SAR Test Report

Report No.: AGC00408231003FH01

FCC ID	:	2A3DR-M92G
APPLICATION PURPOSE	:	Original Equipment
PRODUCT DESIGNATION	:	2G Feature phone
BRAND NAME	:	AGM
MODEL NAME	:	M9_2G
APPLICANT	:	AGM MOBILE LIMITED
DATE OF ISSUE	:	Nov. 01, 2023
STANDARD(S)	:	IEEE Std. 1528:2013 FCC 47 CFR Part 2§2.1093 IEEE Std C95.1 ™-2005
REPORT VERSION	:	V1.0

Attestation of Global Compliance(Shenzhen) Co., Ltd.

Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Nov. 01, 2023	Valid	Initial Release

Test Report

Applicant Name	AGM MOBILE LIMITED
Applicant Address	FLAT/RM 2253 22/F HOI TAI FACTORY ESTATE TSING YEUNG CIRCUIT TUEN MUN NT HONG KONG, CHINA
Manufacturer Name	SHENZHEN AIJIEMO SCIENCE AND TECHNOLOGY CO., LTD
Manufacturer Address	201, Building A2, Huafeng Century Technology Park, Nanchang Community, Xixiang, Baoan District, Shenzhen, China
Factory Name	SHENZHEN AIJIEMO SCIENCE AND TECHNOLOGY CO., LTD
Factory Address	201, Building A2, Huafeng Century Technology Park, Nanchang Community, Xixiang, Baoan District, Shenzhen, China
Product Designation	2G Feature phone
Brand Name	AGM
Model Name	M9_2G
Series Models	N/A
Declaration of Difference	N/A
EUT Voltage	DC3.7V by battery
Applicable Standard	IEEE Std. 1528:2013 FCC 47 CFR Part 2§2.1093 IEEE Std C95.1 ™-2005
Date of receipt of test item	Oct. 17, 2023
Test Date	Oct. 23, 2023 to Oct. 25, 2023
Report Template	AGCRT-US-2.5G/SAR (2021-04-20)

Note: The results of testing in this report apply to the product/system which was tested only.

Prepared By

Jack Gui (Project Engineer) Oct. 25, 2023

Reviewed By

Calvin Liu (Reviewer) Nov. 01, 2023

Approved By

Max Zhang (Authorized Officer) Nov. 01, 2023

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1. SUMMARY OF MAXIMUM SAR VALUE

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

Frequency Band	Highest Reported 1g-SAR(W/kg)		SAR Test Limit (W/kg)
	Head	Body-worn(with 10mm separation)	
GSM 850	1.345	1.291	1.6
PCS 1900	0.375	0.564	
Simultaneous Reported SAR	1.411		
SAR Test Result	PASS		

This device is compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6W/kg) specified in IEEE Std. 1528:2013; FCC 47CFR § 2.1093; IEEE/ANSI C95.1:2005 and the following specific FCC Test Procedures:

- KDB 447498 D01 General RF Exposure Guidance v06
- KDB 648474 D04 Handset SAR v01r03
- KDB 865664 D01 SAR Measurement 100MHz to 6GHz v01r04
- KDB 941225 D01 3G SAR Procedures v03r01

2. GENERAL INFORMATION

2.1. EUT Description

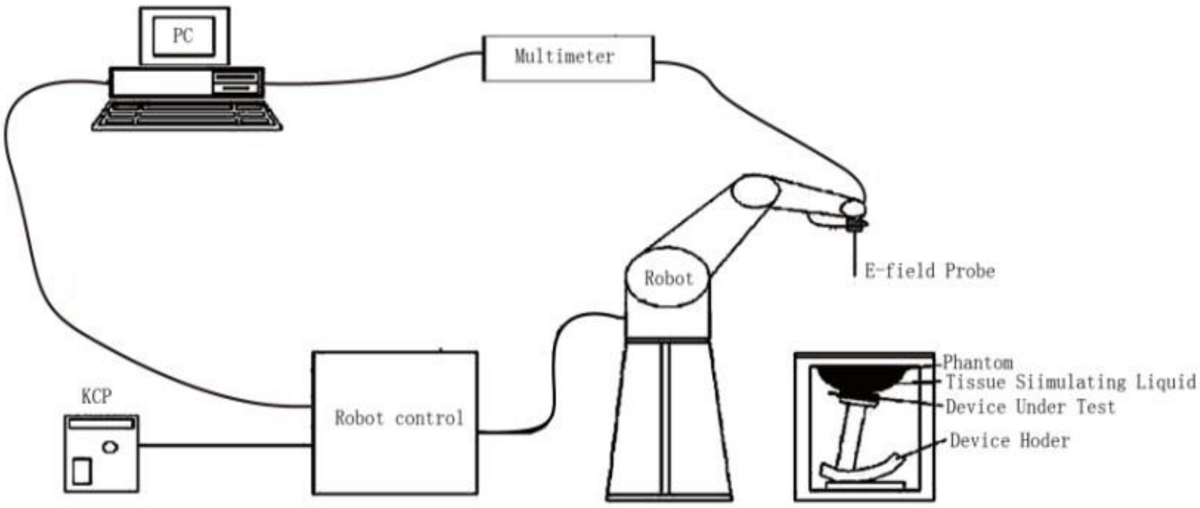
General Information	
Product Designation	2G Feature phone
Test Model	M9_2G
Sample ID	231017052
Hardware Version	FF257V4.0
Software Version	FF257 V4.0
Device Category	Portable
RF Exposure Environment	Uncontrolled
Antenna Type	Internal
GSM and GPRS	
Support Band	☒GSM 850 ☒PCS 1900 (US Frequency) ☒GSM 900 ☒DCS 1800 (none US Frequency)
GPRS Type	Class B
GPRS Class	Class 12(1Tx+4Rx, 2Tx+3Rx, 3Tx+2Rx, 4Tx+1Rx)
TX Frequency Range	GSM 850 : 820-850MHz;; PCS 1900: 1850-1910MHz;
RX Frequency Range	GSM 850 : 869~894MHz; PCS 1900: 1930~1990MHz
Release Version	R99
Type of modulation	GMSK for GSM/GPRS
Antenna Gain	GSM900: -1.31dBi; DCS1800:-0.05dBi;
Max. Average Power	GSM850: 33.16 dBm ;PCS1900: 28.11 dBm
Bluetooth	
Bluetooth Version	V4.2
Operation Frequency	2402~2480MHz
Type of modulation	☒GFSK ☒Π/4-DQPSK ☒8-DPSK
Max. Peak Power (dBm)	1.295dBm
Antenna Gain	2.57dBi
Accessories	
Battery	Brand name: N/A Model No. : AGM_M9 Voltage and Capacitance: 3.7 V & 1000mAh
Earphone	Brand name: N/A Model No. : N/A

Note:1.CMU200 can measure the average power and Peak power at the same time
2.The sample used for testing is end product.
3. The test sample has no any deviation to the test method of standard mentioned in page 1.

Product	Type	
	☒ Production unit	☐ Identical Prototype

3. SAR MEASUREMENT SYSTEM

3.1. The SATIMO system used for performing compliance tests consists of following items



The COMOSAR system for performing compliance tests consists of the following items:

· The PC. It controls most of the bench devices and stores measurement data.A computer running WinXP and the Opensar software.

· The E-Field probe. The probe is a 3-axis system made of 3 distinct dipoles. Each dipole returns a voltage in function of the ambient electric field.

· The Keithley multimeter measures each probe dipole voltages.

· The SAM phantom simulates a human head. The measurement of the electric field is made inside the phantom.

· The liquids simulate the dielectric properties of the human head tissues.

· The network emulator controls the mobile phone under test.

· The validation dipoles are used to measure a reference SAR. They are used to periodically check the bench to make sure that there is no drift of the system characteristics over time.

·The phantom, the device holder and other accessories according to the targeted measurement.

3.2. COMOSAR E-Field Probe

The SAR measurement is conducted with the dosimetric probe manufactured by SATIMO. The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency. SATIMO conducts the probe calibration in compliance with international and national standards (e.g. IEEE 1528 and relevant KDB files.) The calibration data are in Appendix D.

Isotropic E-Field Probe Specification

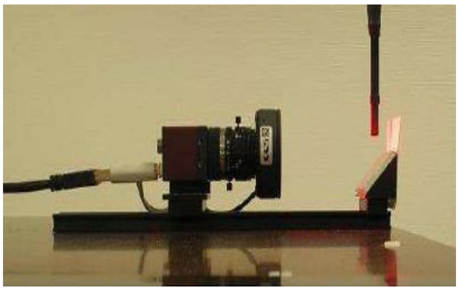
<table>
<tr><th>Model</th><td colspan="2">SSE2</td></tr>
<tr><th>Manufacture</th><td colspan="2">MVG</td></tr>
<tr><th>Identification No.</th><td colspan="2">SN 45/22 EPGO391</td></tr>
<tr><th>Frequency</th><td>0.15GHz-6GHz
Linearity:±0.09dB(0.15GHz-6GHz)</td><td rowspan="3"></td></tr>
<tr><th>Dynamic Range</th><td>0.01W/kg-100W/kg
Linearity:±0.09dB</td></tr>
<tr><th>Dimensions</th><td>Overall length:330mm
Length of individual dipoles:2mm
Maximum external diameter:8mm
Probe Tip external diameter:2.5mm
Distance between dipoles/ probe extremity:1mm</td></tr>
<tr><th>Application</th><td colspan="2">High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields). Only probe which enables compliance testing for frequencies up to 6 GHz with precisin of better 30%.</td></tr>
</table>

3.3. Robot

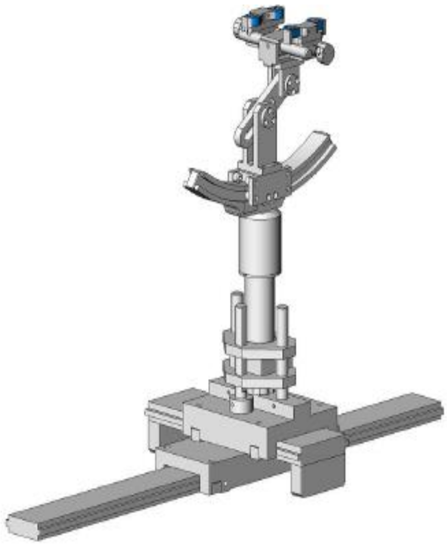
The COMOSAR system uses the KUKA robot from SATIMO SA (France).For the 6-axis controller COMOSAR system, the KUKA robot controller version from SATIMO is used.
The XL robot series have many features that are important for our application:

- High precision (repeatability 0.02 mm)
- High reliability (industrial design)
- Jerk-free straight movements
- Low ELF interference (the closed metallic construction shields against motor control fields)
- 6-axis controller

3.4. Video Positioning System

The video positioning system is used in OpenSAR to check the probe. Which is composed of a camera, LED, mirror and mechanical parts.The camera is piloted by the main computer with firewire link. During the process, the actual position of the probe tip with respect to the robot arm is measured, as well as the probe length and the horizontal probe offset. The software then corrects all movements, such that the robot coordinates are valid for the probe tip. The repeatability of this process is better than 0.1 mm. If a position has been taught with an aligned probe, the same position will be reached with another aligned probe within 0.1 mm, even if the other probe has different dimensions. During probe rotations, the probe tip will keep its actual position.	

3.5. Device Holder

The COMOSAR device holder is designed to cope with different positions given in the standard. It has two scales for the device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear reference points). The rotation center for both scales is the ear reference point (EPR). Thus the device needs no repositioning when changing the angles. The COMOSAR device holder has been made out of low-loss POM material having the following dielectric parameters: relative permittivity εr =3 and loss tangent δ = 0.02. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.	

3.6. SAM Twin Phantom

The SAM twin phantom is a fiberglass shell phantom with 2mm shell thickness (except the ear region where shell thickness increases to 6mm). It has three measurement areas: □ Left head □ Right head □ Flat phantom	

The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. A white cover is provided to tap the phantom during off-periods to prevent water evaporation and changes in the liquid parameters. On the phantom top, three reference markers are provided to identify the phantom position with respect to the robot.

4. SAR MEASUREMENT PROCEDURE

4.1. Specific Absorption Rate (SAR)

SAR is related to the rate at which energy is absorbed per unit mass in 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 occupational/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 given mass density (ρ). The equation description is as below:

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

SAR is expressed in units of Watts per kilogram (W/kg)
SAR can be obtained using either of the following equations:

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

$$\mathrm{SAR} = c_h \left.\frac{dT}{dt}\right|_{t=0}$$

Where

SAR	is the specific absorption rate in watts per kilogram;
E	is the r.m.s. value of the electric field strength in the tissue in volts per meter;
σ	is the conductivity of the tissue in siemens per metre;
ρ	is the density of the tissue in kilograms per cubic metre;
c_h	is the heat capacity of the tissue in joules per kilogram and Kelvin;
$\frac{dT}{dt} \mid t=0$	is the initial time derivative of temperature in the tissue in kelvins per second

4.2. SAR Measurement Procedure

Step 1: Power Reference Measurement

The Power Reference Measurement and Power Drift Measurement are for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface is 2.7mm This distance cannot be smaller than the distance os sensor calibration points to probe tip as `defined in the probe properties,

Step 2: Area Scan

The Area Scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in SATIMO software can find the maximum locations even in relatively coarse grids. When an Area Scan has measured all reachable points, it computes the field maximal found in the scanned area, within a range of the global maximum. The range (in db) is specified in the standards for compliance testing. For example, a 2db range is required in IEEE Standard 1528, whereby 3db is a requirement when compliance is assessed in accordance with the ARIB standard (Japan) If one Zoom Scan follows the Area Scan, then only the absolute maximum will be taken as reference. For cases where multiple maximum are detected, the number of Zoom Scan has to be increased accordingly.

Area Scan Parameters extracted from KDB 865664 D01 SAR Measurement 100MHz to 6GHz

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	½·δ·ln(2) ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}	≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
	When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

Step 3: Zoom Scan

Zoom Scan are used to assess the peak spatial SAR value within a cubic average volume containing 1g abd 10g of simulated tissue. The Zoom Scan measures points(refer to table below) within a cube whose base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the Zoom Scan evaluates the averaged SAR for 1g and 10g and displays these values next to the job's label.

Zoom Scan Parameters extracted from KDB865664 d01 SAR Measurement 100MHz to 6GHz

Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	≤ 1.5·$\Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm
Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details. * When zoom scan is required and the *reported* SAR from the *area scan based 1-g SAR estimation* procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.				

Step 4: Power Drift Measurement

The Power Drift Measurement measures the field at the same location as the most recent power reference measurement within the same procedure, and with the same settings. The Power Drift Measurement gives the field difference in dB from the reading conducted within the same settings. This allows a user to monitor the power drift of the device under test within a batch process. The measurement procedure is the same as Step 1.

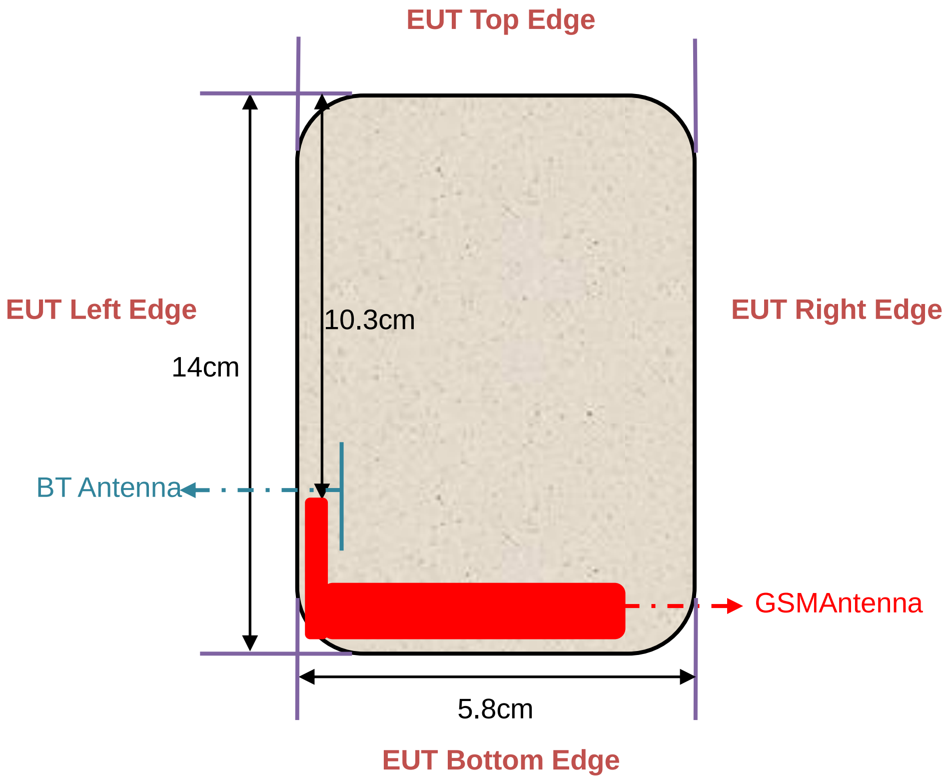
4.3. RF Exposure Conditions

Test Configuration and setting:

The EUT is a model of GSM Portable Mobile Station (MS). It supports GSM/GPRS and BT.

For WWAN SAR testing, the device was controlled by using a base station emulator. Communication between the device and the emulator were established by air link. The distance between the EUT and the antenna is larger than 50cm, and the output power radiated from the emulator antenna is at least 30db smaller than the output power of EUT.

Antenna Location: (the back view)



5. TISSUE SIMULATING LIQUID

For SAR measurement of the field distribution inside the phantom, the phantom must be filled with homogeneous tissue simulating liquid to a depth of at least 15cm. For head SAR testing the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15cm For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15cm.The nominal dielectric values of the tissue simulating liquids in the phantom and the tolerance of 10% are listed in 6.2

5.1. The composition of the tissue simulating liquid

Ingredient (% Weight) / Frequency (MHz)	Water	Nacl	Polysorbate 20	DGBE	1,2 Propanediol	Triton X-100
835 Head	50.36	1.25	48.39	0.0	0.0	0.0
1900 Head	54.9	0.18	0.0	44.92	0.0	0.0

5.2. Tissue Dielectric Parameters for Head and Body Phantoms

The head and body tissue dielectric parameters recommended by the IEEE Std. 1528 have been incorporated in the following table.

Target Frequency (MHz)	head		body	
	εr	σ (S/m)	εr	σ (S/m)
300	45.3	0.87	45.3	0.87
450	43.5	0.87	43.5	0.87
835	**41.5**	**0.90**	**41.5**	**0.90**
900	41.5	0.97	41.5	0.97
915	41.5	1.01	41.5	1.01
1450	40.5	1.20	40.5	1.20
1610	40.3	1.29	40.3	1.29
1800 – 2000	**40.0**	**1.40**	**40.0**	**1.40**
2450	39.2	1.80	39.2	1.80
3000	38.5	2.40	38.5	2.40

(εr = relative permittivity, σ = conductivity and ρ = 1000 kg/m3)

5.3. Tissue Calibration Result

The dielectric parameters of the liquids were verified prior to the SAR evaluation using SATIMO Dielectric Probe Kit and R&S Network Analyzer ZVL6.

Tissue Stimulant Measurement for 835MHz					
Head	Fr. (MHz)	Dielectric Parameters (±10%)		Tissue Temp [°C]	Test time
		εr 41.5 (37.35-45.65)	δ[s/m] 0.90(0.81-0.99)		
	824.2	43.66	0.86	20.2	Oct. 23, 2023
	835	42.57	0.87		
	836.6	41.39	0.89		
	848.8	40.23	0.91		

Tissue Stimulant Measurement for 1900MHz					
Head	Fr. (MHz)	Dielectric Parameters (±10%)		Tissue Temp [°C]	Test time
		εr40.00(36.00-44.00)	δ[s/m]1.40(1.26-1.54)		
	1880	40.15	1.40	20.5	Oct. 25, 2023
	1900	39.77	1.43		

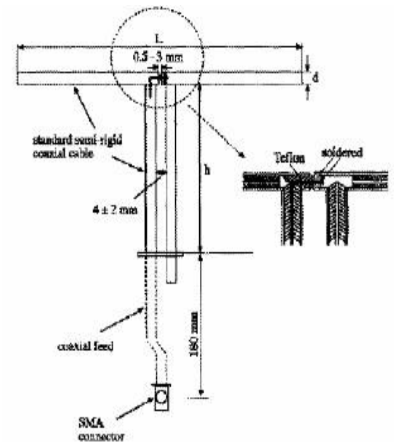
6. SAR SYSTEM CHECK PROCEDURE

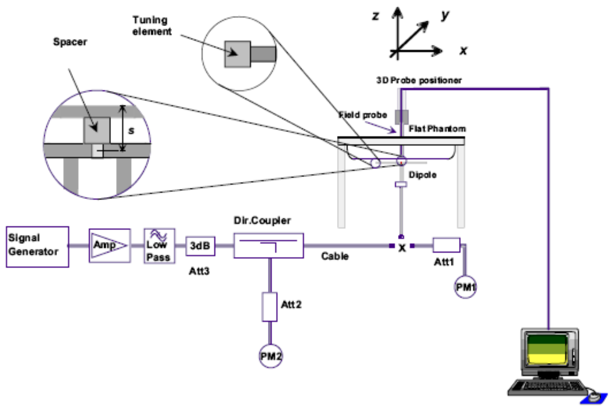
6.1. SAR System Check Procedures

SAR system check is required to confirm measurement accuracy, according to the tissue dielectric media, probe calibration points and other system operating parameters required for measuring the SAR of a test device. The system verification must be performed for each frequency band and within the valid range of each probe calibration point required for testing the device. The same SAR probe(s) and tissue-equivalent media combinations used with each specific SAR system for system verification must be used for device testing. When multiple probe calibration points are required to cover substantially large transmission bands, independent system verifications are required for each probe calibration point. A system verification must be performed before each series of SAR measurements using the same probe calibration point and tissue-equivalent medium. Additional system verification should be considered according to the conditions of the tissue-equivalent medium and measured tissue dielectric parameters, typically every three to four days when the liquid parameters are remeasured or sooner when marginal liquid parameters are used at the beginning of a series of measurements.

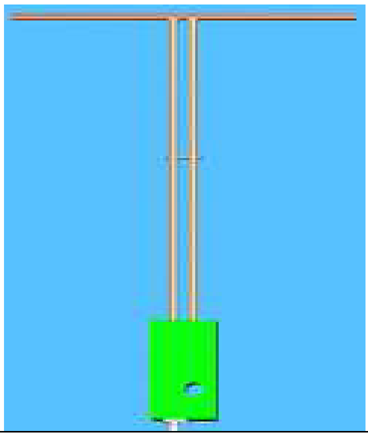
Each SATIMO system is equipped with one or more system check kits. These units, together with the predefined measurement procedures within the SATIMO software, enable the user to conduct the system check and system validation. System kit includes a dipole, and dipole device holder.

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 check setup is shown as below.





6.2. SAR System Check
6.2.1. Dipoles



The dipoles used is based on the IEEE-1528 standard, and is complied with mechanical and electrical specifications in line with the requirements of IEEE. the table below provides details for the mechanical and electrical Specifications for the dipoles.

Frequency	L (mm)	h (mm)	d (mm)
835MHz	161.0	89.8	3.6
1900MHz	68	39.5	3.6

6.2.2. System Check Result

System Performance Check at 835MHz&1900MHz for Head								
Validation Kit: SN 15/16 DIP 0G835-399& SN 46/11 DIP 1G800-186								
Frequency [MHz]	Target Value(W/kg)		Reference Result (± 10%)		Tested Value(W/kg)		Tissue Temp. [°C]	Test time
	1g	10g	1g	10g	1g	10g		
835	9.67	6.14	8.703-10.637	5.526-6.754	9.60	6.15	20.2	Oct. 23, 2023
1900	41.26	20.86	37.134-45.386	18.774-22.946	42.34	20.18	20.5	Oct. 25, 2023

Note:
(1) We use a CW signal of 18dBm for system check, and then all SAR values are normalized to 1W forward power. The result must be within ±10% of target value.

7. EUT TEST POSITION

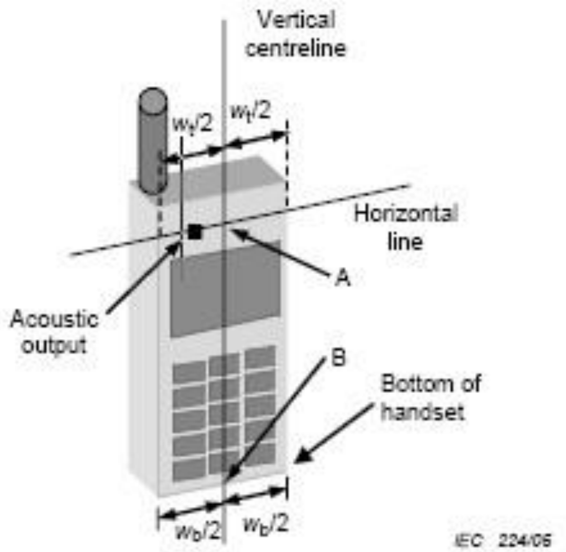
This EUT was tested in **Right Cheek, Right Tilted, Left Cheek, Left Tilted, Body back, Body front**

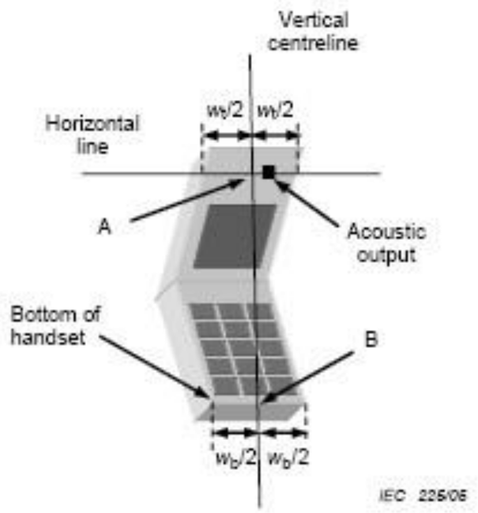
7.1. Define Two Imaginary Lines on the Handset

(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.

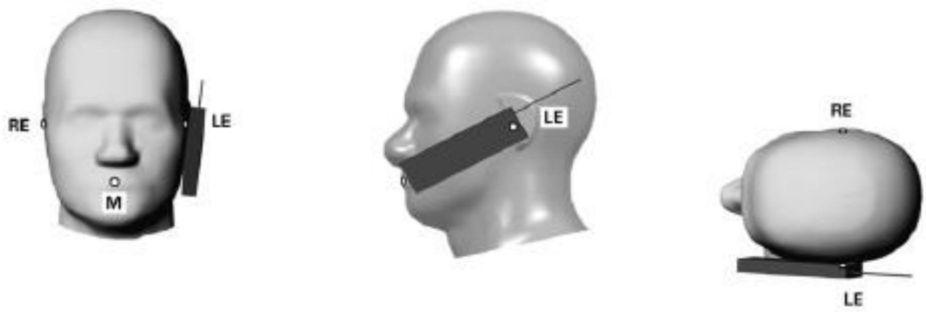




7.2. Cheek Position

(1) To position the device with the vertical center line of the body of the device and the horizontal line crossing the center picec 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 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



7.3. Tilt Position

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

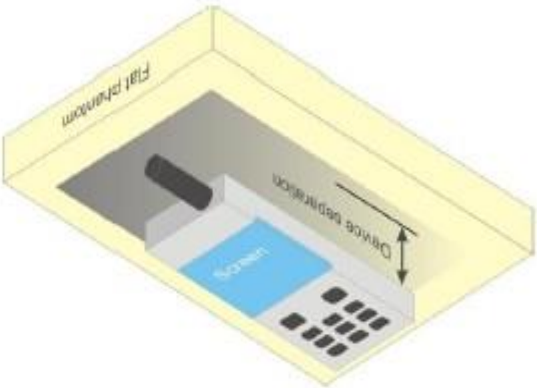
(2) While maintaining the device in the reference plane described above and pivoting against the ear, moves it outward away from the mouth by an angle of 15 degrees or until with the ear is lost.

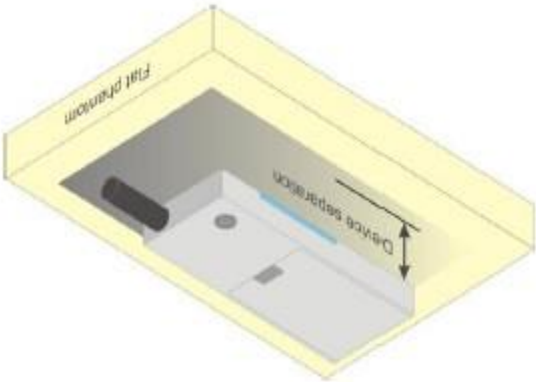
7.4. Body Worn Position

(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. SAR EXPOSURE LIMITS

SAR assessments have been made in line with the requirements of IEEE-1528, and comply with ANSI/IEEE C95.1-2005 “Uncontrolled Environments” limits. These limits apply to a location which is deemed as “Uncontrolled Environment” which can be described as a situation where the general public may be exposed to an RF source with no prior knowledge or control over their exposure.

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

Type Exposure	Uncontrolled Environment Limit (W/kg)
Spatial Peak SAR (1g cube tissue for brain or body)	1.60
Spatial Average SAR (Whole body)	0.08
Spatial Peak SAR (Limbs)	4.0

9. TEST FACILITY

Test Site	Attestation of Global Compliance (Shenzhen) Co., Ltd
Location	1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
Designation Number	CN1259
A2LA Cert. No.	5054.02
Description	Attestation of Global Compliance(Shenzhen) Co., Ltd is accredited by A2LA

10. TEST EQUIPMENT LIST

Equipment description	Manufacturer/ Model	Identification No.	Software version	Current calibration date	Next calibration date
SAR Probe	MVG	SN 45/22 EPGO391	N/A	Dec. 02, 2022	Dec. 01, 2023
Phantom	SATIMO	SN_4511_SAM90	N/A	Validated. No cal required.	Validated. No cal required.
Liquid	SATIMO	-	N/A	Validated. No cal required.	Validated. No cal required.
Comm Tester	Agilent-8960	GB46310822	A.13.07	Jun. 03, 2023	Jun. 02, 2024
Multimeter	Keithley 2000	1350784	N/A	Jun. 02, 2023	Jun. 01, 2024
SAR Software	SATIMO-OpenSAR	N/A	OpenSAR V4_02_32	N/A	N/A
Dipole	SATIMO SID835	SN 15/16 DIP 0G835-399	N/A	Apr. 28,2022	Apr. 27,2025
Dipole	SATIMO SID1900	SN 29/15 DIP 1G900-389	N/A	Apr. 28,2022	Apr. 27,2025
Signal Generator	Agilent-E4438C	US41461365	V5.03	Jun. 01, 2023	May 31, 2024
EXA Signal Analyzer	Agilent / N9010A	MY53470504	N/A	Jun. 01, 2023	May 31, 2024
Network Analyzer	Rhode & Schwarz ZVL6	101443	3.2	Sep. 21, 2023	Sep. 20, 2024
Attenuator	Warison /WATT-6SR1211	S/N:WRJ34AYM2F1	N/A	June 07,2023	June 06,2024
Attenuator	Mini-circuits / VAT-10+	31405	N/A	June 07,2023	June 06,2024
Amplifier	AS0104-55_55	1004793	N/A	N/A	N/A
Directional Couple	Werlatone/ C5571-10	SN99463	N/A	Mar. 10,2022	Mar. 09,2024
Directional Couple	Werlatone/ C6026-10	SN99482	N/A	Mar. 10,2022	Mar. 09,2024
Power Sensor	NRP-Z21	1137.6000.02	N/A	Sep. 05, 2023	Sep. 04, 2024
Power Sensor	NRP-Z23	100323	N/A	Feb. 15,2023	Feb. 14,2024
Power Viewer	R&S	V2.3.1.0	N/A	N/A	N/A
Calibration standard parts for network sub - port	R&S/ ZV-Z132	N/A	V2.3.1.0	Nov. 15,2022	Nov. 14,2023

Note: Per KDB 865664 Dipole SAR Validation, AGC Lab has adopted 3 years calibration intervals. On annual basis, every measurement dipole has been evaluated and is in compliance with the following criteria:
1. There is no physical damage on the dipole;
2. System validation with specific dipole is within 10% of calibrated value;
3. Return-loss is within 20% of calibrated measurement;
4. Impedance is within 5Ω of calibrated measurement.

11. MEASUREMENT UNCERTAINTY

SATIMO Uncertainty- SN 45/22 EPGO391 Measurement uncertainty for DUT averaged over 1 gram / 10 gram.									
Uncertainty Component	Sec.	Tol (+- %)	Prob. Dist.	Div.	Ci (1g)	Ci (10g)	1g Ui (+-%)	10g Ui (+-%)	vi
Measurement System									
Probe calibration	E.2.1	7.000	N	1	1	1	7.000	7.000	∞
Axial Isotropy	E.2.2	0.215	R	1.732	0.707	0.707	0.088	0.088	∞
Hemispherical Isotropy	E.2.2	0.215	R	1.732	0.707	0.707	0.088	0.088	∞
Boundary effect	E.2.3	1.000	R	1.732	1	1	0.577	0.577	∞
Linearity	E.2.4	0.995	R	1.732	1	1	0.574	0.574	∞
System detection limits	E.2.4	1.000	R	1.732	1	1	0.577	0.577	∞
Modulation response	E2.5	3.000	R	1.732	1	1	1.732	1.732	∞
Readout Electronics	E.2.6	0.021	N	1	1	1	0.021	0.021	∞
Response Time	E.2.7	0.000	R	1.732	1	1	0.000	0.000	∞
Integration Time	E.2.8	1.400	R	1.732	1	1	0.808	0.808	∞
RF ambient conditions-Noise	E.6.1	3.000	R	1.732	1	1	1.732	1.732	∞
RF ambient conditions-reflections	E.6.1	3.000	R	1.732	1	1	1.732	1.732	∞
Probe positioner mechanical tolerance	E.6.2	1.400	R	1.732	1	1	0.808	0.808	∞
Probe positioning with respect to phantom shell	E.6.3	1.400	R	1.732	1	1	0.808	0.808	∞
Extrapolation, interpolation, and integrations algorithms for max. SAR evaluation	E.5	2.300	R	1.732	1	1	1.328	1.328	∞
Test sample Related									
Test sample positioning	E.4.2	2.6	N	1	1	1	2.60	2.60	∞
Device holder uncertainty	E.4.1	3	N	1	1	1	3.00	3.00	∞
Output power variation—SAR drift measurement	E.2.9	5	R	1.732	1	1	2.89	2.89	∞
SAR scaling	E.6.5	5	R	1.732	1	1	2.89	2.89	∞
Phantom and tissue parameters									
Phantom shell uncertainty—shape, thickness, and permittivity	E.3.1	4	R	1.732	1	1	2.309	2.309	∞
Uncertainty in SAR correction for deviations in permittivity and conductivity	E.3.2	1.9	N	1	1	0.84	1.900	1.596	∞
Liquid conductivity measurement	E.3.3	4	N	1	0.78	0.71	3.120	2.840	M
Liquid permittivity measurement	E.3.3	5	N	1	0.23	0.26	1.150	1.300	M
Liquid conductivity—temperature uncertainty	E.3.4	2.5	R	1.732	0.78	0.71	1.126	1.025	∞
Liquid permittivity—temperature uncertainty	E.3.4	2.5	R	1.732	0.23	0.26	0.332	0.375	∞
Combined Standard Uncertainty			RSS				10.529	10.344	
Expanded Uncertainty (95% Confidence interval)			K=2				21.059	20.689	

SATIMO Uncertainty- SN 45/22 EPGO391 System Validation uncertainty for DUT averaged over 1 gram / 10 gram.									
Uncertainty Component	Sec.	Tol (+- %)	Prob. Dist.	Div.	Ci (1g)	Ci (10g)	1g Ui (+-%)	10g Ui (+-%)	vi
Measurement System									
Probe calibration	E.2.1	7.000	N	1	1	1	7.000	7.000	∞
Axial Isotropy	E.2.2	0.215	R	1.732	1.000	1.000	0.124	0.124	∞
Hemispherical Isotropy	E.2.2	0.215	R	1.732	0.000	0.000	0.000	0.000	∞
Boundary effect	E.2.3	1.000	R	1.732	1.000	1.000	0.577	0.577	∞
Linearity	E.2.4	0.995	R	1.732	1.000	1.000	0.574	0.574	∞
System detection limits	E.2.4	1.000	R	1.732	1.000	1.000	0.577	0.577	∞
Modulation response	E2.5	3.000	R	1.732	0.000	0.000	0.000	0.000	∞
Readout Electronics	E.2.6	0.021	N	1.000	1.000	1.000	0.021	0.021	∞
Response Time	E.2.7	0.000	R	1.732	0.000	0.000	0.000	0.000	∞
Integration Time	E.2.8	1.400	R	1.732	0.000	0.000	0.000	0.000	∞
RF ambient conditions-Noise	E.6.1	3.000	R	1.732	1.000	1.000	1.732	1.732	∞
RF ambient conditions-reflections	E.6.1	3.000	R	1.732	1.000	1.000	1.732	1.732	∞
Probe positioner mechanical tolerance	E.6.2	1.400	R	1.732	1.000	1.000	0.808	0.808	∞
Probe positioning with respect to phantom shell	E.6.3	1.400	R	1.732	1.000	1.000	0.808	0.808	∞
Extrapolation, interpolation, and integrations algorithms for max. SAR evaluation	E.5	2.300	R	1.732	1.000	1.000	1.328	1.328	∞
System validation source									
Deviation of experimental dipole from numerical dipole	E.6.4	5	N	1	1	1	5	5	∞
Input power and SAR drift measurement	8,6.6.4	5	R	1.732	1	1	2.887	2.887	∞
Dipole axis to liquid distance	8,E.6.6	2	R	1.732	1	1	1.155	1.155	∞
Phantom and set-up									
Phantom shell uncertainty—shape, thickness, and permittivity	E.3.1	4	R	1.732	1	1	2.309	2.309	∞
Uncertainty in SAR correction for deviations in permittivity and conductivity	E.3.2	1.9	N	1	1	0.84	1.9	1.596	∞
Liquid conductivity（temperature uncertainty）	E.3.3	4	N	1	0.78	0.71	3.12	2.84	∞
Liquid conductivity（measured）	E.3.3	5	N	1	0.23	0.26	1.15	1.3	M
Liquid permittivity（temperature uncertainty）	E.3.4	2.5	R	1.732	0.78	0.71	1.126	1.025	∞
Liquid permittivity（measured）	E.3.4	2.5	R	1.732	0.23	0.26	0.332	0.375	M
Combined Standard Uncertainty			RSS				10.462	10.276	
Expanded Uncertainty (95% Confidence interval)			K=2				20.925	20.552	

SATIMO Uncertainty- SN 45/22 EPGO391 System Check uncertainty for DUT averaged over 1 gram / 10 gram.									
Uncertainty Component	Sec.	Tol (+- %)	Prob. Dist.	Div.	Ci (1g)	Ci (10g)	1g Ui (+-%)	10g Ui (+-%)	vi
Measurement System									
Probe calibration drift	E.2.1.3	7.000	N	1	1	1	7	7	∞
Axial Isotropy	E.2.2	0.215	R	$\sqrt{3}$	0	0	0	0	∞
Hemispherical Isotropy	E.2.2	0.215	R	$\sqrt{3}$	0	0	0	0	∞
Boundary effect	E.2.3	1.000	R	$\sqrt{3}$	0	0	0	0	∞
Linearity	E.2.4	0.995	R	$\sqrt{3}$	0	0	0	0	∞
System detection limits	E.2.4	1	R	$\sqrt{3}$	0	0	0	0	∞
Modulation response	E2.5	3	R	$\sqrt{3}$	0	0	0	0	∞
Readout Electronics	E.2.6	0.021	N	$\sqrt{3}$	0	0	0	0	∞
Response Time	E.2.7	0	R	$\sqrt{3}$	0	0	0	0	∞
Integration Time	E.2.8	1.4	R	$\sqrt{3}$	0	0	0	0	∞
RF ambient conditions-Noise	E.6.1	3	R	$\sqrt{3}$	0	0	0	0	∞
RF ambient conditions-reflections	E.6.1	3	R	$\sqrt{3}$	0	0	0	0	∞
Probe positioner mechanical tolerance	E.6.2	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
Probe positioning with respect to phantom shell	E.6.3	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
Extrapolation, interpolation, and integrations algorithms for max. SAR evaluation	E.5	2.3	R	$\sqrt{3}$	0	0	0	0.00	∞
System check source (dipole)									
Deviation of experimental dipoles	E.6.4	2	N	1	1	1	2	2	∞
Input power and SAR drift measurement	8,6.6.4	5	R	$\sqrt{3}$	1	1	2.89	2.89	∞
Dipole axis to liquid distance	8,E.6.6	2	R	$\sqrt{3}$	1	1	1.15	1.15	∞
Phantom and tissue parameters									
Phantom shell uncertainty—shape, thickness, and permittivity	E.3.1	4	R	$\sqrt{3}$	1	1	2.31	2.31	∞
Uncertainty in SAR correction for deviations in permittivity and conductivity	E.3.2	1.9	N	1.000	1	0.84	1.90	1.60	∞
Liquid conductivity measurement	E.3.3	4	N	1.000	0.78	0.71	3.12	2.84	∞
Liquid permittivity measurement	E.3.3	5	N	1.000	0.23	0.26	1.15	1.30	M
Liquid conductivity—temperature uncertainty	E.3.4	2.5	R	$\sqrt{3}$	0.78	0.71	1.13	1.02	∞
Liquid permittivity—temperature uncertainty	E.3.4	2.5	R	$\sqrt{3}$	0.23	0.26	0.33	0.38	M
Combined Standard Uncertainty			RSS				8.927	8.708	
Expanded Uncertainty (95% Confidence interval)			K=2				17.853	17.415	

12. CONDUCTED POWER MEASUREMENT

GSM BAND

Mode	Frequency(MHz)	Avg. Burst Power(dBm)	Duty cycle Factor(dBm)	Frame Power(dBm)
Maximum Power <1>				
GSM 850	824.2	32.99	-9	23.99
	836.6	33.15	-9	24.15
	848.8	**33.16**	-9	24.16
GPRS 850 （1 Slot）	824.2	33.04	-9	24.04
	836.6	33.13	-9	24.13
	848.8	33.10	-9	24.10
GPRS 850 （2 Slot）	824.2	31.96	-6	**25.96**
	836.6	31.53	-6	25.53
	848.8	31.44	-6	25.44
GPRS 850 （3 Slot）	824.2	29.25	-4.26	24.99
	836.6	29.74	-4.26	25.48
	848.8	29.11	-4.26	24.85
GPRS 850 （4 Slot）	824.2	27.05	-3	24.05
	836.6	27.10	-3	24.10
	848.8	27.24	-3	24.24
Maximum Power <2>				
GSM 850	824.2	31.96	-9	22.96
	836.6	32.02	-9	23.02
	848.8	32.09	-9	23.09
GPRS 850 （1 Slot）	824.2	31.68	-9	22.68
	836.6	31.92	-9	22.92
	848.8	32.01	-9	23.01
GPRS 850 （2 Slot）	824.2	30.99	-6	24.99
	836.6	31.04	-6	25.04
	848.8	30.63	-6	24.63
GPRS 850 （3 Slot）	824.2	29.11	-4.26	24.85
	836.6	29.10	-4.26	24.84
	848.8	28.54	-4.26	24.28
GPRS 850 （4 Slot）	824.2	26.35	-3	23.35
	836.6	27.02	-3	24.02
	848.8	26.97	-3	23.97

GSM BAND CONTINUE

Mode	Frequency(MHz)	Avg. Burst Power(dBm)	Duty cycle Factor(dBm)	Frame Power(dBm)
Maximum Power <1>				
PCS1900	1850.2	27.77	-9	18.77
	1880	27.95	-9	18.95
	1909.8	27.85	-9	18.85
GPRS1900 （1 Slot）	1850.2	27.80	-9	18.80
	1880	**28.11**	-9	19.11
	1909.8	27.90	-9	18.90
GPRS1900 （2 Slot）	1850.2	26.36	-6	20.36
	1880	26.40	-6	20.40
	1909.8	26.41	-6	**20.41**
GPRS1900 （3 Slot）	1850.2	24.60	-4.26	20.34
	1880	24.52	-4.26	20.26
	1909.8	24.05	-4.26	19.79
GPRS1900 （4 Slot）	1850.2	22.11	-3	19.11
	1880	22.05	-3	19.05
	1909.8	22.10	-3	19.10
Maximum Power <2>				
PCS1900	1850.2	26.32	-9	17.32
	1880	26.65	-9	17.65
	1909.8	26.51	-9	17.51
GPRS1900 （1 Slot）	1850.2	26.66	-9	17.66
	1880	26.78	-9	17.78
	1909.8	26.61	-9	17.61
GPRS1900 （2 Slot）	1850.2	25.39	-6	19.39
	1880	25.99	-6	19.99
	1909.8	25.67	-6	19.67
GPRS1900 （3 Slot）	1850.2	24.44	-4.26	20.18
	1880	23.55	-4.26	19.29
	1909.8	23.66	-4.26	19.40
GPRS1900 （4 Slot）	1850.2	21.53	-3	18.53
	1880	21.48	-3	18.48
	1909.8	21.33	-3	18.33

Note 1:
The Frame Power (Source-based time-averaged Power) is scaled the maximum burst average power based on time slots. The calculated methods are show as following:
Frame Power = Max burst power (1 Up Slot) – 9 dB
Frame Power = Max burst power (2 Up Slot) – 6 dB
Frame Power = Max burst power (3 Up Slot) – 4.26 dB
Frame Power = Max burst power (4 Up Slot) – 3 dB

Bluetooth_V4.2(BR/EDR)

Modulation	Channel	Frequency(MHz)	Peak Power (dBm)
GFSK	0	2402	**1.295**
	39	2441	0.045
	78	2480	0.398
π /4-DQPSK	0	2402	-0.603
	39	2441	-0.280
	78	2480	0.117
8-DPSK	0	2402	-0.651
	39	2441	-0.327
	78	2480	0.051

13. TEST RESULTS

13.1. SAR Test Results Summary

13.1.1. Test position and configuration

Head SAR was performed with the device configured in the positions according to IEEE 1528-2013, Body-worn SAR was performed with the device 10mm from the phantom.

13.1.2. Operation Mode

1. Per KDB 447498 D01 v06 ,for each exposure position, if the highest 1-g SAR is ≤ 0.8 W/kg, testing for low and high channel is optional.
2. Per KDB 865664 D01 v01r04,for each frequency band, if the measured SAR is ≥0.8W/kg, testing for repeated SAR measurement is required , that the highest measured SAR is only to be tested. When the SAR results are near the limit, the following procedures are required for each device to verify these types of SAR measurement related variation concerns by repeating the highest measured SAR configuration in each frequency band.
   (1) When the original highest measured SAR is ≥0.8W/kg, repeat that measurement once.
   (2) 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.
   (3) Perform a third repeated measurement only if the original, first and second repeated measurement is ≥1.5 W/kg and ratio of largest to smallest SAR for the original, first and second measurement is ≥ 1.20.
3. Body-worn exposure conditions are intended to voice call operations, therefore GSM voice call mode is selected to be test.
4. Per KDB 648474 D04 v01r03,when the reported SAR for a body-worn accessory measured without a headset connected to the handset is ≤1.2W/kg, SAR testing with a headset connected is not required.
5. Maximum Scaling SAR in order to calculate the Maximum SAR values to test under the standard Peak Power, Calculation method is as follows:
   Maximum Scaling SAR =tested SAR (Max.) ×[maximum turn-up power (mw)/ maximum measurement output power(mw)]
6. Proximity sensor, just for avoiding the wrong operation in the phone screen when call, and has no influence on output power or SAR result.

13.1.3. Test Result

SAR MEASUREMENT									
Depth of Liquid (cm):>15				Relative Humidity (%):51.7					
Product: 2G Feature phone									
Test Mode: GSM850 with GMSK modulation									
Position	**Mode**	**Ch.**	**Fr. (MHz)**	**Power Drift (<±5%)**	**SAR (1g) (W/kg)**	**Max. Tune-up Power (dBm)**	**Meas. output Power (dBm)**	**Scaled SAR (W/kg)**	**Limit (W/kg)**
SIM 1 Card									
Left Cheek	voice	128	824.2	-0.13	0.926	33.20	32.99	0.972	1.6
Left Cheek	voice	190	836.6	0.22	0.979	33.20	33.15	0.990	1.6
Left Cheek	voice	251	848.8	-0.15	0.932	33.20	33.16	0.941	1.6
Left Tilt	voice	190	836.6	-0.30	0.448	33.20	33.15	0.453	1.6
Right Cheek	voice	128	824.2	0.43	1.243	33.20	32.99	1.305	1.6
Right Cheek	voice	190	836.6	-0.23	**1.330**	33.20	33.15	**1.345**	1.6
Right Cheek	voice	251	848.8	0.40	1.178	33.20	33.16	1.189	1.6
Right Tilt	voice	190	836.6	-0.09	0.565	33.20	33.15	0.572	1.6
Body back	voice	128	824.2	0.25	1.063	33.20	32.99	1.116	1.6
Body back	voice	190	836.6	0.21	1.145	33.20	33.15	1.158	1.6
Body back	voice	251	848.8	-0.07	**1.178**	33.20	33.16	**1.189**	1.6
Body front	voice	128	824.2	0.23	1.108	33.20	32.99	1.163	1.6
Body front	voice	190	836.6	-0.14	1.078	33.20	33.15	1.090	1.6
Body front	voice	251	848.8	0.38	1.150	33.20	33.16	1.161	1.6
Body back	GPRS-2 slot	128	824.2	-0.13	**1.193**	32.00	31.96	1.204	1.6
Body back	GPRS-2 slot	190	836.6	-0.20	1.159	32.00	31.53	**1.291**	1.6
Body back	GPRS-2 slot	251	848.8	0.40	1.109	32.00	31.44	1.262	1.6
Body front	GPRS-2 slot	128	824.2	-0.28	1.058	32.00	31.96	1.068	1.6
Body front	GPRS-2 slot	190	836.6	0.31	1.122	32.00	31.53	1.250	1.6
Body front	GPRS-2 slot	251	848.8	-0.07	1.078	32.00	31.44	1.226	1.6
Body back+Ear.	GPRS-2 slot	128	824.2	0.01	0.919	32.00	31.96	0.928	1.6
Body back+Ear.	GPRS-2 slot	190	836.6	0.18	0.939	32.00	31.53	1.046	1.6
Body back+Ear.	GPRS-2 slot	251	848.8	-0.27	0.963	32.00	31.44	1.096	1.6

Note:
· When the 1-g Reported SAR is ≤ 0.8 W/kg, testing for low and high channel is optional. Refer to KDB 447498.
·The test separation for body back and body front is 10mm of all above table.

SAR MEASUREMENT									
Depth of Liquid (cm):>15					Relative Humidity (%):48.9				
Product: 2G Feature phone									
Test Mode: PCS1900 with GMSK modulation									
Position	**Mode**	**Ch.**	**Fr. (MHz)**	**Power Drift (<±5%)**	**SAR (1g) (W/kg)**	**Max. Tune-up Power (dBm)**	**Meas. output Power (dBm)**	**Scaled SAR (W/kg)**	**Limit (W/kg)**
SIM 1 Card									
Left Cheek	voice	661	1880.0	0.17	0.226	28.00	27.95	0.229	1.6
Left Tilt	voice	661	1880.0	-0.19	0.080	28.00	27.95	0.081	1.6
Right Cheek	voice	661	1880.0	-0.23	**0.371**	28.00	27.95	**0.375**	1.6
Right Tilt	voice	661	1880.0	0.18	0.054	28.00	27.95	0.055	1.6
Body back	voice	661	1880.0	-0.13	**0.407**	28.00	27.95	**0.412**	1.6
Body front	voice	661	1880.0	0.33	0.272	28.00	27.95	0.275	1.6
Body back	GPRS-2 slot	661	1880.0	-0.37	**0.551**	26.50	26.40	**0.564**	1.6
Body front	GPRS-2 slot	661	1880.0	-0.13	0.375	26.50	26.40	0.384	1.6

Note:
· When the 1-g Reported SAR is ≤ 0.8 W/kg, testing for low and high channel is optional. Refer to KDB 447498.
·The test separation for body back and body front is 10mm of all above table.

Repeated SAR										
Product: 2G Feature phone										
Test Mode: GSM850 with GMSK modulation										
Position	**Mode**	**Ch.**	**Fr. (MHz)**	**Power Drift (<±5%)**	**Once SAR (1g) (W/kg)**	**Power Drift (<±5%)**	**Twice SAR (1g) (W/kg)**	**Power Drift (<±5%)**	**Third SAR (1g) (W/kg)**	**Limit (W/kg)**
Right Cheek	voice	190	836.6	0.03	1.203	-	-	-	-	1.6

The second repeated SAR judge reference								
Product: 2G Feature phone								
Band	**Position**	**Mode**	**Ch.**	**Fr. (MHz)**	**Orignal SAR (1g) (W/kg)**	**First SAR (1g) (W/kg)**	**Ratio**	**Limit**
GSM850	Right Cheek	voice	190	836.6	1.330	1.203	1.106	<1.2

NO	Simultaneous state	Portable Handset		
		Head	Body-worn	Hotspot
1	GSM(voice)+Bluetooth(data)	Yes	Yes	-
2	GSM (Data) + Bluetooth(data)	Yes	Yes	-

NOTE:
1. Simultaneous with every transmitter must be the same test position.
2. KDB 447498 D01, BT SAR is excluded as below table.
3. KDB 447498 D01, for handsets the test separation distance is determined by the smallest distance between the outer surface of the device and the user; which is 0mm for head SAR and 10mm for body-worn SAR.
4. According to KDB 447498 D01 4.3.1, Standalone SAR test exclusion is as follow:
   For 100 MHz to 6 GHz and test separation distances ≤ 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:
   [(max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)] • [√f(GHz)] ≤ 3.0 for 1-g SAR, and ≤ 7.5 for 10-g extremity SAR[30], where
   • f(GHz) is the RF channel transmit frequency in GHz
   • Power and distance are rounded to the nearest mW and mm before calculation[31]
   • The result is rounded to one decimal place for comparison
   • The values 3.0 and 7.5 are referred to as numeric thresholds in step b) below
   The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm, and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm according to 4.1 f) is applied to determine SAR test exclusion.
5. If the test separation distance is <5mm, 5mm is used for excluded SAR calculation.
6. According to KDB 447498 D01 4.3.2, simultaneous transmission SAR test exclusion is as follow:
   (1) 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.
   (2) Any transmitters and antennas should be considered when calculating simultaneous mode.
   (3) For mobile phone and PC, it's the sum of all transmitters and antennas at the same mode with same position in each applicable exposure condition
   (4)When the standalone SAR test exclusion of section 4.3.2 is applied to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to the following to det
   (max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)]·[√f(GHz)/x] W/kg for test separation distances ≤ 50 mm;
   where x = 7.5 for 1-g SAR, and x = 18.75 for 10-g SAR.
7. When the sum of SAR is larger than the limit, SAR test exclusion is determined by the SAR to peak location separation ratio. The simultaneous transmitting antennas in each operating mode and exposure condition combination must be considered one pair at a time to determine the SAR to peak location separation ratio to qualify for test exclusion. The ratio is determined by (SAR1 + SAR2)1.5/Ri, rounded to two decimal digits, and must be ≤ 0.04 for all antenna pairs in the configuration to qualify for 1-g SAR test exclusion.

Estimated SAR		Max Power including Tune-up Tolerance		Separation Distance (mm)	Estimated SAR (W/kg)
		dBm	mW		
BT	Head	2	1.585	0	0.066
	Body	2	1.585	10	0.033

Sum of the SAR for GSM 850 & BT:

RF Exposure Conditions	Test Position	Simultaneous Transmission Scenario		Σ1-g SAR (W/kg)	SPLSR (Yes/No)
		GSM 850	Bluetooth		
Head (voice)	Left Touch	0.990	0.066	1.056	No
	Left Tilt	0.453	0.066	0.519	No
	Right Touch	1.345	0.066	**1.411**	No
	Right Tilt	0.572	0.066	0.638	No
Body-worn (voice)	Rear	1.189	0.033	1.222	No
	Front	1.163	0.033	1.196	No
Body-worn (Data)	Rear	1.291	0.033	1.324	No
	Front	1.250	0.033	1.283	No

Note:

·According to KDB 447498 D01 General RF Exposure Guidance, when the simultaneous transmission SAR is less than1.6 W/kg, SPLSR assessment is not required.

·SPLSR mean is “The SAR to Peak Location Separation Ratio “

Sum of the SAR for PCS 1900 & BT:

RF Exposure Conditions	Test Position	Simultaneous Transmission Scenario		Σ1-g SAR (W/kg)	SPLSR (Yes/No)
		PCS 1900	Bluetooth		
Head (voice)	Left Touch	0.229	0.066	0.295	No
	Left Tilt	0.081	0.066	0.147	No
	Right Touch	0.375	0.066	0.441	No
	Right Tilt	0.055	0.066	0.121	No
Body-worn (voice)	Rear	0.412	0.033	0.445	No
	Front	0.275	0.033	0.308	No
Body-worn (Data)	Rear	0.564	0.033	0.597	No
	Front	0.384	0.033	0.417	No

Note:

·According to KDB 447498 D01 General RF Exposure Guidance, when the simultaneous transmission SAR is less than1.6 W/kg, SPLSR assessment is not required.
·SPLSR mean is “The SAR to Peak Location Separation Ratio “

APPENDIX A. SAR SYSTEM CHECK DATA

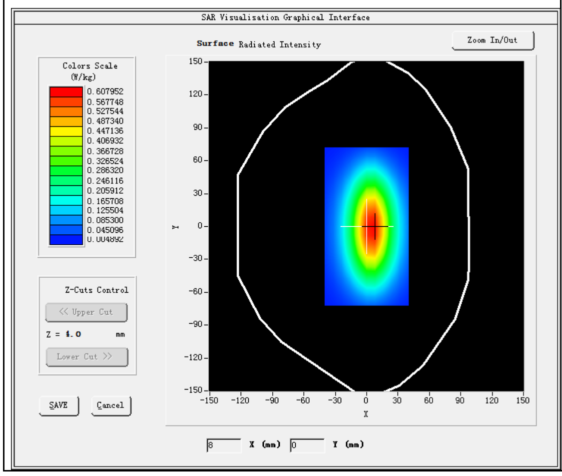
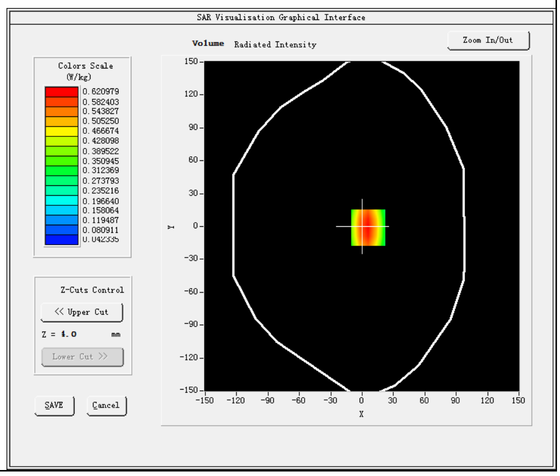
Test Laboratory: AGC Lab **Date: Oct. 23, 2023**
System Check Head 835 MHz
DUT: Dipole 835 MHz Type: SID 835
Communication System CW; Communication System Band: D835 (835.0 MHz); Duty Cycle: 1:1; Conv.F=2.13
Frequency: 835 MHz; Medium parameters used: f = 835 MHz; σ=0.87 mho/m; εr =42.57; ρ= 1000 kg/m³ ;
Phantom section: Flat Section; Input Power=18dBm

Ambient temperature (℃):20.6, Liquid temperature (℃): 20.2

SATIMO Configuration

- Probe: SSE2; Calibrated: Dec. 02, 2022; Serial No.: SN 45/22 EPGO391
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: SAM twin phantom
- Measurement SW: OpenSAR V4_02_32

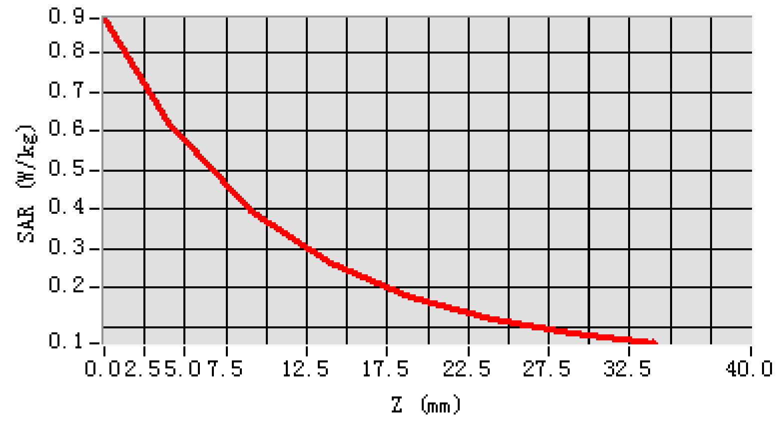
Configuration/System Check 835MHz Head/Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/System Check 835MHz Head/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm

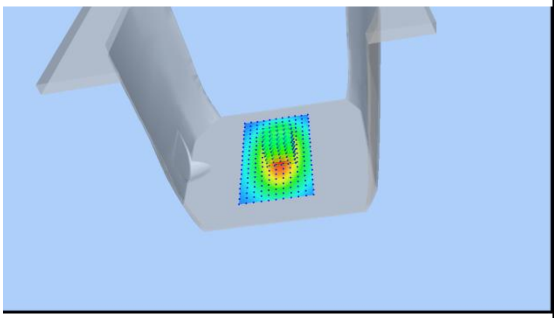
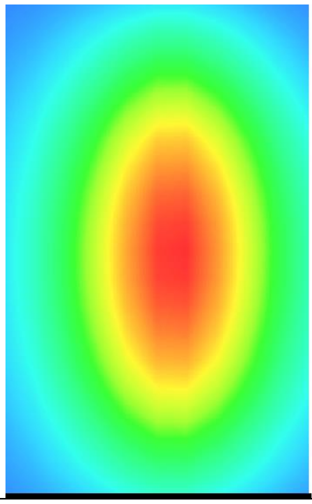
SURFACE SAR	VOLUME SAR
	

Maximum location: X=6.00, Y=-1.00
SAR Peak: 0.89 W/kg

SAR 10g (W/Kg)	0.388352
SAR 1g (W/Kg)	0.605974

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.8875	0.6235	0.3991	0.2638	0.1781	0.1215	0.0847



3D screen shot	Hot spot position
	

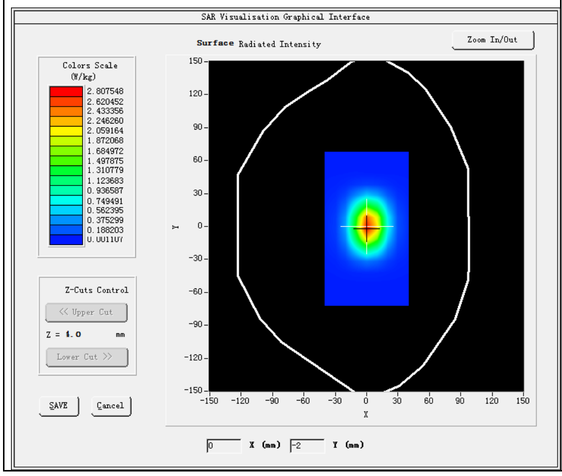
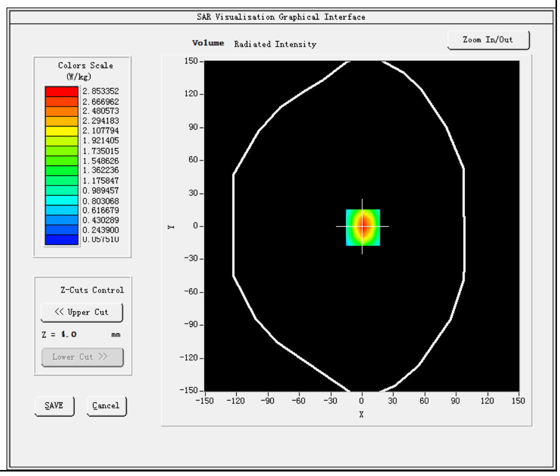
Test Laboratory: AGC Lab **Date: Oct. 25, 2023**
System Check Head 1900MHz
DUT: Dipole 1900 MHz; Type: SID 1900
Communication System: CW; Communication System Band: D1900 (1900.0 MHz); Duty Cycle:1:1; Conv.F=2.32
Frequency: 1900 MHz; Medium parameters used: f = 1800 MHz; σ=1.43 mho/m; εr =39.77; ρ= 1000 kg/m³ ;
Phantom section: Flat Section; Input Power=18dBm

Ambient temperature (℃):21.0, Liquid temperature (℃): 20.5

SATIMO Configuration:

- Probe: SSE2; Calibrated: Dec. 02, 2022; Serial No.: SN 45/22 EPGO391
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: SAM twin phantom
- Measurement SW: OpenSAR V4_02_32

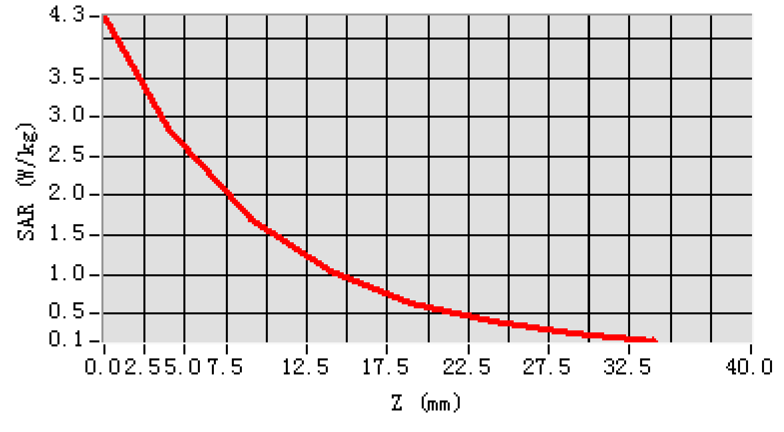
Configuration/System Check 1900MHz Head/Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/System Check 1900MHz Head/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm

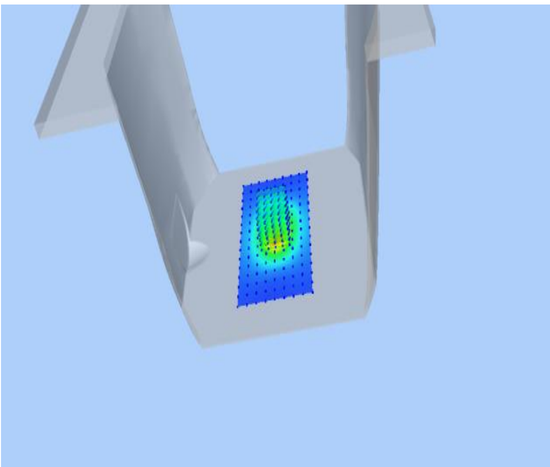
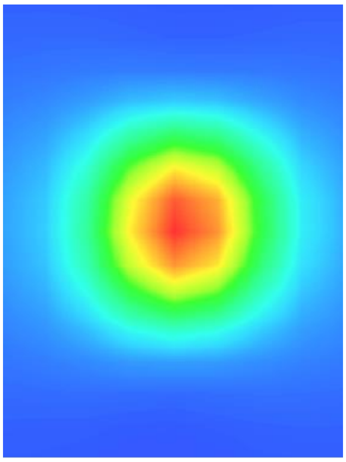
SURFACE SAR	VOLUME SAR
	

Maximum location: X=1.00, Y=-1.00
SAR Peak: 4.29 W/kg

SAR 10g (W/Kg)	1.273548
SAR 1g (W/Kg)	2.671652

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	4.2828	2.8571	1.6964	1.0473	0.6342	0.3908	0.2469



3D screen shot	Hot spot position
	

APPENDIX B. SAR MEASUREMENT DATA

Test Laboratory: AGC Lab **Date: Oct. 23, 2023**
GSM 850 Mid- Touch-Right <SIM 1>
DUT: 2G Feature phone; Type: M9_2G

Communication System: Generic GSM; Communication System Band: GSM 850; Duty Cycle: 1:8.3; Conv.F=2.13; Frequency: 836.6 MHz; Medium parameters used: f = 835 MHz; σ= 0.89 mho/m; εr = 41.39; ρ= 1000 kg/m³ ; Phantom section: Right Section

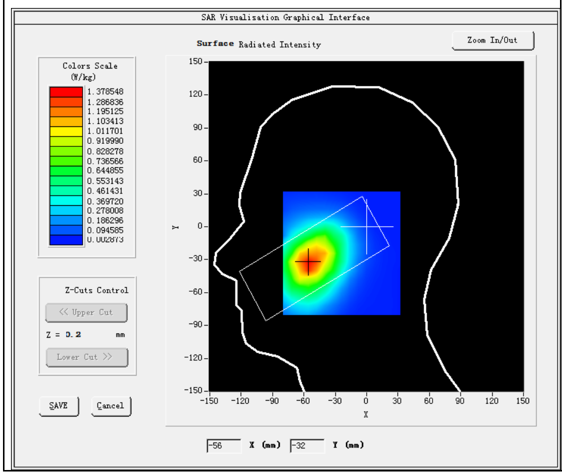
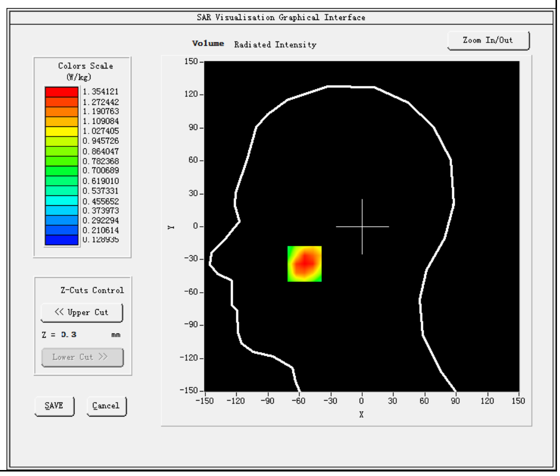
Ambient temperature (℃): 20.6, Liquid temperature (℃): 20.2

SATIMO Configuration:

- Probe: SSE2; Calibrated: Dec. 02, 2022; Serial No.: SN 45/22 EPGO391
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: SAM twin phantom
- Measurement SW: OpenSAR V4_02_32

Configuration/GSM 850 Mid-Touch-Right/Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/GSM 850 Mid-Touch-Right/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm;

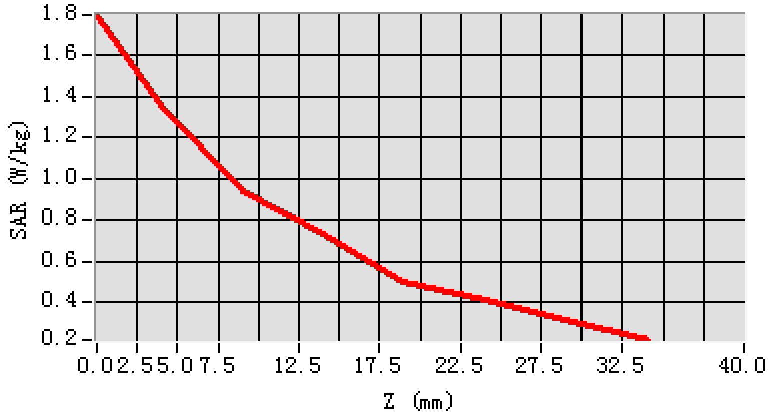
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Right head
Device Position	Cheek
Band	GSM 850
Channels	Middle
Signal	TDMA (Crest factor: 8.0)

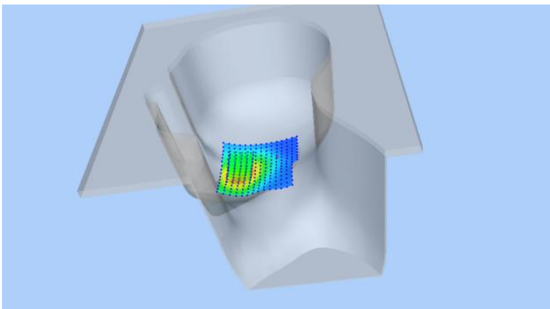
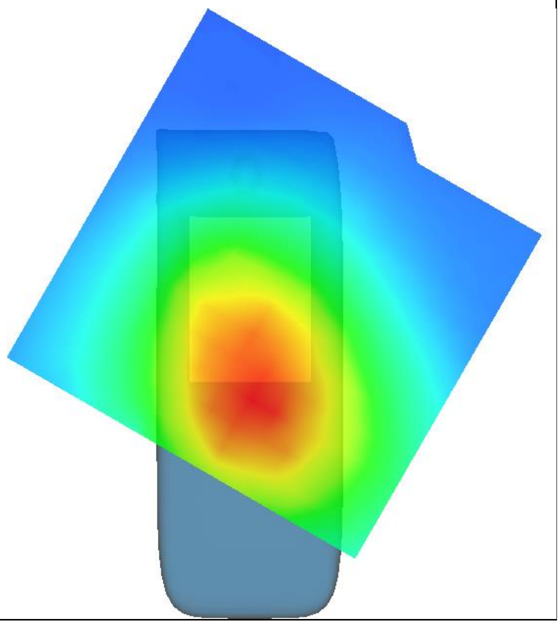
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-55.00, Y=-34.00
SAR Peak: 2.00 W/kg

SAR 10g (W/Kg)	0.864875
SAR 1g (W/Kg)	1.329553

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	1.7956	1.3541	0.9410	0.7329	0.5055	0.4106	0.3137



3D screen shot	Hot spot position
	

Test Laboratory: AGC Lab **Date: Oct. 23, 2023**
GSM 850 High- Body- Back (MS)<SIM 1>
DUT: 2G Feature phone; Type: M9_2G

Communication System: Generic GSM; Communication System Band: GSM 850; Duty Cycle: 1:8.3; Conv.F=2.13; Frequency: 848.8 MHz; Medium parameters used: f = 835 MHz; σ= 0.91 mho/m; εr = 40.23; ρ= 1000 kg/m³ ;
Phantom section: Flat Section

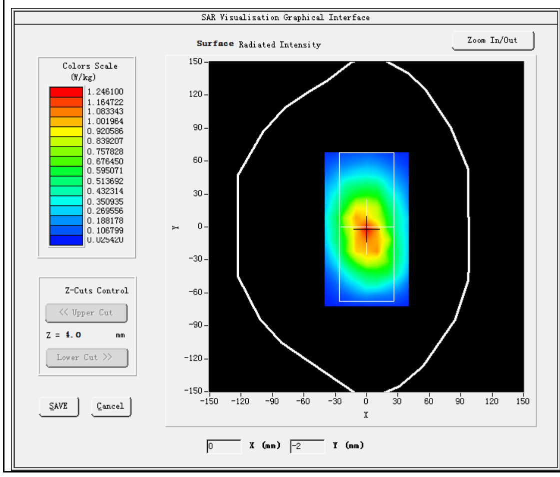
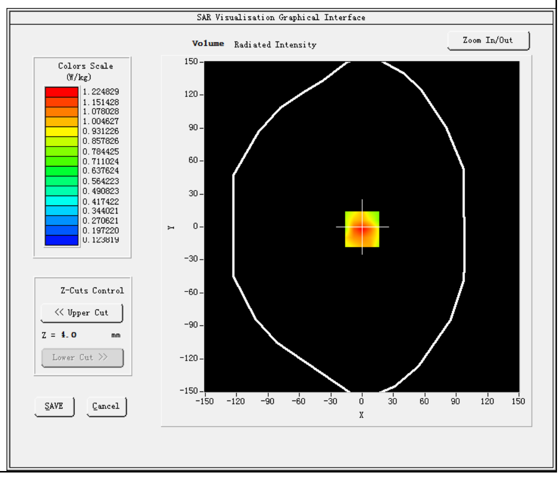
Ambient temperature (℃): 20.6, Liquid temperature (℃): 20.2

SATIMO Configuration:

- Probe: SSE2; Calibrated: Dec. 02, 2022; Serial No.: SN 45/22 EPGO391
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: SAM twin phantom
- Measurement SW: OpenSAR V4_02_32

Configuration/GSM 850 High -Body-Back/Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/GSM 850 High -Body-Back/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm;

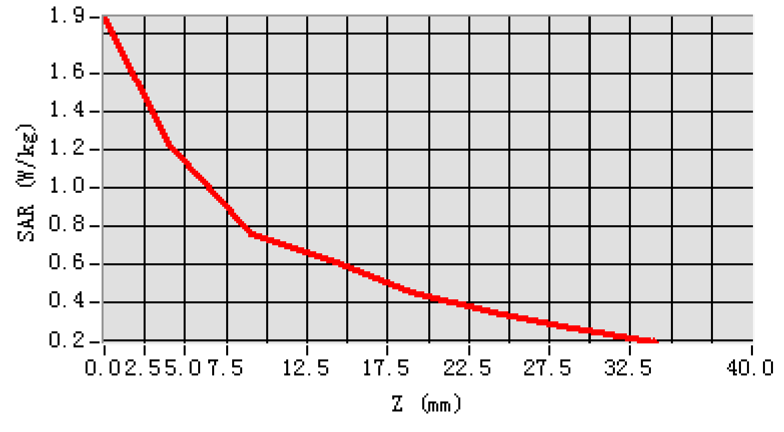
Area Scan	surf_sam_plan.txt, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body Back
Band	GSM 850
Channels	High
Signal	TDMA (Crest factor: 8.0)

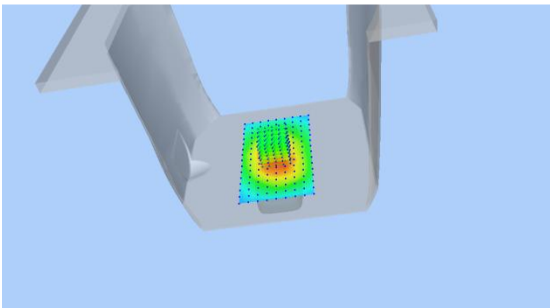
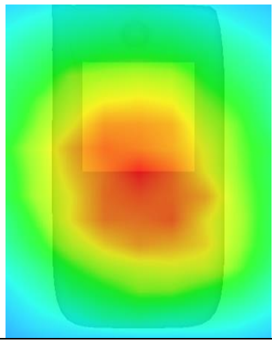
SURFACE SAR	VOLUME SAR
	

Maximum location: X=0.00, Y=-2.00
SAR Peak: 1.90 W/kg

SAR 10g (W/Kg)	0.754018
SAR 1g (W/Kg)	1.178077

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	1.8886	1.2248	0.7601	0.6154	0.4551	0.3439	0.2594



3D screen shot	Hot spot position
	

Test Laboratory: AGC Lab **Date: Oct. 23, 2023**
GPRS 850 Low- Body- Back (2up)
DUT: 2G Feature phone; Type: M9_2G

Communication System: GPRS-2 Slot; Communication System Band: GSM 850; Duty Cycle: 1:4.2; Conv.F=2.13; Frequency: 824.2 MHz; Medium parameters used: f = 835 MHz; σ= 0.86 mho/m; εr = 43.66; ρ= 1000 kg/m³ ; Phantom section: Flat Section

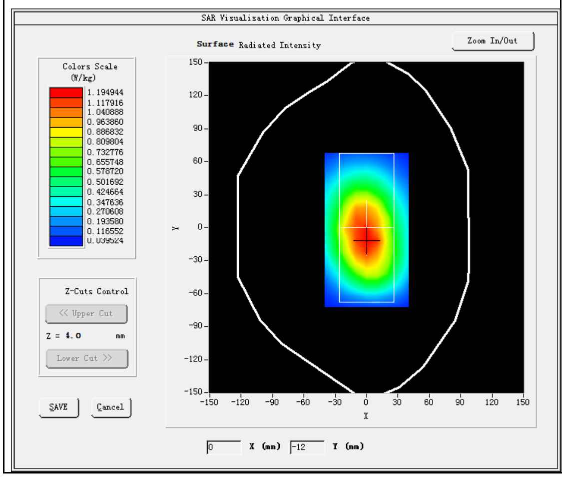
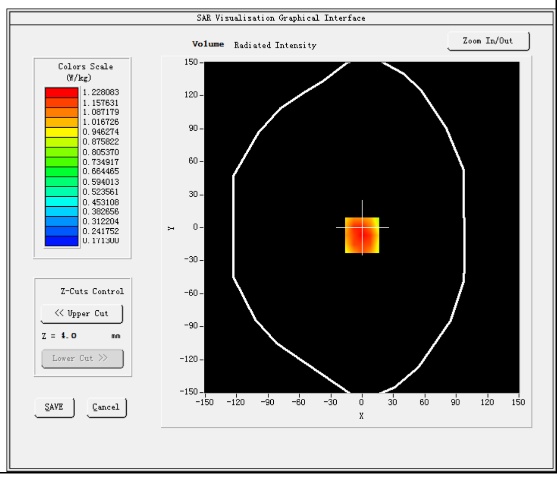
Ambient temperature (℃): 20.6, Liquid temperature (℃): 20.2

SATIMO Configuration:

- Probe: SSE2; Calibrated: Dec. 02, 2022; Serial No.: SN 45/22 EPGO391
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: SAM twin phantom
- Measurement SW: OpenSAR V4_02_32

Configuration/GPRS 850 Low -Body-Back/Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/GPRS 850 Low -Body-Back/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm;

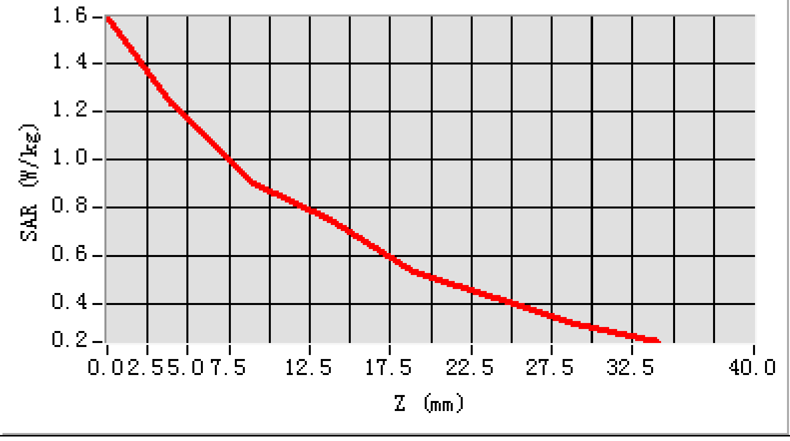
Area Scan	surf_sam_plan.txt, h= 5.00 mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body Back
Band	GSM 850
Channels	Low
Signal	TDMA (Crest factor: 4.0)

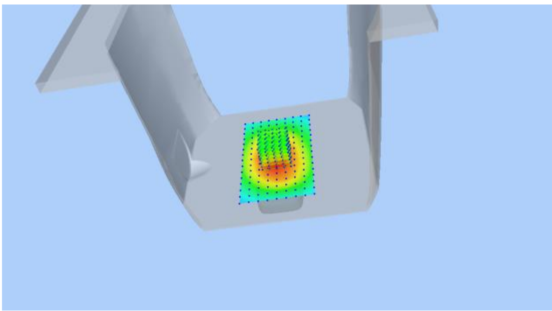
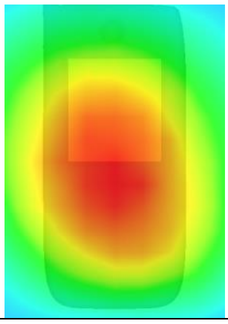
SURFACE SAR	VOLUME SAR
	

Maximum location: X=0.00, Y=-7.00
SAR Peak: 1.59 W/kg

SAR 10g (W/Kg)	0.857668
SAR 1g (W/Kg)	1.193061

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	1.5868	1.2281	0.9011	0.7381	0.5372	0.4248	0.3232



3D screen shot	Hot spot position
	

Test Laboratory: AGC Lab **Date: Oct. 25, 2023**
PCS 1900 Mid-Touch-Right <SIM 1>
DUT: 2G Feature phone; Type: M9_2G

Communication System: Generic GSM; Communication System Band: PCS 1900; Duty Cycle: 1:8.3; Conv.F=2.32; Frequency: 1880 MHz; Medium parameters used: f = 1800 MHz; σ= 1.40 mho/m; εr =40.15; ρ= 1000 kg/m³ ; Phantom section: Right Section

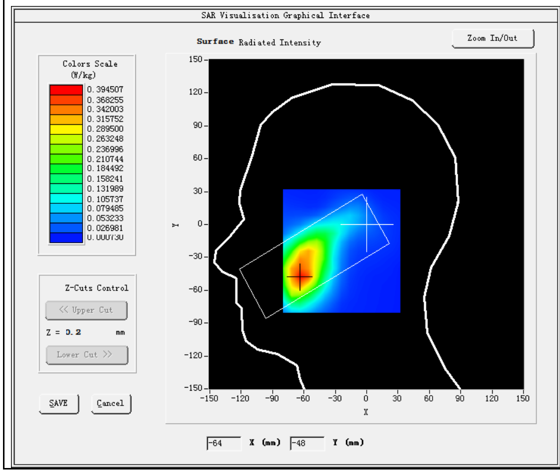
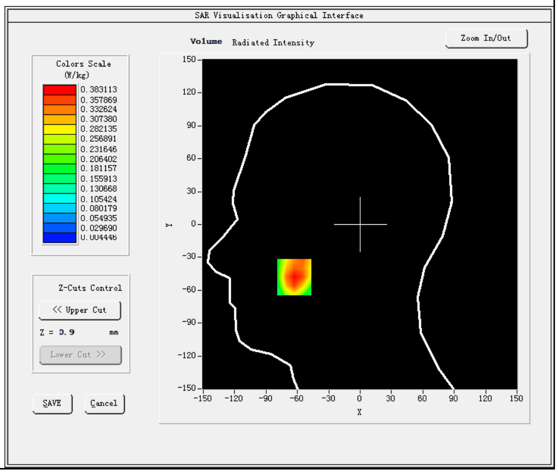
Ambient temperature (℃): 21.0, Liquid temperature (℃): 20.5

SATIMO Configuration:

- Probe: SSE2; Calibrated: Dec. 02, 2022; Serial No.: SN 45/22 EPGO391
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: SAM twin phantom
- Measurement SW: OpenSAR V4_02_32

Configuration/PCS1900 Mid-Touch-Right/Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/PCS1900 Mid-Touch-Right/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm;

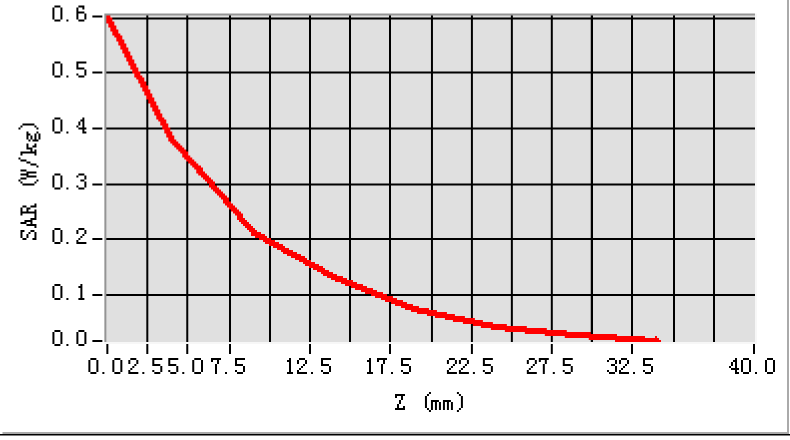
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Right head
Device Position	Cheek
Band	PCS 1900
Channels	Middle
Signal	TDMA (Crest factor: 8.0)

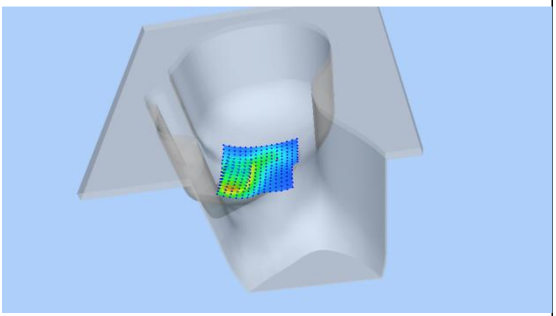
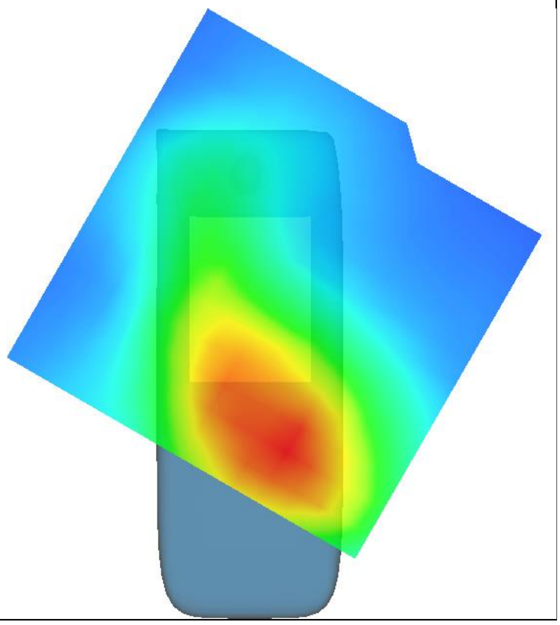
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-63.00, Y=-48.00
SAR Peak: 0.63 W/kg

SAR 10g (W/Kg)	0.205914
SAR 1g (W/Kg)	0.370808

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.6028	0.3831	0.2123	0.1315	0.0733	0.0425	0.0248



3D screen shot	Hot spot position
	

Test Laboratory: AGC Lab **Date: Oct. 25, 2023**
PCS 1900 Mid-Body-Back (MS)<SIM 1>
DUT: 2G Feature phone; Type: M9_2G

Communication System: Generic GSM; Communication System Band: PCS 1900; Duty Cycle: 1:8.3; Conv.F=2.32; Frequency: 1880 MHz; Medium parameters used: f = 1800 MHz; σ= 1.40 mho/m; εr =40.15; ρ= 1000 kg/m³ ; Phantom section: Flat Section

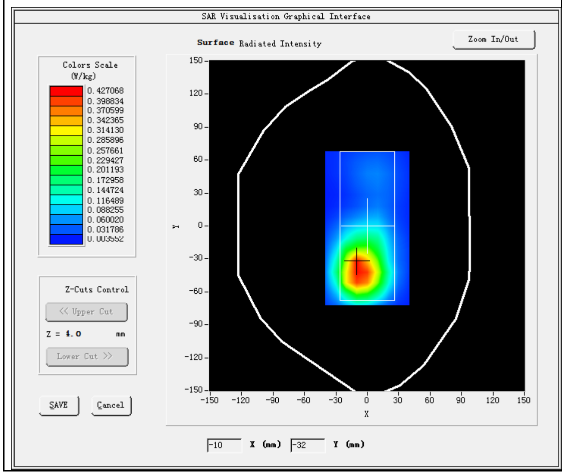
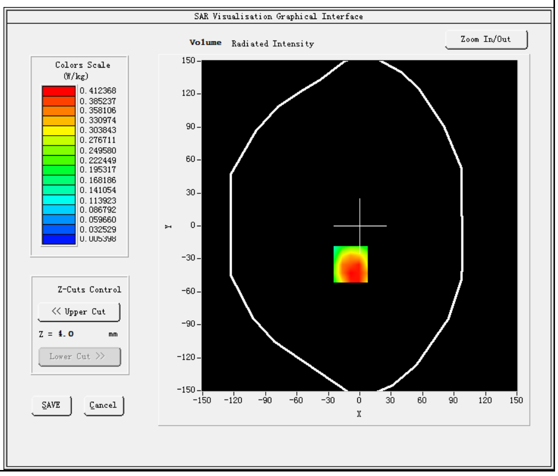
Ambient temperature (℃): 21.0, Liquid temperature (℃): 20.5

SATIMO Configuration:

- Probe: SSE2; Calibrated: Dec. 02, 2022; Serial No.: SN 45/22 EPGO391
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: SAM twin phantom
- Measurement SW: OpenSAR V4_02_32

Configuration/PCS1900 Mid-Body-Back/Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/PCS1900 Mid-Body-Back/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm;

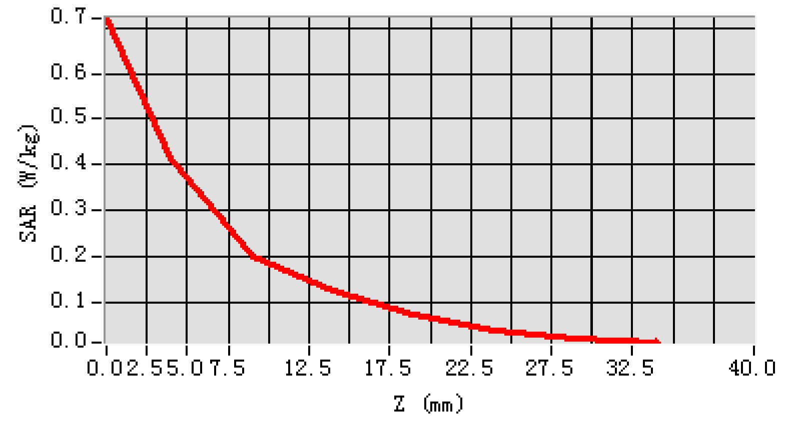
Area Scan	surf_sam_plan.txt, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body Back
Band	PCS 1900
Channels	Middle
Signal	TDMA (Crest factor: 8.0)

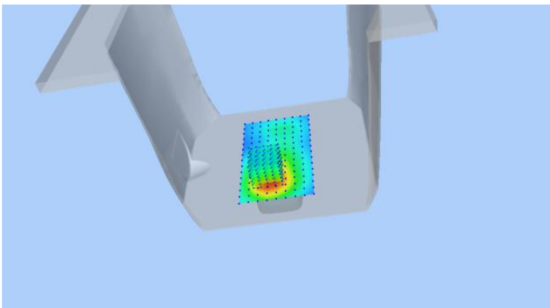
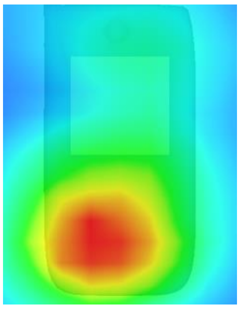
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-9.00, Y=-35.00
SAR Peak: 0.70 W/kg

SAR 10g (W/Kg)	0.224487
SAR 1g (W/Kg)	0.406683

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.7205	0.4124	0.1996	0.1277	0.0736	0.0386	0.0223



3D screen shot	Hot spot position
	

Test Laboratory: AGC Lab **Date: Oct. 25, 2023**
GPRS 1900 Mid-Body-Back (2up)
DUT: 2G Feature phone; Type: M9_2G

Communication System: GPRS-2Slot; Communication System Band: PCS 1900; Duty Cycle: 1:4.2; Conv.F=2.32; Frequency: 1880 MHz; Medium parameters used: f = 1800 MHz; σ= 1.40 mho/m; εr =40.15; ρ= 1000 kg/m³ ; Phantom section: Flat Section

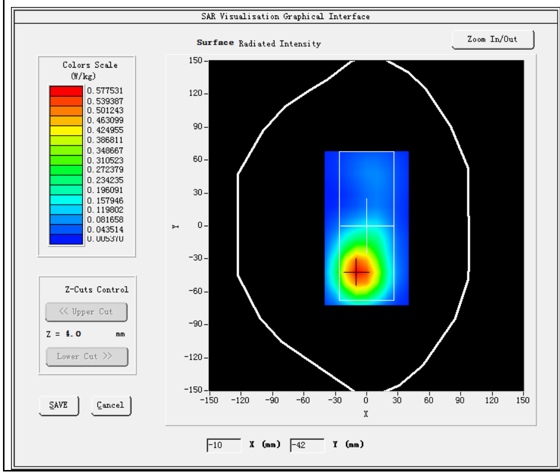
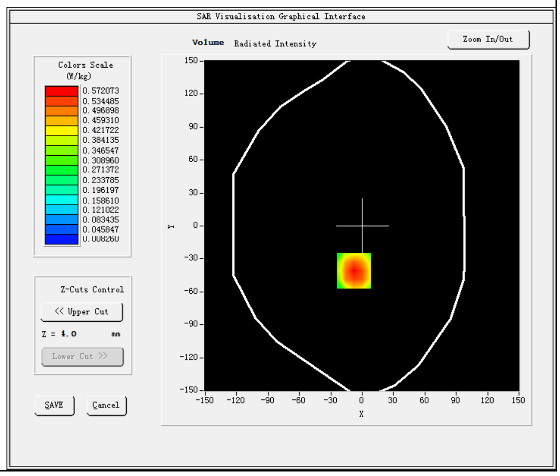
Ambient temperature (℃): 21.0, Liquid temperature (℃): 20.5

SATIMO Configuration:

- Probe: SSE2; Calibrated: Dec. 02, 2022; Serial No.: SN 45/22 EPGO391
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: SAM twin phantom
- Measurement SW: OpenSAR V4_02_32

Configuration/GPRS1900 Mid-Body-Back/Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/GPRS1900 Mid-Body-Back/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm;

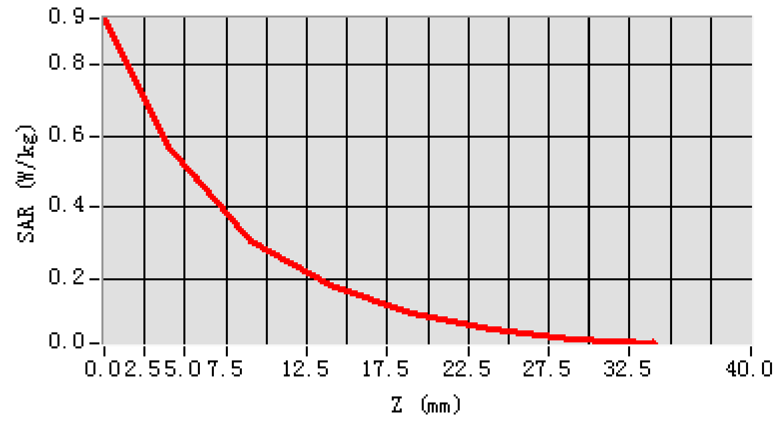
Area Scan	surf_sam_plan.txt, h= 5.00 mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body Back
Band	PCS 1900
Channels	Middle
Signal	TDMA (Crest factor: 4.0)

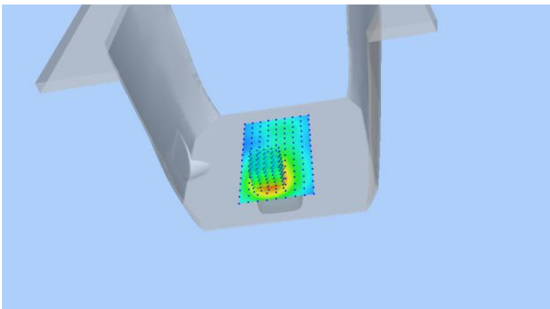
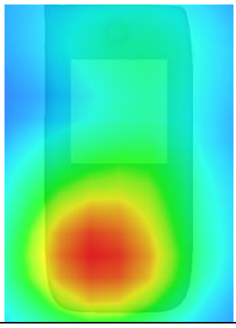
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-8.00, Y=-41.00
SAR Peak: 0.92 W/kg

SAR 10g (W/Kg)	0.309692
SAR 1g (W/Kg)	0.551468

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.9310	0.5721	0.3047	0.1826	0.1033	0.0576	0.0315



3D screen shot	Hot spot position
	

Repeated SAR
Test Laboratory: AGC Lab **Date: Oct. 23, 2023**
GSM 850 Mid- Touch-Right <SIM 1>
DUT: 2G Feature phone; Type: M9_2G

Communication System: Generic GSM; Communication System Band: GSM 850; Duty Cycle: 1:8.3; Conv.F=2.13; Frequency: 836.6 MHz; Medium parameters used: f = 835 MHz; σ= 0.89 mho/m; εr = 41.39; ρ= 1000 kg/m³ ; Phantom section: Right Section

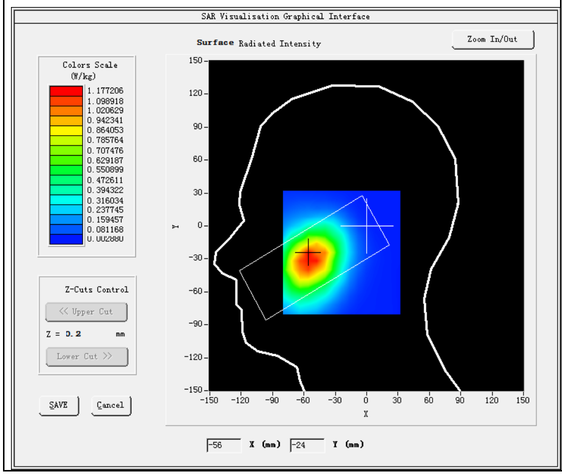
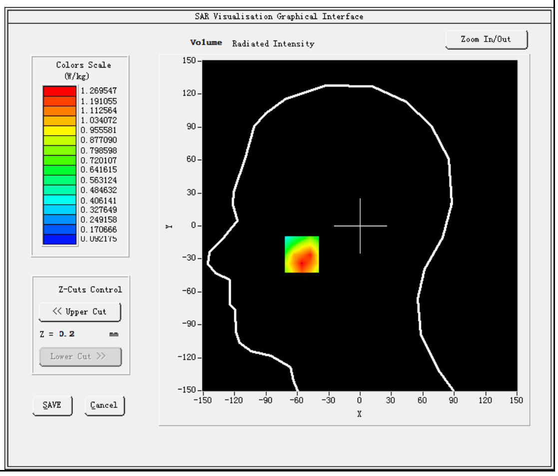
Ambient temperature (℃): 20.6, Liquid temperature (℃): 20.2

SATIMO Configuration:

- Probe: SSE2; Calibrated: Dec. 02, 2022; Serial No.: SN 45/22 EPGO391
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: SAM twin phantom
- Measurement SW: OpenSAR V4_02_32

Configuration/GSM 850 Mid-Touch-Right/Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/GSM 850 Mid-Touch-Right/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm;

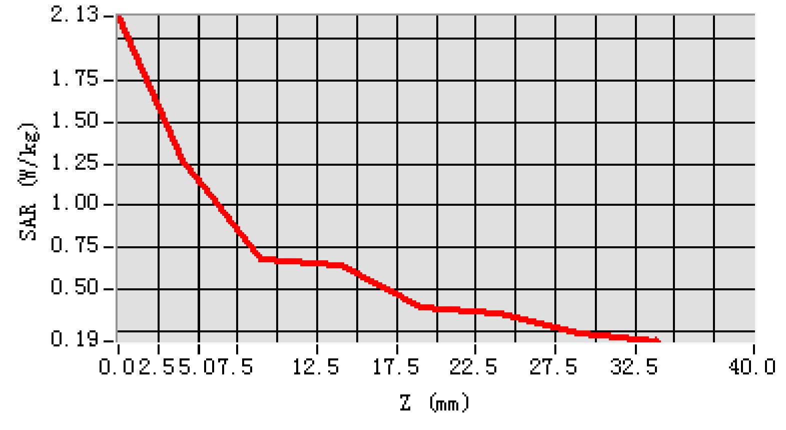
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Right head
Device Position	Cheek
Band	GSM 850
Channels	Middle
Signal	TDMA (Crest factor: 8.0)

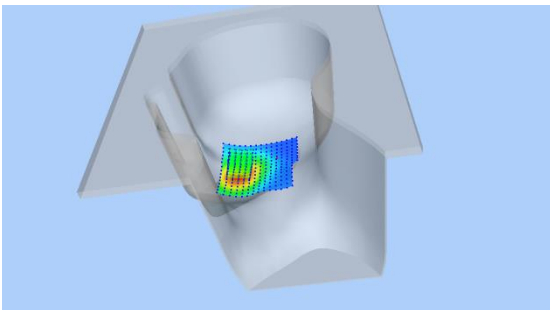
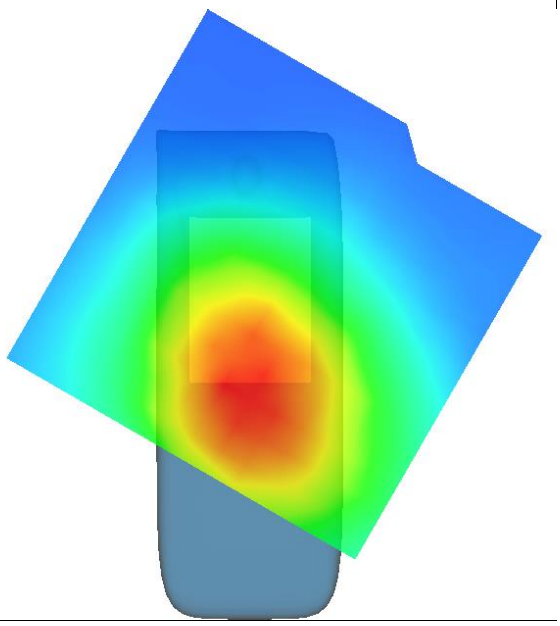
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-56.00, Y=-26.00
SAR Peak: 1.78 W/kg

SAR 10g (W/Kg)	0.801686
SAR 1g (W/Kg)	1.203070

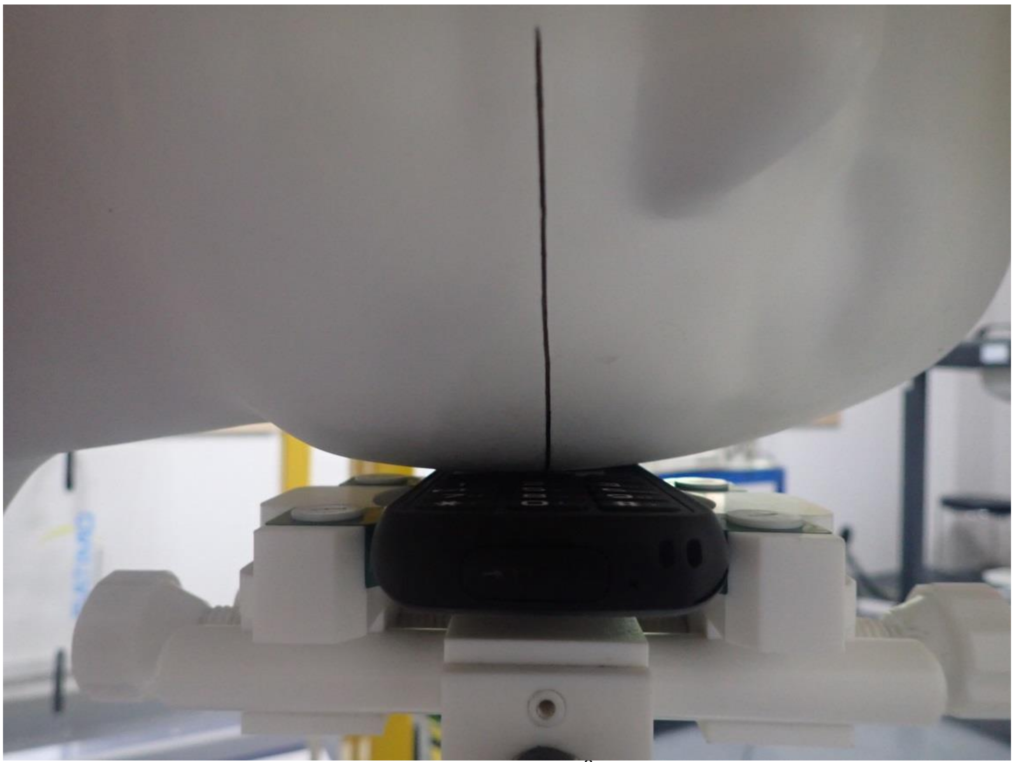
Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	2.1290	1.2695	0.6886	0.6493	0.3983	0.3636	0.2462



3D screen shot	Hot spot position
	

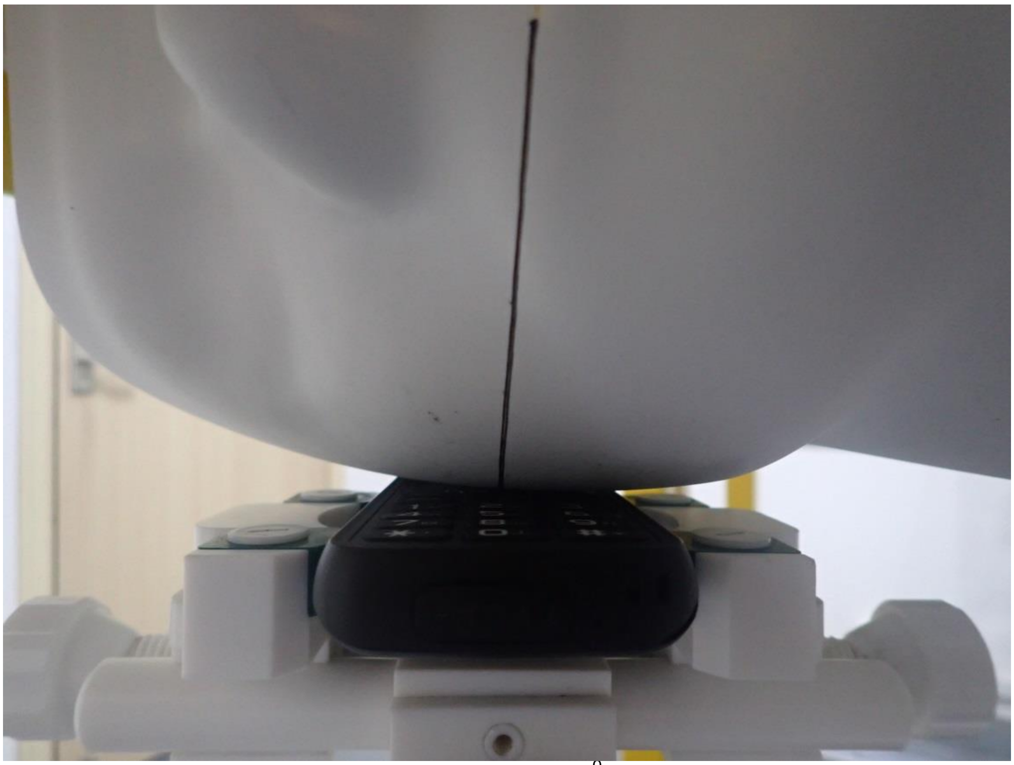
APPENDIX C. TEST SETUP PHOTOGRAPHS

LEFT- CHEEK TOUCH

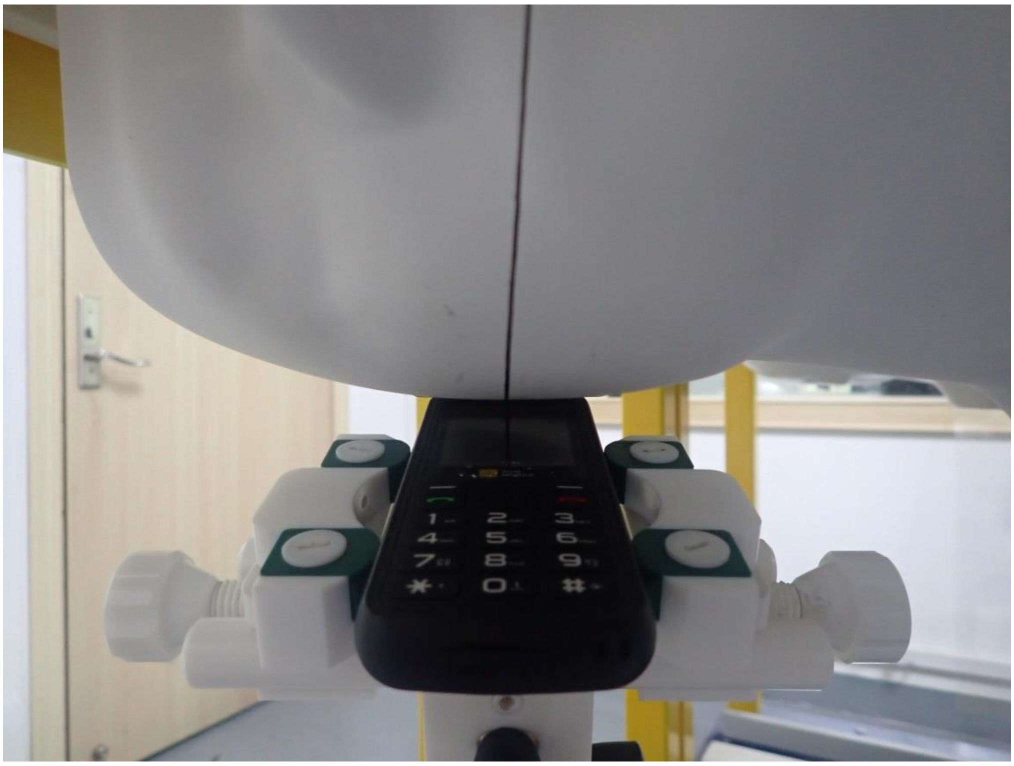


LEFT-TILT 15^{0}

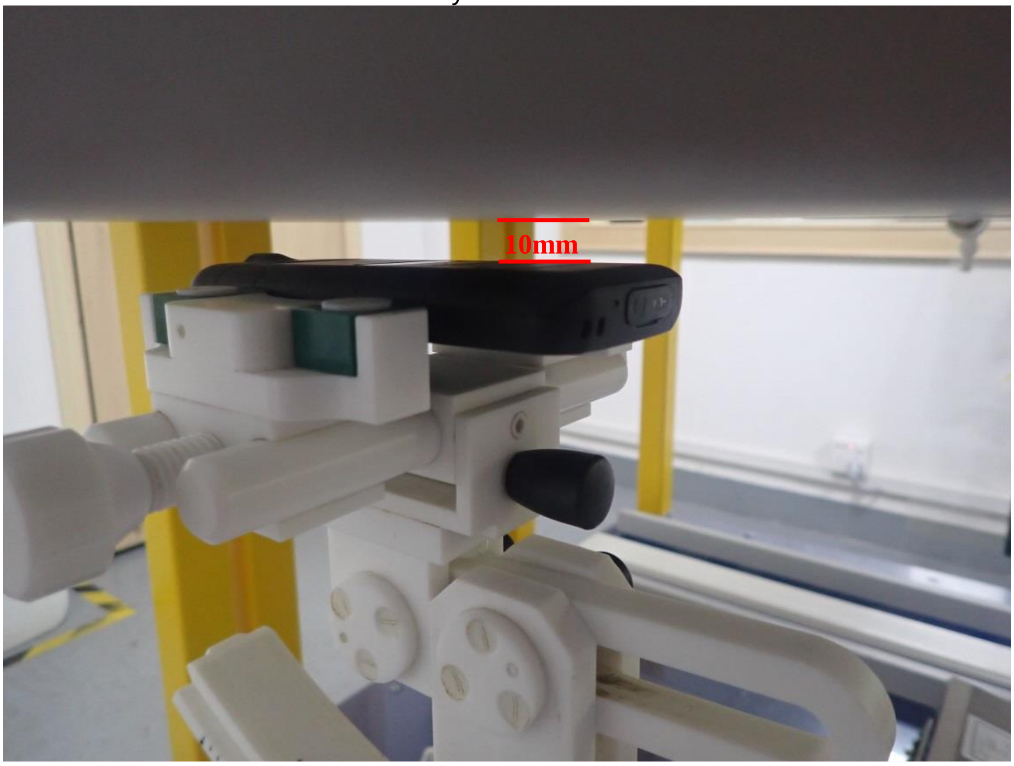
RIGHT- CHEEK TOUCH



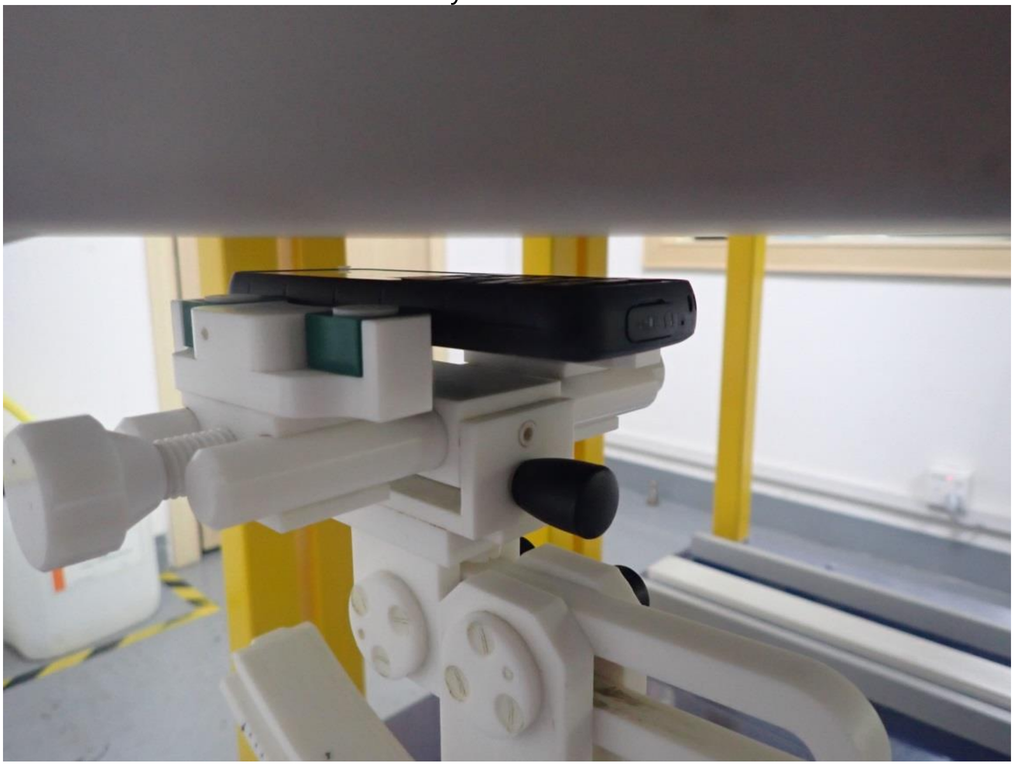
RIGHT-TILT 15^0



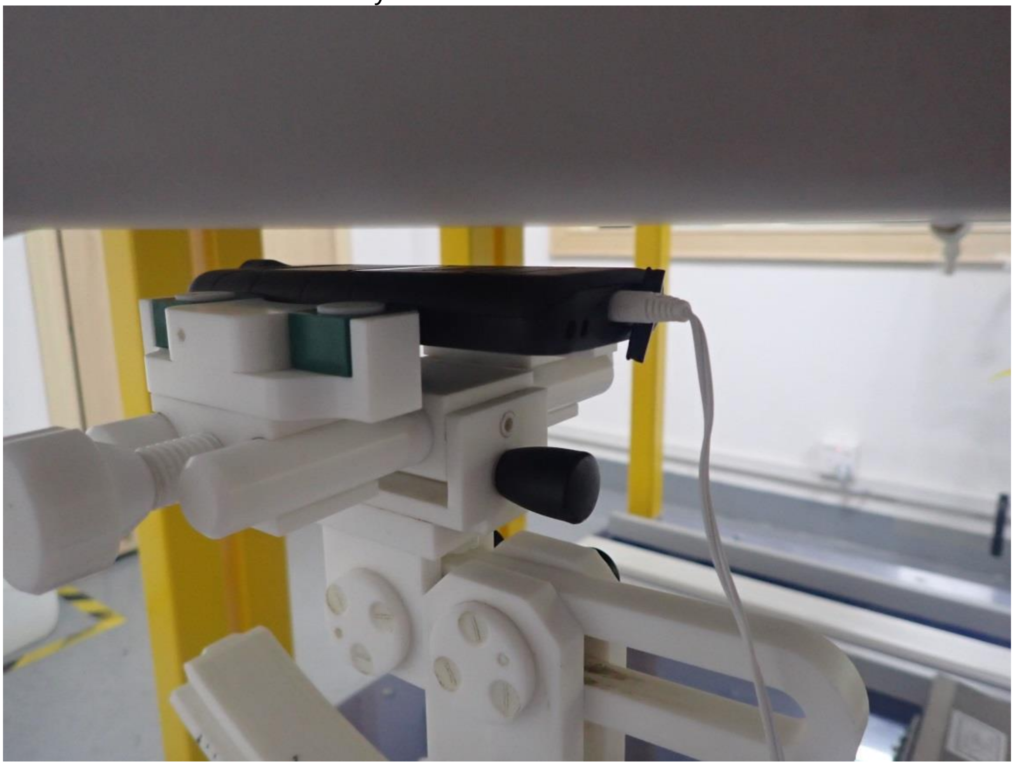
Body Back 10mm



Body Front 10mm



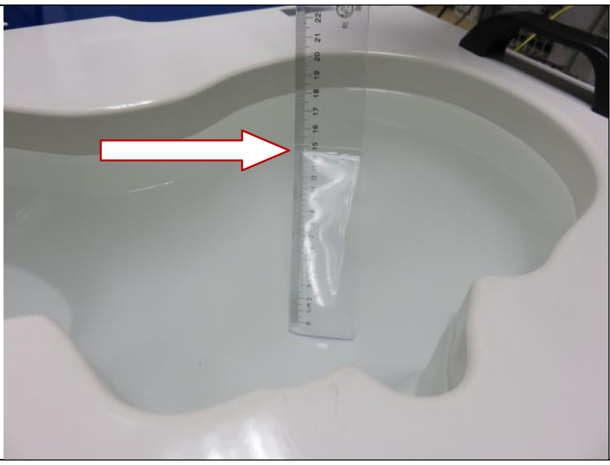
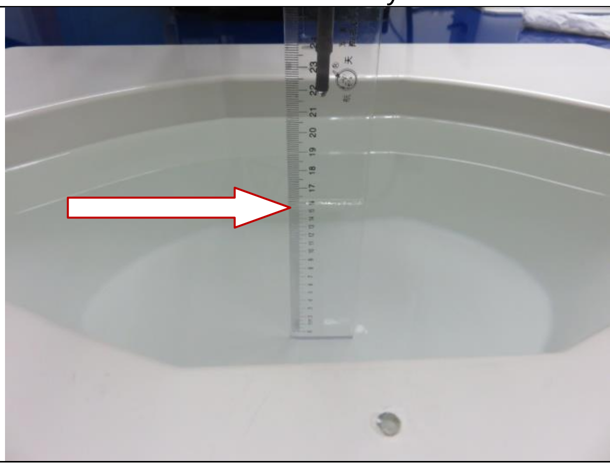
Body back with Headset 10mm



Position of the device under test in relation to the phantom

DEPTH OF THE LIQUID IN THE PHANTOM—ZOOM IN

Note：The position used in the measurement were according to IEEE 1528-2013

835MHz head	835MHz body
	
1900MHz head	1900MHz body
	

APPENDIX D. CALIBRATION DATA

Refer to Attached files.

----END OF REPORT----

Conditions of Issuance of Test Reports

1. All samples and goods are accepted by the Attestation of Global Compliance (Shenzhen) Co., Ltd (the "Company") solely for testing and reporting in accordance with the following terms and conditions. The company provides its services on the basis that such terms and conditions constitute express agreement between the company and any person, firm or company requesting its services (the "Clients").

2. Any report issued by Company as a result of this application for testing services (the "Report") shall be issued in confidence to the Clients and the Report will be strictly treated as such by the Company. It may not be reproduced either in its entirety or in part and it may not be used for advertising or other unauthorized purposes without the written consent of the Company. The Clients to whom the Report is issued may, however, show or send it, or a certified copy thereof prepared by the Company to its customer, supplier or other persons directly concerned. The Company will not, without the consent of the Clients, enter into any discussion or correspondence with any third party concerning the contents of the Report, unless required by the relevant governmental authorities, laws or court orders.

3.The Company shall not be called or be liable to be called to give evidence or testimony on the Report in a court of law without its prior written consent, unless required by the relevant governmental authorities, laws or court orders.

4. In the event of the improper use of the report as determined by the Company, the Company reserves the right to withdraw it, and to adopt any other additional remedies which may be appropriate.

5. Samples submitted for testing are accepted on the understanding that the Report issued cannot form the basis of, or be the instrument for, any legal action against the Company.

6. The Company will not be liable for or accept responsibility for any loss or damage however arising from the use of information contained in any of its Reports or in any communication whatsoever about its said tests or investigations.

7.Clients wishing to use the Report in court proceedings or arbitration shall inform the Company to that effect prior to submitting the sample for testing.

8. The Company is not responsible for recalling the electronic version of the original report when any revision is made to them. The Client assumes the responsibility to providing the revised version to any interested party who uses them.

9. Subject to the variable length of retention time for test data and report stored hereinto as otherwise specifically required by individual accreditation authorities, the Company will only keep the supporting test data and information of the test report for a period of six years. The data and information will be disposed of after the aforementioned retention period has elapsed. Under no circumstances shall we provide any data and information which has been disposed of after retention period. Under no circumstances shall we be liable for damage of any kind, including (but not limited to) compensatory damages, lost profits, lost data, or any form of special, incidental, indirect, consequential or punitive damages of any kind, whether based on breach of contract of warranty, tort (including negligence), product liability or otherwise, even if we are informed in advance of the possibility of such damages.