FCC SAR

TEST REPORT

of

CDMA 1x mobile phone

Model Name: C201S
Trade Name: CHIVA
Report No.: SZ08080036S01
FCC ID: WN5-C201S

prepared for

SHENZHEN ZHENHUA COMMUNICATION EQUIPMENT CO.,LTD.
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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.:	SZ08080036S01
Date of Issue:	Nov 19, 2008
Date of Tests:	Nov 15, 2008 - Nov 15, 2008
Responsible for Accreditation:	Mr. Shu Luan
Project Manager:	Li Lei
Deputy Project Manager:	Liao Jianming

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.

Li Lei
Tested by
(Responsible for the Test Report)

Liao Jianming
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
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	Synthetizer	Rohde&Schwarz (SML_03, SN:101868)
5	Amplifier	Nucl udes (ALB216, SN:10800)
6	Power Meter	Rohde&Schwarz (NRVD, SN:101066)
7	Probe	Antennessa (SN:SN_3708_EP80)
8	Phantom	Antennessa (SN:SN_36_08_SAM62)
9	Liquid	Antennessa (Last Calibration:21 08 04)

3. Technical Information

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

3.1. Identification of Applicant

Company Name:	SHENZHEN ZHENHUA COMMUNICATION EQUIPMENT CO.,LTD.
Address:	Zhenhua Industrial Park, No. 44, Tiezai Road.,Xixiang Town, BaoAn, Shenzhen, GuangDong, China
Contact Person:	stone_wang
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Facsimile:	0755-61528111-615
E-mail:	stone_wang@chiva.com.cn

3.2. Identification of Manufacturer

Company Name:	SHENZHEN ZHENHUA COMMUNICATION EQUIPMENT CO.,LTD.
Address:	Zhenhua Industrial Park, No. 44, Tiezai Road.,Xixiang Town, BaoAn, Shenzhen, GuangDong, China
Contact Person:	stone_wang
Telephone:	0755-61528111-603
Facsimile:	0755-61528111-615
E-mail:	stone_wang@chiva.com.cn

3.3. Equipment Under Test (EUT)

Brand Name:	CHIVA
Type Name:	C201S
Marking Name:	C201S
Hardware Version:	1.0
Software Version:	UC201SMT01
Frequency Bands:	Tx:825.25 MHz—847.75MHz Rx: 870.25 MHz—892.75MHz
Modulation Mode:	CDMA
Antenna type:	Build inside
Accessories:	Charger; Battery
Battery Model:	UNICAIR
Battery specification:	1050mAh 3.7V

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	ESN	Hardware Version	Software Version
1#	00000000	1.0	UC201SMT01
2#	00000000	1.0	UC201SMT01
3#	00000000	1.0	UC201SMT01

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		
Details of Power Supply:	220V/50Hz AC		
Extreme Temperature:	Low Temperature (LT)	=	-10°C
	High Temperature (HT)	=	55°C
Extreme Voltage of the EUT:	Normal Voltage (NV)	=	3.80V
	Low Voltage (LV)	=	3.60V
	High Voltage (HV)	=	4.20V
Test frequency:	CDMA 800MHz		
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 9, 384 and 758 respectively in the case of CDMA 800MHz, 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

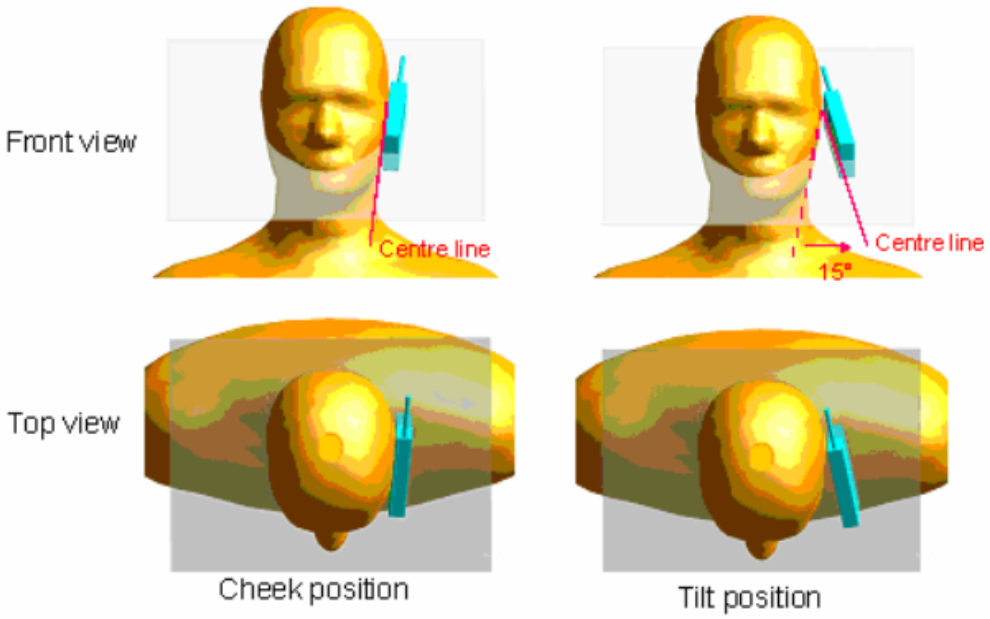
I.1. Normative reference

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:

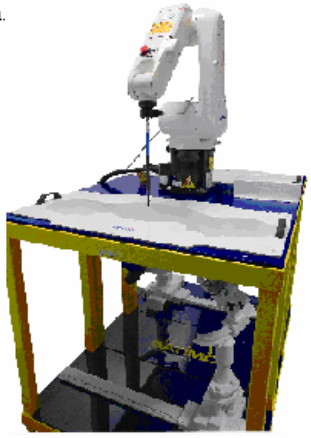
The mobile phone is well place in the "cheek" position as described above. Then the mobile phone is moved outward away from the mouth by an angle of 15 degrees or until contact with the ear lost.

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 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. 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	$\sqrt{3}$	$(1\text{-}Cp)^{1/2}$	$(1\text{-}Cp)^{1/2}$	1.02	1.02	∞
Hemispherical Isotropy	E.2.2	4.0	R	$\sqrt{3}$	$\sqrt{Cp}$	$\sqrt{Cp}$	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	

4.3.4. 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	Target value (1g)	Test value (1g)	
800MHz	10.8W/Kg	10.7(head)	10.6(body)

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 1.5cm (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 (Nov 15)	835 MHZ	41.790001	0.867138

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	55.0	1.05
Validation value (Nov 15)	835 MHZ	54.116001	1.003105

4.3.6. Simulant liquids

Simulant liquids that are used for testing at frequencies of 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	
	835	
Tissue Type	Head	Body
Water	41.45	52.4
Salt(NaCl)	1.45	1.4
Sugar	56.0	45.0
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	42.45	56.1
Conductivity (S/m)	0.91	0.95

4.4. 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 CDMA2000 1x

These procedures were followed according to FCC "SAR Measurement Procedures for 3G Devices", June 2006.

4.4.2.1 Output Power Verification

See 3GPP2 C.S0011/TIA-98-E as recommended by "SAR Measurement Procedures for 3G Devices", June 2006.
Maximum output power is verified on the High, Middle and Low channels according to procedures

defined in section 4.4.5.2 of 3GPP2 C.S0011/TIA-98-E. SO55 tests were measured with power control bits in "All Up" condition.
1. If the mobile station supports Reverse TCH RC 1 and Forward TCH RC 1, set up a call using Fundamental Channel Test Mode 1 (RC=1/1) with 9600 bps data rate only.
2. Under RC1, C.S0011 Table 4.4.5.2-1 (Table.A) parameters were applied.
3. If the MS supports the RC 3 Reverse FCH, RC3 Reverse SCH0 and demodulation of RC 3, 4, or 5, set up a call using Supplemental Channel Test Mode 3 (RC 3/3) with 9600 bps Fundamental Channel and 9600 bps SCH0 data rate Channel and 9600 bps SCH0 data rate.
4. Under RC3, C.S0011 Table 4.4.5.2-2(Table.B) was applied.
5. FCHs were configured at full rate for maximum SAR with "All Up" power control bits.
Table.A Table.B

Parameters for Max. Power for RC1

Parameter	Units	Value
$\hat{I}_{or}$	dBm/1.23 MHz	-104
$\frac{\text{Pilot } E_c}{\hat{I}_{or}}$	dB	-7
$\frac{\text{Traffic } E_c}{\hat{I}_{or}}$	dB	-7.4

Table.A

Parameters for Max. Power for RC3

Parameter	Units	Value
$\hat{I}_{or}$	dBm/1.23 MHz	-86
$\frac{\text{Pilot } E_c}{\hat{I}_{or}}$	dB	-7
$\frac{\text{Traffic } E_c}{\hat{I}_{or}}$	dB	-7.4

Table.B

4.4.2.2 Head SAR Measurement

SAR for head exposure configurations is measured in RC3 with the DUT configured to transmit at fullrate using Loopback Service Option SO55. SAR for RC1 is not required when the maximum average output of each channel is less than ¼ dB higher than that measured in RC3. Otherwise, SAR is measured on the maximum output channel in RC1 using the exposure configuration that results in the highest SAR for that channel in RC3.

4.4.2.3 Body SAR Measurement

SAR for body exposure configurations is measured in RC3 with the DUT configured to transmit at full rate on FCH with all other code channels disabled using TDSO / SO32. SAR for multiple code channels (FCH + SCHn) is not required when the maximum average output of each RF channel is less than ¼ dB higher than that measured with FCH only. Otherwise, SAR is measured on the maximum output channel (FCH + SCHn) with FCH at full rate and SCH0 enabled at 9600 bps using the exposure configuration that results in the highest SAR for that channel with FCH only. When multiple code channels are enabled, the DUT output may shift by more than 0.5 dB and lead to higher SAR drifts and SCH dropouts. Body SAR in RC1 is not required when the maximum average output of each channel is less than ¼dB higher than that measured in RC3. Otherwise, SAR is measured on the maximum output channel in RC1; with Loopback Service Option SO55, at full rate, using the body exposure configuration that results in the highest SAR for that channel in RC3 .

Channel	Radio Configuration aud conducted Power (dBm)				
	RC1	RC2	RC3	RC4	RC5
Low	27.63	27.44	27.84	27.73	27.43
Mid	26.13	26.52	26.13	26.39	26.14
High	27.73	27.15	27.41	27.93	27.73
SO	SO2	SO9	SO55	SO55	SO55

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 (CDMA 800MHz Band)
SAR Values (CDMA 800MHz Band), Measured against the head.

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)
Left head, Touch cheek, channel Low	0.709067	27.73
Left head, Touch cheek, channel Middle	0.535831	26.39
Left head, Touch cheek, channel High	0.405866	27.93
Left head, Tilt 15 Degree, channel Low	0.484396	27.73
Left head, Tilt 15 Degree, Channel Middle	0.376886	26.39
Left head, Tilt 15 Degree, Channel High	0.264539	27.93
Right head, Touch cheek, channel Low	0.751275	27.73
Right head, Touch cheek, Channel Middle	0.617263	26.39
Right head, Touch cheek, Channel High	0.461720	27.93
Right head, Tilt 15 Degree, channel Low	0.485817	27.73
Right head, Tilt 15 Degree, Channel Middle	0.391413	26.39
Right head, Tilt 15 Degree, Channel High	0.281234	27.93

SAR Values (CDMA 800MHz 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)
Side, Low frequency	0.452004	27.73
Side, Middle frequency	0.341536	26.39
Side, High frequency	0.240613	27.93

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 1.5cm(taking into account of the IEEE 1528 and the place of the antenna)

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

(CQCS Testing Co. Ltd.)

Electronic Testing Building Wenguang Road, Shahe West, Xili Town, Nanshan District, Shenzhen, Guangdong, China

to ISO/IEC 17025:1999 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: 2007-01-17

Date of Expiry: 2009-10-08

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 Recognition Arrangement (APLAC MRA).

Annex B Photographs of the EUT

1 EUT Left Head Touch Cheek Position

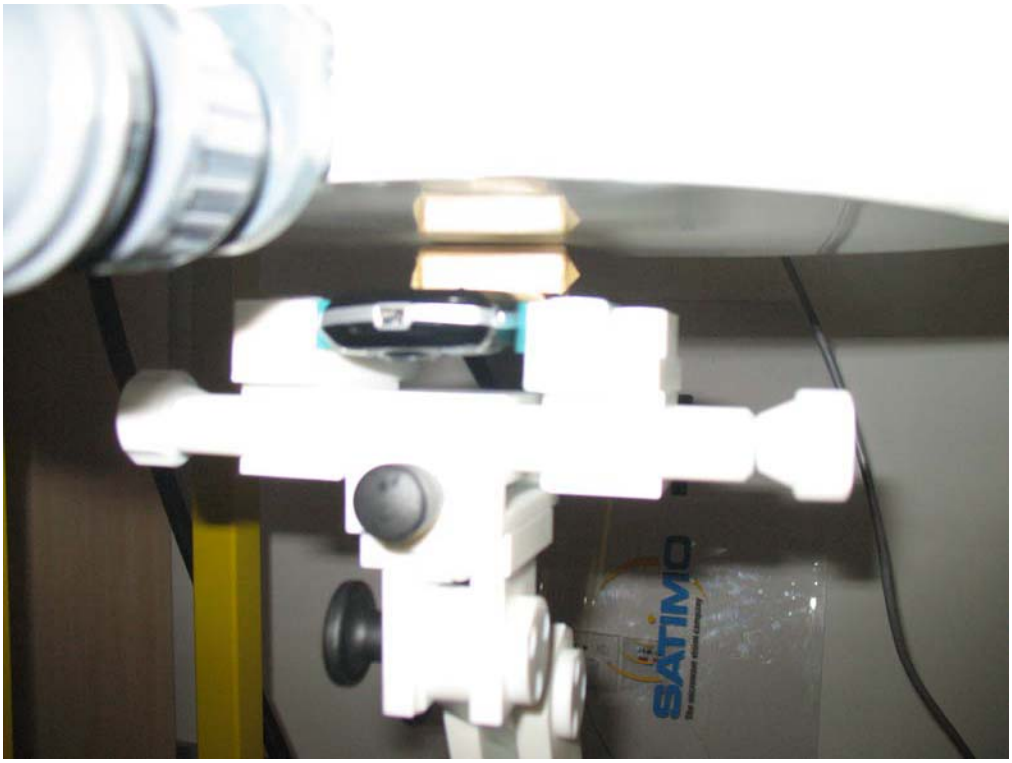
6 EUT Left Head Tilt15 Position

7 EUT Right Head Touch Cheek Position

8 EUT Right Head Tilt15 Position

9 spacer 1.5cm

10 Side Position



Annex C Graph Test Results

	BAND	PARAMETERS
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TYPE	**CDMA850**	Measurement 1: Right Head with Cheek device position on Low Channel in CDMA mode Measurement 2: Right Head with Cheek device position on Middle Channel in CDMA mode Measurement 3: Right Head with Cheek device position on High Channel in CDMA mode Measurement 4: Right Head with Tilt device position on Low Channel in CDMA mode Measurement 5: Right Head with Tilt device position on Middle Channel in CDMA mode Measurement 6: Right Head with Tilt device position on High Channel in CDMA mode Measurement 7: Left Head with Cheek device position on Low Channel in CDMA mode Measurement 8: Left Head with Cheek device position on Middle Channel in CDMA mode Measurement 9: Left Head with Cheek device position on High Channel in CDMA mode Measurement 10: Left Head with Tilt device position on Low Channel in CDMA mode Measurement 11: Left Head with Tilt device position on Middle Channel in CDMA mode Measurement 12: Left Head with Tilt device position on High Channel in CDMA mode Measurement 13: Validation Plane with Body device position on Low Channel in CDMA mode Measurement 14: Validation Plane with Body device position on Middle Channel in CDMA mode Measurement 15: Validation Plane with Body device position on High Channel in CDMA mode

MEASUREMENT 1

Type: Phone measurement (Very fast, 27 points in the volume)

Date of measurement: 15/11/2008

Measurement duration: 3 minutes 45 seconds

Mobile Phone IMEI number: --

A. Experimental conditions.

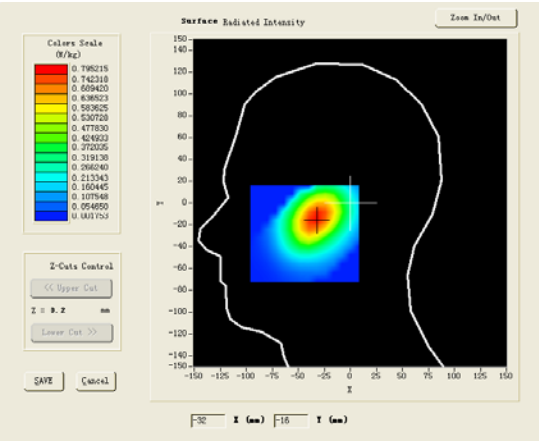
Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Right head
Device Position	Cheek
Band	CDMA850
Channels	Low
Signal	CDMA

B. SAR Measurement Results

Lower Band SAR (Channel 9):

Frequency (MHz)	825.27
Relative permittivity (real part)	41.790001
Relative permittivity (imaginary part)	18.926250

Conductivity (S/m)	0.867138
Variation (%)	-0.870000

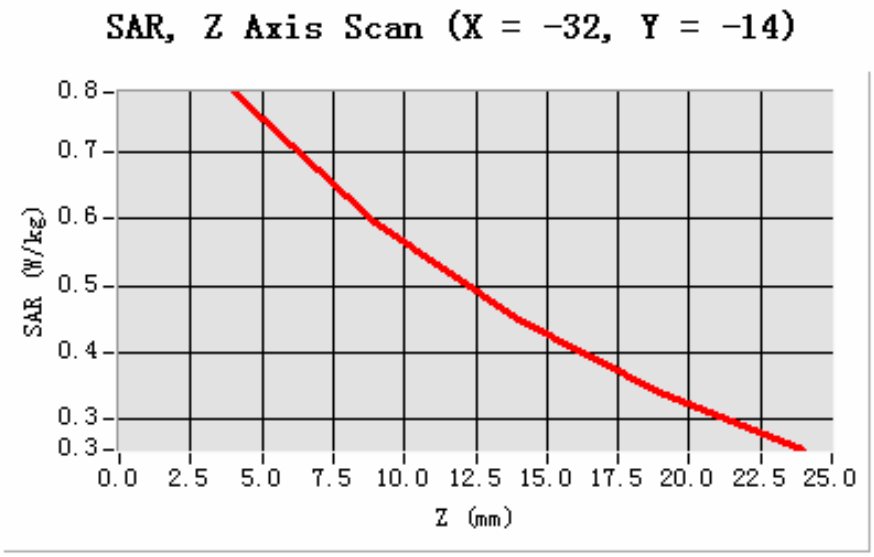
SURFACE SAR	VOLUME SAR
	

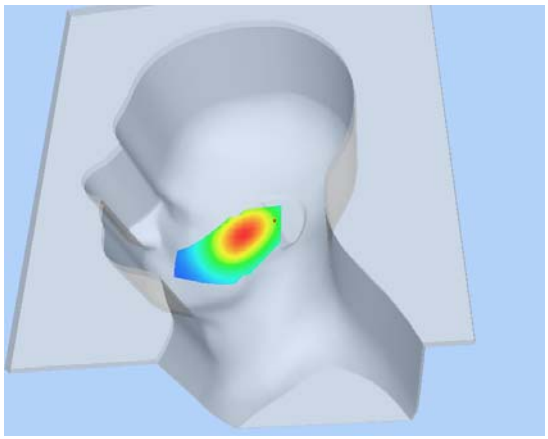
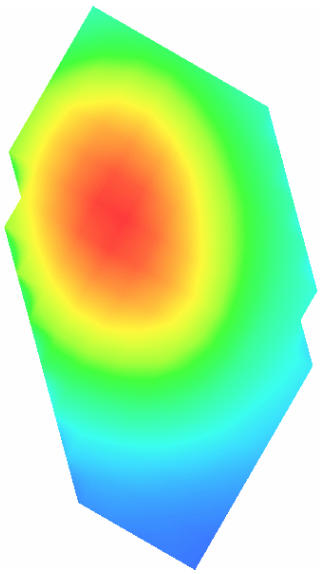
Maximum location: X=-32.00, Y=-14.00

SAR 10g (W/Kg)	0.521966
SAR 1g (W/Kg)	0.751275

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.7896	0.5952	0.4497	0.3405



3D sceen shot	Hot spot position
	

MEASUREMENT 2

Type: Phone measurement (Very fast, 27 points in the volume)

Date of measurement: 15/11/2008

Measurement duration: 3 minutes 50 seconds

Mobile Phone IMEI number: --

A. Experimental conditions.

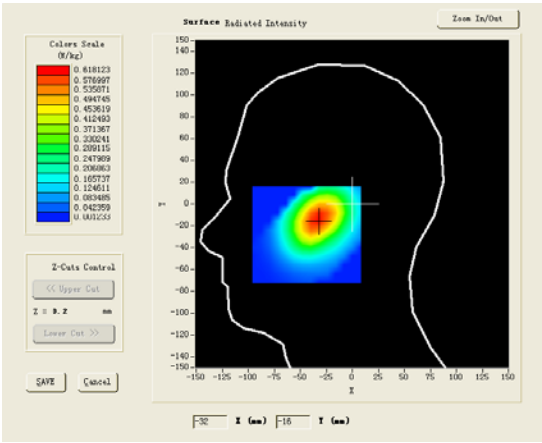
Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Right head
Device Position	Cheek
Band	CDMA850
Channels	Middle
Signal	CDMA

B. SAR Measurement Results

Middle Band SAR (Channel 384):

Frequency (MHz)	836.520020
Relative permittivity (real part)	41.790001
Relative permittivity (imaginary	18.926250

part)	
Conductivity (S/m)	0.879566
Variation (%)	1.530000

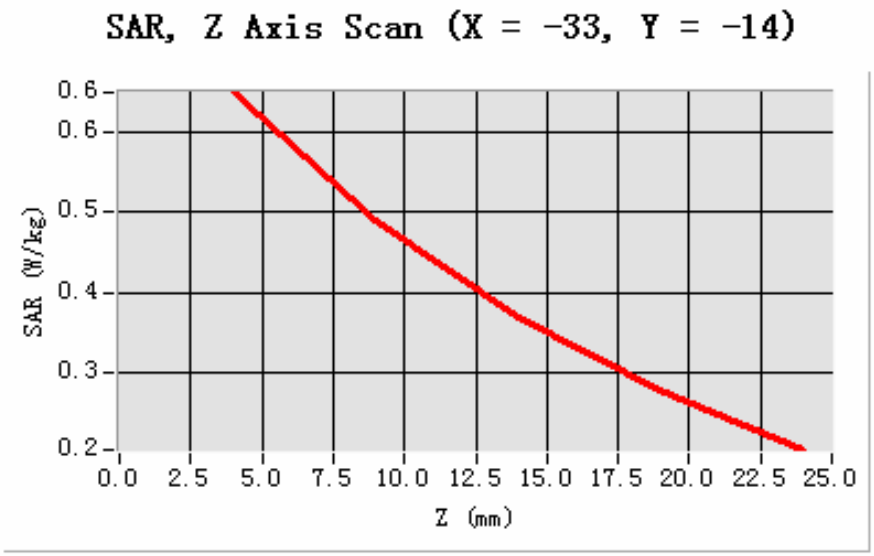
SURFACE SAR	VOLUME SAR
	

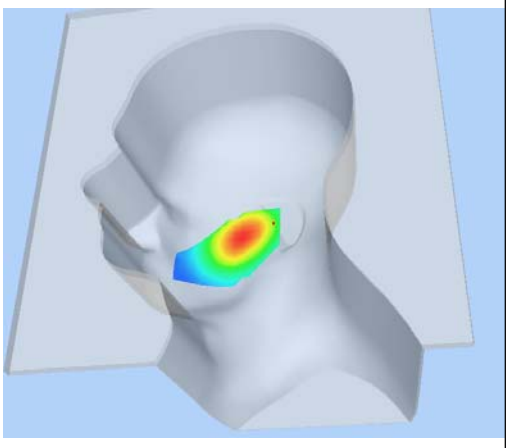
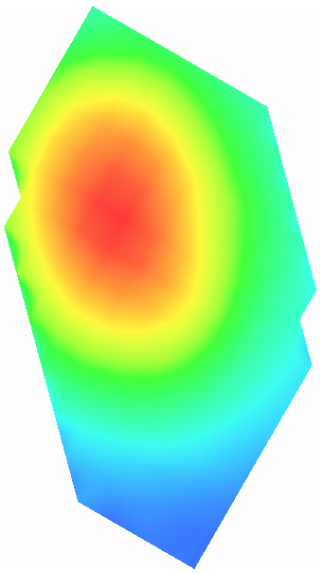
Maximum location: X=-33.00, Y=-14.00

SAR 10g (W/Kg)	0.427337
SAR 1g (W/Kg)	0.617263

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.6490	0.4896	0.3689	0.2775



3D sceen shot	Hot spot position
	

MEASUREMENT 3

Type: Phone measurement (Very fast, 27 points in the volume)

Date of measurement: 15/11/2008

Measurement duration: 3 minutes 50 seconds

Mobile Phone IMEI number: --

A. Experimental conditions.

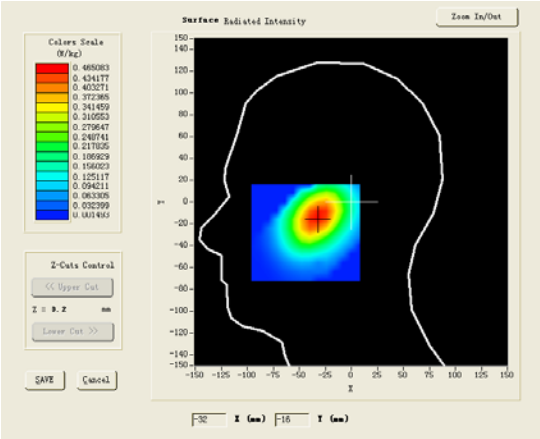
Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Right head
Device Position	Cheek
Band	CDMA850
Channels	High
Signal	CDMA

B. SAR Measurement Results

Higher Band SAR (Channel 758):

Frequency (MHz)	847.74
Relative permittivity (real part)	41.790001
Relative permittivity (imaginary	18.926250

part)	
Conductivity (S/m)	0.891963
Variation (%)	1.460000

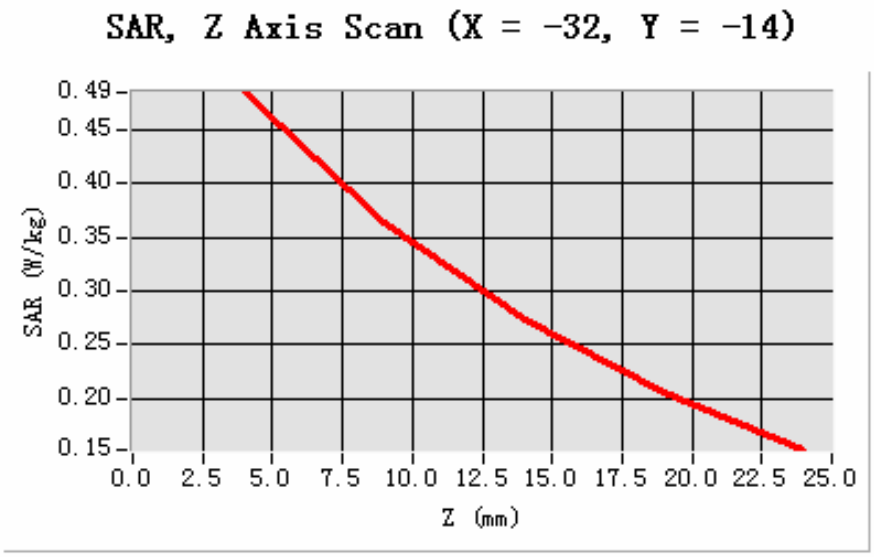
SURFACE SAR	VOLUME SAR
	

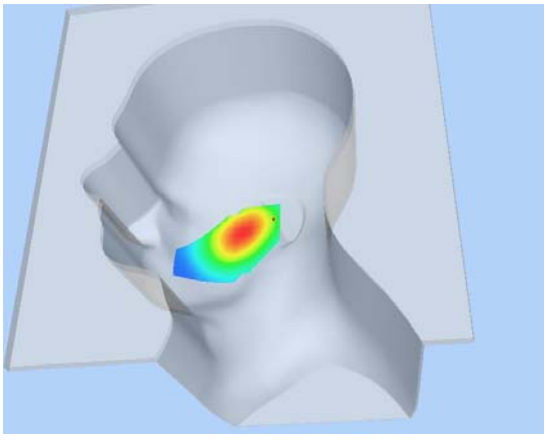
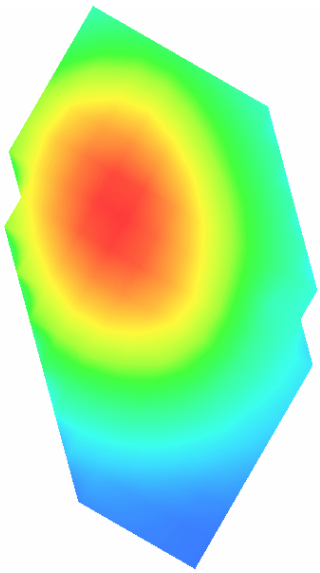
Maximum location: X=-32.00, Y=-14.00

SAR 10g (W/Kg)	0.319184
SAR 1g (W/Kg)	0.461720

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.4853	0.3640	0.2734	0.2056



3D sceen shot	Hot spot position
	

MEASUREMENT 4

Type: Phone measurement (Very fast, 27 points in the volume)

Date of measurement: 15/11/2008

Measurement duration: 3 minutes 48 seconds

Mobile Phone IMEI number: --

A. Experimental conditions.

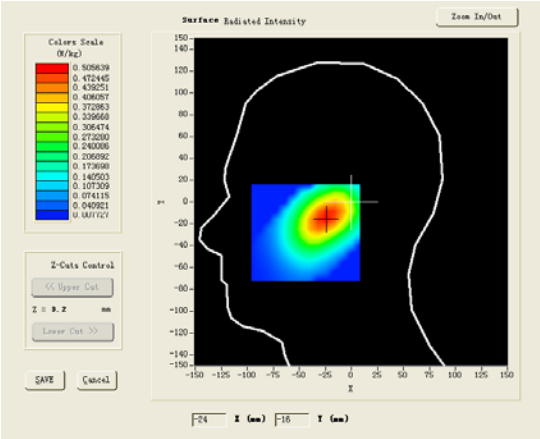
Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Right head
Device Position	Tilt
Band	CDMA850
Channels	Low
Signal	CDMA

B. SAR Measurement Results

Lower Band SAR (Channel 9):

Frequency (MHz)	825.27
Relative permittivity (real part)	41.790001
Relative permittivity (imaginary	18.926250

part)	
Conductivity (S/m)	0.867138
Variation (%)	-0.080000

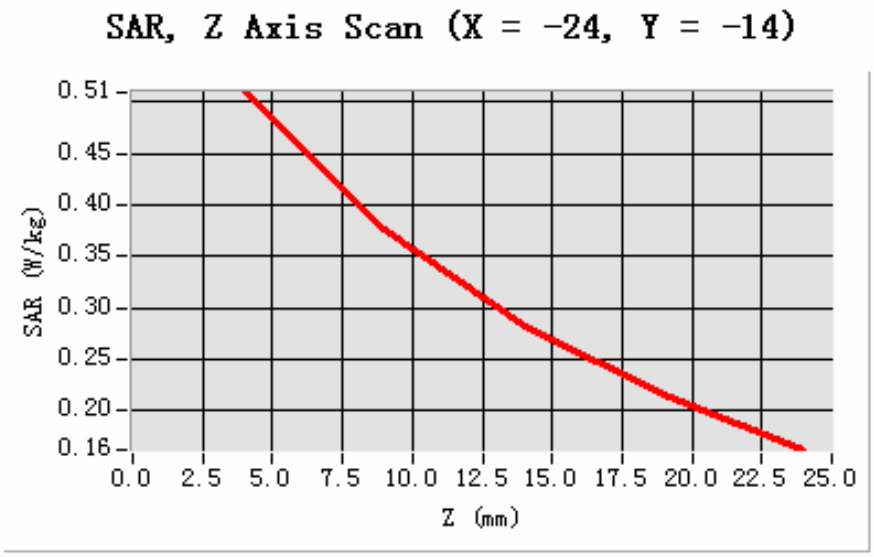
SURFACE SAR	VOLUME SAR
	

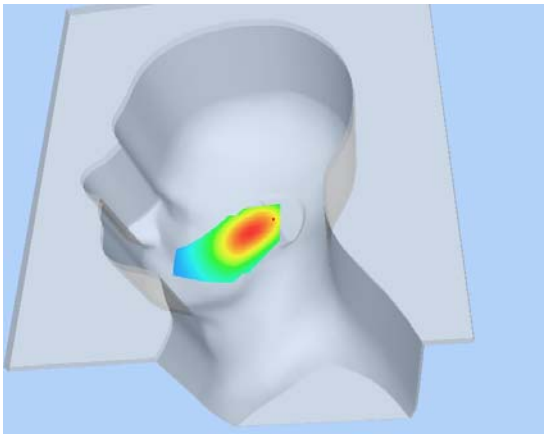
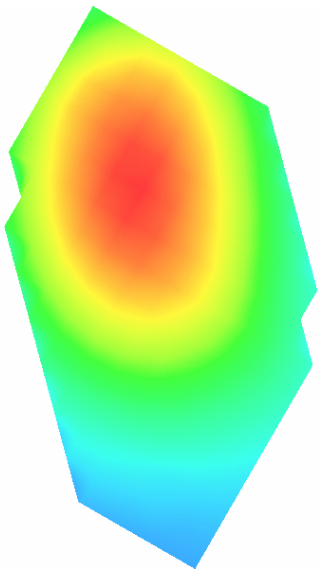
Maximum location: X=-24.00, Y=-14.00

SAR 10g (W/Kg)	0.337760
SAR 1g (W/Kg)	0.485817

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.5090	0.3767	0.2820	0.2143



3D sceen shot	Hot spot position
	

MEASUREMENT 5

Type: Phone measurement (Very fast, 27 points in the volume)

Date of measurement: 15/11/2008

Measurement duration: 3 minutes 48 seconds

Mobile Phone IMEI number: --

A. Experimental conditions.

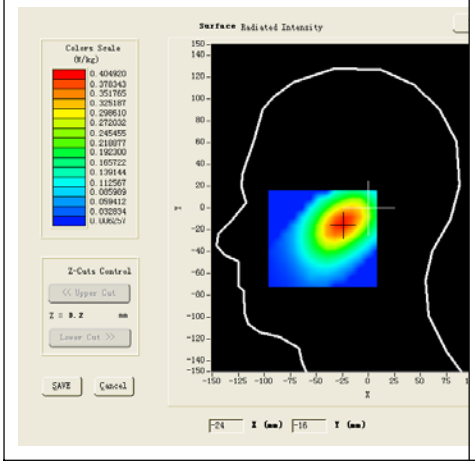
Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Right head
Device Position	Tilt
Band	CDMA850
Channels	Middle
Signal	CDMA

B. SAR Measurement Results

Middle Band SAR (Channel 384):

Frequency (MHz)	836.520020
Relative permittivity (real part)	41.790001
Relative permittivity (imaginary	18.926250

part)	
Conductivity (S/m)	0.879566
Variation (%)	0.020000

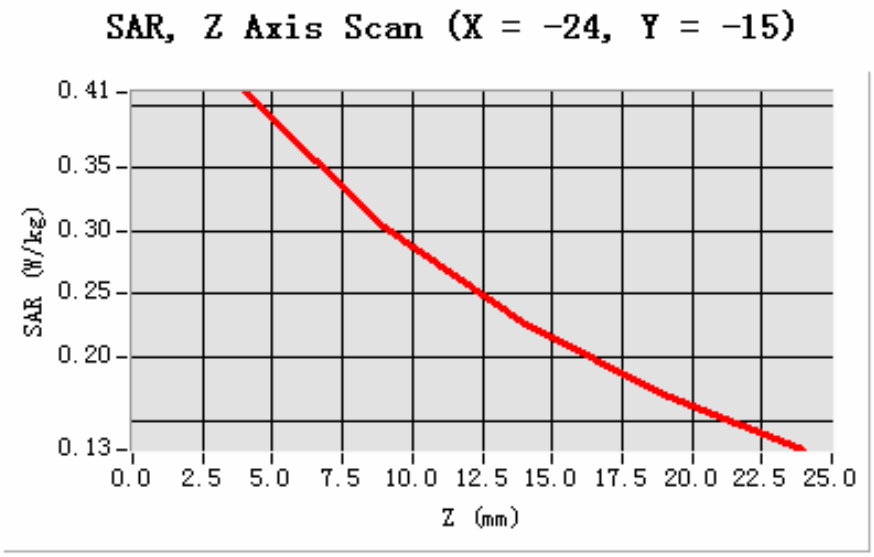
SURFACE SAR	VOLUME SAR
	

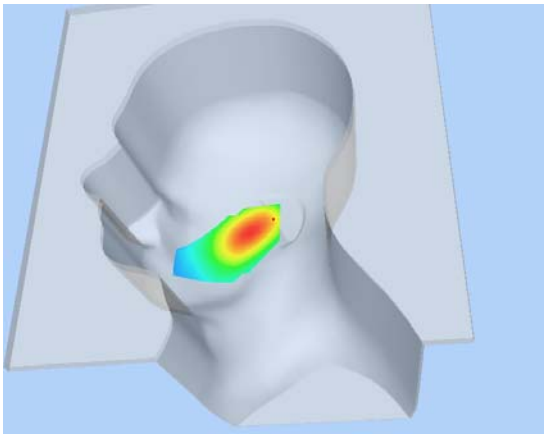
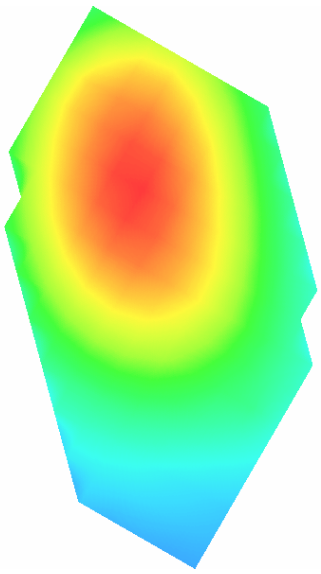
Maximum location: X=-24.00, Y=-15.00

SAR 10g (W/Kg)	0.271770
SAR 1g (W/Kg)	0.391413

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.4102	0.3039	0.2267	0.1705



3D sceen shot	Hot spot position
	

MEASUREMENT 6

Type: Phone measurement (Very fast, 27 points in the volume)

Date of measurement: 15/11/2008

Measurement duration: 3 minutes 49 seconds

Mobile Phone IMEI number: --

A. Experimental conditions.

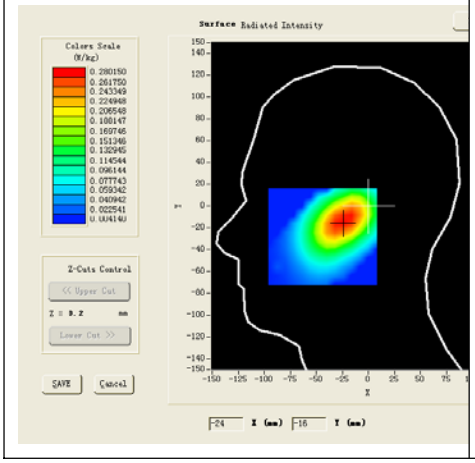
Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Right head
Device Position	Tilt
Band	CDMA850
Channels	High
Signal	CDMA

B. SAR Measurement Results

Higher Band SAR (Channel 758):

Frequency (MHz)	847.74
Relative permittivity (real part)	41.790001
Relative permittivity (imaginary	18.926250

part)	
Conductivity (S/m)	0.891963
Variation (%)	1.490000

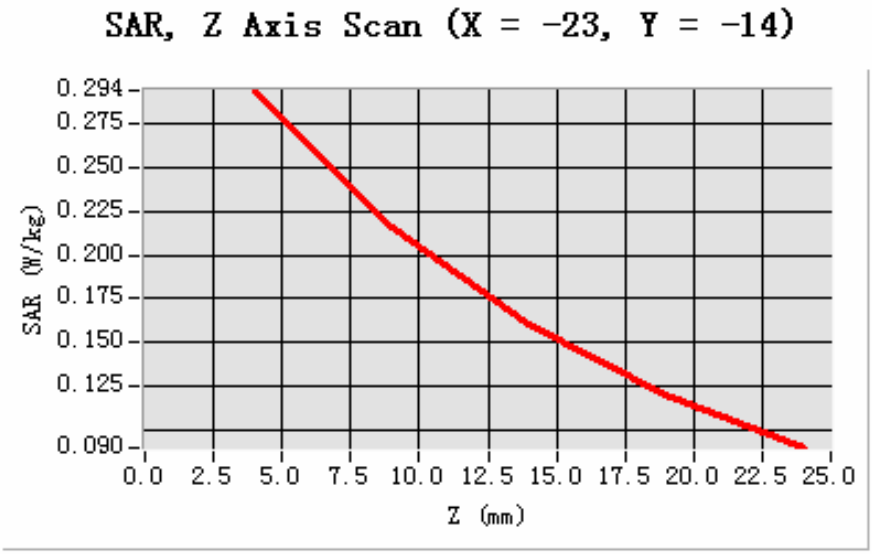
SURFACE SAR	VOLUME SAR
	

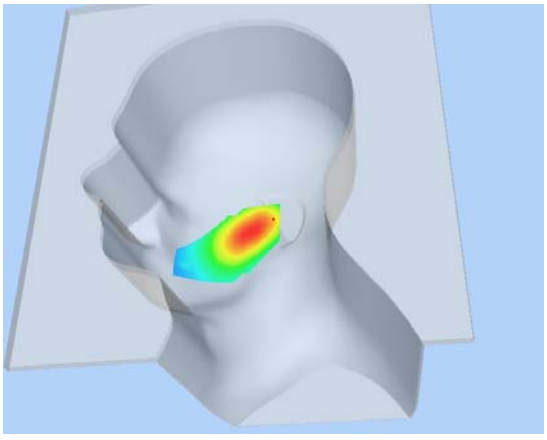
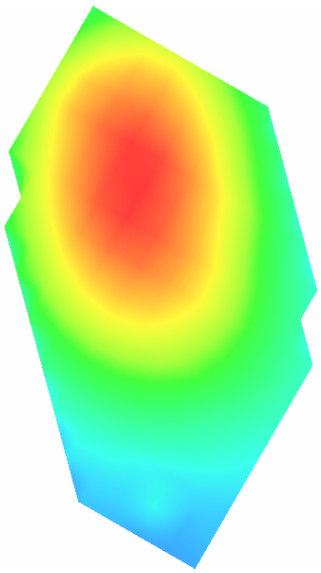
Maximum location: X=-23.00, Y=-14.00

SAR 10g (W/Kg)	0.194392
SAR 1g (W/Kg)	0.281234

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.2940	0.2160	0.1603	0.1206



3D sceen shot	Hot spot position
	

MEASUREMENT 7

Type: Phone measurement (Very fast, 27 points in the volume)

Date of measurement: 15/11/2008

Measurement duration: 3 minutes 48 seconds

Mobile Phone IMEI number: --

A. Experimental conditions.

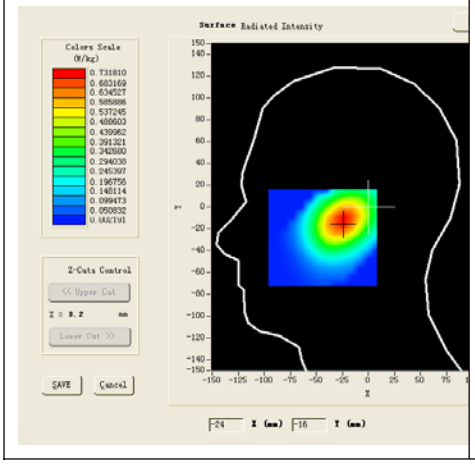
Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Left head
Device Position	Cheek
Band	CDMA850
Channels	Low
Signal	CDMA

B. SAR Measurement Results

Lower Band SAR (Channel 9):

Frequency (MHz)	825.27
Relative permittivity (real part)	41.790001

Relative permittivity (imaginary part)	18.926250
Conductivity (S/m)	0.867138
Variation (%)	-0.310000

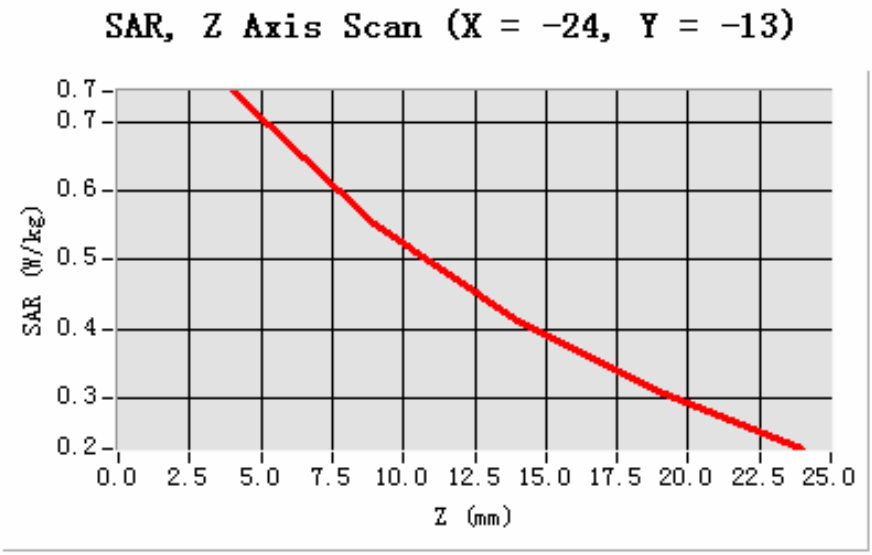
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-24.00, Y=-13.00

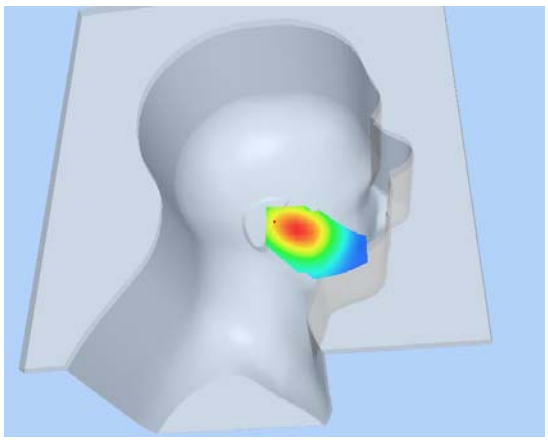
SAR 10g (W/Kg)	0.490323
SAR 1g (W/Kg)	0.709067

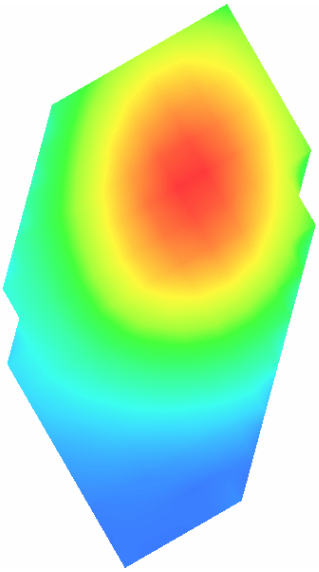
Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.7430	0.5527	0.4127	0.3095



3D sceen shot	Hot spot position





MEASUREMENT 8

Type: Phone measurement (Very fast, 27 points in the volume)

Date of measurement: 15/11/2008

Measurement duration: 3 minutes 47 seconds

Mobile Phone IMEI number: --

A. Experimental conditions.

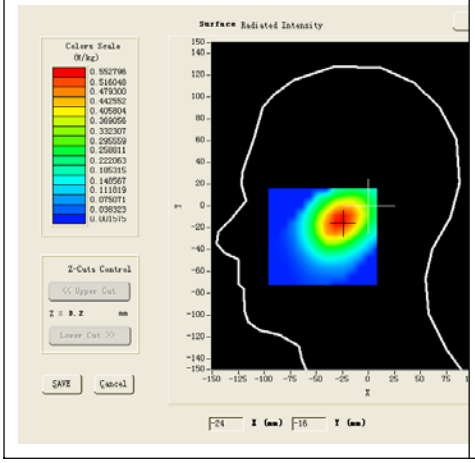
Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Left head
Device Position	Cheek
Band	CDMA850
Channels	Middle
Signal	CDMA

B. SAR Measurement Results

Middle Band SAR (Channel 384):

Frequency (MHz)	836.520020
Relative permittivity (real part)	41.790001
Relative permittivity (imaginary	18.926250

part)	
Conductivity (S/m)	0.879566
Variation (%)	-2.300000

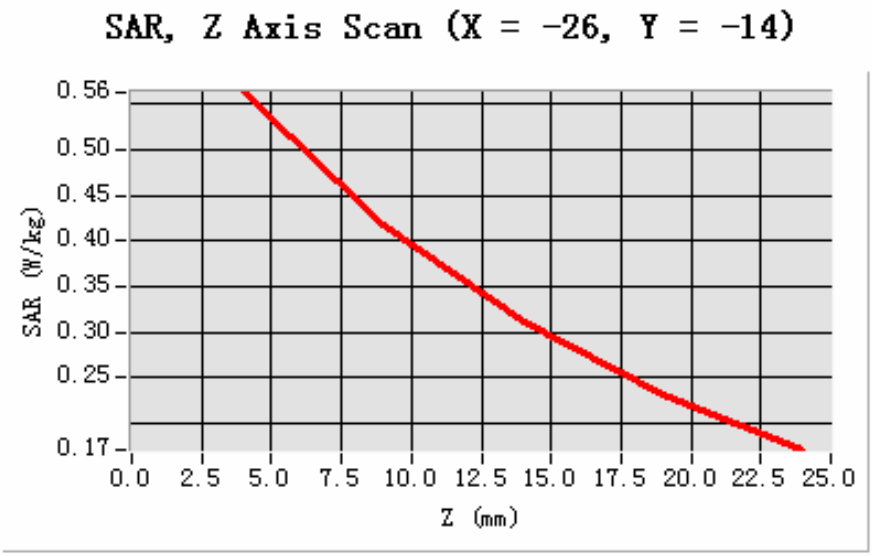
SURFACE SAR	VOLUME SAR
	

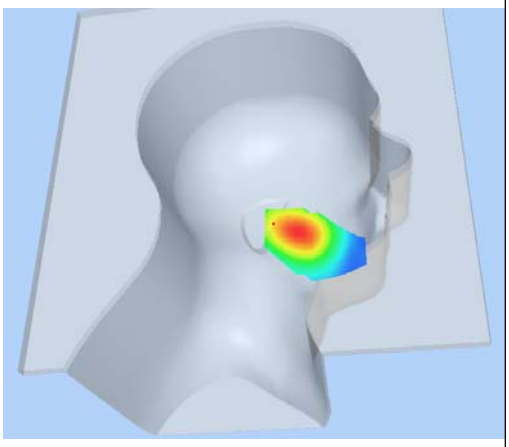
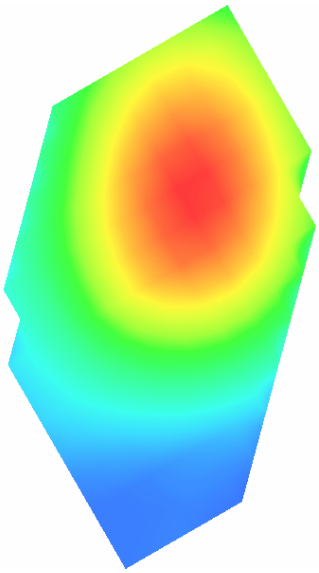
Maximum location: X=-26.00, Y=-14.00

SAR 10g (W/Kg)	0.368102
SAR 1g (W/Kg)	0.535831

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.5626	0.4171	0.3105	0.2324



3D sceen shot	Hot spot position
	

MEASUREMENT 9

Type: Phone measurement (Very fast, 27 points in the volume)

Date of measurement: 15/11/2008

Measurement duration: 3 minutes 47 seconds

Mobile Phone IMEI number: --

A. Experimental conditions.

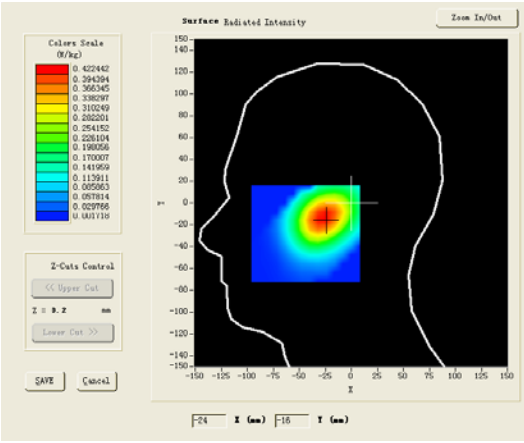
Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Left head
Device Position	Cheek
Band	CDMA850
Channels	High
Signal	CDMA

B. SAR Measurement Results

Higher Band SAR (Channel 758):

Frequency (MHz)	847.74
Relative permittivity (real part)	41.790001

Relative permittivity (imaginary part)	18.926250
Conductivity (S/m)	0.891963
Variation (%)	-1.240000

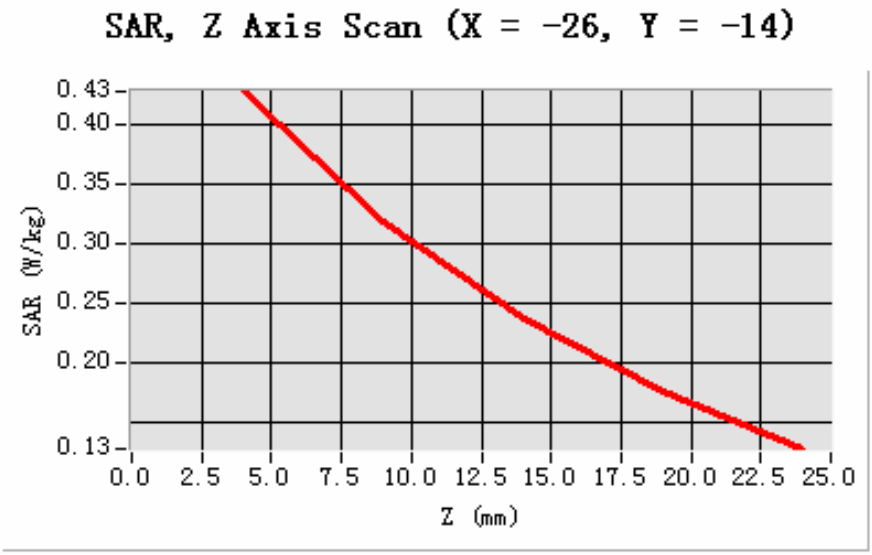
SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=-26.00, Y=-14.00

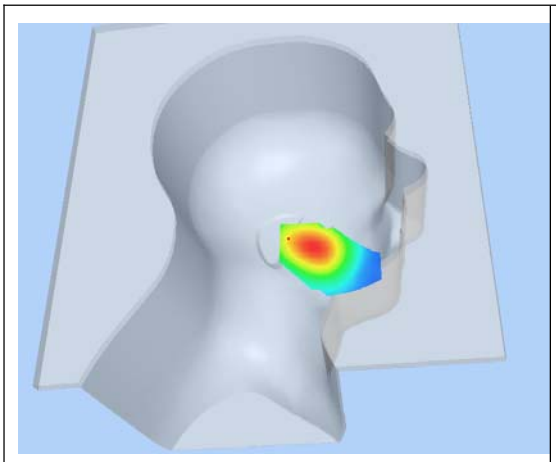
SAR 10g (W/Kg)	0.279299
SAR 1g (W/Kg)	0.405866

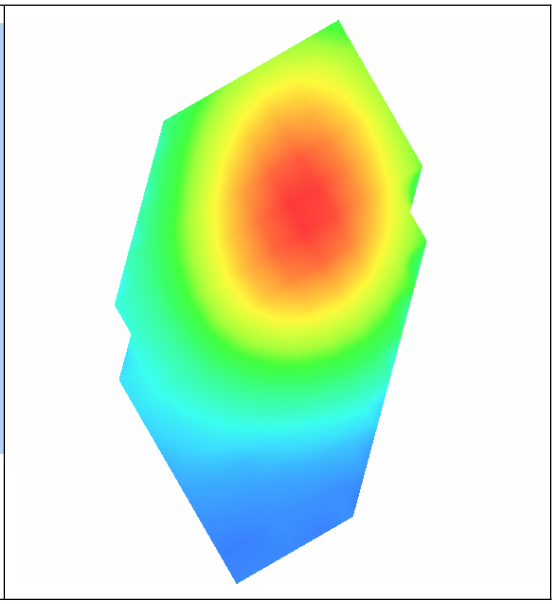
Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.4268	0.3175	0.2362	0.1756



3D sceen shot	Hot spot position





MEASUREMENT 10

Type: Phone measurement (Very fast, 27 points in the volume)

Date of measurement: 15/11/2008

Measurement duration: 4 minutes 7 seconds

Mobile Phone IMEI number: --

A. Experimental conditions.

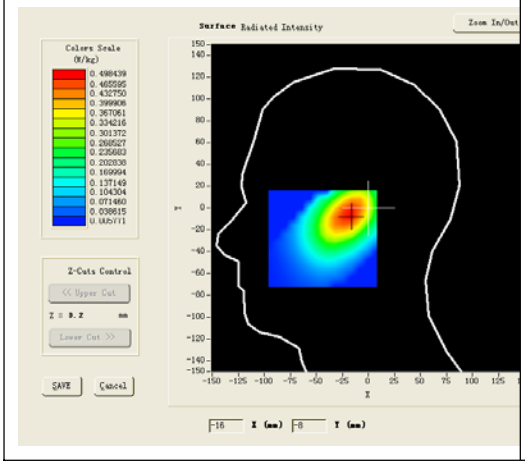
Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Left head
Device Position	Tilt
Band	CDMA850
Channels	Low
Signal	CDMA

B. SAR Measurement Results

Lower Band SAR (Channel 9):

Frequency (MHz)	825.27
Relative permittivity (real part)	41.790001
Relative permittivity (imaginary	18.926250

part)	
Conductivity (S/m)	0.867138
Variation (%)	-0.340000

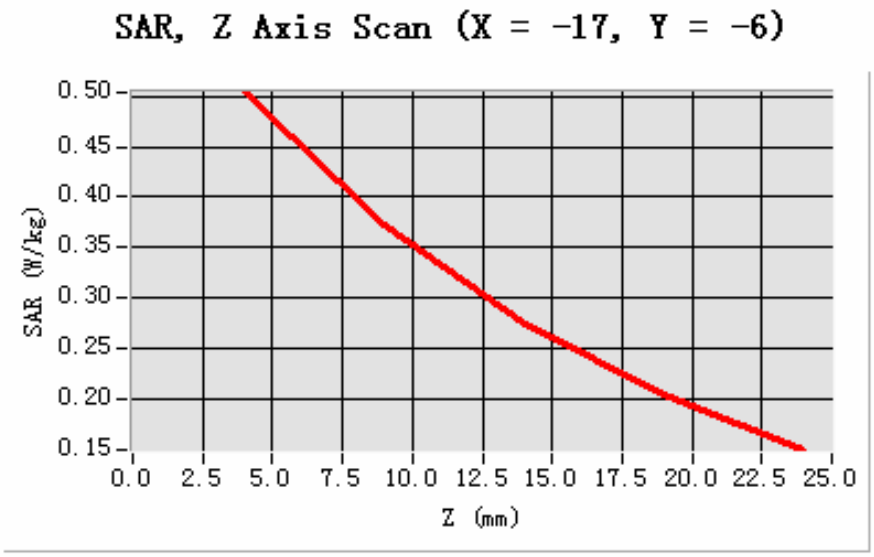
SURFACE SAR	VOLUME SAR
	

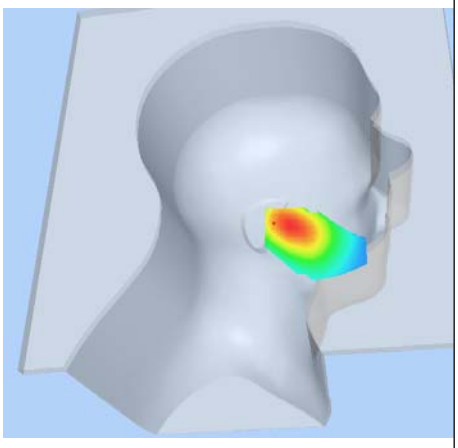
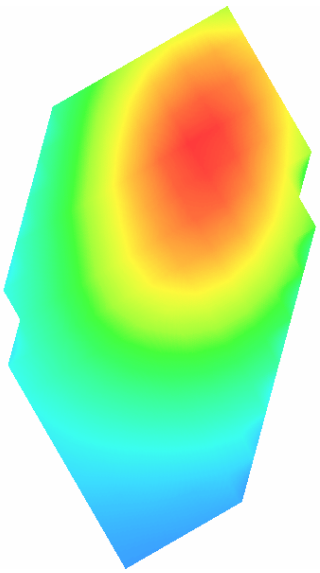
Maximum location: X=-17.00, Y=-6.00

SAR 10g (W/Kg)	0.336092
SAR 1g (W/Kg)	0.484396

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.5040	0.3714	0.2747	0.2041



3D sceen shot	Hot spot position
	

MEASUREMENT 11

Type: Phone measurement (Very fast, 27 points in the volume)

Date of measurement: 15/11/2008

Measurement duration: 3 minutes 48 seconds

Mobile Phone IMEI number: --

A. Experimental conditions.

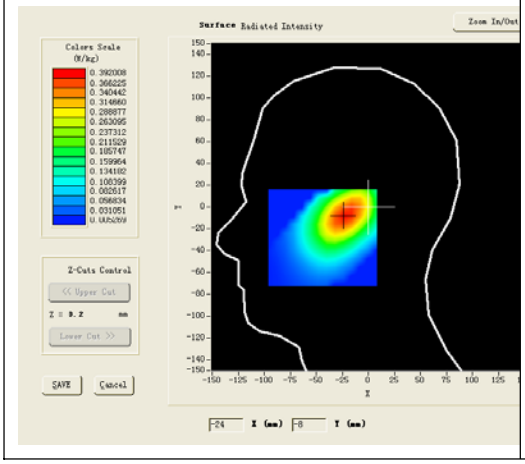
Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Left head
Device Position	Tilt
Band	CDMA850
Channels	Middle
Signal	CDMA

B. SAR Measurement Results

Middle Band SAR (Channel 384):

Frequency (MHz)	836.520020
Relative permittivity (real part)	41.790001

Relative permittivity (imaginary part)	18.926250
Conductivity (S/m)	0.879566
Variation (%)	-0.240000

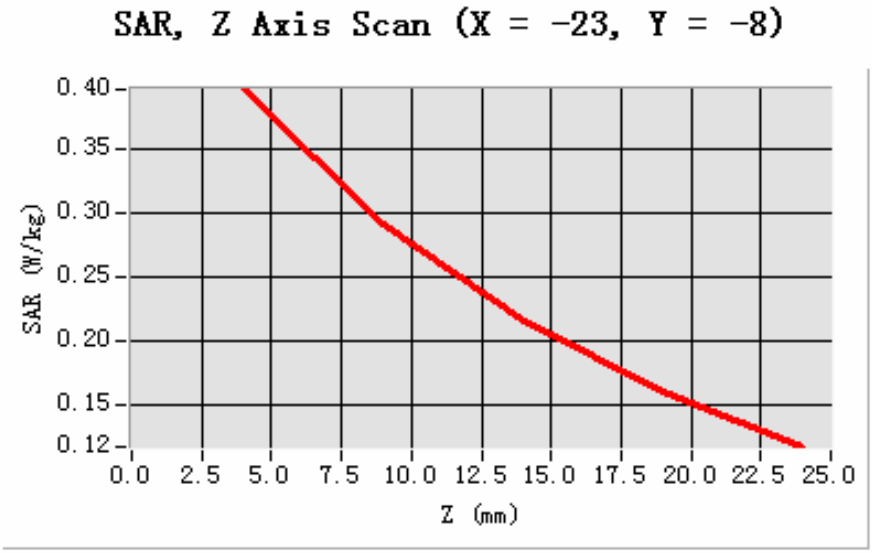
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-23.00, Y=-8.00

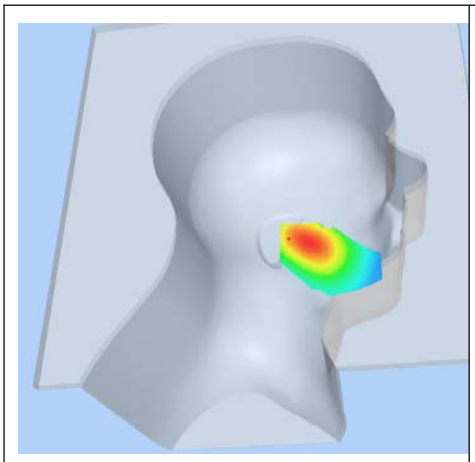
SAR 10g (W/Kg)	0.260039
SAR 1g (W/Kg)	0.376886

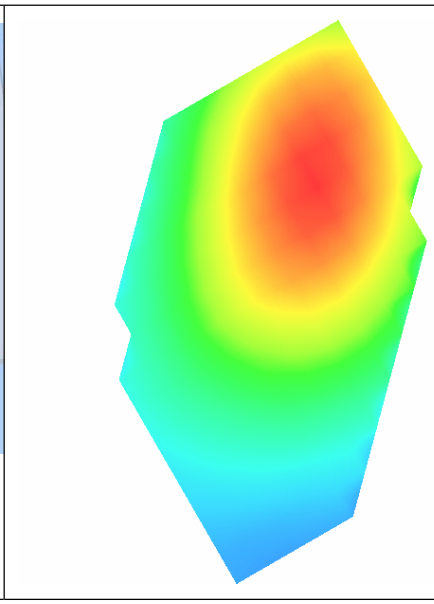
Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.3954	0.2907	0.2151	0.1605



3D sceen shot	Hot spot position





MEASUREMENT 12

Type: Phone measurement (Very fast, 27 points in the volume)

Date of measurement: 15/11/2008

Measurement duration: 3 minutes 49 seconds

Mobile Phone IMEI number: --

A. Experimental conditions.

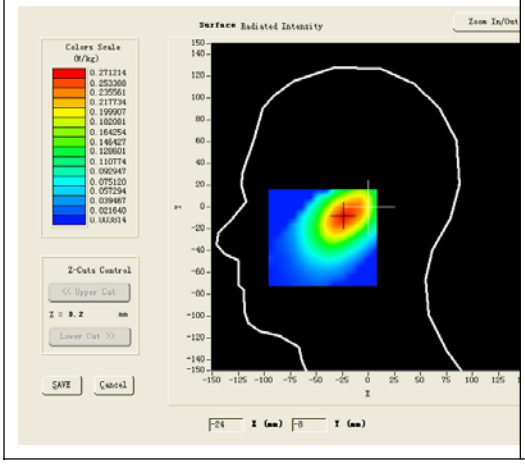
Phantom File	sam_direct_droit2_surf8mm.txt
Phantom	Left head
Device Position	Tilt
Band	CDMA850
Channels	High
Signal	CDMA

B. SAR Measurement Results

Higher Band SAR (Channel 758):

Frequency (MHz)	847.74
Relative permittivity (real part)	41.790001

Relative permittivity (imaginary part)	18.926250
Conductivity (S/m)	0.891963
Variation (%)	-0.290000

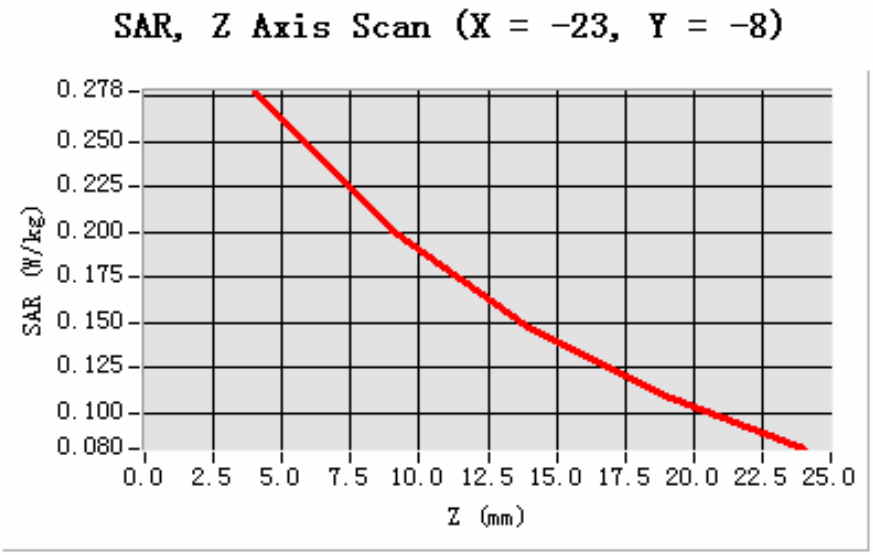
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-23.00, Y=-8.00

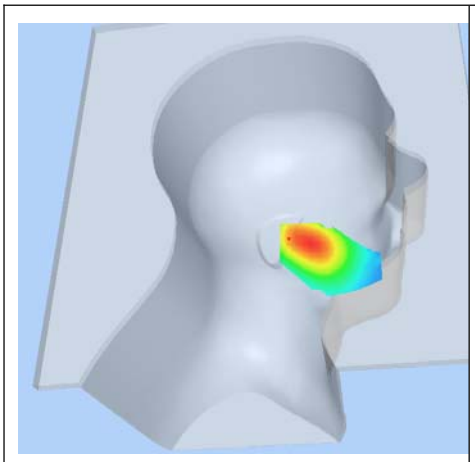
SAR 10g (W/Kg)	0.180750
SAR 1g (W/Kg)	0.264539

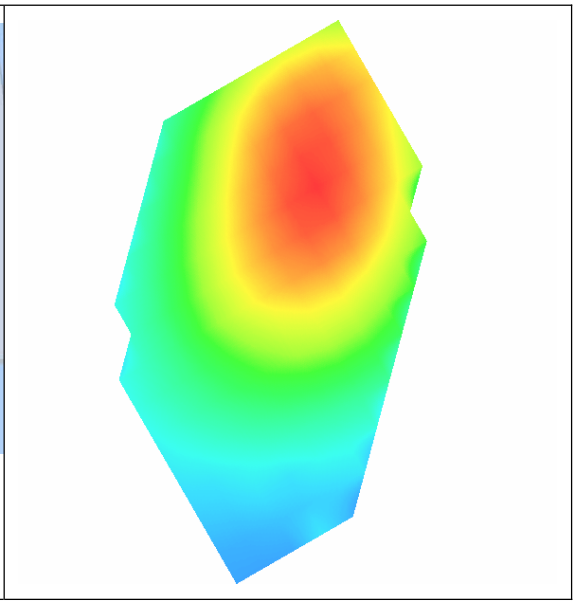
Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.2775	0.2005	0.1465	0.1088



3D sceen shot	Hot spot position





MEASUREMENT 13

Type: Phone measurement (Very fast, 27 points in the volume)

Date of measurement: 15/11/2008

Measurement duration: 5 minutes 26 seconds

Mobile Phone IMEI number: --

A. Experimental conditions.

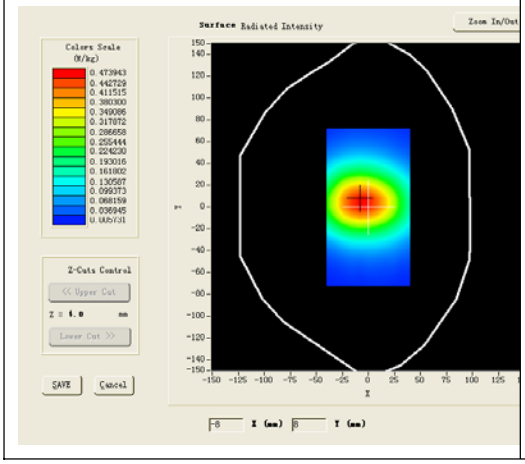
Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	CDMA850
Channels	Low
Signal	CDMA

C. SAR Measurement Results

Lower Band SAR (Channel 9):

Frequency (MHz)	825.27
Relative permittivity (real part)	41.790001

Relative permittivity (imaginary part)	18.926250
Conductivity (S/m)	0.867138
Variation (%)	-0.980000

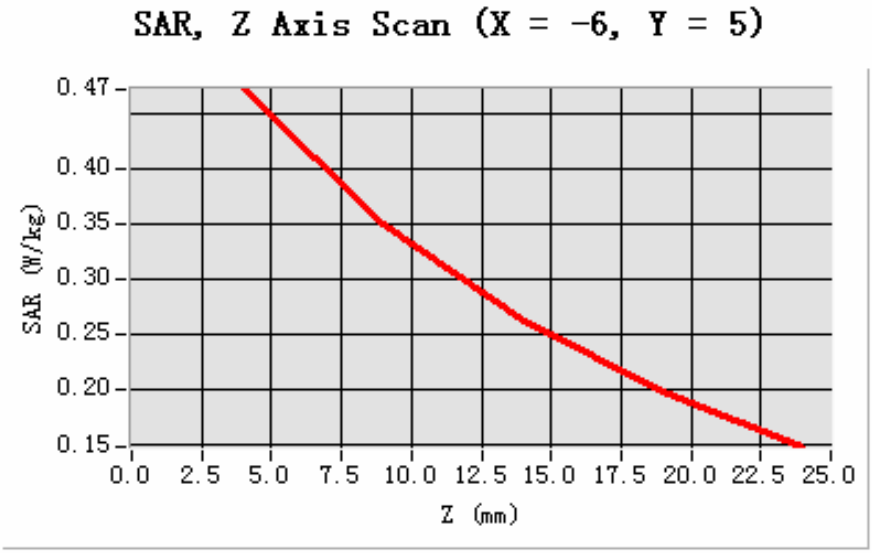
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-6.00, Y=5.00

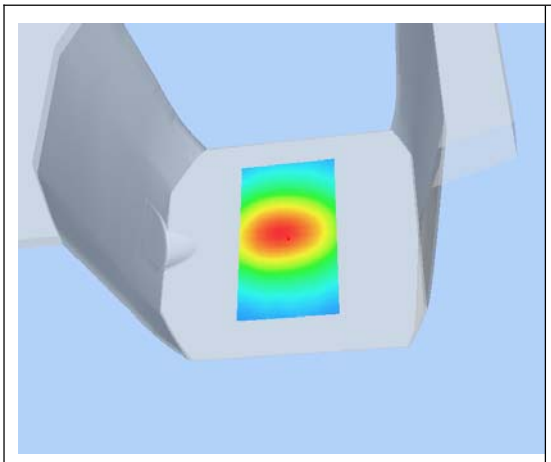
SAR 10g (W/Kg)	0.319893
SAR 1g (W/Kg)	0.452004

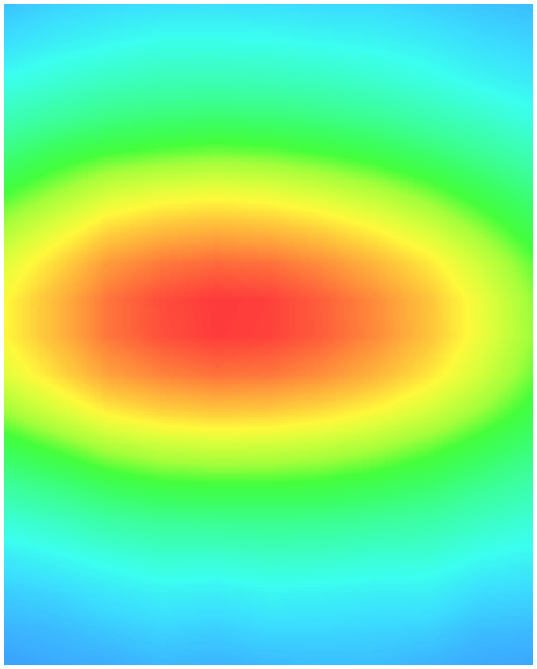
Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.4713	0.3506	0.2628	0.1988



3D sceen shot	Hot spot position





MEASUREMENT 14

Type: Phone measurement (Very fast, 27 points in the volume)

Date of measurement: 15/11/2008

Measurement duration: 5 minutes 24 seconds

Mobile Phone IMEI number: --

A. Experimental conditions.

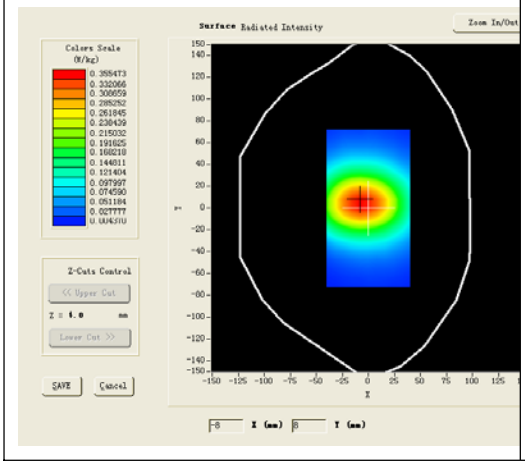
Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	CDMA850
Channels	Middle
Signal	CDMA

C. SAR Measurement Results

Middle Band SAR (Channel 384):

Frequency (MHz)	836.520020
Relative permittivity (real part)	41.790001
Relative permittivity (imaginary	18.926250

part)	
Conductivity (S/m)	0.879566
Variation (%)	0.020000

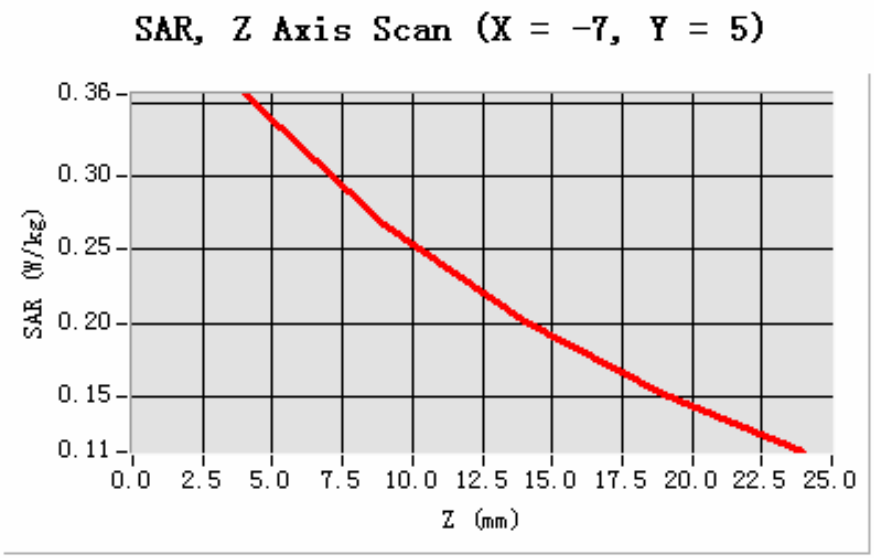
SURFACE SAR	VOLUME SAR
	

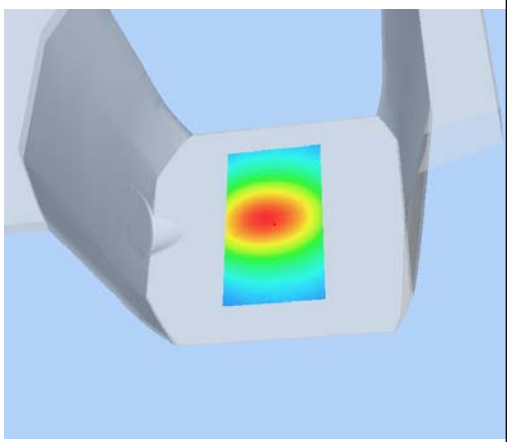
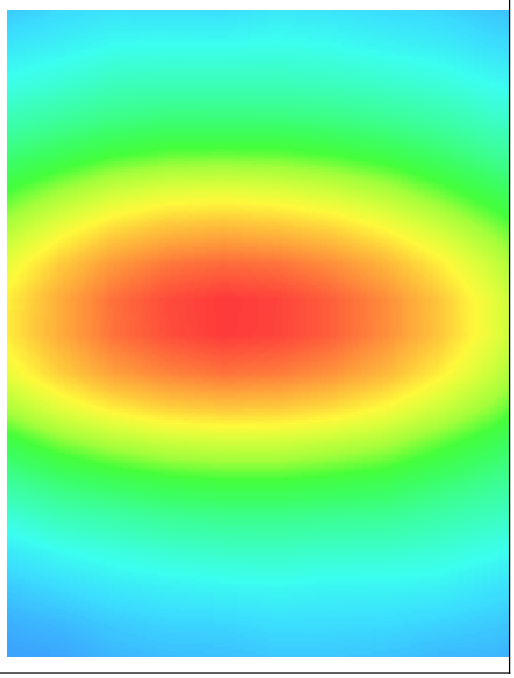
Maximum location: X=-7.00, Y=5.00

SAR 10g (W/Kg)	0.242779
SAR 1g (W/Kg)	0.341536

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.3561	0.2676	0.2013	0.1516



3D sceen shot	Hot spot position
	

MEASUREMENT 15

Type: Phone measurement (Very fast, 27 points in the volume)

Date of measurement: 15/11/2008

Measurement duration: 5 minutes 21 seconds

Mobile Phone IMEI number: --

A. Experimental conditions.

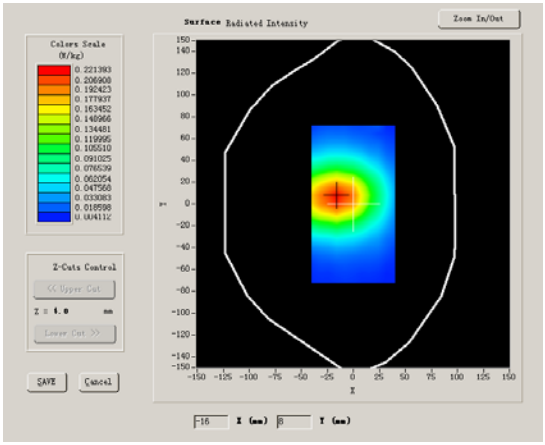
Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	CDMA850
Channels	High
Signal	CDMA

C. SAR Measurement Results

Higher Band SAR (Channel 758):

Frequency (MHz)	847.74
Relative permittivity (real part)	54.116001
Relative permittivity (imaginary	21.284550

part)	
Conductivity (S/m)	1.003105
Variation (%)	-0.360000

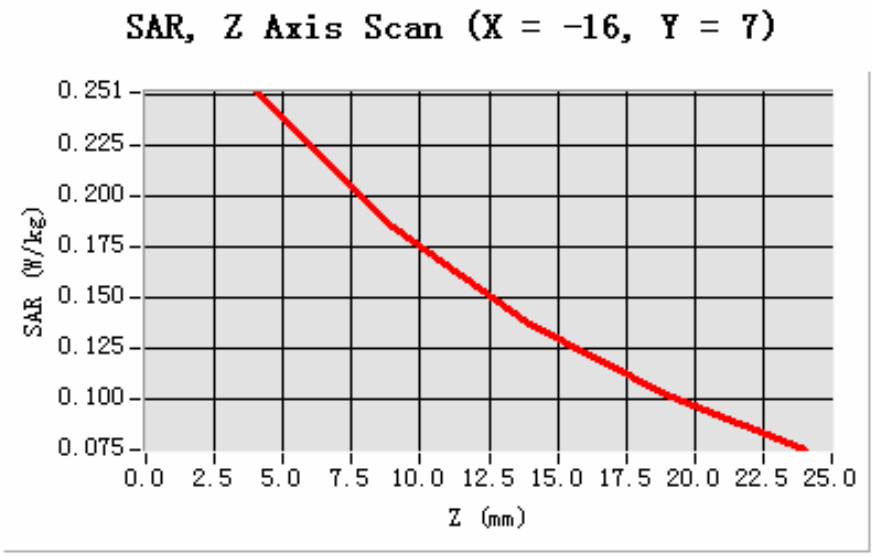
SURFACE SAR	VOLUME SAR
	

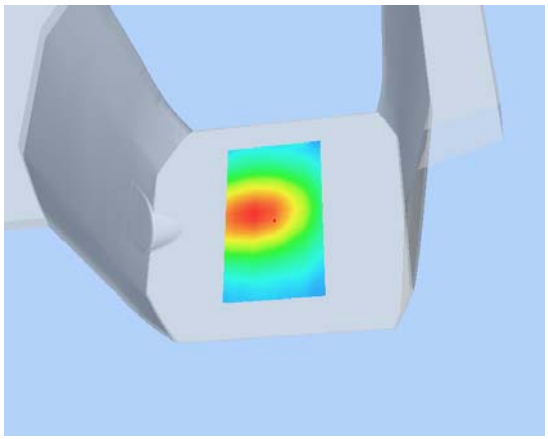
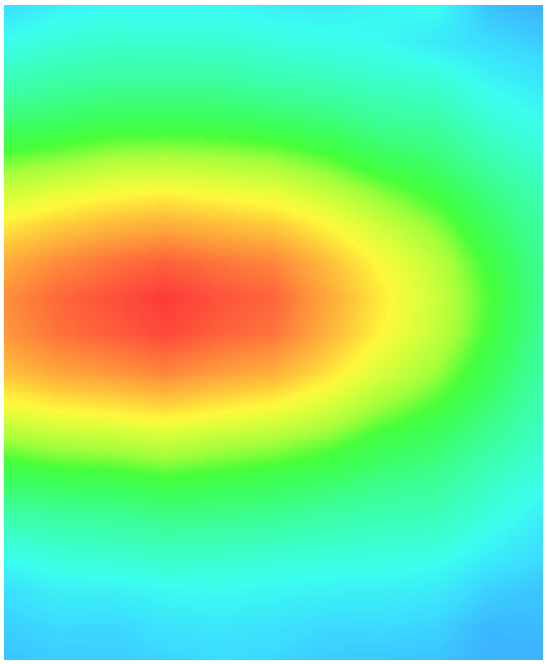
Maximum location: X=-16.00, Y=7.00

SAR 10g (W/Kg)	0.168715
SAR 1g (W/Kg)	0.240613

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.2506	0.1844	0.1366	0.1021



3D sceen shot	Hot spot position
	

System Performance Check Data(Head)

Type: Validation measurement (Very fast, 27 points in the volume)

Date of measurement: 15/11/2008

Measurement duration: 5 minutes 27 seconds

Mobile Phone IMEI number: --

A. Experimental conditions.

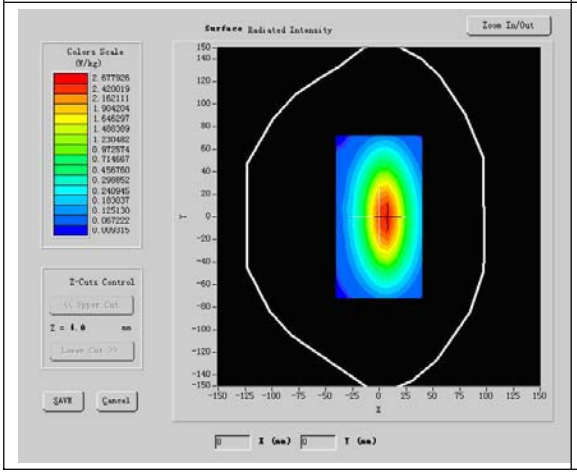
Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	CDMA 800
Channels	Middle
Signal	CDMA

B. SAR Measurement Results

Middle Band SAR (Channel 384):

Frequency (MHz)	836.520020
Relative permittivity (real part)	51.540001
Relative permittivity (imaginary	15.070000

part)	
Conductivity (S/m)	1.573978
Variation (%)	-0.050000

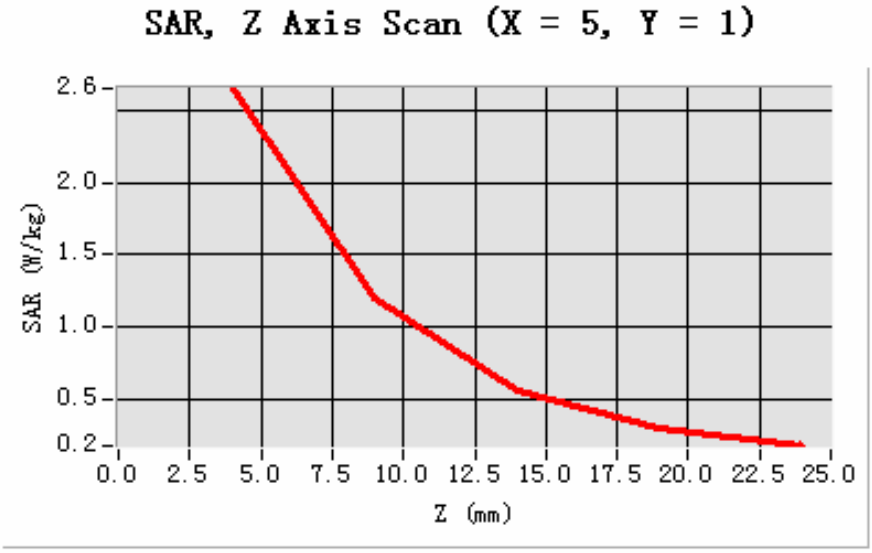
SURFACE SAR	VOLUME SAR
	

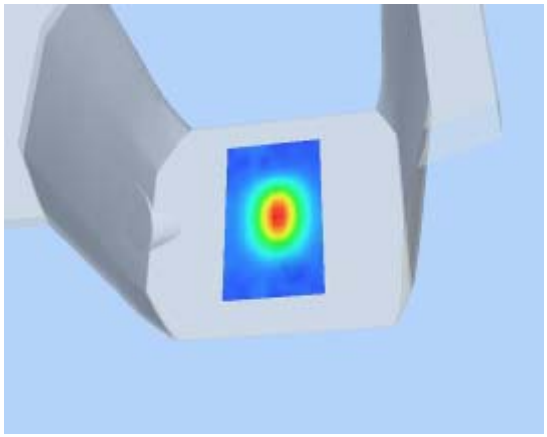
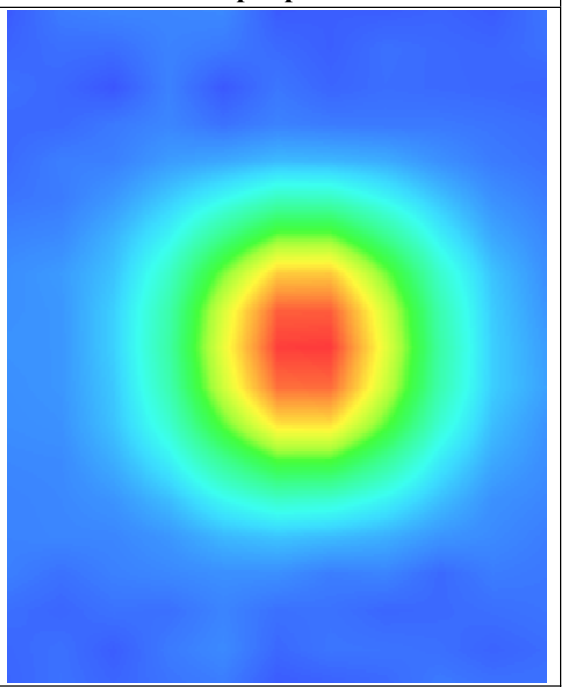
Maximum location: X=5.00, Y=1.00

SAR 10g (W/Kg)	1.349500
SAR 1g (W/Kg)	2.677926

Z Axis Scan

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



3D sceen shot	Hot spot position
	

System Performance Check Data(Body)

Type: Validation measurement (Very fast, 27 points in the volume)

Date of measurement: 15/11/2008

Measurement duration: 5 minutes 27 seconds

Mobile Phone IMEI number: --

A. Experimental conditions.

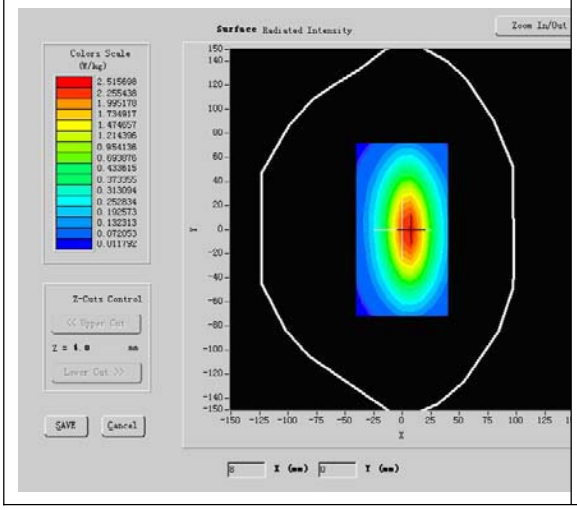
Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Body
Band	CDMA 800
Channels	Middle
Signal	CDMA

B. SAR Measurement Results

Middle Band SAR (Channel 384):

Frequency (MHz)	836.520020
Relative permittivity (real part)	51.540001
Relative permittivity (imaginary	15.070000

part)	
Conductivity (S/m)	1.573978
Variation (%)	-0.140000

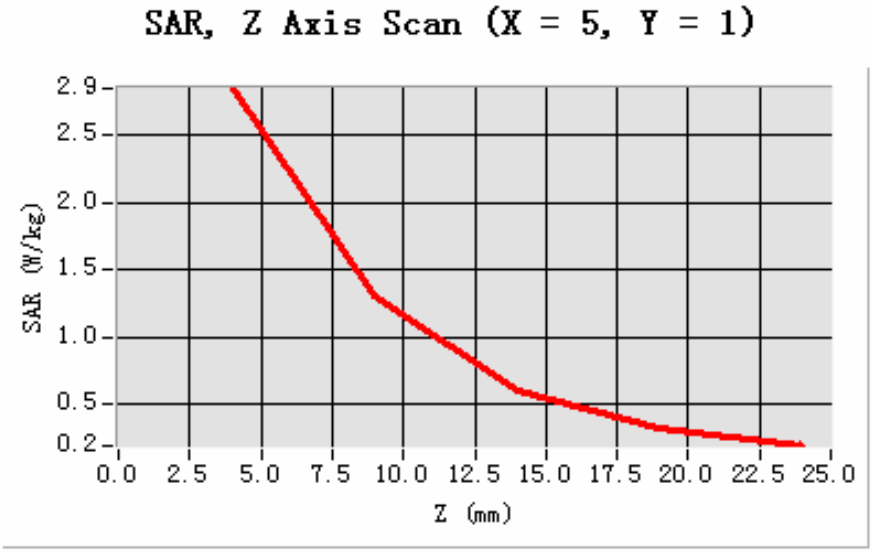
SURFACE SAR	VOLUME SAR
	

Maximum location: X=5.00, Y=1.00

SAR 10g (W/Kg)	1.236559
SAR 1g (W/Kg)	2.515698

Z Axis Scan

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



3D sceen shot	Hot spot position