FCC SAR TEST REPORT

Report No.:	SET2014-13183
Product:	WCDMA digital mobile phone
Model No.:	W861
FCC ID:	SG71111HW-W861
Applicant:	Haier Telecom (Qingdao) Co., Ltd
Address:	No.1 Haier Road, Hi-tech Zone, Qingdao, China
Issued by:	CCIC-SET
Lab Location:	Electronic Testing Building, Shahe Road，Xili, Nanshan District, Shenzhen, 518055, P. R. China
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Test Report

Product. …….:	WCDMA digital mobile phone
Model No. ……..:	W861
Brand Name……..:	Haier
FCC ID…….:	SG71111HW-W861
Applicant……..:	Haier Telecom (Qingdao) Co., Ltd
Applicant Address…….:	No.1 Haier Road, Hi-tech Zone, Qingdao, China
Manufacturer……:	Haier Telecom (Qingdao) Co., Ltd
Manufacturer Address:	No.1 Haier Road, Hi-tech Zone, Qingdao, China
Test Standards…….:	**47CFR § 2.1093-** Radiofrequency Radiation Exposure Evaluation: Portable Devices; **FCC OET Bulletin 65 (Edition 97-01), Supplement C (Edition 01-01):** Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; **ANSI C95.1–1999:** IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz; **IEEE 1528–2013:** Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques;
Test Result……:	Pass
Tested by ……..:	Mei Chun 2014-12-03 Chun Mei, Test Engineer
Reviewed by……:	Shuangwen Zhang 2014-12-03 Shuangwen Zhang,Senior Egineer
Approved by……:	Wu Lian 2014-12-03 Wu Li'an , Manager

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1. GENERAL CONDITIONS

1.1 This report only refers to the item that has undergone the test.

1.2 This report standalone does not constitute or imply by its own an approval of the product by the certification Bodies or competent Authorities.

1.3 This document is only valid if complete; no partial reproduction can be made without written approval of CCIC-SET

1.4 This report cannot be used partially or in full for publicity and/or promotional purposes without previous written approval of CCIC-SET and the Accreditation Bodies, if it applies.

2. Administrative Date

2.1. Identification of the Responsible Testing Laboratory

Company Name:	CCIC-SET
Department:	EMC & RF Department
Address:	Electronic Testing Building, Shahe Road, Nanshan District, ShenZhen, P. R. China
Telephone:	+86-755-26629676
Fax:	+86-755-26627238
Responsible Test Lab Managers:	Mr. Wu Li'an

2.2. Identification of the Responsible Testing Location(s)

Company Name:	CCIC-SET
Address:	Electronic Testing Building, Shahe Road, Nanshan District, Shenzhen, P. R. China

2.3. Organization Item

CCIC-SET Report No.:	SET2014-13183
CCIC-SET Project Leader:	Mr. Li Sixiong
CCIC-SET Responsible for accreditation scope:	Mr. Wu Li'an
Start of Testing:	2014-11-27
End of Testing:	2014-11-28

2.4. Identification of Applicant

Company Name:	Haier Telecom (Qingdao) Co., Ltd
Address:	No.1 Haier Road, Hi-tech Zone, Qingdao, China

2.5. Identification of Manufacture

Company Name:	Haier Telecom (Qingdao) Co., Ltd
Address:	No.1 Haier Road, Hi-tech Zone, Qingdao, China

Notes: This data is based on the information by the applicant.

3. Equipment Under Test (EUT)

3.1. Identification of the Equipment under Test

Sample Name:	WCDMA digital mobile phone	
Type Name:	W861	
Brand Name:	Haier	
General description:	Support Band	GSM850MHz/1900MHz/900MHz/1800MHz WCDMA 850MHz/1900MHzMHz Wi-Fi802.11b,802.11g,802.11n-20, Bluetooth
	Test Band	GSM 850MHz/ GSM 1900MHz WCDMA 850MHz/ WCDMA 1900MHz Wi-Fi 802.11b
	Multislot Class	GPRS: Class 33, EDGE: Class 33
	GPRS Class	Class B
	Development Stage	Identical Prototype
	Accessories	Power Supply
	Battery type	3.8V 2200mAh
	Antenna type	IFA Antenna
	Operation mode	GSM / GPRS/WCDMA / Bluetooth / WIFI
	Modulation mode	GMSK, QPSK,DSSS, OFDM, GFSK/π /4-DQPSK/8-DPSK
	Max. RF Power	31.87dBm
	IMEI	862549028066706
	Max. SAR Value	Head:0.494w/kg; Body:0.930w/kg

NOTE:

a. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

b. This device supports GPRS operation up to class33(max.uplin:5, max.downlink:4, total timeslots:6)

c. The EUT does not support 16QAM uplink function in HSPA+ mode.

4 Specific Absorption Rate (SAR)

4.1 Introduction

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

4.2 SAR Definition

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

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

SAR is expressed in units of Watts per kilogram (W/kg)

SAR measurement can be either related to the temperature elevation in tissue by

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

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

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

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

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

4.3 Phantoms

The phantom used for all tests i.e. for both system checks and device testing, was the twin-headed "SAM Phantom", manufactured by SATIMO. The SAM twin phantom is a fiberglass shell phantom with 2mm shell thickness (except the ear region, where shell thickness increases to 6mm).

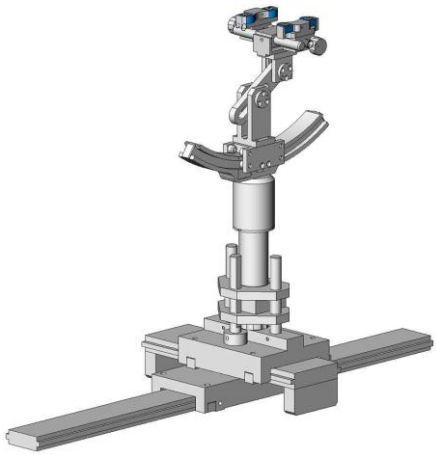
System checking was performed using the flat section, whilst Head SAR tests used the left and right head profile sections. Body SAR testing also used the flat section between the head profiles.

SAM Twin Phantom

5.4 Device Holder

The device was placed in the device holder (illustrated below) that is supplied by SATIMO as an integral part of the COMOSAR test system.

The device holder is designed to cope with the different positions given in the standard. It has two scales for device rotation (with respect to the body axis) and device inclination (with respect to the line between the ear reference points). The rotation centers for both scales is the ear reference point (ERP). Thus the device needs no repositioning when changing the angles.



Device holder

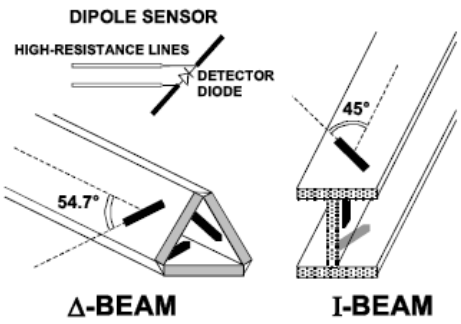
4.5 Probe Specification

Construction	Symmetrical design with triangular core Interleaved sensors Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Calibration	ISO/IEC 17025 calibration service available.
Frequency	700 MHz to 3 GHz; Linearity: ± 0.5 dB (700 MHz to 3 GHz)
Directivity	± 0.25 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)
Dynamic Range	1.5 µW/g to 100 mW/g; Linearity: ± 0.5 dB
Dimensions	Overall length: 330 mm (Tip: 20 mm) Tip diameter: 5 mm (Body: 8 mm) Distance from probe tip to dipole centers: <2.7 mm
Application	General dosimetry up to 3 GHz Dosimetry in strong gradient fields Compliance tests of mobile phones
Frequency	450 MHz to 6 GHz; Linearity: ± 0.5 dB (450 MHz to 6 GHz)
Dimensions	Overall length: 330 mm Tip diameter: 2.5 mm Distance from probe tip to dipole centers: 1 mm
Compatibility	COMOSAR

Isotropic E-Field Probe

The isotropic E-Field probe has been fully calibrated and assessed for isotropicity, and boundary effect within a controlled environment. Depending on the frequency for which the probe is calibrated the method utilized for calibration will change.

The E-Field probe utilizes a triangular sensor arrangement as detailed in the diagram below:



5 OPERATIONAL CONDITIONS DURING TEST

5.1 Schematic Test Configuration

During SAR test, EUT was operating 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) was allocated to 128, 189 and 251 respectively in the case of GSM 850MHz, or to 512, 661 and 810 respectively in the case of PCS 1900MHz, or to 4132, 4182 and 4233 respectively in the case of WCDMA 850MHz, or to 9262, 9400 and 9538 respectively in the case of WCDMA 1900MHz, and WIFI 802.11b. The EUT was commanded to operate at maximum transmitting power.

The EUT should 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 was 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 should be lower than the output power level of the handset by at least 35 dB

5.2 SAR Measurement System

The SAR measurement system being used is the SATIMO system, the system is controlled remotely from a PC, which contains the software to control the robot and data acquisition equipment. The software also displays the data obtained from test scans.

In operation, the system first does an area (2D) scan at a fixed depth within the liquid from the inside wall of the phantom. When the maximum SAR point has been found, the system will then carry out a 3D scan centred at that point to determine volume averaged SAR level.

5.2.1 Tissue Dielectric Parameters for Head and Body Phantoms

The head tissue dielectric parameters recommended by the IEEE SCC-34/SC-2 in P1528 have been incorporated in the following table. These head parameters are derived from planar layer models simulating the highest expected SAR for the dielectric properties and tissue thickness Power drifts in a human head. Other head and body tissue parameters that have not been specified in P1528 are derived from the tissue dielectric parameters computed from the 4-Cole-Cole equations described in Reference [12] and extrapolated according to the head parameters specified in P1528.

Table 1: Recommended Dielectric Performance of Tissue

Ingredients (% by weight)	Frequency (MHz)									
	450		835		915		1900		2450	
Tissue Type	Head	Body	Head	Body	Head	Body	Head	Body	Head	Body
Water	38.56	51.16	41.46	52.4	41.05	56.0	54.9	40.4	62.7	73.2
Salt (Nacl)	3.95	1.49	1.45	1.4	1.35	0.76	0.18	0.5	0.5	0.04
Sugar	56.32	46.78	56.0	45.0	56.5	41.76	0.0	58.0	0.0	0.0
HEC	0.98	0.52	1.0	1.0	1.0	1.21	0.0	1.0	0.0	0.0
Bactericide	0.19	0.05	0.1	0.1	0.1	0.27	0.0	0.1	0.0	0.0
Triton x-100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	36.8	0.0
DGBE	0.0	0.0	0.0	0.0	0.0	0.0	44.92	0.0	0.0	26.7
Dielectric Constant	43.42	58.0	42.54	56.1	42.0	56.8	39.9	54.0	39.8	52.5
Conductivity (s/m)	0.85	0.83	0.91	0.95	1.0	1.07	1.42	1.45	1.88	1.78

Table 2 Recommended Tissue Dielectric Parameters

Frequency (MHz)	Head Tissue		Body Tissue	
	ε_r	σ(S/m)	ε_r	σ(S/m)
150	52.3	0.76	61.9	0.80
300	45.3	0.87	58.2	0.92
450	43.5	0.87	56.7	0.94
835	41.5	0.90	55.2	0.97
900	41.5	0.97	55.0	1.05
915	41.5	0.98	55.0	1.06
1450	40.5	1.20	54.0	1.30
1610	40.3	1.29	53.8	1.40
1800-2000	40.0	1.40	53.3	1.52
2450	39.2	1.80	52.7	1.95
3000	38.5	2.40	52.0	2.73
5800	35.3	5.27	48.2	6.00

5.2.2 Simulant liquids

For measurements against the phantom head, the “cheek” and “tilt” position on both the left hand and the right hand sides of the phantom. For body-worn measurements, the EUT was tested against flat phantom representing the user body. The EUT was put on in the belt holder. Simulant liquids that are used for testing at frequencies of GSM 850MHz/1900MHz, WCDMA850MHz/1900MHz, and Wi-Fi 2.4GHz, which are made mainly of sugar, salt and water solutions may be left in the phantoms.

Table 3: Dielectric Performance of Head Tissue Simulating Liquid

Temperature: 23.2°C; Humidity: 64%;			
/	Frequency	Permittivity ε	Conductivity σ (S/m)
Target value	835MHz	41.5	0.90
Validation value (Nov. 27th, 2014)	835MHz	41.45	0.91
Target value	1900MHz	40.0	1.40
Validation value (Nov. 27th, 2014)	1900MHz	39.98	1.41
Target value	2450MHz	39.2	1.80
Validation value (Nov. 27th, 2014)	2450MHz	38.99	1.81

Table 4: Dielectric Performance of Body Tissue Simulating Liquid

Temperature: 23.2°C; Humidity: 64%;			
/	Frequency	Permittivity ε	Conductivity σ (S/m)
Target value	835MHz	55.2	0.97
Validation value (Nov. 28th, 2014)	835MHz	55.26	0.98
Target value	1900MHz	53.3	1.52
Validation value (Nov. 28th, 2014)	1900MHz	53.28	1.53
Target value	2450MHz	52.7	1.95
Validation value (Nov. 28th, 2014)	2450MHz	52.65	1.96

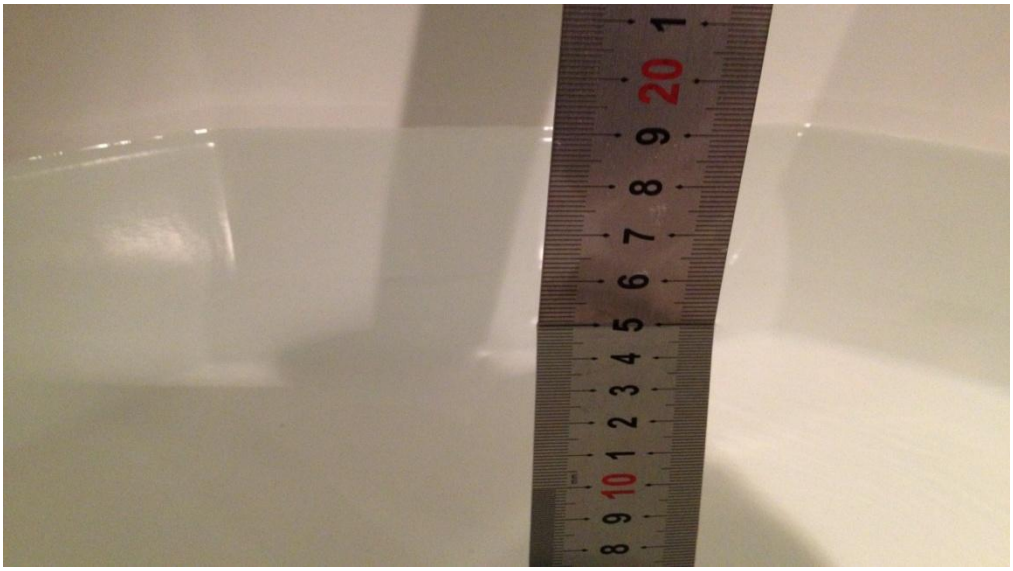


Fig. 1 Configuration of body tissue

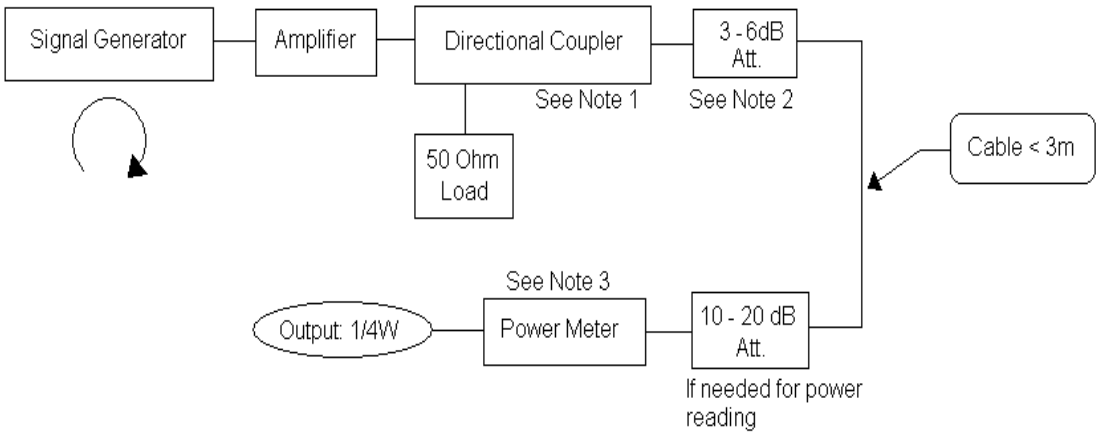
5.3 Equipments and results of validation testing

Table 6 Important equipments :

Equipment description	Manufacturer/Model	Identification No.
System Simulator	E5515C	GB 47200710
SAR Probe	SATIMO	SN 09/13 EP169
Dipole	SID835	SN 09/13 DIP 0G835-217
Dipole	SID1900	SN 09/13 DIP 1G900-218
Dipole	SID2450	SN 09/13 DIP 2G450-220
Vector Network Analyzer	ZVB8	A0802530
Signal Generator	SMR27	A0304219
Amplifier	Nucletudes	143060
Power Meter	NRVS	1020.1809.02
Power Sensor	NRV-Z4	100069
Multimeter	Keithley-2000	4014020
Device Holder	SATIMO	SN 09/13 MSH80
SAM Phantom	SAM97	SN 09/13 SAM97

Prior to the assessment, the system validation kit was used to test whether the system was operating within its specifications of ±10%. The validation results are tabulated below. And also the corresponding SAR plot is attached as well in the SAR plots files.

The following procedure, recommended for performing validation tests using box phantoms is based on the procedures described in the draft IEEE standard P1528. Setup according to the setup diagram below :



With the SG and Amp and with directional coupler in place, set up the source signal at the relevant frequency and use a power meter to measure the power at the end of the SMA cable that you intend to connect to the balanced dipole. Adjust the SG to make this, say, 0.25W (24 dBm). If this level is too high to read directly with the power meter sensor, insert a calibrated attenuator (e.g. 10 or 20 dB) and make a suitable correction to the power meter reading.

Note 1: In this method, the directional coupler is used for monitoring rather than setting the exact feed power level. If, however, the directional coupler is used for power measurement, you should check the frequency range and power rating of the coupler and measure the coupling factor (referred to output) at the test frequency using a VNA.

Note 2: Remember that the use of a 3dB attenuator (as shown in Figure 8.1 of P1528) means that you need an RF amplifier of 2 times greater power for the same feed power. The other issue is the cable length. You might get up to 1dB of loss per meter of cable, so the cable length after the coupler needs to be quite short.

Note 3: For the validation testing done using CW signals, most power meters are suitable. However, if you are measuring the output of a modulated signal from either a signal generator or a handset, you must ensure that the power meter correctly reads the modulated signals.

The measured 1-gram averaged SAR values of the device against the phantom are provided in Tables 7 and Table 8. The humidity and ambient temperature of test facility were 64% and 23.2°C respectively. The body phantom were full of the body tissue simulating liquid. The EUT was supplied with full-charged battery for each measurement.

The distance between the back of the EUT and the bottom of the flat phantom is 10 mm (taking into account of the IEEE 1528 and the place of the antenna).

Table 7: Head SAR system validation (1g)

Frequency	Duty cycle	Target value （W/kg）	Test value (W/kg)	
			250 mW	1W
835MHz(Nov. 27th, 2014)	1:1	9.77	2.45	9.80
1900MHz(Nov. 27th, 2014)	1:1	40.37	9.79	39.16
2450MHz(Nov. 27th, 2014)	1:1	53.60	13.17	52.68

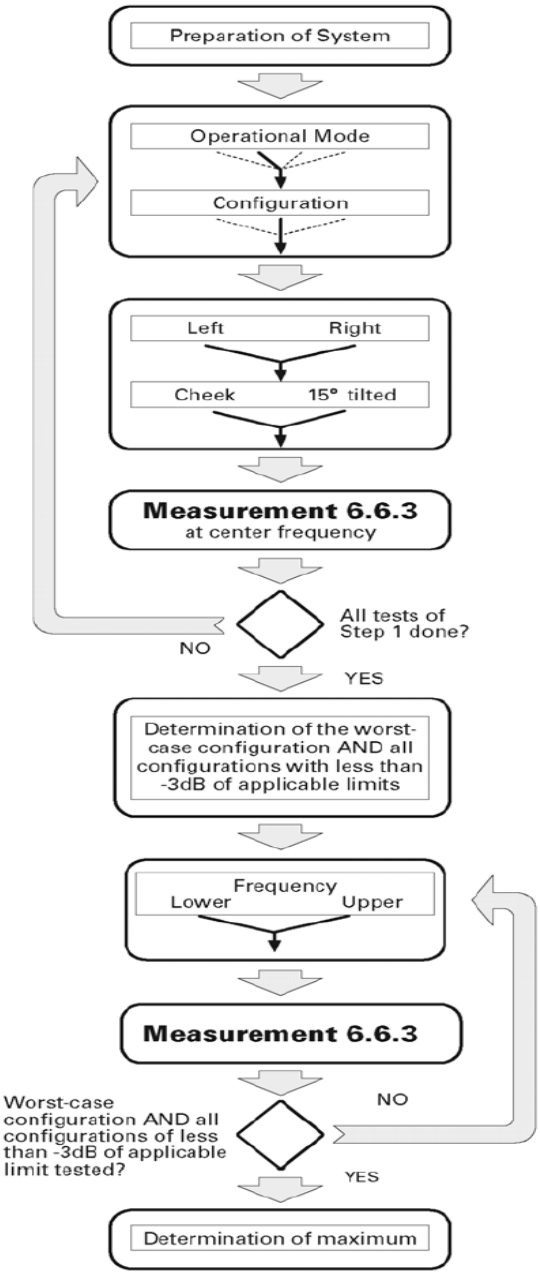
Table 8: Body SAR system validation (1g)

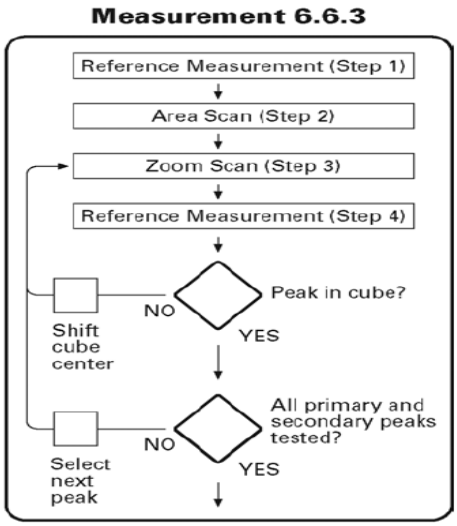
Frequency	Duty cycle	Target value （W/kg）	Test value (W/kg)	
			250 mW	1W
835MHz(Nov. 28h, 2014)	1:1	10.31	2.46	9.84
1900MHz(Nov. 28th, 2014)	1:1	40.81	9.98	39.92
2450MHz(Nov. 28th, 2014)	1:1	52.66	13.08	52.32

* Note: Target value was referring to the measured value in the calibration certificate of reference dipole.
Note: All SAR values are normalized to 1W forward power.

5.4 SAR measurement procedure

The SAR test against the head phantom was carried out as follow:





Establish a call with the maximum output power with a base station simulator, the connection between the EUT and the base station simulator is established via air interface.

After an area scan has been done at a fixed distance of 8mm from the surface of the phantom on the source side, a 3D scan is set up around the location of the maximum spot SAR. First, a point within the scan area is visited by the probe and a SAR reading taken at the start of testing. At the end of testing, the probe is returned to the same point and a second reading is taken. Comparison between these start and end readings enables the power drift during measurement to be assessed.

Above is the scanning procedure flow chart and table from the IEEEp1528 standard. This is the procedure for which all compliant testing should be carried out to ensure that all variations of the device position and transmission behaviour are tested.

For body-worn measurement, the EUT was tested under two position: face upward and back upward.

5.5 Transmitting antenna information

There are three antennas (GSM &WCDMA antenna, WIFI&BT antenna) inside the EUT, the former two antennas are the transmitting source, and they are a type of IFA antenna.

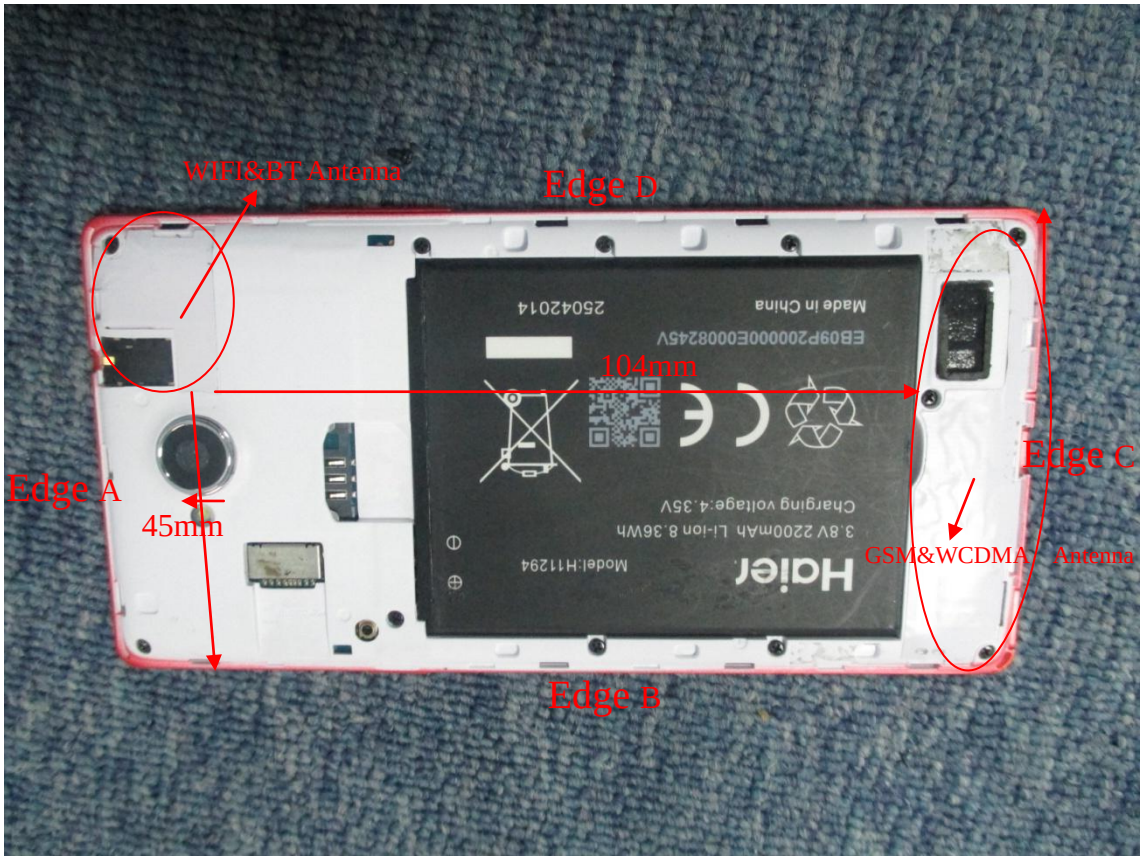


Fig. 3 Position of the antennas

HOTSPOT MODE EVALUATION PROCEDURE

The SAR evaluation procedures for Portable Devices with Wireless Router function is according to KDB 941225 D06 Hot Spot SAR v01.

SAR must be tested for all surfaces and edges(side) with a transmitting antenna with in 2.5cm from that surface or edge, at a test separation distance of 5mm, in the wireless modes that support wireless routing.

Assessment	Hotspot side for SAR Test distance:5mm					
Antennas	Back	Front	Edge A	Edge B	Edge C	Edge D
GSM/WCDMA	Yes	Yes	No	Yes	Yes	Yes
WLAN/BT	Yes	Yes	Yes	NO	No	Yes

6 CHARACTERISTICS OF THE TEST

6.1 Applicable Limit Regulations

47CFR § 2.1093- Radiofrequency Radiation Exposure Evaluation: Portable Devices;

FCC OET Bulletin 65 (Edition 97-01), Supplement C (Edition 01-01): Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields;

ANSI C95.1–1999: IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz;

IEEE 1528–2013: Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques;

It specifies the maximum exposure limit of **1.6 W/kg** as averaged over any 1 gram of tissue for portable devices being used within 20 cm of the user in the uncontrolled environment.

6.2 Applicable Measurement Standards

The Specific Absorption Rate (SAR) testing specification, method, and procedure for this is in accordance with the following standards:

FCC 47 CFR Part2 (2.1093)
FCC OET Bulletin 65 (Edition 97-01), Supplement C (Edition 01-01)
ANSI/IEEE C95.1-1992
IEEE 1528-2003
IC RSS 102 Issue 4
FCC KDB 447498 D02 v01r01 Dipole Requirements for SAR System Validation and Verification
FCC KDB 447498 D01 v05r02 General RF Exposure Guidance v05r01
FCC KDB 616217 D04 SAR for laptop and tablets v01r01
FCC KDB 648474 D04 v01r02 SAR Evaluation Considerations for Wireless Handsets
FCC KDB 248227 D01 v01r02 SAR Measurement Procedures-802.11a/b/g Transmitters
FCC KDB 865664 D01 v01r03 SAR Measurement 100MHz to 6GHz
FCC KDB 865664 D02 v01r01 SAR Reporting
FCC KDB 941225 D01 v02 SAR test for 3G devices
FCC KDB 941225 D04 v01 Evaluating SAR for GSM/(E)GPRS Dual Transfer Mode
FCC KDB 941225 D06 v01r01 Hot Spot SAR

7 LABORATORY ENVIRONMENT

7.1 The Ambient Conditions during SAR Test

Temperature	Min. = 15 ° C, Max. = 30 ° C
Atmospheric pressure	Min.=86 kPa, Max.=106 kPa
Relative humidity	Min. = 45%, Max. = 75%
Ground system resistance	< 0.5 Ω

Ambient noise is checked and found very low and in compliance with requirement of standards.

Reflection of surrounding objects is minimized and in compliance with requirement of standards.

8.Conducted RF Output Power

8.1 GSM Conducted Power

Band		Burst Average Power (dBm)			Frame-Average Power (dBm)		
GSM850	TX Channel	128	189	251	128	189	251
	Frequency(MHz)	824.2	836.4	848.8	824.2	836.4	848.8
	GSM	**31.87**	31.75	31.79	22.84	22.72	22.76
	GPRS (Slot 1)	29.21	29.18	29.17	23.19	23.16	23.15
	GPRS (Slot 2)	29.98	29.88	29.93	25.72	25.62	25.67
	GPRS (Slot 3)	30.87	30.76	30.82	27.86	27.75	27.81
	GPRS (Slot 4)	31.62	31.48	31.53	28.61	28.47	28.52
	EDGE (Slot 1)	29.12	29.08	29.13	23.1	23.06	23.11
	EDGE (Slot 2)	29.95	29.89	29.97	25.69	25.63	25.71
	EDGE (Slot 3)	30.87	30.75	30.88	27.86	27.74	27.87
	EDGE (Slot 4)	31.45	31.38	31.47	28.44	28.37	28.46
GSM1900	TX Channel	512	661	810	512	661	810
	Frequency(MHz)	1850.2	1880	1909.8	1850.2	1880	1909.8
	GSM	29.46	**29.61**	29.53	20.43	20.58	20.5
	GPRS (Slot 1)	27.15	27.09	27.17	21.13	21.07	21.15
	GPRS (Slot 2)	27.84	27.76	27.85	23.58	23.5	23.59

	GPRS (Slot 3)	28.52	28.45	28.56	25.51	25.44	25.55
	GPRS (Slot 4)	29.24	29.18	29.35	26.23	26.17	26.34
	EDGE (Slot 1)	27.05	27.11	27.14	21.03	21.09	21.12
	EDGE (Slot 2)	27.84	27.92	27.95	23.58	23.66	23.69
	EDGE (Slot 3)	28.43	28.52	28.57	25.42	25.51	25.56
	EDGE (Slot 4)	29.05	29.16	29.23	26.04	26.15	26.22

Note: Per KDB 447498 D01 v05r02, the maximum output power channel is used for SAR testing and for further SAR test reduction.

8.2 WCDMA Conducted peak output Power

Item	band	WCDMA 850			WCDMA 1900		
	ARFCN	4132/ 826.4	4182/ 836.4	4233/ 846.6	9262/ 1852.4	9400/ 1880.0	9538/ 1907.6
	subtest	dBm			dBm		
WCDMA	non	**22.87**	22.76	22.82	22.73	**22.85**	22.69
HSDPA	1	22.41	22.51	22.54	22.67	22.79	22.58
	2	22.29	22.71	22.29	22.47	22.25	22.54
	3	21.68	21.91	21.78	21.85	21.89	21.95
	4	21.79	21.54	21.61	21.77	21.94	21.83
HSUPA	1	22.24	22.37	22.77	22.54	22.37	22.57
	2	22.29	22.14	22.21	22.03	21.89	21.74
	3	21.86	22.09	22.08	22.17	22.01	22.08
	4	22..05	22.04	22.33	21.99	21.51	21.74
	5	22.23	22.16	22.11	22.05	22.25	22.08
HSPA+	1	22.23	22.41	22.25	22.39	22.45	22.57
Note:	The Conducted RF Output Power test of WCDMA /HSDPA /HSUPA /HSPA+ was tested by power meter.						

HSUPA Setup Configuration:

a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
b. The RF path losses were compensated into the measurements.
c. A call was established between EUT and Base Station with following setting * :
   i. Call Configs = 5.2B, 5.9B, 5.10B, and 5.13.2B with QPSK
   ii. Set the Gain Factors (β_c and β_d) and parameters (AG Index) were set according to each specific sub-test in the following table, C11.1.3, quoted from the TS 34.121
   iii. Set Cell Power = -86 dBm
   iv. Set Channel Type = 12.2k + HSPA
   v. Set UE Target Power
   vi. Power Ctrl Mode= Alternating bits
   vii. Set and observe the E-TFCI
   viii. Confirm that E-TFCI is equal to the target E-TFCI of 75 for sub-test 1, and other subtest's E-TFCI
d. The transmitted maximum output power was recorded.

Table C.11.1.3: β values for transmitter characteristics tests with HS-DPCCH and E-DCH

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note1)	β_{ec}	β_{ed} (Note 5) (Note 6)	β_{ed} (SF)	β_{ed} (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 6)	E-TFCI
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/225	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	$\beta_{ed}1$: 47/15 $\beta_{ed}2$: 47/15	4 4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15 (Note 4)	15/15 (Note 4)	64	15/15 (Note 4)	30/15	24/15	134/15	4	1	1.0	0.0	21	81

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c.
Note 2: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15. For all other combinations of DPDCH, DPCCH, HS- DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.
Note 3: For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 10/15 and β_d = 15/15.
Note 4: For subtest 5 the β_c/β_d ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 14/15 and β_d = 15/15.
Note 5: In case of testing by UE using E-DPDCH Physical Layer category 1, Sub-test 3 is omitted according to TS25.306 Table 5.1g.
Note 6: β_{ed} can not be set directly, it is set by Absolute Grant Value.

Setup Configuration

HSDPA Setup Configuration:

a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
b. The RF path losses were compensated into the measurements.
c. A call was established between EUT and Base Station with following setting:
   i. Set Gain Factors (β_c and β_d) and parameters were set according to each
   ii. Specific sub-test in the following table, C10.1.4, quoted from the TS 34.121
   iii. Set RMC 12.2Kbps + HSDPA mode.
   iv. Set Cell Power = -86 dBm
   v. Set HS-DSCH Configuration Type to FRC (H-set 1, QPSK)
   vi. Select HSDPA Uplink Parameters
   vii. Set Delta ACK, Delta NACK and Delta CQI = 8
   viii. Set Ack-Nack Repetition Factor to 3
   ix. Set CQI Feedback Cycle (k) to 4 ms
   x. Set CQI Repetition Factor to 2
   xi. Power Ctrl Mode = All Up bits
d. The transmitted maximum output power was recorded.

Table C.10.1.4: β values for transmitter characteristics tests with HS-DPCCH

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note1, Note 2)	CM (dB) (Note 3)	MPR (dB) (Note 3)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15 (Note 4)	15/15 (Note 4)	64	12/15 (Note 4)	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c.

Note 2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA, Δ_{ACK} and Δ_{NACK} = 30/15 with β_{hs} = 30/15 * β_c, and Δ_{CQI} = 24/15 with β_{hs} = 24/15 * β_c.

Note 3: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 4: For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 11/15 and β_d = 15/15.

Note:

1. WCDMA SAR was tested under PMC 12.2kbps with HSPA Inactive per KDB Publication 941225 D01.HSPA SAR was not requires since the average output power of the HSPA subtests was not more than 0.25dB higher than the RMC level and SAR was less than 1.2W/kg.

2. It is expected by the manufacturer that MPR for some HSPA subtests may be up to 2dB more than specified by 3GPP,but also as low as 0dB according to the chipset implementation in this model.

8.3 WLAN 2.4GHz Band Conducted Power

Channel	Frequency (MHz)	WIFI Output Power(dBm)		
		802.11b	802.11g	802.11n-20
CH 01	2412	14.47	12.17	12.03
CH 06	2437	14.28	12.19	12.12
CH 11	2462	14.89	12.99	12.24

Note:

1. Per KDB 248227 D01 v01r02, choose the highest output power channel to test SAR and determine further SAR exclusion

2. For each frequency band, testing at higher data rates and higher order modulations is not required when the maximum average output power for each of these configurations is less than 1/4dB higher than those measured at lowest data rate

3. Per KDB 248227 D01 v01r02, 802.11g /11n-HT20/11n-HT40 is not required, for the maximum average output power is less than 1/4dB higher than measured on the corresponding 802.11b mode. Thus the SAR can be excluded.

Bluetooth Conducted Power

Channel	Frequency (MHz)	BT3.0 Output Power(dBm)		
		GFSK	Π /4-DQPSK	8-DPSK
CH 0	2402	4.95	4.67	4.35
CH 39	2441	5.62	5.12	4.95
CH 78	2480	5.70	5.17	4.72

Channel	Frequency(MHz)	BT 4.0
CH 0	2402	-1.87
CH 20	2442	-1.21
CH 39	2480	-1.14

Note:

1. Per KDB 447498 D01v05r02, the 1-g and 10-g SAR test exclusion thrssholds for 100MHz to 6GHz at test separation distances ≤ 50mm are determined by:[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] • [$\sqrt{f}$ (GHz)] ≤3.0 for 1-g SAR and ≤7.5 for 10-g extremity SAR
   (1) f(GHz) is the RF channel transmit frequency in GHz
   (2) Power and distance are round to the nearest mW and mm before calculation
   (3) The result is rounded to one decimal place for comparison
   (4) If the test separation diatance(antenna-user) is < 5mm, 5mm is used for excluded SAR calculation

Bluetooth Max Power (dBm)	mW	Test Distance (mm)	Frequency(Ghz)	Exclusion Thresholds
6.0	3.981	5	2.48	1.254

2. Per KDB 447498 D01v05r02 exclusion thresholds is 1.254<3, RF exposure evaluation is not required.

General Note:

1. Per KDB 447498 D01v05r02, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
   a. Tune-up scaling Factor = tune-up limit power(mW)/EUT RF power(mW), where tune-up limit is the maximum rated power among all production units.
   b. For SAR testing of WLAN signal with non-100% duty cycle , the measured SAR is scaled-up by the duty cycle scaling factor which is equal to “1/(duty cycle)”
   c. For WWAN: Reported SAR(W/kg)=Measured SAR(W/kg)*Tune-up Scaling Factor
   d. For WLAN: Reported SAR(W/kg)=Measured SAR(W/kg)*Duty Cycle scaling factor * Tune-up scaling factor

2. Per KDB 447498 D01v05r02, for each exposure position, if the highest output channel reported SAR≤0.8W/kg, other channels SAR testing is not necessary.
3. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to “1/(duty cycle)”
4. Body-worn SAR testing was performed at 5mm separation, and this distance is determined by the handset manufacturer that there will be body-worn accessories with the required minimum separation.
5. Per KDB 648474 D04v01r02,when the reported SAR for a body-worn accessory measured without a headset connected to the handset is ≤1.2W/kg, SAR testing with a headset connected to the handset is not required.

6. Scaling Factor calculation

Operation Mode	Channel	Output Power(dBm)	Tune up Power in tolerance(dBm)	Scaling Factor
GSM 850	128	31.87	31.45 ± 0.5	1.019
	190	31.75	31.45 ± 0.5	1.047
	251	31.79	31.45 ± 0.5	1.038
GPRS 850(5Tx)	128	31.62	31.20 ±0.5	1.019
	190	31.48	31.20 ±0.5	1.052
	251	31.53	31.20 ±0.5	1.040
GSM1900	512	29.46	29.20 ±0.5	1.057
	661	29.61	29.20 ±0.5	1.021
	810	29.53	29.20 ±0.5	1.040
GPRS1900(5Tx)	512	29.24	28.90 ±0.5	1.038
	661	29.18	28.90 ±0.5	1.052
	810	29.35	28.90 ±0.5	1.012
WCDMA850	4132	22.87	22.40 ±0.5	1.007
	4182	22.76	22.40 ±0.5	1.033
	4233	22.82	22.40 ±0.5	1.019
WCDMA1900	9262	22.73	22.40 ±0.5	1.040
	9400	22.85	22.40 ±0.5	1.012
	9538	22.69	22.40 ±0.5	1.050
802.11b	2462	14.89	14.50 ±0.5	1.026
BT 3.0 GFSK	2480	5.70	5.50 ±0.5	1.072

Simultaneous SAR

Description of Simultaneous Transmit Capabilities				
No.	Transmitter Combinations	Scenario Supported or not	Supported for Mobile Hotspot or not	Explanation
1	GSM(Voice)+GSM(Data)	No	No	Note1
2	WCDMA(Voice)+WCDMA(Data)	Yes	No	
3	GSM(Voice)+ WCDMA(Data)	No	No	
4	WCDMA(Voice)+GSM(Data)	No	No	
5	GSM(Voice)+ WCDMA(Voice)	No	No	
6	GSM(Voice)+Wifi(/BT)	Yes	Yes	Note 2
7	WCDMA(Voice) +Wifi(/BT)	Yes	Yes	
8	WCDMA(Voice)+WCDMA(Data)+Wifi(/BT)	Yes	Yes	
9	GSM(Data)+wifi	Yes	Yes	
10	WCDMA(Data) +wifi	Yes	Yes	

Not applicable	Applicable	Head	Body-worn	Hotspot
1,3,4,5	2,6,7,8,9.10	2,6,7,8	2,6,7,8,9.10	6,7,8,9,10

Note :

1. EUT system architecture support simultaneous voice and data(except on WCDMA), multiple voice channels, or multiple data channels during a single session on the cellular net work.

2. Support for mobile hotspot operation.

3. When the user enables the personal wireless router functions for the handset, actual operations include simultaneous transmission of both the WiFi transmitter and another licensed transmitter. Both transmitter often do not transmit at the same transmitting frequency and thus cannot be evaluated for SAR under actual use conditions. The “Portable Hotspot” feature on the handset was not activated, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal.

4. The hotspot SAR result may overlap with the body-worn accessory SAR requirements, per KDB 941225 D06, the more conservative configurations can be considered, thus excluding some unnecessary body-worn accessory SAR tests.

5. WCDMA supports voice and data transmission simultaneously.

6. Simultaneous Transmission SAR evaluation is not required for BT and WiFi, because the software mechanism have been incorporated to guarantee that the WLAN and Bluetooth transmitters would not simultaneously operate.

7. For Scenario No.2,7.8,10 , WCDMA and WiFi is tested separately, the WCDMA mode is test with 12.2kbps RMC and TPC set to all “1”, if maximum SAR for 12.2kbps RMC is⩽75% of the SAR limit(i.e. 1.2W/kg 1g) and maximum average output of each RF channel with HSDPA/HSUPA active is less than 1/4 dB Middle than that measured without HSDPA/HSUPA using 12.2kbps RMC, according to KDB 941224 D01v02, SAR is not required for this handset with HSPA capabilities.

8. For Scenario No.6 to 10, GSM, WCDMA, BT and WiFi is tested separately, the GSM mode do not supports voice and data transmission simultaneously, voic (GSM) and data(GPRS) is tested separately.

Applicable Multiple Scenario Evaluation

Test Position	WCDMA&GSM SAR Max.(W/Kg)	Wifi SAR Max.(W/Kg)	Bluetooth Max.(W/Kg)	∑1-gSARMAX.(W/Kg)	
				BT&Main Ant	Wifi&Main Ant
Head SAR	0.494	0.033	0.167	0.587	0.661
Body SAR	0.930	0.025	0.083	0.955	1.013

Simultaneous Transmission SAR evaluation is not required for Wifi and WCDMA&GSM, because the sum of 1g SAR Max is 0.955W/Kg<1.6 W/Kg for Wifi and WCDMA&GSM.
Simultaneous Transmission SAR evaluation is not required for BT and WCDMA&GSM, because the sum of 1g SAR Max is 1.013W/Kg<1.6 W/Kg for BT and WCDMA&GSM.
(According to KDB 447498D01v05r02,the sum of the Highest reported SAR of each antenna does not exceed the limit, simultaneous transmission SAR evaluation is not required.)

9 TEST RESULTS

9.1 Summary of Power Measurement Results

According the description above, the measurements against the head phantom were executed on the operation mode: GSM850 /1900MHz, WCDMA850/1900MHz and WIFI 802.11b, while the tests against the body-worn were carried out on the operation mode : GSM850/1900MHz, GPRS 850 /1900MHz, WCDMA850/1900MHz,WIFI 802.11b.

Table 1: SAR Values of GSM 850MHz Band

Temperature: 23.0~23.5°C, humidity: 62~64%.					
Test Positions			Channel /Frequency (MHz)	SAR(W/Kg), 1.6 (1g average)	
				SAR(W/Kg1g Peak)	Scaled SAR(W/Kg),1g
Right Side of Head	Cheek		128/824.2	**0.271**	0.276
	Tilt 15 degrees		128/824.2	0.216	0.220
Left Side of Head	Cheek		128/824.2	0.227	0.231
	Tilt 15 degrees		128/824.2	0.225	0.229
Body (5mm Separation)	GSM	Face Upward	128/824.2	0.348	0.354
		Back Upward	128/824.2	**0.699**	0.712
		Edge B	128/824.2	0.493	0.502
		Edge C	128/824.2	0.326	0.332
		Edge D	128/824.2	0.438	0.446
	GPRS	Face Upward	128/824.2	0.322	0.328
		Back Upward	128/824.2	**0.743**	0.757
		Edge B	128/824.2	0.433	0.441
		Edge C	128/824.2	0.345	0.351
		Edge D	128/824.2	0.352	0.359

Table 2: SAR Values of GSM1900 MHz Band

Temperature: 23.0~23.5°C, humidity: 62~64%.					
Test Positions			Channel /Frequency (MHz)	SAR(W/Kg), 1.6 (1g average)	
				SAR(W/Kg1g Peak)	Scaled SAR(W/Kg),1g
Right Side of Head	Cheek		661/1880.0	**0.301**	0.307
	Tilt 15 degrees		661/1880.0	0.172	0.176
Left Side of Head	Cheek		661/1880.0	0.165	0.168
	Tilt 15 degrees		661/1880.0	0.123	0.126
Body (5mm Separation)	GSM	Face Upward	661/1880.0	0.395	0.403
		Back Upward	661/1880.0	0.452	0.461
		Edge B	661/1880.0	**0.742**	0.758
		Edge C	661/1880.0	0.665	0.679
		Edge D	661/1880.0	0.311	0.318
	GPRS	Face Upward	661/1880.0	0.279	0.293
		Back Upward	661/1880.0	0.452	0.475
		Edge B	661/1880.0	**0.710**	0.747
		Edge C	661/1880.0	0.419	0.441
		Edge D	661/1880.0	0.258	0.271

Table 3: SAR Values of WCDMA850

Temperature: 23.0~23.5°C, humidity: 62~64%.				
Test Positions		Channel /Frequency (MHz)	SAR(W/Kg), 1.6 (1g average)	
			SAR(W/Kg1g Peak)	Scaled SAR(W/Kg),1g
Right Side of Head	Cheek	4132/826.4	0.155	0.156
	Tilt 15 degrees	4132/826.4	0.116	0.117
Left Side of Head	Cheek	4132/826.4	**0.161**	0.162
	Tilt 15 degrees	4132/826.4	0.100	0.101
Body (5mm Separation)	Face Upward	4132/826.4	0.216	0.217
	Back Upward	4132/826.4	**0.558**	0.562
	Edge B	4132/826.4	0.181	0.182
	Edge C	4132/826.4	0.079	0.080
	Edge D	4132/826.4	0.238	0.240

Table 4: SAR Values of WCDMA1900

Temperature: 23.0~23.5°C, humidity: 62~64%.				
Test Positions		Channel /Frequency (MHz)	SAR(W/Kg), 1.6 (1g average)	
			SAR(W/Kg1g Peak)	Scaled SAR(W/Kg),1g
Right Side of Head	Cheek	9400/1880.0	**0.488**	0.494
	Tilt 15 degrees	9400/1880.0	0.258	0.261
Left Side of Head	Cheek	9400/1880.0	0.332	0.336
	Tilt 15 degrees	9400/1880.0	0.216	0.219
Body (5mm Separation)	Face Upward	9400/1880.0	0.659	0.667
	Back Upward	9262/1852.4	0.876	0.911
		9400/1880.0	**0.919**	0.930
		9400/1880.0	0.887	0.897
		9538/1907.6	0.845	0.887
	Edge B	9400/1880.0	0.472	0.477
	Edge C	9400/1880.0	0.449	0.454
	Edge D	9400/1880.0	0.206	0.208

Table 7:SAR Values of Wi-Fi 802.11b

Temperature: 23.0~23.5°C, humidity: 62~64%.				
Test Positions		Channel /Frequency (MHz)	SAR(W/Kg), 1.6 (1g average)	
			SAR(W/Kg1g Peak)	Scaled SAR(W/Kg),1g
Right Side of Head	Cheek	11/2462	**0.032**	0.033
	Tilt 15 degrees	11/2462	0.021	0.022
Left Side of Head	Cheek	11/2462	0.031	0.032
	Tilt 15 degrees	11/2462	0.018	0.018
802.11b(5mm Separation)	Edge A	11/2462	0.016	0.016
	Edge D	11/2462	0.018	0.018
	Face Upward	11/2462	0.010	0.010
	Back Upward	11/2462	**0.024**	0.025

Note:

a) According to KDB 941225 D01, since the maximum average output of each RF channel with HSDPA/HSUPA active is less than that measured without HSDPA/HSUPA using 12.2 kbps RMC and the maximum SAR for 12.2 kbps RMC is less 1.2 W/kg, the measurement against HSDPA and HSUPA were ignored in this report.

b) When the 1-g SAR for the mid-band channel or the channel with the Highest output power satisfy the following conditions, testing of the other channels in the band is not required.(Per KDB 447498 D01 General RF Exposure Guidance v05r02)

- ≤ 0.8 W/kg, when the transmission band is ≤ 100 MHz
- ≤ 0.6 W/kg, when the transmission band is between 100 MHz and 200 MHz
- ≤ 0.4 W/kg, when the transmission band is ≥ 200 MHz

10.2 Conclusion

Localized Specific Absorption Rate (SAR) of this portable wireless device has been measured in all cases requested by the relevant standards cited in Clause 6 of this report. Maximum localized SAR is **below** exposure limits specified in the relevant standards.

11 Measurement Uncertainty

No.	Uncertainty Component	Type	Uncertainty Value (%)	Probability Distribution	k	ci	Standard Uncertainty (%) ui(%)	Degree of freedom Veff or vi
	Measurement System							
1	－Probe Calibration	B	7	N	3	1	3.5	∞
2	－Axial isotropy	B	4.7	R	$\sqrt{3}$	0.5	4.3	∞
3	－Hemispherical Isotropy	B	9.4	R	$\sqrt{3}$	0.5	4.3	∞
4	－Boundary Effect	B	11.0	R	$\sqrt{3}$	1	6.4	∞
5	－Linearity	B	4.7	R	$\sqrt{3}$	1	2.7	∞
6	－System Detection Limits	B	1.0	R	$\sqrt{3}$	1	0.6	∞
7	－Readout Electronics	B	1.0	N	3	1	1.00	∞
8	－Response Time	B	0.00	R	$\sqrt{3}$	1	0.00	∞
9	－Integration Time	B	0.00	R	$\sqrt{3}$	1	0.00	∞
10	－RF Ambient Conditions	B	3.0	R	$\sqrt{3}$	1	1.73	∞
11	－Probe Position Mechanical tolerance	B	0.4	R	$\sqrt{3}$	1	0.2	∞
12	－Probe Position with respect to Phantom Shell	B	2.9	R	$\sqrt{3}$	1	1.7	∞
13	－Extrapolation, Interpolation and Integration Algorithms for Max. SAR evaluation	B	3.9	R	$\sqrt{3}$	1	2.3	∞
	Uncertainties of the DUT							
14	－Position of the DUT	A	4.8	N	3	1	4.8	5
15	－Holder of the DUT	A	7.1	N	3	1	7.1	5

16	—Output Power Variation –SAR drift measurement	B	5.0	R	$\sqrt{3}$	1	2.9	∞
	Phantom and Tissue Parameters							
17	—Phantom Uncertainty(shape and thickness tolerances)	B	1.0	R	$\sqrt{3}$	1	0.6	∞
18	—Liquid Conductivity Target –tolerance	B	5.0	R	$\sqrt{3}$	0.6	1.7	∞
19	—Liquid Conductivity –measurement Uncertainty)	B	0.23	N	3	1	0.23	9
20	—Liquid Permittivity Target tolerance	B	5.0	R	$\sqrt{3}$	0.6	1.7	∞
21	—Liquid Permittivity –measurement uncertainty	B	0.46	N	3	1	0.46	∞
Combined Standard Uncertainty				RSS			12.92	44.15
Expanded uncertainty (Confidence interval of 95 %)				K=2			25.84	

12 MAIN TEST INSTRUMENTS

No.	EQUIPMENT	TYPE	Series No.	Last Calibratio	Due Date
1	System Simulator	E5515C	GB 47200710	2014/02/23	1 Year
2	SAR Probe	SATIMO	SN 09/13 EP169	2014/04/05	1 Year
3	Dipole	SID835	SN09/13 DIP0G835-217	2014/08/28	1 Year
4	Dipole	SID1800	SN09/13 DIP1G800-216	2014/08/28	1 Year
5	Dipole	SID1900	SN09/13 DIP1G900-218	2014/08/28	1 Year
6	Dipole	SID2450	SN09/13 DIP2G450-220	2014/08/28	1 Year
7	Network Analyzer	ZVB8	A0802530	2014/06/13	1 Year
8	Signal Generator	SMR27	A0304219	2014/06/10	1 Year
9	Amplifier	Nucletudes	143060	2014/04/05	1 Year
10	Power Meter	NRVS	1020.1809.02	2014/06/13	1 Year
11	Power Sensor	NRV-Z4	100069	2014/06/10	1 Year
12	Multimeter	Keithley-2000	4014020	2013/01/29	2 Year
13	Device Holder	SATIMO	SN 09/13 MSH80	2014/04/05	1 Year
14	SAM Phantom	SAM97	SN 09/13 SAM97	2014/04/05	1 Year

ANNEX A

of

CCIC Southern Electronic Product Testing (Shenzhen) Co., Ltd.

CONFORMANCE TEST REPORT FOR

HUMAN EXPOSURE TO ELECTROMAGNETIC FIELDS

SET2014-13183

Haier Telecom (Qingdao) Co., Ltd

WCDMA digital mobile phone

Type Name: W861

Hardware Version: UALD07 VER.A

Software Version: HW-W861-H01-S004-VE

Accreditation Certificate

This Annex consists of 2 pages

Date of Report: 2014-12-03

China National Accreditation Service for Conformity Assessment

LABORATORY ACCREDITATION CERTIFICATE

(Registration No. CNAS L1659)

CCIC Southern Electronic Product Testing (Shenzhen) Co., Ltd.

Building 28/29, Shigudong, Xili Industrial Area, Xili Street,

Nanshan District, Shenzhen, Guangdong, China

is accredited 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 of testing and calibration.*

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

Date of Issue: 2012-09-29

Date of Expiry: 2015-09-28

Date of Initial Accreditation: 1999-08-03

Date of Update: 2012-09-29

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 schemes for conformity assessment. CNAS is the signatory to International Laboratory Accreditation Cooperation Multilateral Recognition Arrangement (ILAC MRA) and Asia Pacific Laboratory Accreditation Cooperation Multilateral Recognition Arrangement (APLAC MRA).

No.CNAS AL 2

0005210

ANNEX B

of

CCIC-SET

CONFORMANCE TEST REPORT FOR

HUMAN EXPOSURE TO ELECTROMAGNETIC FIELDS

SET2014-13183

Haier Telecom (Qingdao) Co., Ltd

WCDMA digital mobile phone

Type Name: W861

Hardware Version: UALD07 VER.A

Software Version: HW-W861-H01-S004-VE

TEST LAYOUT

This Annex consists of 7 pages

Date of Report: 2014-12-03

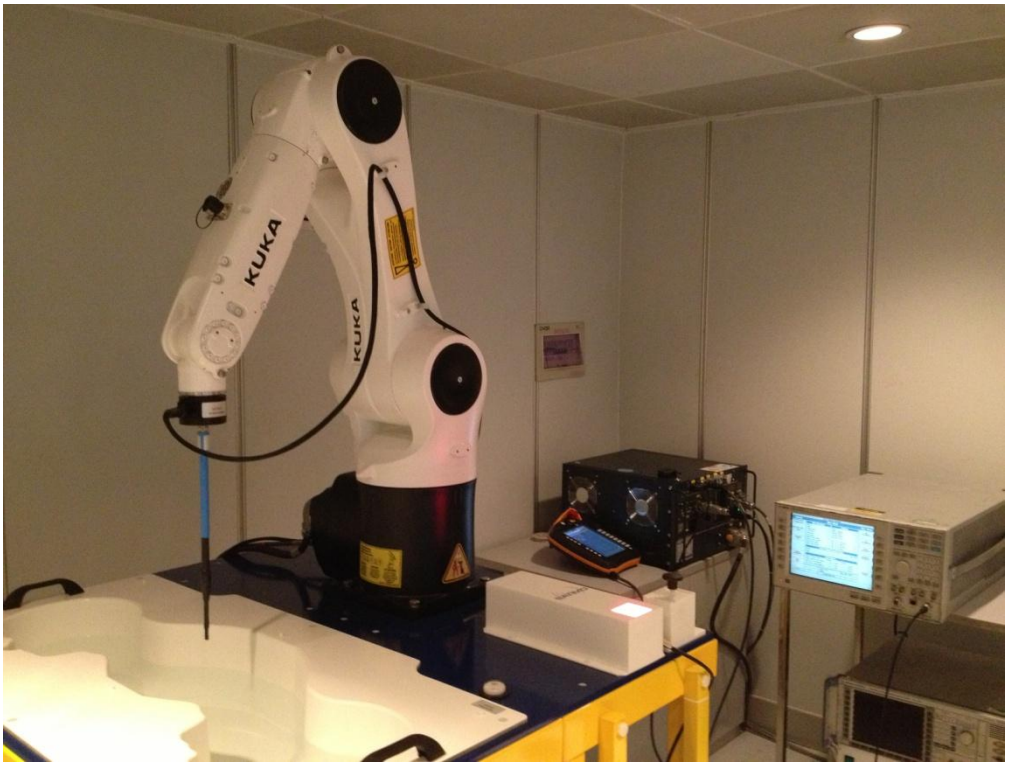


Fig.1 COMO SAR Test System

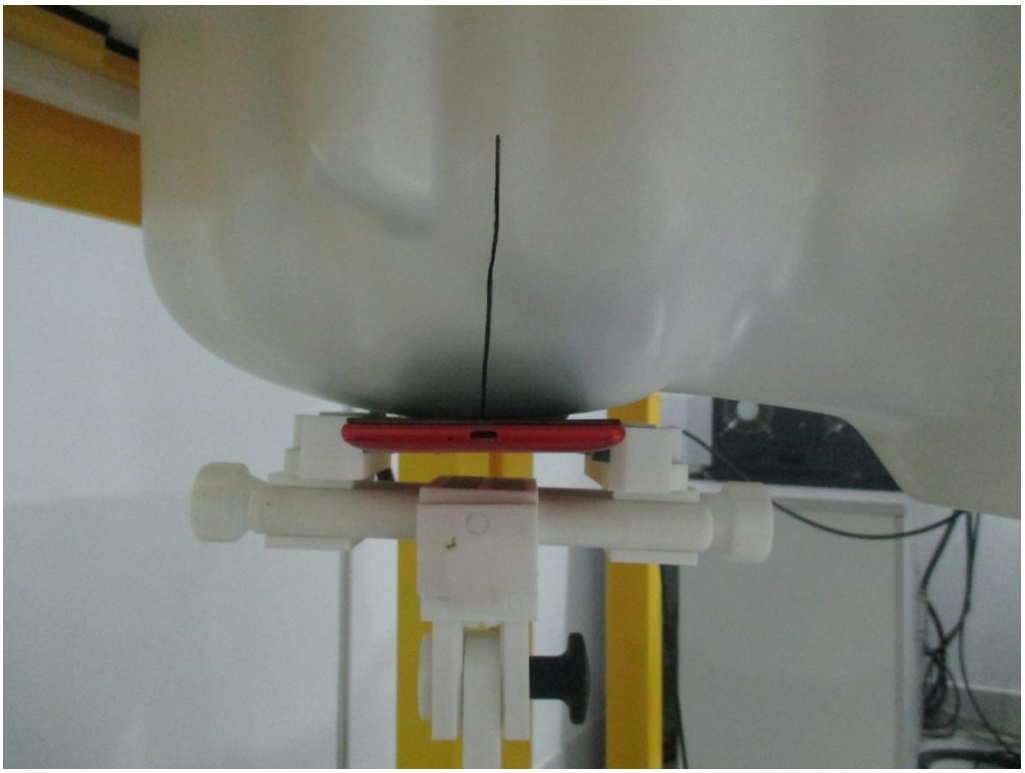


Fig.2 Right_Cheek

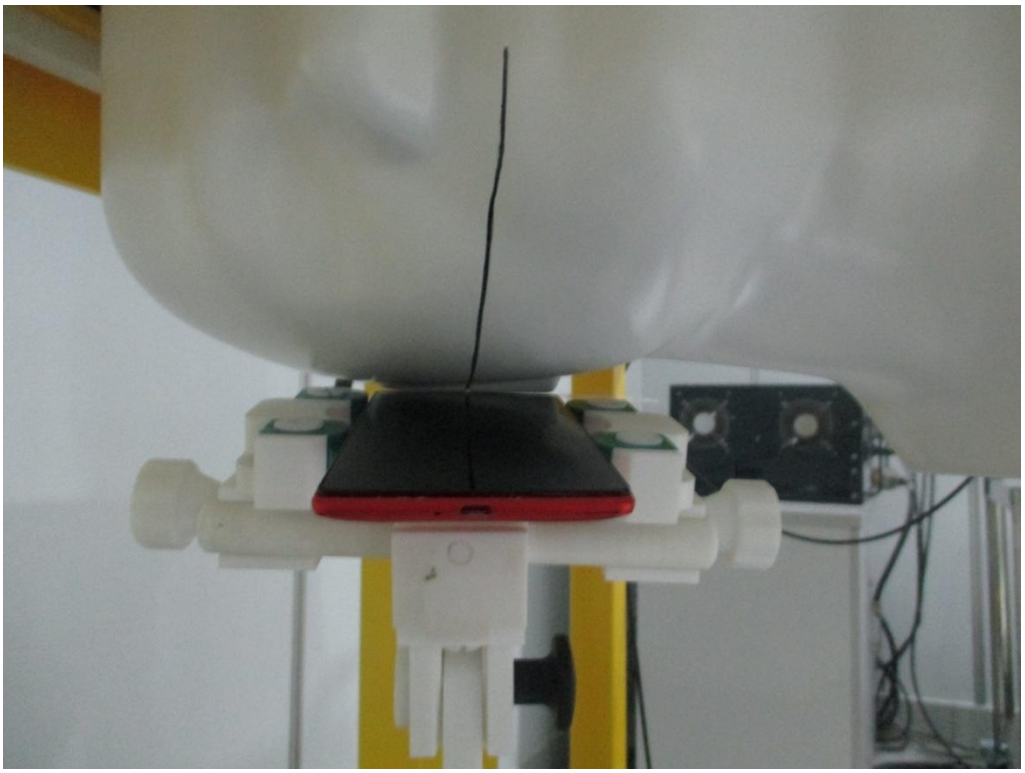


Fig.3 Right_Tilt

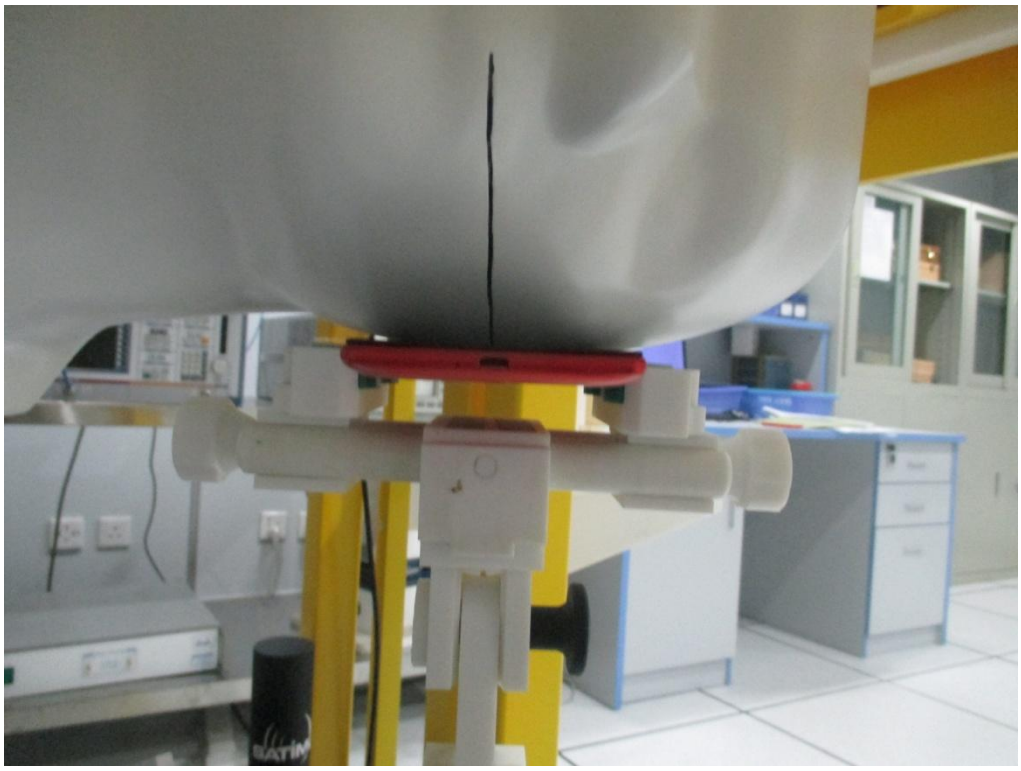


Fig.4 Left Cheek

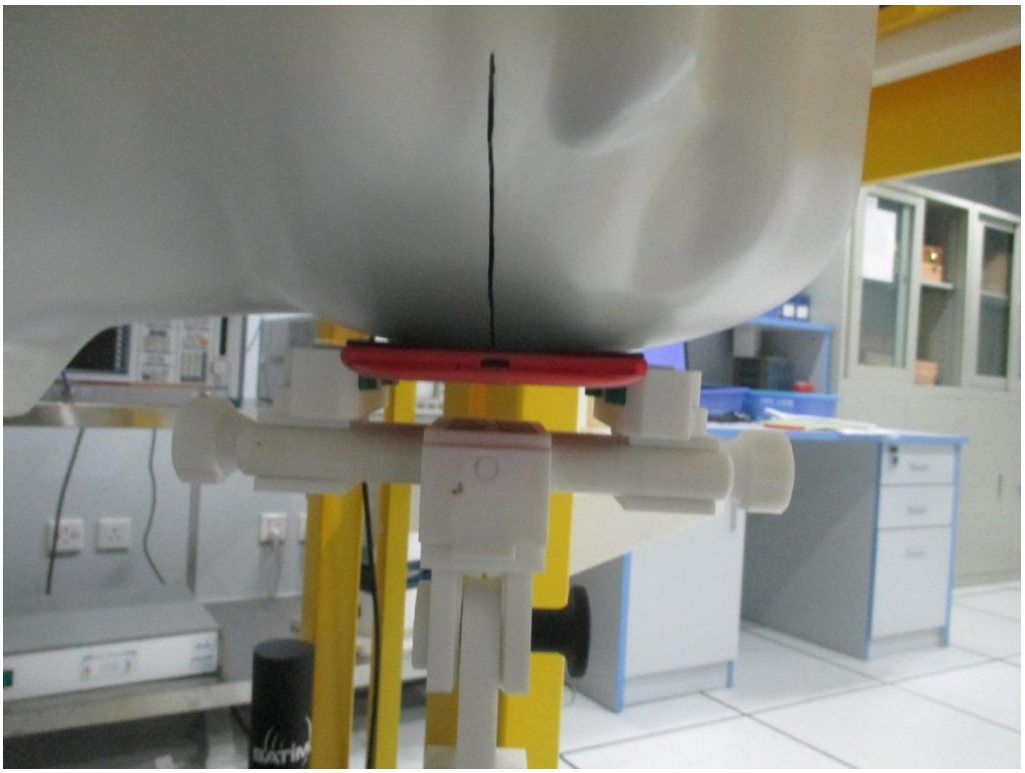


Fig.5 Left_Tilt

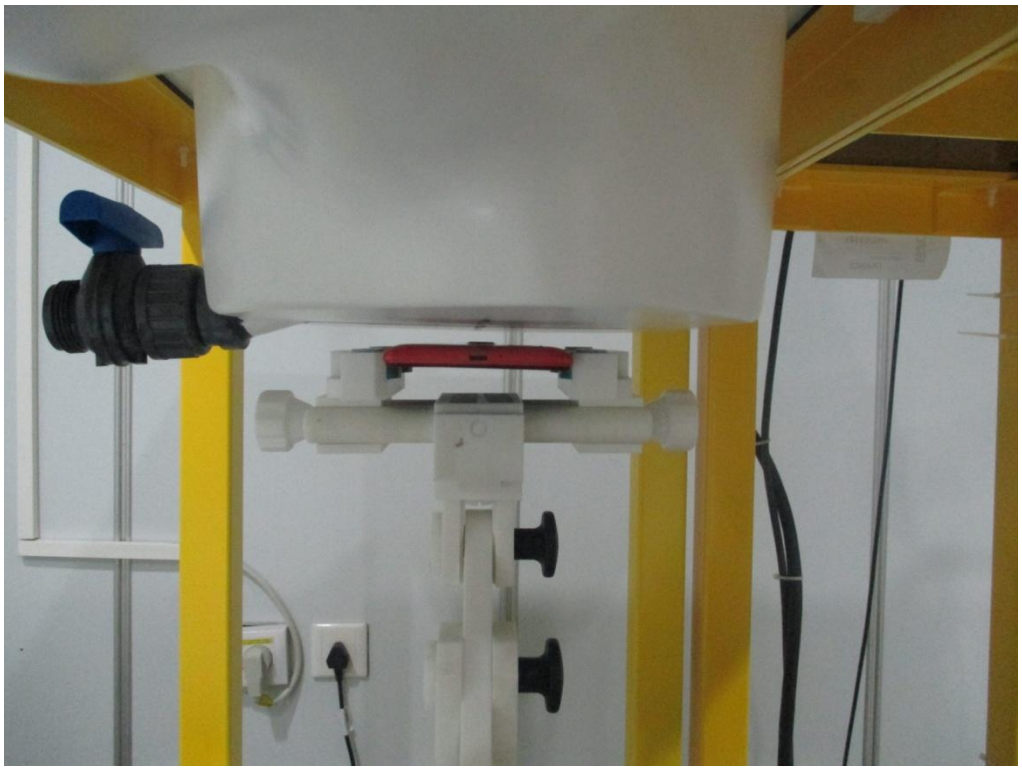


Fig.6 Body(Back upside,5mm seperation)

Fig.7 Body(Face upside,5mm seperation)

Fig.8 Body Edge A(UP,5mm seperation)

Fig.9 Body Edge B(Right upside,5mm separation)

Fig.10 Body Edge C(Down,5mm seperation)

Fig.11 Body Edge D(Left upside,5mm separation)

ANNEX C

of

CCIC-SET

CONFORMANCE TEST REPORT FOR

HUMAN EXPOSURE TO ELECTROMAGNETIC FIELDS

SET2014-13183

WCDMA digital mobile phone

Type Name: W861

Hardware Version: UALD07 VER.A

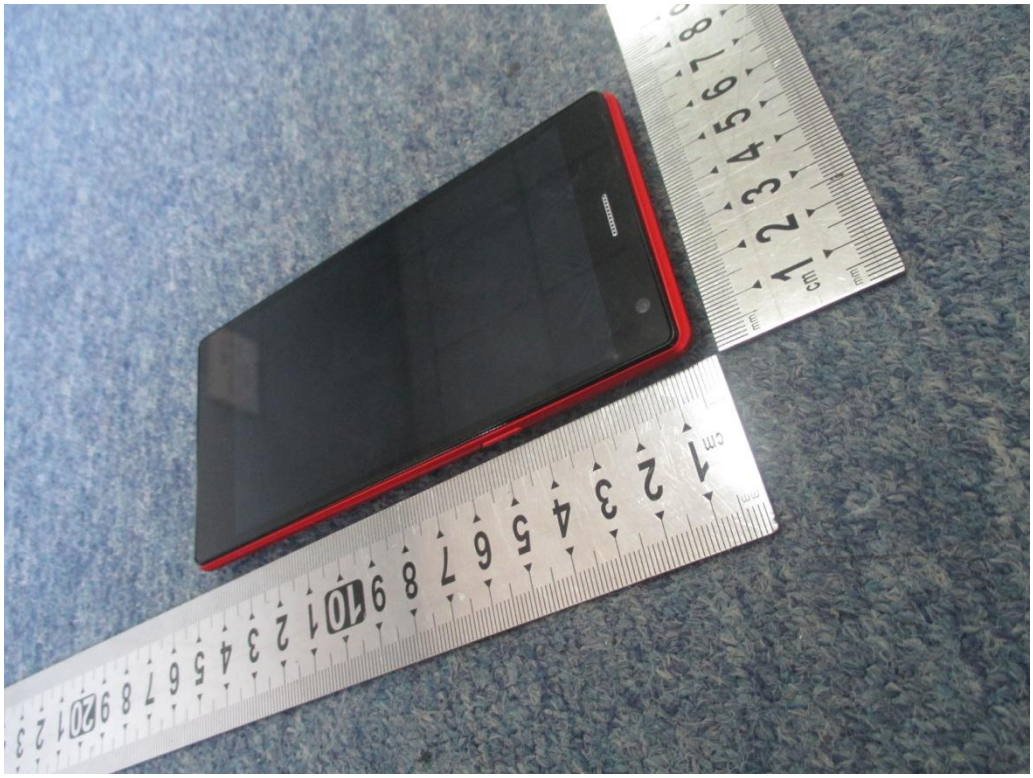
Software Version: HW-W861-H01-S004-VE

Sample Photographs

This Annex consists of 2 pages

Date of Report: 2014-12-03

1. Appearance



Appearance and size (obverse)

Appearance and size (reverse)

ANNEX D

of

CCIC-SET

CONFORMANCE TEST REPORT FOR

HUMAN EXPOSURE TO ELECTROMAGNETIC FIELDS

SET2014-13183

WCDMA digital mobile phone

Type Name: W861

Hardware Version: UALD07 VER.A

Software Version: HW-W861-H01-S004-VE

System Performance Check Data and Highest SAR Plots

This Annex consists of 50 pages

Date of Report: 2014-12-03

GRAPH TEST RESULTS

BAND	PAPAMETERS
GSM 850	Right Head with Cheek device position on Low Channel in GSM mode Flat Plane with Edge B Body device position on Low Channel in GSM mode Flat Plane with Back Body device position on Low Channel in GPRS mode
GSM 1900	Right Head with Cheek device position on Middle Channel in GSM mode Flat Plane with Edge B Body device position on Middle Channel in GSM mode Flat Plane with Edge B Body device position on Middle Channel in GPRS mode
WCDMA 850	Left Head with Cheek device position on Low Channel in WCDMA mode Flat Plane with Edge B Body device position on Low Channel in WCDMA mode
WCDMA 1900	Right Head with Cheek device position on Middle Channel in WCDMA mode Flat Plane with Edge B Body device position on Middle Channel in WCDMA mode Flat Plane with Edge B Body device position on Middle Channel in WCDMA mode(repeated measurement)
WIFI 802.11b	Right Head with Cheek device position on High Channel in DSSS mode Flat Plane with Back Body device position on High Channel in DSSS mode

System Performance Check (Head, 835MHz)

Type: Phone measurement (Complete)

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

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

Date of measurement:27/11/2014

Measurement duration: 12 minutes 57 seconds

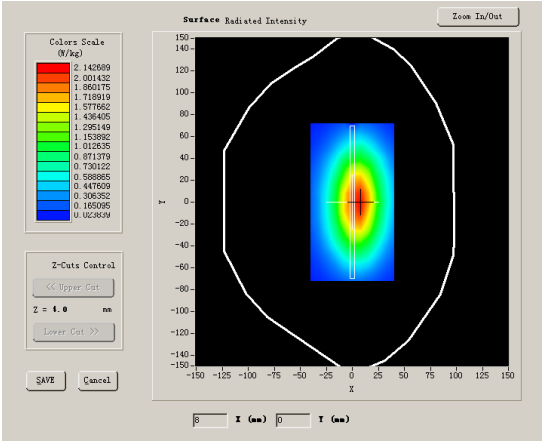
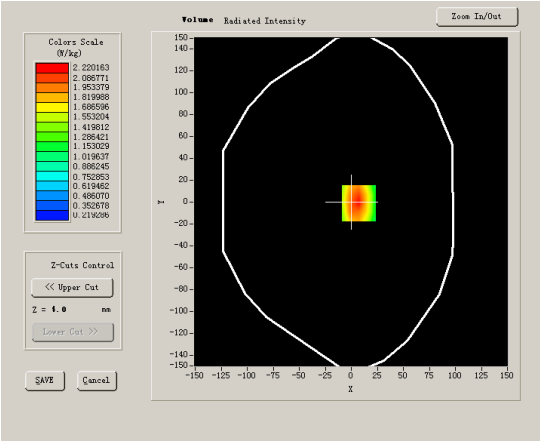
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Flat Plane
Device Position	
Band	835MHz
Channels	
Signal	CW

B. SAR Measurement Results

Band SAR

Frequency (MHz)	835.000000
Relative permittivity (real part)	41.45
Relative permittivity	15.07
Conductivity (S/m)	0.91
Power drift (%)	-0.230000
Ambient Temperature:	23.2 ℃
Liquid Temperature:	23.5 ℃
ConvF:	5.51
Duty factor:	1:1

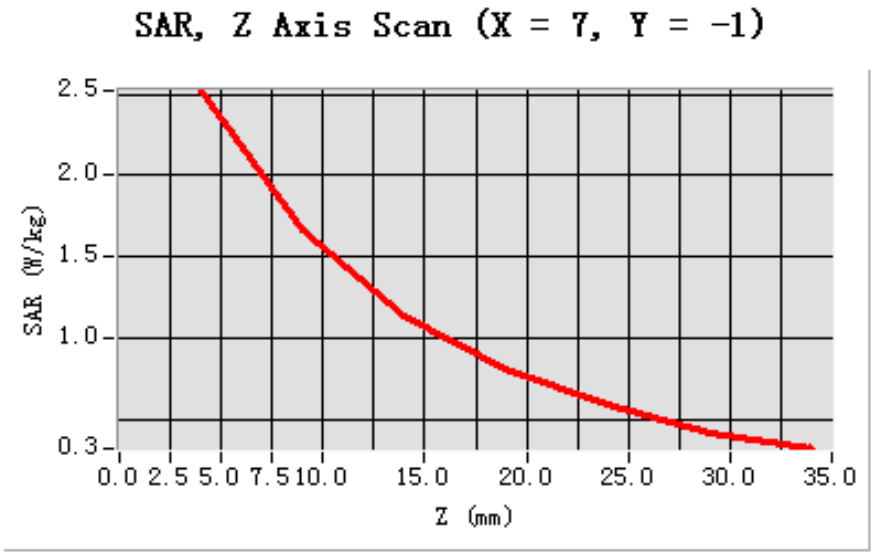
SURFACE SAR	VOLUME SAR
	

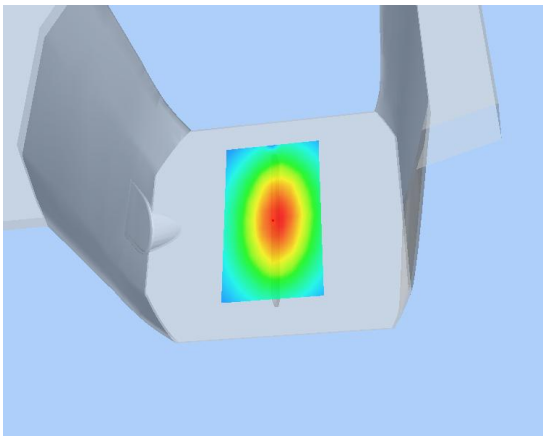
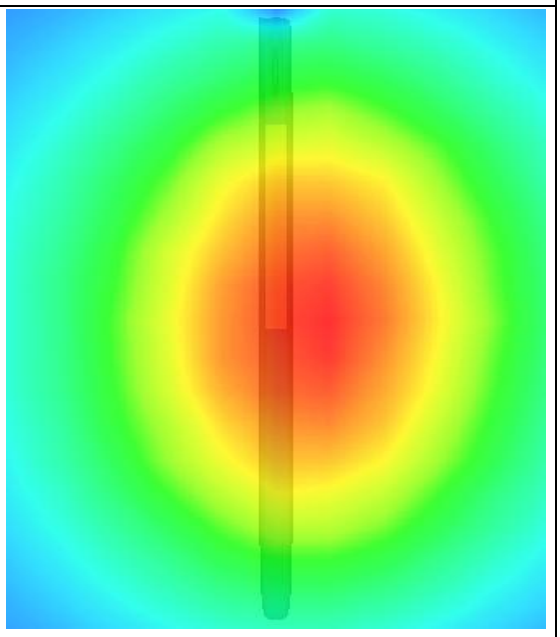
Maximum location: X=7.00, Y=-1.00

SAR 10g (W/Kg)	1.824256
SAR 1g (W/Kg)	2.454673

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	2.5214	1.6624	1.1451	0.8065	0.5875	0.4153



3D sceen shot	Hot spot position
	

System Performance Check (Head, 1900MHz)

Type: Phone measurement (Complete)

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

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

Date of measurement: 27/11/2014

Measurement duration: 12 minutes 57 seconds

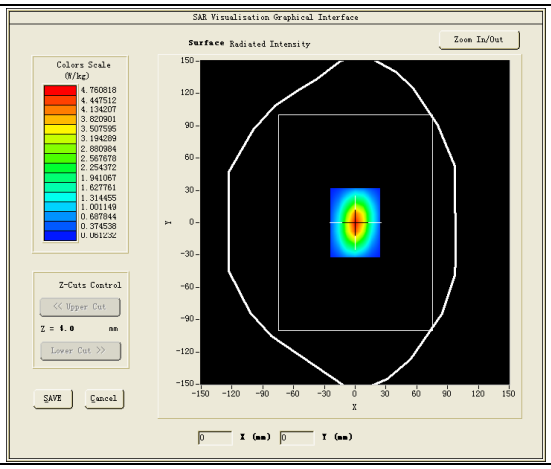
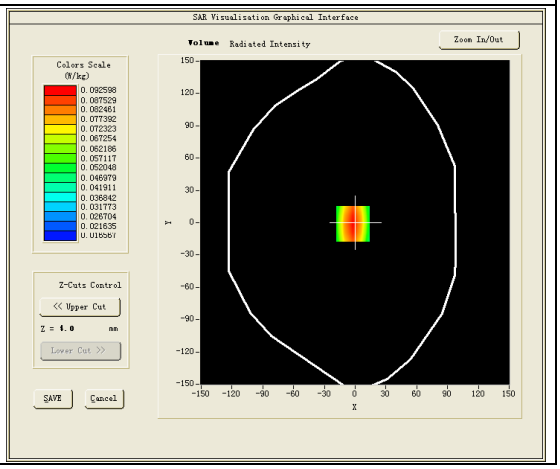
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Flat Plane
Device Position	
Band	1900MHz
Channels	
Signal	CW

B. SAR Measurement Results

Band SAR

Frequency (MHz)	1900.000000
Relative permittivity (real part)	39.98
Relative permittivity	15.07
Conductivity (S/m)	1.41
Power drift (%)	-0.150000
Ambient Temperature:	22.3℃
Liquid Temperature:	22.6℃
ConvF:	5.49
Duty factor:	1:1

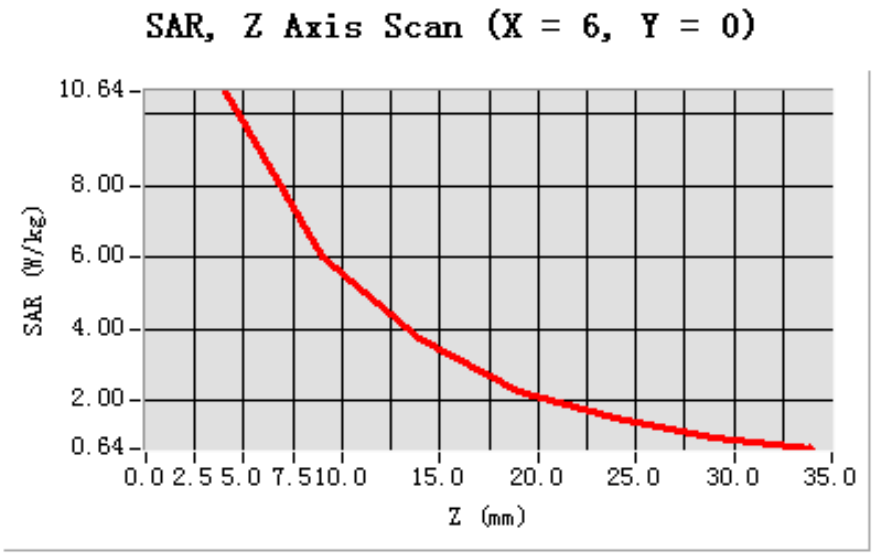
SURFACE SAR	**VOLUME SAR**
	

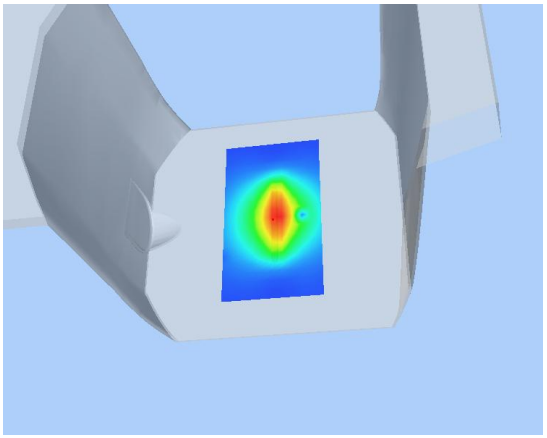
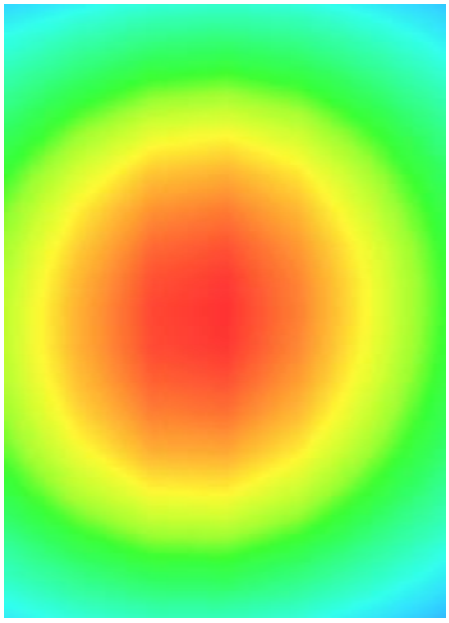
Maximum location: X=6.00, Y=0.00

SAR 10g (W/Kg)	5.142873
SAR 1g (W/Kg)	9.794237

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	10.6418	6.0044	3.7296	2.2605	1.5117	0.9790



3D sceen shot	Hot spot position
	

System Performance Check (Head, 2450MHz)

Type: Phone measurement (Complete)

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

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

Date of measurement:27/11/2014

Measurement duration: 15 minutes 24 seconds

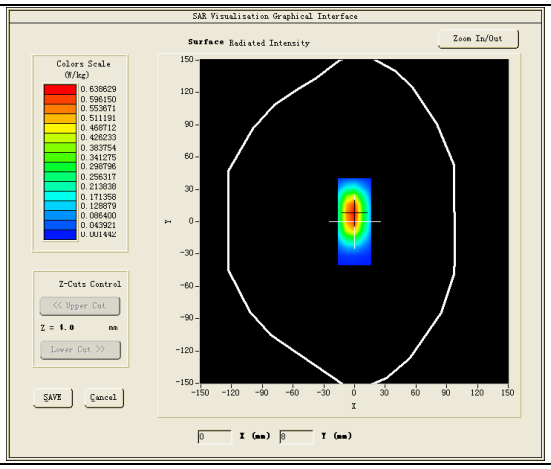
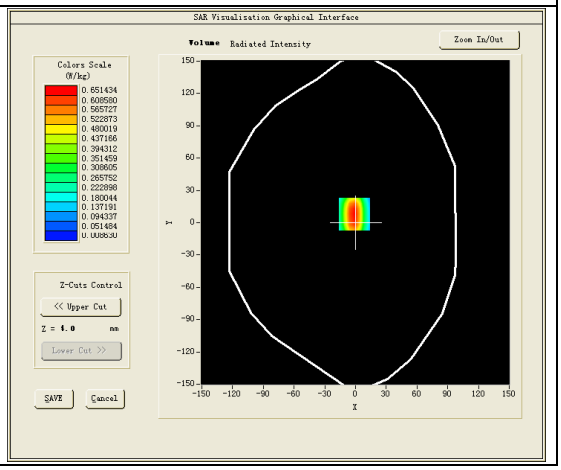
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Dipole
Band	2450MHz
Channels	
Signal	CW

B. SAR Measurement Results

Band SAR

Frequency (MHz)	2450.000000
Relative permittivity (real part)	38.99
Relative permittivity	13.19
Conductivity (S/m)	1.81
Power Drift (%)	0.420000
ConvF:	4.81
Duty factor:	1:1

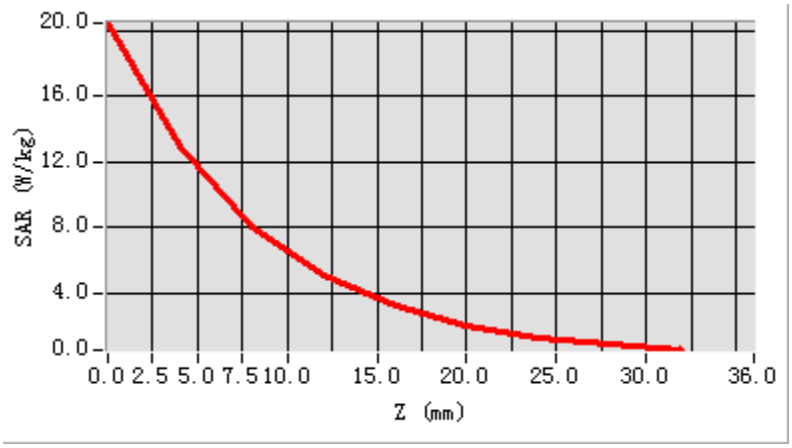
SURFACE SAR	VOLUME SAR
	

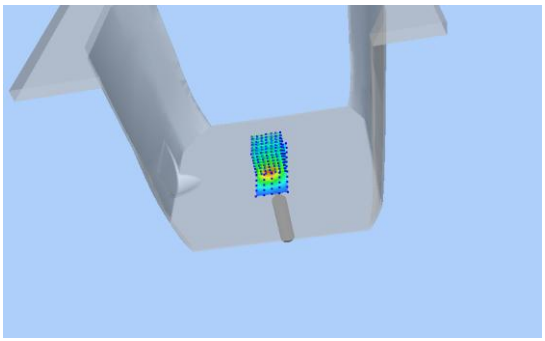
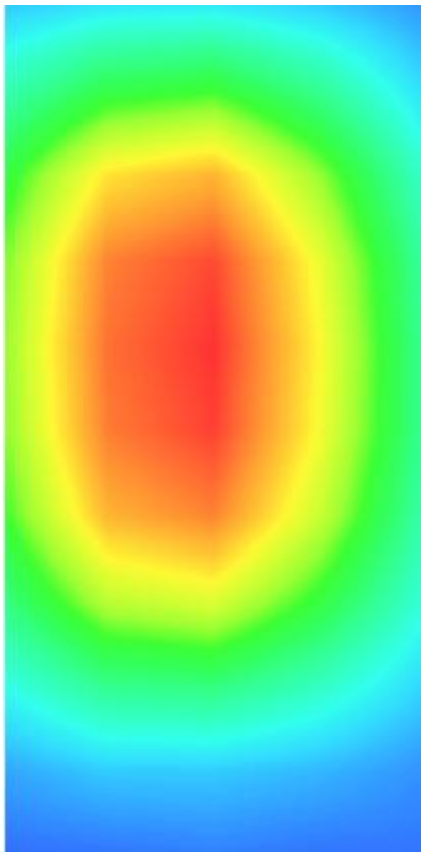
Maximum location: X=0.00, Y=8.00

SAR 10g (W/Kg)	5.900543
SAR 1g (W/Kg)	13.174632

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	20.3890	13.160218	3.8625	0. 8019	0.2333



3D sceen shot	Hot spot position
	

System Performance Check (Body, 835MHz)

Type: Phone measurement (Complete)

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

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

Date of measurement: 28/11/2014

Measurement duration: 13 minutes 12 seconds

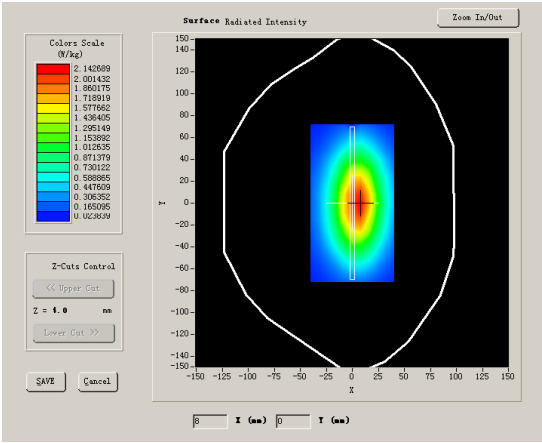
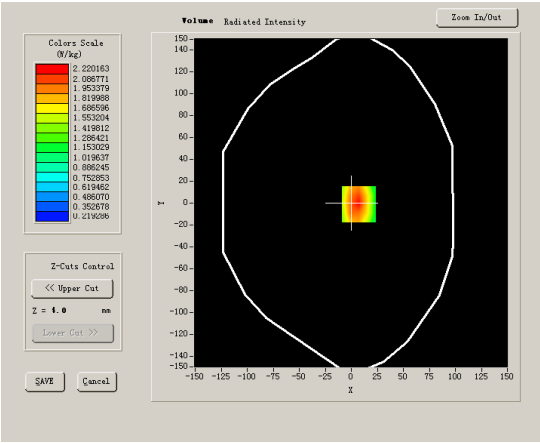
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Flat Plane
Device Position	
Band	835MHz
Channels	
Signal	CW

B. SAR Measurement Results

Band SAR

Frequency (MHz)	835.000000
Relative permittivity (real part)	55.26
Relative permittivity	21.71
Conductivity (S/m)	0.98
Power drift (%)	-0.270000
Ambient Temperature:	23.2 ℃
Liquid Temperature:	23.5 ℃
ConvF:	5.68
Duty factor:	1:1

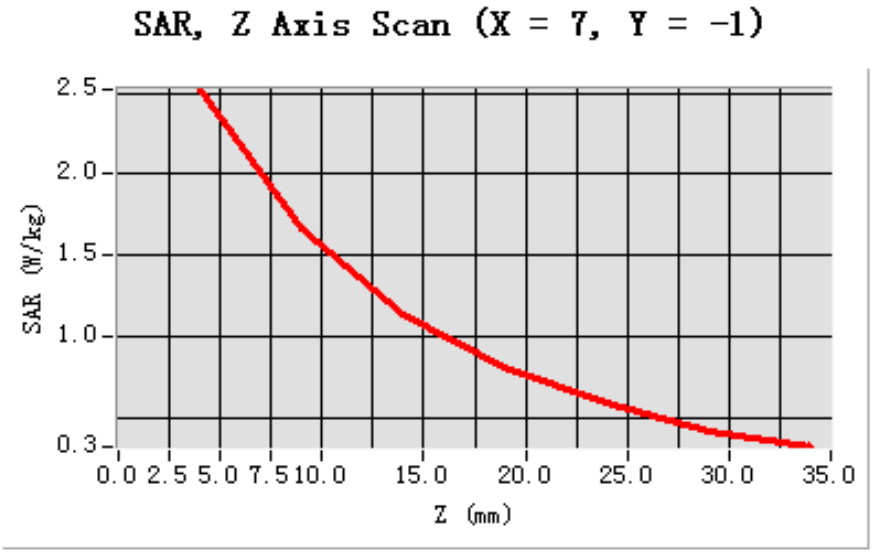
SURFACE SAR	VOLUME SAR
	

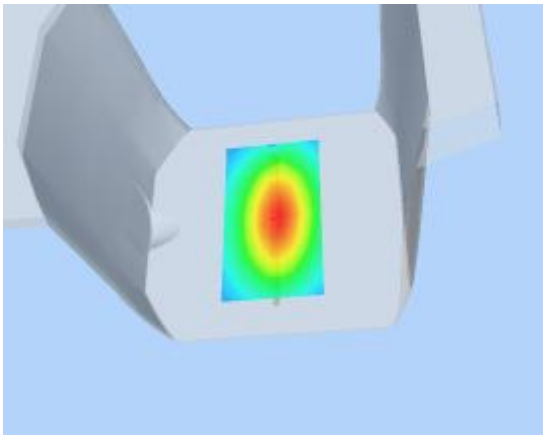
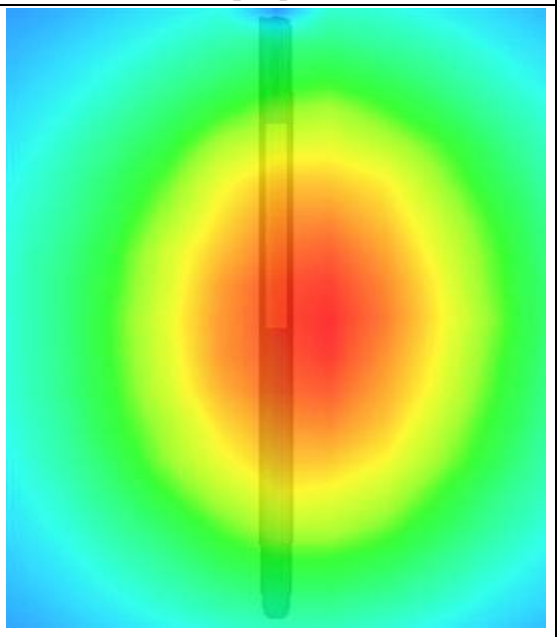
Maximum location: X=7.00, Y=-1.00

SAR 10g (W/Kg)	1.735712
SAR 1g (W/Kg)	2.463547

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	2.5212	1.6645	1.1443	0.8082	0.5893	0.4148



3D sceen shot	Hot spot position
	

System Performance Check (Body, 1900MHz)

Type: Phone measurement (Complete)

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

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

Date of measurement: 28/11/2014

Measurement duration: 13 minutes 12 seconds

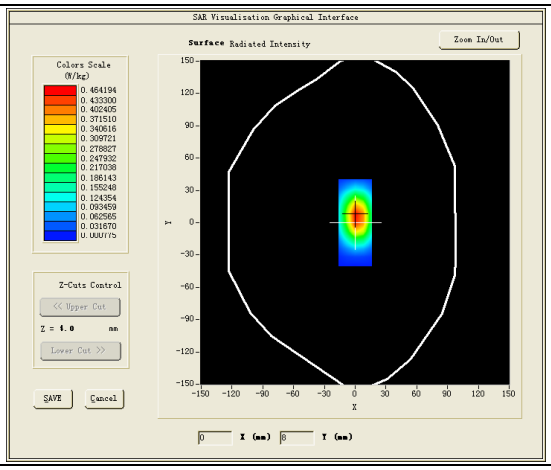
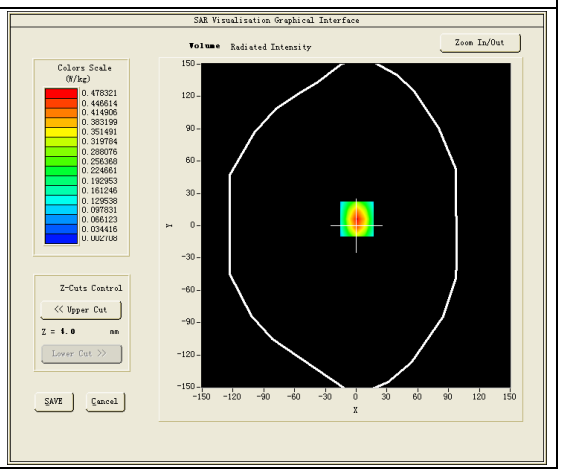
A. Experimental conditions.

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

B. SAR Measurement Results

Band SAR

Frequency (MHz)	1900.000000
Relative permittivity (real part)	53.28
Relative permittivity	12.99
Conductivity (S/m)	1.53
Power Drift (%)	0.410000
Ambient Temperature:	22.0℃
Liquid Temperature:	21.8℃
ConvF:	5.65
Duty factor:	1:1

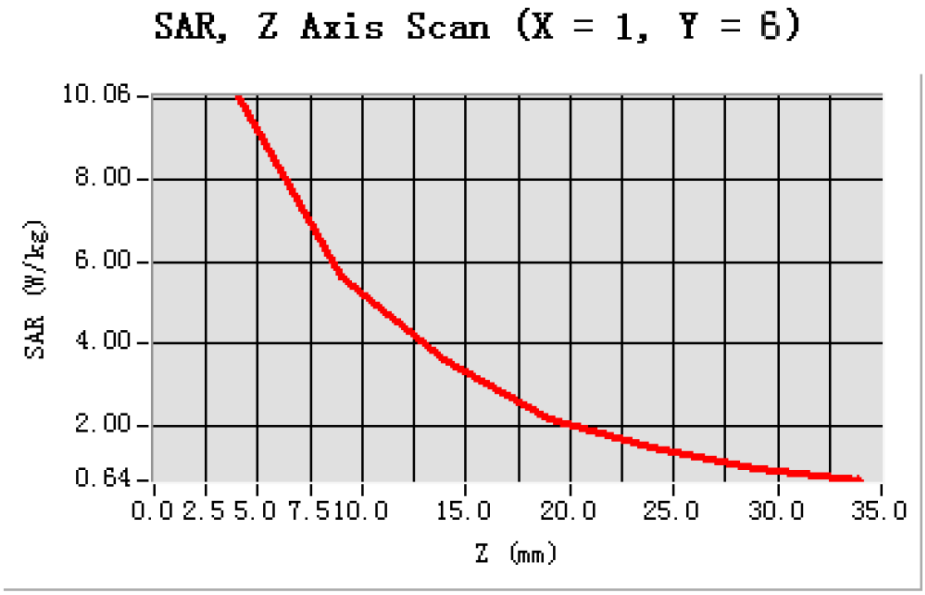
SURFACE SAR	VOLUME SAR
	

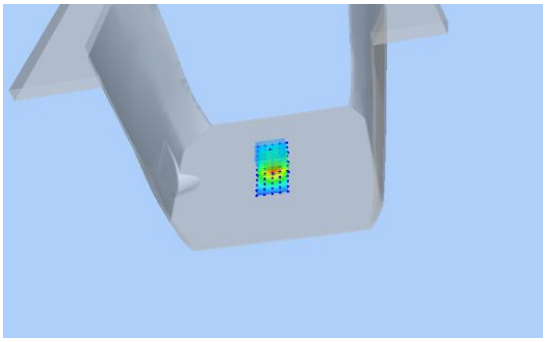
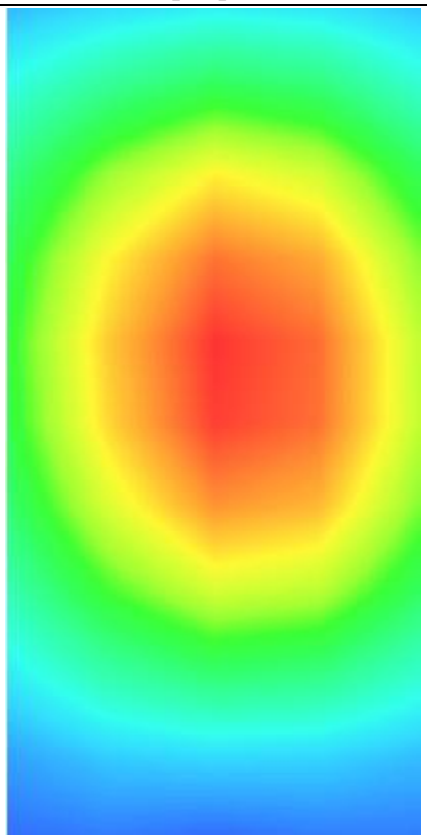
Maximum location: X=1.00, Y=6.00

SAR 10g (W/Kg)	5.215326
SAR 1g (W/Kg)	9.982523

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	10.0613	5.7282	3. 6529	2.0314



3D sceen shot	Hot spot position
	

System Performance Check (Body, 2450MHz)

Type: Phone measurement (Complete)

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

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

Date of measurement: 28/11/2014

Measurement duration: 13 minutes 21 seconds

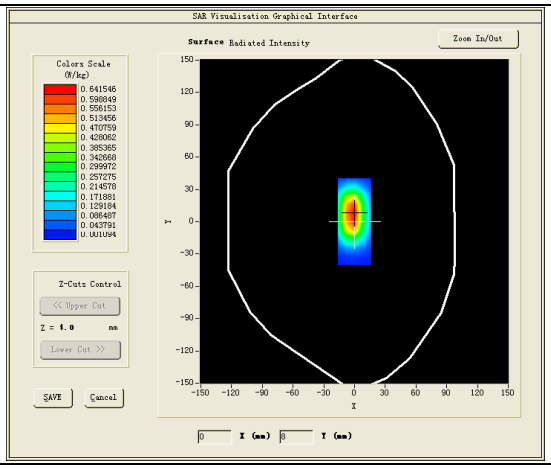
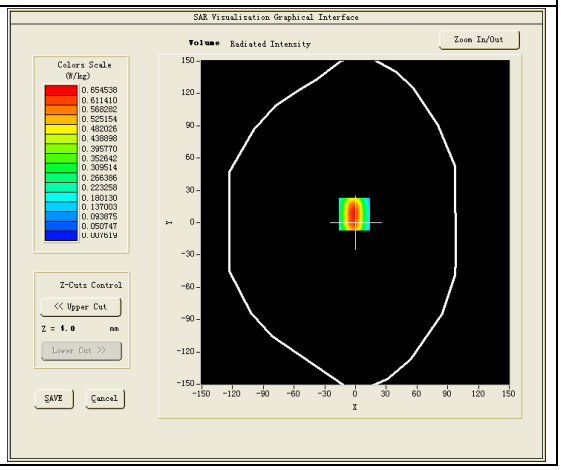
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	Dipole
Band	2450MHz
Channels	
Signal	CW

B. SAR Measurement Results

Band SAR

Frequency (MHz)	2450.000000
Relative permittivity (real part)	52.65
Relative permittivity	13.02
Conductivity (S/m)	1.96
Power Drift (%)	-0.310000
Duty factor:	1:1
ConvF:	4.91

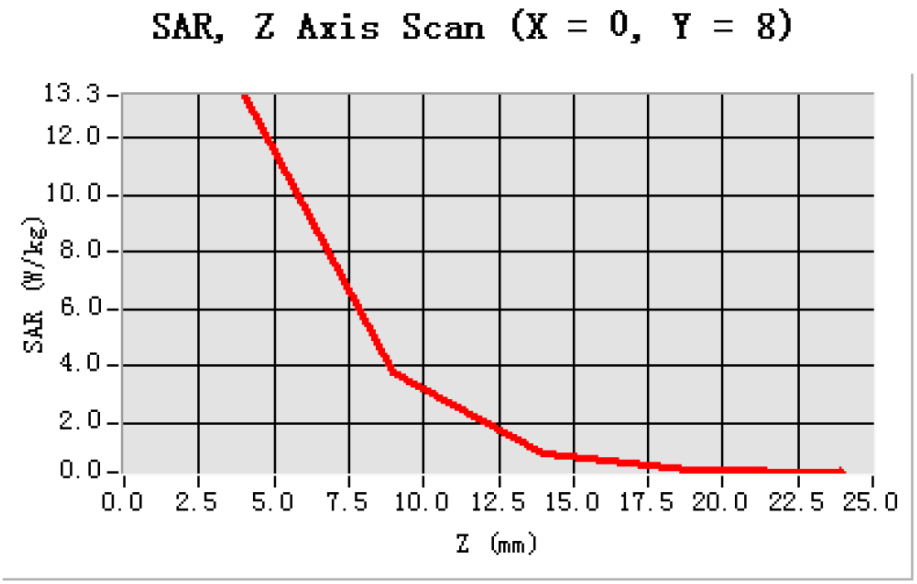
SURFACE SAR	VOLUME SAR
	

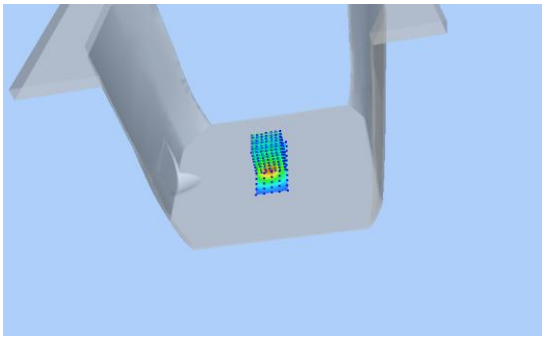
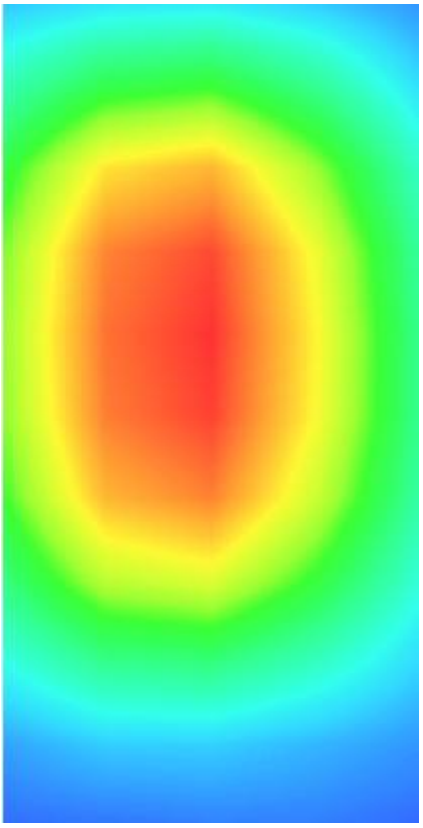
Maximum location: X=0.00, Y=8.00

SAR 10g (W/Kg)	6.032464
SAR 1g (W/Kg)	13.087432

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	13.3124	3.8627	0. 8023	0.2335



3D sceen shot	Hot spot position
	

GSM850, Right Cheek, Low

Type: Phone measurement (Very fast, 11 points in the volume)

Date of measurement: 27/11/2014

Measurement duration: 6 minutes 35 seconds

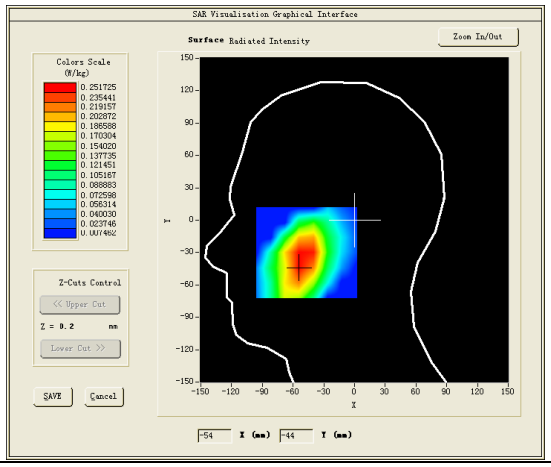
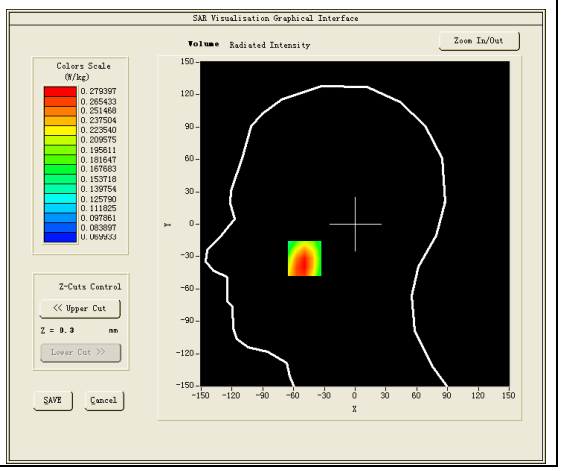
Mobile Phone IMEI number: --

A. Experimental conditions.

Area Scan	sam_direct_droit2_surf8mm.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm,Very fast
Phantom	Right head
Device Position	Cheek
Band	GSM850
Channels	128
Signal	GSM (Duty cycle: 1:8)

B. SAR Measurement Results

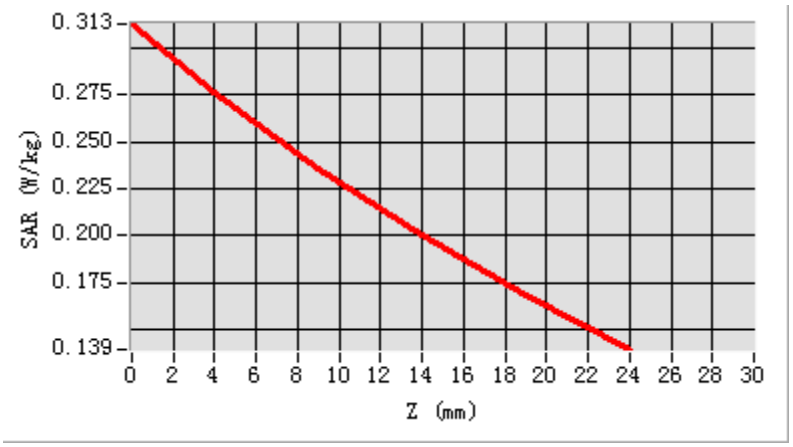
Frequency (MHz)	824.2
Relative permittivity (real part)	41.45
Relative permittivity (imaginary part)	15.07
Conductivity (S/m)	0.91
Variation (%)	-1.730000
ConvF:	5.51

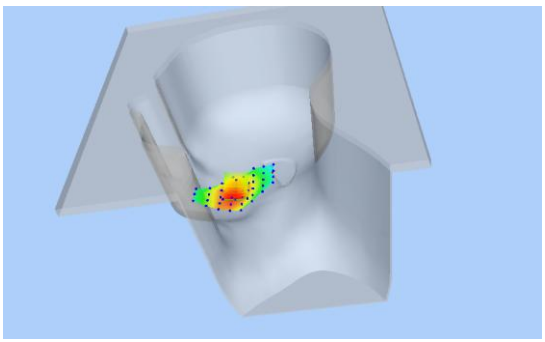
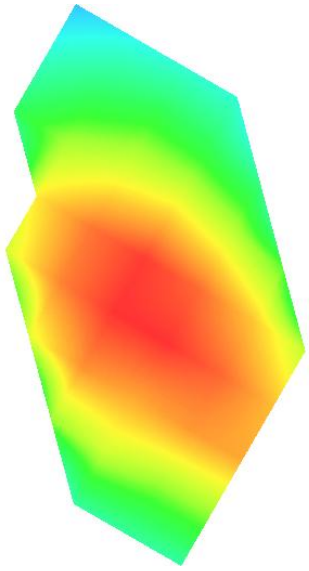
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-49.00, Y=-32.00

SAR 10g (W/Kg)	0.212156
SAR 1g (W/Kg)	0.271412

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.3128	0.2767	0.2361	0.2001	0.1681



3D screen shot	Hot spot position
	

GSM850, Back, Low

Type: Phone measurement (Very fast, 11 points in the volume)

Date of measurement: 28/11/2014

Measurement duration: 7 minutes 32 seconds

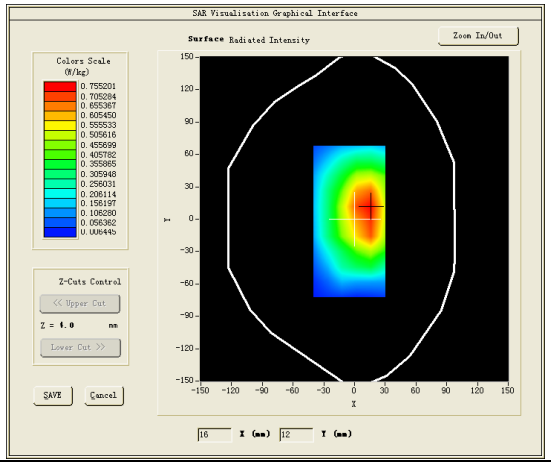
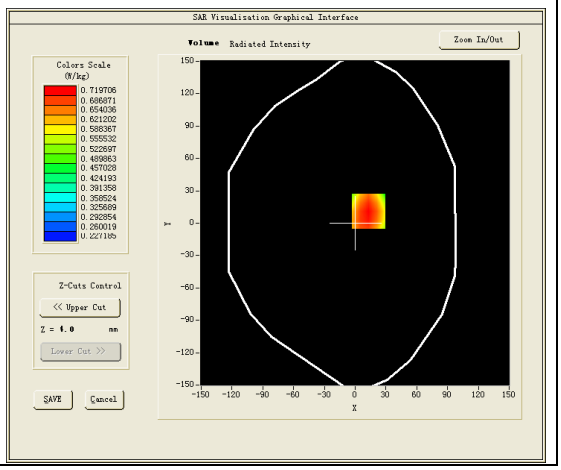
Mobile Phone IMEI number: --

A. Experimental conditions.

Area Scan	surf_sam_plan.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm,Very fast
Phantom	Validation plane
Device Position	Back
Band	GSM850
Channels	128
Signal	GSM(Duty cycle: 1:8)

B. SAR Measurement Results

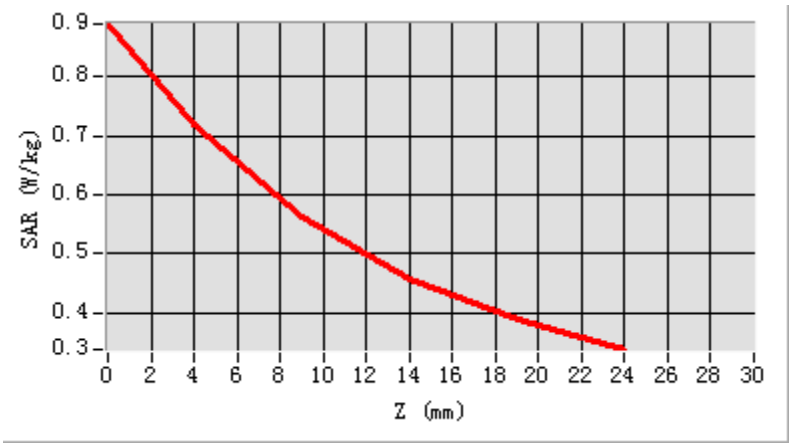
Frequency (MHz)	824.2
Relative permittivity (real part)	55.26
Relative permittivity (imaginary part)	21.71
Conductivity (S/m)	0.98
Variation (%)	2.000000
ConvF:	5.68

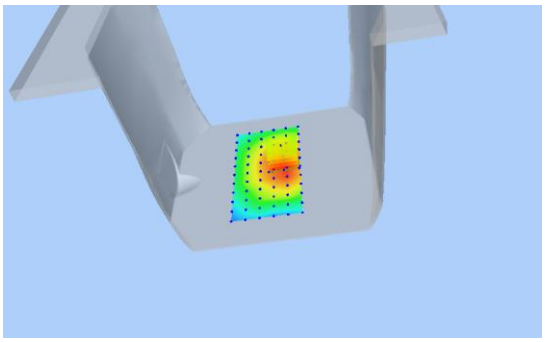
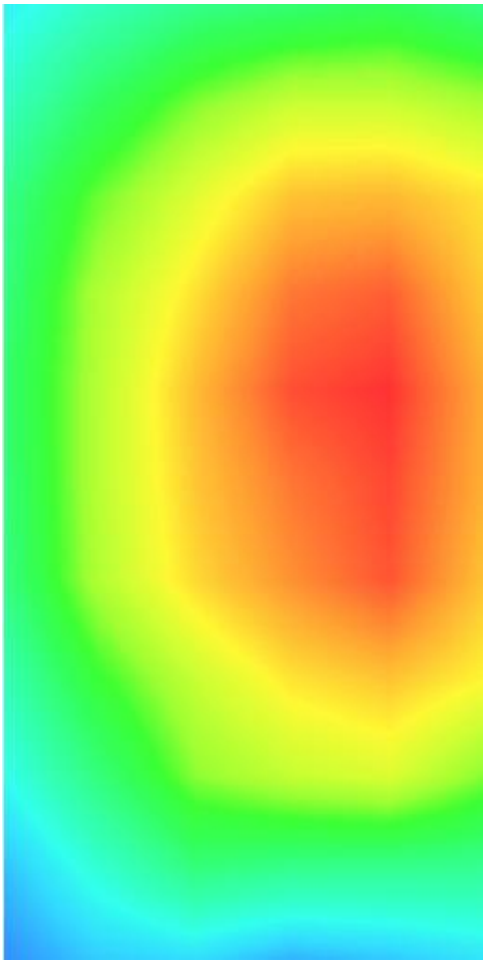
SURFACE SAR	VOLUME SAR
	

Maximum location: X=13.00, Y=11.00

SAR 10g (W/Kg)	0.542386
SAR 1g (W/Kg)	0.698662

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.8897	0.7197	0.5631	0.4577	0.3886



3D screen shot	Hot spot position
	

GPRS 850, Back, Low

Type: Phone measurement (Very fast, 11 points in the volume)

Date of measurement: 28/11/2014

Measurement duration: 7 minutes 33 seconds

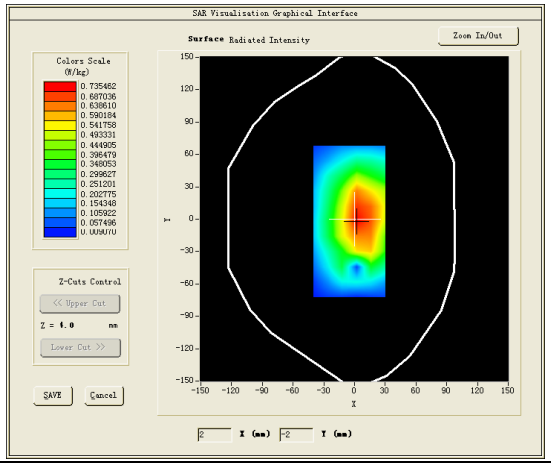
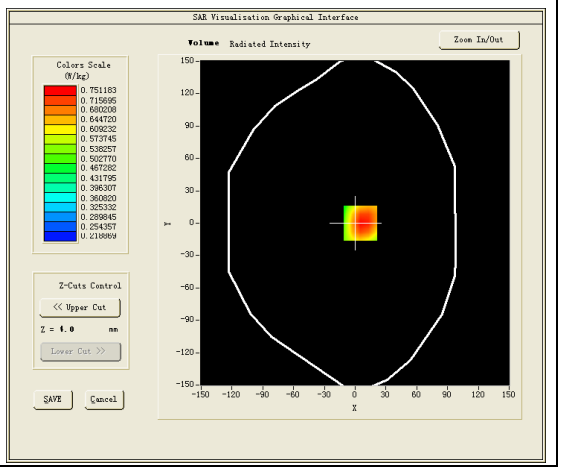
Mobile Phone IMEI number: --

A. Experimental conditions.

Area Scan	surf_sam_plan.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm,Very fast
Phantom	Validation plane
Device Position	Back
Band	CUSTOM (GPRS850)
Channels	128
Signal	GPRS slot 4 mode (Duty cycle: 1:2)

B.SAR Measurement Results

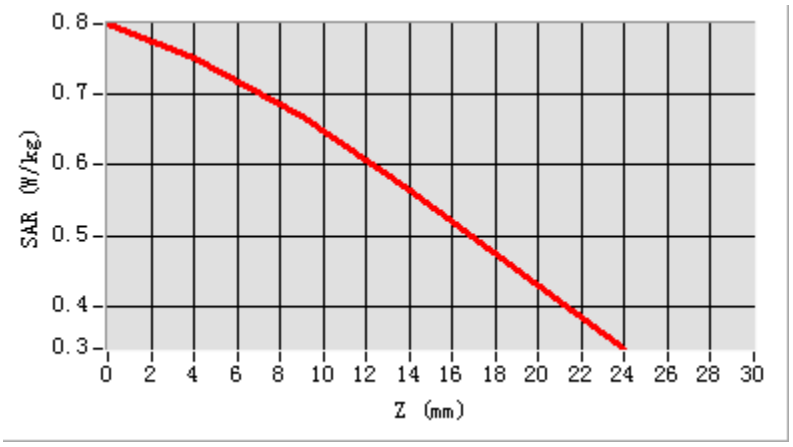
Frequency (MHz)	824.2
Relative permittivity (real part)	55.26
Relative permittivity (imaginary part)	21.71
Conductivity (S/m)	0.98
Variation (%)	1.410000
ConvF:	5.68

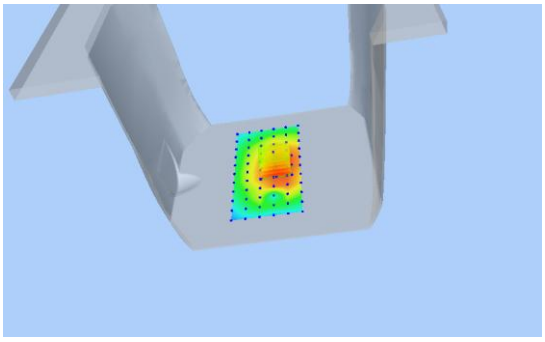
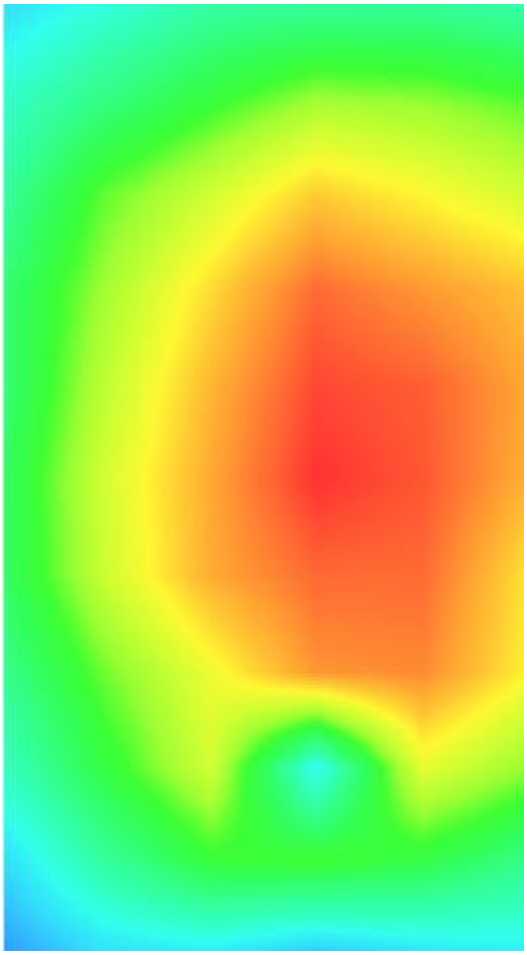
SURFACE SAR	VOLUME SAR
	

Maximum location: X=5.00, Y=0.00

SAR 10g (W/Kg)	0.577624
SAR 1g (W/Kg)	0.742791

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.7998	0.7512	0.6681	0.5645	0.4503



3D screen shot	Hot spot position
	

GSM1900, Right Cheek, Middle

Type: Phone measurement (Very fast, 11 points in the volume)

Date of measurement: 27/11/2014

Measurement duration: 5 minutes 37 seconds

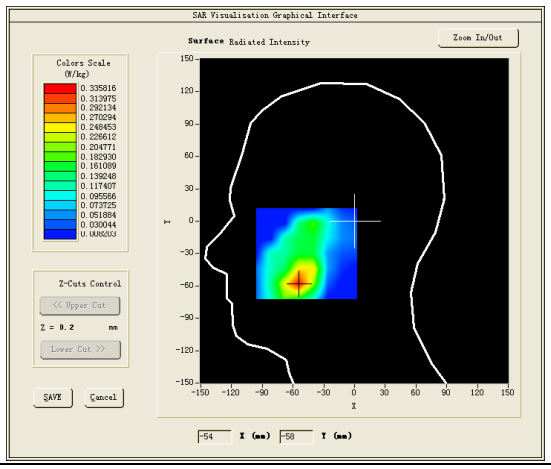
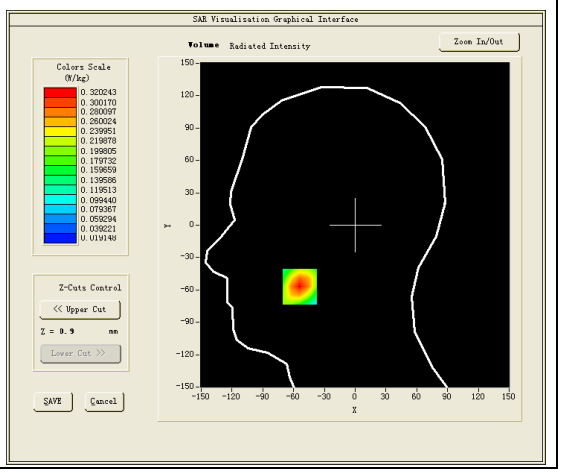
Mobile Phone IMEI number: --

A. Experimental conditions.

Area Scan	sam_direct_droit2_surf8mm.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm,Very fast
Phantom	Right head
Device Position	Cheek
Band	GSM1900
Channels	661
Signal	GSM (Duty cycle: 1:8)

B.SAR Measurement Results

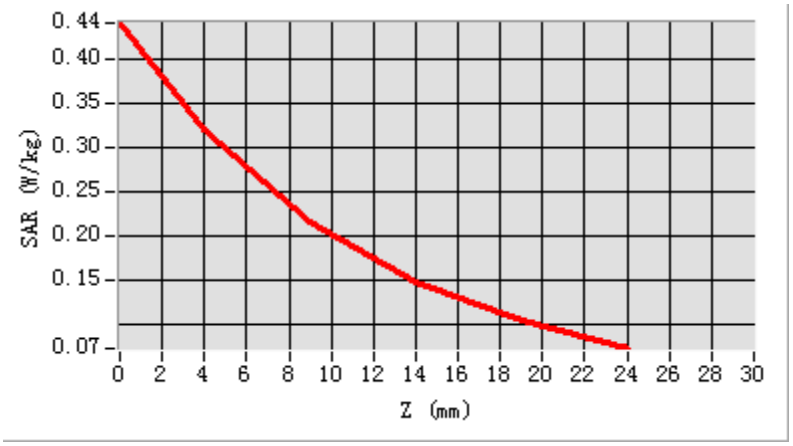
Frequency (MHz)	1880.0
Relative permittivity (real part)	39.98
Relative permittivity (imaginary part)	15.07
Conductivity (S/m)	1.41
Variation (%)	2.090000
ConvF:	5.49

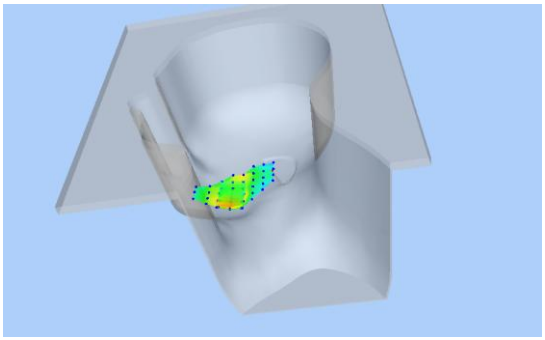
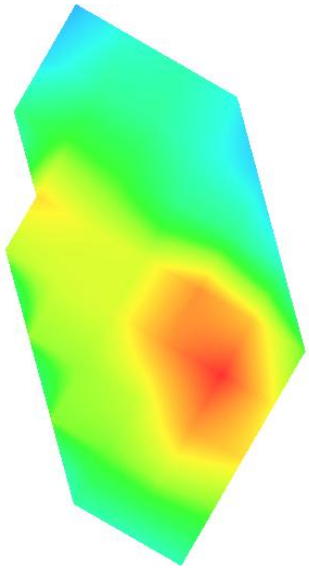
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-54.00, Y=-57.00

SAR 10g (W/Kg)	0.186088
SAR 1g (W/Kg)	0.301247

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.4402	0.3202	0.2150	0.1471	0.1040



3D screen shot	Hot spot position
	

GSM1900, Edge B, Middle

Type: Phone measurement (Very fast, 11 points in the volume)

Date of measurement: 28/11/2014

Measurement duration: 6 minutes 52 seconds

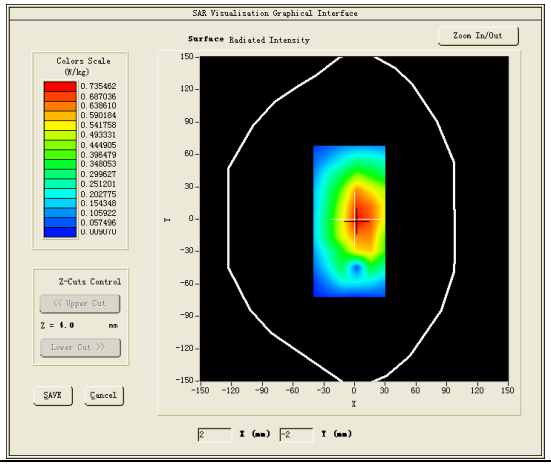
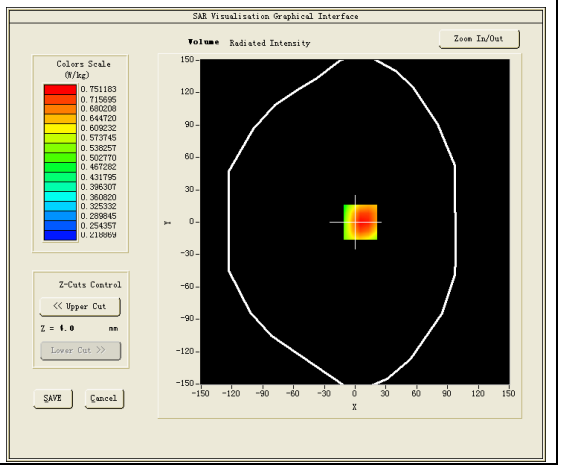
Mobile Phone IMEI number: --

A. Experimental conditions.

Area Scan	dx=8mm dy=8mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm,Very fast
Phantom	Validation plane
Device Position	Back
Band	GSM1900
Channels	661
Signal	GSM (Duty cycle: 1:8)

B. SAR Measurement Results

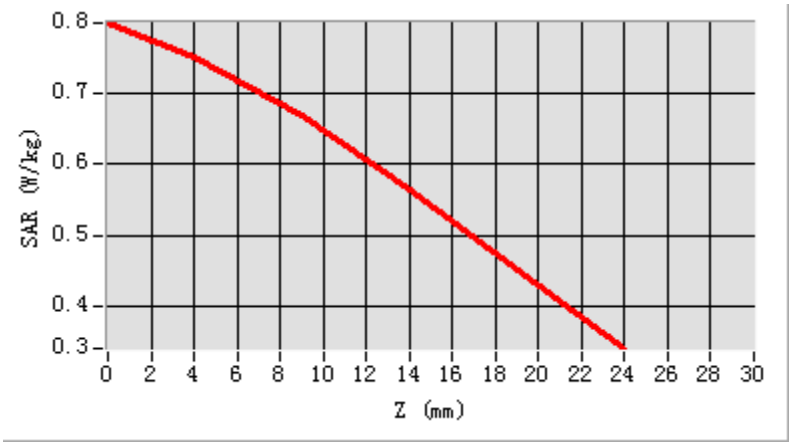
Frequency (MHz)	1880.0
Relative permittivity (real part)	53.28
Relative permittivity (imaginary part)	12.99
Conductivity (S/m)	1.53
Variation (%)	-3.010000
ConvF:	5.65

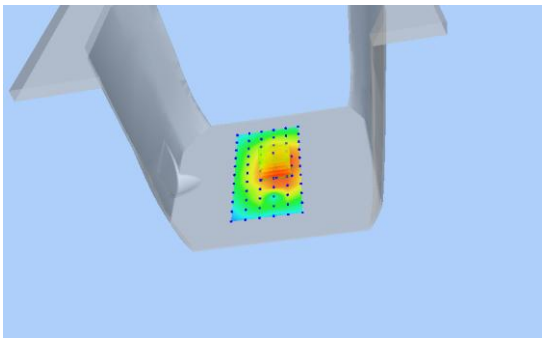
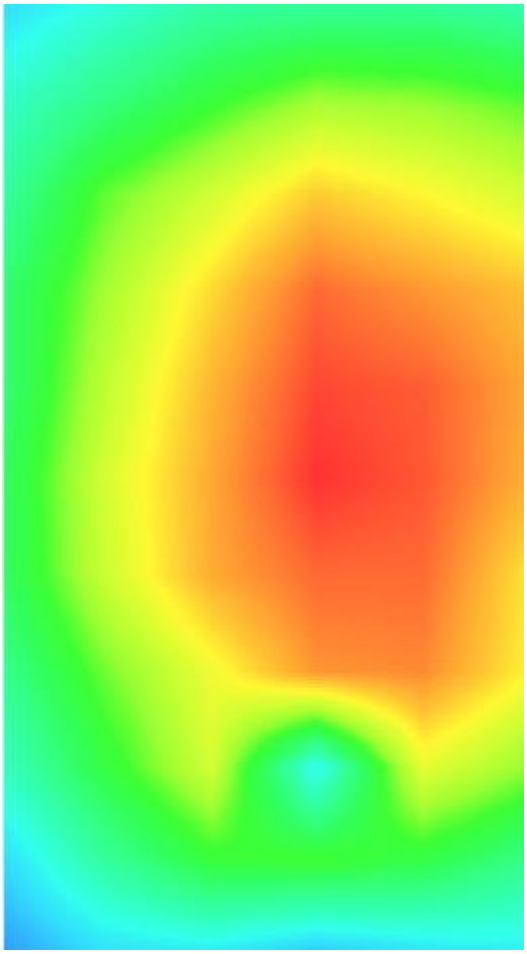
SURFACE SAR	VOLUME SAR
	

Maximum location: X=5.00, Y=0.00

SAR 10g (W/Kg)	0.576574
SAR 1g (W/Kg)	0.742057

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.7984	0.7501	0.6632	0.5634	0.4501



3D screen shot	Hot spot position
	

GPRS1900, Edge B, Middle

Type: Phone measurement (Very fast, 11 points in the volume)

Date of measurement: 28/11/2014

Measurement duration: 7 minutes 31 seconds

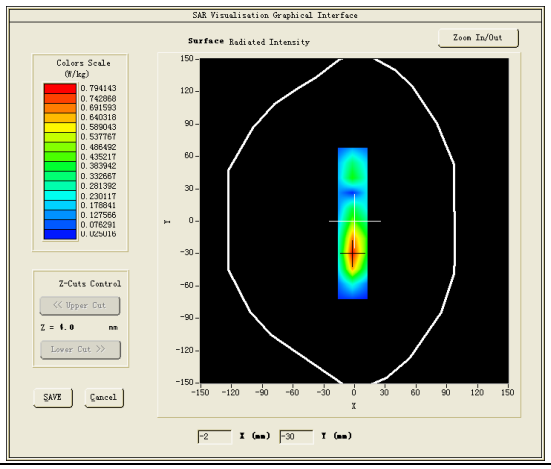
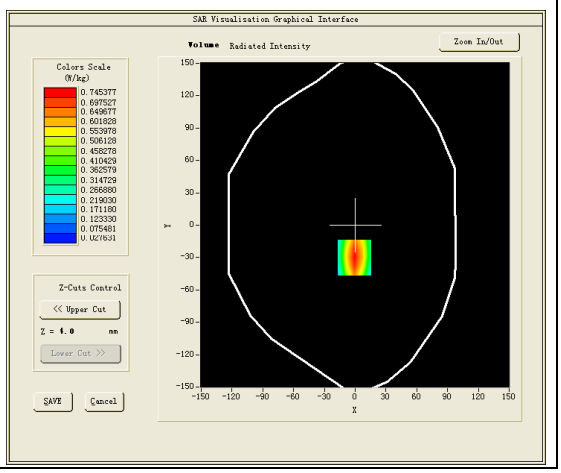
Mobile Phone IMEI number: --

A. Experimental conditions.

Area Scan	surf_sam_plan.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm,Very fast
Phantom	Validation plane
Device Position	Body
Band	CUSTOM (GPRS1900)
Channels	661
Signal	GPRS slot 4 mode (Duty cycle: 1:2)

B. SAR Measurement Results

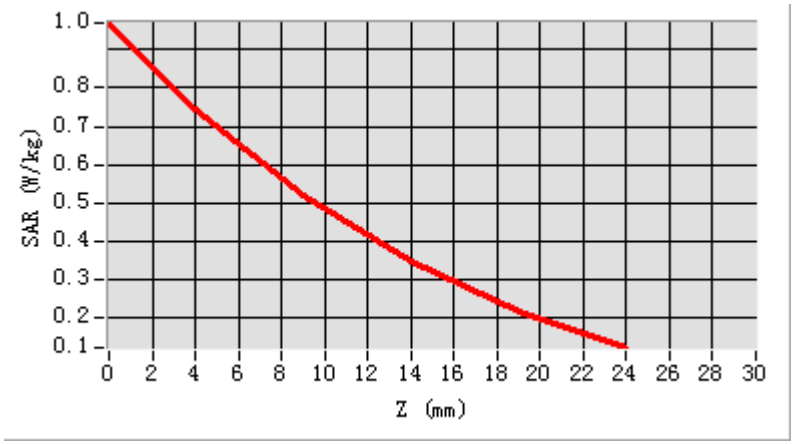
Frequency (MHz)	1880.0
Relative permittivity (real part)	53.28
Relative permittivity (imaginary part)	12.99
Conductivity (S/m)	1.53
Variation (%)	2.510000
ConvF:	5.65

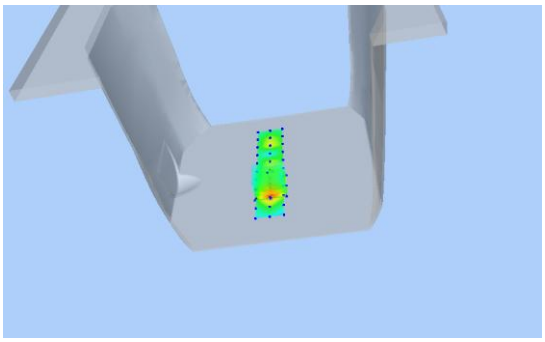
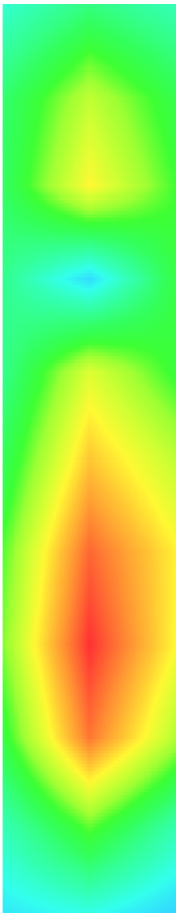
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-1.00, Y=-30.00

SAR 10g (W/Kg)	0.422336
SAR 1g (W/Kg)	0.709666

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.9694	0.7454	0.5209	0.3490	0.2199



3D screen shot	Hot spot position
	

WCDMA850, Left Cheek, Low

Type: Phone measurement (Very fast, 11 points in the volume)

Date of measurement: 27/11/2014

Measurement duration: 5 minutes 19 seconds

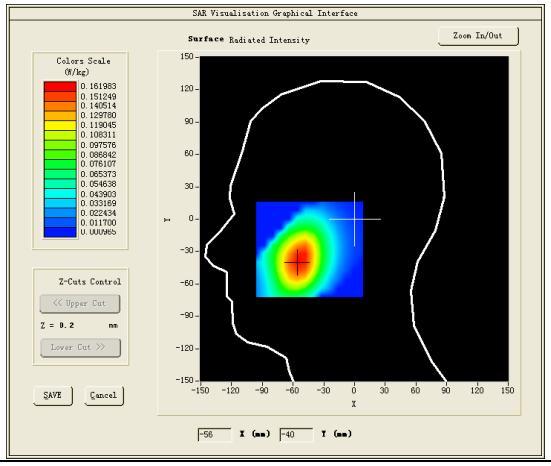
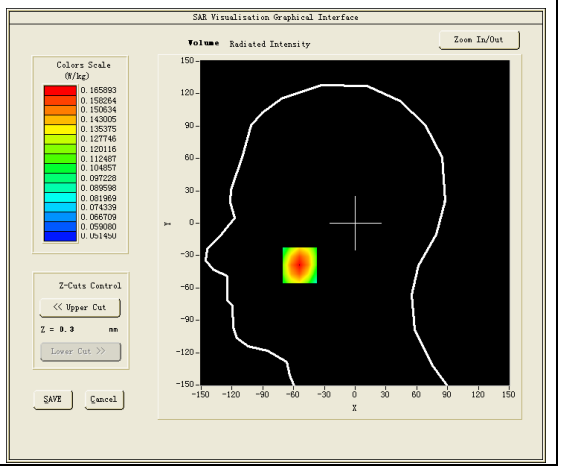
Mobile Phone IMEI number: --

A. Experimental conditions.

Area Scan	sam_direct_droit2_surf8mm.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm,Very fast
Phantom	Left head
Device Position	Cheek
Band	Band5_WCDMA850
Channels	4132
Signal	WCDMA (Duty cycle: 1:1)

B. SAR Measurement Results

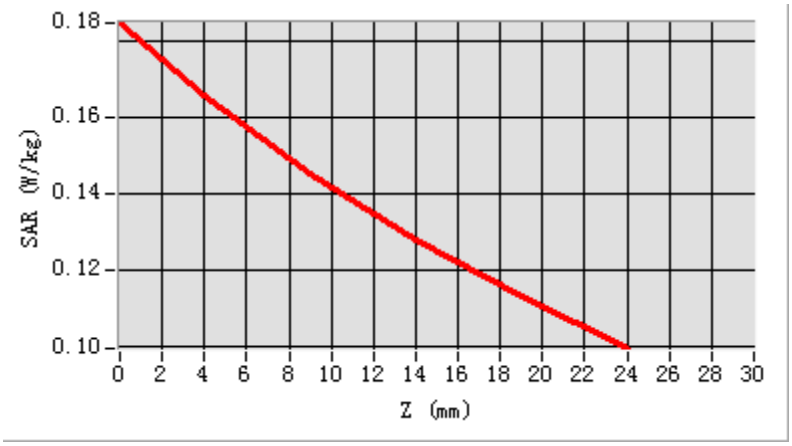
Frequency (MHz)	826.4
Relative permittivity (real part)	41.45
Relative permittivity (imaginary part)	15.07
Conductivity (S/m)	0.91
Variation (%)	-1.910000
ConvF:	5.51

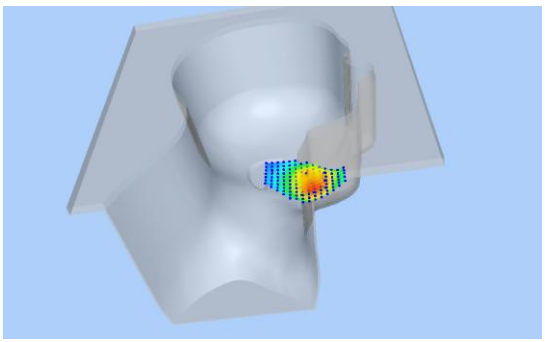
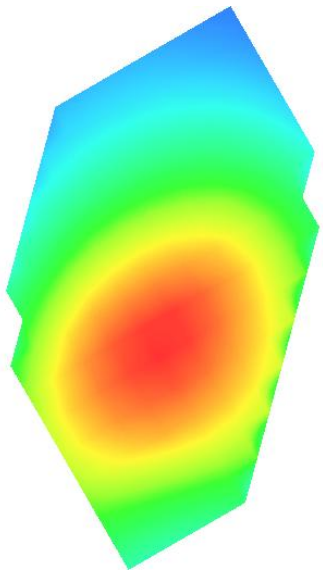
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-54.00, Y=-39.00

SAR 10g (W/Kg)	0.129691
SAR 1g (W/Kg)	0.160506

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.1846	0.1659	0.1454	0.1279	0.1128



3D screen shot	Hot spot position
	

WCDMA850, Edge B, Low

Type: Phone measurement (Very fast, 11 points in the volume)

Date of measurement: 28/11/2014

Measurement duration: 7 minutes 26 seconds

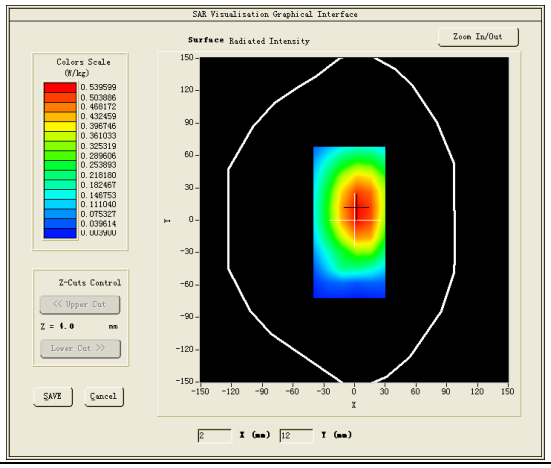
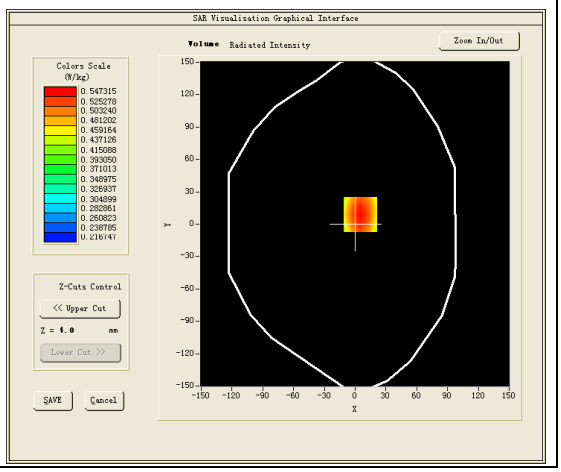
Mobile Phone IMEI number: --

A. Experimental conditions.

Area Scan	surf_sam_plan.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm,Very fast
Phantom	Validation plane
Device Position	Edge B
Band	Band5_WCDMA850
Channels	4132
Signal	WCDMA (Crest factor: 1:1)

B. SAR Measurement Results

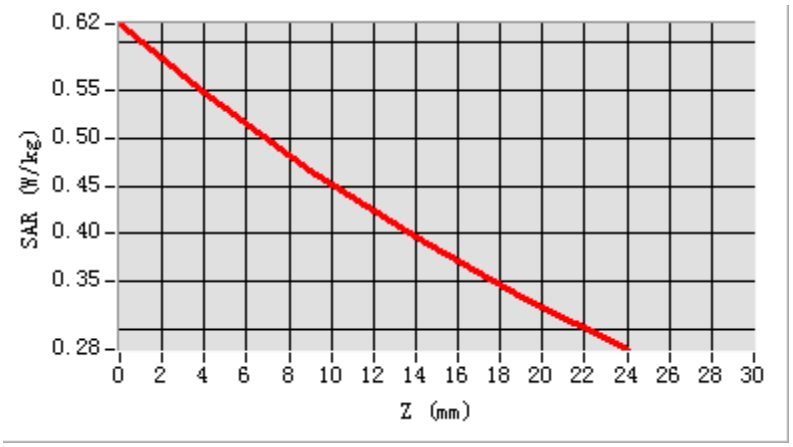
Frequency (MHz)	826.4
Relative permittivity (real part)	55.26
Relative permittivity (imaginary part)	21.71
Conductivity (S/m)	0.98
Variation (%)	-1.290000
ConvF:	5.68

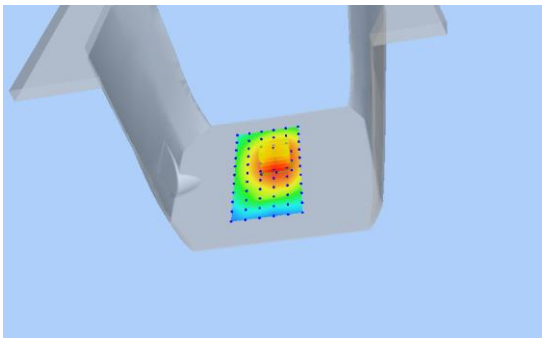
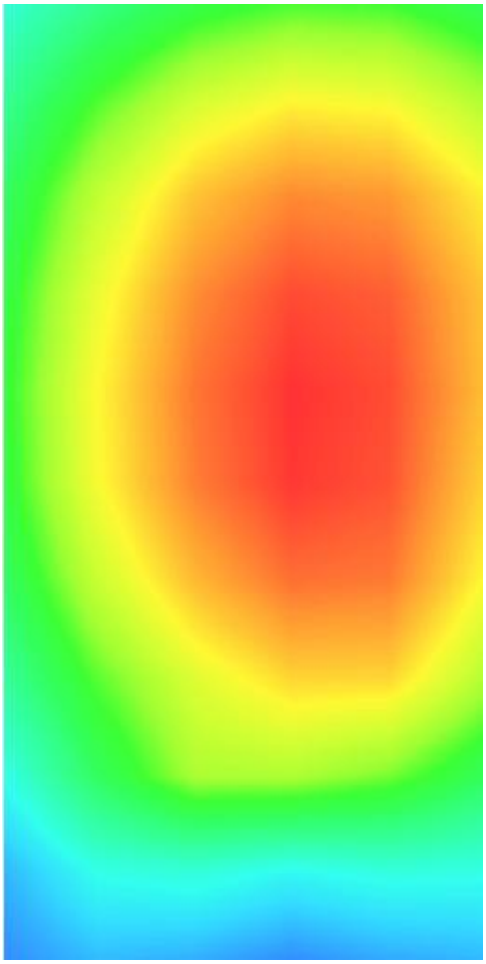
SURFACE SAR	VOLUME SAR
	

Maximum location: X=5.00, Y=9.00

SAR 10g (W/Kg)	0.450736
SAR 1g (W/Kg)	0.557510

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.6200	0.5473	0.4664	0.3956	0.3337



3D screen shot	Hot spot position
	

WCDMA1900, Right Cheek, Middle

Type: Phone measurement (Very fast, 11 points in the volume)

Date of measurement: 27/11/2014

Measurement duration: 6 minutes 6 seconds

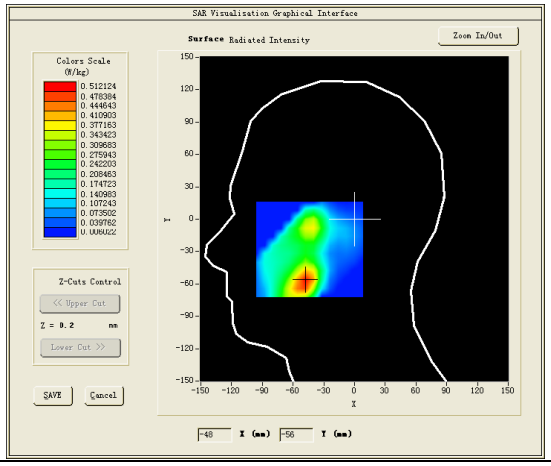
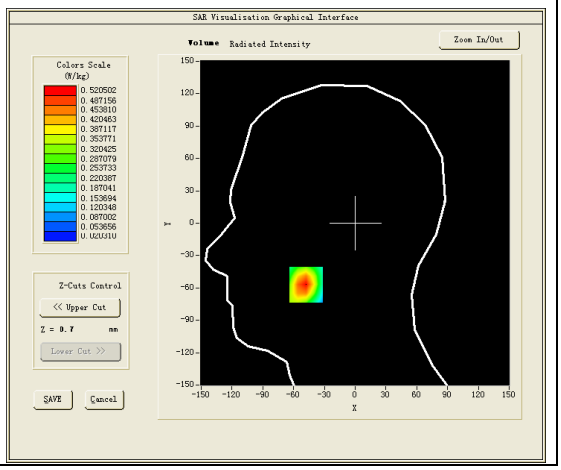
Mobile Phone IMEI number: --

A. Experimental conditions.

Area Scan	sam_direct_droit2_surf8mm.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm,Very fast
Phantom	Right head
Device Position	Cheek
Band	Band2_WCDMA1900
Channels	9400
Signal	WCDMA (Duty cycle: 1:1)

B. SAR Measurement Results

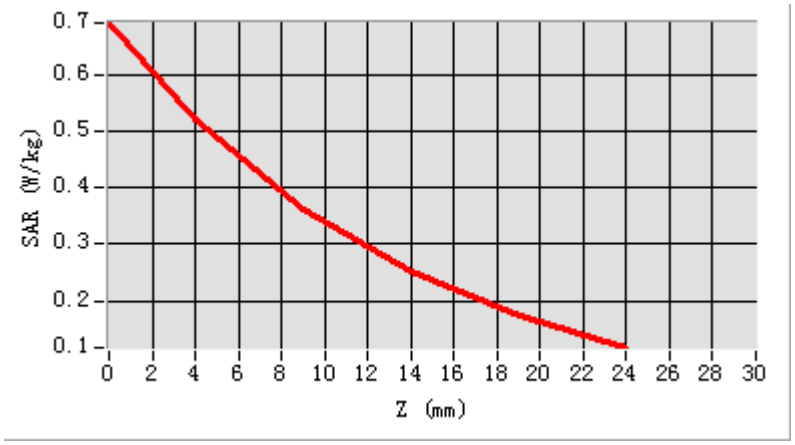
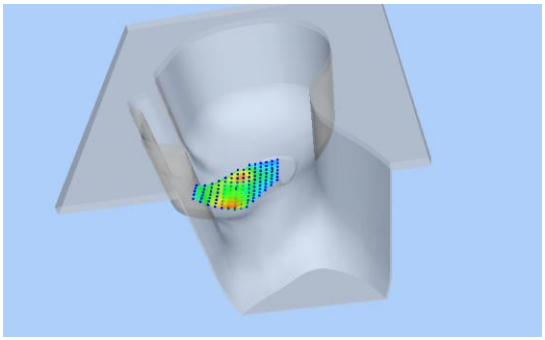
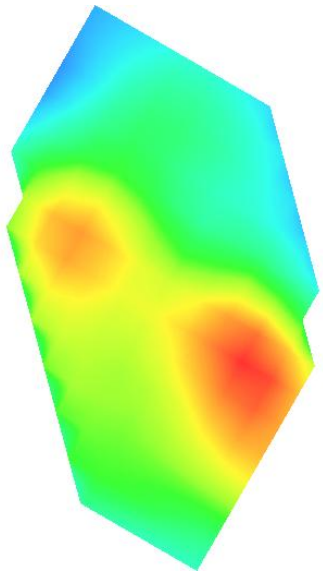
Frequency (MHz)	1880.0
Relative permittivity (real part)	39.98
Relative permittivity (imaginary	15.07
Conductivity (S/m)	1.41
Variation (%)	-0.240000
ConvF:	5.49

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-48.00, Y=-57.00

SAR 10g (W/Kg)	0.297404
SAR 1g (W/Kg)	0.488263

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.6923	0.5205	0.3612	0.2504	0.1736



3D screen shot	Hot spot position