FCC SAR TEST REPORT

Report No.:	SET2015-03028
Product:	Mobile WiFi
Brand Name:	Huawei
Model No.:	E5573s-508
FCC ID:	QISE5573S-508
Applicant:	Huawei Technologies Co., Ltd.
Address:	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C
Issued by:	CCIC-SET
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Test Report

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Model No. ……..:	E5573s-508
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Applicant……..:	Huawei Technologies Co., Ltd.
Applicant Address…….:	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C
Manufacturer……:	Huawei Technologies Co., Ltd.
Manufacturer Address:	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C
Test Standards…….:	**47CFR § 2.1093-** Radiofrequency Radiation Exposure Evaluation: Portable Devices; **ANSI C95.1–1992:** Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz – 300 GHz.(IEEE Std C95.1-1991) **IEEE 1528–2003:** IEEE 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 ……..: 2015-03-23

Chun Mei, Test Engineer

Reviewed by……: 2015-03-23

Shuangwen Zhang,Senior Egineer

Approved by……: 2015-03-23

Wu Li'an , Manager

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1. General Conditions

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2. Administrative Date

2.1. Identification of the Responsible Testing Laboratory

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Department:	EMC & RF Department
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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.:	SET2015-03028
CCIC-SET Project Leader:	Mr. Li Sixiong
CCIC-SET Responsible for accreditation scope:	Mr. Wu Li'an
Start of Testing:	2015-03-09
End of Testing:	2015-03-22

2.4. Identification of Applicant

Company Name:	Huawei Technologies Co., Ltd.
Address:	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C

2.5. Identification of Manufacture

Company Name:	Huawei Technologies Co., Ltd.
Address:	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C

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

3. Equipment Under Test (EUT)

3.1. Identification of the Equipment under Test

device type :	portable device	
DUT Name:	Mobile WiFi	
Type Identification:	E5573s-508	
S/N :	3KL0115113000100	
IMEI No :	004401722470354	
exposure category:	uncontrolled environment / general population	
test device production information	production unit	
operating mode(s)	GSM850/1900,UMTS Band II/IV/V,LTE Band 2,4,5,7, WiFi(Tested)	
Test modulation	GSM(GMSK/8PSK),UMTS(QPSK),LTE(QPSK,16QAM) , WIFI(DSSS,OFDM)	
Device Class :	B	
operating frequency range(s)	transmitter frequency range	receiver frequency range
GSM850 (tested):	824-849 MHz	869-894 MHz
GSM1900 (tested):	1850-1910 MHz	1930-1990 MHz
UMTS Band II (tested):	1850-1910 MHz	1930-1990 MHz
UMTS Band IV (tested):	1710-1755 MHz	2110-2155 MHz
UMTS Band V (tested):	824-849 MHz	896-894 MHz
LTE Band2(tested):	1850-1910 MHz	1930-1990 MHz
LTE Band4(tested):	1710-1755 MHz	2110-2155 MHz
LTE Band5(tested):	824-849 MHz	896-894 MHz
LTE Band7(tested):	2500-2570 MHz	2620-2690 MHz
WiFi(tested):	2400-2483.5 MHz	2400-2483.5 MHz
GPRS Multislot Class:	12	

EGPRS Multislot Class:	12	
Power class :	tested with power level 5(GSM850)	
	tested with power level 0(GSM1900)	
	tested with power control “all 1”(UMTS Band II)	
	tested with power control “all 1”(UMTS Band IV)	
	tested with power control “all 1”(UMTS Band V)	
	tested with power control “all Max”(LTE Band 2)	
	tested with power control “ all Max ”(LTE Band 4)	
	tested with power control “ all Max ”(LTE Band 5)	
	tested with power control “ all Max ”(LTE Band 7)	
test channels (low-mid-high) :	128-190-251 (GSM850)	
	512-661-810(GSM1900)	
	9262-9400-9538(UMTS Band II)	
	1312-1413-1513(UMTS Band IV)	
	4132-4183-4233(UMTS Band V)	
	18700-18900-19100(LTE Band 2 BandWidth 20M)	
	20050-20175-20300 (LTE Band 4 BandWidth 20M)	
	20450-20525-20600(LTE Band 5 BandWidth 10M)	
	20850-21100-21350(LTE Band 7 BandWidth 20M)	
	1-3-5-7-9 (WiFi 2450)	
hardware version :	CL1E5573SM	
software version :	21.200.01.01.00	
antenna type :	Integrated antenna	
battery options :	SUNWODA(Main test) LISHEN(1#) SCUD(2#)	Li-polymer Battery Battery Model: HB434666RBC Rated capacity: 1500mAh Nominal Voltage: ⎓ +3.8V Charging Voltage: ⎓ +4.35V

4 SAR Summary

The Highest Measured Standalone SAR Summary

Exposure Position	Frequency Band	Scaled 1g-SAR(W/kg)	Max. Reported 1g-SAR(W/kg)
Body (10mm Gap)	GSM850	0.770	1.309
	GSM1900	0.487	
	WCDMA Band Ⅱ	0.718	
	WCDMA Band Ⅳ	0.916	
	WCDMA Band Ⅴ	1.309	
	LTE FDD2	0.717	
	LTE FDD4	1.005	
	LTE FDD5	1.207	
	LTE FDD7	0.726	
	WIFI	0.181	

5 Specific Absorption Rate (SAR)

5.1 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.

5.2 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.

5.3 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).

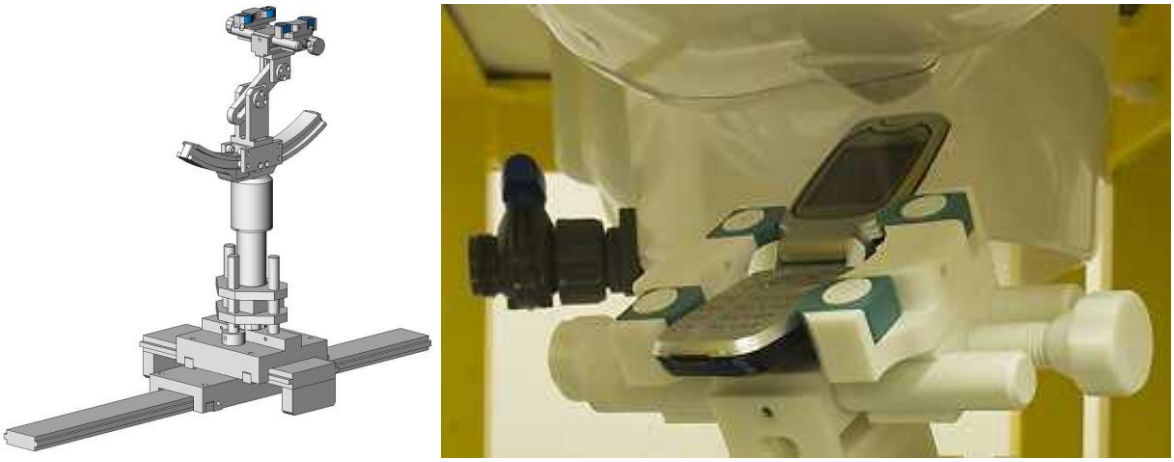
System checking was performed using the flat section, whilst Head SAR tests used the left and right head profile sections. Body SAR testing also used the flat section between the head profiles.

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

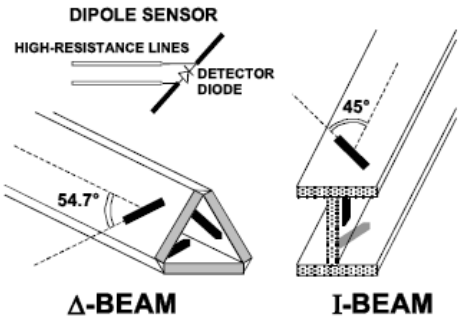
5.5 Probe Specification

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

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:



6 OPERATIONAL CONDITIONS DURING TEST

6.1 General Description

E5573s-508 is a LTE/UMTS/GSM triple mode and 2*2 WiFi Wireless mobile WiFi; it can be used as a WiFi hotspot based on standard of IEEE802.11 b/g/n. It supports 2G GSM,3G WCDMA and 4G LTE wireless internet accessing function. For WCDMA wireless mode,it supports WCDMA and HSDPA/HSUPA/HSPA+/DC-HSPA+, operating in Band II/ Band IV/ UMTS Band V, and LTE, operating in Band 2/4/5/7; and GSM mode supports EDGE/GPRS 1900MHz/850MHz. The WiFi supports 2.4G 802.11b/g/n. WiFi 802.11n supports 2Tx2Rx MIMO.

GSM Test Configuration

The tests in the band of GSM850 and GSM1900 are performed in the mode of GPRS/EGPRS function. Using Agilent 8960 the power lever is set to “5”and “0” in SAR of GPRS850 and GPRS1900. Since the GPRS class is 12 for this EUT, it has at most 4 timeslots in uplink and at most 4 timeslots in downlink, the maximum total timeslot is 5. The EGPRS class is 12 for this EUT, it has at most 4 timeslots in uplink, and at most 4 timeslots in downlink, the maximum total timeslot is 5.

When SAR tests for EGPRS mode is necessary, GMSK modulation should be used to minimize SAR measurement error due to higher peak-to-average power (PAR) ratios inherent in 8-PSK.

According to specification 3GPP TS 51.010, the maximum power of the GSM can do the power reduction for the multi-slot.

The allowed power reduction in the multi-slot configuration is as following:

Number of timeslots in uplink assignment		Reduction of maximum output power (dB)		
Band	Time Slots	GPRS (GMSK）	EGPRS (GMSK)	EGPRS (8PSK)
GSM850	1 TX slot	0	0	0
	2 TX slots	2	2	2
	3 TX slots	4	4	4
	4 TX slots	6	6	6
GSM1900	1 TX slot	0	0	0
	2 TX slots	2	2	2
	3 TX slots	4	4	4
	4 TX slots	6	6	6

UMTS Test Configuration

1) Output Power Verification

Maximum output power is verified on the High, Middle and Low channels according to the procedures description in section 5.2 of 3GPP TS 34.121,using the appropriate RMC or AMR with TPC(transmit power control) set to all “1s” for WCDMA/HSDPA or applying the required inner loop power control procedure to maintain maximum output power while HSUPA is active. Result for all applicable physical channel configurations (DPCCH, DPDCHn and spreading codes, HSDPA, HSPA)Should be tabulated in the SAR report .All configuration that are not supported by the DUT or cannot be measured due to technical or equipment limitation should

be clearly identified.

2) WCDMA

Body SAR Measurements

SAR for body exposure configurations is measured using the 12.2 kbps RMC with the TPC bits configured to all “1s”. SAR for other spreading codes and multiple DPDCHn, when supported by the EUT, are not required when the maximum average outputs of each RF channel, for each spreading code and DPDCHn configuration, are less than ¼ dB higher than those measured in 12.2 kbps RMC. SAR for body exposure configurations is measured using the 12.2 kbps RMC with the TPC bits configured to all “1s”. SAR for other spreading codes and multiple DPDCHn, when supported by the EUT, are not required when the maximum average outputs of each RF channel, for each spreading code and DPDCHn configuration, are less than ¼ dB higher than those measured in 12.2 kbps RMC.

3) HSDPA

SAR for body exposure configurations is measured according to the “Body SAR Measurements”” procedures of 3G device. In addition, body SAR is also measured for HSDPA when the maximum average outputs of each RF channel with HSDPA active is at ¼ dB higher than that measured without HSDPA using 12.2kbps RMC or the maximum SAR 12.2kbps RMC is above 75% of the SAR limit. Body SAR for HSDPA is measured using an FRC with H-Set 1 in Sub-test 1 and a 12.2kbps RMC configured in Test Loop Mode 1, using the highest body SAR configuration in 12.2 kbps RMC without HSDPA.

HSDPA should be configured according to UE category of a test device. The number of HS-DSCH/HS- PDSCHs, HAPRQ processes, minimum inter-TTI interval, transport block sizes and RV coding sequence are defined by the H-set. To maintain a consistent test configuration and stable transmission condition, QPSK is used in the H-set for SAR testing. HS-DPCCH should be configured with a CQI feedback cycle of 4ms with a CQI repetition factor of 2 to maintain a constant rate of active CQI slots. The β_c and β_d gain factors for DPCCH and DPDCH were set according to the values in the below table, β_{hs} for HS-DPCCH is set automatically to the correct value when ΔACK,ΔNACK,ΔCQI=8.The variation of the β_c /β_d ratio causes a power reduction at sub-tests 2- 4.

Sub-test	□ β_c	□ β_d	□ β_d (SF)	□ β_c /β_d	□ β_{hs} (1)	CM(dB)(2)	MPR (dB)
1	2/15	15/15	64	2/15	4/15	0.0	0
2	12/15(3)	15/15(3)	64	12/15(3)	24/15	1.0	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: ΔACK, ΔNACK and ΔCQI = 8□. $A_{hs} = \beta_{hs}/\beta_c = 30/15$□. $\beta_{hs} = 30/15 * \beta_c$

Note 2 : CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{hs}/\beta_c = 24/15$

Note 3 : 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

The measurements were performed with a Fixed Reference Channel (FRC) and H-Set 1 QPSK.

Parameter	Value
Nominal average inf. bit rate	534 kbit/s
Inter-TTI Distance	3 TTI's
Number of HARQ Processes	2 Processes
Information Bit Payload	3202 Bits
MAC-d PDU size	336 Bits
Number Code Blocks	1 Block
Binary Channel Bits Per TTI	4800 Bits
Total Available SMLs in UE	19200 SMLs
Number of SMLs per HARQ Process	9600 SMLs
Coding Rate	0.67
Number of Physical Channel Codes	5

settings of required H-Set 1 QPSK acc. to 3GPP 34.121

HS-DSCH Category	Maximum HS-DSCH Codes Received	Minimum Inter-TTI Interval	Maximum HS-DSCH Transport Block Bits/HS-DSCH TTI	Total Soft Channel Bits
1	5	3	7298	19200
2	5	3	7298	28800
3	5	2	7298	28800
4	5	2	7298	38400
5	5	1	7298	57600
6	5	1	7298	67200
7	10	1	14411	115200
8	10	1	14411	134400
9	15	1	25251	172800
10	15	1	27952	172800
11	5	2	3630	14400
12	5	1	3630	28800
13	15	1	34800	259200
14	15	1	42196	259200
15	15	1	23370	345600
16	15	1	27952	345600

HSDPA UE category

3) HSUPA

Body SAR is also measured for HSDPA when the maximum average outputs of each RF channel with HSDPA active is at ¼ dB higher than that measured without HSDPA using 12.2kbps RMC or the maximum SAR 12.2kbps RMC is above 75% of the SAR limit. Body SAR for HSPA is measured with E-DCH Sub-test 5, using H-set 1 and QPSK for FRC and 12.2kbps RMC configured in Test Loop Mode 1 with power control algorithm 2, according to the highest body SAR configuration in 12.2 kbps RMC without HSPA.

Due to inner loop power control requirements in HSDPA, a commercial communication test set should be used for the output power and SAR tests. The 12.2 kbps RMC, FRC H-set 1 and E-DCH

configurations for HSDPA should be configured according to the □. values indicated below as well as other applicable procedures described in the 'WCDMA Handset' and 'Release 5 HSDPA Data Device' sections of 3G device.

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{hs}(1)	β_{ec}	β_{ed}	β_{ec} (SF)	β_{ed}(code)	CM(2) (dB)	MPR (dB)	AG(4) Index	E-TFCI
1	11/15(3)	15/15(3)	64	11/15(3)	22/15	209/225	1039/225	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	β_{ed1}:47/15 β_{ed2}:47/15	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(4)	15/15(4)	64	15/15(4)	30/15	24/15	134/15	4	1	1.0	0.0	21	81

Note 1: □ ΔACK, ΔNACK and ΔCQI = 8□. $A_{hs} = \beta_{hs}/\beta_c = 30/15$□. $\beta_{hs} = 30/15 * \beta_c$

Note 2: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{hs}/\beta_c = 24/15$. 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 : Testing UE using E-DPDCH Physical Layer category 1 Sub-test 3 is not required according to TS 25.306 Table 5.1g

Note 6: β_{ed} can not be set directly; it is set by Absolute Grant Value.

Subtests for HSUPA.

UE E-DCH Category	Maximum E-DCH Codes Transmitted	Number of HARQ Processes	E-DCH TTI(ms)	Minimum Speading Factor	Maximum E-DCH Transport Block Bits	Max Rate (Mbps)
1	1	4	10	4	7110	0.7296
2	2	8	2	4	2798	1.4592
	2	4	10	4	14484	
3	2	4	10	4	14484	1.4592
4	2	8	2	2	5772	2.9185
	2	4	10	2	20000	2.00

5	2	4	10	2	20000	2.00
6	4	8	10	2SF2&2SF4	11484	5.76
(No DPDCH)	4	4	2		20000	2.00
7	4	8	2	2SF2&2SF4	22996	
(No DPDCH)	4	4	10		20000	

NOTE: When 4 codes are transmitted in parallel, two codes shall be transmitted with SF2 and two with SF4. UE categories 1 to 6 support QPSK only. UE category 7 supports QPSK and 16QAM.(TS25.306-7.3.0)

HSUPA UE category

4) DC-HSDPA

SAR for body exposure configurations is measured according to the ‘’Body SAR Measurements’’ procedures of 3G device. SAR is required for Rel. 8 DC-HSDPA when SAR is required for Rel. 5 HSDPA; otherwise, the 3G SAR test reduction procedure is applied to DC-HSDPA with 12.2 kbps RMC as the primary mode.Power is measured for DC-HSDPA according to the H-Set 12, FRC configuration in Table C.8.1.12 of 3GPP TS34.121-1 to determine SAR test reduction. A primary and a secondary serving HS-DSCH Cell are required to perform the power measurement and for the results to be acceptable.

HS-DSCH category	Maximum number of HS-DSCH codes received	Minimum inter-TTI interval	Maximum number of bits of an HS-DSCH transport block received within an HS-DSCH TTI NOTE 1	Total number of soft channel bits	Supported modulations without MIMO operation or dual cell operation	Supported modulations with MIMO operation and without dual cell operation	Supported modulations with dual cell operation
Category 1	5	3	7298	19200	QPSK, 16QAM	Not applicable (MIMO not supported)	Not applicable (dual cell operation not supported)
Category 2	5	3	7298	28800			
Category 3	5	2	7298	28800			
Category 4	5	2	7298	38400			
Category 5	5	1	7298	57600			
Category 6	5	1	7298	67200			
Category 7	10	1	14411	115200			
Category 8	10	1	14411	134400			
Category 9	15	1	20251	172800			
Category 10	15	1	27952	172800			
Category 11	5	2	3630	14400	QPSK		
Category 12	5	1	3630	28800			
Category 13	15	1	35230	259200	QPSK, 16QAM, 64QAM		
Category 14	15	1	42192	259200			
Category 15	15	1	23370	345600	QPSK, 16QAM		
Category 16	15	1	27952	345600			
Category 17 NOTE 2	15	1	35230	259200	QPSK, 16QAM, 64QAM	–	
			23370	345600	–	QPSK, 16QAM	
Category 18 NOTE 3	15	1	42192	259200	QPSK, 16QAM, 64QAM	–	
			27952	345600	–	QPSK, 16QAM	
Category 19	15	1	35230	518400	QPSK, 16QAM, 64QAM		
Category 20	15	1	42192	518400			
Category 21	15	1	23370	345600	-	-	QPSK, 16QAM
Category 22	15	1	27952	345600			
Category 23	15	1	35230	518400			QPSK, 16QAM, 64QAM
Category 24	15	1	42192	518400			

Subtests for HS-DSCH

LTE Test Configurations

The CMW500 WideBand Radio Communication Tester was used for LTE output power measurements and SAR testing. Closed loop power control was used so the UE transmits with maximum output power during SAR testing. SAR test were performed with the same number of RB and RB offsets transmitting on all frames.

1)Spectrum Plots for RB configurations

A properly configured base station simulator was used for LTE output power measurements and SAR testing. Therefore, spectrum plots for RB configurations were not required to be included in this report.

2)MPR

When MPR is implemented permanently within the UE, regardless of network requirements, only those RB configurations allowed by 3GPP for the channel banwidth and modulation conbinations may be tested with MPR active. Configurations with RB allocations less than the RB thresholds required by 3GPP must be tested without MPR.

The allowed Maximum Power Reduction(MPR) for the maximum output power due to higher order modulation and transmit bandwidth configuration (resource blocks) is specified in Table 6.2.3-1 of the 3GPP TS36.101:

Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3

Modulation	Channel bandwidth / Transmission bandwidth configuration [RB]						MPR (dB)
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2

3)A-MPR LTE procedures for SAR testing

A-MPR(Additional MPR) has been disabled for all SAR tests by using Network Signalling Value of “NS_01” on the base station simulator.

4)LTE procedures for SAR testing

A) Largest channel bandwidth standalone SAR test

requirements i) QPSK with 1 RB allocation

Start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel. When the reported SAR is ≤ 0.8W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel. When the reported SAR of a required test channel is > 1.45 W/kg, SAR is required for all three RB offset configurations for that required test channel.

ii) QPSK with 50% RB allocation

The procedures required for 1 RB allocation in i) are applied to measure the SAR for QPSK with 50% RB allocation.

iii) QPSK with 100% RB allocation

For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation in i) and ii) are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.

iv) Higher order modulations

For each modulation besides QPSK; e.g., 16-QAM, 64-QAM, apply the QPSK procedures in above sections to determine the QAM configurations that may need SAR measurement. For each configuration identified as required for testing, SAR is required only when the highest maximum output power for the configuration in the higher order modulation is > ½ dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is > 1.45 W/kg.

B) Other channel bandwidth standalone SAR test requirements

For the other channel bandwidths used by the device in a frequency band, apply all the procedures required for the largest channel bandwidth in section A) to determine the channels and RB configurations that need SAR testing and only measure SAR when the highest maximum output power of a configuration requiring testing in the smaller channel bandwidth is > ½ dB higher than the equivalent channel configurations in the largest channel bandwidth configuration or the reported SAR of a configuration for the largest channel bandwidth is > 1.45 W/kg.

WiFi 2.4G Test Configuration

For the 802.11b/g SAR tests, a communication link is set up with the test mode software for WiFi mode test. The Absolute Radio Frequency Channel Number(ARFCN) is allocated to 1 ,6 and 11 respectively in the case of 2450 MHz. During the test,at the each test frequency channel, the EUT is operated at the RF continuous emission mode. Each channel should be tested at the lowest data rate.

802.11b/g operating modes are tested independently according to the service requirements in each frquency band. 802.11b/g modes are tested on channel 1, 6, 11; however, if output power reduction is necessary for channels 1 and/or 11 to meet restricted band requirements the highest output channel closest to each of these channels must be tested instead.

SAR is not required for 802.11g/n channels when the maximum average output power is less than 0.25dB higher than that measured on the corresponding 802.11b channels.

Mode	Band	GHz	Channel	"Default Test Channels"	
				802.11b	802.11g
802.11b/g	2.4 GHz	2.412	1#	√	△
		2.437	6	√	△
		2.462	11#	√	△

Notes:
√ = "default test channels"
△= possible 802.11g channels with maximum average output ¼ dB the "default test channels"
= when output power is reduced for channel 1 and /or 11 to meet restricted band requirements the highest output channels closest to each of these channels should be tested.

802.11 Test Channels per FCC KDB 248227

The frequencies of E5573s-508 allocated is F (MHz) =2412+5*(n-1) (1<=n<=9). The lowest, middle, highest channel numbers of the EUT used and tested in this report are separately 1 (2412MHz), 5(2432MHz) and 9(2452MHz) for 802.11b/g/n-20MHz and 3(2422MHz), 5(2432MHz) and 7(2442MHz) for 802.11n-40MHz

6.2 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.

6.2.1 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.

Dielectric Performance of Tissue

Ingredients (% by weight)	Frequency (MHz)						
	450	835	915	1800	1900	2450	2600
Tissue Type	Body	Body	Body	Body	Body	Body	Body
Water	51.16	52.4	56.0	69.91	69.91	73.2	64.493
Salt (Nacl)	1.49	1.4	0.76	0.13	0.13	0.04	0.024
Sugar	46.78	45.0	41.76	0.0	0.0	0.0	0.0
HEC	0.52	1.0	1.21	0.0	0.0	0.0	0.0
Bactericide	0.05	0.1	0.27	0.0	0.0	0.0	0.0
Triton x-100	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DGBE	0.0	0.0	0.0	29.96	29.96	26.7	32.252

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

6.2.2 Simulant liquids

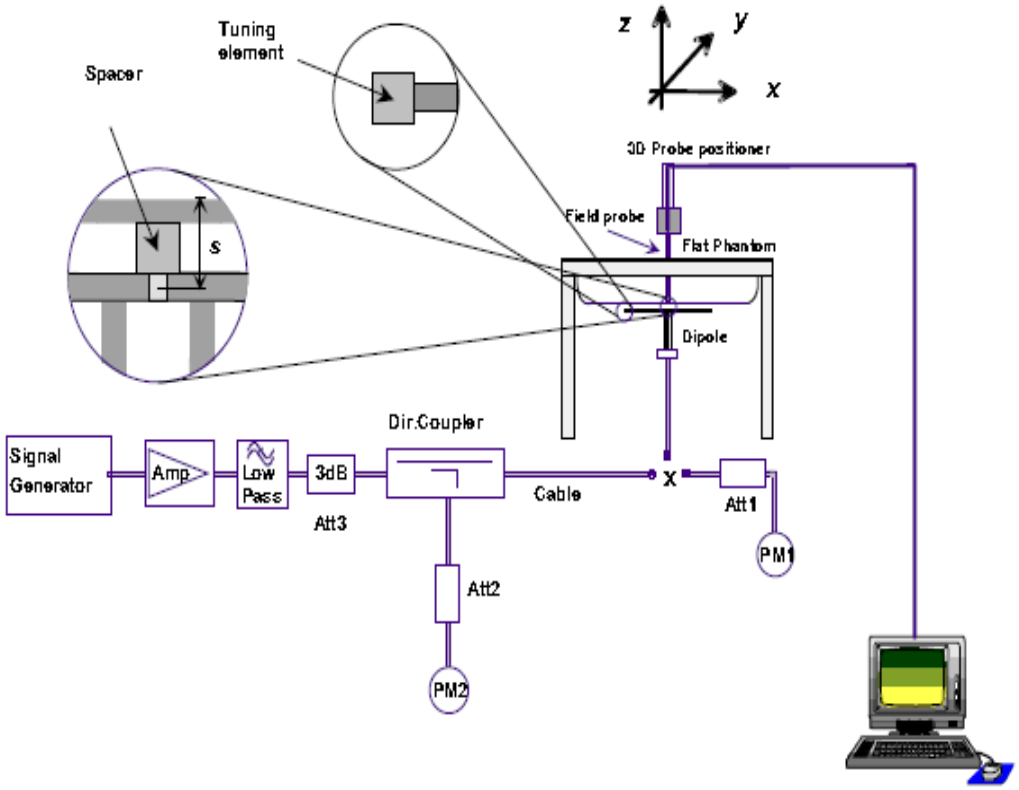
For measurements against the phantom head, the “cheek” and “tilt” position on both the left hand and the right hand sides of the phantom. For body-worn measurements, the EUT was tested against flat phantom representing the user body. The EUT was put on in the belt holder. Simulant liquids that are used for testing at frequencies of GSM 850MHz/1900MHz, WCDMA850MHz/1700MHz/1900MHz, LTE Band 2/4/5/7and Wi-Fi 2.4GHz, which are made mainly of sugar, salt and water solutions may be left in the phantoms.

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±5%	0.97±5%
Validation value (Mar.. 09th, 2015)	835MHz	55.24	0.98
Target value	1750 MHz	53.3±5%	1.52±5%
Validation value (Mar.. 10th, 2015)	1750 MHz	53.42	1.54
Target value	1900MHz	53.3±5%	1.52±5%
Validation value (Mar.. 11th, 2015)	1900MHz	53.26	1.50
Target value	2450MHz	52.7±5%	1.95±5%
Validation value (Mar.. 21th, 2015)	2450MHz	52.65	1.93
Target value	2600MHz	52.5±5%	2.16±5%
Validation value (Mar.. 21th, 2015)	2600MHz	52.18	2.23

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 IEEE standard P1528-2003. 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 following table . The humidity and ambient temperature of test facility were 64% and 22.2°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).

Body SAR system validation (1g)

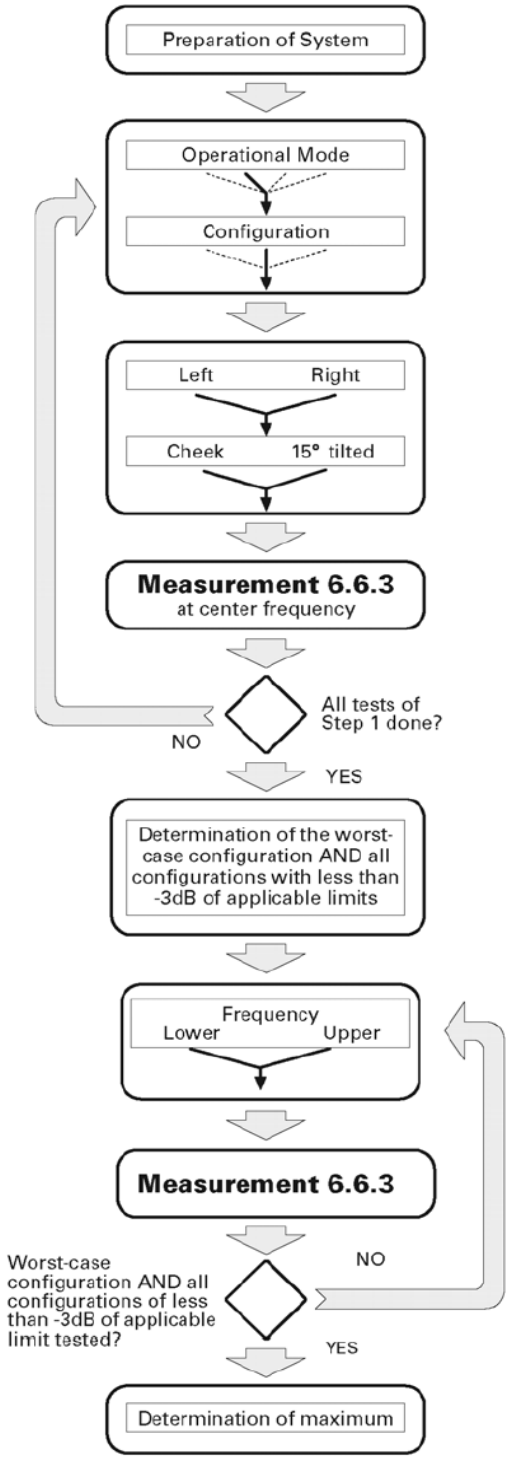
Frequency	Duty cycle	Target value （W/kg）	Test value (W/kg)	
			250 mW	1W
835MHz(Mar.. 09th, 2015)	1:1	10.31±10%	2.51	10.04
1750MHz(Mar.. 10th, 2015)	1:1	40.07±10%	9.85	39.40
1900MHz(Mar.. 11th, 2015)	1:1	40.81±10%	10.12	40.48
2450MHz(Mar.. 21th, 2015)	1:1	52.66±10%	12.77	51.08
2600MHz(Mar.. 21th, 2015)	1:1	57.55±10%	15.18	60.72

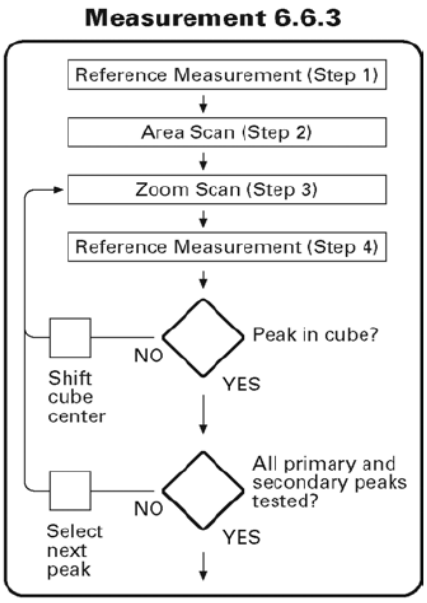
* Note: Target value was referring to the measured value in the calibration certificate of reference dipole.

Note: All SAR values are normalized to 1W forward power.

6.4 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 2mm 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.

6.5 Transmitting antenna information

There are GSM &WCDMA&LTE antennas and WIFI antennas inside the EUT,

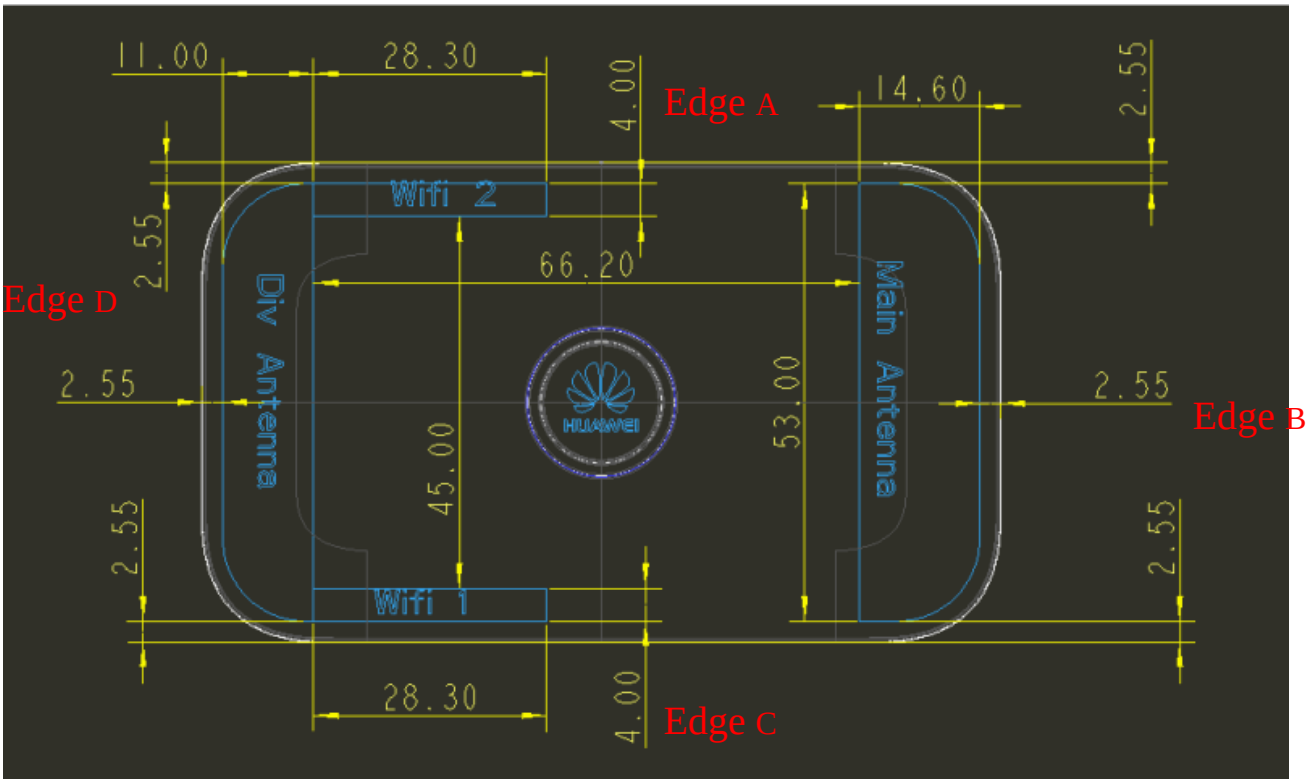


Fig. 3 Position of the antennas

7 Applicable Measurement Standards

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

ANSI C95.1–1992: Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz – 300 GHz.(IEEE Std C95.1-1991)

IEEE 1528–2003: IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques;

IEEE Std 1528a-2005: IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques

FCC KDB 865664 D01 v01r03 SAR Measurement 100MHz to 6GHz

FCC KDB 865664 D02 v01r01 RF Exposure Reporting

FCC KDB 447498 D01 v05r02 General RF Exposure Guidance v05r02

FCC KDB 941225 D01 v03 SAR test for 3G devices

FCC KDB 941225 D05 v02r03 SAR for LTE Devices

FCC KDB 941225 D06 v02 Hotspot Mode

FCC KDB 248227 D01 v01r02 SAR Measurement Procedures-802.11a/b/g Transmitters

8 Laboratory Environment

8.1 The Ambient Conditions during SAR Test

Temperature	Min. = 18 ℃, Max. = 25 ℃
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.	

9.Conducted RF Output Power

For the measurements a Rohde & Schwarz Radio Communication Tester CMU 200 was used.
SAR drift measured at the same position in liquid before and after each SAR test as below.
The signalling modes differ as follows:

mode	coding scheme	modulation
• GPRS	• CS1 to CS4	• GMSK
• EDGE	• MCS1 to MCS4	• GMSK
• EDGE	• MCS5 to MCS9	• 8PSK

Apart from modulation change (GMSK/8PSK) coding schemes differ in code rate without influence on the RF signal.Therefore one coding scheme per mode was selected for conducted power measurements.

9.1 GSM Conducted Power

Band		Burst Average Power (dBm)			Frame-Average Power (dBm)		
GSM850	TX Channel	128	190	251	128	190	251
	Frequency(MHz)	824.2	836.4	848.8	824.2	836.4	848.8
GPRS/ EDGE850 (GMSK)	1Tx Slot	32.07	32.12	31.98	23.04	23.09	22.95
	2Tx Slots	30.21	30.27	30.18	**24.19**	**24.25**	**24.16**
	3Tx Slots	28.18	28.19	28.17	23.92	23.93	23.91
	4Tx Slots	26.12	26.14	26.08	23.11	23.13	23.07
EDGE850 (8PSK)	1Tx Slot	32.01	32.11	32.03	22.98	23.08	23.00
	2Tx Slots	29.82	29.87	29.84	23.8	23.85	23.82
	3Tx Slots	28.04	28.11	28.17	23.78	23.85	23.91

	4Tx Slots	26.37	26.41	26.38	23.36	23.4	23.37
GSM1900	TX Channel	512	661	810	512	661	810
	Frequency(MHz)	1850.2	1880	1909.8	1850.2	1880	1909.8
GPRS/ EDGE1900 (GMSK)	1Tx Slot	28.12	28.41	28.22	19.09	19.38	19.19
	2Tx Slots	26.24	26.37	26.32	**20.22**	**20.35**	**20.30**
	3Tx Slots	24.38	24.45	24.40	20.12	20.19	20.14
	4Tx Slots	22.08	22.14	22.19	19.07	19.13	19.18
EDGE1900 (8PSK)	1Tx Slot	29.06	29.11	28.91	20.03	20.08	19.88
	2Tx Slots	26.21	26.22	26.24	20.19	20.2	20.22
	3Tx Slots	24.54	24.58	24.59	20.18	20.22	20.23
	4Tx Slots	22.37	22.38	22.40	19.36	19.37	19.39

Note: Per KDB 447498 D01 v05r02, the maximum output power channel is used for SAR testing and for further SAR test reduction.
For Body worn SAR testing, GSM should be evaluated, therefore the EUT was set in GPRS850 and GPRS 1900 due to its highest frame-average power.
Per KDB 941225 D01, the bolded GPRS 850 2Tx mode was selected for SAR testing according to the highest frame-averaged output power table.
Per KDB 941225 D01, the bolded GPRS 1900 2Tx mode was selected for SAR testing according to the highest frame-averaged output power table.

Timeslot consignations:

No. Of Slots	Slot 1	Slot 2	Slot 3	Slot 4
Slot Consignation	1Up4Down	2Up3Down	3Up2Down	4Up1Down
Duty Cycle	1:8	1:4	1:267	1:2
Crest Factor	-9.03dB	-6.02dB	-4.26dB	-3.01dB

9.2 WCDMA Conducted peak output Power

Item	band	WCDMA 850			WCMDA1700			WCDMA 1900		
	ARFCN	4132	4183	4233	1312	1413	1513	9262	9400	9538
	subtest	dBm			dBm			dBm		
RMC 12.2kbps	non	23.01	**23.06**	22.94	**23.03**	22.89	22.97	22.91	**22.98**	22.95
AMR	non	22.97	22.91	22.78	22.92	22.74	22.78	22.65	22.71	22.67
HSDPA	1	22.81	22.79	22.84	22.25	22.14	22.24	22.75	22.79	22.68
	2	22.49	22.51	22.54	22.11	22.05	22.08	22.47	22.55	22.42
	3	21.78	21.91	21.75	21.89	21.89	21.97	21.85	21.89	21.95
	4	21.79	21.54	21.61	21.79	21.91	21.80	21.77	21.64	21.71
HSUPA	1	22.24	22.37	22.44	22.14	22.07	21.91	22.54	22.37	22.72
	2	22.29	22.14	22.21	22.23	21.82	21.79	22.23	22.34	22.14
	3	21.86	22.09	22.08	22.17	22.15	22.20	22.17	22.01	22.08
	4	22.15	22.27	22.18	21.97	21.81	21.74	22.14	22.21	22.14
	5	22.23	22.16	22.11	22.12	22.15	22.31	22.05	22.25	22.08
Note:	The Conducted RF Output Power test of WCDMA /HSDPA/HSUPA was tested by power meter.									

Note:

1. Per KDB941225 D01v03, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode.
2. It is expected by the manufacturer that MPR for some HSDPA/HSUPA 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.

9.3 LTE Conducted peak output Power

1. LTE Band 2 Conducted Power Test Verdict:

BW (MHz)	Modulation	RB Size	RB Offset	Power(dBm) Low Ch./Freq.	Power(dBm) Middle Ch./Freq.	Power(dBm) High Ch./Freq.
Channel				18700	18900	19100
Frequency(MHz)				1860	1880	1900
20	QPSK	1	0	23.50	23.51	23.55
20	QPSK	1	49	23.52	**23.60**	23.58
20	QPSK	1	99	23.42	23.54	23.42
20	QPSK	50	0	22.99	22.87	22.93
20	QPSK	50	24	22.87	22.95	22.84
20	QPSK	50	49	22.84	22.79	22.82
20	QPSK	100	0	22.85	22.87	22.79
20	16QAM	1	0	22.50	22.41	22.51
20	16QAM	1	49	22.64	22.65	22.53
20	16QAM	1	99	22.44	22.50	22.55
20	16QAM	50	0	21.97	21.89	21.96
20	16QAM	50	24	21.85	21.97	21.78
20	16QAM	50	49	21.87	21.78	21.91
20	16QAM	100	0	21.79	21.85	21.83
Channel				18675	18900	19125
Frequency(MHz)				1857.5	1880	1902.5
15	QPSK	1	0	23.65	23.66	23.59
15	QPSK	1	37	**23.70**	23.68	23.65
15	QPSK	1	74	23.41	23.44	23.40
15	QPSK	36	0	22.91	22.80	22.77
15	QPSK	36	18	22.74	22.79	22.71
15	QPSK	36	37	22.91	22.95	22.83
15	QPSK	75	0	22.98	22.90	22.84
15	16QAM	1	0	22.71	22.63	22.67
15	16QAM	1	37	22.69	22.70	22.64
15	16QAM	1	74	22.57	22.62	22.65
15	16QAM	36	0	21.95	21.81	21.85
15	16QAM	36	18	21.84	21.76	21.79
15	16QAM	36	37	21.91	21.84	21.95
15	16QAM	75	0	21.79	21.75	21.87

BW (MHz)	Modulation	RB Size	RB Offset	Power(dBm) Low Ch./Freq.	Power(dBm) Middle Ch./Freq.	Power(dBm) High Ch./Freq.
Channel				18650	18900	19150
Frequency(MHz)				1855	1880	1905
10	QPSK	1	0	23.61	23.54	23.63
10	QPSK	1	24	23.62	23.61	**23.64**
10	QPSK	1	49	23.52	23.59	23.60
10	QPSK	25	0	22.74	22.76	22.85
10	QPSK	25	12	22.68	22.76	22.78
10	QPSK	25	24	22.74	22.80	22.75
10	QPSK	50	0	22.76	22.72	22.71
10	16QAM	1	0	22.71	22.68	22.62
10	16QAM	1	24	22.69	22.64	22.71
10	16QAM	1	49	22.55	22.51	22.48
10	16QAM	25	0	22.54	22.10	22.31
10	16QAM	25	12	21.86	21.94	21.81
10	16QAM	25	24	21.77	21.75	21.81
10	16QAM	50	0	21.84	21.81	21.75
Channel				18625	18900	19175
Frequency(MHz)				1852.5	1880	1907.5
5	QPSK	1	0	23.59	**23.62**	23.60
5	QPSK	1	12	23.52	23.57	23.55
5	QPSK	1	24	23.48	23.53	23.57
5	QPSK	12	0	22.74	22.83	22.82
5	QPSK	12	6	22.74	22.64	22.75
5	QPSK	12	11	22.71	22.67	22.77
5	QPSK	25	0	22.81	22.71	22.72
5	16QAM	1	0	22.47	22.55	22.44
5	16QAM	1	12	22.54	22.50	22.47
5	16QAM	1	24	22.45	22.39	22.46
5	16QAM	12	0	21.80	21.76	21.74
5	16QAM	12	6	21.69	21.63	21.75
5	16QAM	12	11	21.84	21.77	21.74
5	16QAM	25	0	21.66	21.71	21.69

LTE Band 4 Conducted Power Test Verdict:

BW (MHz)	Modulation	RB Size	RB Offset	Power(dBm) Low Ch./Freq.	Power(dBm) Middle Ch./Freq.	Power(dBm) High Ch./Freq.
Channel				20050	20175	20300
Frequency(MHz)				1720	1732.5	1745
20	QPSK	1	0	23.62	23.59	**23.66**
20	QPSK	1	49	23.54	23.55	23.57
20	QPSK	1	99	23.61	23.57	23.55
20	QPSK	50	0	22.72	22.84	22.87
20	QPSK	50	24	22.87	22.75	22.81
20	QPSK	50	49	22.74	22.72	22.82
20	QPSK	100	0	22.71	22.75	22.85
20	16QAM	1	0	22.60	22.63	22.61
20	16QAM	1	49	22.54	22.45	22.63
20	16QAM	1	99	22.44	22.50	22.54
20	16QAM	50	0	21.87	21.75	21.78
20	16QAM	50	24	21.79	21.77	21.80
20	16QAM	50	49	21.81	21.71	21.86
20	16QAM	100	0	21.74	21.65	21.81
Channel				20025	20175	20325
Frequency(MHz)				1717.5	1732.5	1747.5
15	QPSK	1	0	23.57	**23.65**	23.62
15	QPSK	1	37	23.53	23.51	23.64
15	QPSK	1	74	23.59	23.57	23.51
15	QPSK	36	0	22.82	22.77	22.84
15	QPSK	36	18	22.88	22.76	22.81
15	QPSK	36	37	22.76	22.74	22.80
15	QPSK	75	0	22.79	22.76	22.92
15	16QAM	1	0	22.46	22.57	22.63
15	16QAM	1	37	22.50	22.66	22.59
15	16QAM	1	74	22.57	22.62	22.58
15	16QAM	36	0	21.76	21.73	21.84
15	16QAM	36	18	21.69	21.73	21.77
15	16QAM	36	37	21.79	21.70	21.83
15	16QAM	75	0	21.78	21.71	21.81

BW (MHz)	Modulation	RB Size	RB Offset	Power(dBm) Low Ch./Freq.	Power(dBm) Middle Ch./Freq.	Power(dBm) High Ch./Freq.
Channel				20000	20175	20350
Frequency(MHz)				1715	1732.5	1750
10	QPSK	1	0	23.57	23.60	23.62
10	QPSK	1	24	23.67	**23.69**	23.65
10	QPSK	1	49	23.62	23.59	23.68
10	QPSK	25	0	22.94	22.86	22.85
10	QPSK	25	12	22.82	22.79	22.80
10	QPSK	25	24	22.78	22.80	22.85
10	QPSK	50	0	22.76	22.82	22.91
10	16QAM	1	0	22.67	22.55	22.64
10	16QAM	1	24	22.61	22.32	22.65
10	16QAM	1	49	22.68	22.72	22.56
10	16QAM	25	0	21.80	21.73	21.86
10	16QAM	25	12	21.84	21.75	21.82
10	16QAM	25	24	21.79	21.75	21.84
10	16QAM	50	0	21.82	21.74	21.79
Channel				19975	20175	20375
Frequency(MHz)				1712.5	1732.5	1752.5
5	QPSK	1	0	23.57	23.59	23.62
5	QPSK	1	12	23.55	23.58	23.60
5	QPSK	1	24	23.61	**23.63**	23.58
5	QPSK	12	0	22.71	22.77	22.82
5	QPSK	12	6	22.81	22.82	22.78
5	QPSK	12	11	22.81	22.73	22.77
5	QPSK	25	0	22.85	22.78	22.75
5	16QAM	1	0	22.47	22.46	22.60
5	16QAM	1	12	22.51	22.47	22.39
5	16QAM	1	24	22.59	22.51	22.55
5	16QAM	12	0	21.73	21.71	21.82
5	16QAM	12	6	21.66	21.62	21.69
5	16QAM	12	11	21.70	21.75	21.72
5	16QAM	25	0	21.83	21.72	21.70

LTE Band 5 Conducted Power Test Verdict:

BW (MHz)	Modulation	RB Size	RB Offset	Power(dBm) Low Ch./Freq.	Power(dBm) Middle Ch./Freq.	Power(dBm) High Ch./Freq.
Channel				20450	20525	20600
Frequency(MHz)				829	836.5	844
10	QPSK	1	0	23.58	23.45	23.53
10	QPSK	1	24	23.59	23.60	23.61
10	QPSK	1	49	23.63	**23.64**	23.59
10	QPSK	25	0	22.72	22.71	22.76
10	QPSK	25	12	22.67	22.76	22.82
10	QPSK	25	24	22.81	22.75	22.76
10	QPSK	50	0	22.69	22.66	22.67
10	16QAM	1	0	22.54	22.64	22.57
10	16QAM	1	24	22.60	22.51	22.53
10	16QAM	1	49	22.52	22.41	22.42
10	16QAM	25	0	21.81	21.76	21.85
10	16QAM	25	12	21.84	21.75	21.71
10	16QAM	25	24	21.82	21.74	21.76
10	16QAM	50	0	21.73	21.76	21.81
Channel				20425	20525	20625
Frequency(MHz)				826.5	836.5	846.5
5	QPSK	1	0	23.52	23.57	23.53
5	QPSK	1	12	23.49	23.53	23.56
5	QPSK	1	24	23.58	23.50	**23.59**
5	QPSK	12	0	22.80	22.93	22.87
5	QPSK	12	6	22.86	22.82	22.92
5	QPSK	12	11	22.76	22.86	22.79
5	QPSK	25	0	22.86	22.93	22.82
5	16QAM	1	0	22.24	22.29	22.19
5	16QAM	1	12	22.25	22.18	22.26
5	16QAM	1	24	22.53	22.47	22.17
5	16QAM	12	0	21.70	21.75	21.85
5	16QAM	12	6	21.62	21.75	21.69
5	16QAM	12	11	21.78	21.80	21.77
5	16QAM	25	0	21.71	21.82	21.74

LTE Band 7 Conducted Power Test Verdict:

BW (MHz)	Modulation	RB Size	RB Offset	Power(dBm) Low Ch./Freq.	Power(dBm) Middle Ch./Freq.	Power(dBm) High Ch./Freq.
Channel				20850	21100	21350
Frequency(MHz)				2510	2535	2560
20	QPSK	1	0	22.27	22.39	**22.40**
20	QPSK	1	24	22.34	22.25	22.33
20	QPSK	1	49	22.21	22.17	22.25
20	QPSK	25	0	21.72	21.84	21.87
20	QPSK	25	12	21.67	21.75	21.81
20	QPSK	25	24	21.64	21.72	21.82
20	QPSK	50	0	21.72	21.75	21.80
20	16QAM	1	0	21.60	21.55	21.61
20	16QAM	1	24	21.54	21.65	21.53
20	16QAM	1	49	21.58	21.60	21.54
20	16QAM	25	0	20.67	20.75	20.78
20	16QAM	25	12	20.69	20.67	20.70
20	16QAM	25	24	20.73	20.71	20.76
20	16QAM	50	0	20.74	20.65	20.81
Channel				20825	21100	21375
Frequency(MHz)				2507.5	2535	2562.5
15	QPSK	1	0	22.29	22.30	22.33
15	QPSK	1	12	22.34	**22.35**	22.29
15	QPSK	1	24	22.25	22.30	22.31
15	QPSK	12	0	21.77	21.80	21.82
15	QPSK	12	6	21.82	21.75	21.81
15	QPSK	12	11	21.64	21.72	21.76
15	QPSK	25	0	21.68	21.75	21.77
15	16QAM	1	0	21.50	21.57	21.43
15	16QAM	1	12	21.54	21.58	21.63
15	16QAM	1	24	21.49	21.50	21.46
15	16QAM	12	0	20.67	20.75	20.78
15	16QAM	12	6	20.69	20.67	20.72
15	16QAM	12	11	20.75	20.71	20.86
15	16QAM	25	0	20.74	20.69	20.81

BW (MHz)	Modulation	RB Size	RB Offset	Power(dBm) Low Ch./Freq.	Power(dBm) Middle Ch./Freq.	Power(dBm) High Ch./Freq.
Channel				20800	21100	21400
Frequency(MHz)				2505	2535	2565
10	QPSK	1	0	22.29	22.35	**22.37**
10	QPSK	1	24	22.34	22.30	22.29
10	QPSK	1	49	22.31	22.28	22.33
10	QPSK	25	0	21.82	21.80	21.85
10	QPSK	25	12	21.72	21.70	21.76
10	QPSK	25	24	21.69	21.72	21.82
10	QPSK	50	0	21.77	21.75	21.85
10	16QAM	1	0	21.30	21.41	21.45
10	16QAM	1	24	21.44	21.39	21.43
10	16QAM	1	49	21.33	21.20	21.34
10	16QAM	25	0	20.67	20.75	20.78
10	16QAM	25	12	20.69	20.67	20.80
10	16QAM	25	24	20.61	20.71	20.86
10	16QAM	50	0	20.54	20.65	20.61
Channel				20775	21100	21425
Frequency(MHz)				2502.5	2535	2567.5
5	QPSK	1	0	22.37	22.29	**22.38**
5	QPSK	1	12	22.34	22.35	22.36
5	QPSK	1	24	22.31	22.29	22.30
5	QPSK	12	0	21.82	21.74	21.77
5	QPSK	12	6	21.77	21.75	21.81
5	QPSK	12	11	21.74	21.72	21.78
5	QPSK	25	0	21.81	21.75	21.85
5	16QAM	1	0	21.40	21.31	21.37
5	16QAM	1	12	21.40	21.35	21.43
5	16QAM	1	24	21.44	21.38	21.24
5	16QAM	12	0	20.57	20.65	20.58
5	16QAM	12	6	20.79	20.77	20.80
5	16QAM	12	11	20.68	20.79	20.72
5	16QAM	25	0	20.72	20.65	20.81

9.4 WLAN 2.4GHz Band Conducted Power

Channel	Frequency (MHz)	Antenna	802.11b Output Power(dBm)			
			DSSS Data Rate			
			1 Mbps	2 Mbps	5.5Mbps	11 Mbps
1	2412	A	**21.34**	21.32	21.09	21.30
		B	**20.87**	20.79	20.81	20.84
5	2432	A	**20.62**	20.55	20.49	20.59
		B	**21.31**	21.29	21.25	21.27
9	2452	A	**21.38**	21.32	21.37	21.29
		B	**21.11**	21.04	21.07	21.10

Channel	Frequency (MHz)	Antenna	802.11g Output Power(dBm)							
			OFDM Data Rate							
			6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
1	2412	A	**19.63**	19.54	19.50	19.59	19.46	19.52	19.58	19.61
		B	**19.03**	19.01	18.92	18.98	18.87	18.92	18.95	19.00
5	2432	A	**19.17**	19.14	19.11	19.16	19.12	19.09	19.14	19.15
		B	**19.73**	19.64	19.58	19.67	19.66	19.54	19.69	19.71
9	2452	A	**19.94**	19.88	19.83	19.92	19.87	19.90	19.84	19.89
		B	**20.39**	20.29	20.31	20.36	20.33	20.28	20.37	20.30

Channel	Frequency (MHz)	Antenna	802.11n-20 Output Power(dBm)							
			OFDM Data Rate							
			MCS 0	MCS 1	MCS 2	MCS 3	MCS 4	MCS 5	MCS 6	MCS 7
1	2412	A	**18.23**	18.19	18.20	18.11	18.22	18.14	18.17	18.13
		B	**17.84**	18.75	18.79	18.82	18.77	18.72	18.75	18.80
5	2432	A	**17.77**	17.72	17.65	17.69	17.75	17.70	17.69	17.68
		B	**18.29**	18.22	18.17	18.15	18.27	18.25	18.23	18.20
9	2452	A	**18.49**	18.38	18.44	18.40	18.35	18.47	18.36	18.41
		B	**18.96**	18.89	18.78	18.94	18.82	18.95	18.88	18.84

Channel	Frequency (MHz)	Antenna	802.11n-20 Output Power(dBm)							
			OFDM Data Rate							
			MCS 8	MCS 9	MCS 10	MCS 11	MCS 12	MCS 13	MCS 14	MCS 15
1	2412	A+B	**21.72**	21.70	21.67	21.66	21.59	21.64	21.67	21.61
5	2432	A+B	**21.82**	21.76	21.68	21.71	21.80	21.76	21.79	21.62
9	2452	A+B	**22.91**	22.83	22.78	22.88	22.75	22.90	22.82	22.87

Channel	Frequency (MHz)	Antenna	802.11n-40 Output Power(dBm)							
			OFDM Data Rate							
			MCS 0	MCS 1	MCS 2	MCS 3	MCS 4	MCS 5	MCS 6	MCS 7
3	2422	A	**18.08**	18.01	17.99	17.92	17.95	18.04	18.07	18.01
		B	**18.09**	18.05	17.89	17.96	18.02	18.05	17.98	18.02
5	2432	A	**17.75**	17.71	17.68	17.62	17.69	17.73	17.65	17.72
		B	**18.17**	18.11	18.15	18.04	18.10	18.09	18.04	18.12
7	2442	A	**18.42**	18.40	18.37	18.32	18.38	18.33	18.39	18.35
		B	**18.70**	18.55	18.67	18.62	18.59	18.66	18.64	18.65

Channel	Frequency (MHz)	Antenna	802.11n-40 Output Power(dBm)							
			OFDM Data Rate							
			MCS 8	MCS 9	MCS 10	MCS 11	MCS 12	MCS 13	MCS 14	MCS 15
3	2422	A+B	**21.21**	21.18	21.11	21.19	21.20	21.15	21.18	21.14
5	2432	A+B	**21.81**	21.75	21.71	21.79	21.73	21.71	21.78	21.74
7	2442	A+B	**22.23**	22.14	22.20	22.18	22.15	22.17	22.10	22.21

Note:

1. Per KDB 248227 D01 v01r02, choose the highest output power channel to test SAR and determine further SAR exclusion.
2. Ant. A is corresponding with the Wifi 1 Antenna; Ant. B is corresponding with the Wifi 2 Antenna; Antenna A+B means Wifi 1 and Wifi 2 launch at the same time.
3. During the test, at each test frequency channel, the EUT is operated at the RF continuous emission mode. Each channel should be tested at the lowest data rate. As Bold in the Output Power table above.
4. 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

General Note:

1. Per KDB 447498 D01v05r02, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
2. Per KDB447498 D01v05r02, testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is: ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is≤ 100 MHz. When the maximum output power variation across the required test channels is > ½ dB, instead of the middle channel, the highest output power channel must be used.
3. Per KDB941225 D06v02, the DUT Dimension is bigger than 9 cm x 5 cm, so 10mm is chosen as the test separation distance for Hotspot mode. When the antenna-to-edge distance is greater than 2.5cm, such position does not need to be tested.
4. Per KDB 865664 D01v01r03,for each frequency band,repeated SAR measurement is required only when the measured SAR is ≥0.8W/Kg; if the deviation among the repeated measurement is ≤20%,and the measured SAR <1.45W/Kg,only one repeated measurement is required.
5. Per KDB865664 D02v01r01, SAR plot is only required for the highest measured SAR in each exposure configuration, wireless mode and frequency band combination; Plots are also required when the measured SAR is > 1.5 W/kg, or > 7.0 W/kg for occupational exposure. The published RF exposure KDB procedures may require additional plots; for example, to support SAR to peak location separation ratio test exclusion and/or volume scan post-processing(Refer to appendix D for details).
6. Per KDB941225 D01 v03, when multiple slots can be used, the GPRS/EDGE slot configuration with the highest frame–averaged output power was selected for SAR testing.
7. Per KDB941225 D01v03, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode.
8. The LTE test configurations are determined according to KDB941225 D05 SAR for LTE Devices v02r03.The general test procedures used for SAR testing can be found in Section 6.3.
9. 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.
10.

9.5. Scaling Factor calculation

Operation Mode	Channel	Output Power(dBm)	Tune up Power in tolerance(dBm)	Scaling Factor
GPRS 850(2Tx)	128	30.21	30.00 ±1	1.199
	190	30.27	30.00 ±1	1.183
	251	30.18	30.00 ±1	1.208
GPRS1900(2Tx)	512	26.24	26.00 ±0.5	1.062
	661	26.37	26.00 ±0.5	1.030
	810	26.32	26.00 ±0.5	1.042
WCDMA850	4132	23.01	23.00 ±0.5	1.119
	4183	23.06	23.00 ±0.5	1.107
	4233	22.94	23.00 ±0.5	1.138
WCDMA1700	1312	23.03	23.00 ±0.5	1.114
	1413	22.89	23.00 ±0.5	1.151
	1513	22.97	23.00 ±0.5	1.130
WCDMA1900	9262	22.91	22.50 ±0.5	1.021
	9400	22.98	22.50 ±0.5	1.005
	9538	22.95	22.50 ±0.5	1.012
LTE Band 2 1RB	18700	23.52	23.00 ±1	1.117
	18900	23.60	23.00 ±1	1.096
	19100	23.58	23.00 ±1	1.102
LTE Band 2 50%RB	18700	22.99	23.00 ±1	1.262
	18900	22.87	23.00 ±1	1.297
	19100	22.93	23.00 ±1	1.279
LTE Band 2 100%RB	18700	22.85	23.00 ±1	1.303
	18900	22.87	23.00 ±1	1.297
	19100	22.79	23.00 ±1	1.321
LTE Band 4 1RB	20050	23.62	23.00 ±1	1.091
	20175	23.59	23.00 ±1	1.099
	20300	23.66	23.00 ±1	1.081
LTE Band 4 50%RB	20050	22.72	23.00 ±1	1.343
	20175	22.84	23.00 ±1	1.306
	20300	22.87	23.00 ±1	1.297
LTE Band 4 100%RB	20050	22.71	23.00 ±1	1.346
	20175	22.75	23.00 ±1	1.334
	20300	22.85	23.00 ±1	1.303

LTE Band 5 1RB	20450	23.63	22.70 ±1	1.016
	20525	23.64	22.70 ±1	1.014
	20600	23.59	22.70 ±1	1.026
LTE Band 5 50%RB	20450	22.67	22.70 ±1	1.268
	20525	22.76	22.70 ±1	1.242
	20600	22.82	22.70 ±1	1.225
LTE Band 5 100%RB	20450	22.69	22.70 ±1	1.262
	20525	22.66	22.70 ±1	1.271
	20600	22.67	22.70 ±1	1.268
LTE Band 7 1RB	20850	22.27	21.50 ±1	1.054
	21100	22.39	21.50 ±1	1.026
	21350	22.40	21.50 ±1	1.023
LTE Band 7 50%RB	20850	21.72	21.50 ±1	1.197
	21100	21.84	21.50 ±1	1.164
	21350	21.87	21.50 ±1	1.156
LTE Band 7 100%RB	20850	21.72	21.50 ±1	1.197
	21100	21.75	21.50 ±1	1.189
	21350	21.80	21.50 ±1	1.175
802.11b Ant. A	1	21.34	21.00 ±1	1.164
	5	20.62	21.00 ±1	1.374
	9	21.38	21.00 ±1	1.153
802.11b Ant. B	1	20.87	21.00 ±1	1.297
	5	21.32	21.00 ±1	1.169
	9	21.11	21.00 ±1	1.227
802.11n-20 Ant. A+B	1	21.72	22.00 ±1	1.343
	5	21.82	22.00 ±1	1.312
	9	22.91	22.00 ±1	1.012
802.11n-40 Ant. A+B	3	21.21	22.00 ±1	1.510
	5	21.81	22.00 ±1	1.315
	7	22.23	22.00 ±1	1.149

9.6 SIMULTANEOUS TRANSMISSION ANALYSIS

Test Position		Face	Back	Edge A	Edge B	Edge C	Edge D
MAX 1-g SAR(W/Kg)	GPRS850	0.519	0.770	0.511	0.166	0.392	0.056
	GPRS1900	0.487	0.348	0.195	0.096	0.073	0.039
	WCDMA1900	0.718	0.519	0.294	0.313	0.121	0.067
	WCDMA1700	0.916	0.665	0.359	0.170	0.265	0.089
	WCDMA 850	1.309	0.935	0.614	0.092	0.487	0.048
	LTE Band 2	0.538	0.717	0.569	0.323	0.284	0.142
	LTE Band 4	0.916	1.005	0.568	0.188	0.483	0.085
	LTE Band 5	1.115	1.207	0.668	0.110	0.403	0.052
	LTE Band 7	0.392	0.382	0.037	0.726	0.258	0.028
	2.4G WiFi SISO	0.148	0.091	0.085	0.059	0.055	0.112
∑1-g SAR(W/Kg)		1.457	1.298	0.699	0.785	0.542	0.254

Simultaneous Tx Combination of GSM/WCDMA/LTE and 2.4G WiFi SISO.

Test Position		Face	Back	Edge A	Edge B	Edge C	Edge D
MAX 1-g SAR(W/Kg)	GPRS850	0.519	0.770	0.511	0.166	0.392	0.056
	GPRS1900	0.487	0.348	0.195	0.096	0.073	0.039
	WCDMA1900	0.718	0.519	0.294	0.313	0.121	0.067
	WCDMA1700	0.916	0.665	0.359	0.170	0.265	0.089
	WCDMA 850	1.309	0.935	0.614	0.092	0.487	0.048
	LTE Band 2	0.538	0.717	0.569	0.323	0.284	0.142
	LTE Band 4	0.916	1.005	0.568	0.188	0.483	0.085
	LTE Band 5	1.115	1.207	0.668	0.110	0.403	0.052
	LTE Band 7	0.392	0.382	0.037	0.726	0.258	0.028
	2.4G WiFi MIMO	0.122	0.07	0.076	0.046	0.055	0.181
∑1-g SAR(W/Kg)		1.431	1.277	0.744	0.772	0.542	0.323

Simultaneous Tx Combination of GSM/WCDMA/LTE and 2.4G WiFi MIMO.

SAR to Peak Location Separation Ratio (SPLSR)

As the Sum of the SAR is not greater than 1.6 W/kg SPLSR assessment is not required

10 Test Results

10.1 Summary of SAR Measurement Results

According the description above, while the tests against the body-worn were carried out on the operation mode : GPRS 850/1900MHz, WCDMA850/1700/1900MHz, LTE Band 2/4/5/7, WIFI 802.11b/n.

Table 1: SAR Values of GPRS 850MHz Band

Temperature: 22.0~23.5°C, humidity: 62~64%.					
Test Positions of Body (10mm distance)		Channel /Frequency (MHz)	Power drift(%)	SAR(W/Kg), 1.6 (1g average)	
				Measured SAR	Scaled SAR
GPRS (2Tx)	Face Upward	190/836.6	2.33	0.439	0.519
	Back Upward	190/836.6	0.58	**0.651**	0.770
	Back Upward With Battery1#	190/836.6	-3.7	0.565	0.668
	Back Upward With Battery2#	190/836.6	-1.8	0.600	0.710
	Edge A	190/836.6	4.61	0.432	0.511
	Edge B	190/836.6	-3.71	0.140	0.166
	Edge C	190/836.6	4.64	0.331	0.392
	Edge D	190/836.6	1.37	0.047	0.056

Table 2: SAR Values of GPRS1900 MHz Band

Temperature: 22.0~23.5°C, humidity: 62~64%.					
Test Positions of Body (10mm distance)		Channel /Frequency (MHz)	Power drift(%)	SAR(W/Kg), 1.6 (1g average)	
				Measured SAR	Scaled SAR
GPRS (2Tx)	Face Upward	661/1880.0	-4.57	**0.421**	0.487
	Face Upward With Battery1#	661/1880.0	-0.03	0.415	0.480
	Face Upward With Battery2#	661/1880.0	0.05	0.413	0.477
	Back Upward	661/1880.0	-0.1	0.301	0.348
	Edge A	661/1880.0	0.58	0.169	0.195
	Edge B	661/1880.0	0.82	0.083	0.096
	Edge C	661/1880.0	0.97	0.063	0.073
	Edge D	661/1880.0	-3.73	0.034	0.039

Table 3: SAR Values of WCDMA850

Temperature: 22.0~23.5°C, humidity: 62~64%.				
Test Positions of Body (10mm distance)	Channel /Frequency (MHz)	Power drift(%)	SAR(W/Kg), 1.6 (1g average)	
			Measured SAR	Scaled SAR
Face Upward	4132/826.4	-1.08	1.146	1.282
	4183/836.6	-1.05	1.063	1.177
	4233/846.6	-2.73	**1.150**	1.309
	4233/846.6 Repeated	-1.72	**1.095**	1.246
Face Upward With Battery1#	4132/826.4	0.87	0.913	1.022
	4183/836.6	1.24	0.921	1.020
	4233/846.6	-1.54	0.925	1.053
	4233/846.6 Repeated	0.69	0.922	1.049
Face Upward With Battery2#	4132/826.4	-1.05	0.879	0.984
	4183/836.6	0.87	0.881	0.975
	4233/846.6	-0.44	0.884	1.006
	4233/846.6 Repeated	0.21	0.883	1.005
Back Upward	4132/826.4	-1.06	0.836	0.935
	4183/836.6	-1.66	0.836	0.925
	4183/836.6 Repeated	-1.05	0.829	0.918
	4233/846.6	-1.54	0.762	0.826
Edge A	4183/836.6	-0.16	0.555	0.614
Edge B	4183/836.6	-1.00	0.083	0.092
Edge C	4183/836.6	-0.64	0.440	0.487
Edge D	4183/836.6	-0.21	0.043	0.048

Table 4: SAR Values of WCDMA1700

Temperature: 22.0~23.5°C, humidity: 62~64%.				
Test Positions of Body (10mm distance)	Channel /Frequency (MHz)	Power drift(%)	SAR(W/Kg), 1.6 (1g average)	
			Measured SAR	Scaled SAR
Face Upward	1312/1712.4	-1.88	**0.797**	0.888
	1312/1712.4 Repeated	-0.82	0.772	0.860
	1413/1732.6	-0.11	0.795	0.916
	1513/1752.6	0.22	0.757	0.855
Face Upward With Battery1#	1413/1732.6	-2.35	0.571	0.657
Face Upward With Battery2#	1413/1732.6	-0.51	0.561	0.646
Back Upward	1413/1732.6	-0.98	0.597	0.687
Edge A	1413/1732.6	-0.43	0.312	0.359
Edge B	1413/1732.6	-1.02	0.148	0.170
Edge C	1413/1732.6	-0.76	0.230	0.265
Edge D	1413/1732.6	-1.02	0.077	0.089

Table 5: SAR Values of WCDMA1900

Temperature: 22.0~23.5°C, humidity: 62~64%.				
Test Positions of Body (10mm distance)	Channel /Frequency (MHz)	Power drift(%)	SAR(W/Kg), 1.6 (1g average)	
			Measured SAR	Scaled SAR
Face Upward	9400/1880.0	-3.32	**0.714**	0.718
Face Upward With Battery1#	9400/1880.0	-1.89	0.556	0.559
Face Upward With Battery2#	9400/1880.0	-1.32	0.549	0.552
Back Upward	9400/1880.0	-0.64	0.516	0.519
Edge A	9400/1880.0	-2.97	0.292	0.294
Edge B	9400/1880.0	-0.49	0.311	0.313
Edge C	9400/1880.0	-1.00	0.120	0.121
Edge D	9400/1880.0	-0.11	0.067	0.067

Table 6:SAR Values of LTE Band 2, Bandwidth 20MHz, QPSK

Temperature: 22.0~23.5°C, humidity: 62~64%.						
Test Positions of Body (10mm distance)	Channel /Frequency (MHz)	RB Size	RB Offset	Power drift(%)	SAR(W/Kg), 1.6 (1g average)	
					Measured SAR	Scaled SAR
Edge A	Middle	1	49	-0.97	0.453	0.496
	Middle	50	0	-0.49	0.439	0.569
Edge B	Middle	1	49	3.81	0.261	0.286
	Middle	50	0	-0.93	0.249	0.323
Edge C	Middle	1	49	-0.56	0.216	0.237
	Middle	50	0	-1.14	0.219	0.284
Edge D	Middle	1	49	0.3	0.130	0.142
	Middle	50	0	-1.99	0.100	0.130
Face Upward	Middle	1	49	0.55	0.491	0.538
	Middle	50	0	-0.78	0.517	0.671
Back Upward	Middle	1	49	2.13	**0.654**	0.717
	Middle	50	0	2.59	0.531	0.670
Back Upward With Battery1#	Middle	1	49	-1.46	0.511	0.560
Back Upward With Battery2#	Middle	1	49	0.99	0.583	0.639

Table 7:SAR Values of LTE Band 4, Bandwidth 20MHz, QPSK

Temperature: 22.0~23.5°C, humidity: 62~64%.						
Test Positions of Body (10mm distance)	Channel /Frequency (MHz)	RB Size	RB Offset	Power drift(%)	SAR(W/Kg), 1.6 (1g average)	
					Measured SAR	Scaled SAR
Edge A	Middle	1	0	-0.97	0.517	0.568
	Middle	50	0	0.02	0.434	0.567
Edge B	Middle	1	0	0.06	0.101	0.111
	Middle	50	0	-0.03	0.144	0.188
Edge C	Middle	1	0	-0.53	0.432	0.475
	Middle	50	0	-0.1	0.370	0.483
Edge D	Middle	1	0	-0.31	0.077	0.085
	Middle	50	0	-0.33	0.064	0.084
Face Upward	Low	1	0	-0.47	0.570	0.622
	Middle	1	0	-0.44	**0.817**	0.898
	Middle Repeated	1	0	-0.49	**0.817**	0.898
	High	1	0	-0.56	0.603	0.652
	Low	50	0	-4.45	0.639	0.858
	Middle	50	0	1.15	0.698	0.912
	High	50	0	-0.08	0.706	0.916
	High	100	0	1.24	0.575	0.749
Face Upward With Battery1#	Middle	1	0	-0.69	0.689	0.757
Face Upward With Battery2#	Middle	1	0	-0.06	0.683	0.751
Back Upward	Low	1	0	-1.83	0.714	0.779
	Middle	1	0	-0.99	0.754	0.829
	Middle	1	0	2.4	0.694	0.763
	High	1	0	0.72	0.761	0.823
	Low	50	0	0.74	0.703	0.944
	Middle	50	0	4.07	0.638	0.833
	High	50	0	-0.45	0.775	1.005
	High	50	0	0.74	0.701	0.909
	Low	100	0	0.95	0.588	0.791
	Middle	100	0	3.32	0.697	0.930
	High	100	0	0.45	0.699	0.911
	High	100	0	1.09	0.683	0.890

Table 8:SAR Values of LTE Band 5, Bandwidth 10MHz,QPSK

Temperature: 22.0~23.5°C, humidity: 62~64%.						
Test Positions of Body (10mm distance)	Channel /Frequency (MHz)	RB Size	RB Offest	Power drift(%)	SAR(W/Kg), 1.6 (1g average)	
					Measured SAR	Scaled SAR
Edge A	Middle	1	49	-0.6	0.659	0.668
	Middle	25	12	-0.09	0.450	0.559
Edge B	Middle	1	49	-0.97	0.108	0.110
	Middle	25	12	-0.06	0.078	0.097
Edge C	Middle	1	49	-0.83	0.397	0.403
	Middle	25	12	-2.31	0.262	0.325
Edge D	Middle	1	49	-0.58	0.051	0.052
	Middle	25	12	-0.18	0.035	0.043
Face Upward	Low	1	49	-1.03	1.085	1.102
	Middle	1	49	-0.33	1.051	1.066
	High	1	49	-0.52	**1.087**	1.115
	High Repeated	1	49	-0.41	**1.086**	1.114
	Low	25	12	-0.66	0.690	0.875
	Middle	25	12	-1.06	0.702	0.872
	High	25	12	-0.25	0.693	0.849
	Low	50	0	1.24	0.634	0.800
Face Upward With Battery1#	Low	1	49	3.21	1.042	1.059
	Middle	1	49	1.57	1.041	1.056
	High	1	49	-0.90	1.066	1.094
	High Repeated	1	49	2.05	1.058	1.086
Face Upward With Battery2#	Low	1	49	-1.19	1.042	1.059
	Middle	1	49	0.87	1.047	1.062
	High	1	49	-0.77	1.055	1.082
	High Repeated	1	49	2.01	1.052	1.079
Back Upward	Low	1	49	-0.82	0.956	0.971
	Middle	1	49	-0.29	0.966	0.980
	High	1	49	-0.24	0.974	0.999
	High Repeated	1	49	-0.5	0.915	0.939
	Low	25	12	-0.37	0.952	1.207
	Middle	25	12	1.54	0.967	1.201
	Middle Repeated	25	12	-0.84	0.963	1.196
	High	25	12	-0.51	0.936	1.147
	Low	50	0	2.38	0.758	0.957

Table 9:SAR Values of LTE Band 7, Bandwidth 20MHz,QPSK

Temperature: 22.0~23.5°C, humidity: 62~64%.						
Test Positions of Body (10mm distance)	Channel /Frequency (MHz)	RB Size	RB Offest	Power drift(%)	SAR(W/Kg), 1.6 (1g average)	
					SAR(W/Kg1g Peak)	Scaled SAR(W/Kg),1g
Edge A	Middle	1	0	-0.84	0.033	0.034
	Middle	25	0	-1.22	0.032	0.037
Edge B	Middle	1	0	0.26	**0.692**	0.710
	Middle	25	0	3.15	0.624	0.726
Edge B With Battery1#	Middle	1	0	-1.4	0.671	0.688
Edge B With Battery2#	Middle	1	0	-0.51	0.670	0.687
Edge C	Middle	1	0	1.34	0.243	0.249
	Middle	25	0	-3.61	0.222	0.258
Edge D	Middle	1	0	1.27	0.025	0.026
	Middle	25	0	0.54	0.027	0.028
Face Upward	Middle	1	0	-1.07	0.342	0.351
	Middle	25	0	-1.54	0.337	0.392
Back Upward	Middle	1	0	2.62	0.345	0.354
	Middle	25	0	2.34	0.328	0.382

Table 10:SAR Values of Wi-Fi 802.11b

Temperature: 22.0~23.5°C, humidity: 62~64%.					
Test Positions of Body (10mm distance)		Channel /Frequency (MHz)	Power drift(%)	SAR(W/Kg), 1.6 (1g average)	
				Measured SAR	Scaled SAR
802.11b Ant. A	Edge A	5/2432	0.34	0.013	0.018
	Edge B	5/2432	-1.08	0.043	0.059
	Edge C	5/2432	2.37	0.048	0.055
	Edge D	5/2432	1.34	0.097	0.112
	Face Upward	5/2432	0.29	**0.108**	0.148
	Face Upward With Battery1#	5/2432	1.24	0.103	0.142
	Face Upward With Battery2#	5/2432	-0.35	0.106	0.146
	Back Upward	5/2432	-2.05	0.066	0.091
802.11b Ant. B	Edge A	5/2432	4.21	0.073	0.085
	Edge B	5/2432	1.35	0.004	0.005
	Edge C	5/2432	-0.54	0.006	0.007
	Edge D	5/2432	2.05	0.032	0.037
	Face Upward	5/2432	3.32	0.069	0.081
	Back Upward	5/2432	2.06	0.075	0.088
	Back Upward With Battery1#	5/2432	-0.75	0.070	0.082
	Back Upward With Battery2#	5/2432	-0.92	0.071	0.083

Table 11:SAR Values of Wi-Fi 802.11n

Temperature: 22.0~23.5°C, humidity: 62~64%.					
Test Positions of Body (10mm distance)		Channel /Frequency (MHz)	Power drift(%)	SAR(W/Kg), 1.6 (1g average)	
				Measured SAR	Scaled SAR
802.11n-20 Ant. A+B	Edge A	5/2432	0.14	0.048	0.063
	Edge B	5/2432	-0.36	0.010	0.013
	Edge C	5/2432	-2.89	0.042	0.055
	Edge D	5/2432	-3.70	0.062	0.081
	Face Upward	5/2432	-1.49	**0.093**	0.122
	Back Upward	5/2432	1.25	0.053	0.07
	Face Upward With Battery1#	5/2432	3.54	0.082	0.108
	Face Upward With Battery2#	5/2432	2.41	0.084	0.108
802.11n-40 Ant. A+B	Edge A	5/2432	1.54	0.058	0.076
	Edge B	5/2432	2.06	0.035	0.046
	Edge C	5/2432	-1.52	0.016	0.021
	Edge D	5/2432	1.13	**0.138**	0.181
	Edge D With Battery1#	5/2432	2.09	0.132	0.174
	Edge D With Battery2#	5/2432	1.56	0.135	0.178
	Face Upward	5/2432	-0.76	0.084	0.110
	Back Upward	5/2432	0.38	0.050	0.066

Note:

When the 1-g SAR for the mid-band channel or the channel with the Highest output power≤ 0.8 W/kg, when the transmission band is ≤ 100 MHz, testing of the other channels in the band is not required.(Per KDB 447498 D01 General RF Exposure Guidance v05r02)

Per KDB941225 D06v02, the DUT Dimension is bigger than 9 cm x 5 cm, so 10mm is chosen as the test separation distance for Hotspot mode. When the antenna-to-edge distance is greater than 2.5cm, such position does not need to be tested.

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 7 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	5.8	N	1	1	5.8	∞
2	– Axial isotropy	B	3.5	R	$\sqrt{3}$	0.5	1.43	∞
3	—Hemispherical Isotropy	B	5.9	R	$\sqrt{3}$	0.5	2.41	∞
4	– Boundary Effect	B	1	R	$\sqrt{3}$	1	0.58	∞
5	– Linearity	B	4.7	R	$\sqrt{3}$	1	2.71	∞
6	– System Detection Limits	B	1.0	R	$\sqrt{3}$	1	0.58	∞
7	-Modulation response	B	3	N	1	1	3.00	∞
8	– Readout Electronics	B	0.5	N	1	1	0.50	∞
9	– Response Time	B	0	R	1	1	0	∞
10	– Integration Time	B	1.4	R	$\sqrt{3}$	1	0.81	∞
11	– RF Ambient Conditions-Noise	B	3.0	R	$\sqrt{3}$	1	1.73	∞
12	– RF Ambient Conditions-Reflections	B	3.0	R	$\sqrt{3}$	1	1.73	∞
13	– Probe Position Mechanical tolerance	B	1.4	R	$\sqrt{3}$	1	0.81	∞
14	– Probe Position with respect to Phantom Shell	B	1.4	R	$\sqrt{3}$	1	0.81	∞
15	– Extrapolation, Interpolation and Integration Algorithms for Max. SAR evaluation	B	2.3	R	$\sqrt{3}$	1	1.33	∞
	Uncertainties of the DUT							
16	– Position of the DUT	A	2.6	N	$\sqrt{3}$	1	2.6	5

17	– Holder of the DUT	A	3	N	$\sqrt{3}$	1	3.0	5
18	– Output Power Variation –SAR drift measurement	B	5.0	R	$\sqrt{3}$	1	2.89	∞
19	–SAR Scaling	B	2	R	$\sqrt{3}$	1	1.15	∞
Phantom and Tissue Parameters								
20	– Phantom shell Uncertainty(shape and thickness tolerances)	B	4	R	$\sqrt{3}$	1	2.31	∞
21	Uncertainty in SAR correction for deviation(in permittivity and conductivity)	B	2	N	1	1	2.00	∞
22	– Liquid Conductivity measurement	B	4	N	$\sqrt{3}$	1	0.92	9
23	– Liquid Permittivity measurement	B	5	N	$\sqrt{3}$	1	1.15	9
24	– Liquid Conductivity— temperature uncertainly	B	2.5	R	$\sqrt{3}$	0.6	1.95	∞
25	– Liquid Permittivity — temperature uncertainly	B	2.5	R	$\sqrt{3}$	0.6	1.95	∞
Combined Standard Uncertainty				RSS			10.63	
Expanded uncertainty (Confidence interval of 95 %)				K=2			21.26	

System Check 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	5.8	N	1	1	5.8	∞
2	– Axial isotropy	B	3.5	R	$\sqrt{3}$	0.5	1.43	∞
3	—Hemispherical Isotropy	B	5.9	R	$\sqrt{3}$	0.5	2.41	∞
4	– Boundary Effect	B	1	R	$\sqrt{3}$	1	0.58	∞

5	– Linearity	B	4.7	R	$\sqrt{3}$	1	2.71	∞
6	– System Detection Limits	B	1	R	$\sqrt{3}$	1	0.58	∞
7	Modulation response	B	0	N	1	1	0.00	
8	– Readout Electronics	B	0.5	N	1	1	0.50	∞
9	– Response Time	B	0.00	R	$\sqrt{3}$	1	0.00	∞
10	– Integration Time	B	1.4	R	$\sqrt{3}$	1	0.81	∞
11	– RF Ambient Conditions	B	3.0	R	$\sqrt{3}$	1	1.73	∞
12	– Probe Position Mechanical tolerance	B	1.4	R	$\sqrt{3}$	1	0.81	∞
13	– Probe Position with respect to Phantom Shell	B	1.4	R	$\sqrt{3}$	1	0.81	∞
14	– Extrapolation, Interpolation and Integration Algorithms for Max. SAR evaluation	B	2.3	R	$\sqrt{3}$	1	1.33	∞
	Uncertainties of the DUT							
15	Deviation of experimental source from numberical source	A	4	N	1	1	4.00	5
16	Input Power and SAR drift measurement	A	5	R	$\sqrt{3}$	1	2.89	5
17	Dipole Axis to Liquid Distance	B	2	R	$\sqrt{3}$	1	1.2	∞
Phantom and Tissue Parameters								
18	– Phantom Uncertainty(shape and thickness tolerances)	B	4	R	$\sqrt{3}$	1	2.31	∞
19	Uncertainty in SAR correction for deviation(in permittivity and conductivity)	B	2	N	1	1	2.00	
20	– Liquid Conductivity Target –tolerance	B	2.5	R	$\sqrt{3}$	0.6	1.95	∞
21	– Liquid Conductivity –measurement Uncertainty)	B	4	N	$\sqrt{3}$	1	0.92	9

22	– Liquid Permittivity Target tolerance	B	2.5	R	$\sqrt{3}$	0.6	1.95	∞
23	– Liquid Permittivity –measurement uncertainty	B	5	N	$\sqrt{3}$	1	1.15	∞
Combined Standard Uncertainty				RSS			10.15	
Expanded uncertainty (Confidence interval of 95 %)				K=2			20.29	

12 Main Test Instruments

No.	EQUIPMENT	TYPE	Series No.	Last Calibration	Due Date
1	System Simulator	E5515C	GB 47200710	2015/02/23	1 Year
2	System Simulator	CMW500	130805	2014/06/10	1 Year
3	System Simulator	CMU200	A0304212	2014/06/10	1 Year
4	SAR Probe	E-Field Probe	SN 09/13 EP169	2014/04/05	1 Year
5	SAR Probe	E-Field Probe	SN 09/13 EP166	2014/08/14	1 Year
6	Dipole	SID835	SN09/13 DIP0G835-217	2014/08/28	1 Year
7	Dipole	SID1800	SN09/13 DIP1G800-216	2014/08/28	1 Year
8	Dipole	SID1900	SN09/13 DIP1G900-218	2014/08/28	1 Year
9	Dipole	SID2450	SN09/13 DIP2G450-220	2014/08/28	1 Year
10	Dipole	SID2600	SN32/14 DIP2G600-338	2014/08/12	1 Year
11	Network Analyzer	ZVB8	A0802530	2014/06/13	1 Year
12	Signal Generator	SMR27	A0304219	2014/06/10	1 Year
13	Amplifier	Nucletudes	143060	2014/04/05	1 Year
14	Directional Coupler	DC6180A	305827	2014/06/10	1 Year
15	Power Meter	NRVS	1020.1809.02	2014/06/13	1 Year
16	Power Sensor	NRV-Z4	100069	2014/06/10	1 Year
17	Power Meter	NRP2	A140401673	2014/04/04	1 Year
18	Power Sensor	NPR-Z11	1138.3004.02-114072-nq	2014/04/04	1 Year
19	Multimeter	Keithley-2000	4014020	2014/04/16	1 Year
20	Device Holder	SATIMO	SN 09/13 MSH80	2014/04/05	1 Year
21	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

SET2015-03028

Huawei Technologies Co., Ltd.

Mobile WiFi

Type Name: E5573s-508

Hardware Version: CL1E5573SM

Software Version: 21.200.01.01.00

Accreditation Certificate

This Annex consists of 2 pages

Date of Report: 2015-03-23

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

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Huawei Technologies Co., Ltd.

Mobile WiFi

Type Name: E5573s-508

Hardware Version： CL1E5573SM

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TEST LAYOUT

This Annex consists of 7 pages

Date of Report: 2015-03-23

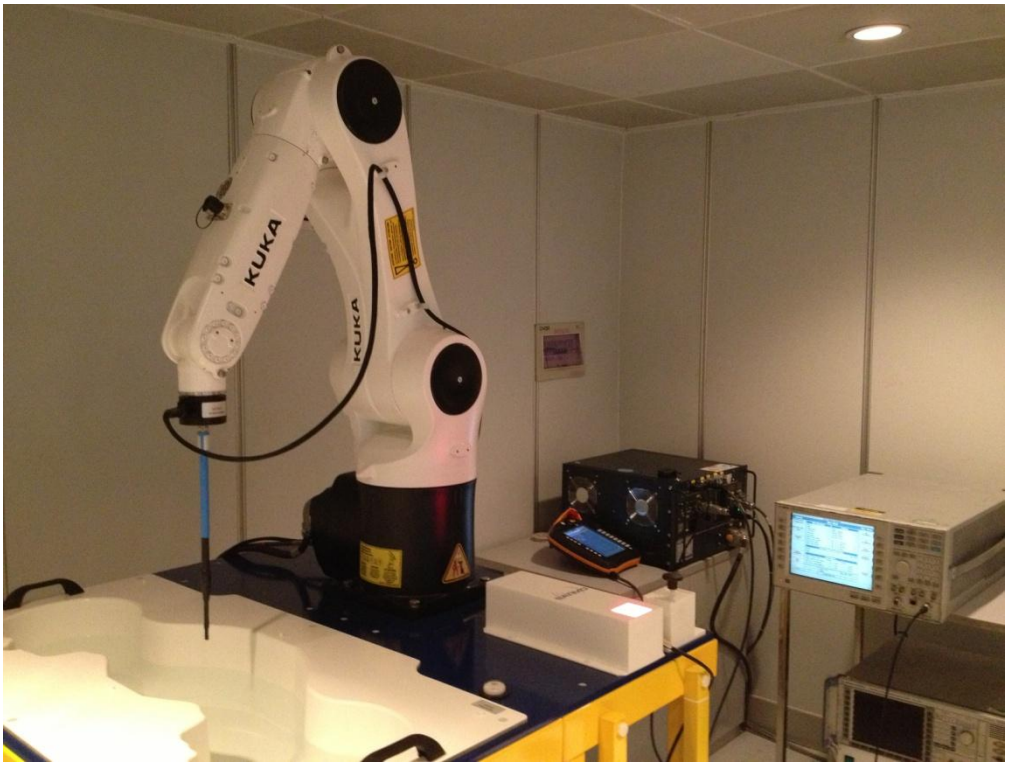


Fig.1 COMO SAR Test System

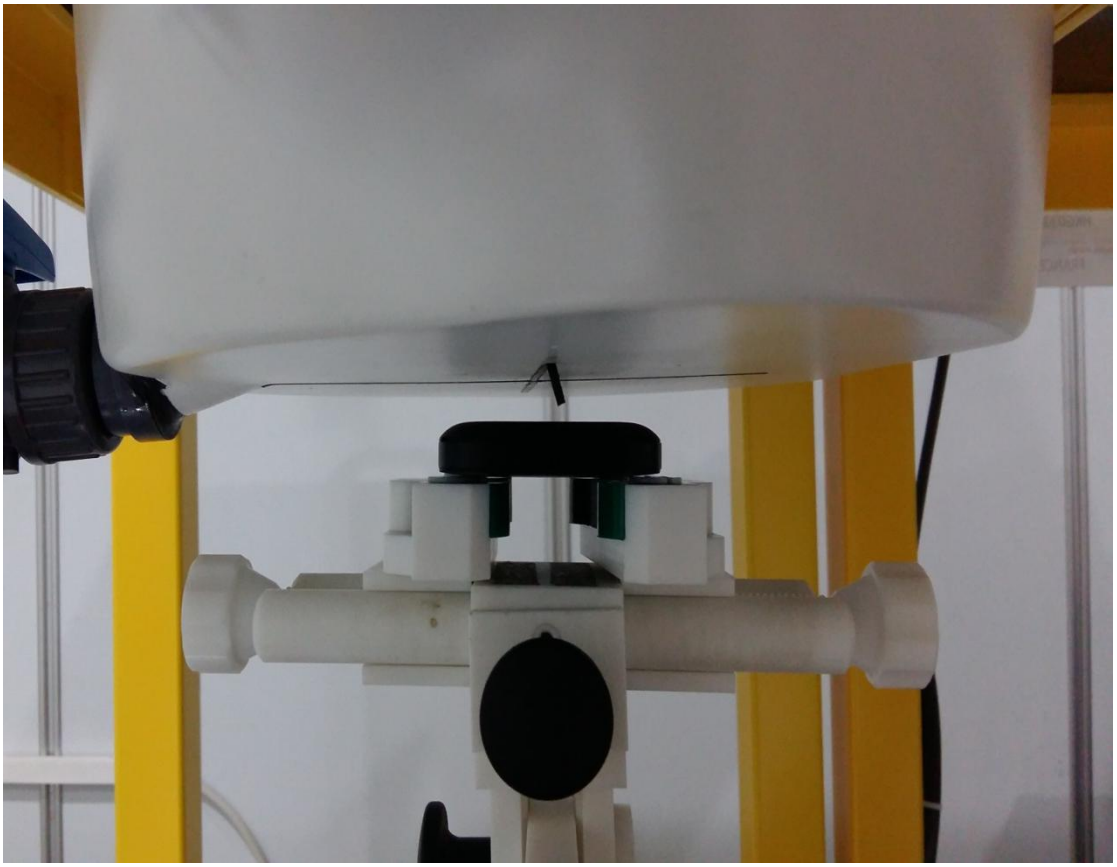


Fig.2 Body(Back upside,10mm seperation)

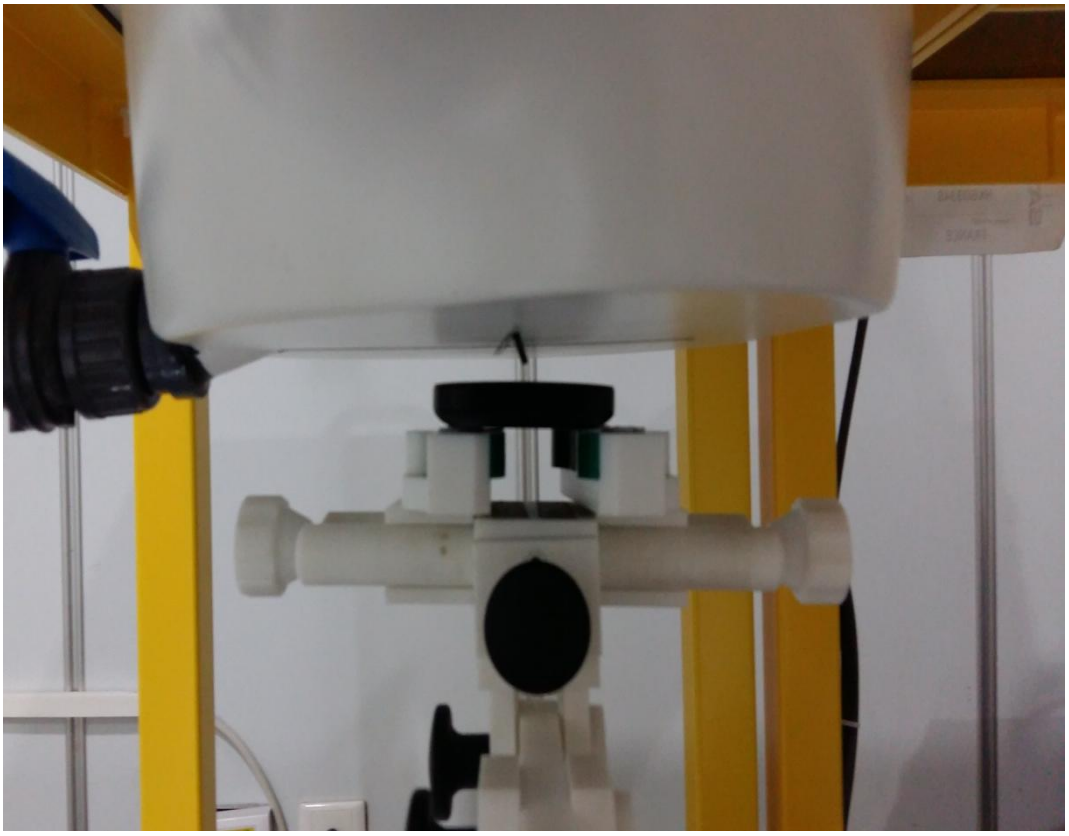


Fig.3 Body(Face upside,10mm seperation)

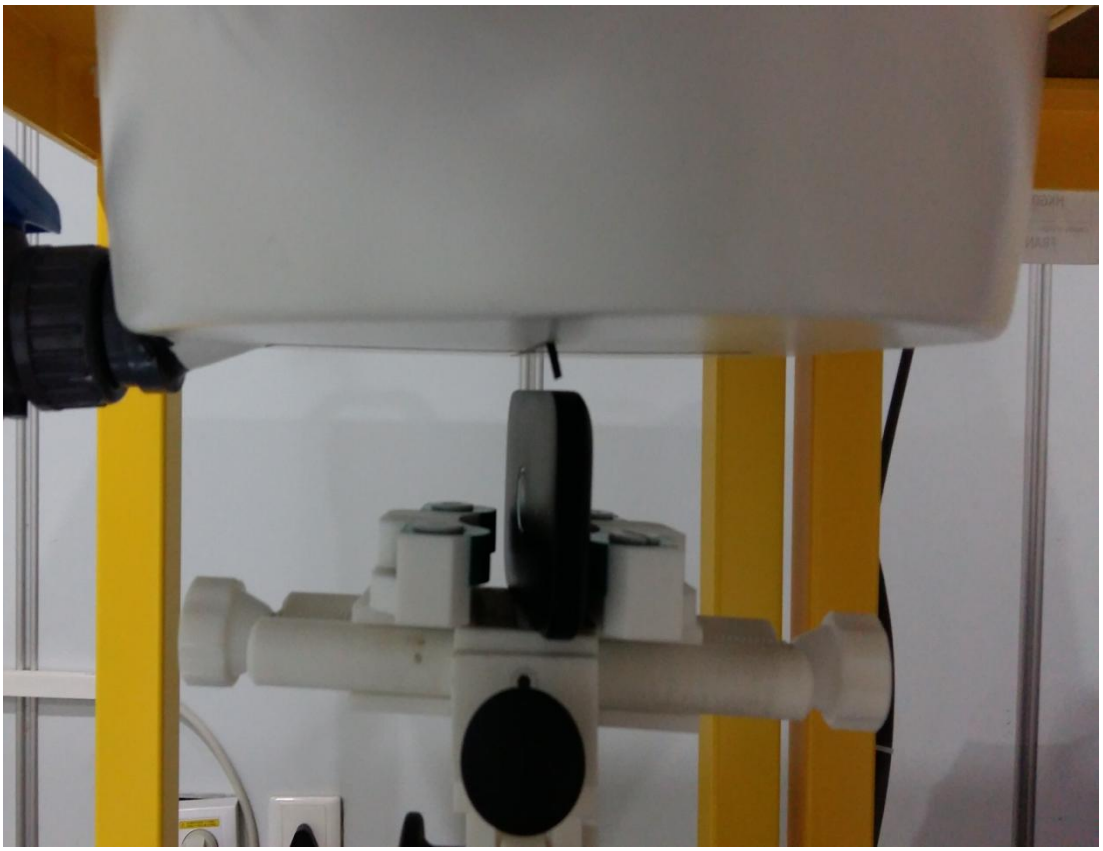


Fig.4 Body Edge A(UP,10mm seperation)

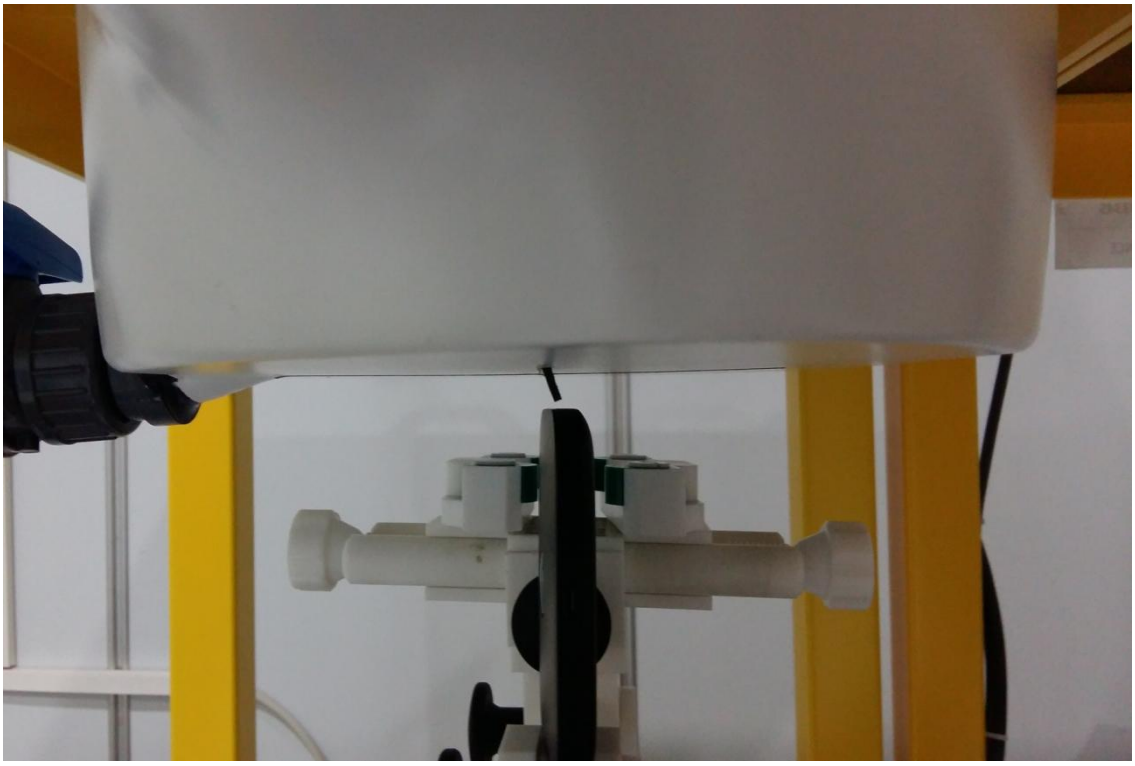


Fig.5 Body Edge B(Right upside,10mm separation)

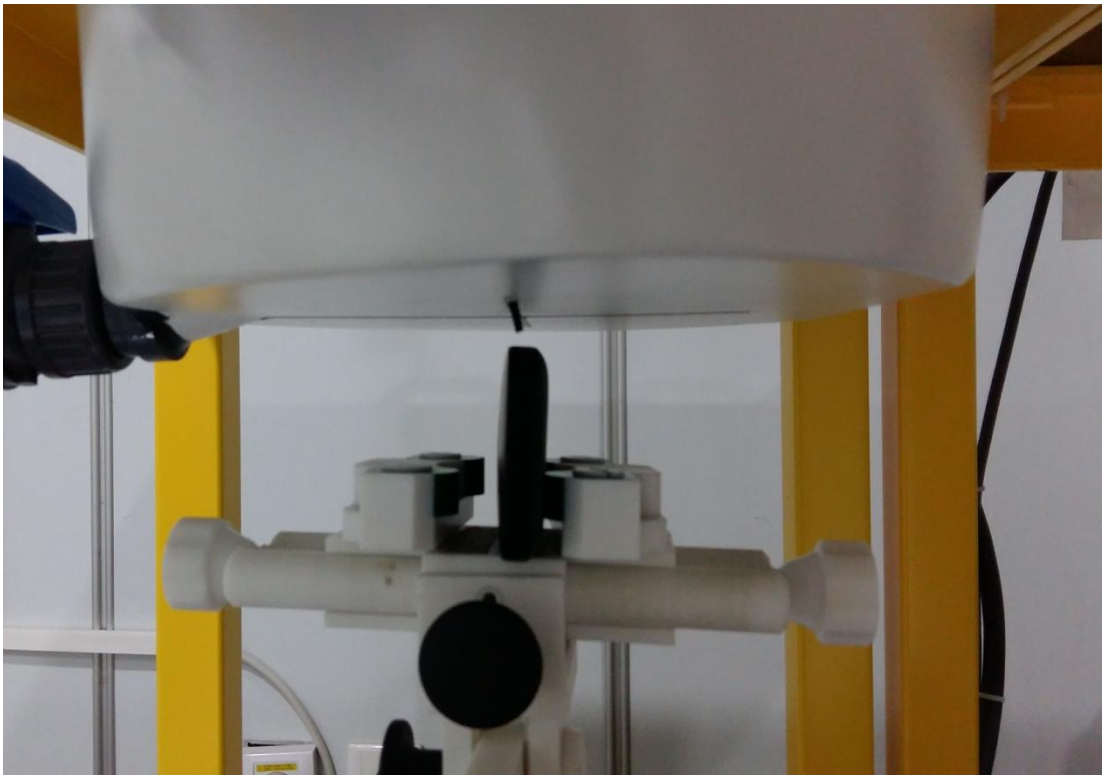


Fig.6 Body Edge C(Down,10mm seperation)

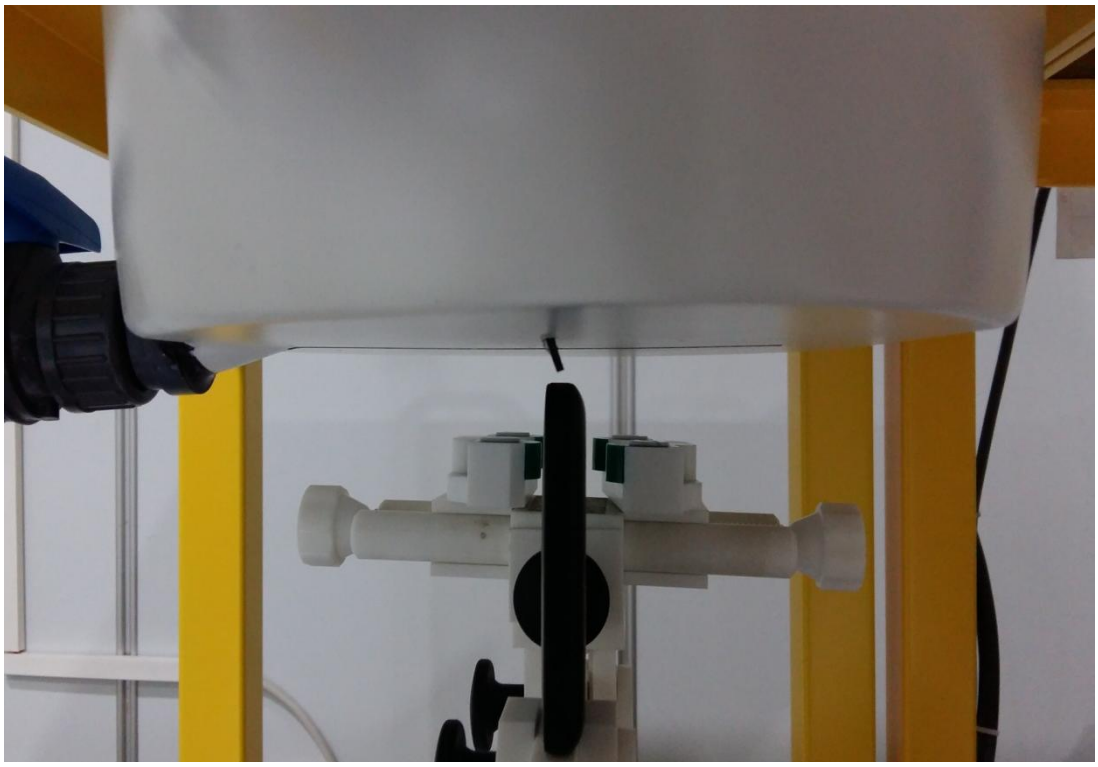


Fig.7 Body Edge D(Left upside,10mm separation)

Fig.8 Body Liquid of 835MHz(15cm)

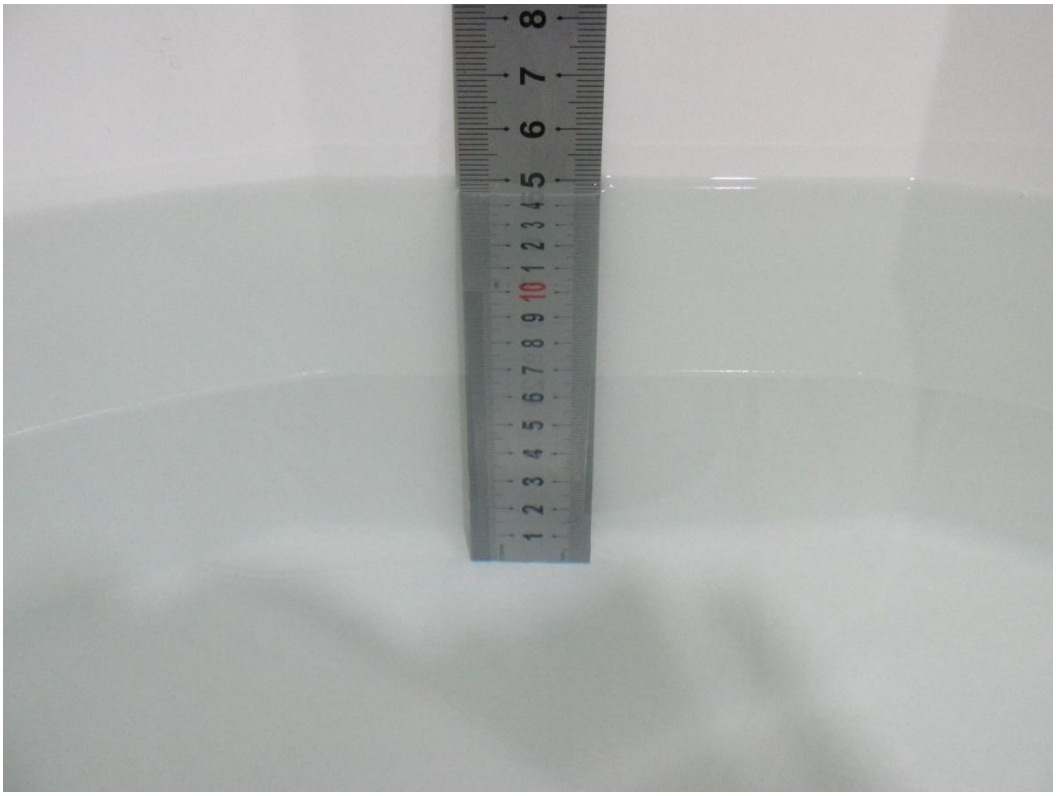


Fig.9 Body Liquid of 1800MHz(15cm)

Fig.10 Body Liquid of 1900MHz(15cm)

Fig.11 Body Liquid of 2450MHz(15cm)

Fig.12 Body Liquid of 2600MHz(15cm)

ANNEX C

of

CCIC-SET

CONFORMANCE TEST REPORT FOR

HUMAN EXPOSURE TO ELECTROMAGNETIC FIELDS

SET2015-03028

Mobile WiFi

Type Name: E5573s-508

Hardware Version: CL1E5573SM

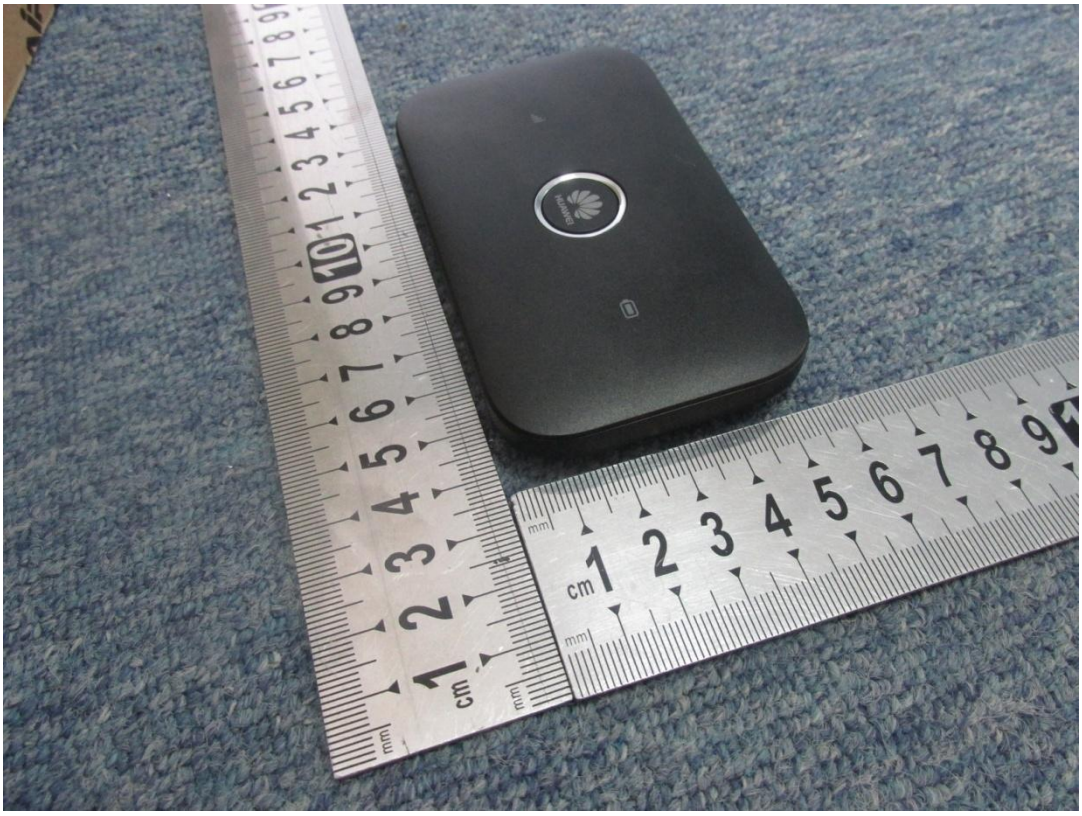
Software Version: 21.200.01.01.00

Sample Photographs

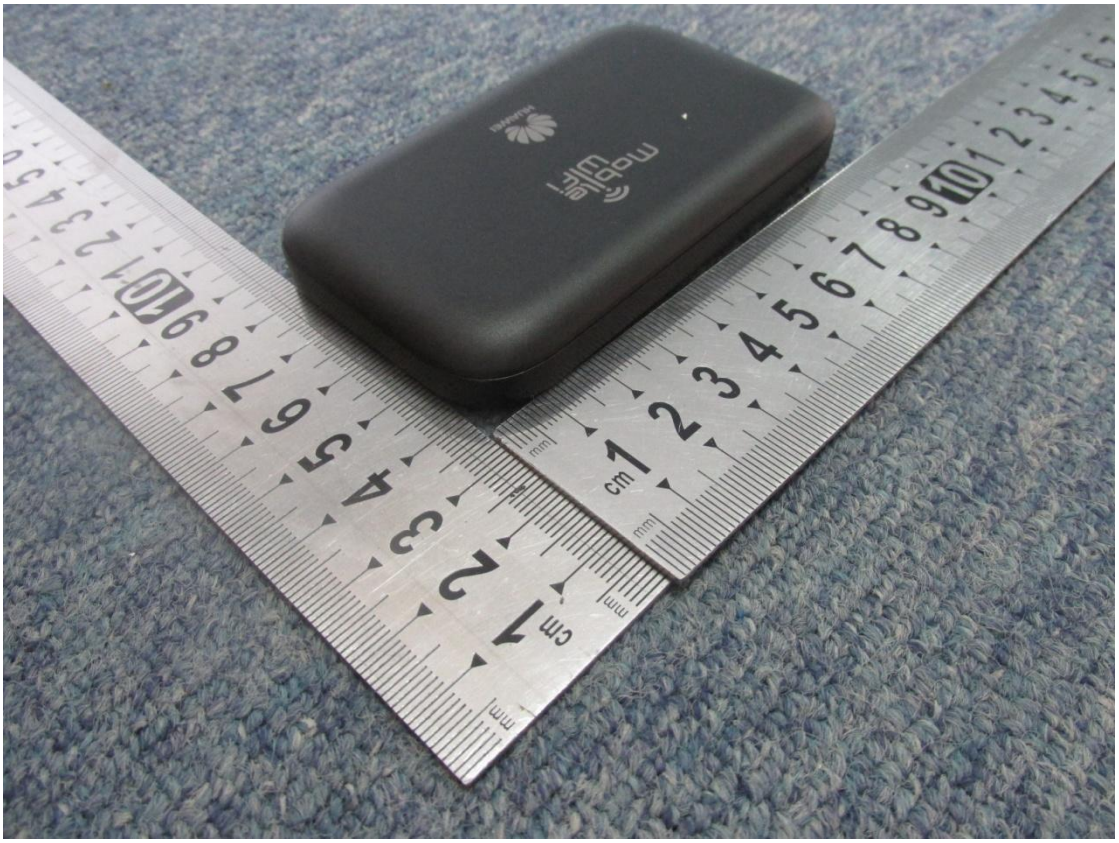
This Annex consists of 3 pages

Date of Report: 2015-03-23

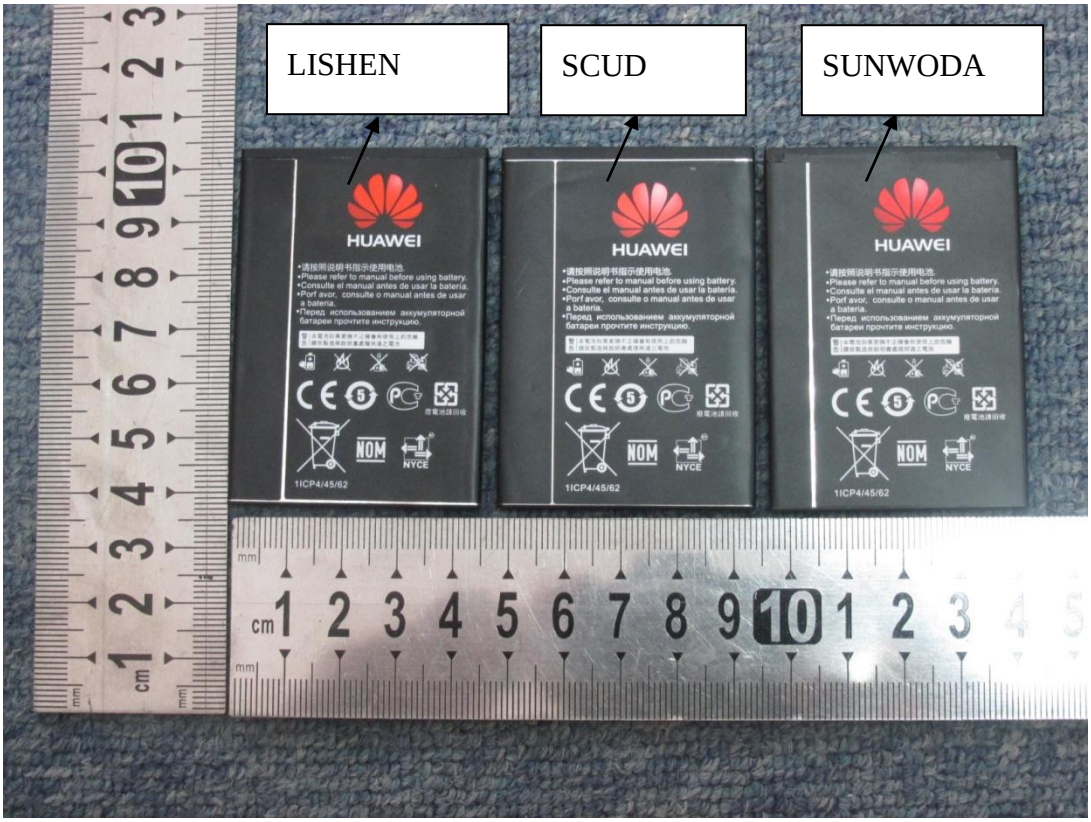
1. Appearance



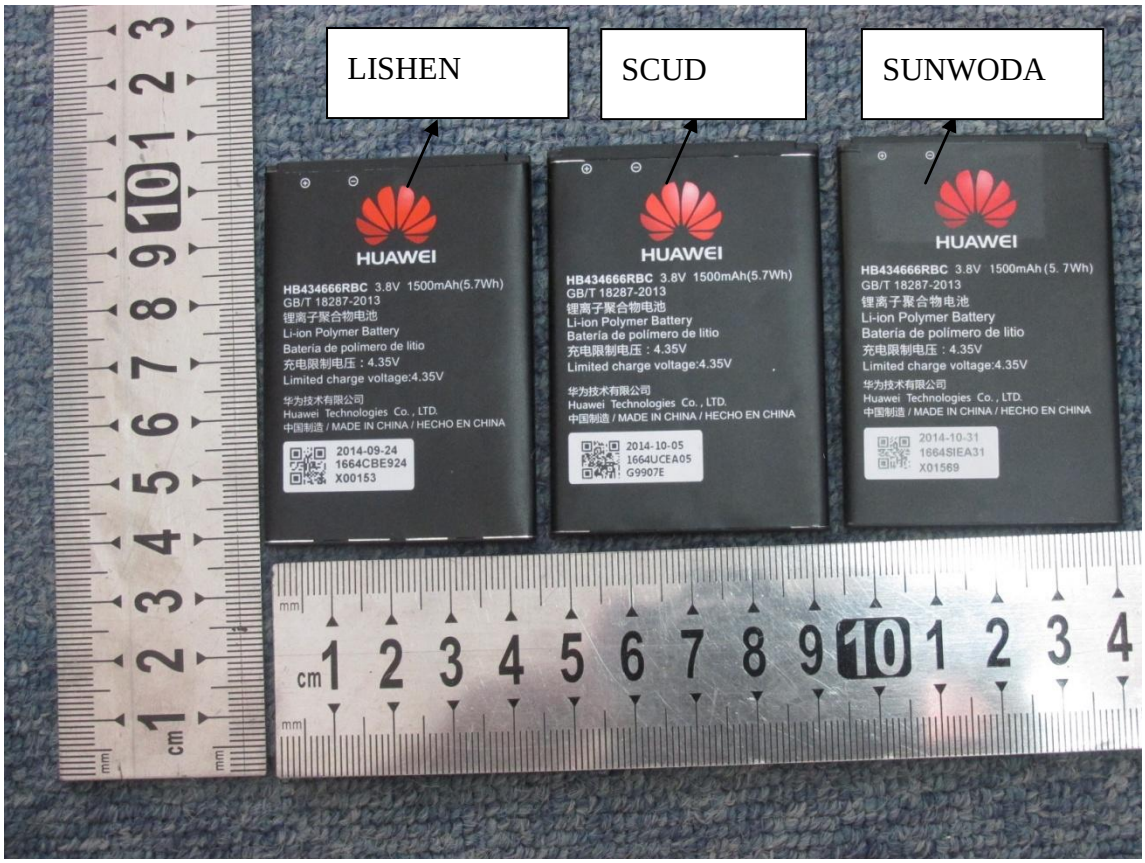
Appearance and size (obverse)



Appearance and size (reverse)



Battery



Battery

ANNEX D

of

CCIC-SET

CONFORMANCE TEST REPORT FOR

HUMAN EXPOSURE TO ELECTROMAGNETIC FIELDS

SET2015-03028

Mobile WiFi

Type Name: E5573s-508

Hardware Version: CL1E5573SM

Software Version: 21.200.01.01.00

System Performance Check Data and Highest SAR Plots

This Annex consists of 40 pages

Date of Report: 2015-03-23

GRAPH TEST RESULTS

BAND	PAPAMETERS
GPRS 850 (2Tx)	Flat Plane with Back Body device position on Middle Channel in GPRS mode (10mm distance)
GPRS 1900 (2Tx)	Flat Plane with Face Body device position on Middle Channel in GPRS mode (10mm distance)
WCDMA 850	Flat Plane with Face Body device position on High Channel in RMC mode(10mm distance) Flat Plane with Face Body device position on High Channel in RMC mode(10mm distance, Repeated)
WCDMA 1700	Flat Plane with Face Body device position on Low Channel in RMC mode(10mm distance)
WCDMA 1900	Flat Plane with Face Body device position on Middle Channel in RMC mode (10mm distance)
LTE Band2	Flat Plane with Back Body device position on Middle Channel in QPSK 20M, 1RB#49 mode(10mm distance)
LTE Band4	Flat Plane with Face Body device position on Middle Channel in QPSK 20M,1RB#0 mode(10mm distance) Flat Plane with Face Body device position on Middle Channel in QPSK 20M,1RB#0 mode(10mm distance, Repeated)
LTE Band5	Flat Plane with Face Body device position on High Channel in QPSK 10M,1RB#49 mode(10mm distance) Flat Plane with Face Body device position on High Channel in QPSK 10M,1RB#49 mode(10mm distance, Repeated)
LTE Band7	Flat Plane with Edge B Body device position on Middle Channel in QPSK 20M,1RB#0 mode(10mm distance)
WIFI 802.11b	Flat Plane with Face Body device position on Middle Channel in DSSS mode (10mm distance, Ant. A)
WIFI 802.11N-20	Flat Plane with Face Body device position on Middle Channel in DSSS mode (10mm distance, Ant. A+B)
WIFI 802.11N-40	Flat Plane with Edge D Body device position on Middle Channel in DSSS mode (10mm distance, Ant. A+B)

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: 09/03/2015

Measurement duration: 13 minutes 12 seconds

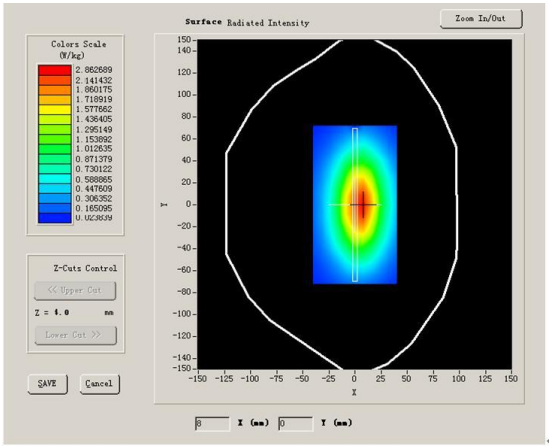
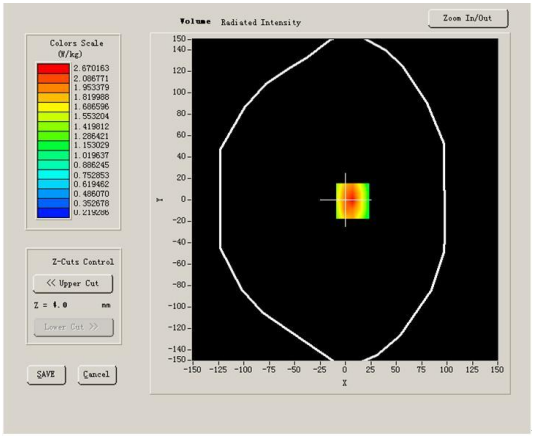
A. Experimental conditions.

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

B. SAR Measurement Results

Band SAR

Frequency (MHz)	835
Relative permittivity (real part)	55.24
Relative permittivity	21.13
Conductivity (S/m)	0.98
Power drift (%)	-0.150000
Ambient Temperature:	22.2 ℃
Liquid Temperature:	22.5 ℃
ConvF:	5.68
Duty factor:	1:1

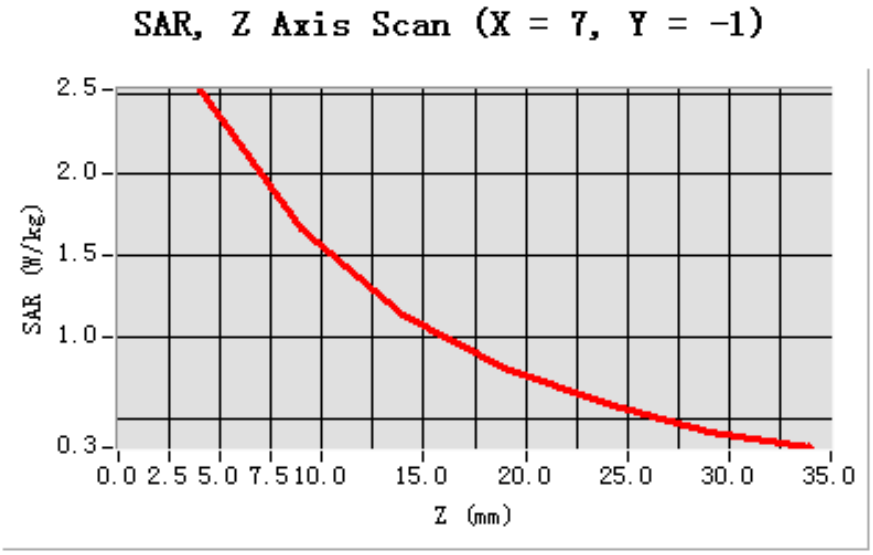
SURFACE SAR	VOLUME SAR
	

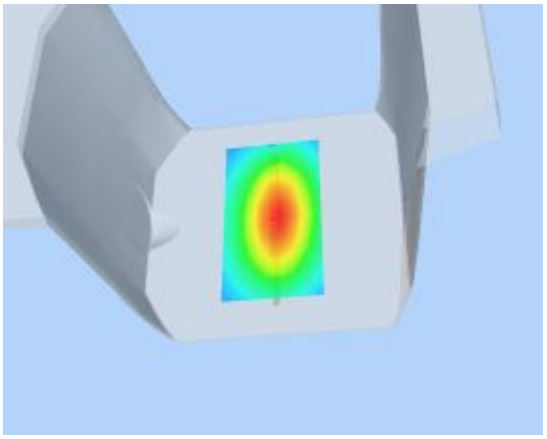
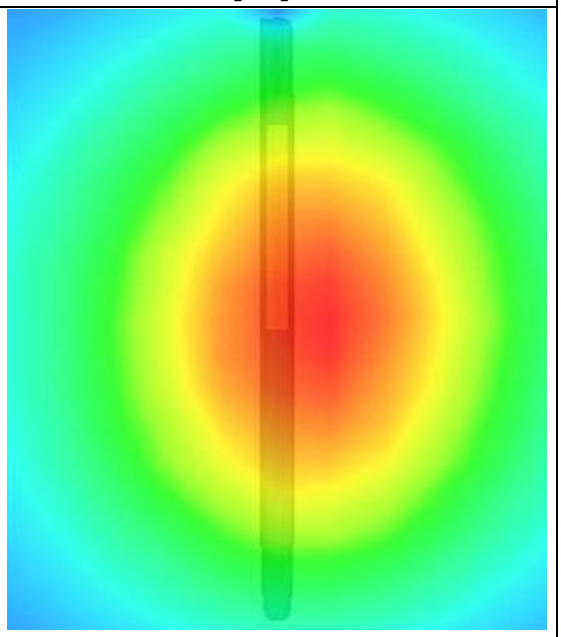
Maximum location: X=7.00, Y=-1.00

SAR 10g (W/Kg)	1.612574
SAR 1g (W/Kg)	2.598630

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	2.632	1.6687	1.1582	0.8124	0.5962	0.4147



3D sceen shot	Hot spot position
	

System Performance Check (Body, 1750MHz)

Type: Phone measurement (Complete)

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

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

Date of measurement: 10/03/2015

Measurement duration: 13 minutes 06 seconds

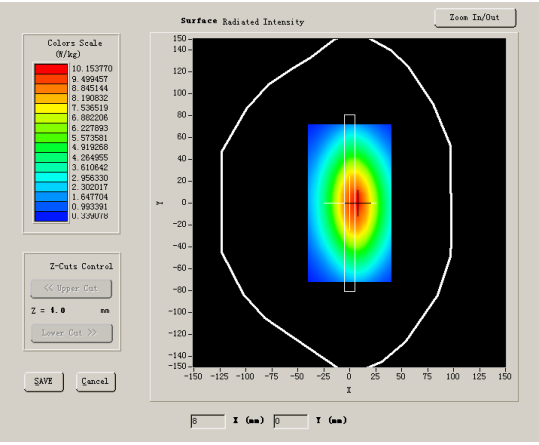
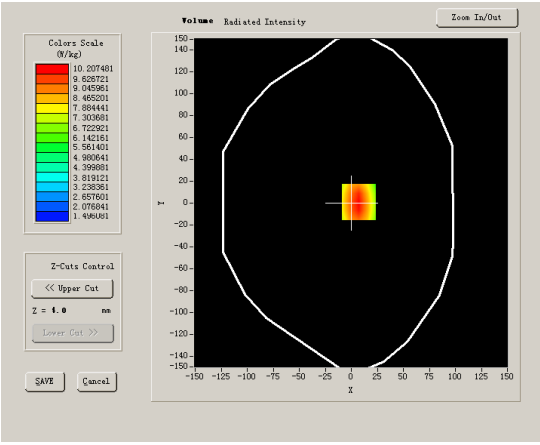
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Flat Plane
Device Position	Dipole
Band	1750MHz
Channels	
Signal	CW

B. SAR Measurement Results

Band SAR

Frequency (MHz)	1750
Relative permittivity (real part)	53.42
Relative permittivity	15.84
Conductivity (S/m)	1.54
Power drift (%)	-0.720000
Ambient Temperature:	22.2 ℃
Liquid Temperature:	22.6 ℃
ConvF:	4.94
Crest factor:	1:1

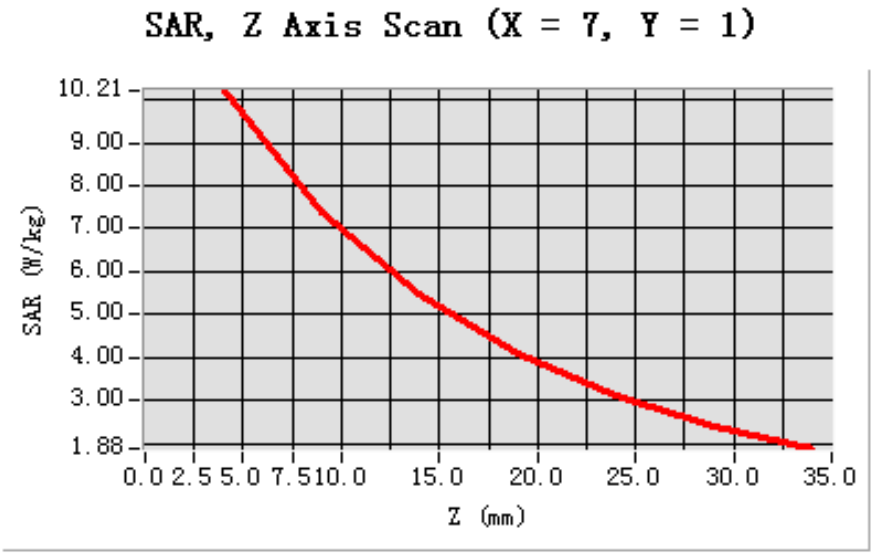
SURFACE SAR	VOLUME SAR
	

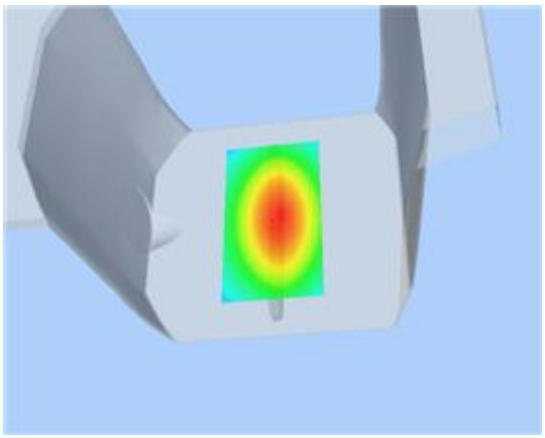
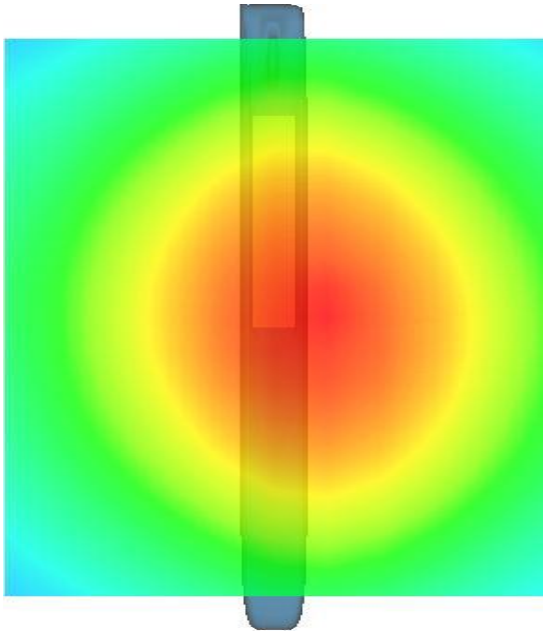
Maximum location: X=7.00, Y=1.00

SAR 10g (W/Kg)	5.234517
SAR 1g (W/Kg)	9.854762

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	10.2034	7.3965	5.4573	4.1097	3.1230	2.4115



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: 11/03/2015

Measurement duration: 13 minutes 12 seconds

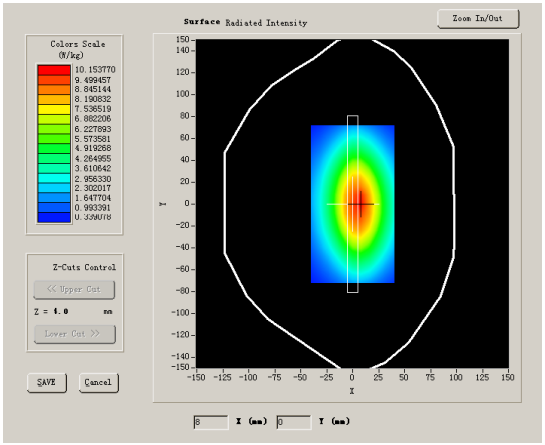
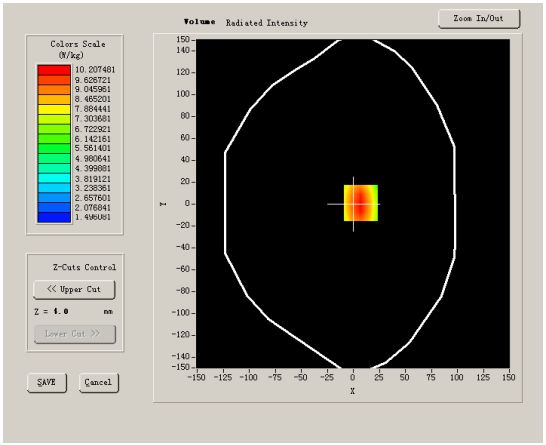
A. Experimental conditions.

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

B. SAR Measurement Results

Band SAR

Frequency (MHz)	1900
Relative permittivity (real part)	53.26
Relative permittivity	14.21
Conductivity (S/m)	1.50
Power Drift (%)	-0.92
Ambient Temperature:	22.0 ℃
Liquid Temperature:	22.8 ℃
ConvF:	5.65
Duty factor:	1:1

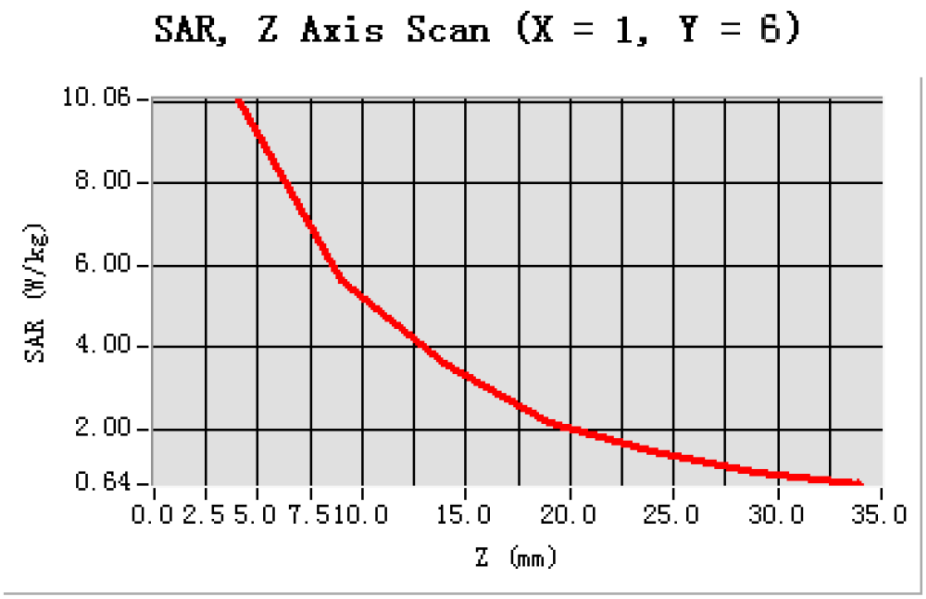
SURFACE SAR	VOLUME SAR
	

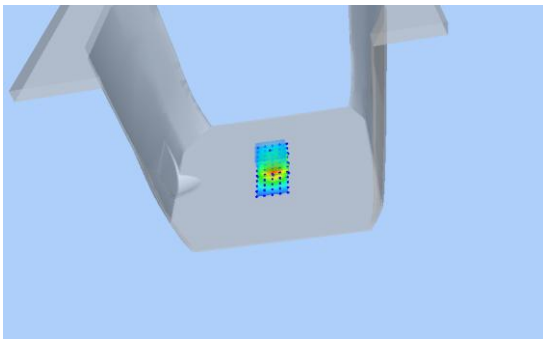
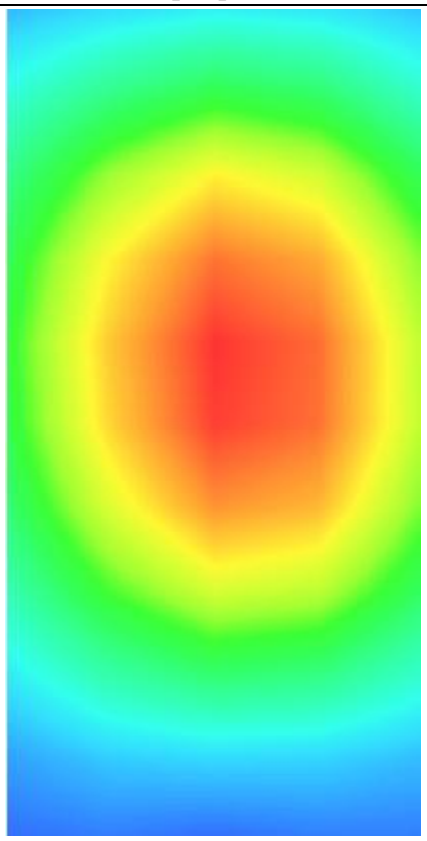
Maximum location: X=1.00, Y=6.00

SAR 10g (W/Kg)	5.263475
SAR 1g (W/Kg)	10.12469

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	10.1472	5.7054	3. 6531	2.0325



3D sceen shot	Hot spot position
	

System Performance Check (Body, 2450MHz)

Type: Validation measurement (Complete)

Date of measurement: 21/3/2015

Measurement duration: 22 minutes 59 seconds

Mobile Phone IMEI number: --

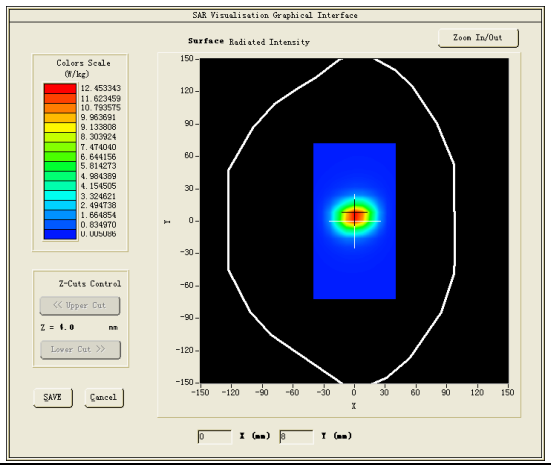
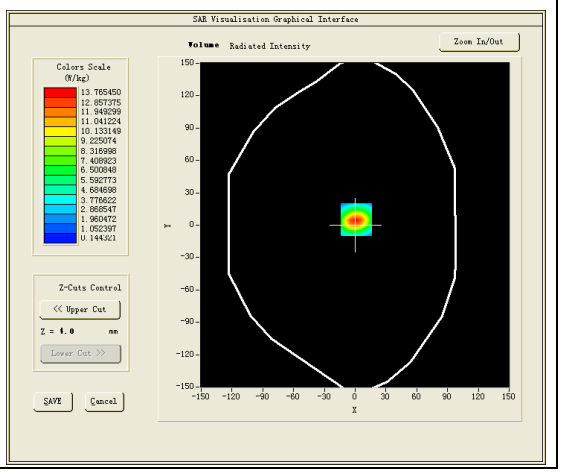
A. Experimental conditions.

Phantom File	surf_sam_plan.txt, h= 5.00 mm
Phantom	7x7x8,dx=5mm dy=5mm dz=4mm,Complete/nsurf_sam_plan.txt, h= 5.00 mm
Device Position	Dipole
Band	2450MHz
Channels	
Signal	CW

B. SAR Measurement Results

Band SAR

Frequency (MHz)	2450.000000
Relative permittivity (real part)	55.231461
Relative permittivity	13.682040
Conductivity (S/m)	1.856197
Power Drift (%)	0.020000
Ambient Temperature:	22.0 ℃
Liquid Temperature:	22.6 ℃
Duty factor:	1:1
ConvF:	4.91

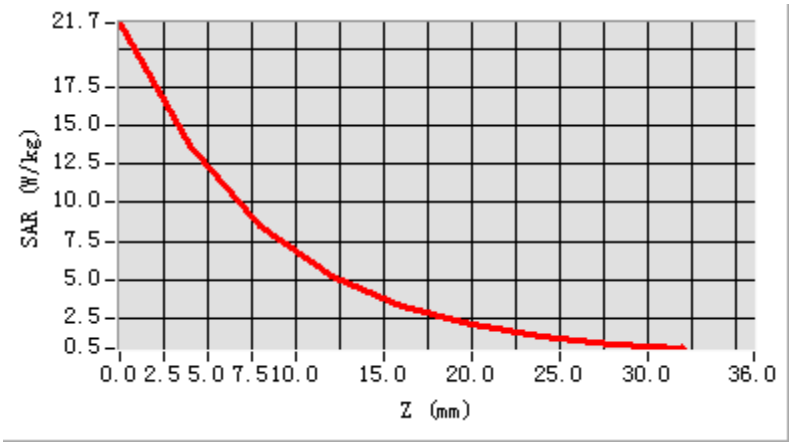
SURFACE SAR	VOLUME SAR
	

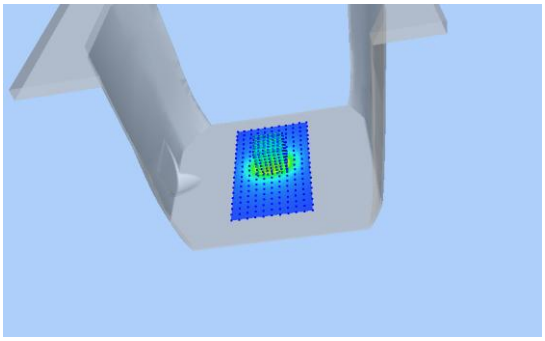
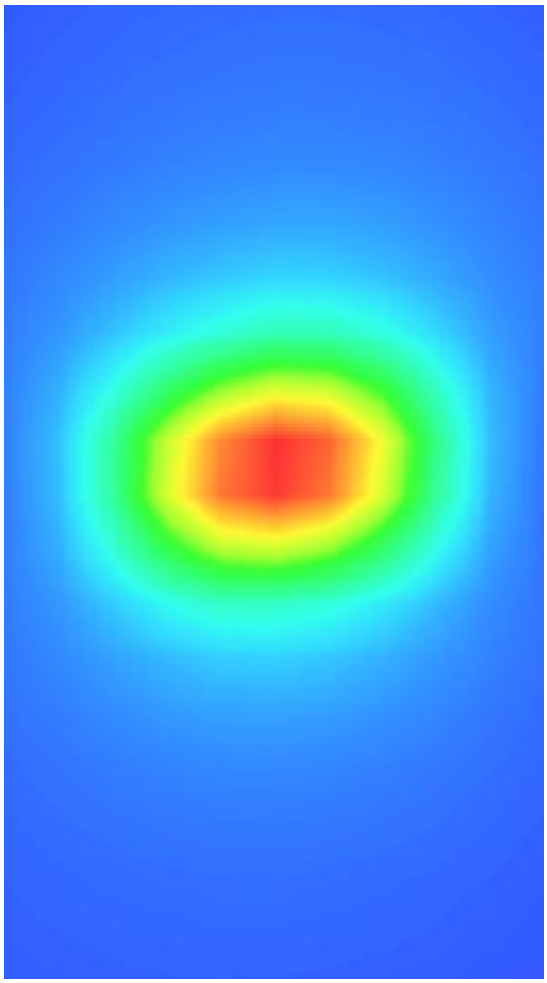
Maximum location: X=1.00, Y=5.00

SAR Peak: 22.36 W/kg

SAR 10g (W/Kg)	6.177815
SAR 1g (W/Kg)	12.774716

Z (mm)	0.00	4.00	8.00	12.00	16.00	20.00	24.00	28.00
SAR (W/Kg)	21.7255	13.7654	8.5074	5.2328	3.2077	2.0007	1.2426	0.7782



3D screen shot	Hot spot position
	

System Performance Check (Body, 2600MHz)

Type: Validation measurement (Complete)

Date of measurement: 21/3/2015

Measurement duration: 22 minutes 49 seconds

Mobile Phone IMEI number: --

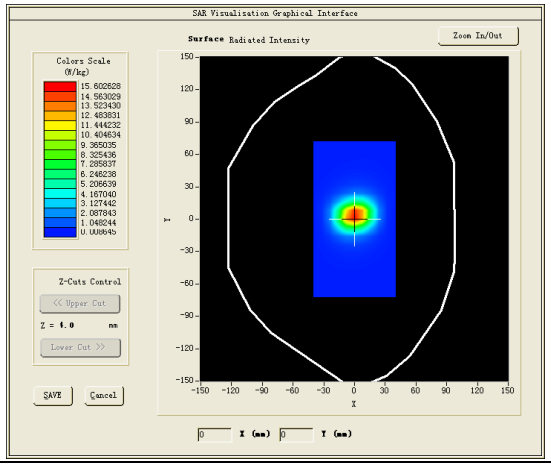
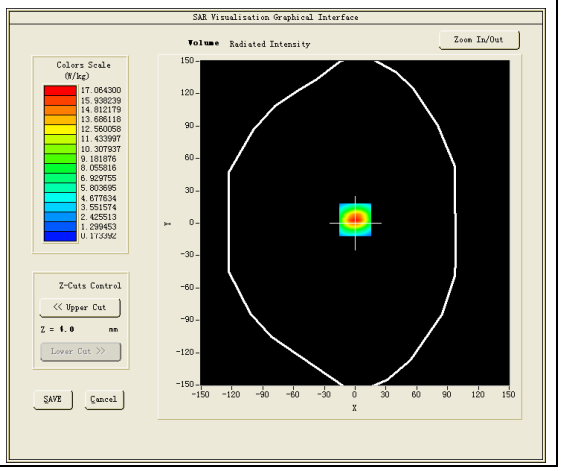
A. Experimental conditions.

Phantom File	surf_sam_plan.txt, h= 5.00 mm
Phantom	7x7x8,dx=5mm dy=5mm dz=4mm,Complete/nsurf_sam_plan.txt, h= 5.00 mm
Device Position	Dipole
Band	2600MHz
Channels	
Signal	CW

B. SAR Measurement Results

Band SAR

Frequency (MHz)	2600
Relative permittivity (real part)	55.118401
Relative permittivity	13.898700
Conductivity (S/m)	1.957400
Power Drift (%)	-0.290000
Ambient Temperature:	22.0 ℃
Liquid Temperature:	22.5 ℃
Duty factor:	1:1
ConvF:	5.22

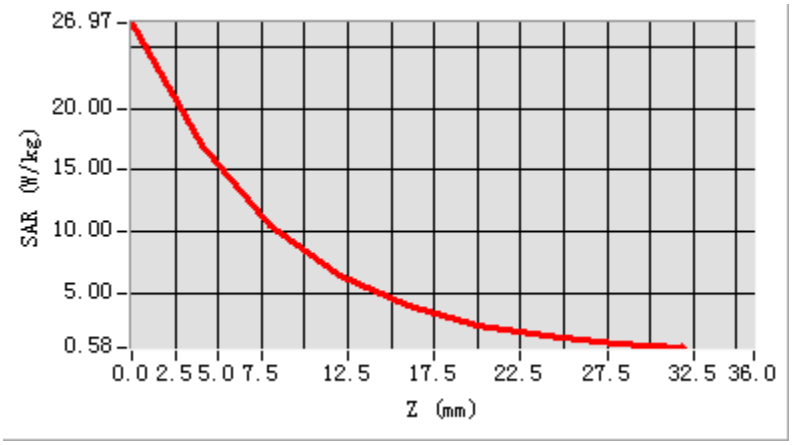
SURFACE SAR	VOLUME SAR
	

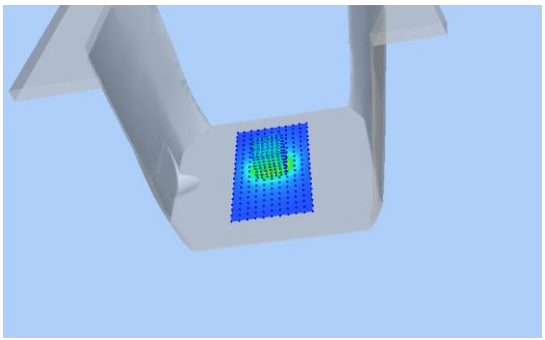
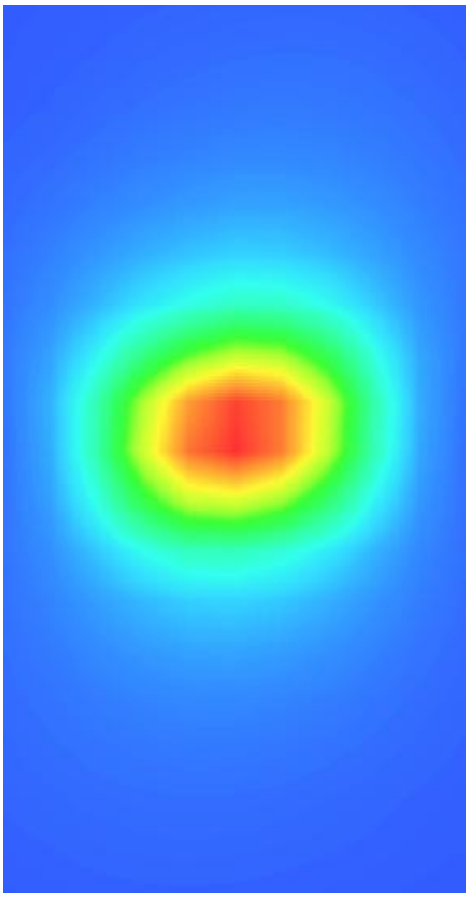
Maximum location: X=0.00, Y=3.00

SAR Peak: 26.84 W/kg

SAR 10g (W/Kg)	6.820115
SAR 1g (W/Kg)	15.179070

Z (mm)	0.00	4.00	8.00	12.00	16.00	20.00	24.00	28.00
SAR (W/Kg)	26.9675	17.0643	10.5372	6.4327	3.9443	2.4394	1.5074	0.9337



3D screen shot	Hot spot position
	

GPRS 850, Back, Middle

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

Date of measurement: 09/03/2015

Measurement duration: 7 minutes 33 seconds

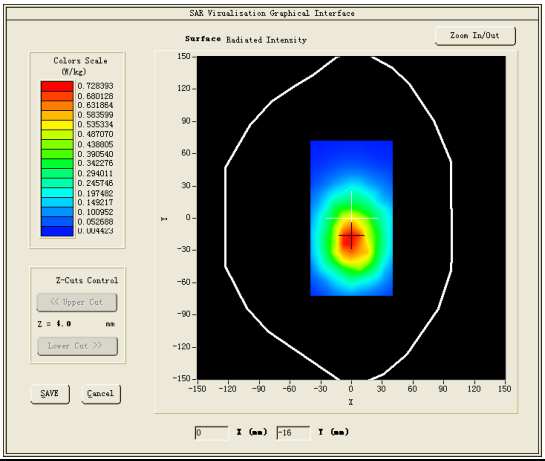
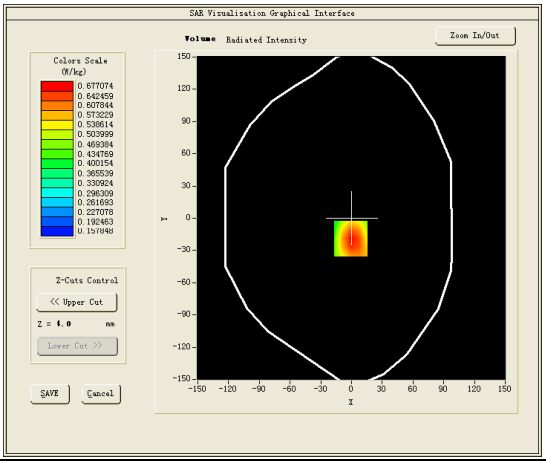
Mobile Phone IMEI number: --

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_2Tx)
Channels	190
Signal	GPRS(Duty cycle: 1:4)

B.SAR Measurement Results

Frequency (MHz)	836.6
Relative permittivity (real part)	55.24
Relative permittivity (imaginary part)	21.13
Conductivity (S/m)	0.98
Variation (%)	-0.58
ConvF:	5.68

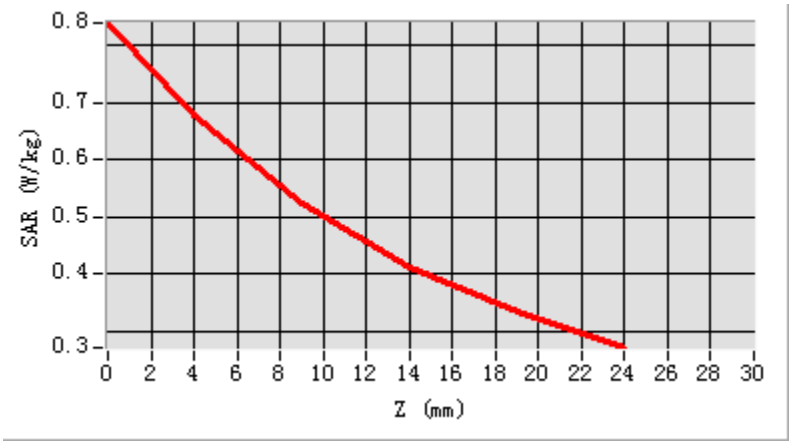
SURFACE SAR	VOLUME SAR
	

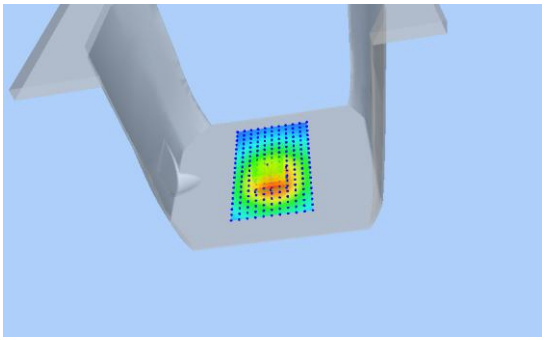
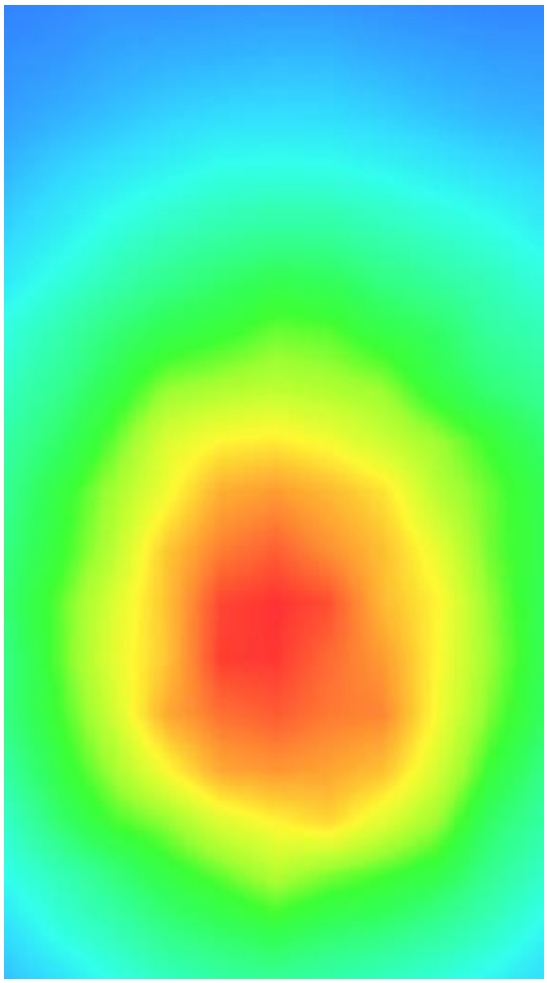
Maximum location: X=-1.00, Y=-19.00

SAR Peak: 0.84 W/kg

SAR 10g (W/Kg)	0.477689
SAR 1g (W/Kg)	0.651324

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.8386	0.6771	0.5227	0.4120	0.3327



3D screen shot	Hot spot position
	

GPRS1900, FACE, Middle

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

Date of measurement: 11/03/2015

Measurement duration: 7 minutes 31 seconds

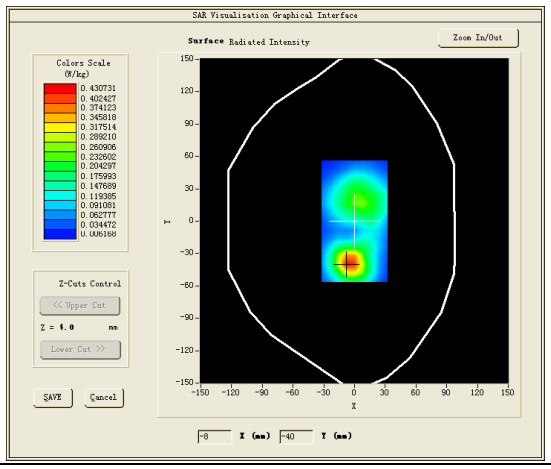
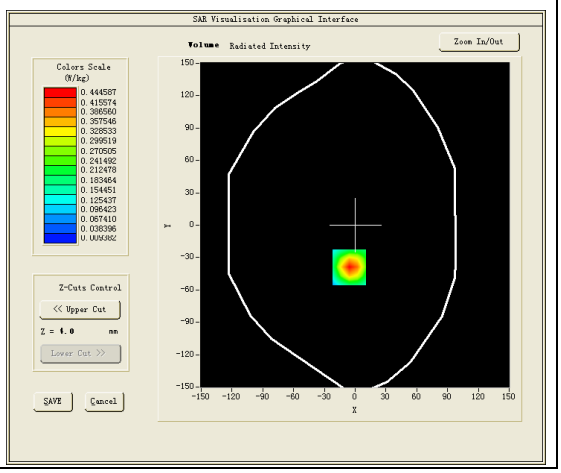
Mobile Phone IMEI number: --

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_2Tx)
Channels	661
Signal	GPRS (Duty cycle: 1:4)

B. SAR Measurement Results

Frequency (MHz)	1880.0
Relative permittivity (real part)	53.26
Relative permittivity (imaginary part)	14.21
Conductivity (S/m)	1.50
Variation (%)	-4.57
ConvF:	5.65

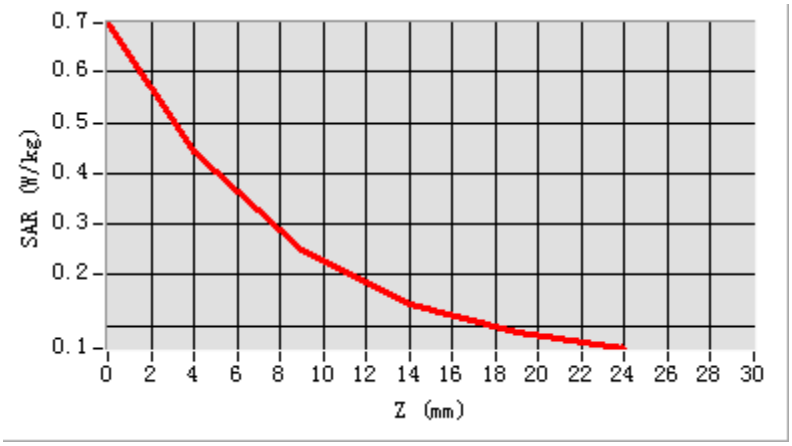
SURFACE SAR	VOLUME SAR
	

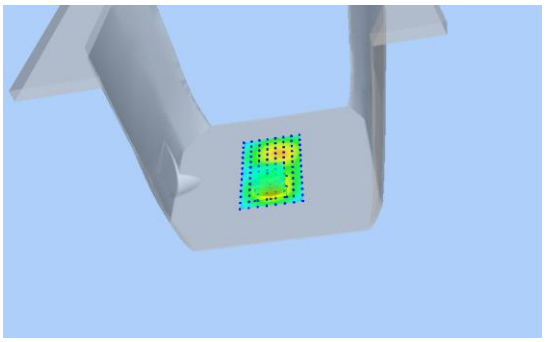
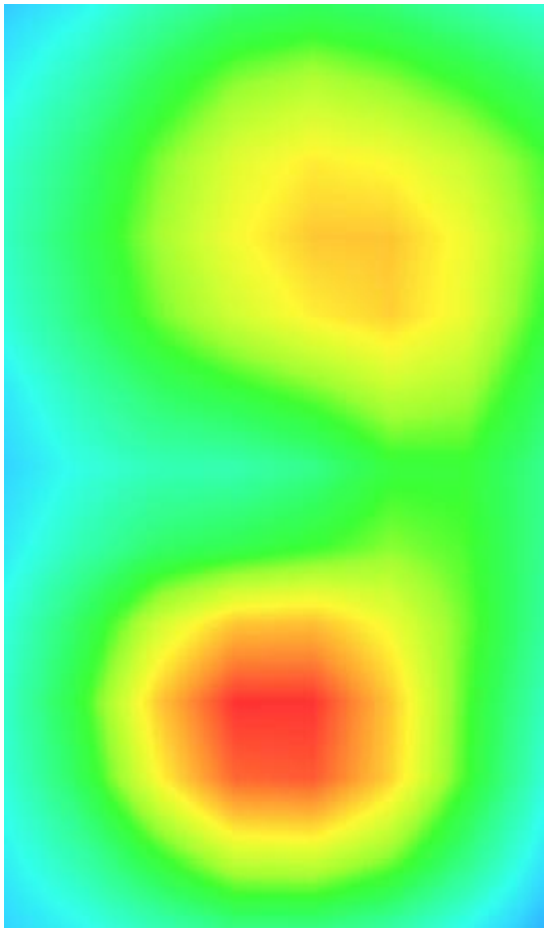
Maximum location: X=-6.00, Y=-39.00

SAR Peak: 0.70 W/kg

SAR 10g (W/Kg)	0.217239
SAR 1g (W/Kg)	0.420963

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.6959	0.4446	0.2491	0.1427	0.0877



3D screen shot	Hot spot position
	

WCDMA850, FACE, High

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

Date of measurement: 09/03/2015

Measurement duration: 5 minutes 19 seconds

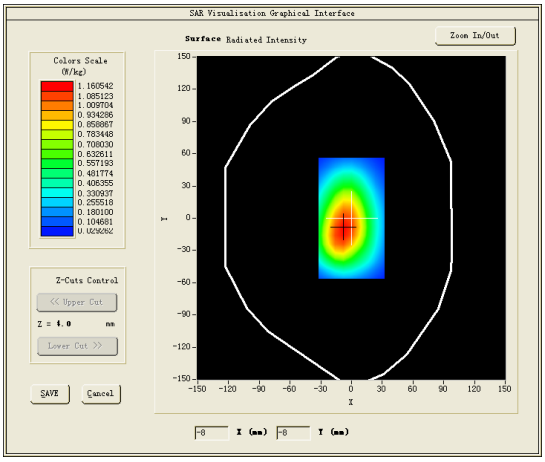
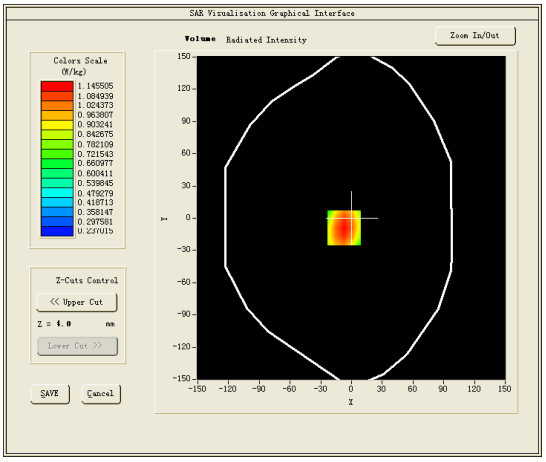
Mobile Phone IMEI number: --

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	Band5_WCDMA850
Channels	4233
Signal	WCDMA (Crest factor: 1:1)

B. SAR Measurement Results

Frequency (MHz)	846.6
Relative permittivity (real part)	54.28
Relative permittivity (imaginary part)	21.18
Conductivity (S/m)	1.00
Variation (%)	-2.73
ConvF:	5.68

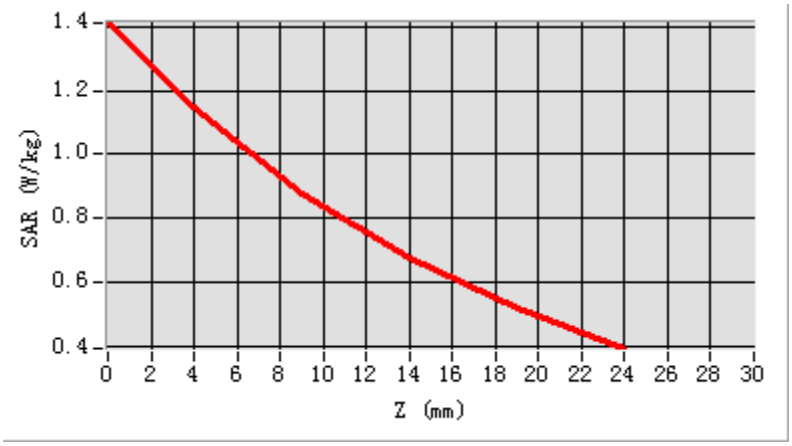
SURFACE SAR	VOLUME SAR
	

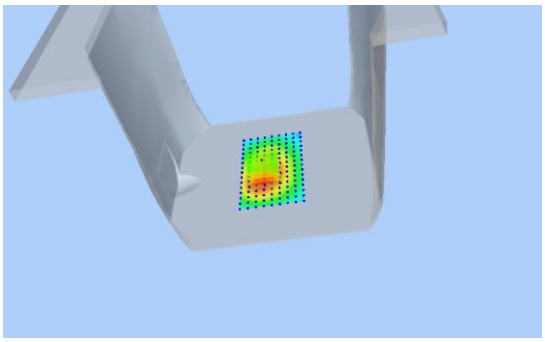
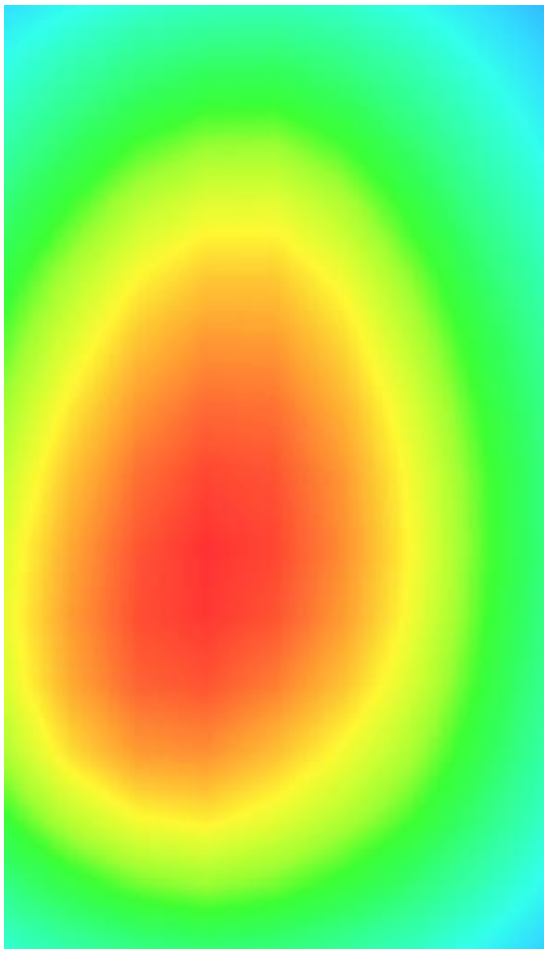
Maximum location: X=-7.00, Y=-9.00

SAR Peak: 1.48 W/kg

SAR 10g (W/Kg)	0.827880
SAR 1g (W/Kg)	1.150440

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.4116	1.1455	0.8796	0.6761	0.5199



3D screen shot	Hot spot position
	

WCDMA850, FACE, High, Repeated testing

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

Date of measurement: 09/03/2015

Measurement duration: 7 minutes 26 seconds

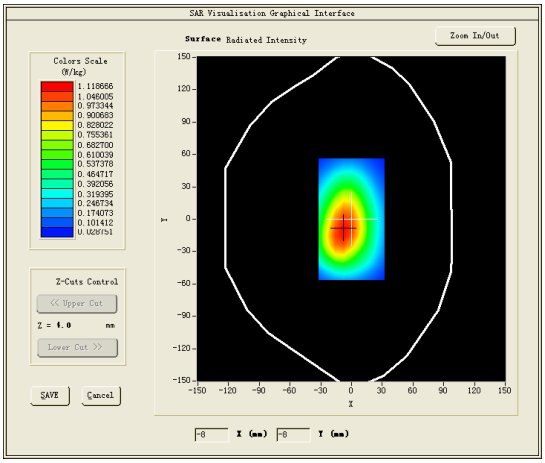
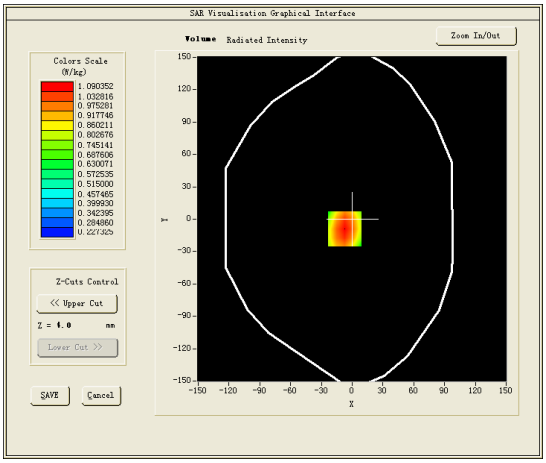
Mobile Phone IMEI number: --

A. Experimental conditions.

Area Scan	surf_sam_plan.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm,Very fast
Phantom	Validation plane
Device Position	Body
Band	Band5_WCDMA850
Channels	4233
Signal	WCDMA (Crest factor: 1:1)

B. SAR Measurement Results

Frequency (MHz)	846.6
Relative permittivity (real part)	54.28
Relative permittivity (imaginary part)	21.18
Conductivity (S/m)	1.00
Variation (%)	-1.72
ConvF:	5.68

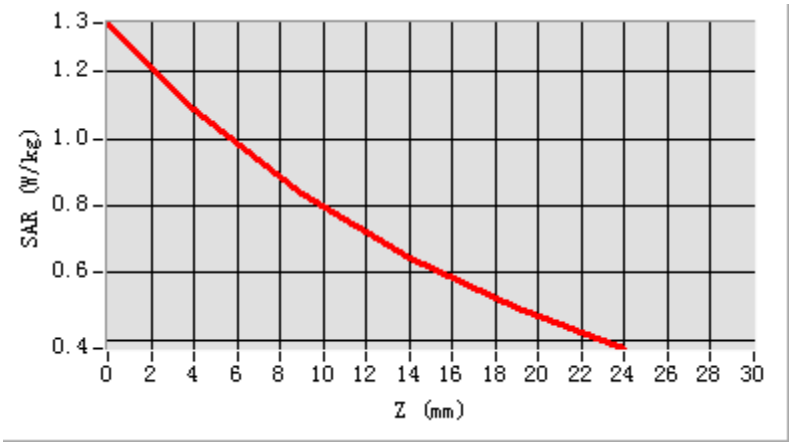
SURFACE SAR	VOLUME SAR
	

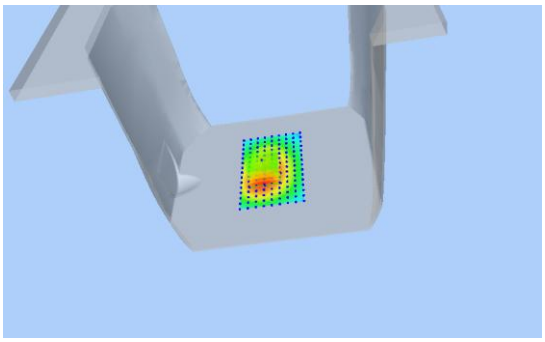
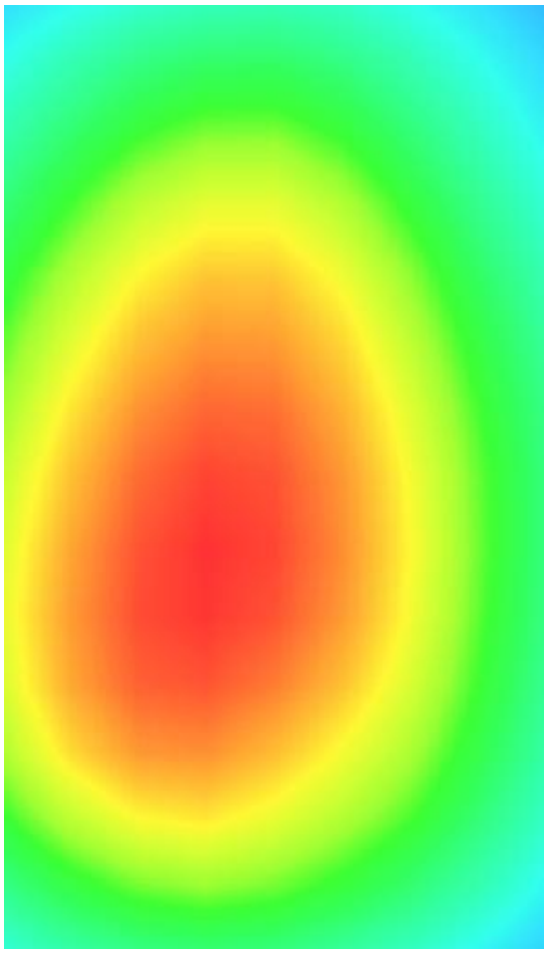
Maximum location: X=-7.00, Y=-9.00

SAR Peak: 1.41 W/kg

SAR 10g (W/Kg)	0.787542
SAR 1g (W/Kg)	1.095023

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.3453	1.0904	0.8362	0.6424	0.4941



3D screen shot	Hot spot position
	

WCDMA1900, FACE, Middle

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

Date of measurement: 11/03/2015

Measurement duration: 7 minutes 37 seconds

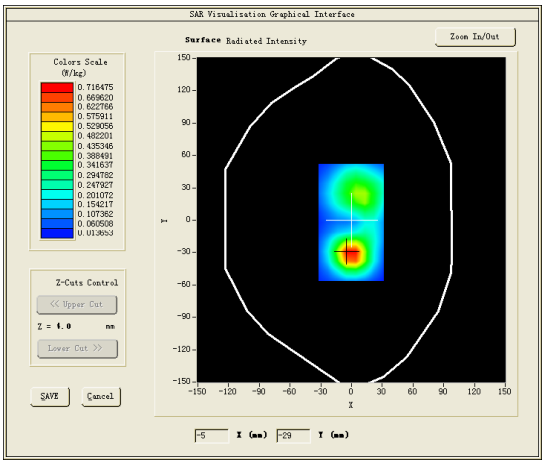
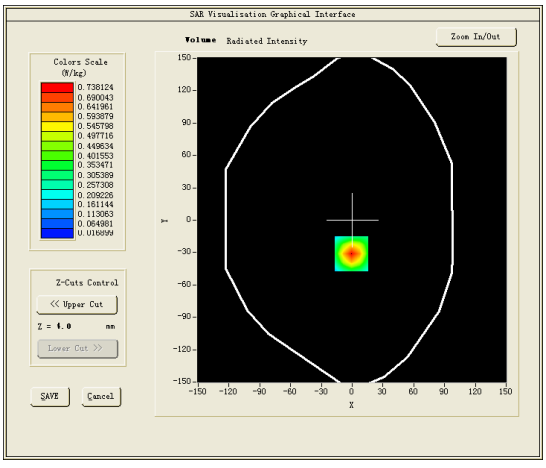
Mobile Phone IMEI number: --

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	Band2_WCDMA1900
Channels	9400
Signal	WCDMA (Duty cycle: 1:1)

B. SAR Measurement Results

Frequency (MHz)	1880.0
Relative permittivity (real part)	53.26
Relative permittivity (imaginary	14.21
Conductivity (S/m)	1.50
Variation (%)	-3.32
ConvF:	5.65

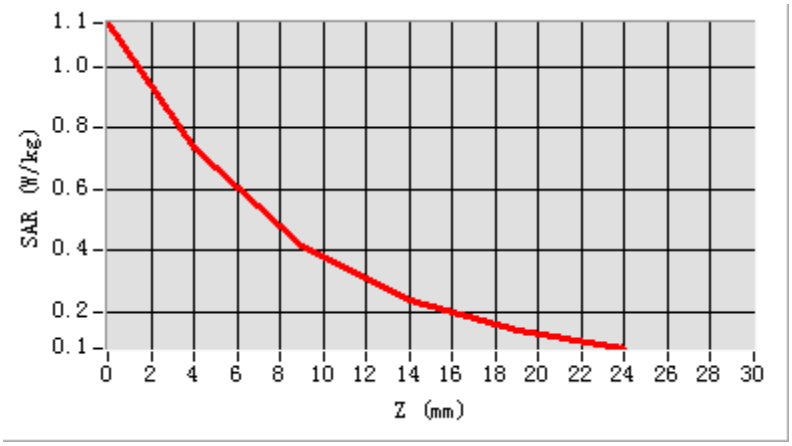
SURFACE SAR	VOLUME SAR
	

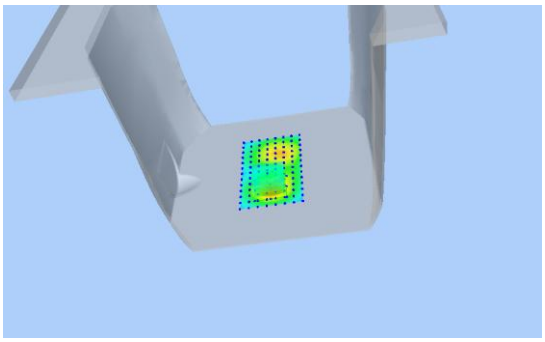
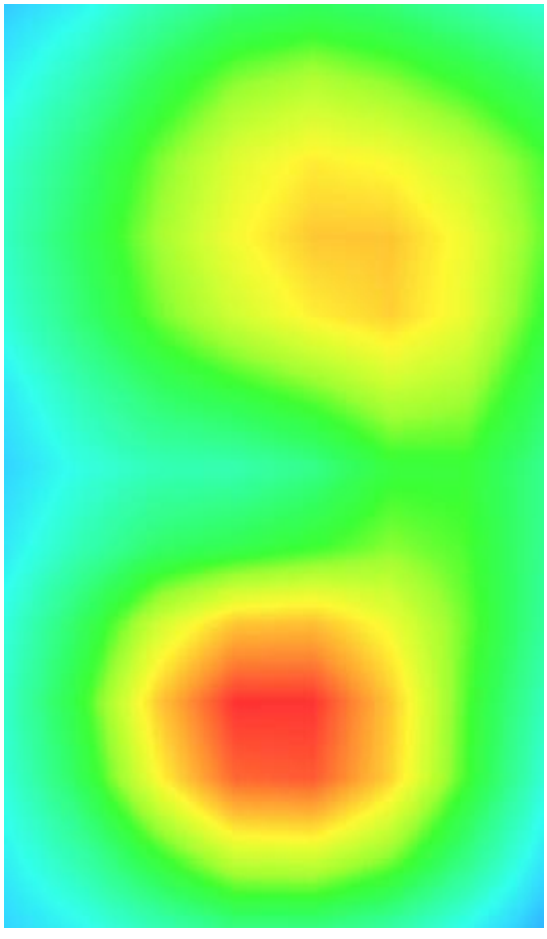
Maximum location: X=-1.00, Y=-31.00

SAR Peak: 1.20 W/kg

SAR 10g (W/Kg)	0.367369
SAR 1g (W/Kg)	0.713814

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.1420	0.7381	0.4177	0.2378	0.1410



3D screen shot	Hot spot position
	

WCDMA1700, Face, Low

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

Date of measurement: 10/03/2015

Measurement duration: 7 minutes 37 seconds

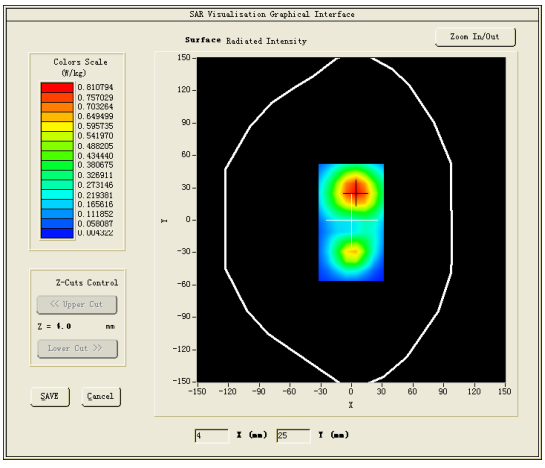
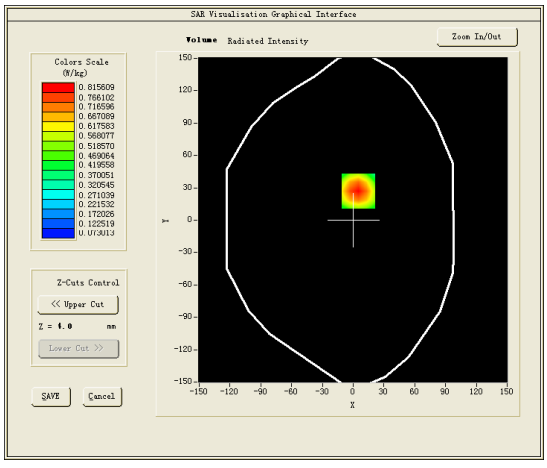
Mobile Phone IMEI number: --

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	Band4_WCDMA1700
Channels	1312
Signal	WCDMA (Duty cycle: 1:1)

B. SAR Measurement Results

Frequency (MHz)	1712.4
Relative permittivity (real part)	53.72
Relative permittivity (imaginary	15.89
Conductivity (S/m)	1.51
Variation (%)	-1.88
ConvF:	4.94

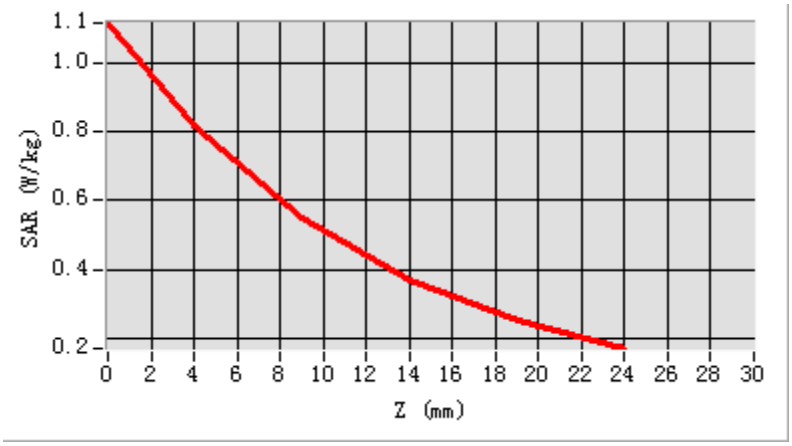
SURFACE SAR	VOLUME SAR
	

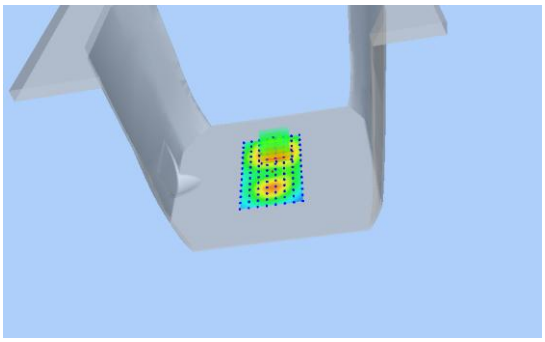
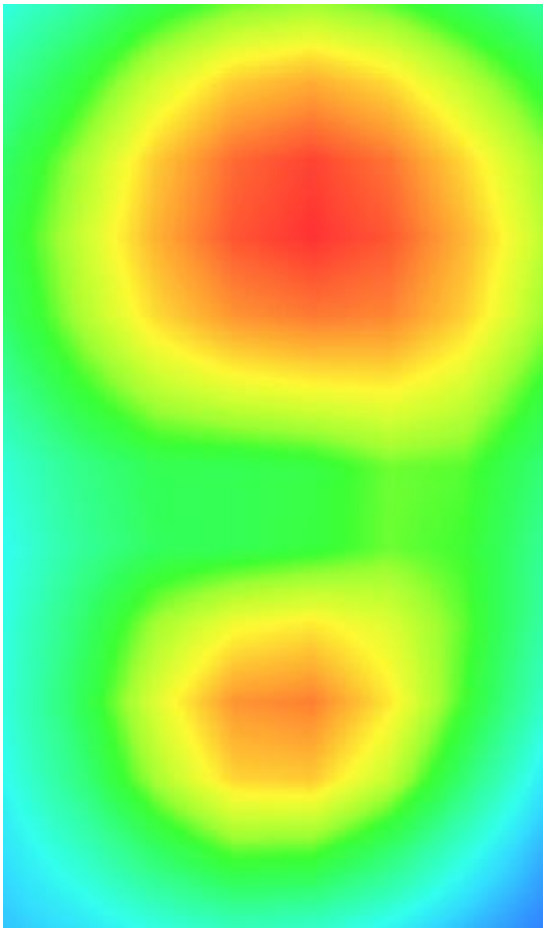
Maximum location: X=5.00, Y=27.00

SAR Peak: 1.15 W/kg

SAR 10g (W/Kg)	0.499719
SAR 1g (W/Kg)	0.796506

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.1136	0.8156	0.5491	0.3722	0.2561



3D screen shot	Hot spot position
	

LTE Band 2 , 20M , BACK, Middle,1RB#49

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

Date of measurement: 11/03/2015

Measurement duration: 7 minutes 37 seconds

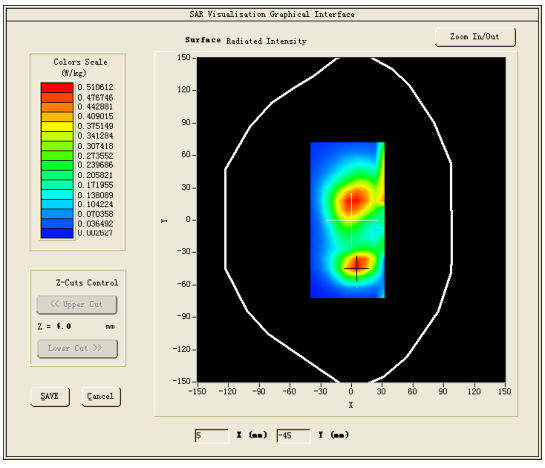
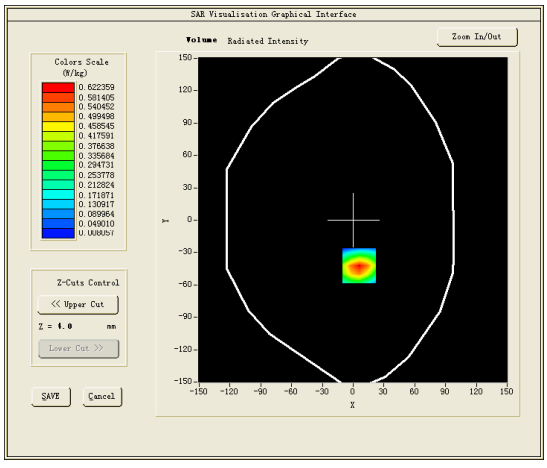
Mobile Phone IMEI number: --

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	LTE Band2
Channels	Middle
Signal	Duty cycle: 1:1

B. SAR Measurement Results

Frequency (MHz)	1880
Relative permittivity (real part)	53.26
Relative permittivity (imaginary	14.21
Conductivity (S/m)	1.50
Variation (%)	2.13
ConvF:	5.65

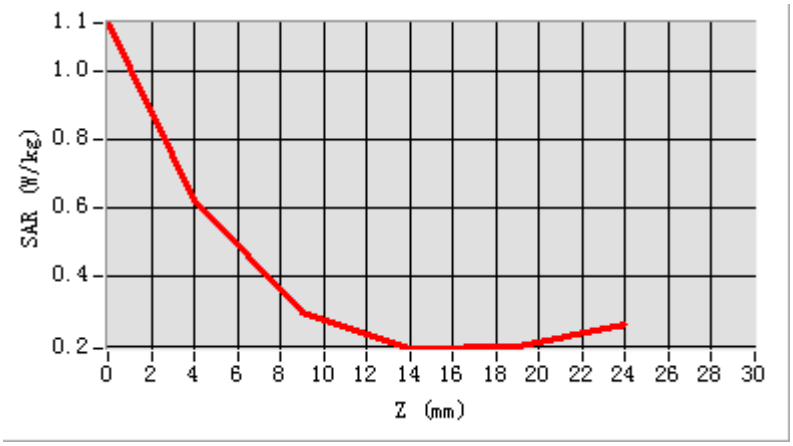
SURFACE SAR	VOLUME SAR
	

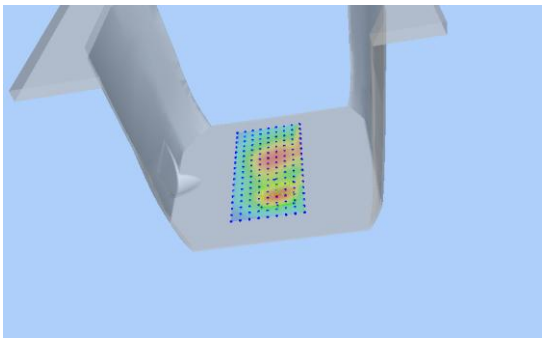
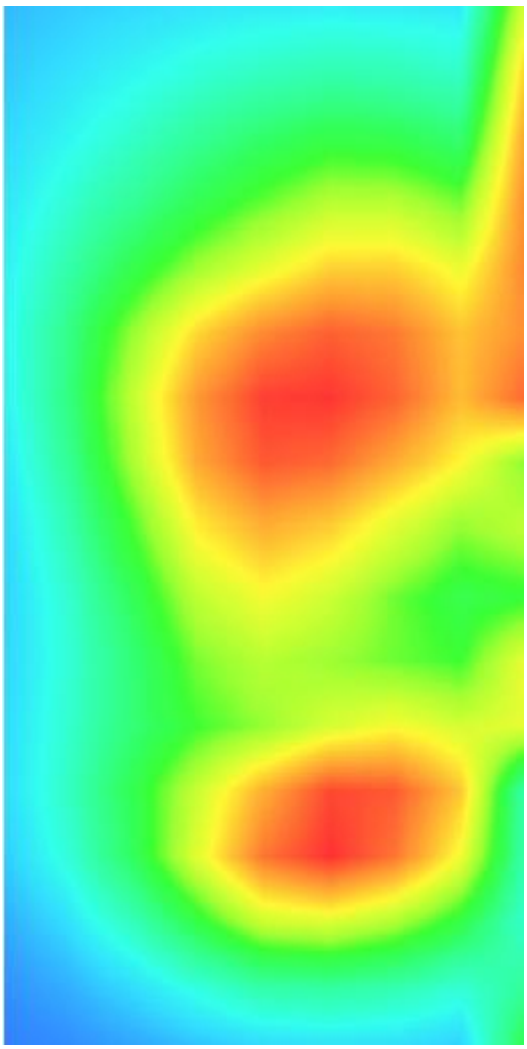
Maximum location: X=6.00, Y=-42.00

SAR Peak: 1.26 W/kg

SAR 10g (W/Kg)	0.363792
SAR 1g (W/Kg)	0.654023

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.1394	0.6224	0.2984	0.1925	0.1997



3D screen shot	Hot spot position
	

LTE Band 4 , 20M , Face, Middle,1RB#0

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

Date of measurement: 10/03/2015

Measurement duration: 7 minutes 37 seconds

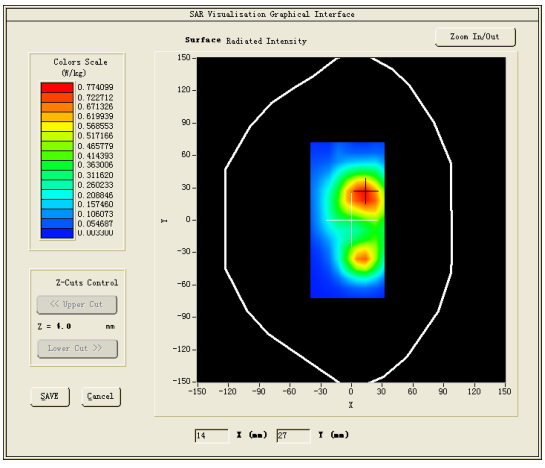
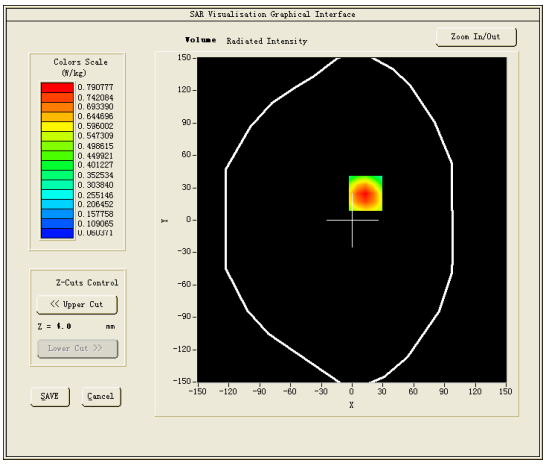
Mobile Phone IMEI number: --

A. Experimental conditions.

Area Scan	surf_sam_plan.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm,Very fast
Phantom	Validation plane
Device Position	Face
Band	LTE Band4
Channels	Middle
Signal	Duty cycle: 1:1

B. SAR Measurement Results

Frequency (MHz)	1732.5
Relative permittivity (real part)	53.42
Relative permittivity (imaginary	15.84
Conductivity (S/m)	1.54
Variation (%)	-0.44
ConvF:	4.94

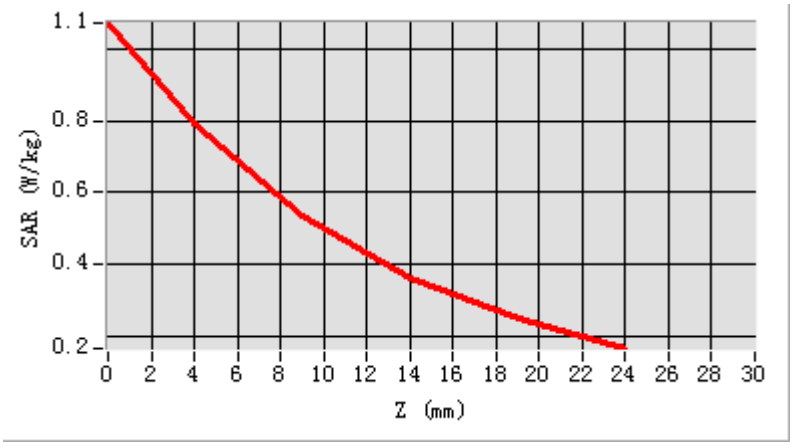
SURFACE SAR	VOLUME SAR
	

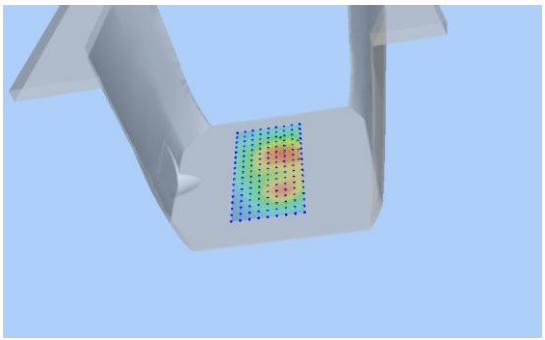
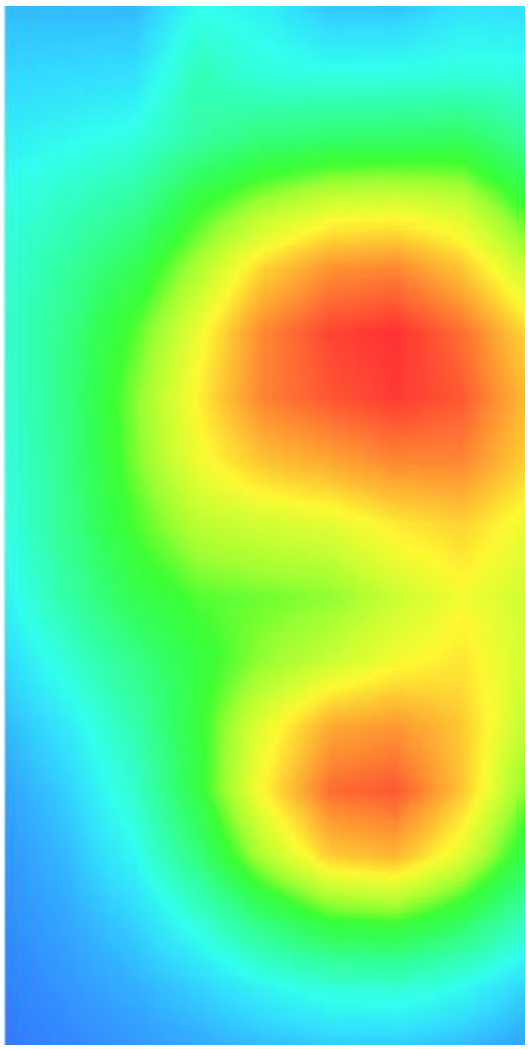
Maximum location: X=13.00, Y=25.00

SAR Peak: 1.17 W/kg

SAR 10g (W/Kg)	0.515806
SAR 1g (W/Kg)	0.817217

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.0737	0.7908	0.5350	0.3627	0.2477



3D screen shot	Hot spot position
	

LTE Band 4 ,20M ,Face,Middle,1RB#0,Repeat testing

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

Date of measurement: 10/03/2015

Measurement duration: 7 minutes 37 seconds

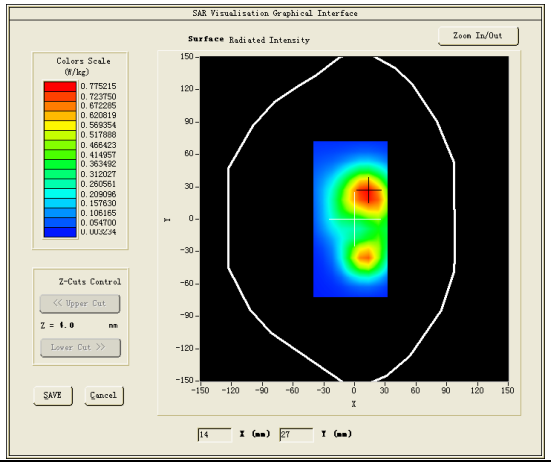
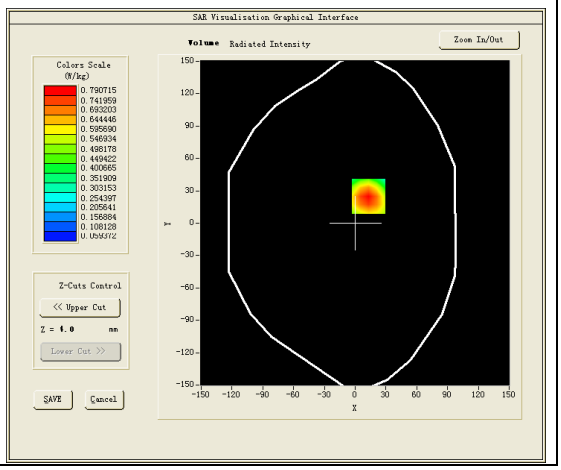
Mobile Phone IMEI number: --

A. Experimental conditions.

Area Scan	surf_sam_plan.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm,Very fast
Phantom	Validation plane
Device Position	Face
Band	LTE Band4
Channels	Middle
Signal	Duty cycle: 1:1

B. SAR Measurement Results

Frequency (MHz)	1732.5
Relative permittivity (real part)	53.42
Relative permittivity (imaginary	15.84
Conductivity (S/m)	1.54
Variation (%)	-0.49
ConvF:	4.94

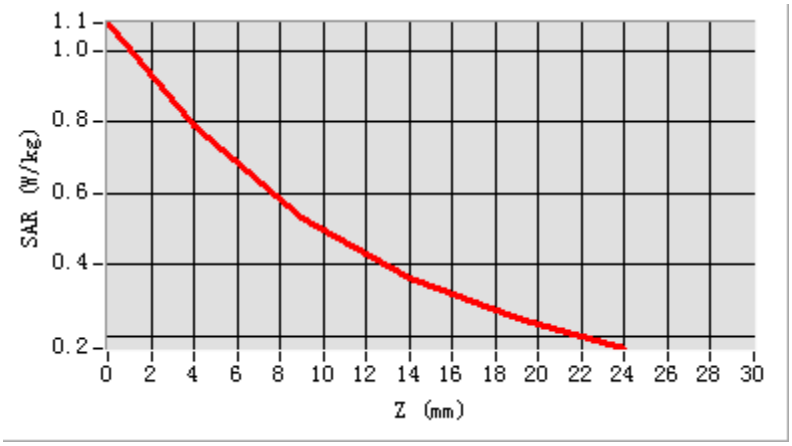
SURFACE SAR	VOLUME SAR
	

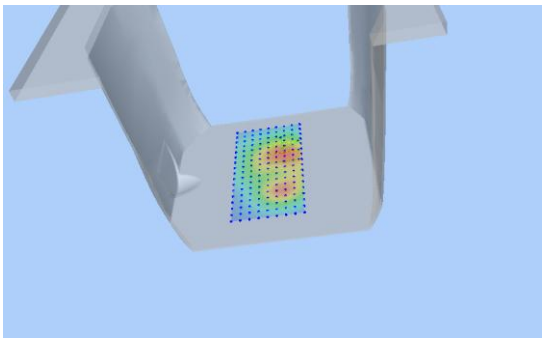
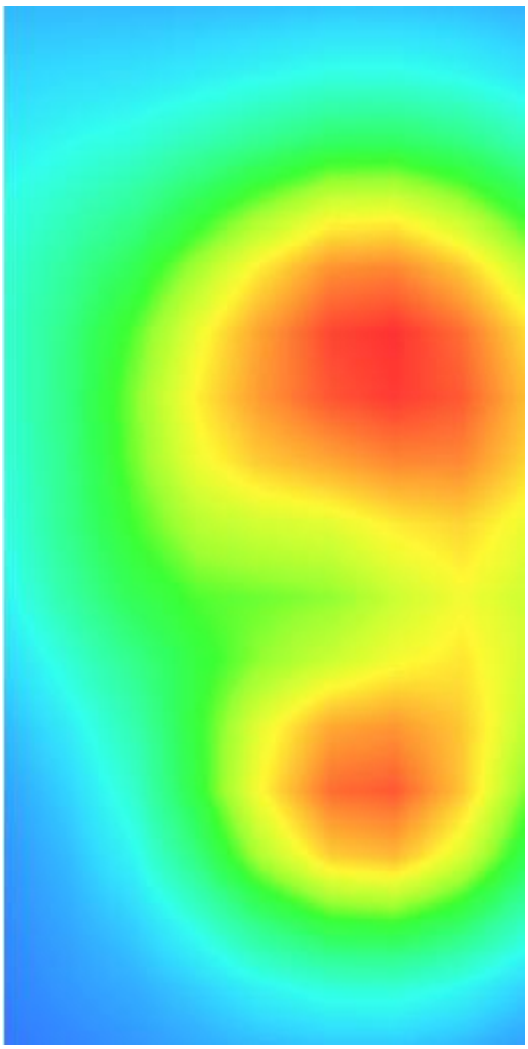
Maximum location: X=13.00, Y=25.00

SAR Peak: 1.18 W/kg

SAR 10g (W/Kg)	0.514547
SAR 1g (W/Kg)	0.817031

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.0772	0.7907	0.5331	0.3607	0.2464



3D screen shot	Hot spot position
	

LTE Band5, 10M, Face, High,1RB#49

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

Date of measurement: 09/03/2015

Measurement duration: 7 minutes 32 seconds

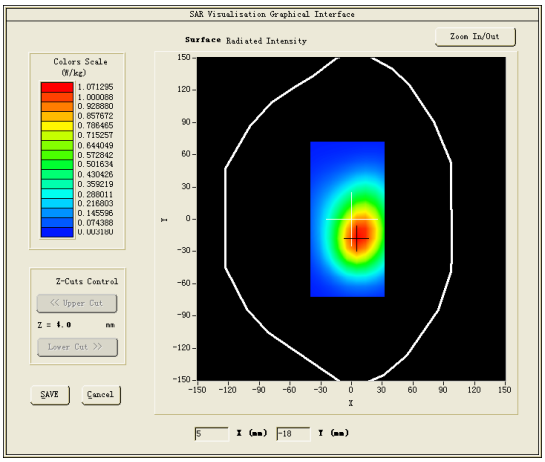
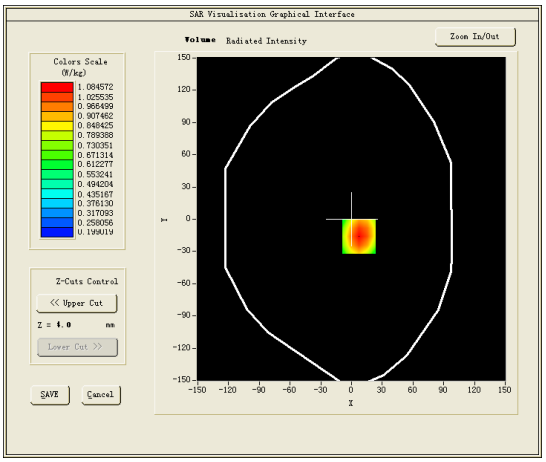
Mobile Phone IMEI number: --

A. Experimental conditions.

Area Scan	surf_sam_plan.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm,Very fast
Phantom	Validation plane
Device Position	Face
Band	LTE Band5
Channels	High
Signal	Duty cycle: 1:1

B. SAR Measurement Results

Frequency (MHz)	844
Relative permittivity (real part)	55.24
Relative permittivity (imaginary part)	21.13
Conductivity (S/m)	0.98
Variation (%)	-0.52
ConvF:	5.68

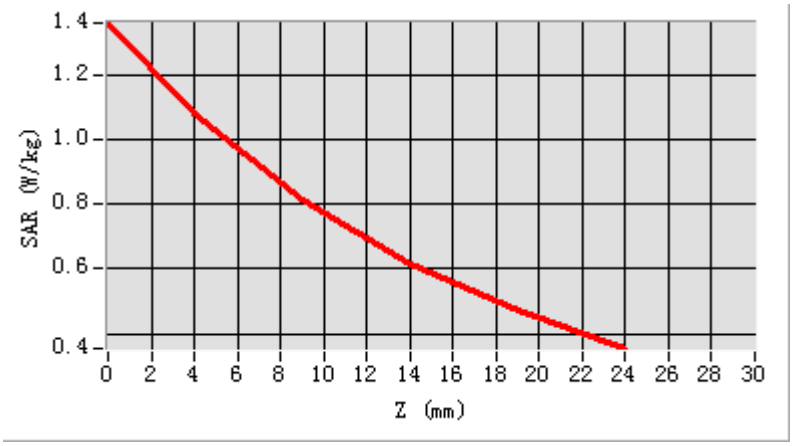
SURFACE SAR	VOLUME SAR
	

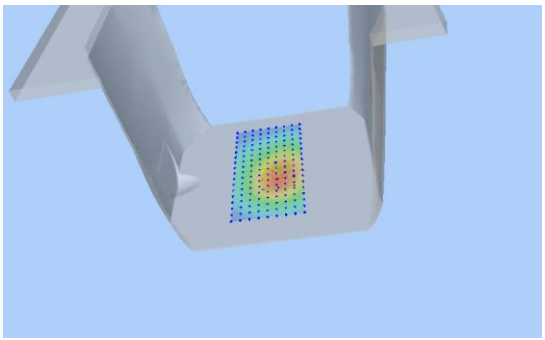
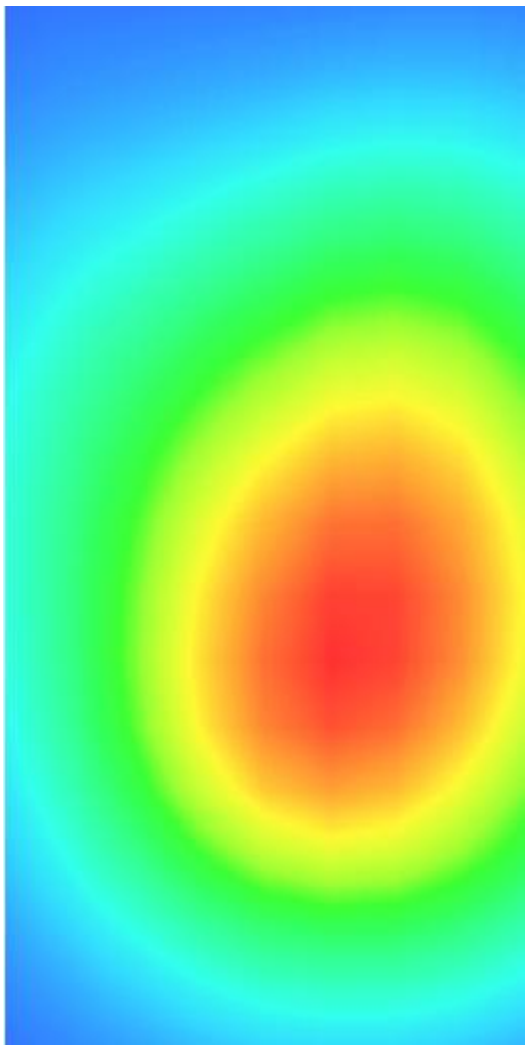
Maximum location: X=7.00, Y=-16.00

SAR Peak: 1.43 W/kg

SAR 10g (W/Kg)	0.763920
SAR 1g (W/Kg)	1.086858

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.3618	1.0846	0.8155	0.6170	0.4705



3D screen shot	Hot spot position
	

LTE Band5, 10M, Face, High,1RB#49,Repeat testing

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

Date of measurement: 09/03/2015

Measurement duration: 7 minutes 32 seconds

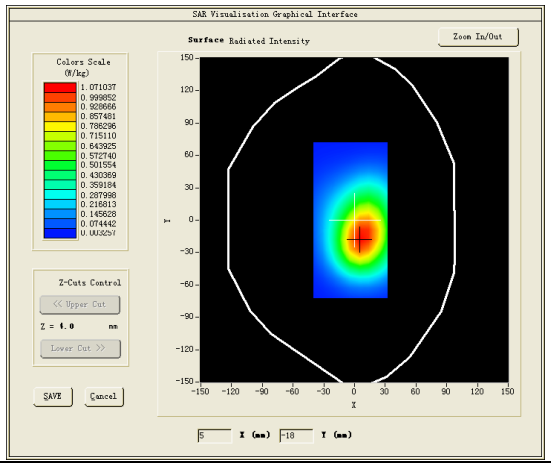
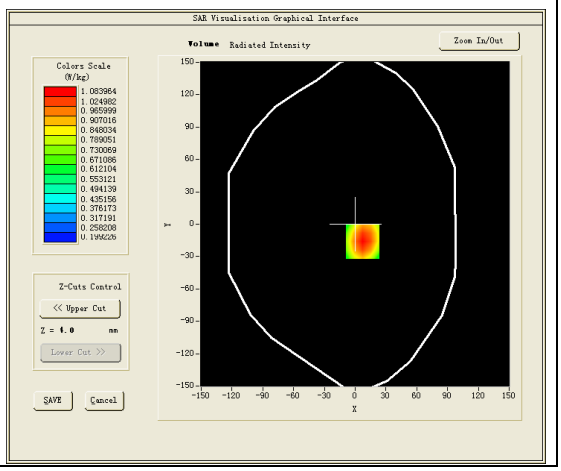
Mobile Phone IMEI number: --

A. Experimental conditions.

Area Scan	surf_sam_plan.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm,Very fast
Phantom	Validation plane
Device Position	Face
Band	LTE Band5
Channels	High
Signal	Duty cycle: 1:1

B. SAR Measurement Results

Frequency (MHz)	844
Relative permittivity (real part)	55.24
Relative permittivity (imaginary part)	21.13
Conductivity (S/m)	0.98
Variation (%)	-0.41
ConvF:	5.68

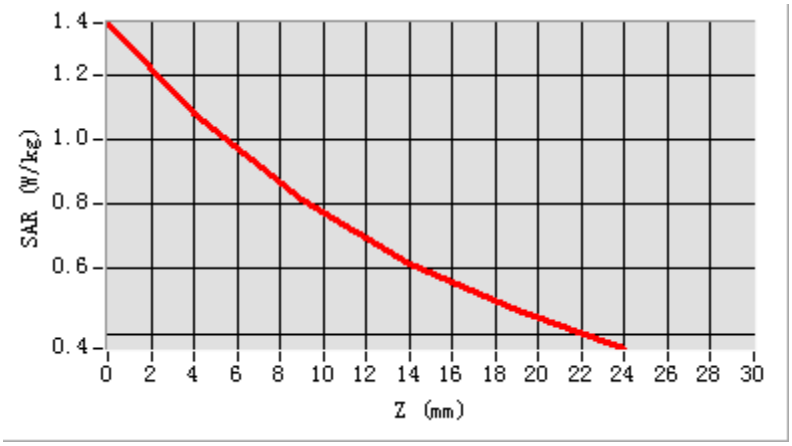
SURFACE SAR	VOLUME SAR
	

Maximum location: X=7.00, Y=-16.00

SAR Peak: 1.43 W/kg

SAR 10g (W/Kg)	0.763671
SAR 1g (W/Kg)	1.086054

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.3605	1.0840	0.8154	0.6172	0.4707



3D screen shot	Hot spot position