CNAS

SAR TEST REPORT

Issued to

Cellon Communications Technology(ShenZhen)Co., Ltd.

For

GSM Mobile Phone

Model Name	:	C7519,HSD1303,TE1303MX,HSD1303PE,
		HSD1303AL,HSD1303CL,HSD1303EC,
		HSD1303MV,HSD1303OM,HSD1303MX, CL1303
Trade Name	:	CLARO, PCD, CELLON, Telefonica
Brand Name	:	PCD
FCC ID	:	T38PCD7519
Standard	:	FCC Oet65 Supplement C Jun.2001
		47CFR 2.1093
		ANSI C95.1-1999
		IEEE 1528-2003
MAX SAR	:	Head: 1.156W/kg
		Body: 0.889W/kg
Test date	:	2011-4-27
Issue date	:	2011-5-24

by

Shenzhen MORLAB Communication Technology Co., Ltd.

Certification

Tested by _Samuel.pong_   Approved by _Zeng Dexin_   Review by _Li lei_
Samuel Peng   Zeng Dexin   Li Lei

Date _2011.5.24_   Date _2011. 5. 24_   Date _2011.5.24_

CTIA Authorized Test Lab   **OFTA**   **TAF**   **GCF**   **Bluetooth**   **FCC**
LAB CODE 200812ZZ3-00
IEEE 1725   **OTA**   電訊管理局   ilac-MRA   Testing Laboratory   Official Observer of Global Certification Forum   **BQTF**   Reg. No. **741109**

DIRECTORY

Change History		
Issue	Date	Reason for change
1.0	May 24, 2011	First edition

1. Testing Laboratory

1.1. Identification of the Responsible Testing Laboratory

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

1.2. Identification of the Responsible Testing Location

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

1.3. Accreditation Certificate

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

1.4. List of Test Equipments

No.	Instrument	Type	Cal. Date	Cal. Due
1	PC	Dell (Pentium IV 2.4GHz, SN:X10-23533)	(n.a)	(n.a)
2	Network Emulator	Rohde&Schwarz (CMU200, SN:105894)	2010-9-26	1year
3	Voltmeter	Keithley (2000, SN:1000572)	2010-9-24	1year
4	Synthetizer	Rohde&Schwarz (SML_03, SN:101868)	2010-9-24	1year
5	Amplifier	Nucl udes (ALB216, SN:10800)	2010-9-24	1year
6	Power Meter	Rohde&Schwarz (NRVD, SN:101066)	2010-9-24	1year
7	Probe	Satimo (SN:SN_3708_EP80)	2010-9-24	1year
8	Phantom	Satimo (SN:SN_36_08_SAM62)	2010-9-24	1year
9	Liquid	Satimo (Last Calibration:21 08 08)	2010-8-21	1year
10	Dipole 835MHz	Satimo (SN 36/08 DIPC 99)	2010-9-23	1year
11	Dipole 1800MHz	Satimo (SN 36/08 DIPF 101)	2010-9-23	1year

2. Technical Information

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

2.1. Identification of Applicant

Company Name:	Cellon Communications Technology(ShenZhen)Co., Ltd.
Address:	13/F, Skyworth Building C Gaoxin S. Ave. 1st, High-Tech industrial Park NanShan, ShenZhen

2.2. Identification of Manufacturer

Company Name:	Cellon Communications Technology(ShenZhen)Co., Ltd.
Address:	13/F, Skyworth Building C Gaoxin S. Ave. 1st, High-Tech industrial Park NanShan, ShenZhen

2.3. Equipment Under Test (EUT)

Brand Name:	PCD
Type Name:	CLARO, PCD,CELLON,Telefonica
Marking Name:	C7519,HSD1303,TE1303MXHSD1303PE,HSD1303AL,HSD1303CL,HSD1303EC,HSD1303MV,HSD1303OM,HSD1303MX, CL1303
Hardware Version:	C7519_MB_P3
Software Version:	C7519_5.7S_PCD_DEB
Frequency Bands:	GSM 850MHz / PCS 1900MHz
	WCMDA 850MHz / WCMDA 1900MHz
Multislot Class	GPRS: Multislot Class 12: EDGE: Multislot Class 12(downlink only)
GPRS operation mode:	Class B
HSPA release:	Rel-6
HS-DSCH categories:	Category 8
Antenna type:	Fixed Internal Antenna
Development Stage:	Identical prototype
Battery Model:	BTR8093
Battery specification:	1200mAh 3.7V

2.3.1. Photographs of the EUT

Please see for photographs of the EUT.

2.3.2. Identification of all used EUTs

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

EUT Identity	Hardware Version	Software Version
1#	C7519_MB_P3	C7519_5.7S_PCD_DEB

2.4. Applied Reference Documents

Leading reference documents for testing:

No.	Identity	Document Title
1	**47 CFR§2.1O93**	Radiofrequency Radiation Exposure Evaluation: Portable Devices
2	**FCC OET Bulletin 65 (Edition 97-01), Supplement C (Edition 01-01)**	Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields
3	**ANSI C95.1-1999**	IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3kHz to 300 GHz
4	**IEEE 1528-2003**	Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate(SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techuiques.

2.5. Device Category and SAR Limits

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

2.6. Test Environment/Conditions

Normal Temperature (NT):   20 ... 25 °C

Relative Humidity: 30 ... 75 %

Air Pressure: 980 ... 1020 hPa

Test frequency: GSM 850MHz /PCS 1900MHz

        WCMDA 850MHz / WCMDA 1900MHz

Operation mode: Call established

Power Level: GSM 850 MHz Maximum output power (level 5)

        PCS 1900 MHz Maximum output power (level 0)

        WCMDA 850MH Maximum output power (all up bits)

        WCMDA 1900MHz Maximum output power (all up bits)

During SAR test, EUT is in Traffic Mode (Channel Allocated) at Normal Voltage Condition. A communication link is set up with a System Simulator (SS) by air link, and a call is established.

The Absolute Radio Frequency Channel Number (ARFCN) is allocated to 125, 190 and 251 respectively in the case of GSM 850 MHz, or to 512, 661 and 810 respectively in the case of PCS 1900 MHz, at channel 4132, 4182 and 4233 of WCDMA 850MHz, at channel 9262, 9400 and 9538 of WCDMA 1900 MHz, The EUT is commanded to operate at maximum transmitting power.

The EUT shall use its internal transmitter. The antenna(s), battery and accessories shall be those specified by the manufacturer. The EUT battery must be fully charged and checked periodically during the test to ascertain uniform power output. If a wireless link is used, the antenna connected to the output of the base station simulator shall be placed at least 50 cm away from the handset.

The signal transmitted by the simulator to the antenna feeding point shall be lower than the output power level of the handset by at least 35 dB.

For SAR testing, EUT is in GPRS/EDGE or WCDMA/HSDPA link mode. In GPRS/EDGE link mode, its crest factor is 2, because EUT is set in GPRS/EDGE multi-slot class 12 with 4 uplink slots. In WCDMA/HSDPA/HSUPA link mode, its crest factor is 1.

3. Specific Absorption Rate (SAR)

3.1. Introduction

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

3.2. SAR Definition

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

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

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

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

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

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

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

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

4. SAR Measurement Setup

4.1. The Measurement System

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

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

The following figure shows the system.

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

4.2. Probe

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

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

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

Angle between probe axis (evaluation axis) and suface normal line:1ess than 30˚

Probe calibration is realized, in compliance with CENELEC EN 62209 and IEEE 1528 std, with CALISAR, Antennessa proprietary calibration system. The calibration is performed with the EN 622091 annexe technique using reference guide at the five frequencies.
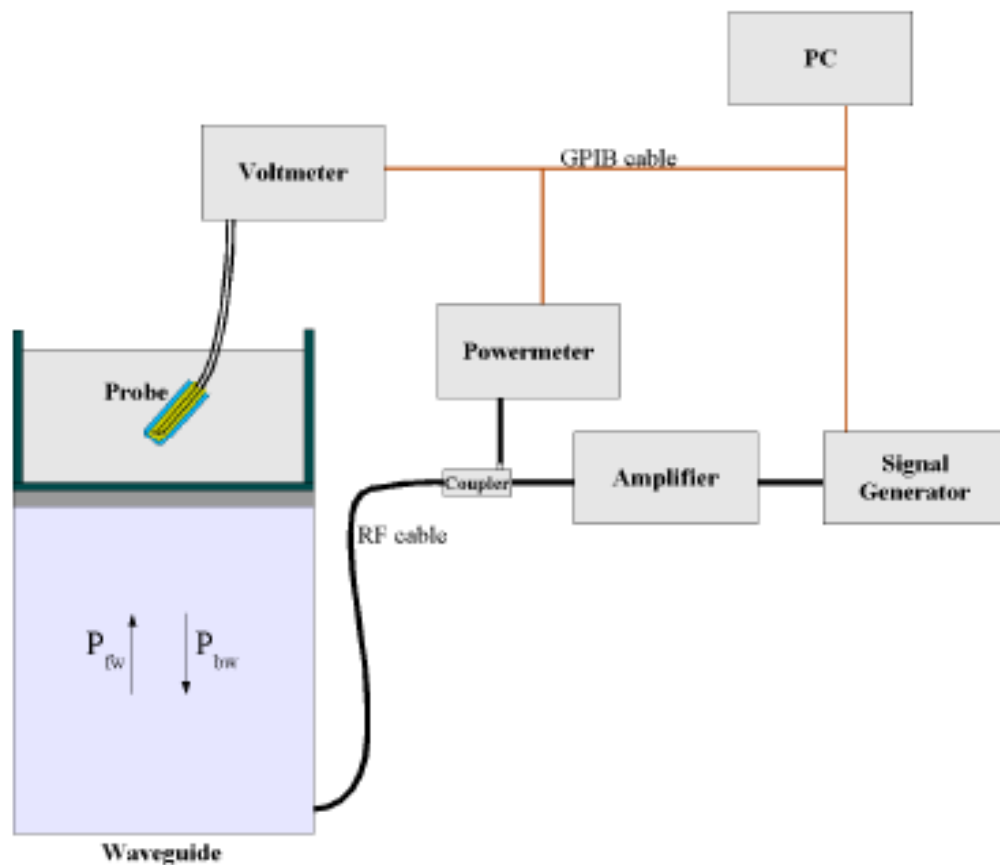
$$SAR = \frac{4\left(P_{fw} - P_{bw}\right)}{ab\delta} \cos^2\left(\pi\frac{y}{a}\right) c^{(2z/\delta)}$$

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

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

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

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

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

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

where DCP is the diode compression point in mV.

4.3. Phantom

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

4.4. Device Holder

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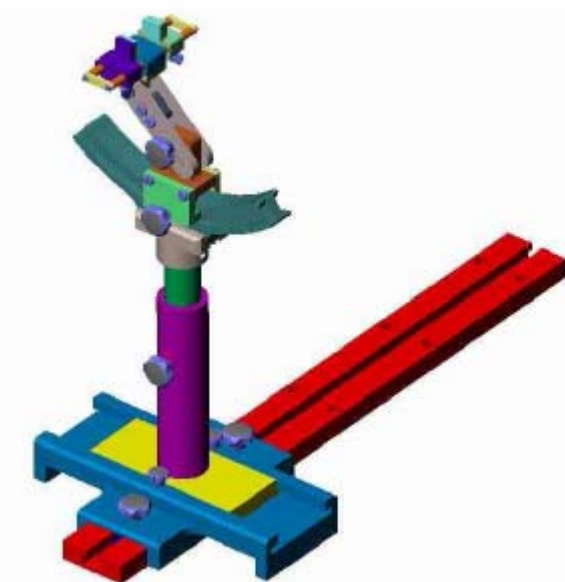
Device holder

System Material	Permittivity	Loss Tangent
Delrin	3.7	0.005

5. Tissue Simulating Liquids

Simulant liquids that are used for testing at frequencies of GSM 850MHz PCS 1900MHz, which are made mainly of sugar, salt and water solutions may be left in the phantoms. Approximately 20litres are needed for an upright head compared to about 25 litres for a horizontal bath phantom. The liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is (head SAR)or from the flat phantom to the liquid top surface (body SAR) is 15cm.

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

Ingredients (% by weight)	Frequency Band 835MHz		Frequency Band 1900MHz	
Tissue Type	Head	Body	Head	Body
Water	41.45	52.4	55.36	40.4
Salt(NaCl)	1.45	1.4	0.35	0.5
Sugar	56.0	45.0	30.45	58.0
HEC	1.0	1.0	0.0	1.0
Bactericide	0.1	0.1	0.0	0.1
Triton	0.0	0.0	0.0	0.0
DGBE	0.0	0.0	13.84	0.0
Acticide SPX	0.0	0.0	0.0	0.0
Dielectric Constant	42.45	56.1	41.00	54.0
Conductivity (S/m)	0.91	0.95	1.38	1.45

Recipes for Tissue Simulating Liquid

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

Table 1: Dielectric Performance of Head Tissue Simulating Liquid

Temperature: 23.0~23.8°C, humidity: 54~60%.			
/	**Frequency**	**Permittivity ε**	**Conductivity σ (S/m)**
Target value	835 MHZ	41.5	0.90
Validation value (Apr. 27)	835 MHZ	41.675999	0.894409
Target value	1900 MHZ	40	1.40
Validation value (Apr. 27)	1900 MHZ	38.509998	1.436111

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

Table 2: Dielectric Performance of Body Tissue Simulating Liquid

Temperature: 23.0~23.8°C, humidity: 54~60%.			
/	**Frequency**	**Permittivity ε**	**Conductivity σ (S/m)**
Target value	835 MHz	55.2	0.97
Validation value (Apr. 27)	835 MHz	55.709999	1.009033
Target value	1900 MHz	53.3	1.52
Validation value (Apr. 27)	1900 MHz	52.548876	1.573978

6. Uncertainty Assessment

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

6.1. UNCERTAINTY EVALUATION FOR HANDSET SAR TEST

a	b	c	d	e= f(d,k)	f	g	h= c*f/e	i= c*g/e	k
Uncertainty Component	Sec.	Tol (+- %)	Prob. Dist.	Div.	Ci (1g)	Ci (10g)	1g Ui (+-%)	10g Ui (+-%)	Vi
Measurement System									
Probe calibration	E.2.1	7.0	N	1	1	1	7.00	7.00	∞
Axial Isotropy	E.2.2	2.5	R	$\sqrt{3}$	0.7	0.7	1.02	1.02	∞
Hemispherical Isotropy	E.2.2	4.0	R	$\sqrt{3}$	0.7	0.7	1.63	1.63	∞
Boundary effect	E.2.3	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Linearity	E.2.4	5.0	R	$\sqrt{3}$	1	1	2.89	2.89	∞
System detection limits	E.2.5	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Readout Electronics	E.2.6	0.02	N	1	1	1	0.02	0.02	∞
Reponse Time	E.2.7	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	∞
Integration Time	E.2.8	2.0	R	$\sqrt{3}$	1	1	1.15	1.15	∞
RF ambient Conditions	E.6.1	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	∞
Probe positioner Mechanical Tolerance	E.6.2	2.0	R	$\sqrt{3}$	1	1	1.15	1.15	∞
Probe positioning with respect to Phantom Shell	E.6.3	0.05	R	$\sqrt{3}$	1	1	0.03	0.03	∞
Extrapolation, interpolation and integration Algoritms for Max. SAR Evaluation	E.5.2	5.0	R	$\sqrt{3}$	1	1	2.89	2.89	∞
Test sample Related									
Test sample positioning	E.4.2.1	0.03	N	1	1	1	0.03	0.03	N-1
Device Holder Uncertainty	E.4.1.1	5.00	N	1	1	1	5.00	5.00	∞
Output power Power Drift - SAR drift measurement	6.6.2	2.74	R	$\sqrt{3}$	1	1	1.58	1.58	∞
Phantom and Tissue Parameters									
Phantom Uncertainty (Shape and thickness tolerances)	E.3.1	0.05	R	$\sqrt{3}$	1	1	0.03	0.03	∞
Liquid conductivity - deviation from target value	E.3.2	4.57	R	$\sqrt{3}$	0.64	0.43	1.69	1.13	∞

Liquid conductivity - measurement uncertainty	E.3.3	5.00	N	1	0.64	0.43	3.20	2.15	M
Liquid permittivity - deviation from target value	E.3.2	3.69	R	$\sqrt{3}$	0.6	0.49	1.28	1.04	∞
Liquid permittivity - measurement uncertainty	E.3.3	10.00	N	1	0.6	0.49	6.00	4.90	M
Combined Standard Uncertainty			RSS				10.09	9.53	
Expanded Uncertainty (95% Confidence interval)			k				20.18	19.06	

6.2. UNCERTAINTY FOR SYSTEM PERFORMANCE CHECK

a	b	c	d	e= f(d,k)	f	g	h= c*f/e	i= c*g/e	k
Uncertainty Component	Sec.	Tol (+- %)	Prob. Dist.	Div.	Ci (1g)	Ci (10g)	1g Ui (+-%)	10g Ui (+-%)	Vi
Measurement System									
Probe calibration	E.2.1	7.0	N	1	1	1	7.00	7.00	∞
Axial Isotropy	E.2.2	2.5	R	$\sqrt{3}$	0.7	0.7	1.02	1.02	∞
Hemispherical Isotropy	E.2.2	4.0	R	$\sqrt{3}$	0.7	0.7	1.63	1.63	∞
Boundary effect	E.2.3	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Linearity	E.2.4	5.0	R	$\sqrt{3}$	1	1	2.89	2.89	∞
System detection limits	E.2.5	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Readout Electronics	E.2.6	0.02	N	1	1	1	0.02	0.02	∞
Reponse Time	E.2.7	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	∞
Integration Time	E.2.8	2.0	R	$\sqrt{3}$	1	1	1.15	1.15	∞
RF ambient Conditions	E.6.1	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	∞
Probe positioner Mechanical Tolerance	E.6.2	2.0	R	$\sqrt{3}$	1	1	1.15	1.15	∞
Probe positioning with respect to Phantom Shell	E.6.3	0.05	R	$\sqrt{3}$	1	1	0.03	0.03	∞
Extrapolation, interpolation and integration Algoritms for Max. SAR Evaluation	E.5.2	5.0	R	$\sqrt{3}$	1	1	2.89	2.89	∞
Dipole									
Dipole axis to liquid Distance	8,E.4.2	1.00	R	$\sqrt{3}$	1	1	0.58	0.58	N-1
Input power and SAR drift measurement	8,6.6.2	2.74	R	$\sqrt{3}$	1	1	1.58	1.58	∞

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				8.77	8.12	
Expanded Uncertainty (95% Confidence interval)			k				17.54	16.25	

7. SAR Measurement Evaluation

7.1. System Setup

In the simplified setup for system evaluation, the DUT is replaced by a calibrated dipole and the power source is replaced by a continuous wave which comes from a signal generator at frequency 835 MHz and 1900 MHz. The calibrated dipole must be placed beneath the flat phantom section of the SAM twin phantom with the correct distance holder. The distance holder should touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom.

Equipments :

name	Type and specification
Signal generator	E4433B
Directional coupler	450MHz-3GHz
Amplifier	3W 502(10-2500MHz)
Reference dipole	835MHz:SN 36/08 DIPC 99 1800MHz:SN 36/08 DIPF 101

7.2. Validation Results

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

Frequency	835MHz	1900MHz
Target value (1g)	9.5 W/Kg	38.1 W/Kg
250 mW input power	2.627 W/Kg (head) 2.711 W/Kg (body)	9.903 W/Kg (head) 9.835 W/Kg (body)
Test value (1g)	10.508 W/Kg (head) 10.844 W/Kg (body)	39.612 W/Kg (head) 39.34 W/Kg (body)

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

8. Operational Conditions During Test

8.1. Informations on the testing

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

The mobile phone is test in the "cheek" and "tilted" positions on the left and right sides of the phantom. The mobile phone is placed with the vertical centre line of the body of the mobile phone and the horizontal line crossing the centre of the earpiece in a plane parallel to the sagittal plane of the phantom.
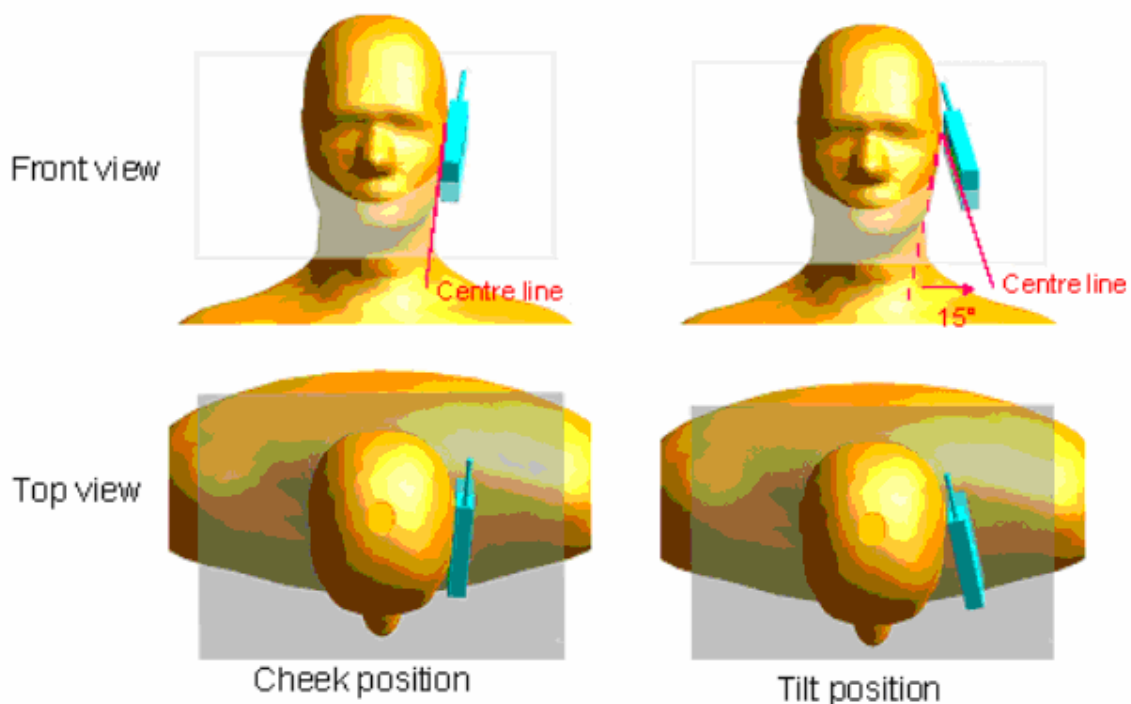
Description of the "cheek" position:
The mobile phone is well placed in the reference plane and the earpiece is in contact with the ear. Then the mobile phone is moved until any point on the front side get in contact with the cheek of the phantom or until contact with the ear is lost.

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

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

8.2. Body-worn Configurations

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

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

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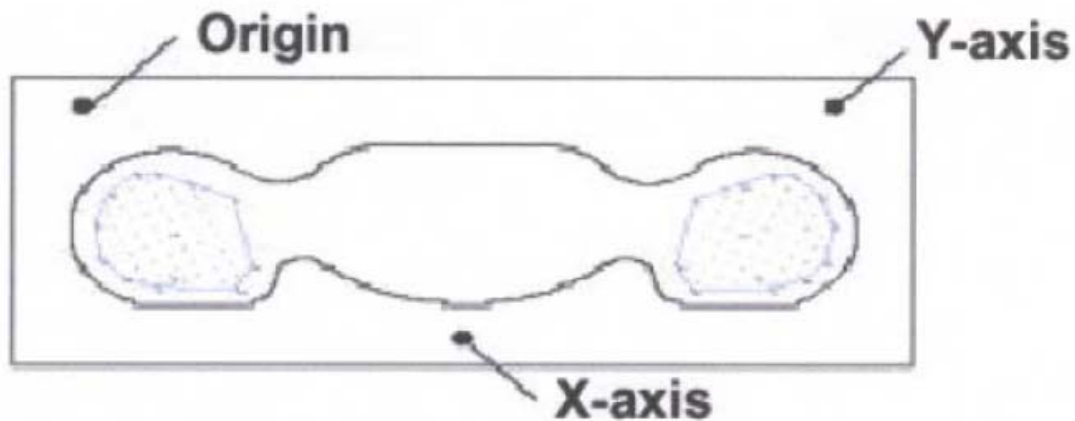
SAR Measurement Points in Area Scan

8.3. Measurement procedure

The following steps are used for each test position

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

8.4. Description of interpolation/extrapolation scheme

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

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

from the liquid surface with a 1mm step.

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

9. MEASUREMENT PROCEDURES

9.1. Procedures Used To Establish Test Signal

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

9.2. SAR Measurement Conditions for WCDMA

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

9.3. Output Power Verification

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

9.4. Mobile Phone with HSDPA

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

WCDMA mode conducted output power values

	band	WCDMA 850			WCDMA 1900		
ltem	ARFCN	4132	4182	4233	9262	9400	9538
	subtest	dBm			dBm		
5.2(WCDMA)	non	25.07	24.33	25.43	23.40	24.33	24.55
5.2AA(HSDPA)	1	25.05	24.24	25.30	23.67	24.31	24.51
	2	24.97	24.21	25.37	23.71	24.29	24.48
	3	24.50	23.74	24.83	23.24	23.78	24.01
	4	24.51	23.78	24.81	23.26	23.80	23.09

GPRS/EDGE modes conducted output power values

GSM Mode

Band	Channel	Frequency (MHz)	Output Power (dBm)
Cellular (GMSK)	128	824.2	29.53
	190	836.6	31.30
	251	848.8	33.68
PCS (GMSK)	512	1850.2	29.60
	661	1880.0	28.44
	810	1909.8	28.76

GPRS Mode (Class 12)

Band	Channel	Frequency (MHz)	Output Power(dBm)			
			Slot 1	Slot 2	Slot 3	Slot 4
Cellular (GMSK)	128	824.2	27.21	27.12	27.14	26.88
	190	836.6	31.15	31.21	31.04	31.08
	251	848.8	28.77	28.72	28.79	28.78
PCS (GMSK)	512	1850.2	29.15	29.18	29.17	30.19
	661	1880.0	29.56	29.58	29.61	29.74
	810	1909.8	29.12	29.16	29.14	29.08

Average Power of each mode

Duty cycle of each condition:

	GSM	GPRS			
	Slot 1	Slot 1	Slot 2	Slot 3	Slot 4
Duty Cycle	1:8	1:8	2:8	3:8	4:8
Correct Factor	-9dB	-9dB	-6dB	-4.25dB	-3dB

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

GSM Mode

Band	Channel	Frequency (MHz)	Output Power
			(dBm)
Cellular (GMSK)	128	824.2	20.53
	190	836.6	22.30
	251	848.8	24.68
PCS (GMSK)	512	1850.2	20.60
	661	1880.0	19.44
	810	1909.8	19.76

GPRS Mode (Class 12)

Band	Channel	Frequency (MHz)	Output Power(dBm)			
			Slot 1	Slot 2	Slot 3	Slot 4
Cellular (GMSK)	128	824.2	18.21	21.12	22.94	23.88
	190	836.6	22.15	25.21	26.84	28.08
	251	848.8	19.77	22.72	24.59	25.78
PCS (GMSK)	512	1850.2	20.15	23.18	24.97	27.19
	661	1880.0	20.56	23.58	25.41	26.74
	810	1909.8	20.12	23.16	24.94	26.08

Because the GPRS average power of slot 4 is high than other slots, we choose GPRS slot 4 configure and GSM voice configure for body SAR test.

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	Antenna Positions	SAR(W/Kg)		
			Device Test channel		
			Channel 128	Channel 190	Channel 251
Left Side Of Head	Cheek/Touch	Extended	/	0.485	/
	Ear/Tilt	Extended	/	0.357	/
Right Side Of Head	Cheek/Touch	Extended	/	0.487	/
	Ear/Tilt	Extended	/	0.374	/
Body (GSM)	Back upward	Extended	/	0.675	/
	Keyboard Upward	Extended	/	0.426	/
Body (GPRS)	Back upward	Extended	/	0.538	/
	Keyboard Upward	Extended	/	0.392	/

Summary of Measurement Results (GSM 1900MHz Band)

Temperature: 21.0~23.8°C, humidity: 54~60%.					
Phantom Configurations	Device Test Positions	Antenna Positions	SAR(W/Kg)		
			Device Test channel		
			Channel 512	Channel 661	Channel 810
Left Side Of Head	Cheek/Touch	Extended	1.028	1.156	1.154
	Ear/Tilt	Extended	/	0.260	/
Right Side Of Head	Cheek/Touch	Extended	/	0.768	/
	Ear/Tilt	Extended	/	0.188	/
Body (GSM)	Back upward	Extended	/	0.681	/
	Keyboard Upward	Extended	/	0.552	/
Body (GPRS)	Back upward	Extended	/	0.614	/
	Keyboard Upward	Extended	/	0.532	/

Summary of Measurement Results (WCDMA 850MHz Band)

Temperature: 21.0~23.8°C, humidity: 54~60%.					
Phantom Configurations	Device Test Positions	Antenna Positions	SAR(W/Kg)		
			Device Test channel		
			Channel 4132	Channel 4182	Channel 4233
Left Side Of Head	Cheek/Touch	Extended	/	0.611	/
	Ear/Tilt	Extended	/	0.268	/
Right Side Of Head	Cheek/Touch	Extended	/	0.702	/
	Ear/Tilt	Extended	/	0.480	/
Body (WCDMA)	Back upward	Extended	0.889	0.853	0.851
	Keyboard Upward	Extended	/	0.648	/
Body (HSDPA)	Back upward	Extended	/	0.696	/
	Keyboard Upward	Extended	/	/	/

Summary of Measurement Results (WCDMA 1900MHz Band)

Temperature: 21.0~23.8°C, humidity: 54~60%.					
Phantom Configurations	Device Test Positions	Antenna Positions	SAR(W/Kg)		
			Device Test channel		
			Channel 9262	Channel 9400	Channel 9538
Left Side Of Head	Cheek/Touch	Extended	1.023	1.080	1.051
	Ear/Tilt	Extended	/	0.687	/
Right Side Of Head	Cheek/Touch	Extended	0.910	0.916	0.872
	Ear/Tilt	Extended	/	0.264	/
Body (WCDMA)	Back upward	Extended	0.785	0.852	0.740
	Keyboard Upward	Extended	/	0.605	/
Body (HSDPA)	Back upward	Extended	/	0.715	/
	Keyboard Upward	Extended	/	/	/

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

2. EUT with Bluetooth, and bluetooth conducted power is 3.805dBm. It is very low, so the test does not consider the Bluetooth status.

Annex A Accreditation Certificate

CNAS L3572

China National Accreditation Service for Conformity Assessment

LABORATORY ACCREDITATION CERTIFICATE

(No. CNAS L3572)

China National Accreditation Service for Conformity Assessment has accredited

Morlab Laboratory Shenzhen Morlab Communications Technology Co., Ltd.

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

Shenzhen, Guangdong, China

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

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

Date of Issue：2008-07-01

Date of Expiry：2011-06-30

Date of Initial Accreditation：2008-07-01

Signed on behalf of China National Accreditation Service for Conformity Assessment

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

Annex B EUT Setup Photos

1   EUT Left Head Touch Cheek Position
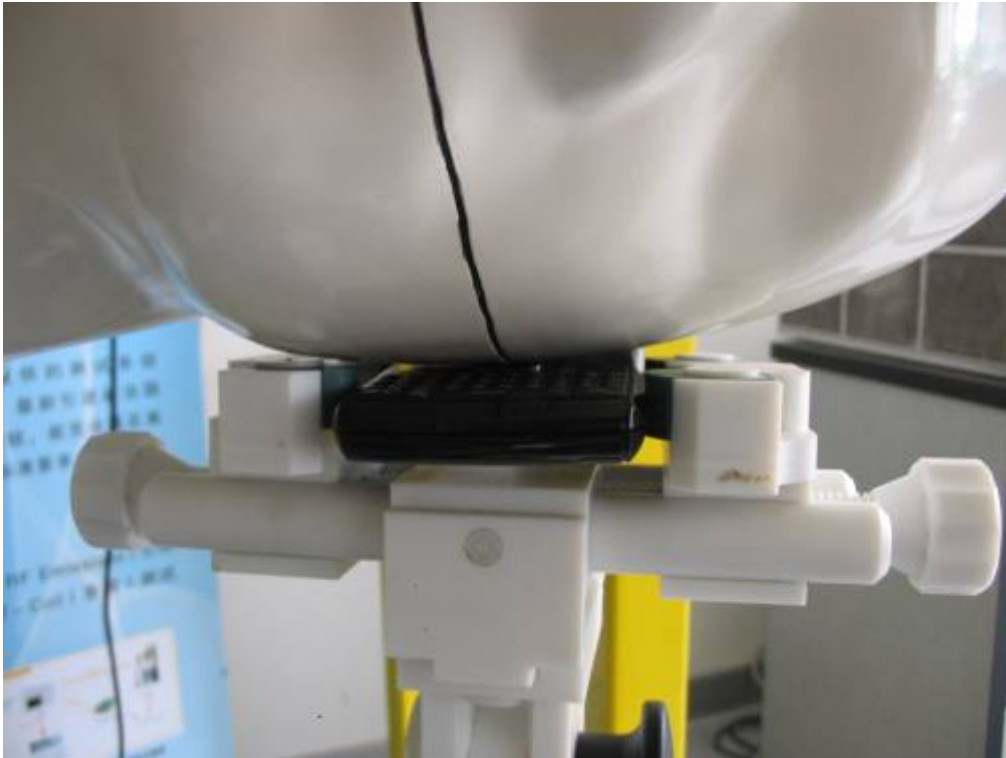
2   EUT Left Head Tilt15 Position
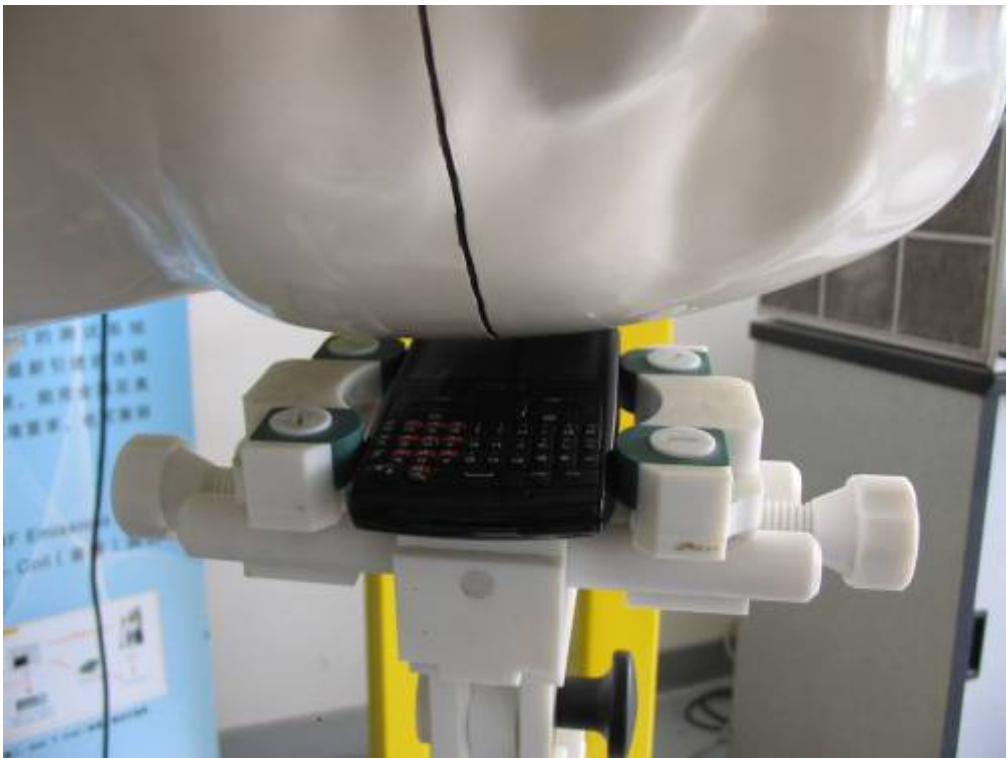
3 EUT Right Head Touch Cheek Position
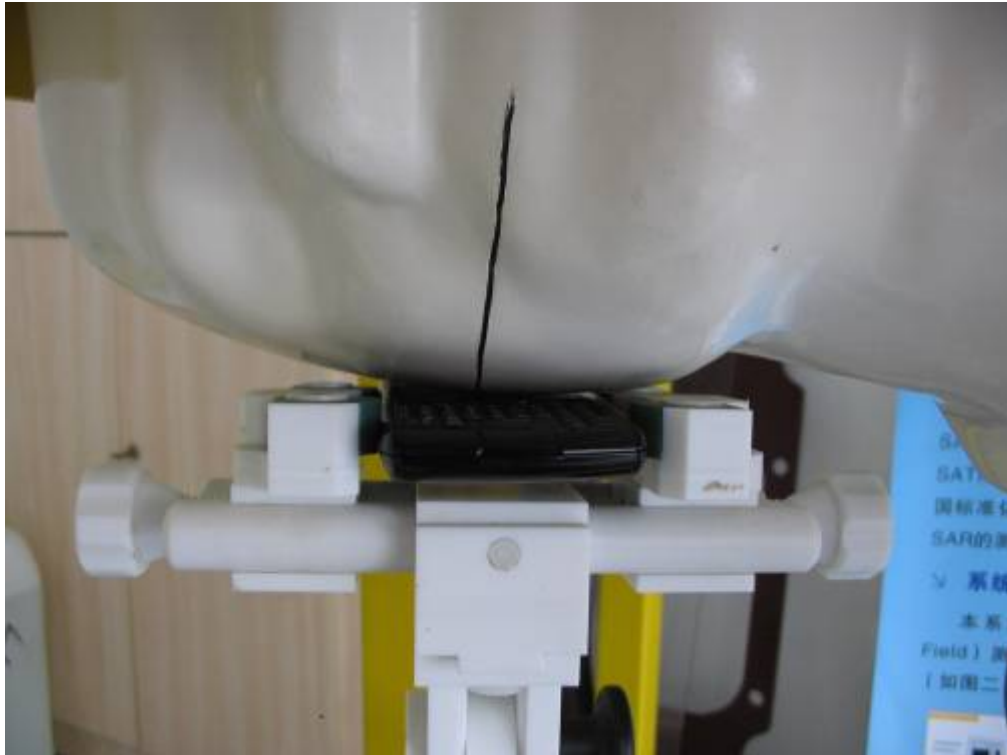
4 EUT Right Head Tilt15 Position

5　Side Position

Liquid Level Photo

Annex C 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: Validation Plane with Body device position on Middle Channel in GSM mode Measurement 6: Validation Plane with Body device position on Middle Channel in GSM mode Measurement 7: Validation Plane with Body device position on Middle Channel in GPRS mode Measurement 8: Validation Plane with Body device position on Middle Channel in GPRS mode
GSM1900	Measurement 9: Right Head with Cheek device position on Middle Channel in GSM mode Measurement 10: Right Head with Tilt device position on Middle Channel in GSM mode Measurement 11: Left Head with Cheek device position on Low Channel in GSM mode Measurement 12: Left Head with Cheek device position on Middle Channel in GSM mode Measurement 13: Left Head with Cheek device position on High Channel in GSM mode Measurement 14: Left Head with Tilt device position on Middle Channel in GSM mode Measurement 15: Validation Plane with Body device position on Middle Channel in GSM mode Measurement 16: Validation Plane with Body device position on Middle Channel in GSM mode Measurement 17: Validation Plane with Body device position on Middle Channel in GPRS mode Measurement 18: Validation Plane with Body device position on Middle Channel in GPRS mode
	Measurement 19: Right Head with Cheek device position on Middle Channel in WCDMA mode Measurement 20: Right Head with Tilt device position on Middle Channel in WCDMA mode Measurement 21: Left Head with Cheek device position on Middle

WCDMA 850MHz		Channel in WCDMA mode Measurement 22: Left Head with Tilt device position on Middle Channel in WCDMA mode Measurement 23: Validation Plane with Body device position on Low Channel in WCDMA mode Measurement 24: Validation Plane with Body device position on Middle Channel in WCDMA mode Measurement 25: Validation Plane with Body device position on High Channel in WCDMA mode Measurement 26: Validation Plane with Body device position on Middle Channel in WCDMA mode Measurement 27: Validation Plane with Body device position on Middle Channel in HSDPA mode
WCDMA 1900MHz		Measurement 28: Right Head with Cheek device position on Low Channel in WCDMA mode Measurement 29: Right Head with Cheek device position on Middle Channel in WCDMA mode Measurement 30: Right Head with Cheek device position on High Channel in WCDMA mode Measurement 31: Right Head with Tilt device position on Middle Channel in WCDMA mode Measurement 32: Left Head with Cheek device position on Low Channel in WCDMA mode Measurement 33: Left Head with Cheek device position on Middle Channel in WCDMA mode Measurement 34: Left Head with Cheek device position on High Channel in WCDMA mode Measurement 35: Left Head with Tilt device position on Middle Channel in WCDMA mode Measurement 36: Validation Plane with Body device position on Low Channel in WCDMA mode Measurement 37: Validation Plane with Body device position on Middle Channel in WCDMA mode Measurement 38: Validation Plane with Body device position on High Channel in WCDMA mode Measurement 39: Validation Plane with Body device position on Middle Channel in WCDMA mode Measurement 40: Validation Plane with Body device position on Middle Channel in HSDPA mode

MEASUREMENT 1

Type: Phone measurement (Complete)
　　Area scan resolution: dx=8mm,dy=8mm
　　Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 27/4/2011
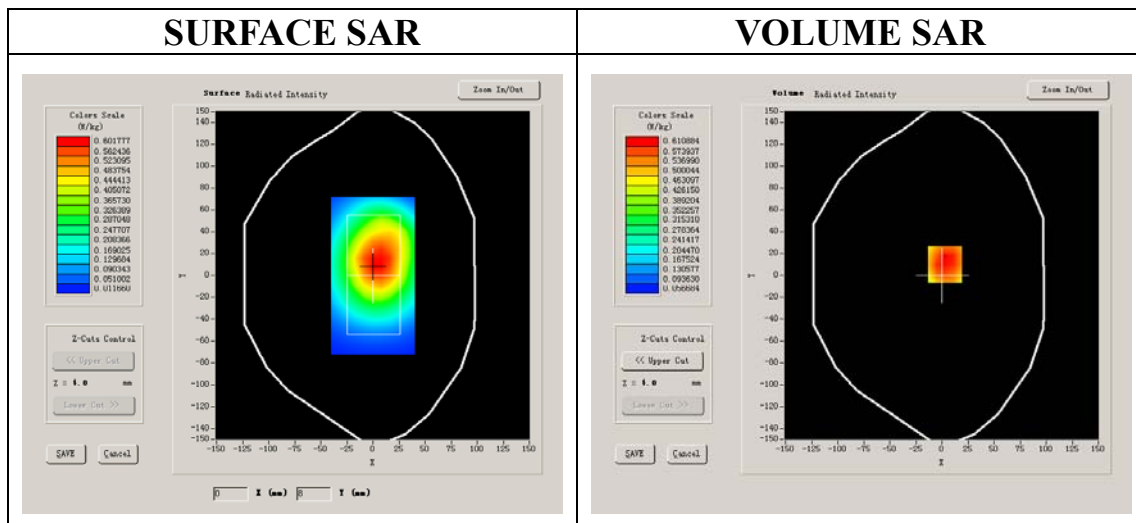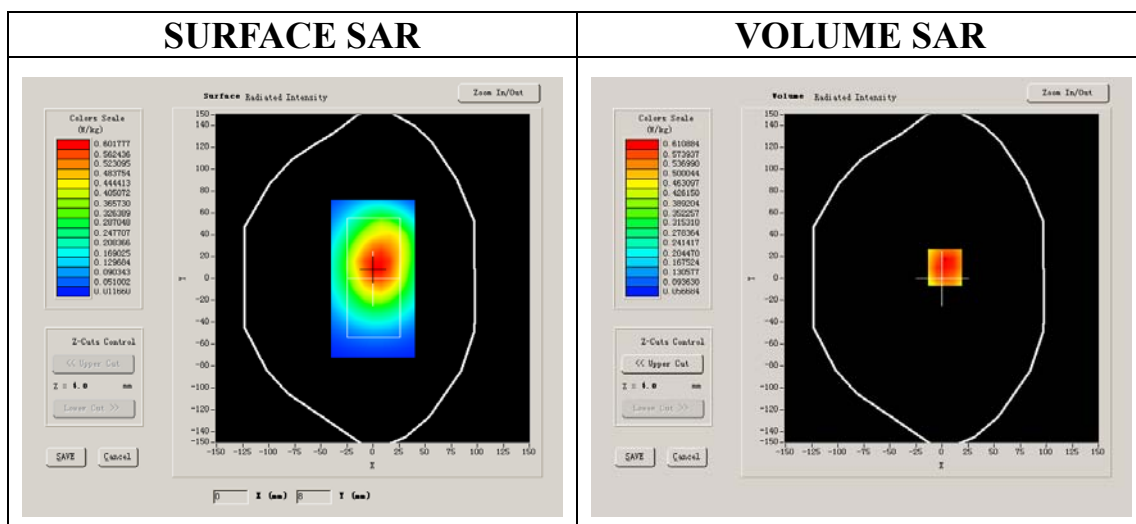Measurement duration: 7 minutes 56 seconds

A. Experimental conditions.

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

B. SAR Measurement Results

Middle Band SAR (Channel 190):

Frequency (MHz)	836.599976
Relative permittivity (real part)	40.669998
Relative permittivity	19.120001
Conductivity (S/m)	0.888655
Power Drift (%)	0.770000
Ambient Temperature:	22.2°C
Liquid Temperature:	21.8°C
ConvF:	28.479,25.214,27.196
Crest factor:	1:8

SURFACE SAR	VOLUME SAR
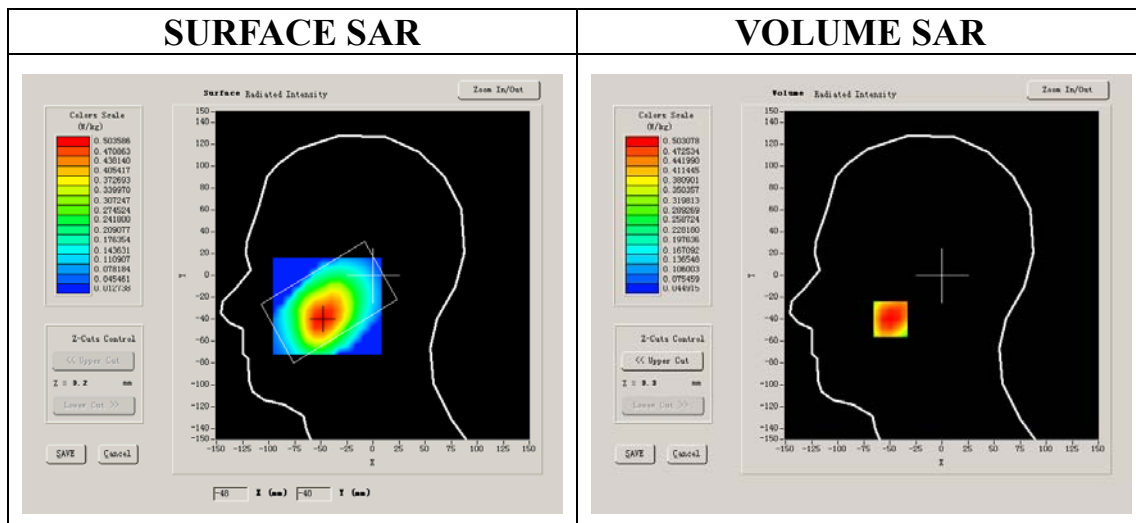
Maximum location: X=-49.00, Y=-40.00

SAR 10g (W/Kg)	0.348552
SAR 1g (W/Kg)	0.487270

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.5031	0.3853	0.2901	0.2154	0.1615	0.1212
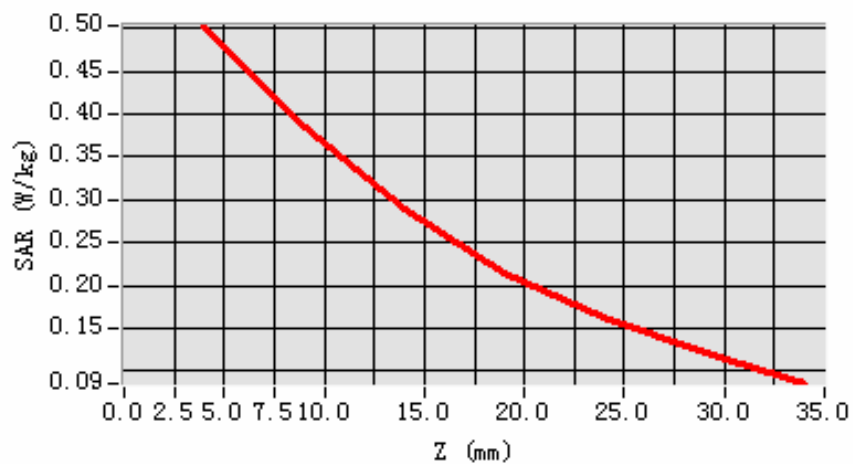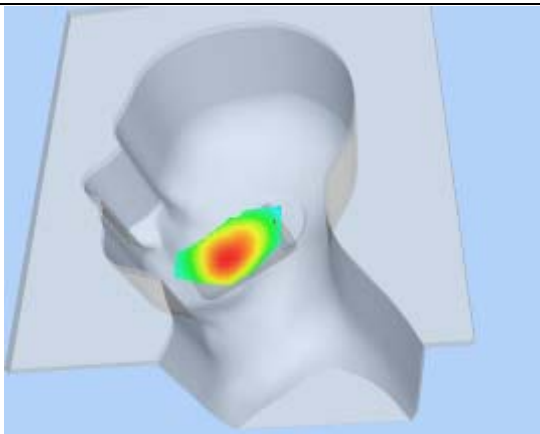
3D sceen shot	Hot spot position
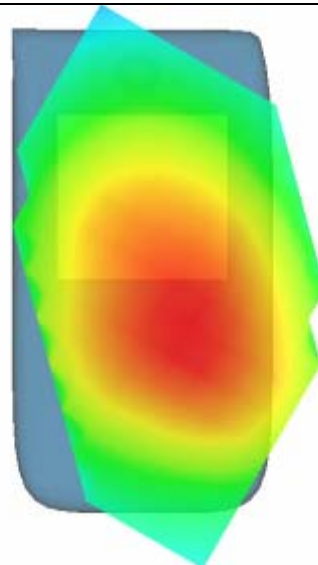
MEASUREMENT 2

Type: Phone measurement (Complete)
   Area scan resolution: dx=8mm,dy=8mm
   Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 27/4/2011
Measurement duration: 7 minutes 39 seconds
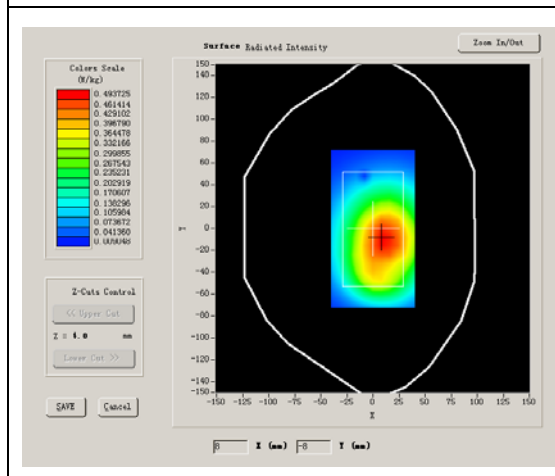
A. Experimental conditions.

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

B. SAR Measurement Results

Higher Band SAR (Channel 190):

Frequency (MHz)	836.599976
Relative permittivity (real part)	41.675999
Relative permittivity	18.967199
Conductivity (S/m)	0.894409
Power Drift (%)	0.150000
Ambient Temperature:	22.2°C
Liquid Temperature:	21.8°C
ConvF:	28.479,25.214,27.196
Crest factor:	1:8

SURFACE SAR	VOLUME SAR
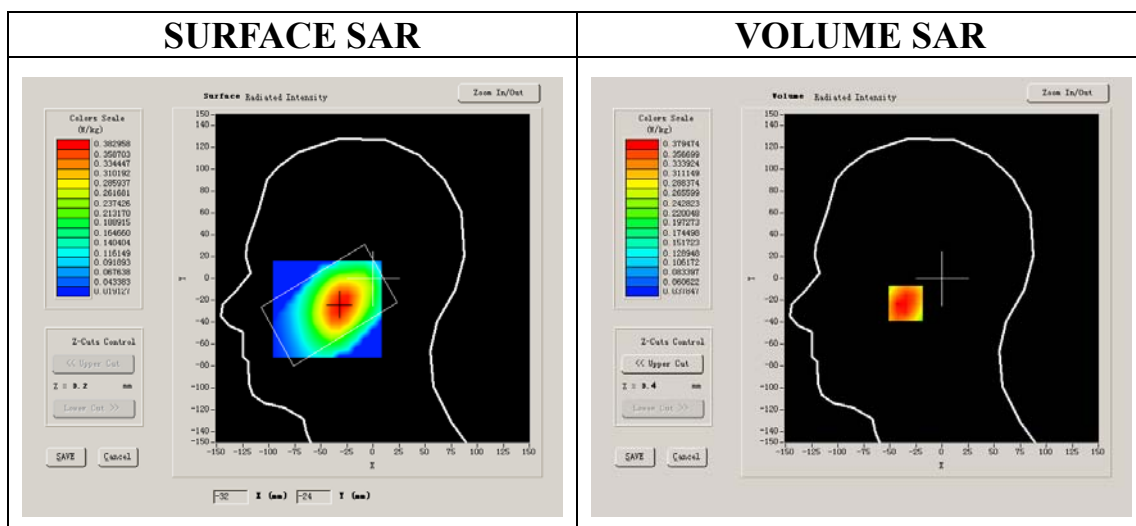
Maximum location: X=-29.00, Y=-23.00

SAR 10g (W/Kg)	0.264193
SAR 1g (W/Kg)	0.374380

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.3775	0.2847	0.2137	0.1683	0.1236	0.0887
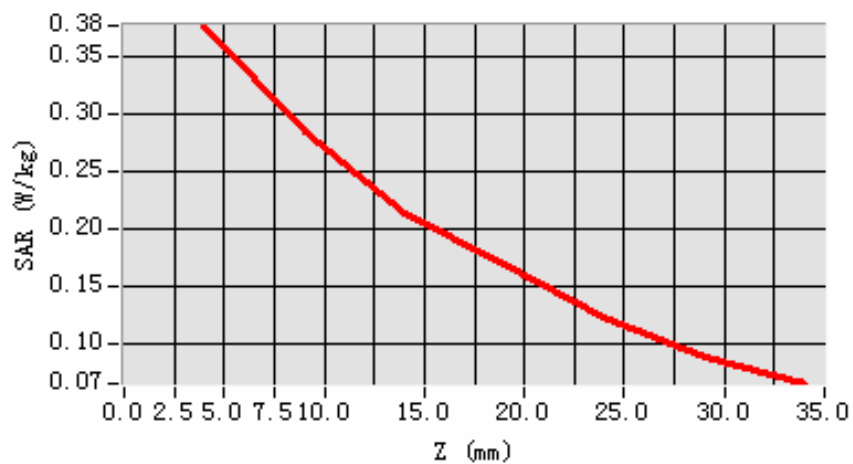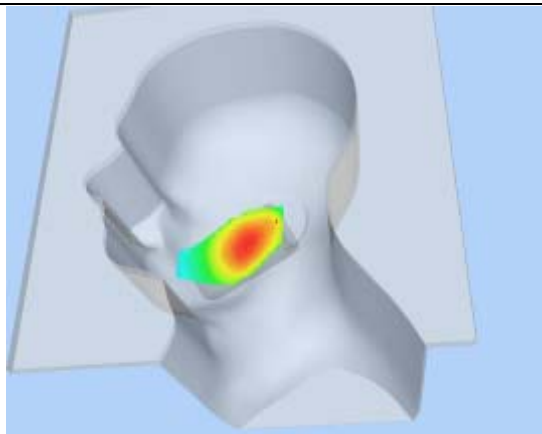
3D sceen shot	Hot spot position
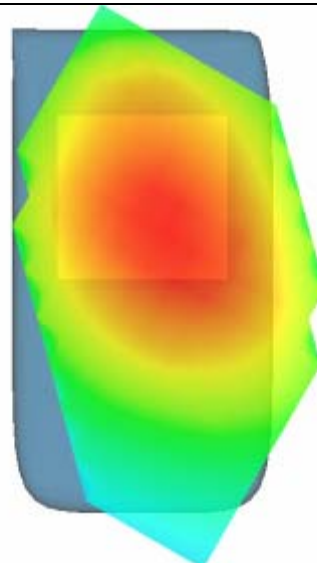
MEASUREMENT 3

Type: Phone measurement (Complete)
    Area scan resolution: dx=8mm,dy=8mm
    Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 27/4/2011
Measurement duration: 7 minutes 46 seconds

A. Experimental conditions.

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

B. SAR Measurement Results

Middle Band SAR (Channel 190):

Frequency (MHz)	836.599976
Relative permittivity (real part)	40.669998
Relative permittivity	19.120001
Conductivity (S/m)	0.888655
Power Drift (%)	-0.130000
Ambient Temperature:	22.2°C
Liquid Temperature:	21.8°C
ConvF:	28.479,25.214,27.196
Crest factor:	1:8

SURFACE SAR	VOLUME SAR
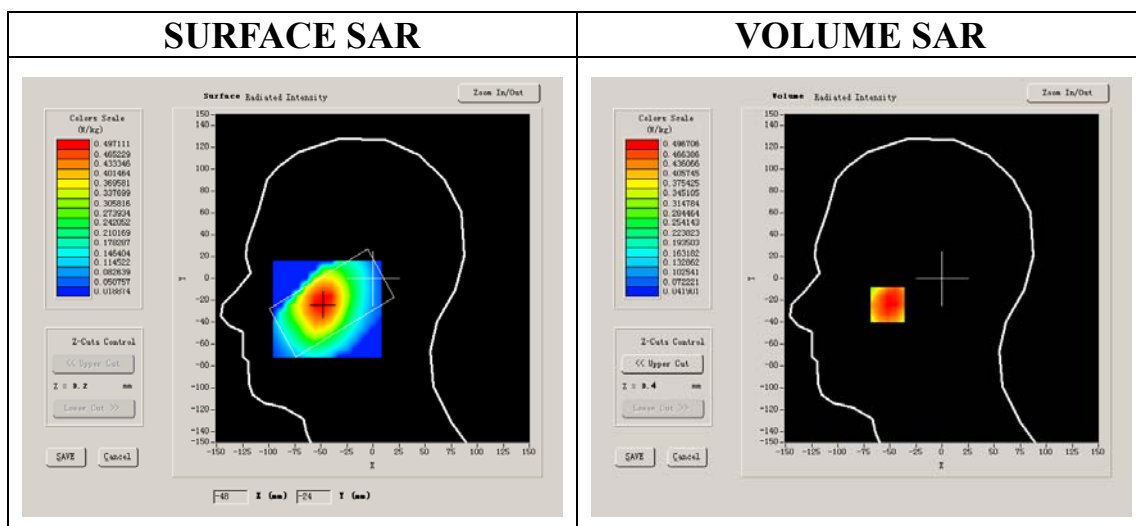
Maximum location: X=-52.00, Y=-24.00

SAR 10g (W/Kg)	0.340561
SAR 1g (W/Kg)	0.485701

Z Axis Scan

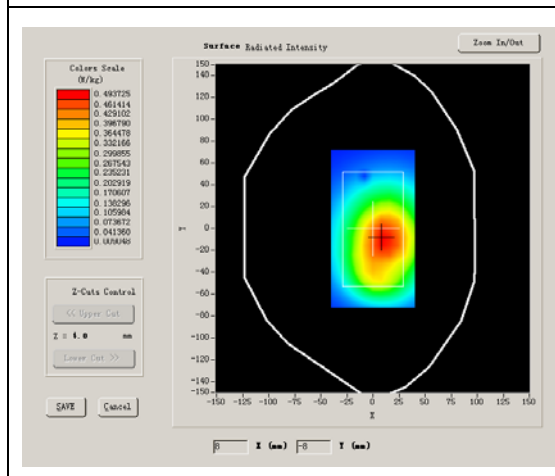| Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.4967	0.3596	0.2632	0.1937	0.1401	0.0993

SAR, Z Axis Scan (X = -52, Y = -24)
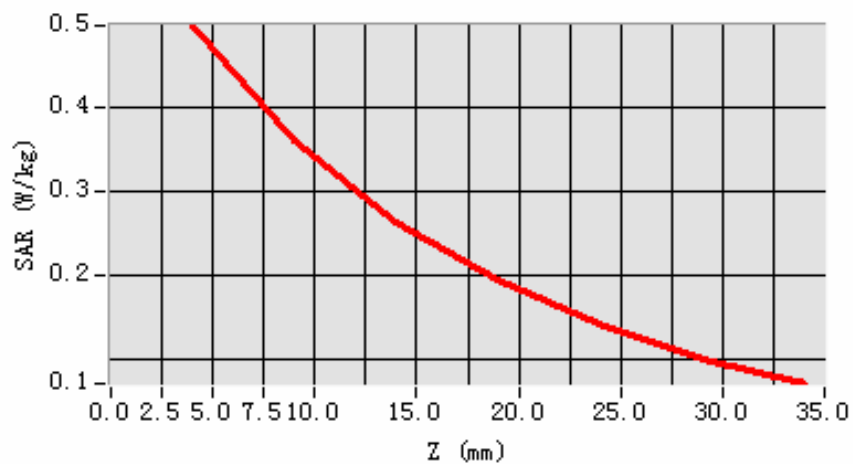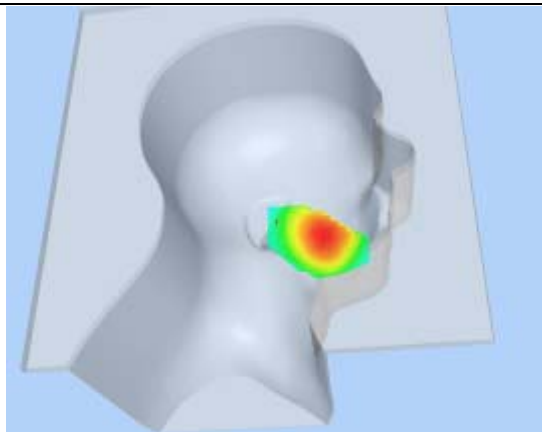
3D sceen shot	Hot spot position
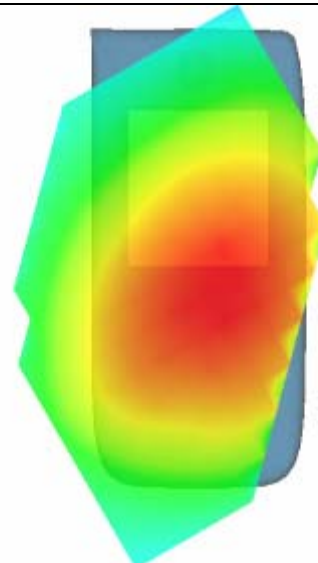
MEASUREMENT 4

Type: Phone measurement (Complete)
  Area scan resolution: dx=8mm,dy=8mm
  Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 27/4/2011
Measurement duration: 7 minutes 36 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

Higher Band SAR (Channel 190):

Frequency (MHz)	836.599976
Relative permittivity (real part)	41.675999
Relative permittivity	18.967199
Conductivity (S/m)	0.894409
Power Drift (%)	-0.250000
Ambient Temperature:	22.2°C
Liquid Temperature:	21.8°C
ConvF:	28.479,25.214,27.196
Crest factor:	1:8

SURFACE SAR	VOLUME SAR
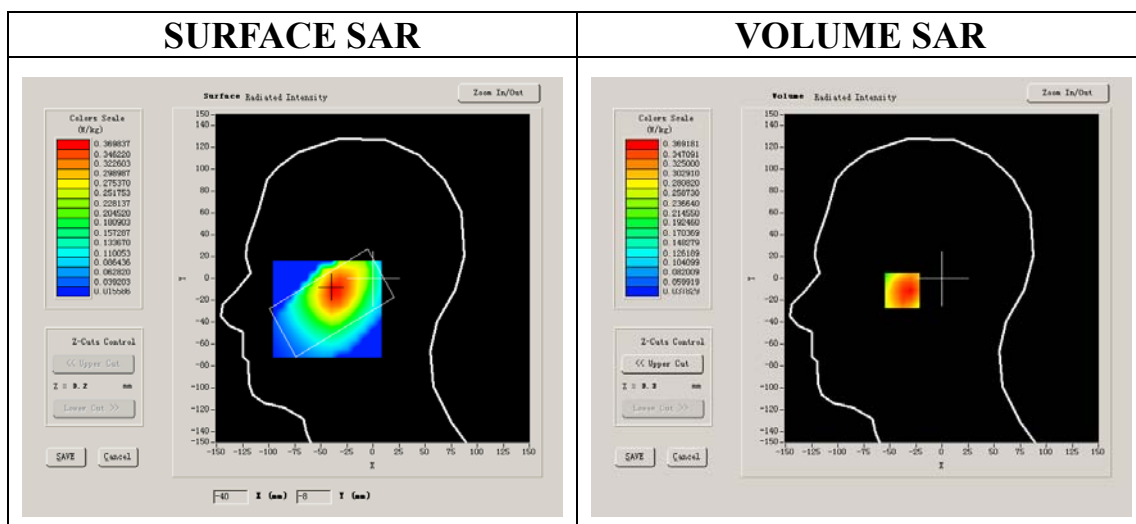
## Maximum location: X=-38.00, Y=-10.00

SAR 10g (W/Kg)	0.250948
SAR 1g (W/Kg)	0.357161

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.3552	0.2726	0.2032	0.1514	0.1134	0.0797

SAR, Z Axis Scan (X = −38, Y = −10)
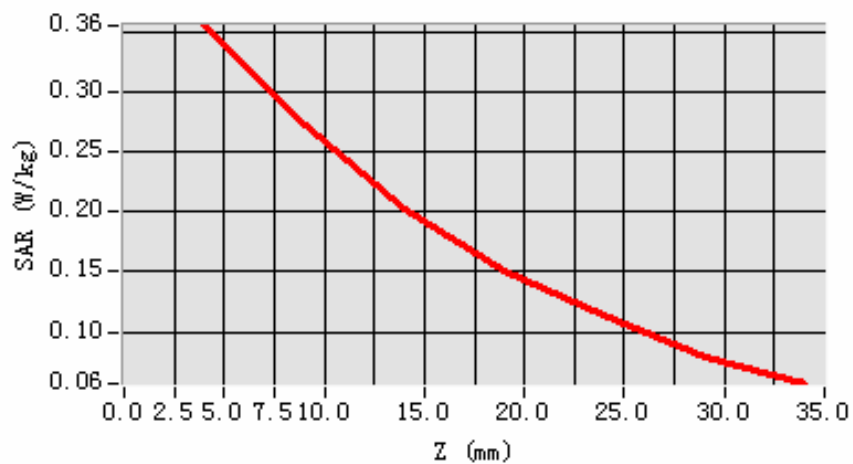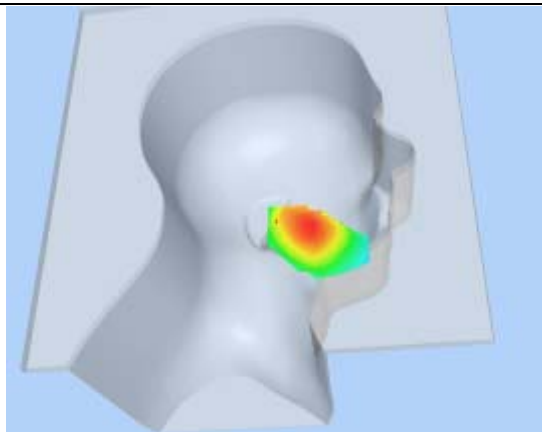
3D sceen shot	Hot spot position
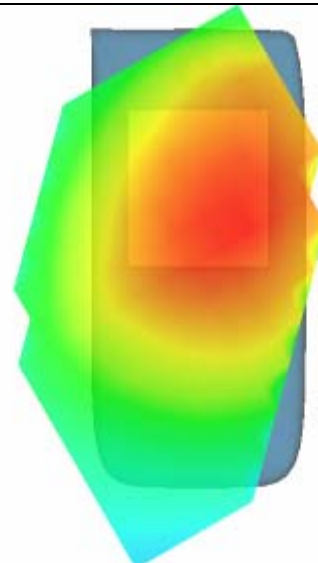
MEASUREMENT 5

Type: Phone measurement (Complete)

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

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

Date of measurement: 27/4/2011

Measurement duration: 9 minutes 9 seconds

A. Experimental conditions.

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

B. SAR Measurement Results

Middle Band SAR (Channel 190):

Frequency (MHz)	836.599976
Relative permittivity (real part)	55.709999
Relative permittivity	21.709999
Conductivity (S/m)	1.009033
Power Drift (%)	-1.160000
Ambient Temperature:	22.2°C
Liquid Temperature:	21.8°C
ConvF:	28.479,25.214,27.196
Crest factor:	1:8

SURFACE SAR	VOLUME SAR

Maximum location: X=3.00, Y=10.00

SAR 10g (W/Kg)	0.465080
SAR 1g (W/Kg)	0.675723

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.6880	0.4889	0.3488	0.2564	0.1858	0.1299

3D sceen shot	Hot spot position

MEASUREMENT 6

Type: Phone measurement (Complete)

　　Area scan resolution: dx=8mm,dy=8mm

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

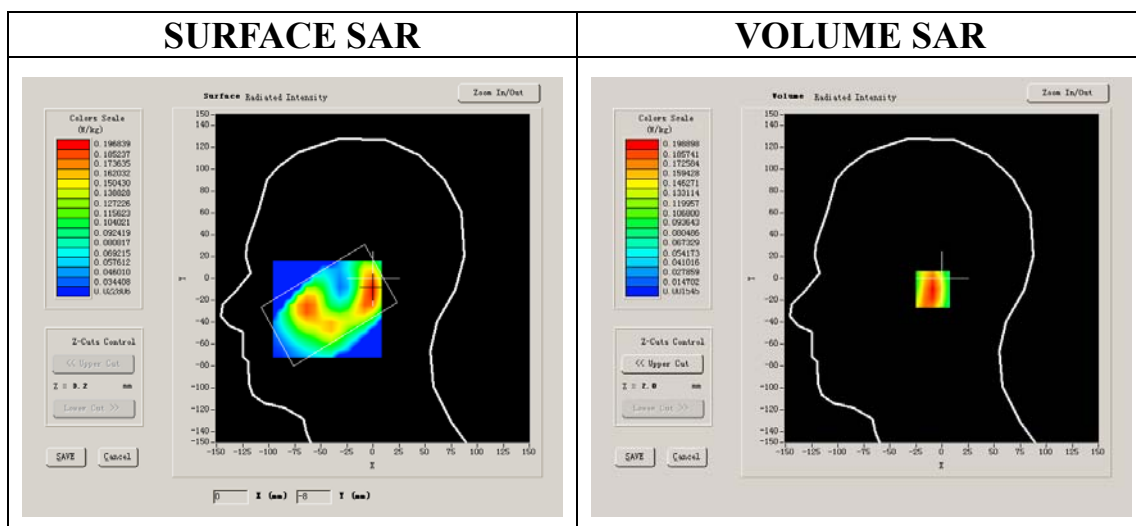Date of measurement: 27/4/2011

Measurement duration: 9 minutes 9 seconds

A. Experimental conditions.

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

B. SAR Measurement Results

Middle Band SAR (Channel 190):

Frequency (MHz)	836.599976
Relative permittivity (real part)	55.709999
Relative permittivity	21.709999
Conductivity (S/m)	1.009033
Power Drift (%)	-1.160000
Ambient Temperature:	22.2°C
Liquid Temperature:	21.8°C
ConvF:	28.479,25.214,27.196
Crest factor:	1:8

SURFACE SAR	VOLUME SAR

Maximum location: X=3.00, Y=10.00

SAR 10g (W/Kg)	0.215576
SAR 1g (W/Kg)	0.425653

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.6880	0.4889	0.3488	0.2564	0.1858	0.1299

SAR, Z Axis Scan (X = 3, Y = 10)
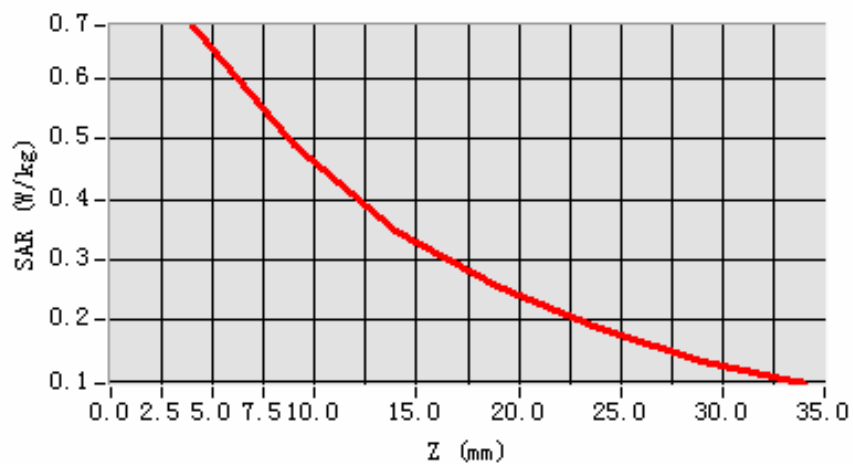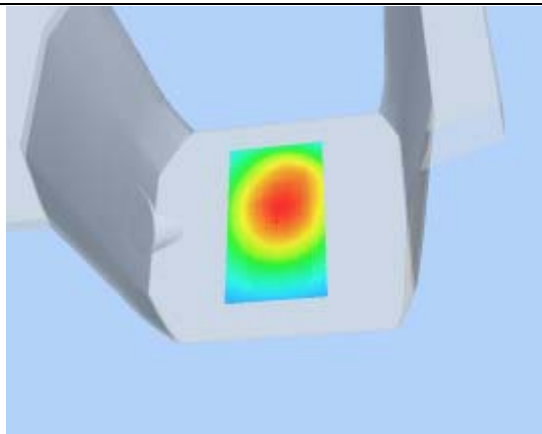
3D sceen shot	Hot spot position
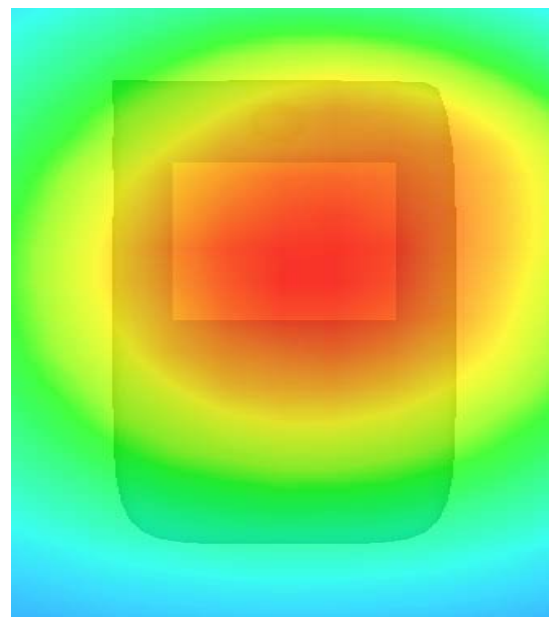
MEASUREMENT 7

Type: Phone measurement (Complete)
  Area scan resolution: dx=8mm,dy=8mm
  Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 27/4/2011
Measurement duration: 9 minutes 8 seconds

A. Experimental conditions.

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

B. SAR Measurement Results

Middle Band SAR (Channel 190):

Frequency (MHz)	836.599976
Relative permittivity (real part)	55.709999
Relative permittivity	21.709999
Conductivity (S/m)	1.009033
Power Drift (%)	-1.410000
Ambient Temperature:	22.2°C
Liquid Temperature:	21.8°C
ConvF:	28.479,25.214,27.196
Crest factor:	1:2

SURFACE SAR	VOLUME SAR

Maximum location: X=10.00, Y=-10.00

SAR 10g (W/Kg)	0.383526
SAR 1g　(W/Kg)	0.538698

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.5417	0.4412	0.3465	0.2695	0.2244	0.1785

3D sceen shot	Hot spot position

MEASUREMENT 8

Type: Phone measurement (Complete)
      Area scan resolution: dx=8mm,dy=8mm
      Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 27/4/2011
Measurement duration: 9 minutes 8 seconds

A. Experimental conditions.

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

B. SAR Measurement Results

Middle Band SAR (Channel 190):

Frequency (MHz)	836.599976
Relative permittivity (real part)	55.709999
Relative permittivity	21.709999
Conductivity (S/m)	1.009033
Power Drift (%)	-1.410000
Ambient Temperature:	22.2°C
Liquid Temperature:	21.8°C
ConvF:	28.479,25.214,27.196
Crest factor:	1:2

SURFACE SAR	VOLUME SAR

Maximum location: X=10.00, Y=-10.00

SAR 10g (W/Kg)	0.194872
SAR 1g (W/Kg)	0.391678

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.5417	0.4412	0.3465	0.2695	0.2244	0.1785

SAR, Z Axis Scan (X = 10, Y = −10)
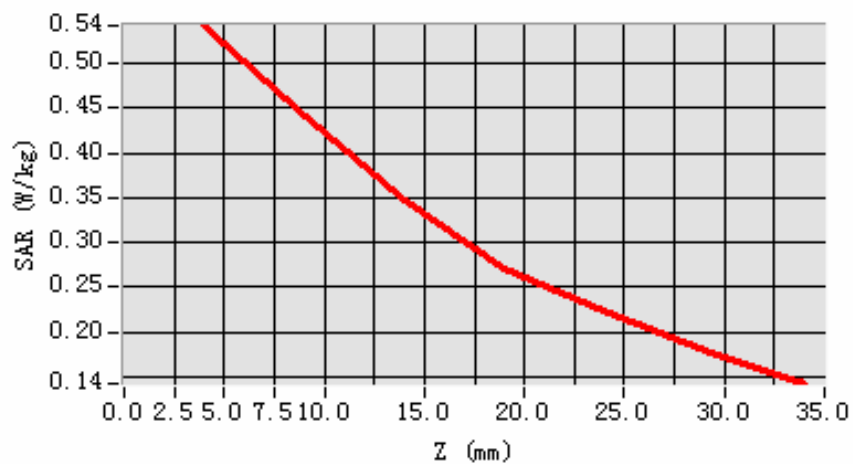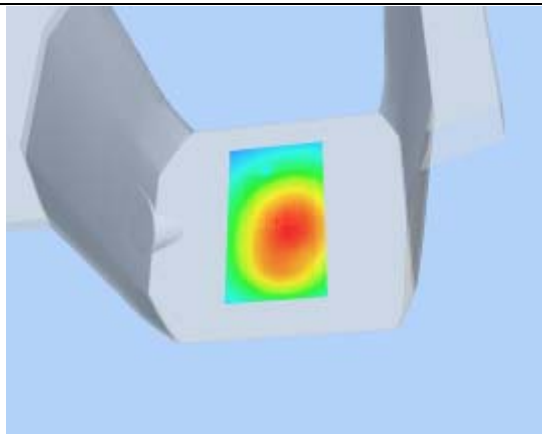
3D sceen shot	Hot spot position
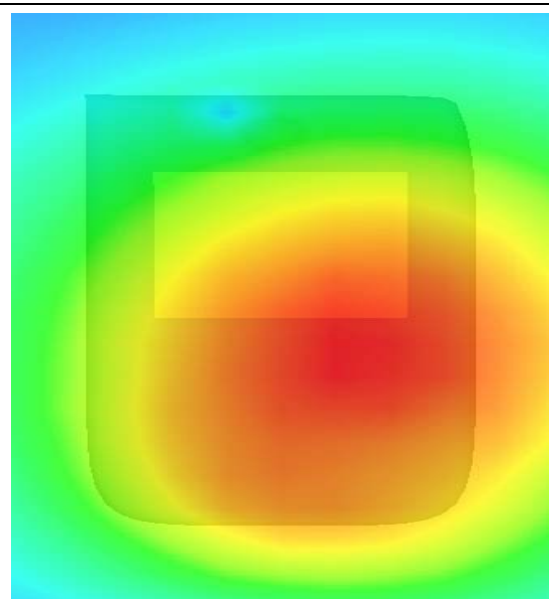
MEASUREMENT 9

Type: Phone measurement (Complete)
    Area scan resolution: dx=8mm,dy=8mm
    Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 27/4/2011
Measurement duration: 9 minutes 16 seconds

A. Experimental conditions.

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

B. SAR Measurement Results

Middle Band SAR (Channel 661):

Frequency (MHz)	1880.000000
Relative permittivity (real part)	38.509998
Relative permittivity	13.750000
Conductivity (S/m)	1.436111
Power Drift (%)	-2.020000
Ambient Temperature:	23.0°C
Liquid Temperature:	22.4°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:8

SURFACE SAR	VOLUME SAR
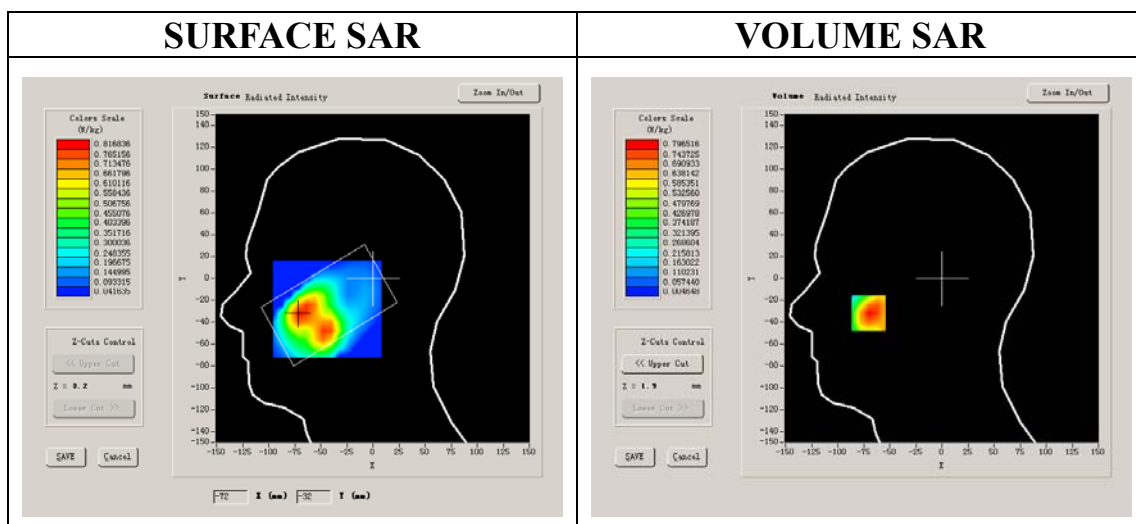
Maximum location: X=-70.00, Y=-32.00

SAR 10g (W/Kg)	0.400686
SAR 1g (W/Kg)	0.767648

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.7965	0.3780	0.1860	0.0881	0.0440	0.0221

SAR, Z Axis Scan (X = -70, Y = -32)
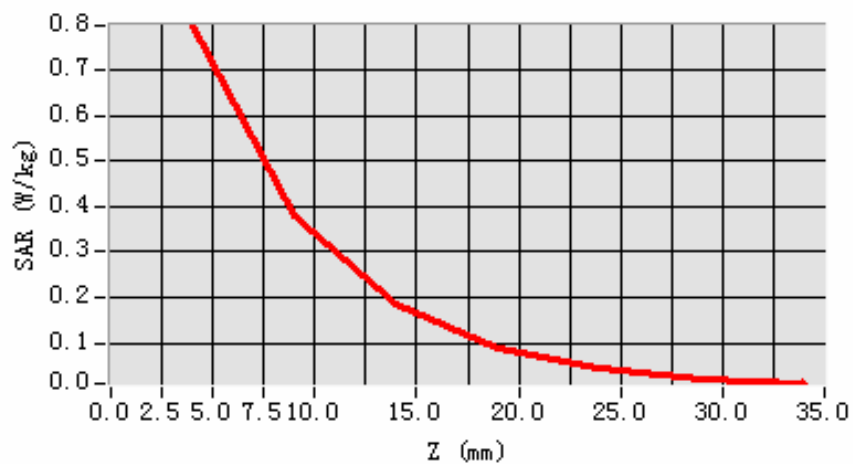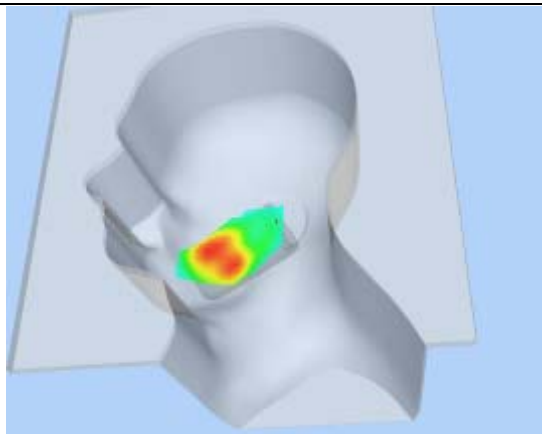
3D sceen shot	Hot spot position
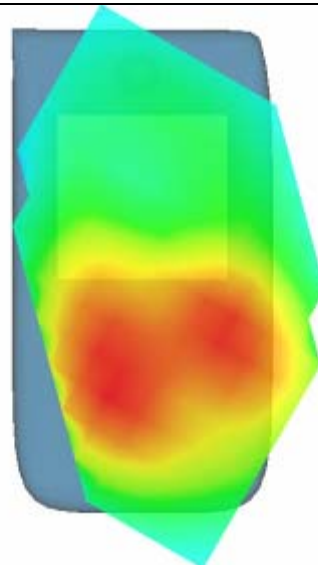
MEASUREMENT 10

Type: Phone measurement (Complete)

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

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

Date of measurement: 27/4/2011

Measurement duration: 7 minutes 26 seconds

A. Experimental conditions.

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

B. SAR Measurement Results

Middle Band SAR (Channel 661):

Frequency (MHz)	1880.000000
Relative permittivity (real part)	38.509998
Relative permittivity	13.750000
Conductivity (S/m)	1.436111
Power Drift (%)	-0.140000
Ambient Temperature:	23.0°C
Liquid Temperature:	22.4°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:8

SURFACE SAR	VOLUME SAR

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

SAR 10g (W/Kg)	0.101123
SAR 1g (W/Kg)	0.188661

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.1989	0.1059	0.0539	0.0281	0.0158	0.0065

SAR, Z Axis Scan (X = −1, Y = −10)
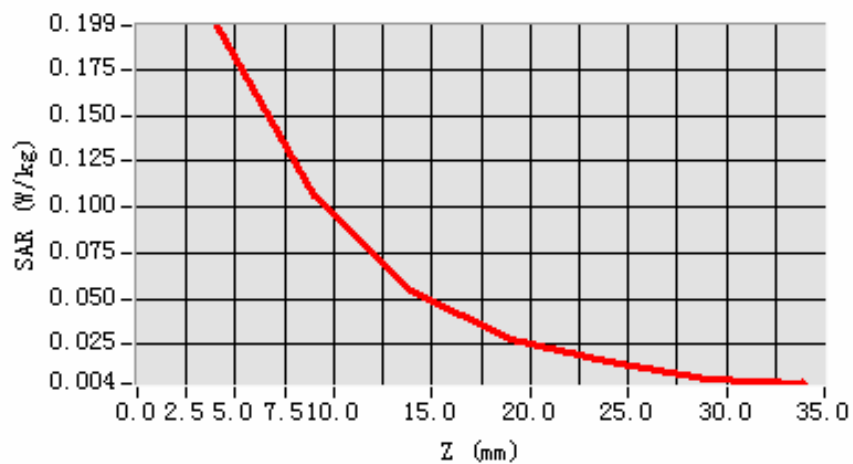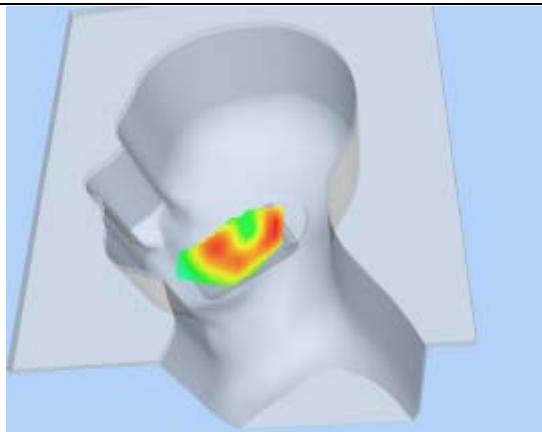
3D sceen shot	Hot spot position
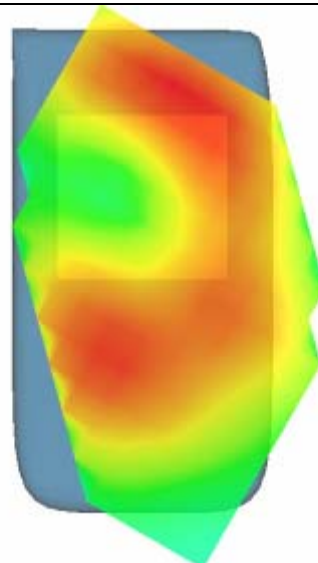
MEASUREMENT 11

Type: Phone measurement (Complete)
   Area scan resolution: dx=8mm,dy=8mm
   Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 27/4/2011
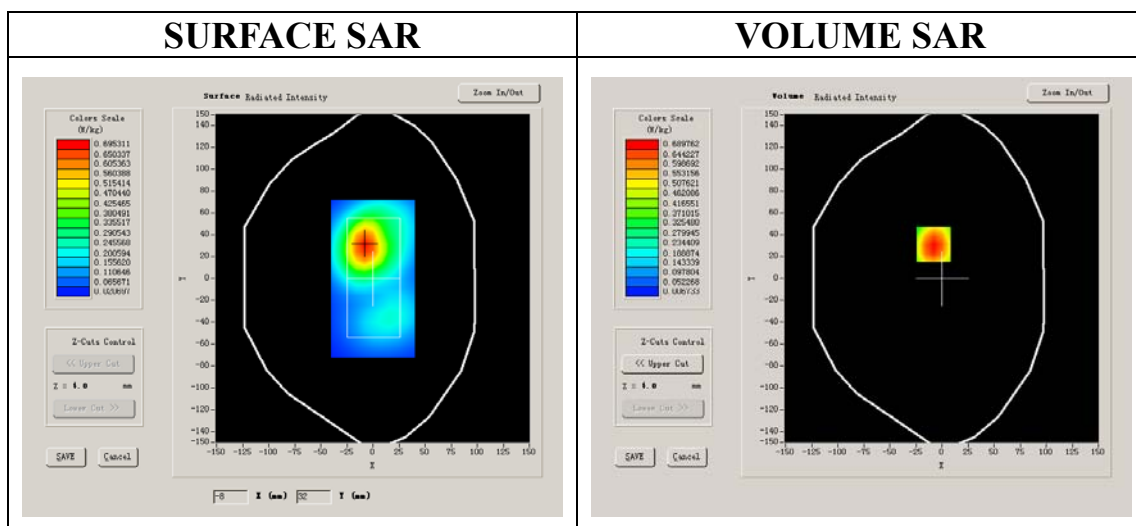Measurement duration: 8 minutes 8 seconds

A. Experimental conditions.

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

B. SAR Measurement Results

Lower Band SAR (Channel 512):

Frequency (MHz)	1850.199951
Relative permittivity (real part)	39.993999
Relative permittivity	12.991650
Conductivity (S/m)	1.335397
Power Drift (%)	0.520000
Ambient Temperature:	23.0°C
Liquid Temperature:	22.4°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:8

SURFACE SAR	VOLUME SAR
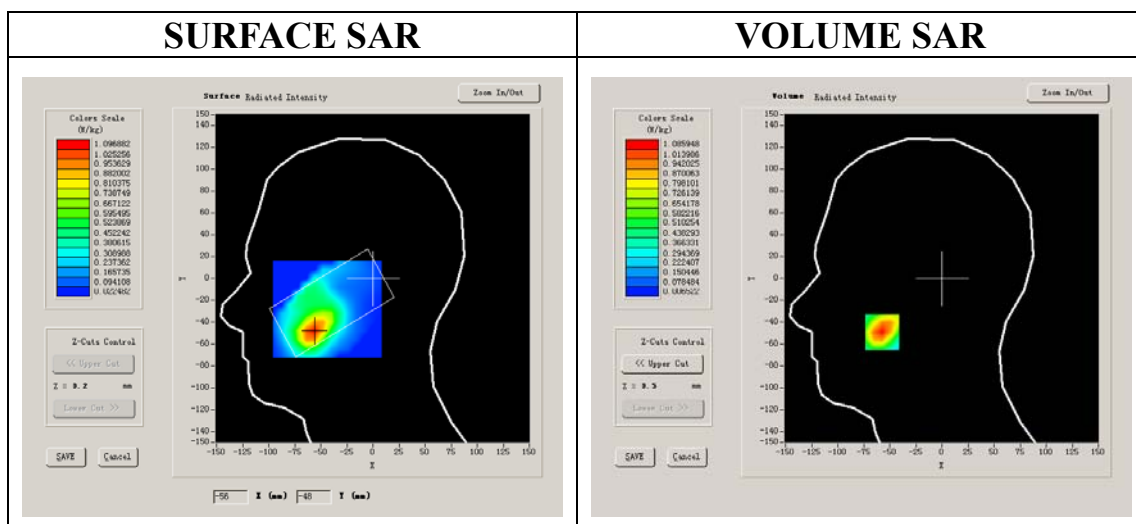
Maximum location: X=-57.00, Y=-49.00

SAR 10g (W/Kg)	0.510713
SAR 1g (W/Kg)	1.027884

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	1.0859	0.5003	0.2360	0.1091	0.0530	0.0251

SAR, Z Axis Scan (X = -57, Y = -49)
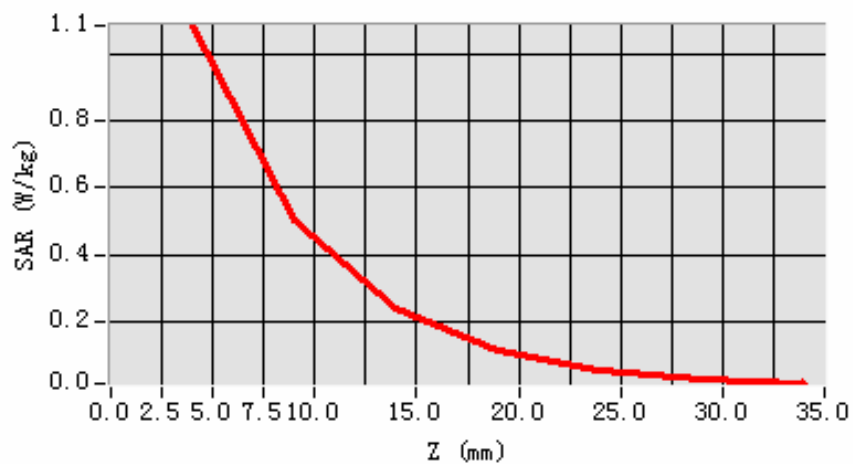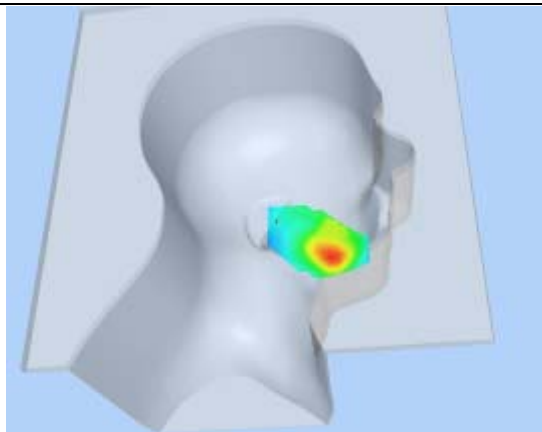
3D sceen shot	Hot spot position
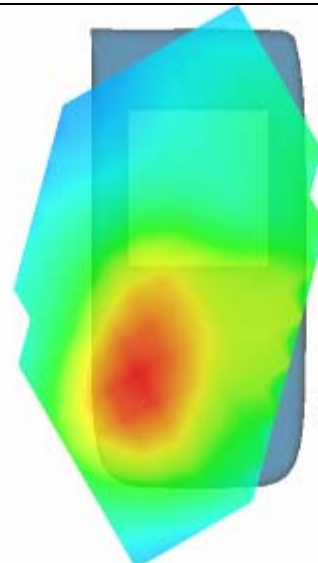
MEASUREMENT 12

Type: Phone measurement (Complete)
     Area scan resolution: dx=8mm,dy=8mm
     Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
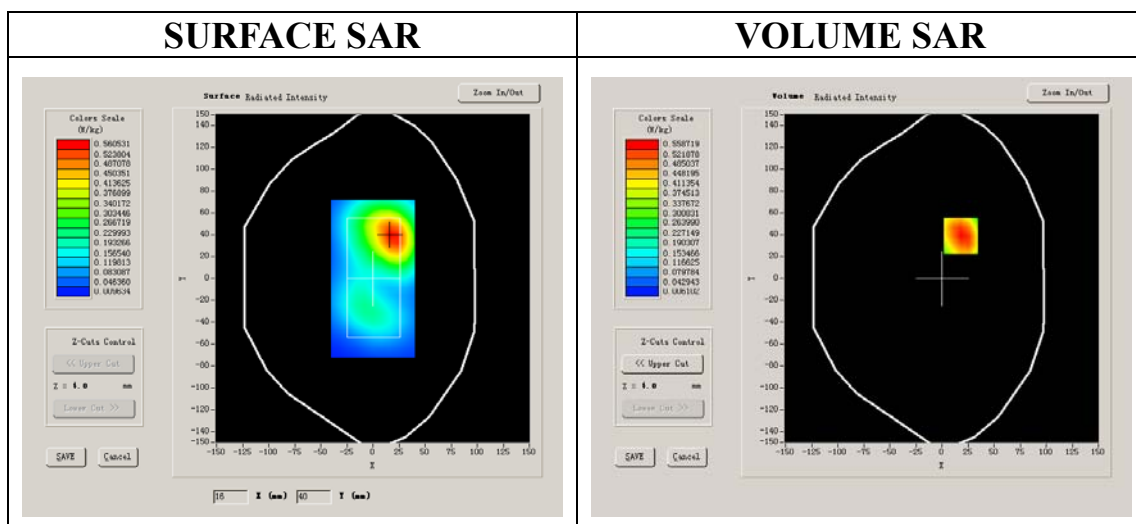Date of measurement: 27/4/2011
Measurement duration: 8 minutes 8 seconds

A. Experimental conditions.

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

B. SAR Measurement Results

Middle Band SAR (Channel 661):

Frequency (MHz)	1880.000000
Relative permittivity (real part)	38.509998
Relative permittivity	13.750000
Conductivity (S/m)	1.436111
Power Drift (%)	-0.080000
Ambient Temperature:	23.0°C
Liquid Temperature:	22.4°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:8

SURFACE SAR	VOLUME SAR
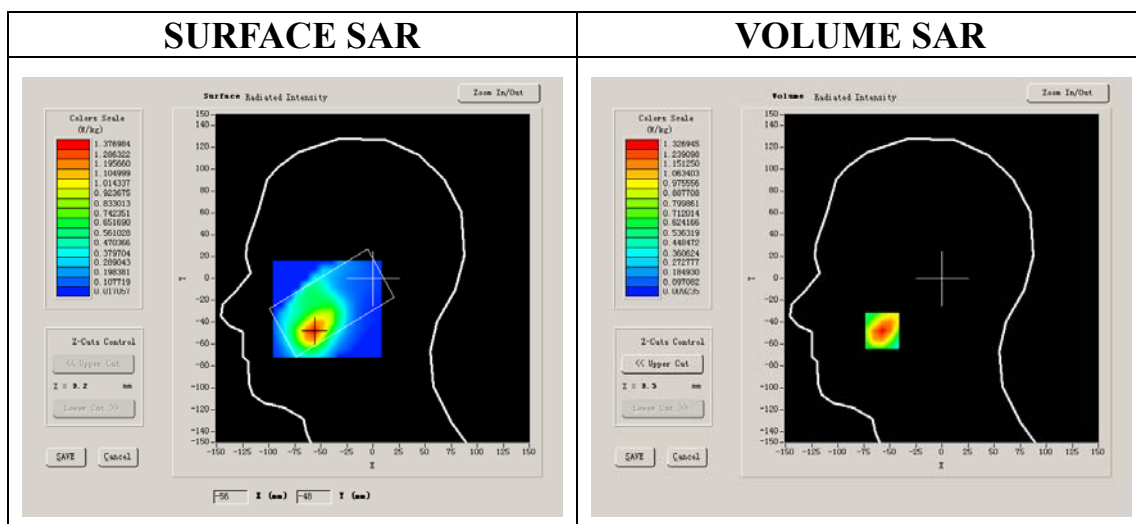
Maximum location: X=-57.00, Y=-48.00

SAR 10g (W/Kg)	0.633354
SAR 1g (W/Kg)	1.156115

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	1.3269	0.6357	0.3010	0.1419	0.0688	0.0324

SAR, Z Axis Scan (X = -57, Y = -48)
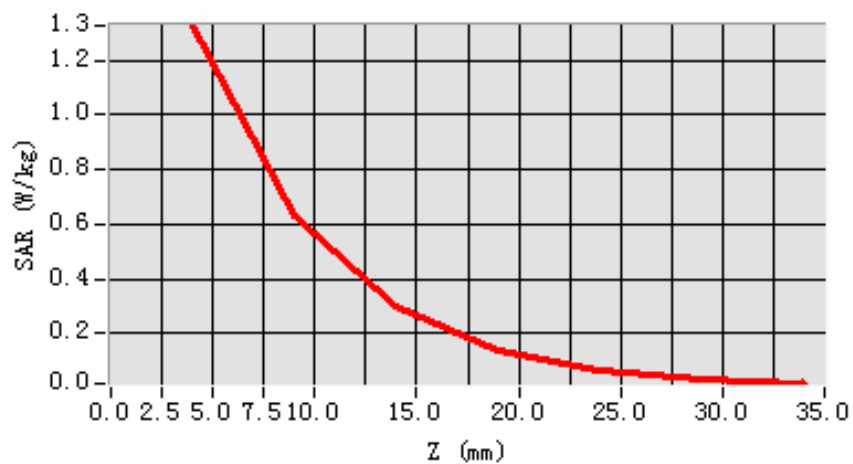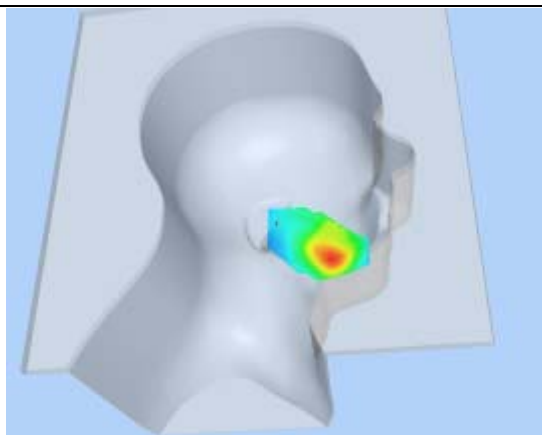
3D sceen shot	Hot spot position
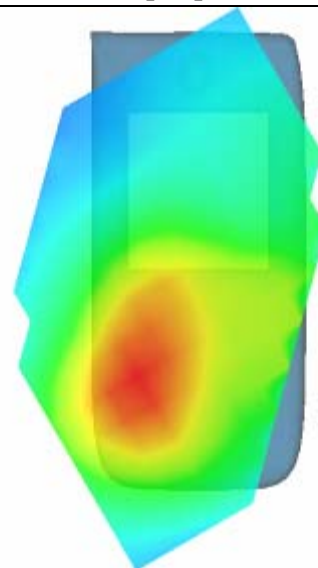
MEASUREMENT 13

Type: Phone measurement (Complete)

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

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

Date of measurement: 27/4/2011
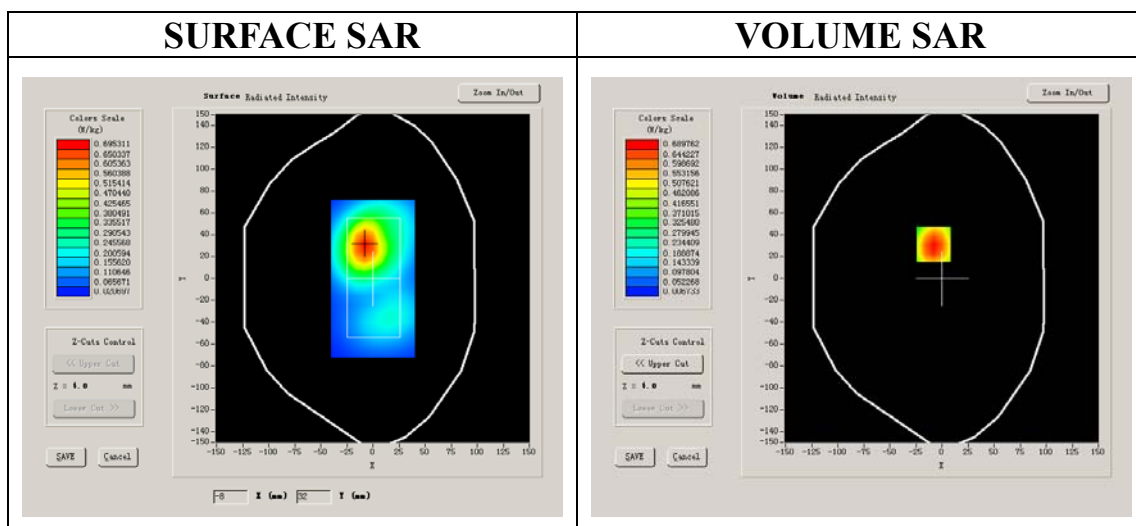
Measurement duration: 8 minutes 5 seconds

A. Experimental conditions.

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

B. SAR Measurement Results

Higher Band SAR (Channel 810):

Frequency (MHz)	1909.800049
Relative permittivity (real part)	39.929001
Relative permittivity	13.156500
Conductivity (S/m)	1.395905
Power Drift (%)	-0.520000
Ambient Temperature:	23.0°C
Liquid Temperature:	22.4°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:8

SURFACE SAR	VOLUME SAR
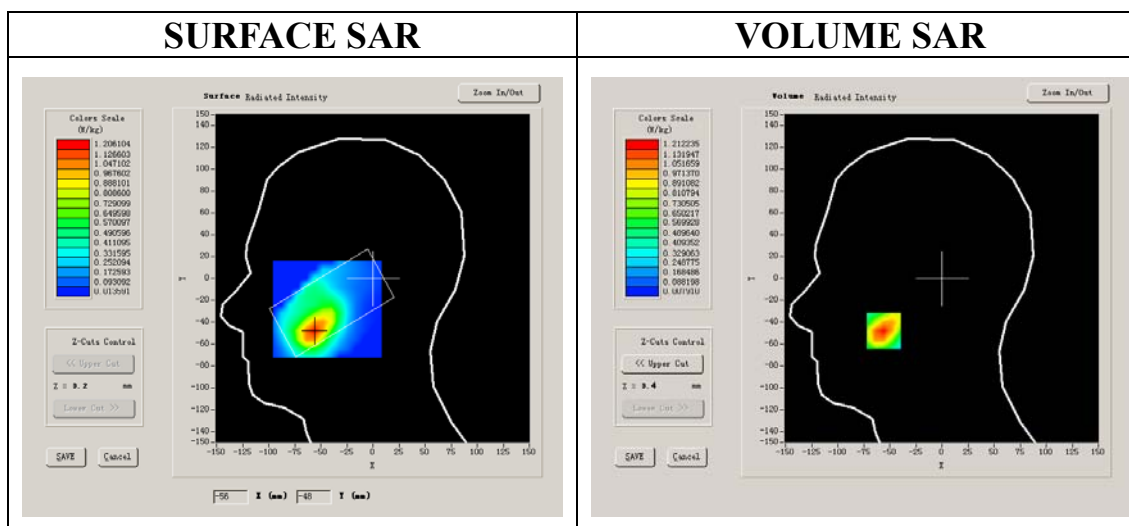
Maximum location: X=-56.00, Y=-48.00

SAR 10g (W/Kg)	0.564592
SAR 1g (W/Kg)	1.153891

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	1.2122	0.5492	0.2494	0.1159	0.0559	0.0277
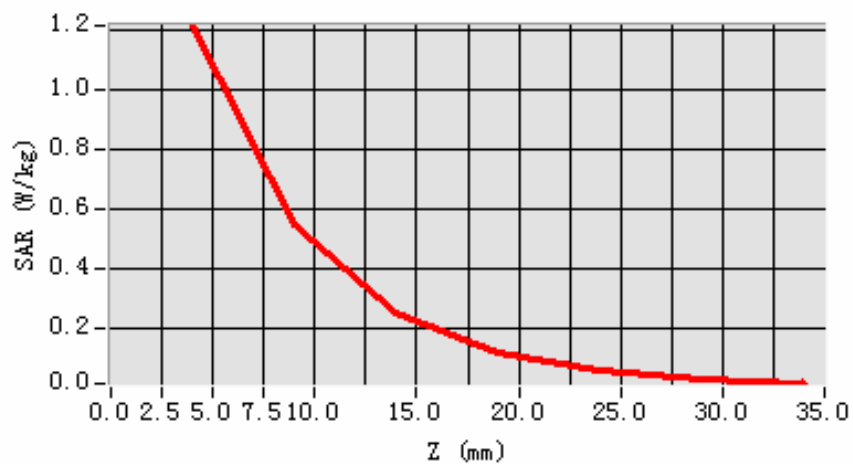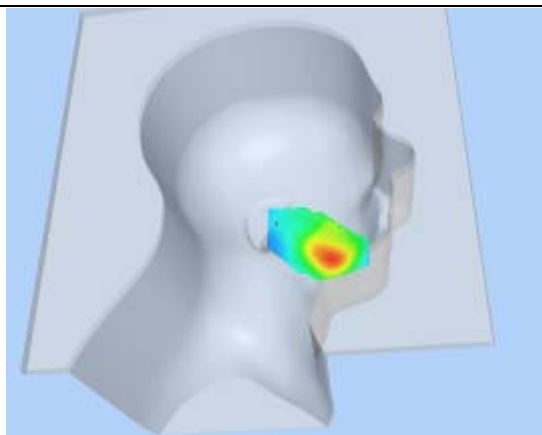
3D sceen shot	Hot spot position
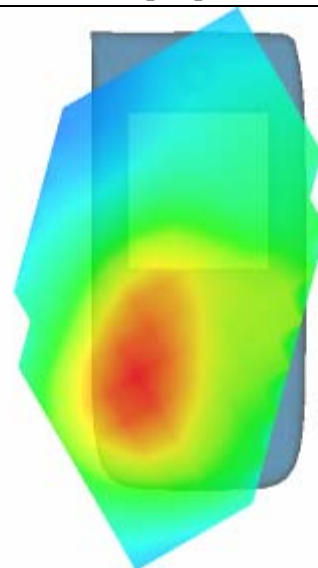
MEASUREMENT 14

Type: Phone measurement (Complete)

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

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

Date of measurement: 27/4/2011

Measurement duration: 7 minutes 56 seconds

A. Experimental conditions.

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

B. SAR Measurement Results

Middle Band SAR (Channel 661):

Frequency (MHz)	1880.000000
Relative permittivity (real part)	38.509998
Relative permittivity	13.750000
Conductivity (S/m)	1.436111
Power Drift (%)	2.230000
Ambient Temperature:	23.0°C
Liquid Temperature:	22.4°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:8

SURFACE SAR	VOLUME SAR
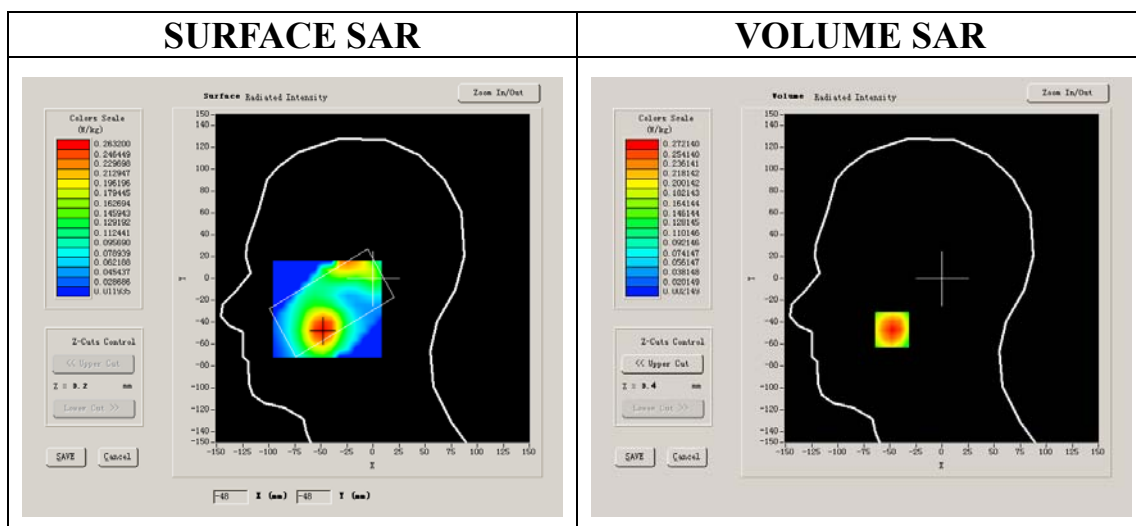
Maximum location: X=-48.00, Y=-47.00

SAR 10g (W/Kg)	0.139528
SAR 1g (W/Kg)	0.259740

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.2721	0.1380	0.0728	0.0375	0.0194	0.0107

SAR, Z Axis Scan (X = -48, Y = -47)
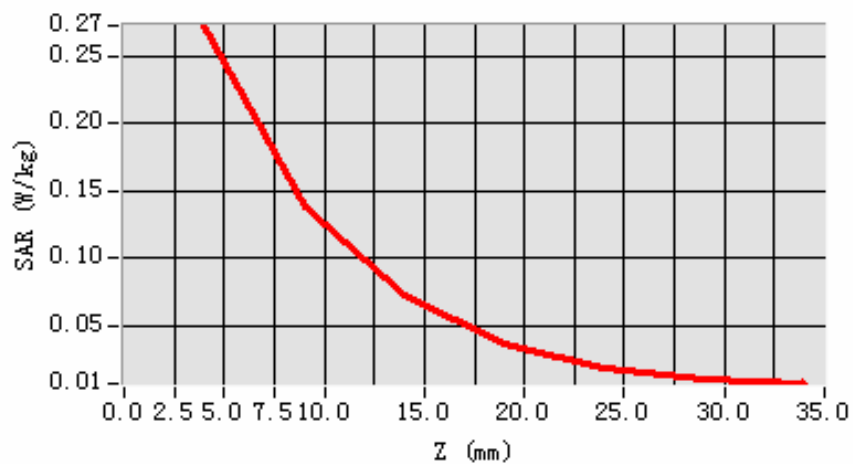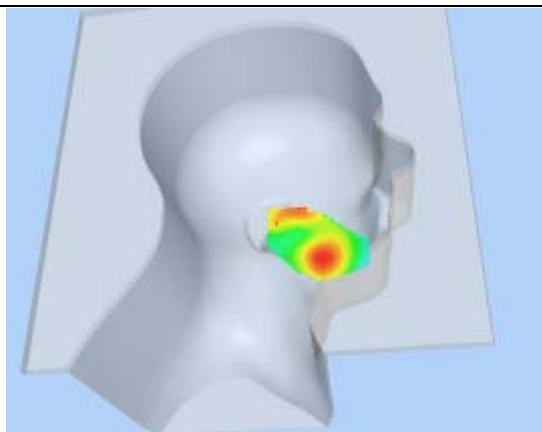
3D sceen shot	Hot spot position
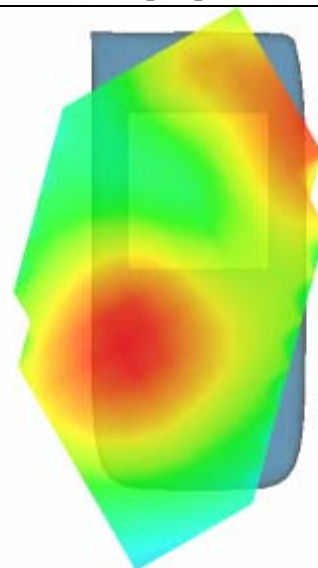
MEASUREMENT 15

Type: Phone measurement (Complete)

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

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

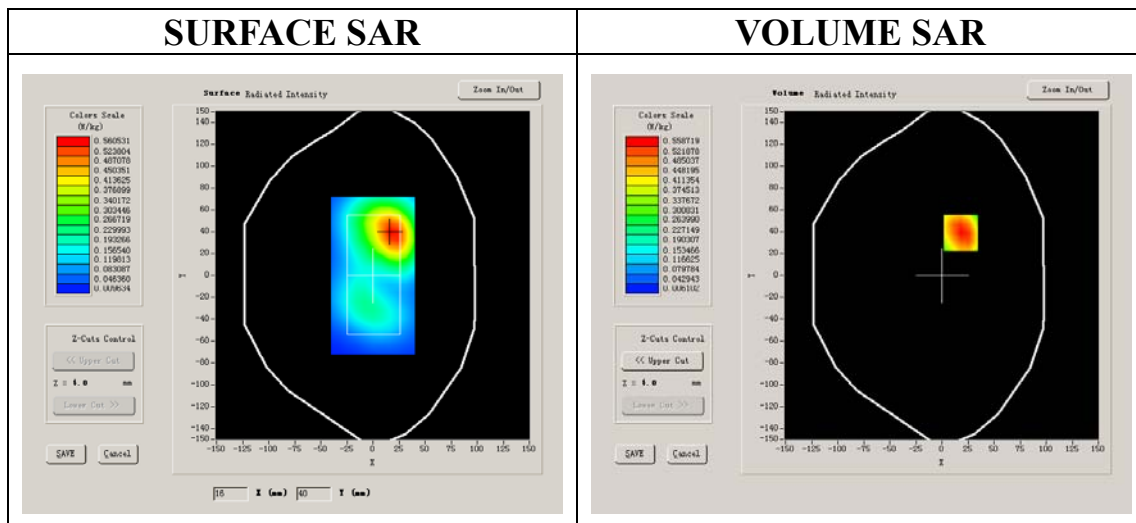Date of measurement: 27/4/2011

Measurement duration: 9 minutes 8 seconds

A. Experimental conditions.

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

B. SAR Measurement Results

Middle Band SAR (Channel 661):

Frequency (MHz)	1880.000000
Relative permittivity (real part)	52.540001
Relative permittivity	14.070000
Conductivity (S/m)	1.469533
Power Drift (%)	0.650000
Ambient Temperature:	23.0°C
Liquid Temperature:	22.4°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:8

SURFACE SAR	VOLUME SAR

Maximum location: X=-8.00, Y=31.00

SAR 10g (W/Kg)	0.364788
SAR 1g (W/Kg)	0.681381

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.7058	0.3506	0.1713	0.0850	0.0416	0.0216
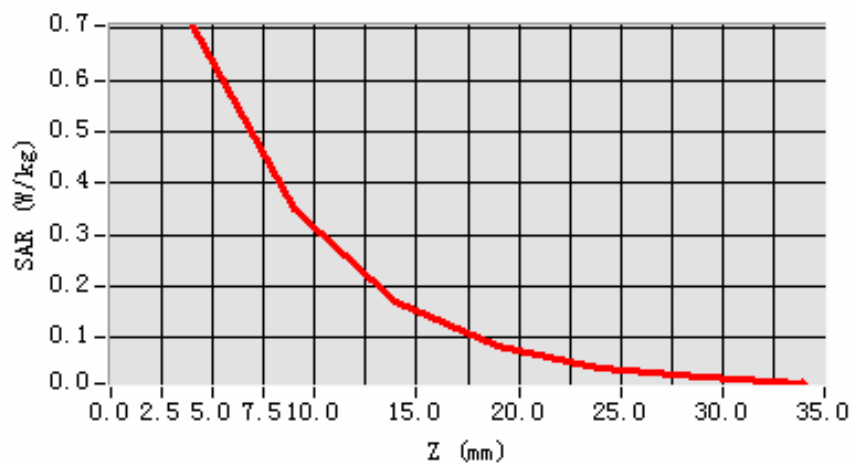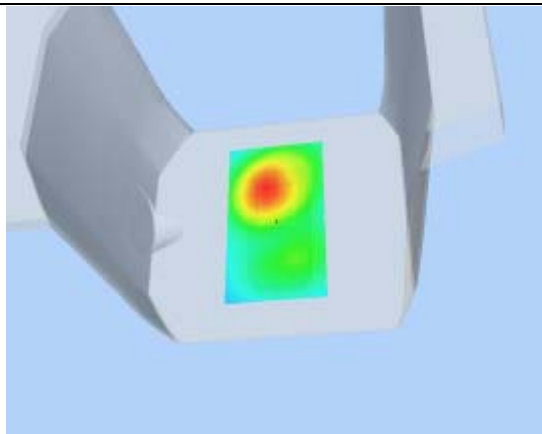
3D sceen shot	Hot spot position
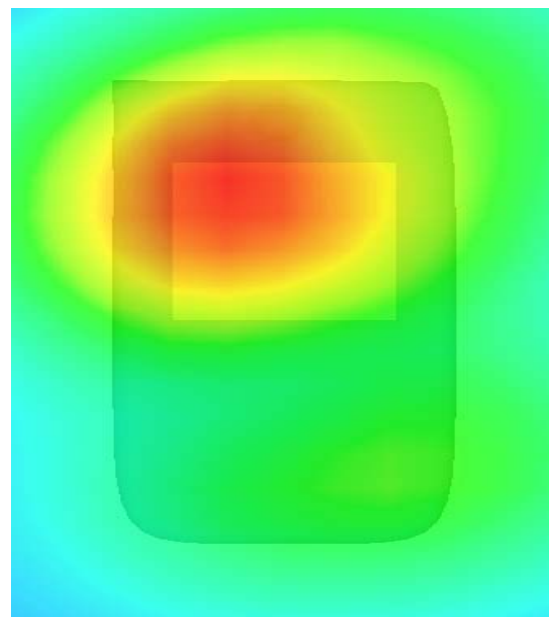
MEASUREMENT 16

Type: Phone measurement (Complete)

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

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

Date of measurement: 27/4/2011

Measurement duration: 9 minutes 10 seconds

A. Experimental conditions.

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

B. SAR Measurement Results

Middle Band SAR (Channel 661):

Frequency (MHz)	1880.000000
Relative permittivity (real part)	52.540001
Relative permittivity	14.070000
Conductivity (S/m)	1.469533
Power Drift (%)	-1.370000
Ambient Temperature:	23.0°C
Liquid Temperature:	22.4°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:8

SURFACE SAR	VOLUME SAR

Maximum location: X=18.00, Y=39.00

SAR 10g (W/Kg)	0.296945
SAR 1g (W/Kg)	0.552732

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.5717	0.2814	0.1396	0.0706	0.0355	0.0175

SAR, Z Axis Scan (X = 18, Y = 39)
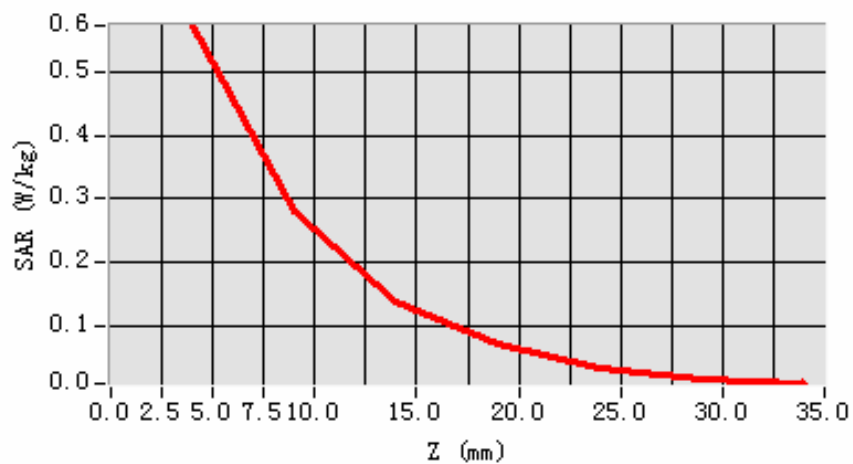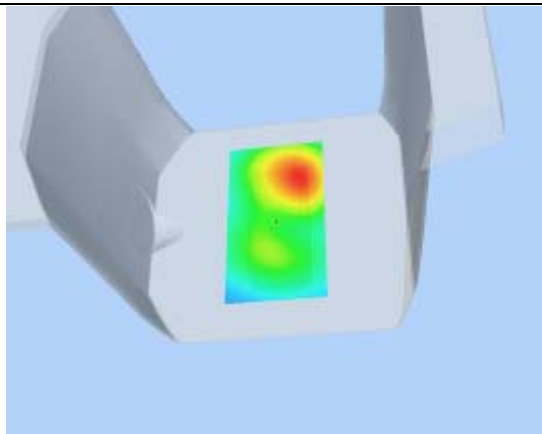
3D sceen shot	Hot spot position
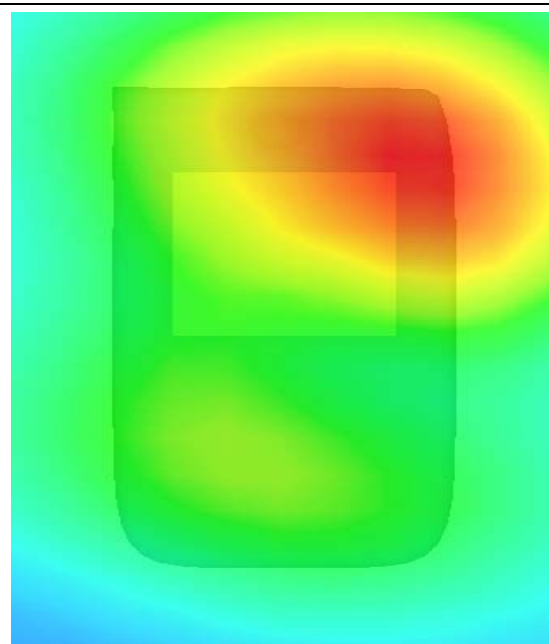
MEASUREMENT 17

Type: Phone measurement (Complete)
    Area scan resolution: dx=8mm,dy=8mm
    Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 27/4/2011
Measurement duration: 9 minutes 8 seconds

A. Experimental conditions.

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

B. SAR Measurement Results

Middle Band SAR (Channel 661):

Frequency (MHz)	1880.000000
Relative permittivity (real part)	52.540001
Relative permittivity	14.070000
Conductivity (S/m)	1.469533
Power Drift (%)	0.650000
Ambient Temperature:	23.0°C
Liquid Temperature:	22.4°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:2

SURFACE SAR	VOLUME SAR

Maximum location: X=-8.00, Y=31.00

SAR 10g (W/Kg)	0.334462
SAR 1g (W/Kg)	0.614344

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.7058	0.3506	0.1713	0.0850	0.0416	0.0216

SAR, Z Axis Scan (X = −8, Y = 31)
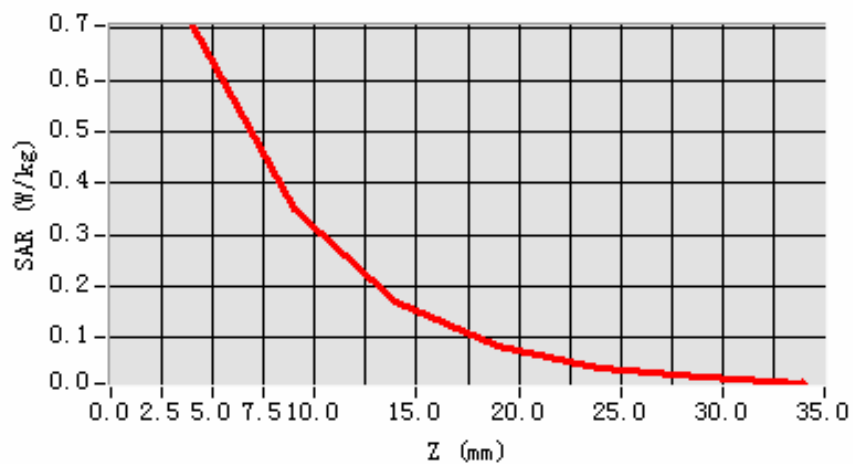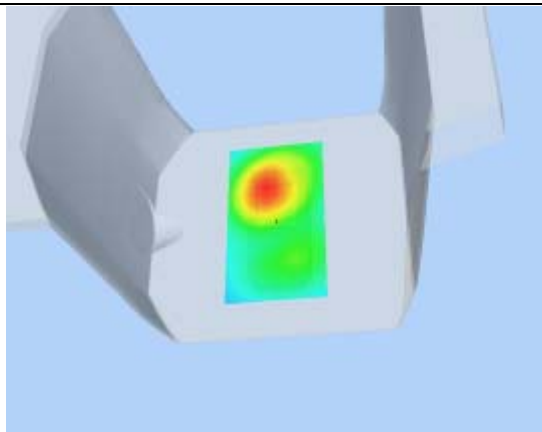
3D sceen shot	Hot spot position
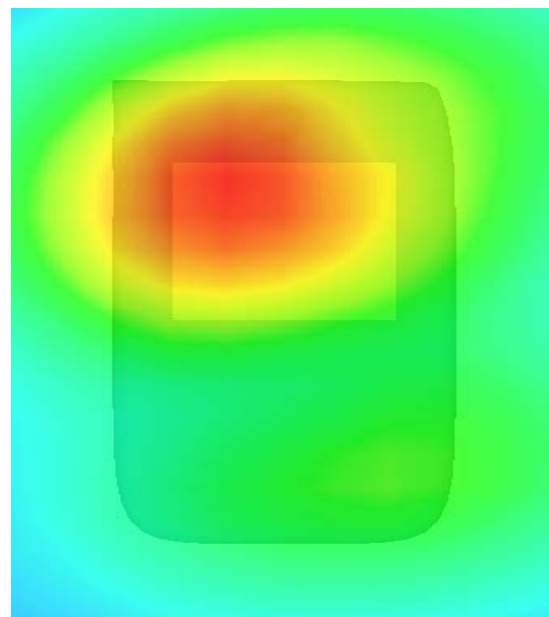
MEASUREMENT 18

Type: Phone measurement (Complete)
      Area scan resolution: dx=8mm,dy=8mm
      Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 27/4/2011
Measurement duration: 9 minutes 10 seconds

A. Experimental conditions.

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

B. SAR Measurement Results

Middle Band SAR (Channel 661):

Frequency (MHz)	1880.000000
Relative permittivity (real part)	52.540001
Relative permittivity	14.070000
Conductivity (S/m)	1.469533
Power Drift (%)	-1.370000
Ambient Temperature:	23.0°C
Liquid Temperature:	22.4°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:2

SURFACE SAR	VOLUME SAR

Maximum location: X=18.00, Y=39.00

SAR 10g (W/Kg)	0.285688
SAR 1g (W/Kg)	0.532551

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.5717	0.2814	0.1396	0.0706	0.0355	0.0175

SAR, Z Axis Scan (X = 18, Y = 39)
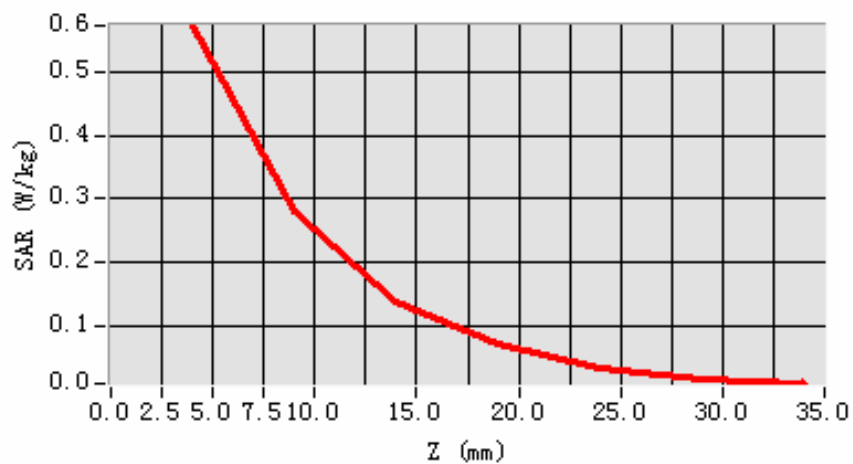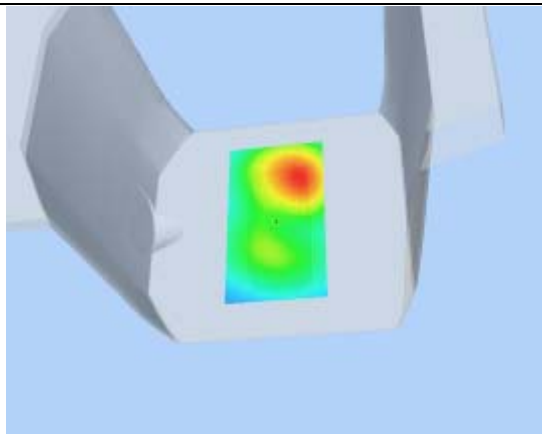
3D sceen shot	Hot spot position
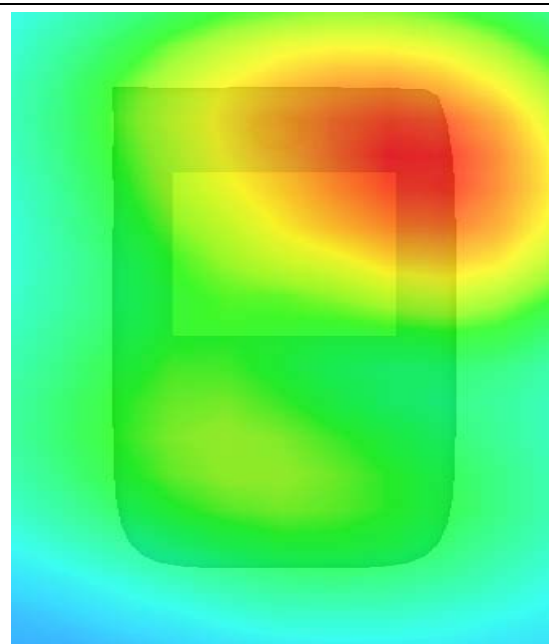
MEASUREMENT 19

Type: Phone measurement (Complete)
  Area scan resolution: dx=8mm,dy=8mm
  Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 27/4/2011
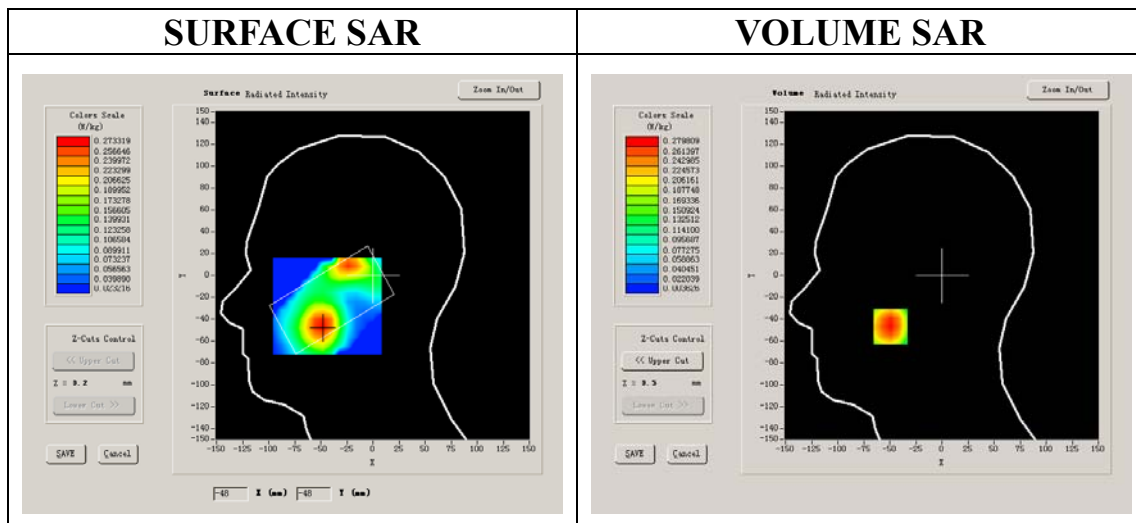Measurement duration: 7 minutes 54 seconds

A. Experimental conditions.

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

B. SAR Measurement Results

Middle Band SAR (Channel 4182):

Frequency (MHz)	836.000000
Relative permittivity (real part)	39.910000
Relative permittivity	13.230000
Conductivity (S/m)	0.614460
Power Drift (%)	0.190000
Ambient Temperature:	22.2°C
Liquid Temperature:	21.8°C
ConvF:	28.479,25.214,27.196
Crest factor:	1:1

SURFACE SAR	VOLUME SAR
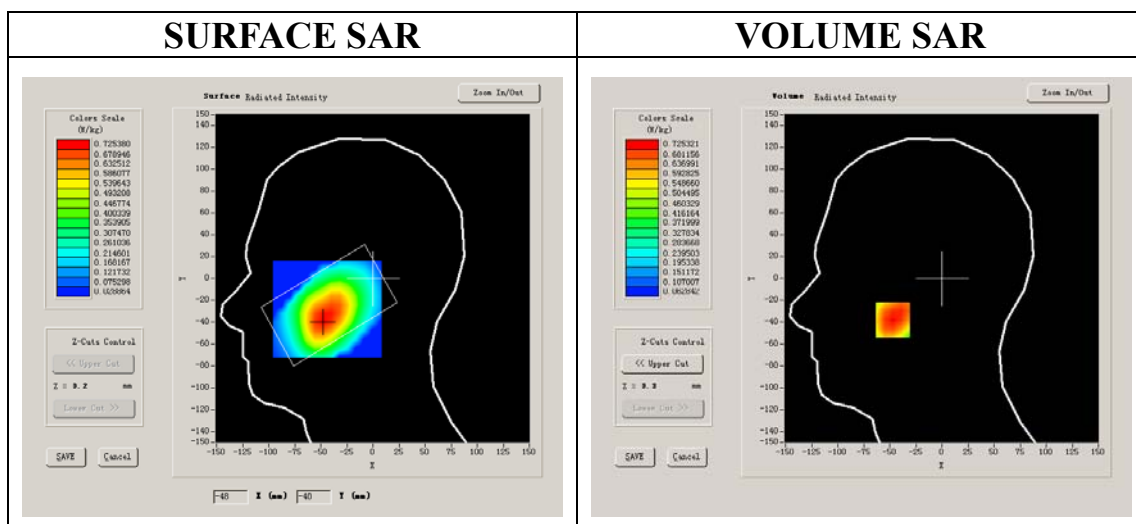
Maximum location: X=-47.00, Y=-38.00

SAR 10g (W/Kg)	0.505428
SAR 1g (W/Kg)	0.701545

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.7253	0.5494	0.4144	0.3117	0.2309	0.1694

SAR, Z Axis Scan (X = -47, Y = -38)
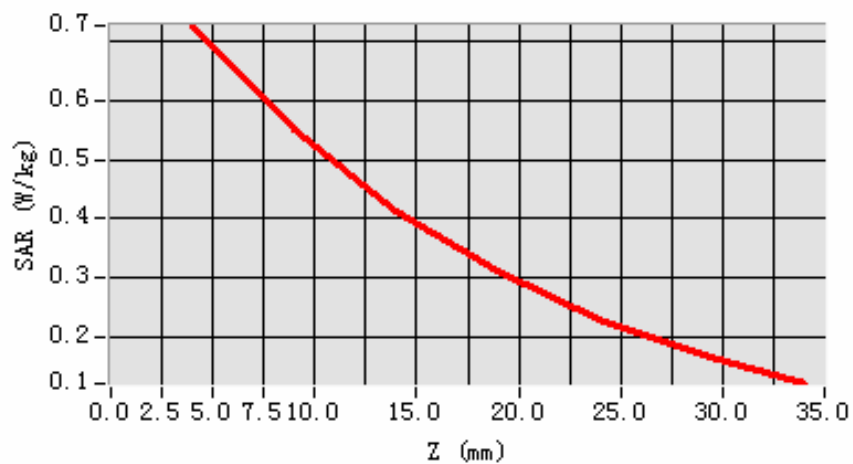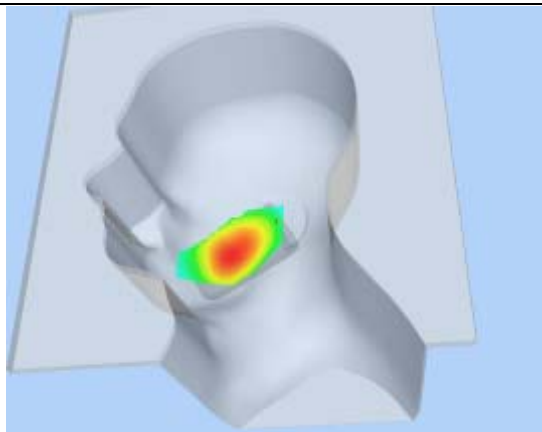
3D sceen shot	Hot spot position
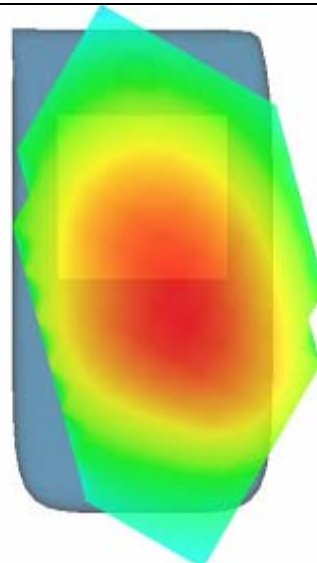
MEASUREMENT 20

Type: Phone measurement (Complete)

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

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

Date of measurement: 27/4/2011

Measurement duration: 7 minutes 37 seconds
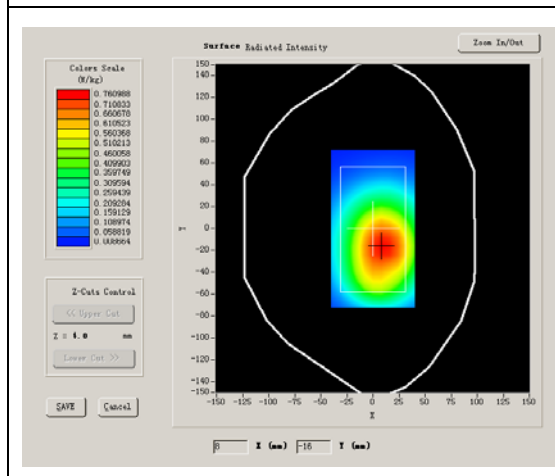
A. Experimental conditions.

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

B. SAR Measurement Results

Middle Band SAR (Channel 4182):

Frequency (MHz)	836.000000
Relative permittivity (real part)	39.910000
Relative permittivity	13.230000
Conductivity (S/m)	0.614460
Power Drift (%)	-0.480000
Ambient Temperature:	22.2°C
Liquid Temperature:	21.8°C
ConvF:	28.479,25.214,27.196
Crest factor:	1:1

SURFACE SAR	VOLUME SAR
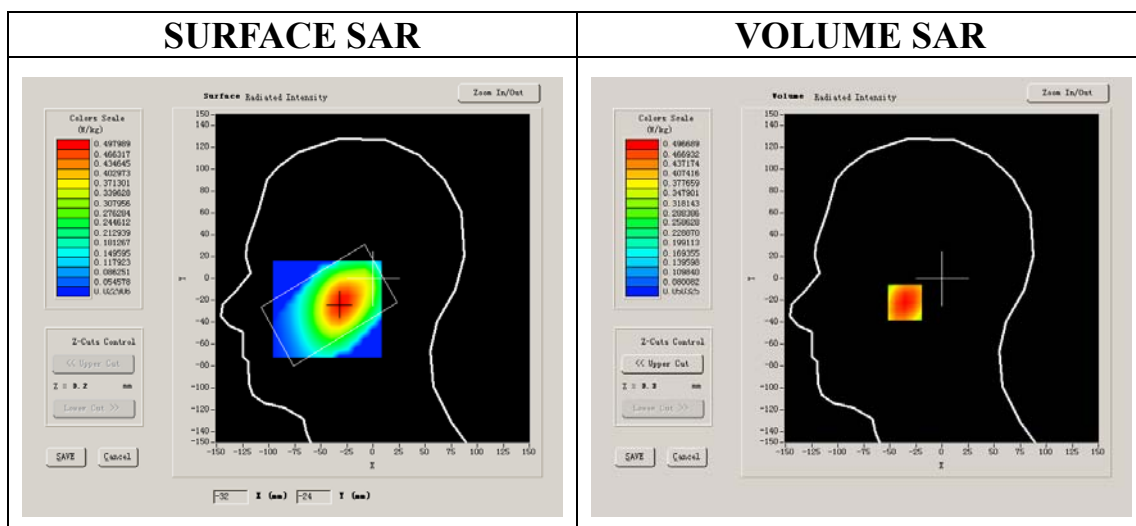
Maximum location: X=-30.00, Y=-22.00

SAR 10g (W/Kg)	0.346274
SAR 1g (W/Kg)	0.479883

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.4967	0.3752	0.2831	0.2181	0.1609	0.1214

SAR, Z Axis Scan (X = -30, Y = -22)
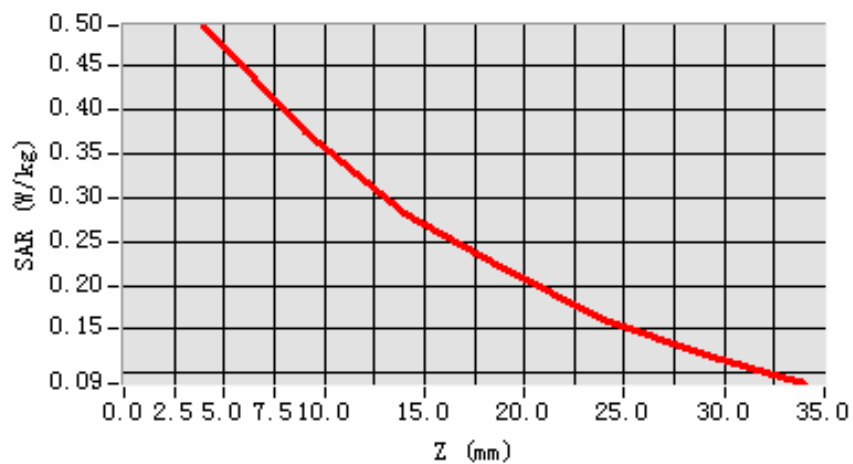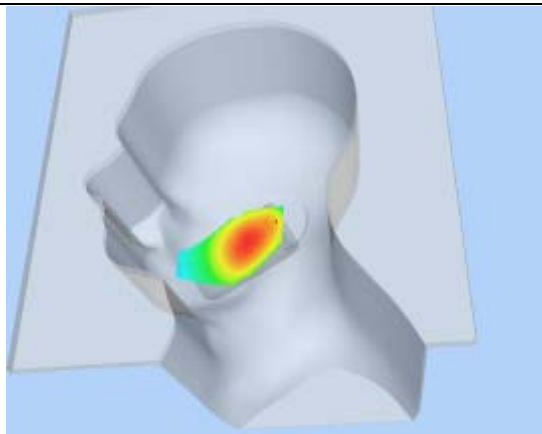
3D sceen shot	Hot spot position
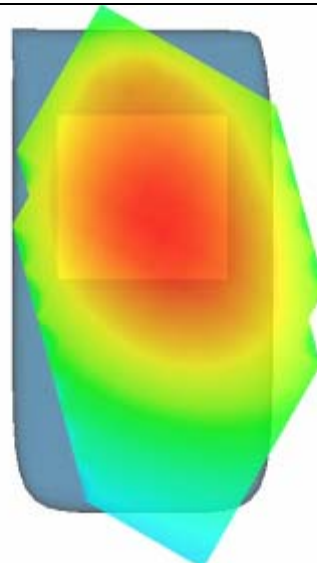
MEASUREMENT 21

Type: Phone measurement (Complete)
    Area scan resolution: dx=8mm,dy=8mm
    Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 27/4/2011
Measurement duration: 7 minutes 37 seconds

A. Experimental conditions.

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

B. SAR Measurement Results

Middle Band SAR (Channel 4182):

Frequency (MHz)	836.000000
Relative permittivity (real part)	39.910000
Relative permittivity	13.230000
Conductivity (S/m)	0.614460
Power Drift (%)	-0.440000
Ambient Temperature:	22.2°C
Liquid Temperature:	21.8°C
ConvF:	28.479,25.214,27.196
Crest factor:	1:1

SURFACE SAR	VOLUME SAR
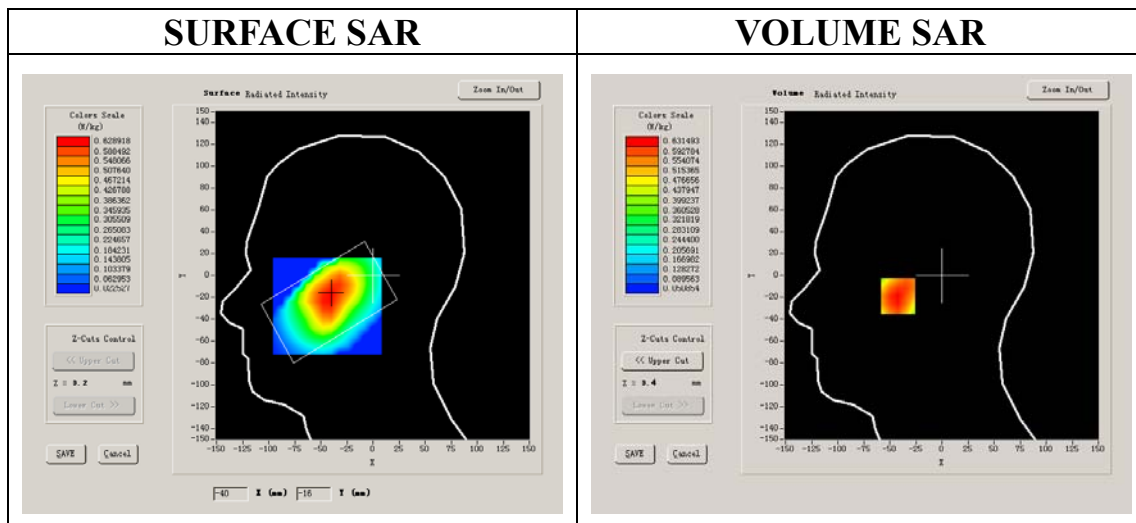
Maximum location: X=-42.00, Y=-19.00

SAR 10g (W/Kg)	0.434639
SAR 1g (W/Kg)	0.611049

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.6315	0.4669	0.3463	0.2576	0.1883	0.1369
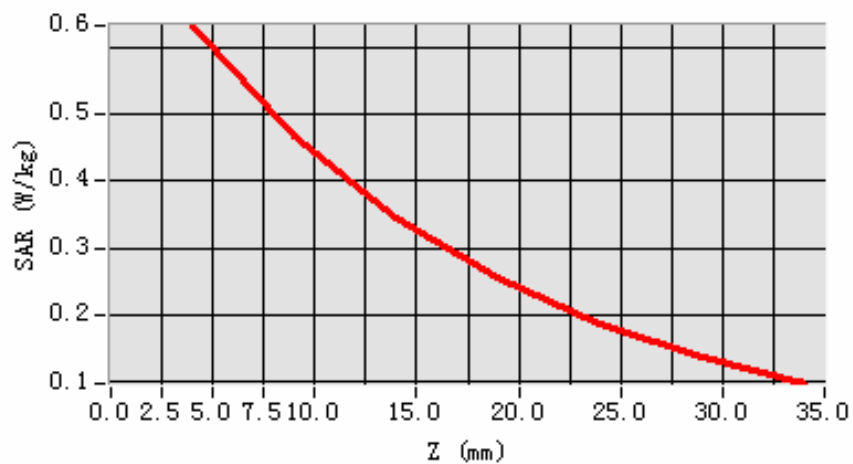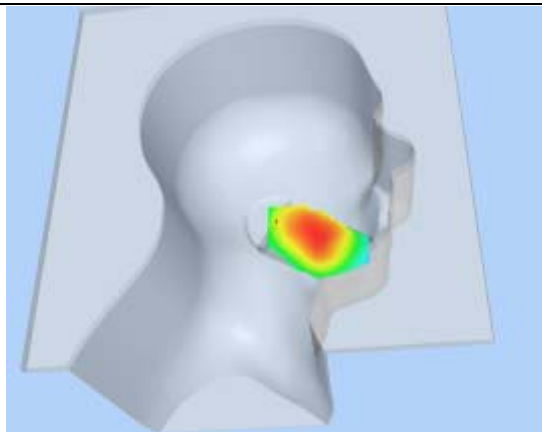
3D sceen shot	Hot spot position
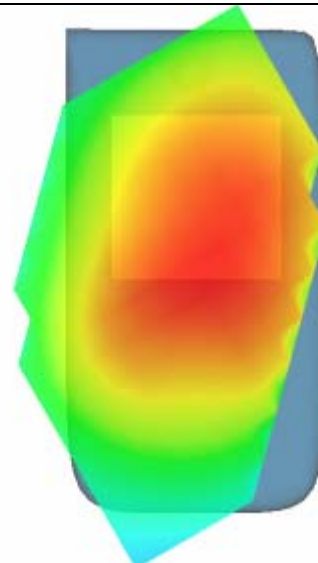
MEASUREMENT 22

Type: Phone measurement (Complete)
     Area scan resolution: dx=8mm,dy=8mm
     Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 27/4/2011
Measurement duration: 8 minutes 12 seconds

A. Experimental conditions.

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

B. SAR Measurement Results

Middle Band SAR (Channel 9400):

Frequency (MHz)	1880.000000
Relative permittivity (real part)	39.910000
Relative permittivity	13.230000
Conductivity (S/m)	1.381800
Power Drift (%)	1.410000
Ambient Temperature:	22.2°C
Liquid Temperature:	21.8°C
ConvF:	28.479,25.214,27.196
Crest factor:	1:1

SURFACE SAR	VOLUME SAR

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

SAR 10g (W/Kg)	0.146283
SAR 1g (W/Kg)	0.268496

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.2798	0.1430	0.0752	0.0401	0.0214	0.0169

SAR, Z Axis Scan (X = -49, Y = -47)
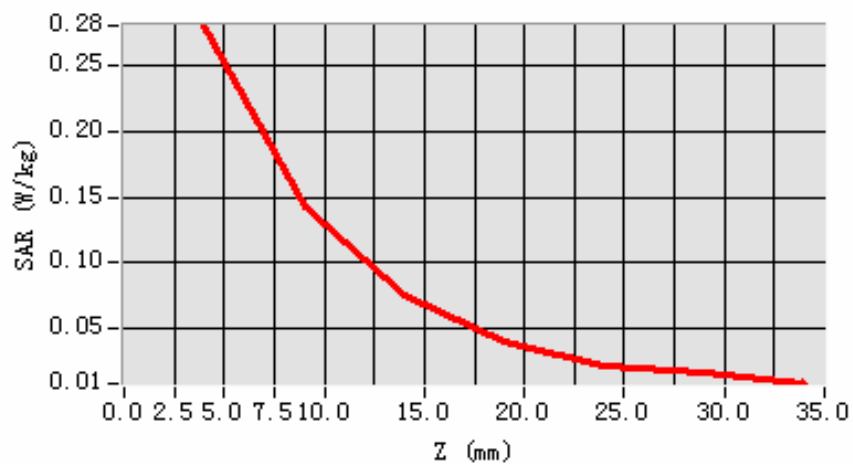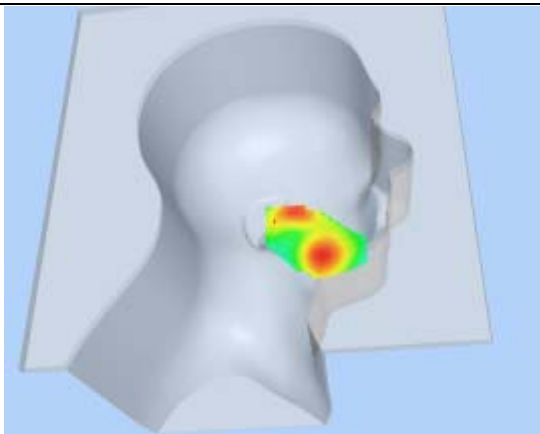
3D sceen shot	Hot spot position
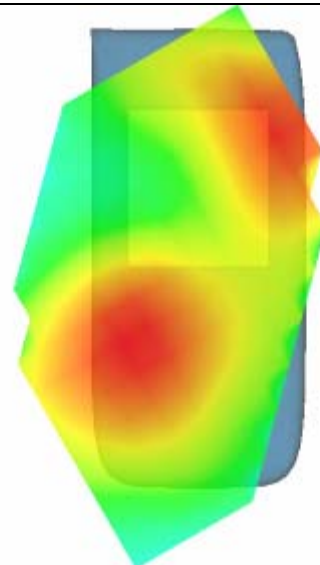
MEASUREMENT 23

Type: Phone measurement (Complete)
  Area scan resolution: dx=8mm,dy=8mm
  Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 27/4/2011
Measurement duration: 9 minutes 8 seconds

A. Experimental conditions.

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

B. SAR Measurement Results

Lower Band SAR (Channel 4132):

Frequency (MHz)	826.000000
Relative permittivity (real part)	51.341000
Relative permittivity	15.877050
Conductivity (S/m)	0.728580
Power Drift (%)	0.600000
Ambient Temperature:	22.2°C
Liquid Temperature:	21.8°C
ConvF:	28.479,25.214,27.196
Crest factor:	1:1

SURFACE SAR	VOLUME SAR

Maximum location: X=9.00, Y=-16.00

SAR 10g (W/Kg)	0.624814
SAR 1g (W/Kg)	0.889652
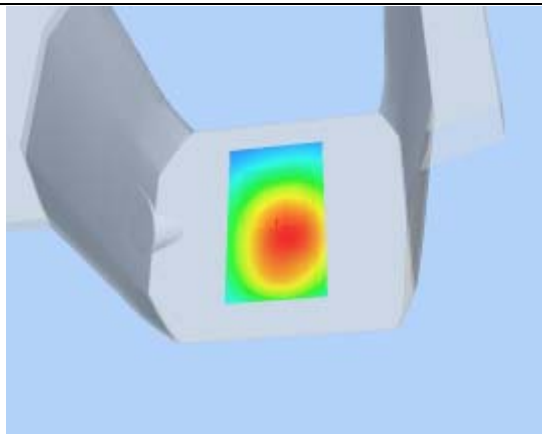
Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.9150	0.6713	0.4833	0.3495	0.2515	0.1816
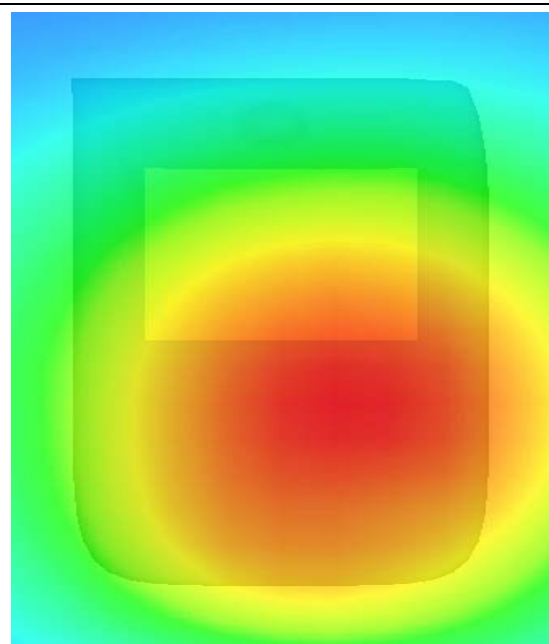
SAR, Z Axis Scan (X = 9, Y = -16)

3D sceen shot	Hot spot position

MEASUREMENT 24

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 27/4/2011
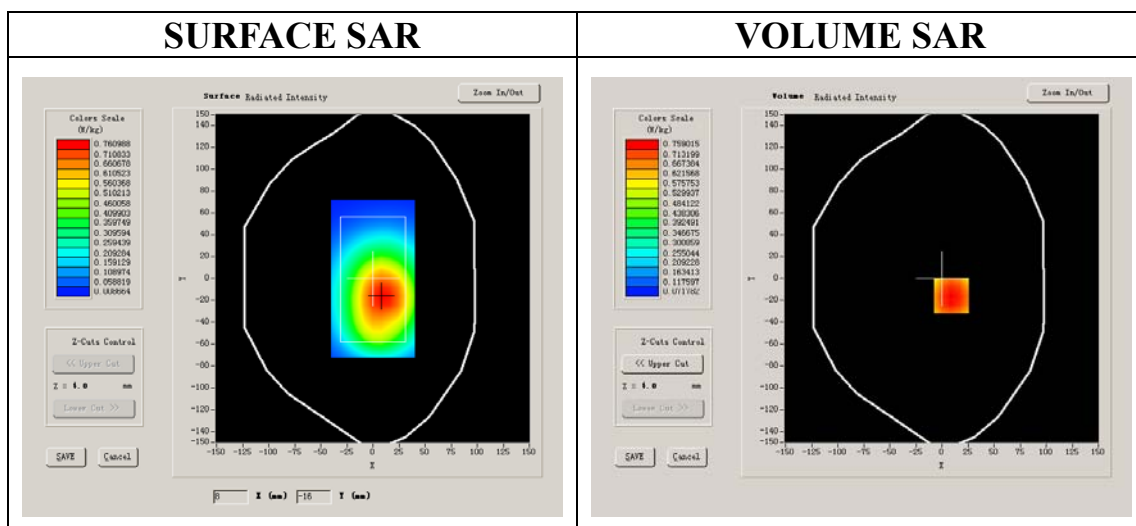Measurement duration: 9 minutes 7 seconds

A. Experimental conditions.

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

B. SAR Measurement Results

Middle Band SAR (Channel 4182):

Frequency (MHz)	836.000000
Relative permittivity (real part)	51.341000
Relative permittivity	15.877050
Conductivity (S/m)	0.737401
Power Drift (%)	0.470000
Ambient Temperature:	22.2°C
Liquid Temperature:	21.8°C
ConvF:	28.479,25.214,27.196
Crest factor:	1:1

SURFACE SAR	VOLUME SAR
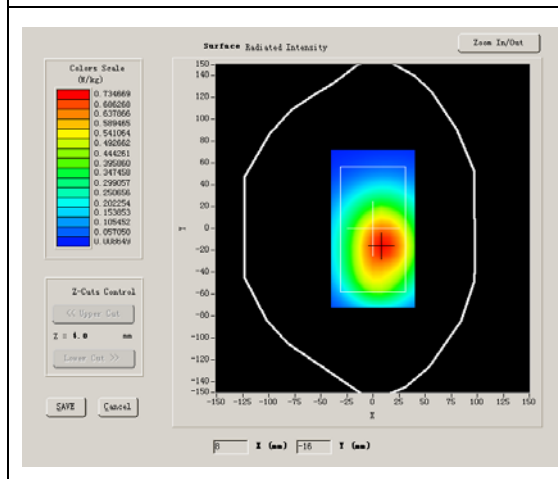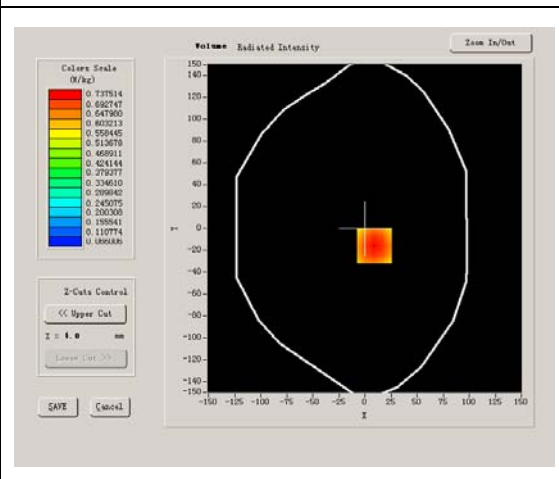
Maximum location: X=9.00, Y=-16.00

SAR 10g (W/Kg)	0.596199
SAR 1g (W/Kg)	0.853680

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.8851	0.6348	0.4560	0.3277	0.2356	0.1692

SAR, Z Axis Scan (X = 9, Y = -16)
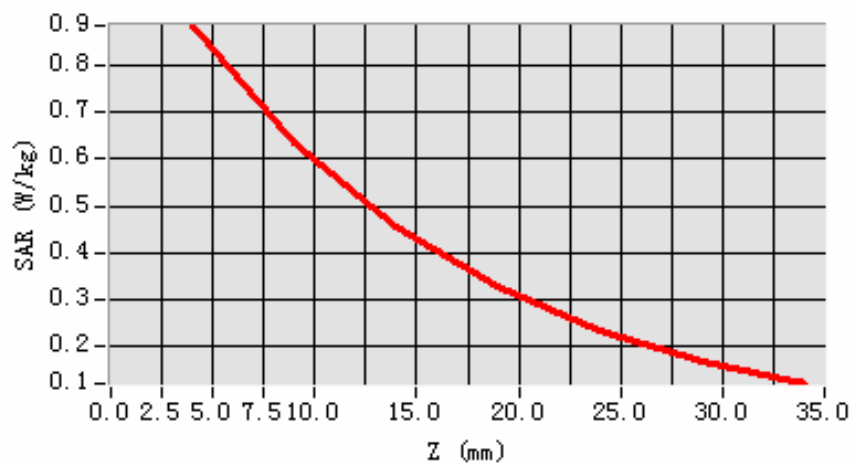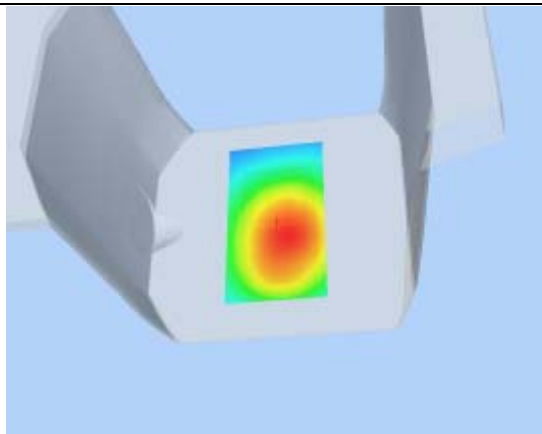
3D sceen shot	Hot spot position
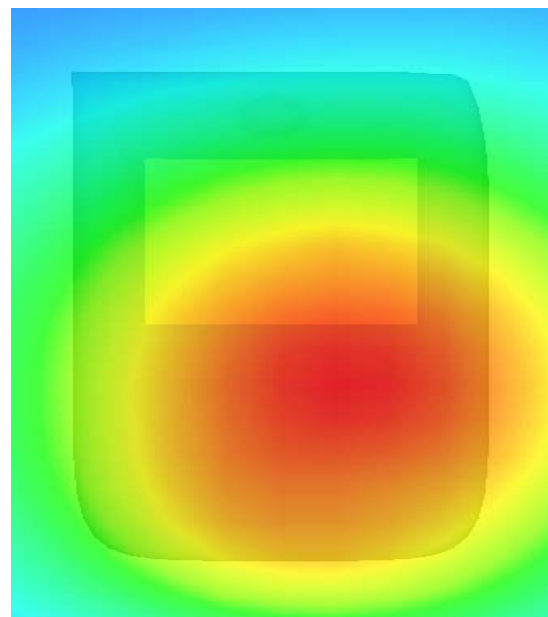
MEASUREMENT 25

Type: Phone measurement (Complete)
  Area scan resolution: dx=8mm,dy=8mm
  Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 27/4/2011
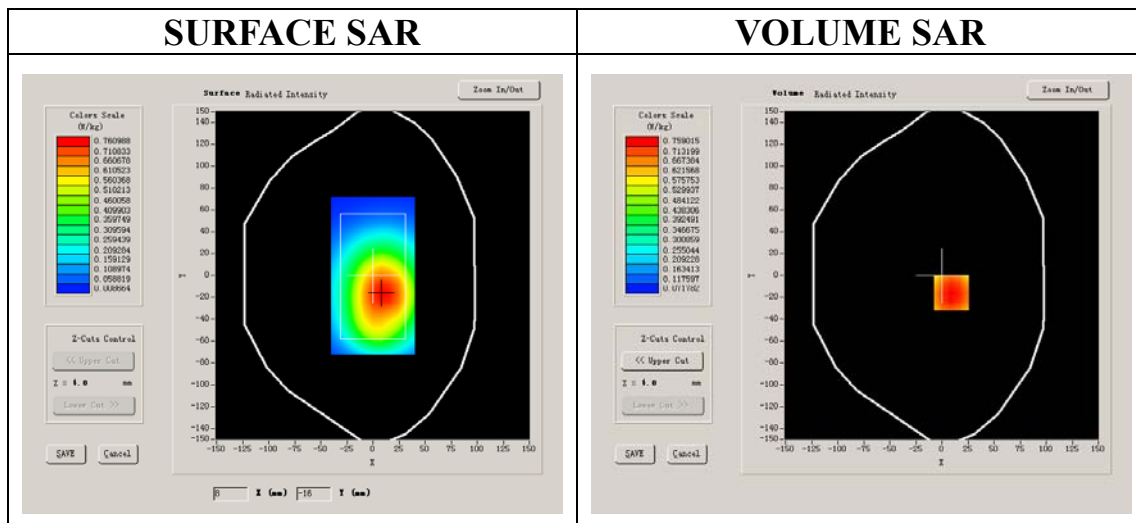Measurement duration: 9 minutes 8 seconds

A. Experimental conditions.

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

B. SAR Measurement Results

Higher Band SAR (Channel 4233):

Frequency (MHz)	846.000000
Relative permittivity (real part)	51.341000
Relative permittivity	15.877050
Conductivity (S/m)	0.746221
Power Drift (%)	-0.060000
Ambient Temperature:	22.2°C
Liquid Temperature:	21.8°C
ConvF:	28.479,25.214,27.196
Crest factor:	1:1

SURFACE SAR	VOLUME SAR
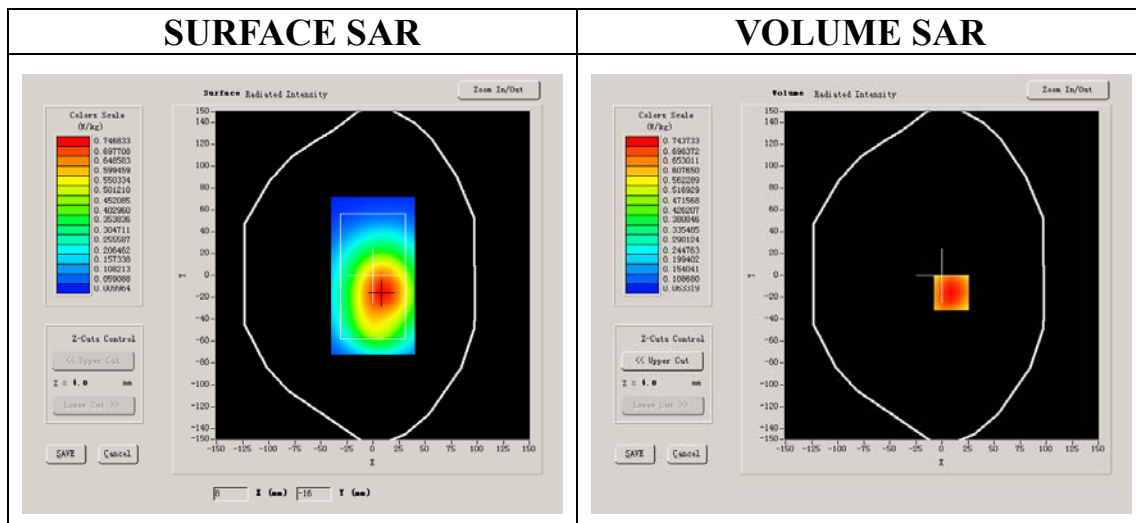
Maximum location: X=9.00, Y=-16.00

SAR 10g (W/Kg)	0.592269
SAR 1g (W/Kg)	0.851599

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.8825	0.6315	0.4506	0.3220	0.2302	0.1641

SAR, Z Axis Scan (X = 9, Y = −16)
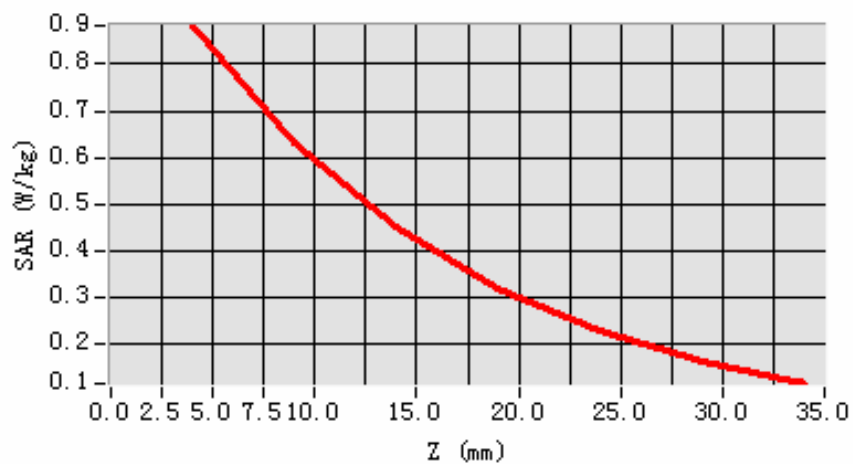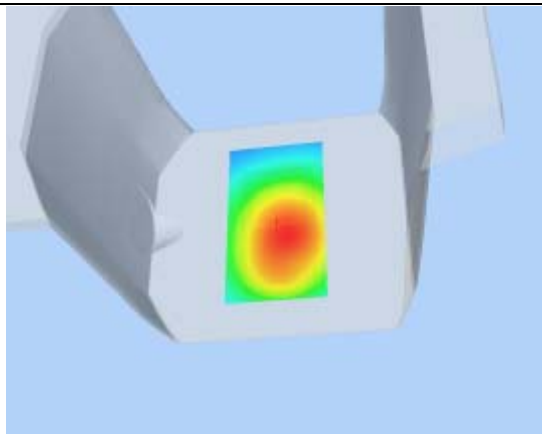
3D sceen shot	Hot spot position
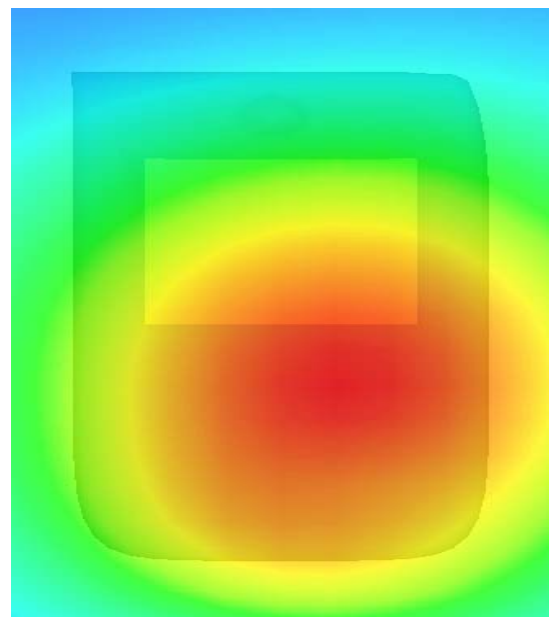
MEASUREMENT 26

Type: Phone measurement (Complete)
   Area scan resolution: dx=8mm,dy=8mm
   Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
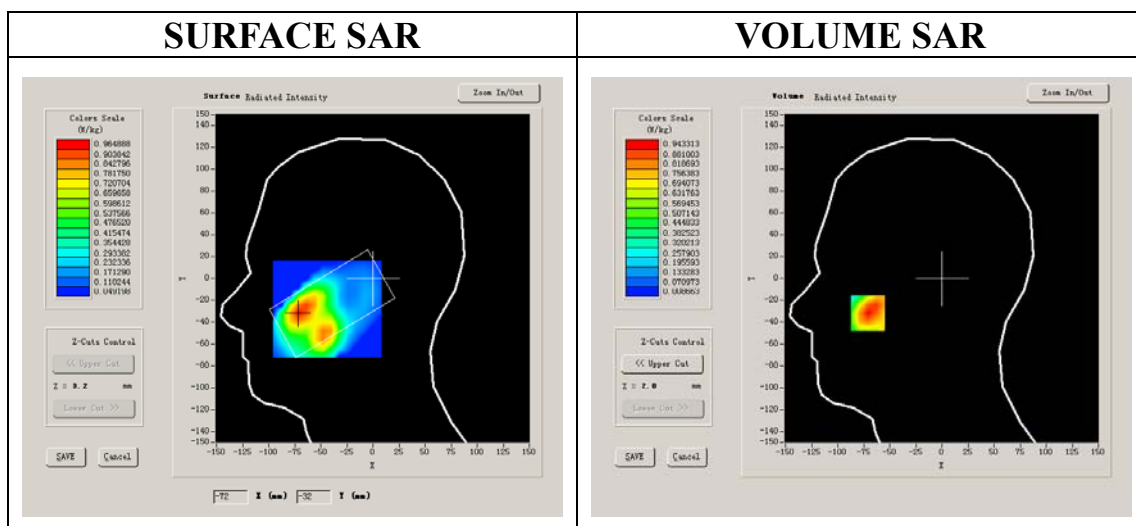Date of measurement: 27/4/2011
Measurement duration: 9 minutes 8 seconds

A. Experimental conditions.

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

B. SAR Measurement Results

Lower Band SAR (Channel 4132):

Frequency (MHz)	826.000000
Relative permittivity (real part)	51.341000
Relative permittivity	15.877050
Conductivity (S/m)	0.728580
Power Drift (%)	0.600000
Ambient Temperature:	22.2°C
Liquid Temperature:	21.8°C
ConvF:	28.479,25.214,27.196
Crest factor:	1:1

SURFACE SAR	VOLUME SAR

Maximum location: X=9.00, Y=-16.00

SAR 10g (W/Kg)	0.424552
SAR 1g (W/Kg)	0.647724

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.9150	0.6713	0.4833	0.3495	0.2515	0.1816
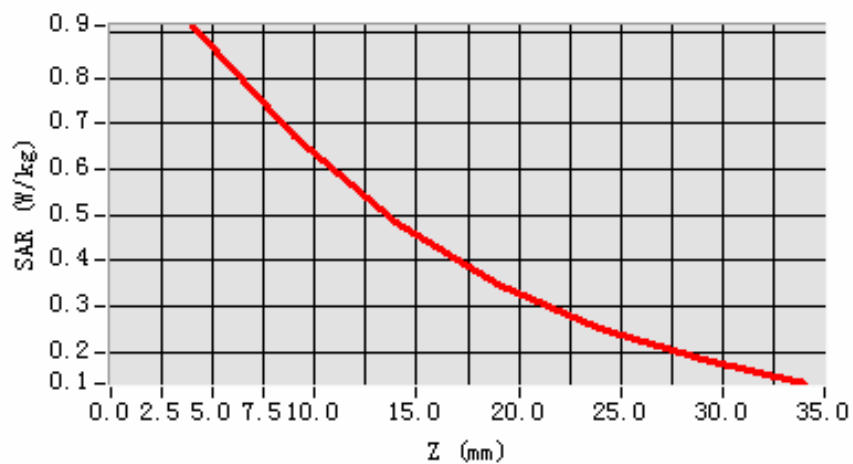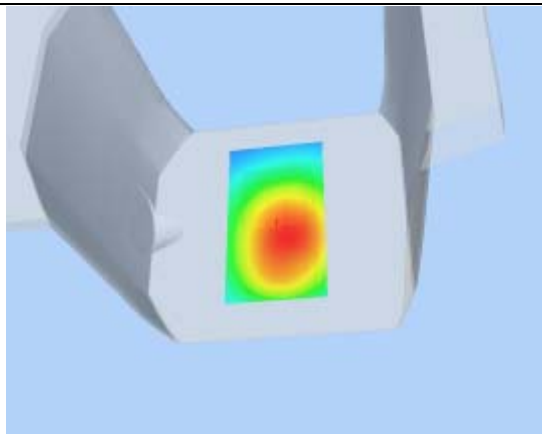
3D sceen shot	Hot spot position
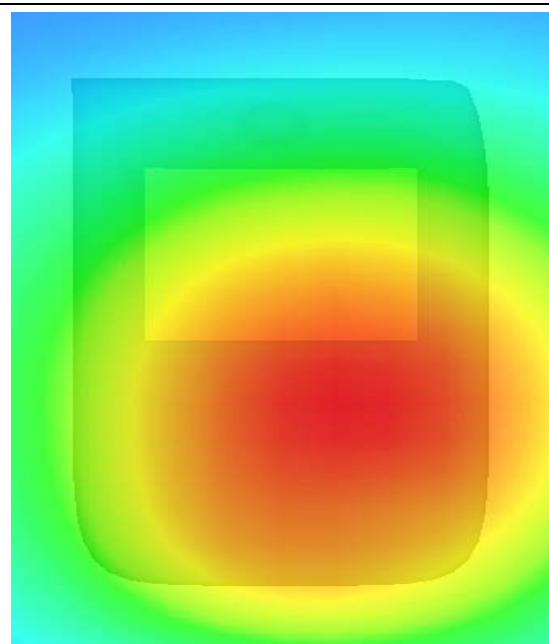
MEASUREMENT 27

Type: Phone measurement (Complete)
     Area scan resolution: dx=8mm,dy=8mm
     Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
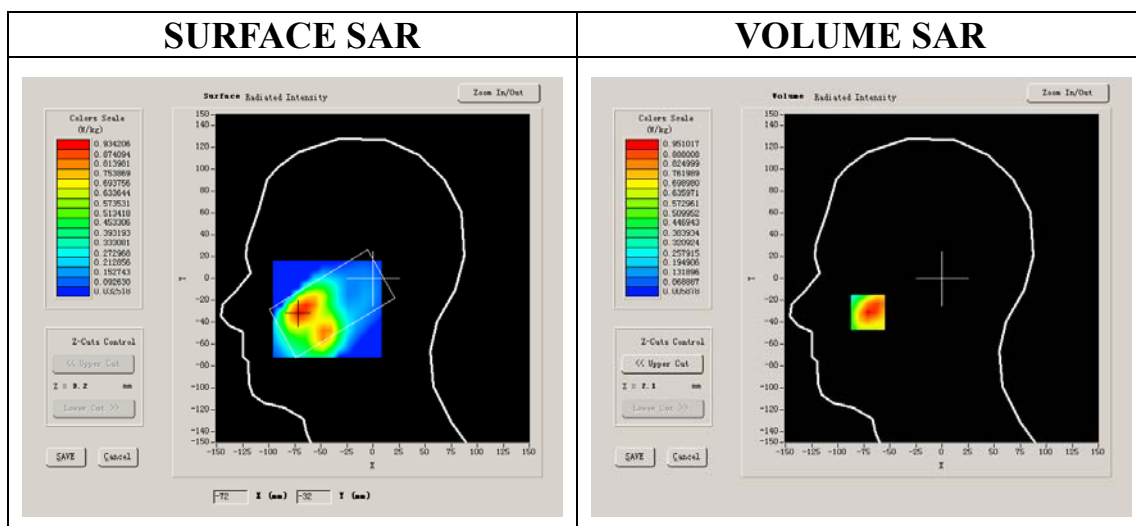Date of measurement: 27/4/2011
Measurement duration: 9 minutes 8 seconds

A. Experimental conditions.

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

B. SAR Measurement Results

Lower Band SAR (Channel 4132):

Frequency (MHz)	826.000000
Relative permittivity (real part)	51.341000
Relative permittivity	15.877050
Conductivity (S/m)	0.728580
Power Drift (%)	0.600000
Ambient Temperature:	22.2°C
Liquid Temperature:	21.8°C
ConvF:	28.479,25.214,27.196
Crest factor:	1:1

SURFACE SAR	VOLUME SAR
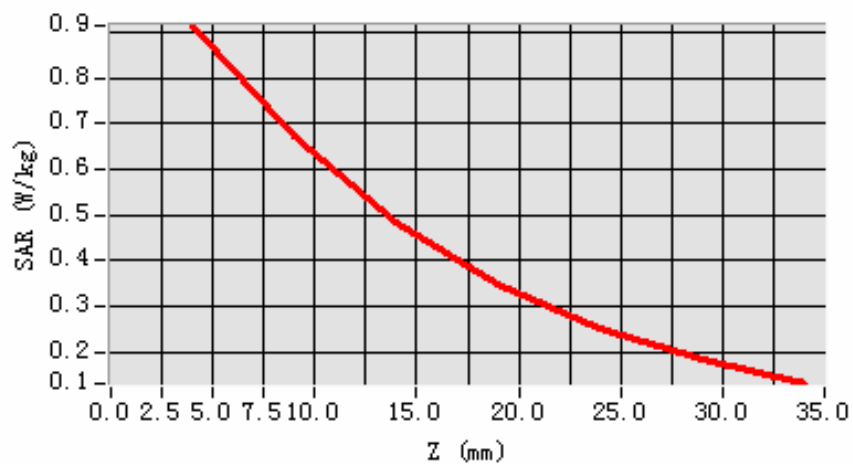
Maximum location: X=9.00, Y=-16.00

SAR 10g (W/Kg)	0.357466
SAR 1g (W/Kg)	0.695726

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.9150	0.6713	0.4833	0.3495	0.2515	0.1816

SAR, Z Axis Scan (X = 9, Y = −16)

3D sceen shot	Hot spot position

MEASUREMENT 28

Type: Phone measurement (Complete)
  Area scan resolution: dx=8mm,dy=8mm
  Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 27/4/2011
Measurement duration: 9 minutes 20 seconds

A. Experimental conditions.

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

B. SAR Measurement Results

Lower Band SAR (Channel 9262):

Frequency (MHz)	1852.000000
Relative permittivity (real part)	39.980000
Relative permittivity	13.170000
Conductivity (S/m)	1.355047
Power Drift (%)	0.290000
Ambient Temperature:	23.0°C
Liquid Temperature:	22.4°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:1

SURFACE SAR	VOLUME SAR

Maximum location: X=-71.00, Y=-32.00

SAR 10g (W/Kg)	0.478519
SAR 1g (W/Kg)	0.909591

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.9433	0.4480	0.2211	0.1093	0.0573	0.0268

SAR, Z Axis Scan (X = -71, Y = -32)
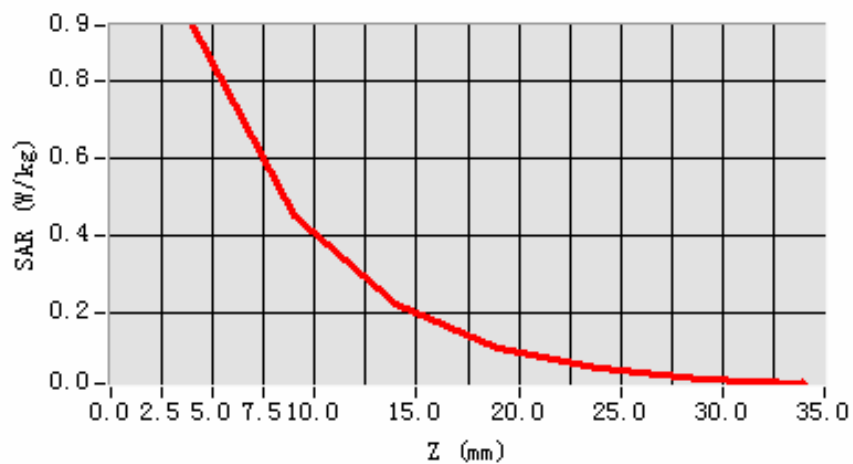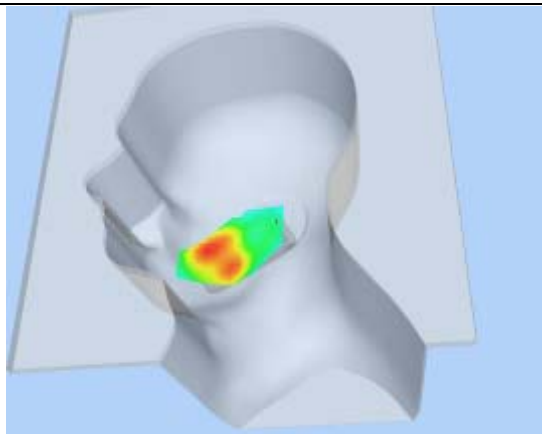
3D sceen shot	Hot spot position
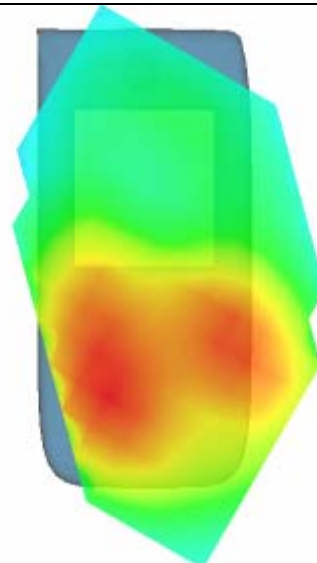
MEASUREMENT 29

Type: Phone measurement (Complete)
     Area scan resolution: dx=8mm,dy=8mm
     Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 27/4/2011
Measurement duration: 9 minutes 21 seconds

A. Experimental conditions.

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

B. SAR Measurement Results

Middle Band SAR (Channel 9400):

Frequency (MHz)	1880.000000
Relative permittivity (real part)	39.910000
Relative permittivity	13.230000
Conductivity (S/m)	1.381800
Power Drift (%)	0.290000
Ambient Temperature:	23.0°C
Liquid Temperature:	22.4°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:1

SURFACE SAR	VOLUME SAR

Maximum location: X=-71.00, Y=-31.00

SAR 10g (W/Kg)	0.474929
SAR 1g (W/Kg)	0.916271

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.9510	0.4542	0.2188	0.1087	0.0545	0.0289

SAR, Z Axis Scan (X = -71, Y = -31)
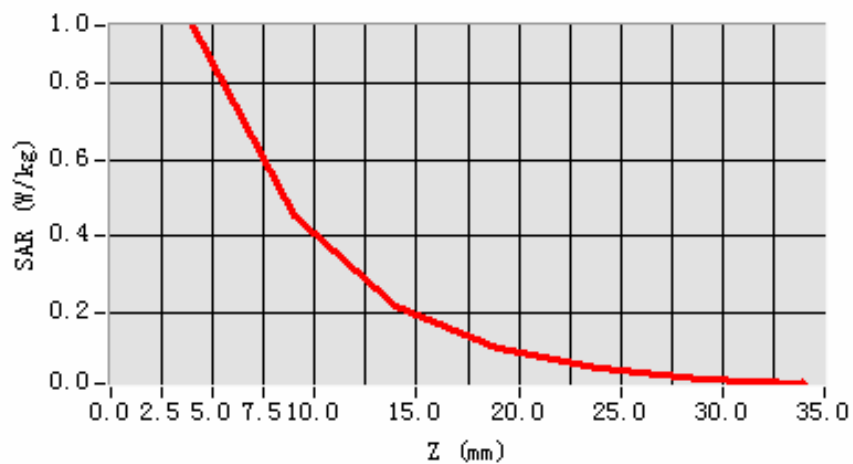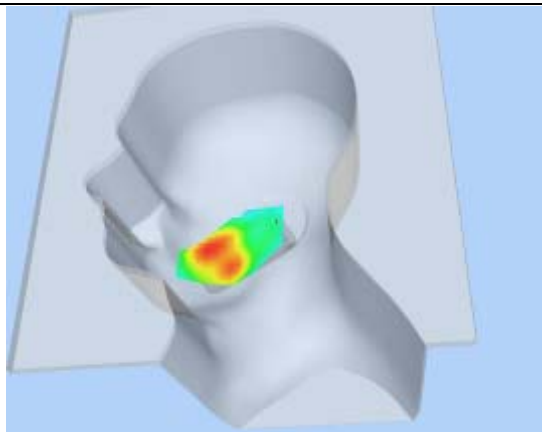
3D sceen shot	Hot spot position
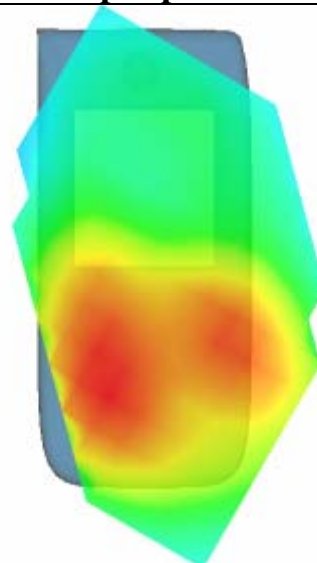
MEASUREMENT 30

Type: Phone measurement (Complete)
    Area scan resolution: dx=8mm,dy=8mm
    Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 27/4/2011
Measurement duration: 9 minutes 18 seconds

A. Experimental conditions.

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

B. SAR Measurement Results

Higher Band SAR (Channel 9538):

Frequency (MHz)	1907.000000
Relative permittivity (real part)	39.799999
Relative permittivity	13.380000
Conductivity (S/m)	1.417537
Power Drift (%)	0.330000
Ambient Temperature:	23.0°C
Liquid Temperature:	22.4°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:1

SURFACE SAR	VOLUME SAR
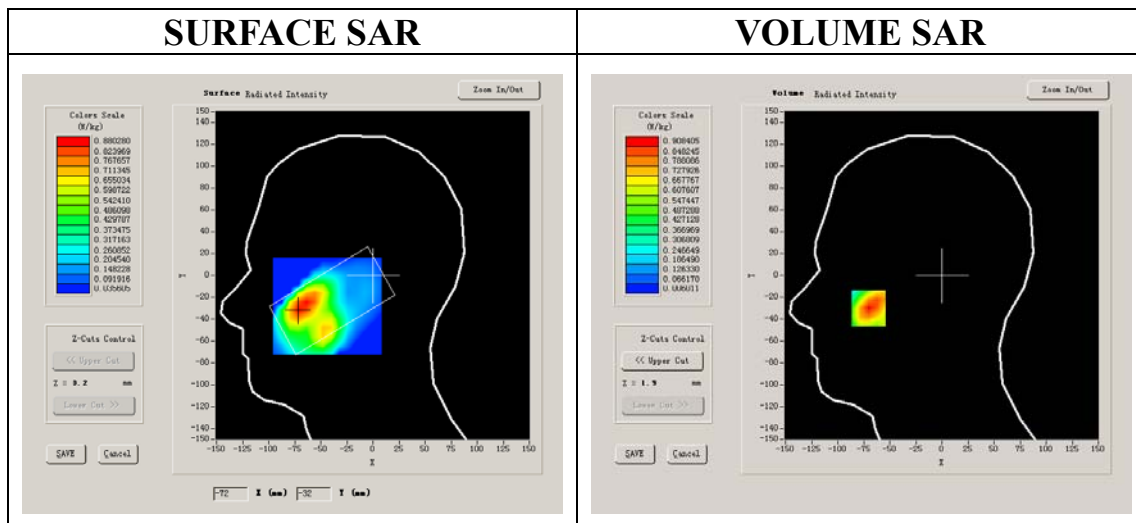
Maximum location: X=-70.00, Y=-30.00

SAR 10g (W/Kg)	0.445215
SAR 1g (W/Kg)	0.872530

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.9084	0.4075	0.1933	0.0992	0.0471	0.0226

SAR, Z Axis Scan (X = -70, Y = -30)
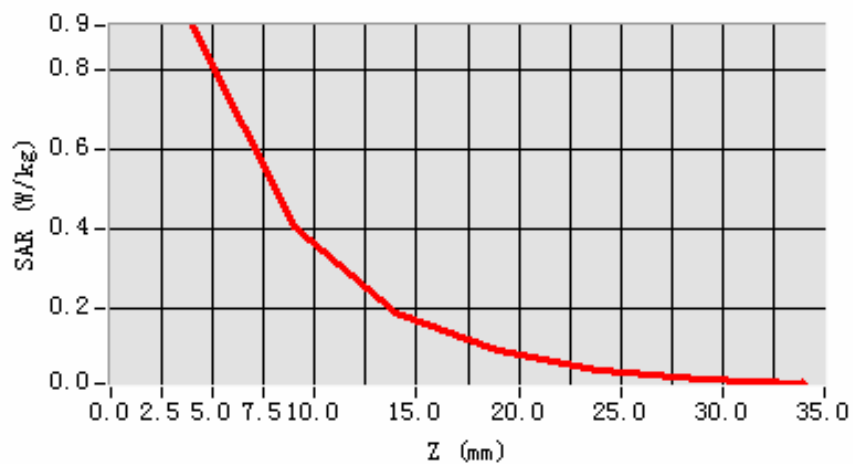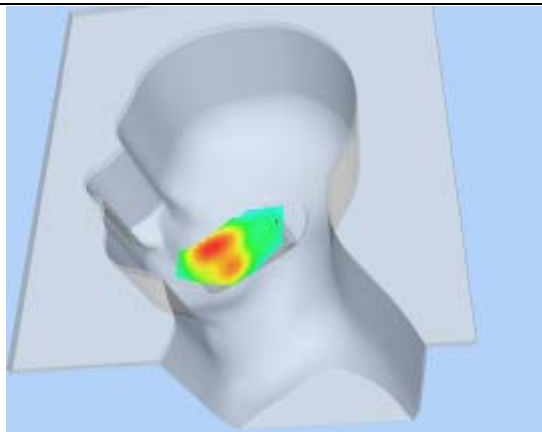
3D sceen shot	Hot spot position
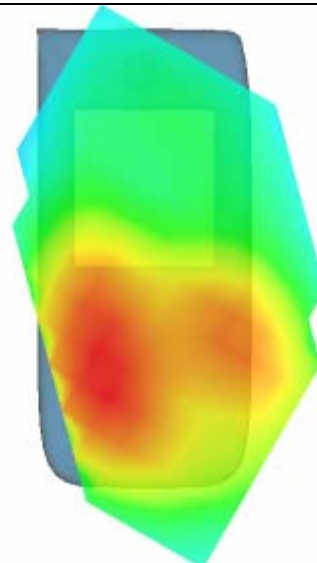
MEASUREMENT 31

Type: Phone measurement (Complete)
    Area scan resolution: dx=8mm,dy=8mm
    Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 27/4/2011
Measurement duration: 8 minutes 45 seconds

A. Experimental conditions.

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

B. SAR Measurement Results

Middle Band SAR (Channel 9400):

Frequency (MHz)	1880.000000
Relative permittivity (real part)	39.910000
Relative permittivity	13.230000
Conductivity (S/m)	1.381800
Power Drift (%)	1.280000
Ambient Temperature:	23.0°C
Liquid Temperature:	22.4°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:1

SURFACE SAR	VOLUME SAR
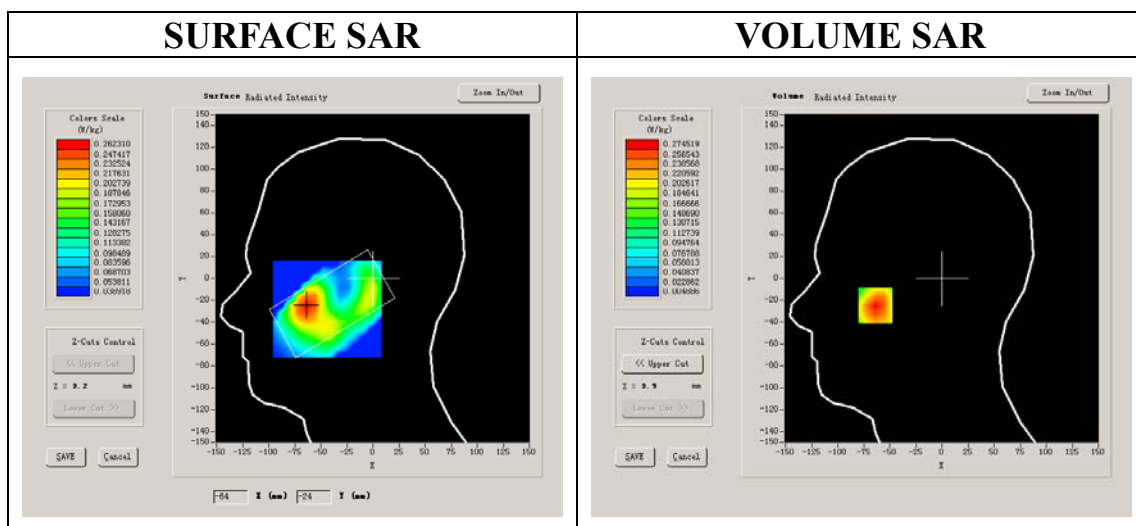
Maximum location: X=-64.00, Y=-25.00

SAR 10g (W/Kg)	0.142208
SAR 1g (W/Kg)	0.263559

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.2745	0.1339	0.0682	0.0381	0.0176	0.0131

SAR, Z Axis Scan (X = -64, Y = -25)
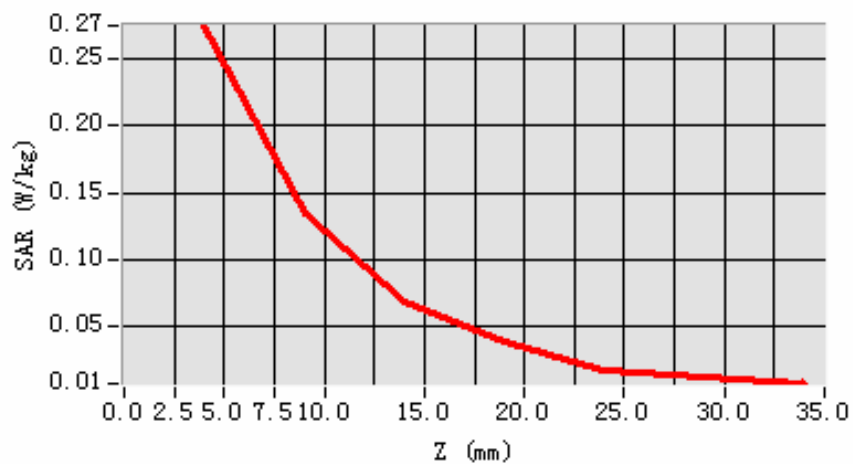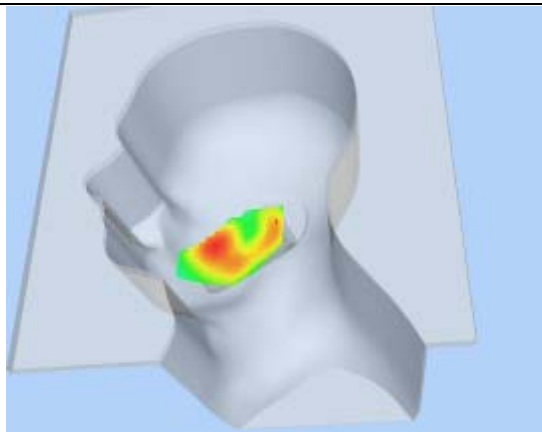
3D sceen shot	Hot spot position
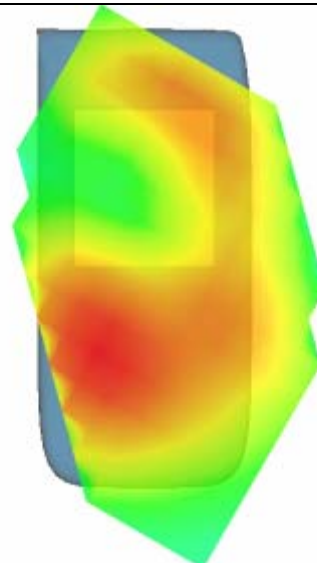
MEASUREMENT 32

Type: Phone measurement (Complete)

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

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

Date of measurement: 27/4/2011
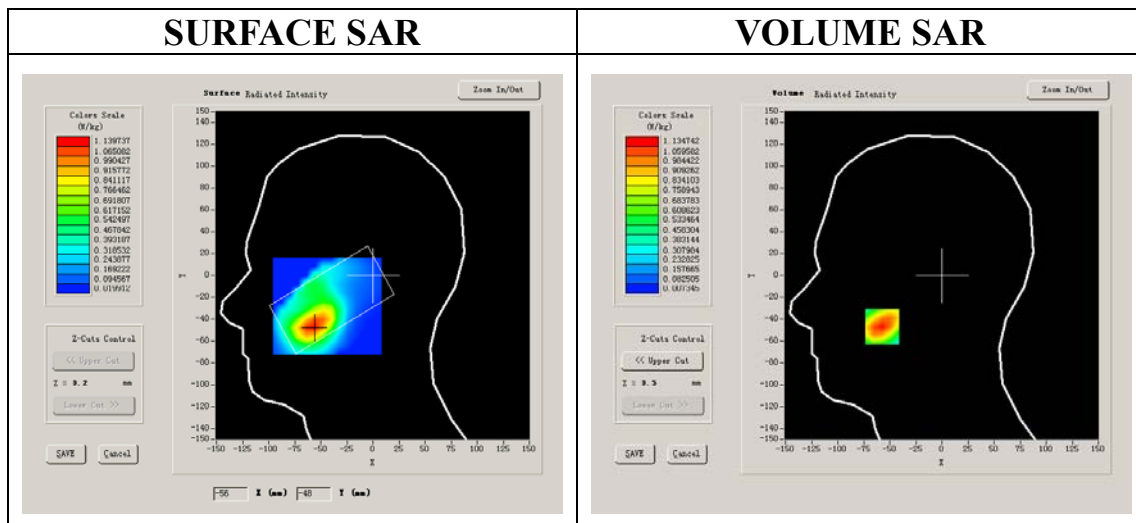
Measurement duration: 8 minutes 18 seconds

A. Experimental conditions.

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

B. SAR Measurement Results

Lower Band SAR (Channel 9262):

Frequency (MHz)	1852.000000
Relative permittivity (real part)	39.980000
Relative permittivity	13.170000
Conductivity (S/m)	1.355047
Power Drift (%)	-1.170000
Ambient Temperature:	23.0°C
Liquid Temperature:	22.4°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:1

SURFACE SAR	VOLUME SAR
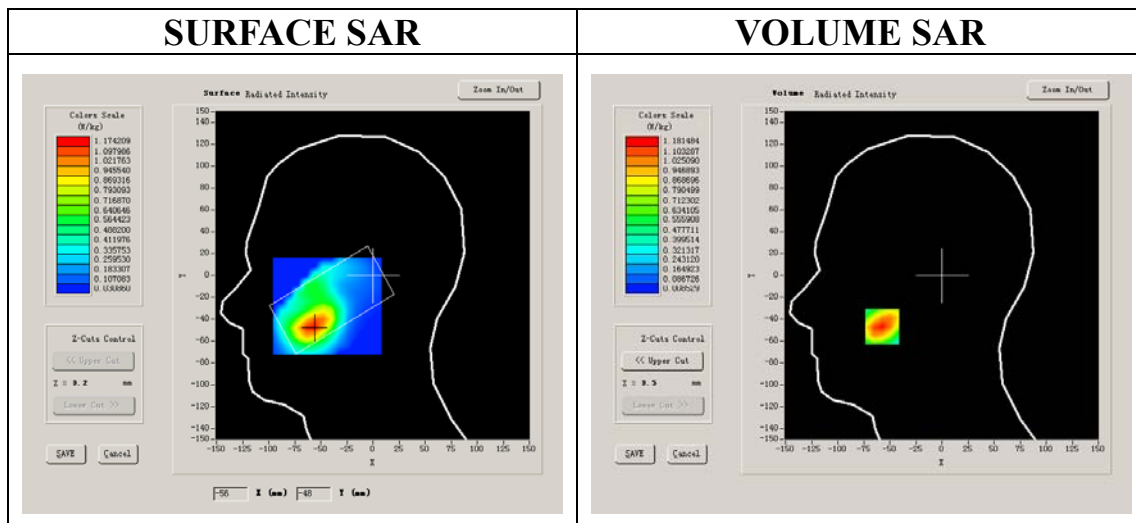
Maximum location: X=-57.00, Y=-47.00

SAR 10g (W/Kg)	0.576311
SAR 1g (W/Kg)	1.023154

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	1.1815	0.5698	0.2847	0.1407	0.0718	0.0389

SAR, Z Axis Scan (X = -57, Y = -47)
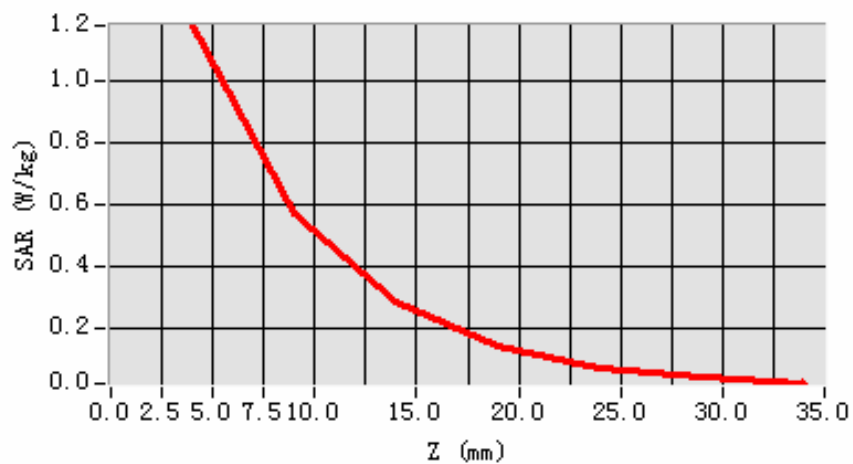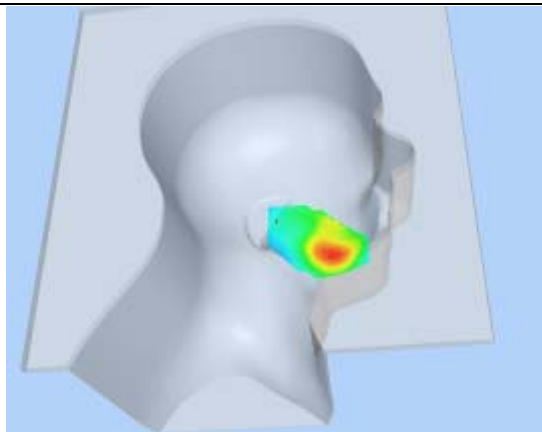
3D sceen shot	Hot spot position
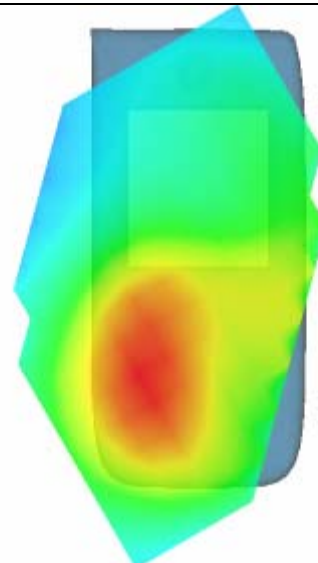
MEASUREMENT 33

Type: Phone measurement (Complete)

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

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

Date of measurement: 27/4/2011

Measurement duration: 8 minutes 14 seconds

A. Experimental conditions.

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

B. SAR Measurement Results

Middle Band SAR (Channel 9400):

Frequency (MHz)	1880.000000
Relative permittivity (real part)	39.910000
Relative permittivity	13.230000
Conductivity (S/m)	1.381800
Power Drift (%)	-0.560000
Ambient Temperature:	23.0°C
Liquid Temperature:	22.4°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:1

SURFACE SAR	VOLUME SAR

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

SAR 10g (W/Kg)	0.555259
SAR 1g (W/Kg)	1.079773

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	1.1347	0.5535	0.2669	0.1316	0.0675	0.0369

SAR, Z Axis Scan (X = −57, Y = −47)
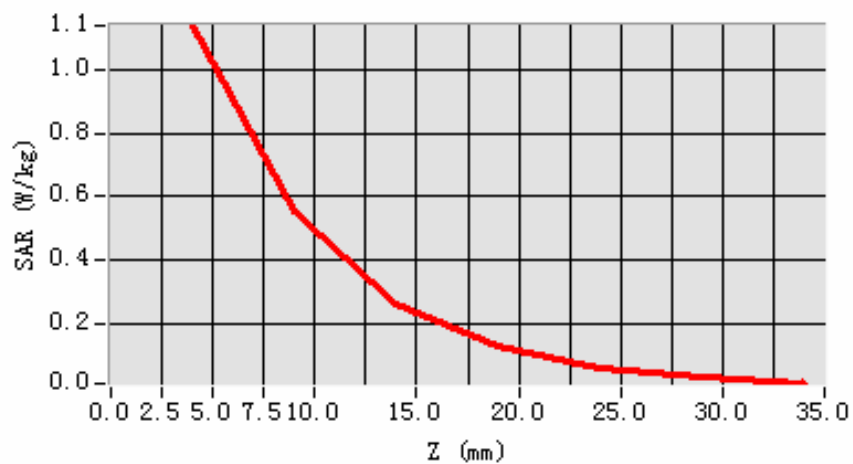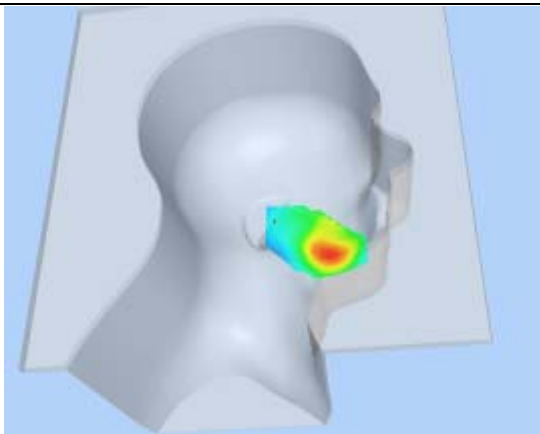
3D sceen shot	Hot spot position
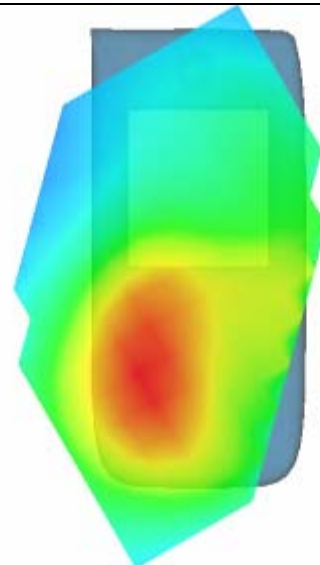
MEASUREMENT 34

Type: Phone measurement (Complete)
      Area scan resolution: dx=8mm,dy=8mm
      Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 27/4/2011
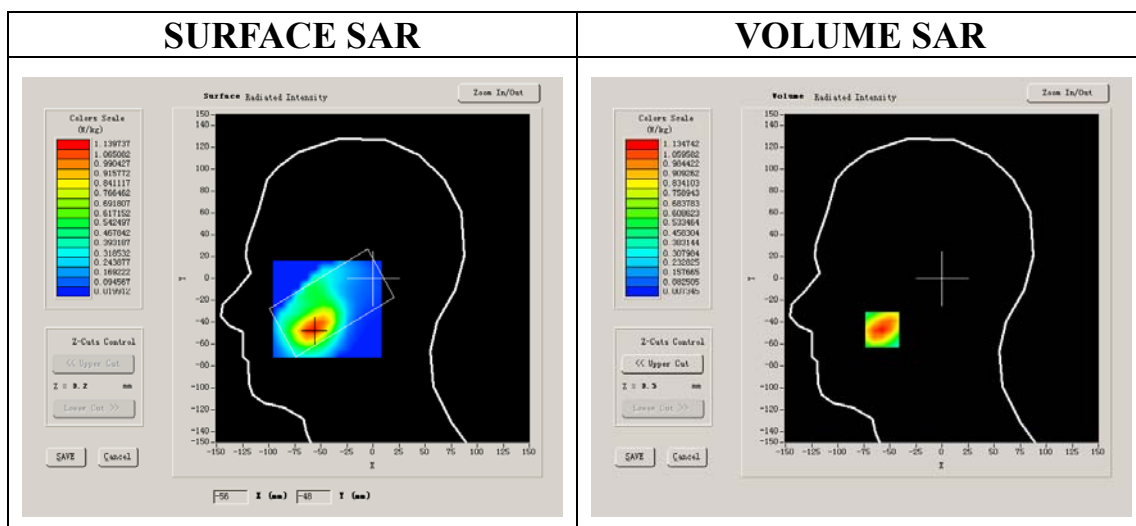Measurement duration: 8 minutes 17 seconds

A. Experimental conditions.

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

B. SAR Measurement Results

Higher Band SAR (Channel 9538):

Frequency (MHz)	1907.000000
Relative permittivity (real part)	39.799999
Relative permittivity	13.380000
Conductivity (S/m)	1.417537
Power Drift (%)	-3.010000
Ambient Temperature:	23.0°C
Liquid Temperature:	22.4°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:1

SURFACE SAR	VOLUME SAR
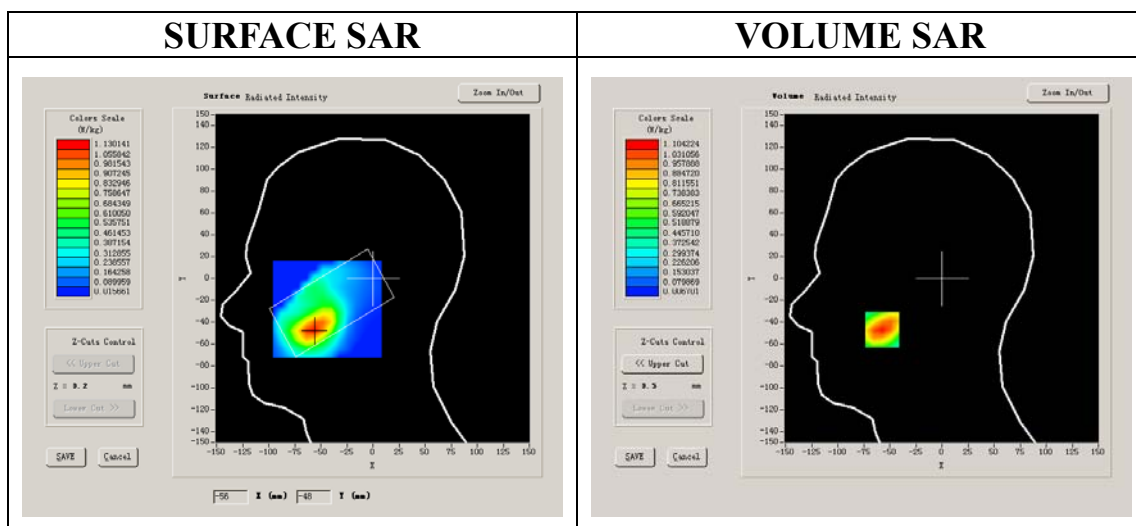
Maximum location: X=-57.00, Y=-47.00

SAR 10g (W/Kg)	0.537492
SAR 1g (W/Kg)	1.050770

Z Axis Scan

| Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	1.1042	0.5314	0.2526	0.1290	0.0632	0.0313

SAR, Z Axis Scan (X = -57, Y = -47)
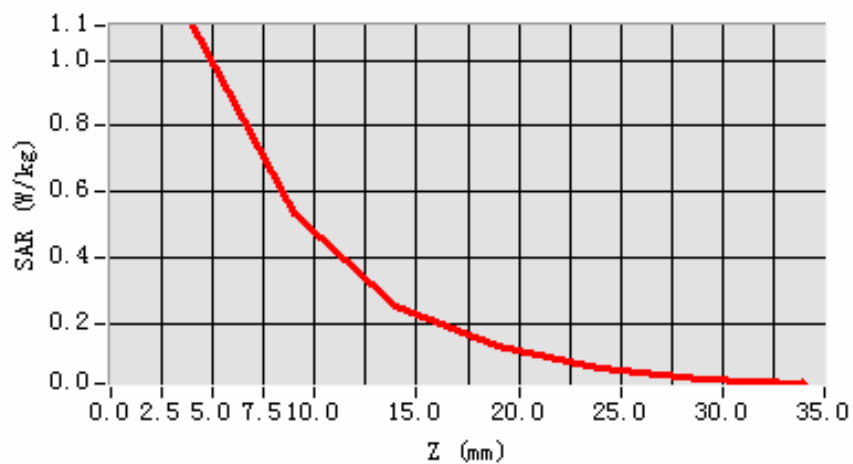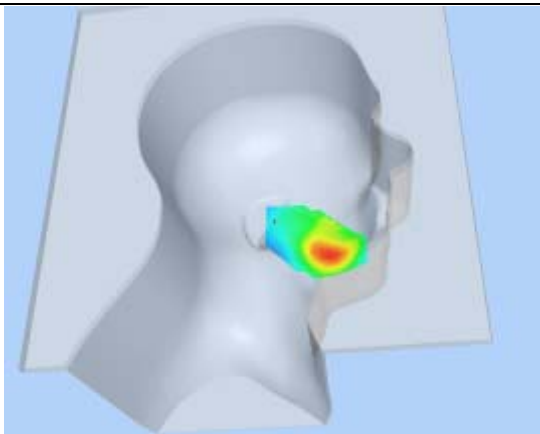
3D sceen shot	Hot spot position
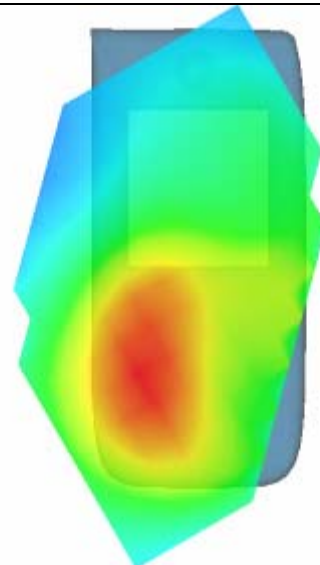
MEASUREMENT 35

Type: Phone measurement (Complete)
    Area scan resolution: dx=8mm,dy=8mm
    Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 27/4/2011
Measurement duration: 8 minutes 14 seconds

A. Experimental conditions.

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

B. SAR Measurement Results

Middle Band SAR (Channel 9400):

Frequency (MHz)	1880.000000
Relative permittivity (real part)	39.910000
Relative permittivity	13.230000
Conductivity (S/m)	1.381800
Power Drift (%)	-0.560000
Ambient Temperature:	23.0°C
Liquid Temperature:	22.4°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:1

SURFACE SAR	VOLUME SAR

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

SAR 10g (W/Kg)	0.352699
SAR 1g (W/Kg)	0.687441

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	1.1347	0.5535	0.2669	0.1316	0.0675	0.0369
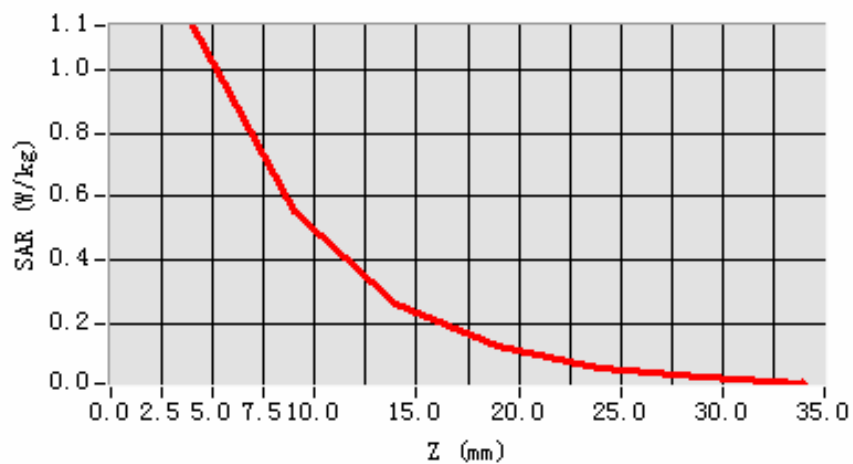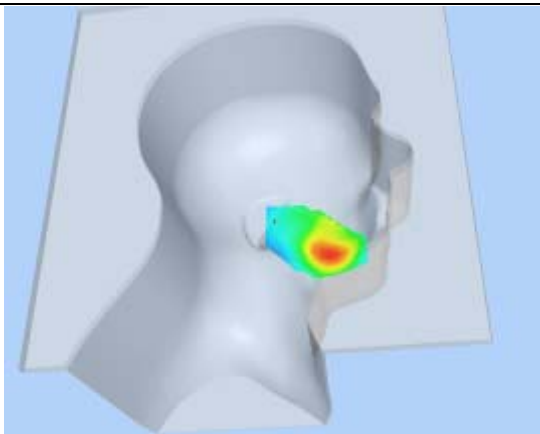
3D sceen shot	Hot spot position
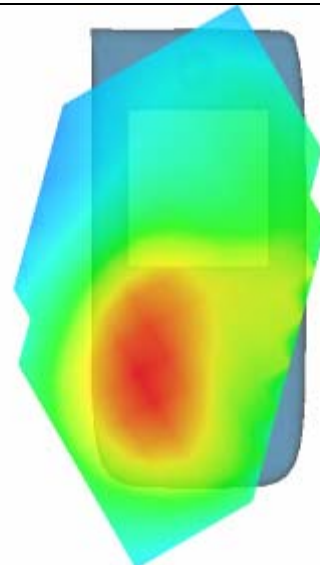
MEASUREMENT 36

Type: Phone measurement (Complete)
     Area scan resolution: dx=8mm,dy=8mm
     Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 27/4/2011
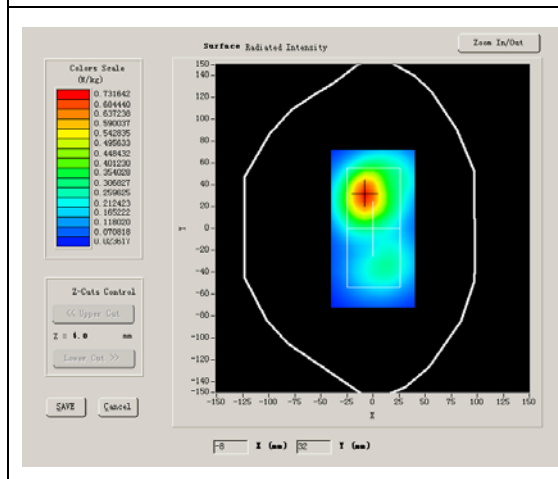Measurement duration: 9 minutes 14 seconds

A. Experimental conditions.

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

B. SAR Measurement Results

Lower Band SAR (Channel 9262):

Frequency (MHz)	1852.000000
Relative permittivity (real part)	51.341000
Relative permittivity	15.877050
Conductivity (S/m)	1.633572
Power Drift (%)	0.020000
Ambient Temperature:	23.0°C
Liquid Temperature:	22.4°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:1

SURFACE SAR	VOLUME SAR
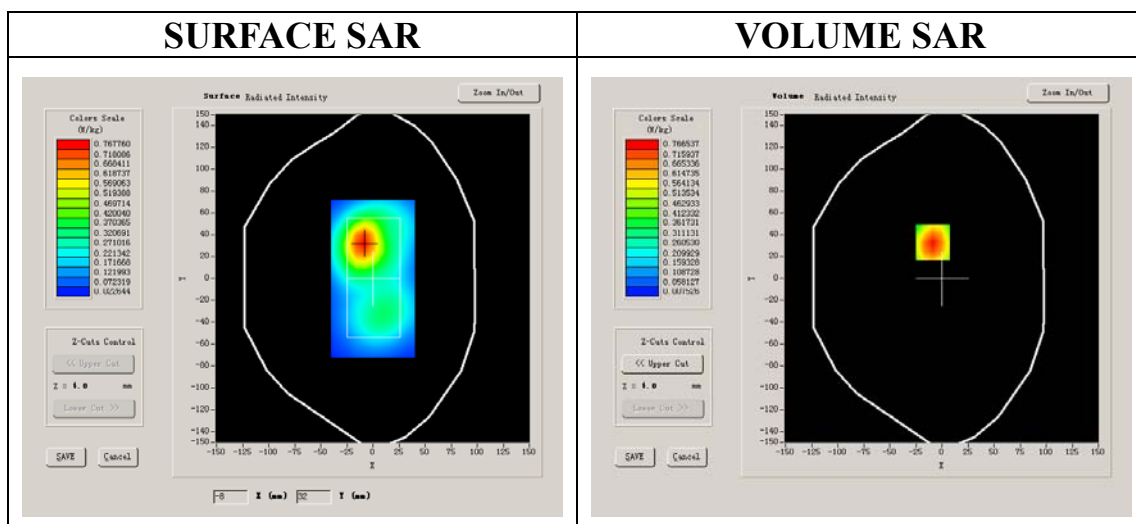
Maximum location: X=-9.00, Y=33.00

SAR 10g (W/Kg)	0.366924
SAR 1g (W/Kg)	0.784511

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.9241	0.4481	0.2226	0.1150	0.0597	0.0250

SAR, Z Axis Scan (X = -9, Y = 33)
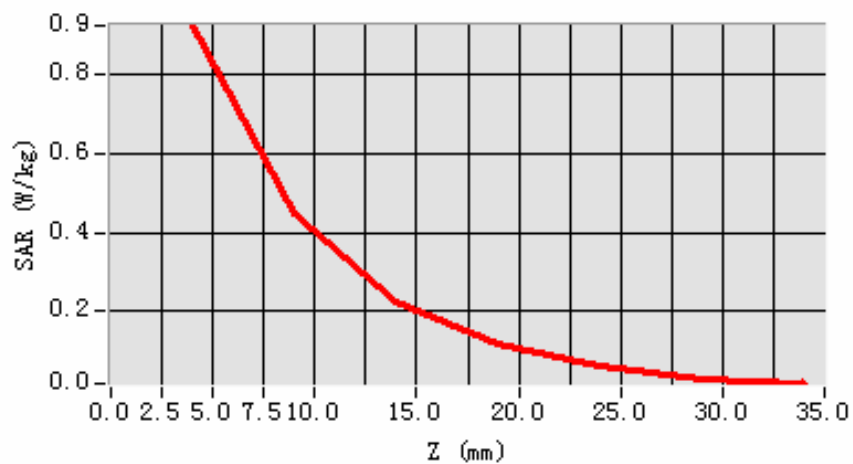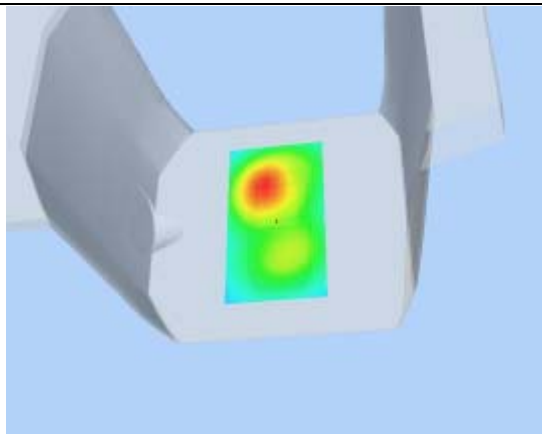
3D sceen shot	Hot spot position
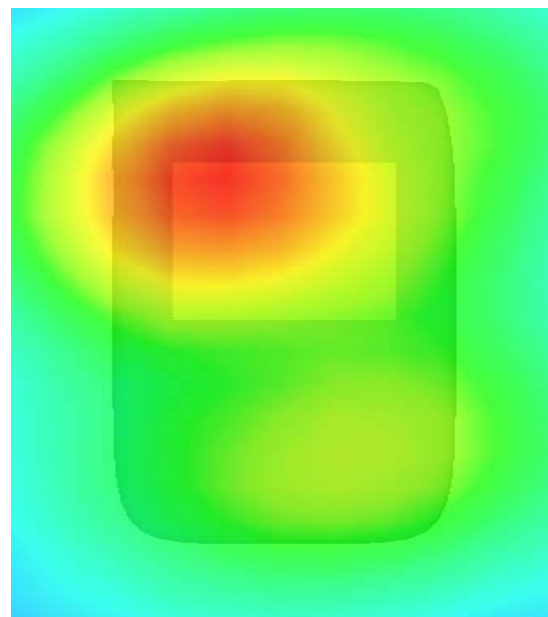
MEASUREMENT 37

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 27/4/2011
Measurement duration: 9 minutes 16 seconds

A. Experimental conditions.

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

B. SAR Measurement Results

Middle Band SAR (Channel 9400):

Frequency (MHz)	1880.000000
Relative permittivity (real part)	51.341000
Relative permittivity	15.877050
Conductivity (S/m)	1.658270
Power Drift (%)	0.730000
Ambient Temperature:	23.0°C
Liquid Temperature:	22.4°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:1

SURFACE SAR	VOLUME SAR

Maximum location: X=-8.00, Y=31.00

SAR 10g (W/Kg)	0.450891
SAR 1g (W/Kg)	0.851615

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.8854	0.4209	0.2116	0.1070	0.0498	0.0264

SAR, Z Axis Scan (X = −8, Y = 31)
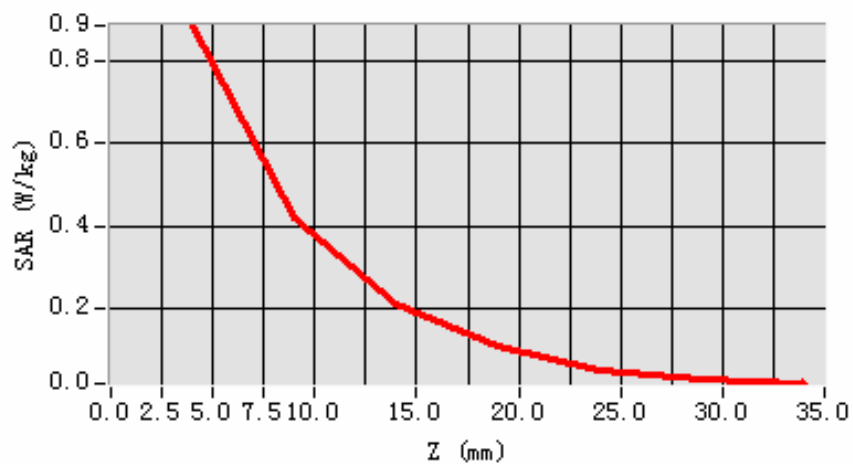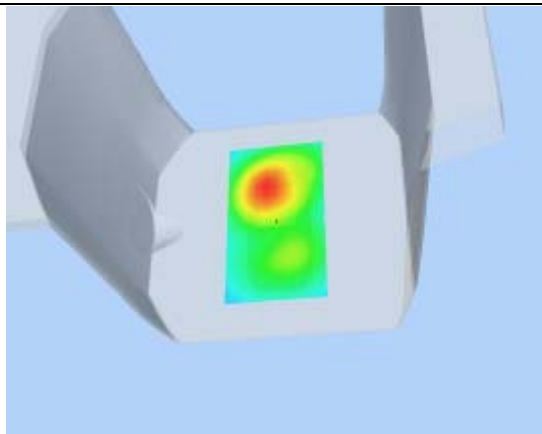
3D sceen shot	Hot spot position
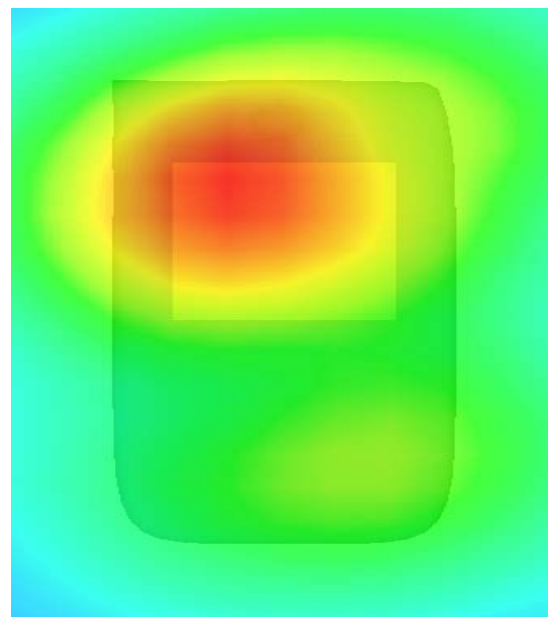
MEASUREMENT 38

Type: Phone measurement (Complete)
    Area scan resolution: dx=8mm,dy=8mm
    Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 27/4/2011
Measurement duration: 9 minutes 16 seconds

A. Experimental conditions.

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

B. SAR Measurement Results

Higher Band SAR (Channel 9538):

Frequency (MHz)	1907.000000
Relative permittivity (real part)	51.341000
Relative permittivity	15.877050
Conductivity (S/m)	1.682085
Power Drift (%)	0.620000
Ambient Temperature:	23.0°C
Liquid Temperature:	22.4°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:1

SURFACE SAR	VOLUME SAR
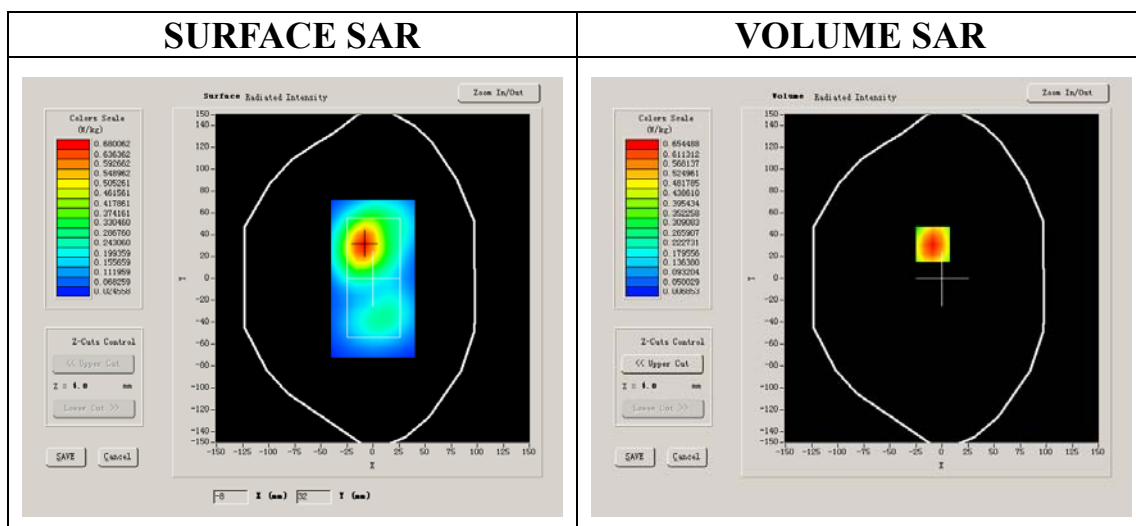
Maximum location: X=-9.00, Y=31.00

SAR 10g (W/Kg)	0.395087
SAR 1g (W/Kg)	0.740695

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.7766	0.3863	0.1861	0.0899	0.0451	0.0285

SAR, Z Axis Scan (X = -9, Y = 31)
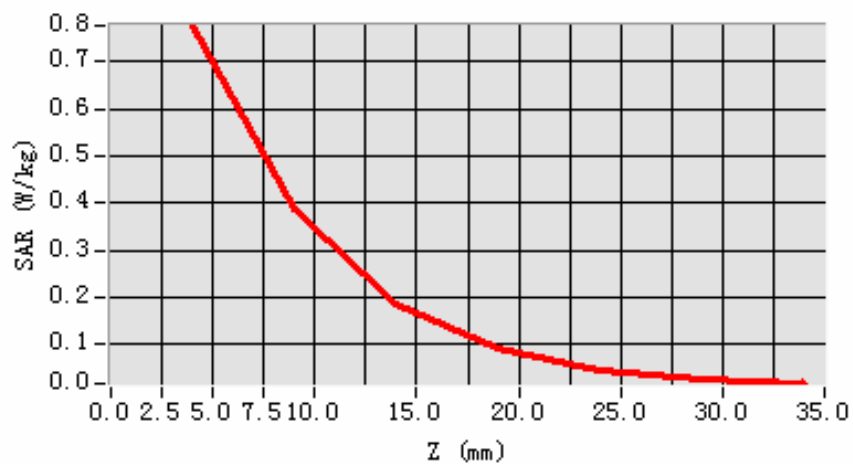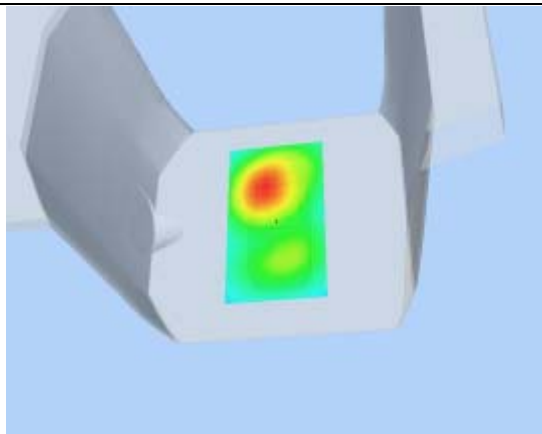
3D sceen shot	Hot spot position
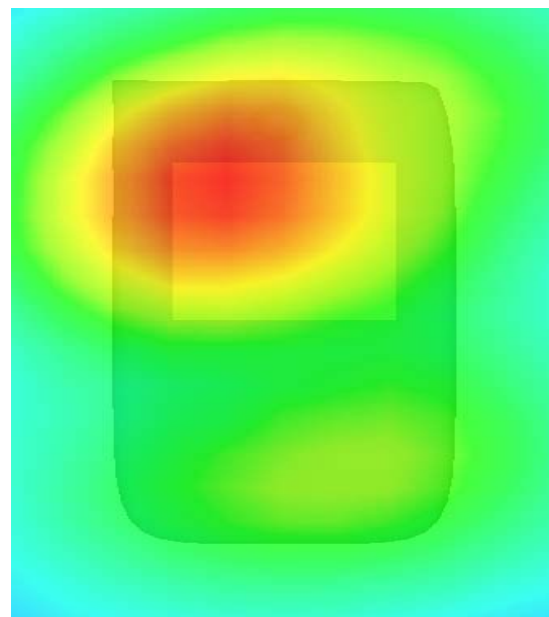
MEASUREMENT 39

Type: Phone measurement (Complete)
   Area scan resolution: dx=8mm,dy=8mm
   Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 27/4/2011
Measurement duration: 9 minutes 11 seconds

A. Experimental conditions.

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

B. SAR Measurement Results

Middle Band SAR (Channel 9400):

Frequency (MHz)	1880.000000
Relative permittivity (real part)	51.341000
Relative permittivity	15.877050
Conductivity (S/m)	1.658270
Power Drift (%)	-0.490000
Ambient Temperature:	23.0°C
Liquid Temperature:	22.4°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:1

SURFACE SAR	VOLUME SAR
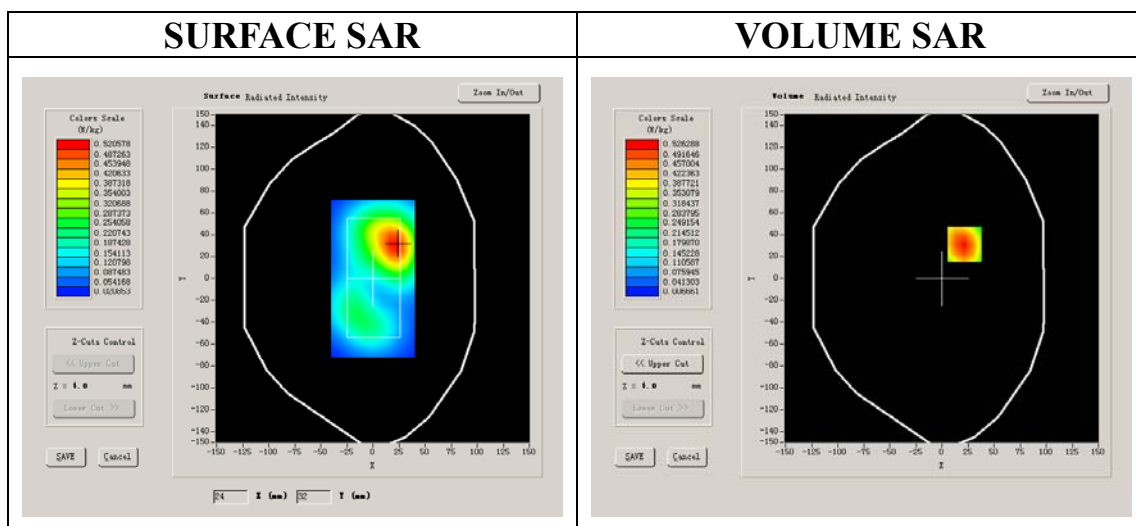
Maximum location: X=22.00, Y=31.00

SAR 10g (W/Kg)	0.324920
SAR 1g (W/Kg)	0.604772

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.6316	0.3071	0.1564	0.0770	0.0423	0.0188
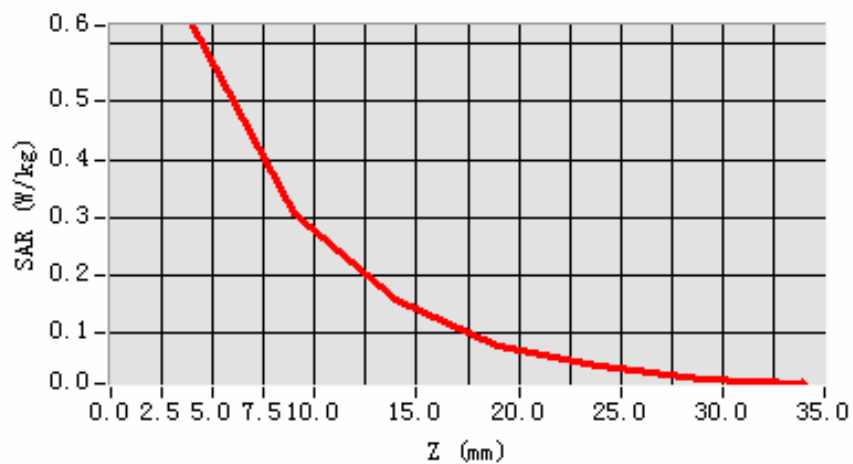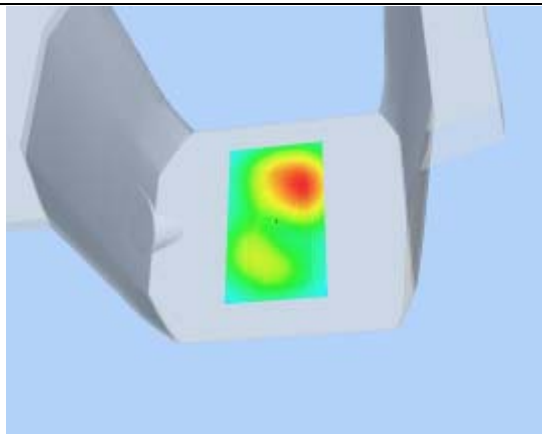
3D sceen shot	Hot spot position
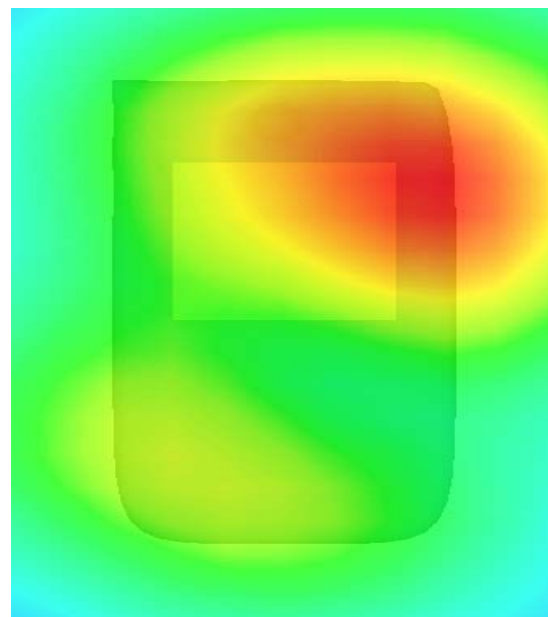
MEASUREMENT 40

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 27/4/2011
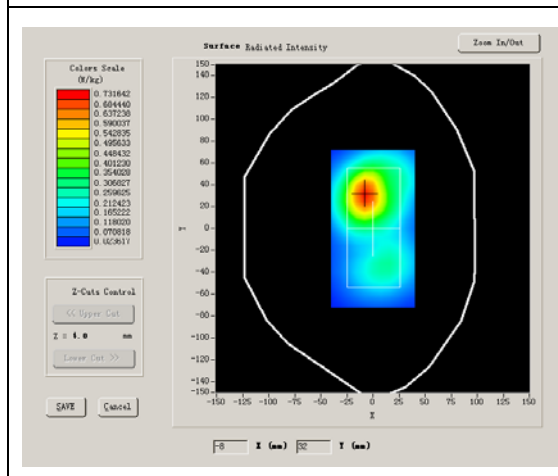Measurement duration: 9 minutes 16 seconds

A. Experimental conditions.

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

B. SAR Measurement Results

Middle Band SAR (Channel 9400):

Frequency (MHz)	1880.000000
Relative permittivity (real part)	51.341000
Relative permittivity	15.877050
Conductivity (S/m)	1.658270
Power Drift (%)	0.730000
Ambient Temperature:	23.0°C
Liquid Temperature:	22.4°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:1

SURFACE SAR	VOLUME SAR

Maximum location: X=-8.00, Y=31.00

SAR 10g (W/Kg)	0.363778
SAR 1g (W/Kg)	0.714578

Z Axis Scan

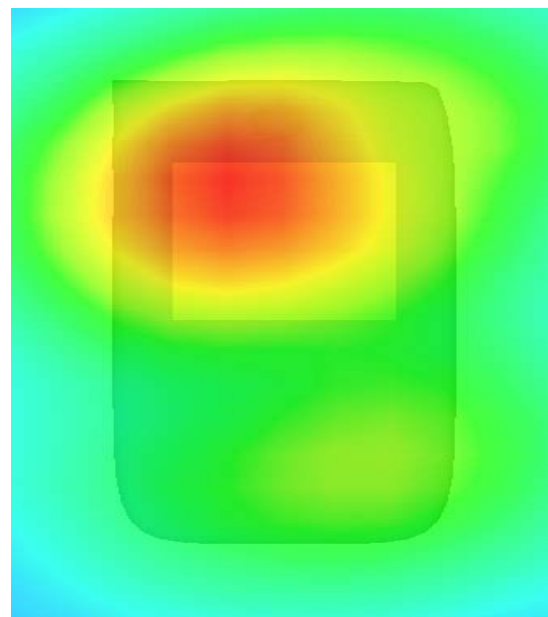| Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.8854	0.4209	0.2116	0.1070	0.0498	0.0264

SAR, Z Axis Scan (X = -8, Y = 31)

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: 27/4/2011
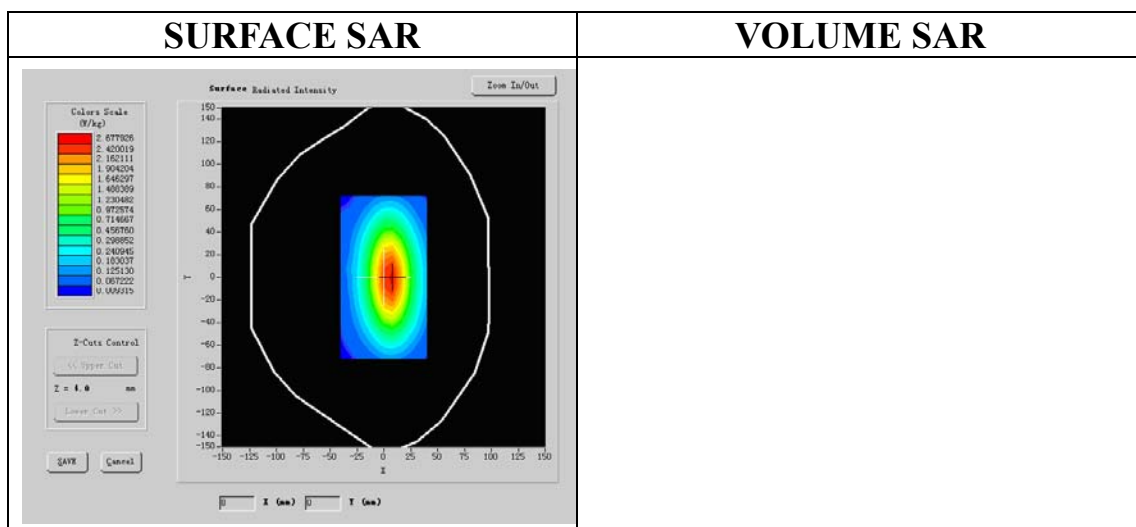Measurement duration: 13 minutes 27 seconds

A. Experimental conditions.

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

B. SAR Measurement Results

Band SAR

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

SURFACE SAR	VOLUME SAR

Maximum location: X=5.00, Y=1.00

SAR 10g (W/Kg)	1.715223
SAR 1g (W/Kg)	2.677926

Z Axis Scan

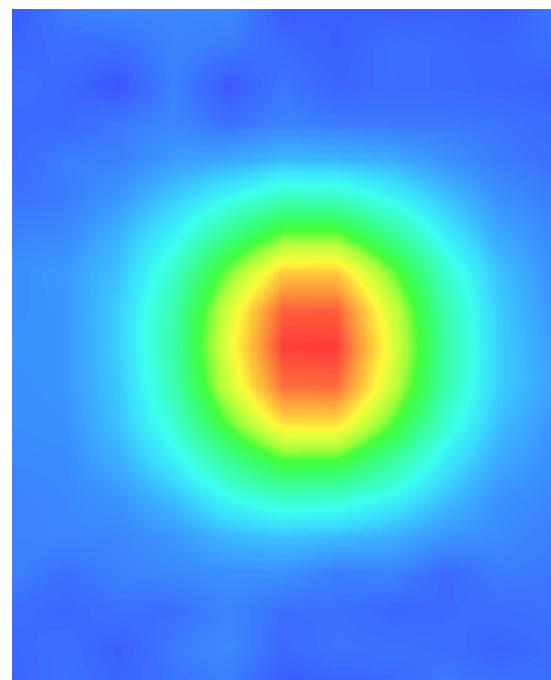| Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	2.6486	1.2069	0.5583	0.3002

SAR, Z Axis Scan (X = 5, Y = 1)

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: 27/4/2011
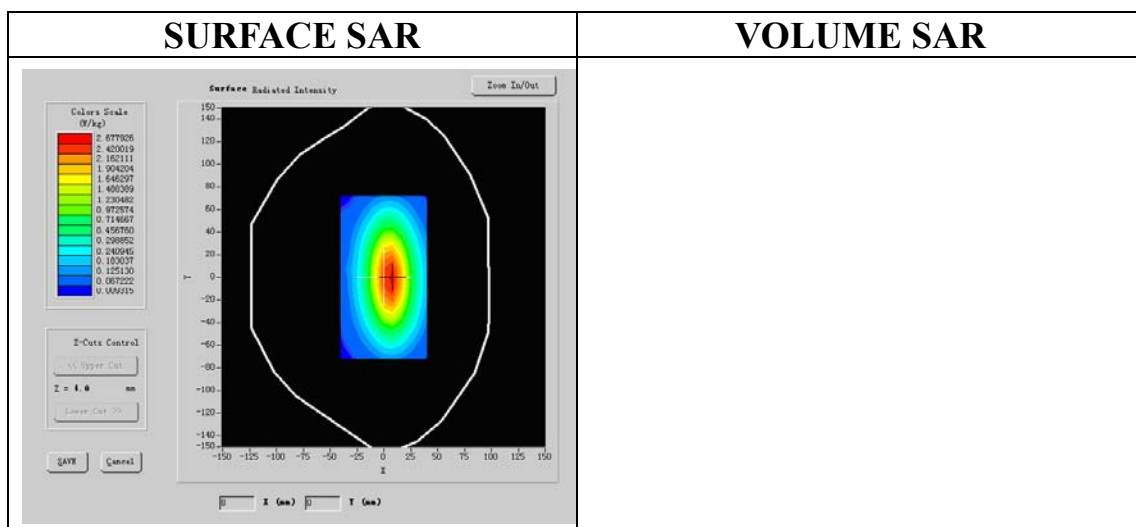Measurement duration: 13 minutes 27 seconds

A. Experimental conditions.

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

B. SAR Measurement Results

Band SAR

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

SURFACE SAR	VOLUME SAR

Maximum location: X=5.00, Y=1.00

SAR 10g (W/Kg)	1.715223
SAR 1g (W/Kg)	2.677926

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	2.6486	1.2069	0.5583	0.3002

SAR, Z Axis Scan (X = 5, Y = 1)

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: 27/4/2011
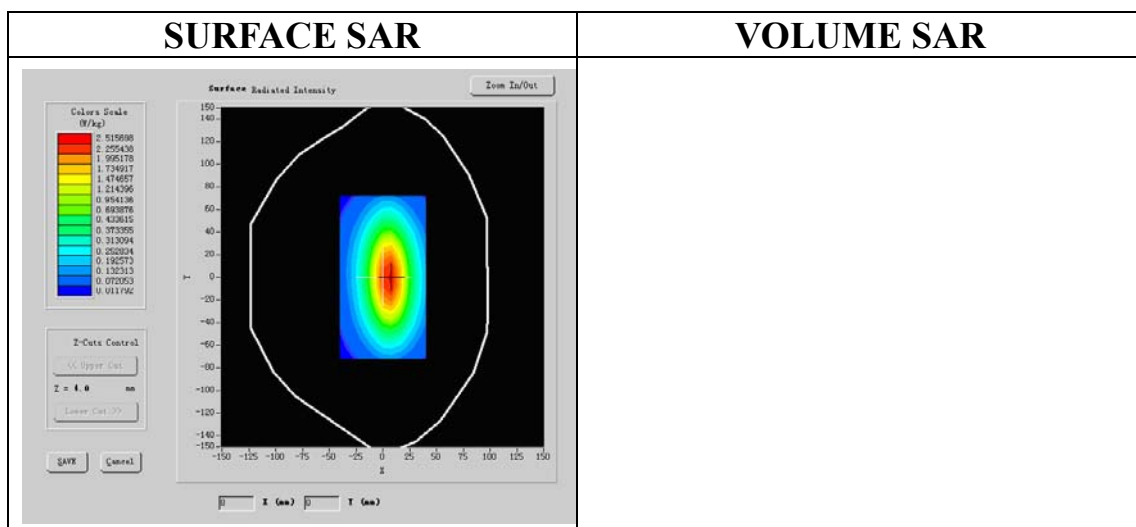Measurement duration: 13 minutes 27 seconds

A. Experimental conditions.

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

B. SAR Measurement Results

Band SAR

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

SURFACE SAR	VOLUME SAR

Maximum location: X=5.00, Y=1.00

SAR 10g (W/Kg)	4.910003
SAR 1g (W/Kg)	8.455521

Z Axis Scan

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

3D sceen shot	Hot spot position

System Performance Check Data(Body)

Type: Phone measurement (Complete)

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

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

Date of measurement: 27/4/2011

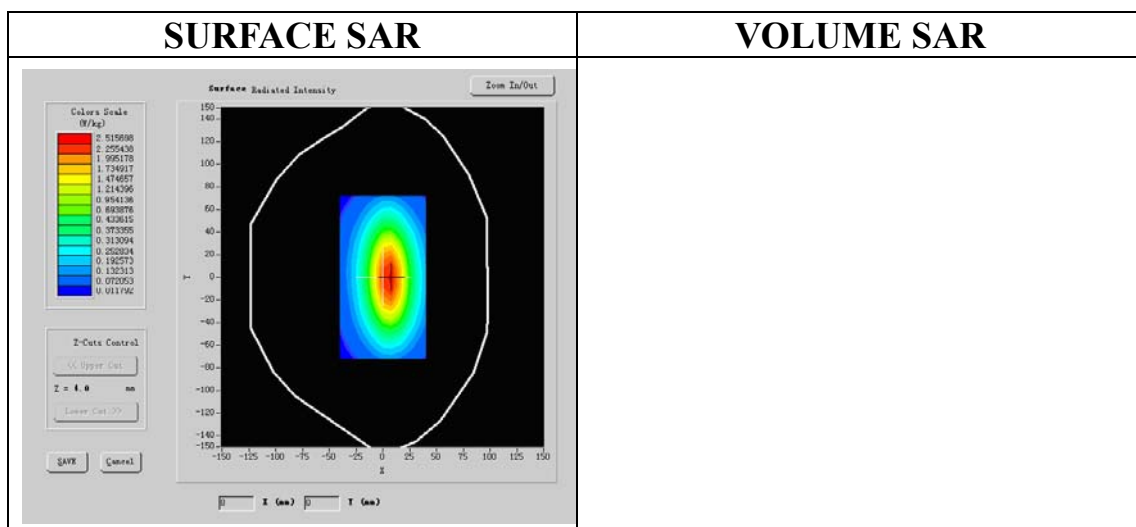Measurement duration: 13 minutes 27 seconds

A. Experimental conditions.

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

B. SAR Measurement Results

Band SAR

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

SURFACE SAR	VOLUME SAR

Maximum location: X=5.00, Y=1.00

SAR 10g (W/Kg)	4.910003
SAR 1g (W/Kg)	8.455521

Z Axis Scan

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

3D sceen shot	Hot spot position