Report No.:SZ11110138S02

SAR TEST REPORT

Issued to

shenzhen xinjida technology co., ltd

For

anti radiation silicone case

Model Name	:	xjd-ip4s-001
Trade Name	:	cellsafe
Brand Name	:	cellsafe
Standard	:	EN 50360: 2001 EN 62209-1: 2006 EN 62311:2008
Test date	:	2011-12-13
Issue date	:	2011-12-15

by

Shenzhen MORLAB Communication Technology Co., Ltd.

Tested by	Zhu Zhan	*Approved by*	Wei Yanqian	*Review by*	Samuel Peng
Date	2011.12.15	*Date*		*Date*	2011.12.15

Shenzhen MORLAB Communication Technology Co., Ltd. Tel: +86 755 61281201 Fax: +86 755 86130218
3 F, Electronic Testing Building, Shahe Road, Xili, Nanshan Districe, Shenzhen, 518055 P. R. China

DIRECTORY

Change History		
Issue	Date	Reason for change
1.0	Dec.15, 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

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)	2011-9-26	1year
3	Voltmeter	Keithley (2000, SN:1000572)	2011-9-24	1year
4	Synthetizer	Rohde&Schwarz (SML_03, SN:101868)	2011-9-24	1year
5	Amplifier	Nucl udes (ALB216, SN:10800)	2011-9-24	1year
6	Power Meter	Rohde&Schwarz (NRVD, SN:101066)	2011-9-24	1year
7	Probe	Satimo (SN:SN_3708_EP80)	2011-9-24	1year
8	Phantom	Satimo (SN:SN_36_08_SAM62)	2011-9-24	1year
9	Liquid	Satimo (Last Calibration:2011-12-13)	NA	NA
10	Dipole 835MHz	Satimo (SN 36/08 DIPC 99)	2011-9-23	1year
11	Dipole 1800MHz	Satimo (SN 36/08 DIPF 101)	2011-9-23	1year

2. Technical Information

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

2.1. Identification of Applicant

Company Name: shenzhen xinjida technology co.,ltd
Address: weiyecheng industrial xintian village guanlan town baoan shenzhen china

2.2. Identification of Manufacturer

Company Name: shenzhen xinjida technology co.,ltd
Address: weiyecheng industrial xintian village guanlan town baoan shenzhen china

2.3. Equipment Under Test (EUT)

Model Name: xjd-ip4s-001
Trade Name: cellsafe
Brand Name: cellsafe

2.3.1. Photographs of the EUT

Please see for photographs of the EUT.

2.4. Applied Reference Documents

Leading reference documents for testing:

No.	Identity	Document Title
1	**EN 50360: 2001**	Product standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from GSM Mobile phones.
2	**EN 62209-1 : 2006**	Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Human models, instrumentation, and procedures - Part 1: Procedure to determine the specific absorption rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)
3	**EN 62311:2008**	Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz – 300 GHz)

2.5. Test Environment/Conditions

Normal Temperature (NT):	20 ... 25 °C
Relative Humidity:	30 ... 75 %
Air Pressure:	980 ... 1020 hPa
Test frequency:	GSM 900MHz ;DCS 1800MHz WCDMA2100
Operation mode:	Call established
Power Level:	GSM 900 MHz Maximum output power(level 5) DCS 1800 MHz Maximum output power(level 0) WCDMA2100 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 975, 38 and 124 respectively in the case of GSM 900 MHz, or to 512, 698 and 885 respectively in the case of DCS 1800 MHz or to 9612, 9750 and 9888 respectively in the case of WCDMA2100. The EUT is commanded to operate at maximum transmitting power.
The EUT shall use its internal transmitter. The antenna(s), battery and accessories shall be those specified by the manufacturer. The EUT battery must be fully charged and checked periodically during the test to ascertain uniform power output. If a wireless link is used, the antenna connected to the output of the base station simulator shall be placed at least 50 cm away from the handset.
The signal transmitted by the simulator to the antenna feeding point shall be lower than the output power level of the handset by at least 35 dB.

3. Specific Absorption Rate (SAR)

3.1. Introduction

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

3.2. SAR Definition

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

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

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

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

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

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

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

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

4. SAR Measurement Setup

4.1. The Measurement System

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

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

The following figure shows the system.

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

4.2. Probe

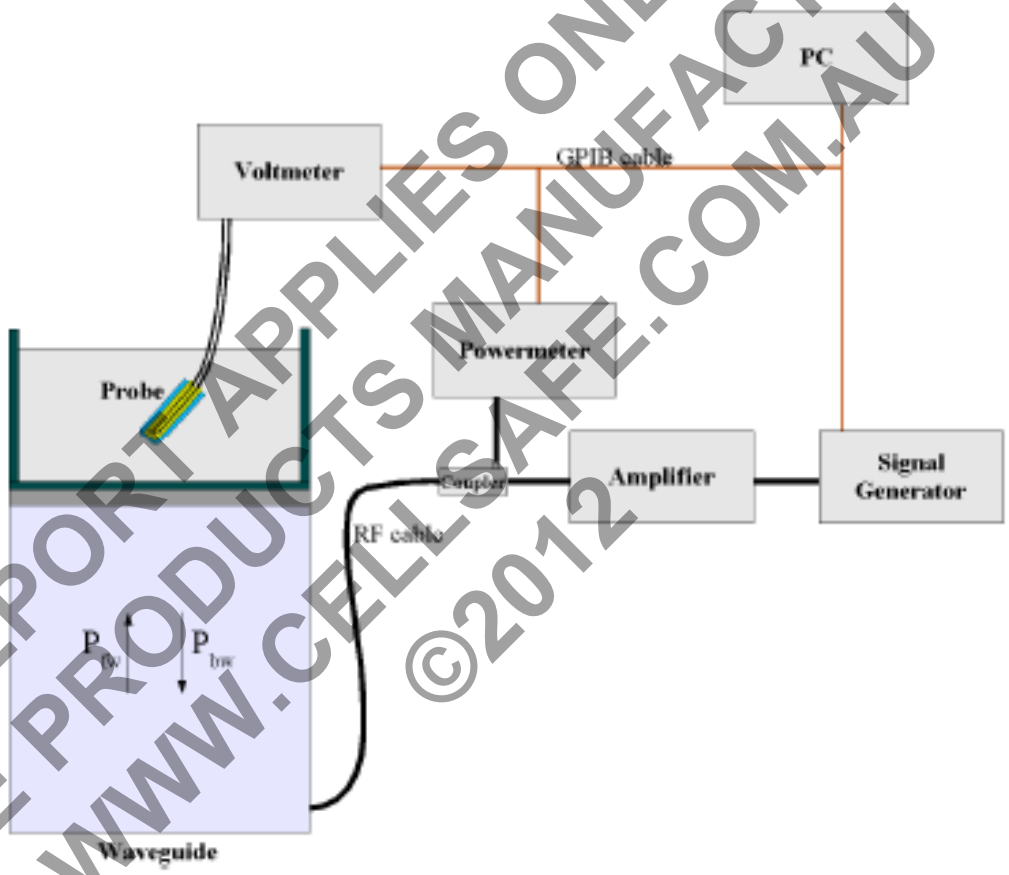
For the measurements the Specific Dosimetric E-Field Probe SN 37/08 EP80 with following specifications is used

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

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

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

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



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

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

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

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

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

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

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

where DCP is the diode compression point in mV.

4.3. Phantom

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

4.4. Device Holder

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

Device holder

System Material	Permittivity	Loss Tangent
Delrin	3.7	0.005

5. Tissue Simulating Liquids

Simulating liquid used for testing at frequencies of 835MHz and 1800MHz, which are mainly made of sugar, salt and water. Approximately 20litres are needed for an upright head compared to about 25 liter for a horizontal bath phantom. The liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is (head SAR)or from the flat phantom to the liquid top surface (body SAR) is 15cm.

Following are the recipes for one liter of head tissue simulating liquid for frequency band 835 MHz and 1800 MHz.

Ingredients (% by weight)	Frequency Band 835MHz	Frequency Band 1800MHz
Tissue Type	Head	Head
Water	41.45	55.36
Salt(NaCl)	1.45	0.35
Sugar	56.0	30.45
HEC	1.0	0.0
Bactericide	0.1	0.0
Triton	0.0	0.0
DGBE	0.0	13.84
Acticide SPX	0.0	0.0
Dielectric Constant	42.45	41.00
Conductivity (S/m)	0.91	1.38

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 (Dec.13)	835 MHZ	41.675999	0.894409
Target value	1800 MHZ	40	1.40
Validation value (Dec.13)	1800 MHZ	38.509998	1.436111

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	√3	0.7	0.7	1.01	1.01	
Hemispherical Isotropy	E.2.2	4.0	R	√3	0.7	0.7	1.62	1.62	
Boundary effect	E.2.3	1.0	R	√3	1	1	0.58	0.58	
Linearity	E.2.4	5.0	R	√3	1	1	2.89	2.89	
System detection limits	E.2.5	1.0	R	√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	√3	1	1	1.73	1.73	
Integration Time	E.2.8	2.0	R	√3	1	1	1.15	1.15	
RF ambient Conditions	E.6.1	3.0	R	√3	1	1	1.73	1.73	
Probe positioner Mechanical Tolerance	E.6.2	2.0	R	√3	1	1	1.15	1.15	
Probe positioning with respect to Phantom Shell	E.6.3	0.05	R	√3	1	1	0.03	0.03	
Extrapolation, interpolation and integration Algoritms for Max. SAR Evaluation	E.5.2	5.0	R	√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	√3	1	1	1.58	1.58	
Phantom and Tissue Parameters									
Phantom Uncertainty (Shape and thickness tolerances)	E.3.1	0.05	R	√3	1	1	0.03	0.03	
Liquid conductivity - deviation from target value	E.3.2	4.57	R	√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	√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				12.52	11.71	
Expanded Uncertainty (95% Confidence interval)			k				25.05	23.42	

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	√3	0.7	0.7	1.01	1.01	
Hemispherical Isotropy	E.2.2	4.0	R	√3	0.7	0.7	1.62	1.62	
Boundary effect	E.2.3	1.0	R	√3	1	1	0.58	0.58	
Linearity	E.2.4	5.0	R	√3	1	1	2.89	2.89	
System detection limits	E.2.5	1.0	R	√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	√3	1	1	1.73	1.73	
Integration Time	E.2.8	2.0	R	√3	1	1	1.15	1.15	
RF ambient Conditions	E.6.1	3.0	R	√3	1	1	1.73	1.73	
Probe positioner Mechanical Tolerance	E.6.2	2.0	R	√3	1	1	1.15	1.15	
Probe positioning with respect to Phantom Shell	E.6.3	0.05	R	√3	1	1	0.03	0.03	
Extrapolation, interpolation and integration Algoritms for Max. SAR Evaluation	E.5.2	5.0	R	√3	1	1	2.89	2.89	
Dipole									
Dipole axis to liquid Distance	8,E.4.2	1.00	N	√3	1	1	0.58	0.58	N-1
Input power and SAR drift measurement	8,6.6.2	2.74	R	√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				11.50	10.61	
Expanded Uncertainty (95% Confidence interval)			k				23.00	21.21	

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 SATIMO, the validation data should be within its specification of 10 %.

Frequency	835MHz	1800MHz
Target value（10g）	6.2 W/Kg	19.8 W/Kg
250 mW input power	1.615 W/Kg	4.823 W/Kg
Test value（10g）	6.460 W/Kg	19.292 W/Kg

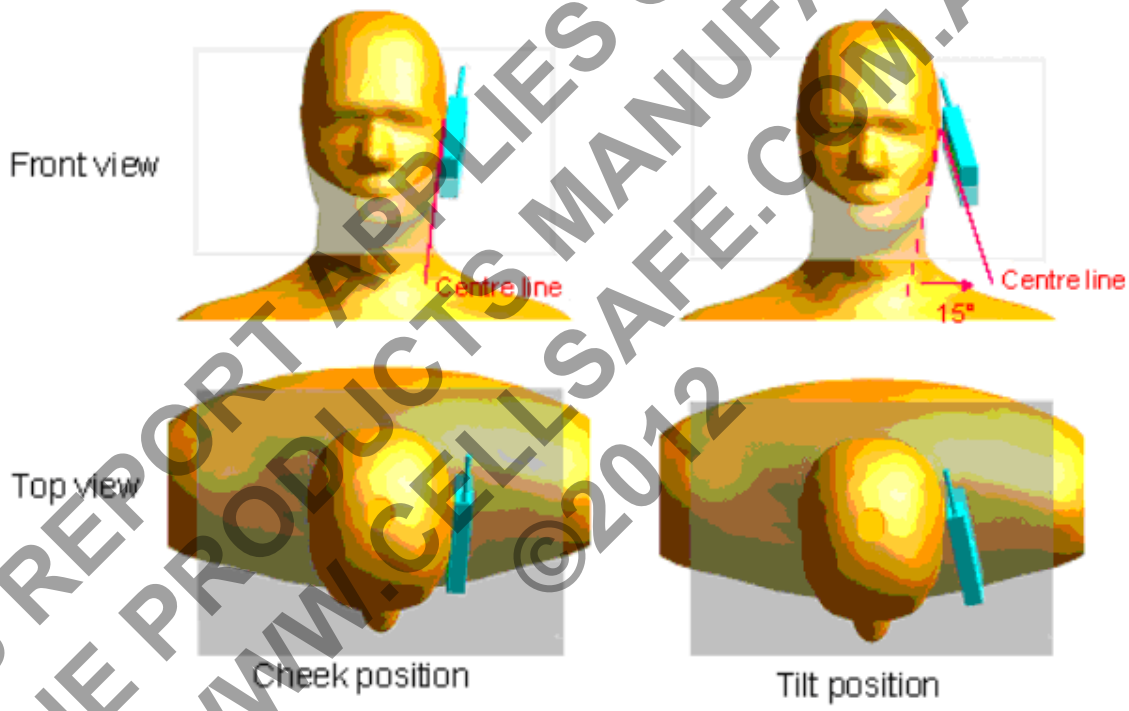
Note: System checks the specific test data please see page 49-52.

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. 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.

8.3. 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. Test Results List

Table 1(GSM 900MHz Band)

Temperature: 21.0~23.8°C, humidity: 54~60%.					
Phantom Configurations	Device Test Positions	Antenna Positions	SAR(W/Kg), 10g value		
			Device Test channel		
			Channel 975	Channel 38	Channel 124
Right Side Of Head	Cheek/Touch	Internal	/	0.588	/
Left Side Of Head	Cheek/Touch	Internal	/	0.615	/

Table 2 (GSM 1800MHz Band)

Temperature: 21.0~23.8°C, humidity: 54~60%.					
Phantom Configurations	Device Test Positions	Antenna Positions	SAR(W/Kg), 10g value		
			Device Test channel, Frequency		
			Channel 512	Channel 698	Channel 885
Right Side Of Head	Cheek/Touch	Internal	/	0.465	/
Left Side Of Head	Cheek/Touch	Internal	/	0.576	/

Table 3 (WCDMA 2100MHz Band)

Temperature: 21.0~23.8°C, humidity: 54~60%.					
Phantom Configurations	Device Test Positions	Antenna Positions	SAR(W/Kg), 10g value		
			Device Test channel, Frequency		
			Channel 9612	Channel 9750	Channel 9888
Right Side Of Head	Cheek/Touch	Internal	/	1.069	/
Left Side Of Head	Cheek/Touch	Internal	/	0.984	/

Table 4 (GSM 900MHz Band)

Temperature: 21.0~23.8°C, humidity: 54~60%.					
Phantom Configurations	Device Test Positions	Antenna Positions	SAR(W/Kg), 10g value		
			Device Test channel		
			Channel 975	Channel 38	Channel 124
Right Side Of Head	Cheek/Touch	Internal	/	0.016	/
Left Side Of Head	Cheek/Touch	Internal	/	0.035	/

Table 5 (GSM 1800MHz Band)

Temperature: 21.0~23.8°C, humidity: 54~60%.					
Phantom Configurations	Device Test Positions	Antenna Positions	SAR(W/Kg), 10g value		
			Device Test channel, Frequency		
			Channel 512	Channel 698	Channel 885
Right Side Of Head	Cheek/Touch	Internal	/	0.149	/
Left Side Of Head	Cheek/Touch	Internal	/	0.306	/

Table 6 (WCDMA 2100MHz Band)

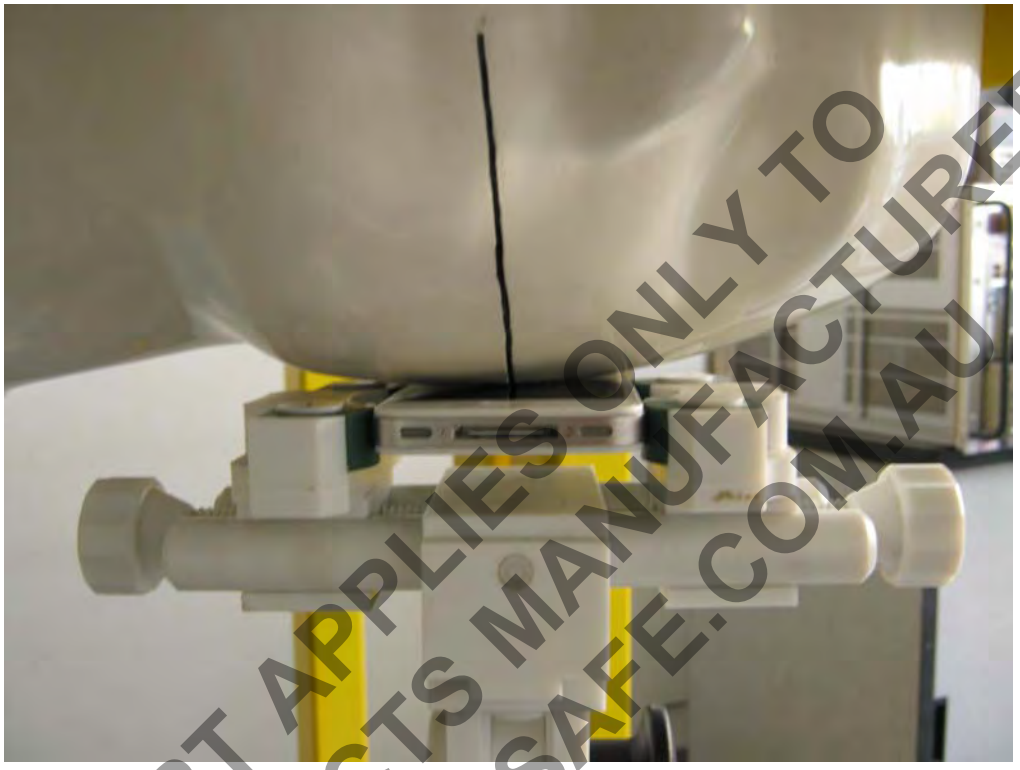
Temperature: 21.0~23.8°C, humidity: 54~60%.					
Phantom Configurations	Device Test Positions	Antenna Positions	SAR(W/Kg), 10g value		
			Device Test channel, Frequency		
			Channel 9612	Channel 9750	Channel 9888
Right Side Of Head	Cheek/Touch	Internal	/	0.267	/
Left Side Of Head	Cheek/Touch	Internal	/	0.215	/

Note: 1.Results in Table1, Table 2 and Table 3 are tested with cellphone alone.

2. Results in Table4, Table5 and Table 6 are tested with cellphone put into the case.

Annex A Photographs of the EUT

1 EUT Left Head Touch/Cheek Position



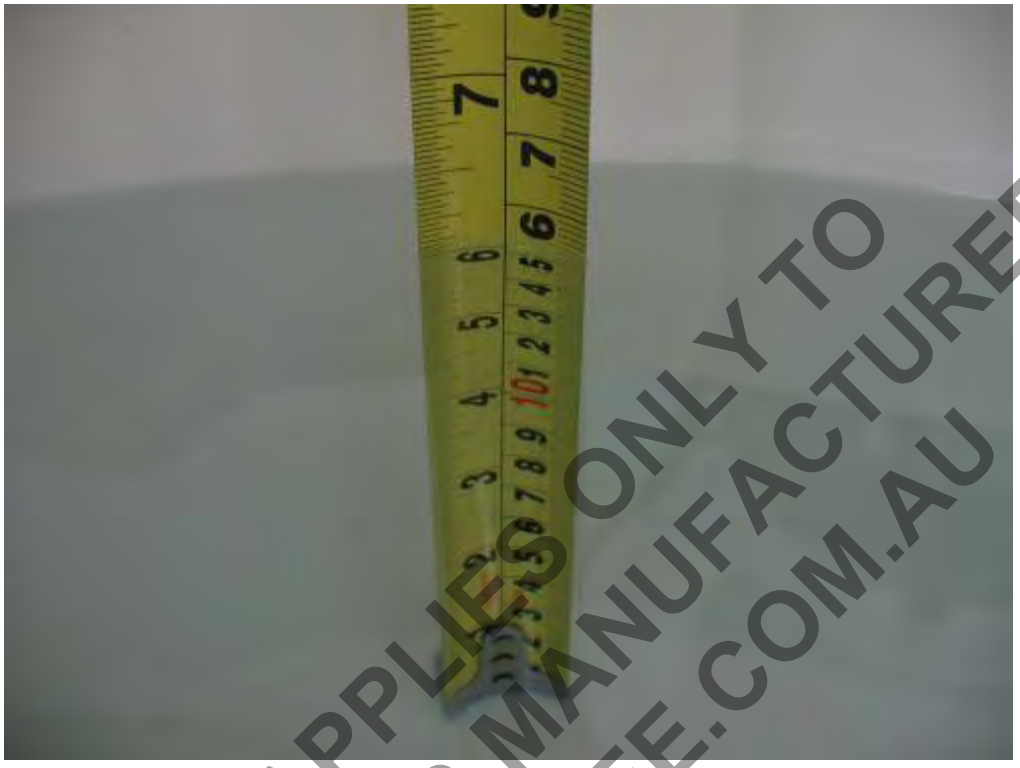
2 EUT Left Head Touch/Cheek Position

3 EUT Right Head Touch/Cheek Position

4 EUT Right Head Touch/Cheek Position

5 ETU view

Liquid Level Photo



Annex B Graph Test Results

BAND	PARAMETERS
GSM900	Measurement 1: Right Head with Cheek device position on Middle Channel in GSM mode (cellphone alone) Measurement 2: Left Head with Cheek device position on Middle Channel in GSM mode (cellphone alone) Measurement 3: Right Head with Cheek device position on Middle Channel in GSM mode (cellphone put into the case) Measurement 4: Left Head with Cheek device position on Middle Channel in GSM mode (cellphone put into the case)
GSM1800	Measurement 5: Right Head with Cheek device position on Middle Channel in GSM mode (cellphone alone) Measurement 6: Left Head with Cheek device position on Middle Channel in GSM mode (cellphone alone) Measurement 7: Right Head with Cheek device position on Middle Channel in GSM mode (cellphone put into the case) Measurement 8: Left Head with Cheek device position on Middle Channel in GSM mode (cellphone put into the case)
WCDMA 2100	Measurement 9: Right Head with Cheek device position on Middle Channel in WCDMA mode (cellphone alone) Measurement 10: Left Head with Cheek device position on Middle Channel in WCDMA mode (cellphone alone) Measurement 11: Right Head with Cheek device position on Middle Channel in WCDMA mode (cellphone put into the case) Measurement 12: Left Head with Cheek device position on Middle Channel in WCDMA mode (cellphone put into the case)

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: 13/12/2011
Measurement duration: 8 minutes 2 seconds

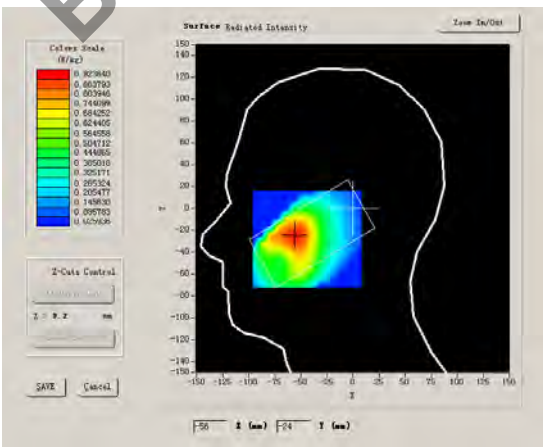
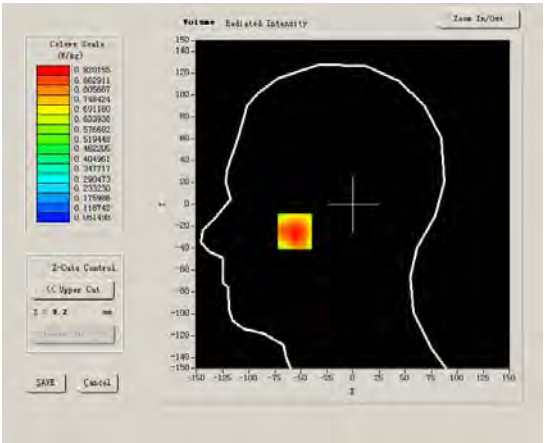
A. Experimental conditions.

Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Right head
Device Position	Cheek
Band	GSM900
Channels	Middle
Signal	GSM

B. SAR Measurement Results

Middle Band SAR (Channel 38):

Frequency (MHz)	897.599976
Relative permittivity (real part)	40.330002
Relative permittivity	19.219999
Conductivity (S/m)	0.958437
Power drift (%)	-0.790000
Ambient Temperature:	22.4°C
Liquid Temperature:	22.8°C
ConvF:	28.479, 25.214, 27.196
Crest factor:	1:8

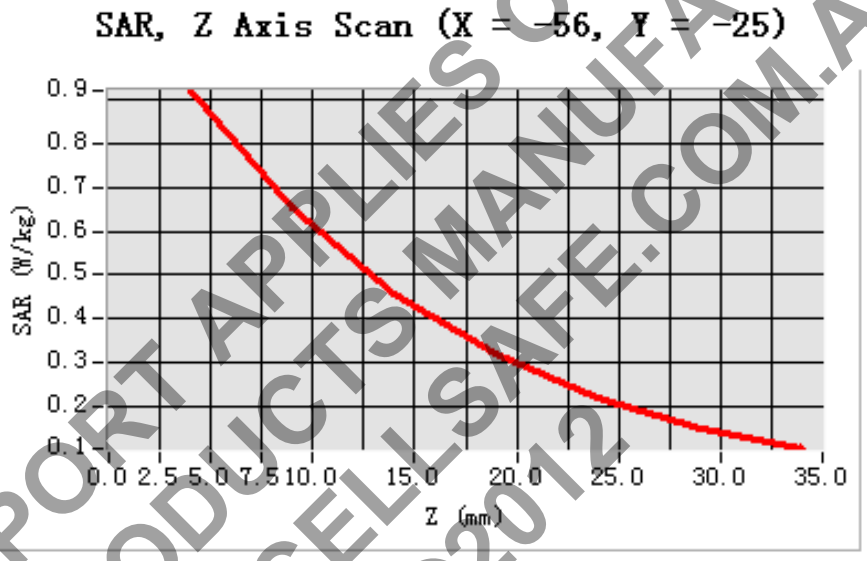
SURFACE SAR	VOLUME SAR
	

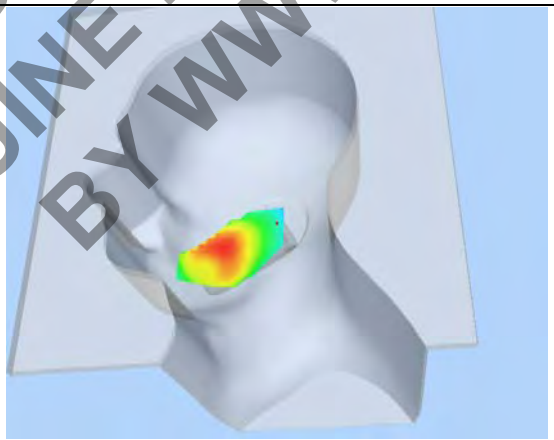
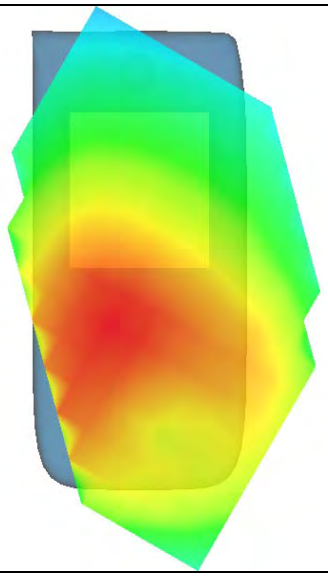
Maximum location: X=-56.00, Y=-25.00

SAR 10g (W/Kg)	0.588418
SAR 1g (W/Kg)	0.884065

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.9202	0.6558	0.4572	0.3205	0.2229	0.1520



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: 13/12/2011
Measurement duration: 7 minutes 31 seconds

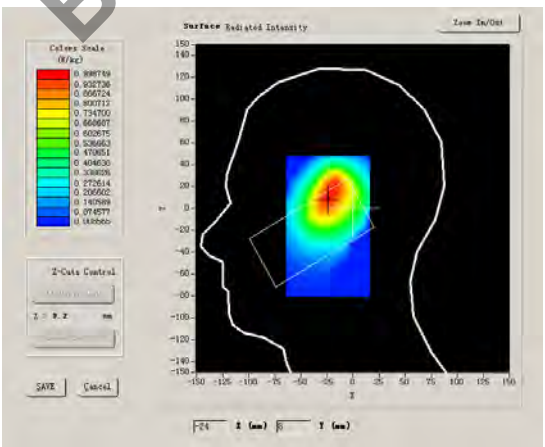
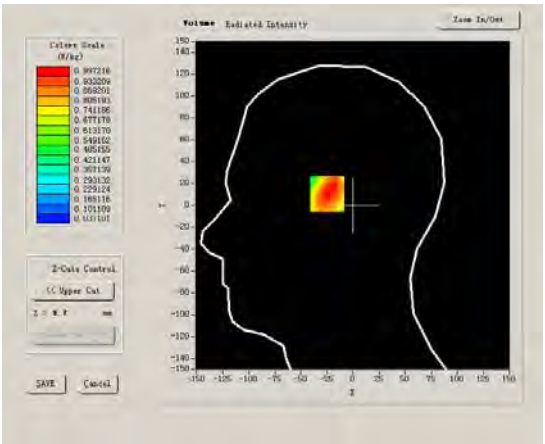
A. Experimental conditions.

Phantom File	zinf3.txt
Phantom	Left head
Device Position	Cheek
Band	GSM900
Channels	Middle
Signal	GSM

B. SAR Measurement Results

Middle Band SAR (Channel 38):

Frequency (MHz)	897.599976
Relative permittivity (real part)	40.330002
Relative permittivity	19.219999
Conductivity (S/m)	0.958437
Power drift (%)	-0.990000
Ambient Temperature:	22.4°C
Liquid Temperature:	22.8°C
ConvF:	28.479, 25.214, 27.196
Crest factor:	1:8

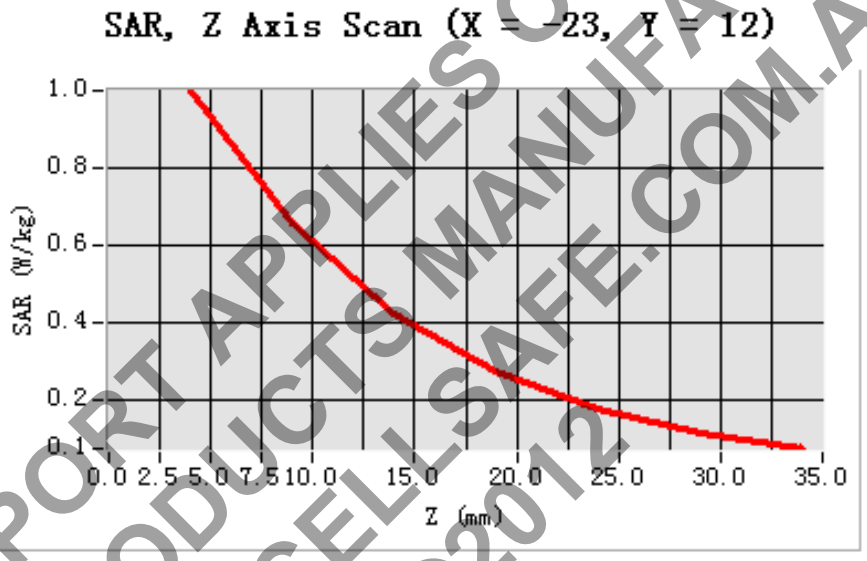
SURFACE SAR	VOLUME SAR
	

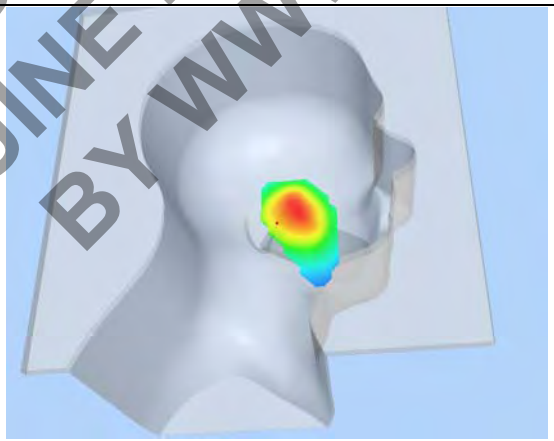
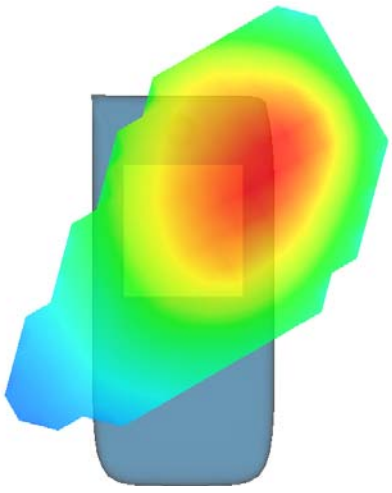
Maximum location: X=-23.00, Y=12.00

SAR 10g (W/Kg)	0.614621
SAR 1g (W/Kg)	0.976067

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.9972	0.6529	0.4223	0.2712	0.1783	0.1149



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: 13/12/2011
Measurement duration: 8 minutes 3 seconds

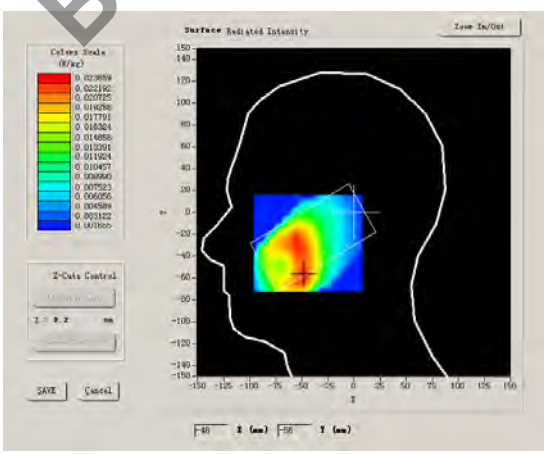
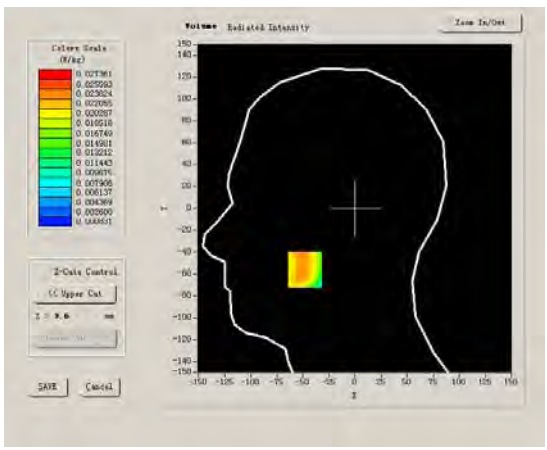
A. Experimental conditions.

Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Right head
Device Position	Cheek
Band	GSM900
Channels	Middle
Signal	GSM

B. SAR Measurement Results

Middle Band SAR (Channel 38):

Frequency (MHz)	897.599976
Relative permittivity (real part)	40.330002
Relative permittivity	19.219999
Conductivity (S/m)	0.958437
Power drift (%)	1.360000
Ambient Temperature:	22.4°C
Liquid Temperature:	22.8°C
ConvF:	28.479, 25.214, 27.196
Crest factor:	1:8

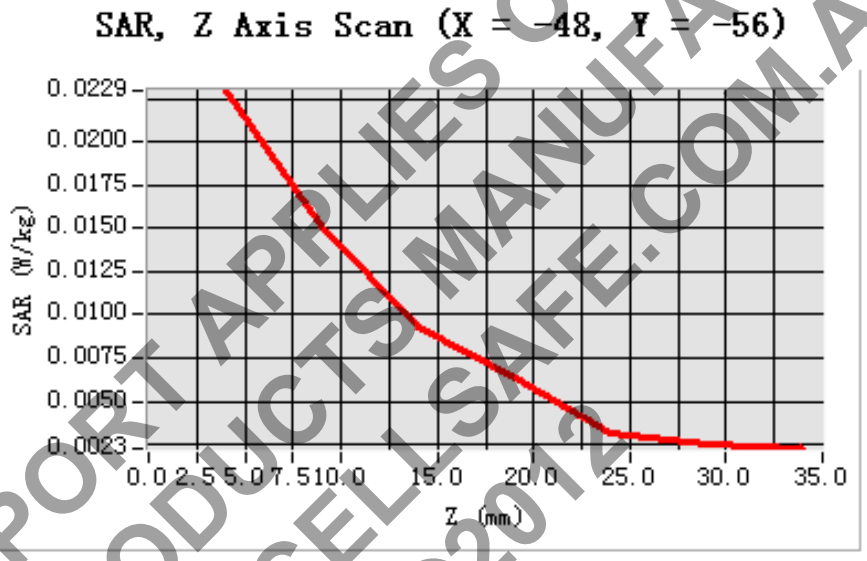
SURFACE SAR	VOLUME SAR
	

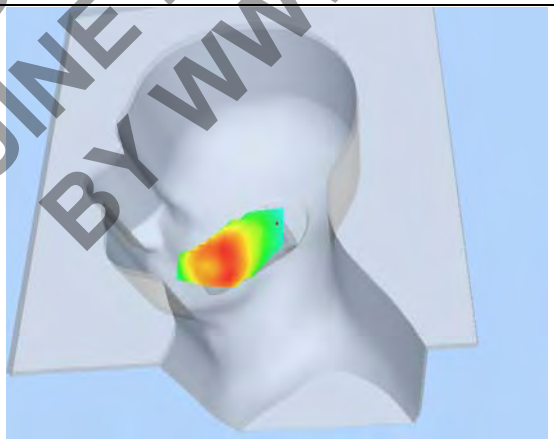
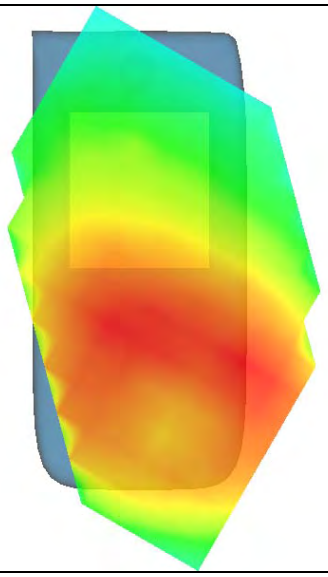
Maximum location: X=-48.00, Y=-56.00

SAR 10g (W/Kg)	0.015574
SAR 1g (W/Kg)	0.023398

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.0229	0.0151	0.0093	0.0064	0.0031	0.0025



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: 13/12/2011
Measurement duration: 7 minutes 54 seconds

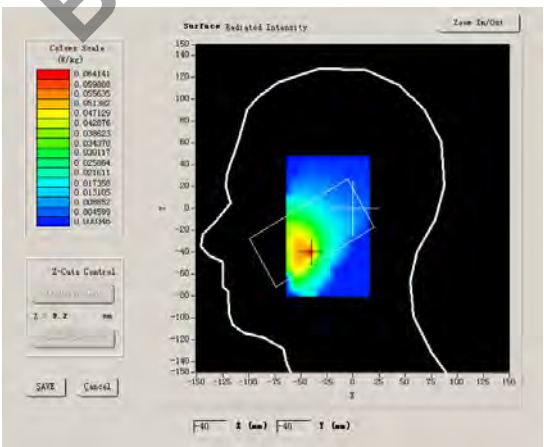
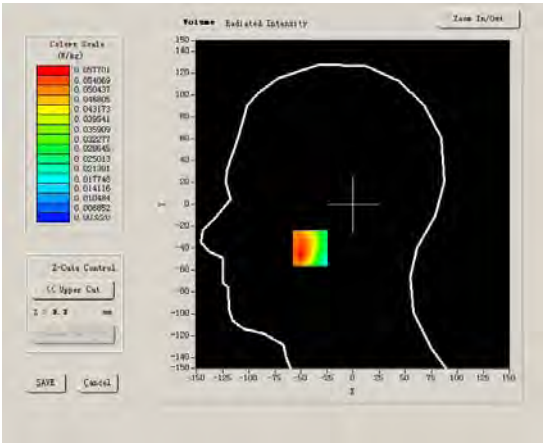
A. Experimental conditions.

Phantom File	zinf3.txt
Phantom	Left head
Device Position	Cheek
Band	GSM900
Channels	Middle
Signal	GSM

B. SAR Measurement Results

Middle Band SAR (Channel 38):

Frequency (MHz)	897.599976
Relative permittivity (real part)	40.330002
Relative permittivity	19.219999
Conductivity (S/m)	0.958437
Power drift (%)	-13.560000
Ambient Temperature:	22.4°C
Liquid Temperature:	22.8°C
ConvF:	28.479, 25.214, 27.196
Crest factor:	1:8

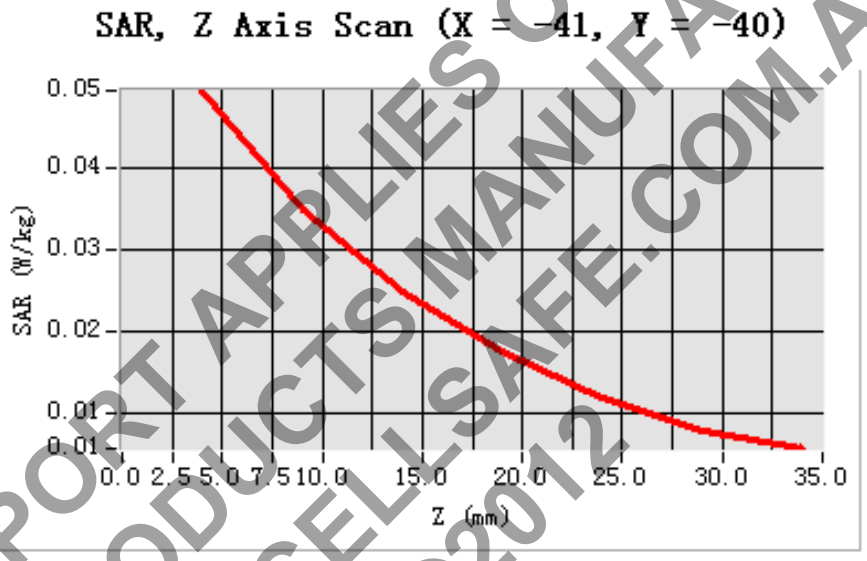
SURFACE SAR	VOLUME SAR
	

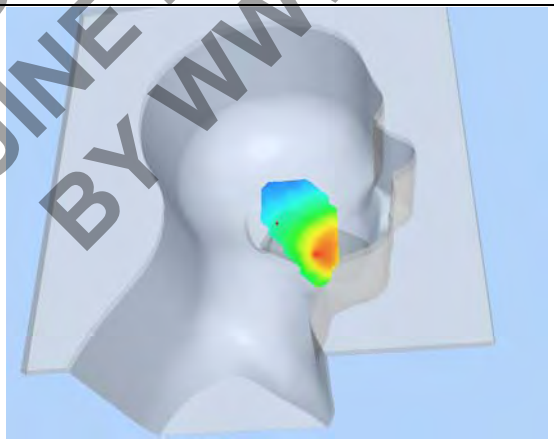
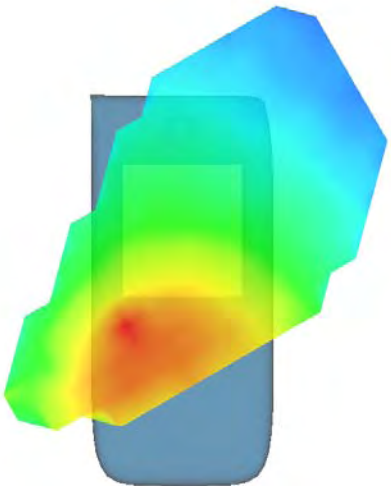
Maximum location: X=-41.00, Y=-40.00

SAR 10g (W/Kg)	0.034632
SAR 1g (W/Kg)	0.054042

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.0493	0.0348	0.0247	0.0177	0.0121	0.0079



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: 18/11/2011
Measurement duration: 7 minutes 59 seconds

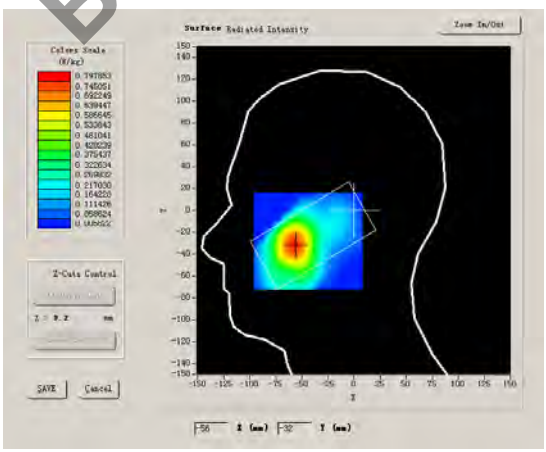
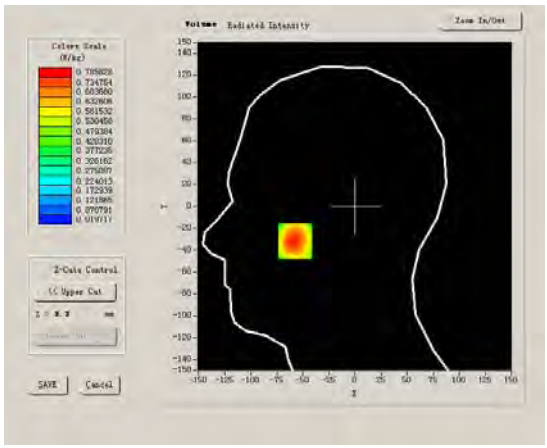
A. Experimental conditions.

Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Right head
Device Position	Cheek
Band	GSM1800
Channels	Middle
Signal	GSM

B. SAR Measurement Results

Middle Band SAR (Channel 698):

Frequency (MHz)	1747.400024
Relative permittivity (real part)	38.930000
Relative permittivity	13.610000
Conductivity (S/m)	1.321229
Power drift (%)	-0.810000
Ambient Temperature	22.4°C
Liquid Temperature	22.9°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:8

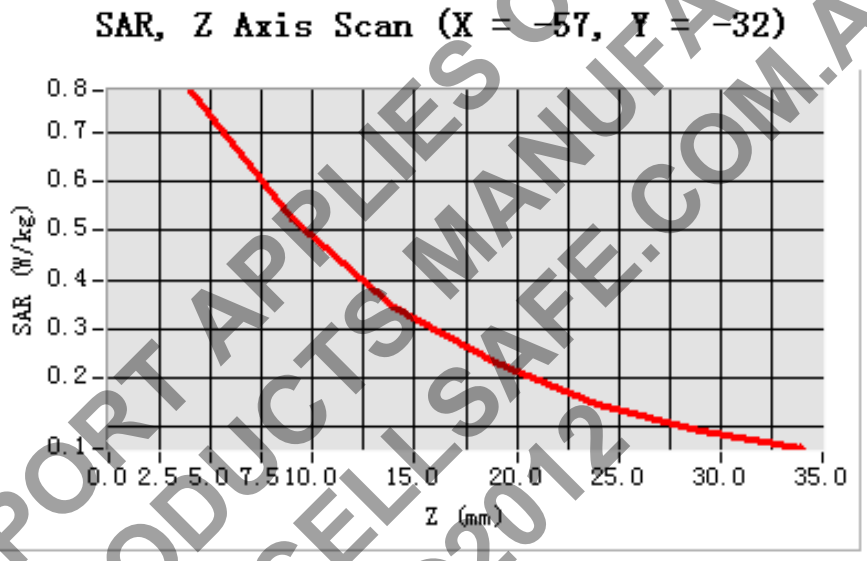
SURFACE SAR	VOLUME SAR
	

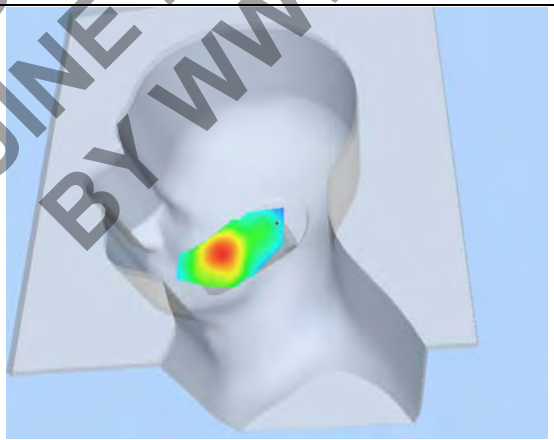
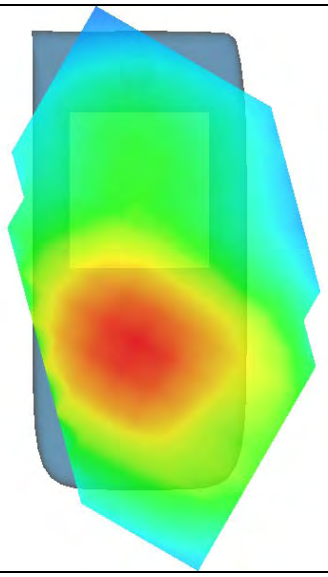
Maximum location: X=-57.00, Y=-32.00

SAR 10g (W/Kg)	0.465485
SAR 1g (W/Kg)	0.753664

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.7858	0.5240	0.3433	0.2322	0.1459	0.0927



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: 18/11/2011
Measurement duration: 8 minutes 7 seconds

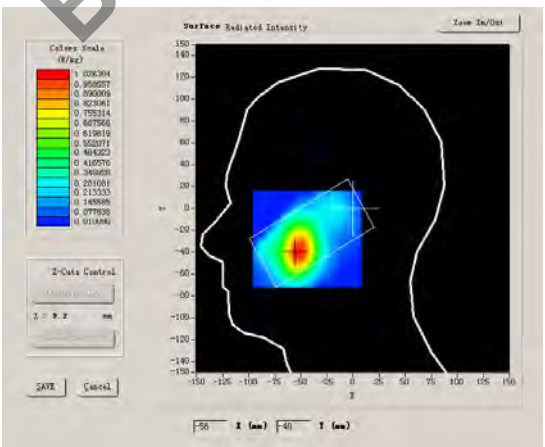
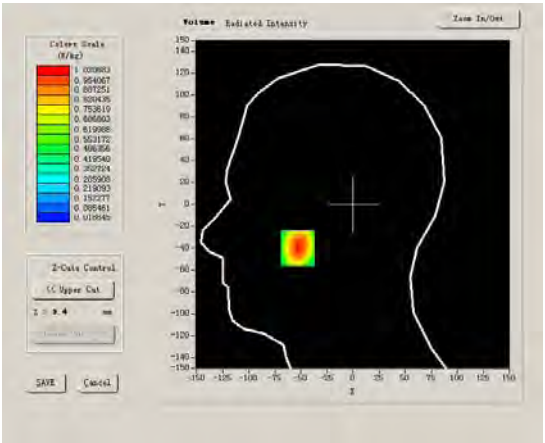
A. Experimental conditions.

Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Left head
Device Position	Cheek
Band	GSM1800
Channels	Middle
Signal	GSM

B. SAR Measurement Results

Middle Band SAR (Channel 698):

Frequency (MHz)	1747.400024
Relative permittivity (real part)	38.930000
Relative permittivity	13.610000
Conductivity (S/m)	1.321229
Power drift (%)	-3.310000
Ambient Temperature	22.4°C
Liquid Temperature	22.9°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:8

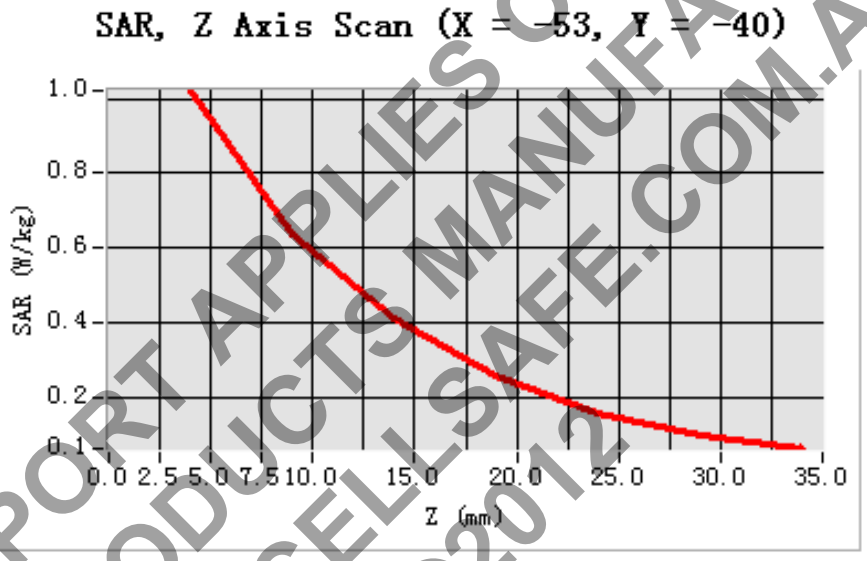
SURFACE SAR	VOLUME SAR
	

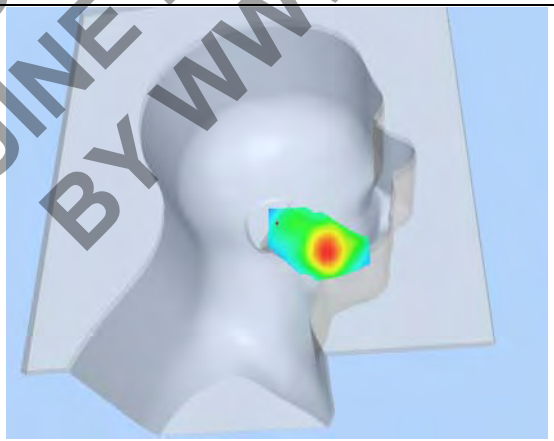
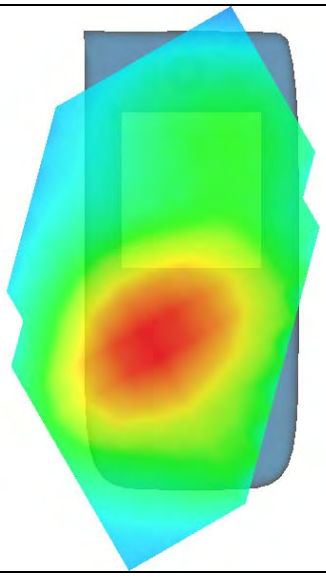
Maximum location: X=-53.00, Y=-40.00

SAR 10g (W/Kg)	0.575796
SAR 1g (W/Kg)	0.970161

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	1.0209	0.6343	0.4119	0.2569	0.1571	0.0982



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: 13/12/2011
Measurement duration: 9 minutes 31 seconds

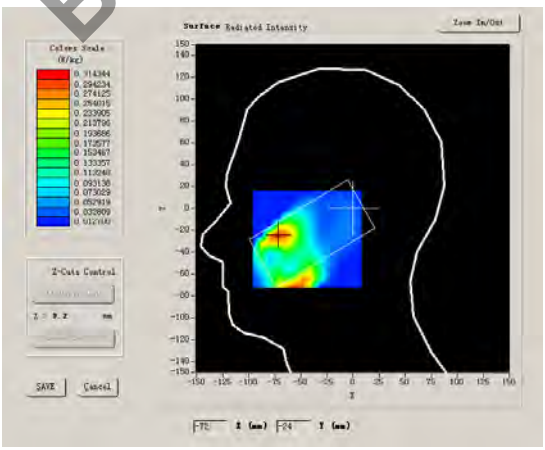
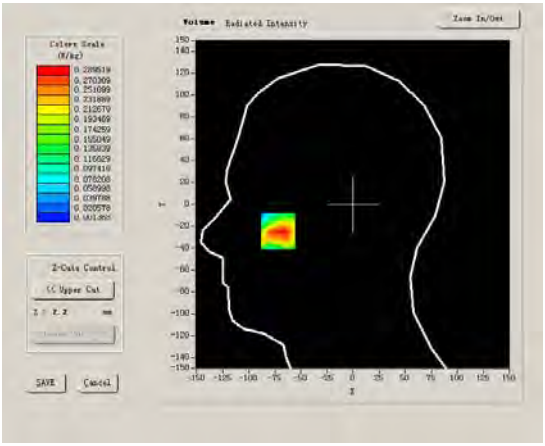
A. Experimental conditions.

Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Right head
Device Position	Cheek
Band	GSM1800
Channels	Middle
Signal	GSM

B. SAR Measurement Results

Middle Band SAR (Channel 698):

Frequency (MHz)	1747.400024
Relative permittivity (real part)	38.930000
Relative permittivity	13.610000
Conductivity (S/m)	1.321229
Power drift (%)	-2.630000
Ambient Temperature:	22.4°C
Liquid Temperature:	22.8°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:8

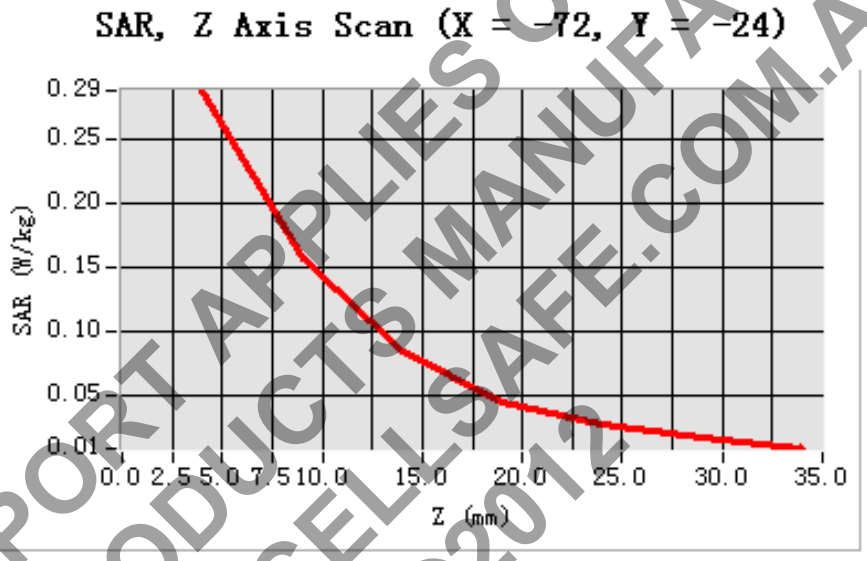
SURFACE SAR	VOLUME SAR
	

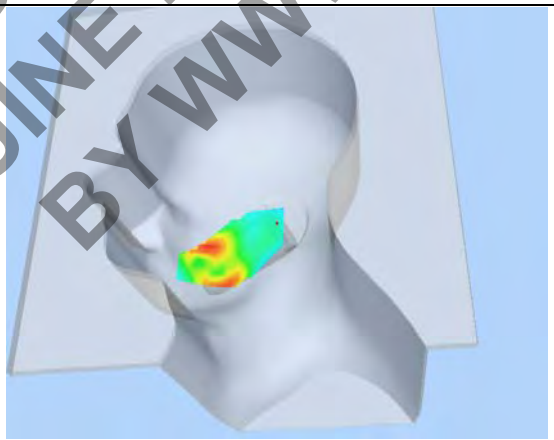
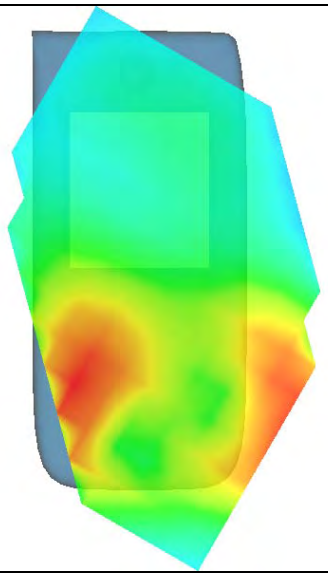
Maximum location: X=-72.00, Y=-24.00

SAR 10g (W/Kg)	0.149173
SAR 1g (W/Kg)	0.278507

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.2880	0.1566	0.0851	0.0464	0.0288	0.0174



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: 13/12/2011
Measurement duration: 8 minutes 4 seconds

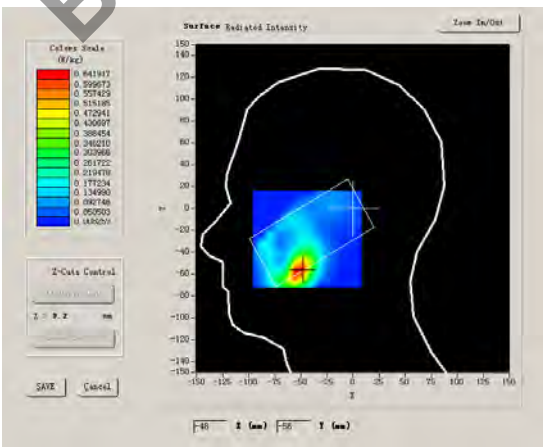
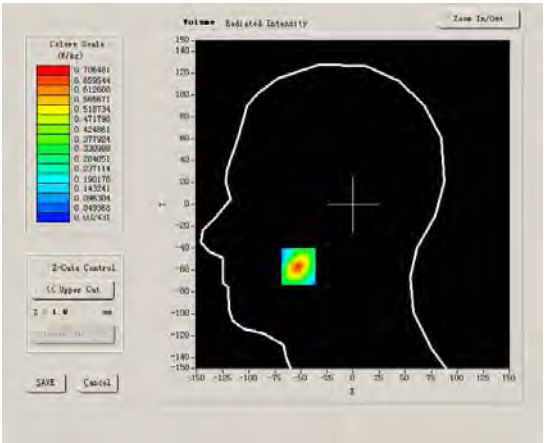
A. Experimental conditions.

Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Left head
Device Position	Cheek
Band	GSM1800
Channels	Middle
Signal	GSM

B. SAR Measurement Results

Middle Band SAR (Channel 698):

Frequency (MHz)	1747.400024
Relative permittivity (real part)	38.930000
Relative permittivity	13.610000
Conductivity (S/m)	1.321229
Power drift (%)	-1.380000
Ambient Temperature	22.4°C
Liquid Temperature	22.9°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:8

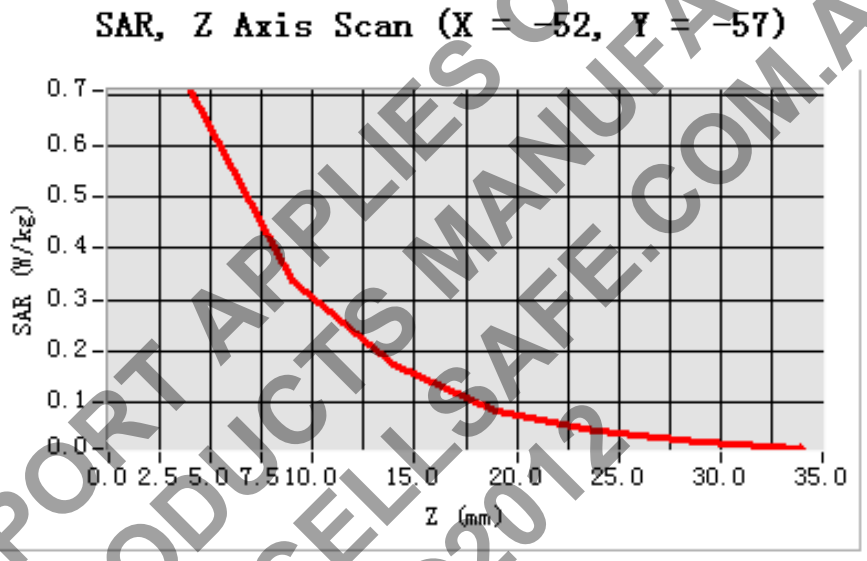
SURFACE SAR	VOLUME SAR
	

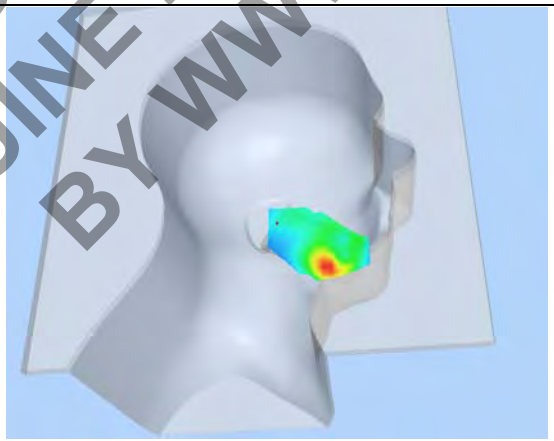
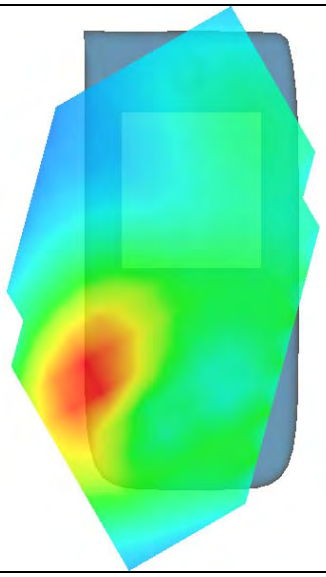
Maximum location: X=-52.00, Y=-57.00

SAR 10g (W/Kg)	0.305775
SAR 1g (W/Kg)	0.659175

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.7065	0.3390	0.1724	0.0848	0.0453	0.0227



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: 13/12/2011
Measurement duration: 8 minutes 7 seconds

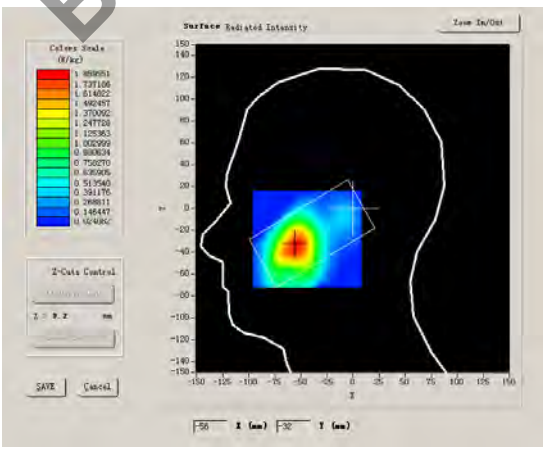
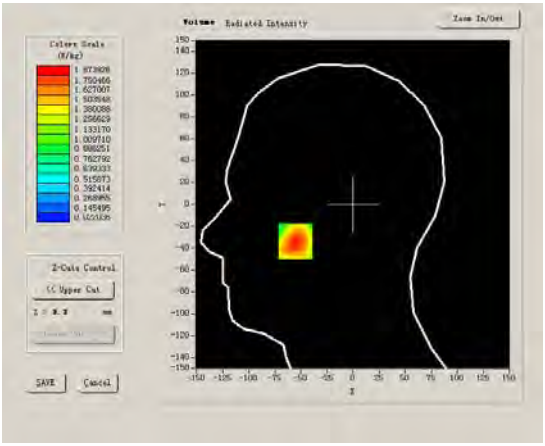
A. Experimental conditions.

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 9750):

Frequency (MHz)	1950.000000
Relative permittivity (real part)	39.910000
Relative permittivity	13.230000
Conductivity (S/m)	1.433250
Power drift (%)	-0.190000
Ambient Temperature	22.4°C
Liquid Temperature	22.9°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:8

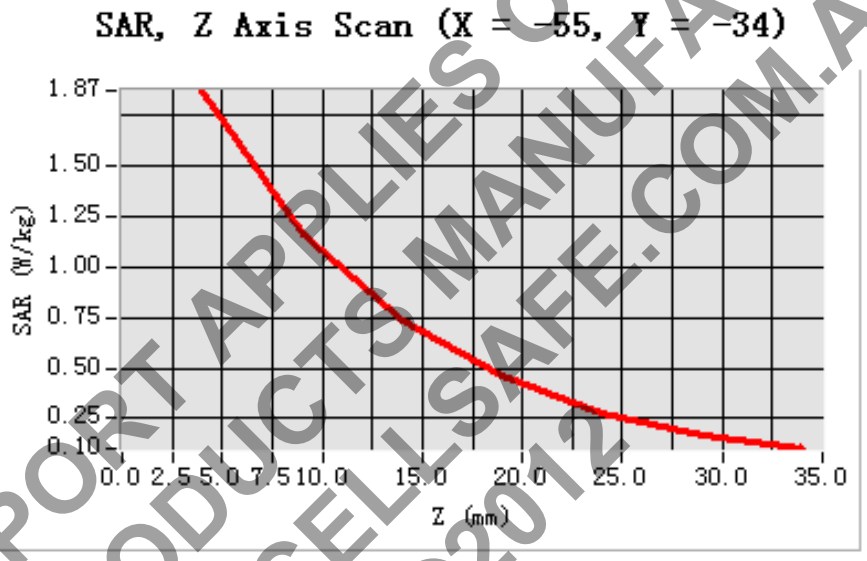
SURFACE SAR	VOLUME SAR
	

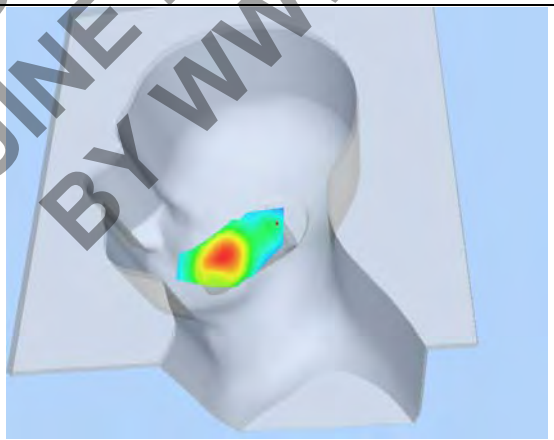
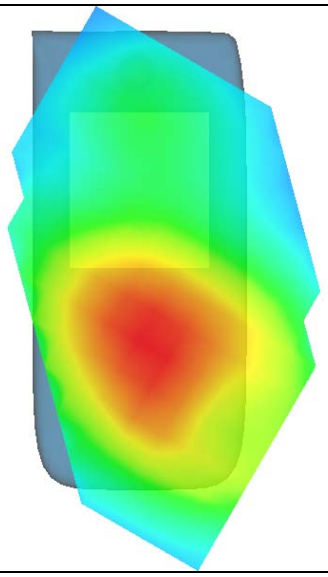
Maximum location: X=-55.00, Y=-34.00

SAR 10g (W/Kg)	1.068947
SAR 1g (W/Kg)	1.792185

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	1.8739	1.1667	0.7386	0.4631	0.2784	0.1673



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: 138/12/2011
Measurement duration: 7 minutes 49 seconds

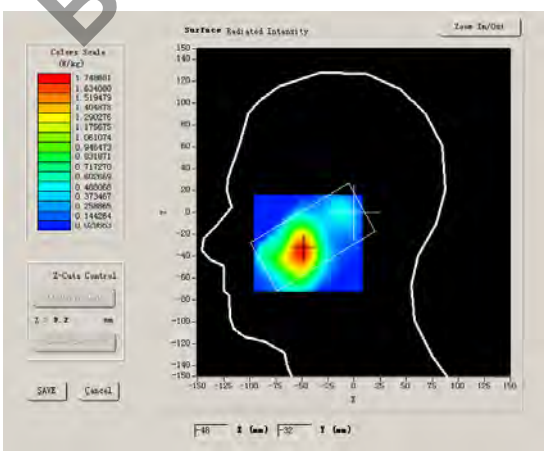
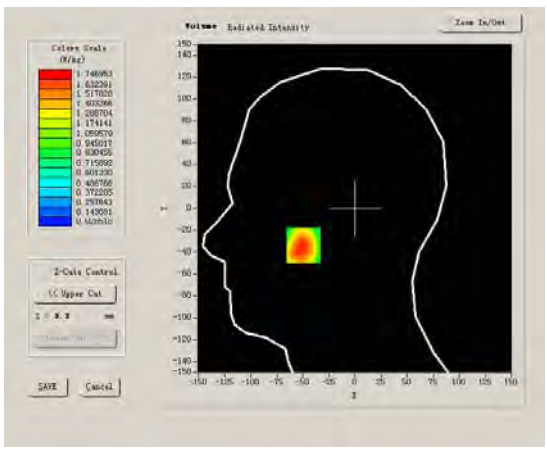
A. Experimental conditions.

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 9750):

Frequency (MHz)	1950.000000
Relative permittivity (real part)	39.910000
Relative permittivity	13.230000
Conductivity (S/m)	1.433250
Power drift (%)	-0.440000
Ambient Temperature:	22.6°C
Liquid Temperature:	22.7°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:1

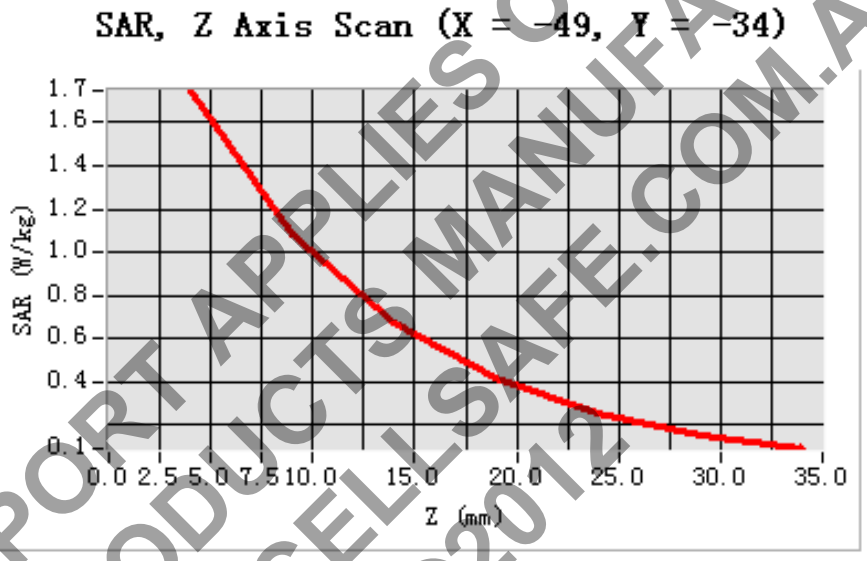
SURFACE SAR	VOLUME SAR
	

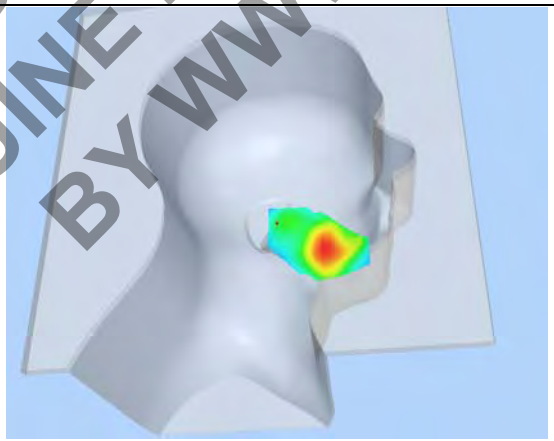
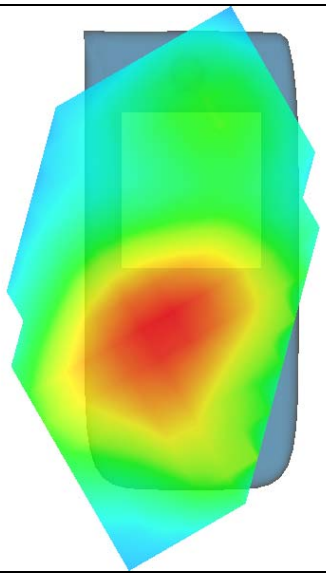
Maximum location: X=-49.00, Y=-34.00

SAR 10g (W/Kg)	0.984470
SAR 1g (W/Kg)	1.661224

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	1.7470	1.0824	0.6753	0.4218	0.2583	0.1534



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: 13/12/2011
Measurement duration: 8 minutes 13 seconds

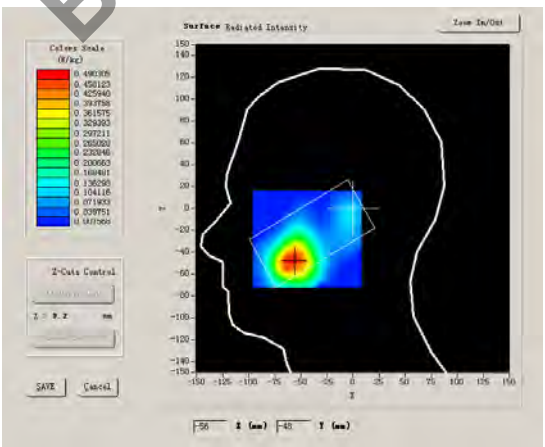
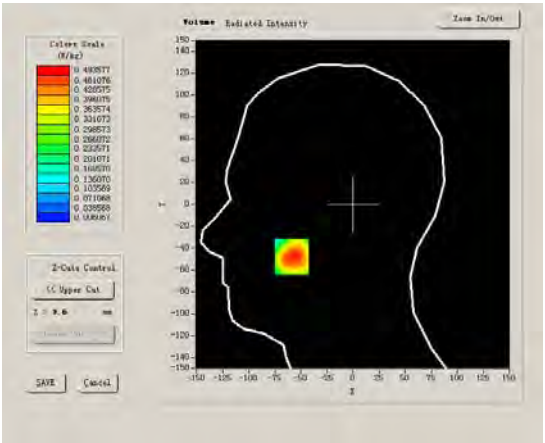
A. Experimental conditions.

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 9750):

Frequency (MHz)	1950.000000
Relative permittivity (real part)	39.910000
Relative permittivity	13.230000
Conductivity (S/m)	1.433250
Power drift (%)	0.170000
Ambient Temperature	22.4°C
Liquid Temperature	22.9°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:1

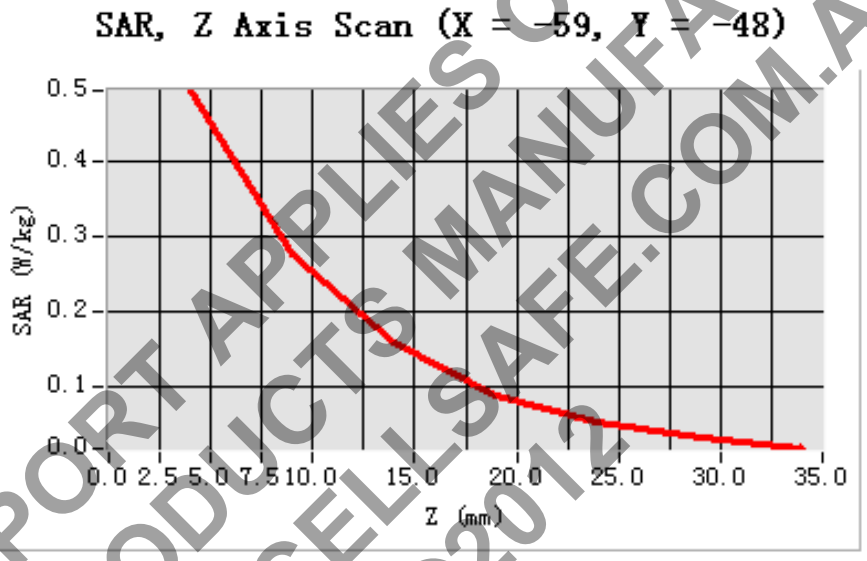
SURFACE SAR	VOLUME SAR
	

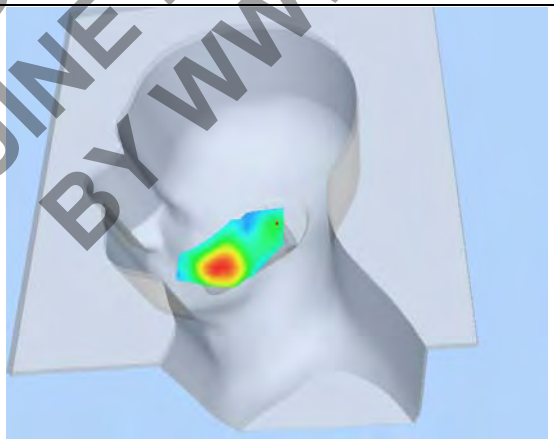
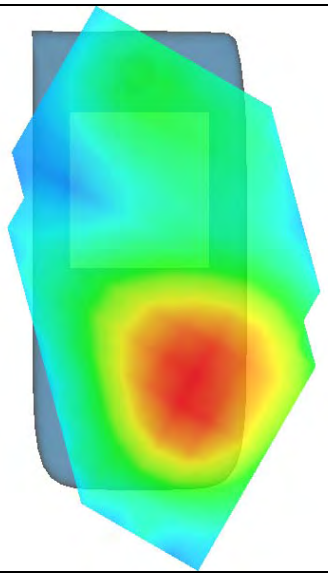
Maximum location: X=-59.00, Y=-48.00

SAR 10g (W/Kg)	0.266916
SAR 1g (W/Kg)	0.472194

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.4936	0.2777	0.1594	0.0898	0.0547	0.0324



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: 13/12/2011
Measurement duration: 8 minutes 24 seconds

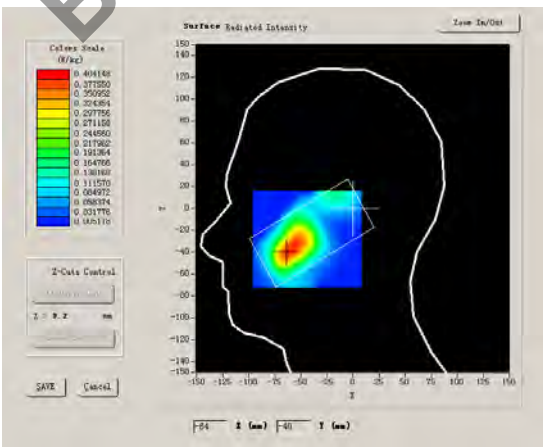
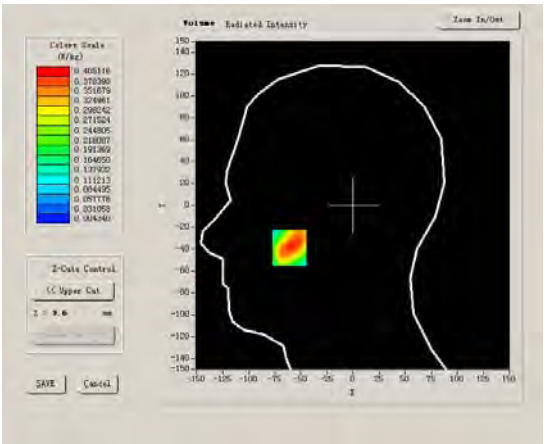
A. Experimental conditions.

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 9750):

Frequency (MHz)	1950.000000
Relative permittivity (real part)	39.910000
Relative permittivity	13.230000
Conductivity (S/m)	1.433250
Power drift (%)	0.300000
Ambient Temperature	22.4°C
Liquid Temperature	22.9°C
ConvF:	40.136,34.843,38.721
Crest factor:	1:1

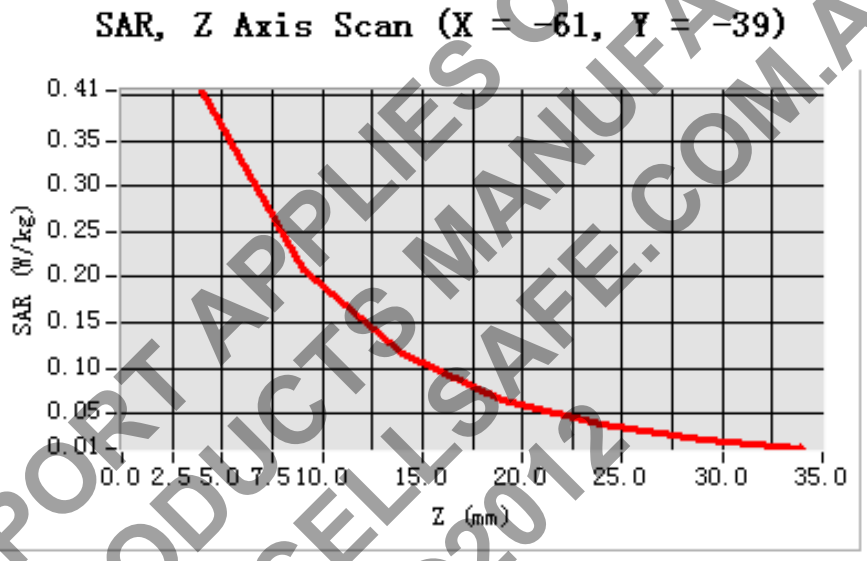
SURFACE SAR	VOLUME SAR
	

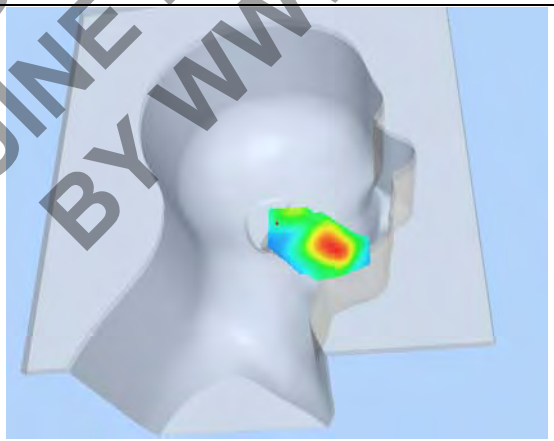
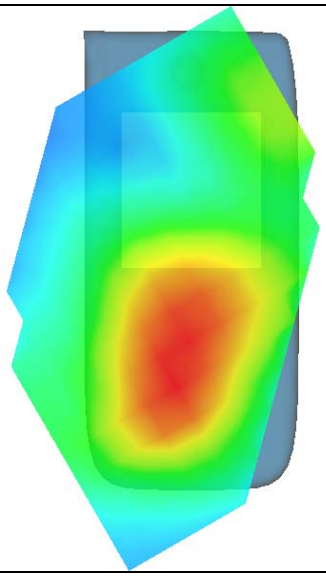
Maximum location: X=-61.00, Y=-39.00

SAR 10g (W/Kg)	0.214860
SAR 1g (W/Kg)	0.393505

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.4051	0.2074	0.1171	0.0654	0.0382	0.0208



3D sceen shot	Hot spot position
	

System Performance Check Data(835MHz)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 13/12/2011
Measurement duration: 13 minutes 27 seconds

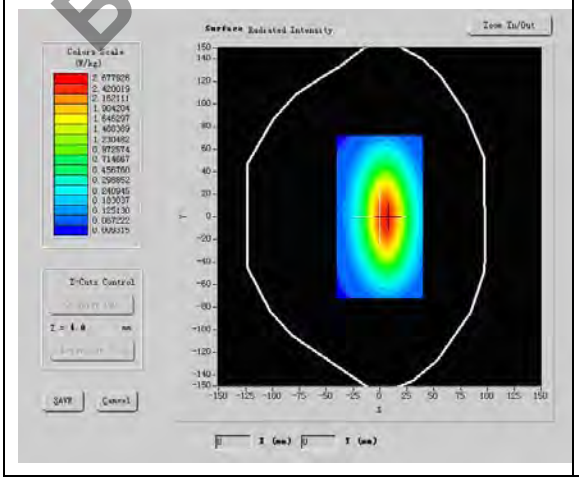
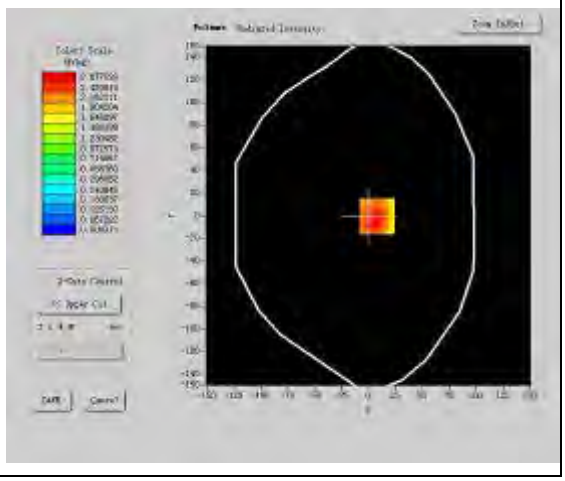
A. Experimental conditions.

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:	21.5°C
ConvF:	28.479,25.214,27.196
Crest factor:	1:1

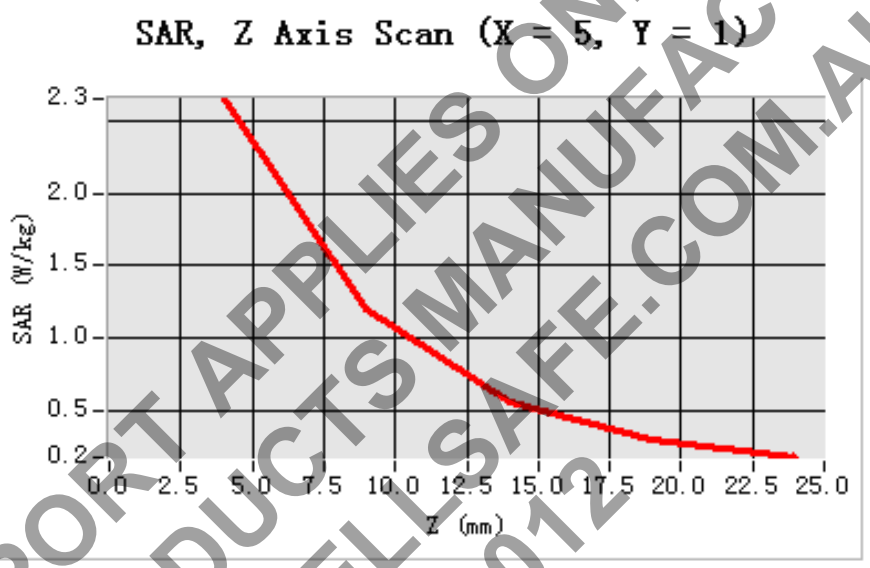
SURFACE SAR	VOLUME SAR
	

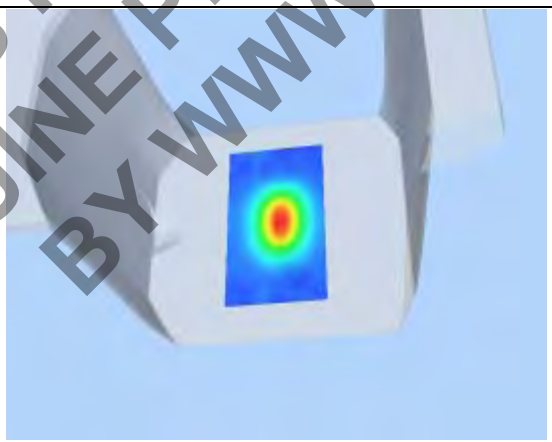
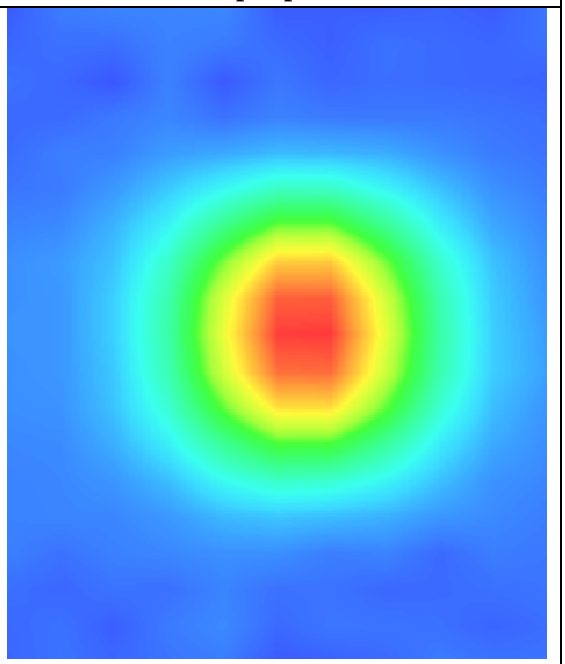
Maximum location: X=5.00, Y=1.00

SAR 10g (W/Kg)	1.614732
SAR 1g (W/Kg)	2.478462

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	2.2754	1.2251	0.5857	0.3114



3D sceen shot	Hot spot position
	

System Performance Check Data(1800MHz)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 13/12/2011
Measurement duration: 13 minutes 27 seconds

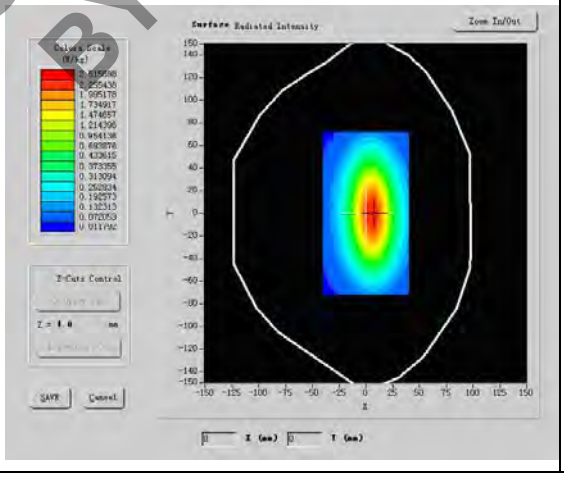
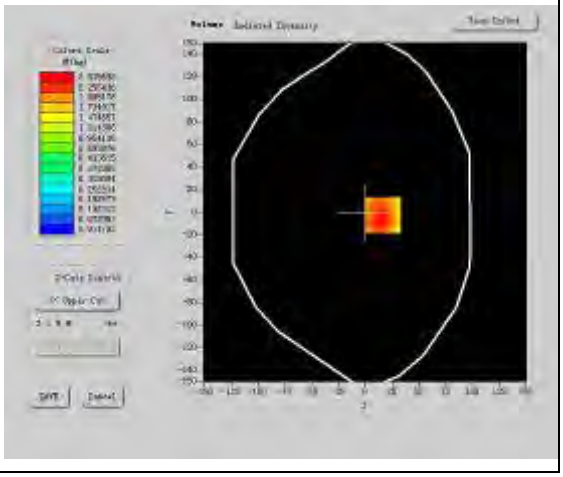
A. Experimental conditions.

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

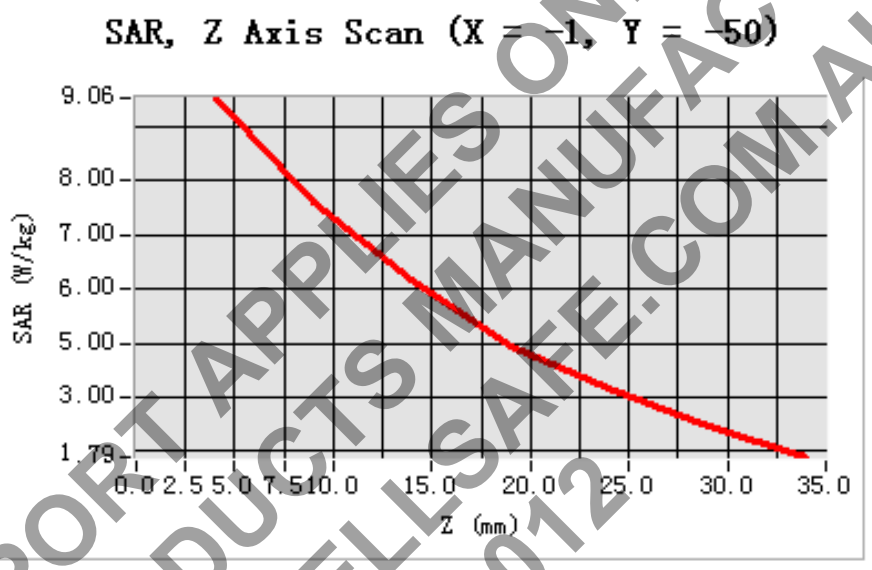
SURFACE SAR	VOLUME SAR
	

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

SAR 10g (W/Kg)	4.822510
SAR 1g (W/Kg)	9.023212

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	9.1563	5.2107	2.5702	0.3211



3D sceen shot	Hot spot position