

## SPECIFIC ABSORPTION RATE (SAR)

# TEST REPORT

of

### GPS tracker

Model Name: GL100  
Trade Name: eLoc  
FCC ID: UDV-0809182008007  
Report No.: SH08090012S01

*prepared for*

### SHANGHAI SIMCOM LIMITED

Build A, No. 633 JinZhong Rd.,  
ChangNing District Shanghai, PRC China.

*prepared by*

### Shenzhen Electronic Product Quality Testing Center

#### Morlab Laboratory

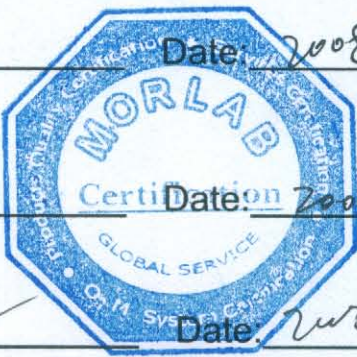
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## GENERAL SUMMARY

Product Name	GPS tracker	Development Stage	Identical prototype
Standard(s)	<p><b>47CFR §2.1093:</b> Radiofrequency Radiation Exposure Evaluation: Portable Devices</p> <p><b>FCC OET Bulletin 65 (Edition 97-01), Supplement C (Edition 01-01):</b> Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields</p> <p><b>ANSI C95.1-1999:</b> IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.</p> <p><b>IEEE 1528-2003:</b> Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques.</p>		
Conclusion	<p>Localized Specific Absorption Rate (SAR) of this portable wireless equipment has been measured in all cases requested by the relevant standards cited in Clause 5.2 of this test report. Maximum localized SAR is below exposure limits specified in the relevant standards cited in Clause 5.1 of this test report.</p> <p>General Judgment: <b>Pass</b></p> <p><b>Date of issue: Oct. 07, 2008</b></p>		
Comment	<p>TX Freq. Band: 824.20 MHz-848.80 MHz      1850.20 MHz -1909.80 MHz</p> <p>RX Freq. Band: 869.20 MHz-893.80 MHz      1930.20 MHz -1989.80 MHz</p> <p>Antenna Character : build inside</p> <p>The test result only responds to the measured sample.</p>		
<div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="width: 45%;"> <p>Teste by: <u>Lou Qinchao</u></p> <p style="margin-left: 40px;">Lou Qinchao</p> <p>Checked by: <u>Zhang Jun</u></p> <p style="margin-left: 40px;">Zhang Jun</p> <p>Approved by: <u>Su Feng</u></p> <p style="margin-left: 40px;">Su Feng</p> </div> <div style="width: 10%; text-align: center;">  </div> <div style="width: 45%;"> <p>Date: <u>2008.10.8</u></p> <p>Date: <u>2008.10.8</u></p> <p>Date: <u>2008.10.8</u></p> </div> </div>			



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## **1. GENERAL CONDITIONS**

**1.1 This report only refers to the item that has undergone the test.**

**1.2 This report standalone does not constitute or imply by its own an approval of the product by the certification Bodies or competent Authorities.**

**1.3 This document is only valid if complete; no partial reproduction can be made without written approval of Shenzhen Morlab Communications Technology Co., Ltd.**

**1.4 This report cannot be used partially or in full for publicity and/or promotional purposes without previous written approval of Shenzhen Morlab Communications Technology Co., Ltd. and the Accreditation Bodies, if it applies.**

**1.5 This production is a GPS tracker no speech function.**



## 2. Administrative Date

### 2.1. Identification of the Responsible Testing Laboratory

**Company Name:** Shenzhen Morlab Communications Technology Co.,Ltd.  
**Department:** Testing Department  
**Address:** 3FI, Electronic Testing Building, ShaHe Road, NanShan District, Shenzhen, P. R. China  
**Telephone:** +86 755 86130268  
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**Responsible Test Lab Managers:** Mr. Shu Luan

### 2.2. Identification of the Responsible Testing Location(s)

**Company Name:** Shenzhen Electronic Product Quality Testing Center Morlab Laboratory  
**Address:** 3FI, Electronic Testing Building, ShaHe Road, NanShan District, Shenzhen, P. R. China

### 2.3. Organization Item

**Morlab Report No.:** SH08090012S01  
**Morlab Project Leader:** Mr. Lou Qinchao  
**Morlab Responsible for** Mr. Shu Luan  
**Accreditation scope:**  
**Start of Testing:** 2008-9-24  
**End of Testing:** 2008-10-6

### 2.4. Identification of Applicant

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**Company Name:** SHANGHAI SIMCOM LIMITED.  
**Address:** Build A, No. 633 JinZhong Rd., ChangNing District Shanghai, PRC China  
**Contact person:** Mr. Tang Erchang  
**Telephone:** +86 (0) 13818816267  
**Fax:** +86-021-54278901

**Notes:** This data is based on the information offered by the applicant.

### 3. Equipment Under Test (EUT)

#### 3.1. Identification of the Equipment under Test

<b>Brand Name:</b>	eLoc	
<b>Type Name:</b>	GL100	
<b>Marking Name:</b>	eLoc	
	Test frequency	GSM 850MHz and PCS 1900MHz
	Development Stage	Identical prototype
	Accessories	Charger, Battery
	Battery Model	GL100(JLFV)
	Battery specification	3.7V 1300mAh
<b>General description:</b>	Antenna type	Integrated
	Operation mode	Call established
	Modulation mode	GMSK
	Max. Power	0.43W for GSM850MHz band
	(ERP/EIRP)	0.49W for PCS1900MHz band

#### 3.2. Identification of all used Test Sample of the Equipment under Test

EUT Code	Serial Number	Hardware Version	Software Version	IMEI
#1	N.A.	V1.02	ADI 16.0	--

#### NOTE:

1. The EUT consists of normal options: Charger, Lithium Battery as listed above.
2. Please refer to Appendix C for the photographs of the EUT. For a more detailed features description of the EUT, please refer to its User's Manual.

## 4 OPERATIONAL CONDITIONS DURING TEST

### 4.1 Schematic Test Configuration

During SAR test, EUT is in Traffic Mode (Channel Allocated) at Normal Voltage Condition. A communication link is set up with a System Simulator (SS) by air link, and a call is established.

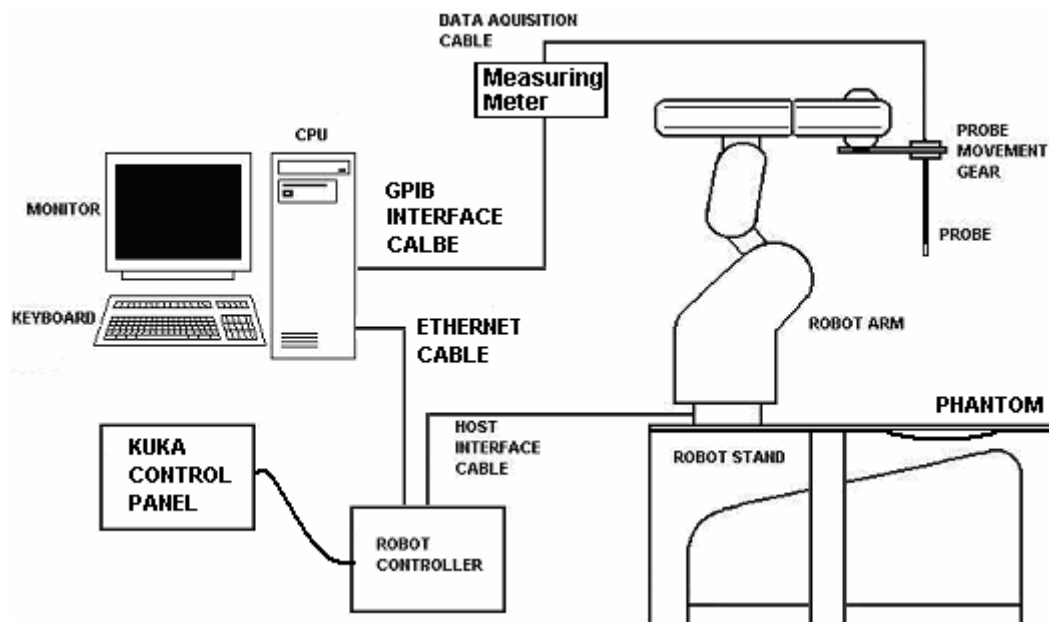
The TCH is allocated to 128, 189 and 251 respectively in the case of GSM 850 MHz, or to 512, 661 and 810 respectively in the case of PCS 1900 MHz. The EUT is commanded to operate at maximum transmitting power.

The EUT shall use its internal transmitter. The antenna(s), battery and accessories shall be those specified by the manufacturer. The EUT battery must be fully charged and checked periodically during the test to ascertain uniform power output. If a wireless link is used, the antenna connected to the output of the base station simulator shall be placed at least 50 cm away from the handset.

The signal transmitted by the simulator to the antenna feeding point shall be lower than the output power level of the handset by at least 35 dB.

### 4.2 SAR Measurement System

The SAR measurement system being used is the COMOSAR Test Bench, which consists of a



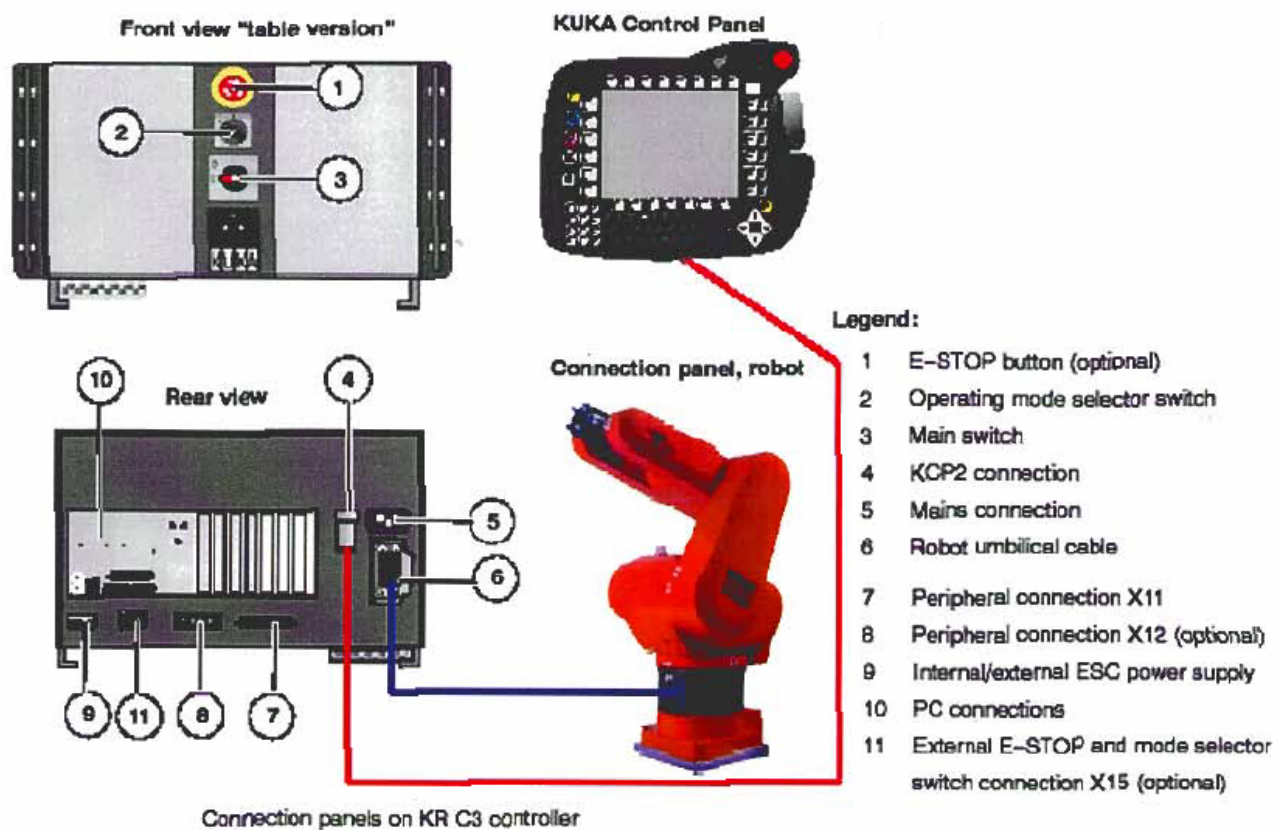
**Figure1. SAR Lab Test Measurement Set-up**

KUKA 6-axis robot arm and controller, Antennessa probe with *no amplifier* and SAM phantom. The system is controlled remotely from a PC, which contains the software to control most of the bench devices and stores measurement data. The software also displays the data obtained from test scans,

and determines the averaged SAR values (averaging region 1 gram or 10 gram) for compliance testing. In operation, the system first does an area (2D) scan at a fixed depth within the liquid from the inside wall of the phantom. When the maximum SAR point has been found, the system will then carry out a 3D scan centered at that point to determine volume averaged SAR level.

#### 4.2.1 Robot system specification

The robot is used to articulate the probe to programmed positions inside the phantom head to obtain the SAR readings from the DUT.





## 4.2.2 Probe Specification

### Antennessa isotropic waterproof and low loss SAR probe

Antennessa probes are constructed with a triangular section bar in alumina. On each face, a dipole and a resistive line are printed. A Schottky diode is placed in the center of each dipole.

This probe is designed to fulfill CENELEC, IEEE and FCC recommendations for the measurement of electromagnetic fields radiated by mobile phones and base stations.

All probes are protected by waterproof and low loss girdle. The dosimetric probe has special calibration factors for each frequency and mode.

Due to the specific structure and high sensitivity of Antennessa probes, the E field evaluation needs *no amplification* between the sensors and the PC.

### Technical data

This E-field detection probe is composed of three orthogonal dipoles linked to special Schottky diodes with low detection thresholds. The probe allows the measurement of electric fields in liquids such as the on defined in the IEEE and CENELEC standard. These uncoupled dipoles perform the isotropic and wideband measurements necessary to assess mobile phones SAR.

Frequency range	100 MHz - 30 GHz
Length	330 mm
Dipoles Length	4.5 mm
Maximum external diameter	8 mm
Probe tip external diameter	5 mm
Distance between dipoles and the probe tip	<2.7mm
Dipole resistance (in the connector plane)	1M   to 2M
Axial isotropy in human-equivalent liquids	± 0.25 dB
Hemispherical Isotropy in human-equivalent liquids	± 0.5 dB
Linearity	± 0.5 dB
Maximum operating SAR	100 Watts/kg
Lower SAR detection threshold	0.0015 Watts/kg
Connectors	6 male wires (Hirose SR30)

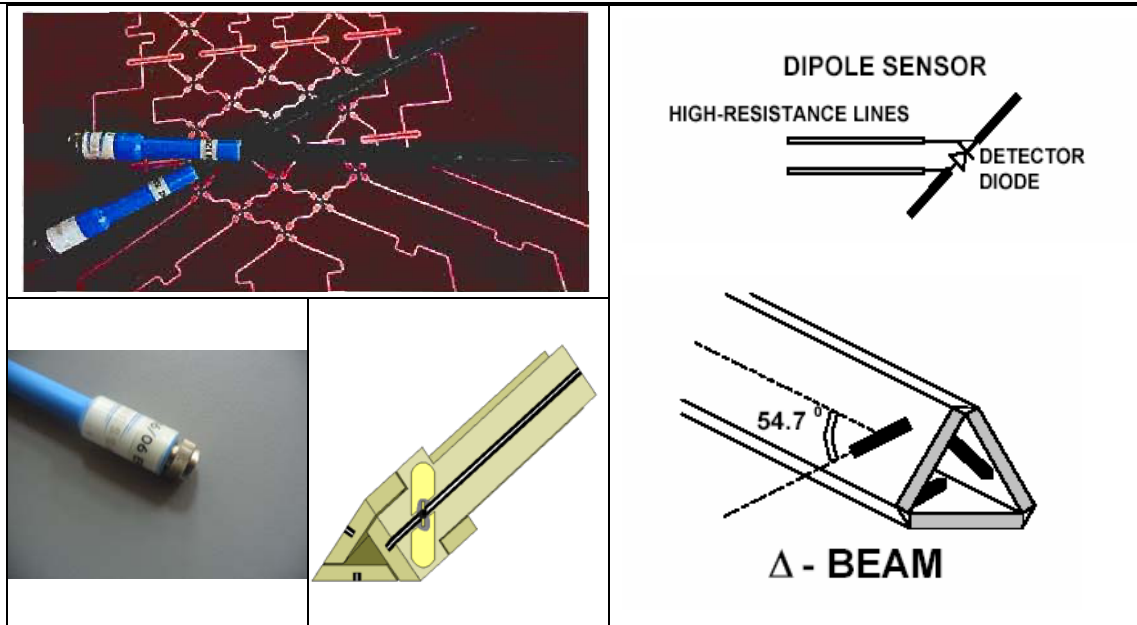
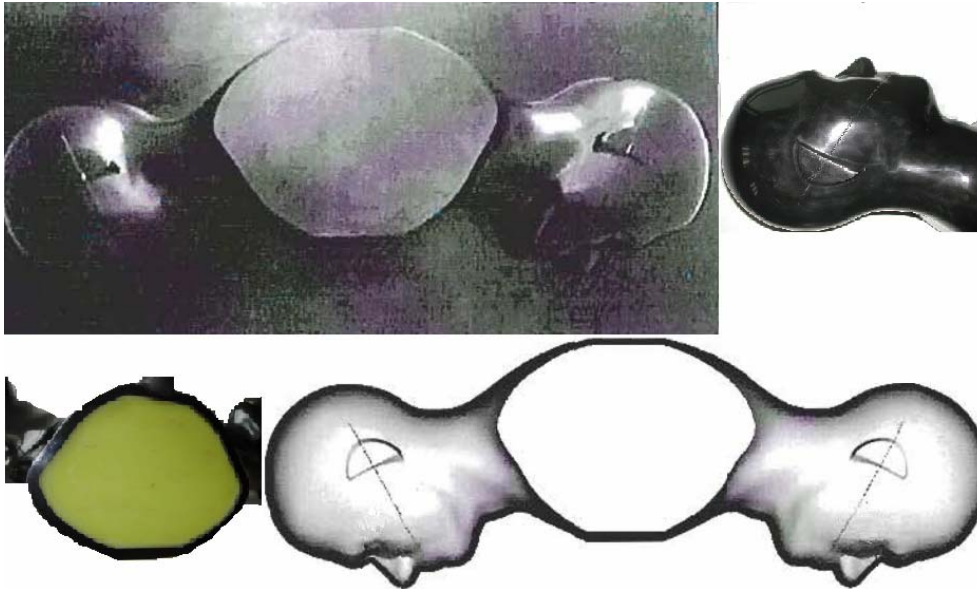


Figure2. Specification and characterization parameters of antenna probe

### 4.2.3 Phantoms, Device Holder and Simulant Liquid

#### 4.2.3.1 Sam Phantom

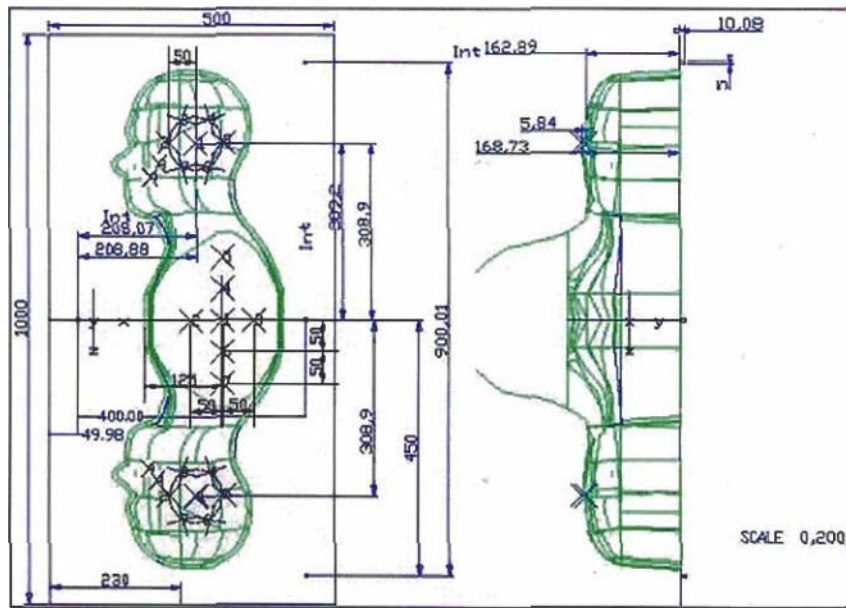


The SAM phantom is used to measure the SAR relative to person's exposure to electro-magnetic field radiated by mobile phones.

#### Technical Data

Shell thickness	2 mm +/-0.2 mm
Filling volume	27 liters
Dimensions	1000 mm (Length) ; 500 mm (Width) ; 200 mm (Height)
5 molded plastic points for high precision reference Delivered with 4 nylon screws	

For thickness control purposes, the phantom has several integrated thickness control points (see crosses on the picture below)



### Position of the thickness control points

The SAM phantom is delivered with a CAD CD-ROM including the 3D data of the internal shape of the shell. These data are used by the 6 axis robot control software to define movements relative to its internal surface.

The SAM phantom also has 5 additional CAD-linked reference points to properly position the 6-axis robot (probe tip) in the phantom shell.

The SAM phantom has reference points at the center of the flat area (for measurements with dipoles) and near its mouth and ear for mobile phone positioning purposes.

The phantom is equipped with a tap for draining the liquid.

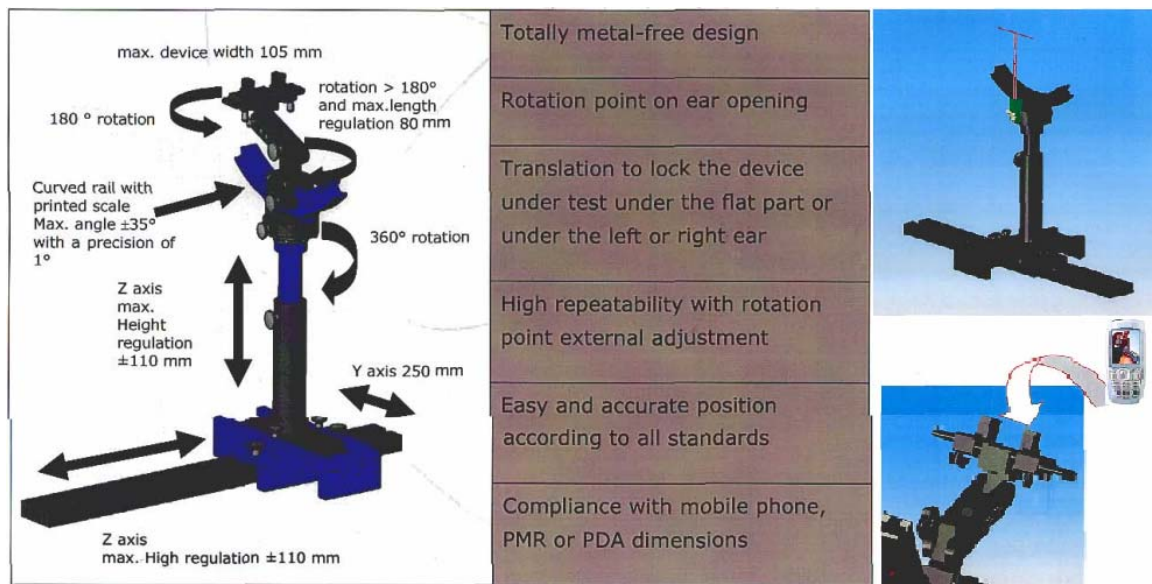
The liquid quantity necessary to fill the phantom is approximately 20 liters.

All phantoms are tested after production. The test is made on 22 different points. It is based on an ultrasonic system measurement, which allows measuring the thickness with a precision of  $10\mu\text{m}$ . The mould has been controlled by a certification company.

### 4.2.3.2 Device and Dipole Holder



The SAR value is approximately inversely proportional to the square of the distance between the source and the internal phantom surface. For a source at 5mm distance, a positioning uncertainty of  $\pm 0.5\text{mm}$  would produce a SAR uncertainty of  $\pm 20\%$ . An accurate device positioning is therefore essential for accurate and repeatable measurements.



This positioning system allows the translating of the mobile phone along the x, y and z axis, as well as the required rotation around the phantom ear, for the 2 positions defined by standards (0° “cheek” position and 15° “tilt” position).

The correct position can be easily determined thanks to an additional tool with a pointer. The top part of the system, above the curved rail, can be fixed definitively so that subsequent adjustments just concern the angle or the x, y or z axis.

This simplifies the positioning of the acoustic output of the telephone on the cross section of the phantom, before rolling the system underneath the phantom. It also improves the accuracy and repeatability of positioning with a tolerance  $\leq 0.65\text{mm}$ .

#### 4.2.3.3 Tissue Simulating Liquids

There is no simulating liquids that can cover all frequency bands. Therefore, our system is using different liquids for the measured band as explained bellows.

The parameters of the simulating solution strongly influence the SAR values. The different normalization organizations have defined adapted solutions for the each mobile system.

GSM liquid: is made of 1-2 Propylene Glycol, de-ionized water and NaCl, reconstituting the electric properties of human tissues at 900MHz.

PCS Liquid: is made of de-ionized water, DGBE, Triton X 100 and NaCl, reconstituting the electric properties of human tissues at 1800MHz.

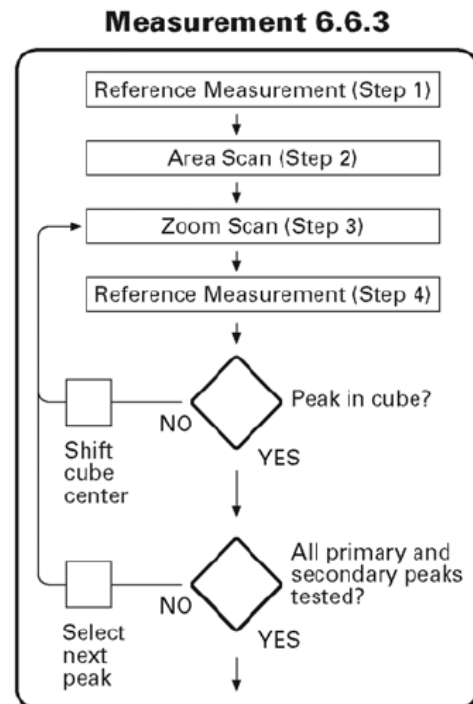
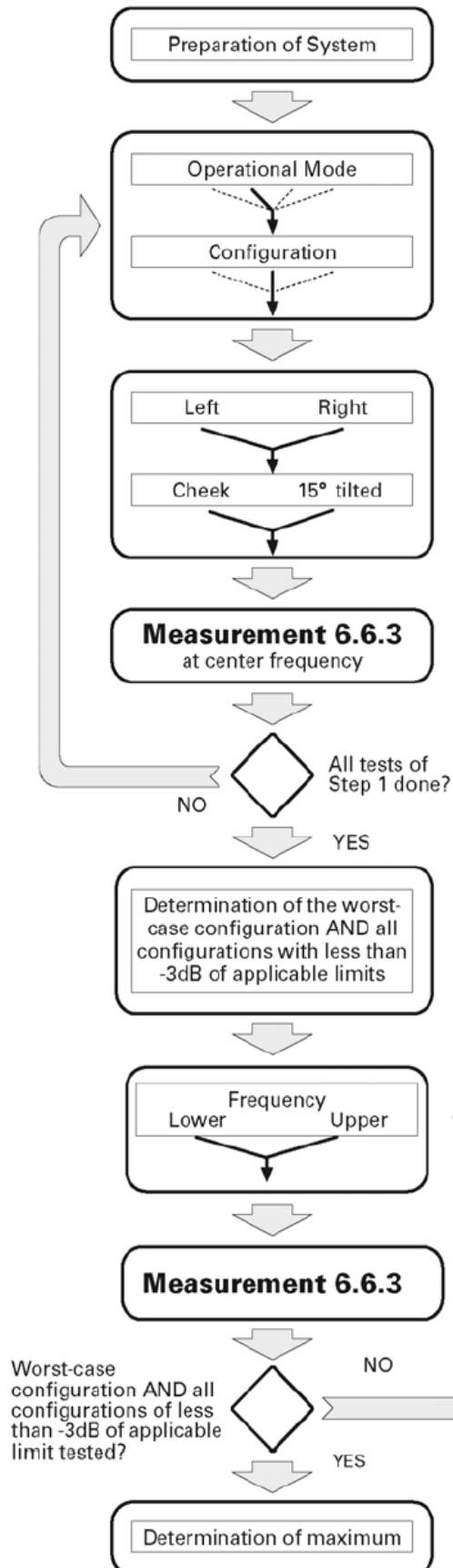
UMTS Liquid: is made of de-ionized water, DGBE, Triton X 100 and NaCl, reconstituting the electric properties of human tissues at 2000MHz.



Several measurement systems are available for measuring the dielectric parameters.

Antennessa has developed its own software, based on a coaxial probe. This method allows measurement of liquid permittivity between 300 MHz and 6GHz.

#### 4.2.4 SAR measurement procedure



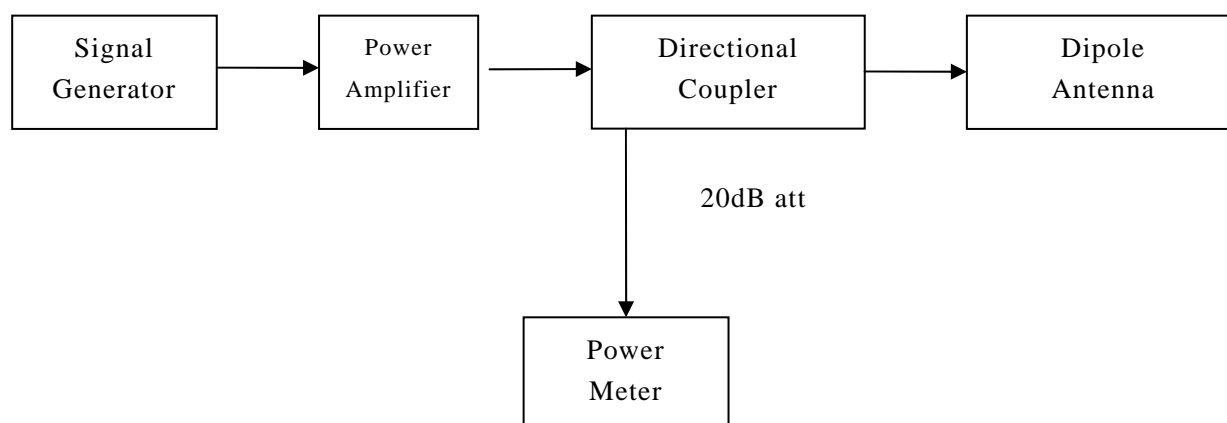
Channel	Left				Right			
	Cheek		Tilt		Cheek		Tilt	
	Retracted	Extended	Retracted	Extended	Retracted	Extended	Retracted	Extended
Mode 1:								
High			S2(-1.4dB)	S2(-0.4dB)			S2(-2.2dB)	S2(-1.4dB)
Middle	S1(-4dB)	S1(-4dB)	S1(-1.5dB)	S1(-0.5dB)	S1(-5dB)	S1(-5dB)	S1(-2.5dB)	S1(-1.5dB)
Low			S2(-1.3dB)	S2(-0.7dB)			S2(-2.7dB)	S2(-0.6dB)
Mode 2:								
High			S2(-2.7dB)	S2(-1.1dB)				
Middle	S1(-5dB)	S1(-5dB)	S1(-2.5dB)	S1(-1dB)	S1(-6dB)	S1(-6dB)	S1(-5dB)	S1(-5dB)
Low			S2(-2.2dB)	S2(-0.8dB)				

After an area scan has been done at a fixed distance of 8mm from the surface of the phantom on the source side, a 3D scan is set up around the location of the maximum spot SAR. First, a point within the scan area is visited by the probe and a SAR reading taken at the start of testing. At the end of testing, the probe is returned to the same point and a second reading is taken. Comparison between these start and end readings enables the power drift during measurement to be assessed.

Above is the scanning procedure flow chart and table from the IEEE p1528 standard. This is the procedure for which all compliant testing should be carried out to ensure that all variations of the device position and transmission behavior are tested.

#### 4.2.5 Validation Test Using Flat Phantom

The following procedure, recommended for performing validation tests using flat phantom is based on the procedures described in the IEEE standard P1528. Setup according to the setup diagram below:

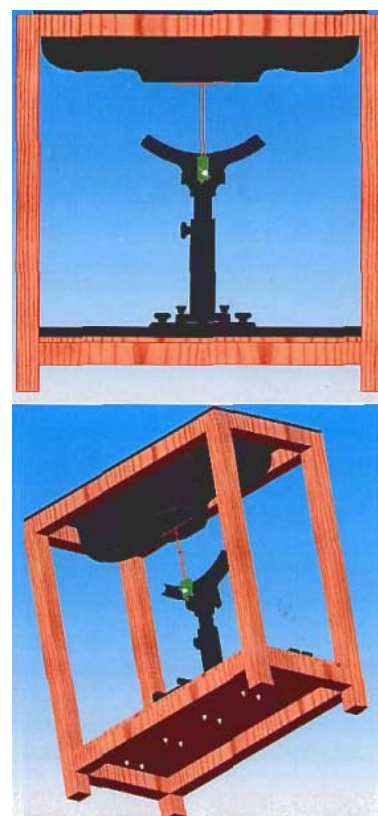


#### 4.2.5.1 Setting up the Box Phantom for Validation Testing

One of the main purposes of the flat part of the phantom is for validation of the system. By placing the highly-symmetric and matched reference dipole below the phantom and using the same device holder, the system can now be used to check that the probe and software are giving accurate readings. The antennas are developed with a  $\lambda_0/4$  balun, so that all calibration dipoles are totally symmetrical.

Each validation dipole is used to check the whole SAR measurement chain in its frequency band. They are especially developed to make SAR measurements near a flat SAM phantom filled with human-equivalent liquid, according to the standards.

Each dipole has been designed to be plugged in the Antennessa phone positioning system. Validation measurements are made according to the standard, as the Antennessa phone positioning system is totally metal free.



#### 4.2.5.2 Equipments and Results of Validation Testing

Equipments:

name	Type and specification
Signal generator	SMT 06
Directional coupler	MFR 34078
Amplifier	BLMA 0820-6
Reference dipole	SN 36/05 DIP C20
	SN 36/05 DIP G23

Results:

Frequency	Date	Target value(1g) W/kg	Test value(1g) W/kg
850MHz	2008.10.05	9.5	9.94 (Body)
1900MHz	2008.10.06	39.7	37.68 (Body)

#### 4.2.6 Measurement Procedure

The following steps are used for each test position

Establish a call with the maximum output power with a base station simulator. The connection between

the mobile phone and the base station simulator is established via air interface.

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

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

#### **4.2.7 Description of Interpolation/Extrapolation Scheme**

The local SAR inside the phantom is measured using small dipole sensing elements inside a probe body. The probe tip must not be in contact with the phantom surface in order to minimise measurements errors, but the highest local SAR will occur at the surface of the phantom.

An extrapolation is using to determinate this highest local SAR values. The extrapolation is base on a fourth-order least square polynomial fit of measured data. The local SAR value is then extrapolated from the liquid surface with a 1mm step.

The measurements have to be performed over a limited (due to the duration of the battery) so the step of measurement is high. It could vary between 5 and 8mm. to obtain an accurate assessment of the maximum SAR averaged over 10 grams and 1gram requires a very fine resolution in the three-dimensional scanned data array.

## **5 CHARACTERISTICS OF THE TEST**

### **5.1 Applicable Limit Regulations**

**47CFR §2.1093:** Radiofrequency Radiation Exposure Evaluation: Portable Devices

**FCC OET Bulletin 65(Edition 97-01), Supplement C(Edition 01-01):** Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields

**ANSI C95.1–1999:** IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.

It specifies the maximum exposure limit of **1.6 W/kg** as averaged over any 1 gram of tissue for portable devices being used within 20 cm of the user in the uncontrolled environment.

### **5.2 Applicable Measurement Standards**

**IEEE 1528–2003:** Recommended Practice for Determining the Peak Spatial-Average Specific Absorption



Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques.

They specify the measurement method for demonstration of compliance with the SAR limits for such equipments.

## 6 LABORATORY ENVIRONMENT

**Table: The Ambient Conditions during SAR Test**

Temperature	Min. =15°C, Max. =30°C
Relative humidity	Min. =30%, Max. =70%
Ground system resistance	<0.5Ω
Ambient noise is checked and found very low and in compliance with requirement of standards. Reflection of surrounding objects is minimized and in compliance with requirement of standards.	

## 7 3G MEASUREMEAMENT PROCEDURE

### 7.1 Procedures Used To Establish Test Signal

The device was placed into a simulated call using a base station simulator in a shielded chamber. Such test signals offer a consistent means for testing SAR and are recommended for evaluating SAR. SAR measurements were taken with a fully charged battery. In order to verify that the device was tested and maintained at full power, this was configured with the base station simulator. The SAR measurement software calculates a reference point at the start and end of the test to check for power drifts. If conducted power deviations of more then 5% occurred, the tests were repeated. 7.2 SAR Measurement Conditions for CDMA2000 1x.

### 7.2 SAR Measurement Conditions for CDMA2000 1x

These procedures were followed according to FCC "SAR Measurement Procedures for 3G Devices", June 2006.

#### 7.2.1 Output Power Verification

See 3GPP2 C.S0011/TIA-98-E as recommended by "SAR Measurement Procedures for 3G Devices", June 2006. Maximum output power is verified on the High, Middle and Low channels according to procedures defined in section 4.4.5.2 of 3GPP2 C.S0011/TIA-98-E. SO55 tests were measured with power control bits in "All Up" condition. 1. If the mobile station supports Reverse TCH RC 1 and Forward TCH RC 1, set up a call using Fundamental Channel Test Mode 1 (RC=1/1) with 9600 bps data rate only. 2. Under RC1, C.S0011 Table 4.4.5.2-1 (Table.A) parameters were applied. 3. If the MS supports the RC 3 Reverse FCH, RC3 Reverse SCH0 and demodulation of RC 3, 4, or 5, set up a call using Supplemental Channel Test Mode 3 (RC 3/3) with 9600 bps Fundamental Channel and 9600 bps SCH0 data rate Channel and 9600 bps SCH0 data rate. 4. Under RC3, C.S0011 Table 4.4.5.2-2(Table.B) was applied. 5. FCHs were configured at full rate for maximum SAR with "All Up" power control bits.

**Table 1: Parameters for Max. Power for RC1**

Parameter	Units	Value
$\hat{I}_{or}$	dBm/ 1.23 MHz	-104
$\frac{Pilot E_c}{I_{or}}$	dB	-7
$\frac{Traffic E_c}{I_{or}}$	dB	-7.4

**Table 2: Parameters for Max. Power for RC3**

Parameter	Units	Value
$\hat{I}_{or}$	dBm/3.69 MHz	-99
$\frac{\text{Pilot } E_c}{I_{or}}$	dB	-10
$\frac{\text{Traffic } E_c}{I_{or}}$	dB	-12.4

## 7.2.2 Head SAR Measurement

SAR for head exposure configurations is measured in RC3 with the DUT configured to transmit at full rate using Loop back Service Option SO55. SAR for RC1 is not required when the maximum average output of each channel is less than ¼ dB higher than that measured in RC3. Otherwise, SAR is measured on the maximum output channel in RC1 using the exposure configuration that results in the highest SAR for that channel in RC3.

## 7.2.3 Body SAR Measurement

SAR for body exposure configurations is measured in RC3 with the DUT configured to transmit at full rate on FCH with all other code channels disabled using TDSO / SO32. SAR for multiple code channels (FCH + SCHn) is not required when the maximum average output of each RF channel is less than ¼ dB higher than that measured with FCH only. Otherwise, SAR is measured on the maximum output channel (FCH + SCHn) with FCH at full rate and SCH0 enabled at 9600 bps using the exposure configuration that results in the highest SAR for that channel with FCH only. When multiple code channels are enabled, the DUT output may shift by more than 0.5 dB and lead to higher SAR drifts and SCH dropouts. Body SAR in RC1 is not required when the maximum average output of each channel is less than ¼dB higher than that measured in RC3. Otherwise, SAR is measured on the maximum output channel in RC1; with Loop back Service Option SO55, at full rate, using the body exposure configuration that results in the highest SAR for that channel in RC3 .

Band	Channel	SO2	SO2	SO55	SO55	TDSO SO32
		RC1/1	RC3/3	RC1/1	RC3/3	RC3/3
GSM850	128	28.12	27.56	28.25	28.35	28.22
	189	28.43	28.31	28.50	28.52	28.45
PCS1900	251	28.33	28.22	28.35	28.49	28.42
	512	23.48	23.55	23.45	23.58	23.46
	661	39.57	24.00	24.01	24.06	24.17
	810	24.15	24.10	24.12	24.27	24.28

## 8 TEST RESULTS

### 8.1 Dielectric Performance

The measured 1-gram averaged SAR values of the device against the head and the body are provided in Table 1. The relative humidity and ambient temperature of test facility were 60% ~65% and 21.0 °C ~23.5°C respectively. The SAM head phantom (SN 36/05 SAM 25) was full of the head tissue simulating liquid. The depth of the body tissue was 15.0cm. The distance between the back of the device and the bottom of the flat phantom is 1.5cm. A base station simulator was used to control the device during the SAR measurement. The phone was supplied with full-charged battery for each measurement.

For body-worn measurements, the device was tested against flat phantom representing the user body. Under measurement phone was put on in the belt holder.

**Table 1: SAR Measurement Calibration**

Function	Name	Model No.	Series No.	Cal. Date	Cal. Due
SAR Measurement	Dipole antenna FREQ 850MHz	Dipole 835	SN 36/05 DIP C20	2008.10.05	1 year
SAR Measurement	Dipole antenna FREQ 1900MHz	Dipole 1900	SN 36/05 DIP G23	2008.10.06	1 year
SAR Measurement	Measurement probe	E-field Probe	SN 12/05 EP 61	2007-12- 26	1 year

**Table 2: Dielectric Performance of Body Tissue Simulating Liquid**

Temperature: 21.0~23.5°C, Relative Humidity: 60~65%.			
/	Frequency	Permittivity $\epsilon$	Conductivity $\sigma$ (S/m)
<b>Target value</b>	850 MHz	55.2	0.97
<b>Validation value</b> (Oct 5)	850 MHz	54.41	1.00
<b>Target value</b>	1900MHz	53.3	1.52
<b>Validation value</b> (Oct 6)	1900MHz	54.85	1.50



## 8.2 Summary of Measurement Results (GSM850MHz and PCS 1900MHz Band)

**Table 3: SAR Values (GSM 850 MHz Band), Measured against the body**

Temperature: 21.0~23.5°C, Relative Humidity: 60~65%.	
Limit of SAR (W/kg)	1 g Average
	1.6
Test Case	Measurement Result (W/kg)
	1 g Average (W/kg)
Side, Low Channel	0.342
Side, Mid Channel	0.303
Side, High Channel	0.326
Side, Middle Channel (BACK)	0.268

**Table 4: SAR Values (PCS 1900 MHz Band), Measured against the body**

Temperature: 21.0~23.5°C, Relative Humidity: 60~65%.	
Limit of SAR (W/kg)	1 g Average
	1.6
Test Case	Measurement Result (W/kg)
	1 g Average (W/kg)
Side, Low Channel	0.437
Side, Mid Channel	0.468
Side, High Channel	0.373
Side, Middle Channel (BACK)	0.409

## 8.3 Conclusion

Peak Spatial-Average Specific Absorption Rate (SAR) of this portable wireless device has been measured in all configurations requested by the relevant standards cited in Clause 5.2 of this report. SAR values are **below** exposure limits specified in the relevant standards cited in Clause 5.1 of this test report.

## 9 Measurement Uncertainties

The following table includes the uncertainty table of the IEEE 1528. The values are determined by Antennessa.

### UNCERTAINTY EVALUATION FOR DEVICE SAR TEST

a	b	c	d	e= f(d,k)	f	g	h= c*f/e	i= c*g/e	k
Uncertainty Component	Sec.	Tol (+-%)	Prob. Dist.	Div.	Ci (1g)	Ci (10g)	1g Ui (+-%)	10g Ui (+-%)	Vi
<b>Measurement System</b>									
Probe calibration	E.2.1	6.0	N	1	1	1	6.0	6.0	$\infty$
Axial Isotropy	E.2.2	2.5	R	$\sqrt{3}$	$(1-C_p)^{1/2}$	$(1-C_p)^{1/2}$	1.0	1.0	$\infty$
Hemispherical Isotropy	E.2.2	4.0	R	$\sqrt{3}$	$\sqrt{C_p}$	$\sqrt{C_p}$	1.6	1.6	$\infty$
Boundary effect	E.2.3	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	$\infty$
Linearity	E.2.4	5.0	R	$\sqrt{3}$	1	1	2.9	2.9	$\infty$
System detection limits	E.2.5	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	$\infty$
Readout Electronics	E.2.6	0.5	N	1	1	1	0.5	0.5	$\infty$
Reponse Time	E.2.7	0.2	R	$\sqrt{3}$	1	1	0.1	0.1	$\infty$
Integration Time	E.2.8	2.0	R	$\sqrt{3}$	1	1	1.2	1.2	$\infty$
RF ambient Conditions	E.6.1	3.0	R	$\sqrt{3}$	1	1	1.7	1.7	$\infty$
Probe positioner Mechanical Tolerance	E.6.2	2.0	R	$\sqrt{3}$	1	1	1.2	1.2	$\infty$
Probe positioning with respect to Phantom Shell	E.6.3	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	$\infty$
Extrapolation, interpolation and integration Algorithms for Max. SAR Evaluation	E.5.2	1.5	R	$\sqrt{3}$	1	1	0.9	0.9	$\infty$
<b>Test sample Related</b>									
Test sample positioning	E.4.2.1	1.5	N	1	1	1	1.5	1.5	N-1
Device Holder Uncertainty	E.4.1.1	5.0	N	1	1	1	5.0	5.0	
Output power Variation - SAR drift measurement	6.6.2	2.5	R	$\sqrt{3}$	1	1	1.4	1.4	$\infty$
<b>Phantom and Tissue Parameters</b>									
Phantom Uncertainty (Shape and thickness tolerances)	E.3.1	4.0	R	$\sqrt{3}$	1	1	2.3	2.3	$\infty$
Liquid conductivity - deviation from target value	E.3.2	1.6	R	$\sqrt{3}$	0.64	0.43	0.6	0.4	$\infty$



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Liquid conductivity - measurement uncertainty	E.3.3	2.5	N	1	0.64	0.43	1.6	1.1	M
Liquid permittivity - deviation from target value	E.3.2	2.9	R	$\sqrt{3}$	0.6	0.49	1.0	0.8	$\infty$
Liquid permittivity - measurement uncertainty	E.3.3	2.5	N	1	0.6	0.49	1.5	1.2	M
Combined Standard Uncertainty			RSS				9.5	9.4	
Expanded Uncertainty (95% Confidence interval)			k				18.6	18.4	

# UNCERTAINTY FOR SYSTEM PERFORMANCE CHECK

a	b	c	d	e= f(d,k)	f	g	h= c*f/e	i= c*g/e	k
Uncertainty Component	Sec.	Tol (+-%)	Prob. Dist.	Div.	Ci (1g)	Ci (10g)	1g Ui (+-%)	10g Ui (+-%)	Vi
<b>Measurement System</b>									
Probe calibration	E.2.1	6.0	N	1	1	1	6.0	6.0	$\infty$
Axial Isotropy	E.2.2	2.5	R	$\sqrt{3}$	$(1-C_p)^{1/2}$	$(1-C_p)^{1/2}$	1.0	1.0	$\infty$
Hemispherical Isotropy	E.2.2	4.0	R	$\sqrt{3}$	$\sqrt{C_p}$	$\sqrt{C_p}$	1.6	1.6	$\infty$
Boundary effect	E.2.3	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	$\infty$
Linearity	E.2.4	5.0	R	$\sqrt{3}$	1	1	2.9	2.9	$\infty$
System detection limits	E.2.5	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	$\infty$
Readout Electronics	E.2.6	0.5	N	1	1	1	0.5	0.5	$\infty$
Reponse Time	E.2.7	0.2	R	$\sqrt{3}$	1	1	0.1	0.1	$\infty$
Integration Time	E.2.8	2.0	R	$\sqrt{3}$	1	1	1.2	1.2	$\infty$
RF ambient Conditions	E.6.1	3.0	R	$\sqrt{3}$	1	1	1.7	1.7	$\infty$
Probe positioner Mechanical Tolerance	E.6.2	2.0	R	$\sqrt{3}$	1	1	1.2	1.2	$\infty$
Probe positioning with respect to Phantom Shell	E.6.3	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	$\infty$
Extrapolation, interpolation and integration Algorithms for Max. SAR Evaluation	E.5.2	1.5	R	$\sqrt{3}$	1	1	0.9	0.9	$\infty$
<b>Dipole</b>									
Dipole axis to liquid Distance	8,E.4.2	1.0	N	$\sqrt{3}$	1	1	0.6	0.6	N-1
Input power and SAR drift measurement	8,6.6.2	2.5	R	$\sqrt{3}$	1	1	1.4	1.4	$\infty$
<b>Phantom and Tissue Parameters</b>									
Phantom Uncertainty (Shape and thickness tolerances)	E.3.1	4.0	R	$\sqrt{3}$	1	1	2.3	2.3	$\infty$
Liquid conductivity - deviation from target value	E.3.2	1.6	R	$\sqrt{3}$	0.64	0.43	0.6	0.4	$\infty$
Liquid conductivity - measurement uncertainty	E.3.3	2.5	N	1	0.64	0.43	1.6	1.1	M



Report No: SH08090012S01

Liquid permittivity - deviation from target value	E.3.2	2.9	R	$\sqrt{3}$	0.6	0.49	1.0	0.8	$\infty$
Liquid permittivity - measurement uncertainty	E.3.3	2.5	N	1	0.6	0.49	1.5	1.2	M
Combined Standard Uncertainty			RSS				8.0	7.9	
Expanded Uncertainty (95% Confidence interval)			k				15.6	15.4	



## 10 MAIN TEST INSTRUMENTS

Function	Name	Model No.	Series No.	Cal. Due Date
General	Desktop Computer	Pentium IV 2.4GHz	X1023533	2009-07-30
	SAR measurement software	OpenSAR V2.0.1e	/	2009-07-30
Liquid mixing and calibration	Vector Network Analyzer	ZVB 8	100154	2009-09-26
	PC 3.5 Calibration Kit	ZV-Z32	100356	2009-09-26
	Test Cable	ZV-Z13	100152	2009-07-15
	Constant temperature cultivating cabinet	DNP-9272	L-504468	2009-08-01
	Liquid thermometer	Testo 106-T1	/	2009-07-21
	Electric scale	YP20KN	/	2009-08-26
	Magnetic stirring machine	90-1B	/	2009-11-09
And calibration probe, beaker, test tube, injector, calibration bottles, mix barrel etc.				2009-07-30
SAR Measurement	Dipole antenna FREQ 850MHz	Dipole 835	SN 36/05 DIP C20	2008-10-05
	Dipole antenna FREQ 1900MHz	Dipole 1900	SN 36/05 DIP G23	2008-10-06
	Power amplifier (Freq.: 0.8-2.0GHz)	BLMA 0820-6	056060A	2009-11-27
	Directional coupler (Freq.: 0.5-2.0GHz)	MFR 34078	CPL-5220-20-SMA-79	2009-09-24
	Signal generator	SMT 06	101836	2009-09-26
	Power meter	NRVD	101311	2009-09-25
	Multi meter	2000	1062728	2009-09-19
	Robot	KCP2 Std.ed05	00171	2009-10-01
	Measurement probe	E-field Probe	SN 12/05 EP 61	2008-12-26
	Flat Phantom	/	SN 36/05 SAM 25	2009-10-01
	Test table	/	SN 35/05 TABP13	2009-10-01
	Supporter (Holder)	/	SN 45/04 MSH09	2009-10-01

**ANNEX A**  
**of**  
**Shenzhen Morlab Communications Technology Co., Ltd.**

**CONFORMANCE TEST REPORT FOR**  
**HUMAN EXPOSURE TO ELECTROMAGNETIC FIELDS**

REPORT NO: SH08090012S01

**SHANGHAI SIMCOM LIMITED**

**GPS tracker**

**Accreditation Certificate**







**China National Accreditation Service for Conformity Assessment**

**LABORATORY ACCREDITATION CERTIFICATE**

**(No. CNAS L1659 )**

*China National Accreditation Service for Conformity Assessment has accredited*

**Shenzhen Electronic Product Quality Testing Center  
(CQCS Testing Co. Ltd.)**

Electronic Testing Building Wenguang Road, Shahe West, Xili Town, Nanshan  
District, Shenzhen, Guangdong, China

*to ISO/IEC 17025:1999 General Requirements for the Competence of  
Testing and Calibration Laboratories(CNAS-CL01 Accreditation Criteria  
for the Competence of Testing and Calibration Laboratories) for the  
competence in the field of testing and calibration.*

*The scope of accreditation is detailed in the attached schedule bearing the same  
accreditation number as above. The schedule forms an integral part of this  
certificate.*

Date of Issue: 2007-01-17

Date of Expiry: 2009-10-08

Date of Initial Accreditation: 1999-08-03



Signed on behalf of China National Accreditation Service  
for Conformity Assessment

China National Accreditation Service for Conformity Assessment(CNAS) is authorized by Certification and Accreditation Administration of the People's Republic of China (CNCA) to operate the national accreditation systems for conformity assessment. CNAS is the signatory to International Laboratory Accreditation Cooperation Multilateral Recognition Arrangement (ILAC MRA), and the signatory to Asia Pacific Laboratory Accreditation Cooperation Multilateral Recognition Arrangement (APLAC MRA).



**ANNEX B**  
**of**  
**Shenzhen Morlab Communications Technology Co.,Ltd.**

**CONFORMANCE TEST REPORT FOR**  
**HUMAN EXPOSURE TO ELECTROMAGNETIC FIELDS**

REPORT NO: SH08090012S01

**SHANGHAI SIMCOM LIMITED**

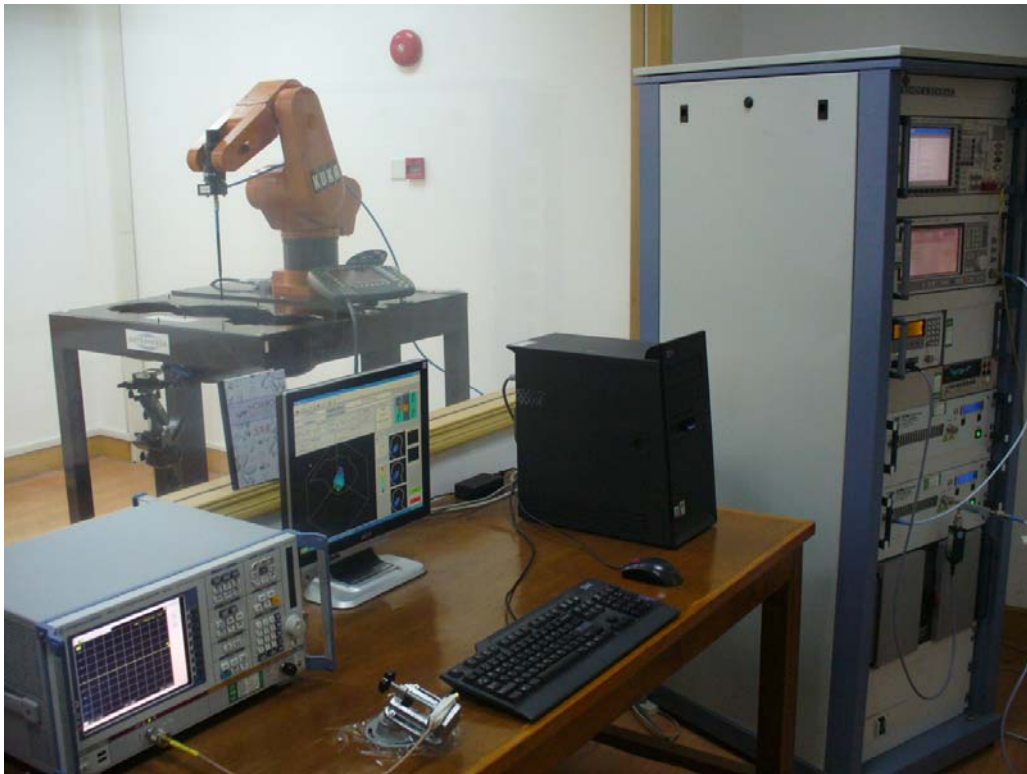
**GPS tracker**

**Type Name: GL100**

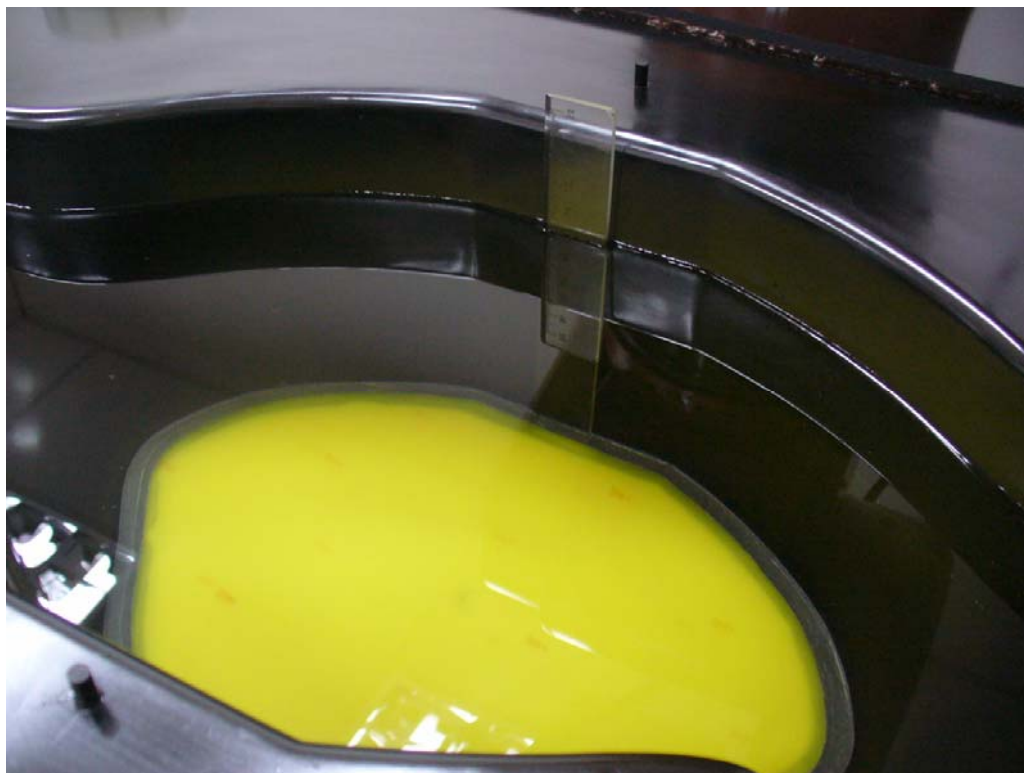
<b>Hardware Version:</b>	<b>V1.02</b>
<b>Software Version:</b>	<b>ADI 16.0</b>

**TEST LAYOUT**

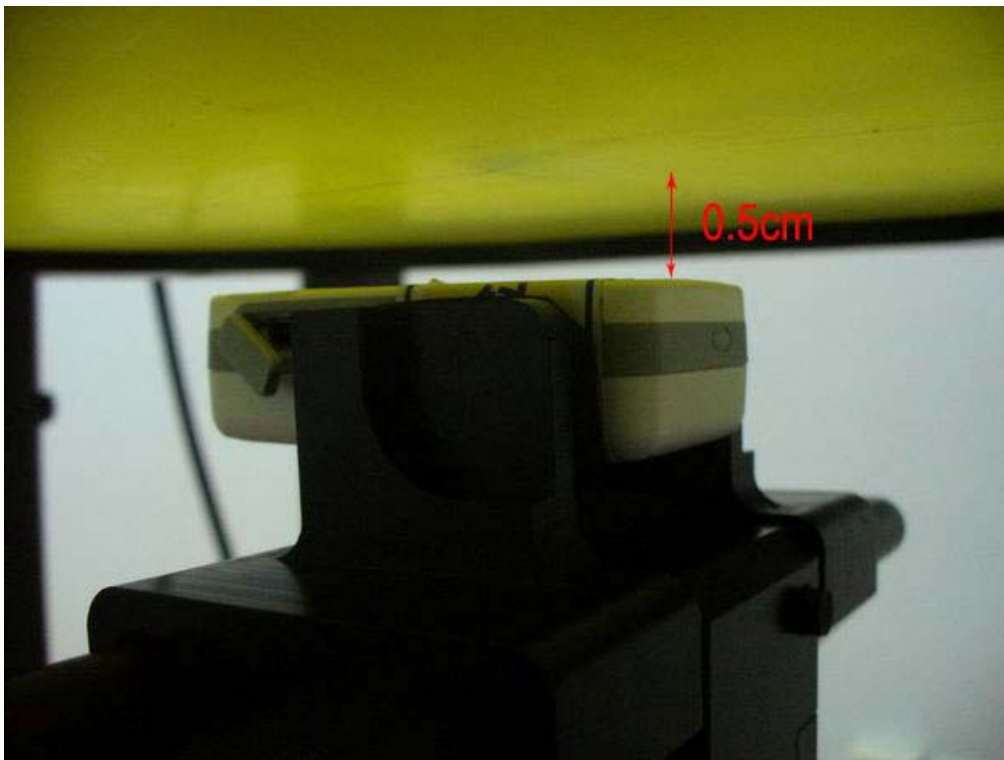




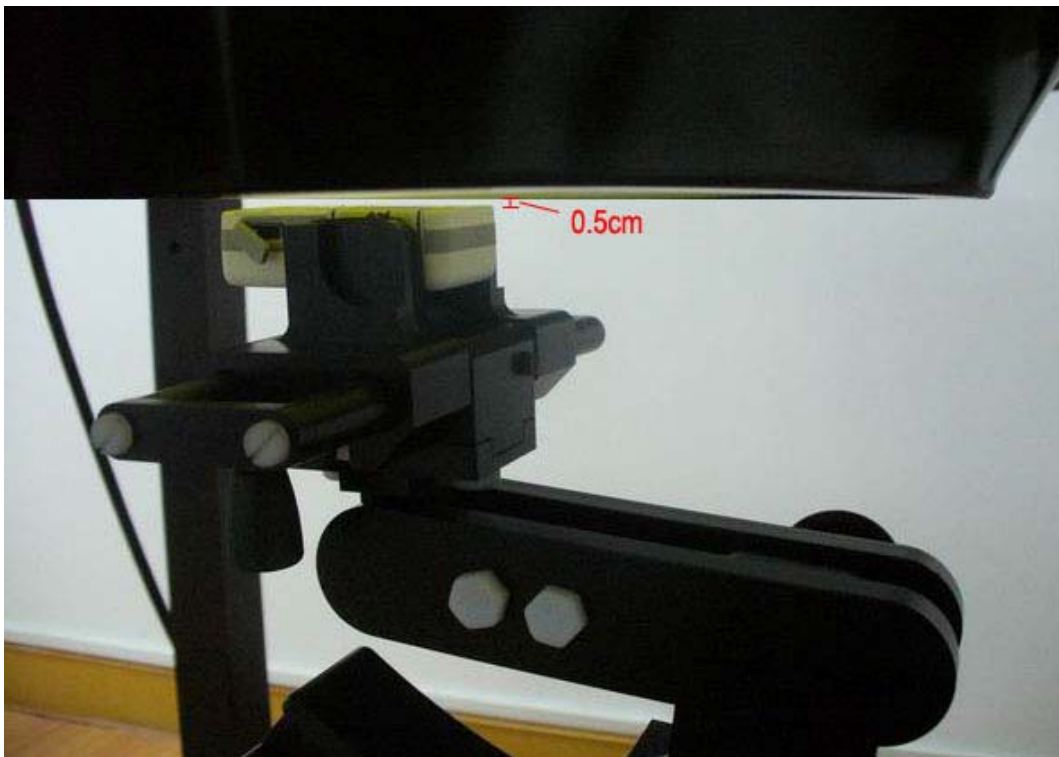
**Figure B.1 COMOSAR Test Bench Test Layout**



**Figure B.2 Depth of Simulating Liquid in SAM Flat (Body) Phantom**



**Figure B.3EUT Body Position(FRONT)**



**Figure B.4EUT Body Position(BACK)**



**ANNEX C**  
**of**  
**Shenzhen Morlab Communications Technology Co.,Ltd.**

**CONFORMANCE TEST REPORT FOR**  
**HUMAN EXPOSURE TO ELECTROMAGNETIC FIELDS**

REPORT NO: SH08090012S01

**SHANGHAI SIMCOM LIMITED**

**GPS tracker**

**Type Name: GL100**

<b>Hardware Version:</b>	<b>V1.02</b>
<b>Software Version:</b>	<b>ADI 16.0</b>

**Sample Photographs**



## Photograph of the Equipment under Test

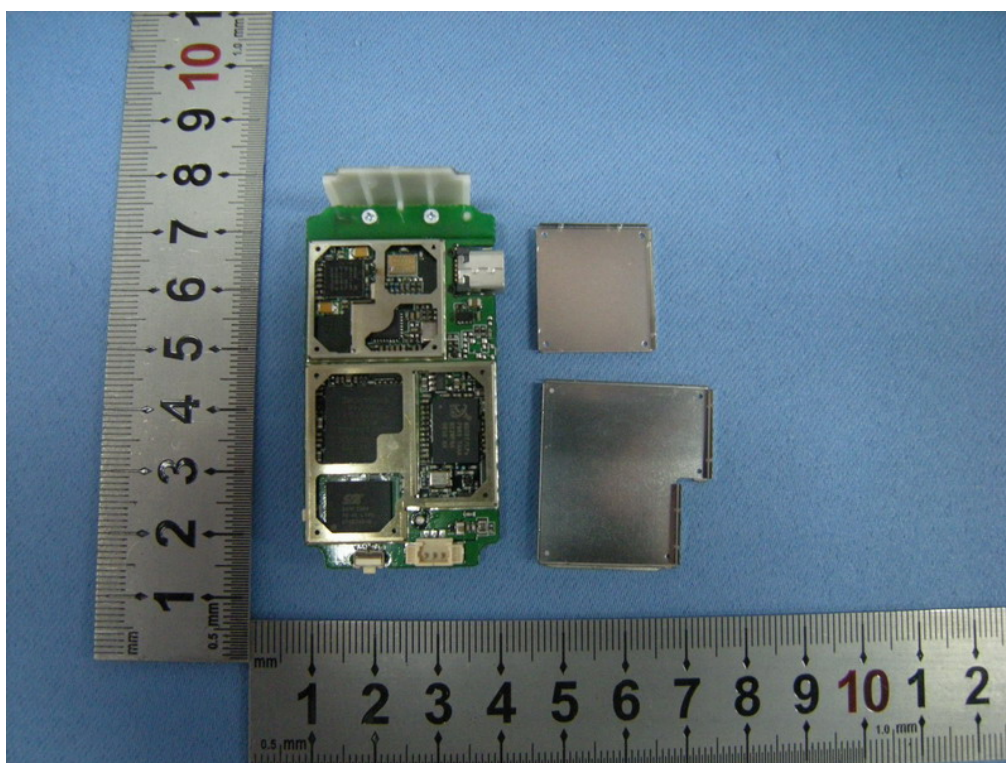




## 1.2 Inside









**ANNEX D**  
**of**  
**Shenzhen Morlab Communications Technology Co.,Ltd.**

**CONFORMANCE TEST REPORT FOR**  
**HUMAN EXPOSURE TO ELECTROMAGNETIC FIELDS**

REPORT NO: SH08090012S01

**SHANGHAI SIMCOM LIMITED**

**GPS tracker**

**Type Name: GL100**

**Hardware Version:**  
**Software Version:**

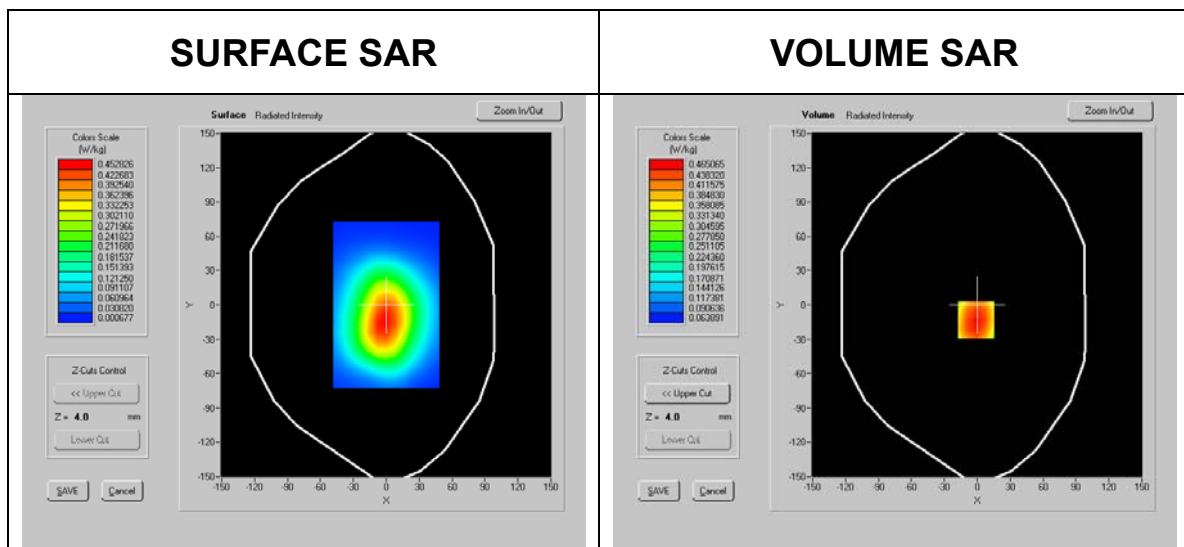
**V1.02**  
**ADI 16.0**

**Graph Test Results**

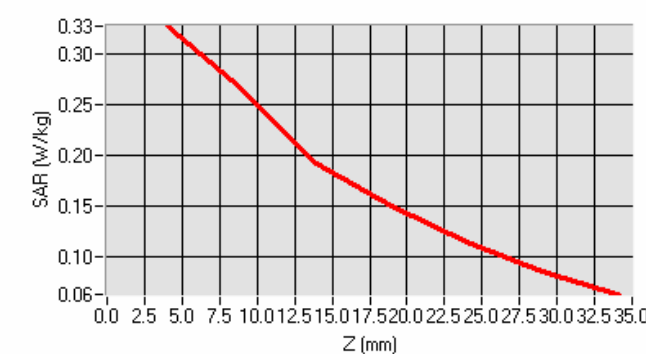


### SAR Test GSM 850 Body (Low Channel)

<b>System / software:</b>	COMOSAR / OpenSAR v2.0.1e	<b>Modn. Duty Cycle:</b>	1: 4
<b>Date:</b>	2008-10-5	<b>Input Power Level:</b>	28.5dBm
<b>Project Name:</b>	SH08090012S01	<b>DUT Battery Model/No:</b>	GL100(JLTV)
<b>Ambient Temperature:</b>	21.5°C	<b>Probe Serial Number:</b>	SN 12/05 EP 61
<b>Device Under Test:</b>	GL100	<b>Simulating Liquid:</b>	850 MHz BODY tissue
<b>Relative Humidity:</b>	60%	<b>Relative Permittivity:</b>	54.51
<b>Phantom name:</b>	Flat	<b>Conductivity:</b>	0.98
<b>Phantom S/No:</b>	SN 36/05 SAM 25	<b>Liquid Temperature:</b>	21.6°C
<b>Phantom File:</b>	sam_direct_droit2_surf 8mm.txt	<b>Max SAR X-axis Location:</b>	6.00 mm
<b>Device Position:</b>	850_Body	<b>Max SAR Y-axis Location:</b>	21.00 mm
<b>Antenna Configuration:</b>	Integrated	<b>SAR 1g:</b>	0.342206 W/kg
<b>Test Frequency:</b>	850 MHz	<b>SAR 10g:</b>	0.230896 W/kg
<b>Comment:</b>	/	<b>SAR Drift during Scan:</b>	3.09 %
<b>Type of Modulation:</b>	GMSK	<b>Extrapolation:</b>	poly4
<b>ConvF</b>	33.38,31.28,28.37	<b>Liquid Parameter</b>	1



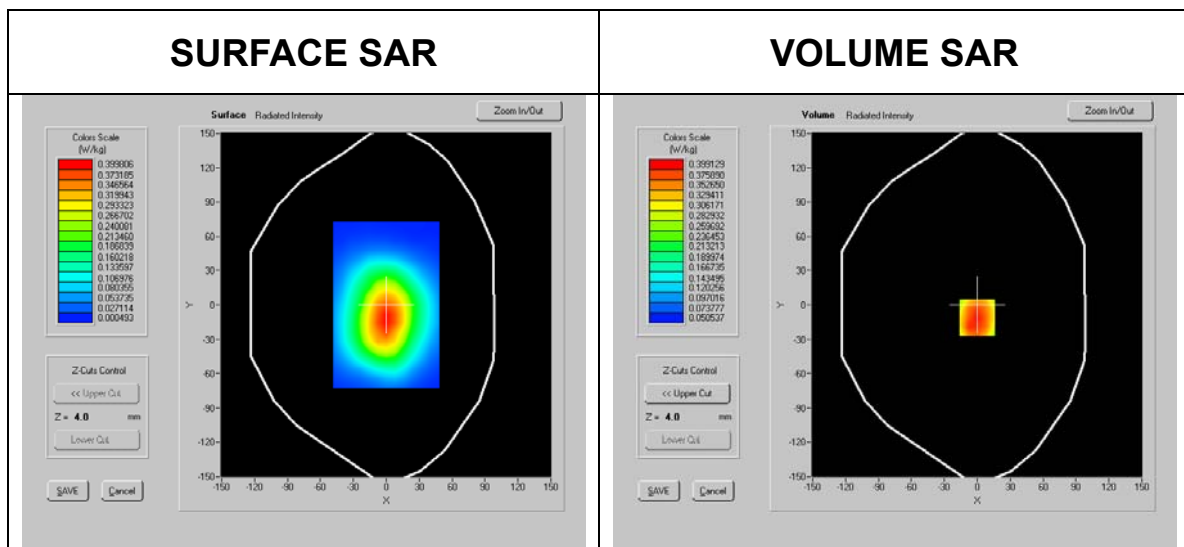
SAR, Z Axis Scan (X = 6, Y = 21)



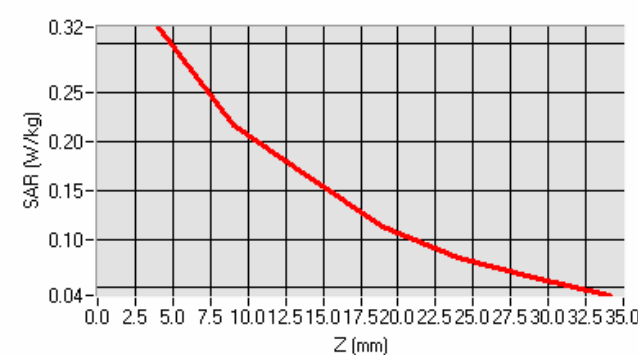


### SAR Test GSM 850 Body (Middle Channel)

System / software:	COMOSAR / OpenSAR v2.0.1e	Modn. Duty Cycle:	1: 4
Date:	2008-10-5	Input Power Level:	28.7dBm
Project Name:	SH08090012S01	DUT Battery Model/No:	GL100(JLHV)
Ambient Temperature:	21.5°C	Probe Serial Number:	SN 12/05 EP 61
Device Under Test:	GL100	Simulating Liquid:	850 MHz BODY tissue
Relative Humidity:	60%	Relative Permittivity:	54.41
Phantom name:	Flat	Conductivity:	1.00
Phantom S/No:	SN 36/05 SAM 25	Liquid Temperature:	21.6°C
Phantom File:	sam_direct_droit2_surf 8mm.txt	Max SAR X-axis Location:	6.00 mm
Device Position:	850_Body	Max SAR Y-axis Location:	18.00 mm
Antenna Configuration:	Integrated	SAR 1g:	0.302653W/kg
Test Frequency:	850 MHz	SAR 10g:	0.202573 W/kg
Comment:	/	SAR Drift during Scan:	-1.62 %
Type of Modulation:	GMSK	Extrapolation:	poly4
ConvF	33.38,31.28,28.37	Liquid Parameter	1

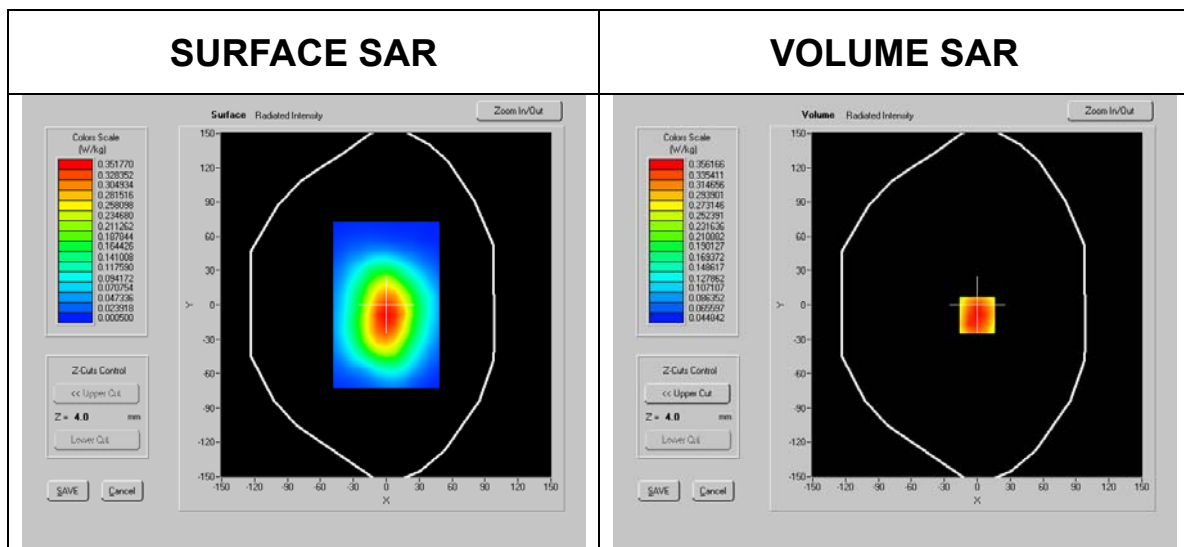


SAR, Z Axis Scan (X = 6, Y = 18)

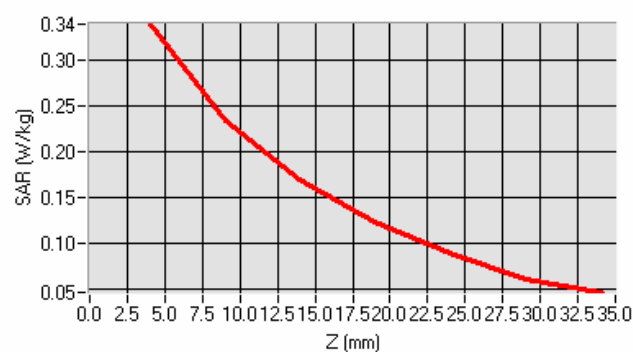


### SAR Test GSM 850 Body (High Channel)

<b>System / software:</b>	COMOSAR / OpenSAR v2.0.1e	<b>Modn. Duty Cycle:</b>	1: 4
<b>Date:</b>	2008-10-5	<b>Input Power Level:</b>	28.6dBm
<b>Project Name:</b>	SH08090012S01	<b>DUT Battery Model/No:</b>	GL100(JLHV)
<b>Ambient Temperature:</b>	21.5°C	<b>Probe Serial Number:</b>	SN 12/05 EP 61
<b>Device Under Test:</b>	GL100	<b>Simulating Liquid:</b>	800 MHz BODY tissue
<b>Relative Humidity:</b>	60%	<b>Relative Permittivity:</b>	54.3
<b>Phantom name:</b>	Flat	<b>Conductivity:</b>	1.01
<b>Phantom S/No:</b>	SN 36/05 SAM 25	<b>Liquid Temperature:</b>	21.6°C
<b>Phantom File:</b>	sam_direct_droit2_surf 8mm.txt	<b>Max SAR X-axis Location:</b>	5.00 mm
<b>Device Position:</b>	850_Body	<b>Max SAR Y-axis Location:</b>	18.00 mm
<b>Antenna Configuration:</b>	Integrated	<b>SAR 1g:</b>	0.325622 W/kg
<b>Test Frequency:</b>	850 MHz	<b>SAR 10g:</b>	0.217036 W/kg
<b>Comment:</b>	/	<b>SAR Drift during Scan:</b>	-1.72 %
<b>Type of Modulation:</b>	GMSK	<b>Extrapolation:</b>	poly4
<b>ConvF</b>	33.38,31.28,28.37	<b>Liquid Parameter</b>	1

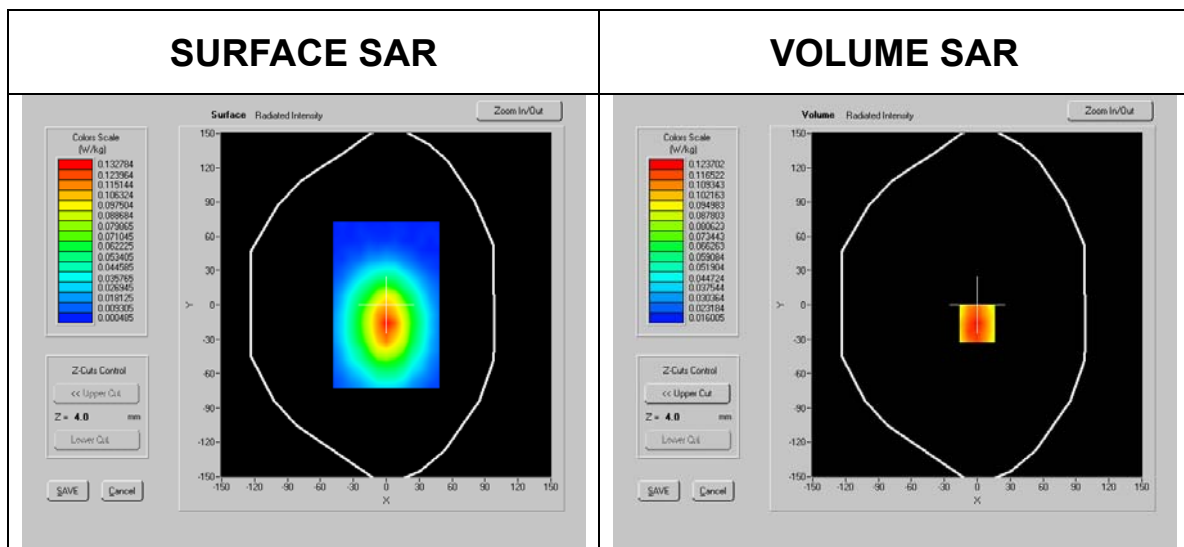


SAR, Z Axis Scan (X = 5, Y = 18)

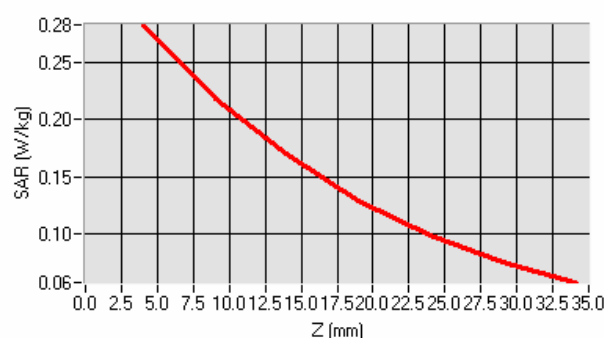


### SAR Test GSM 850 Body (Middle Channel, BACK)

System / software:	COMOSAR / OpenSAR v2.0.1e	Modn. Duty Cycle:	1: 4
Date:	2008-10-5	Input Power Level:	28.8dBm
Project Name:	SH08090012S01	DUT Battery Model/No:	GL100(JLTV)
Ambient Temperature:	21.5°C	Probe Serial Number:	SN 12/05 EP 61
Device Under Test:	GL100	Simulating Liquid:	850 MHz BODY tissue
Relative Humidity:	60%	Relative Permittivity:	54.41
Phantom name:	Flat	Conductivity:	1.00
Phantom S/No:	SN 36/05 SAM 25	Liquid Temperature:	21.6°C
Phantom File:	sam_direct_droit2_surf 8mm.txt	Max SAR X-axis Location:	-7.00 mm
Device Position:	850_Body	Max SAR Y-axis Location:	18.00 mm
Antenna Configuration:	Integrated	SAR 1g:	0.268339 W/kg
Test Frequency:	850 MHz	SAR 10g:	0.101082 W/kg
Comment:	/	SAR Drift during Scan:	-2.42 %
Type of Modulation:	GSMK	Extrapolation:	poly4
ConvF	33.38,31.28,28.37	Liquid Parameter	1

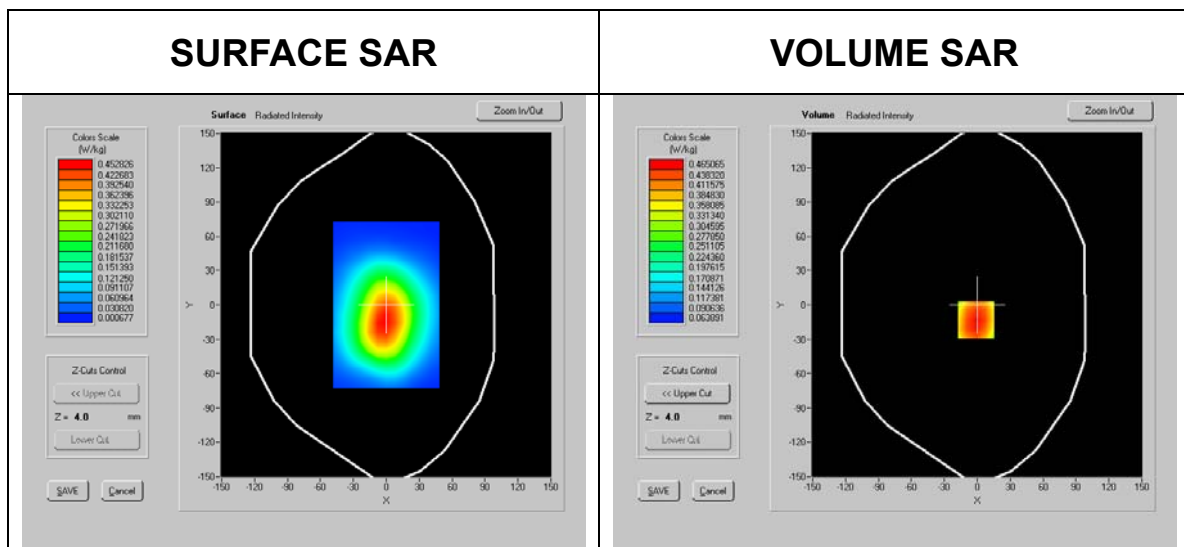


SAR, Z Axis Scan (X = -7, Y = 18)

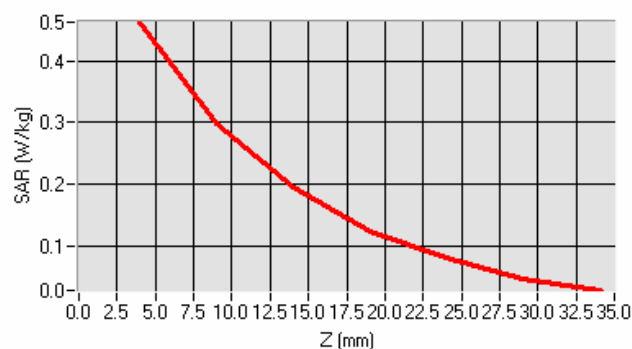


### SAR Test PCS 1900 Body (Low Channel)

System / software:	COMOSAR / OpenSAR v2.0.1e	Modn. Duty Cycle:	1: 4
Date:	2008-10-6	Input Power Level:	23.7dBm
Project Name:	SH08090012S01	DUT Battery Model/No:	GL100(JLHV)
Ambient Temperature:	21.5°C	Probe Serial Number:	SN 12/05 EP 61
Device Under Test:	GL100	Simulating Liquid:	1900 MHz BODY tissue
Relative Humidity:	60%	Relative Permittivity:	54.83
Phantom name:	Flat	Conductivity:	1.48
Phantom S/No:	SN 36/05 SAM 25	Liquid Temperature:	21.6°C
Phantom File:	sam_direct_droit2_surf 8mm.txt	Max SAR X-axis Location:	2.00 mm
Device Position:	1900_Body	Max SAR Y-axis Location:	00.00 mm
Antenna Configuration:	Integrated	SAR 1g:	0.437302 W/kg
Test Frequency:	1900 MHz	SAR 10g:	0.266580 W/kg
Comment:	/	SAR Drift during Scan:	3.09 %
Type of Modulation:	GMSK	Extrapolation:	poly4
ConvF	39.76,36.97,33.37	Liquid Parameter	1

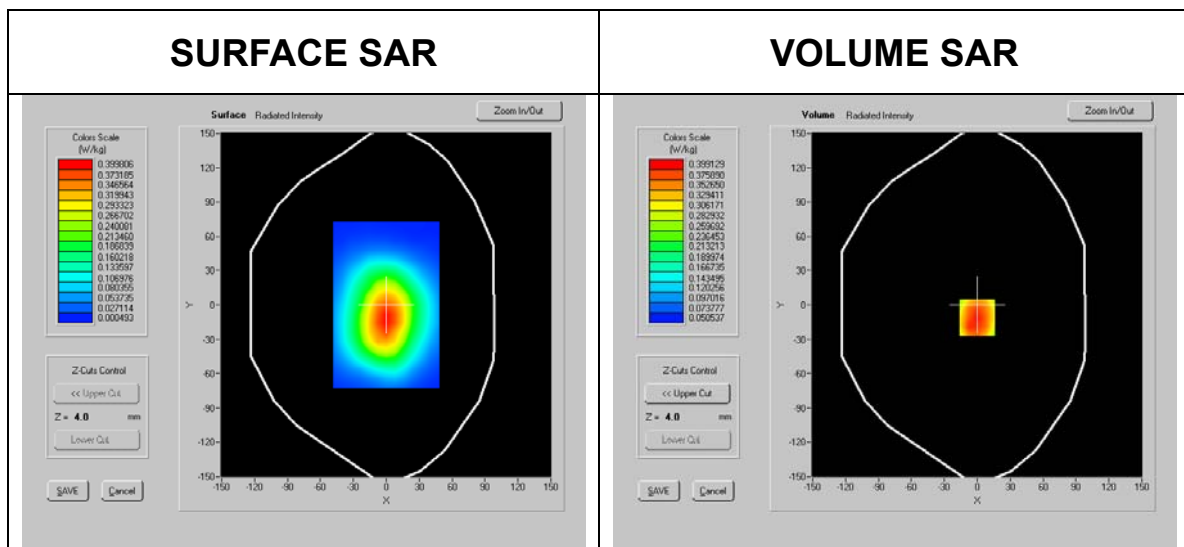


SAR, Z Axis Scan (X = 2, Y = 0)

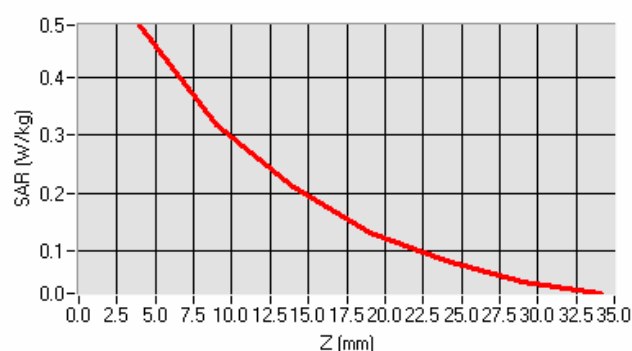


### SAR Test PCS 1900 Body (Middle Channel)

System / software:	COMOSAR / OpenSAR v2.0.1e	Modn. Duty Cycle:	1: 4
Date:	2008-10-6	Input Power Level:	24.3dBm
Project Name:	SH08090012S01	DUT Battery Model/No:	GL100(JLFV)
Ambient Temperature:	21.5°C	Probe Serial Number:	SN 12/05 EP 61
Device Under Test:	GL100	Simulating Liquid:	1900 MHz BODY tissue
Relative Humidity:	60%	Relative Permittivity:	54.85
Phantom name:	Flat	Conductivity:	1.50
Phantom S/No:	SN 36/05 SAM 25	Liquid Temperature:	21.6°C
Phantom File:	sam_direct_droit2_surf 8mm.txt	Max SAR X-axis Location:	5.00 mm
Device Position:	1900_Body	Max SAR Y-axis Location:	1.00 mm
Antenna Configuration:	Integrated	SAR 1g:	0.467877 W/kg
Test Frequency:	1900 MHz	SAR 10g:	0.285542 W/kg
Comment:	/	SAR Drift during Scan:	-1.62 %
Type of Modulation:	GMSK	Extrapolation:	poly4
ConvF	39.76,36.97,33.37	Liquid Parameter	1

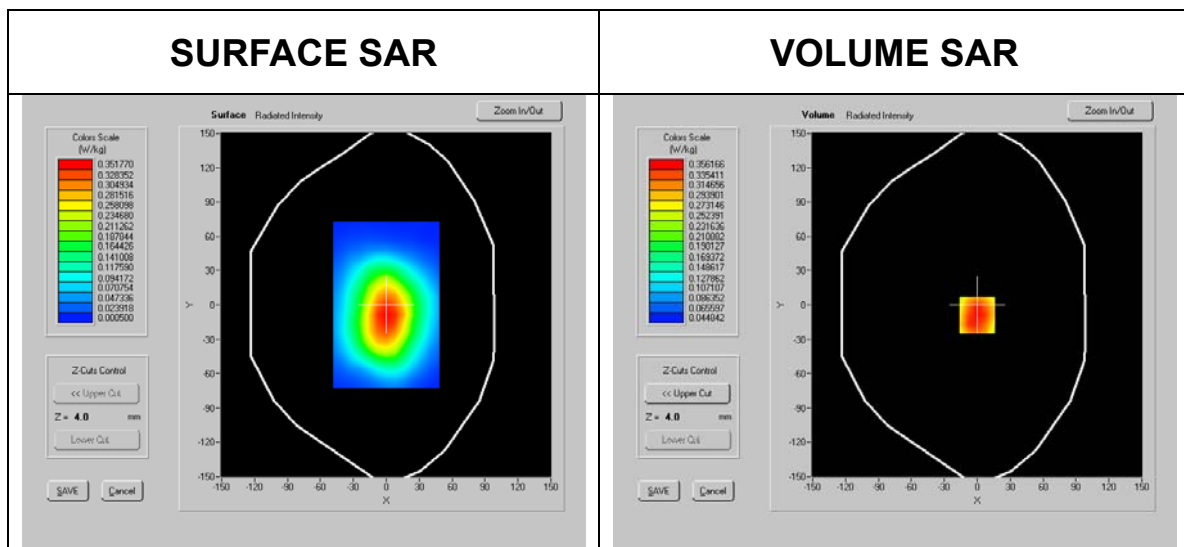


SAR, Z Axis Scan (X = 5, Y = 1)

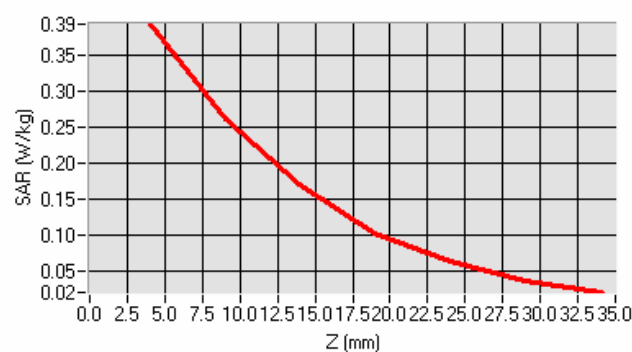


### SAR Test PCS 1900 Body (High Channel)

System / software:	COMOSAR / OpenSAR v2.0.1e	Modn. Duty Cycle:	1: 4
Date:	2008-10-6	Input Power Level:	24.5dBm
Project Name:	SH08090012S01	DUT Battery Model/No:	GL100(JLHV)
Ambient Temperature:	21.5°C	Probe Serial Number:	SN 12/05 EP 61
Device Under Test:	GL100	Simulating Liquid:	1900 MHz BODY tissue
Relative Humidity:	60%	Relative Permittivity:	54.82
Phantom name:	Flat	Conductivity:	1.53
Phantom S/No:	SN 36/05 SAM 25	Liquid Temperature:	21.6°C
Phantom File:	sam_direct_droit2_surf 8mm.txt	Max SAR X-axis Location:	1.00 mm
Device Position:	1900_Body	Max SAR Y-axis Location:	0.00 mm
Antenna Configuration:	Integrated	SAR 1g:	0.372701 W/kg
Test Frequency:	1900 MHz	SAR 10g:	0.223807 W/kg
Comment:	/	SAR Drift during Scan:	-1.72 %
Type of Modulation:	GMSK	Extrapolation:	poly4
ConvF	39.76,36.97,33.37	Liquid Parameter	1



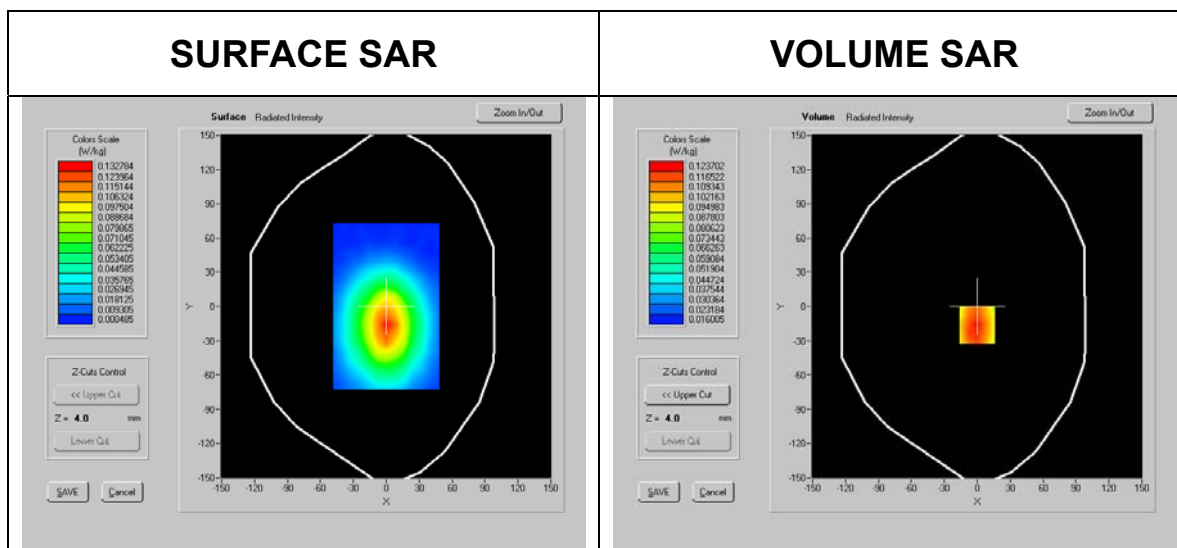
SAR, Z Axis Scan (X = 1, Y = 0)



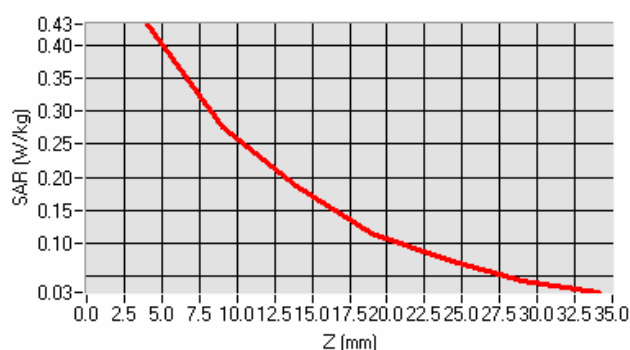


### SAR Test PCS 1900 Body (Middle Channel, BACK)

System / software:	COMOSAR / OpenSAR v2.0.1e	Modn. Duty Cycle:	1: 4
Date:	2008-10-6	Input Power Level:	24.3dBm
Project Name:	SH08090012S01	DUT Battery Model/No:	GL100(JLFFV)
Ambient Temperature:	21.5°C	Probe Serial Number:	SN 12/05 EP 61
Device Under Test:	GL100	Simulating Liquid:	1900 MHz BODY tissue
Relative Humidity:	60%	Relative Permittivity:	54.85
Phantom name:	Flat	Conductivity:	1.50
Phantom S/No:	SN 36/05 SAM 25	Liquid Temperature:	21.6°C
Phantom File:	sam_direct_droit2_surf 8mm.txt	Max SAR X-axis Location:	0.00 mm
Device Position:	1900_Body	Max SAR Y-axis Location:	0.00 mm
Antenna Configuration:	Integrated	SAR 1g:	0.409053 W/kg
Test Frequency:	1900 MHz	SAR 10g:	0.250595W/kg
Comment:	/	SAR Drift during Scan:	-2.42 %
Type of Modulation:	SMSK	Extrapolation:	poly4
ConvF	39.76,36.97,33.37	Liquid Parameter	1



SAR, Z Axis Scan (X = 0, Y = 0)



**ANNEX E**  
**of**  
**Shenzhen Morlab Communications Technology Co.,Ltd.**

**CONFORMANCE TEST REPORT FOR**  
**HUMAN EXPOSURE TO ELECTROMAGNETIC FIELDS**

REPORT NO: SH08090012S01

**SHANGHAI SIMCOM LIMITED**

**GPS tracker**

Type Name: GL100

Hardware Version:

V1.02

Software Version:

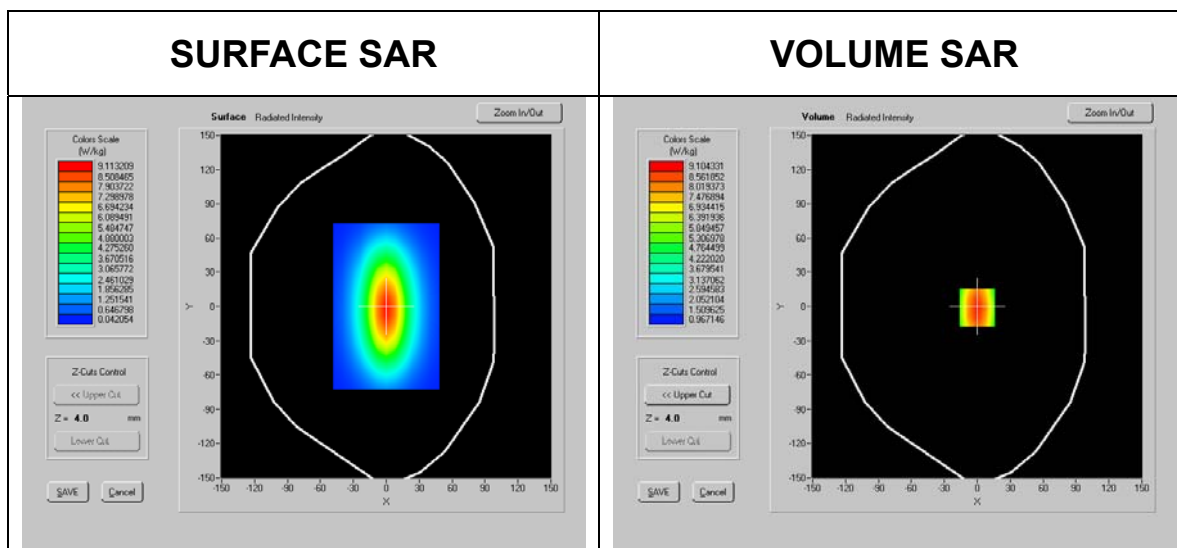
ADI 16.0

**System Performance Check Data**

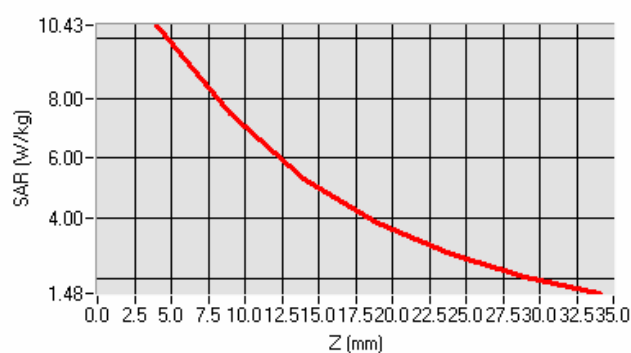


### System Check GSM 850 Body

System / software:	COMOSAR / OpenSAR v2.0.1e	Modn. Duty Cycle:	1: 4
Date:	2008-10-5	Input Power Level:	24dBm
Project Name:	SH08090012S01	DUT Battery Model/No:	/
Ambient Temperature:	21.5°C	Probe Serial Number:	SN 12/05 EP 61
Device Under Test:	Dipole Antenna (100W)	Simulating Liquid:	850 MHz BODY tissue
Relative Humidity:	60%	Relative Permittivity:	54.41
Phantom name:	Validation plane	Conductivity:	1.00
Phantom S/No:	SN 36/05 SAM 25	Liquid Temperature:	21.6°C
Phantom File:	sam_direct_droit2_surf 8mm.txt	Max SAR X-axis Location:	-1.00 mm
Device Position:	850_Body	Max SAR Y-axis Location:	-1.00 mm
Antenna Configuration:	/	SAR 1g:	9.945581 W/kg
Test Frequency:	850 MHz	SAR 10g:	6.760474W/kg
Comment:	/	SAR Drift during Scan:	-0.47 %
Type of Modulation:	GMSK	Extrapolation:	poly4
ConvF	33.38,31.28,28.37	Liquid Parameter	1

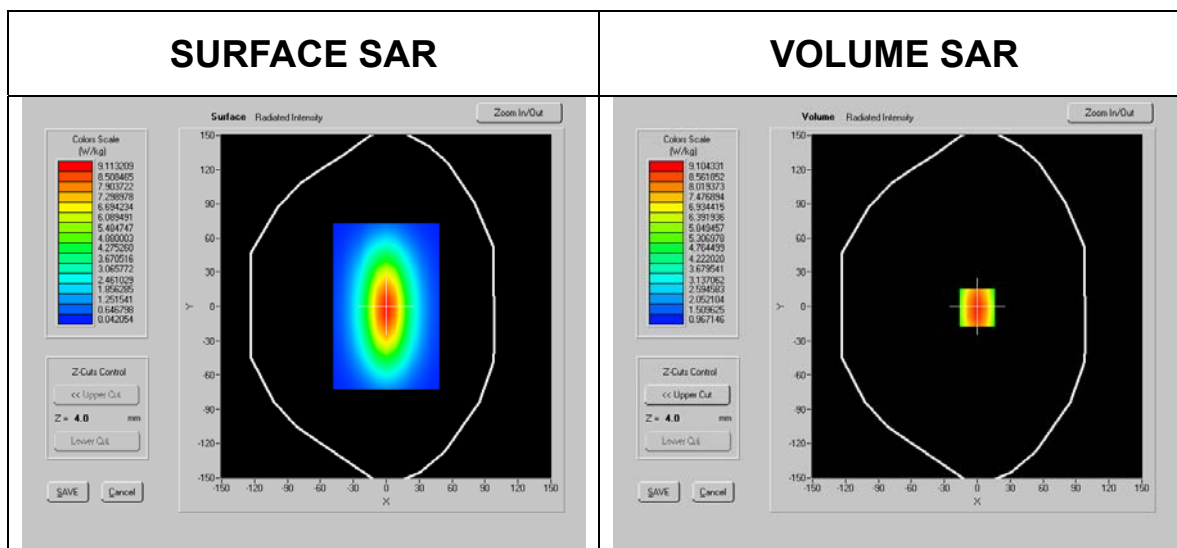


SAR, Z Axis Scan (X = -1, Y = -1)



### System Check PCS 1900 Body

System / software:	COMOSAR / OpenSAR v2.0.1e	Modn. Duty Cycle:	1: 4
Date:	2008-10-6	Input Power Level:	24dBm
Project Name:	SH08090012S01	DUT Battery Model/No:	/
Ambient Temperature:	21.5°C	Probe Serial Number:	SN 12/05 EP 61
Device Under Test:	Dipole Antenna (100W)	Simulating Liquid:	1900 MHz BODY tissue
Relative Humidity:	60%	Relative Permittivity:	54.85
Phantom name:	Validation plane	Conductivity:	1.50
Phantom S/No:	SN 36/05 SAM 25	Liquid Temperature:	21.6°C
Phantom File:	sam_direct_droit2_surf 8mm.txt	Max SAR X-axis Location:	0.00 mm
Device Position:	1900_Body	Max SAR Y-axis Location:	0.00 mm
Antenna Configuration:	/	SAR 1g:	37.688026W/kg
Test Frequency:	1900 MHz	SAR 10g:	16.943329 W/kg
Comment:	/	SAR Drift during Scan:	-0.47 %
Type of Modulation:	GMSK	Extrapolation:	poly4
ConvF	39.76,36.97,33.37	Liquid Parameter	1



SAR, Z Axis Scan (X = 0, Y = 0)

