PASS	166.7 ±1 %.	PASS	6.35 ±1 %.	PASS
750	176.0 ±1 %.		100.0 ±1 %.		6.35 ±1 %.	
835	161.0 ±1 %.		89.8 ±1 %.		3.6 ±1 %.	
900	149.0 ±1 %.		83.3 ±1 %.		3.6 ±1 %.	
1450	89.1 ±1 %.		51.7 ±1 %.		3.6 ±1 %.	
1500	80.5 ±1 %.		50.0 ±1 %.		3.6 ±1 %.	
1640	79.0 ±1 %.		45.7 ±1 %.		3.6 ±1 %.	
1750	75.2 ±1 %.		42.9 ±1 %.		3.6 ±1 %.	
1800	72.0 ±1 %.		41.7 ±1 %.		3.6 ±1 %.	
1900	68.0 ±1 %.		39.5 ±1 %.		3.6 ±1 %.	
1950	66.3 ±1 %.		38.5 ±1 %.		3.6 ±1 %.	
2000	64.5 ±1 %.		37.5 ±1 %.		3.6 ±1 %.	
2100	61.0 ±1 %.		35.7 ±1 %.		3.6 ±1 %.	
2300	55.5 ±1 %.		32.6 ±1 %.		3.6 ±1 %.	
2450	51.5 ±1 %.		30.4 ±1 %.		3.6 ±1 %.	
2600	48.5 ±1 %.		28.8 ±1 %.		3.6 ±1 %.	
3000	41.5 ±1 %.		25.0 ±1 %.		3.6 ±1 %.	
3500	37.0±1 %.		26.4 ±1 %.		3.6 ±1 %.	
3700	34.7±1 %.		26.4 ±1 %.		3.6 ±1 %.	

7 VALIDATION MEASUREMENT

The IEEE Std. 1528, FCC KDBs and CEI/IEC 62209 standards state that the system validation measurements must be performed using a reference dipole meeting the fore mentioned return loss and mechanical dimension requirements. The validation measurement must be performed against a liquid filled flat phantom, with the phantom constructed as outlined in the fore mentioned standards. Per the standards, the dipole shall be positioned below the bottom of the phantom, with the dipole length centered and parallel to the longest dimension of the flat phantom, with the top surface of the dipole at the described distance from the bottom surface of the phantom.

7.1 HEAD LIQUID MEASUREMENT

Frequency MHz	Relative permittivity (ε_r)		Conductivity (σ) S/m	
	required	measured	required	measured
300	45.3 ±5 %		0.87 ±5 %	
450	43.5 ±5 %	PASS	0.87 ±5 %	PASS
750	41.9 ±5 %		0.89 ±5 %	
835	41.5 ±5 %		0.90 ±5 %	
900	41.5 ±5 %		0.97 ±5 %	
1450	40.5 ±5 %		1.20 ±5 %	
1500	40.4 ±5 %		1.23 ±5 %	
1640	40.2 ±5 %		1.31 ±5 %	
1750	40.1 ±5 %		1.37 ±5 %	

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1800	40.0 ±5 %		1.40 ±5 %	
1900	40.0 ±5 %		1.40 ±5 %	
1950	40.0 ±5 %		1.40 ±5 %	
2000	40.0 ±5 %		1.40 ±5 %	
2100	39.8 ±5 %		1.49 ±5 %	
2300	39.5 ±5 %		1.67 ±5 %	
2450	39.2 ±5 %		1.80 ±5 %	
2600	39.0 ±5 %		1.96 ±5 %	
3000	38.5 ±5 %		2.40 ±5 %	
3500	37.9 ±5 %		2.91 ±5 %	

7.2 SAR MEASUREMENT RESULT WITH HEAD LIQUID

The IEEE Std. 1528 and CEI/IEC 62209 standards state that the system validation measurements should produce the SAR values shown below (for phantom thickness of 2 mm), within the uncertainty for the system validation. All SAR values are normalized to 1 W forward power. In bracket, the measured SAR is given with the used input power.

Software	OPENSAR V4
Phantom	SN 20/09 SAM71
Probe	SN 18/11 EPG122
Liquid	Head Liquid Values: eps' : 42.2 sigma : 0.86
Distance between dipole center and liquid	15.0 mm
Area scan resolution	dx=8mm/dy=8mm
Zoon Scan Resolution	dx=8mm/dy=8mm/dz=5mm
Frequency	450 MHz
Input power	20 dBm
Liquid Temperature	21 °C
Lab Temperature	21 °C
Lab Humidity	45 %

Frequency MHz	1 g SAR (W/kg/W)		10 g SAR (W/kg/W)	
	required	measured	required	measured
300	2.85		1.94	
450	4.58	4.70 (0.47)	3.06	3.01 (0.30)
750	8.49		5.55	
835	9.56		6.22	
900	10.9		6.99	
1450	29		16	
1500	30.5		16.8	
1640	34.2		18.4	
1750	36.4		19.3	
1800	38.4		20.1	

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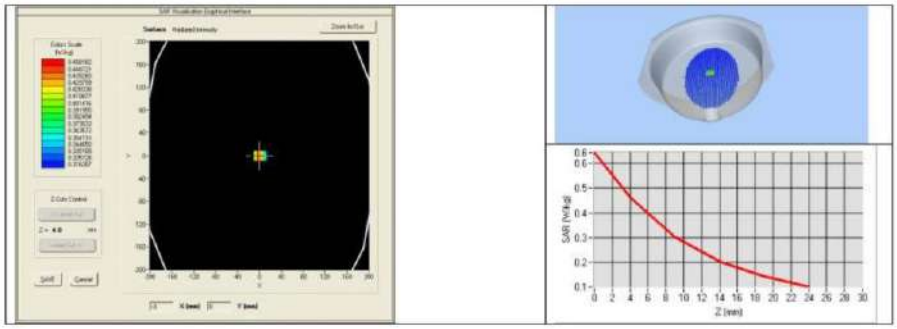
1900	39.7		20.5	
1950	40.5		20.9	
2000	41.1		21.1	
2100	43.6		21.9	
2300	48.7		23.3	
2450	52.4		24	
2600	55.3		24.6	
3000	63.8		25.7	
3500	67.1		25	
3700	67.4		24.2	



7.3 BODY LIQUID MEASUREMENT

Frequency MHz	Relative permittivity (ε,')		Conductivity (σ) S/m	
	required	measured	required	measured
150	61.9 ±5 %		0.80 ±5 %	
300	58.2 ±5 %		0.92 ±5 %	
450	56.7 ±5 %	PASS	0.94 ±5 %	PASS
750	55.5 ±5 %		0.96 ±5 %	
835	55.2 ±5 %		0.97 ±5 %	
900	55.0 ±5 %		1.05 ±5 %	
915	55.0 ±5 %		1.06 ±5 %	
1450	54.0 ±5 %		1.30 ±5 %	
1610	53.8 ±5 %		1.40 ±5 %	
1800	53.3 ±5 %		1.52 ±5 %	
1900	53.3 ±5 %		1.52 ±5 %	
2000	53.3 ±5 %		1.52 ±5 %	
2100	53.2 ±5 %		1.62 ±5 %	

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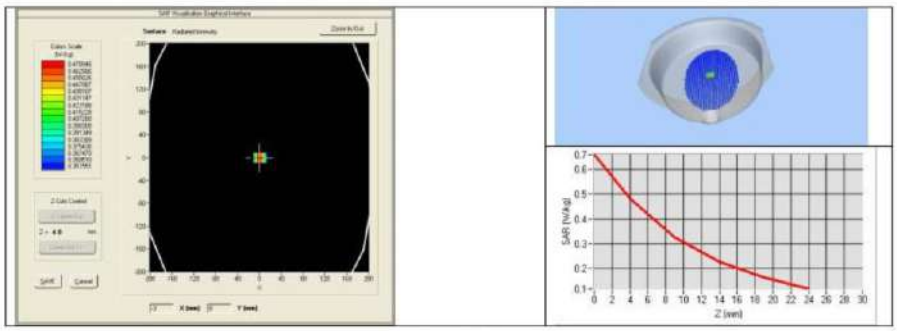
2300	52.9 ±5 %		1.81 ±5 %	
2450	52.7 ±5 %		1.95 ±5 %	
2600	52.5 ±5 %		2.16 ±5 %	
3000	52.0 ±5 %		2.73 ±5 %	
3500	51.3 ±5 %		3.31 ±5 %	
3700	51.0 ±5 %		3.55 ±5 %	
5200	49.0 ±10 %		5.30 ±10 %	
5300	48.9 ±10 %		5.42 ±10 %	
5400	48.7 ±10 %		5.53 ±10 %	
5500	48.6 ±10 %		5.65 ±10 %	
5600	48.5 ±10 %		5.77 ±10 %	
5800	48.2 ±10 %		6.00 ±10 %	

7.4 SAR MEASUREMENT RESULT WITH BODY LIQUID

Software	OPENSAR V4
Phantom	SN 20/09 SAM71
Probe	SN 18/11 EPG122
Liquid	Body Liquid Values: eps' : 57.6 sigma : 0.95
Distance between dipole center and liquid	15.0 mm
Area scan resolution	dx=8mm/dy=8mm
Zoon Scan Resolution	dx=8mm/dy=8mm/dz=5mm
Frequency	450 MHz
Input power	20 dBm
Liquid Temperature	21 °C
Lab Temperature	21 °C
Lab Humidity	45 %

Frequency MHz	1 g SAR (W/kg/W)	10 g SAR (W/kg/W)
	measured	measured
450	4.80 (0.48)	3.15 (0.31)



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8 LIST OF EQUIPMENT

Equipment Summary Sheet				
Equipment Description	**Manufacturer / Model**	**Identification No.**	**Current Calibration Date**	**Next Calibration Date**
SAM Phantom	MVG	SN-20/09-SAM71	Validated. No cal required.	Validated. No cal required.
COMOSAR Test Bench	Version 3	NA	Validated. No cal required.	Validated. No cal required.
Network Analyzer	Rhode & Schwarz ZVA	SN100132	06/2023	06/2026
Calipers	Carrera	CALIPER-01	01/2023	01/2026
Reference Probe	MVG	EPG122 SN 18/11	08/2024	08/2025
Multimeter	Keithley 2000	1188656	01/2023	01/2026
Signal Generator	Agilent E4438C	MY49070581	01/2023	01/2026
Amplifier	Aethercomm	SN 046	Characterized prior to test. No cal required.	Characterized prior to test. No cal required.
Power Meter	HP E4418A	US38261498	11/2023	11/2026
Power Sensor	HP ECP-E26A	US37181460	01/2023	01/2026
Directional Coupler	Narda 4216-20	01386	Characterized prior to test. No cal required.	Characterized prior to test. No cal required.
Temperature and Humidity Sensor	Control Company	150798832	11/2023	11/2026

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SAR Reference Dipole Calibration Report

Ref : ACR.53.23.25.BES.A

GUANGDONG ASIA HONGKE TEST TECHNOLOGY CO., LTD
NO.1/F,BUILDING B1, JUNFENG INDUSTRIAL PARK, CHONGQING ROAD, HEPING COMMUNITY, FUHAIHAI STREET, BAO'AN DISTRICT,SHENZHEN, GUANGDONG 518055, P.R.CHINA

SATIMO COMOSAR REFERENCE DIPOLE
FREQUENCY: 750 MHZ
SERIAL NO.: SN 07/14 DIP 0G750-302

Calibrated at SATIMO US
2105 Barrett Park Dr. - Kennesaw, GA 30144

02/21/2025

Summary:

This document presents the method and results from an accredited SAR reference dipole calibration performed in SATIMO USA using the COMOSAR test bench. All calibration results are traceable to national metrology institutions.

	Name	Function	Date	Signature
Prepared by :	Jérôme LUC	Product Manager	02/22/2025	
Checked by :	Jérôme LUC	Product Manager	02/22/2025	
Approved by :	Kim RUTKOWSKI	Quality Manager	02/22/2025	

	Customer Name
Distribution :	Shenzhen Asia Hongke

Issue	Date	Modifications
A	02/22/2025	Initial release

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1 INTRODUCTION

This document contains a summary of the requirements set forth by the IEEE 1528, OET 65 Bulletin C and CEI/IEC 62209 standards for reference dipoles used for SAR measurement system validations and the measurements that were performed to verify that the product complies with the fore mentioned standards.

2 DEVICE UNDER TEST

Device Under Test	
Device Type	COMOSAR 750 MHz REFERENCE DIPOLE
Manufacturer	Satimo
Model	SID750
Serial Number	SN 07/14 DIP 0G750-302
Product Condition (new / used)	New

A yearly calibration interval is recommended.

3 PRODUCT DESCRIPTION

3.1 GENERAL INFORMATION

Satimo's COMOSAR Validation Dipoles are built in accordance to the IEEE 1528, OET 65 Bulletin C and CEI/IEC 62209 standards. The product is designed for use with the COMOSAR test bench only.

Figure 1 – *Satimo COMOSAR Validation Dipole*

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4 MEASUREMENT METHOD

The IEEE 1528, OET 65 Bulletin C and CEI/IEC 62209 standards provide requirements for reference dipoles used for system validation measurements. The following measurements were performed to verify that the product complies with the fore mentioned standards.

4.1 RETURN LOSS REQUIREMENTS

The dipole used for SAR system validation measurements and checks must have a return loss of -20 dB or better. The return loss measurement shall be performed against a liquid filled flat phantom, with the phantom constucted as outlined in the fore mentioned standards.

4.2 MECHANICAL REQUIREMENTS

The IEEE Std. 1528 and CEI/IEC 62209 standards specify the mechanical components and dimensions of the validation dipoles, with the dimensions frequency and phantom shell thickness dependent. The COMOSAR test bench employs a 2 mm phantom shell thickness therefore the dipoles sold for use with the COMOSAR test bench comply with the requirements set forth for a 2 mm phantom shell thickness.

5 MEASUREMENT UNCERTAINTY

All uncertainties listed below represent an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2, traceable to the Internationally Accepted Guides to Measurement Uncertainty.

5.1 RETURN LOSS

The following uncertainties apply to the return loss measurement:

Frequency band	Expanded Uncertainty on Return Loss
400-6000MHz	0.1 dB

5.2 DIMENSION MEASUREMENT

The following uncertainties apply to the dimension measurements:

Length (mm)	Expanded Uncertainty on Length
3 - 300	0.05 mm

5.3 VALIDATION MEASUREMENT

The guidelines outlined in the IEEE 1528, OET 65 Bulletin C, CENELEC EN50361 and CEI/IEC 62209 standards were followed to generate the measurement uncertainty for validation measurements.

Scan Volume	Expanded Uncertainty
1 g	20.3 %
10 g	20.1 %

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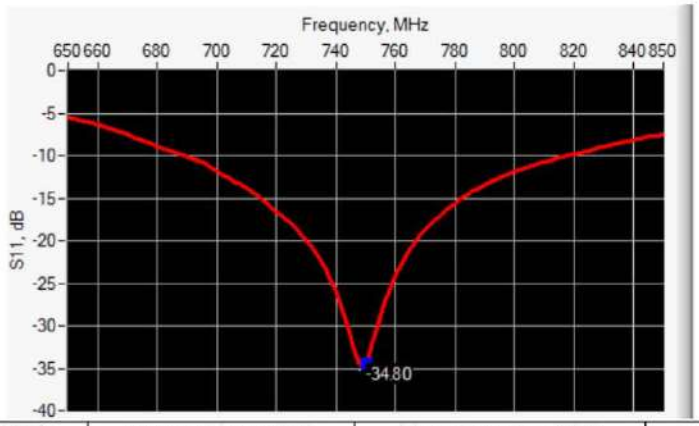
6 CALIBRATION MEASUREMENT RESULTS

6.1 RETURN LOSS AND IMPEDANCE



Frequency (MHz)	Return Loss (dB)	Requirement (dB)	Impedance
750	-34.80	-20	50.7 Ω + 1.6 jΩ

6.2 MECHANICAL DIMENSIONS

Frequency MHz	L mm		h mm		d mm	
	required	measured	required	measured	required	measured
300	420.0 ±1 %.		250.0 ±1 %.		6.35 ±1 %.	
450	290.0 ±1 %.		166.7 ±1 %.		6.35 ±1 %.	
750	176.0 ±1 %.	PASS	100.0 ±1 %.	PASS	6.35 ±1 %.	PASS
835	161.0 ±1 %.		89.8 ±1 %.		3.6 ±1 %.	
900	149.0 ±1 %.		83.3 ±1 %.		3.6 ±1 %.	
1450	89.1 ±1 %.		51.7 ±1 %.		3.6 ±1 %.	
1500	80.5 ±1 %.		50.0 ±1 %.		3.6 ±1 %.	
1640	79.0 ±1 %.		45.7 ±1 %.		3.6 ±1 %.	
1750	75.2 ±1 %.		42.9 ±1 %.		3.6 ±1 %.	
1800	72.0 ±1 %.		41.7 ±1 %.		3.6 ±1 %.	
1900	68.0 ±1 %.		39.5 ±1 %.		3.6 ±1 %.	
1950	66.3 ±1 %.		38.5 ±1 %.		3.6 ±1 %.	
2000	64.5 ±1 %.		37.5 ±1 %.		3.6 ±1 %.	
2100	61.0 ±1 %.		35.7 ±1 %.		3.6 ±1 %.	
2300	55.5 ±1 %.		32.6 ±1 %.		3.6 ±1 %.	
2450	51.5 ±1 %.		30.4 ±1 %.		3.6 ±1 %.	
2600	48.5 ±1 %.		28.8 ±1 %.		3.6 ±1 %.	
3000	41.5 ±1 %.		25.0 ±1 %.		3.6 ±1 %.	
3500	37.0±1 %.		26.4 ±1 %.		3.6 ±1 %.	
3700	34.7±1 %.		26.4 ±1 %.		3.6 ±1 %.	

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7 VALIDATION MEASUREMENT

The IEEE Std. 1528, OET 65 Bulletin C and CEI/IEC 62209 standards state that the system validation measurements must be performed using a reference dipole meeting the fore mentioned return loss and mechanical dimension requirements. The validation measurement must be performed against a liquid filled flat phantom, with the phantom constructed as outlined in the fore mentioned standards. Per the standards, the dipole shall be positioned below the bottom of the phantom, with the dipole length centered and parallel to the longest dimension of the flat phantom, with the top surface of the dipole at the described distance from the bottom surface of the phantom.

7.1 HEAD LIQUID MEASUREMENT

Frequency MHz	Relative permittivity (ε_r')		Conductivity (σ) S/m	
	required	measured	required	measured
300	45.3 ±5 %		0.87 ±5 %	
450	43.5 ±5 %		0.87 ±5 %	
750	41.9 ±5 %	PASS	0.89 ±5 %	PASS
835	41.5 ±5 %		0.90 ±5 %	
900	41.5 ±5 %		0.97 ±5 %	
1450	40.5 ±5 %		1.20 ±5 %	
1500	40.4 ±5 %		1.23 ±5 %	
1640	40.2 ±5 %		1.31 ±5 %	
1750	40.1 ±5 %		1.37 ±5 %	
1800	40.0 ±5 %		1.40 ±5 %	
1900	40.0 ±5 %		1.40 ±5 %	
1950	40.0 ±5 %		1.40 ±5 %	
2000	40.0 ±5 %		1.40 ±5 %	
2100	39.8 ±5 %		1.49 ±5 %	
2300	39.5 ±5 %		1.67 ±5 %	
2450	39.2 ±5 %		1.80 ±5 %	
2600	39.0 ±5 %		1.96 ±5 %	
3000	38.5 ±5 %		2.40 ±5 %	
3500	37.9 ±5 %		2.91 ±5 %	

7.2 SAR MEASUREMENT RESULT WITH HEAD LIQUID

The IEEE Std. 1528 and CEI/IEC 62209 standards state that the system validation measurements should produce the SAR values shown below (for phantom thickness of 2 mm), within the uncertainty for the system validation. All SAR values are normalized to 1 W forward power. In bracket, the measured SAR is given with the used input power.

Software	OPENSAR V4
Phantom	SN 20/09 SAM71
Probe	SN 18/11 EPG122
Liquid	Head Liquid Values: eps' : 42.1 sigma : 0.89
Distance between dipole center and liquid	15.0 mm
Area scan resolution	dx=8mm/dy=8mm

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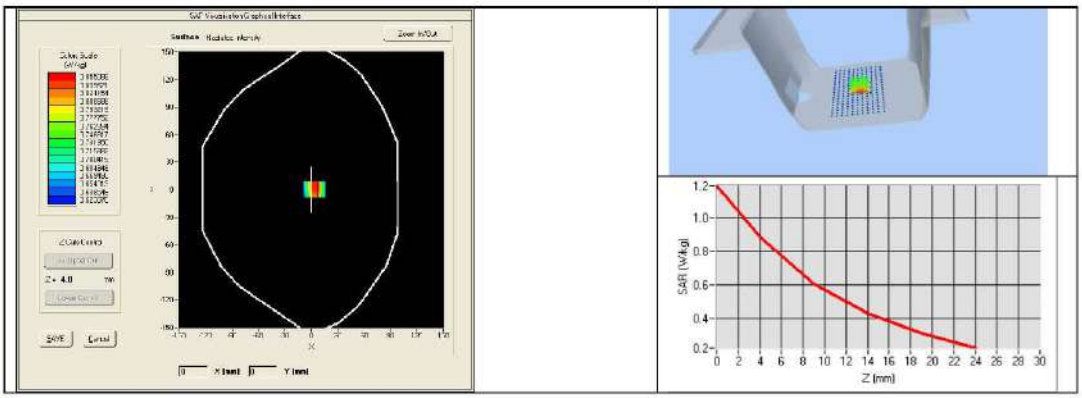
Zoon Scan Resolution	dx=8mm/dy=8m/dz=5mm
Frequency	750 MHz
Input power	20 dBm
Liquid Temperature	21 °C
Lab Temperature	21 °C
Lab Humidity	45 %

Frequency MHz	1 g SAR (W/kg/W)		10 g SAR (W/kg/W)	
	required	measured	required	measured
300	2.85		1.94	
450	4.58		3.06	
750	8.49	8.38 (0.84)	5.55	5.53 (0.55)
835	9.56		6.22	
900	10.9		6.99	
1450	29		16	
1500	30.5		16.8	
1640	34.2		18.4	
1750	36.4		19.3	
1800	38.4		20.1	
1900	39.7		20.5	
1950	40.5		20.9	
2000	41.1		21.1	
2100	43.6		21.9	
2300	48.7		23.3	
2450	52.4		24	
2600	55.3		24.6	
3000	63.8		25.7	
3500	67.1		25	



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7.3 BODY LIQUID MEASUREMENT

Frequency MHz	Relative permittivity (ε,')		Conductivity (σ) S/m	
	required	measured	required	measured
150	61.9 ±5 %		0.80 ±5 %	
300	58.2 ±5 %		0.92 ±5 %	
450	56.7 ±5 %		0.94 ±5 %	
750	55.5 ±5 %	PASS	0.96 ±5 %	PASS
835	55.2 ±5 %		0.97 ±5 %	
900	55.0 ±5 %		1.05 ±5 %	
915	55.0 ±5 %		1.06 ±5 %	
1450	54.0 ±5 %		1.30 ±5 %	
1610	53.8 ±5 %		1.40 ±5 %	
1800	53.3 ±5 %		1.52 ±5 %	
1900	53.3 ±5 %		1.52 ±5 %	
2000	53.3 ±5 %		1.52 ±5 %	
2100	53.2 ±5 %		1.62 ±5 %	
2450	52.7 ±5 %		1.95 ±5 %	
2600	52.5 ±5 %		2.16 ±5 %	
3000	52.0 ±5 %		2.73 ±5 %	
3500	51.3 ±5 %		3.31 ±5 %	
5200	49.0 ±10 %		5.30 ±10 %	
5300	48.9 ±10 %		5.42 ±10 %	
5400	48.7 ±10 %		5.53 ±10 %	
5500	48.6 ±10 %		5.65 ±10 %	
5600	48.5 ±10 %		5.77 ±10 %	
5800	48.2 ±10 %		6.00 ±10 %	

7.4 SAR MEASUREMENT RESULT WITH BODY LIQUID

Software	OPENSAR V4
Phantom	SN 20/09 SAM71
Probe	SN 18/11 EPG122
Liquid	Body Liquid Values: eps' : 56.6 sigma : 0.99
Distance between dipole center and liquid	15.0 mm
Area scan resolution	dx=8mm/dy=8mm
Zoon Scan Resolution	dx=8mm/dy=8m/dz=5mm
Frequency	750 MHz
Input power	20 dBm
Liquid Temperature	21 °C
Lab Temperature	21 °C
Lab Humidity	45 %

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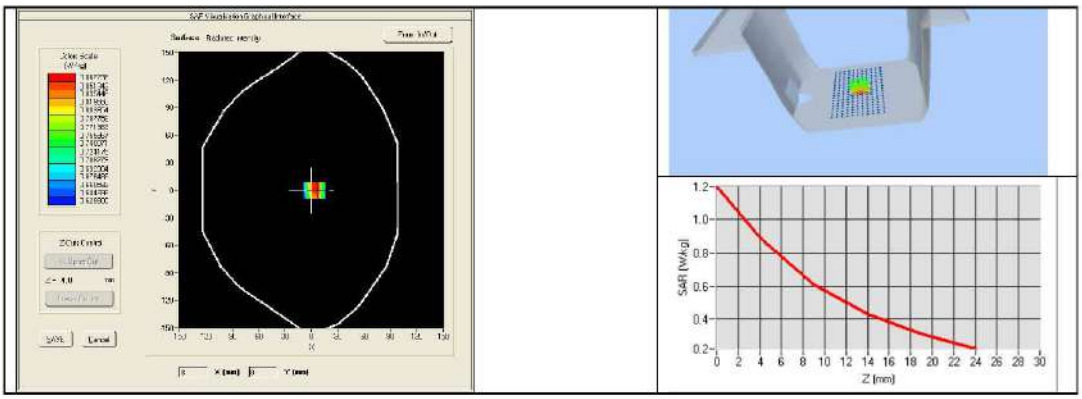
Frequency MHz	1 g SAR (W/kg/W)	10 g SAR (W/kg/W)
	measured	measured
750	8.77 (0.88)	5.78 (0.58)



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8 LIST OF EQUIPMENT

Equipment Summary Sheet				
Equipment Description	**Manufacturer / Model**	**Identification No.**	**Current Calibration Date**	**Next Calibration Date**
SAM Phantom	Satimo	SN-20/09-SAM71	Validated. No cal required.	Validated. No cal required.
COMOSAR Test Bench	Version 3	NA	Validated. No cal required.	Validated. No cal required.
Network Analyzer	Rhode & Schwarz ZVA	SN100132	08/2022	08/2025
Calipers	Carrera	CALIPER-01	12/2023	12/2026
Reference Probe	Satimo	EPG122 SN 18/11	10/2024	10/2025
Multimeter	Keithley 2000	1188656	12/2022	12/2025
Signal Generator	Agilent E4438C	MY49070581	12/2022	12/2025
Amplifier	Aethercomm	SN 046	Characterized prior to test. No cal required.	Characterized prior to test. No cal required.
Power Meter	HP E4418A	US38261498	12/2022	12/2025
Power Sensor	HP ECP-E26A	US37181460	12/2022	12/2025
Directional Coupler	Narda 4216-20	01386	Characterized prior to test. No cal required.	Characterized prior to test. No cal required.
Temperature and Humidity Sensor	Control Company	11-661-9	8/2022	8/2025

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SAR Reference Dipole Calibration Report

Ref : ACR.53.24.25.BES.A

GUANGDONG ASIA HONGKE TEST TECHNOLOGY CO., LTD
NO.1/F,BUILDING B1, JUNFENG INDUSTRIAL PARK, CHONGQING ROAD, HEPING COMMUNITY, FUHAIHAI STREET, BAO'AN DISTRICT,SHENZHEN, GUANGDONG 518055, P.R.CHINA

SATIMO COMOSAR REFERENCE DIPOLE

FREQUENCY: 835 MHZ

SERIAL NO.: SN 07/14 DIP 0G835-303

Calibrated at SATIMO US

2105 Barrett Park Dr. - Kennesaw, GA 30144

02/21/2025

Summary:

This document presents the method and results from an accredited SAR reference dipole calibration performed in SATIMO USA using the COMOSAR test bench. All calibration results are traceable to national metrology institutions.

	Name	Function	Date	Signature
Prepared by :	Jérôme LUC	Product Manager	02/22/2025	
Checked by :	Jérôme LUC	Product Manager	02/22/2025	
Approved by :	Kim RUTKOWSKI	Quality Manager	02/22/2025	

	Customer Name
Distribution :	Shenzhen Asia Hongke

Issue	Date	Modifications
A	02/22/2025	Initial release

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1 INTRODUCTION

This document contains a summary of the requirements set forth by the IEEE 1528, OET 65 Bulletin C and CEI/IEC 62209 standards for reference dipoles used for SAR measurement system validations and the measurements that were performed to verify that the product complies with the fore mentioned standards.

2 DEVICE UNDER TEST

Device Under Test	
Device Type	COMOSAR 835 MHz REFERENCE DIPOLE
Manufacturer	Satimo
Model	SID835
Serial Number	SN 07/14 DIP 0G835-303
Product Condition (new / used)	New

A yearly calibration interval is recommended.

3 PRODUCT DESCRIPTION

3.1 GENERAL INFORMATION

Satimo's COMOSAR Validation Dipoles are built in accordance to the IEEE 1528, OET 65 Bulletin C and CEI/IEC 62209 standards. The product is designed for use with the COMOSAR test bench only.

Figure 1 – *Satimo COMOSAR Validation Dipole*

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4 MEASUREMENT METHOD

The IEEE 1528, OET 65 Bulletin C and CEI/IEC 62209 standards provide requirements for reference dipoles used for system validation measurements. The following measurements were performed to verify that the product complies with the fore mentioned standards.

4.1 RETURN LOSS REQUIREMENTS

The dipole used for SAR system validation measurements and checks must have a return loss of -20 dB or better. The return loss measurement shall be performed against a liquid filled flat phantom, with the phantom constucted as outlined in the fore mentioned standards.

4.2 MECHANICAL REQUIREMENTS

The IEEE Std. 1528 and CEI/IEC 62209 standards specify the mechanical components and dimensions of the validation dipoles, with the dimensions frequency and phantom shell thickness dependent. The COMOSAR test bench employs a 2 mm phantom shell thickness therefore the dipoles sold for use with the COMOSAR test bench comply with the requirements set forth for a 2 mm phantom shell thickness.

5 MEASUREMENT UNCERTAINTY

All uncertainties listed below represent an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2, traceable to the Internationally Accepted Guides to Measurement Uncertainty.

5.1 RETURN LOSS

The following uncertainties apply to the return loss measurement:

Frequency band	Expanded Uncertainty on Return Loss
400-6000MHz	0.1 dB

5.2 DIMENSION MEASUREMENT

The following uncertainties apply to the dimension measurements:

Length (mm)	Expanded Uncertainty on Length
3 - 300	0.05 mm

5.3 VALIDATION MEASUREMENT

The guidelines outlined in the IEEE 1528, OET 65 Bulletin C, CENELEC EN50361 and CEI/IEC 62209 standards were followed to generate the measurement uncertainty for validation measurements.

Scan Volume	Expanded Uncertainty
1 g	20.3 %
10 g	20.1 %

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