

FCC SAR

TEST REPORT

of

w phone watch

Model Name: WP1203
Trade Name: Kempler & Strauss
Report No.: SH09110046S01
FCC ID.: XZWWPHONEWATCH

prepared for

Vento North America LLC
6190 Cornerstone Ct. St. 200, San Diego, California, USA



prepared by

Shenzhen Electronic Product Quality Testing Center
Morlab Laboratory

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LAB CODE 20081223-00

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General Information

1.1. Notes

The test results of this test report relate exclusively to the information specified in section 3.3. Shenzhen Electronic Product Quality Testing Center Morlab Laboratory does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the identification. The test report may only be reproduced or published in full. Reproduction or publications of extracts from the test report requires the prior written approval of Shenzhen Electronic Product Quality Testing Center Morlab Laboratory. The test report shall be invalid without all the signatures of testing the Project Manager, the Deputy Project Manager and the Test Lab Manager. Any objections must be raised to Morlab within 30 days since the date when the report is received. It will not be taken into consideration beyond this limit.

1.2. Organization item

Report No.:	SH09110046S01
Date of Issue:	July 27, 2010
Date of Tests:	July 22, 2010 – July 23, 2010
Approved by:	WeiBei
Reviewed by:	ZhangJun
Tested by:	Huangyunlong

1.3. Conclusion

Shenzhen Electronic Product Quality Testing Center Morlab Laboratory has verified that all tests as listed in the section 4.5 of this report have been performed successfully with the tested equipment.

		
Huangyunlong		ZhangJun
Tested by		Reviewed by
(Responsible for the Test Report)		(Verification of the Test Report)
		
WeiBei		
Approved by		
(Responsible Test Lab Manager)		

2. Testing Laboratory

2.1. Identification of the Responsible Testing Laboratory

Company Name: Shenzhen Electronic Product Quality Testing Center
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

2.2. Identification of the Responsible Testing Location

Name: Shenzhen Electronic Product Quality Testing Center Morlab Laboratory
Address: 3/F, Electronic Testing Building, Shahe Road, Nanshan District, Shenzhen, 518055 P. R. China

2.3. Accreditation Certificate

Accredited Testing Laboratory: No. CNAS L1659 (see 0)

2.4. List of Test Equipments

No.	Instrument	Type
1	PC	Dell (Pentium IV 2.4GHz, SN:X10-23533)
2	Network Emulator	Rohde&Schwarz (CMU200, SN:105894)
3	Voltmeter	Keithley (2000, SN:1000572)
4	Synthesizer	Rohde&Schwarz (SML_03, SN:101868)
5	Amplifier	Bonn (BLMA, SN:10800)
6	Power Meter	Rohde&Schwarz (NRVD, SN:101066)
7	Probe	Antennessa (SN:SN_3708_EP80)
8	Phantom	Antennessa (SN:SN_36_08_SAM25)
9	Liquid	Antennessa (Last Calibration:2010.1.28)

3. Technical Information

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

3.1. Identification of Applicant

Company Name: Vento North America LLC
Address: 6190 Cornerstone Ct. St. 200, San Diego, California, USA

3.2. Identification of Manufacturer

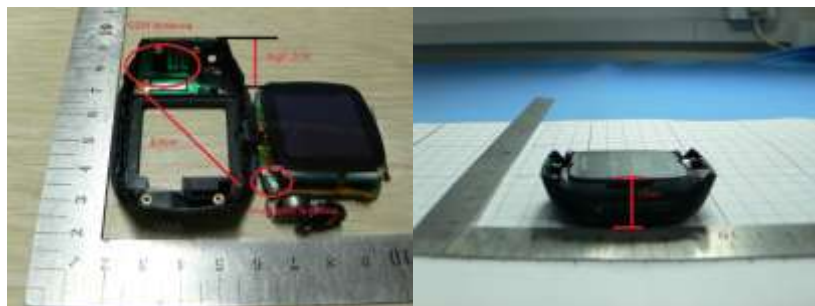
Company Name: GSUN(Shanghai) Communication Technology Co., Ltd.
Address: Minhang District, Shanghai XinJian east road – NO.58, Room 2710.

3.3. Equipment Under Test (EUT)

Brand Name: Kempler & Strauss Trade Name: Kempler & Strauss
Marking Name: WP1203 Modulation Mode: GMSK
Hardware Version: W100B_PCB_MB_VC0 Antenna type: Build inside
Frequency Bands: GSM 850MHz (channel 128:824.20MHz, channel 190:836.59MHz, channel 251:848.29MHz)
PCS 1900MHz (channel 512:1850.19MHz, channel 661:1880.00MHz, channel 810:1909.80MHz)
Battery Model: (n.a)
Battery specification: 400mAh 3.7V—4.2V
Development Stage Identical prototype
Antenna distance : Bluetooth and GSM distance is greater than 4.5cm

Note:

So just did the GSM simultaneously SAR test with the request of the client. Bluetooth Max $P < 60/f(\text{GHz})\text{mW}$ BT SAR is no request.



3.3.1. Photographs of the EUT

Please see for photographs of the EUT.

3.3.2. Identification of all used EUTs

The EUT Identity consists of numerical and letter characters (see the table below), the first five numerical characters indicates the Type of the EUT defined by Morlab, the next letter character indicates the test sample, and the following two numerical characters indicates the software version of the test sample.

EUT Identity	Hardware Version	Software Version
1#	W100B_PCB_MB_VC0	W100B_MZ_SAM_V25_091110

4. Test Results

4.1. Applied Reference Documents

Leading reference documents for testing:

No.	Identity	Document Title
1	47 CFR § 2.1093	Radiofrequency Radiation Exposure Evaluation: Portable Devices
2	FCC OET Bulletin 65 (Edition 97-01), Supplement C (Edition 01-01)	Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields
3	ANSI C95.1-1999	IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3kHz to 300 GHz
4	IEEE 1528-2003	Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate(SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques.

4.2. Test Environment/Conditions

Normal Temperature (NT):	20 ... 25 °C
Relative Humidity:	30 ... 75 %
Air Pressure:	980 ... 1020 hPa
Extreme Temperature:	Low Temperature (LT) = -10 °C High Temperature (HT) = 55 °C
Extreme Voltage of the EUT:	Normal Voltage (NV) = 3.70V Low Voltage (LV) = 3.60V High Voltage (HV) = 4.20V
Test frequency:	GSM 850MHz PCS 1900MHz
Operation mode:	Call established
Power Level:	GSM 850 MHz Maximum output power(level 5) PCS 1900 MHz Maximum output power(level 0)

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

The Absolute Radio Frequency Channel Number (ARFCN) is allocated to 125, 189 and 251 respectively in the case of GSM 850 MHz, or to 512, 661 and 810 respectively in the case of PCS 1900 MHz, The EUT, The EUT is commanded to operate at maximum transmitting power.

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

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

4.3.Operational Conditions During Test

4.3.1. Informations On The Testing

I. INFORMATIONS ON THE TESTING

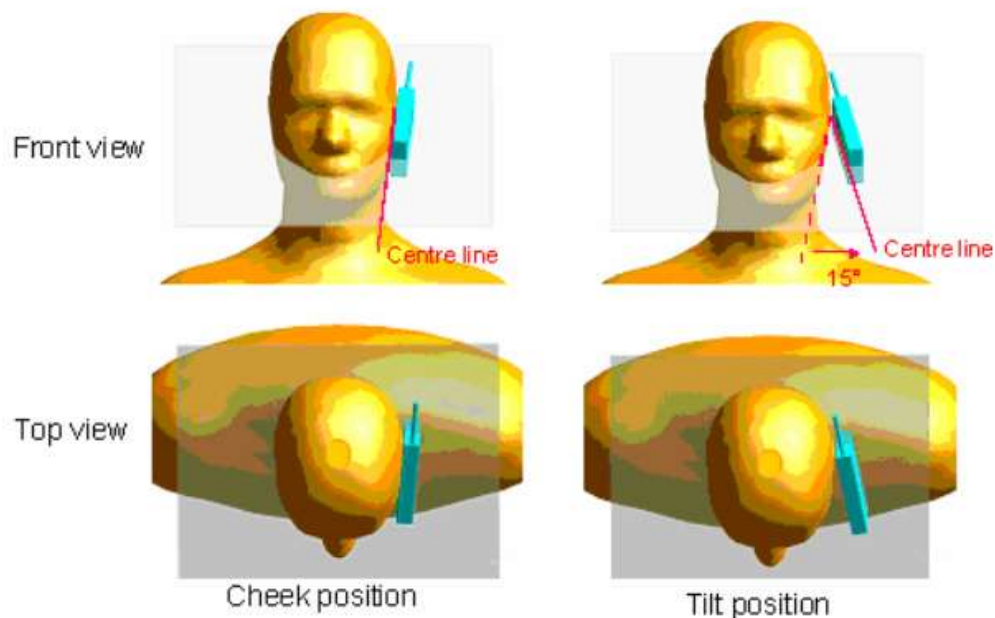
I.1. Normative reference

IEEE 1528: Recommended Practice for determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques. Institute of Electrical and Electronics Engineers, INC., 2003.

I.3. Positions and test conditions of the mobile phone under test

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

4.3.2. 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.



COMOSAR bench

The mobile phone 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 10 g mass.

II.1. 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 2 mm +/- 0,2 mm. It enables the dosimetric evaluation of left and right hand 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.

II.2. Probe

For the measurements the Specific Dosimetric E-Field Probe SSE5 with following specifications is used.

- Dynamic range: 0.01-100 W/kg
- Tip Diameter : 5 mm

- Distance between probe tip and sensor center : 2.5 mm
- 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 : <0.50 dB
- Calibration range : 835 to 2500 MHz for head & body simulating liquid
- Angle between probe axis (evaluation axis) and surface normal line : less than 30°

II.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 16 mm * 8 to 16 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.

II.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 minimise 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 1 mm 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.

4.3.3. Uncertainty Assessment

The following table includes the uncertainty table of the IEEE 1528.

The values are determined by Antennessa.

a	b	c	d	e= f(d,k)	f	g	h= c*f/e	i= c*g/e	k
Uncertainty Component	Sec.	Tol (+- %)	Prob. Dist.	Div.	Ci (1g)	Ci (10g)	1g Ui (+-%)	10g Ui (+-%)	Vi
Measurement System									
Probe calibration	E.2.1	7.0	N	1	1	1	7.00	7.00	∞
Axial Isotropy	E.2.2	2.5	R	$\sqrt{3}$	$(1 C_p)^{1/2}$	$(1 C_p)^{1/2}$	1.02	1.02	∞
Hemispherical Isotropy	E.2.2	4.0	R	$\sqrt{3}$	$\sqrt{C_p}$	$\sqrt{C_p}$	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 Algorithms 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 Variation - SAR drift measurement	6.6.2	4.76	R	$\sqrt{3}$	1	1	2.75	2.75	∞
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	0.57	R	$\sqrt{3}$	0.64	0.43	0.21	0.14	∞
Liquid conductivity -	E.3.3	5.00	N	1	0.64	0.43	3.20	2.15	M

measurement uncertainty									
Liquid permittivity - deviation from target value	E.3.2	3.66	R	$\sqrt{3}$	0.6	0.49	1.27	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				11.28	10.78	
Expanded Uncertainty (95% Confidence interval)			k				21.99	21.03	

4.3.4. Equipments and results of validation testing

Equipments :

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

Results:

Frequency	835MHz	1900MHz
Target value (1g)	9.5 W/Kg	39.7 W/Kg
250 mW input power	2.501 W/Kg (head) 2.476 W/Kg (body)	9.73 W/Kg (head) 10.19 W/Kg (body)
Test value (1g)	10.004 W/Kg (head) 9.904 W/Kg (body)	38.92 W/Kg (head) 40.76 W/Kg (body)

Note:Please refer to check the system performance data

4.3.5. Dielectric Performance

The measured 1-gram averaged SAR values of the device against the head and the body are provided in Tables 1 and 2 respectively. The humidity and ambient temperature of test facility were 54% ~60% and 23.0 °C ~23.8 °C respectively. The SAM head phantom (SN 0381 SH) were full of the head tissue simulating liquid. 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 1cm (taking into account of the IEEE 1528 and the place of the antenna). A base station simulator was used to control the device during the SAR measurement. The phone was supplied with full-charged battery for each measurement. For head measurement, the device was tested at the lowest, middle and highest frequencies in the transmit band.

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 (July 22)	835 MHZ	41.6759	0.8944
Target value	1900 MHZ	40	1.40
Validation value (July 22)	1900 MHZ	39.48	1.3957

For body-worn measurements, the device was tested against flat phantom representing the user body. Under measurement phone was put on in the belt 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 (July 22)	835 MHz	55.7099	1.009
Target value	1900 MHz	53.3	1.52

Validation value (July 22)	1900 MHz	52.548	1.5739
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4.3.6. Simulant liquids

Simulant liquids that are used for testing at frequencies of GSM 850MHz and GSM 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 20litres for a horizontal bath phantom.

Ingredients (% by weight)	Frequency Band		Frequency Band	
	835MHz		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

4.4. Items used in the Test Results List

Terms in the column “Verdict” for the test results list of the section 4.5:

Verdict	Description
PASS	EUT passed this test case
FAIL	EUT failed this test case
INC.	EUT did not pass and did not fail this test case, therefore the verdict is inconclusive
Decl.	“Declaration”: Morlab has received documents from the applicant and/or manufacturer which show conformity to the applied standards for this test case.
N/A	Test case not applicable for the EUT, see the column “Note” for detailed

4.5. Test Results List

SAR Values (GSM 850MHz Band), Measured against the body.




Temperature: 23.0~23.8 °C, humidity: 54~60%.		
Limit of SAR (W/kg)	1.6 W/kg(front of watch)	
	4.0 W/kg(back of watch)	
Test Case	Measurement Result (W/kg)	
	10g Average (W/kg)	Power level (dBm)
Backside touch phantom, Low frequency	0.611	31.97
BackSide touch phantom, Middle frequency	0.617	31.81
BackSide touch phantom, High frequency	0.432	31.84
BackSide touch phantom(with earphone),Middle frequency	0.605	31.84
Test Case	1g Average (W/kg)	Power level (dBm)
FrontSide toward phantom 10mm, Low head liquid	0.331	31.97
FrontSide toward phantom 10mm, Middle head liquid	0.434	31.81
FrontSide toward phantom 10mm, High head liquid	0.390	31.84

SAR Values (GSM 1900MHz Band), Measured against the body.

Temperature: 23.0~23.8 °C, humidity: 54~60%.		
Limit of SAR (W/kg)	1.6 W/kg(front of watch)	
	4.0 W/kg(back of watch)	
Test Case	Measurement Result (W/kg)	
	10g Average (W/kg)	Power level (dBm)
Backside touch phantom, Low frequency	0.197	30.65
BackSide touch phantom, Middle frequency	0.404	30.52
BackSide touch phantom, High frequency	0.536	28.73
BackSide touch phantom(with earphone), High frequency	0.516	28.73
Test Case	1g Average (W/kg)	Power level (dBm)
FrontSide toward phantom 10mm, Low head liquid	0.223	30.65
FrontSide toward phantom 10mm, Middle head liquid	0.243	30.52
FrontSide toward phantom 10mm, High head liquid	0.294	28.73

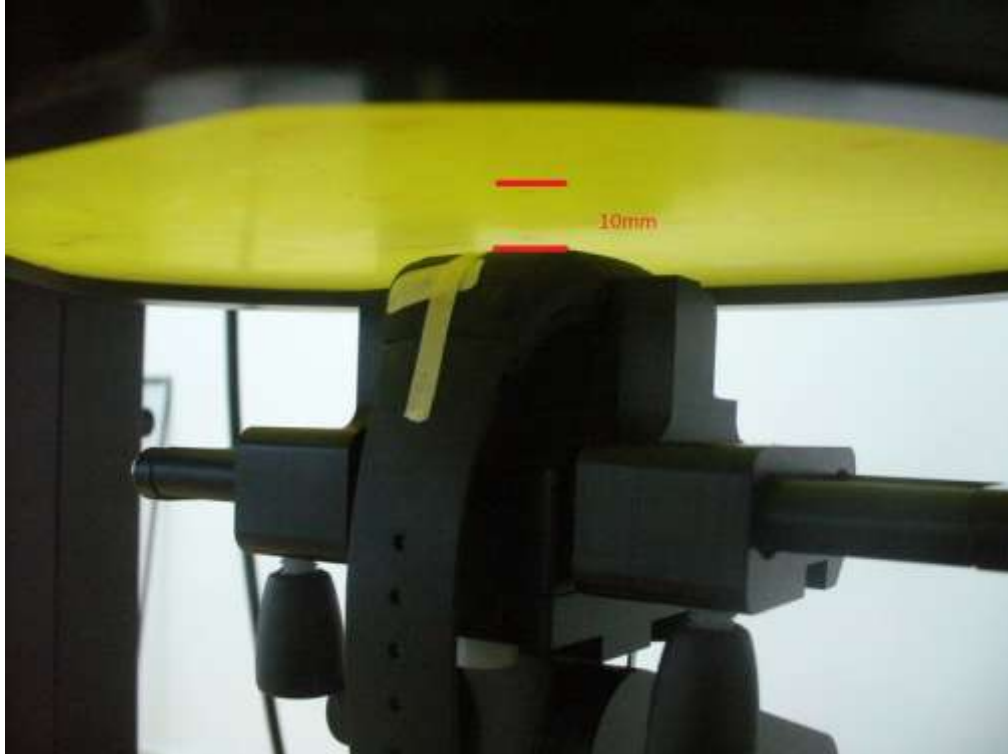
Note: The depth of the body tissue was 15.1cm. The distance between the back of the device and the bottom of the flat phantom is 1cm(taking into account of the IEEE 1528 and the place of the antenna)

Annex A Accreditation Certificate

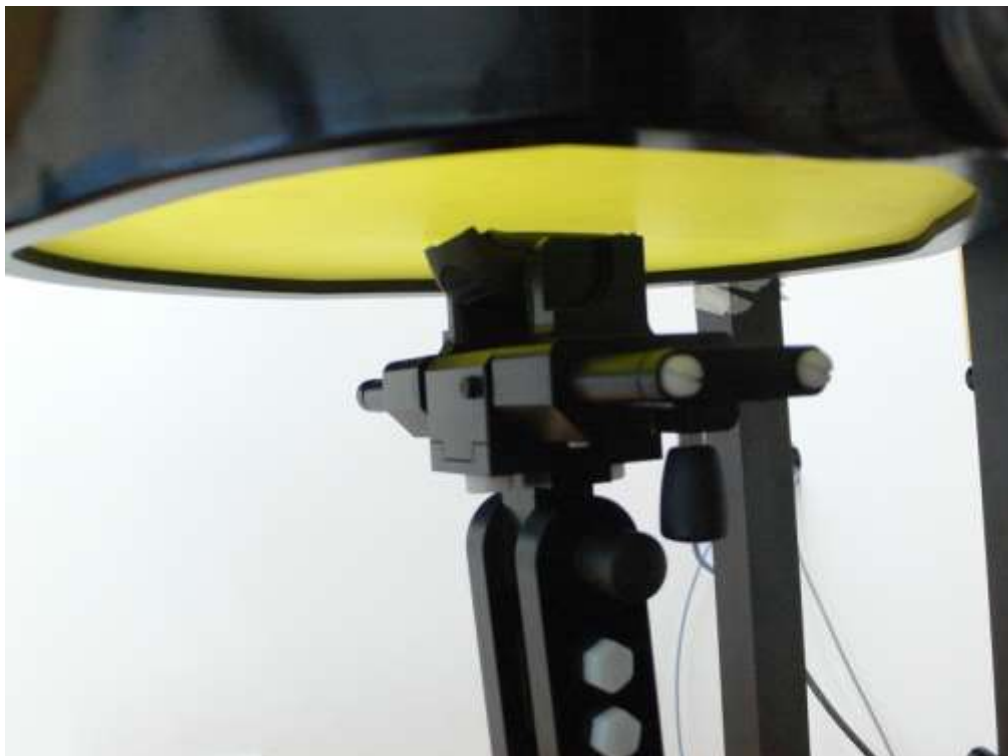
<div></div> <div>China National Accreditation Service for Conformity Assessment</div> <div>LABORATORY ACCREDITATION CERTIFICATE</div> <div>(No. CNAS L1659)</div> <div><i>China National Accreditation Service for Conformity Assessment has accredited</i></div> <div>Shenzhen Electronic Product Quality Testing Center</div> <div><u>Electronic Testing Building, Shahe Road, Xili, Nanshan District,</u> <u>Shenzhen, Guangdong, China</u></div> <div><i>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 calibration.</i></div> <div><i>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.</i></div> <div>Date of Issue: 2009-09-29</div> <div>Date of Expiry: 2012-09-28</div> <div>Date of Initial Accreditation: 1999-08-03</div> <div></div> <div>Signed on behalf of China National Accreditation Service for Conformity Assessment</div> <div><small>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).</small></div>
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Annex B Photographs of the EUT

- 1 EUT Frontside Toward phantom 10mm



- 2 EUT backside Touch phantom



3 EUT With headphone Backside Touch phantom



Annex C Graph Test Results

	<u>PARAMETERS</u>
<u>TYPE</u>	<u>Measurement 1:</u> Backside touch phantom, Low frequency in GSM850 mode
	<u>Measurement 2:</u> Backside touch phantom, Middle frequency in GSM850 mode
	<u>Measurement 3:</u> Backside touch phantom, High frequency in GSM850 mode
	<u>Measurement 4:</u> BackSide touch phantom(with earphone) High frequency in GSM850 mode
	<u>Measurement 5:</u> FrontSide toward phantom 10mm, Low frequency in GSM850 mode
	<u>Measurement 6:</u> FrontSide toward phantom 10mm, Middle frequency in GSM850 mode
	<u>Measurement 7:</u> FrontSide toward phantom 10mm, High frequency in GSM850 mode
	<u>Measurement 8:</u> Backside touch phantom, Low frequency in GSM1900 mode
	<u>Measurement 9:</u> Backside touch phantom, Middle frequency in GSM1900 mode
	<u>Measurement 10:</u> Backside touch phantom, High frequency in GSM1900 mode
	<u>Measurement 11:</u> BackSide touch phantom(with earphone), High frequency in GSM1900 mode
	<u>Measurement 12:</u> FrontSide toward phantom 10mm, Low frequency in GSM1900 mode

	<u>Measurement 13:</u> FrontSide toward phantom 10mm, Middle frequency in GSM1900 mode <u>Measurement 14:</u> FrontSide toward phantom 10mm, High frequency in GSM1900 mode
<u>System</u> <u>Performance</u> <u>Check Data</u>	(835MHz head) (835MHz body) (1900MHz head) (1900MHz body)

MEASUREMENT 1

Date of measurement: 22/7/2010

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

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

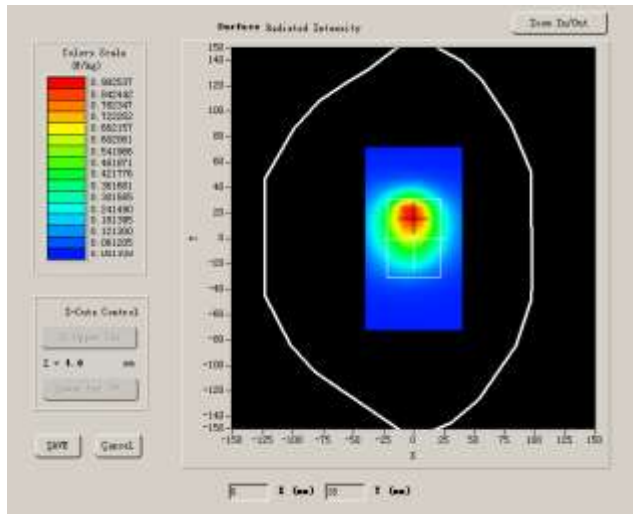
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	body
Device Position	Backside touch phantom
Band	GSM850
Channels	Low
Signal	GSM

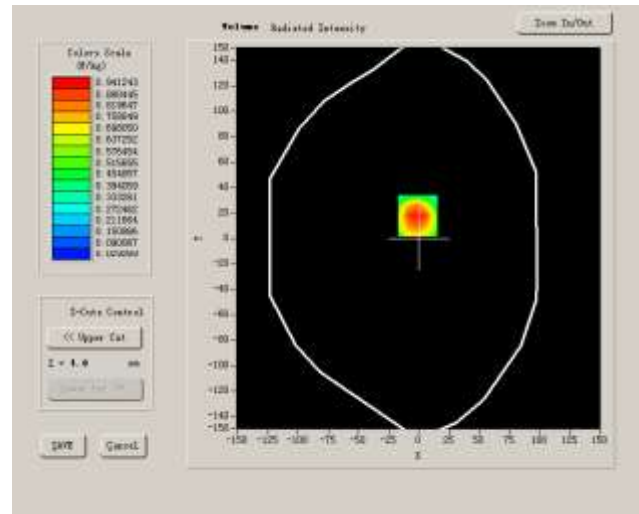
Lower Band SAR (Channel 128):

Frequency (MHz)	824.200012
Relative permittivity (real part)	54.116001
Relative permittivity (imaginary part)	21.284550
Conductivity (S/m)	0.974596
ConvF:	28.559,25.681,27.588
Crest factor:	1:8
Variation (%)	1.680000

SURFACE SAR



VOLUME SAR

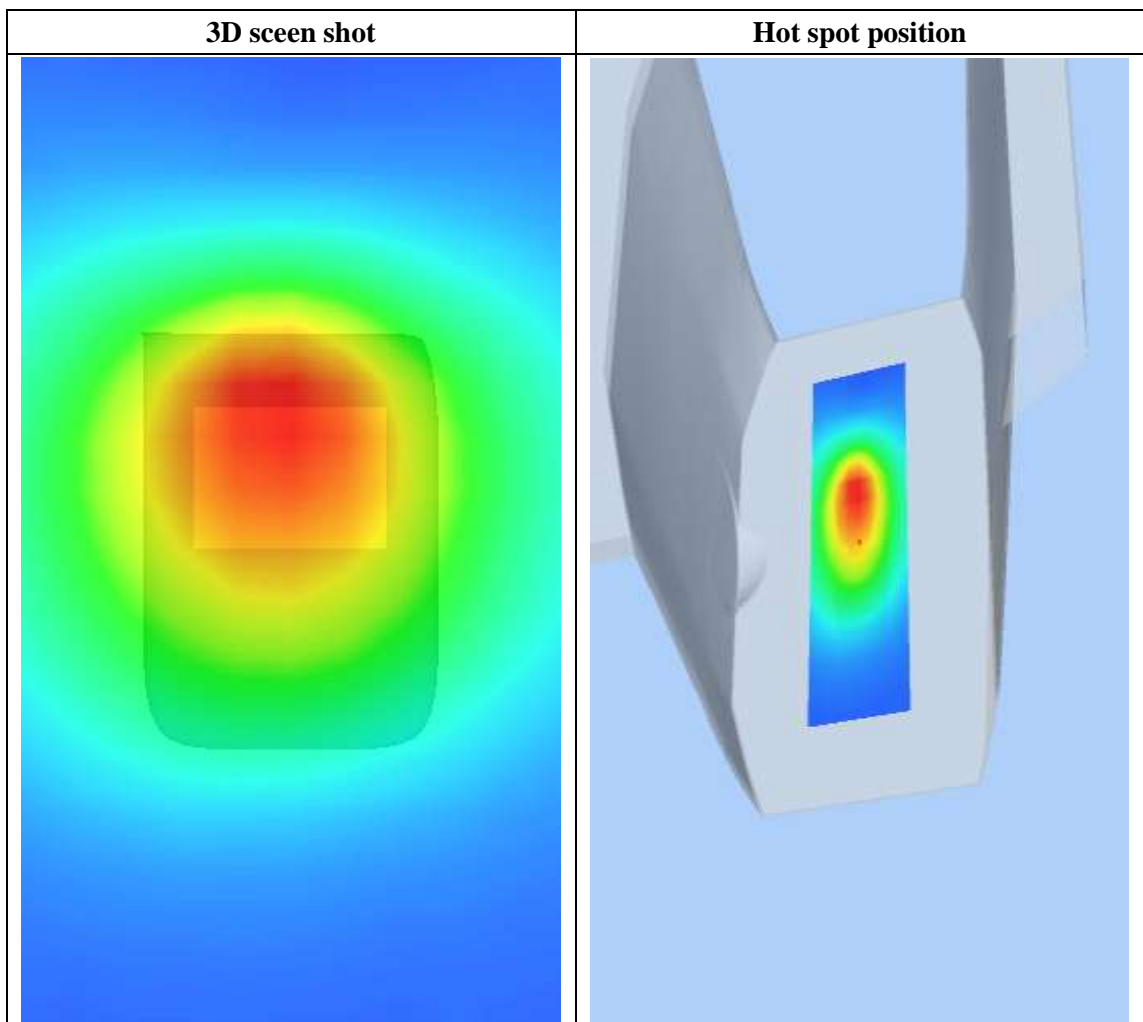
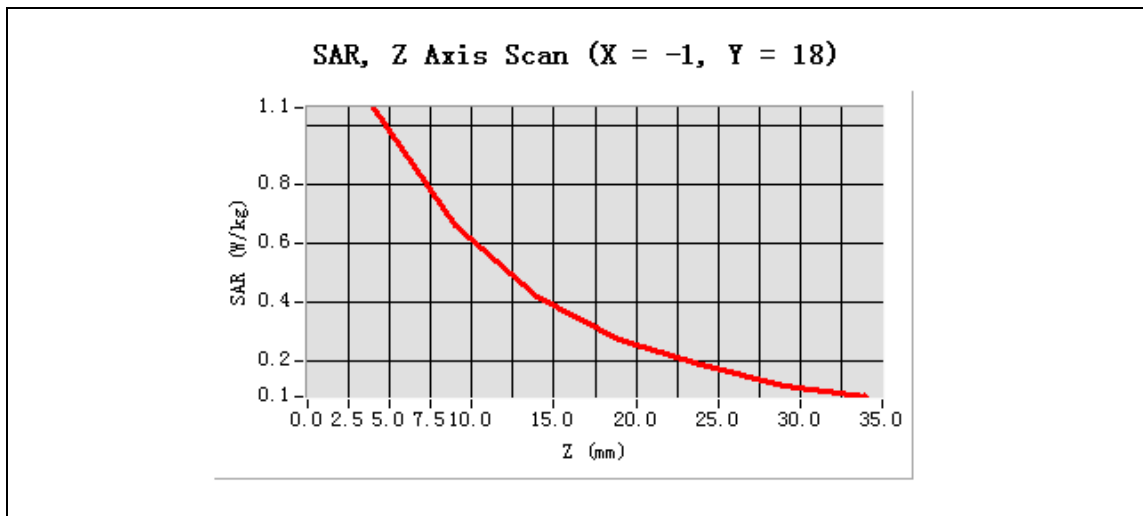


Maximum location: X=8.00, Y=-40.00

SAR 10g (W/Kg)	0.610936
SAR 1g (W/Kg)	1.011812

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	1.0585	0.6597	0.4126	0.2708	0.1836	0.1143



MEASUREMENT 2

Date of measurement: 22/7/2010

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

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

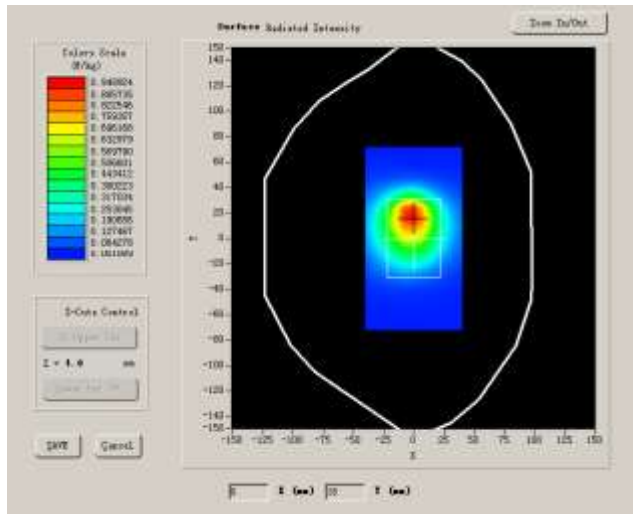
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Body
Device Position	BackSide touch phantom
Band	GSM850
Channels	Middle
Signal	GSM

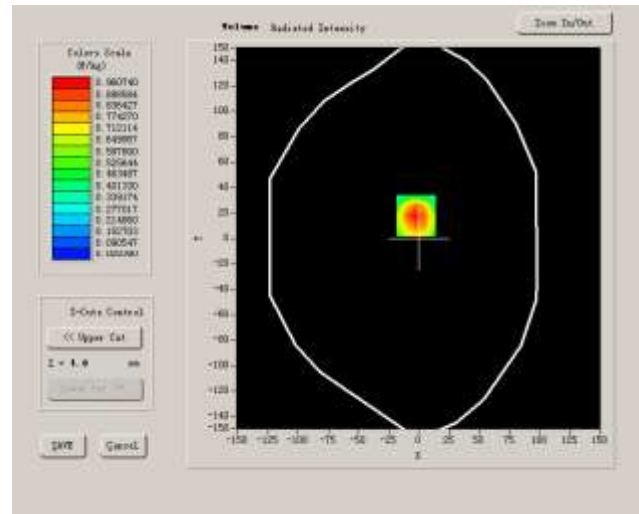
Middle Band SAR (Channel 190):

Frequency (MHz)	836.599976
Relative permittivity (real part)	55.673323
Relative permittivity (imaginary part)	21.733416
Conductivity (S/m)	1.012346
ConvF:	28.559,25.681,27.588
Crest factor:	1:8
Variation (%)	0.320000

SURFACE SAR



VOLUME SAR

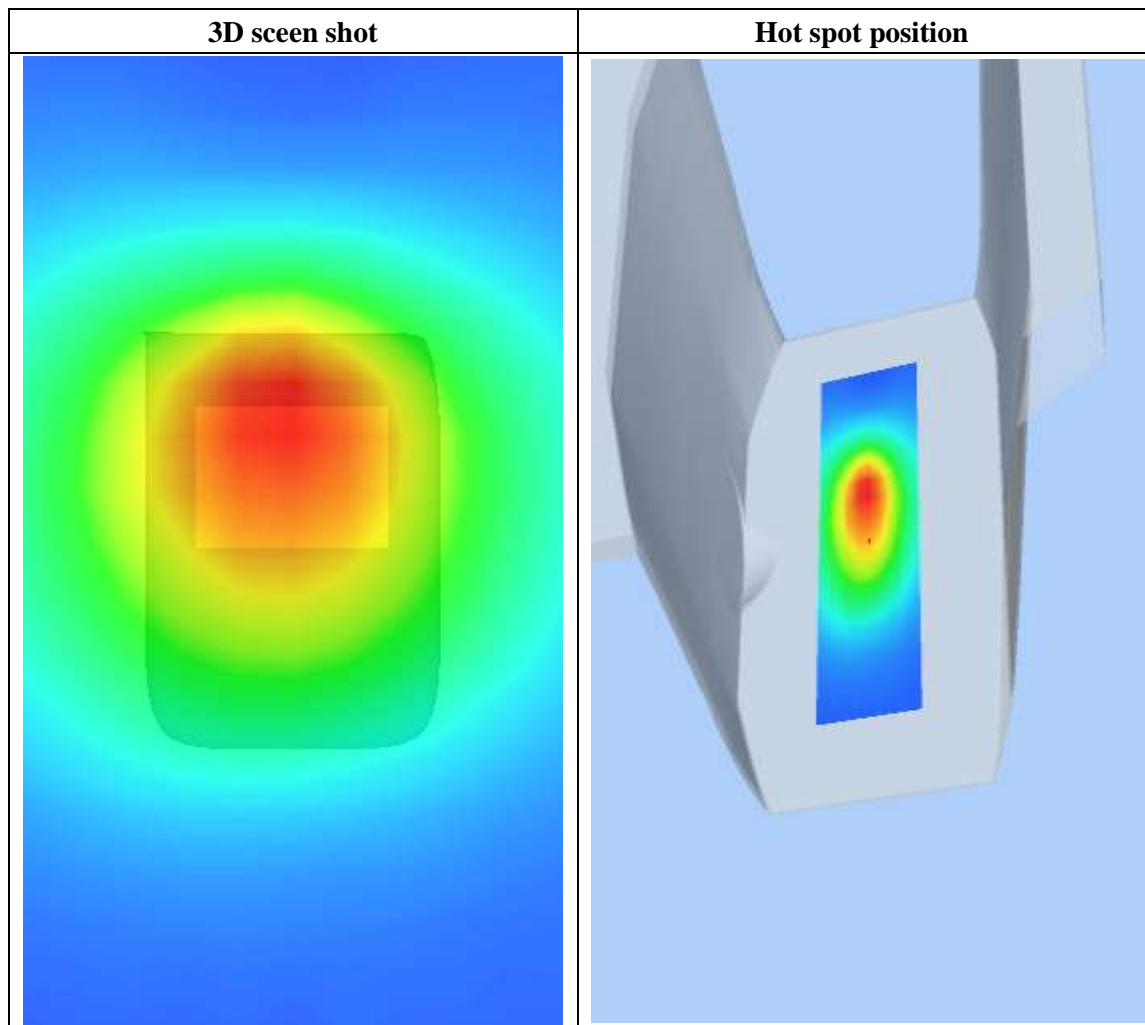
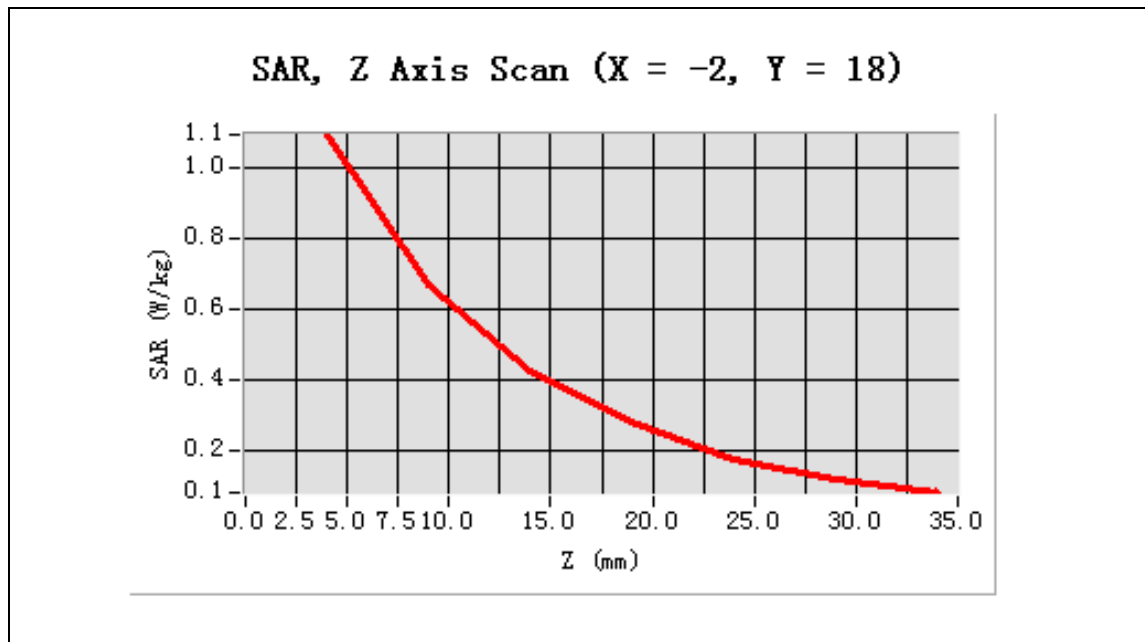


Maximum location: X=-2.00, Y=18.00

SAR 10g (W/Kg)	0.617355
SAR 1g (W/Kg)	1.117453

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	1.0919	0.6332	0.4134	0.2742	0.1703	0.1132



MEASUREMENT 3

Date of measurement: 22/7/2010

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

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

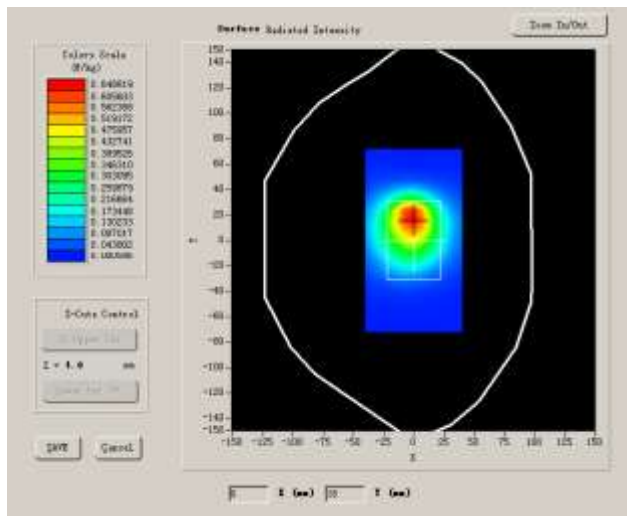
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Body
Device Position	Backside touch phantom
Band	GSM850
Channels	High
Signal	GSM

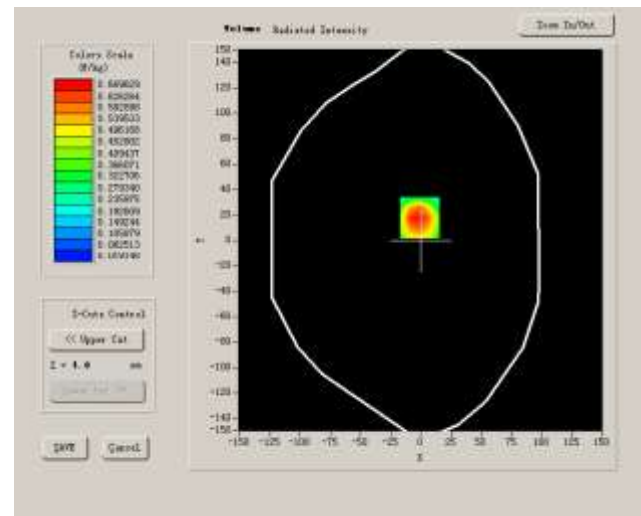
Higher Band SAR (Channel 251):

Frequency (MHz)	848.799988
Relative permittivity (real part)	54.014999
Relative permittivity (imaginary part)	21.332850
Conductivity (S/m)	1.005962
ConvF:	28.559,25.681,27.588
Crest factor:	1:8
Variation (%)	0.860000

SURFACE SAR



VOLUME SAR

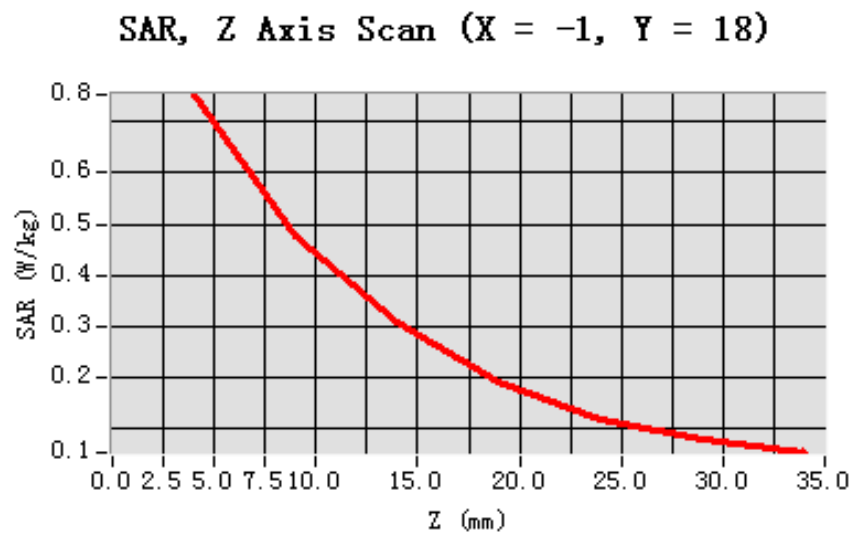


Maximum location: X=-1.00, Y=18.00

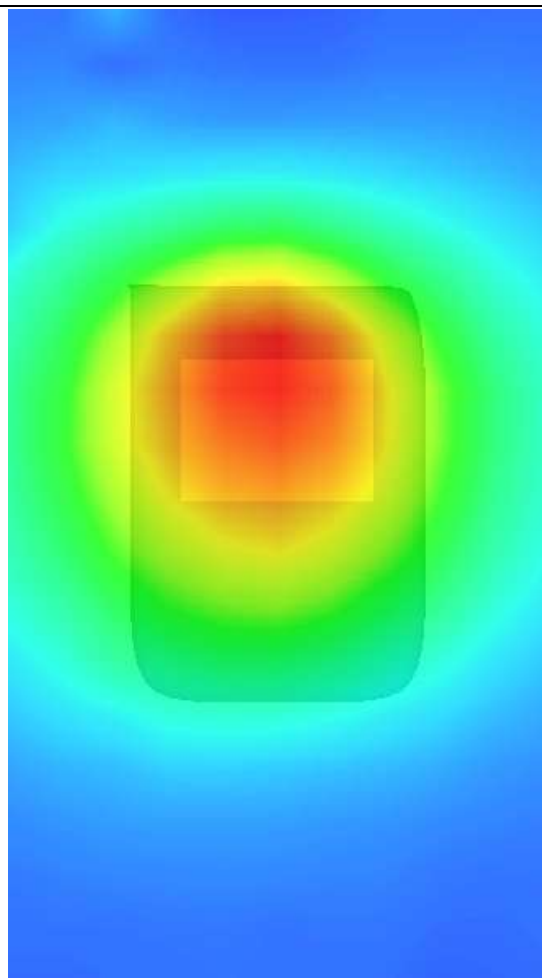
SAR 10g (W/Kg)	0.431603
SAR 1g (W/Kg)	0.734896

Z Axis Scan

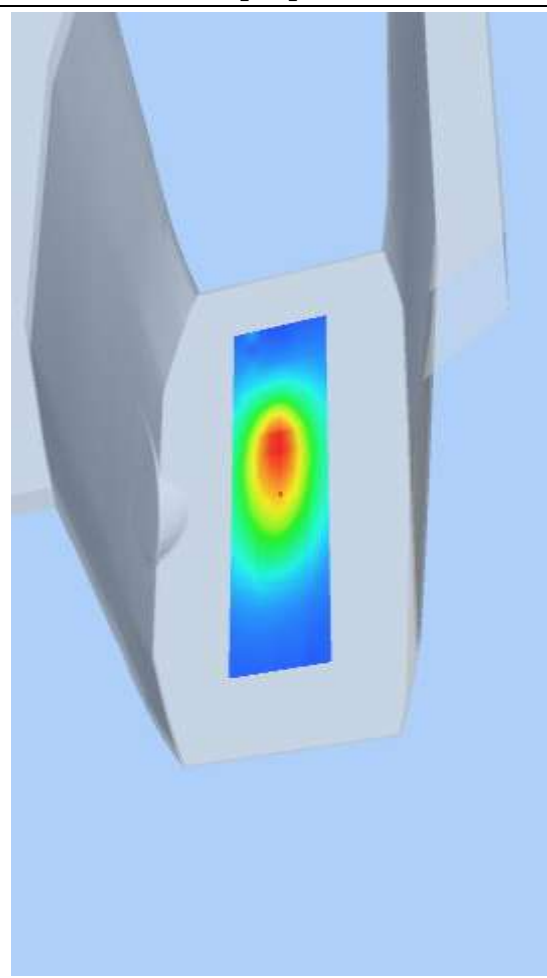
Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.7531	0.4753	0.3060	0.1909	0.1190	0.0803



3D scene shot



Hot spot position



MEASUREMENT 4

Date of measurement: 22/7/2010

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

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

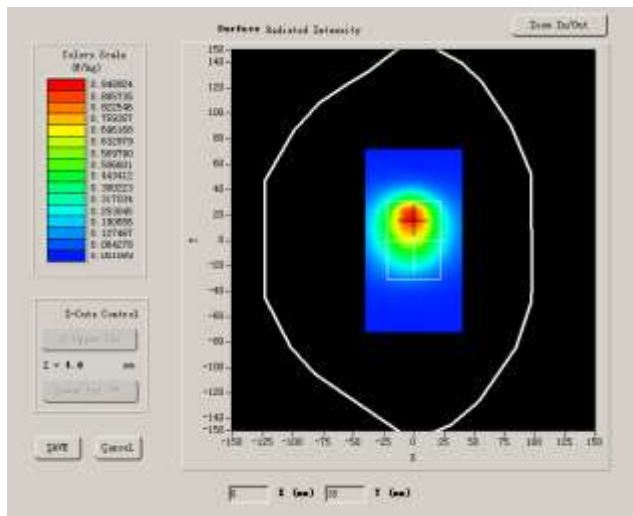
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Body
Device Position	Backside touched phantom(with earphone)
Band	GSM850
Channels	Middle
Signal	GSM

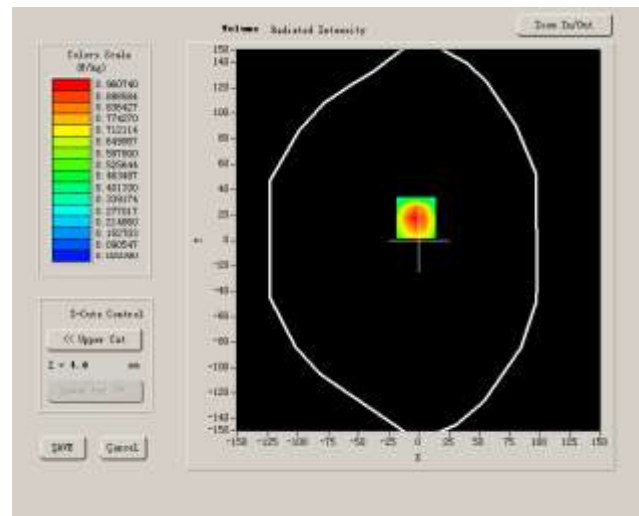
Higher Band SAR (Channel 251):

Frequency (MHz)	836.599976
Relative permittivity (real part)	55.673323
Relative permittivity (imaginary part)	21.733416
Conductivity (S/m)	1.012346
ConvF:	28.559,25.681,27.588
Crest factor:	1:8
Variation (%)	0.610000

SURFACE SAR



VOLUME SAR

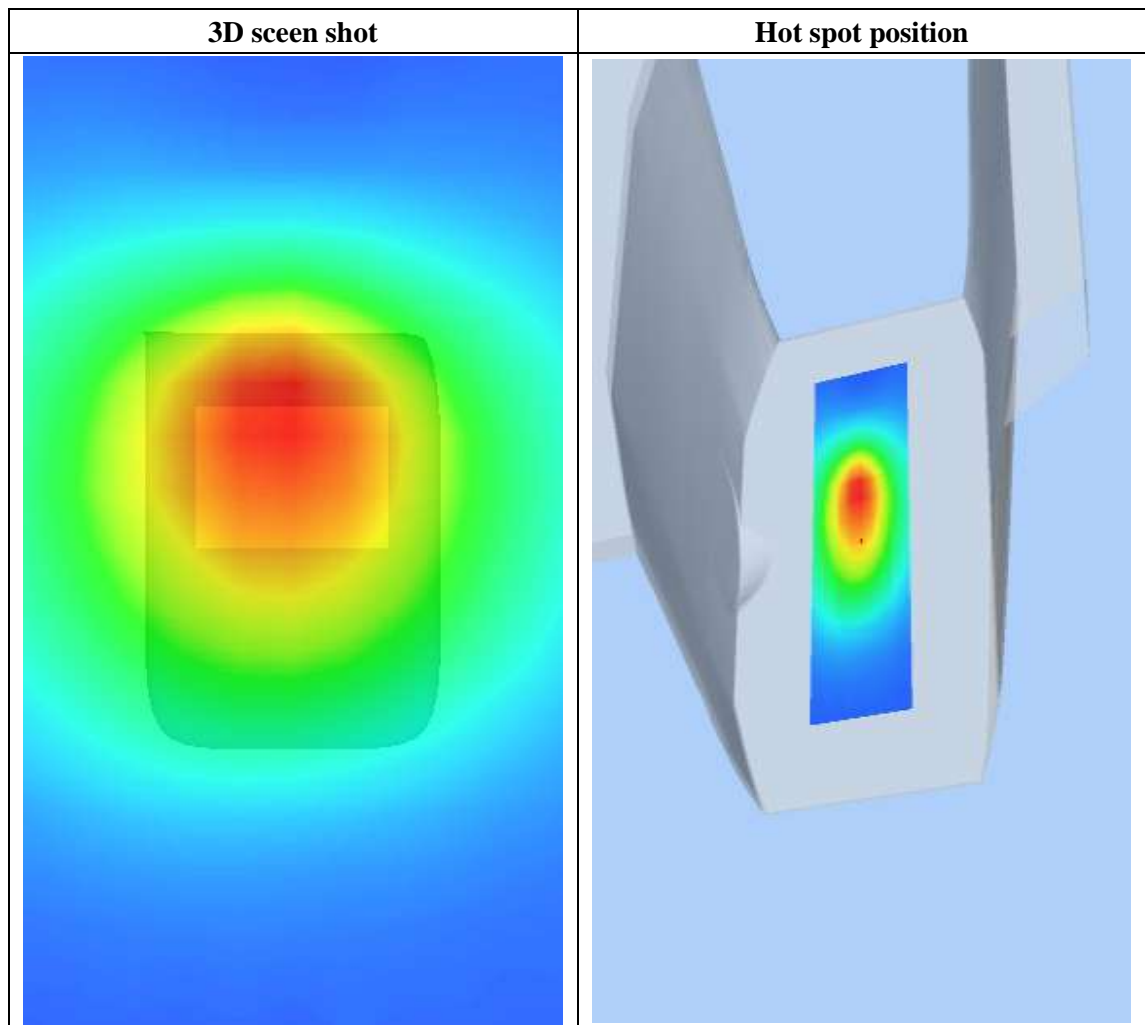
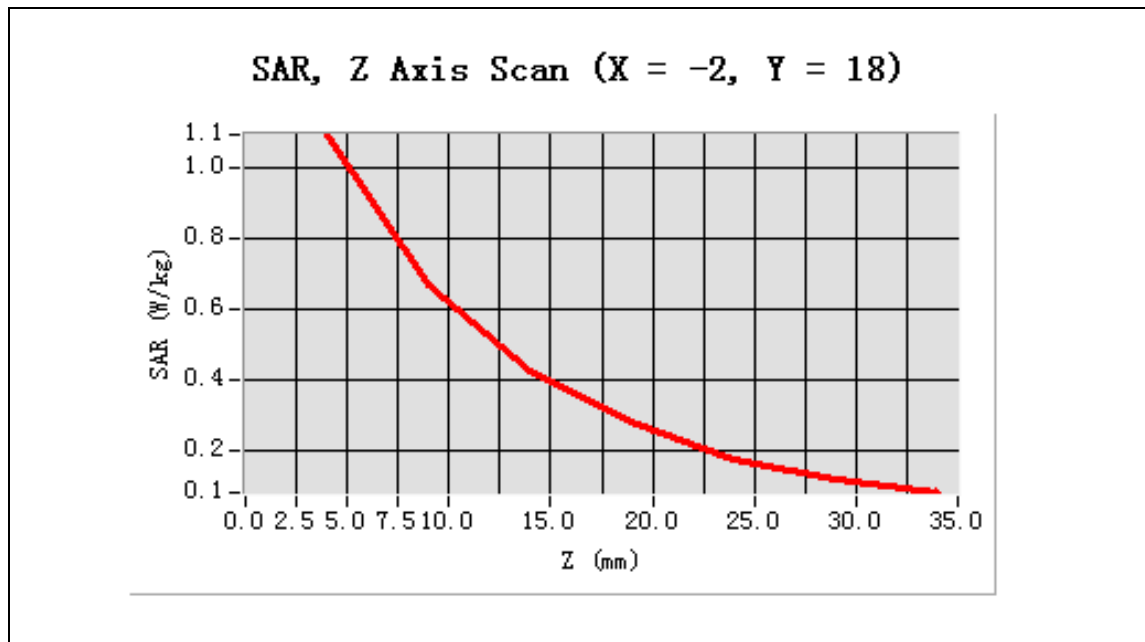


Maximum location: X=-2.00, Y=18.00

SAR 10g (W/Kg)	0.60556
SAR 1g (W/Kg)	1.02456

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	1.0956	0.6756	0.4456	0.2864	0.1764	0.134



MEASUREMENT 5

Date of measurement: 22/7/2010

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

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

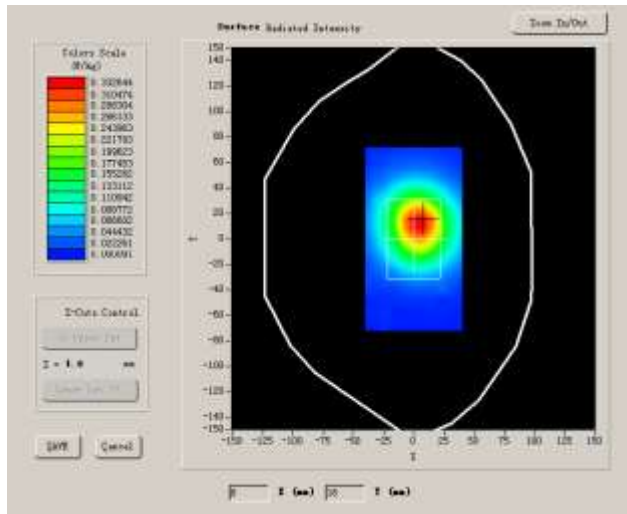
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Body
Device Position	FrontSide toward phantom 10mm
Band	GSM850
Channels	Low
Signal	GSM

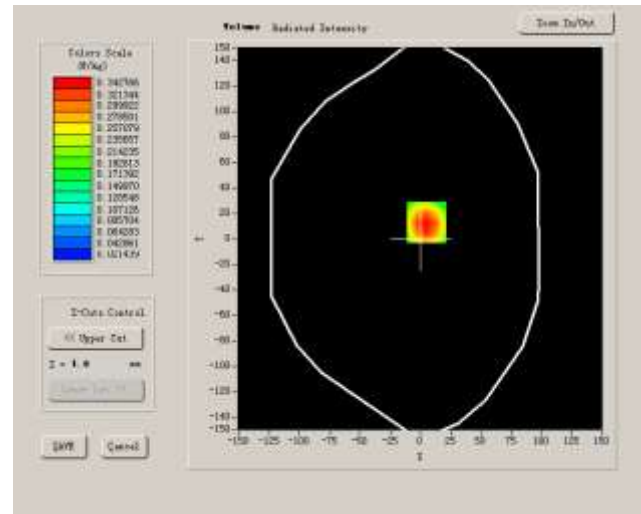
Low Band SAR (Channel 128):

Frequency (MHz)	824.200012
Relative permittivity (real part)	41.790001
Relative permittivity (imaginary part)	18.926250
Conductivity (S/m)	0.866612
ConvF:	28.479,25.214,27.196
Crest factor:	1:8
Variation (%)	-1.160000

SURFACE SAR



VOLUME SAR

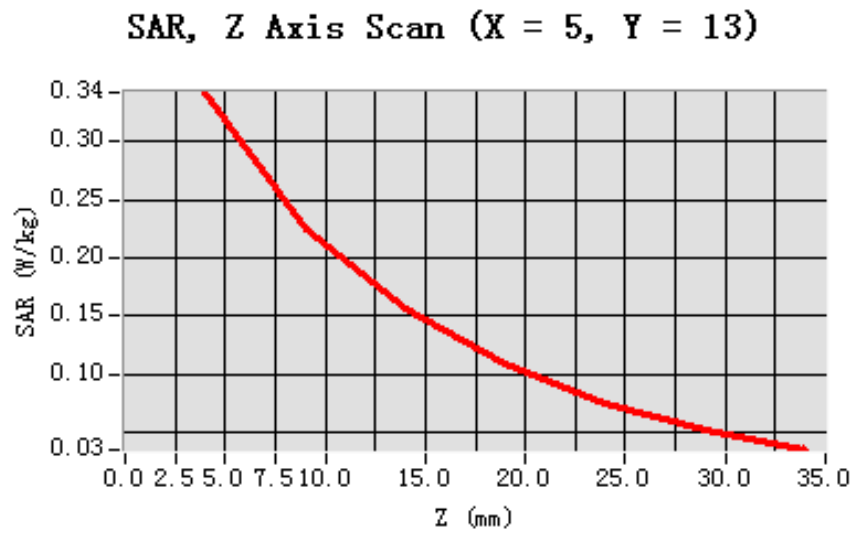


Maximum location: X=5.00, Y=13.00

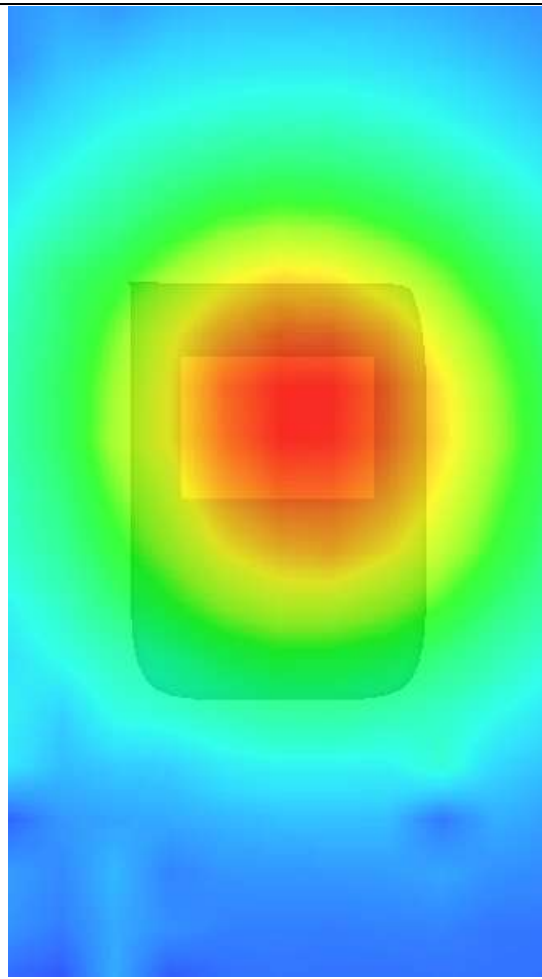
SAR 10g (W/Kg)	0.210248
SAR 1g (W/Kg)	0.330745

Z Axis Scan

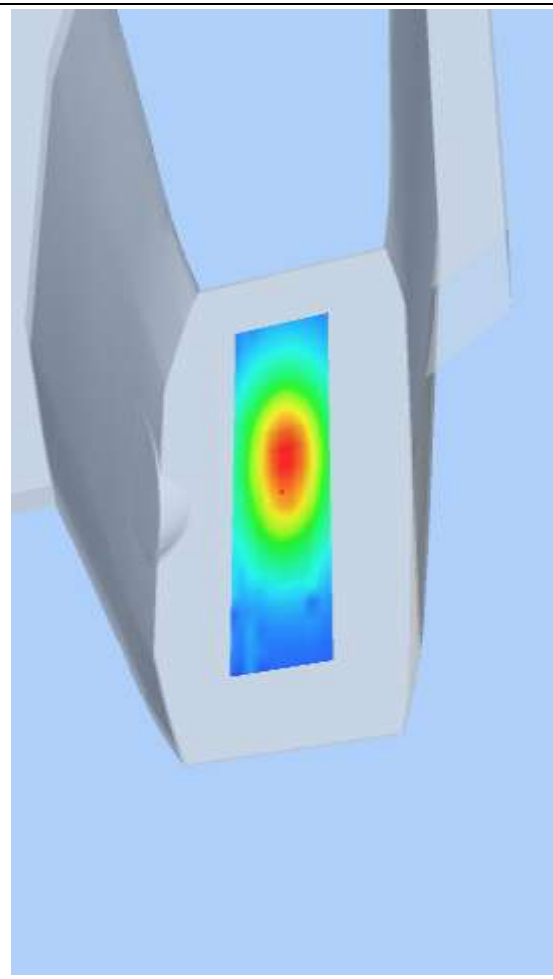
Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.3428	0.2256	0.1565	0.1092	0.0756	0.0511



3D scene shot



Hot spot position



MEASUREMENT 6

Date of measurement: 22/7/2010

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

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

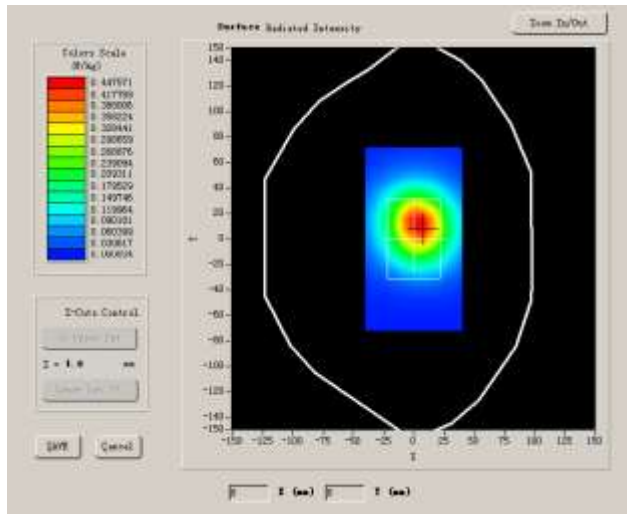
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Body
Device Position	FrontSide toward phantom 10mm
Band	GSM850
Channels	Middle
Signal	GSM

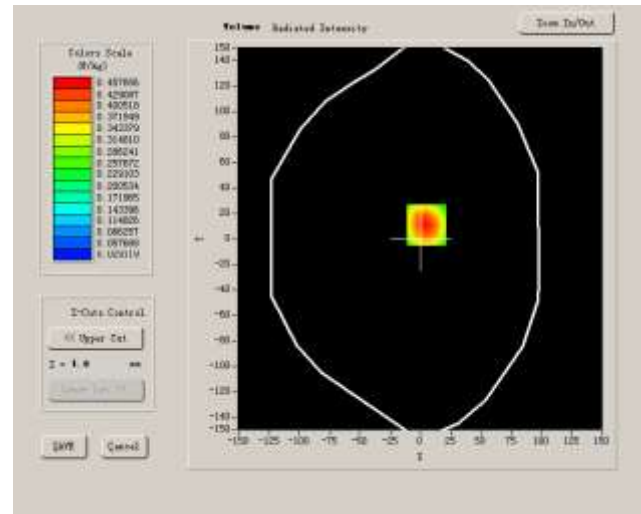
Middle Band SAR (Channel 190):

Frequency (MHz)	836.599976
Relative permittivity (real part)	40.669998
Relative permittivity (imaginary part)	19.120001
Conductivity (S/m)	0.888655
ConvF:	28.479,25.214,27.196
Crest factor:	1:8
Variation (%)	0.030000

SURFACE SAR



VOLUME SAR

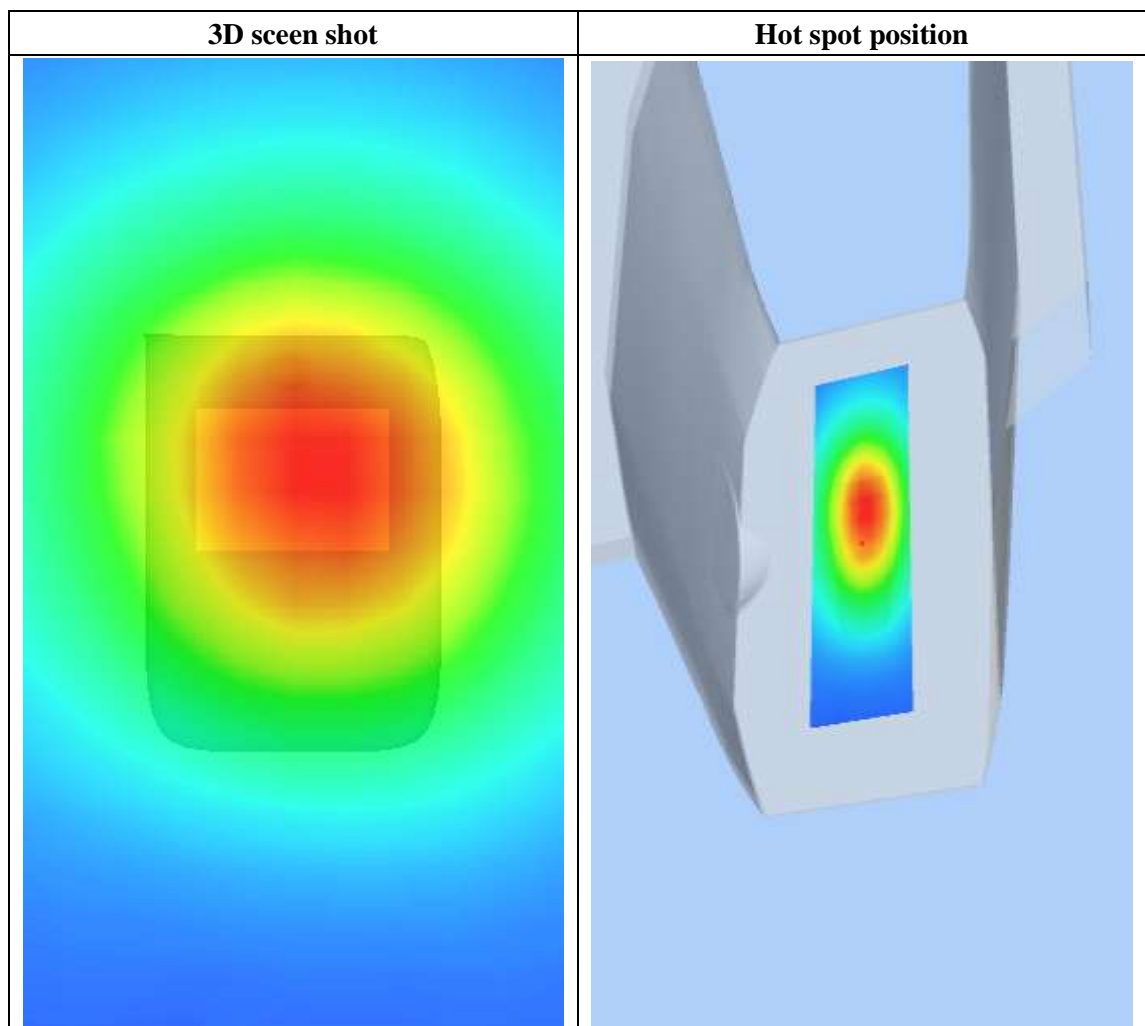
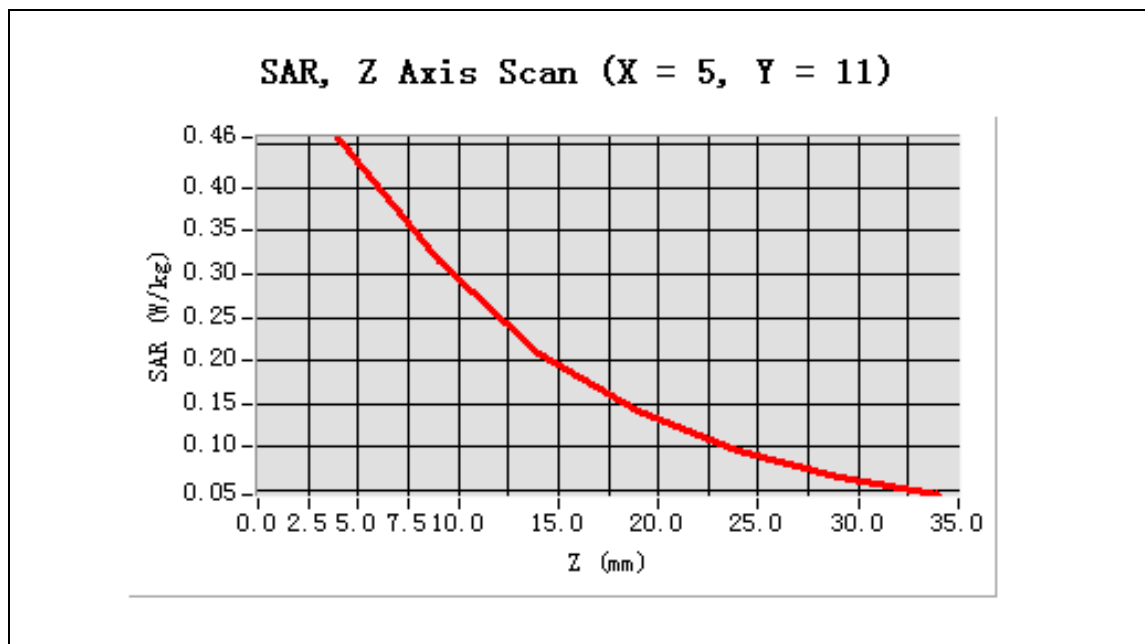


Maximum location: X=5.00, Y=11.00

SAR 10g (W/Kg)	0.277102
SAR 1g (W/Kg)	0.433856

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.4577	0.3147	0.2085	0.1425	0.0968	0.0666



MEASUREMENT 7

Date of measurement: 22/7/2010

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

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

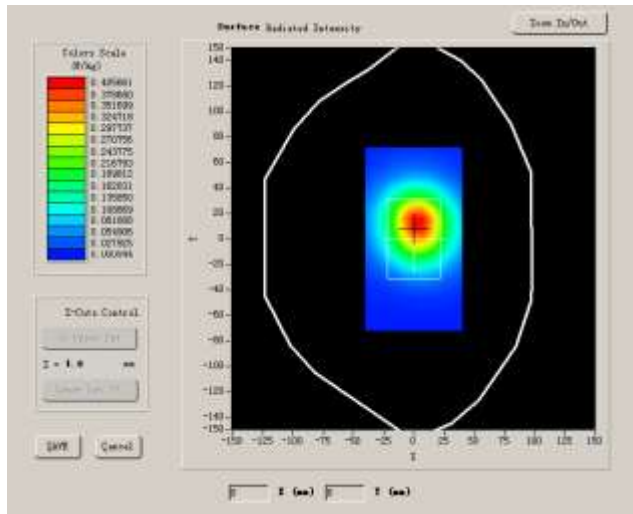
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Body
Device Position	FrontSide toward phantom 10mm
Band	GSM850
Channels	High
Signal	GSM

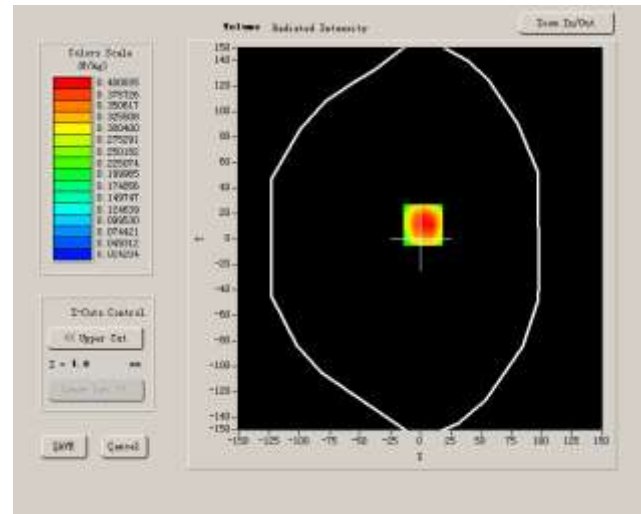
Higher Band SAR (Channel 251):

Frequency (MHz)	848.799988
Relative permittivity (real part)	41.675999
Relative permittivity (imaginary part)	18.967199
Conductivity (S/m)	0.894409
ConvF:	28.479,25.214,27.196
Crest factor:	1:8
Variation (%)	-0.280000

SURFACE SAR



VOLUME SAR

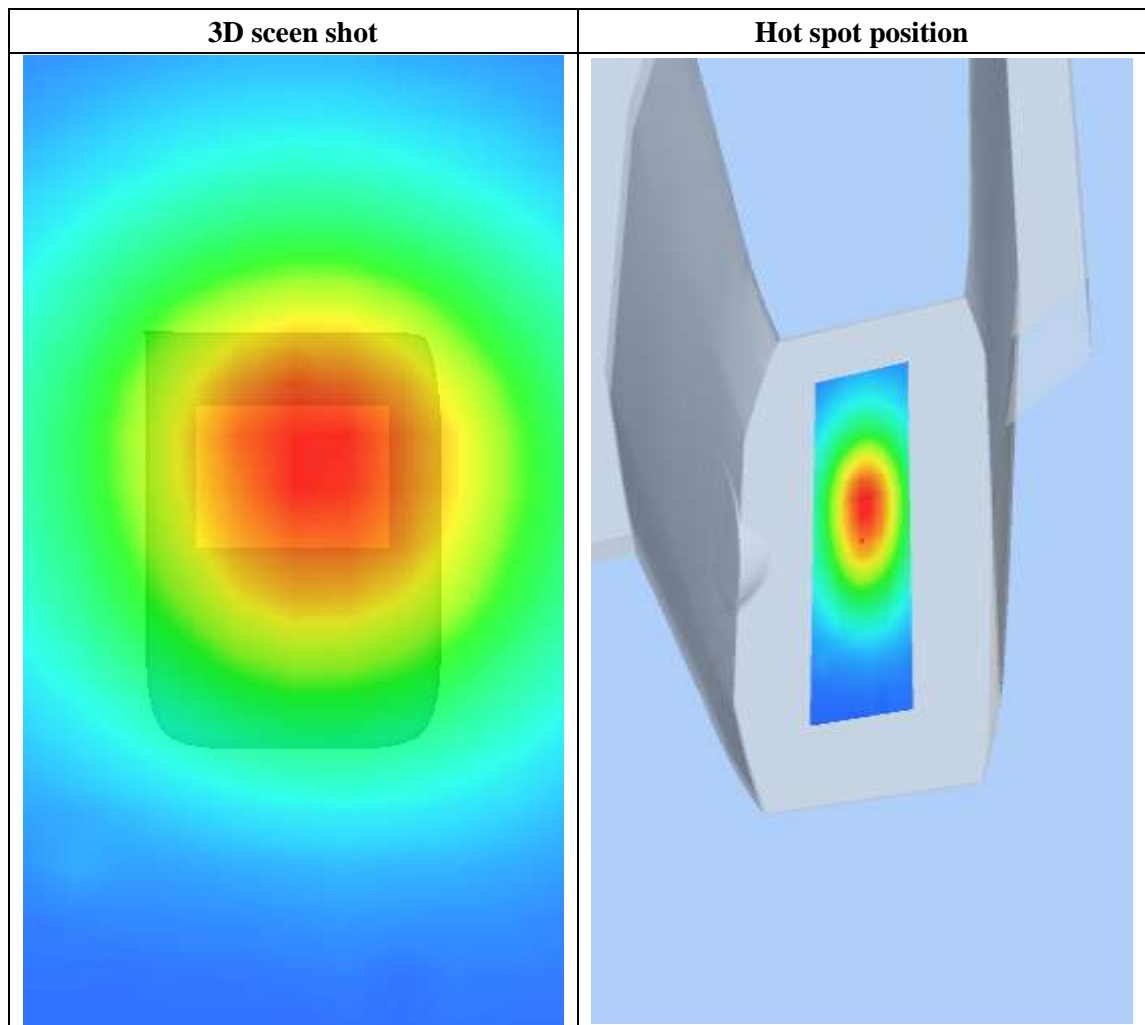
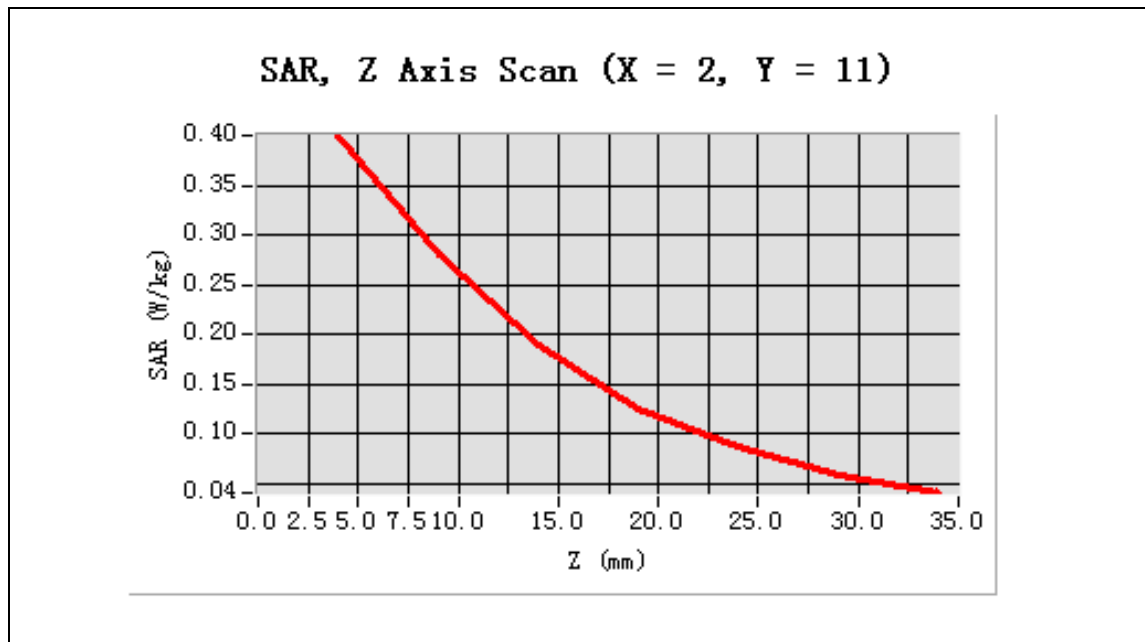


Maximum location: X=2.00, Y=11.00

SAR 10g (W/Kg)	0.248387
SAR 1g (W/Kg)	0.389793

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.4008	0.2801	0.1884	0.1257	0.0862	0.0573



MEASUREMENT 8

Date of measurement: 22/7/2010

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

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

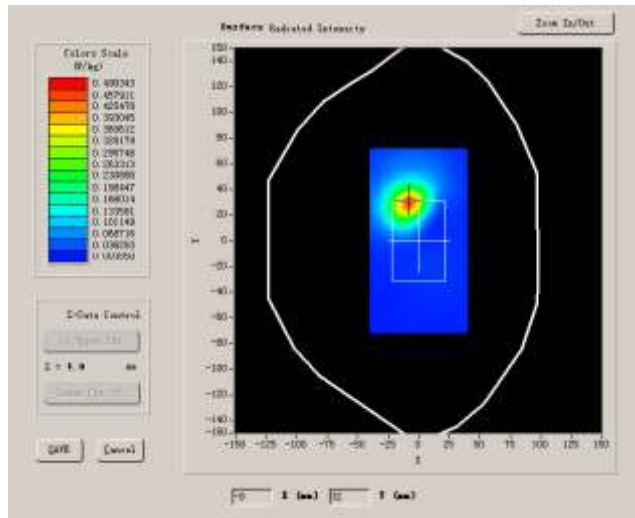
A. Experimental conditions.

Phantom File	zinf3.txt
Phantom	Body
Device Position	Backside touch phantom
Band	GSM1900
Channels	Low
Signal	GSM

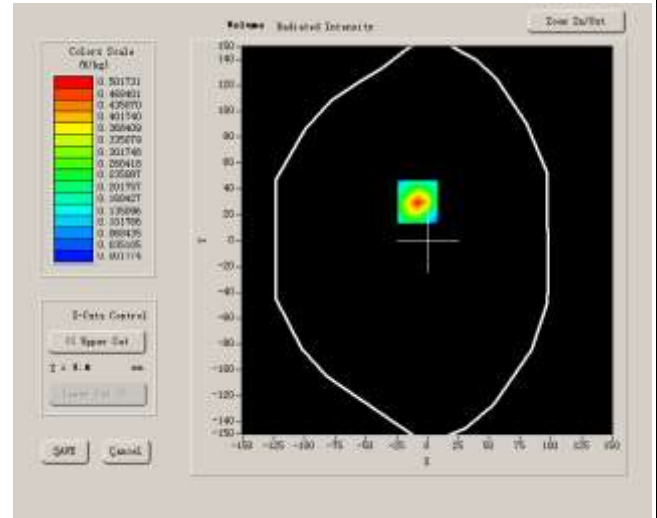
Lower Band SAR (Channel 512):

Frequency (MHz)	1850.199951
Relative permittivity (real part)	54.47853
Relative permittivity (imaginary part)	14.769124
Conductivity (S/m)	1.521656
ConvF:	40.625,34.773,38.535
Crest factor:	1:8
Variation (%)	-0.2304

SURFACE SAR



VOLUME SAR

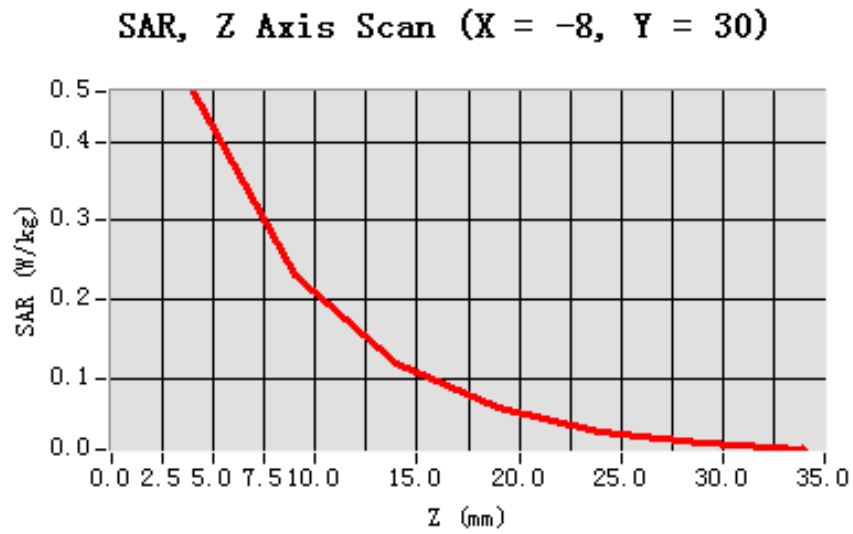


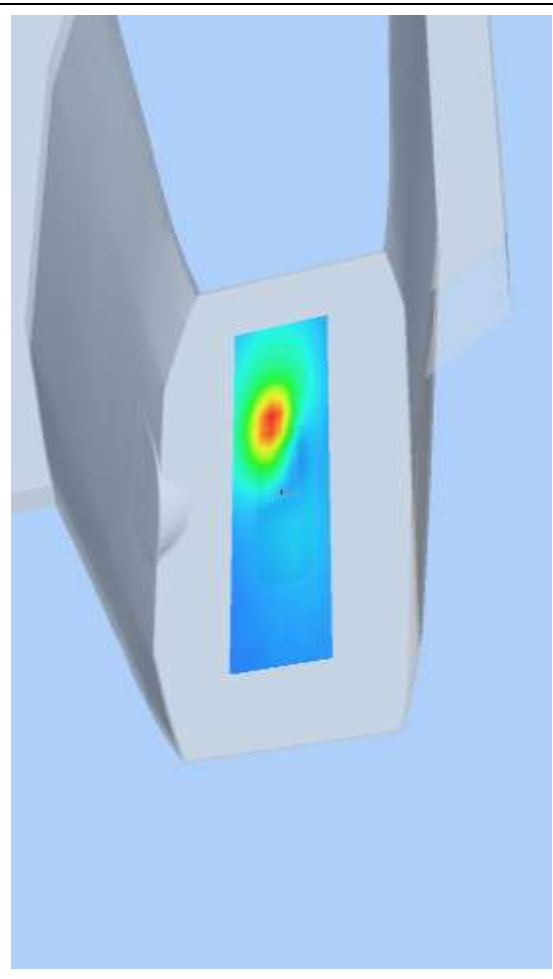
Maximum location: X=-8.00, Y=30.00

SAR 10g (W/Kg)	0.197293
SAR 1g (W/Kg)	0.420696

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.4634	0.2310	0.1197	0.0625	0.0326	0.0183


3D scene shot

Hot spot position


MEASUREMENT 9

Date of measurement: 22/7/2010

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

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

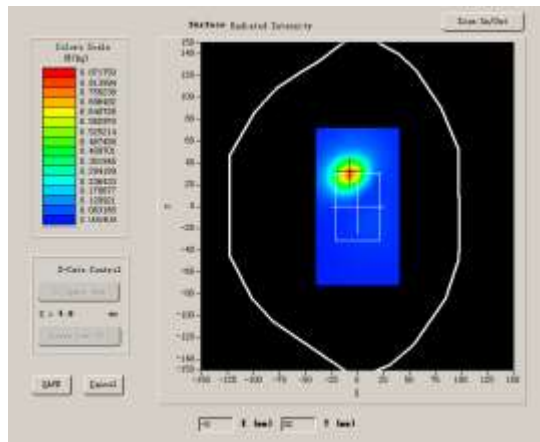
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Body
Device Position	BackSide touch phantom
Band	GSM1900
Channels	Middle
Signal	GSM

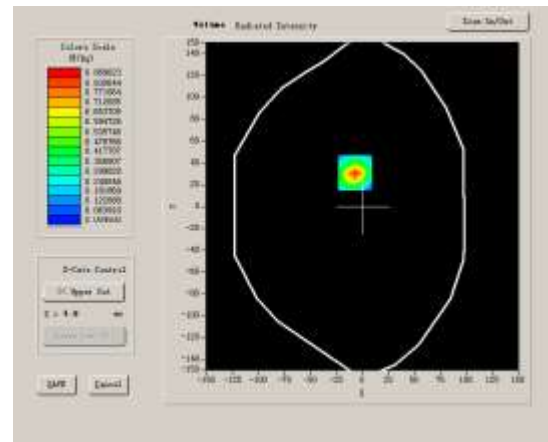
Middle Band SAR (Channel 661):

Frequency (MHz)	1880.000000
Relative permittivity (real part)	53.55189
Relative permittivity (imaginary part)	15.267103
Conductivity (S/m)	1.5467832
ConvF:	40.625,34.773,38.535
Crest factor:	1:8
Variation (%)	-0.610000

SURFACE SAR



VOLUME SAR

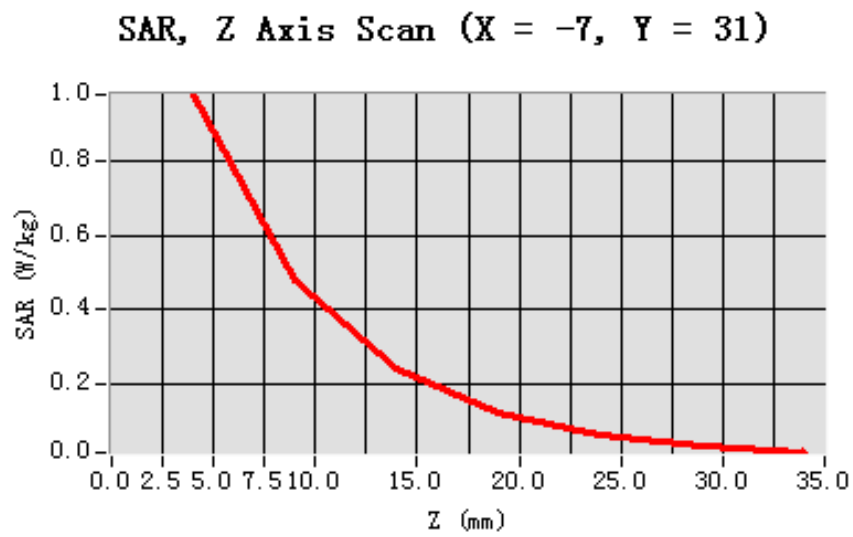


Maximum location: X=-7.00, Y=31.00

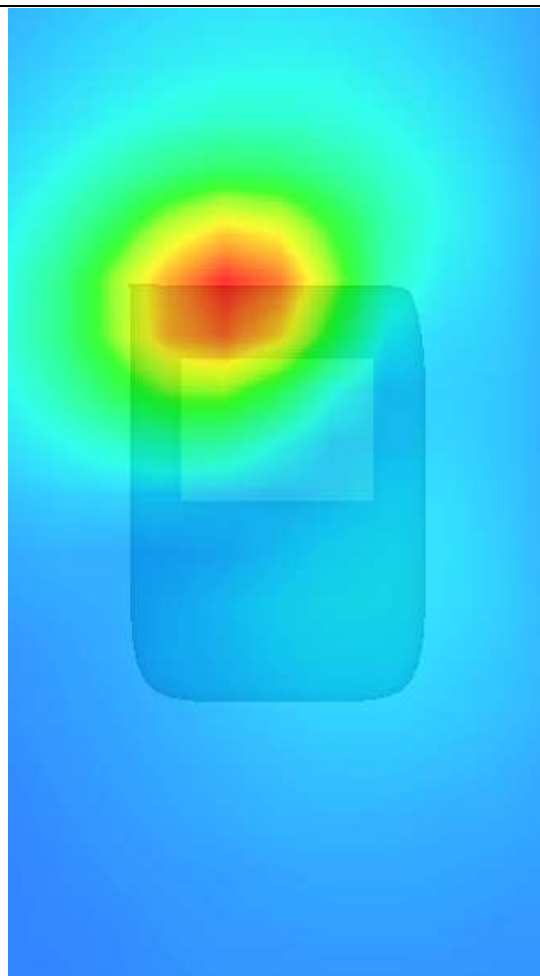
SAR 10g (W/Kg)	0.404247
SAR 1g (W/Kg)	0.885082

Z Axis Scan

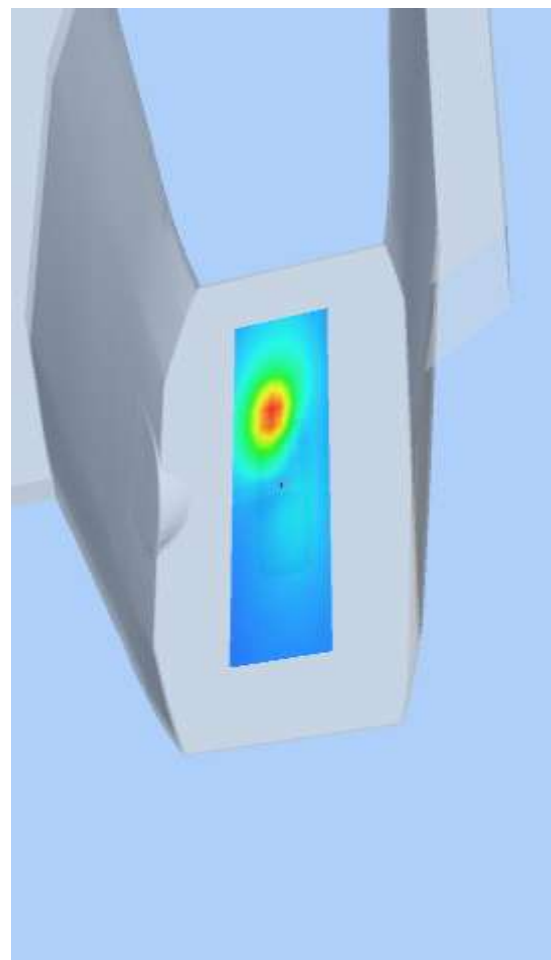
Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.9750	0.4811	0.2416	0.1235	0.0662	0.0347



3D scene shot



Hot spot position



MEASUREMENT 10

Date of measurement: 22/7/2010

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

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

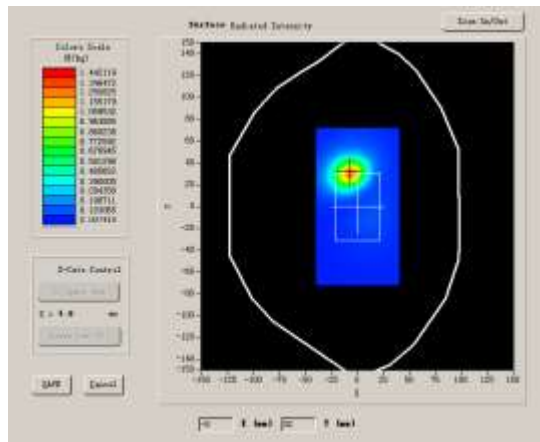
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Body
Device Position	BackSide touch phantom
Band	GSM1900
Channels	High
Signal	GSM

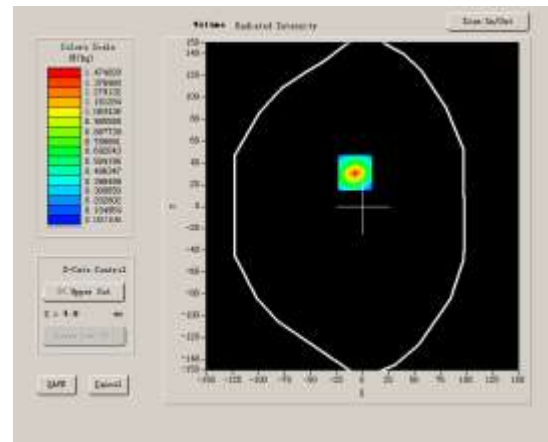
Higher Band SAR (Channel 810):

Frequency (MHz)	1909.800049
Relative permittivity (real part)	54.51564
Relative permittivity (imaginary part)	14.81231
Conductivity (S/m)	1.567812
ConvF:	40.625,34.773,38.535
Crest factor:	1:8
Variation (%)	0.20000

SURFACE SAR



VOLUME SAR

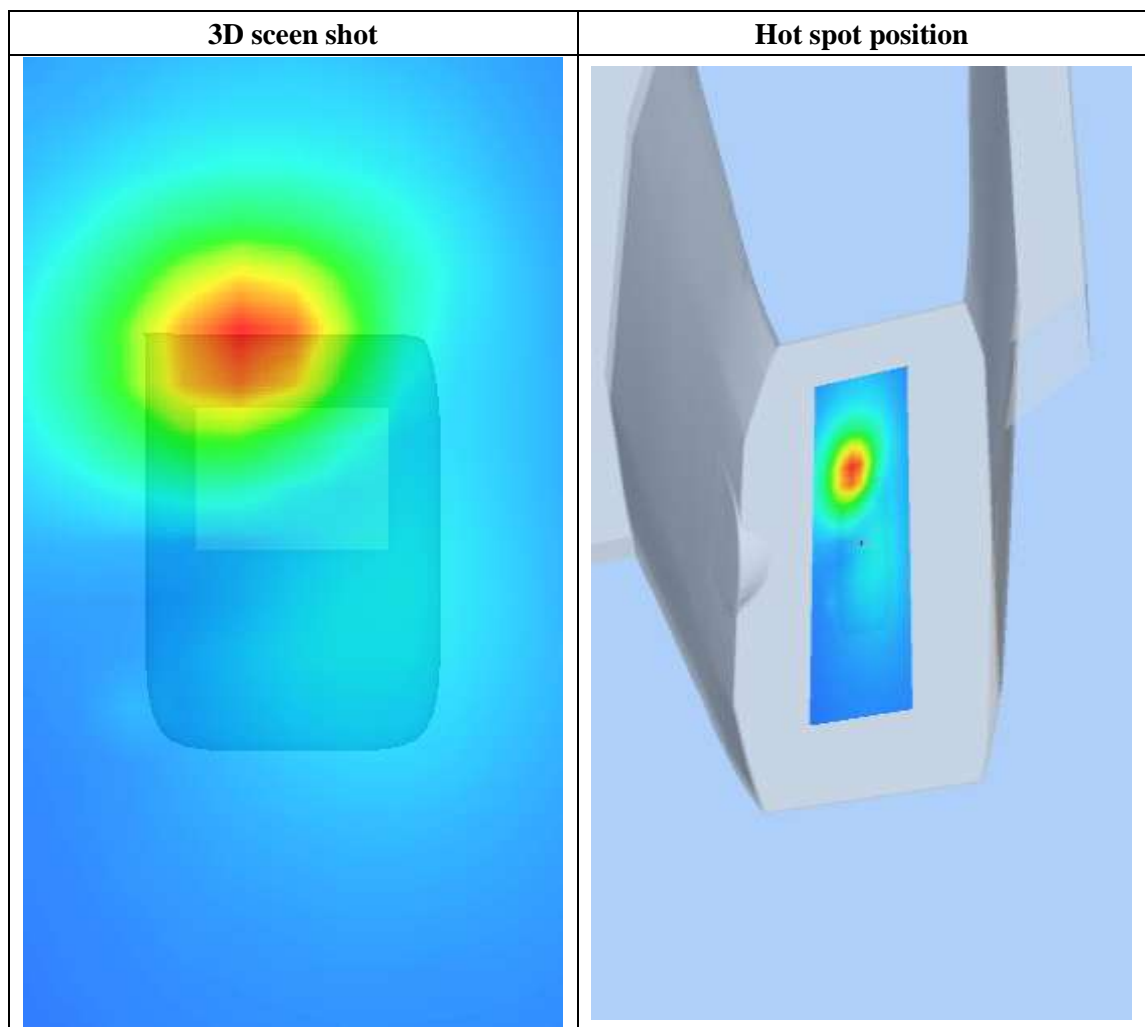
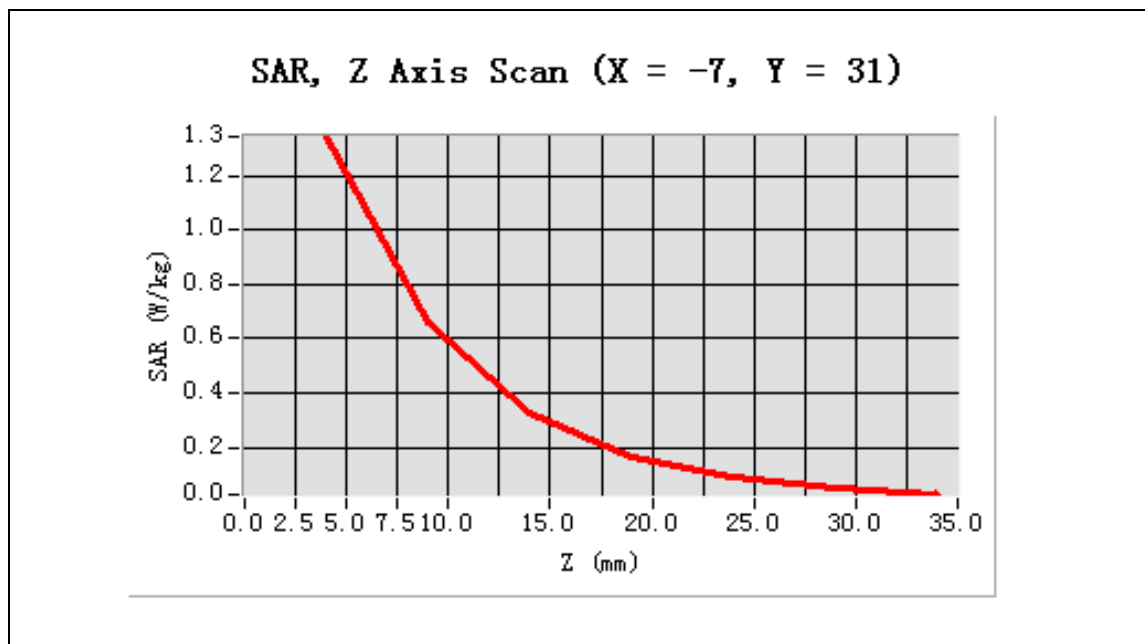


Maximum location: X=-7.00, Y=31.00

SAR 10g (W/Kg)	0.536322
SAR 1g (W/Kg)	1.199638

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	1.3452	0.6602	0.3289	0.1635	0.0871	0.0467



MEASUREMENT 11

Date of measurement: 22/7/2010

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

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

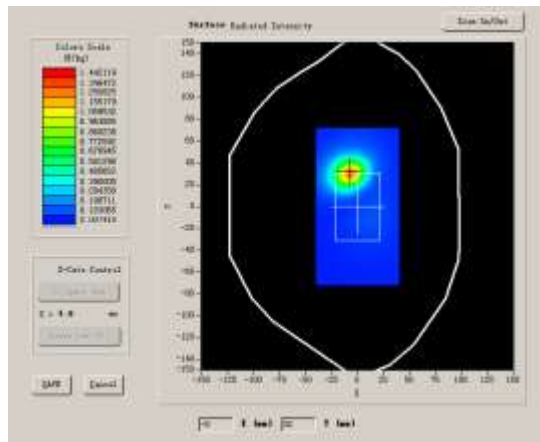
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Body
Device Position	BackSide touch phantom(with earphone)
Band	GSM1900
Channels	High
Signal	GSM

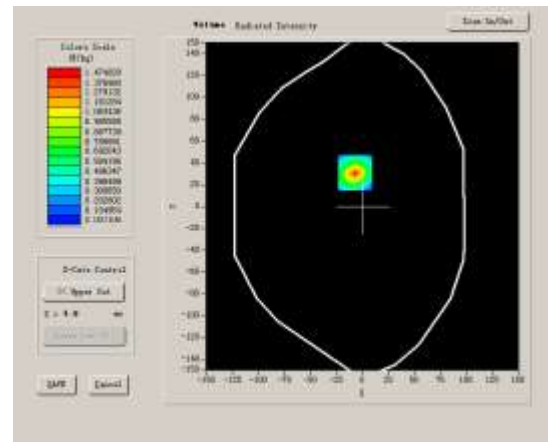
Higher Band SAR (Channel 810):

Frequency (MHz)	1909.800049
Relative permittivity (real part)	54.225345
Relative permittivity (imaginary part)	14.89452
Conductivity (S/m)	1.582421
ConvF:	40.625,34.773,38.535
Crest factor:	1:8
Variation (%)	-0.210000

SURFACE SAR



VOLUME SAR

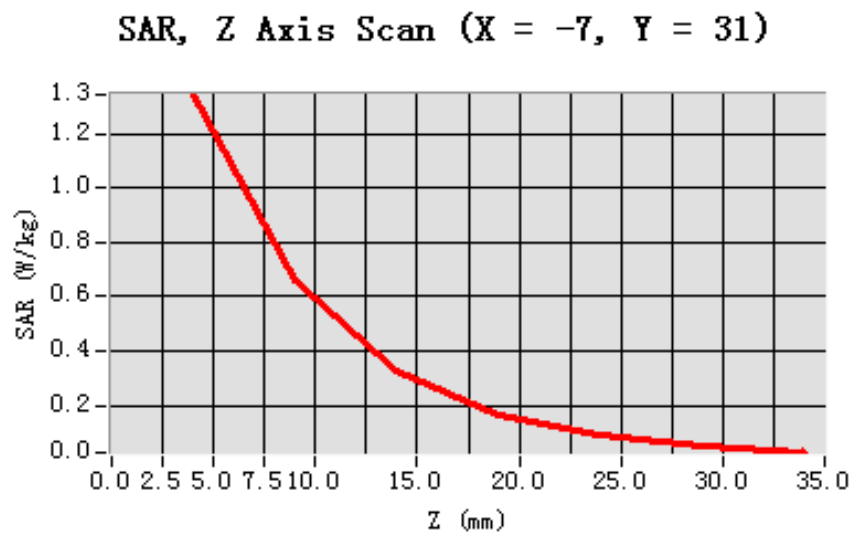
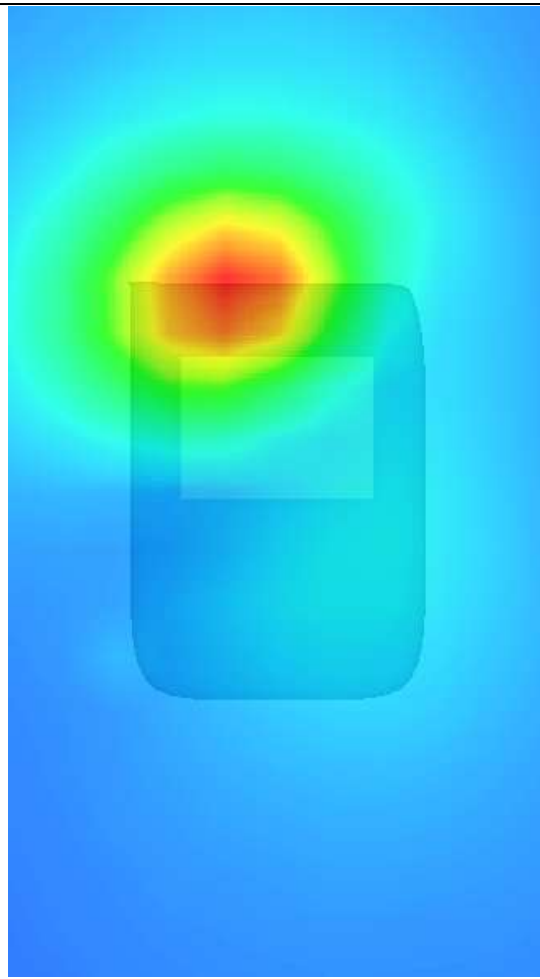
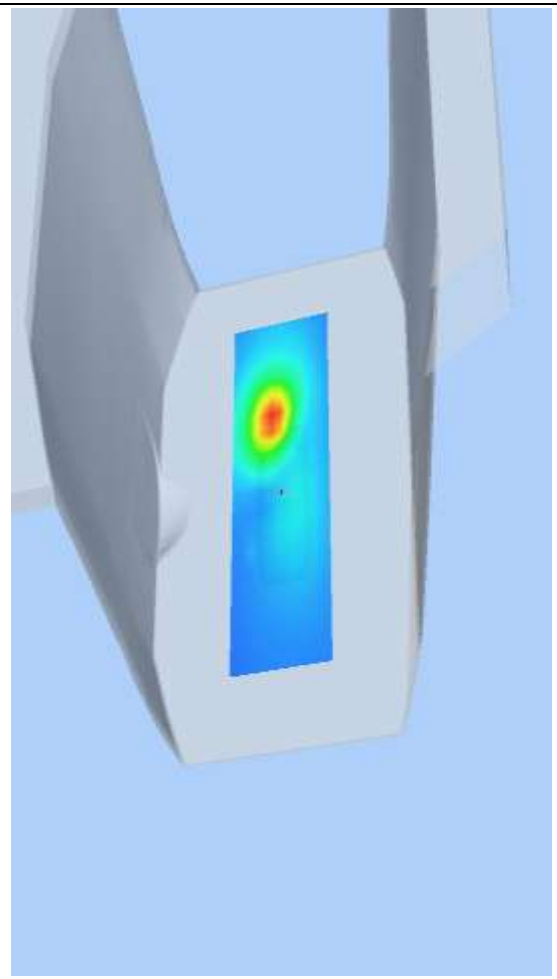


Maximum location: X=-7.00, Y=31.00

SAR 10g (W/Kg)	0.516355
SAR 1g (W/Kg)	1.141388

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	1.3452	0.6602	0.3289	0.1635	0.0871	0.0467


3D scene shot

Hot spot position


MEASUREMENT 12

Date of measurement: 22/7/2010

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

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

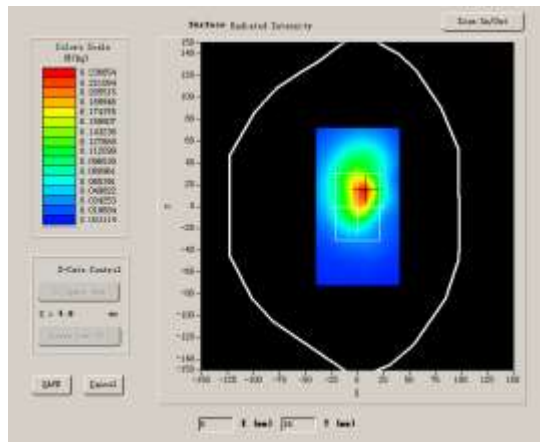
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Body
Device Position	FrontSide toward phantom 10mm
Band	GSM1900
Channels	Low
Signal	GSM

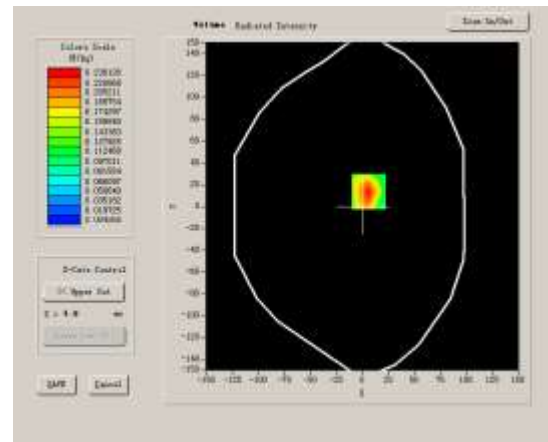
Low Band SAR (Channel 512):

Frequency (MHz)	1850.199951
Relative permittivity (real part)	39.876031
Relative permittivity (imaginary part)	12.812763
Conductivity (S/m)	1.345128
ConvF:	40.136,34.843,38.721
Crest factor:	1:8
Variation (%)	0.120000

SURFACE SAR



VOLUME SAR

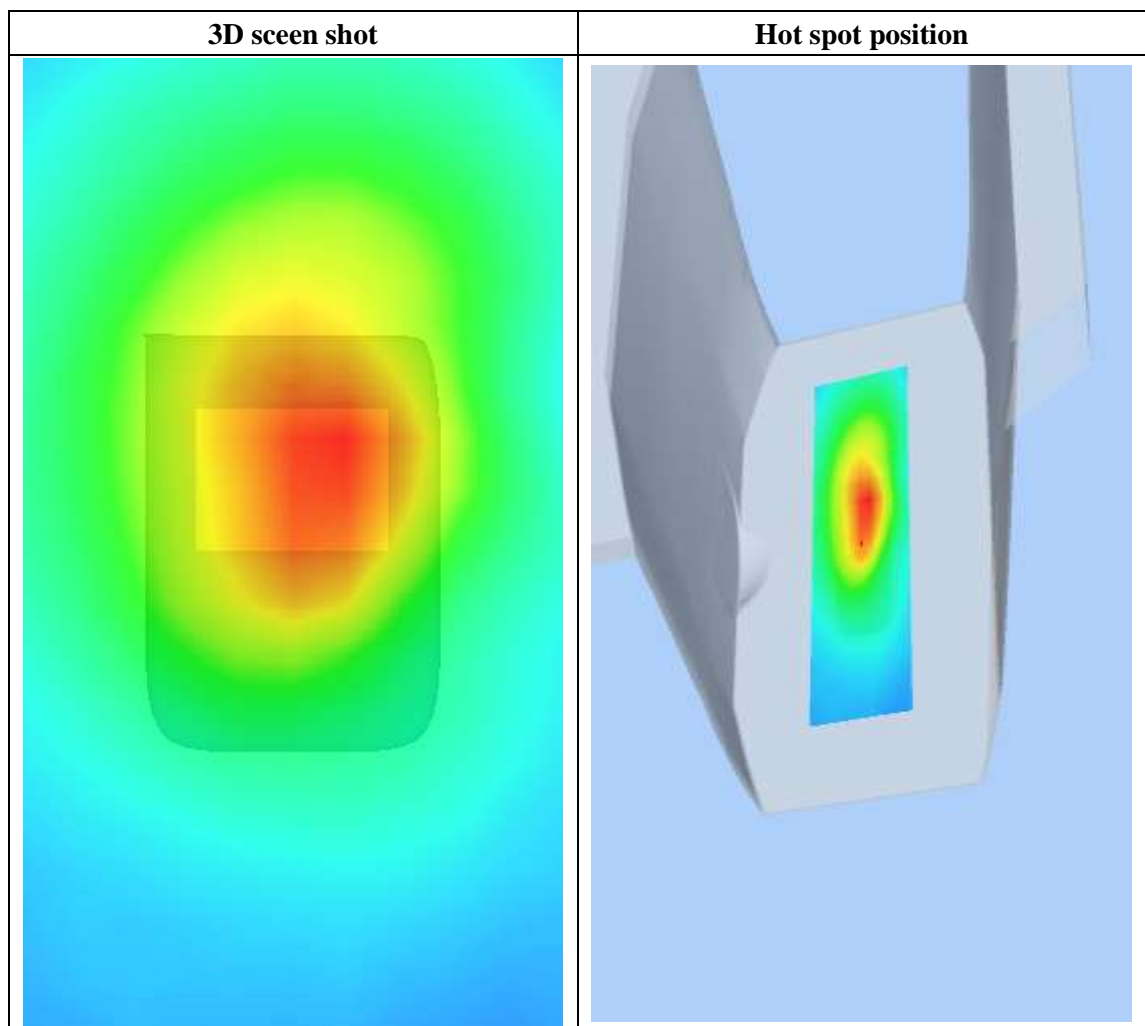
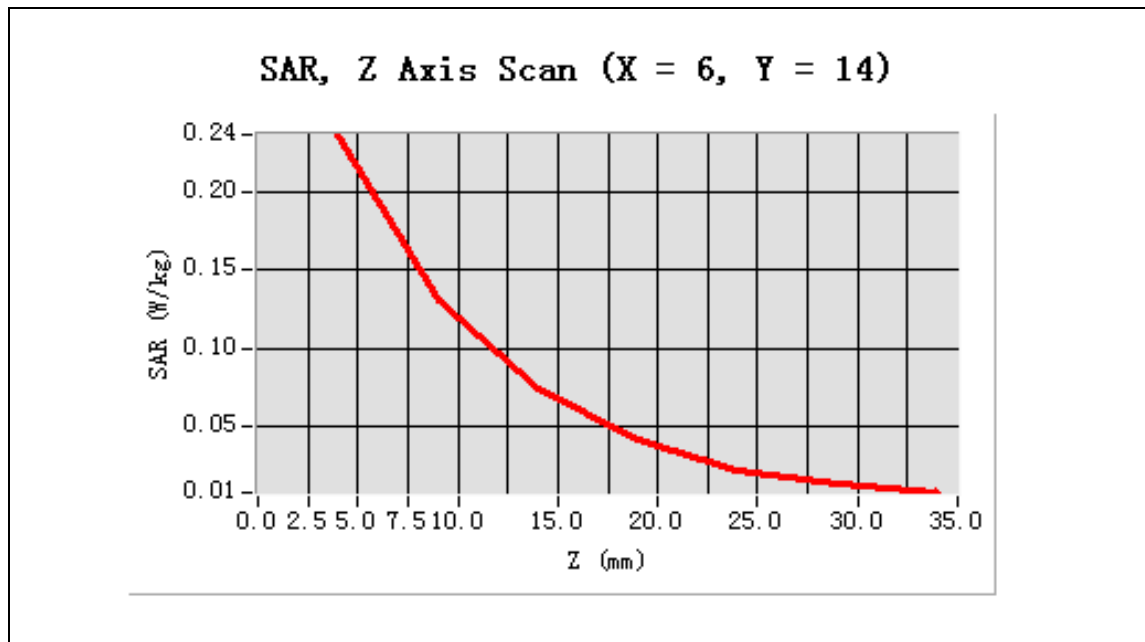


Maximum location: X=6.00, Y=14.00

SAR 10g (W/Kg)	0.121685
SAR 1g (W/Kg)	0.222595

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.2361	0.1309	0.0742	0.0423	0.0227	0.0139



MEASUREMENT 13

Date of measurement: 22/7/2010

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

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

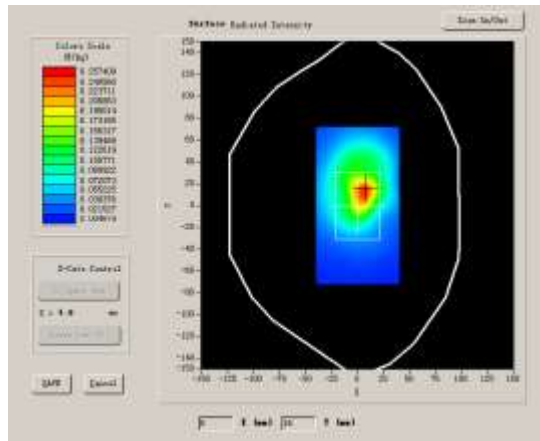
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Body
Device Position	FrontSide toward phantom 10mm
Band	GSM1900
Channels	Middle
Signal	GSM

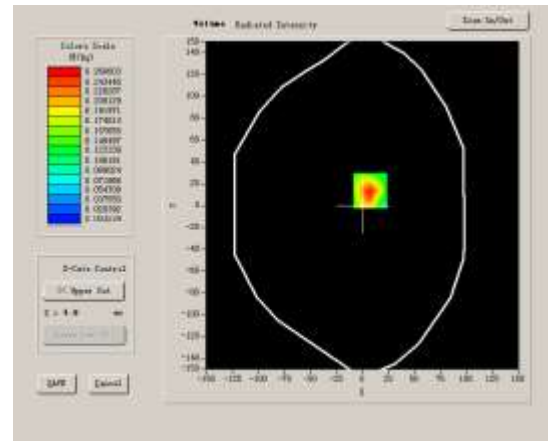
Middle Band SAR (Channel 661):

Frequency (MHz)	1880.000000
Relative permittivity (real part)	38.649702
Relative permittivity (imaginary part)	13.73406
Conductivity (S/m)	1.4457
ConvF:	40.136,34.843,38.721
Crest factor:	1:8
Variation (%)	-0.350000

SURFACE SAR



VOLUME SAR

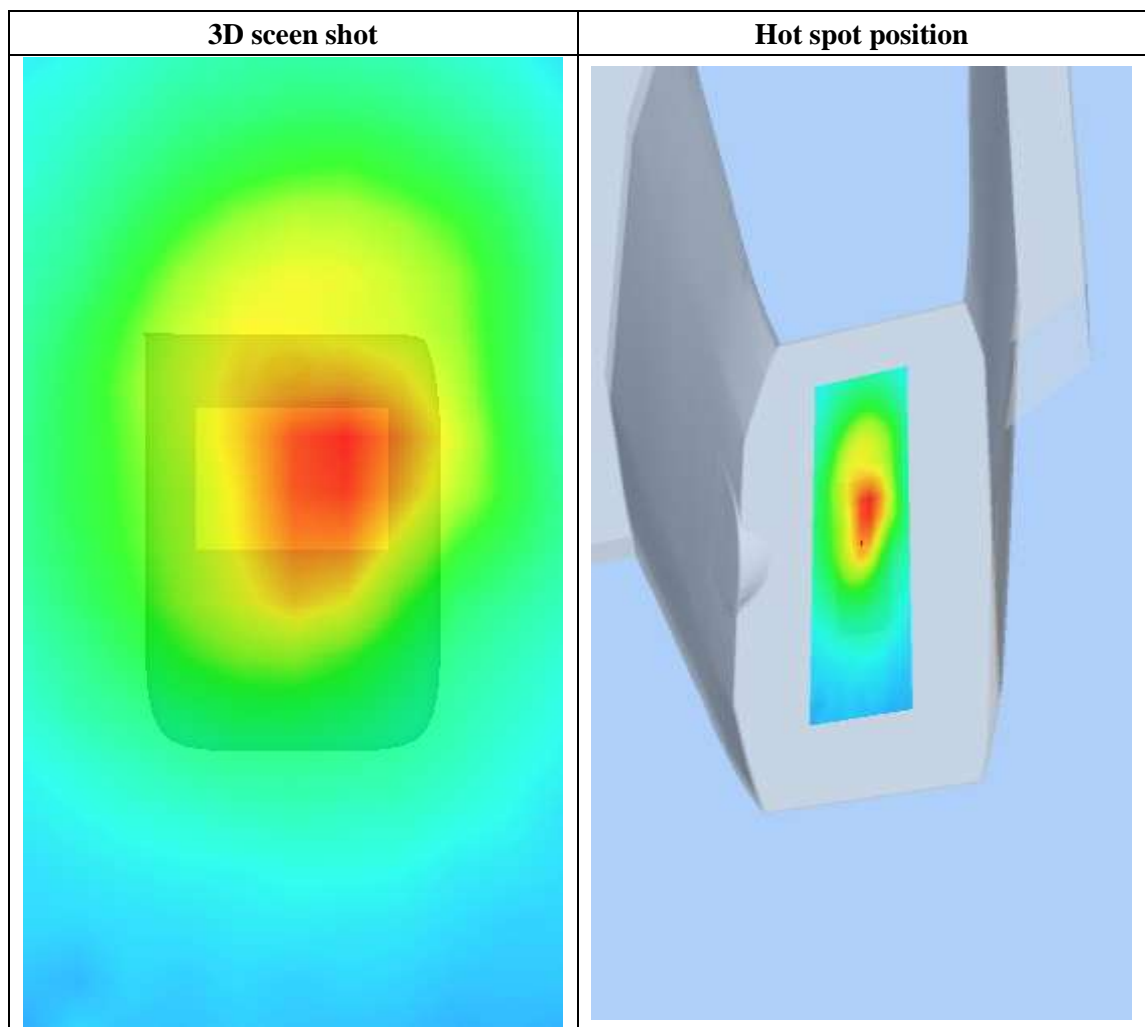
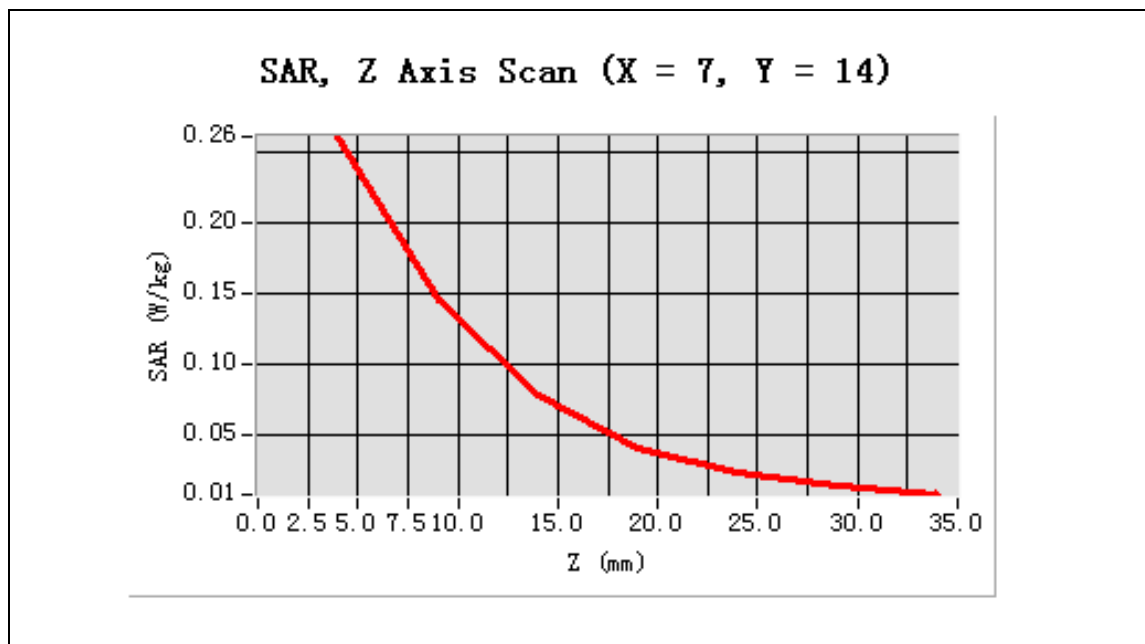


Maximum location: X=7.00, Y=14.00

SAR 10g (W/Kg)	0.130004
SAR 1g (W/Kg)	0.242878

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.2606	0.1446	0.0776	0.0407	0.0236	0.0139



MEASUREMENT 14

Date of measurement: 22/7/2010

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

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

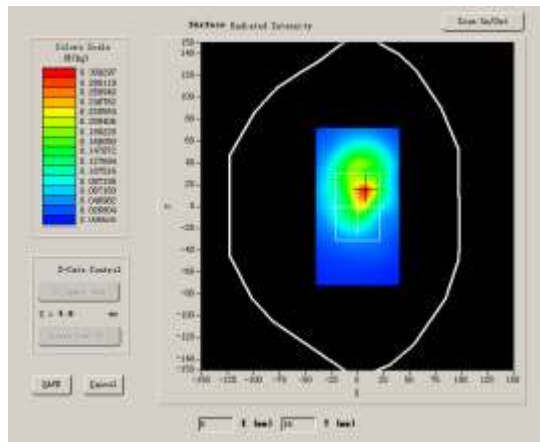
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Body
Device Position	FrontSide toward phantom 10mm
Band	GSM1900
Channels	High
Signal	GSM

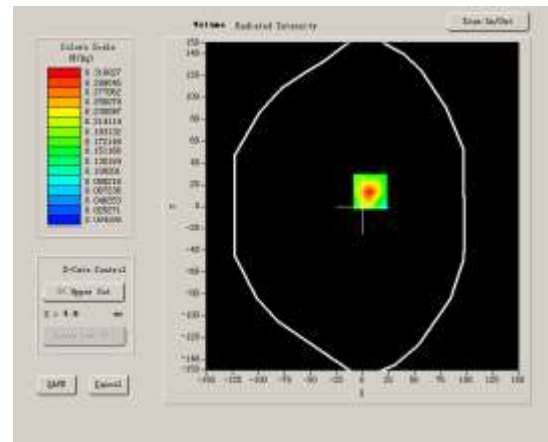
Higher Band SAR (Channel 810):

Frequency (MHz)	1909.800049
Relative permittivity (real part)	39.97023
Relative permittivity (imaginary part)	13.27651
Conductivity (S/m)	1.389606
ConvF:	40.136,34.843,38.721
Crest factor:	1:8
Variation (%)	-0.430000

SURFACE SAR



VOLUME SAR

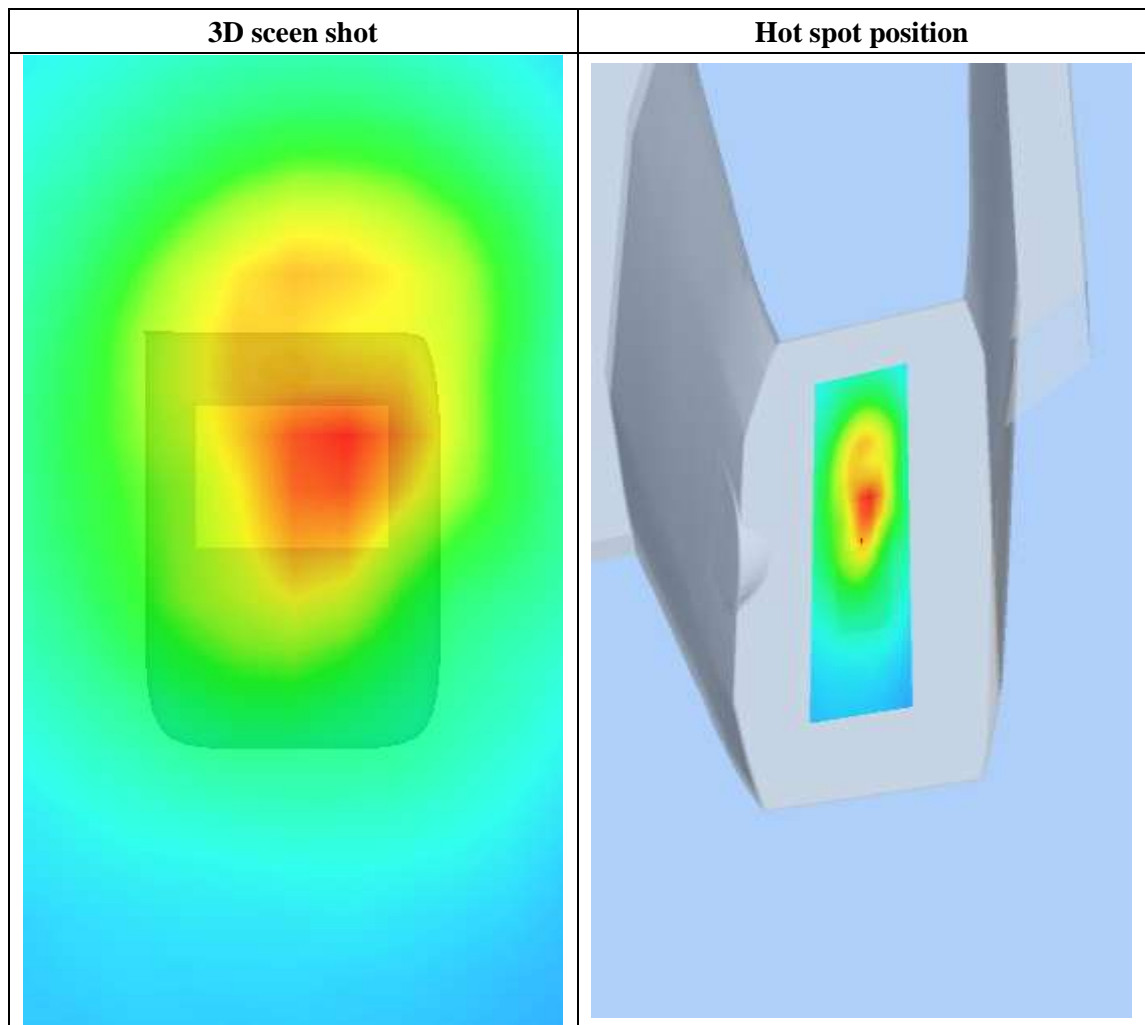
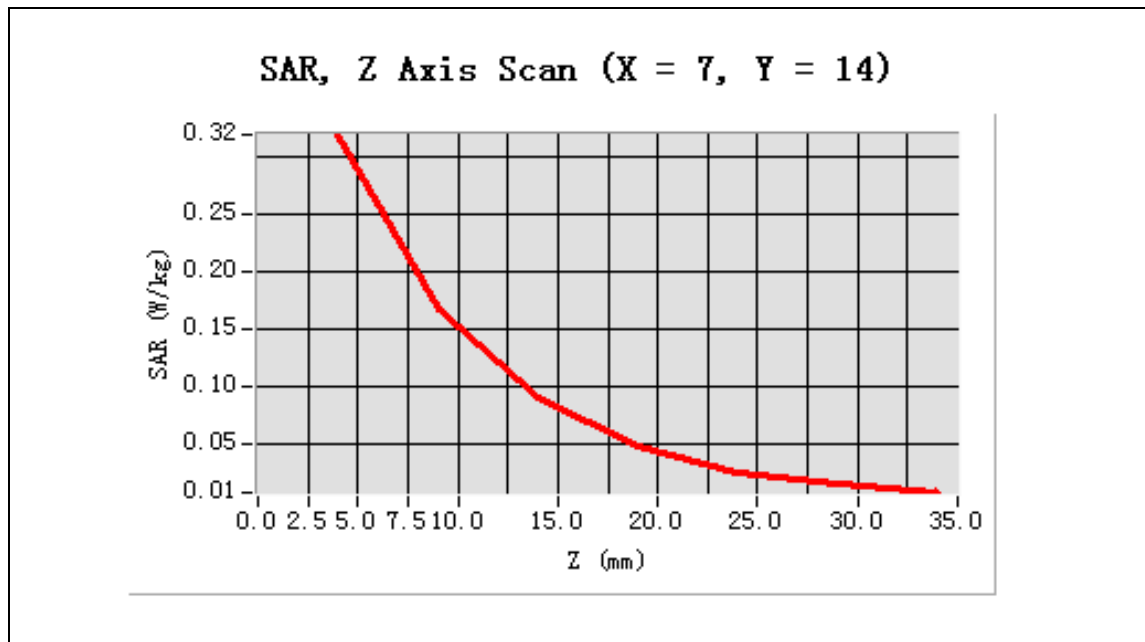


Maximum location: X=7.00, Y=14.00

SAR 10g (W/Kg)	0.151357
SAR 1g (W/Kg)	0.293838

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.3190	0.1682	0.0913	0.0481	0.0267	0.0155



System Performance Check Data(835MHz Head)

Date of measurement: 22/7/2010

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

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

A. Experimental conditions.

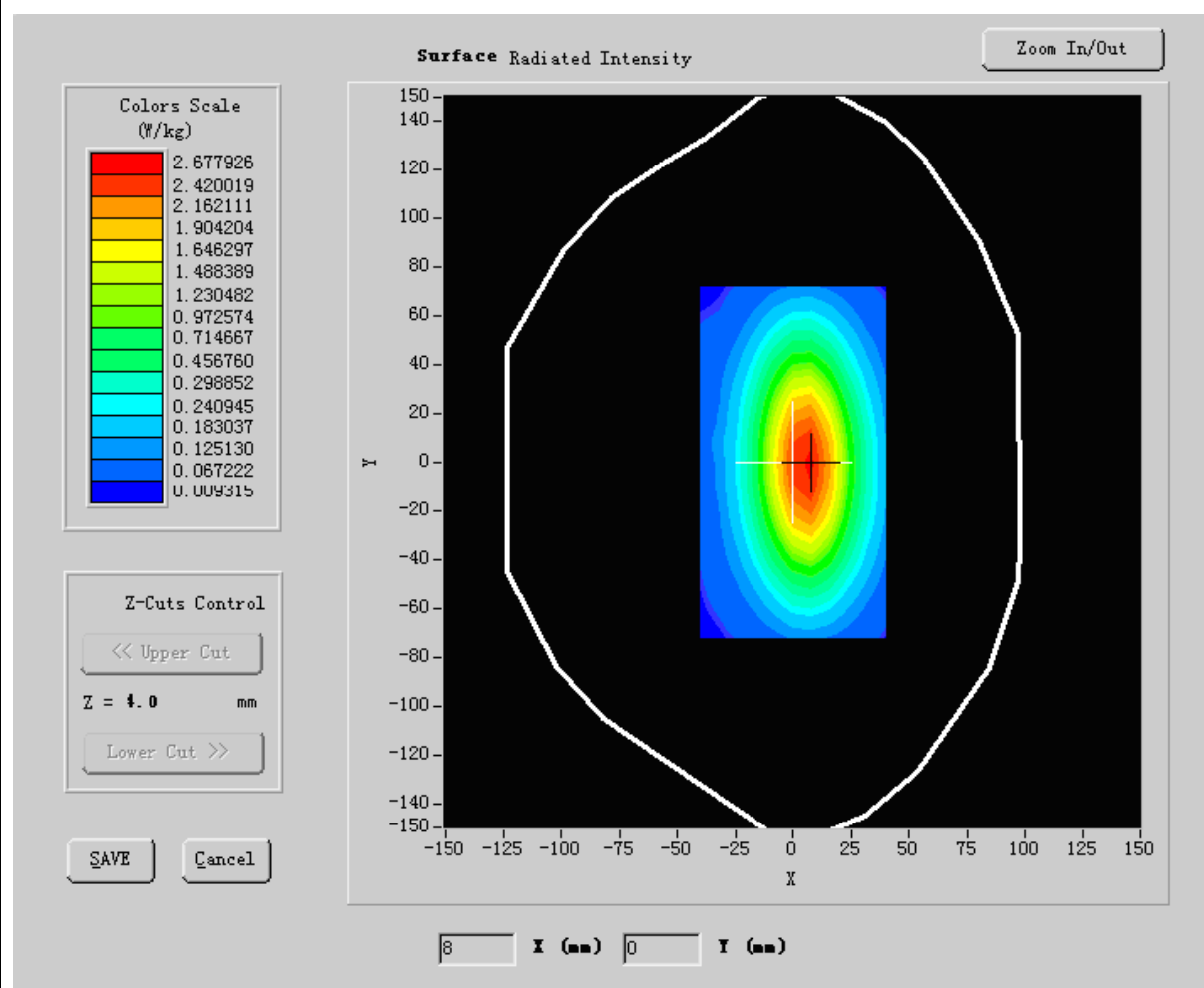
Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	GSM835
Channels	
Signal	CW

B. SAR Measurement Results

Frequency (MHz)	835.00000
Relative permittivity (real part)	41.675999
Relative permittivity	18.926250
Conductivity (S/m)	0.894409
Variation (%)	-0.050000

Ambient Temperature:	23.5 °C
Liquid Temperature:	22.8 °C
ConvF:	28.479,25.214,27.196
Crest factor:	1:1

SURFACE SAR



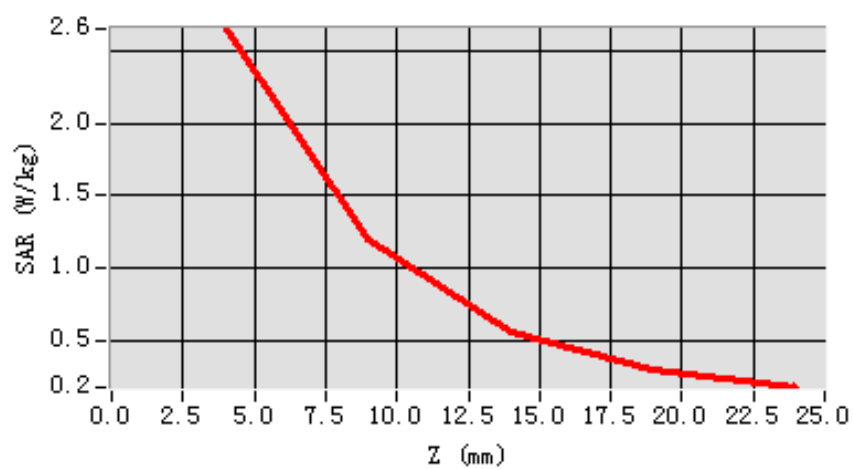
Maximum location: X=5.00, Y=1.00

SAR 10g (W/Kg)	1.523772
SAR 1g (W/Kg)	2.501733

Z Axis Scan

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

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



System Performance Check Data(835MHz Body)

Date of measurement: 22/7/2010

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

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

A. Experimental conditions.

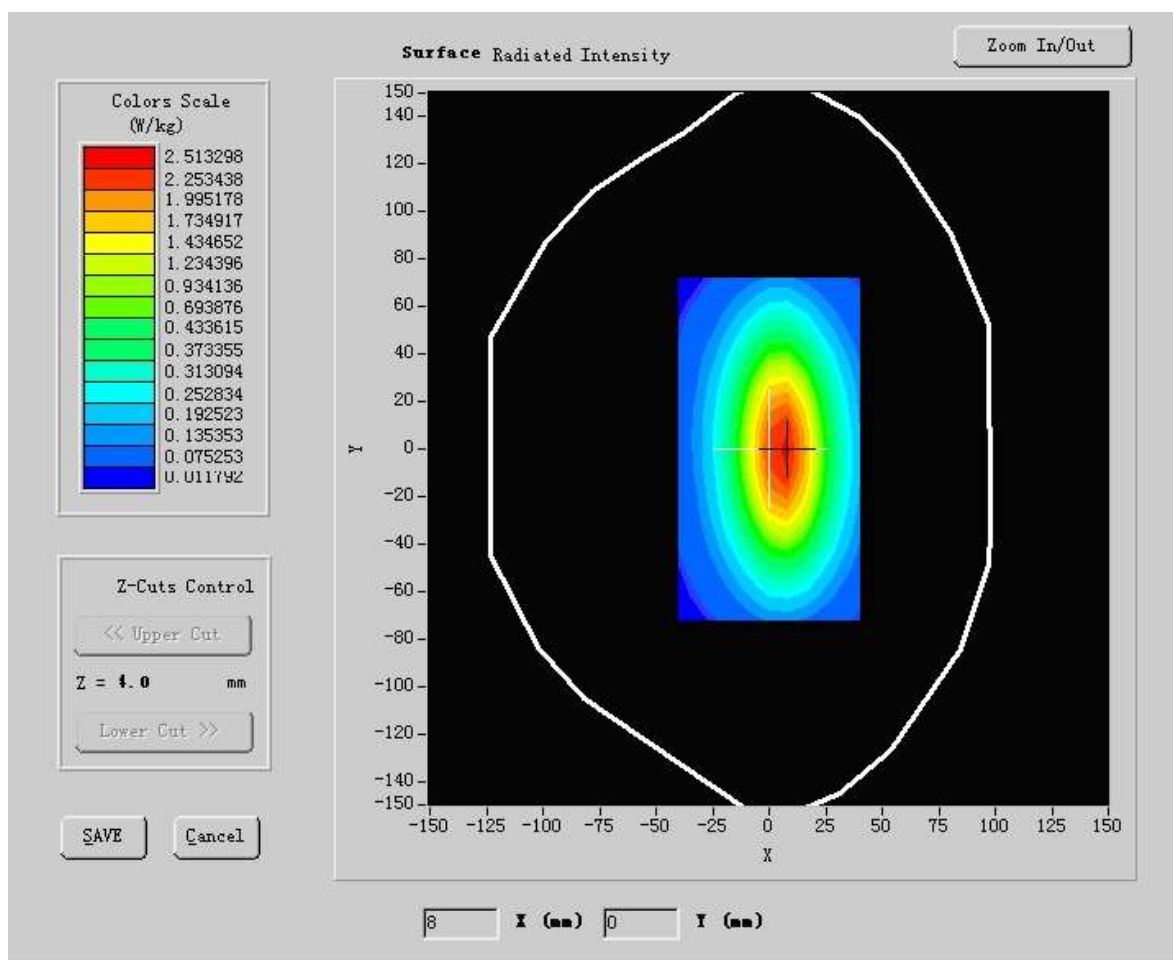
Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	GSM 835MHz
Channels	
Signal	CW

B. SAR Measurement Results

Frequency (MHz)	835.000000
Relative permittivity (real part)	55.709999
Relative permittivity	15.070000
Conductivity (S/m)	1.009033
Variation (%)	-0.140000
Ambient Temperature:	23.5 °C

Liquid Temperature:	22.8 °C
ConvF:	28.559,25.681,27.588
Crest factor:	1:1

SURFACE SAR



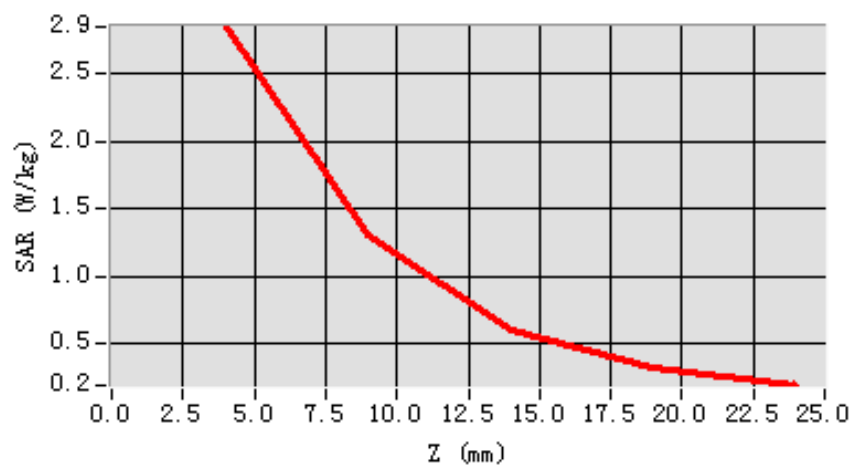
Maximum location: X=5.00, Y=1.00

SAR 10g (W/Kg)	1.477363
SAR 1g (W/Kg)	2.476528

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	2.7536	1.3061	0.6041	0.3211

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



System Performance Check Data(1900MHz Head)

Date of measurement: 22/7/2010

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

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

A. Experimental conditions.

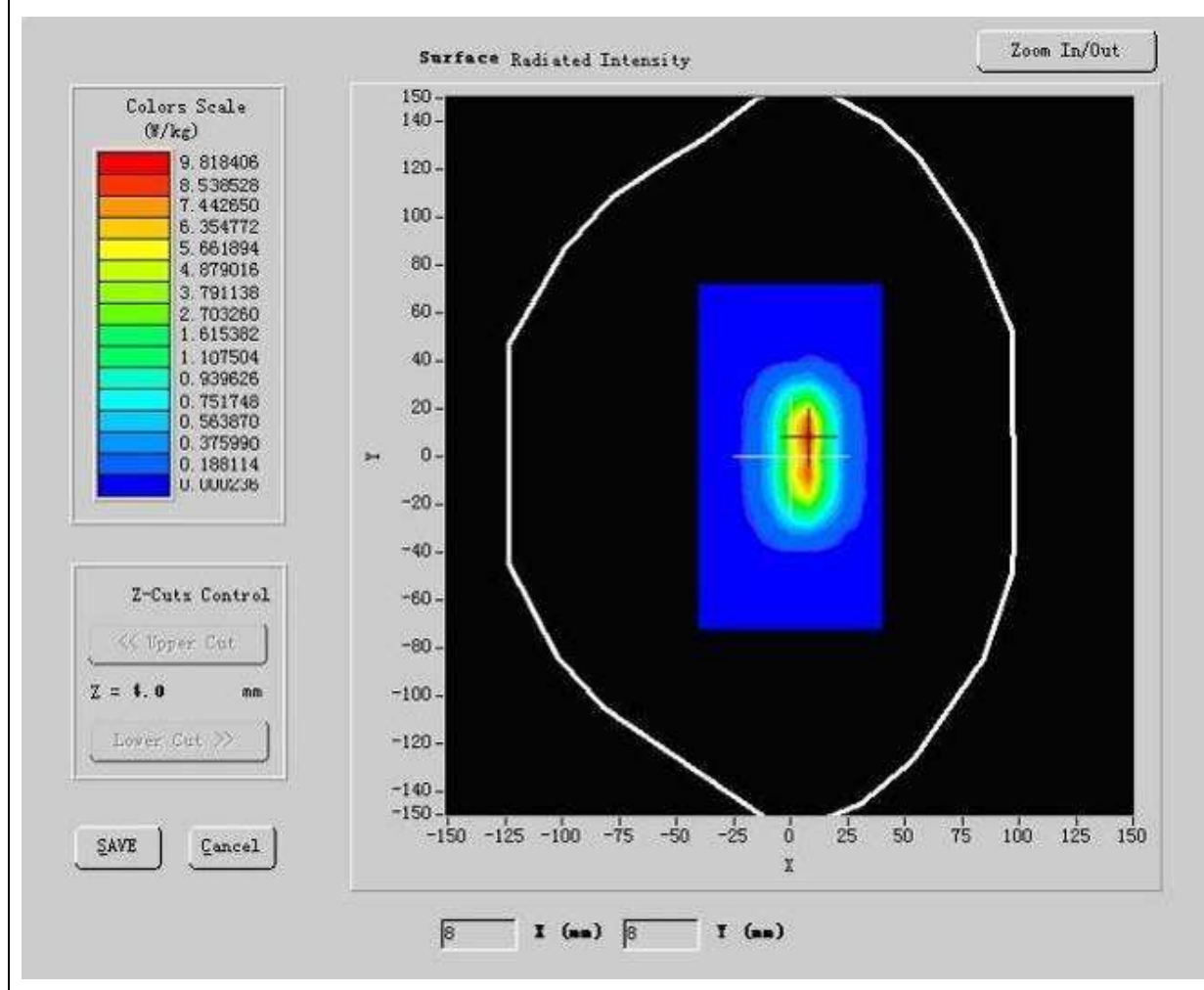
Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	GSM1900
Channels	
Signal	CW

B. SAR Measurement Results

Frequency (MHz)	1900.000000
Relative permittivity (real part)	39.481223
Relative permittivity	12.991650
Conductivity (S/m)	1.395758
Variation (%)	0.570000
Ambient Temperature:	23.5 °C

Liquid Temperature:	22.8 °C
ConvF:	40.136,34.843,38.721
Crest factor:	1:1

SURFACE SAR



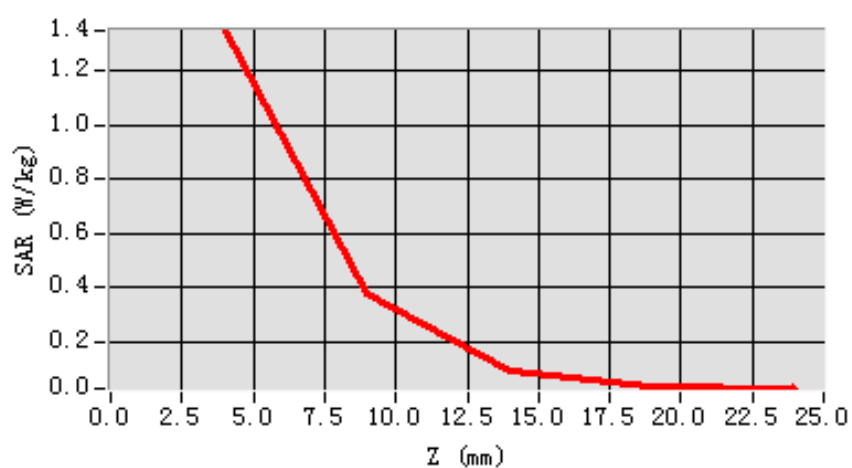
Maximum location: X=7.00, Y=8.00

SAR 10g (W/Kg)	5.627721
SAR 1g (W/Kg)	9.738846

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	1.3503	0.3791	0.0904	0.0338

SAR, Z Axis Scan (X = 7, Y = 8)



System Performance Check Data(1900MHz Body)

Date of measurement: 22/7/2010

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

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

A. Experimental conditions.

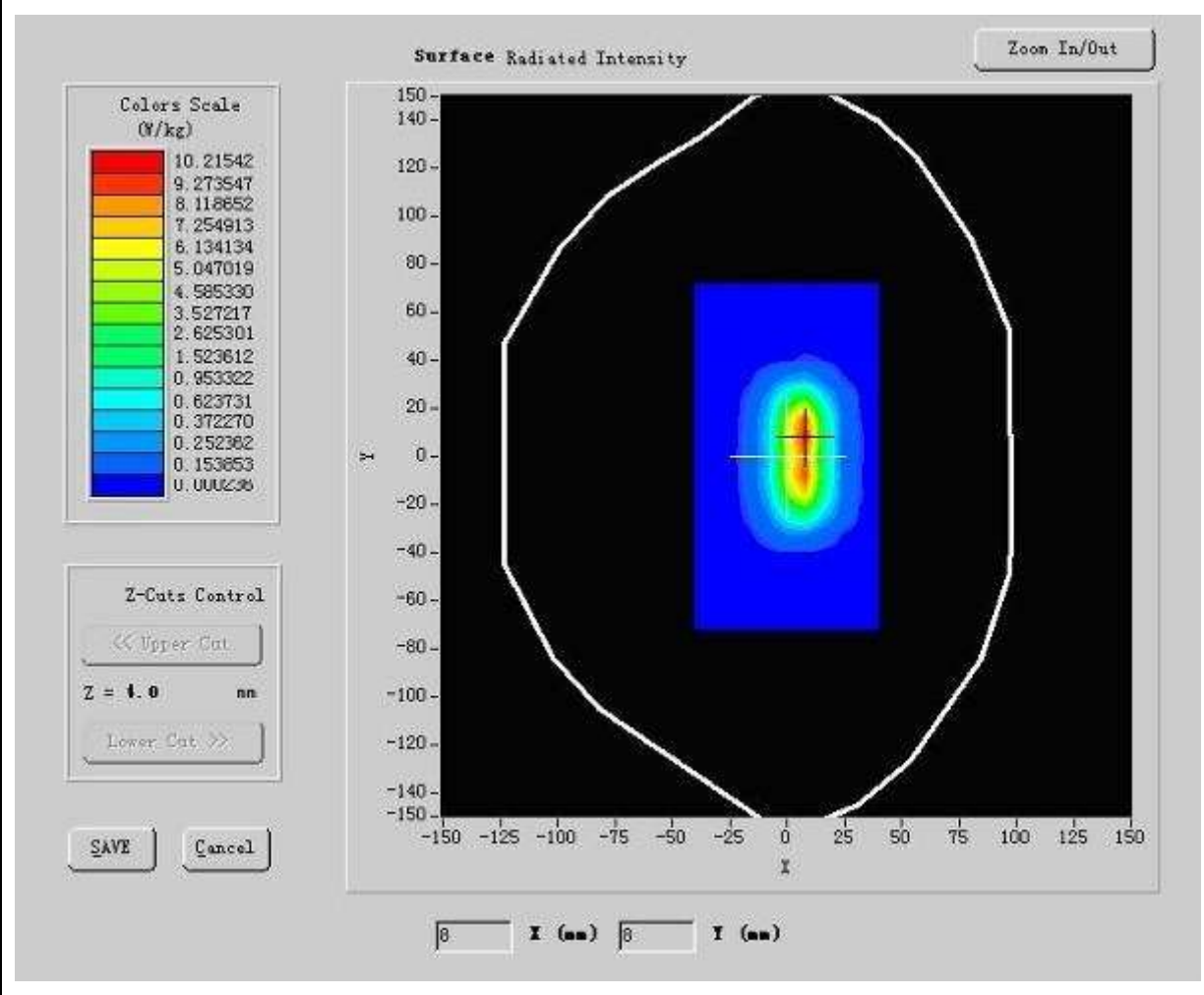
Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	GSM1900
Channels	
Signal	CW

B. SAR Measurement Results

Frequency (MHz)	1900.000000
Relative permittivity (real part)	52.548876
Relative permittivity (imaginary part)	12.991650
Conductivity (S/m)	1.573978
Variation (%)	0.570000
Ambient Temperature:	23.5 °C

Liquid Temperature:	22.8 °C
ConvF:	40.625,34.773,38.535
Crest factor:	1:1

SURFACE SAR



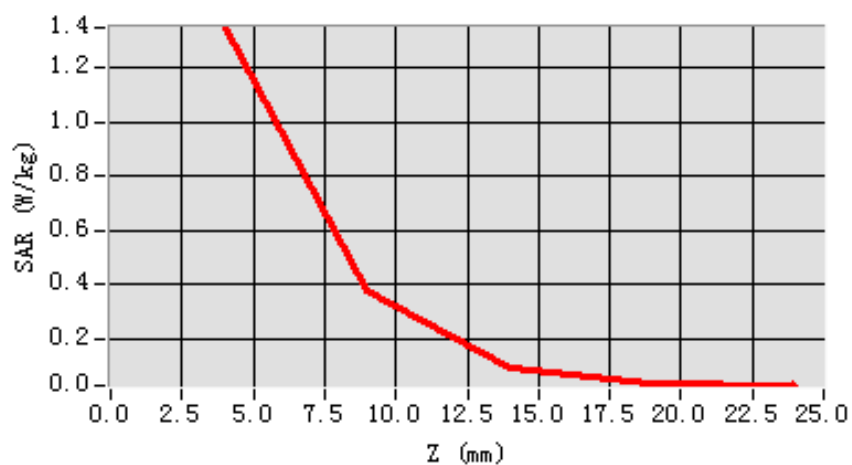
Maximum location: X=7.00, Y=8.00

SAR 10g (W/Kg)	5.637773
SAR 1g (W/Kg)	10.196333

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	1.3503	0.3791	0.0904	0.0338

SAR, Z Axis Scan (X = 7, Y = 8)



**** END OF REPORT ****