FCC SAR EVALUATION REPORT

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

Product Name : Smart POS Terminal

Trademark : N/A

Model Name : M90

Family Model : N/A

FCC ID : 2AQRE-M90

Report No. : S24110606103001

Prepared for

Fujian Morefun Electronic Technology Co., Ltd.

4F, 15BLD, Jinshan, Gaishan Town, Cangshan Area, Fuzhou, Fujian, China

Prepared by

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TEST RESULT CERTIFICATION

Applicant's name..... Fujian Morefun Electronic Technology Co., Ltd.

Address ..... 4F, 15BLD, Jinshan, Gaishan Town, Cangshan Area, Fuzhou, Fujian China

Manufacturer's Name..... Fujian Morefun Electronic Technology Co., Ltd.

Address ..... 4F, 15BLD, Jinshan, Gaishan Town, Cangshan Area, Fuzhou, Fujian China

Product description

Product name..... Smart POS Terminal

Trademark ..... N/A

Model Name..... M90

Family 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 Shenzhen NTEK.In accordance with themeasurement methods and procedures specified in IEEE Std 1528-2013 and KDB865664 D01. Testing has shown that this device iscapable 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 stateddevice/equipment. Other similar device/equipment will not necessarily produce the same results dueto production tolerance and measurementuncertainties.

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Test Sample Number S241106061003

Date of Test

Date (s) of performance of tests..... Dec. 10, 2024~ Dec. 28, 2024

Date of Issue ..... Feb. 27, 2025

Test Result ..... **Pass**

Prepared By	Reviewed By	Approved By
Owen Xiao	Aaron Cheng	Alex Li
Owen Xiao (Project Engineer)	Aaron Cheng (Supervisor)	Alex Li (Manager)

※ ※ Revision History ※ ※

REV.	DESCRIPTION	ISSUED DATE	REMARK
Rev.1.0	Initial Test Report Release	Feb. 27, 2025	Owen Xiao

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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*** isaveraged 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 definedas 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 areaware 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 noknowledge or control of their exposure.

NOTE

TRUNK EXTREMITY LIMIT for 4.0 W/kg

APPLIED TO THIS EUT

1.2. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for M90 are as follows.

RF Exposure Conditions	Equipment Class -Highest Reported SAR (W/kg)				Max. Reported SAR (W/kg)
	PCB	DTS	NII	DSS	
1-g Body-Worn (Separation distance of 0mm)	1.209	0.343	0.334	0.265	1.209
Max Simultaneous Tx	1.368	1.334	1.368	1.474	1.474

Note: The Max Simultaneous Tx 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 (trunk limit for 1.6 W/kg and extremity limit for 4.0 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	Smart POS Terminal		
Trade Name	N/A		
Model Name	M90		
Family Model	N/A		
Model Difference	N/A		
FCC ID	2AQRE-M90		
Device Phase	Identical Prototype		
Exposure Category	General population / Uncontrolled environment		
Antenna	FPC Antenna		
Battery	DC 7.6V, 2500mAh,19Wh		
Hardware version	N/A		
Software version	N/A		
Device Operating Configurations			
Supporting Mode(s)	GSM 850/1900, WCDMABand2/4/5, LTEBand2/4/5/12/17/41/66/71,WLAN 2.4G/5G, Bluetooth, NFC		
Test Modulation	GSM(GMSK),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 12	699-716	729-746
	LTE Band 17	704-716	734-746
	LTE Band 41	2535-2655	
	LTE Band 66	1710-1780	2110-2200
	LTE Band 71	663-698	617-652
	WLAN 2.4G	2412-2462	
	WLAN 5.2G	5180-5240	
	WLAN 5.3G	5260-5320	
	WLAN 5.6G	5500-5700	
	WLAN 5.8G	5745-5825	
	Bluetooth	2402-2480	
	NFC	13.56-13.56	
GPRS 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 12)		
	3, tested with power control all Max.(LTE Band 17)		
	3, tested with power control all Max.(LTE Band 41)		
	3, tested with power control all Max.(LTE Band 66)		
	3, tested with power control all Max.(LTE Band 71)		

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
KDB 865664 D02 RF Exposure Reporting
KDB 447498 D01 General RF Exposure Guidance
KDB 248227 D01 802.11 Wi-Fi SAR
KDB 941225 D01 3G SAR Procedures
KDB 941225 D05 SAR for LTE Devices

1.5. Ambient Condition

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

1.6. Facilities And Accreditations

1.6.1. Facilities

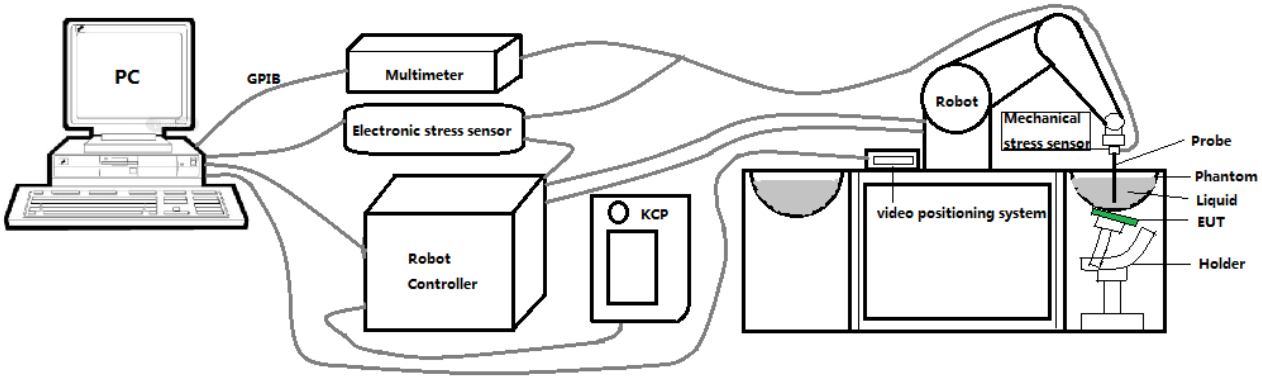
All measurement facilities used to collect the measurement data are located at
Building 1, No. 24 Xinfa East Road, Xiangshan Community, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, China
The sites are constructed in conformance with the requirements of IEC/IEEE IEEE Std 1528-2013

1.6.2. Laboratory Accreditations And Listings

Site Description
CNAS Lab. : The Certificate Registration Number is L5516
A2LA Lab. : The Certificate Registration Number is 4298.01
FCC Accredited : Test Firm Registration Number: 463705
Designation Number: CN1184
ISED Registration : Company Number: 9270A
CAB identifier: CN0074

2. SAR Measurement System

2.1. SATIMO SAR Measurement Set-upDiagram



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 apositional repeatability of better than ±0.03mm.The SAR measurements were conducted with dosimetric probe (manufactured by SATIMO), designed in theclassical 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 robotcontroller version (KUKA) from KUKA is used. The KUKA robot series have many features that are important forour application:

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

2.3. E-Field Probe

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

For the measurements the Specific Dosimetric E-Field Probe 4024-EPGO-442 with following specifications is used

- Dynamic range: 0.01-100 W/kg
- TipDiameter : 2.5 mm
- Distance between probe tip and sensor center: 1 mm
-Distance between sensor center and the inner phantom surface: 2 mm (repeatability better than ±1 mm).
- Probe linearity: ±0.06 dB
- Axial isotropy: ±0.01 dB
- Hemispherical Isotropy: ±0.01 dB
- Calibration range: 650MHz to 5900MHz for head & body simulating liquid.
- Lowerdetection limit: 8mW/kg

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

2.3.1. E-Field Probe Calibration

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

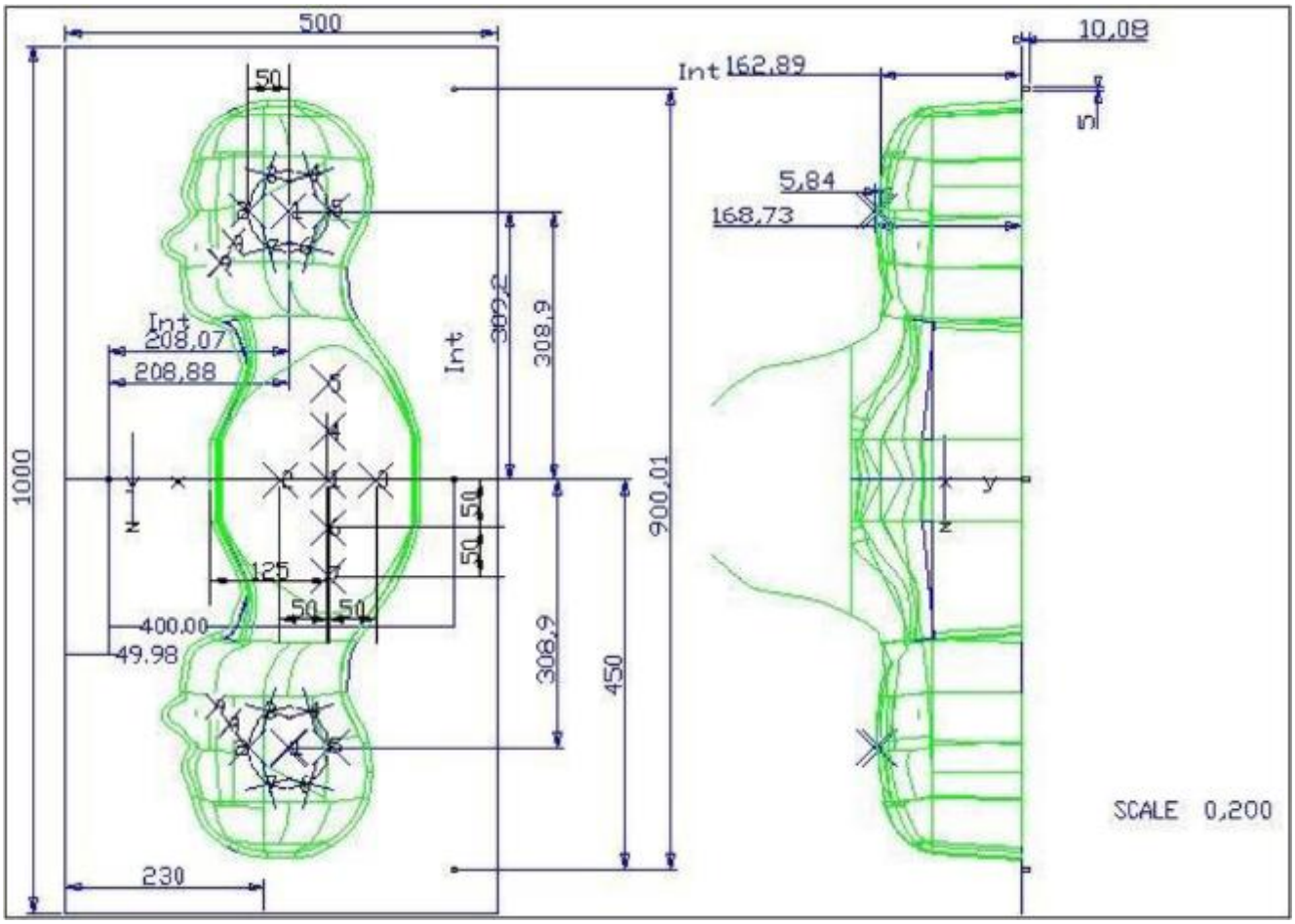
2.4. SAM phantoms

Photo of SAM phantom SN 16/15 SAM119

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

2.4.1. Technical Data

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

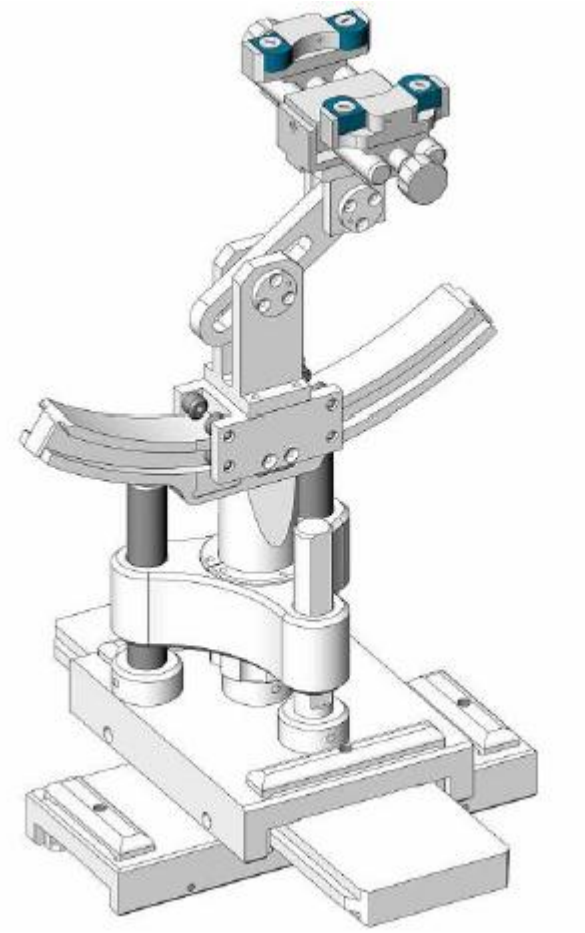


Serial Number	Left Head(mm)		Right Head(mm)		Flat Part(mm)	
SN 16/15 SAM119	2	2.02	2	2.08	1	2.09
	3	2.05	3	2.06	2	2.06
	4	2.07	4	2.07	3	2.08
	5	2.08	5	2.08	4	2.10
	6	2.05	6	2.07	5	2.10
	7	2.05	7	2.05	6	2.07
	8	2.07	8	2.06	7	2.07
	9	2.08	9	2.06	-	-

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

2.5. Device Holder

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



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

2.6. Test Equipment List

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

Devices used during the test described are marked ☒

	Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
					Last Cal.	Due Date
☒	MVG	E FIELD PROBE	SSE2	4024-EPGO-442	Oct.4.2024	Oct.3.2025
☒	MVG	750 MHz Dipole	SID750	SN 03/15 DIP 0G750-355	Feb. 21, 2024	Feb. 20, 2027
☒	MVG	835 MHz Dipole	SID835	SN 03/15 DIP 0G835-347	Feb. 21, 2024	Feb. 20, 2027
☐	MVG	900 MHz Dipole	SID900	SN 03/15 DIP 0G900-348	Feb. 21, 2024	Feb. 20, 2027
☒	MVG	1800 MHz Dipole	SID1800	SN 03/15 DIP 1G800-349	Feb. 21, 2024	Feb. 20, 2027
☒	MVG	1900 MHz Dipole	SID1900	SN 03/15 DIP 1G900-350	Feb. 21, 2024	Feb. 20, 2027
☐	MVG	2000 MHz Dipole	SID2000	SN 03/15 DIP 2G000-351	Feb. 21, 2024	Feb. 20, 2027
☒	MVG	2450 MHz Dipole	SID2450	SN 03/15 DIP 2G450-352	Feb. 21, 2024	Feb. 20, 2027
☒	MVG	2600 MHz Dipole	SID2600	SN 03/15 DIP 2G600-356	Feb. 21, 2024	Feb. 20, 2027
☐	MVG	3500 MHz Dipole	SID3500	SN 09/12 DIP 3G500-360	Oct. 15, 2022	Oct. 14, 2025
☐	MVG	3700 MHz Dipole	SID3700	SN 09/12 DIP 3G/700-361	Oct. 15 2022	Oct. 14 2025
☐	MVG	5000 MHz Dipole	SWG5500	SN 13/14 WGA 33	Feb. 21, 2024	Feb. 20, 2027
☒	MVG	Liquid measurement Kit	SCLMP	SN 21/15 OCPG 72	NCR	NCR
☒	MVG	Power Amplifier	N.A	AMPLISAR_28/14_003	NCR	NCR
☒	KEITHLEY	Millivoltmeter	2000	4072790	Nov. 29, 2024	Nov. 28, 2025
☒	R&S	Universal radio communication tester	CMU200	105747	Apr. 26, 2024	Apr. 25, 2025
☒	R&S	Wideband	CMW500	103917	Apr. 26,	Apr. 25,

		radio communication tester			2024	2025
☐	Anritsu	4G LTE comprehensive tester	MT8821C	6262192315	2024/7/17	2025/7/16
☐	Anritsu	5G NR comprehensive tester	MT8000A	6262186364	2024/7/17	2025/7/16
☒	HP	Network Analyzer	E5071C	LPS-461	Oct. 15, 2024	Oct. 14, 2025
☒	Agilent	MXG Vector Signal Generator	N5182A	MY47070317	Apr. 25, 2024	Apr. 24, 2025
☒	Agilent	Power meter	E4419B	MY45102538	Apr. 25, 2024	Apr. 24, 2025
☒	Agilent	Power sensor	E9301A	US39212148	Apr. 25, 2024	Apr. 24, 2025
☒	Agilent	Power sensor	E9301A	US39212148	Apr. 25, 2024	Apr. 24, 2025
☒	MCLI/USA	Directional Coupler	CB11-20	0D2L51502	Apr. 26, 2024	Apr. 25, 2027
☒	N/A	Thermometer	N/A	LES-085	Mar. 27, 2023	Mar. 26, 2026
☒	MVG	SAM Phantom	SSM2	SN 16/15 SAM119	NCR	NCR
☒	MVG	Device Holder	SMPPD	SN 16/15 MSH100	NCR	NCR

Measurement Software

Manufacturer	Software Name	Software Version
SATIMO	OpenSAR	V4_02_31

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 conductedconnection with RF cable, at maximum power in each supported wireless interface and frequency band.

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

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

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

<SAR measurement>

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

(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 powerchannel is larger than 0.8 W/kg.

According to the test standard, the recommended procedure for assessing the peak spatial-average SAR valueconsists 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 thedevice under test in the batch process. The minimum distance of probe sensors to surface determines the closestmeasurement 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.

MeasurementoftheSARdistributionwithagridof8to16mm * 8to16 mm and a constant distance tothe 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 assessedby 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 thepositions of any local maxima with SAR values within 2 dB of the maximum value that will not be within the zoomscan of other peaks; additional peaks shall be measured only when the primary peak is within 2 dB of the SARcompliance 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 <u>reported</u> SAR from the area scan based 1-g SAR estimation procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.</td></tr>
</table>

3.3. Description of interpolation/extrapolation scheme

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

3.4. Volumetric Scan

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

3.5. Power Drift

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

4. System Verification Procedure

4.1. Tissue Verification

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

Ingredients (% of weight)	Head Tissue								
Frequency Band (MHz)	750	835	900	1800	1900	2000	2450	2600	5000
Water	34.40	34.40	34.40	55.36	55.36	71.88	71.88	71.88	65.53
NaCl	0.79	0.79	0.79	0.35	0.35	0.16	0.16	0.16	0.00
1,2-Propanediol	64.81	64.81	64.81	0.00	0.00	0.00	0.00	0.00	0.00
Triton X-100	0.00	0.00	0.00	30.45	30.45	19.97	19.97	19.97	17.24
DGBE	0.00	0.00	0.00	13.84	13.84	7.99	7.99	7.99	0.00

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

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

4.1.1. Tissue Dielectric Parameter Check Results

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

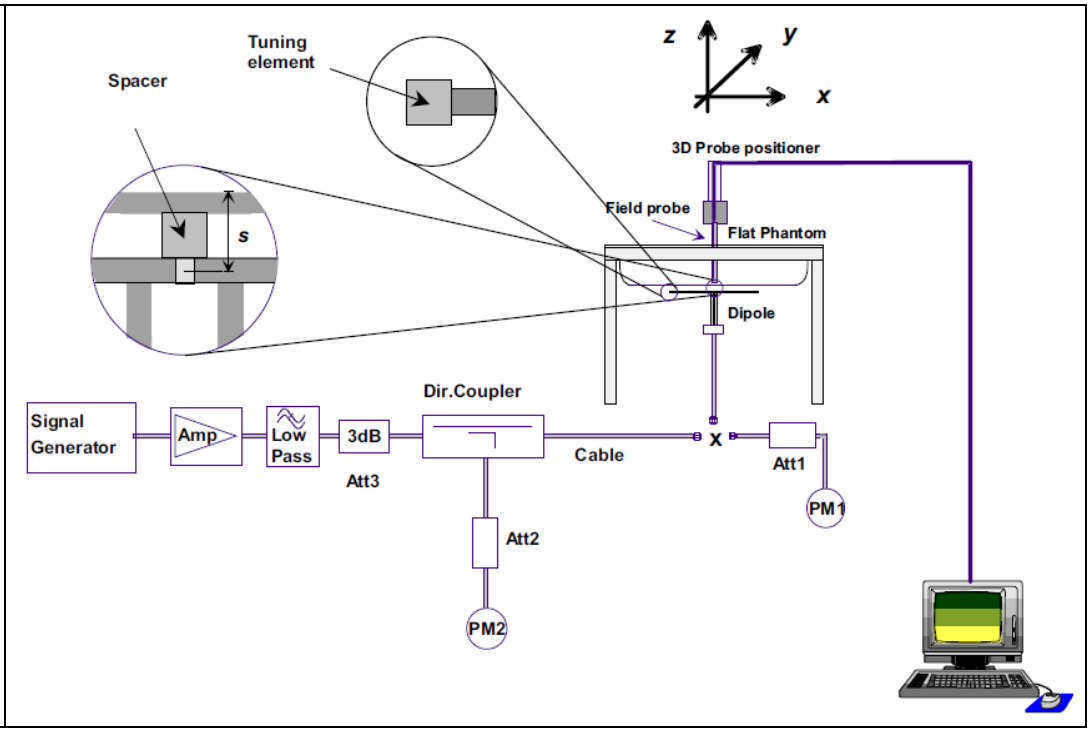
Tissue Type	Measured Frequency (MHz)	Target Tissue		Measured Tissue		Liquid Temp.	Test Date
		εr (±5%)	σ (S/m) (±5%)	εr	σ (S/m)		
Head 750	750	41.96 (39.86~44.06)	0.89 (0.85~0.93)	40.72	0.90	21.7 °C	Dec. 28, 2024
Head 850	835	41.50 (39.43~43.58)	0.90 (0.86~0.95)	41.77	0.91	21.8 °C	Dec. 27, 2024
Head 1800	1800	40.00 (38.00~42.00)	1.40 (1.33~1.47)	38.91	1.37	21.3 °C	Dec. 25, 2024
Head 1900	1900	40.00 (38.00~42.00)	1.40 (1.33~1.47)	38.53	1.46	21.4 °C	Dec. 26, 2024
Head 2450	2450	39.20 (37.24~41.16)	1.80 (1.71~1.89)	37.81	1.78	21.6 °C	Dec. 12, 2024
Head 2600	2600	39.01 (37.06~40.96)	1.96 (1.86~2.06)	38.78	1.97	21.3 °C	Dec. 16, 2024
Head 5200	5200	36.00 (34.20~37.80)	4.66 (4.43~4.89)	34.65	4.50	21.3 °C	Dec. 11, 2024
Head 5400	5400	35.80 (34.01~37.59)	4.86 (4.62~5.10)	34.33	4.80	21.8 °C	Dec. 19, 2024
Head 5600	5600	35.50 (33.73~37.28)	5.07 (4.82~5.32)	34.40	4.94	21.6 °C	Dec. 18, 2024
Head 5800	5800	35.30 (33.54~37.07)	5.27 (5.01~5.53)	33.98	5.08	21.2 °C	Dec. 17, 2024

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. To adjust this power a power meter is used. The power sensor is connected to the cable before the system verification to measure the power at this point and do adjustments at the signal generator. At the outputs of the directional coupler both return loss as well as forward power are controlled during the system verification to make sure that emitted power at the dipole is kept constant. This can also be checked by the power drift measurement after the test (result on plot).

The system verification is shown as below picture:



4.2.1. System Verification Results

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

System Verification	Target SAR (1W) (±10%)		Measured SAR			Measured SAR (Normalized to 1W)		Liquid Temp.	Test Date
	1-g (W/Kg)	10-g (W/Kg)	Input Power	1-g (W/Kg)	10-g (W/Kg)	1-g (W/Kg)	10-g (W/Kg)		
750MHz	8.60 (7.74~9.46)	5.78 (5.20~6.36)	20dBm	0.873	0.534	8.73	5.34	21.7 °C	Dec. 28, 2024
835MHz	9.40 (8.46~10.34)	6.28 (5.65~6.91)	18dBm	0.579	0.383	9.26	6.13	21.8 °C	Dec. 27, 2024
1800MHz	37.06 (33.35~40.77)	20.01 (18.01~22.01)	18dBm	2.272	1.176	36.35	18.82	21.3 °C	Dec. 25, 2024
1900MHz	39.69 (35.72~43.66)	20.92 (18.83~23.01)	18dBm	2.398	1.180	38.37	18.88	21.4 °C	Dec. 26, 2024
2450MHz	50.05 (45.05~55.06)	23.80 (21.42~26.18)	20dBm	4.962	2.217	49.62	22.17	21.6 °C	Dec. 12, 2024
2600MHz	54.16 (48.74~59.58)	24.85 (22.37~27.34)	20dBm	5.859	2.452	58.59	24.52	21.3 °C	Dec. 16, 2024
5200MHz	162.59 (146.33~178.85)	56.21 (50.59~61.83)	20dBm	15.654	5.450	156.54	54.50	21.3 °C	Dec. 11, 2024
5400MHz	159.81 (143.83~175.79)	55.00 (49.50~60.50)	20dBm	16.123	5.331	161.23	53.31	21.4 °C	Dec. 19, 2024
5600MHz	179.15 (161.24~197.07)	61.01 (54.91~67.11)	20dBm	17.239	5.512	172.39	55.12	21.1 °C	Dec. 18, 2024
5800MHz	182.20 (163.98~200.42)	61.32 (55.19~67.45)	20dBm	19.065	6.479	190.65	64.79	21.2 °C	Dec. 17, 2024

5. SAR Measurement variability and uncertainty

5.1. SAR measurement variability

Per KDB865664 D01 SAR measurement 100 MHz to 6 GHz, SAR measurement variability must be assessed for each frequency band, which is determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. The additional measurements are repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device should be returned to ambient conditions (normal room temperature) with the battery fully charged before it is re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

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

5.2. SAR measurement uncertainty

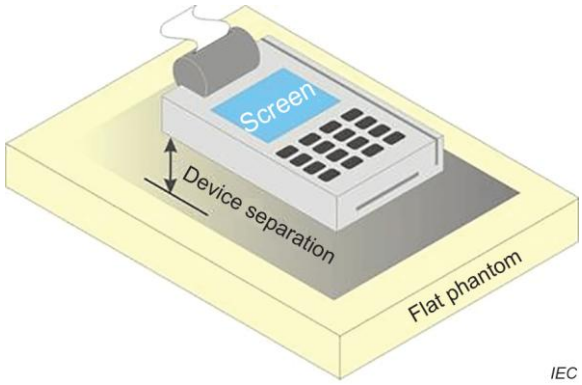
Per KDB865664 D01 SAR Measurement 100 MHz to 6 GHz,when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg, the extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval. The equivalent ratio (1.5/1.6)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

6. RF Exposure Positions

6.1. Devices used next to or against the body without an accessory

A typical example of a device used next to the body is a wireless enabled laptop or a tablet device containing a peripheral plug-in radio transmitter that can be supported on the user's body. Other devices that fall into this category include tablets of equivalent sizes or larger than a netbook computer (> 20 cm diagonal display), credit card transaction authorization terminals, and point-of-sale and/or inventory terminals.

The DUT shall be positioned with its base (bottom surface) and applicable edges against the flat phantom. The orientations and other use positions can be host device specific. Therefore, these should be determined according to the transmitter and antenna locations on the host device.



Test positions for body supported devices (Wireless credit card transaction authorization terminal)

6.2. Extremity exposure considerations

1. Based on the actual use, we always hold it by our left hand, so we only take the Extremity SAR of left side, front side and back side at device into consideration. We will test the front side, left side and right side of this device. (We test the right side aiming to stimulate left hand for finger exposes to LTE, WCDMA, GSM when using.)

2. WIFI antenna is the nearest away from left side at the device. LTE, WCDMA, GSM antenna are far away from left side at the device.

3. The nearest distance between the left hand's fingers and the LTE, WCDMA, GSM antenna is 6cm, when we always hold it by our left hand. And we use 0cm from the phantom to the right side at the device to test SAR, which is substitution method we mentioned, to evaluate the SAR of the left hand's fingers.

4. The Extremity SAR of the backside of this device for WIFI antenna, we will calculate it by following SAR exemption.

7. RF Output Power

7.1. GSM Conducted Power

Band GSM850	Burst-Averaged output Power (dBm)				Frame-Averaged output Power (dBm)			
Tx Channel	Tune-up	128	189	251	Tune-up	128	189	251
Frequency (MHz)	(dBm)	824.2	836.4	848.8	(dBm)	824.2	836.4	848.8
GSM (GMSK)	32.50	32.30	32.34	32.43	23.47	23.27	23.31	23.40
GPRS(GMSK,1 Tx slot)	32.50	32.24	32.27	32.16	23.47	23.21	23.24	23.13
GPRS(GMSK,2 Tx slot)	32.50	32.06	32.11	32.09	26.48	26.04	26.09	26.07
GPRS(GMSK,3 Tx slot)	32.00	31.91	31.90	31.97	27.74	27.65	27.64	27.71
GPRS(GMSK,4 Tx slot)	32.50	31.92	31.95	32.10	29.49	28.91	28.94	29.09
EGPRS(8PSK,1 Tx slot)	27.00	26.51	26.43	26.54	17.97	17.48	17.40	17.51
EGPRS(8PSK,2 Tx slot)	27.00	26.55	26.64	26.48	20.98	20.53	20.62	20.46
EGPRS(8PSK,3 Tx slot)	26.50	26.26	26.32	26.18	22.24	22.00	22.06	21.92
EGPRS(8PSK,4 Tx slot)	24.50	24.47	24.36	24.28	21.49	21.46	21.35	21.27
Band GSM1900	Burst-Averaged output Power (dBm)				Frame-Averaged output Power (dBm)			
Tx Channel	Tune-up	512	661	810	Tune-up	512	661	810
Frequency (MHz)	(dBm)	1850.2	1880	1909.8	(dBm)	1850.2	1880	1909.8
GSM (GMSK)	30.50	30.06	30.23	30.21	21.47	21.03	21.20	21.18
GPRS(GMSK,1 Tx slot)	30.50	30.03	30.21	30.17	21.47	21.00	21.18	21.14
GPRS(GMSK,2 Tx slot)	30.50	29.93	30.11	30.09	24.48	23.91	24.09	24.07
GPRS(GMSK,3 Tx slot)	30.00	29.79	29.99	30.00	25.74	25.53	25.73	25.74
GPRS(GMSK,4 Tx slot)	28.00	27.33	27.56	27.66	24.99	24.32	24.55	24.65
EGPRS(8PSK,1 Tx slot)	27.00	26.47	26.99	26.86	17.97	17.44	17.96	17.83
EGPRS(8PSK,2 Tx slot)	27.00	25.93	26.81	26.99	20.98	19.91	20.79	20.97
EGPRS(8PSK,3 Tx slot)	27.50	26.10	26.82	27.01	23.24	21.84	22.56	22.75
EGPRS(8PSK,4 Tx slot)	25.00	23.90	24.69	25.00	21.99	20.89	21.68	21.99

7.2. WCDMA Conducted Power

WCDMA Band 2	Burst-Averaged output Power (dBm)			
Tx Channel	Tune-up	9262	9400	9538
Frequency (MHz)	(dBm)	1852.4	1880	1907.6
RMC12.2K	23.00	22.77	22.72	22.97
HSDPA Sub 1	22.50	21.87	21.78	22.03
HSDPA Sub 2	22.00	21.37	21.37	21.57
HSDPA Sub 3	20.50	20.48	20.34	20.40

HSDPA Sub 4	20.50	20.32	20.13	20.35
HSUPA Sub 1	22.00	20.53	21.53	21.84
HSUPA Sub 2	22.00	21.66	21.65	21.96
HSUPA Sub 3	21.00	19.98	20.57	20.60
HSUPA Sub 4	22.00	21.83	21.76	21.99
HSUPA Sub 5	21.50	20.27	20.89	21.13
WCDMA Band 4	Burst-Averaged output Power (dBm)			
Tx Channel	Tune-up	1312	1413	1513
Frequency (MHz)	(dBm)	1712.4	1732.6	1752.6
RMC12.2K	23.00	22.83	22.83	22.84
HSDPA Sub 1	22.00	21.87	21.91	21.94
HSDPA Sub 2	22.00	21.51	21.48	21.37
HSDPA Sub 3	21.00	20.32	20.53	20.23
HSDPA Sub 4	20.50	20.49	20.05	20.18
HSUPA Sub 1	22.00	20.54	21.76	21.72
HSUPA Sub 2	22.00	21.80	21.83	21.76
HSUPA Sub 3	21.00	20.10	20.73	20.55
HSUPA Sub 4	22.00	21.90	21.94	21.96
HSUPA Sub 5	21.50	20.54	21.29	21.02
WCDMA Band 5	Burst-Averaged output Power (dBm)			
Tx Channel	Tune-up	4132	4182	4233
Frequency (MHz)	(dBm)	826.4	836.4	846.6
RMC12.2K	23.50	23.03	22.96	23.02
HSDPA Sub 1	22.50	22.12	22.04	22.09
HSDPA Sub 2	22.00	21.69	21.36	21.68
HSDPA Sub 3	21.00	20.39	20.20	20.60
HSDPA Sub 4	21.00	20.22	20.29	20.66
HSUPA Sub 1	22.00	21.57	21.81	21.94
HSUPA Sub 2	22.50	22.07	21.95	22.08
HSUPA Sub 3	21.00	20.55	20.64	20.70
HSUPA Sub 4	22.50	22.16	22.09	22.13
HSUPA Sub 5	22.00	20.59	21.29	21.54

7.3. LTE Conducted Power

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		18607/1850.7	18900/1880	19193/1909.3
LTE Band 2	1.4MHz	QPSK	1	0	23.00	21.60	22.63	22.61
			1	2	23.00	22.74	22.74	22.77
			1	5	23.00	22.54	22.59	22.60
			3	0	23.00	22.57	22.67	22.67
			3	1	23.00	22.55	22.65	22.66
			3	2	23.00	22.54	22.64	22.67
			6	0	22.00	21.58	21.66	21.67
		16QAM	1	0	22.00	21.77	21.45	21.73
			1	2	22.00	21.84	21.63	21.84
			1	5	22.00	21.70	21.47	21.72
			3	0	22.00	21.84	21.81	21.78
			3	1	22.00	21.83	21.82	21.78
			3	2	22.00	21.82	21.84	21.78
			6	0	21.00	20.73	20.85	20.82
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	22.63	22.66	22.64
			1	7	23.00	22.85	22.79	22.94
			1	14	23.00	22.51	22.66	22.67
			8	0	22.00	21.59	21.68	21.68
			8	4	22.00	21.61	21.71	21.70
			8	7	22.00	21.56	21.66	21.64
			15	0	22.00	21.56	21.65	21.61
		16QAM	1	0	22.50	22.00	21.89	21.47
			1	7	22.50	22.25	22.12	21.74
			1	14	22.50	21.95	21.82	21.49
			8	0	21.00	20.63	20.67	20.63
			8	4	21.00	20.63	20.70	20.64
			8	7	21.00	20.56	20.63	20.62
			15	0	21.00	20.61	20.59	20.68
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	23.00	22.53	22.54	22.50
			1	12	23.00	22.84	22.93	22.94

			1	24	23.00	22.49	22.53	22.56
			12	0	22.00	21.59	21.63	21.61
			12	6	22.00	21.60	21.71	21.68
			12	11	22.00	21.45	21.59	21.56
			25	0	22.00	21.55	21.63	21.61
		16QAM	1	0	22.50	21.84	21.84	22.00
			1	12	22.50	22.08	22.31	22.41
			1	24	22.50	21.53	21.86	22.03
			12	0	21.00	20.54	20.64	20.57
			12	6	21.00	20.55	20.67	20.68
			12	11	21.00	20.46	20.64	20.55
			25	0	21.00	20.56	20.62	20.57
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	23.00	22.67	22.63	22.61
			1	24	23.00	22.74	22.81	22.74
			1	49	23.00	22.69	22.65	22.63
			25	0	22.00	21.63	21.66	21.65
			25	12	22.00	21.57	21.67	21.69
			25	24	22.00	21.59	21.63	21.61
			50	0	22.00	21.59	21.63	21.62
		16QAM	1	0	22.50	21.50	22.05	21.75
			1	24	22.50	21.60	22.17	21.95
			1	49	22.50	21.46	22.04	21.80
			25	0	21.00	20.66	20.69	20.61
			25	12	21.00	20.55	20.71	20.65
			25	24	21.00	20.57	20.69	20.59
			50	0	21.00	20.57	20.65	20.61
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	23.00	22.53	22.58	22.56
			1	37	23.00	22.94	22.89	22.87
			1	74	23.00	22.60	22.56	22.54
			36	0	22.00	21.60	21.69	21.66
			36	18	22.00	21.63	21.69	21.72
			36	37	22.00	21.61	21.63	21.66
			75	0	22.00	21.59	21.67	21.66
		16QAM	1	0	22.50	21.63	21.96	21.75

			1	37	22.50	21.93	22.32	21.97
			1	74	22.50	21.59	21.95	21.70
			36	0	21.00	20.56	20.69	20.68
			36	18	21.00	20.53	20.67	20.73
			36	37	21.00	20.54	20.64	20.67
			75	0	21.00	20.61	20.67	20.64
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	22.48	22.52	22.52
			1	49	23.00	22.66	22.81	22.81
			1	99	23.00	22.46	22.46	22.44
			50	0	22.00	21.60	21.70	21.71
			50	24	22.00	21.56	21.66	21.68
			50	49	22.00	21.62	21.61	21.60
			100	0	22.00	21.65	21.64	21.67
		16QAM	1	0	22.50	21.68	21.83	21.81
			1	49	22.50	21.88	22.06	22.04
			1	99	22.50	21.73	21.78	21.69
			50	0	21.00	20.68	20.73	20.74
			50	24	21.00	20.67	20.71	20.66
			50	49	21.00	20.68	20.68	20.59
			100	0	21.00	20.67	20.66	20.64

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	21.00	20.34	20.08	20.02
			1	2	21.00	20.55	20.22	20.13
			1	5	21.00	20.33	20.11	20.04
			3	0	20.50	20.37	20.19	20.06
			3	1	20.50	20.37	20.20	20.08
			3	2	20.50	20.32	20.23	20.06
			6	0	19.50	18.67	18.34	19.06
		16QAM	1	0	19.50	19.12	19.29	18.85
			1	2	19.50	19.32	19.45	19.00
			1	5	19.50	19.14	19.28	18.90
			3	0	20.00	0.00	19.38	19.19
			3	1	20.00	19.51	19.40	19.20
			3	2	20.00	19.49	19.41	19.25

			6	0	18.50	17.74	17.48	18.42
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	21.00	20.33	20.09	20.06
			1	7	21.00	20.62	20.37	20.39
			1	14	21.00	20.30	20.12	20.06
			8	0	19.50	19.32	19.10	19.06
			8	4	19.50	19.34	19.15	19.13
			8	7	19.50	19.33	19.14	19.05
			15	0	19.50	18.49	19.09	18.88
		16QAM	1	0	20.00	19.70	19.30	18.95
			1	7	20.00	19.93	19.59	19.18
			1	14	20.00	19.69	19.28	18.90
			8	0	18.50	18.21	17.87	17.70
			8	4	18.50	18.23	17.91	17.72
			8	7	18.50	18.19	17.90	17.72
			15	0	19.00	18.52	17.94	17.80
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	21.00	20.27	20.06	19.94
			1	12	21.00	20.80	20.56	20.37
			1	24	21.00	20.24	20.04	19.94
			12	0	19.50	19.29	19.16	19.04
			12	6	19.50	19.36	19.19	19.10
			12	11	19.50	19.31	19.16	18.95
			25	0	19.50	18.49	19.11	18.87
		16QAM	1	0	20.50	19.74	19.39	19.26
			1	12	20.50	20.33	19.76	19.61
			1	24	20.50	19.70	19.36	19.22
			12	0	18.50	18.25	18.04	18.04
			12	6	18.50	18.37	18.16	18.14
			12	11	18.50	18.33	18.03	18.00
			25	0	18.50	17.44	18.25	18.01
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	20.50	20.36	20.17	20.12
			1	24	20.50	-23.76	20.26	20.25

			1	49	20.50	20.26	20.13	20.09
			25	0	19.50	19.29	19.13	19.13
			25	12	19.50	19.31	19.19	19.14
			25	24	19.50	19.31	19.15	19.08
			50	0	19.50	18.46	19.23	19.06
		16QAM	1	0	20.00	19.72	19.32	18.98
			1	24	20.00	19.80	19.42	19.09
			1	49	20.00	19.54	19.29	18.92
			25	0	18.50	18.31	18.18	18.00
			25	12	18.50	18.32	18.18	17.98
			25	24	18.50	18.36	18.14	17.96
			50	0	18.50	17.44	18.38	18.07
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	20.50	20.00	20.13	20.06
			1	37	20.50	20.30	20.36	20.34
			1	74	20.50	19.81	20.05	19.98
			36	0	19.50	19.35	19.21	19.18
			36	18	19.50	19.38	19.25	19.20
			36	37	19.50	19.35	19.17	19.21
			75	0	19.50	18.63	19.21	19.27
		16QAM	1	0	20.00	19.65	19.26	19.21
			1	37	20.00	19.98	19.45	19.51
			1	74	20.00	19.57	19.26	19.10
			36	0	18.50	18.34	18.23	18.12
			36	18	18.50	18.37	18.27	18.14
			36	37	18.50	18.36	18.22	18.11
			75	0	18.50	17.50	18.35	18.28
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	20.00	19.50	19.60	19.50
			1	49	20.00	19.79	19.87	19.84
			1	99	20.00	19.36	19.48	19.44
			50	0	19.00	18.68	18.78	18.64
			50	24	19.00	18.67	18.80	18.66
			50	49	19.00	18.63	18.76	18.61
			100	0	19.00	18.84	18.71	18.62
		16QAM	1	0	19.50	18.97	18.82	18.60

			1	49	19.50	19.22	19.07	18.98
			1	99	19.50	18.82	18.77	18.56
			50	0	18.00	17.98	17.72	17.67
			50	24	18.00	18.00	17.75	17.68
			50	49	18.00	17.94	17.73	17.64
			100	0	18.50	18.15	17.84	17.75

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	22.00	21.45	21.37	21.28
			1	2	22.00	21.59	21.50	21.37
			1	5	22.00	21.46	21.35	21.36
			3	0	21.50	21.44	21.47	21.29
			3	1	21.50	21.44	21.48	21.29
			3	2	21.50	21.45	21.47	21.25
			6	0	21.00	20.86	19.89	20.74
		16QAM	1	0	21.00	20.54	20.58	20.10
			1	2	21.00	20.63	20.67	20.16
			1	5	21.00	20.51	20.53	20.02
			3	0	21.00	20.58	20.68	20.38
			3	1	21.00	20.60	20.70	20.40
			3	2	21.00	20.58	20.69	20.34
			6	0	20.50	20.04	20.03	19.73
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	22.00	21.52	21.47	21.37
			1	7	22.00	21.75	21.69	21.76
			1	14	22.00	21.57	21.53	21.43
			8	0	21.00	20.53	20.50	20.33
			8	4	21.00	20.55	20.52	20.37
			8	7	21.00	20.53	20.51	20.35
			15	0	21.00	20.85	20.87	20.57
		16QAM	1	0	21.50	20.81	20.67	20.23
			1	7	21.50	21.21	20.84	20.48
			1	14	21.50	20.84	20.66	20.12
			8	0	20.00	19.52	19.48	19.33
			8	4	20.00	19.54	19.53	19.35
			8	7	20.00	19.53	19.49	19.29

			15	0	20.00	19.89	18.91	19.63
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	22.00	21.39	21.44	21.24
			1	12	22.00	21.93	21.65	21.60
			1	24	22.00	21.42	21.38	21.27
			12	0	21.00	20.51	20.51	20.38
			12	6	21.00	20.58	20.59	20.39
			12	11	21.00	20.53	20.47	20.31
			25	0	20.50	20.00	20.01	20.48
		16QAM	1	0	21.50	20.82	20.72	20.51
			1	12	21.50	21.22	21.02	20.89
			1	24	21.50	20.85	20.68	20.43
			12	0	20.00	19.42	19.46	19.42
			12	6	20.00	19.53	19.54	19.41
			12	11	20.00	19.45	19.42	19.29
			25	0	20.50	18.93	20.01	19.68
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	22.00	21.65	20.93	21.36
			1	24	22.00	21.80	21.87	21.68
			1	49	22.00	21.77	20.84	21.31
			25	0	21.00	20.52	20.57	20.47
			25	12	21.00	20.53	20.54	20.41
			25	24	21.00	20.57	20.51	20.31
			50	0	21.00	20.88	20.88	20.65
		16QAM	1	0	21.50	21.15	21.00	20.52
			1	24	21.50	21.32	21.07	20.59
			1	49	21.50	21.22	20.88	20.42
			25	0	20.00	19.55	19.57	19.48
			25	12	20.00	19.50	19.52	19.39
			25	24	20.00	19.60	19.50	19.32
			50	0	20.00	19.97	19.01	19.83

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	1.4MHz	QPSK	1	0	24.00	23.42	23.16	23.44

Band 12			1	2	24.00	23.47	23.31	23.56
			1	5	24.00	23.37	23.19	23.41
			3	0	23.50	23.49	23.26	23.44
			3	1	23.50	23.49	23.26	23.44
			3	2	23.50	23.44	23.28	23.42
			6	0	22.50	22.44	22.29	22.42
		16QAM	1	0	23.00	22.58	22.08	22.36
			1	2	23.00	22.68	22.21	22.50
			1	5	23.00	22.52	22.09	22.42
			3	0	23.00	22.61	22.41	22.49
			3	1	23.00	22.68	22.38	22.53
			3	2	23.00	22.63	22.42	22.48
			6	0	22.00	21.57	21.44	21.51

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	24.00	23.49	23.31	23.41
			1	7	24.00	23.76	23.54	23.88
			1	14	24.00	23.43	23.30	23.39
			8	0	22.50	22.46	22.25	22.42
			8	4	22.50	22.47	22.30	22.44
			8	7	22.50	22.43	22.30	22.40
			15	0	22.50	22.39	22.25	22.34
		16QAM	1	0	23.00	22.63	22.17	22.68
			1	7	23.00	22.92	22.44	22.96
			1	14	23.00	22.51	22.19	22.69
			8	0	22.00	21.49	21.24	21.43
			8	4	22.00	21.50	21.28	21.42
			8	7	22.00	21.38	21.31	21.37
			15	0	21.50	21.32	21.31	21.37

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	24.00	23.35	23.17	23.22
			1	12	24.00	23.73	23.48	23.73
			1	24	24.00	23.22	23.24	23.39
			12	0	22.50	22.42	22.28	22.34
			12	6	22.50	22.45	22.34	22.39
			12	11	22.50	22.31	22.36	22.32
			25	0	22.50	22.39	22.34	22.33

		16QAM	1	0	23.00	22.65	22.51	22.66
			1	12	23.00	22.83	22.78	23.00
			1	24	23.00	22.55	22.52	22.76
			12	0	21.50	21.37	21.30	21.29
			12	6	21.50	21.38	21.37	21.37
			12	11	21.50	21.26	21.42	21.29
			25	0	21.50	21.41	21.34	21.30
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	23.44	23.33	23.28
			1	24	23.50	23.42	23.34	23.45
			1	49	23.50	23.25	23.30	23.49
			25	0	23.00	22.50	22.37	22.28
			25	12	23.00	22.35	22.33	22.34
			25	24	23.00	22.35	22.48	22.33
			50	0	22.50	22.42	22.39	22.27
		16QAM	1	0	23.00	22.78	22.47	22.15
			1	24	23.00	22.79	22.52	22.26
			1	49	23.00	22.68	22.43	22.24
			25	0	22.00	21.50	21.38	21.25
			25	12	22.00	21.43	21.37	21.34
			25	24	22.00	21.37	21.48	21.31
			50	0	21.50	21.47	21.45	21.24

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	23.19	22.86	22.87
			1	12	23.50	23.44	23.11	23.38
			1	24	23.50	22.90	22.92	23.06
			12	0	22.50	22.17	21.93	22.09
			12	6	22.50	22.15	21.96	22.16
			12	11	22.50	22.07	21.99	22.11
			25	0	22.50	22.13	21.98	22.09
		16QAM	1	0	23.00	22.62	22.18	22.14
			1	12	23.00	22.93	22.47	22.55
			1	24	23.00	22.41	22.19	22.30
			12	0	21.50	21.16	20.89	21.14
			12	6	21.50	21.17	20.95	21.15

			12	11	21.50	21.10	20.94	21.08
			25	0	21.50	21.15	21.00	21.10
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	23.19	23.07	23.11
			1	24	23.50	23.04	22.89	23.08
			1	49	23.50	23.09	23.17	23.27
			25	0	22.50	22.09	21.92	21.92
			25	12	22.50	21.97	21.96	21.99
			25	24	22.50	22.03	22.00	22.01
			50	0	22.50	22.02	22.02	21.99
		16QAM	1	0	23.00	22.55	22.22	21.96
			1	24	23.00	22.39	22.10	21.91
			1	49	23.00	22.40	22.23	22.00
			25	0	21.50	21.16	20.99	20.92
			25	12	21.50	21.02	21.00	21.04
			25	24	21.50	21.09	21.05	21.03
			50	0	21.50	21.10	21.08	20.98

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)			
			RB Size	RB Offset		40065/2537.5	40640/3595	40928/2624	41215/2652.5
LTE Band 41	5MHz	QPSK	1	0	23.00	22.12	22.22	22.11	22.39
			1	12	23.00	22.45	22.57	22.42	22.71
			1	24	23.00	22.10	22.22	22.20	22.39
			12	0	22.00	21.18	21.29	21.12	21.51
			12	6	22.00	21.27	21.39	21.22	21.57
			12	11	22.00	21.17	21.27	21.15	21.50
			25	0	22.00	21.20	21.31	21.38	21.51
		16QAM	1	0	22.50	21.70	21.45	21.54	21.66
			1	12	22.50	22.01	21.77	21.77	21.94
			1	24	22.50	21.68	21.44	21.70	21.62
			12	0	21.00	20.19	20.20	20.18	20.49
			12	6	21.00	20.29	20.30	20.42	20.56
			12	11	21.00	20.15	20.21	20.18	20.50
			25	0	20.50	20.16	20.32	20.17	20.49

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)			
			RB Size	RB Offset		40090/2540	40640/3595	40928/2624	41190/2650
LTE Band 41	10MHz	QPSK	1	0	23.00	22.15	22.33	22.52	22.50
			1	24	23.00	22.33	22.49	22.18	22.71
			1	49	23.00	22.19	22.35	22.20	22.54
			25	0	22.00	21.18	21.36	21.40	21.52
			25	12	22.00	21.24	21.35	21.57	21.56
			25	24	22.00	21.21	21.34	21.50	21.61
			50	0	22.00	21.23	21.39	21.30	21.57
		16QAM	1	0	22.00	21.15	21.73	21.51	21.61
			1	24	22.00	21.29	21.89	21.59	21.76
			1	49	22.00	21.13	21.74	21.77	21.60
			25	0	21.00	20.23	20.36	20.20	20.52
			25	12	21.00	20.23	20.38	20.47	20.56
			25	24	21.00	20.20	20.35	20.38	20.57
			50	0	21.00	20.20	20.37	20.27	20.61

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)			
			RB Size	RB Offset		40115/2542.5	40640/3595	40928/2624	41165/2647.5
LTE Band 41	15MHz	QPSK	1	0	23.00	22.06	22.23	22.08	22.37
			1	37	23.00	22.30	22.56	22.06	22.64
			1	74	23.00	21.99	22.29	22.59	22.33
			36	0	22.00	21.16	21.30	21.61	21.55
			36	18	22.00	21.20	21.35	21.46	21.55
			36	37	22.00	21.23	21.40	21.41	21.62
			75	0	22.00	21.21	21.31	21.33	21.58
		16QAM	1	0	22.00	21.56	21.36	21.62	21.64
			1	37	22.00	21.81	21.64	21.87	21.92
			1	74	22.00	21.52	21.39	21.57	21.58
			36	0	21.00	20.24	20.37	20.41	20.46
			36	18	21.00	20.23	20.43	20.30	20.53
			36	37	21.00	20.19	20.42	20.26	20.53
			75	0	21.00	20.22	20.32	20.25	20.57

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)			
			RB Size	RB Offset		40140/2545	40640/3595	40928/2624	41140/2645
LTE Band 41	20MHz	QPSK	1	0	23.00	21.97	22.04	22.10	22.31
			1	49	23.00	22.30	22.41	22.32	22.63
			1	99	23.00	21.94	22.12	22.03	22.25
			50	0	22.00	21.18	21.30	21.20	21.45
			50	24	22.00	21.16	21.34	21.16	21.51
			50	49	22.00	21.18	21.35	21.29	21.54
			100	0	22.00	21.18	21.36	21.42	21.51
		16QAM	1	0	22.00	21.23	21.29	21.60	21.49
			1	49	22.00	21.55	21.65	21.63	21.80
			1	99	22.00	21.18	21.35	21.30	21.44
			50	0	21.00	20.26	20.33	20.24	20.49
			50	24	21.00	20.23	20.33	20.14	20.57
			50	49	21.00	20.26	20.34	20.27	20.58
			100	0	21.00	20.21	20.36	20.27	20.51

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		131979/1710.7	132322/1745	132665/1779.3
LTE Band 66	1.4MHz	QPSK	1	0	23.50	22.94	22.75	22.78
			1	2	23.50	23.06	22.90	22.89
			1	5	23.50	22.94	22.74	22.78
			3	0	23.50	22.97	22.80	22.84
			3	1	23.50	23.02	22.88	22.87
			3	2	23.50	22.97	22.81	22.77
			6	0	22.00	21.96	21.82	21.83
		16QAM	1	0	22.50	22.06	21.97	21.62
			1	2	22.50	22.20	22.06	21.76
			1	5	22.50	22.05	21.95	21.62
			3	0	22.50	22.13	22.02	21.90
			3	1	22.50	22.15	22.07	0.00
			3	2	22.50	22.10	22.06	22.00
			6	0	21.50	21.12	20.96	20.98
Band	Band	Modulation	RB		Tune-up	Channel/Frequency(MHz)		

	Width		Configuration		(dBm)			
			RB Size	RB Offset		131987/1711.5	132322/1745	132657/1778.5
LTE Band 66	3MHz	QPSK	1	0	23.50	22.93	22.78	22.78
			1	7	23.50	23.18	23.22	23.05
			1	14	23.50	22.88	22.82	22.87
			8	0	22.00	21.92	21.81	21.83
			8	4	22.00	21.97	21.82	21.85
			8	7	22.00	21.91	21.84	21.79
			15	0	22.00	21.89	21.85	21.80
		16QAM	1	0	23.00	22.34	21.99	21.64
			1	7	23.00	22.58	22.29	21.96
			1	14	23.00	22.26	21.97	21.66
			8	0	21.00	20.95	20.85	20.81
			8	4	21.00	20.97	20.85	20.77
			8	7	21.00	20.92	20.80	20.75
			15	0	21.00	20.85	20.72	20.83
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		131997/1712.5	132322/1745	132647/1777.5
LTE Band 66	5MHz	QPSK	1	0	23.50	22.80	22.71	22.63
			1	12	23.50	23.10	23.02	23.17
			1	24	23.50	22.73	22.73	22.70
			12	0	22.00	21.88	21.74	21.78
			12	6	22.00	21.93	21.86	21.81
			12	11	22.00	21.86	21.78	21.73
			25	0	22.00	21.89	21.82	21.76
		16QAM	1	0	23.00	22.14	22.24	21.94
			1	12	23.00	22.50	22.61	22.46
			1	24	23.00	22.05	22.23	22.03
			12	0	21.00	20.83	20.78	20.71
			12	6	21.00	20.93	20.83	20.73
			12	11	21.00	20.87	20.78	20.60
			25	0	21.00	20.80	20.76	20.73
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		132022/1715	132322/1745	132622/1775
LTE	10MHz	QPSK	1	0	23.50	22.91	22.73	22.70

Band 66			1	24	23.50	23.05	22.97	22.86
			1	49	23.50	22.95	22.80	22.79
			25	0	22.00	21.82	21.79	21.82
			25	12	22.00	21.91	21.87	21.82
			25	24	22.00	21.91	21.85	21.74
			50	0	22.00	21.91	21.79	21.78
		16QAM	1	0	22.50	22.07	21.63	22.10
			1	24	22.50	22.19	21.85	22.29
			1	49	22.50	22.03	21.69	22.16
			25	0	21.00	20.86	20.80	20.87
			25	12	21.00	20.89	20.86	20.82
			25	24	21.00	20.91	20.83	20.74
			50	0	21.00	20.91	20.75	20.73

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		132047/1717.5	132322/1745	132597/1772.5
LTE Band 66	15MHz	QPSK	1	0	23.50	22.81	22.71	22.63
			1	37	23.50	23.12	22.95	22.95
			1	74	23.50	22.88	22.71	22.71
			36	0	22.00	21.94	21.86	21.83
			36	18	22.00	21.96	21.85	21.83
			36	37	22.00	22.00	21.90	21.79
			75	0	22.00	21.94	21.90	21.80
		16QAM	1	0	22.50	22.26	21.92	21.80
			1	37	22.50	22.49	22.17	22.13
			1	74	22.50	22.19	21.91	21.84
			36	0	21.00	20.90	20.89	20.74
			36	18	21.00	20.94	20.88	20.76
			36	37	21.00	20.95	20.92	20.71
			75	0	21.00	20.86	20.81	20.75

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	22.71	22.63	22.55
			1	49	23.00	22.93	22.95	22.88
			1	99	23.00	22.65	22.62	22.60
			50	0	22.00	21.83	21.81	21.77
			50	24	22.00	21.89	21.81	21.75

			50	49	22.00	21.87	21.84	21.57
			100	0	22.00	21.88	21.80	21.71
		16QAM	1	0	22.50	22.04	21.92	21.79
			1	49	22.50	22.30	22.19	22.11
			1	99	22.50	22.00	21.86	21.82
			50	0	21.00	20.90	20.79	20.83
			50	24	21.00	20.93	20.82	20.79
			50	49	21.00	20.97	20.84	20.64
			100	0	21.00	20.90	20.76	20.68

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		133147/665.5	133297/680.5	133447/695.5
LTE Band 71	5MHz	QPSK	1	0	23.50	22.82	22.91	22.89
			1	12	23.50	23.19	23.32	23.30
			1	24	23.50	22.92	22.97	22.91
			12	0	22.50	21.79	22.01	22.14
			12	6	22.50	21.98	22.09	22.13
			12	11	22.50	22.00	22.03	21.98
			25	0	22.50	21.91	22.06	22.06
		16QAM	1	0	23.00	22.33	22.21	22.24
			1	12	23.00	22.59	22.67	22.57
			1	24	23.00	22.43	22.29	22.22
			12	0	21.50	20.79	21.00	21.14
			12	6	21.50	20.99	21.08	21.13
			12	11	21.50	21.01	21.00	21.00
			25	0	21.50	20.93	21.11	21.07

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		133172/668	133297/680.5	133422/693
LTE Band 71	10MHz	QPSK	1	0	23.50	22.92	23.01	23.00
			1	24	23.50	23.15	23.15	23.19
			1	49	23.50	23.08	23.05	23.08
			25	0	22.50	21.86	22.14	22.22
			25	12	22.50	21.98	22.07	22.09
			25	24	22.50	22.06	22.13	22.08
			50	0	22.50	21.93	22.13	22.12
		16QAM	1	0	23.00	21.71	22.41	22.18
			1	24	23.00	21.96	22.57	22.34
			1	49	23.00	21.94	22.43	22.25

			25	0	21.50	20.84	21.17	21.24
			25	12	21.50	21.01	21.09	21.12
			25	24	21.50	21.10	21.20	21.12
			50	0	21.50	20.96	21.17	21.18
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		133197/670.5	133297/680.5	133397/690.5
LTE Band 71	15MHz	QPSK	1	0	23.50	22.89	22.92	23.00
			1	37	23.50	23.24	23.22	23.14
			1	74	23.50	23.01	22.95	23.06
			36	0	22.50	21.94	22.12	22.07
			36	18	22.50	22.06	22.13	22.11
			36	37	22.50	22.11	22.12	22.10
			75	0	22.50	22.01	22.14	22.08
		16QAM	1	0	23.00	22.02	22.07	22.35
			1	37	23.00	22.36	22.53	22.66
			1	74	23.00	22.13	22.12	22.41
			36	0	21.50	20.99	21.10	21.09
			36	18	21.50	21.13	21.10	21.12
			36	37	21.50	21.16	21.09	21.11
			75	0	21.50	21.03	21.18	21.13
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		133222/673	133322/683	133372/688
LTE Band 71	20MHz	QPSK	1	0	23.50	22.73	22.81	22.84
			1	49	23.50	23.15	23.20	23.12
			1	99	23.50	22.90	22.86	22.88
			50	0	22.50	21.82	22.20	22.09
			50	24	22.50	22.01	22.10	22.02
			50	49	22.50	21.96	22.00	22.02
			100	0	22.50	21.91	22.05	22.06
		16QAM	1	0	22.50	21.98	22.13	22.13
			1	49	22.50	22.31	22.49	22.39
			1	99	22.50	22.15	22.20	22.06
			50	0	21.50	20.90	21.23	21.12
			50	24	21.50	21.11	21.16	21.06
			50	49	21.50	21.07	21.10	21.02
			100	0	21.50	20.98	21.12	21.13

7.4. WLAN & Bluetooth Output Power

Mode	Channel	Frequency (MHz)	Tune-up (dBm)	Output Power (dBm)
802.11b	1	2412	17.00	16.46
	6	2437	17.00	16.78
	11	2462	17.00	16.04
802.11g	1	2412	15.00	14.34
	6	2437	15.00	14.59
	11	2462	15.00	13.86
802.11n HT20	1	2412	13.50	12.85
	6	2437	13.50	13.13
	11	2462	13.50	12.53
802.11n HT40	3	2422	13.50	13.41
	6	2437	13.50	13.02
	9	2452	13.50	13.08

NOTE: Power measurement results of WLAN 2.4G.

Mode	Channel	Frequency (MHz)	Tune-up (dBm)	Output Power (dBm)
802.11a	36	5180	11.50	10.46
	40	5200	11.50	10.65
	48	5240	11.50	11.47
802.11n HT20	36	5180	11.50	10.54
	40	5200	11.50	10.54
	48	5240	11.50	11.15
802.11n HT40	38	5190	11.00	10.02
	46	5230	11.00	10.63
802.11ac VHT20	36	5180	11.00	10.35
	40	5200	11.00	10.50
	48	5240	11.00	10.60
802.11ac VHT40	38	5190	11.50	11.37
	46	5230	11.50	9.95
802.11ac VHT80	42	5210	11.00	10.58

NOTE: Power measurement results of WLAN 5.2G.

Mode	Channel	Frequency (MHz)	Tune-up (dBm)	Output Power (dBm)
802.11a	52	5260	11.50	10.85

	56	5280	11.50	10.94
	64	5320	11.50	11.01
802.11n HT20	52	5260	11.50	10.56
	56	5280	11.50	10.95
	64	5320	11.50	11.10
802.11n HT40	54	5270	11.50	10.82
	62	5310	11.50	11.01
802.11ac VHT20	52	5260	11.00	10.92
	56	5280	11.00	10.62
	64	5320	11.00	10.95
802.11ac VHT40	54	5270	11.50	11.03
	62	5310	11.50	10.79
802.11ac VHT80	58	5290	10.50	10.44

NOTE: Power measurement results of WLAN 5.3G.

Mode	Channel	Frequency (MHz)	Tune-up (dBm)	Output Power (dBm)
802.11a	100	5500	10.50	10.19
	120	5600	10.50	9.02
	140	5700	10.50	9.11
802.11n HT20	100	5500	10.50	10.03
	120	5600	10.50	9.02
	140	5700	10.50	9.00
802.11n HT40	102	5510	10.50	10.32
	118	5590	10.50	9.64
802.11ac VHT20	134	5670	10.50	8.77
	100	5500	10.50	10.10
	120	5600	10.50	9.25
802.11ac VHT40	140	5700	10.50	10.03
	102	5510	10.00	8.92
802.11ac VHT80	118	5590	10.00	8.94

NOTE: Power measurement results of WLAN 5.6G.

Mode	Channel	Frequency (MHz)	Tune-up (dBm)	Output Power (dBm)
802.11a	149	5745	10.00	8.79
	157	5785	10.00	9.34
	165	5825	10.00	9.73

802.11n HT20	149	5745	9.50	8.12
	157	5785	9.50	8.47
	165	5825	9.50	9.21
802.11n HT40	151	5755	9.00	8.16
	159	5795	9.00	8.76
802.11ac VHT20	149	5745	9.50	9.40
	157	5785	9.50	8.77
	165	5825	9.50	8.46
802.11ac VHT40	151	5755	9.50	9.20
	159	5795	9.50	8.03
802.11ac VHT80	155	5775	9.00	8.56

NOTE: Power measurement results of WLAN 5.8G.

	Output Power (dBm)				
BR+EDR	Data Rates	Tune-up (dBm)	Channel		
			0CH	39CH	78CH
	1M	8	7.93	7.21	6.43
	2M	7.5	7.23	6.27	6.01
	3M	7.5	7.19	6.23	6.05

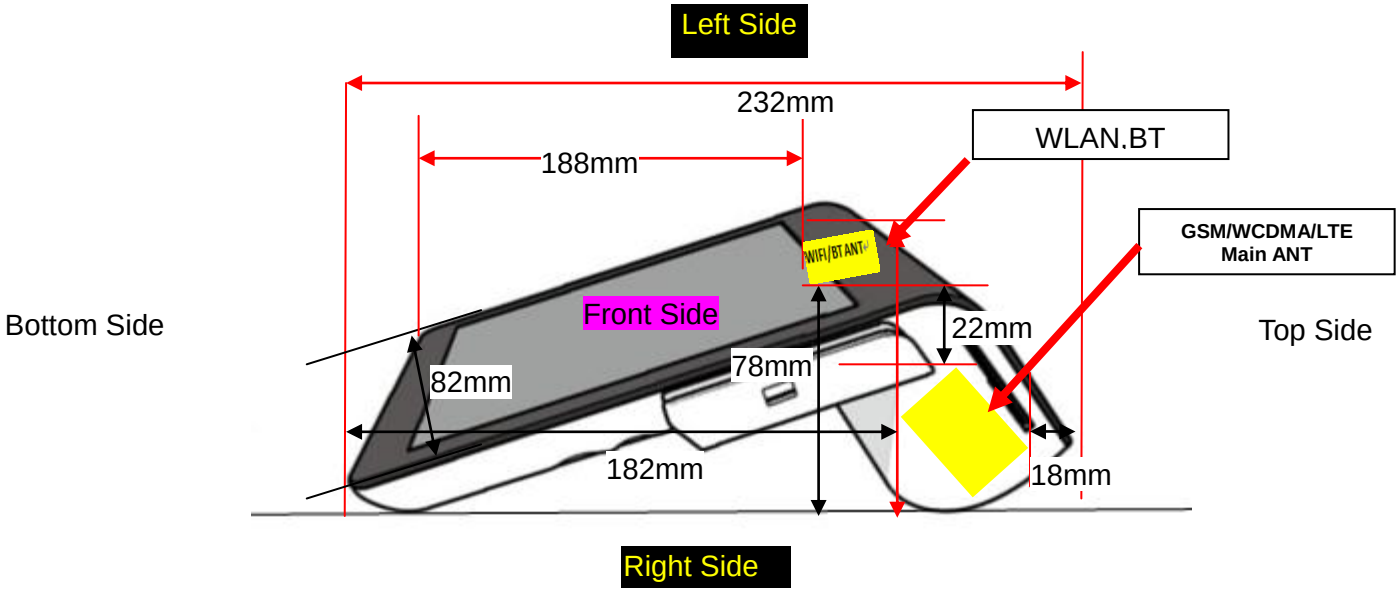
BLE	Data Rates	Tune-up (dBm)	Output Power (dBm)		
			0CH	39CH	78CH
	1M	-3.50	-5.22	-3.91	-4.85
	2M	-3.50	-5.24	-3.89	-4.82

NOTE: Power measurement results of Bluetooth.

7.5. NFC

Channel Freq（MHz）	Min Distance (mm)	Max power (dBm)	tune-up power (dBm)	Max power（mW）	Limits（mW）	SAR Test Exclusion
13.56	0	-38.31	-38.31±1	0.00019	443	Yes

8. Antenna Location



Right View

Note: Since the confidentiality request of EUT，the antenna location example diagram see as above.

Distance of the Antenna to the EUT surface/edge						
Antennas	Front Side	Back Side	Left Side	Right Side	Top Side	Bottom Side
GSM/WCDMA/LTE Main	22	5	5	5	18	182
WLAN/BT	12	20	5	78	15	188

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

Distance of the Antenna to the EUT surface/edge						
Antennas	Front Side	Back Side	Left Side	Right Side	Top Side	Bottom Side
WWAN Main ANT	≤25mm	≤ 25mm	≤ 25mm	≤ 25mm	≤ 25mm	>25mm
WLAN & Bluetooth	≤ 25mm	≤ 25mm	≤25mm	>25mm	≤25mm	>25mm
Positions for SAR tests						
Antennas	Front Side	Back Side	Left Side	Right Side	Top Side	Bottom Side
WWAN Main ANT	Yes	Yes	Yes	Yes	Yes	NO
WLAN & Bluetooth	Yes	Yes	Yes	NO	Yes	NO

9. 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)]·[$\sqrt{f_{(GHZ)}}$] ≤ 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	P_{max} (dBm)	P_{max} (mW)	Distance (mm)	f (GHz)	Calculation Result	SAR Exclusion threshold	SAR test exclusion
Bluetooth	8.00	6.31	5	2.480	1.987	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)] * [$\sqrt{f_{(GHZ)}}$/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	P_{max} (dBm)	P_{max} (mW)	Distance (mm)	f (GHz)	x	Estimated SAR (W/Kg)
Bluetooth	Body	8.00	6.31	5	2.48	7.5	0.265
Bluetooth	Body	8.00	6.31	5	2.48	18.75	0.106

NOTE: Estimated SAR calculation for Bluetooth

10. SAR Results

10.1. SAR measurement results

10.1.1. SAR measurement Result of GSM850

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

Front Side	189/836.4	GPRS(GMSK 4TS)	0.731	0.267	2.09	31.95	32.50	0.830	2024/12/27	
Back Side	189/836.4	GPRS(GMSK 4TS)	0.400	0.143	0.57	31.95	32.50	0.454	2024/12/27	
Left Side	189/836.4	GPRS(GMSK 4TS)	0.148	0.051	2.63	31.95	32.50	0.168	2024/12/27	
Right Side	189/836.4	GPRS(GMSK 4TS)	0.508	0.182	-1.98	31.95	32.50	0.577	2024/12/27	
Top Side	189/836.4	GPRS(GMSK 4TS)	0.418	0.147	0.69	31.95	32.50	0.474	2024/12/27	
Front Side	128/824.2	GPRS(GMSK 4TS)	0.715	0.238	0.81	31.92	32.50	0.817	2024/12/27	
Front Side	251/848.8	GPRS(GMSK 4TS)	0.742	0.288	-1.63	32.10	32.50	0.814	2024/12/27	1#
FrontSide Repeated	189/836.4	GPRS(GMSK 4TS)	0.739	0.285	-2.69	32.10	32.50	0.810	2024/12/27	

10.1.2. SAR measurement Result of GSM1900

Test Position	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1g	10g						
Body with 0mm										
Front Side	661/1880	GPRS(GMSK 3TS)	0.158	0.065	-2.56	29.99	30.00	0.158	2024/12/26	
Back Side	661/1880	GPRS(GMSK 3TS)	0.174	0.073	2.69	29.99	30.00	0.174	2024/12/26	
Left Side	661/1880	GPRS(GMSK 3TS)	0.055	0.023	-1.67	29.99	30.00	0.055	2024/12/26	
Right Side	661/1880	GPRS(GMSK 3TS)	0.751	0.323	2.10	29.99	30.00	0.753	2024/12/26	2#
Top Side	661/1880	GPRS(GMSK 3TS)	0.079	0.032	-3.05	29.99	30.00	0.079	2024/12/26	

10.1.3. SAR measurement Result of WCDMA Band 2

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

Body with 0mm										
Front Side	9400/1880	RMC12.2K	0.174	0.082	-1.65	22.72	23.00	0.186	2024/12/26	
Back Side	9400/1880	RMC12.2K	0.191	0.090	-1.96	22.72	23.00	0.204	2024/12/26	
Left Side	9400/1880	RMC12.2K	0.060	0.028	-0.44	22.72	23.00	0.064	2024/12/26	
Right Side	9400/1880	RMC12.2K	0.836	0.400	-0.03	22.72	23.00	0.892	2024/12/26	3#
Top Side	9400/1880	RMC12.2K	0.085	0.039	-2.25	22.72	23.00	0.091	2024/12/26	
Right Side	9262/1852.4	RMC12.2K	0.844	0.410	-0.66	22.77	23.00	0.890	2024/12/26	
Right Side	9538/1907.6	RMC12.2K	0.875	0.422	-0.30	22.97	23.00	0.881	2024/12/26	
Right Side Repeated	9538/1907.6	RMC12.2K	0.873	0.419	-0.30	22.97	23.00	0.879	2024/12/26	

10.1.4. SAR measurement Result of WCDMA Band 4

Test Position	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
Body with 0mm										
Front Side	1413/1732.6	RMC12.2K	0.220	0.111	-2.17	22.83	23.00	0.229	2024/12/25	
Back Side	1413/1732.6	RMC12.2K	0.244	0.125	0.96	22.83	23.00	0.254	2024/12/25	
Left Side	1413/1732.6	RMC12.2K	0.076	0.039	-0.53	22.83	23.00	0.079	2024/12/25	
Right Side	1413/1732.6	RMC12.2K	1.063	0.544	-0.95	22.83	23.00	1.105	2024/12/25	4#
Top Side	1413/1732.6	RMC12.2K	0.108	0.053	0.74	22.83	23.00	0.112	2024/12/25	
Right Side	1312/1712.4	RMC12.2K	0.989	0.536	-1.55	22.83	23.00	1.028	2024/12/25	
Right Side	1513/1752.6	RMC12.2K	1.058	0.541	2.05	22.84	23.00	1.098	2024/12/25	
Right Side Repeated	1413/1732.6	RMC12.2K	1.056	0.542	-2.60	22.83	23.00	1.098	2024/12/25	

10.1.5. SAR measurement Result of WCDMA Band 5

Test Position	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
Body with 0mm										
Front Side	4182/836.4	RMC12.2K	1.068	0.717	-1.40	22.96	23.50	1.209	2024/12/27	5#
Back Side	4182/836.4	RMC12.2K	0.562	0.366	0.02	22.96	23.50	0.636	2024/12/27	
Left Side	4182/836.4	RMC12.2K	0.216	0.144	1.62	22.96	23.50	0.245	2024/12/27	
Right Side	4182/836.4	RMC12.2K	0.726	0.463	-0.61	22.96	23.50	0.822	2024/12/27	
Top Side	4182/836.4	RMC12.2K	0.600	0.399	-0.92	22.96	23.50	0.679	2024/12/27	
Front Side	4132/826.4	RMC12.2K	1.066	0.719	-0.41	23.03	23.50	1.188	2024/12/27	
Front Side	4233/846.6	RMC12.2K	1.034	0.694	-0.36	23.02	23.50	1.155	2024/12/27	
Front Side Repeated	4182/836.4	RMC12.2K	1.063	0.717	-3.22	22.96	23.50	1.204	2024/12/27	

10.1.6. SAR measurement Result of LTE Band 2

Test Position	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
Body with 0mm										
1RB										
Front Side	18900/1880	20M QPSK(1,49)	0.148	0.067	3.73	22.81	23.00	0.155	2024/12/26	
Right Side	18900/1880	20M QPSK(1,49)	0.724	0.345	4.38	22.81	23.00	0.756	2024/12/26	11#
Left Side	18900/1880	20M QPSK(1,49)	0.053	0.024	-2.56	22.81	23.00	0.055	2024/12/26	
Back Side	18900/1880	20M QPSK(1,49)	0.163	0.078	-3.03	22.81	23.00	0.170	2024/12/26	

Top Side	18900/1880	20M QPSK(1,49)	0.075	0.035	0.67	22.81	23.00	0.078	2024/12/26	
50%RB										
Front Side	18900/1880	20M QPSK(50,0)	0.089	0.034	1.49	21.70	22.00	0.095	2024/12/26	
Back Side	18900/1880	20M QPSK(50,0)	0.088	0.043	-4.15	21.70	22.00	0.094	2024/12/26	
Left Side	18900/1880	20M QPSK(50,0)	0.029	0.013	-3.12	21.70	22.00	0.031	2024/12/26	
Right Side	18900/1880	20M QPSK(50,0)	0.429	0.173	-4.77	21.70	22.00	0.460	2024/12/26	
Top Side	18900/1880	20M QPSK(50,0)	0.039	0.018	4.95	21.70	22.00	0.042	2024/12/26	

10.1.7. SAR measurement Result of LTE Band 4

Test Position	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
Body with 0mm										
1RB										
Front Side	20175/1732.5	20M QPSK(1,49)	0.202	0.099	-0.93	19.87	20.00	0.208	2024/12/25	
Back Side	20175/1732.5	20M QPSK(1,49)	0.229	0.116	-2.16	19.87	20.00	0.236	2024/12/25	
Left Side	20175/1732.5	20M QPSK(1,49)	0.074	0.037	-3.97	19.87	20.00	0.076	2024/12/25	
Right Side	20175/1732.5	20M QPSK(1,49)	1.004	0.508	-0.56	19.87	20.00	1.035	2024/12/25	
Top Side	20175/1732.5	20M QPSK(1,49)	0.105	0.051	3.61	19.87	20.00	0.108	2024/12/25	
Right Side	20050/1720	20M QPSK(1,49)	1.133	0.554	1.16	19.79	20.00	1.189	2024/12/25	12#
Right Side	20300/1745	20M QPSK(1,49)	0.901	0.465	0.56	19.84	20.00	0.935	2024/12/25	
Right Side Repeated	20050/1720	20M QPSK(1,49)	1.130	0.552	-0.08	19.79	20.00	1.186	2024/12/25	
50%RB										

Front Side	20175/1732.5	20M QPSK(50,24)	0.106	0.057	2.41	18.80	19.00	0.111	2024/12/25	
Back Side	20175/1732.5	20M QPSK(50,24)	0.122	0.069	3.30	18.80	19.00	0.128	2024/12/25	
Left Side	20175/1732.5	20M QPSK(50,24)	0.043	0.021	1.57	18.80	19.00	0.045	2024/12/25	
Right Side	20175/1732.5	20M QPSK(50,24)	0.578	0.276	4.70	18.80	19.00	0.605	2024/12/25	
Top Side	20175/1732.5	20M QPSK(50,24)	0.054	0.027	-1.87	18.80	19.00	0.057	2024/12/25	
100%RB										
Right Side	20175/1732.5	20M QPSK(100,0)	0.492	0.249	3.26	18.71	19.00	0.526	2024/12/25	

10.1.8. SAR measurement Result of LTE Band 5

Test Position	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
Body with 0mm										
1RB										
Back Side	20525/836.5	10M QPSK(1,24)	0.614	0.405	3.07	21.87	22.00	0.633	2024/12/27	
Front Side	20525/836.5	10M QPSK(1,24)	1.158	0.779	-0.88	21.87	22.00	1.193	2024/12/27	13#
Left Side	20525/836.5	10M QPSK(1,24)	0.234	0.153	2.44	21.87	22.00	0.241	2024/12/27	
Right Side	20525/836.5	10M QPSK(1,24)	0.766	0.515	0.41	21.87	22.00	0.789	2024/12/27	
Top Side	20525/836.5	10M QPSK(1,24)	0.644	0.420	-2.33	21.87	22.00	0.664	2024/12/27	
Front Side	20450/829	10M QPSK(1,24)	1.123	0.762	-0.32	21.80	22.00	1.176	2024/12/27	
Front Side	20600/844	10M QPSK(1,24)	1.055	0.717	-0.34	21.68	22.00	1.136	2024/12/27	
FrontSide Repeated	20525/836.5	10M QPSK(1,24)	1.152	0.775	-0.56	21.87	22.00	1.187	2024/12/27	
50%RB										
Front	20525/836.5	10M	0.591	0.444	0.60	20.57	21.00	0.653	2024/12/27	

Side		QPSK(25,0)								
Back Side	20525/836.5	10M QPSK(25,0)	0.309	0.232	3.01	20.57	21.00	0.341	2024/12/27	
Left Side	20525/836.5	10M QPSK(25,0)	0.123	0.081	2.61	20.57	21.00	0.136	2024/12/27	
Right Side	20525/836.5	10M QPSK(25,0)	0.430	0.276	1.73	20.57	21.00	0.475	2024/12/27	
Top Side	20525/836.5	10M QPSK(25,0)	0.351	0.248	-0.31	20.57	21.00	0.388	2024/12/27	
100%RB										
Back Side	20525/836.5	20M QPSK(100,0)	0.654	0.393	2.41	20.88	21.00	0.672	2024/12/27	

10.1.9. SAR measurement Result of LTE Band 12

Test Position	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
Body with 0mm										
1RB										
Back Side	23095/707.5	10M QPSK(1,24)	0.442	0.299	-3.11	23.34	23.50	0.459	2024/12/28	
Front Side	23095/707.5	10M QPSK(1,24)	0.822	0.574	-1.09	23.34	23.50	0.853	2024/12/28	
Left Side	23095/707.5	10M QPSK(1,24)	0.166	0.114	3.66	23.34	23.50	0.172	2024/12/28	
Right Side	23095/707.5	10M QPSK(1,24)	0.561	0.384	2.13	23.34	23.50	0.582	2024/12/28	
Top Side	23095/707.5	10M QPSK(1,24)	0.462	0.306	0.34	23.34	23.50	0.479	2024/12/28	
Front Side	23060/704	10M QPSK(1,24)	0.864	0.598	-0.51	23.42	23.50	0.880	2024/12/28	14#
Front Side	23130/711	10M QPSK(1,24)	0.797	0.561	-0.51	23.45	23.50	0.806	2024/12/28	
FrontSide Repeated	23060/704	10M QPSK(1,24)	0.860	0.597	-3.80	23.42	23.50	0.876	2024/12/28	
50%RB										
Front Side	23095/707.5	10M QPSK(25,0)	0.478	0.298	-4.37	23.30	23.50	0.501	2024/12/28	

Back Side	23095/707.5	10M QPSK(25,0)	0.251	0.179	1.26	23.30	23.50	0.263	2024/12/28	
Left Side	23095/707.5	10M QPSK(25,0)	0.099	0.064	2.56	23.30	23.50	0.104	2024/12/28	
Right Side	23095/707.5	10M QPSK(25,0)	0.287	0.227	-3.34	23.30	23.50	0.301	2024/12/28	
Top Side	23095/707.5	10M QPSK(25,0)	0.242	0.183	-3.30	23.30	23.50	0.253	2024/12/28	
100%RB										
Back Side	23095/707.5	20M QPSK(100,0)	0.414	0.303	4.65	22.39	22.50	0.425	2024/12/28	

10.1.10. SAR measurement Result of LTE Band 17

Test Position	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
Body with 0mm										
1RB										
Back Side	23790/710	10M QPSK(1,49)	0.421	0.284	2.67	23.17	23.50	0.454	2024/12/28	
Front Side	23790/710	10M QPSK(1,49)	0.806	0.555	-1.22	23.17	23.50	0.870	2024/12/28	
Left Side	23790/710	10M QPSK(1,49)	0.170	0.114	-1.31	23.17	23.50	0.183	2024/12/28	
Right Side	23790/710	10M QPSK(1,49)	0.535	0.350	-0.54	23.17	23.50	0.577	2024/12/28	
Top Side	23790/710	10M QPSK(1,49)	0.462	0.315	1.38	23.17	23.50	0.498	2024/12/28	
Front Side	23780/709	10M QPSK(1,49)	0.810	0.556	-0.78	23.09	23.50	0.890	2024/12/28	15#
Front Side	23800/711	10M QPSK(1,49)	0.798	0.551	-1.10	23.27	23.50	0.841	2024/12/28	
FrontSide Repeated	23780/709	10M QPSK(1,49)	0.805	0.553	-0.16	23.09	23.50	0.885	2024/12/28	
50%RB										
Front Side	23790/710	10M QPSK(25,24)	0.479	0.328	-4.11	22.00	22.50	0.537	2024/12/28	
Back Side	23790/710	10M QPSK(25,24)	0.211	0.164	3.46	22.00	22.50	0.237	2024/12/28	
Left Side	23790/710	10M	0.097	0.062	-4.75	22.00	22.50	0.109	2024/12/28	

		QPSK(25,24)								
Right Side	23790/710	10M QPSK(25,24)	0.311	0.187	1.45	22.00	22.50	0.349	2024/12/28	
Top Side	23790/710	10M QPSK(25,24)	0.234	0.176	3.68	22.00	22.50	0.263	2024/12/28	
100%RB										
Back Side	23790/710	20M QPSK(100,0)	0.467	0.318	3.59	22.02	22.50	0.522	2024/12/28	

10.1.11. SAR measurement Result of LTE Band 41

Test Position	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
Body with 0mm										
1RB										
Front Side	40620/2593	20M QPSK(1,49)	0.053	0.024	-0.67	22.41	23.00	0.061	2024/12/16	
Back Side	40620/2593	20M QPSK(1,49)	0.350	0.160	-3.55	22.41	23.00	0.401	2024/12/16	
Left Side	40620/2593	20M QPSK(1,49)	0.062	0.028	-3.00	22.41	23.00	0.071	2024/12/16	
Right Side	40620/2593	20M QPSK(1,49)	0.523	0.221	-0.09	22.41	23.00	0.599	2024/12/16	16#
Top Side	40620/2593	20M QPSK(1,49)	0.122	0.056	-1.69	22.41	23.00	0.140	2024/12/16	
50%RB										
Front Side	40620/2593	20M QPSK(50,49)	0.030	0.013	-2.43	21.35	22.00	0.035	2024/12/16	
Back Side	40620/2593	20M QPSK(50,49)	0.209	0.083	3.21	21.35	22.00	0.243	2024/12/16	
Left Side	40620/2593	20M QPSK(50,49)	0.035	0.016	-0.48	21.35	22.00	0.041	2024/12/16	
Right Side	40620/2593	20M QPSK(50,49)	0.267	0.130	-4.19	21.35	22.00	0.310	2024/12/16	
Bottom Side	40620/2593	20M QPSK(50,49)	0.063	0.033	-2.87	21.35	22.00	0.073	2024/12/16	

10.1.12. SAR measurement Result of LTE Band 66

Test Position	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
Body with 0mm										
1RB										
Front Side	132322/1745	20M QPSK(1,49)	0.188	0.091	0.32	22.95	23.00	0.190	2024/12/25	
Back Side	132322/1745	20M QPSK(1,49)	0.207	0.099	2.81	22.95	23.00	0.209	2024/12/25	
Left Side	132322/1745	20M QPSK(1,49)	0.064	0.032	-0.64	22.95	23.00	0.065	2024/12/25	
Right Side	132322/1745	20M QPSK(1,49)	0.897	0.453	-1.42	22.95	23.00	0.907	2024/12/25	
Top Side	132322/1745	20M QPSK(1,49)	0.093	0.046	-1.86	22.95	23.00	0.094	2024/12/25	
Right Side	132072/1720	20M QPSK(1,49)	1.121	0.547	0.63	22.93	23.00	1.139	2024/12/25	17#
Right Side	132572/1770	20M QPSK(1,49)	0.755	0.400	-1.13	22.88	23.00	0.776	2024/12/25	
Right Side Repeated	132072/1720	20M QPSK(1,49)	1.116	0.536	-0.38	22.93	23.00	1.134	2024/12/25	
50%RB										
Front Side	132322/1745	20M QPSK(50,49)	0.097	0.049	1.49	21.84	22.00	0.101	2024/12/25	
Back Side	132322/1745	20M QPSK(50,49)	0.106	0.058	-3.89	21.84	22.00	0.110	2024/12/25	
Left Side	132322/1745	20M QPSK(50,49)	0.035	0.019	4.70	21.84	22.00	0.036	2024/12/25	
Right Side	132322/1745	20M QPSK(50,49)	0.483	0.265	-2.90	21.84	22.00	0.501	2024/12/25	
Top Side	132322/1745	20M QPSK(50,49)	0.055	0.024	-3.13	21.84	22.00	0.057	2024/12/25	
100%RB										
Right Side	132322/1745	20M QPSK(100,0)	0.43	0.235	2.48	21.80	22.00	0.450	2024/12/25	

10.1.13. SAR measurement Result of LTE Band 71

Test Position	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
Body with 0mm										
1RB										
Front Side	133322/683	20M QPSK(1,49)	0.892	0.542	-1.68	23.20	23.50	0.956	2024/12/28	18#
Back Side	133322/683	20M QPSK(1,49)	0.489	0.291	1.66	23.20	23.50	0.524	2024/12/28	
Left Side	133322/683	20M QPSK(1,49)	0.180	0.106	-2.01	23.20	23.50	0.193	2024/12/28	
Right Side	133322/683	20M QPSK(1,49)	0.614	0.369	0.51	23.20	23.50	0.658	2024/12/28	
Top Side	133322/683	20M QPSK(1,49)	0.506	0.307	3.54	23.20	23.50	0.542	2024/12/28	
Front Side	133147/665.5	20M QPSK(1,49)	0.841	0.525	-1.69	23.15	23.50	0.912	2024/12/28	
Front Side	133447/695.5	20M QPSK(1,49)	0.832	0.514	-2.74	23.12	23.50	0.908	2024/12/28	
FrontSide Repeated	133322/683	20M QPSK(1,49)	0.879	0.540	-1.52	23.20	23.50	0.942	2024/12/28	
50%RB										
Front Side	133322/683	20M QPSK(50,0)	0.529	0.291	-2.35	22.20	22.50	0.567	2024/12/28	
Back Side	133322/683	20M QPSK(50,0)	0.280	0.149	2.04	22.20	22.50	0.300	2024/12/28	
Left Side	133322/683	20M QPSK(50,0)	0.090	0.058	-1.27	22.20	22.50	0.096	2024/12/28	
Right Side	133322/683	20M QPSK(50,0)	0.319	0.217	3.10	22.20	22.50	0.342	2024/12/28	
Top Side	133322/683	20M QPSK(50,0)	0.272	0.154	4.59	22.20	22.50	0.291	2024/12/28	
100%RB										
Back Side	133322/683	20M QPSK(100,0)	0.448	0.267	-3.06	22.05	22.50	0.497	2024/12/28	

10.1.14. SAR measurement Result of WLAN 2.4G

Test Position	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
Body with 0mm										
Front Side	6/2437	802.11b	0.119	0.065	-2.93	16.78	17.00	0.125	2024/12/12	
Back Side	6/2437	802.11b	0.058	0.033	2.87	16.78	17.00	0.061	2024/12/12	
Left Side	6/2437	802.11b	0.326	0.161	-1.50	16.78	17.00	0.343	2024/12/12	10#
Right Side	6/2437	802.11b	0.064	0.035	-1.42	16.78	17.00	0.067	2024/12/12	

10.1.15. SAR measurement Result of WLAN 5.2G

Test Position	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
Body with 0mm										
Front Side	38/5190	802.11ac VHT40	0.154	0.071	1.87	11.37	11.50	0.159	2024/12/27	
Back Side	38/5190	802.11ac VHT40	0.067	0.032	1.15	11.37	11.50	0.069	2024/12/27	
Left Side	38/5190	802.11ac VHT40	0.273	0.114	1.19	11.37	11.50	0.281	2024/12/27	6#
Top Side	38/5190	802.11ac VHT40	0.080	0.038	-3.17	11.37	11.50	0.082	2024/12/27	

10.1.16. SAR measurement Result of WLAN 5.3G

Test Position	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
Body with 0mm										
Front Side	56/5280	802.11n HT40	0.140	0.057	2.42	11.01	11.50	0.157	2024/12/19	
Back Side	56/5280	802.11n HT40	0.070	0.029	2.35	11.01	11.50	0.078	2024/12/19	
Left Side	56/5280	802.11n HT40	0.298	0.124	-2.05	11.01	11.50	0.334	2024/12/19	7#
Top	56/5280	802.11n	0.090	0.037	-2.02	11.01	11.50	0.101	2024/12/19	

Side		HT40								

10.1.17. SAR measurement Result of WLAN 5.6G

Test Position	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
Body with 0mm										
Front Side	102/5510	802.11n HT40	0.112	0.046	3.34	10.32	10.50	0.117	2024/12/18	
Back Side	102/5510	802.11n HT40	0.055	0.026	-3.21	10.32	10.50	0.057	2024/12/18	
Left Side	102/5510	802.11n HT40	0.281	0.115	3.82	10.32	10.50	0.293	2024/12/18	8#
Top Side	102/5510	802.11n HT40	0.080	0.037	1.71	10.32	10.50	0.083	2024/12/18	

10.1.18. SAR measurement Result of WLAN 5.8G

Test Position	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
Body with 0mm										
Front Side	157/5785	802.11a	0.056	0.026	-2.92	9.34	10.00	0.065	2024/12/17	
Back Side	157/5785	802.11a	0.030	0.014	1.20	9.34	10.00	0.035	2024/12/17	
Left Side	157/5785	802.11a	0.255	0.107	4.20	9.34	10.00	0.297	2024/12/17	9#
Top Side	157/5785	802.11a	0.050	0.023	3.33	9.34	10.00	0.058	2024/12/17	
Front Side	157/5785	802.11a	0.056	0.026	-2.92	9.34	10.00	0.065	2024/12/17	

10.2. 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.

Test Position		Scaled SARMAX		∑1-g SAR (W/Kg)	SPLSR	Remark
		WWAN	DTS			
Body	Front Side	1.209	0.125	1.334	N/A	N/A
	Back Side	0.672	0.061	0.733	N/A	N/A
	Left Side	0.245	0.343	0.588	N/A	N/A
	Right Side	1.189	0.067	1.256	N/A	N/A
	Top Side	0.679	N/A	0.679	N/A	N/A
	Bottom Side	N/A	N/A	N/A	N/A	N/A

Test Position		Scaled SARMAX		∑1-g SAR (W/Kg)	SPLSR	Remark
		WWAN	NII			
Body	Front Side	1.209	0.159	1.368	N/A	N/A
	Back Side	0.672	0.078	0.750	N/A	N/A
	Left Side	0.245	0.334	0.579	N/A	N/A
	Right Side	1.189	0.000	1.189	N/A	N/A
	Top Side	0.679	0.101	0.780	N/A	N/A
	Bottom Side	N/A	N/A	N/A	N/A	N/A

Test Position		Scaled SARMAX		∑1-g SAR (W/Kg)	SPLSR	Remark
		WWAN	DSS			
Body	Front Side	1.209	0.265	1.474	N/A	N/A
	Back Side	0.672	0.265	0.937	N/A	N/A
	Left Side	0.245	0.265	0.510	N/A	N/A
	Right Side	1.189	0.265	1.454	N/A	N/A
	Top Side	0.679	0.265	0.944	N/A	N/A
	Bottom Side	N/A	N/A	N/A	N/A	N/A

11. Appendix A. Photo documentation

Refer to appendix Test Setup photo---SAR

12. Appendix B. System Check Plots

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MEASUREMENT 6 SystemPerformanceCheck-2600MHz
MEASUREMENT 7 SystemPerformanceCheck-5200MHz
MEASUREMENT 8 SystemPerformanceCheck-5300MHz
MEASUREMENT 9 SystemPerformanceCheck-5600MHz
MEASUREMENT 10 SystemPerformanceCheck-5800MHz

MEASUREMENT 1

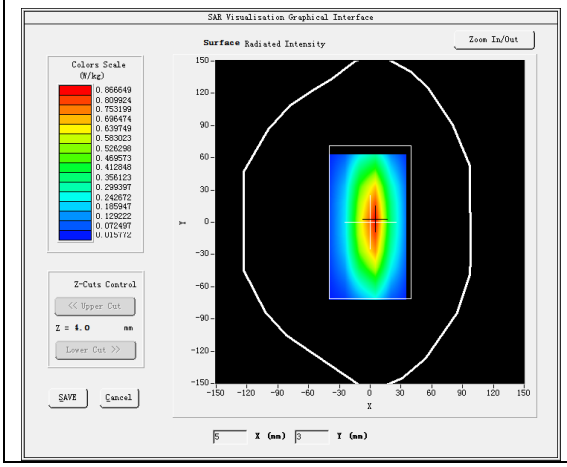
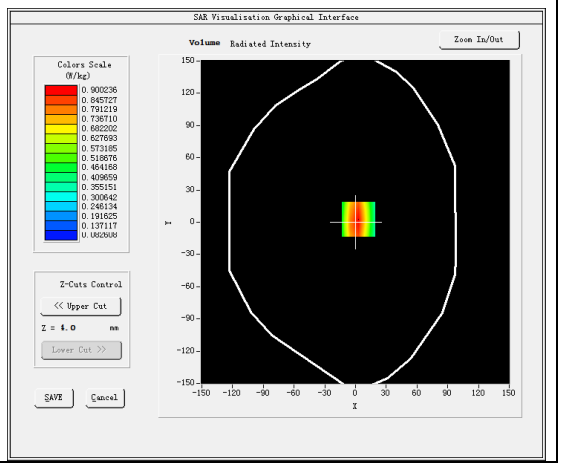
Date of measurement: 28/12/2024

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	2.42

B. SAR Measurement Results

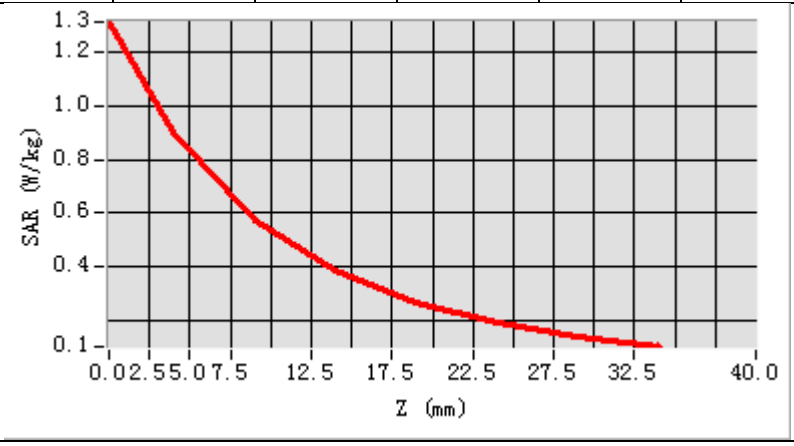
Frequency (MHz)	750.000000
Relative permittivity (real part)	40.716808
Relative permittivity (imaginary part)	21.492181
Conductivity (S/m)	0.895508
Variation (%)	-0.280000

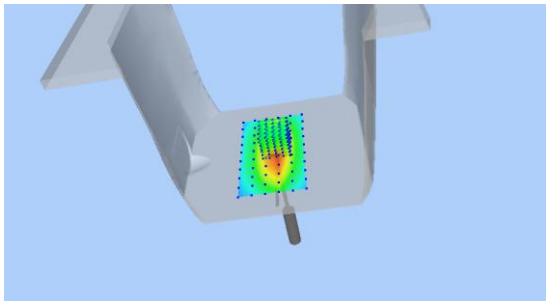
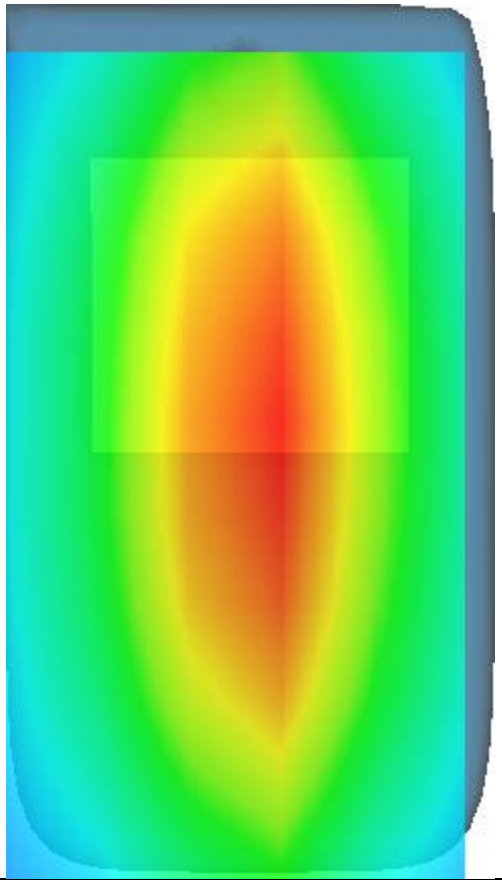
SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=3.00, Y=3.00
SAR Peak: 1.31 W/kg

SAR 10g (W/Kg)	0.534160
SAR 1g (W/Kg)	0.872762

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	1.3105	0.9002	0.5711	0.3865	0.2687	0.1928	0.1413



3D screen shot	Hot spot position
	

MEASUREMENT 2

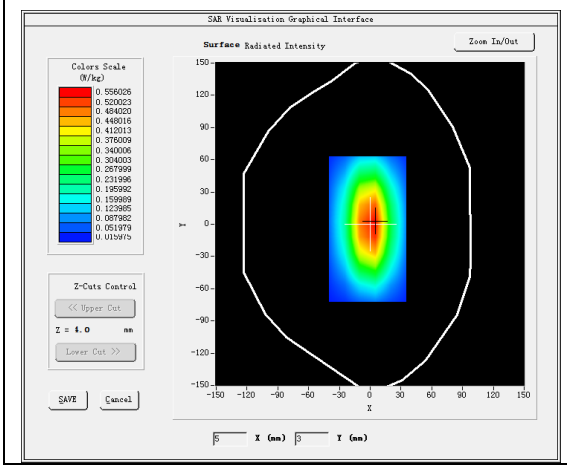
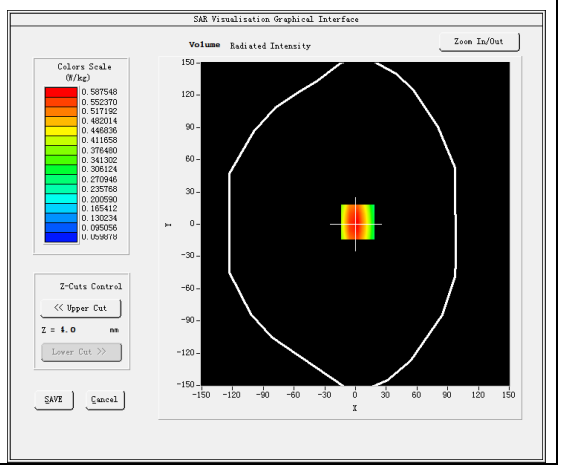
Date of measurement: 27/12/2024

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	2.34

B. SAR Measurement Results

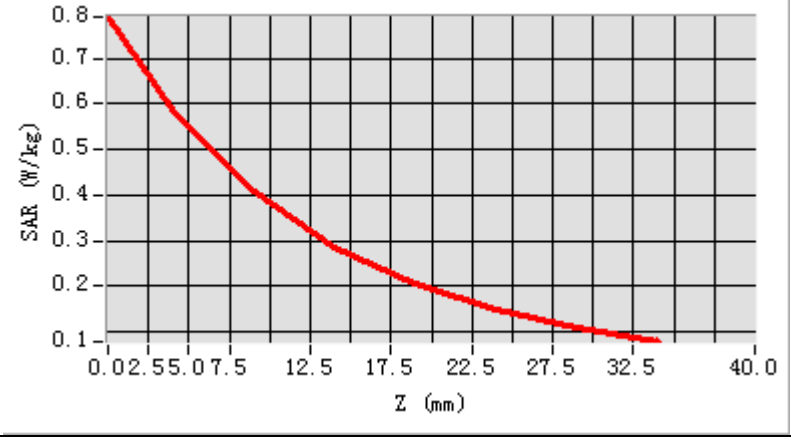
Frequency (MHz)	835.000000
Relative permittivity (real part)	41.771852
Relative permittivity (imaginary part)	19.536408
Conductivity (S/m)	0.906272
Variation (%)	-0.030000

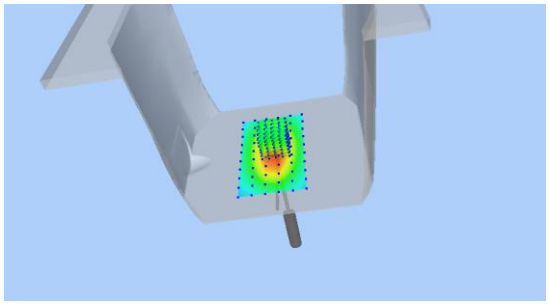
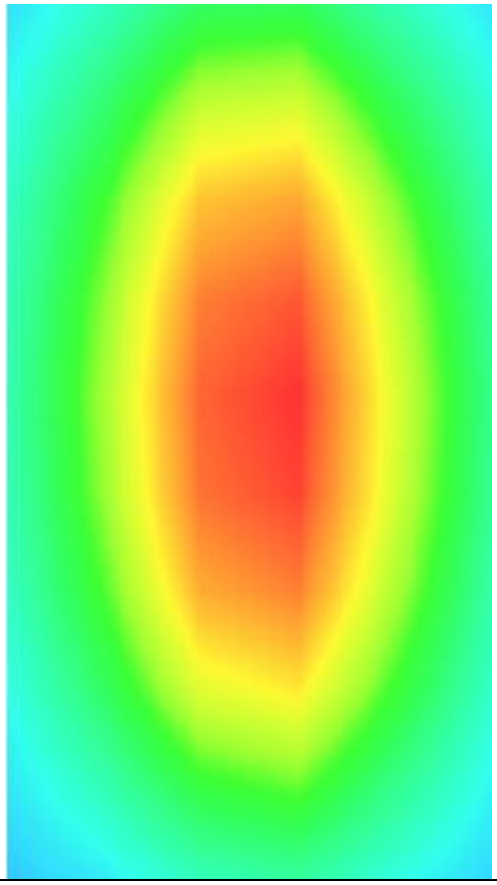
SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=2.00, Y=2.00
SAR Peak: 0.80 W/kg

SAR 10g (W/Kg)	0.383168
SAR 1g (W/Kg)	0.578894

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.7903	0.5875	0.4073	0.2838	0.2050	0.1483	0.1091



3D screen shot	Hot spot position
	

MEASUREMENT 3

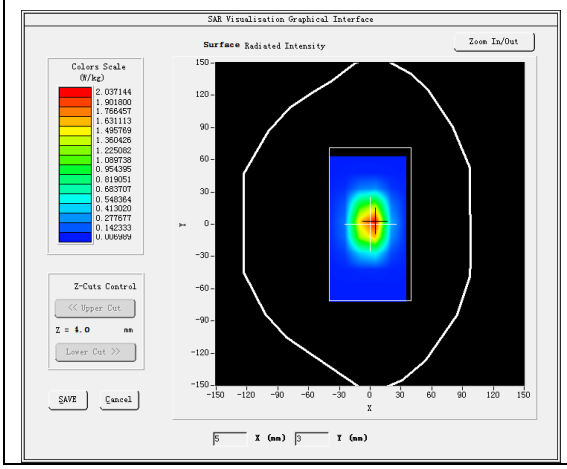
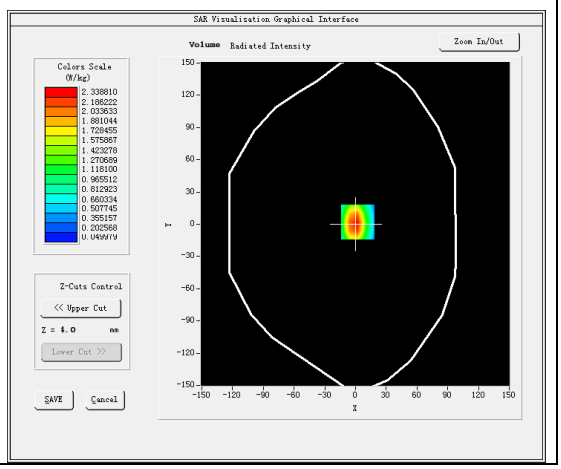
Date of measurement: 25/12/2024

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	2.51

B. SAR Measurement Results

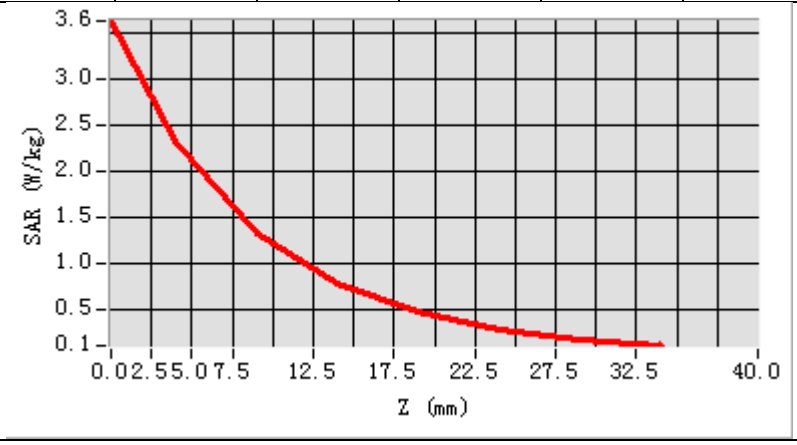
Frequency (MHz)	1800.000000
Relative permittivity (real part)	38.914988
Relative permittivity (imaginary part)	13.691182
Conductivity (S/m)	1.369118
Variation (%)	-1.030000

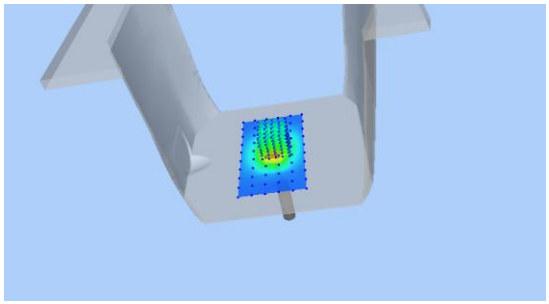
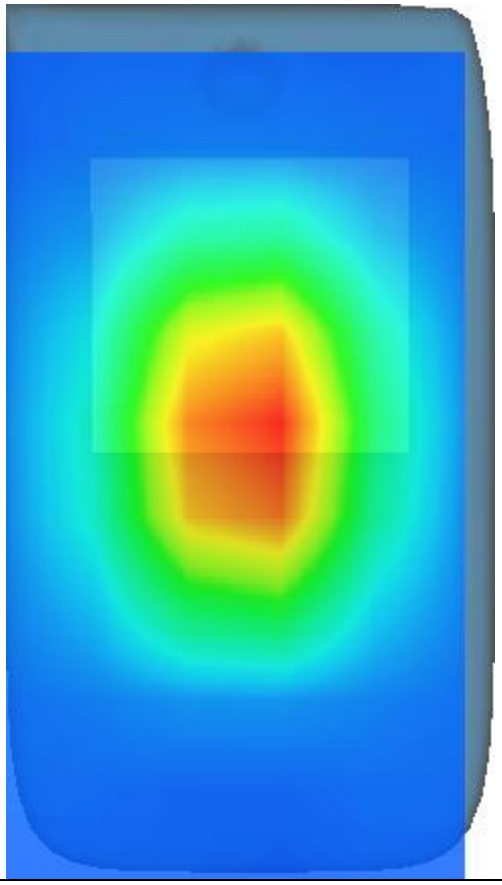
SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=2.00, Y=2.00
SAR Peak: 3.77 W/kg

SAR 10g (W/Kg)	1.176403
SAR 1g (W/Kg)	2.271929

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	3.6321	2.3388	1.3298	0.7822	0.4767	0.2922	0.1855



3D screen shot	Hot spot position
	

MEASUREMENT 4

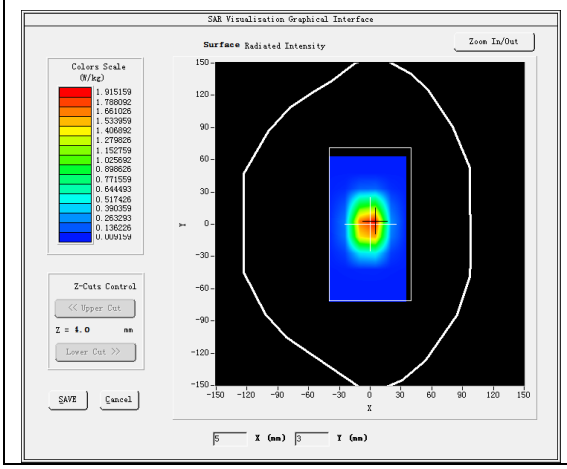
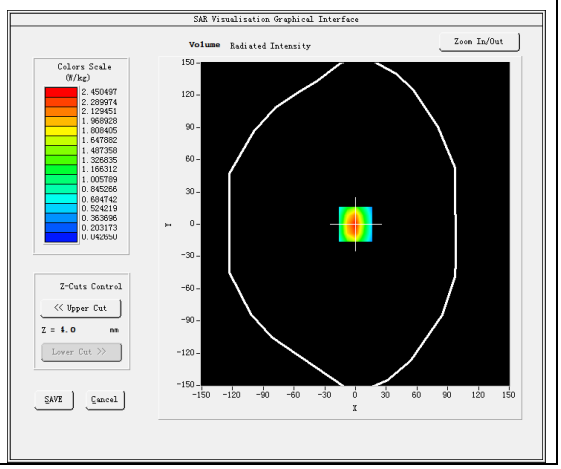
Date of measurement: 26/12/2024

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	2.57

B. SAR Measurement Results

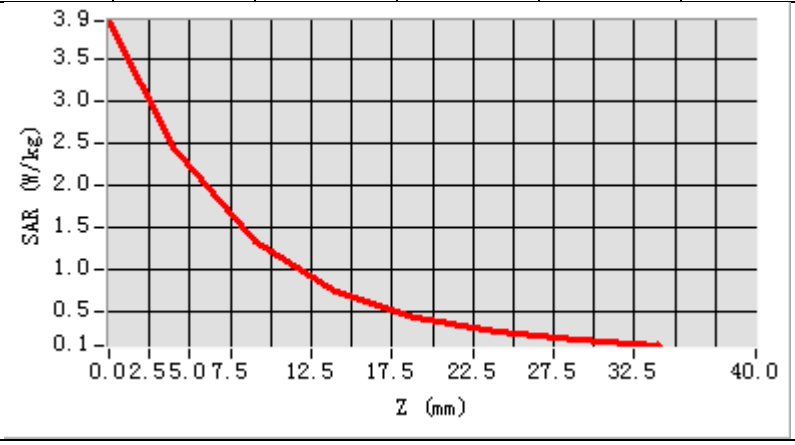
Frequency (MHz)	1900.000000
Relative permittivity (real part)	38.525400
Relative permittivity (imaginary part)	13.853198
Conductivity (S/m)	1.462282
Variation (%)	-0.200000

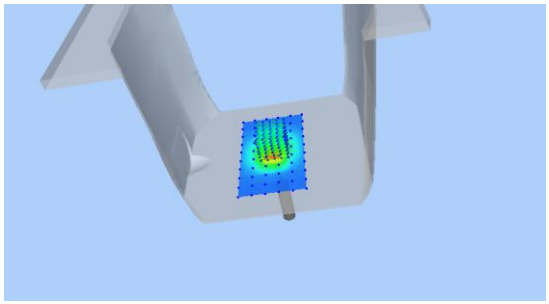
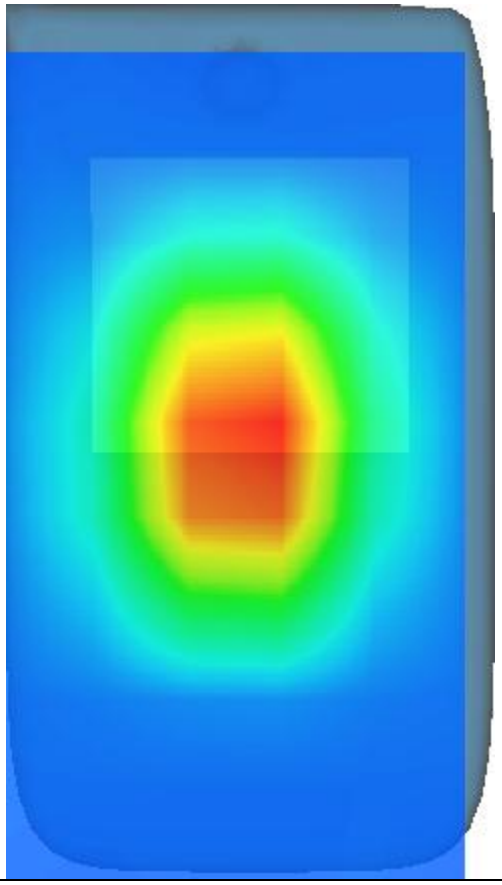
SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=0.00, Y=0.00
SAR Peak: 3.97 W/kg

SAR 10g (W/Kg)	1.280374
SAR 1g (W/Kg)	2.397560

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	3.9415	2.4505	1.3195	0.7376	0.4282	0.2542	0.1538



3D screen shot	Hot spot position
	

MEASUREMENT 5

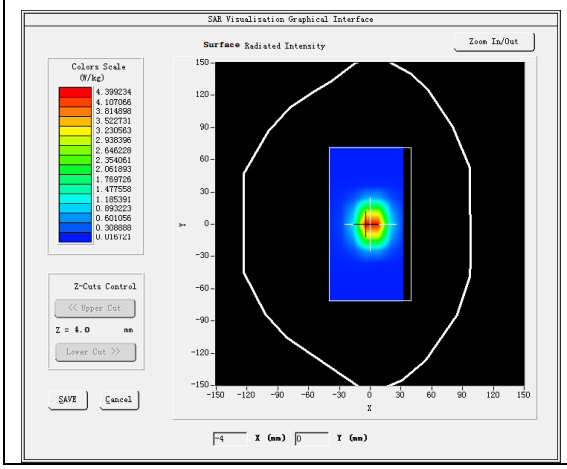
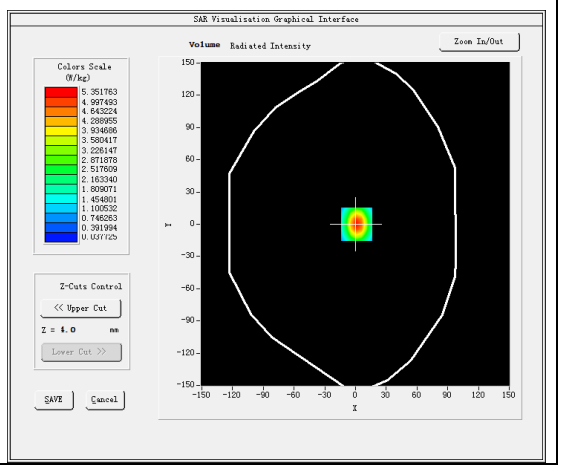
Date of measurement: 12/12/2024

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	2.74

B. SAR Measurement Results

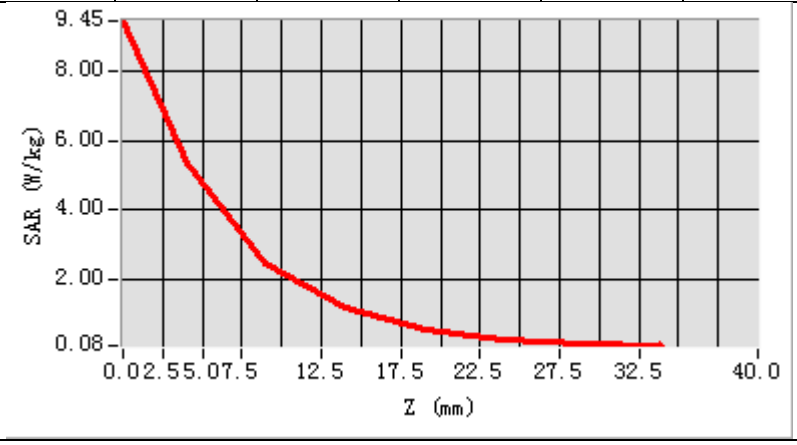
Frequency (MHz)	2450.000000
Relative permittivity (real part)	37.814490
Relative permittivity (imaginary part)	13.088029
Conductivity (S/m)	1.781426
Variation (%)	-0.120000

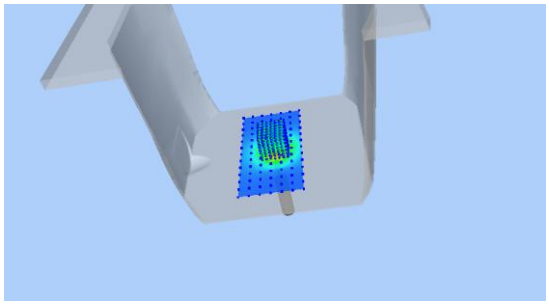
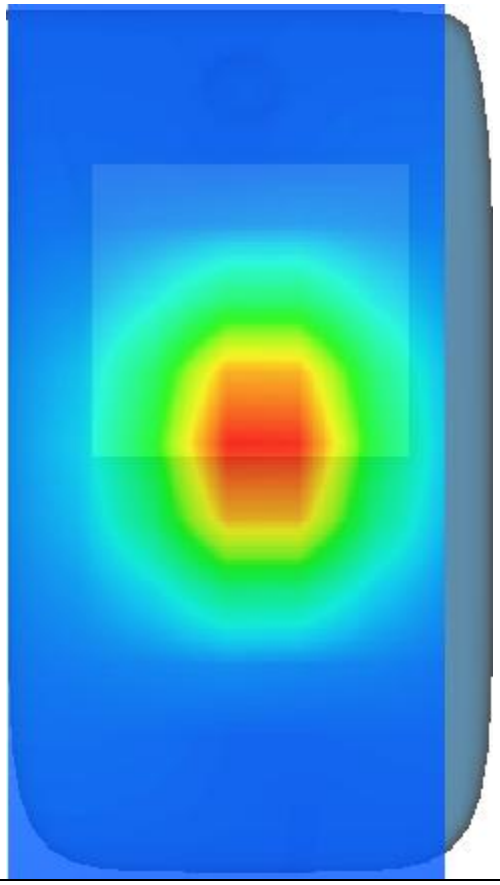
SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=1.00, Y=0.00
SAR Peak: 9.35 W/kg

SAR 10g (W/Kg)	2.216730
SAR 1g (W/Kg)	4.962190

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	9.4489	5.3518	2.4364	1.1509	0.5548	0.2722	0.1404



3D screen shot	Hot spot position
	

MEASUREMENT 6

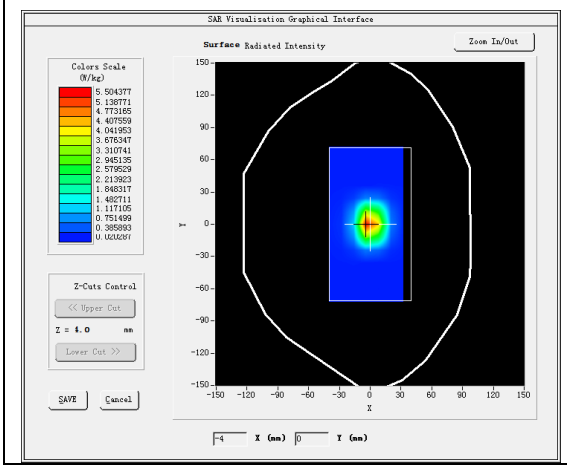
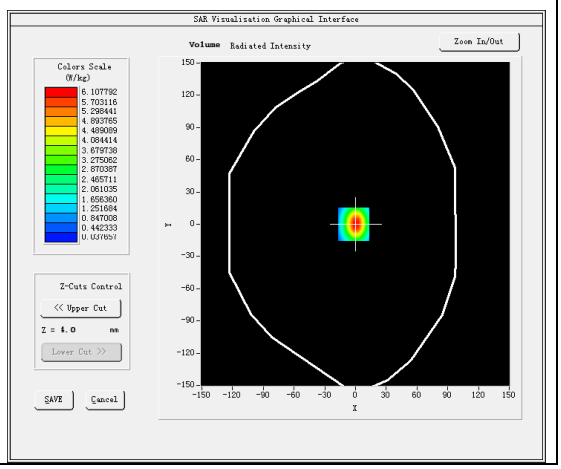
Date of measurement: 16/12/2024

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	2.51

B. SAR Measurement Results

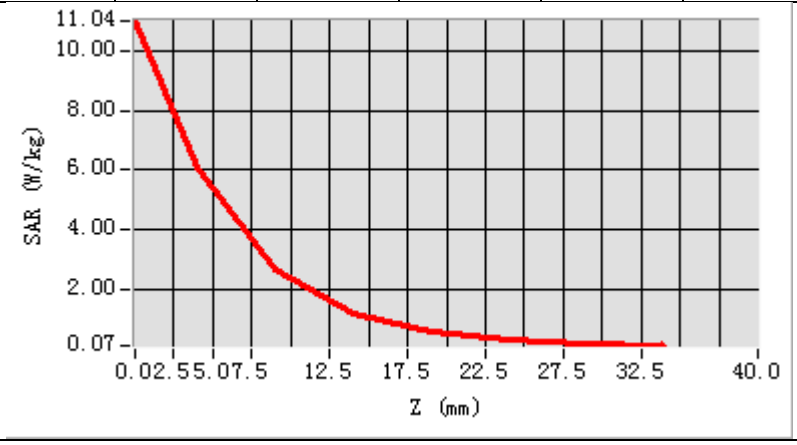
Frequency (MHz)	2600.000000
Relative permittivity (real part)	38.780921
Relative permittivity (imaginary part)	13.634014
Conductivity (S/m)	1.969358
Variation (%)	0.060000

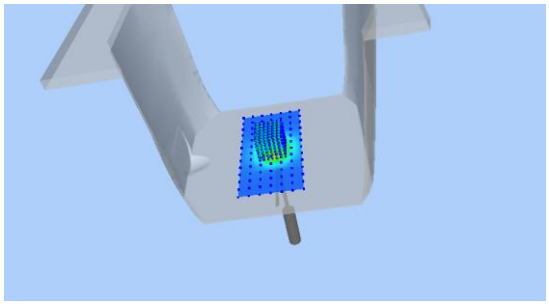
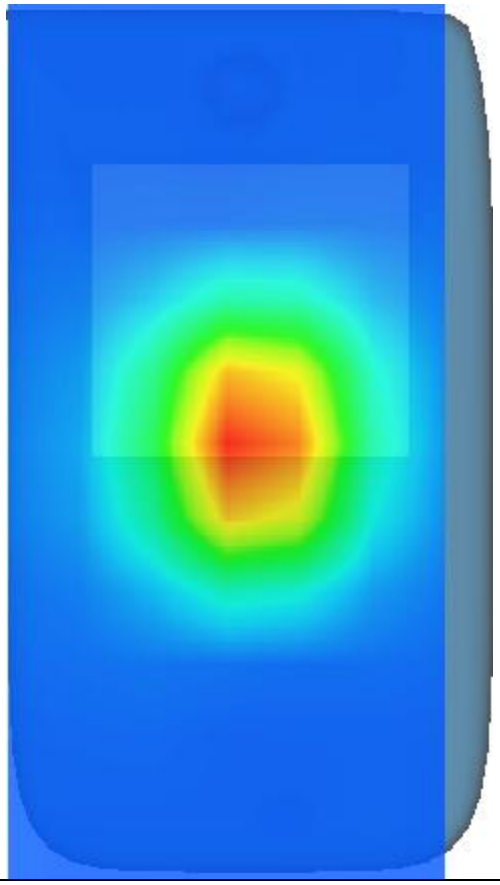
SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=-2.00, Y=0.00
SAR Peak: 11.37 W/kg

SAR 10g (W/Kg)	2.451632
SAR 1g (W/Kg)	5.858735

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	11.0395	6.1078	2.6593	1.1897	0.5516	0.2634	0.1313



3D screen shot	Hot spot position
	

MEASUREMENT 7

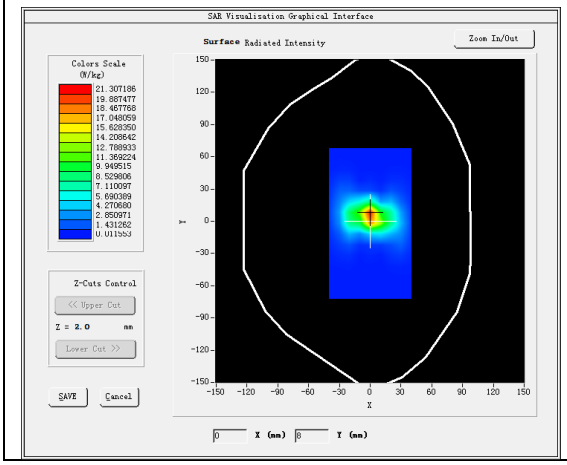
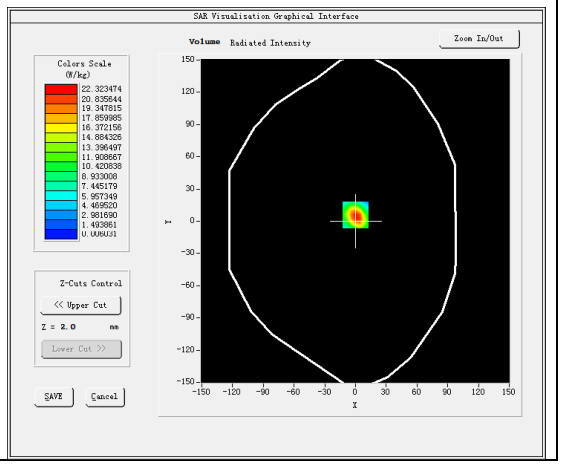
Date of measurement: 27/12/2024

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	CW5200
Channels	Middle
Signal	CW (Crest factor: 1.0)
ConvF	1.89

B. SAR Measurement Results

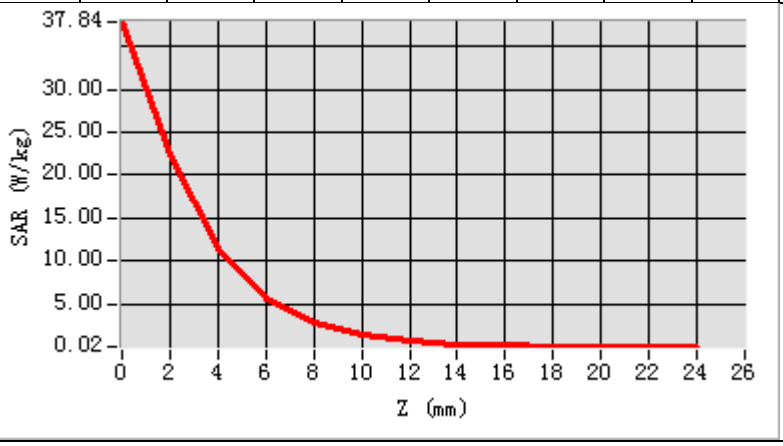
Frequency (MHz)	5200.000000
Relative permittivity (real part)	34.652485
Relative permittivity (imaginary part)	15.561054
Conductivity (S/m)	4.4954156
Variation (%)	1.590000

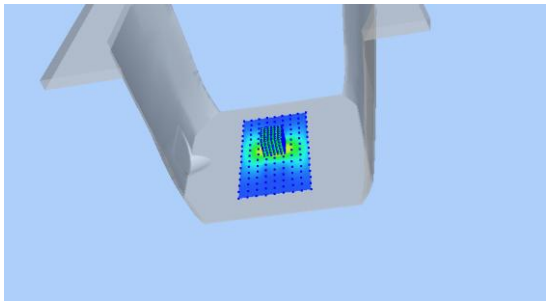
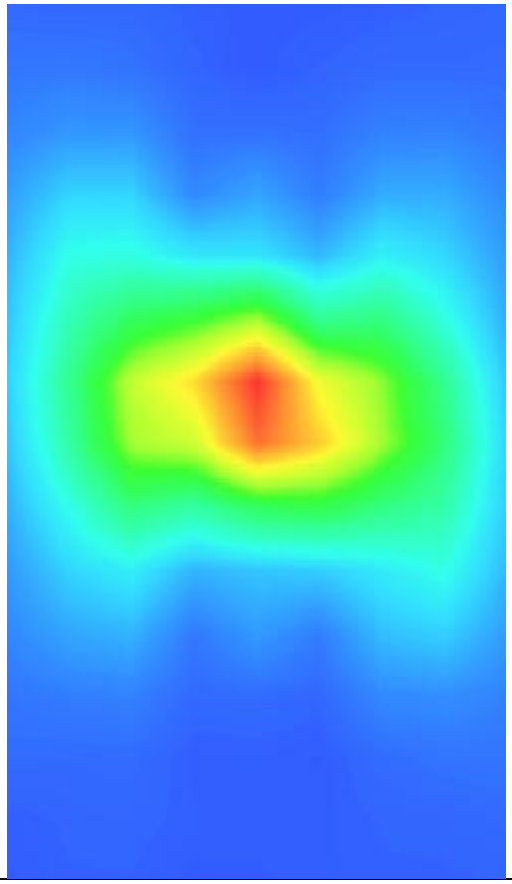
SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=0.00, Y=6.00
SAR Peak: 40.06 W/kg

SAR 10g (W/Kg)	5.450374
SAR 1g (W/Kg)	15.653564

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)	37.8356	22.3278	11.3730	5.6618	2.8255	1.4093	0.7124	0.3660	0.1808	0.1012	0.0513	0.0323



3D screen shot	Hot spot position
	

MEASUREMENT 8

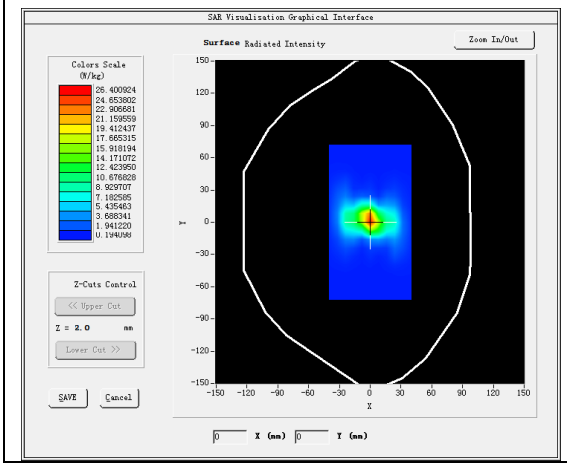
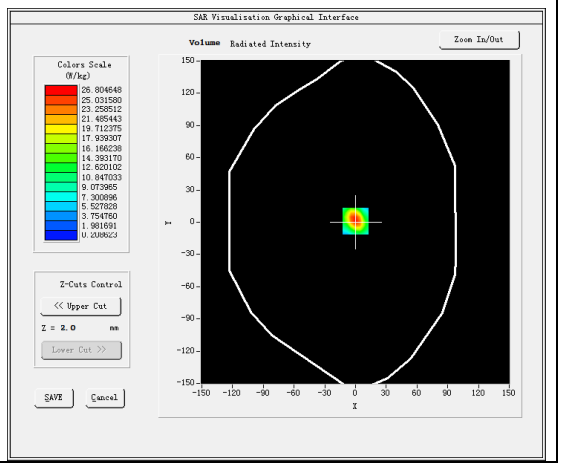
Date of measurement: 126/12/2024

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	CW5400
Channels	Middle
Signal	CW (Crest factor: 1.0)
ConvF	1.97

B. SAR Measurement Results

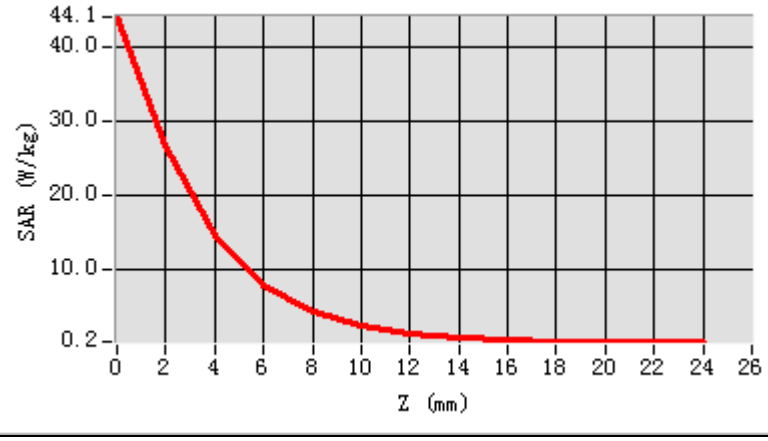
Frequency (MHz)	5400.000000
Relative permittivity (real part)	34.328834
Relative permittivity (imaginary part)	16.013383
Conductivity (S/m)	4.804015
Variation (%)	-0.690000

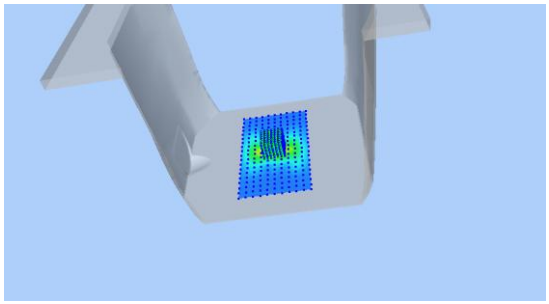
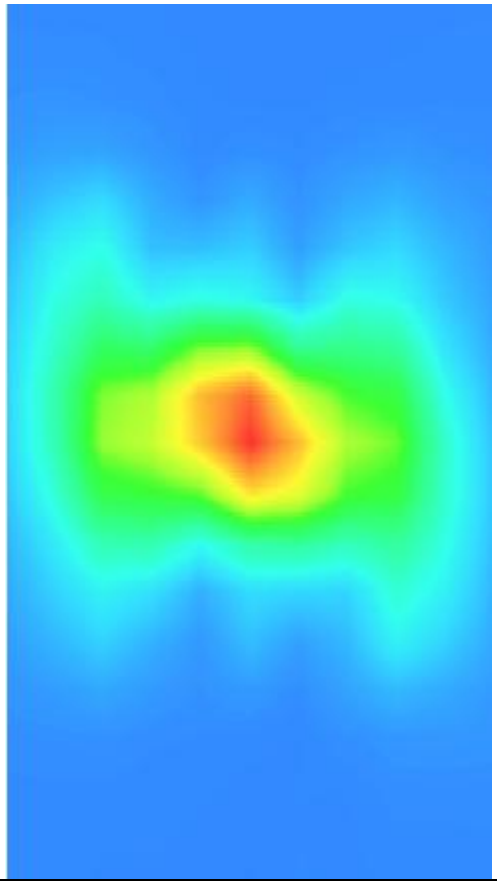
SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=0.00, Y=1.00
SAR Peak: 46.18 W/kg

SAR 10g (W/Kg)	5.330881
SAR 1g (W/Kg)	16.122849

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)	44.074	26.875	14.612	7.8109	4.2226	2.3238	1.3237	0.7813	0.5004	0.3745	0.2803	0.2613



3D screen shot	Hot spot position
	

MEASUREMENT 9

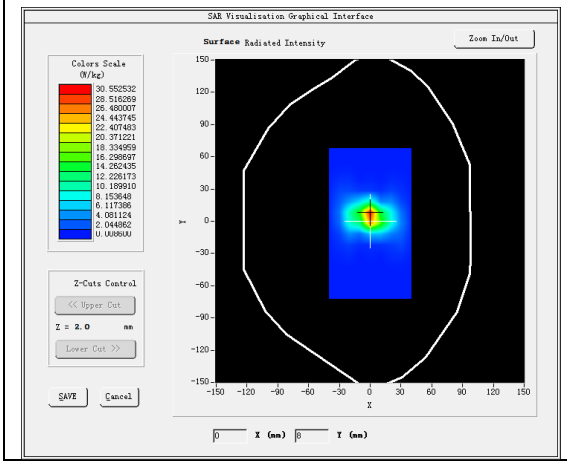
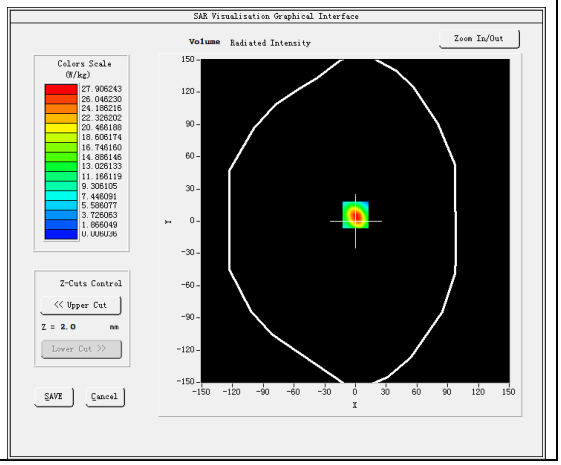
Date of measurement: 18/12/2024

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	CW5600
Channels	Middle
Signal	CW (Crest factor: 1.0)
ConvF	1.88

B. SAR Measurement Results

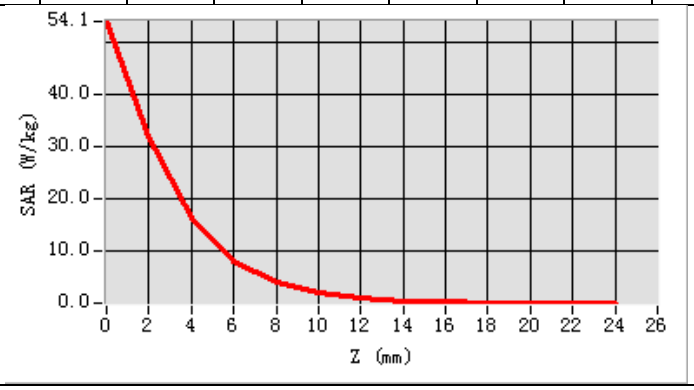
Frequency (MHz)	5600.000000
Relative permittivity (real part)	34.403251
Relative permittivity (imaginary part)	15.863583
Conductivity (S/m)	4.935337
Variation (%)	0.200000

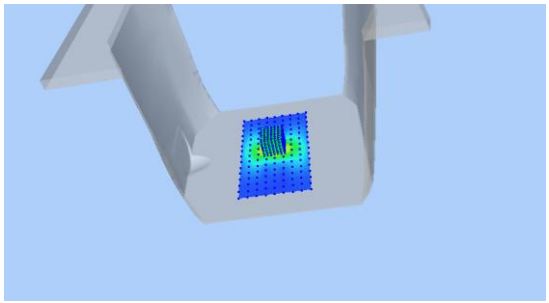
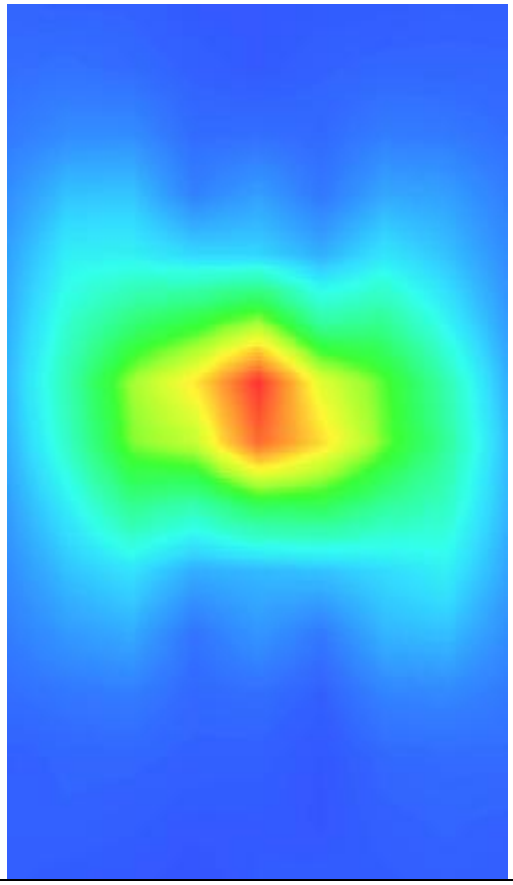
SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=0.00, Y=6.00
SAR Peak: 51.23 W/kg

SAR 10g (W/Kg)	5.511984
SAR 1g (W/Kg)	17.239165

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)	54.1388	31.9062	16.3510	8.1783	4.0824	3.8166	1.0345	0.4687	0.2729	0.1326	0.0755	0.0502



3D screen shot	Hot spot position
	

MEASUREMENT 10

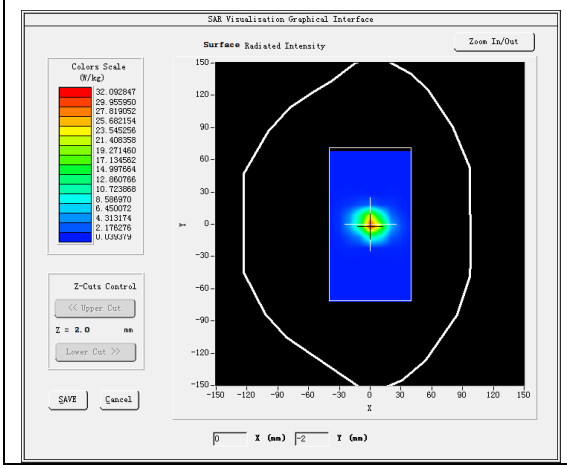
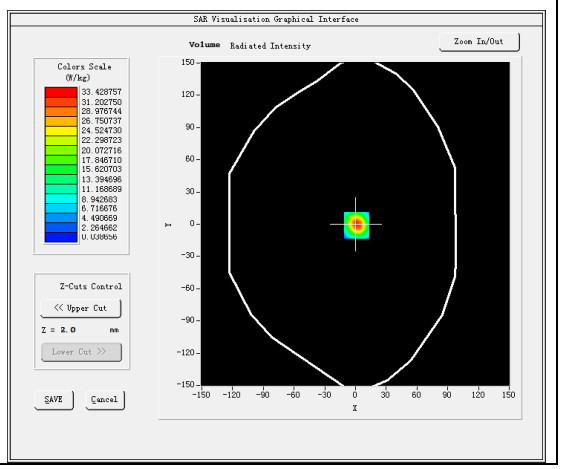
Date of measurement: 17/12/2024

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	1.90

B. SAR Measurement Results

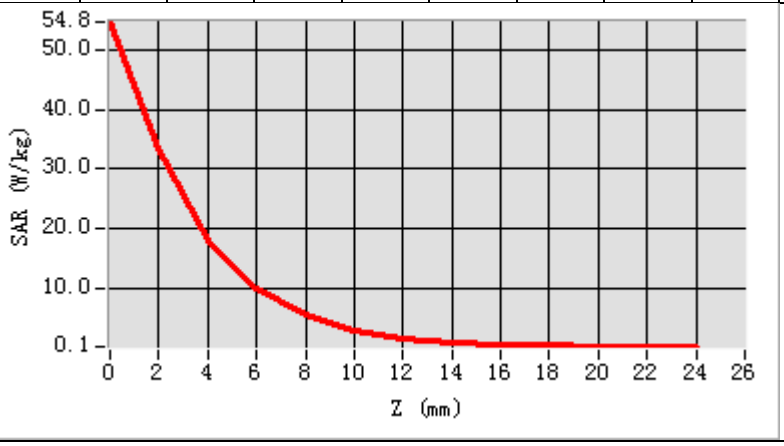
Frequency (MHz)	5800.000000
Relative permittivity (real part)	33.903621
Relative permittivity (imaginary part)	15.920115
Conductivity (S/m)	5.129815
Variation (%)	-0.570000

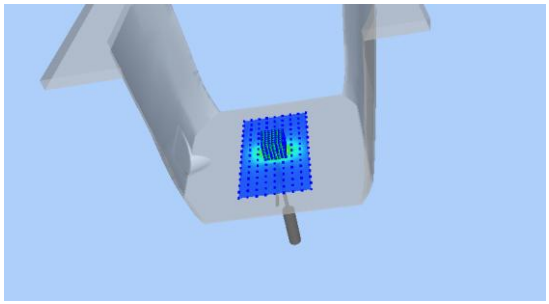
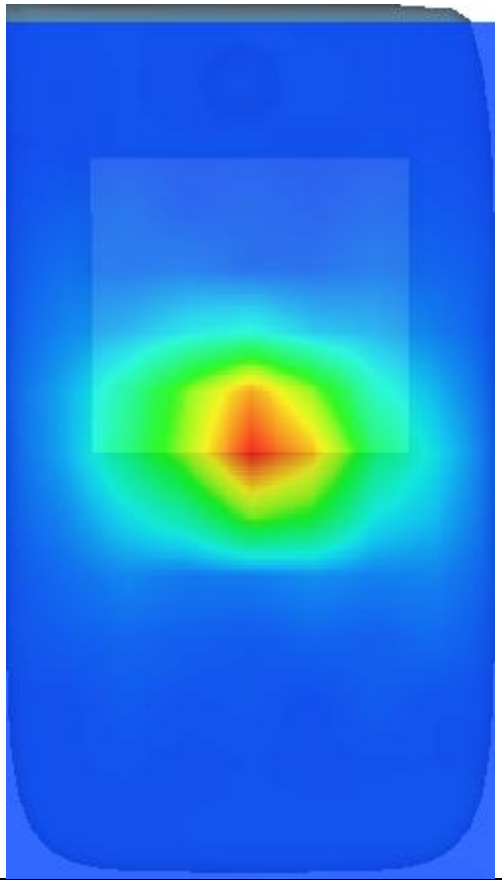
SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=1.00, Y=-1.00
SAR Peak: 57.36 W/kg

SAR 10g (W/Kg)	6.479202
SAR 1g (W/Kg)	19.064737

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)	54.7514	33.4288	18.0436	9.9351	5.3474	2.9017	1.5754	0.8653	0.4965	0.2888	0.1906	0.1046



3D screen shot	Hot spot position
	

13. Appendix C. Plots of High SAR Measurement

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MEASUREMENT 1

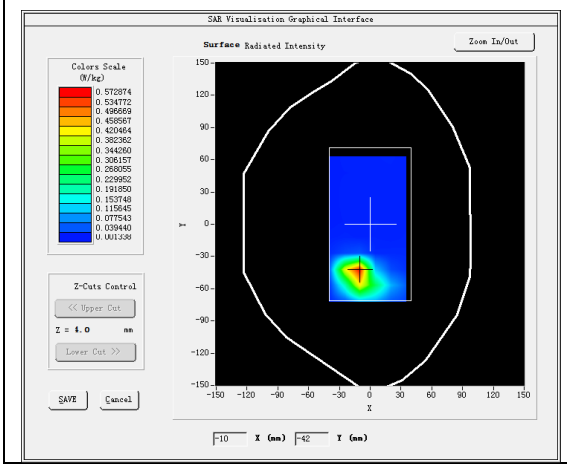
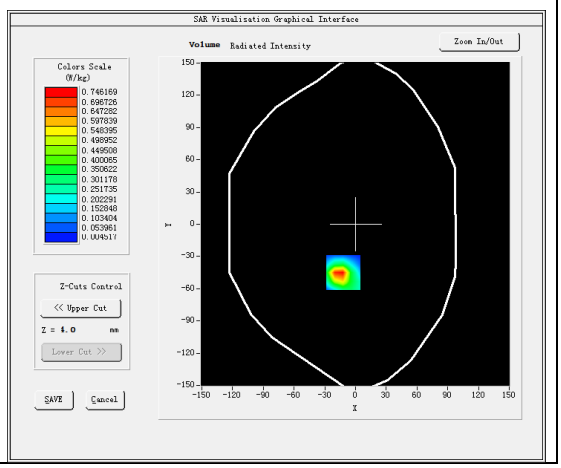
Date of measurement: 27/12/2024

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	High
Signal	TDMA (Crest factor: 8.0)
ConvF	2.34

B. SAR Measurement Results

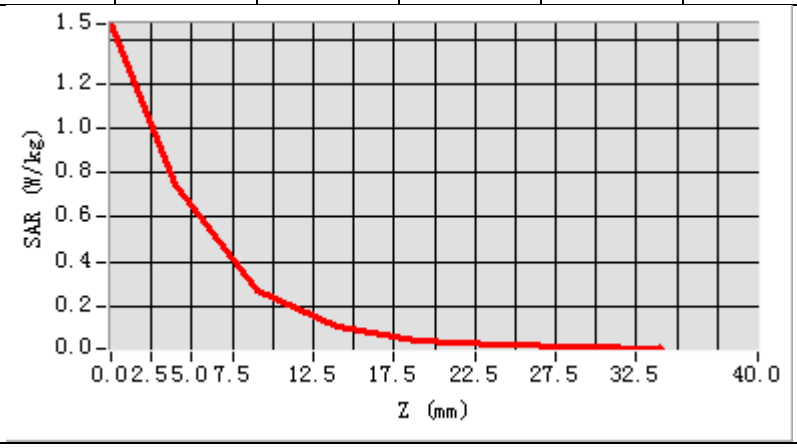
Frequency (MHz)	848.800000
Relative permittivity (real part)	41.742706
Relative permittivity (imaginary part)	19.618612
Conductivity (S/m)	0.911612
Variation (%)	2.090000

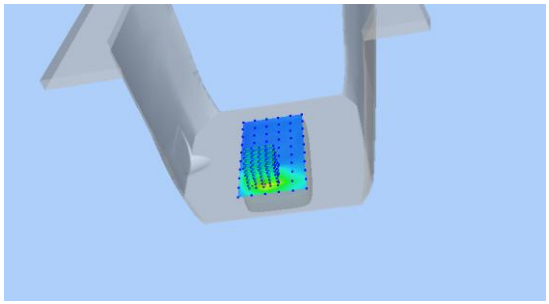
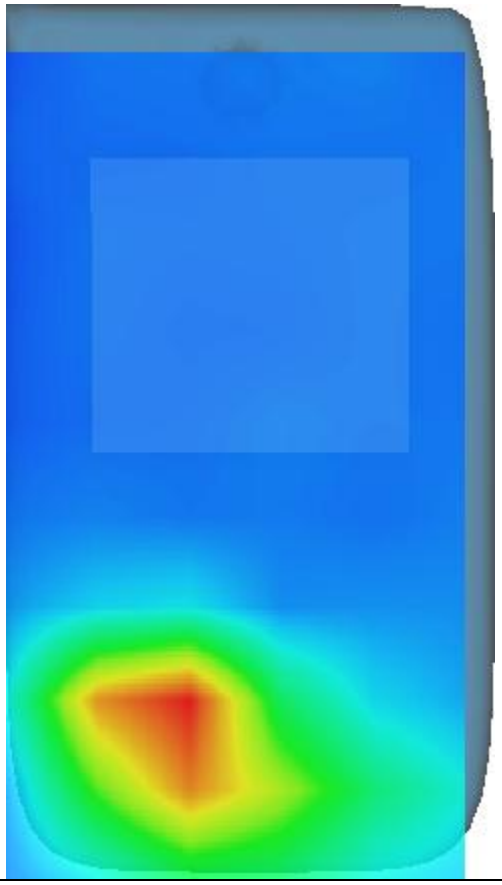
SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=-12.00, Y=-45.00
SAR Peak: 1.56 W/kg

SAR 10g (W/Kg)	0.288411
SAR 1g (W/Kg)	0.742111

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	1.4704	0.7462	0.2713	0.1085	0.0467	0.0231	0.0135



3D screen shot	Hot spot position
	

MEASUREMENT 2

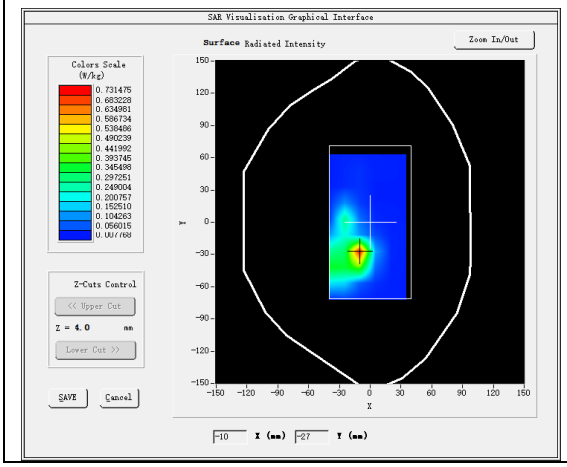
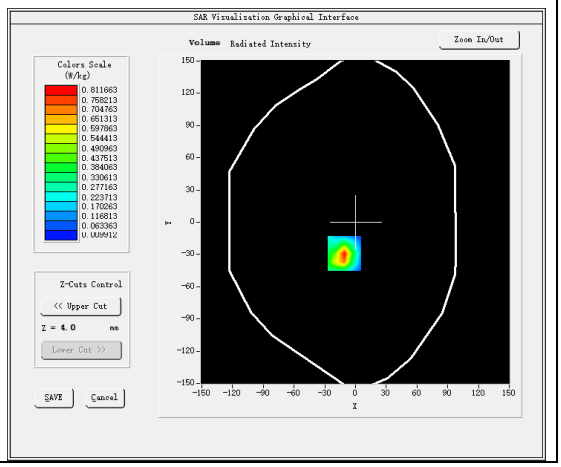
Date of measurement: 26/12/2024

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: 8.0)
ConvF	2.57

B. SAR Measurement Results

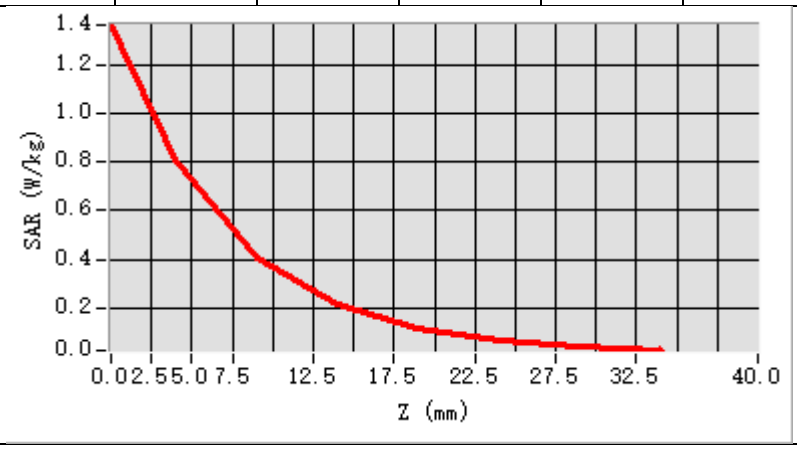
Frequency (MHz)	1880.000000
Relative permittivity (real part)	38.543579
Relative permittivity (imaginary part)	13.809931
Conductivity (S/m)	1.442371
Variation (%)	2.100000

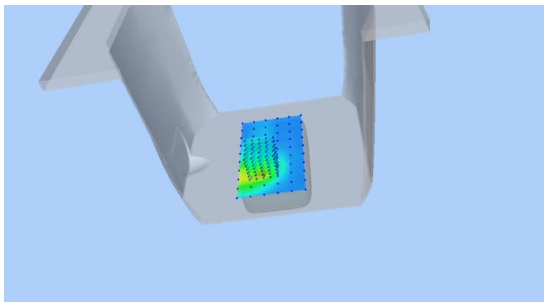
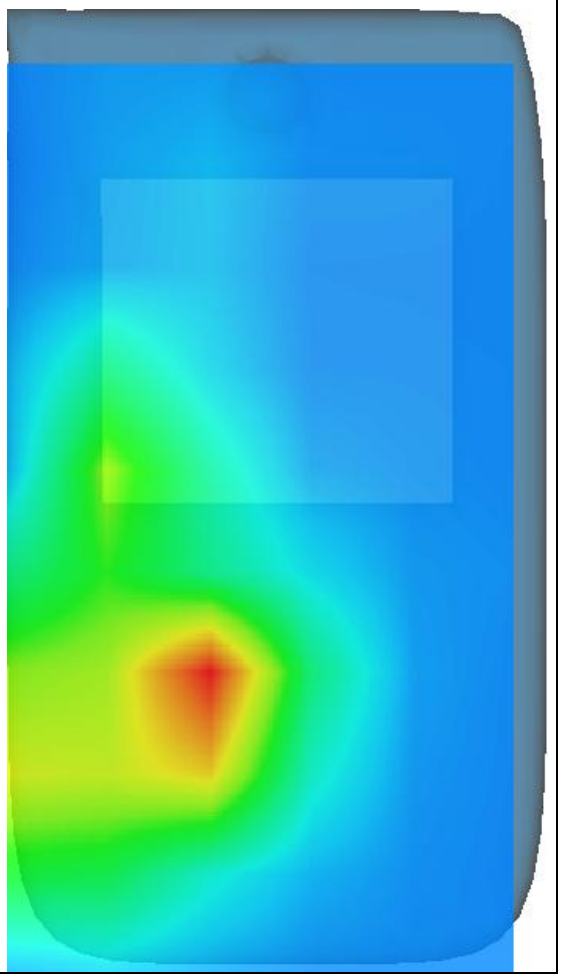
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-11.00, Y=-29.00
SAR Peak: 1.38 W/kg

SAR 10g (W/Kg)	0.323394
SAR 1g (W/Kg)	0.750568

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	1.3613	0.8117	0.4066	0.2125	0.1139	0.0657	0.0381



3D screen shot	Hot spot position
	

MEASUREMENT 3

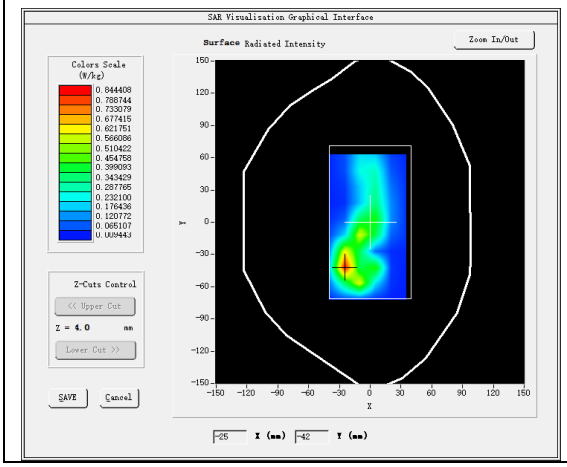
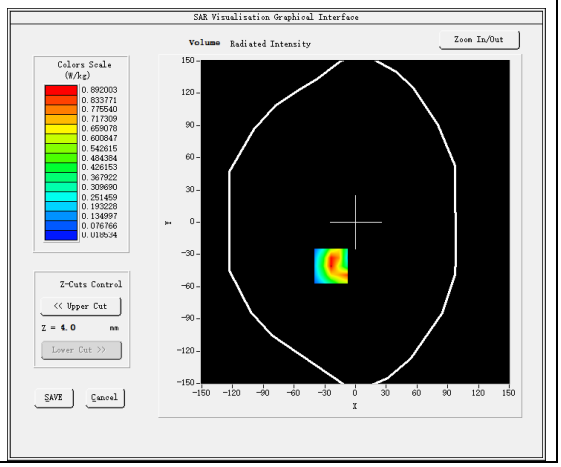
Date of measurement: 26/12/2024

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	High
Signal	WCDMA (Crest factor: 1.0)
ConvF	2.57

B. SAR Measurement Results

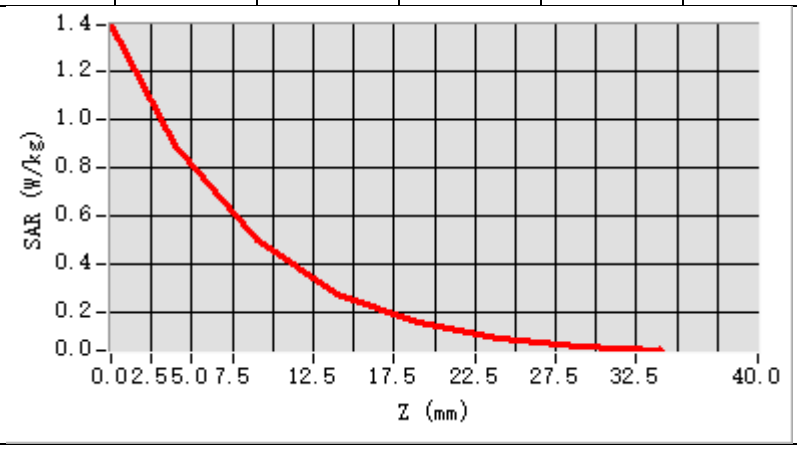
Frequency (MHz)	1907.600000
Relative permittivity (real part)	38.429939
Relative permittivity (imaginary part)	13.746431
Conductivity (S/m)	1.456816
Variation (%)	-0.300000

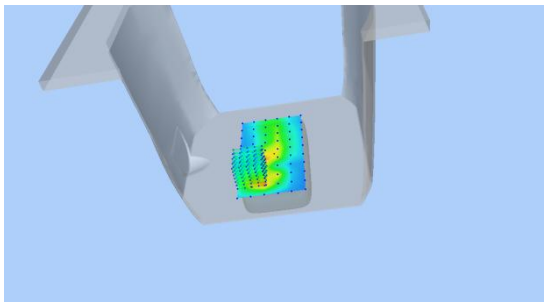
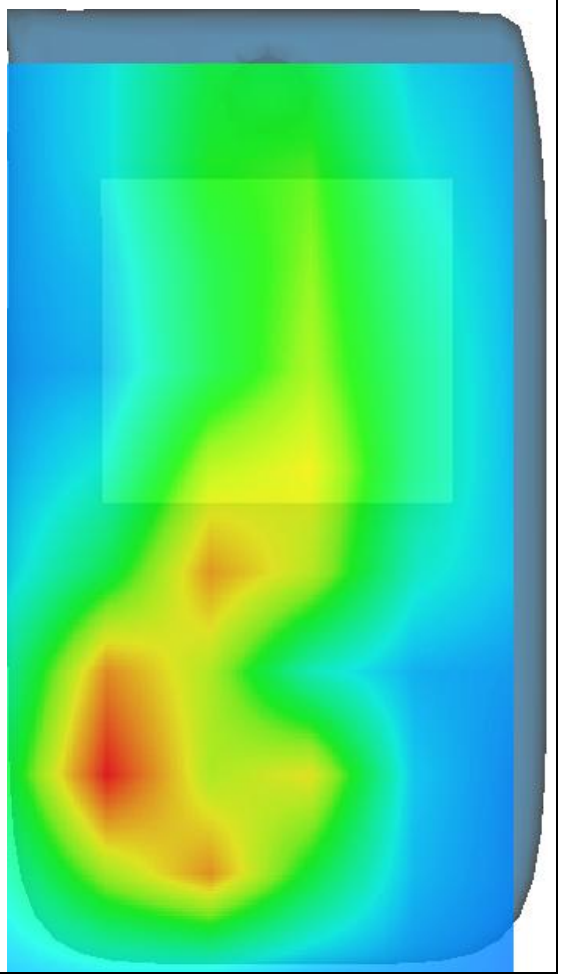
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-24.00, Y=-41.00
SAR Peak: 1.49 W/kg

SAR 10g (W/Kg)	0.422331
SAR 1g (W/Kg)	0.875186

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	1.3963	0.8920	0.4951	0.2757	0.1568	0.0903	0.0547



3D screen shot	Hot spot position
	

MEASUREMENT 4

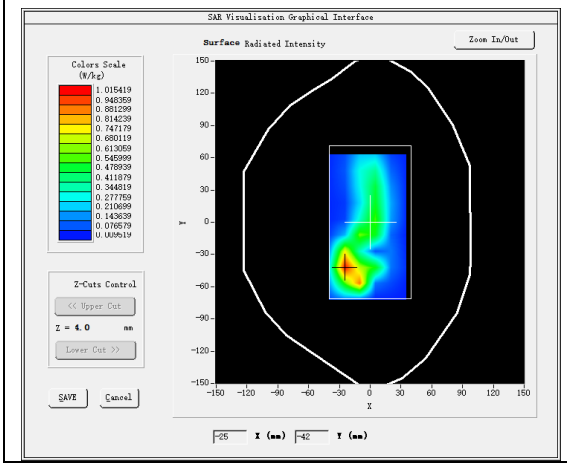
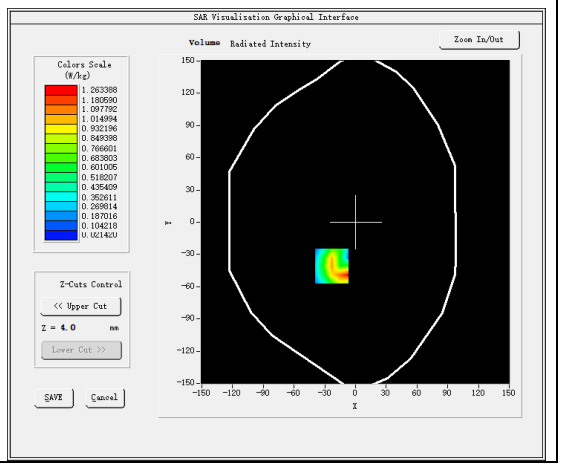
Date of measurement: 25/12/2024

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	2.51

B. SAR Measurement Results

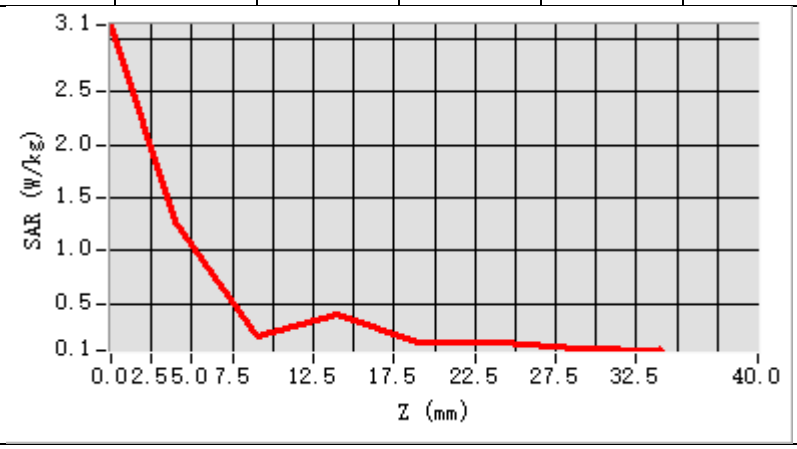
Frequency (MHz)	1732.600000
Relative permittivity (real part)	39.429882
Relative permittivity (imaginary part)	13.699847
Conductivity (S/m)	1.318230
Variation (%)	-0.950000

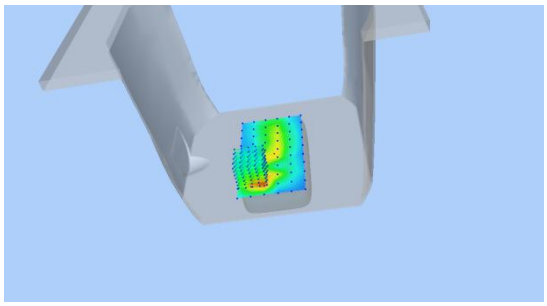
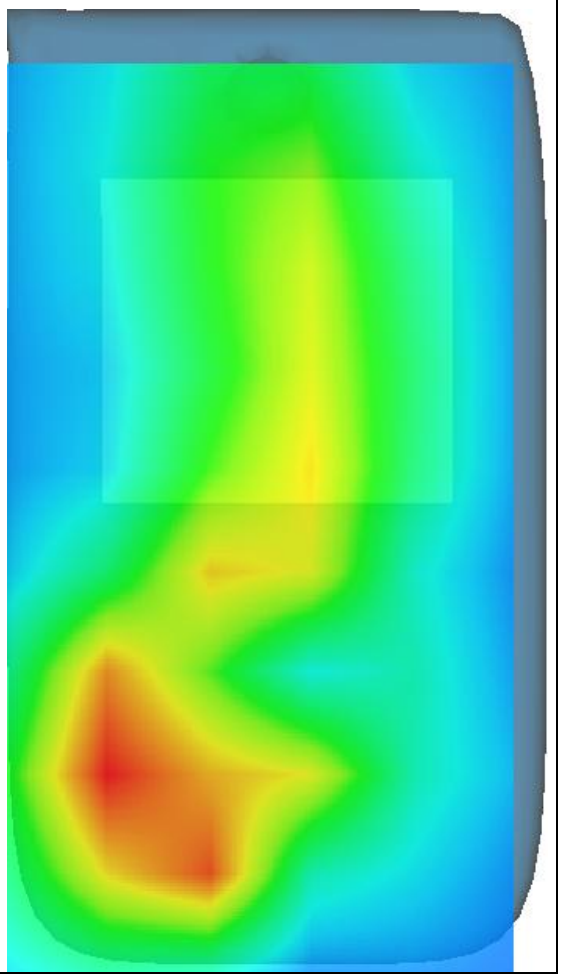
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-23.00, Y=-41.00
SAR Peak: 1.99 W/kg

SAR 10g (W/Kg)	0.543913
SAR 1g (W/Kg)	1.060015

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	3.1283	1.2634	0.1946	0.3950	0.1263	0.1435	0.0714



3D screen shot	Hot spot position
	

MEASUREMENT 5

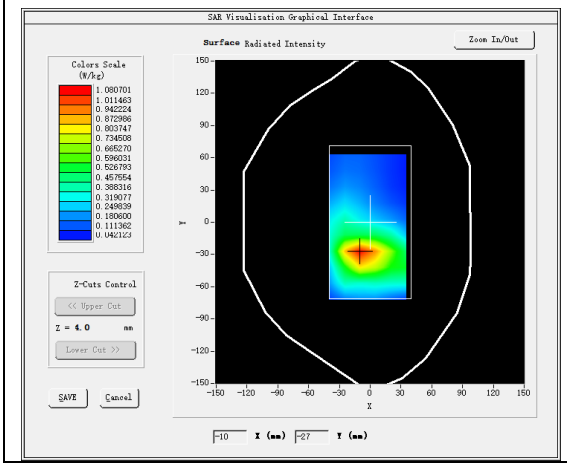
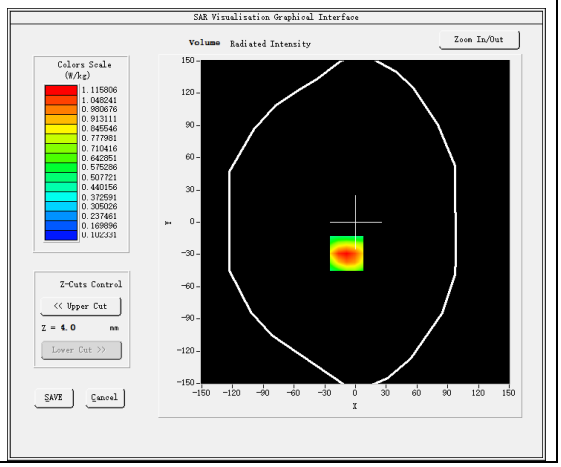
Date of measurement: 27/12/2024

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	2.34

B. SAR Measurement Results

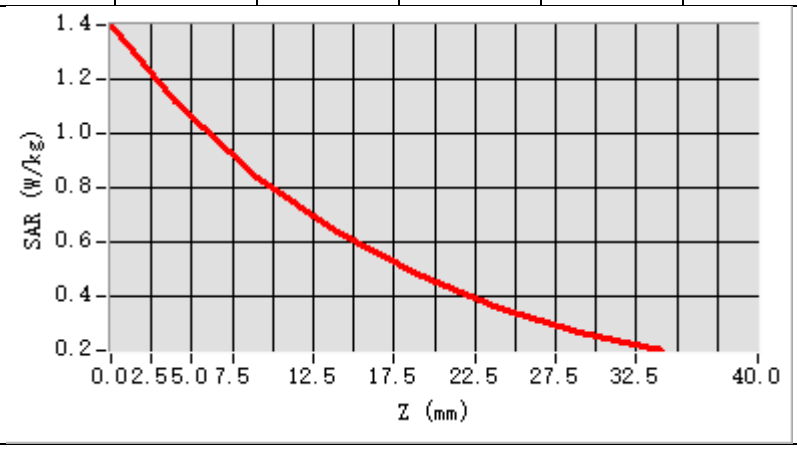
Frequency (MHz)	836.400000
Relative permittivity (real part)	41.742706
Relative permittivity (imaginary part)	19.618612
Conductivity (S/m)	0.911612
Variation (%)	-1.400000

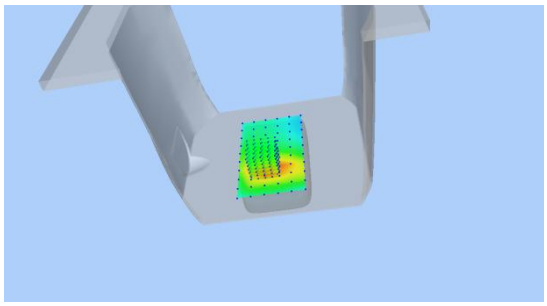
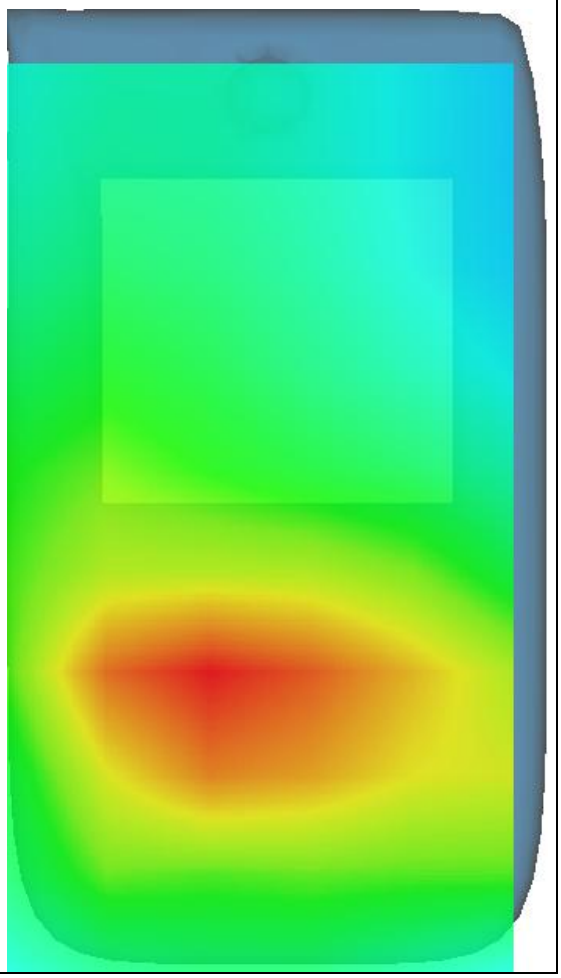
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-9.00, Y=-29.00
SAR Peak: 1.41 W/kg

SAR 10g (W/Kg)	0.717294
SAR 1g (W/Kg)	1.067585

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	1.4011	1.1158	0.8390	0.6367	0.4786	0.3543	0.2666



3D screen shot	Hot spot position
	

MEASUREMENT 6

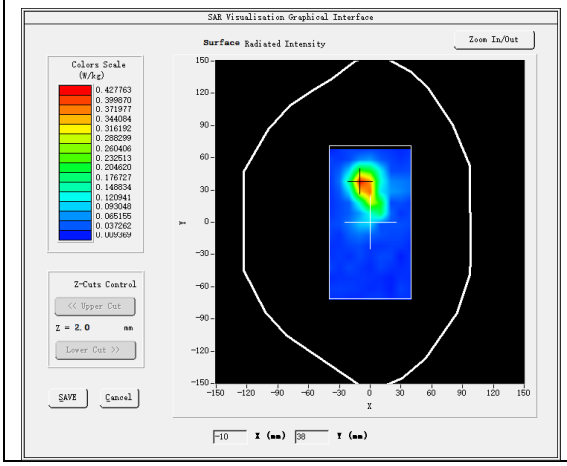
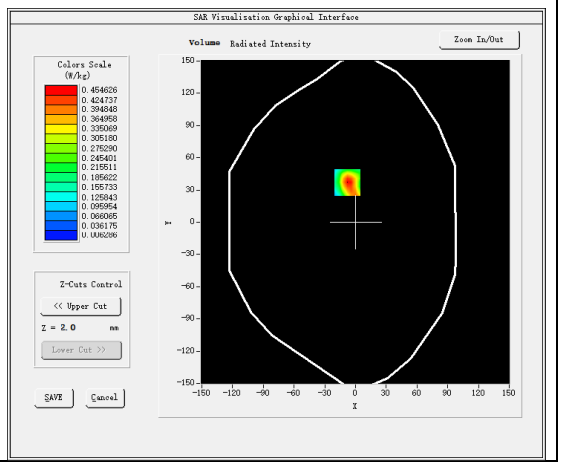
Date of measurement: 27/12/2024

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 802.11ac U-NII
Channels	Middle
Signal	IEEE802.11ac (Crest factor: 1.0)
ConvF	1.89

B. SAR Measurement Results

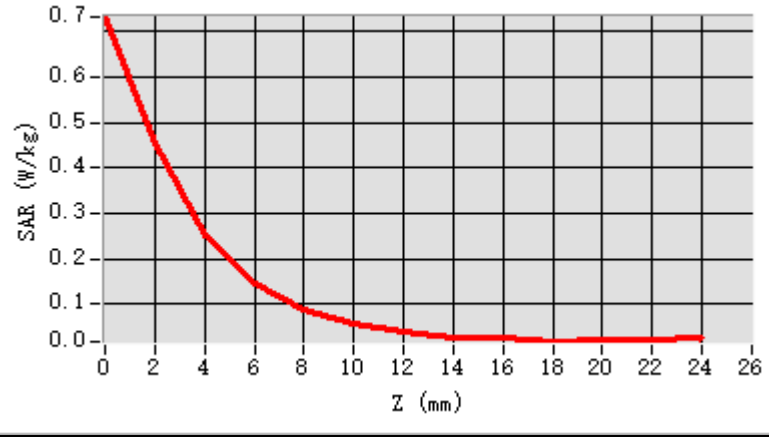
Frequency (MHz)	5190.000000
Relative permittivity (real part)	34.566783
Relative permittivity (imaginary part)	15.367477
Conductivity (S/m)	4.430955
Variation (%)	1.190000

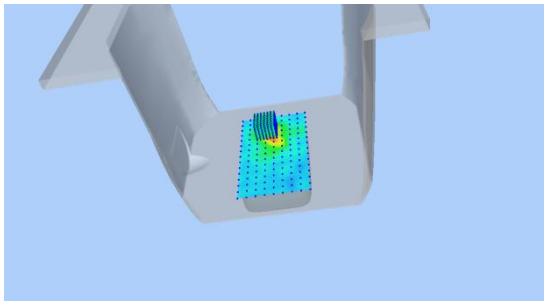
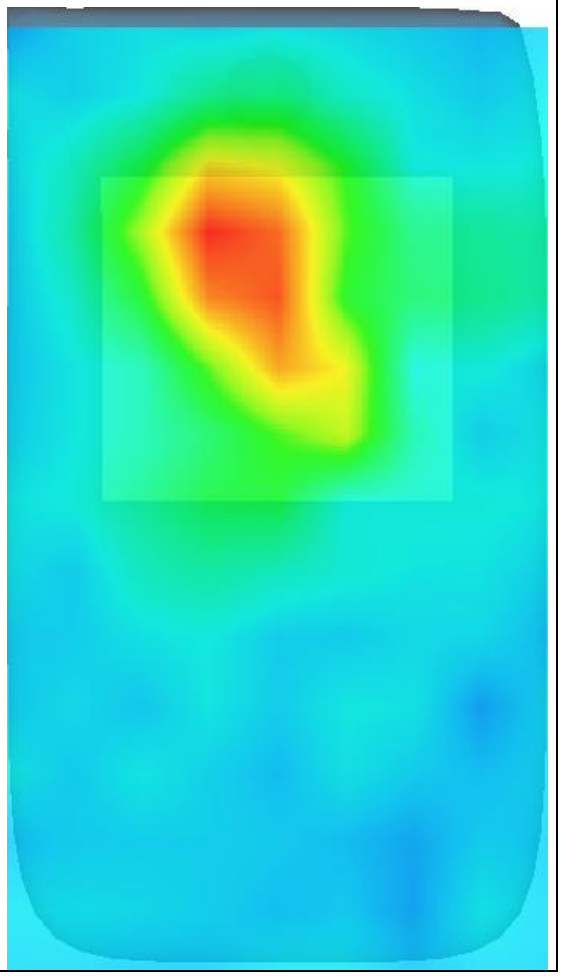
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-8.00, Y=37.00
SAR Peak: 0.78 W/kg

SAR 10g (W/Kg)	0.114088
SAR 1g (W/Kg)	0.273134

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)	0.7319	0.4546	0.2514	0.1467	0.0898	0.0581	0.0373	0.0271	0.0279	0.0171	0.0228	0.0232



3D screen shot	Hot spot position
	

MEASUREMENT 7

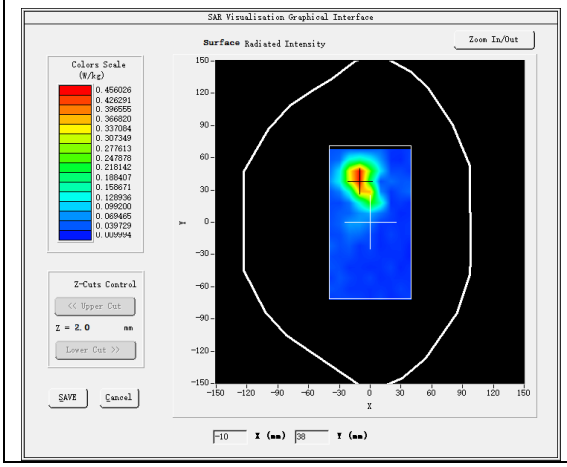
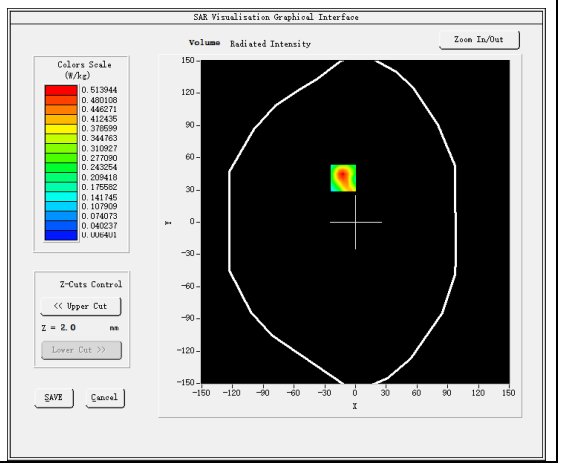
Date of measurement: 26/12/2024

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 802.11n U-NII
Channels	Middle
Signal	IEEE802.11n (Crest factor: 1.0)
ConvF	1.97

B. SAR Measurement Results

Frequency (MHz)	5280.000000
Relative permittivity (real part)	34.682827
Relative permittivity (imaginary part)	15.764924
Conductivity (S/m)	4.624378
Variation (%)	-2.050000

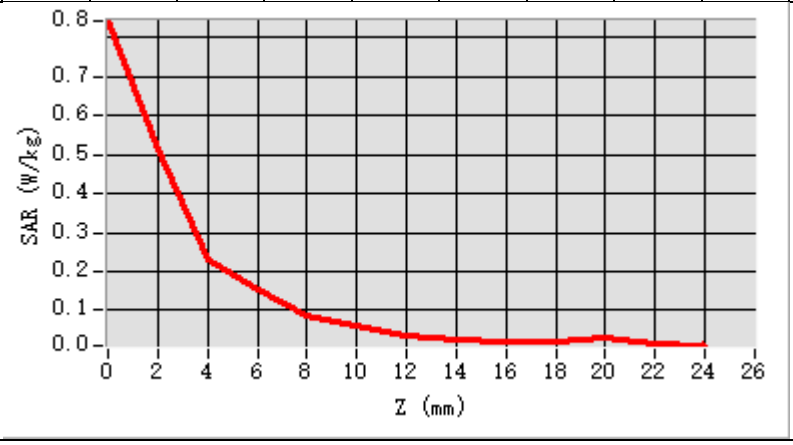
SURFACE SAR	VOLUME SAR
	

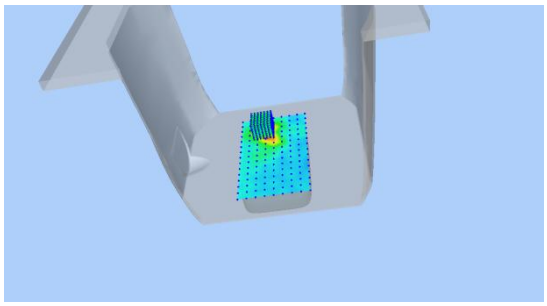
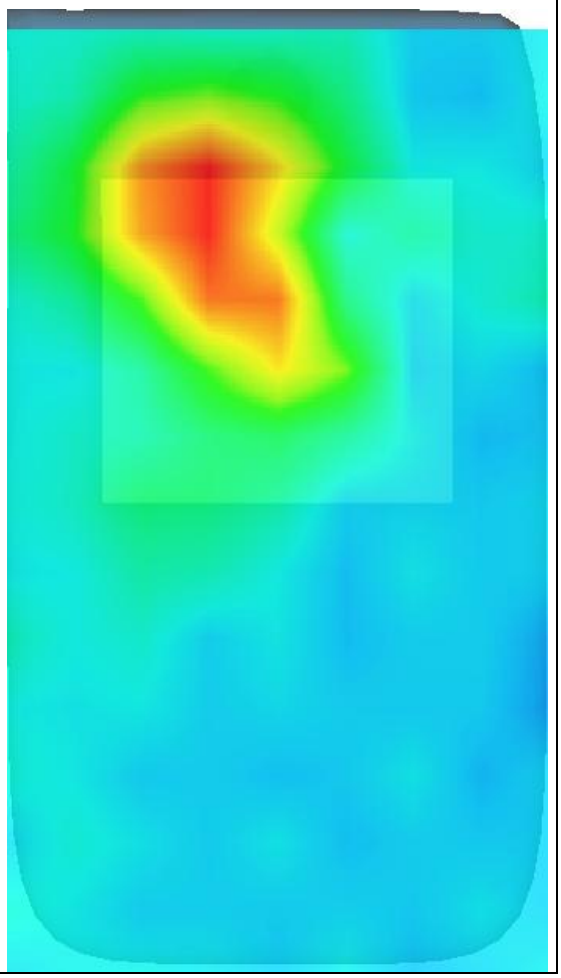
Maximum location: X=-12.00, Y=41.00

SAR Peak: 0.88 W/kg

SAR 10g (W/Kg)	0.123550
SAR 1g (W/Kg)	0.297618

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)	0.8437	0.5139	0.2312	0.1551	0.0852	0.0603	0.0329	0.0250	0.0202	0.0200	0.0279	0.0166



3D screen shot	Hot spot position
	

MEASUREMENT 8

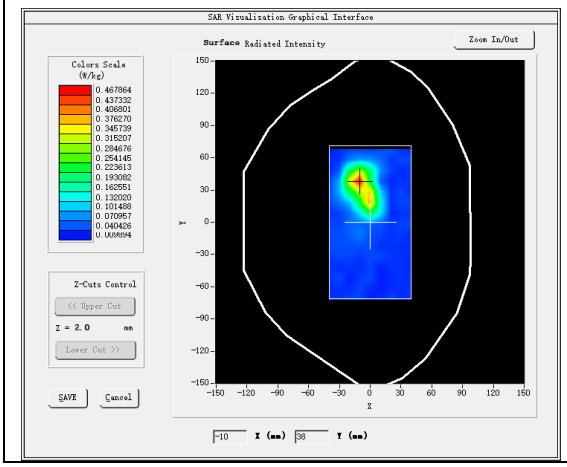
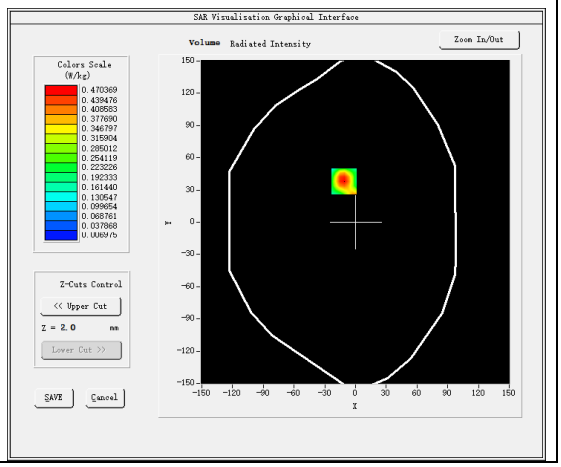
Date of measurement: 18/12/2024

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 802.11n U-NII
Channels	Middle
Signal	IEEE802.11n (Crest factor: 1.0)
ConvF	1.88

B. SAR Measurement Results

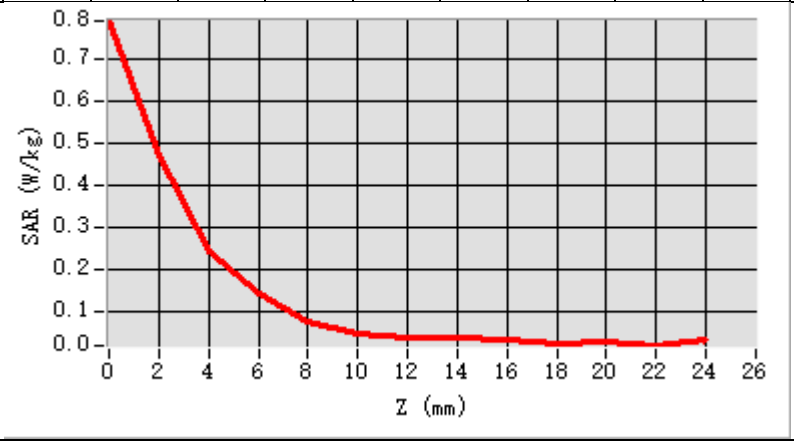
Frequency (MHz)	5510.000000
Relative permittivity (real part)	34.728582
Relative permittivity (imaginary part)	15.758889
Conductivity (S/m)	4.823971
Variation (%)	3.820000

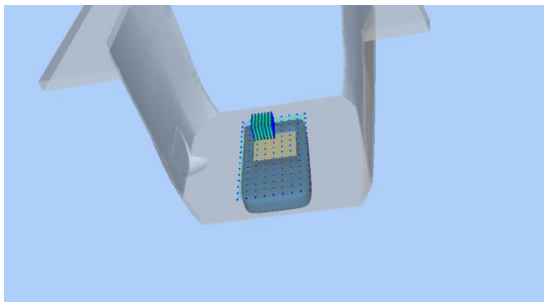
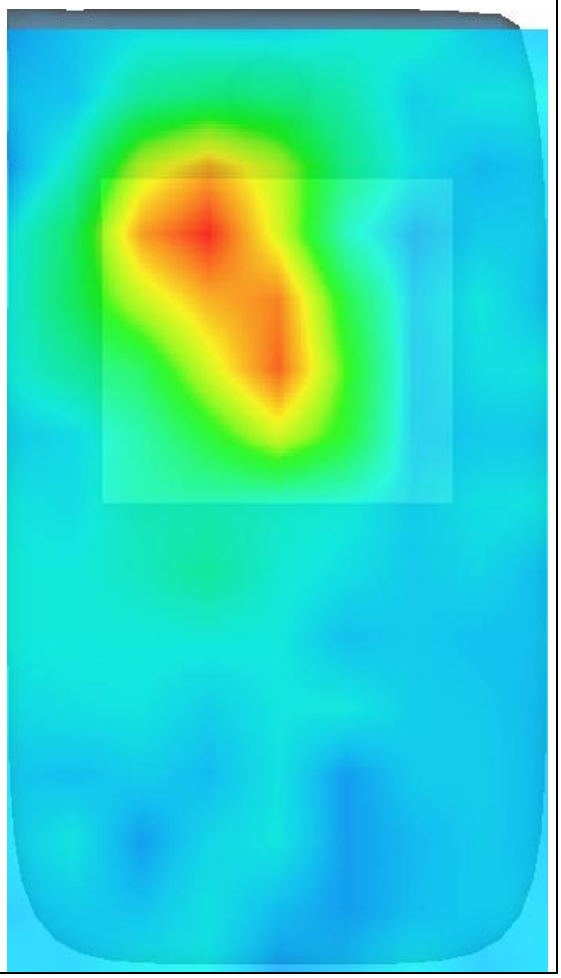
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-11.00, Y=38.00
SAR Peak: 0.83 W/kg

SAR 10g (W/Kg)	0.115396
SAR 1g (W/Kg)	0.280770

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)	0.7932	0.4704	0.2431	0.1401	0.0729	0.0451	0.0352	0.0339	0.0305	0.0224	0.0251	0.0171



3D screen shot	Hot spot position
	

MEASUREMENT 9

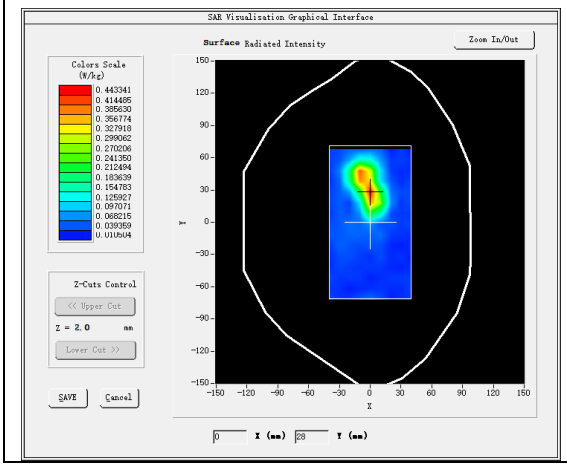
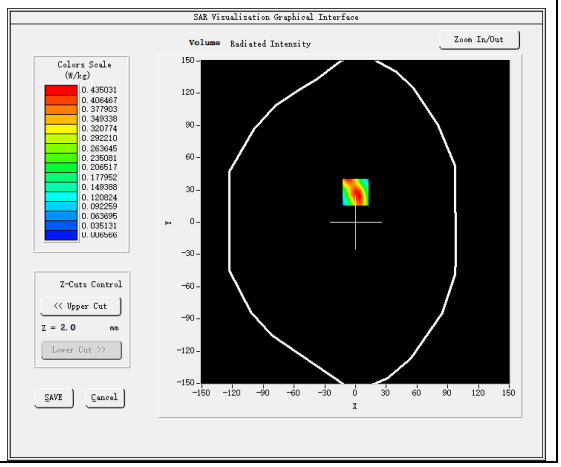
Date of measurement: 17/12/2024

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	Middle
Signal	IEEE802.11a (Crest factor: 1.0)
ConvF	1.90

B. SAR Measurement Results

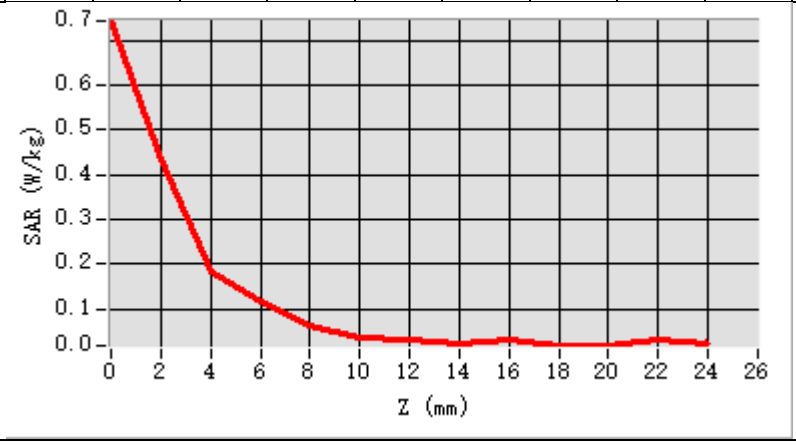
Frequency (MHz)	5785.000000
Relative permittivity (real part)	33.979572
Relative permittivity (imaginary part)	15.795672
Conductivity (S/m)	5.076553
Variation (%)	4.200000

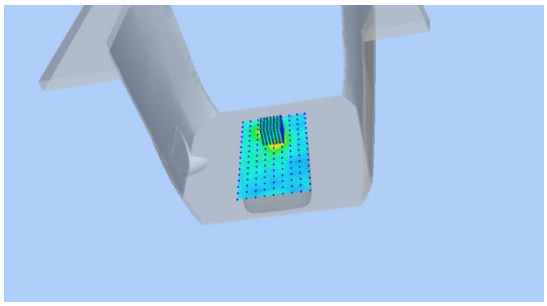
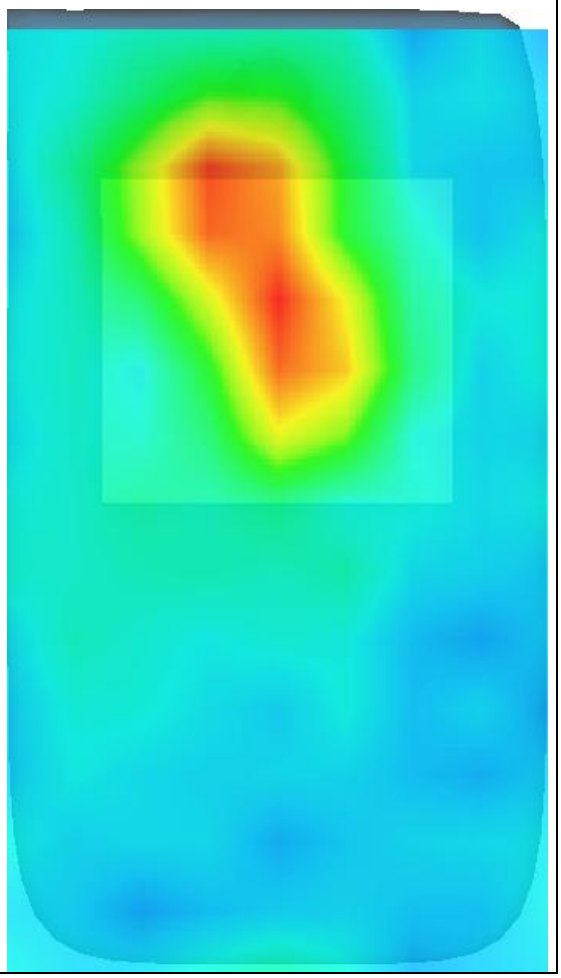
SURFACE SAR	VOLUME SAR
	

Maximum location: X=0.00, Y=28.00
SAR Peak: 0.79 W/kg

SAR 10g (W/Kg)	0.107369
SAR 1g (W/Kg)	0.255331

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)	0.7434	0.4350	0.1858	0.1191	0.0613	0.0363	0.0328	0.0229	0.0311	0.0188	0.0194	0.0318



3D screen shot	Hot spot position
	

MEASUREMENT 10

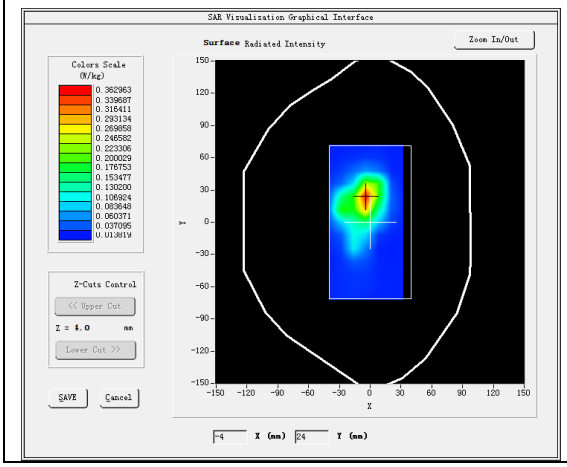
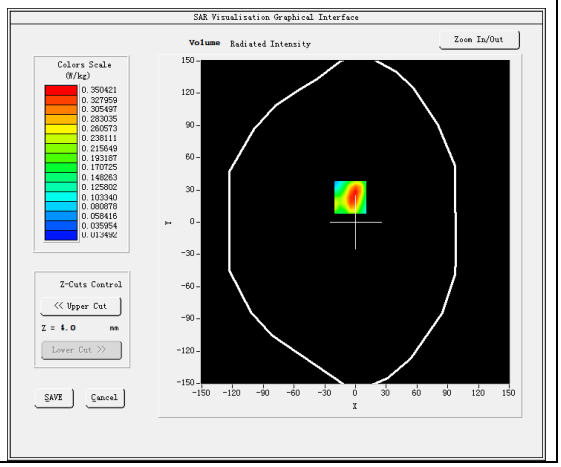
Date of measurement: 12/12/2024

A. Experimental conditions.

Area Scan	dx=12mm dy=12mm, h= 5.00 mm
ZoomScan	7x7x7,dx=5mm dy=5mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	IEEE 802.11b ISM
Channels	Middle
Signal	IEEE802.11b (Crest factor: 1.0)
ConvF	2.74

B. SAR Measurement Results

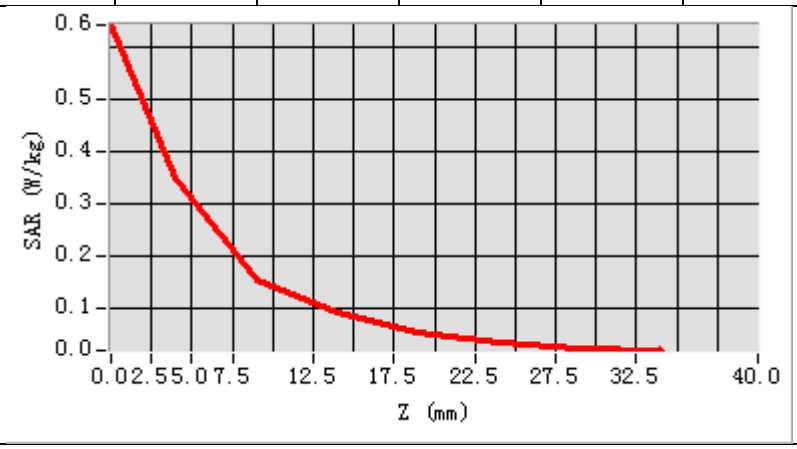
Frequency (MHz)	2437.000000
Relative permittivity (real part)	37.866589
Relative permittivity (imaginary part)	13.006529
Conductivity (S/m)	1.760940
Variation (%)	-1.500000

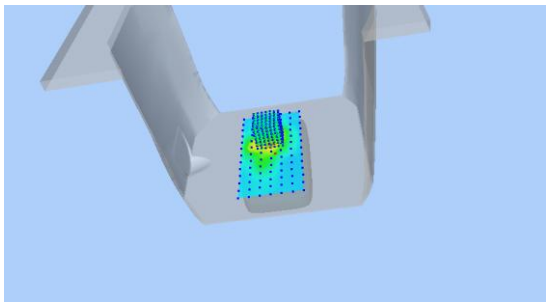
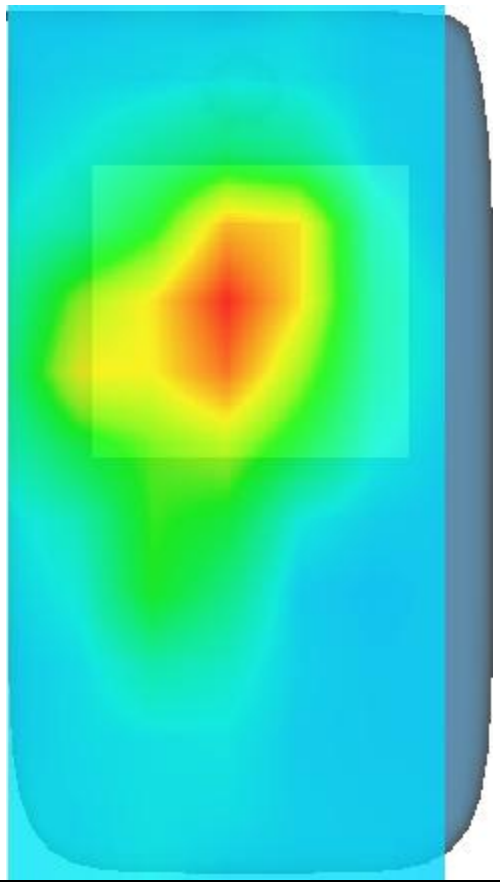
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-5.00, Y=23.00
SAR Peak: 0.58 W/kg

SAR 10g (W/Kg)	0.161108
SAR 1g (W/Kg)	0.326483

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.6405	0.3504	0.1552	0.0928	0.0544	0.0340	0.0260



3D screen shot	Hot spot position
	

MEASUREMENT 11

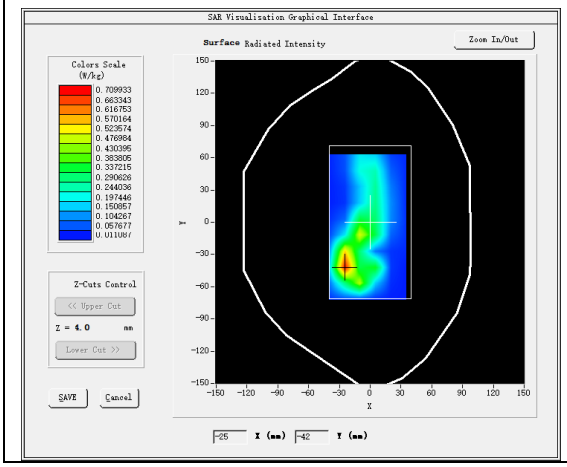
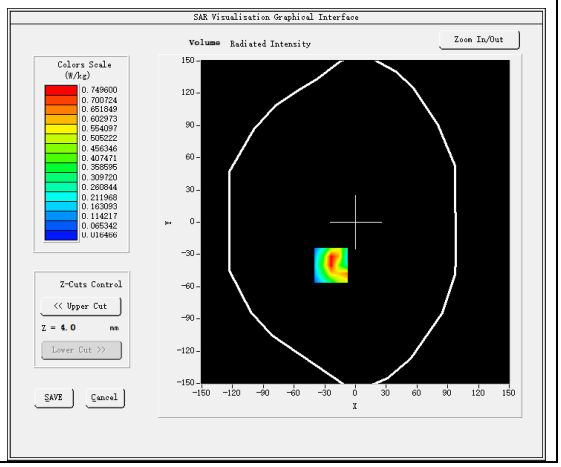
Date of measurement: 26/12/2024

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	2.57

B. SAR Measurement Results

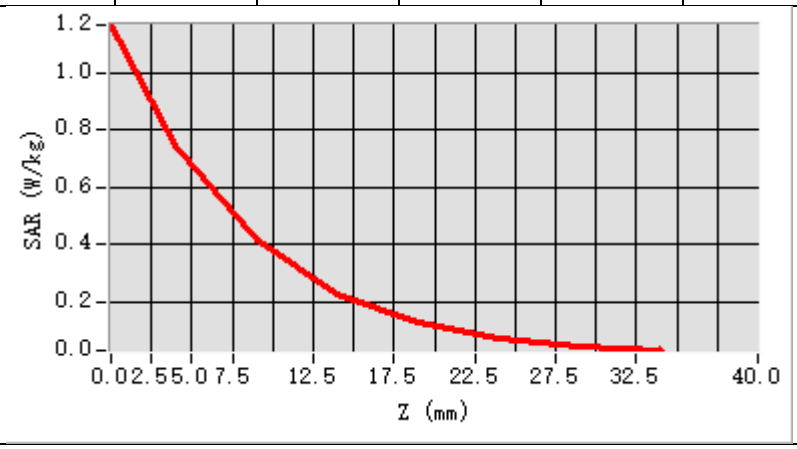
Frequency (MHz)	1880.000000
Relative permittivity (real part)	38.611800
Relative permittivity (imaginary part)	13.870998
Conductivity (S/m)	1.448749
Variation (%)	4.380000

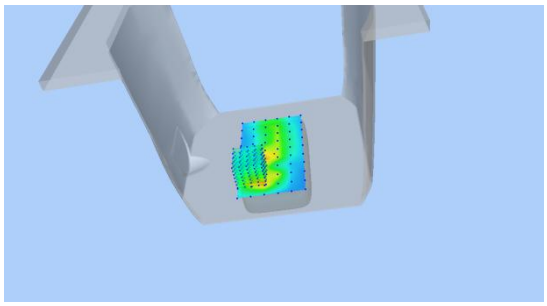
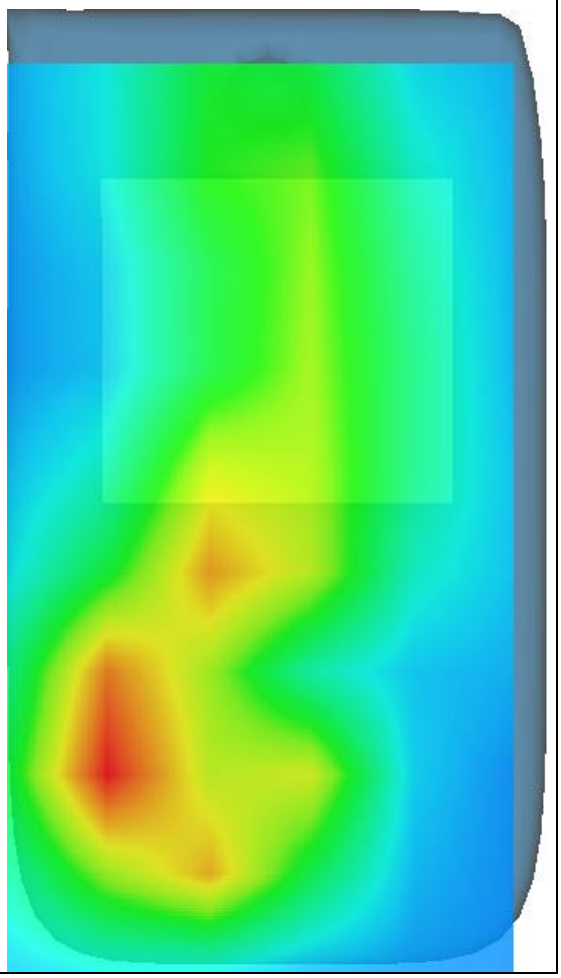
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-24.00, Y=-40.00
SAR Peak: 1.27 W/kg

SAR 10g (W/Kg)	0.345402
SAR 1g (W/Kg)	0.724351

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	1.1669	0.7496	0.4193	0.2241	0.1315	0.0762	0.0478



3D screen shot	Hot spot position
	

MEASUREMENT 12

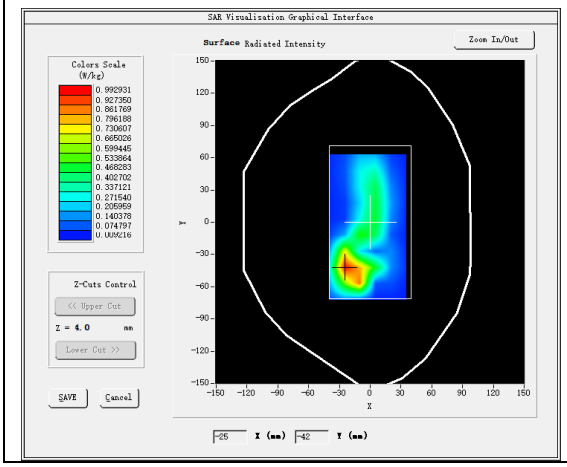
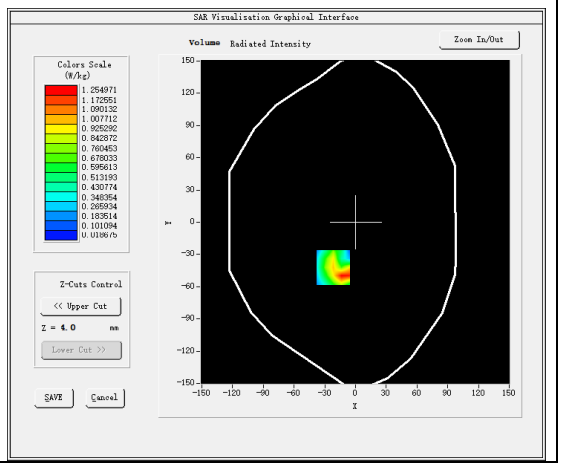
Date of measurement: 25/12/2024

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	Low
Signal	LTE (Crest factor: 1.0)
ConvF	2.51

B. SAR Measurement Results

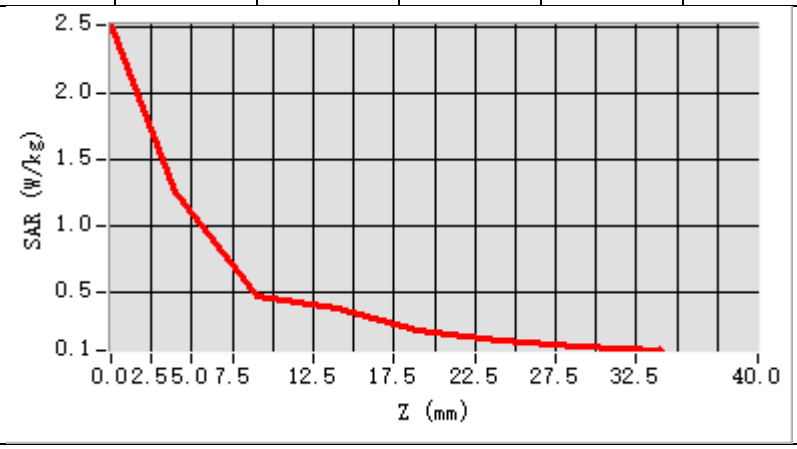
Frequency (MHz)	1720.000000
Relative permittivity (real part)	39.560183
Relative permittivity (imaginary part)	13.675347
Conductivity (S/m)	1.306755
Variation (%)	1.160000

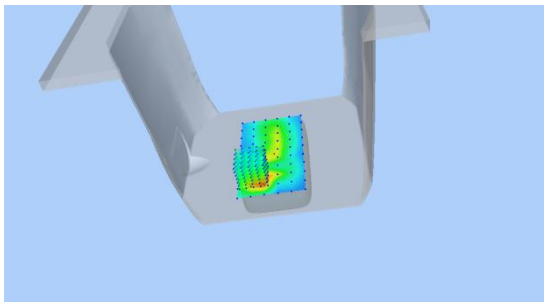
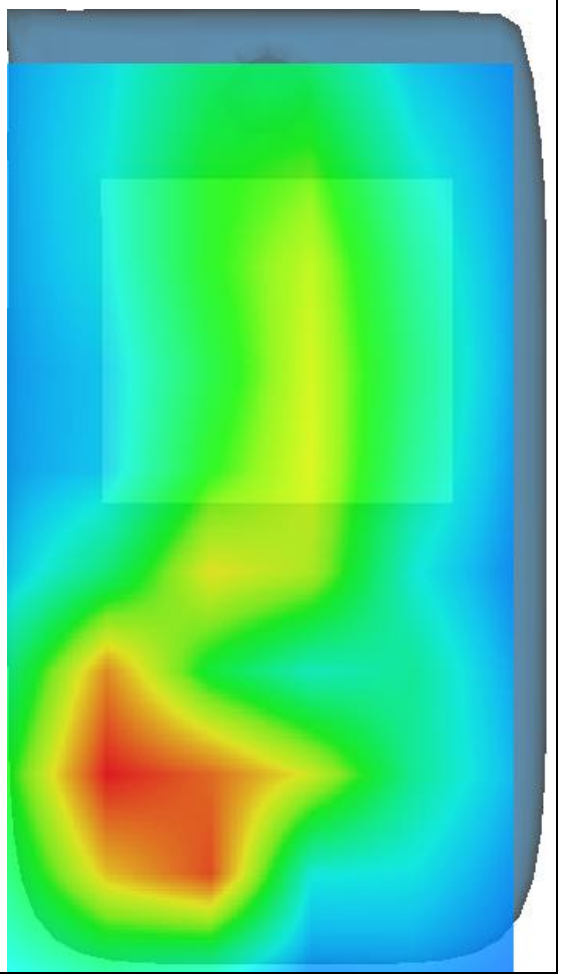
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-22.00, Y=-42.00
SAR Peak: 2.08 W/kg

SAR 10g (W/Kg)	0.554294
SAR 1g (W/Kg)	1.132785

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	2.5142	1.2550	0.4690	0.3774	0.2019	0.1335	0.0819



3D screen shot	Hot spot position
	

MEASUREMENT 13

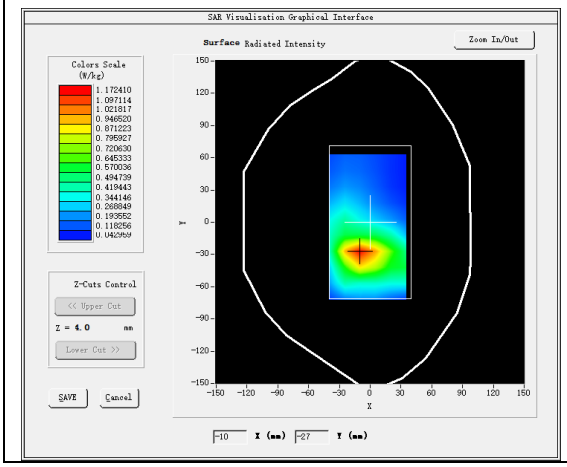
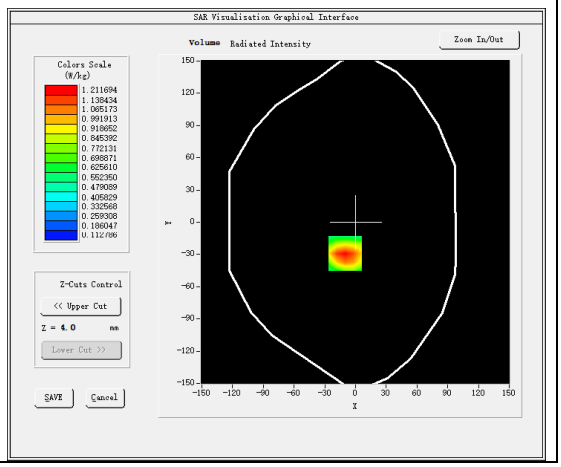
Date of measurement: 27/12/2024

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	2.34

B. SAR Measurement Results

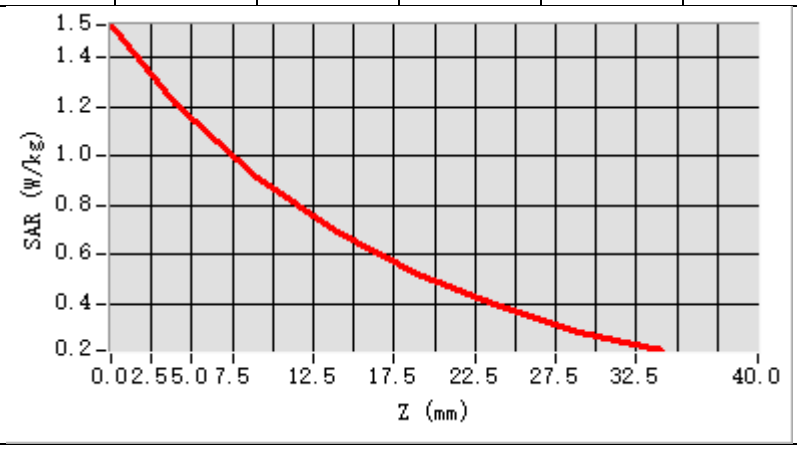
Frequency (MHz)	836.500000
Relative permittivity (real part)	41.690102
Relative permittivity (imaginary part)	19.560907
Conductivity (S/m)	0.909039
Variation (%)	-0.880000

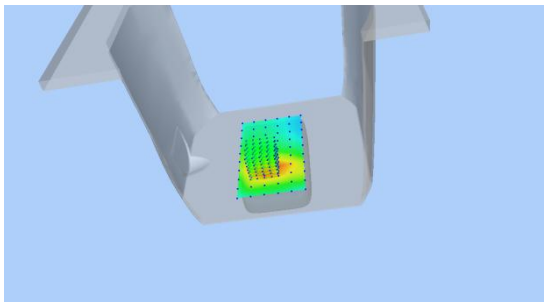
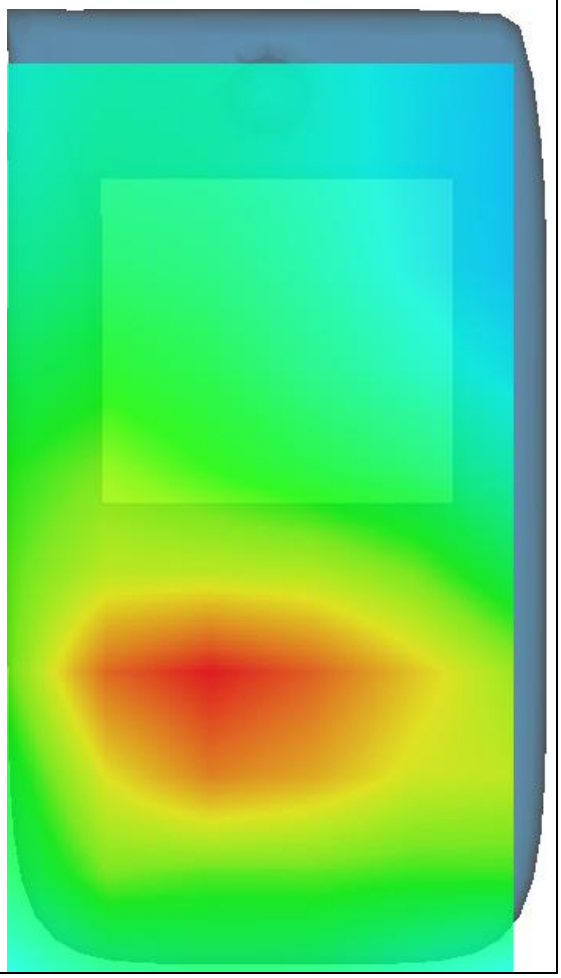
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-10.00, Y=-29.00
SAR Peak: 1.54 W/kg

SAR 10g (W/Kg)	0.779415
SAR 1g (W/Kg)	1.157831

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	1.5287	1.2117	0.9107	0.6935	0.5216	0.3889	0.2881



3D screen shot	Hot spot position
	

MEASUREMENT 14

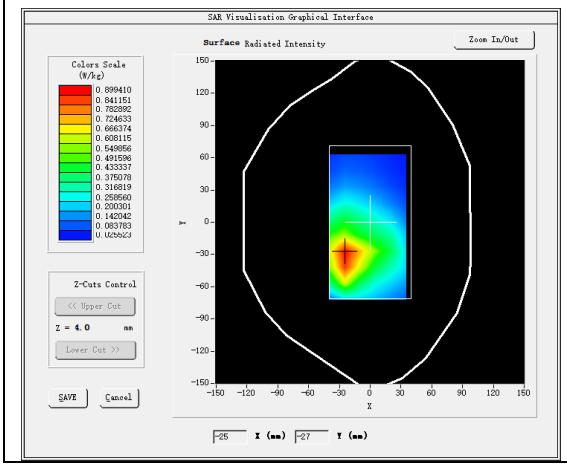
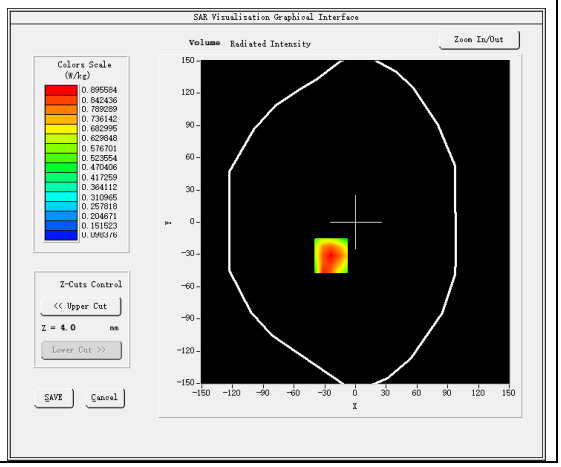
Date of measurement: 28/12/2024

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	Low
Signal	LTE (Crest factor: 1.0)
ConvF	2.42

B. SAR Measurement Results

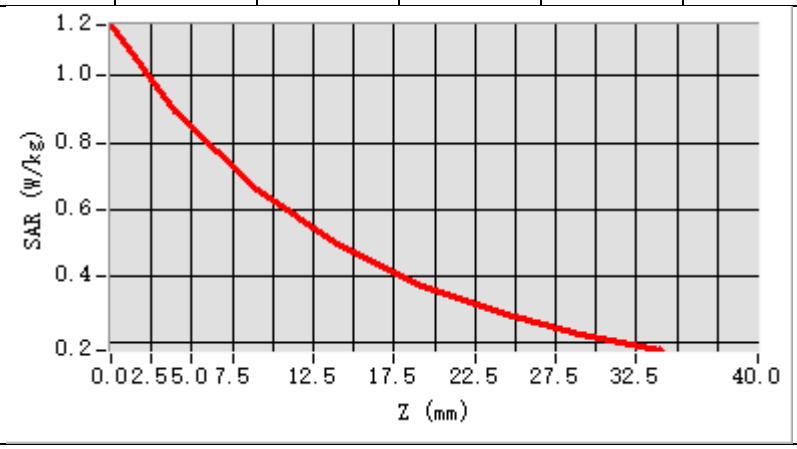
Frequency (MHz)	704.000000
Relative permittivity (real part)	41.271803
Relative permittivity (imaginary part)	21.924346
Conductivity (S/m)	0.857486
Variation (%)	-0.510000

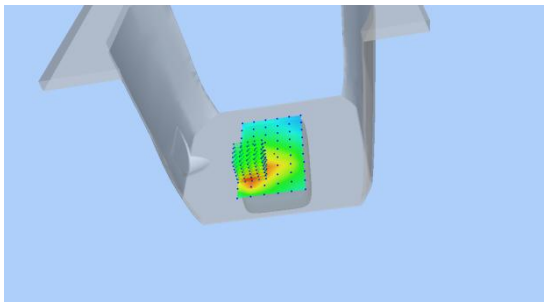
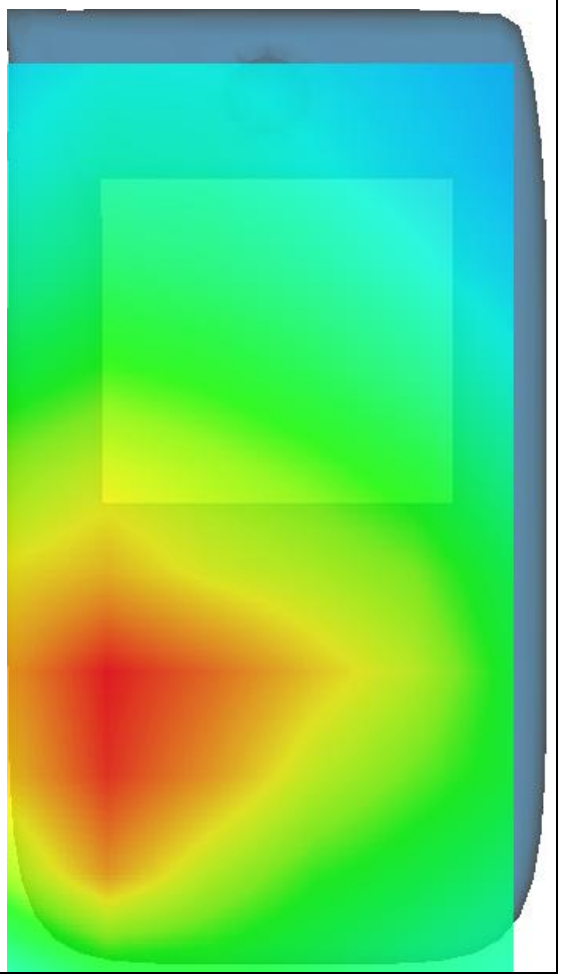
SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=-24.00, Y=-31.00
SAR Peak: 1.39 W/kg

SAR 10g (W/Kg)	0.597746
SAR 1g (W/Kg)	0.863600

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	1.1521	0.8956	0.6593	0.4964	0.3773	0.2914	0.2281



3D screen shot	Hot spot position
	

MEASUREMENT 15

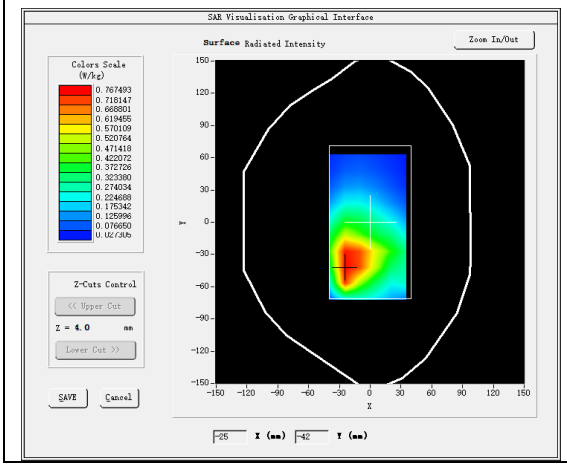
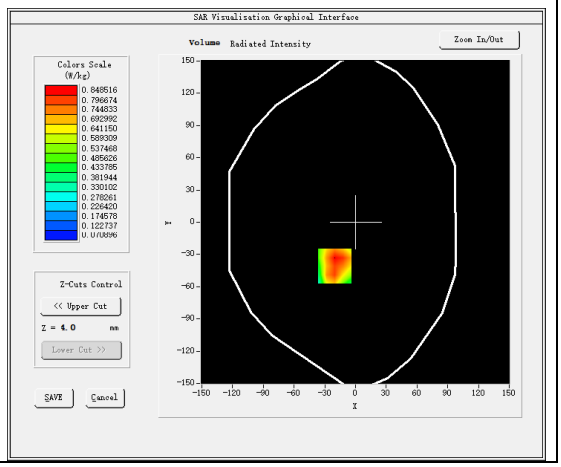
Date of measurement: 28/12/2024

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	Low
Signal	LTE (Crest factor: 1.0)
ConvF	2.42

B. SAR Measurement Results

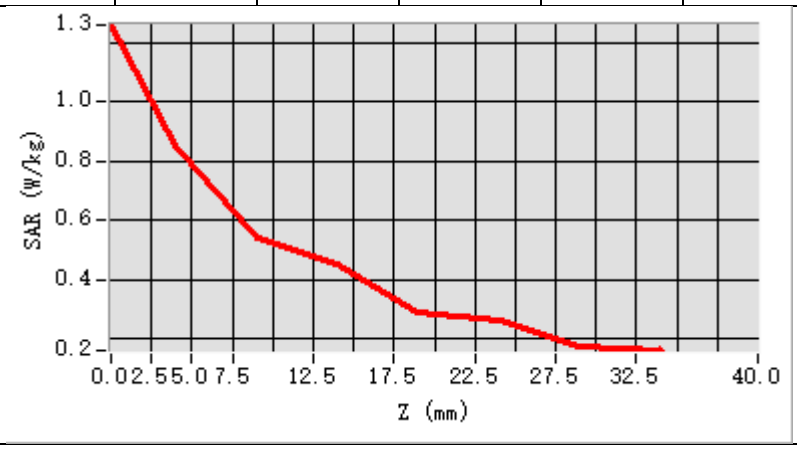
Frequency (MHz)	709.000000
Relative permittivity (real part)	41.307102
Relative permittivity (imaginary part)	21.815447
Conductivity (S/m)	0.859286
Variation (%)	-0.780000

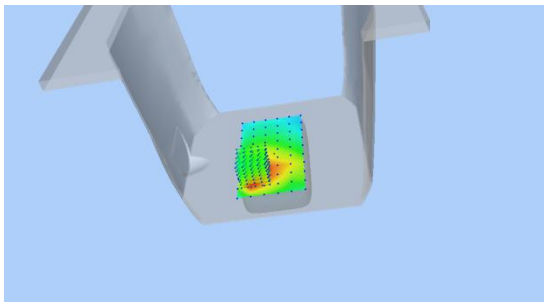
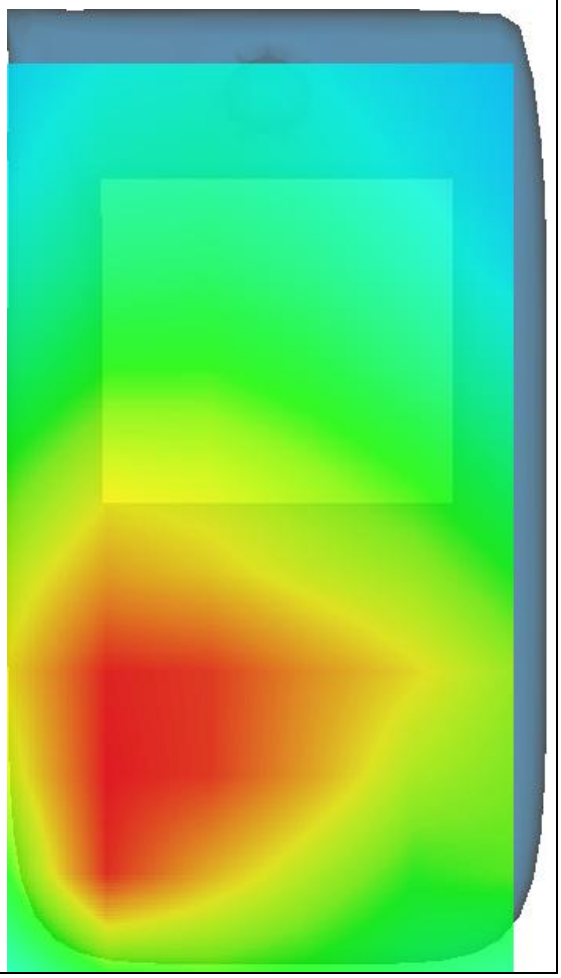
SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=-20.00, Y=-41.00
SAR Peak: 1.20 W/kg

SAR 10g (W/Kg)	0.555944
SAR 1g (W/Kg)	0.810044

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	1.2591	0.8485	0.5390	0.4519	0.2882	0.2627	0.1764



3D screen shot	Hot spot position
	

MEASUREMENT 16

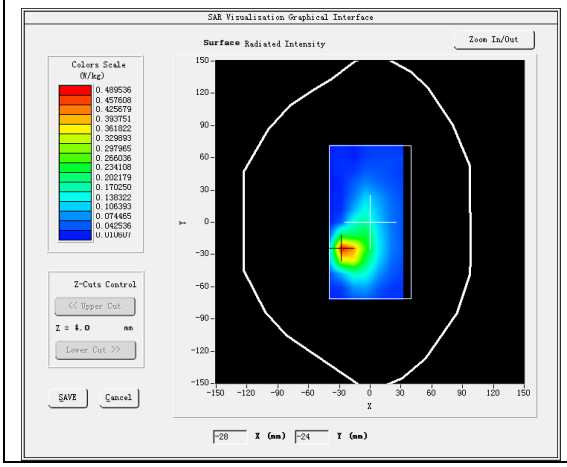
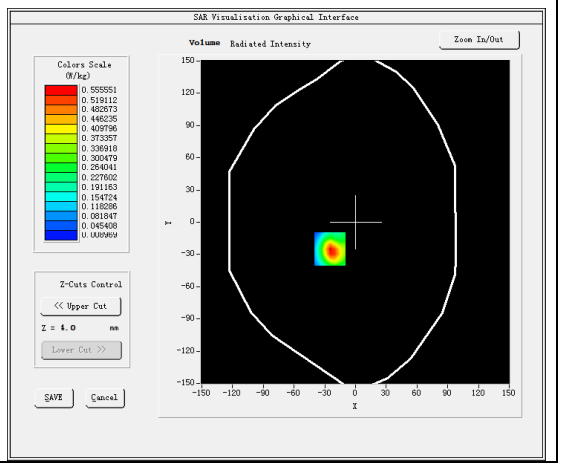
Date of measurement: 16/12/2024

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 41
Channels	Middle
Signal	LTE (Crest factor: 1.6)
ConvF	2.51

B. SAR Measurement Results

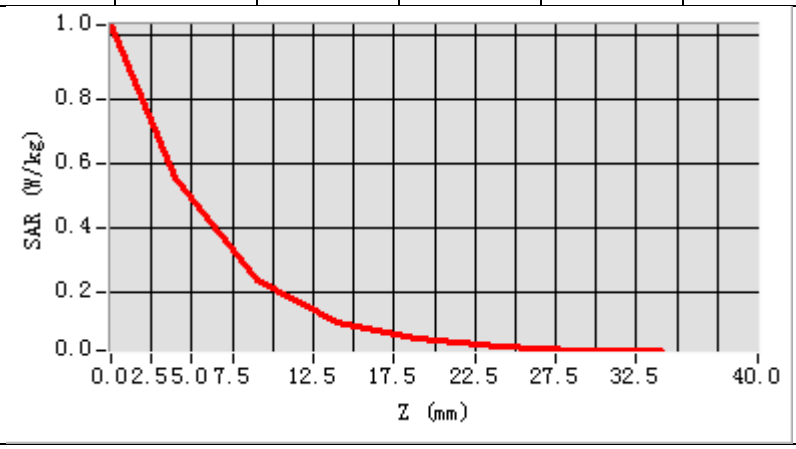
Frequency (MHz)	2593.000000
Relative permittivity (real part)	38.834721
Relative permittivity (imaginary part)	13.665514
Conductivity (S/m)	1.968593
Variation (%)	-0.090000

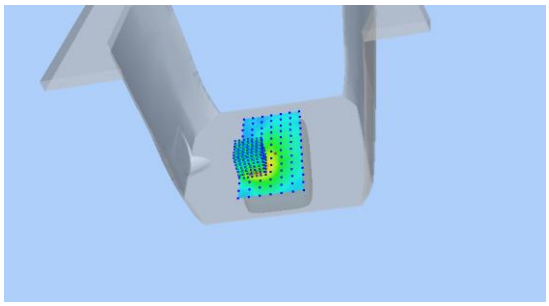
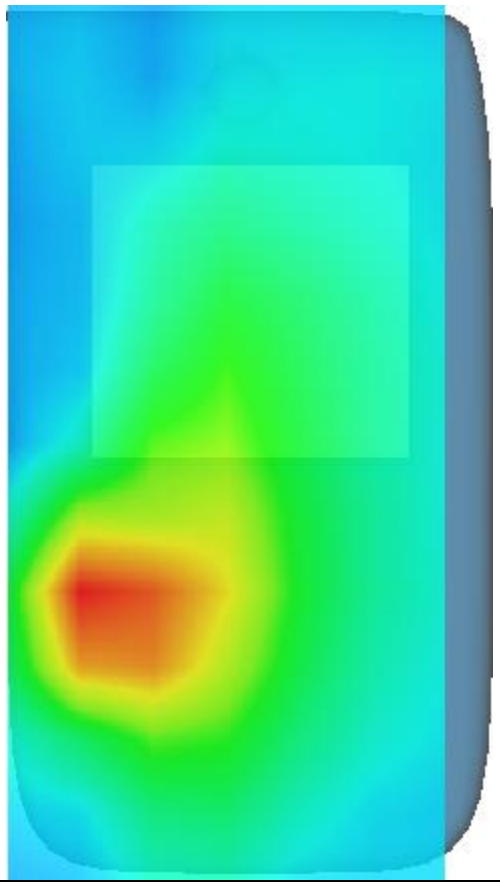
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-25.00, Y=-25.00
SAR Peak: 1.04 W/kg

SAR 10g (W/Kg)	0.220896
SAR 1g (W/Kg)	0.523102

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	1.0313	0.5556	0.2332	0.1010	0.0510	0.0286	0.0170



3D screen shot	Hot spot position
	

MEASUREMENT 17

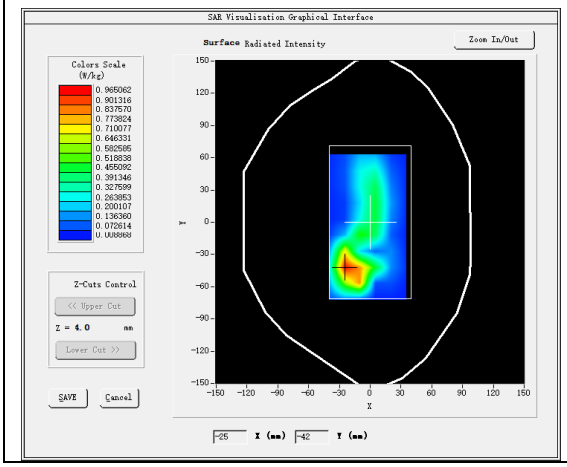
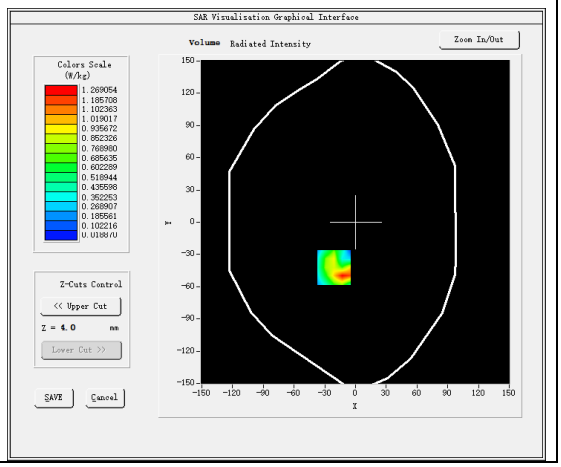
Date of measurement: 25/12/2024

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	FDDBand66
Channels	Low
Signal	(Crest factor: 1.0)
ConvF	2.51

B. SAR Measurement Results

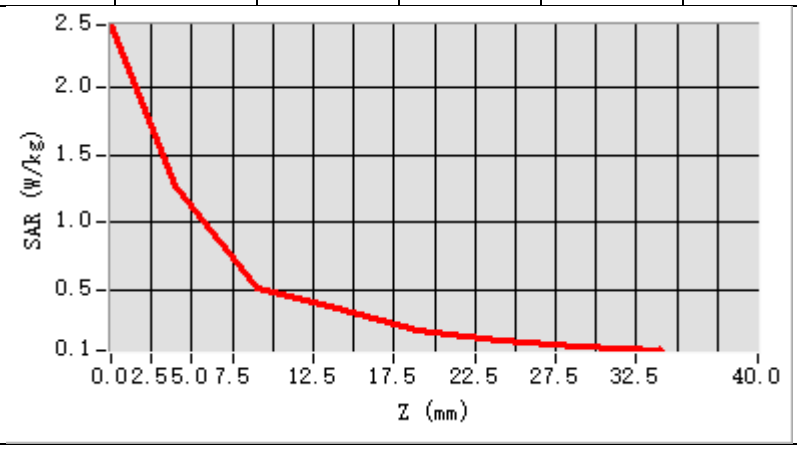
Frequency (MHz)	1720.000000
Relative permittivity (real part)	39.504990
Relative permittivity (imaginary part)	13.618982
Conductivity (S/m)	1.301369
Variation (%)	0.630000

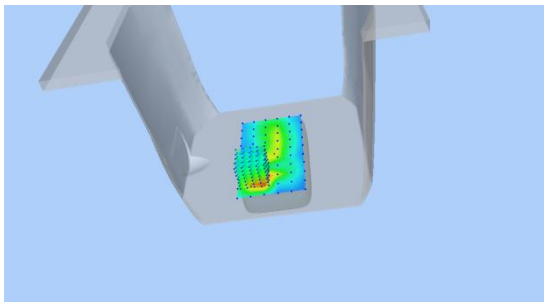
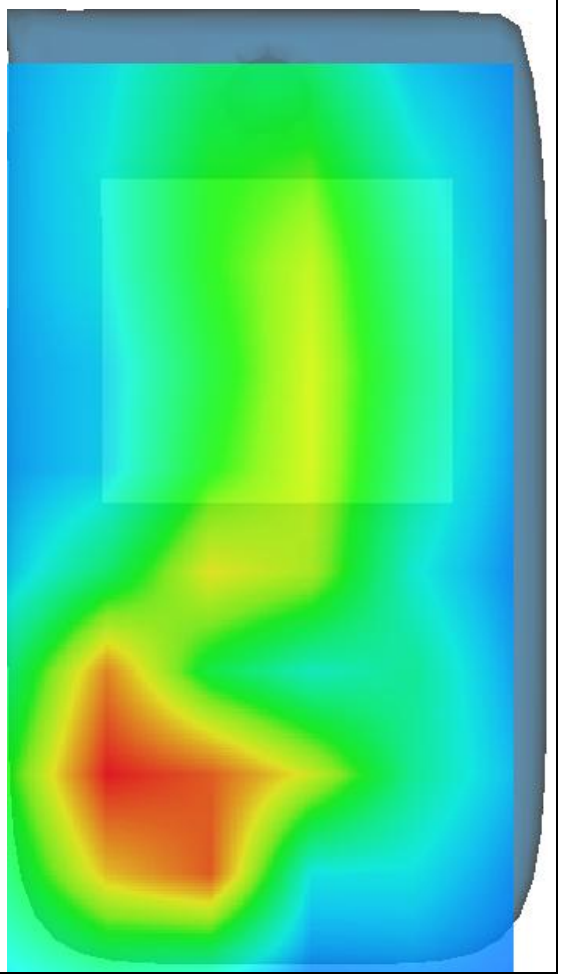
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-21.00, Y=-42.00
SAR Peak: 2.06 W/kg

SAR 10g (W/Kg)	0.547115
SAR 1g (W/Kg)	1.121123

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	2.4657	1.2691	0.5089	0.3676	0.2063	0.1312	0.0800



3D screen shot	Hot spot position
	

MEASUREMENT 18

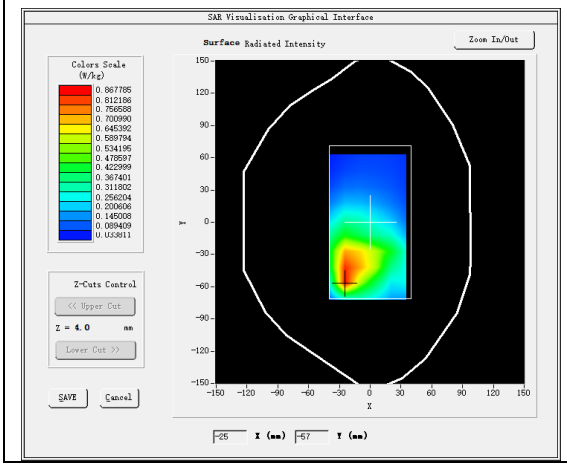
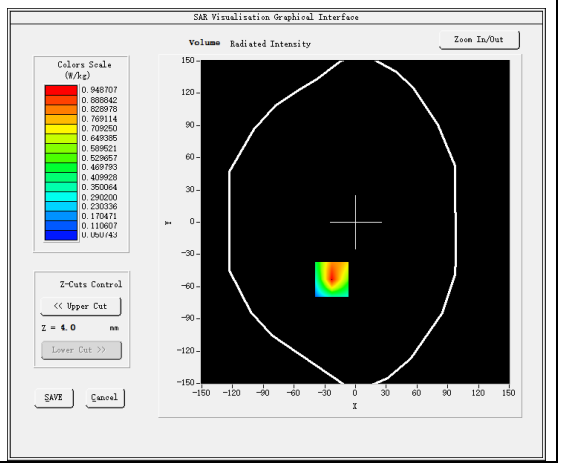
Date of measurement: 28/12/2024

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	FDDBand71
Channels	Middle
Signal	(Crest factor: 1.0)
ConvF	2.42

B. SAR Measurement Results

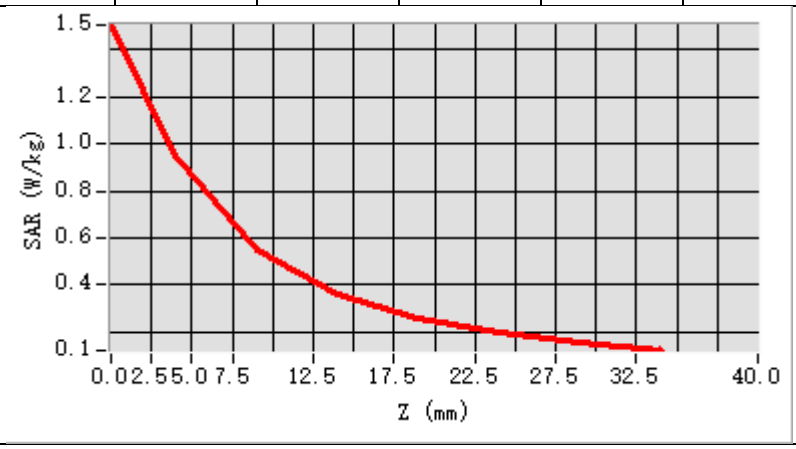
Frequency (MHz)	683.000000
Relative permittivity (real part)	41.557507
Relative permittivity (imaginary part)	22.546680
Conductivity (S/m)	0.855521
Variation (%)	-1.680000

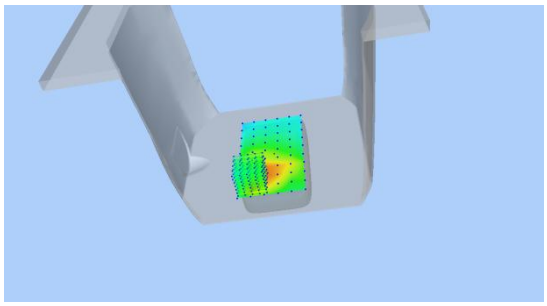
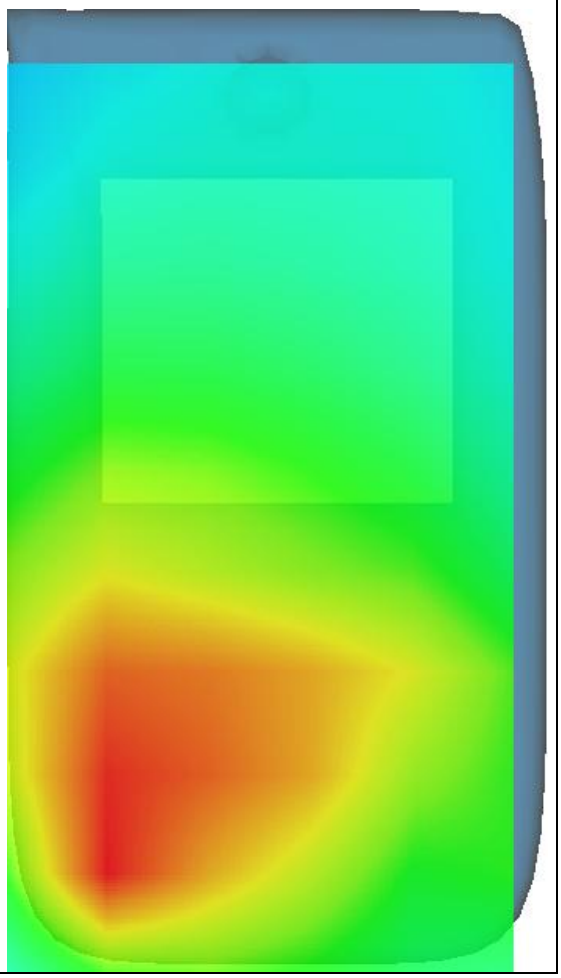
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-23.00, Y=-53.00
SAR Peak: 1.49 W/kg

SAR 10g (W/Kg)	0.542468
SAR 1g (W/Kg)	0.891801

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	1.5057	0.9487	0.5458	0.3586	0.2588	0.1967	0.1546



3D screen shot	Hot spot position
	

14. Appendix D. Calibration Certificate

Table of contents
E Field Probe - 4024-EPGO-442
835 MHz Dipole - SN 03/15 DIP 0G835-347
1800 MHz Dipole - SN 03/15 DIP 1G800-349
1900 MHz Dipole - SN 03/15 DIP 1G900-350
2450 MHz Dipole - SN 03/15 DIP 2G450-352
2600 MHz Dipole - SN 03/15 DIP 2G600-356
5000-6000 MHz Dipole - SN 13/14 WGA 33

COMOSAR E-Field Probe Calibration Report

Ref : ACR.278.12.24.BES.A

SHENZHEN NTEK TESTING TECHNOLOGY CO., LTD.

BUILDING E, FENDA SCIENCE PARK, SANWEI COMMUNITY, XIXIANG STREET,
BAO'AN DISTRICT, SHENZHEN GUANGDONG, CHINA

MVG COMOSAR DOSIMETRIC E-FIELD PROBE

SERIAL NO.: 4024-EPGO-442

Calibrated at MVG

Z.I. de la pointe du diable

Technopôle Brest Iroise – 295 avenue Alexis de Rochon

29280 PLOUZANE - FRANCE

Calibration date: 10/04/2024

Accreditations #2-6789
Scope available on www.cofrac.fr

Summary:

This document presents the method and results from an accredited COMOSAR Dosimetric E-Field Probe calibration performed at MVG, using the CALIPROBE test bench, for use with a MVG COMOSAR system only. The test results covered by accreditation are traceable to the International System of Units (SI).

COMOSAR E-FIELD PROBE CALIBRATION REPORT

Ref: ACR.278.12.24.BES.A

	Name	*Function*	*Date*	*Signature*
Prepared by :	Cyrille ONNEE	Measurement Responsible	10/4/2024	
Checked & approved by:	Pedro Ruiz	Technical Manager	10/4/2024	
Authorized by:	Pedro Ruiz	Laboratory Director	10/4/2024 Assinado por: Pedro RUIZ 29093B31C46F428...	

	Customer Name
Distribution :	SHENZHEN NTEK TESTING TECHNOLOGY CO., LTD.

Issue	*Name*	*Date*	*Modifications*
A	Cyrille ONNEE	10/4/2024	Initial release

TABLE OF CONTENTS

1 DEVICE UNDER TEST

Device Under Test	
Device Type	COMOSAR DOSIMETRIC E FIELD PROBE
Manufacturer	MVG
Model	SSE2
Serial Number	4024-EPGO-442
Product Condition (new / used)	New
Frequency Range of Probe	0.15 GHz-7.5GHz
Resistance of Three Dipoles at Connector	Dipole 1: R1=0.206 MΩ Dipole 2: R2=0.223 MΩ Dipole 3: R3=0.235 MΩ

2 PRODUCT DESCRIPTION

2.1 GENERAL INFORMATION

MVG's COMOSAR E field Probes are built in accordance to the IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards.

Figure 1 – *MVG COMOSAR Dosimetric E field Probe*

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 IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards provide recommended practices for the probe calibrations, including the performance characteristics of interest and methods by which to assess their effect. All calibrations / measurements performed meet the fore-mentioned standards.

3.1 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 for frequency range 600-7500MHz and using the calorimeter cell method (transfer method) as outlined in the standards for frequency 150-450 MHz.

3.2 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.

3.3 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 to 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°).

3.4 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.

The boundary effect uncertainty can be estimated according to the following uncertainty approximation formula based on linear and exponential extrapolations between the surface and $d_{be} + d_{step}$ along lines that are approximately normal to the surface:

$$\mathrm{SAR}_{\mathrm{uncertainty}}[\%] = \delta \mathrm{SAR}_{be} \frac{(d_{be} + d_{step})^2}{2d_{step}} \frac{\left(e^{-d_{be}/(\delta/2)}\right)}{\delta/2} \quad \text{for } (d_{be} + d_{step}) < 10 \text{ mm}$$

where

$\mathrm{SAR}_{\mathrm{uncertainty}}$	is the uncertainty in percent of the probe boundary effect
d_{be}	is the distance between the surface and the closest *zoom-scan* measurement point, in millimetre
Δ_{step}	is the separation distance between the first and second measurement points that are closest to the phantom surface, in millimetre, assuming the boundary effect at the second location is negligible
δ	is the minimum penetration depth in millimetres of the head tissue-equivalent liquids defined in this standard, i.e., $\delta \approx 14$ mm at 3 GHz;
$\Delta\mathrm{SAR}_{be}$	in percent of SAR is the deviation between the measured SAR value, at the distance d_{be} from the boundary, and the analytical SAR value.

The measured worst case boundary effect SARuncertainty[%] for scanning distances larger than 4mm is 1.0% Limit ,2%).

3.5 PROBE MODULATION RESPONSE

MVG's probe were evaluated experimentally with various modulated signal and the deviation from CW response were found neglectable in the used power range of the probe. So the correction to taking into account the linearization parameters for different modulation is null, therefore the CW factor given in this report can be used whatever the measured modulation

4 MEASUREMENT UNCERTAINTY

The guidelines outlined in the IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards were followed to generate the measurement uncertainty associated with a SAR probe calibration using the waveguide or calorimetric cell technique depending on the frequency.

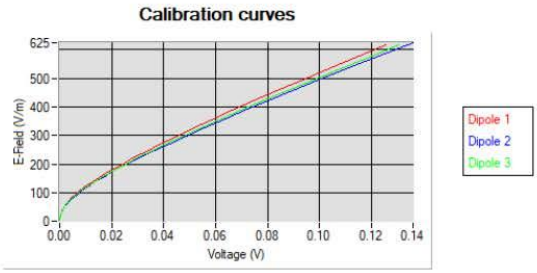
The estimated expanded uncertainty (k=2) in calibration for SAR (W/kg) is +/-11% for the frequency range 150-450MHz.
The estimated expanded uncertainty (k=2) in calibration for SAR (W/kg) is +/-14% for the frequency range 600-7500MHz.

5 CALIBRATION RESULTS

Ambient condition	
Liquid Temperature	20 +/- 1 °C
Lab Temperature	20 +/- 1 °C
Lab Humidity	30-70 %

5.1 CALIBRATION IN AIR

The following curve represents the measurement in waveguide of the voltage picked up by the probe toward the E-field generated inside the waveguide.



From this curve, the sensitivity in air is calculated using the below formula.

$$E^2 = \sum_{i=1}^{3} \frac{V_i \left(1 + {}^{V_i}/_{DCP_i}\right)}{Norm_i}$$

where
Vi=voltage readings on the 3 channels of the probe
DCPi=diode compression point given below for the 3 channels of the probe
Normi=dipole sensitivity given below for the 3 channels of the probe

Normx dipole 1 (μV/(V/m)^2)	Normy dipole 2 (μV/(V/m)^2)	Normz dipole 3 (μV/(V/m)^2)
0.73	0.79	0.78

DCP dipole 1 (mV)	DCP dipole 2 (mV)	DCP dipole 3 (mV)
105	109	103

5.2 CALIBRATION IN LIQUID

The calorimeter cell or the waveguide is used to determine the calibration in liquid using the formula below.

$$ConvF = \frac{E_{liquid}^2}{E_{air}^2}$$

The E-field in the liquid is determined from the SAR measurement according to the below formula.

$$E_{liquid}^2 = \frac{\rho\, SAR}{\sigma}$$

where
σ=the conductivity of the liquid
ρ=the volumetric density of the liquid
SAR=the SAR measured from the formula that depends on the setup used. The SAR formulas are given below

For the calorimeter cell (150-450 MHz), the formula is:

$$SAR = c\frac{dT}{dt}$$

where
c=the specific heat for the liquid
dT/dt=the temperature rises over the time

For the waveguide setup (600-75000 MHz), the formula is:

$$SAR = \frac{4P_W}{ab\delta}e^{\frac{-2z}{\delta}}$$