REPORT No. : SZ14100117S01

FCC SAR TEST REPORT

APPLICANT	:	ZTE Corporation
PRODUCT NAME	:	WCDMA Digital Mobile Phone Handset
MODEL NAME	:	ZTE Blade C330
TRADE NAME	:	ZTE
BRAND NAME	:	ZTE
FCC ID	:	SRQ-C330
STANDARD(S)	:	47CFR 2.1093 IEEE 1528-2013
ISSUE DATE	:	2014-11-11

SHENZHEN MORLAB COMMUNICATIONS TECHNOLOGY Co., Ltd.

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Change History		
Issue	Date	Reason for change
1.0	2014-11-11	First edition

TEST REPORT DECLARATION

Applicant	ZTE Corporation		
Applicant Address	ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, P.R.China		
Manufacturer	ZTE Corporation		
Manufacturer Address	ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, P.R.China		
Product Name	WCDMA Digital Mobile Phone Handset		
Model Name	ZTE Blade C330		
Brand Name	ZTE		
HW Version	C330_V1BMB		
SW Version	C330_MXCommon_1.00		
Test Standards	47CFR 2.1093; IEEE 1528-2013		
Test Date	2014-11-5 to 2014-11-6		
The Highest Reported 1g-SAR(W/kg)	Head	0.565W/kg	Limit(W/kg): 1.6W/kg
	Body	1.311W/kg	

Tested by : Liu Jun

Liu Jun

Reviewed by : Peng Huarui

Peng Huarui

Approved by : Zeng Dexin

Zeng Dexin

1.TECHNICAL INFORMATION

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

1.1 Identification of Applicant

Company Name:	ZTE Corporation
Address:	ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, P.R.China

1.2 Identification of Manufacturer

Company Name:	ZTE Corporation
Address:	ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, P.R.China

1.3 Equipment Under Test (EUT)

Model Name:	ZTE Blade C330
Trade Name:	ZTE
Brand Name:	ZTE
Hardware Version:	C330_V1BMB
Software Version:	C330_MXCommon_1.00
Tx Frequency Bands:	GSM 850: 824-849MHz; GSM 1900: 1850-1910MHz; WCDMA Band II : 1850-1910MHz; WCDMA Band V : 824-849MHz 802.11 b/g/n20/n40: 2412-2462 MHz; Bluetooth; Bluetooth4.0;
Uplink Modulations:	GSM/GPRS: GSMK; GPRS: GMSK/8PSK; WCDMA/HSDPA/HSUPA/HSPA+:QPSK; WIFI 802.11b: DSSS; WIFI 802.11g: OFDM; WIFI 802.11n20/n40:OFDM; Bluetooth: GFSK/π/4-DQPSK/8-DPSK; Bluetooth4.0: GFSK
Multislot Class:	GPRS: Class 12; EGPRS: Class 12;
GPRS Class:	Class B
DTM:	Not support
Antenna type:	Fixed Internal Antenna
Development Stage:	Identical prototype
3GPP Version:	Release 8
Hotspot function:	Support

1.3.1 Photographs of the EUT

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

1.3.2 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#	C330_V1BMB	C330_MXCommon_1.00

1.4 Applied Reference Documents

Leading reference documents for testing:

No.	Identity	Document Title
1	**47 CFR§2.1093**	Radiofrequency Radiation Exposure Evaluation: Portable Devices
2	**IEEE 1528-2013**	IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques
3	**KDB 447498 D01v05r02**	General RF Exposure Guidance
4	**KDB 248227 D01v02**	SAR Measurement Guidance for IEEE 802.11 Transmitters
5	**KDB 941225 D01v03**	SAR Measurement Procedures for 3G Devices
6	**KDB 941225 D02v02r02**	HSPA and 1x Advanced
7	**KDB 941225 D03v01**	SAR Test Reduction GSM GPRS GPRS
8	**KDB 941225 D04v01**	SAR for GSM E GPRS Dual Xfer Mode
9	**KDB 941225 D06v02**	Hotspot Mode SAR
10	**KDB 865664 D01v01r02**	SAR Measurement 100 MHz to 6 GHz
11	**KDB 865664 D02v01r01**	SAR Reporting
12	**KDB 648474 D04v01r02**	Handset SAR

1.5 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. SPECIFIC ABSORPTION RATE (SAR)

2.1 Introduction

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

2.2 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:

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

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

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

Where C is the specific head capacity, δT is the temperature rise and δt the exposure duration, or related to the electrical field in the tissue by

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

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.

3. SAR MEASUREMENT SETUP

3.1 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.

3.2 Probe

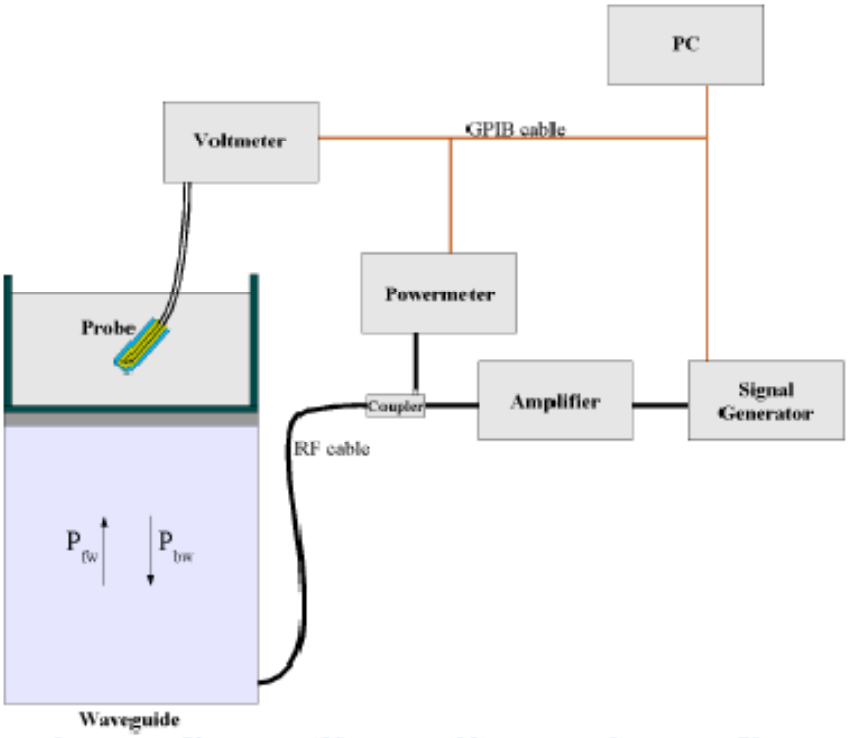
For the measurements the Specific Dosimetric E-Field Probe SN 37/08 EP80 with Following specifications is used

- 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 surface normal line: less than 30°

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



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

Where :

Pfw = Forward Power

Pbw = Backward Power

a and b = Waveguide dimensions

ı = Skin depth

Keithley configuration:

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

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

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

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

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

Where DCP is the diode compression point in mV.

3.3 Probe Calibration Process

3.3.1 Dosimetric Assessment Procedure

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

3.3.2 Free Space Assessment Procedure

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

3.3.3 Temperature Assessment Procedure

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

Where:

δt = exposure time (30 seconds),

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

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

δT = temperature increase due to RF exposure.

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

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

Where:

σ = simulated tissue conductivity,

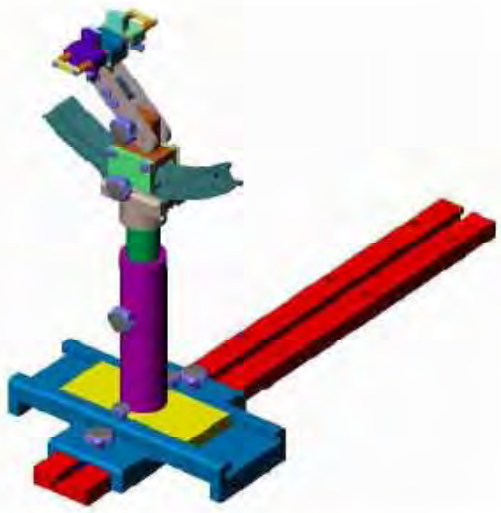
ρ = Tissue density (1.25 g/cm³ for brain tissue)

3.4 Phantom

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

3.5 Device Holder

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



Device holder

System Material	Permittivity	Loss Tangent
Delrin	3.7	0.005

4. TISSUE SIMULATING LIQUIDS

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

The following table gives the recipes for tissue simulating liquids

Frequency Band (MHz)	835		1900		2450	
Tissue Type	Head	Body	Head	Body	Head	Body
Ingredients (% by weight)						
Deionised Water	50.36	50.20	54.90	40.40	62.70	73.20
Salt(NaCl)	1.25	0.90	0.18	0.50	0.50	0.10
Sugar	0.00	48.50	0.00	58.00	0.00	0.00
Tween 20	48.39	0.00	0.00	0.00	0.00	0.00
HEC	0.00	0.20	0.00	1.00	0.00	0.00
Bactericide	0.00	0.20	0.00	0.10	0.00	0.00
Triton X-100	0.00	0.00	0.00	0.00	36.80	0.00
DGBE	0.00	0.00	44.92	0.00	0.00	26.70
Diethylenglycol monohexylether	0.00	0.00	0.00	0.00	0.00	0.00
Measured dielectric parameters						
Dielectric Constant	41.50	56.10	39.90	53.30	39.20	52.70
Conductivity (S/m)	0.90	0.95	1.42	1.52	1.80	1.95

Note: Please refer to the validation results for dielectric parameters of each frequency band.

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

Table 1: Dielectric Performance of Tissue Simulating Liquid

Temperature: 22.0~23.8°C, humidity: 54~60%.						
Date	**Freq.(MHz)**	**Liquid Parameters**	**Meas.**	**Target**	**Delta(%)**	**Limit±(%)**
2014/11/5	Head 835	Relative Permittivity(εr):	41.31	41.5	-0.46	5
		Conductivity(σ):	0.91	0.90	1.11	5
2014/11/5	Body 835	Relative Permittivity(εr):	55.84	56.10	-0.73	5
		Conductivity(σ):	0.97	0.95	2.11	5
2014/11/6	Head 1900	Relative Permittivity(εr):	39.96	39.90	0.20	5
		Conductivity(σ):	1.41	1.42	-0.70	5
2014/11/6	Body 1900	Relative Permittivity(εr):	53.09	53.3	-0.39	5
		Conductivity(σ):	1.51	1.52	-0.66	5
2014/11/6	Head 2450	Relative Permittivity(εr):	39.29	39.20	0.23	5
		Conductivity(σ):	1.79	1.80	-0.56	5
2014/11/6	Body 2450	Relative Permittivity(εr):	52.48	52.70	-0.42	5
		Conductivity(σ):	1.96	1.95	0.51	5

5. UNCERTAINTY ASSESSMENT

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

5.1 UNCERTAINTY EVALUATION FOR EUT SAR TEST

a	b	c	d	e= f(d,k)	f	g	h= c*f/e	i= c*g/e	k
Uncertainty Component	Sec.	Tol (+-%)	Prob. Dist.	Div.	Ci (1g)	Ci (10g)	1g Ui (+-%)	10g Ui (+-%)	Vi
Measurement System									
Probe calibration	E.2.1	4.76	N	1	1	1	4.76	4.7	∞
Axial Isotropy	E.2.2	2.5	R	$\sqrt{3}$	0.7	0.7	1.01	1.0	∞
Hemispherical Isotropy	E.2.2	4.0	R	$\sqrt{3}$	0.7	0.7	1.62	1.6	∞
Boundary effect	E.2.3	1.0	R	$\sqrt{3}$	1	1	0.58	0.5	∞
Linearity	E.2.4	5.0	R	$\sqrt{3}$	1	1	2.89	2.8	∞
System detection limits	E.2.5	1.0	R	$\sqrt{3}$	1	1	0.58	0.5	∞
Readout Electronics	E.2.6	0.02	N	1	1	1	0.02	0.0	∞
Reponse Time	E.2.7	3.0	R	$\sqrt{3}$	1	1	1.73	1.7	∞
Integration Time	E.2.8	2.0	R	$\sqrt{3}$	1	1	1.15	1.1	∞
RF ambient Conditions	E.6.1	3.0	R	$\sqrt{3}$	1	1	1.73	1.7	∞
Probe positioner Mechanical Tolerance	E.6.2	2.0	R	$\sqrt{3}$	1	1	1.15	1.15	∞
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.	5.00	N	1	1	1	5.00	5.0	N-

	1							0	1
Output power Power drift - SAR drift measurement	6.6.2	4.04	R	$\sqrt{3}$	1	1	2.33	2.33	∞
Phantom and Tissue Parameters									
Phantom Uncertainty (Shape and thickness tolerances)	E.3.1	0.05	R	$\sqrt{3}$	1	1	0.03	0.03	∞
Liquid conductivity - deviation from target value	E.3.2	4.57	R	$\sqrt{3}$	0.64	0.43	1.69	1.13	∞
Liquid conductivity - measurement uncertainty	E.3.3	5.00	N	1	0.64	0.43	3.20	2.15	M
Liquid permittivity - deviation from target value	E.3.2	3.69	R	$\sqrt{3}$	0.6	0.49	1.28	1.04	∞
Liquid permittivity - measurement uncertainty	E.3.3	10.00	N	1	0.6	0.49	6.00	4.90	M
Combined Standard Uncertainty			RSS				11.55	10.67	
Expanded Uncertainty (95% Confidence interval)			K=2				23.11	21.33	

5.2 UNCERTAINTY FOR SYSTEM PERFORMANCE CHECK

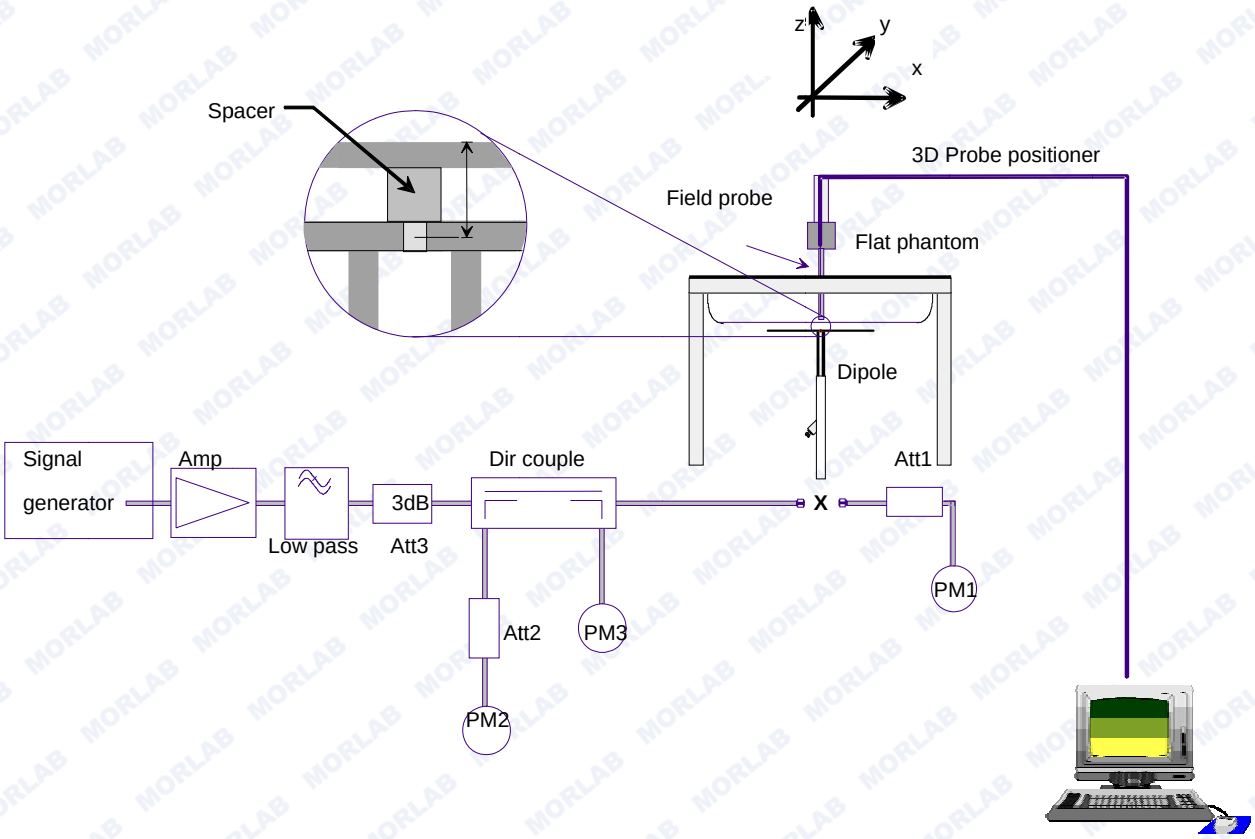
a	b	c	d	e= f(d,k)	f	g	h= c*f/e	i= c*g/e	k
Uncertainty Component	Sec.	Tol (+-%)	Prob. Dist.	Div.	Ci (1g)	Ci (10g)	1g Ui (+-%)	10g Ui (+-%)	Vi
Measurement System									
Probe calibration	E.2.1	4.76	N	1	1	1	4.76	4.7	∞
Axial Isotropy	E.2.2	2.5	R	$\sqrt{3}$	0.7	0.7	1.01	1.0	∞
Hemispherical Isotropy	E.2.2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

Reponse Time	E.2.7	3.0	R	$\sqrt{3}$	1	1	1.73	1.7	∞
Integration Time	E.2.8	2.0	R	$\sqrt{3}$	1	1	1.15	1.1	∞
RF ambient Conditions	E.6.1	3.0	R	$\sqrt{3}$	1	1	1.73	1.7	∞
Probe positioner Mechanical Tolerance	E.6.2	2.0	R	$\sqrt{3}$	1	1	1.15	1.15	∞
Probe positioning with respect to Phantom Shell	E.6.3	0.05	R	$\sqrt{3}$	1	1	0.03	0.03	∞
Extrapolation, interpolation and integration Algoritms for Max. SAR Evaluation	E.5.2	5.0	R	$\sqrt{3}$	1	1	2.89	2.89	∞
Dipole									
Dipole axis to liquid Distance	8,E.4.2	1.00	N	$\sqrt{3}$	1	1	0.58	0.58	∞
Input power and SAR drift measurement	8,6.6.2	4.04	R	$\sqrt{3}$	1	1	2.33	2.33	∞
Phantom and Tissue Parameters									
Phantom Uncertainty (Shape and thickness tolerances)	E.3.1	0.05	R	$\sqrt{3}$	1	1	0.03	0.03	∞
Liquid conductivity - deviation from target value	E.3.2	4.57	R	$\sqrt{3}$	0.64	0.43	1.69	1.13	∞
Liquid conductivity - measurement uncertainty	E.3.3	5.00	N	$\sqrt{3}$	0.64	0.43	1.85	1.24	M
Liquid permittivity - deviation from target value	E.3.2	3.69	R	$\sqrt{3}$	0.6	0.49	1.28	1.04	∞
Liquid permittivity - measurement uncertainty	E.3.3	10.00	N	$\sqrt{3}$	0.6	0.49	3.46	2.83	M
Combined Standard Uncertainty			RSS				8.83	8.37	
Expanded Uncertainty (95% Confidence interval)			K=2				17.66	16.73	

6. SAR MEASUREMENT EVALUATION

6.1 System Setup

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



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

6 GHz) at the dipole connector and the power meter PM2 is read at that level. After connecting the cable to the dipole, the signal generator is readjusted for the same reading at power meter PM2.

6.2 Validation Results

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

Frequency	835MHz(H)	835MHz(B)	1900MHz(H)	1900MHz(B)
Target value 1W (1g)	9.68 W/Kg	10.04 W/Kg	39.36 W/Kg	42.36 W/Kg
Test value 1g (250 mW input power)	2.387 W/Kg (11.5)	2.451 W/Kg (11.5)	9.778 W/Kg (11.6)	9.986 W/Kg (11.6)
Normalized to 1W value(1g)	9.548 W/Kg	9.804 W/Kg	39.112 W/Kg	39.944 W/Kg

Frequency	2450MHz(H)	2450MHz(B)
Target value 1W (1g)	54.74 W/Kg	56.13 W/Kg
Test value 1g (250 mW input power)	12.837 W/Kg (11.6)	12.926 W/Kg (11.6)
Normalized to 1W value(1g)	51.348 W/Kg	51.704 W/Kg

Note: System checks the specific test data please see 147~158.

7. OPERATIONAL CONDITIONS DURING TEST

7.1 Information on the testing

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

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

Illustration for Cheek Position

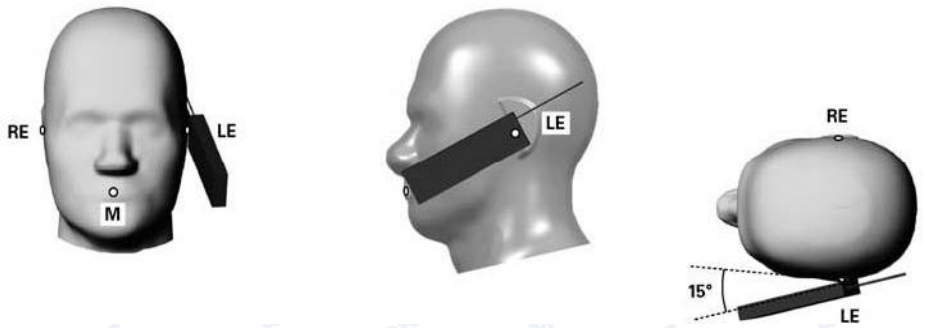


Illustration for Tilted Position

Description of the “cheek” position:

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

Description of the “tilted” position:

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

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

7.2 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.

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

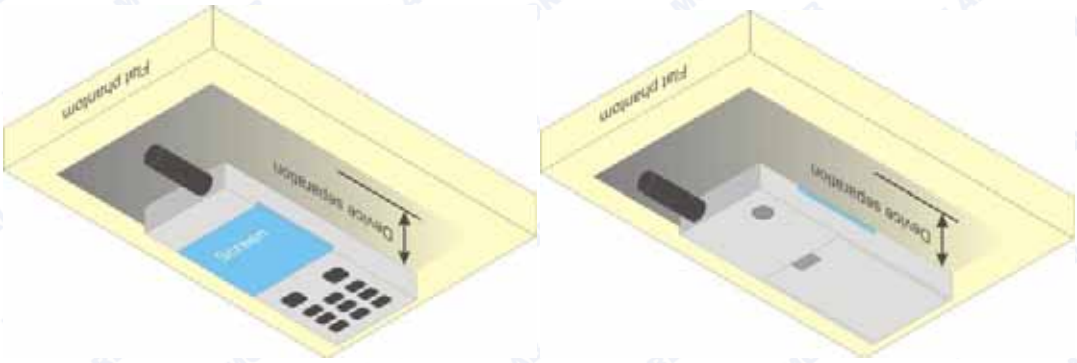


Illustration for Body Worn Position

7.3 Measurement procedure

The Following steps are used for each test position

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

8 * 5 or 8*4 or 5 mm. With these data, the peak spatial-average SAR value can be calculated.

7.4 Description of interpolation/extrapolation scheme

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

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

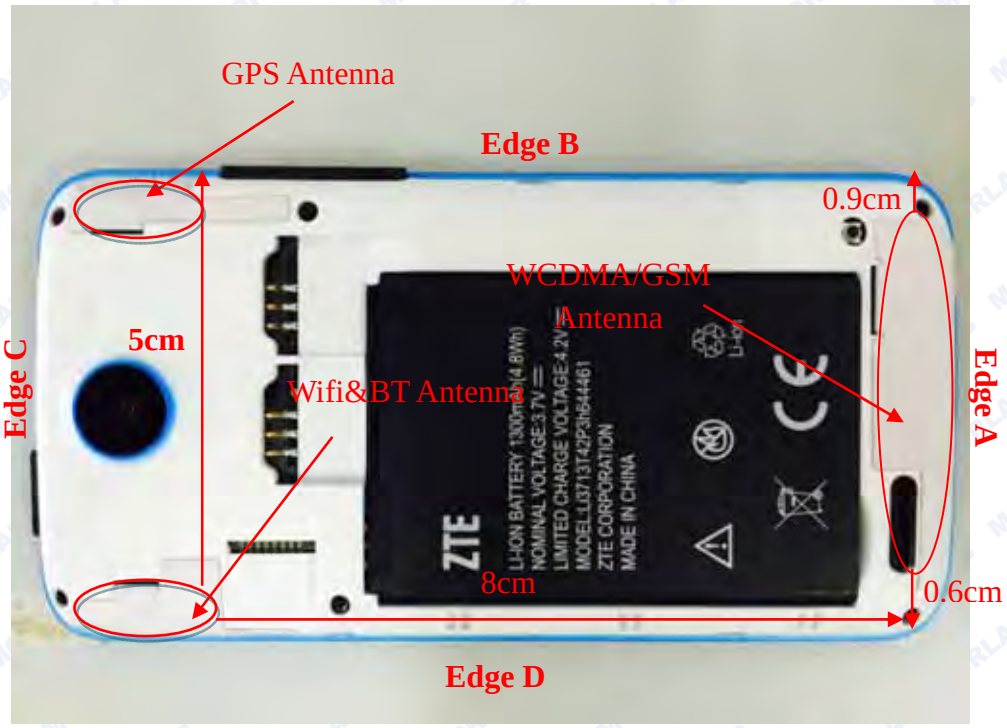
The measurements have to be performed over a limited time (due to the duration of the battery) so the step of measurement is high. It could vary between 5 and 8 mm. To obtain an accurate assessment of the maximum SAR averaged over 10 grams and 1 gram requires a very fine resolution in the three dimensional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

8. HOTSPOT MODE EVALUATION PROCEDURE

The SAR evaluation procedures for Portable Devices with Wireless Router function is according to KDB 941225 D06 Hot Spot SAR v01r01.

SAR must be tested for all surfaces and GPRSs (side) with a transmitting antenna with in 2.5 cm from that surface or GPRS, at a test separation distance of 10 mm, in the wireless mode that support wireless routing.

GPRS configurations:



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

9. MEASUREMENT OF CONDUCTED OUTPUT POWER

1. WCDMA mode conducted output power values

Item	band	WCDMA 850			WCDMA 1900		
	ARFCN	4132	4175	4233	9262	9400	9538
	subtest	dBm			dBm		
5.2(WCDMA)	non	24.40	24.25	24.29	23.27	23.80	23.38
HSDPA	1	23.61	23.36	23.42	23.18	22.90	22.85
	2	23.59	23.35	23.41	23.17	22.88	22.84
	3	23.09	22.85	22.91	22.67	22.37	22.33
	4	23.08	22.34	22.90	22.68	22.36	22.35
HSUPA	1	23.63	23.29	23.43	22.87	22.93	22.81
	2	21.62	21.28	21.40	20.88	20.93	20.80
	3	22.61	22.29	22.42	21.86	21.92	21.81
	4	21.60	21.28	21.41	20.87	20.93	20.80
	5	23.62	23.28	23.42	22.86	22.82	21.80
HSPA+	1	23.61	23.31	23.51	22.84	22.47	21.82
Note:	The Conducted RF Output Power test of WCDMA /HSDPA /HSUPA/HSPA+ was tested by power meter.						

2. GSM Mode

Band	Channel	Frequency (MHz)	Output Power(dBm)
GSM 850	128	824.2	32.30
	190	836.6	32.48
	251	848.8	32.46
PCS 1900	512	1850.2	28.83
	661	1880.0	29.40
	810	1909.8	29.45

3. GPRS Mode Conducted peak output power

Band	Channel	Frequency (MHz)	Output Power(dBm)			
			Slot 1	Slot 2	Slot 3	Slot 4
GSM 850	128	824.2	29.91	28.79	27.84	26.98
	190	836.6	30.04	28.92	27.97	27.11
	251	848.8	29.97	28.85	27.90	27.04
PCS 1900	512	1850.2	26.46	25.34	24.39	23.53
	661	1880.0	26.23	25.11	24.16	23.30
	810	1909.8	26.45	25.33	24.38	23.52

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	20.88	22.77	23.58	23.97
	190	836.6	21.01	22.90	23.71	24.10
	251	848.8	20.94	22.83	23.64	24.03
PCS 1900	512	1850.2	17.43	19.32	20.13	20.52
	661	1880.0	17.20	19.09	19.90	20.29
	810	1909.8	17.42	19.31	20.12	20.51

Timeslot consignations:

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

3. EDGE Mode Conducted peak output power

Band	Channel	Frequency (MHz)	Output Power(dBm)			
			Slot 1	Slot 2	Slot 3	Slot 4
GSM 850	128	824.2	31.67	30.49	29.52	28.64
	190	836.6	31.77	30.59	29.62	28.74
	251	848.8	31.67	30.49	29.52	28.64
PCS 1900	512	1850.2	28.36	27.18	26.21	25.33
	661	1880.0	28.18	27.00	26.03	25.15
	810	1909.8	28.39	27.21	26.24	25.36

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	22.64	24.47	25.26	25.63
	190	836.6	22.74	24.57	25.36	25.73
	251	848.8	22.64	24.47	25.26	25.63
PCS 1900	512	1850.2	19.33	21.16	21.95	22.32
	661	1880.0	19.15	20.98	21.77	22.14
	810	1909.8	19.36	21.19	21.98	22.35

5. WiFi Average output power

Band	Channel	Frequency (MHz)	Output Power(dBm)		
			802.11b (DSSS)	802.11g (OFDM)	802.11n20 (OFDM)
WiFi	1	2412	18.41	18.35	18.39
	6	2437	14.22	15.10	14.38
	11	2462	14.17	15.15	14.14

Band	Channel	Frequency (MHz)	Output Power(dBm)
			802.11n40 (OFDM)
Wifi	3	2422	12.21
	6	2437	14.98
	9	2452	12.06

6. BT+EDR 2.1 peak output power

Band	Channel	Frequency (MHz)	Output Power(dBm)		
			GFSK	π/4-DQPSK	8-DPSK
BT	0	2402	6.26	5.42	5.40
	39	2441	7.05	6.24	6.24
	78	2480	5.66	4.83	4.78

Band	Channel	Frequency (MHz)	Output Power(dBm)
			GFSK
BT	0	2402	-3.66
	19	2441	-3.76
	39	2480	-3.98

10. TEST RESULTS LIST

Summary of Measurement Results (GSM 850MHz Band)

Temperature: 21.0~23.8°C, humidity: 54~60%.						
Phantom Configurations		Device Test Positions	Device Test channel	SAR(W/Kg), 1g Peak	Scaling Factor	Scaled SAR (W/Kg), 1g
Right Side Of Head		Cheek/Touch	190	0.406	1.005	0.408
		Ear/Tilt		0.254		0.255
Left Side Of Head		Cheek/Touch		0.333		0.335
		Ear/Tilt		0.244		0.245
Body (10mm Separation)	GSM	Back upward		0.660		0.663
		Front upward		0.519		0.522
	EDGE	Back upward	128	0.858	1.086	0.932
			190	**0.980**	1.062	1.041
			251	0.804	1.086	0.873
		Front upward	190	0.751	1.062	0.798
		Edge A		0.077		0.082
		Edge B		0.505		0.536
		Edge D		0.510		0.542

Summary of Measurement Results (GSM 1900MHz Band)

Temperature: 21.0~23.8°C, humidity: 54~60%.						
Phantom Configurations		Device Test Positions	Device Test channel	SAR(W/Kg), 1g Peak	Scaling Factor	Scaled SAR (W/Kg), 1g
Right Side Of Head		Cheek/Touch	810	0.285	1.012	0.288
		Ear/Tilt		0.047		0.048
Left Side Of Head		Cheek/Touch		0.124		0.125
		Ear/Tilt		0.040		0.040
Body (10mm Separation)	GSM	Back upward		0.646		0.654
		Front upward		0.458		0.463
	EDGE	Back upward	810	0.694	1.033	0.717
		Front upward		0.371		0.383
		Edge A		0.617		0.637
		Edge B		0.087		0.090
		Edge D		0.175		0.181

Note:

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

Band	Channel	Slots	Power control level	Duty Cycle	Powe Class
EDGE850	251	4	5	1:2	4
EDGE1900	661	4	0	1:2	1

Summary of Measurement Results (WCDMA 850MHz Band)

Temperature: 21.0~23.8°C, humidity: 54~60%.					
Phantom Configurations	Device Test Positions	Device Test channel	SAR(W/Kg), 1g Peak	Scaling Factor	Scaled SAR (W/Kg), 1g
Right Side Of Head	Cheek/Touch	4132	0.467	1.023	0.478
	Ear/Tilt		0.295		0.302
Left Side Of Head	Cheek/Touch		0.403		0.412
	Ear/Tilt		0.273		0.279
Body (10mm Separation)	Back upward	4132	0.506	1.023	0.518
		4175	**0.799**	1.059	0.846
		4233	0.575	1.050	0.604
	Front upward	4132	0.580	1.023	0.593
	Edge A		0.069		0.071
	Edge B		0.409		0.418
	Edge D		0.536		0.548

Summary of Measurement Results (WCDMA 1900MHz Band)

Temperature: 21.0~23.8°C, humidity: 54~60%.					
Phantom Configurations	Device Test Positions	Device Test channel	SAR(W/Kg), 1g Peak	Scaling Factor	Scaled SAR (W/Kg), 1g
Right Side Of Head	Cheek/Touch	9400	0.476	1.047	0.498
	Ear/Tilt		0.096		0.101
Left Side Of Head	Cheek/Touch		0.540		**0.565**
	Ear/Tilt		0.118		0.124
Body (10mm Separation)	Back upward	9262	0.961	1.183	1.137
		9400	1.060	1.047	1.110
		9538	**1.137**	1.153	**1.311**
	Front upward	9400	0.684	1.047	0.716
	Edge A		0.760		0.796
	Edge B		0.237		0.248
	Edge D		0.252		0.264

Summary of Measurement Results (WLAN 802.11b Band)

Temperature: 21.0~23.8°C, humidity: 54~60%.					
Phantom Configurations	Device Test Positions	Device Test channel	SAR(W/Kg), 1g Peak	Scaling Factor	Scaled SAR (W/Kg), 1g
Right Side Of Head	Cheek/Touch	1	0.189	1.021	0.193
	Ear/Tilt		0.187		0.191
Left Side Of Head	Cheek/Touch		0.341		0.348
	Ear/Tilt		0.222		0.227
Body (10mm Separation)	Back upward		0.073		0.075
	Front upward		0.089		0.091
	Edge C		0.046		0.047
	Edge D		0.182		0.186

Note:

1. When the 1-g SAR for the mid-band channel or the channel with the highest output power satisfy the following conditions, testing of the other channels in the band is not required. (Per KDB 447498 D01 General RF Exposure Guidance v05r02)
   ≤ 0.8 W/kg and transmission band ≤ 100 MHz
   ≤ 0.6 W/kg and, 100 MHz < transmission bandwidth ≤ 200 MHz
   ≤ 0.4 W/kg and transmission band > 200 MHz
2. The WCDMA mode is test with 12.2kbps RMC and TPC set to all "1", if maximum SAR for 12.2kbps RMC is ≤ 75% of the SAR limit (i.e. 1.2W/Kg 1g) and maximum average output of each RF channel with HSDPA/HSUPA active is less than 1/4 dB Middle than that measured without HSDPA/HSUPA using 12.2kbps RMC, according to KDB 941225D01v02, SAR is not required for this handset with HSPA capabilities.
4. BT & WiFi SAR test is conducted according to section 12 stand-alone SAR evaluation of this report.
5. During 802.11 testing, engineering testing software installed on the EUT can provide continuous transmitting RF signal. The RF signal utilized in SAR measurement has almost 100% duty cycle, and its crest factor is 1.
6. IEEE Std 1528-2013 require the middle channel to be tested first. This generally applies to wireless devices that are designed to operate in technologies with tight tolerances for maximum output power variations across channels in the band. When the maximum output power variation across the required test channels is > ½ dB, instead of the middle channel, the

highest output power channel must be used.

7. Per 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.

8. The WCDMA mode is test with 12.2kbps RMC and TPC set to all "1", if maximum SAR for 12.2kbps RMC is ≤ 75% of the SAR limit (i.e. 1.2W/Kg 1g) and maximum average output of each RF channel with HSDPA/HSUPA active is less than 1/4 dB higher than that measured without HSDPA/HSUPA using 12.2kbps RMC, according to KDB 941225D01v02, SAR is not required for this handset with HSPA capabilities. This module supports 3GPP release R7 HSPA+ using QPSK only without 16QAM in the uplink. So PBA is not required for HSPA+.

9. Scaling Factor calculation

Band	Tune-up power tolerance(dBm)	SAR test channel Power (dBm)	Scaling Factor
GSM 850	PCL = 5, PWR =33+-0.5	33.48	1.005
EDGE 850	PCL = 5, PWR =28.5+-0.5(4 slots)	28.64	1.086
		28.74	1.062
		28.64	1.086
GSM1900	PCL = 0, PWR =29+-0.5	29.45	1.012
EDGE1900	PCL=0,PWR= 25+-0.5(4 slots)	25.36	1.033
WCDMA 850	Max output power =23.5(+1/-2)	24.40	1.023
		24.25	1.059
		24.29	1.050
WCDMA 1900	Max output power =23(+1/-2)	23.27	1.183
		23.80	1.047
		23.38	1.153
802.11b	Max output power =18+-0.5	18.41	1.021

Note:

1. GSM test Scenario

Band	Powe Class	Power Control Level(PCL)
GSM850	4	5
GSM1900	1	0

11. REPEATED SAR MEASUREMENT

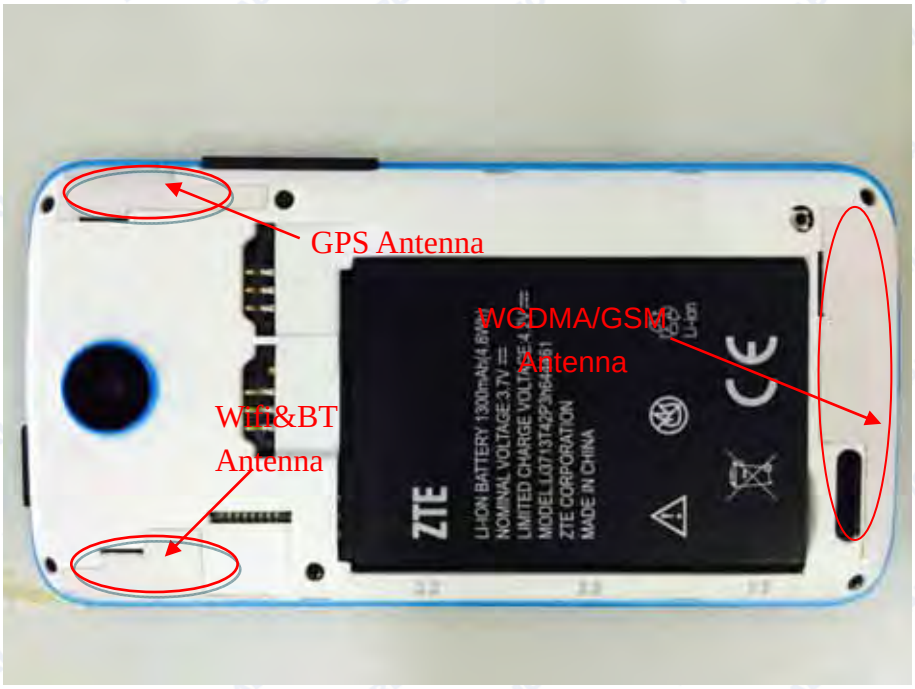
In accordance with published RF Exposure KDB procedure 865664 D01 SAR measurement 100 MHz to 6 GHz. These additional measurements are repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device should be returned to ambient conditions (normal room temperature) with the battery fully charged before it is re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

1) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg; steps 2) through 4) do not apply.
2) When the original highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.
3) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit).
4) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.

Band	Test Position	Test Channel	Meas.SAR(W/kg)		Largest to Smallest SAR Ratio
			Original	Repeated	
GSM850	Body	128	0.898	0.890	1.009
WCDMA850	Body	4182	0.799	0.801	1.003
WCDMA1900	Body	9538	1.205	1.198	1.006

12. MULTIPLE TRANSMITTERS EVALUATION

The are three transmitters build in EUT, as following:



Stand-alone SAR

Test distance: 5mm			
Band	**Highest power(mW) per tune up**	**1-g SAR test threshold**	**Test required?**
WIFI(2.4G)	69.34	[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] • [√f(GHz)] ≤ 3.0 for 1-g SAR	Yes
BT	5.07		No

Test distance: 10mm			
Band	**Highest power(mW) per tune up**	**1-g SAR test threshold**	**Test required?**
WIFI(2.4G)	69.34	[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] • [√f(GHz)] ≤ 3.0 for 1-g SAR	Yes
BT	5.07		No

The Head SAR test for BT is not required for highest power do not exceed the power threshold for 2450MHz at the test distance of 5 mm, Body SAR for BT is not required.
The SAR test for 802.11b (2.4GHz) is required, 802.11g/HT20/HT40 is not required, for the maximum average output power is less than 1/4 dB Higher than measured on the corresponding 802.11b channels. As per KDB 248227

The BT stand-alone body SAR is not required, the standalone SAR must be estimated according to following to determine simultaneous transmission SAR test exclusion:
(*max. power of channel, including tune-up tolerance, mW*)/(*min. test separation distance, mm*)]·[√f(GHz)/*x*] W/kg for *test separation distances* ≤ 50 mm;
where *x* = 7.5 for 1-g SAR, and *x* = 18.75 for 10-g SAR.
(Max power= 7.46 mW; *min. test separation distance*= 5mm for head; *f*=2.4GHz)
BT estimated Head SAR = **0.210** W/Kg (1g)
(Max power= 7.46 mW; *min. test separation distance*= 10mm for body; *f*=2.4GHz)
BT estimated Body SAR = **0.105** W/Kg (1g)

Simultaneous SAR

	Simultaneous transmission conditions				
	WWAN		WLAN		Sum of WWAN& WLAN
#	GSM	UMTS	802.11b/g/n	BT	
1	×		×		×
2		×	×		×
3	×			×	×
4		×		×	×

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

2. The hotspot SAR result may overlap with the body-worn accessory SAR requirements, per KDB 941225 D06, the more conservative configurations can be considered, thus excluding some unnecessary body-worn accessory SAR tests.

3. GSM supports voice and data transmission, though not simultaneously. WCDMA supports voice and data transmission simultaneously.

4. Simultaneous Transmission SAR evaluation is not required for BT and WiFi, because the software mechanism have been incorporated to guarantee that the WLAN and Bluetooth transmitters would not simultaneously operate.

5. Per KDB 447498D01v05r01, Simultaneous Transmission SAR Evaluation procedures is as followed:
   Step 1: If sum of 1 g SAR < 1.6 W/kg, Simultaneous SAR measurement is not required.
   Step 2: If sum of 1 g SAR > 1.6 W/kg, ratio of SAR to peak separation distance for pair of transmitters calculated.
   Step 3: If the ratio of SAR to peak separation distance is ≤ 0.04, Simultaneous SAR measurement is not required.
   Step 4: If the ratio of SAR to peak separation distance is > 0.04, Simultaneous SAR measurement is required and simultaneous transmission SAR value is calculated.
   (The ratio is determined by: (SAR1 + SAR2) ^ 1.5/Ri ≤ 0.04,
   Ri is the separation distance between the peak SAR locations for the antenna pair in mm)

6. Applicable Multiple Scenario Evaluation

Test Position	Main Ant. SARMax (W/Kg)	Bluetooth SAR(W/Kg)	WiFi SARMax(W/Kg)	∑1-g SARMax(W/Kg)	
				BT&Main Ant	WiFi&Main Ant
Head SAR	0.565	0.210	0.348	0.775	0.913
Body SAR	1.311	0.105	0.186	1.416	1.497

Simultaneous Transmission SAR evaluation is not required for WiFi and WCDMA&GSM, because the sum of 1g SARMax is **1.497**W/Kg < 1.6W/Kg for Wifi and WCDMA&GSM.
Simultaneous Transmission SAR evaluation is not required for BT and WCDMA&GSM, because the sum of 1g SARMax is **1.416**W/Kg < 1.6W/Kg for BT and WCDMA&GSM.
(According to KDB 447498D01v05r01, the sum of the Highest *reported* SAR of each antenna does not exceed the limit, simultaneous transmission SAR evaluation is not required.)

ANNEX A GRAPH TEST RESULTS

BAND	PARAMETERS
GSM850	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: Flat Plane with Body device position on Middle Channel in GSM mode Measurement 6: Flat Plane with Body device position on Middle Channel in GSM mode Measurement 7: Flat Plane with Body device position on Low Channel in GPRS mode Measurement 8: Flat Plane with Body device position on Middle Channel in GPRS mode Measurement 9: Flat Plane with Body device position on High Channel in GPRS mode Measurement 10: Flat Plane with Body device position on Middle Channel in GPRS mode Measurement 11: Flat Plane with Body device position on Middle Channel in GPRS mode Measurement 12: Flat Plane with Body device position on Middle Channel in GPRS mode Measurement 13: Flat Plane with Body device position on Middle Channel in GPRS mode
	Measurement 14: Right Head with Cheek device position on High Channel in GSM mode Measurement 15: Right Head with Tilt device position on High Channel in GSM mode Measurement 16: Left Head with Cheek device position on High Channel in GSM mode Measurement 17: Left Head with Tilt device position on High Channel in GSM mode

GSM1900	Measurement 18: Flat Plane with Body device position High Channel in GSM mode Measurement 19: Flat Plane with Body device position on High Channel in GSM mode Measurement 20: Flat Plane with Body device position on High Channel in GPRS mode Measurement 21: Flat Plane with Body device position on High Channel in GPRS mode Measurement 22: Flat Plane with Body device position on High Channel in GPRS mode Measurement 23: Flat Plane with Body device position on High Channel in GPRS mode Measurement 24: Flat Plane with Body device position on High Channel in GPRS mode
WCDMA 850	Measurement 25: Right Head with Cheek device position on Low Channel in WCDMA mode Measurement 26: Right Head with Tilt device position on Low Channel in WCDMA mode Measurement 27: Left Head with Cheek device position on Low Channel in WCDMA mode Measurement 28: Left Head with Tilt device position on Low Channel in WCDMA mode Measurement 29: Flat Plane with Body device position on Low Channel in WCDMA mode Measurement 30: Flat Plane with Body device position on Middle Channel in WCDMA mode Measurement 31: Flat Plane with Body device position on High Channel in WCDMA mode Measurement 32: Flat Plane with Body device position on Low Channel in WCMA mode Measurement 33: Flat Plane with Body device position on Low Channel in WCDMA mode Measurement 34: Flat Plane with Body device position on Low Channel in WCMA mode Measurement 35: Flat Plane with Body device position on Low Channel in WCDMA mode
	Measurement 36: Right Head with Cheek device position on Middle Channel in WCDMA mode

WCDMA 1900	Measurement 37: Right Head with Tilt device position on Middle Channel in WCDMA mode Measurement 38: Left Head with Cheek device position on Middle Channel in WCDMA mode Measurement 39: Left Head with Tilt device position on Middle Channel in WCDMA mode Measurement 40: Flat Plane with Body device position on Low Channel in WCDMA mode Measurement 41: Flat Plane with Body device position on Middle Channel in WCDMA mode Measurement 42: Flat Plane with Body device position on High Channel in WCDMA mode Measurement 43: Flat Plane with Body device position on Middle Channel in WCDMA mode Measurement 44: Flat Plane with Body device position on Middle Channel in WCDMA mode Measurement 45: Flat Plane with Body device position on Middle Channel in WCDMA mode Measurement 46: Flat Plane with Body device position on Middle Channel in WCMA mode
802.11b	Measurement 47: Right Head with Cheek device position on Low Channel in DSSS mode Measurement 48: Right Head with Tilt device position on Low Channel in DSSS mode Measurement 49: Left Head with Cheek device position on Low Channel in DSSS mode Measurement 50: Left Head with Tilt device position on Low Channel in DSSS mode Measurement 51: Flat Plane with Body device position on Low Channel in DSSS mode Measurement 52: Flat Plane with Body device position on Low Channel in DSSS mode Measurement 53: Flat Plane with Body device position on Low Channel in DSSS mode Measurement 54: Flat Plane with Body device position on Low Channel in DSSS mode.

MEASUREMENT 1

Type: Phone measurement (Complete)

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

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

Date of measurement: 2014.11.5

Measurement duration: 9 minutes 1 second

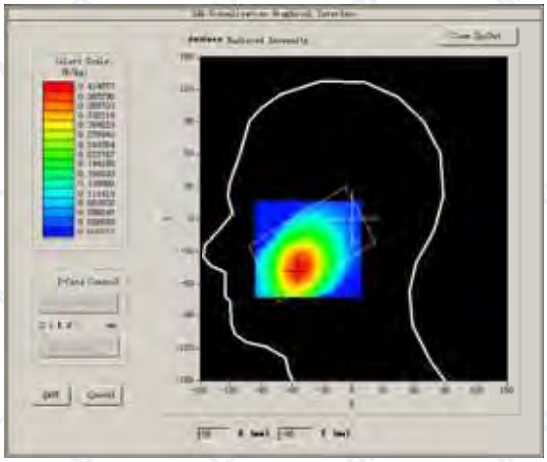
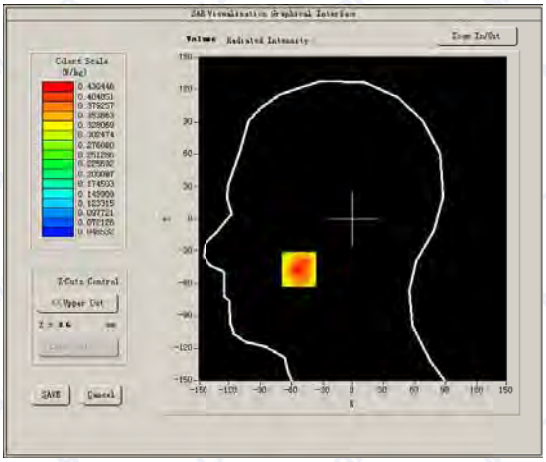
A. Experimental conditions.

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):

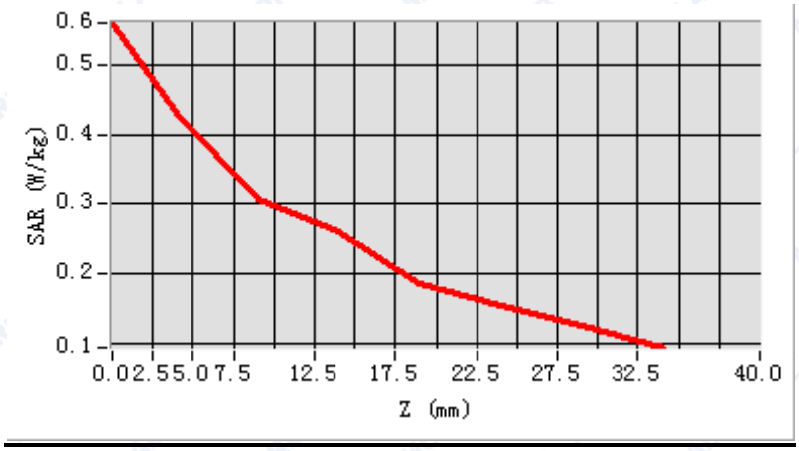
Frequency (MHz)	836.600000
Relative permittivity (real part)	41.305586
Conductivity (S/m)	0.908954
Power drift (%)	1.270000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	6.73
Crest factor:	1:8

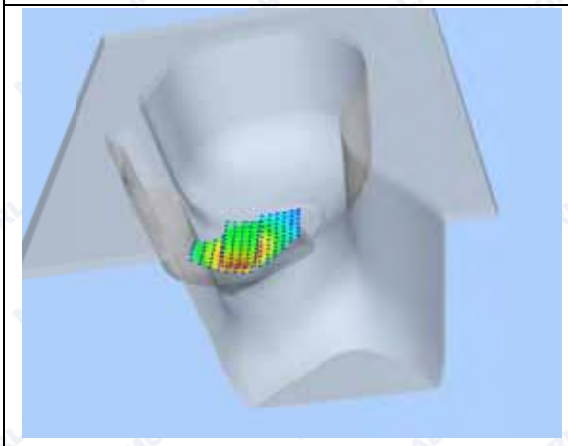
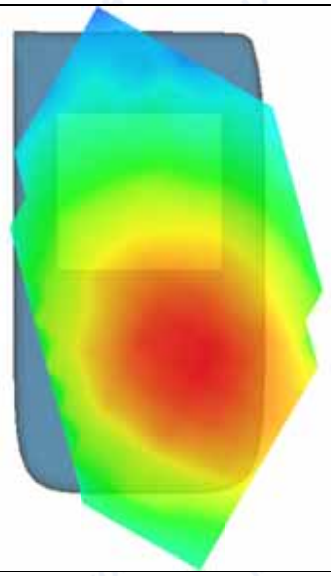
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-53.00, Y=-47.00
SAR Peak: 0.57 W/kg

SAR 10g (W/Kg)	0.290319
SAR 1g (W/Kg)	0.406471

Z axis scan



3D screen shot	Hot spot position
	

MEASUREMENT 2

Type: Phone measurement (Complete)

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

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

Date of measurement: 2014.11.5

Measurement duration: 8 minutes 24 seconds

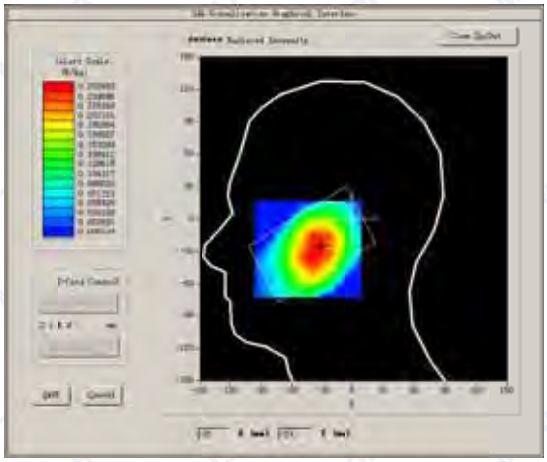
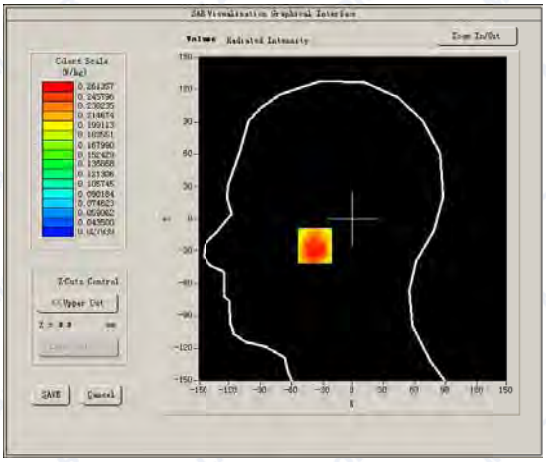
A. Experimental conditions.

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):

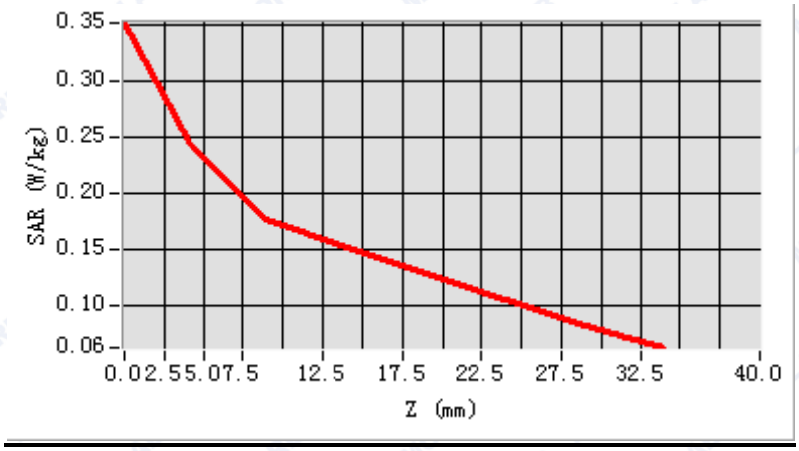
Frequency (MHz)	836.600000
Relative permittivity (real part)	41.305586
Conductivity (S/m)	0.908954
Power drift(%)	3.100000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	6.73
Crest factor:	1:8

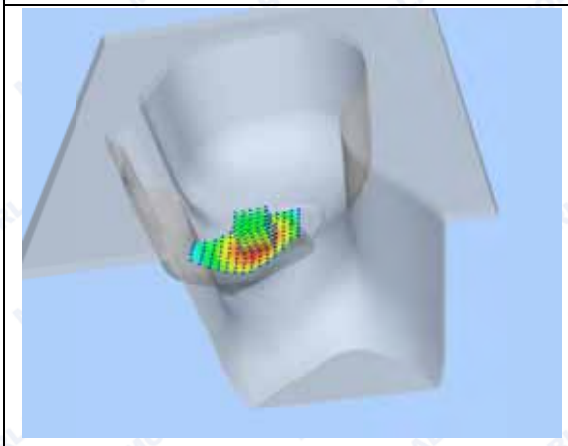
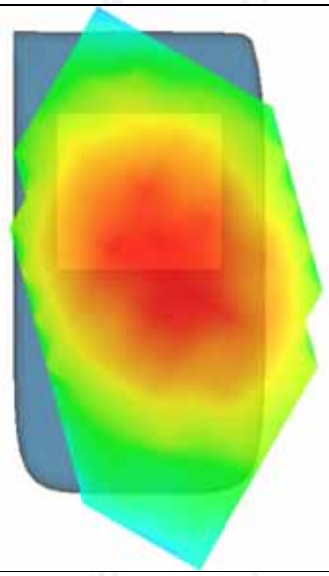
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-33.00, Y=-25.00
SAR Peak: 0.38 W/kg

SAR 10g (W/Kg)	0.178450
SAR 1g (W/Kg)	0.254420

Z axis scan



3D screen shot	Hot spot position
	

MEASUREMENT 3

Type: Phone measurement (Complete)

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

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

Date of measurement: 2014.11.5

Measurement duration: 8 minutes 56 seconds

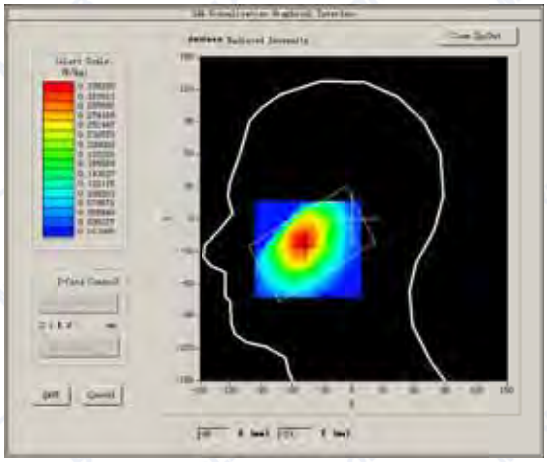
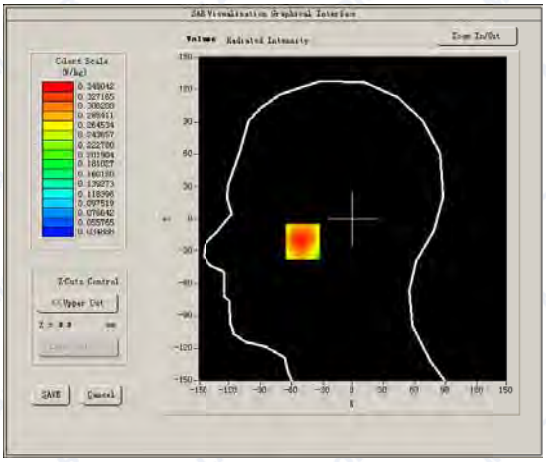
A. Experimental conditions.

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):

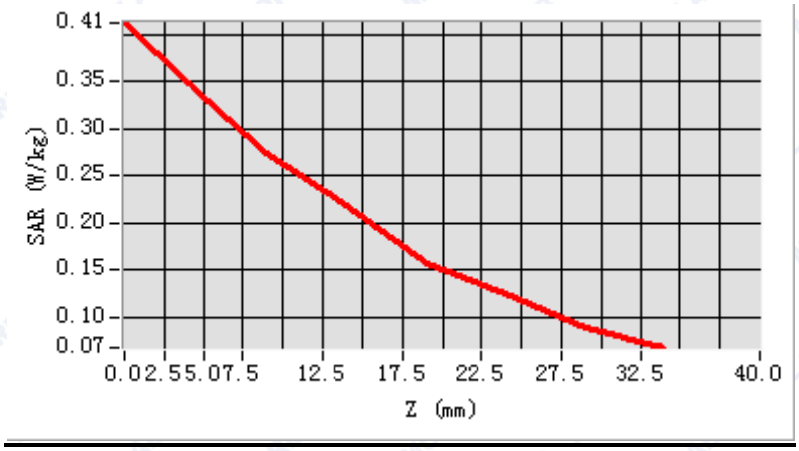
Frequency (MHz)	836.600000
Relative permittivity (real part)	41.305586
Conductivity (S/m)	0.908954
Power drift (%)	2.550000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	6.73
Crest factor:	1:8

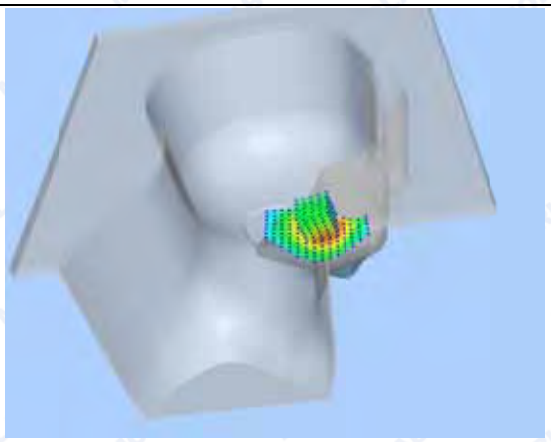
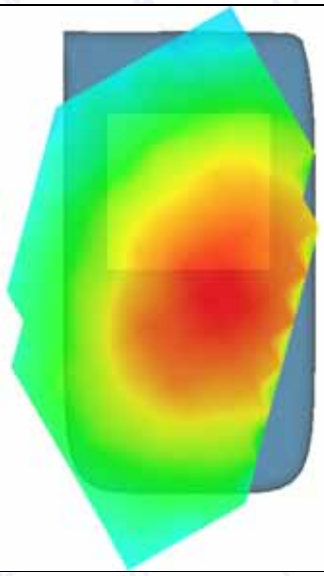
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-49.00, Y=-21.00
SAR Peak: 0.42 W/kg

SAR 10g (W/Kg)	0.241761
SAR 1g (W/Kg)	0.333073

Z axis scan



3D screen shot	Hot spot position
	

MEASUREMENT 4

Type: Phone measurement (Complete)

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

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

Date of measurement: 2014.11.5

Measurement duration: 8 minutes 18 seconds

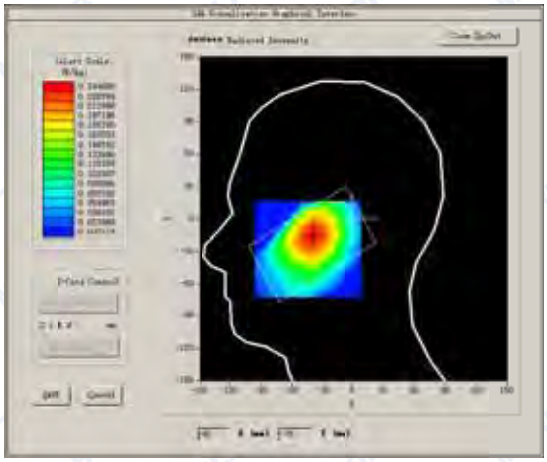
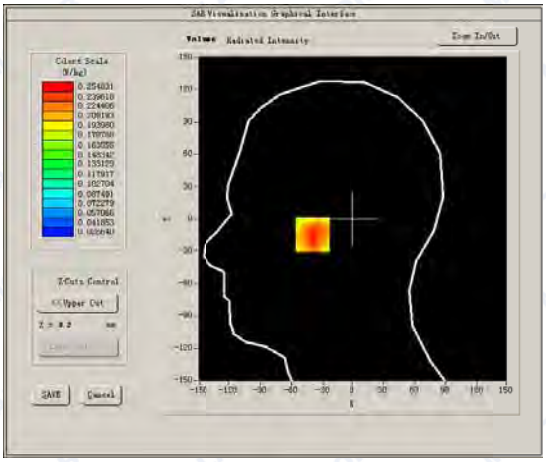
A. Experimental conditions.

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):

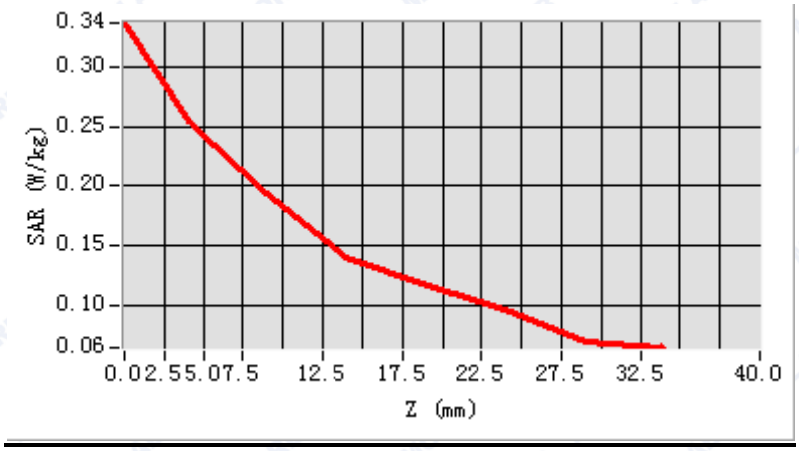
Frequency (MHz)	836.600000
Relative permittivity (real part)	41.305586
Conductivity (S/m)	0.908954
Power drift(%)	0.510000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	6.73
Crest factor:	1:8

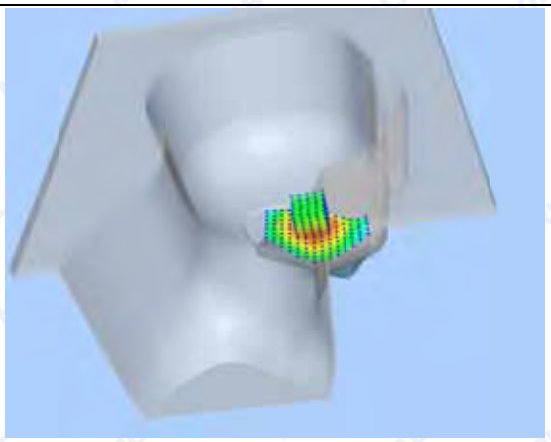
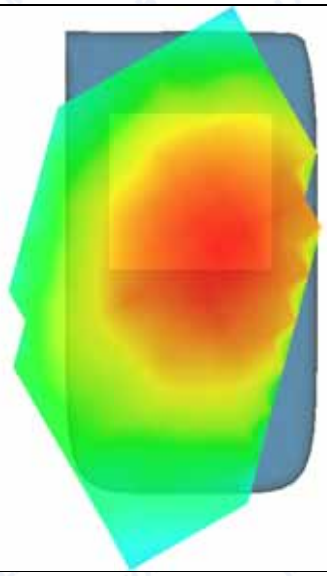
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-40.00, Y=-14.00
SAR Peak: 0.34 W/kg

SAR 10g (W/Kg)	0.173555
SAR 1g (W/Kg)	0.244206

Z axis scan



3D screen shot	Hot spot position
	

MEASUREMENT 5

Type: Phone measurement (Complete)

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

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

Date of measurement: 2014.11.5

Measurement duration: 9 minutes 37 seconds

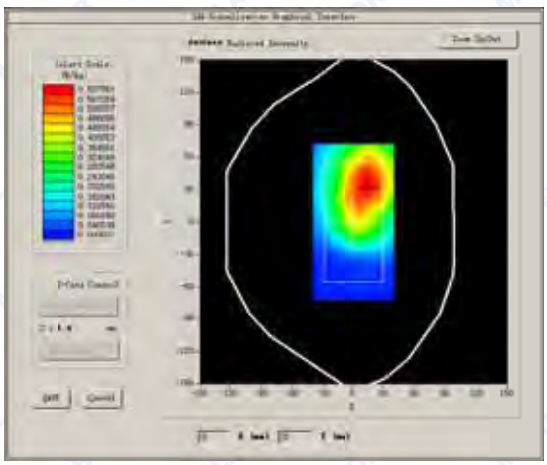
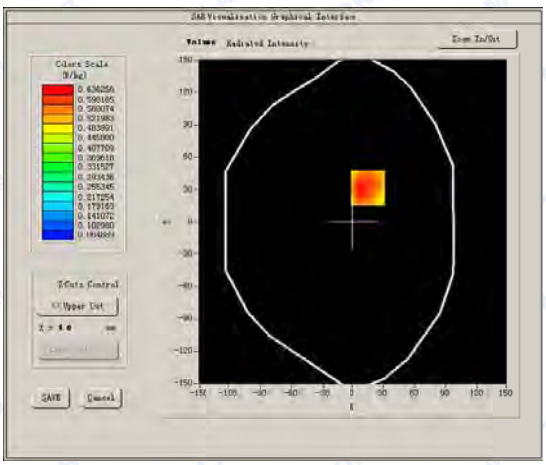
A. Experimental conditions.

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

B. SAR Measurement Results

Middle Band SAR (Channel 190):

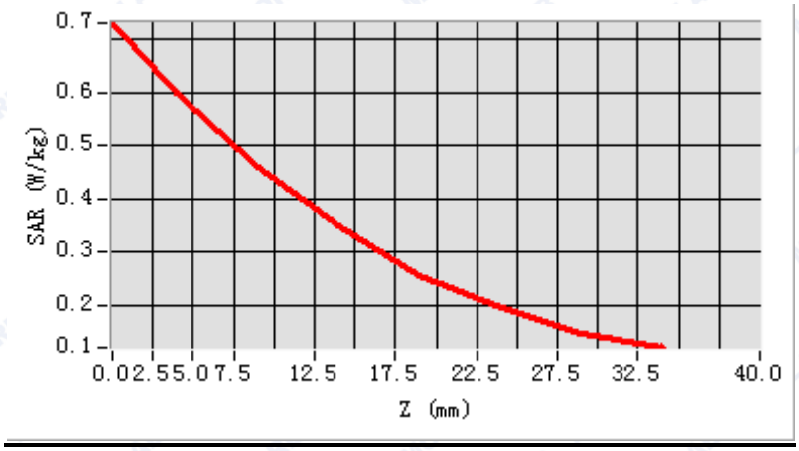
Frequency (MHz)	836.600000
Relative permittivity (real part)	55.838595
Conductivity (S/m)	0.973824
Power drift (%)	2.210000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	6.99
Crest factor:	1:8

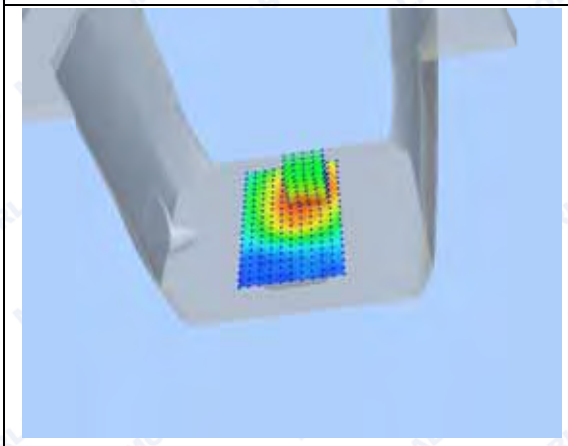
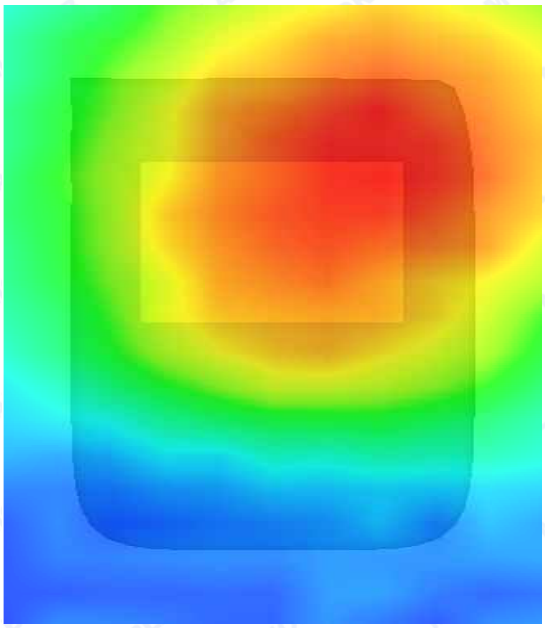
SURFACE SAR	VOLUME SAR
	

Maximum location: X=15.00, Y=32.00
SAR Peak: 0.91 W/kg

SAR 10g (W/Kg)	0.465007
SAR 1g (W/Kg)	0.659645

Z axis scan



3D screen shot	Hot spot position
	

MEASUREMENT 6

Type: Phone measurement (Complete)

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

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

Date of measurement: 2014.11.5

Measurement duration: 9 minutes 28 seconds

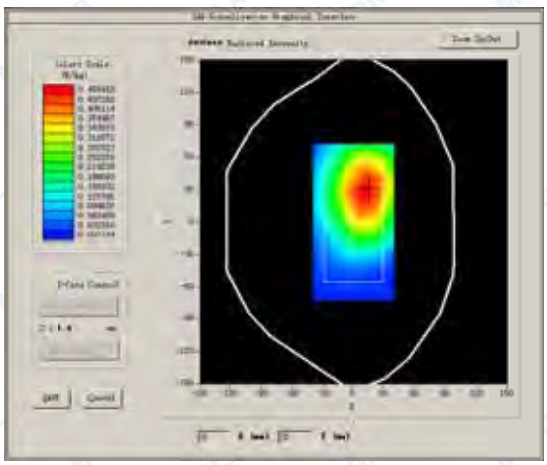
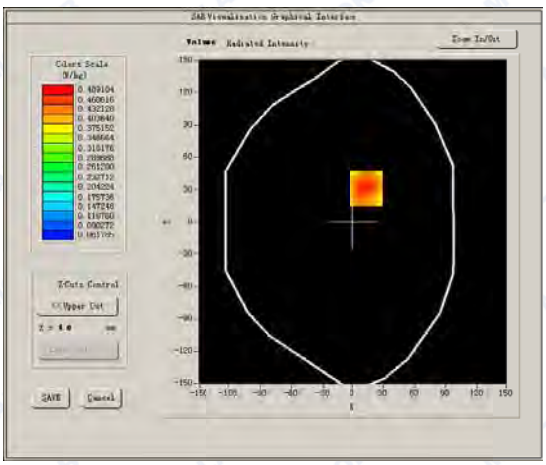
A. Experimental conditions.

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

B. SAR Measurement Results

Middle Band SAR (Channel 190):

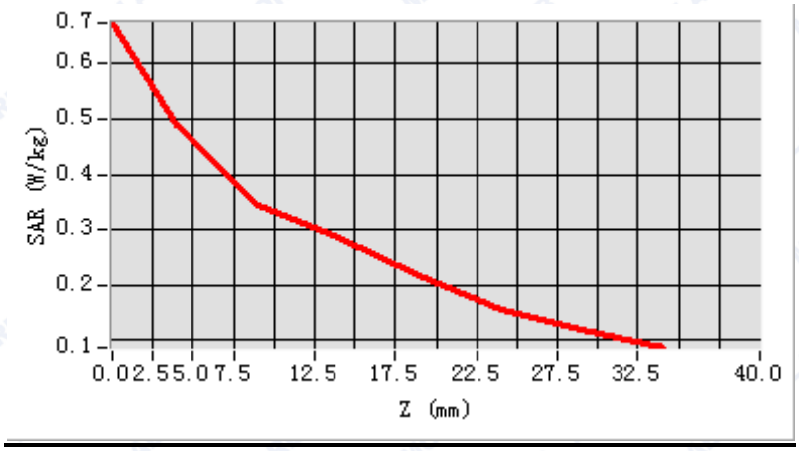
Frequency (MHz)	836.600000
Relative permittivity (real part)	55.838595
Conductivity (S/m)	0.973824
Power drift(%)	-2.390000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	6.99
Crest factor:	1:8

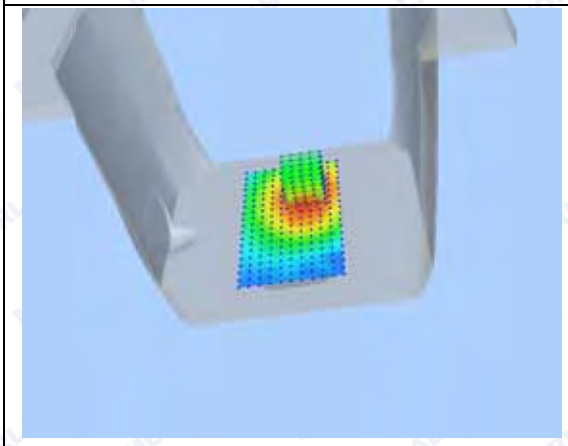
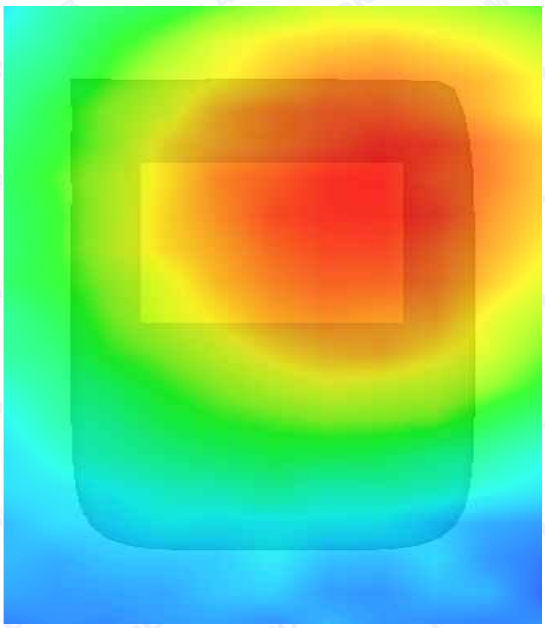
SURFACE SAR	VOLUME SAR
	

Maximum location: X=13.00, Y=31.00
SAR Peak: 0.74 W/kg

SAR 10g (W/Kg)	0.359376
SAR 1g (W/Kg)	0.518636

Z axis scan



3D screen shot	Hot spot position
	

MEASUREMENT 7

Type: Phone measurement (Complete)

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

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

Date of measurement: 2014.11.5

Measurement duration: 9 minutes 33 seconds

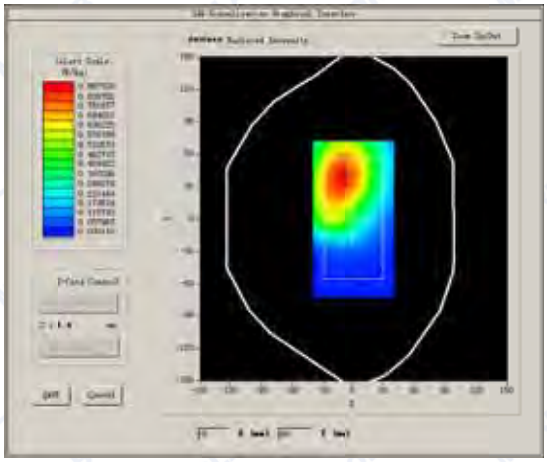
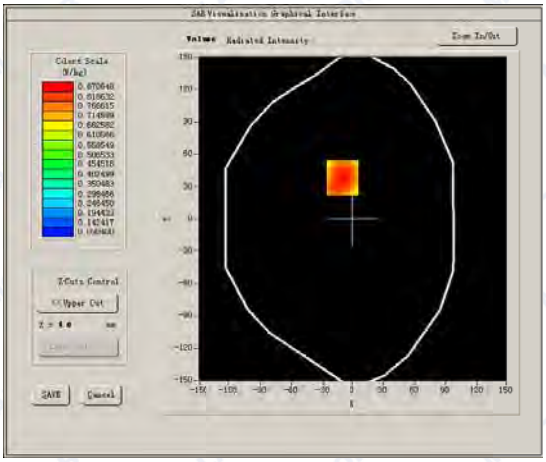
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Flat Plane
Device Position	Body
Band	GSM850
Channels	Low
Signal	EDGE

B. SAR Measurement Results

Middle Band SAR (Channel 128):

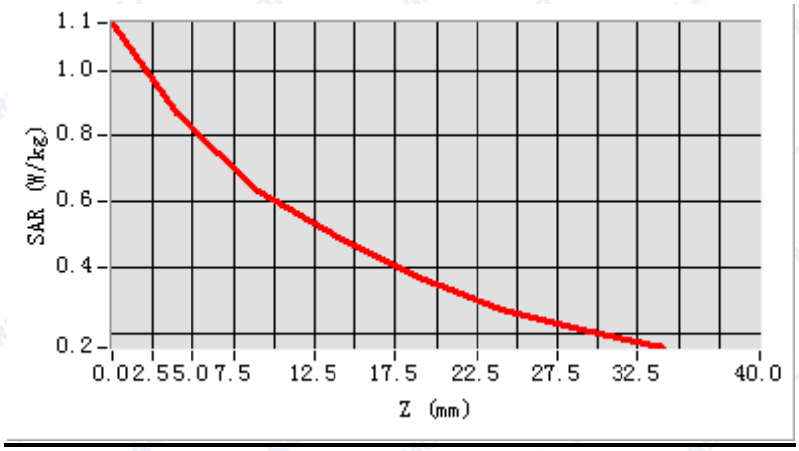
Frequency (MHz)	824.200000
Relative permittivity (real part)	55.838595
Conductivity (S/m)	0.973824
Power drift(%)	-0.530000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	6.99
Crest factor:	1:2

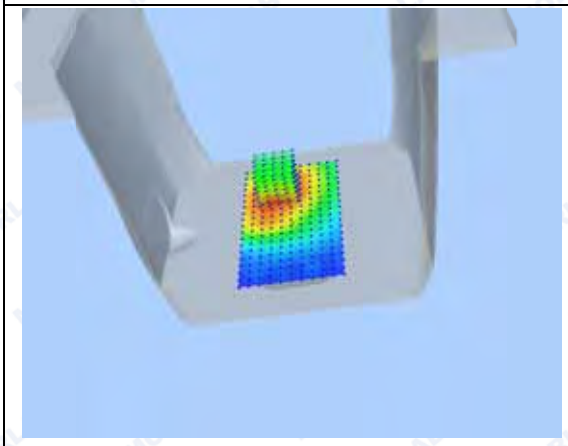
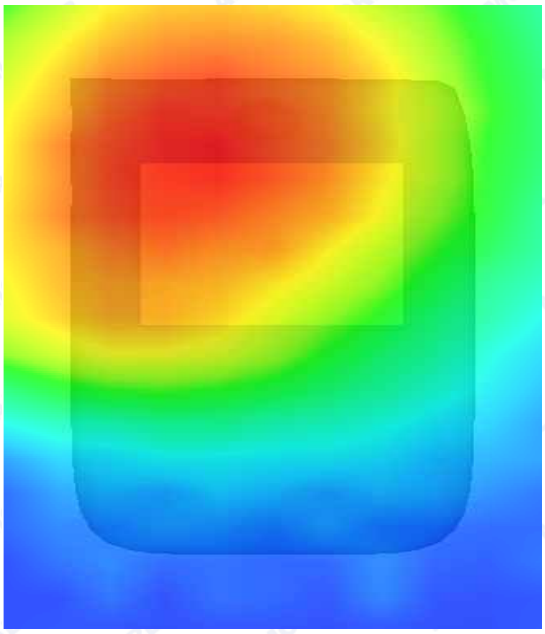
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-10.00, Y=38.00
SAR Peak: 1.15 W/kg

SAR 10g (W/Kg)	0.598947
SAR 1g (W/Kg)	0.857697

Z axis scan



3D screen shot	Hot spot position
	

MEASUREMENT 8

Type: Phone measurement (Complete)

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

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

Date of measurement: 2014.11.5

Measurement duration: 9 minutes 32 seconds

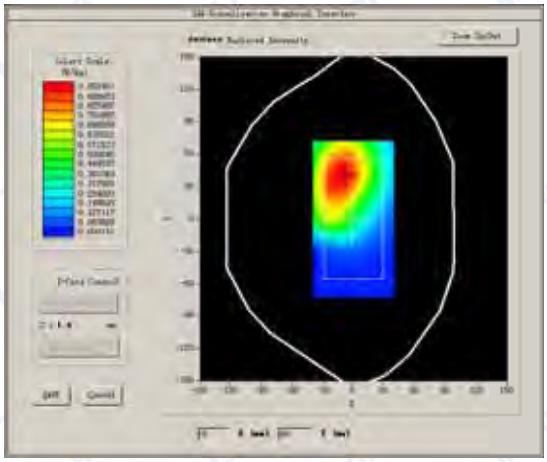
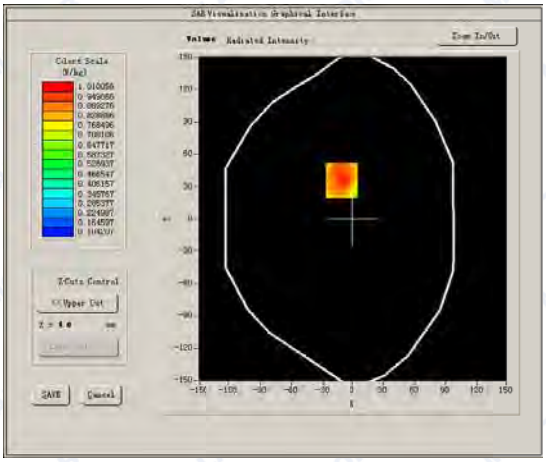
A. Experimental conditions.

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

B. SAR Measurement Results

Middle Band SAR (Channel 190):

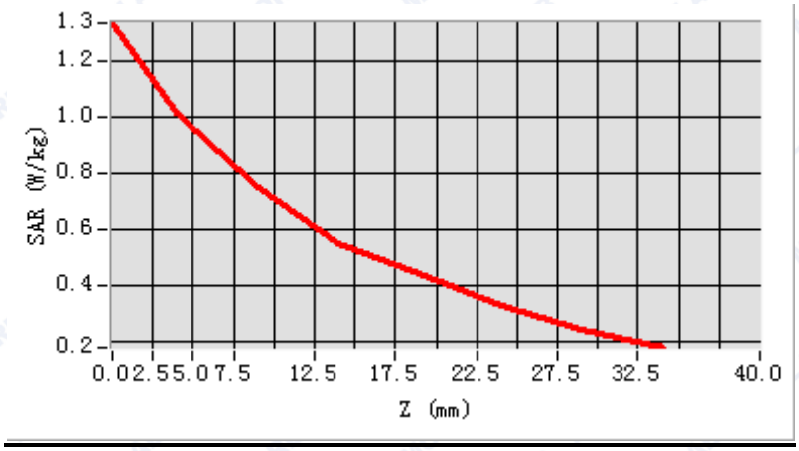
Frequency (MHz)	836.600000
Relative permittivity (real part)	55.838595
Conductivity (S/m)	0.973824
Power drift(%)	-2.620000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	6.99
Crest factor:	1:2

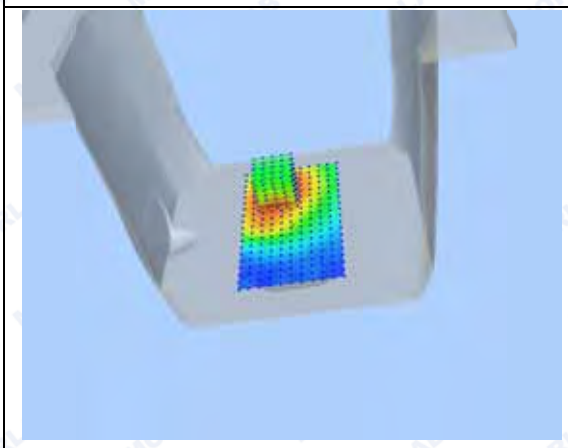
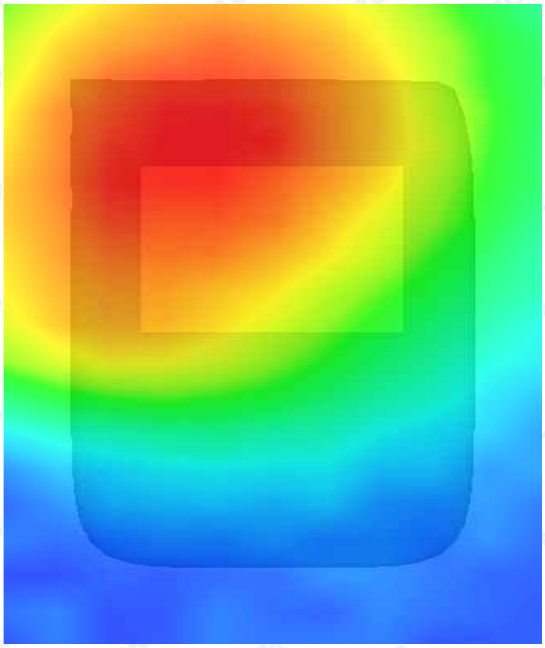
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-11.00, Y=36.00
SAR Peak: 1.37 W/kg

SAR 10g (W/Kg)	0.682058
SAR 1g (W/Kg)	0.980429

Z axis scan



3D screen shot	Hot spot position
	

MEASUREMENT 9

Type: Phone measurement (Complete)

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

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

Date of measurement: 2014.11.5

Measurement duration: 9 minutes 36 seconds

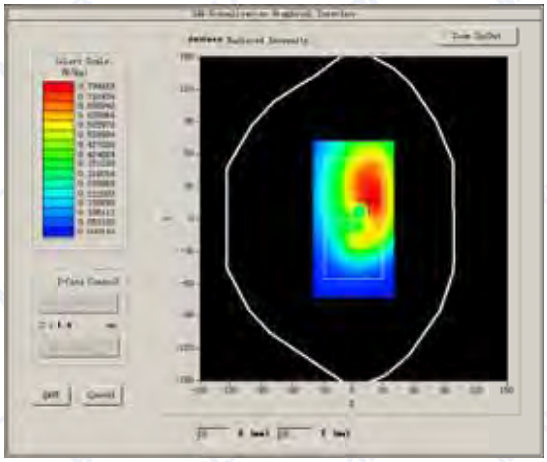
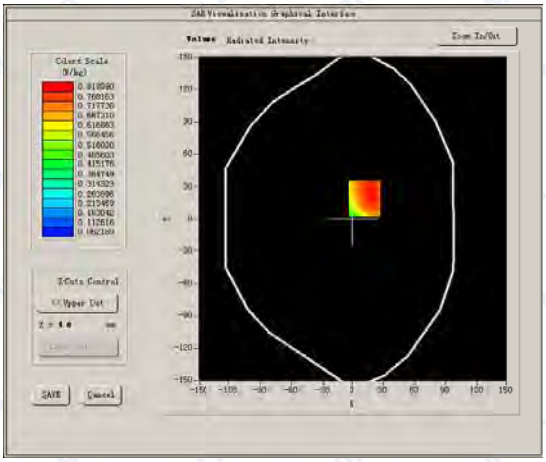
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Flat Plane
Device Position	Body
Band	GSM850
Channels	High
Signal	EDGE

B. SAR Measurement Results

High Band SAR (Channel 251):

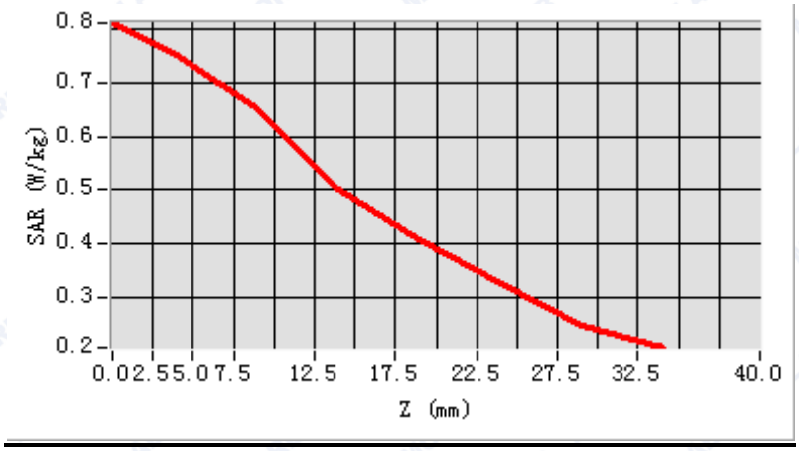
Frequency (MHz)	848.800000
Relative permittivity (real part)	55.838595
Conductivity (S/m)	0.973824
Power drift(%)	0.250000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	6.99
Crest factor:	1:2

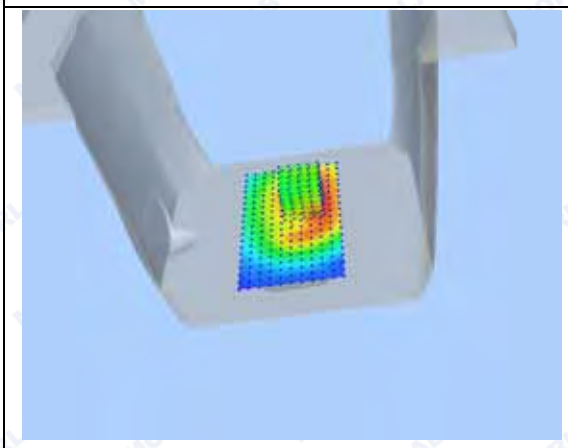
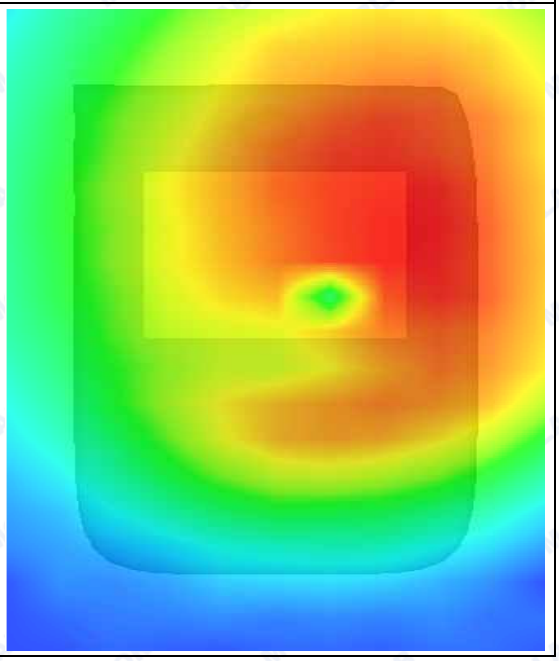
SURFACE SAR	VOLUME SAR
	

Maximum location: X=11.00, Y=19.00
SAR Peak: 0.99 W/kg

SAR 10g (W/Kg)	0.619935
SAR 1g (W/Kg)	0.803533

Z axis scan



3D screen shot	Hot spot position
	

MEASUREMENT 10

Type: Phone measurement (Complete)

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

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

Date of measurement: 2014.11.5

Measurement duration: 9 minutes 36 seconds

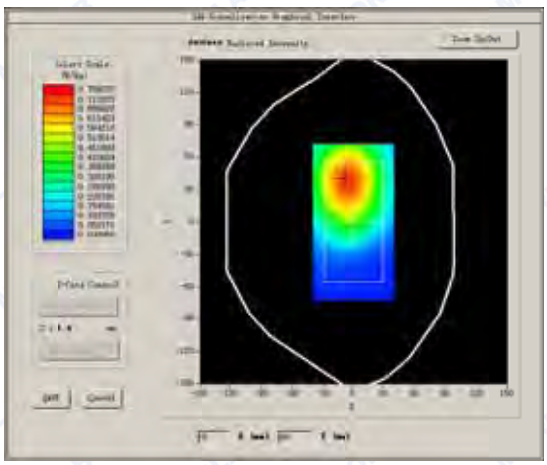
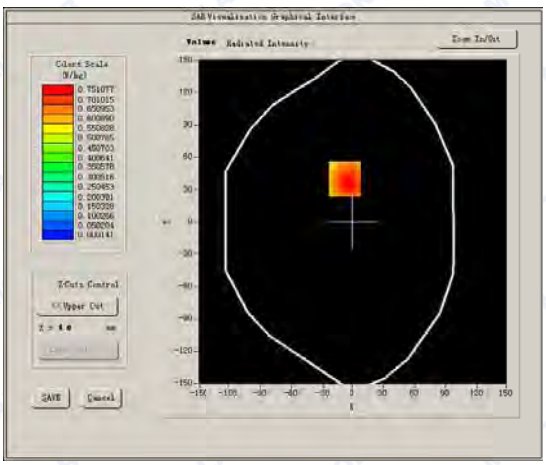
A. Experimental conditions.

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

B. SAR Measurement Results

Middle Band SAR (Channel 190):

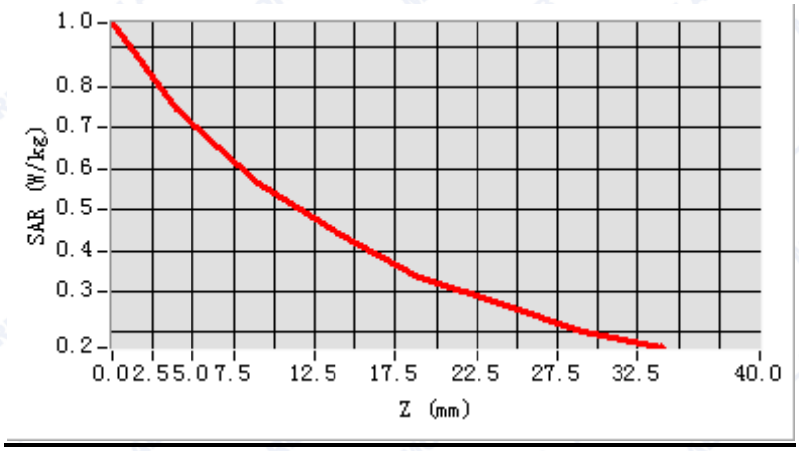
Frequency (MHz)	836.600000
Relative permittivity (real part)	55.838595
Conductivity (S/m)	0.973824
Power drift(%)	0.730000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	6.99
Crest factor:	1:2

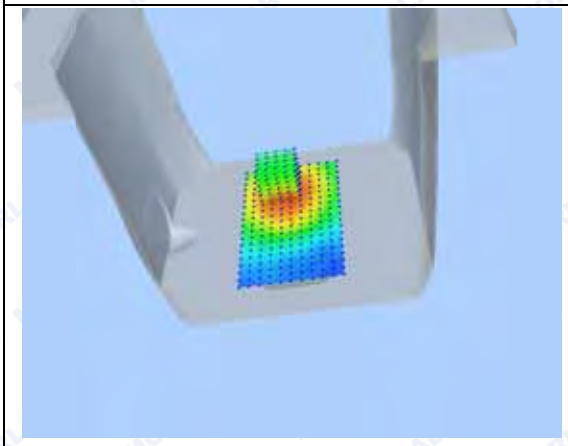
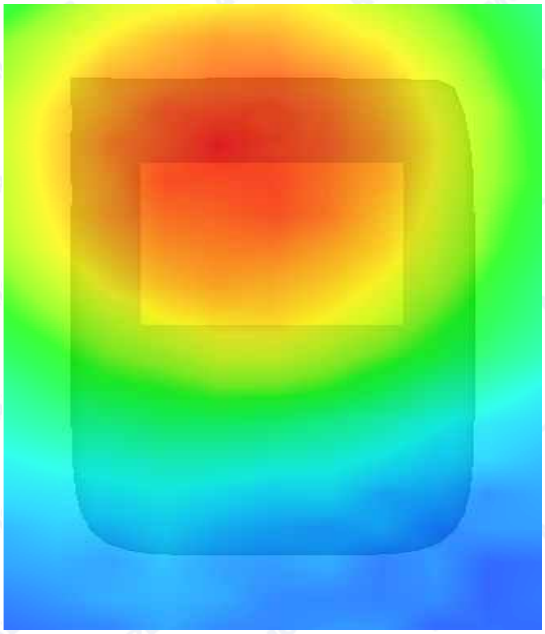
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-8.00, Y=40.00
SAR Peak: 0.98 W/kg

SAR 10g (W/Kg)	0.532440
SAR 1g (W/Kg)	0.750895

Z axis scan



3D screen shot	Hot spot position
	

MEASUREMENT 11

Type: Phone measurement (Complete)

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

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

Date of measurement: 2014.11.5

Measurement duration: 9 minutes 34 seconds

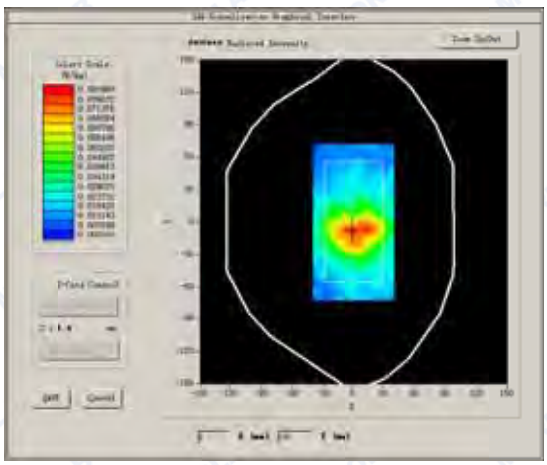
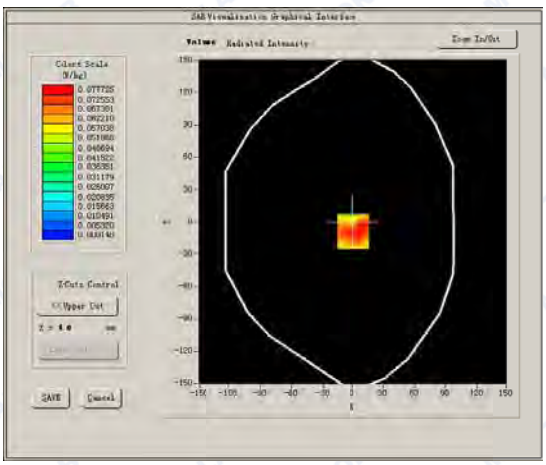
A. Experimental conditions.

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

B. SAR Measurement Results

Middle Band SAR (Channel 190):

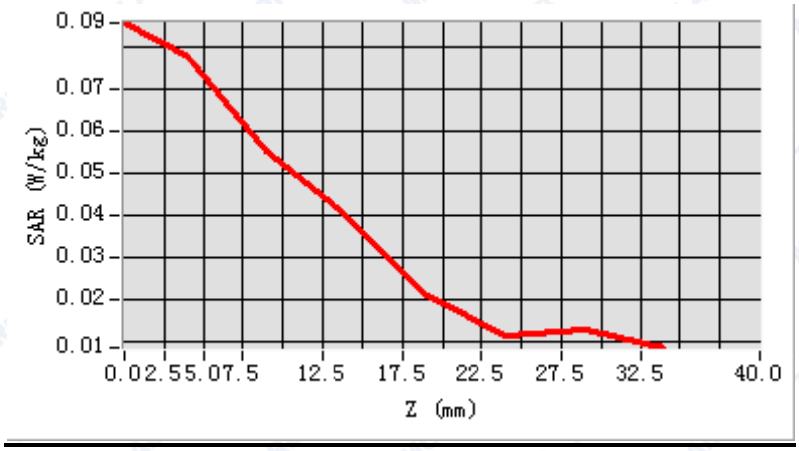
Frequency (MHz)	836.600000
Relative permittivity (real part)	55.838595
Conductivity (S/m)	0.973824
Power drift(%)	0.030000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	6.99
Crest factor:	1:2

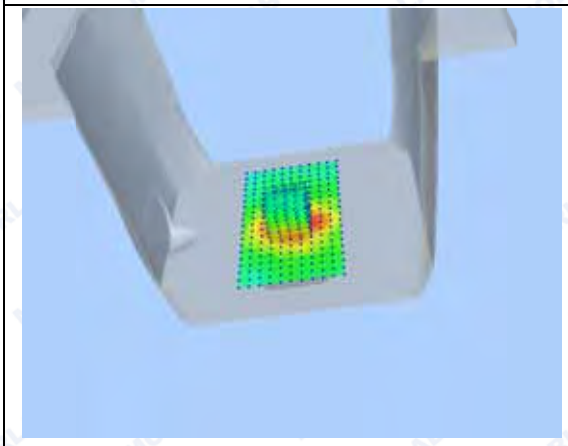
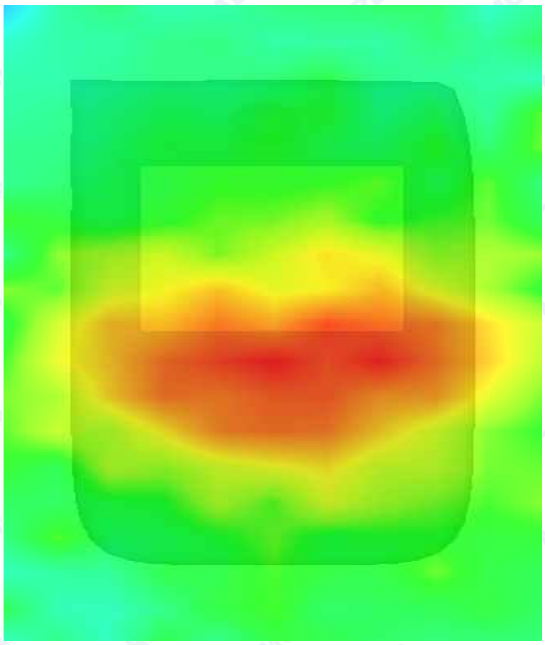
SURFACE SAR	VOLUME SAR
	

Maximum location: X=0.00, Y=-9.00
SAR Peak: 0.12 W/kg

SAR 10g (W/Kg)	0.048333
SAR 1g (W/Kg)	0.076973

Z axis scan



3D screen shot	Hot spot position
	

MEASUREMENT 12

Type: Phone measurement (Complete)

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

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

Date of measurement: 2014.11.5

Measurement duration: 9 minutes 34 seconds

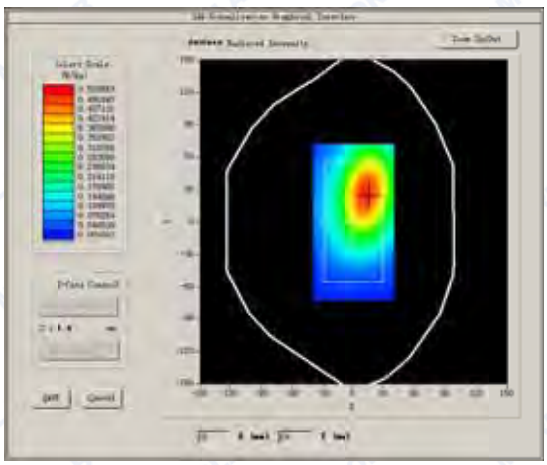
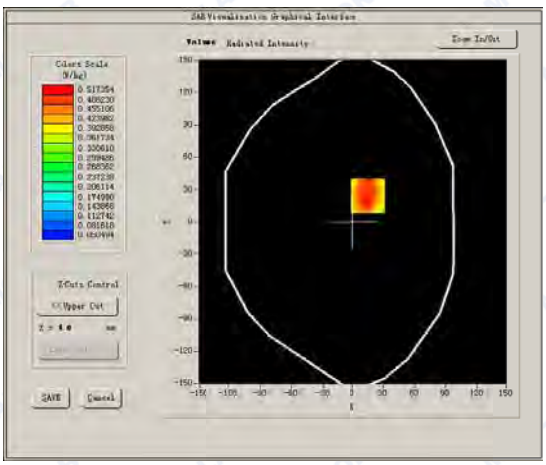
A. Experimental conditions.

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

B. SAR Measurement Results

Middle Band SAR (Channel 190):

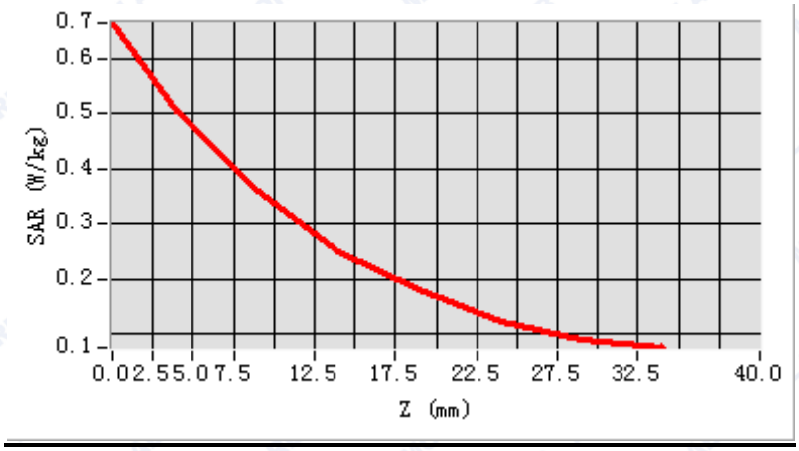
Frequency (MHz)	836.600000
Relative permittivity (real part)	55.838595
Conductivity (S/m)	0.973824
Power drift(%)	-0.160000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	6.99
Crest factor:	1:2

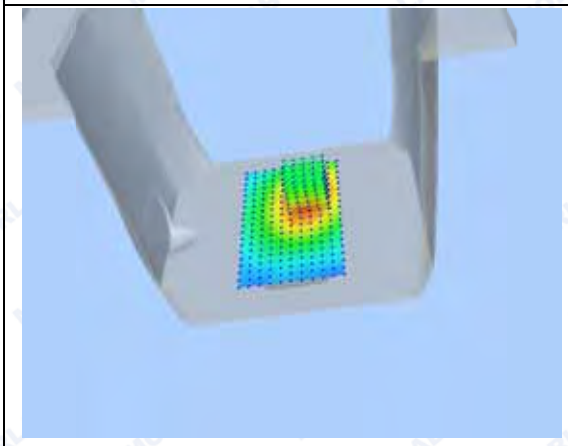
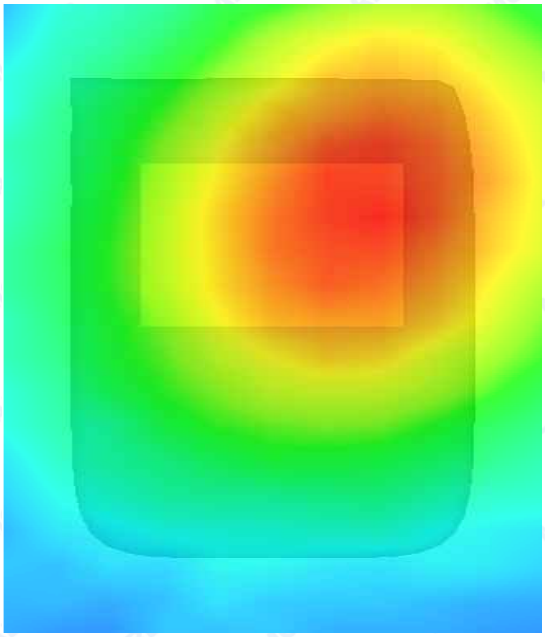
SURFACE SAR	VOLUME SAR
	

Maximum location: X=15.00, Y=24.00
SAR Peak: 0.74 W/kg

SAR 10g (W/Kg)	0.330238
SAR 1g (W/Kg)	0.504966

Z axis scan



3D screen shot	Hot spot position
	

MEASUREMENT 13

Type: Phone measurement (Complete)

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

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

Date of measurement: 2014.11.5

Measurement duration: 9 minutes 34 seconds

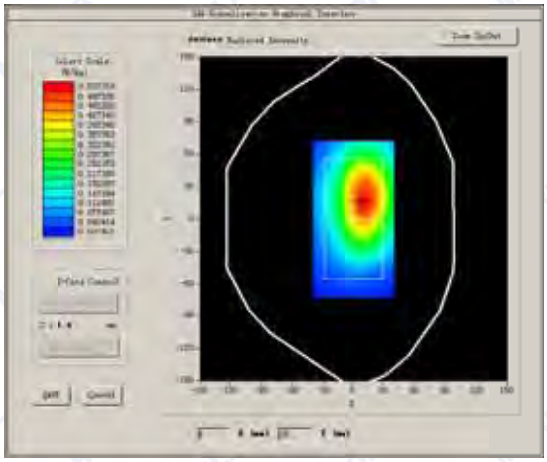
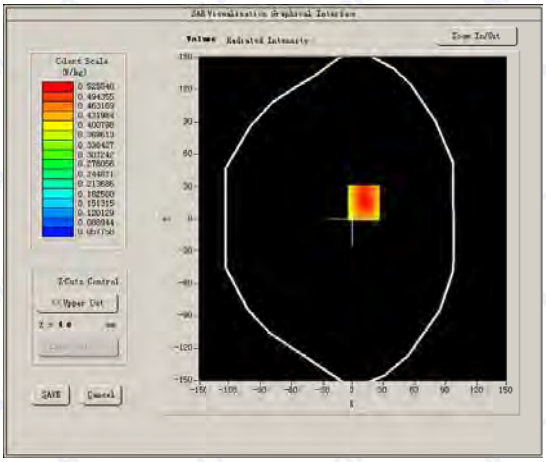
A. Experimental conditions.

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

B. SAR Measurement Results

Middle Band SAR (Channel 190):

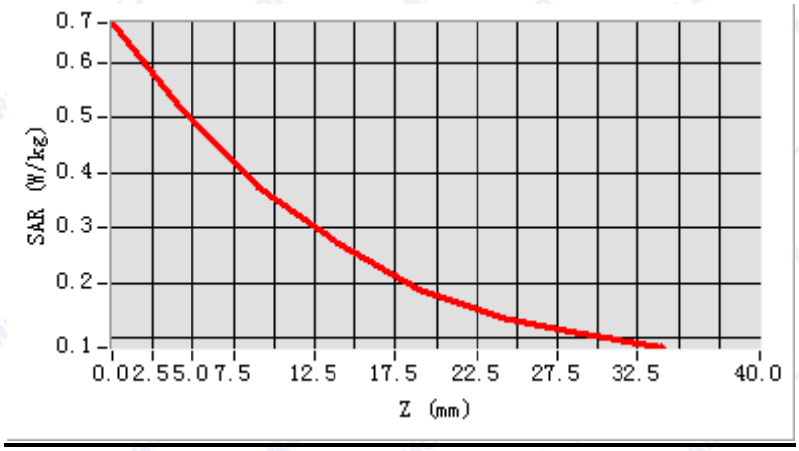
Frequency (MHz)	836.600000
Relative permittivity (real part)	55.838595
Conductivity (S/m)	0.973824
Power drift(%)	-2.470000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	6.99
Crest factor:	1:2

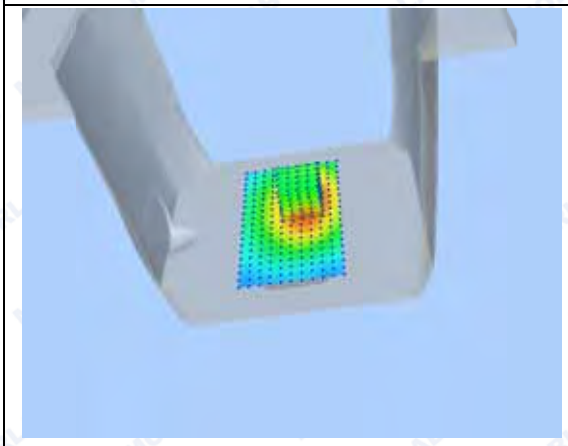
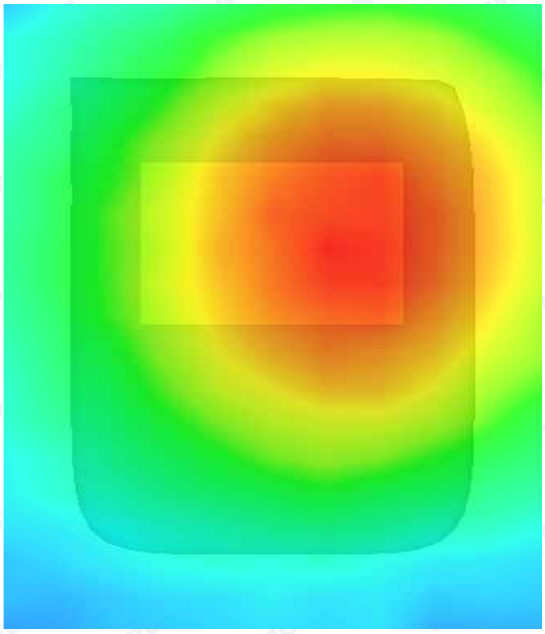
SURFACE SAR	VOLUME SAR
	

Maximum location: X=10.00, Y=15.00
SAR Peak: 0.71 W/kg

SAR 10g (W/Kg)	0.343383
SAR 1g (W/Kg)	0.510492

Z axis scan



3D screen shot	Hot spot position
	

MEASUREMENT 14

Type: Phone measurement (Complete)

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

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

Date of measurement: 2014.11.6

Measurement duration: 9 minutes 24 seconds

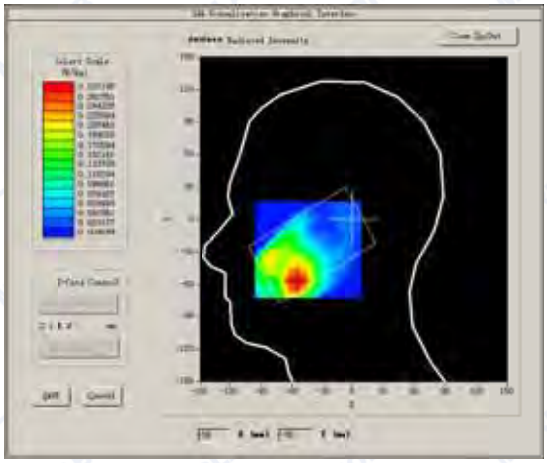
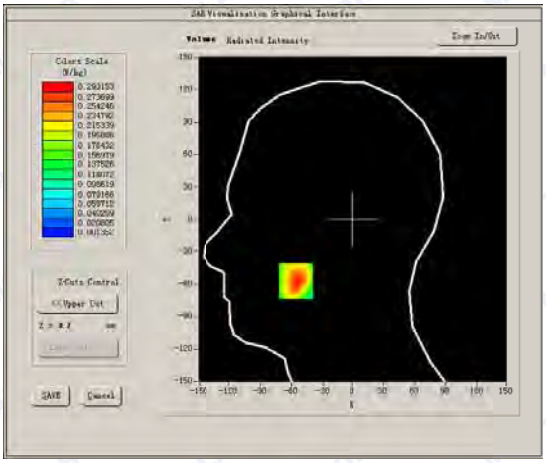
A. Experimental conditions.

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

B. SAR Measurement Results

High Band SAR (Channel 810):

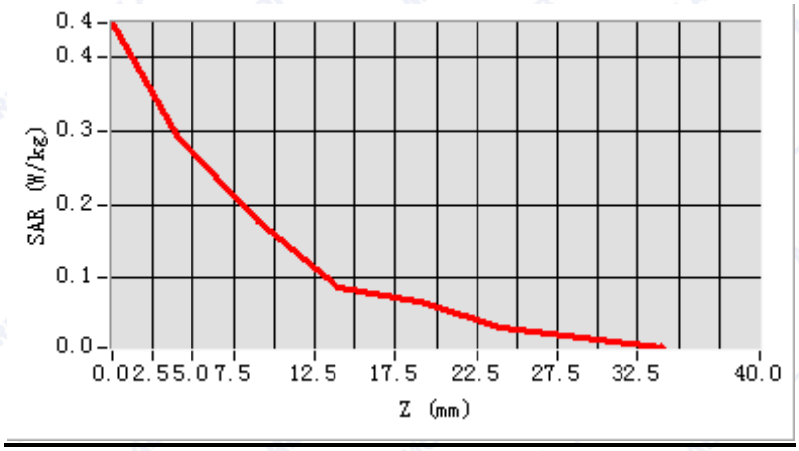
Frequency (MHz)	1909.800000
Relative permittivity (real part)	39.958875
Conductivity (S/m)	1.410215
Power drift(%)	1.390000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	6.00
Crest factor:	1:8

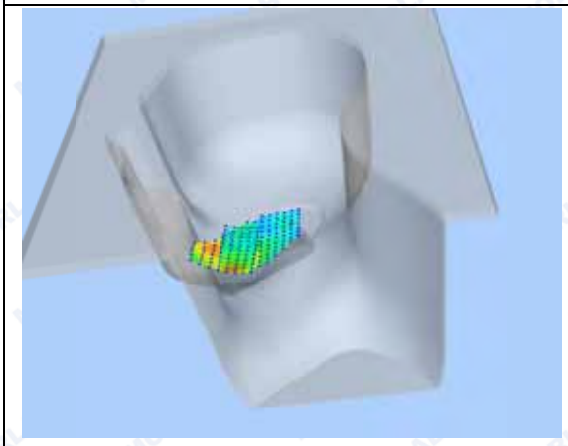
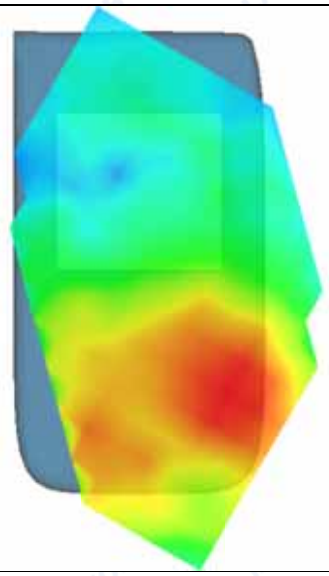
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-56.00, Y=-57.00
SAR Peak: 0.52 W/kg

SAR 10g (W/Kg)	0.151171
SAR 1g (W/Kg)	0.285056

Z axis scan



3D screen shot	Hot spot position
	

MEASUREMENT 15

Type: Phone measurement (Complete)

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

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

Date of measurement: 2014.11.6

Measurement duration: 8 minutes 7 seconds

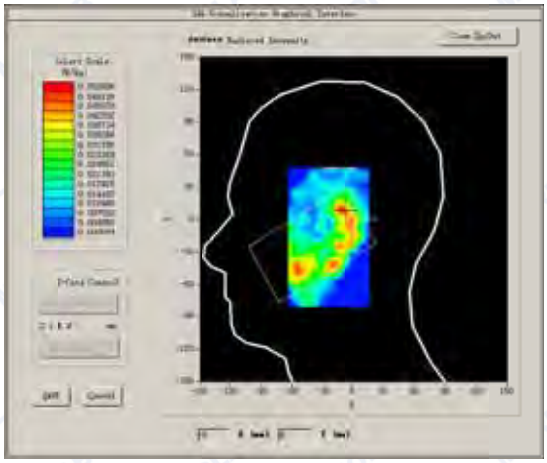
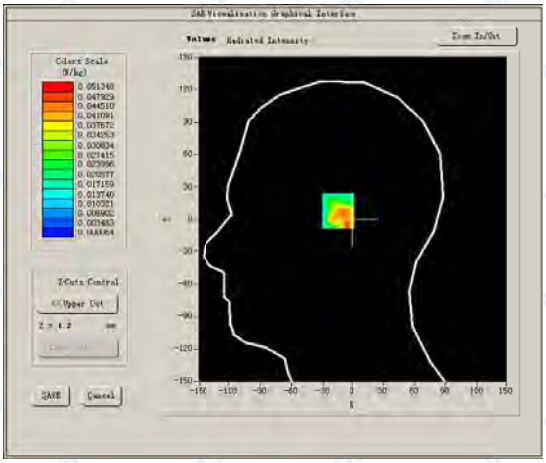
A. Experimental conditions.

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

B. SAR Measurement Results

High Band SAR (Channel 810):

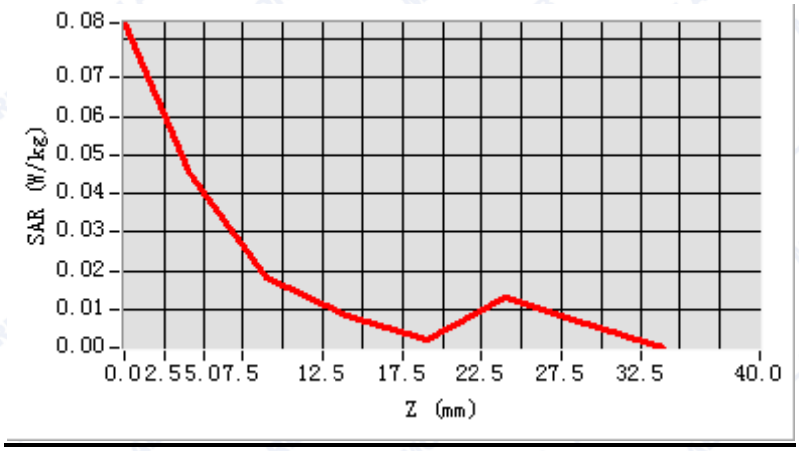
Frequency (MHz)	1909.800000
Relative permittivity (real part)	39.958875
Conductivity (S/m)	1.410215
Power drift(%)	-3.540000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	6.00
Crest factor:	1:8

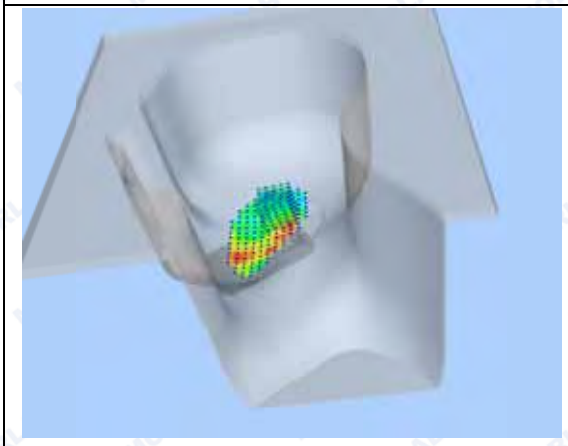
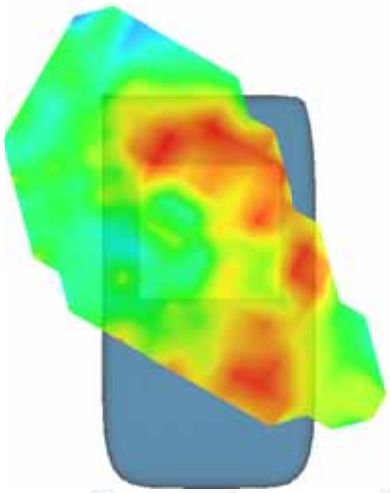
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-10.00, Y=8.00
SAR Peak: 0.13 W/kg

SAR 10g (W/Kg)	0.023752
SAR 1g (W/Kg)	0.046869

Z axis scan



3D screen shot	Hot spot position
	

MEASUREMENT 16

Type: Phone measurement (Complete)

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

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

Date of measurement: 2014.11.6

Measurement duration: 9 minutes 13 seconds

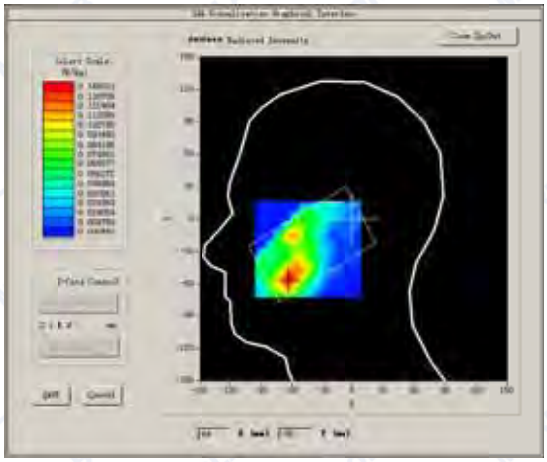
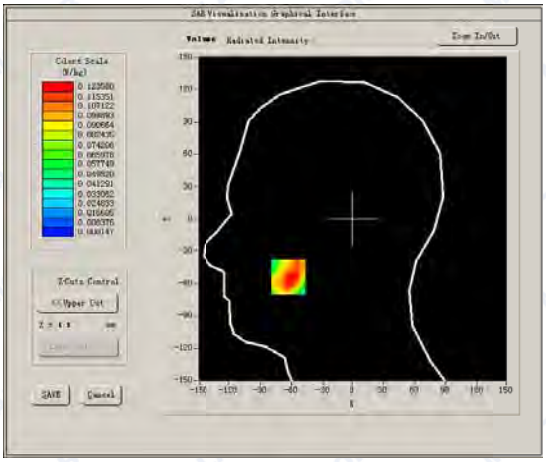
A. Experimental conditions.

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

B. SAR Measurement Results

High Band SAR (Channel 810):

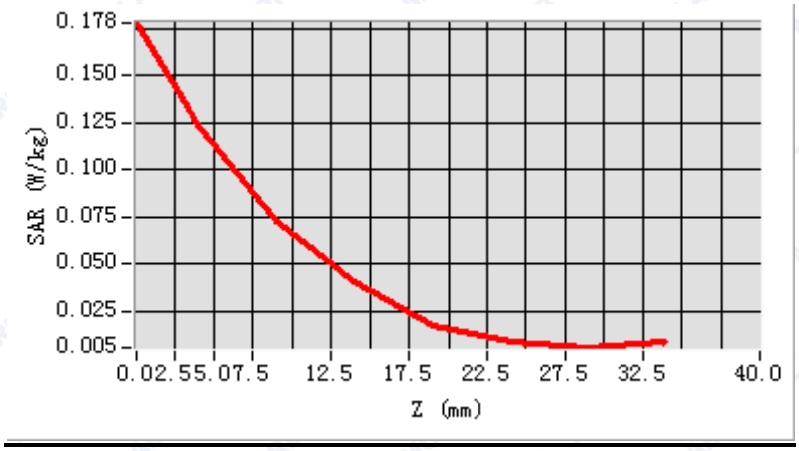
Frequency (MHz)	1909.800000
Relative permittivity (real part)	39.958875
Conductivity (S/m)	1.410215
Power drift(%)	-1.730000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	6.00
Crest factor:	1:8

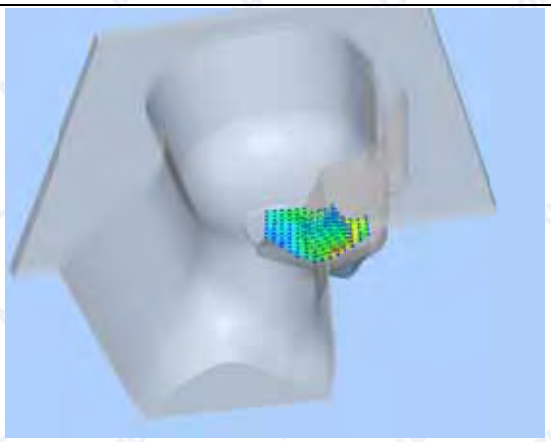
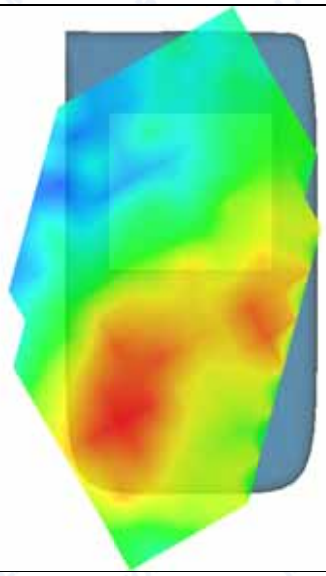
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-63.00, Y=-54.00
SAR Peak: 0.22 W/kg

SAR 10g (W/Kg)	0.064597
SAR 1g (W/Kg)	0.123948

Z axis scan



3D screen shot	Hot spot position
	

MEASUREMENT 17

Type: Phone measurement (Complete)

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

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

Date of measurement: 2014.11.6

Measurement duration: 7 minutes 47 seconds

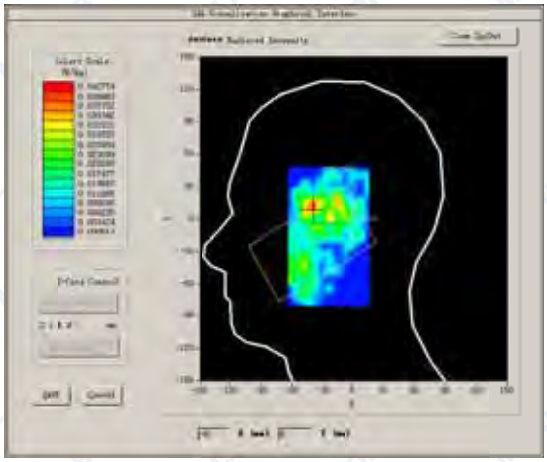
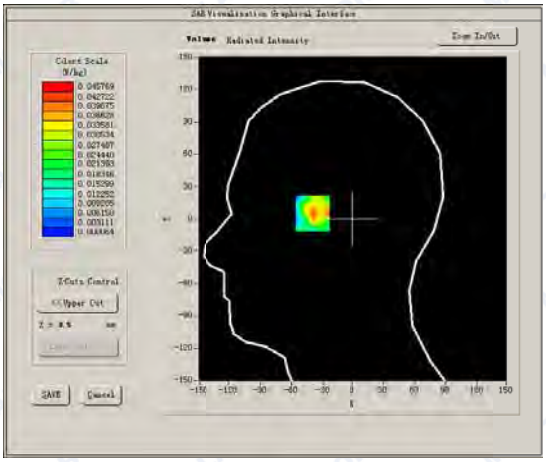
A. Experimental conditions.

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

B. SAR Measurement Results

High Band SAR (Channel 810):

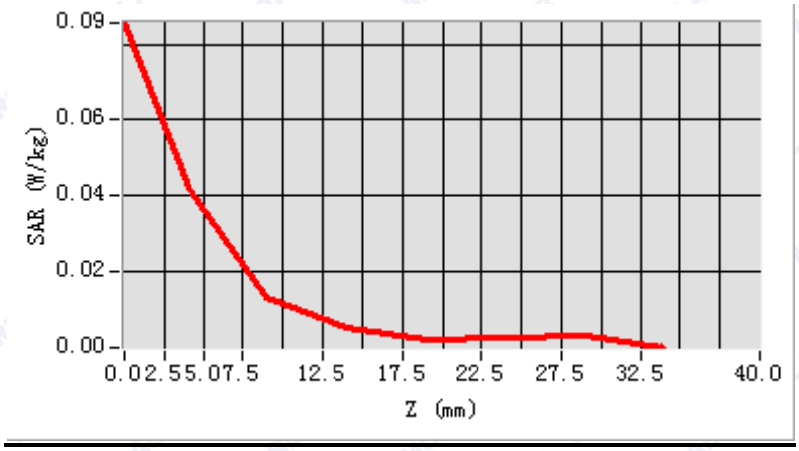
Frequency (MHz)	1909.800000
Relative permittivity (real part)	39.958875
Conductivity (S/m)	1.410215
Power drift(%)	2.000000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	6.00
Crest factor:	1:8

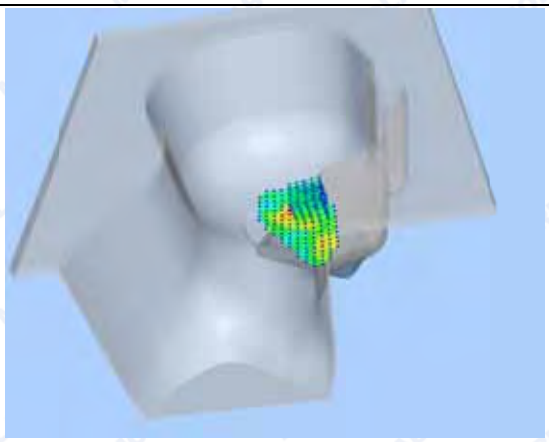
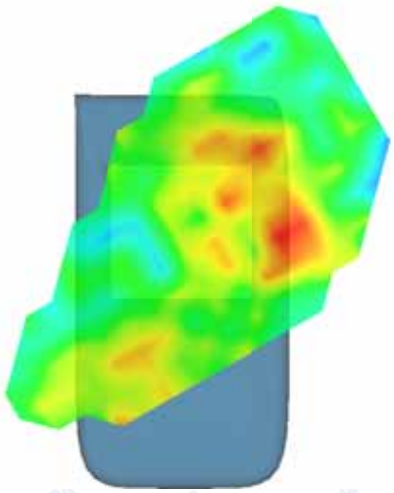
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-40.00, Y=10.00
SAR Peak: 0.08 W/kg

SAR 10g (W/Kg)	0.018634
SAR 1g (W/Kg)	0.040410

Z axis scan



3D screen shot	Hot spot position
	

MEASUREMENT 18

Type: Phone measurement (Complete)

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

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

Date of measurement: 2014.11.6

Measurement duration: 9 minutes 30 seconds

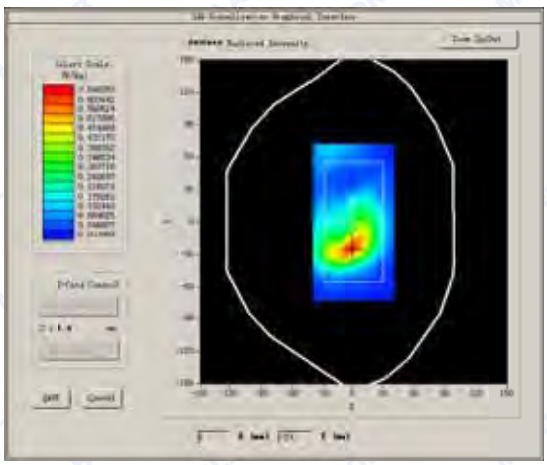
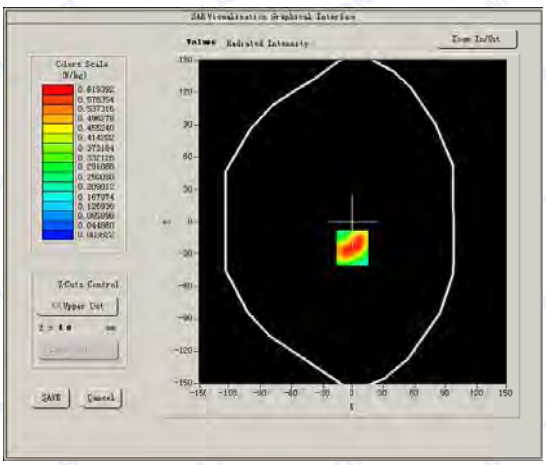
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Flat Plane
Device Position	Body
Band	GSM1900
Channels	High
Signal	GSM

B. SAR Measurement Results

High Band SAR (Channel 810):

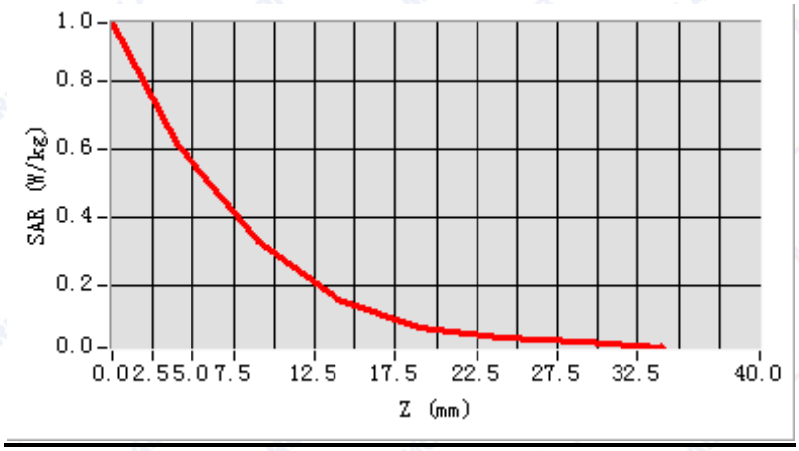
Frequency (MHz)	1909.800000
Relative permittivity (real part)	53.087685
Conductivity (S/m)	1.508657
Power drift(%)	-3.770000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	6.17
Crest factor:	1:8

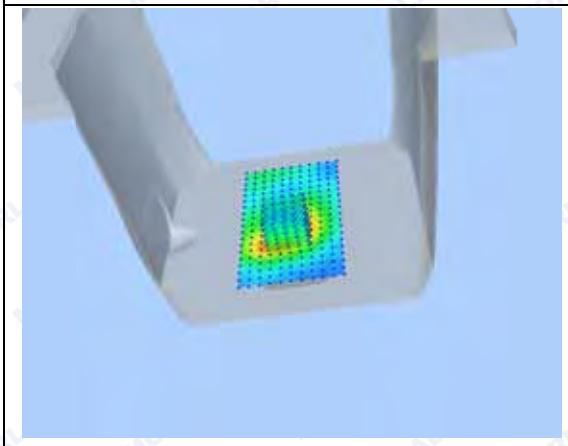
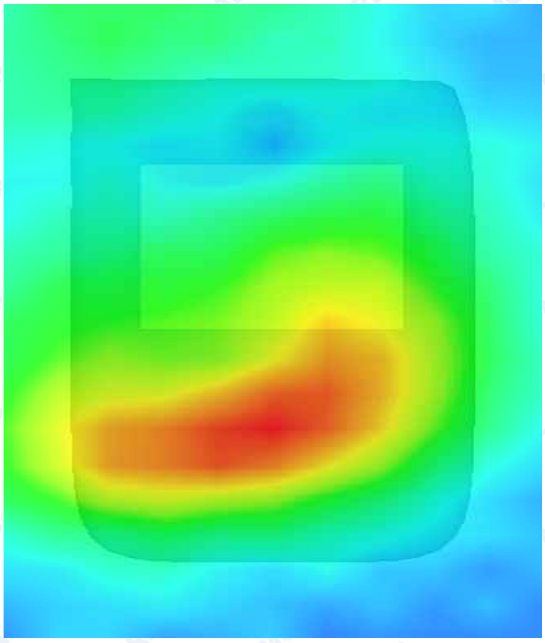
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-1.00, Y=-24.00
SAR Peak: 1.20 W/kg

SAR 10g (W/Kg)	0.317171
SAR 1g (W/Kg)	0.645602

Z axis scan



3D screen shot	Hot spot position
	

MEASUREMENT 19

Type: Phone measurement (Complete)

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

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

Date of measurement: 2014.11.6

Measurement duration: 9 minutes 32 seconds

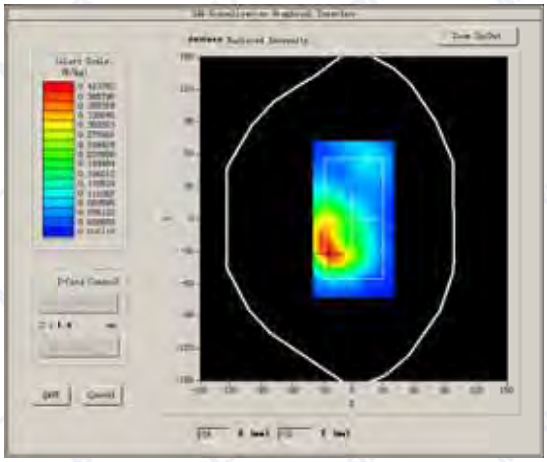
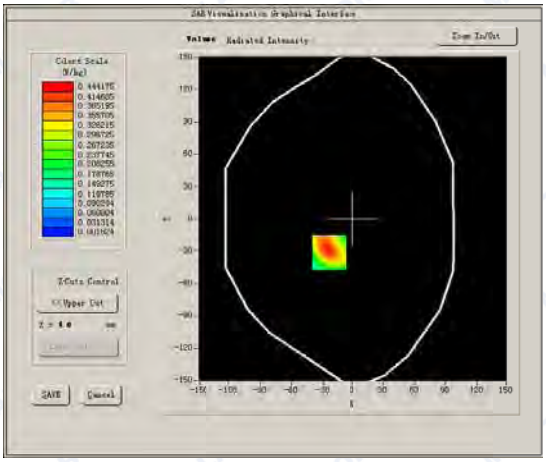
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Flat Plane
Device Position	Body
Band	GSM1900
Channels	High
Signal	GSM

B. SAR Measurement Results

High Band SAR (Channel 810):

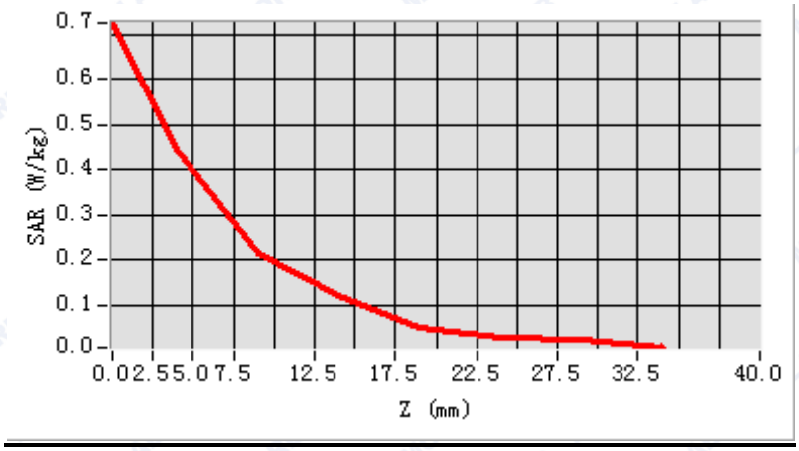
Frequency (MHz)	1909.800000
Relative permittivity (real part)	53.087685
Conductivity (S/m)	1.508657
Power drift(%)	3.550000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	6.17
Crest factor:	1:8

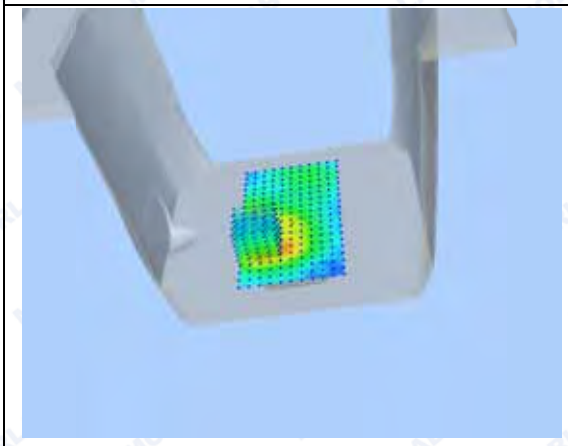
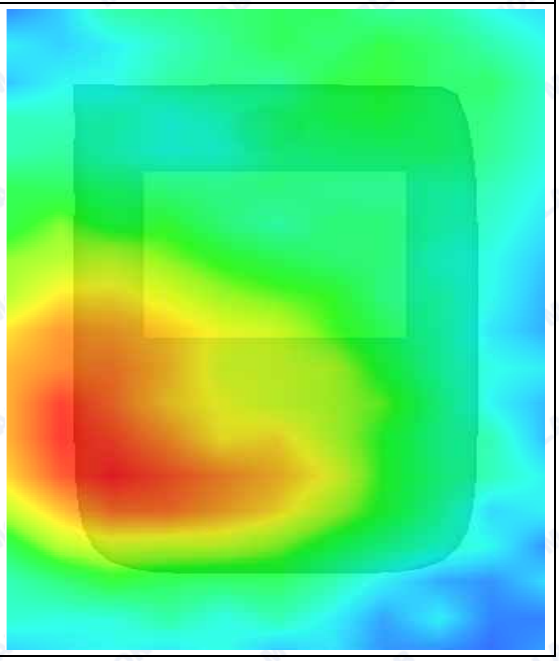
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-24.00, Y=-31.00
SAR Peak: 0.80 W/kg

SAR 10g (W/Kg)	0.231230
SAR 1g (W/Kg)	0.458328

Z axis scan



3D screen shot	Hot spot position
	

MEASUREMENT 20

Type: Phone measurement (Complete)

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

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

Date of measurement: 2014.11.6

Measurement duration: 9 minutes 30 seconds

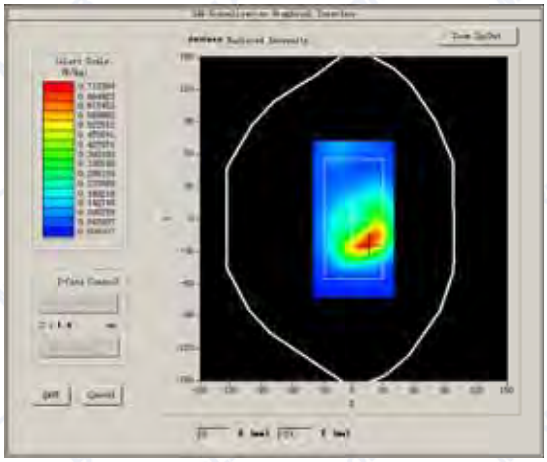
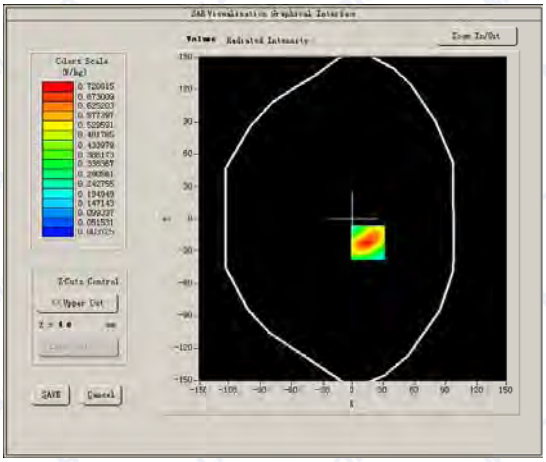
A. Experimental conditions.

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

B. SAR Measurement Results

High Band SAR (Channel 810):

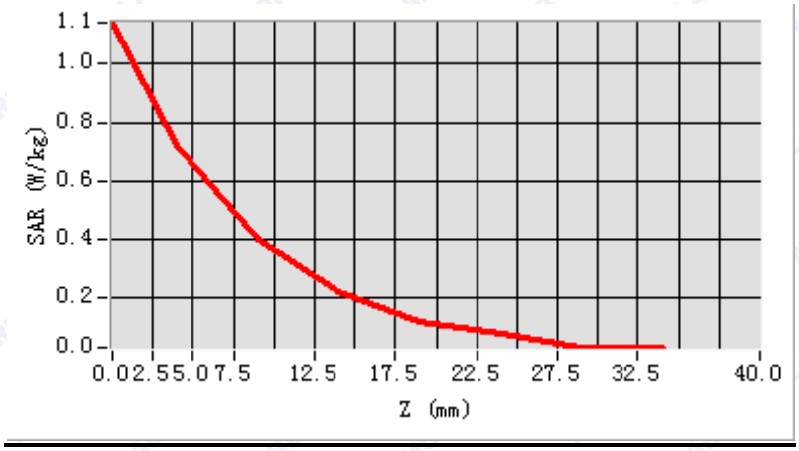
Frequency (MHz)	1909.800000
Relative permittivity (real part)	53.087685
Conductivity (S/m)	1.508657
Power drift(%)	-1.370000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	6.17
Crest factor:	1:2

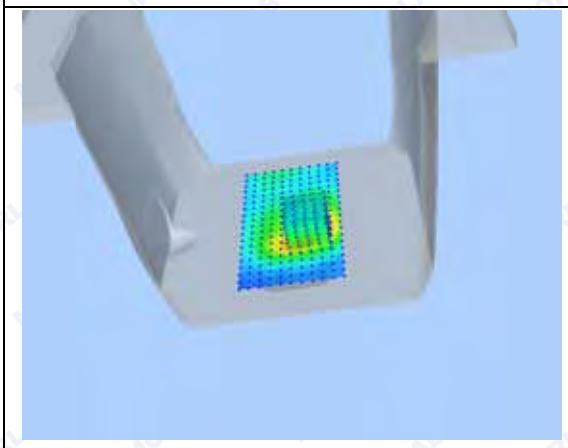
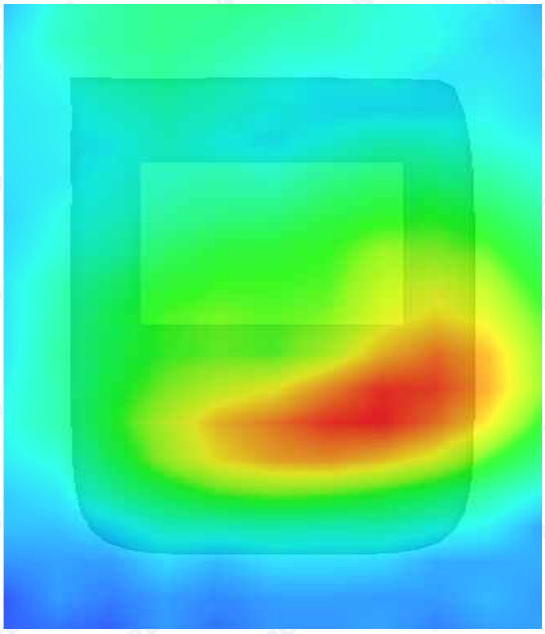
SURFACE SAR	VOLUME SAR
	

Maximum location: X=15.00, Y=-22.00
SAR Peak: 1.15 W/kg

SAR 10g (W/Kg)	0.355602
SAR 1g (W/Kg)	0.694440

Z axis scan



3D screen 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: 2014.11.6

Measurement duration: 9 minutes 30 seconds

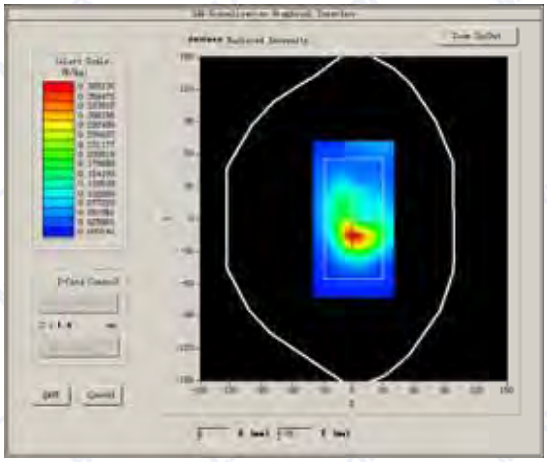
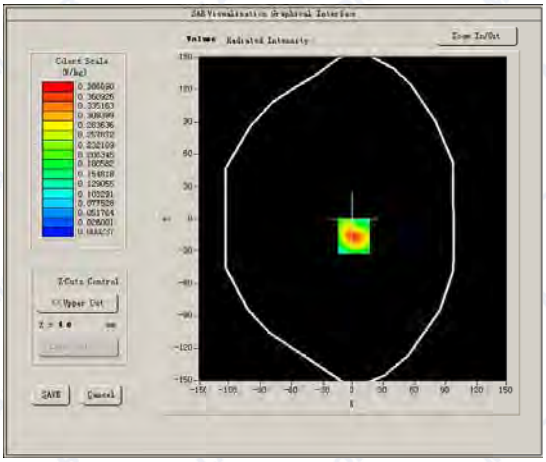
A. Experimental conditions.

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

B. SAR Measurement Results

High Band SAR (Channel 810):

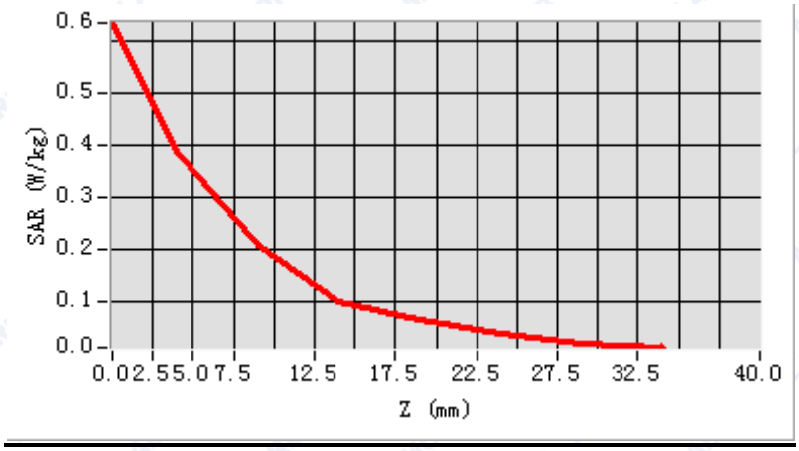
Frequency (MHz)	1909.800000
Relative permittivity (real part)	53.087685
Conductivity (S/m)	1.508657
Power drift(%)	0.520000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	6.17
Crest factor:	1:2

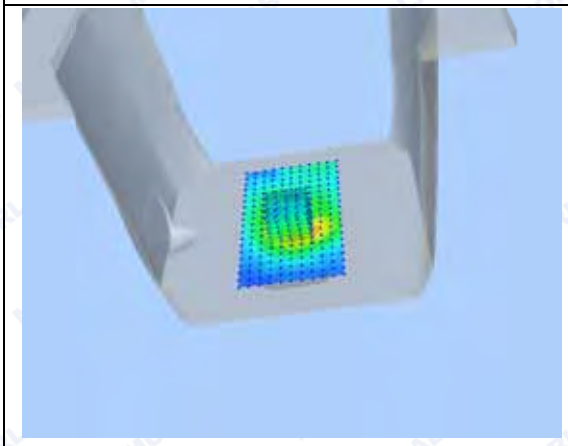
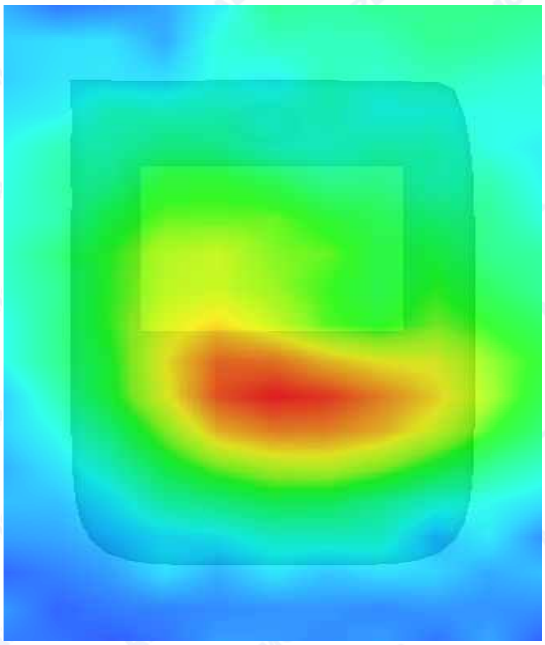
SURFACE SAR	VOLUME SAR
	

Maximum location: X=1.00, Y=-16.00
SAR Peak: 0.63 W/kg

SAR 10g (W/Kg)	0.185191
SAR 1g (W/Kg)	0.370852

Z axis scan



3D screen 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: 2014.11.6

Measurement duration: 9 minutes 30 seconds

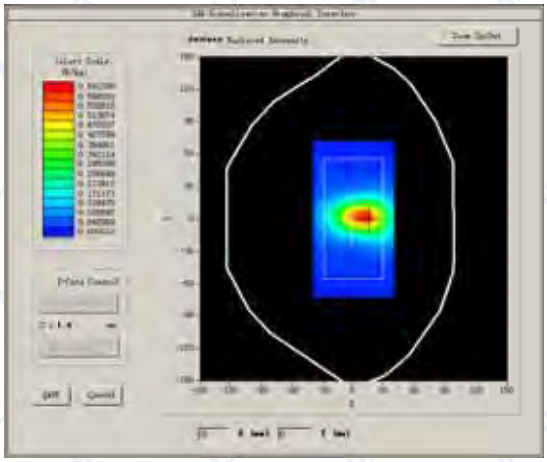
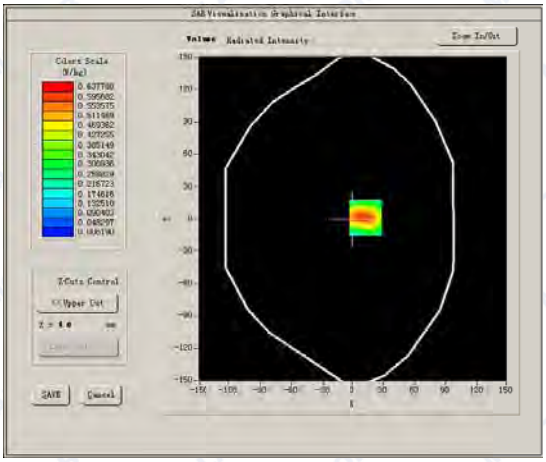
A. Experimental conditions.

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

B. SAR Measurement Results

High Band SAR (Channel 810):

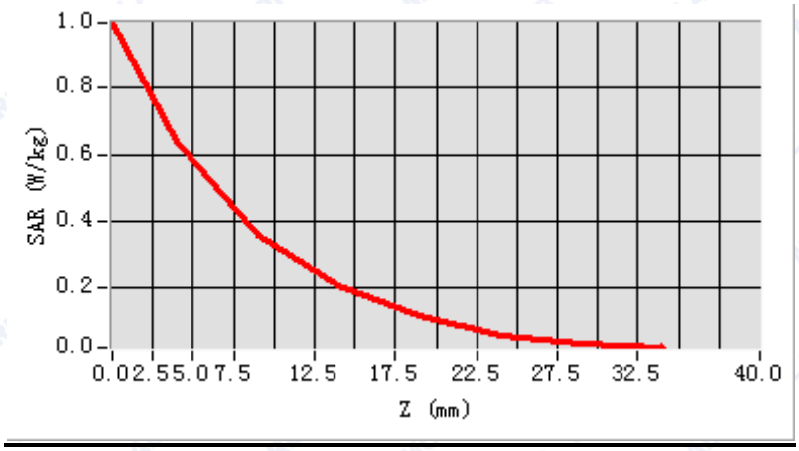
Frequency (MHz)	1909.800000
Relative permittivity (real part)	53.087685
Conductivity (S/m)	1.508657
Power drift(%)	-3.770000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	6.17
Crest factor:	1:2

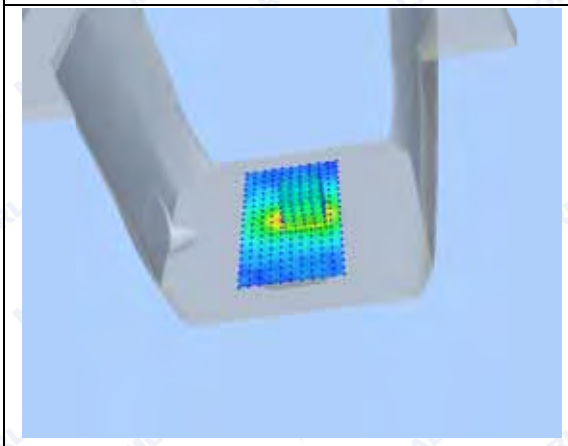
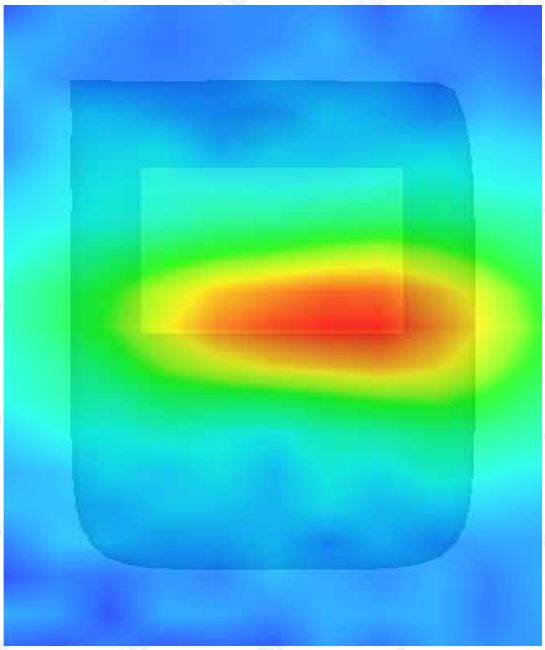
SURFACE SAR	VOLUME SAR
	

Maximum location: X=12.00, Y=1.00
SAR Peak: 1.01 W/kg

SAR 10g (W/Kg)	0.320115
SAR 1g (W/Kg)	0.616726

Z axis scan



3D screen 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: 2014.11.6

Measurement duration: 9 minutes 31 seconds

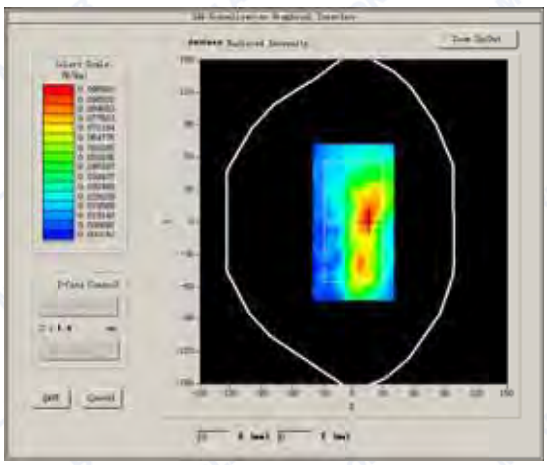
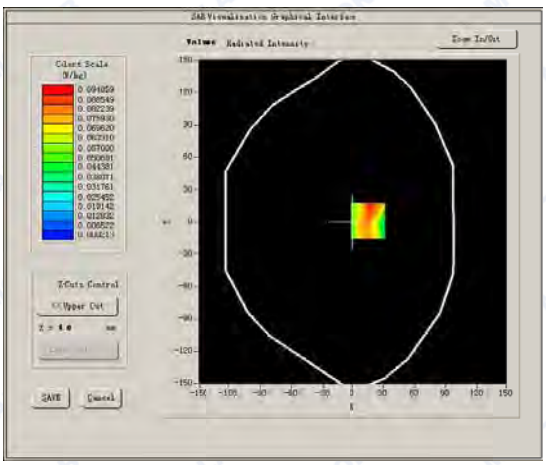
A. Experimental conditions.

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

B. SAR Measurement Result

High Band SAR (Channel 810):

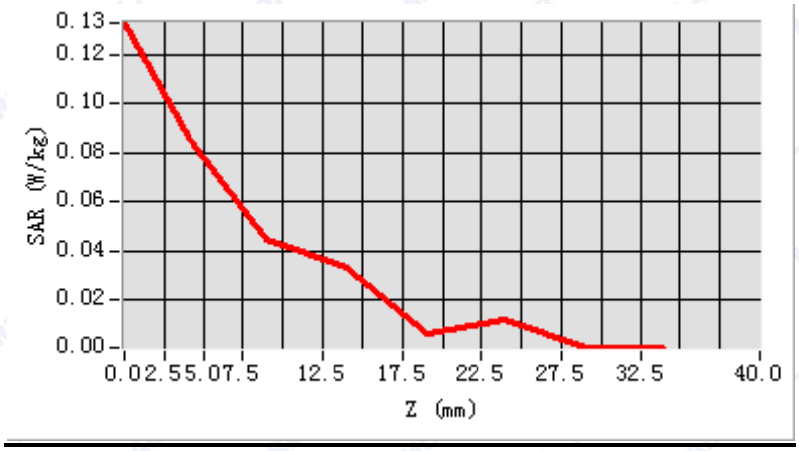
Frequency (MHz)	1880.800000
Relative permittivity (real part)	53.087685
Conductivity (S/m)	1.508657
Power drift(%)	0.260000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	6.17
Crest factor:	1:2

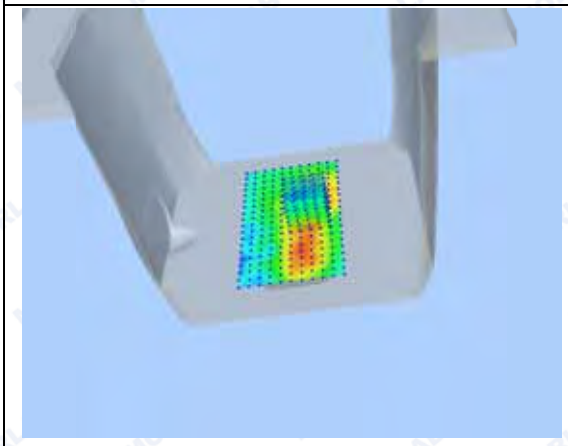
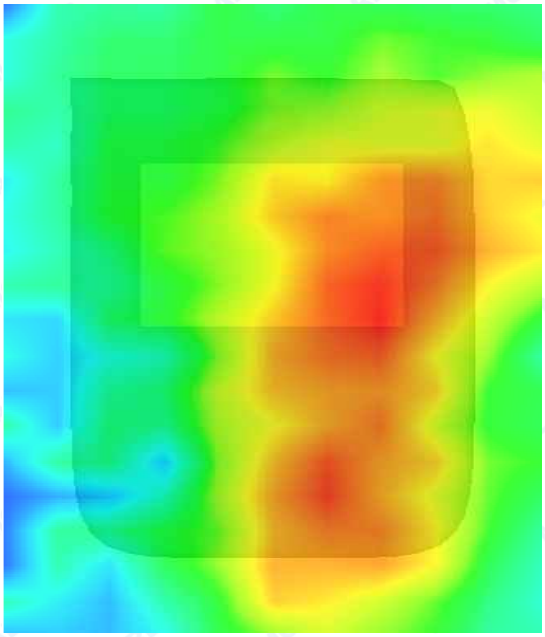
SURFACE SAR	VOLUME SAR
	

Maximum location: X=15.00, Y=1.00
SAR Peak: 0.15 W/kg

SAR 10g (W/Kg)	0.044741
SAR 1g (W/Kg)	0.086608

Z axis scan



3D screen 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: 2014.11.6

Measurement duration: 9 minutes 30 seconds

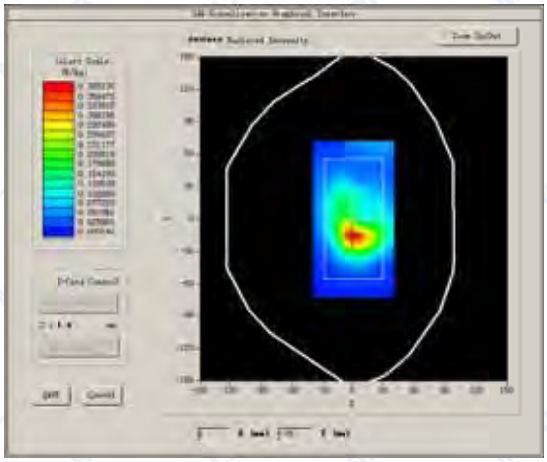
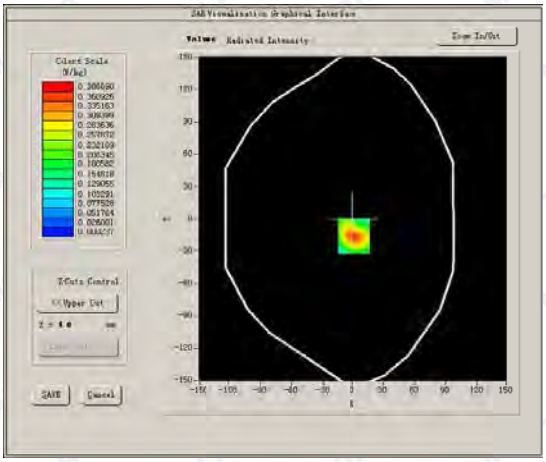
A. Experimental conditions.

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

B. SAR Measurement Results

High Band SAR (Channel 810):

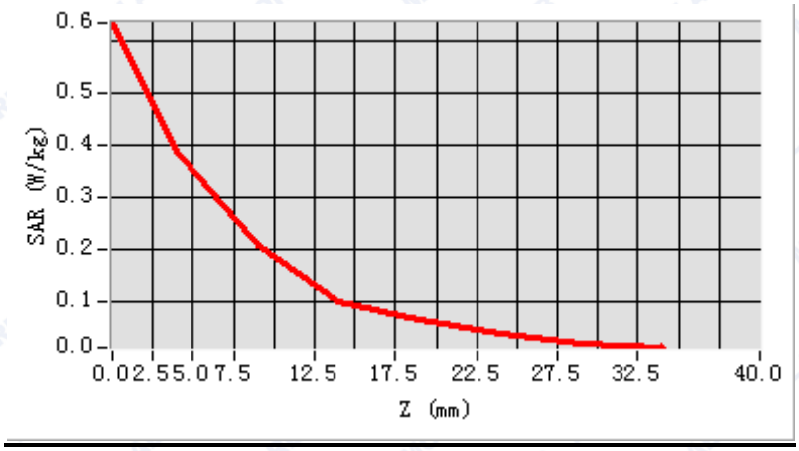
Frequency (MHz)	1909.800000
Relative permittivity (real part)	53.087685
Conductivity (S/m)	1.508657
Power drift(%)	0.520000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	6.17
Crest factor:	1:2

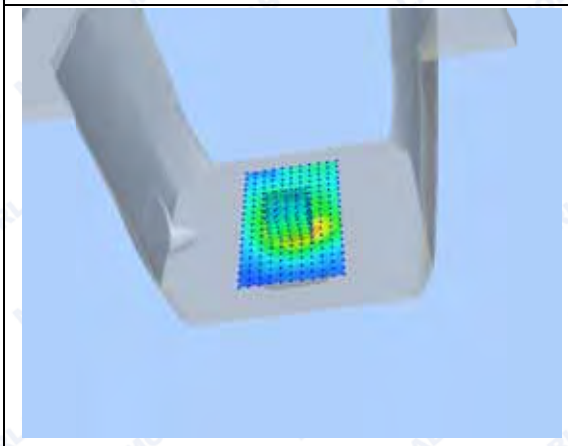
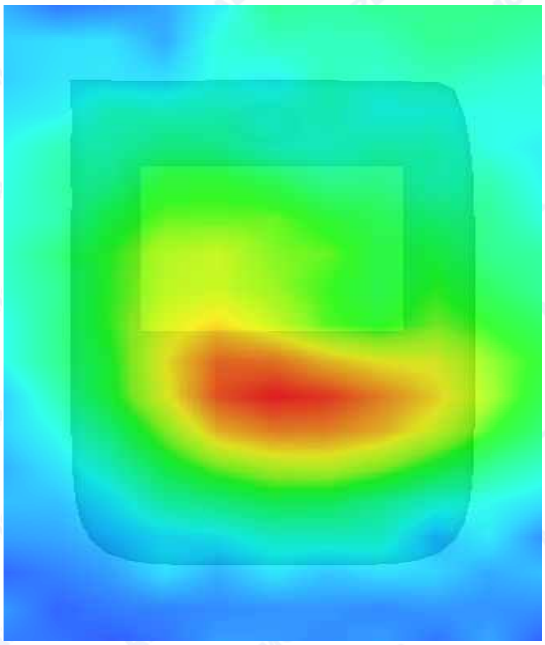
SURFACE SAR	VOLUME SAR
	

Maximum location: X=1.00, Y=-16.00
SAR Peak: 0.63 W/kg

SAR 10g (W/Kg)	0.185191
SAR 1g (W/Kg)	0.370852

Z axis scan



3D screen 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: 2014.11.5

Measurement duration: 9 minutes 16 seconds

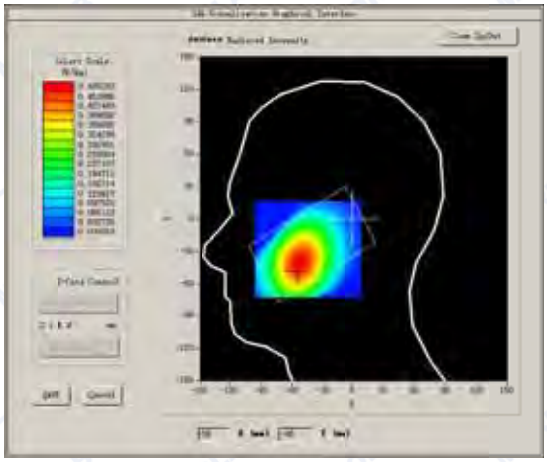
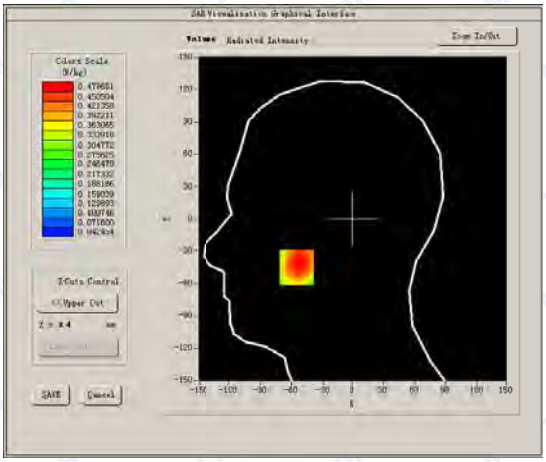
A. Experimental conditions.

Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Right head
Device Position	Cheek
Band	WCDMA850
Channels	Low
Signal	CDMA

B. SAR Measurement Results

Low Band SAR (Channel 4132):

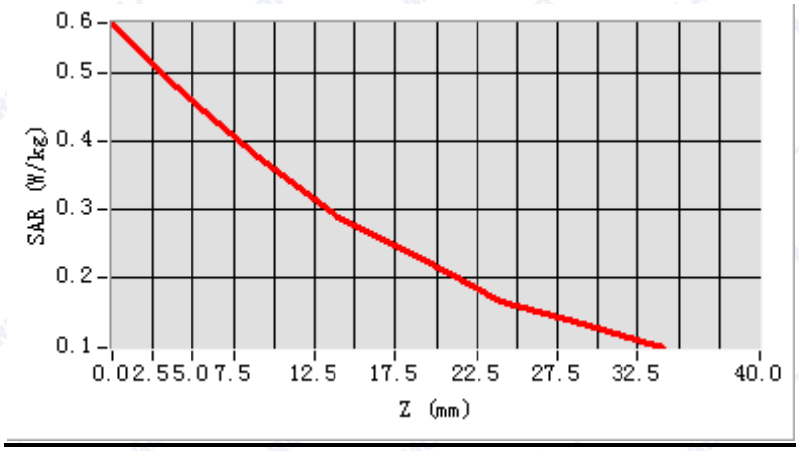
Frequency (MHz)	826.000000
Relative permittivity (real part)	41.305586
Conductivity (S/m)	0.908954
Power drift (%)	-1.700000
Ambient Temperature:	22.7°C
Liquid Temperature:	22.3°C
ConvF:	6.73
Crest factor:	1:1

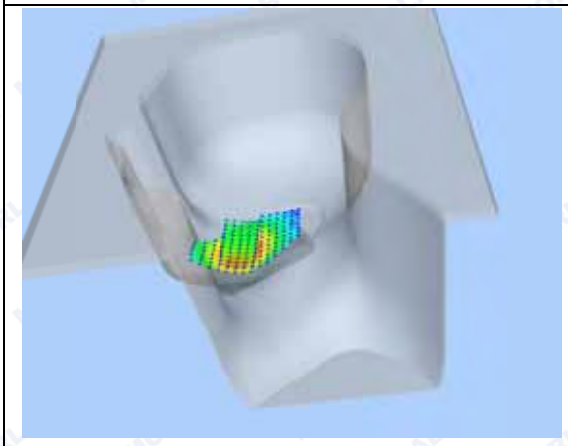
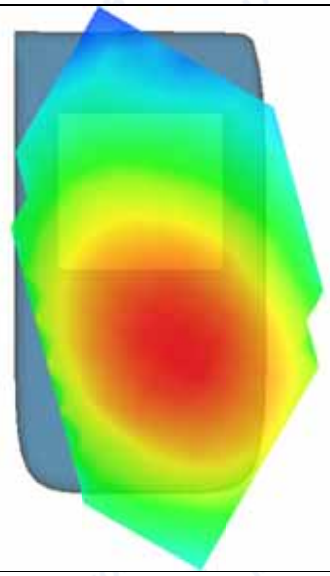
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-55.00, Y=-45.00
SAR Peak: 0.58 W/kg

SAR 10g (W/Kg)	0.341906
SAR 1g (W/Kg)	0.467228

Z axis scan



3D screen 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: 2014.11.5

Measurement duration: 8 minutes 13 seconds

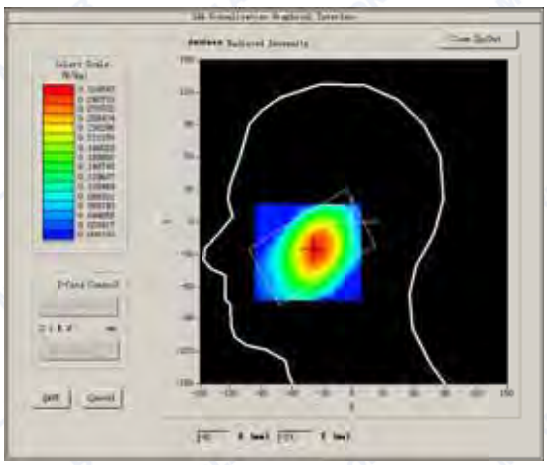
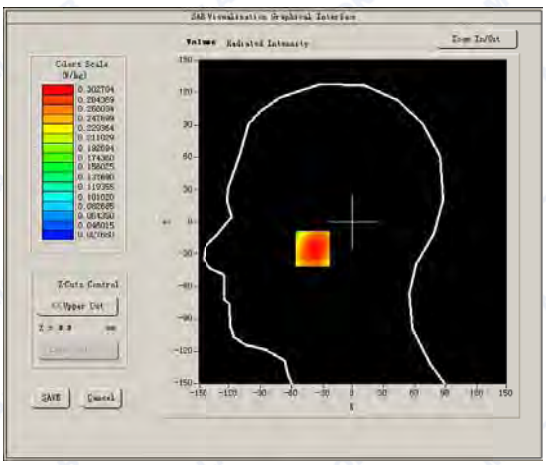
A. Experimental conditions.

Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Right head
Device Position	Tilt
Band	WCDMA850
Channels	Low
Signal	CDMA

B. SAR Measurement Results

Low Band SAR (Channel 4132):

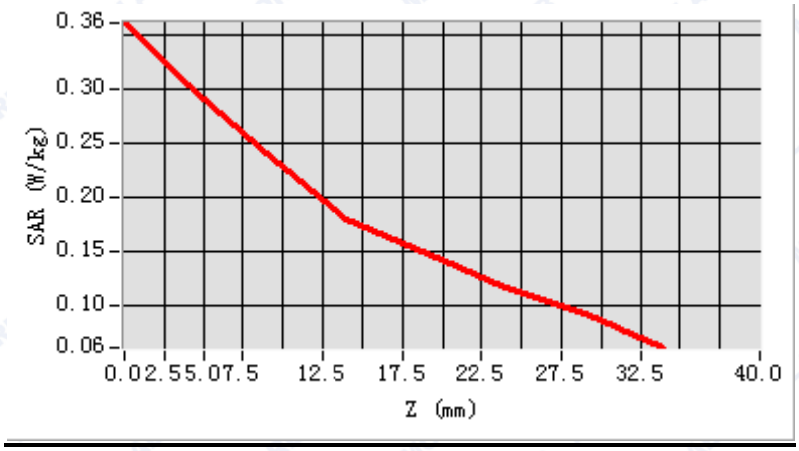
Frequency (MHz)	826.000000
Relative permittivity (real part)	41.305586
Conductivity (S/m)	0.908954
Power drift (%)	-3.430000
Ambient Temperature:	22.7°C
Liquid Temperature:	22.3°C
ConvF:	6.73
Crest factor:	1:1

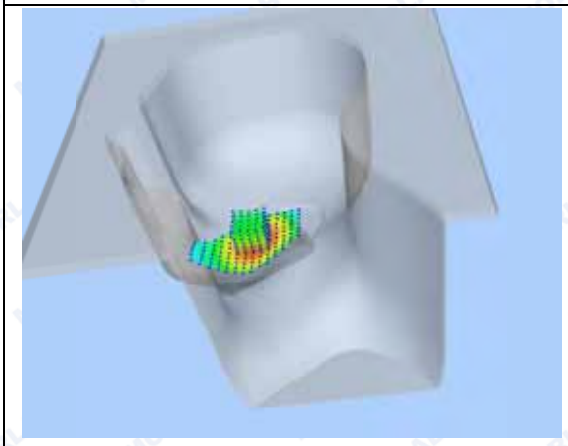
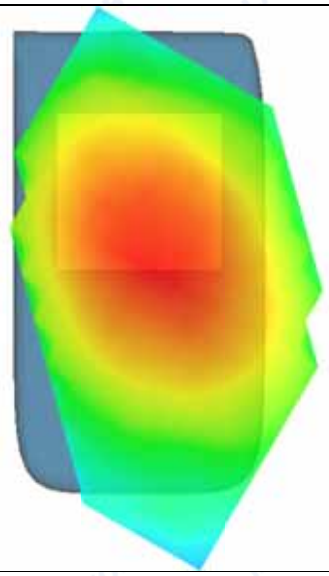
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-39.00, Y=-25.00
SAR Peak: 0.40 W/kg

SAR 10g (W/Kg)	0.214513
SAR 1g (W/Kg)	0.294915

Z axis scan



3D screen 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: 2014.11.5

Measurement duration: 8 minutes 59 seconds

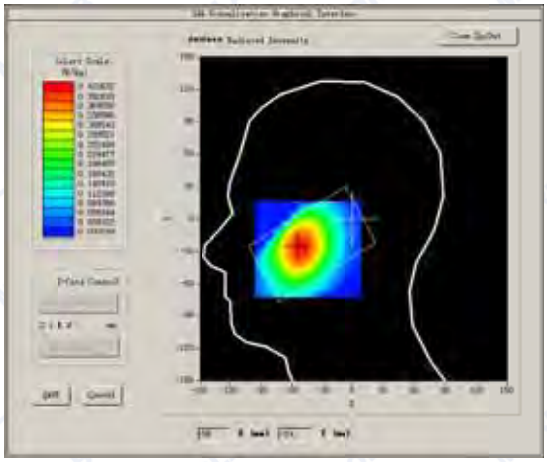
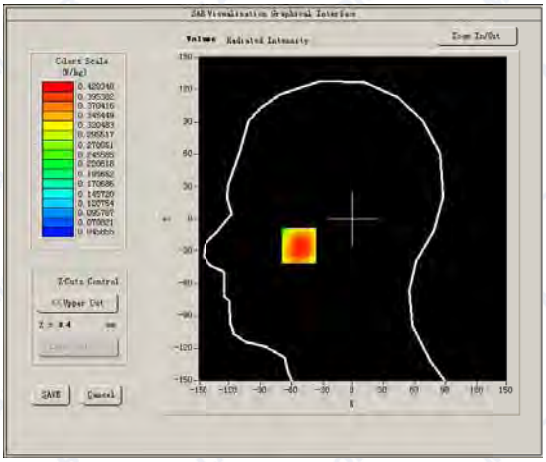
A. Experimental conditions.

Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Left head
Device Position	Cheek
Band	WCDMA850
Channels	Low
Signal	CDMA

B. SAR Measurement Results

Low Band SAR (Channel 4132):

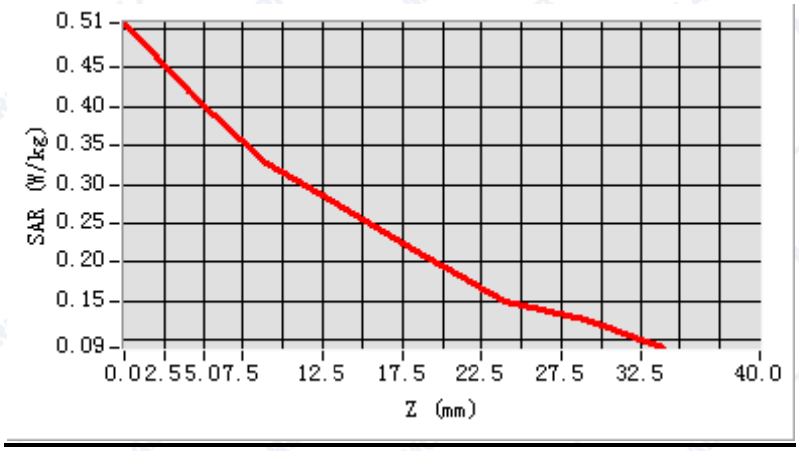
Frequency (MHz)	826.000000
Relative permittivity (real part)	41.305586
Conductivity (S/m)	0.908954
Power drift (%)	3.940000
Ambient Temperature:	22.7°C
Liquid Temperature:	22.3°C
ConvF:	6.73
Crest factor:	1:1

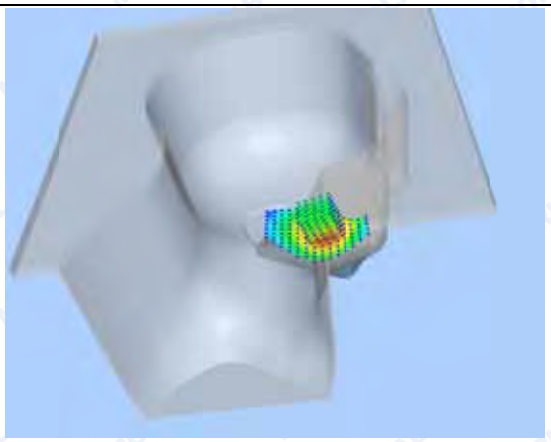
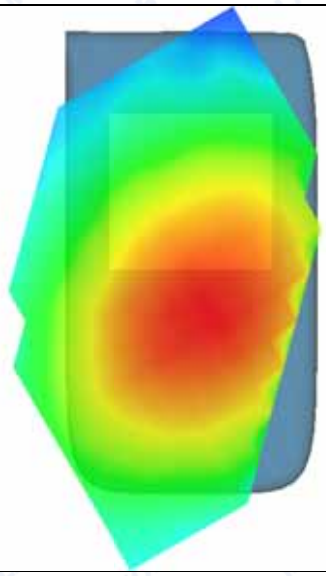
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-53.00, Y=-25.00
SAR Peak: 0.53 W/kg

SAR 10g (W/Kg)	0.292184
SAR 1g (W/Kg)	0.403337

Z axis scan



3D screen 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: 2014.11.5

Measurement duration: 8 minutes 13 seconds

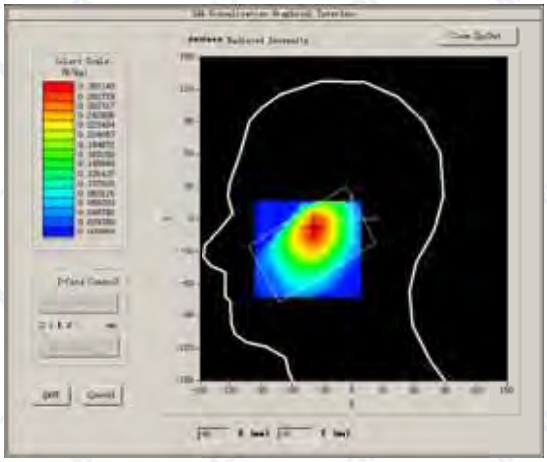
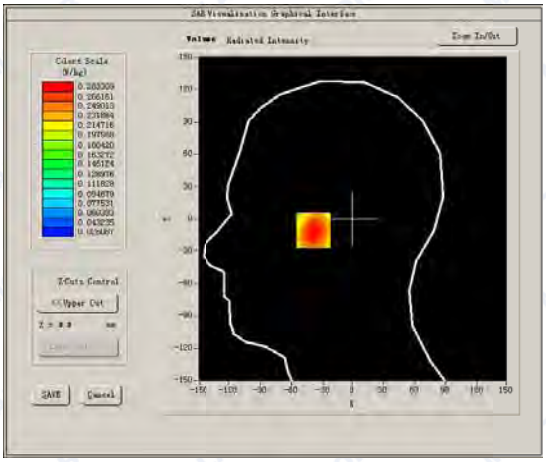
A. Experimental conditions.

Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Left head
Device Position	Tilt
Band	WCDMA850
Channels	Low
Signal	CDMA

B. SAR Measurement Results

Low Band SAR (Channel 4132):

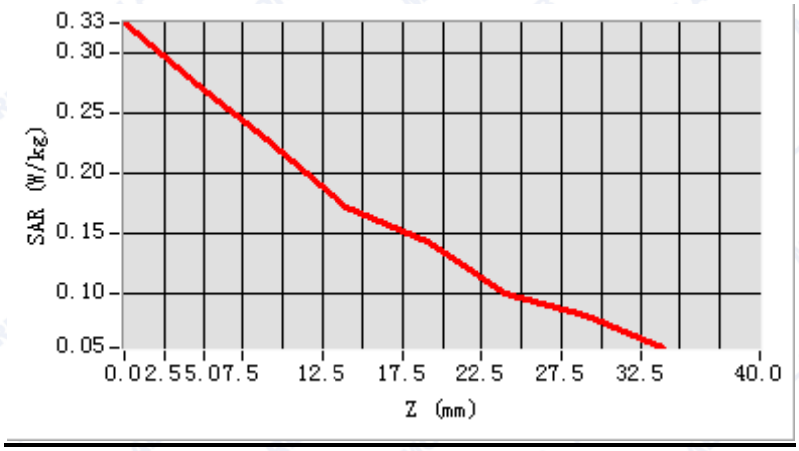
Frequency (MHz)	826.000000
Relative permittivity (real part)	41.305586
Conductivity (S/m)	0.908954
Power drift (%)	0.780000
Ambient Temperature:	22.7°C
Liquid Temperature:	22.3°C
ConvF:	6.73
Crest factor:	1:1

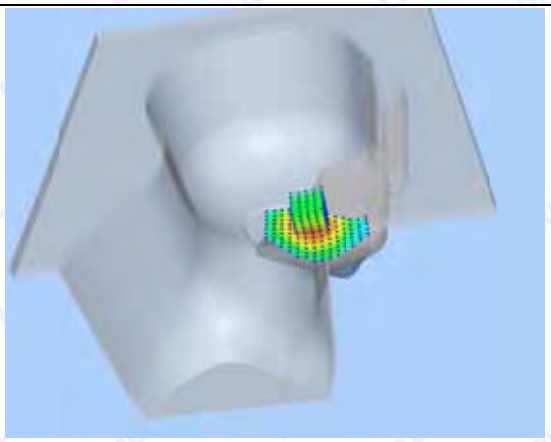
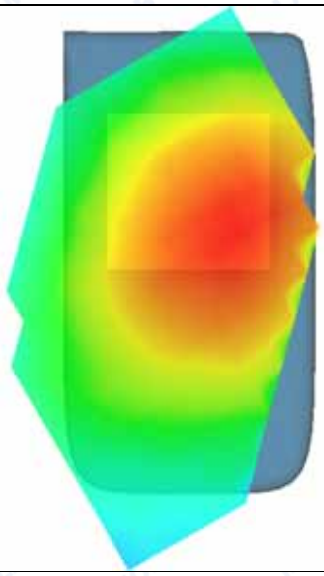
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-39.00, Y=-9.00
SAR Peak: 0.37 W/kg

SAR 10g (W/Kg)	0.199270
SAR 1g (W/Kg)	0.273383

Z axis scan



3D screen 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: 2014.11.5

Measurement duration: 9 minutes 32 seconds

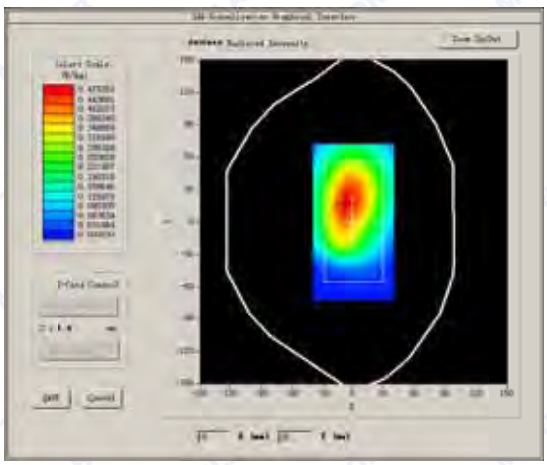
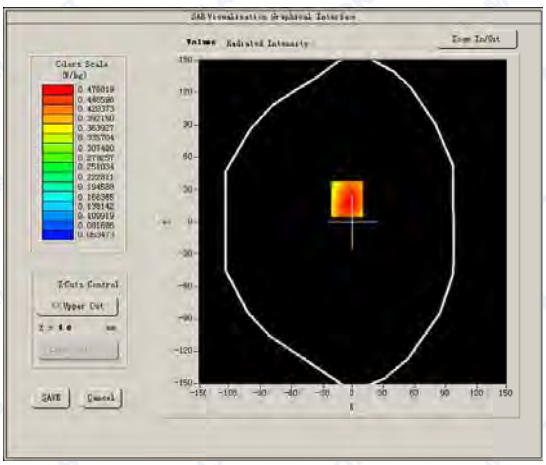
A. Experimental conditions.

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

B. SAR Measurement Results

Low Band SAR (Channel 4132):

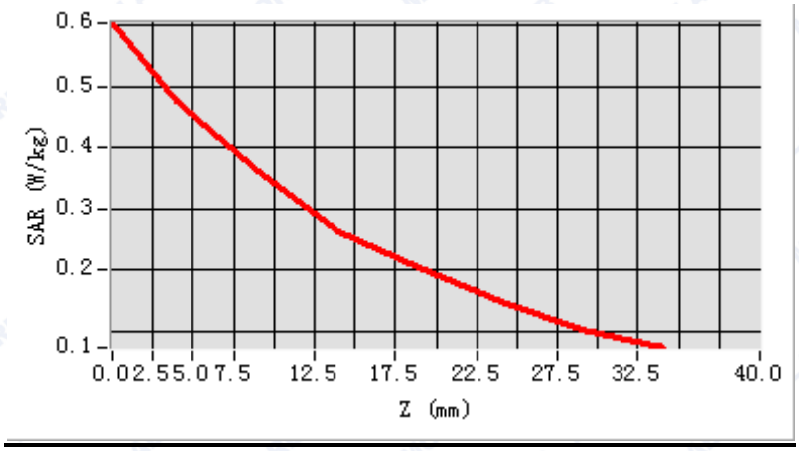
Frequency (MHz)	826.000000
Relative permittivity (real part)	55.838595
Conductivity (S/m)	0.973824
Power drift (%)	0.370000
Ambient Temperature:	22.7°C
Liquid Temperature:	22.3°C
ConvF:	6.99
Crest factor:	1:1

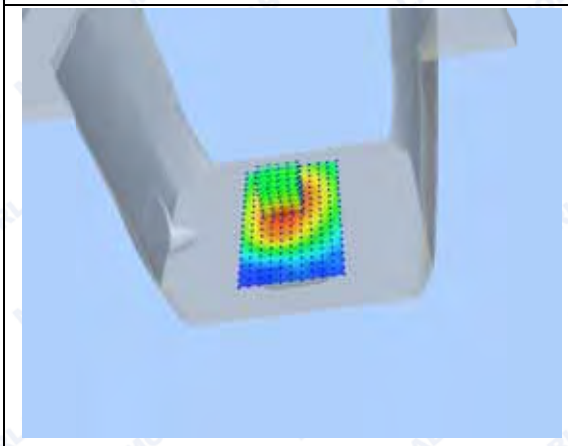
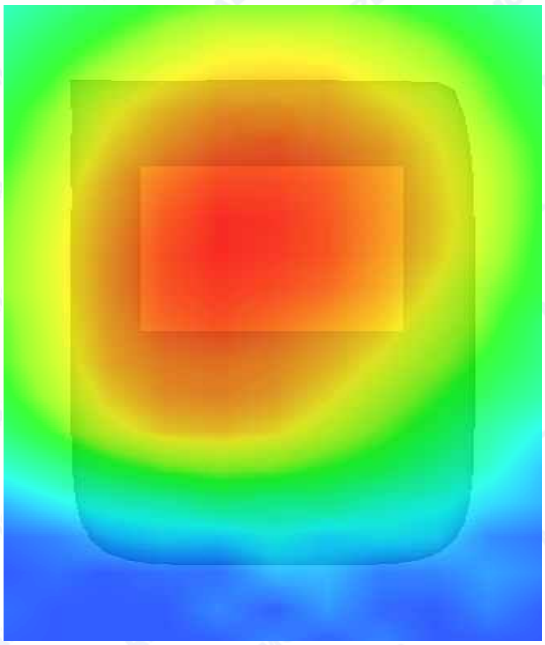
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-6.00, Y=21.00
SAR Peak: 0.67 W/kg

SAR 10g (W/Kg)	0.358977
SAR 1g (W/Kg)	0.506019

Z axis scan



3D screen 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: 2014.11.5

Measurement duration: 9 minutes 33 seconds

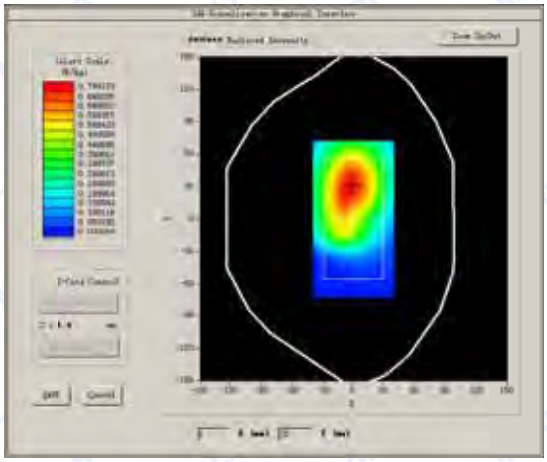
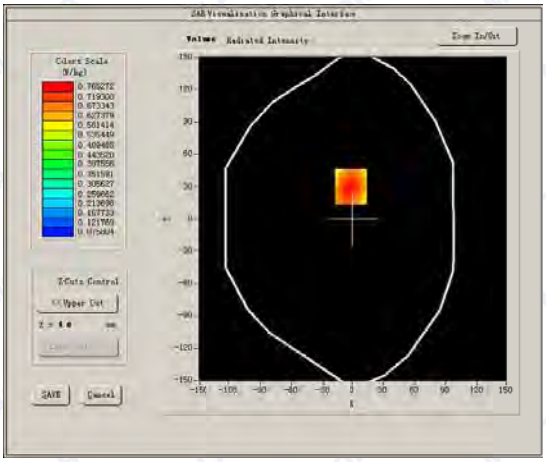
A. Experimental conditions.

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

B. SAR Measurement Results

Middle Band SAR (Channel 4182):

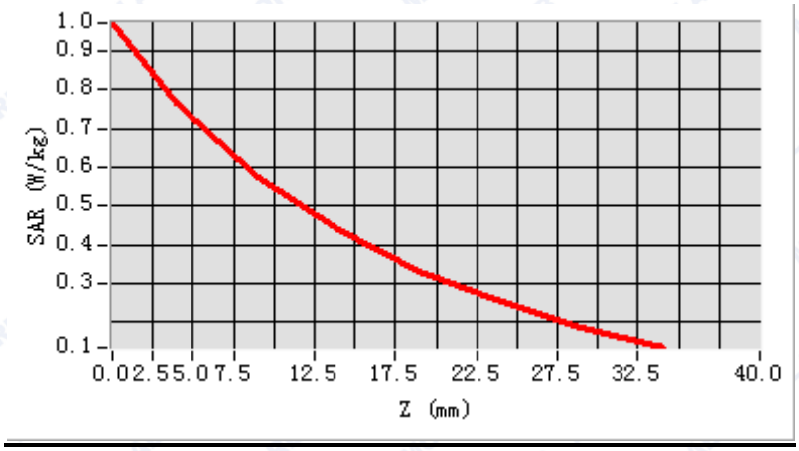
Frequency (MHz)	836.000000
Relative permittivity (real part)	55.838595
Conductivity (S/m)	0.973824
Power drift (%)	-0.840000
Ambient Temperature:	22.7°C
Liquid Temperature:	22.3°C
ConvF:	6.99
Crest factor:	1:1

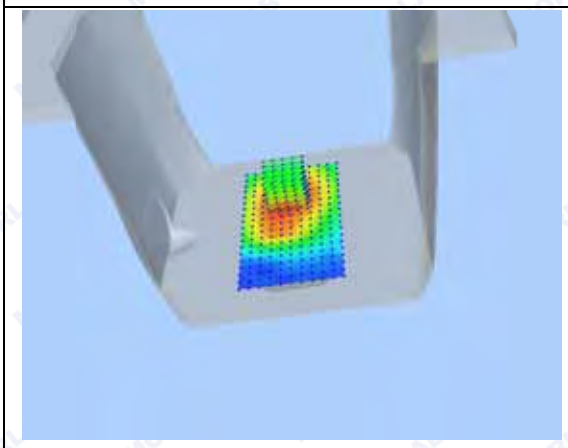
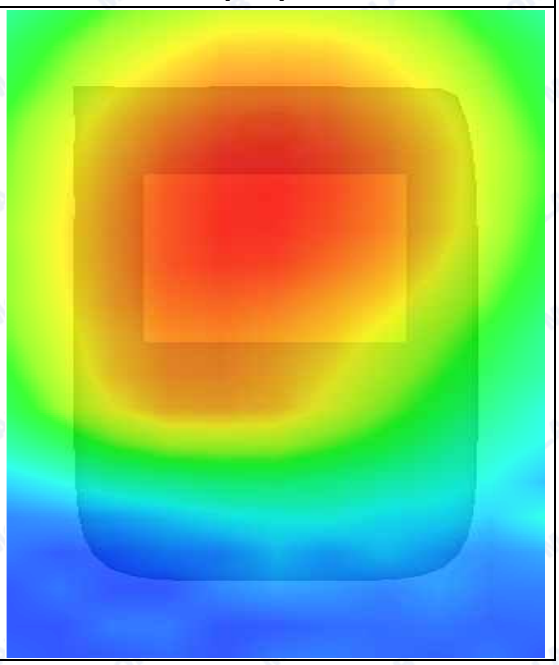
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-2.00, Y=30.00
SAR Peak: 1.06 W/kg

SAR 10g (W/Kg)	0.570593
SAR 1g (W/Kg)	0.799145

Z axis scan



3D screen 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: 2014.11.5

Measurement duration: 9 minutes 32 seconds

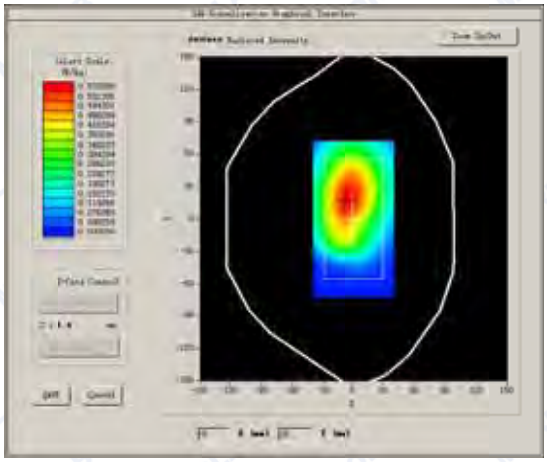
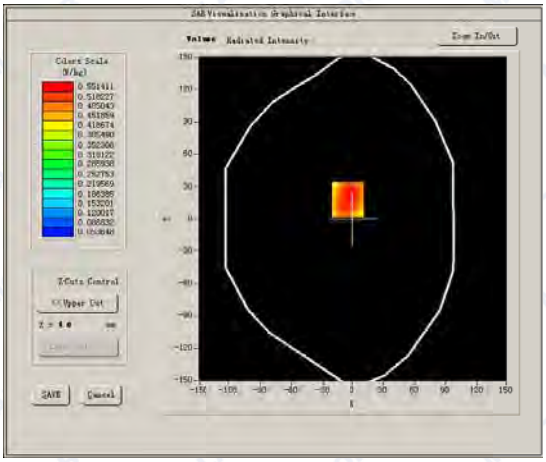
A. Experimental conditions.

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

B. SAR Measurement Results

High Band SAR (Channel 4233):

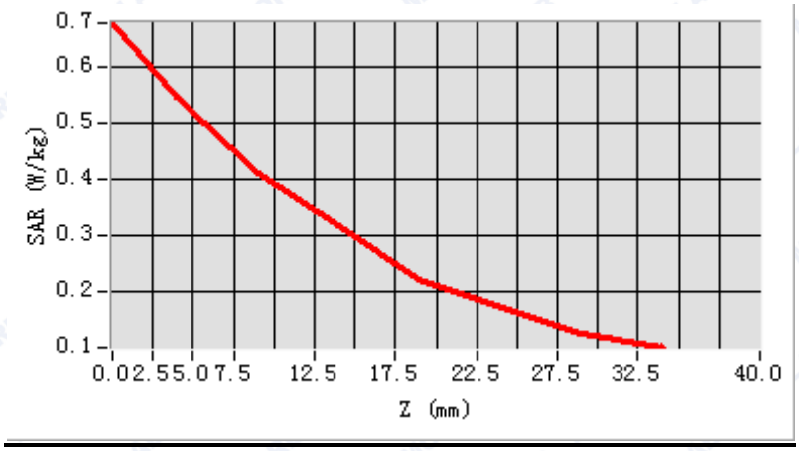
Frequency (MHz)	848.800000
Relative permittivity (real part)	55.838595
Conductivity (S/m)	0.973824
Power drift (%)	-2.230000
Ambient Temperature:	22.7°C
Liquid Temperature:	22.3°C
ConvF:	6.99
Crest factor:	1:1

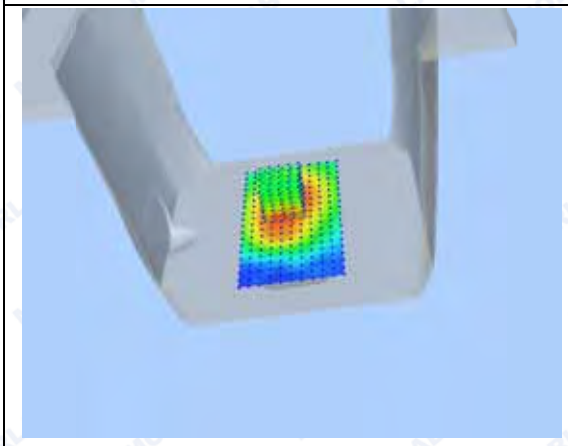
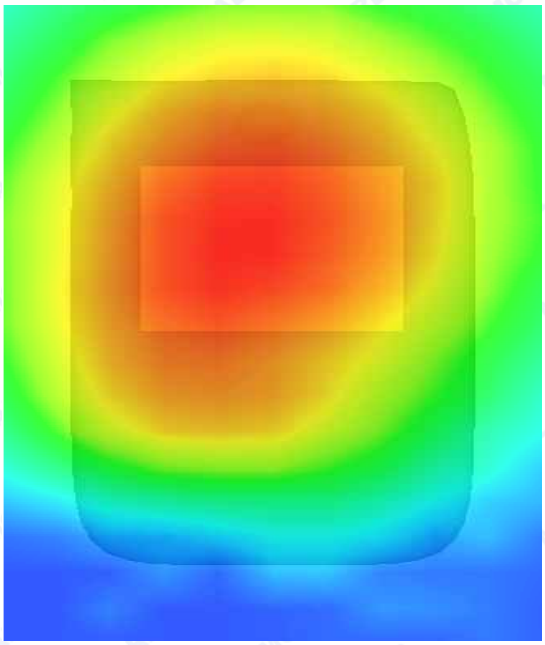
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-5.00, Y=18.00
SAR Peak: 0.77 W/kg

SAR 10g (W/Kg)	0.408739
SAR 1g (W/Kg)	0.574754

Z axis scan



3D screen 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: 2014.11.5

Measurement duration: 9 minutes 31 seconds

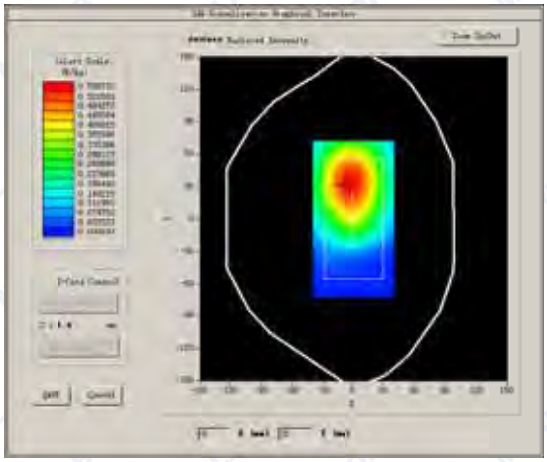
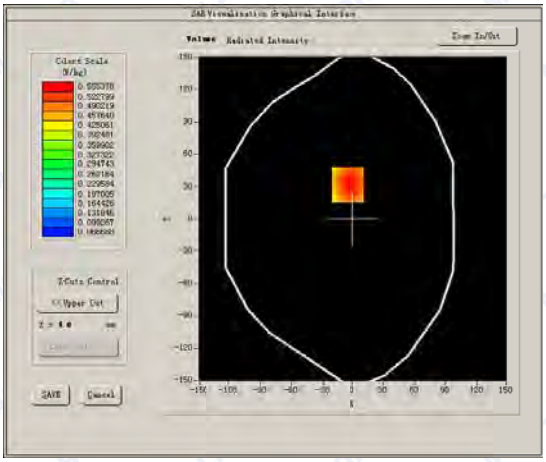
A. Experimental conditions.

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

B. SAR Measurement Results

Low Band SAR (Channel 4132):

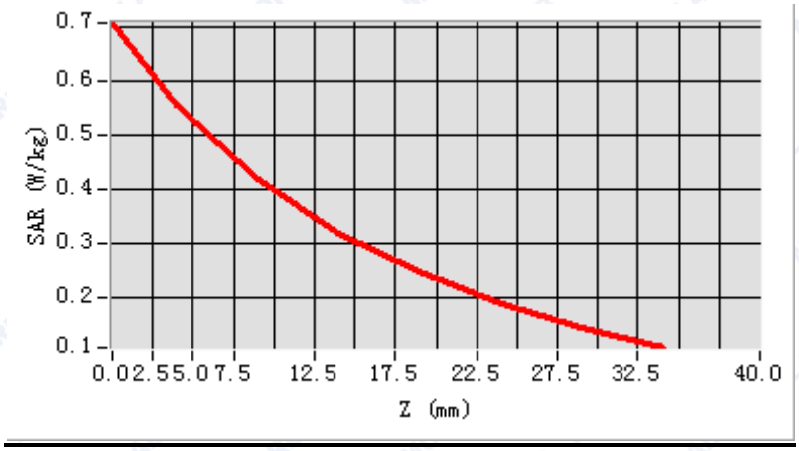
Frequency (MHz)	826.000000
Relative permittivity (real part)	55.838595
Conductivity (S/m)	0.973824
Power drift (%)	-0.750000
Ambient Temperature:	22.7°C
Liquid Temperature:	22.3°C
ConvF:	6.99
Crest factor:	1:1

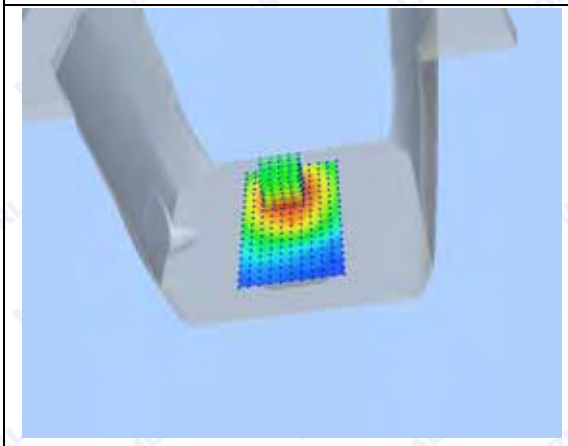
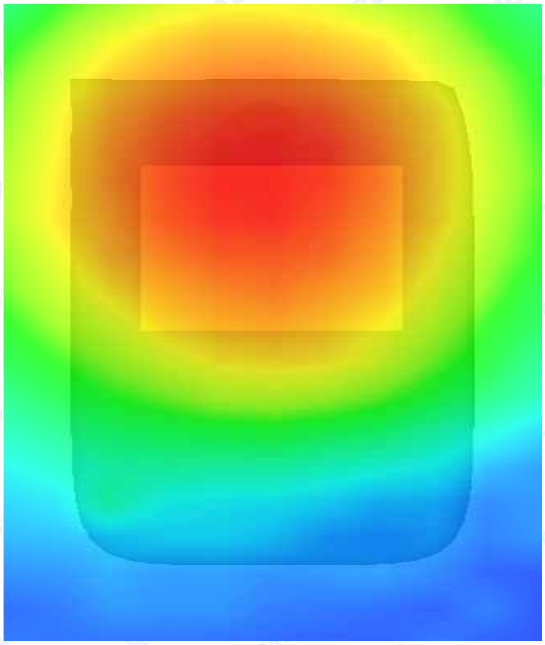
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-5.00, Y=32.00
SAR Peak: 0.76 W/kg

SAR 10g (W/Kg)	0.420629
SAR 1g (W/Kg)	0.580187

Z axis scan



3D screen 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: 2014.11.5

Measurement duration: 9 minutes 28 seconds

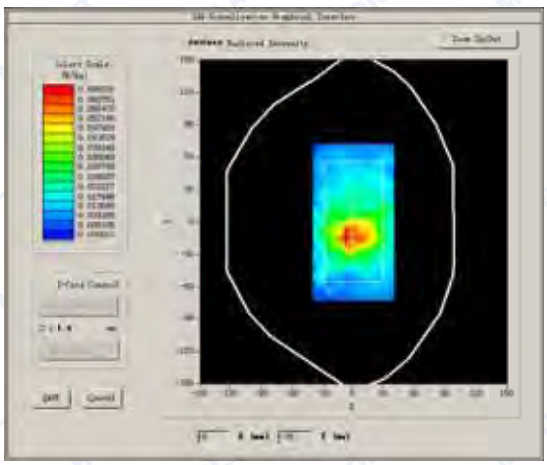
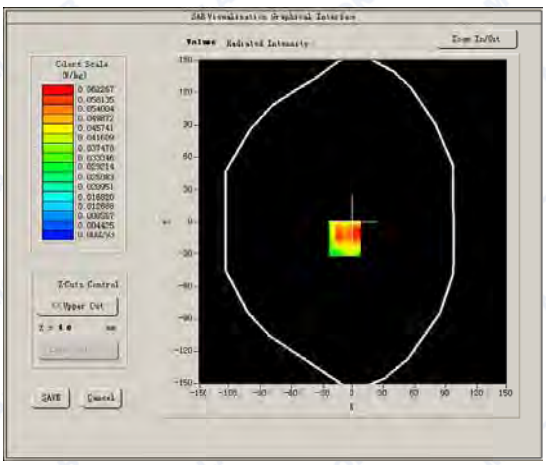
A. Experimental conditions.

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

B. SAR Measurement Results

Low Band SAR (Channel 4132):

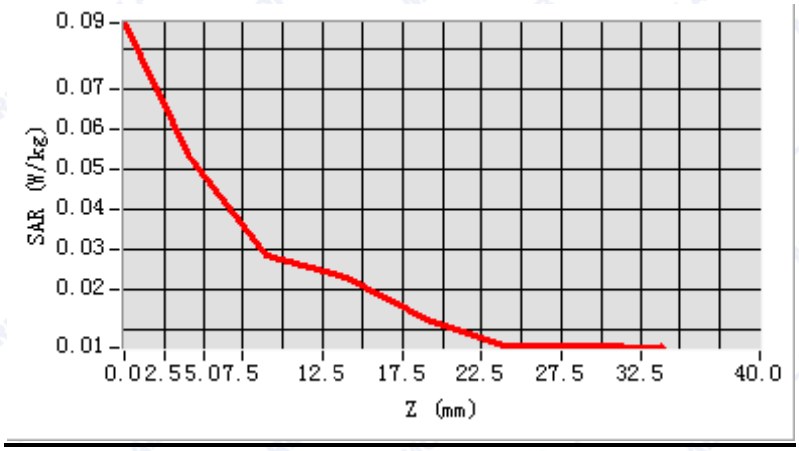
Frequency (MHz)	826.000000
Relative permittivity (real part)	55.838595
Conductivity (S/m)	0.973824
Power drift (%)	-3.470000
Ambient Temperature:	22.7°C
Liquid Temperature:	22.3°C
ConvF:	6.99
Crest factor:	1:1

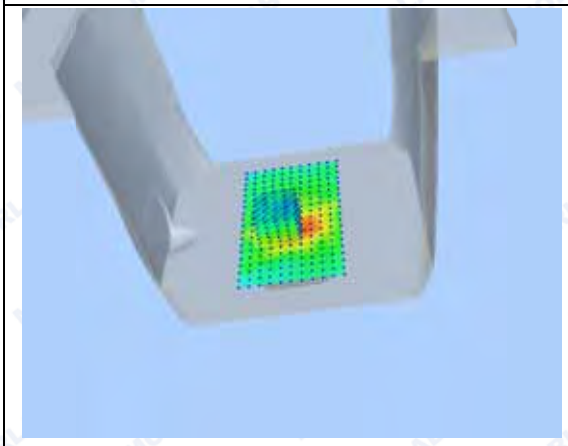
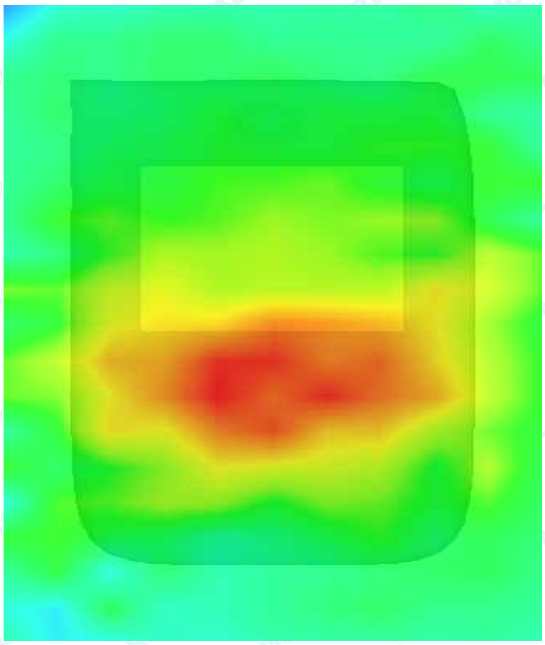
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-8.00, Y=-15.00
SAR Peak: 0.14 W/kg

SAR 10g (W/Kg)	0.034754
SAR 1g (W/Kg)	0.069082

Z axis scan



3D screen 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: 2014.11.5

Measurement duration: 9 minutes 28 seconds

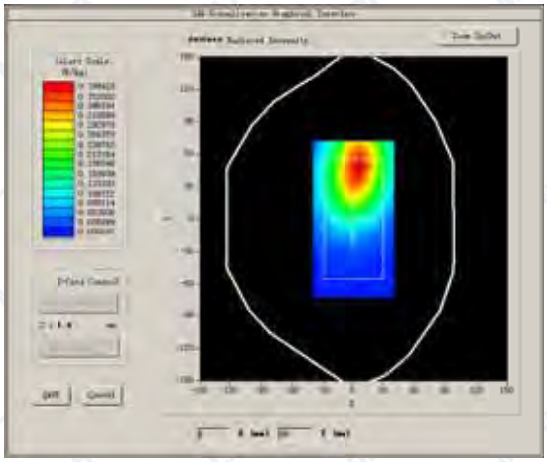
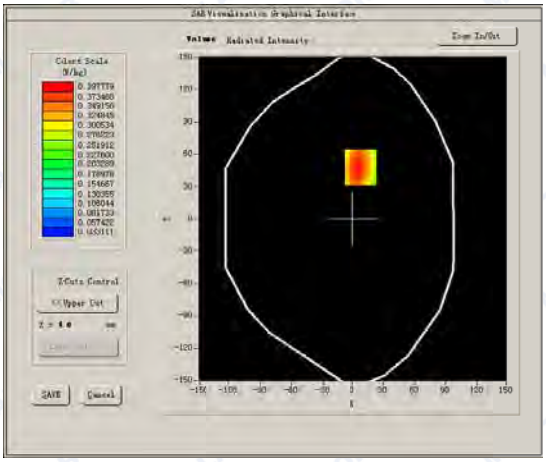
A. Experimental conditions.

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

B. SAR Measurement Results

Low Band SAR (Channel 4132):

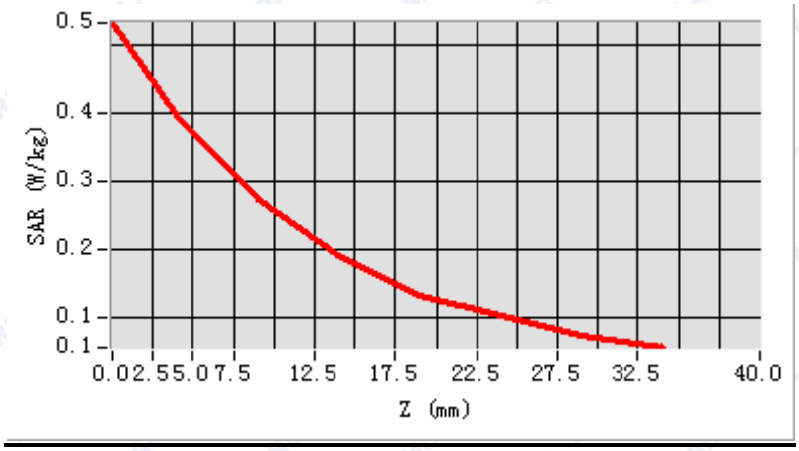
Frequency (MHz)	826.000000
Relative permittivity (real part)	55.838595
Conductivity (S/m)	0.973824
Power drift (%)	0.190000
Ambient Temperature:	22.7°C
Liquid Temperature:	22.3°C
ConvF:	6.99
Crest factor:	1:1

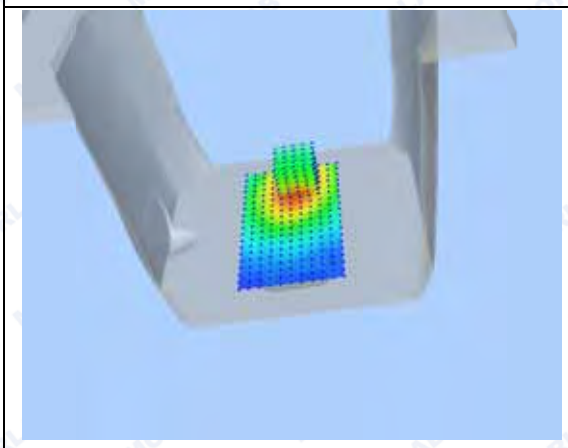
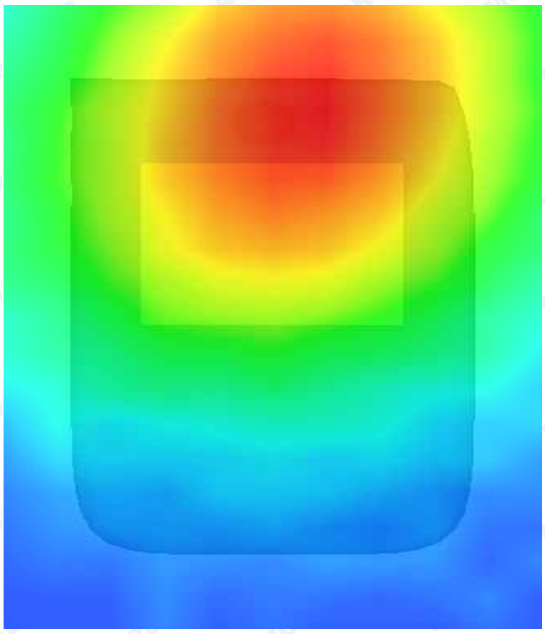
SURFACE SAR	VOLUME SAR
	

Maximum location: X=7.00, Y=48.00
SAR Peak: 0.57 W/kg

SAR 10g (W/Kg)	0.273444
SAR 1g (W/Kg)	0.409322

Z axis scan



3D screen 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: 2014.11.5

Measurement duration: 9 minutes 28 seconds

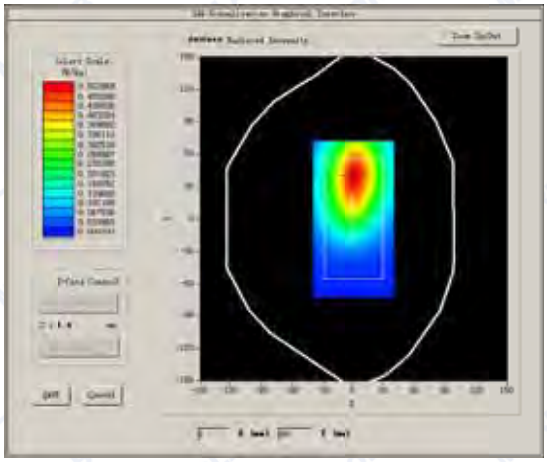
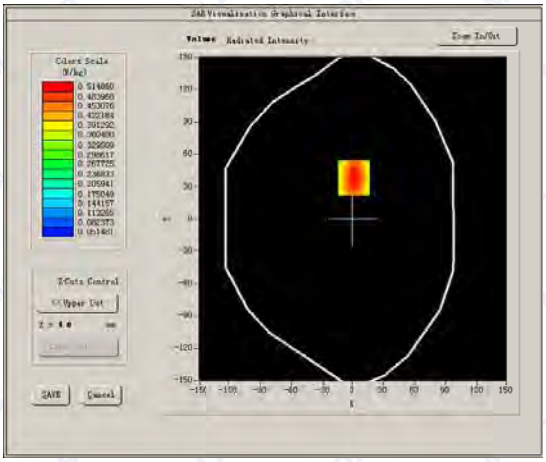
A. Experimental conditions.

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

B. SAR Measurement Results

Low Band SAR (Channel 4132):

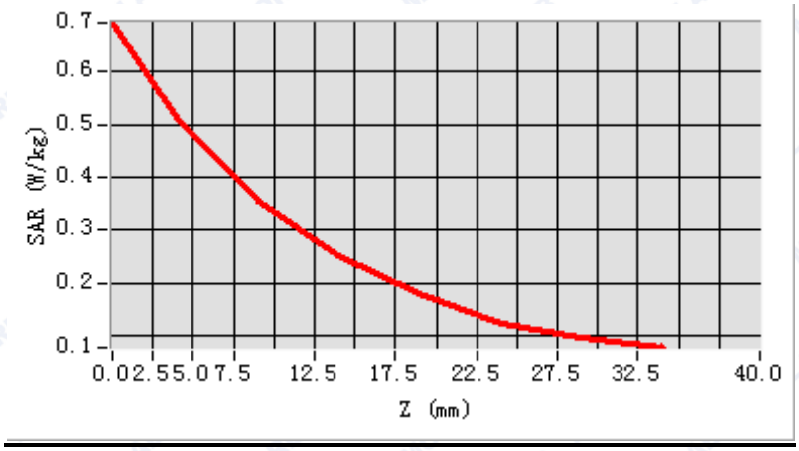
Frequency (MHz)	826.000000
Relative permittivity (real part)	55.838595
Conductivity (S/m)	0.973824
Power drift (%)	-0.170000
Ambient Temperature:	22.7°C
Liquid Temperature:	22.3°C
ConvF:	6.99
Crest factor:	1:1

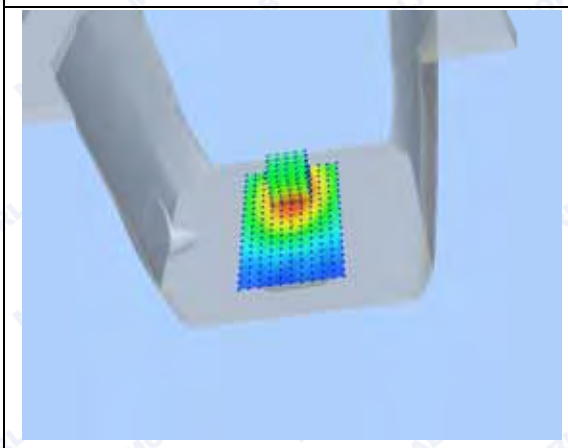
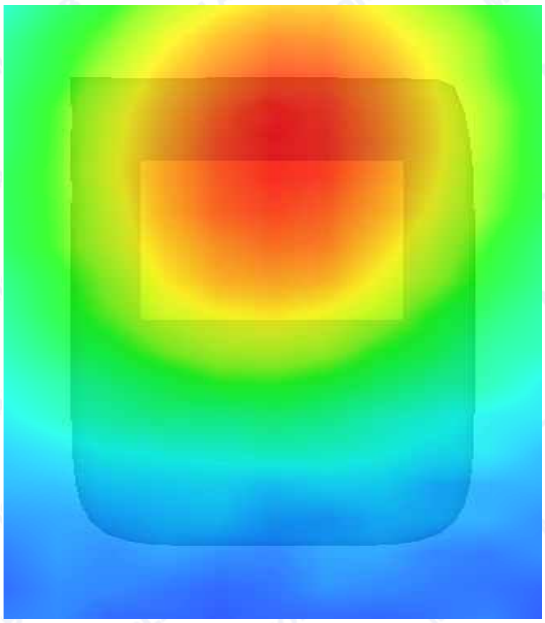
SURFACE SAR	VOLUME SAR
	

Maximum location: X=1.00, Y=38.00
SAR Peak: 0.76 W/kg

SAR 10g (W/Kg)	0.357342
SAR 1g (W/Kg)	0.535662

Z axis scan



3D screen 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: 2014.11.6

Measurement duration: 9 minutes 30 seconds

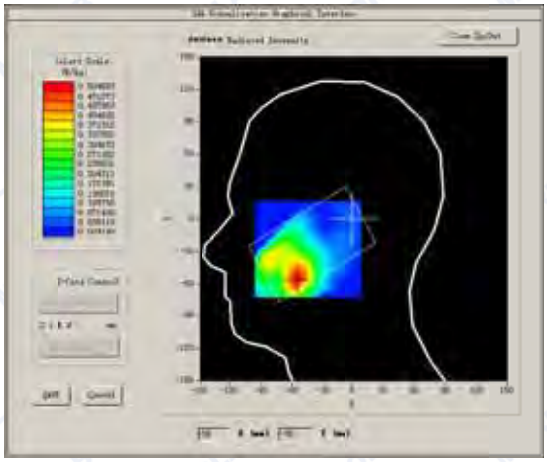
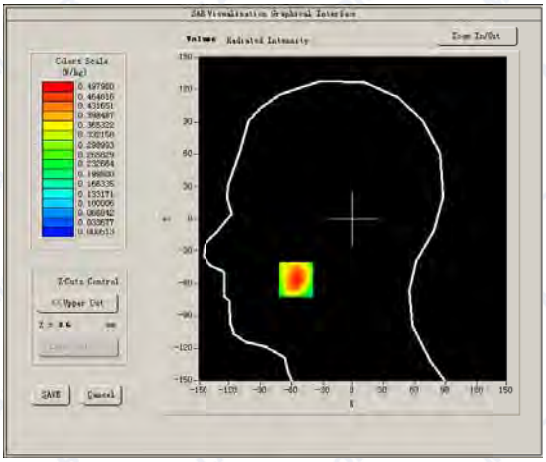
A. Experimental conditions.

Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Right head
Device Position	Cheek
Band	WCDMA1900
Channels	Middle
Signal	CDMA

B. SAR Measurement Results

Middle Band SAR (Channel 9400):

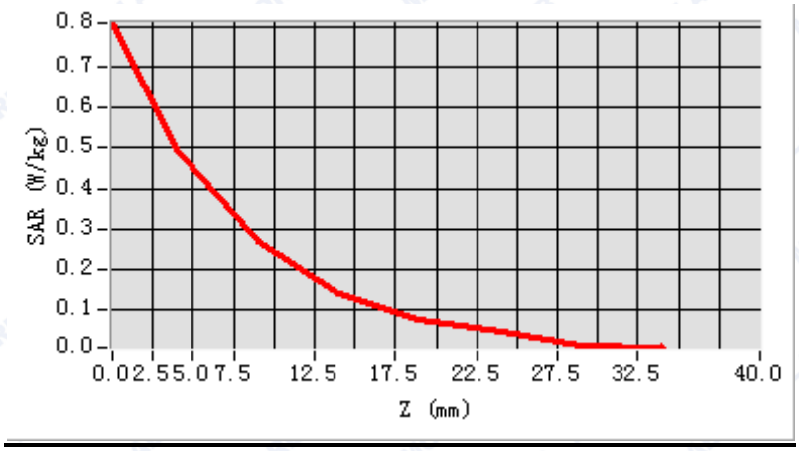
Frequency (MHz)	1880.000000
Relative permittivity (real part)	39.958875
Conductivity (S/m)	1.410215
Power drift (%)	-2.950000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	6.00
Crest factor:	1:1

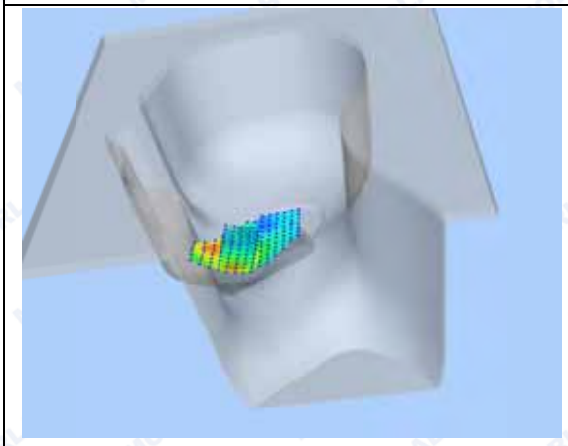
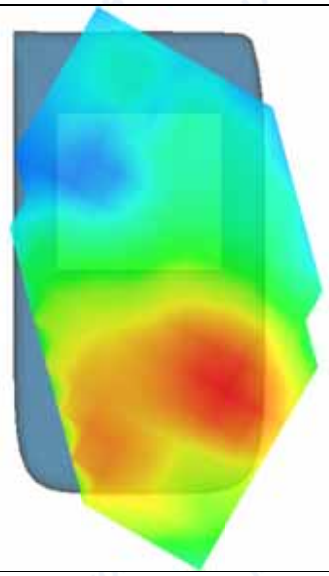
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-56.00, Y=-56.00
SAR Peak: 0.81 W/kg

SAR 10g (W/Kg)	0.251317
SAR 1g (W/Kg)	0.475933

Z axis scan



3D screen 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: 2014.11.6

Measurement duration: 7 minutes 54 seconds

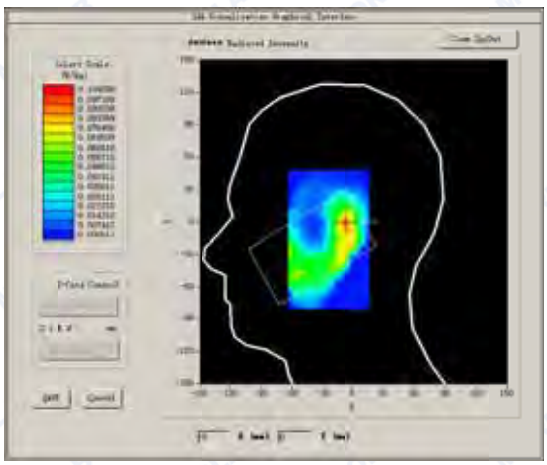
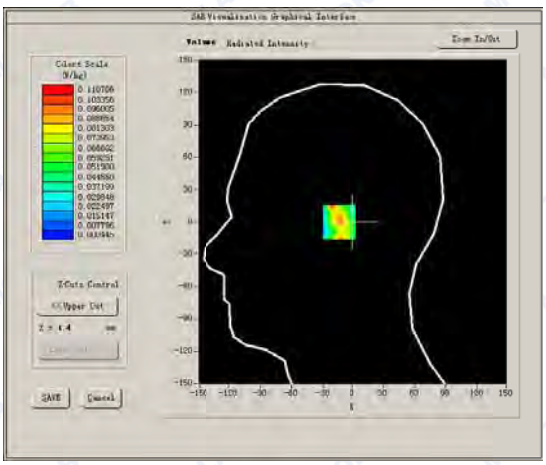
A. Experimental conditions.

Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Right head
Device Position	Tilt
Band	WCDMA1900
Channels	Middle
Signal	CDMA

B. SAR Measurement Results

Middle Band SAR (Channel 9400):

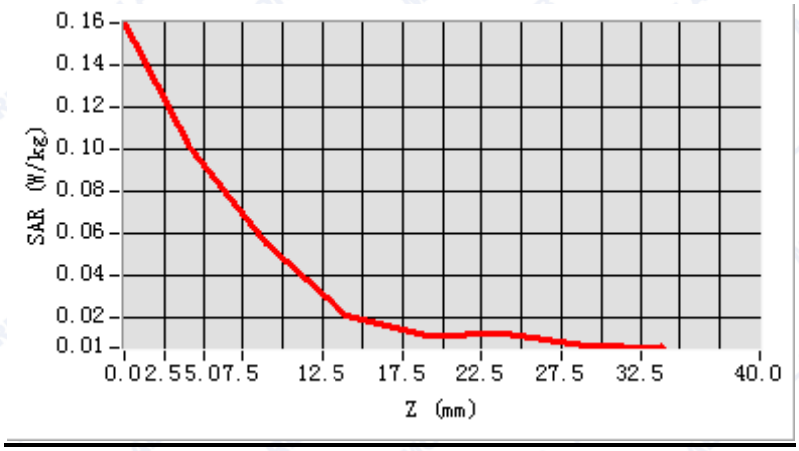
Frequency (MHz)	1880.000000
Relative permittivity (real part)	39.958875
Conductivity (S/m)	1.410215
Power drift (%)	1.740000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	6.00
Crest factor:	1:1

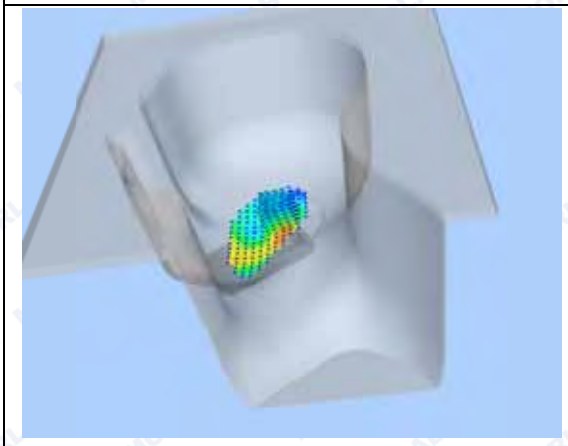
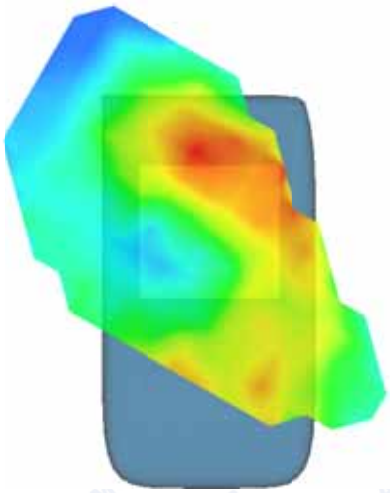
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-8.00, Y=0.00
SAR Peak: 0.26 W/kg

SAR 10g (W/Kg)	0.042430
SAR 1g (W/Kg)	0.096319

Z axis scan



3D screen 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: 2014.11.6

Measurement duration: 9 minutes 37 seconds

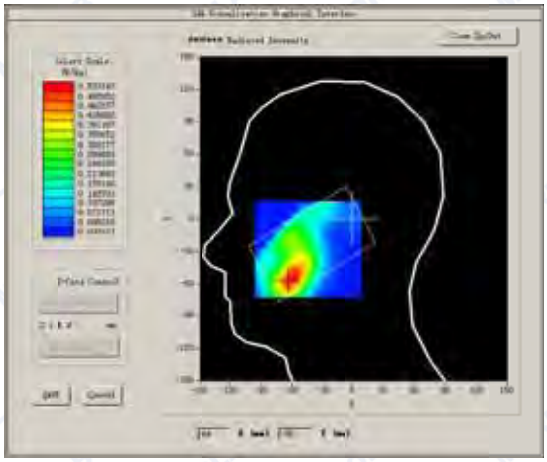
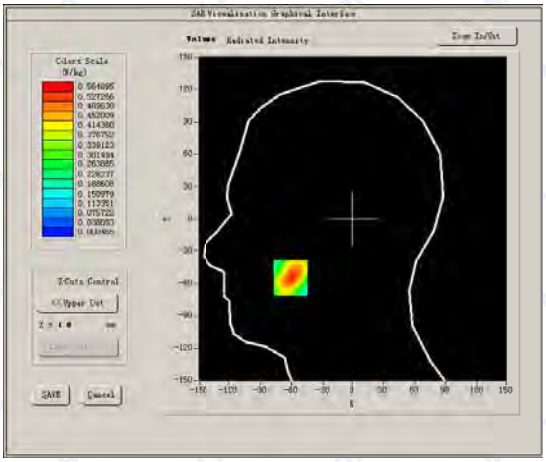
A. Experimental conditions.

Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Left head
Device Position	Cheek
Band	WCDMA1900
Channels	Middle
Signal	CDMA

B. SAR Measurement Results

Middle Band SAR (Channel 9400):

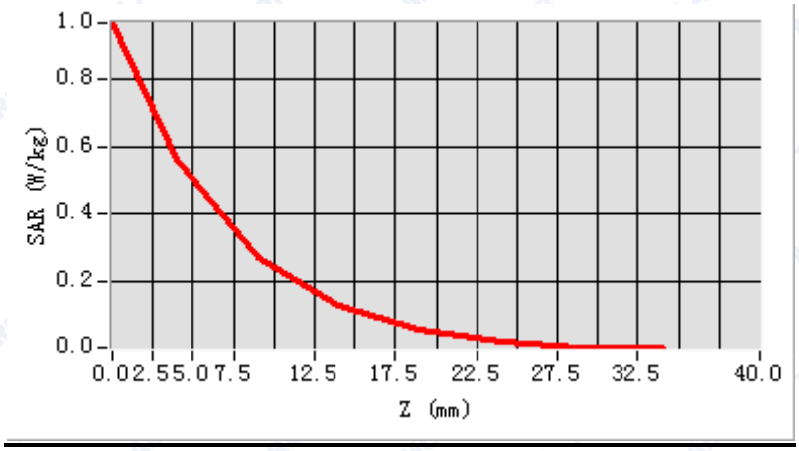
Frequency (MHz)	1880.000000
Relative permittivity (real part)	39.958875
Conductivity (S/m)	1.410215
Power drift (%)	2.820000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	6.00
Crest factor:	1:1

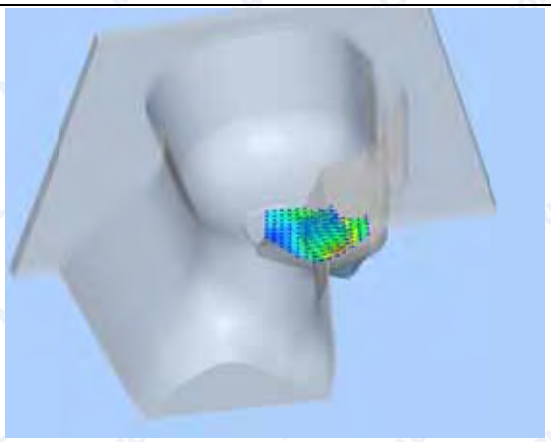
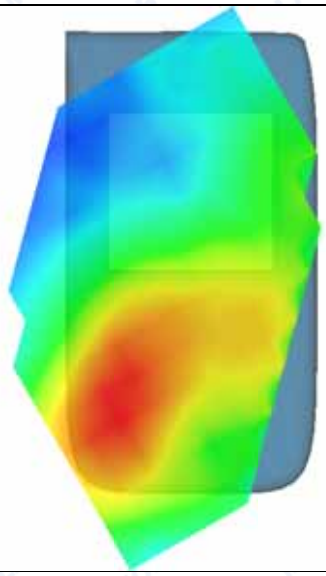
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-61.00, Y=-55.00
SAR Peak: 1.00 W/kg

SAR 10g (W/Kg)	0.257973
SAR 1g (W/Kg)	0.539644

Z axis scan



3D screen 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: 2014.11.6

Measurement duration: 7 minutes 51 seconds

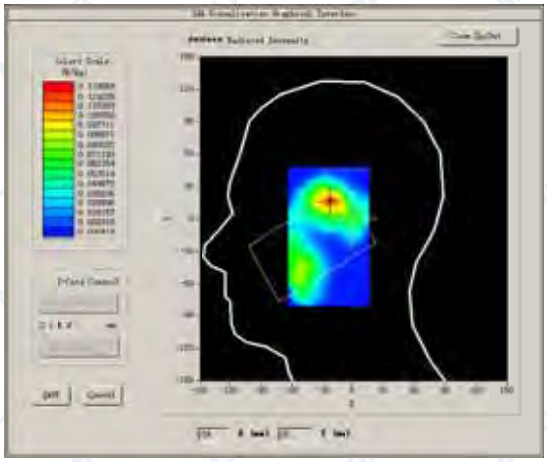
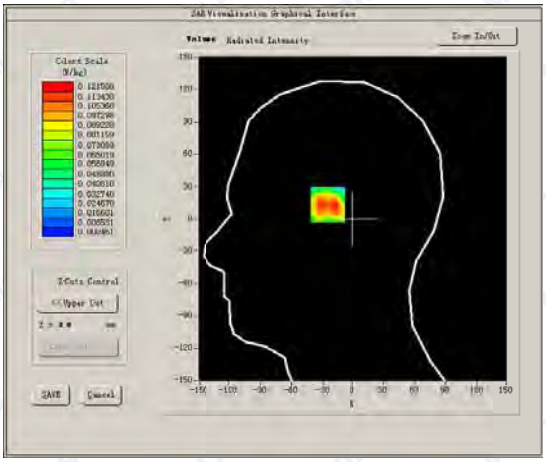
A. Experimental conditions.

Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Left head
Device Position	Tilt
Band	WCDMA1900
Channels	Middle
Signal	CDMA

B. SAR Measurement Results

Middle Band SAR (Channel 9400):

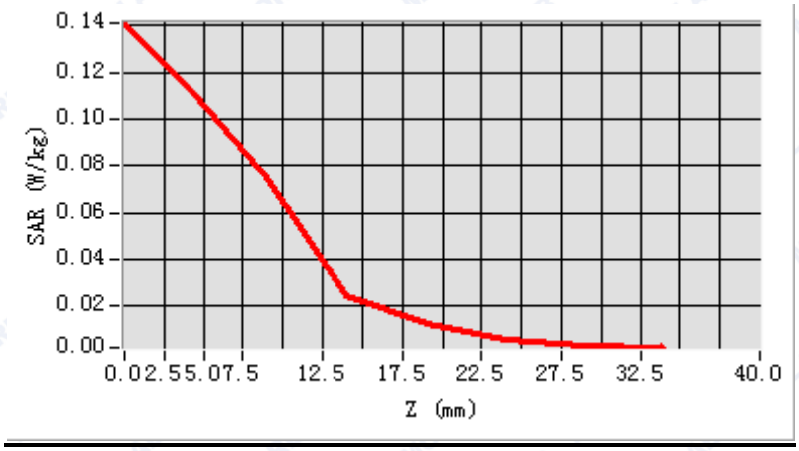
Frequency (MHz)	1880.000000
Relative permittivity (real part)	39.958875
Conductivity (S/m)	1.410215
Power drift (%)	3.480000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	6.00
Crest factor:	1:1

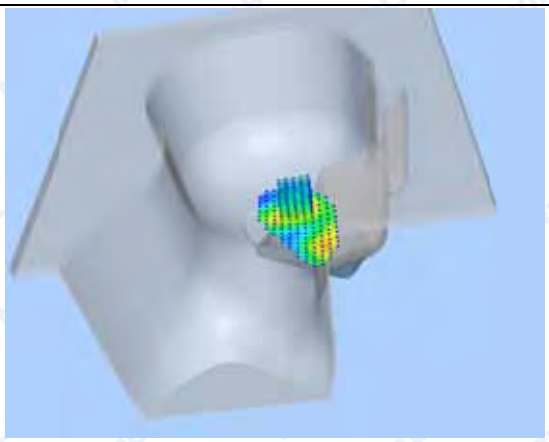
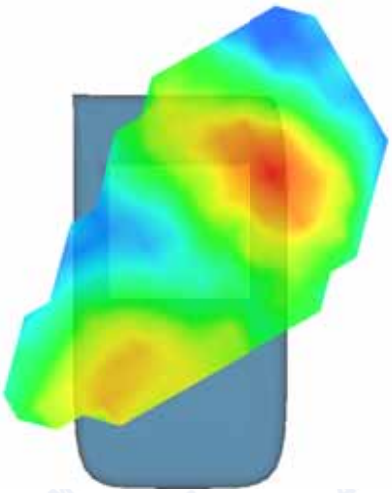
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-24.00, Y=16.00
SAR Peak: 0.23 W/kg

SAR 10g (W/Kg)	0.058594
SAR 1g (W/Kg)	0.118318

Z axis scan



3D screen 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: 2014.11.6

Measurement duration: 9 minutes 26 seconds

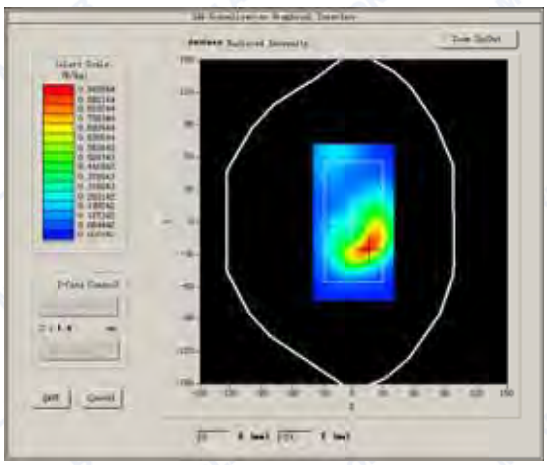
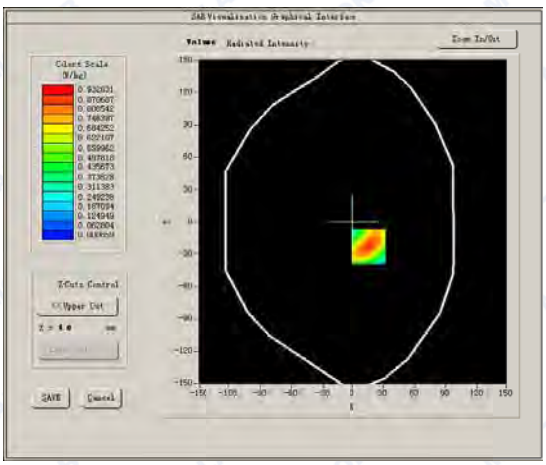
A. Experimental conditions.

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

B. SAR Measurement Results

Low Band SAR (Channel 9262):

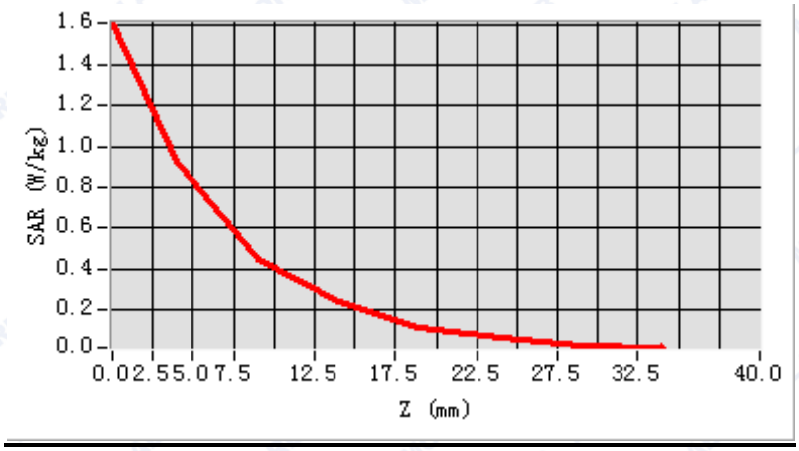
Frequency (MHz)	1852.400000
Relative permittivity (real part)	53.087685
Conductivity (S/m)	1.508657
Power drift (%)	-1.250000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	6.17
Crest factor:	1:1

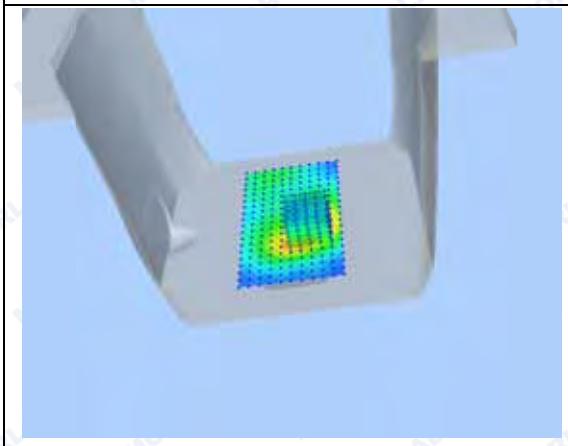
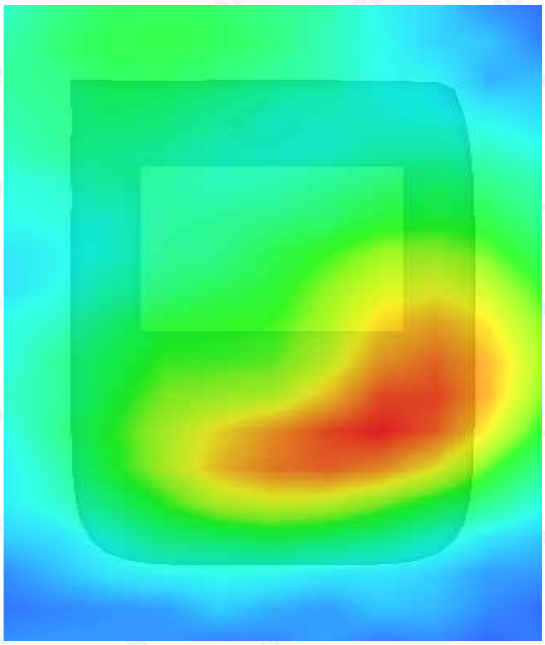
SURFACE SAR	VOLUME SAR
	

Maximum location: X=16.00, Y=-23.00
SAR Peak: 1.72 W/kg

SAR 10g (W/Kg)	0.475112
SAR 1g (W/Kg)	0.961033

Z axis scan



3D screen shot	Hot spot position
	

MEASUREMENT 41

Type: Phone measurement (Complete)

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

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

Date of measurement: 2014.11.6

Measurement duration: 9 minutes 31 seconds

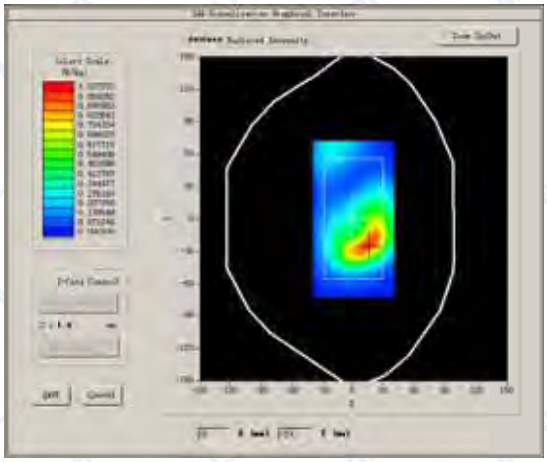
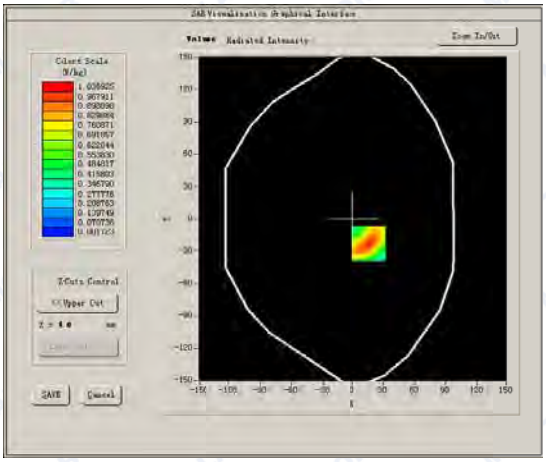
A. Experimental conditions.

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

B. SAR Measurement Results

Middle Band SAR (Channel 9400):

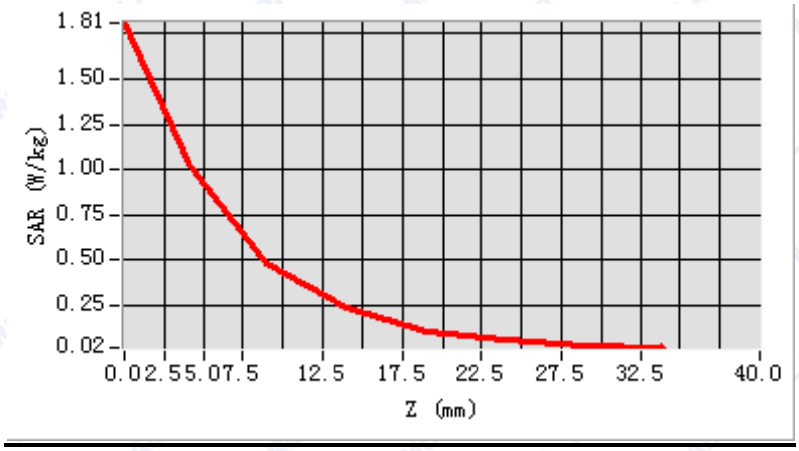
Frequency (MHz)	1880.000000
Relative permittivity (real part)	53.087685
Conductivity (S/m)	1.508657
Power drift (%)	-2.020000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	6.17
Crest factor:	1:1

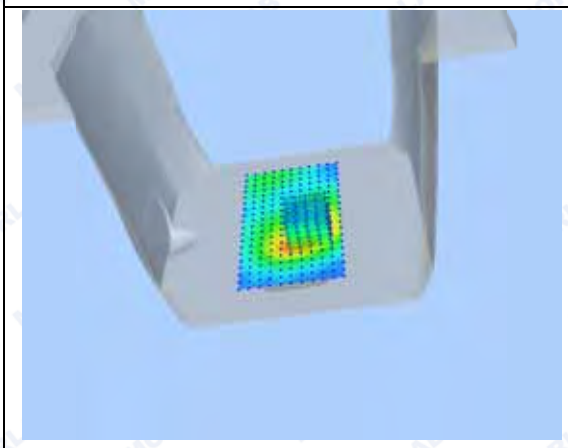
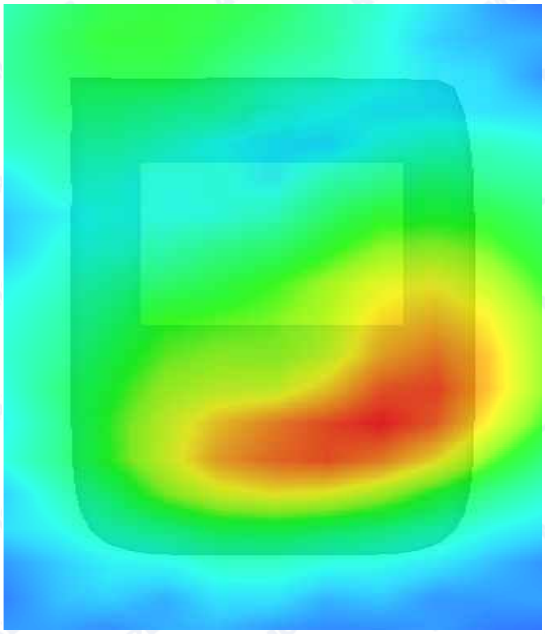
SURFACE SAR	VOLUME SAR
	

Maximum location: X=16.00, Y=-23.00
SAR Peak: 1.94 W/kg

SAR 10g (W/Kg)	0.516133
SAR 1g (W/Kg)	1.060212

Z axis scan



3D screen shot	Hot spot position
	

MEASUREMENT 42

Type: Phone measurement (Complete)

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

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

Date of measurement: 2014.11.6

Measurement duration: 9 minutes 32 seconds

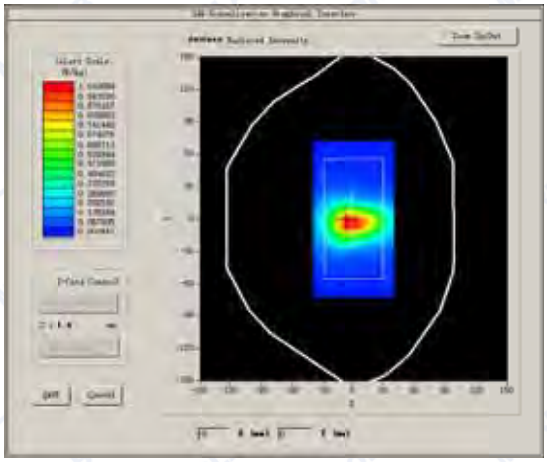
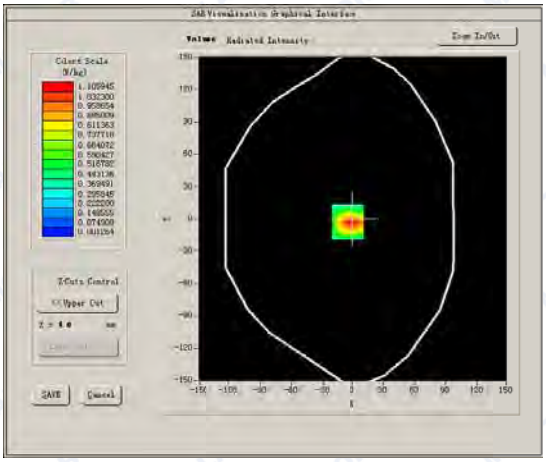
A. Experimental conditions.

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

B. SAR Measurement Results

High Band SAR (Channel 9538):

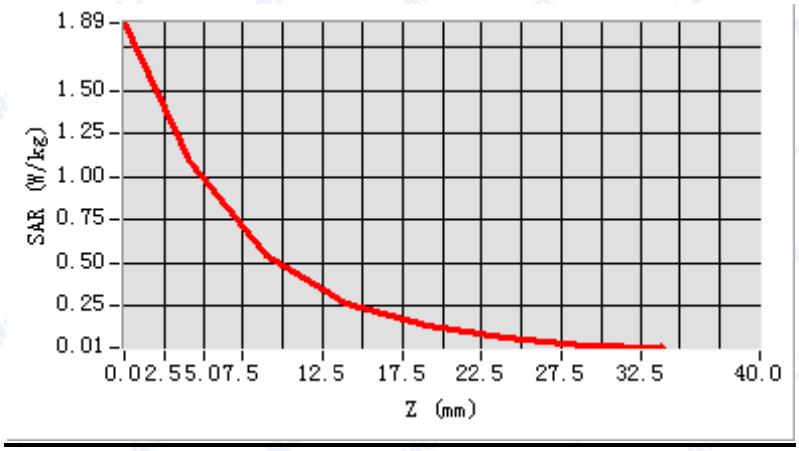
Frequency (MHz)	1907.600000
Relative permittivity (real part)	53.087685
Conductivity (S/m)	1.508657
Power drift (%)	0.390000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	6.17
Crest factor:	1:1

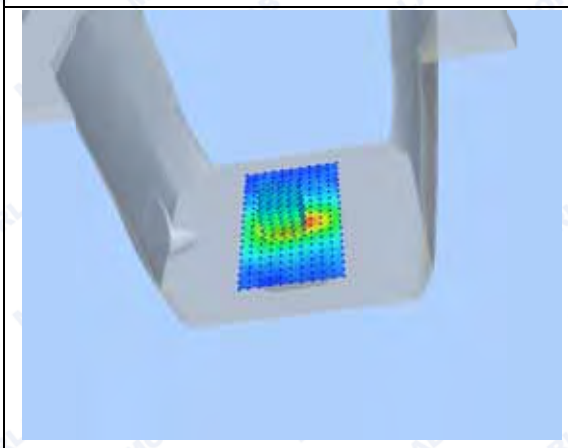
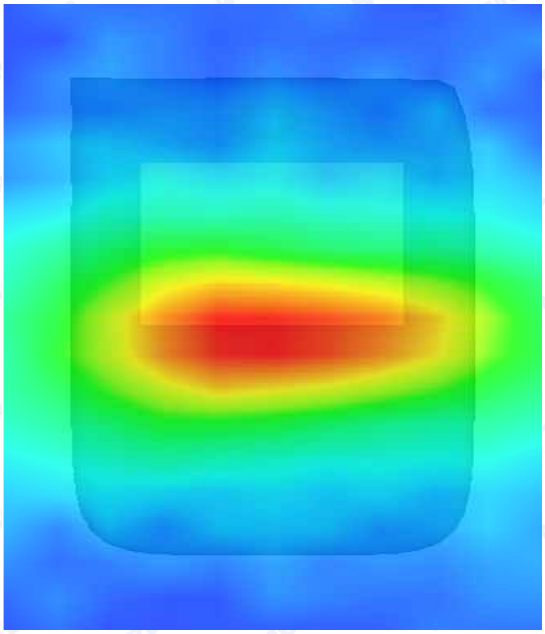
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-5.00, Y=-3.00
SAR Peak: 2.03 W/kg

SAR 10g (W/Kg)	0.551200
SAR 1g (W/Kg)	1.137209

Z axis scan



3D screen shot	Hot spot position
	

MEASUREMENT 43

Type: Phone measurement (Complete)

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

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

Date of measurement: 2014.11.6

Measurement duration: 9 minutes 34 seconds

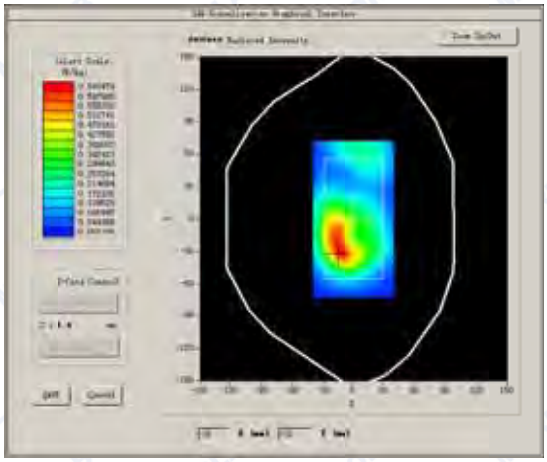
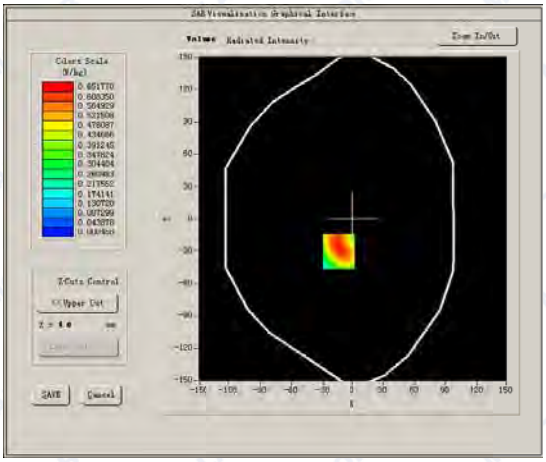
A. Experimental conditions.

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

B. SAR Measurement Results

Middle Band SAR (Channel 9400):

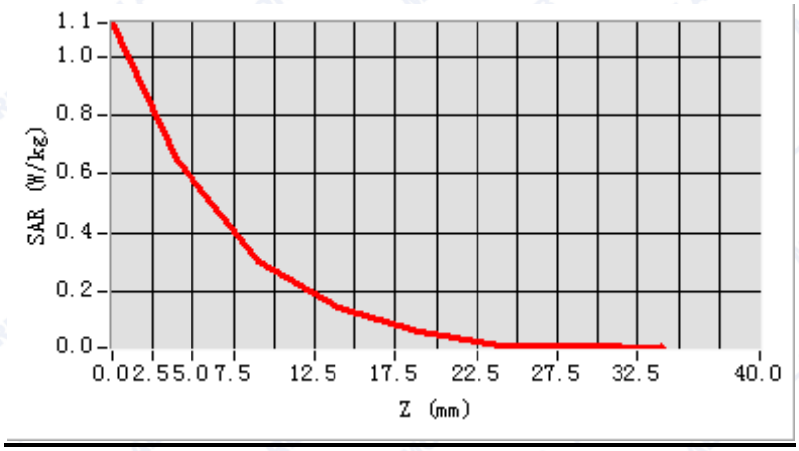
Frequency (MHz)	1880.000000
Relative permittivity (real part)	53.087685
Conductivity (S/m)	1.508657
Power drift (%)	-0.960000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	6.17
Crest factor:	1:1

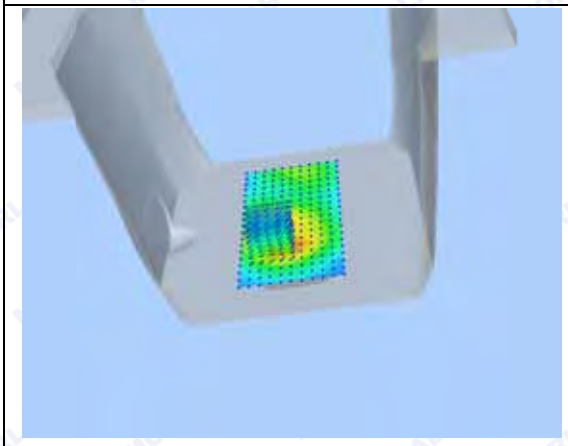
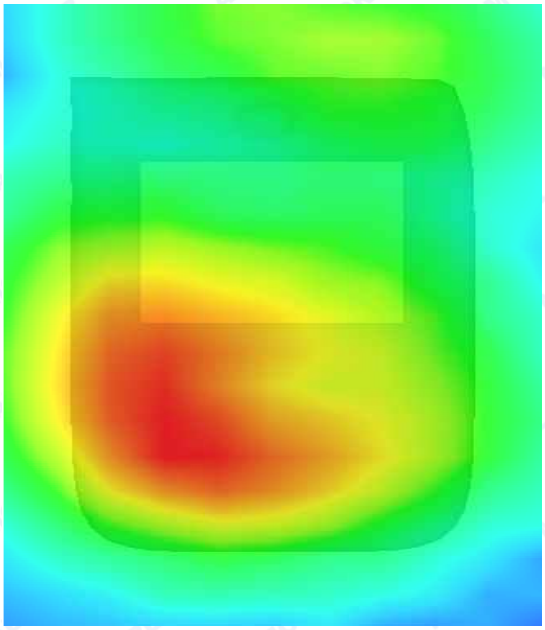
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-14.00, Y=-30.00
SAR Peak: 1.23 W/kg

SAR 10g (W/Kg)	0.344487
SAR 1g (W/Kg)	0.683752

Z axis scan



3D screen shot	Hot spot position
	

MEASUREMENT 44

Type: Phone measurement (Complete)

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

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

Date of measurement: 2014.11.6

Measurement duration: 9 minutes 33 seconds

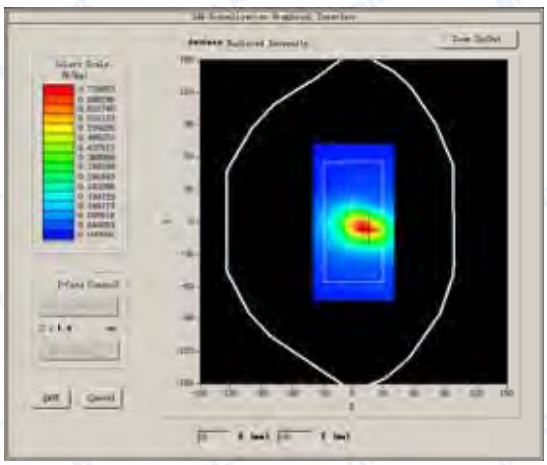
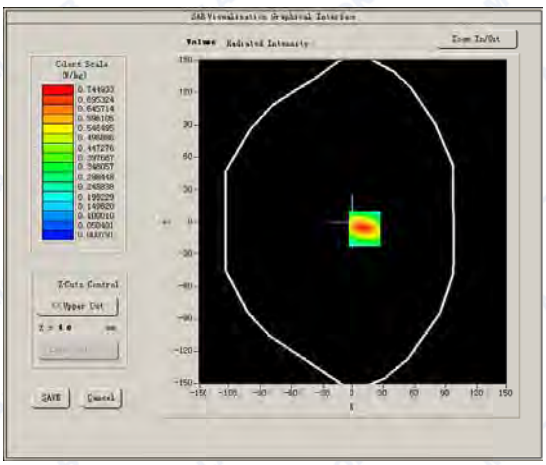
A. Experimental conditions.

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

B. SAR Measurement Results

Middle Band SAR (Channel 9400):

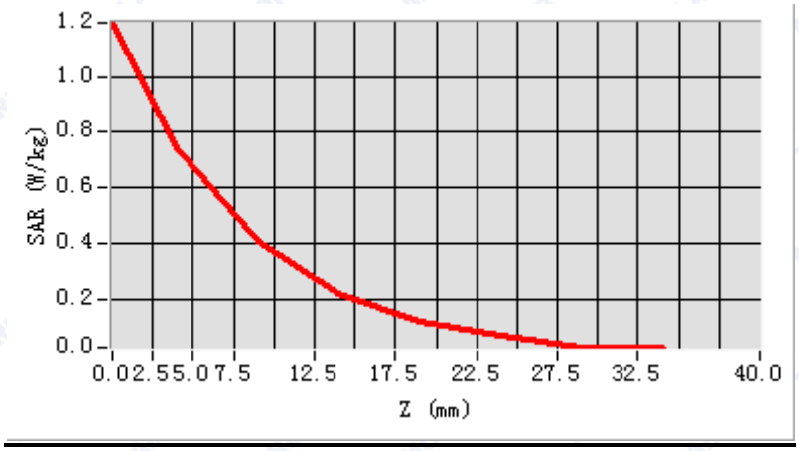
Frequency (MHz)	1880.000000
Relative permittivity (real part)	53.087685
Conductivity (S/m)	1.508657
Power drift (%)	-0.850000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	6.17
Crest factor:	1:1

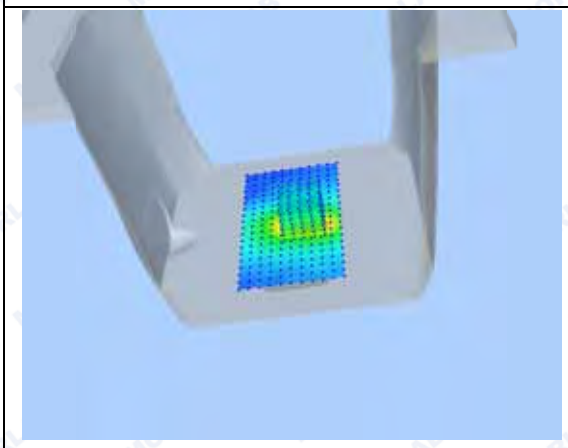
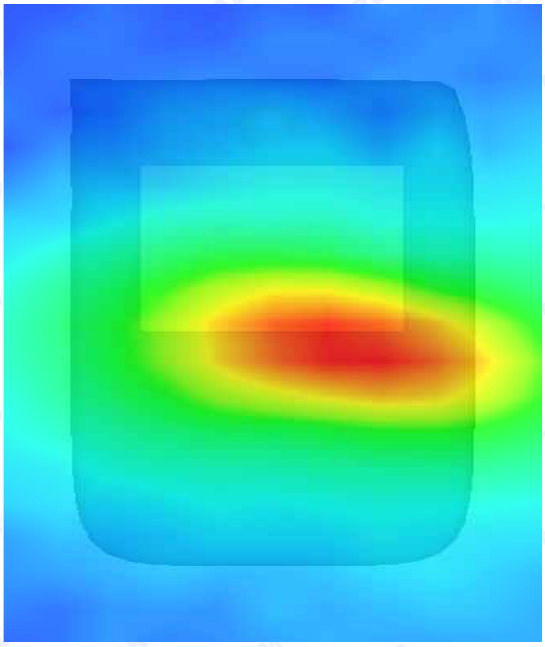
SURFACE SAR	VOLUME SAR
	

Maximum location: X=11.00, Y=-6.00
SAR Peak: 1.28 W/kg

SAR 10g (W/Kg)	0.385700
SAR 1g (W/Kg)	0.760147

Z axis scan



3D screen shot	Hot spot position
	

MEASUREMENT 45

Type: Phone measurement (Complete)

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

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

Date of measurement: 2014.11.6

Measurement duration: 9 minutes 31 seconds

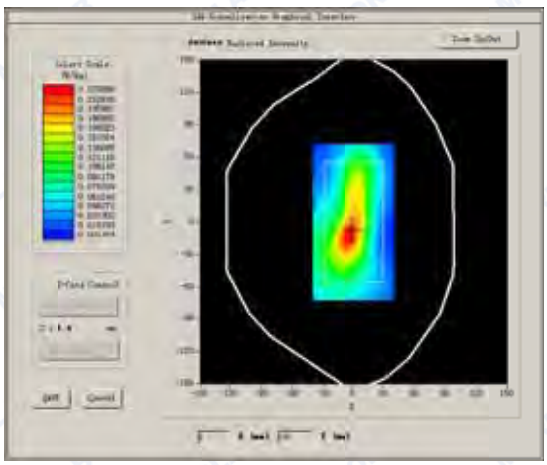
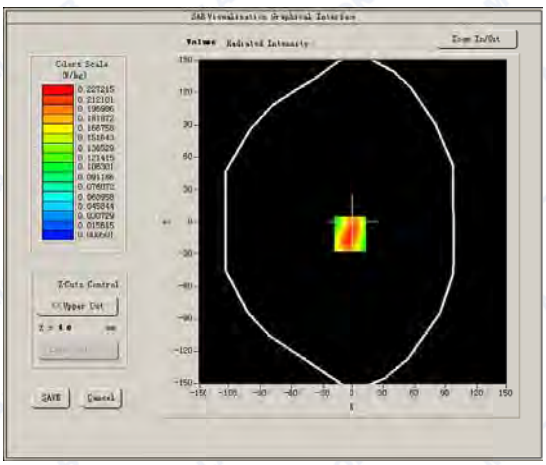
A. Experimental conditions.

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

B. SAR Measurement Results

Middle Band SAR (Channel 9400):

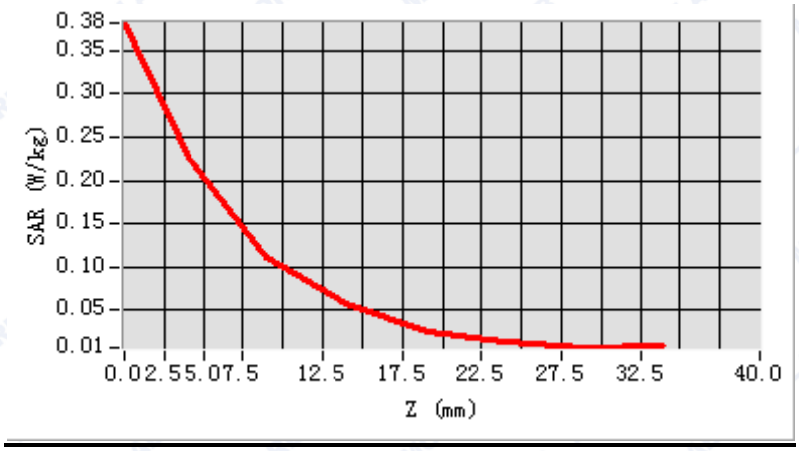
Frequency (MHz)	1880.000000
Relative permittivity (real part)	53.087685
Conductivity (S/m)	1.508657
Power drift (%)	-2.860000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	6.17
Crest factor:	1:1

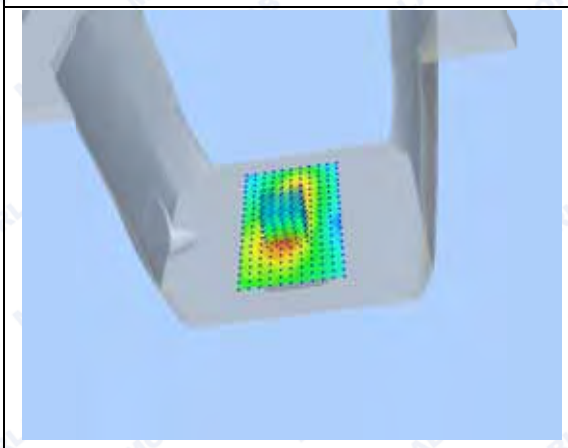
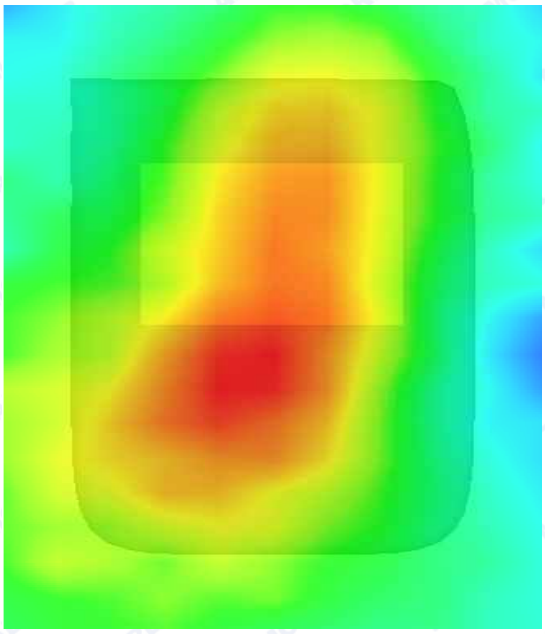
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-3.00, Y=-11.00
SAR Peak: 0.42 W/kg

SAR 10g (W/Kg)	0.118883
SAR 1g (W/Kg)	0.236819

Z axis scan



3D screen shot	Hot spot position
	

MEASUREMENT 46

Type: Phone measurement (Complete)

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

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

Date of measurement: 2014.11.6

Measurement duration: 9 minutes 31 seconds

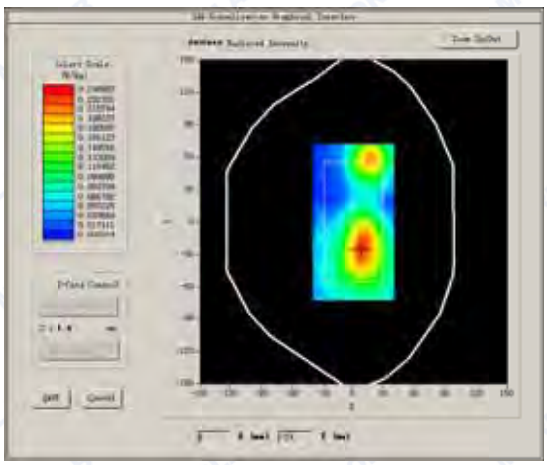
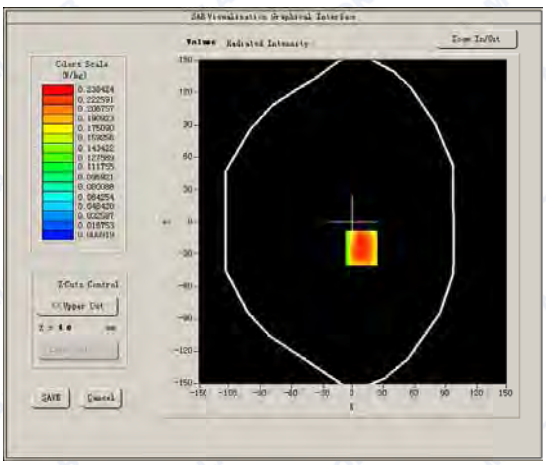
A. Experimental conditions.

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

B. SAR Measurement Results

Middle Band SAR (Channel 9400):

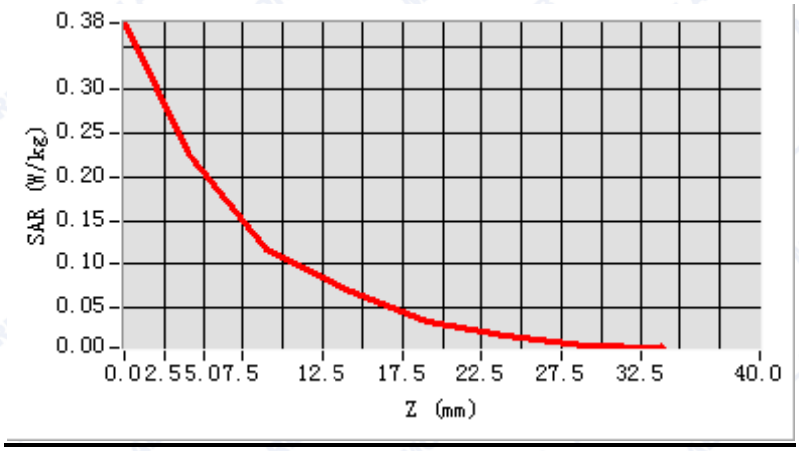
Frequency (MHz)	1880.000000
Relative permittivity (real part)	53.087685
Conductivity (S/m)	1.508657
Power drift (%)	-2.030000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	6.17
Crest factor:	1:1

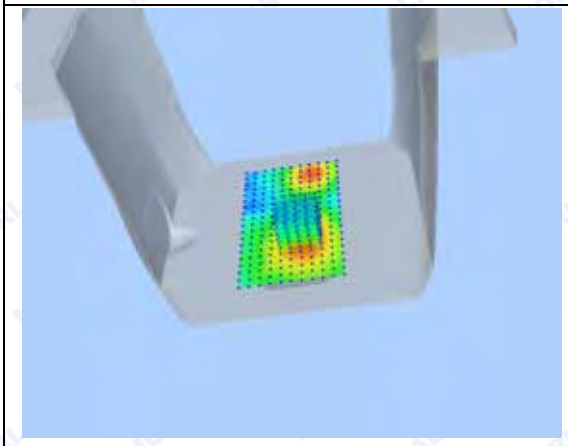
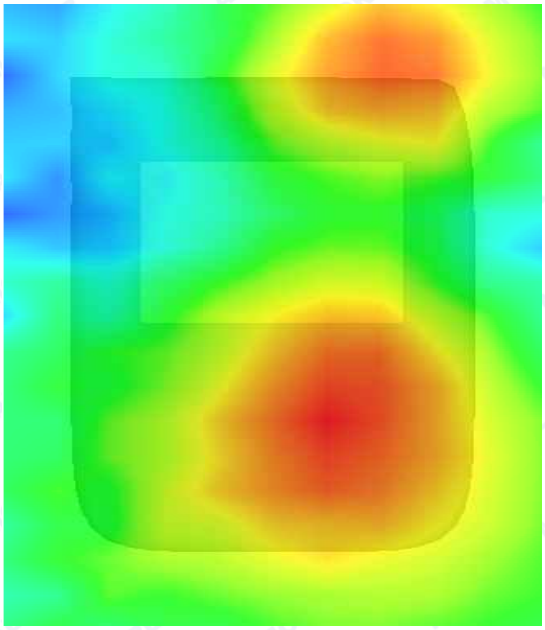
SURFACE SAR	VOLUME SAR
	

Maximum location: X=8.00, Y=-24.00
SAR Peak: 0.46 W/kg

SAR 10g (W/Kg)	0.132265
SAR 1g (W/Kg)	0.251631

Z axis scan



3D screen shot	Hot spot position
	

MEASUREMENT 47

Type: Phone measurement (Complete)

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

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

Date of measurement: 2014.11.6

Measurement duration: 7 minutes 47 seconds

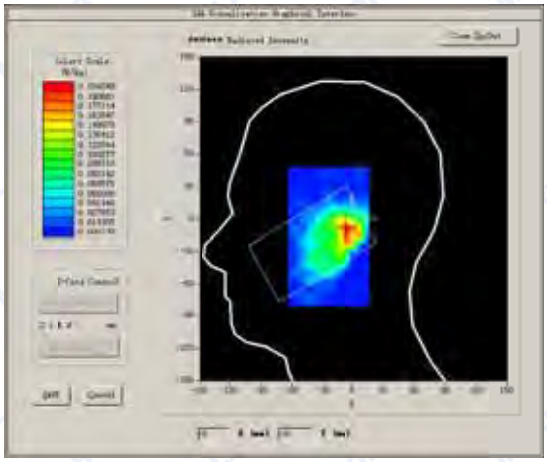
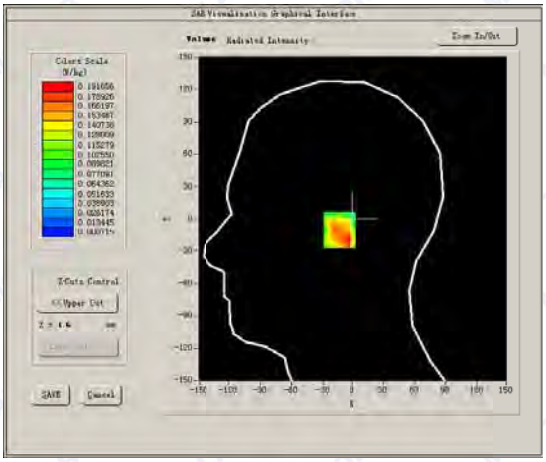
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Right head
Device Position	Cheek
Band	802.11b
Channels	Low
Signal	DSSS

B. SAR Measurement Results

Low Band SAR (Channel 1):

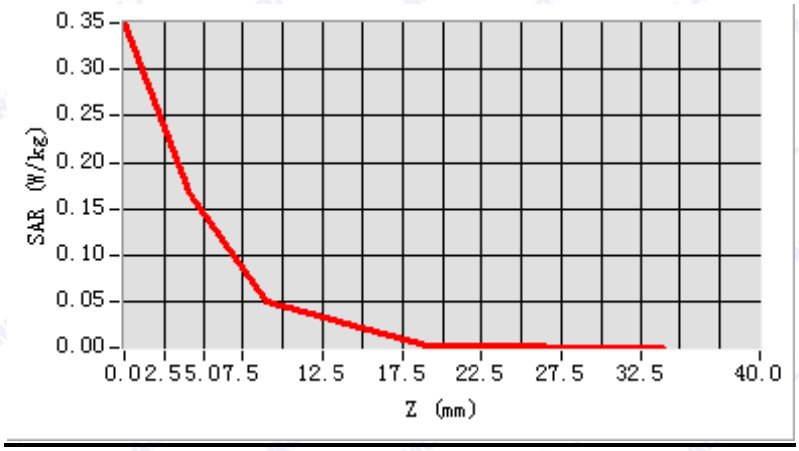
Frequency (MHz)	2412.000000
Relative permittivity (real part)	39.285758
Conductivity (S/m)	1.791024
Power drift (%)	-3.480000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	4.80
Crest factor:	1:1

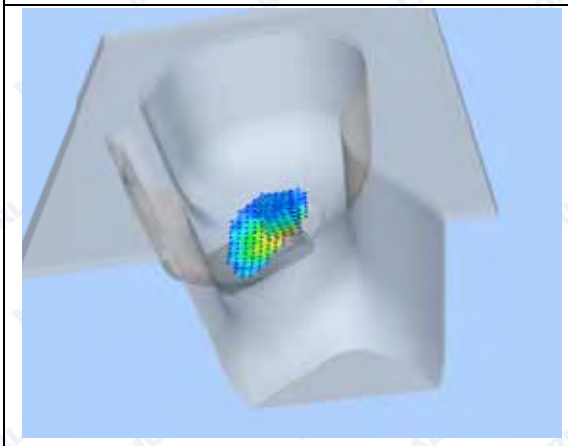
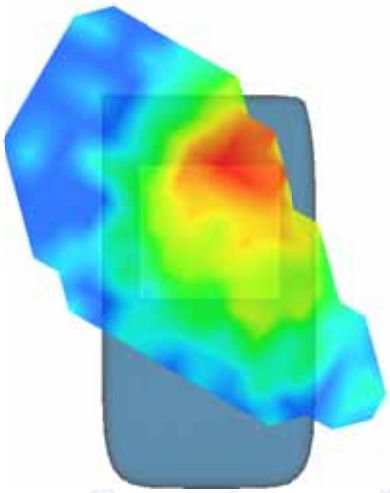
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-6.00, Y=-10.00
SAR Peak: 0.45 W/kg

SAR 10g (W/Kg)	0.080738
SAR 1g (W/Kg)	0.188931

Z axis scan



3D screen shot	Hot spot position
	

MEASUREMENT 48

Type: Phone measurement (Complete)

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

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

Date of measurement: 2014.11.6

Measurement duration: 7 minutes 50 seconds

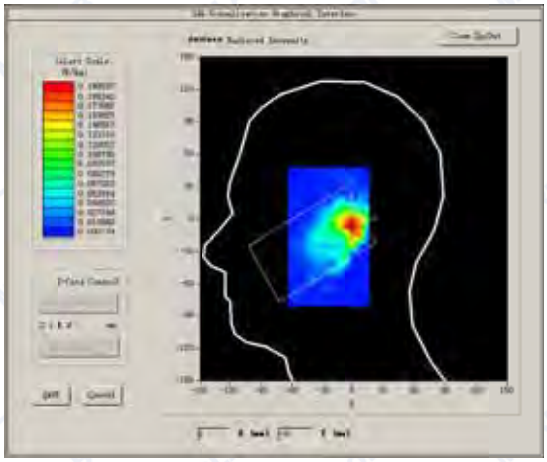
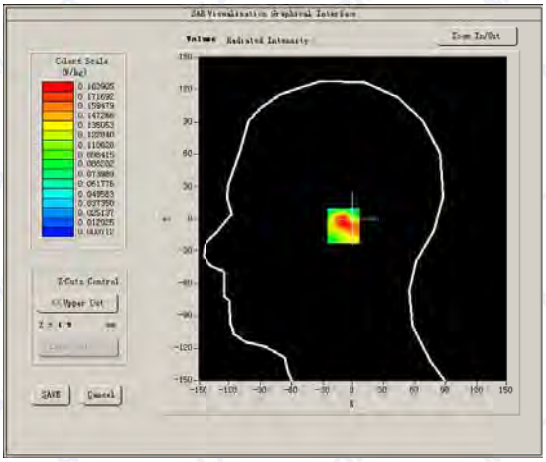
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Right head
Device Position	Tilt
Band	802.11b
Channels	Low
Signal	DSSS

B. SAR Measurement Results

Low Band SAR (Channel 1)

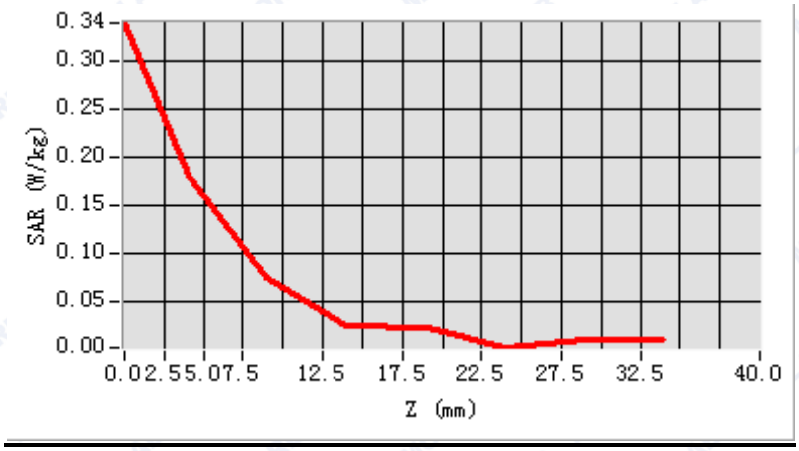
Frequency (MHz)	2412.000000
Relative permittivity (real part)	39.285758
Conductivity (S/m)	1.791024
Power drift (%)	3.640000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	4.80
Crest factor:	1:1

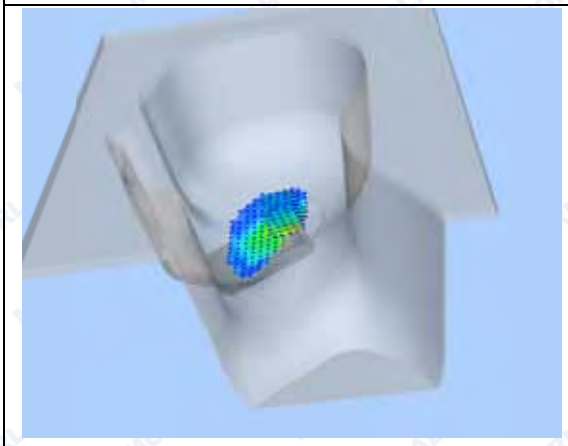
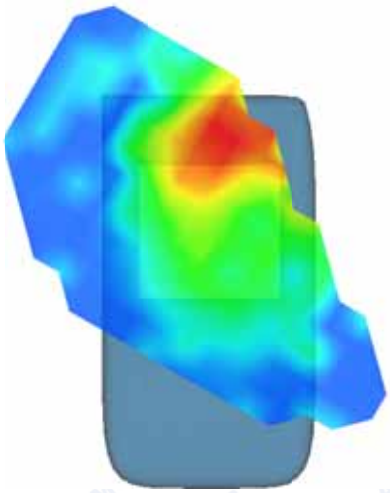
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-2.00, Y=-6.00
SAR Peak: 0.40 W/kg

SAR 10g (W/Kg)	0.074952
SAR 1g (W/Kg)	0.187143

Z axis scan



3D screen shot	Hot spot position
	

MEASUREMENT 49

Type: Phone measurement (Complete)

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

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

Date of measurement: 2014.11.6

Measurement duration: 7 minutes 51 seconds

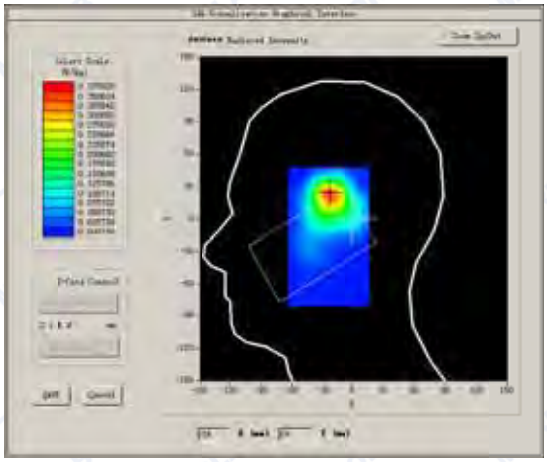
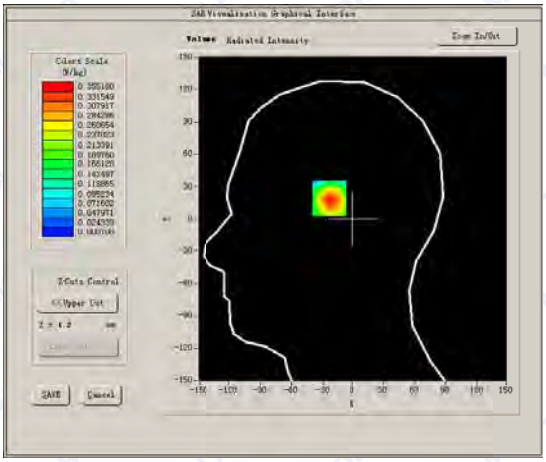
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Left head
Device Position	Cheek
Band	802.11b
Channels	Low
Signal	DSSS

B. SAR Measurement Results

Low Band SAR (Channel 1)

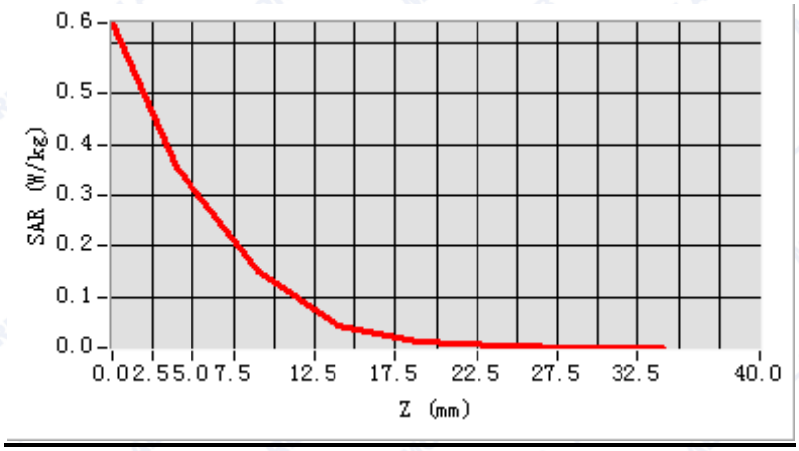
Frequency (MHz)	2412.000000
Relative permittivity (real part)	39.285758
Conductivity (S/m)	1.791024
Power drift (%)	-2.920000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	4.80
Crest factor:	1:1

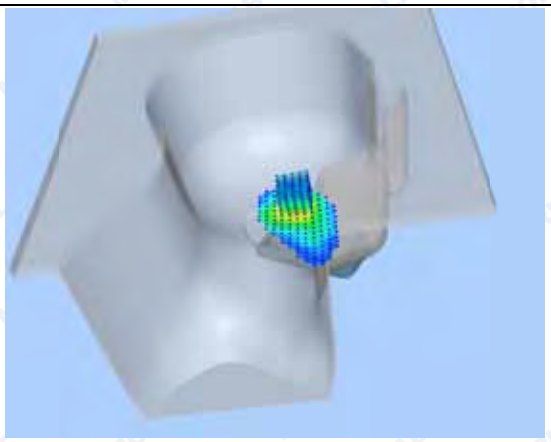
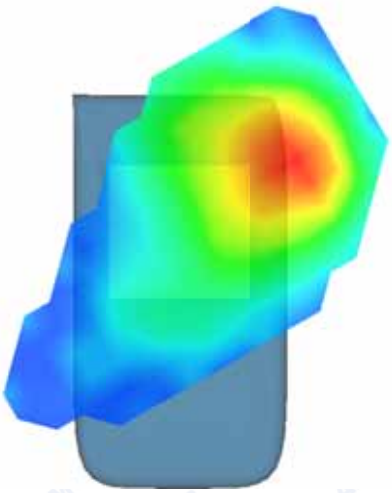
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-24.00, Y=23.00
SAR Peak: 0.66 W/kg

SAR 10g (W/Kg)	0.148217
SAR 1g (W/Kg)	0.341309

Z axis scan



3D screen shot	Hot spot position
	

MEASUREMENT 50

Type: Phone measurement (Complete)

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

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

Date of measurement: 2014.11.6

Measurement duration: 7 minutes 51 seconds

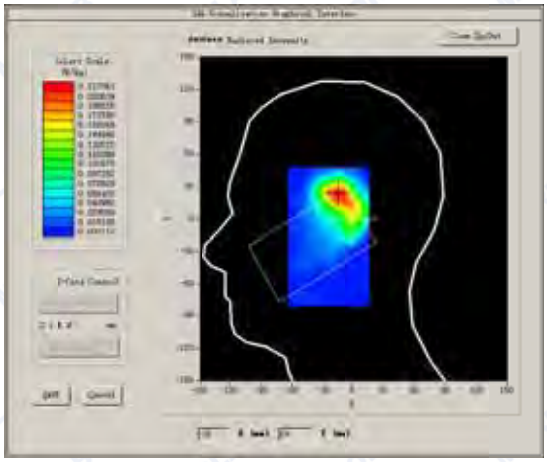
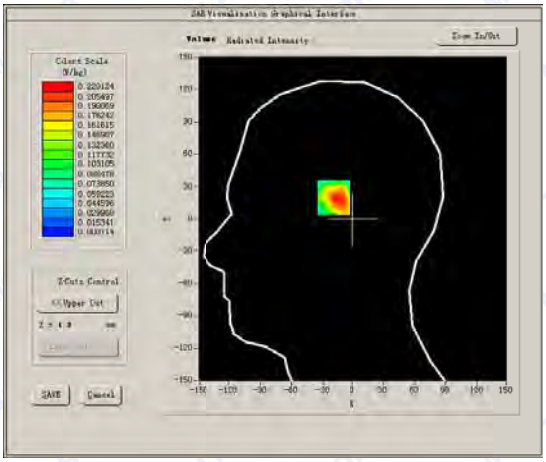
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Left head
Device Position	Tilt
Band	802.11b
Channels	Low
Signal	DSSS

B. SAR Measurement Results

Low Band SAR (Channel 1)

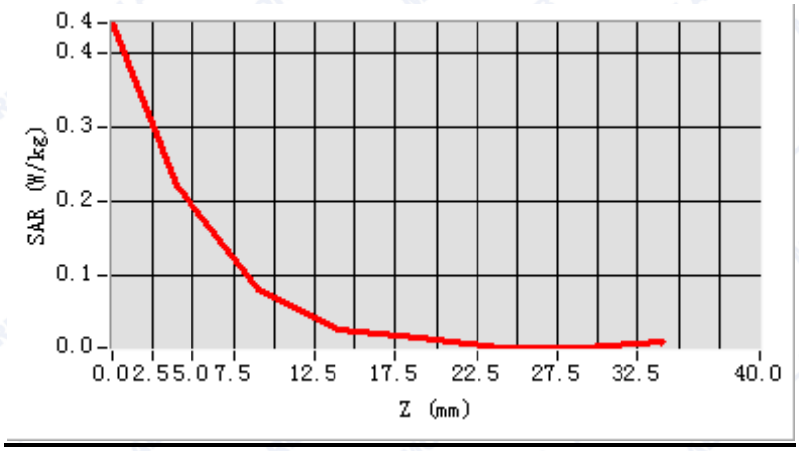
Frequency (MHz)	2412.000000
Relative permittivity (real part)	39.285758
Conductivity (S/m)	1.791024
Power drift (%)	0.500000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	4.80
Crest factor:	1:1

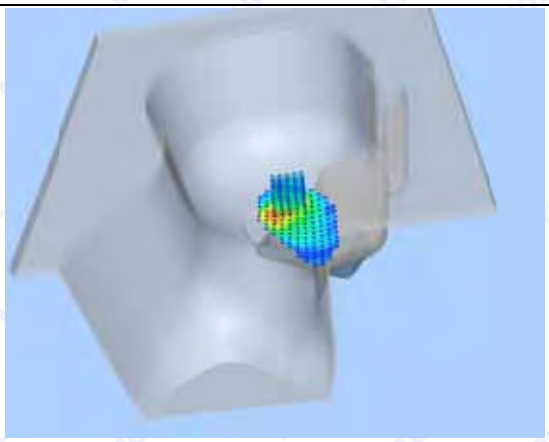
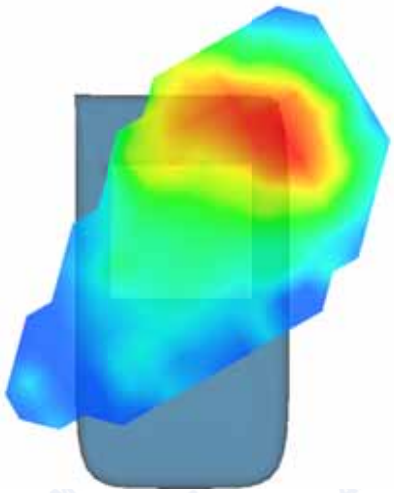
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-17.00, Y=23.00
SAR Peak: 0.45 W/kg

SAR 10g (W/Kg)	0.096218
SAR 1g (W/Kg)	0.221595

Z axis scan



3D screen shot	Hot spot position
	

MEASUREMENT 51

Type: Phone measurement (Complete)

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

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

Date of measurement: 2014.11.6

Measurement duration: 9 minutes 37 seconds

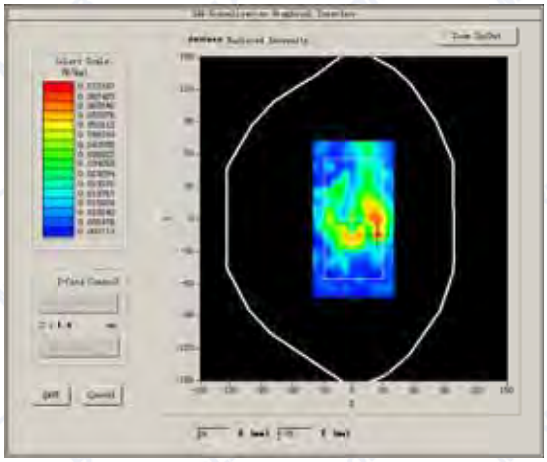
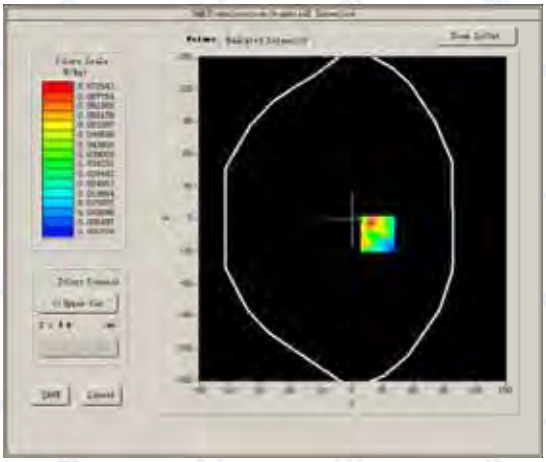
A. Experimental conditions.

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

B. SAR Measurement Results

Low Band SAR (Channel 1)

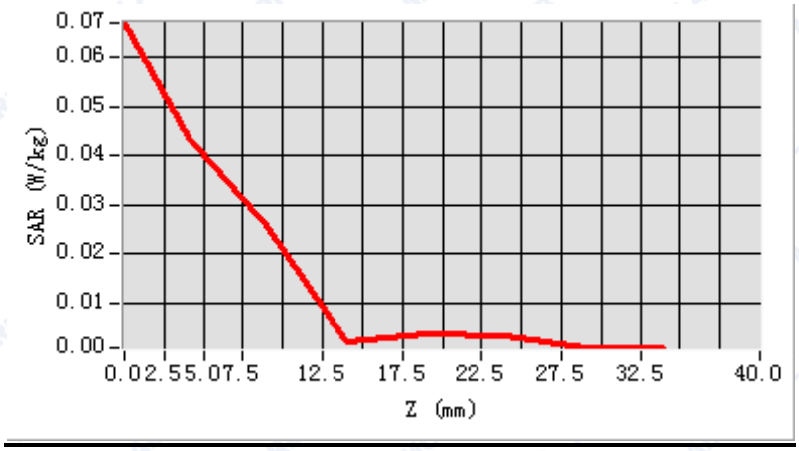
Frequency (MHz)	2412.000000
Relative permittivity (real part)	52.521347
Conductivity (S/m)	1.960245
Power drift (%)	-3.420000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	4.96
Crest factor:	1:1

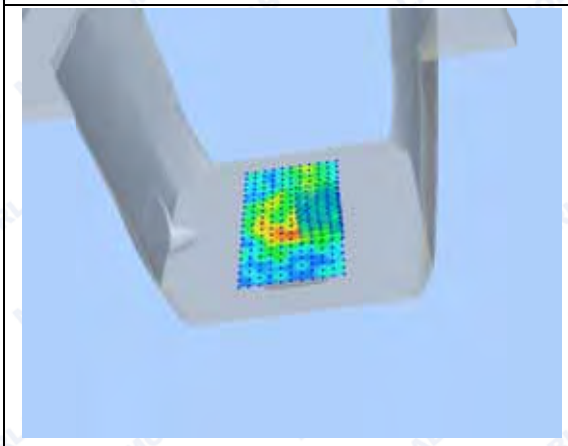
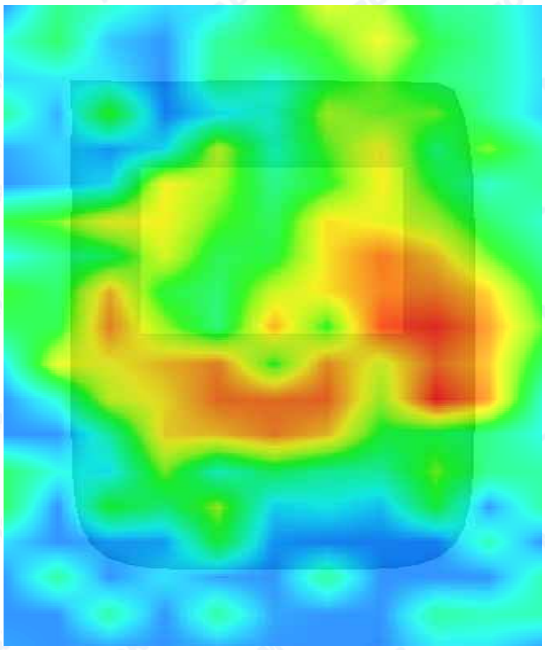
SURFACE SAR	VOLUME SAR
	

Maximum location: X=25.00, Y=-14.00
SAR Peak: 0.17 W/kg

SAR 10g (W/Kg)	0.027589
SAR 1g (W/Kg)	0.073352

Z axis scan



3D screen shot	Hot spot position
	

MEASUREMENT 52

Type: Phone measurement (Complete)

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

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

Date of measurement: 2014.11.6

Measurement duration: 9 minutes 29 seconds

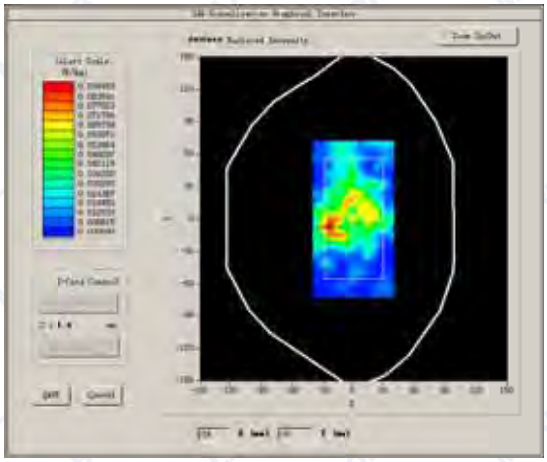
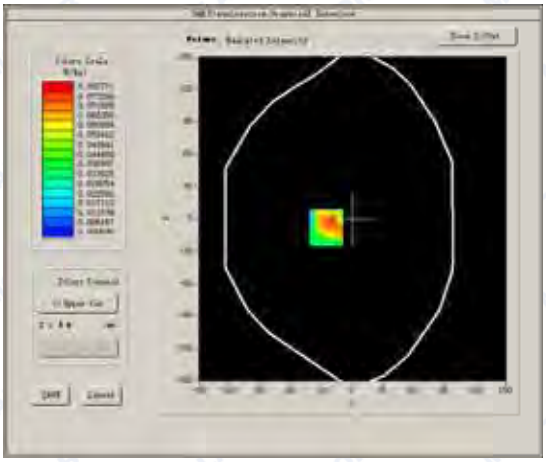
A. Experimental conditions.

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

B. SAR Measurement Results

Low Band SAR (Channel 1)

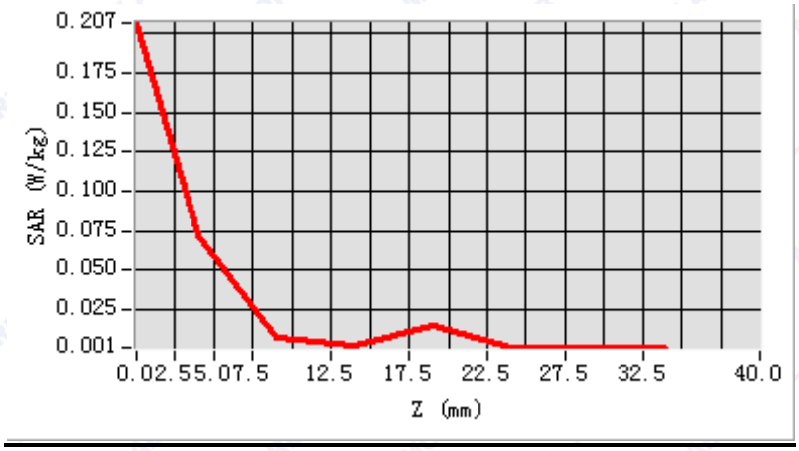
Frequency (MHz)	2412.000000
Relative permittivity (real part)	52.521347
Conductivity (S/m)	1.960245
Power drift (%)	-2.360000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	4.96
Crest factor:	1:1

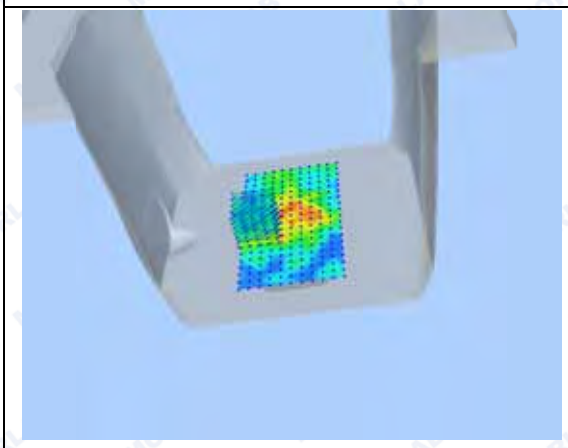
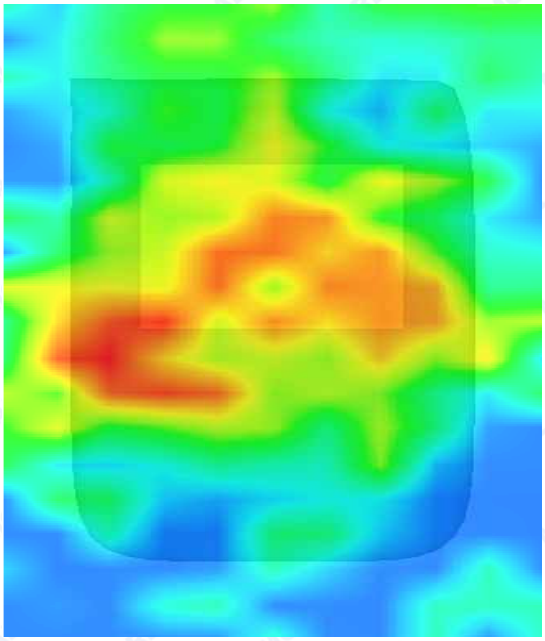
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-26.00, Y=-8.00
SAR Peak: 0.23 W/kg

SAR 10g (W/Kg)	0.037246
SAR 1g (W/Kg)	0.088668

Z axis scan



3D screen shot	Hot spot position
	

MEASUREMENT 53

Type: Phone measurement (Complete)

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

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

Date of measurement: 2014.11.6

Measurement duration: 9 minutes 31 seconds

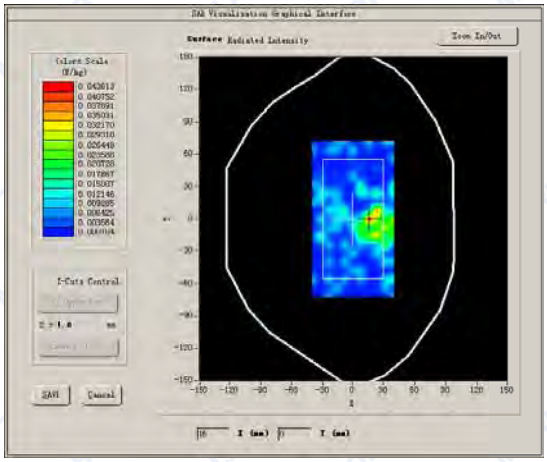
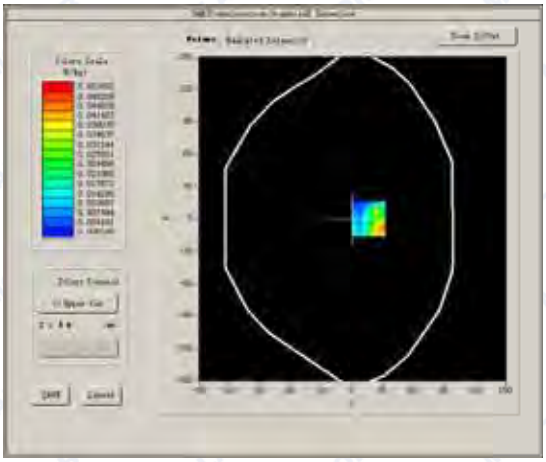
A. Experimental conditions.

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

B. SAR Measurement Results

Low Band SAR (Channel 1)

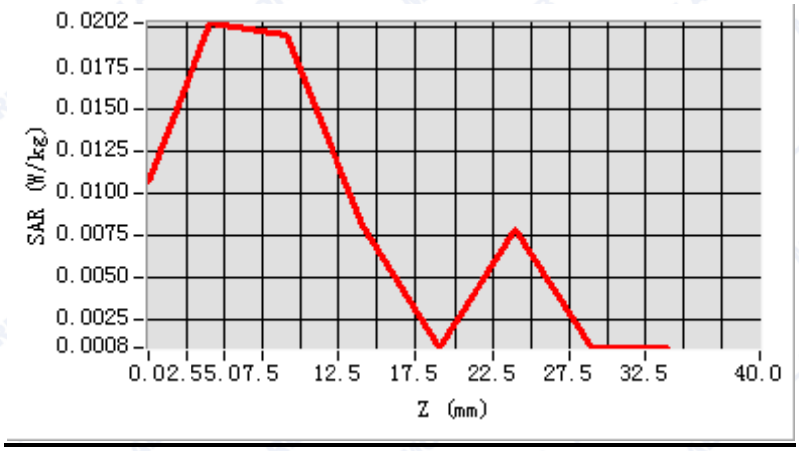
Frequency (MHz)	2412.000000
Relative permittivity (real part)	52.521347
Conductivity (S/m)	1.960245
Power drift (%)	2.440000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	4.96
Crest factor:	1:1

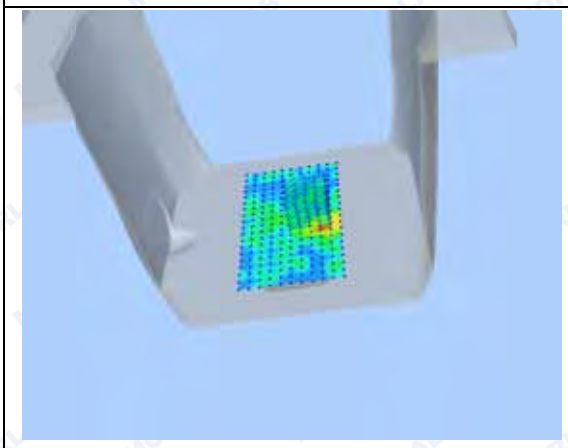
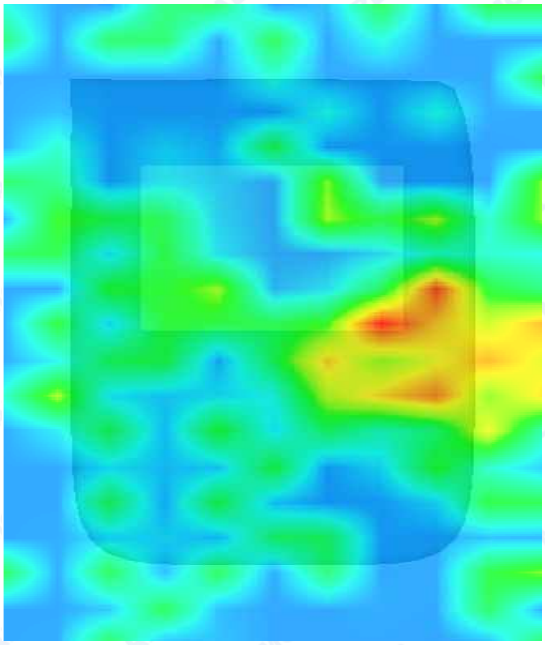
SURFACE SAR	VOLUME SAR
	

Maximum location: X=16.00, Y=0.00
SAR Peak: 0.13 W/kg

SAR 10g (W/Kg)	0.016010
SAR 1g (W/Kg)	0.046029

Z axis scan



3D screen shot	Hot spot position
	

MEASUREMENT 54

Type: Phone measurement (Complete)

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

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

Date of measurement: 2014.11.6

Measurement duration: 9 minutes 31 seconds

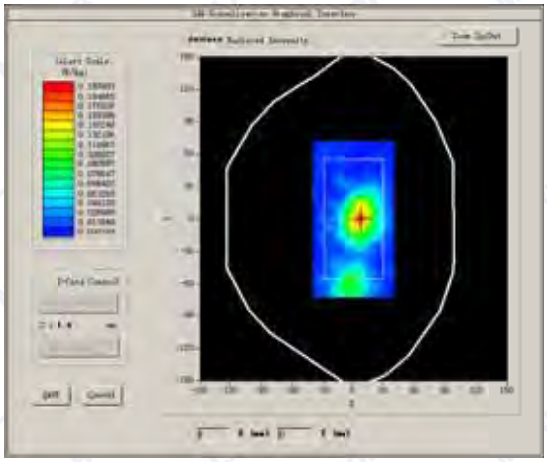
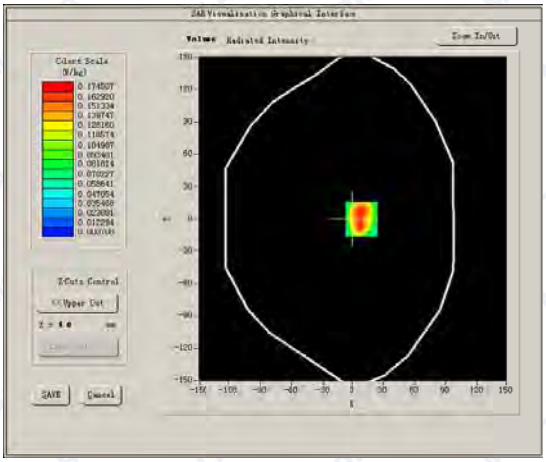
A. Experimental conditions.

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

B. SAR Measurement Results

Low Band SAR (Channel 1)

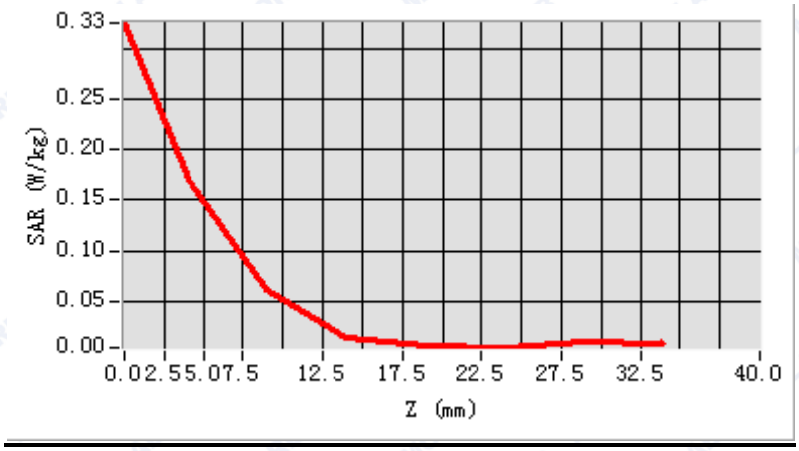
Frequency (MHz)	2412.000000
Relative permittivity (real part)	52.521347
Conductivity (S/m)	1.960245
Power drift (%)	2.650000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	4.96
Crest factor:	1:1

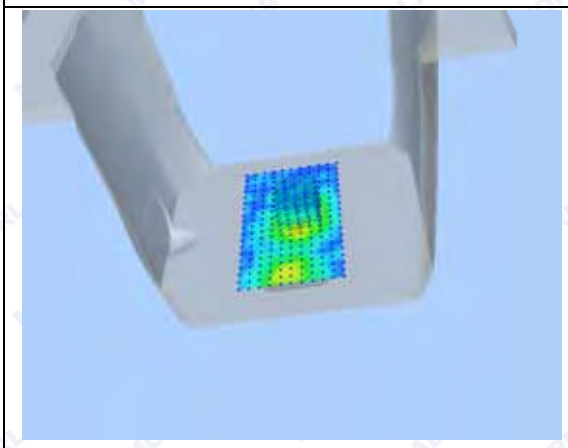
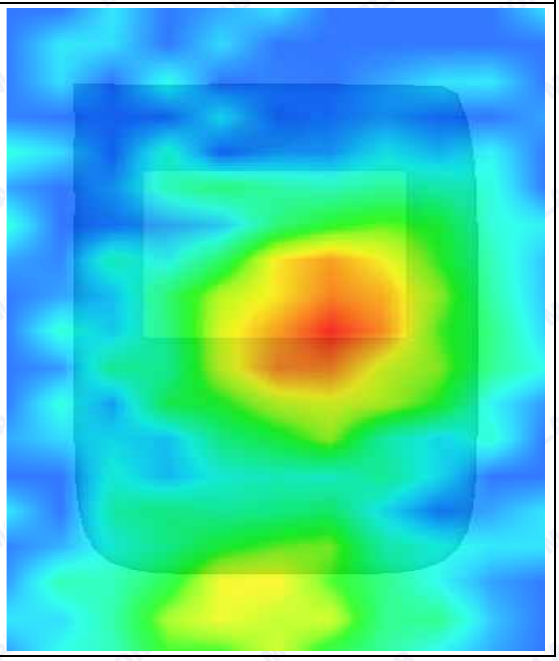
SURFACE SAR	VOLUME SAR
	

Maximum location: X=8.00, Y=0.00
SAR Peak: 0.37 W/kg

SAR 10g (W/Kg)	0.076405
SAR 1g (W/Kg)	0.182400

Z axis scan



3D screen shot	Hot spot position
	

System Performance Check Data(Head)

Type: Phone measurement (Complete)

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

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

Date of measurement: 2014.11.5

Measurement duration: 13 minutes 27 seconds

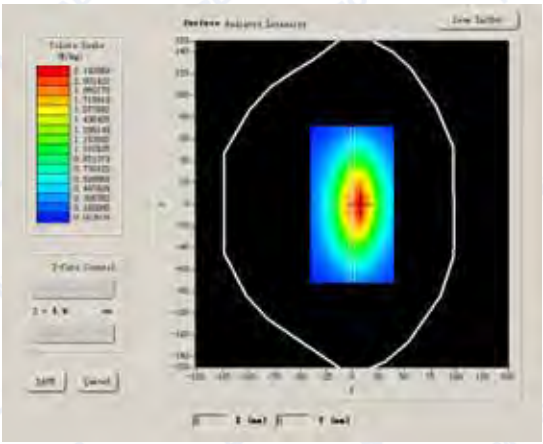
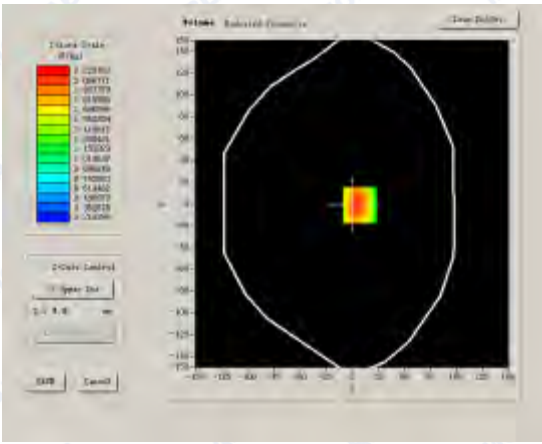
A. Experimental conditions.

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

B. SAR Measurement Results

Band SAR

Frequency (MHz)	835.000000
Relative permittivity (real part)	41.305586
Conductivity (S/m)	0.908954
Power drift (%)	1.030000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	6.73
Crest factor:	1:1

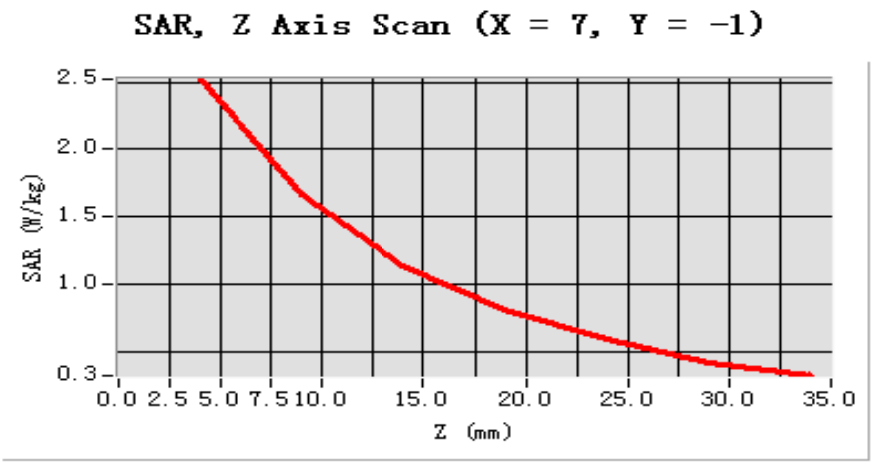
SURFACE SAR	VOLUME SAR
	

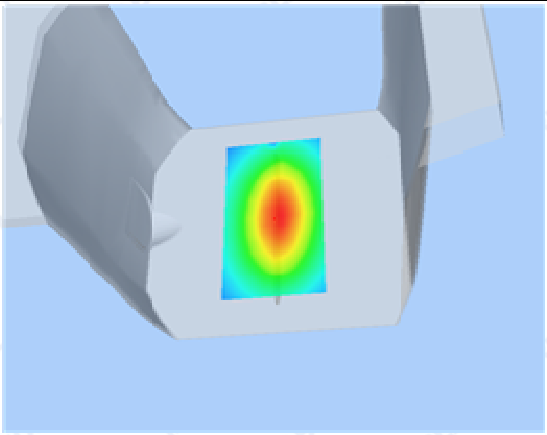
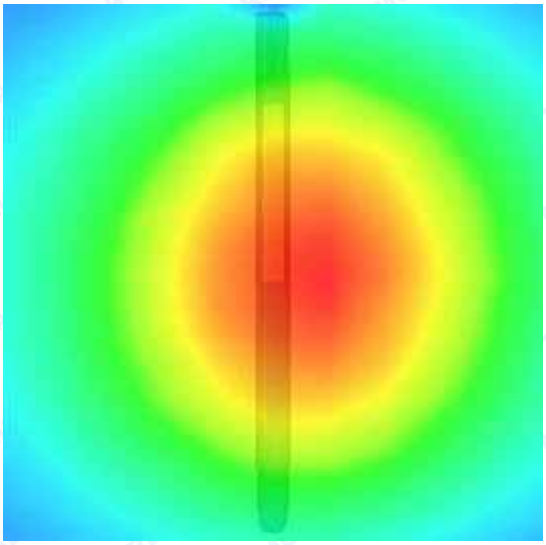
Maximum location: X=7.00, Y=-1.00

SAR 10g (W/Kg)	1.292731
SAR 1g (W/Kg)	2.387306

Z Axis Scan

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



3D sceen shot	Hot spot position
	

System Performance Check Data(Body)

Type: Phone measurement (Complete)

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

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

Date of measurement: 2014.11.5

Measurement duration: 13 minutes 30 seconds

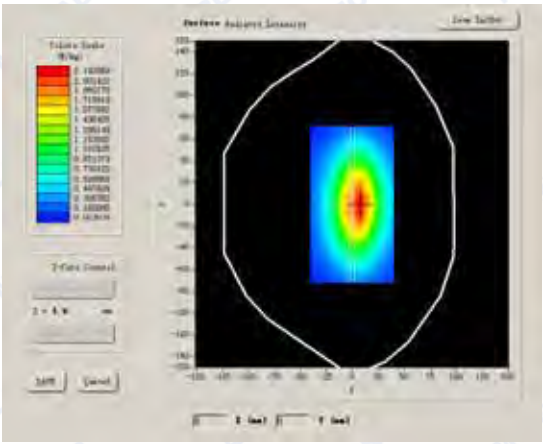
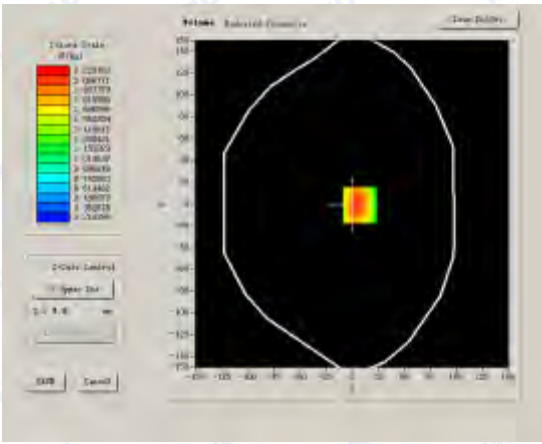
A. Experimental conditions.

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

B. SAR Measurement Results

Band SAR

Frequency (MHz)	835.000000
Relative permittivity (real part)	55.838595
Conductivity (S/m)	0.973824
Power drift (%)	-0.510000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	6.99
Crest factor:	1:1

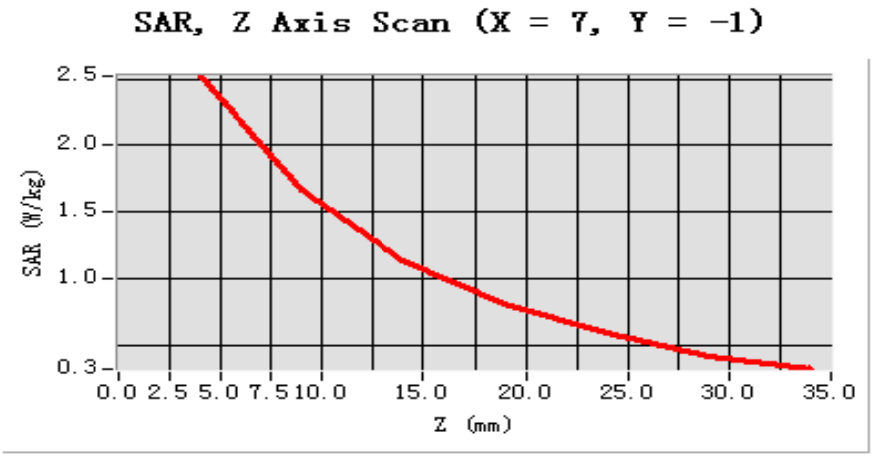
SURFACE SAR	VOLUME SAR
	

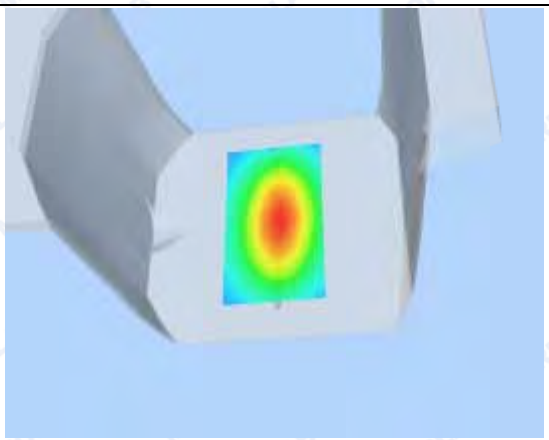
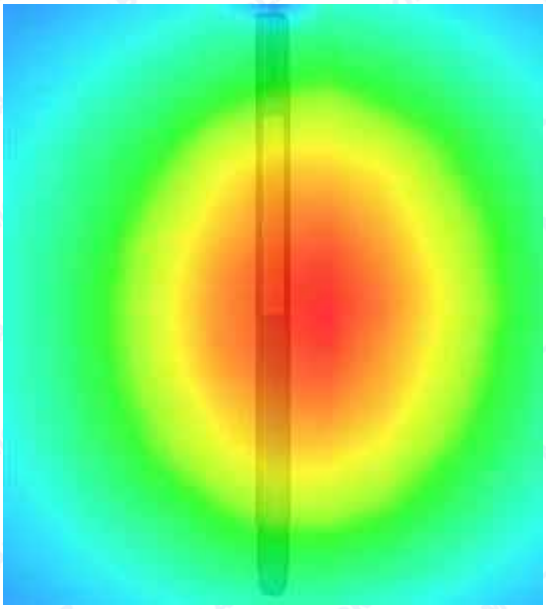
Maximum location: X=7.00, Y=-1.00

SAR 10g (W/Kg)	1.307264
SAR 1g (W/Kg)	2.451296

Z Axis Scan

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



3D sceen shot	Hot spot position
	

System Performance Check Data(Head)

Type: Phone measurement (Complete)

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

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

Date of measurement: 2014.11.6

Measurement duration: 13 minutes 27 seconds

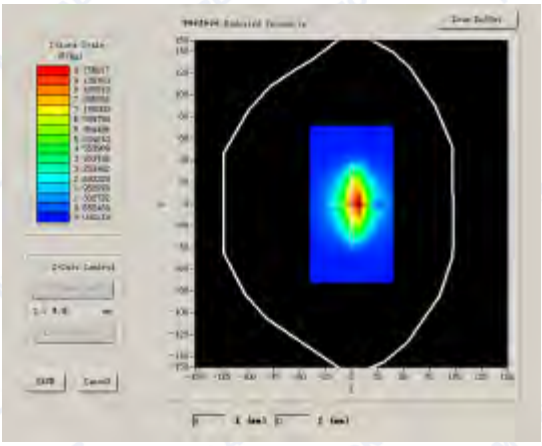
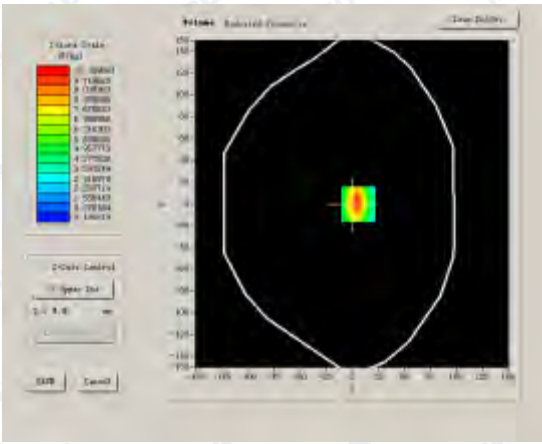
A. Experimental conditions.

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

B. SAR Measurement Results

Band SAR

Frequency (MHz)	1900.000000
Relative permittivity (real part)	39.958875
Conductivity (S/m)	1.410215
Power drift (%)	0.270000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	6.00
Crest factor:	1:1

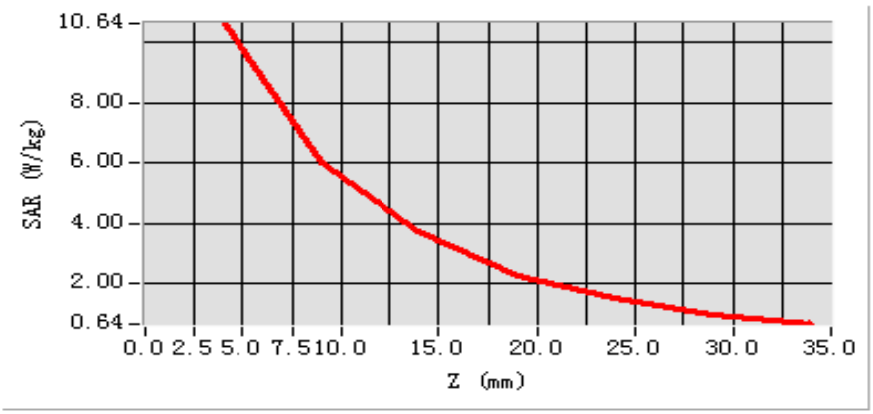
SURFACE SAR	VOLUME SAR
	

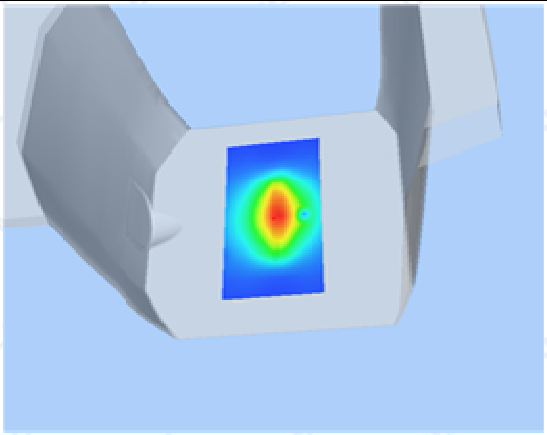
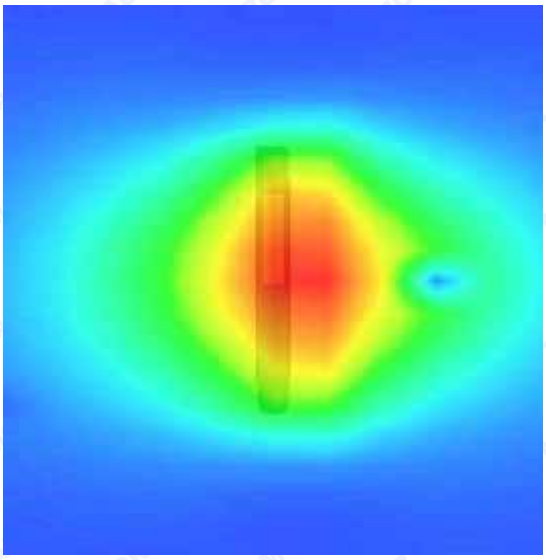
Maximum location: X=6.00, Y=0.00

SAR 10g (W/Kg)	6.353716
SAR 1g (W/Kg)	9.778234

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	10.6419	6.0043	3.7297	2.2606	1.5119	0.9792



3D sceen shot	Hot spot position
	

System Performance Check Data(Body)

Type: Phone measurement (Complete)

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

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

Date of measurement: 2014.11.6

Measurement duration: 13 minutes 26 seconds

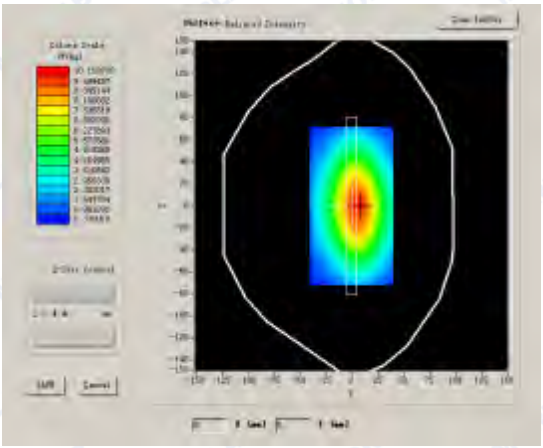
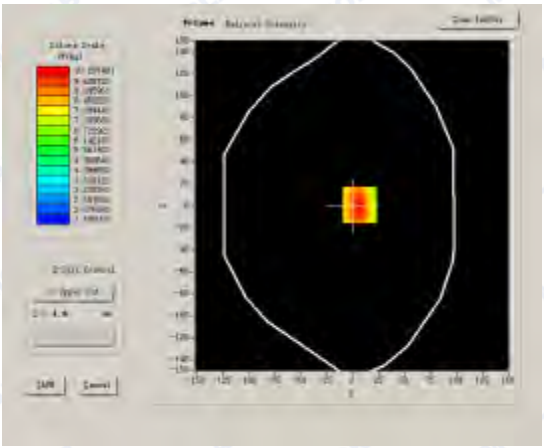
A. Experimental conditions.

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

B. SAR Measurement Results

Band SAR

Frequency (MHz)	1900.000000
Relative permittivity (real part)	53.087685
Conductivity (S/m)	1.508657
Power drift (%)	-0.740000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	6.17
Crest factor:	1:1

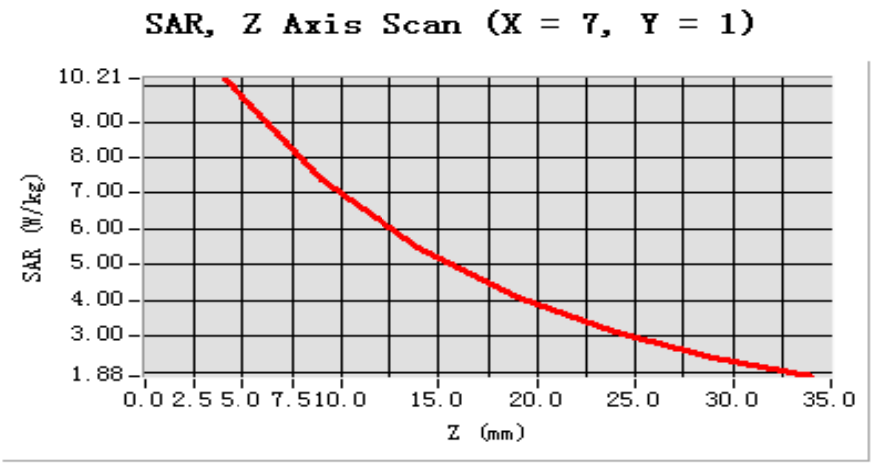
SURFACE SAR	VOLUME SAR
	

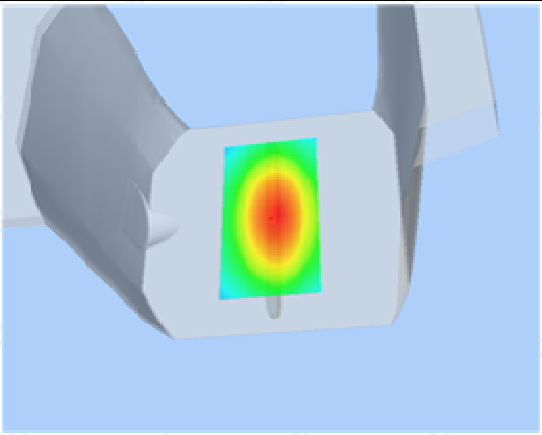
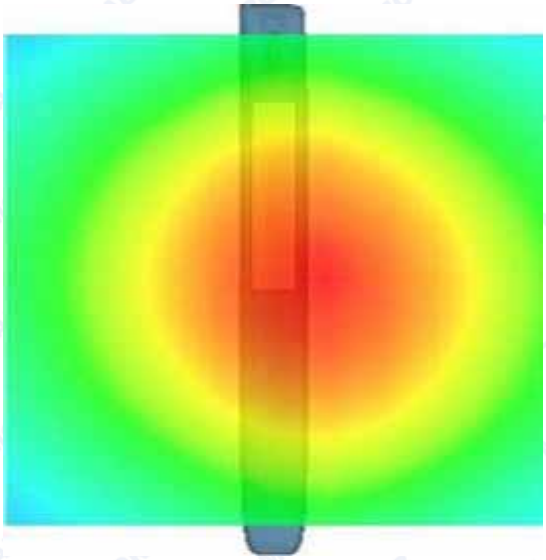
Maximum location: X=7.00, Y=1.00

SAR 10g (W/Kg)	6.742916
SAR 1g (W/Kg)	9.985627

Z Axis Scan

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



3D sceen shot	Hot spot position
	

System Performance Check Data(Head)

Type: Phone measurement (Complete)

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

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

Date of measurement: 2014.11.6

Measurement duration: 13 minutes 27 seconds

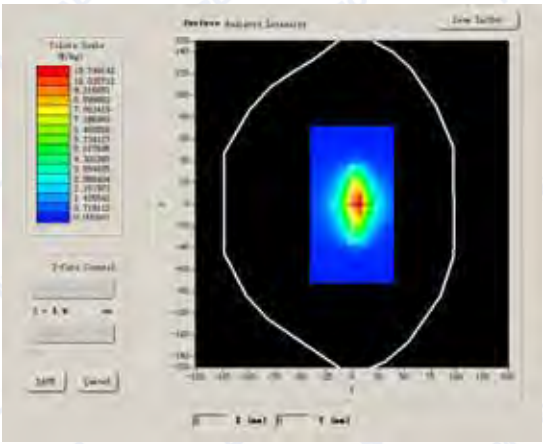
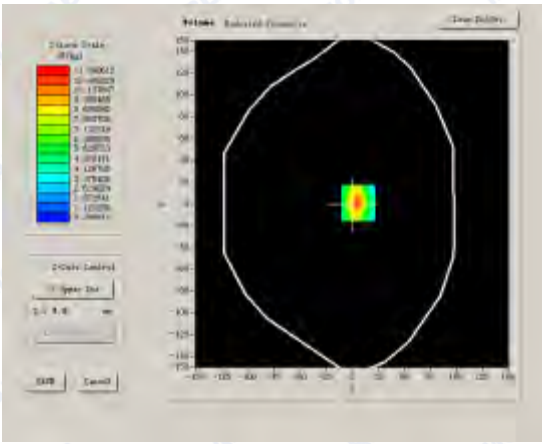
A. Experimental conditions.

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)	39.285758
Conductivity (S/m)	1.791024
Power Drift (%)	0.520000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	4.80
Crest factor:	1:1

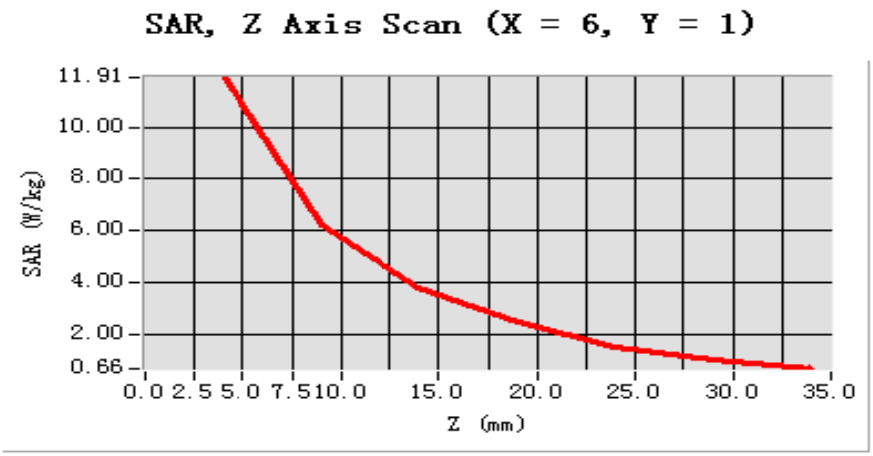
SURFACE SAR	VOLUME SAR
	

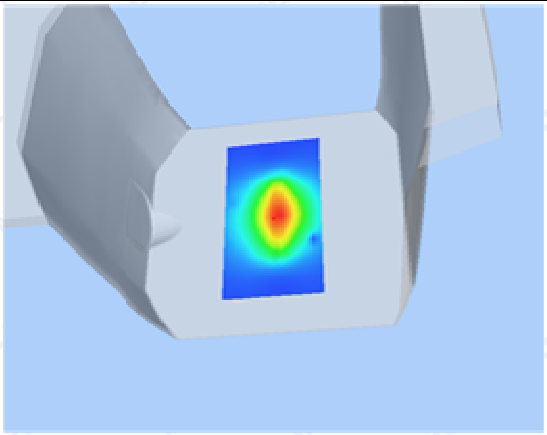
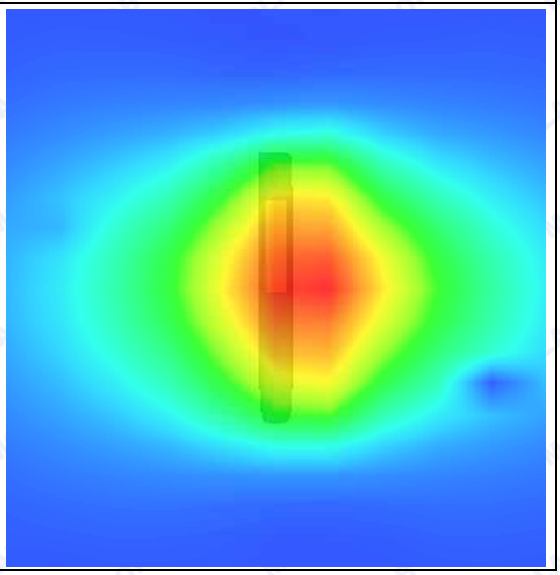
Maximum location: X=6.00, Y=1.00

SAR 10g (W/Kg)	7.668237
SAR 1g (W/Kg)	12.836729

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	11.9115	6.2096	3.8187	2.4504	1.5036	1.0219



3D sceen shot	Hot spot position
	

System Performance Check Data(Body)

Type: Phone measurement (Complete)

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

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

Date of measurement: 2014.11.6

Measurement duration: 13 minutes 27 seconds

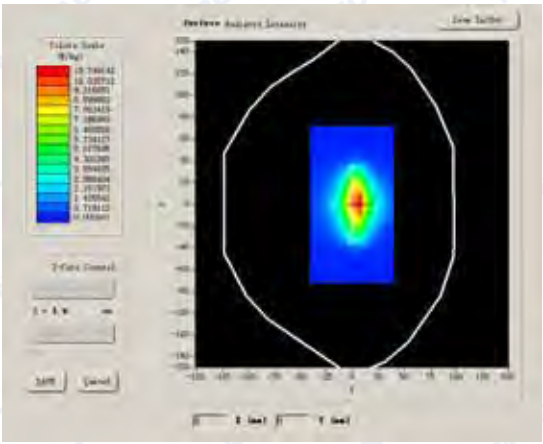
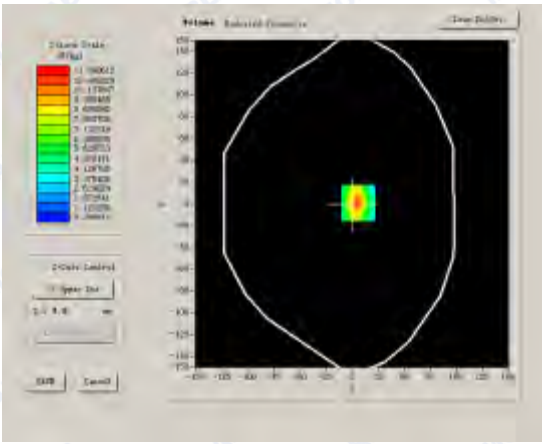
A. Experimental conditions.

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)	52.521347
Conductivity (S/m)	1.960245
Power Drift (%)	0.630000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	4.96
Crest factor:	1:1

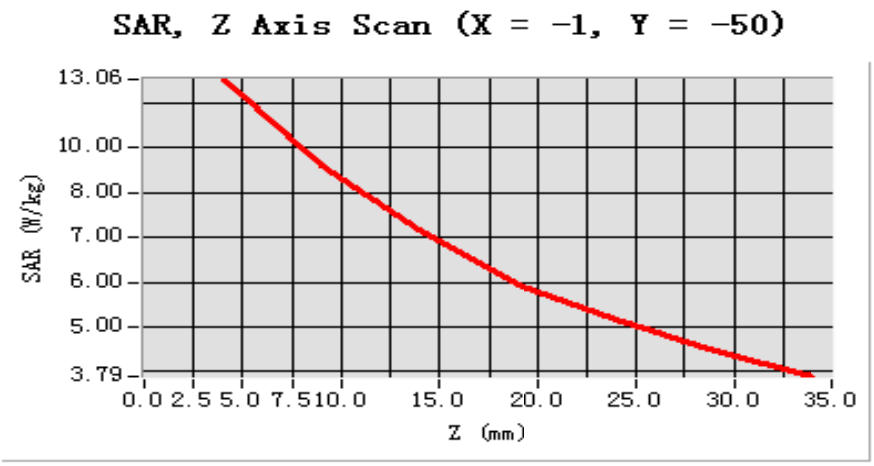
SURFACE SAR	VOLUME SAR
	

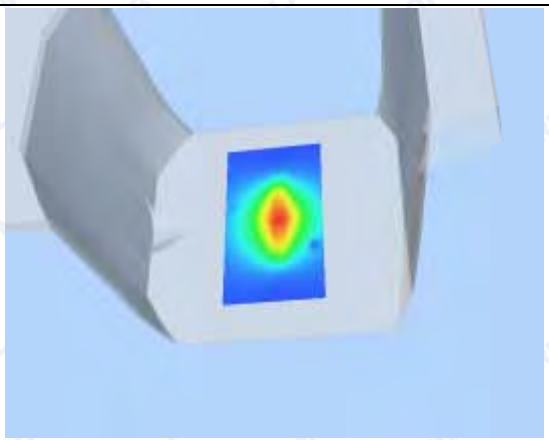
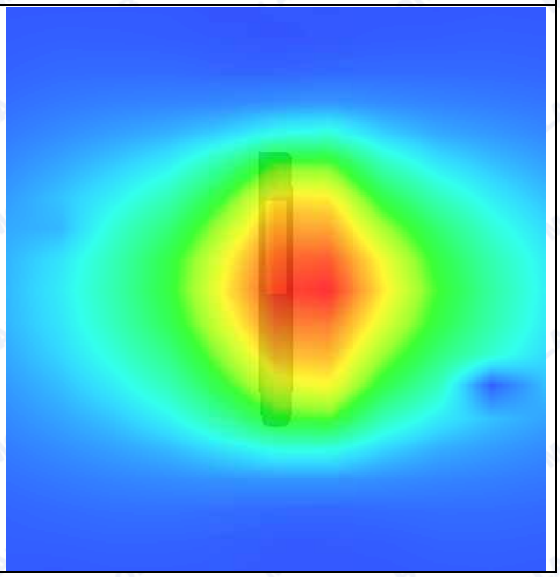
Maximum location: X=-1.00, Y=-50.00

SAR 10g (W/Kg)	7.205168
SAR 1g (W/Kg)	12.926381

Z Axis Scan

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



3D sceen shot	Hot spot position
	

ANNEX B GENERAL INFORMATION

1. Identification of the Responsible Testing Laboratory

Company Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Department:	Morlab Laboratory
Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China
Responsible Test Lab Manager:	Mr. Su Feng
Telephone:	+86 755 36698555
Facsimile:	+86 755 36698525

2. Identification of the Responsible Testing Location

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

3. Accreditation Certificate

Accredited Testing Laboratory: CNAS No. L3572
(Shenzhen Morlab Communications Technology Co., Ltd.)

4. List of Test Equipments

No.	Instrument	Type	Cal. Date	Cal. Due
1	PC	Dell (Pentium IV 2.4GHz, SN:X10-23533)	(n.a)	(n.a)
2	Network Emulator	Aglient (8960, SN:10752)	2014-2-21	1year
3	Network Analyzer	Agilent(E5071B ,SN:MY42404762)	2014-9-24	1year
4	Voltmeter	Keithley (2000, SN:1000572)	2014-9-24	1year
5	Signal Generator	Rohde&Schwarz (SMP_02)	2014-9-24	1year
6	Power Amplifier	PRANA (Ap32 SV125AZ)	2014-9-24	1year
7	Power Meter	Agilent (E4416A, SN:MY45102093)	2014-5-07	1year
8	Power Sensor	Agilent (N8482A, SN:MY41091706)	2014-5-07	1year
9	Directional coupler	Giga-tronics(SN:1829112)	2014-9-24	1year
10	Probe	Satimo (SN:SN 37/08 EP80)	2014-9-22	1year
11	Dielectric Probe Kit	Agilent (85033E)	2014-9-24	1year
12	Phantom	Satimo (SN:SN_36_08_SAM62)	2014-9-24	1year
13	Liquid	Satimo(Last Calibration: 2014-11-5 to 2014-11-6)	N/A	N/A
14	Dipole 835MHz	Satimo (SN 20/08 DIPC 99)	2014-9-22	1year
15	Dipole 1900MHz	Satimo (SN 30/13 DIP1G900-261)	2014-9-22	1year
16	Dipole 2450MHz	Satimo (SN 30/13 DIP2G450-263)	2014-9-22	1year

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