FCC SAR

TEST REPORT

of

HSDPA USB Modem

Model Name: One Touch X080A
Trade Name: Alcatel
Report No.: SZ10050072S01
FCC ID: RAD129

prepared for

TCT Mobile Limited
4/F, South Building,No.2966, Jinke Road, Zhangjiang High-Tech Park, Pudong, Shanghai, 201203, P.R.China

prepared by

Shenzhen Electronic Product Quality Testing Center
Morlab Laboratory
3/F, Electronic Testing Building, Shahe Road, Xili,
Nanshan District, Shenzhen, 518055 P. R. China
Tel: +86 755 86130398
Fax: +86 755 86130218

Contents

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.:	SZ10050072S01
Date of Issue:	Jun 30, 2010
Date of Tests:	Jun 9, 2010 –Jun 9, 2010
Responsible for Accreditation:	Shu Luan
Project Manager:	Li Lei
Deputy Project Manager:	Chen Chao

1.3. Conclusion

Shenzhen Electronic Product Quality Testing Center Morlab Laboratory has verified that all tests as listed in the section 4.6 of this report haven been performed successfully with the tested equipment.

Chen Chao
Tested by
(Responsible for the Test Report)

Li Lei
Reviewed by
(Verification of the Test Report)

Shu Luan
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 Annex A)

2.4. List of Test Equipments

No.	Instrument	Type	Cal. Date	Cal. Due
1	PC	Dell (Pentium IV 2.4GHz, SN:X10-23533)		
2	Network Emulator	Rohde&Schwarz (CMU200, SN:105894)	2009-09-26	1year
3	Voltmeter	Keithley (2000, SN:1000572)	2009-9-24	1year
4	Synthetizer	Rohde&Schwarz (SML_03, SN:101868)	2009-9-24	1year
5	Amplifier	Nucl udes (ALB216, SN:10800)	2009-9-24	1year
6	Power Meter	Rohde&Schwarz (NRVD, SN:101066)	2009-9-24	1year
7	Probe	Antennessa (SN:SN_3708_EP80)	2009-9-24	1year
8	Phantom	Antennessa (SN:SN_36_08_SAM62)	2009-9-24	1year
9	Liquid	Antennessa (Last Calibration:21 08 08)	2009-08-21	1year

3. Technical Information

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

3.1. Identification of Applicant

Company Name:	TCT Mobile Limited
Address:	4/F, South Building,No.2966, Jinke Road, Zhangjiang High-Tech Park, Pudong, Shanghai, 201203, P.R.China

3.2. Identification of Manufacturer

Company Name:	TCL Mobile Communication Co., LTD.
Address:	No. 23 Zone, Zhongkai High-Technology Development Zone, Huizhou, Guangdong, 516006, China

3.3. Equipment Under Test (EUT)

Brand Name:	Alcatel
Type Name:	Alcatel
Marking Name:	One Touch X080A
Hardware Version:	Proto
Software Version:	(n.a)
Frequency Bands:	GSM 850MHz DCS 1900MHz WCMDA 850MHz WCMDA 1900MHz
Antenna type:	Build inside
Multislot Class	GPRS: Multislot Class 12: EDGE: Multislot Class 12
GPRS operation mode:	Class B
DTM modes：	Not Support
HSDPA release:	Rel-5
HS-DSCH categories:	Category 8
HSUPA release:	Not Support

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#	Proto	(n.a)

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 Techuiques.

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)	=	4.75V
	Low Voltage (LV)	=	5.0V
	High Voltage (HV)	=	5.25V
Test frequency:	GSM 850MHz,GSM 1900MHz, WCDMA 850MHz,WCDMA 1900MHz		
Operation mode:	Call established		
Power Level:	Maximum output power		

During SAR test, EUT is in Traffic Mode (Channel Allocated) at Normal Voltage Condition. A communication link is set up with a System Simulator (SS) by air link, and a call is established.
The Absolute Radio Frequency Channel Number (ARFCN) is allocated to 125, 190 and 251 respectively in the case of GSM 850 MHz, or to 512, 661 and 810 respectively in the case of DCS 1800 MHz or is allocated to 4132, 4182 and 4233 respectively in the case of WCDMA 850MHz and is allocated to 9262, 9400 and 9538 respectively in the case of GSM 1900MHz, 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

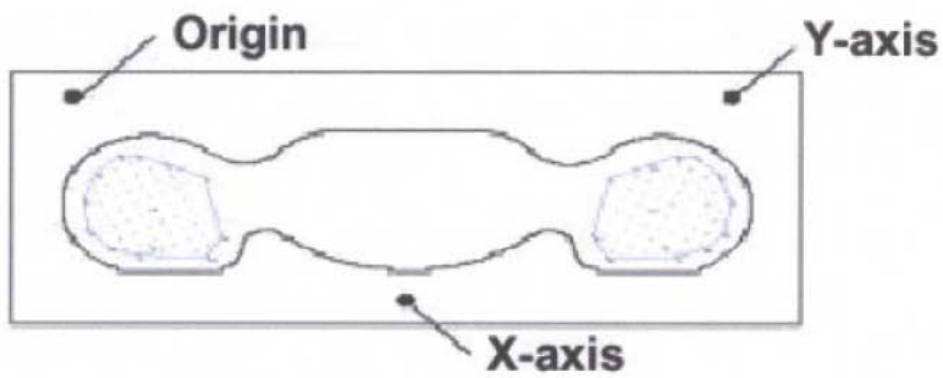
4.3.1.1 Body-worn Configurations

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

The depth of the body tissue was 15.1cm. The distance between the back of the device and the bottom of the flat phantom is 0.5cm(taking into account of the IEEE 1528 and the place of the antenna)

4.3.1.2Phantom Requirements

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



Picture A:SAR Measurement Points in Area Scan

4.3.1.3 Test to be Performed

For devices with retractable antenna the SAR test shall be performed with the antenna fully extended and fully retracted. Other factors that may affect the exposure shall also be tested. For example, optional antennas or optional battery packs which may significantly change the volume, lengths, flip open/closed, etc. Of the device, or any other accessories which might have the potential to considerably increase the peak spatial-average SAR value.

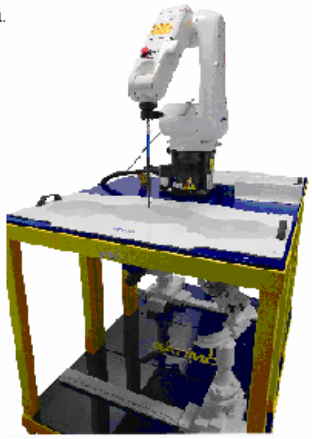
The SAR test shall be performed at the high, middle and low frequency channels of each operating mode. If the SAR measured at the middle channel for each test configuration is at least 3.0dB lower than the SAR limit, testing at the high and low channels is optional.

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 suface 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.

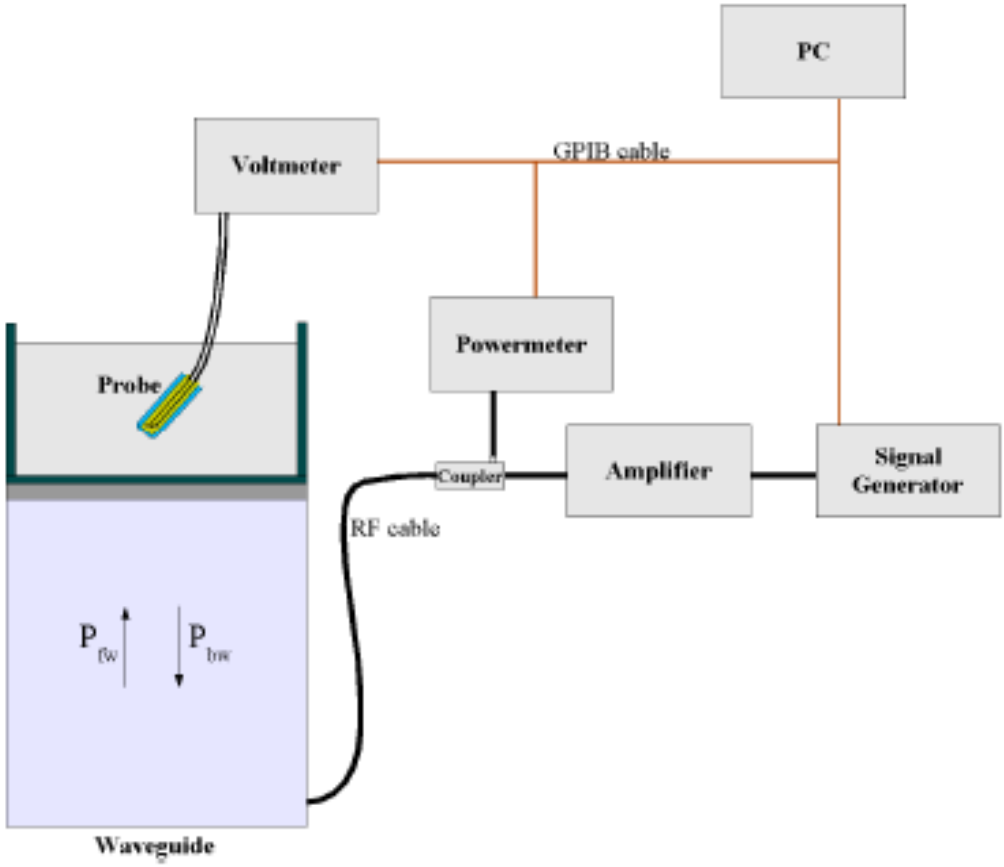
4.3.3. Probe

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: 2.5mm
- 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 50361 and IEEE 1528 std, with CALISAR, Antennessa proprietary calibration system. The calibration is performed with the EN 50361 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) (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)) (N=1,2,3)

where DCP is the diode compression point in mV.

4.3.4. 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 Algoritms for Max. SAR Evaluation	E.5.2	5.0	R	$\sqrt{3}$	1	1	2.89	2.89	∞
Test sample Related									
Test sample positioning	E.4.2.1	0.03	N	1	1	1	0.03	0.03	N-1
Device Holder Uncertainty	E.4.1.1	5.00	N	1	1	1	5.00	5.00	
Output power 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 – 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	3.66	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	

4.3.5. 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)	10.8 W/Kg(body)	39.7 W/Kg
250 mW input power	2.59 W/Kg(body)	9.48 W/Kg(body)
Test value (1g)	10.36 W/Kg(body)	37.92 W/Kg(body)

Note:Please refer to check the system performance data, the first 95-100 page. 250 mW input power

4.3.6. Dielectric Performance

For body-worn measurements, the device was tested against flat phantom representing the user body.

Table 1: 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	56.1	0.95

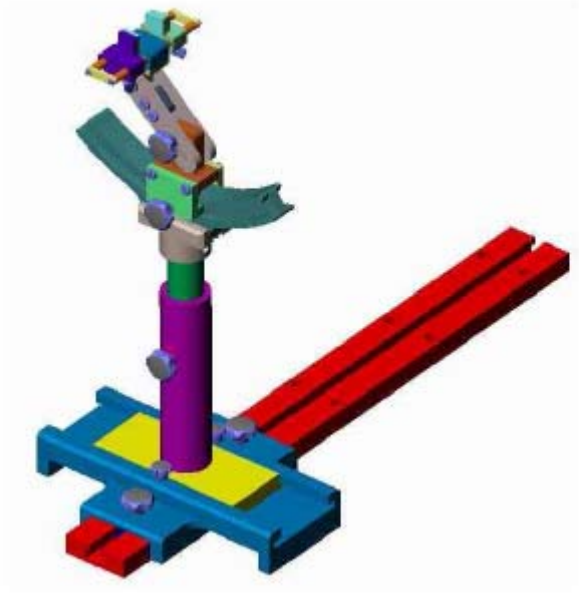
Validation value (Jun 9)	835 MHZ	54.540001	0.975187
Target value	1900 MHz	54	1.45
Validation value (Jun 9)	1900 MHz	53.345554	1.428747

4.3.7. Simulant liquids

Simulant liquids that are used for testing at frequencies of GSM 800MHz PCS 1900MHz, which are made mainly of sugar, salt and water solutions may be left in the phantoms. Approximately 20litres are needed for an upright head compared to about 20litres for a horizontal bath phantom.

Ingredients (% by weight)	Frequency Band 835MHz	Frequency Band 1900MHz
Tissue Type	Body	Body
Water	52.4	40.4
Salt(NaCl)	1.4	0.5
Sugar	45.0	58.0
HEC	1.0	1.0
Bactericide	0.1	0.1
Triton	0.0	0.0
DGBE	0.0	0.0
Acticide SPX	0.0	0.0
Dielectric Constant	56.1	54.0
Conductivity (S/m)	0.95	1.45

4.3.8. device holder



Device holder

System Material	Permittivity	Loss Tangent
Delrin	3.7	0.005

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°.

4.4. 3G MEASUREMENT PROCEDURES

4.4.1. Procedures Used To Establish Test Signal

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

4.4.2. SAR Measurement Conditions for WCDMA

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

4.4.3. Output Power Verification

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

4.4.4. Body SAR Measurement

SAR for body exposure configurations is measured using the 12.2 kbps RMC with TPC bits configured to all “1s”.

4.4.5. USB Dongle with HSDPA

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

Item	band	WCDMA 850			WCDMA 1900		
	ARFCN	4132	4175	4233	9262	9400	9538
	subtest						
5.2(WCDMA)	non	23.24	23.03	23.70	22.56	22.59	21.94
5.2A(HSDPA)	1	23.81	23.52	24.03	22.69	22.37	21.87
	2	23.61	23.48	23.90	22.58	22.29	21.68
	3	23.25	22.07	23.37	22.12	21.43	21.18
	4	23.22	22.10	23.22	22.00	21.74	21.13

GPRS/EDGE modes conducted output power values

Band	Channel	Frequency (MHz)	Measured Output Power(dBm)	Rated Output Power	
				dBm	Tolerance (dB)
GSM 850MHz	128	824.2	30.29	33	±3
	190	836.6	30.60		
	251	848.8	30.33		
GSM 1900MHz	512	1850.2	28.86	30	±3
	661	1880.0	28.67		
	810	1909.8	27.73		
EDGE 850MHz	128	824.2	30.20	33	±3
	190	836.6	30.51		
	251	848.8	30.23		
EDGE 1900MHz	512	1850.2	28.82	30	±3
	661	1880.0	28.49		
	810	1909.8	27.72		

4.5. Items used in the Test Results List

Terms in the column “Verdict” for the test results list of the section 4.6:

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

4.6. Test Results List

Summary of Measurement Results (GSM 850MHz Band)
SAR Values (GSM 850MHz Band), Measured against the body.

Temperature: 23.0~23.8°C, humidity: 54~60%.		
Limit of SAR (W/kg)	1 g Average	
	1.6	
Test Case	Measurement Result (W/kg)	
	1 g Average (W/kg)	Power level (dBm)
Measurement 1:Validation Plane with Body device position on Middle Channel in GPRS mode （Horizontal-Up）	0.270	30.60
Measurement 2:Validation Plane with Body device position on Middle Channel in GPRS mode （Horizontal-Down）	0.249	30.60
Measurement 3:Validation Plane with Body device position on Middle Channel in GPRS mode （Vertical-Front）	0.104	30.60
Measurement 4:Validation Plane with Body device position on Middle Channel in GPRS mode （Vertical-Back）	0.096	30.60
Measurement 5:Validation Plane with Body device position on Middle Channel in EDGE mode （Horizontal-Up）	0.259	30.51

Summary of Measurement Results (GSM 1900MHz Band)
SAR Values (GSM 1900MHz Band), Measured against the body.

Temperature: 23.0~23.8°C, humidity: 54~60%.		
Limit of SAR (W/kg)	1 g Average	
	1.6	
Test Case	Measurement Result (W/kg)	
	1 g Average (W/kg)	Power level (dBm)
Measurement 6:Validation Plane with Body device position on Middle Channel in GPRS mode （Horizontal-Up）	0.334	28.67
Measurement 7:Validation Plane with Body device position on Middle Channel in GPRS mode	0.425	28.67

（Horizontal-Down）		
Measurement 8:Validation Plane with Body device position on Middle Channel in GPRS mode （Vertical-Front）	0.238	28.67
Measurement 9:Validation Plane with Body device position on Middle Channel in GPRS mode （Vertical-Back）	0.104	28.67
Measurement 10:Validation Plane with Body device position on Middle Channel in EDGE mode （Horizontal-Down）	0.406	28.49

Summary of Measurement Results (WCDMA 850MHz Band)
SAR Values (WCDMA 850MHz Band), Measured against the body0.

Temperature: 23.0~23.8°C, humidity: 54~60%.		
Limit of SAR (W/kg)	1 g Average	
	1.6	
Test Case	Measurement Result (W/kg)	
	1 g Average (W/kg)	Power level (dBm)
Measurement 11:Validation Plane with Body device position on Middle Channel in WCDMA mode （Horizontal-Up）	0.276	23.03
Measurement 12:Validation Plane with Body device position on Middle Channel in WCDMA mode （Horizontal-Down）	0.272	23.03
Measurement 13:Validation Plane with Body device position on Middle Channel in WCDMA mode （Vertical-Front）	0.116	23.03
Measurement 14:Validation Plane with Body device position on Middle Channel in WCDMA mode （Vertical-Back）	0.095	23.03
Measurement 15:Validation Plane with Body device position on Middle Channel in HSDPA mode （Horizontal-Up）	0.219	23.52

Summary of Measurement Results (WCDMA 1900MHz Band)
SAR Values (WCDMA 1900MHz Band), Measured against the body0.

Temperature: 23.0~23.8°C, humidity: 54~60%.	
Limit of SAR (W/kg)	1 g Average
	1.6

Test Case	Measurement Result (W/kg)	
	1 g Average (W/kg)	Power level (dBm)
Measurement 16:Validation Plane with Body device position on Middle Channel in WCDMA mode （Horizontal-Up）	0.640	22.59
Measurement 17:Validation Plane with Body device position on Low Channel in WCDMA mode （Horizontal-Down）	0.769	22.56
Measurement 18:Validation Plane with Body device position on Middle Channel in WCDMA mode （Horizontal-Down）	0.825	22.59
Measurement 19:Validation Plane with Body device position on High Channel in WCDMA mode （Horizontal-Down）	0.727	21.94
Measurement 20:Validation Plane with Body device position on Middle Channel in WCDMA mode （Vertical-Front）	0.290	22.59
Measurement 21:Validation Plane with Body device position on Middle Channel in WCDMA mode （Vertical-Back）	0.554	22.59
Measurement 22:Validation Plane with Body device position on Middle Channel in HSDPA mode （Horizontal-Down）	0.649	22.37

Note：1. 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 0.5cm(taking into account of the IEEE 1528 and the place of the antenna)

2. Test Method Reference display to FCC KDB 447498 D02 SAR Procedures for Dongle Xmtr v02.

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

4. The EUT was operating at Max Output Power included +2dB tolerance announced by the Applicant.

Annex A Accreditation Certificate

China National Accreditation Service for Conformity Assessment

LABORATORY ACCREDITATION CERTIFICATE

(No. CNAS L1659)

China National Accreditation Service for Conformity Assessment has accredited

Shenzhen Electronic Product Quality Testing Center

Electronic Testing Building, Shahe Road, Xili, Nanshan District,

Shenzhen, Guangdong, China

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

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

Date of Issue: 2009-09-29

Date of Expiry: 2012-09-28

Date of Initial Accreditation: 1999-08-03

Signed on behalf of China National Accreditation Service for Conformity Assessment

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

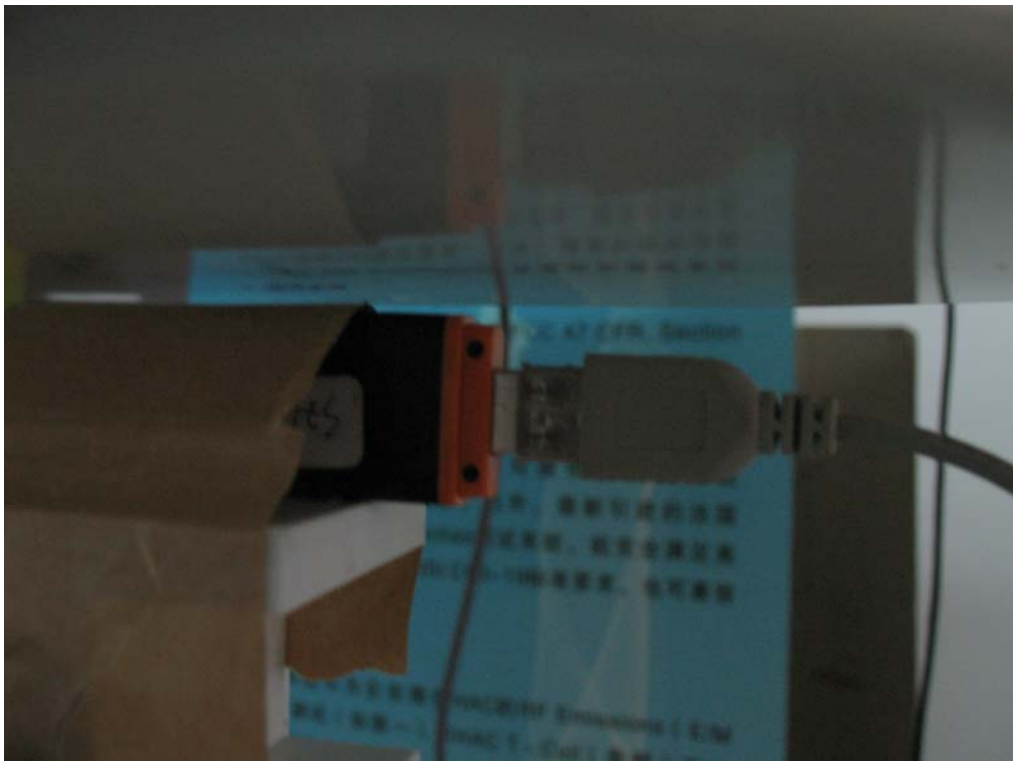
Annex B Photographs of the EUT

1 EUT Horizontal-Up(PC:IBM T42)

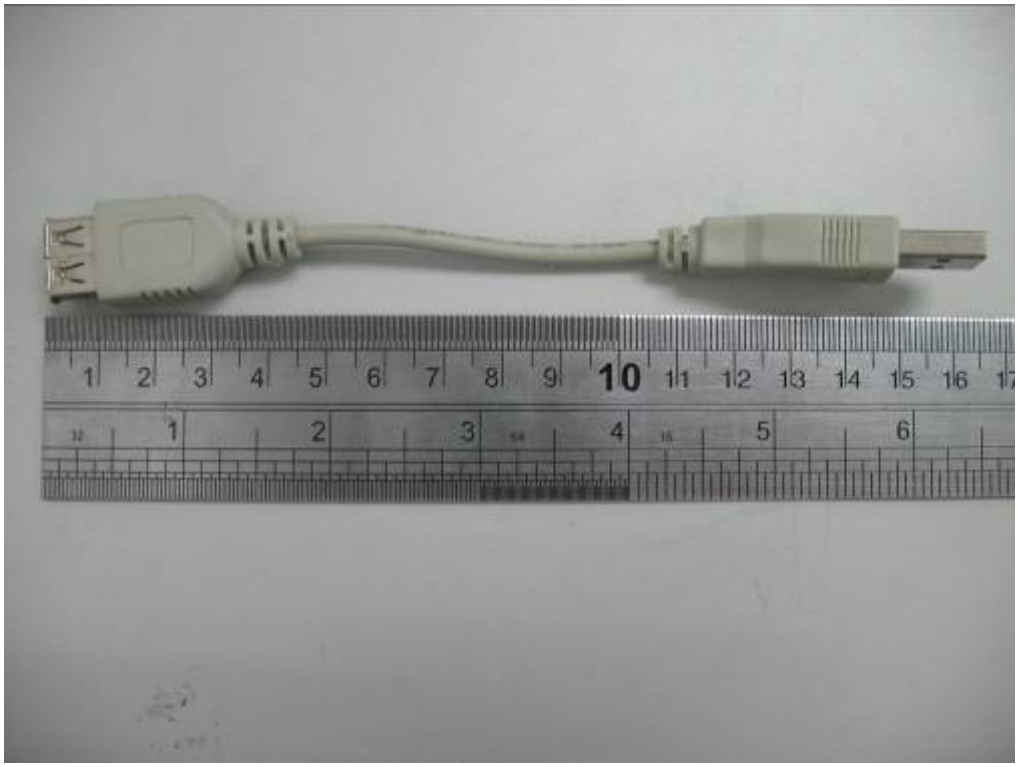
2 EUT Horizontal-Down

3 EUT Vertical-Front(PC:IBM T20)

4 EUT Vertical-Back



5 Data line



Annex C Graph Test Results

	GSM 850MHz	Measurement 1: Validation Plane with Body device position on Middle Channel in GPRS mode （**Horizontal-Up**） Measurement 2: Validation Plane with Body device position on Middle Channel in GPRS mode （**Horizontal-Down**） Measurement 3: Validation Plane with Body device position on Middle Channel in GPRS mode （**Vertical-Front**） Measurement 4: Validation Plane with Body device position on Middle Channel in GPRS mode （**Vertical-Back**） Measurement 5: Validation Plane with Body device position on Middle Channel in EDGE mode （**Horizontal-Up**）
	GSM 1900MHz	Measurement 6: Validation Plane with Body device position on Middle Channel in GPRS mode （**Horizontal-Up**） Measurement 7: Validation Plane with Body device position on Middle Channel in GPRS mode （**Horizontal-Down**） Measurement 8: Validation Plane with Body device position on Middle Channel in GPRS mode （**Vertical-Front**） Measurement 9: Validation Plane with Body device position on Middle Channel in GPRS mode （**Vertical-Back**） Measurement 10: Validation Plane with Body device position on Middle Channel in EDGE mode （**Horizontal-Down**）
	WCDMA 850MHz	Measurement 11: Validation Plane with Body device position on Middle Channel in WCDMA mode （**Horizontal-Up**） Measurement 12: Validation Plane with Body device position on Middle Channel in WCDMA mode （**Horizontal-Down**） Measurement 13: Validation Plane with Body device position on Middle Channel in WCDMA mode （**Vertical-Front**）

		Measurement 14: Validation Plane with Body device position on Middle Channel in WCDMA mode **（Vertical-Back）** Measurement 15: Validation Plane with Body device position on Middle Channel in HSDPA mode **（Horizontal-Up）**
	WCDMA 1900MHz	Measurement 16: Validation Plane with Body device position on Middle Channel in WCDMA mode **（Horizontal-Up）** Measurement 17: Validation Plane with Body device position on Low Channel in WCDMA mode **（Horizontal-Down）** Measurement 18: Validation Plane with Body device position on Middle Channel in WCDMA mode **（Horizontal-Down）** Measurement 19: Validation Plane with Body device position on High Channel in WCDMA mode **（Horizontal-Down）** Measurement 20: Validation Plane with Body device position on Middle Channel in WCDMA mode **（Vertical-Front）** Measurement 21: Validation Plane with Body device position on Middle Channel in WCDMA mode **（Vertical-Back）** Measurement 22: Validation Plane with Body device position on Middle Channel in HSDPA mode **（Horizontal-Down）**

MEASUREMENT 1

Type: Phone measurement (Complete)

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

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

Date of measurement: 9/6/2010

Measurement duration: 13 minutes 20 seconds

A. Experimental conditions.

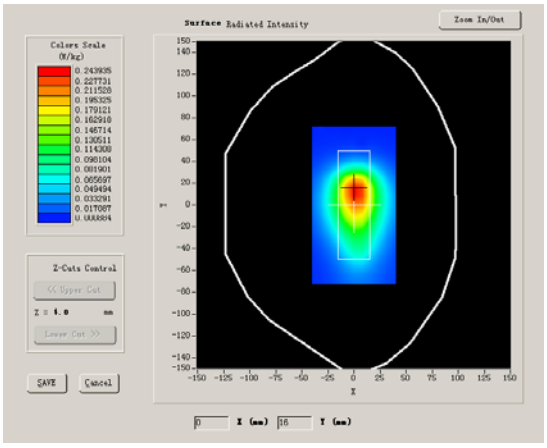
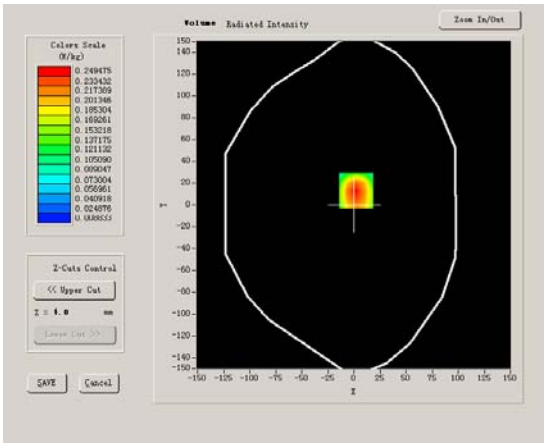
Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	GSM850
Channels	Middle
Signal	GPRS

B. SAR Measurement Results

Middle Band SAR (Channel 190):

Frequency (MHz)	836.599976
Relative permittivity (real part)	55.709999
Relative permittivity	21.709999

Conductivity (S/m)	1.009033
Variation (%)	0.720000
Ambient Temperature:	22.5°C
Liquid Temperature:	22.4°C
ConvF:	28.599,25.681,27.588
Crest factor：	1:2

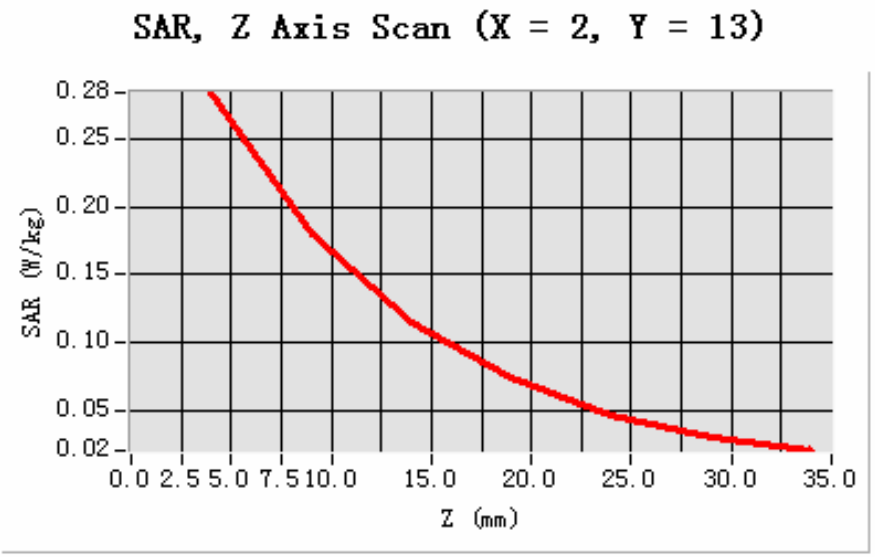
SURFACE SAR	**VOLUME SAR**
	

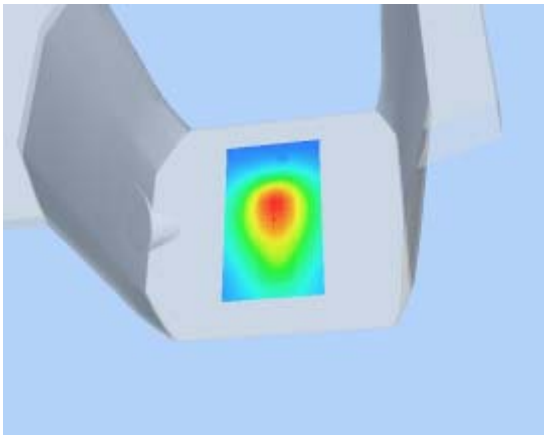
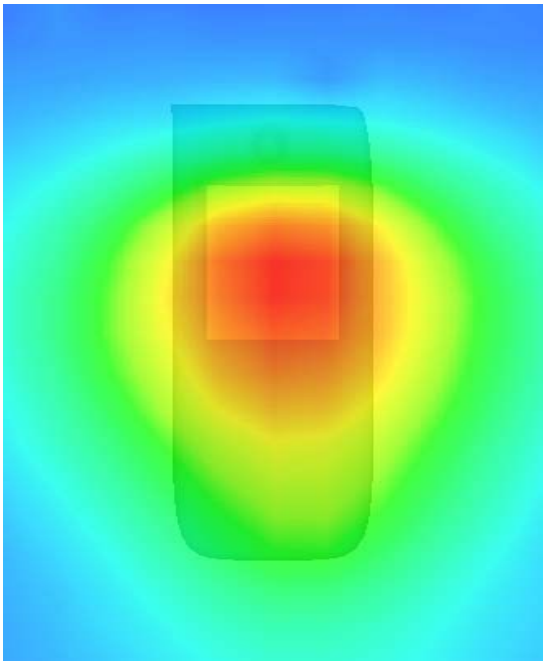
Maximum location: X=2.00, Y=13.00

SAR 10g (W/Kg)	0.165323
SAR 1g (W/Kg)	0.270247

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.2833	0.1794	0.1160	0.0753	0.0480	0.0319



3D sceen shot	Hot spot position
	

MEASUREMENT 2

Type: Phone measurement (Complete)

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

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

Date of measurement: 9/6/2010

Measurement duration: 13 minutes 7 seconds

A. Experimental conditions.

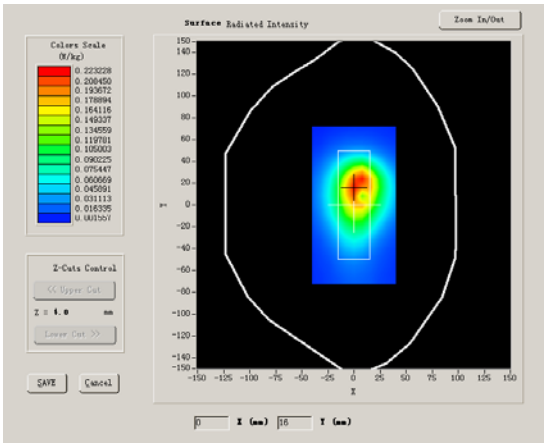
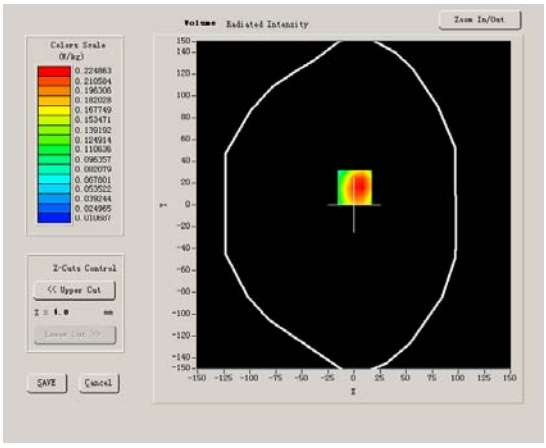
Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	GSM850
Channels	Middle
Signal	GPRS

B. SAR Measurement Results

Middle Band SAR (Channel 190):

Frequency (MHz)	836.599976
Relative permittivity (real part)	55.709999
Relative permittivity	21.709999

Conductivity (S/m)	1.009033
Variation (%)	-0.080000
Ambient Temperature:	22.5°C
Liquid Temperature:	22.4°C
ConvF:	28.599,25.681,27.588
Crest factor：	1:2

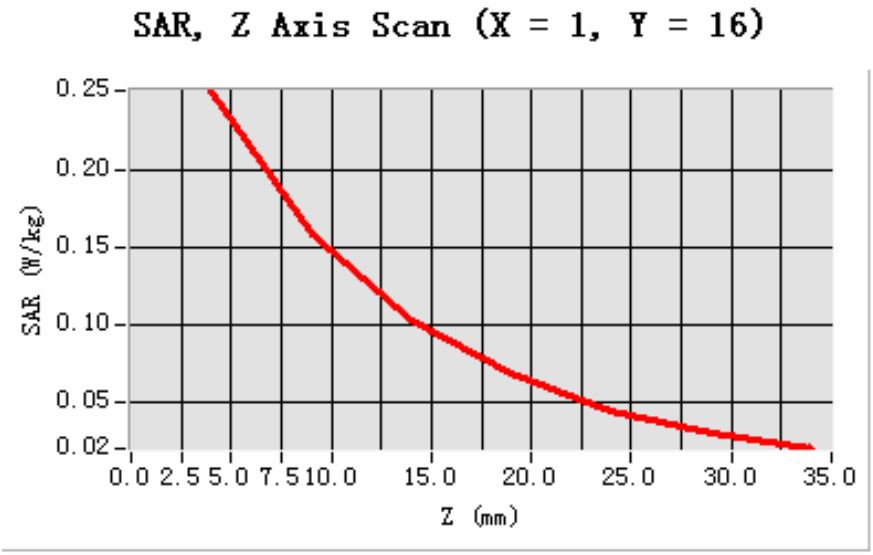
SURFACE SAR	VOLUME SAR
	

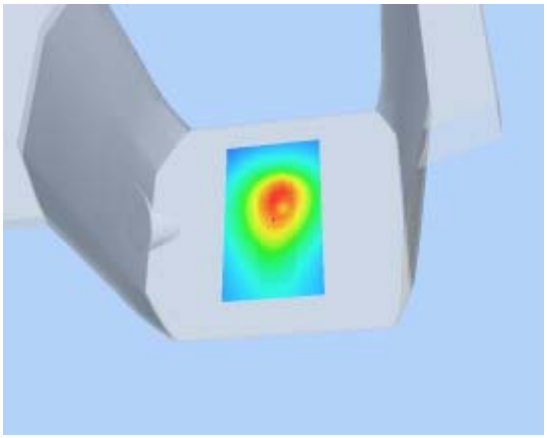
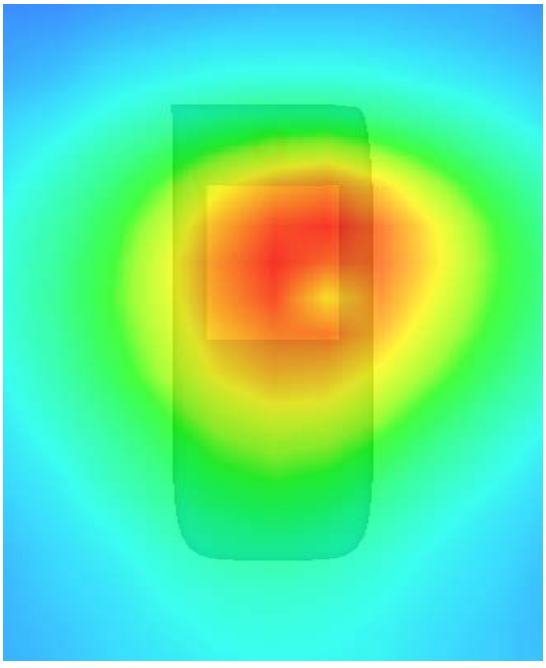
Maximum location: X=1.00, Y=16.00

SAR 10g (W/Kg)	0.152961
SAR 1g (W/Kg)	0.249246

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.2505	0.1583	0.1035	0.0691	0.0439	0.0305



3D sceen shot	Hot spot position
	

MEASUREMENT 3

Type: Phone measurement (Complete)

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

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

Date of measurement: 9/6/2010

Measurement duration:13 minutes 58 seconds

A. Experimental conditions.

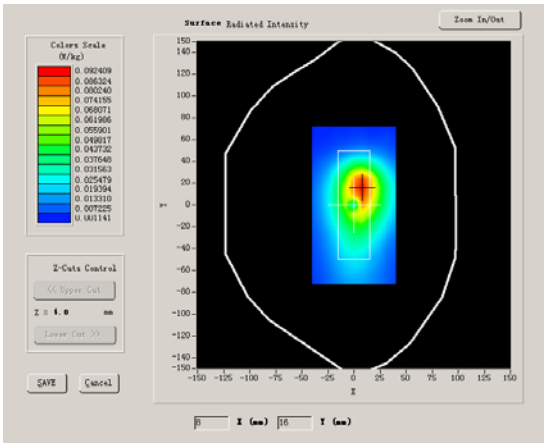
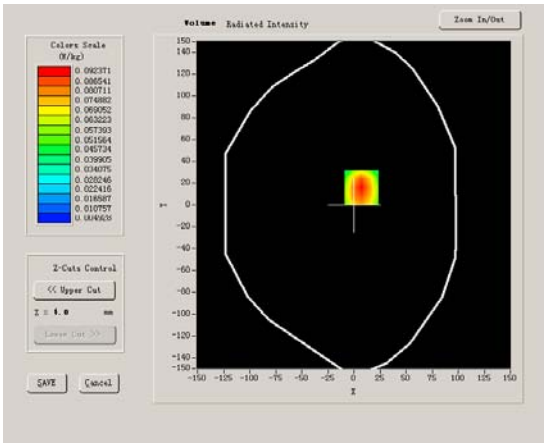
Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	GSM850
Channels	Middle
Signal	GPRS

B. SAR Measurement Results

Middle Band SAR (Channel 190):

Frequency (MHz)	836.599976
Relative permittivity (real part)	55.709999
Relative permittivity	21.709999

Conductivity (S/m)	1.009033
Variation (%)	-0.190000
Ambient Temperature:	22.5°C
Liquid Temperature:	22.4°C
ConvF:	28.599,25.681,27.588
Crest factor：	1:2

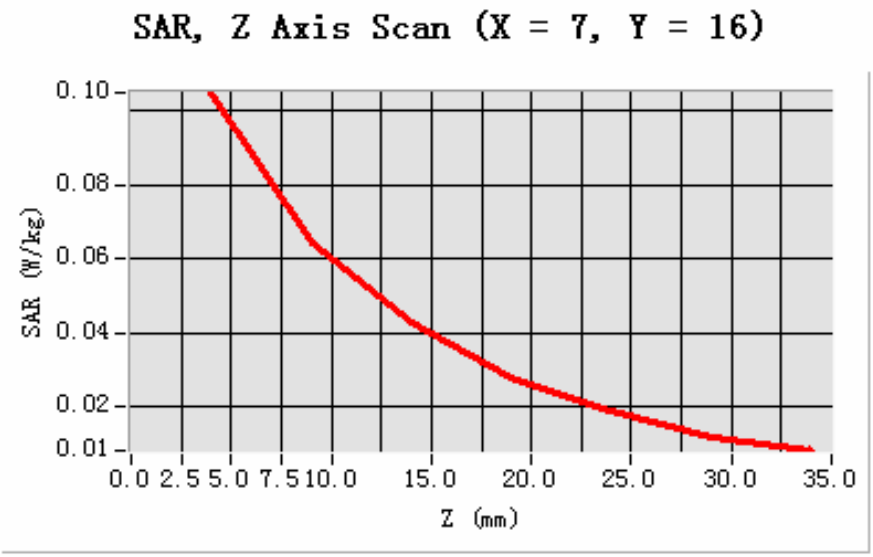
SURFACE SAR	VOLUME SAR
	

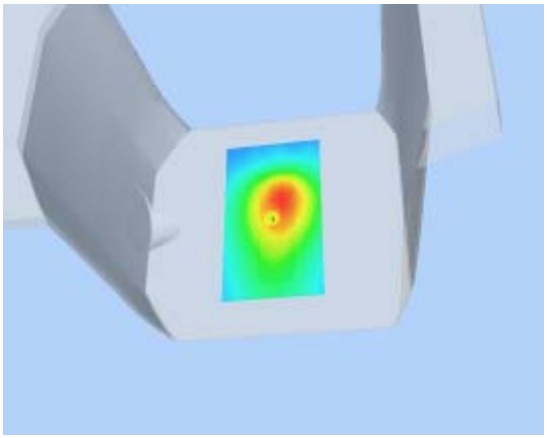
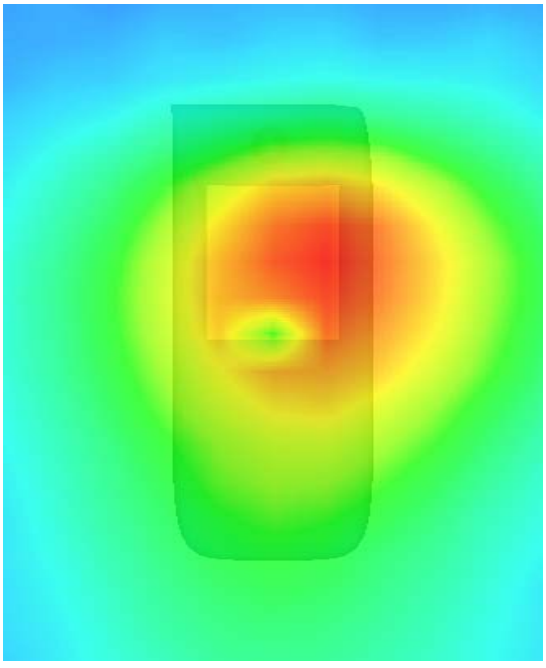
Maximum location: X=7.00, Y=16.00

SAR 10g (W/Kg)	0.060260
SAR 1g (W/Kg)	0.104412

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.1049	0.0645	0.0431	0.0279	0.0191	0.0117



3D sceen shot	Hot spot position
	

MEASUREMENT 4

Type: Phone measurement (Complete)

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

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

Date of measurement: 9/6/2010

Measurement duration: 13 minutes 8 seconds

A. Experimental conditions.

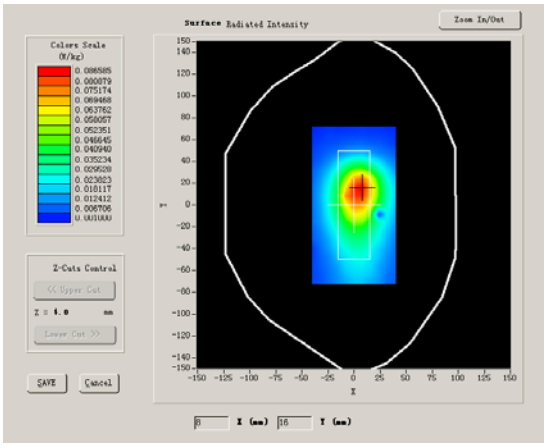
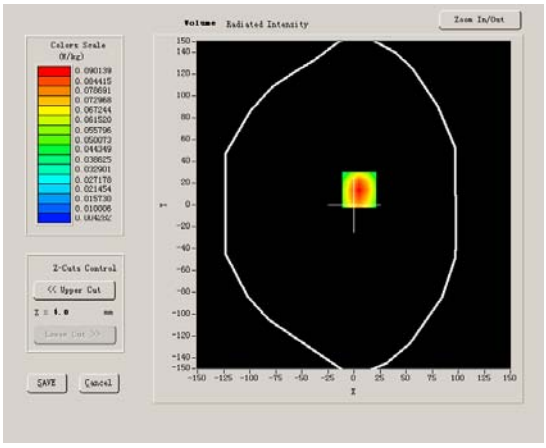
Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	GSM850
Channels	Middle
Signal	GPRS

B. SAR Measurement Results

Middle Band SAR (Channel 190):

Frequency (MHz)	836.599976
Relative permittivity (real part)	55.709999
Relative permittivity	21.709999

Conductivity (S/m)	1.009033
Variation (%)	-0.050000
Ambient Temperature:	22.5°C
Liquid Temperature:	22.4°C
ConvF:	28.599,25.681,27.588
Crest factor：	1:2

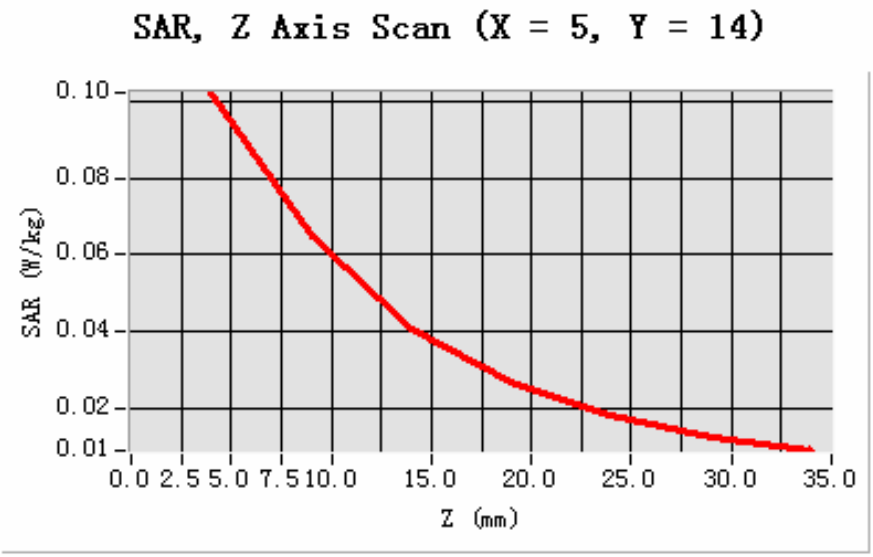
SURFACE SAR	**VOLUME SAR**
	

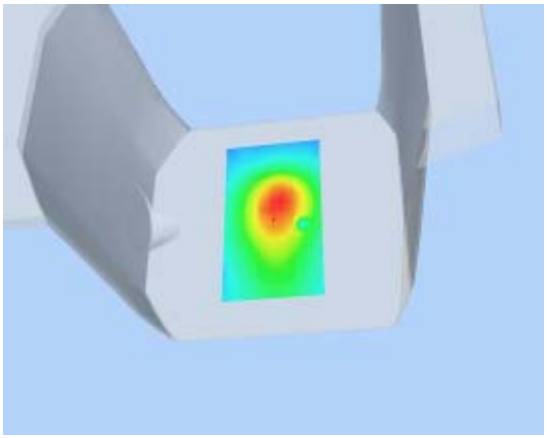
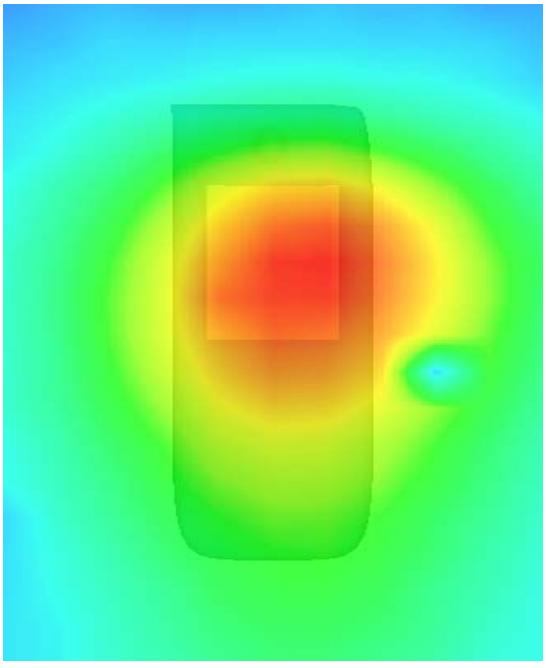
Maximum location: X=5.00, Y=14.00

SAR 10g (W/Kg)	0.058568
SAR 1g (W/Kg)	0.096401

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.1023	0.0649	0.0406	0.0264	0.0182	0.0124



3D sceen shot	Hot spot position
	

MEASUREMENT 5

Type: Phone measurement (Complete)

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

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

Date of measurement: 9/6/2010

Measurement duration: 13 minutes 20 seconds

A. Experimental conditions.

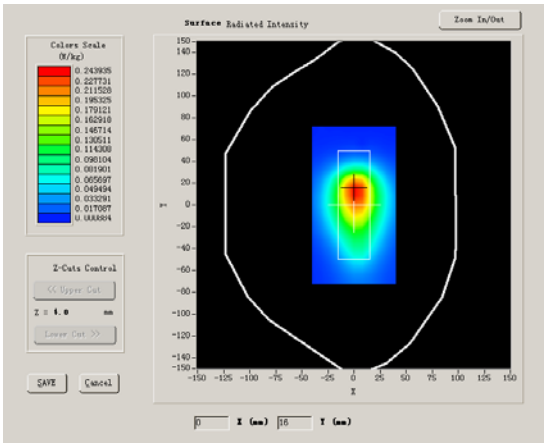
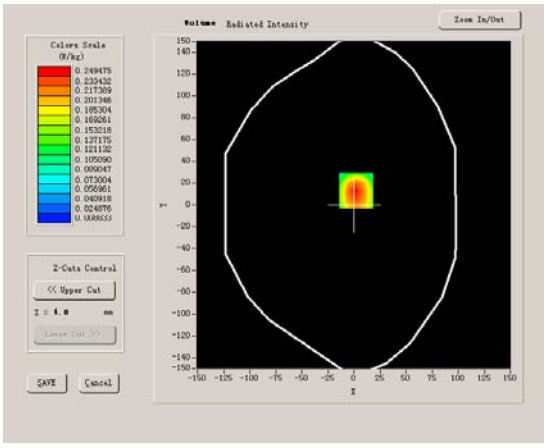
Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	GSM850
Channels	Middle
Signal	EDGE

B. SAR Measurement Results

Middle Band SAR (Channel 190):

Frequency (MHz)	836.599976
Relative permittivity (real part)	55.709999
Relative permittivity	21.709999

Conductivity (S/m)	1.009033
Variation (%)	0.720000
Ambient Temperature:	22.5°C
Liquid Temperature:	22.4°C
ConvF:	28.599,25.681,27.588
Crest factor：	1:2

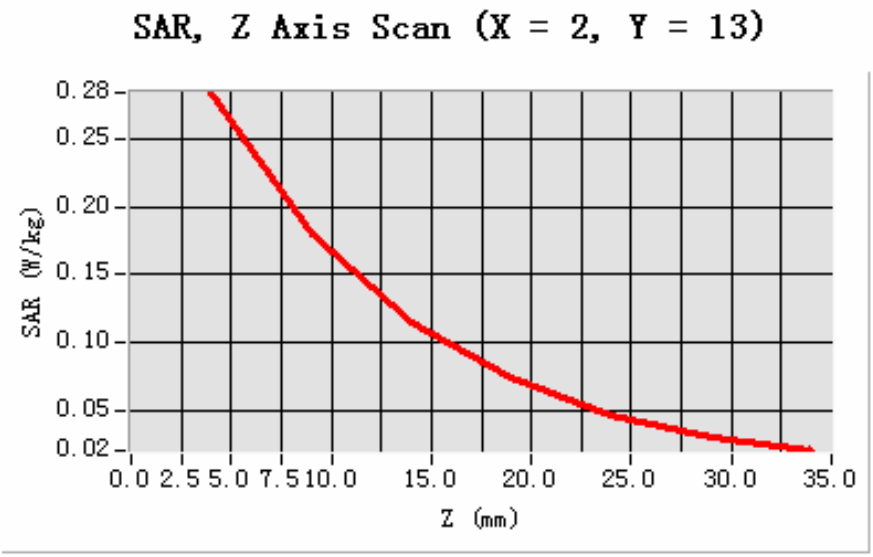
SURFACE SAR	VOLUME SAR
	

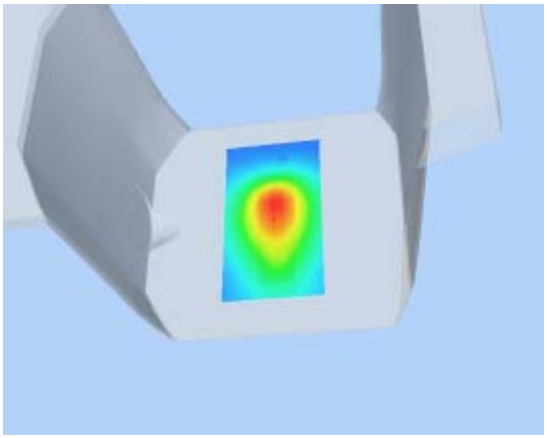
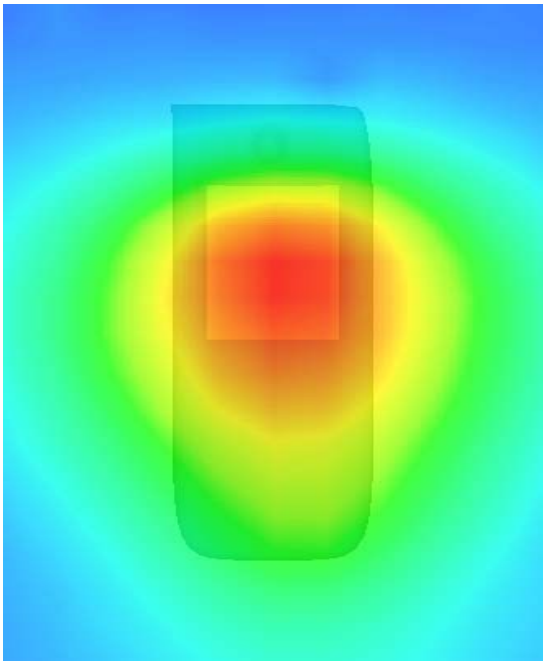
Maximum location: X=2.00, Y=13.00

SAR 10g (W/Kg)	0.137474
SAR 1g (W/Kg)	0.259464

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.2833	0.1794	0.1160	0.0753	0.0480	0.0319



3D sceen shot	Hot spot position
	

MEASUREMENT 6

Type: Phone measurement (Complete)

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

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

Date of measurement: 9/6/2010

Measurement duration: 13 minutes 8 seconds

A. Experimental conditions.

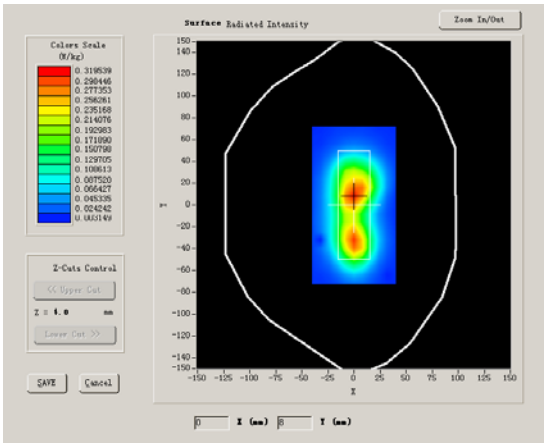
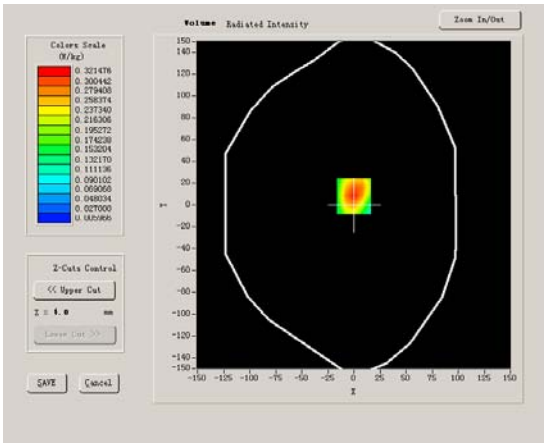
Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	GSM1900
Channels	Middle
Signal	GPRS

B. SAR Measurement Results

Middle Band SAR (Channel 661):

Frequency (MHz)	1880.000000
Relative permittivity (real part)	51.540001
Relative permittivity	15.070000

Conductivity (S/m)	1.573978
Variation (%)	4.420000
Ambient Temperature:	21.9°C
Liquid Temperature:	21.3°C
ConvF:	40.625,34.773,38.535
Crest factor：	1:2

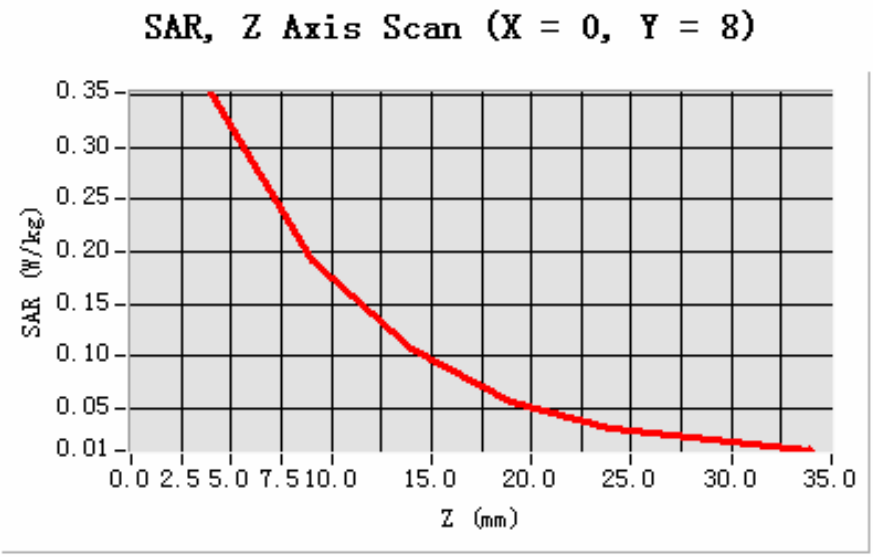
SURFACE SAR	VOLUME SAR
	

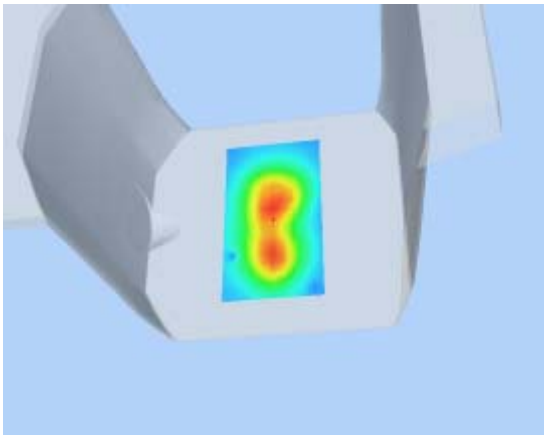
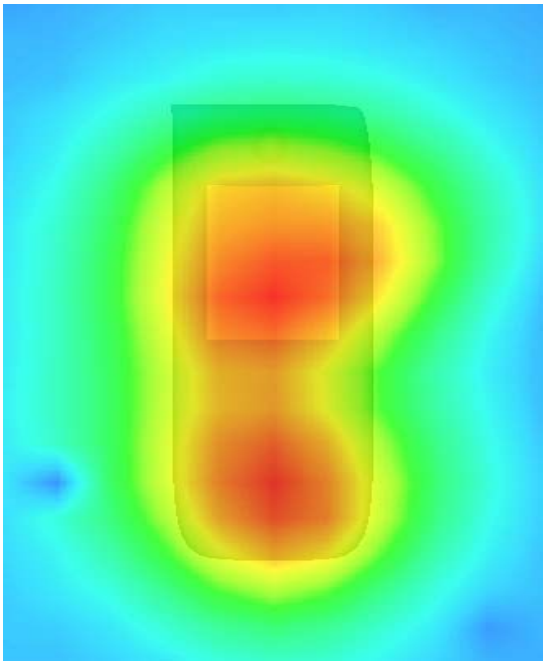
Maximum location: X=0.00, Y=8.00

SAR 10g (W/Kg)	0.181732
SAR 1g (W/Kg)	0.333929

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.3523	0.1913	0.1069	0.0570	0.0318	0.0204



3D sceen shot	Hot spot position
	

MEASUREMENT 7

Type: Phone measurement (Complete)

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

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

Date of measurement: 9/6/2010

Measurement duration: 13 minutes 10 seconds

A. Experimental conditions.

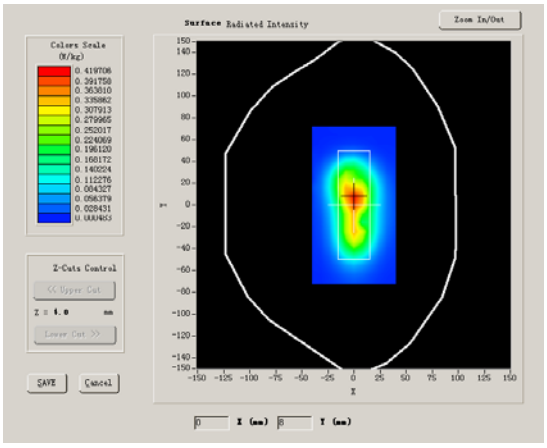
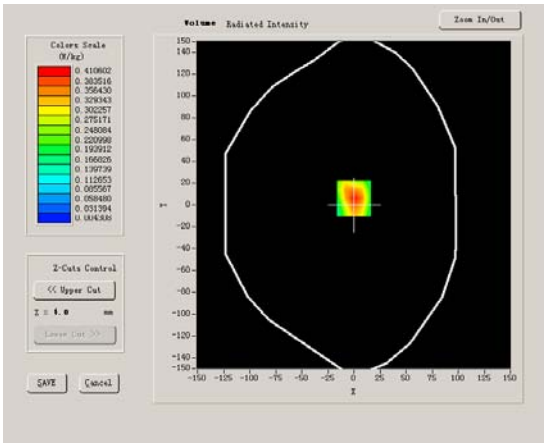
Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	GSM1900
Channels	Middle
Signal	GPRS

B. SAR Measurement Results

Middle Band SAR (Channel 661):

Frequency (MHz)	1880.000000
Relative permittivity (real part)	51.540001
Relative permittivity	15.070000

Conductivity (S/m)	1.573978
Variation (%)	-0.150000
Ambient Temperature:	21.9°C
Liquid Temperature:	21.3°C
ConvF:	40.625,34.773,38.535
Crest factor：	1:2

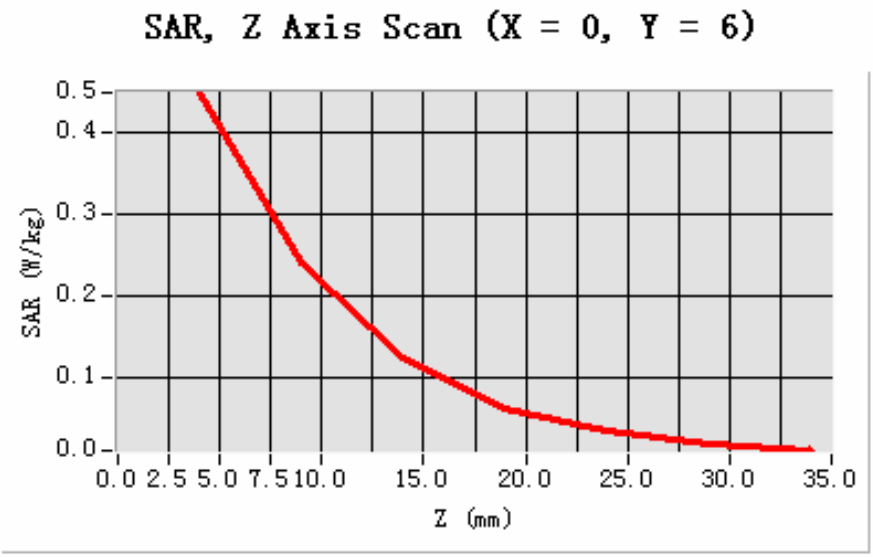
SURFACE SAR	**VOLUME SAR**
	

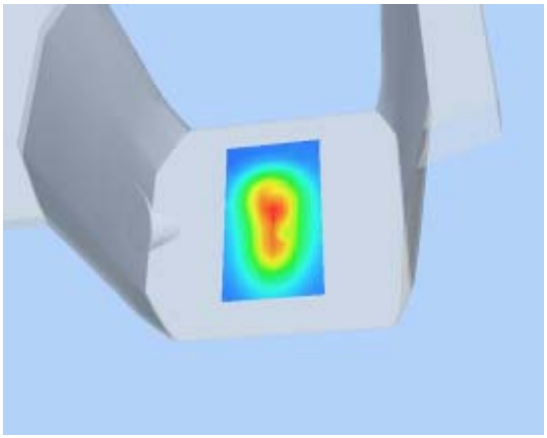
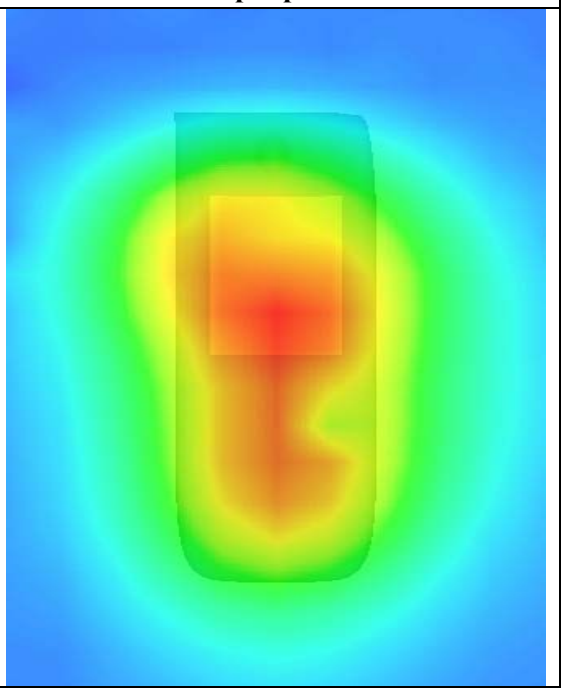
Maximum location: X=0.00, Y=6.00

SAR 10g (W/Kg)	0.231931
SAR 1g (W/Kg)	0.425459

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.4500	0.2408	0.1253	0.0635	0.0351	0.0202



3D sceen shot	Hot spot position
	

MEASUREMENT 8

Type: Phone measurement (Complete)

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

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

Date of measurement: 9/6/2010

Measurement duration: 13minutes 9 seconds

A. Experimental conditions.

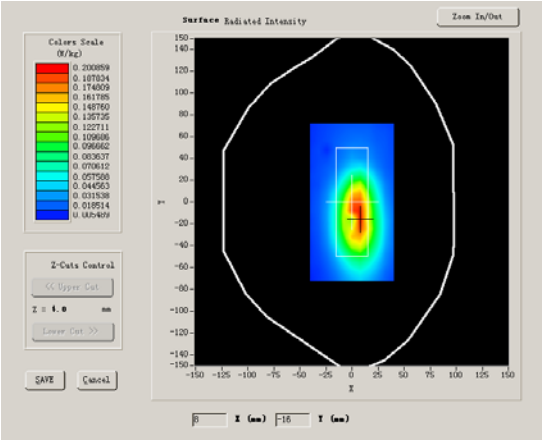
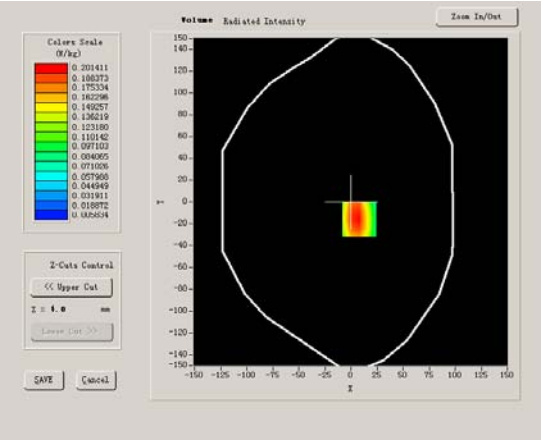
Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	GSM1900
Channels	Middle
Signal	GPRS

B. SAR Measurement Results

Middle Band SAR (Channel 661):

Frequency (MHz)	1880.000000
Relative permittivity (real part)	51.540001
Relative permittivity	15.070000

Conductivity (S/m)	1.573978
Variation (%)	-0.350000
Ambient Temperature:	21.9°C
Liquid Temperature:	21.3°C
ConvF:	40.625,34.773,38.535
Crest factor：	1:2

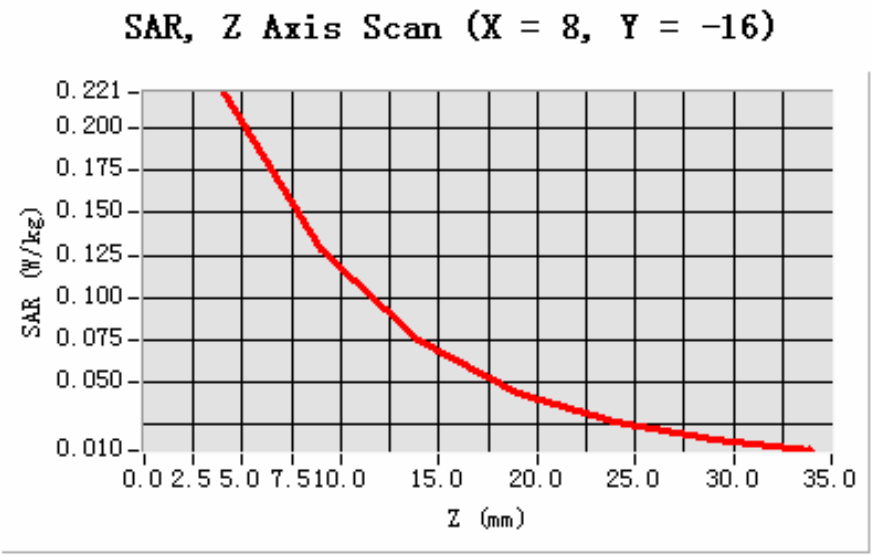
SURFACE SAR	VOLUME SAR
	

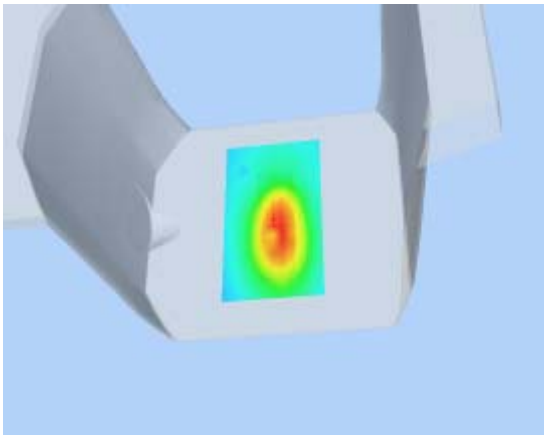
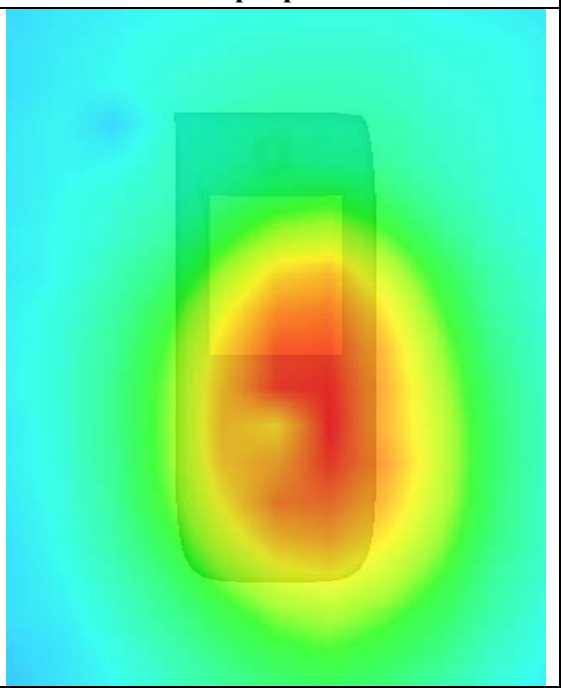
Maximum location: X=8.00, Y=-16.00

SAR 10g (W/Kg)	0.122734
SAR 1g (W/Kg)	0.238320

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.2207	0.1281	0.0754	0.0432	0.0269	0.0167



3D sceen shot	Hot spot position
	

MEASUREMENT 9

Type: Phone measurement (Complete)

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

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

Date of measurement: 9/6/2010

Measurement duration: 13 minutes 9 seconds

A. Experimental conditions.

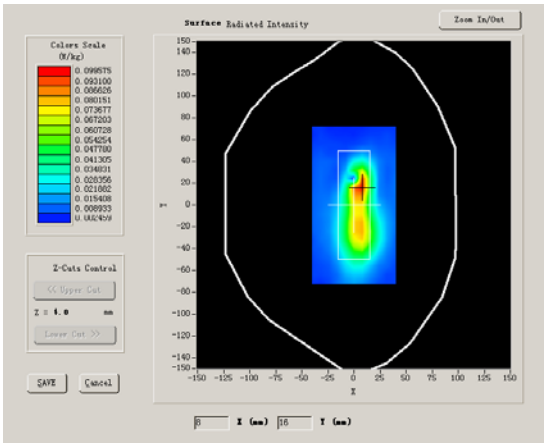
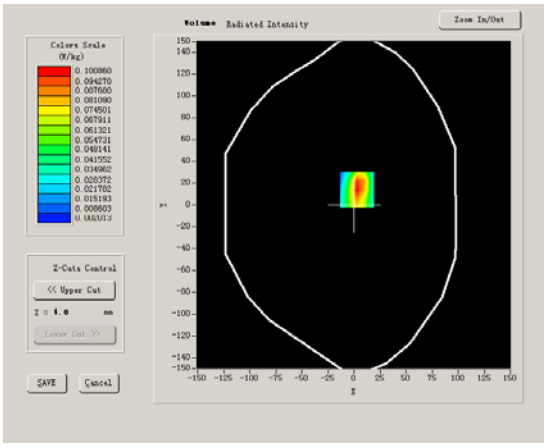
Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	GSM1900
Channels	Middle
Signal	GPRS

B. SAR Measurement Results

Middle Band SAR (Channel 661):

Frequency (MHz)	1880.000000
Relative permittivity (real part)	51.540001
Relative permittivity	15.070000

Conductivity (S/m)	1.573978
Variation (%)	-0.580000
Ambient Temperature:	21.9°C
Liquid Temperature:	21.3°C
ConvF:	40.625,34.773,38.535
Crest factor：	1:2

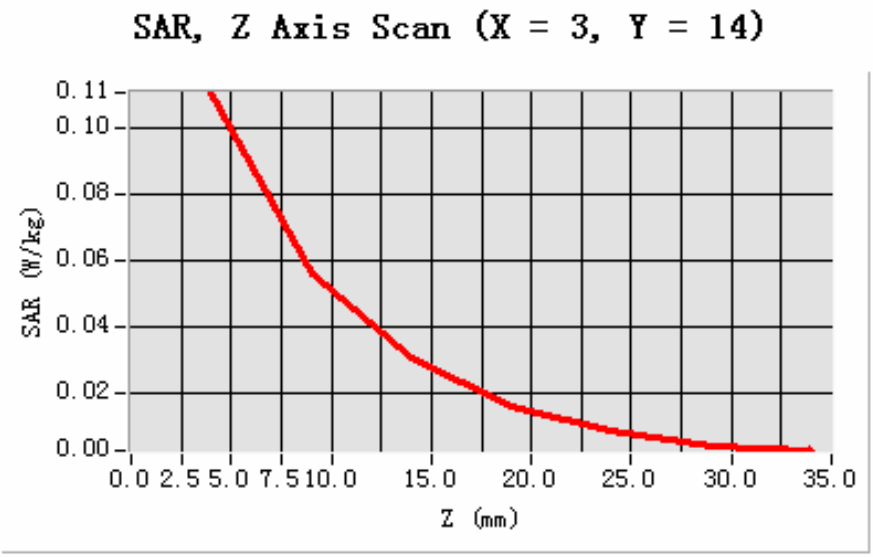
SURFACE SAR	**VOLUME SAR**
	

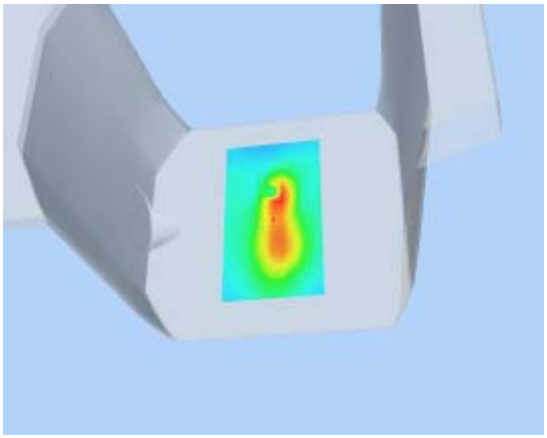
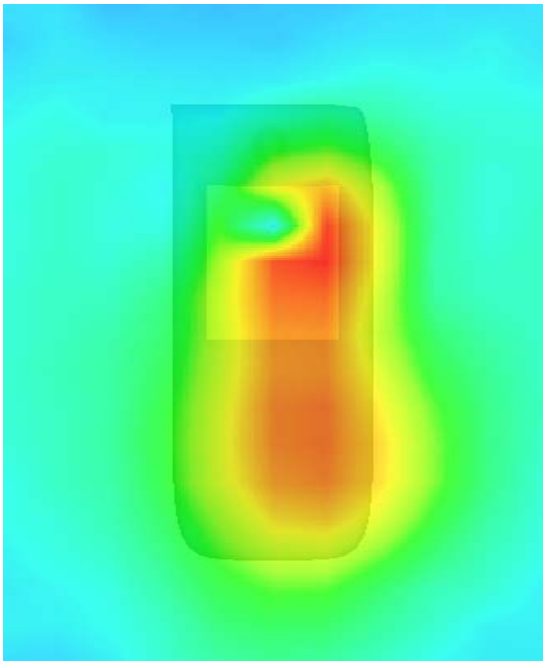
Maximum location: X=3.00, Y=14.00

SAR 10g (W/Kg)	0.050009
SAR 1g (W/Kg)	0.103584

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.1105	0.0558	0.0306	0.0164	0.0091	0.0044



3D sceen shot	Hot spot position
	

MEASUREMENT 10

Type: Phone measurement (Complete)

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

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

Date of measurement: 9/6/2010

Measurement duration: 13 minutes 10 seconds

A. Experimental conditions.

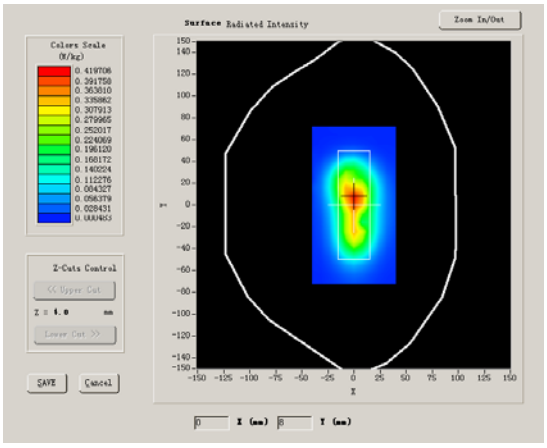
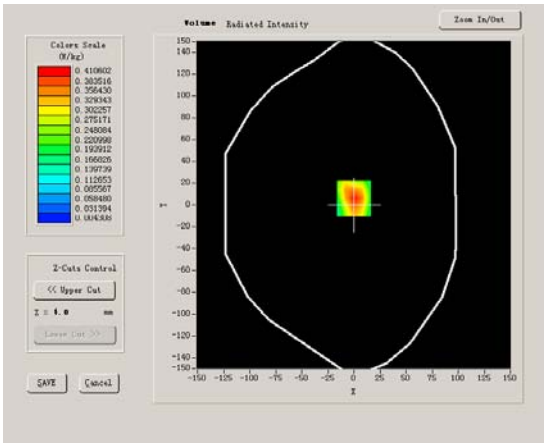
Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	GSM1900
Channels	Middle
Signal	EDGE

B. SAR Measurement Results

Middle Band SAR (Channel 661):

Frequency (MHz)	1880.000000
Relative permittivity (real part)	51.540001
Relative permittivity	15.070000

Conductivity (S/m)	1.573978
Variation (%)	-0.150000
Ambient Temperature:	21.9°C
Liquid Temperature:	21.3°C
ConvF:	40.625,34.773,38.535
Crest factor：	1:2

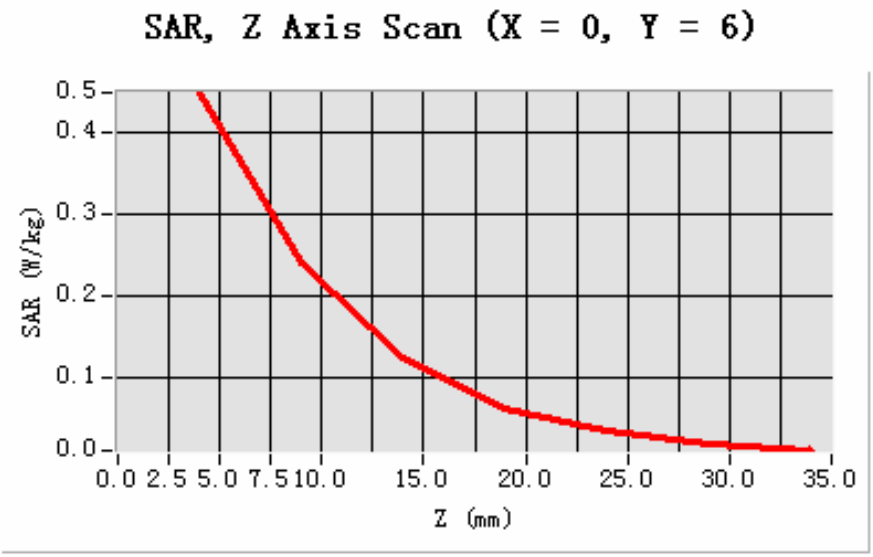
SURFACE SAR	**VOLUME SAR**
	

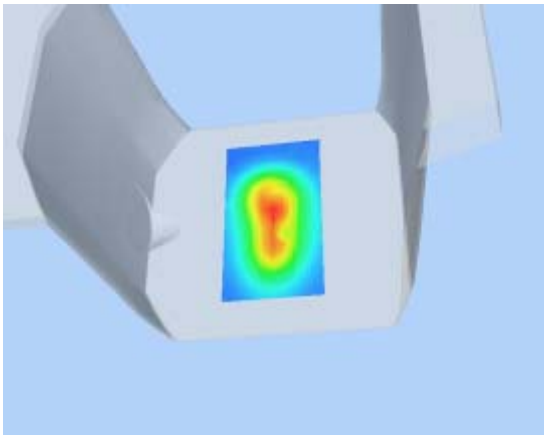
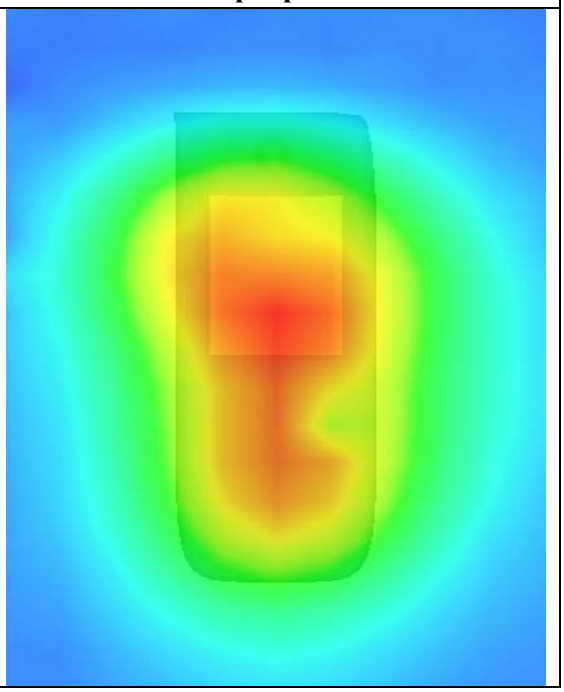
Maximum location: X=0.00, Y=6.00

SAR 10g (W/Kg)	0.227355
SAR 1g (W/Kg)	0.406377

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.4500	0.2408	0.1253	0.0635	0.0351	0.0202



3D sceen shot	Hot spot position
	

MEASUREMENT 11

Type: Phone measurement (Complete)

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

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

Date of measurement: 9/6/2010

Measurement duration: 13 minutes 6 seconds

A. Experimental conditions.

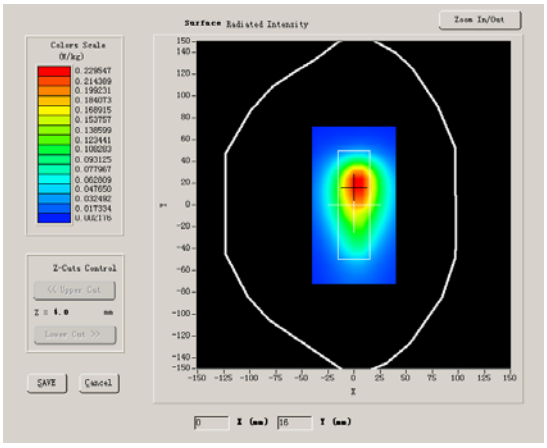
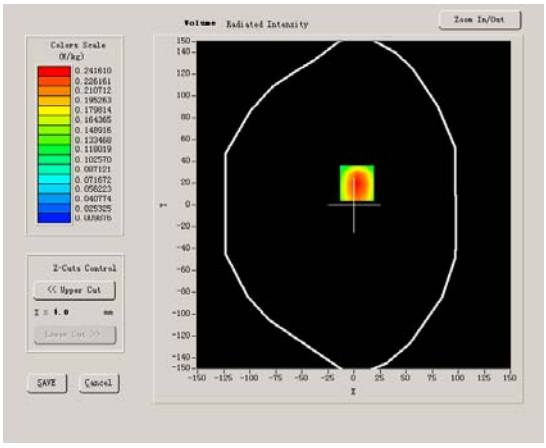
Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	WCDMA
Channels	Middle
Signal	CDMA

B. SAR Measurement Results

Middle Band SAR (Channel 4183):

Frequency (MHz)	836.000000
Relative permittivity (real part)	51.341000
Relative permittivity	15.877050

Conductivity (S/m)	0.737401
Variation (%)	0.310000
Ambient Temperature:	22.5°C
Liquid Temperature:	22.4°C
ConvF:	28.599,25.681,27.588
Crest factor：	1:1

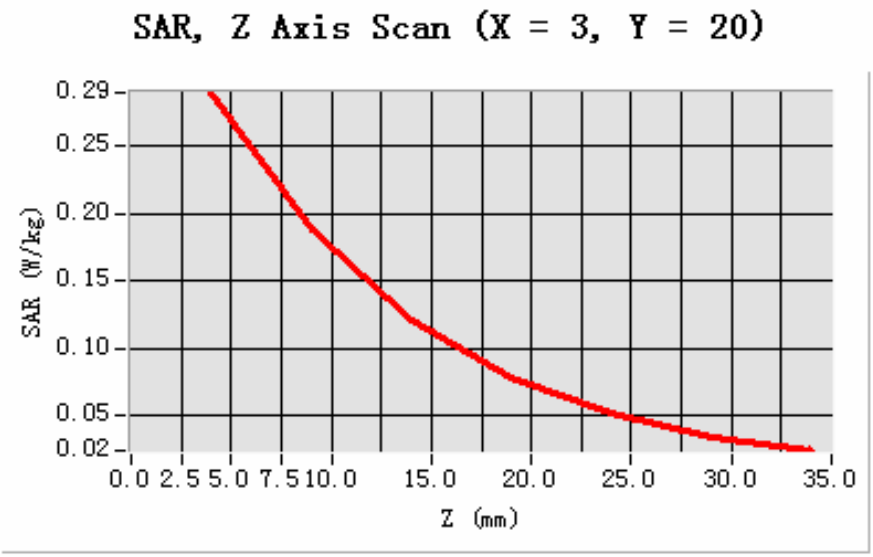
SURFACE SAR	**VOLUME SAR**
	

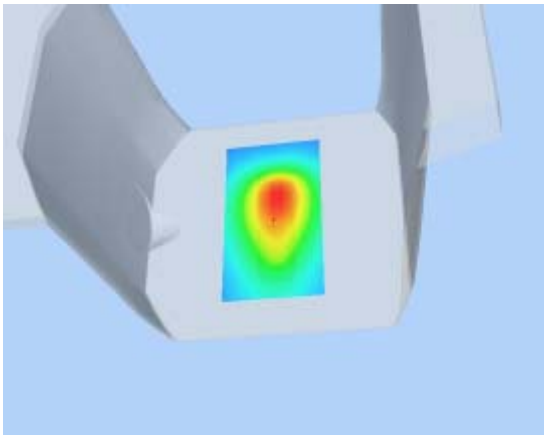
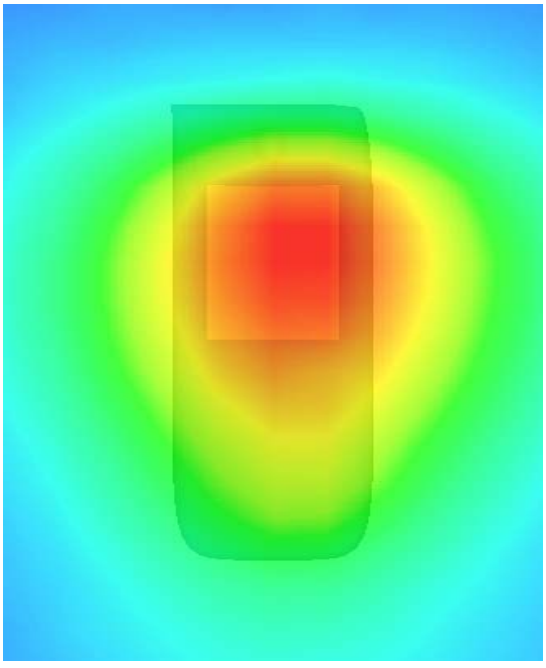
Maximum location: X=3.00, Y=20.00

SAR 10g (W/Kg)	0.171443
SAR 1g (W/Kg)	0.276360

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.2900	0.1875	0.1204	0.0783	0.0519	0.0341



3D sceen shot	Hot spot position
	

MEASUREMENT 12

Type: Phone measurement (Complete)

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

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

Date of measurement: 9/6/2010

Measurement duration: 13 minutes 5 seconds

A. Experimental conditions.

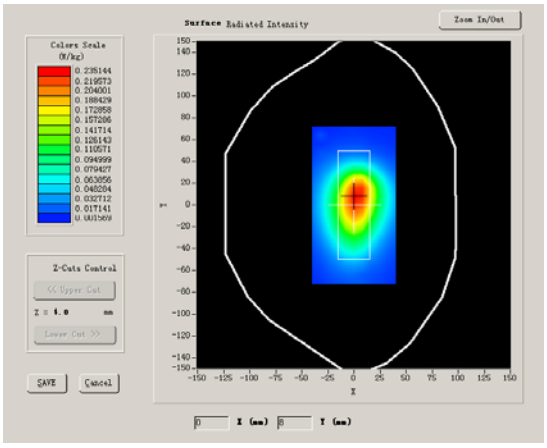
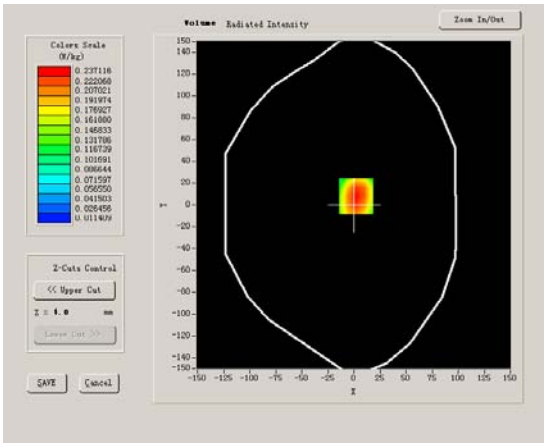
Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	WCDMA
Channels	Middle
Signal	CDMA

B. SAR Measurement Results

Middle Band SAR (Channel 4183):

Frequency (MHz)	836.000000
Relative permittivity (real part)	51.341000
Relative permittivity	15.877050

Conductivity (S/m)	0.737401
Variation (%)	-0.040000
Ambient Temperature:	22.5°C
Liquid Temperature:	22.4°C
ConvF:	28.599,25.681,27.588
Crest factor：	1:1

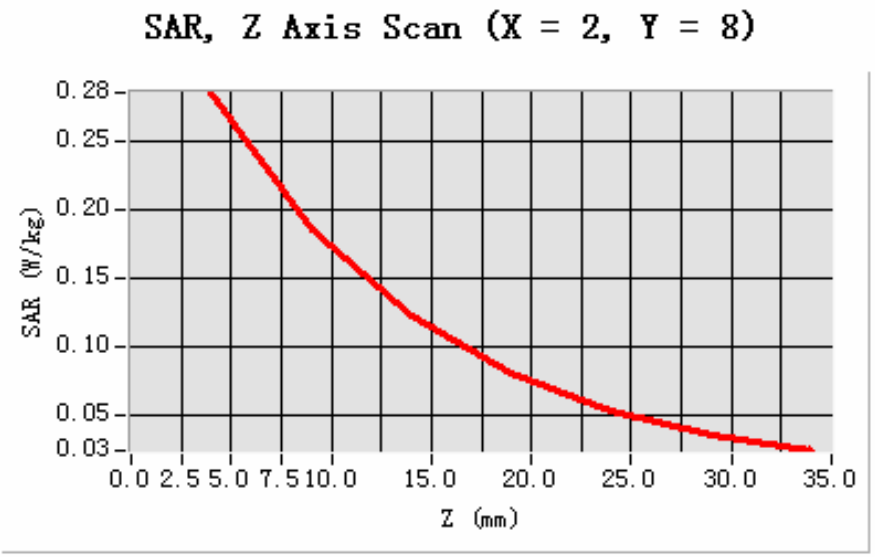
SURFACE SAR	**VOLUME SAR**
	

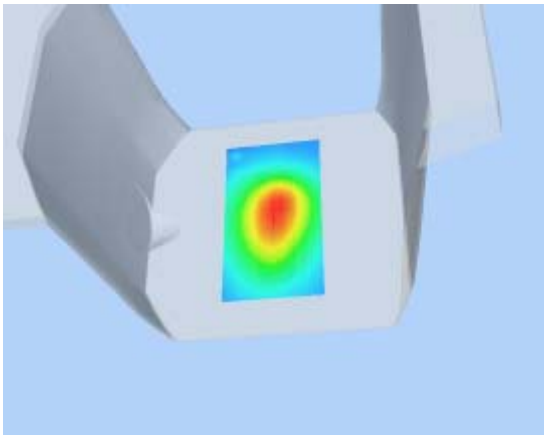
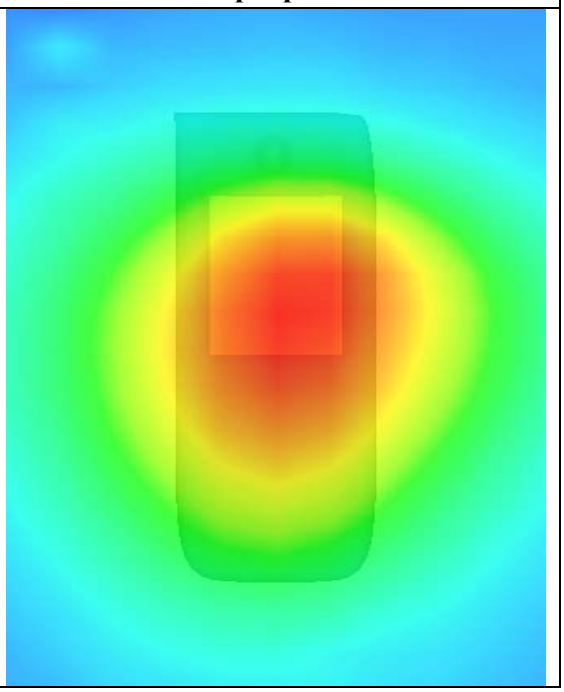
Maximum location: X=2.00, Y=8.00

SAR 10g (W/Kg)	0.172188
SAR 1g (W/Kg)	0.272231

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.2846	0.1850	0.1227	0.0811	0.0542	0.0367



3D sceen shot	Hot spot position
	

MEASUREMENT 13

Type: Phone measurement (Complete)

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

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

Date of measurement: 9/6/2010

Measurement duration: 13 minutes 6 seconds

A. Experimental conditions.

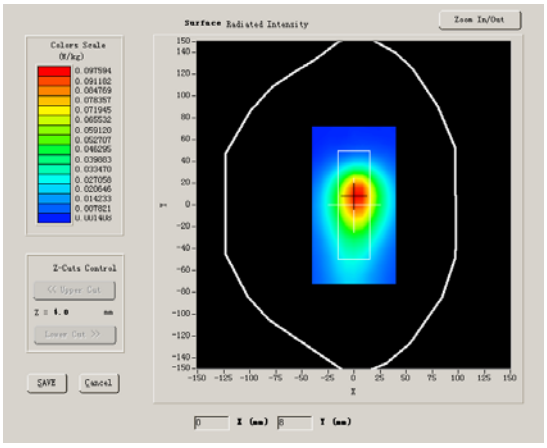
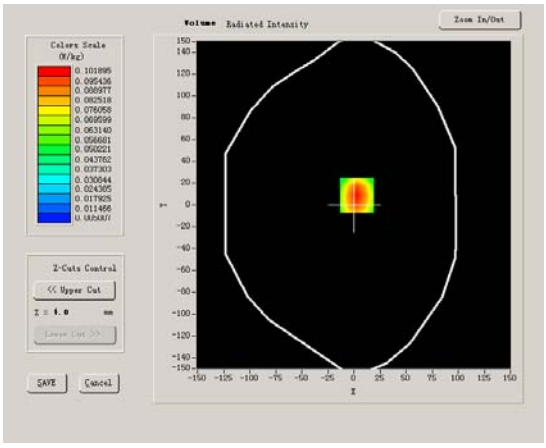
Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	WCDMA
Channels	Middle
Signal	CDMA

B. SAR Measurement Results

Middle Band SAR (Channel 4183):

Frequency (MHz)	836.000000
Relative permittivity (real part)	51.341000
Relative permittivity	15.877050

Conductivity (S/m)	0.737401
Variation (%)	-0.070000
Ambient Temperature:	22.5°C
Liquid Temperature:	22.4°C
ConvF:	28.599,25.681,27.588
Crest factor：	1:1

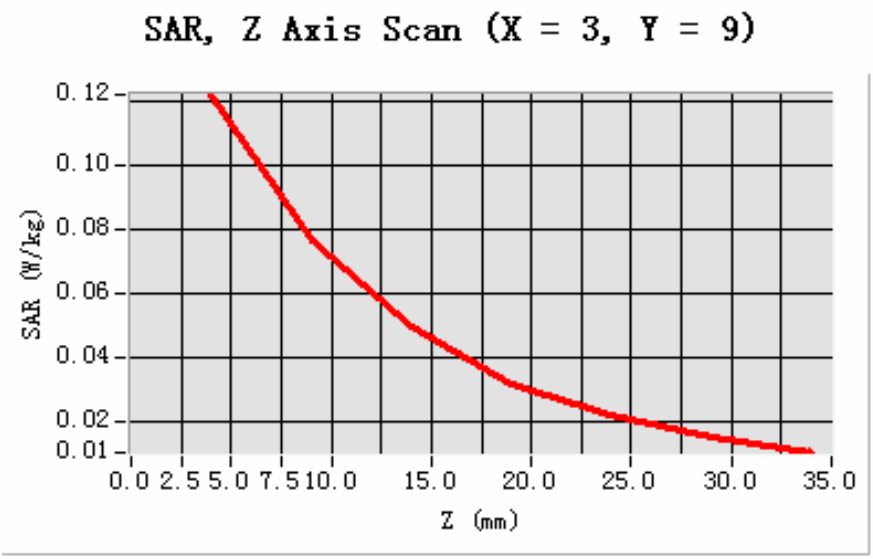
SURFACE SAR	**VOLUME SAR**
	

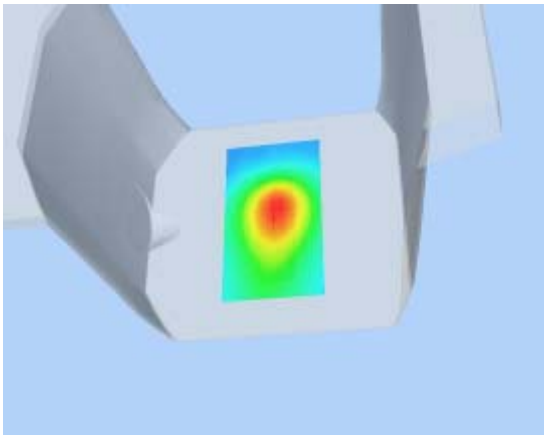
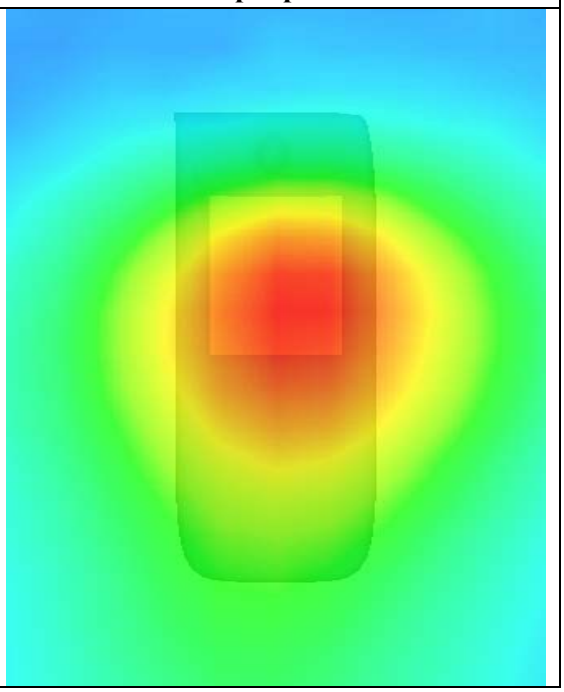
Maximum location: X=3.00, Y=9.00

SAR 10g (W/Kg)	0.071372
SAR 1g (W/Kg)	0.115981

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.1223	0.0763	0.0498	0.0319	0.0218	0.0147



3D sceen shot	Hot spot position
	

MEASUREMENT 14

Type: Phone measurement (Complete)

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

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

Date of measurement: 9/6/2010

Measurement duration: 13 minutes 1 seconds

A. Experimental conditions.

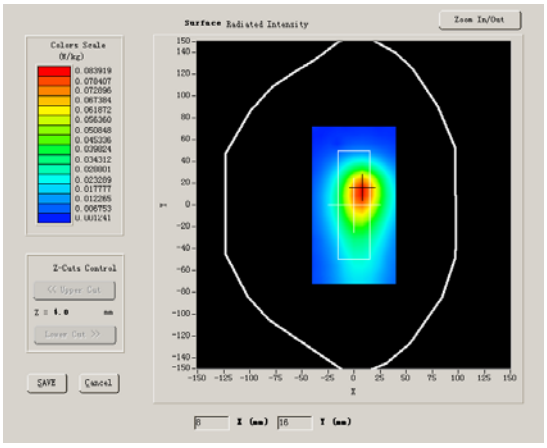
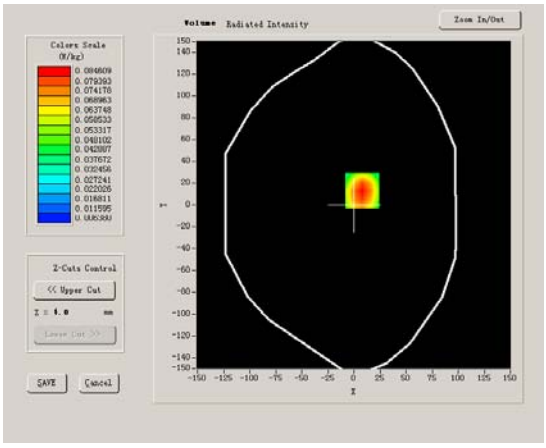
Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	WCDMA
Channels	Middle
Signal	CDMA

B. SAR Measurement Results

Middle Band SAR (Channel 4183):

Frequency (MHz)	836.000000
Relative permittivity (real part)	51.341000
Relative permittivity	15.877050

Conductivity (S/m)	0.737401
Variation (%)	0.330000
Ambient Temperature:	22.5°C
Liquid Temperature:	22.4°C
ConvF:	28.599,25.681,27.588
Crest factor：	1:1

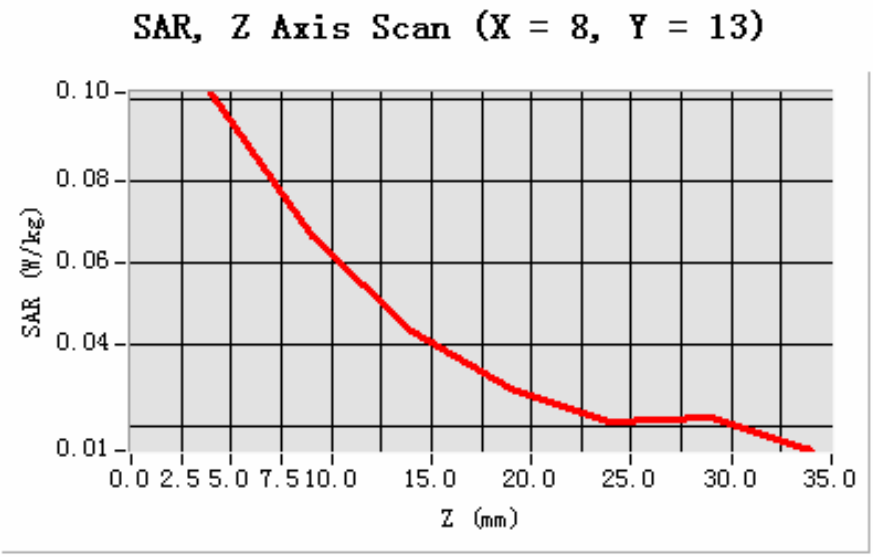
SURFACE SAR	**VOLUME SAR**
	

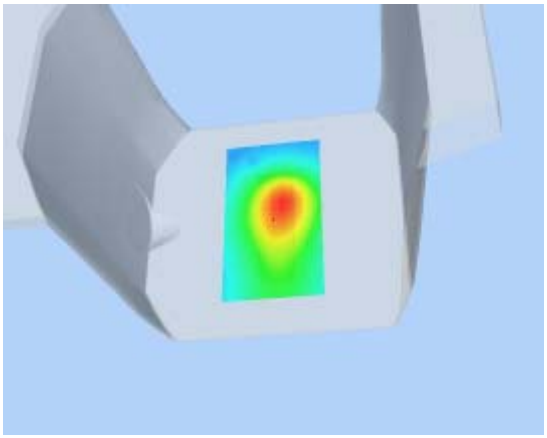
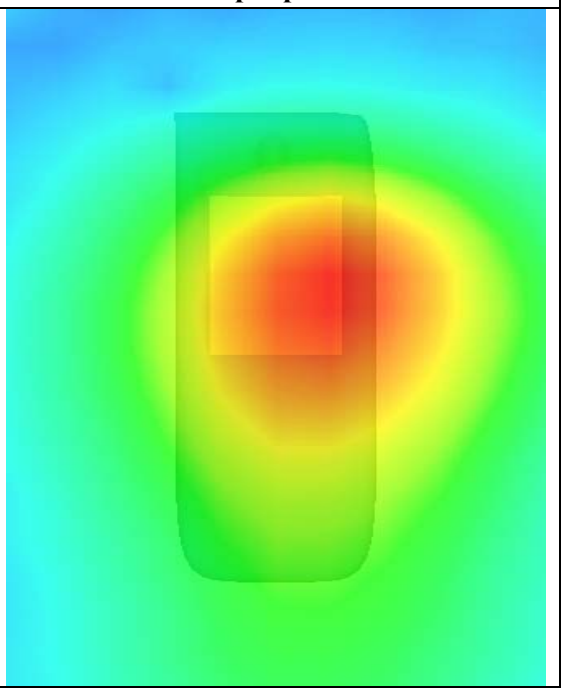
Maximum location: X=8.00, Y=13.00

SAR 10g (W/Kg)	0.059365
SAR 1g (W/Kg)	0.094654

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.1015	0.0661	0.0429	0.0289	0.0209	0.0220



3D sceen shot	Hot spot position
	

MEASUREMENT 15

Type: Phone measurement (Complete)

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

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

Date of measurement: 9/6/2010

Measurement duration: 13 minutes 6 seconds

A. Experimental conditions.

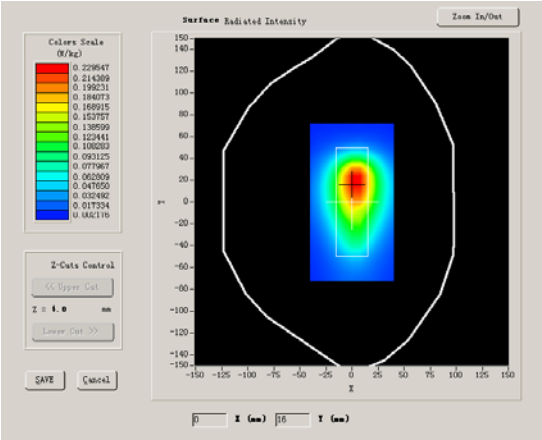
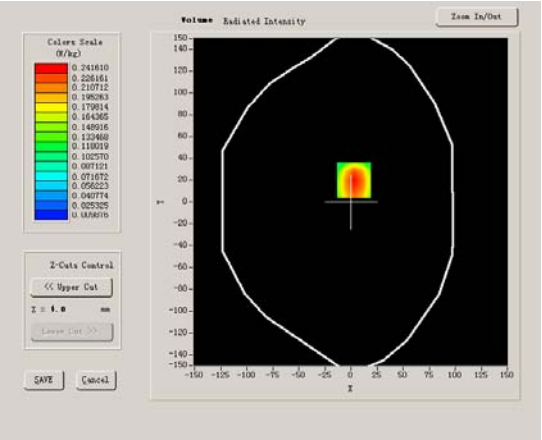
Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	WCDMA
Channels	Middle
Signal	CDMA

B. SAR Measurement Results

Middle Band SAR (Channel 4183):

Frequency (MHz)	836.000000
Relative permittivity (real part)	51.341000
Relative permittivity	15.877050

Conductivity (S/m)	0.737401
Variation (%)	0.310000
Ambient Temperature:	22.5°C
Liquid Temperature:	22.4°C
ConvF:	28.599,25.681,27.588
Crest factor：	1:1

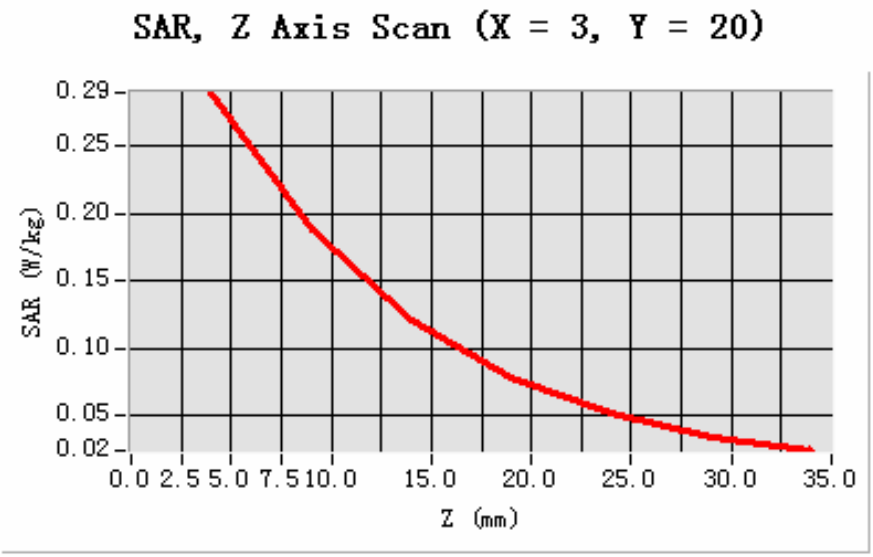
SURFACE SAR	VOLUME SAR
	

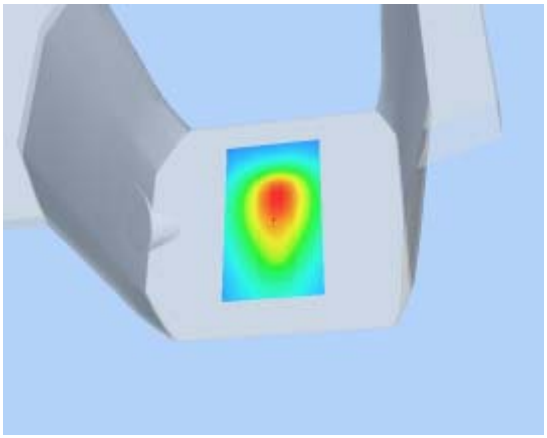
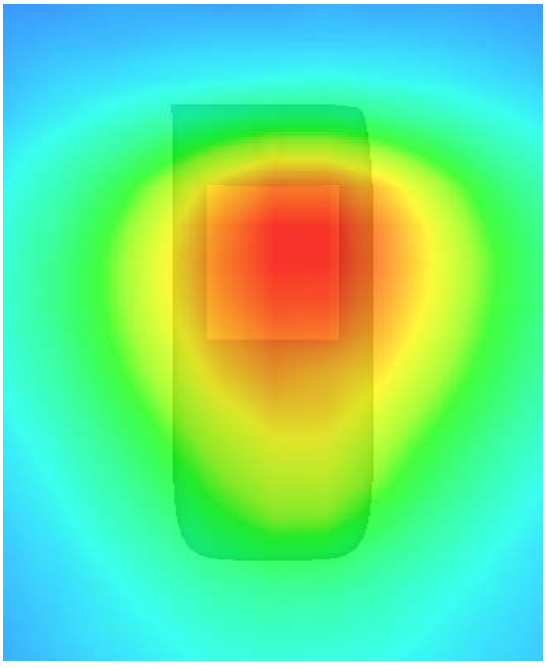
Maximum location: X=3.00, Y=20.00

SAR 10g (W/Kg)	0.142633
SAR 1g (W/Kg)	0.219656

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.2900	0.1875	0.1204	0.0783	0.0519	0.0341



3D sceen shot	Hot spot position
	

MEASUREMENT 16

Type: Phone measurement (Complete)

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

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

Date of measurement: 9/6/2010

Measurement duration: 13 minutes 9 seconds

A. Experimental conditions.

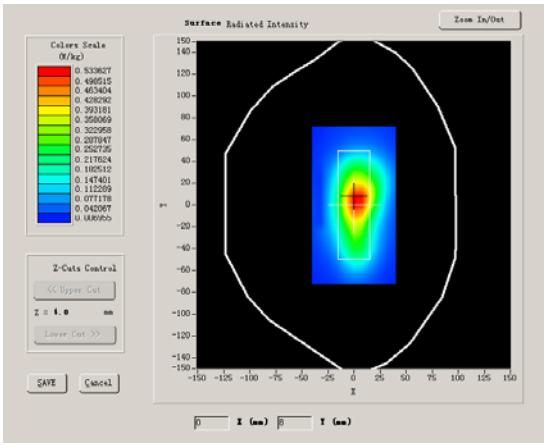
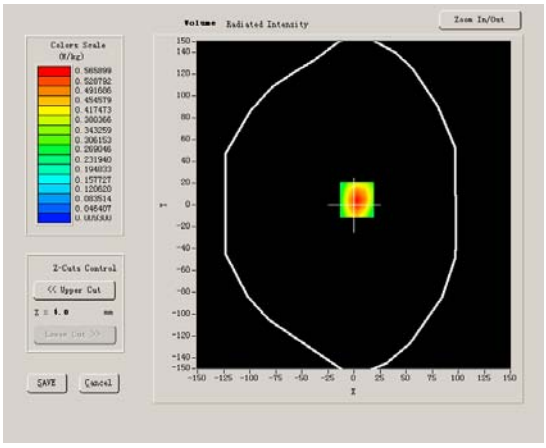
Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	WCDMA
Channels	Middle
Signal	CDMA

B. SAR Measurement Results

Middle Band SAR (Channel 9400):

Frequency (MHz)	1880.000000
Relative permittivity (real part)	51.341000
Relative permittivity	15.877050

Conductivity (S/m)	1.658270
Variation (%)	-0.360000
Ambient Temperature:	21.9°C
Liquid Temperature:	21.3°C
ConvF:	40.625,34.773,38.535
Crest factor：	1:1

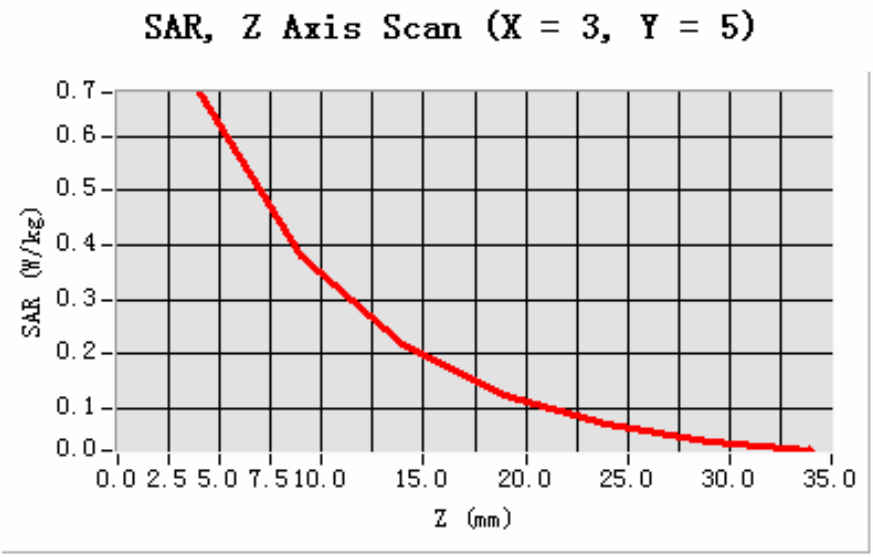
SURFACE SAR	**VOLUME SAR**
	

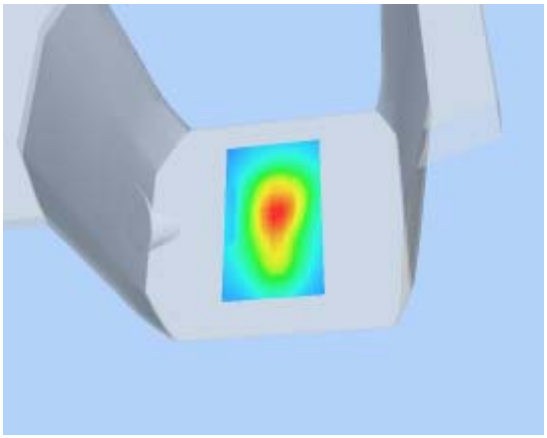
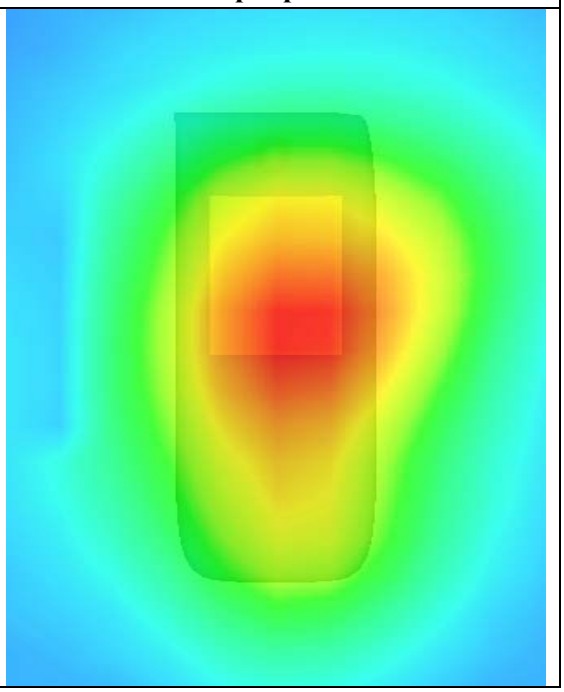
Maximum location: X=3.00, Y=5.00

SAR 10g (W/Kg)	0.355186
SAR 1g (W/Kg)	0.640116

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.6791	0.3804	0.2187	0.1226	0.0695	0.0400



3D sceen shot	Hot spot position
	

MEASUREMENT 17

Type: Phone measurement (Complete)

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

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

Date of measurement: 9/6/2010

Measurement duration: 9 minutes 10 seconds

A. Experimental conditions.

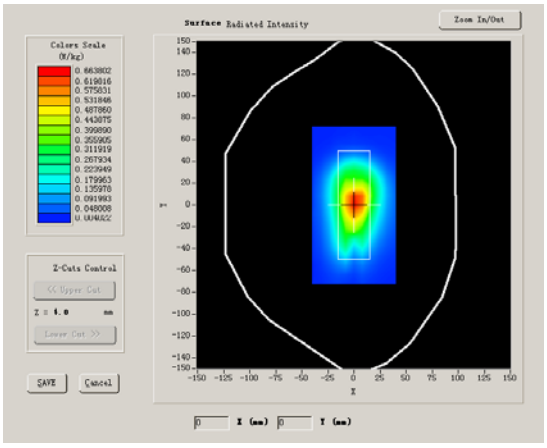
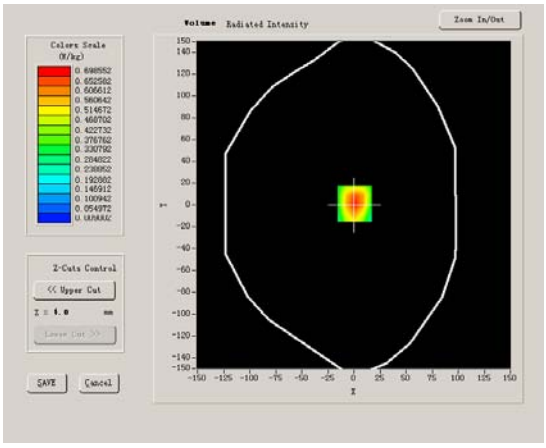
Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	WCDMA
Channels	Low
Signal	CDMA

B. SAR Measurement Results

Lower Band SAR (Channel 9262):

Frequency (MHz)	1852.000000
Relative permittivity (real part)	51.341000
Relative permittivity	15.877050

Conductivity (S/m)	1.633572
Variation (%)	2.750000
Ambient Temperature:	21.9°C
Liquid Temperature:	21.3°C
ConvF:	40.625,34.773,38.535
Crest factor：	1:1

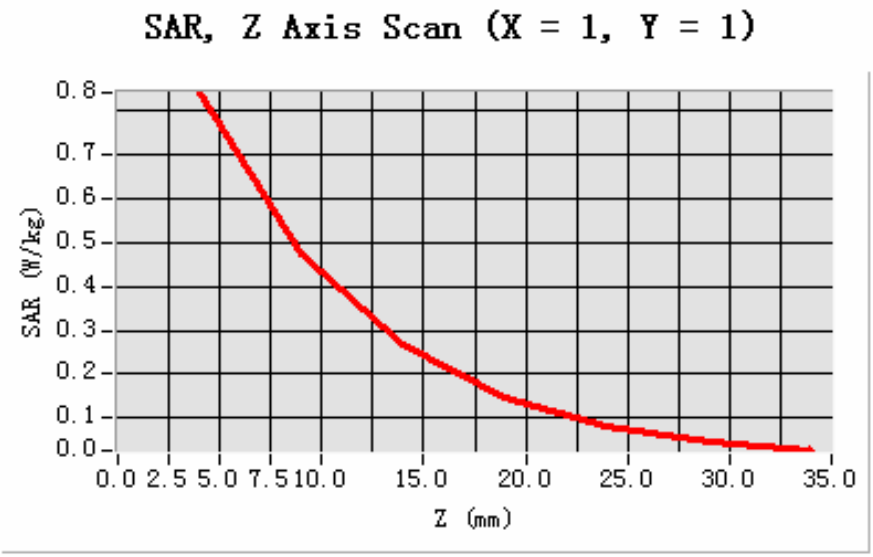
SURFACE SAR	**VOLUME SAR**
	

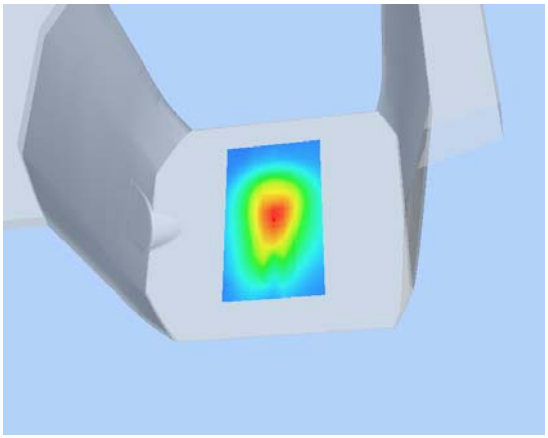
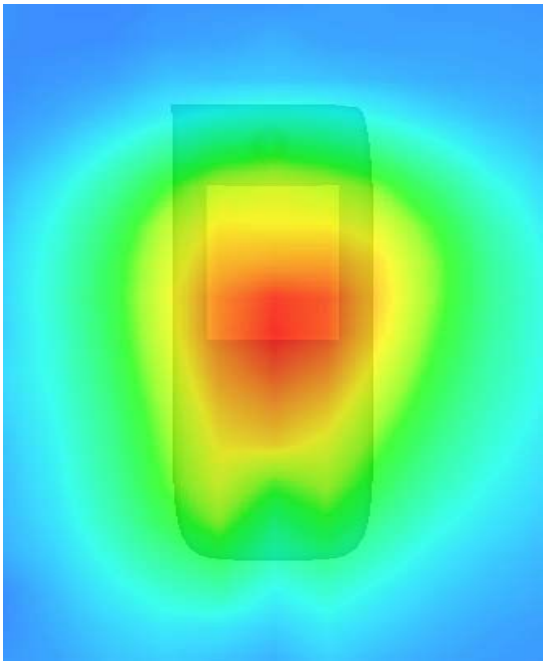
Maximum location: X=1.00, Y=1.00

SAR 10g (W/Kg)	0.438721
SAR 1g (W/Kg)	0.796030

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.8421	0.4732	0.2661	0.1478	0.0809	0.0472



3D sceen shot	Hot spot position
	

MEASUREMENT 18

Type: Phone measurement (Complete)

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

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

Date of measurement: 9/6/2010

Measurement duration:13 minutes 10 seconds

A. Experimental conditions.

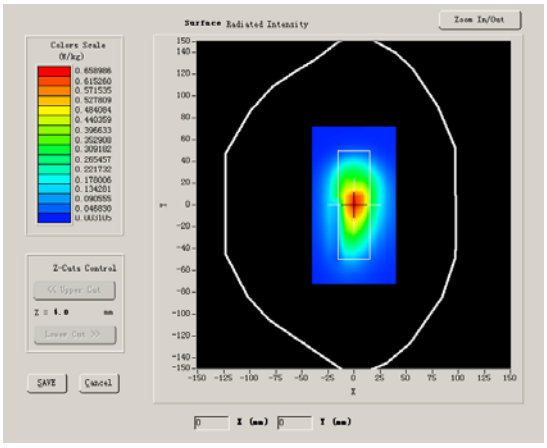
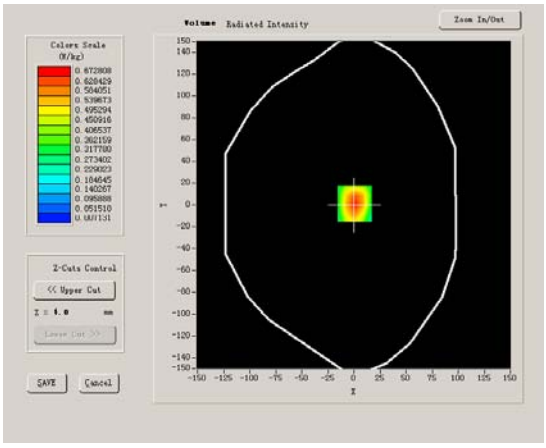
Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	WCDMA
Channels	Middle
Signal	CDMA

B. SAR Measurement Results

Middle Band SAR (Channel 9400):

Frequency (MHz)	1880.000000
Relative permittivity (real part)	51.341000
Relative permittivity	15.877050

Conductivity (S/m)	1.658270
Variation (%)	0.290000
Ambient Temperature:	21.9°C
Liquid Temperature:	21.3°C
ConvF:	40.625,34.773,38.535
Crest factor：	1:1

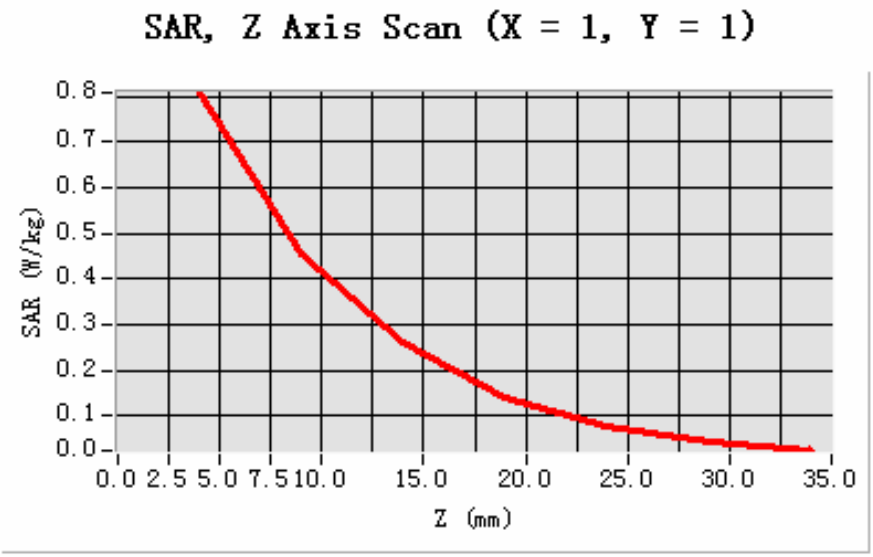
SURFACE SAR	**VOLUME SAR**
	

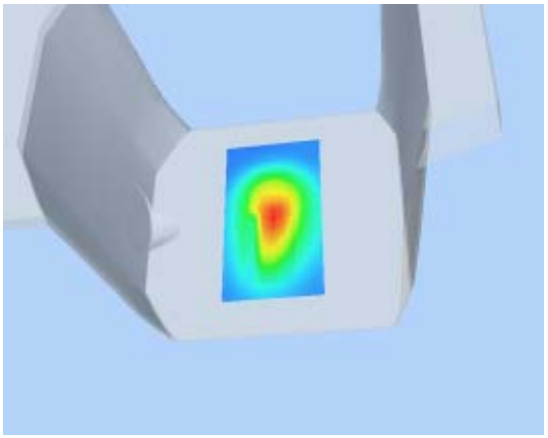
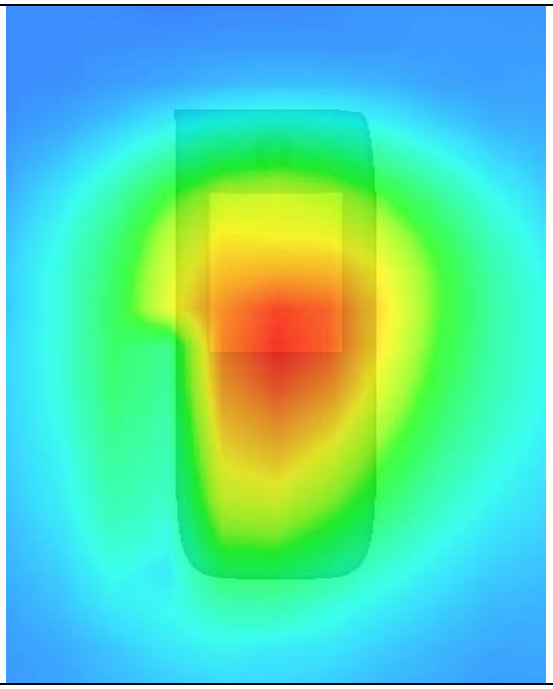
Maximum location: X=1.00, Y=1.00

SAR 10g (W/Kg)	0.427587
SAR 1g (W/Kg)	0.825181

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.8074	0.4537	0.2594	0.1411	0.0780	0.0442



3D sceen shot	Hot spot position
	

MEASUREMENT 19

Type: Phone measurement (Complete)

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

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

Date of measurement: 9/6/2010

Measurement duration: 9 minutes 11 seconds

A. Experimental conditions.

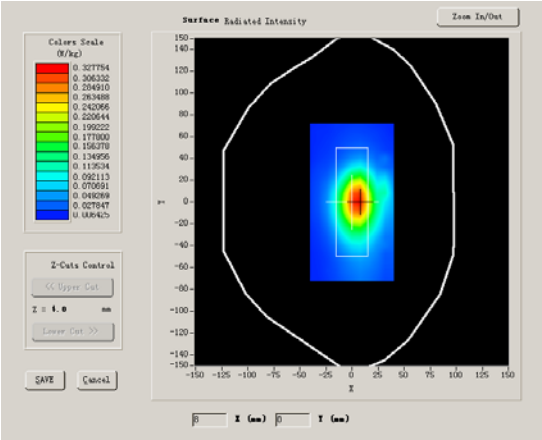
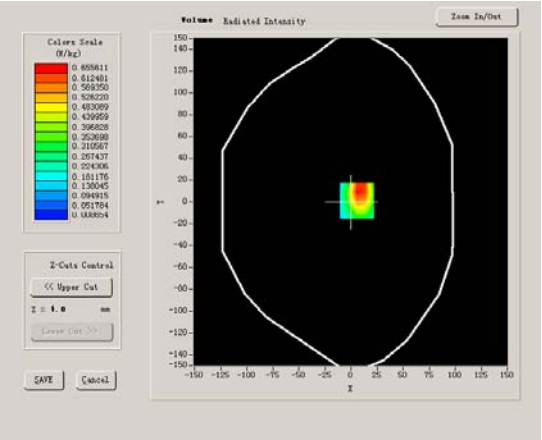
Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	WCDMA
Channels	High
Signal	CDMA

B. SAR Measurement Results

Higher Band SAR (Channel 9538):

Frequency (MHz)	1907.000000
Relative permittivity (real part)	51.341000
Relative permittivity	15.877050

Conductivity (S/m)	1.682085
Variation (%)	2.930000
Ambient Temperature:	21.9°C
Liquid Temperature:	21.3°C
ConvF:	40.625,34.773,38.535
Crest factor：	1:1

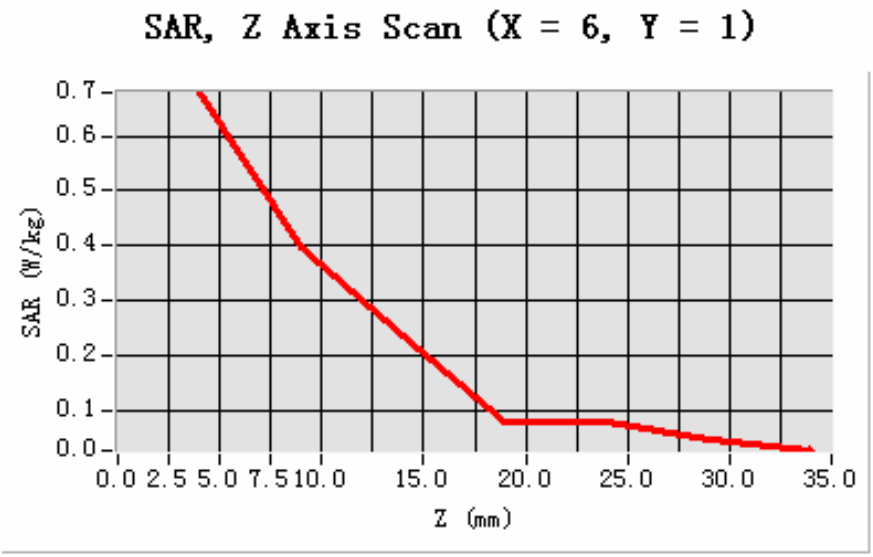
SURFACE SAR	VOLUME SAR
	

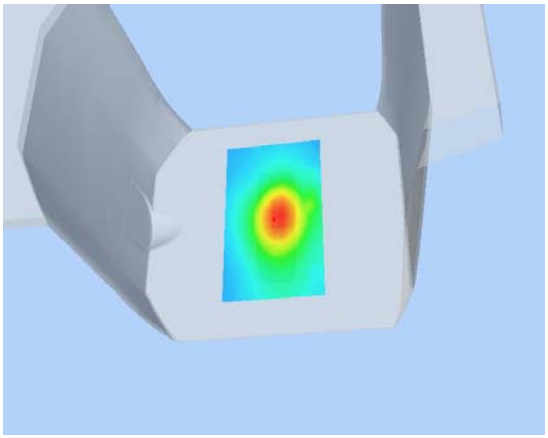
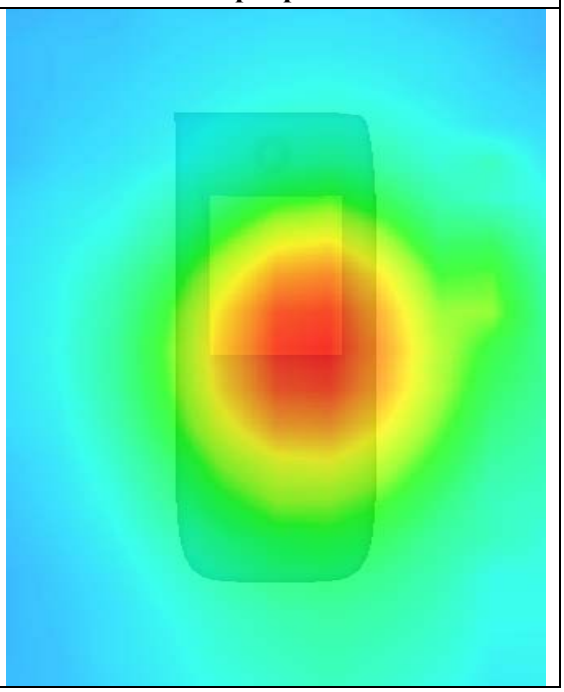
Maximum location: X=6.00, Y=1.00

SAR 10g (W/Kg)	0.386641
SAR 1g (W/Kg)	0.727178

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.6794	0.3982	0.2338	0.0775	0.0786	0.0452



3D sceen shot	Hot spot position
	

MEASUREMENT 20

Type: Phone measurement (Complete)

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

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

Date of measurement: 9/6/2010

Measurement duration: 13 minutes 11 seconds

A. Experimental conditions.

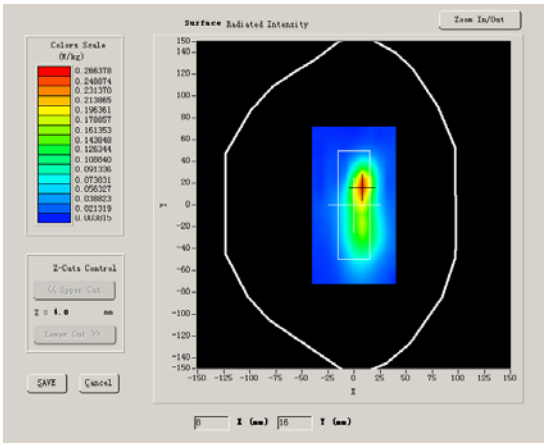
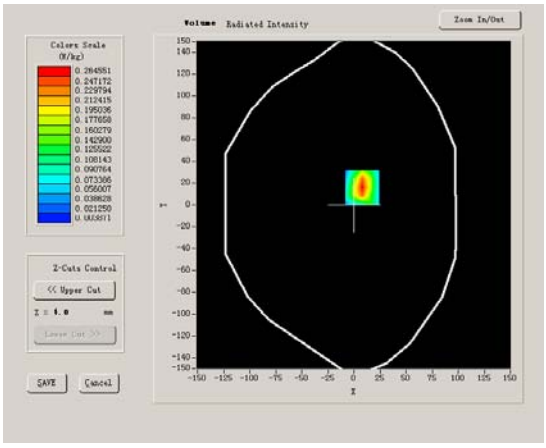
Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	WCDMA
Channels	Middle
Signal	CDMA

B. SAR Measurement Results

Middle Band SAR (Channel 9400):

Frequency (MHz)	1880.000000
Relative permittivity (real part)	51.341000
Relative permittivity	15.877050

Conductivity (S/m)	1.658270
Variation (%)	0.510000
Ambient Temperature:	21.9°C
Liquid Temperature:	21.3°C
ConvF:	40.625,34.773,38.535
Crest factor：	1:1

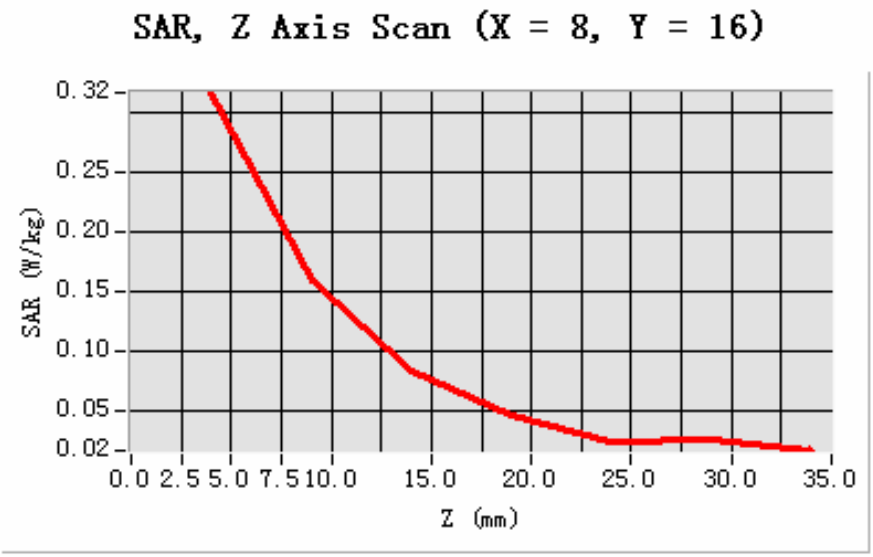
SURFACE SAR	**VOLUME SAR**
	

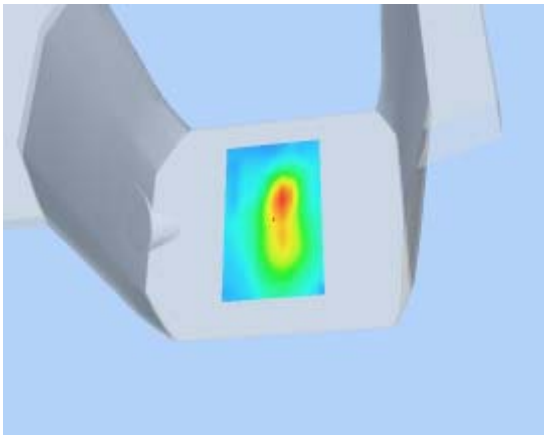
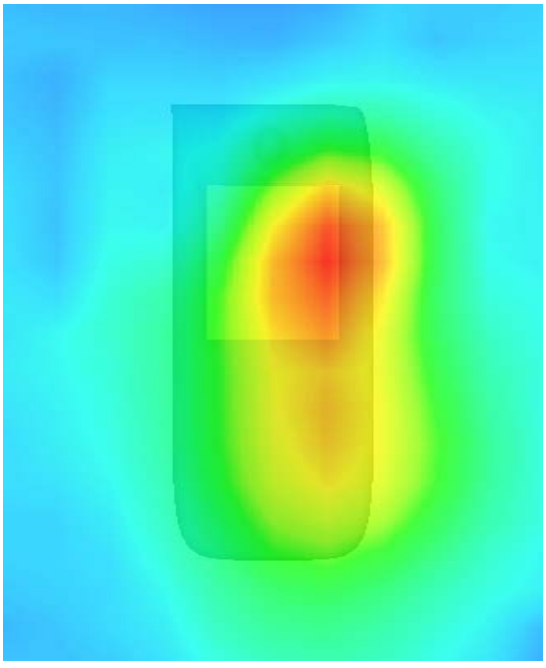
Maximum location: X=8.00, Y=16.00

SAR 10g (W/Kg)	0.137777
SAR 1g (W/Kg)	0.289702

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.3175	0.1595	0.0832	0.0450	0.0239	0.0256



3D sceen shot	Hot spot position
	

MEASUREMENT 21

Type: Phone measurement (Complete)

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

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

Date of measurement: 9/6/2010

Measurement duration: 13 minutes 11 seconds

A. Experimental conditions.

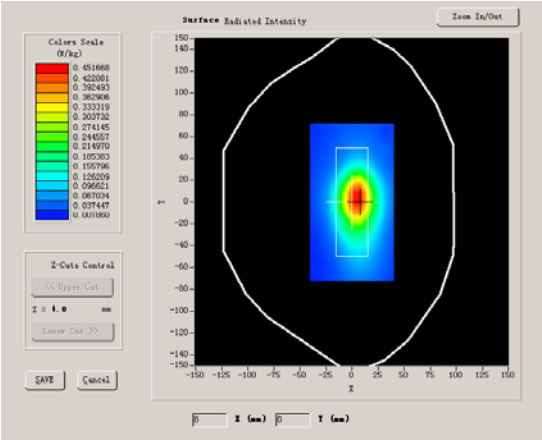
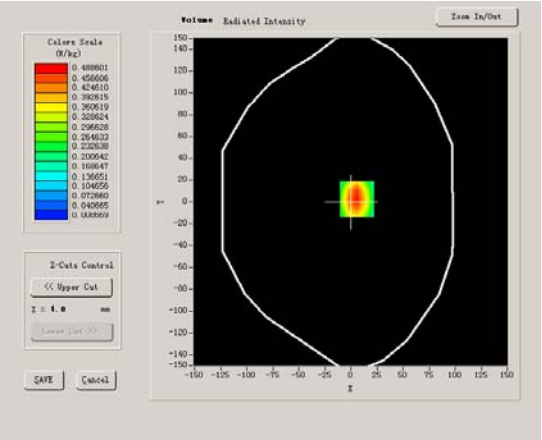
Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	WCDMA
Channels	Middle
Signal	CDMA

B. SAR Measurement Results

Middle Band SAR (Channel 9400):

Frequency (MHz)	1880.000000
Relative permittivity (real part)	51.341000
Relative permittivity	15.877050

Conductivity (S/m)	1.658270
Variation (%)	3.570000
Ambient Temperature:	21.9°C
Liquid Temperature:	21.3°C
ConvF:	40.625,34.773,38.535
Crest factor：	1:1

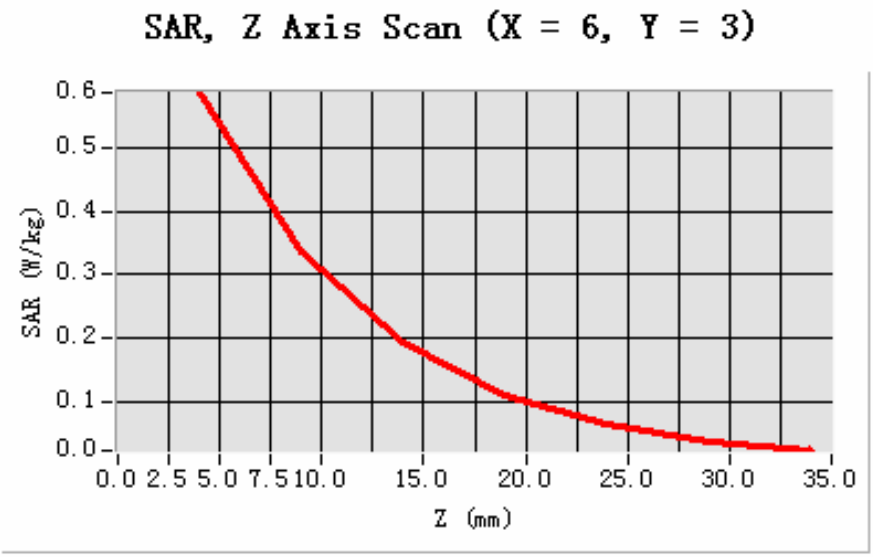
SURFACE SAR	VOLUME SAR
	

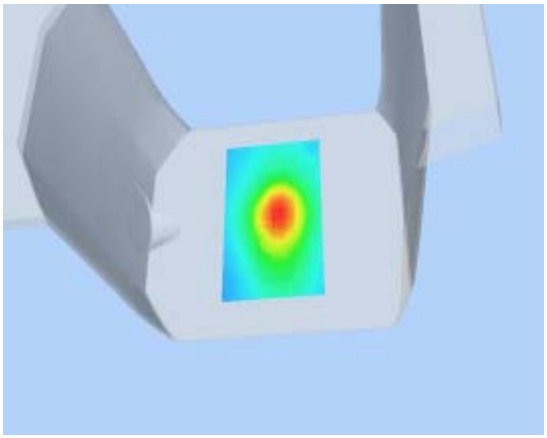
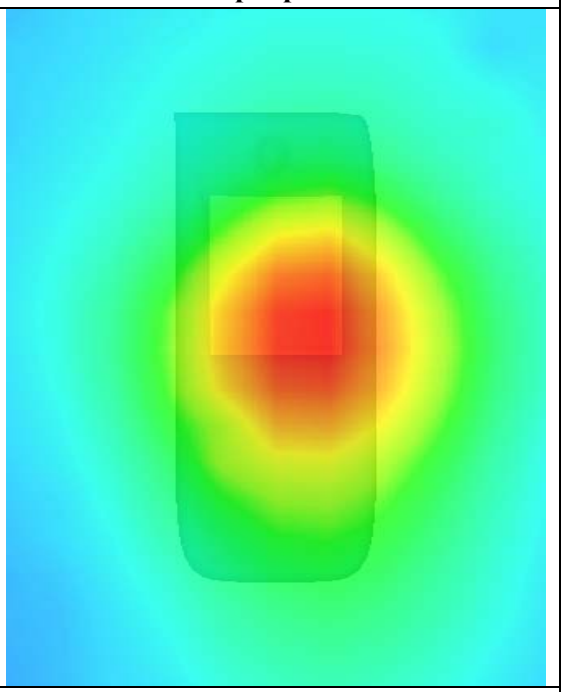
Maximum location: X=6.00, Y=3.00

SAR 10g (W/Kg)	0.308743
SAR 1g (W/Kg)	0.553801

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.5864	0.3346	0.1924	0.1106	0.0646	0.0373



3D sceen shot	Hot spot position
	

MEASUREMENT 22

Type: Phone measurement (Complete)

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

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

Date of measurement: 9/6/2010

Measurement duration:13 minutes 10 seconds

A. Experimental conditions.

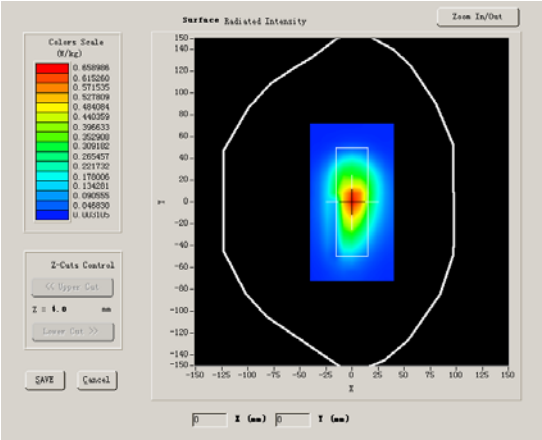
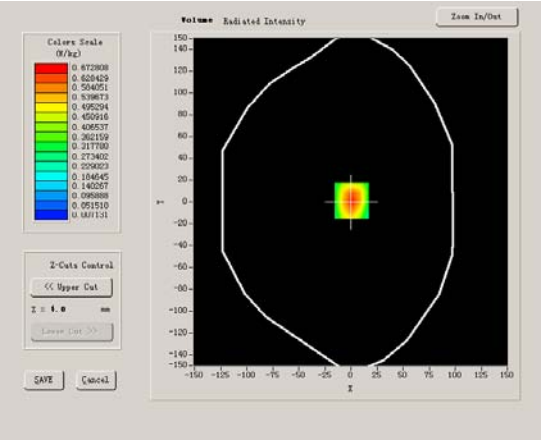
Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	WCDMA
Channels	Middle
Signal	CDMA

B. SAR Measurement Results

Middle Band SAR (Channel 9400):

Frequency (MHz)	1880.000000
Relative permittivity (real part)	51.341000
Relative permittivity	15.877050

Conductivity (S/m)	1.658270
Variation (%)	0.290000
Ambient Temperature:	21.9°C
Liquid Temperature:	21.3°C
ConvF:	40.625,34.773,38.535
Crest factor：	1:1

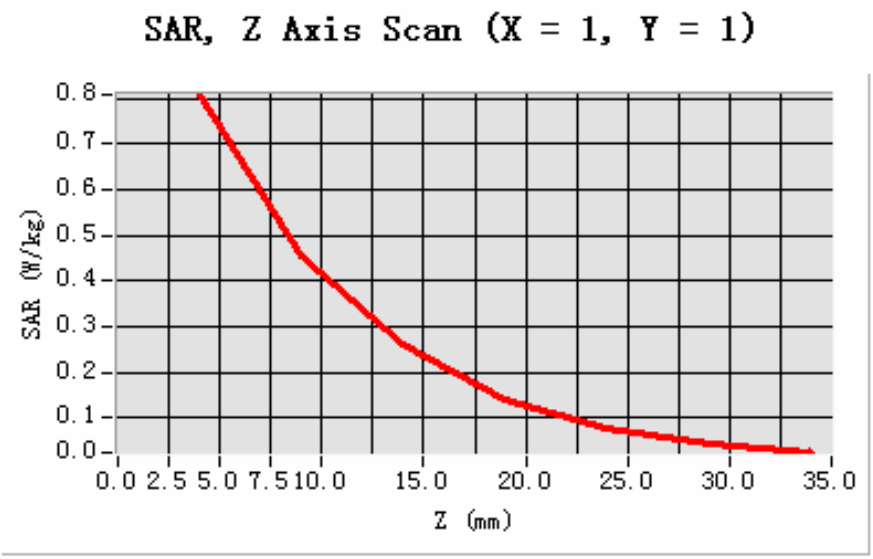
SURFACE SAR	VOLUME SAR
	

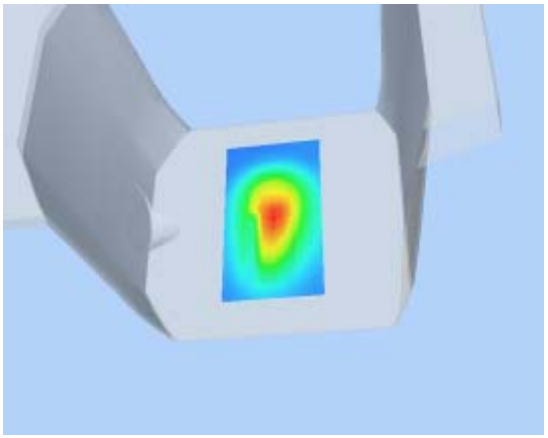
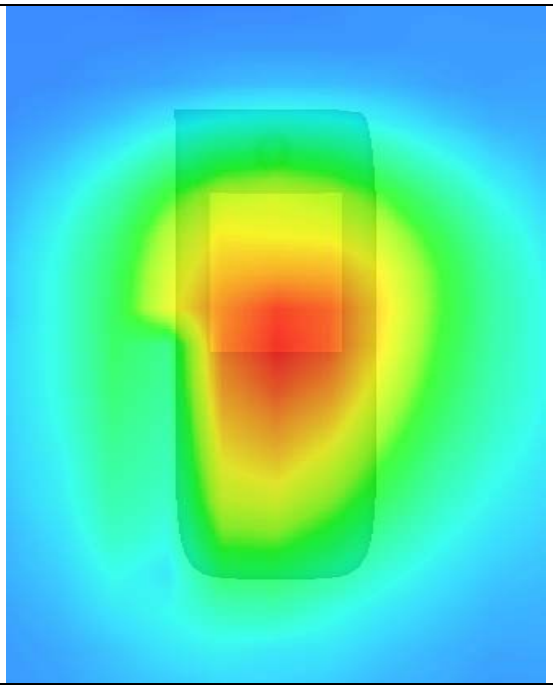
Maximum location: X=1.00, Y=1.00

SAR 10g (W/Kg)	0.352666
SAR 1g (W/Kg)	0.649575

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.8074	0.4537	0.2594	0.1411	0.0780	0.0442



3D sceen shot	Hot spot position
	

System Performance Check Data

Type: Phone measurement (Complete)

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

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

Date of measurement: 9/6/2010

Measurement duration: 9 minutes 27 seconds

A. Experimental conditions.

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

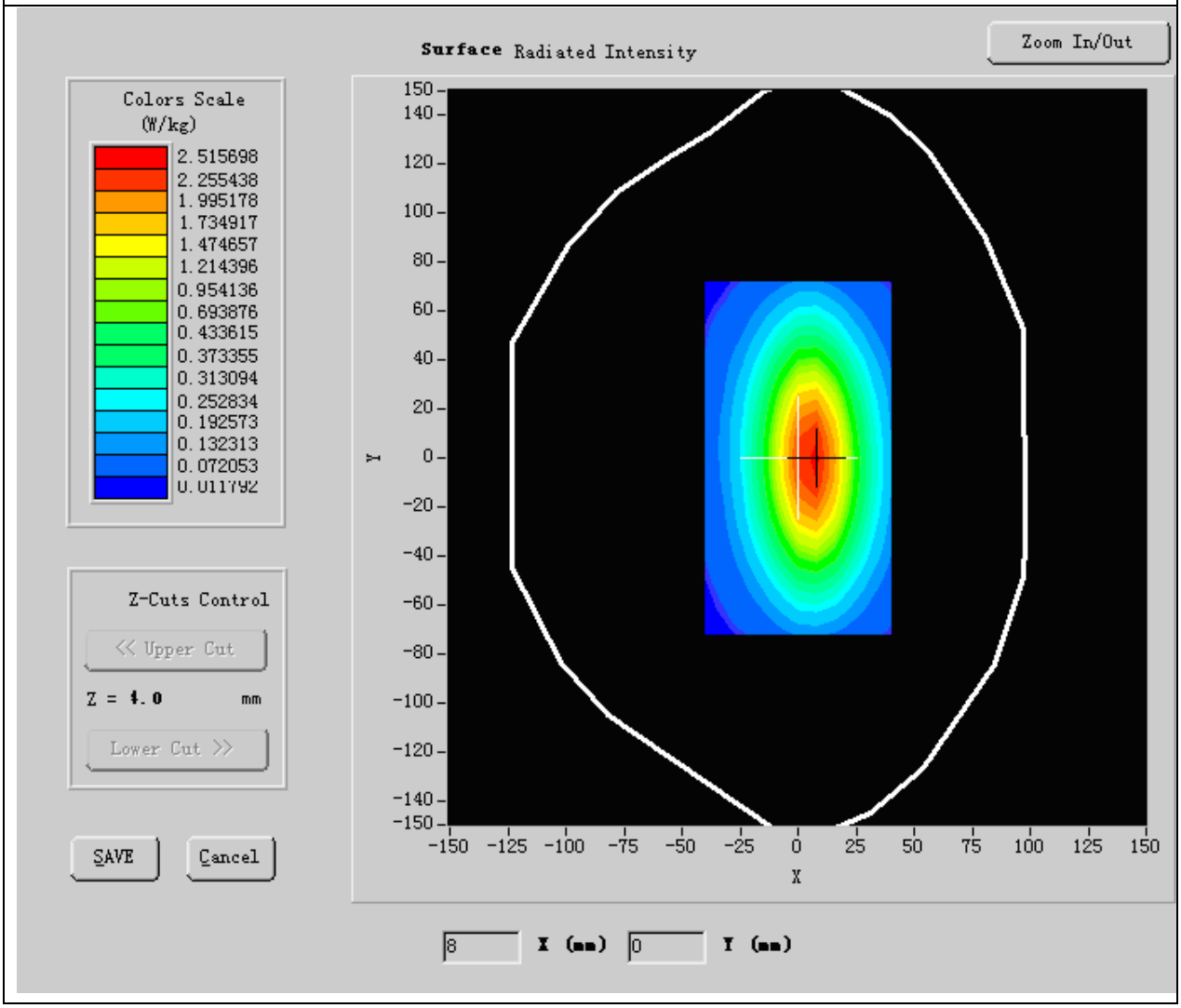
B. SAR Measurement Results

Middle Band SAR:

Frequency (MHz)	835.000000
Relative permittivity (real part)	55.872231
Relative permittivity	15.070000
Conductivity (S/m)	0.954822

Variation (%)	-0.140000
Ambient Temperature:	22.5°C
Liquid Temperature:	22.4°C
ConvF:	28.599,25.681,27.588
Crest factor：	1:1

SURFACE SAR

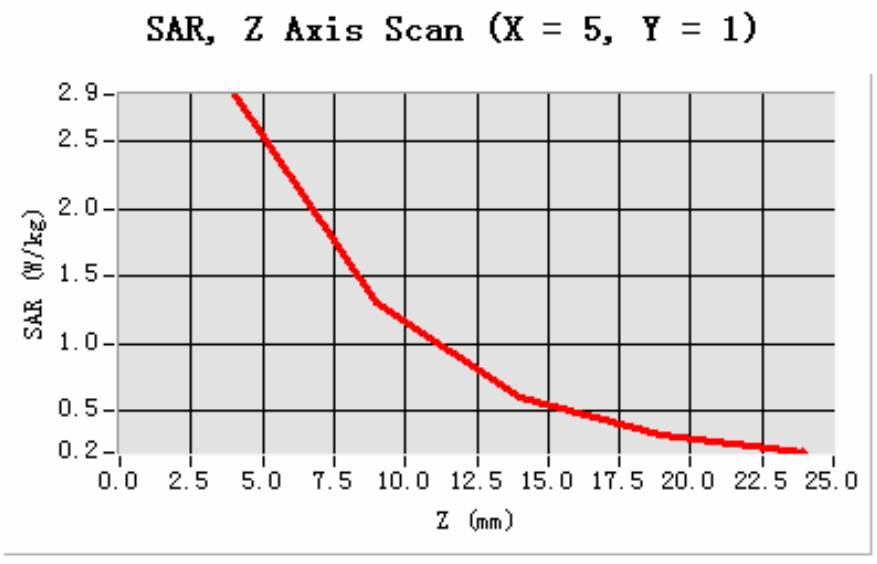


Maximum location: X=5.00, Y=1.00

SAR 10g (W/Kg)	1.643377
SAR 1g (W/Kg)	2.595546

Z Axis Scan

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



System Performance Check Data

Type: Phone measurement (Complete)

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

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

Date of measurement:9/6/2010

Measurement duration: 5 minutes 27 seconds

A. Experimental conditions.

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

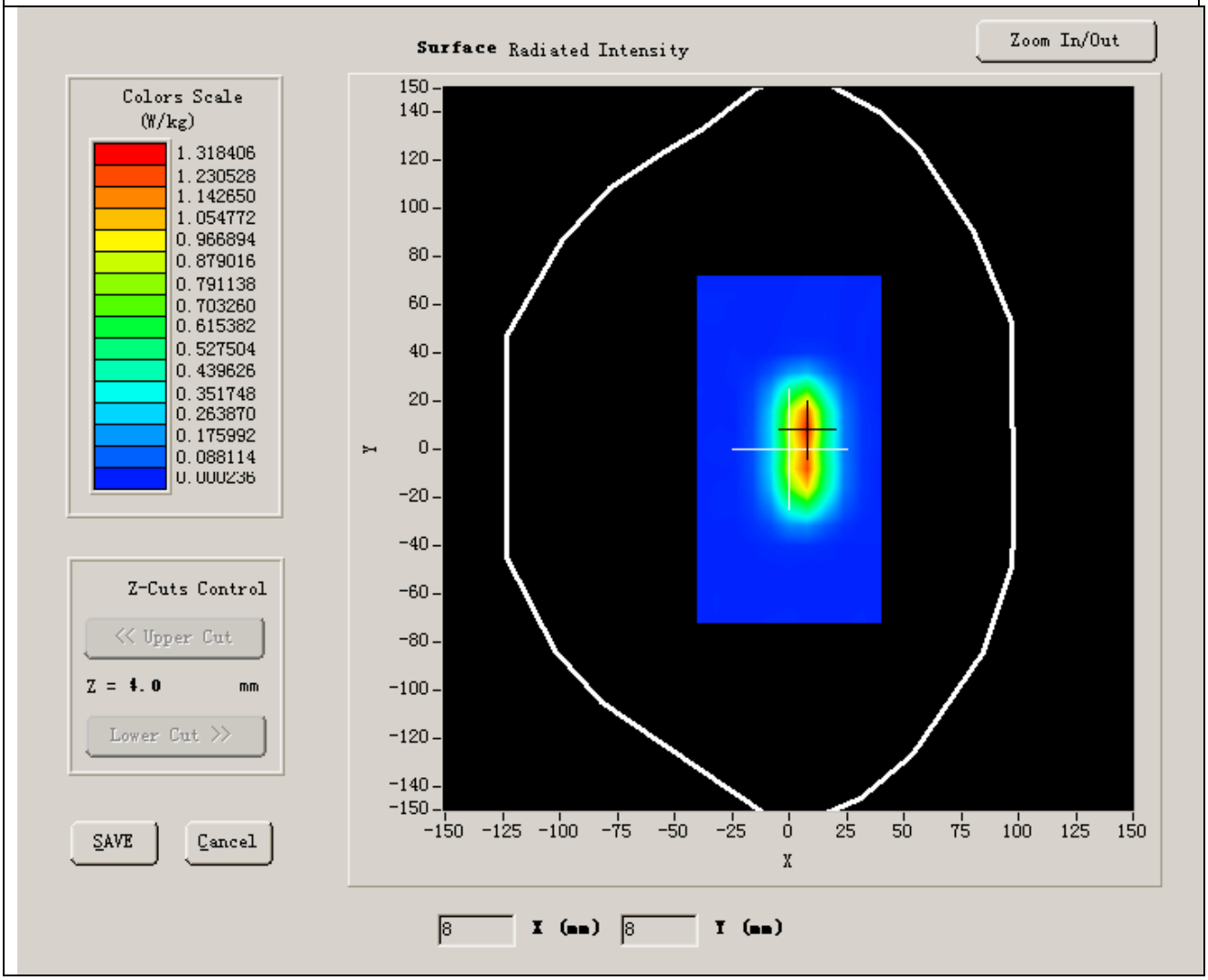
B. SAR Measurement Results

Band SAR:

Frequency (MHz)	1900.000000
Relative permittivity (real part)	53.883521
Relative permittivity	15.070000
Conductivity (S/m)	1.486632

Variation (%)	-0.140000
Ambient Temperature:	21.9°C
Liquid Temperature:	21.3°C
ConvF:	40.625,34.773,38.535
Crest factor：	1:1

SURFACE SAR



Maximum location: X=5.00, Y=1.00

SAR 10g (W/Kg)	5.255842
SAR 1g (W/Kg)	9.485561

Z Axis Scan

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