

SAR Test Report

Report No.: AGC05041160401FH01

FCC ID : AMWON5095

APPLICATION PURPOSE : Original Equipment

PRODUCT DESIGNATION : 462MHz FRS/GMRS Walkie-talkie

BRAND NAME : Uniden

MODEL NAME : GMR5095-2CKHS, GMR5088-2CKHS, GMR5098-2CKVP

CLIENT : On Real Electronics (Shenzhen) Ltd.

DATE OF ISSUE : Apr. 09, 2016

STANDARD(S) : IEEE Std. 1528:2013;
FCC 47CFR § 2.1093;
IEEE/ANSI C95.1:1992

REPORT VERSION : V1.0

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

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Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Apr. 09,2016	Valid	Original Report

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Test Report Certification

Applicant Name	On Real Electronics (Shenzhen) Ltd.
Applicant Address	3001 Gateway Drive Suite 130, Irving, TX 75063
Manufacturer Name	On Real Electronics (Shenzhen) Ltd.
Manufacturer Address	No 146, 2nd Industrial Area, Tangxiayong, Songgang, Baoan, District Shenzhen Guangdong, China
Product Designation	462MHz FRS/GMRS Walkie-talkie
Brand Name	Uniden
Model Name	GMR5095-2CKHS, GMR5088-2CKHS, GMR5098-2CKVP
Different Description	See Page 7, The test model is GMR5095-2CKHS
EUT Voltage	DC 3*1.2V & 3*1.5V by battery
Applicable Standard	IEEE Std. 1528:2013; FCC 47CFR § 2.1093; IEEE/ANSI C95.1:1992
Test Date	Apr. 05,2016 to Apr. 07,2016
Performed Location	Attestation of Global Compliance(Shenzhen) Co., Ltd.
	2 F, Building 2, No.1-No.4, Chaxi Sanwei Technical Industrial Park, Gushu Xixiang Street, Bao'an District, Shenzhen, China
Report Template	AGCRT- US - PTT /SAR (2016-03-01)

Thea Huang

Tested By

Thea Huang(Huang Qianqian) Apr. 09,2016

Angela Li

Checked By

Angela Li(Li Jiao) Apr. 09,2016

Solger Zhang

Authorized By

Solger Zhang(Zhang Hongyi)
Authorized Officer Apr. 09,2016

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TABLE OF CONTENTS

1. SUMMARY OF MAXIMUM SAR VALUE	5
2. GENERAL INFORMATION	6
2.1. EUT DESCRIPTION	6
3. SAR MEASUREMENT SYSTEM	8
3.1. THE SATIMO SYSTEM USED FOR PERFORMING COMPLIANCE TESTS CONSISTS OF FOLLOWING ITEMS	8
3.2. COMOSAR E-FIELD PROBE	9
3.3. ROBOT	9
3.4. VIDEO POSITIONING SYSTEM	10
3.5. DEVICE HOLDER	10
3.6. SAM TWIN PHANTOM	11
4. SAR MEASUREMENT PROCEDURE	12
4.1. SPECIFIC ABSORPTION RATE (SAR)	12
4.2. SAR MEASUREMENT PROCEDURE	13
5. TISSUE SIMULATING LIQUID	15
5.1. THE COMPOSITION OF THE TISSUE SIMULATING LIQUID	15
5.2. TISSUE DIELECTRIC PARAMETERS FOR HEAD AND BODY PHANTOMS	15
5.3. TISSUE CALIBRATION RESULT	16
6. SAR SYSTEM CHECK PROCEDURE	17
6.1. SAR SYSTEM CHECK PROCEDURES	17
6.2. SAR SYSTEM CHECK	18
6.3. SAR SYSTEM VALIDATION	19
7. EUT TEST POSITION	20
7.1. BODY WORN POSITION	20
8. SAR EXPOSURE LIMITS	21
9. TEST EQUIPMENT LIST	22
10. MEASUREMENT UNCERTAINTY	23
11. CONDUCTED POWER MEASUREMENT	27
12. TEST RESULTS	28
12.1. SAR TEST RESULTS SUMMARY	28
APPENDIX A. SAR SYSTEM CHECK DATA	32
APPENDIX B. SAR MEASUREMENT DATA	36
APPENDIX C. TEST SETUP PHOTOGRAPHS & EUT PHOTOGRAPHS	72
APPENDIX D. PROBE CALIBRATION DATA	81
APPENDIX E. DIPOLE CALIBRATION DATA	90

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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:

Highest tested and scaled SAR Summary (with 50% duty cycle) :

Operate Band	Exposure Position	Highest Reported 1g-SAR(W/Kg)
FRS	Face Up	0.414
	body-worn accessory	0.650
GMRS	Face Up	0.563
	body-worn accessory	0.890

This device is compliance with Specific Absorption Rate (SAR) for Occupational / Controlled Exposure Environment limits (1.6W/Kg) specified in 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1, and had been tested in accordance with measurement methods and procedures specified in IEEE 1528-2013 and the following specific FCC Test Procedures:

KDB 447498 D01 General RF Exposure Guidance v06

KDB 865664 D01 SAR Measurement 100MHz to 6GHz v01r04

KDB 643646 D01 SAR Test for PTT Radios v01r03

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2. GENERAL INFORMATION

2.1. EUT Description

General Information			
Product Name	462MHz FRS/GMRS Walkie-talkie		
Test Model	GMR5095-2CKHS		
Hardware Version	ver1.4		
Software Version	V043		
Exposure Category:	Population/Uncontrolled Exposure		
Device Category	Portable Device		
RF Function information	Operate Band	Operate Frequency (MHz)	RF Conducted Power(Peak)
	FRS	467.5625 - 467.7125	26.884dBm
	GMRS	462.5500 - 462.7250	32.948 dBm
Antenna Type	Fixed Antenna		
Antenna Gain	2.17dBi		
Body-Worn Accessories:	Belt Clip with headset		
Face-Head Accessories:	None		
Battery Type (s) Tested:	Battery One : Fully charged with Ni-MH Battery; DC 3*1.2V V, 650mAh		
	Battery Two : 3pcs AAA Alkaline batteries; DC 3*1.5V		

Product	Type
	☒ Production unit ☐ Identical Prototype

Note: The sample used for testing is end product.

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Uniden America Corporation
3001 Gateway Dr.
Suite 130
Irving, TX 75063
817-858-3300
Fax: 817-858-3333

Uniden

January 14, 2016

To whom it may concern,

Multiple Models Confirmation Letter

I, the undersigned, hereby confirm that the family models are listed in the following table.

These models are **identical** as follows:

- ☒ Electrical designs, including software & firmware
☒ PCB layout ☒ Construction design/Physical design/Enclosure
☐ (Others, please specify) _____

The only **differences** between these models are the follows for marketing purpose:

- ☒ Color ☒ Cosmetic details
☐ Trade name ☒ Model Number
☐ (Others, please specify) _____

- ☐ Suffix ("2CKVP, 2CKHS") represents
☒ Color code ☒ Packing configuration
☐ (Others, please specify) _____

,but models with suffix ("2CKVP, 2CKHS") are identical in:

- ☒ Electrical designs, including software & firmware
☒ PCB layout
☒ Construction design/Physical design/Enclosure
☐ (Others, please specify) _____

Item No.	New model	Model Number	Trade Name	Remarks
1	☒ YES	GMR5088-2CKHS	Uniden	
2	☒ YES	GMR5098-2CKVP	Uniden	
3	☒ YES	GMR5095-2CKHS	Uniden	
4	☐ YES			
5	☐ YES			

The sample being submitted to Intertek Testing Services for conformity assessment is GMR5095-2CKHS of the above list.

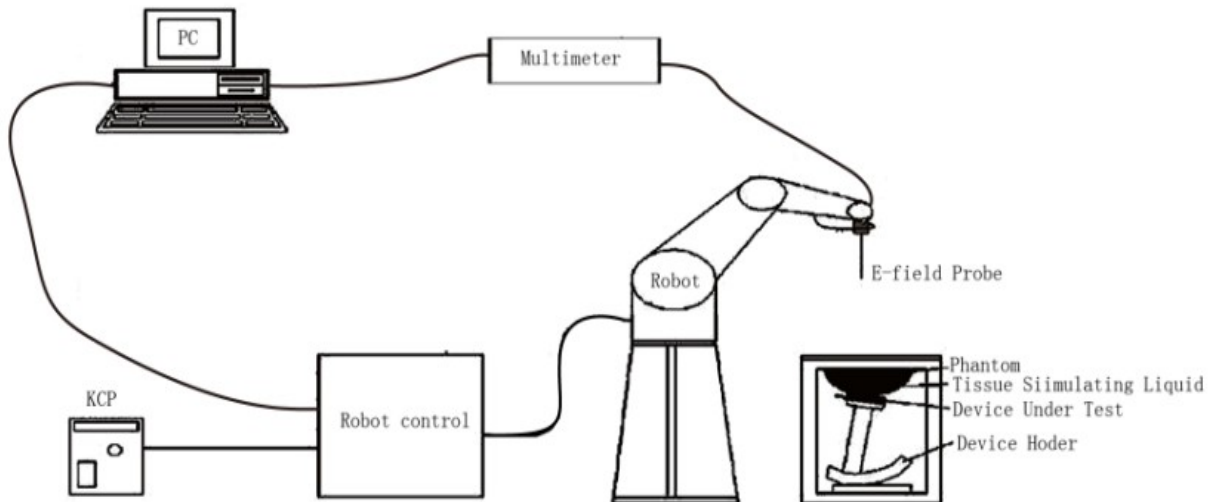
Regards,

Al Baum
Al Baum, Director, Engineering and Quality

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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:

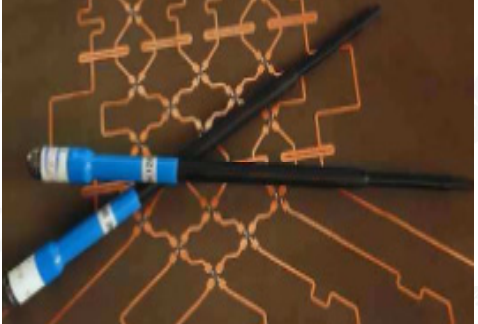
- The PC. It controls most of the bench devices and stores measurement data. A computer running WinXP and the Opensar software.
- The E-Field probe. The probe is a 3-axis system made of 3 distinct dipoles. Each dipole returns a voltage in function of the ambient electric field.
- The Keithley multimeter 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.

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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, EN62209, IEC 62209, etc.) Under ISO17025. The calibration data are in Appendix D.

Isotropic E-Field Probe Specification

Model	SSE5	
Manufacture	MVG	
Identification No.	SN 22/12 EP159	
Frequency	0.45GHz-3.7GHz Linearity: $\pm 0.05\text{dB}$ (450MHz-3.7GHz)	
Dynamic Range	0.01W/Kg-100W/Kg Linearity: $\pm 0.05\text{dB}$	
Dimensions	Overall length: 330mm Length of individual dipoles: 4.5mm Maximum external diameter: 8mm Probe Tip external diameter: 5mm Distance between dipoles/ probe extremity: 2.7mm	
Application	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields). Only probe which enables compliance testing for frequencies up to 3 GHz with precision of better 30%.	

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:

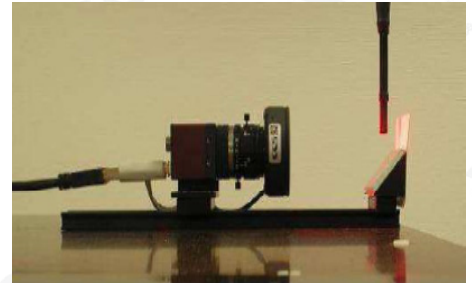
- ☐ High precision (repeatability 0.02 mm)
- ☐ High reliability (industrial design)
- ☐ Jerk-free straight movements
- ☐ Low ELF interference (the closed metallic construction shields against motor control fields)
- ☐ 6-axis controller



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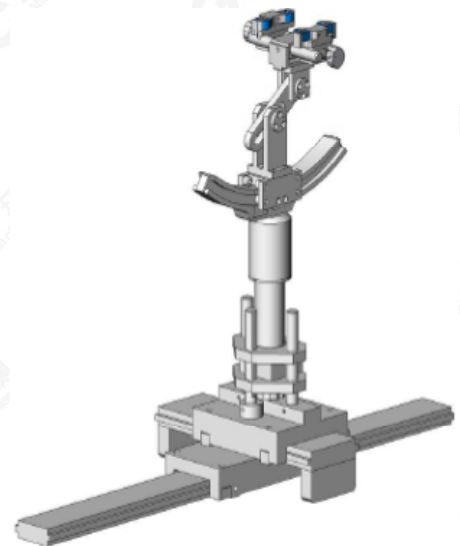
3.4. Video Positioning System

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 $\epsilon_r = 3$ and loss tangent $\delta = 0.02$. 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.

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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:

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

SAR is expressed in units of Watts per kilogram (W/Kg)

SAR can be obtained using either of the following equations:

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

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

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;
$\left. \frac{dT}{dt} \right _{t=0}$	is the initial time derivative of temperature in the tissue in kelvins per second

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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 and IEC62209 standards, 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

	$\leq 3 \text{ GHz}$	$> 3 \text{ GHz}$
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	$5 \pm 1 \text{ mm}$	$\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5 \text{ mm}$
Maximum probe angle from probe axis to phantom surface normal at the measurement location	$30^\circ \pm 1^\circ$	$20^\circ \pm 1^\circ$
Maximum area scan spatial resolution: $\Delta x_{\text{Area}}, \Delta y_{\text{Area}}$	$\leq 2 \text{ GHz: } \leq 15 \text{ mm}$ $2 - 3 \text{ GHz: } \leq 12 \text{ mm}$	$3 - 4 \text{ GHz: } \leq 12 \text{ mm}$ $4 - 6 \text{ GHz: } \leq 10 \text{ mm}$
	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 $\leq$ 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.

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Zoom Scan Parameters extracted from KDB865664 D01 SAR Measurement 100MHz to 6GHz

Maximum zoom scan spatial resolution: Δx_{Zoom} , Δy_{Zoom}			$\leq 2 \text{ GHz}: \leq 8 \text{ mm}$ $2 - 3 \text{ GHz}: \leq 5 \text{ mm}^*$	$3 - 4 \text{ GHz}: \leq 5 \text{ mm}^*$ $4 - 6 \text{ GHz}: \leq 4 \text{ mm}^*$
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		$\leq 5 \text{ mm}$	$3 - 4 \text{ GHz}: \leq 4 \text{ mm}$ $4 - 5 \text{ GHz}: \leq 3 \text{ mm}$ $5 - 6 \text{ GHz}: \leq 2 \text{ mm}$
	graded grid	$\Delta z_{Zoom}(1)$: between 1 st two points closest to phantom surface	$\leq 4 \text{ mm}$	$3 - 4 \text{ GHz}: \leq 3 \text{ mm}$ $4 - 5 \text{ GHz}: \leq 2.5 \text{ mm}$ $5 - 6 \text{ GHz}: \leq 2 \text{ mm}$
		$\Delta z_{Zoom}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z		$\geq 30 \text{ mm}$	$3 - 4 \text{ GHz}: \geq 28 \text{ mm}$ $4 - 5 \text{ GHz}: \geq 25 \text{ mm}$ $5 - 6 \text{ GHz}: \geq 22 \text{ mm}$
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 <u>reported</u> SAR from the <u>area scan based 1-g SAR estimation</u> procedures of KDB 447498 is $\leq 1.4 \text{ W/kg}$, $\leq 8 \text{ mm}$, $\leq 7 \text{ mm}$ and $\leq 5 \text{ mm}$ 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.

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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 5% are listed in 5.2

5.1. The composition of the tissue simulating liquid

Ingredient (% Weight)	450MHz Head (100%)	450MHz Body (100%)
Water	35%	50%
Salt (NaCl)	3%	2%
1-2 propanediol	62%	48%

5.2 Tissue Dielectric Parameters for Head and Body Phantoms

The head tissue dielectric parameters recommended by the IEEE 1528 have been incorporated in the following table. These head parameters are derived from planar layer models simulating the highest expected SAR for the dielectric properties and tissue thickness variations in a human head. Other head and body tissue parameters that have not been specified in IEEE 1528 are derived from the tissue dielectric parameters computed from the 4-Cole-Cole equations described in Reference [12] and extrapolated according to the head parameters specified in IEEE 1528.

Target Frequency (MHz)	head		body	
	ϵ_r	σ (S/m)	ϵ_r	σ (S/m)
150	52.3	0.76	61.9	0.80
300	45.3	0.87	58.2	0.92
450	43.5	0.87	56.7	0.94
835	41.5	0.90	55.2	0.97
900	41.5	0.97	55.0	1.05
915	41.5	0.98	55.0	1.06
1450	40.5	1.20	54.0	1.30
1610	40.3	1.29	53.8	1.40
1800 – 2000	40.0	1.40	53.3	1.52
2450	39.2	1.80	52.7	1.95
3000	38.5	2.40	51.6	2.73

(ϵ_r = relative permittivity, σ = conductivity and $\rho = 1000 \text{ kg/m}^3$)

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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 450MHz				
Fr. (MHz)	Dielectric Parameters (±5%)		Tissue Temp [°C]	Test time
	Head			
	εr43.50(41.325 - 45.675)	δ[s/m]0.87(0.8265 - 0.9135)		
450	43.66	0.85	22.1	Apr. 05,2016
463	43.09	0.88		
468	42.58	0.89		
Fr. (MHz)	Dielectric Parameters (±5%)		Tissue Temp [°C]	Test time
	Body			
	εr56.7(53.865 - 59.535)	δ[s/m] 0.94(0.893- 0.987)		
450	57.73	0.94	22.3	Apr. 07,2016
463	57.12	0.94		
468	56.83	0.96		

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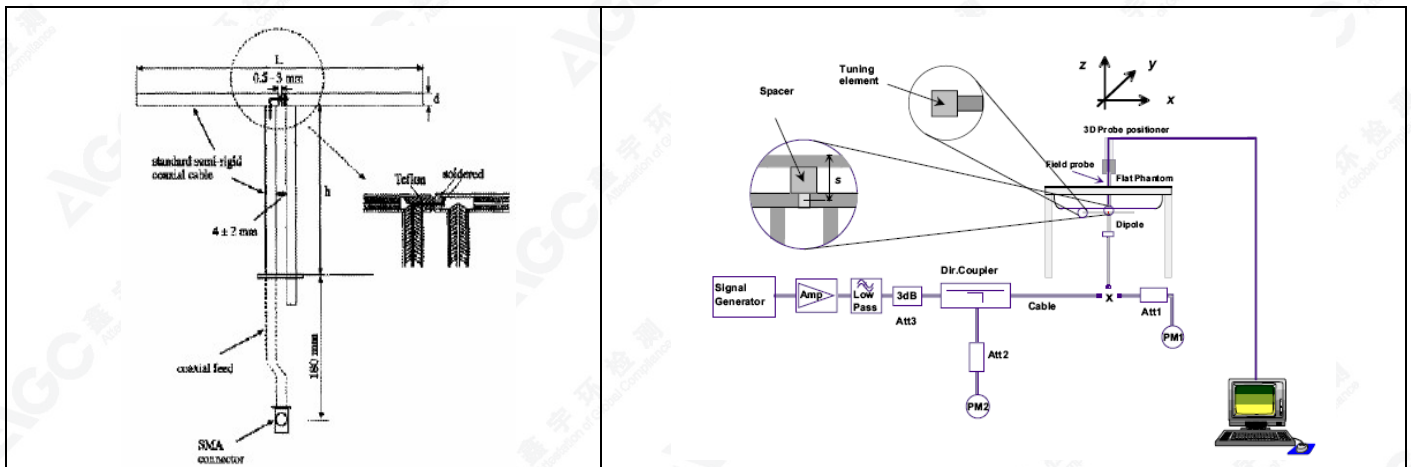
6. SAR SYSTEM CHECK PROCEDURE

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.

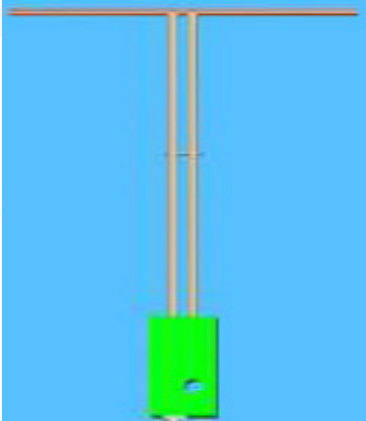
The system check verifies that the system operates within its specifications. It's performed daily or before every SAR measurement. The system check uses normal SAR measurement in the flat section of the phantom with a matched dipole at a specified distance. The system check setup is shown as below.



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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	R/L (mm)	R/h (mm)	d (mm)
450MHz	290	166.7	6.35

6.2.2. System check Result

System Performance Check at 450MHz										
Validation Kit: SN 46/11DIP 0G450-184										
Frequency [MHz]	Target Value(W/Kg)		Reference Result (± 10%)		Tested SAR Value(W/Kg) Input Power=21dBm		Normalized to 1W(W/Kg)		Tissue Temp. [°C]	Test time
	1g	10g	1g	10g	1g	10g	1g	10g		
450 head	4.91	3.13	4.419-5.401	2.817-3.443	0.590	0.401	4.684	3.183	22.1	Apr. 05,2016
450 body	5.07	3.25	4.563-5.577	2.925-3.575	0.600	0.407	4.769	3.235	22.3	Apr. 07,2016

Note:

(1) We use a CW signal of 21dBm for system check, and then all SAR value are normalized to 1W forward power. The result must be within ±10% of target value.

(2) Tested normalized SAR (W/kg) = Tested SAR (W/kg) × [1000/ 10^{0.9}]

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6.3. SAR System Validation

The SAR measurement system was validated according to procedures in KDB 865664 D01.
 SAR probe and tissue dielectric parameters are as shown below.

Test Data	Probe S/N	Tested Freq. (MHz)	Tissue Type	Cond.	Perm	CW validation			Mod. validation		
						Sensitivity	Probe Linearity	Probe Isotropy	Mod. Type	Duty Factor	Peak to average power ratio
12/18/2015	SN 22/12 EP159	450	head	0.844	43.151	PASS	PASS	PASS	FM	PASS	N/A
12/18/2015	SN 22/12 EP159	450	body	0.901	55.125	PASS	PASS	PASS	FM	PASS	N/A

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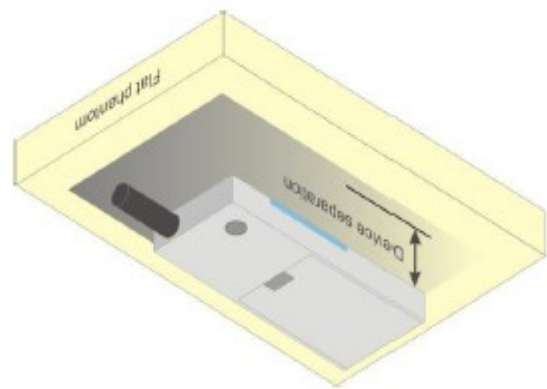
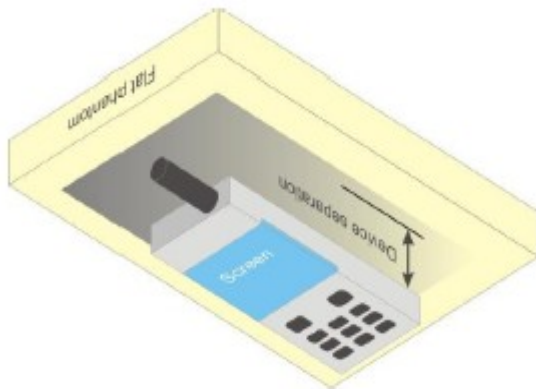


7. EUT TEST POSITION

This EUT was tested in **Front Face and Body Back**.

7.1. 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 **25mm** while used in front of face, **10mm** while used in body back with headset, **0mm** while used in body back touch with Belt Clip & Headset.



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8. SAR EXPOSURE LIMITS

SAR assessments have been made in line with the requirements of IEEE-1528, and comply with ANSI/IEEE C95.1-1992 "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 Environment

Type Exposure Limits	general population/uncontrolled exposure limits (W/Kg)
Spatial Average SAR (whole body)	1.6

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9. TEST EQUIPMENT LIST

Equipment description	Manufacturer/ Model	Identification No.	Current calibration date	Next calibration date
SAR Probe	MVG	SN 22/12 EP159	12/09/2015	12/08/2016
TISSUE Probe	SATIMO	SN 45/11 OCPG45	12/02/2015	12/01/2016
Phantom	SATIMO	SN_4511_SAM90	Validated. No cal required.	Validated. No cal required.
Liquid	SATIMO	-	Validated. No cal required.	Validated. No cal required.
Multimeter	Keithley 2000	1188656	03/10/2016	03/09/2017
Dipole	SATIMO SID450	SN46/11 DIP 0G450-184	11/14/2013	11/13/2016
Signal Generator	Agilent-E4438C	US41461365	02/29/2016	02/28/2017
Spectrum Analyzer E4440	Agilent	US41421290	07/23/2015	07/22/2016
Network Analyzer	Rhode & Schwarz ZVL6	SN100132	03/01/2016	02/28/2017
Attenuator	Warison /WATT-6SR1211	N/A	N/A	N/A
Attenuator	Mini-circuits / VAT-10+	N/A	N/A	N/A
Amplifier	EM30180	SN060552	03/04/2016	03/03/2017
Directional Couple	Werlatone/ C5571-10	SN99463	07/29/2015	07/28/2016
Directional Couple	Werlatone/ C6026-10	SN99482	07/29/2015	07/28/2016
Power Sensor	NRP-Z21	1137.6000.02	10/20/2015	10/19/2016
Power Sensor	NRP-Z23	US38261498	03/01/2016	02/28/2017
Power Viewer	R&S	V2.3.1.0	N/A	N/A

Note: Per KDB 865664 Dipole SAR Validation Verification, 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.

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10. MEASUREMENT UNCERTAINTY

SATIMO Uncertainty									
Measurement uncertainty for 450 MHz to 3.7 GHz 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	5.831	N	1	1	1	5.83	5.83	∞
Axial Isotropy	E.2.2	2.5	R	$\sqrt{3}$	1	1	1.44	1.44	∞
Hemispherical Isotropy	E.2.2	4.0	R	$\sqrt{3}$	1	1	2.31	2.31	∞
Boundary effect	E.2.3	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Linearity	E.2.4	1.13	R	$\sqrt{3}$	1	1	0.65	0.65	∞
System detection limits	E.2.4	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Modulation response	E.2.5	3.5	R	$\sqrt{3}$	1	1	2.02	2.02	∞
Readout Electronics	E.2.6	0.02	N	1	1	1	0.02	0.02	∞
Response Time	E.2.7	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	∞
Integration Time	E.2.8	2.0	R	$\sqrt{3}$	1	1	1.15	1.15	∞
RF ambient Conditions-noise	E.6.1	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	∞
RF ambient Conditions-reflections	E.6.1	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	∞
Probe positioner Mechanical Tolerance	E.6.2	2.0	R	$\sqrt{3}$	1	1	1.15	1.15	∞
Probe positioning with respect to Phantom Shell	E.6.3	0.05	R	$\sqrt{3}$	1	1	0.03	0.03	∞
Extrapolation, interpolation and integration Algorithms for Max. SAR Evaluation	E.5.2	5.0	R	$\sqrt{3}$	1	1	2.89	2.89	∞
Test sample Related									
Test sample positioning	E.4.2.1	0.03	N	1	1	1	0.03	0.03	N-1
Device Holder Uncertainty	E.4.1.1	5.00	N	1	1	1	5.00	5.00	∞
Output power Variation - SAR drift measurement	E.2.9	0.65	R	$\sqrt{3}$	1	1	0.38	0.38	∞
SAR scaling	E.6.5	5.00	R	$\sqrt{3}$	1	1	2.89	2.89	∞
Phantom and Tissue Parameters									
Phantom Uncertainty (Shape and thickness tolerances)	E.3.1	0.05	R	$\sqrt{3}$	1	1	0.03	0.03	∞
Uncertainty in SAR correction for deviations in permittivity and conductivity	E.3.2	1.9	N	1	1	0.084	1.9	0.16	∞
Liquid conductivity measurement	E.3.3	5.00	N	1	0.78	0.71	3.90	3.55	∞
Liquid permittivity measurement	E.3.3	5.00	N	1	0.23	0.26	1.15	1.30	∞
Liquid conductivity temperature uncertainty	E.3.4	5.00	R	$\sqrt{3}$	0.78	0.71	2.25	2.05	∞
Liquid permittivity temperature uncertainty	E.3.4	5.00	R	$\sqrt{3}$	0.23	0.26	0.66	0.75	M
Combined Standard Uncertainty			RSS				10.776	10.080	∞
Expanded Uncertainty (95% Confidence interval)			k				21.551	20.16	

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SATIMO Uncertainty									
System validation uncertainty for 450 MHz to 3.7 GHz 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	5.831	N	1	1	1	5.83	5.83	∞
Axial Isotropy	E.2.2	2.5	R	$\sqrt{3}$	1	1	1.44	1.44	∞
Hemispherical Isotropy	E.2.2	4.0	R	$\sqrt{3}$	1	1	2.31	2.31	∞
Boundary effect	E.2.3	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Linearity	E.2.4	1.13	R	$\sqrt{3}$	1	1	0.65	0.65	∞
System detection limits	E.2.4	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Modulation response	E.2.5	3.5	R	$\sqrt{3}$	1	1	2.02	2.02	∞
Readout Electronics	E.2.6	0.02	N	1	1	1	0.02	0.02	∞
Response Time	E.2.7	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	∞
Integration Time	E.2.8	2.0	R	$\sqrt{3}$	1	1	1.15	1.15	∞
RF ambient Conditions-noise	E.6.1	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	∞
RF ambient Conditions-reflections	E.6.1	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	∞
Probe positioner Mechanical Tolerance	E.6.2	2.0	R	$\sqrt{3}$	1	1	1.15	1.15	∞
Probe positioning with respect to Phantom Shell	E.6.3	0.05	R	$\sqrt{3}$	1	1	0.03	0.03	∞
Extrapolation, interpolation and integration Algorithms for Max. SAR Evaluation	E.5.2	5.0	R	$\sqrt{3}$	1	1	2.89	2.89	∞
System validation source (dipole)									
Deviation of experimental dipole from numerical dipole	E6.4	5	N	1	1	1	5	5	N-1
Input power and SAR drift measurement	8,6.6.4	5.0	N	1	1	1	5.0	5.0	∞
Dipole axis to liquid distance	8,E.6.6	1	R	$\sqrt{3}$	1	1	0.577	0.577	∞
Phantom and Tissue Parameters									
Phantom Uncertainty (Shape and thickness tolerances)	E.3.1	0.05	R	$\sqrt{3}$	1	1	0.03	0.03	∞
Uncertainty in SAR correction for deviations in permittivity and conductivity	E.3.2	1.9	N	1	1	0.084	1.9	0.16	∞
Liquid conductivity measurement	E.3.3	5.00	N	1	0.78	0.71	3.90	3.55	∞
Liquid permittivity measurement	E.3.3	5.00	N	1	0.23	0.26	1.15	1.30	∞
Liquid conductivity temperature uncertainty	E.3.4	5.00	R	$\sqrt{3}$	0.78	0.71	2.25	2.05	∞
Liquid permittivity temperature uncertainty	E.3.4	5.00	R	$\sqrt{3}$	0.23	0.26	0.66	0.75	M
Combined Standard Uncertainty			RSS				11.531	11.531	∞
Expanded Uncertainty (95% Confidence interval)			k				23.063	22.410	

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SATIMO Uncertainty									
System check uncertainty for 450 MHz to 3.7 GHz 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	5.831	N	1	1	1	5.83	5.83	∞
Axial Isotropy	E.2.2	2.5	R	$\sqrt{3}$	1	1	1.44	1.44	∞
Hemispherical Isotropy	E.2.2	4.0	R	$\sqrt{3}$	1	1	2.31	2.31	∞
Boundary effect	E.2.3	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Linearity	E.2.4	1.13	R	$\sqrt{3}$	1	1	0.65	0.65	∞
System detection limits	E.2.4	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Modulation response	E.2.5	3.5	R	$\sqrt{3}$	1	1	2.02	2.02	∞
Readout Electronics	E.2.6	0.02	N	1	1	1	0.02	0.02	∞
Response Time	E.2.7	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	∞
Integration Time	E.2.8	2.0	R	$\sqrt{3}$	1	1	1.15	1.15	∞
RF ambient Conditions-noise	E.6.1	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	∞
RF ambient Conditions-reflections	E.6.1	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	∞
Probe positioner Mechanical Tolerance	E.6.2	2.0	R	$\sqrt{3}$	1	1	1.15	1.15	∞
Probe positioning with respect to Phantom Shell	E.6.3	0.05	R	$\sqrt{3}$	1	1	0.03	0.03	∞
Extrapolation, interpolation and integration Algorithms for Max. SAR Evaluation	E.5.2	5.0	R	$\sqrt{3}$	1	1	2.89	2.89	∞
System check source (dipole)									
Deviation between experimental dipoles	E.6.4	2.0	N	1	1	1	2.0	2.0	N-1
Input power and SAR drift measurement	8,6.6.4	5.0	N	1	1	1	5.0	5.0	∞
Dipole axis to liquid distance	8,E.6.6	1.0	R	$\sqrt{3}$	1	1	0.577	0.577	∞
Phantom and Tissue Parameters									
Phantom Uncertainty (Shape and thickness tolerances)	E.3.1	0.05	R	$\sqrt{3}$	1	1	0.03	0.03	∞
Uncertainty in SAR correction for deviations in permittivity and conductivity	E.3.2	1.9	N	1	1	0.084	1.9	0.16	∞
Liquid conductivity measurement	E.3.3	5.00	N	1	0.78	0.71	3.90	3.55	∞
Liquid permittivity measurement	E.3.3	5.00	N	1	0.23	0.26	1.15	1.30	∞
Liquid conductivity – temperature uncertainty	E.3.4	5.00	R	$\sqrt{3}$	0.78	0.71	2.25	2.05	∞
Liquid permittivity – temperature uncertainty	E.3.4	5.00	R	$\sqrt{3}$	0.23	0.26	0.66	0.75	M
Combined Standard Uncertainty			RSS				10.582	10.225	∞
Expanded Uncertainty (95% Confidence interval)			k				21.163	20.450	

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SATIMO Uncertainty									
System uncertainty for 450 MHz to 3.7 GHz 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	5.831	N	1	1	1	5.83	5.83	∞
Axial Isotropy	E.2.2	2.5	R	$\sqrt{3}$	1	1	1.44	1.44	∞
Hemispherical Isotropy	E.2.2	4.0	R	$\sqrt{3}$	1	1	2.31	2.31	∞
Boundary Effects	E.2.3	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Linearity	E.2.4	1.13	R	$\sqrt{3}$	1	1	0.65	0.65	∞
System detection limits	E.2.5	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Readout Electronics	E.2.6	0.02	N	1	1	1	0.02	0.02	∞
Response Time	E.2.7	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	∞
Integration Time	E.2.8	2.0	R	$\sqrt{3}$	1	1	1.15	1.15	∞
RF ambient Conditions	E.6.1	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	∞
Probe positioner Mechanical Tolerance	E.6.2	2.0	R	$\sqrt{3}$	1	1	1.15	1.15	∞
Probe positioning with respect to Phantom Shell	E.6.3	0.05	R	$\sqrt{3}$	1	1	0.03	0.03	∞
Extrapolation, interpolation and integration Algorithms for Max. SAR Evaluation	E.5.2	5.0	R	$\sqrt{3}$	1	1	2.89	2.89	∞
Dipole									
Dipole axis to liquid Distance	8,E.4.2	1.00	N	$\sqrt{3}$	1	1	0.58	0.58	N-1
Input power and SAR drift measurement	8,6.6.2	0.65	R	$\sqrt{3}$	1	1	0.38	0.38	∞
Phantom and Tissue Parameters									
Phantom Uncertainty (Shape and thickness tolerances)	E.3.1	0.05	R	$\sqrt{3}$	1	1	0.03	0.03	∞
Liquid conductivity - deviation from target value	E.3.2	5.00	R	$\sqrt{3}$	0.64	0.43	1.85	1.24	∞
Liquid conductivity - measurement uncertainty	E.3.3	5.00	N	1	0.64	0.43	3.20	2.15	∞
Liquid permittivity - deviation from target value	E.3.2	0.03	R	$\sqrt{3}$	0.6	0.49	0.01	0.01	∞
Liquid permittivity - measurement uncertainty	E.3.3	10.00	N	1	0.6	0.49	6.00	4.90	M
Combined Standard Uncertainty			RSS				8.99	8.31	
Expanded Uncertainty (95% Confidence interval)			k				17.97	16.62	

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11. CONDUCTED POWER MEASUREMENT

Operate Band	Channel	Freq.(MHz)	Measured Conducted Output power
			Max. Peak Power (dBm)
FRS	8	467.5625	26.767
	11	467.6375	26.794
	14	467.7125	26.884
GMRS	15	462.5500	32.948
	19	462.6500	32.570
	22	462.7250	32.761

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12. TEST RESULTS

12.1. SAR Test Results Summary

12.1.1. Test position and configuration

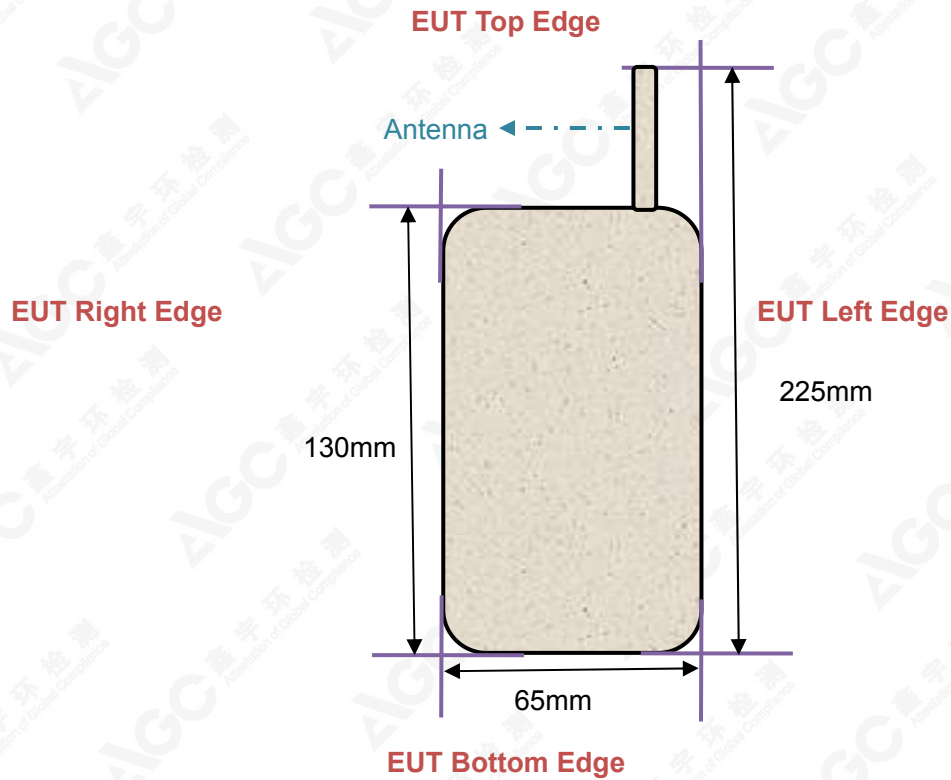
Head SAR was performed with the device configured in the positions according to KDB 643646 and Body SAR was performed with the device configured with all accessories close to the Flat Phantom.

12.1.2. Operation Mode

- Set the EUT to maximum output power level and transmit on lower, middle and top channel with 100% duty cycle individually during SAR measurement.
- Per KDB 865664 D01 v01r04, for each frequency band, if the measured SAR is $\geq 0.8\text{W/Kg}$, 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 $\geq 0.8\text{W/Kg}$, 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 $\geq 1.45\text{ W/Kg}$.
 - (3) Perform a third repeated measurement only if the original, first and second repeated measurement is $\geq 1.5\text{ W/Kg}$ and ratio of largest to smallest SAR for the original, first and second measurement is ≥ 1.20 .
- The EUT only contains the Testing antenna, 3pcs AAA Alkaline batteries/ Ni-MH Battery and default body-worn accessory (Belt Clip with headset) specified by customer.

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12.1.3. Antenna Location: (back view)



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12.1.4. SAR Test Results Summary

SAR MEASUREMENT									
Depth of Liquid (cm):>15									
Product: 462MHz FRS/GMRS Walkie-talkie									
Test Mode: FRS									
Position	Freq. (MHz)	Ch.	Power Drift (<±5%)	SAR 1g with 100% duty Cycle (W/kg)	SAR 1g with 50% duty cycle (W/Kg)	Max. Turn-up Power (dBm)	Meas. output Power (dBm)	Scaled SAR (W/Kg)	Limit W/kg
EUT battery: Fully charged with Ni-MH Battery									
Face Up(25mm)	467.6375	11	-3.20	0.789	0.395	27	26.794	0.414	1.6
Body Back With Belt Clip & Headset (0mm)	467.6375	11	-4.08	1.240	0.620	27	26.794	0.650	1.6
Body Back With Headset (10mm)	467.6375	11	-4.29	0.953	0.477	27	26.794	0.500	1.6
EUT battery: 3pcs AAA Alkaline batteries									
Face Up(25mm)	467.6375	11	-0.82	0.737	0.369	27	26.794	0.386	1.6
Body Back With Belt Clip & Headset (0mm)	467.6375	11	-1.08	0.920	0.460	27	26.794	0.482	1.6
Body Back With Headset (10mm)	467.6375	11	-1.43	1.213	0.607	27	26.794	0.636	1.6
Note: 1. During the test, EUT power is 0.5 W with 100% duty cycle; 2. When the 1-g SAR is ≤ 0.8W/kg, testing for low and high channel is optional. 3. Test mode of above table was specified by the customer.									

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SAR MEASUREMENT									
Depth of Liquid (cm):>15									
Product: 462MHz FRS/GMRS Walkie-talkie									
Test Mode: GMRS									
Position	Freq. (MHz)	Ch.	Power Drift (<±5%)	SAR 1g with 100% duty Cycle (W/kg)	SAR 1g with 50% duty cycle (W/Kg)	Max. Turn-up Power (dBm)	Meas. output Power (dBm)	Scaled SAR (W/Kg)	Limit W/kg
EUT battery: Fully charged with Ni-MH Battery									
Face Up(25mm)	462.6500	19	-4.65	1.019	0.510	33	32.570	0.563	1.6
Body Back With Belt Clip & Headset(0mm)	462.5500	15	-1.77	1.659	0.830	33	32.948	0.840	1.6
Body Back With Belt Clip & Headset(0mm)	462.6500	19	-0.65	1.319	0.660	33	32.570	0.729	1.6
Body Back With Belt Clip & Headset(0mm)	462.7250	22	-0.80	1.684	0.842	33	32.761	0.890	1.6
Body Back With Headset (10mm)	462.5500	15	-2.48	1.630	0.815	33	32.948	0.825	1.6
Body Back With Headset (10mm)	462.6500	19	-1.23	1.590	0.795	33	32.570	0.878	1.6
Body Back With Headset (10mm)	462.7250	22	-3.01	1.376	0.688	33	32.761	0.727	1.6
EUT battery: 3pcs AAA Alkaline batteries									
Face Up(25mm)	462.6500	19	-2.06	0.953	0.477	33	32.570	0.527	1.6
Body Back With Belt Clip & Headset (0mm)	462.5500	15	-4.71	1.324	0.662	33	32.948	0.670	1.6
Body Back With Belt Clip & Headset (0mm)	462.6500	19	-0.34	1.474	0.737	33	32.570	0.814	1.6
Body Back With Belt Clip & Headset (0mm)	462.7250	22	-1.53	1.283	0.642	33	32.761	0.678	1.6
Body Back With Headset (10mm)	462.6500	19	-1.13	1.329	0.665	33	32.570	0.734	1.6
Note: 1. During the test, EUT power is 2 W with 100% duty cycle; 2. When the 1-g SAR is ≤ 0.8W/kg, testing for low and high channel is optional. 3. Test mode of above table was specified by the customer.									

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APPENDIX A. SAR SYSTEM CHECK DATA

Test Laboratory: AGC Lab

Date: Apr. 05, 2016

System Check 450MHz Head

DUT: Dipole 450 MHz Type: SID 450

Communication System: CW; Communication System Band: D450 (450.0 MHz); Duty Cycle: 1:1; Conv.F=7.37

Frequency: 450 MHz; Medium parameters used: $f = 450$ MHz; $\sigma = 0.85$ mho/m; $\epsilon_r = 43.66$; $\rho = 1000$ kg/m³ ;

Phantom section: Flat Section; Input Power=21dBm

Ambient temperature (°C): 22.3, Liquid temperature (°C):22.1, Relative Humidity (%):52.6

SATIMO Configuration:

Probe: SSE5; Calibrated: 12/09/2015; Serial No.: SN 22/12 EP159

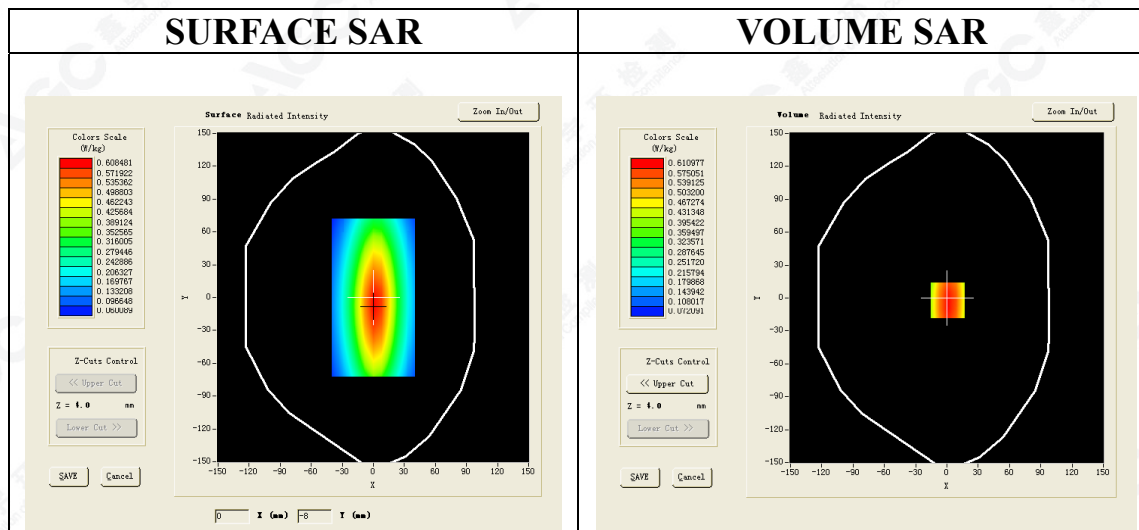
Sensor-Surface: 4mm (Mechanical Surface Detection)

Phantom: SAM twin phantom

Measurement SW: OpenSAR V4_02_01

Configuration/System Check 450 Head /Area Scan: Measurement grid: dx=8mm,dy=8mm

Configuration/System Check 450 Head /Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm



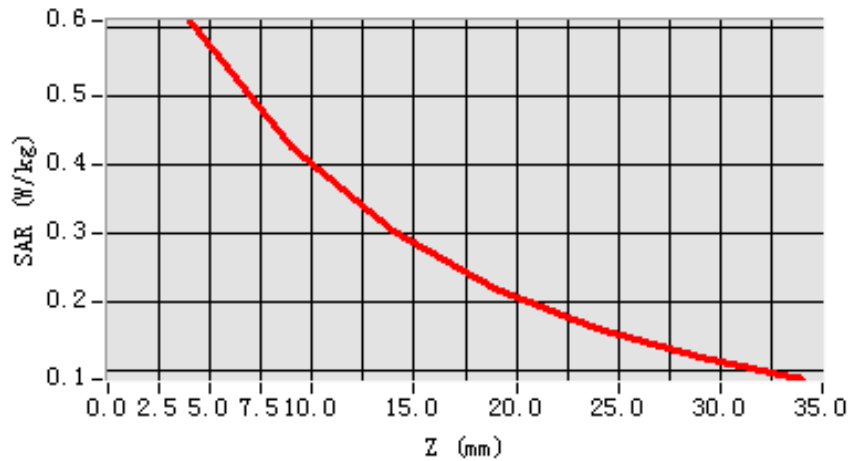
Maximum location: X=1.00, Y=-2.00

SAR 10g (W/Kg)	0.400680
SAR 1g (W/Kg)	0.589723

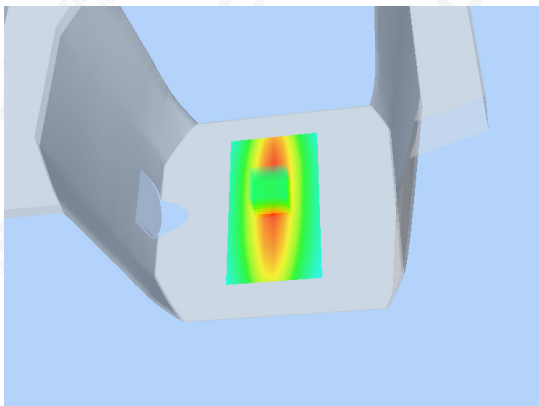
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Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.6110	0.4257	0.3029	0.2193	0.1604	0.1180

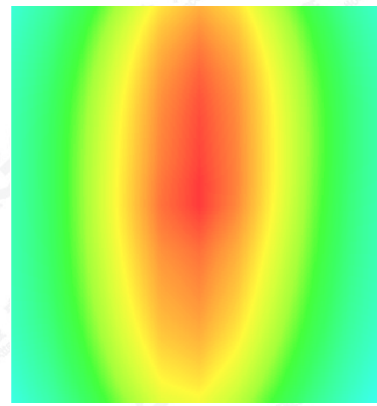
SAR, Z Axis Scan (X = 1, Y = -2)



3D screen shot



Hot spot position



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Test Laboratory: AGC Lab

System Check 450MHz Body

DUT: Dipole 450 MHz Type: SID 450

Communication System: CW; Communication System Band: D450 (450.0 MHz); Duty Cycle: 1:1; Conv.F=7.54

Frequency: 450 MHz; Medium parameters used: $f = 450$ MHz; $\sigma = 0.94$ mho/m; $\epsilon_r = 57.73$; $\rho = 1000$ kg/m³ ;

Phantom section: Flat Section; Input Power=21dBm

Ambient temperature (°C): 22.8, Liquid temperature (°C):22.3, Relative Humidity (%):55.5

SATIMO Configuration:

Probe: SSE5; Calibrated: 12/09/2015; Serial No.: SN 22/12 EP159

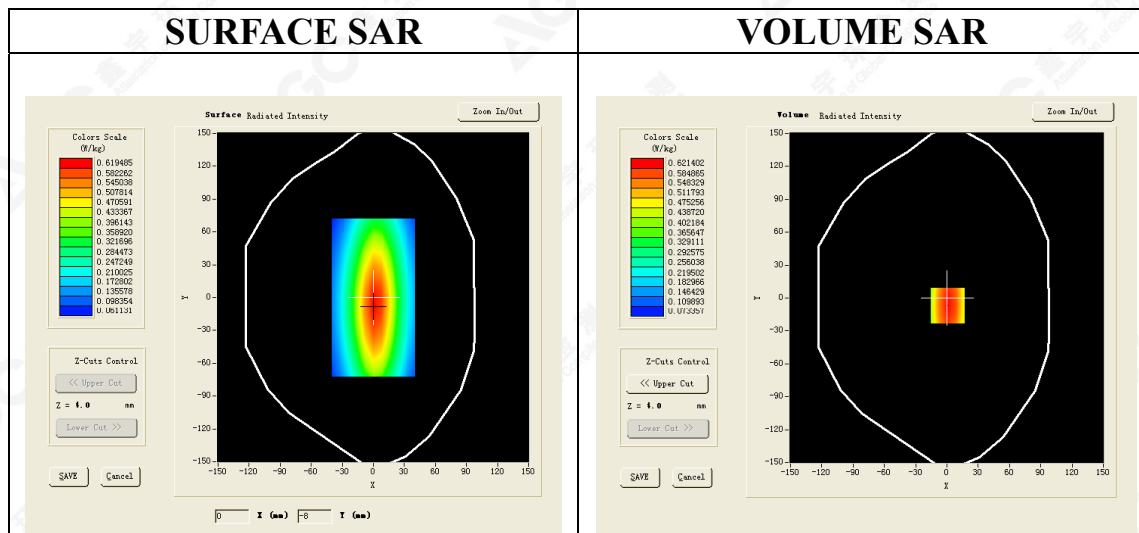
Sensor-Surface: 4mm (Mechanical Surface Detection)

Phantom: SAM twin phantom

Measurement SW: OpenSAR V4_02_01

Configuration/System Check 450 Body /Area Scan: Measurement grid: dx=8mm,dy=8mm

Configuration/System Check 450 Body /Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm



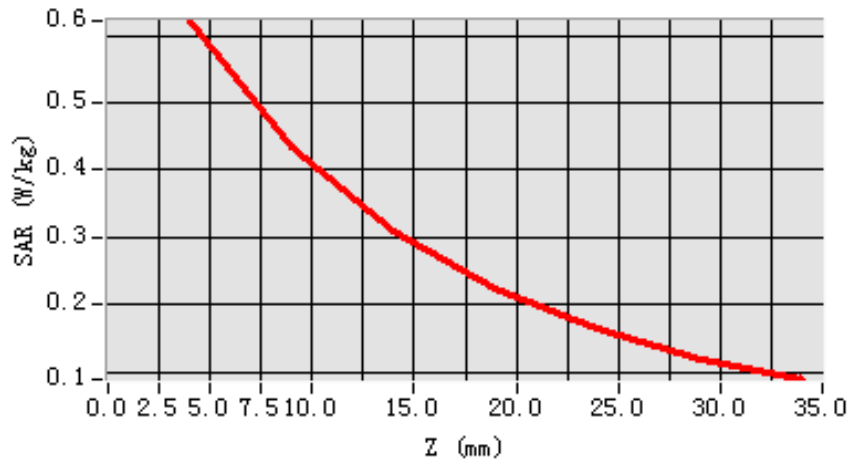
Maximum location: X=1.00, Y=-7.00

SAR 10g (W/Kg)	0.407243
SAR 1g (W/Kg)	0.600337

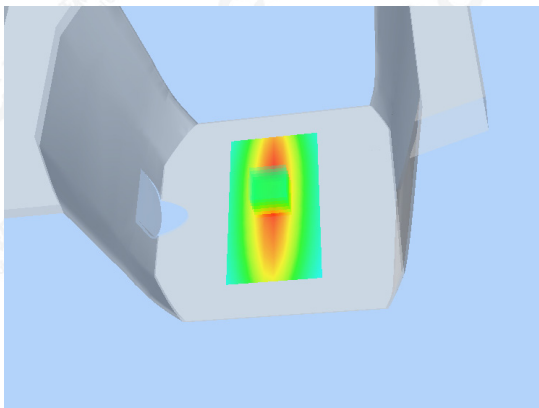
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Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.6214	0.4335	0.3073	0.2221	0.1626	0.1193

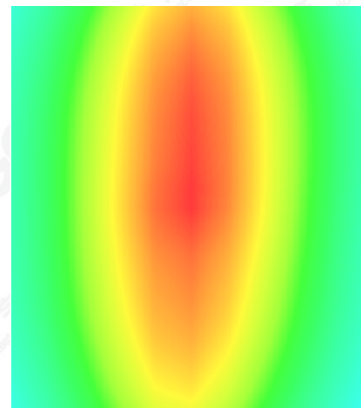
SAR, Z Axis Scan (X = 1, Y = -7)



3D screen shot



Hot spot position



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APPENDIX B. SAR MEASUREMENT DATA

EUT battery: Fully charged with Ni-MH Battery

Test Laboratory: AGC Lab

450 Mid-Face-up (FRS)

DUT: 462MHz FRS/GMRS Walkie-talkie; Type: GMR5095-2CKHS

Date: Apr. 05,2016

Communication System Band: D450 (450.0 MHz); Duty Cycle: 1:1; Conv.F=7.37

Frequency: 467.6375 MHz; Medium parameters used: $f = 450$ MHz; $\sigma=0.89$ mho/m; $\epsilon_r=42.58$; $\rho=1000$ kg/m³ ;

Phantom section: Flat Section

Ambient temperature (°C): 22.3, Liquid temperature (°C):22.1

SATIMO Configuration:

Probe: SSE5; Calibrated: 12/09/2015; Serial No.: SN 22/12 EP159

Sensor-Surface: 4mm (Mechanical Surface Detection)

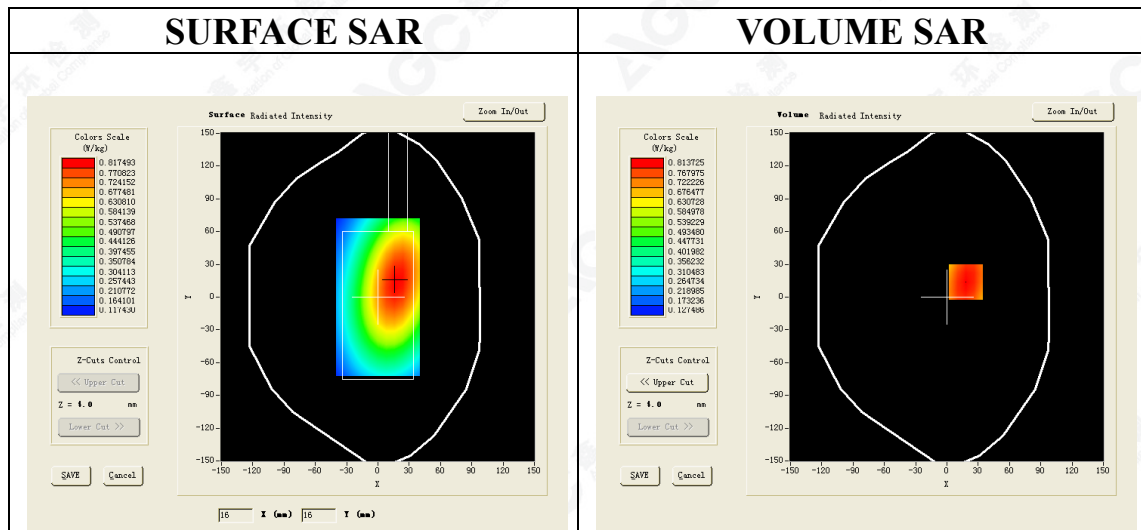
Phantom: SAM twin phantom

Measurement SW: OpenSAR V4_02_01

Configuration/ 450 Face-up /Area Scan: Measurement grid: dx=8mm, dy=8mm

Configuration/ 450 Face-up /Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm

Area Scan	sam_direct_droit2_surf8mm.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Face up with 25mm
Band	450
Channels	Middle
Signal	Crest factor: 1.0



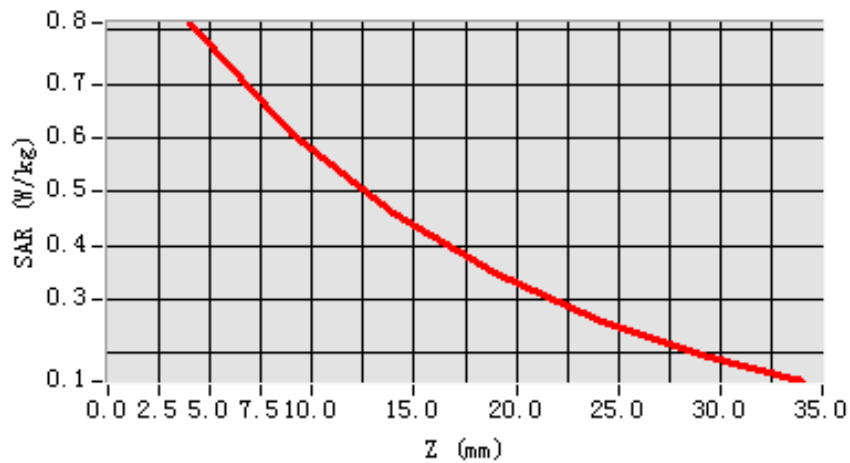
Maximum location: X=18.00, Y=14.00

SAR 10g (W/Kg)	0.578062
SAR 1g (W/Kg)	0.788932

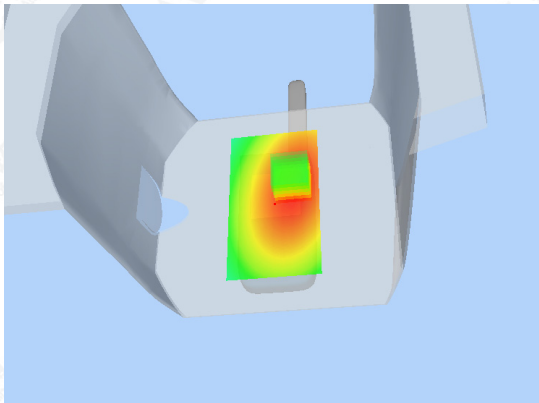
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Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.8137	0.6100	0.4605	0.3470	0.2610	0.1973

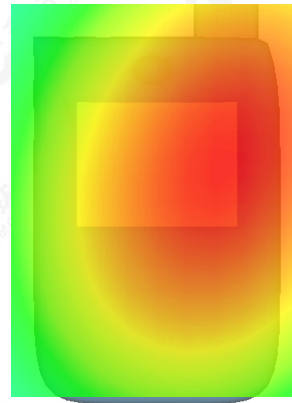
SAR, Z Axis Scan (X = 18, Y = 14)



3D screen shot



Hot spot position



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Test Laboratory: AGC Lab
450 Mid- Body Back With Belt Clip & Headset (FRS)
DUT: 462MHz FRS/GMRS Walkie-talkie; Type: GMR5095-2CKHS

Date: Apr. 07,2016

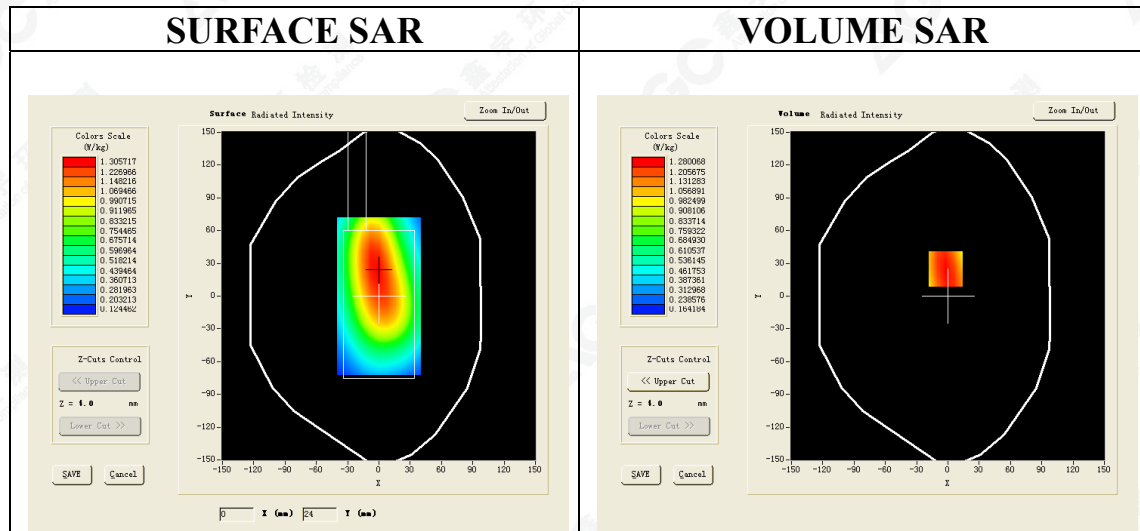
Communication System Band: D450 (450.0 MHz); Duty Cycle: 1:1; Conv.F=7.54
Frequency: 467.6375MHz; Medium parameters used: $f = 450$ MHz; $\sigma=0.96$ mho/m; $\epsilon_r=56.83$; $\rho=1000$ kg/m³ ;
Phantom section: Flat Section
Ambient temperature (°C): 22.8, Liquid temperature (°C):22.3

SATIMO Configuration:

Probe: SSE5; Calibrated: 12/09/2015; Serial No.: SN 22/12 EP159
Sensor-Surface: 4mm (Mechanical Surface Detection)
Phantom: SAM twin phantom
Measurement SW: OpenSAR V4_02_01

Configuration/450 Mid- Body- Back /Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/450 Mid- Body- Back /Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm

Area Scan	sam_direct_droit2_surf8mm.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body Back With 0mm
Band	450
Channels	Middle
Signal	Crest factor: 1.0



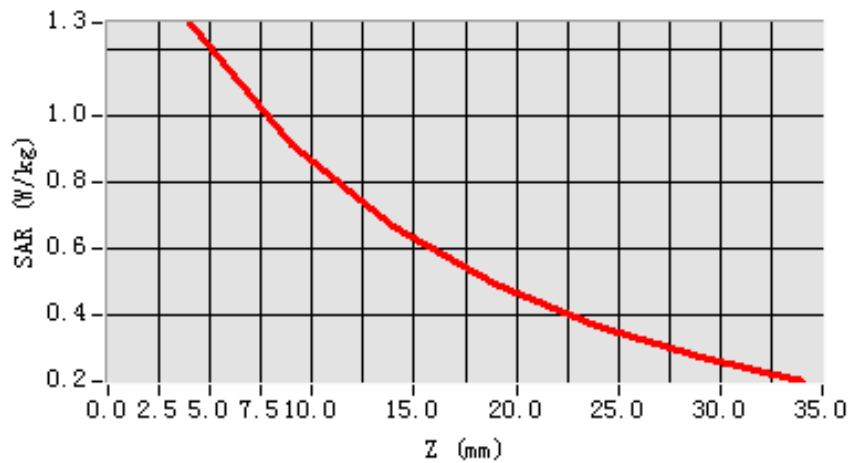
Maximum location: X=-2.00, Y=25.00

SAR 10g (W/Kg)	0.877579
SAR 1g (W/Kg)	1.240452

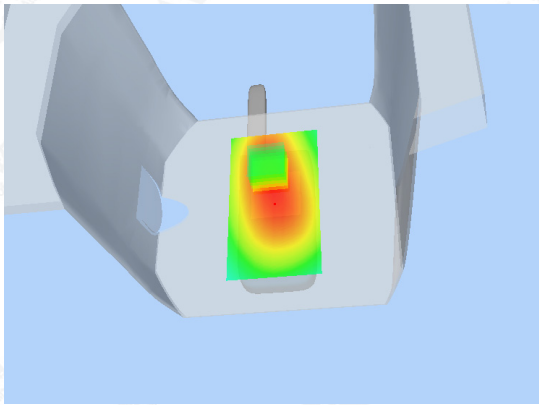
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Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	1.2801	0.9170	0.6697	0.4940	0.3665	0.2735

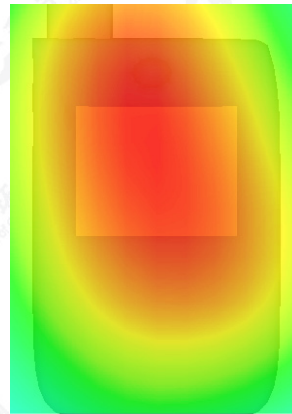
SAR, Z Axis Scan (X = -2, Y = 25)



3D screen shot



Hot spot position



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Test Laboratory: AGC Lab
450 Mid- Body Back With Headset (FRS)
DUT: 462MHz FRS/GMRS Walkie-talkie; Type: GMR5095-2CKHS

Date: Apr. 07,2016

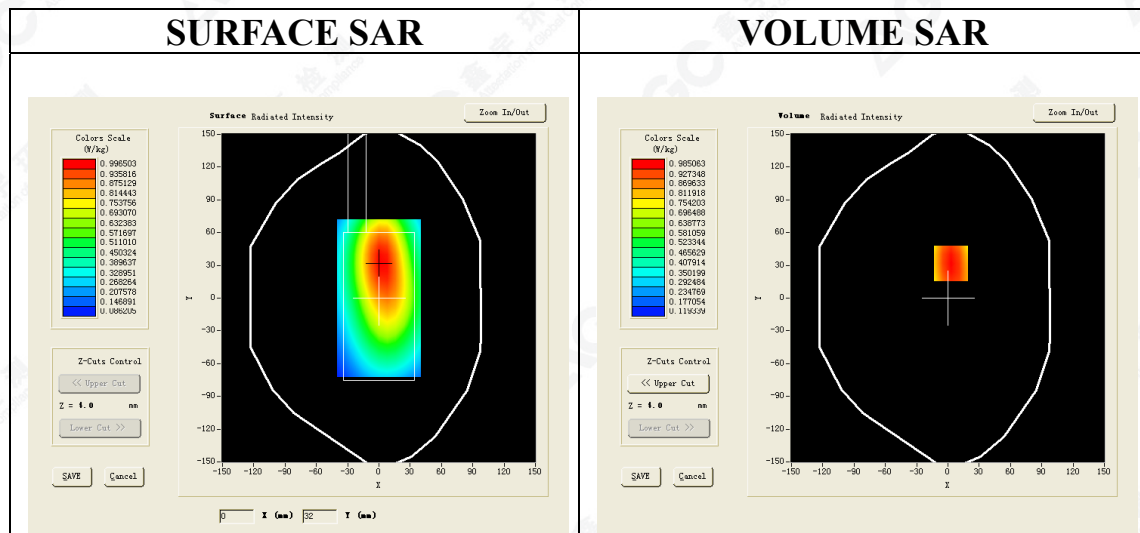
Communication System Band: D450 (450.0 MHz); Duty Cycle: 1:1; Conv.F=7.54
Frequency: .467.6375MHz; Medium parameters used: $f = 450$ MHz; $\sigma=0.96$ mho/m; $\epsilon_r=56.83$; $\rho=1000$ kg/m³ ;
Phantom section: Flat Section
Ambient temperature (°C): 22.8, Liquid temperature (°C):22.3

SATIMO Configuration:

Probe: SSE5; Calibrated: 12/09/2015; Serial No.: SN 22/12 EP159
Sensor-Surface: 4mm (Mechanical Surface Detection)
Phantom: SAM twin phantom
Measurement SW: OpenSAR V4_02_01

Configuration/450 Mid- Body- Back /Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/450 Mid- Body- Back /Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm

Area Scan	sam_direct droit2_surf8mm.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body Back With 10mm
Band	450
Channels	Middle
Signal	Crest factor: 1.0



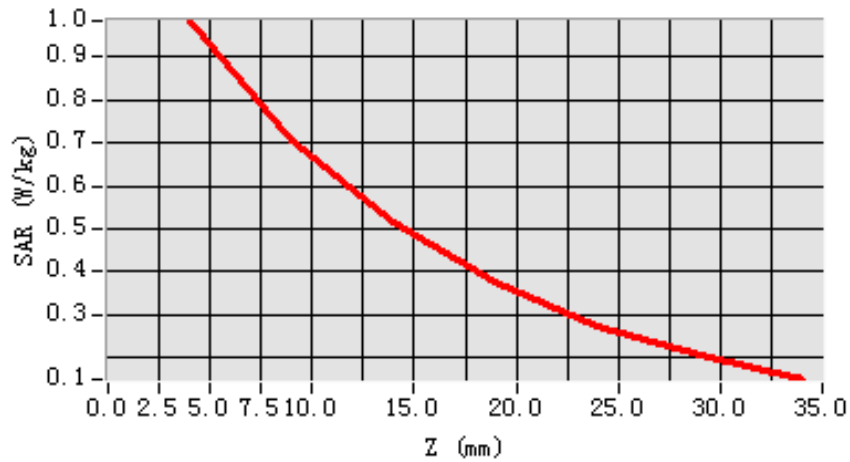
Maximum location: X=3.00, Y=32.00

SAR 10g (W/Kg)	0.670253
SAR 1g (W/Kg)	0.953048

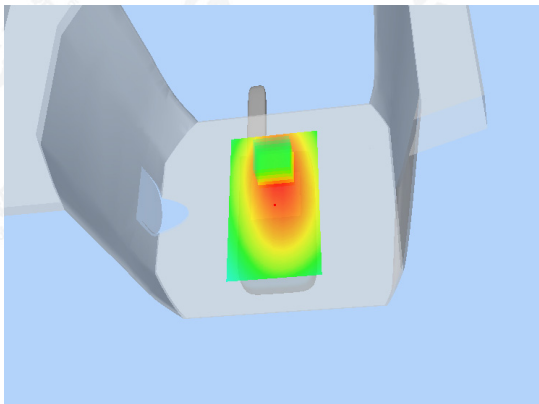
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Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.9851	0.7050	0.5135	0.3760	0.2757	0.2039

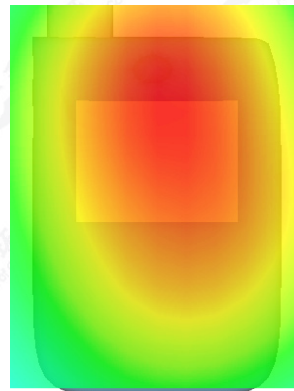
SAR, Z Axis Scan (X = 3, Y = 32)



3D screen shot



Hot spot position



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EUT battery: 3pcs AAA Alkaline batteries

Test Laboratory: AGC Lab

450 Mid-Face-up (FRS)

DUT: 462MHz FRS/GMRS Walkie-talkie; Type: GMR5095-2CKHS

Date: Apr. 05,2016

Communication System Band: D450 (450.0 MHz); Duty Cycle: 1:1; Conv.F=7.37

Frequency: 467.6375 MHz; Medium parameters used: $f = 450$ MHz; $\sigma = 0.89$ mho/m; $\epsilon_r = 42.58$; $\rho = 1000$ kg/m³ ;

Phantom section: Flat Section

Ambient temperature (°C): 22.3, Liquid temperature (°C):22.1

SATIMO Configuration:

Probe: SSE5; Calibrated: 12/09/2015; Serial No.: SN 22/12 EP159

Sensor-Surface: 4mm (Mechanical Surface Detection)

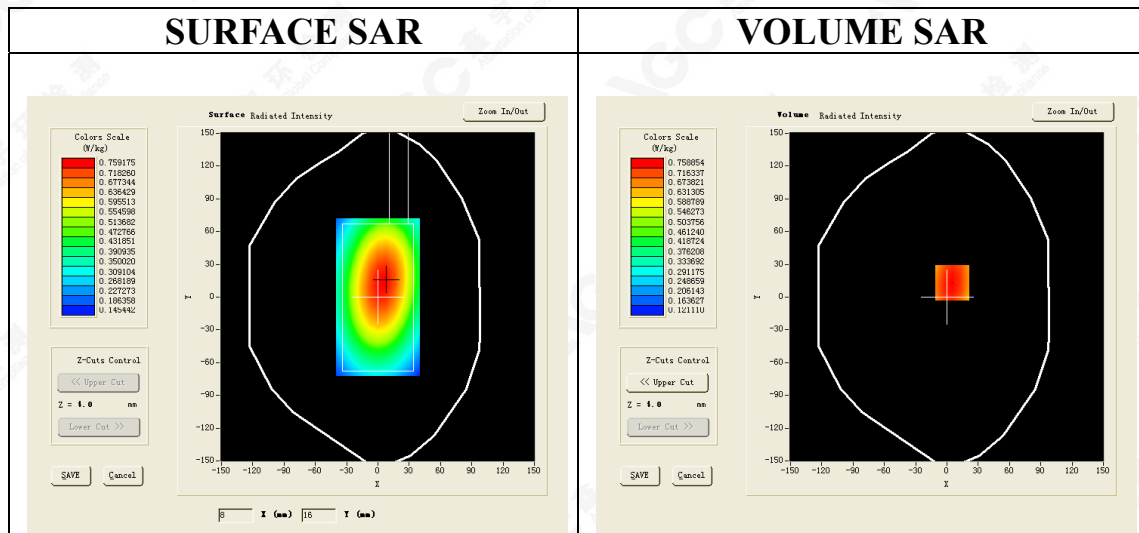
Phantom: SAM twin phantom

Measurement SW: OpenSAR V4_02_01

Configuration/ 450 Face-up /Area Scan: Measurement grid: dx=8mm, dy=8mm

Configuration/ 450 Face-up /Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm

Area Scan	sam_direct_droit2_surf8mm.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Face up with 25mm
Band	450
Channels	Middle
Signal	Crest factor: 1.0



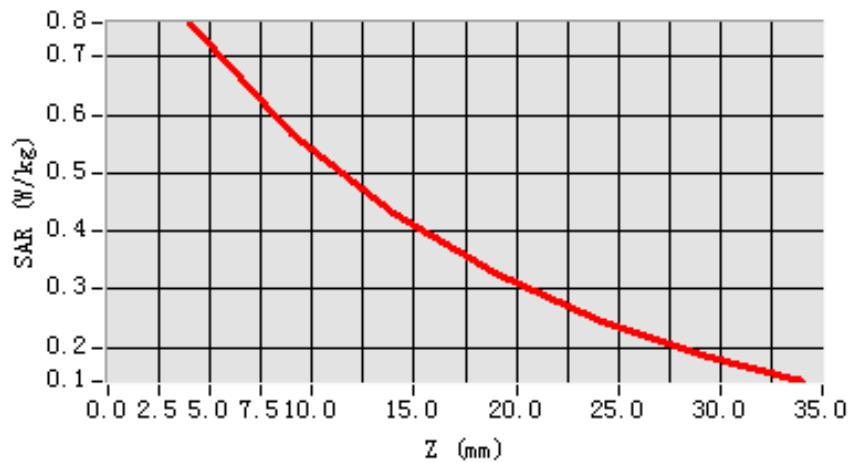
Maximum location: X=5.00, Y=13.00

SAR 10g (W/Kg)	0.540072
SAR 1g (W/Kg)	0.736942

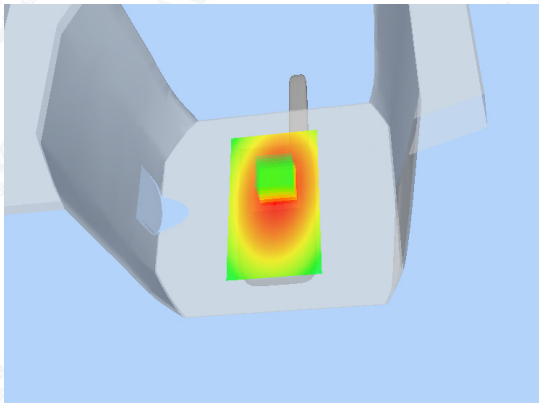
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Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.7589	0.5695	0.4305	0.3269	0.2477	0.1874

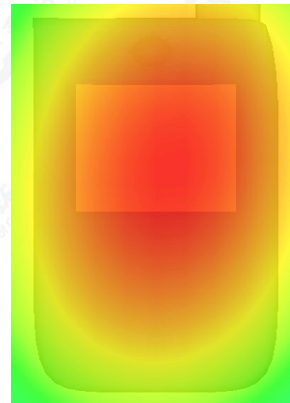
SAR, Z Axis Scan (X = 5, Y = 13)



3D screen shot



Hot spot position



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Test Laboratory: AGC Lab
450 Mid- Body Back With Belt Clip & Headset (FRS)
DUT: 462MHz FRS/GMRS Walkie-talkie; Type: GMR5095-2CKHS

Date: Apr. 07,2016

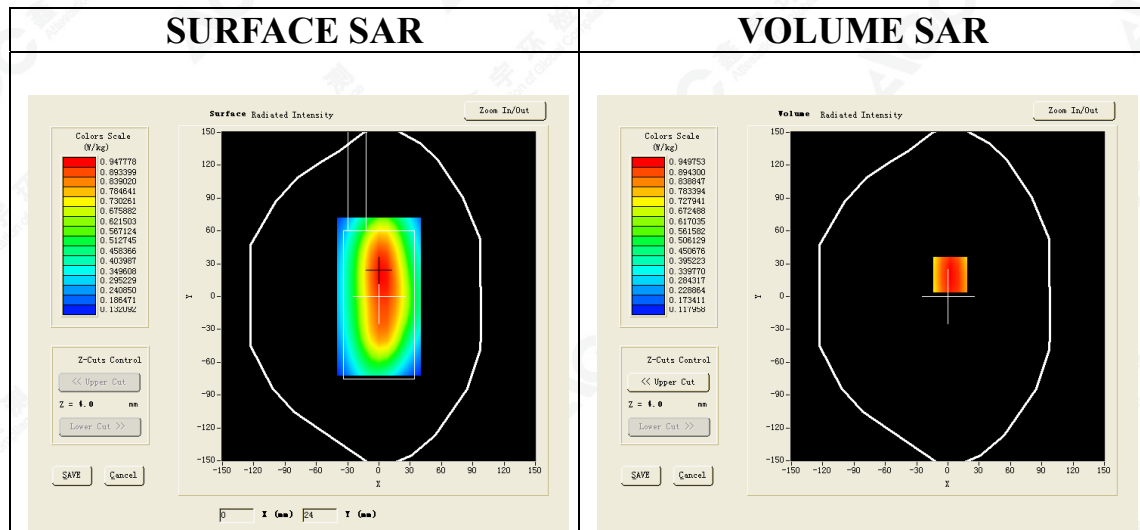
Communication System Band: D450 (450.0 MHz); Duty Cycle: 1:1; Conv.F=7.54
Frequency: .467.6375MHz; Medium parameters used: f = 450 MHz; $\sigma=0.96$ mho/m; $\epsilon_r=56.83$; $\rho=1000$ kg/m³ ;
Phantom section: Flat Section
Ambient temperature (°C): 22.8, Liquid temperature (°C):22.3

SATIMO Configuration:

Probe: SSE5; Calibrated: 12/09/2015; Serial No.: SN 22/12 EP159
Sensor-Surface: 4mm (Mechanical Surface Detection)
Phantom: SAM twin phantom
Measurement SW: OpenSAR V4_02_01

Configuration/450 Mid- Body- Back /Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/450 Mid- Body- Back /Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm

Area Scan	sam_direct droit2_surf8mm.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body Back With 0mm
Band	450
Channels	Middle
Signal	Crest factor: 1.0



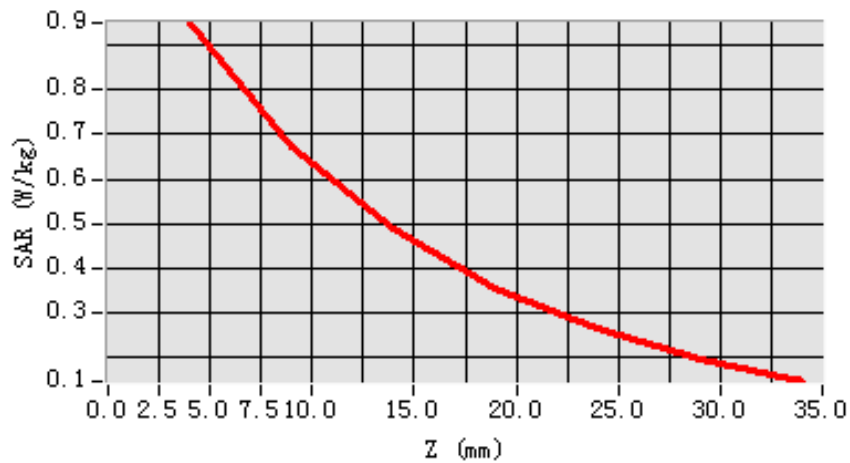
Maximum location: X=2.00, Y=20.00

SAR 10g (W/Kg)	0.645323
SAR 1g (W/Kg)	0.920034

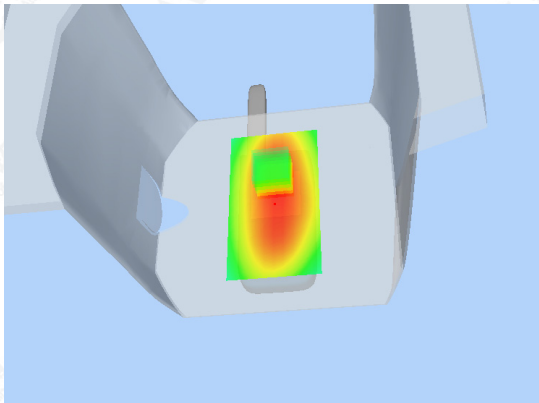
The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by AGC, this document cannot be reproduced except in full with our prior written permission. The document is available on request and the brief information for its validation can be assessable and confirmed at <http://www.agc-cert.com>

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.9498	0.6729	0.4884	0.3578	0.2645	0.1984

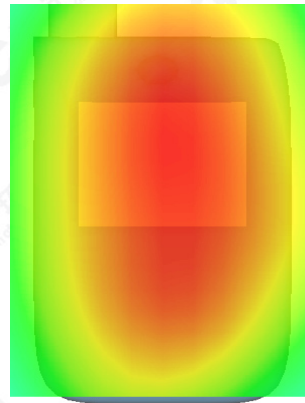
SAR, Z Axis Scan (X = 2, Y = 20)



3D screen shot



Hot spot position



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Test Laboratory: AGC Lab
450 Mid- Body Back With Headset (FRS)
DUT: 462MHz FRS/GMRS Walkie-talkie; Type: GMR5095-2CKHS

Date: Apr. 07,2016

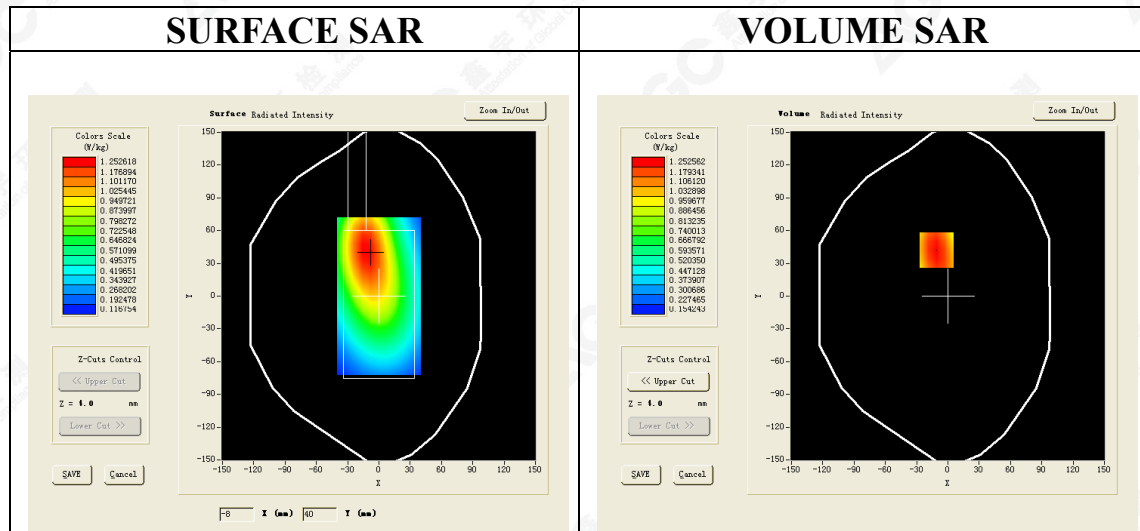
Communication System Band: D450 (450.0 MHz); Duty Cycle: 1:1; Conv.F=7.54
Frequency: .467.6375MHz; Medium parameters used: $f = 450$ MHz; $\sigma=0.96$ mho/m; $\epsilon_r=56.83$; $\rho=1000$ kg/m³ ;
Phantom section: Flat Section
Ambient temperature (°C): 22.8, Liquid temperature (°C):22.3

SATIMO Configuration:

Probe: SSE5; Calibrated: 12/09/2015; Serial No.: SN 22/12 EP159
Sensor-Surface: 4mm (Mechanical Surface Detection)
Phantom: SAM twin phantom
Measurement SW: OpenSAR V4_02_01

Configuration/450 Mid- Body- Back /Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/450 Mid- Body- Back /Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm

Area Scan	sam_direct droit2_surf8mm.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body Back With 10mm
Band	450
Channels	Middle
Signal	Crest factor: 1.0



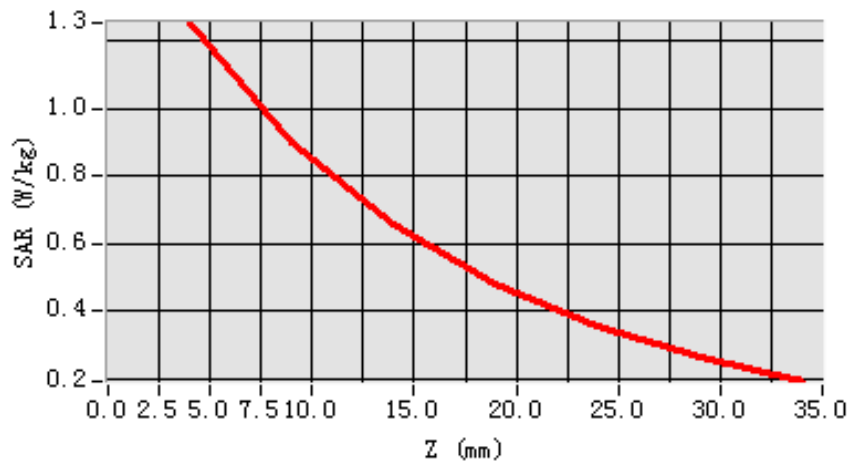
Maximum location: X=-11.00, Y=42.00

SAR 10g (W/Kg)	0.851598
SAR 1g (W/Kg)	1.212548

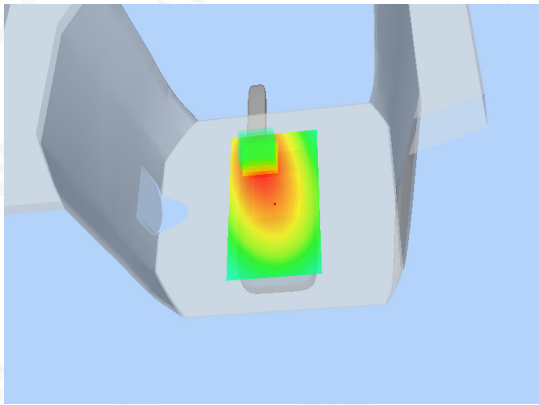
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Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	1.2526	0.9020	0.6567	0.4821	0.3549	0.2615

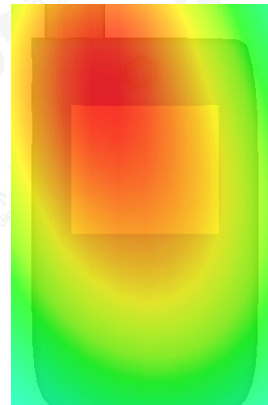
SAR, Z Axis Scan (X = -11, Y = 42)



3D screen shot



Hot spot position



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EUT battery: Fully charged with Ni-MH Battery

Test Laboratory: AGC Lab

450 Mid-Face-up (GMRS)

DUT: 462MHz FRS/GMRS Walkie-talkie; Type: GMR5095-2CKHS

Date: Apr. 05,2016

Communication System Band: D450 (450.0 MHz); Duty Cycle: 1:1; Conv.F=7.37

Frequency: 462.6500 MHz; Medium parameters used: $f = 450$ MHz; $\sigma = 0.88$ mho/m; $\epsilon_r = 43.09$; $\rho = 1000$ kg/m³ ;

Phantom section: Flat Section

Ambient temperature (°C): 22.3, Liquid temperature (°C):22.1

SATIMO Configuration:

Probe: SSE5; Calibrated: 12/09/2015; Serial No.: SN 22/12 EP159

Sensor-Surface: 4mm (Mechanical Surface Detection)

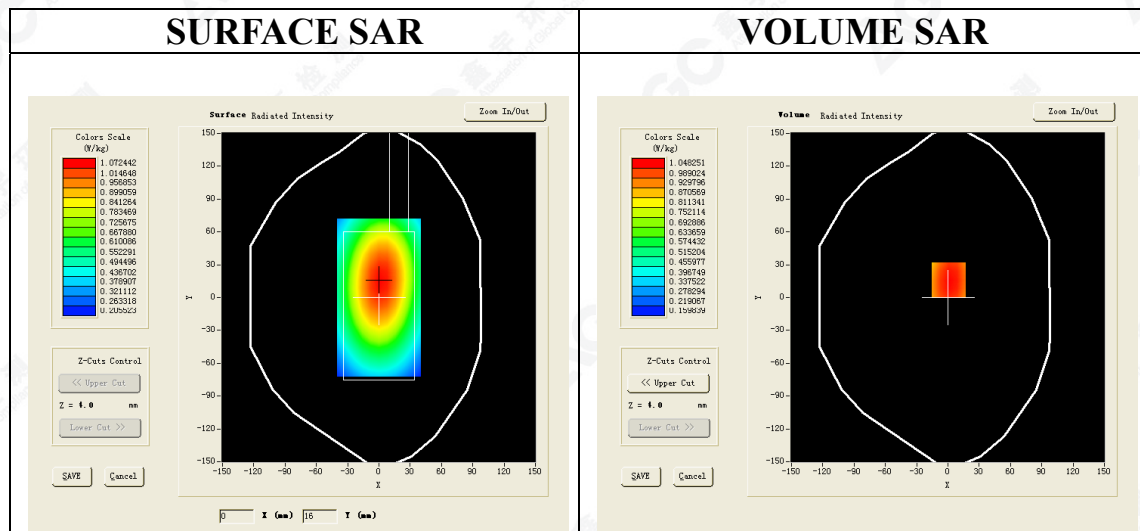
Phantom: SAM twin phantom

Measurement SW: OpenSAR V4_02_01

Configuration/ 450 Face-up /Area Scan: Measurement grid: dx=8mm, dy=8mm

Configuration/ 450 Face-up /Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm

Area Scan	sam_direct_droit2_surf8mm.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Face up with 25mm
Band	450
Channels	Middle
Signal	Crest factor: 1.0



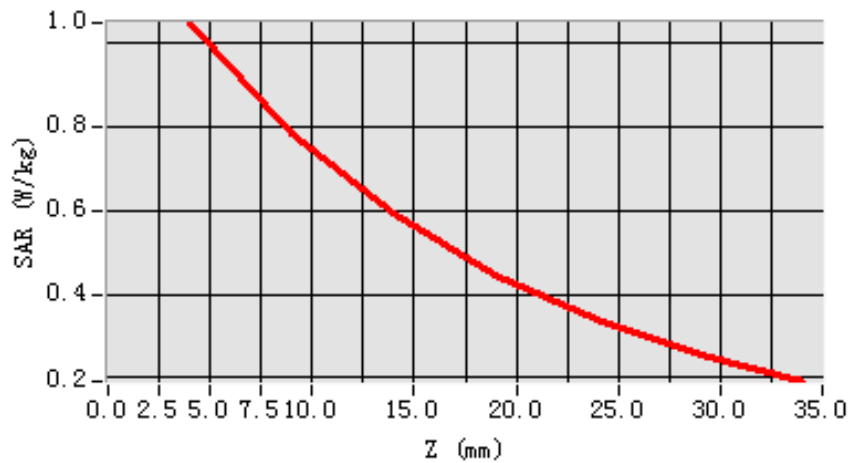
Maximum location: X=1.00, Y=16.00

SAR 10g (W/Kg)	0.744240
SAR 1g (W/Kg)	1.018607

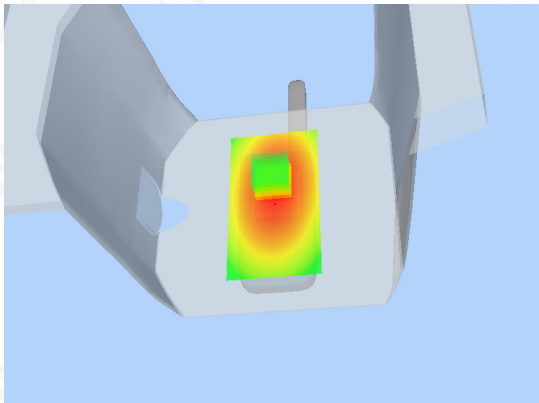
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Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	1.0483	0.7830	0.5918	0.4470	0.3373	0.2544

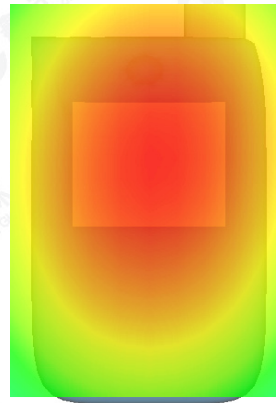
SAR, Z Axis Scan (X = 1, Y = 16)



3D screen shot



Hot spot position



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Test Laboratory: AGC Lab
450 Low- Body Back With Belt Clip & Headset (GMRS)
DUT: 462MHz FRS/GMRS Walkie-talkie; Type: GMR5095-2CKHS

Date: Apr. 07,2016

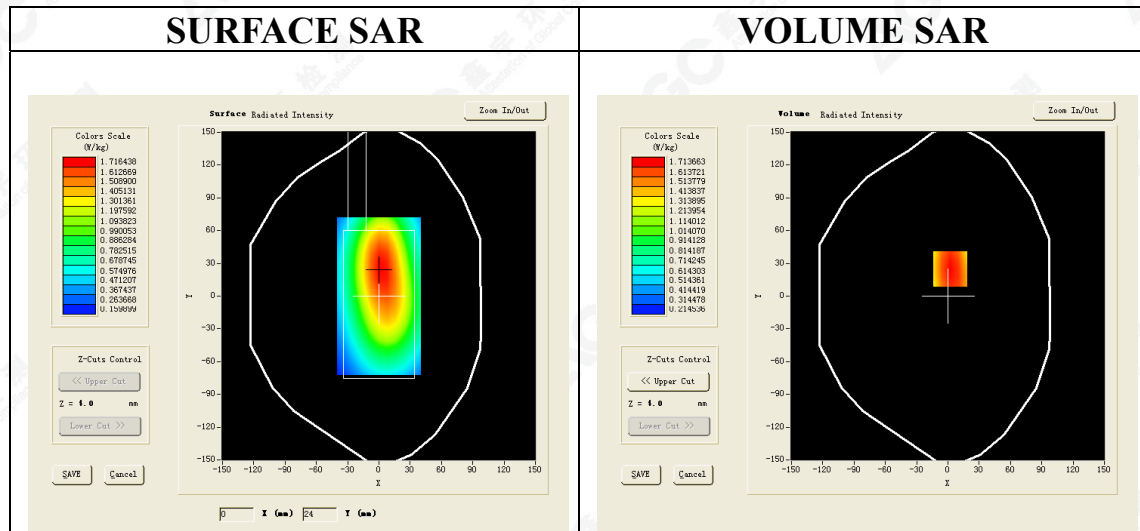
Communication System Band: D450 (450.0 MHz); Duty Cycle: 1:1; Conv.F=7.54
Frequency: : 462.5500MHz; Medium parameters used: $f = 450$ MHz; $\sigma=0.94$ mho/m; $\epsilon_r=57.12$; $\rho= 1000$ kg/m³ ;
Phantom section: Flat Section
Ambient temperature (°C): 22.8, Liquid temperature (°C):22.3

SATIMO Configuration:

Probe: SSE5; Calibrated: 12/09/2015; Serial No.: SN 22/12 EP159
Sensor-Surface: 4mm (Mechanical Surface Detection)
Phantom: SAM twin phantom
Measurement SW: OpenSAR V4_02_01

Configuration/450 Low - Body- Back /Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/450 Low- Body- Back /Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm

Area Scan	sam_direct_droit2_surf8mm.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body Back With 0mm
Band	450
Channels	Low
Signal	Crest factor: 1.0



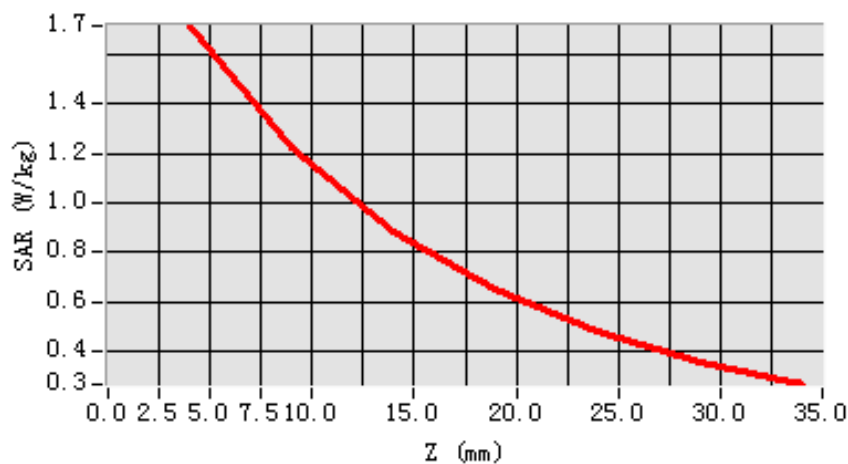
Maximum location: X=2.00, Y=25.00

SAR 10g (W/Kg)	1.164808
SAR 1g (W/Kg)	1.658728

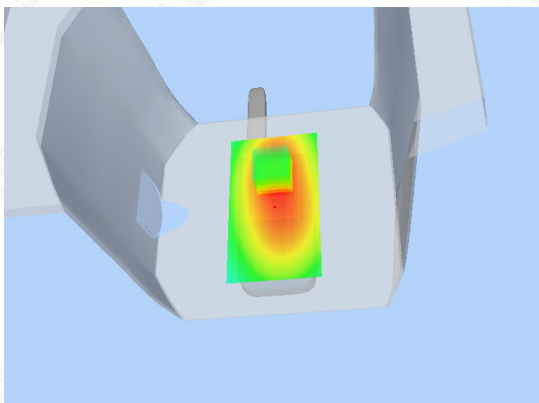
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Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	1.7137	1.2226	0.8882	0.6528	0.4844	0.3613

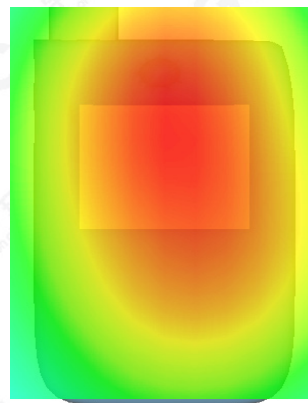
SAR, Z Axis Scan (X = 2, Y = 25)



3D screen shot



Hot spot position



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Test Laboratory: AGC Lab
450 Mid- Body Back With Belt Clip & Headset (GMRS)
DUT: 462MHz FRS/GMRS Walkie-talkie; Type: GMR5095-2CKHS

Date: Apr. 07,2016

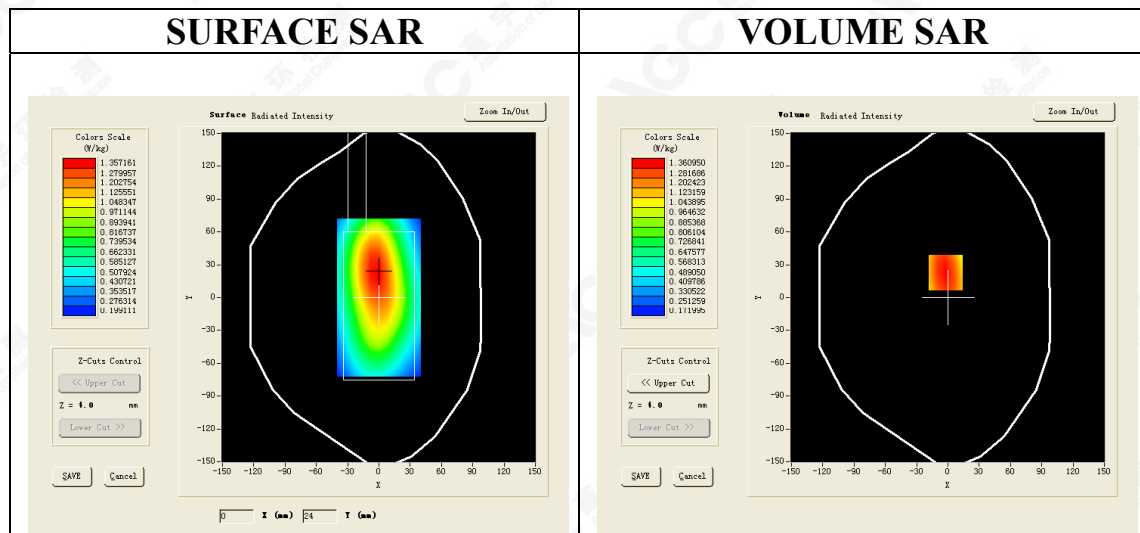
Communication System Band: D450 (450.0 MHz); Duty Cycle: 1:1; Conv.F=7.54
Frequency: : 462.6500MHz; Medium parameters used: $f = 450$ MHz; $\sigma=0.94$ mho/m; $\epsilon_r=57.12$; $\rho=1000$ kg/m³ ;
Phantom section: Flat Section
Ambient temperature (°C): 22.8, Liquid temperature (°C):22.3

SATIMO Configuration:

Probe: SSE5; Calibrated: 12/09/2015; Serial No.: SN 22/12 EP159
Sensor-Surface: 4mm (Mechanical Surface Detection)
Phantom: SAM twin phantom
Measurement SW: OpenSAR V4_02_01

Configuration/450 Mid- Body- Back /Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/450 Mid- Body- Back /Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm

Area Scan	sam_direct_droit2_surf8mm.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body Back With 0mm
Band	450
Channels	Middle
Signal	Crest factor: 1.0



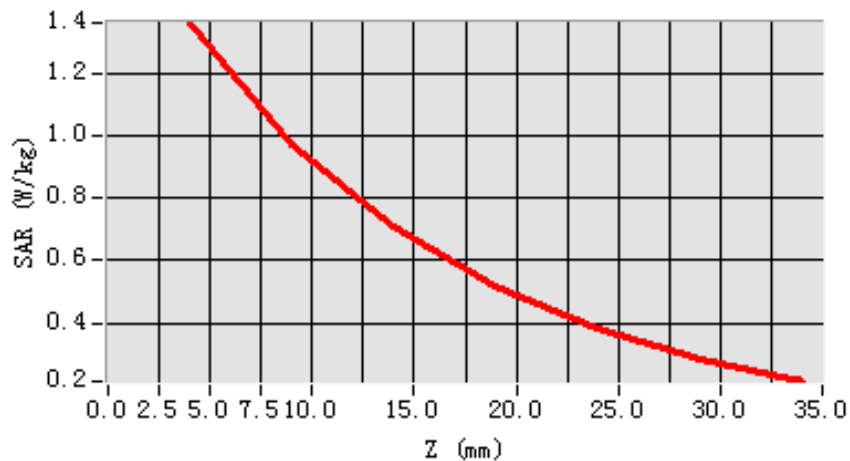
Maximum location: X=-2.00, Y=23.00

SAR 10g (W/Kg)	0.924854
SAR 1g (W/Kg)	1.319089

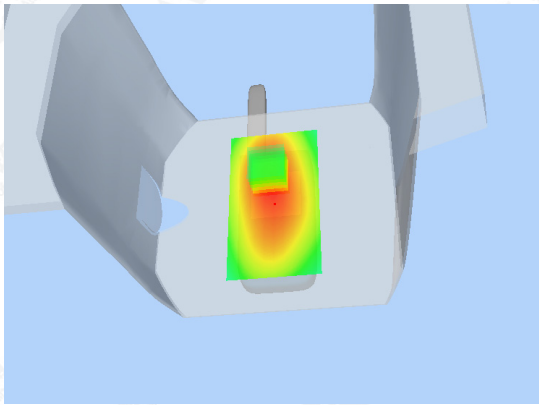
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Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	1.3610	0.9726	0.7089	0.5204	0.3849	0.2855

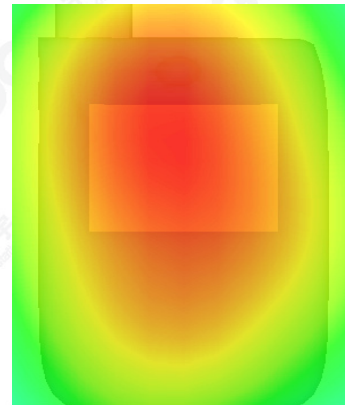
SAR, Z Axis Scan (X = -2, Y = 23)



3D screen shot



Hot spot position



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Test Laboratory: AGC Lab
450High- Body Back With Belt Clip & Headset (GMRS)
DUT: 462MHz FRS/GMRS Walkie-talkie; Type: GMR5095-2CKHS

Date: Apr. 07,2016

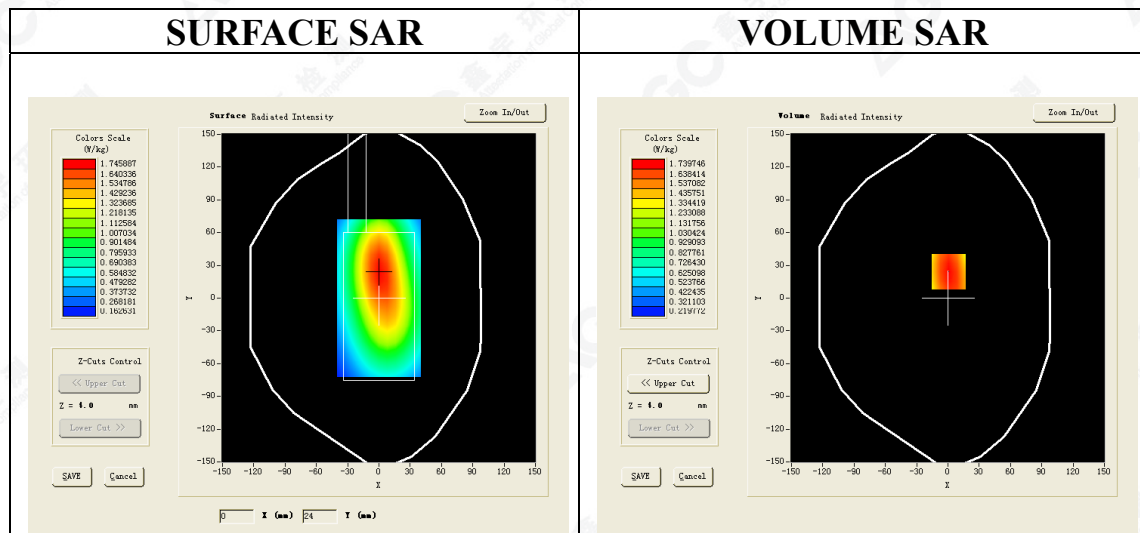
Communication System Band: D450 (450.0 MHz); Duty Cycle: 1:1; Conv.F=7.54
Frequency: : 462.7250MHz; Medium parameters used: $f = 450$ MHz; $\sigma=0.94$ mho/m; $\epsilon_r=57.12$; $\rho=1000$ kg/m³ ;
Phantom section: Flat Section
Ambient temperature (°C): 22.8, Liquid temperature (°C):22.3

SATIMO Configuration:

Probe: SSE5; Calibrated: 12/09/2015; Serial No.: SN 22/12 EP159
Sensor-Surface: 4mm (Mechanical Surface Detection)
Phantom: SAM twin phantom
Measurement SW: OpenSAR V4_02_01

Configuration/450 High - Body- Back /Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/450 High - Body- Back /Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm

Area Scan	sam_direct_droit2_surf8mm.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body Back With 0mm
Band	450
Channels	High
Signal	Crest factor: 1.0



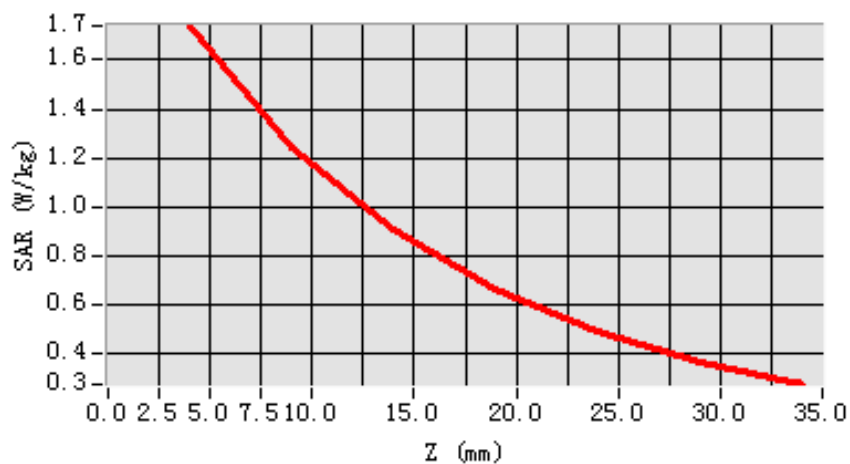
Maximum location: X=1.00, Y=24.00

SAR 10g (W/Kg)	1.181539
SAR 1g (W/Kg)	1.683767

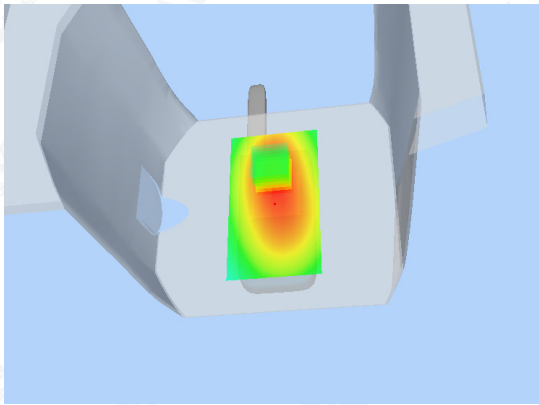
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Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	1.7397	1.2391	0.9026	0.6617	0.4917	0.3674

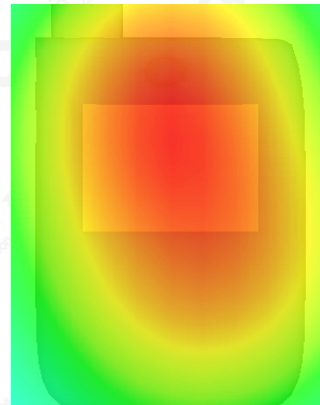
SAR, Z Axis Scan (X = 1, Y = 24)



3D screen shot



Hot spot position



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Test Laboratory: AGC Lab
450 Low- Body Back With Headset (GMRS)
DUT: 462MHz FRS/GMRS Walkie-talkie; Type: GMR5095-2CKHS

Date: Apr. 07,2016

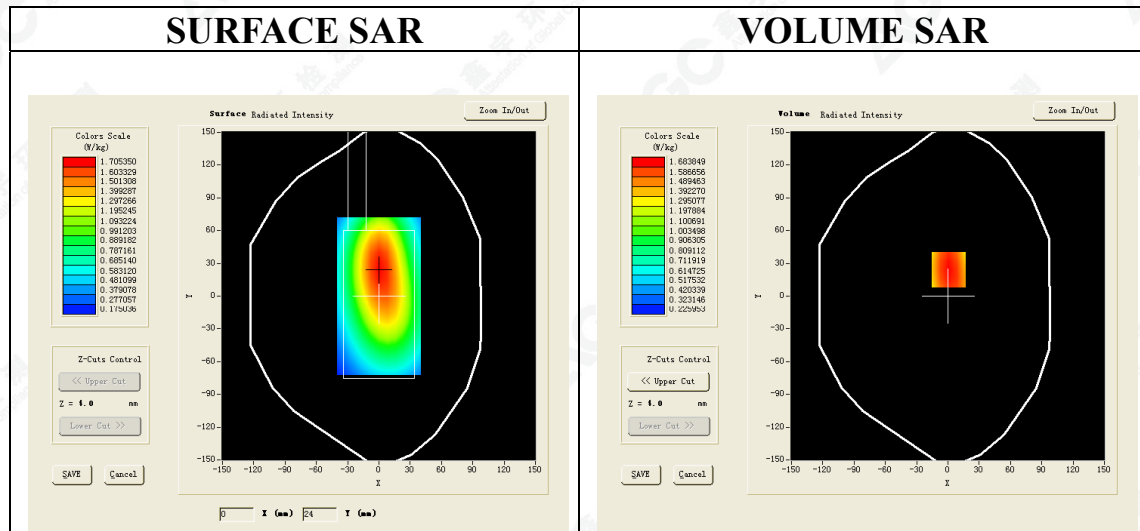
Communication System Band: D450 (450.0 MHz); Duty Cycle: 1:1; Conv.F=7.54
Frequency: : 462.5500MHz; Medium parameters used: $f = 450$ MHz; $\sigma=0.94$ mho/m; $\epsilon_r=57.12$; $\rho=1000$ kg/m³ ;
Phantom section: Flat Section
Ambient temperature (°C): 22.8, Liquid temperature (°C):22.3

SATIMO Configuration:

Probe: SSE5; Calibrated: 12/09/2015; Serial No.: SN 22/12 EP159
Sensor-Surface: 4mm (Mechanical Surface Detection)
Phantom: SAM twin phantom
Measurement SW: OpenSAR V4_02_01

Configuration/450 Low - Body- Back /Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/450 Low - Body- Back /Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm

Area Scan	sam_direct droit2_surf8mm.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body Back With 10mm
Band	450
Channels	Low
Signal	Crest factor: 1.0



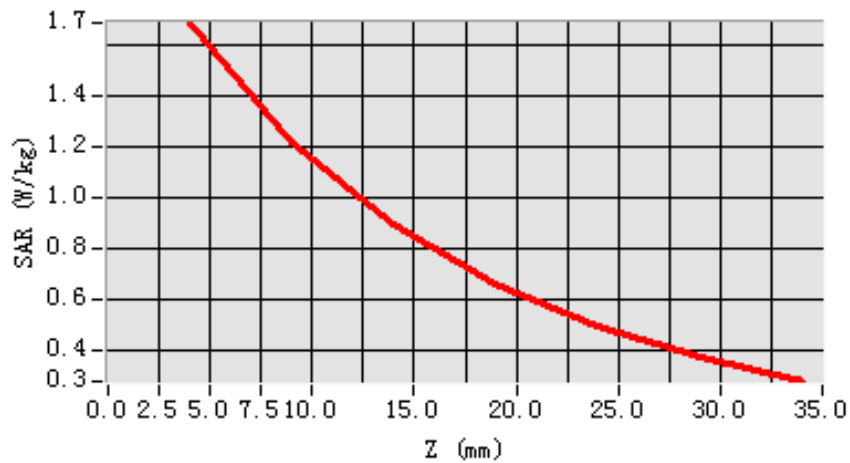
Maximum location: X=1.00, Y=24.00

SAR 10g (W/Kg)	1.158328
SAR 1g (W/Kg)	1.630292

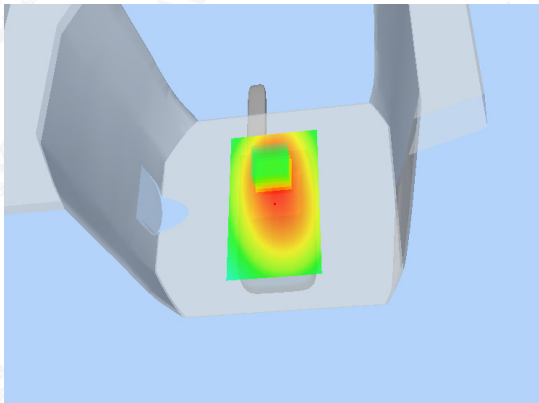
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Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	1.6838	1.2191	0.8968	0.6647	0.4970	0.3730

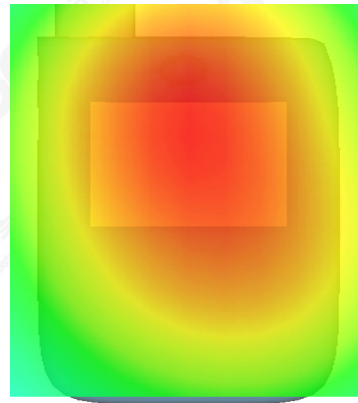
SAR, Z Axis Scan (X = 1, Y = 24)



3D screen shot



Hot spot position



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Test Laboratory: AGC Lab
450 Mid- Body Back With Headset (GMRS)
DUT: 462MHz FRS/GMRS Walkie-talkie; Type: GMR5095-2CKHS

Date: Apr. 07,2016

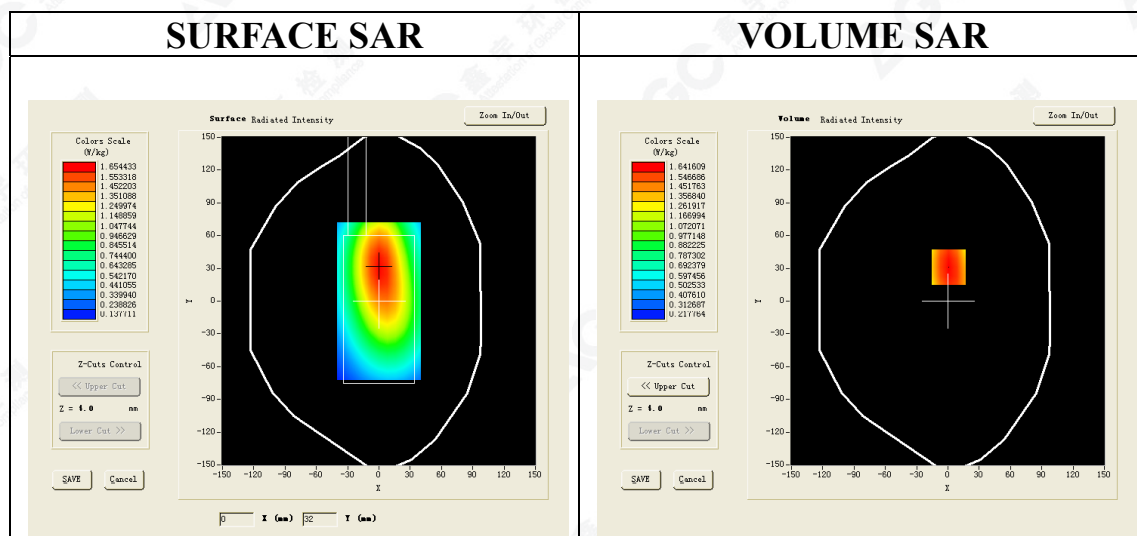
Communication System Band: D450 (450.0 MHz); Duty Cycle: 1:1; Conv.F=7.54
Frequency: : 462.6500MHz; Medium parameters used: $f = 450$ MHz; $\sigma = 0.94$ mho/m; $\epsilon_r = 57.12$; $\rho = 1000$ kg/m³ ;
Phantom section: Flat Section
Ambient temperature (°C): 22.8, Liquid temperature (°C):22.3

SATIMO Configuration:

Probe: SSE5; Calibrated: 12/09/2015; Serial No.: SN 22/12 EP159
Sensor-Surface: 4mm (Mechanical Surface Detection)
Phantom: SAM twin phantom
Measurement SW: OpenSAR V4_02_01

Configuration/450 Mid- Body- Back /Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/450 Mid- Body- Back /Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm

Area Scan	sam_direct_droit2_surf8mm.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body Back With 10mm
Band	450
Channels	Middle
Signal	Crest factor: 1.0



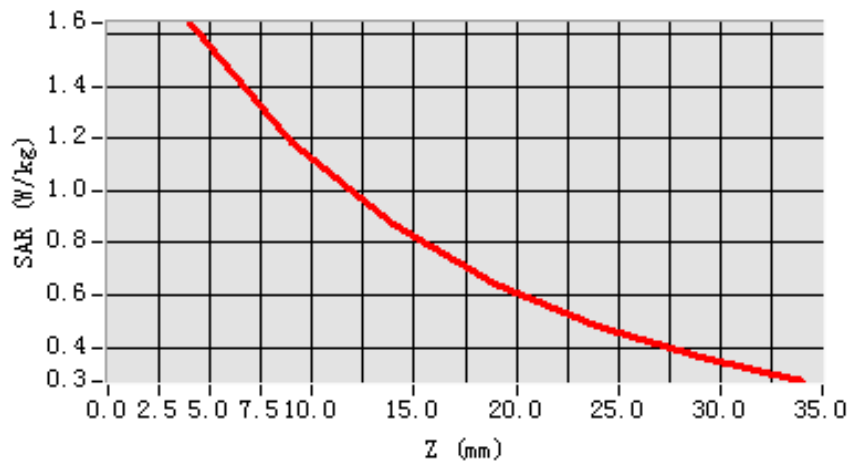
Maximum location: X=1.00, Y=31.00

SAR 10g (W/Kg)	1.129155
SAR 1g (W/Kg)	1.590365

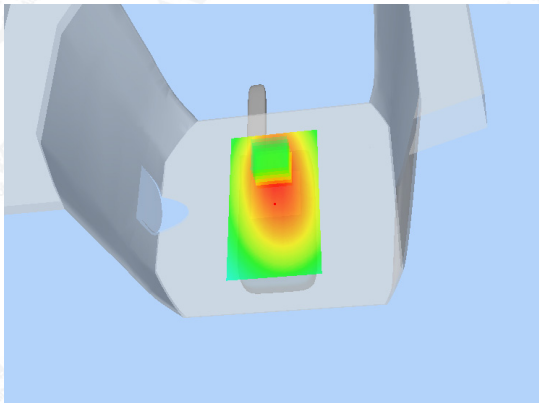
The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by AGC, this document cannot be reproduced except in full with our prior written permission. The document is available on request and the brief information for its validation can be assessable and confirmed at <http://www.agc-cert.com>

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	1.6416	1.1878	0.8716	0.6469	0.4835	0.3617

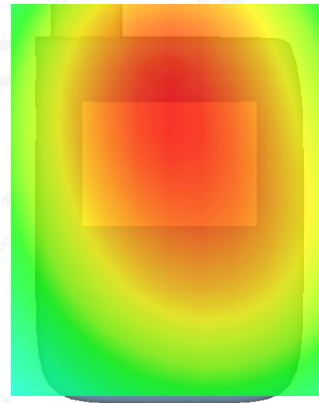
SAR, Z Axis Scan (X = 1, Y = 31)



3D screen shot



Hot spot position



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Test Laboratory: AGC Lab
450 High- Body Back With Headset (GMRS)
DUT: 462MHz FRS/GMRS Walkie-talkie; Type: GMR5095-2CKHS

Date: Apr. 07,2016

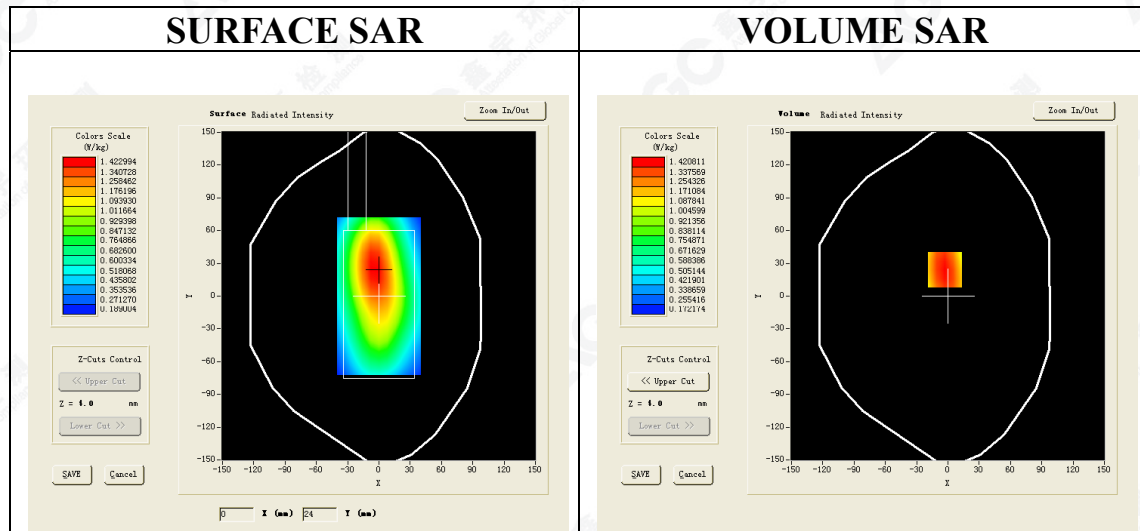
Communication System Band: D450 (450.0 MHz); Duty Cycle: 1:1; Conv.F=7.54
Frequency: : 462.7250MHz; Medium parameters used: $f = 450$ MHz; $\sigma=0.94$ mho/m; $\epsilon_r=57.12$; $\rho=1000$ kg/m³ ;
Phantom section: Flat Section
Ambient temperature (°C): 22.8, Liquid temperature (°C):22.3

SATIMO Configuration:

Probe: SSE5; Calibrated: 12/09/2015; Serial No.: SN 22/12 EP159
Sensor-Surface: 4mm (Mechanical Surface Detection)
Phantom: SAM twin phantom
Measurement SW: OpenSAR V4_02_01

Configuration/450 High - Body- Back /Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/450 High - Body- Back /Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm

Area Scan	sam_direct_droit2_surf8mm.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body Back With 10mm
Band	450
Channels	High
Signal	Crest factor: 1.0



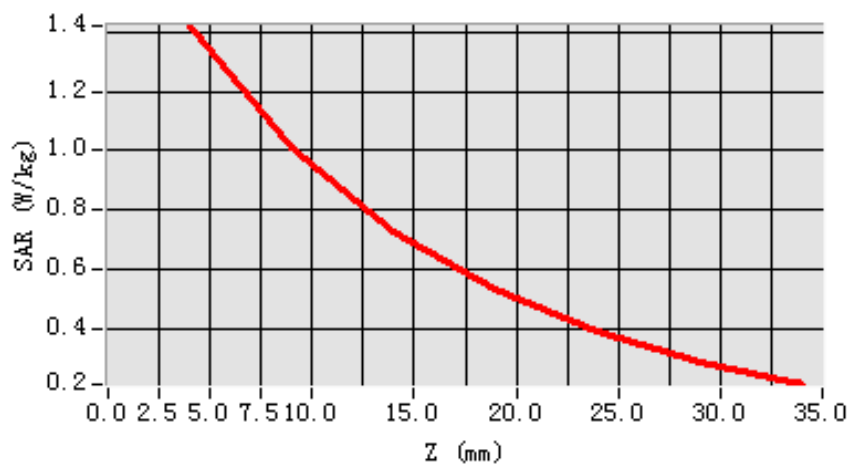
Maximum location: X=-3.00, Y=24.00

SAR 10g (W/Kg)	0.956929
SAR 1g (W/Kg)	1.376337

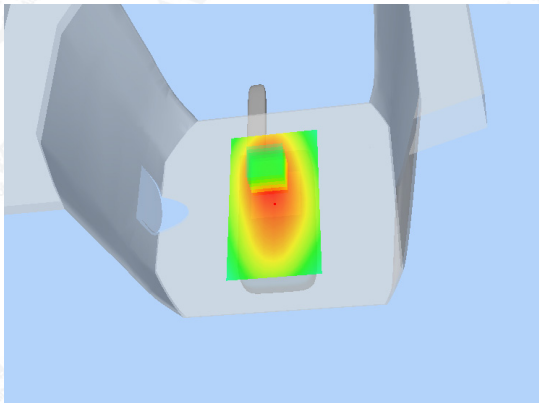
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Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	1.4208	1.0076	0.7278	0.5313	0.3898	0.2877

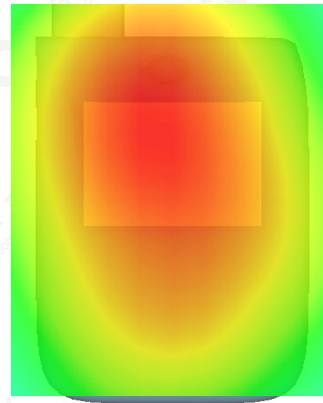
SAR, Z Axis Scan (X = -3, Y = 24)



3D screen shot



Hot spot position



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EUT battery: 3pcs AAA Alkaline batteries

Test Laboratory: AGC Lab

450 Mid-Face-up (GMRS)

DUT: 462MHz FRS/GMRS Walkie-talkie; Type: GMR5095-2CKHS

Date: Apr. 05,2016

Communication System Band: D450 (450.0 MHz); Duty Cycle: 1:1; Conv.F=7.37

Frequency: 462.6500 MHz; Medium parameters used: $f = 450$ MHz; $\sigma=0.88$ mho/m; $\epsilon_r=43.09$; $\rho= 1000$ kg/m³ ;

Phantom section: Flat Section

Ambient temperature (°C): 22.3, Liquid temperature (°C):22.1

SATIMO Configuration:

Probe: SSE5; Calibrated: 12/09/2015; Serial No.: SN 22/12 EP159

Sensor-Surface: 4mm (Mechanical Surface Detection)

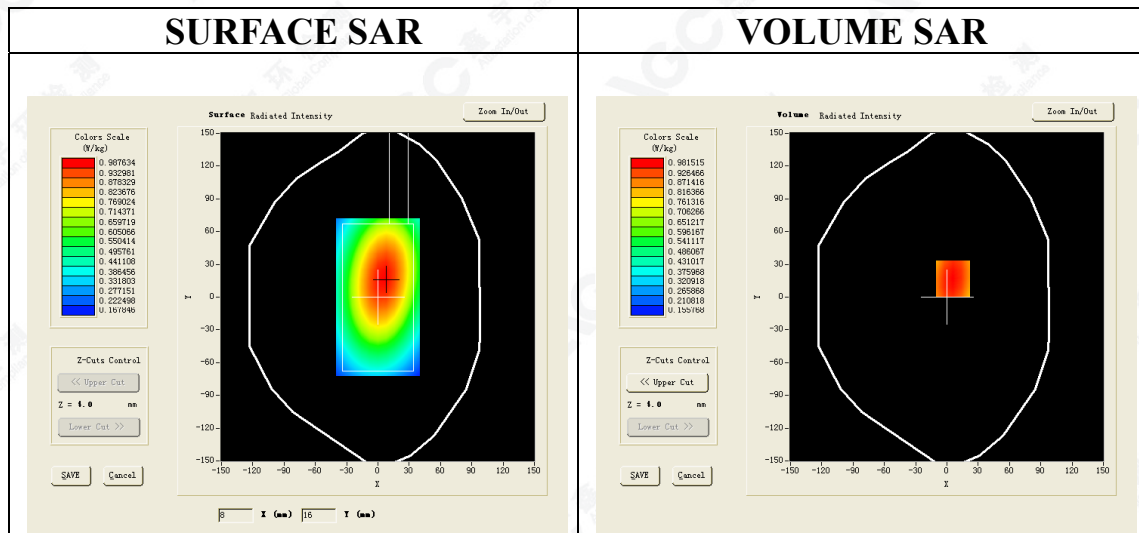
Phantom: SAM twin phantom

Measurement SW: OpenSAR V4_02_01

Configuration/ 450 Face-up /Area Scan: Measurement grid: dx=8mm, dy=8mm

Configuration/ 450 Face-up /Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm

Area Scan	sam_direct droit2_surf8mm.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Face up with 25mm
Band	450
Channels	Middle
Signal	Crest factor: 1.0



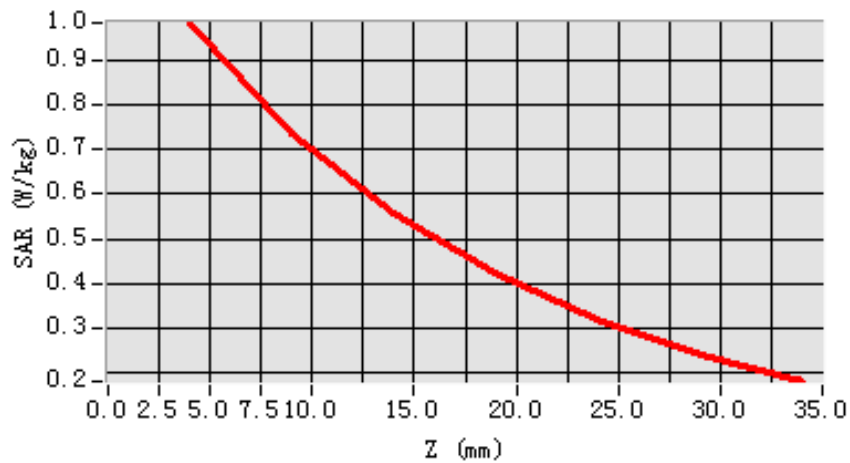
Maximum location: X=6.00, Y=17.00

SAR 10g (W/Kg)	0.698233
SAR 1g (W/Kg)	0.952791

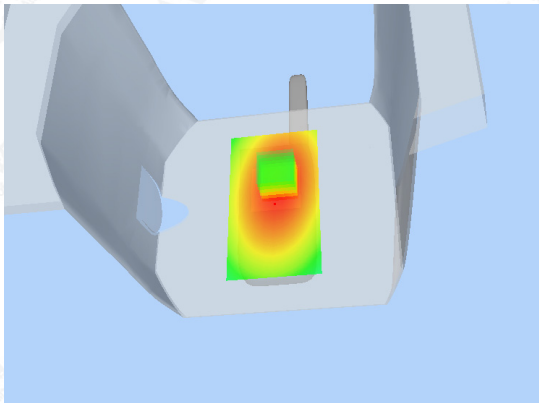
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Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.9815	0.7371	0.5568	0.4223	0.3198	0.2421

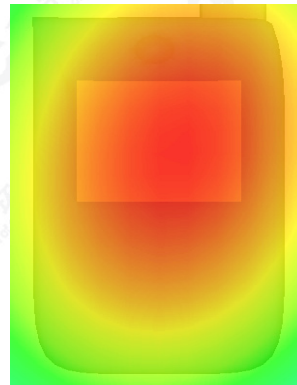
SAR, Z Axis Scan (X = 6, Y = 17)



3D screen shot



Hot spot position



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Test Laboratory: AGC Lab
450 Low- Body Back With Belt Clip & Headset (GMRS)
DUT: 462MHz FRS/GMRS Walkie-talkie; Type: GMR5095-2CKHS

Date: Apr. 07,2016

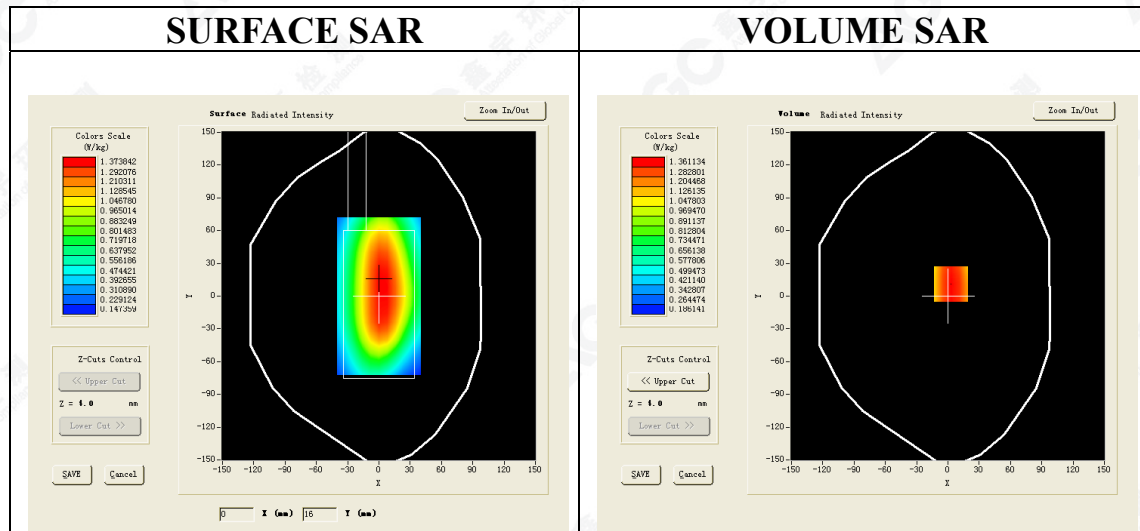
Communication System Band: D450 (450.0 MHz); Duty Cycle: 1:1; Conv.F=7.54
Frequency: : 462.5500MHz; Medium parameters used: $f = 450$ MHz; $\sigma=0.94$ mho/m; $\epsilon_r=57.12$; $\rho= 1000$ kg/m³ ;
Phantom section: Flat Section
Ambient temperature (°C): 22.8, Liquid temperature (°C):22.3

SATIMO Configuration:

Probe: SSE5; Calibrated: 12/09/2015; Serial No.: SN 22/12 EP159
Sensor-Surface: 4mm (Mechanical Surface Detection)
Phantom: SAM twin phantom
Measurement SW: OpenSAR V4_02_01

Configuration/450 Low - Body- Back /Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/450 Low - Body- Back /Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm

Area Scan	sam_direct droit2_surf8mm.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body Back With 0mm
Band	450
Channels	Low
Signal	Crest factor: 1.0



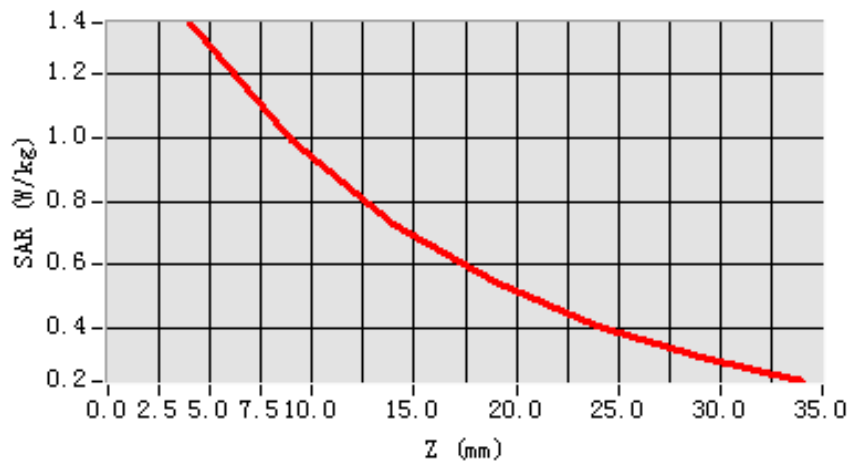
Maximum location: X=3.00, Y=11.00

SAR 10g (W/Kg)	0.950601
SAR 1g (W/Kg)	1.324249

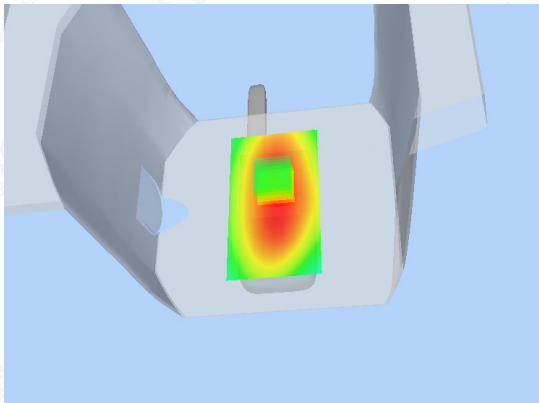
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Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	1.3611	0.9893	0.7312	0.5462	0.4104	0.3111

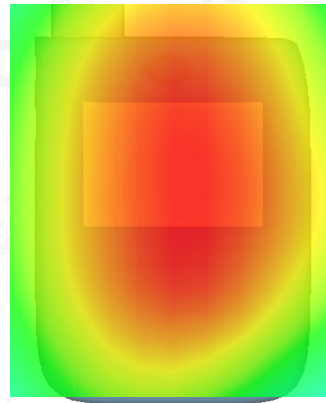
SAR, Z Axis Scan (X = 3, Y = 11)



3D screen shot



Hot spot position



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Test Laboratory: AGC Lab
450 Mid- Body Back With Belt Clip & Headset (GMRS)
DUT: 462MHz FRS/GMRS Walkie-talkie; Type: GMR5095-2CKHS

Date: Apr. 07,2016

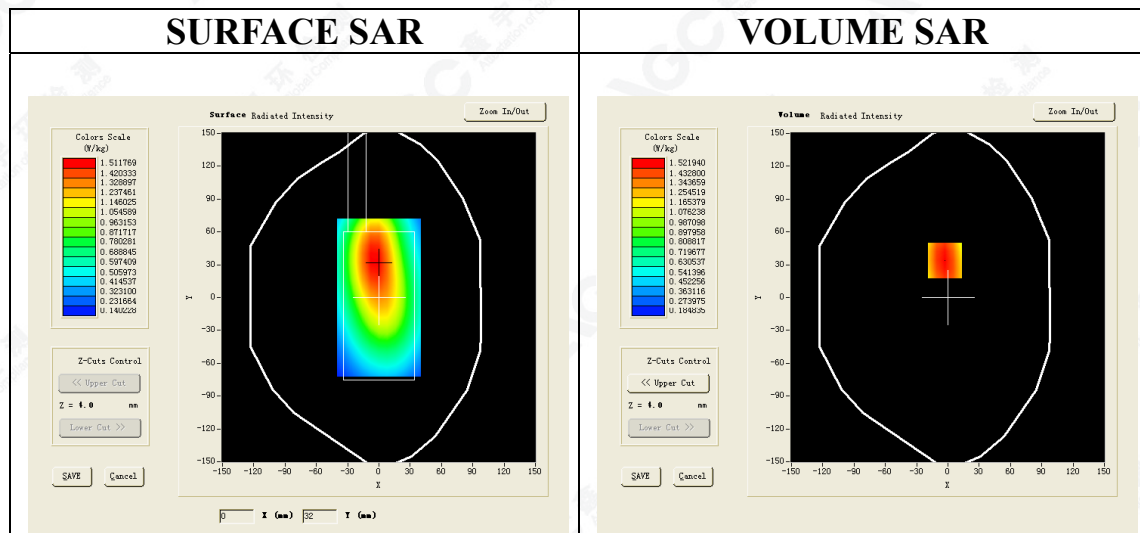
Communication System Band: D450 (450.0 MHz); Duty Cycle: 1:1; Conv.F=7.54
Frequency: : 462.6500MHz; Medium parameters used: $f = 450$ MHz; $\sigma=0.94$ mho/m; $\epsilon_r=57.12$; $\rho= 1000$ kg/m³ ;
Phantom section: Flat Section
Ambient temperature (°C): 22.8, Liquid temperature (°C):22.3

SATIMO Configuration:

Probe: SSE5; Calibrated: 12/09/2015; Serial No.: SN 22/12 EP159
Sensor-Surface: 4mm (Mechanical Surface Detection)
Phantom: SAM twin phantom
Measurement SW: OpenSAR V4_02_01

Configuration/450 Mid- Body- Back /Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/450 Mid- Body- Back /Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm

Area Scan	sam_direct_droit2_surf8mm.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body Back With 0mm
Band	450
Channels	Middle
Signal	Crest factor: 1.0



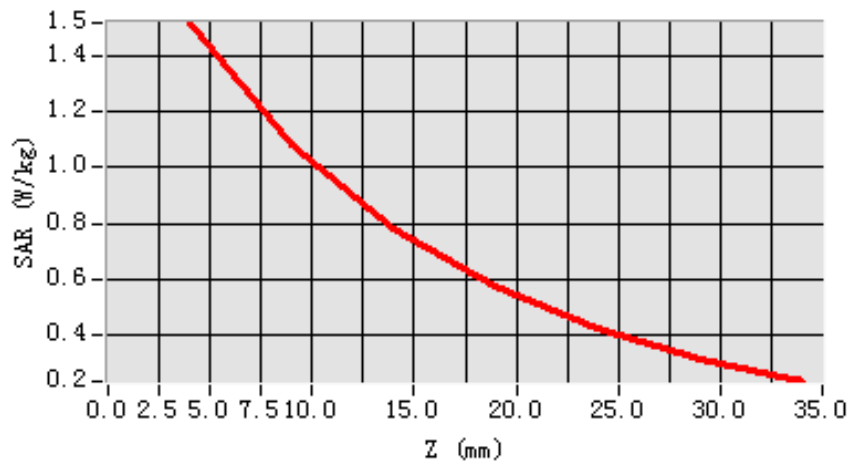
Maximum location: X=-3.00, Y=34.00

SAR 10g (W/Kg)	1.026763
SAR 1g (W/Kg)	1.473503

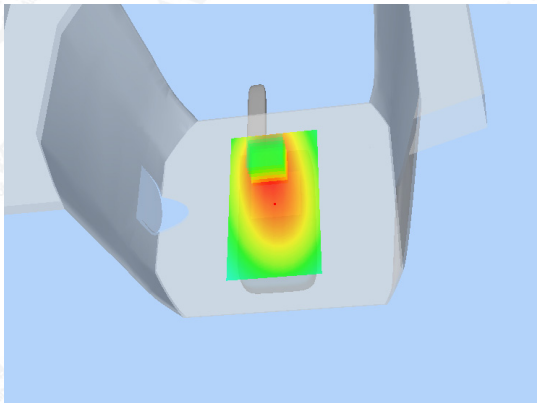
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Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	1.5219	1.0820	0.7838	0.5722	0.4205	0.3101

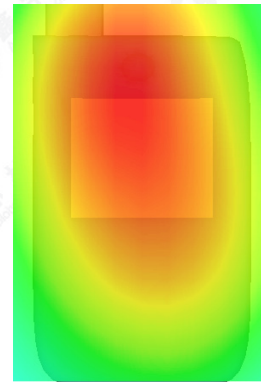
SAR, Z Axis Scan (X = -3, Y = 34)



3D screen shot



Hot spot position



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Test Laboratory: AGC Lab
450 High- Body Back With Belt Clip & Headset (GMRS)
DUT: 462MHz FRS/GMRS Walkie-talkie; Type: GMR5095-2CKHS

Date: Apr. 07,2016

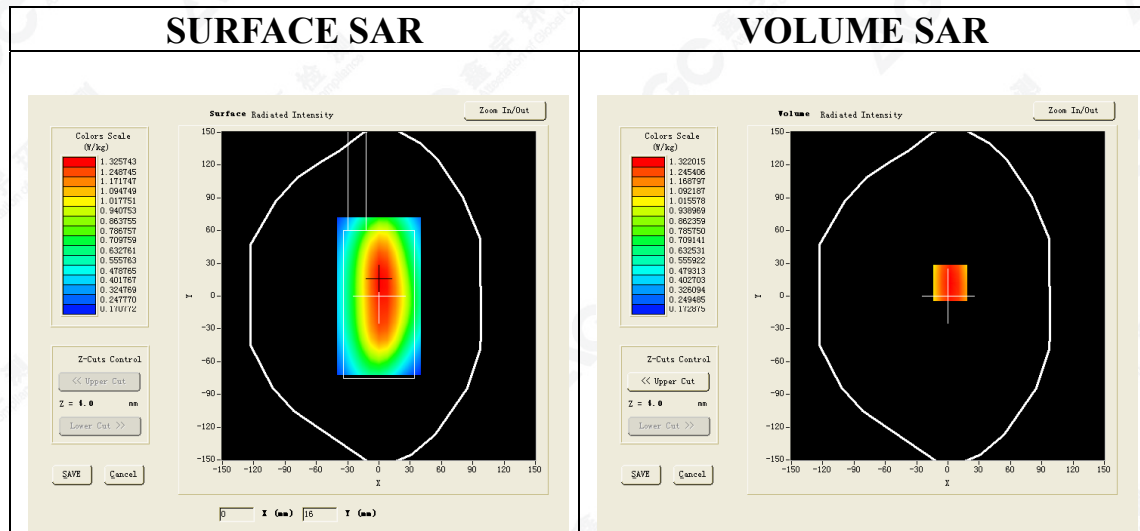
Communication System Band: D450 (450.0 MHz); Duty Cycle: 1:1; Conv.F=7.54
Frequency: 462.7250MHz; Medium parameters used: $f = 450$ MHz; $\sigma=0.94$ mho/m; $\epsilon_r=57.12$; $\rho=1000$ kg/m³ ;
Phantom section: Flat Section
Ambient temperature (°C): 22.8, Liquid temperature (°C):22.3

SATIMO Configuration:

Probe: SSE5; Calibrated: 12/09/2015; Serial No.: SN 22/12 EP159
Sensor-Surface: 4mm (Mechanical Surface Detection)
Phantom: SAM twin phantom
Measurement SW: OpenSAR V4_02_01

Configuration/450 High - Body- Back /Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/450 High - Body- Back /Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm

Area Scan	sam_direct_droit2_surf8mm.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body Back With 0mm
Band	450
Channels	High
Signal	Crest factor: 1.0



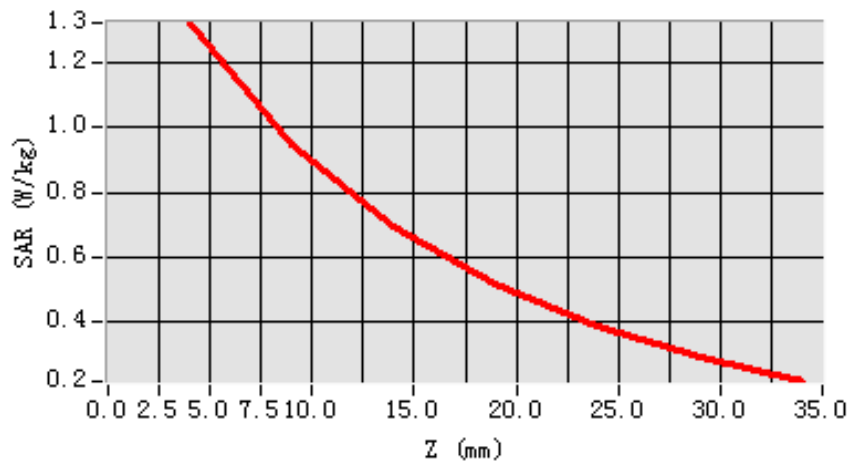
Maximum location: X=2.00, Y=12.00

SAR 10g (W/Kg)	0.910944
SAR 1g (W/Kg)	1.283464

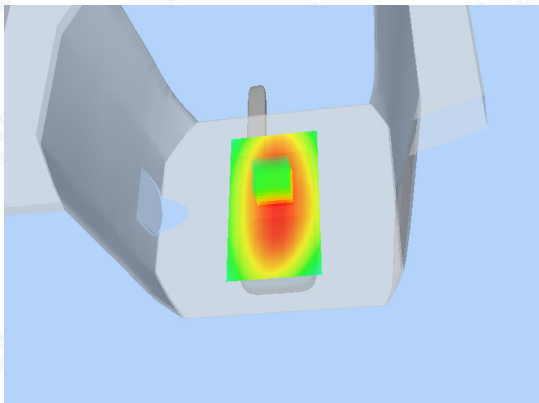
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Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	1.3220	0.9482	0.6932	0.5146	0.3847	0.2895

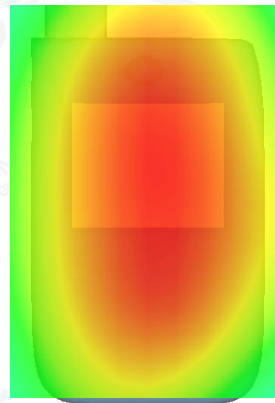
SAR, Z Axis Scan (X = 2, Y = 12)



3D screen shot



Hot spot position



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Test Laboratory: AGC Lab
450 Mid- Body Back With Headset (GMRS)
DUT: 462MHz FRS/GMRS Walkie-talkie; Type: GMR5095-2CKHS

Date: Apr. 07,2016

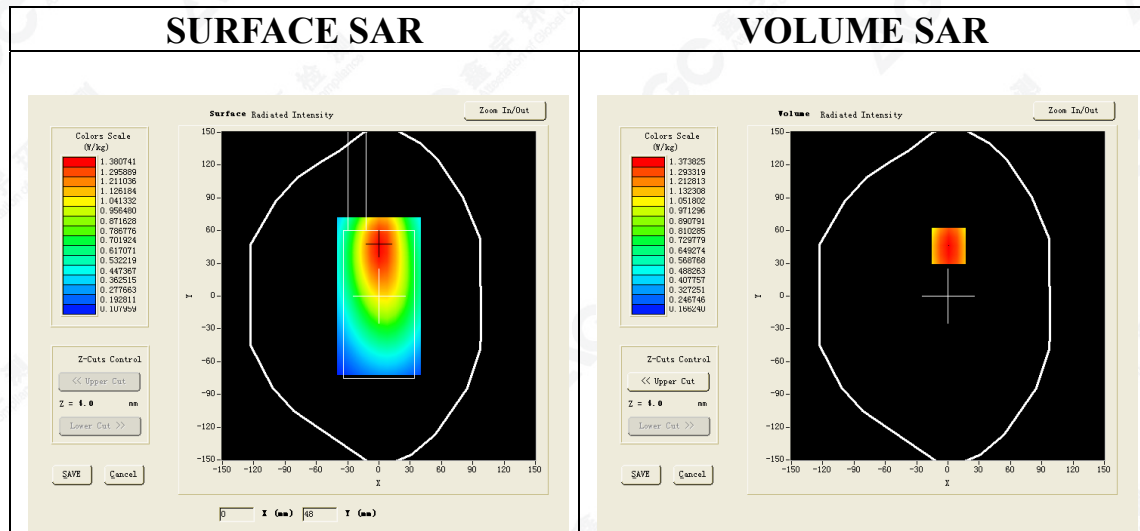
Communication System Band: D450 (450.0 MHz); Duty Cycle: 1:1; Conv.F=7.54
Frequency: 462.6500MHz; Medium parameters used: $f = 450$ MHz; $\sigma=0.94$ mho/m; $\epsilon_r=57.12$; $\rho=1000$ kg/m³ ;
Phantom section: Flat Section
Ambient temperature (°C): 22.8, Liquid temperature (°C):22.3

SATIMO Configuration:

Probe: SSE5; Calibrated: 12/09/2015; Serial No.: SN 22/12 EP159
Sensor-Surface: 4mm (Mechanical Surface Detection)
Phantom: SAM twin phantom
Measurement SW: OpenSAR V4_02_01

Configuration/450 Mid- Body- Back /Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/450 Mid- Body- Back /Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm

Area Scan	sam_direct_droit2_surf8mm.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body Back With 10mm
Band	450
Channels	Middle
Signal	Crest factor: 1.0



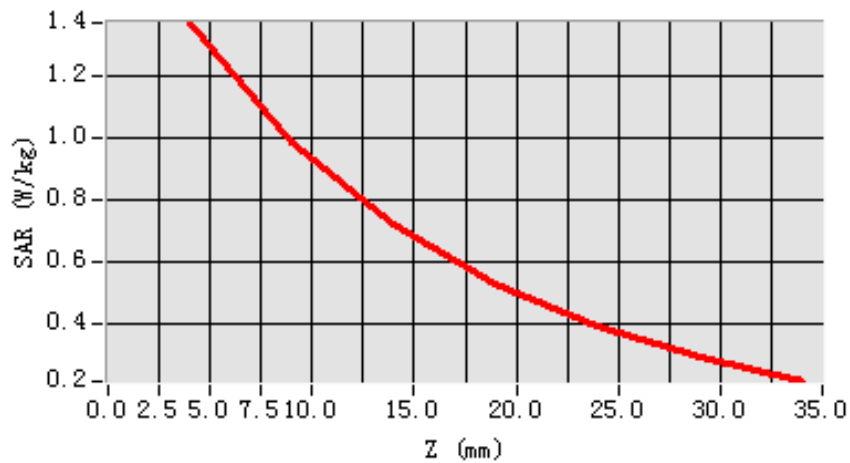
Maximum location: X=1.00, Y=46.00

SAR 10g (W/Kg)	0.936183
SAR 1g (W/Kg)	1.328986

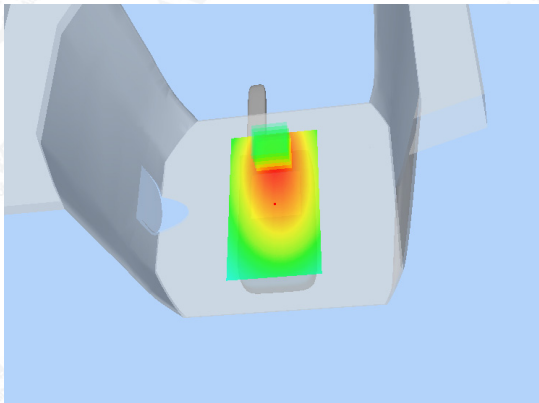
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Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	1.3738	0.9874	0.7204	0.5279	0.3891	0.2873

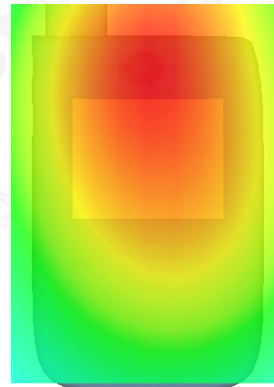
SAR, Z Axis Scan (X = 1, Y = 46)



3D screen shot



Hot spot position



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APPENDIX C. TEST SETUP PHOTOGRAPHS & EUT PHOTOGRAPHS

Test Setup Photographs

Face Up with 25mm Separation Distance.



Body Back With Belt Clip & Headset (0mm)



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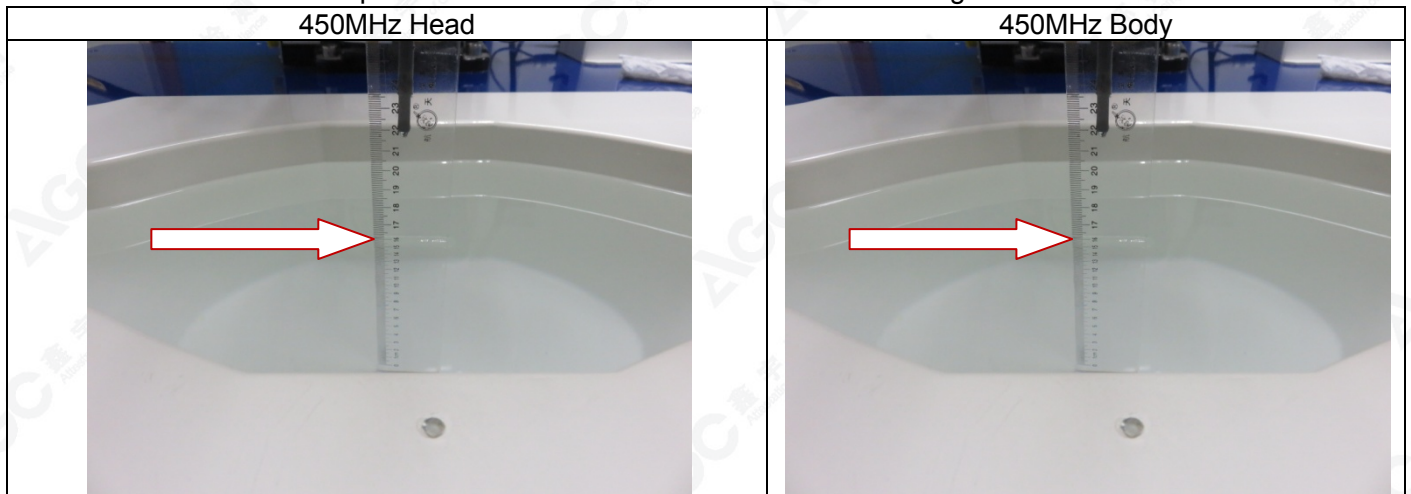
Body Back With Headset (10mm)



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DEPTH OF THE LIQUID IN THE PHANTOM—ZOOM IN

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



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