SAR TEST REPORT

Issued to

UN Cells Limited

For

Mobile Phone

Model Name	:	Chairman
Trade Name	:	SCI Innovations Limited
Brand Name	:	UN Cells
FCC ID	:	ZTBCHMN-01
Standard	:	FCC Oet65 Supplement C Jun.2001 47CFR 2.1093 ANSI C95.1-1999 IEEE 1528-2003
MAX SAR	:	Head: 0.207W/kg Body: 0.441W/kg
Test date	:	2011-06-27
Issue date		2011-10-28

Shenzhen MORLAB Communication Technology Co., Ltd.

Tested by	Zhu Zhan	*Approved by*	Zeng Dexin	*Review by*	Samuel. Peng
	Zhu Zhan		Zeng Dexin		Samuel. Peng
Date	2011.10.28	*Date*	2011.10.28	*Date*	2011.10.28

DIRECTORY

Change History		
Issue	Date	Reason for change
1.0	Oct.2, 2011	First edition
2.0	Oct.28, 2011	Add low channel GSM850 test results.

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

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:2011-06-27)	N/A	N/A
10	Dipole 835MHz	Satimo (SN 36/08 DIPC 99)	2010-9-23	1year
11	Dipole 1900MHz	Satimo (SN 36/08 DIPF 102)	2010-9-23	1year
12	Dipole 2450MHz	Satimo (SN 36/08 DIPF 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:	UN Cells Limited
Address:	16C Hurst End, Folly Lane, Newport Pagnell, Buckinghamshire MK16 9HS, United Kingdom

2.2. Identification of Manufacturer

Company Name:	Flextronics (SBS)
Address:	Munkas ut 28, PO Box 33, HU-8660 Tab, Hungary

2.3. Equipment Under Test (EUT)

Brand Name:	UN Cells
Type Name:	SCI Innovations Limited
Marking Name:	Chairman
Hardware Version:	V4.4
Software Version:	Chairman_GAPPS-eng 2.2 MAIN eng.duy.20110614.170756 test-keys
Frequency Bands:	GSM 850 / PCS 1900 WCDMA 850/WCMDA 1900 WIFI 802.11B/G Bluetooth 2.4G
Modulation Mode:	GSM / GPRS : GMSK; EDGE: 8PSK WCDMA: CDMA WIFI 802.11B: DSSS WIFI 802.11G: OFDM Bluetooth: GFSK
Multislot Class	GPRS: Multislot Class 12; EDGE: Multislot Class 12
GPRS operation mode:	Class B
Antenna type:	Fixed Internal Antenna
Development Stage:	Identical prototype
Battery Model:	763740AR
Battery specification:	1300mAh 3.7V

2.3.1. Photographs of the EUT

Please see for photographs of the EUT.

2.3.2. Identification of all used EUT

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

EUT Identity	Hardware Version	Software Version
1#	V4.4	Chairman_GAPPS-eng 2.2 MAIN eng.duy.20110614.170756 test-keys

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 Radio frequency 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:	GSM 900MHz/DCS 1800MHz
	WCDMA 900 MHz/WCDMA2100MHz
	WIFI 802.11B/G 2.4GHz
Operation mode:	Call established
Power Level:	GSM 850 MHz Maximum output power(level 5)
	PCS 1900 MHz Maximum output power(level 0)
	WCMDA 850 (All Up Bit)
	WCDMA 1900 (All Up Bit)
	WIFI 802.11B/G (Maximum output power)

During SAR test, EUT is in Traffic Mode (Channel Allocated) at Normal Voltage Condition. A communication link is set up with a System Simulator (SS) by air link, and a call is established.
The Absolute Radio Frequency Channel Number (ARFCN) is allocated to 128, 190 and 251 respectively in the case of GSM 850 MHz, or to 512, 661 and 810 respectively in the case of PCS 1800 MHz, The EUT, The EUT is commanded to operate at maximum transmitting power.
And Located at channel 4132, 4182 and 4233 of WCDMA 850 band; Located at channel 9262, 9400 and 9538 of WCDMA 1900 band.
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 2, because EUT is set in GPRS/EDGE multi-slot class 12 with 4 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:

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

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

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

, 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

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

, 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

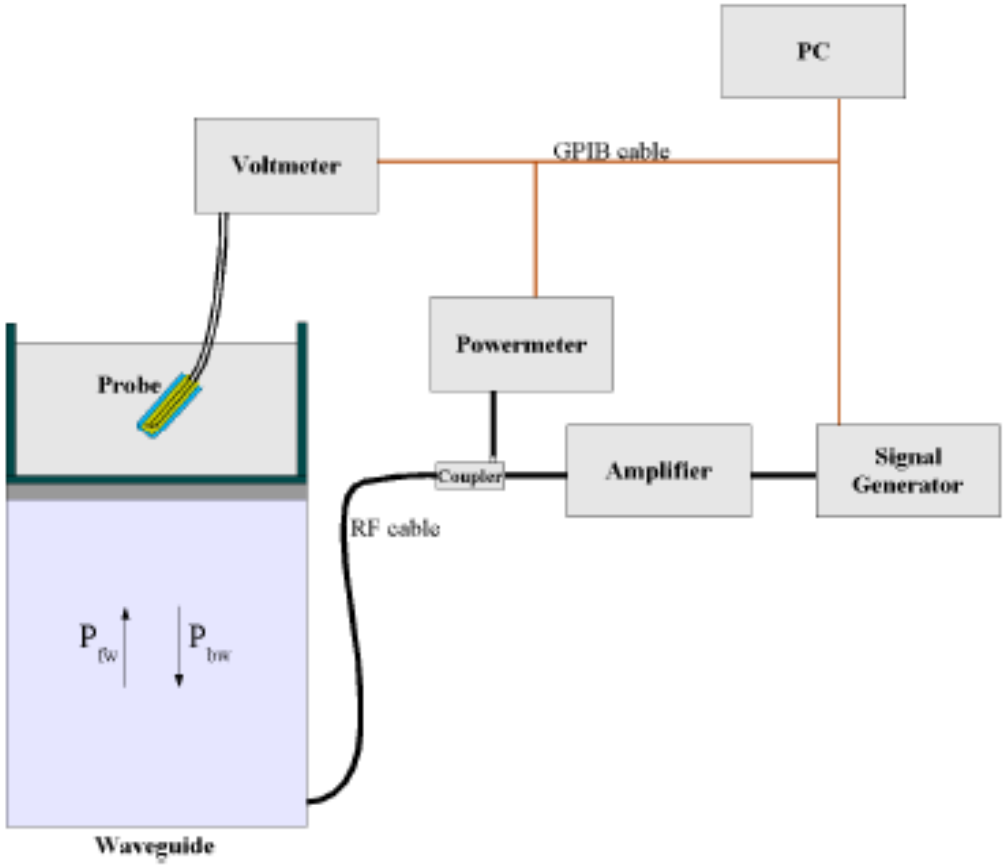
For the measurements the Specific Dosimetric E-Field Probe SN 37/08 EP80 with following specifications is used

- 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.



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

Where :
Pfw = Forward Power
Pbw = Backward Power
a and b = Waveguide dimensions
ı = Skin depth
Keithley configuration:

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

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

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

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

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

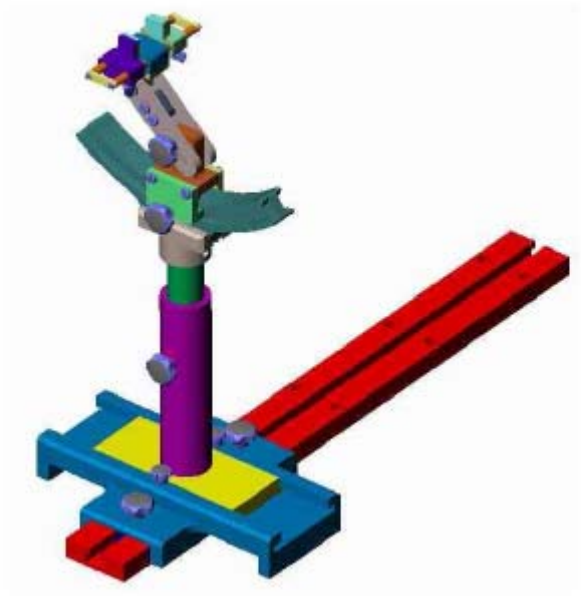
where DCP is the diode compression point in mV.

4.3. 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, WCDMA 850MHz, PCS 1900MHz and WCDMA 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.

Following is the recipes for one liter of head and body tissue simulating liquid for frequency band 835 MHz, 1900 MHz and 2450MHz.

Ingredients (% by weight)	Frequency Band		Frequency Band		Frequency Band
	835MHz		1900MHz		2450MHz
Tissue Type	Head	Body	Head	Body	Body
Water	41.45	52.4	54.9	40.4	40.4
Salt(NaCl)	1.49	1.4	0.18	0.5	0.5
Sugar	46.78	45.0	0.0	58.0	58.0
HEC	0.52	1.0	0.0	1.0	1.0
Bactericide	0.05	0.1	0.0	0.1	0.1
Triton	0.0	0.0	0.0	0.0	0.0
DGBE	0.0	0.0	44.92	0.0	0.0
Acticide SPX	0.0	0.0	0.0	0.0	0.0
Dielectric Constant	42.54	56.1	39.9	54.0	54.0
Conductivity (S/m)	0.91	0.95	1.42	1.45	1.45

Recipes for Tissue Simulating Liquid

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.

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 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	835 MHZ	41.5	0.90
Validation value (Jun. 27)	835 MHZ	41.675999	0.894409
Target value	1900 MHZ	40	1.40
Validation value (Jun. 27)	1900 MHZ	38.509998	1.436111
Target value	835 MHZ	41.5	0.90
Validation value (Oct. 27)	835 MHZ	41.574998	0.887366

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	835 MHz	55.2	0.97
Validation value (Jun. 27)	835 MHz	55.709999	1.009033
Target value	1900 MHz	53.3	1.52
Validation value (Jun. 27)	1900 MHz	52.548876	1.573978
Target value	2450 MHz	53.3	1.52
Validation value (Jun. 27)	2450 MHz	52.548876	1.573978

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 (+- %)	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	$\sqrt{3}$			1.02	1.02	
Hemispherical Isotropy	E.2.2	4.0	R	$\sqrt{3}$			1.63	1.63	
Boundary effect	E.2.3	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	
Linearity	E.2.4	5.0	R	$\sqrt{3}$	1	1	2.89	2.89	
System detection limits	E.2.5	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	
Readout Electronics	E.2.6	0.02	N	1	1	1	0.02	0.02	
Reponse Time	E.2.7	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	
Integration Time	E.2.8	2.0	R	$\sqrt{3}$	1	1	1.15	1.15	
RF ambient Conditions	E.6.1	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	
Probe positioner Mechanical Tolerance	E.6.2	2.0	R	$\sqrt{3}$	1	1	1.15	1.15	
Probe positioning with respect to Phantom Shell	E.6.3	0.05	R	$\sqrt{3}$	1	1	0.03	0.03	
Extrapolation, interpolation and integration Algoritms for Max. SAR Evaluation	E.5.2	5.0	R	$\sqrt{3}$	1	1	2.89	2.89	
Test sample Related									
Test sample positioning	E.4.2.1	0.03	N	1	1	1	0.03	0.03	N-1
Device Holder Uncertainty	E.4.1.1	5.00	N	1	1	1	5.00	5.00	
Output power Power drift - SAR drift measurement	6.6.2	4.04	R	$\sqrt{3}$	1	1	2.33	2.33	
Phantom and Tissue Parameters									
Phantom Uncertainty (Shape and thickness tolerances)	E.3.1	0.05	R	$\sqrt{3}$	1	1	0.03	0.03	
Liquid conductivity - deviation	E.3.2	4.57	R	$\sqrt{3}$	0.64	0.43	1.69	1.13	

from target value									
Liquid conductivity - measurement uncertainty	E.3.3	5.00	N	1	0.64	0.43	3.20	2.15	M
Liquid permittivity - deviation from target value	E.3.2	3.69	R	$\sqrt{3}$	0.6	0.49	1.28	1.04	
Liquid permittivity - measurement uncertainty	E.3.3	10.00	N	1	0.6	0.49	6.00	4.90	M
Combined Standard Uncertainty			RSS				11.23	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	$\sqrt{3}$			1.02	1.02	
Hemispherical Isotropy	E.2.2	4.0	R	$\sqrt{3}$			1.63	1.63	
Boundary effect	E.2.3	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	
Linearity	E.2.4	5.0	R	$\sqrt{3}$	1	1	2.89	2.89	
System detection limits	E.2.5	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	
Readout Electronics	E.2.6	0.02	N	1	1	1	0.02	0.02	
Reponse Time	E.2.7	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	
Integration Time	E.2.8	2.0	R	$\sqrt{3}$	1	1	1.15	1.15	
RF ambient Conditions	E.6.1	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	
Probe positioner Mechanical Tolerance	E.6.2	2.0	R	$\sqrt{3}$	1	1	1.15	1.15	
Probe positioning with respect to Phantom Shell	E.6.3	0.05	R	$\sqrt{3}$	1	1	0.03	0.03	
Extrapolation, interpolation and integration Algoritms for Max. SAR Evaluation	E.5.2	5.0	R	$\sqrt{3}$	1	1	2.89	2.89	
Dipole									
Dipole axis to liquid Distance	8,E.4.2	1.00	N	$\sqrt{3}$	1	1	0.58	0.58	N-1

Input power and SAR drift measurement	8,6.6.2	4.04	R	$\sqrt{3}$	1	1	2.33	2.33	
Phantom and Tissue Parameters									
Phantom Uncertainty (Shape and thickness tolerances)	E.3.1	0.05	R	$\sqrt{3}$	1	1	0.03	0.03	
Liquid conductivity - deviation from target value	E.3.2	4.57	R	$\sqrt{3}$	0.64	0.43	1.69	1.13	
Liquid conductivity - measurement uncertainty	E.3.3	5.00	N	1	0.64	0.43	3.20	2.15	M
Liquid permittivity - deviation from target value	E.3.2	3.69	R	$\sqrt{3}$	0.6	0.49	1.28	1.04	
Liquid permittivity - measurement uncertainty	E.3.3	10.00	N	1	0.6	0.49	6.00	4.90	M
Combined Standard Uncertainty			RSS				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 835MHz, 1800MHz, 1900MHZ and 2450MHz. The calibrated dipole must be placed beneath the flat phantom section of the SAM twin phantom with the correct distance holder. The distance holder should touch the phantom 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	835MHz:SN 36/08 DIPC 99 1900MHz:SN 36/08 DIPF 102 2450MHz:SN 36/08 DIPF 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	835MHz	1900MHz	2450MHz
Target value（1g）	9.5 W/Kg	39.7 W/Kg	52.4 W/Kg
250 mW input power	2.478 W/Kg	9.556 W/Kg	12.899 W/Kg
Test value（1g）(**Jun. 27**)	9.912 W/Kg	38.224 W/Kg	51.596 W/Kg
250 mW input power	2.3591 W/Kg	\	\
Test value（1g）(**Oct.27**)	9.4364 W/Kg	\	\

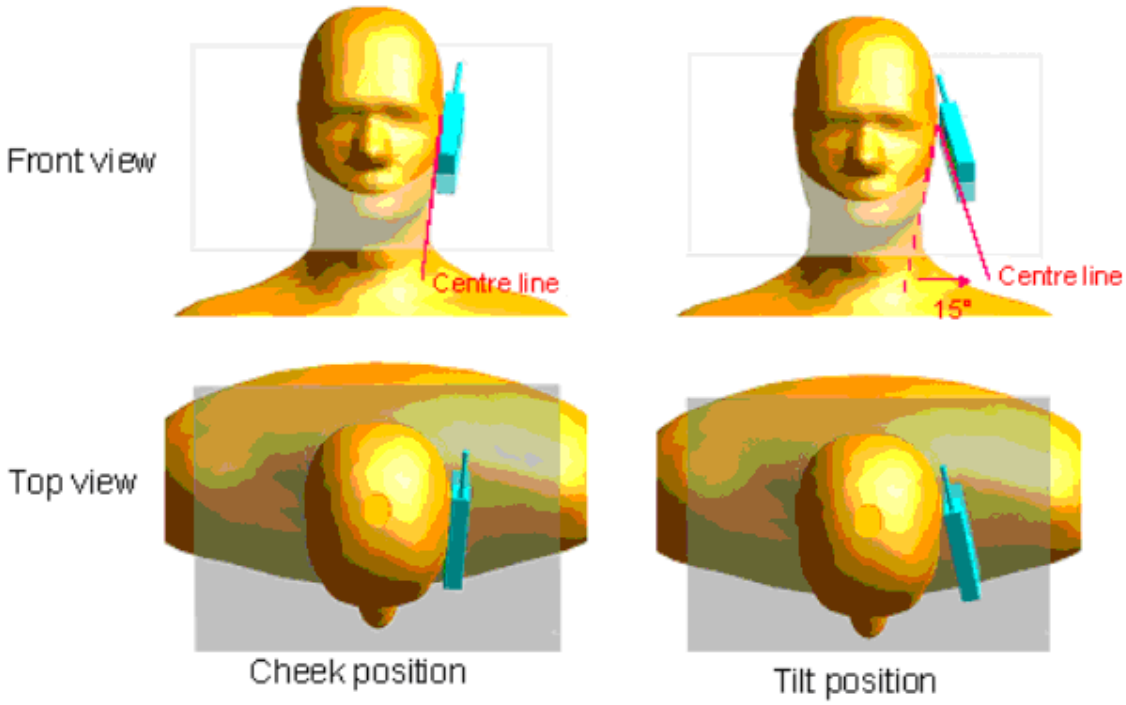
Note: System checks the specific test data please see page 112-119.

8. Operational Conditions During Test

8.1. Information of 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 gets 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.

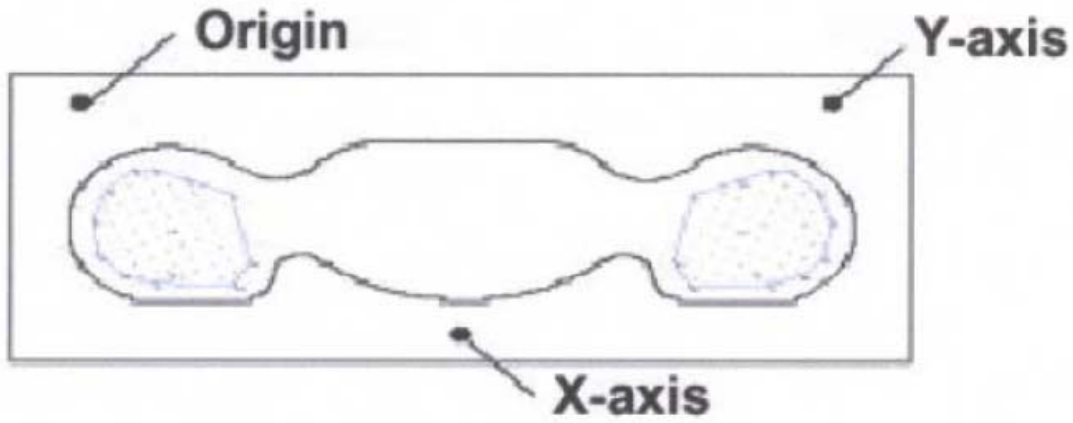
Remark: Please refer to Appendix B for the test setup photos.

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.

9. 3G MEASUREMENT PROCEDURES

9.1. Procedures Used To Establish Test Signal

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

9.2. SAR Measurement Conditions for WCDMA

These procedures were followed according to FCC KDB 941225, October, 2007.

9.3. Output Power Verification

Maximum output power is verified on the High, Middle and Low channels according to the general descriptions in section 5.2 of 3GPP TS 34.121, using the appropriate RMC or AMR with TPC(transmit power control) set to all "1s". Results for all applicable physical channel configurations (DPCCH, DPDCHn and spreading codes) should be tabulated in the test report. All configurations that are not supported by the EUT or cannot be measured due to technical or equipment limitations should be clearly identified.

9.4. Tablet PC with HSUPA

Body SAR is also measured for HSUPA when the maximum average output of each RF channel with HSUPA active is at least 1/4 dB higher then that measured without HSUPA using 12.2kbps RMC or the maximum SAR for 12.2kbps RMC is above 75% of the SAR limit. Body SAR for HSDPA is measured using an FRC with H-Set 1 in Sub-test 1 and a 12.2kbps RMC configured in Test Loop Mode 1,using the highest body SAR configuration in 12.2kbps RMC without HSD-PA

9.5. Measurement Of Conducted Peak Output Power.

ltem	band	WCDMA 850			WCDMA 1900		
	ARFCN	4132	4175	4233	9262	9400	9538
	subtest						
5.2(WCDMA)	non	22.55	21.98	22.00	21.5	22.09	21.97
5.2AA(HSDPA)	1	21.81	21.44	21.48	20.75	21.06	20.53
	2	21.61	21.58	21.50	20.58	20.99	20.48
	3	21.25	21.07	20.97	20.21	20.43	20.28
	4	21.22	21.10	20.92	20.30	20.42	20.23
5.2B(HSUPA)	1	22.34	21.86	21.91	21.52	21.97	21.79
	2	20.45	20.01	19.93	19.61	19.87	19.69
	3	21.21	20.99	20.86	20.65	20.90	20.66
	4	20.35	20.05	20.04	19.72	19.92	19.63
	5	22.41	21.81	21.94	21.42	21.88	21.84

GSM Mode

Band	Channel	Frequency (MHz)	Output Power (dBm)
GSM 850	128	824.2	33.02
	190	836.6	32.85
	251	848.8	32.64
PCS 1900	512	1850.2	26.92
	661	1880.0	26.50
	810	1909.8	26.07

GPRS Mode

Band	Channel	Frequency (MHz)	Output Power(dBm)			
			Slot 1	Slot 2	Slot 3	Slot 4
GSM 850	128	824.2	30.53	29.49	27.67	26.55
	190	836.6	30.67	29.60	27.56	26.54
	251	848.8	30.62	29.44	27.54	26.50
PCS 1900	512	1850.2	29.19	29.12	30.26	29.31
	661	1880.0	29.87	29.47	29.40	29.97
	810	1909.8	29.76	29.29	29.26	29.84

GPRS Time-based Average Power

Band	Channel	Frequency (MHz)	Output Power(dBm)			
			Slot 1	Slot 2	Slot 3	Slot 4
GSM 850	128	824.2	21.53	23.49	23.41	23.55
	190	836.6	21.67	23.6	23.30	23.54
	251	848.8	21.62	23.44	23.28	23.50
PCS 1900	512	1850.2	20.19	23.12	26.00	26.31
	661	1880.0	20.87	23.47	25.14	26.97
	810	1909.8	20.76	23.29	25.00	26.84

EDGE Mode

Band	Channel	Frequency (MHz)	Output Power(dBm)			
			Slot 1	Slot 2	Slot 3	Slot 4
GSM 850	128	824.2	29.45	32.22	31.18	31.08
	190	836.6	32.62	32.4	31.34	31.44
	251	848.8	32.56	32.33	31.32	31.32
PCS 1900	512	1850.2	29.31	28.94	29.00	27.70
	661	1880.0	29.95	29.56	29.58	28.31
	810	1909.8	29.81	29.45	29.44	28.20

EDGE Time-based Average Power

Band	Channel	Frequency (MHz)	Output Power(dBm)			
			Slot 1	Slot 2	Slot 3	Slot 4
GSM 850	128	824.2	20.45	26.22	26.92	28.08
	190	836.6	23.62	26.4	27.08	28.44
	251	848.8	23.56	26.33	27.06	28.32
PCS 1900	512	1850.2	20.31	22.94	24.74	24.70
	661	1880.0	20.95	23.56	25.32	25.31
	810	1909.8	20.81	23.45	25.18	25.20

Wifi peak output power

Band	Channel	Frequency (MHz)	Output Power(dBm)	
			802.11B (DSSS)	802.11G (OFDM)
WiFi	1	2412	10.13	11.57
	6	2437	10.67	12.49
	11	2462	10.32	11.69

Bluetooth peak output power

Band	Channel	Frequency (MHz)	Output Power(dBm)		
			GFSK	Π/4-DQPSK	8-DPSK
BT	0	2402	0.447	0.447	1.331
	38	2441	-0.609	-0.609	0.307
	79	2480	-0.860	-0.860	-0.989

10.Test Results List

Summary of Measurement Results (GSM 850 Band)

Temperature: 21.0~23.8°C, humidity: 54~60%.					
Phantom Configurations	Device Test Positions	Antenna Positions	SAR(W/Kg), 1g value		
			Device Test channel		
			Channel 128	Channel 190	Channel 251
Left Side Of Head	Cheek/Touch	Internal	0.180	0.207	/
	Ear/Tilt	Internal	0.133	0.117	/
Right Side Of Head	Cheek/Touch	Internal	0.184	0.162	/
	Ear/Tilt	Internal	0.132	0.138	/
Body (GSM)	Back upward	Internal	0.430	0.386	/
	Face Upward	Internal	0.248	0.166	/
Body (GPRS)	Back upward	Internal	0.423	/	/
	Face Upward	Internal	0.192	/	/
Body (EDGE)	Back upward	Internal	/	0.441	/
	Face Upward	Internal	/	0.167	/

Summary of Measurement Results (GSM 1900 Band)

Temperature: 21.0~23.8°C, humidity: 54~60%.					
Phantom Configurations	Device Test Positions	Antenna Positions	SAR(W/Kg), 1g value		
			Device Test channel, Frequency		
			Channel 512	Channel 661	Channel 810
Left Side Of Head	Cheek/Touch	Internal	0.043	/	/
	Ear/Tilt	Internal	0.008	/	/
Right Side Of Head	Cheek/Touch	Internal	0.044	/	/
	Ear/Tilt	Internal	0.008	/	/
Body (GSM)	Back upward	Internal	0.146	/	/
	Face Upward	Internal	0.016	/	/
Body (GPRS)	Back upward	Internal	/	0.150	/
	Face Upward	Internal	/	0.129	/
Body (EDGE)	Back upward	Internal	/	0.121	/
	Face Upward	Internal	/	0.017	/

Summary of Measurement Results (WCDMA 850 Band)

Temperature: 21.0~23.8°C, humidity: 54~60%.					
Phantom Configurations	Device Test Positions	Antenna Positions	SAR(W/Kg), 1g value		
			Device Test channel		
			Channel 4132	Channel 4182	Channel 4233
Left Side Of Head	Cheek/Touch	Internal	0.140	/	/
	Ear/Tilt	Internal	0.094	/	/
Right Side Of Head	Cheek/Touch	Internal	0.127	/	/
	Ear/Tilt	Internal	0.103	/	/
Body	Back upward	Internal	0.098	/	/
	Face Upward	Internal	0.059	/	/

Summary of Measurement Results (WCDMA 1900 Band)

Temperature: 21.0~23.8°C, humidity: 54~60%.					
Phantom Configurations	Device Test Positions	Antenna Positions	SAR(W/Kg), 1g value		
			Device Test channel, Frequency		
			Channel 9262	Channel 9400	Channel 9538
Left Side Of Head	Cheek/Touch	Internal	/	0.120	/
	Ear/Tilt	Internal	/	0.015	/
Right Side Of Head	Cheek/Touch	Internal	/	0.102	/
	Ear/Tilt	Internal	/	0.014	/
Body	Back upward	Internal	/	0.306	/
	Face Upward	Internal	/	0.113	/

Summary of Measurement Results (WIFI 802.11G Band)

Temperature: 21.0~23.8°C, humidity: 54~60%.					
Phantom Configurations	Device Test Positions	Antenna Positions	SAR(W/Kg), 1g value		
			Device Test channel, Frequency		
			Channel 1	Channel 6	Channel 11
Body	Back upward	Internal	/	0.127	/
	Face Upward	Internal	/	0.041	/

Note: 1. Refer 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.

11.Multiple Transmitters Evaluation

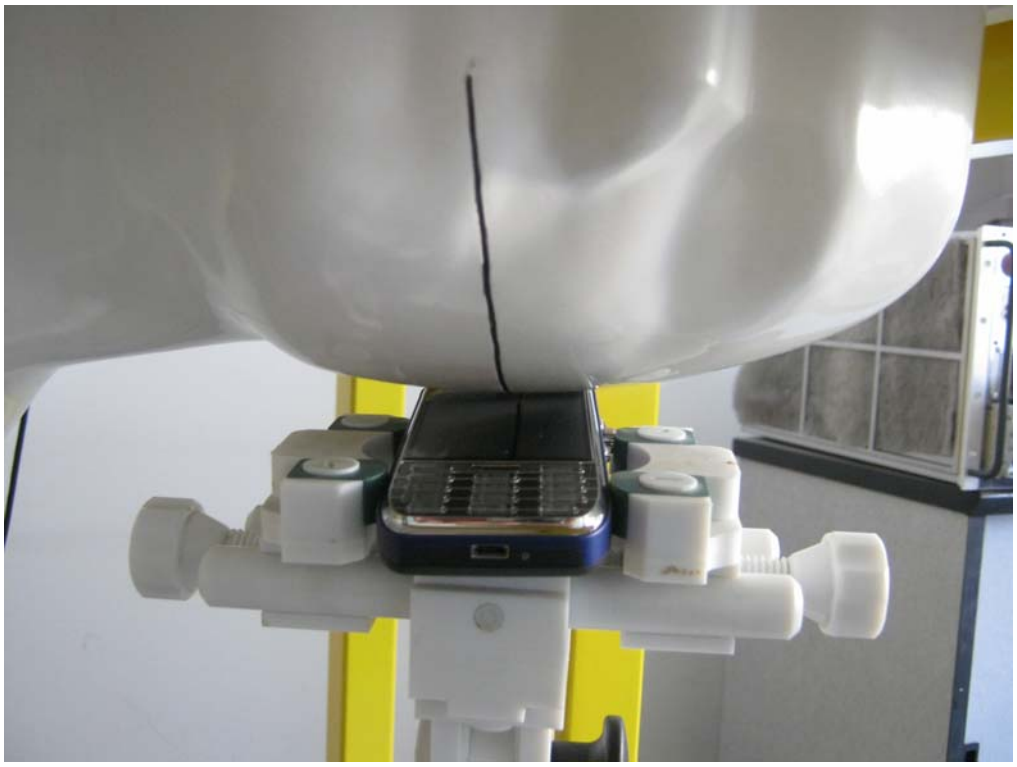
The are three transmitters build in EUT, CDMA, BT and WiFi, As follwing :

1. The Wifi mode Max. 1-g SAR vauel is 0.127W/Kg, and the CDMA Max. 1-g SAR vauel is 0.441W/Kg, the sum of 1-g SAR vauel is 0.568W/Kg less than 1.6W/Kg, according with KDB 648474 D01, when the sum of the 1-g SAR is <1.6 W/kg for all simultaneous transmitting antennas, and the Simultaneous Transmission SAR is not required.

Annex A Photographs of the EUT

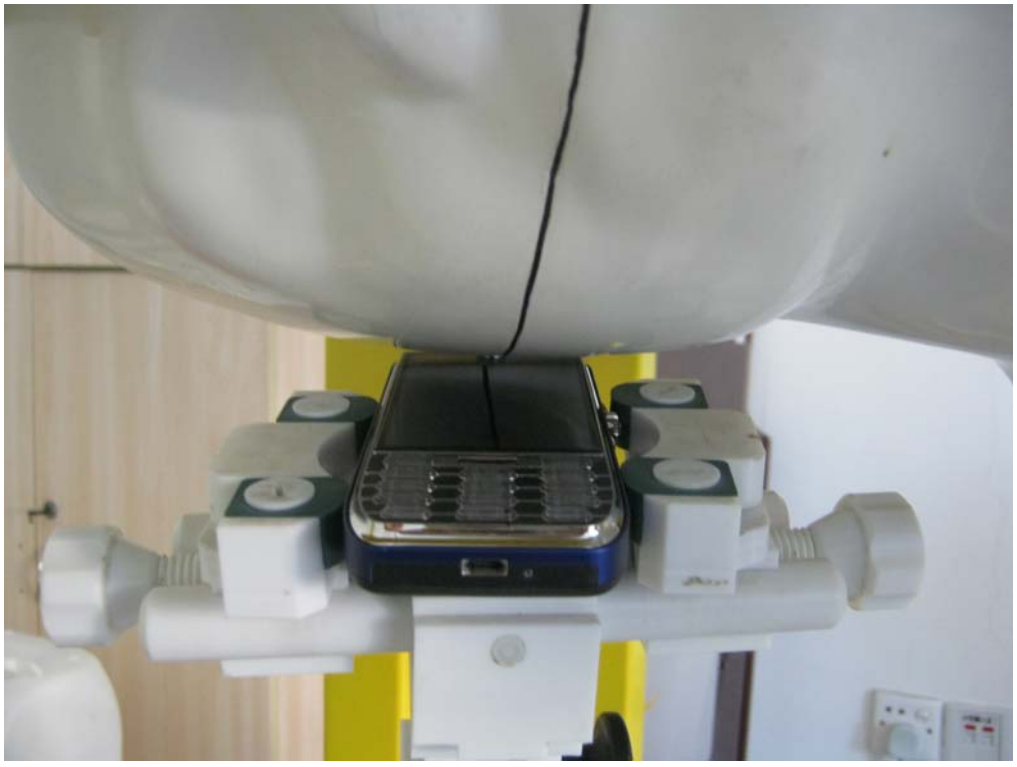
1 EUT Left Head Touch Cheek Position

2 EUT Left Head Tilt15 Position



3 EUT Right Head Touch Cheek Position

4 EUT Right Head Tilt15 Position



5 Side Position with earphone

Liquid Level Photo

Annex C Graph Test Results

BAND	PARAMETERS
GSM 850	Measurement 1: Right Head with Cheek device position on Middle Channel in GSM mode Measurement 2: Right Head with Tilt device position on Middle Channel in GSM mode Measurement 3: Left Head with Cheek device position on Middle Channel in GSM mode Measurement 4: Left Head with Tilt device position on Middle Channel in GSM mode Measurement 5: Validation Plane with Body device position on Middle Channel in GSM mode Measurement 6: Validation Plane with Body device position on Middle Channel in GSM mode Measurement 7: Right Head with Cheek device position on Low Channel in GSM mode Measurement 8: Right Head with Tilt device position on Low Channel in GSM mode Measurement 9: Left Head with Cheek device position on Low Channel in GSM mode Measurement 10: Left Head with Tilt device position on Low Channel in GSM mode Measurement 11: Validation Plane with Body device position on Low Channel in GSM mode Measurement 12: Validation Plane with Body device position on Low Channel in GSM mode Measurement 13: Validation Plane with Body device position on Low Channel in GPRS mode Measurement 14: Validation Plane with Body device position on Low Channel in GPRS mode Measurement 15: Validation Plane with Body device position on Middle Channel in EDGE mode Measurement 16: Validation Plane with Body device position on Middle Channel in EDGE mode
GSM 1900	Measurement 17: Right Head with Cheek device position on Low Channel in GSM mode Measurement 18: Right Head with Tilt device position on Low Channel in GSM mode Measurement 19: Left Head with Cheek device position on Low Channel in GSM mode Measurement 20: Left Head with Tilt device position on Low Channel in GSM mode Measurement 21: Validation Plane with Body device position on

	Low Channel in GSM mode Measurement 22: Validation Plane with Body device position on Low Channel in GSM mode Measurement 23: Validation Plane with Body device position on Middle 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 Middle Channel in EDGE mode Measurement 26: Validation Plane with Body device position on Middle Channel in EDGE mode
WCDMA 850	Measurement 27: Right Head with Cheek device position on Low Channel in WCDMA mode Measurement 28: Right Head with Tilt device position on Low Channel in WCDMA mode Measurement 29: Left Head with Cheek device position on Low Channel in WCDMA mode Measurement 30: Left Head with Tilt device position on Low Channel in WCDMA mode Measurement 31: Left Head with Tilt device position on Low Channel in WCDMA mode Measurement 32: Left Head with Tilt device position on Low Channel in WCDMA mode
WCDMA 1900	Measurement 33: Right Head with Cheek device position on Middle Channel in WCDMA mode Measurement 34: Right Head with Tilt device position on Middle Channel in WCDMA mode Measurement 35: Left Head with Cheek device position on Middle Channel in WCDMA mode Measurement 36: Left Head with Tilt device position on Middle Channel in WCDMA mode Measurement 37: Left Head with Tilt device position on Middle Channel in WCDMA mode Measurement 38: Left Head with Tilt device position on Middle Channel in WCDMA mode
WIFI 802.11G	Measurement 39: Left Head with Tilt device position on Middle Channel in 802.11G mode Measurement 40: Left Head with Tilt device position on Middle Channel in 802.11G 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: 27/6/2011
Measurement duration: 8 minutes 11 seconds

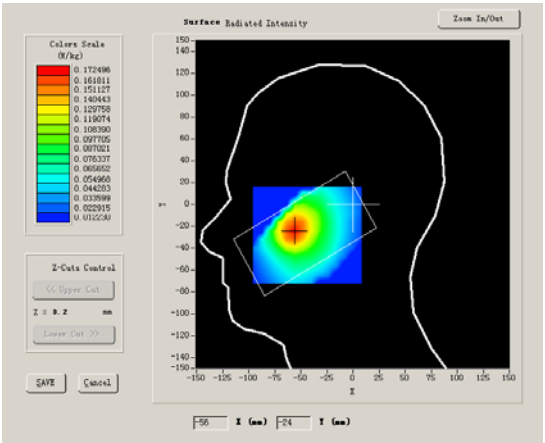
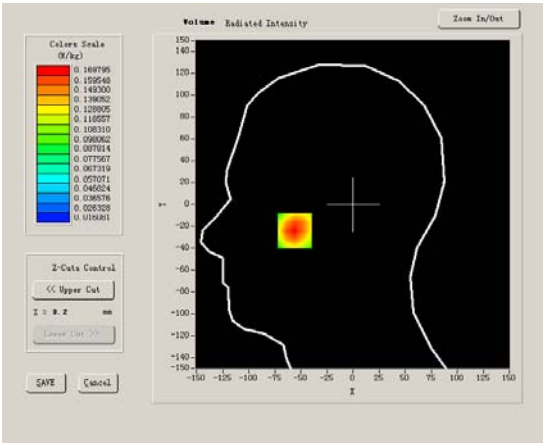
A. Experimental conditions.

Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Right head
Device Position	Cheek
Band	GSM850
Channels	Middle
Signal	GSM

B. SAR Measurement Results

Middle Band SAR (Channel 190):

Frequency (MHz)	836.599976
Relative permittivity (real part)	40.669998
Relative permittivity	19.120001
Conductivity (S/m)	0.888655
Power drift (%)	-2.420000
Ambient Temperature:	22.2°C
Liquid Temperature:	21.5C
ConvF:	28.479,25.214,27.196
Crest factor:	1:8

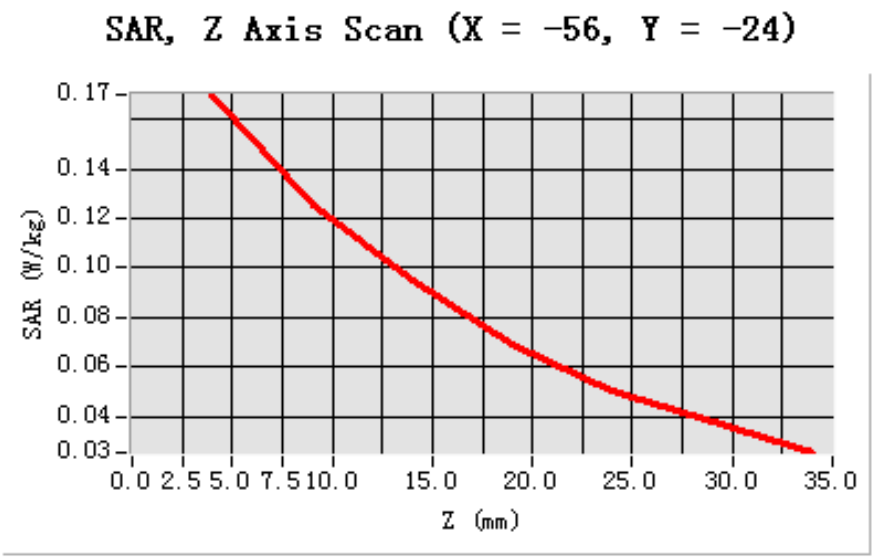
SURFACE SAR	VOLUME SAR
	

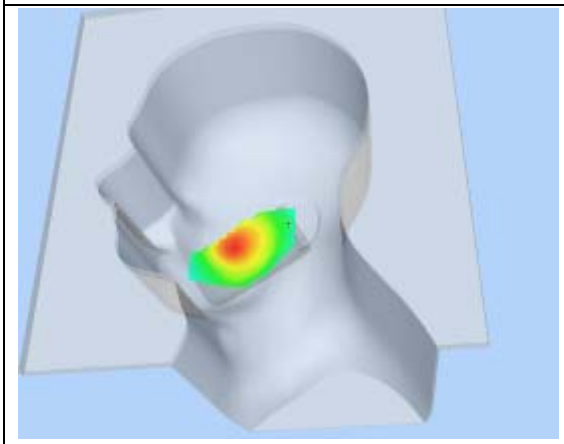
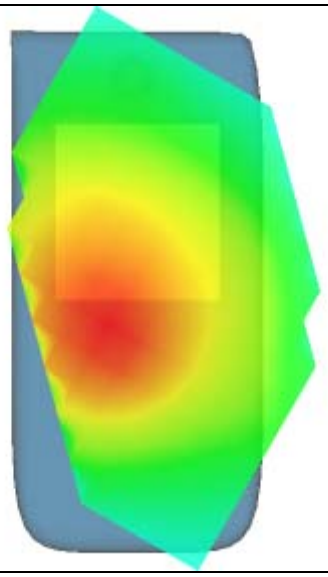
Maximum location: X=-56.00, Y=-24.00

SAR 10g (W/Kg)	0.112247
SAR 1g (W/Kg)	0.162478

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.1698	0.1257	0.0950	0.0694	0.0509	0.0382



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: 27/6/2011
Measurement duration: 7 minutes 35 seconds

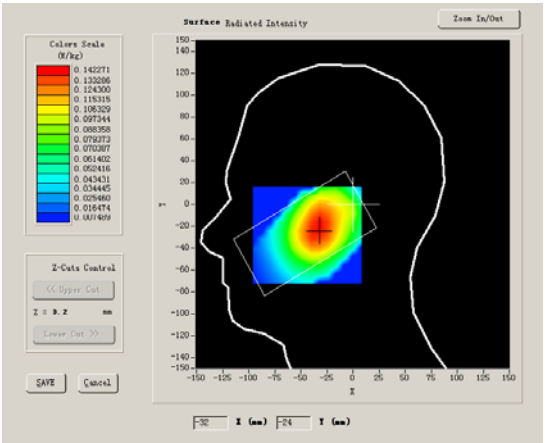
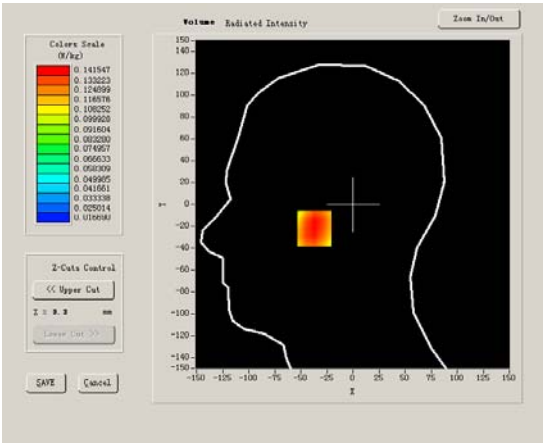
A. Experimental conditions.

Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Right head
Device Position	Tilt
Band	GSM850
Channels	Middle
Signal	GSM

B. SAR Measurement Results

Middle Band SAR (Channel 190):

Frequency (MHz)	836.599976
Relative permittivity (real part)	40.669998
Relative permittivity	19.120001
Conductivity (S/m)	0.888655
Power drift (%)	0.740000
Ambient Temperature:	22.2°C
Liquid Temperature:	21.5C
ConvF:	28.479,25.214,27.196
Crest factor:	1:8

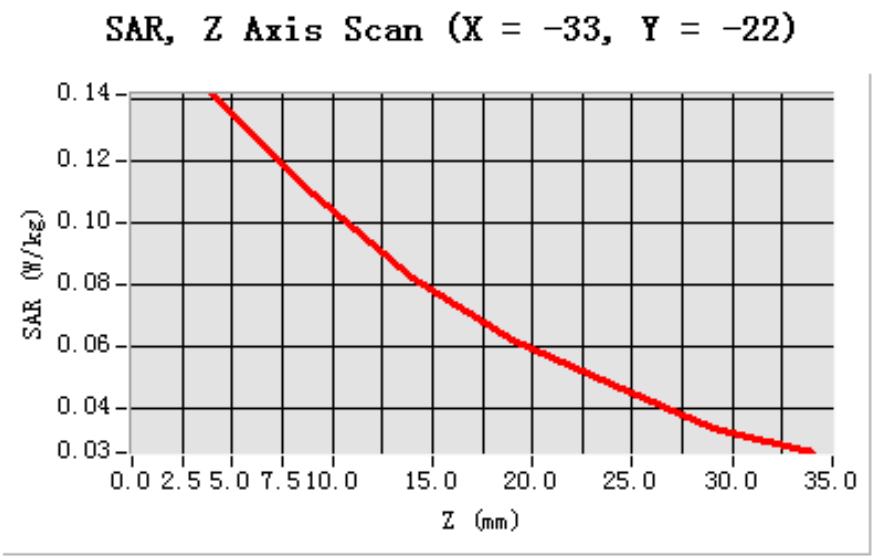
SURFACE SAR	VOLUME SAR
	

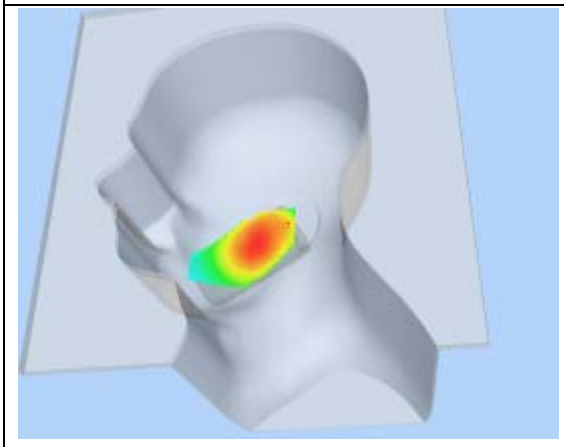
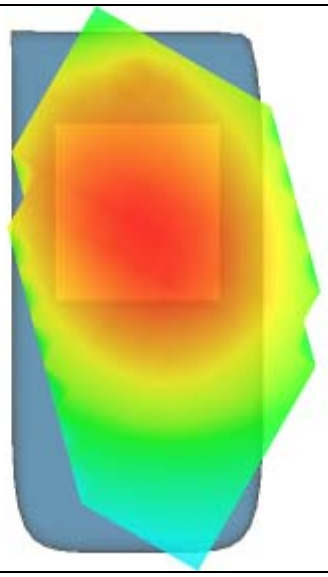
Maximum location: X=-33.00, Y=-22.00

SAR 10g (W/Kg)	0.099895
SAR 1g (W/Kg)	0.137566

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.1415	0.1092	0.0821	0.0625	0.0481	0.0340



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: 27/6/2011
Measurement duration: 8 minutes 4 seconds

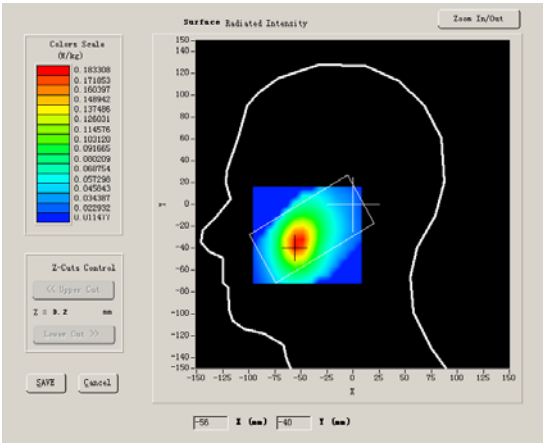
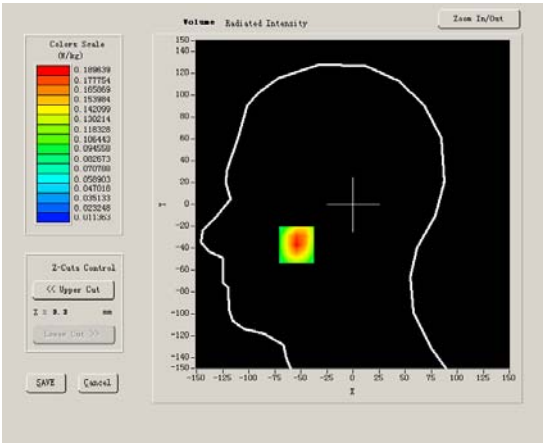
A. Experimental conditions.

Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Left head
Device Position	Cheek
Band	GSM850
Channels	Middle
Signal	GSM

B. SAR Measurement Results

Middle Band SAR (Channel 190):

Frequency (MHz)	836.599976
Relative permittivity (real part)	40.669998
Relative permittivity	19.120001
Conductivity (S/m)	0.888655
Power drift (%)	-1.830000
Ambient Temperature:	22.2°C
Liquid Temperature:	21.5C
ConvF:	28.479,25.214,27.196
Crest factor:	1:8

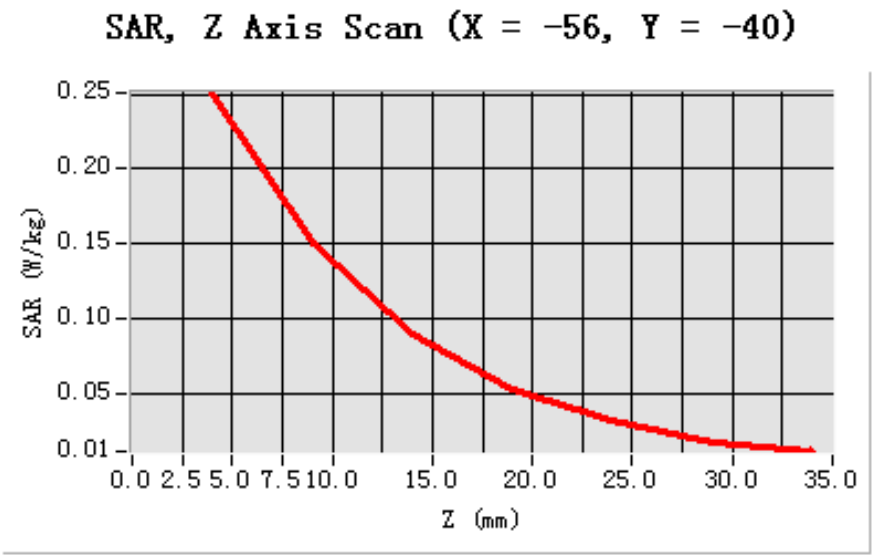
SURFACE SAR	VOLUME SAR
	

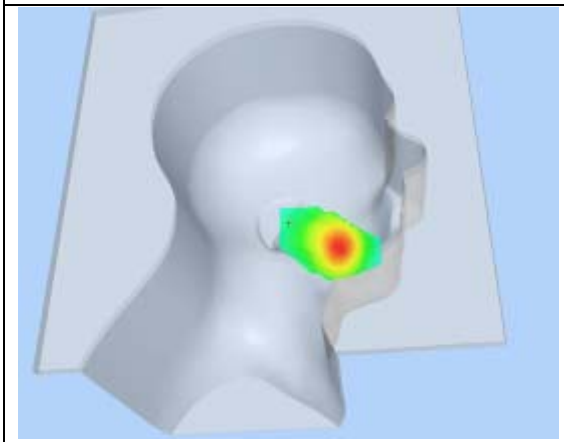
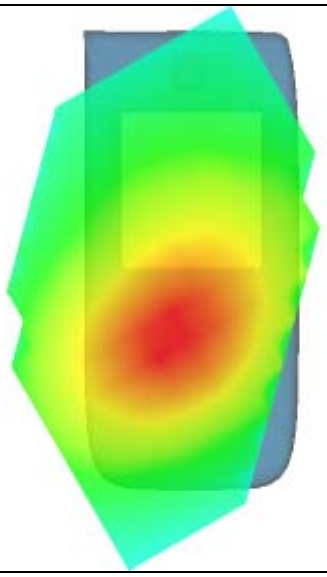
Maximum location: X=-56.00, Y=-40.00

SAR 10g (W/Kg)	0.114237
SAR 1g (W/Kg)	0.207057

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.2596	0.1876	0.1085	0.0815	0.0641	0.0510



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: 27/6/2011
Measurement duration: 7 minutes 29 seconds

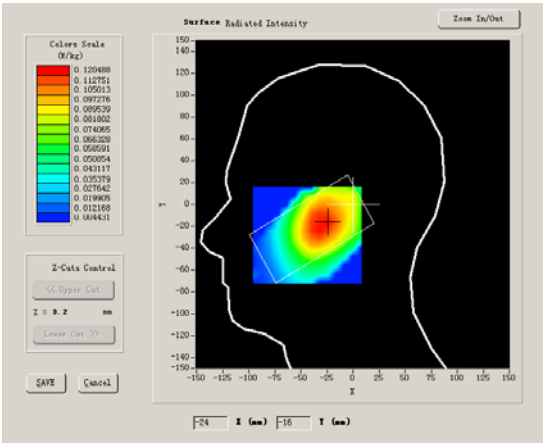
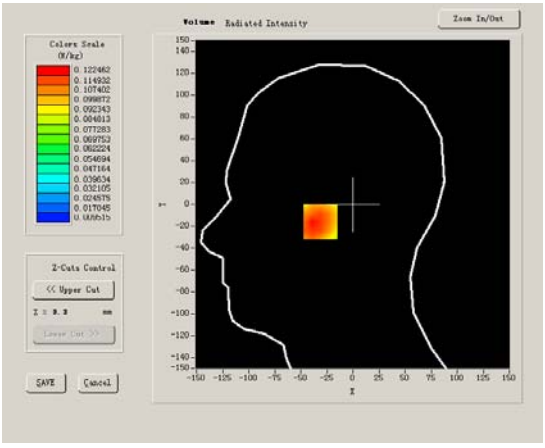
A. Experimental conditions.

Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Left head
Device Position	Tilt
Band	GSM850
Channels	Middle
Signal	GSM

B. SAR Measurement Results

Middle Band SAR (Channel 190):

Frequency (MHz)	836.599976
Relative permittivity (real part)	40.669998
Relative permittivity	19.120001
Conductivity (S/m)	0.888655
Power drift (%)	-2.180000
Ambient Temperature:	22.2°C
Liquid Temperature:	21.5C
ConvF:	28.479,25.214,27.196
Crest factor:	1:8

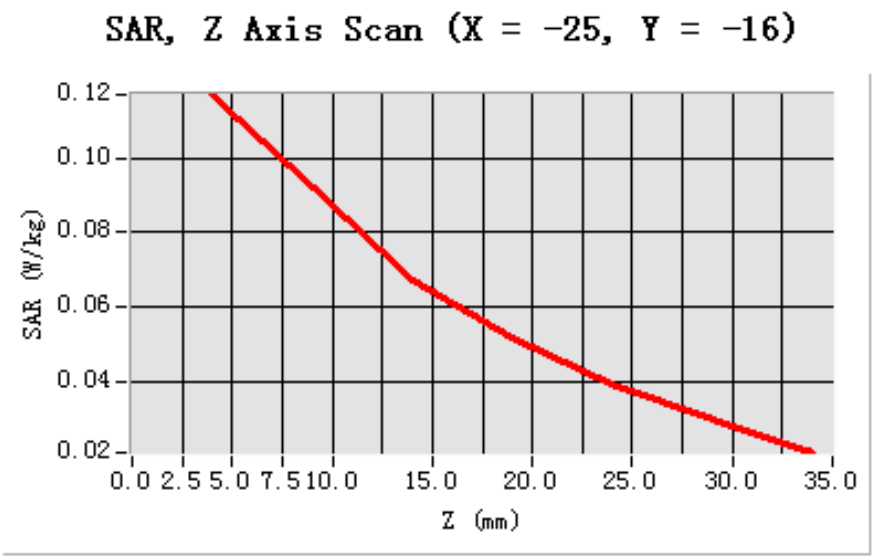
SURFACE SAR	VOLUME SAR
	

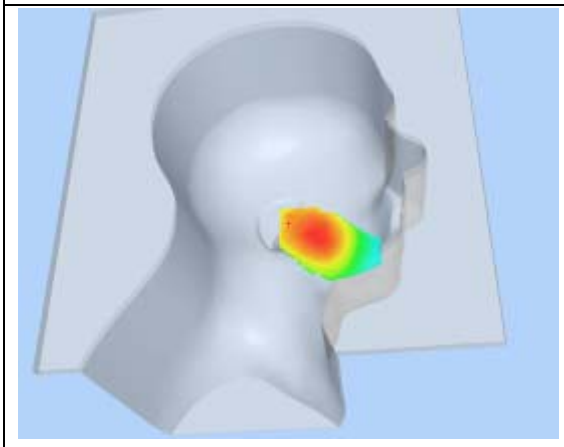
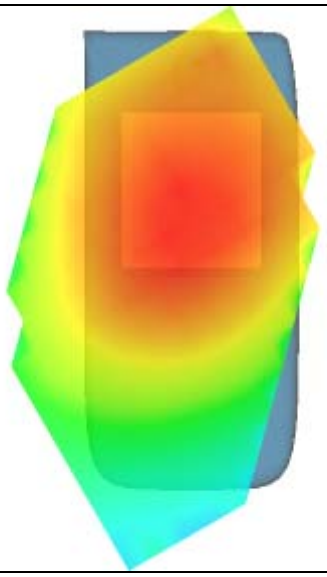
Maximum location: X=-25.00, Y=-16.00

SAR 10g (W/Kg)	0.084679
SAR 1g (W/Kg)	0.117452

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.1169	0.0920	0.0675	0.0517	0.0393	0.0299



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: 27/6/2011
Measurement duration: 9 minutes 4 seconds

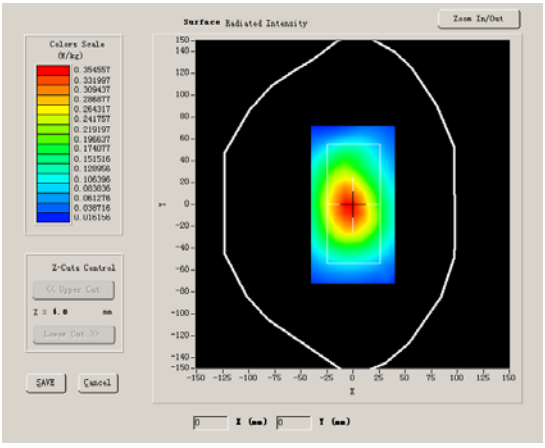
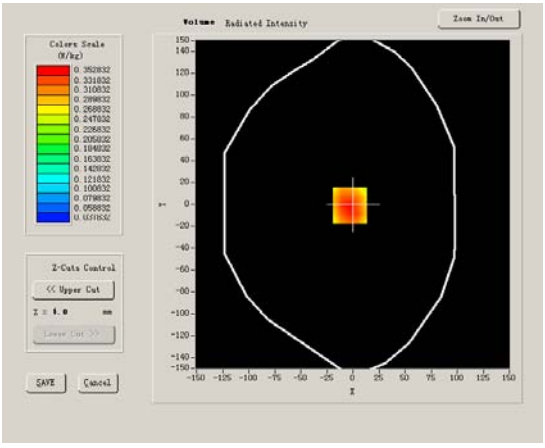
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	GSM850
Channels	Middle
Signal	GSM

B. SAR Measurement Results

Middle Band SAR (Channel 190):

Frequency (MHz)	836.599976
Relative permittivity (real part)	55.709999
Relative permittivity	21.709999
Conductivity (S/m)	1.009033
Power drift (%)	-2.050000
Ambient Temperature:	22.2°C
Liquid Temperature:	21.5C
ConvF:	28.479,25.214,27.196
Crest factor:	1:8

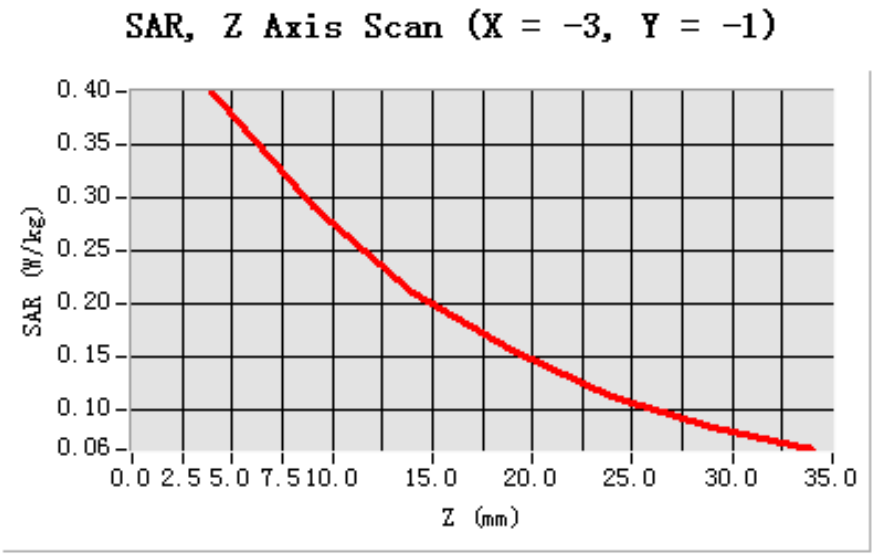
SURFACE SAR	VOLUME SAR
	

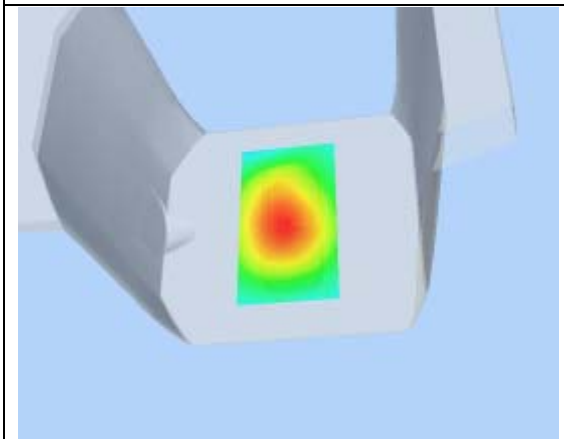
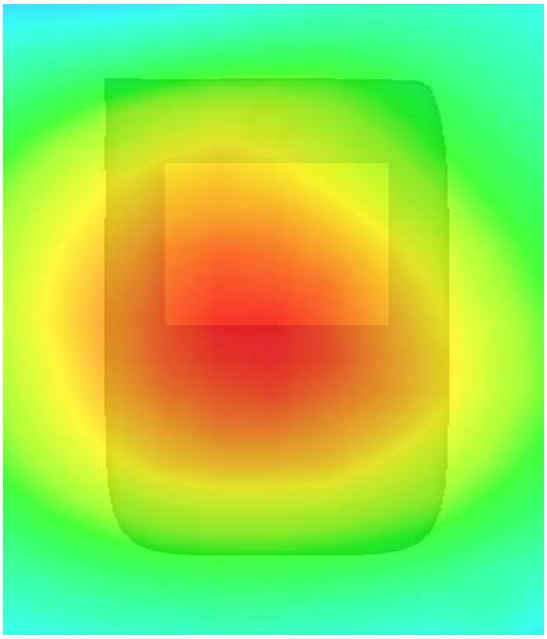
Maximum location: X=-3.00, Y=-1.00

SAR 10g (W/Kg)	0.269995
SAR 1g (W/Kg)	0.385640

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.4006	0.2929	0.2111	0.1550	0.1126	0.0832



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: 27/6/2011
Measurement duration: 9 minutes 10 seconds

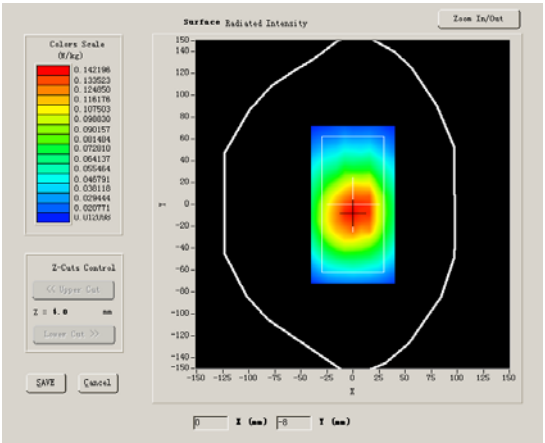
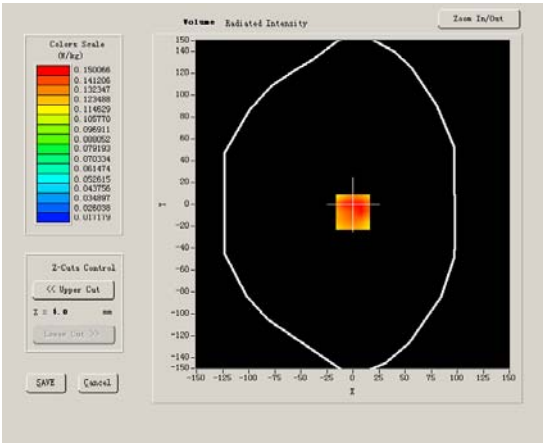
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	GSM850
Channels	Middle
Signal	GSM

B. SAR Measurement Results

Middle Band SAR (Channel 190):

Frequency (MHz)	836.599976
Relative permittivity (real part)	55.709999
Relative permittivity	21.709999
Conductivity (S/m)	1.009033
Power drift (%)	-0.410000
Ambient Temperature:	22.2°C
Liquid Temperature:	21.5C
ConvF:	28.479,25.214,27.196
Crest factor:	1:8

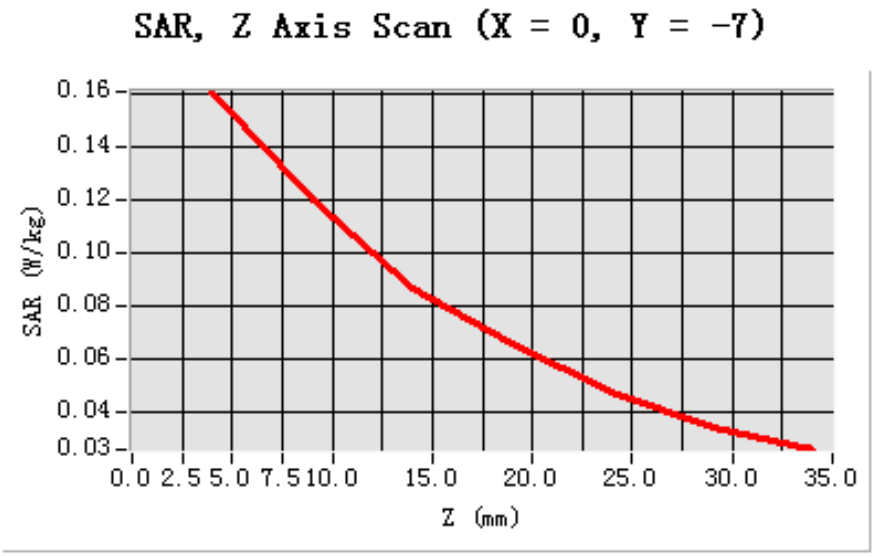
SURFACE SAR	VOLUME SAR
	

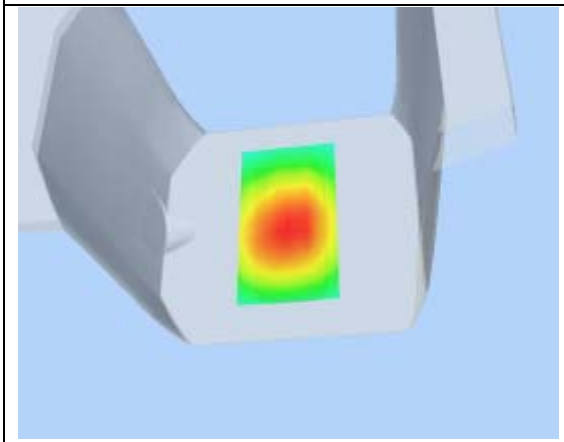
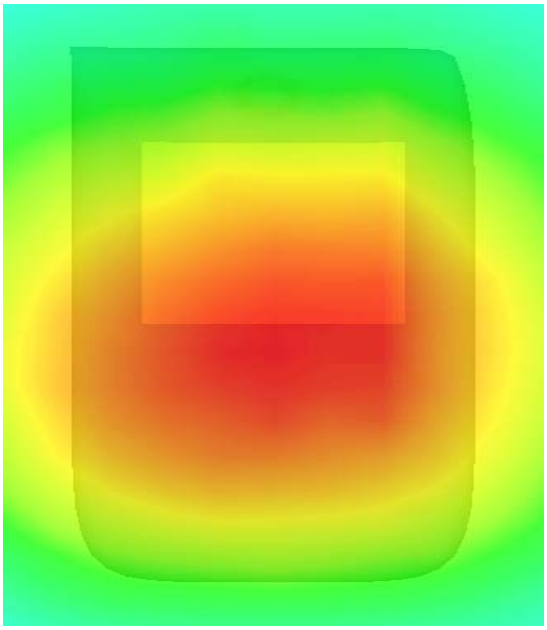
Maximum location: X=0.00, Y=-7.00

SAR 10g (W/Kg)	0.114452
SAR 1g (W/Kg)	0.165968

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.1604	0.1195	0.0864	0.0662	0.0476	0.0347



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: 27/10/2011
Measurement duration: 9 minutes 10 seconds

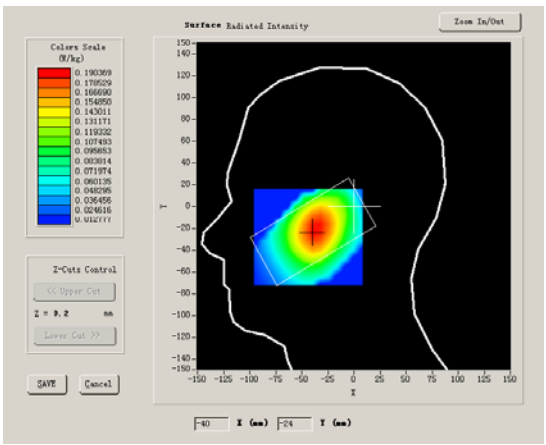
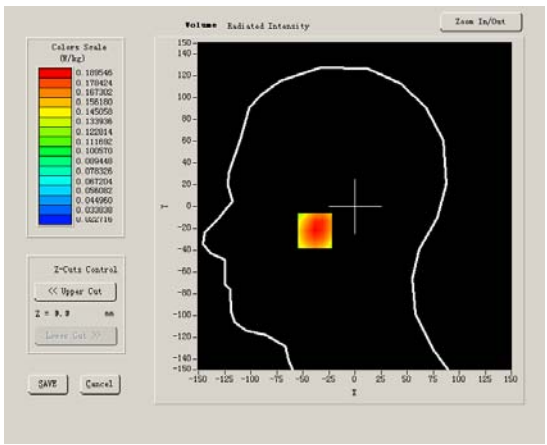
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Right head
Device Position	Cheek
Band	GSM850
Channels	Low
Signal	GSM

B. SAR Measurement Results

Lower Band SAR (Channel 128):

Frequency (MHz)	824.200012
Relative permittivity (real part)	40.669998
Relative permittivity	19.120001
Conductivity (S/m)	0.888655
Power drift (%)	-0.410000
Ambient Temperature:	22.2°C
Liquid Temperature:	21.5C
ConvF:	28.479,25.214,27.196
Crest factor:	1:8

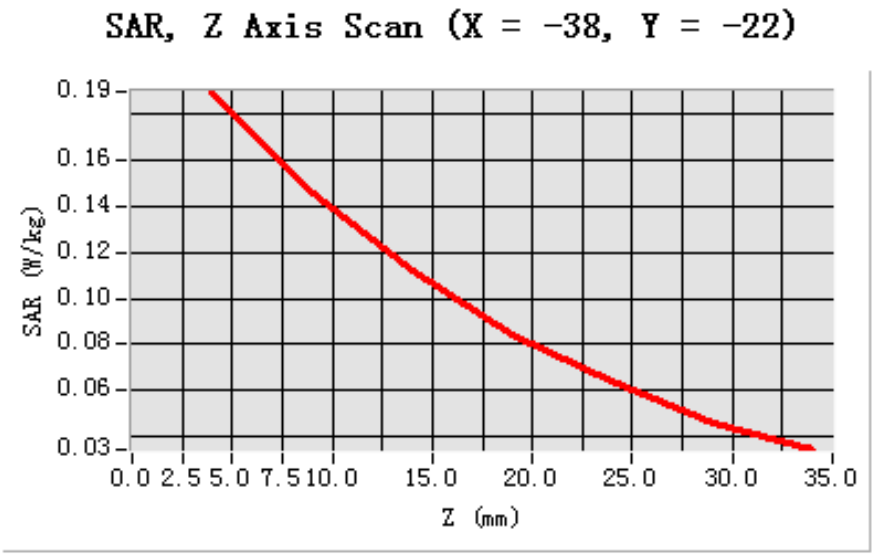
SURFACE SAR	VOLUME SAR
	

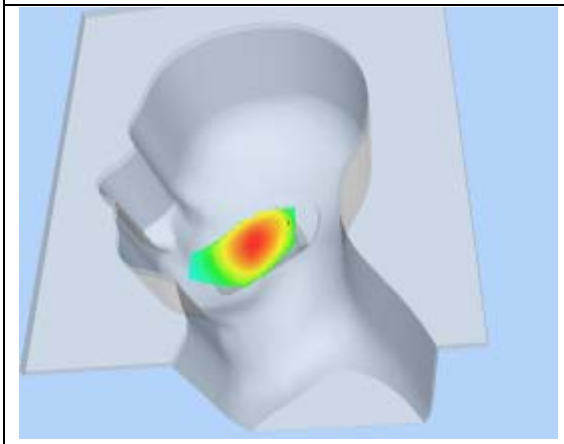
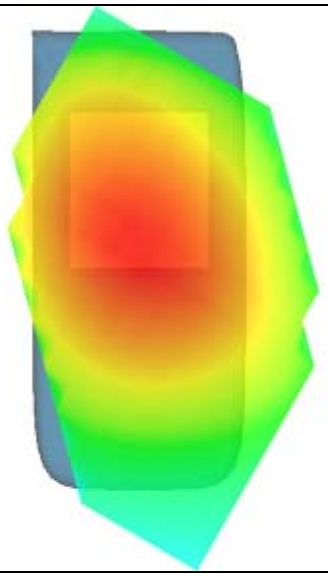
Maximum location: X=-38.00, Y=-22.00

SAR 10g (W/Kg)	0.133193
SAR 1g (W/Kg)	0.183669

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.1895	0.1457	0.1119	0.0846	0.0638	0.0457



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: 27/10/2011
Measurement duration: 9 minutes 10 seconds

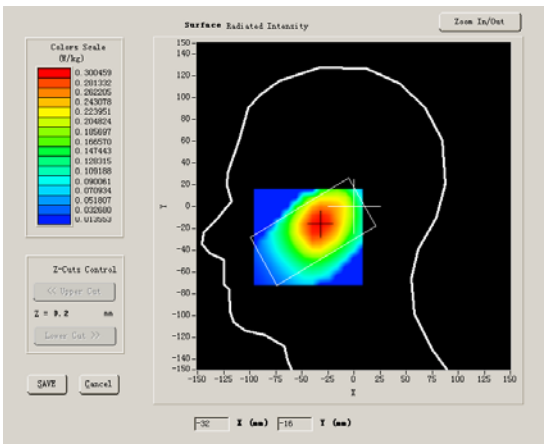
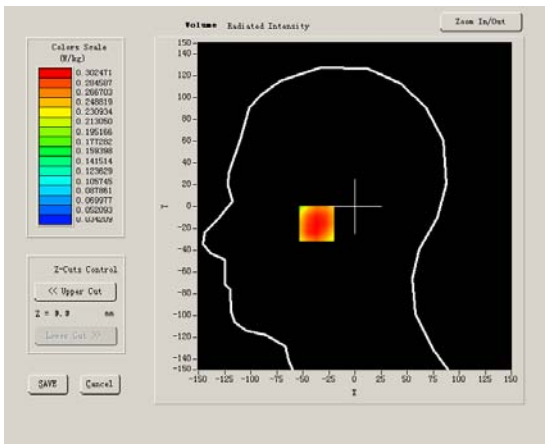
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Right head
Device Position	Tilt
Band	GSM850
Channels	Low
Signal	GSM

B. SAR Measurement Results

Lower Band SAR (Channel 128):

Frequency (MHz)	824.200012
Relative permittivity (real part)	40.669998
Relative permittivity	19.120001
Conductivity (S/m)	0.888655
Power drift (%)	-0.410000
Ambient Temperature:	22.2°C
Liquid Temperature:	21.5C
ConvF:	28.479,25.214,27.196
Crest factor:	1:8

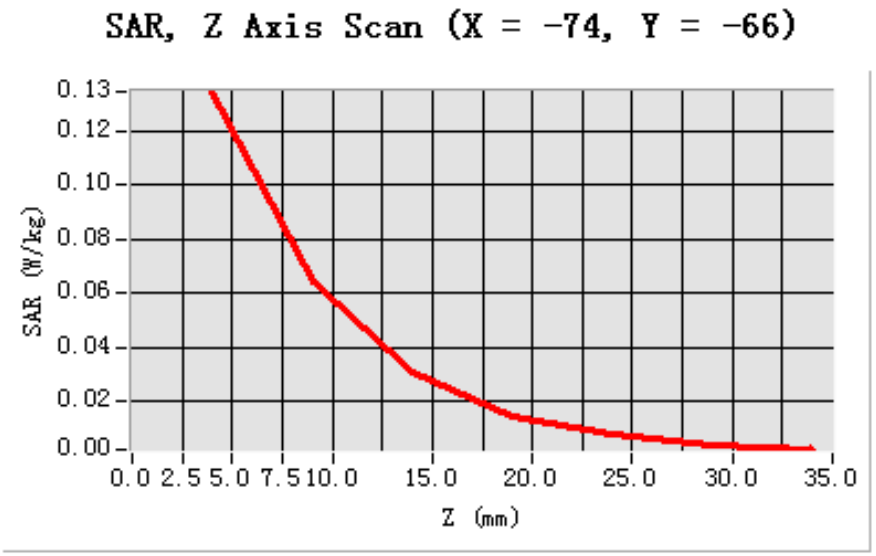
SURFACE SAR	VOLUME SAR
	

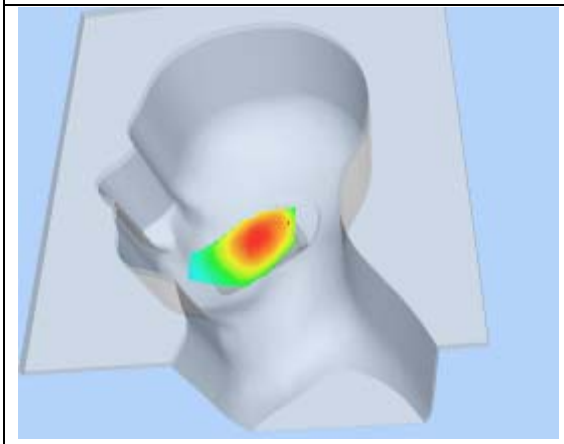
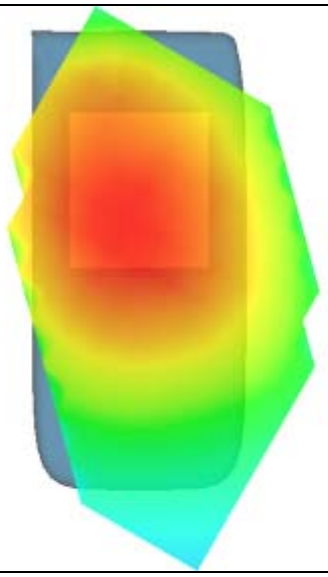
Maximum location: X=-74.00, Y=-66.00

SAR 10g (W/Kg)	0.070591
SAR 1g (W/Kg)	0.131663

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.1348	0.0641	0.0305	0.0141	0.0076	0.0034



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: 27/10/2011
Measurement duration: 9 minutes 10 seconds

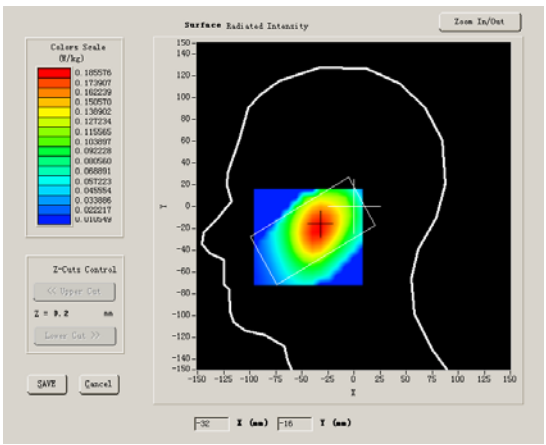
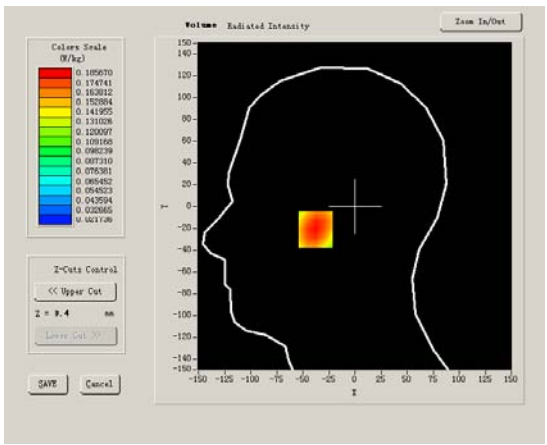
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Left head
Device Position	Cheek
Band	GSM850
Channels	Low
Signal	GSM

B. SAR Measurement Results

Lower Band SAR (Channel 128):

Frequency (MHz)	824.200012
Relative permittivity (real part)	40.669998
Relative permittivity	19.120001
Conductivity (S/m)	0.888655
Power drift (%)	-0.410000
Ambient Temperature:	22.2°C
Liquid Temperature:	21.5C
ConvF:	28.479,25.214,27.196
Crest factor:	1:8

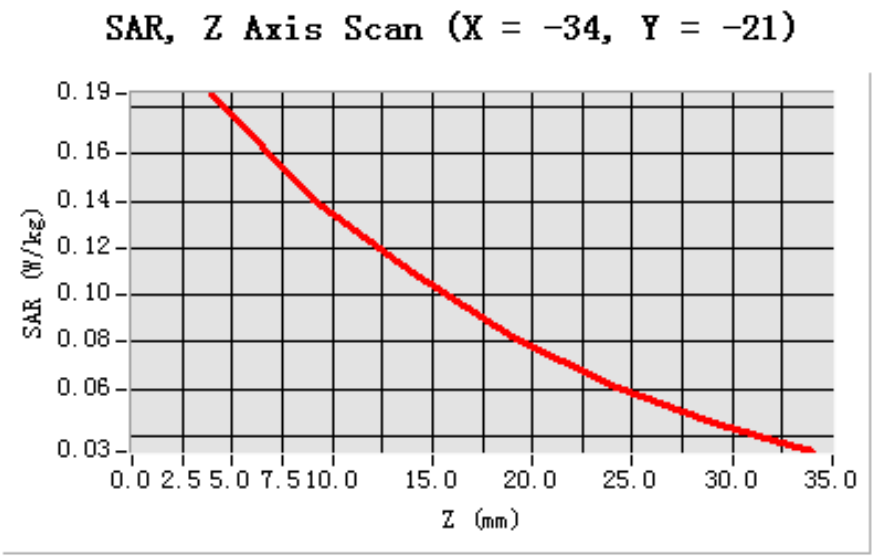
SURFACE SAR	VOLUME SAR
	

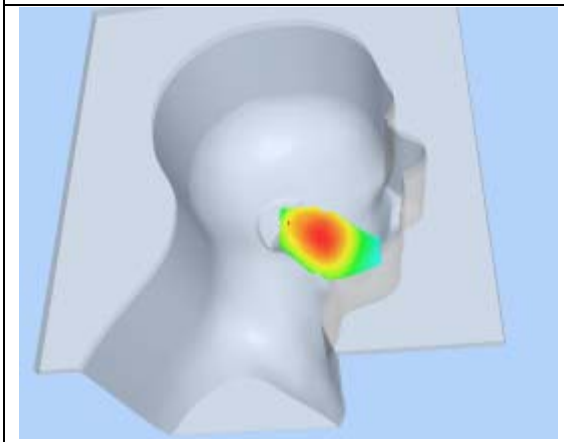
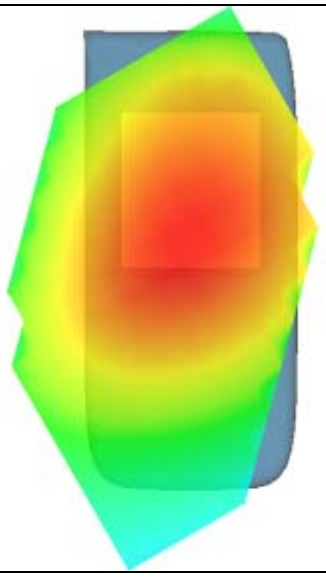
Maximum location: X=-34.00, Y=-21.00

SAR 10g (W/Kg)	0.130522
SAR 1g (W/Kg)	0.179522

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.1857	0.1404	0.1091	0.0826	0.0619	0.0456



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: 27/10/2011
Measurement duration: 9 minutes 10 seconds

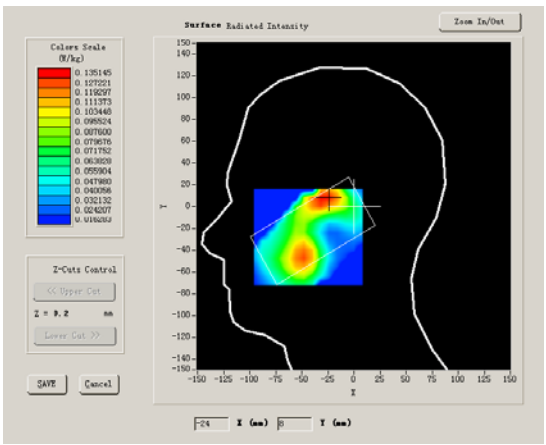
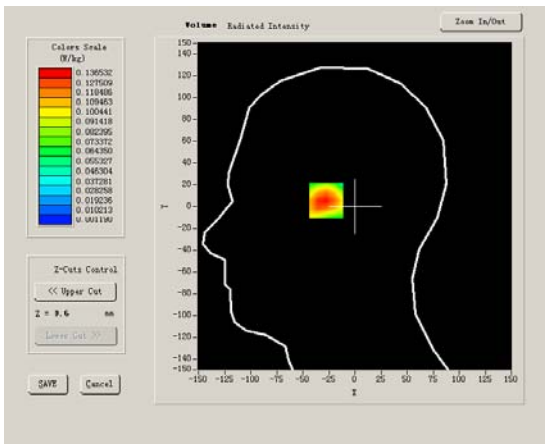
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Left head
Device Position	Tilt
Band	GSM850
Channels	Low
Signal	GSM

B. SAR Measurement Results

Lower Band SAR (Channel 128):

Frequency (MHz)	824.200012
Relative permittivity (real part)	40.669998
Relative permittivity	19.120001
Conductivity (S/m)	0.888655
Power drift (%)	-0.410000
Ambient Temperature:	22.2°C
Liquid Temperature:	21.5C
ConvF:	28.479,25.214,27.196
Crest factor:	1:8

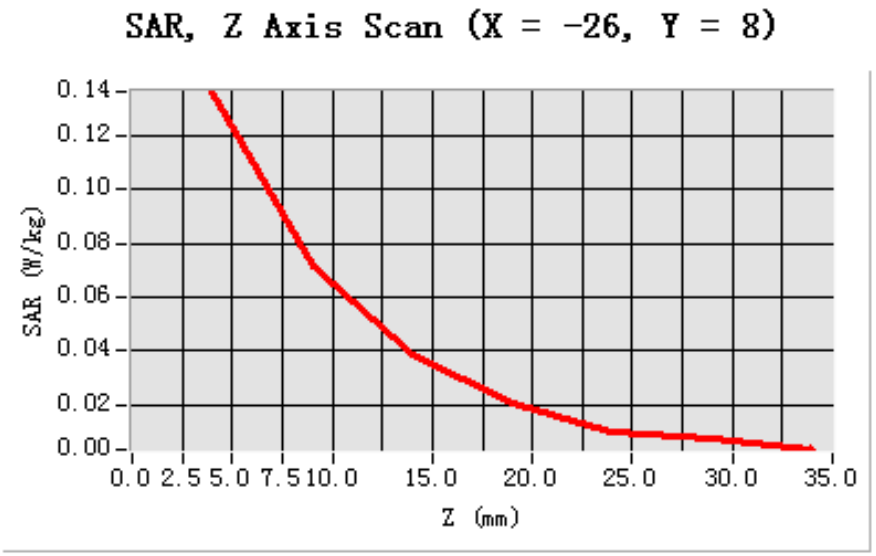
SURFACE SAR	VOLUME SAR
	

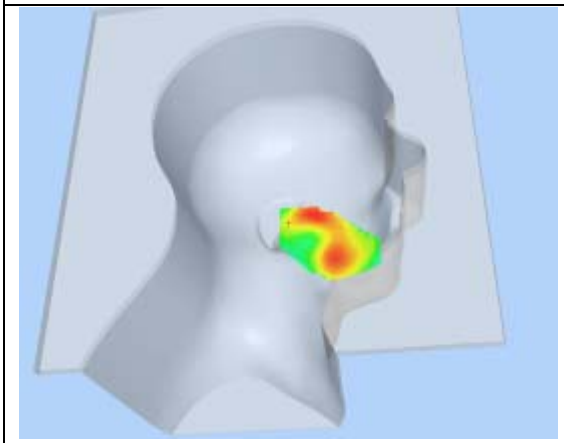
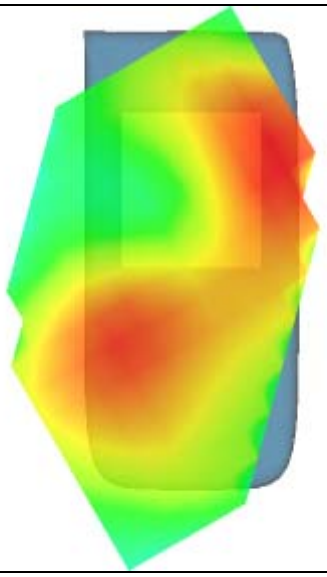
Maximum location: X=-26.00, Y=8.00

SAR 10g (W/Kg)	0.071092
SAR 1g (W/Kg)	0.132507

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.1365	0.0713	0.0382	0.0207	0.0100	0.0070



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: 27/10/2011
Measurement duration: 9 minutes 10 seconds

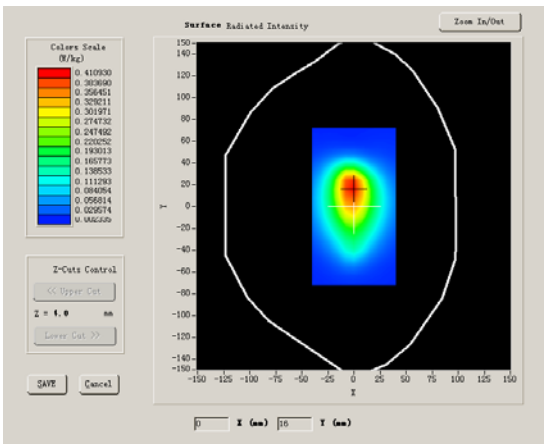
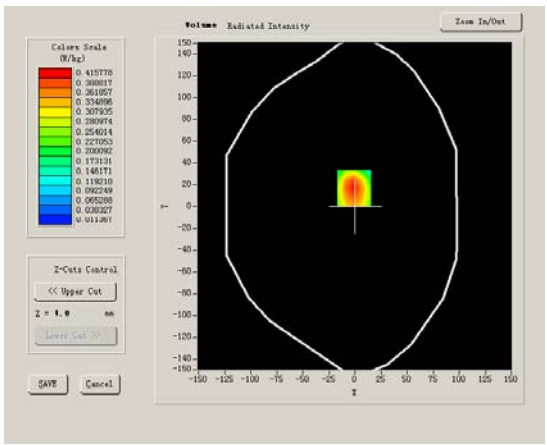
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	GSM850
Channels	Low
Signal	GSM

B. SAR Measurement Results

Lower Band SAR (Channel 128):

Frequency (MHz)	824.200012
Relative permittivity (real part)	54.116001
Relative permittivity	21.284550
Conductivity (S/m)	0.974596
Power drift (%)	1.300000
Ambient Temperature:	22.2°C
Liquid Temperature:	21.5C
ConvF:	28.479,25.214,27.196
Crest factor:	1:8

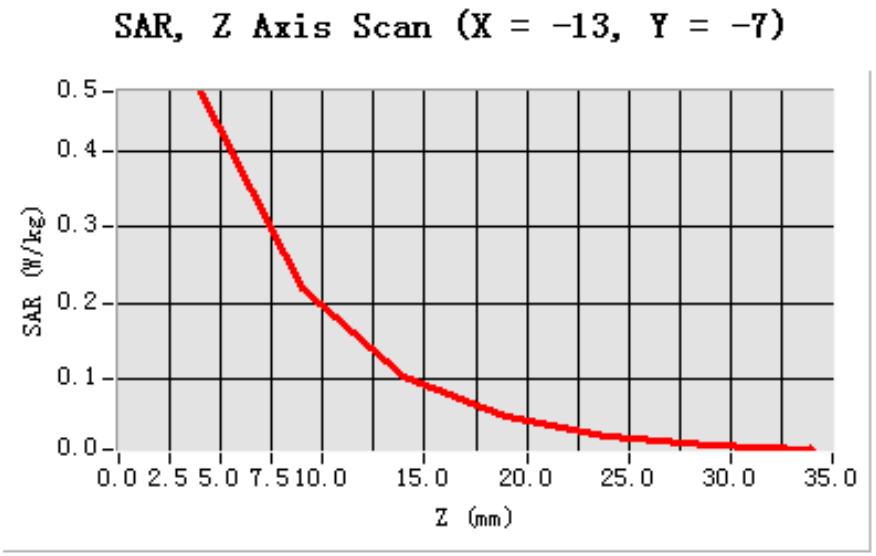
SURFACE SAR	VOLUME SAR
	

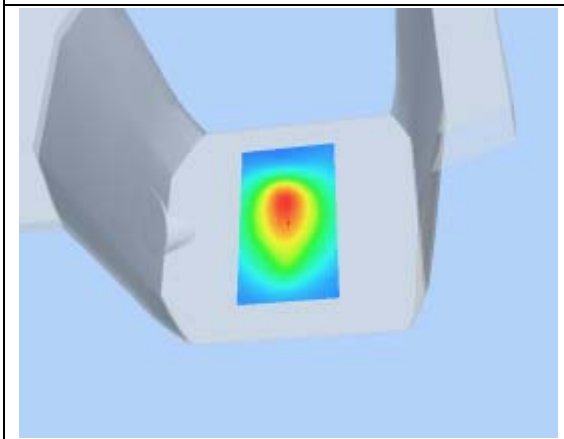
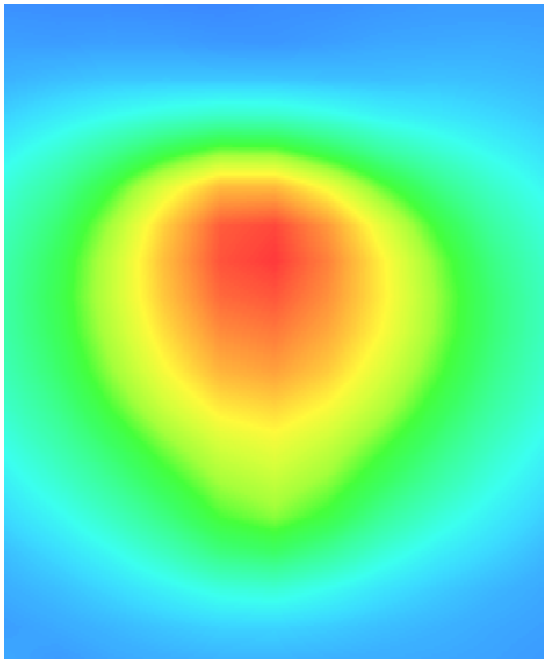
Maximum location: X=-13.00, Y=-7.00

SAR 10g (W/Kg)	0.232468
SAR 1g (W/Kg)	0.430134

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.4778	0.2193	0.1034	0.0497	0.0243	0.0119



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: 27/10/2011
Measurement duration: 9 minutes 10 seconds

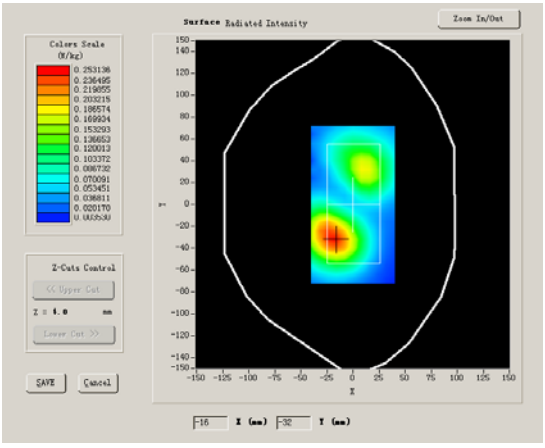
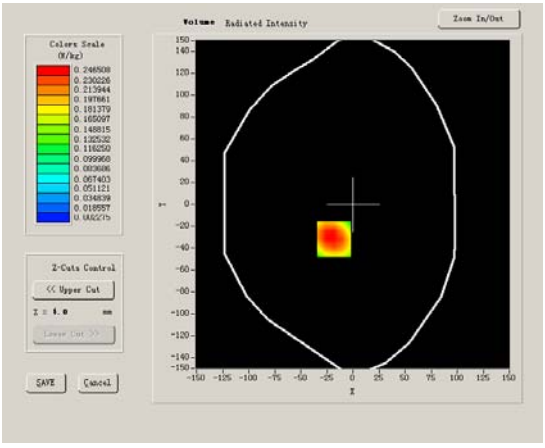
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	GSM850
Channels	Low
Signal	GSM

B. SAR Measurement Results

Lower Band SAR (Channel 128):

Frequency (MHz)	824.200012
Relative permittivity (real part)	54.116001
Relative permittivity	21.284550
Conductivity (S/m)	0.974596
Power drift (%)	1.300000
Ambient Temperature:	22.2°C
Liquid Temperature:	21.5C
ConvF:	28.479,25.214,27.196
Crest factor:	1:8

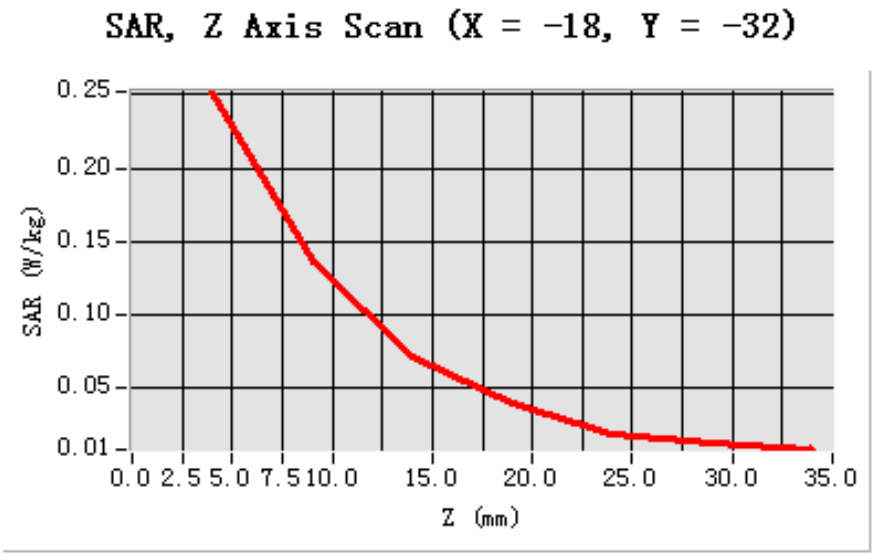
SURFACE SAR	VOLUME SAR
	

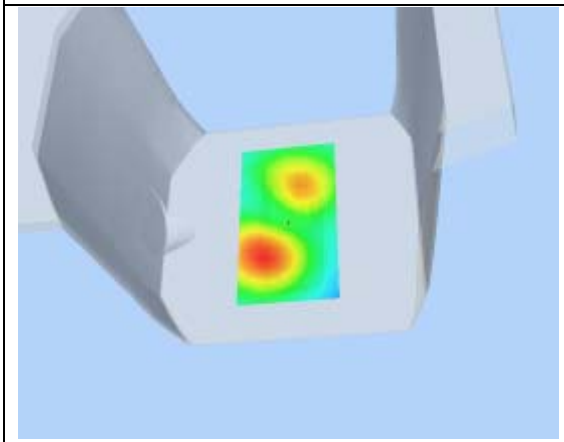
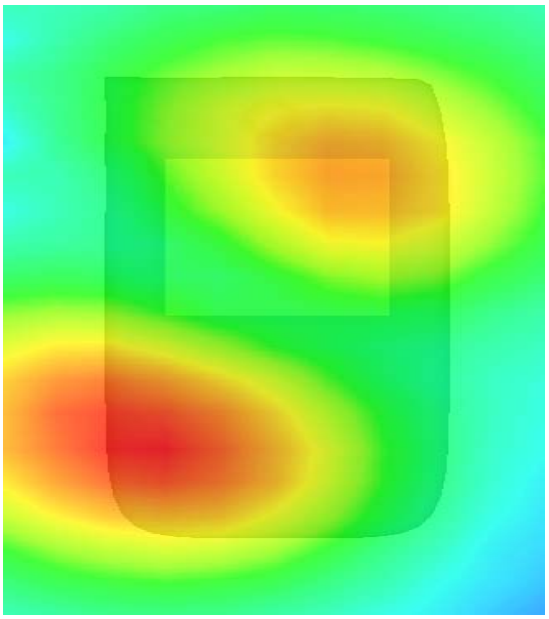
Maximum location: X=-18.00, Y=-32.00

SAR 10g (W/Kg)	0.136079
SAR 1g (W/Kg)	0.248094

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.2522	0.1355	0.0701	0.0387	0.0182	0.0120



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: 27/6/2011
Measurement duration: 9 minutes 10 seconds

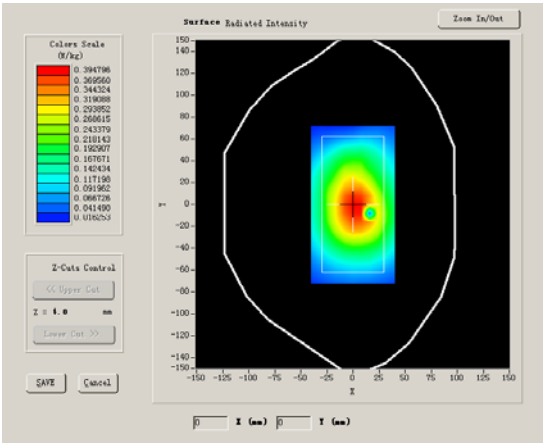
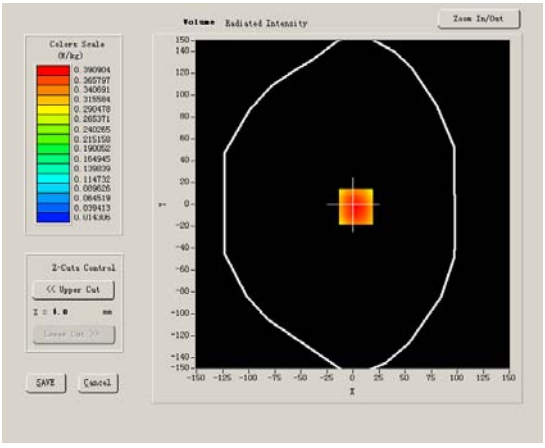
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	GSM850
Channels	Low
Signal	GPRS

B. SAR Measurement Results

Lower Band SAR (Channel 128):

Frequency (MHz)	824.200012
Relative permittivity (real part)	54.116001
Relative permittivity	21.284550
Conductivity (S/m)	0.974596
Power drift (%)	1.300000
Ambient Temperature:	22.2°C
Liquid Temperature:	21.5C
ConvF:	28.479,25.214,27.196
Crest factor:	1:2

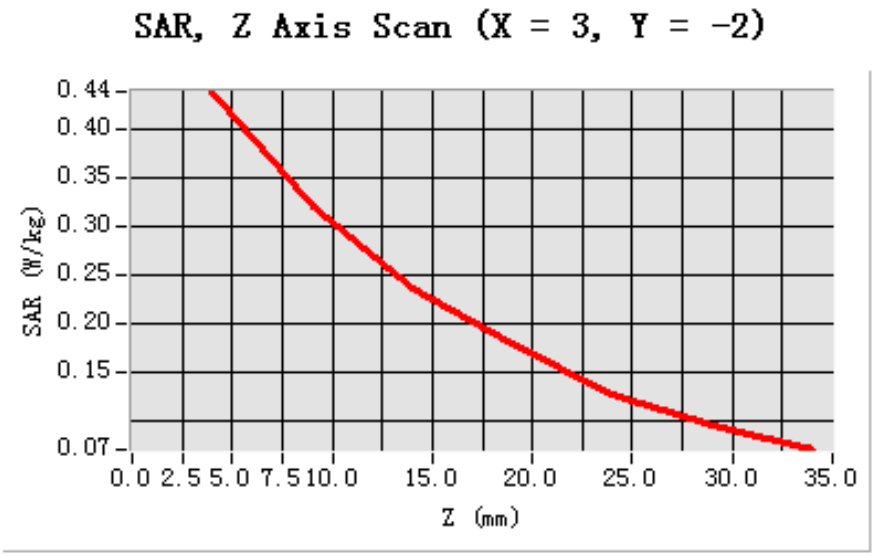
SURFACE SAR	VOLUME SAR
	

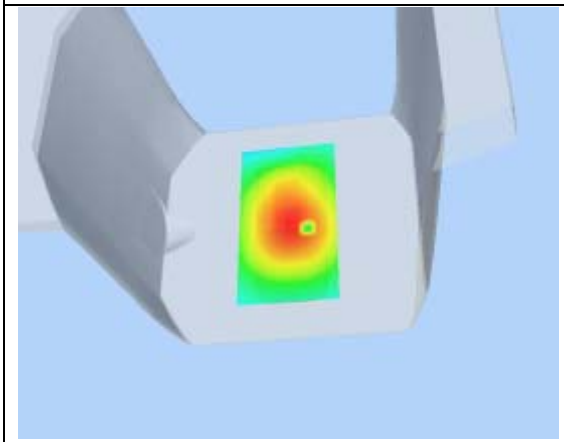
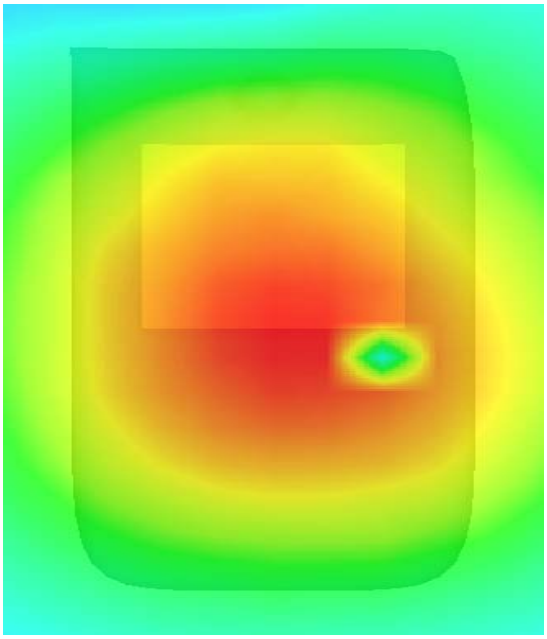
Maximum location: X=3.00, Y=-2.00

SAR 10g (W/Kg)	0.298108
SAR 1g (W/Kg)	0.423843

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.4396	0.3216	0.2362	0.1802	0.1276	0.0958



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: 27/6/2011
Measurement duration: 9 minutes 14 seconds

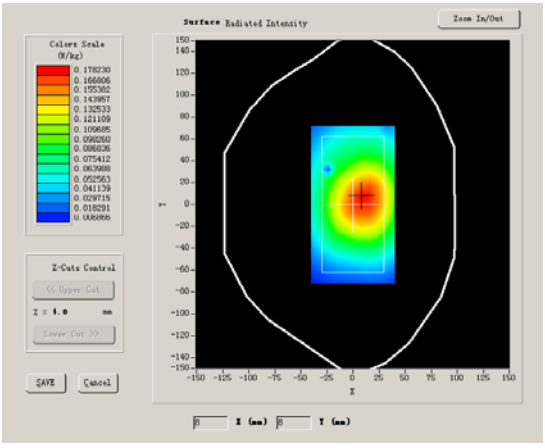
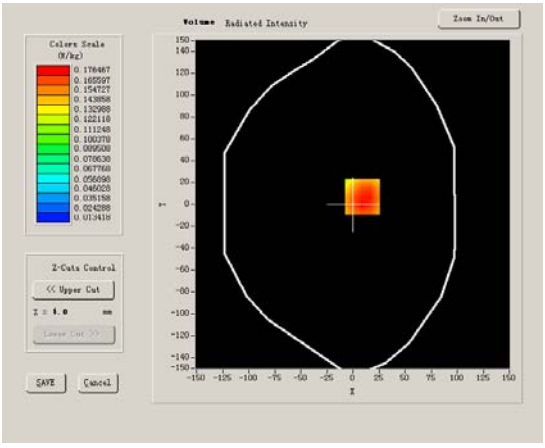
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	GSM850
Channels	Low
Signal	GPRS

B. SAR Measurement Results

Lower Band SAR (Channel 128):

Frequency (MHz)	824.200012
Relative permittivity (real part)	54.116001
Relative permittivity	21.284550
Conductivity (S/m)	0.974596
Power drift (%)	-1.560000
Ambient Temperature:	22.2°C
Liquid Temperature:	21.5C
ConvF:	28.479,25.214,27.196
Crest factor:	1:2

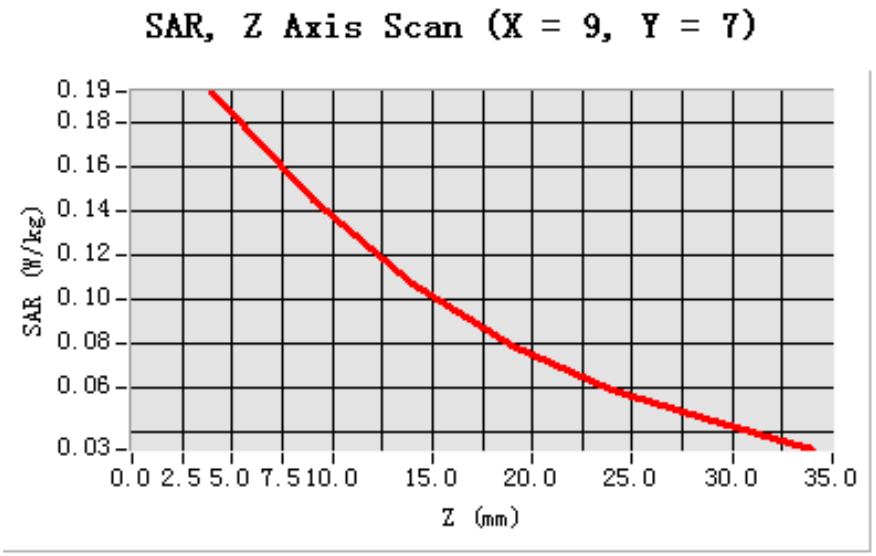
SURFACE SAR	VOLUME SAR
	

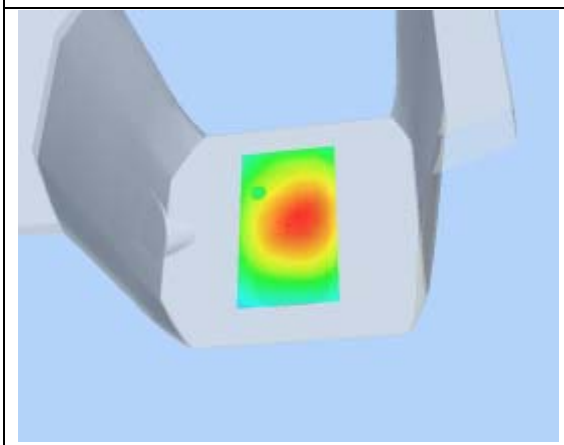
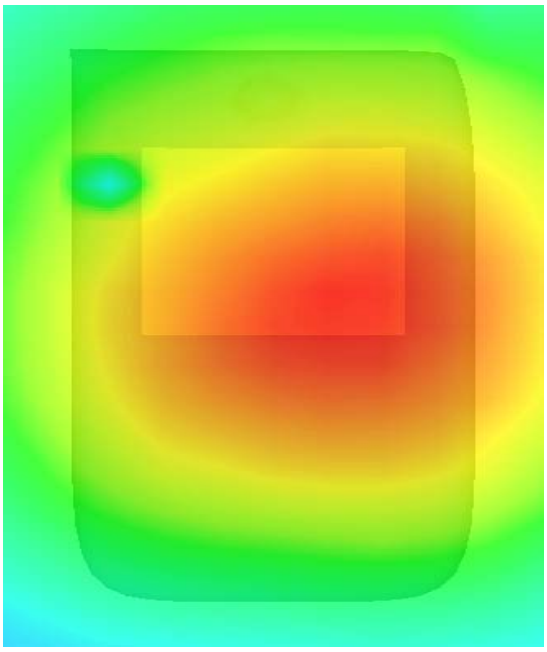
Maximum location: X=9.00, Y=7.00

SAR 10g (W/Kg)	0.136043
SAR 1g (W/Kg)	0.192372

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.1938	0.1446	0.1063	0.0785	0.0584	0.0442



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: 27/6/2011
Measurement duration: 9 minutes 11 seconds

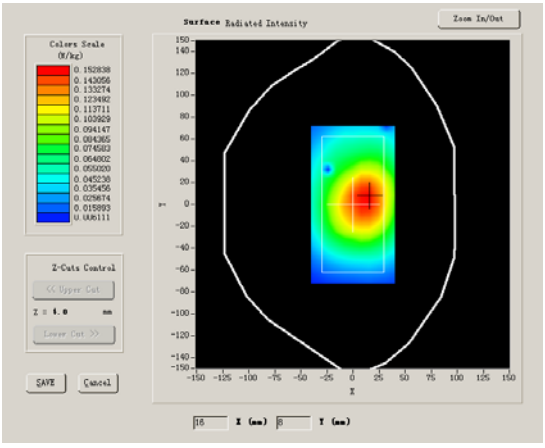
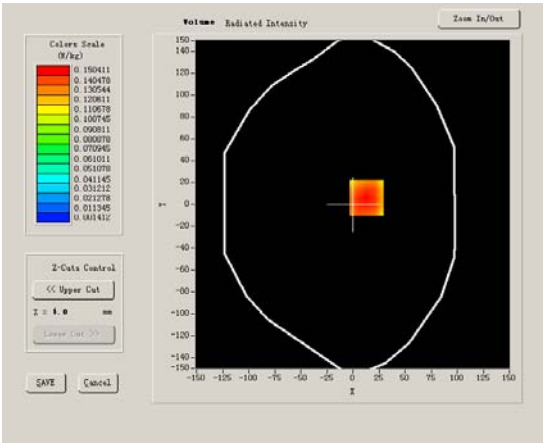
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	GSM850
Channels	Middle
Signal	EDGE

B. SAR Measurement Results

Middle Band SAR (Channel 190):

Frequency (MHz)	836.599976
Relative permittivity (real part)	55.709999
Relative permittivity	21.709999
Conductivity (S/m)	1.009033
Power drift (%)	0.320000
Ambient Temperature:	22.2°C
Liquid Temperature:	21.5C
ConvF:	28.479,25.214,27.196
Crest factor:	1:2

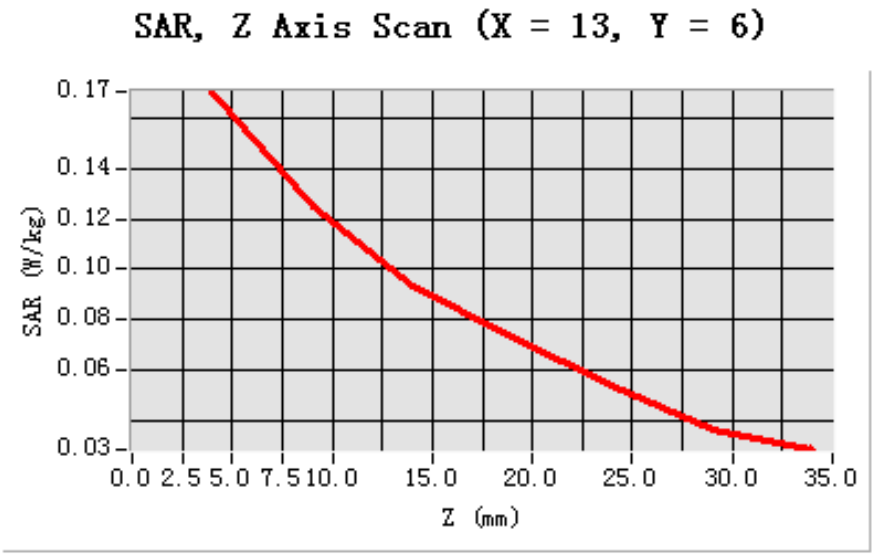
SURFACE SAR	VOLUME SAR
	

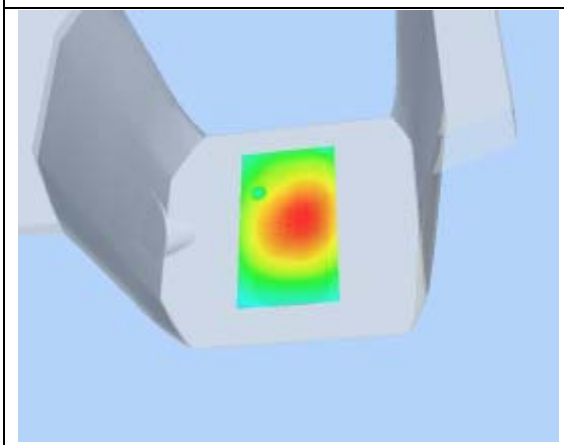
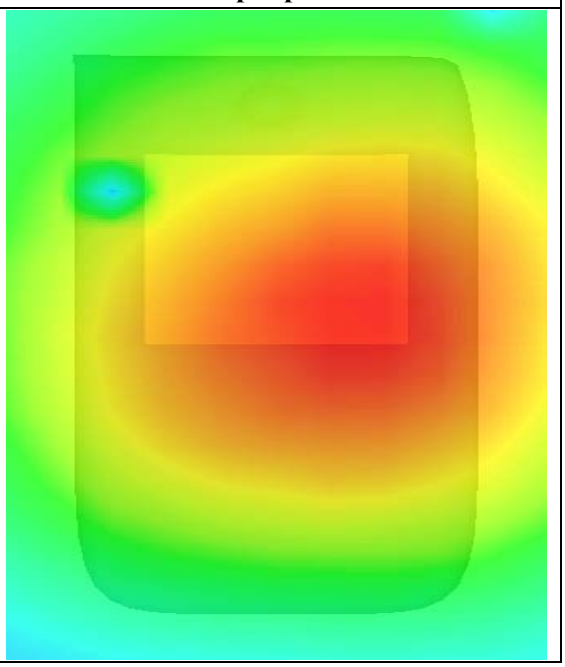
Maximum location: X=13.00, Y=6.00

SAR 10g (W/Kg)	0.118615
SAR 1g (W/Kg)	0.166892

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.1708	0.1253	0.0931	0.0735	0.0541	0.0362



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: 27/6/2011
Measurement duration: 9 minutes 3 seconds

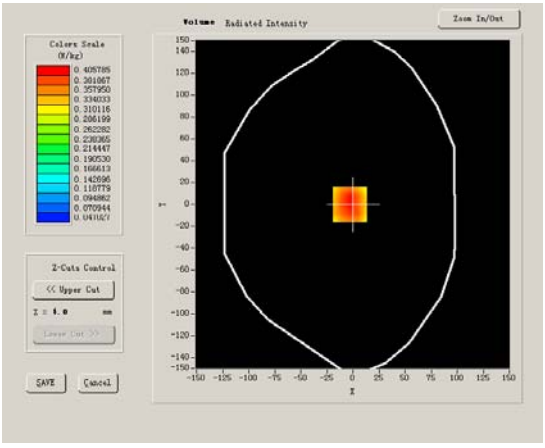
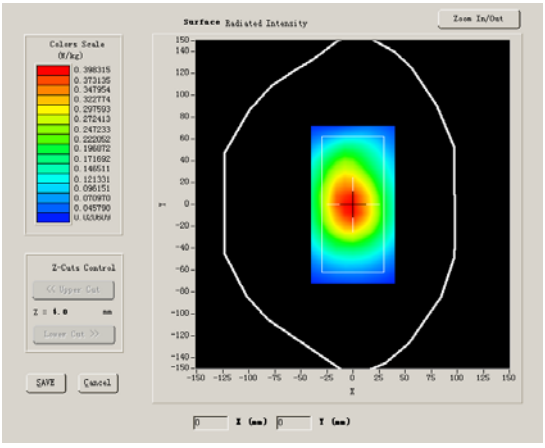
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	GSM850
Channels	Middle
Signal	EDGE

B. SAR Measurement Results

Middle Band SAR (Channel 190):

Frequency (MHz)	836.599976
Relative permittivity (real part)	40.669998
Relative permittivity	19.120001
Conductivity (S/m)	0.888655
Power drift (%)	-1.020020
Ambient Temperature:	22.2°C
Liquid Temperature:	21.5C
ConvF:	28.479,25.214,27.196
Crest factor:	1:2

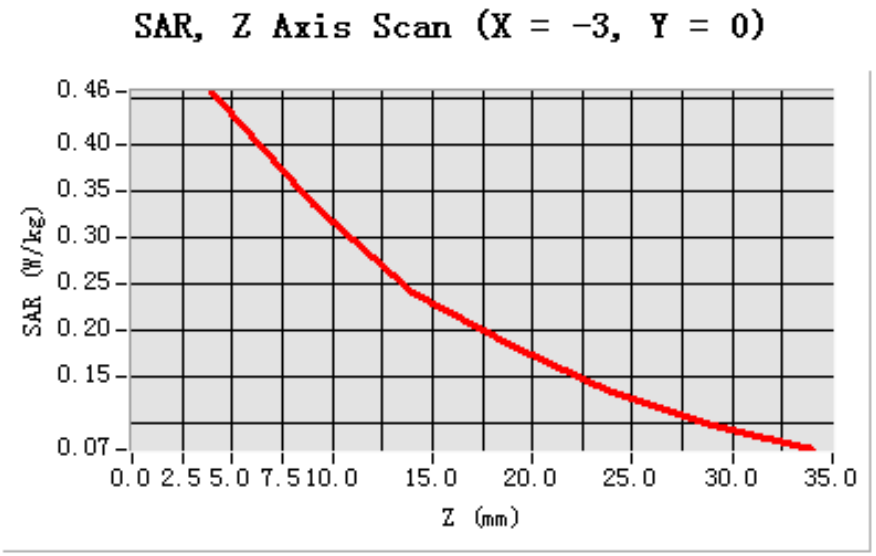
SURFACE SAR	VOLUME SAR
	

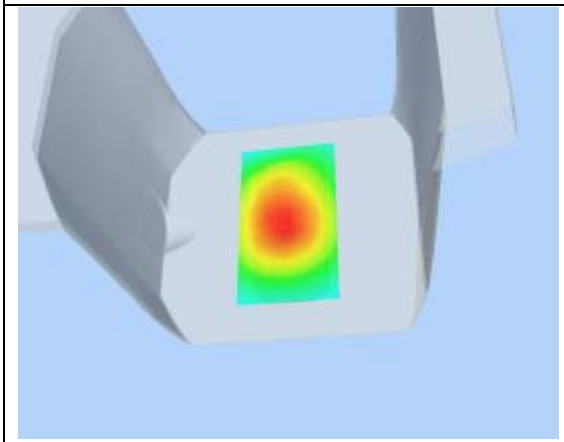
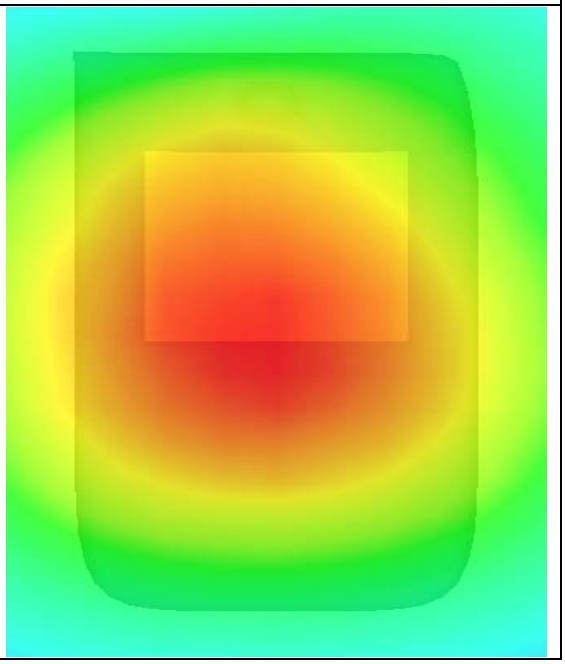
Maximum location: X=-3.00, Y=0.00

SAR 10g (W/Kg)	0.308231
SAR 1g (W/Kg)	0.440960

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.4564	0.3341	0.2388	0.1828	0.1313	0.0956



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: 27/6/2011
Measurement duration: 7 minutes 42 seconds

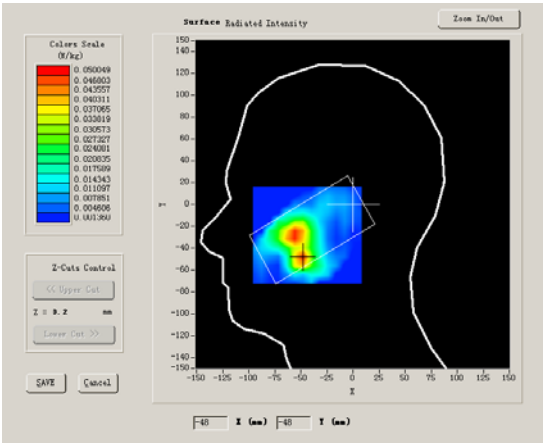
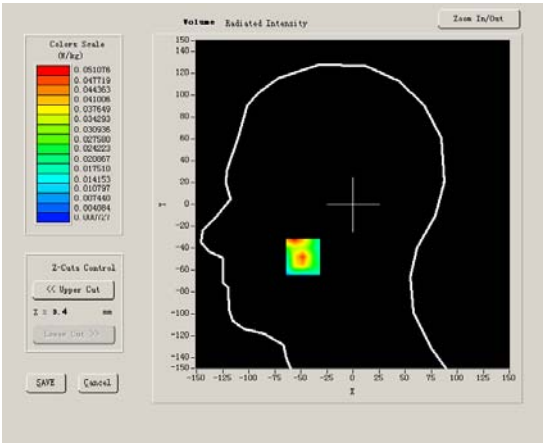
A. Experimental conditions.

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 (%)	-1.600000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:8

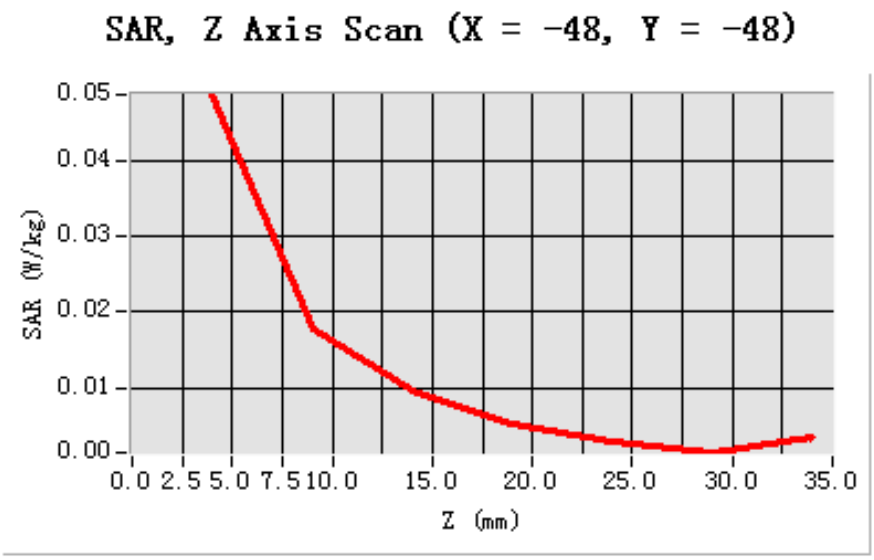
SURFACE SAR	VOLUME SAR
	

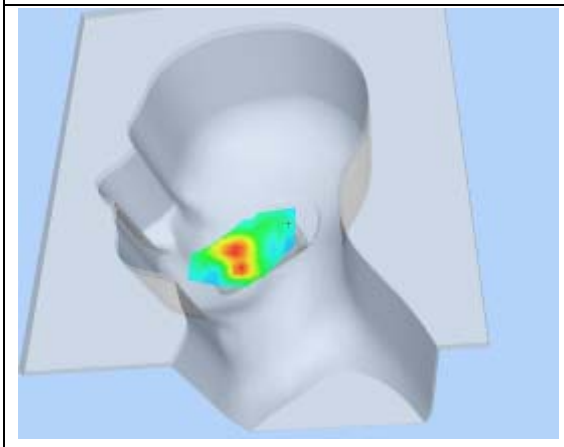
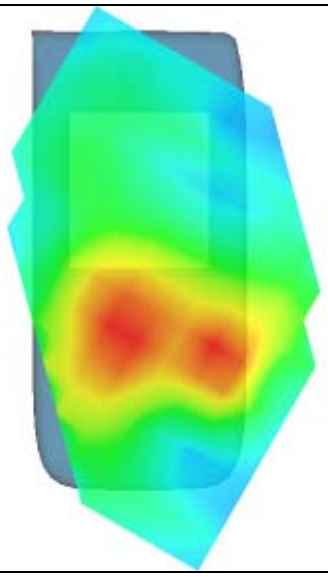
Maximum location: X=-48.00, Y=-48.00

SAR 10g (W/Kg)	0.021483
SAR 1g (W/Kg)	0.043530

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.0488	0.0178	0.0095	0.0051	0.0028	0.0014



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: 27/6/2011
Measurement duration: 7 minutes 26 seconds

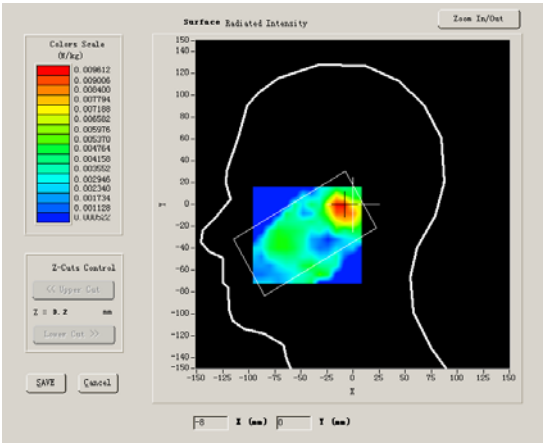
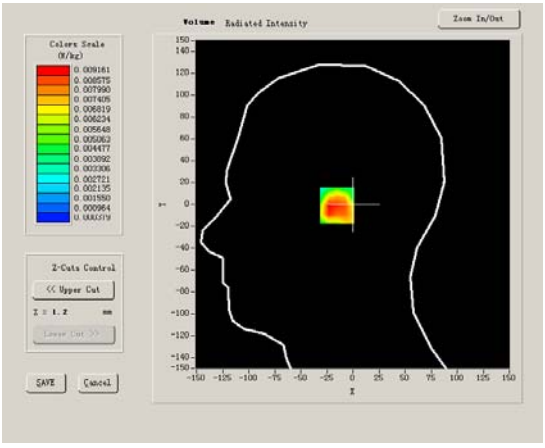
A. Experimental conditions.

Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Right head
Device Position	Tilt
Band	GSM1900
Channels	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 (%)	-2.000000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:8

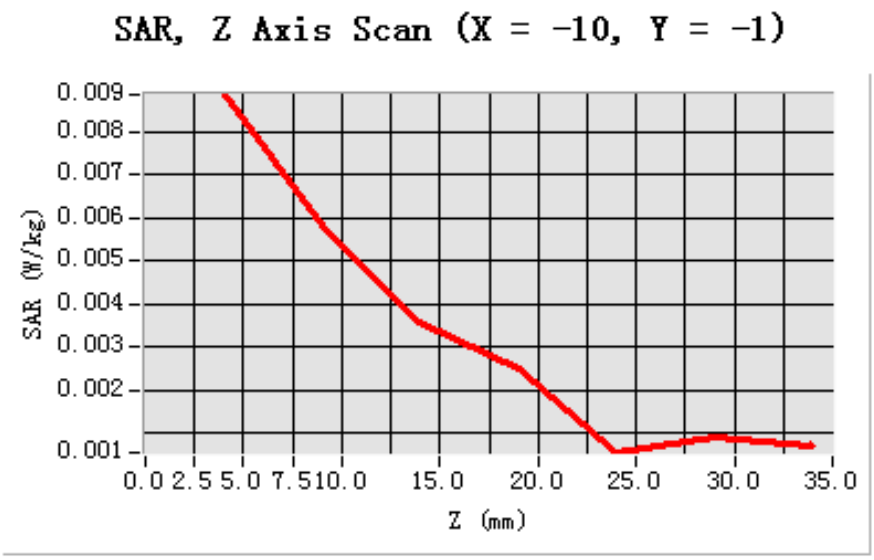
SURFACE SAR	VOLUME SAR
	

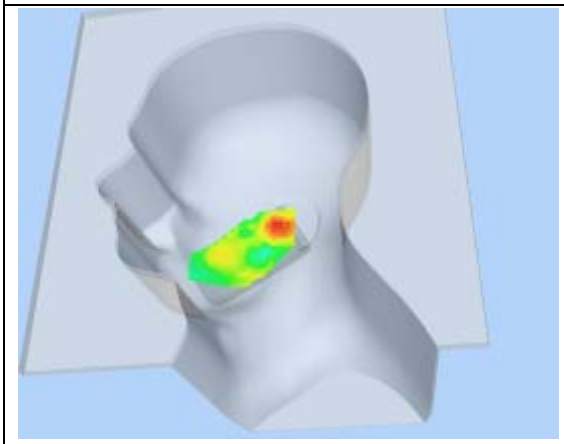
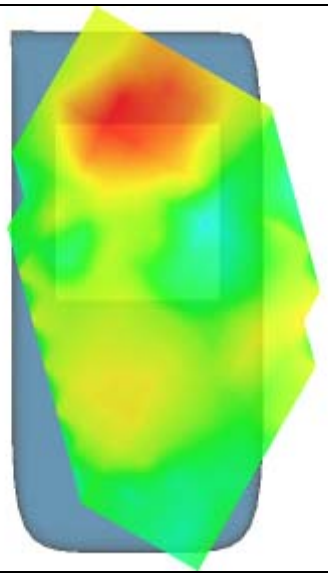
Maximum location: X=-10.00, Y=-1.00

SAR 10g (W/Kg)	0.004966
SAR 1g (W/Kg)	0.008860

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.0089	0.0058	0.0036	0.0025	0.0005	0.0009



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: 27/6/2011
Measurement duration: 8 minutes 6 seconds

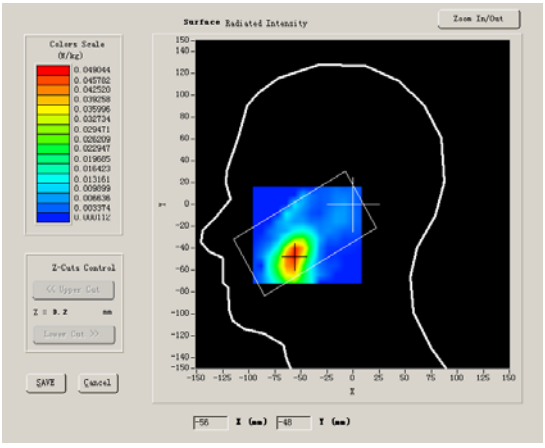
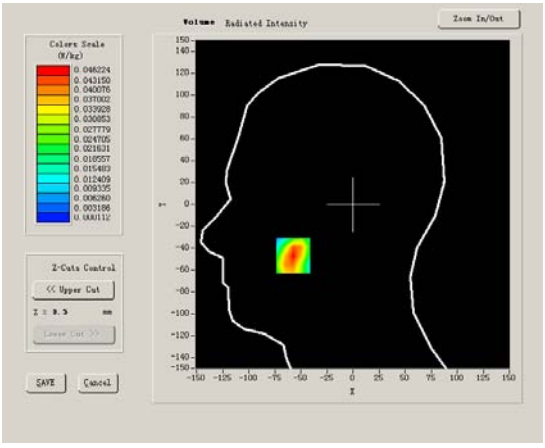
A. Experimental conditions.

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)	39.993999
Relative permittivity	12.991650
Conductivity (S/m)	1.335397
Power drift (%)	-3.250000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:8

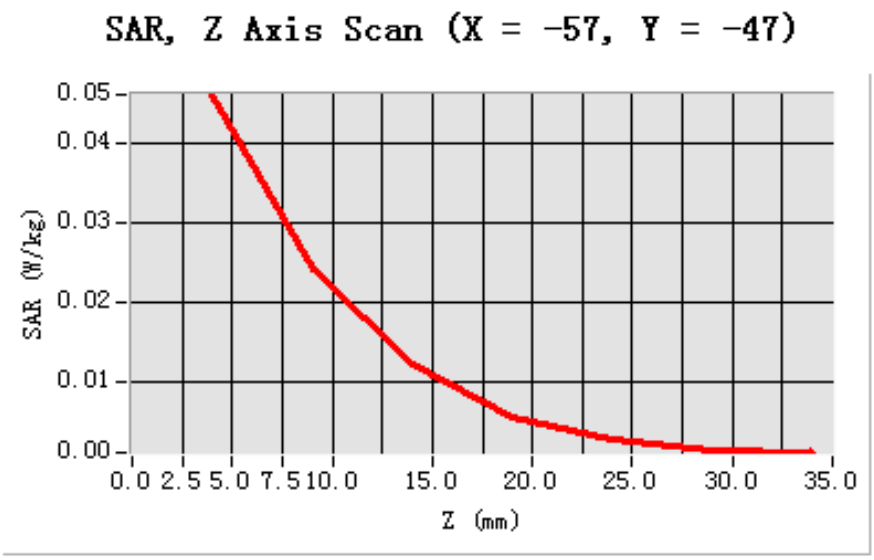
SURFACE SAR	VOLUME SAR
	

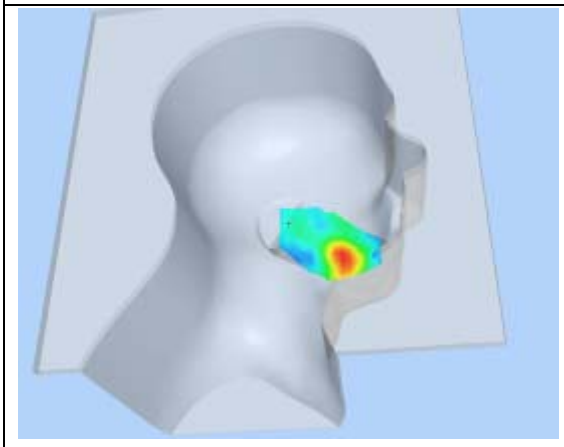
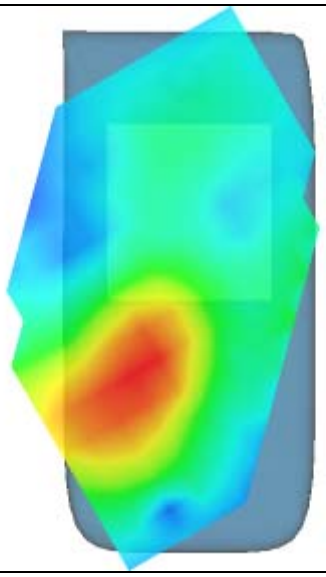
Maximum location: X=-57.00, Y=-47.00

SAR 10g (W/Kg)	0.021256
SAR 1g (W/Kg)	0.043217

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.0462	0.0243	0.0123	0.0055	0.0029	0.0015



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: 27/6/2011
Measurement duration: 8 minutes 36 seconds

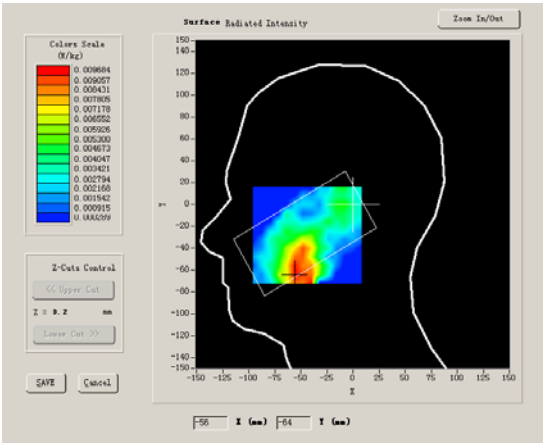
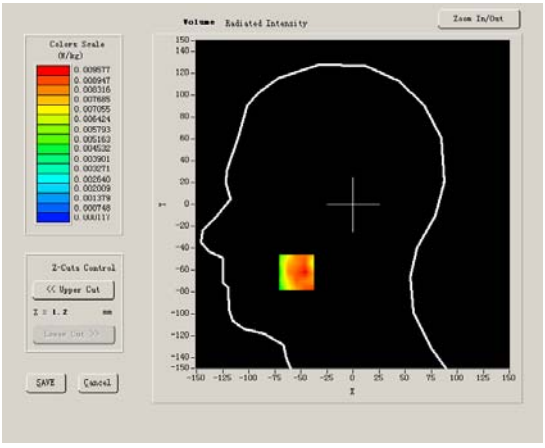
A. Experimental conditions.

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 (%)	-2.769989
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:8

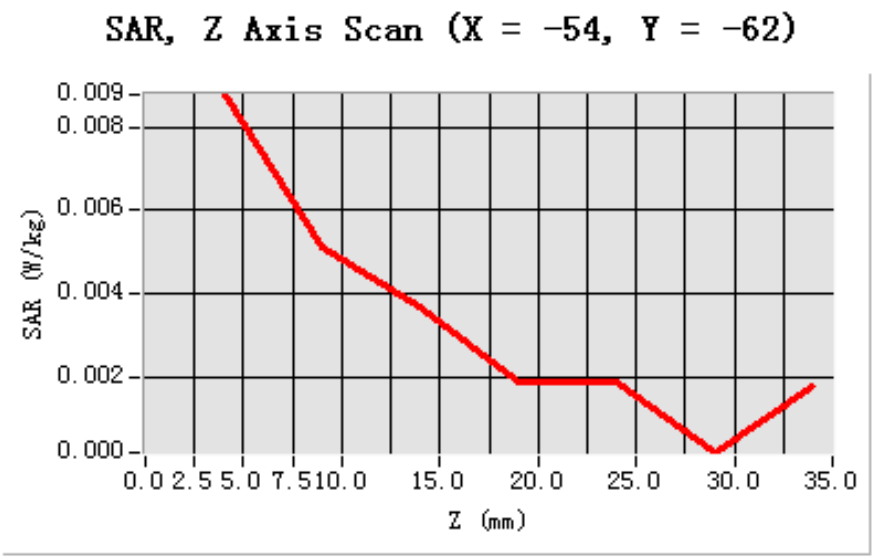
SURFACE SAR	VOLUME SAR
	

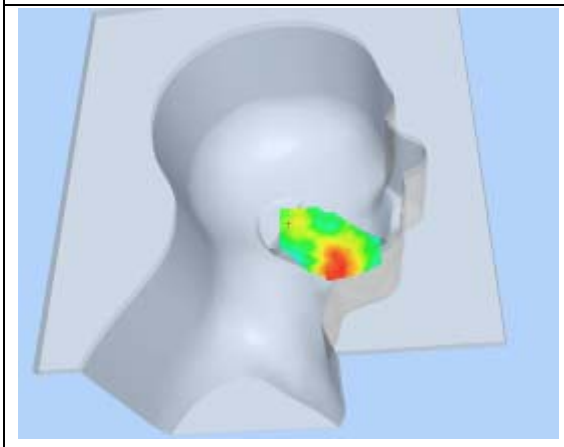
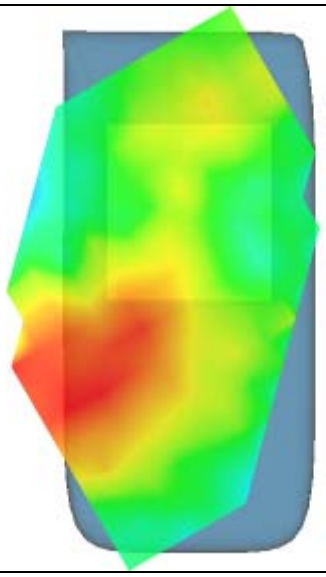
Maximum location: X=-54.00, Y=-62.00

SAR 10g (W/Kg)	0.005192
SAR 1g (W/Kg)	0.008383

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.0088	0.0051	0.0037	0.0019	0.0019	0.0002



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: 27/6/2011
Measurement duration: 8 minutes 49 seconds

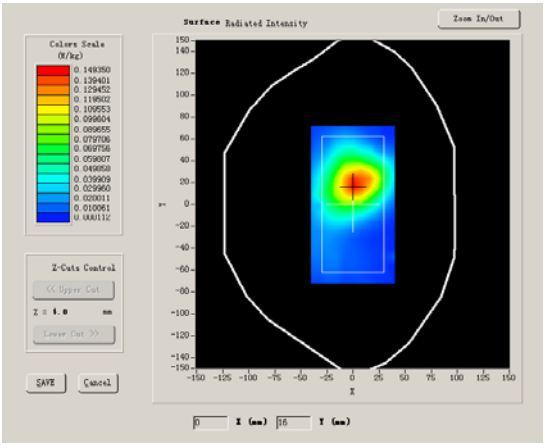
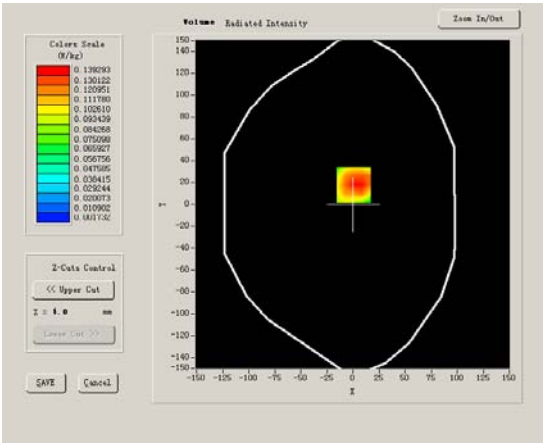
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
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 (%)	-3.360000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:8

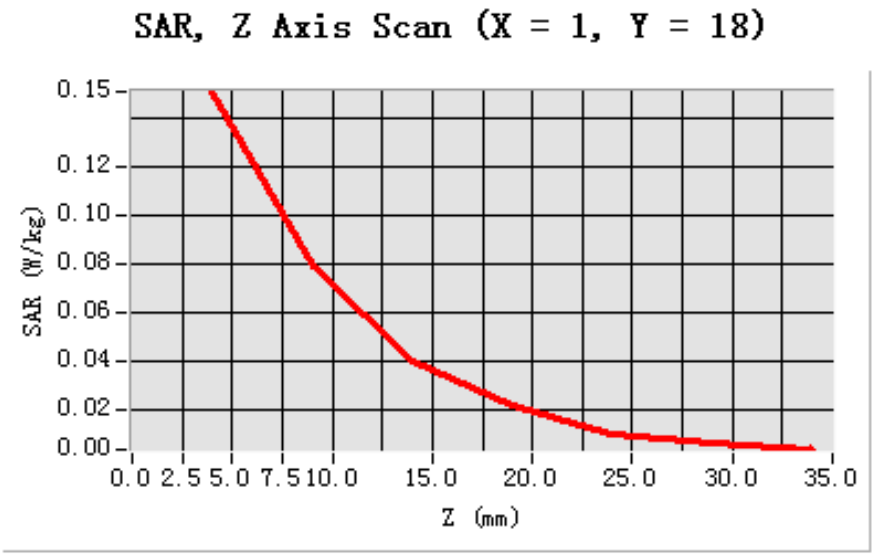
SURFACE SAR	VOLUME SAR
	

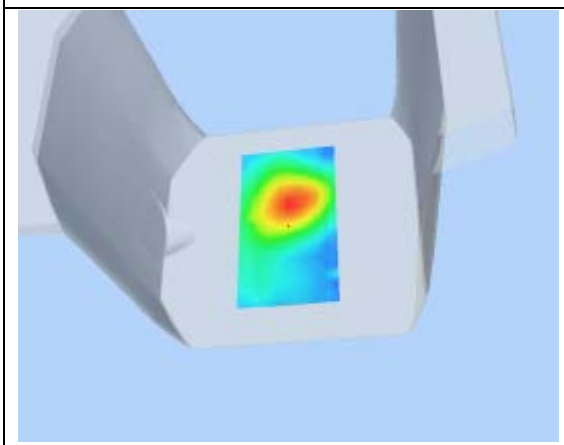
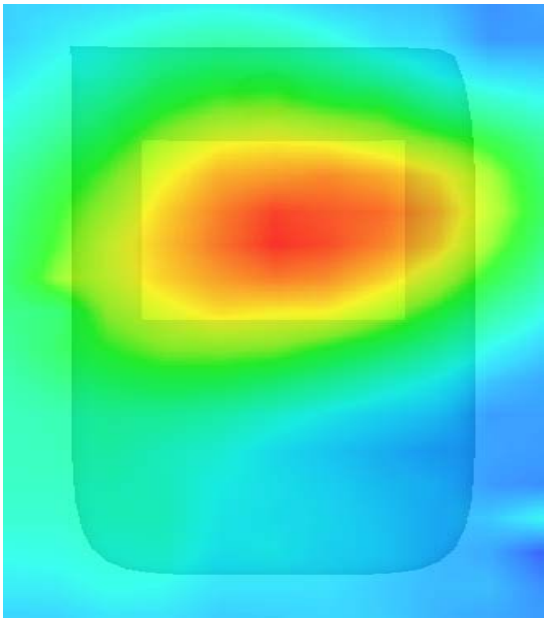
Maximum location: X=1.00, Y=18.00

SAR 10g (W/Kg)	0.078924
SAR 1g (W/Kg)	0.145585

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.1509	0.0786	0.0402	0.0218	0.0098	0.0063



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: 27/6/2011
Measurement duration: 8 minutes 48 seconds

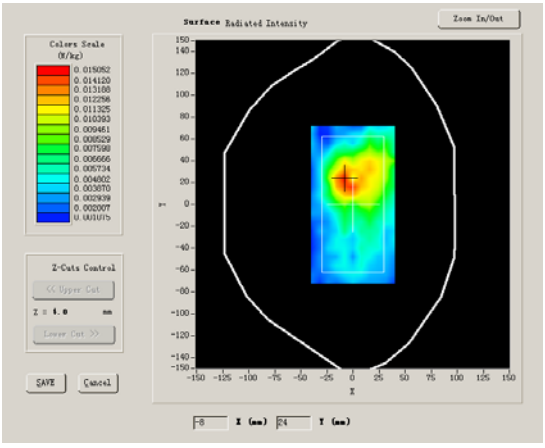
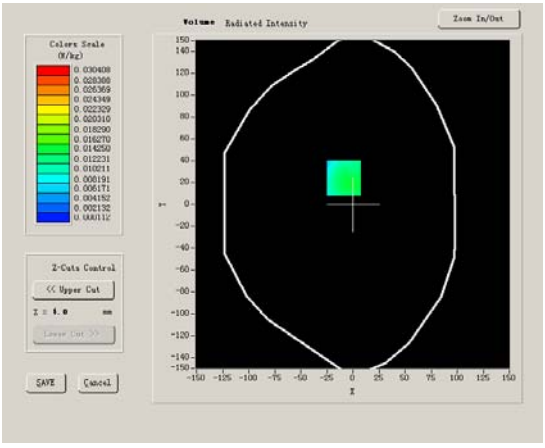
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
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 (%)	-3.710000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:8

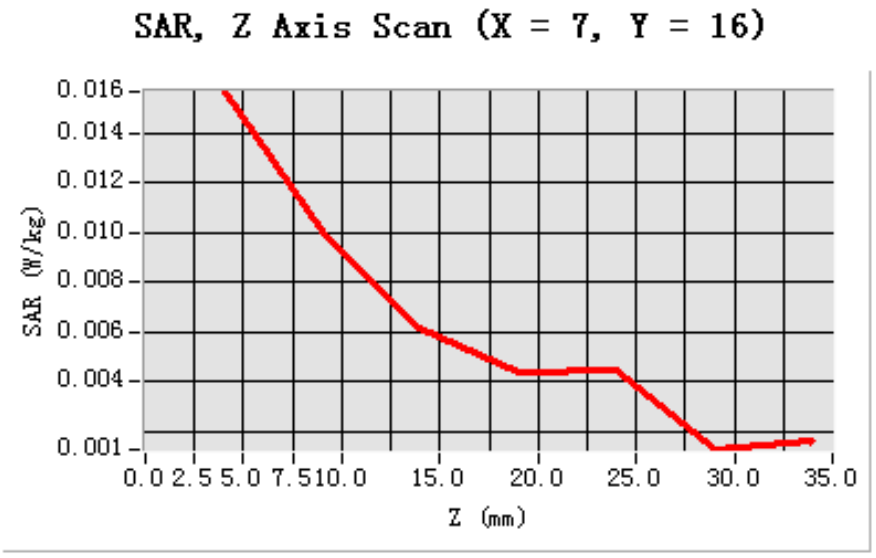
SURFACE SAR	VOLUME SAR
	

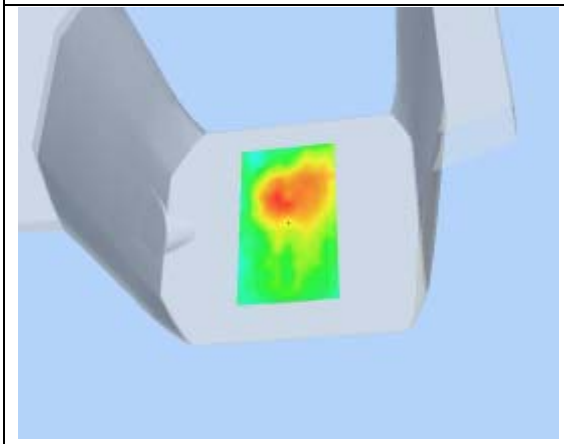
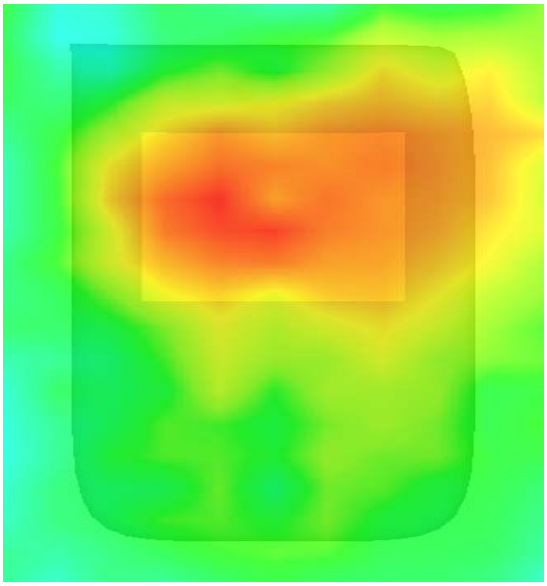
Maximum location: X=-7.00, Y=16.00

SAR 10g (W/Kg)	0.009080
SAR 1g (W/Kg)	0.016166

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.0150	0.0098	0.0044	0.0023	0.0019	0.0008



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: 27/6/2011
Measurement duration: 9 minutes 3 seconds

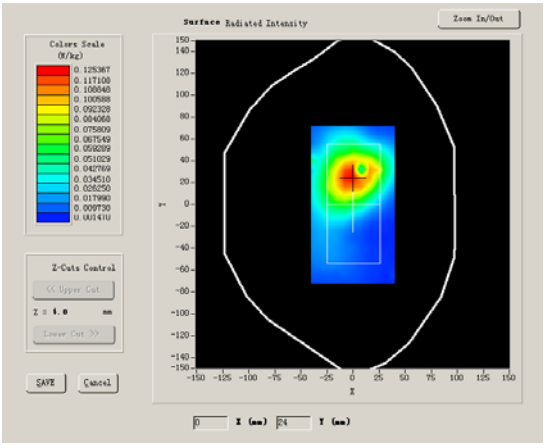
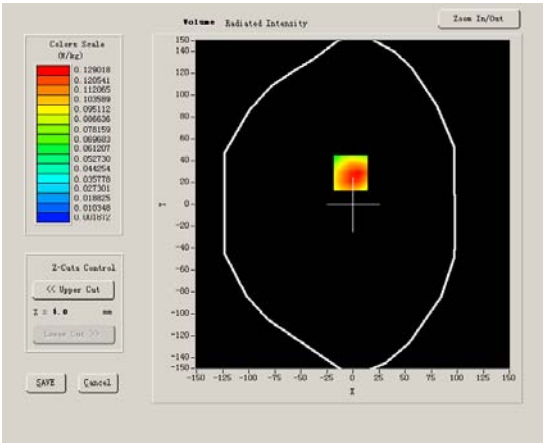
A. Experimental conditions.

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 (%)	1.340000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:2

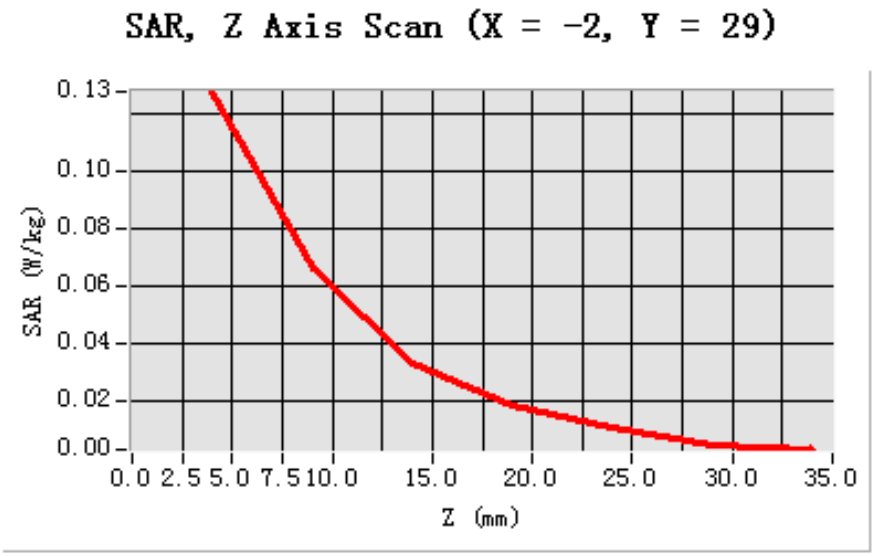
SURFACE SAR	VOLUME SAR
	

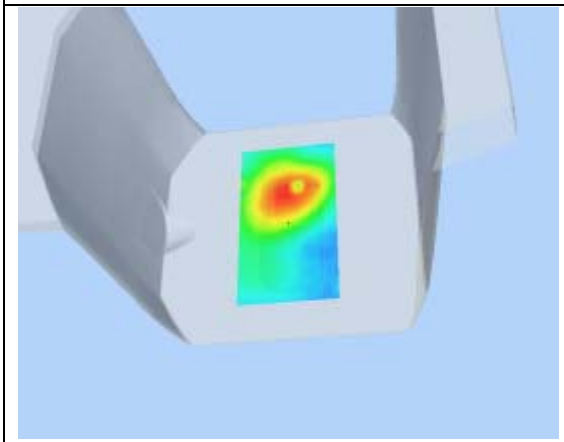
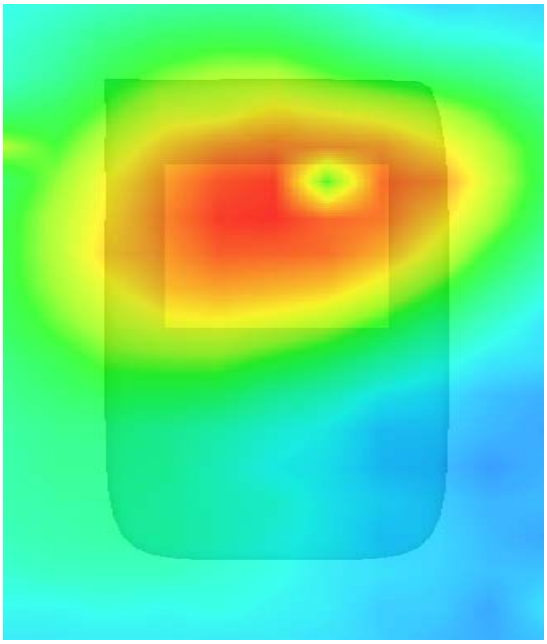
Maximum location: X=-2.00, Y=29.00

SAR 10g (W/Kg)	0.068968
SAR 1g (W/Kg)	0.129404

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.1275	0.0658	0.0331	0.0186	0.0106	0.0045



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: 27/6/2011
Measurement duration: 9 minutes 12 seconds

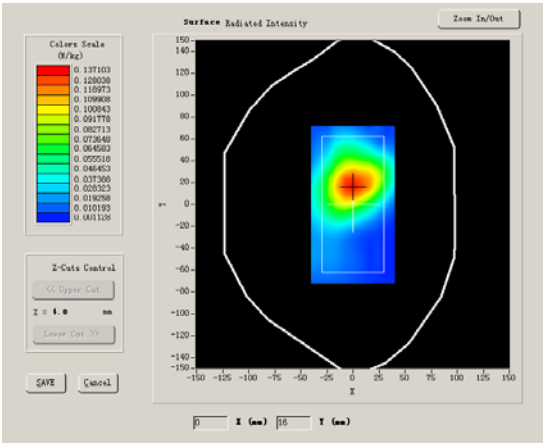
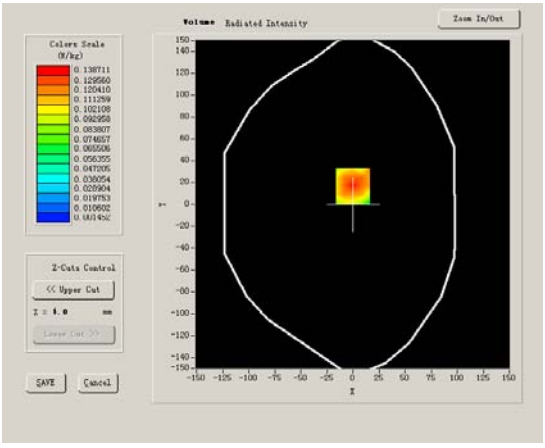
A. Experimental conditions.

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 (%)	-2.579987
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:2

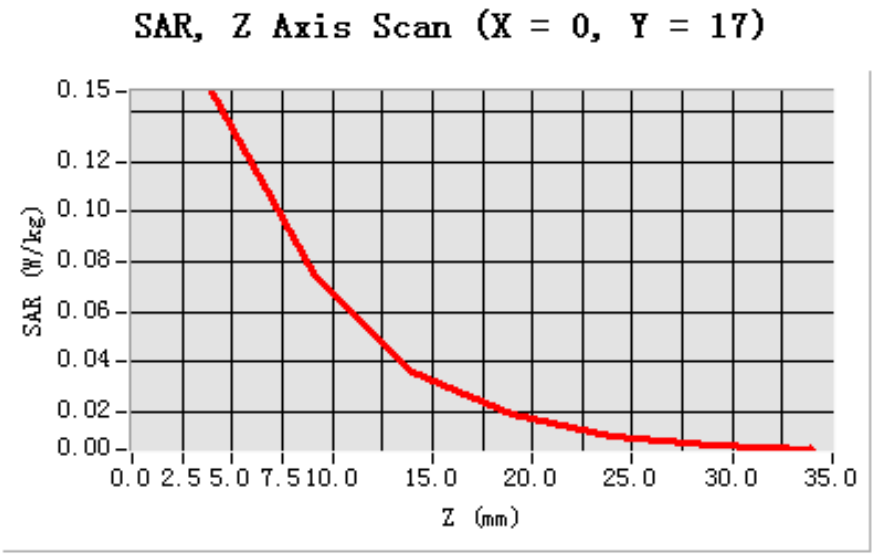
SURFACE SAR	VOLUME SAR
	

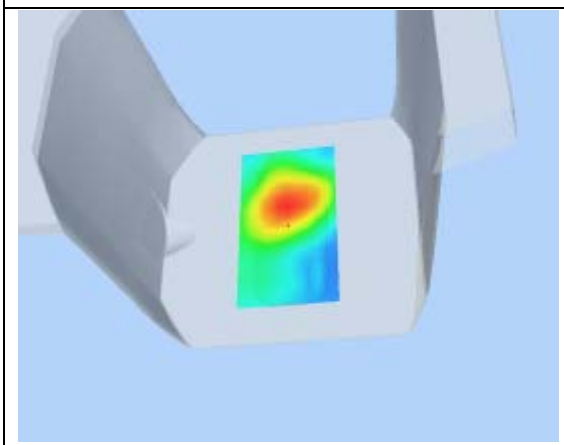
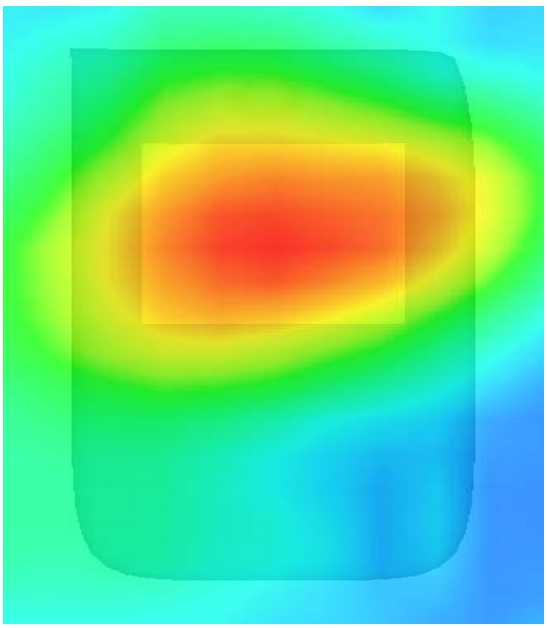
Maximum location: X=0.00, Y=17.00

SAR 10g (W/Kg)	0.075875
SAR 1g (W/Kg)	0.149981

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.1483	0.0756	0.0354	0.0191	0.0100	0.0062



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: 27/6/2011
Measurement duration: 8 minutes 51 seconds

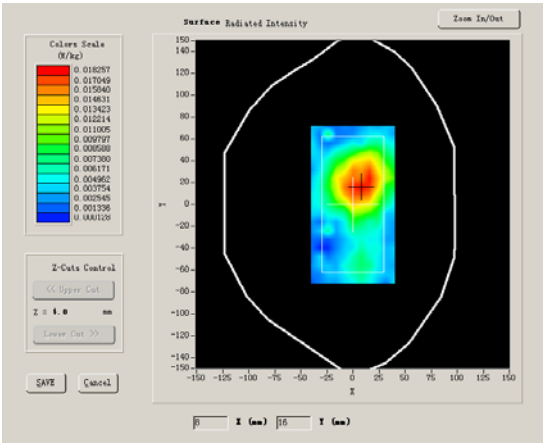
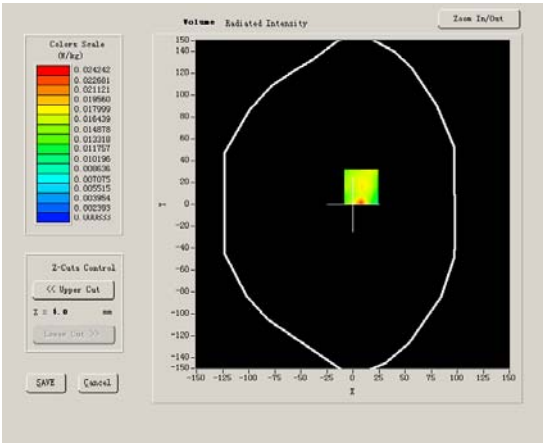
A. Experimental conditions.

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 (%)	2.840000
Ambient Temperature:	22.2°C
Liquid Temperature:	21.5C
ConvF:	28.479,25.214,27.196
Crest factor:	1:2

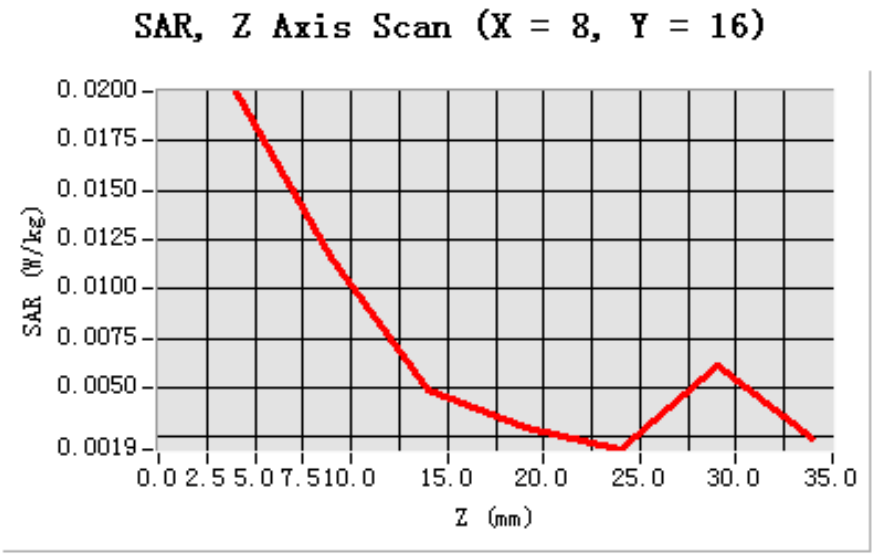
SURFACE SAR	VOLUME SAR
	

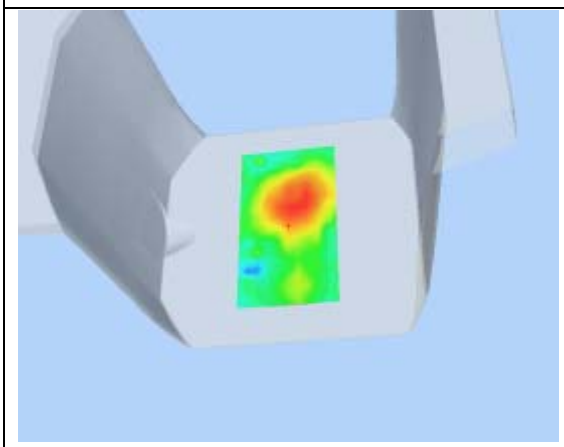
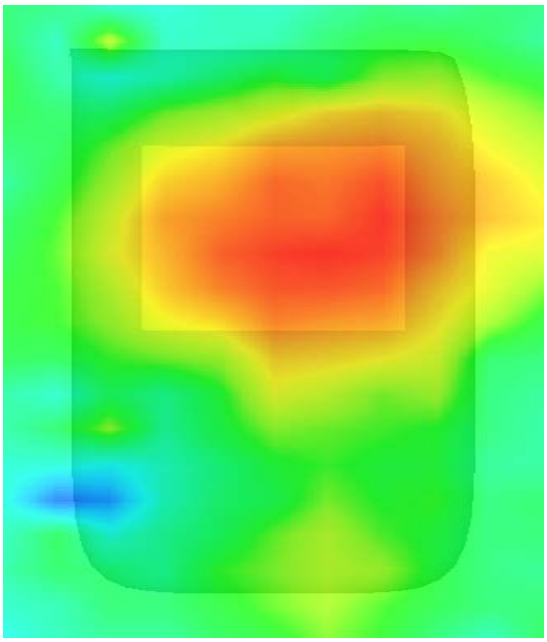
Maximum location: X=8.00, Y=16.00

SAR 10g (W/Kg)	0.010429
SAR 1g (W/Kg)	0.017282

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.0200	0.0116	0.0049	0.0030	0.0019	0.0062



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: 27/6/2011
Measurement duration: 9 minutes 10 seconds

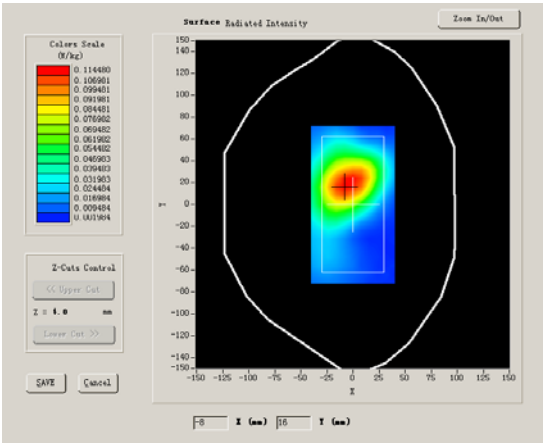
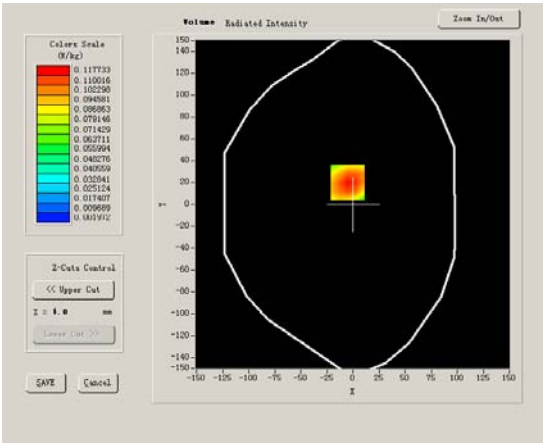
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	GSM1900
Channels	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 (%)	0.270000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:2

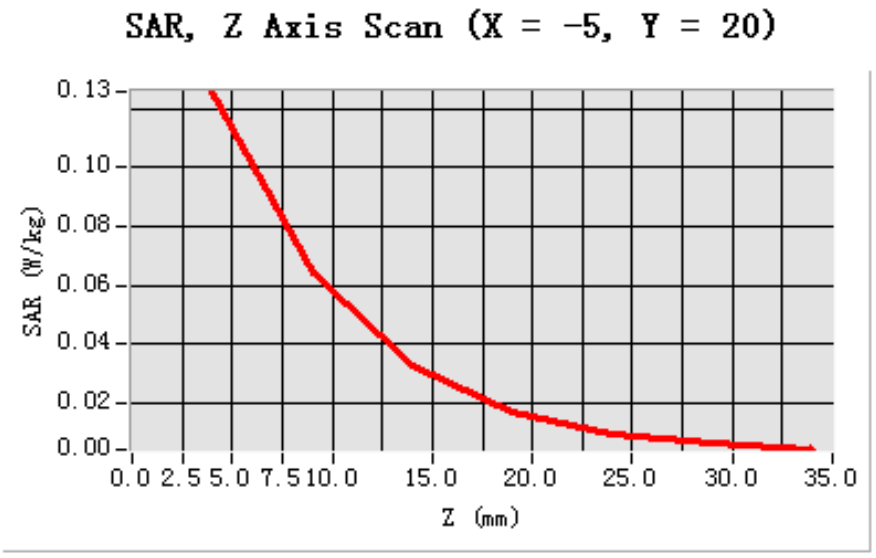
SURFACE SAR	VOLUME SAR
	

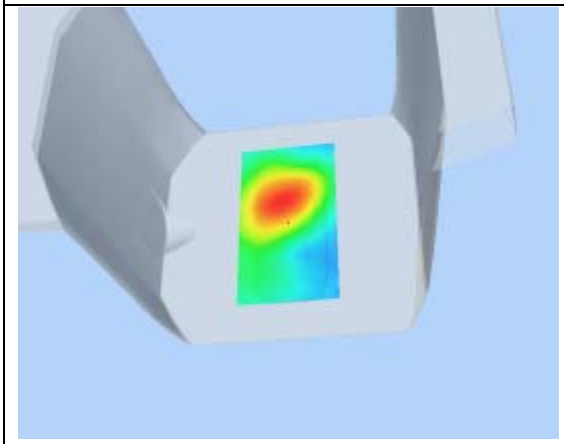
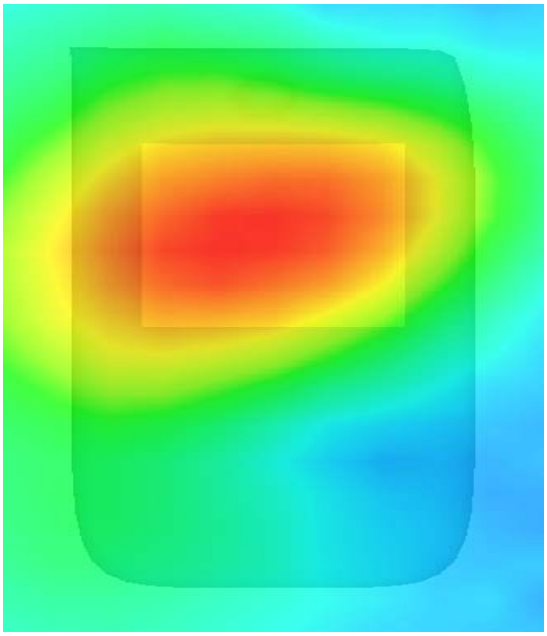
Maximum location: X=-5.00, Y=20.00

SAR 10g (W/Kg)	0.066912
SAR 1g (W/Kg)	0.121508

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.1259	0.0643	0.0330	0.0171	0.0096	0.0064



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: 27/6/2011
Measurement duration: 8 minutes 5 seconds

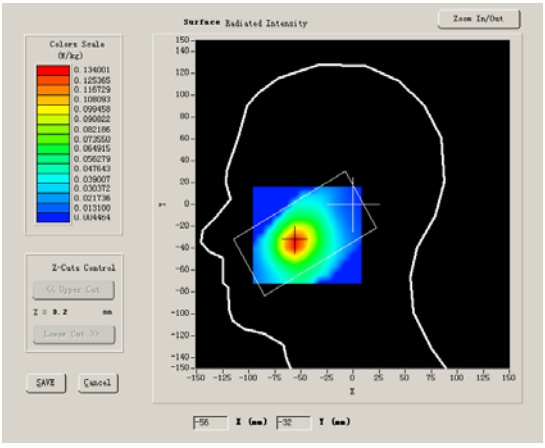
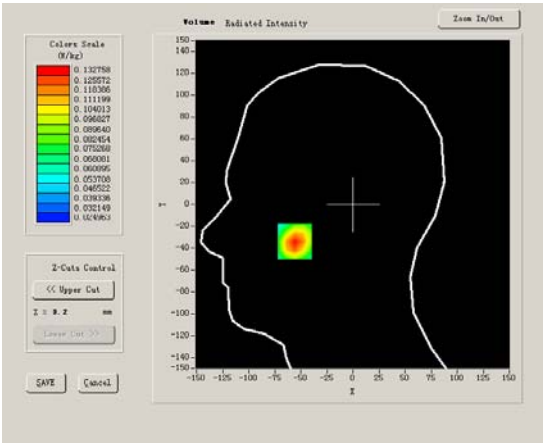
A. Experimental conditions.

Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Right head
Device Position	Cheek
Band	WCDMA 850
Channels	Low
Signal	CDMA

B. SAR Measurement Results

Lower Band SAR (Channel 4132):

Frequency (MHz)	826.000000
Relative permittivity (real part)	39.980000
Relative permittivity	13.170000
Conductivity (S/m)	0.604357
Power drift (%)	-1.070000
Ambient Temperature:	22.2°C
Liquid Temperature:	21.5C
ConvF:	28.479,25.214,27.196
Crest factor:	1:1

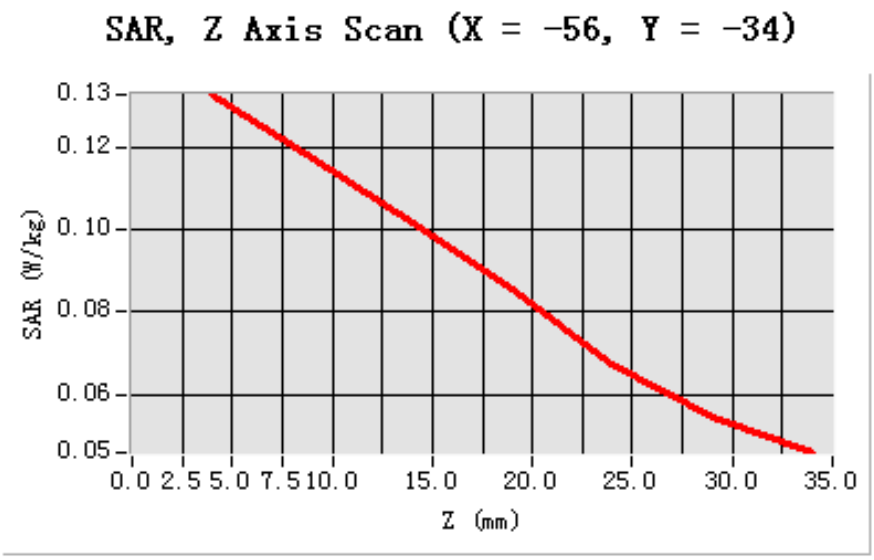
SURFACE SAR	VOLUME SAR
	

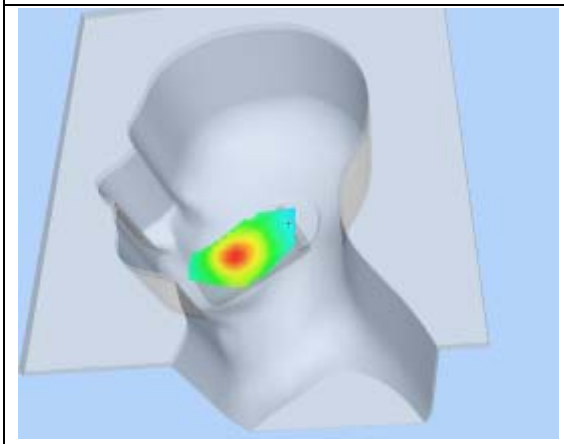
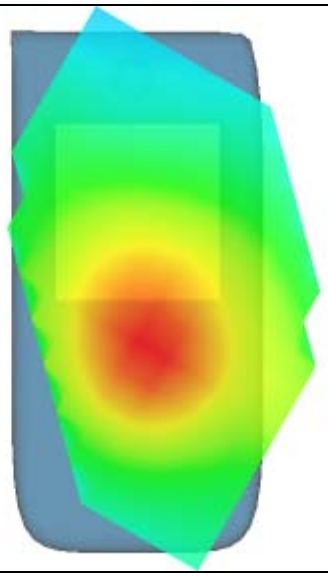
Maximum location: X=-56.00, Y=-34.00

SAR 10g (W/Kg)	0.098993
SAR 1g (W/Kg)	0.126820

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.1328	0.1171	0.1015	0.0853	0.0675	0.0547



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: 27/6/2011
Measurement duration: 7 minutes 35 seconds

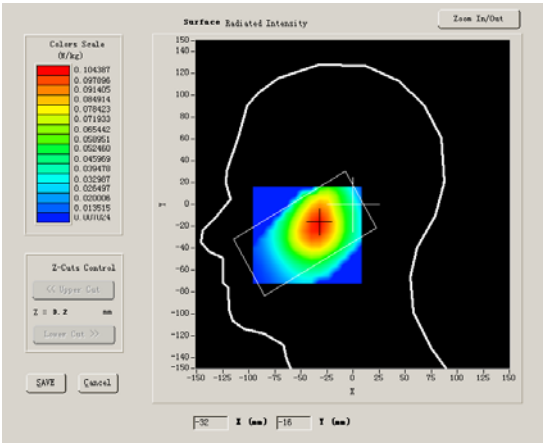
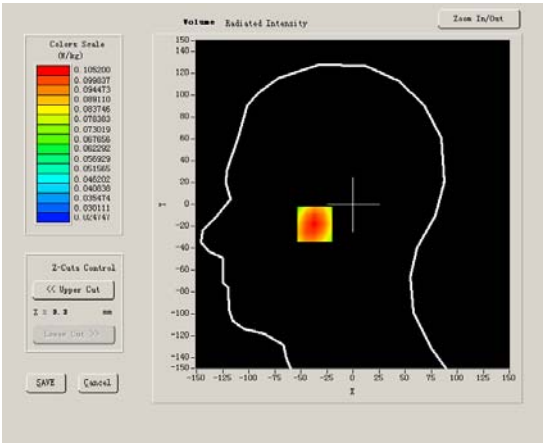
A. Experimental conditions.

Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Right head
Device Position	Tilt
Band	WCDMA 850
Channels	Low
Signal	CDMA

B. SAR Measurement Results

Lower Band SAR (Channel 4132):

Frequency (MHz)	826.000000
Relative permittivity (real part)	39.980000
Relative permittivity	13.170000
Conductivity (S/m)	0.604357
Power drift (%)	-0.660000
Ambient Temperature:	22.2°C
Liquid Temperature:	21.5C
ConvF:	28.479,25.214,27.196
Crest factor:	1:1

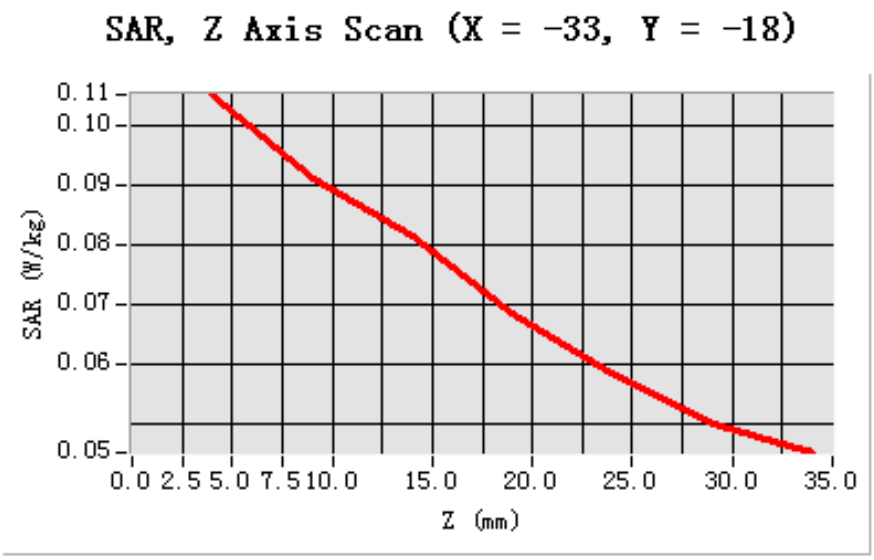
SURFACE SAR	VOLUME SAR
	

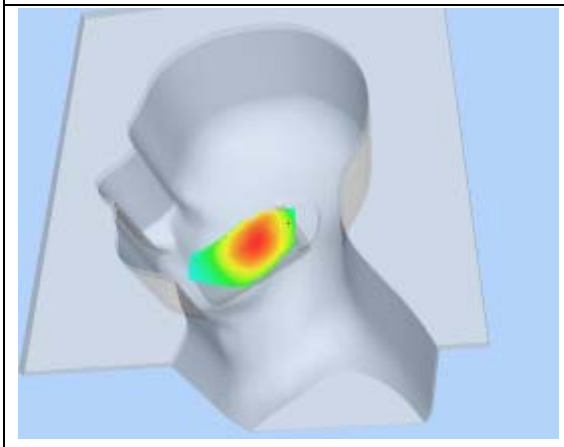
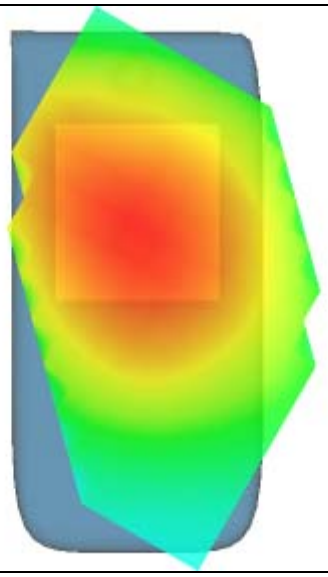
Maximum location: X=-33.00, Y=-18.00

SAR 10g (W/Kg)	0.084752
SAR 1g (W/Kg)	0.102862

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.1052	0.0912	0.0815	0.0685	0.0585	0.0499



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: 27/6/2011
Measurement duration: 8 minutes 5 seconds

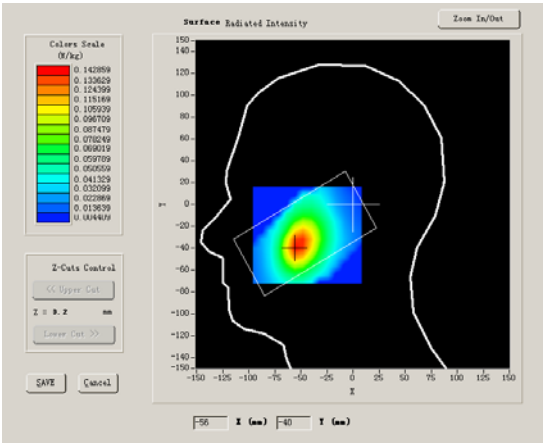
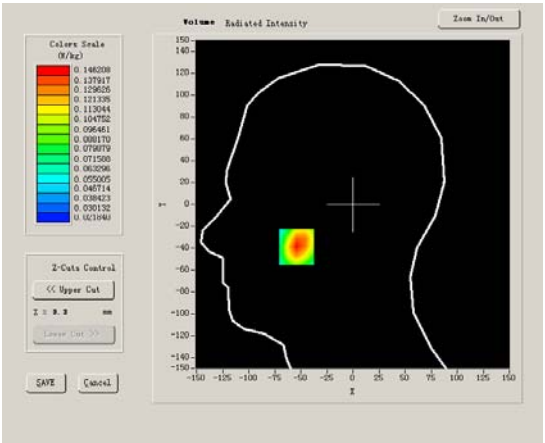
A. Experimental conditions.

Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Left head
Device Position	Cheek
Band	WCDMA 850
Channels	Low
Signal	CDMA

B. SAR Measurement Results

Lower Band SAR (Channel 4132):

Frequency (MHz)	826.000000
Relative permittivity (real part)	39.980000
Relative permittivity	13.170000
Conductivity (S/m)	0.604357
Power drift (%)	0.100000
Ambient Temperature:	22.2°C
Liquid Temperature:	21.5C
ConvF:	28.479,25.214,27.196
Crest factor:	1:1

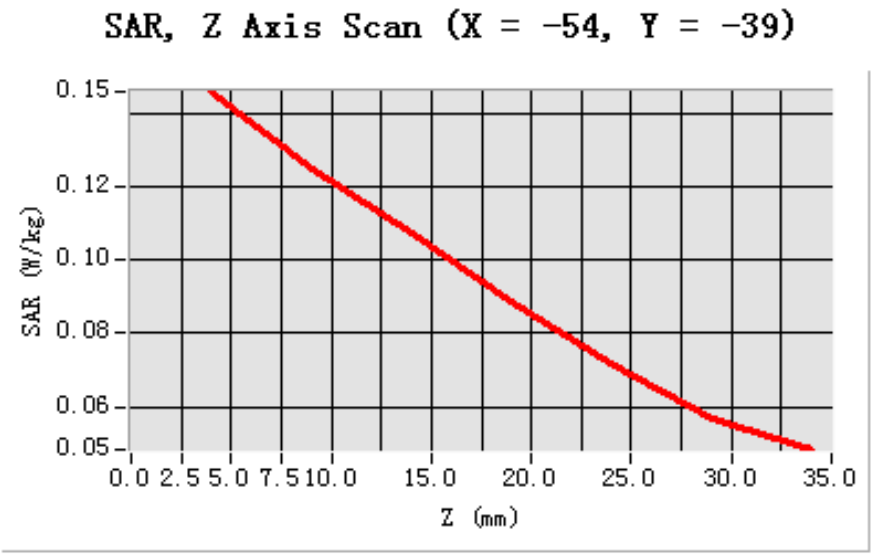
SURFACE SAR	VOLUME SAR
	

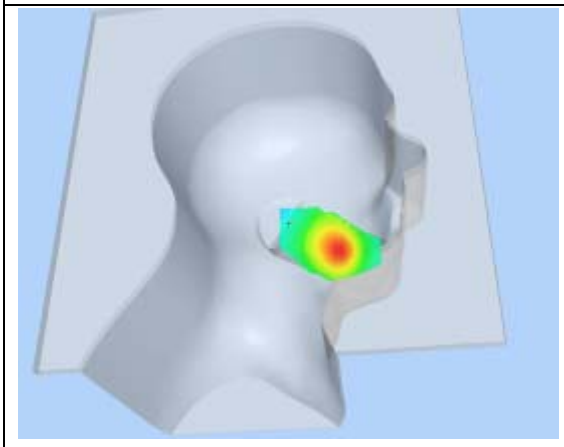
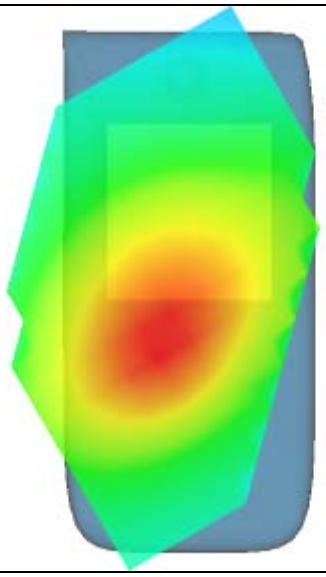
Maximum location: X=-54.00, Y=-39.00

SAR 10g (W/Kg)	0.107784
SAR 1g (W/Kg)	0.140308

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.1462	0.1252	0.1073	0.0887	0.0720	0.0566



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: 27/6/2011
Measurement duration: 7 minutes 34 seconds

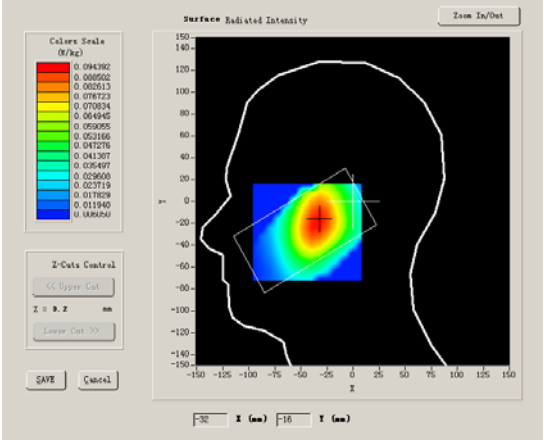
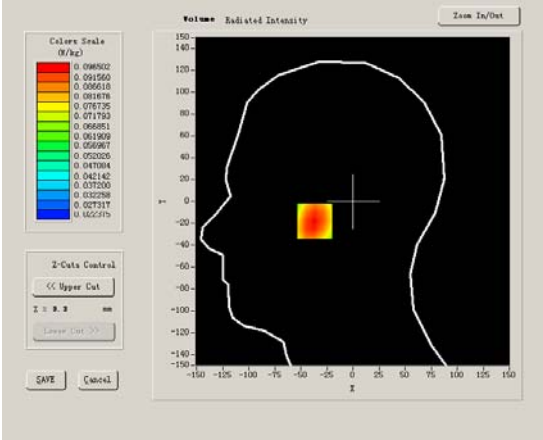
A. Experimental conditions.

Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Left head
Device Position	Tilt
Band	WCDMA 850
Channels	Low
Signal	CDMA

B. SAR Measurement Results

Lower Band SAR (Channel 4132):

Frequency (MHz)	826.000000
Relative permittivity (real part)	39.980000
Relative permittivity	13.170000
Conductivity (S/m)	0.604357
Power drift (%)	0.590000
Ambient Temperature:	22.2°C
Liquid Temperature:	21.5C
ConvF:	28.479,25.214,27.196
Crest factor:	1:1

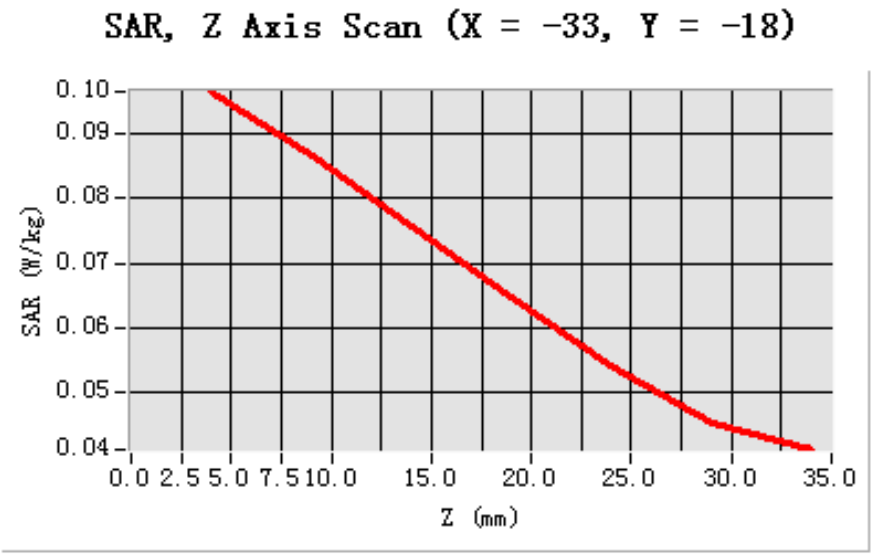
SURFACE SAR	VOLUME SAR
	

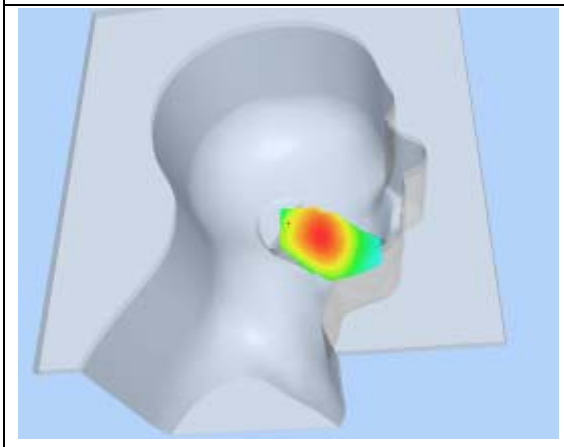
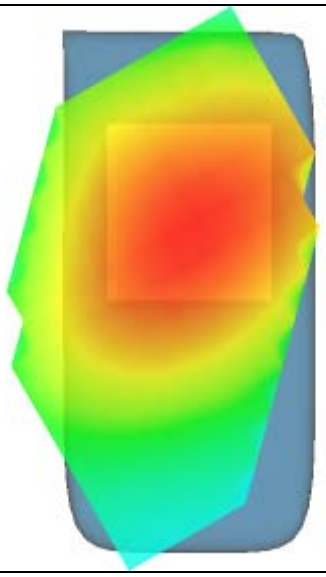
Maximum location: X=-33.00, Y=-18.00

SAR 10g (W/Kg)	0.078276
SAR 1g (W/Kg)	0.094254

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.0965	0.0865	0.0758	0.0649	0.0541	0.0452



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: 27/6/2011
Measurement duration: 9 minutes 8 seconds

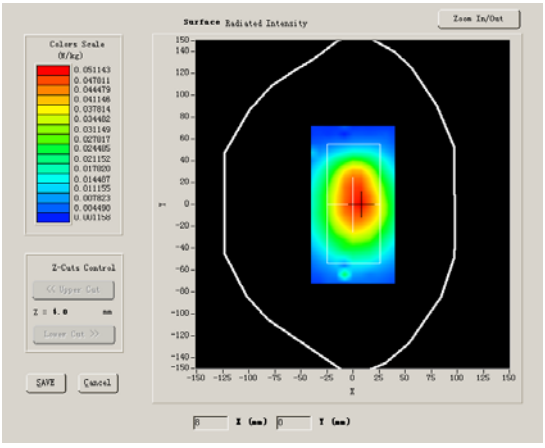
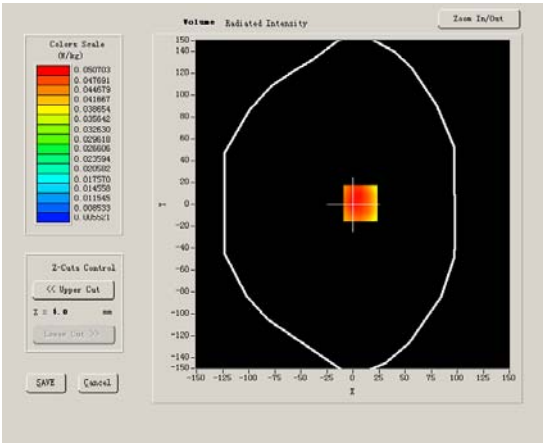
A. Experimental conditions.

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

B. SAR Measurement Results

Lower Band SAR (Channel 4132):

Frequency (MHz)	826.000000
Relative permittivity (real part)	51.341000
Relative permittivity	15.877050
Conductivity (S/m)	0.728580
Power drift (%)	0.090000
Ambient Temperature:	22.2°C
Liquid Temperature:	21.5C
ConvF:	28.479,25.214,27.196
Crest factor:	1:1

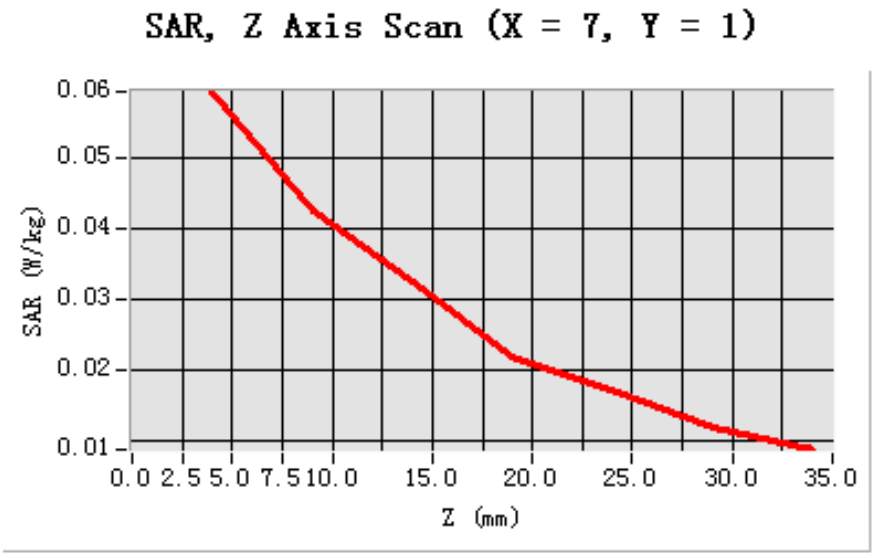
SURFACE SAR	VOLUME SAR
	

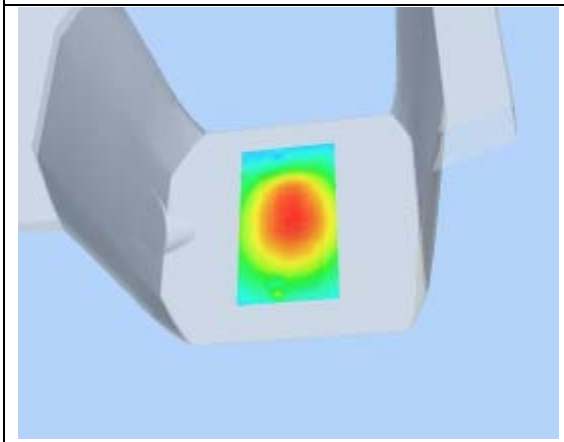
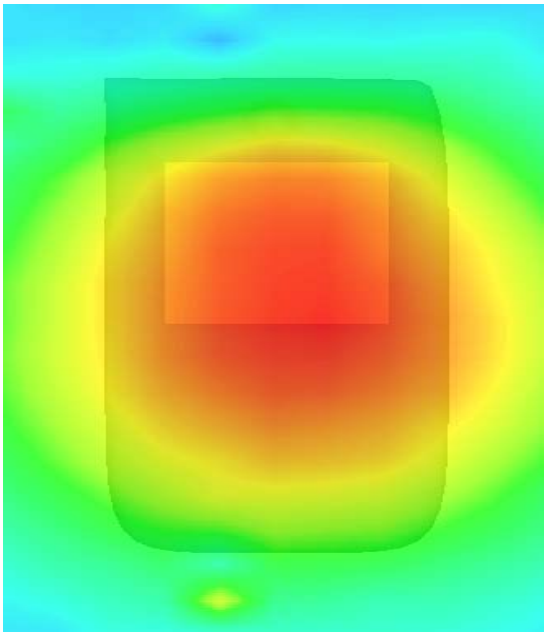
Maximum location: X=7.00, Y=1.00

SAR 10g (W/Kg)	0.041208
SAR 1g (W/Kg)	0.058556

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.0595	0.0427	0.0327	0.0222	0.0173	0.0121



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: 27/6/2011
Measurement duration: 9 minutes 6 seconds

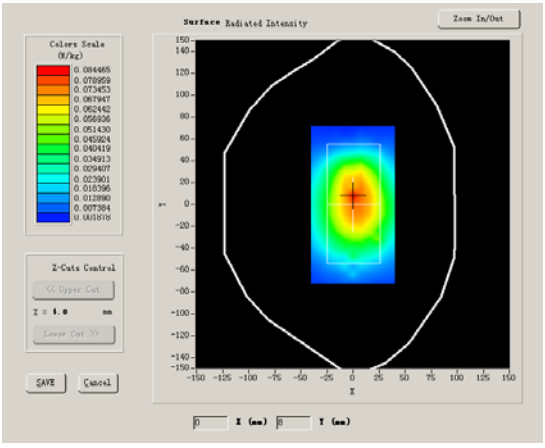
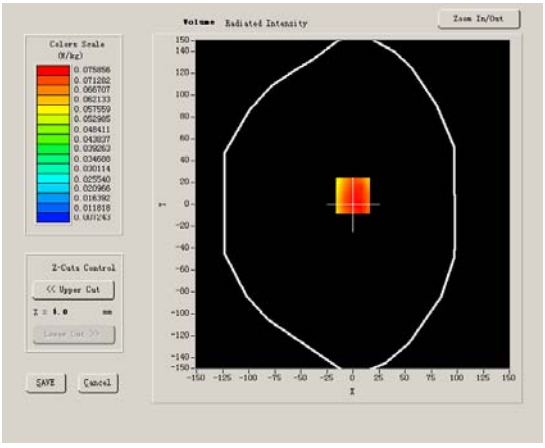
A. Experimental conditions.

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

B. SAR Measurement Results

Lower Band SAR (Channel 4132):

Frequency (MHz)	826.000000
Relative permittivity (real part)	51.341000
Relative permittivity	15.877050
Conductivity (S/m)	0.728580
Power drift (%)	-2.940000
Ambient Temperature:	22.2°C
Liquid Temperature:	21.5C
ConvF:	28.479,25.214,27.196
Crest factor:	1:1

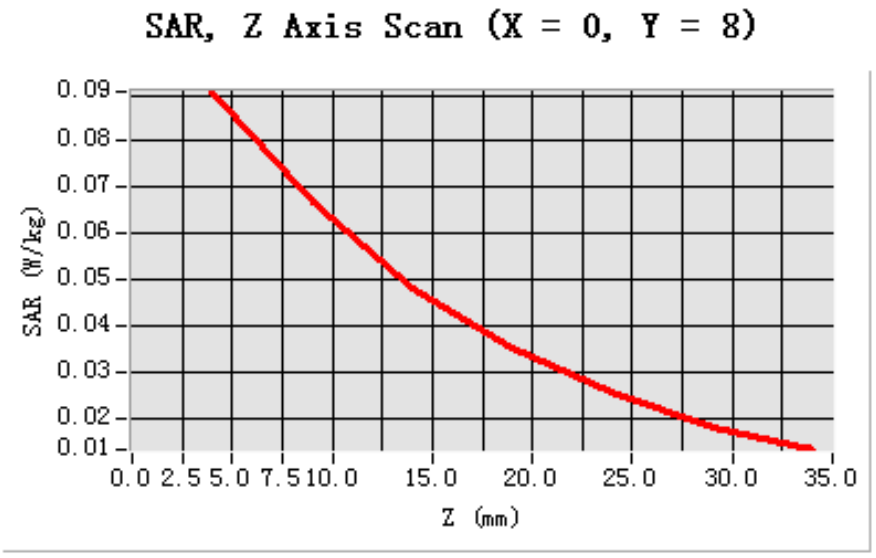
SURFACE SAR	VOLUME SAR
	

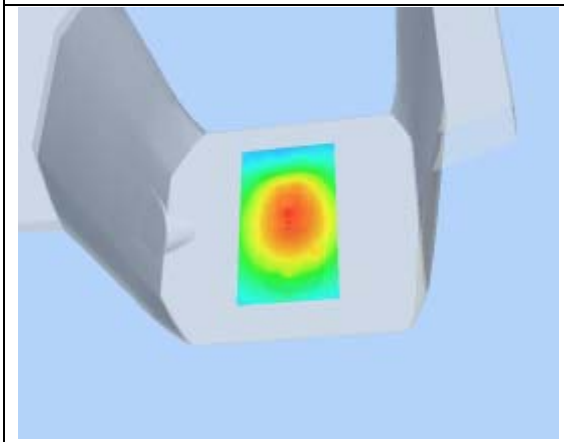
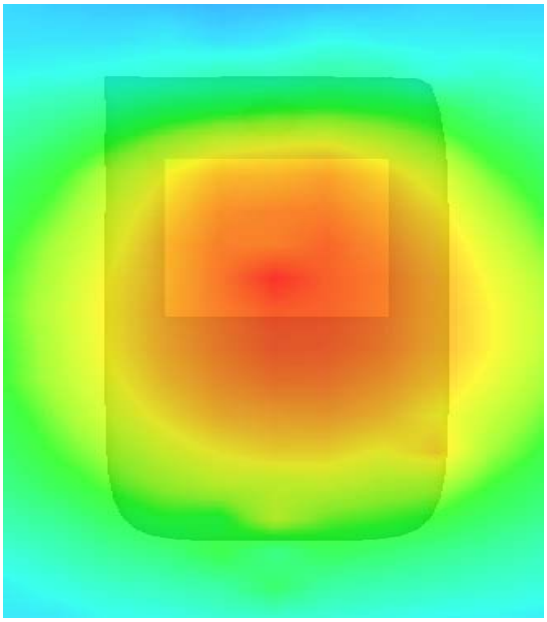
Maximum location: X=0.00, Y=8.00

SAR 10g (W/Kg)	0.063684
SAR 1g (W/Kg)	0.097646

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.0907	0.0667	0.0484	0.0354	0.0260	0.0184



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: 27/6/2011
Measurement duration: 8 minutes 12 seconds

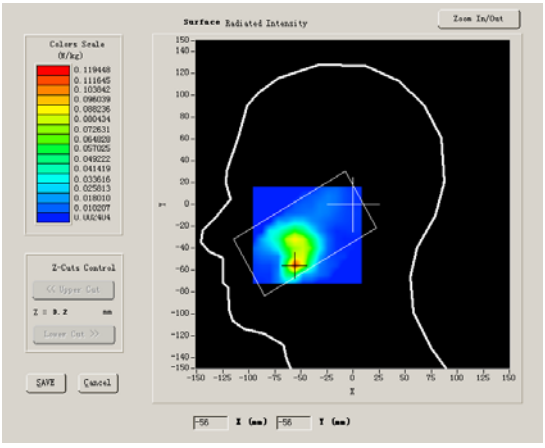
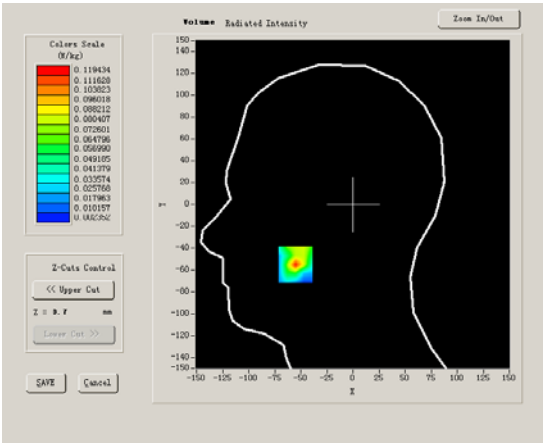
A. Experimental conditions.

Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Right head
Device Position	Cheek
Band	WCDMA
Channels	Middle
Signal	CDMA

B. SAR Measurement Results

Middle Band SAR (Channel 9400):

Frequency (MHz)	1880.000000
Relative permittivity (real part)	39.910000
Relative permittivity	13.230000
Conductivity (S/m)	1.381800
Power drift (%)	-0.910000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:1

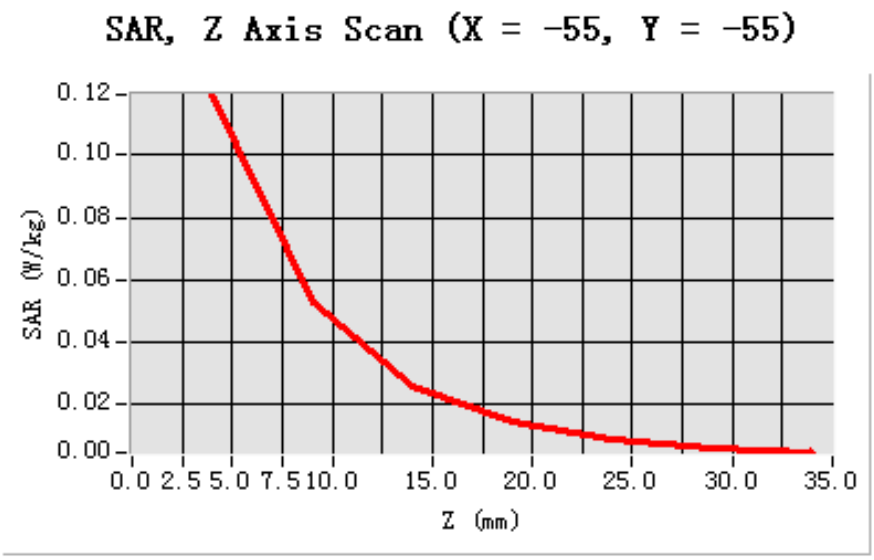
SURFACE SAR	VOLUME SAR
	

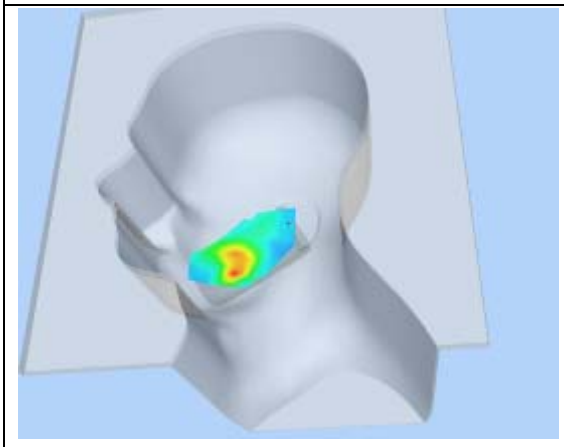
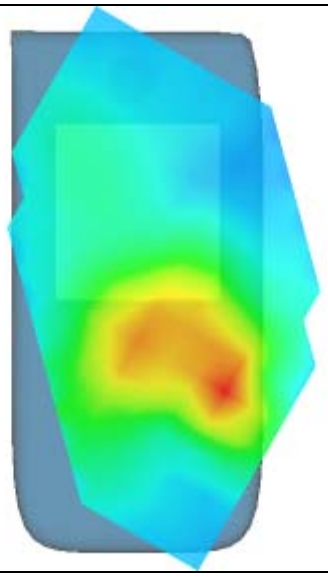
Maximum location: X=-55.00, Y=-55.00

SAR 10g (W/Kg)	0.046389
SAR 1g (W/Kg)	0.102495

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.1194	0.0529	0.0260	0.0142	0.0085	0.0062



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

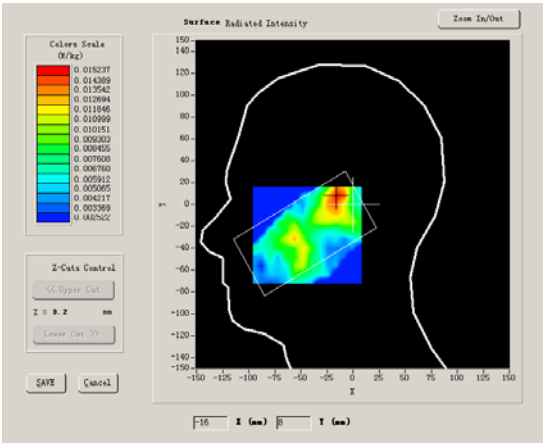
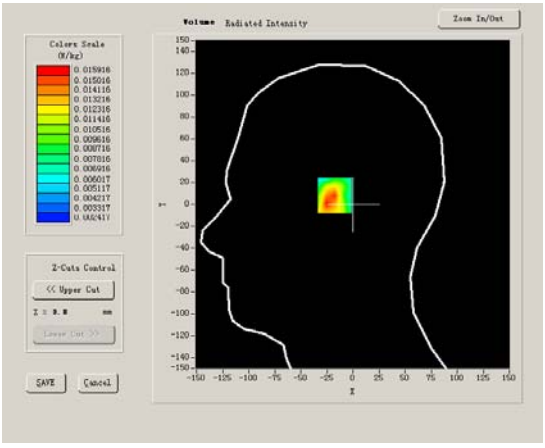
A. Experimental conditions.

Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Right head
Device Position	Tilt
Band	WCDMA
Channels	Middle
Signal	CDMA

B. SAR Measurement Results

Middle Band SAR (Channel 9400):

Frequency (MHz)	1880.000000
Relative permittivity (real part)	39.910000
Relative permittivity	13.230000
Conductivity (S/m)	1.381800
Power drift (%)	-3.809998
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:1

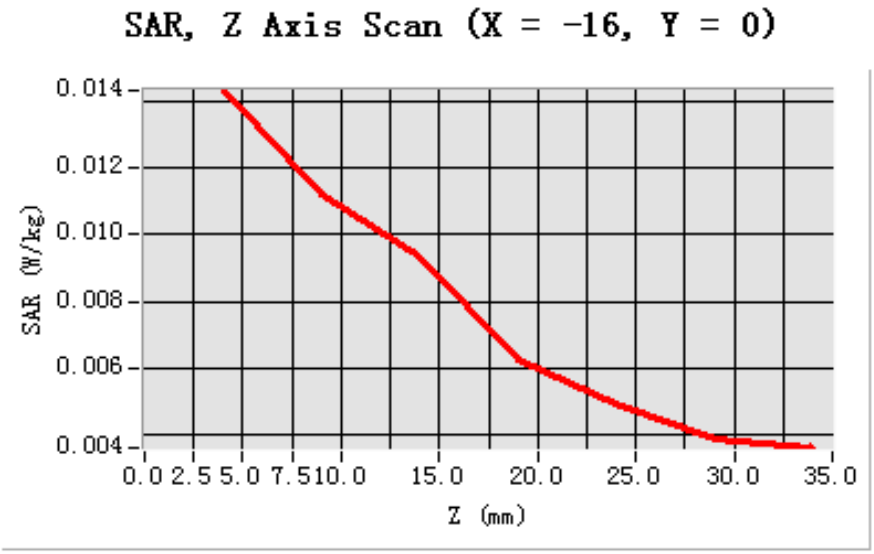
SURFACE SAR	VOLUME SAR
	

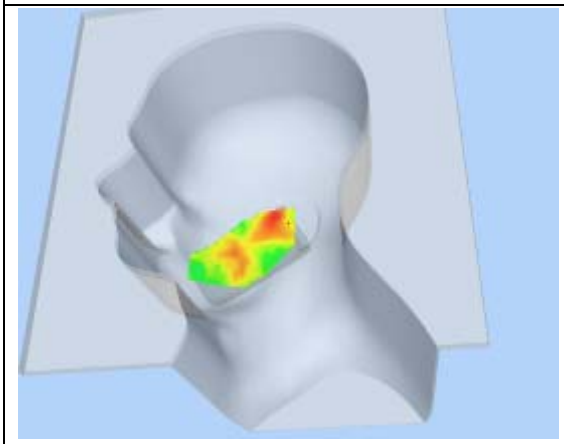
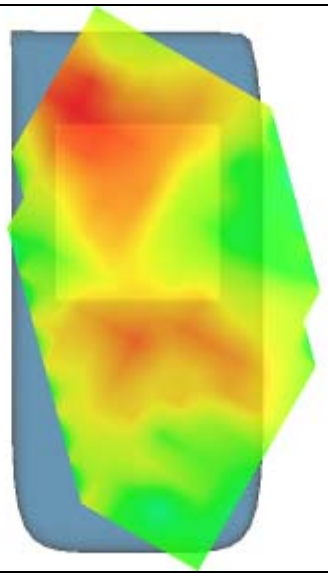
Maximum location: X=--16.00, Y=0.00

SAR 10g (W/Kg)	0.009101
SAR 1g (W/Kg)	0.014416

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.0155	0.0099	0.0094	0.0043	0.0038	0.0040



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: 27/6/2011
Measurement duration: 7 minutes 59 seconds

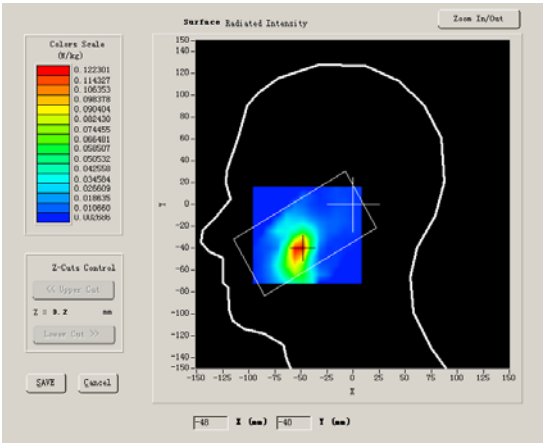
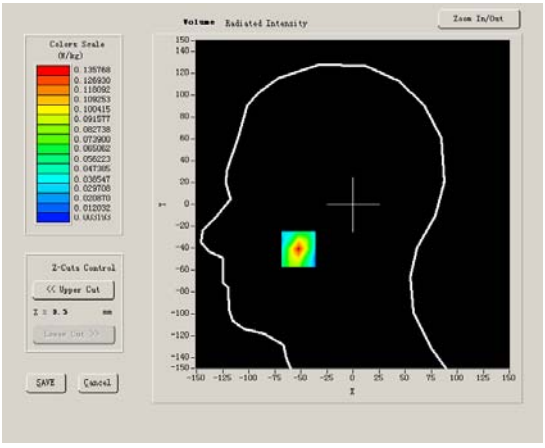
A. Experimental conditions.

Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Left head
Device Position	Cheek
Band	WCDMA
Channels	Middle
Signal	CDMA

B. SAR Measurement Results

Middle Band SAR (Channel 9400):

Frequency (MHz)	1880.000000
Relative permittivity (real part)	39.910000
Relative permittivity	13.230000
Conductivity (S/m)	1.381800
Power drift (%)	1.170000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:1

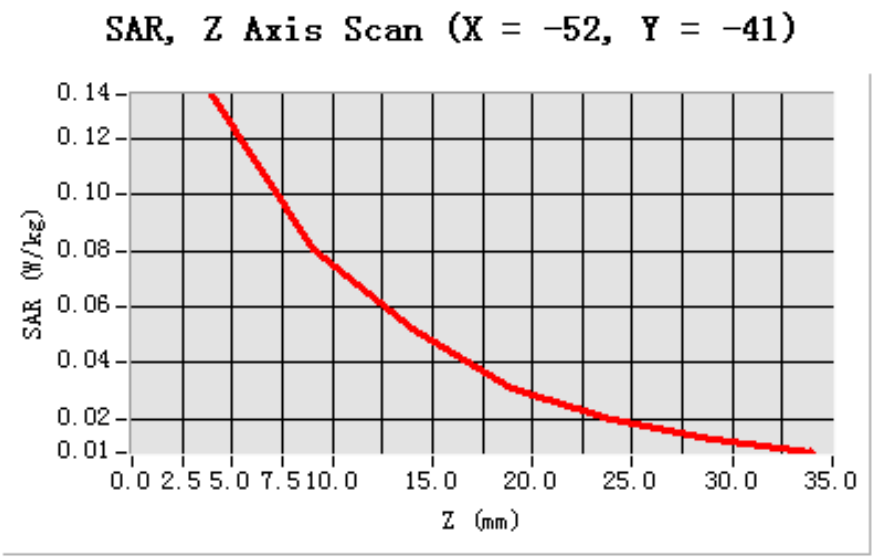
SURFACE SAR	VOLUME SAR
	

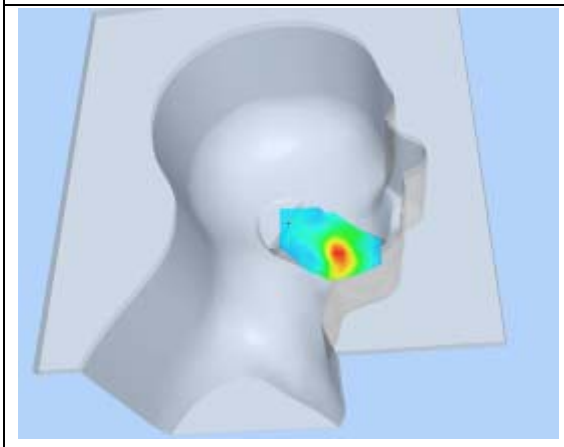
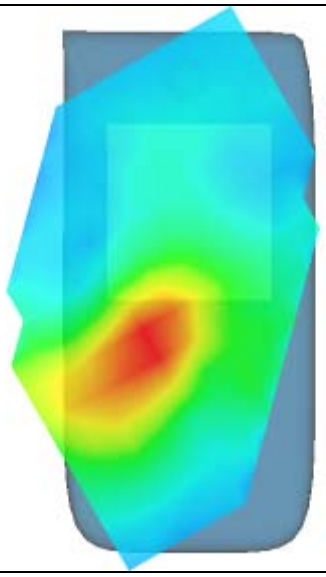
Maximum location: X=-52.00, Y=-41.00

SAR 10g (W/Kg)	0.061547
SAR 1g (W/Kg)	0.119911

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.1358	0.0804	0.0519	0.0306	0.0200	0.0125



3D sceen shot	Hot spot position
	

MEASUREMENT 36

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 27/6/2011
Measurement duration: 7 minutes 29 seconds

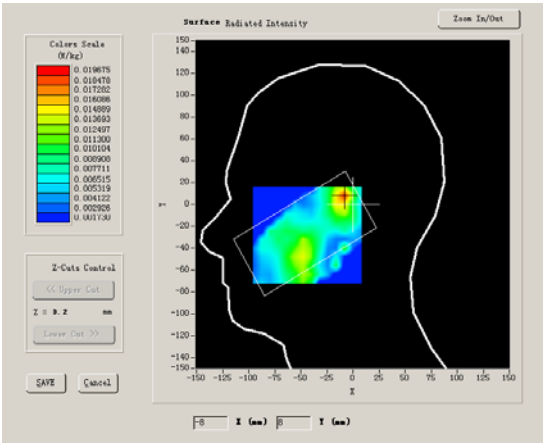
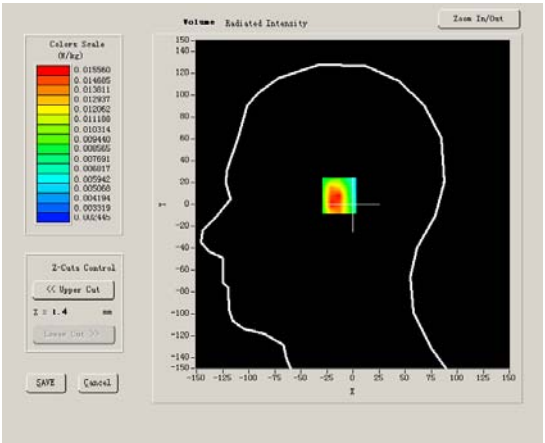
A. Experimental conditions.

Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Left head
Device Position	Tilt
Band	WCDMA
Channels	Middle
Signal	CDMA

B. SAR Measurement Results

Middle Band SAR (Channel 9400):

Frequency (MHz)	1880.000000
Relative permittivity (real part)	39.910000
Relative permittivity	13.230000
Conductivity (S/m)	1.381800
Power drift (%)	-1.900000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:1

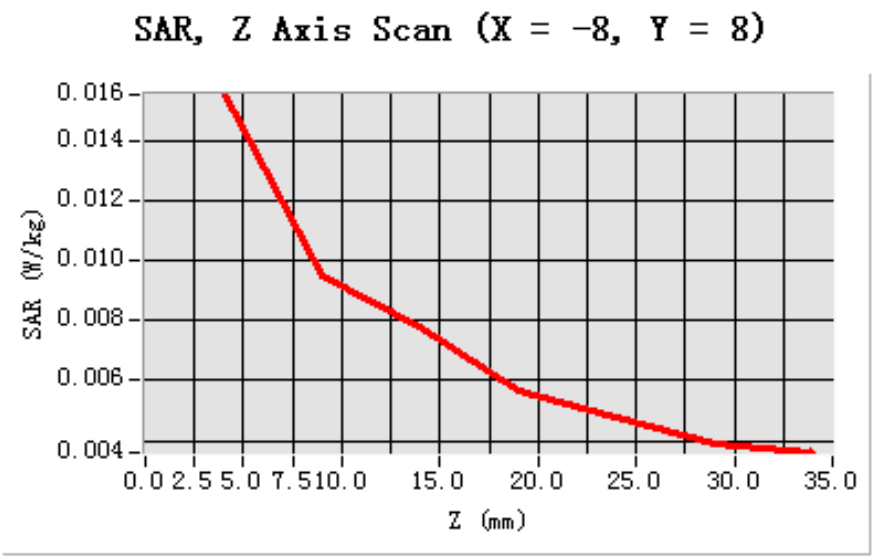
SURFACE SAR	VOLUME SAR
	

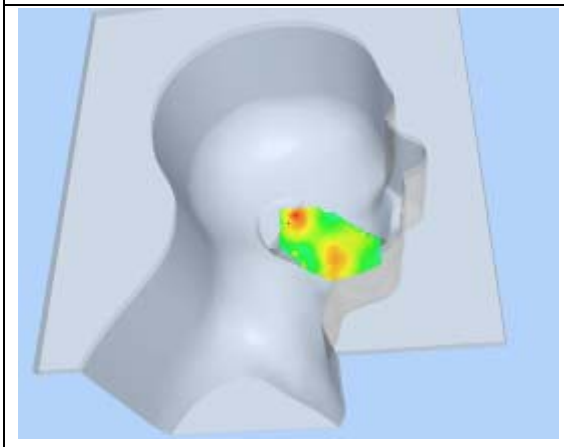
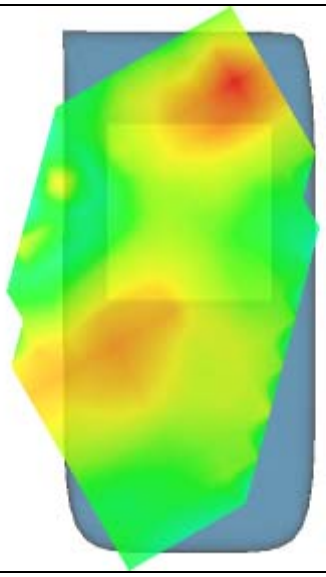
Maximum location: X=-8.00, Y=8.00

SAR 10g (W/Kg)	0.009656
SAR 1g (W/Kg)	0.015186

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.0156	0.0095	0.0078	0.0057	0.0048	0.0039



3D sceen shot	Hot spot position
	

MEASUREMENT 37

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 27/6/2011
Measurement duration: 9 minutes 10 seconds

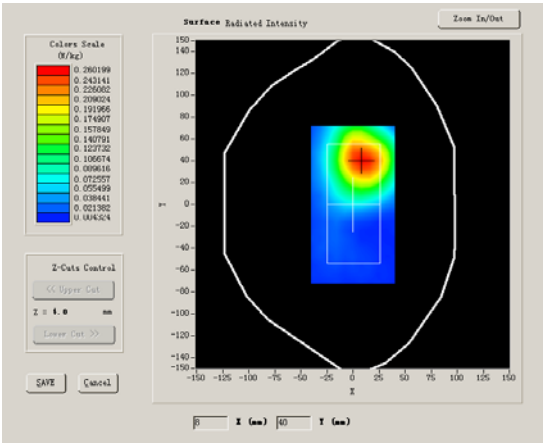
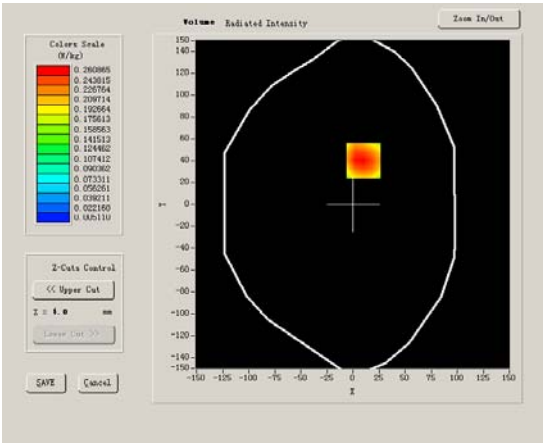
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	WCDMA
Channels	Middle
Signal	CDMA

B. SAR Measurement Results

Middle Band SAR (Channel 9400):

Frequency (MHz)	1880.000000
Relative permittivity (real part)	51.341000
Relative permittivity	15.877050
Conductivity (S/m)	1.658270
Power drift (%)	0.580000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:1

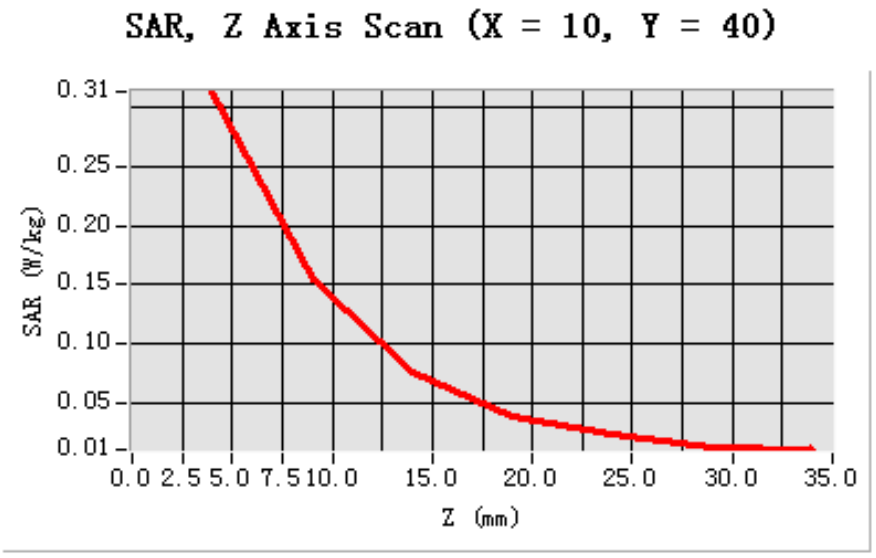
SURFACE SAR	VOLUME SAR
	

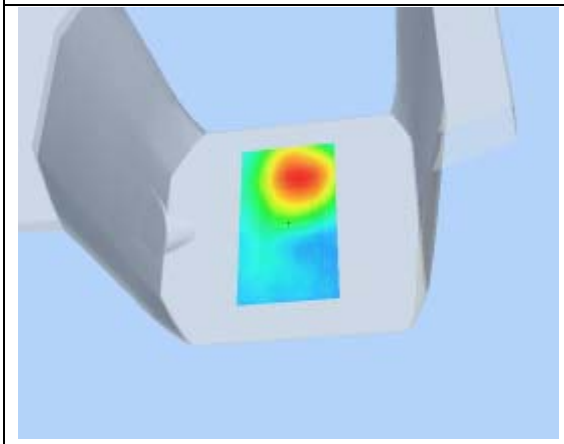
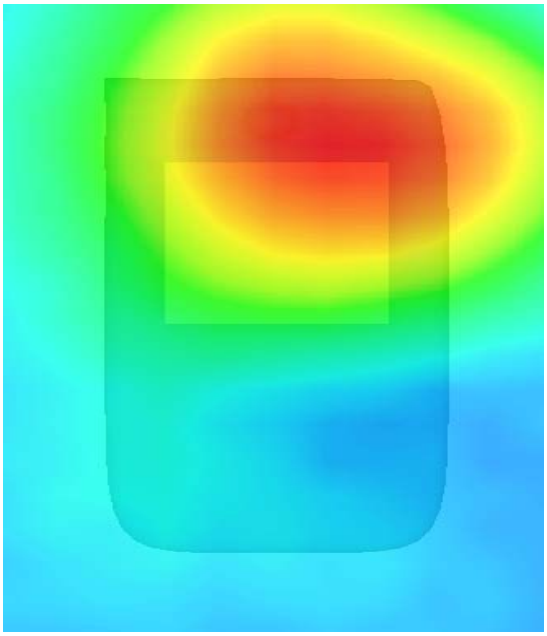
Maximum location: X=10.00, Y=40.00

SAR 10g (W/Kg)	0.165272
SAR 1g (W/Kg)	0.305575

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.3131	0.1542	0.0751	0.0392	0.0233	0.0129



3D sceen shot	Hot spot position
	

MEASUREMENT 38

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 27/6/2011
Measurement duration: 9 minutes 8 seconds

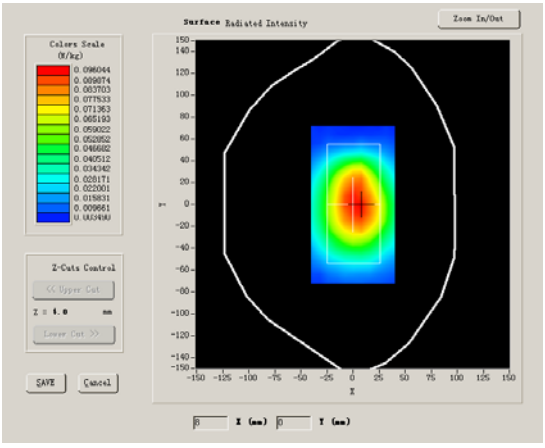
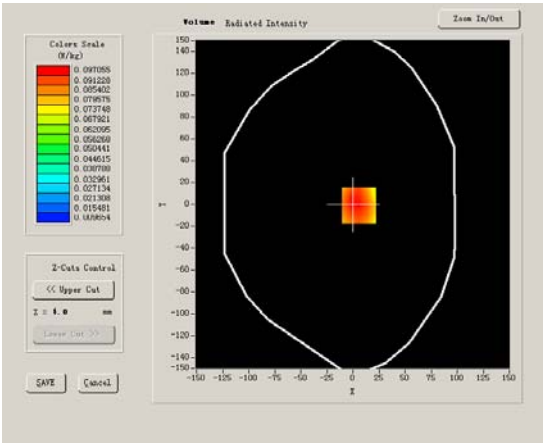
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	WCDMA
Channels	Middle
Signal	CDMA

B. SAR Measurement Results

Middle Band SAR (Channel 9400):

Frequency (MHz)	1880.000000
Relative permittivity (real part)	51.341000
Relative permittivity	15.877050
Conductivity (S/m)	1.658270
Power drift (%)	-1.220000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:1

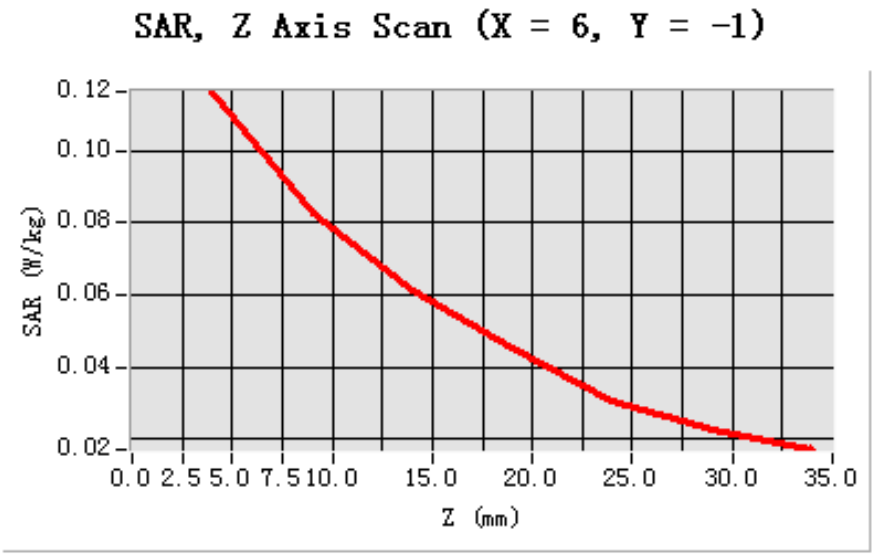
SURFACE SAR	VOLUME SAR
	

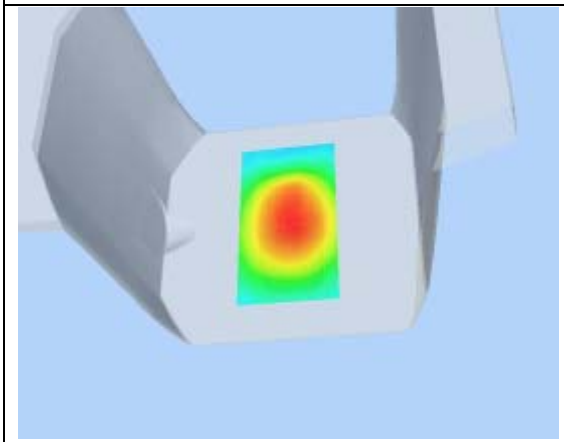
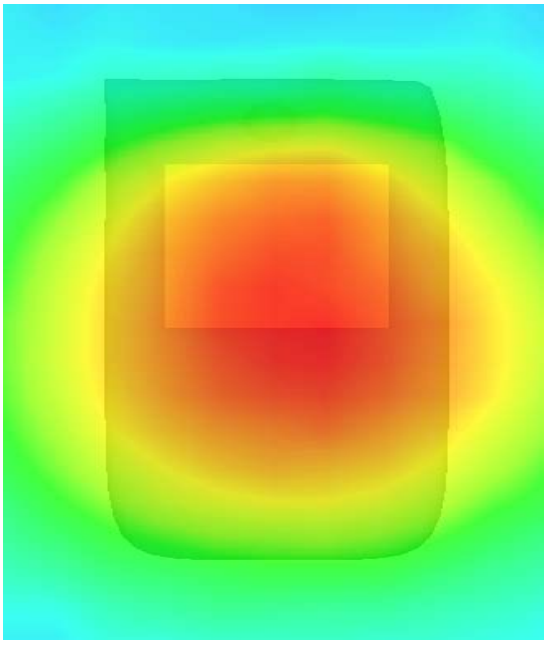
Maximum location: X=6.00, Y=-1.00

SAR 10g (W/Kg)	0.078992
SAR 1g (W/Kg)	0.113316

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.1165	0.0829	0.0615	0.0453	0.0302	0.0228



3D sceen shot	Hot spot position
	

MEASUREMENT 39

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 27/6/2011
Measurement duration: 9 minutes 8 seconds

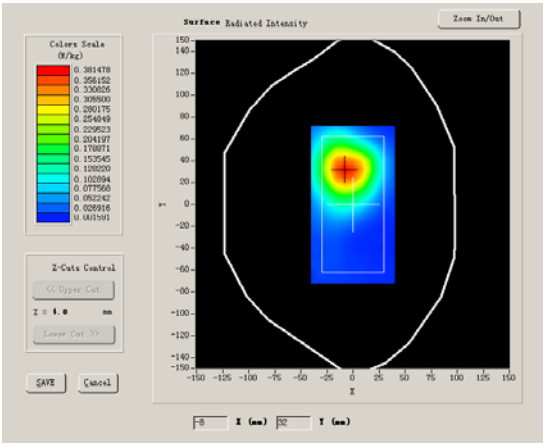
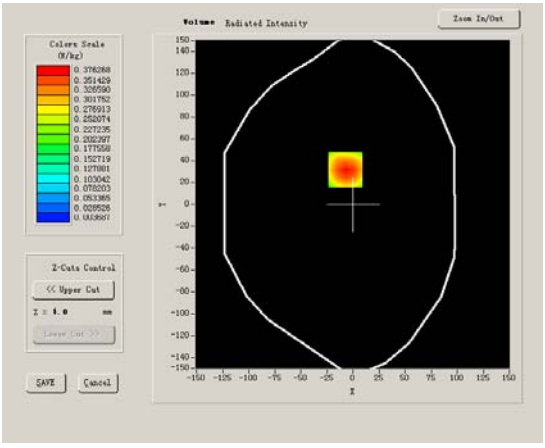
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	802.11G
Channels	Middle
Signal	OFDM

B. SAR Measurement Results

Middle Band SAR (Channel 6):

Frequency (MHz)	2436.000000
Relative permittivity (real part)	52.548876
Relative permittivity	12.991650
Conductivity (S/m)	1.770014
Power drift (%)	0.300000
Ambient Temperature:	22.0°C
Liquid Temperature:	21.8°C
ConvF:	39.772,33.946,37.835
Crest factor:	1:1

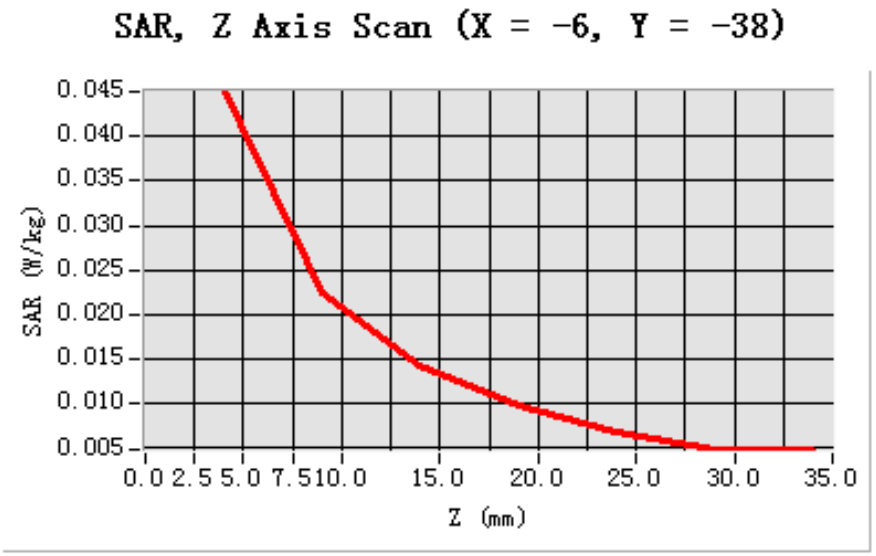
SURFACE SAR	VOLUME SAR
	

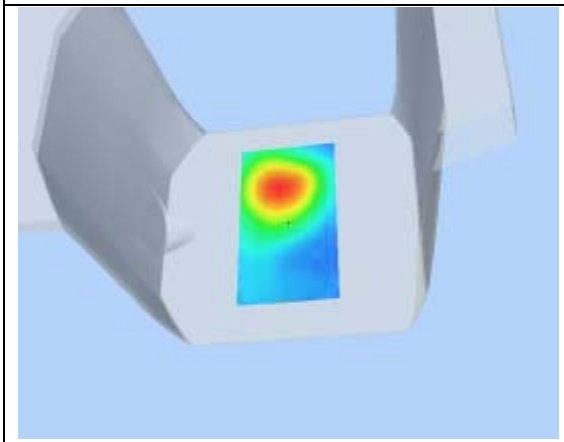
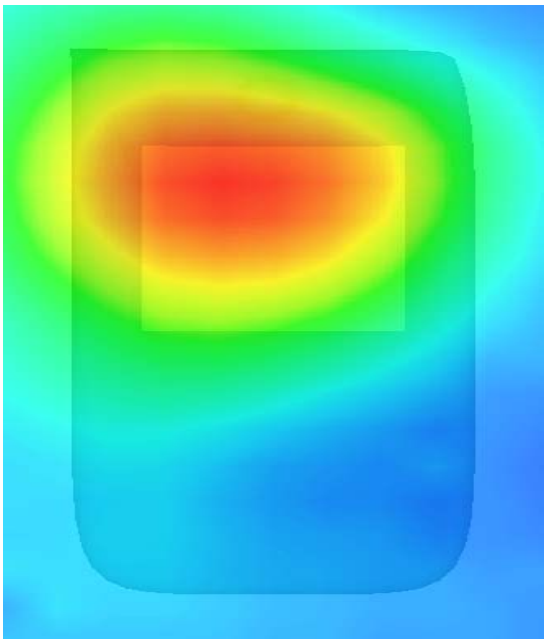
Maximum location: X=-6.00, Y=-38.00

SAR 10g (W/Kg)	0.022397
SAR 1g (W/Kg)	0.041689

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.0450	0.0225	0.0142	0.0099	0.0068	0.0048



3D sceen shot	Hot spot position
	

MEASUREMENT 40

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 27/6/2011
Measurement duration: 9 minutes 8 seconds

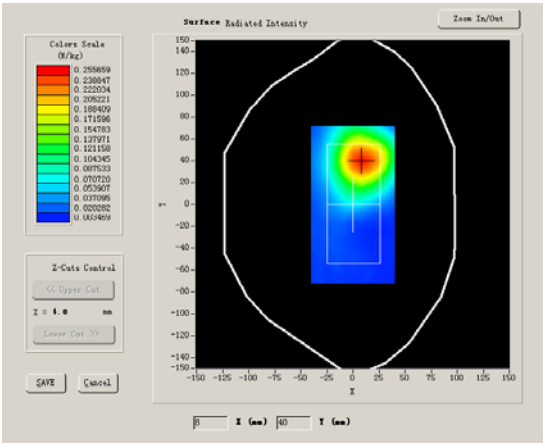
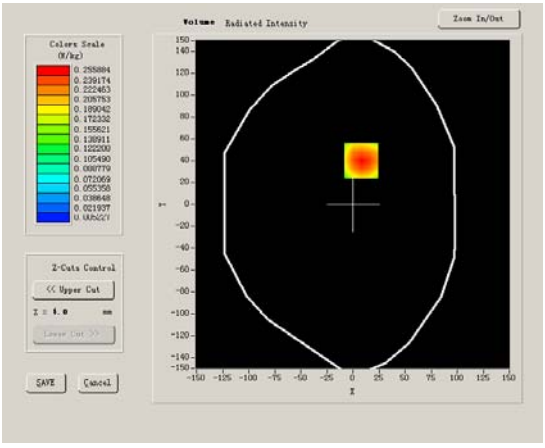
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	802.11G
Channels	Middle
Signal	OFDM

B. SAR Measurement Results

Middle Band SAR (Channel 6):

Frequency (MHz)	2436.000000
Relative permittivity (real part)	52.548876
Relative permittivity	12.991650
Conductivity (S/m)	1.770014
Power drift (%)	1.860000
Ambient Temperature:	22.0°C
Liquid Temperature:	21.8°C
ConvF:	39.772,33.946,37.835
Crest factor:	1:1

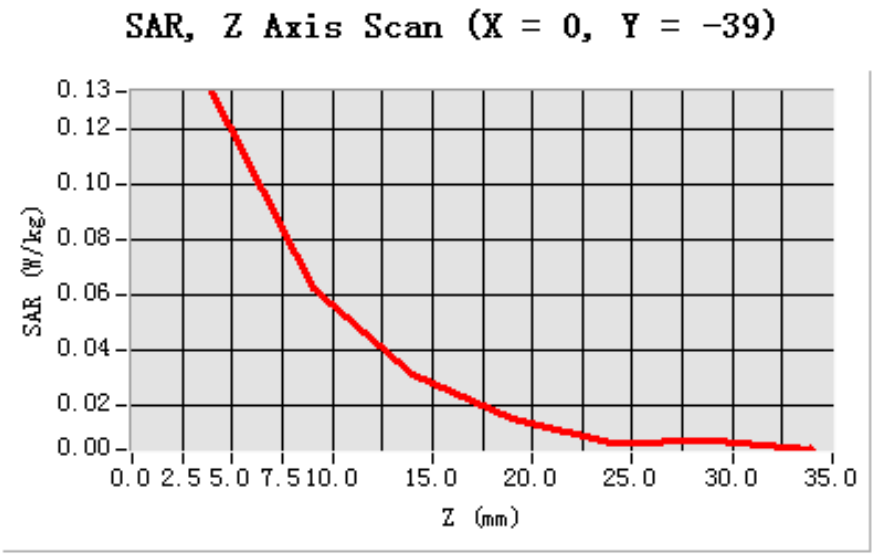
SURFACE SAR	VOLUME SAR
	

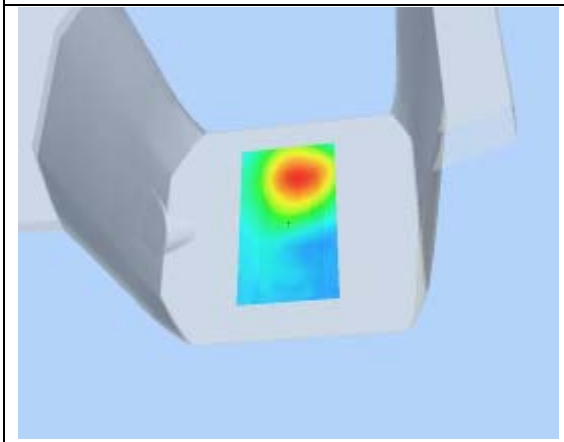
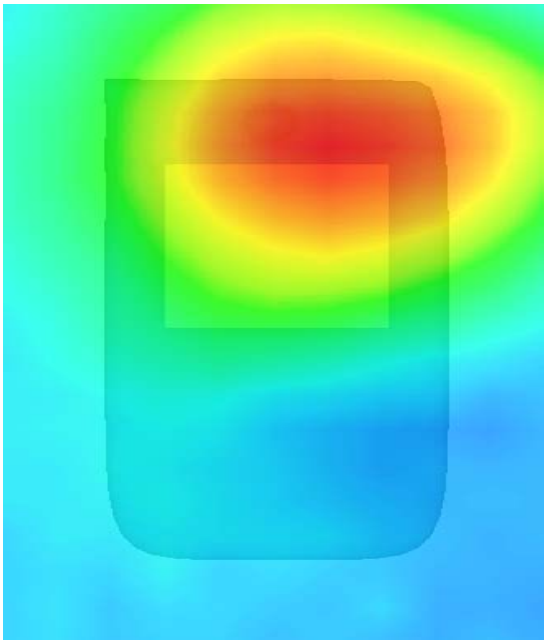
Maximum location: X=0.00, Y=-39.00

SAR 10g (W/Kg)	0.068440
SAR 1g (W/Kg)	0.127225

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.1336	0.0628	0.0312	0.0157	0.0067	0.0077



3D sceen shot	Hot spot position
	

System Performance Check Data(835MHz)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 27/6/2011
Measurement duration: 13 minutes 27 seconds

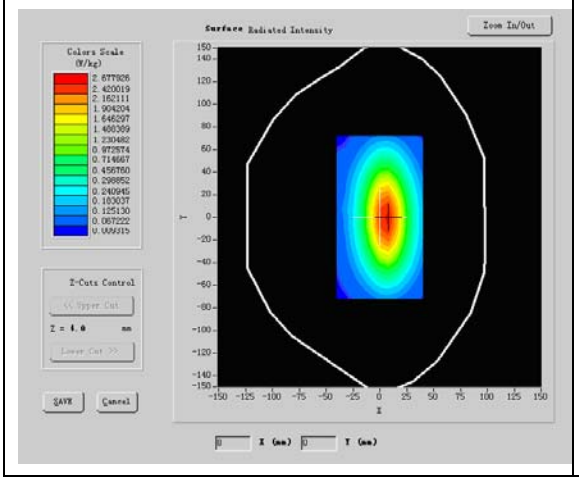
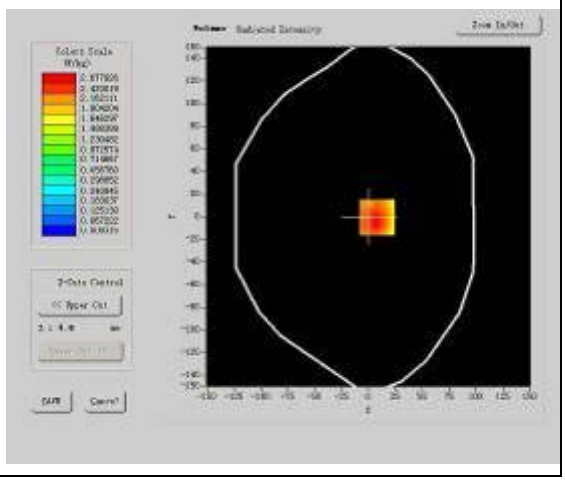
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	
Band	835MHz
Channels	
Signal	CW

B. SAR Measurement Results

Band SAR

Frequency (MHz)	835.000000
Relative permittivity (real part)	40.490002
Relative permittivity	15.070000
Conductivity (S/m)	0.983918
Power Drift (%)	-0.050000
Ambient Temperature:	22.4°C
Liquid Temperature:	22.5°C
ConvF:	28.479,25.214,27.196
Crest factor:	1:1

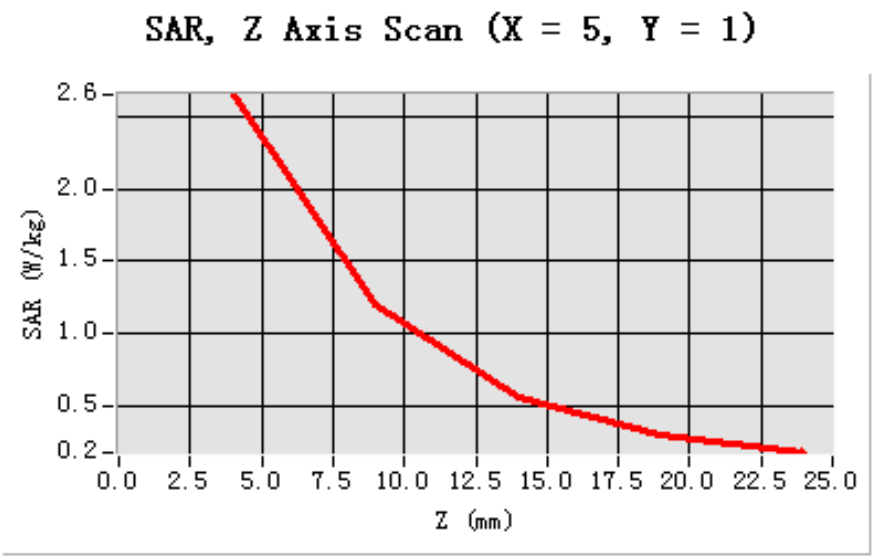
SURFACE SAR	VOLUME SAR
	

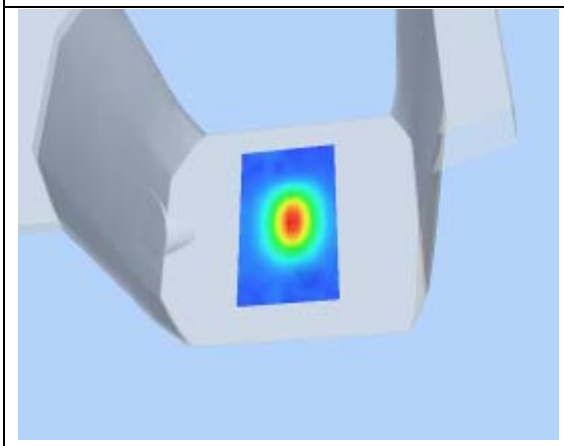
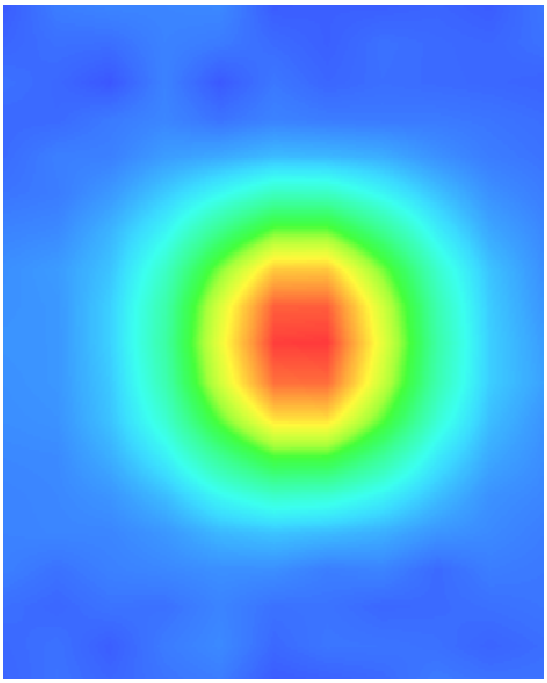
Maximum location: X=5.00, Y=1.00

SAR 10g (W/Kg)	1.715223
SAR 1g (W/Kg)	2.477926

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	2.5486	1.2069	0.5583	0.3002



3D sceen shot	Hot spot position
	

System Performance Check Data(1900MHz)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 27/6/2011
Measurement duration: 13 minutes 27 seconds

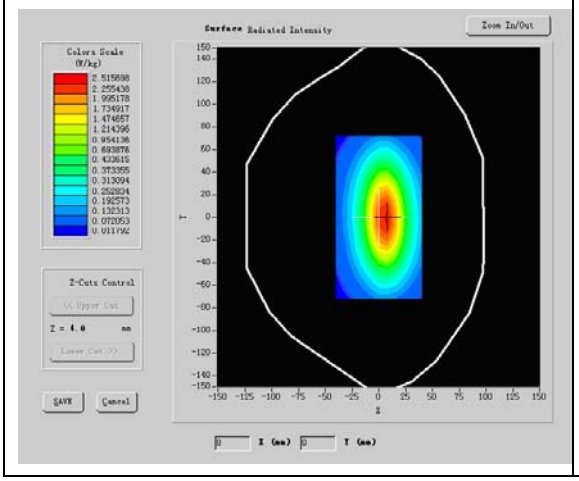
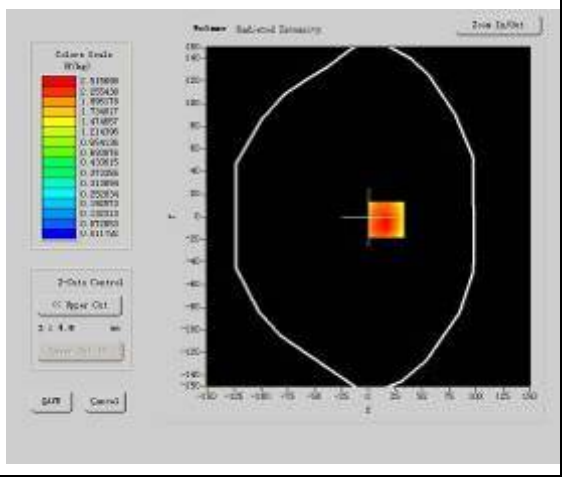
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	
Band	1900MHz
Channels	
Signal	CW

B. SAR Measurement Results

Band SAR

Frequency (MHz)	1900.000000
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

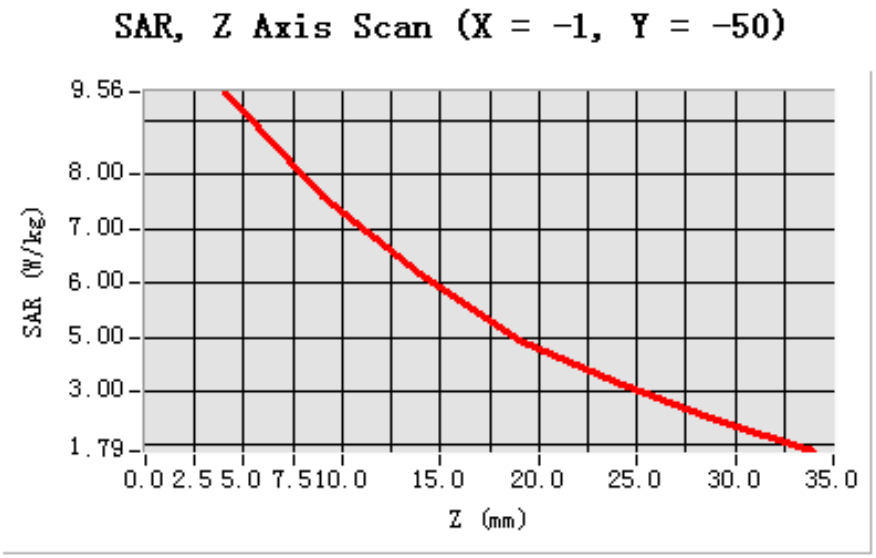
SURFACE SAR	VOLUME SAR
	

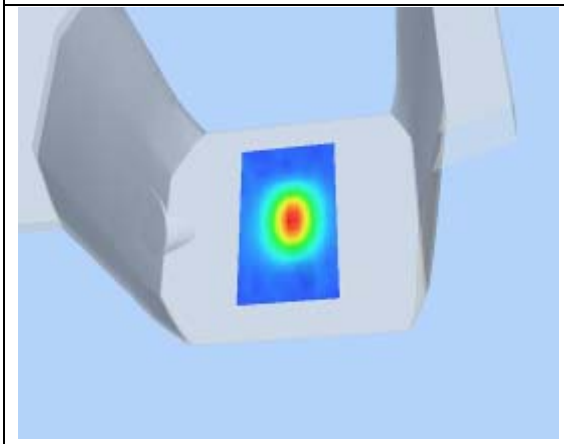
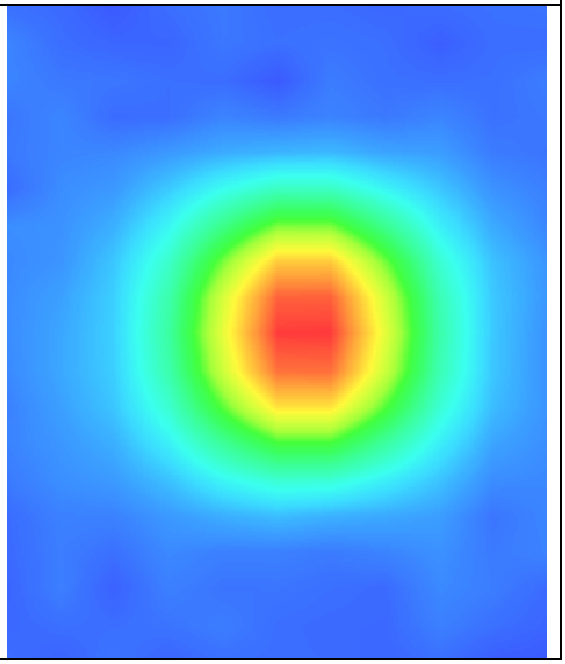
Maximum location: X=-1.00, Y=-50.00

SAR 10g (W/Kg)	4.910003
SAR 1g (W/Kg)	9.555521

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	9.5536	5.3061	2.6041	0.3211



3D sceen shot	Hot spot position
	

System Performance Check Data(2450MHz)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 27/6/2011
Measurement duration: 13 minutes 27 seconds

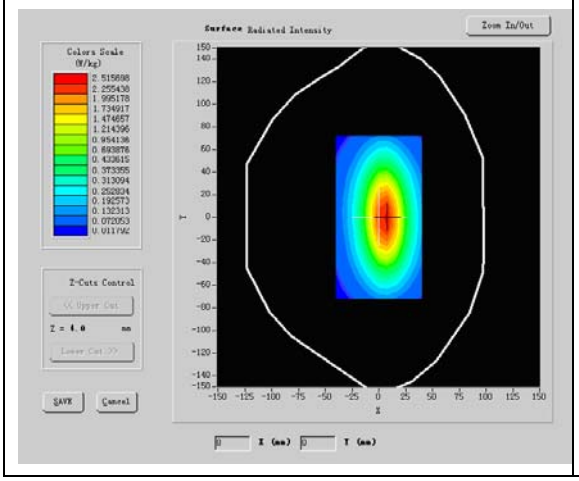
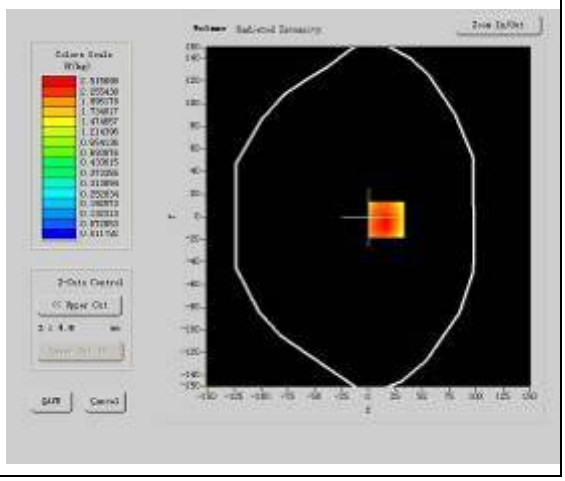
A. Experimental conditions.

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)	52.548876
Relative permittivity	12.991650
Conductivity (S/m)	1.770014
Power Drift (%)	-2.180000
Ambient Temperature:	22.0°C
Liquid Temperature:	21.8°C
ConvF:	39.772,33.946,37.835
Crest factor:	1:1

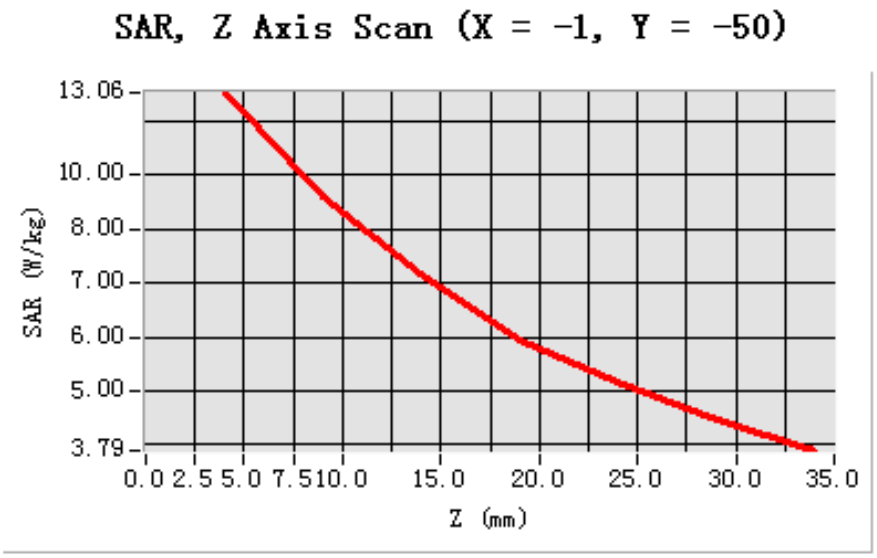
SURFACE SAR	VOLUME SAR
	

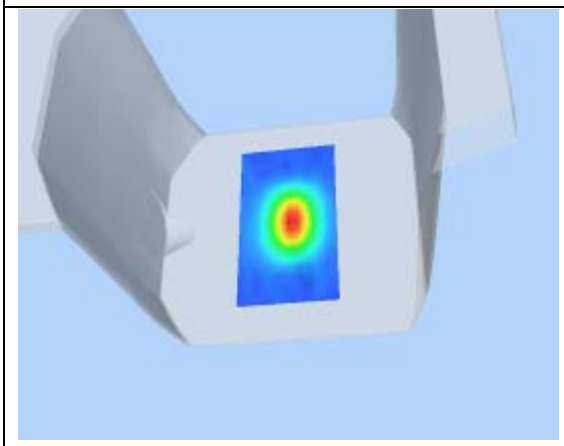
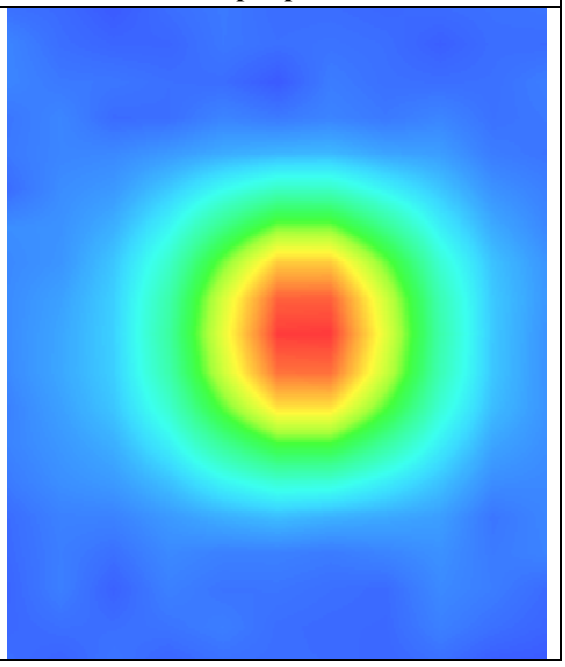
Maximum location: X=-1.00, Y=-50.00

SAR 10g (W/Kg)	6.256773
SAR 1g (W/Kg)	12.899365

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(835MHz)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 27/10/2011
Measurement duration: 13 minutes 27 seconds

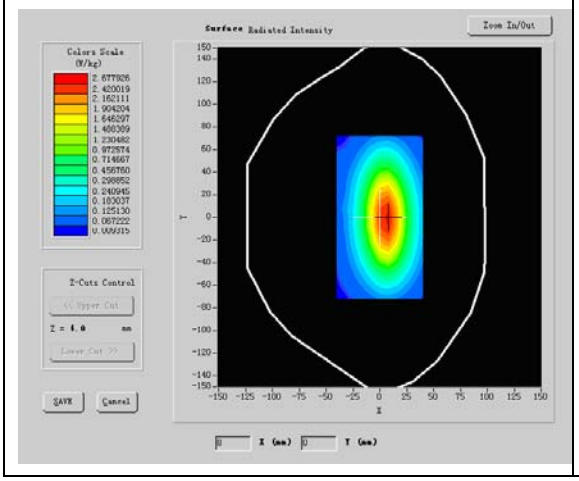
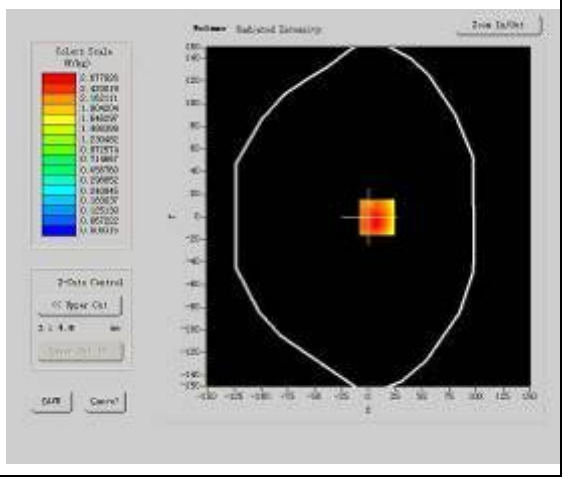
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	
Band	835MHz
Channels	
Signal	CW

B. SAR Measurement Results

Band SAR

Frequency (MHz)	835.000000
Relative permittivity (real part)	40.490002
Relative permittivity	15.070000
Conductivity (S/m)	0.983918
Power Drift (%)	-0.050000
Ambient Temperature:	22.4°C
Liquid Temperature:	22.5°C
ConvF:	28.479,25.214,27.196
Crest factor:	1:1

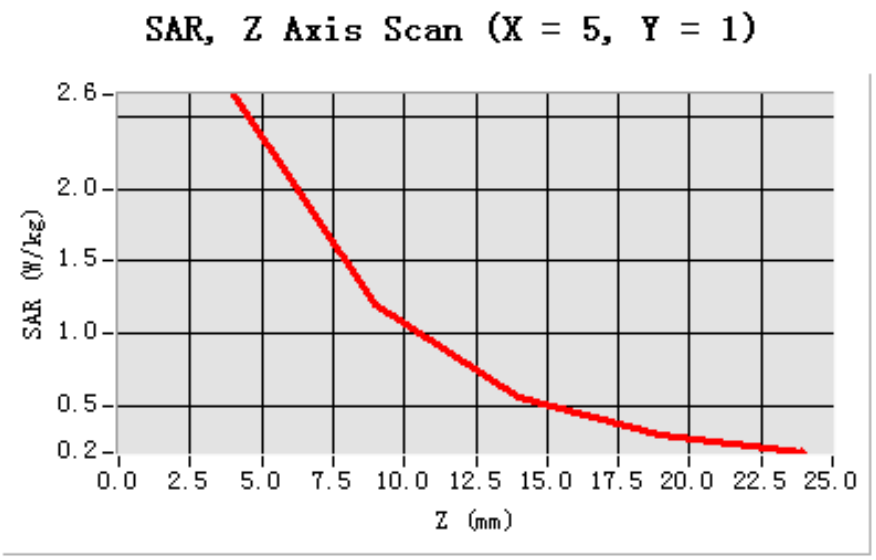
SURFACE SAR	VOLUME SAR
	

Maximum location: X=5.00, Y=1.00

SAR 10g (W/Kg)	1.615283
SAR 1g (W/Kg)	2.359136

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	24889	1.0964	0.4886	0.2207



3D sceen shot	Hot spot position