# FCC SAR TEST REPORT

TESTING
CNAS L3572

*Issued to*

**TCT Mobile Limited**

*For*

**UMTS USB Modem**

| | | |
|---|---|---|
| Model Name | : | X602A/X602 |
| Trade Name | : | ALCATEL onetouch |
| Brand Name | : | ALCATEL onetouch |
| FCC ID | : | RAD502 |
| Standard | : | 47CFR 2.1093<br>IEEE 1528-2013 |
| MAX SAR | : | Body: 1.088 W/kg |
| Test date | : | 2014-5-4 to 2014-5-5 |
| Issue date | : | 2014-5-16 |

*by*

**Shenzhen Morlab Communications Technology Co., Ltd.**
FL.3, Building A, FeiYang Science Park, No.8 LongChang Road,Block 67, BaoAn District,
ShenZhen, GuangDong Province,P.R. China 518101

| | | | | | |
|---|---|---|---|---|---|
| **Tested by** | Zou Jian | **Approved by** | Zeng Dexin | **Reviewed by** | Zhu Zhan |
| | Zou Jian | | Zeng Dexin | | Zhu Zhan |
| | (Test Engineer) | | (Chief Engineer) | | ( SAR Specialist) |
| **Date** | 2014.5.16 | **Date** | 2014.5.16 | **Date** | 2014.5.16 |

# DIRECTORY


1. TESTING LABORATORY ..... 4

1.1 IDENTIFICATION OF THE RESPONSIBLE TESTING LOCATION ..... 4
1.2 ACCREDITATION CERTIFICATE ..... 4
1.3 LIST OF TEST EQUIPMENTS ..... 4

2. TECHNICAL INFORMATION ..... 5

2.1 IDENTIFICATION OF APPLICANT ..... 5
2.2 IDENTIFICATION OF MANUFACTURER ..... 5
2.3 EQUIPMENT UNDER TEST (EUT) ..... 5
2.3.1 PHOTOGRAPHS OF THE EUT ..... 6
2.3.2 IDENTIFICATION OF ALL USED EUT ..... 6
2.4 APPLIED REFERENCE DOCUMENTS ..... 6
2.5 DEVICE CATEGORY AND SAR LIMITS ..... 6
2.6 TEST ENVIRONMENT/CONDITIONS ..... 7

3. SPECIFIC ABSORPTION RATE (SAR) ..... 8

3.1 INTRODUCTION ..... 8
3.2 SAR DEFINITION ..... 8

4. SAR MEASUREMENT SETUP ..... 9

4.1 THE MEASUREMENT SYSTEM ..... 9
4.2 PROBE ..... 9
4.3 PROBE CALIBRATION PROCESS ..... 11
4.3.1 DOSIMETRIC ASSESSMENT PROCEDURE ..... 11
4.3.2 FREE SPACE ASSESSMENT PROCEDURE ..... 11
4.3.3 TEMPERATURE ASSESSMENT PROCEDURE ..... 11
4.4 PHANTOM ..... 12
4.5 DEVICE HOLDER ..... 12

5. TISSUE SIMULATING LIQUIDS ..... 13

6. UNCERTAINTY ASSESSMENT ..... 15

6.1 UNCERTAINTY EVALUATION FOR EUT SAR TEST ..... 15
6.2 UNCERTAINTY FOR SYSTEM PERFORMANCE CHECK ..... 16

7. SAR MEASUREMENT EVALUATION ..... 18

7.1 SYSTEM SETUP ..... 18
7.2 VALIDATION RESULTS ..... 19

8. OPERATIONAL CONDITIONS DURING TEST ..... 20

8.1 BODY-WORN CONFIGURATIONS ..... 20
8.2 MEASUREMENT PROCEDURE ..... 20
8.3 DESCRIPTION OF INTERPOLATION/EXTRAPOLATION SCHEME ..... 20

9. MEASUREMENT OF CONDUCTED PEAK OUTPUT POWER ..... 22

10. TEST RESULTS LIST ..... 24

ANNEX A GRAPH TEST RESULTS ..... 27

| Change History | | |
|---|---|---|
| Issue | Date | Reason for change |
| 1.0 | May 16, 2014 | First edition |
| | | |
| | | |

# 1. TESTING LABORATORY

## 1.1 Identification of the Responsible Testing Location

Name: Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory

Address: FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China 518101

## 1.2 Accreditation Certificate

Accredited Testing Laboratory: No. CNAS L3572

## 1.3 List of Test Equipments

| No. | Instrument | Type | Cal. Date | Cal. Due |
|---|---|---|---|---|
| 1 | PC | Dell (Pentium IV 2.4GHz, SN:X10-23533) | (n.a) | (n.a) |
| 2 | Network Emulator | Aglient (8960, SN:10752) | 2014-2-21 | 1year |
| 3 | Network Analyzer | Agilent(E5071B ,SN:MY42404762) | 2013-9-26 | 1year |
| 4 | Voltmeter | Keithley (2000, SN:1000572) | 2013-9-24 | 1year |
| 5 | Signal Generator | Rohde&Schwarz (SMP_02) | 2013-9-24 | 1year |
| 6 | Power Amplifier | PRANA (Ap32 SV125AZ) | 2013-9-24 | 1year |
| 7 | Power Meter | Agilent (E4416A, SN:MY45102093) | 2013-5-07 | 1year |
| 8 | Power Sensor | Agilent (N8482A, SN:MY41091706) | 2013-5-07 | 1year |
| 9 | Directional coupler | Giga-tronics(SN:1829112) | 2013-9-24 | 1year |
| 10 | Probe | Satimo (SN:SN 37/08 EP80) | 2013-9-25 | 1year |
| 11 | Dielectric Probe Kit | Agilent (85033E ) | 2013-9-24 | 1year |
| 12 | Phantom | Satimo (SN:SN_36_08_SAM62) | 2013-9-24 | 1year |
| 13 | Liquid | Satimo(Last Calibration: 2014-5-4 to 2014-5-5) | N/A | N/A |
| 14 | Dipole 835MHz | Satimo (SN 20/08 DIPC 99) | 2013-9-25 | 1year |
| 15 | Dipole 1900MHz | Satimo (SN 30/13 DIP1G900-261) | 2013-9-25 | 1year |

# 2. TECHNICAL INFORMATION

Note: the Following data is based on the information by the applicant.

## 2.1 Identification of Applicant

| | |
|---|---|
| Company Name: | TCT Mobile Limited |
| Address: | 5F, C building, No. 232, Liang Jing Road ZhangJiang High-Tech Park, Pudong Area Shanghai, P.R. China. 201203 |

## 2.2 Identification of Manufacturer

| | |
|---|---|
| Company Name: | TCL COMMUNICATION TECHNOLOGY HOLDINGS LIMITED |
| Address: | 70 Huifeng 4rd, ZhongKai Hi-tech Development District, Huizhou, Guangdong 516006 P.R.China（TCL Mobile Communication Co., LTD. Huizhou） |

## 2.3 Equipment Under Test (EUT)

| | |
|---|---|
| Model Name: | X602A/X602 |
| Trade Name: | ALCATEL<br>onetouch |
| Brand Name: | ALCATEL<br>onetouch |
| Hardware Version: | V2.0 |
| Software Version: | X602-A-C.140423.R007.00.0.X.T |
| Frequency Bands: | GSM 850MHz/PCS1900MHz;<br>WCDMA 850MHZ/1900MHz; (Band II, V) |
| Modulation Mode: | GSM/GPRS: GMSK; EDGE:8PSK;<br>WCDMA/HSDPA/HSUPA/HSPA+: QPSK; |
| Multi-slot Class: | GPRS: Class 12; EDGE: Class 12 |
| GPRS Class: | Class B |
| DTM: | Not support |
| Antenna type: | Fixed Internal Antenna |
| Development Stage: | Identical prototype |
| 3GPP Version: | Release 8 |
| Hotspot function: | No |

Note:

X602A and X602 are the same both in hardware and software, just different model name for marketing requirement, no other changes.

### 2.3.1 Photographs of the EUT

Please refer to the External Photos for the Photos of the EUT.

### 2.3.2 Identification of all used EUT

The EUT identity consists of numerical and letter characters, the letter character indicates the test sample, and the Following two numerical characters indicate the software version of the test sample.

| EUT Identity | Hardware Version | Software Version |
|---|---|---|
| 1# | V2.0 | X602-A-C.140423.R007.00.0.X.T |

## 2.4 Applied Reference Documents

Leading reference documents for testing:

| No. | Identity | Document Title |
|---|---|---|
| 1 | **47 CFR§2.1093** | Radiofrequency Radiation Exposure Evaluation: Portable Devices |
| 2 | **IEEE 1528-2013** | Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques. |
| 3 | **KDB 447498 D01v05r02** | General RF Exposure Guidance |
| 4 | **KDB 447498 D02v02** | SAR Procedures for Dongle Xmtr |
| 5 | **KDB 941225 D01v02** | SAR test for 3G devices |
| 6 | **KDB 941225 D02v02r02** | HSPA and 1x Advanced |
| 7 | **KDB 941225 D03v01** | SAR Test Reduction GSM GPRS EDGE |
| 8 | **KDB 865664 D01v01r03** | SAR Measurement 100 MHz to 6 GHz |
| 9 | **KDB 865664 D02v01r01** | RF Exposure Reporting |

## 2.5 Device Category and SAR Limits

This device belongs to portable device category because its radiating structure is allowed to be used within 20 centimeters of the body of the user. Limit for General Population/Uncontrolled exposure should be applied for this device, it is 1.6 W/kg as averaged over any 1 gram of tissue.

## 2.6 Test Environment/Conditions

| | |
|---|---|
| Normal Temperature (NT): | 20 ... 25 °C |
| Relative Humidity: | 30 ... 75 % |
| Air Pressure: | 980 ... 1020 hPa |
| Test frequency: | GSM 850MHz /PCS1900MHz;<br>WCDMA 850MHz/WCDMA1900MHz; |
| Operation mode: | Call established |
| Power Level: | GSM 850 MHz Maximum output power(level 5)<br>PCS1900 MHz Maximum output power(level 0)<br>WCDMA 850MHz Maximum output power(All up bits)<br>WCDMA 1900MHz Maximum output power(All up bits) |

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 Absolute Radio Frequency Channel Number (ARFCN) is allocated to 128, 190 and 251 respectively in the case of GSM 850MHz, or to 512, 661 and 810 respectively in the case of PCS 1900MHz, or to 9262, 9400 and 9538 respectively in the case of WCDMA 1900MHz, or to 4132, 4182 and 4233 respectively in the case of WCDMA 850MHz. 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 Middle than the output power level of the handset by at least 35 dB.

# 3. SPECIFIC ABSORPTION RATE (SAR)

## 3.1 Introduction

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

## 3.2 SAR Definition

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

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

SAR is expressed in units of Watts per kilogram (W/kg)
SAR measurement can be either related to the temperature elevation in tissue by,

$$\mathbf{SAR} = \mathbf{C}\left(\frac{\boldsymbol{\delta}\mathbf{T}}{\boldsymbol{\delta}\mathbf{t}}\right)$$

Where $C$ is the specific head capacity, $\delta T$ is the temperature rise and $\delta t$ the exposure duration, or related to the electrical field in the tissue by

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

Where $\sigma$ is the conductivity of the tissue, $\rho$ is the mass density of the tissue and $|E|$ is the rms electrical field strength.

However for evaluating SAR of low power transmitter, electrical field measurement is typically applied.

# 4. SAR MEASUREMENT SETUP

## 4.1 The Measurement System

Comosar is a system that is able to determine the SAR distribution inside a phantom of human being according to different standards. The Comosar system consists of the Following items:

- Main computer to control all the system
- 6 axis robot
- Data acquisition system
- Miniature E-field probe
- Phone holder
- Head simulating tissue

The Following figure shows the system.

The EUT under test operating at the maximum power level is placed in the phone holder, under the phantom, which is filled with head simulating liquid. The E-Field probe measures the electric field inside the phantom. The OpenSAR software computes the results to give a SAR value in a 1g or 10g mass.

## 4.2 Probe

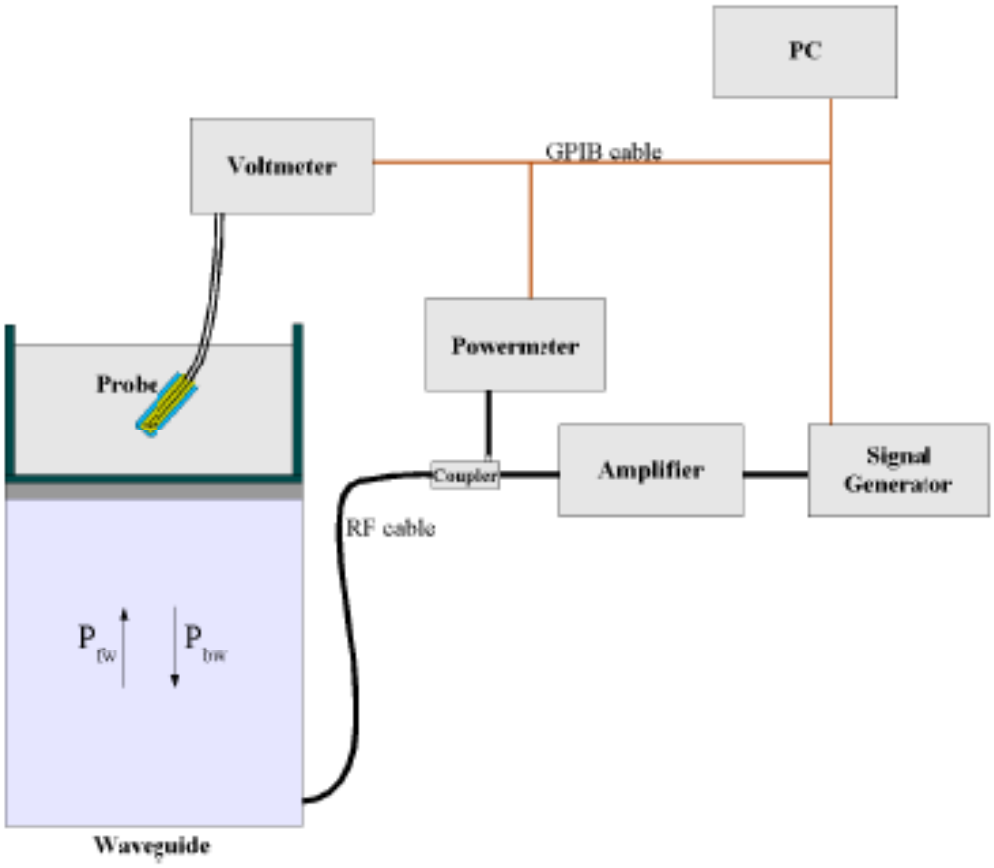
For the measurements the Specific Dosimetric E-Field Probe SN 37/08 EP80 with Following specifications is used

- Dynamic range: 0.01-100 W/kg
- Tip Diameter : 6.5 mm
- Distance between probe tip and sensor center: 2.5mm

- Distance between sensor center and the inner phantom surface: 4 mm
  (repeatability better than +/- 1mm)
- Probe linearity: ＜0.25 dB
- Axial Isotropy: ＜0.25 dB
- Spherical Isotropy: ＜0.25 dB
- Calibration range: 835 to 2500MHz for head & body simulating liquid.

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

Probe calibration is realized, in compliance with CENELEC EN 62209 and IEEE 1528 std, with CALISAR, Antennessa proprietary calibration system. The calibration is performed with the EN 622091 annex technique using reference guide at the five frequencies.




$$SAR = \frac{4\,(P_{fw} - P_{bw})}{ab\delta}\cos^2\left(\pi\frac{y}{a}\right)e^{-(2z/\delta)}$$

Where :

Pfw = Forward Power

Pbw = Backward Power

a and b = Waveguide dimensions

ı = Skin depth

Keithley configuration:

Rate = Medium; Filter =ON; RDGS=10; FILTER TYPE =MOVING AVERAGE; RANGE AUTO
After each calibration, a SAR measurement is performed on a validation dipole and compared with a NPL calibrated probe, to verify it.

The calibration factors, CF(N), for the 3 sensors corresponding to dipole 1, dipole 2 and dipole 3 are:

$$CF(N)=SAR(N)/Vlin(N) \qquad (N=1,2,3)$$

The linearised output voltage Vlin(N) is obtained from the displayed output voltage V(N) using

$$Vlin(N)=V(N)*(1+V(N)/DCP(N)) \qquad (N=1,2,3)$$

Where DCP is the diode compression point in mV.

## 4.3 Probe Calibration Process

### 4.3.1 Dosimetric Assessment Procedure

Each E-Probe/Probe Amplifier combination has unique calibration parameters. SATIMO Probe calibration procedure is conducted to determine the proper amplifier settings to enter in the probe parameters. The amplifier settings are determined for a given frequency by subjecting the probe to a known E-field density (1 mW/cm$^2$ ) using an with CALISAR, Antenna proprietary calibration system.

### 4.3.2 Free Space Assessment Procedure

The free space E-field from amplified probe outputs is determined in a test chamber. This calibration can be performed in a TEM cell if the frequency is below 1 GHz and in a waveguide or other methodologies above 1 GHz for free space. For the free space calibration, the probe is placed in the volumetric center of the cavity and at the proper orientation with the field. The probe is rotated 360 degrees until the three channels show the maximum reading. The power density readings equates to 1 mW/cm$^2$ .

### 4.3.3 Temperature Assessment Procedure

E-field temperature correlation calibration is performed in a flat phantom filled with the appropriate simulating head tissue. The E-field in the medium correlates with the temperature rise in the dielectric medium. For temperature correlation calibration a RF transparent thermistor-based temperature probe is used in conjunction with the E-field probe.

Where:

δt = exposure time (30 seconds),

$$\mathbf{SAR} = \mathbf{C}\left(\frac{\delta \mathbf{T}}{\delta \mathbf{t}}\right)$$

C = heat capacity of tissue (brain or muscle),

δT = temperature increase due to RF exposure.

SAR is proportional to ΔT/Δt, the initial rate of tissue heating, before thermal diffusion takes place. The electric field in the simulated tissue can be used to estimate SAR by equating the thermally derived SAR to that with the E- field component.

Where:

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

σ = simulated tissue conductivity,

ρ = Tissue density (1.25 g/cm$^3$ for brain tissue)

## 4.4 Phantom

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

## 4.5 Device Holder

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

Device holder

| System Material | Permittivity | Loss Tangent |
|---|---|---|
| Delrin | 3.7 | 0.005 |

# 5. TISSUE SIMULATING LIQUIDS

For SAR measurement of the field distribution inside the phantom, the phantom must be filled with homogeneous tissue simulating liquid to a depth of at least 15 cm. For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm. The nominal dielectric values of the tissue simulating liquids in the phantom and the tolerance of 5% are listed in below table.

The following table gives the recipes for tissue simulating liquids

| Frequency Band (MHz) | 835.00 | 1900.00 |
|---|---|---|
| Tissue Type | Body | Body |
| Ingredients (% by weight ) | | |
| Deionised Water | 50.20 | 40.40 |
| Salt(NaCl) | 0.90 | 0.50 |
| Sugar | 48.50 | 58.00 |
| Tween 20 | 0.00 | 0.00 |
| HEC | 0.20 | 1.00 |
| Bactericide | 0.20 | 0.10 |
| Triton X-100 | 0.00 | 0.00 |
| DGBE | 0.00 | 0.00 |
| Diethylenglycol monohexylether | 0.00 | 0.00 |
| Measured dielectric parameters | | |
| Dielectric Constant | 56.10 | 53.30 |
| Conductivity (S/m) | 0.95 | 1.52 |

The dielectric properties of the tissue simulating liquids were verified prior to the SAR evaluation using an Agilent 85033E Dielectric Probe Kit and an Agilent Network Analyzer.

**Table 1: Dielectric Performance of Tissue Simulating Liquid**

| Temperature: 22.0~23.8°C, humidity: 54~60%. | | | | | | |
|---|---|---|---|---|---|---|
| **Date** | **Freq.(MHz)** | **Liquid Parameters** | **Meas.** | **Target** | **Delta(%)** | **Limit±(%)** |
| 2014/5/4 | Body 835 | Relative Permittivity(εr): | 56.43 | 56.10 | 0.59 | 5 |
| | | Conductivity(σ): | 0.97 | 0.95 | 2.11 | 5 |
| 2014/5/5 | Body 1900 | Relative Permittivity(εr): | 53.18 | 53.30 | -0.23 | 5 |
| | | Conductivity(σ): | 1.50 | 1.52 | -1.32 | 5 |

# 6. UNCERTAINTY ASSESSMENT

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

## 6.1 UNCERTAINTY EVALUATION FOR EUT 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 |
| **Measurement System** | | | | | | | | | |
| Probe calibration | E.2.1 | 4.76 | N | 1 | 1 | 1 | 4.76 | 4.7 | ∞ |
| Axial Isotropy | E.2.2 | 2.5 | R | $\sqrt{3}$ | 0.7 | 0.7 | 1.01 | 1.0 | ∞ |
| Hemispherical Isotropy | E.2.2 | 4.0 | R | $\sqrt{3}$ | 0.7 | 0.7 | 1.62 | 1.6 | ∞ |
| Boundary effect | E.2.3 | 1.0 | R | $\sqrt{3}$ | 1 | 1 | 0.58 | 0.5 | ∞ |
| Linearity | E.2.4 | 5.0 | R | $\sqrt{3}$ | 1 | 1 | 2.89 | 2.8 | ∞ |
| System detection limits | E.2.5 | 1.0 | R | $\sqrt{3}$ | 1 | 1 | 0.58 | 0.5 | ∞ |
| Readout Electronics | E.2.6 | 0.02 | N | 1 | 1 | 1 | 0.02 | 0.0 | ∞ |
| Reponse Time | E.2.7 | 3.0 | R | $\sqrt{3}$ | 1 | 1 | 1.73 | 1.7 | ∞ |
| Integration Time | E.2.8 | 2.0 | R | $\sqrt{3}$ | 1 | 1 | 1.15 | 1.1 | ∞ |
| RF ambient Conditions | E.6.1 | 3.0 | R | $\sqrt{3}$ | 1 | 1 | 1.73 | 1.7 | ∞ |
| Probe positioner Mechanical Tolerance | E.6.2 | 2.0 | R | $\sqrt{3}$ | 1 | 1 | 1.15 | 1.1 5 | ∞ |
| Probe positioning with respect to Phantom Shell | E.6.3 | 0.05 | R | $\sqrt{3}$ | 1 | 1 | 0.03 | 0.0 3 | ∞ |
| Extrapolation, interpolation and integration Algoritms for Max. SAR Evaluation | E.5.2 | 5.0 | R | $\sqrt{3}$ | 1 | 1 | 2.89 | 2.8 9 | ∞ |
| **Test sample Related** | | | | | | | | | |
| Test sample positioning | E.4.2. 1 | 0.03 | N | 1 | 1 | 1 | 0.03 | 0.0 3 | N-1 |
| Device Holder Uncertainty | E.4.1. 1 | 5.00 | N | 1 | 1 | 1 | 5.00 | 5.0 0 | N-1 |
| Output power Power drift - | 6.6.2 | 4.04 | R | $\sqrt{3}$ | 1 | 1 | 2.33 | 2.3 | ∞ |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAR drift measurement | | | | | | | | 3 | |
| **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 | 4.57 | R | $\sqrt{3}$ | 0.64 | 0.43 | 1.69 | 1.13 | ∞ |
| Liquid conductivity - measurement uncertainty | E.3.3 | 5.00 | N | 1 | 0.64 | 0.43 | 3.20 | 2.15 | M |
| Liquid permittivity - deviation from target value | E.3.2 | 3.69 | R | $\sqrt{3}$ | 0.6 | 0.49 | 1.28 | 1.04 | ∞ |
| Liquid permittivity - measurement uncertainty | E.3.3 | 10.00 | N | 1 | 0.6 | 0.49 | 6.00 | 4.90 | M |
| Combined Standard Uncertainty | | | RSS | | | | 11.55 | 10.67 | |
| Expanded Uncertainty (95% Confidence interval) | | | K=2 | | | | 23.11 | 21.33 | |

## 6.2 UNCERTAINTY FOR SYSTEM PERFORMANCE CHECK

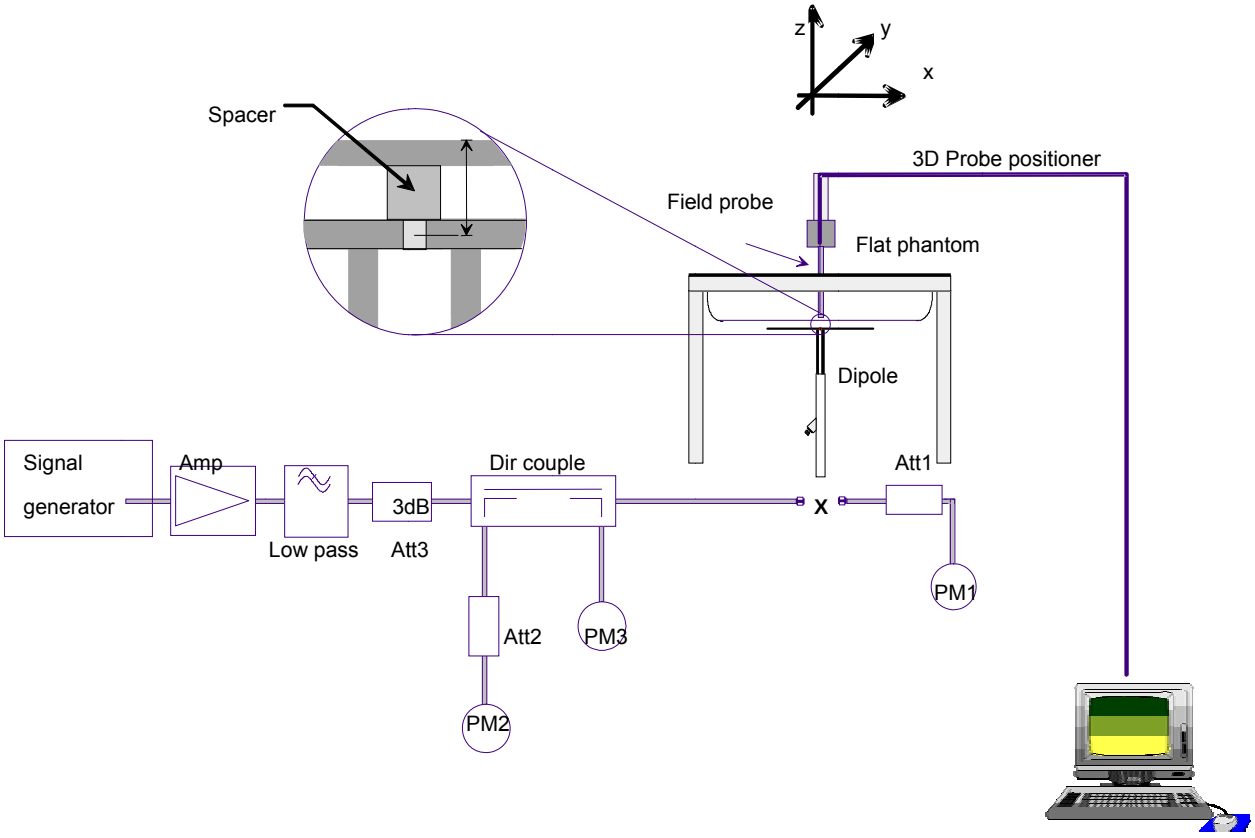
| a | b | c | d | e= f(d,k) | f | g | h= c*f/e | i= c*g/e | k |
|---|---|---|---|---|---|---|---|---|---|
| Uncertainty Component | Sec. | Tol (+-%) | Prob. Dist. | Div. | Ci (1g) | Ci (10g) | 1g Ui (+-%) | 10g Ui (+-%) | Vi |
| **Measurement System** | | | | | | | | | |
| Probe calibration | E.2.1 | 4.76 | N | 1 | 1 | 1 | 4.76 | 4.7 | ∞ |
| Axial Isotropy | E.2.2 | 2.5 | R | $\sqrt{3}$ | 0.7 | 0.7 | 1.01 | 1.0 | ∞ |
| Hemispherical Isotropy | E.2.2 | 4.0 | R | $\sqrt{3}$ | 0.7 | 0.7 | 1.62 | 1.6 | ∞ |
| Boundary effect | E.2.3 | 1.0 | R | $\sqrt{3}$ | 1 | 1 | 0.58 | 0.5 | ∞ |
| Linearity | E.2.4 | 5.0 | R | $\sqrt{3}$ | 1 | 1 | 2.89 | 2.8 | ∞ |
| System detection limits | E.2.5 | 1.0 | R | $\sqrt{3}$ | 1 | 1 | 0.58 | 0.5 | ∞ |
| Readout Electronics | E.2.6 | 0.02 | N | 1 | 1 | 1 | 0.02 | 0.0 | ∞ |
| Reponse Time | E.2.7 | 3.0 | R | $\sqrt{3}$ | 1 | 1 | 1.73 | 1.7 | ∞ |
| Integration Time | E.2.8 | 2.0 | R | $\sqrt{3}$ | 1 | 1 | 1.15 | 1.1 | ∞ |
| RF ambient Conditions | E.6.1 | 3.0 | R | $\sqrt{3}$ | 1 | 1 | 1.73 | 1.7 | ∞ |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 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 Algoritms 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 | ∞ |
| Input power and SAR drift measurement | 8,6.6.2 | 4.04 | R | $\sqrt{3}$ | 1 | 1 | 2.33 | 2.33 | ∞ |
| **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 | 4.57 | R | $\sqrt{3}$ | 0.64 | 0.43 | 1.69 | 1.13 | ∞ |
| Liquid conductivity - measurement uncertainty | E.3.3 | 5.00 | N | $\sqrt{3}$ | 0.64 | 0.43 | 1.85 | 1.24 | M |
| Liquid permittivity - deviation from target value | E.3.2 | 3.69 | R | $\sqrt{3}$ | 0.6 | 0.49 | 1.28 | 1.04 | ∞ |
| Liquid permittivity - measurement uncertainty | E.3.3 | 10.00 | N | $\sqrt{3}$ | 0.6 | 0.49 | 3.46 | 2.83 | M |
| Combined Standard Uncertainty | | | RSS | | | | 8.83 | 8.37 | |
| Expanded Uncertainty (95% Confidence interval) | | | K=2 | | | | 17.66 | 16.73 | |

# 7. SAR MEASUREMENT EVALUATION

## 7.1 System Setup

In the simplified setup for system evaluation, the DUT is replaced by a calibrated dipole and the power source is replaced by a continuous wave which comes from a signal generator. The calibrated dipole must be placed beneath the flat phantom section of the SAM twin phantom with the correct distance holder. The distance holder should touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom. The system check verifies that the system operates within its specifications. It is performed daily or before every SAR measurement. The system check uses normal SAR measurements in the flat section of the phantom with a matched dipole at a specified distance. The system verification setup is shown as below.




The validation dipole is placed beneath the flat phantom with the specific spacer in place. The distance spacer is touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom. The power meter PM1 measures the forward power at the location of the system check dipole connector. The signal generator is adjusted for the desired forward power (250 mW is used for 700 MHz to 3 GHz,100 mW is used for 3.5 GHz to 6 GHz) at the dipole connector and the power meter PM2 is read at that level. After connecting the cable to the dipole, the signal generator is readjusted for the same reading at power meter PM2.

## 7.2 Validation Results

After system check testing, the SAR result will be normalized to 1W forward input power and compared with the reference SAR value derived from validation dipole certificate report. The deviation of system check should be within 10 %.

| **Frequency** | 835MHz(B) | 1900MHz(B) |
|---|---|---|
| **Target value (1g)** | 10.020 W/Kg | 42.330 W/Kg |
| **Test value (1g 250 mW input)** | 2.482 W/Kg (5.4) | 9.908 W/Kg (5.5) |
| **Normalized value (1g)** | 9.928 W/Kg | 39.632 W/Kg |

**Note**: System checks the specific test data please see page 69~72.

# 8. OPERATIONAL CONDITIONS DURING TEST

## 8.1 Body-worn Configurations

The body-worn configurations shall be tested with the supplied accessories (belt-clips, holsters, etc.) attached to the device in normal use configuration.

For body-worn and other configurations a flat phantom shall be used which is comprised of material with electrical properties similar to the corresponding tissues.

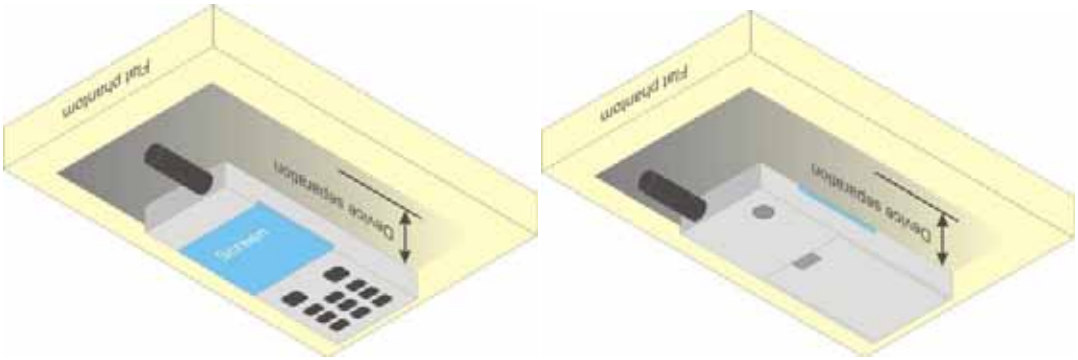



**Illustration for Body Worn Position**

## 8.2 Measurement procedure

The Following steps are used for each test position

1. Establish a call with the maximum output power with a base station simulator. The connection between the mobile and the base station simulator is established via air interface.
2. Measurement of the local E-field value at a fixed location. This value serves as a reference value for calculating a possible power drift.
3. Measurement of the SAR distribution with a grid of 8 to 16mm * 8 to16 mm and a constant distance to the inner surface of the phantom. Since the sensors can not directly measure at the inner phantom surface, the values between the sensors and the inner phantom surface are extrapolated. With these values the area of the maximum SAR is calculated by an interpolation scheme.
4. Around this point, a cube of 30 * 30 * 30 mm or 32 * 32 * 32 mm is assessed by measuring 5 or 8 * 5 or 8*4 or 5 mm. With these data, the peak spatial-average SAR value can be calculated.

## 8.3 Description of interpolation/extrapolation scheme

The local SAR inside the phantom is measured using small dipole sensing elements inside a probe body.

The probe tip must not be in contact with the phantom surface in order to minimize measurements errors, but the highest local SAR will occur at the surface of the phantom.

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

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

# 9. MEASUREMENT OF CONDUCTED PEAK OUTPUT POWER

1. WCDMA Conducted peak output power

| Item | band | WCDMA 850 | | | WCDMA 1900 | | |
|---|---|---|---|---|---|---|---|
| | ARFCN | 4132 | 4182 | 4233 | 9262 | 9400 | 9538 |
| | subtest | dBm | | | dBm | | |
| 5.2(WCDMA) | non | 23.30 | 22.84 | 22.80 | 24.11 | 24.45 | 23.85 |
| HSDPA | 1 | 23.30 | 22.75 | 22.74 | 24.11 | 24.45 | 23.76 |
| | 2 | 23.26 | 22.72 | 22.76 | 24.08 | 24.41 | 23.77 |
| | 3 | 22.81 | 22.23 | 22.19 | 23.55 | 23.86 | 23.24 |
| | 4 | 22.78 | 22.27 | 22.21 | 23.48 | 23.90 | 23.28 |
| HSUPA | 1 | 23.26 | 22.80 | 22.80 | 24.04 | 24.40 | 23.84 |
| | 2 | 21.24 | 20.82 | 20.72 | 22.10 | 22.37 | 21.86 |
| | 3 | 22.30 | 21.79 | 21.82 | 23.03 | 23.42 | 22.79 |
| | 4 | 21.22 | 20.80 | 20.84 | 22.08 | 23.39 | 21.82 |
| | 5 | 23.25 | 22.75 | 22.76 | 23.96 | 24.28 | 23.71 |
| HSPA+ | 1 | 23.27 | 22.65 | 22.75 | 23.85 | 24.37 | 23.67 |
| Note: The Conducted RF Output Power test of WCDMA /HSDPA /HSUPA/HSPA+ was tested by power meter. | | | | | | | |

2. GPRS Mode Conducted peak output power

| Band | Channel | Frequency (MHz) | Output Power(dBm) | | | |
|---|---|---|---|---|---|---|
| | | | Slot 1 | Slot 2 | Slot 3 | Slot 4 |
| GSM 850 | 128 | 824.2 | 31.76 | 30.40 | 29.49 | 28.96 |
| | 190 | 836.6 | 31.80 | 30.44 | 29.53 | 29.00 |
| | 251 | 848.8 | 31.85 | 30.49 | 29.58 | 29.05 |
| PCS 1900 | 512 | 1850.2 | 27.33 | 25.97 | 25.06 | 24.53 |
| | 661 | 1880.0 | 27.27 | 25.91 | 25.00 | 24.47 |
| | 810 | 1909.8 | 26.41 | 25.05 | 24.14 | 23.61 |

GPRS Time-based Average Power

| Band | Channel | Frequency (MHz) | Output Power(dBm) | | | |
|---|---|---|---|---|---|---|
| | | | Slot 1 | Slot 2 | Slot 3 | Slot 4 |
| GSM 850 | 128 | 824.2 | 22.73 | 24.38 | 25.23 | 25.95 |
| | 190 | 836.6 | 22.77 | 24.42 | 25.27 | 25.99 |
| | 251 | 848.8 | 22.82 | 24.47 | 25.32 | 26.04 |
| PCS 1900 | 512 | 1850.2 | 18.30 | 19.95 | 20.80 | 21.52 |
| | 661 | 1880.0 | 18.24 | 19.89 | 20.74 | 21.46 |
| | 810 | 1909.8 | 17.38 | 19.03 | 19.88 | 20.60 |

4. EGPRS Mode Conducted peak output power

| Band | Channel | Frequency (MHz) | Output Power(dBm) | | | |
|---|---|---|---|---|---|---|
| | | | Slot 1 | Slot 2 | Slot 3 | Slot 4 |
| GSM 850 | 128 | 824.2 | 31.74 | 30.37 | 29.56 | 29.10 |
| | 190 | 836.6 | 31.83 | 30.46 | 29.65 | 29.19 |
| | 251 | 848.8 | 31.80 | 30.43 | 29.62 | 29.16 |
| PCS 1900 | 512 | 1850.2 | 26.84 | 25.47 | 24.66 | 24.20 |
| | 661 | 1880.0 | 27.30 | 25.93 | 25.12 | 24.66 |
| | 810 | 1909.8 | 27.41 | 26.04 | 25.23 | 24.77 |

EGPRS Time-based Average Power

| Band | Channel | Frequency (MHz) | Output Power(dBm) | | | |
|---|---|---|---|---|---|---|
| | | | Slot 1 | Slot 2 | Slot 3 | Slot 4 |
| GSM 850 | 128 | 824.2 | 22.71 | 24.35 | 25.3 | 26.09 |
| | 190 | 836.6 | 22.80 | 24.44 | 25.39 | 26.18 |
| | 251 | 848.8 | 22.77 | 24.41 | 25.36 | 26.15 |
| PCS 1900 | 512 | 1850.2 | 17.81 | 19.45 | 20.4 | 21.19 |
| | 661 | 1880.0 | 18.27 | 19.91 | 20.86 | 21.65 |
| | 810 | 1909.8 | 18.38 | 20.02 | 20.97 | 21.76 |

Timeslot consignations:

| No. Of Slots | Slot 1 | Slot 2 | Slot 3 | Slot 4 |
|---|---|---|---|---|
| Slot Consignation | 1Up4Down | 2Up2Down | 3Up2Down | 4Up1Down |
| Duty Cycle | 1:8 | 1:2 | 1:2.67 | 1:2 |
| Correct Factor | -9.03dB | -6.02dB | -4.26dB | -3.01dB |

# 10. TEST RESULTS LIST

Summary of Measurement Results (GSM 850MHz Band)

| Temperature: 21.0~23.8°C, humidity: 54~60%. | | | | | | |
|---|---|---|---|---|---|---|
| Phantom Configurations | | Device Test Positions | Device Test channel | SAR(W/Kg), 1g Peak | Scaling Factor | Scaled SAR (W/Kg), 1g |
| Body (5mm Separation) | EDGE | Horizontal-Up | 190 | 0.200 | 1.074 | 0.215 |
| | | Horizontal-Down | | 0.233 | | 0.250 |
| | | Vertical-Front | | 0.101 | | 0.108 |
| | | Vertical-Back | | 0.080 | | 0.086 |
| | GPRS | Horizontal-Down | 251 | 0.258 | 1.109 | 0.286 |

Summary of Measurement Results (GSM 1900MHz Band)

| Temperature: 21.0~23.8°C, humidity: 54~60%. | | | | | | |
|---|---|---|---|---|---|---|
| Phantom Configurations | | Device Test Positions | Device Test channel | SAR(W/Kg), 1g Peak | Scaling Factor | Scaled SAR (W/Kg), 1g |
| Body (5mm Separation) | EDGE | Horizontal-Up | 512 | 0.905 | 1.202 | 1.088 |
| | | Horizontal-Up | 661 | 0.936 | 1.081 | 1.012 |
| | | Horizontal-Up | 810 | 0.808 | 1.054 | 0.852 |
| | | Horizontal-Down | 810 | 0.742 | 1.054 | 0.782 |
| | | Vertical-Front | | 0.355 | | 0.374 |
| | | Vertical-Back | | 0.497 | | 0.524 |
| | GPRS | Horizontal-Up | 512 | 0.561 | 1.114 | 0.625 |

Note:

1. GPRS/EDGE test Scenario (Based on the Max. Time-based Average Power)

| Band | Channel | Slots | Power level | Duty Cycle |
|---|---|---|---|---|
| **GPRS850** | 251 | 4 | 5 | 1:2 |
| **EDGE850** | 190 | 4 | 5 | 1:2 |
| **GPRS1900** | 512 | 4 | 0 | 1:2 |
| **EDGE1900** | 810 | 4 | 0 | 1:2 |

Summary of Measurement Results (WCDMA 850MHz Band)

| Temperature: 21.0~23.8°C, humidity: 54~60%. | | | | | |
|---|---|---|---|---|---|
| Phantom Configurations | Device Test Positions | Device Test channel | SAR(W/Kg), 1g Peak | Scaling Factor | Scaled SAR (W/Kg), 1g |
| Body (5mm Separation) | Horizontal-Up | 4132 | 0.143 | 1.047 | 0.150 |
| | Horizontal-Down | | 0.161 | | 0.169 |
| | Vertical-Front | | 0.058 | | 0.061 |
| | Vertical-Back | | 0.054 | | 0.057 |

Summary of Measurement Results (WCDMA 1900MHz Band)

| Temperature: 21.0~23.8°C, humidity: 54~60%. | | | | | |
|---|---|---|---|---|---|
| Phantom Configurations | Device Test Positions | Device Test channel | SAR(W/Kg), 1g Peak | Scaling Factor | Scaled SAR (W/Kg), 1g |
| Body (5mm Separation) | Horizontal-Up | 9400 | 0.745 | 1.012 | 0.754 |
| | Horizontal-Down | | 0.677 | | 0.685 |
| | Vertical-Front | | 0.264 | | 0.267 |
| | Vertical-Back | | 0.357 | | 0.361 |

Note:

1. When the 1-g SAR for the mid-band channel or the channel with the Highest output power satisfy the following conditions, testing of the other channels in the band is not required. (Per KDB 447498 D01 General RF Exposure Guidance v05)
   ≤ 0.8 W/kg and transmission band ≤ 100 MHz
   ≤ 0.6 W/kg and, 100 MHz < transmission bandwidth ≤ 200 MHz
   ≤ 0.4 W/kg and transmission band > 200 MHz

2. The WCDMA mode is test with 12.2kbps RMC and TPC set to all "1", if maximum SAR for 12.2kbps RMC is ≤ 75% of the SAR limit (i.e. 1.2W/Kg 1g) and maximum average output of each RF channel with HSDPA/HSUPA/HSPA+ active is less than 1/4 dB Middle than that measured without HSDPA/HSUPA/HSPA+ using 12.2kbps RMC, according to KDB 941225D01v02, SAR is not required for this handset with HSPA capabilities.

3. Scaling Factor calculation

| Band | Tune-up power tolerance (dBm) | SAR test channel Power (dBm) | Scaling Factor |
|---|---|---|---|
| **GPRS 850** | PCL = 5, PWR =29+-0.5(4 slots) | 29.05 | 1.109 |
| **EDGE 850** | PCL = 5, PWR =29+-0.5(4 slots) | 29.19 | 1.074 |
| **GPRS 1900** | PCL=0, PWR= 24.5+-0.5(4 slots) | 24.53 | 1.114 |
| **EDGE 1900** | PCL=0, PWR= 24.5+-0.5(4 slots) | 24.20 | 1.202 |
| | | 24.66 | 1.081 |
| | | 24.77 | 1.054 |
| **WCDMA 850** | Max output power =22.5(+1/-2) | 23.30 | 1.047 |
| **WCDMA 1900** | Max output power =23.5 (+1/-2) | 24.45 | 1.012 |

# ANNEX A GRAPH TEST RESULTS

| BAND | PARAMETERS |
|---|---|
| **GSM850** | Measurement 1: Flat Plane with Body device position on Middle Channel in EDGE mode<br>Measurement 2: Flat Plane with Body device position on Middle Channel in EDGE mode<br>Measurement 3: Flat Plane with Body device position on Middle Channel in EDGE mode<br>Measurement 4: Flat Plane with Body device position on Middle Channel in EDGE mode<br>Measurement 5: Flat Plane with Body device position on High Channel in GPRS mode |
| **GSM1900** | Measurement 6: Flat Plane with Body device position on Low Channel in EDGE mode<br>Measurement 7: Flat Plane with Body device position on Middle Channel in EDGE mode<br>Measurement 8: Flat Plane with Body device position on High Channel in EDGE mode<br>Measurement 9: Flat Plane with Body device position on High Channel in EDGE mode<br>Measurement 10: Flat Plane with Body device position on High Channel in EDGE mode<br>Measurement 11: Flat Plane with Body device position on High Channel in EDGE mode<br>Measurement 12: Flat Plane with Body device position on Low Channel in GPRS mode |
| **WCDMA 850** | Measurement 13: Flat Plane with Body device position on Low Channel in WCDMA mode<br>Measurement 14: Flat Plane with Body device position on Low Channel in WCDMA mode<br>Measurement 15: Flat Plane with Body device position on Low Channel in WCDMA mode<br>Measurement 16: Flat Plane with Body device position on Low Channel in WCDMA mode |
| **WCDMA 1900** | Measurement 17: Flat Plane with Body device position on Middle Channel in WMA mode<br>Measurement 18: Flat Plane with Body device position on Middle Channel in WCMA mode |

| | |
|---|---|
| | Measurement 19: Flat Plane with Body device position on Middle Channel in WCDMA mode<br>Measurement 20: Flat Plane with Body device position on Middle Channel in WCMA mode |

# MEASUREMENT 1

Type: Phone measurement (Complete)

Area scan resolution: dx=8mm,dy=8mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2014.5.4

Measurement duration: 9 minutes 33 seconds

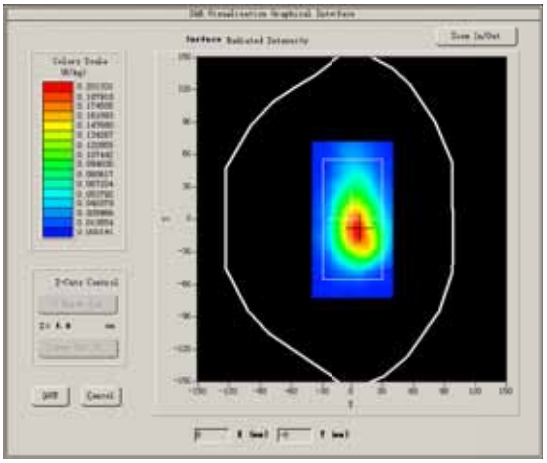
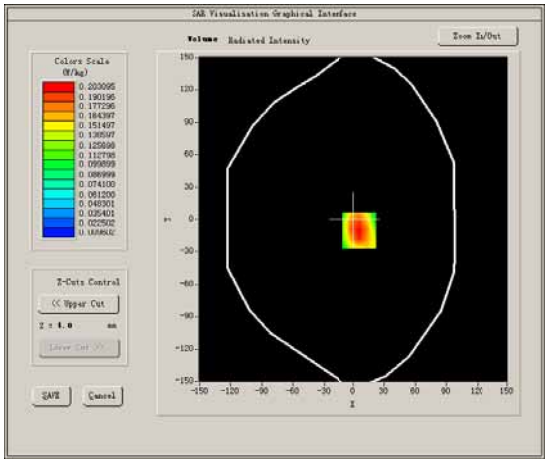
## A. Experimental conditions.

| | |
|---|---|
| **Phantom File** | surf_sam_plan.txt |
| **Phantom** | Flat Plane |
| **Device Position** | Body |
| **Band** | GSM850 |
| **Channels** | Middle |
| **Signal** | EDGE |

## B. SAR Measurement Results

Middle Band SAR (Channel 190):

| | |
|---|---|
| **Frequency (MHz)** | 836.600000 |
| **Relative permittivity (real part)** | 56.430942 |
| **Conductivity (S/m)** | 0.973481 |
| **Power drift(%)** | -2.470000 |
| **Ambient Temperature:** | 22.9°C |
| **Liquid Temperature:** | 22.1°C |
| **ConvF:** | 6.99 |
| **Crest factor:** | 1:2 |

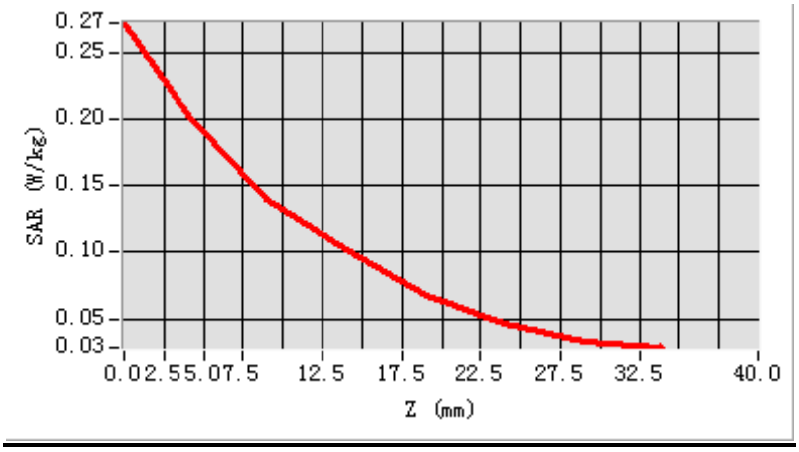
| SURFACE SAR | VOLUME SAR |
|---|---|
|  |  |

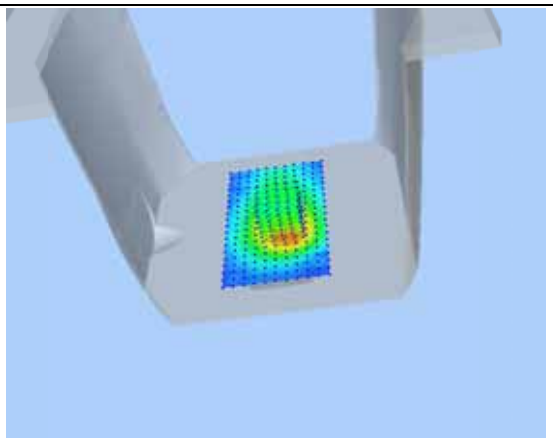
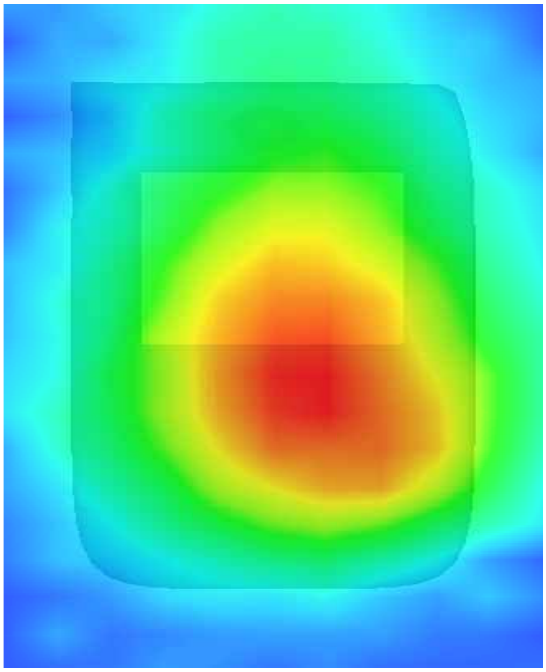
**Maximum location: X=6.00, Y=-10.00**

**SAR Peak: 0.30 W/kg**

| | |
|---|---|
| **SAR 10g (W/Kg)** | 0.125454 |
| **SAR 1g (W/Kg)** | 0.200448 |

**Z axis scan**




| 3D screen shot | Hot spot position |
|---|---|
|  |  |

# MEASUREMENT 2

Type: Phone measurement (Complete)

Area scan resolution: dx=8mm,dy=8mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2014.5.4

Measurement duration: 9 minutes 33 seconds

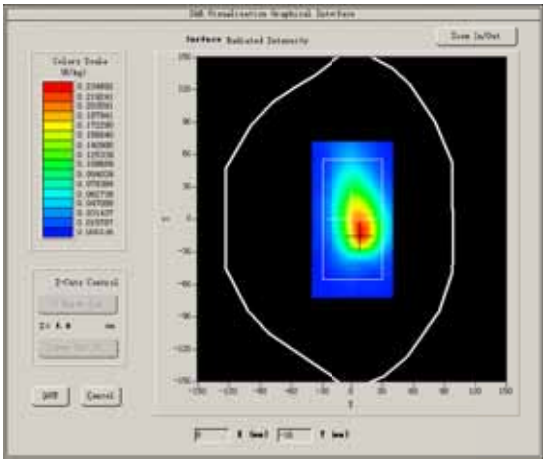
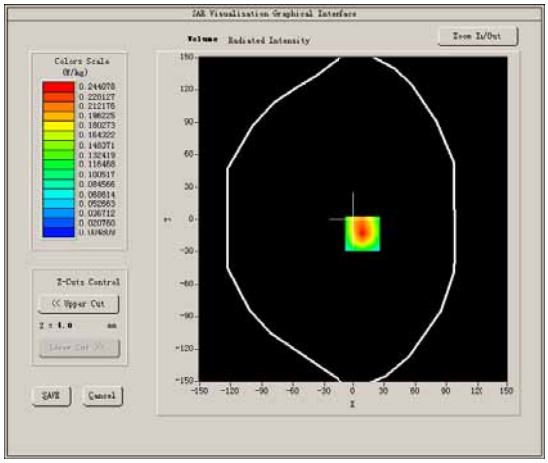
## A. Experimental conditions.

| | |
|---|---|
| **Phantom File** | surf_sam_plan.txt |
| **Phantom** | Flat Plane |
| **Device Position** | Body |
| **Band** | GSM850 |
| **Channels** | Middle |
| **Signal** | EDGE |

## B. SAR Measurement Results

Middle Band SAR (Channel 190):

| | |
|---|---|
| **Frequency (MHz)** | 836.600000 |
| **Relative permittivity (real part)** | 56.430942 |
| **Conductivity (S/m)** | 0.973481 |
| **Power drift(%)** | -0.560000 |
| **Ambient Temperature:** | 22.9°C |
| **Liquid Temperature:** | 22.1°C |
| **ConvF:** | 6.99 |
| **Crest factor:** | 1:2 |

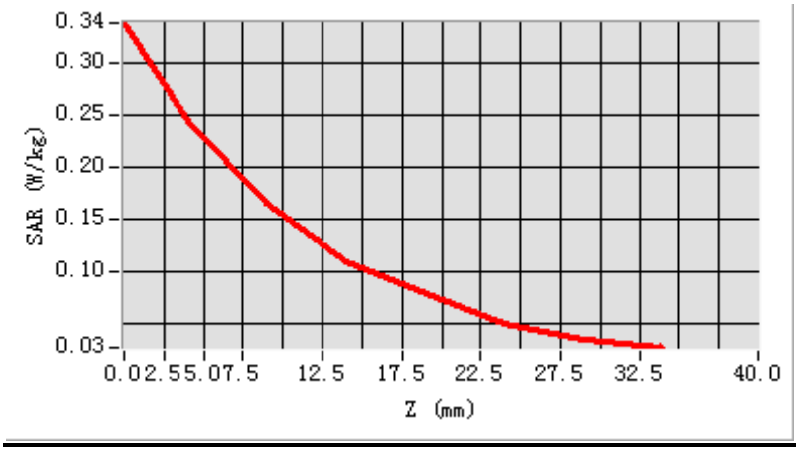
| SURFACE SAR | VOLUME SAR |
|---|---|
|  |  |

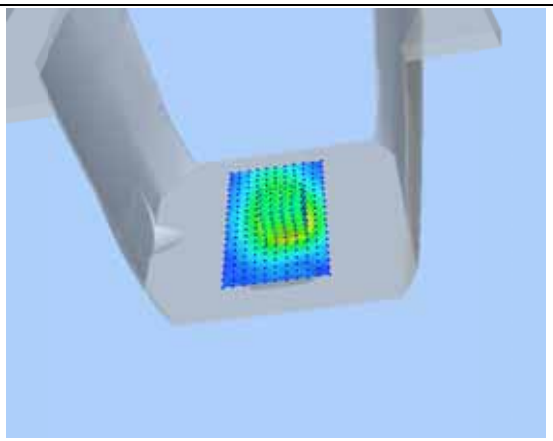
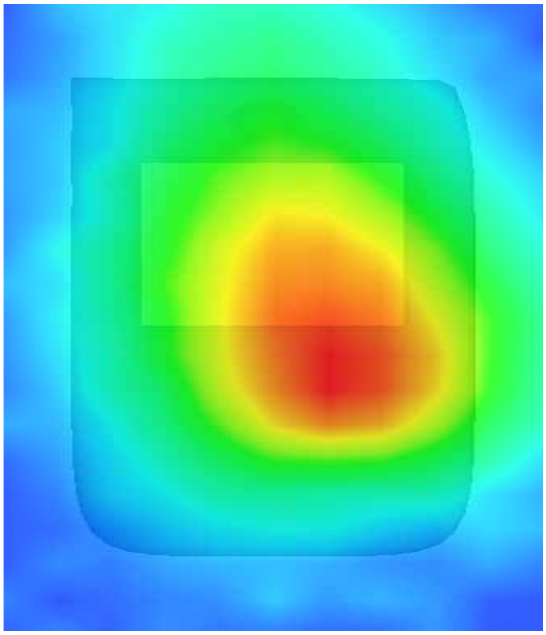
**Maximum location: X=9.00, Y=-13.00**

**SAR Peak: 0.35 W/kg**

| | |
|---|---|
| **SAR 10g (W/Kg)** | 0.142101 |
| **SAR 1g (W/Kg)** | 0.232804 |

**Z axis scan**




| 3D screen shot | Hot spot position |
|---|---|
|  |  |

# MEASUREMENT 3

Type: Phone measurement (Complete)

Area scan resolution: dx=8mm,dy=8mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2014.5.4

Measurement duration: 9 minutes 35 seconds

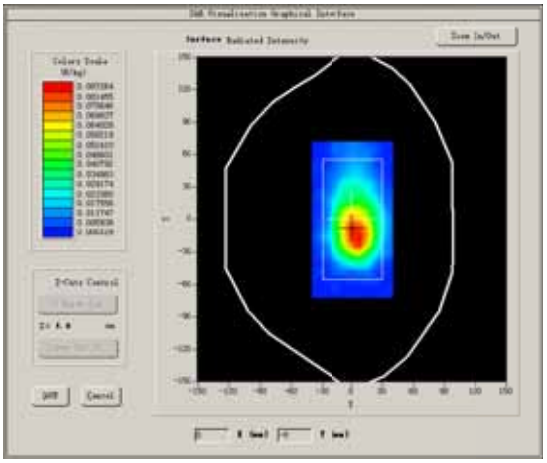
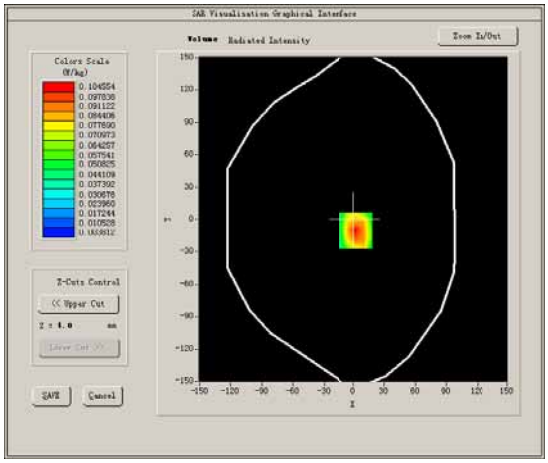
## A. Experimental conditions.

| | |
|---|---|
| **Phantom File** | surf_sam_plan.txt |
| **Phantom** | Flat Plane |
| **Device Position** | Body |
| **Band** | GSM850 |
| **Channels** | Middle |
| **Signal** | EDGE |

## B. SAR Measurement Results

Middle Band SAR (Channel 190):

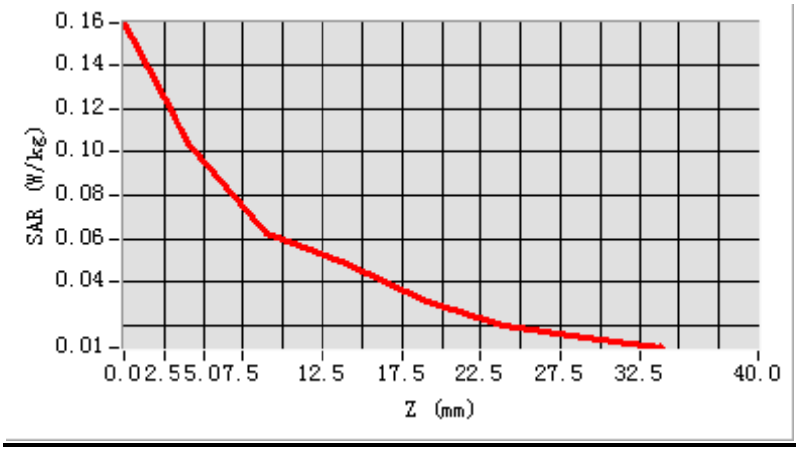
| | |
|---|---|
| **Frequency (MHz)** | 836.600000 |
| **Relative permittivity (real part)** | 56.430942 |
| **Conductivity (S/m)** | 0.973481 |
| **Power drift(%)** | 3.830000 |
| **Ambient Temperature:** | 22.9°C |
| **Liquid Temperature:** | 22.1°C |
| **ConvF:** | 6.99 |
| **Crest factor:** | 1:2 |

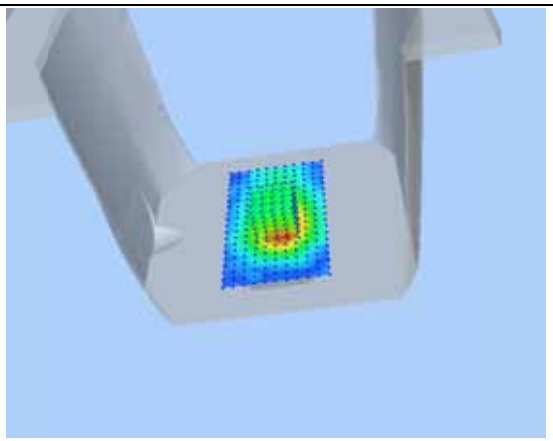
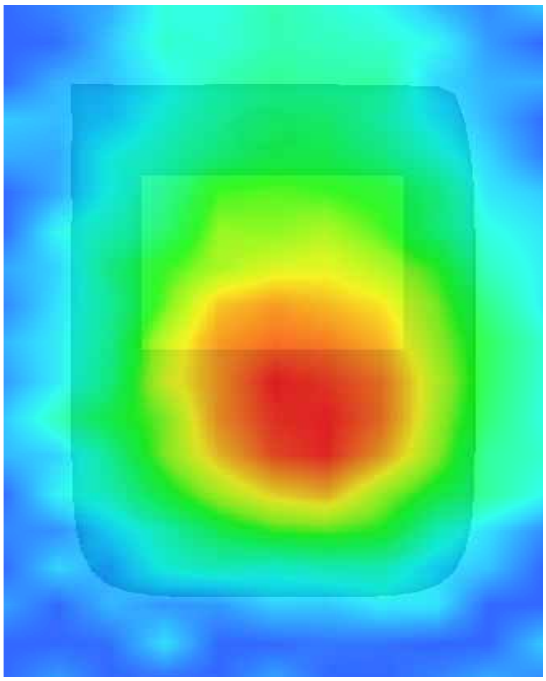
| SURFACE SAR | VOLUME SAR |
|---|---|
|  |  |

**Maximum location: X=2.00, Y=-10.00**
**SAR Peak: 0.16 W/kg**

| | |
|---|---|
| **SAR 10g (W/Kg)** | 0.059247 |
| **SAR 1g (W/Kg)** | 0.100876 |

**Z axis scan**




| 3D screen shot | Hot spot position |
|---|---|
|  |  |

# MEASUREMENT 4

Type: Phone measurement (Complete)

Area scan resolution: dx=8mm,dy=8mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2014.5.4

Measurement duration: 9 minutes 34 seconds

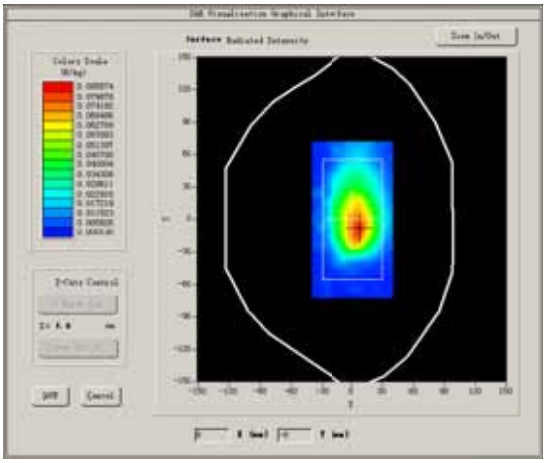
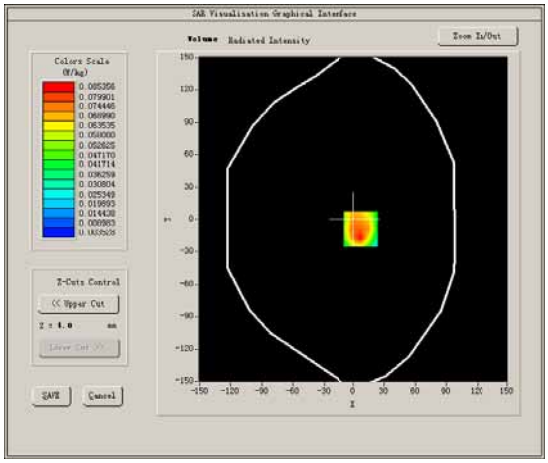
## A. Experimental conditions.

| | |
|---|---|
| **Phantom File** | surf_sam_plan.txt |
| **Phantom** | Flat Plane |
| **Device Position** | Body |
| **Band** | GSM850 |
| **Channels** | Middle |
| **Signal** | EDGE |

## B. SAR Measurement Results

Middle Band SAR (Channel 190):

| | |
|---|---|
| **Frequency (MHz)** | 836.600000 |
| **Relative permittivity (real part)** | 56.430942 |
| **Conductivity (S/m)** | 0.973481 |
| **Power drift(%)** | -3.410000 |
| **Ambient Temperature:** | 22.9°C |
| **Liquid Temperature:** | 22.1°C |
| **ConvF:** | 6.99 |
| **Crest factor:** | 1:2 |

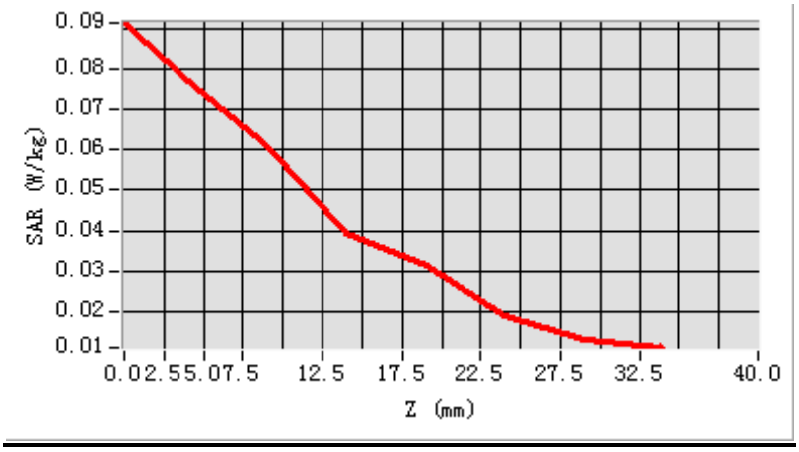
| SURFACE SAR | VOLUME SAR |
|---|---|
|  |  |

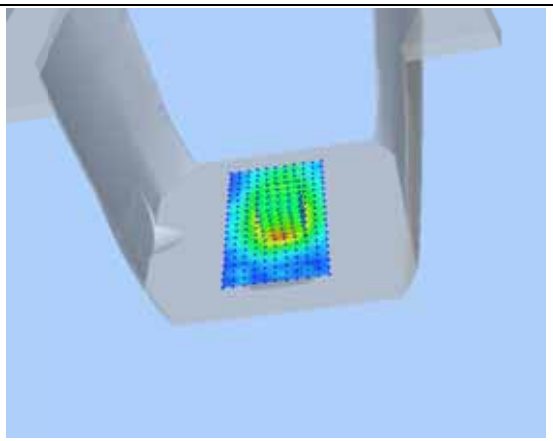
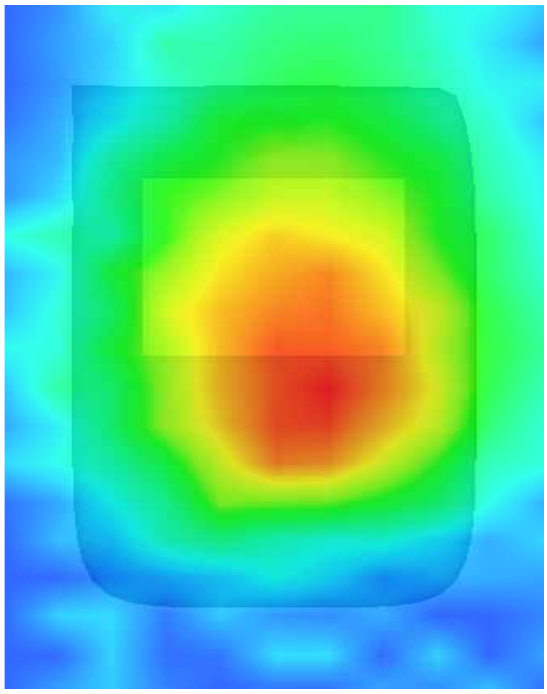
**Maximum location: X=7.00, Y=-9.00**

**SAR Peak: 0.12 W/kg**

| | |
|---|---|
| **SAR 10g (W/Kg)** | 0.050457 |
| **SAR 1g (W/Kg)** | 0.080089 |

**Z axis scan**




| 3D screen shot | Hot spot position |
|---|---|
|  |  |

# MEASUREMENT 5

Type: Phone measurement (Complete)

Area scan resolution: dx=8mm,dy=8mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2014.5.4

Measurement duration: 9 minutes 35 seconds

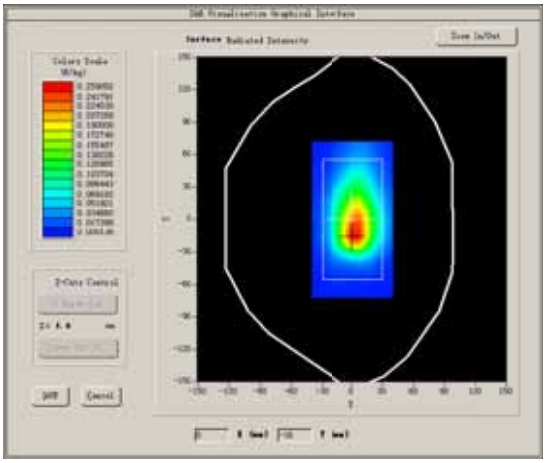
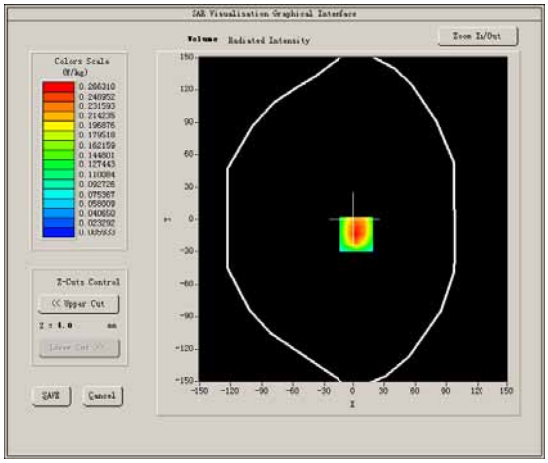
## A. Experimental conditions.

| | |
|---|---|
| **Phantom File** | surf_sam_plan.txt |
| **Phantom** | Flat Plane |
| **Device Position** | Body |
| **Band** | GSM850 |
| **Channels** | High |
| **Signal** | GPRS |

## B. SAR Measurement Results

High Band SAR (Channel 251):

| | |
|---|---|
| **Frequency (MHz)** | 848.800000 |
| **Relative permittivity (real part)** | 56.430942 |
| **Conductivity (S/m)** | 0.973481 |
| **Power drift(%)** | 1.600000 |
| **Ambient Temperature:** | 22.9°C |
| **Liquid Temperature:** | 22.1°C |
| **ConvF:** | 6.99 |
| **Crest factor:** | 1:2 |

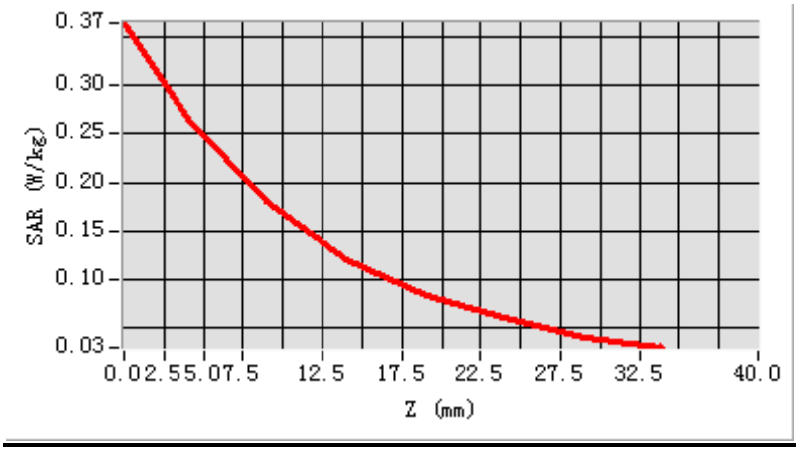
| SURFACE SAR | VOLUME SAR |
|---|---|
|  |  |

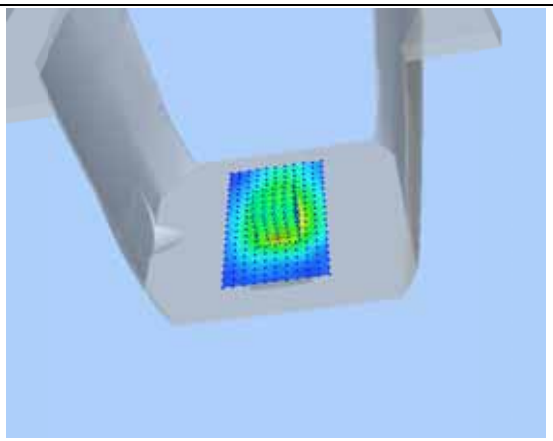
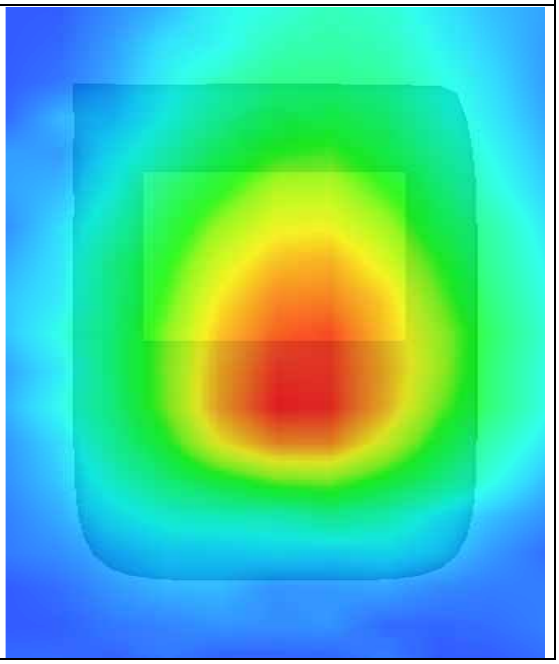
**Maximum location: X=3.00, Y=-14.00**

**SAR Peak: 0.39 W/kg**

| | |
|---|---|
| **SAR 10g (W/Kg)** | 0.156946 |
| **SAR 1g (W/Kg)** | 0.257883 |

**Z axis scan**




| 3D screen shot | Hot spot position |
|---|---|
|  |  |

# MEASUREMENT 6

Type: Phone measurement (Complete)

Area scan resolution: dx=8mm,dy=8mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2014.5.5

Measurement duration: 9 minutes 37 seconds

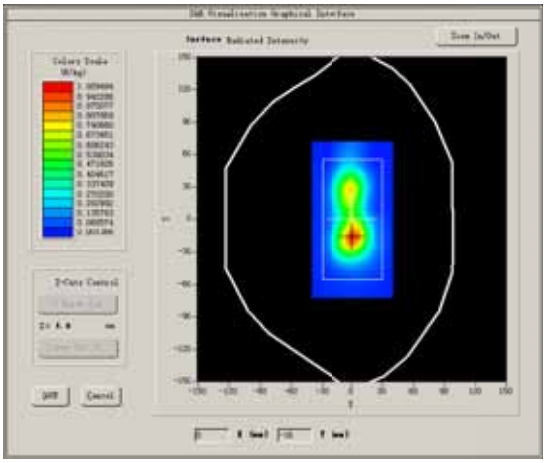
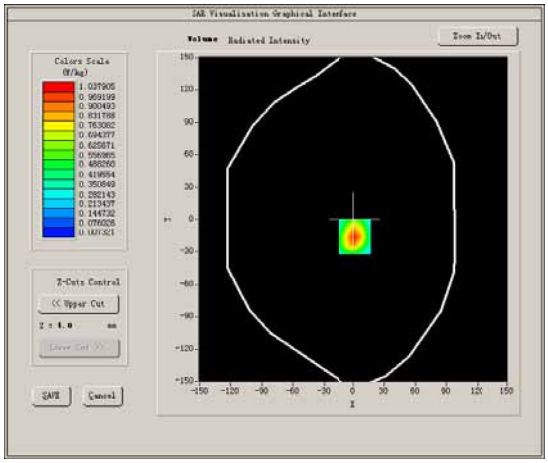
## A. Experimental conditions.

| | |
|---|---|
| **Phantom File** | surf_sam_plan.txt |
| **Phantom** | Flat Plane |
| **Device Position** | Body |
| **Band** | GSM1900 |
| **Channels** | Low |
| **Signal** | EDGE |

## B. SAR Measurement Results

Low Band SAR (Channel 512):

| | |
|---|---|
| **Frequency (MHz)** | 1850.200000 |
| **Relative permittivity (real part)** | 53.183720 |
| **Conductivity (S/m)** | 1.496482 |
| **Power drift(%)** | 0.200000 |
| **Ambient Temperature:** | 22.9°C |
| **Liquid Temperature:** | 22.1°C |
| **ConvF:** | 6.17 |
| **Crest factor:** | 1:2 |

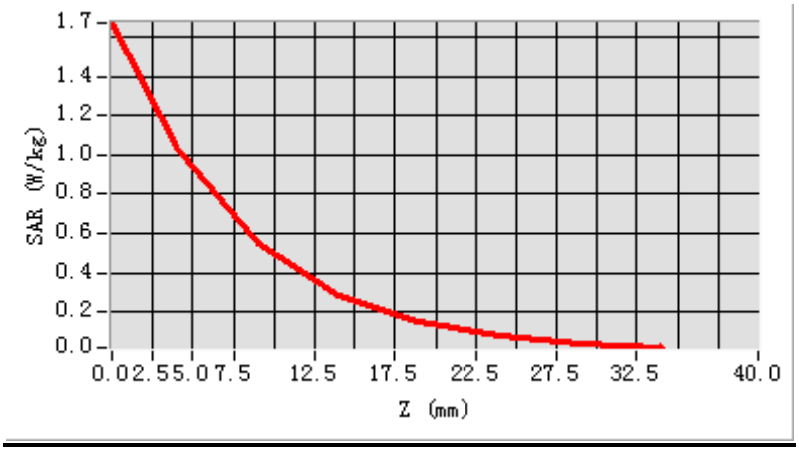
| SURFACE SAR | VOLUME SAR |
|---|---|
|  |  |

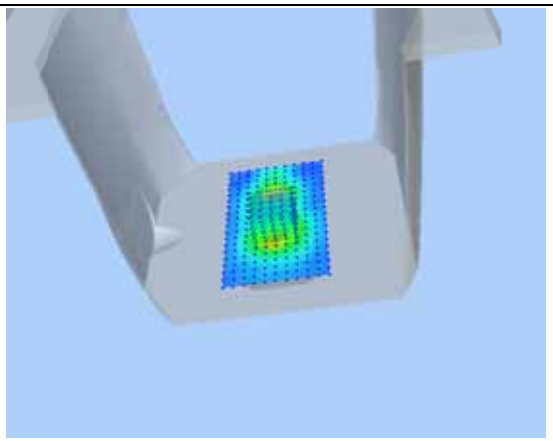
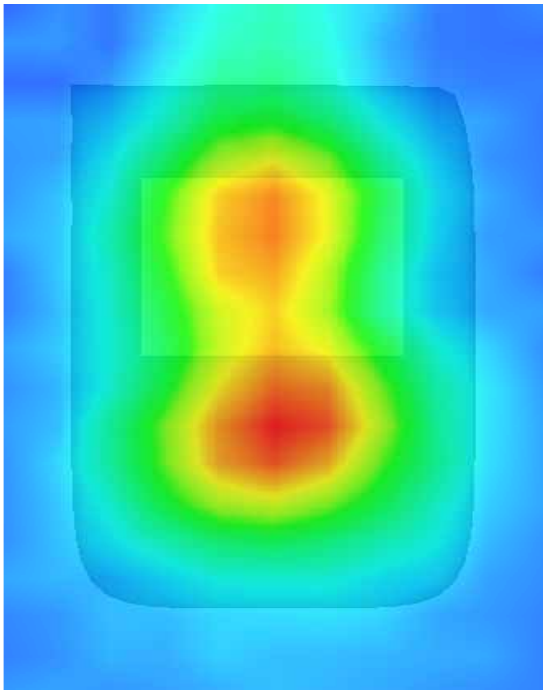
**Maximum location: X=1.00, Y=-16.00**

**SAR Peak: 1.71 W/kg**

| | |
|---|---|
| **SAR 10g (W/Kg)** | 0.476991 |
| **SAR 1g (W/Kg)** | 0.904594 |

**Z axis scan**




| 3D screen shot | Hot spot position |
|---|---|
|  |  |

# MEASUREMENT 7

Type: Phone measurement (Complete)

Area scan resolution: dx=8mm,dy=8mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2014.5.5

Measurement duration: 9 minutes 34 seconds

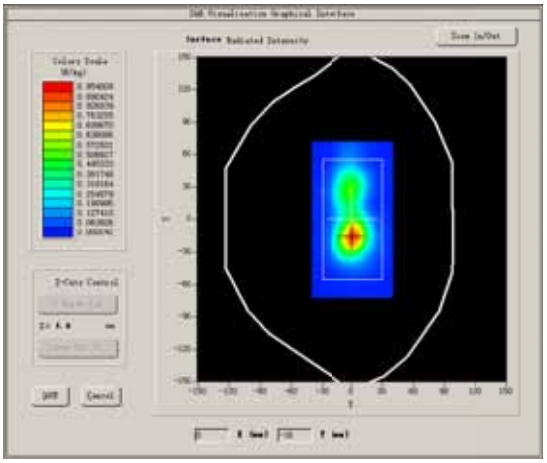
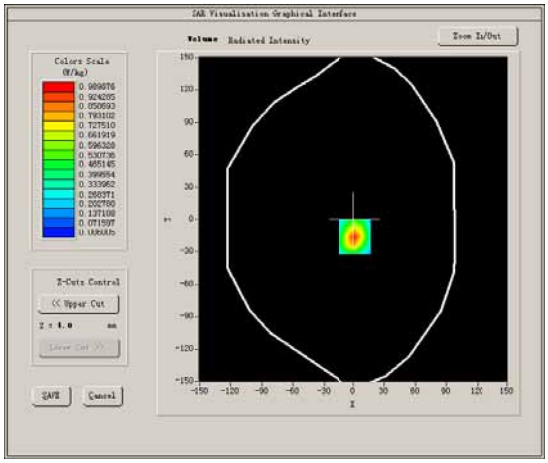
## A. Experimental conditions.

| | |
|---|---|
| **Phantom File** | surf_sam_plan.txt |
| **Phantom** | Flat Plane |
| **Device Position** | Body |
| **Band** | GSM1900 |
| **Channels** | Middle |
| **Signal** | EDGE |

## B. SAR Measurement Results

Middle Band SAR (Channel 661):

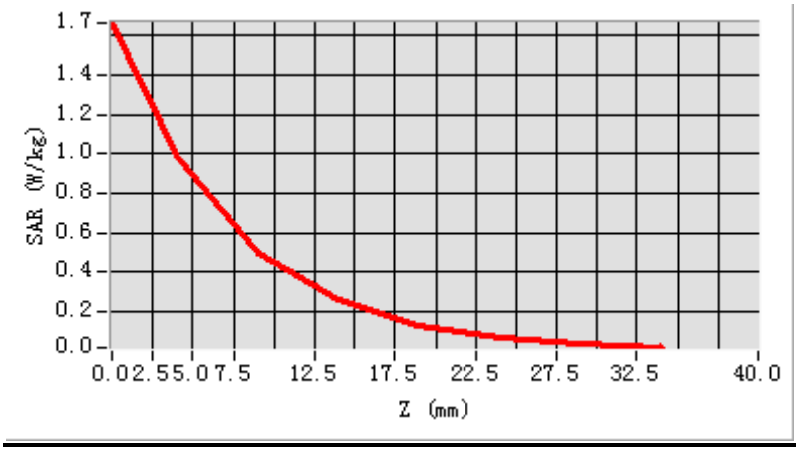
| | |
|---|---|
| **Frequency (MHz)** | 1880.000000 |
| **Relative permittivity (real part)** | 53.183720 |
| **Conductivity (S/m)** | 1.496482 |
| **Power drift(%)** | 0.400000 |
| **Ambient Temperature:** | 22.9°C |
| **Liquid Temperature:** | 22.1°C |
| **ConvF:** | 6.17 |
| **Crest factor:** | 1:2 |

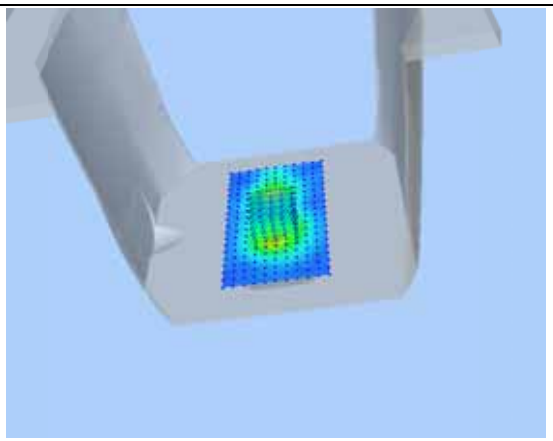
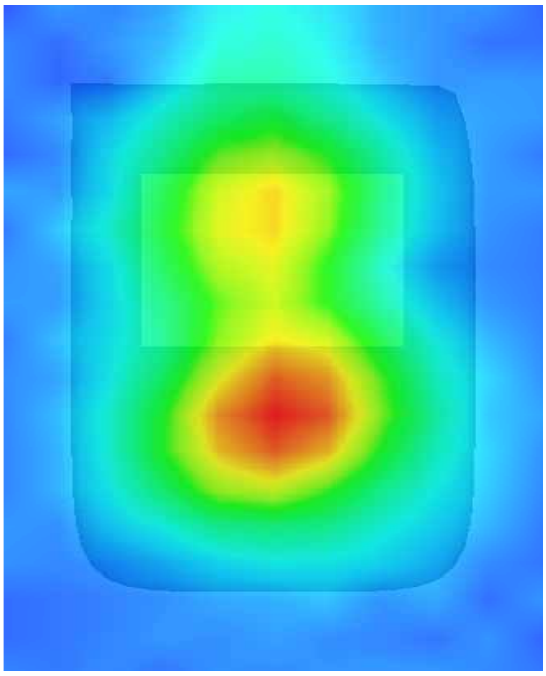
| SURFACE SAR | VOLUME SAR |
|---|---|
|  |  |

**Maximum location: X=1.00, Y=-16.00**
**SAR Peak: 1.67 W/kg**

| | |
|---|---|
| **SAR 10g (W/Kg)** | 0.432441 |
| **SAR 1g (W/Kg)** | 0.935700 |

**Z axis scan**




| 3D screen shot | Hot spot position |
|---|---|
|  |  |

# MEASUREMENT 8

Type: Phone measurement (Complete)

Area scan resolution: dx=8mm,dy=8mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2014.5.5

Measurement duration: 9 minutes 36 seconds

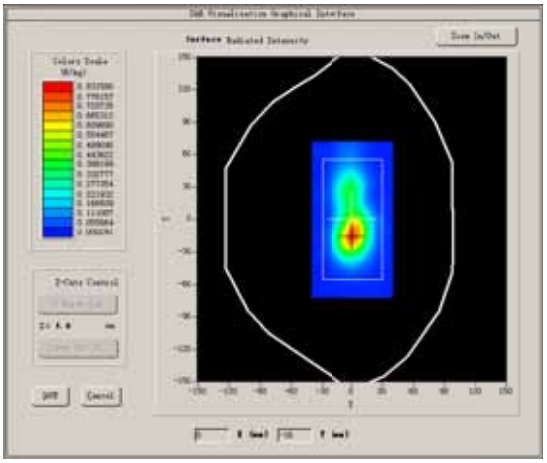
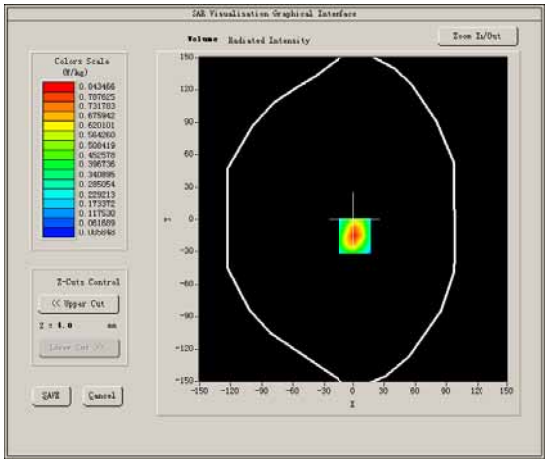
## A. Experimental conditions.

| | |
|---|---|
| **Phantom File** | surf_sam_plan.txt |
| **Phantom** | Flat Plane |
| **Device Position** | Body |
| **Band** | GSM1900 |
| **Channels** | High |
| **Signal** | EDGE |

## B. SAR Measurement Result

High Band SAR (Channel 810):

| | |
|---|---|
| **Frequency (MHz)** | 1909.800000 |
| **Relative permittivity (real part)** | 53.183720 |
| **Conductivity (S/m)** | 1.496482 |
| **Power drift(%)** | 2.000000 |
| **Ambient Temperature:** | 22.9°C |
| **Liquid Temperature:** | 22.1°C |
| **ConvF:** | 6.17 |
| **Crest factor:** | 1:2 |

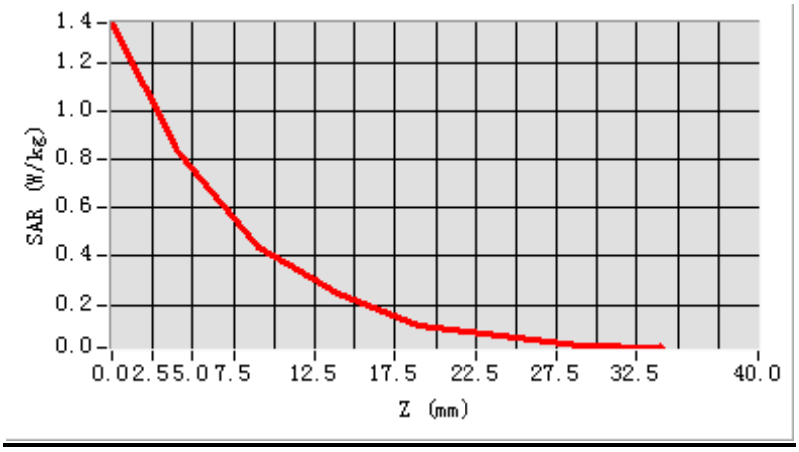
| SURFACE SAR | VOLUME SAR |
|---|---|
|  |  |

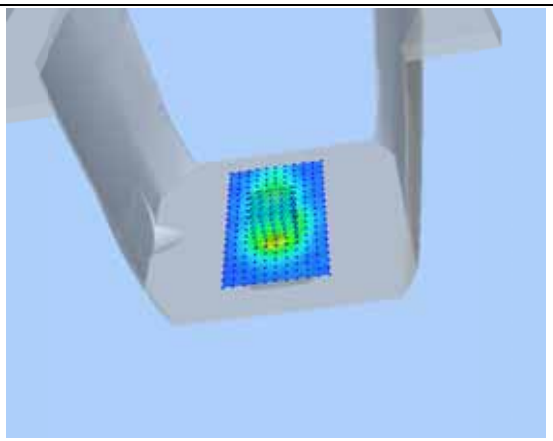
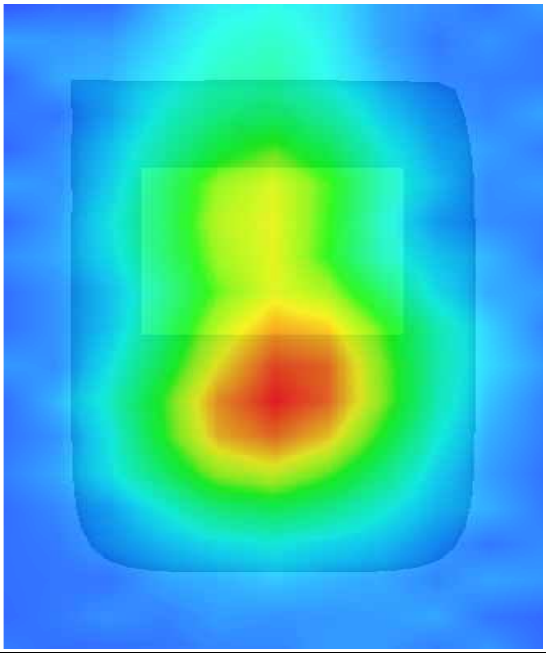
**Maximum location: X=1.00, Y=-15.00**

**SAR Peak: 1.37 W/kg**

| | |
|---|---|
| **SAR 10g (W/Kg)** | 0.394284 |
| **SAR 1g (W/Kg)** | 0.807537 |

**Z axis scan**




| 3D screen shot | Hot spot position |
|---|---|
|  |  |

# MEASUREMENT 9

Type: Phone measurement (Complete)

Area scan resolution: dx=8mm,dy=8mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2014.5.5

Measurement duration: 9 minutes 38 seconds

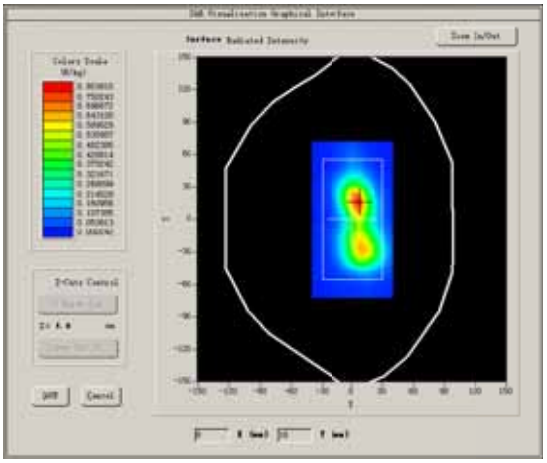
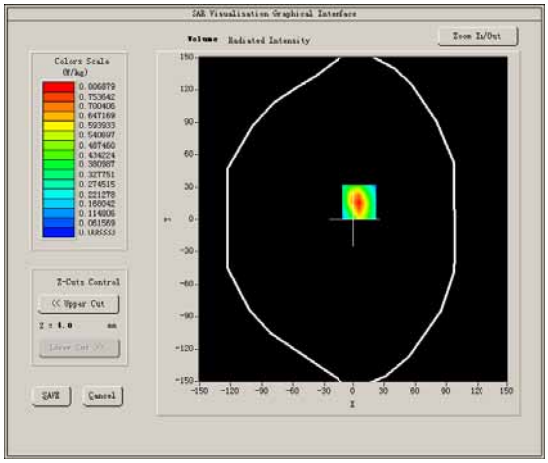
## A. Experimental conditions.

| | |
|---|---|
| **Phantom File** | surf_sam_plan.txt |
| **Phantom** | Flat Plane |
| **Device Position** | Body |
| **Band** | GSM1900 |
| **Channels** | High |
| **Signal** | EDGE |

## B. SAR Measurement Results

High Band SAR (Channel 810):

| | |
|---|---|
| **Frequency (MHz)** | 1909.800000 |
| **Relative permittivity (real part)** | 53.183720 |
| **Conductivity (S/m)** | 1.496482 |
| **Power drift(%)** | 1.580000 |
| **Ambient Temperature:** | 22.9°C |
| **Liquid Temperature:** | 22.1°C |
| **ConvF:** | 6.17 |
| **Crest factor:** | 1:2 |

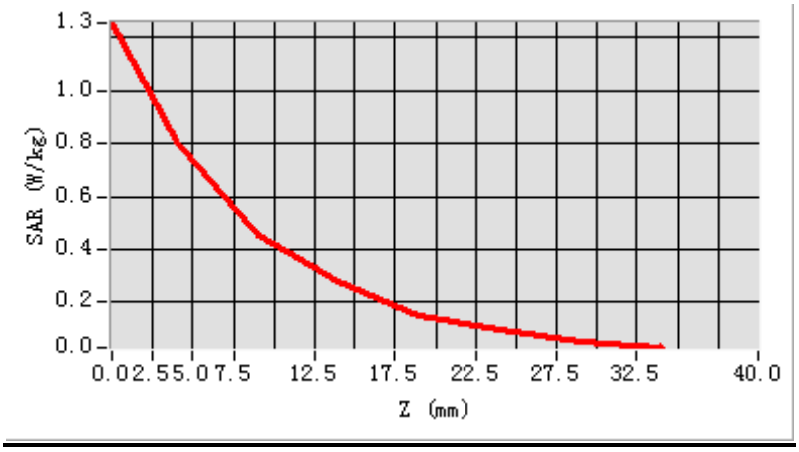
| SURFACE SAR | VOLUME SAR |
|---|---|
|  |  |

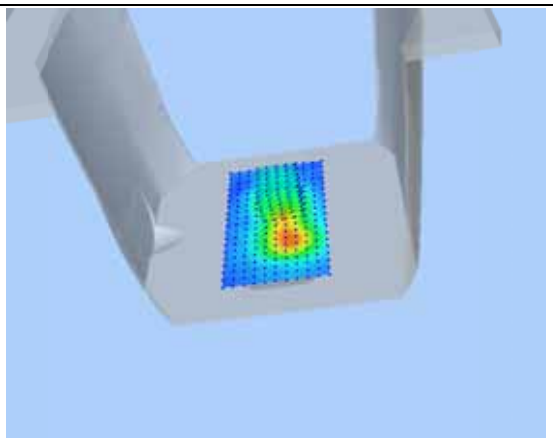
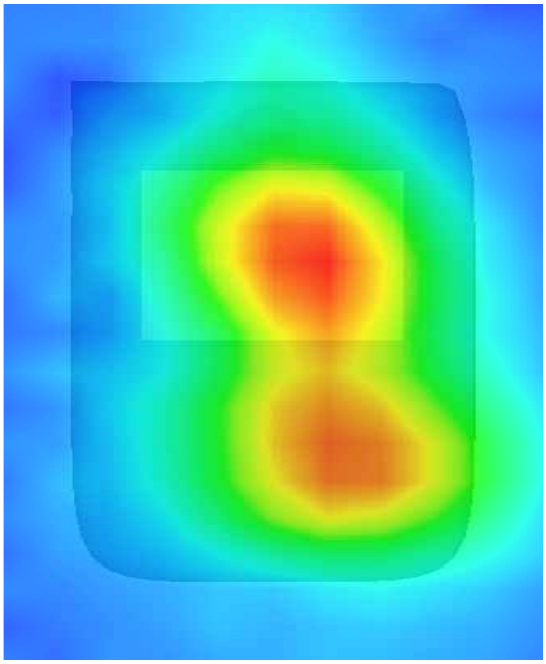
**Maximum location: X=6.00, Y=16.00**

**SAR Peak: 1.26 W/kg**

| SAR 10g (W/Kg) | 0.388626 |
|---|---|
| SAR 1g (W/Kg) | 0.741565 |

**Z axis scan**




| 3D screen shot | Hot spot position |
|---|---|
|  |  |

# MEASUREMENT 10

Type: Phone measurement (Complete)

Area scan resolution: dx=8mm,dy=8mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2014.5.5

Measurement duration: 9 minutes 37 seconds

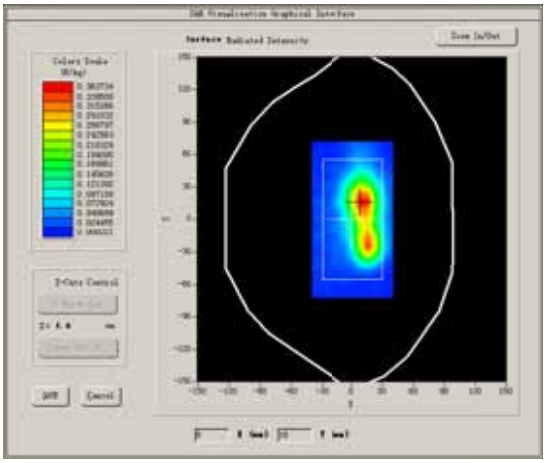
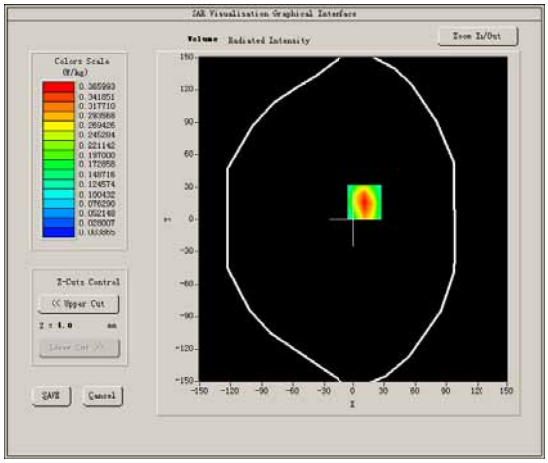
## A. Experimental conditions.

| | |
|---|---|
| **Phantom File** | surf_sam_plan.txt |
| **Phantom** | Flat Plane |
| **Device Position** | Body |
| **Band** | GSM1900 |
| **Channels** | High |
| **Signal** | EDGE |

## B. SAR Measurement Results

High Band SAR (Channel 810):

| | |
|---|---|
| **Frequency (MHz)** | 1909.800000 |
| **Relative permittivity (real part)** | 53.183720 |
| **Conductivity (S/m)** | 1.496482 |
| **Power drift(%)** | -3.270000 |
| **Ambient Temperature:** | 22.9°C |
| **Liquid Temperature:** | 22.1°C |
| **ConvF:** | 6.17 |
| **Crest factor:** | 1:2 |

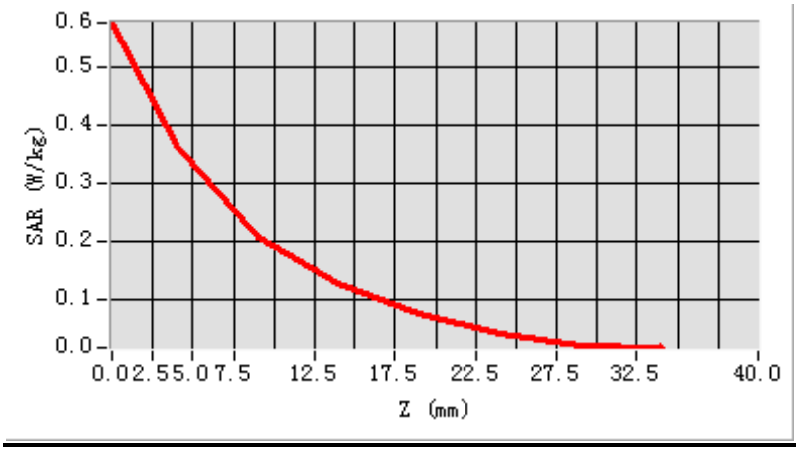
| SURFACE SAR | VOLUME SAR |
|---|---|
|  |  |

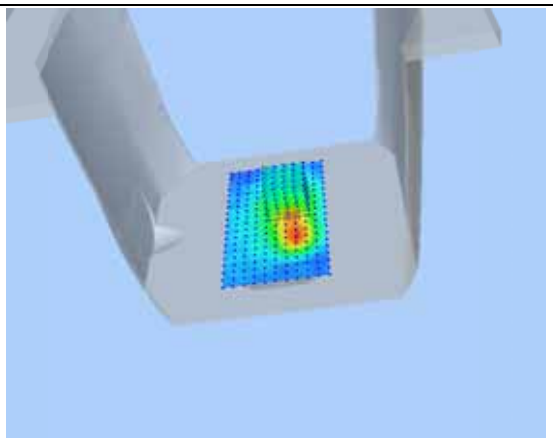
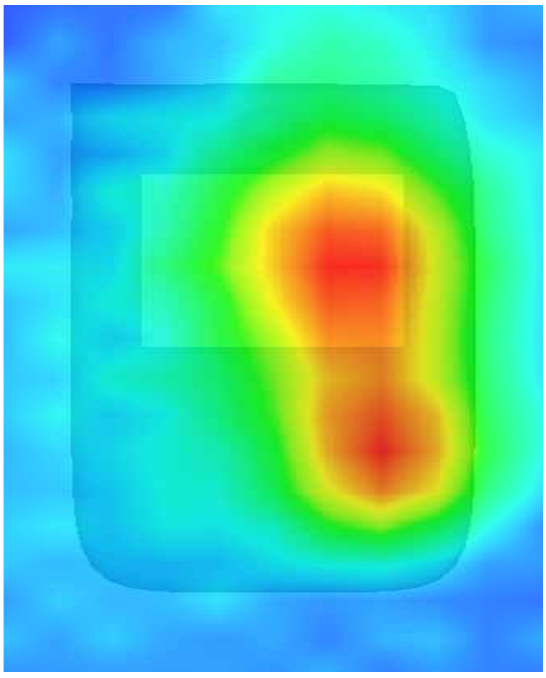
**Maximum location: X=11.00, Y=16.00**

**SAR Peak: 0.58 W/kg**

| | |
|---|---|
| **SAR 10g (W/Kg)** | 0.186358 |
| **SAR 1g (W/Kg)** | 0.355411 |

**Z axis scan**




| 3D screen shot | Hot spot position |
|---|---|
|  |  |

# MEASUREMENT 11

Type: Phone measurement (Complete)

Area scan resolution: dx=8mm,dy=8mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2014.5.5

Measurement duration: 9 minutes 36 seconds

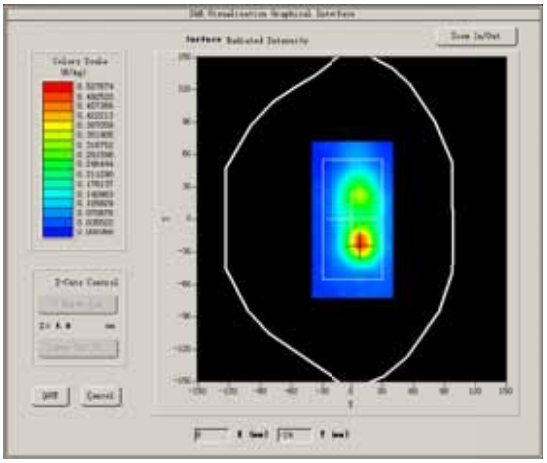
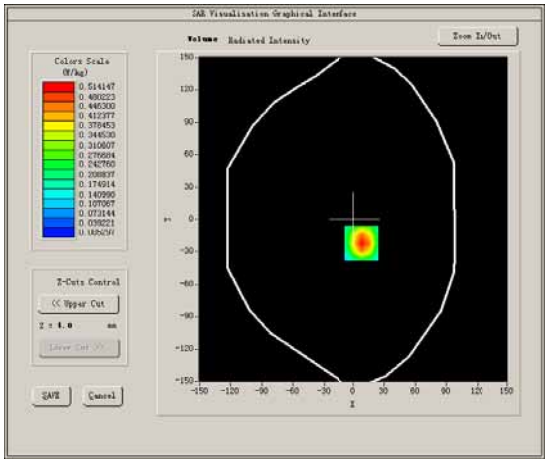
## A. Experimental conditions.

| | |
|---|---|
| **Phantom File** | surf_sam_plan.txt |
| **Phantom** | Flat Plane |
| **Device Position** | Body |
| **Band** | GSM1900 |
| **Channels** | High |
| **Signal** | EDGE |

## B. SAR Measurement Results

High Band SAR (Channel 810):

| | |
|---|---|
| **Frequency (MHz)** | 1909.800000 |
| **Relative permittivity (real part)** | 53.183720 |
| **Conductivity (S/m)** | 1.496482 |
| **Power drift(%)** | 0.870000 |
| **Ambient Temperature:** | 22.9°C |
| **Liquid Temperature:** | 22.1°C |
| **ConvF:** | 6.17 |
| **Crest factor:** | 1:2 |

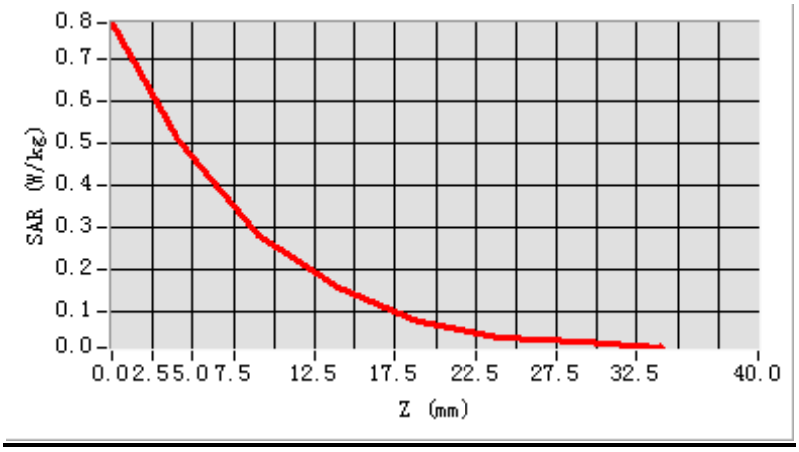
| SURFACE SAR | VOLUME SAR |
|---|---|
|  |  |

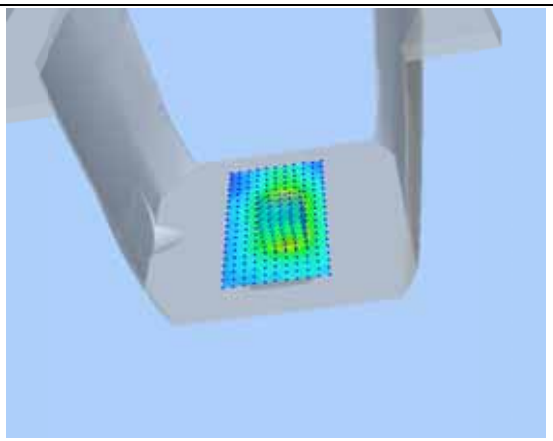
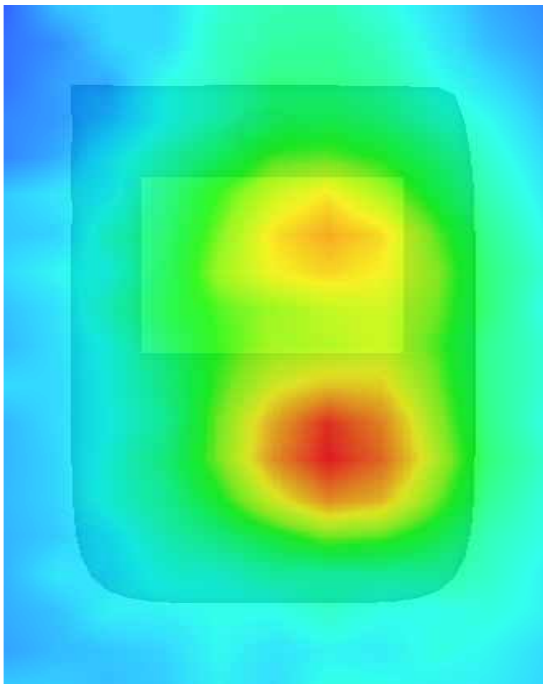
**Maximum location: X=8.00, Y=-22.00**

**SAR Peak: 0.83 W/kg**

| | |
|---|---|
| **SAR 10g (W/Kg)** | 0.243325 |
| **SAR 1g (W/Kg)** | 0.496780 |

**Z axis scan**




| 3D screen shot | Hot spot position |
|---|---|
|  |  |

# MEASUREMENT 12

Type: Phone measurement (Complete)

Area scan resolution: dx=8mm,dy=8mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2014.5.5

Measurement duration: 9 minutes 28 seconds

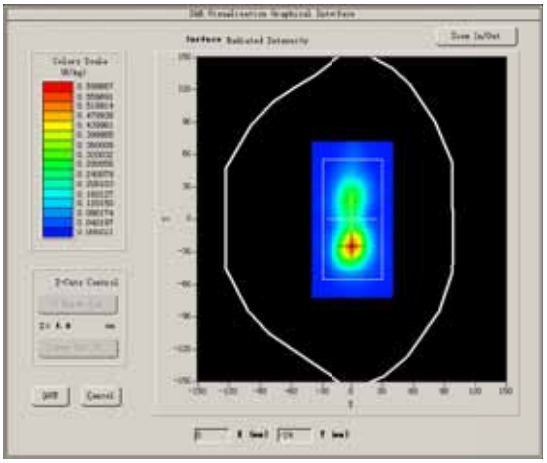
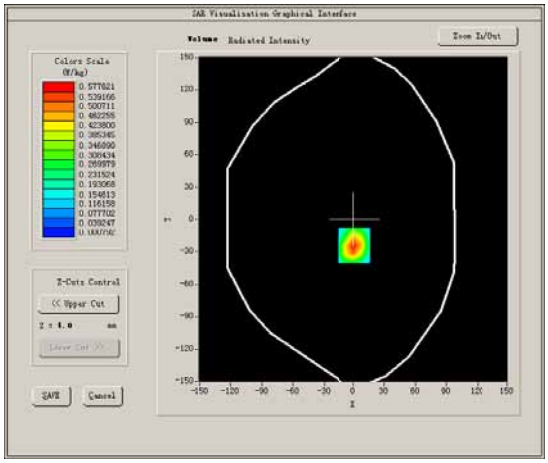
## A. Experimental conditions.

| | |
|---|---|
| **Phantom File** | surf_sam_plan.txt |
| **Phantom** | Flat Plane |
| **Device Position** | Body |
| **Band** | GSM1900 |
| **Channels** | Low |
| **Signal** | EDGE |

## B. SAR Measurement Results

Low Band SAR (Channel 512):

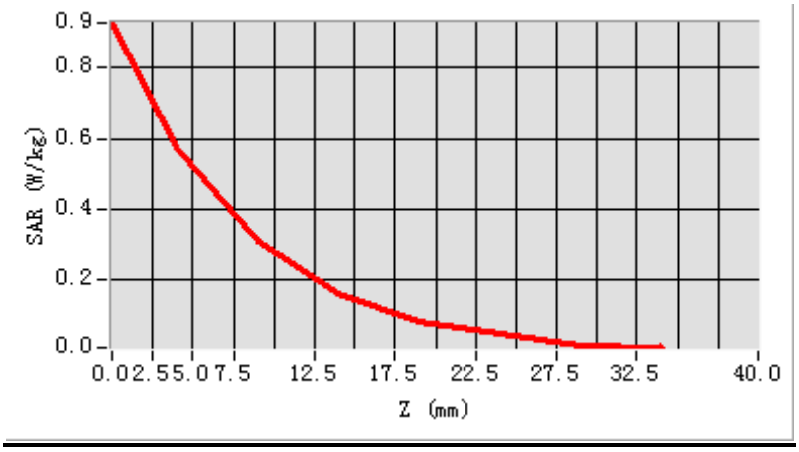
| | |
|---|---|
| **Frequency (MHz)** | 1850.200000 |
| **Relative permittivity (real part)** | 53.183720 |
| **Conductivity (S/m)** | 1.496482 |
| **Power drift(%)** | -3.870000 |
| **Ambient Temperature:** | 22.9°C |
| **Liquid Temperature:** | 22.1°C |
| **ConvF:** | 6.17 |
| **Crest factor:** | 1:2 |

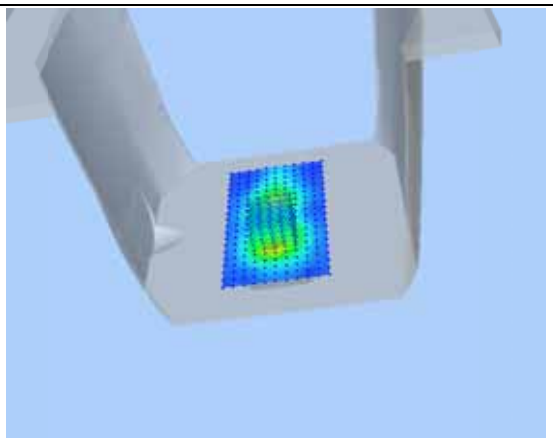
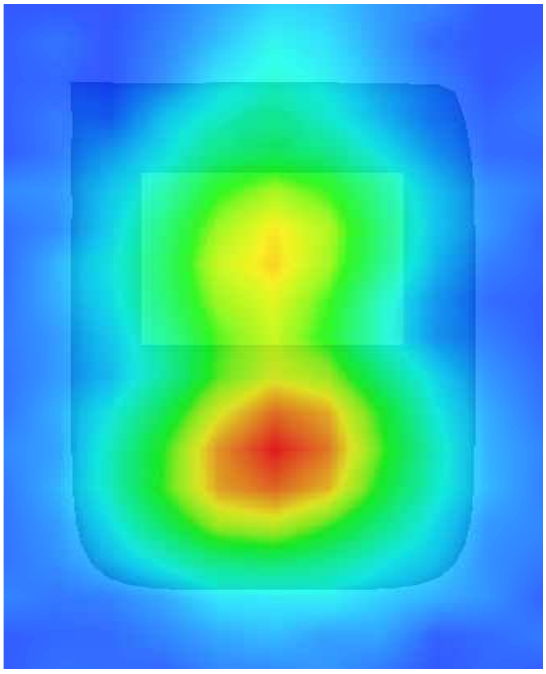
| SURFACE SAR | VOLUME SAR |
|---|---|
|  |  |

**Maximum location: X=0.00, Y=-24.00**
**SAR Peak: 0.95 W/kg**

| | |
|---|---|
| **SAR 10g (W/Kg)** | 0.262843 |
| **SAR 1g (W/Kg)** | 0.561168 |

**Z axis scan**




| 3D screen shot | Hot spot position |
|---|---|
|  |  |

# MEASUREMENT 13

Type: Phone measurement (Complete)

Area scan resolution: dx=8mm,dy=8mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2014.5.4

Measurement duration: 9 minutes 33 seconds

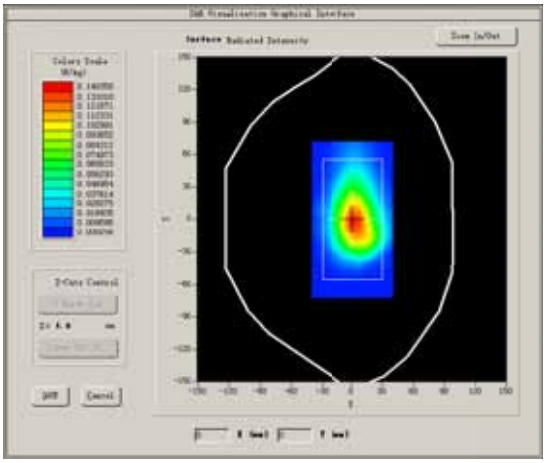
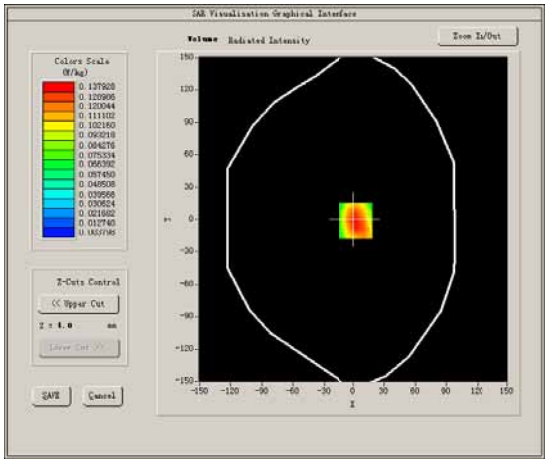
## A. Experimental conditions.

| | |
|---|---|
| **Phantom File** | surf_sam_plan.txt |
| **Phantom** | Validation plane |
| **Device Position** | Body |
| **Band** | WCDMA850 |
| **Channels** | Low |
| **Signal** | CDMA |

## B. SAR Measurement Results

Low Band SAR (Channel 4132):

| | |
|---|---|
| **Frequency (MHz)** | 826.400000 |
| **Relative permittivity (real part)** | 56.430942 |
| **Conductivity (S/m)** | 0.973481 |
| **Power drift (%)** | 0.550000 |
| **Ambient Temperature:** | 22.9°C |
| **Liquid Temperature:** | 22.1°C |
| **ConvF:** | 6.99 |
| **Crest factor:** | 1:1 |

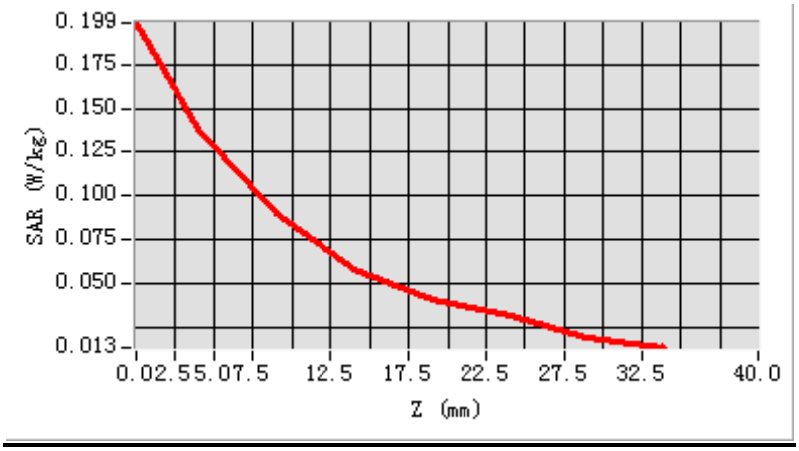
| SURFACE SAR | VOLUME SAR |
|---|---|
|  |  |

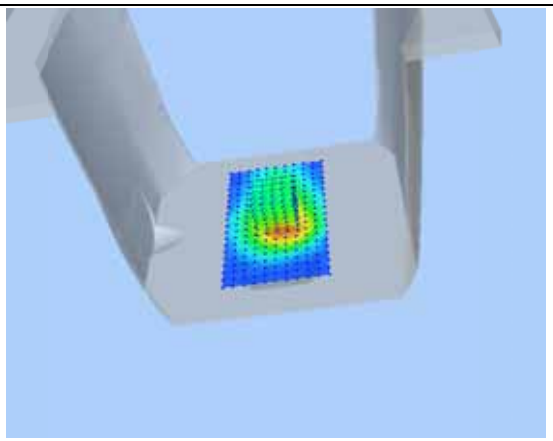
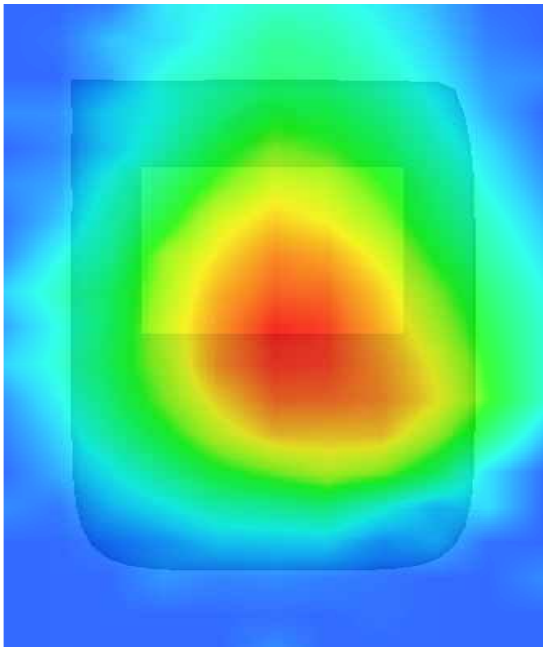
**Maximum location: X=2.00, Y=-1.00**

**SAR Peak: 0.22 W/kg**

| SAR 10g (W/Kg) | 0.089761 |
|---|---|
| SAR 1g (W/Kg) | 0.142760 |

**Z axis scan**




| 3D screen shot | Hot spot position |
|---|---|
|  |  |

# MEASUREMENT 14

Type: Phone measurement (Complete)

Area scan resolution: dx=8mm,dy=8mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2014.5.4

Measurement duration: 9 minutes 35 seconds

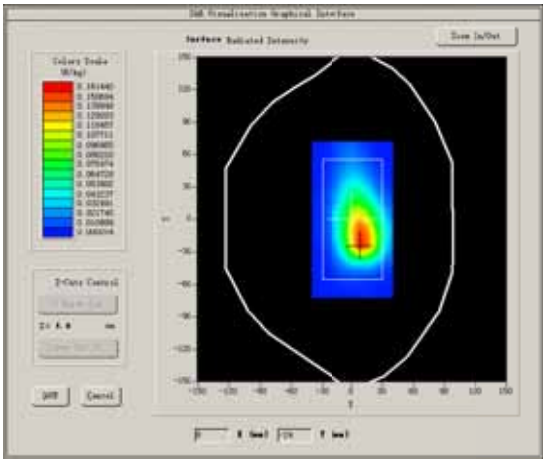
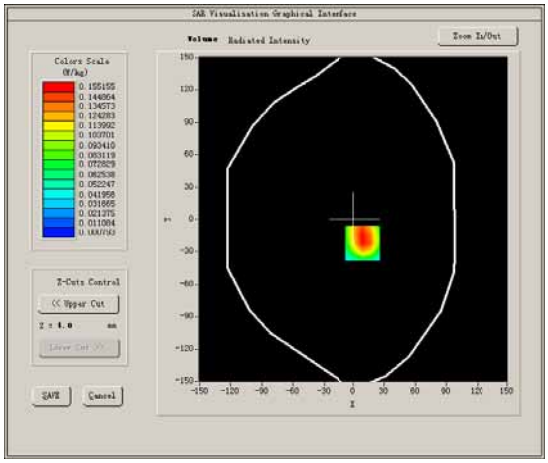
## A. Experimental conditions.

| | |
|---|---|
| **Phantom File** | surf_sam_plan.txt |
| **Phantom** | Validation plane |
| **Device Position** | Body |
| **Band** | WCDMA850 |
| **Channels** | Low |
| **Signal** | CDMA |

## B. SAR Measurement Results

Low Band SAR (Channel 4132):

| | |
|---|---|
| **Frequency (MHz)** | 826.400000 |
| **Relative permittivity (real part)** | 56.430942 |
| **Conductivity (S/m)** | 0.973481 |
| **Power drift (%)** | -3.250000 |
| **Ambient Temperature:** | 22.9°C |
| **Liquid Temperature:** | 22.1°C |
| **ConvF:** | 6.99 |
| **Crest factor:** | 1:1 |

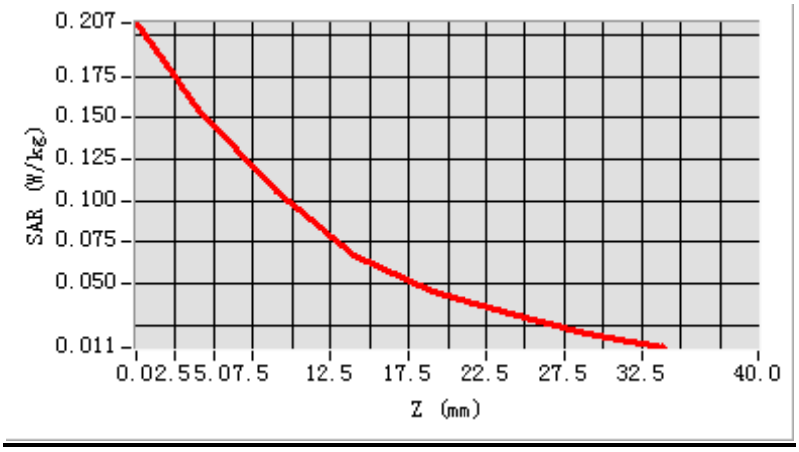
| SURFACE SAR | VOLUME SAR |
|---|---|
|  |  |

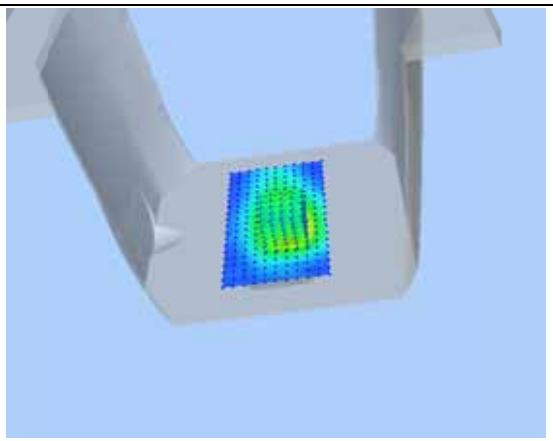
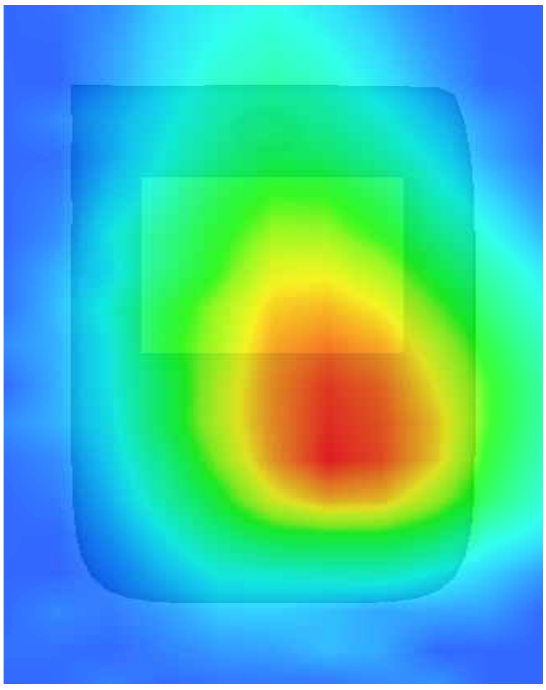
**Maximum location: X=9.00, Y=-22.00**

**SAR Peak: 0.23 W/kg**

| | |
|---|---|
| **SAR 10g (W/Kg)** | 0.101314 |
| **SAR 1g (W/Kg)** | 0.160630 |

**Z axis scan**




| 3D screen shot | Hot spot position |
|---|---|
|  |  |

# MEASUREMENT 15

Type: Phone measurement (Complete)

Area scan resolution: dx=8mm,dy=8mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2014.5.4

Measurement duration: 9 minutes 32 seconds

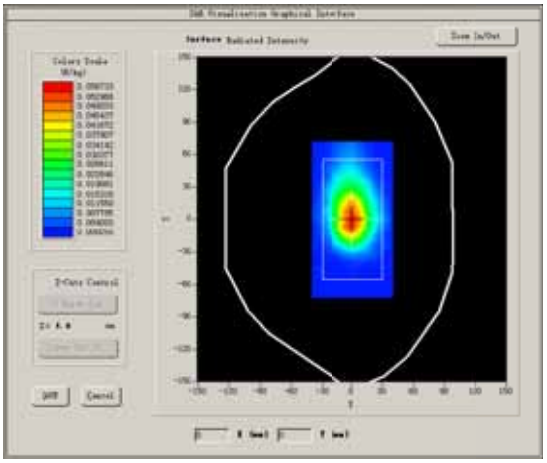
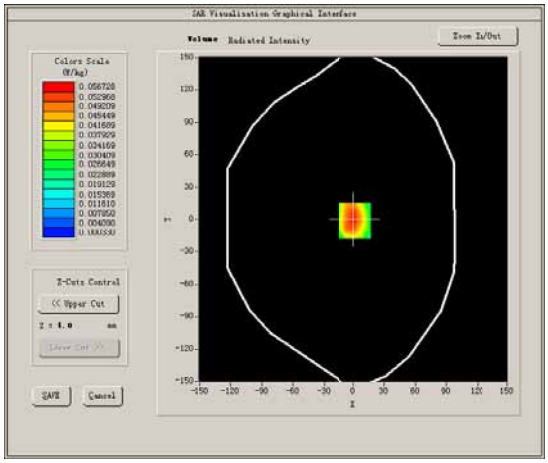
## A. Experimental conditions.

| | |
|---|---|
| **Phantom File** | surf_sam_plan.txt |
| **Phantom** | Validation plane |
| **Device Position** | Body |
| **Band** | WCDMA850 |
| **Channels** | Low |
| **Signal** | CDMA |

## B. SAR Measurement Results

Low Band SAR (Channel 4132):

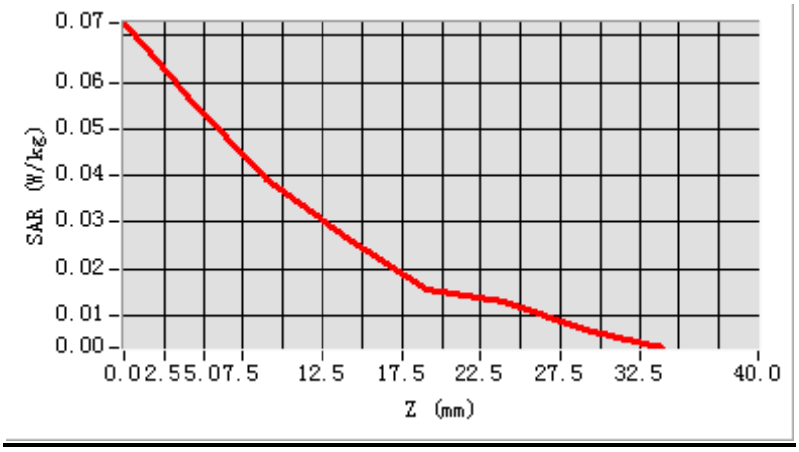
| | |
|---|---|
| **Frequency (MHz)** | 826.400000 |
| **Relative permittivity (real part)** | 56.430942 |
| **Conductivity (S/m)** | 0.973481 |
| **Power drift (%)** | -0.430000 |
| **Ambient Temperature:** | 22.9°C |
| **Liquid Temperature:** | 22.1°C |
| **ConvF:** | 6.99 |
| **Crest factor:** | 1:1 |

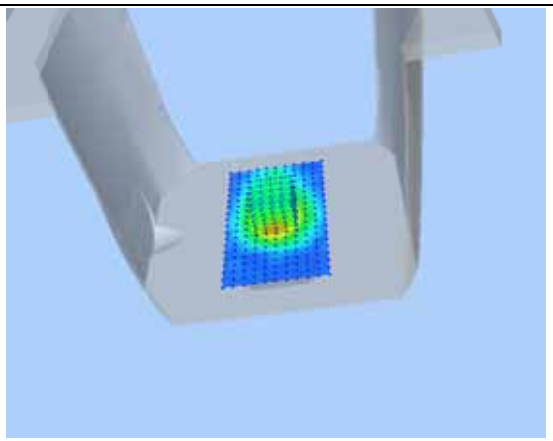
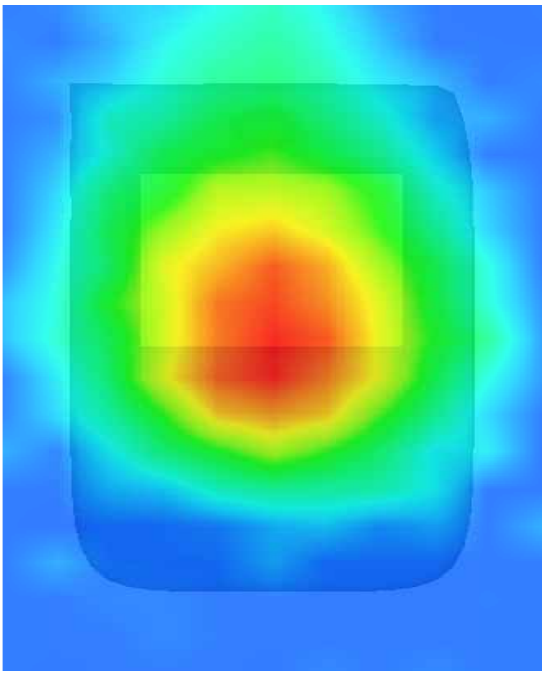
| SURFACE SAR | VOLUME SAR |
|---|---|
|  |  |

**Maximum location: X=1.00, Y=-1.00**
**SAR Peak: 0.09 W/kg**

| | |
|---|---|
| **SAR 10g (W/Kg)** | 0.034755 |
| **SAR 1g (W/Kg)** | 0.057781 |

**Z axis scan**




| 3D screen shot | Hot spot position |
|---|---|
|  |  |

# MEASUREMENT 16

Type: Phone measurement (Complete)

Area scan resolution: dx=8mm,dy=8mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2014.5.4

Measurement duration: 9 minutes 31 seconds

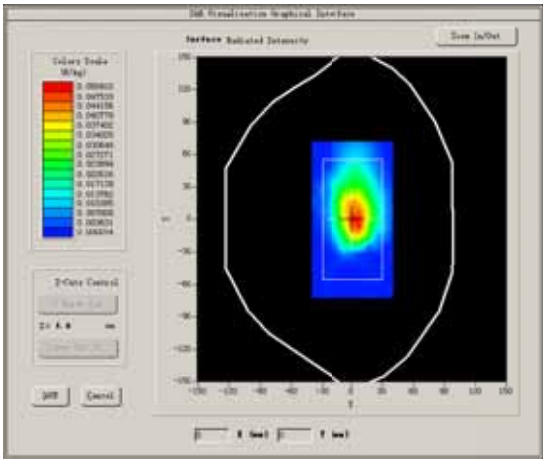
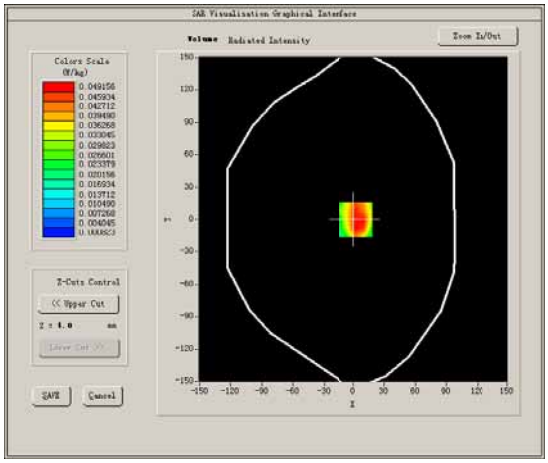
## A. Experimental conditions.

| | |
|---|---|
| **Phantom File** | surf_sam_plan.txt |
| **Phantom** | Validation plane |
| **Device Position** | Body |
| **Band** | WCDMA850 |
| **Channels** | Low |
| **Signal** | CDMA |

## B. SAR Measurement Results

Low Band SAR (Channel 4132):

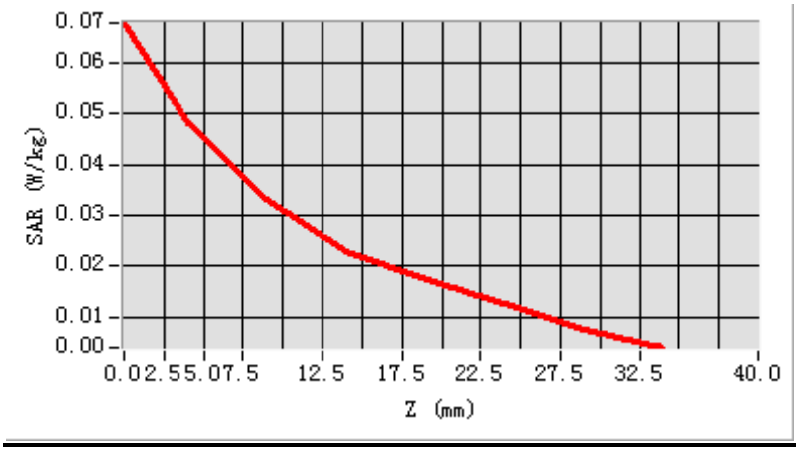
| | |
|---|---|
| **Frequency (MHz)** | 826.400000 |
| **Relative permittivity (real part)** | 56.430942 |
| **Conductivity (S/m)** | 0.973481 |
| **Power drift (%)** | 0.670000 |
| **Ambient Temperature:** | 22.9°C |
| **Liquid Temperature:** | 22.1°C |
| **ConvF:** | 6.99 |
| **Crest factor:** | 1:1 |

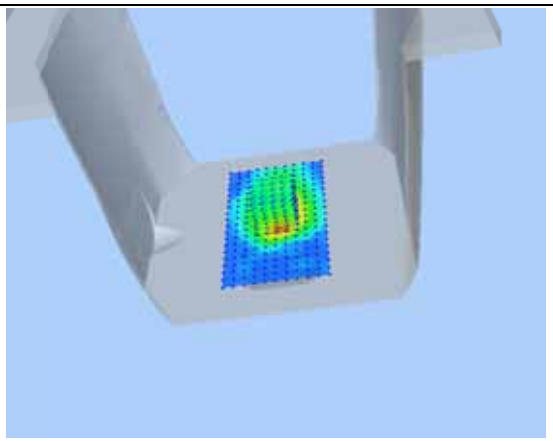
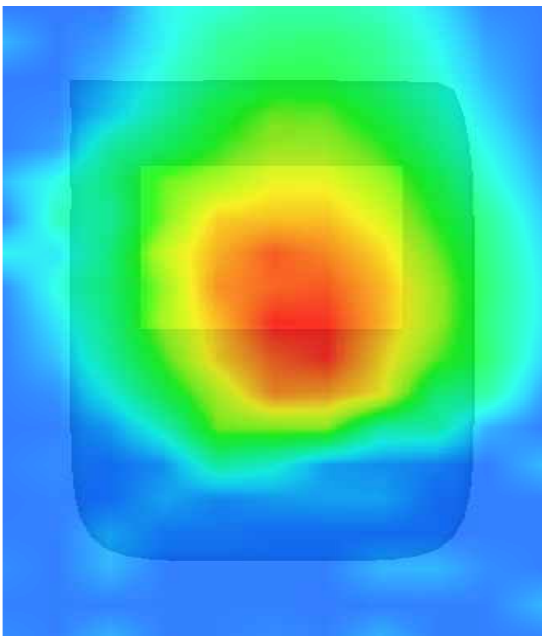
| SURFACE SAR | VOLUME SAR |
|---|---|
|  |  |

**Maximum location: X=2.00, Y=0.00**
**SAR Peak: 0.09 W/kg**

| | |
|---|---|
| **SAR 10g (W/Kg)** | 0.032538 |
| **SAR 1g (W/Kg)** | 0.053699 |

**Z axis scan**




| 3D screen shot | Hot spot position |
|---|---|
|  |  |

# MEASUREMENT 17

Type: Phone measurement (Complete)

Area scan resolution: dx=8mm,dy=8mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2014.5.5

Measurement duration: 9 minutes 31 seconds

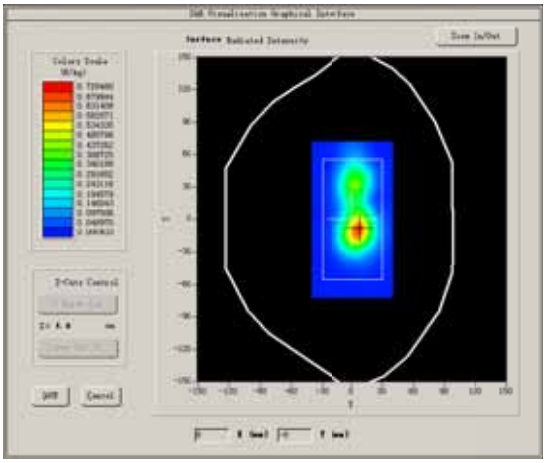
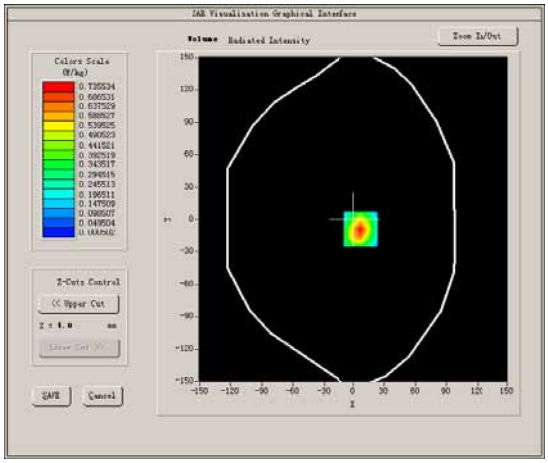
## A. Experimental conditions.

| | |
|---|---|
| **Phantom File** | surf_sam_plan.txt |
| **Phantom** | Validation plane |
| **Device Position** | Body |
| **Band** | WCDMA1900 |
| **Channels** | Middle |
| **Signal** | CDMA |

## B. SAR Measurement Results

Middle Band SAR (Channel 9400):

| | |
|---|---|
| **Frequency (MHz)** | 1880.000000 |
| **Relative permittivity (real part)** | 53.183720 |
| **Conductivity (S/m)** | 1.496482 |
| **Power drift (%)** | 1.230000 |
| **Ambient Temperature:** | 22.9°C |
| **Liquid Temperature:** | 22.1°C |
| **ConvF:** | 6.17 |
| **Crest factor:** | 1:1 |

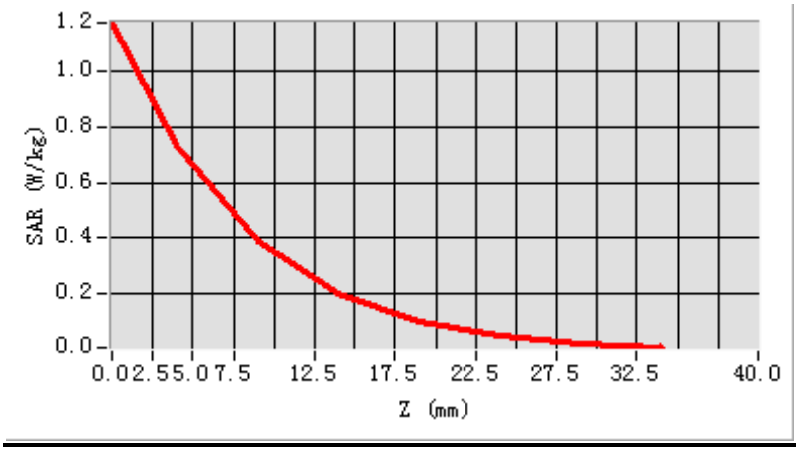
| SURFACE SAR | VOLUME SAR |
|---|---|
|  |  |

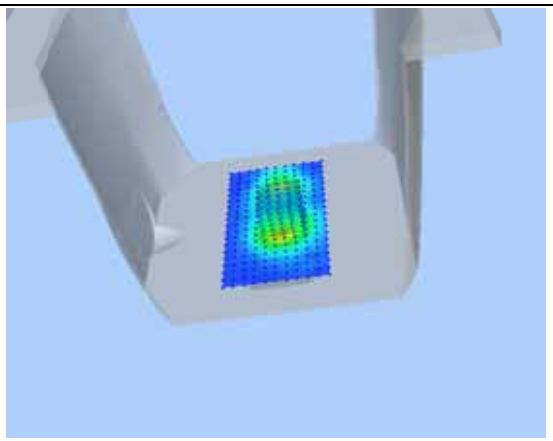
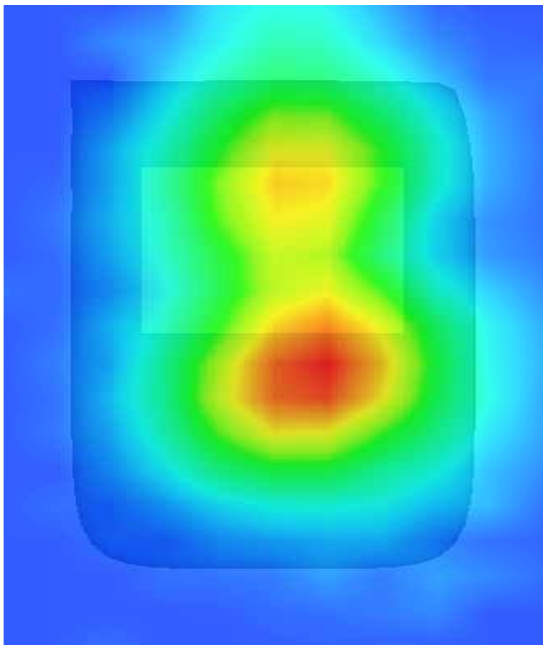
**Maximum location: X=7.00, Y=-9.00**

**SAR Peak: 1.31 W/kg**

| SAR 10g (W/Kg) | 0.351774 |
|---|---|
| SAR 1g (W/Kg) | 0.744658 |

**Z axis scan**




| 3D screen shot | Hot spot position |
|---|---|
|  |  |

# MEASUREMENT 18

Type: Phone measurement (Complete)

Area scan resolution: dx=8mm,dy=8mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2014.5.5

Measurement duration: 9 minutes 38 seconds

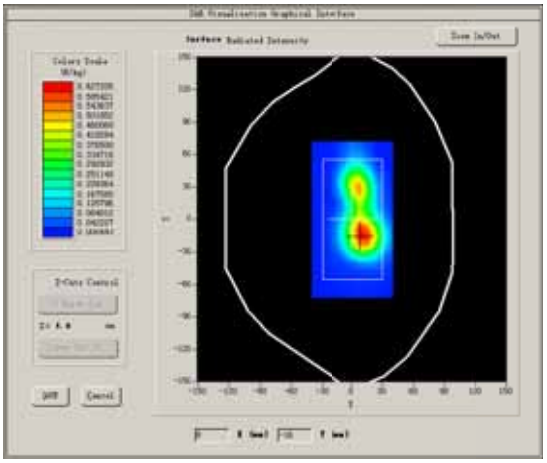
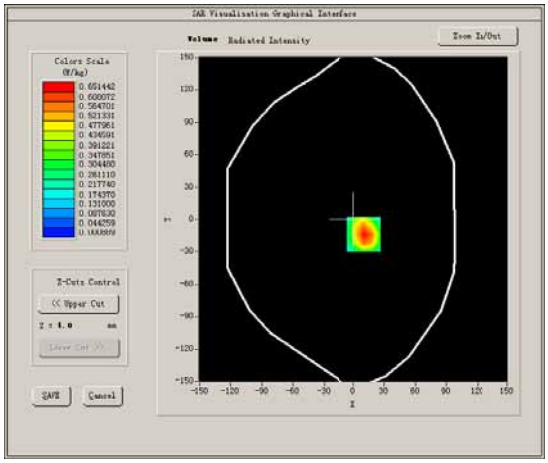
## A. Experimental conditions.

| | |
|---|---|
| **Phantom File** | surf_sam_plan.txt |
| **Phantom** | Validation plane |
| **Device Position** | Body |
| **Band** | WCDMA1900 |
| **Channels** | Middle |
| **Signal** | CDMA |

## B. SAR Measurement Results

Middle Band SAR (Channel 9400):

| | |
|---|---|
| **Frequency (MHz)** | 1880.000000 |
| **Relative permittivity (real part)** | 53.183720 |
| **Conductivity (S/m)** | 1.496482 |
| **Power drift (%)** | 2.320000 |
| **Ambient Temperature:** | 22.9°C |
| **Liquid Temperature:** | 22.1°C |
| **ConvF:** | 6.17 |
| **Crest factor:** | 1:1 |

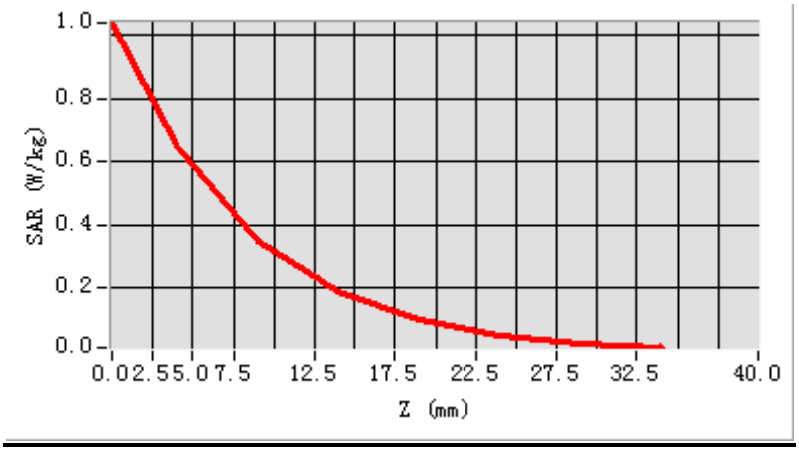
| SURFACE SAR | VOLUME SAR |
|---|---|
|  |  |

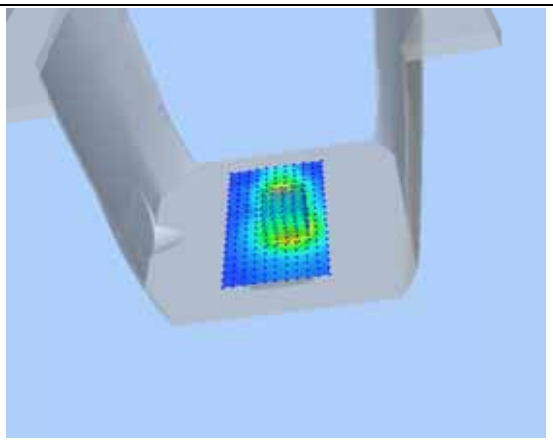
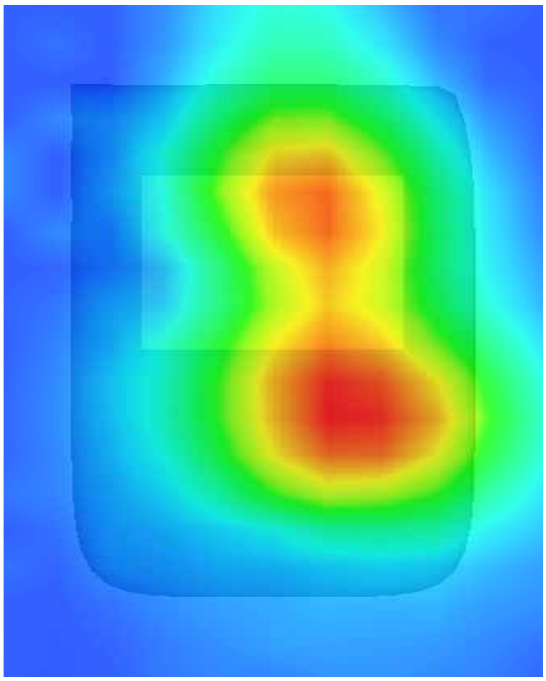
**Maximum location: X=10.00, Y=-14.00**

**SAR Peak: 1.17 W/kg**

| | |
|---|---|
| **SAR 10g (W/Kg)** | 0.339617 |
| **SAR 1g (W/Kg)** | 0.676959 |

**Z axis scan**




| 3D screen shot | Hot spot position |
|---|---|
|  |  |

# MEASUREMENT 19

Type: Phone measurement (Complete)

Area scan resolution: dx=8mm,dy=8mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2014.5.5

Measurement duration: 9 minutes 38 seconds

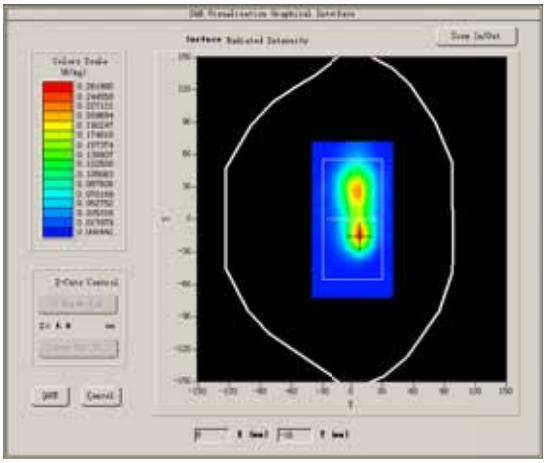
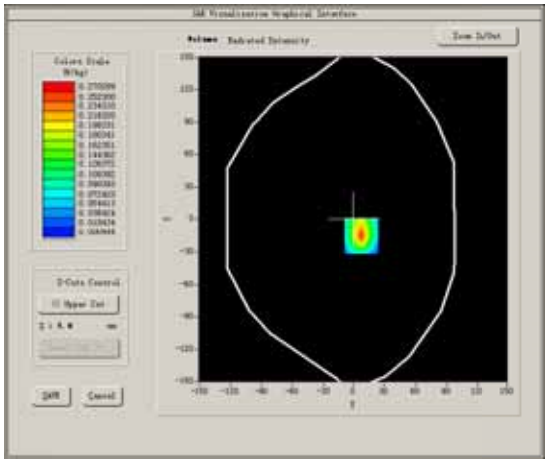
## A. Experimental conditions.

| | |
|---|---|
| **Phantom File** | surf_sam_plan.txt |
| **Phantom** | Validation plane |
| **Device Position** | Body |
| **Band** | WCDMA1900 |
| **Channels** | Middle |
| **Signal** | CDMA |

## B. SAR Measurement Results

Middle Band SAR (Channel 9400):

| | |
|---|---|
| **Frequency (MHz)** | 1980.000000 |
| **Relative permittivity (real part)** | 53.183720 |
| **Conductivity (S/m)** | 1.496482 |
| **Power drift (%)** | 0.700000 |
| **Ambient Temperature:** | 22.9°C |
| **Liquid Temperature:** | 22.1°C |
| **ConvF:** | 6.17 |
| **Crest factor:** | 1:1 |

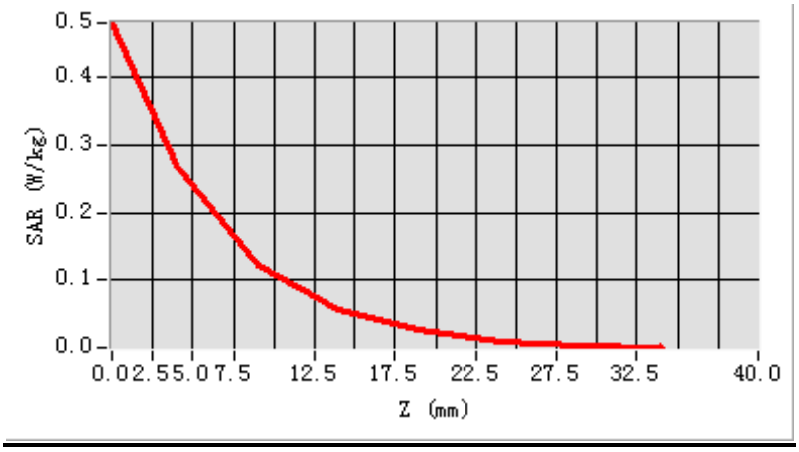
| SURFACE SAR | VOLUME SAR |
|---|---|
|  |  |

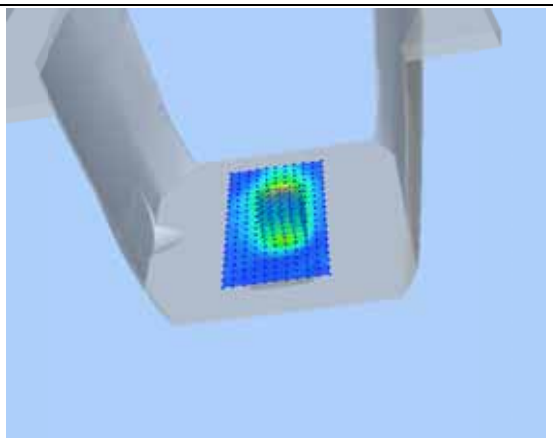
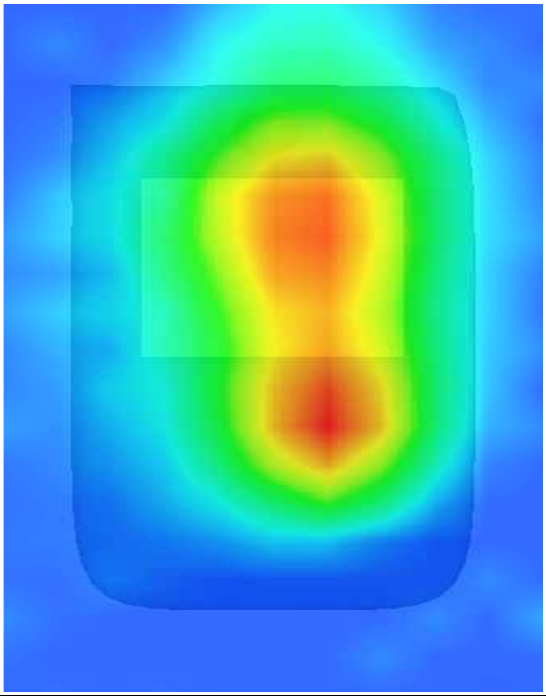
**Maximum location: X=8.00, Y=-15.00**

**SAR Peak: 0.52 W/kg**

| SAR 10g (W/Kg) | 0.112282 |
|---|---|
| SAR 1g (W/Kg) | 0.263711 |

**Z axis scan**




| 3D screen shot | Hot spot position |
|---|---|
|  |  |

# MEASUREMENT 20

Type: Phone measurement (Complete)

Area scan resolution: dx=8mm,dy=8mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2014.5.5

Measurement duration: 9 minutes 32 seconds

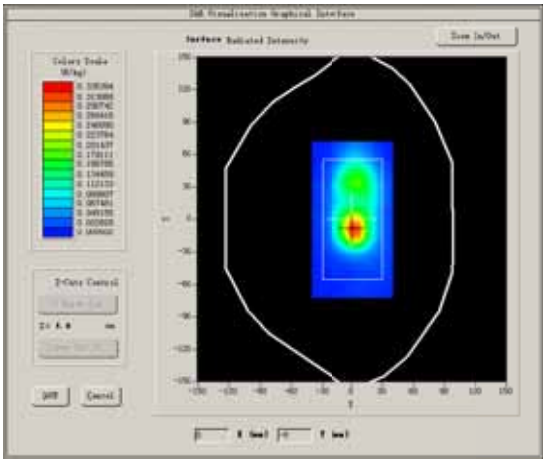
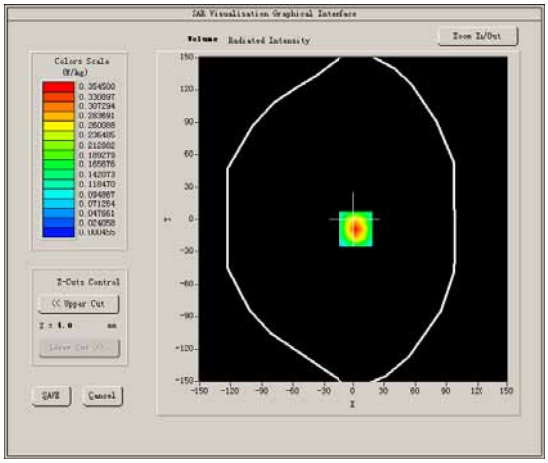
## A. Experimental conditions.

| | |
|---|---|
| **Phantom File** | surf_sam_plan.txt |
| **Phantom** | Validation plane |
| **Device Position** | Body |
| **Band** | WCDMA1900 |
| **Channels** | Middle |
| **Signal** | CDMA |

## B. SAR Measurement Results

Middle Band SAR (Channel 9400):

| | |
|---|---|
| **Frequency (MHz)** | 1880.000000 |
| **Relative permittivity (real part)** | 53.183720 |
| **Conductivity (S/m)** | 1.496482 |
| **Power drift (%)** | 0.150000 |
| **Ambient Temperature:** | 22.9°C |
| **Liquid Temperature:** | 22.1°C |
| **ConvF:** | 6.17 |
| **Crest factor:** | 1:1 |

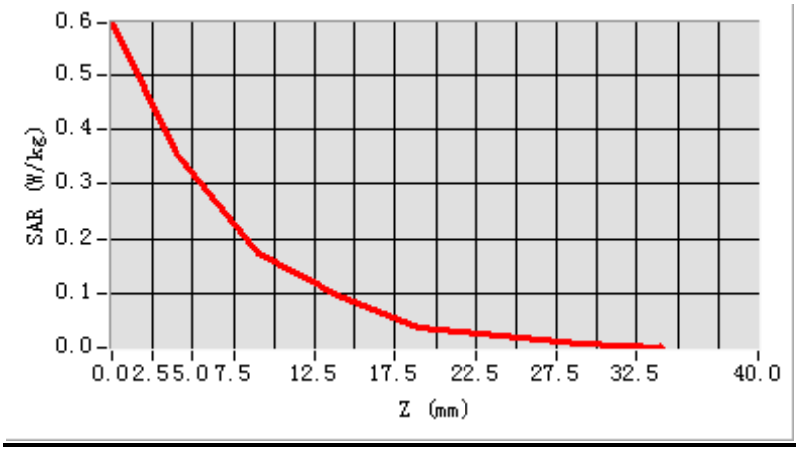
| SURFACE SAR | VOLUME SAR |
|---|---|
|  |  |

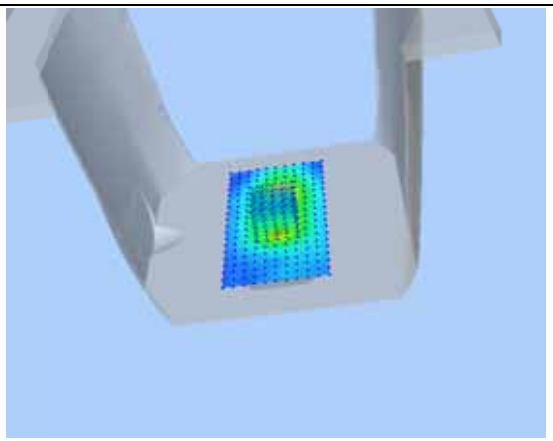
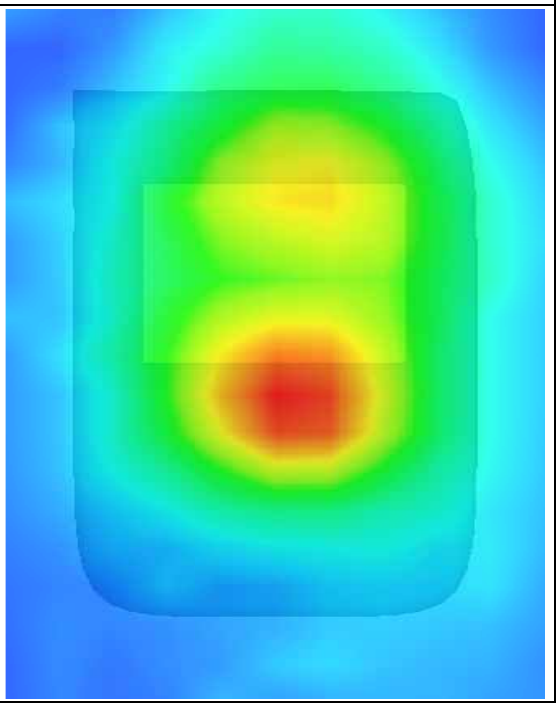
**Maximum location: X=2.00, Y=-9.00**

**SAR Peak: 0.64 W/kg**

| | |
|---|---|
| **SAR 10g (W/Kg)** | 0.167325 |
| **SAR 1g (W/Kg)** | 0.356657 |

**Z axis scan**




| 3D screen shot | Hot spot position |
|---|---|
|  |  |

# System Performance Check Data(Body)

Type: Phone measurement (Complete)

Area scan resolution: dx=8mm,dy=8mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2014.5.4

Measurement duration: 13 minutes 27 seconds

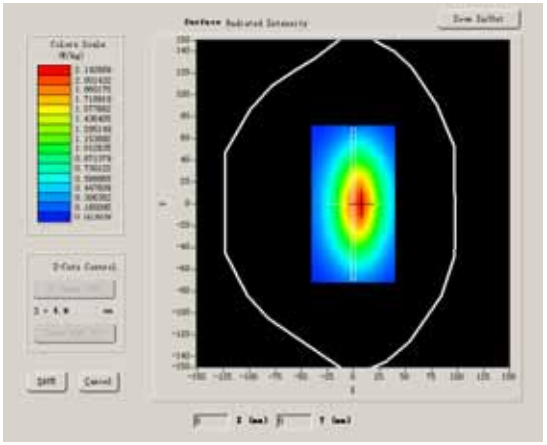
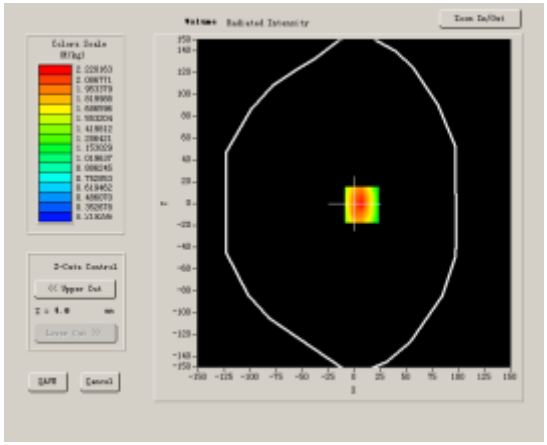
## A. Experimental conditions.

| | |
|---|---|
| **Phantom File** | surf_sam_plan.txt |
| **Phantom** | Flat Plane |
| **Device Position** | |
| **Band** | 835MHz |
| **Channels** | |
| **Signal** | CW |

## B. SAR Measurement Results

Band SAR

| | |
|---|---|
| **Frequency (MHz)** | 835.000000 |
| **Relative permittivity (real part)** | 56.430942 |
| **Conductivity (S/m)** | 0.973481 |
| **Power drift (%)** | 1.030000 |
| **Ambient Temperature:** | 22.9°C |
| **Liquid Temperature:** | 22.1°C |
| **ConvF:** | 6.99 |
| **Crest factor:** | 1:1 |

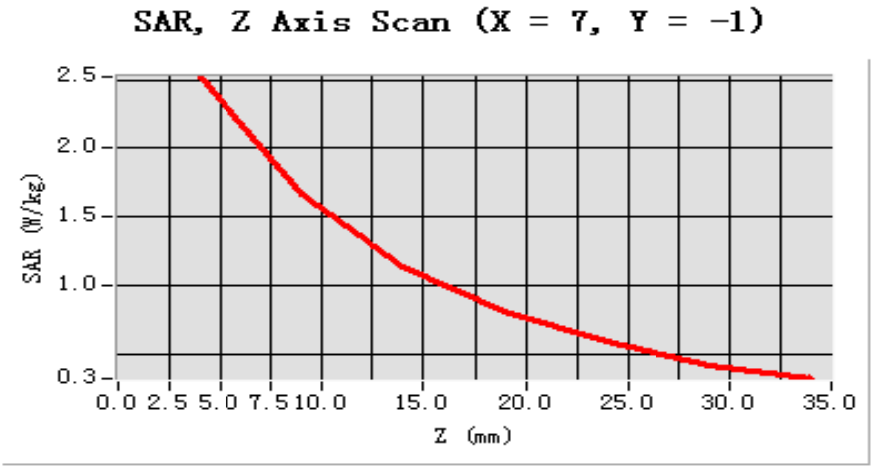
| SURFACE SAR | VOLUME SAR |
|---|---|
|  |  |

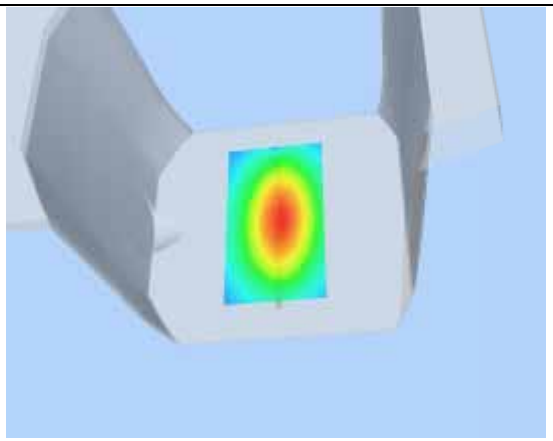
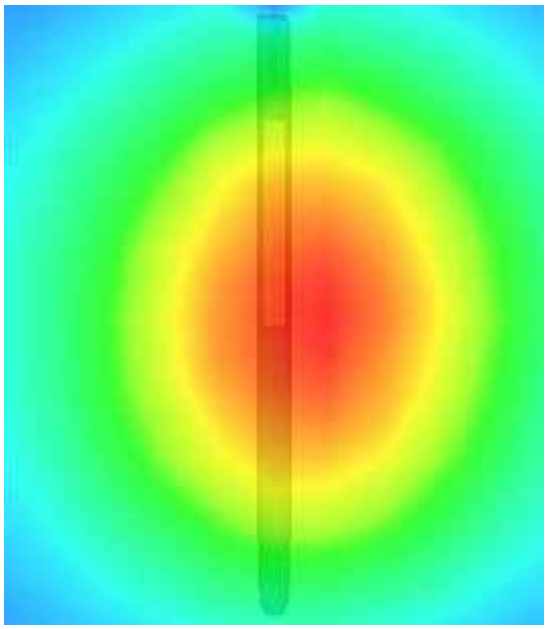
**Maximum location: X=7.00, Y=-1.00**

| SAR 10g (W/Kg) | 1.518375 |
|---|---|
| SAR 1g (W/Kg) | 2.482163 |

## Z Axis Scan

| Z (mm) | 0.00 | 4.00 | 9.00 | 14.00 | 19.00 | 24.00 | 29.00 |
|---|---|---|---|---|---|---|---|
| SAR (W/Kg) | 0.0000 | 2.5209 | 1.6629 | 1.1437 | 0.8075 | 0.5889 | 0.4143 |




| 3D sceen shot | Hot spot position |
|---|---|
|  |  |

# System Performance Check Data(Body)

Type: Phone measurement (Complete)

Area scan resolution: dx=8mm,dy=8mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2014.5.5

Measurement duration: 13 minutes 32 seconds

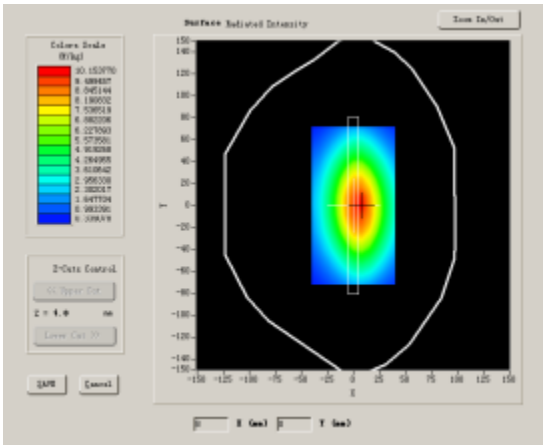
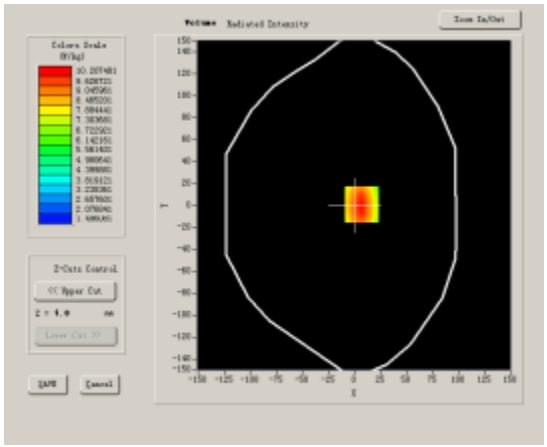
## A. Experimental conditions.

| | |
|---|---|
| **Phantom File** | surf_sam_plan.txt |
| **Phantom** | Flat Plane |
| **Device Position** | |
| **Band** | 1900MHz |
| **Channels** | |
| **Signal** | CW |

## B. SAR Measurement Results

Band SAR

| | |
|---|---|
| **Frequency (MHz)** | 1900.000000 |
| **Relative permittivity (real part)** | 53.183720 |
| **Conductivity (S/m)** | 1.496482 |
| **Power drift (%)** | -0.820000 |
| **Ambient Temperature:** | 22.9°C |
| **Liquid Temperature:** | 22.1°C |
| **ConvF:** | 6.17 |
| **Crest factor:** | 1:1 |

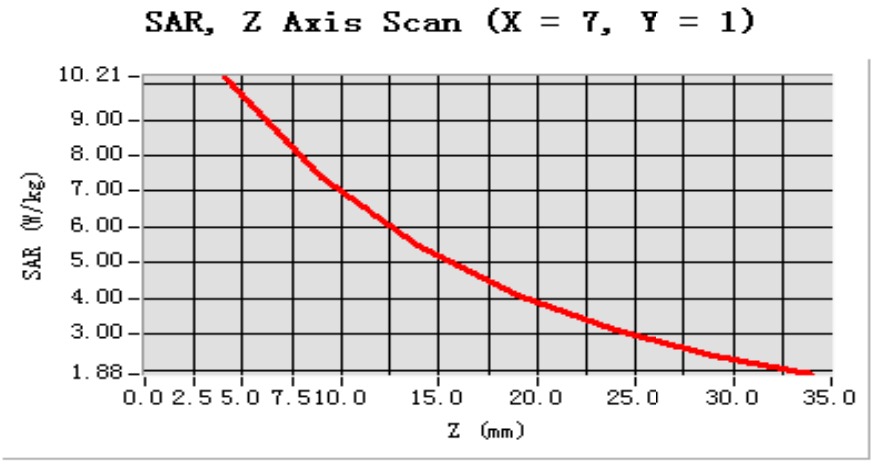
| SURFACE SAR | VOLUME SAR |
|---|---|
|  |  |

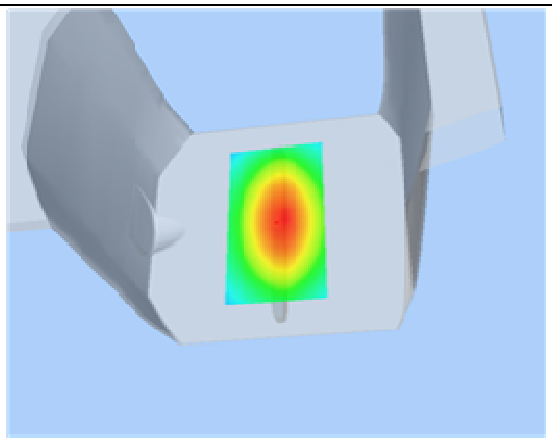
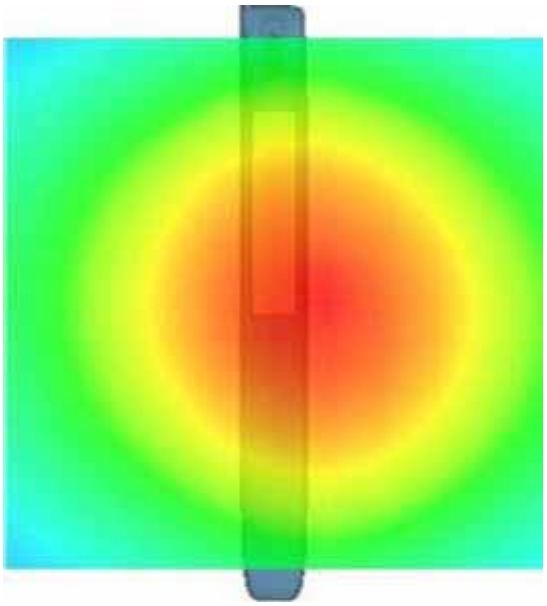
**Maximum location: X=7.00, Y=1.00**

| SAR 10g (W/Kg) | 6. 41376 |
|---|---|
| SAR 1g (W/Kg) | 9.907739 |

## Z Axis Scan

| Z (mm) | 0.00 | 4.00 | 9.00 | 14.00 | 19.00 | 24.00 | 29.00 |
|---|---|---|---|---|---|---|---|
| SAR (W/Kg) | 0.0000 | 10.2075 | 7.3996 | 5.4654 | 4.1101 | 3.1286 | 2.4128 |




| 3D sceen shot | Hot spot position |
|---|---|
|  |  |