SAR TEST REPORT

Product Name: Feature phone

Model Name: INOI 106Z

FCC ID：2A9SN-INOI106Z

Issued For	:	INOI Limited Office 302, Dominion Centre 43-59, Queens Road, East Wanchai, Hong Kong, China
Issued By	:	Shenzhen LGT Test Service Co., Ltd. Room 205, Building 13, Zone B, Chen Hsong Industrial Park, No.177 Renmin West Road, Jinsha Community, Kengzi Street, Pingshan New District, Shenzhen, China

Report Number:	LGT22L059HA01
Sample Received Date:	Dec. 08, 2022
Date of Test:	Jan. 03, 2023 ~ Jan. 04, 2023
Date of Issue:	Jan. 05, 2023
Max. SAR (10g):	Head: 0.697 W/kg Body: 1.135 W/kg

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Revision History

Rev.	Issue Date	Contents
00	Jan. 05, 2023	Initial Issue

TEST REPORT CERTIFICATION

Applicant	INOI Limited
Address	Office 302, Dominion Centre 43-59, Queens Road, East Wanchai, Hong Kong, China
Manufacture	INOI Limited
Address	Office 302, Dominion Centre 43-59, Queens Road, East Wanchai, Hong Kong, China
Product Name	Feature phone
Trademark	INOI
Model Name	INOI 106Z
Sample number：	LGT22012102

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC KDB 447498 D04 v01；FCC KDB 865664 D01 v01r04；FCC KDB 865664 D02 v01r02；FCC KDB 941225 D01 v03r01；FCC KDB 941225 D05 v02r05；FCC KDB 941225 D06 v02r01；FCC KDB 648474 D04 v01r03；FCC KDB 248227 D01 Wi-Fi SAR v02r02	PASS

Prepared by:

Zane Shan

Engineer

Approved by:

Vita Li

Manager

(1) The test report is effective only with both signature and specialized stamp.

(2) This report shall not be reproduced except in full without the written approval of the Laboratory.

(3) The results in this report apply to the test sample(s) mentioned above at the time of the testing period only and are not to be used to indicate applicability to other similar products.

1. General Information

1.1 EUT Description

Product Name	Feature phone		
Trademark	INOI		
Model Name	INOI 106Z		
Series Model	N/A		
Model Difference	N/A		
Hardware Version	CG218B_MB_V1.1		
Software Version	CG218B_128X160_A18240CG_3(INOI_106Z)EnRuKaUzGeAz_V08_20220923		
Frequency Range	GSM 850: 824 ~ 849 MHz PCS 1900: 1850 ~ 1910 MHz Bluetooth: 2402 ~ 2480 MHz		
Max. Reported SAR(1g)	Mode	Head (W/ kg)	Body (W/ kg)
	GSM 850	0.697	1.135
	PCS 1900	0.545	0.660
	Bluetooth	0.030	0.037
	Limit	1.6 W/kg	
Battery	Rated Voltage: 3.7V Charge Limit Voltage: 4.2V Capacity: 1650mAh		
Description test modes	SIM 1 and SIM 2 is a chipset unit and tested as single chipset, SIM 1 is used to tested.		
Modulation Mode	GMSK for GSM/GPRS Bluetooth: GFSK +π/4DQPSK+8DPSK		
Antenna Specification	GSM: PIFA Antenna Bluetooth: Monopole Antenna		
Operating Mode	Maximum continuous output		

1.2 Test Environment

Ambient conditions in the SAR laboratory:

Items	Required
Temperature (℃)	18-25
Humidity (%RH)	30-70

1.3 Test Factory

Company Name:	Shenzhen LGT Test Service Co., Ltd.
Address:	Room 205, Building 13, Zone B, Chen Hsong Industrial Park, No.177 Renmin West Road, Jinsha Community, Kengzi Street, Pingshan New District, Shenzhen, China
	FCC test Firm Registration No.: 746540 IC Registration No.: CN0136 A2LA Certificate No.: 6727.01

2. Test Standards and Limits

No.	Identity	Document Title
1	47 CFR Part 2	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
2	ANSI/IEEE Std. C95.1-1992	IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz
3	IEEE Std. 1528-2013	Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques
4	FCC KDB 447498 D04 v01	RF Exposure Procedures and Equipment Authorization Policies for Mobile and Portable Devices
5	FCC KDB 865664 D01 v01r04	SAR Measurement 100 MHz to 6 GHz
6	FCC KDB 865664 D02 v01r02	RF Exposure Reporting
7	FCC KDB 941225 D01 v03r01	SAR Measurement Procedures for 3G Devices
8	FCC KDB 941225 D05 v02r05	SAR for LTE Devices
9	FCC KDB 941225 D06 v02r01	Hotspot Mode SAR
10	FCC KDB 648474 D04 v01r03	SAR Evaluation Considerations for Wireless Handsets
11	FCC KDB 248227 D01 Wi-Fi SAR v02r02	SAR Considerations for 802.11 Devices

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

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

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

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

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

Population/Uncontrolled Environments:
Are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure.

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

NOTE
GENERAL POPULATION/UNCONTROLLED EXPOSURE
PARTIAL BODY LIMIT
1.6 W/kg

3. SAR Measurement System

3.1 Definition of Specific Absorption Rate (SAR)

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below:

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

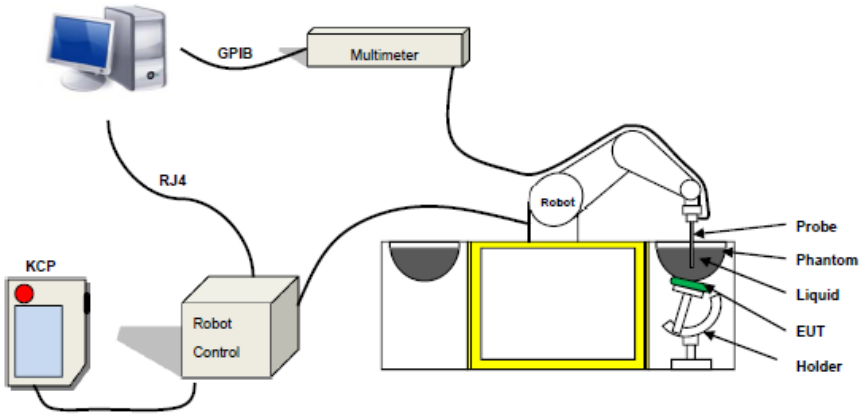
SAR is expressed in units of Watts per kilogram (W/kg) SAR measurement can be related to the electrical field in the tissue by

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

Where: σ is the conductivity of the tissue;
ρ is the mass density of the tissue and E is the RMS electrical field strength.

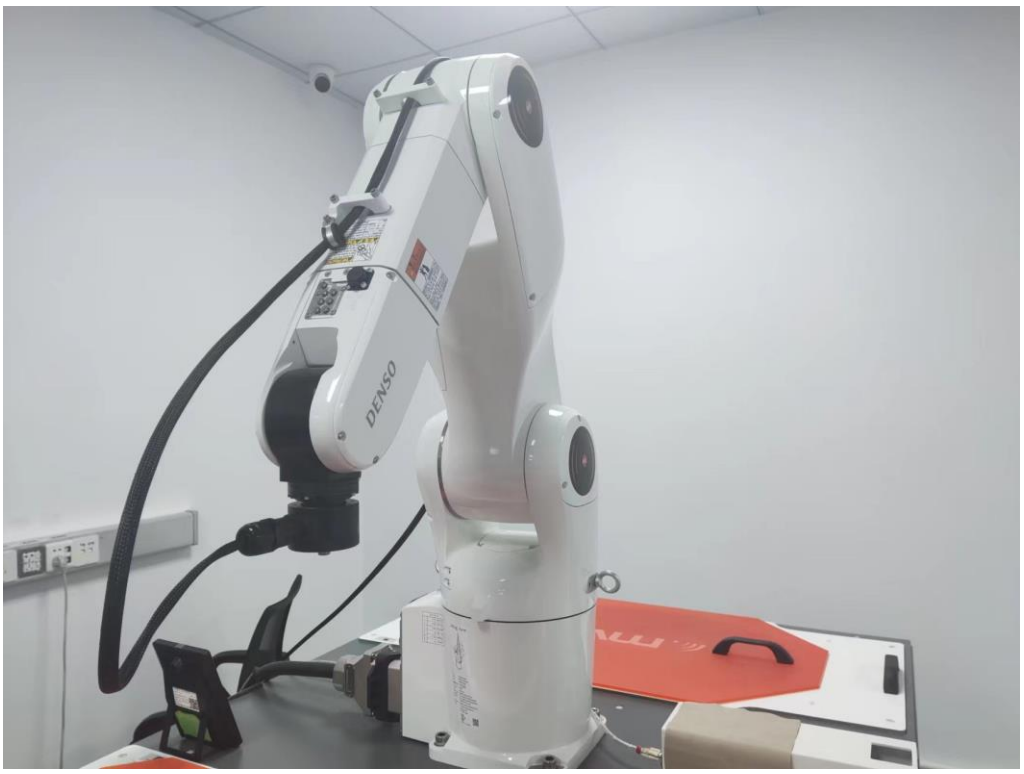
3.2 SAR System

MVG SAR System Diagram:



COMOSAR is a system that is able to determine the SAR distribution inside a phantom of human being according to different standards. The COMOSAR system consists of the following items:
- Main computer to control all the system
- 6 axis robot
- Data acquisition system
- Miniature E-field probe
- Phone holder
- Head simulating tissue

The following figure shows the system.



The EUT under test operating at the maximum power level is placed in the phone holder, under the phantom, which is filled with head simulating liquid. The E-Field probe measures the electric field inside the phantom. The OpenSAR software computes the results to give a SAR value in a 1g or 1g mass.

3.2.1 Probe

For the measurements the Specific Dosimetric E-Field Probe SN 04/22 EPGO364 with following specifications is used
- Probe Length: 330 mm
- Length of Individual Dipoles: 2mm
- Maximum external diameter: 8 mm
- Probe Tip External Diameter: 2.5 mm
- Distance between dipole/probe extremity: 1 mm
- Dynamic range: 0.01-100 W/kg
- Probe linearity: 3%
- Axial Isotropy: < 0.10 dB
- Spherical Isotropy: < 0.10 dB
- Calibration range: 150 MHz to 6 GHz for head & body simulating liquid.
-Angle between probe axis (evaluation axis) and surface normal line: less than 30°

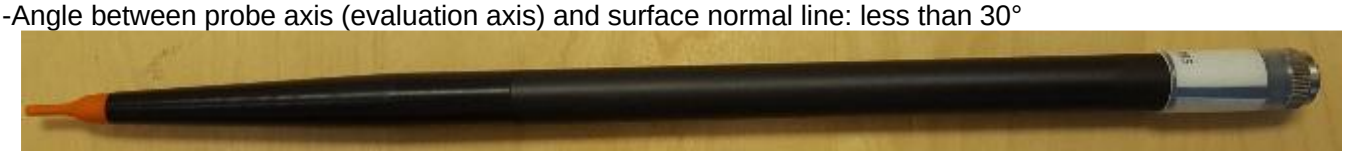


Figure 1-MVG COMOSAR Dosimetric E field Probe

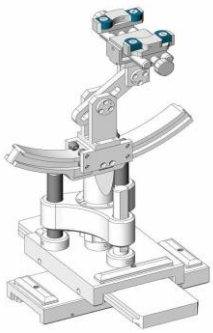
3.2.2 Phantom

For the measurements the Specific Anthropomorphic Mannequin (SAM) defined by the IEEE SCC-34/SC2 group is used. The phantom is a polyurethane shell integrated in a wooden table. The thickness of the phantom amounts to 2mm +/- 0.2mm. It enables the dosimetric evaluation of left and right phone usage and includes an additional flat phantom part for the simplified performance check. The phantom set-up includes a cover, which prevents the evaporation of the liquid.

Figure-SN 06/22 SAM 148

Figure-SN 06/22 ELLI 51

3.2.3 Device Holder



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

4. Tissue Simulating Liquids

4.1 Simulating Liquids Parameter Check

The simulating liquids should be checked at the beginning of a series of SAR measurements to determine of the dielectric parameters are within the tolerances of the specified target values

The uncertainty due to the liquid conductivity and permittivity arises from two different sources. The first source of error is the deviation of the liquid conductivity from its target value (max _ 5 %) and the second source of error arises from the measurement procedures used to assess conductivity. The uncertainty shall be assessed using a rectangular probability For 1 g averaging, the maximum weighting coefficient for SAR is 0,5.

IEEE SCC-34/SC-2 RECOMMENDED TISSUE DIELECTRIC PARAMETERS
The head and body tissue dielectric parameters recommended by the IEEE SCC-34/SC-2 have been incorporated in the following table.

Frequency	εr		σ 1g S/m	
	Head	Body	Head	Body
300	45.3	45.3	0.87	0.87
450	43.5	43.5	0.87	0.87
900	41.5	41.5	0.97	0.97
1450	40.5	40.5	1.20	1.20
1800	40.0	40.0	1.40	1.40
2450	39.2	39.2	1.80	1.80
3000	38.5	38.5	2.40	2.40
5200	36.0	36.0	4.70	4.70

LIQUID MEASUREMENT RESULTS

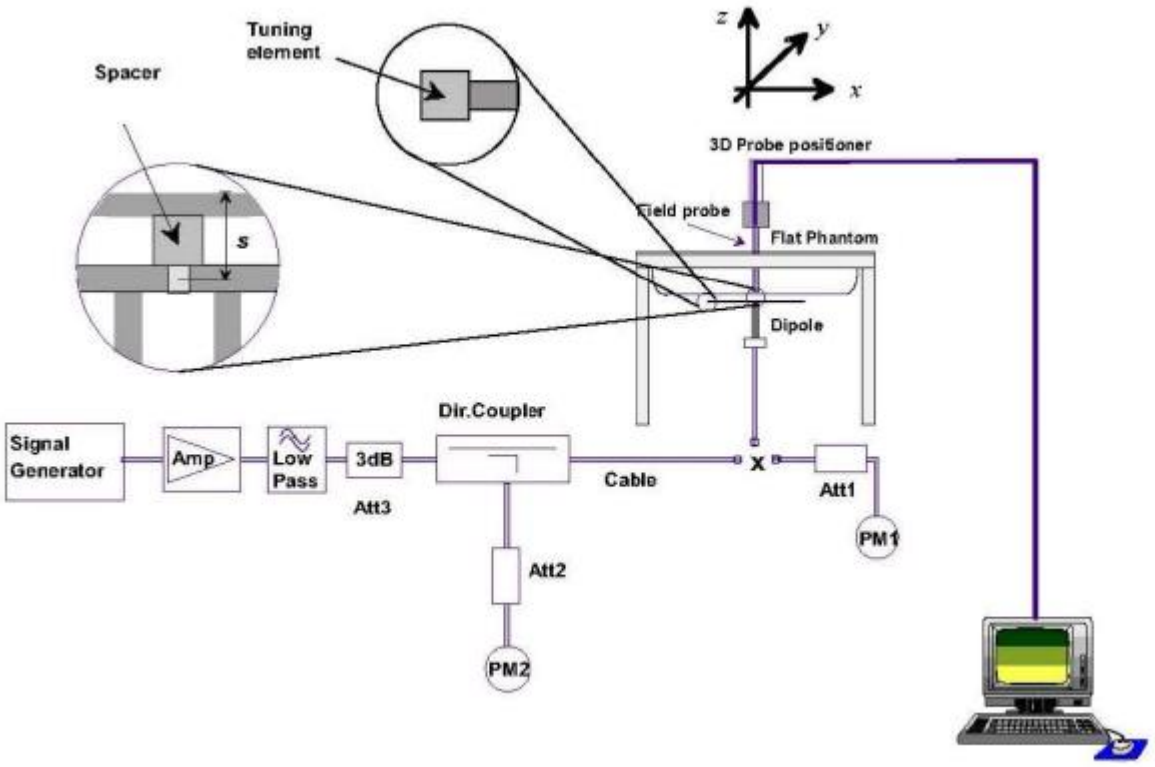
Date	Ambient		Simulating Liquid		Parameters	Target	Measured	Deviation %	Limited %
	Temp. [°C]	Humidity %	Frequency (MHz)	Temp. [°C]					
2023-01-03	23.4	58	835	23.1	Permittivity	41.50	40.63	-2.10	±5
					Conductivity	0.90	0.93	3.33	±5
2023-01-03	23.4	58	1900	23.1	Permittivity	40.00	40.75	1.88	±5
					Conductivity	1.40	1.38	-1.43	±5
2023-01-04	23.5	45	2450	23.2	Permittivity	39.20	39.75	1.40	±5
					Conductivity	1.80	1.84	2.22	±5

5. SAR System Validation

5.1 Validation System

Each MVG system is equipped with one or more system validation kits. These units, together with the predefined measurement procedures within the MVG software, enable the user to conduct the system performance check and system validation. System kit includes a dipole, and dipole device holder.

The system check verifies that the system operates within its specifications. It's performed daily or before every SAR measurement. The system check uses normal SAR measurement in the flat section of the phantom with a matched dipole at a specified distance. The system validation setup is shown as below.



5.2 Validation Result

Comparing to the original SAR value provided by MVG, the validation data should be within its specification of ±10 %.

Date	Freq.	Power	Tested Value	Normalized SAR	Target SAR	Tolerance	Limit
	(MHz)	(mW)	(W/Kg)	(W/kg)	1g(W/kg)	(%)	(%)
2023-01-03	835	100	0.973	9.73	9.63	1.04	10
2023-01-03	1900	100	3.993	39.93	39.84	0.23	10
2023-01-04	2450	100	5.434	54.34	54.70	-0.66	10

6. SAR Evaluation Procedures

The procedure for assessing the average SAR value consists of the following steps:

The following steps are used for each test position

- Establish a call with the maximum output power with a base station simulator. The connection between the mobile and the base station simulator is established via air interface

- Measurement of the local E-field value at a fixed location. This value serves as a reference value for calculating a possible power drift.

- Measurement of the SAR distribution with a grid of 8 to 16mm * 8 to16 mm and a constant distance to the inner surface of the phantom. Since the sensors cannot directly measure at the inner phantom surface, the values between the sensors and the inner phantom surface are extrapolated. With these values the area of the maximum SAR is calculated by an interpolation scheme.

- Around this point, a cube of 30 * 30 * 30 mm or 32 * 32 * 32 mm is assessed by measuring 5 or 8 * 5 or 8*4 or 5 mm. With these data, the peak spatial-average SAR value can be calculated.

➢ Area Scan& Zoom Scan

First Area Scan is used to locate the approximate location(s) of the local peak SAR value(s). The measurement grid within an Area Scan is defined by the grid extent, grid step size and grid offset. Next, in order to determine the EM field distribution in a three-dimensional spatial extension, Zoom Scan is required. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR-distribution over 10 g. Area scan and zoom scan resolution setting follows KDB 865664 D01 quoted below.

When the 1-g SAR of the highest peak is within 2 dB of the SAR limit, additional zoom scans are required for other peaks within 2 dB of the highest peak that have not been included in any zoom scan to ensure there is no increase in SAR.

7. EUT Test Position

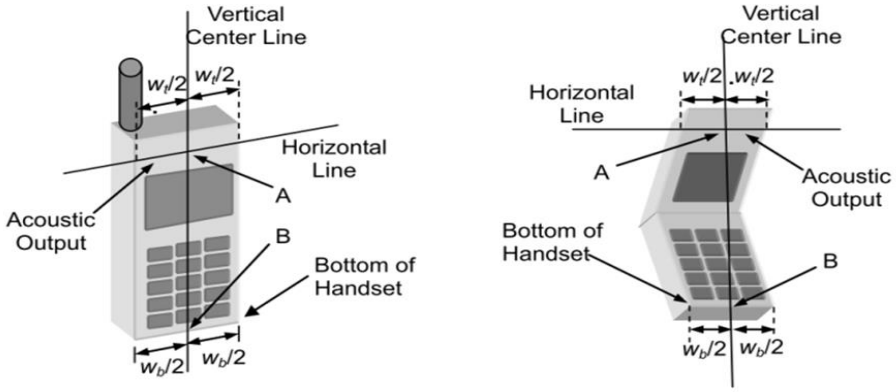
This EUT was tested in Right Cheek, Right Titled, Left Cheek, Left Titled, Front Face and Rear Face.

Define Two Imaginary Lines On The Handset:

1)The vertical centerline passes through two points on the front side of the handset the midpoint of the width wt of the handset at the level of the acoustic output, and the midpoint of the width wb of the handset.

2)The horizontal line is perpendicular to the vertical centerline and passes through the center of the acoustic output. The horizontal line is also tangential to the face of the handset at point A.

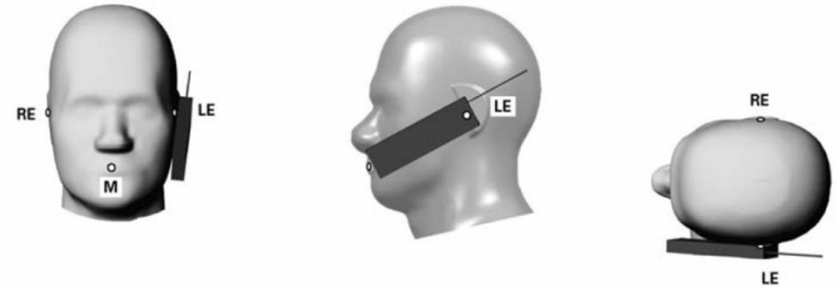
3)The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centerline is not necessarily to the front face of the handset, especially for clamshell handsets, handsets with flip covers, and other irregularly shaped handsets.



7.1 Cheek Position

1) To position the device with the vertical center line of the body of the device and the horizontal line crossing the center piece in a plane parallel to the sagittal plane of the phantom. While maintaining the device in this plane, align the vertical center line with the reference plane containing the ear and mouth reference point (M: Mouth, RE: Right Ear, and LE: Left Ear) and align the center of the ear piece with the line RE-LE.

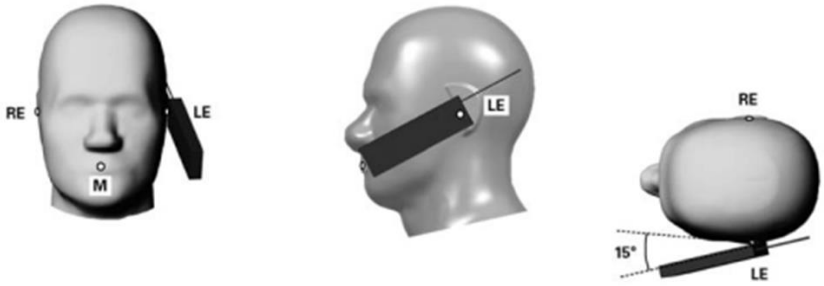
2) To move the device towards the phantom with the ear piece aligned with the line LE-RE until the phone touched the ear. While maintaining the device in the reference plane and maintaining the phone contact with ear, move the bottom of the phone until any point on the front side is in contact with the cheek of the phantom or until contact with the ear is lost



7.2 Tilt Position

(1)To position the device in the “cheek” position described above.

(2) While maintaining the device in the reference plane described above and pivoting against the ear, moves it outward away from the mouth by an angle of 15 degrees or until with the ear is lost.

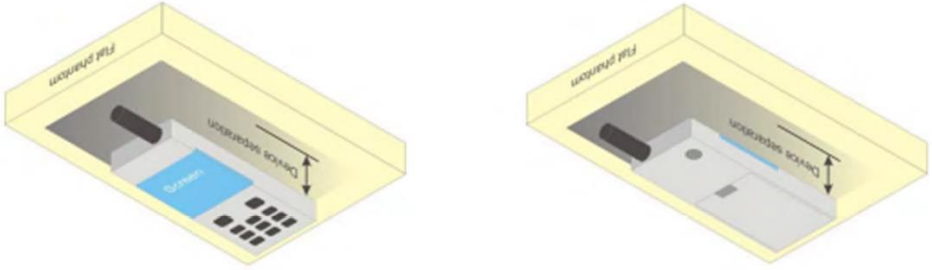


7.3 Body-worn Position Conditions

1) To position the EUT parallel to the phantom surface.

2) To adjust the EUT parallel to the flat phantom.

3) To adjust the distance between the EUT surface and the flat phantom to 10mm.



8. Uncertainty

8.1 Measurement Uncertainty

The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in IEEE 1528: 2013.This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Uncertainty Component	Tol (+- %)	Prob. Dist.	Div.	Ci (1g)	Ci (10g)	1g Ui (+-%)	10g Ui (+-%)	vi
Measurement System								
Probe calibration	5.8	N	1	1	1	5.8	5.8	∞
Axial Isotropy	3.5	R	$\sqrt{3}$	√0.5	√0.5	1.43	1.43	∞
Hemispherical Isotropy	5.9	R	$\sqrt{3}$	√0.5	√0.5	2.41	2.41	∞
Boundary effect	1	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Linearity	4.7	R	$\sqrt{3}$	1	1	2.71	2.71	∞
System detection limits	1	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Modulation response	3	R	$\sqrt{3}$	1	1	1.73	1.73	∞
Readout Electronics	0.5	N	1	1	1	0.50	0.50	∞
Response Time	0	R	$\sqrt{3}$	1	1	0.00	0.00	∞
Integration Time	1.4	R	$\sqrt{3}$	1	1	1.81	1.81	∞
RF ambient conditions-Noise	3	R	$\sqrt{3}$	1	1	1.73	1.73	∞
RF ambient conditions-reflections	3	R	$\sqrt{3}$	1	1	1.73	1.73	∞
Probe positioner mechanical tolerance	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
Probe positioning with respect to phantom shell	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
Extrapolation, Interpolation and Integration Algoritms for Max, SAR	2.3	R	$\sqrt{3}$	1	1	1.33	1.33	∞
Test sample Related								
Test sample positioning	2.6	N	1	1	1	2.60	2.60	11
Device holder uncertainty	3	N	1	1	1	3.00	3.00	7
Output Power Variation - SAR Drift Measurement	5	R	$\sqrt{3}$	1	1	2.89	2.89	∞
SAR scaling	2	R	$\sqrt{3}$	1	1	1.15	1.15	∞
Phantom and tissue parameters								
Phantom uncertainty (shape and thickness uncertainty)	4	R	$\sqrt{3}$	1	1	2.31	2.31	∞
Uncertainty in SAR correction for deviations in permittivity and conductivity	2	N	1	1	0.84	2.00	1.68	∞
Liquid Conductivity - Measurement Uncertainty)	4	N	1	0.78	0.71	3.12	2.84	5
Liquid Permittivity - Measurement Uncertainty	5	N	1	0.23	0.26	1.15	1.30	5
Liquid Conductivity (Temperature Uncertainty)	2.5	R	$\sqrt{3}$	0.78	0.71	1.13	1.02	∞
Liquid Permittivity (Temperature Uncertainty)	2.5	R	$\sqrt{3}$	0.23	0.26	0.33	0.38	∞
Combined Standard Uncertainty		RSS				10.47	10.34	
Expanded Uncertainty (95% Confidence interval)		K				20.95	20.69	

8.2 System validation uncertainty

Uncertainty Component	Tol (+- %)	Prob. Dist.	Div.	Ci (1g)	Ci (10g)	1g Ui (+-%)	10g Ui (+-%)	vi
Measurement System								
Probe calibration	5.8	N	1	1	1	5.8	5.8	∞
Axial Isotropy	3.5	R	$\sqrt{3}$	1	1	2.02	2.02	∞
Hemispherical Isotropy	5.9	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Boundary effect	1	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Linearity	4.7	R	$\sqrt{3}$	1	1	0.71	0.71	∞
System detection limits	1	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Modulation response	0	N	$\sqrt{3}$	0	0	0.00	0.00	∞
Readout Electronics	0.5	N	1	1	1	0.50	0.50	∞
Response Time	0	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Integration Time	1.4	R	$\sqrt{3}$	0	0	0.00	0.00	∞
RF ambient conditions-Noise	3	R	$\sqrt{3}$	1	1	1.73	1.73	∞
RF ambient conditions-reflections	3	R	$\sqrt{3}$	1	1	1.73	1.73	∞
Probe positioner mechanical tolerance	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
Probe positioning with respect to phantom shell	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
Extrapolation, Interpolation and Integration Algoritms for Max, SAR	2.3	R	$\sqrt{3}$	1	1	1.33	1.33	∞
Dipole								
Deviation of Experimental Source from Numerical Source	5	N	1	1	1	5.00	5.00	∞
Input Power and SAR Drift Measurement	0.5	R	$\sqrt{3}$	1	1	0.29	0.29	∞
Dipole Axis to Liquid Distance	2	R	$\sqrt{3}$	1	1	1.15	1.15	∞
Phantom and Tissue Parameters								
Phantom uncertainty (shape and thickness uncertainty)	4	R	$\sqrt{3}$	1	1	2.31	2.31	∞
Uncertainty in SAR correction for deviations in permittivity and conductivity	2	N	1	1	0.84	2.00	1.68	∞
Liquid Conductivity - Measurement Uncertainty)	4	N	1	0.78	0.71	3.12	2.84	5
Liquid Permittivity - Measurement Uncertainty	5	N	1	0.23	0.26	1.15	1.30	5
Liquid Conductivity (Temperature Uncertainty)	2.5	R	$\sqrt{3}$	0.78	0.71	1.13	1.02	∞
Liquid Permittivity (Temperature Uncertainty)	2.5	R	$\sqrt{3}$	0.23	0.26	0.33	0.38	∞
Combined Standard Uncertainty		RSS				10.16	10.03	
Expanded Uncertainty (95% Confidence interval)		K				20.32	20.06	

9. Conducted Power Measurement

Test Result:

Burst Average Power (dBm)						
Band	GSM 850			PCS 1900		
Channel	128	190	251	512	661	810
Frequency (MHz)	824.2	836.6	848.8	1850.2	1880.0	1909.8
GSM (GMSK, 1-Slot)	33.12	32.71	32.84	29.90	30.02	29.84
GPRS (GMSK, 1-Slot)	33.16	32.74	32.90	29.86	29.98	29.82
GPRS (GMSK, 2-Slot)	31.61	31.14	31.30	28.35	28.54	28.44
GPRS (GMSK, 3-Slot)	29.88	29.39	29.54	26.59	26.80	26.75
GPRS (GMSK, 4-Slot)	28.36	27.83	27.97	24.76	25.06	25.02
Remark: GPRS, CS4 coding scheme. Multi-Slot Class 8, Support Max 4 downlink, 1 uplink, 5 working link Multi-Slot Class 10, Support Max 4 downlink, 2 uplink, 5 working link Multi-Slot Class 12, Support Max 4 downlink, 4 uplink, 5 working link						

Frame- Average Power(dBm)						
Band	GSM 850			PCS 1900		
Channel	128	190	251	512	661	810
Frequency (MHz)	824.2	836.6	848.8	1850.2	1880.0	1909.8
GSM (GMSK, 1-Slot)	24.09	23.68	23.81	20.87	20.99	20.81
GPRS (GMSK, 1-Slot)	24.13	23.71	23.87	20.83	20.95	20.79
GPRS (GMSK, 2-Slot)	25.59	25.12	25.28	22.33	22.52	22.42
GPRS (GMSK, 3-Slot)	25.62	25.13	25.28	22.33	22.54	22.49
GPRS (GMSK, 4-Slot)	25.35	24.82	24.96	21.75	22.05	22.01
Remark: 1. SAR testing was performed on the maximum frame-averaged power mode. 2. The frame-averaged power is linearly proportion to the slot number configured and it is linearly scaled the maximum Burst - averaged power based on time slots. The calculated method is shown as below: Frame-averaged power = Burst averaged power (1 TX Slot) – 9.03 dB Frame-averaged power = Burst averaged power (2 TX Slots) – 6.02 dB Frame-averaged power = Burst averaged power (3 TX Slots) - 4.26 dB Frame-averaged power = Burst averaged power (4 TX Slots) – 3.01 dB						

Bluetooth

BT				
Mode	Channel Number	Frequency (MHz)	Average Power (dBm)	Output Power (mW)
GFSK(1Mbps)	0	2402	5.14	3.27
	39	2441	6.61	4.58
	78	2480	8.05	6.38
π/4-QPSK(2Mbps)	0	2402	5.23	3.33
	39	2441	6.31	4.28
	78	2480	7.4	5.50
8DPSK(3Mbps)	0	2402	5.25	3.35
	39	2441	6.29	4.26
	78	2480	7.4	5.50

Tune Up Power:

Mode	GSM850(AVG)	GSM1900(AVG)
GSM/DCS	32.5±1dBm	29.5±1dBm
GPRS (1 Slot)	32.5±1dBm	29±1dBm
GPRS (2 Slot)	31±1dBm	28±1dBm
GPRS (3 Slot)	29±1dBm	26±1dBm
GPRS (4 Slot)	27.5±1dBm	24.5±1dBm

Mode	BT(AVG)
GFSK	7.5±1dBm
π/4-DQPSK	6.5±1dBm
8DPSK	6.5±1dBm

10. Test Photos and Results

10.1 EUT Photos

Front side

Back side

Right Edge

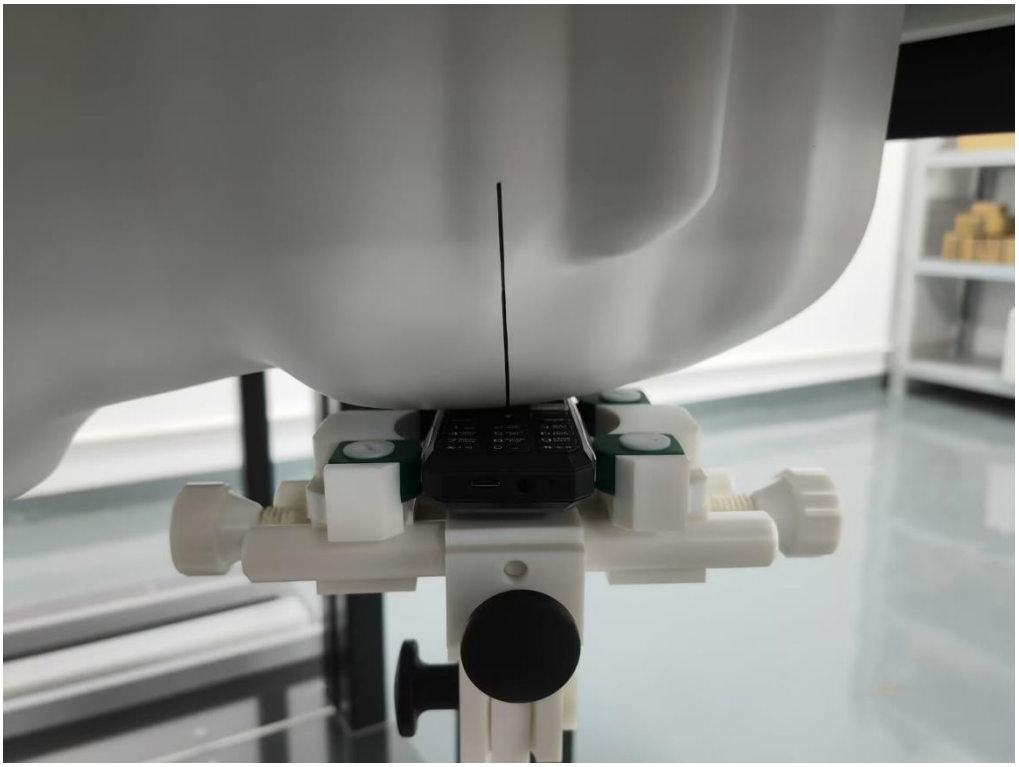
Left Edge

Top Edge

Bottom Edge

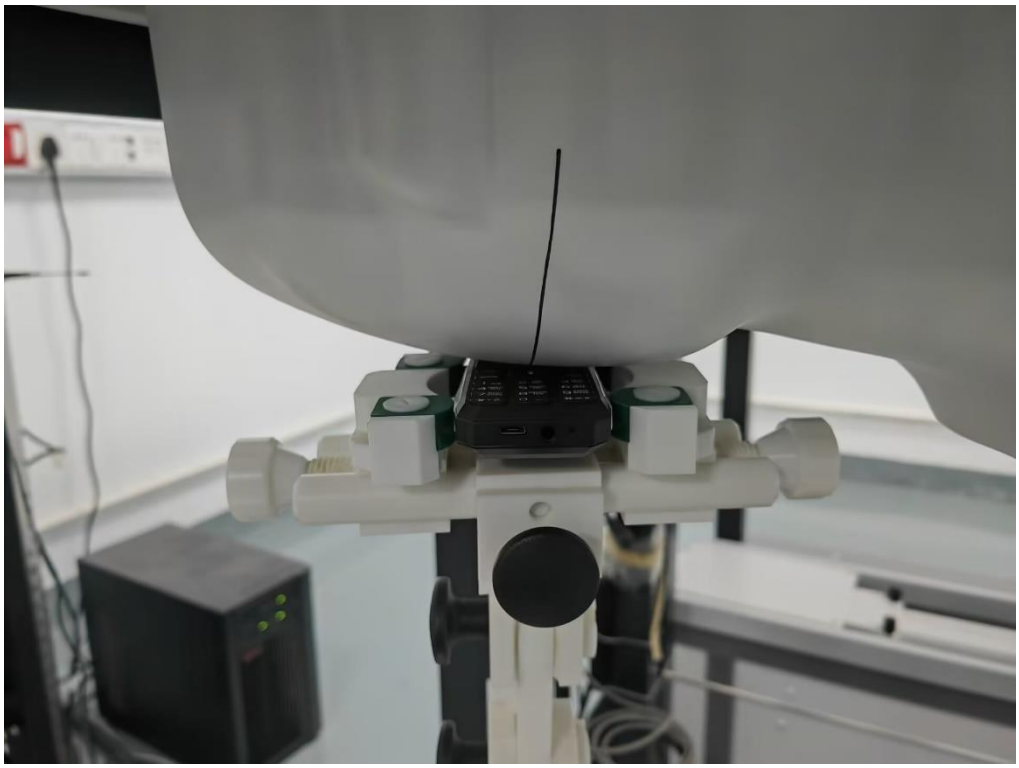
10.2 Setup Photos

Right Touch

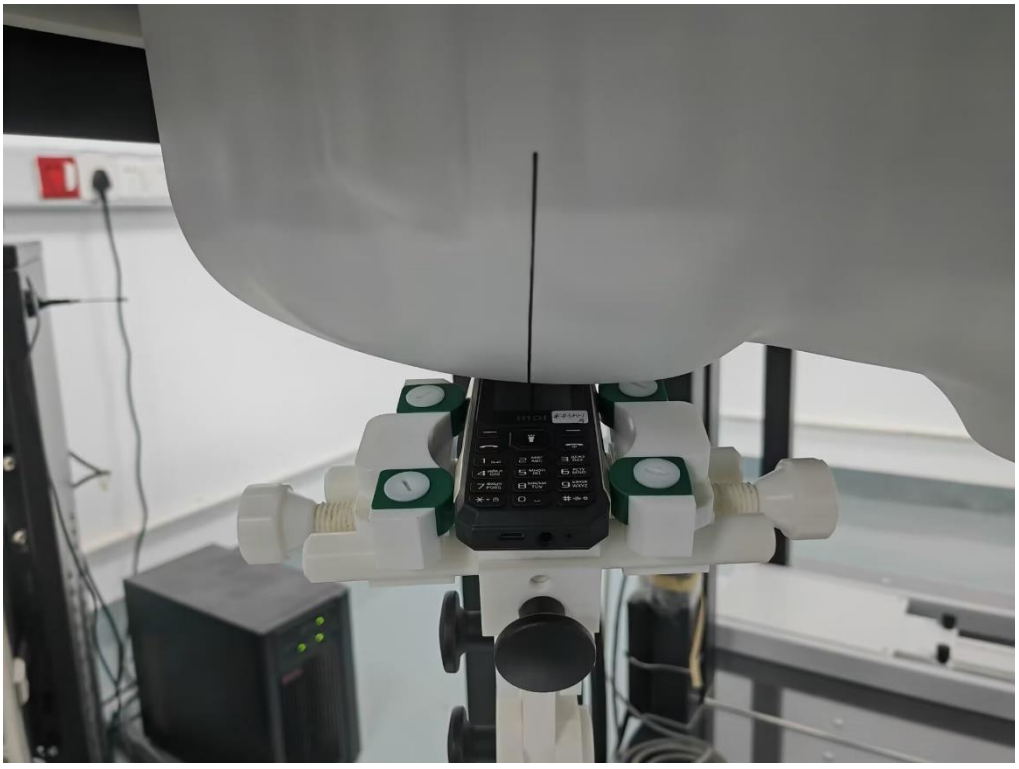


Right Tilt

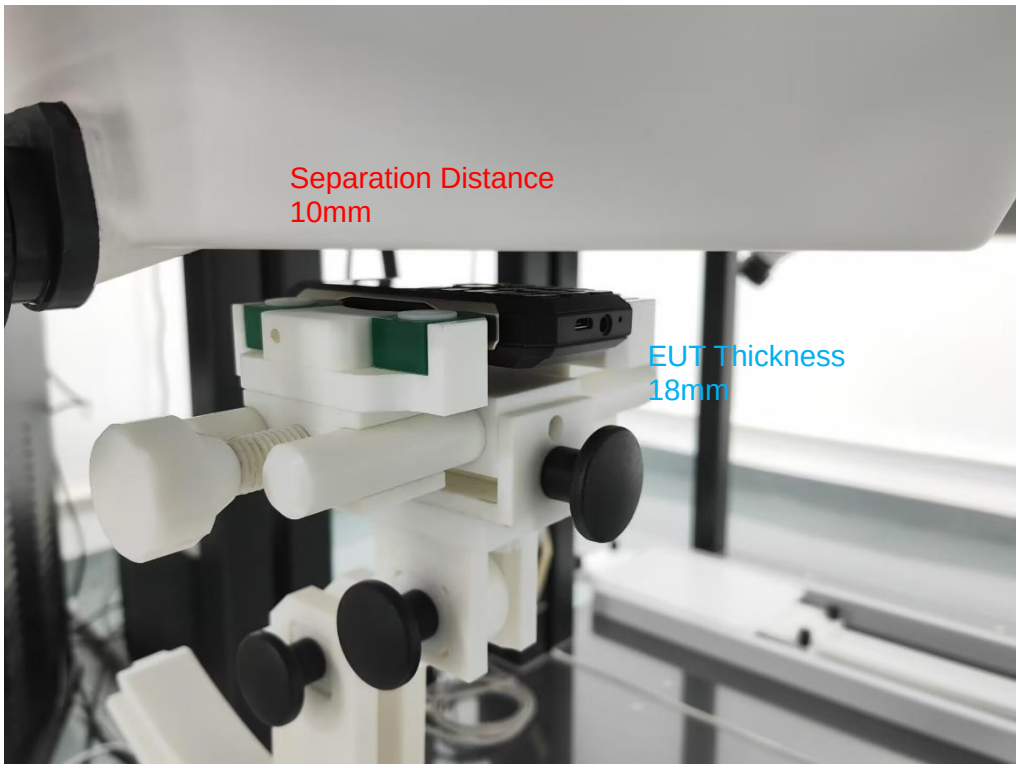
Left Touch



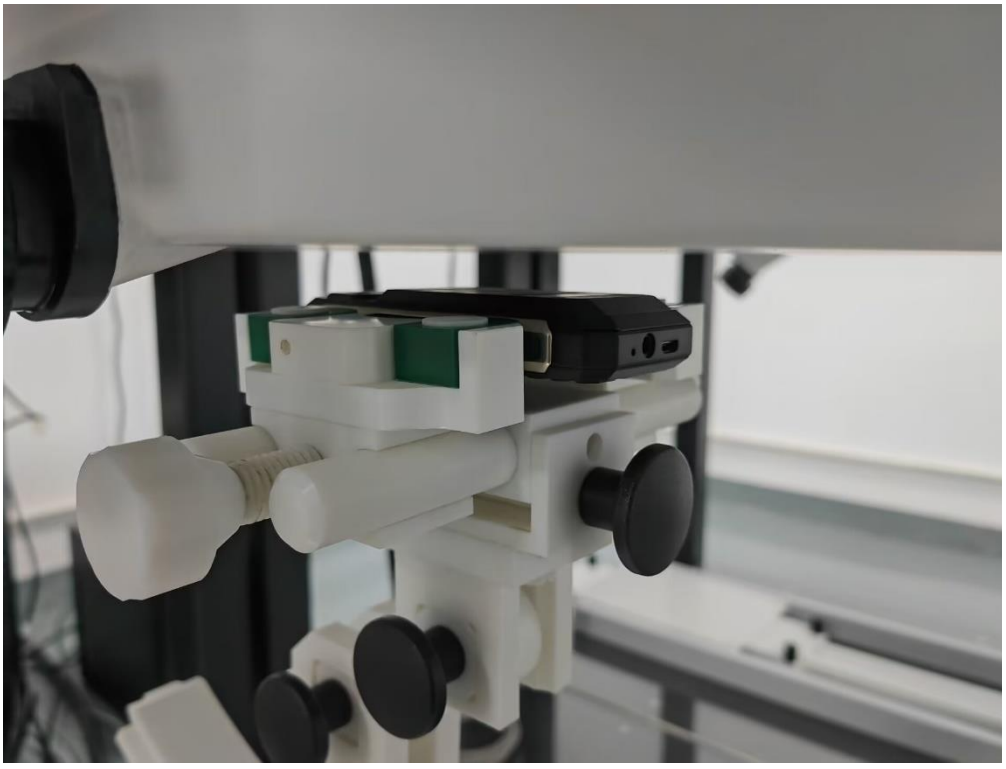
Left Tilt



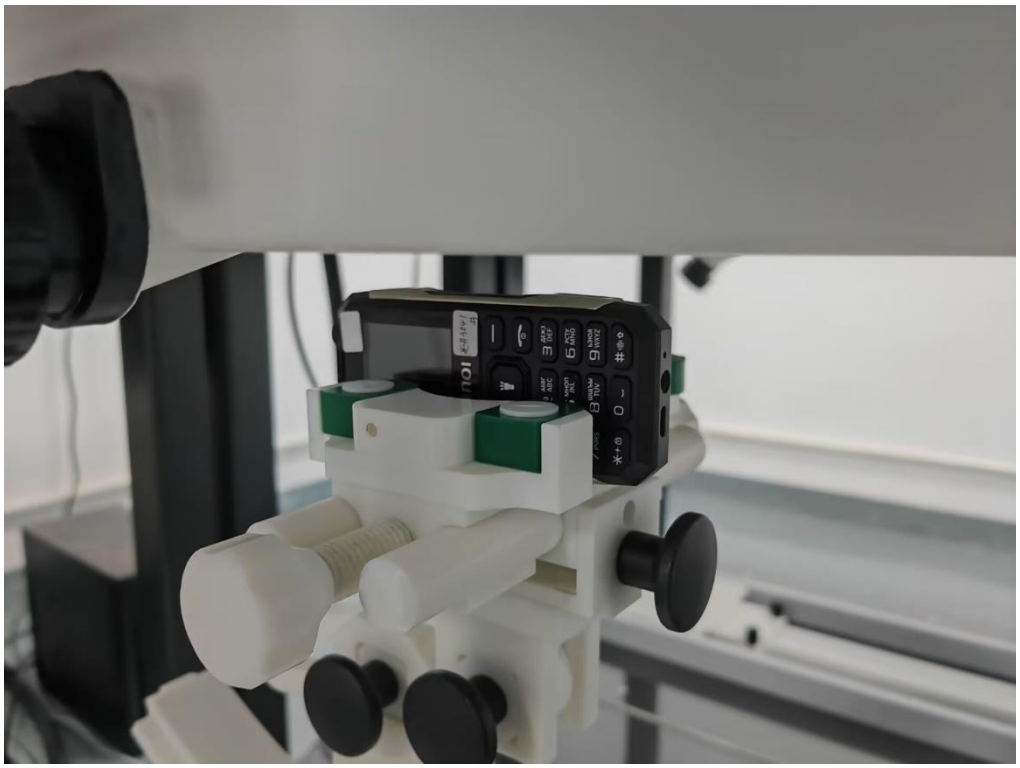
Body Front side



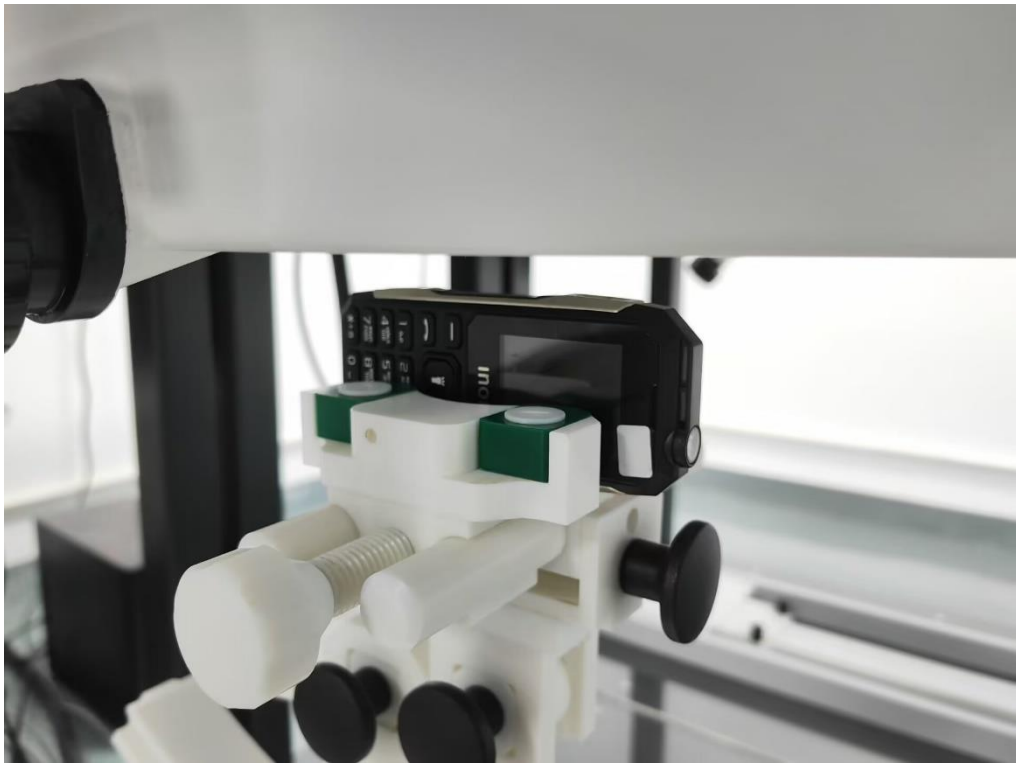
Body Back side



Body Right side



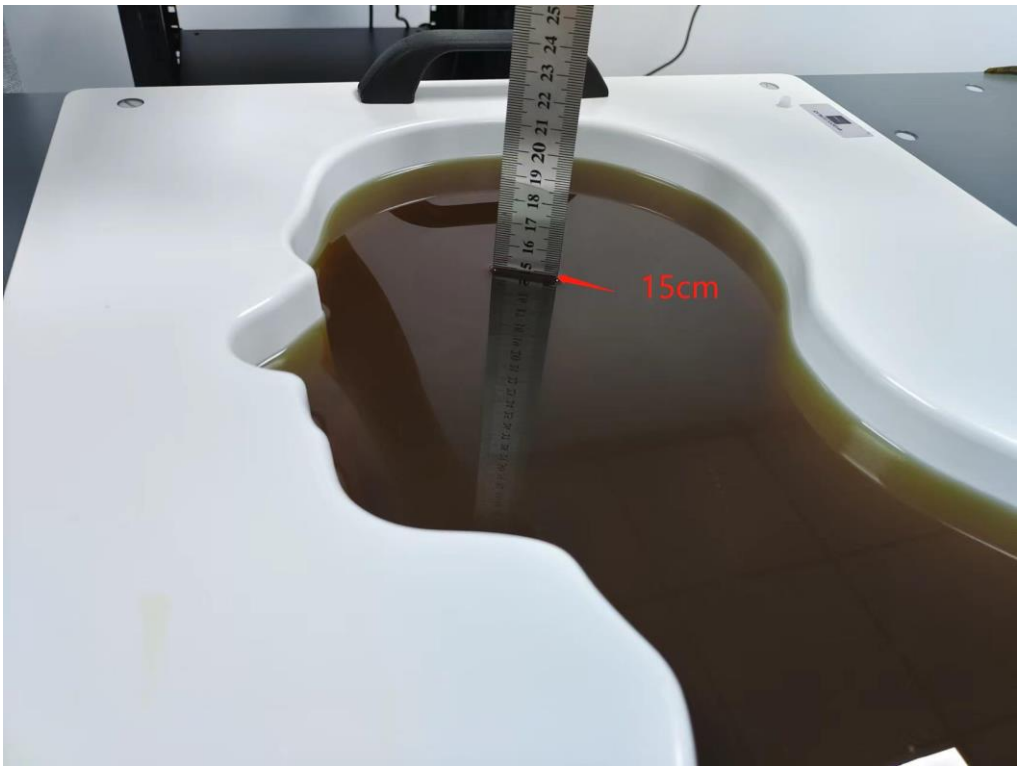
Body Left side



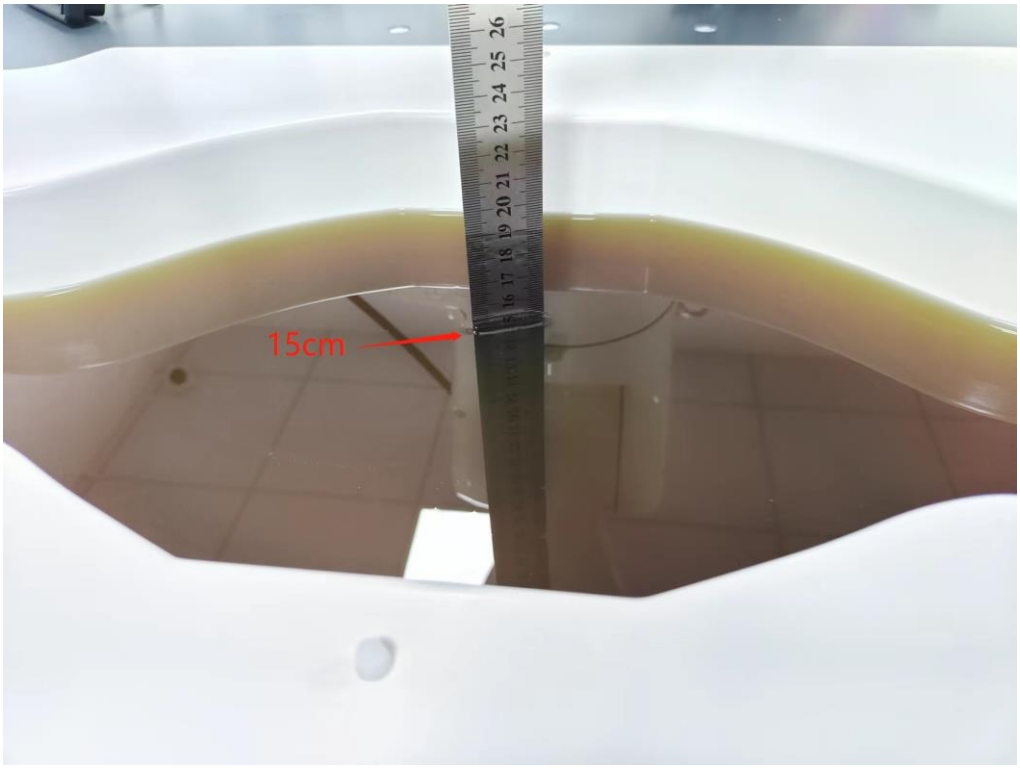
Top Edge

Bottom Edge

Liquid depth (15 cm)



Liquid depth (15 cm)



11. SAR Result Summary

HEAD SAR

Band	Model	Test Position	Freq.	SAR (1g) (W/kg)	Power Drift(%)	Max.Turn-up Power(dBm)	Meas.Output Power(dBm)	Scaled SAR (W/Kg)	Meas.No.
GSM850	GSM	Right Cheek	824.2	0.639	-3.43	33.50	33.12	**0.697**	**1**
		Right Cheek	836.6	0.542	-1.71	33.50	32.71	0.650	/
		Right Cheek	848.8	0.555	2.01	33.50	32.84	0.646	/
		Right Tilt	824.2	0.325	0.99	33.50	33.12	0.355	/
		Left Cheek	824.2	0.623	0.16	33.50	33.12	0.680	/
		Left Tilt	824.2	0.320	0.44	33.50	33.12	0.349	/
GSM1900	GSM	Right Cheek	1880	0.488	-1.88	30.50	30.02	**0.545**	**3**
		Right Tilt	1880	0.244	-1.09	30.50	30.02	0.273	/
		Left Cheek	1880	0.404	-2.82	30.50	30.02	0.451	/
		Left Tilt	1880	0.202	0.35	30.50	30.02	0.226	/
BT	GFSK	Left Tilt	2480	0.021	1.43	8.50	8.05	0.023	/
		Right Tilt	2480	0.014	2.83	8.50	8.05	0.016	/
		Left Cheek	2480	0.027	-2.27	8.50	8.05	**0.030**	**5**
		Left Tilt	2480	0.019	1.24	8.50	8.05	0.021	/

BODY SAR

Band	Model	Test Position	Ch.	SAR (1g) (W/kg)	Power Drift(%)	Max.Turn-up Power(dBm)	Meas.Output Power(dBm)	Scaled SAR (W/Kg)	Meas.No.
GSM850	GPRS Data-3 Slot	Front Side	824.2	0.646	-3.97	30.00	29.88	0.664	/
		Back Side	824.2	1.104	2.07	30.00	29.88	**1.135**	**2**
		Back Side	836.6	0.821	1.28	30.00	29.39	0.945	/
		Back Side	848.8	0.842	3.62	30.00	29.54	0.936	/
		Left Edge	824.2	0.145	0.50	30.00	29.88	0.149	/
		Right Edge	824.2	0.186	-3.02	30.00	29.88	0.191	/
		Top Edge	824.2	0.069	-0.20	30.00	29.88	0.071	/
		Bottom Edge	824.2	0.081	-1.74	30.00	29.88	0.083	/
GSM1900	GPRS Data-3 Slot	Front Side	1880	0.135	-2.97	27.00	26.80	0.141	/
		Back Side	1880	0.630	-1.51	27.00	26.80	**0.660**	**4**
		Left Edge	1880	0.120	2.30	27.00	26.80	0.126	/
		Right Edge	1880	0.136	-2.95	27.00	26.80	0.142	/
		Top Edge	1880	0.101	-0.28	27.00	26.80	0.106	/
		Bottom Edge	1880	0.302	-0.47	27.00	26.80	0.316	/
Bluetooth	GFSK	Front Side	2480	0.033	-1.42	8.50	8.05	**0.037**	**6**
		Back Side	2480	0.022	-2.98	8.50	8.05	0.024	/
		Left Edge	2480	0.017	-3.27	8.50	8.05	0.019	/
		Right Edge	2480	0.015	1.41	8.50	8.05	0.017	/
		Top Edge	2480	0.018	2.80	8.50	8.05	0.020	/
		Bottom Edge	2480	0.011	-0.23	8.50	8.05	0.012	/

Note:

1. Per KDB 447498 D04, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.

a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.

b. Scaled SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor

2. Per KDB 865664 D01, Repeated measurement is not required when the original highest measured SAR is <0.80 W/kg
3. Two SIM card slot can't work at the same time.

Repeated SAR measurement

Band	Mode	Test Position	Freq.	Original Measured SAR 1g(W/kg)	1 st Repeated SAR 1g	Ratio
GSM 850	GPRS Data-3 Slot	Back Side	824.2	1.104	1.050	1.051
		Back Side	836.6	0.821	0.783	1.049
		Back Side	848.8	0.842	0.808	1.042

Repeated SAR

Band	Mode	Test Position	Freq.	Result 1g (W/Kg)	Power Drift(%)	Max.Turn-up Power(dBm)	Meas.Output Power(dBm)	Scaled SAR(W/Kg)
GSM 850	GPRS Data-3 Slot	Back Side	824.2	1.050	0.93	30	29.88	1.079
		Back Side	836.6	0.783	-0.34	30	29.39	0.901
		Back Side	848.8	0.808	0.11	30	29.54	0.898

Note:

1. Per KDB 447498 D04, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.

a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.

b. Scaled SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor

2.Per KDB 865664 D01, Repeated measurement is not required when the original highest measured SAR is <0.80 W/kg

Simultaneous Multi-band Transmission Evaluation:

Application Simultaneous Transmission information:

Position	Simultaneous State
Head	1. GSM + Bluetooth
Body	1. GSM + Bluetooth

NOTE：

1.Bluetooth can't simultaneous transmission at the same time.

2.For simultaneous transmission at head and body exposure position, 2 transmitters simultaneous transmission was the worst state.

3.If the test separation distance is <5mm, 5mm is used for excluded SAR calculation.

4.KDB 447498 Appendix E, 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:

$$SAR_{test} = 1.6 \cdot Pant / Pth \ [W/kg].$$

Pant is maximum time-averaged power or effective radiated power (ERP), whichever is greater, and Pth is defined in Formula KDB 447498 (B.2).

Simultaneous transmission SAR test exclusion is determined for each operating configuration and exposure condition according to the reported standalone SAR of each applicable simultaneous transmitting antenna.

When the sum of SAR 1g of all simultaneously transmitting antennas in an operating mode and exposure condition combination is within the SAR limit (SAR-1g 1.6 W/kg), the simultaneous transmission SAR is not required. When the sum of SAR 1g is greater than the SAR limit (SAR-1g 1.6 W/kg), SAR test exclusion is determined by the SPLSR.

Simultaneous Mode	Position	Mode	Max. 1-g SAR (W/kg)	1-g Sum SAR (W/kg)
GSM + Bluetooth	Head	GSM	0.697	0.727
		Bluetooth	0.030	
	Body	GSM	1.135	1.172
		Bluetooth	0.037	

12. Equipment List

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Calibrated Until
835MHz Dipole	MVG	DIP0G835	SN 06/22 DIP0G835-639	2022.02.11	2023.02.10
1900MHz Dipole	MVG	DIP1G900	SN 06/22 DIP1G900-641	2022.02.11	2023.02.10
2450MHz Dipole	MVG	DIP2G450	SN 06/22 DIP2G450-645	2022.02.11	2023.02.10
E-Field Probe	MVG	EPGO364	SN 04/22 EPGO364	2022.02.11	2023.02.10
Dielectric Probe Kit	MVG	OCPG 87	SN 06/22 OCPG87	2022.02.11	2023.02.10
Antenna	MVG	ANTA 73	SN 06/22 ANTA 73	N/A	N/A
Ellipsoid Phantom	MVG	ELLI 51	SN 06/22 ELLI 51	N/A	N/A
Phantom	MVG	SAM 148	SN 06/22 SAM148	N/A	N/A
Phone holder	MVG	MSH 117	SN 06/22 MSH 117	N/A	N/A
Laptop holder	MVG	LSH 36	SN 06/22 LSH 38	N/A	N/A
Directional coupler	SHW	SHWDCP	202203280013	N/A	N/A
Network Analyzer	Agilent	E5071C	MY46418070	2022.03.28	2023.03.27
Multi Meter	Keithley	DMM6500	DMM6500	2022.05.05	2023.05.04
Signal Generator	Keithley	N5182B	MY59100717	2022.04.29	2023.04.28
Wireless Communication Test Set	R&S	CMW500	137737	2022.04.29	2023.04.28
Power Sensor	R&S	Z11	116184	2022.03.28	2023.03.27
Temperature hygrometer	N/A	ST-W2318	N/A	2022.05.05	2023.05.04
Thermograph	N/A	TP101	N/A	2022.05.05	2023.05.04

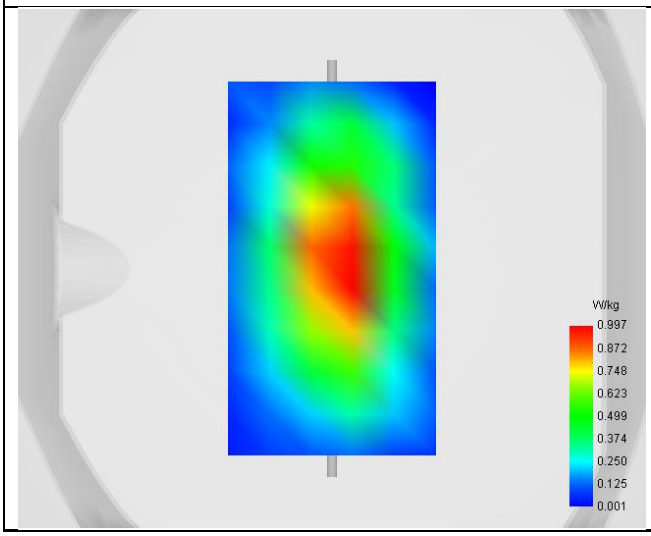
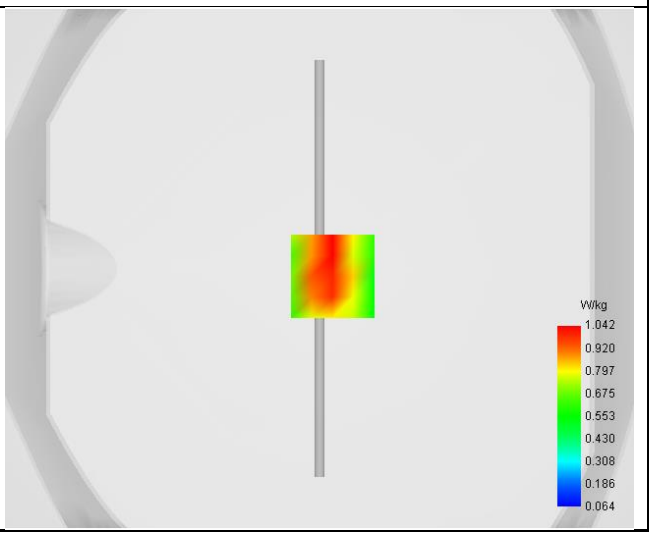
Appendix A. System Validation Plots

System Performance Check Data (835MHz)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 2023-01-03

Experimental conditions.

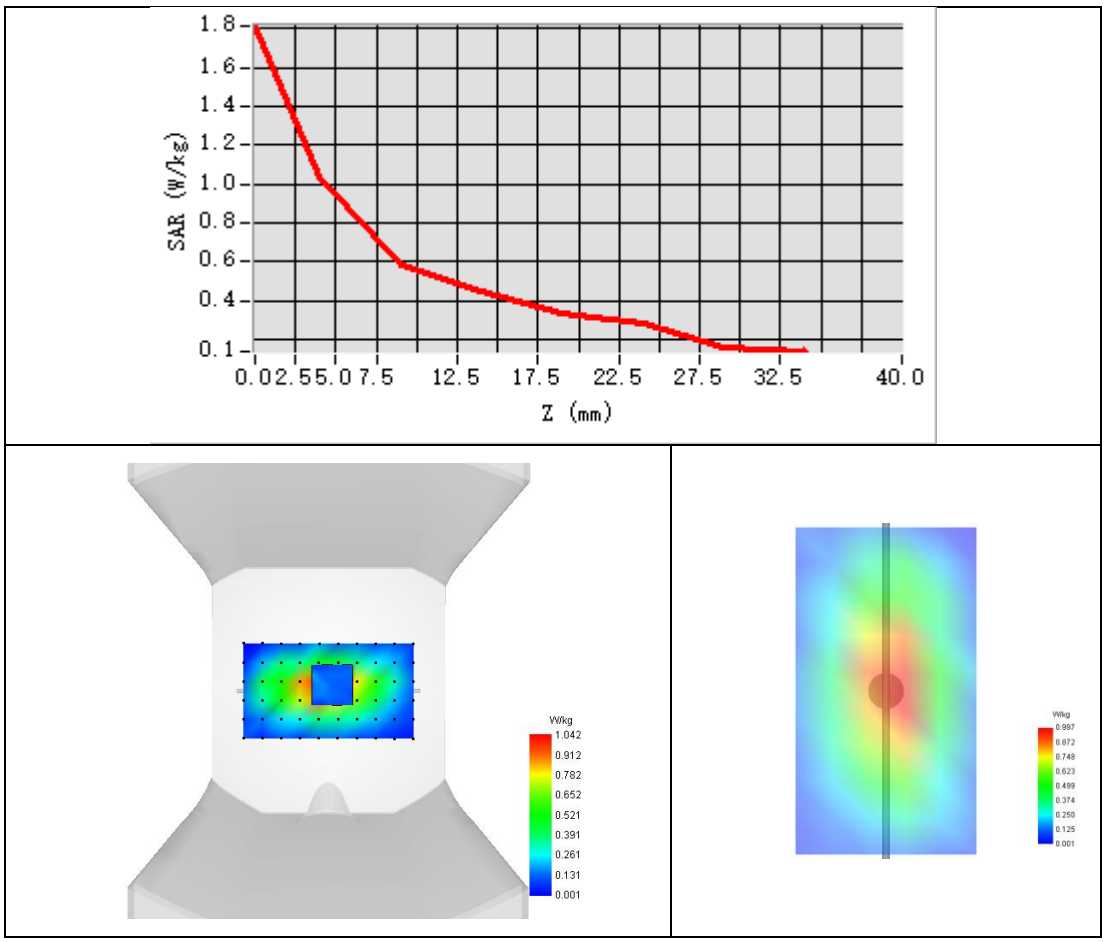
Phantom	Validation plane
Device Position	Dipole
Band	CW835
Channels	Middle
Signal	CW
Frequency (MHz)	835.000
Relative permittivity	40.63
Conductivity (S/m)	0.93
Probe	SN 04/22 EPGO364
ConvF	1.72
Crest factor:	1:1

SURFACE SAR	VOLUME SAR
	

Maximum location: X=5.00, Y=-3.00 ; SAR Peak: 1.54 W/kg

SAR 10g (W/Kg)	0.604410
SAR 1g (W/Kg)	0.973381

Z Axis Scan

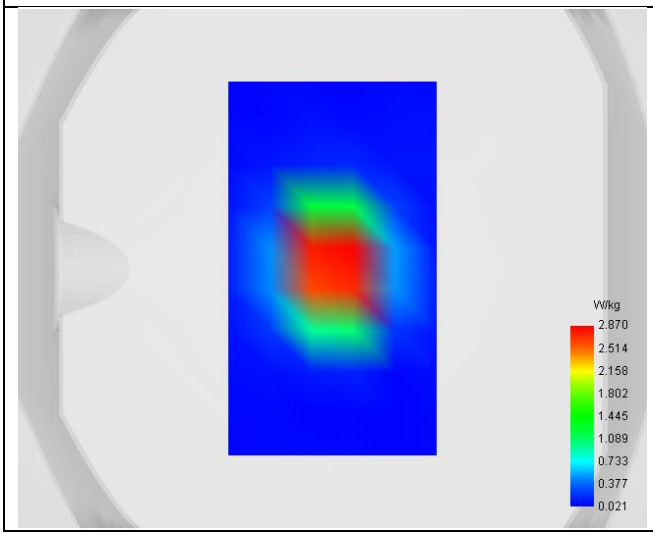
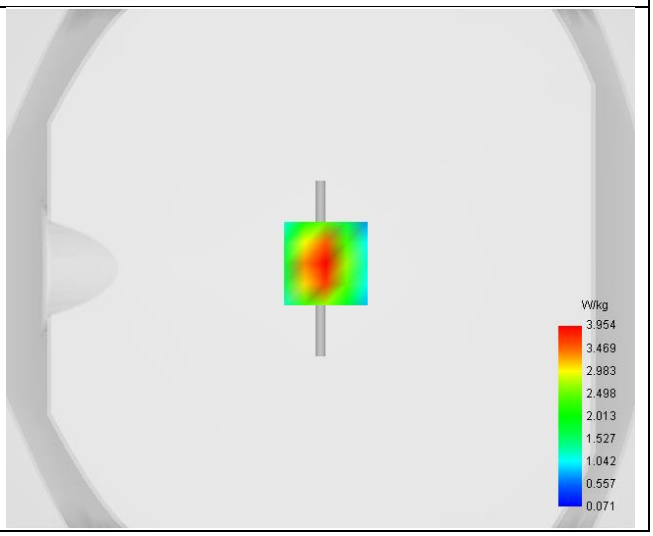

SAR (W/kg)
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.1
0.0 2.5 5.0 7.5 12.5 17.5 22.5 27.5 32.5 40.0
Z (mm)
W/kg
1.042
0.912
0.782
0.652
0.521
0.391
0.261
0.131
0.001

System Performance Check Data (1900MHz)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm, dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 2023-01-03

Experimental conditions.

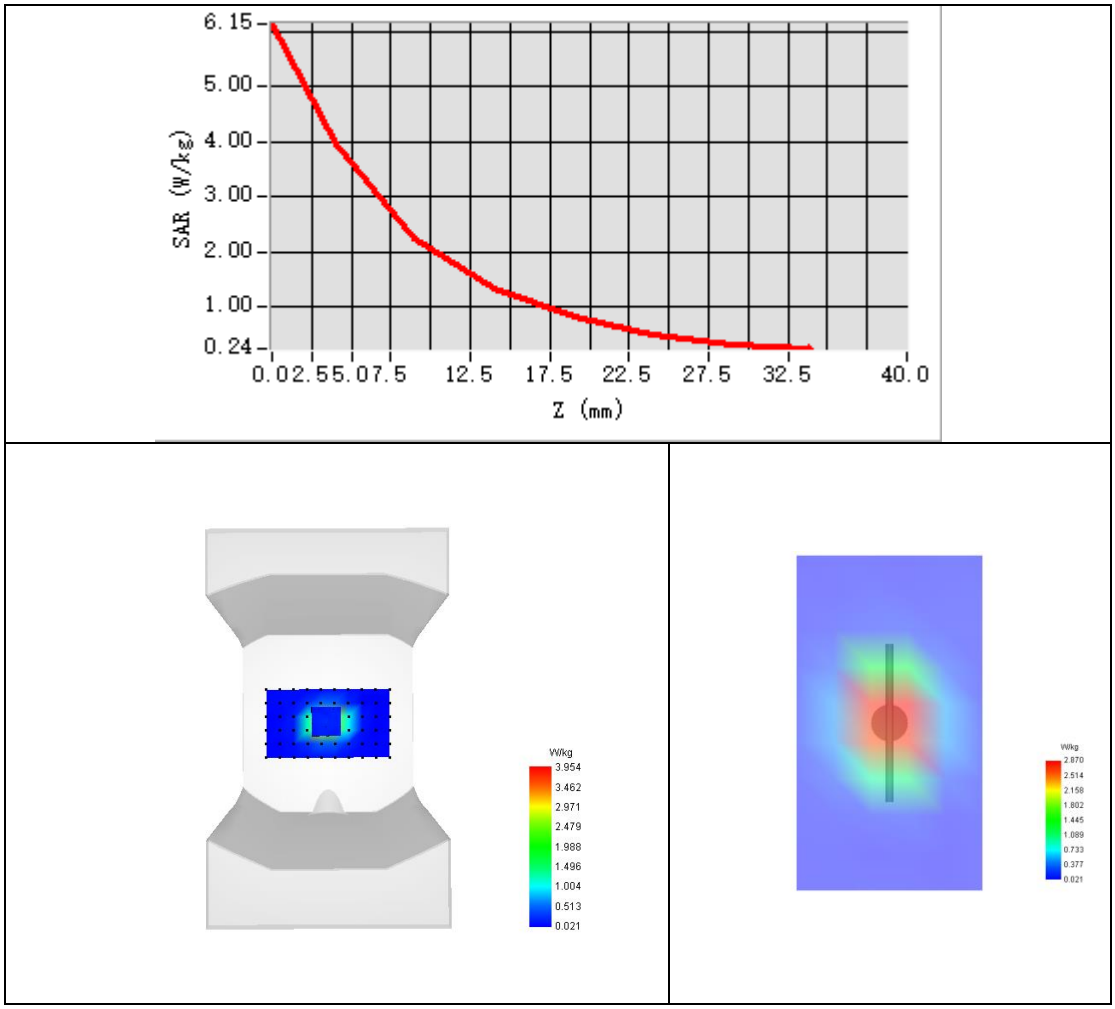
Phantom	Validation plane
Device Position	Dipole
Band	CW1900
Channels	Middle
Signal	CW
Frequency (MHz)	1900.000
Relative permittivity	40.75
Conductivity (S/m)	1.38
Probe	SN 04/22 EPGO364
ConvF	2.25
Crest factor:	1:1

SURFACE	VOLUME SAR
	

Maximum location: X=2.00, Y=2.00 ; SAR Peak: 6.20 W/kg

SAR 10g (W/Kg)	2.068806
SAR 1g (W/Kg)	3.993155

Z Axis Scan

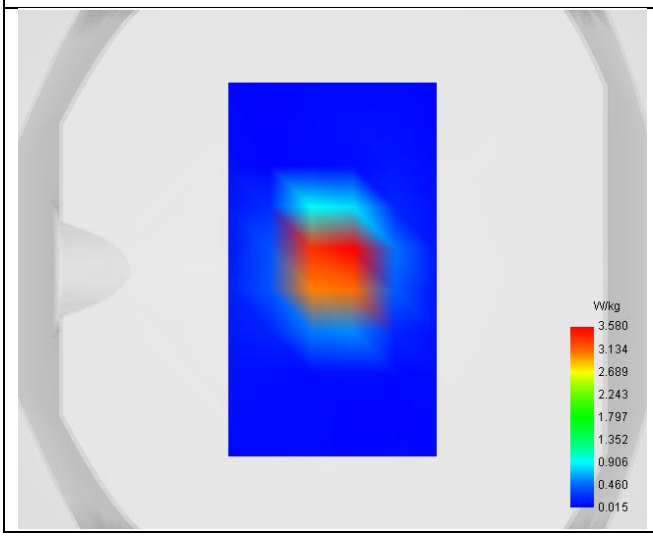
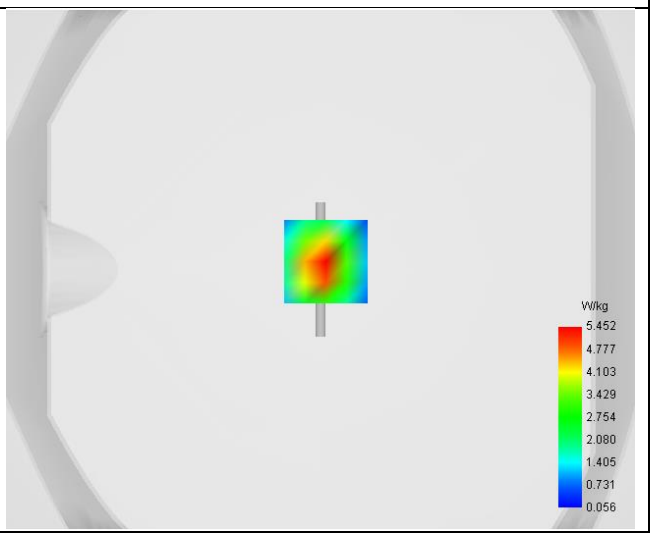

6.15
5.00
4.00
3.00
2.00
1.00
0.24
SAR (W/kg)
0.0 2.5 5.0 7.5 12.5 17.5 22.5 27.5 32.5 40.0
Z (mm)
W/kg
3.954
3.462
2.971
2.479
1.988
1.496
1.004
0.513
0.021
W/kg
2.870
2.514
2.158
1.802
1.445
1.089
0.733
0.377
0.021

System Performance Check Data (2450MHz)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm, dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 2023-01-04

Experimental conditions.

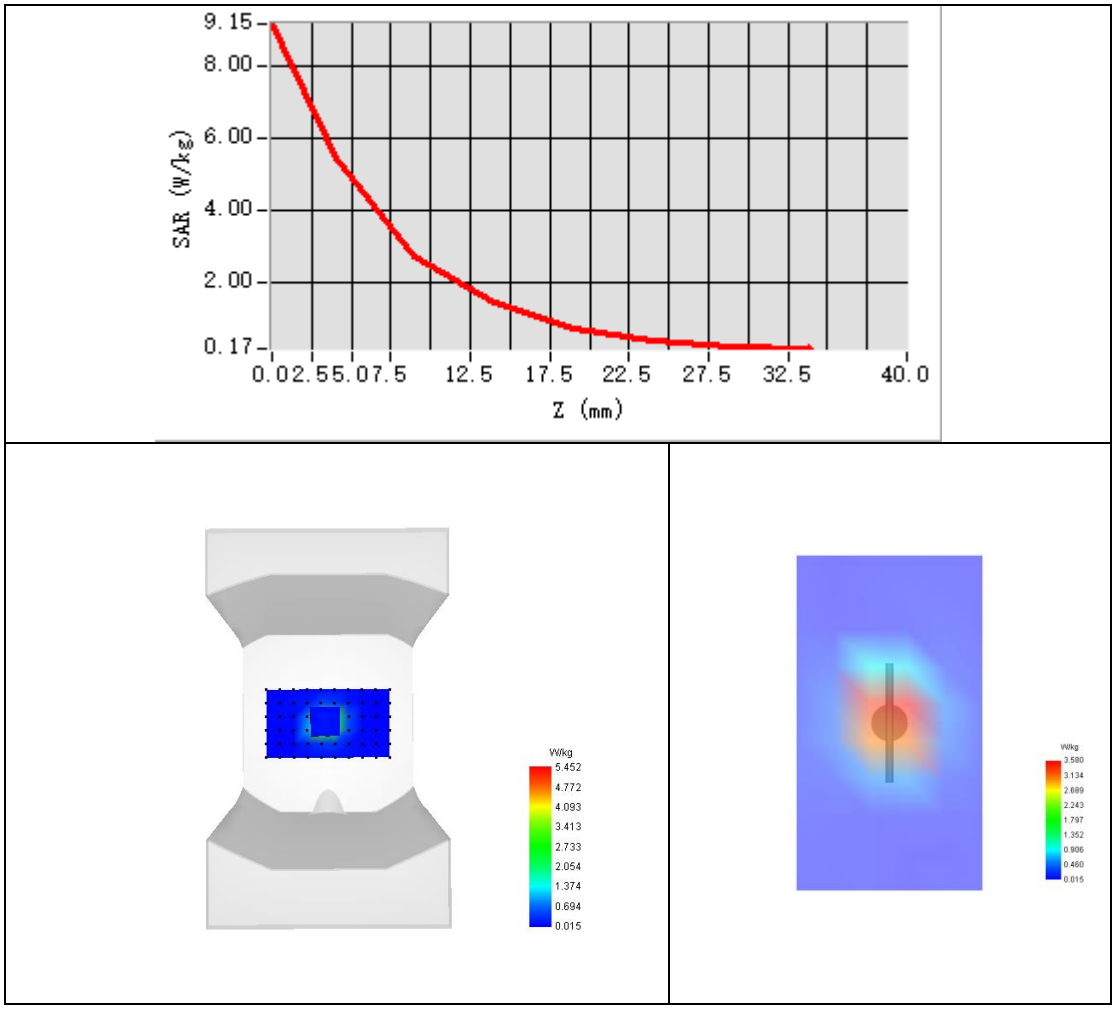
Phantom	Validation plane
Device Position	Dipole
Band	CW2450
Channels	Middle
Signal	CW
Frequency (MHz)	2450.000
Relative permittivity	39.75
Conductivity (S/m)	1.84
Probe	SN 04/22 EPGO364
ConvF	2.33
Crest factor:	1:1

SURFACE	VOLUME SAR
	

Maximum location: X=2.00, Y=3.00 ; SAR Peak: 9.34 W/kg

SAR 10g (W/Kg)	2.407883
SAR 1g (W/Kg)	5.433569

Z Axis Scan

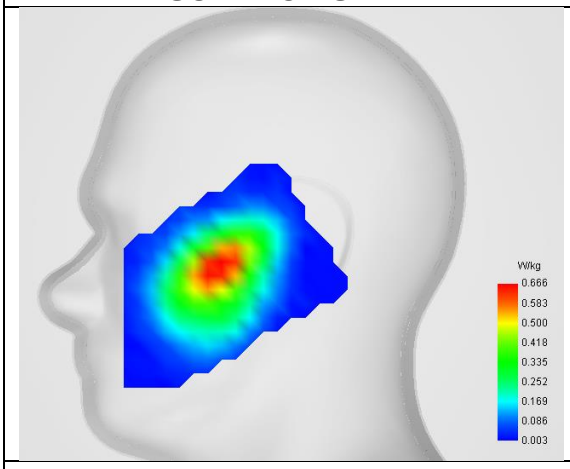
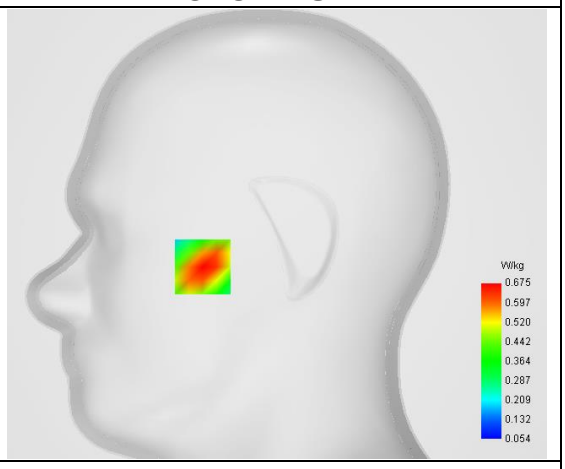
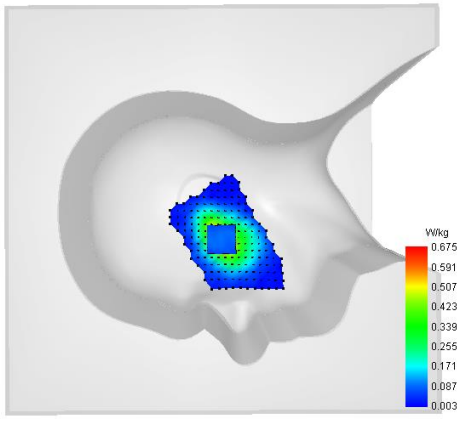
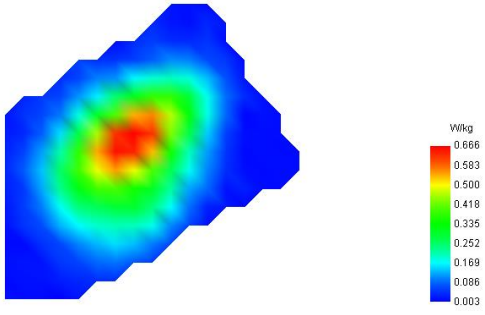

9.15
8.00
6.00
4.00
2.00
0.17
SAR (W/kg)
0.0 2.5 5.0 7.5 12.5 17.5 22.5 27.5 32.5 40.0
Z (mm)
W/kg
5.452
4.772
4.093
3.413
2.733
2.054
1.374
0.694
0.015
W/kg
3.580
3.134
2.689
2.243
1.797
1.352
0.906
0.460
0.015

Appendix B. SAR Test Plots

Plot 1:

Test Date	2023-01-03
Area Scan	sam_direct_droit2_surf8mm.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Right head
Device Position	Cheek
Band	GSM850
Signal	TDMA (GSM)
Frequency	824.2
SAR 10g (W/Kg)	0.408
SAR 1g (W/Kg)	0.639

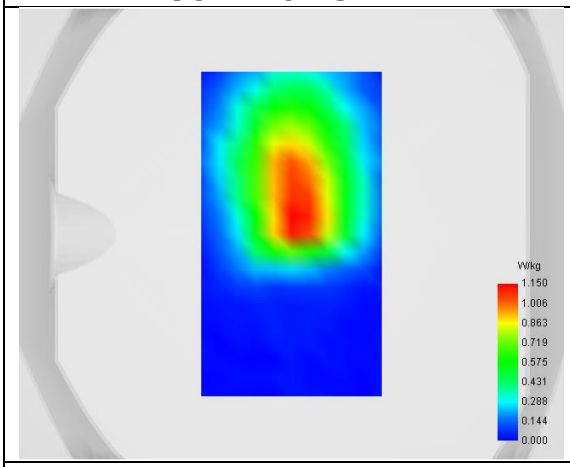
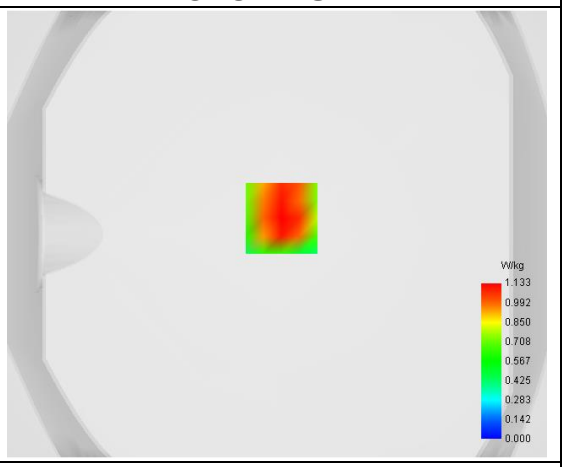
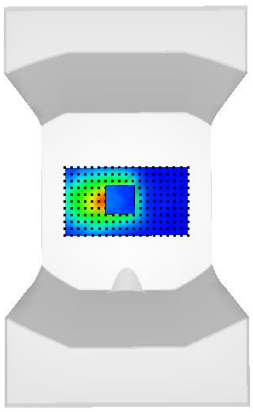
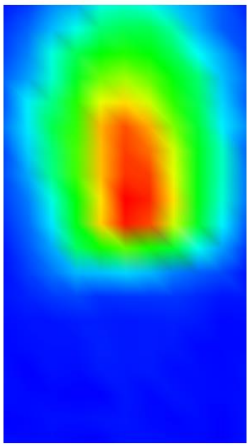
Maximum location: X=-43.00, Y=-19.00 ; SAR Peak: 0.90 W/kg

SURFACE SAR	VOLUME SAR
	
3D screen shot	**Hot spot position**
	

Plot 2:

Test Date	2023-01-03
Area Scan	surf_sam_plan.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Back Side
Band	GPRS850
Signal	TDMA (GPRS)
Frequency	824.2
SAR 10g (W/Kg)	0.708
SAR 1g (W/Kg)	1.104

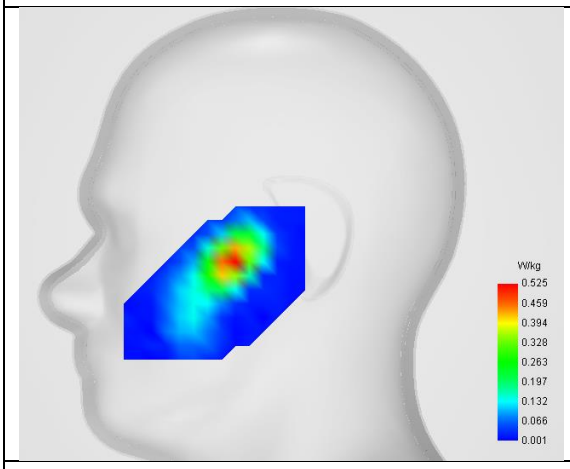
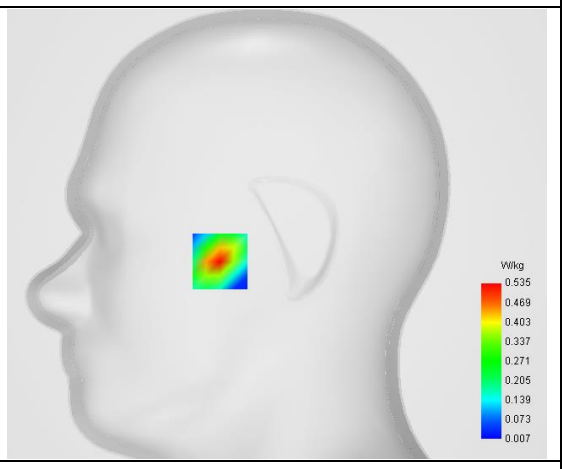
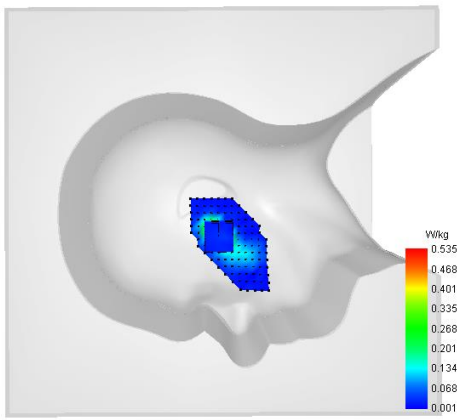
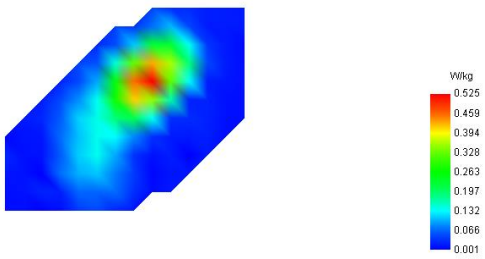
Maximum location: X=2.00, Y=7.00 ; SAR Peak: 1.60 W/kg

SURFACE SAR	VOLUME SAR
	
3D screen shot	**Hot spot position**
	

Plot 3:

Test Date	2023-01-03
Area Scan	sam_direct_droit2_surf8mm.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Right Cheek
Device Position	Cheek
Band	GSM1900
Signal	TDMA (GSM)
Frequency	1880
SAR 10g (W/Kg)	0.259
SAR 1g (W/Kg)	0.488

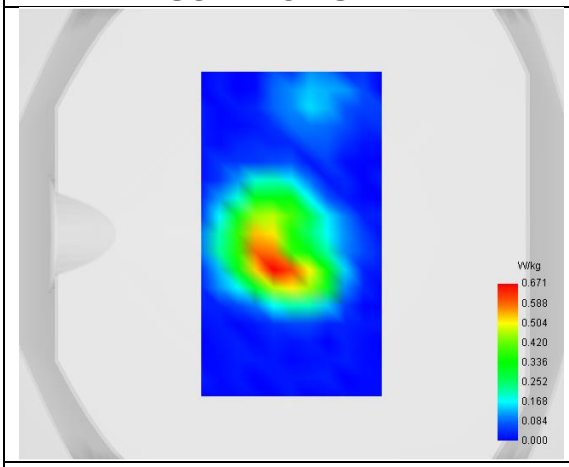
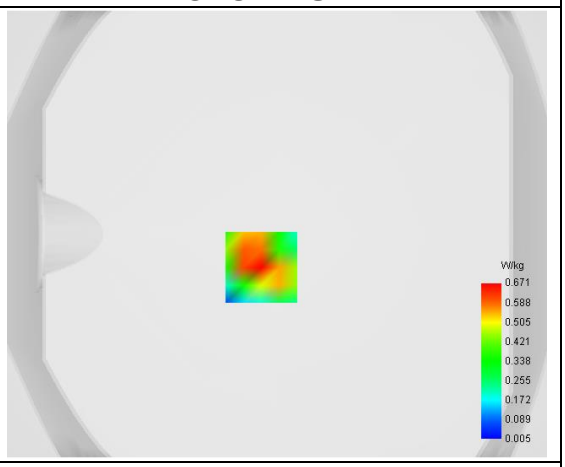
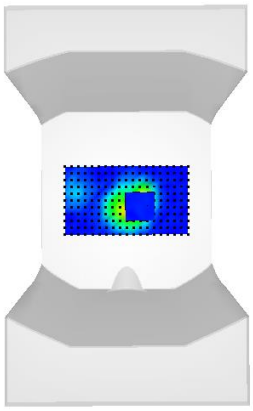
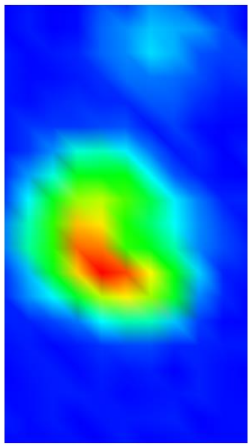
Maximum location: X=-33.00, Y=-16.00 ; SAR Peak: 0.73 W/kg

SURFACE SAR	VOLUME SAR
	
3D screen shot	**Hot spot position**
	

Plot 4:

Test Date	2023-01-03
Area Scan	surf_sam_plan.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Back Side
Band	GPRS1900
Signal	TDMA (GPRS)
Frequency	1880
SAR 10g (W/Kg)	0.328
SAR 1g (W/Kg)	0.630

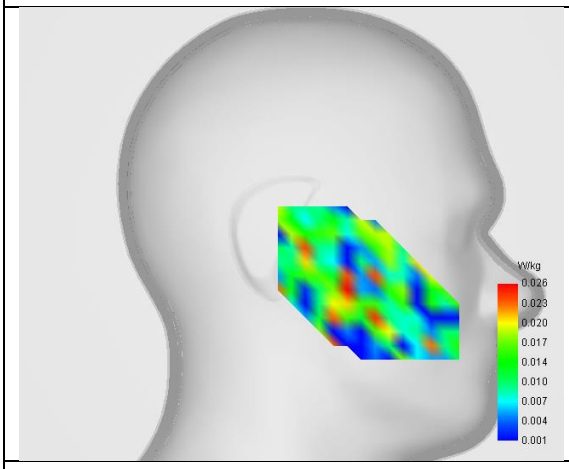
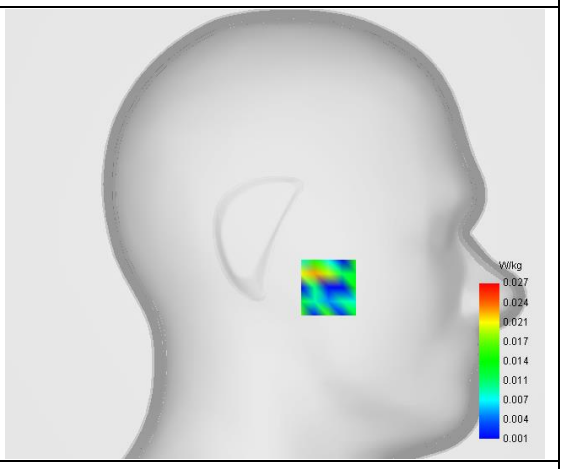
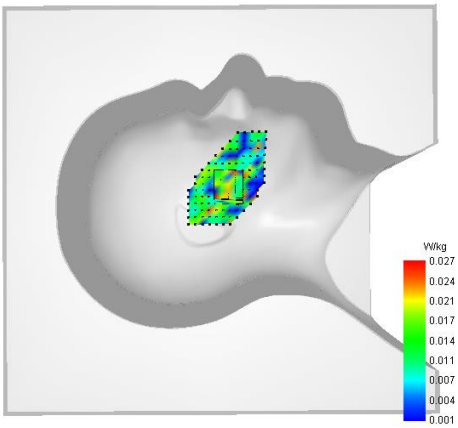
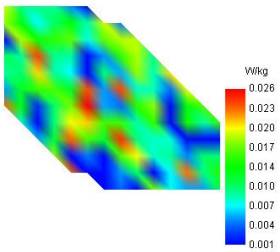
Maximum location: X=-7.00, Y=-15.00 ; SAR Peak: 1.07 W/kg

SURFACE SAR	VOLUME SAR
	
3D screen shot	**Hot spot position**
	

Plot 05:

Test Date	2023-01-04
Area Scan	sam_direct_droit2_surf8mm.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Left Cheek
Device Position	Cheek
Band	Bluetooth
Signal	Bluetooth
Frequency	2480
SAR 10g (W/Kg)	0.013
SAR 1g (W/Kg)	0.027

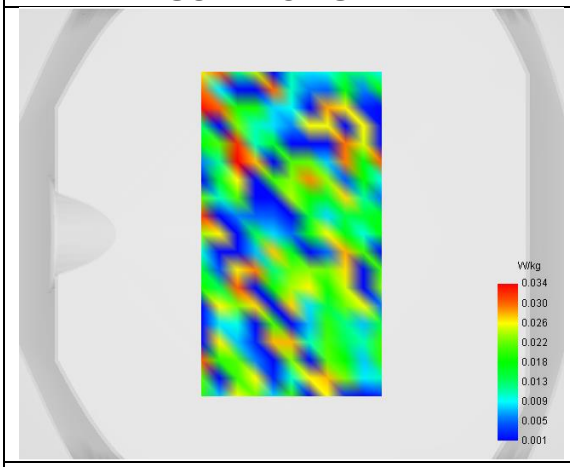
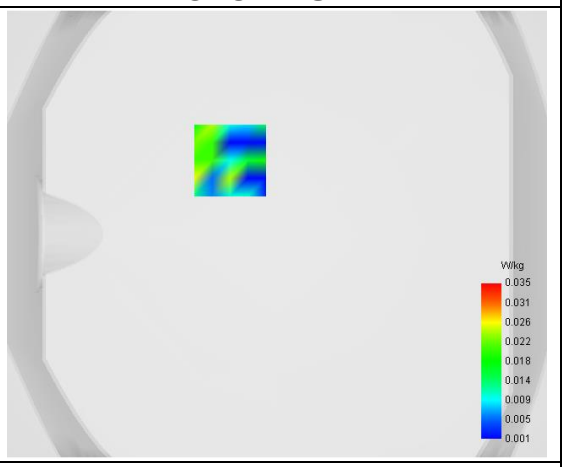
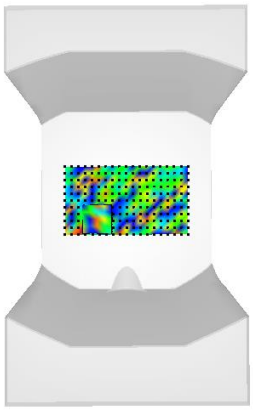
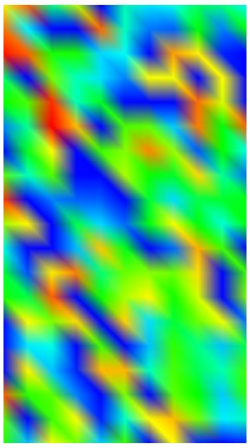
Maximum location: X=-31.00, Y=-31.00 ; SAR Peak: 0.07 W/kg

SURFACE SAR	VOLUME SAR
	
3D screen shot	**Hot spot position**
	

Plot 06:

Test Date	2023-01-04
Area Scan	surf_sam_plan.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Front Side
Band	Bluetooth
Signal	Bluetooth
Frequency	2480
SAR 10g (W/Kg)	0.018
SAR 1g (W/Kg)	0.033

Maximum location: X=-21.00, Y=33.00 ; SAR Peak: 0.09 W/kg

SURFACE SAR	VOLUME SAR
	
3D screen shot	**Hot spot position**
	

Appendix C. Probe Calibration and Dipole Calibration Report

Refer the appendix Calibration Report.

※※※※※END OF THE REPORT※※※※※