Report No.:SZ11030122S02

TESTING
CNAS L3572

SAR TEST REPORT

Issued to

Huawei Technologies Co., Ltd

For

Mobile Phone

Model Name	:	HUAWEI U8650NFC -1/ U8650NFC -1/ TURKCELL T20/T20
Trade Name	:	HUAWEI / TURKCELL
Brand Name	:	HUAWEI / TURKCELL
FCC ID	:	QISU8650NFC-1
Standard	:	FCC Oet65 Supplement C Jun.2001 47CFR 2.1093 ANSI C95.1-1999 IEEE 1528-2003
MAX SAR	:	Head: 1.168W/kg Body: 0.937W/kg
Test date	:	May. 3, 2011-Jun. 7, 2011
Issue date	:	Jun. 8, 2011

by

Shenzhen MORLAB Communication Technology Co., Ltd.

MORLAB Certification

Tested by Samuel Peng	*Approved by* Shu Luan	*Review by* Li Lei
Date 2011.06.08	*Date* 2011.6.8	*Date* 2011.06.08

CTIA Authorized Test Lab LAB CODE 200611223-00 IEEE 1725 OTA OFTA 電訊管理局 ilac-MRA TAF GCF Official Observer of Global Certification Forum Bluetooth BQTF FCC Reg. No. 741109

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Change History		
Issue	Date	Reason for change
1.0	May. 17, 2011	First edition
1.0	Jun. 8, 2011	Secondly edition

1. Testing Laboratory

1.1. Identification of the Responsible Testing Laboratory

Company Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Department:	Morlab Laboratory
Address:	3/F, Electronic Testing Building, Shahe Road, Nanshan District, Shenzhen, 518055 P. R. China
Responsible Test Lab Manager:	Mr. Shu Luan
Telephone:	+86 755 86130268
Facsimile:	+86 755 86130218

1.2. Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory
Address:	3/F, Electronic Testing Building, Shahe Road, Nanshan District, Shenzhen, 518055 P. R. China

1.3. Accreditation Certificate

Accredited Testing Laboratory: No. CNAS L3572 (see 0)

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	Rohde&Schwarz (CMU200, SN:105894)	2010-9-26	1year
3	Voltmeter	Keithley (2000, SN:1000572)	2010-9-24	1year
4	Synthetizer	Rohde&Schwarz (SML_03, SN:101868)	2010-9-24	1year
5	Amplifier	Nucl udes (ALB216, SN:10800)	2010-9-24	1year
6	Power Meter	Rohde&Schwarz (NRVD, SN:101066)	2010-9-24	1year
7	Probe	Satimo (SN:SN_3708_EP80)	2010-9-24	1year
8	Phantom	Satimo (SN:SN_36_08_SAM62)	2010-9-24	1year
9	Liquid	Satimo (Last Calibration:21 08 08)	2010-8-21	1year
10	Dipole 835MHz	Satimo (SN 36/08 DIPC 99)	2010-9-23	1year
11	Dipole 1800MHz	Satimo (SN 36/08 DIPF 101)	2010-9-23	1year
12	Dipole 2450MHz	Satimo (SN 36/08 DIPJ 103)	2010-9-23	1year

2. Technical Information

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

2.1. Identification of Applicant

Company Name:	Huawei Technologies Co., Ltd
Address:	Huawei Base, Bantian, Longgang District, Shenzhen 518129, P.R. China

2.2. Identification of Manufacturer

Company Name:	Huawei Technologies Co., Ltd
Address:	Huawei Base, Bantian, Longgang District, Shenzhen 518129, P.R. China

2.3. Equipment Under Test (EUT)

Brand Name:	HUAWEI / TURKCELL
Type Name:	HUAWEI / TURKCELL
Marking Name:	HUAWEI U8650NFC -1/U8650NFC -1/TURKCELL T20/T20
Hardware Version:	HUAWEI U8650-1 V100R001C00B820
Software Version:	HD1U865M
Frequency Bands:	PCS 1900MHz WIFI 802.11 b/g/n
Modulation Mode:	GSM / GPRS : GMSK EDGE: GMSK / 8PSK
Multislot Class	GPRS: Multislot Class 10: EDGE: Multislot Class 10
GPRS operation mode:	Class B
Antenna type:	Fixed Internal Antenna
Development Stage:	Identical prototype
Battery Model:	HB5K1H
Battery specification:	1400mAh 3.7V

2.3.1. Photographs of the EUT

Please see for photographs of the EUT.

2.3.2. Identification of all used EUTs

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#	HUAWEI U8650-1 V100R001C00B820	HD1U865M

2.4. Applied Reference Documents

Leading reference documents for testing:

No.	Identity	Document Title
1	**47 CFR § 2. 1093**	Radiofrequency Radiation Exposure Evaluation: Portable Devices
2	**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 Techuiques.

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:	PCS 1900MHz
Operation mode:	Call established
Power Level:	PCS 1900 MHz Maximum output power(level 0)

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 512, 661 and 810 respectively in the case of PCS 1900 MHz, The EUT, 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.
For SAR testing, EUT is in GPRS/EDGE mode. In GPRS/EDGE link mode, its crest factor is 4, because EUT is set in GPRS/EDGE multi-slot class 10 with 2 uplink slots.

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:

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

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

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

, 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

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

, 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
- Head simulating tissue

The following figure shows the system.

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

4.2. Probe

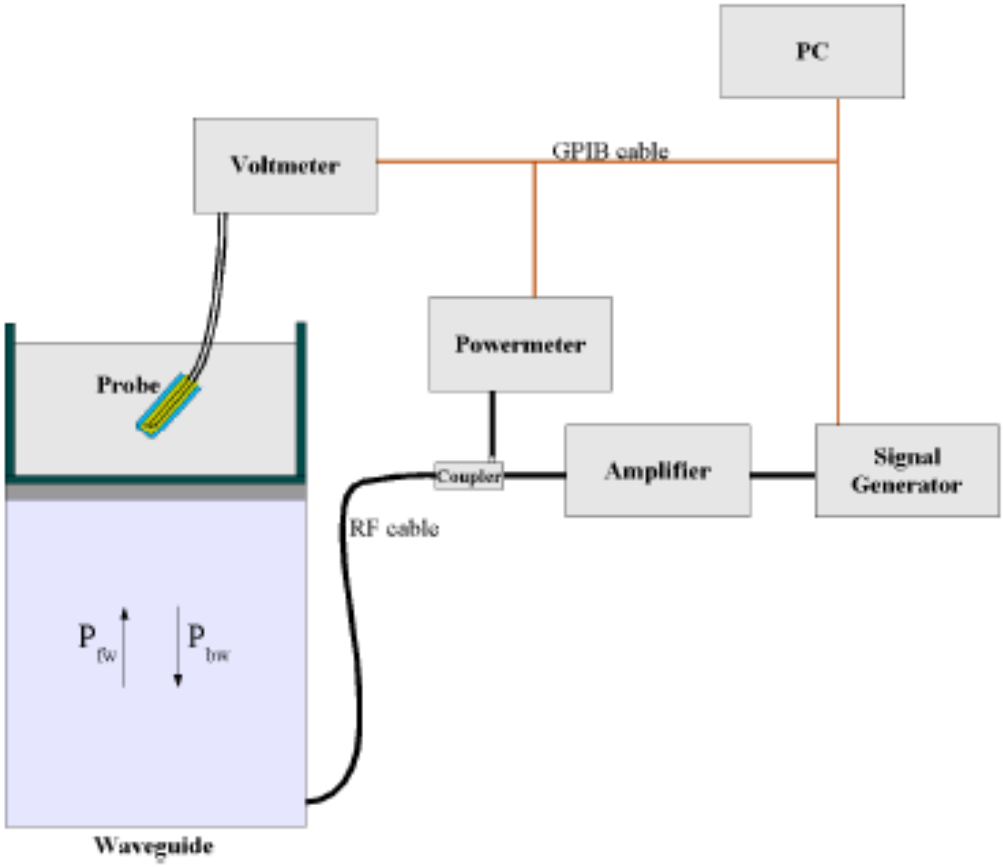
For the measurements the Specific Dosimetric E-Field Probe SN 37/08 EP80 with following specifications is used

- Dynamic range: 0.01-100 W/kg
- Tip Diameter : 6.5 mm
- Distance between probe tip and sensor center: 2.5mm
- Distance between sensor center and the inner phantom surface: 4 mm
  (repeatability better than +/- 1mm)

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

Angle between probe axis (evaluation axis) and suface 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:

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

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

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

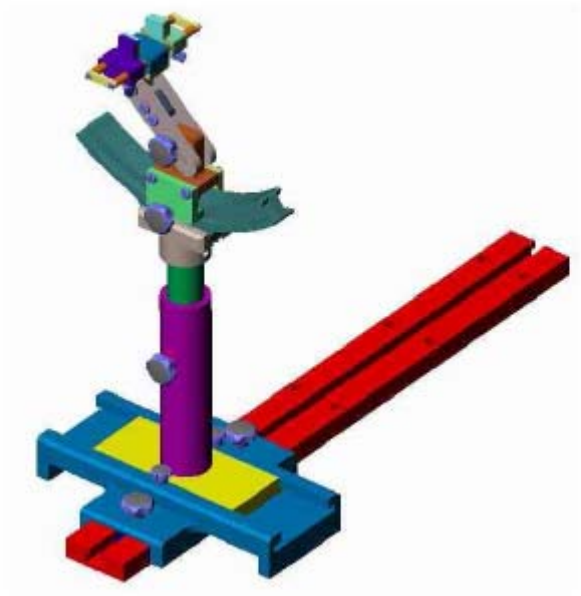
where DCP is the diode compression point in mV.

4.3. 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.

4.4. 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 that are used for testing at frequencies of GSM 850MHz PCS 1900MHz, which 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 is (head SAR)or from the flat phantom to the liquid top surface (body SAR) is 15cm.

Gives the recipes for one liter of head and body tissue simulating liquid for frequency band 835 MHz and 1900 MHz.

Recipes for Tissue Simulating Liquid

Ingredients (% by weight)	Frequency Band		Frequency Band
Tissue Type	1900MHz		2450MHz
Water	Head	Body	Body
Salt(NaCl)	55.36	40.4	52.4
Sugar	0.35	0.5	1.4
HEC	30.45	58.0	45.0
Bactericide	0.0	1.0	1.0
Triton	0.0	0.1	0.1
DGBE	0.0	0.0	0.0
Acticide SPX	13.84	0.0	0.0
Dielectric Constant	0.0	0.0	0.0
Conductivity (S/m)	41.00	54.0	52.7

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.

Table 1: Dielectric Performance of Head Tissue Simulating Liquid

Temperature: 23.0~23.8°C, humidity: 54~60%.			
/	**Frequency**	**Permittivity ε**	**Conductivity σ (S/m)**
Target value	1900 MHZ	40	1.40
Validation value (May. 3)	1900 MHZ	38.509998	1.436111

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.

Table 2: Dielectric Performance of Body Tissue Simulating Liquid

Temperature: 23.0~23.8°C, humidity: 54~60%.

/	Frequency	Permittivity ε	Conductivity σ (S/m)
Target value	1900 MHz	53.3	1.52
Validation value (May. 3)	1900 MHz	52.548876	1.573978
Validation value (Jun. 7)	1900 MHz	52.540001	1.469533
Target value	2450 MHz	52.7	1.95
Validation value (May. 3)	2450 MHz	54.341000	1.952641
Validation value (Jun. 7)	2450 MHz	54.362770	1.937211

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 HANDSET 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 (+-%)	V i
Measurement System									
Probe calibration	E.2.1	7.0	N	1	1	1	7.00	7.00	
Axial Isotropy	E.2.2	2.5	R				1.02	1.02	
Hemispherical Isotropy	E.2.2	4.0	R				1.63	1.63	
Boundary effect	E.2.3	1.0	R		1	1	0.58	0.58	
Linearity	E.2.4	5.0	R		1	1	2.89	2.89	
System detection limits	E.2.5	1.0	R		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		1	1	1.73	1.73	
Integration Time	E.2.8	2.0	R		1	1	1.15	1.15	
RF ambient Conditions	E.6.1	3.0	R		1	1	1.73	1.73	
Probe positioner Mechanical Tolerance	E.6.2	2.0	R		1	1	1.15	1.15	
Probe positioning with respect to Phantom Shell	E.6.3	0.05	R		1	1	0.03	0.03	
Extrapolation, interpolation and integration Algoritms for Max. SAR Evaluation	E.5.2	5.0	R		1	1	2.89	2.89	
Test sample Related									
Test sample positioning	E.4.2.1	0.03	N	1	1	1	0.03	0.03	N - 1
Device Holder Uncertainty	E.4.1.1	5.00	N	1	1	1	5.00	5.00	
Output power Power Drift - SAR drift measurement	6.6.2	4.04	R		1	1	2.33	2.33	
Phantom and Tissue Parameters									
Phantom Uncertainty (Shape and thickness tolerances)	E.3.1	0.05	R		1	1	0.03	0.03	
Liquid conductivity - deviation from target value	E.3.2	4.57	R		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		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				11.23	10.70	
Expanded Uncertainty (95% Confidence interval)			k				21.91	20.86	

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	7.0	N	1	1	1	7.00	7.00	
Axial Isotropy	E.2.2	2.5	R				1.02	1.02	
Hemispherical Isotropy	E.2.2	4.0	R				1.63	1.63	
Boundary effect	E.2.3	1.0	R		1	1	0.58	0.58	
Linearity	E.2.4	5.0	R		1	1	2.89	2.89	
System detection limits	E.2.5	1.0	R		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		1	1	1.73	1.73	
Integration Time	E.2.8	2.0	R		1	1	1.15	1.15	
RF ambient Conditions	E.6.1	3.0	R		1	1	1.73	1.73	
Probe positioner Mechanical Tolerance	E.6.2	2.0	R		1	1	1.15	1.15	
Probe positioning with respect to Phantom Shell	E.6.3	0.05	R		1	1	0.03	0.03	
Extrapolation, interpolation and integration Algoritms for Max. SAR Evaluation	E.5.2	5.0	R		1	1	2.89	2.89	
Dipole									
Dipole axis to liquid Distance	8,E.4.2	1.00	N		1	1	0.58	0.58	N-1
Input power and SAR drift measurement	8,6.6.2	4.04	R		1	1	2.33	2.33	
Phantom and Tissue Parameters									

Phantom Uncertainty (Shape and thickness tolerances)	E.3.1	0.05	R		1	1	0.03	0.03	
Liquid conductivity - deviation from target value	E.3.2	4.57	R		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		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				10.08	9.47	
Expanded Uncertainty (95% Confidence interval)			k				19.65	18.47	

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 1900 MHz. The calibrated dipole must be placed beneath the flat phantom section of the SAM twin phantom with the correct distance holder. The distance holder should touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom.

Equipments :

name	Type and specification
Signal generator	E4433B
Directional coupler	450MHz-3GHz
Amplifier	3W 502(10-2500MHz)
Reference dipole	1800MHz:SN 36/08 DIPF 101 2450MHz:SN 36/08 DIPJ 103

7.2. Validation Results

Comparing to the original SAR value provided by SPEAG, the validation data should be within its specification of 10 %.

Frequency	1900MHz	2450 MHz
Target value(1g)	38.1 W/Kg	52.4 W/Kg(body)
250 mW input power (May. 3)	9.844 W/Kg (head) 9.818 W/Kg (body)	12.9 W/Kg (body)
Test value(1g) (May. 3)	39.376 W/Kg (head) 39.272 W/Kg (body)	51.6 W/Kg (body)
250 mW input power (Jun. 7)	9.800 W/Kg (body)	12.947 W/Kg (body)
Test value(1g) (Jun. 7)	39.2 W/Kg (body)	51.788 W/Kg (body)

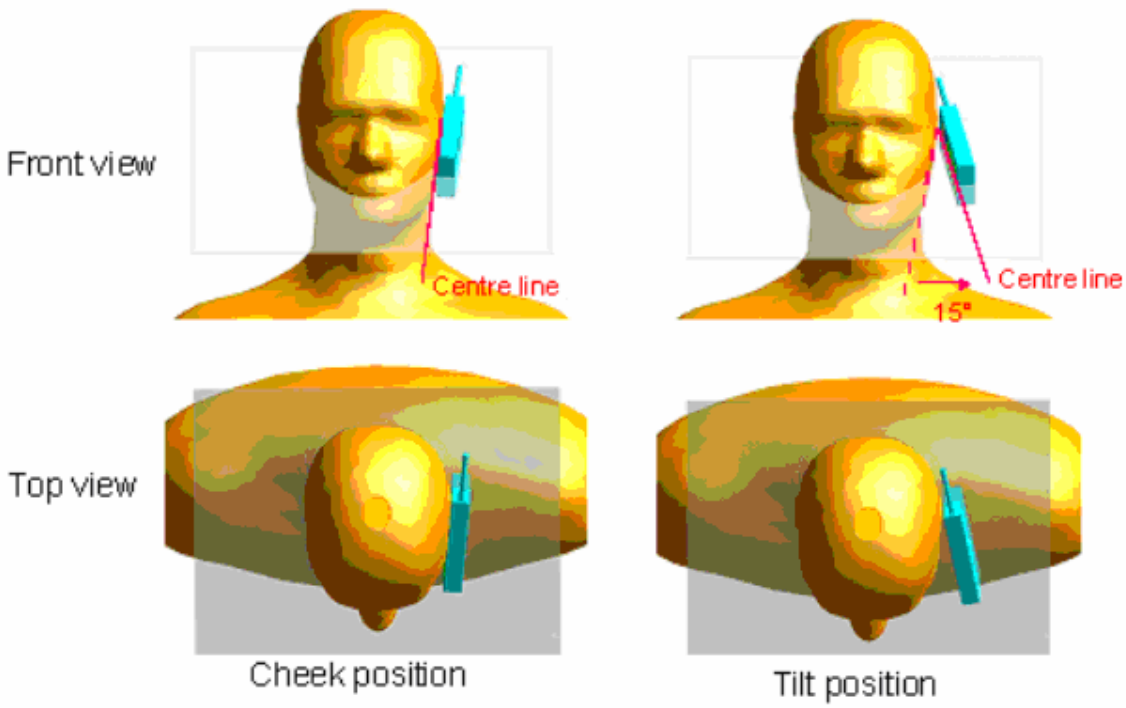
Note: System checks the specific test data please see page 104-113

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.

The mobile phone is test in the “cheek” and “tilted” positions on the left and right sides of the phantom. The mobile phone is placed with the vertical centre line of the body of the mobile phone and the horizontal line crossing the centre of the earpiece in a plane parallel to the sagittal plane of the phantom.



Description of the “cheek” position:
The mobile phone is well placed in the reference plane and the earpiece is in contact with the ear. Then the mobile phone is moved until any point on the front side get in contact with the cheek of the phantom or until contact with the ear is lost.

Description of the “tilted” position:
The mobile phone is well placed in the “cheek” position as described above. Then the mobile phone is moved outward away from the month by an angle of 15 degrees or until contact with the ear lost.

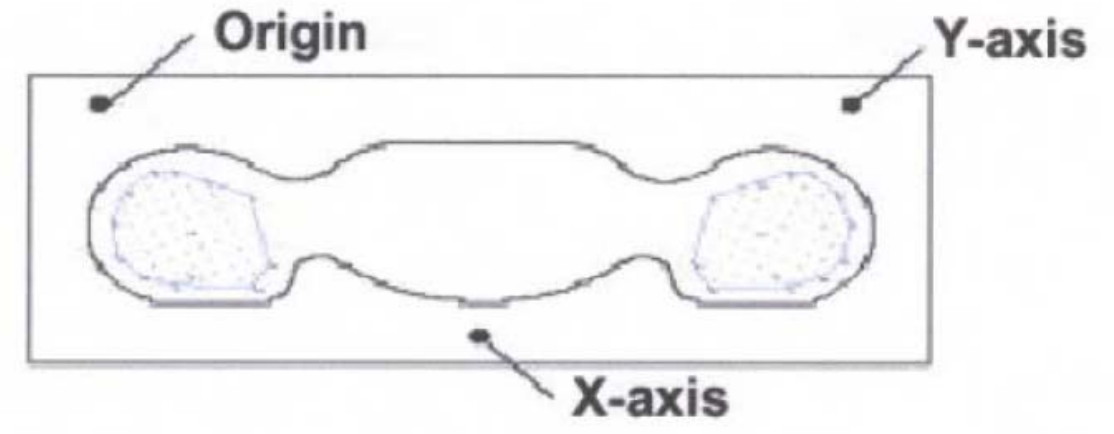
Remark: Please refer to Appendix B for the test setup photos.

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 interface
- 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 surface of the phantom. Since the sensors can not directly measure at the inner phantom surface, the values between the sensors and the inner phantom surface are extrapolated. With these values the area of the maximum SAR is calculated by an interpolation scheme.
- 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 surface in order to minimize measurements errors, but the highest local SAR will occur at the surface of the phantom.

An extrapolation is using to determinate this highest local SAR values. The extrapolation is based on a fourth-order least-square polynomial fit of measured data. The local SAR value is then extrapolated

from the liquid surface with a 1mm step.

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

8.5. Output Power

Here the lowest, middle and highest channels are selected to perform testing to verify the conducted RF output power of the EUT. For the GSM 1900MHz operates at PCL=0 (where Power Class is 1), the rated conducted RF output power is 32dBm.

GPRS/EDGE modes conducted output power values

Band	Channel	Frequency (MHz)	Measured Output Power
			dBm
GSM 1900MHz	512	1850.2	29.36
	661	1880.0	29.49
	810	1909.8	29.54
GPRS 1900MHz	128	824.2	28.25
	190	836.6	28.19
	251	848.8	28.23
EDGE 1900MHz	512	1850.2	28.25
	661	1880.0	28.19
	810	1909.8	28.24

The EUT operates at hopping-off test mode. The lowest, middle and highest channels are selected to perform testing to verify the conducted RF output peak power of the Module.

GPRS/EDGE modes average conducted output power values

Because AV power = PK power + 10log [1/ (duty cycle)], the Time-based Average Power as following:

Mode	Band	Channel	Frequency (MHz)	Output Power(dBm)	
				Slot 1	Slot 2
GPRS	PCS 1900	512	1850.2	19.27	22.25
		661	1880.0	19.24	22.19
		810	1909.8	19.26	22.23
EDGE	PCS 1900	512	1850.2	19.30	22.25
		661	1880.0	19.21	22.19
		810	1909.8	19.26	22.24

802.11b Test mode

Channel	Frequency (MHz)	Measured Output Peak Power	
		dBm	W
1	2412	18.12	0.065
6	2437	18.30	0.068
11	2462	17.95	0.062

802.11g Test mode

Channel	Frequency (MHz)	Measured Output Peak Power	
		dBm	W
1	2412	12.72	0.019
6	2437	13.10	0.020
11	2462	12.50	0.018

802.11n Test mode

Channel	Frequency (MHz)	Measured Output Peak Power	
		dBm	W
1	2412	10.95	0.012
6	2437	11.12	0.013
11	2462	10.50	0.011

9. Test Results List

9.1. Head Adjacent Test Results

Summary of Measurement Results (GSM 1900MHz Band)

Temperature: 21.0~23.8°C, humidity: 54~60%.					
Phantom Configurations	Device Test Positions	Antenna Positions	SAR(W/Kg), 1g Peak		
			Device Test channel		
			Channel 512	Channel 661	Channel 810
Left Side Of Head	Cheek/Touch	Internal	1.112	1.140	1.168
	Ear/Tilt	Internal	0.282	0.298	0.319
Right Side Of Head	Cheek/Touch	Internal	0.661	0.803	0.814
	Ear/Tilt	Internal	0.255	0.213	0.243

9.2. Body Worn Test Results

Summary of Measurement Results (GSM 1900MHz Band), Phone 15 mm from Phantom

Temperature: 21.0~23.8°C, humidity: 54~60%.					
Phantom Configurations	Device Test Positions	Antenna Positions	SAR(W/Kg), 1g Peak		
			Device Test channel		
			Channel 512	Channel 661	Channel 810
Body (GSM - voice only)	Back upward	Internal	/	0.451	/
	Keyboard Upward	Internal	/	0.635	/
Body (GPRS - data only)	Back upward	Internal	0.601	/	/
	Keyboard Upward	Internal	0.883	0.791	0.740
Body (EDGE - data only)	Back upward	Internal	/	0.484	/
	Keyboard Upward	Internal	/	0.635	/

Summary of Measurement Results (WIFI 802.11 b), Phone 15 mm from Phantom

Temperature: 21.0~23.8°C, humidity: 54~60%.					
Phantom Configurations	Device Test Positions	Antenna Positions	SAR(W/Kg), 1g Peak		
			Device Test channel		
			Channel 1	Channel 6	Channel 11
WIFI 802.11 b	Back upward	Internal	/	0.095	/
	Keyboard Upward	Internal	/	0.124	/

9.3. Mobile Hotspot Test Results

Testing was performed with a separation of 1 cm between the DUT and the "flat" phantom. The DUT was positioned for SAR tests with the front and back surfaces facing the phantom, and also with the edges facing the phantom in which the transmitting antenna is < 2.5 cm from the edge. Each transmit band was utilized for SAR testing, but only the "mode" within each band that exhibited the highest SAR results from Body Worn Test Results.

Summary of Measurement Results (GSM 1900MHz Band), Phone 10 mm from Phantom

Temperature: 21.0~23.8°C, humidity: 54~60%.					
Phantom Configurations	Device Test Positions	Antenna Positions	SAR(W/Kg), 1g Peak		
			Device Test channel		
			Channel 512	Channel 661	Channel 810
Body (GPRS - data only)	Back	Internal	0.689	/	/
	Front	Internal	0.937	0.845	0.801
	Bottom Edge	Internal	0.703	/	/
	Right Edge	Internal	0.311	/	/
	Left Edge	Internal	0.447	/	/

Summary of Measurement Results (WIFI 802.11 b), Phone 10 mm from Phantom

Temperature: 21.0~23.8°C, humidity: 54~60%.					
Phantom Configurations	Device Test Positions	Antenna Positions	SAR(W/Kg), 1g Peak		
			Device Test channel		
			Channel 1	Channel 6	Channel 11
WIFI 802.11 b	Back	Internal	/	0.105	/
	Front	Internal	0.132	0.146	0.140
	Right Edge	Internal	/	0.078	/
	Top Edge	Internal	/	0.082	/

Note: 1. KDB 447498, when the SAR procedures require multiple channels to be tested and the 1-g SAR for the highest output channel is less than 0.8 W/kg and peak SAR is less than 1.6W/kg, where the transmission band corresponding to all channels is ≤ 100 MHz, testing for the other channels is not required.

2. EUT with Bluetooth and NFC, but conducted power is very low, so the test does not consider the Bluetooth amd NFC status.

3. Simultaneous transmitter testing to comply with FCC KDB 648474 File Description

4. EUT with Wireless Router Capabilities testing to comply FCC KDB 941225 File Description

5. WIFI some of the test are done under the maximum output power.

6. SUM SAR values 0.937 W/kg + 0.146 W/kg = 1.083 W/kg lower than 1.6 W/kg

Top Edge

Right Edge

Left Edge

Bottom Edge

Annex A Accreditation Certificate

China National Accreditation Service for Conformity Assessment

LABORATORY ACCREDITATION CERTIFICATE

(No. CNAS L3572)

China National Accreditation Service for Conformity Assessment has accredited

Morlab Laboratory Shenzhen Morlab Communications Technology Co., Ltd.

3/F, Electronic Testing Building, Shahe Road, Xili,Nanshan District, Shenzhen, Guangdong, China

to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories(CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing and/or calibration.

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

Date of Issue：2008-07-01

Date of Expiry：2011-06-30

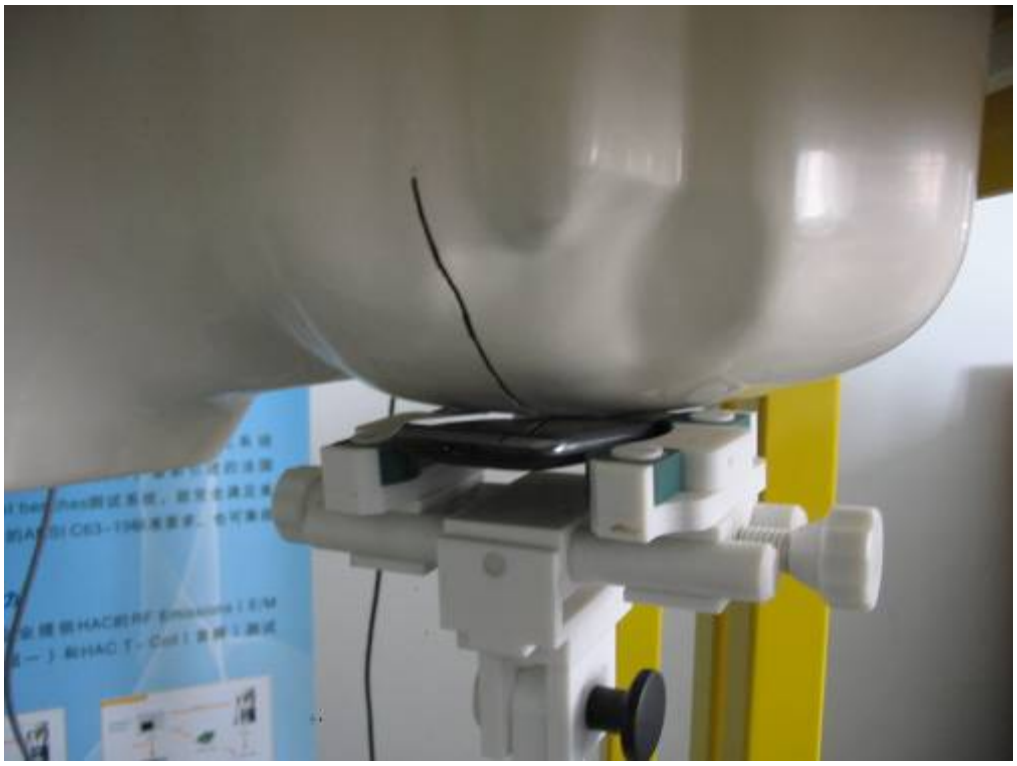
Date of Initial Accreditation：2008-07-01

Signed on behalf of China National Accreditation Service for Conformity Assessment

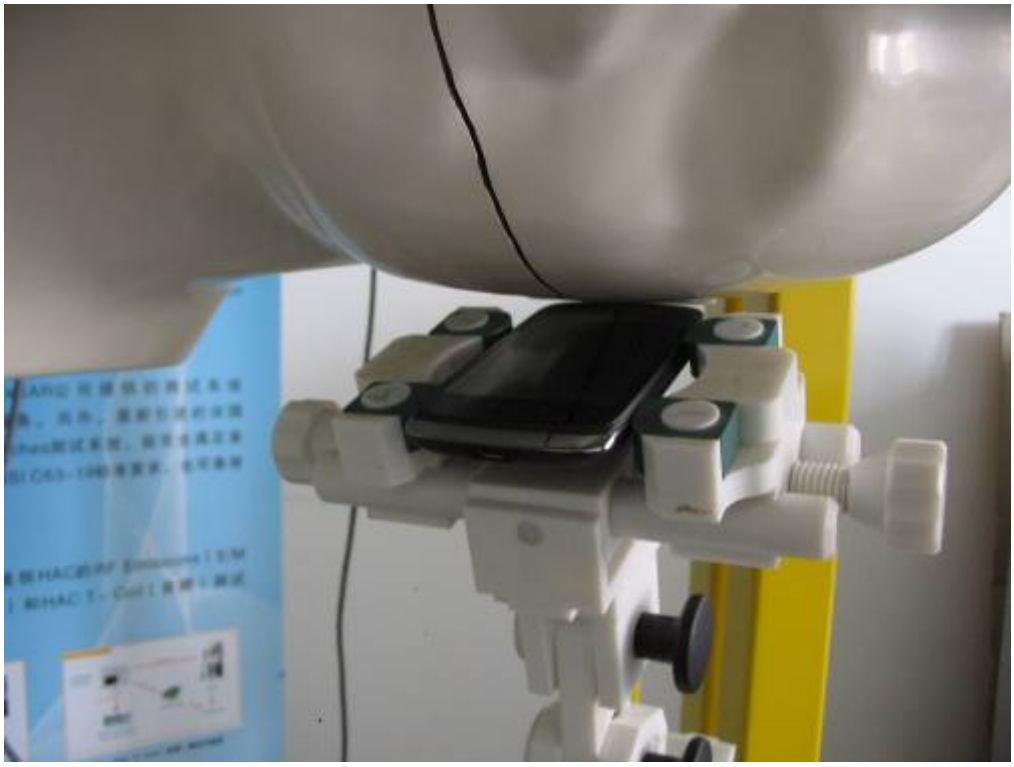
China National Accreditation Service for Conformity Assessment(CNAS) is authorized by Certification and Accreditation Administration of the People's Republic of China (CNCA) to operate the national accreditation systems for conformity assessment. CNAS is the signatory to International Laboratory Accreditation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

Annex B Photographs of the EUT

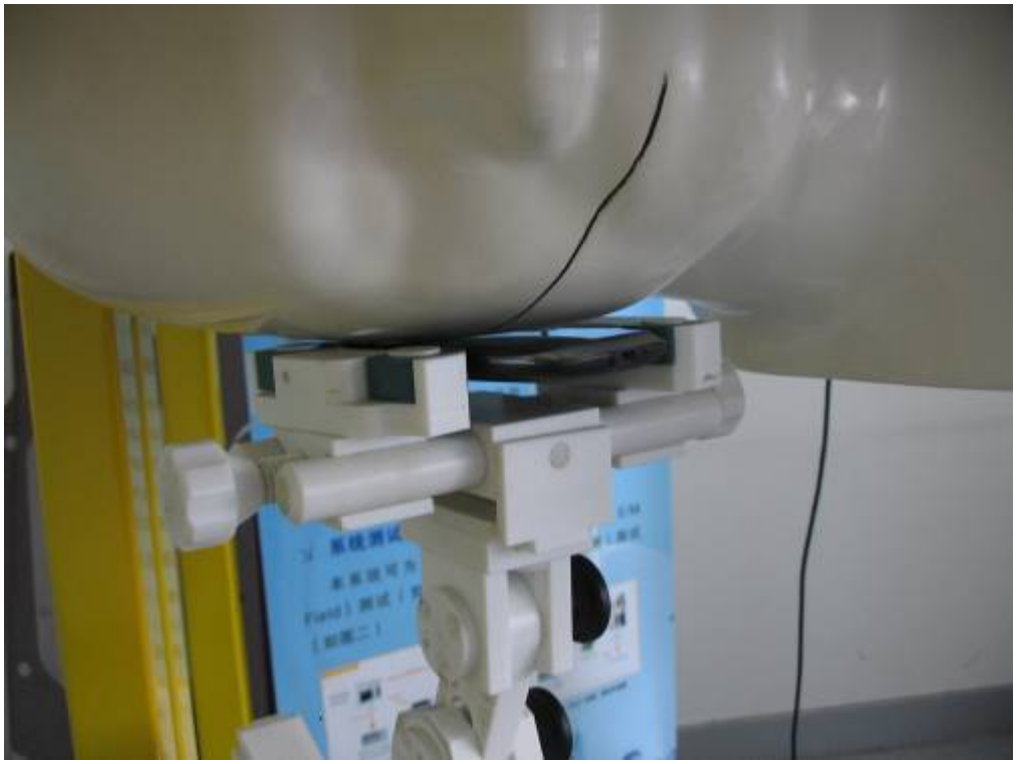
1 EUT Left Head Touch Cheek Position



2 EUT Left Head Tilt15 Position



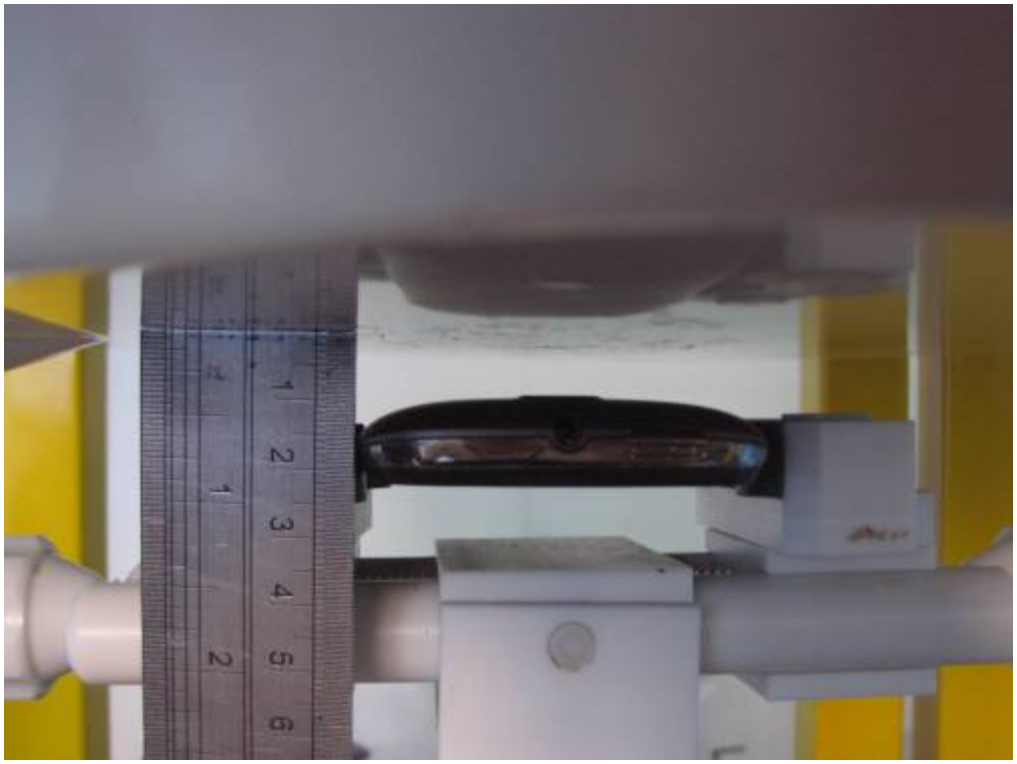
3 EUT Right Head Touch Cheek Position



4 EUT Right Head Tilt15 Position

5 Phone 15 mm from Phantom

6 Phone 10 mm from Phantom

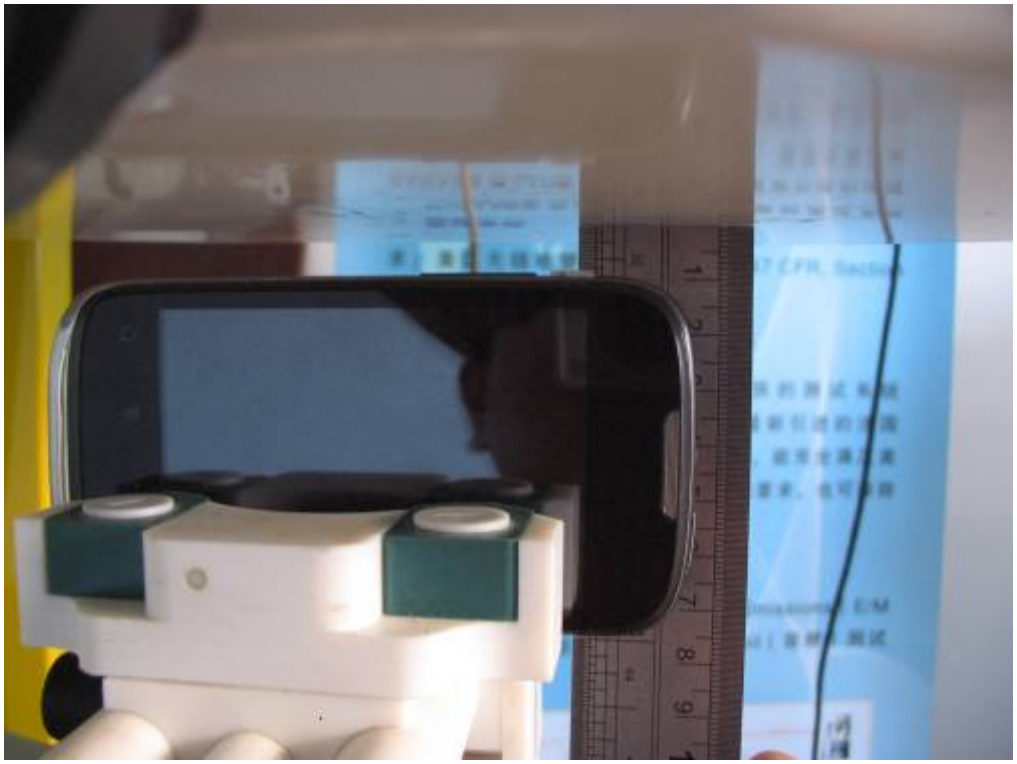


7 Top Edge

8 Bottom Edge

9 Right Edge

10 Left Edge



Liquid Level Photo

Annex C Graph Test Results

TYPE	BAND	PARAMETERS
Head Test	**GSM1900**	Measurement 1: Right Head with Cheek device position on Low Channel in GSM mode Measurement 2: Right Head with Cheek device position on Middle Channel in GSM mode Measurement 3: Right Head with Cheek device position on High Channel in GSM mode Measurement 4: Right Head with Tilt device position on Low Channel in GSM mode Measurement 5: Right Head with Tilt device position on Middle Channel in GSM mode Measurement 6: Right Head with Tilt device position on High Channel in GSM mode Measurement 7: Left Head with Cheek device position on Low Channel in GSM mode Measurement 8: Left Head with Cheek device position on Middle Channel in GSM mode Measurement 9: Left Head with Cheek device position on High Channel in GSM mode Measurement 10: Left Head with Tilt device position on Low Channel in GSM mode Measurement 11: Left Head with Tilt device position on Middle Channel in GSM mode Measurement 12: Left Head with Tilt device position on High Channel in GSM mode

TYPE	BAND	PARAMETERS
Body Worn Test (Phone 15 mm from Phantom)	**GSM1900**	Measurement 13: Validation Plane with Body device position on Middle Channel in GSM mode Measurement 14: Validation Plane with Body device position on Middle Channel in GSM mode Measurement 15: Validation Plane with Body device position on Low Channel in GPRS mode Measurement 16: Validation Plane with Body device position on Middle Channel in GPRS mode Measurement 17: Validation Plane with Body device position on High Channel in GPRS mode Measurement 18: Validation Plane with Body device

		position on Middle Channel in EDGE mode
	WIFI 2450MHz	Measurement 21: Validation Plane with Body device position on Middle Channel in WIFI 802.11b mode Measurement 22: Validation Plane with Body device position on Middle Channel in WIFI 802.11b mode

TYPE	BAND	PARAMETERS
Mobile Hotspot Test (Phone 10 mm from Phantom)	**GSM1900**	Measurement 23: Validation Plane with Body device position on Low Channel in GPRS mode Measurement 24: Validation Plane with Body device position on Middle Channel in GPRS mode Measurement 25: Validation Plane with Body device position on High Channel in GPRS mode Measurement 26: Validation Plane with Body device position on Low Channel in GPRS mode Measurement 27: Validation Plane with Body device position on Low Channel in GPRS mode Measurement 28: Validation Plane with Body device position on Low Channel in GPRS mode Measurement 29: Validation Plane with Body device position on Low Channel in GPRS mode
	WIFI 2450MHz	Measurement 30: Validation Plane with Body device position on Middle Channel in WIFI 802.11b mode Measurement 31: Validation Plane with Body device position on Low Channel in WIFI 802.11b mode Measurement 32: Validation Plane with Body device position on Middle Channel in WIFI 802.11b mode Measurement 33: Validation Plane with Body device position on High Channel in WIFI 802.11b mode Measurement 34: Validation Plane with Body device position on Middle Channel in WIFI 802.11b mode Measurement 35: Validation Plane with Body device position on Middle Channel in WIFI 802.11b 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: 3/5/2011
Measurement duration: 8 minutes 13 seconds

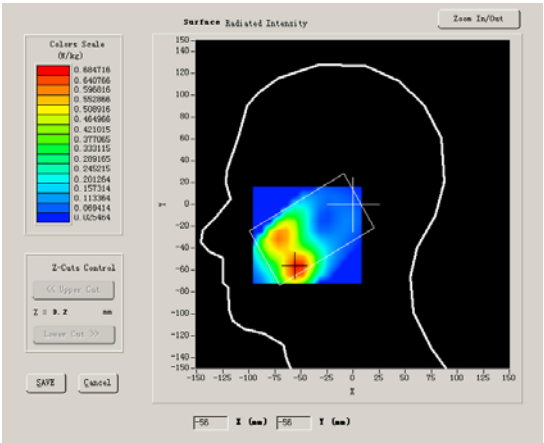
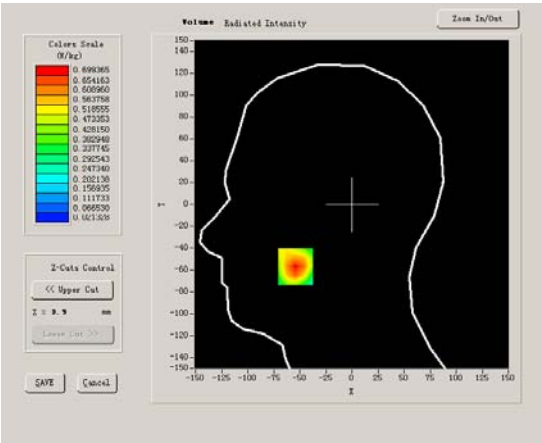
A. Experimental conditions.

Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Right head
Device Position	Cheek
Band	GSM1900
Channels	Low
Signal	GSM

B. SAR Measurement Results

Lower Band SAR (Channel 512):

Frequency (MHz)	1850.199951
Relative permittivity (real part)	39.993999
Relative permittivity	12.991650
Conductivity (S/m)	1.335397
Power Drift (%)	-0.210000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:8

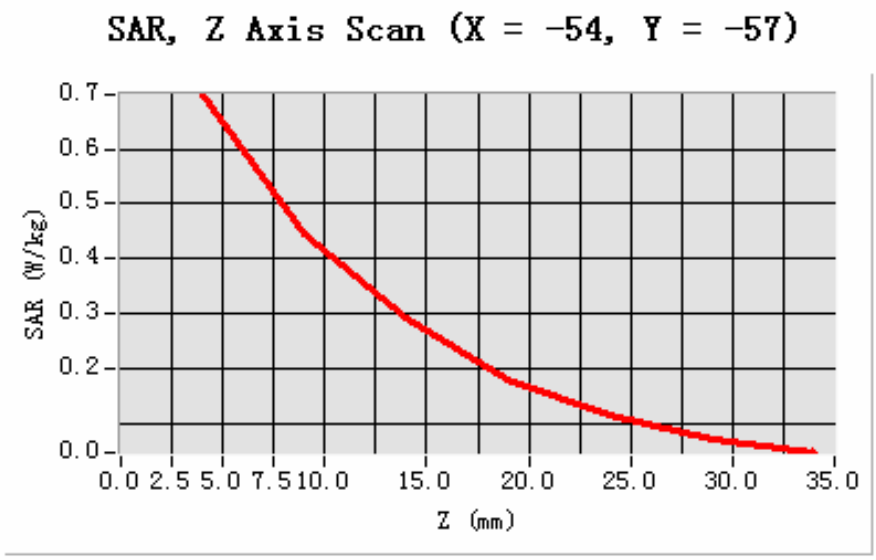
SURFACE SAR	VOLUME SAR
	

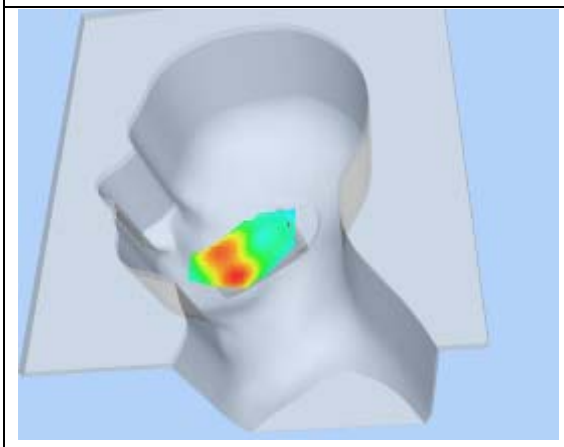
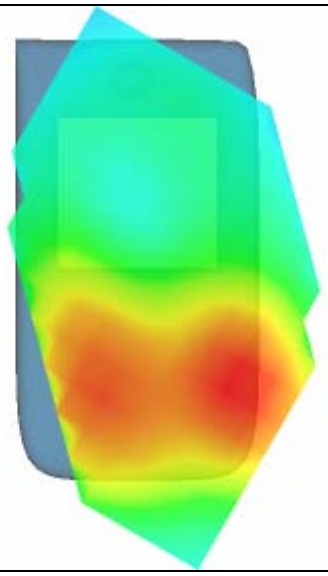
Maximum location: X=-54.00, Y=-57.00

SAR 10g (W/Kg)	0.393158
SAR 1g (W/Kg)	0.661243

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.6994	0.4444	0.2898	0.1796	0.1147	0.0710



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: 3/5/2011
Measurement duration: 8 minutes 13 seconds

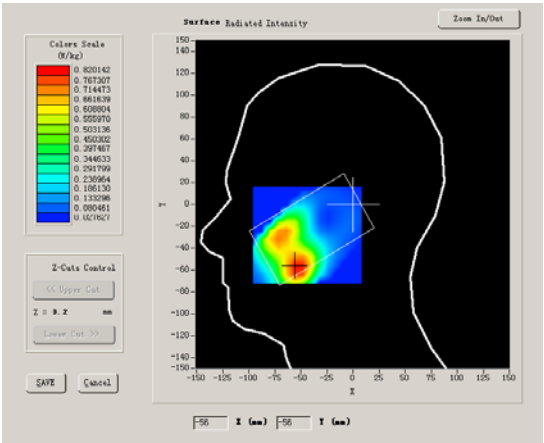
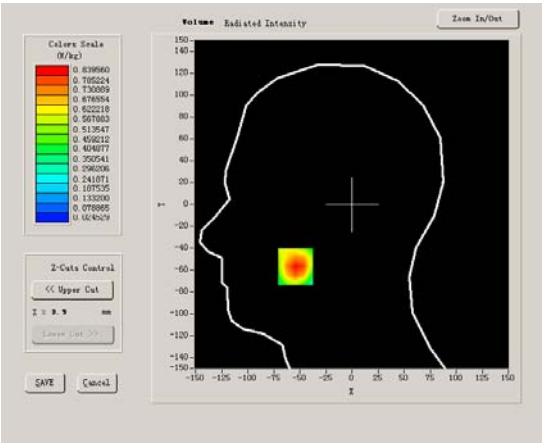
A. Experimental conditions.

Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Right head
Device Position	Cheek
Band	GSM1900
Channels	Middle
Signal	GSM

B. SAR Measurement Results

Middle Band SAR (Channel 661):

Frequency (MHz)	1880.000000
Relative permittivity (real part)	38.509998
Relative permittivity	13.750000
Conductivity (S/m)	1.436111
Power Drift (%)	-0.130000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:8

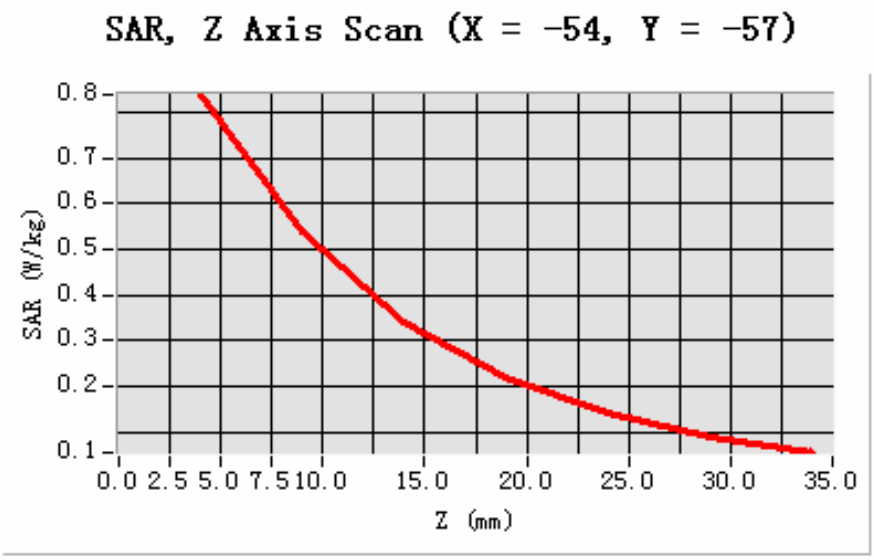
SURFACE SAR	VOLUME SAR
	

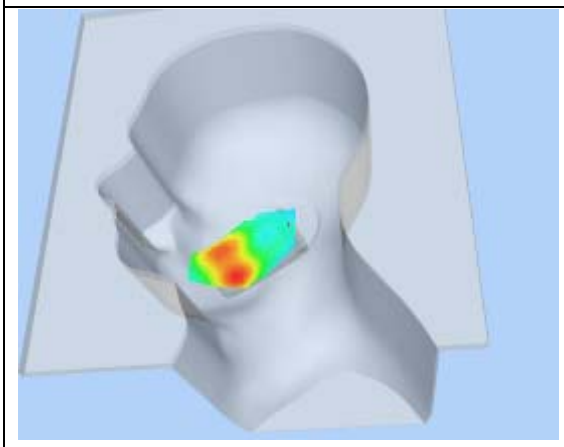
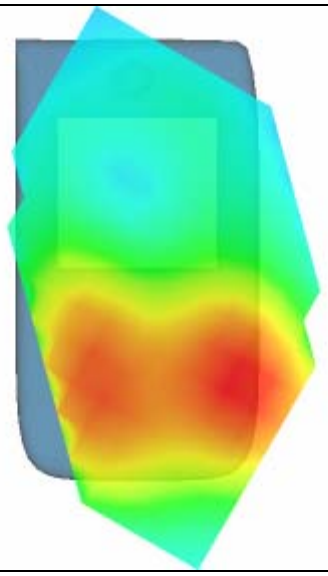
Maximum location: X=-54.00, Y=-57.00

SAR 10g (W/Kg)	0.478687
SAR 1g (W/Kg)	0.803267

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.8396	0.5368	0.3419	0.2194	0.1429	0.0877



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: 3/5/2011
Measurement duration: 8 minutes 2 seconds

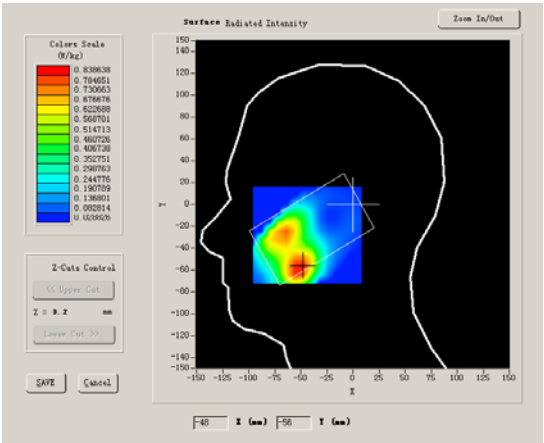
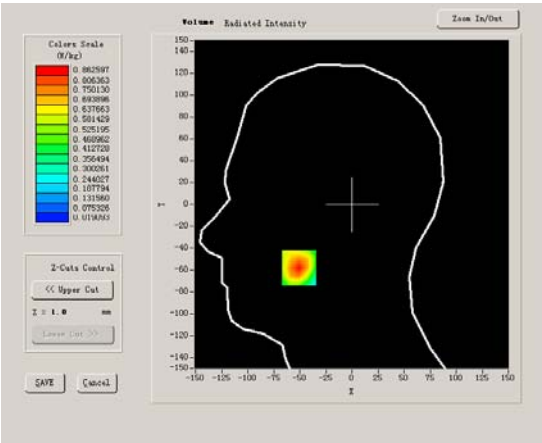
A. Experimental conditions.

Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Right head
Device Position	Cheek
Band	GSM1900
Channels	High
Signal	GSM

B. SAR Measurement Results

Higher Band SAR (Channel 810):

Frequency (MHz)	1909.800049
Relative permittivity (real part)	39.929001
Relative permittivity	13.156500
Conductivity (S/m)	1.395905
Power Drift (%)	-1.130000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:8

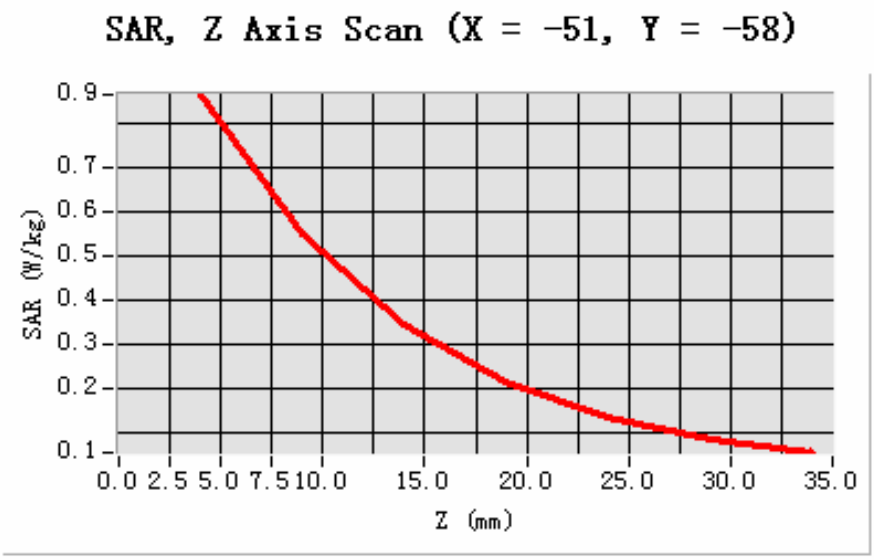
SURFACE SAR	VOLUME SAR
	

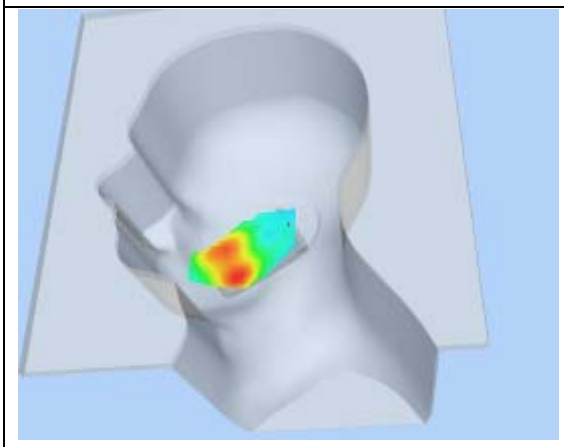
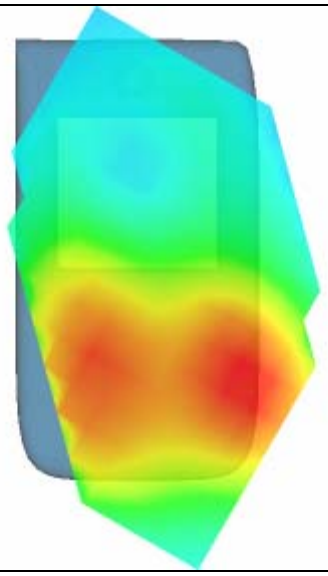
Maximum location: X=-51.00, Y=-58.00

SAR 10g (W/Kg)	0.479335
SAR 1g (W/Kg)	0.813945

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.8626	0.5458	0.3455	0.2126	0.1341	0.0817



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: 3/5/2011
Measurement duration: 7 minutes 24 seconds

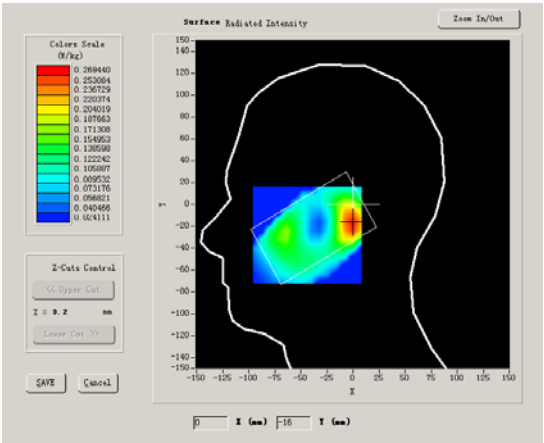
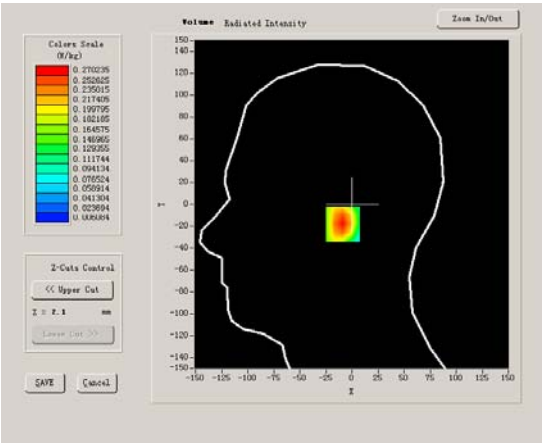
A. Experimental conditions.

Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Right head
Device Position	Tilt
Band	GSM1900
Channels	Low
Signal	GSM

B. SAR Measurement Results

Lower Band SAR (Channel 512):

Frequency (MHz)	1850.199951
Relative permittivity (real part)	39.993999
Relative permittivity	12.991650
Conductivity (S/m)	1.335397
Power Drift (%)	0.030000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:8

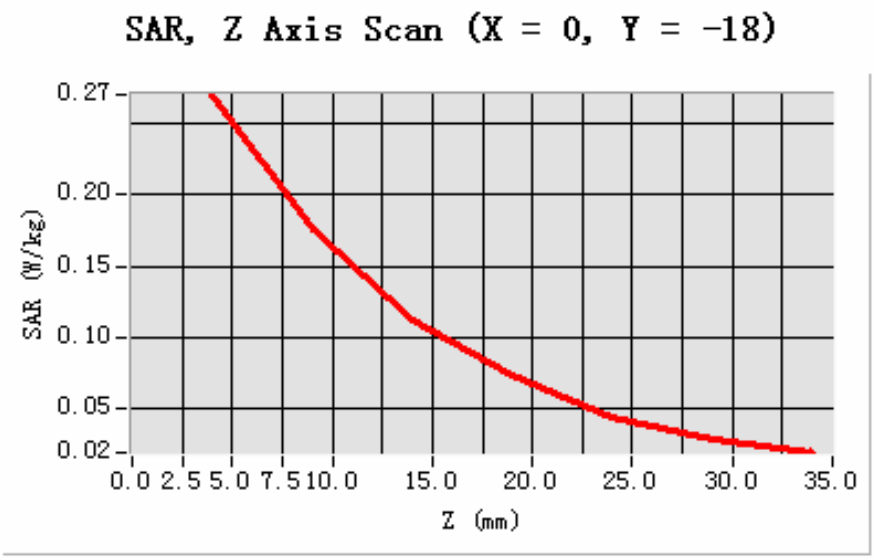
SURFACE SAR	VOLUME SAR
	

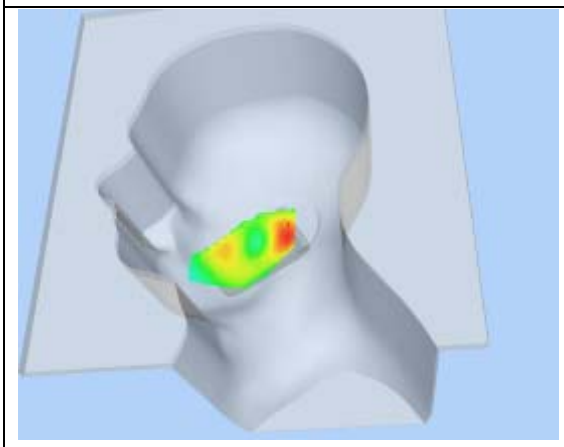
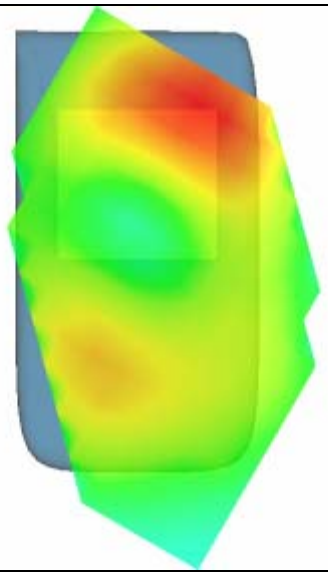
Maximum location: X=0.00, Y=-18.00

SAR 10g (W/Kg)	0.153318
SAR 1g (W/Kg)	0.254957

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.2702	0.1756	0.1124	0.0728	0.0436	0.0288



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: 3/5/2011
Measurement duration: 7 minutes 26 seconds

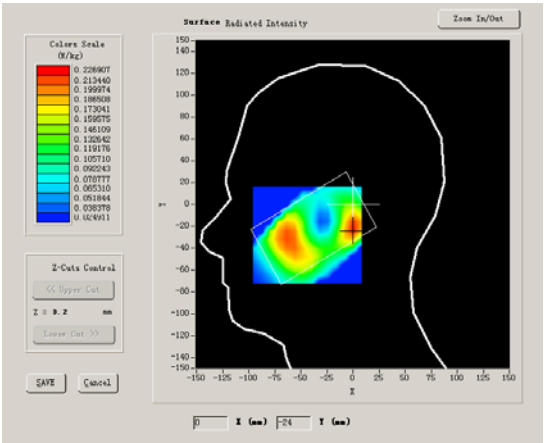
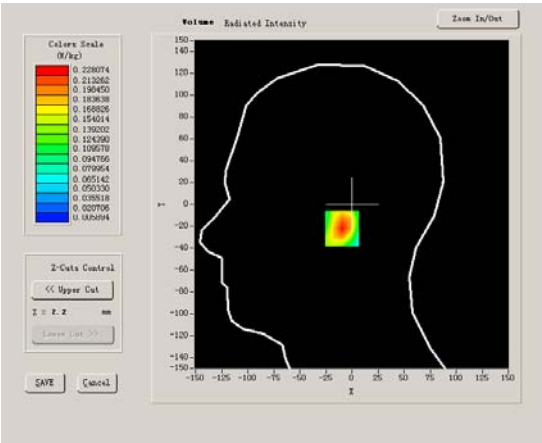
A. Experimental conditions.

Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Right head
Device Position	Tilt
Band	GSM1900
Channels	Middle
Signal	GSM

B. SAR Measurement Results

Middle Band SAR (Channel 661):

Frequency (MHz)	1880.000000
Relative permittivity (real part)	38.509998
Relative permittivity	13.750000
Conductivity (S/m)	1.436111
Power Drift (%)	-1.090000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:8

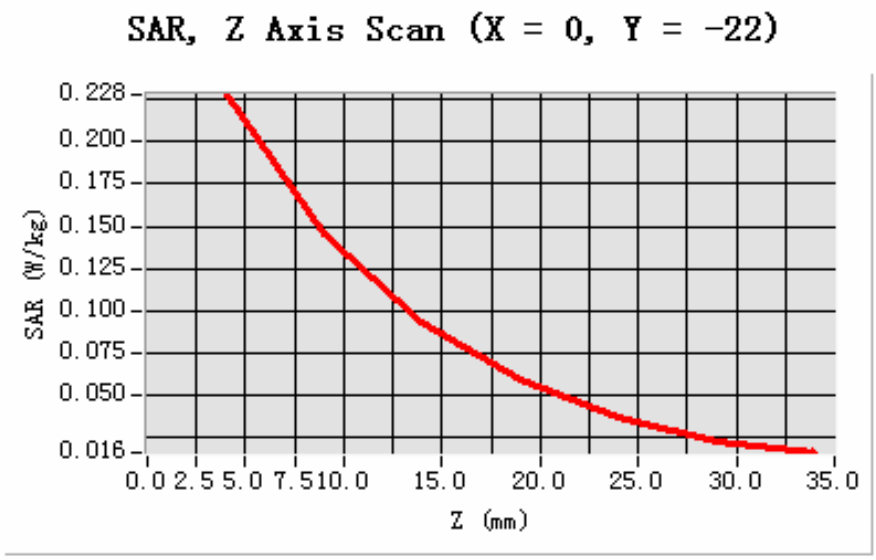
SURFACE SAR	VOLUME SAR
	

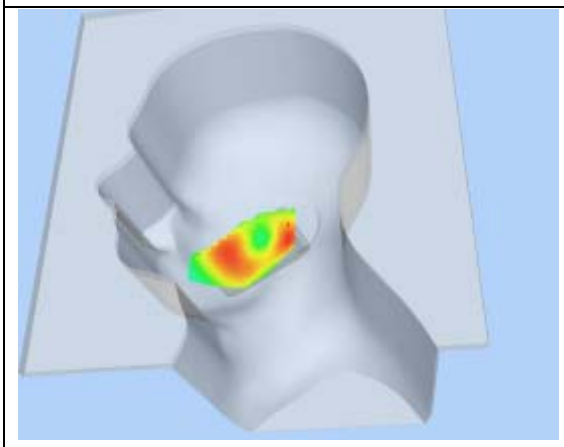
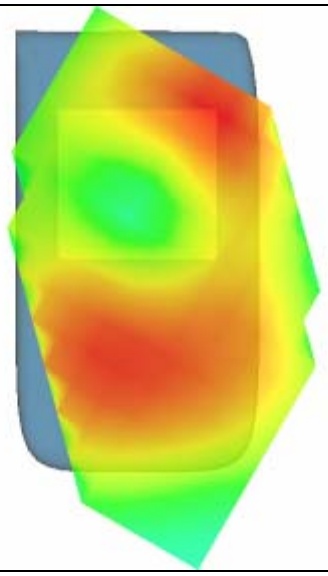
Maximum location: X=0.00, Y=-22.00

SAR 10g (W/Kg)	0.124988
SAR 1g (W/Kg)	0.213295

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.2281	0.1458	0.0931	0.0594	0.0370	0.0215



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: 3/5/2011
Measurement duration: 8 minutes 0 seconds

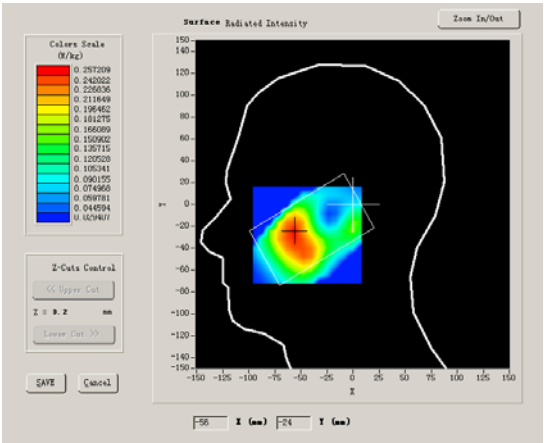
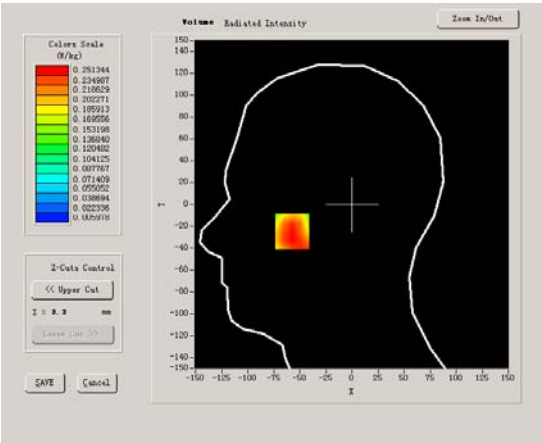
A. Experimental conditions.

Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Right head
Device Position	Tilt
Band	GSM1900
Channels	High
Signal	GSM

B. SAR Measurement Results

Higher Band SAR (Channel 810):

Frequency (MHz)	1909.800049
Relative permittivity (real part)	39.929001
Relative permittivity	13.156500
Conductivity (S/m)	1.395905
Power Drift (%)	-0.050000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:8

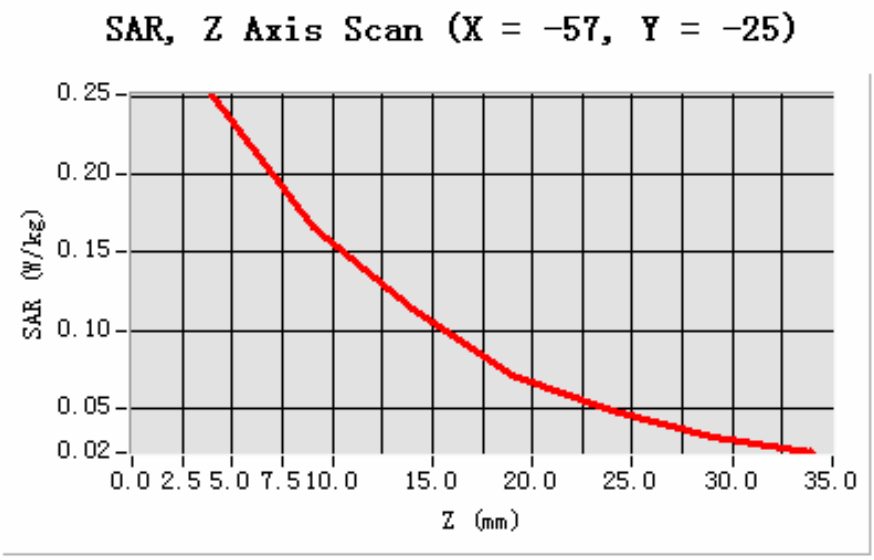
SURFACE SAR	VOLUME SAR
	

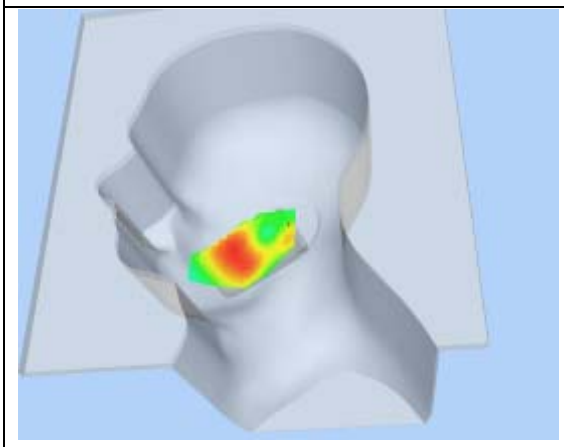
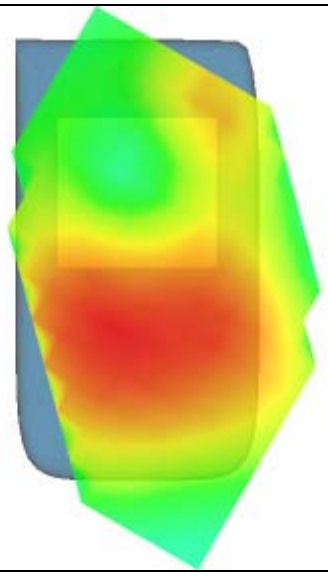
Maximum location: X=-57.00, Y=-25.00

SAR 10g (W/Kg)	0.158141
SAR 1g (W/Kg)	0.243103

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.2509	0.1656	0.1136	0.0713	0.0490	0.0321



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: 3/5/2011
Measurement duration: 8 minutes 10 seconds

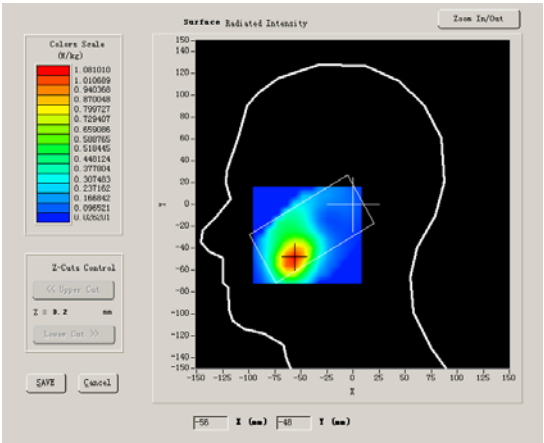
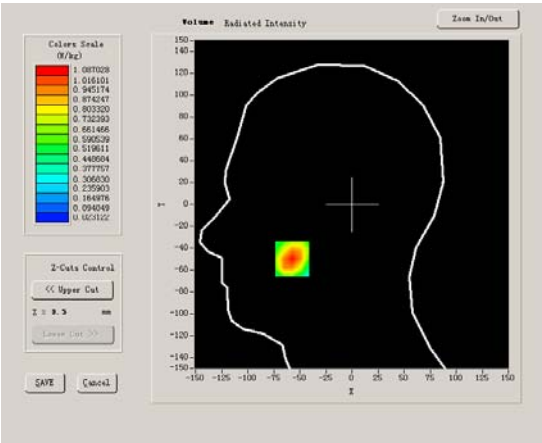
A. Experimental conditions.

Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Left head
Device Position	Cheek
Band	GSM1900
Channels	Low
Signal	GSM

B. SAR Measurement Results

Lower Band SAR (Channel 512):

Frequency (MHz)	1850.199951
Relative permittivity (real part)	52.540001
Relative permittivity	14.070000
Conductivity (S/m)	1.446240
Power Drift (%)	-0.310000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:8

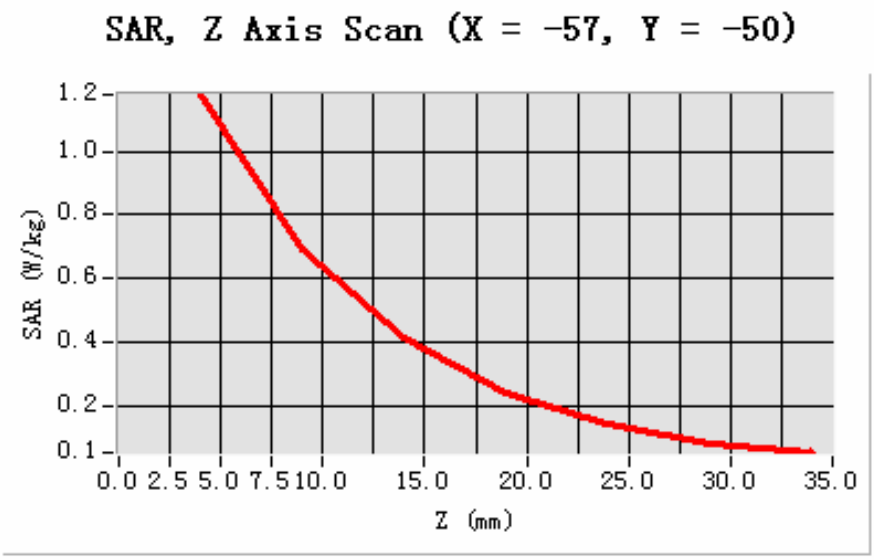
SURFACE SAR	VOLUME SAR
	

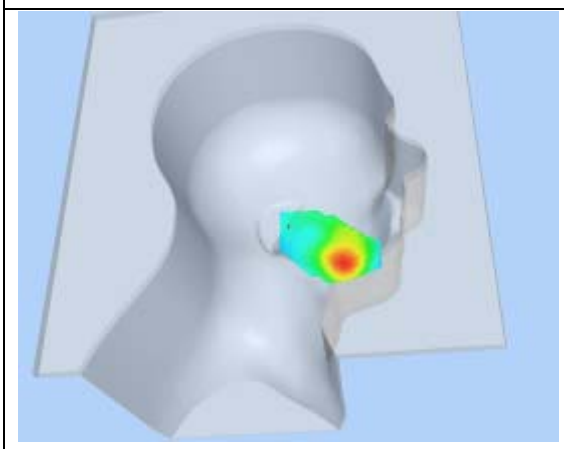
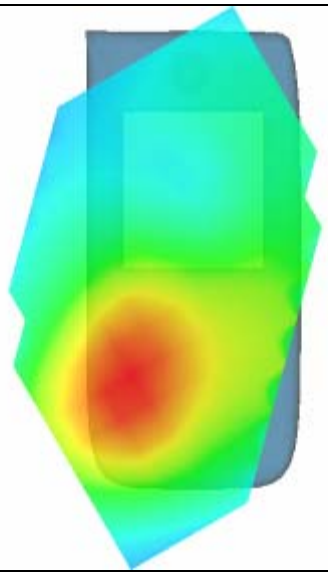
Maximum location: X=-57.00, Y=-50.00

SAR 10g (W/Kg)	0.631462
SAR 1g (W/Kg)	1.111516

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	1.1773	0.6914	0.4120	0.2397	0.1452	0.0859



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: 3/5/2011
Measurement duration: 8 minutes 9 seconds

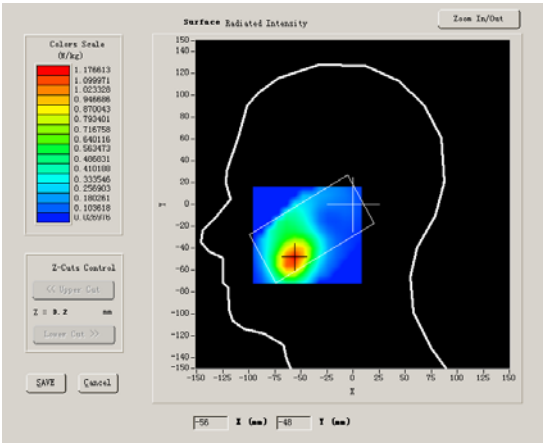
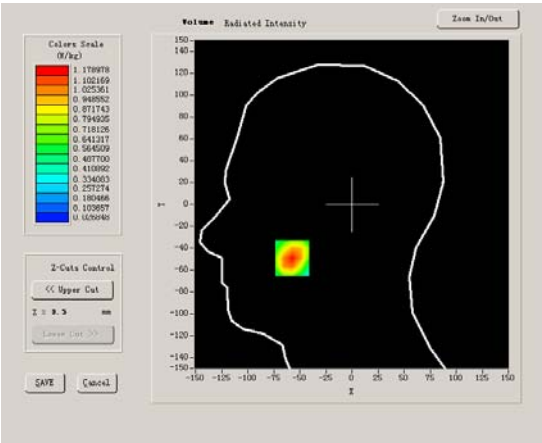
A. Experimental conditions.

Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Left head
Device Position	Cheek
Band	GSM1900
Channels	Middle
Signal	GSM

B. SAR Measurement Results

Middle Band SAR (Channel 661):

Frequency (MHz)	1880.000000
Relative permittivity (real part)	52.540001
Relative permittivity	14.070000
Conductivity (S/m)	1.469533
Power Drift (%)	-0.540000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:8

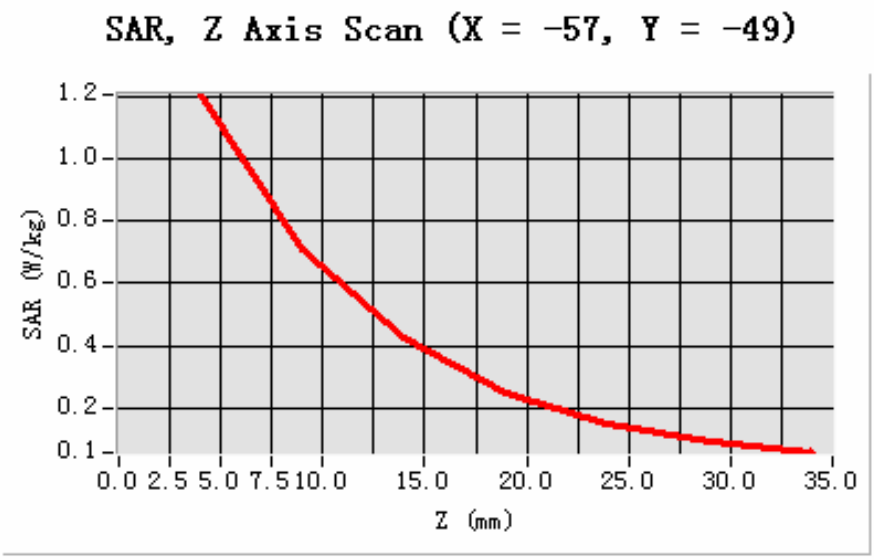
SURFACE SAR	VOLUME SAR
	

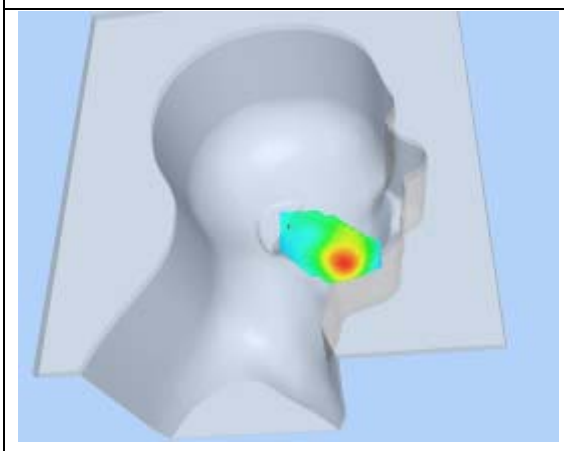
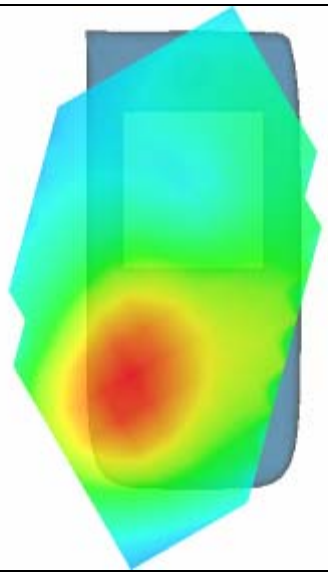
Maximum location: X=-57.00, Y=-49.00

SAR 10g (W/Kg)	0.644063
SAR 1g (W/Kg)	1.140389

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	1.2064	0.7110	0.4235	0.2510	0.1496	0.0882



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: 3/5/2011
Measurement duration: 8 minutes 11 seconds

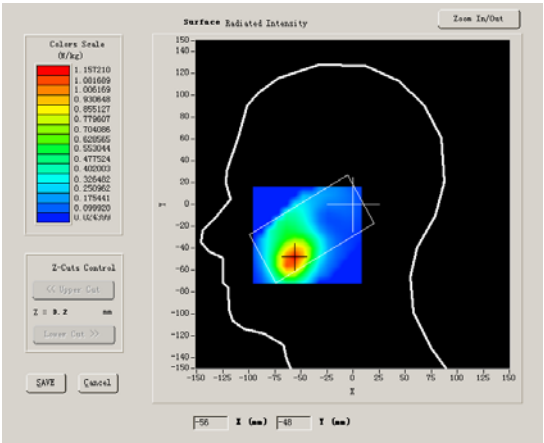
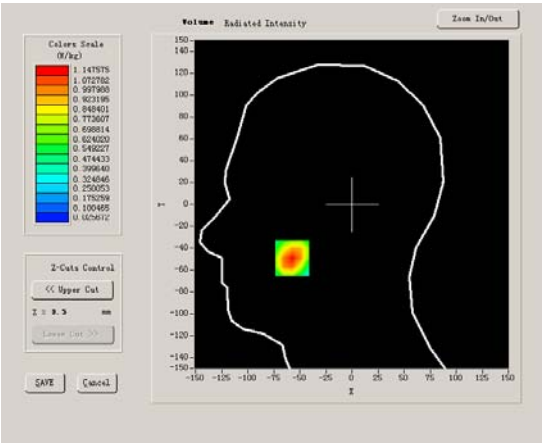
A. Experimental conditions.

Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Left head
Device Position	Cheek
Band	GSM1900
Channels	High
Signal	GSM

B. SAR Measurement Results

Higher Band SAR (Channel 810):

Frequency (MHz)	1909.800049
Relative permittivity (real part)	52.540001
Relative permittivity	14.070000
Conductivity (S/m)	1.492827
Power Drift (%)	-1.140000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:8

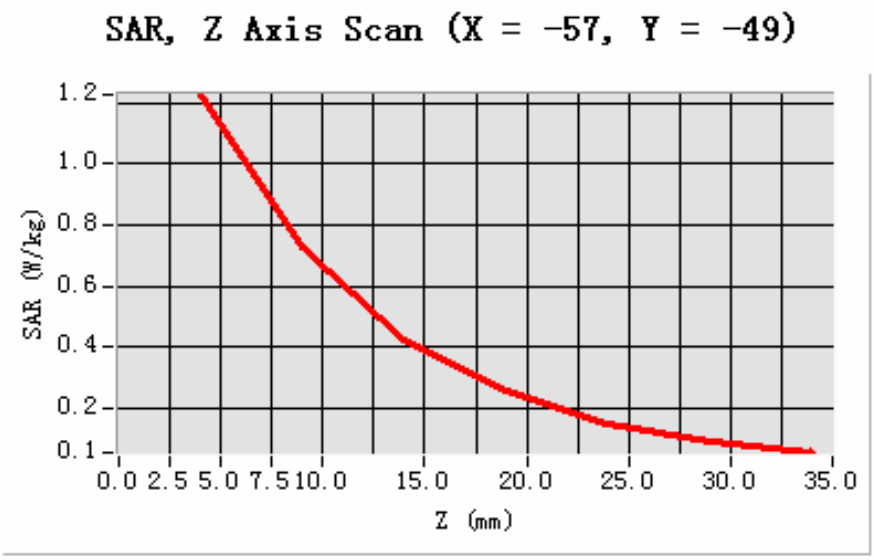
SURFACE SAR	VOLUME SAR
	

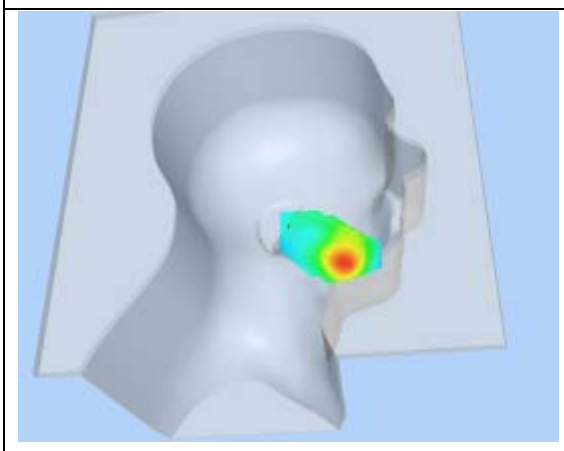
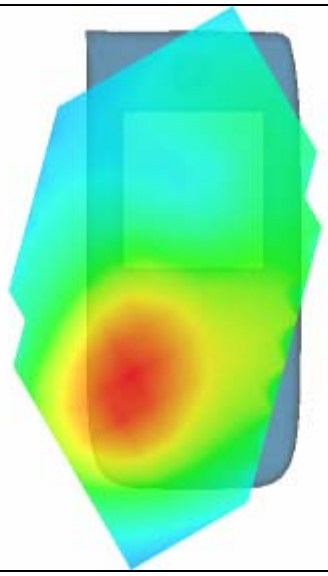
Maximum location: X=-57.00, Y=-49.00

SAR 10g (W/Kg)	0.657878
SAR 1g (W/Kg)	1.167666

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	1.2273	0.7259	0.4228	0.2596	0.1514	0.0882



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: 3/5/2011
Measurement duration: 7 minutes 19 seconds

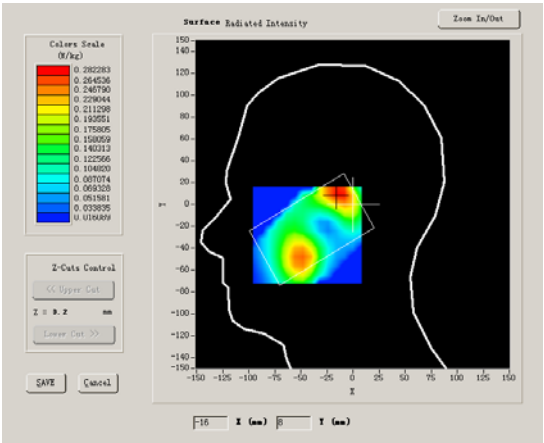
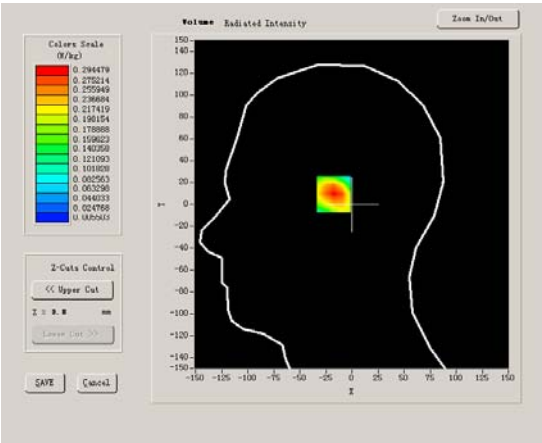
A. Experimental conditions.

Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Left head
Device Position	Tilt
Band	GSM1900
Channels	Low
Signal	GSM

B. SAR Measurement Results

Lower Band SAR (Channel 512):

Frequency (MHz)	1850.199951
Relative permittivity (real part)	39.993999
Relative permittivity	12.991650
Conductivity (S/m)	1.335397
Power Drift (%)	0.420000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:8

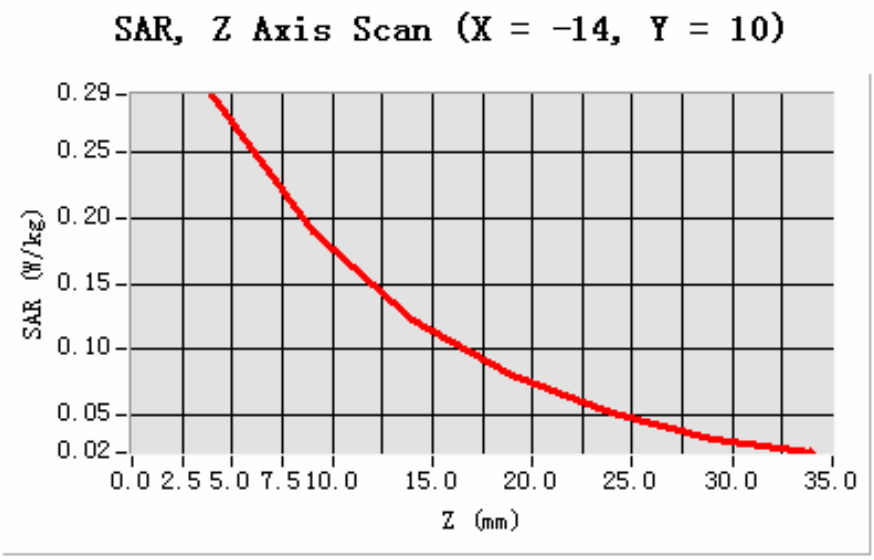
SURFACE SAR	VOLUME SAR
	

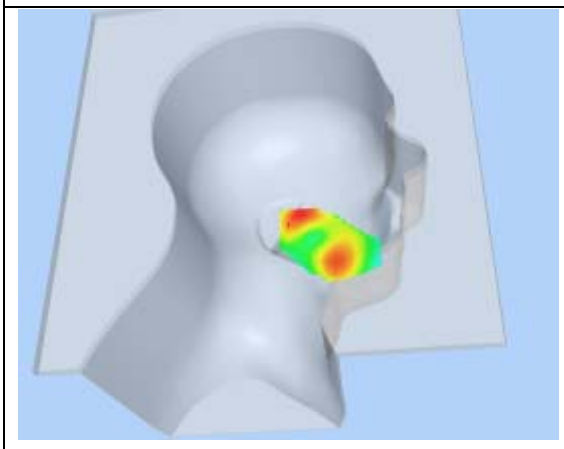
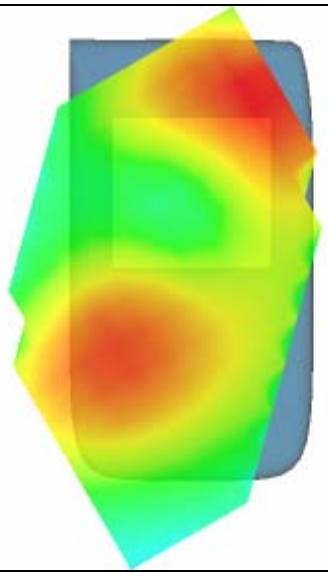
Maximum location: X=-14.00, Y=10.00

SAR 10g (W/Kg)	0.166196
SAR 1g (W/Kg)	0.281685

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.2945	0.1894	0.1227	0.0804	0.0524	0.0320



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: 3/5/2011
Measurement duration: 7 minutes 56 seconds

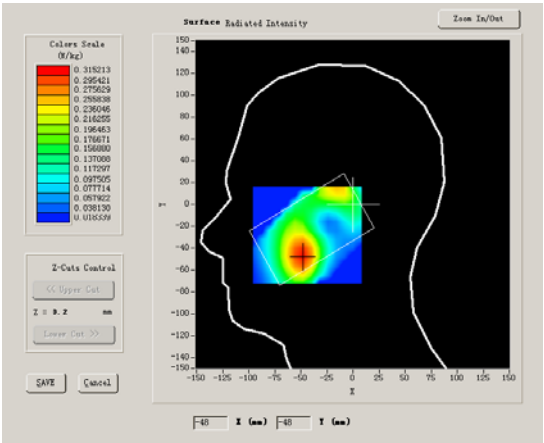
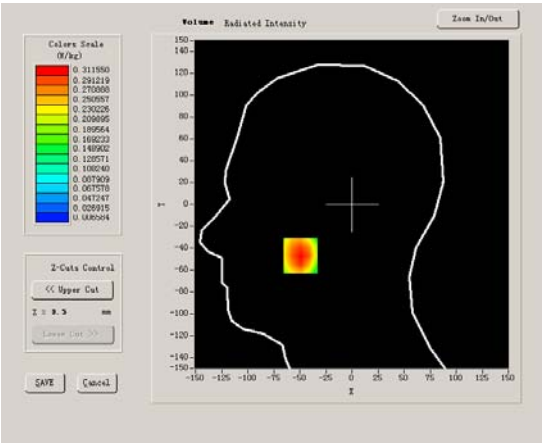
A. Experimental conditions.

Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Left head
Device Position	Tilt
Band	GSM1900
Channels	Middle
Signal	GSM

B. SAR Measurement Results

Middle Band SAR (Channel 661):

Frequency (MHz)	1880.000000
Relative permittivity (real part)	38.509998
Relative permittivity	13.750000
Conductivity (S/m)	1.436111
Power Drift (%)	-0.110000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:8

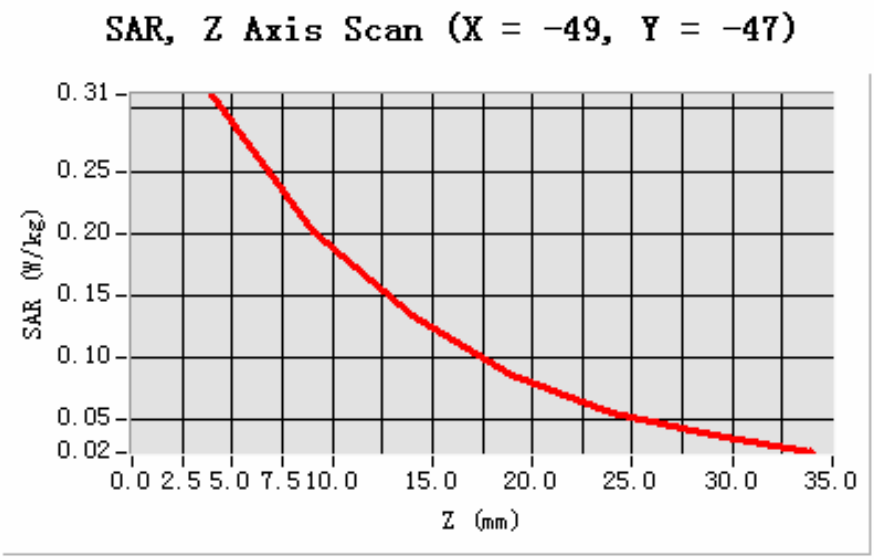
SURFACE SAR	VOLUME SAR
	

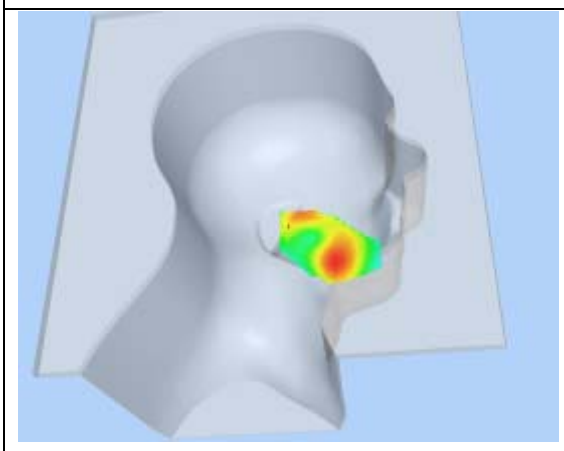
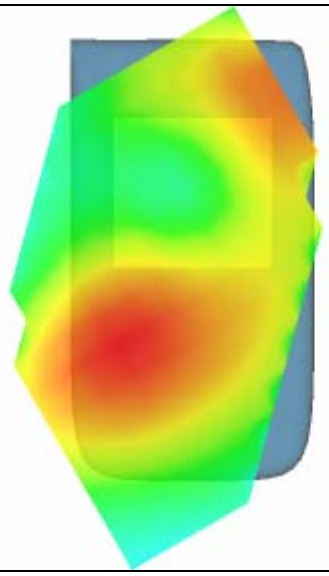
Maximum location: X=-49.00, Y=-47.00

SAR 10g (W/Kg)	0.184934
SAR 1g (W/Kg)	0.298047

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.3115	0.2014	0.1328	0.0861	0.0558	0.0372



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: 3/5/2011
Measurement duration: 7 minutes 51 seconds

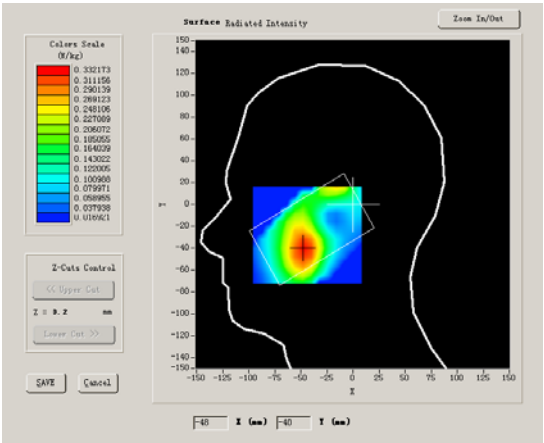
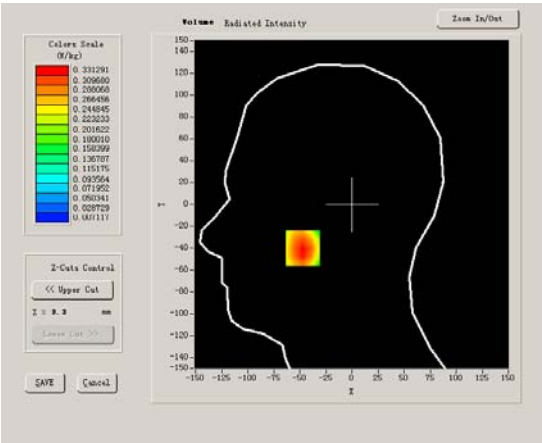
A. Experimental conditions.

Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Left head
Device Position	Tilt
Band	GSM1900
Channels	High
Signal	GSM

B. SAR Measurement Results

Higher Band SAR (Channel 810):

Frequency (MHz)	1909.800049
Relative permittivity (real part)	39.929001
Relative permittivity	13.156500
Conductivity (S/m)	1.395905
Power Drift (%)	-1.290000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:8

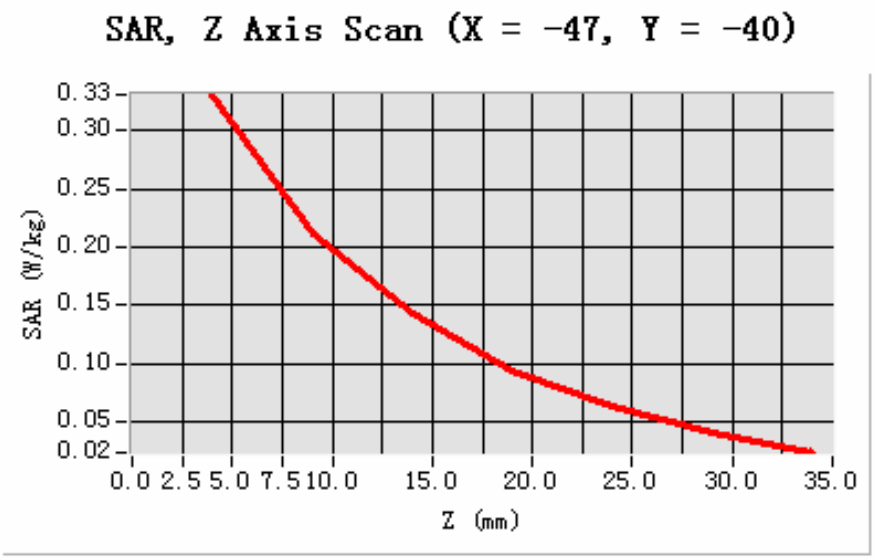
SURFACE SAR	VOLUME SAR
	

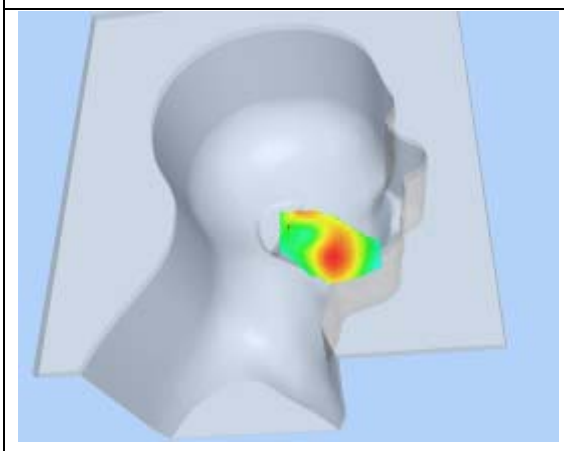
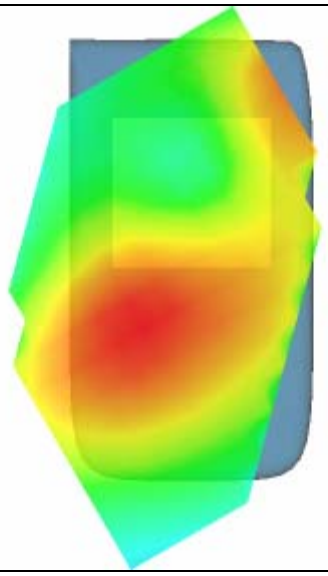
Maximum location: X=-47.00, Y=-40.00

SAR 10g (W/Kg)	0.199665
SAR 1g (W/Kg)	0.319300

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.3313	0.2121	0.1437	0.0941	0.0624	0.0395



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: 3/5/2011
Measurement duration: 9 minutes 6 seconds

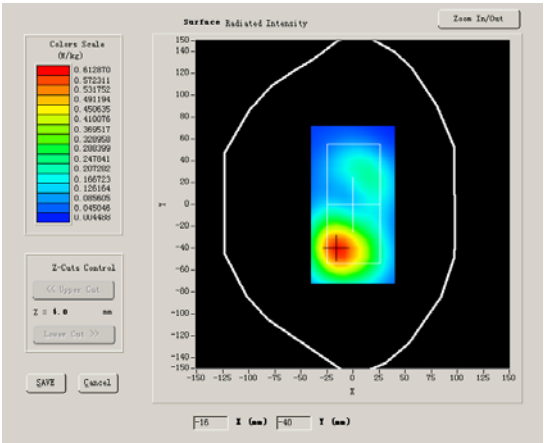
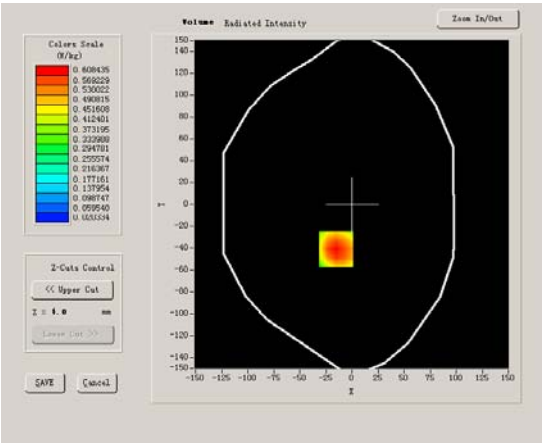
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	GSM1900
Channels	Middle
Signal	GSM

B. SAR Measurement Results

Lower Band SAR (Channel 661):

Frequency (MHz)	1880.000000
Relative permittivity (real part)	52.540001
Relative permittivity	14.070000
Conductivity (S/m)	1.446240
Power Drift (%)	-0.420000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:8

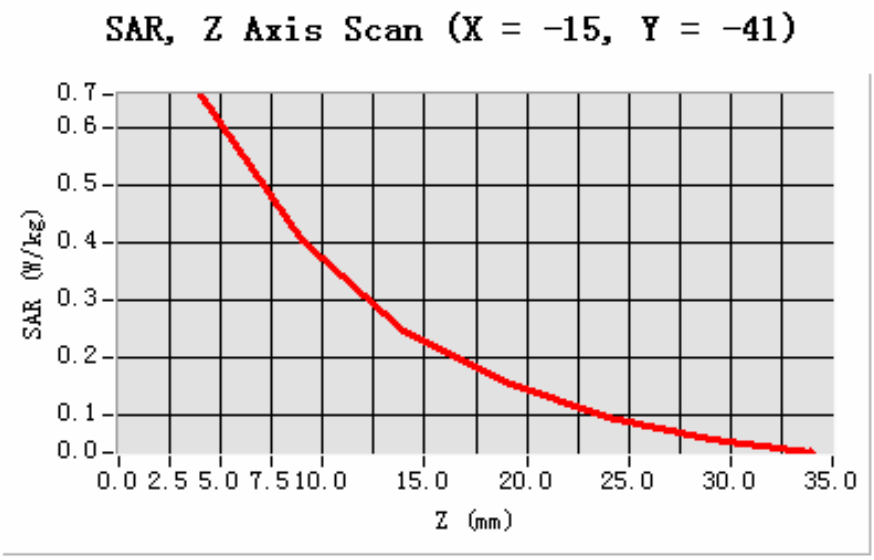
SURFACE SAR	VOLUME SAR
	

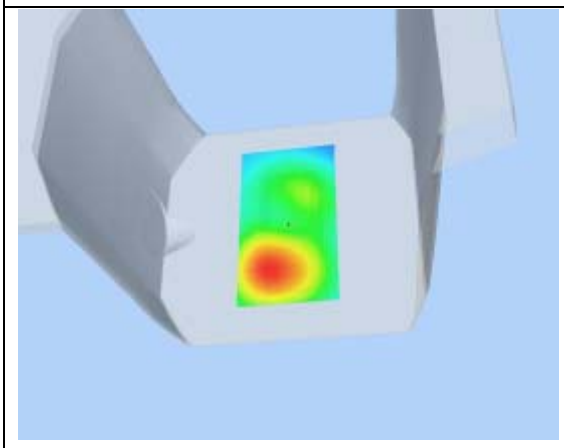
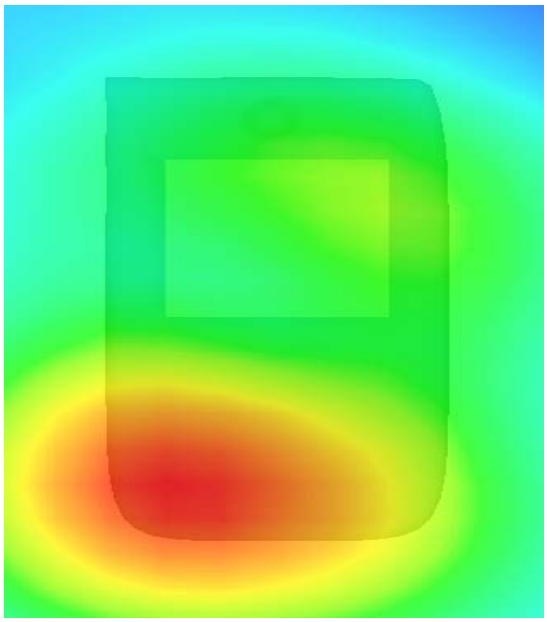
Maximum location: X=-15.00, Y=-41.00

SAR 10g (W/Kg)	0.384638
SAR 1g (W/Kg)	0.634505

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.6589	0.4035	0.2489	0.1587	0.0975	0.0603



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: 3/5/2011
Measurement duration: 9 minutes 6 seconds

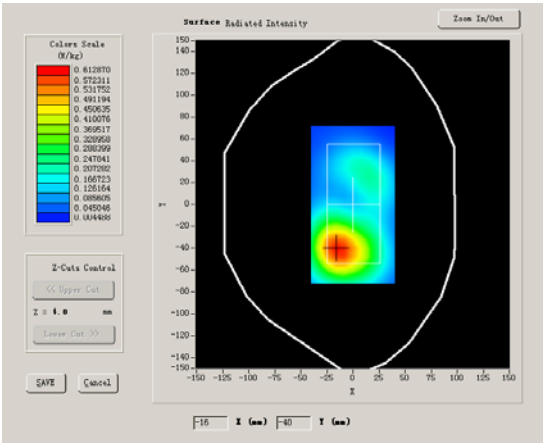
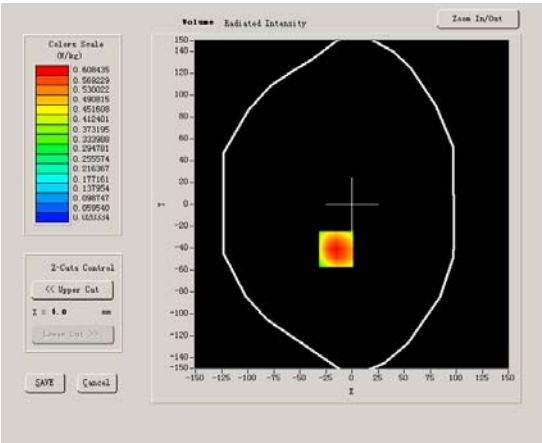
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	GSM1900
Channels	Middle
Signal	GSM

B. SAR Measurement Results

Lower Band SAR (Channel 661):

Frequency (MHz)	1880.000000
Relative permittivity (real part)	52.540001
Relative permittivity	14.070000
Conductivity (S/m)	1.446240
Power Drift (%)	-0.420000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:8

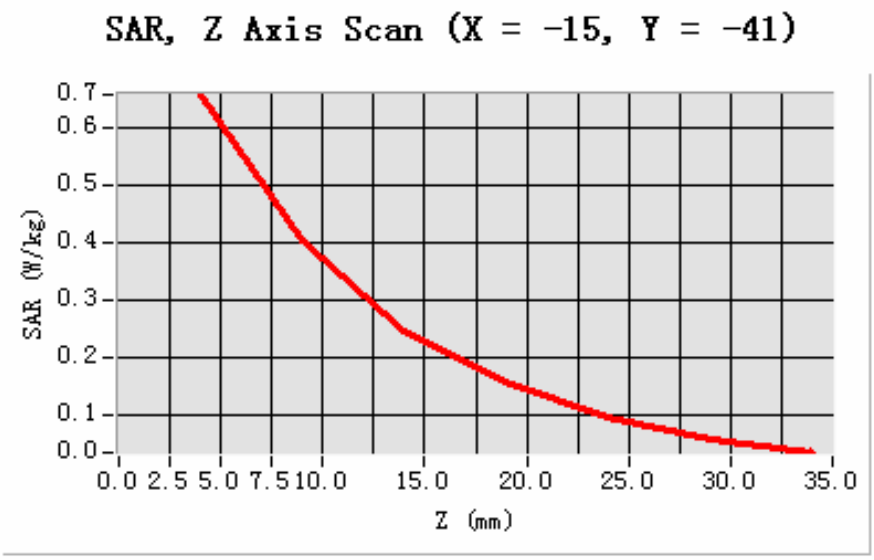
SURFACE SAR	VOLUME SAR
	

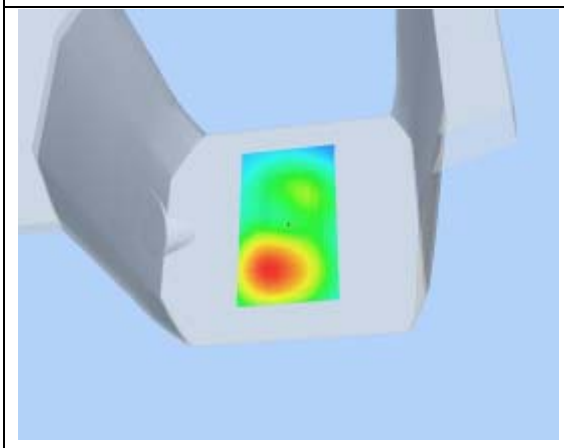
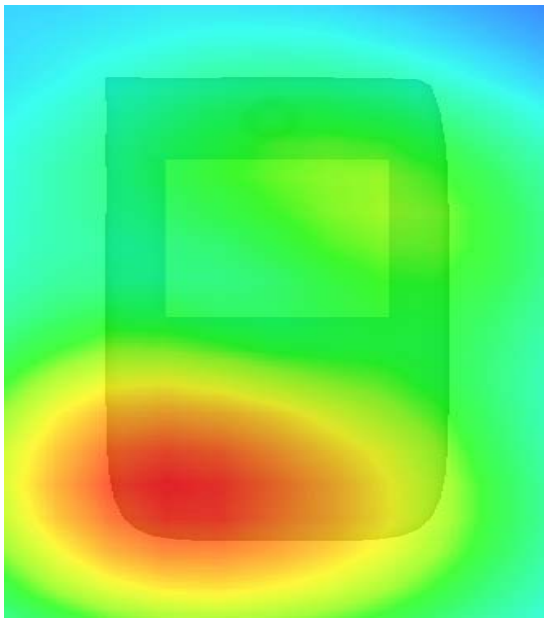
Maximum location: X=-15.00, Y=-41.00

SAR 10g (W/Kg)	0.231745
SAR 1g (W/Kg)	0.451664

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.6589	0.4035	0.2489	0.1587	0.0975	0.0603



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: 3/5/2011
Measurement duration: 9 minutes 13 seconds

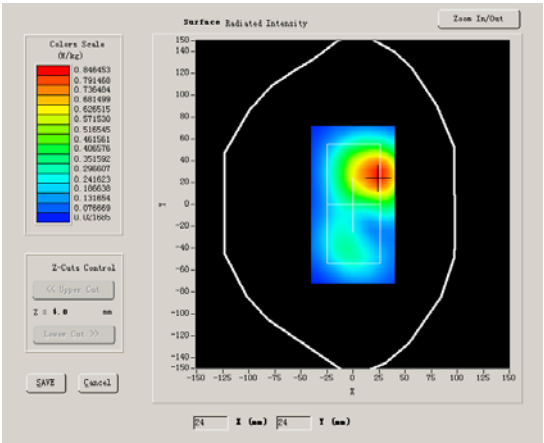
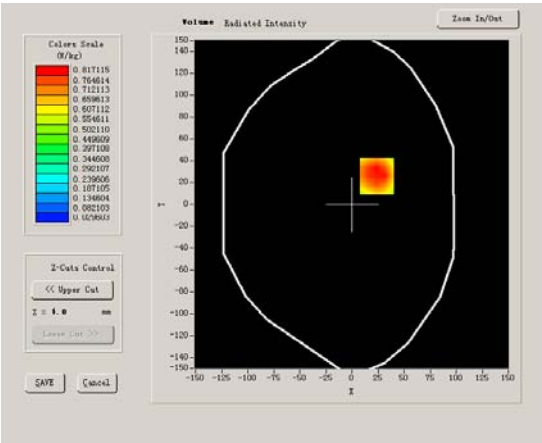
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	GSM1900
Channels	Low
Signal	GPRS

B. SAR Measurement Results

Lower Band SAR (Channel 512):

Frequency (MHz)	1850.199951
Relative permittivity (real part)	52.540001
Relative permittivity	14.070000
Conductivity (S/m)	1.446240
Power Drift (%)	-2.020000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:4

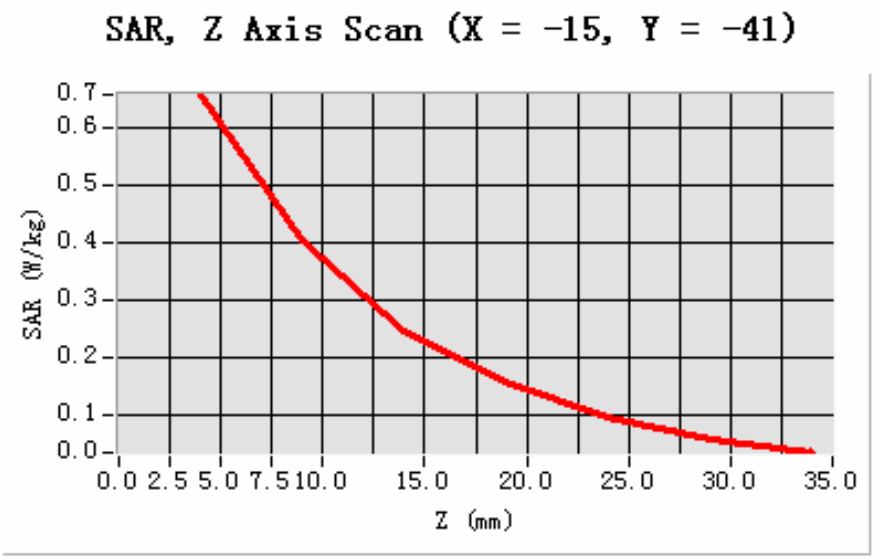
SURFACE SAR	VOLUME SAR
	

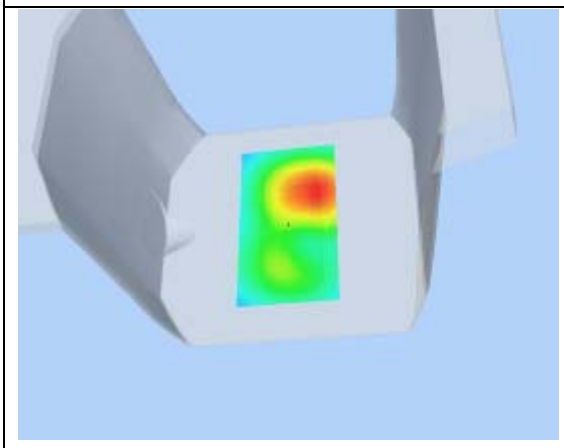
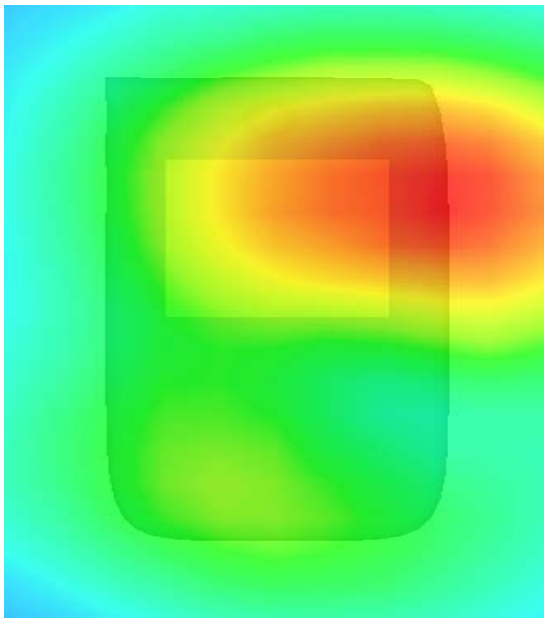
Maximum location: X=24.00, Y=26.00

SAR 10g (W/Kg)	0.523499
SAR 1g (W/Kg)	0.883371

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.8658	0.5534	0.0326	0.2182	0.1374	0.0842



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: 3/5/2011
Measurement duration: 9 minutes 7 seconds

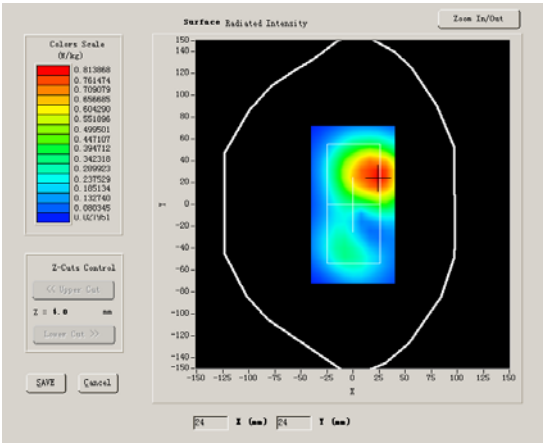
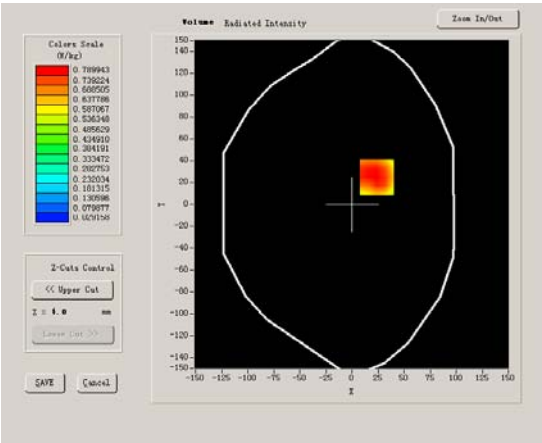
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation 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)	52.540001
Relative permittivity	14.070000
Conductivity (S/m)	1.469533
Power Drift (%)	-1.200000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:4

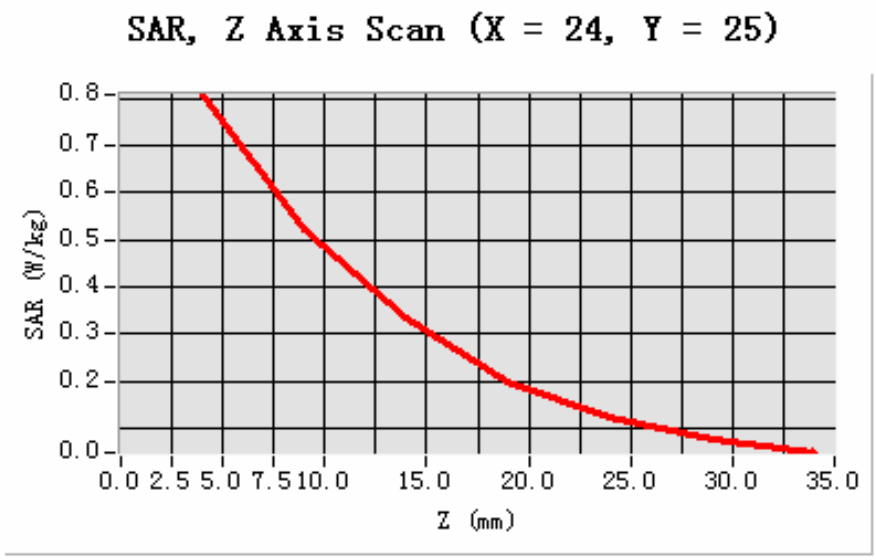
SURFACE SAR	VOLUME SAR
	

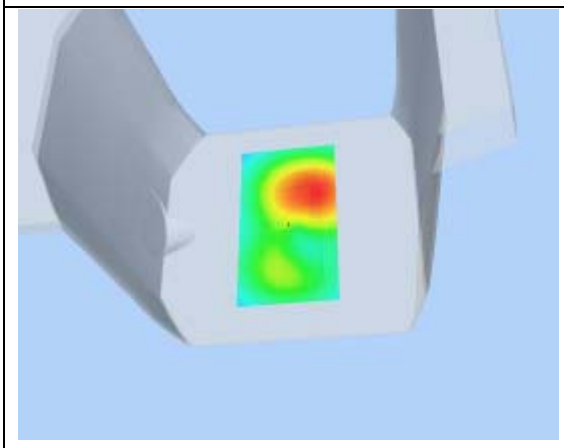
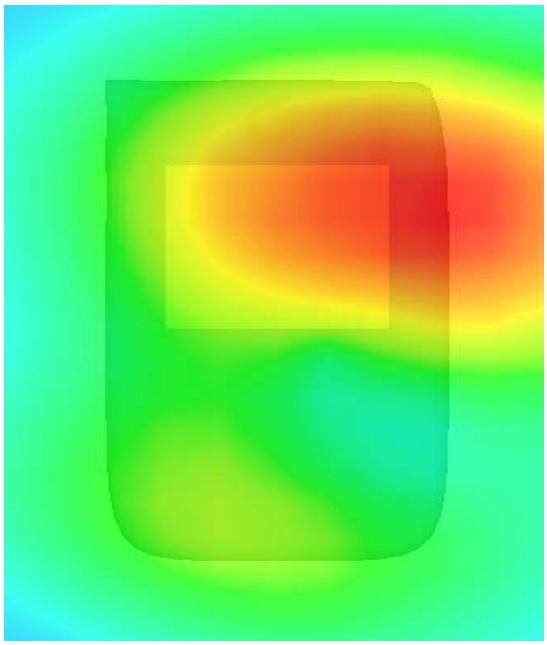
Maximum location: X=24.00, Y=25.00

SAR 10g (W/Kg)	0.498695
SAR 1g (W/Kg)	0.791207

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.8083	0.5239	0.3325	0.1996	0.1252	0.0776



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: 3/5/2011
Measurement duration: 9 minutes 8 seconds

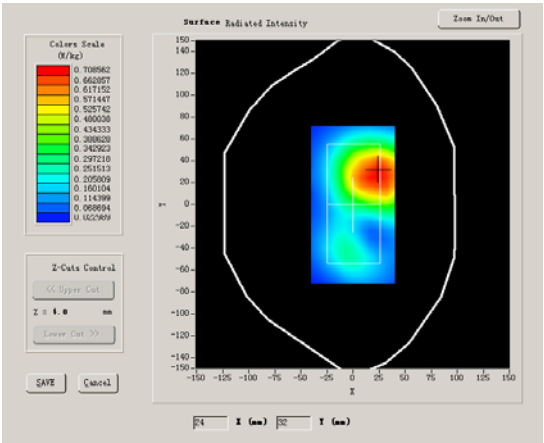
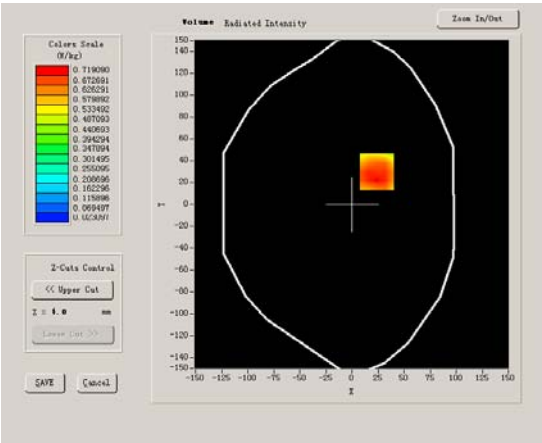
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	GSM1900
Channels	High
Signal	GPRS

B. SAR Measurement Results

Higher Band SAR (Channel 810):

Frequency (MHz)	1909.800049
Relative permittivity (real part)	52.540001
Relative permittivity	14.070000
Conductivity (S/m)	1.492827
Power Drift (%)	0.690000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:4

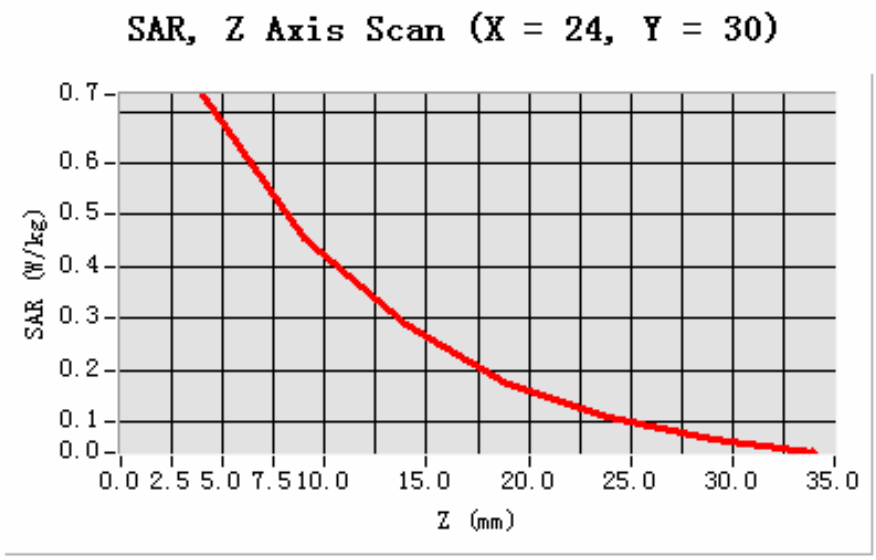
SURFACE SAR	VOLUME SAR
	

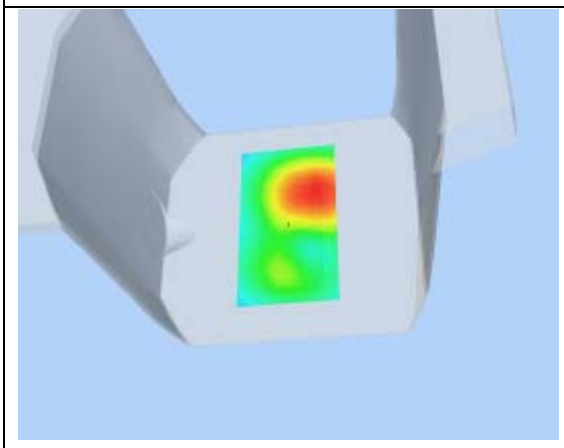
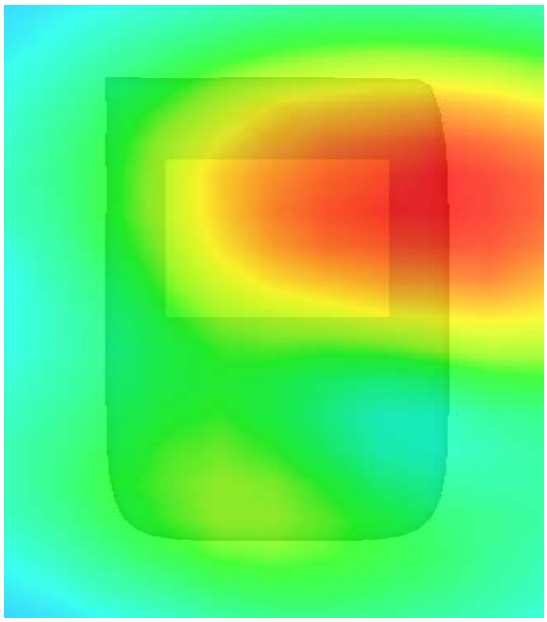
Maximum location: X=24.00, Y=30.00

SAR 10g (W/Kg)	0.455963
SAR 1g (W/Kg)	0.739905

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.7321	0.4554	0.2895	0.1733	0.1094	0.0663



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: 3/5/2011
Measurement duration: 9 minutes 8 seconds

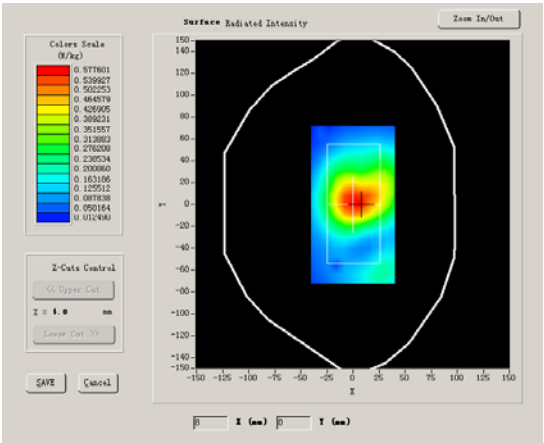
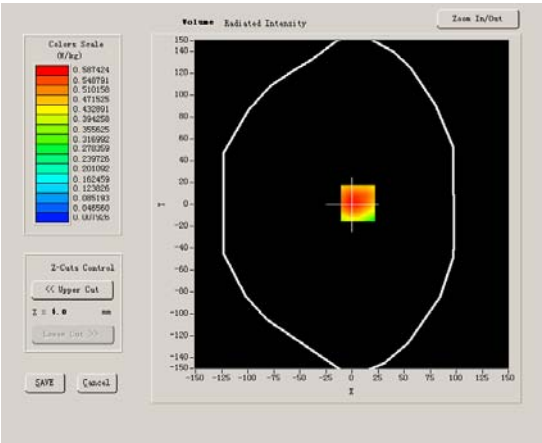
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	GSM1900
Channels	Low
Signal	GPRS

B. SAR Measurement Results

Middle Band SAR (Channel 512):

Frequency (MHz)	1850.199951
Relative permittivity (real part)	52.540001
Relative permittivity	14.070000
Conductivity (S/m)	1.469533
Power Drift (%)	-0.280000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:4

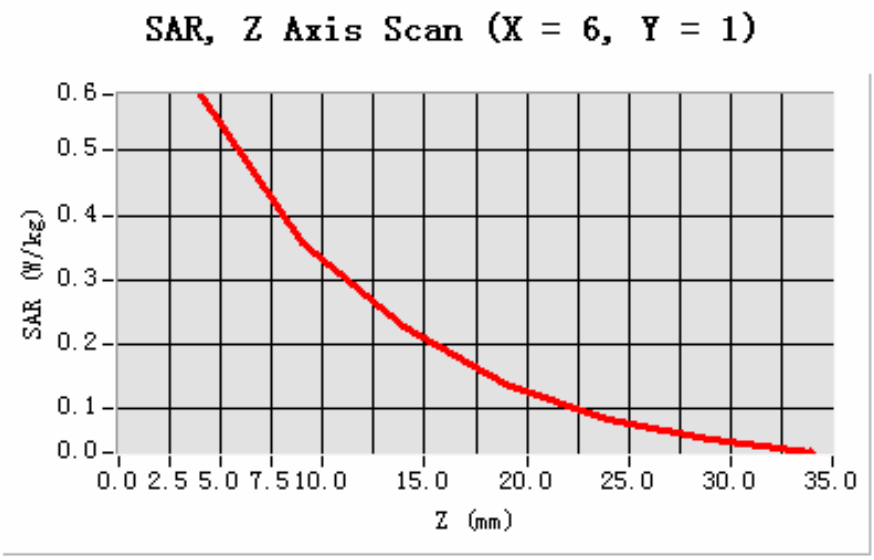
SURFACE SAR	VOLUME SAR
	

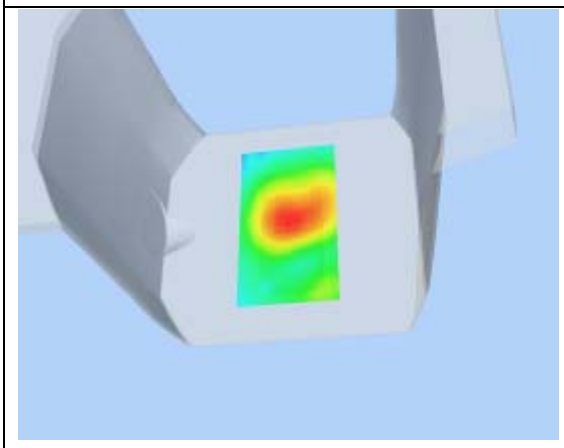
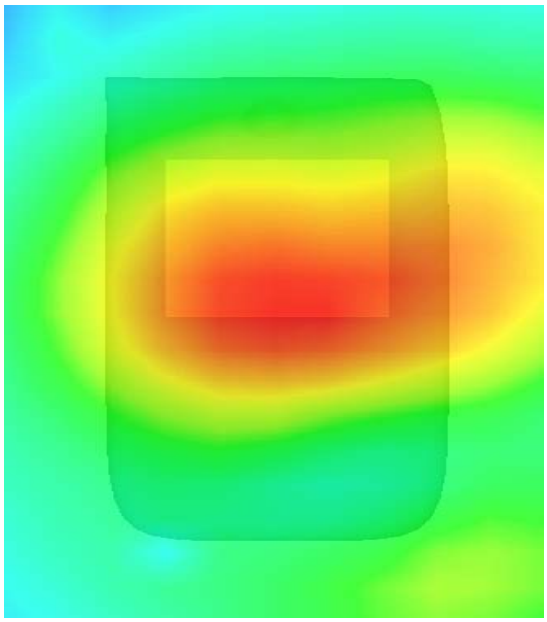
Maximum location: X=6.00, Y=1.00

SAR 10g (W/Kg)	0.367488
SAR 1g (W/Kg)	0.601380

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.5874	0.3574	0.2284	0.1383	0.0846	0.0510



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: 3/5/2011
Measurement duration: 9 minutes 8 seconds

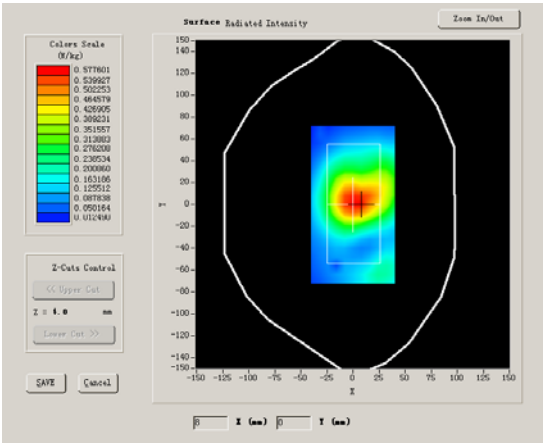
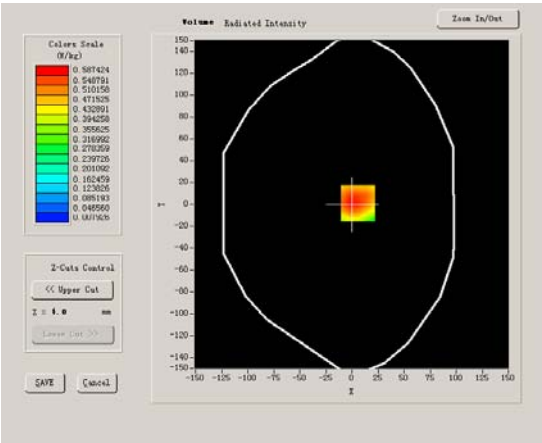
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation 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)	52.540001
Relative permittivity	14.070000
Conductivity (S/m)	1.469533
Power Drift (%)	-0.280000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:4

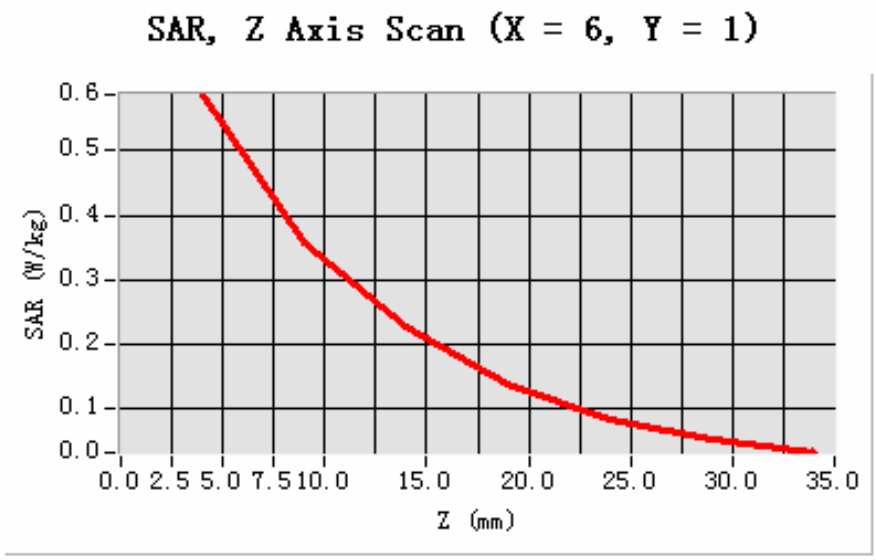
SURFACE SAR	VOLUME SAR
	

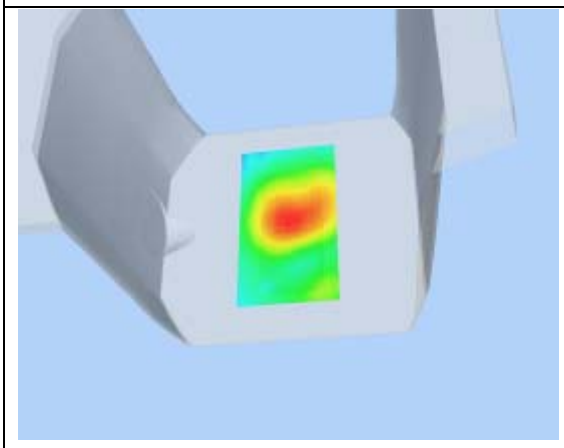
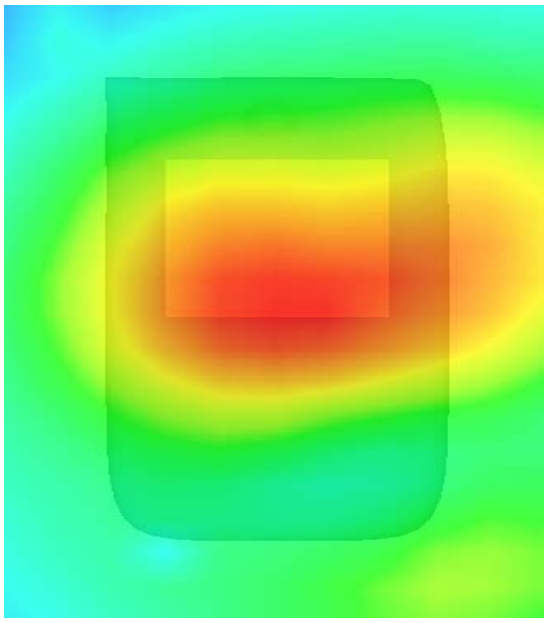
Maximum location: X=6.00, Y=1.00

SAR 10g (W/Kg)	0.323452
SAR 1g (W/Kg)	0.635134

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.5874	0.3574	0.2284	0.1383	0.0846	0.0510



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: 3/5/2011
Measurement duration: 9 minutes 8 seconds

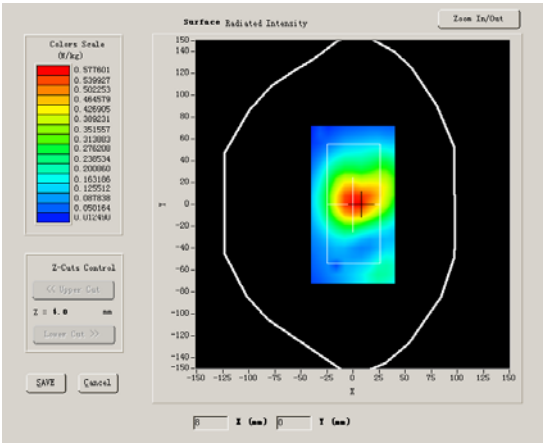
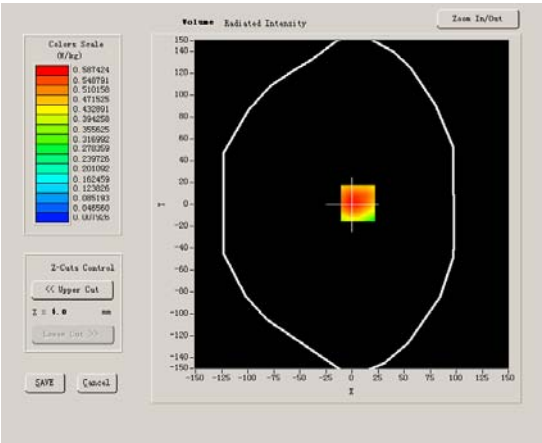
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation 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)	52.540001
Relative permittivity	14.070000
Conductivity (S/m)	1.469533
Power Drift (%)	-0.280000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:4

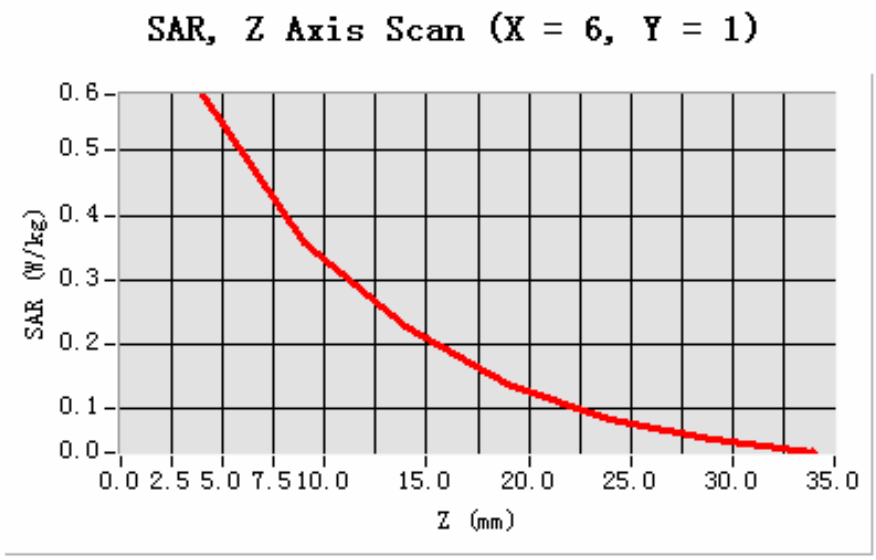
SURFACE SAR	VOLUME SAR
	

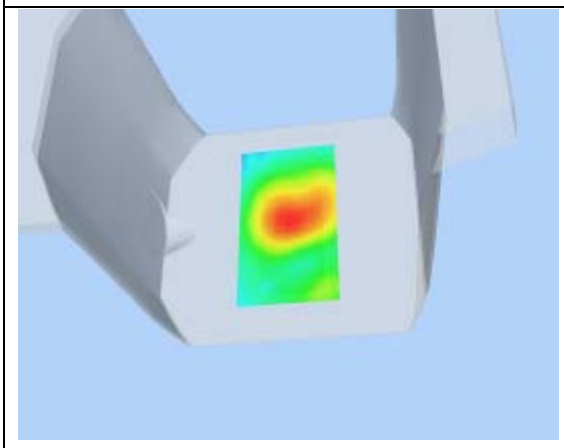
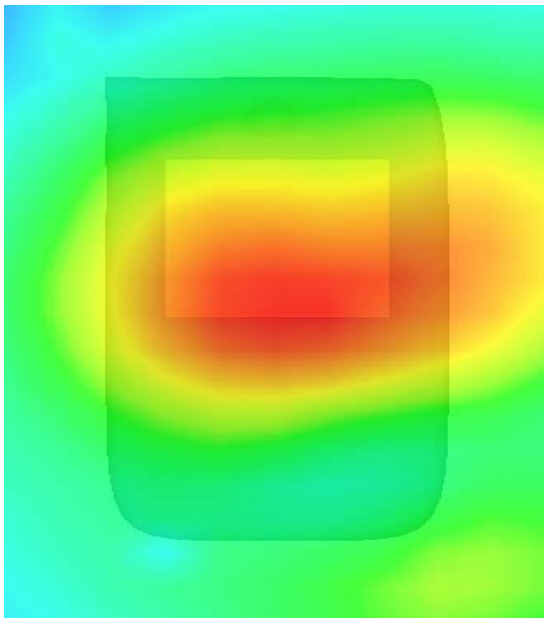
Maximum location: X=6.00, Y=1.00

SAR 10g (W/Kg)	0.231534
SAR 1g (W/Kg)	0.484562

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.5874	0.3574	0.2284	0.1383	0.0846	0.0510



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: 3/5/2011
Measurement duration: 9 minutes 6 seconds

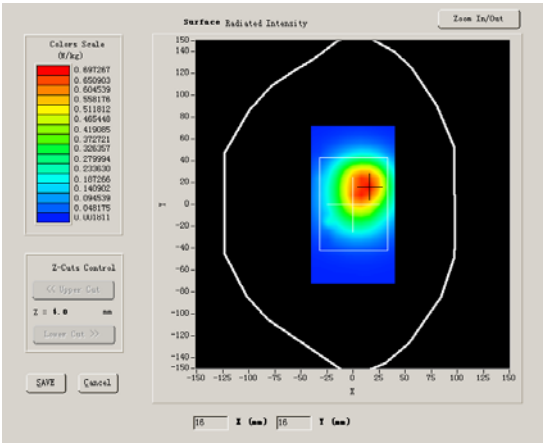
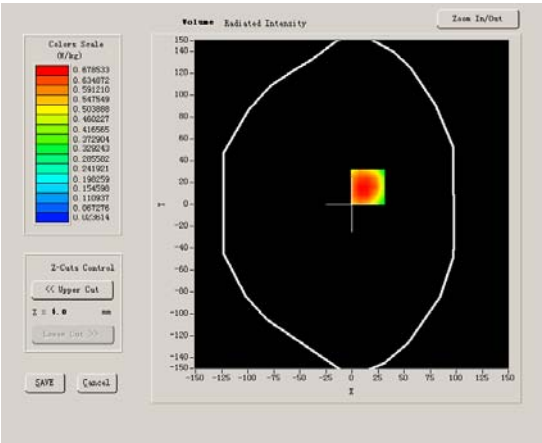
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	802.11 b
Channels	Middle
Signal	CW

B. SAR Measurement Results

Middle Band SAR:

Frequency (MHz)	2437.000000
Relative permittivity (real part)	54.341000
Relative permittivity	19.120001
Conductivity (S/m)	1.952641
Power Drift (%)	-2.180000
Ambient Temperature:	22.5°C
Liquid Temperature:	22.3°C
ConvF:	39.772,33.946,37.835
Crest factor:	1:1

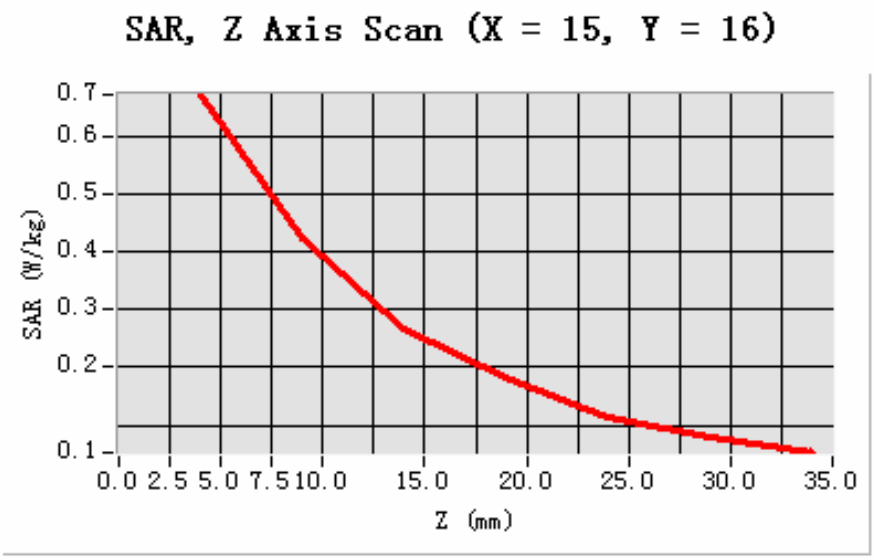
SURFACE SAR	VOLUME SAR
	

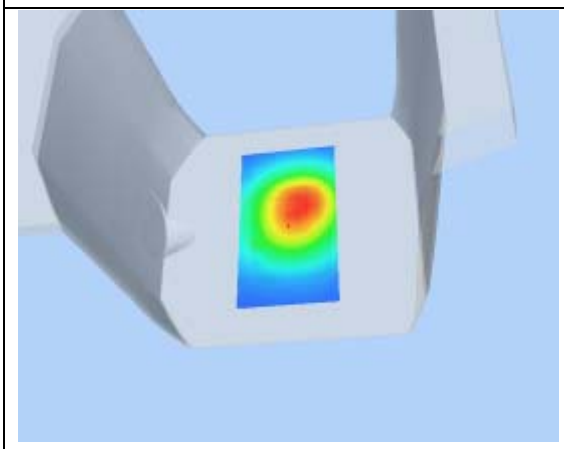
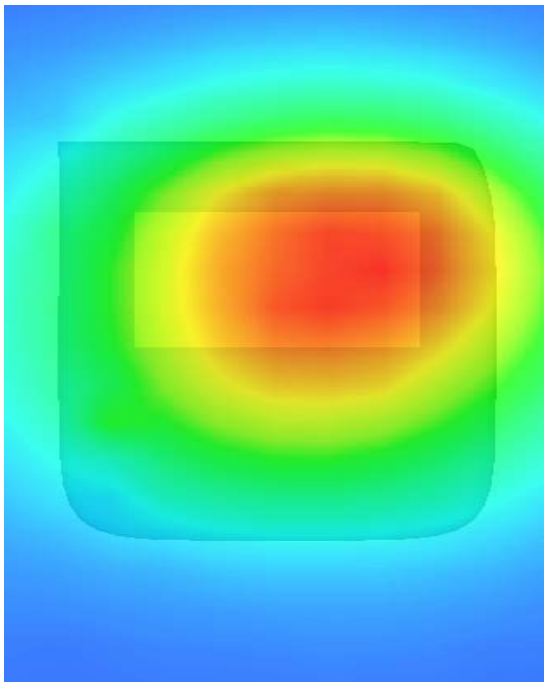
Maximum location: X=15.00, Y=16.00

SAR 10g (W/Kg)	0.045125
SAR 1g (W/Kg)	0.094723

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.6732	0.4257	0.2657	0.1826	0.1143	0.0778



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: 3/5/2011
Measurement duration: 9 minutes 6 seconds

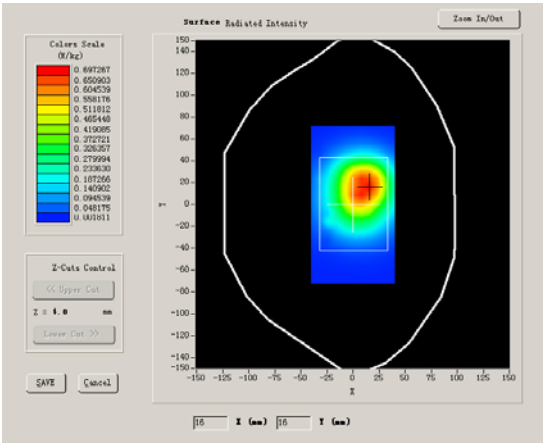
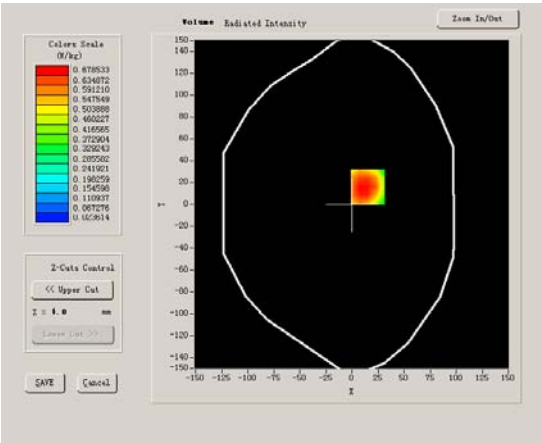
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	802.11 b
Channels	Middle
Signal	CW

B. SAR Measurement Results

Middle Band SAR:

Frequency (MHz)	2437.000000
Relative permittivity (real part)	54.341000
Relative permittivity	19.120001
Conductivity (S/m)	1.952641
Power Drift (%)	-2.180000
Ambient Temperature:	22.5°C
Liquid Temperature:	22.3°C
ConvF:	39.772,33.946,37.835
Crest factor:	1:1

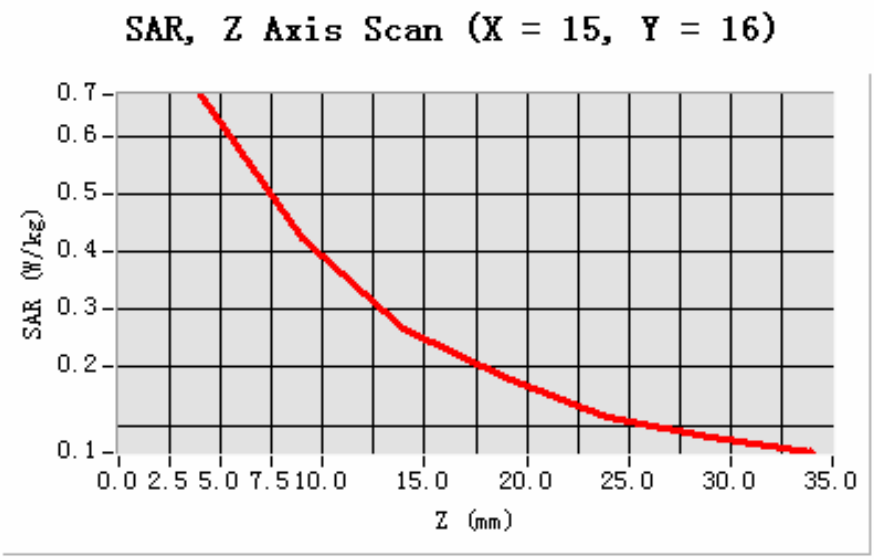
SURFACE SAR	VOLUME SAR
	

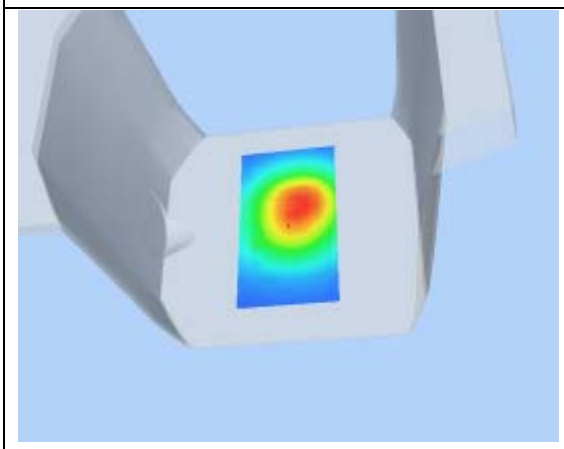
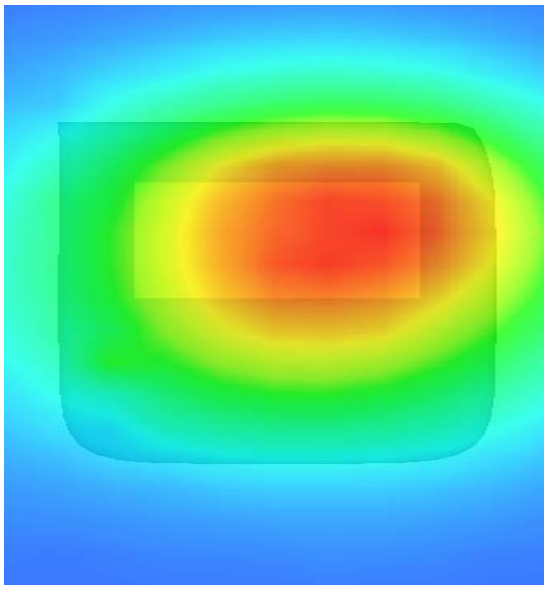
Maximum location: X=15.00, Y=16.00

SAR 10g (W/Kg)	0.063441
SAR 1g (W/Kg)	0.124184

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.6732	0.4257	0.2657	0.1826	0.1143	0.0778



3D sceen shot	Hot spot position
	

MEASUREMENT 23

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 7/6/2011
Measurement duration: 9 minutes 13 seconds

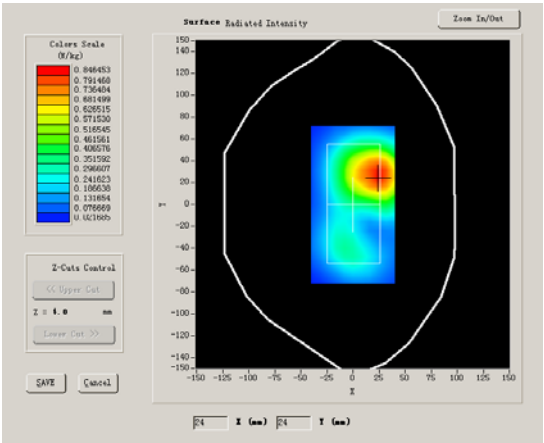
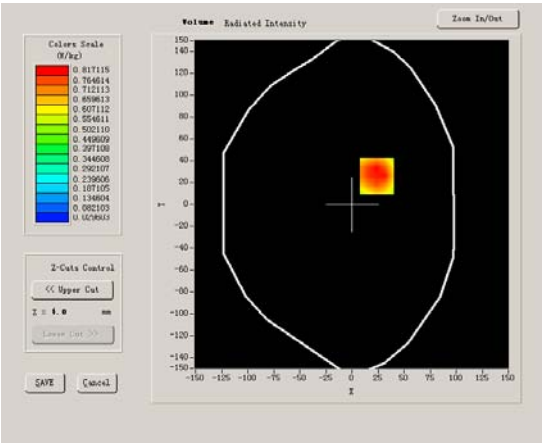
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	GSM1900
Channels	Low
Signal	GPRS

B. SAR Measurement Results

Lower Band SAR (Channel 512):

Frequency (MHz)	1850.199951
Relative permittivity (real part)	52.540001
Relative permittivity	14.070000
Conductivity (S/m)	1.446240
Power Drift (%)	-2.020000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:4

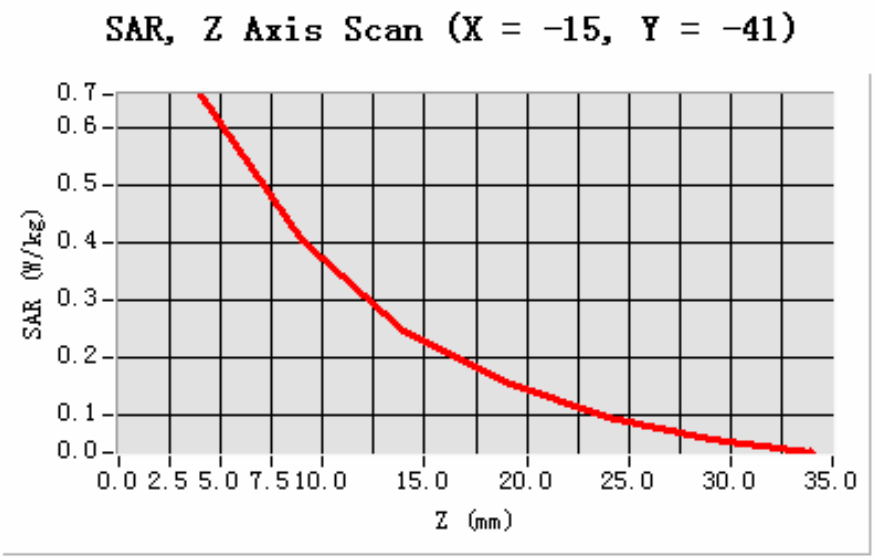
SURFACE SAR	VOLUME SAR
	

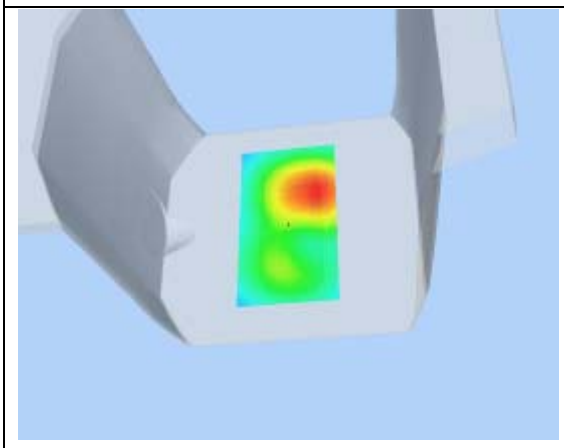
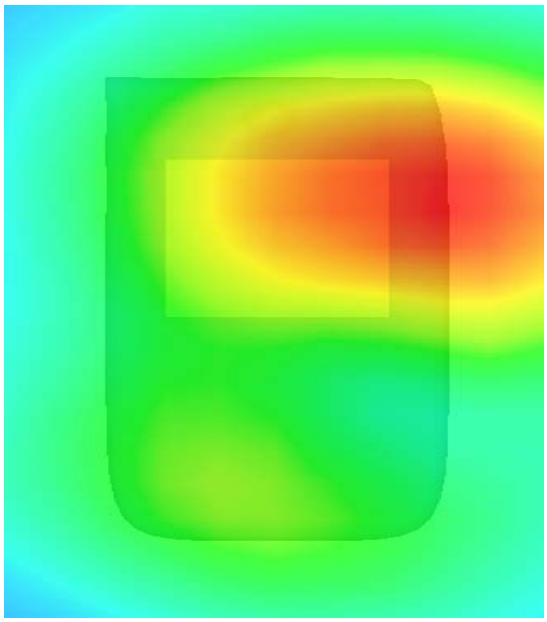
Maximum location: X=24.00, Y=26.00

SAR 10g (W/Kg)	0.584566
SAR 1g (W/Kg)	0.936678

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.8658	0.5534	0.0326	0.2182	0.1374	0.0842



3D sceen shot	Hot spot position
	

MEASUREMENT 24

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 7/6/2011
Measurement duration: 9 minutes 7 seconds

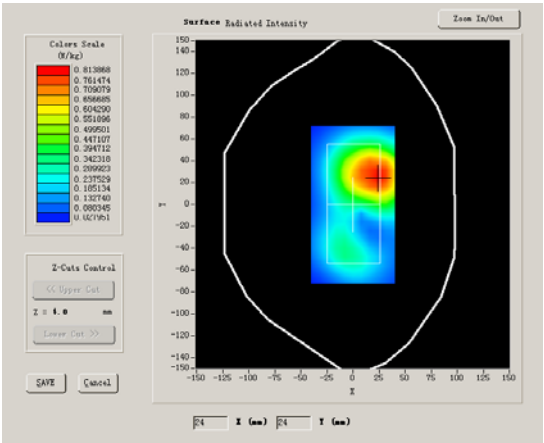
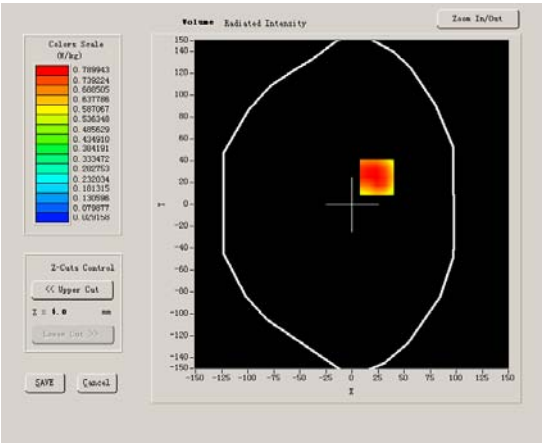
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation 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)	52.540001
Relative permittivity	14.070000
Conductivity (S/m)	1.469533
Power Drift (%)	-1.200000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:4

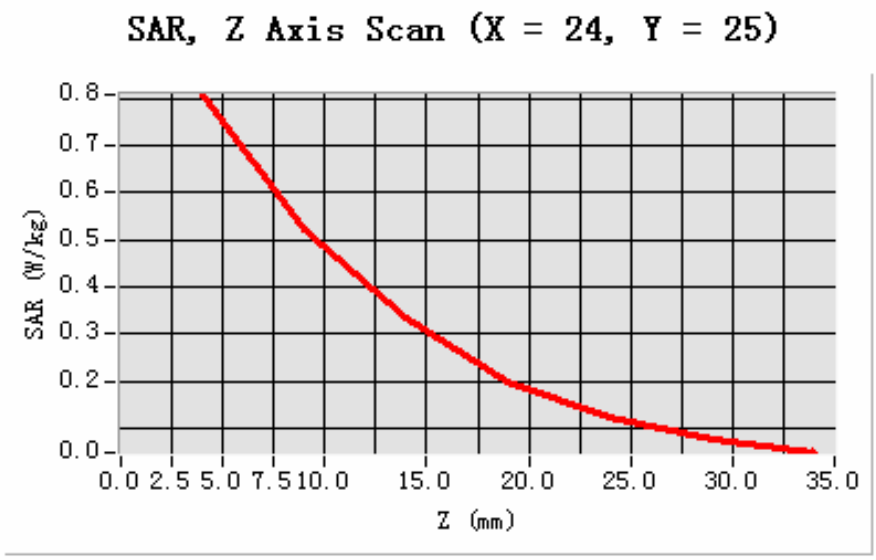
SURFACE SAR	VOLUME SAR
	

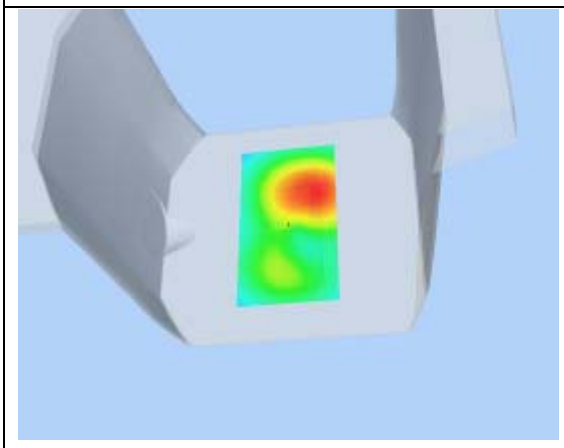
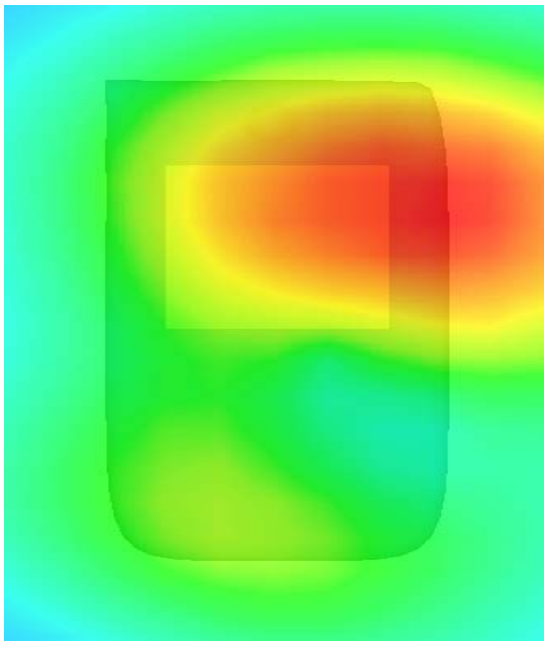
Maximum location: X=24.00, Y=25.00

SAR 10g (W/Kg)	0.517699
SAR 1g (W/Kg)	0.844806

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.8083	0.5239	0.3325	0.1996	0.1252	0.0776



3D sceen shot	Hot spot position
	

MEASUREMENT 25

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 7/6/2011
Measurement duration: 9 minutes 8 seconds

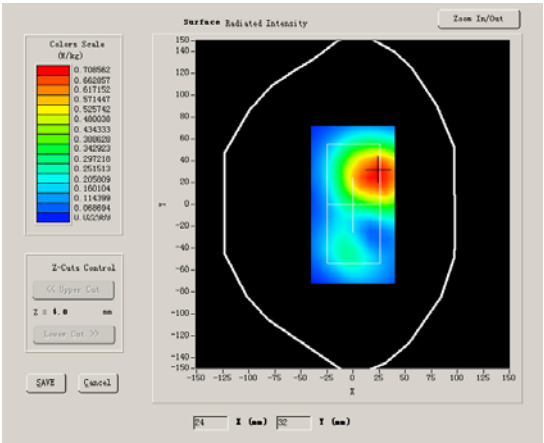
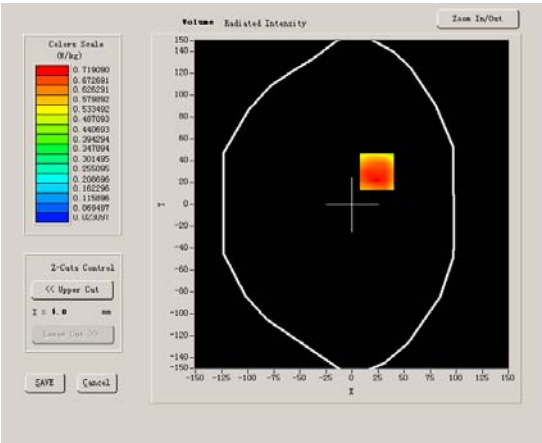
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	GSM1900
Channels	High
Signal	GPRS

B. SAR Measurement Results

Higher Band SAR (Channel 810):

Frequency (MHz)	1909.800049
Relative permittivity (real part)	52.540001
Relative permittivity	14.070000
Conductivity (S/m)	1.492827
Power Drift (%)	0.690000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:4

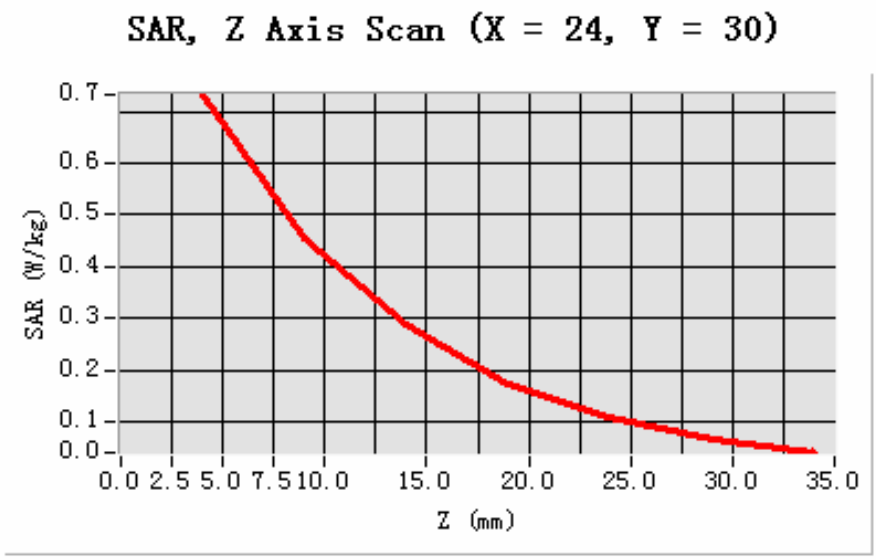
SURFACE SAR	VOLUME SAR
	

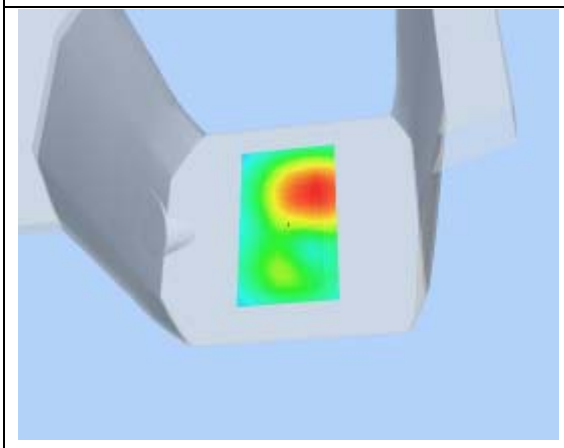
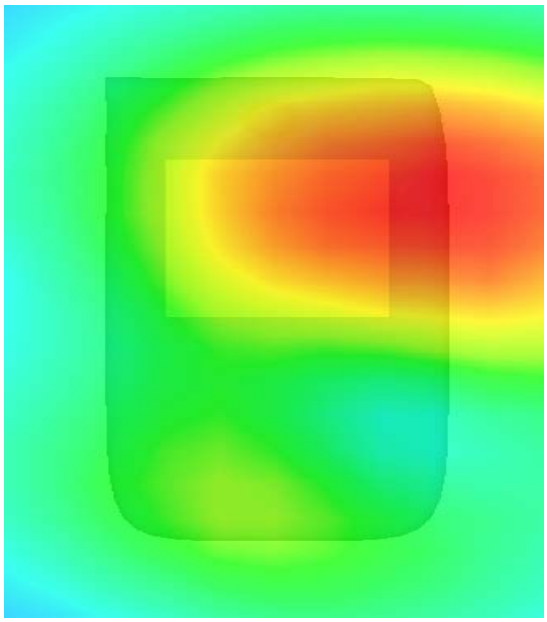
Maximum location: X=24.00, Y=30.00

SAR 10g (W/Kg)	0.474922
SAR 1g (W/Kg)	0.801389

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.7321	0.4554	0.2895	0.1733	0.1094	0.0663



3D sceen shot	Hot spot position
	

MEASUREMENT 26

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 7/6/2011
Measurement duration: 9 minutes 8 seconds

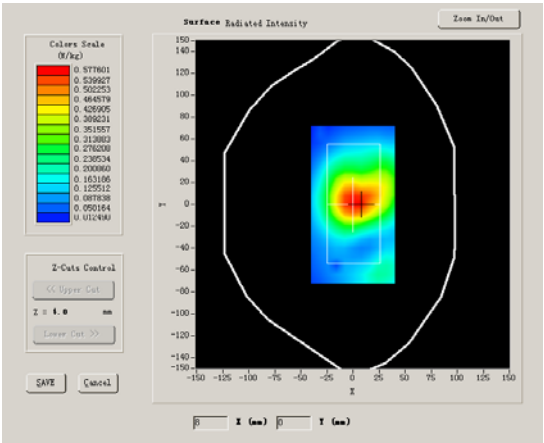
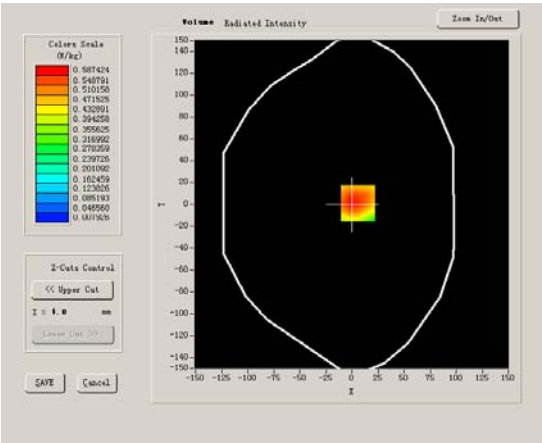
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	GSM1900
Channels	Low
Signal	GPRS

B. SAR Measurement Results

Middle Band SAR (Channel 512):

Frequency (MHz)	1850.199951
Relative permittivity (real part)	52.540001
Relative permittivity	14.070000
Conductivity (S/m)	1.469533
Power Drift (%)	-0.280000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:4

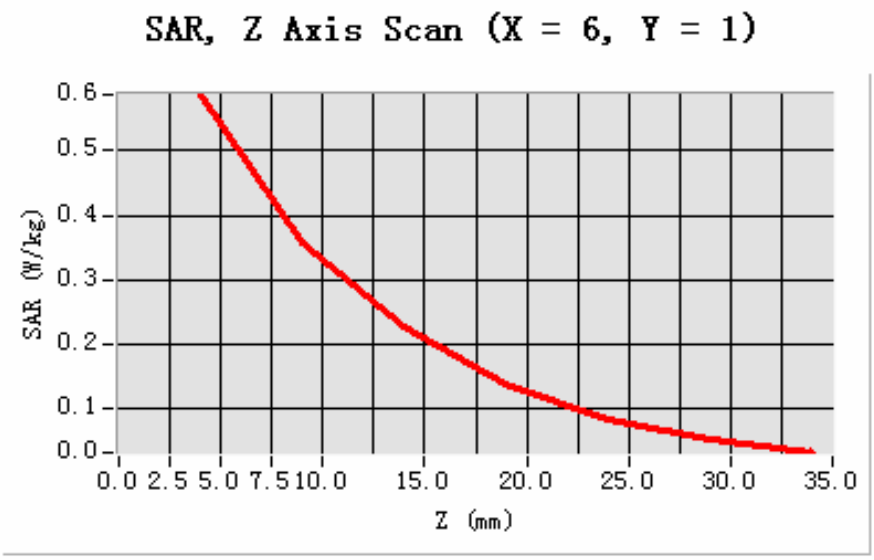
SURFACE SAR	VOLUME SAR
	

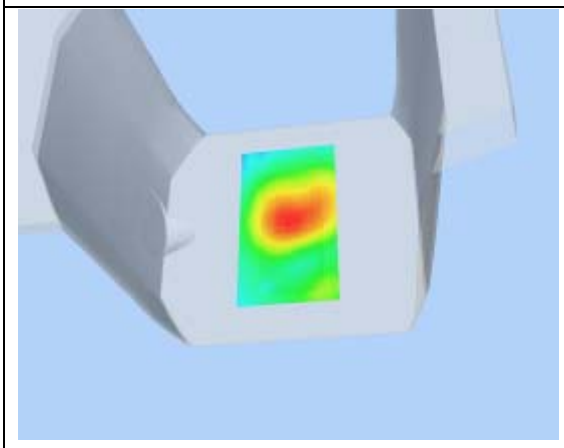
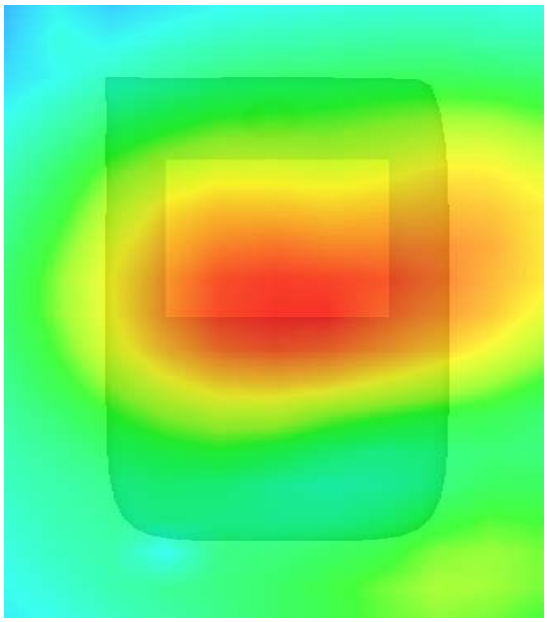
Maximum location: X=6.00, Y=1.00

SAR 10g (W/Kg)	0.384933
SAR 1g (W/Kg)	0.689274

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.5874	0.3574	0.2284	0.1383	0.0846	0.0510



3D sceen shot	Hot spot position
	

MEASUREMENT 27

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 7/6/2011
Measurement duration: 9 minutes 10 seconds

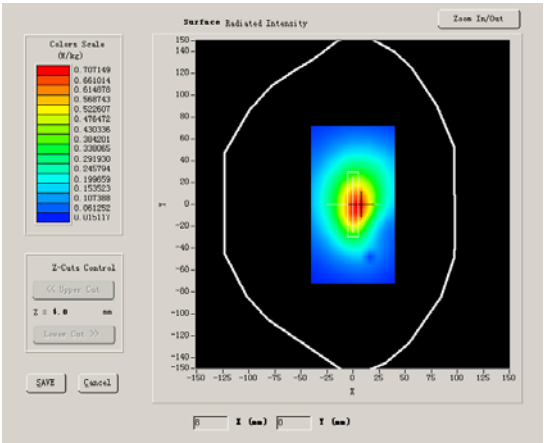
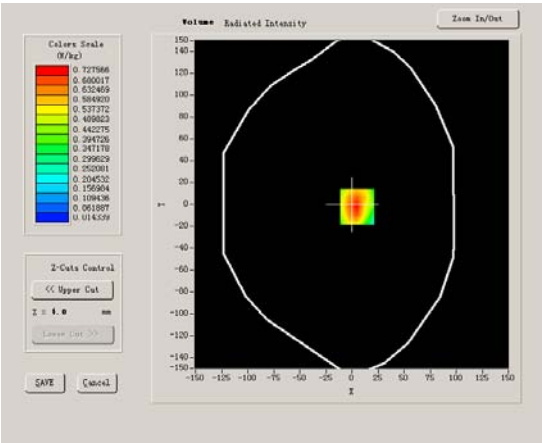
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	GSM1900
Channels	Low
Signal	GPRS

B. SAR Measurement Results

Middle Band SAR (Channel 512):

Frequency (MHz)	1850.199951
Relative permittivity (real part)	52.540001
Relative permittivity	14.070000
Conductivity (S/m)	1.469533
Power Drift (%)	-0.340000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:4

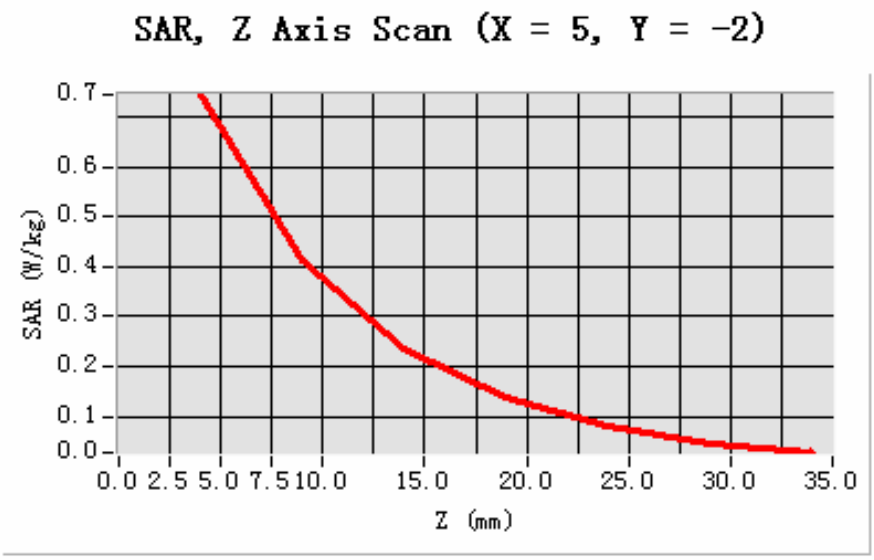
SURFACE SAR	VOLUME SAR
	

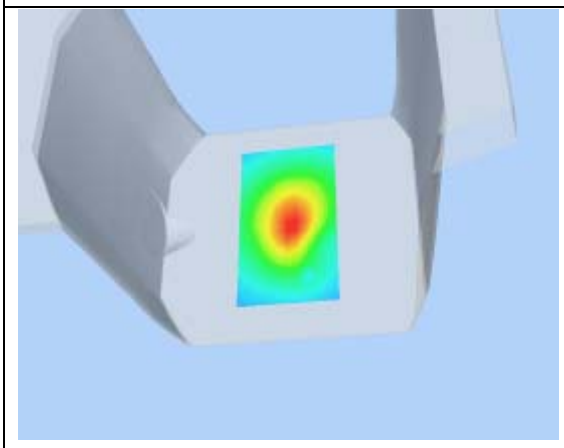
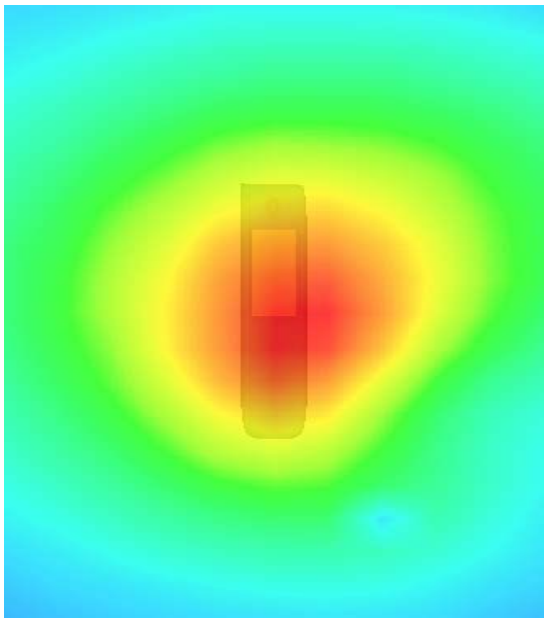
Maximum location: X=5.00, Y=-2.00

SAR 10g (W/Kg)	0.397686
SAR 1g (W/Kg)	0.703122

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.7445	0.4110	0.2351	0.1376	0.0791	0.0470



3D sceen shot	Hot spot position
	

MEASUREMENT 28

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 7/6/2011
Measurement duration: 9 minutes 9 seconds

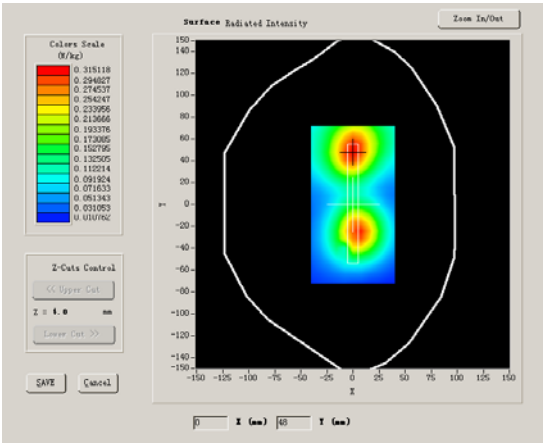
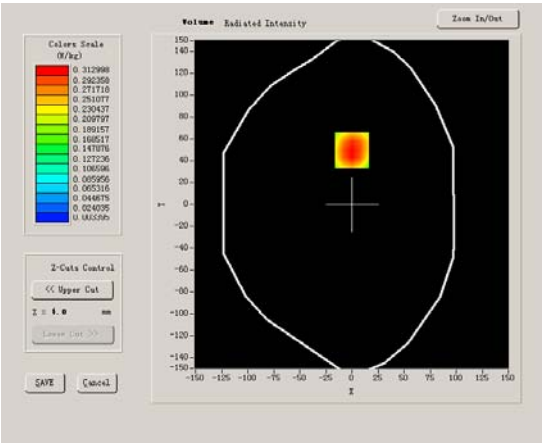
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	GSM1900
Channels	Low
Signal	GPRS

B. SAR Measurement Results

Middle Band SAR (Channel 512):

Frequency (MHz)	1850.199951
Relative permittivity (real part)	52.540001
Relative permittivity	14.070000
Conductivity (S/m)	1.469533
Power Drift (%)	1.050000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:4

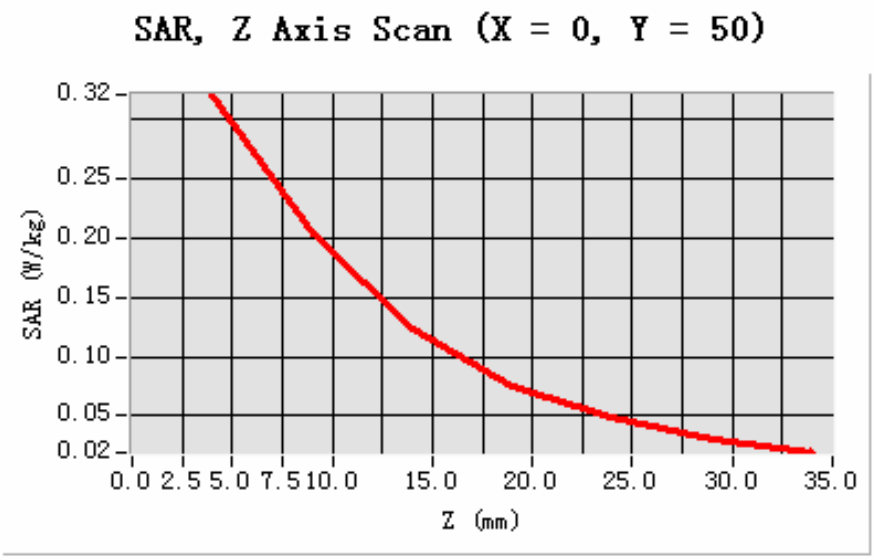
SURFACE SAR	VOLUME SAR
	

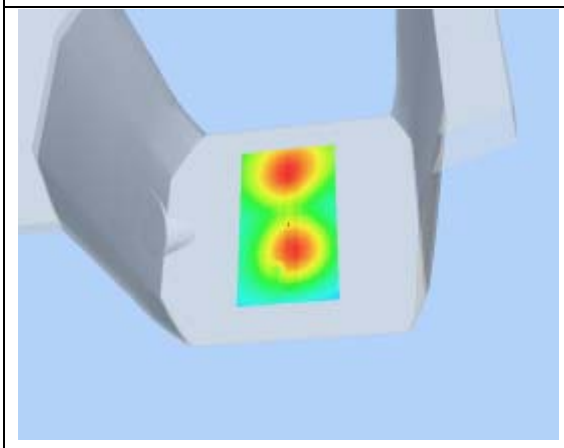
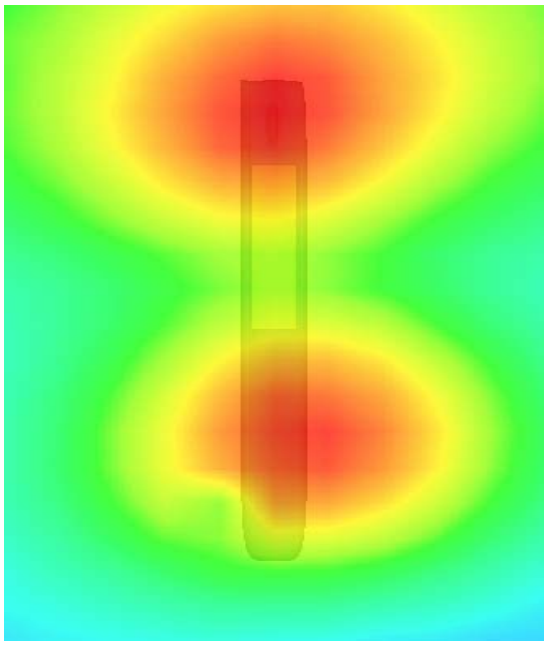
Maximum location: X=0.00, Y=50.00

SAR 10g (W/Kg)	0.187519
SAR 1g (W/Kg)	0.311601

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.3203	0.2042	0.1233	0.0744	0.0489	0.0304



3D sceen shot	Hot spot position
	

MEASUREMENT 29

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 7/6/2011
Measurement duration: 9 minutes 9 seconds

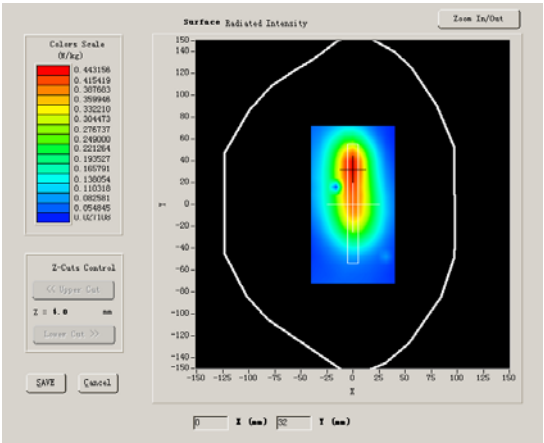
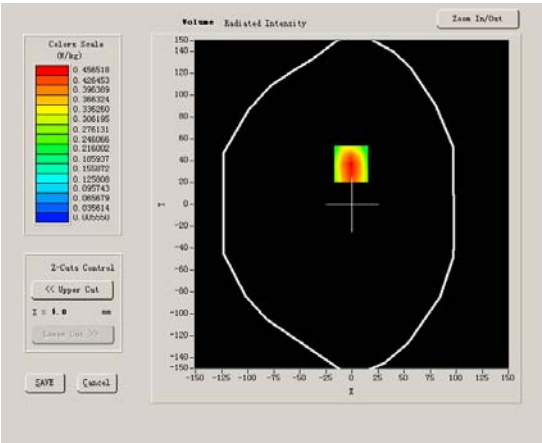
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	GSM1900
Channels	Low
Signal	GPRS

B. SAR Measurement Results

Middle Band SAR (Channel 512):

Frequency (MHz)	1850.199951
Relative permittivity (real part)	52.540001
Relative permittivity	14.070000
Conductivity (S/m)	1.469533
Power Drift (%)	0.640000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:4

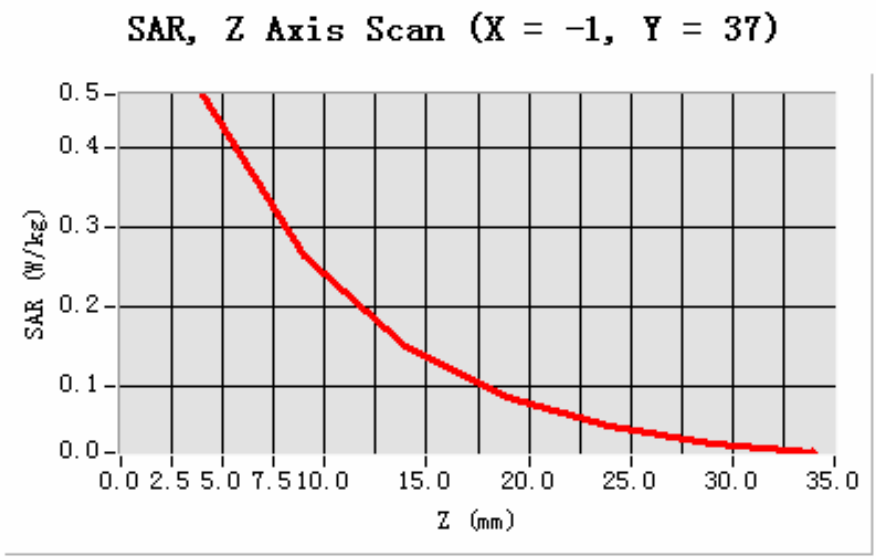
SURFACE SAR	VOLUME SAR
	

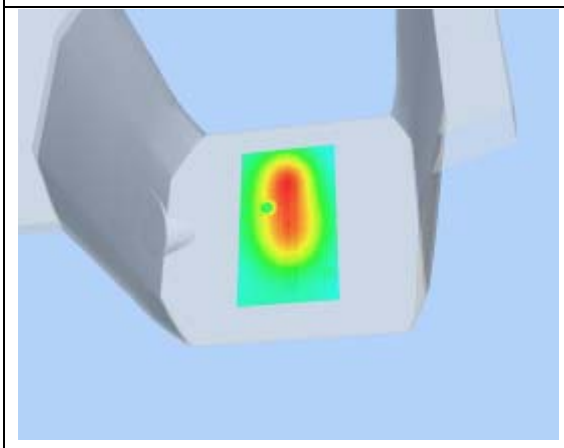
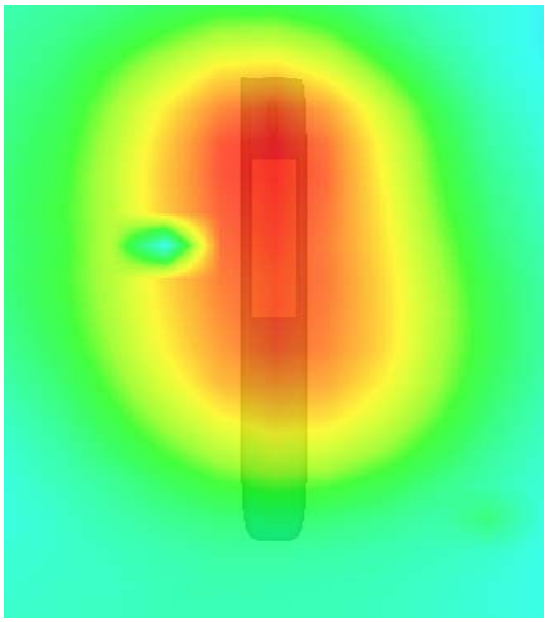
Maximum location: X=-1.00, Y=37.00

SAR 10g (W/Kg)	0.256757
SAR 1g (W/Kg)	0.447109

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.4671	0.2640	0.1511	0.0884	0.0510	0.0302



3D sceen shot	Hot spot position
	

MEASUREMENT 30

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 7/6/2011
Measurement duration: 9 minutes 6 seconds

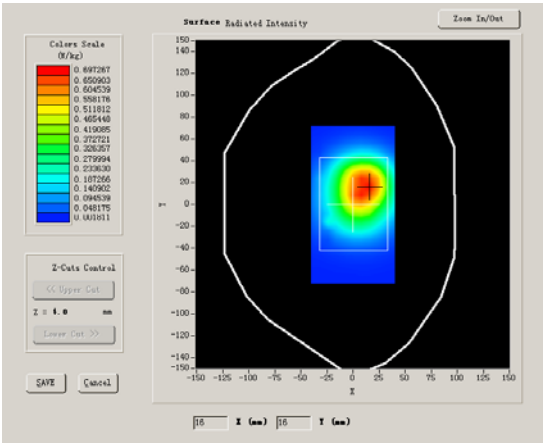
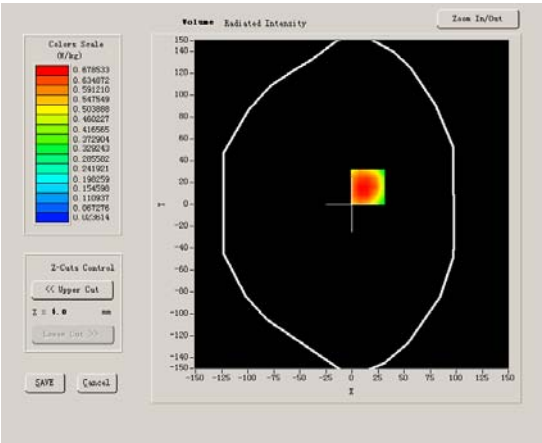
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	802.11 b
Channels	Middle
Signal	CW

B. SAR Measurement Results

Middle Band SAR:

Frequency (MHz)	2437.000000
Relative permittivity (real part)	54.362770
Relative permittivity	19.120001
Conductivity (S/m)	1.937211
Power Drift (%)	-2.180000
Ambient Temperature:	22.5°C
Liquid Temperature:	22.3°C
ConvF:	39.772,33.946,37.835
Crest factor:	1:1

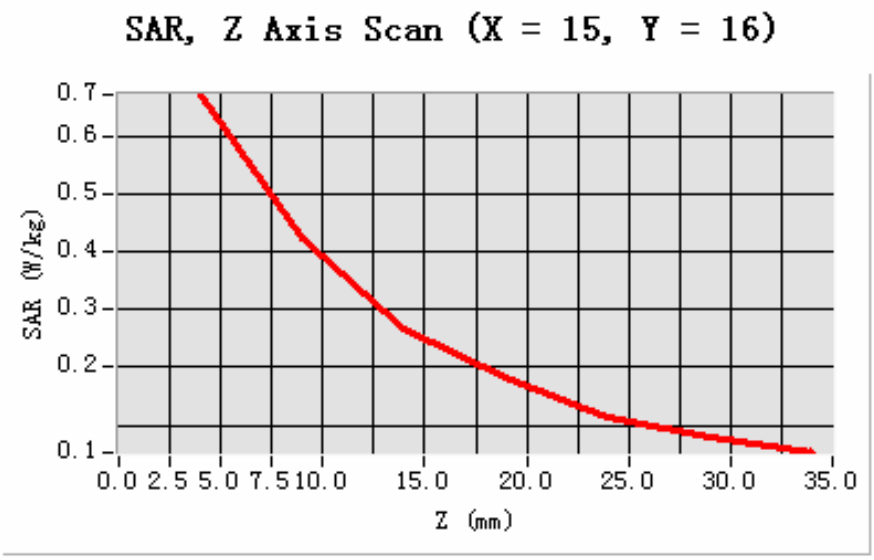
SURFACE SAR	VOLUME SAR
	

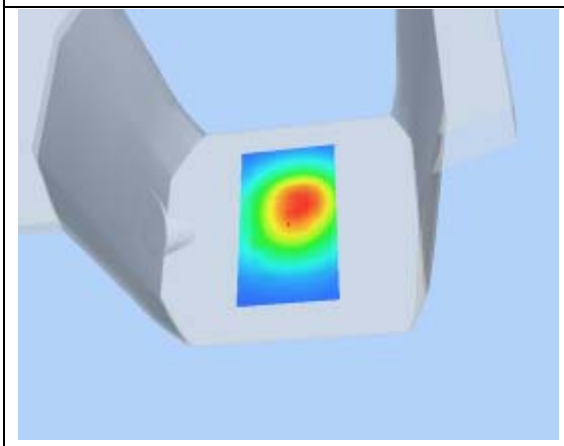
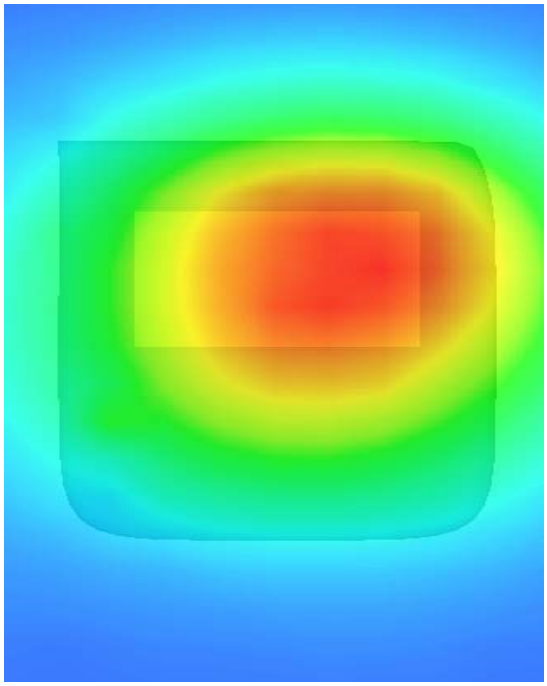
Maximum location: X=15.00, Y=16.00

SAR 10g (W/Kg)	0.056485
SAR 1g (W/Kg)	0.105432

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.6732	0.4257	0.2657	0.1826	0.1143	0.0778



3D sceen shot	Hot spot position
	

MEASUREMENT 31

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 7/6/2011
Measurement duration: 9 minutes 6 seconds

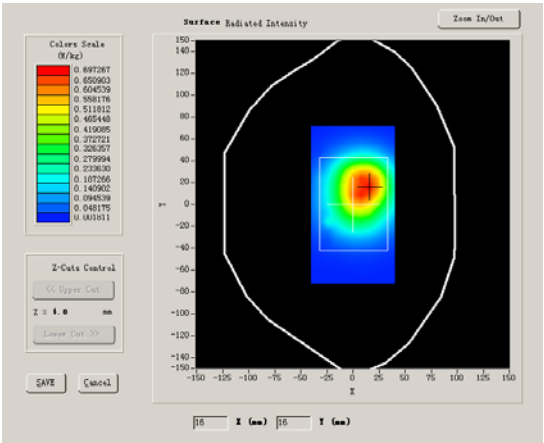
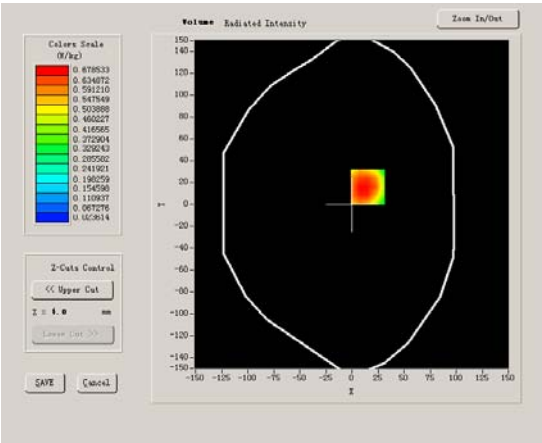
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	802.11 b
Channels	Low
Signal	CW

B. SAR Measurement Results

Middle Band SAR:

Frequency (MHz)	2412.000000
Relative permittivity (real part)	54.341000
Relative permittivity	19.120001
Conductivity (S/m)	1.952641
Power Drift (%)	-2.180000
Ambient Temperature:	22.5°C
Liquid Temperature:	22.3°C
ConvF:	39.772,33.946,37.835
Crest factor:	1:1

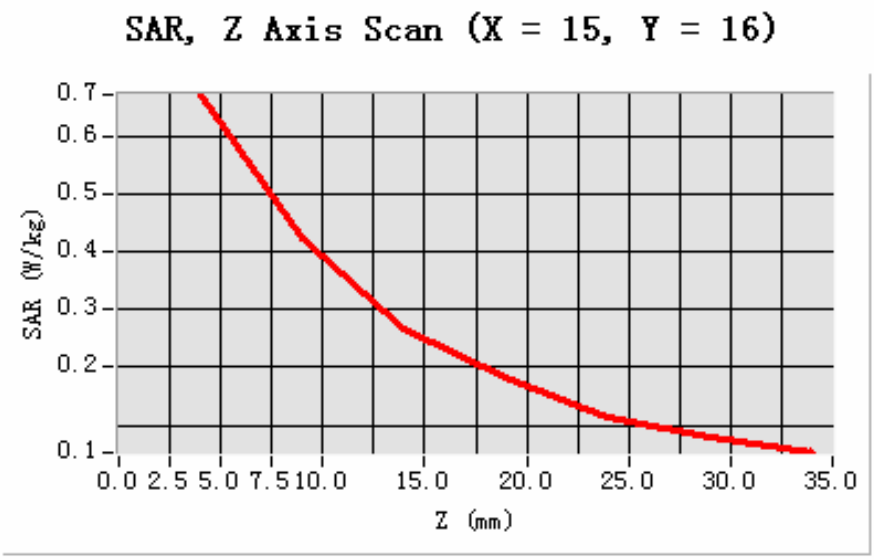
SURFACE SAR	VOLUME SAR
	

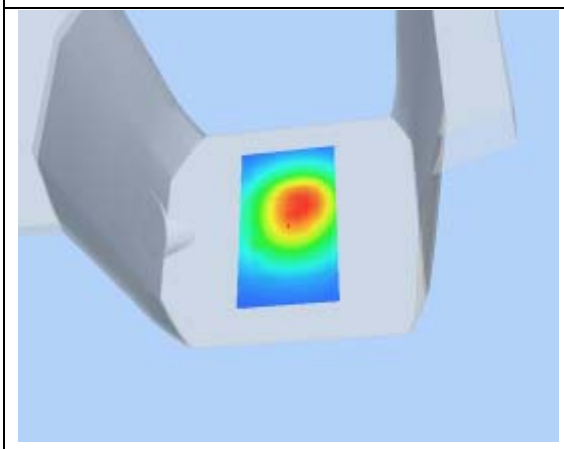
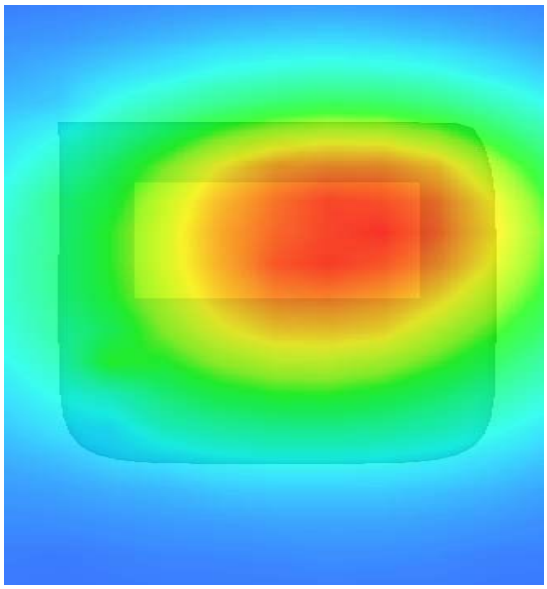
Maximum location: X=15.00, Y=16.00

SAR 10g (W/Kg)	0.073782
SAR 1g (W/Kg)	0.131878

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.6732	0.4257	0.2657	0.1826	0.1143	0.0778



3D sceen shot	Hot spot position
	

MEASUREMENT 32

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 7/6/2011
Measurement duration: 9 minutes 6 seconds

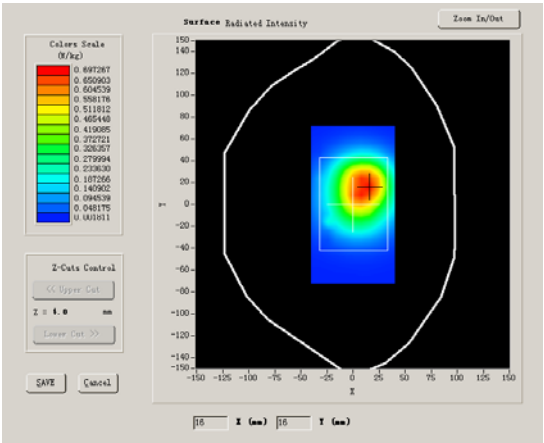
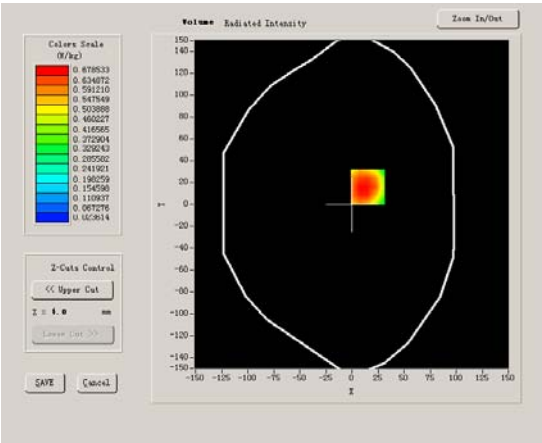
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	802.11 b
Channels	Middle
Signal	CW

B. SAR Measurement Results

Middle Band SAR:

Frequency (MHz)	2437.000000
Relative permittivity (real part)	54.341000
Relative permittivity	19.120001
Conductivity (S/m)	1.952641
Power Drift (%)	-2.180000
Ambient Temperature:	22.5°C
Liquid Temperature:	22.3°C
ConvF:	39.772,33.946,37.835
Crest factor:	1:1

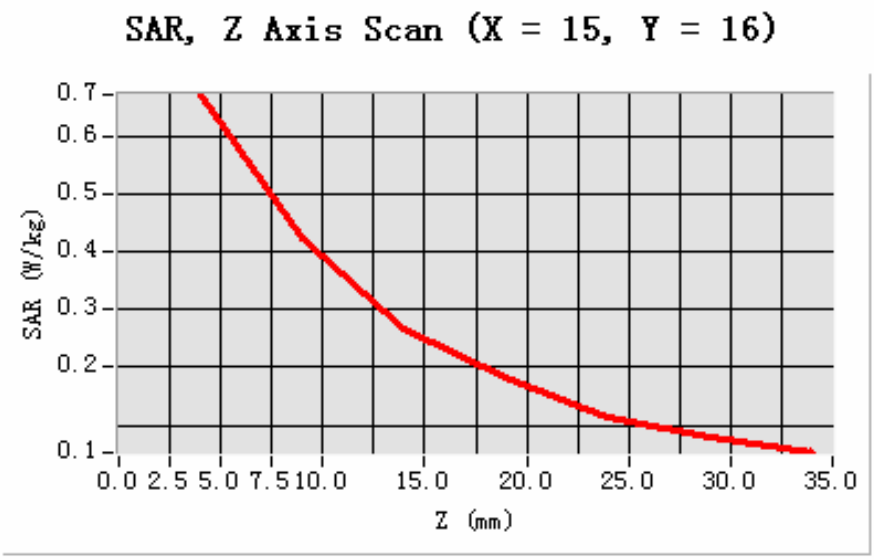
SURFACE SAR	VOLUME SAR
	

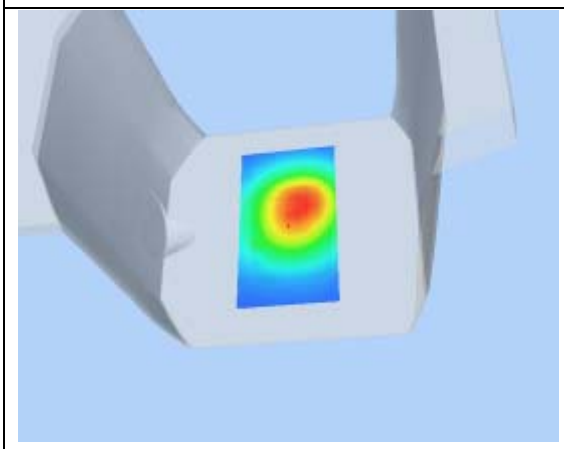
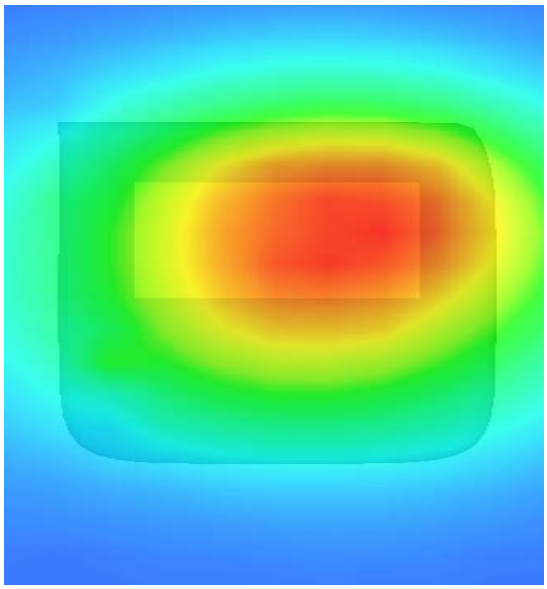
Maximum location: X=15.00, Y=16.00

SAR 10g (W/Kg)	0.079855
SAR 1g (W/Kg)	0.145987

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.6732	0.4257	0.2657	0.1826	0.1143	0.0778



3D sceen shot	Hot spot position
	

MEASUREMENT 33

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 7/6/2011
Measurement duration: 9 minutes 6 seconds

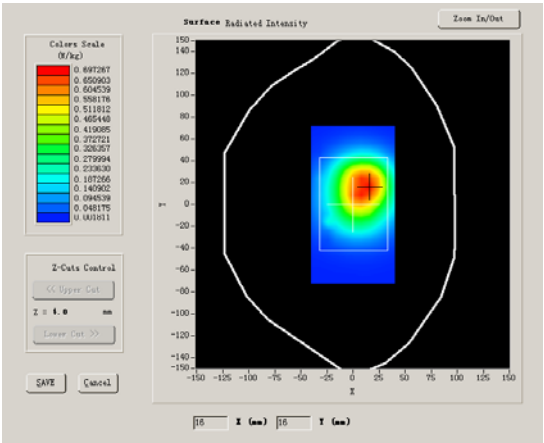
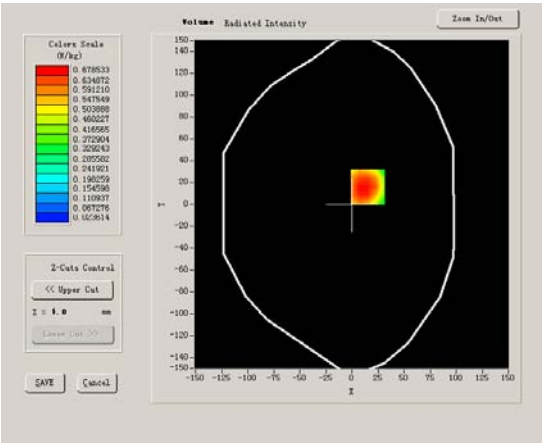
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	802.11 b
Channels	High
Signal	CW

B. SAR Measurement Results

Middle Band SAR:

Frequency (MHz)	2462.000000
Relative permittivity (real part)	54.341000
Relative permittivity	19.120001
Conductivity (S/m)	1.952641
Power Drift (%)	-2.180000
Ambient Temperature:	22.5°C
Liquid Temperature:	22.3°C
ConvF:	39.772,33.946,37.835
Crest factor:	1:1

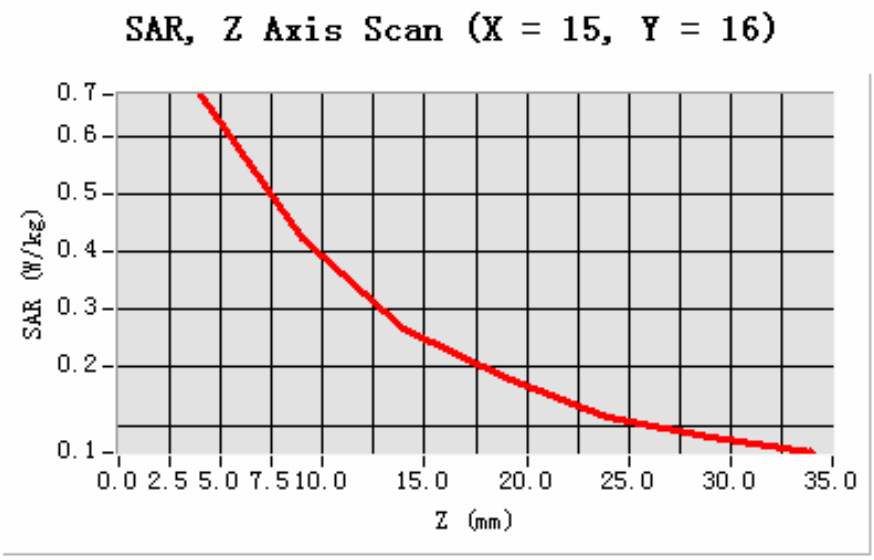
SURFACE SAR	VOLUME SAR
	

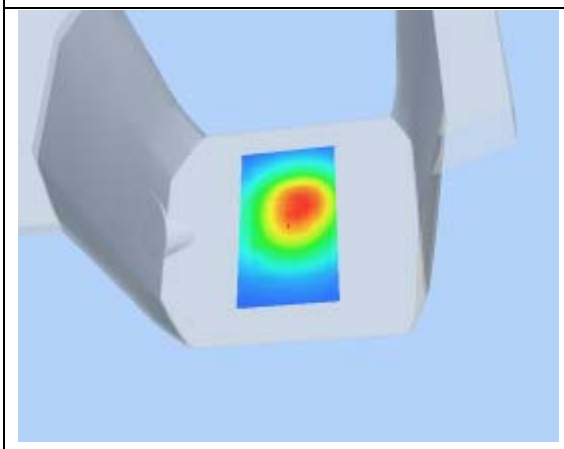
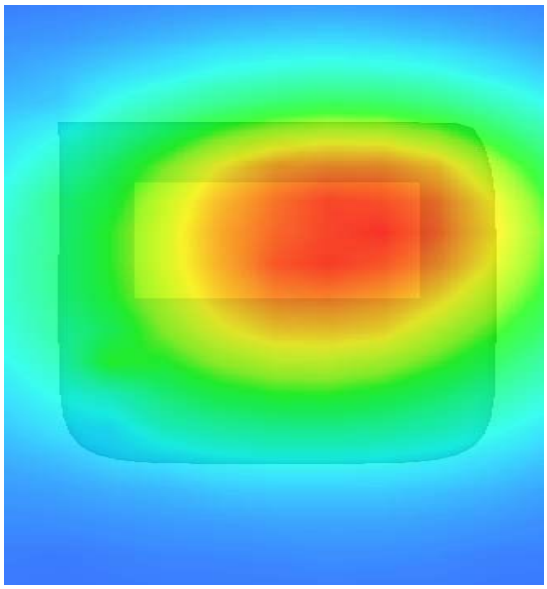
Maximum location: X=15.00, Y=16.00

SAR 10g (W/Kg)	0.077388
SAR 1g (W/Kg)	0.140337

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.6732	0.4257	0.2657	0.1826	0.1143	0.0778



3D sceen shot	Hot spot position
	

MEASUREMENT 34

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 7/6/2011
Measurement duration: 9 minutes 5 seconds

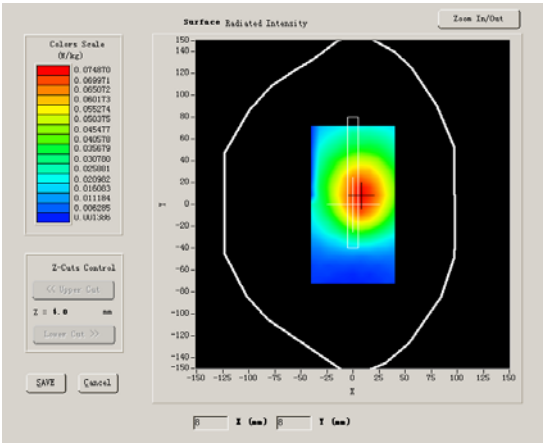
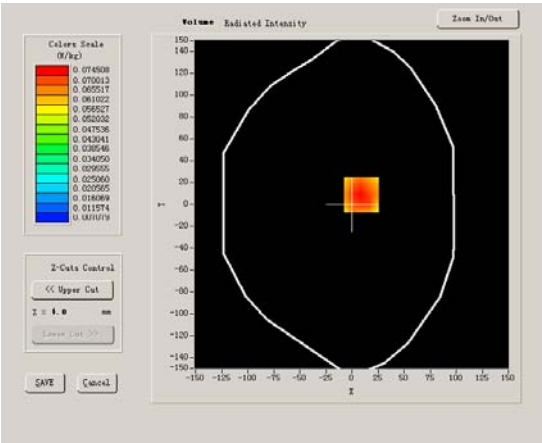
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	802.11 b
Channels	Middle
Signal	CW

B. SAR Measurement Results

Middle Band SAR (Channel 38):

Frequency (MHz)	2437.000000
Relative permittivity (real part)	54.341000
Relative permittivity	19.120001
Conductivity (S/m)	1.952641
Power Drift (%)	-2.180000
Ambient Temperature:	22.5°C
Liquid Temperature:	22.3°C
ConvF:	39.772,33.946,37.835
Crest factor:	1:1

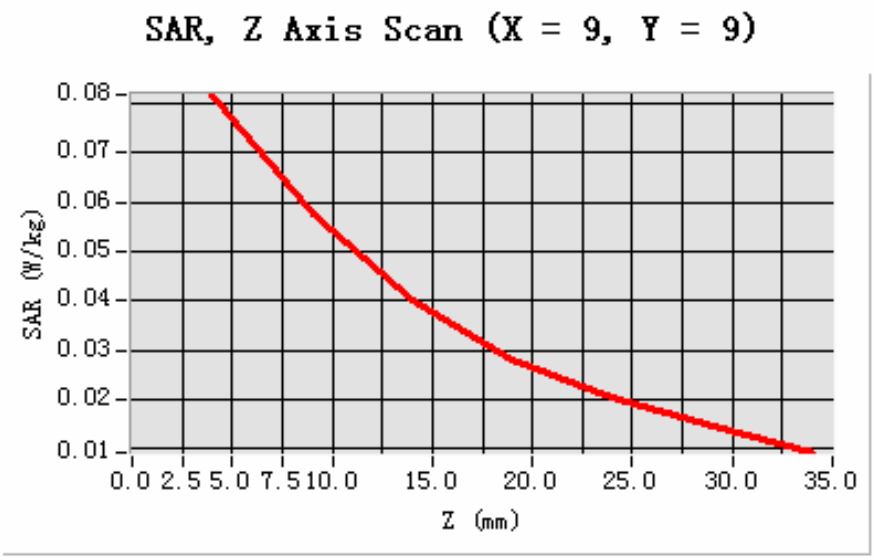
SURFACE SAR	VOLUME SAR
	

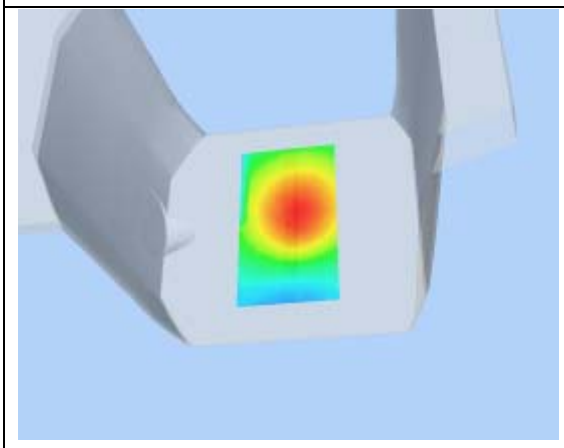
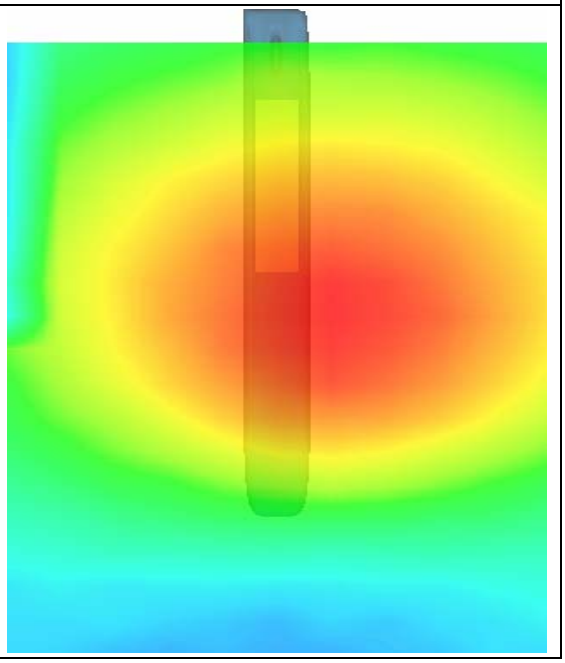
Maximum location: X=9.00, Y=9.00

SAR 10g (W/Kg)	0.053280
SAR 1g (W/Kg)	0.078385

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.0818	0.0576	0.0404	0.0279	0.0206	0.0145



3D sceen shot	Hot spot position
	

MEASUREMENT 35

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 7/6/2011
Measurement duration: 9 minutes 6 seconds

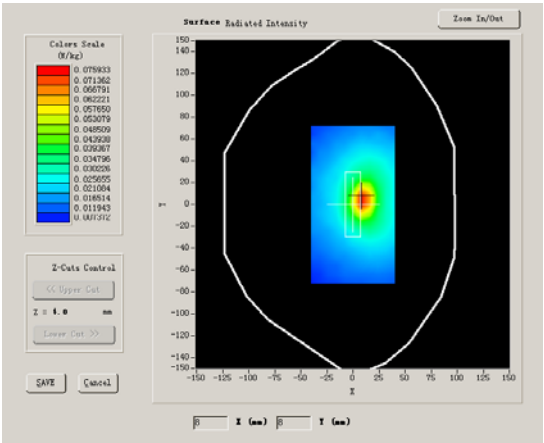
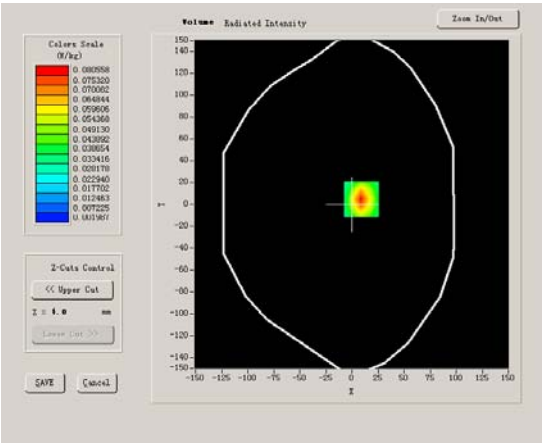
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	802.11 b
Channels	Middle
Signal	CW

B. SAR Measurement Results

Middle Band SAR (Channel 38):

Frequency (MHz)	2437.000000
Relative permittivity (real part)	54.341000
Relative permittivity	19.120001
Conductivity (S/m)	1.952641
Power Drift (%)	-2.180000
Ambient Temperature:	22.5°C
Liquid Temperature:	22.3°C
ConvF:	39.772,33.946,37.835
Crest factor:	1:1

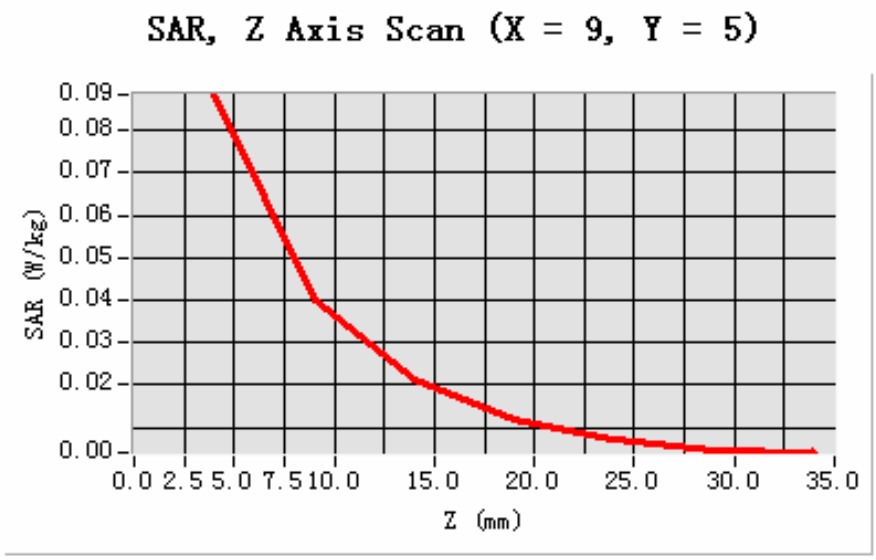
SURFACE SAR	VOLUME SAR
	

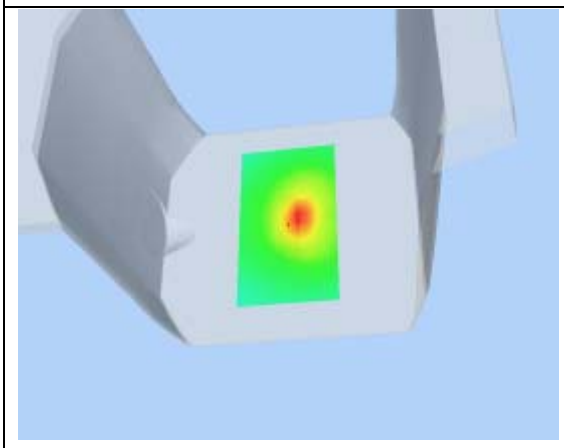
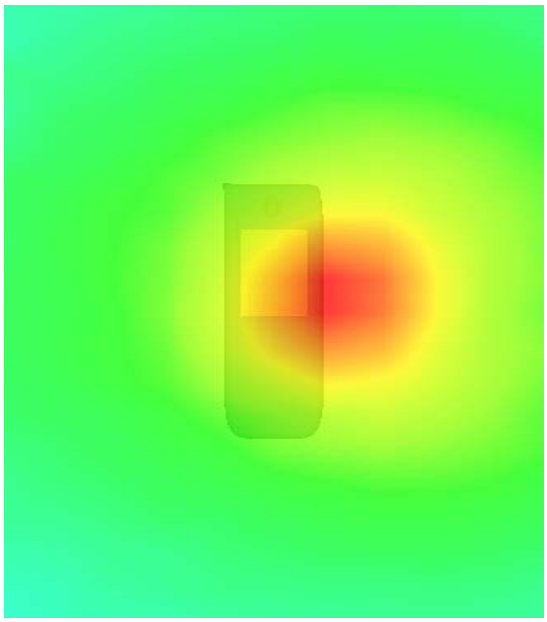
Maximum location: X=9.00, Y=5.00

SAR 10g (W/Kg)	0.041416
SAR 1g (W/Kg)	0.081547

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.0884	0.0402	0.0212	0.0118	0.0069	0.0047



3D sceen shot	Hot spot position
	

System Performance Check Data(Head)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 3/5/2011
Measurement duration: 13 minutes 27 seconds

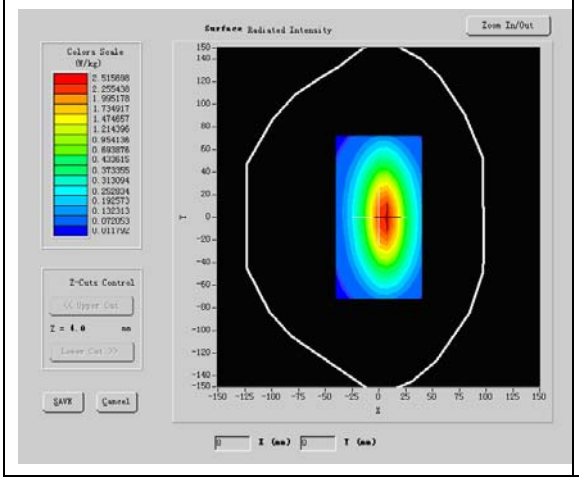
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	
Band	1800MHz
Channels	
Signal	CW

B. SAR Measurement Results

Band SAR

Frequency (MHz)	1800.000000
Relative permittivity (real part)	38.930000
Relative permittivity	15.070000
Conductivity (S/m)	1.321229
Power Drift (%)	-0.140000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:1

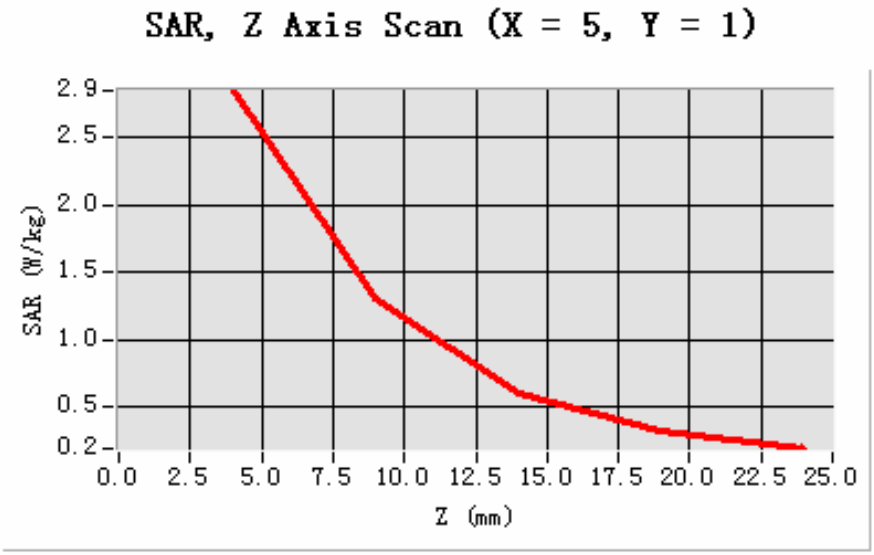
SURFACE SAR	VOLUME SAR
	

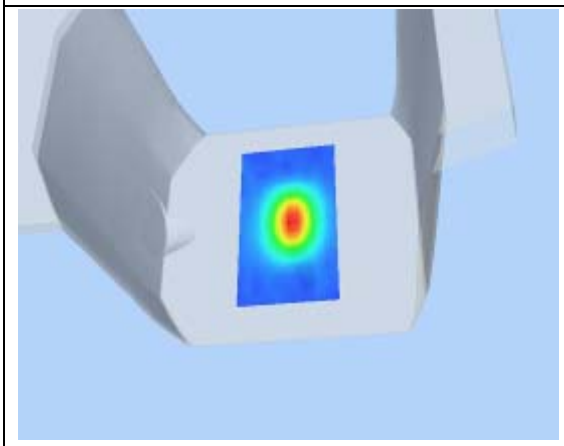
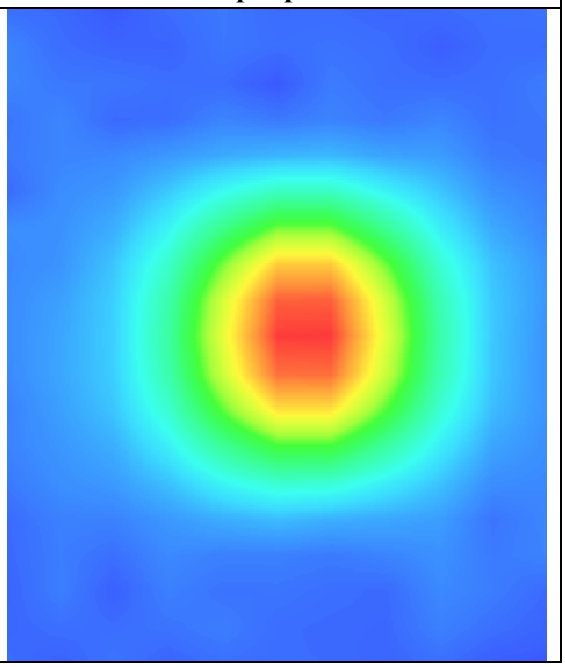
Maximum location: X=5.00, Y=1.00

SAR 10g (W/Kg)	5.957633
SAR 1g (W/Kg)	9.844123

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	2.8536	1.3061	0.6041	0.3211



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: 3/5/2011
Measurement duration: 13 minutes 27 seconds

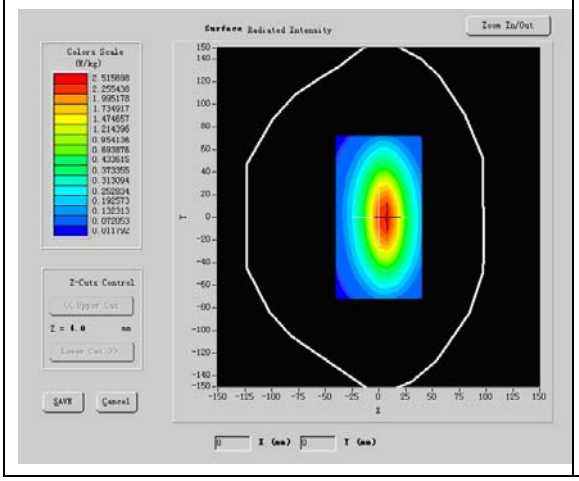
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	
Band	1800MHz
Channels	
Signal	CW

B. SAR Measurement Results

Band SAR

Frequency (MHz)	1800.000000
Relative permittivity (real part)	38.930000
Relative permittivity	15.070000
Conductivity (S/m)	1.321229
Power Drift (%)	-0.140000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:1

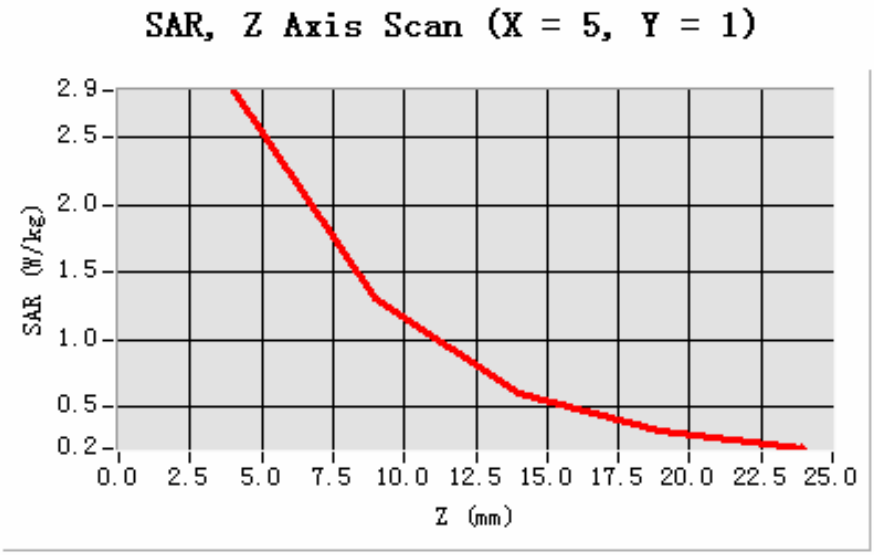
SURFACE SAR	VOLUME SAR
	

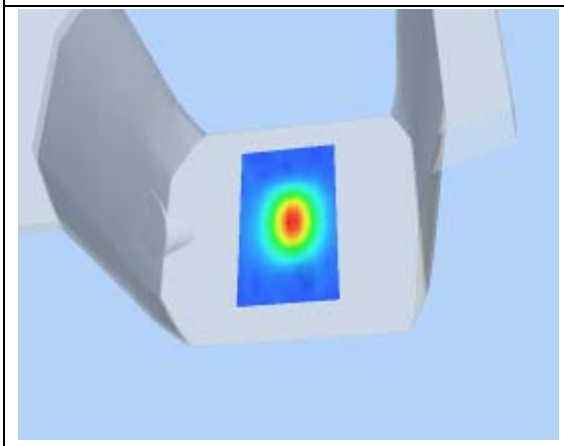
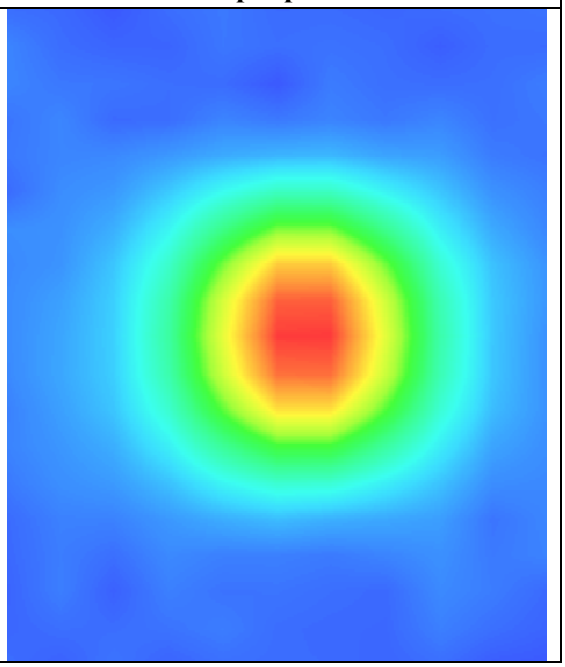
Maximum location: X=5.00, Y=1.00

SAR 10g (W/Kg)	5.912434
SAR 1g (W/Kg)	9.818562

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	2.8536	1.3061	0.6041	0.3211



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: 3/5/2011
Measurement duration: 13 minutes 27 seconds

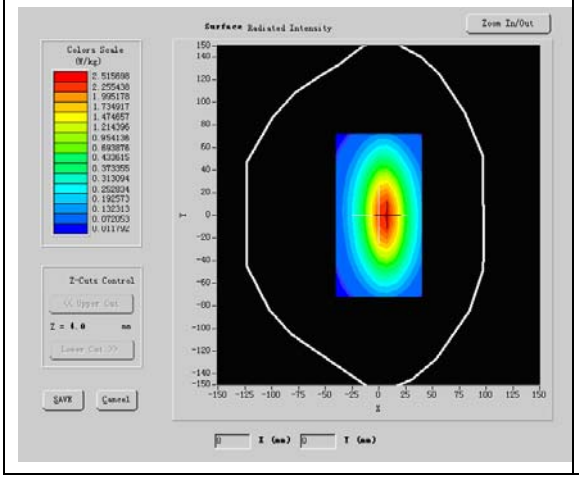
A. Experimental conditions.

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)	54.341000
Relative permittivity	19.120001
Conductivity (S/m)	1.952641
Power Drift (%)	-2.180000
Ambient Temperature:	22.5°C
Liquid Temperature:	22.3°C
ConvF:	39.772,33.946,37.835
Crest factor:	1:1

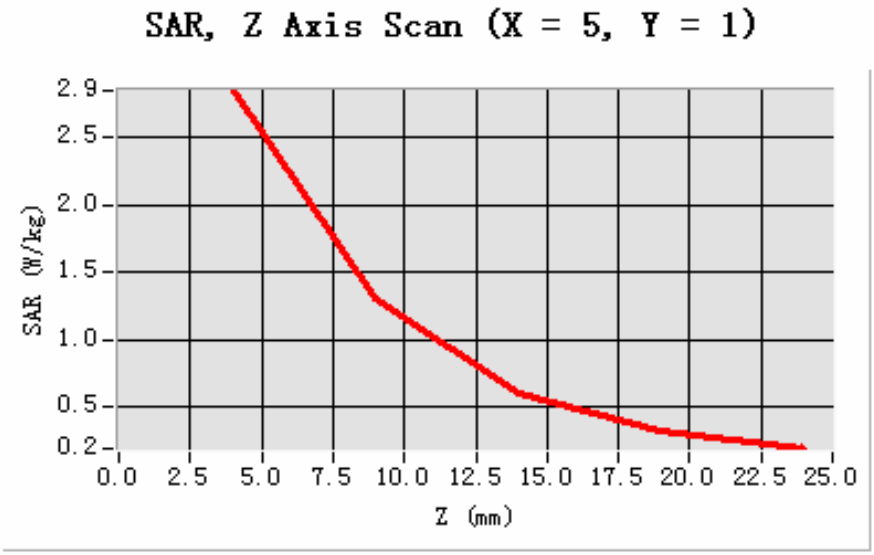
SURFACE SAR	VOLUME SAR
	

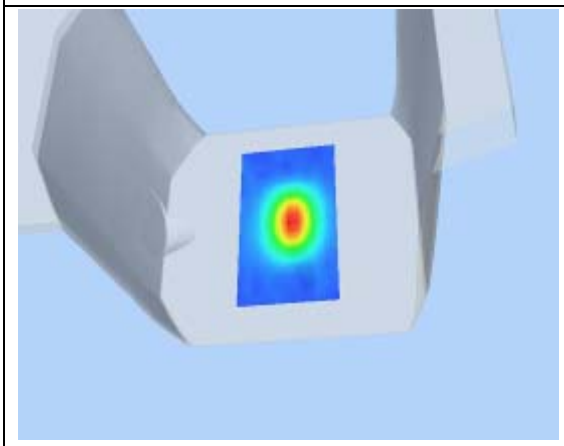
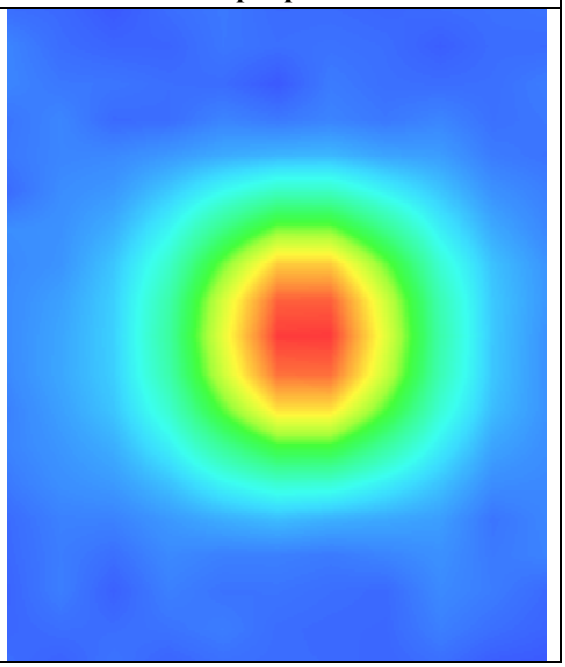
Maximum location: X=5.00, Y=1.00

SAR 10g (W/Kg)	7.077634
SAR 1g (W/Kg)	12.988772

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	2.8536	1.3061	0.6041	0.3211



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: 7/6/2011
Measurement duration: 13 minutes 27 seconds

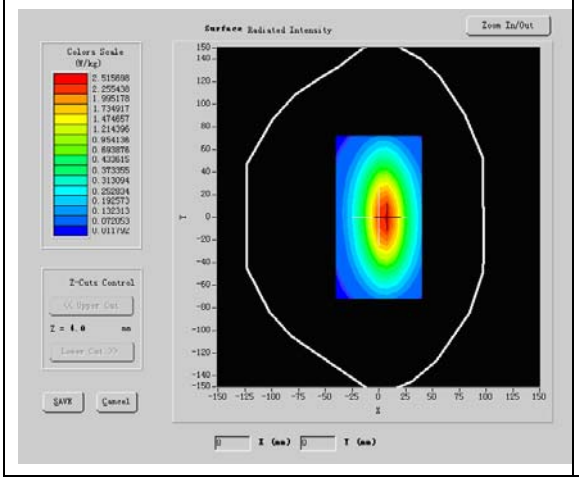
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	
Band	1800MHz
Channels	
Signal	CW

B. SAR Measurement Results

Band SAR

Frequency (MHz)	1800.000000
Relative permittivity (real part)	38.930000
Relative permittivity	15.070000
Conductivity (S/m)	1.321229
Power Drift (%)	-0.140000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:1

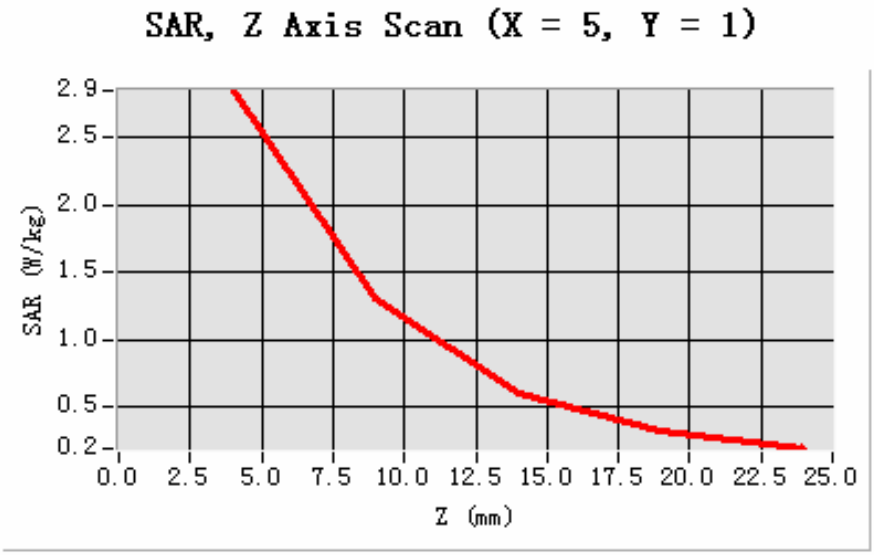
SURFACE SAR	VOLUME SAR
	

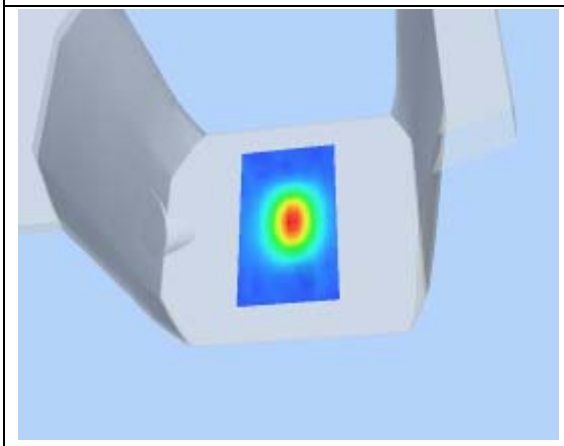
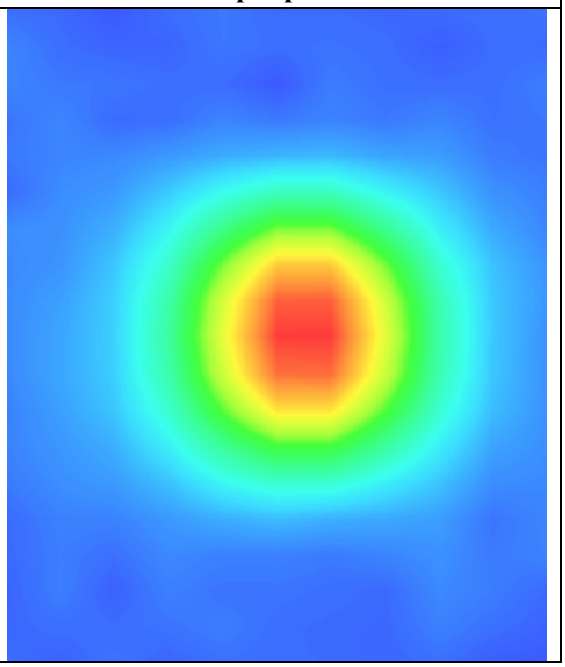
Maximum location: X=5.00, Y=1.00

SAR 10g (W/Kg)	5.894565
SAR 1g (W/Kg)	9.795412

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	2.8536	1.3061	0.6041	0.3211



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: 7/6/2011
Measurement duration: 13 minutes 27 seconds

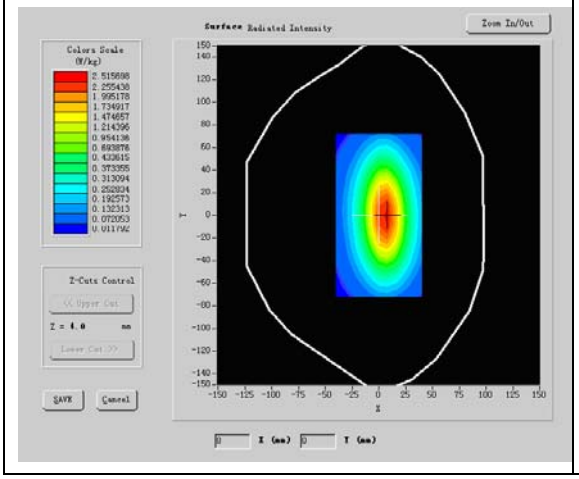
A. Experimental conditions.

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)	54.341000
Relative permittivity	19.120001
Conductivity (S/m)	1.952641
Power Drift (%)	-2.180000
Ambient Temperature:	22.5°C
Liquid Temperature:	22.3°C
ConvF:	39.772,33.946,37.835
Crest factor:	1:1

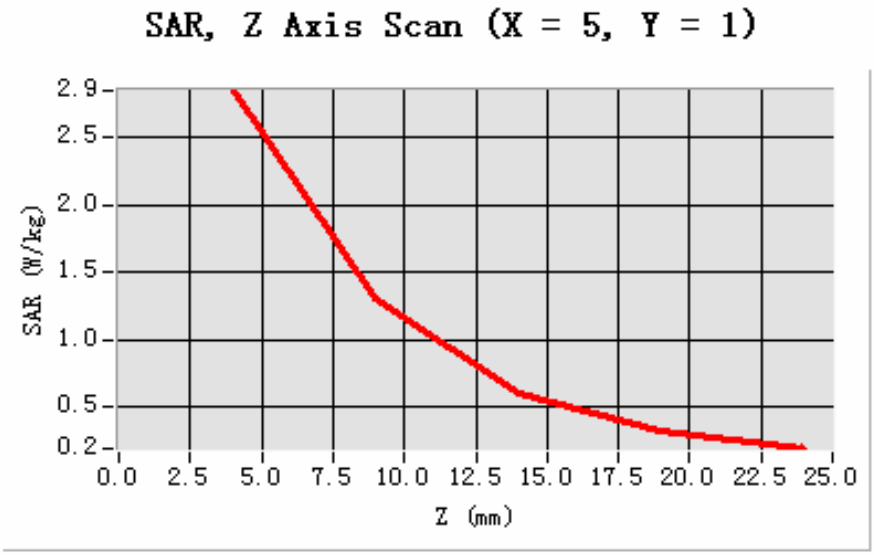
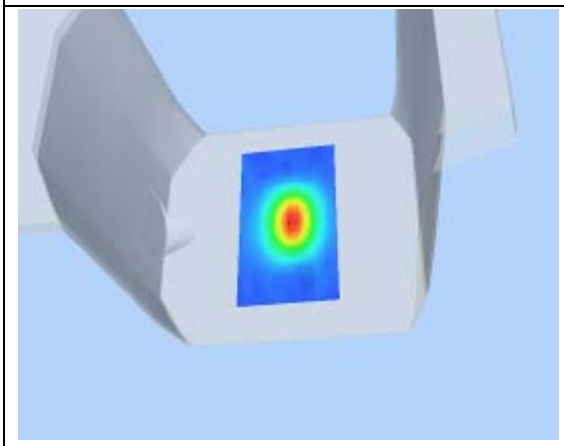
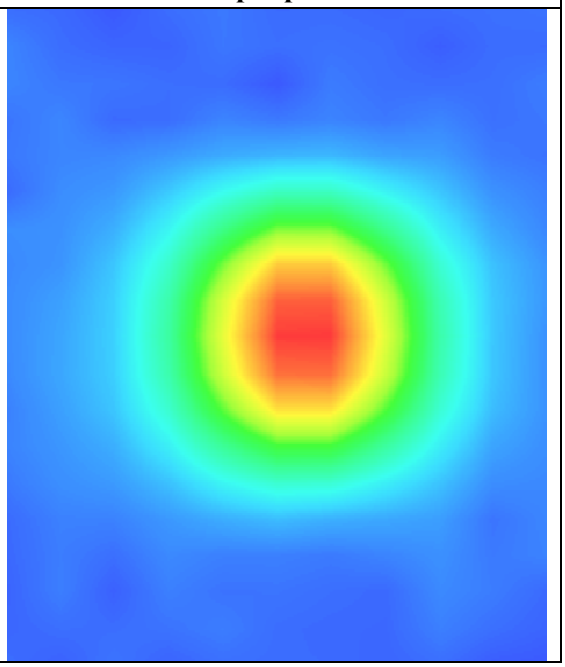
SURFACE SAR	VOLUME SAR
	

Maximum location: X=5.00, Y=1.00

SAR 10g (W/Kg)	6.945144
SAR 1g (W/Kg)	12.946845

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	2.8536	1.3061	0.6041	0.3211



3D sceen shot	Hot spot position