Report No.: SZ13020030S01

TESTING
CNAS L3572

SAR TEST REPORT

Issued to

TCT Mobile Limited

For

HSPA+ AP

Model Name	:	One Touch Y580Y
Trade Name	:	Alcatel
Brand Name	:	Alcatel
FCC ID	:	RAD368
Standard	:	FCC Oet65 Supplement C Jun.2001 47CFR 2.1093 ANSI C95.1-1999 IEEE 1528-2003
MAX SAR	:	Body: 0.529W/kg
Test date	:	2013-2-25
Issue date	:	2013-3-7

Shenzhen MORLAB Communication Technology Co., Ltd.

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(Test Engineer)	*(Department Manager)*	(SAR *Manager*)
Date 2013.3.7	*Date* 2013.03.07	*Date* 2013.3.7

CTIA Authorized Test Lab LAB CODE 20081223-00 IEEE 1725 OTA OFTA 電訊管理局 ilac-MRA TAF Testing Laboratory GCF Official Observer of Global Certification Forum Bluetooth BQTF FCC Reg. No. 695796

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Change History		
Issue	Date	Reason for change
1.0	Mar. 7, 2013	First edition

1. Testing Laboratory

1.1. Identification of the Responsible Testing Laboratory

Company Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Department:	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
Responsible Test Lab Manager:	Mr. Shu Luan
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1.2. 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

1.3. Accreditation Certificate

Accredited Testing Laboratory: No. CNAS L3572

1.4. 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)	2012-9-26	1year
3	Network Analyzer	Agilent(E5071B ,SN:MY42404762)	2012-9-26	1year
4	Voltmeter	Keithley (2000, SN:1000572)	2012-9-24	1year
5	Signal Generator	Rohde&Schwarz (SMP_02)	2012-9-24	1year
6	Power Amplifier	PRANA (Ap32 SV125AZ)	2012-9-24	1year
7	Power Meter	Agilent (E4416A, SN:MY45102093)	2012-5-07	1year
8	Power Sensor	Agilent (N8482A, SN:MY41091706)	2012-5-07	1year
9	Directional coupler	Giga-tronics(SN:1829112)	2012-9-24	1year
10	Probe	Satimo (SN:SN_3708_EP80)	2012-10-04	1year
11	Dielectric Probe Kit	Agilent (85033E)	2012-9-24	1year
12	Phantom	Satimo (SN:SN_36_08_SAM62)	2012-9-24	1year
13	Liquid	Satimo(Last Calibration: 2013-2-25)	N/A	N/A
14	Dipole 835MHz	Satimo (SN 36/08 DIPC 99)	2012-10-05	1year
15	Dipole 1900MHz	Satimo (SN 36/08 DIPF 102)	2012-10-05	1year
16	Dipole 2450MHz	Satimo (SN 36/08 DIPJ 103)	2012-10-05	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:	One Touch Y580Y
Trade Name:	Alcatel
Brand Name:	Alcatel
Hardware Version:	V3.0
Software Version:	S1_B15001S_1110000_B10001S
Frequency Bands:	GSM 850MHz / PCS 1900MHz; WCDMA 850MHZ/ 1900MHz; (Band II, V) Wifi802.11B/G/N (2.4GHz)
Modulation Mode:	GPRS: GMSK; EDGE:8PSK; WCDMA/HSDPA/HSUPA:QPSK; HSPA+: QPSK; WIFI802.11B: DSSS; WIFI802.11G: OFDM WIFI 802.11N: OFDM;
Multislot Class:	GPRS:Class 12; EDGE:Class 12
GPRS Class:	Class B
Antenna type:	Fixed Internal Antenna
Development Stage:	Identical prototype
Battery Model:	CAB23V0000C1
Battery specification:	1500mAh3.7V
3GPP Version:	Release 7
Hotspot function:	Support

2.3.1. Photographs of the EUT

Please see for photographs 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#	V3.0	S1_B15001S_1110000_B10001S

2.4. Applied Reference Documents

Leading reference documents for testing:

No.	Identity	Document Title
1	**47 CFR§2.1O93**	Radiofrequency Radiation Exposure Evaluation: Portable Devices
2	**FCC OET Bulletin 65 (Edition 97-01), Supplement C (Edition 01-01)**	Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields
3	**ANSI C95.1-1999**	IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3kHz to 300 GHz
4	**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.
5	**KDB 447498 D1**	General RF Exposure Guidance v05
6	**KDB 648474 D1**	SAR Evaluation Considerations for Handsets with Multiple Transmitters and Antennas
7	**KDB 248227 D1**	SAR Measurement Procedures for 802.11 a/b/g Transmitters
8	**KDB 941225 D1**	SAR Measurement Procedures for 3G Devices
9	**KDB 941225 D6**	Hot Spot SAR v01
10	**KDB 865664 D1**	SAR Measurement 100 MHz to 6 GHz v01
11	**KDB 865664 D2**	SAR Reporting v01

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 /PCS 1900MHz; WCDMA 850MHz/WCDMA 1900MHz; 802.11B;
Operation mode:	Call established
Power Level:	GSM 850 MHz Maximum output power(level 5) PCS 1900 MHz Maximum output power(level 0) WCDMA 850MHz Maximum output power(All up bits) WCDMA 1900MHz Maximum output power(All up bits) 802.11B Maximum output power

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 125, 190 and 251 respectively in the case of GSM 850 MHz, or to 512, 661 and 810 respectively in the case of PCS 1900 MHz, or to 9262, 9400 and 9538 respectively in the case of WCDMA 1900, or to 4132, 4182 and 4233 respectively in the case of WCDMA 850MHz, or to 1, 6, 11 respectively in the case of 802.11B (2.4GHz). 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.

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 higher 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. ρ). The equation description is as below:

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

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

$$\mathrm{SAR} = C\frac{\delta T}{\delta t}$$

, where C is the specific head capacity, δ T is the temperature rise and δ t the exposure duration, or related to the electrical field in the tissue by

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

, where σ is the conductivity of the tissue, ρ is the mass density of the tissue and E is the rms electrical field strength.

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
- Human 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

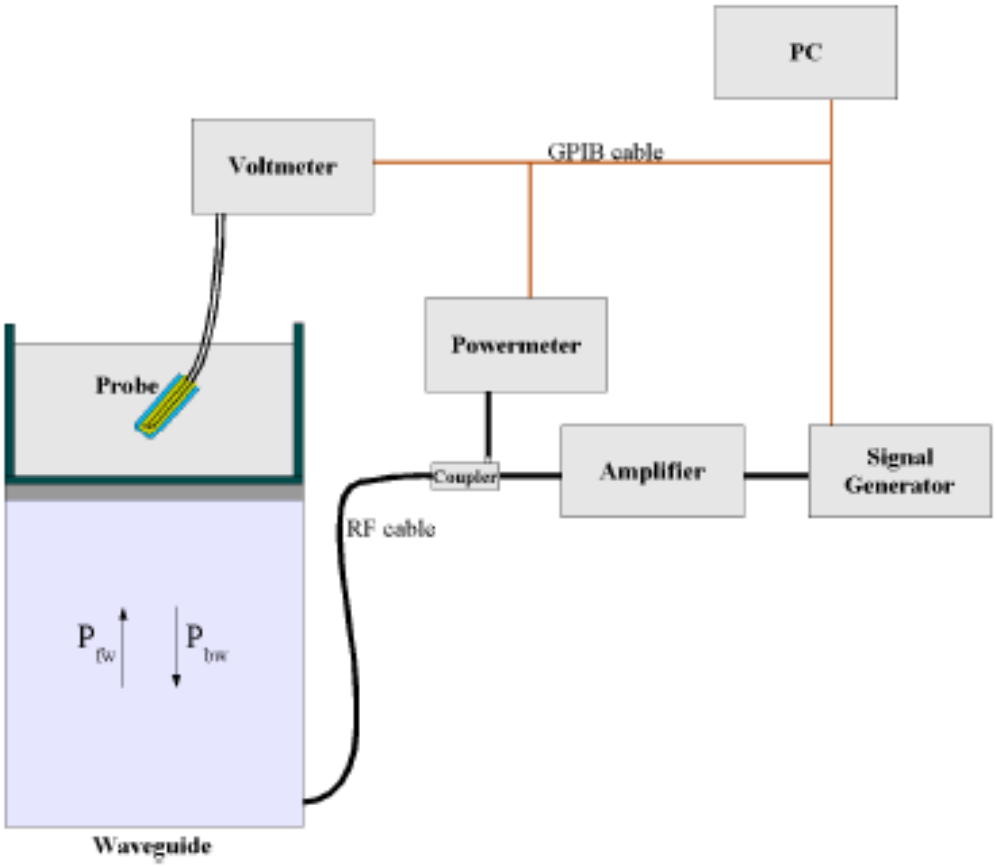
For the measurements the Specific Dosimetric E-Field Probe SN 37/08 EP80 with following specifications is used

- 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 surFront: 4 mm
  (repeatability better than +/- 1mm)

- Probe linearity: ＜0.25 dB
- Axial Isotropy: ＜0.25 dB
- Spherical Isotropy: ＜0.25 dB
- Calibration range: 835to 2500MHz for head & body simulating liquid.

Angle between probe axis (evaluation axis) and suFront normal line:1ess 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 annexe technique using reference guide at the five frequencies.



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

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) (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)) (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/cm2) 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/cm2.

4.3.2 Temperature Assessment Procedure

E-field temperature correlation calibration is performed in a flat phantom filled with the appropriate simulated 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.

$$SAR = C\frac{\Delta T}{\Delta t}$$

Where:

Δt = exposure time (30 seconds),

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

ΔT = temperature increase due to RF exposure.

SAR is proportional to $\Delta T/\Delta t$, 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.

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

Where:

σ = simulated tissue conductivity,

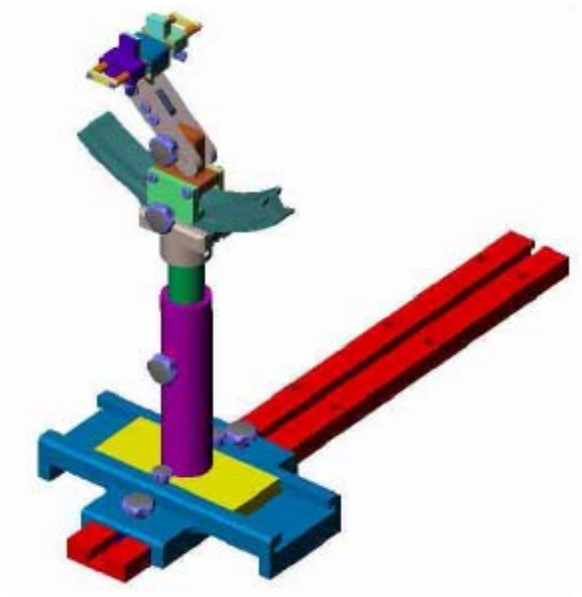
ρ = Tissue density (1.25 g/cm3 for brain tissue)

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 lower than 1°.



Device holder

System Material	Permittivity	Loss Tangent
Delrin	3.7	0.005

5. Tissue Simulating Liquids

Simulant liquids used for testing at frequencies of 835MHz, 1900MHz and 2450MHz, are made mainly of sugar, salt and water solutions may be left in the phantoms. Approximately 20litres are needed for an upright head compared to about 25 litres for a horizontal bath phantom. The liquid height from the ear reference point (ERP) of the phantom to the liquid top surface or from the flat phantom to the liquid top surface is 15cm.
Following are the recipes for body tissue simulating liquid for frequency band 835 MHz , 1900 MHz, 2450MHz .

Ingredients (% by weight)	Frequency Band 835MHz	Frequency Band 1900MHz	Frequency Band 2450MHz
Tissue Type	Body	Body	Body
Water	52.4	40.4	73.2
Salt(NaCl)	1.4	0.5	0.04
Sugar	45.0	58.0	0.0
HEC	1.0	1.0	0.0
Bactericide	0.1	0.1	0.0
Triton X-100	0.0	0.0	0.0
DGBE	0.0	0.0	0.0
Acticide SPX	0.0	0.0	26.7
Dielectric Constant	56.1	54.0	52.5
Conductivity (S/m)	0.95	1.45	1.97

Table 1: Dielectric Performance of Body Tissue Simulating Liquid

Temperature: 22.0~23.8°C, humidity: 54~60%.			
Frequency	**Description**	**Permittivity ε**	**Conductivity σ (S/m)**
835 MHz	**Reference result per OET65 ±5% window**	55.2 52.44 to 57.96	0.97 0.9215 to 1.0185
	Reference result per probe calibration ±5% window	56.1 53.295 to 58.905	0.95 0.905 to 0.998
	Validation value (Feb. 25)	55.016124	0.951510
1900MHz	**Reference result per OET65 ±5% window**	53.3 50.635 to 55.965	1.52 1.444 to 1.596
	Reference result per probe calibration ±5% window	54 51.3 to 56.7	1.45 1.378 to 1.523
	Validation value	53.283431	1.508114

	(Feb. 25)		
2450 MHz	**Reference result per OET65 ±5% window**	52.7 50.635 to 55.965	1.95 1.853 to 2.048
	Reference result per probe calibration ±5% window	52.5 49.875 to 55.125	1.78 1.691 to 1.869
	Validation value (Feb. 25)	53.461064	1.853317

Note:1.The dielectric parameters of the liquids were verified prior to the SAR evaluation using an Agilent 85033E Dielectric Probe Kit and an Agilent Network Analyzer.

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

3.Per KDB 450824 D01, tissue used during test are within 5% tolerances of probe calibration report, and also within 5% of the target dielectric parameters for OET65.
"when the actual tissue dielectric parameters are recorded for the probe calibration, the differences for ε and σ between probe calibration and routine measurements should each be ≤ 5% while satisfying the required ±5% tolerances in target dielectric parameters. "(KDB 450824 D01)

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	4.76	∞
Axial Isotropy	E.2.2	2.5	R	$\sqrt{3}$	0.7	0.7	1.01	1.01	∞
Hemispherical Isotropy	E.2.2	4.0	R	$\sqrt{3}$	0.7	0.7	1.62	1.62	∞
Boundary effect	E.2.3	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Linearity	E.2.4	5.0	R	$\sqrt{3}$	1	1	2.89	2.89	∞
System detection limits	E.2.5	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Readout Electronics	E.2.6	0.02	N	1	1	1	0.02	0.02	∞
Reponse Time	E.2.7	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	∞
Integration Time	E.2.8	2.0	R	$\sqrt{3}$	1	1	1.15	1.15	∞
RF ambient Conditions	E.6.1	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	∞
Probe positioner Mechanical Tolerance	E.6.2	2.0	R	$\sqrt{3}$	1	1	1.15	1.15	∞
Probe positioning with respect to Phantom Shell	E.6.3	0.05	R	$\sqrt{3}$	1	1	0.03	0.03	∞
Extrapolation, interpolation and integration Algoritms for Max. SAR Evaluation	E.5.2	5.0	R	$\sqrt{3}$	1	1	2.89	2.89	∞
Test sample Related									
Test sample positioning	E.4.2.1	0.03	N	1	1	1	0.03	0.03	N-1
Device Holder Uncertainty	E.4.1.1	5.00	N	1	1	1	5.00	5.00	N-1
Output power Power drift - SAR drift measurement	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	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	4.76	∞
Axial Isotropy	E.2.2	2.5	R	$\sqrt{3}$	0.7	0.7	1.01	1.01	∞
Hemispherical Isotropy	E.2.2	4.0	R	$\sqrt{3}$	0.7	0.7	1.62	1.62	∞
Boundary effect	E.2.3	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Linearity	E.2.4	5.0	R	$\sqrt{3}$	1	1	2.89	2.89	∞
System detection limits	E.2.5	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Readout Electronics	E.2.6	0.02	N	1	1	1	0.02	0.02	∞
Reponse Time	E.2.7	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	∞
Integration Time	E.2.8	2.0	R	$\sqrt{3}$	1	1	1.15	1.15	∞
RF ambient Conditions	E.6.1	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	∞
Probe positioner Mechanical Tolerance	E.6.2	2.0	R	$\sqrt{3}$	1	1	1.15	1.15	∞
Probe positioning with respect to Phantom Shell	E.6.3	0.05	R	$\sqrt{3}$	1	1	0.03	0.03	∞
Extrapolation, interpolation and integration 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

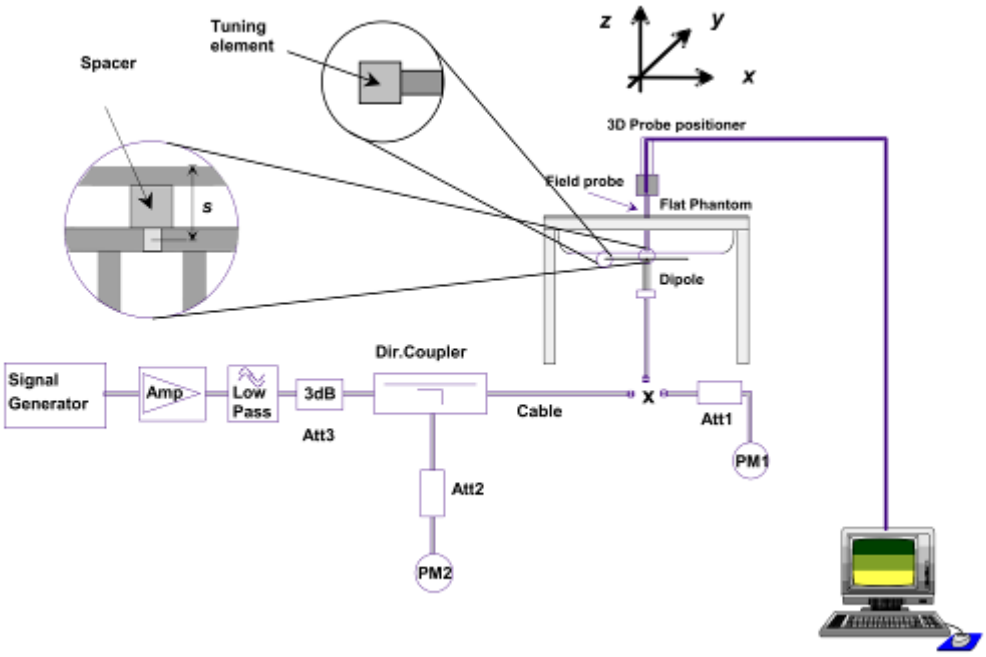
7.1. System Setup

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 at frequency 835 MHz , 1900 MHz and 2450MHz. 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 surFront with a light pressure at the reference marking and be oriented parallel to the long
side of the phantom.

Equipments:

name	Type and specification
Signal generator	Rohde&Schwarz (SMP_02)
Directional coupler	Giga-tronics(SN:1829112)
Amplifier	PRANA (Ap32 SV125AZ)
Reference dipole	835MHz:SN 36/08 DIPC 99 1900MHz:SN 36/08 DIPF 102 2450MHz:SN 36/08 DIPJ 103

System Verification Setup Block Diagram



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)	2450MHz(B)
Target value (1g)	9.880 W/Kg	38.530 W/Kg	53.590 W/Kg
Test value (1g 250 mW input)	2.380 W/Kg	9.746 W/Kg	12.789 W/Kg
Normalized value (1g)	9.520W/Kg	38.984 W/Kg	51.156 W/Kg

Note: System checks the specific test data please see page 88~93

8. Operational Conditions During Test

8.1. Informations on the testing

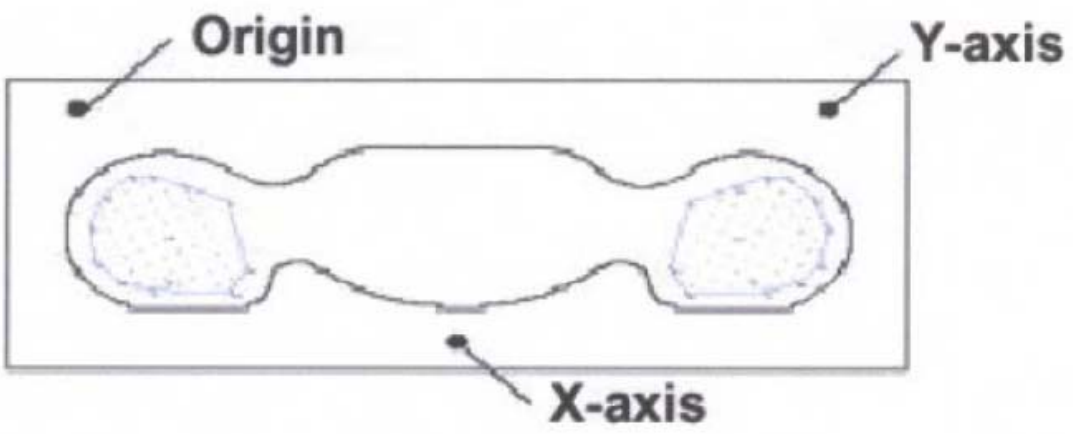
The mobile phone antenna and battery are those specified by the manufacturer. The battery is fully charged before each measurement. The output power and frequency are controlled using a base station simulator. The mobile phone is set to transmit at its highest output peak power level.

8.2. 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.

The depth of the body tissue was 15.1cm. The distance between the back of the device and the bottom of the flat phantom is 1.5cm(taking into account of the IEEE 1528 and the place of the antenna)

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.



SAR Measurement Points in Area Scan

8.3. 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 and the base station simulator is established via air interFront
- Measurement of the local E-field value at a fixed location. This value serves as a reference value for calculating a possible power drift.
- Measurement of the SAR distribution with a grid of 8 to 16mm * 8 to16 mm and a constant distance to the inner surFront of the phantom. Since the sensors can not directly measure at the inner phantom surFront, the values between the sensors and the inner phantom surFront are

extrapolated. With these values the area of the maximum SAR is calculated by an interpolation scheme.

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

8.4. 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 surFront in order to minimize measurements errors, but the highest local SAR will occur at the surFront 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 surFront 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	4175	4233	9262	9400	9538
	subtest	dBm			dBm		
5.2(WCDMA)	non	22.52	22.33	22.45	22.55	22.29	22.59
HSDPA	1	22.48	22.29	22.37	22.53	22.27	22.47
	2	22.47	22.27	22.35	22.51	22.25	22.46
	3	21.95	21.73	21.75	21.05	21.78	21.95
	4	21.91	21.71	21.73	21.02	21.75	21.97
HSUPA	1	22.47	22.27	22.33	22.51	22.25	22.45
	2	20.33	20.29	20.35	20.51	20.07	20.45
	3	21.38	21.18	21.34	21.52	21.26	21.47
	4	20.32	20.29	20.34	20.49	20.27	20.47
	5	22.46	22.28	22.36	22.49	22.23	22.41
HSPA+	1	22.37	22.18	22.22	22.45	22.23	22.43

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	32.49	29.23	28.32	27.57
	190	836.6	33.11	29.34	28.40	27.60
	251	848.8	33.47	29.24	28.34	27.21
PCS 1900	512	1850.2	28.02	26.32	25.15	24.20
	661	1880.0	29.85	26.23	25.10	24.27
	810	1909.8	28.57	26.30	25.12	24.25

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	23.49	23.21	24.06	24.56
	190	836.6	24.11	23.32	24.14	24.59
	251	848.8	24.47	23.22	24.08	24.20
PCS 1900	512	1850.2	19.02	20.30	20.89	21.19
	661	1880.0	20.85	20.21	20.84	21.26
	810	1909.8	19.57	20.28	20.86	21.24

3. EDGE 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	32.47	29.33	28.41	27.51
	190	836.6	33.08	29.21	28.37	27.64
	251	848.8	33.45	29.17	28.56	27.29
PCS 1900	512	1850.2	29.05	26.33	25.25	24.21
	661	1880.0	29.85	26.29	25.20	24.30
	810	1909.8	28.96	26.40	25.27	24.09

EDGE Time-based Average Power

Band	Channel	Frequency (MHz)	Output Power(dBm)			
			Slot 1	Slot 2	Slot 3	Slot 4
GSM 850	128	824.2	23.47	23.31	24.15	24.50
	190	836.6	24.08	23.19	24.11	24.63
	251	848.8	24.45	23.15	24.30	24.28
PCS 1900	512	1850.2	20.05	20.31	20.99	21.20
	661	1880.0	20.85	20.27	20.94	21.29
	810	1909.8	19.96	20.38	21.01	21.08

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	-9.00dB	-6.02dB	-4.26dB	-3.01dB

4. Wifi peak output power

Band	Channel	Frequency (MHz)	Output Power(dBm)		
			802.11B (DSSS)	802.11G (OFDM)	802.11N20 (OFDM)
Wifi	1	2412	17.79	16.95	16.92
	6	2437	18.07	17.40	17.41
	11	2462	18.12	17.36	17.33

11. 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 (10mm Separation)	GPRS	Back upward	190	0.426	1.096	0.467
		Front upward		0.483		0.529
		Edge A		0.342		0.375
		Edge B		0.186		0.204
		Edge C		0.136		0.149
	EDGE	Back upward	190	0.367	1.086	0.399

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 (10mm Separation)	GPRS	Back upward	661	0.194	1.054	0.204
		Front upward		0.206		0.217
		Edge A		0.186		0.196
		Edge B		0.170		0.179
		Edge C		0.124		0.131
	EDGE	Back upward	661	0.163	1.047	0.171

Note:

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

Band	Channel	Slots	Power level	Duty Cycle
GPRS850	190	4	5	1:2
EDGE850	190	4	5	1:2
GPRS1900	661	4	0	1:2
EDGE1900	661	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 (10mm Separation)	Back upward	4132	0.258	1.117	0.288
	Front upward		0.261		0.292
	Edge A		0.321		0.359
	Edge B		0.160		0.179
	Edge C		0.263		0.294

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 (10mm Separation)	Back upward	9538	0.411	1.099	0.452
	Front upward		0.439		0.482
	Edge A		0.181		0.199
	Edge B		0.393		0.432
	Edge C		0.371		0.408

Summary of Measurement Results (WLAN 802.11B 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 (10mm Separation)	Back upward	11	0.163	1.091	0.178
	Front upward		0.186		0.203
	Edge C		0.074		0.081
	Edge D		0.155		0.169

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 active is less than 1/4 dB higher than that measured without HSDPA/HSUPA using 12.2kbps RMC, according to KDB 941225D01v02, SAR is not required for this handset with HSPA capabilities.

3. During 802.11b testing, engineering testing software installed on the EUT can provide continuous transmitting RF signal.The RF signal utilized in SAR measurement has almost 100% duty cycle, and its crest factor is 1.

4. Scaling Factor calculation

Band	**Tune-up power tolerance (dBm)**	**SAR test channel Power (dBm)**	**Scaling Factor**
GPRS 850	PCL = 5, PWR =27.5+-0.5(4 slots)	27.60	1.096
EDGE 850	PCL = 5, PWR =27.5+-0.5(4 slots)	27.64	1.086
GPRS 1900	PCL=0,PWR= 24+-0.5(4 slots)	24.27	1.054
EDGE 1900	PCL=0,PWR= 24+-0.5(4 slots)	24.30	1.047
WCDMA 850	Max output power =22(+1/-2)	22.52	1.117
WCDMA 1900	Max output power =22 (+1/-2)	22.59	1.099
802.11B(2.4GHz)	Max output power =18 +-0.5	18.12	1.091

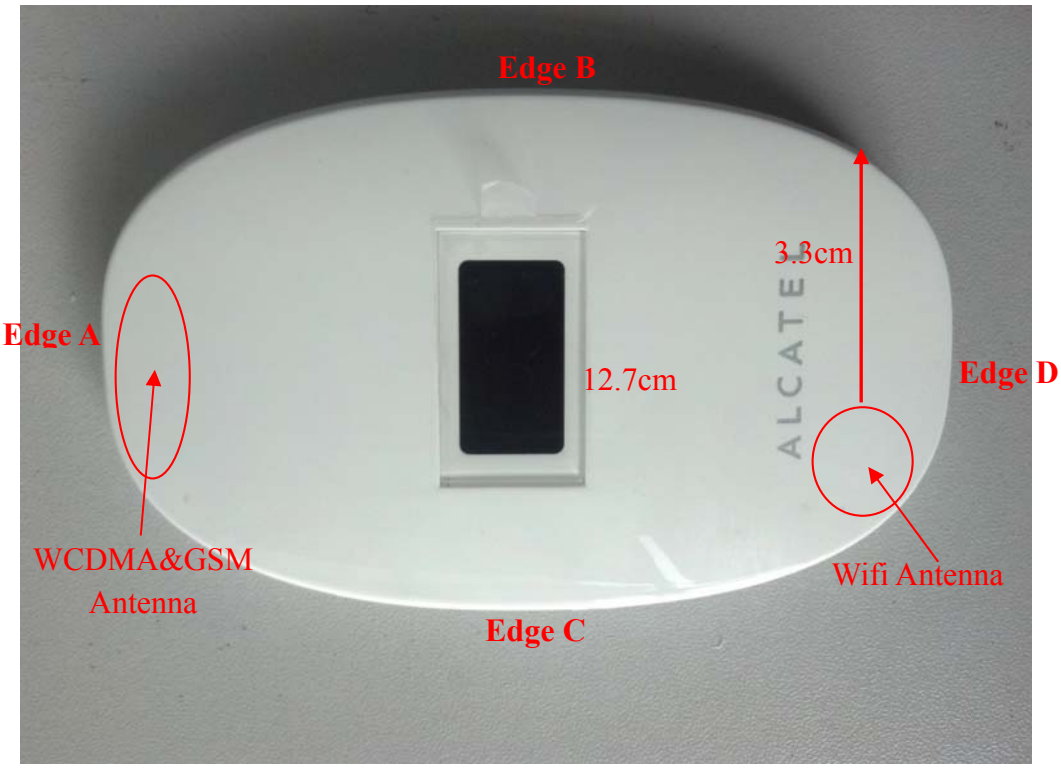
5.The EUT supports 3GPP R7 HSPA+ only using QPSK in the uplink.

12. Hotspot Mode Evaluation Procedure

The SAR evaluation procedures for Portable Devices with Wireless Router function is according to KDB 941225 D06 Hot Spot SAR v01.

The following procedures are applicable when the overall device length and width are ≥ 9cm x 5cm respectively（Note：the overall device length and width of the EUT is 10cm x 6cm）. A test separation of 10mm is required. SAR must be measured for all sides and surfaces with a transmitting antenna located within 25 mm from that surface or edge, for the data modes, wireless technologies and frequency bands supporting hotspot mode. The standalone SAR results in each device test orientation must be analyzed for the applicable hotspot mode simultaneous transmission configurations to determine SAR test exclusion and volume scan requirements.

Edge configurations:

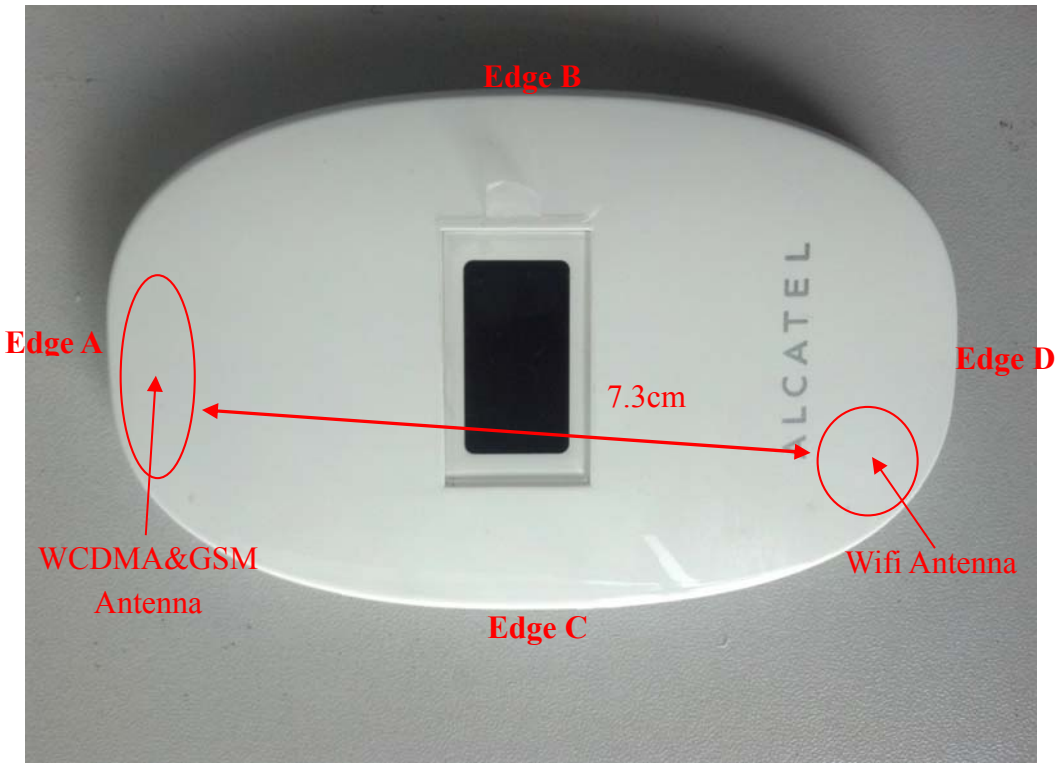


Stand-alone SAR

Assessment	**Hotspot side for SAR**					**Test distance: 10mm**
Antennas	**Back**	**Front**	**Edge A**	**Edge B**	**Edge C**	**Edge D**
WCDMA/GSM	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	No
WLAN	**Yes**	**Yes**	No	No	**Yes**	**Yes**

13. Multiple Transmitters Evaluation

The are two transmitters build in EUT, As followed:
Edge configurations:



Stand-alone SAR

TEST distance: 10mm		
Band	**SAR Test Exclusion Threshold(mW) Per KDB 447498 D01v05**	**Highest test power(mW)**
WIFI(2.4G)	**19**	64 (B High)

The SAR test for 802.11b(2.4GHz) is required, 802.11g/HT20 is not required, for the maximum average output power is less than 1/4 dB higher than measured on the corresponding 802.11b channels. As per KDB 248227

Simultaneous SAR

Description of Simultaneous Transmit Capabilities	
No.	**Transmitter Combinations**
1	GSM(Data)+WiFi
2	WCDMA(Data)+WiFi

Note:

.

1.When the user enables the personal wireless router functions for the handset, actual operations include simultaneous transmission of both the WiFi transmitter and another licensed transmitter.Both transmitter often do not transmit at the same transmitting frenquency and thus cannot be evaluated for SAR under actual use conditions. The "Portable Hotspot" feature on the handset was NOT activated, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal.

2.For Scenario **No.2**,WCDMA and WiFi is tested separately, 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 active is less than 1/4 dB higher than that measured without HSDPA/HSUPA using 12.2kbps RMC, according to KDB 941225D01v02, SAR is not required for this handset with HSPA capabilities.

3.For Scenario **No.1**, GSM and WiFi is tested separately.

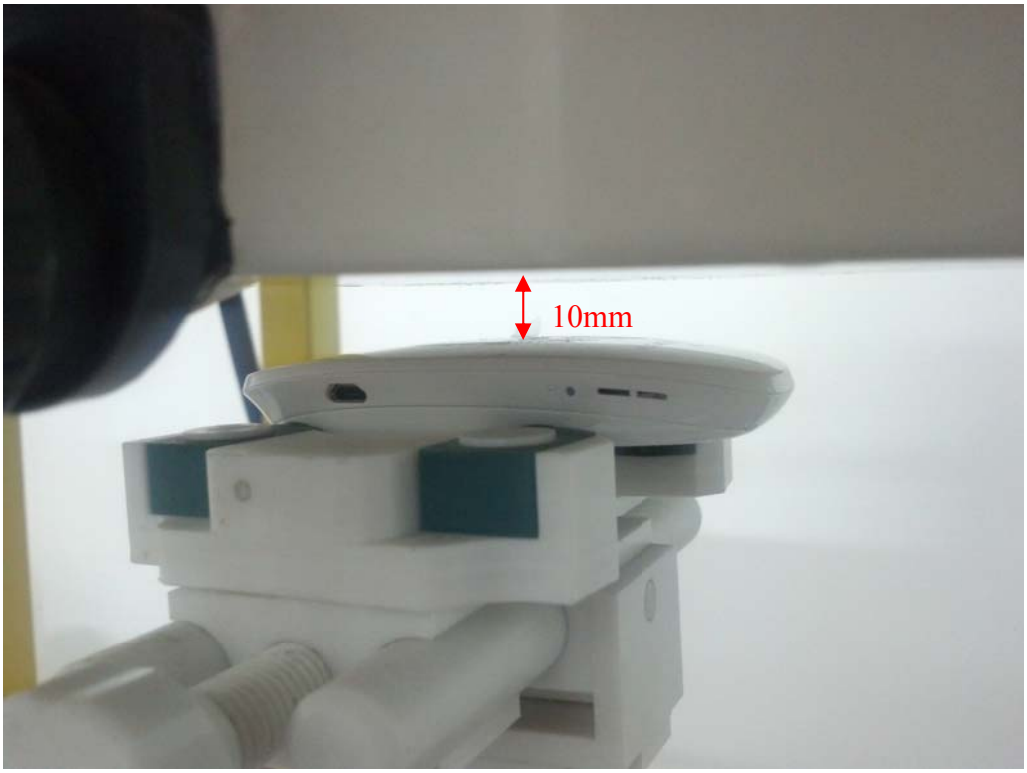
4.Applicable Multiple Scenario Evaluation

Test Position	WCDMA&GSM SAR_{Max} (W/Kg)	WiFi SAR_{Max}(W/Kg)	∑1-gSAR_{Max}(W/Kg) WiFi&Main Ant
Body SAR	0.529	0.203	0.732

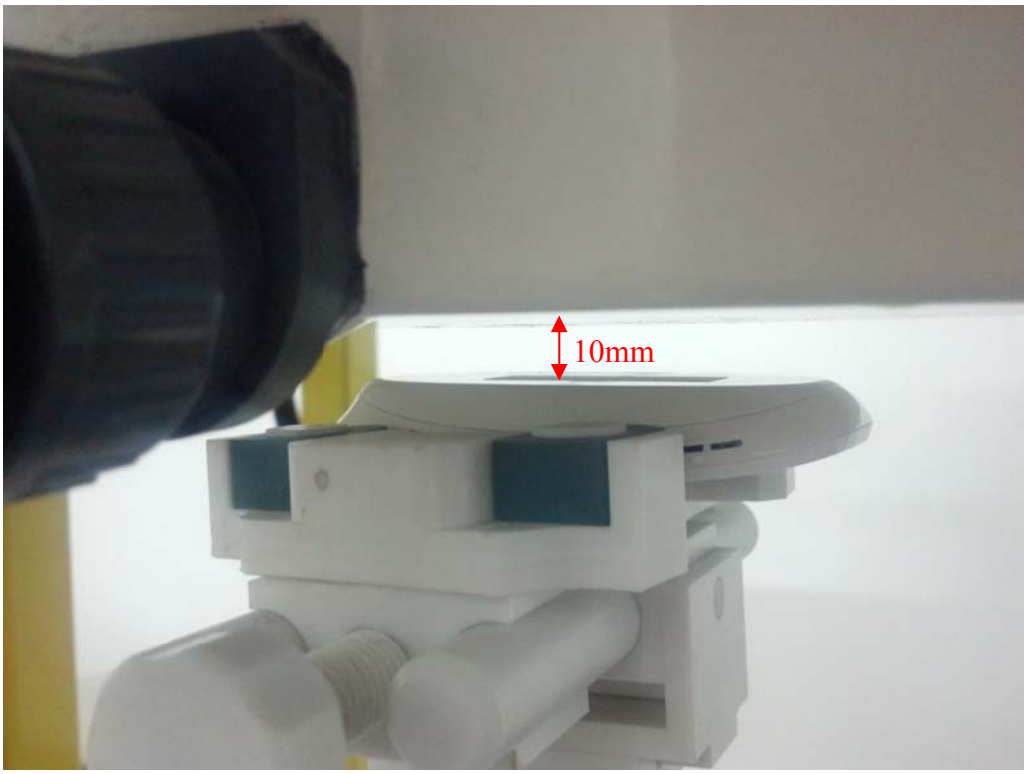
Simultaneous Transmission SAR evaluation is not required for Wifi and WCDMA&GSM, because the sum of 1g SAR_{Max} is **0.732**W/Kg < 1.6W/Kg for Wifi and WCDMA&GSM.
(According to KDB 447498D01v05, the sum of the highest *reported* SAR of each antenna does not exceed the limit, simultaneous transmission SAR evaluation is not required.)

Annex A EUT Setup Photos

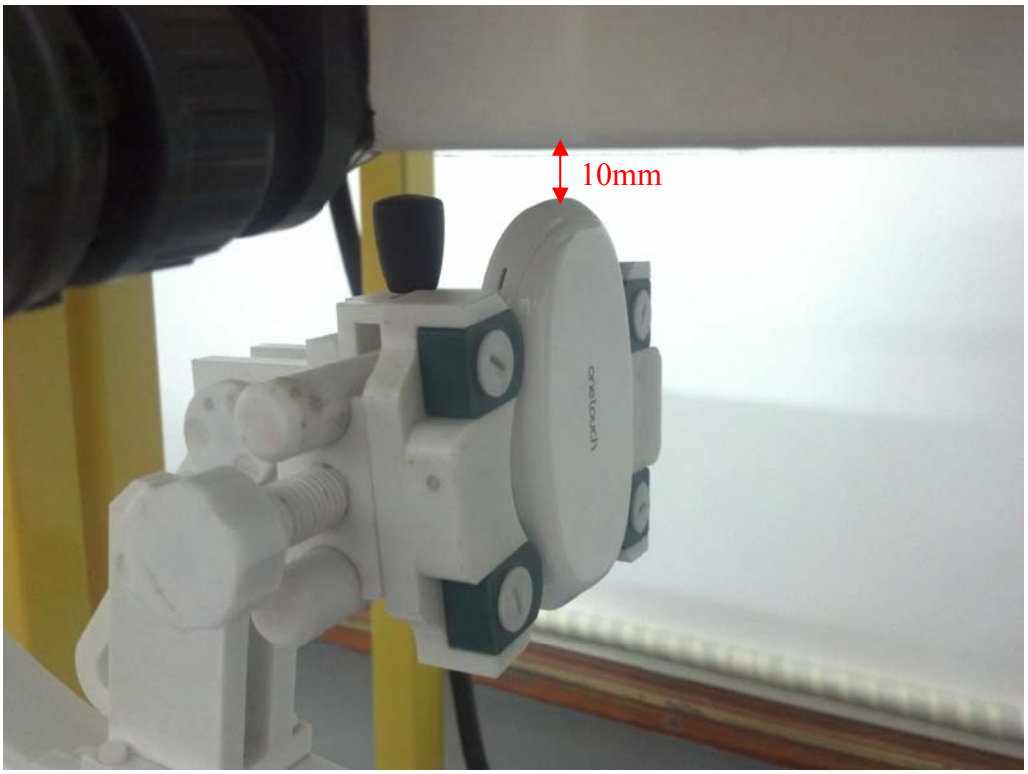
1. Face upward



2. Back upward

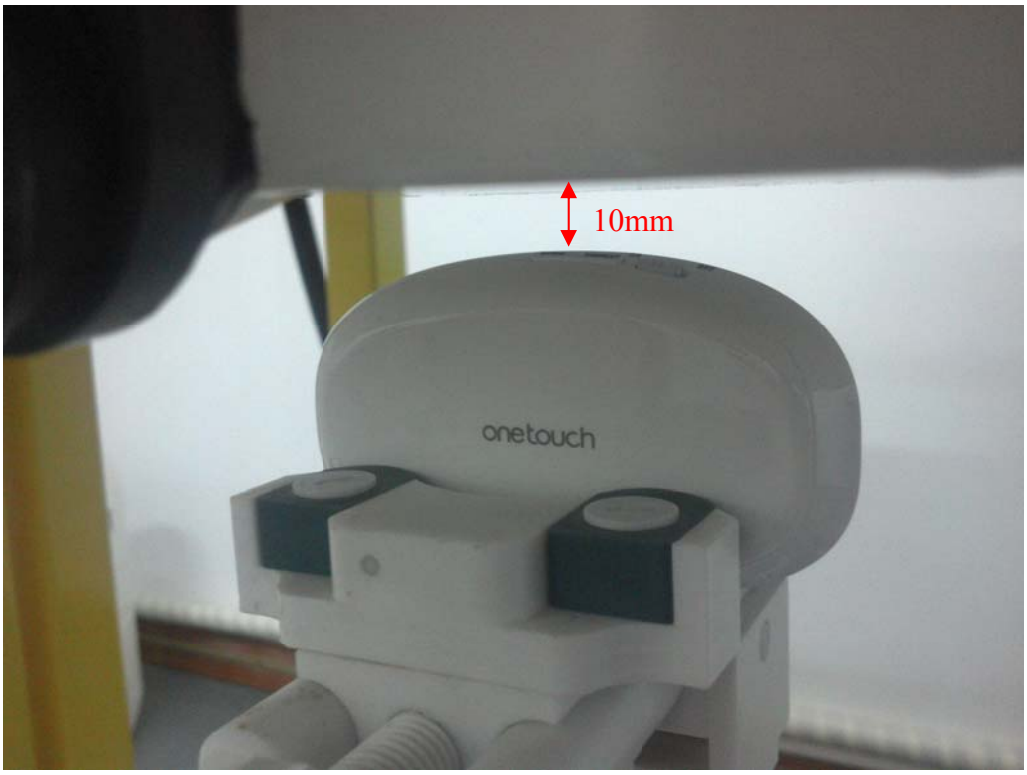


7. Edge A

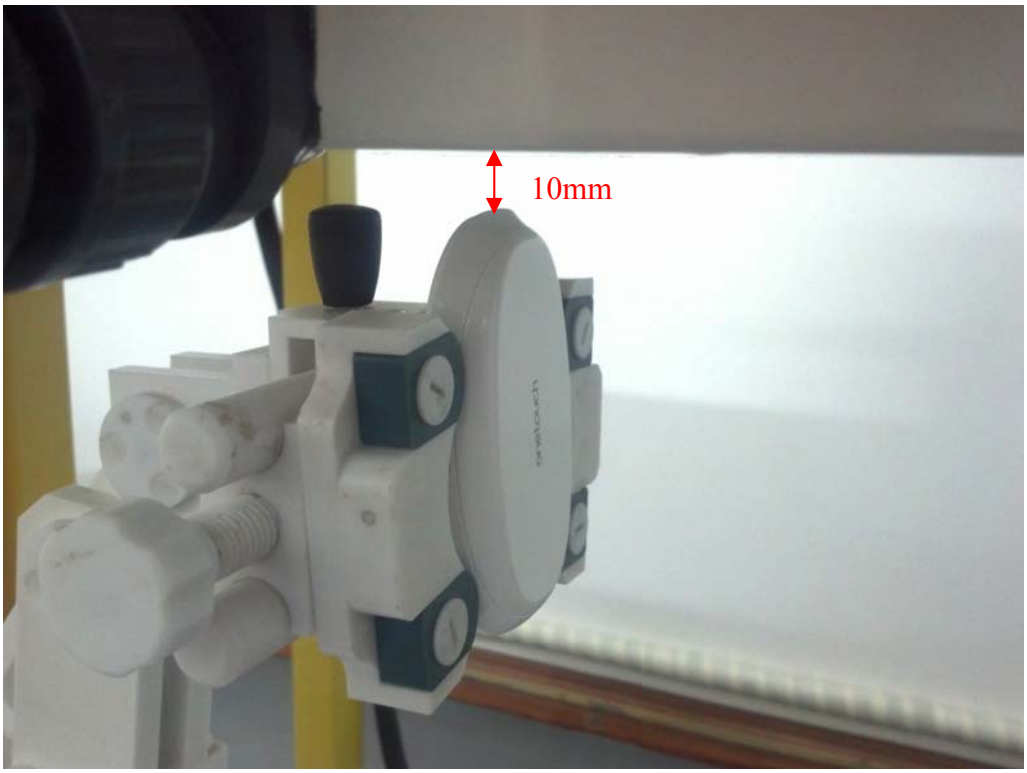


8. Edge B

9. Edge C



10. Edge D



Liquid Level Photo

Liquid depth :15.5cm

Annex B Graph Test Results

BAND	PARAMETERS
GSM850	Measurement 1: Flat Plane with Body device position on Middle Channel in GPRS mode Measurement 2: Flat Plane with Body device position on Middle Channel in GPRS mode Measurement 3: Flat Plane with Body device position on Middle Channel in GPRS mode Measurement 4: Flat Plane with Body device position on Middle Channel in GPRS mode Measurement 5: Flat Plane with Body device position on Middle Channel in GPRS mode Measurement 6: Flat Plane with Body device position on Middle Channel in EDGE mode
GSM1900	Measurement 7: Flat Plane with Body device position on Middle Channel in GPRS mode Measurement 8: Flat Plane with Body device position on Middle Channel in GPRS mode Measurement 9: Flat Plane with Body device position on Middle Channel in GPRS mode Measurement 10: Flat Plane with Body device position on Middle Channel in GPRS mode Measurement 11: Flat Plane with Body device position on Middle Channel in GPRS mode Measurement 12: Flat Plane with Body device position on Middle Channel in EDGE mode
WCDMA 850	Measurement 13: Flat Plane with Body device position on Low Channel in WCDMA mode Measurement 14: Flat Plane with Body device position on Low Channel in WCDMA mode Measurement 15: Flat Plane with Body device position on Low Channel in WCDMA mode Measurement 16: Flat Plane with Body device position on Low Channel in WCDMA mode Measurement 17: Flat Plane with Body device position on Low Channel in WCDMA mode
WCDMA 1900	Measurement 18: Flat Plane with Body device position on High Channel in WCDMA mode Measurement 19: Flat Plane with Body device position on High Channel in WCDMA mode Measurement 20: Flat Plane with Body device position on High Channel in WCDMA mode

	Measurement 21: Flat Plane with Body device position on High Channel in WCDMA mode Measurement 22: Flat Plane with Body device position on High Channel in WCDMA mode
802.11B (2450)	Measurement 23: Flat Plane with Body device position on High Channel in DSSS mode Measurement 24: Flat Plane with Body device position on High Channel in DSSS mode Measurement 25: Flat Plane with Body device position on High Channel in DSSS mode Measurement 26: Flat Plane with Body device position on High Channel in DSSS 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: 2013.2.25
Measurement duration: 9 minutes 11 seconds

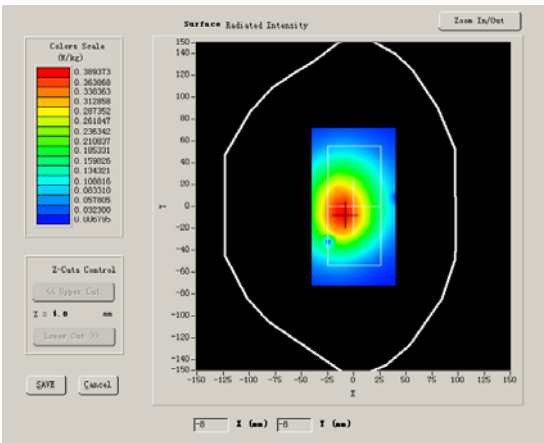
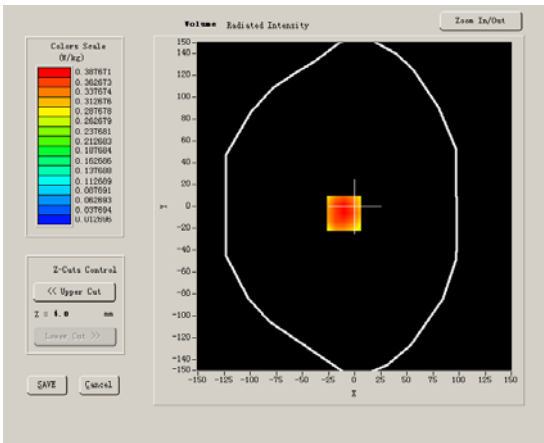
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Flat Plane
Device Position	Body
Band	GSM850
Channels	Middle
Signal	GPRS

B. SAR Measurement Results

Middle Band SAR (Channel 190):

Frequency (MHz)	836.600000
Relative permittivity (real part)	55.016124
Conductivity (S/m)	0.951510
Power drift(%)	-1.200000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.3°C
ConvF:	28.559,25.681,27.588
Crest factor:	1:2

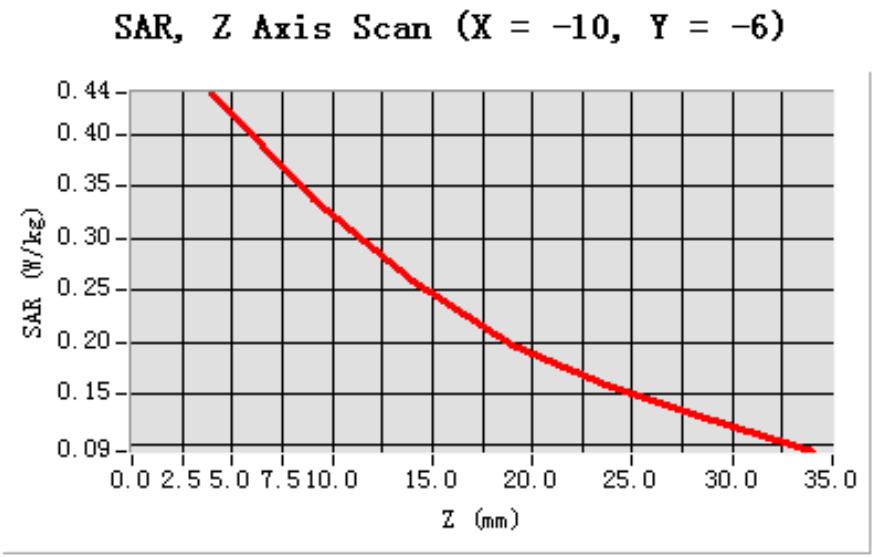
SURFACE SAR	VOLUME SAR
	

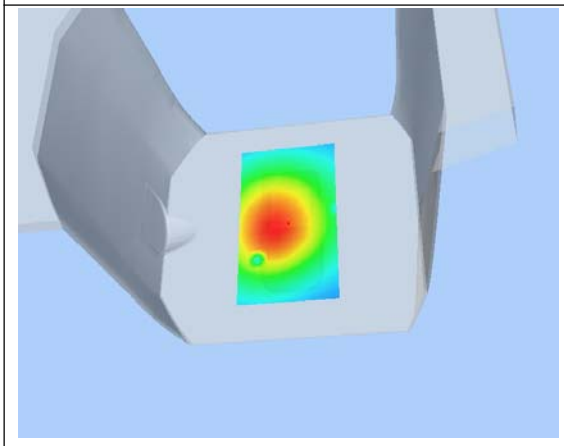
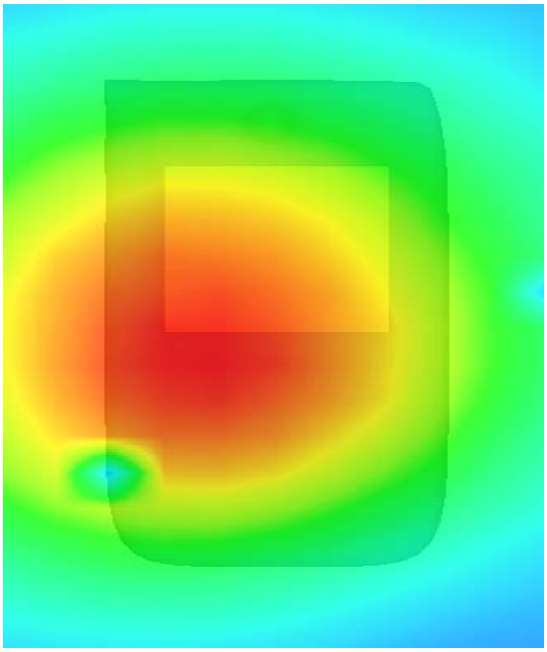
Maximum location: X=-10.00, Y=-6.00

SAR 10g (W/Kg)	0.311689
SAR 1g (W/Kg)	0.425907

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.4402	0.3374	0.2578	0.1981	0.1574	0.1234



3D sceen 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: 2013.2.25
Measurement duration: 9 minutes 11 seconds

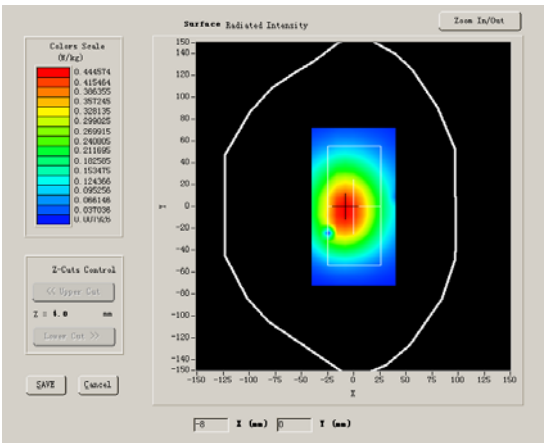
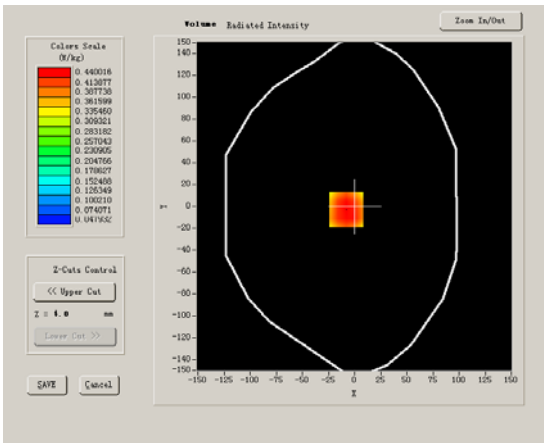
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Flat Plane
Device Position	Body
Band	GSM850
Channels	Middle
Signal	GPRS

B. SAR Measurement Results

Middle Band SAR (Channel 190):

Frequency (MHz)	836.600000
Relative permittivity (real part)	55.016124
Conductivity (S/m)	0.951510
Power drift(%)	-1.200000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.3°C
ConvF:	28.559,25.681,27.588
Crest factor:	1:2

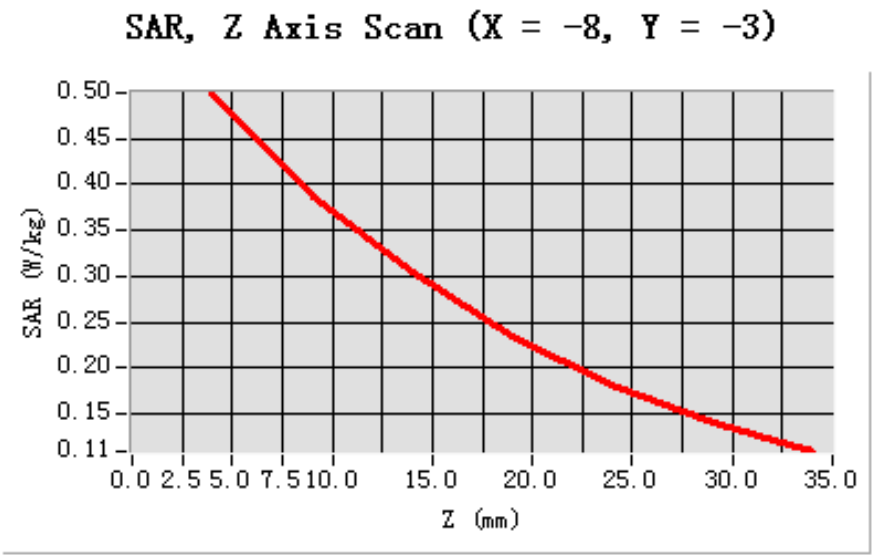
SURFACE SAR	VOLUME SAR
	

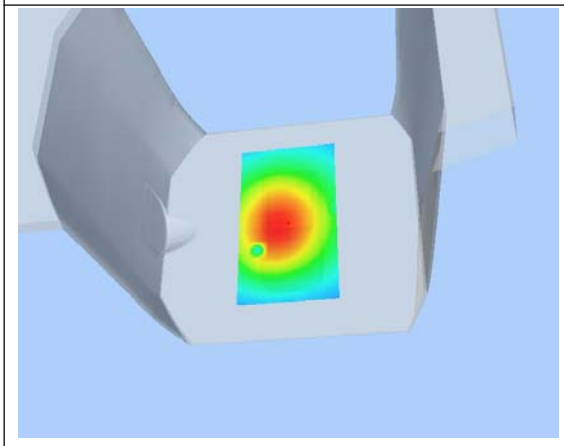
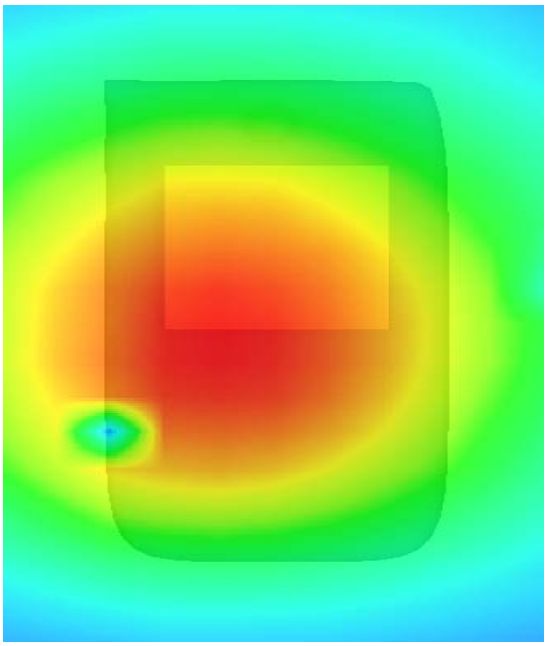
Maximum location: X=-8.00, Y=-3.00

SAR 10g (W/Kg)	0.358271
SAR 1g (W/Kg)	0.483431

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.4996	0.3875	0.3035	0.2340	0.1815	0.1395



3D sceen 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: 2013.2.25
Measurement duration: 9 minutes 10 seconds

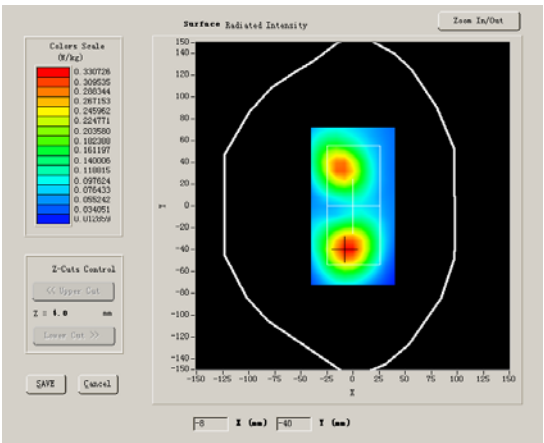
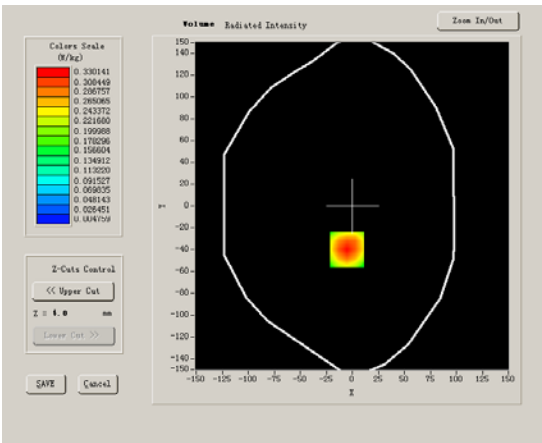
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Flat Plane
Device Position	Body
Band	GSM850
Channels	Middle
Signal	GPRS

B. SAR Measurement Results

Middle Band SAR (Channel 190):

Frequency (MHz)	836.600000
Relative permittivity (real part)	55.016124
Conductivity (S/m)	0.951510
Power drift(%)	-0.590000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.3°C
ConvF:	28.559,25.681,27.588
Crest factor:	1:2

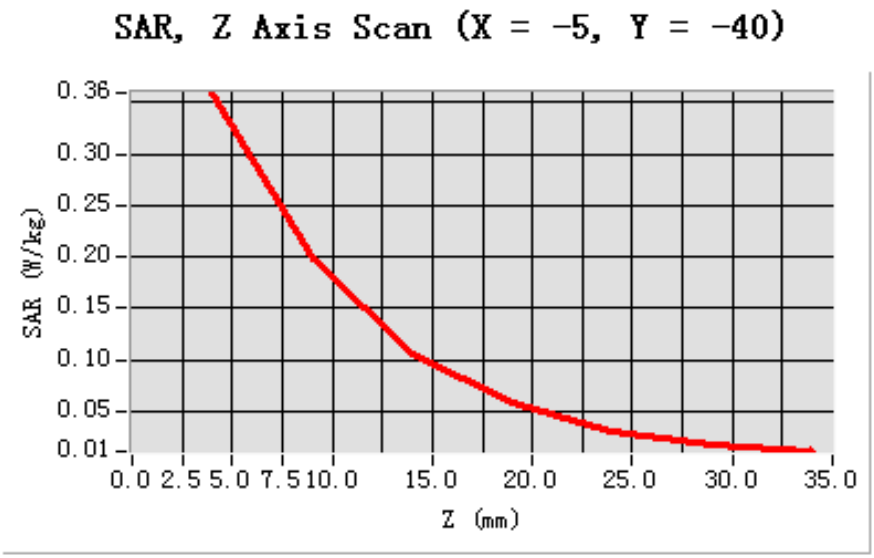
SURFACE SAR	VOLUME SAR
	

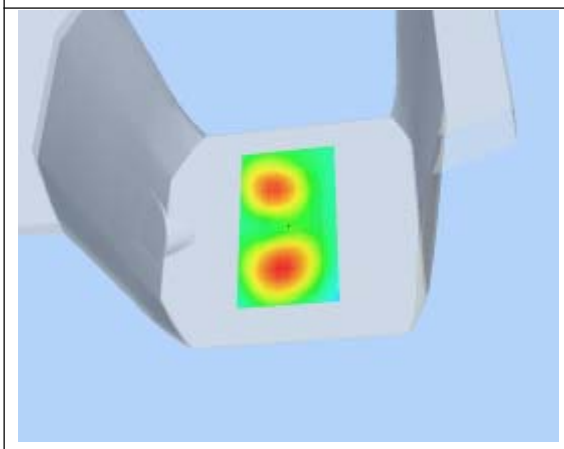
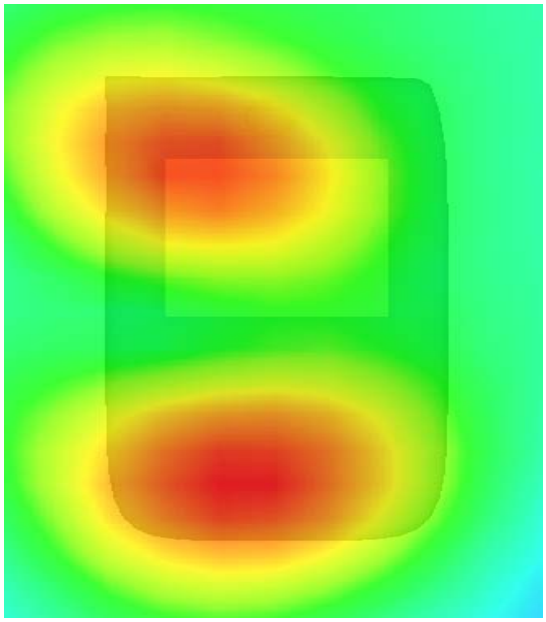
Maximum location: X=-5.00, Y=-40.00

SAR 10g (W/Kg)	0.190519
SAR 1g (W/Kg)	0.341707

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.3595	0.1981	0.1065	0.0586	0.0311	0.0168



3D sceen 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: 2013.2.25
Measurement duration: 9 minutes 10 seconds

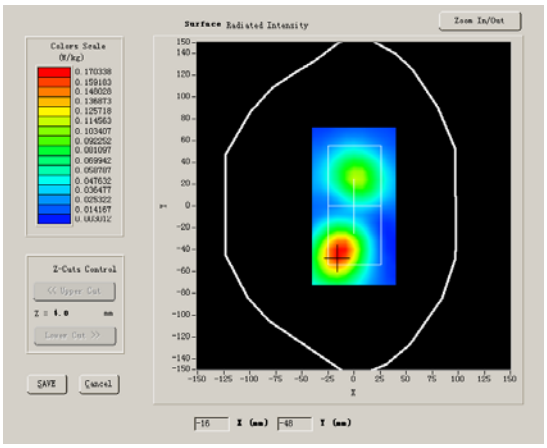
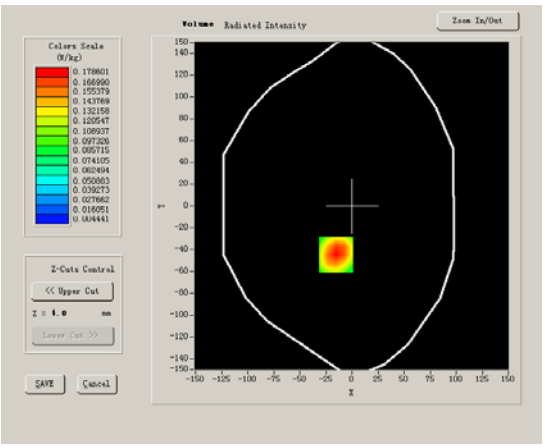
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Flat Plane
Device Position	Body
Band	GSM850
Channels	Middle
Signal	GPRS

B. SAR Measurement Results

Middle Band SAR (Channel 190):

Frequency (MHz)	836.600000
Relative permittivity (real part)	55.016124
Conductivity (S/m)	0.951510
Power drift(%)	-1.320000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.3°C
ConvF:	28.559,25.681,27.588
Crest factor:	1:2

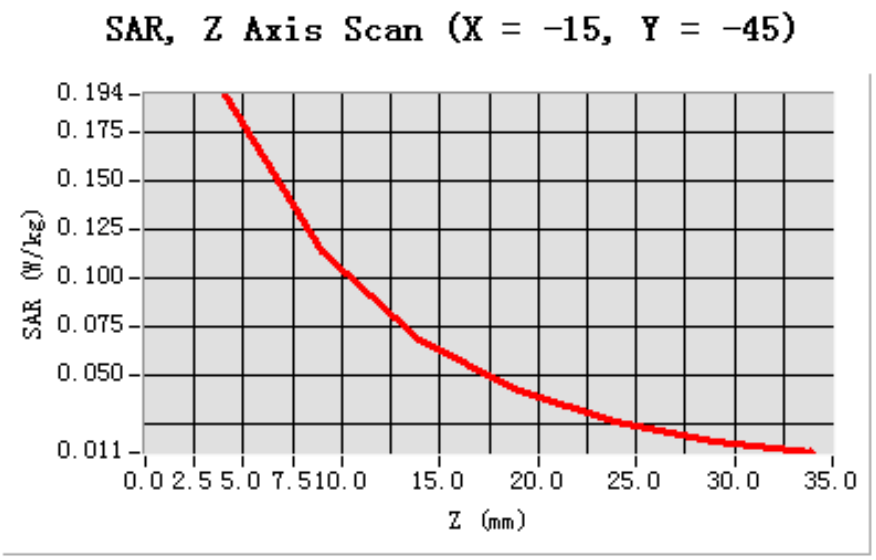
SURFACE SAR	VOLUME SAR
	

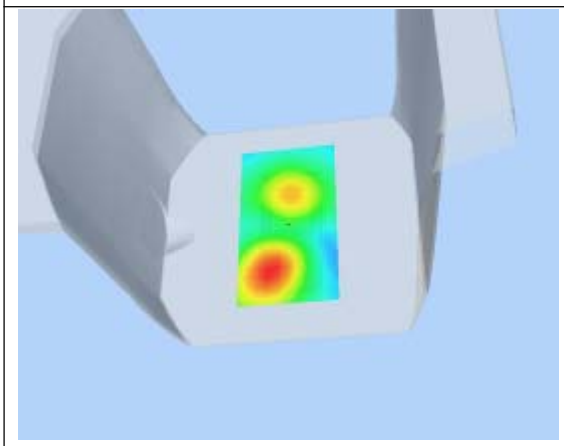
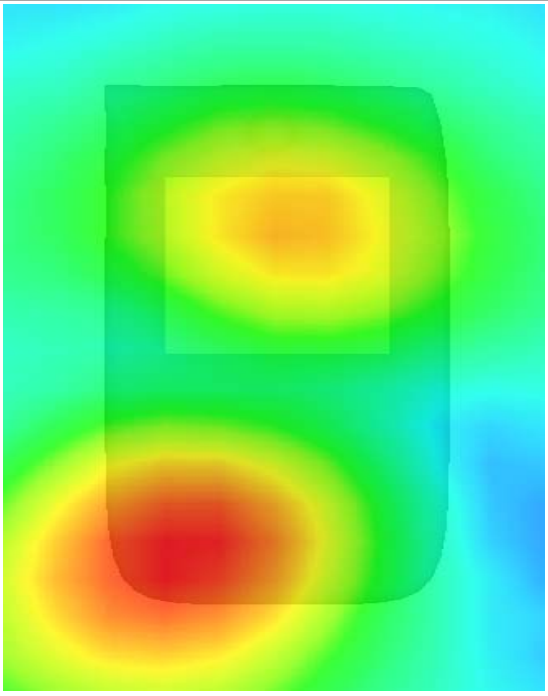
Maximum location: X=-15.00, Y=-45.00

SAR 10g (W/Kg)	0.108322
SAR 1g (W/Kg)	0.185816

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.1945	0.1138	0.0689	0.0423	0.0263	0.0169



3D sceen 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: 2013.2.25
Measurement duration: 9 minutes 10 seconds

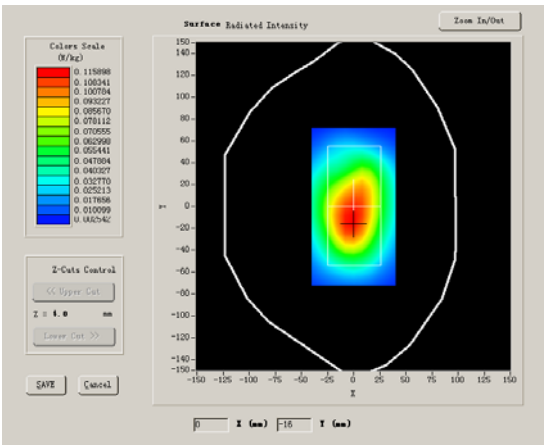
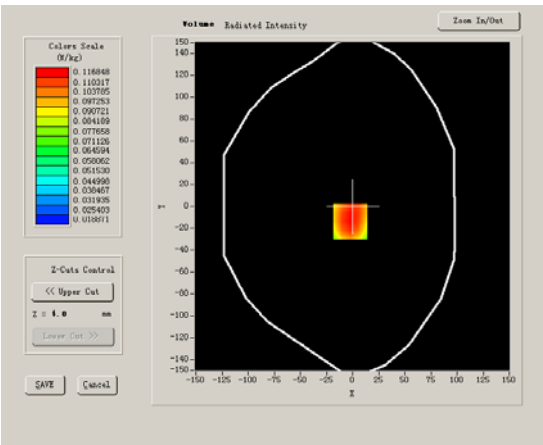
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Flat Plane
Device Position	Body
Band	GSM850
Channels	Middle
Signal	GPRS

B. SAR Measurement Results

Middle Band SAR (Channel 190):

Frequency (MHz)	836.600000
Relative permittivity (real part)	55.016124
Conductivity (S/m)	0.951510
Power drift(%)	-1.320000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.3°C
ConvF:	28.559,25.681,27.588
Crest factor:	1:2

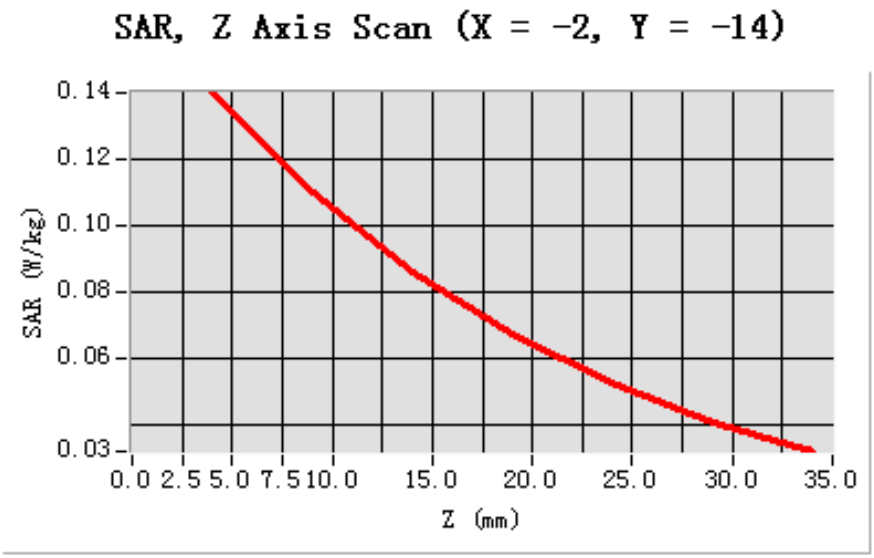
SURFACE SAR	VOLUME SAR
	

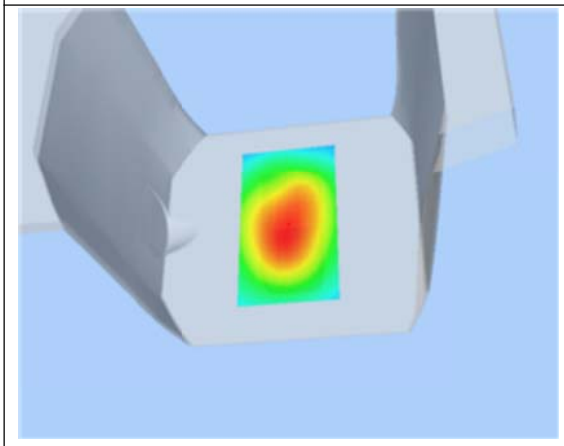
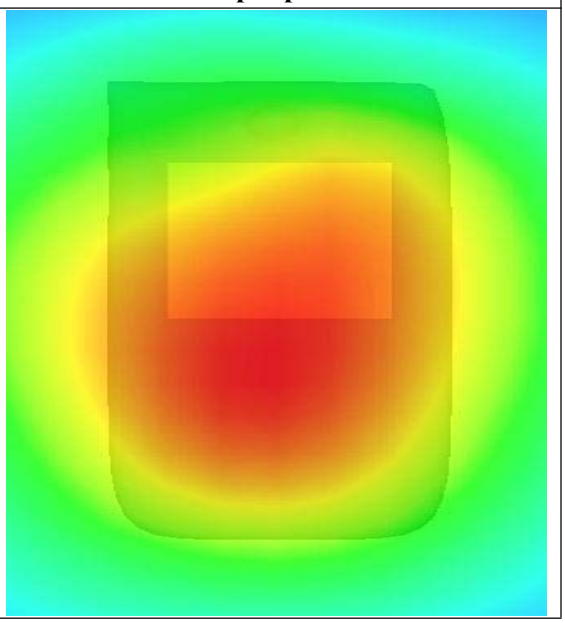
Maximum location: X=-2.00, Y=-14.00

SAR 10g (W/Kg)	0.101884
SAR 1g (W/Kg)	0.135792

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.1402	0.1105	0.0860	0.0671	0.0523	0.0409



3D sceen 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: 2013.2.25
Measurement duration: 9 minutes 10 seconds

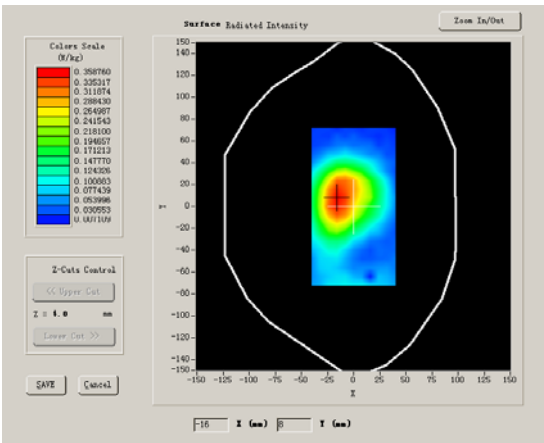
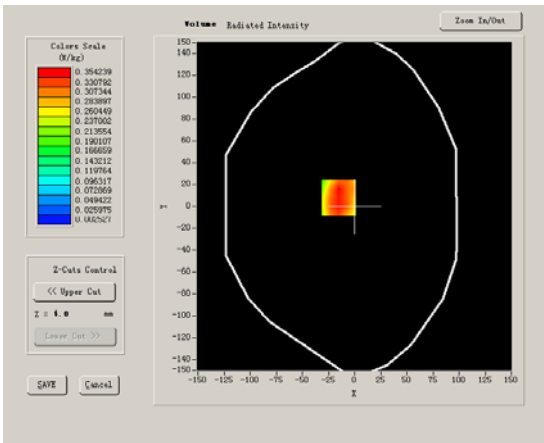
A. Experimental conditions.

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)	55.016124
Conductivity (S/m)	0.951510
Power drift(%)	-1.380000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.3°C
ConvF:	28.559,25.681,27.588
Crest factor:	1:2

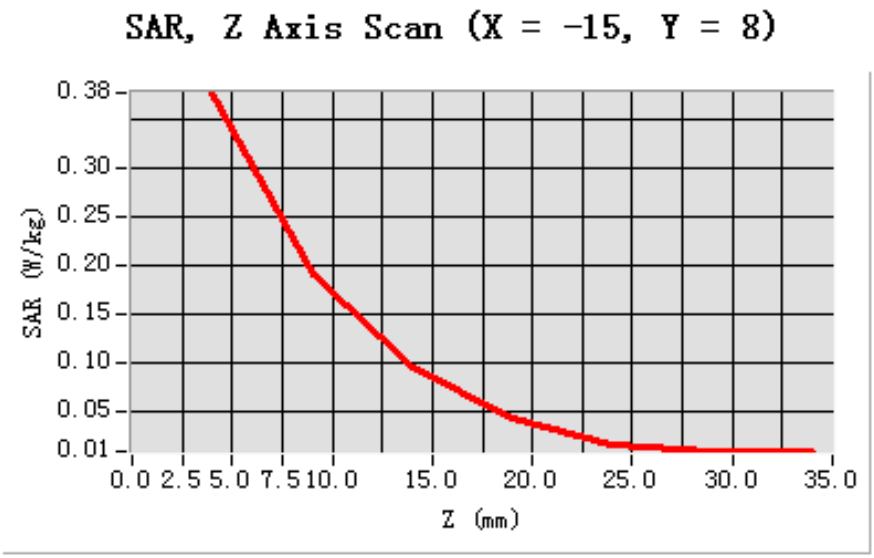
SURFACE SAR	VOLUME SAR
	

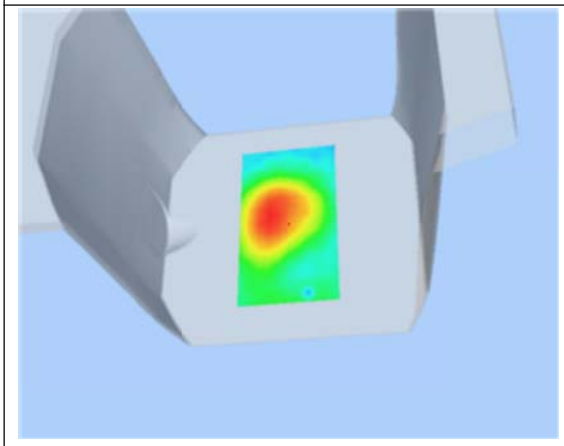
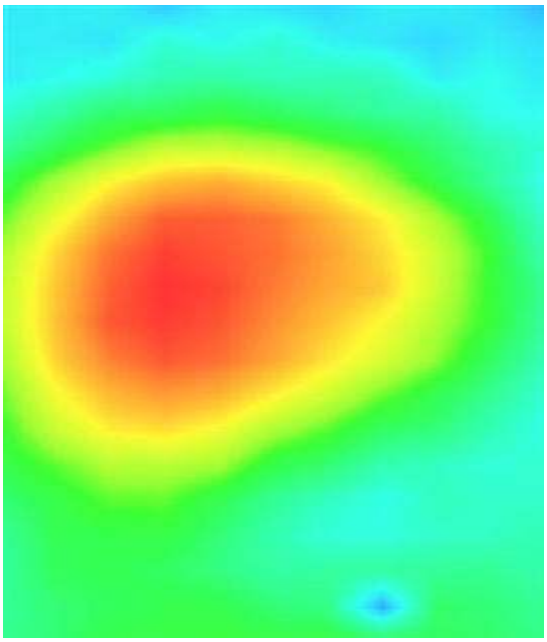
Maximum location: X=-15.00, Y=8.00

SAR 10g (W/Kg)	0.199144
SAR 1g (W/Kg)	0.366578

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.3769	0.1912	0.0952	0.0445	0.0170	0.0102



3D sceen 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: 2013.2.25
Measurement duration: 9 minutes 8 seconds

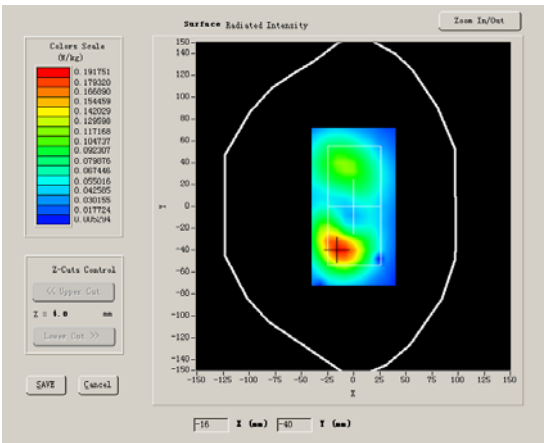
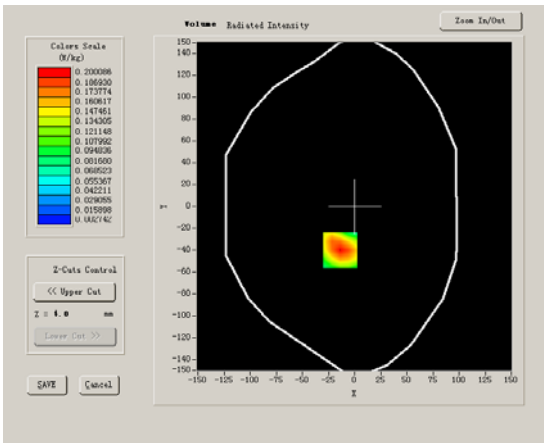
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Flat Plane
Device Position	Body
Band	GSM1900
Channels	Middle
Signal	GPRS

B. SAR Measurement Results

Middle Band SAR (Channel 661):

Frequency (MHz)	1880.000000
Relative permittivity (real part)	53.283431
Conductivity (S/m)	1.508114
Power drift(%)	-1.500000
Ambient Temperature:	22.7°C
Liquid Temperature:	22.3°C
ConvF:	40.625,34.773,38.535
Crest factor:	1:2

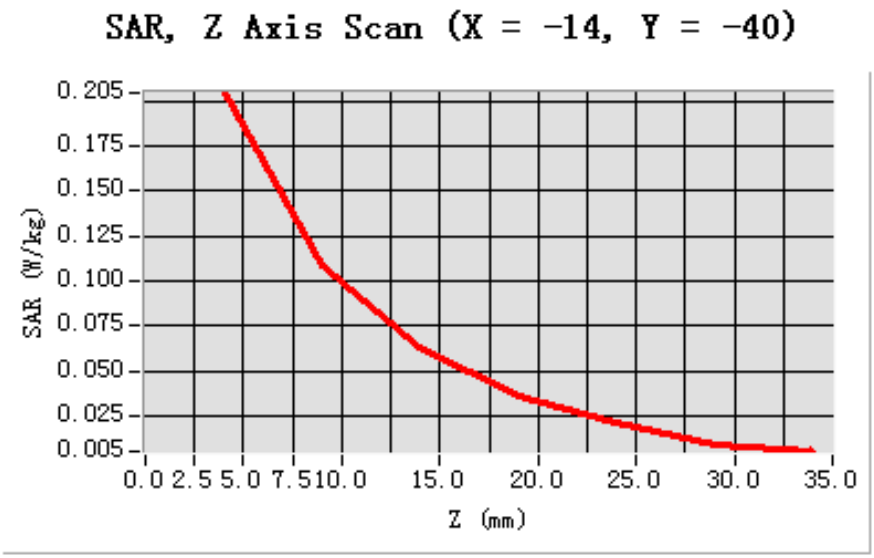
SURFACE SAR	VOLUME SAR
	

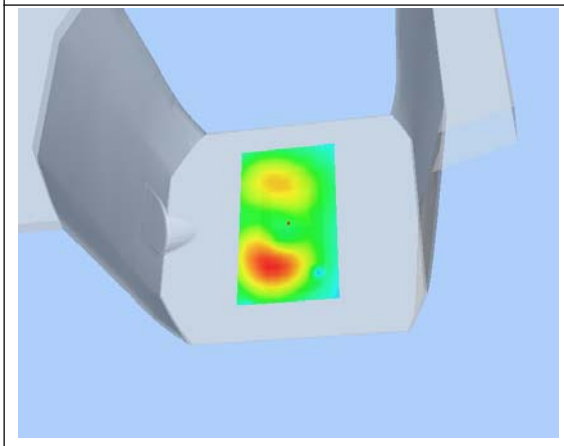
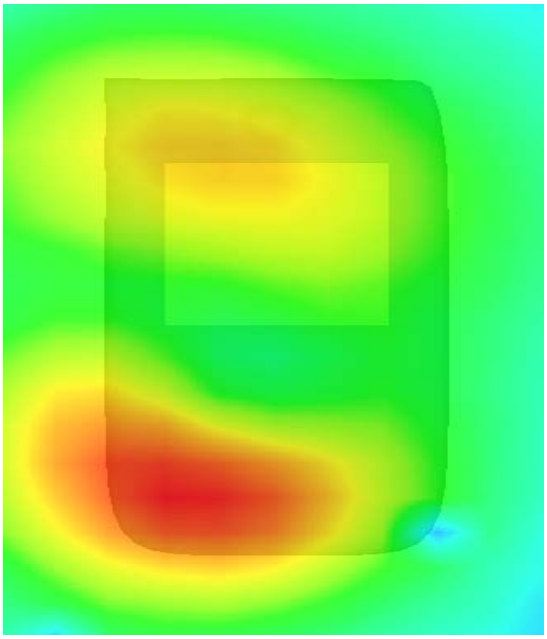
Maximum location: X=-14.00, Y=-40.00

SAR 10g (W/Kg)	0.106662
SAR 1g (W/Kg)	0.193999

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.2047	0.1093	0.0631	0.0358	0.0214	0.0095



3D sceen 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: 2013.2.25
Measurement duration: 9 minutes 8 seconds

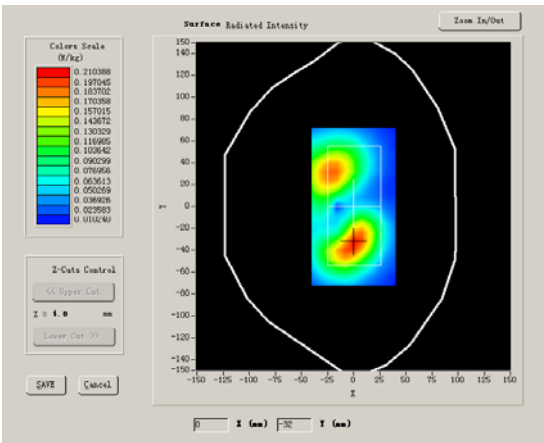
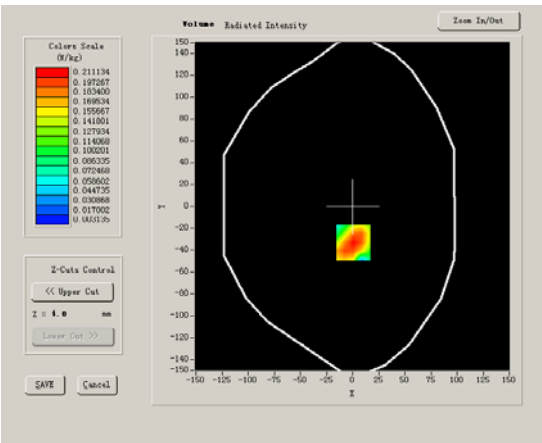
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Flat Plane
Device Position	Body
Band	GSM1900
Channels	Middle
Signal	GPRS

B. SAR Measurement Results

Middle Band SAR (Channel 661):

Frequency (MHz)	1880.000000
Relative permittivity (real part)	53.283431
Conductivity (S/m)	1.508114
Power drift(%)	-1.210000
Ambient Temperature:	22.7°C
Liquid Temperature:	22.3°C
ConvF:	40.625,34.773,38.535
Crest factor:	1:2

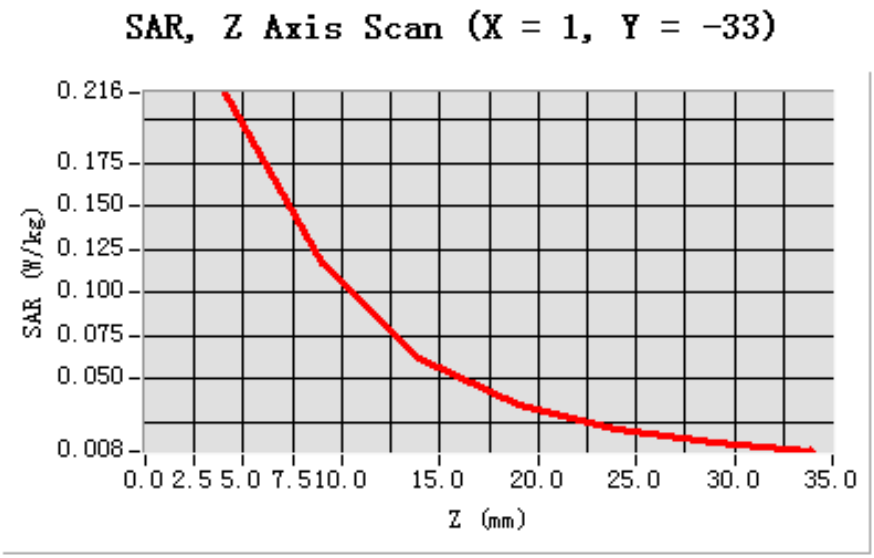
SURFACE SAR	VOLUME SAR
	

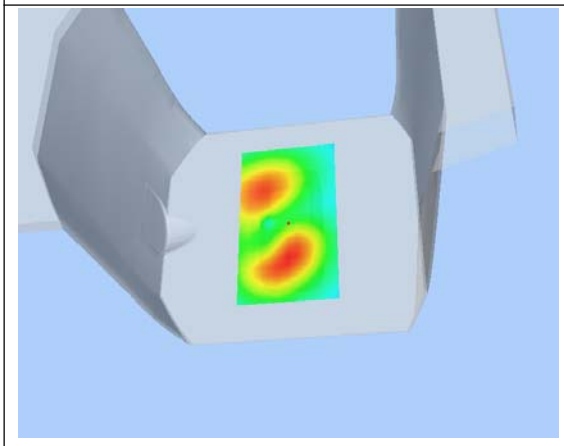
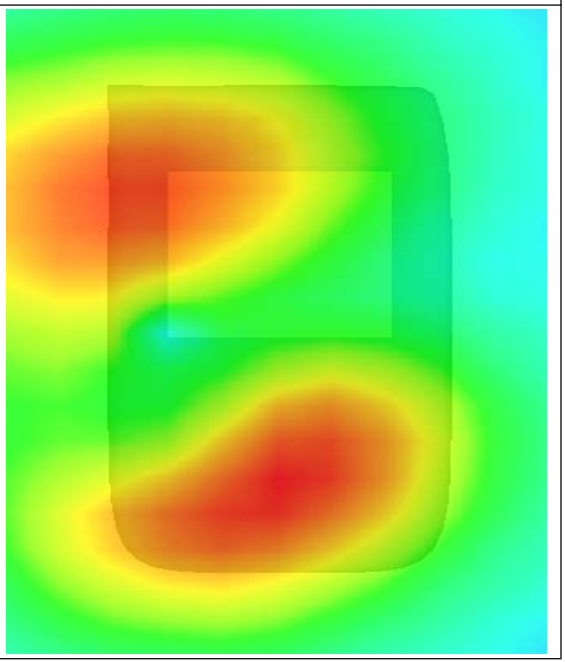
Maximum location: X=1.00, Y=-33.00

SAR 10g (W/Kg)	0.113859
SAR 1g (W/Kg)	0.205962

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.2160	0.1174	0.0619	0.0353	0.0211	0.0129



3D sceen 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: 2013.2.25
Measurement duration: 9 minutes 8 seconds

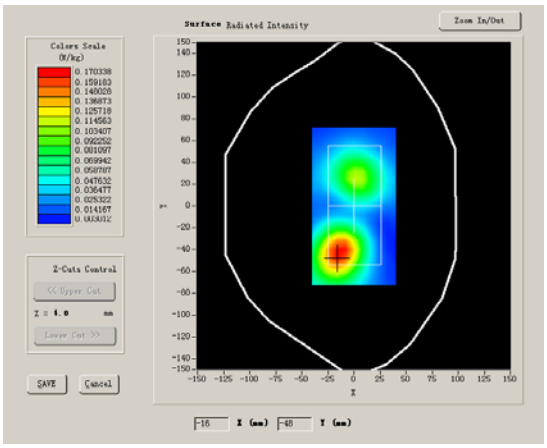
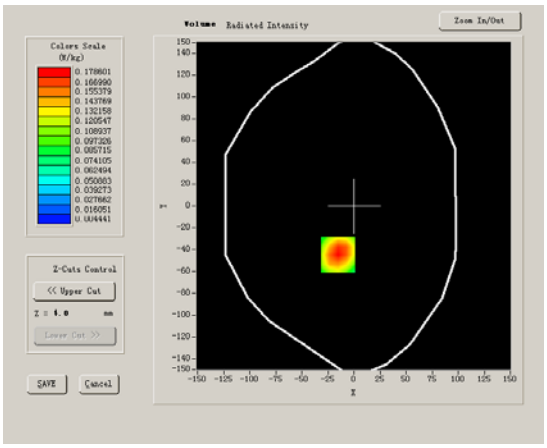
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Flat Plane
Device Position	Body
Band	GSM1900
Channels	Middle
Signal	GPRS

B. SAR Measurement Results

Middle Band SAR (Channel 661):

Frequency (MHz)	1880.000000
Relative permittivity (real part)	53.283431
Conductivity (S/m)	1.508114
Power drift(%)	-1.430000
Ambient Temperature:	22.7°C
Liquid Temperature:	22.3°C
ConvF:	40.625,34.773,38.535
Crest factor:	1:2

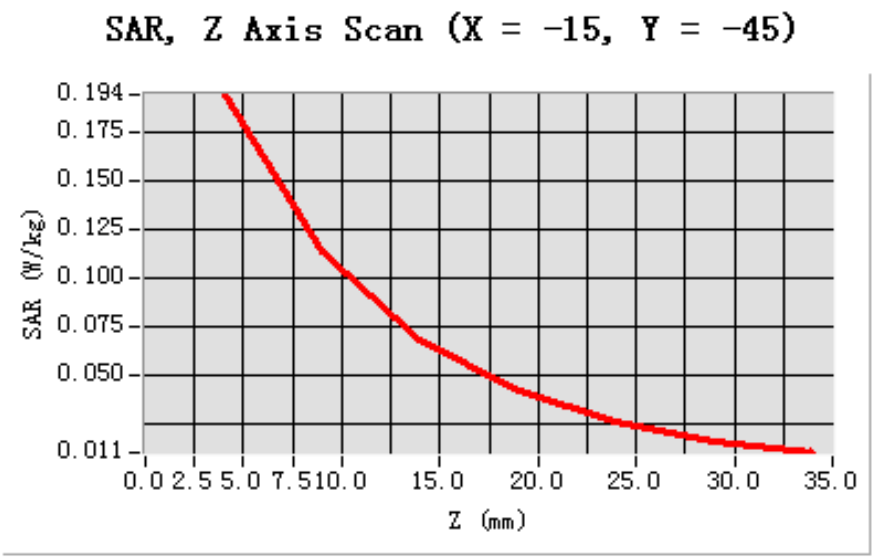
SURFACE SAR	VOLUME SAR
	

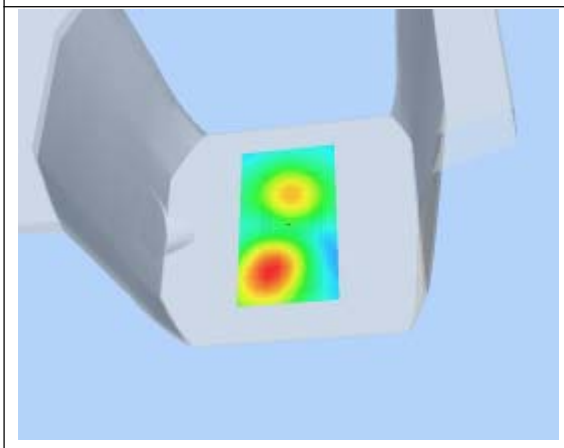
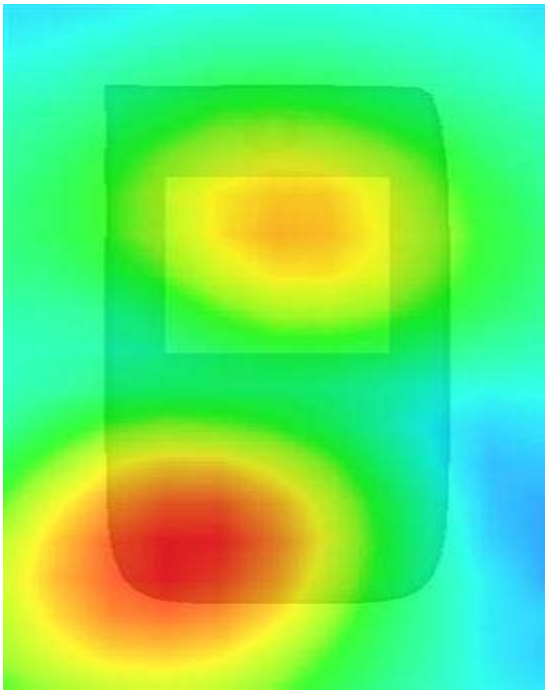
Maximum location: X=-15.00, Y=-45.00

SAR 10g (W/Kg)	0.108322
SAR 1g (W/Kg)	0.185816

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.1945	0.1138	0.0689	0.0423	0.0263	0.0169



3D sceen 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: 2013.2.25
Measurement duration: 9 minutes 9 seconds

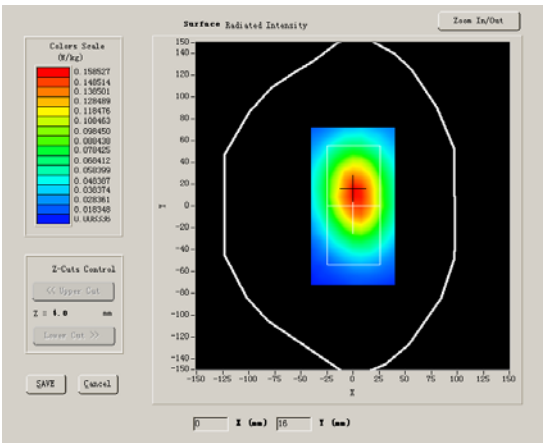
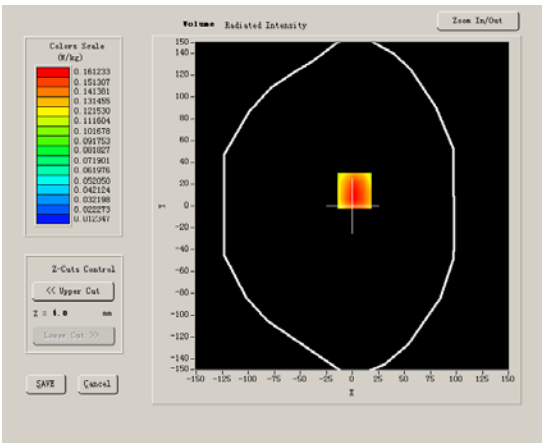
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Flat Plane
Device Position	Body
Band	GSM1900
Channels	Middle
Signal	GPRS

B. SAR Measurement Results

Middle Band SAR (Channel 661):

Frequency (MHz)	1880.000000
Relative permittivity (real part)	53.283431
Conductivity (S/m)	1.508114
Power drift(%)	-0.930000
Ambient Temperature:	22.7°C
Liquid Temperature:	22.3°C
ConvF:	40.625,34.773,38.535
Crest factor:	1:2

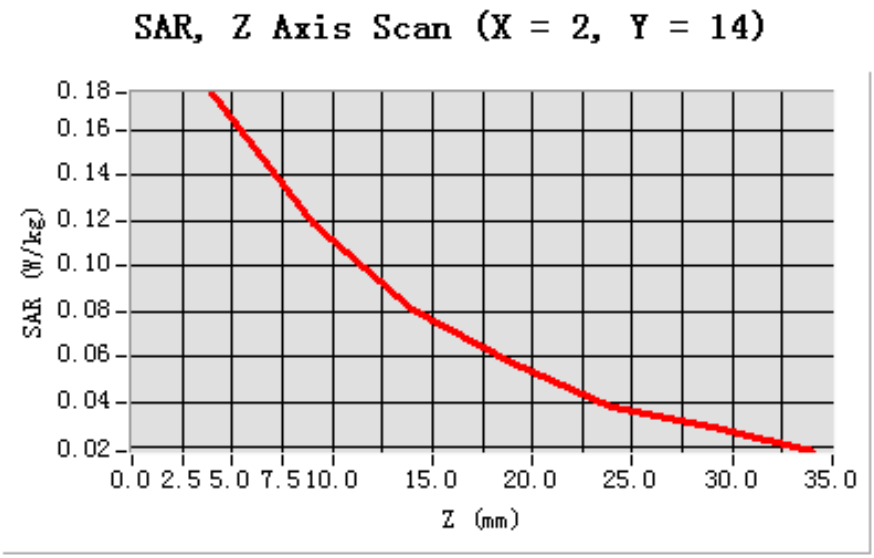
SURFACE SAR	VOLUME SAR
	

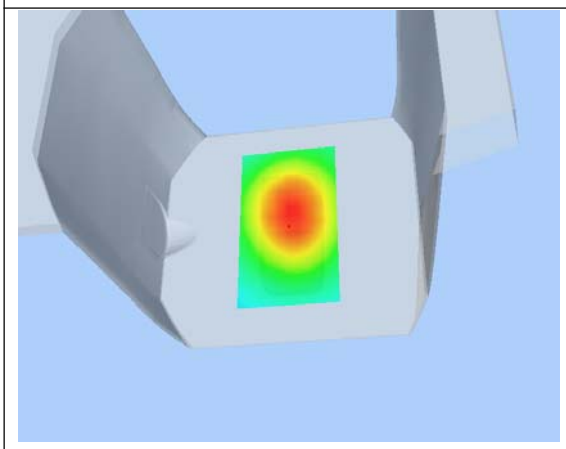
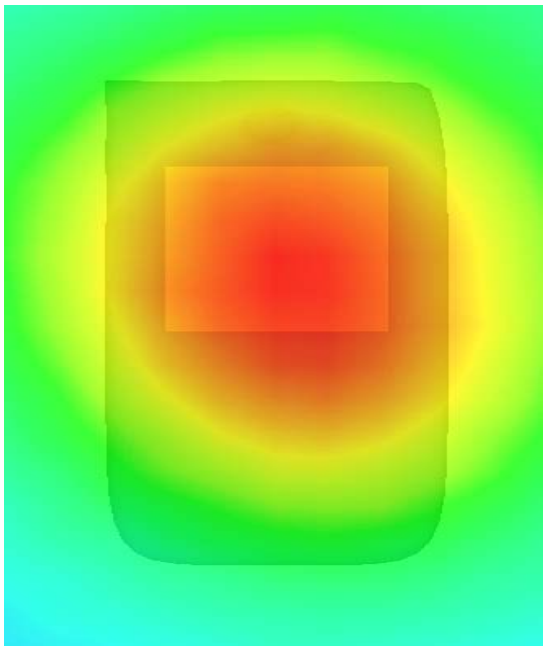
Maximum location: X=2.00, Y=14.00

SAR 10g (W/Kg)	0.111689
SAR 1g (W/Kg)	0.170117

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.1763	0.1190	0.0808	0.0570	0.0382	0.0287



3D sceen 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: 2013.2.25
Measurement duration: 9 minutes 9 seconds

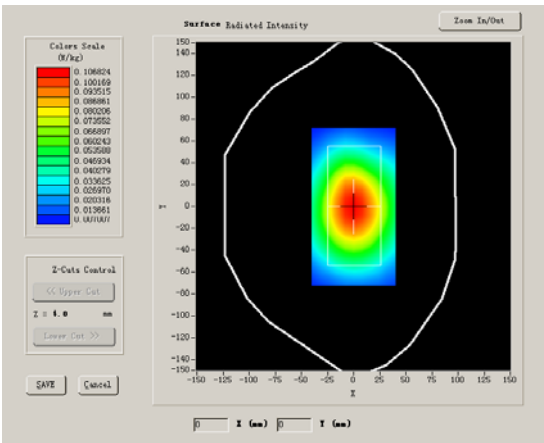
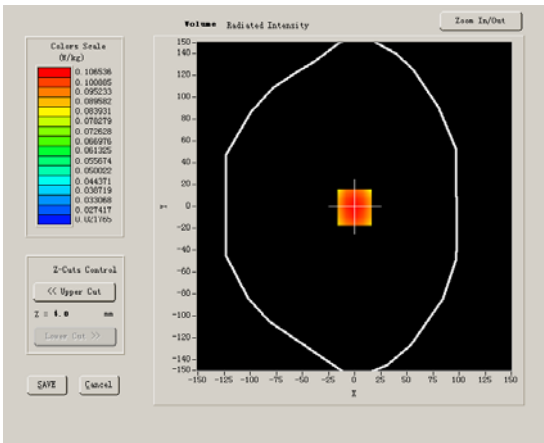
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Flat Plane
Device Position	Body
Band	GSM1900
Channels	Middle
Signal	GPRS

B. SAR Measurement Results

Middle Band SAR (Channel 661):

Frequency (MHz)	1880.000000
Relative permittivity (real part)	53.283431
Conductivity (S/m)	1.508114
Power drift(%)	-1.130000
Ambient Temperature:	22.7°C
Liquid Temperature:	22.3°C
ConvF:	40.625,34.773,38.535
Crest factor:	1:2

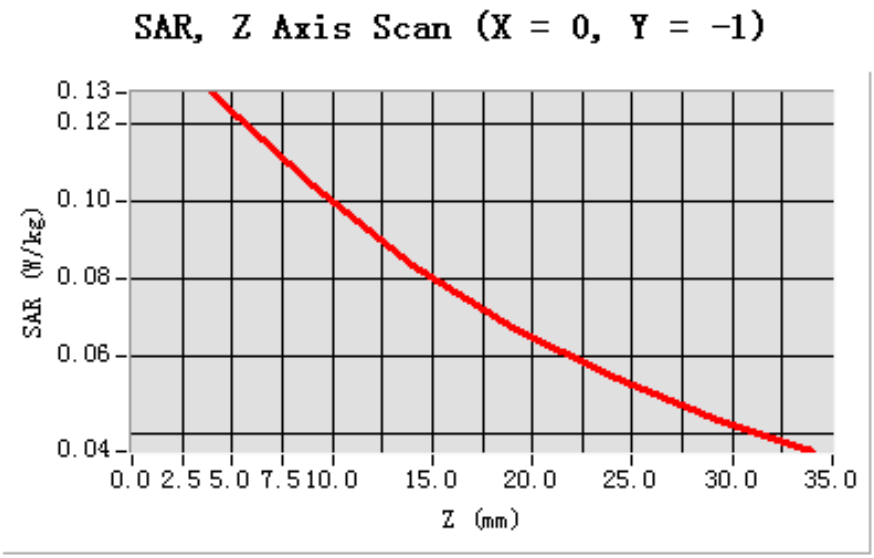
SURFACE SAR	VOLUME SAR
	

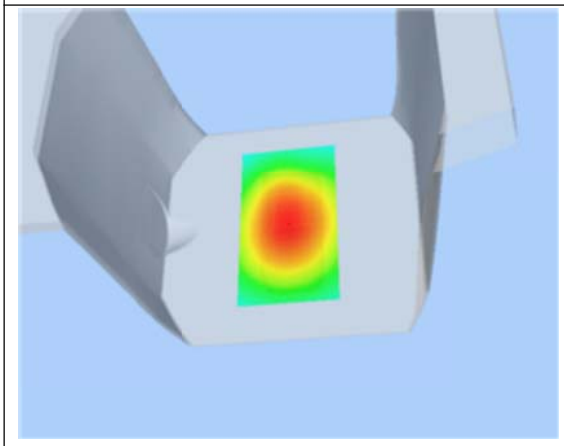
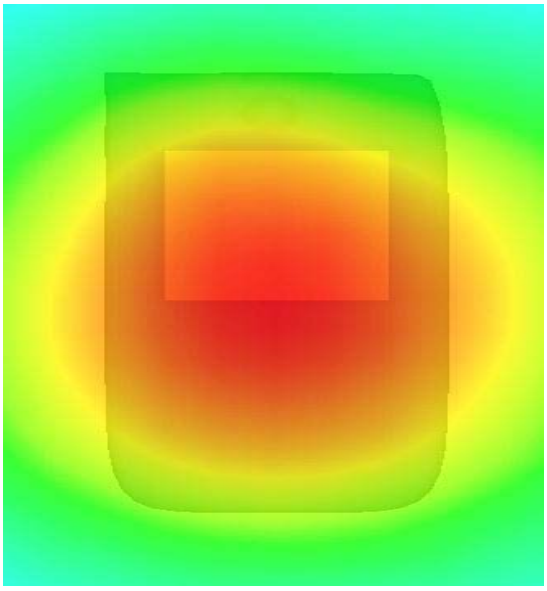
Maximum location: X=0.00, Y=-1.00

SAR 10g (W/Kg)	0.096234
SAR 1g (W/Kg)	0.124151

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.1279	0.1039	0.0832	0.0674	0.0545	0.0437



3D sceen 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: 2013.2.25
Measurement duration: 9 minutes 9 seconds

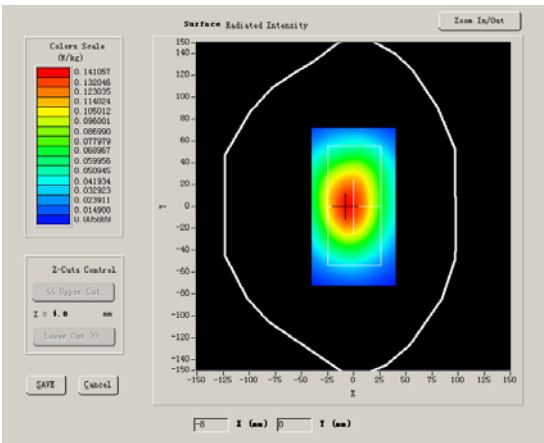
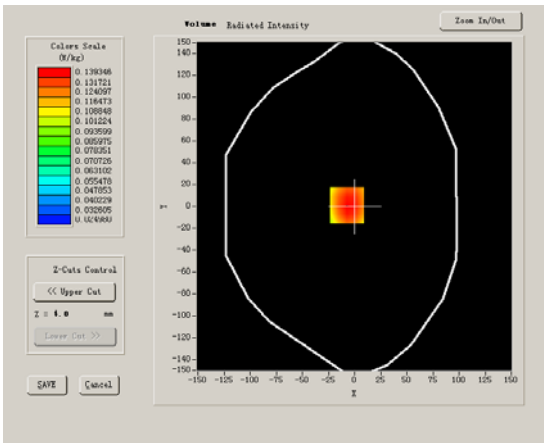
A. Experimental conditions.

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)	53.283431
Conductivity (S/m)	1.508114
Power drift(%)	-1.480000
Ambient Temperature:	22.7°C
Liquid Temperature:	22.3°C
ConvF:	40.625,34.773,38.535
Crest factor:	1:2

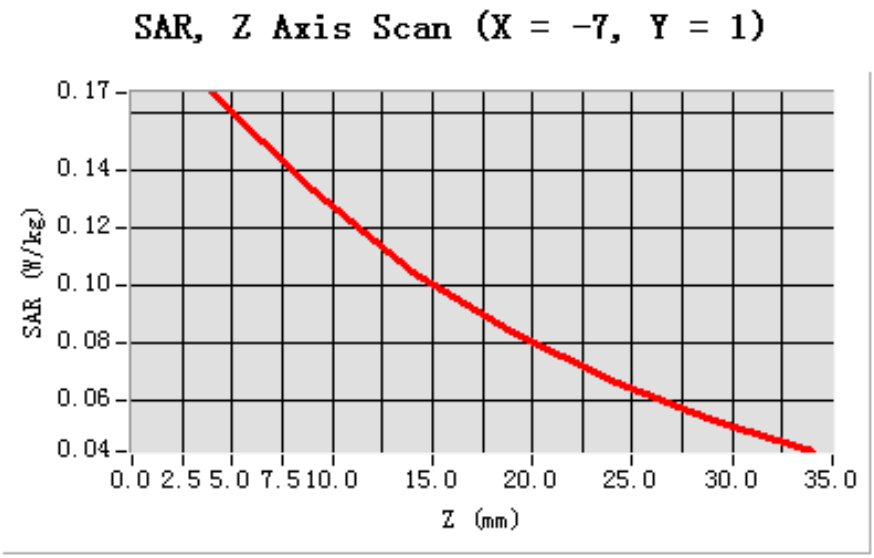
SURFACE SAR	VOLUME SAR
	

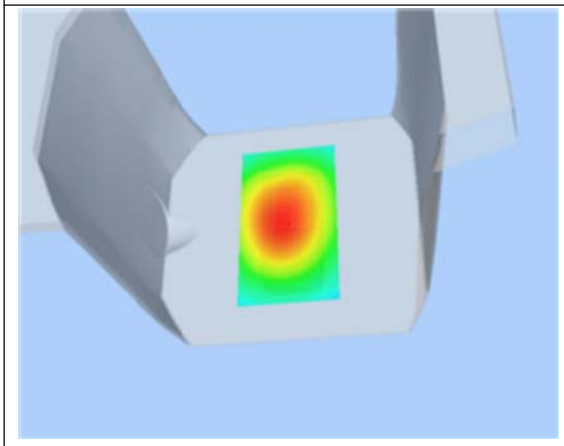
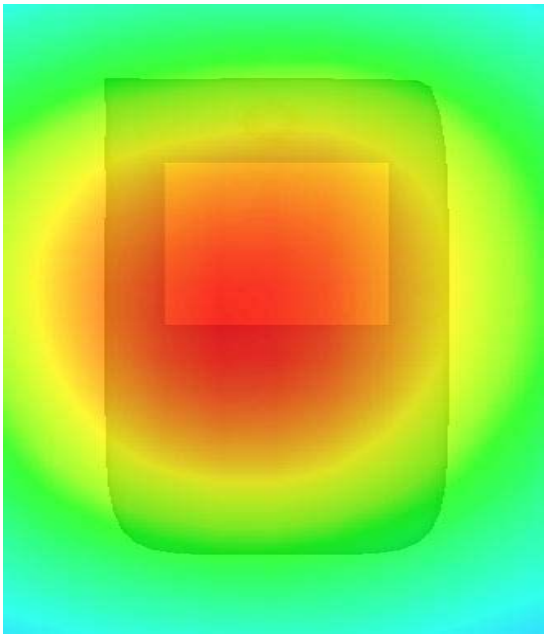
Maximum location: X=-7.00, Y=1.00

SAR 10g (W/Kg)	0.123824
SAR 1g (W/Kg)	0.162860

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.1672	0.1331	0.1048	0.0840	0.0674	0.0531



3D sceen 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: 2013.2.25
Measurement duration: 9 minutes 15 seconds

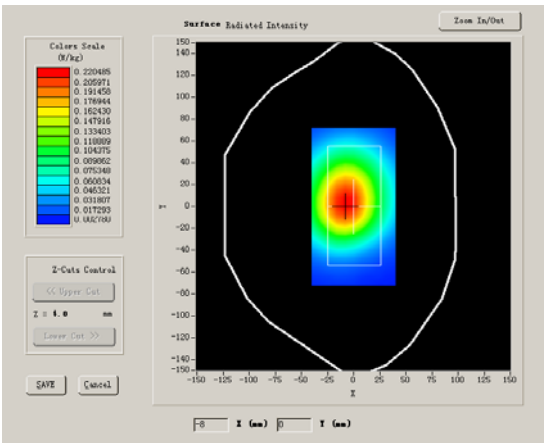
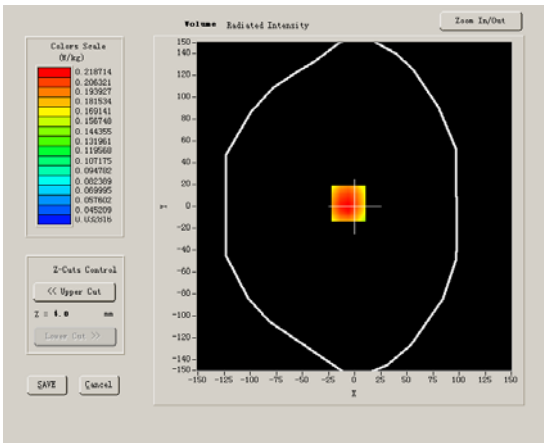
A. Experimental conditions.

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

B. SAR Measurement Results

Lower Band SAR (Channel 4132):

Frequency (MHz)	826.400000
Relative permittivity (real part)	55.016124
Conductivity (S/m)	0.951510
Power drift (%)	-0.030000
Ambient Temperature:	22.7°C
Liquid Temperature:	22.3°C
ConvF:	28.559, 25.681, 27.588
Crest factor:	1:1

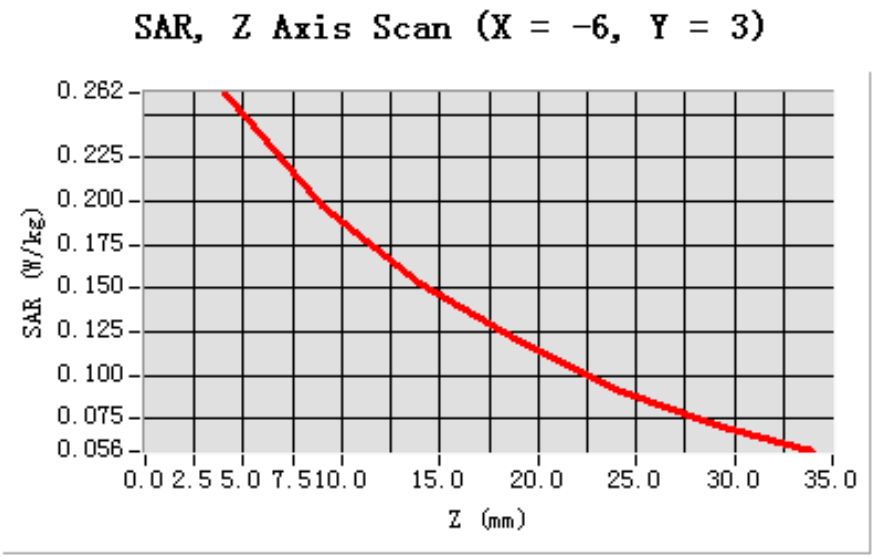
SURFACE SAR	VOLUME SAR
	

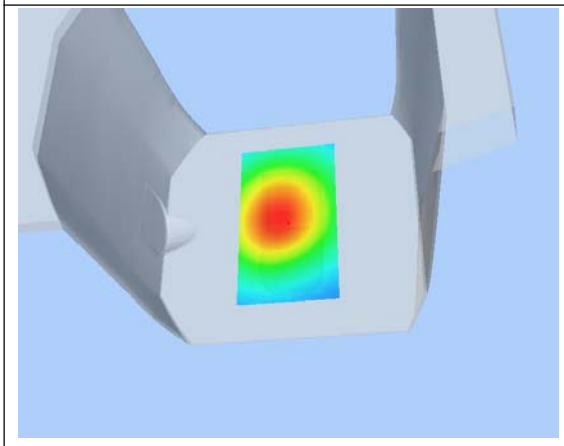
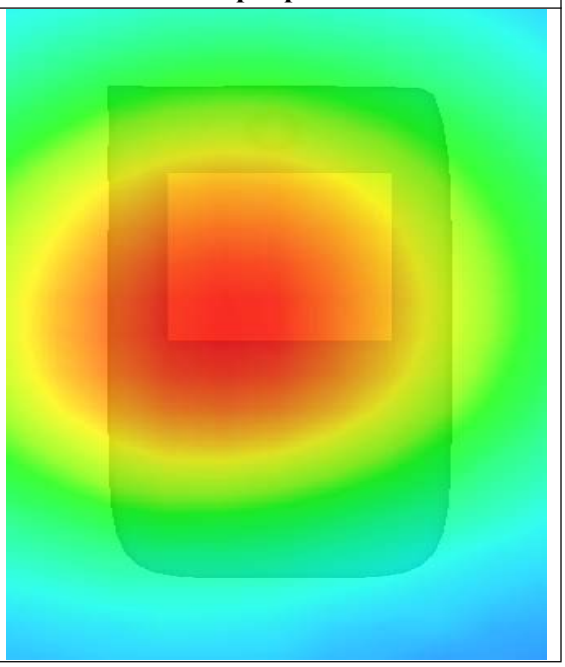
Maximum location: X=-6.00, Y=3.00

SAR 10g (W/Kg)	0.185704
SAR 1g (W/Kg)	0.258275

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.2625	0.1974	0.1531	0.1196	0.0912	0.0712



3D sceen 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: 2013.2.25
Measurement duration: 9 minutes 16 seconds

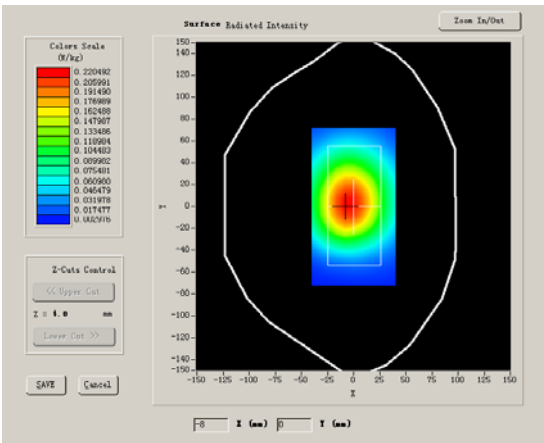
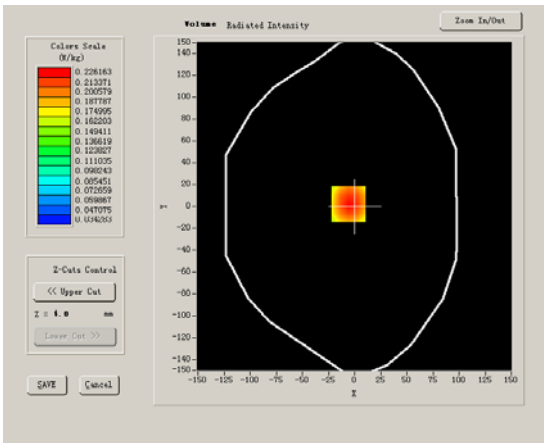
A. Experimental conditions.

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

B. SAR Measurement Results

Lower Band SAR (Channel 4132):

Frequency (MHz)	826.400000
Relative permittivity (real part)	55.016124
Conductivity (S/m)	0.951510
Power drift (%)	-1.390000
Ambient Temperature:	22.7°C
Liquid Temperature:	22.3°C
ConvF:	28.559, 25.681, 27.588
Crest factor:	1:1

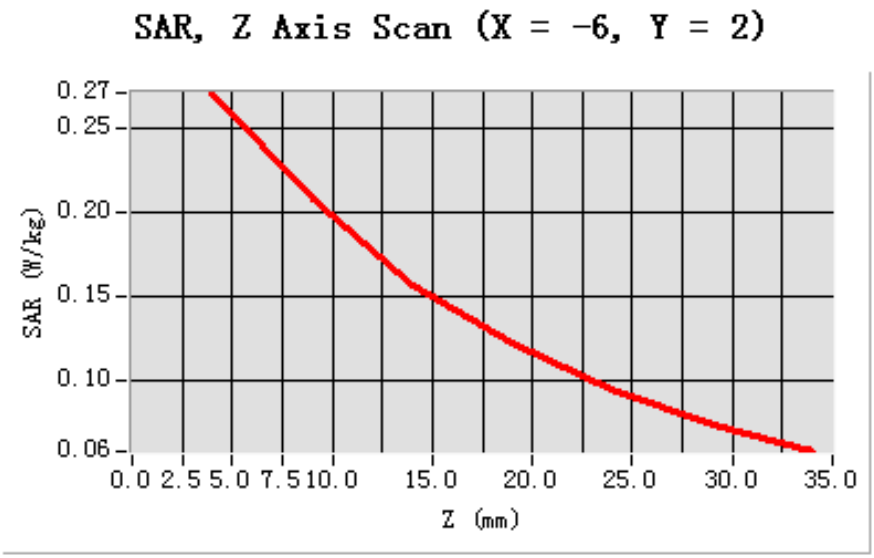
SURFACE SAR	VOLUME SAR
	

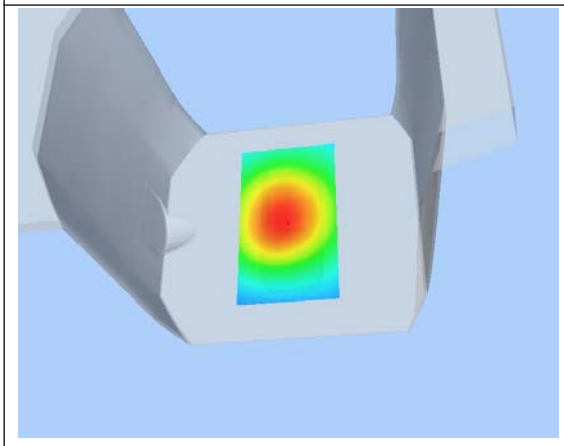
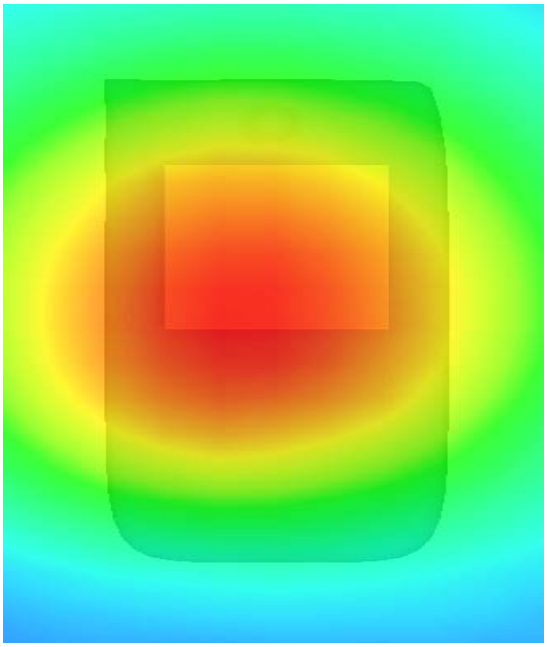
Maximum location: X=-6.00, Y=2.00

SAR 10g (W/Kg)	0.191278
SAR 1g (W/Kg)	0.261305

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.2714	0.2079	0.1576	0.1229	0.0951	0.0744



3D sceen 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: 2013.2.25
Measurement duration: 9 minutes 16 seconds

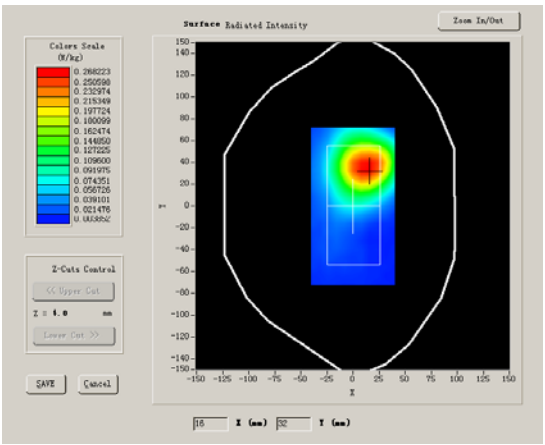
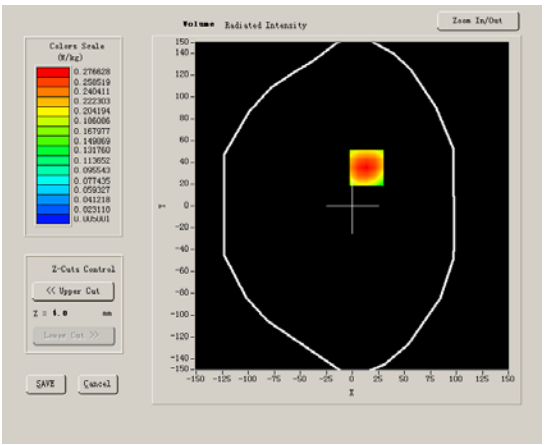
A. Experimental conditions.

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

B. SAR Measurement Results

Lower Band SAR (Channel 4132):

Frequency (MHz)	826.400000
Relative permittivity (real part)	55.016124
Conductivity (S/m)	0.951510
Power drift (%)	-2.190000
Ambient Temperature:	22.7°C
Liquid Temperature:	22.3°C
ConvF:	28.559, 25.681, 27.588
Crest factor:	1:1

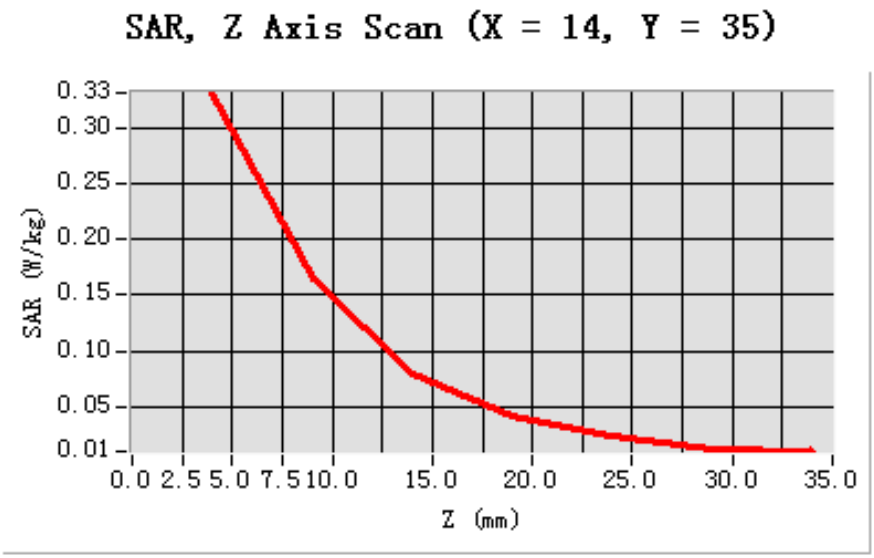
SURFACE SAR	VOLUME SAR
	

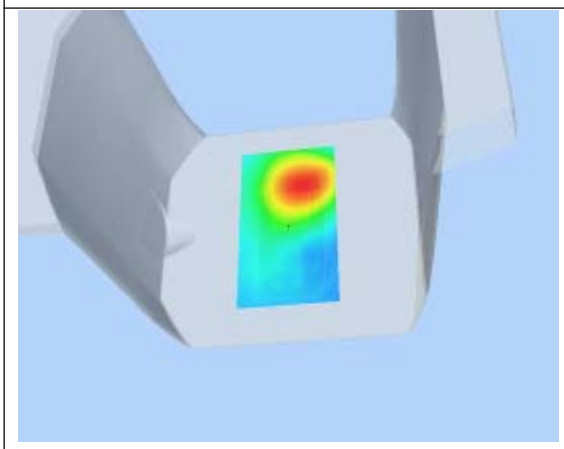
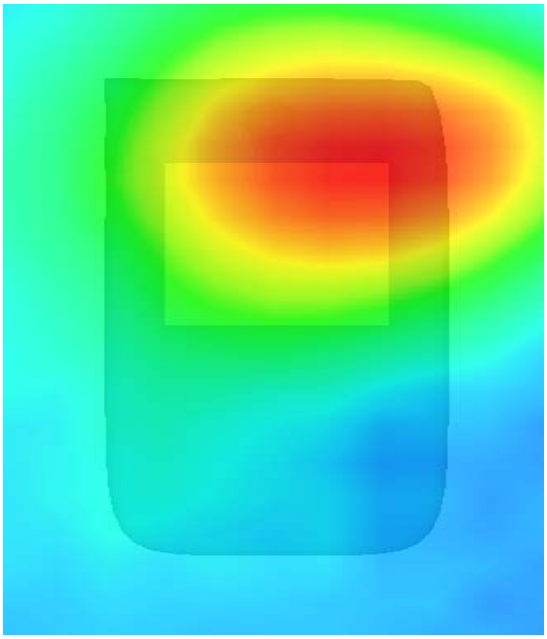
Maximum location: X=14.00, Y=35.00

SAR 10g (W/Kg)	0.173793
SAR 1g (W/Kg)	0.321461

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.3320	0.1645	0.0795	0.0415	0.0226	0.0115



3D sceen 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: 2013.2.25
Measurement duration: 9 minutes 16 seconds

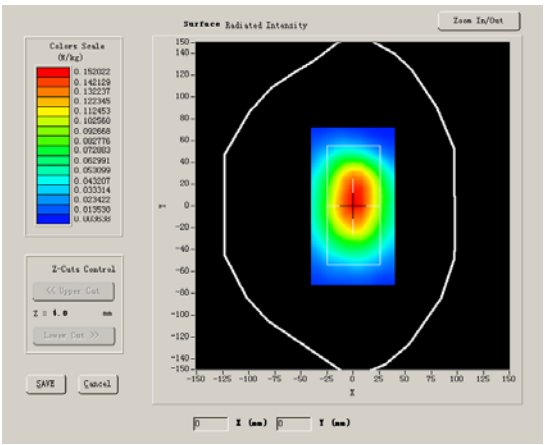
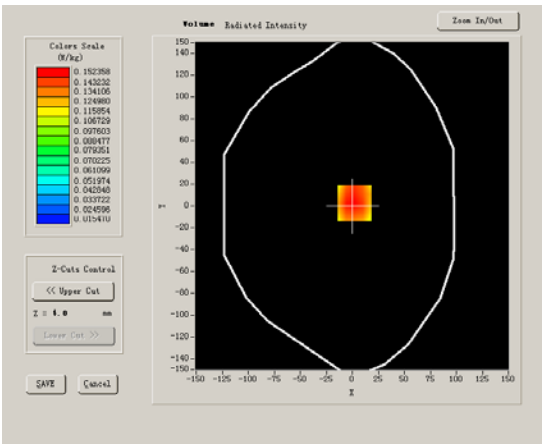
A. Experimental conditions.

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

B. SAR Measurement Results

Lower Band SAR (Channel 4132):

Frequency (MHz)	826.400000
Relative permittivity (real part)	55.016124
Conductivity (S/m)	0.951510
Power drift (%)	-1.390000
Ambient Temperature:	22.7°C
Liquid Temperature:	22.3°C
ConvF:	28.559, 25.681, 27.588
Crest factor:	1:1

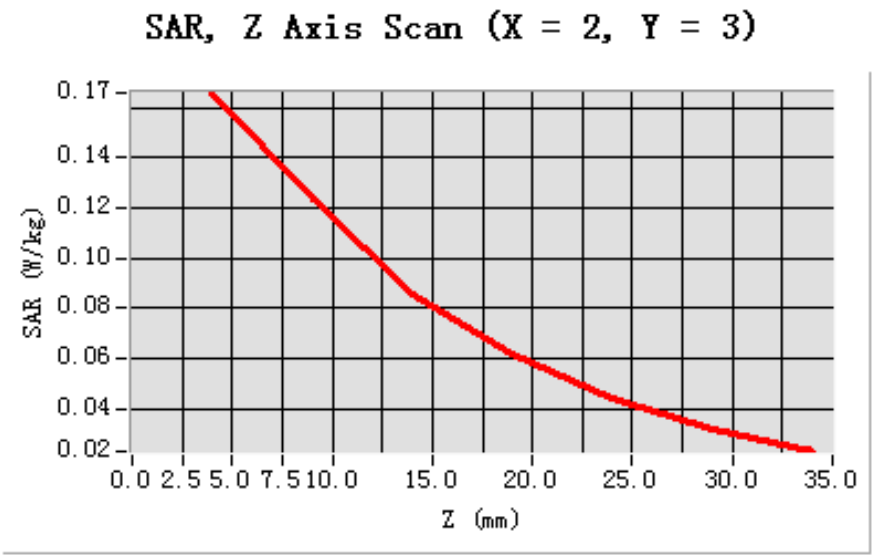
SURFACE SAR	VOLUME SAR
	

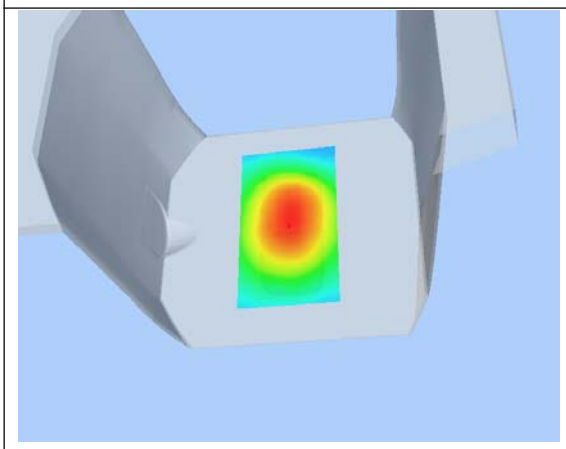
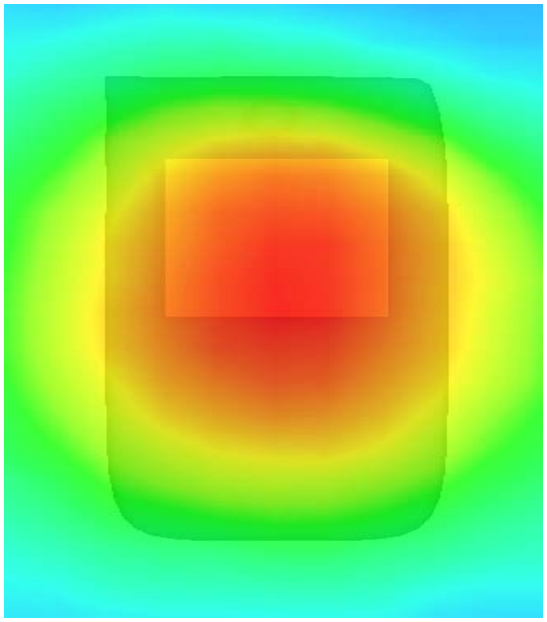
Maximum location: X=2.00, Y=3.00

SAR 10g (W/Kg)	0.110669
SAR 1g (W/Kg)	0.160252

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.1659	0.1232	0.0852	0.0621	0.0439	0.0316



3D sceen 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: 2013.2.25
Measurement duration: 9 minutes 16 seconds

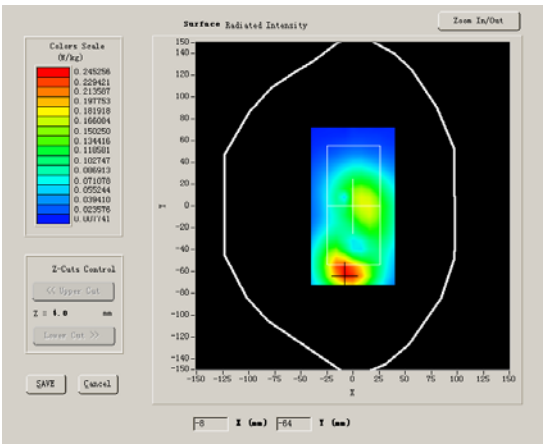
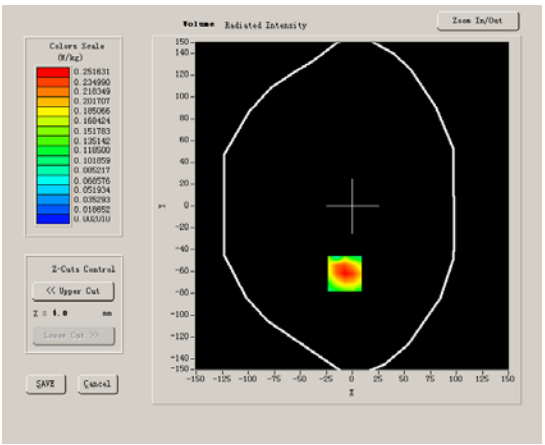
A. Experimental conditions.

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

B. SAR Measurement Results

Lower Band SAR (Channel 4132):

Frequency (MHz)	826.400000
Relative permittivity (real part)	55.016124
Conductivity (S/m)	0.951510
Power drift (%)	-1.080000
Ambient Temperature:	22.7°C
Liquid Temperature:	22.3°C
ConvF:	28.559, 25.681, 27.588
Crest factor:	1:1

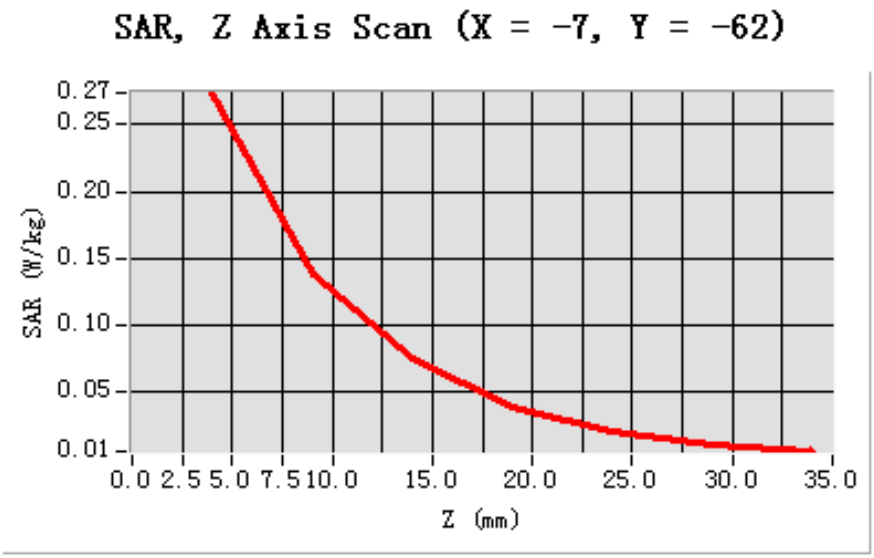
SURFACE SAR	VOLUME SAR
	

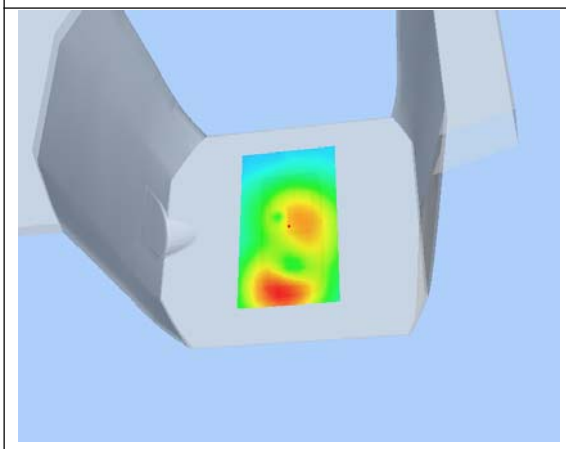
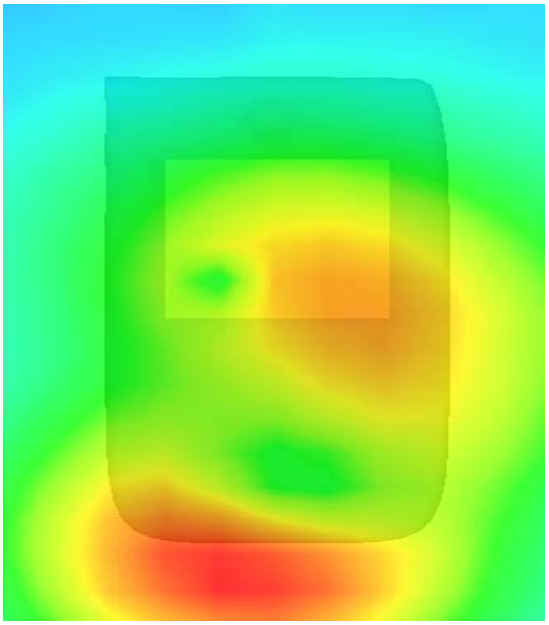
Maximum location: X=-7.00, Y=-62.00

SAR 10g (W/Kg)	0.136365
SAR 1g (W/Kg)	0.263351

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.2740	0.1373	0.0750	0.0384	0.0194	0.0109



3D sceen 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: 2013.2.25
Measurement duration: 9 minutes 7 seconds

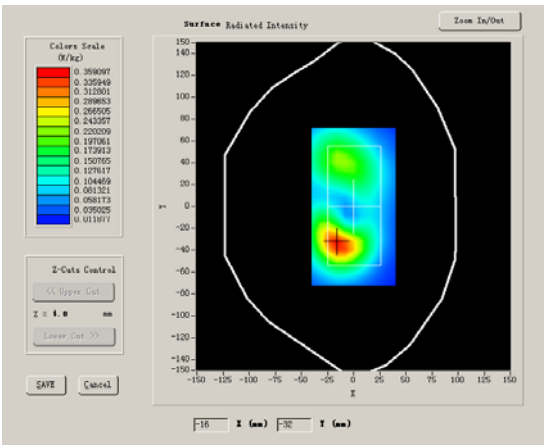
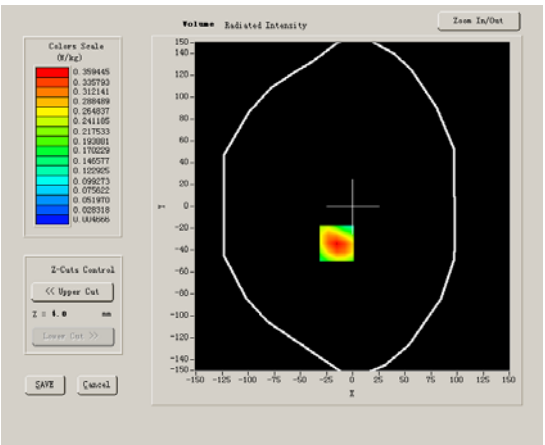
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	WCDMA1900
Channels	High
Signal	CDMA

B. SAR Measurement Results

Higher Band SAR (Channel 9538):

Frequency (MHz)	1907.600000
Relative permittivity (real part)	53.283431
Conductivity (S/m)	1.508114
Power drift (%)	0.060000
Ambient Temperature:	22.7°C
Liquid Temperature:	22.3°C
ConvF:	40.625,34.773,38.535
Crest factor:	1:1

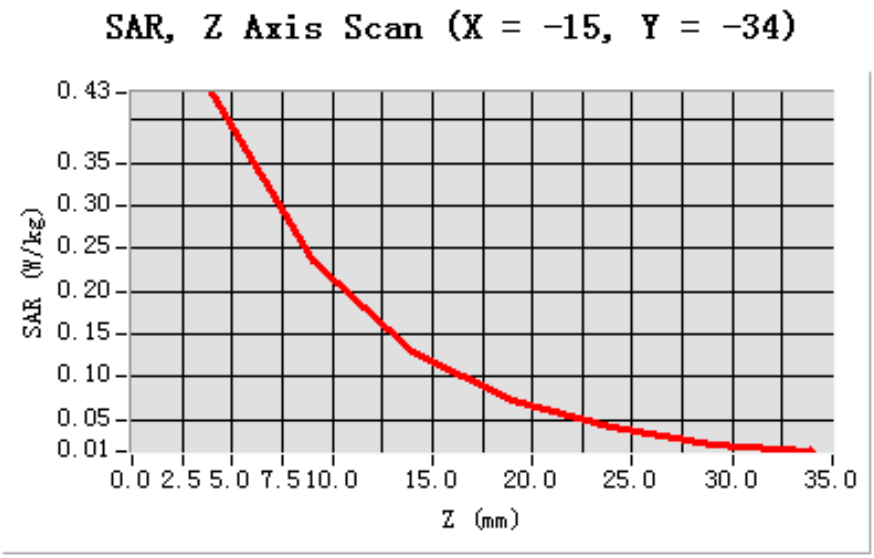
SURFACE SAR	VOLUME SAR
	

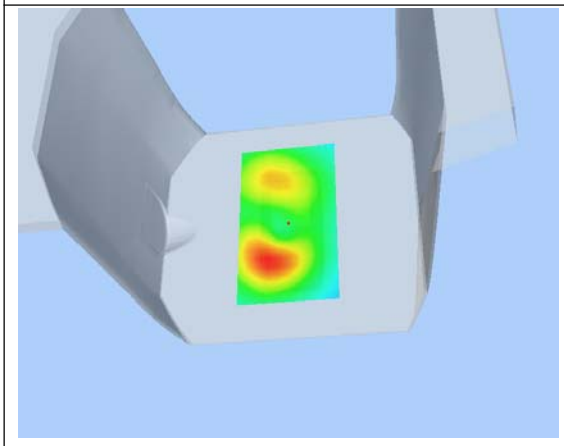
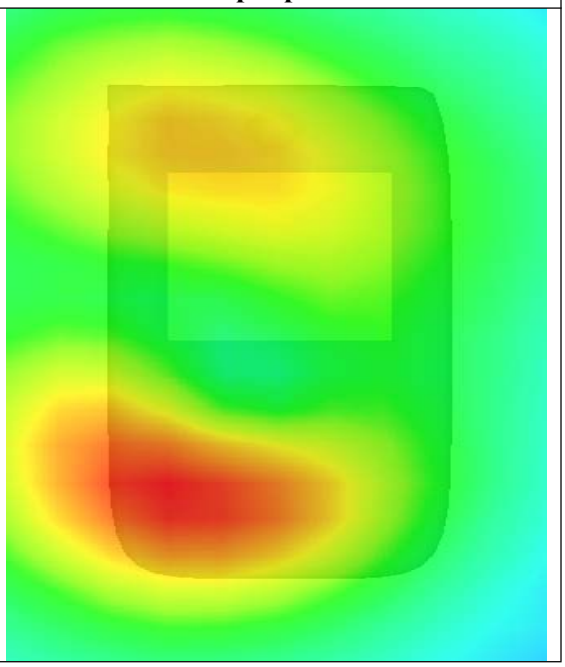
Maximum location: X=-15.00, Y=-34.00

SAR 10g (W/Kg)	0.226679
SAR 1g (W/Kg)	0.411400

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.4314	0.2344	0.1292	0.0728	0.0414	0.0208



3D sceen 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: 2013.2.25
Measurement duration: 9 minutes 14 seconds

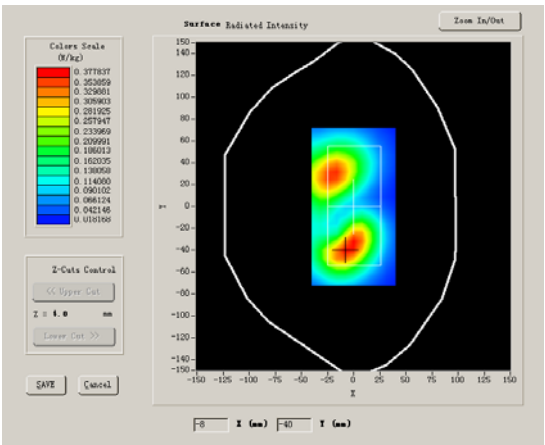
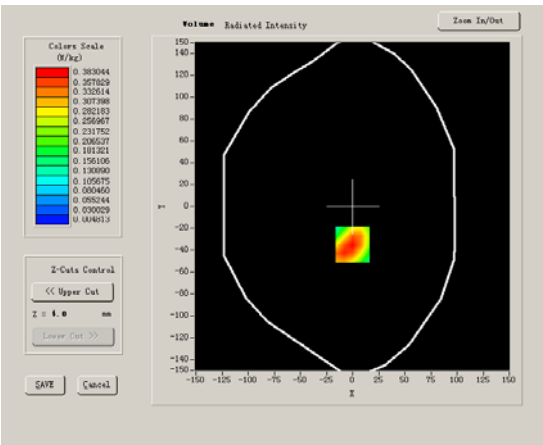
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	WCDMA1900
Channels	High
Signal	CDMA

B. SAR Measurement Results

Higher Band SAR (Channel 9538):

Frequency (MHz)	1907.600000
Relative permittivity (real part)	53.283431
Conductivity (S/m)	1.508114
Power drift (%)	0.080000
Ambient Temperature:	22.7°C
Liquid Temperature:	22.3°C
ConvF:	40.625,34.773,38.535
Crest factor:	1:1

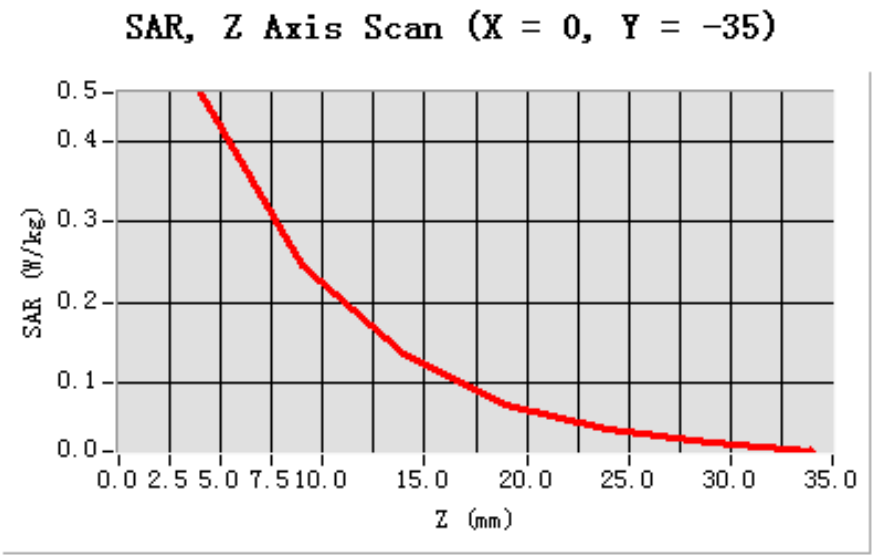
SURFACE SAR	VOLUME SAR
	

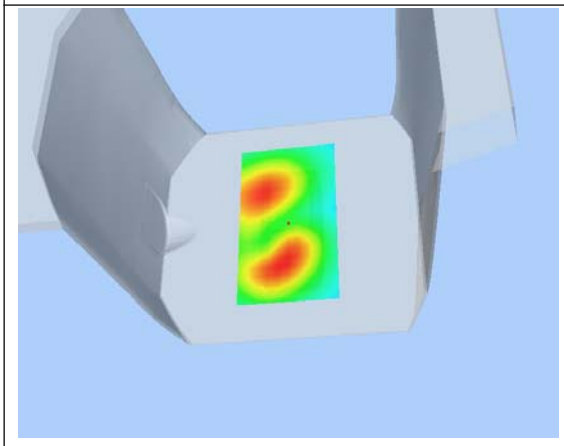
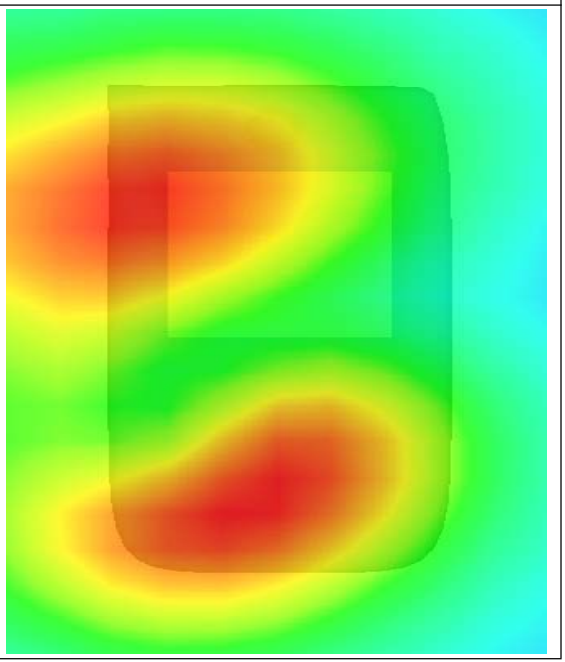
Maximum location: X=0.00, Y=-35.00

SAR 10g (W/Kg)	0.243504
SAR 1g (W/Kg)	0.438716

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.4597	0.2447	0.1373	0.0740	0.0419	0.0254



3D sceen 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: 2013.2.25
Measurement duration: 9 minutes 14 seconds

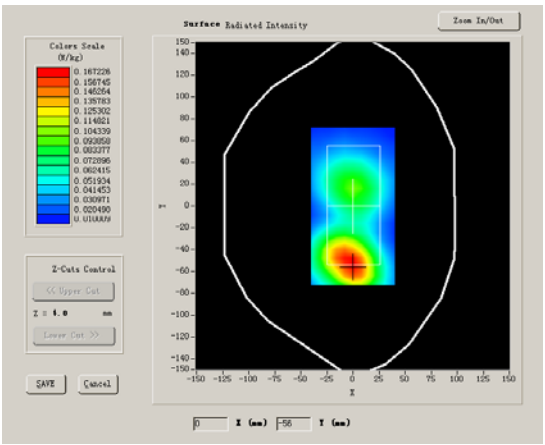
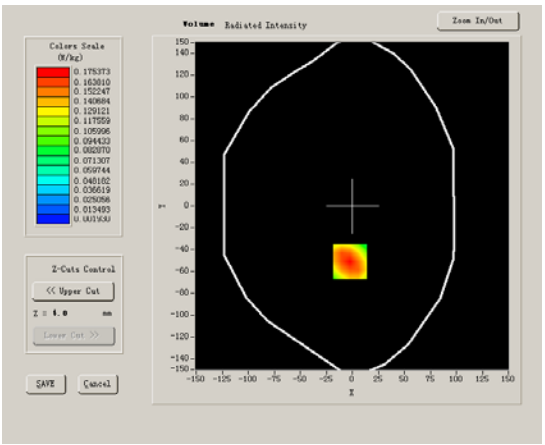
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	WCDMA1900
Channels	High
Signal	CDMA

B. SAR Measurement Results

Higher Band SAR (Channel 9538):

Frequency (MHz)	1907.600000
Relative permittivity (real part)	53.283431
Conductivity (S/m)	1.508114
Power drift (%)	-0.320000
Ambient Temperature:	22.7°C
Liquid Temperature:	22.3°C
ConvF:	40.625,34.773,38.535
Crest factor:	1:1

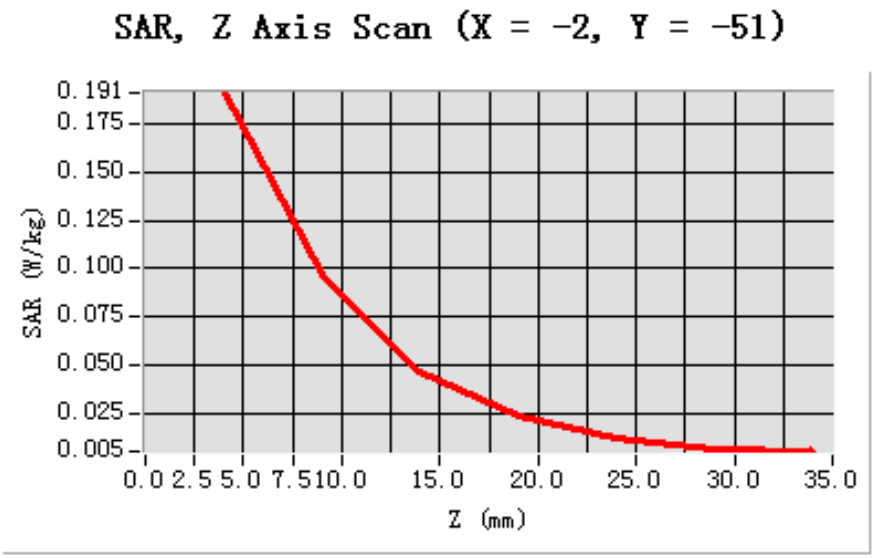
SURFACE SAR	VOLUME SAR
	

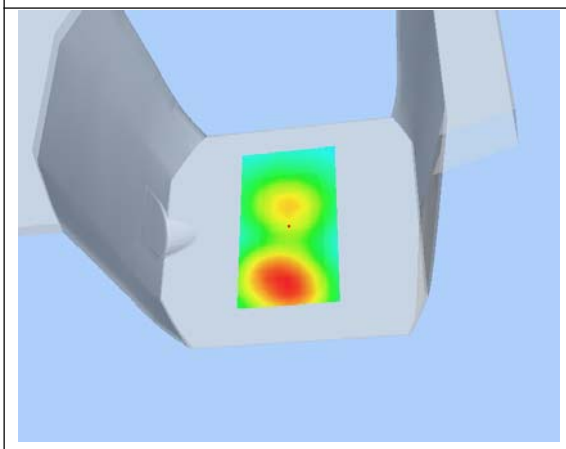
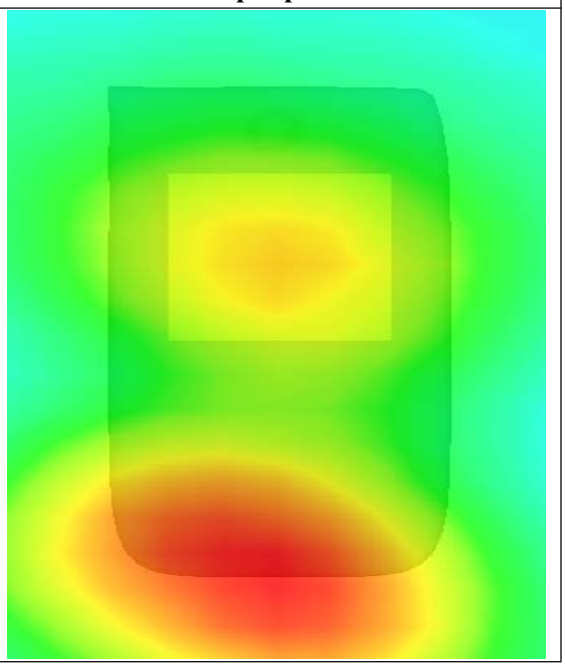
Maximum location: X=-2.00, Y=-51.00

SAR 10g (W/Kg)	0.098172
SAR 1g (W/Kg)	0.180994

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.1910	0.0967	0.0470	0.0240	0.0126	0.0069



3D sceen shot	Hot spot position
	

MEASUREMENT 21

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 2013.2.25
Measurement duration: 9 minutes 14 seconds

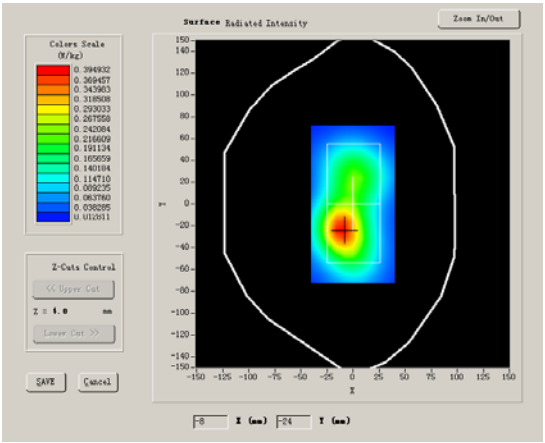
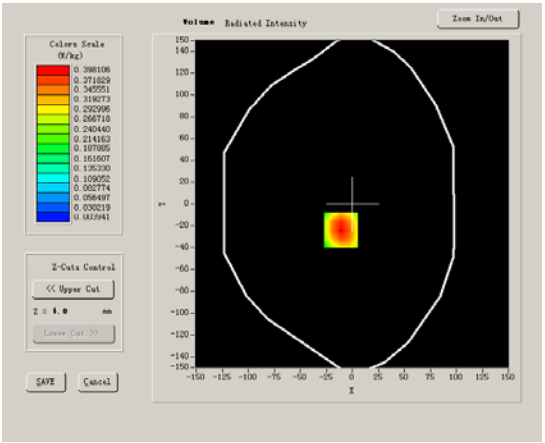
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	WCDMA1900
Channels	High
Signal	CDMA

B. SAR Measurement Results

Higher Band SAR (Channel 9538):

Frequency (MHz)	1907.600000
Relative permittivity (real part)	53.283431
Relative permittivity	15.877050
Conductivity (S/m)	1.508114
Power drift (%)	-0.710000
Ambient Temperature:	22.7°C
Liquid Temperature:	22.3°C
ConvF:	40.625,34.773,38.535
Crest factor:	1:1

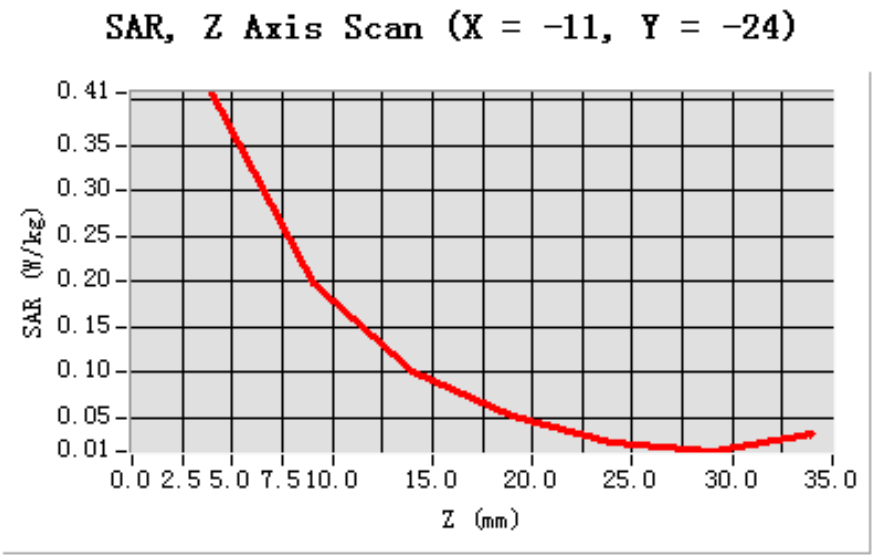
SURFACE SAR	VOLUME SAR
	

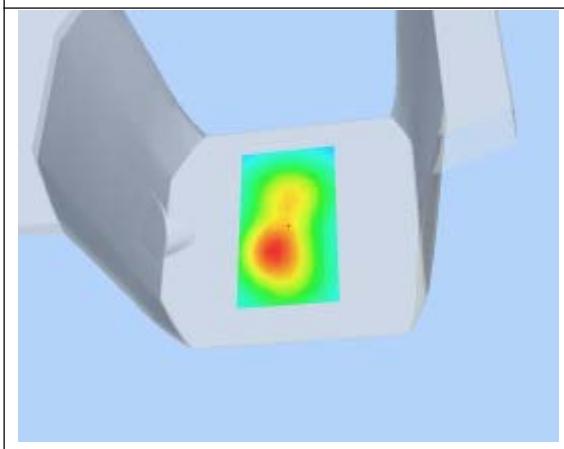
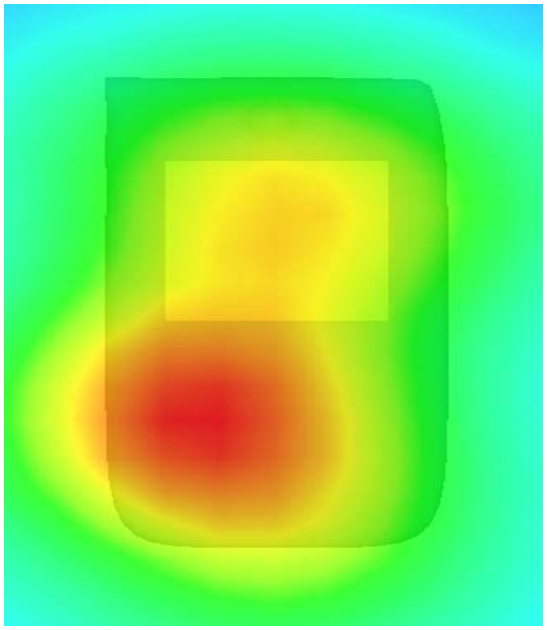
Maximum location: X=-11.00, Y=-24.00

SAR 10g (W/Kg)	0.208716
SAR 1g (W/Kg)	0.392826

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.4074	0.1981	0.1003	0.0502	0.0225	0.0122



3D sceen shot	Hot spot position
	

MEASUREMENT 22

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 2013.2.25
Measurement duration: 9 minutes 14 seconds

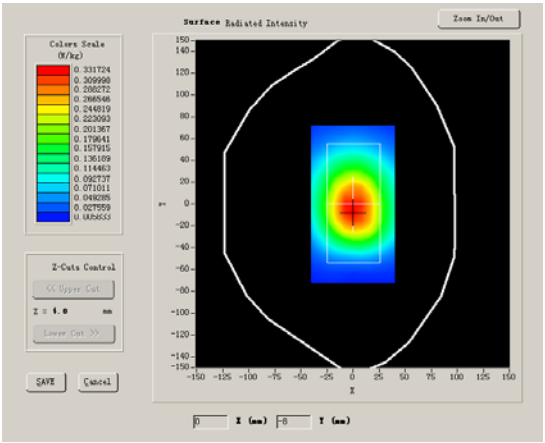
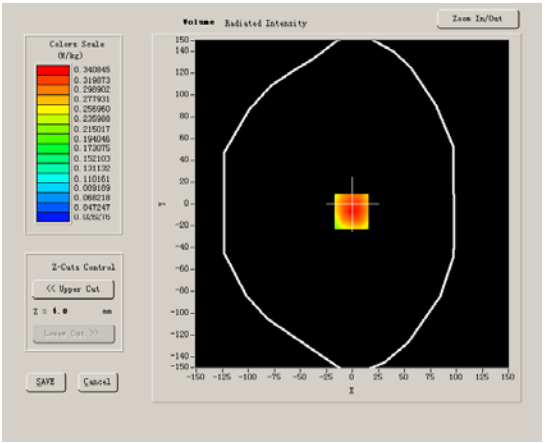
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	WCDMA1900
Channels	High
Signal	CDMA

B. SAR Measurement Results

Higher Band SAR (Channel 9538):

Frequency (MHz)	1907.600000
Relative permittivity (real part)	53.283431
Relative permittivity	15.877050
Conductivity (S/m)	1.508114
Power drift (%)	-1.010000
Ambient Temperature:	22.7°C
Liquid Temperature:	22.3°C
ConvF:	40.625,34.773,38.535
Crest factor:	1:1

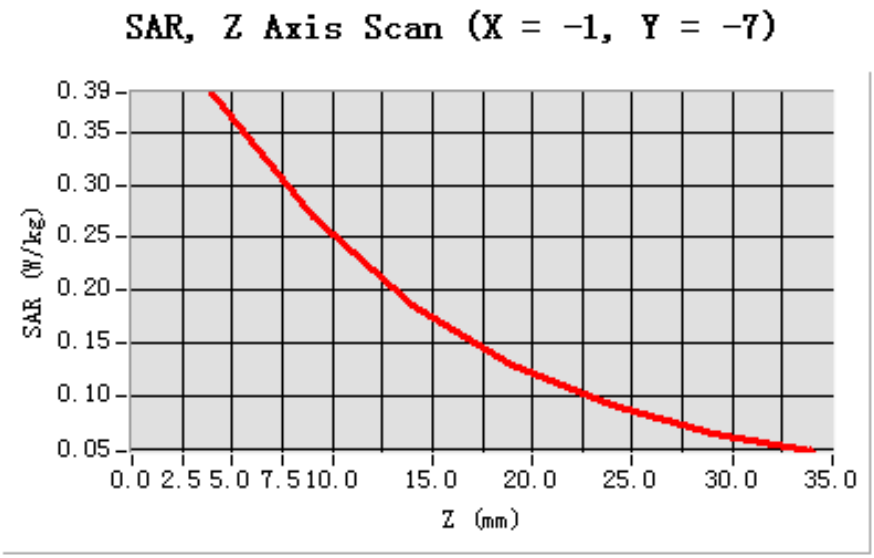
SURFACE SAR	VOLUME SAR
	

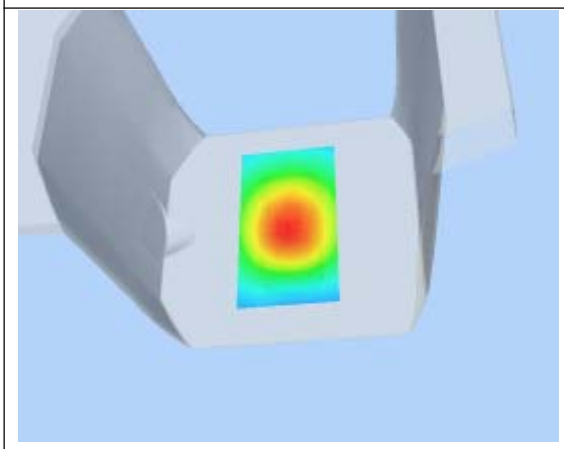
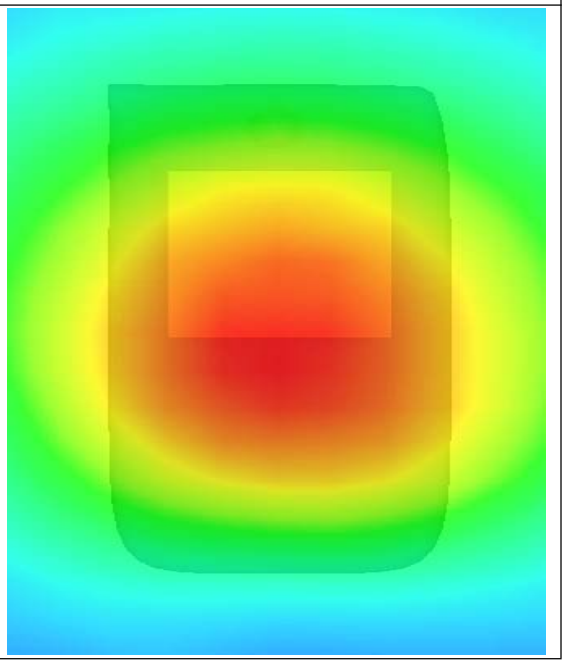
Maximum location: X=-1.00, Y=-7.00

SAR 10g (W/Kg)	0.249927
SAR 1g (W/Kg)	0.370563

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.3870	0.2691	0.1868	0.1305	0.0908	0.0655



3D sceen shot	Hot spot position
	

MEASUREMENT 23

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=5mm, dy=5mm, dz=5mm
Date of measurement: 2013.2.25
Measurement duration: 9 minutes 10 seconds

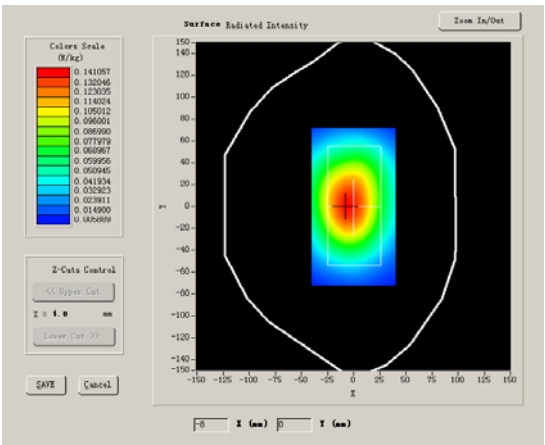
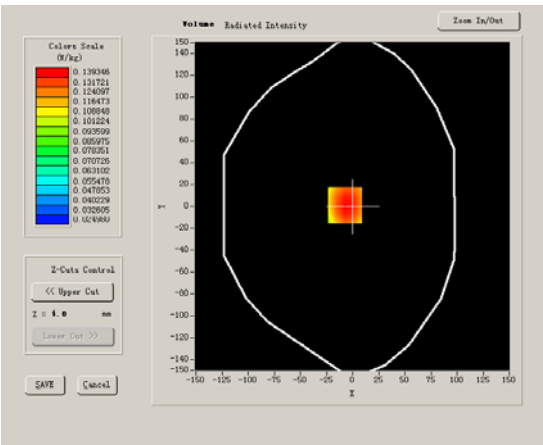
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	802.11B
Channels	High
Signal	DSSS

B. SAR Measurement Results

High Band SAR (Channel 11)

Frequency (MHz)	2462.000000
Relative permittivity (real part)	53.461064
Conductivity (S/m)	1.853317
Power drift (%)	-1.710000
Ambient Temperature:	22.0°C
Liquid Temperature:	21.8°C
ConvF:	39.772,33.946,37.835
Crest factor:	1:1

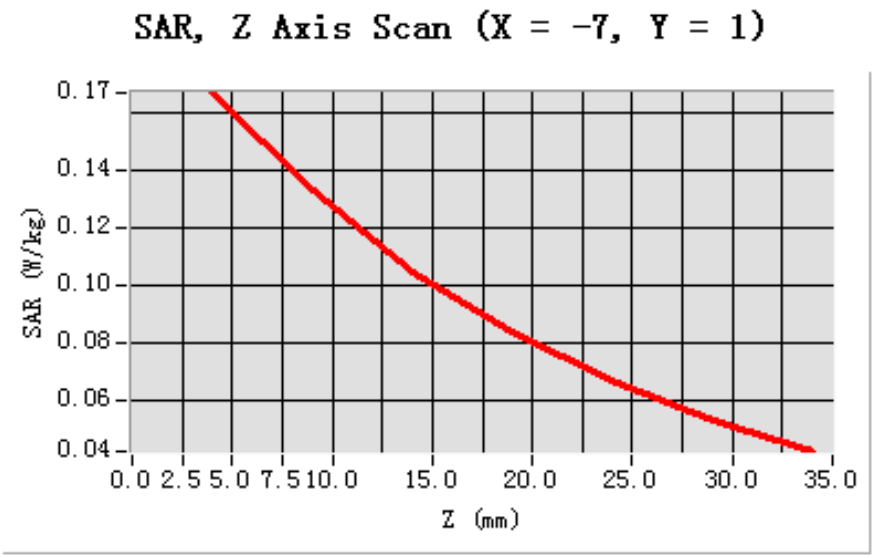
SURFACE SAR	VOLUME SAR
	

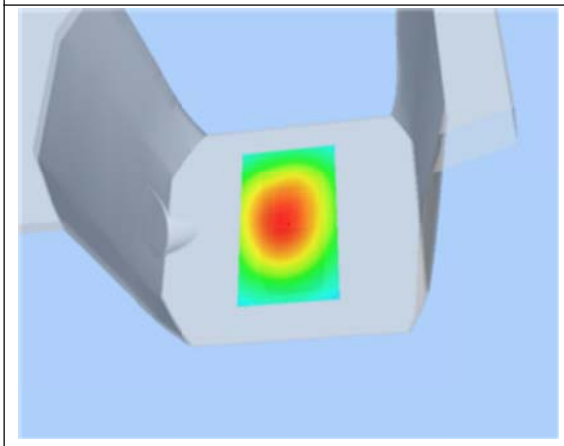
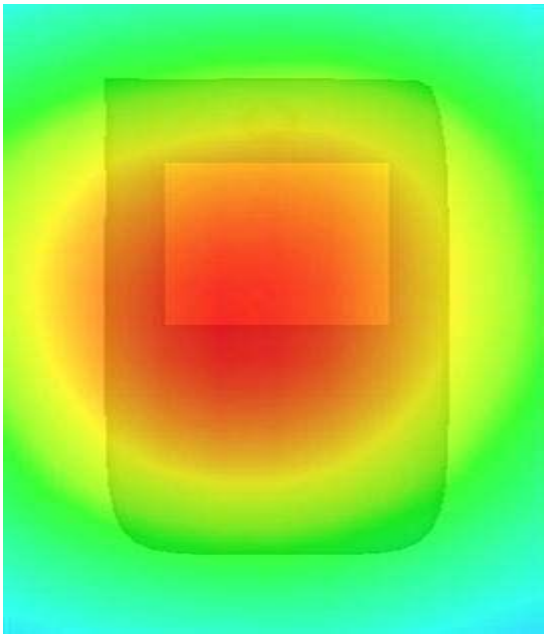
Maximum location: X=-7.00, Y=1.00

SAR 10g (W/Kg)	0.123824
SAR 1g (W/Kg)	0.162860

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.1672	0.1331	0.1048	0.0840	0.0674	0.0531



3D sceen shot	Hot spot position
	

MEASUREMENT 24

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=5mm, dy=5mm, dz=5mm
Date of measurement: 2013.2.25
Measurement duration: 9 minutes 10 seconds

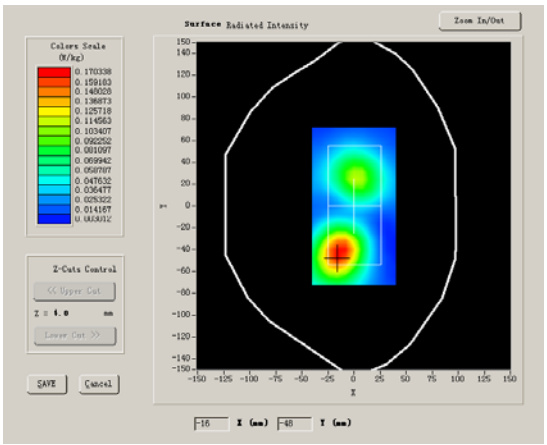
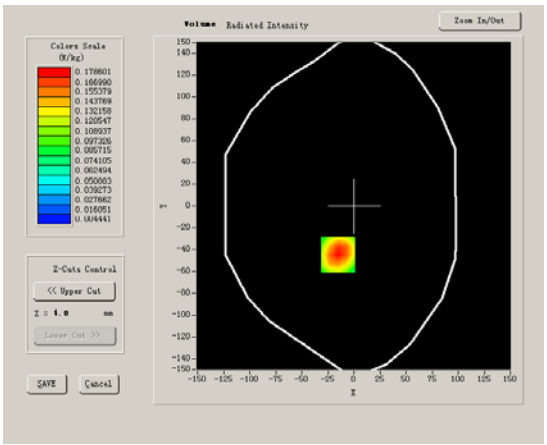
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	802.11B
Channels	High
Signal	DSSS

B. SAR Measurement Results

Higher Band SAR (Channel 11)

Frequency (MHz)	2462.000000
Relative permittivity (real part)	53.461064
Conductivity (S/m)	1.853317
Power drift (%)	-2.160000
Ambient Temperature:	22.0°C
Liquid Temperature:	21.8°C
ConvF:	39.772,33.946,37.835
Crest factor:	1:1

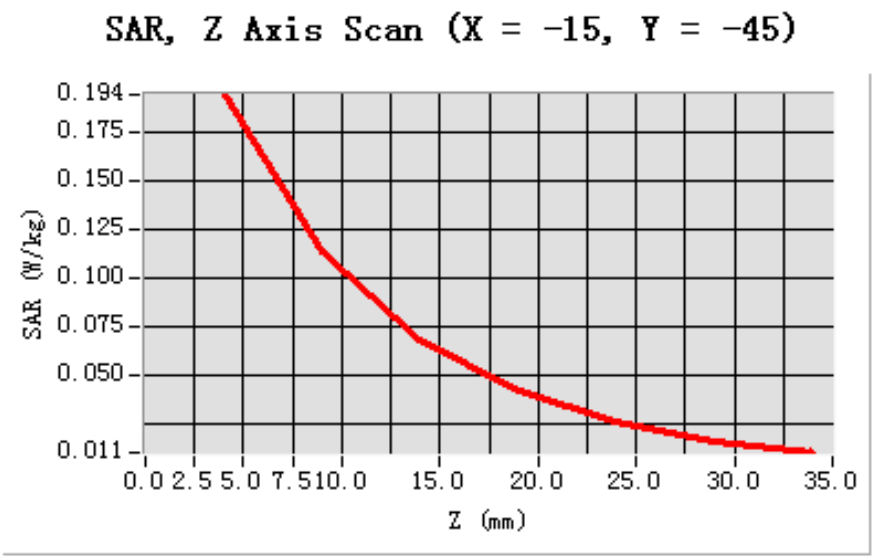
SURFACE SAR	VOLUME SAR
	

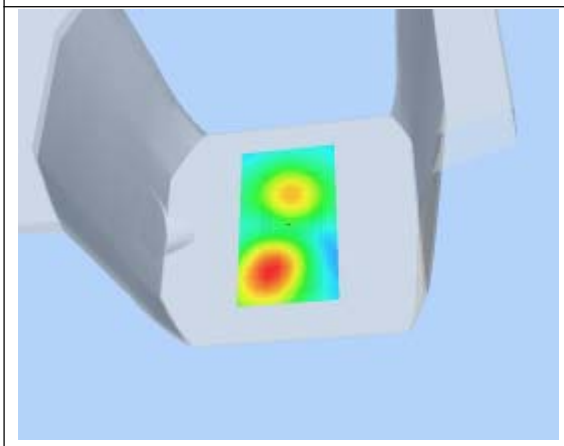
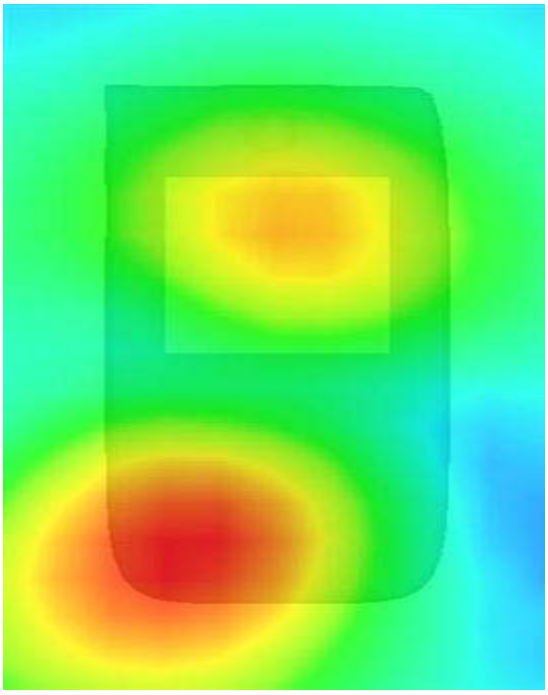
Maximum location: X=-15.00, Y=-45.00

SAR 10g (W/Kg)	0.108322
SAR 1g (W/Kg)	0.185816

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.1945	0.1138	0.0689	0.0423	0.0263	0.0169



3D sceen shot	Hot spot position
	

MEASUREMENT 25

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=5mm, dy=5mm, dz=5mm
Date of measurement: 2013.2.25
Measurement duration: 9 minutes 10 seconds

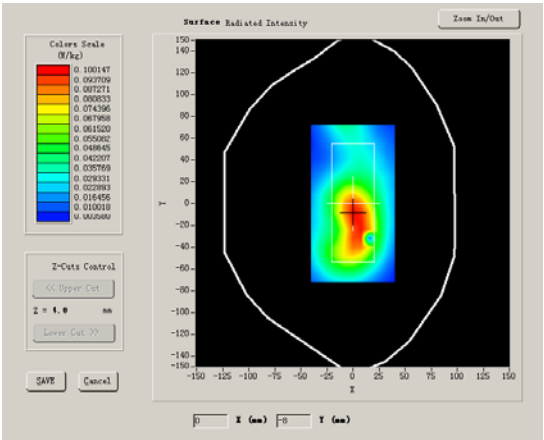
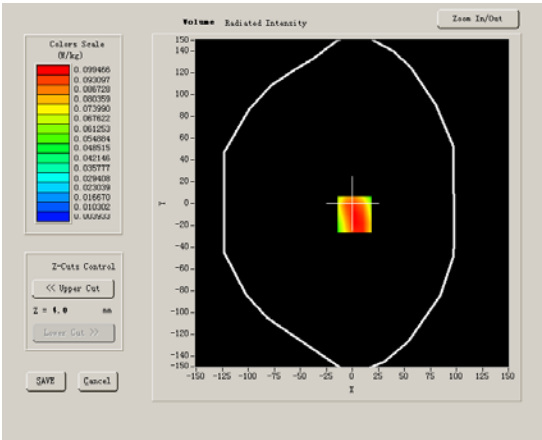
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	802.11B
Channels	High
Signal	DSSS

B. SAR Measurement Results

Higher Band SAR (Channel 11)

Frequency (MHz)	2462.000000
Relative permittivity (real part)	53.461064
Conductivity (S/m)	1.853317
Power drift (%)	-1.910000
Ambient Temperature:	22.0°C
Liquid Temperature:	21.8°C
ConvF:	39.772,33.946,37.835
Crest factor:	1:1

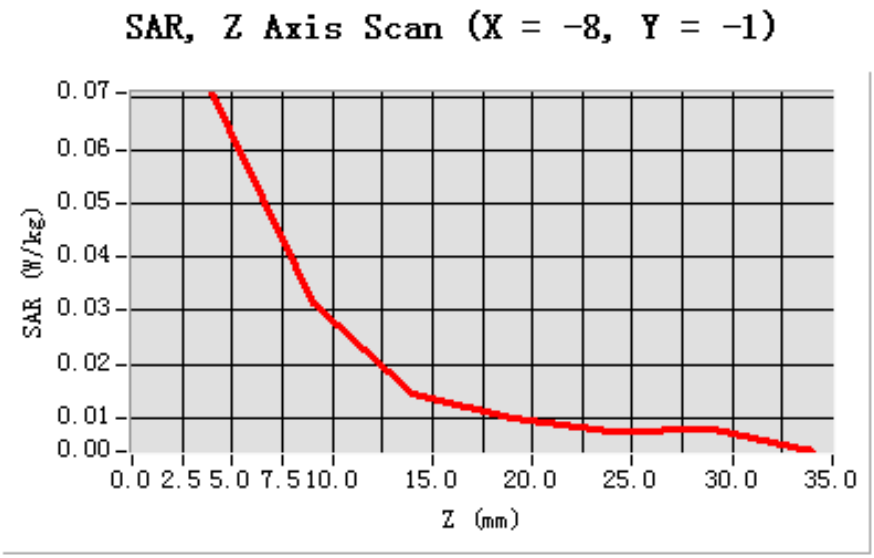
SURFACE SAR	VOLUME SAR
	

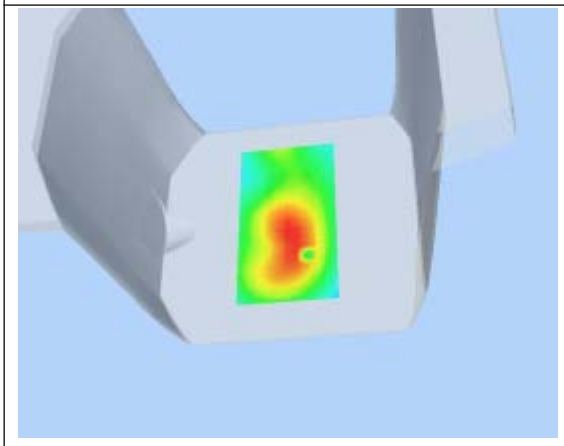
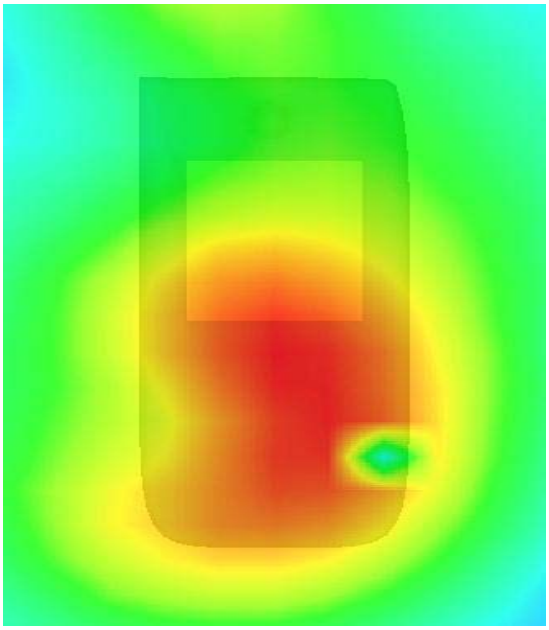
Maximum location: X=-8.00, Y=-1.00

SAR 10g (W/Kg)	0.039495
SAR 1g (W/Kg)	0.074147

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.0706	0.0314	0.0146	0.0099	0.0073	0.0078



3D sceen shot	Hot spot position
	

MEASUREMENT 26

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=5mm, dy=5mm, dz=5mm
Date of measurement: 2013.2.25
Measurement duration: 9 minutes 10 seconds

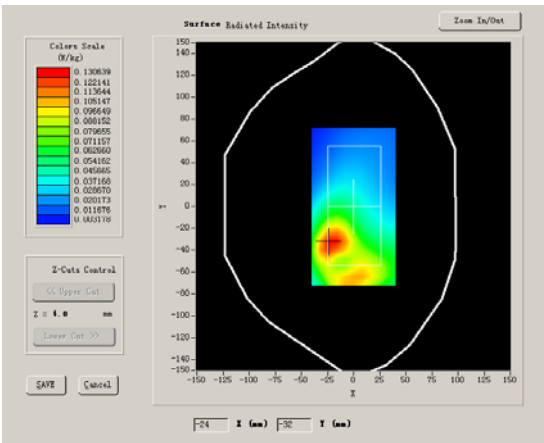
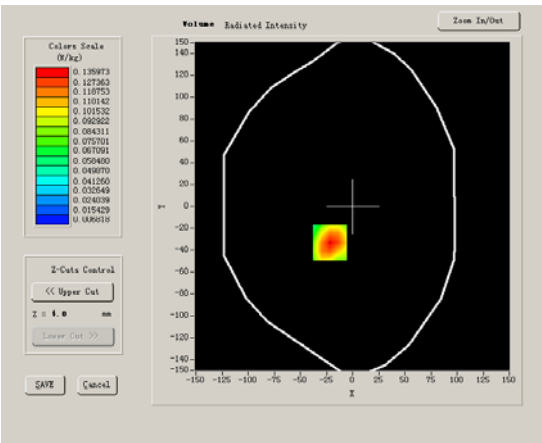
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	802.11B
Channels	High
Signal	DSSS

B. SAR Measurement Results

Higher Band SAR (Channel 11)

Frequency (MHz)	2462.000000
Relative permittivity (real part)	53.461064
Conductivity (S/m)	1.853317
Power drift (%)	-1.810000
Ambient Temperature:	22.0°C
Liquid Temperature:	21.8°C
ConvF:	39.772,33.946,37.835
Crest factor:	1:1

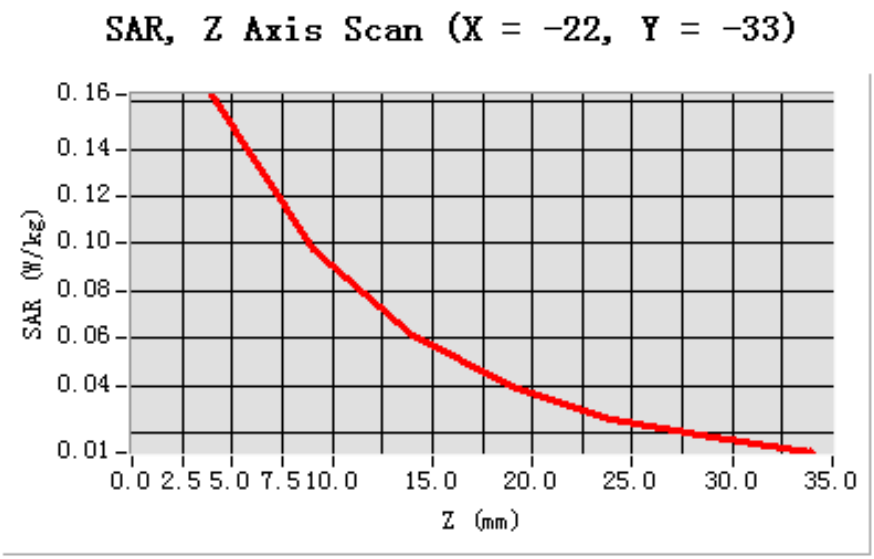
SURFACE SAR	VOLUME SAR
	

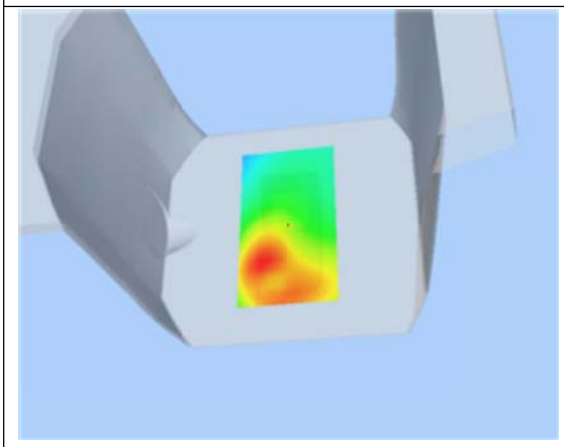
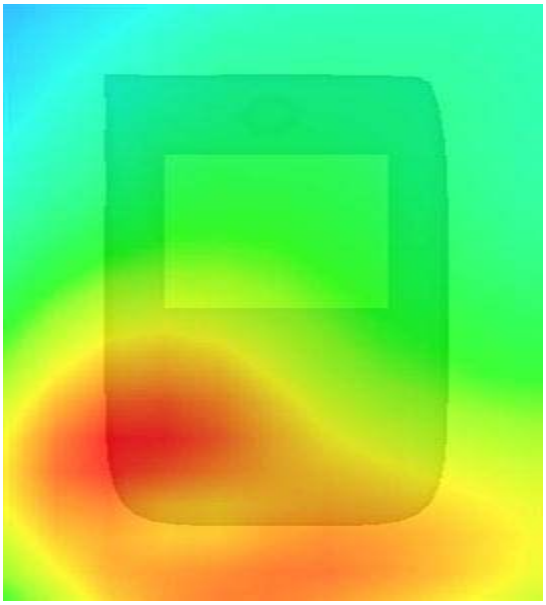
Maximum location: X=-22.00, Y=-33.00

SAR 10g (W/Kg)	0.093804
SAR 1g (W/Kg)	0.155393

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.1632	0.0973	0.0610	0.0391	0.0258	0.0176



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: 2013.2.25
Measurement duration: 13 minutes 27 seconds

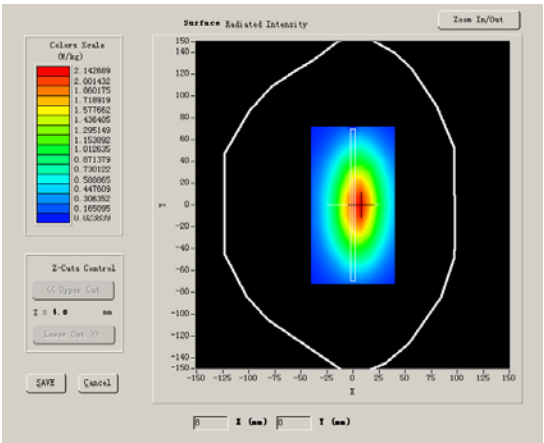
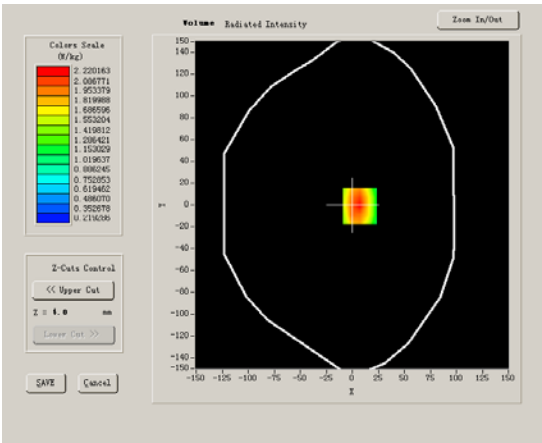
A. Experimental conditions.

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)	55.016124
Conductivity (S/m)	0.951510
Power drift (%)	-0.170000
Ambient Temperature:	22.4°C
Liquid Temperature:	21.5°C
ConvF:	28.559,25.681,27.588
Crest factor:	1:1

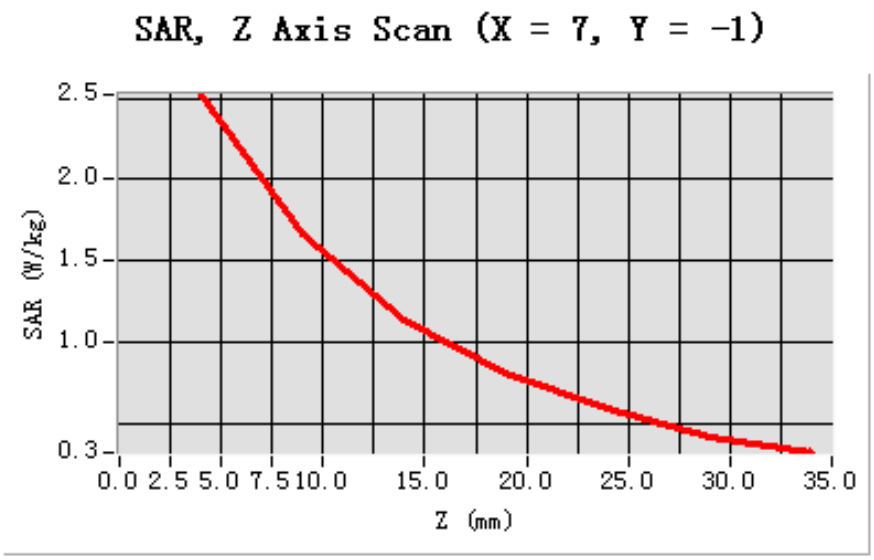
SURFACE SAR	VOLUME SAR
	

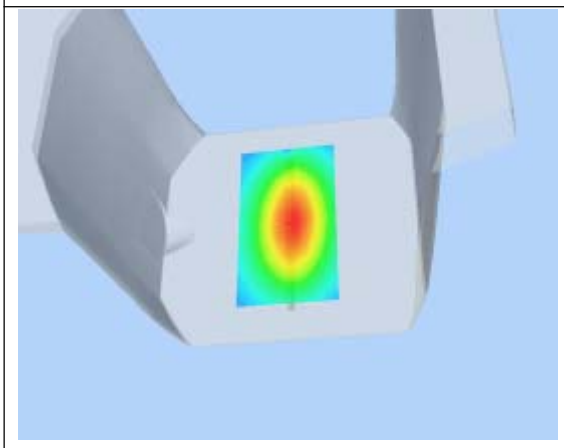
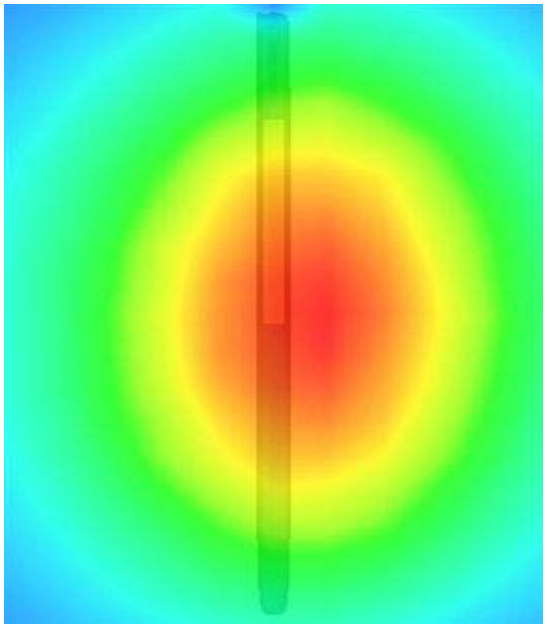
Maximum location: X=7.00, Y=-1.00

SAR 10g (W/Kg)	1.497122
SAR 1g (W/Kg)	2.379818

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: 2013.2.25
Measurement duration: 13 minutes 26 seconds

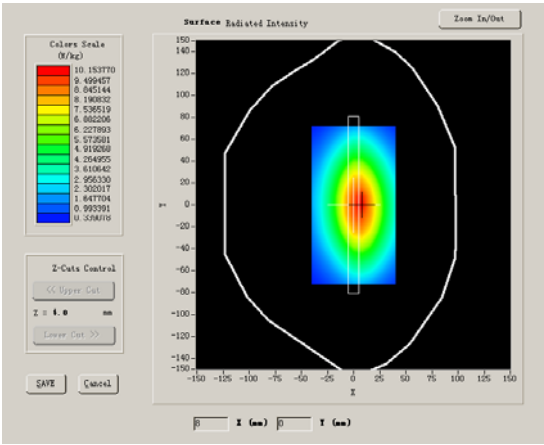
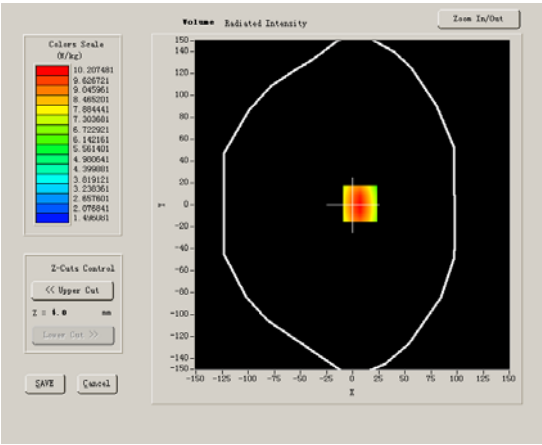
A. Experimental conditions.

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)	53.283431
Conductivity (S/m)	1.508114
Power drift (%)	-0.030000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.7°C
ConvF:	40.625,34.773,38.535
Crest factor:	1:1

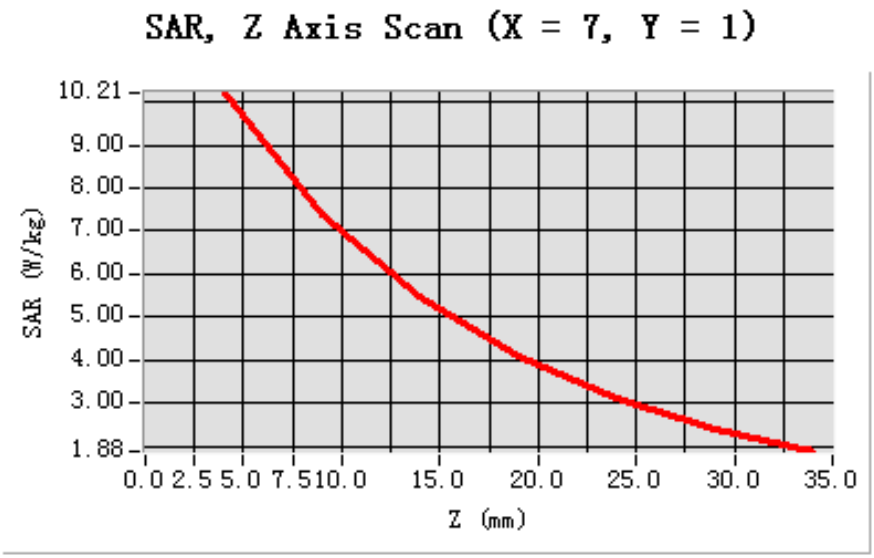
SURFACE SAR	VOLUME SAR
	

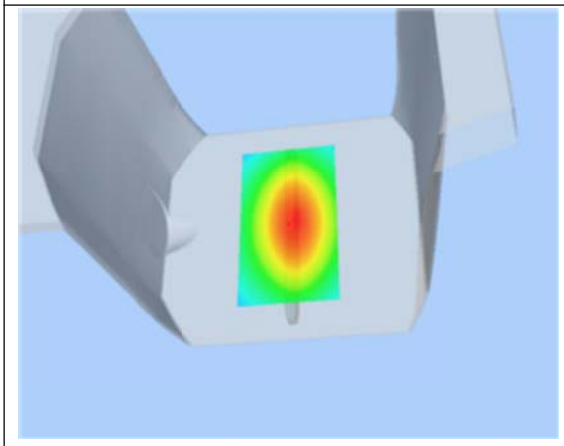
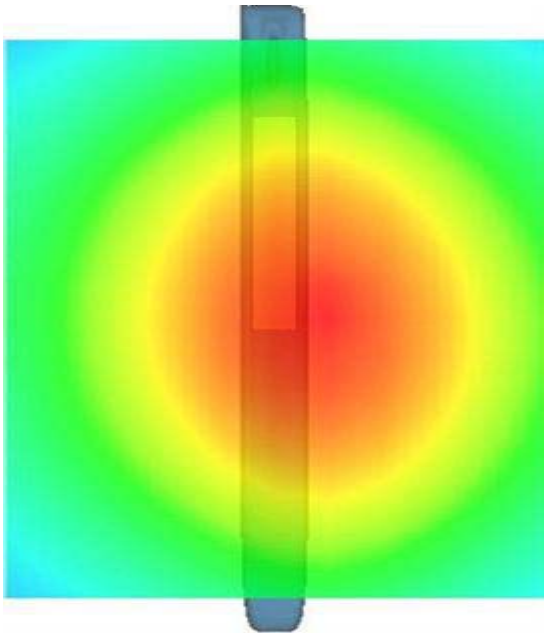
Maximum location: X=7.00, Y=1.00

SAR 10g (W/Kg)	6.628519
SAR 1g (W/Kg)	9.746173

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
	

System Performance Check Data(Body)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=5mm, dy=5mm, dz=5mm
Date of measurement: 2013.2.25
Measurement duration: 13 minutes 27 seconds

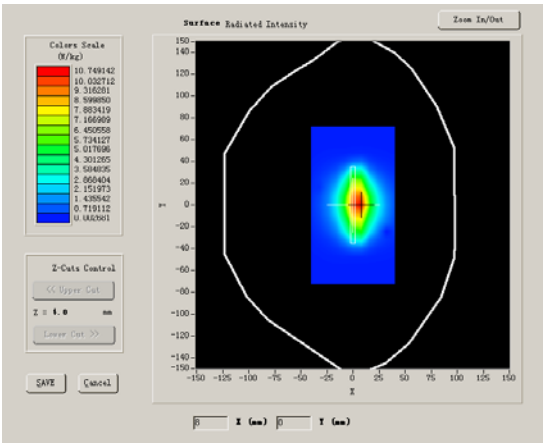
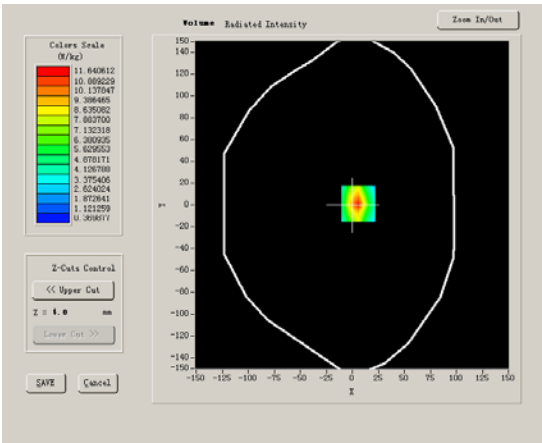
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	
Band	2450MHz
Channels	
Signal	CW

B. SAR Measurement Results

Band SAR

Frequency (MHz)	2450.000000
Relative permittivity (real part)	53.461064
Conductivity (S/m)	1.853317
Power Drift (%)	1.080000
Ambient Temperature:	22.0°C
Liquid Temperature:	21.8°C
ConvF:	39.772,33.946,37.835
Crest factor:	1:1

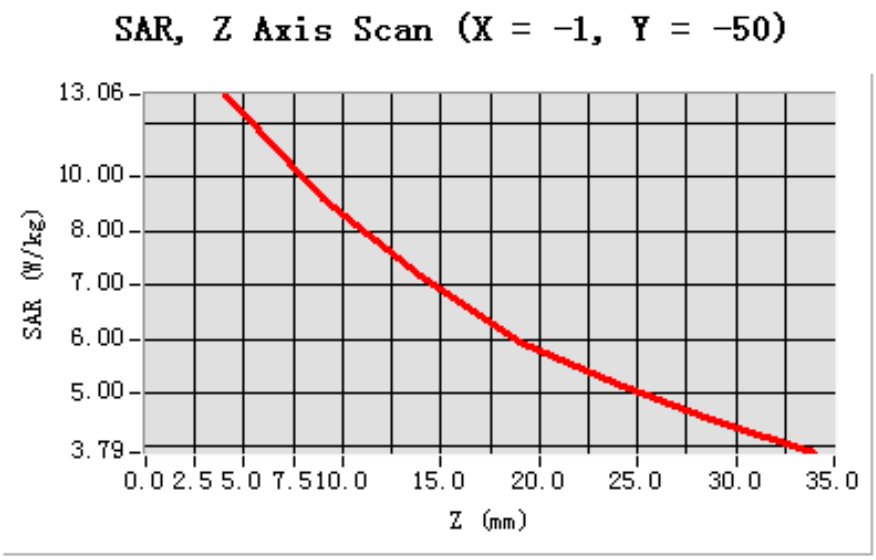
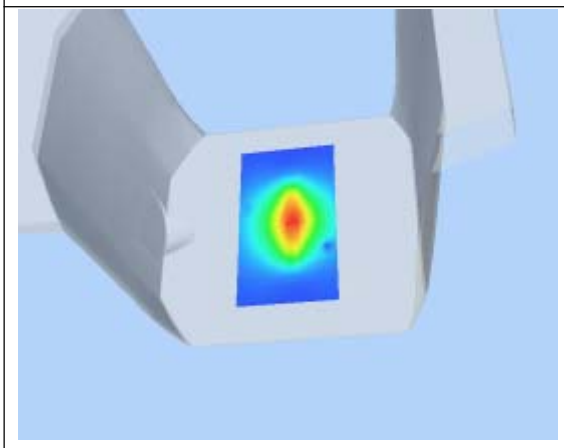
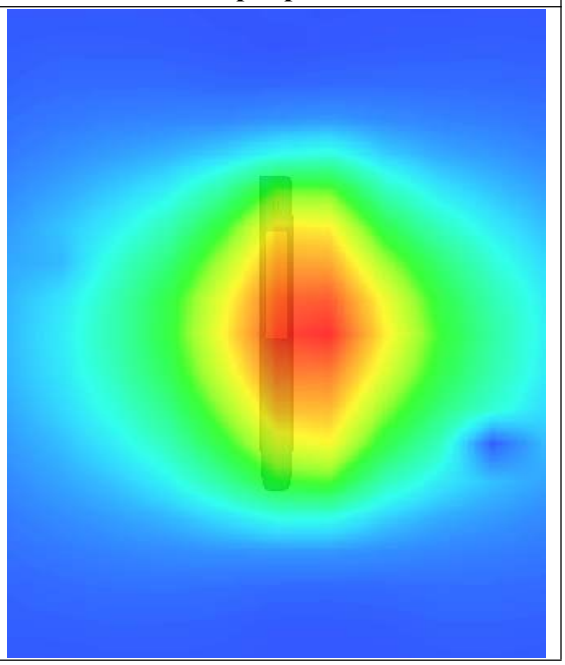
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-1.00, Y=-50.00

SAR 10g (W/Kg)	7.156773
SAR 1g (W/Kg)	12.789110

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	13.1279	6.8312	3. 5991	1.3473



3D sceen shot	Hot spot position