FCC SAR TEST REPORT

Report No.:	SET2015-15028
Product:	LTE Digital Mobile Phone
Brand Name:	ZTE
Model No.:	ZTE Blade A570, Blade A570, Blade D Lux, ZTE Blade D Lux, ZTE T617
FCC ID:	SRQ-BLADEA570
Applicant:	ZTE Corporation
Address:	ZTE Plaza, Keji Road South, Shenzhen, China
Issued by:	CCIC-SET
Lab Location:	Electronic Testing Building, Shahe Road，Xili, Nanshan District, Shenzhen, 518055, P. R. China
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Test Report

Product. …….:	LTE Digital Mobile Phone
Model No. ……..:	ZTE Blade A570, Blade A570, Blade D Lux, ZTE Blade D Lux, ZTE T617
Brand Name……..:	ZTE
FCC ID……..:	SRQ-BLADEA570
Applicant……..:	ZTE Corporation
Applicant Address…….:	ZTE Plaza, Keji Road South, Shenzhen, China
Manufacturer……:	ZTE Corporation
Manufacturer Address:	ZTE Plaza, Keji Road South, Shenzhen, China
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 1528–2013:** 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 ……..:	Mei Chun 2015-10-27 Chun Mei, Test Engineer
Reviewed by……:	Shuangwen Zhang 2015-10-27 Shuangwen Zhang,Senior Egineer
Approved by……:	Wu Lian 2015-10-27 Wu Li'an , Manager

Contents

1. **GENERAL CONDITIONS**----------4
2. **ADMINISTRATIVE DATA**----------5
   2.1. Identification of the Responsible Testing Laboratory----------5
   2.2. Identification of the Responsible Testing Location(s)----------5
   2.3. Organization Item----------5
   2.4. Identification of Applicant----------5
   2.5. Identification of Manufacture----------5
3. **EQUIPMENT UNDER TEST (EUT)**----------6
4. **SAR SUMMAY**----------7
5. **Specific Absorption Rate(SAR)**----------9
   5.1. Introduction----------9
   5.2. SAR Definition----------9
   5.3. Phantoms----------10
   5.4. Device Holder----------10
   5.5. Probe Specification----------11
6. **OPERATIONAL CONDITIONS DURING TEST**----------12
   6.1. Schematic Test Configuration----------12
   6.2. SAR Measurement System----------12
   6.3. Equipments and results of validation testing----------15
   6.4. SAR measurement procedure----------17
   6.5. Antennas position and test position----------18
7. **CHARACTERISTICS OF THE TEST**----------19
   7.1. Applicable Limit Regulations----------19
   7.2. Applicable Measurement Standards----------19
8. **LABORATORY ENVIRONMENT**----------20
9. **CONDUCTED RF OUTPUT POWER**----------20
10. **TEST RESULTS**----------41
11. **MEASUREMENT UNCERTAINTY**----------51
12. **MAIN TEST INSTRUMENTS**----------54

This Test Report consists of the following Annexes:

Annex A: Test Layout ----------55

Annex B: Sample Photographs----------62

Annex C: System Performance Check Data and Highest SAR Plots----------64

Annex D: Calibration Certificate of Probe and Dipoles----------119

1. GENERAL CONDITIONS

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

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

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

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

2. Administrative Date

2.1. Identification of the Responsible Testing Laboratory

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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.:	SET2015-15028
CCIC-SET Project Leader:	Mr. Li Sixiong
CCIC-SET Responsible for accreditation scope:	Mr. Wu Li'an
Start of Testing:	2015-10-12
End of Testing:	2015-10-22

2.4. Identification of Applicant

Company Name:	ZTE Corporation
Address:	ZTE Plaza, Keji Road South, Shenzhen, China

2.5. Identification of Manufacture

Company Name:	ZTE Corporation
Address:	ZTE Plaza, Keji Road South, Shenzhen, China

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

3. Equipment Under Test (EUT)

3.1. Identification of the Equipment under Test

Sample Name: LTE Digital Mobile Phone

Type Name: ZTE Blade A570, Blade A570, Blade D Lux, ZTE Blade D Lux, ZTE T617

Brand Name: ZTE

General description:	Support Band	GSM850MHz/1900MHz/900MHz/1800MHz WCDMA 850MHz/1700MHz/1900MHz, LTE Band2/4/5/7/28,WIFI, BT
	Test Band	GSM 850MHz/ GSM 1900MHz, GPRS 850MHz/ GPRS 1900MHz WCDMA 850MHz/ 1700MHz/1900MHz LTE Band2/4/5/7, WIFI 802.11b
	Multislot Class	GPRS: Class 12 ; EDGE: Class 12
	GPRS Class	Class B
	Development Stage	Identical Prototype
	Accessories	Power Supply
	Battery type	3.8V 2800mAh
	Antenna type	Inner Antenna
	Operation mode	GSM / GPRS /WCDMA/ LTE /WIFI
	Modulation mode	GSM(GMSK),UMTS(QPSK),LTE(QPSK,16QAM), WIFI(OFDM/DSSS)
	Max. RF Power	32.81dBm
	Max. SAR Value	Head: 1.306 W/kg; Body: 0.977 W/kg; Hotspot: 1.412 W/kg

NOTE:

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

b. This device supports GPRS operation up to class12 (max.uplin:4, max.downlink:4, total timeslots:5). This device supports EDGE operation up to class12(max.uplin:4, max.downlink:4, total timeslots:5)

4 SAR SUMMARY

Highest Standalone SAR Summary

Exposure Position	Frequency Band	Scaled 1g-SAR(W/kg)	Highest Scaled 1g-SAR(W/kg)
Head	GSM850	0.416	1.306
	GSM1900	0.219	
	WCDMA Band II	1.306	
	WCDMA Band Ⅴ	0.185	
	WCDMA Band IV	0.608	
	LTE Band 2	0.502	
	LTE Band 4	0.854	
	LTE Band 5	0.109	
	LTE Band 7	1.190	
	WIFI	0.278	
Body-worn Accessory (10mm Gap)	GSM850	0.343	0.977
	GSM1900	0.426	
	WCDMA Band II	0.977	
	WCDMA Band Ⅴ	0.262	
	WCDMA Band IV	0.248	
	LTE Band 2	0.543	
	LTE Band 4	0.737	
	LTE Band 5	0.230	
	LTE Band 7	0.781	
	WIFI	0.060	
Hotspot Accessory (10mm Gap)	GSM850	0.318	1.412
	GSM1900	0.536	
	WCDMA Band II	1.412	
	WCDMA Band Ⅴ	0.274	
	WCDMA Band IV	0.248	
	LTE Band 2	0.966	
	LTE Band 4	1.133	
	LTE Band 5	0.230	
	LTE Band 7	1.243	
	WIFI	0.060	

Highest Simultaneous SAR Summary

Exposure Position	Frequency Band	Scaled 1g-SAR(W/kg)	Highest Scaled 1g-SAR(W/kg)
Head	GSM850&WIFI	0.416+0.167	1.470
	GSM1900&WIFI	0.219+0.164	
	WCDMA Band II &WIFI	1.306+0.164	
	WCDMA Band Ⅴ&WIFI	0.146+0.278	
	WCDMA Band IV&WIFI	0.608+0.167	
	LTE Band 2&WIFI	0.502+0.164	
	LTE Band 4&WIFI	0.854+0.164	
	LTE Band 5&WIFI	0.095+0.278	
	LTE Band 7&WIFI	1.190+0.164	
Body-worn Accessory (10mm Gap)	GSM850&WIFI	0.343+0.060	1.037
	GSM1900&WIFI	0.426+0.060	
	WCDMA Band II &WIFI	0.977+0.060	
	WCDMA Band Ⅴ&WIFI	0.262+0.060	
	WCDMA Band IV&WIFI	0.248+0.060	
	LTE Band 2&WIFI	0.543+0.060	
	LTE Band 4&WIFI	0.737+0.060	
	LTE Band 5&WIFI	0.230+0.060	
	LTE Band 7&WIFI	0.781+0.060	
Hotspot Accessory (10mm Gap)	GSM850&WIFI	0.318+0.060	1.412
	GSM1900&WIFI	0.536	
	WCDMA Band II &WIFI	1.412	
	WCDMA Band Ⅴ&WIFI	0.274+0.060	
	WCDMA Band IV&WIFI	0.248+0.060	
	LTE Band 2&WIFI	0.966	
	LTE Band 4&WIFI	1.133	
	LTE Band 5&WIFI	0.230+0.060	
	LTE Band 7&WIFI	1.243	

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).

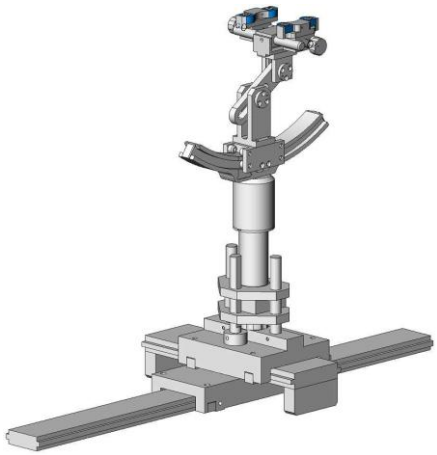
System checking was performed using the flat section, whilst Head SAR tests used the left and right head profile sections. Body SAR testing also used the flat section between the head profiles.

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

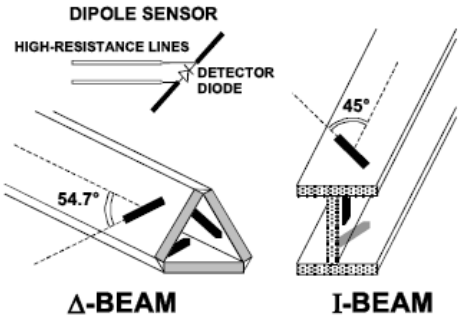
5.5 Probe Specification

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 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
Compatibility	COMOSAR

Isotropic E-Field Probe

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

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



6 OPERATIONAL CONDITIONS DURING TEST

6.1 Schematic Test Configuration

During SAR test, EUT was operating in Traffic Mode (Channel Allocated) at Normal Voltage Condition. A communication link is set up with a System Simulator (SS) by air link, and a call is established.The EUT was commanded to operate at maximum transmitting power.

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

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

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.

Table 1: Recommended Dielectric Performance of Tissue

Ingredients (% by weight)	Frequency (MHz)									
	450		835		915		1900		2450	
Tissue Type	Head	Body	Head	Body	Head	Body	Head	Body	Head	Body
Water	38.56	51.16	41.46	52.4	41.05	56.0	54.9	40.4	62.7	73.2
Salt (Nacl)	3.95	1.49	1.45	1.4	1.35	0.76	0.18	0.5	0.5	0.04
Sugar	56.32	46.78	56.0	45.0	56.5	41.76	0.0	58.0	0.0	0.0
HEC	0.98	0.52	1.0	1.0	1.0	1.21	0.0	1.0	0.0	0.0

Bactericide	0.19	0.05	0.1	0.1	0.1	0.27	0.0	0.1	0.0	0.0
Triton x-100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	36.8	0.0
DGBE	0.0	0.0	0.0	0.0	0.0	0.0	44.92	0.0	0.0	26.7
Dielectric Constant	43.42	58.0	42.54	56.1	42.0	56.8	39.9	54.0	39.8	52.5
Conductivity (s/m)	0.85	0.83	0.91	0.95	1.0	1.07	1.42	1.45	1.88	1.78

Table 2 Recommended Tissue Dielectric Parameters

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

6.2.2 Stimulant 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. Stimulant liquids that are used for testing at frequencies of GSM 850MHz/1900MHz, WCDMA850MHz/1700MHz/1900MHz, LTE Band2/4/5/7 and Wi-Fi 2.4GHz, which are made mainly of sugar, salt and water solutions may be left in the phantoms.

Table 3: Dielectric Performance of Head Tissue Simulating Liquid

Temperature: 23.2°C; Humidity: 64%;			
/	Frequency	Permittivity ε	Conductivity σ (S/m)
Target value	835MHz	41.5±5%	0.90±5%
Validation value (Oct. 12th, 2015)	835MHz	41.34	0.88
Target value	1800 MHz	40.0±5%	1.40±5%
Validation value (Oct. 13th, 2015)	1800 MHz	39.81	1.39
Target value	1900MHz	40.0±5%	1.40±5%
Validation value (Oct. 14th, 2015)	1900MHz	39.85	1.39

Target value	2450MHz	39.2±5%	1.80±5%
Validation value (Oct. 15th, 2015)	2450MHz	38.97	1.80
Target value	2600MHz	39.0±5%	1.96±5%
Validation value (Oct. 15th, 2015)	2600MHz	38.91	1.94

Table 4: Dielectric Performance of Body Tissue Simulating Liquid

Temperature: 23.2°C; Humidity: 64%;			
/	Frequency	Permittivity ε	Conductivity σ (S/m)
Target value	835MHz	55.2±5%	0.97±5%
Validation value (Oct.19th, 2015)	835MHz	54.82	0.95
Target value	1800 MHz	53.3±5%	1.52±5%
Validation value (Oct. 20th, 2015)	1800 MHz	53.44	1.53
Target value	1900MHz	53.3±5%	1.52±5%
Validation value (Oct. 21th, 2015)	1900MHz	52.87	1.50
Target value	2450MHz	52.7±5%	1.95±5%
Validation value (Oct. 22h, 2015)	2450MHz	52.47	1.94
Target value	2600MHz	52.5±5%	2.16±5%
Validation value (Oct. 22th, 2015)	2600MHz	52.73	2.16

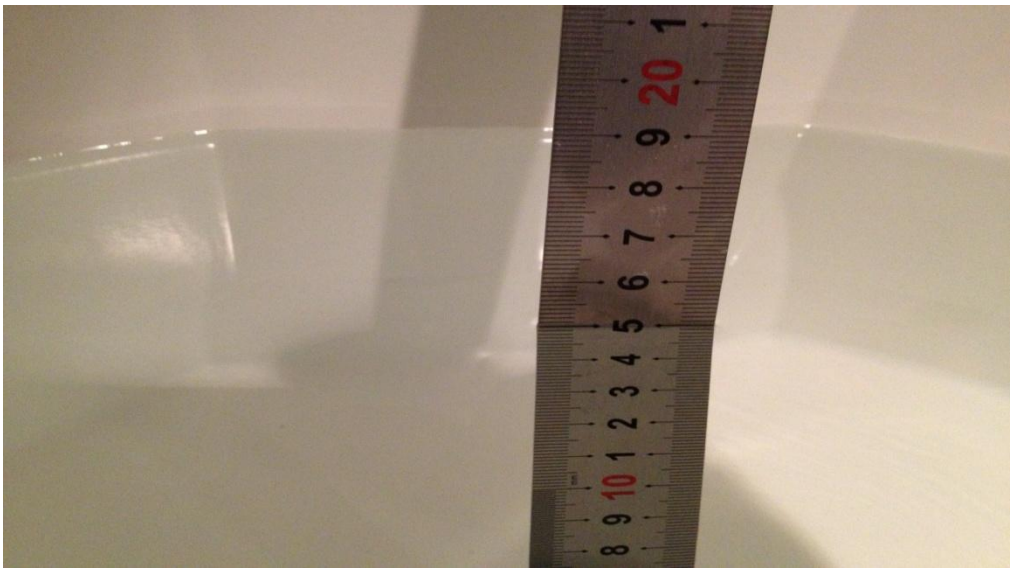
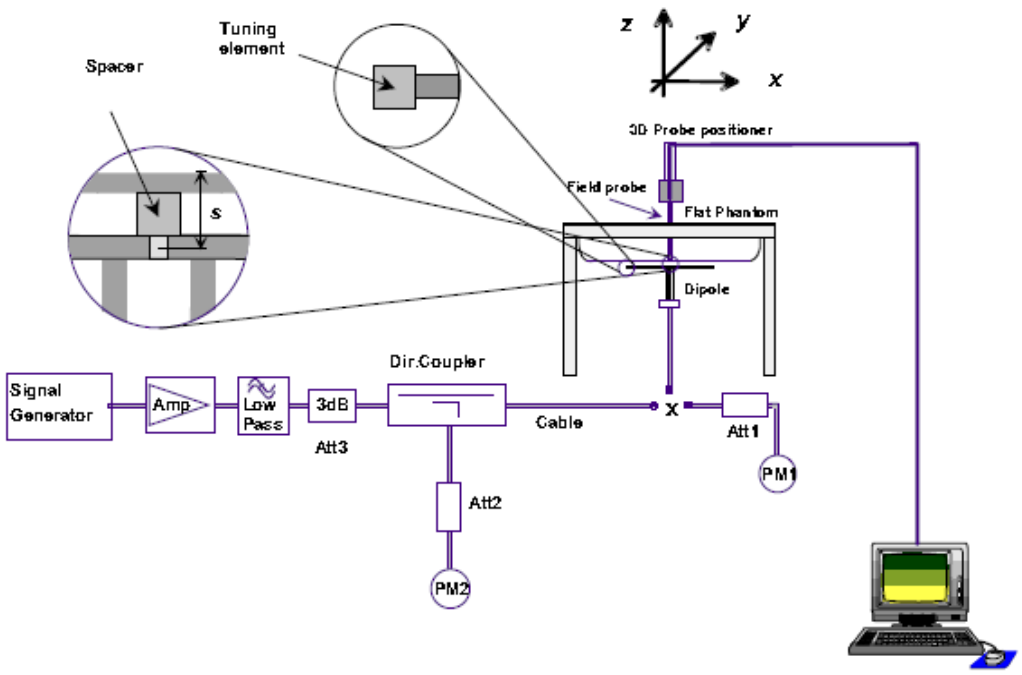


Fig. 1 Configuration of body tissue

6.3 Results of validation testing

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. Setup according to the setup diagram below :



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

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

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

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

The measured 1-gram averaged SAR values of the device against the phantom are provided in Tables 5 and Table 6. The humidity and ambient temperature of test facility were 64% and 23.2°C respectively. The body phantom were full of the body tissue simulating liquid. The EUT was supplied with full-charged battery for each measurement.

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

Table 5: Head SAR system validation (1g)

Frequency	Duty cycle	Target value （W/kg）	Test value (W/kg)	
			250 mW	1W
835MHz(Oct. 12th, 2015)	1:1	9.77±10%	2.41	9.64
1800MHz(Oct. 13th, 2015)	1:1	38.67±10%	9.49	37.96
1900MHz(Oct. 14th, 2015)	1:1	40.37±10%	9.89	39.56
2450MHz(Oct. 15th, 2015)	1:1	53.60±10%	13.21	52.84
2600MHz(Oct. 15th, 2015)	1:1	56.19±10%	13.97	55.88

Table 6: Body SAR system validation (1g)

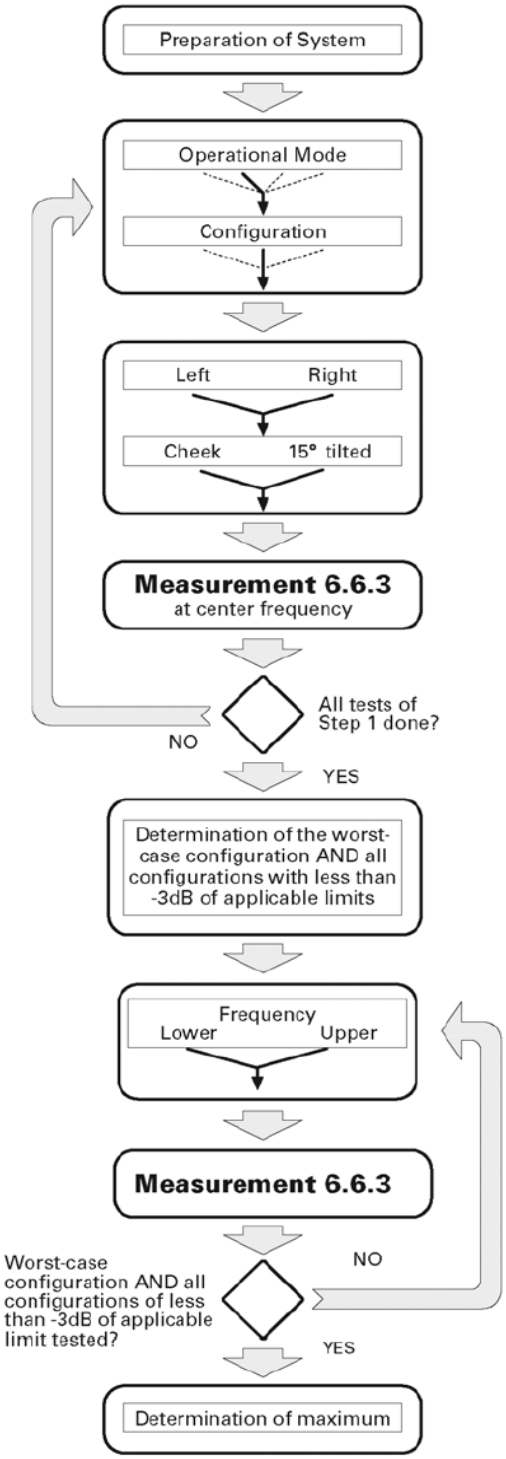
Frequency	Duty cycle	Target value （W/kg）	Test value (W/kg)	
			250 mW	1W
835MHz(Oct. 19th, 2015)	1:1	10.31±10%	2.53	10.12
1800MHz(Oct. 20th, 2015)	1:1	40.07±10%	9.87	39.48
1900MHz(Oct. 21th, 2015)	1:1	40.81±10%	10.13	40.52
2450MHz(Oct. 22th, 2015)	1:1	52.66±10%	13.09	52.36
2600MHz(Oct. 22th, 2015)	1:1	57.55±10%	14.08	56.32

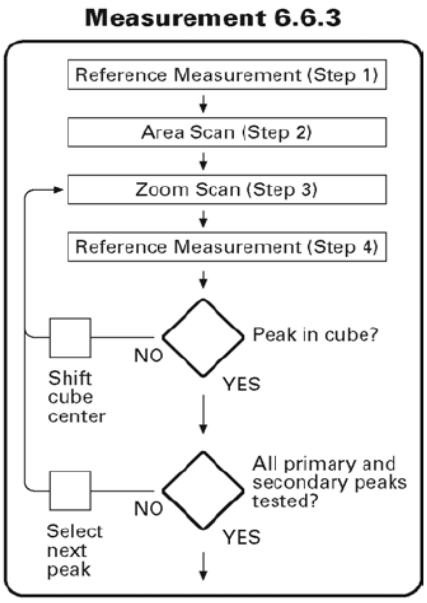
* Note: Target value was referring to the measured value in the calibration certificate of reference dipole.

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

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 behavior are tested.

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

6.5 Transmitting antenna information

The GSM&WCDMA&LTE&WIFI&BT&GPS antennas inside the EUT.

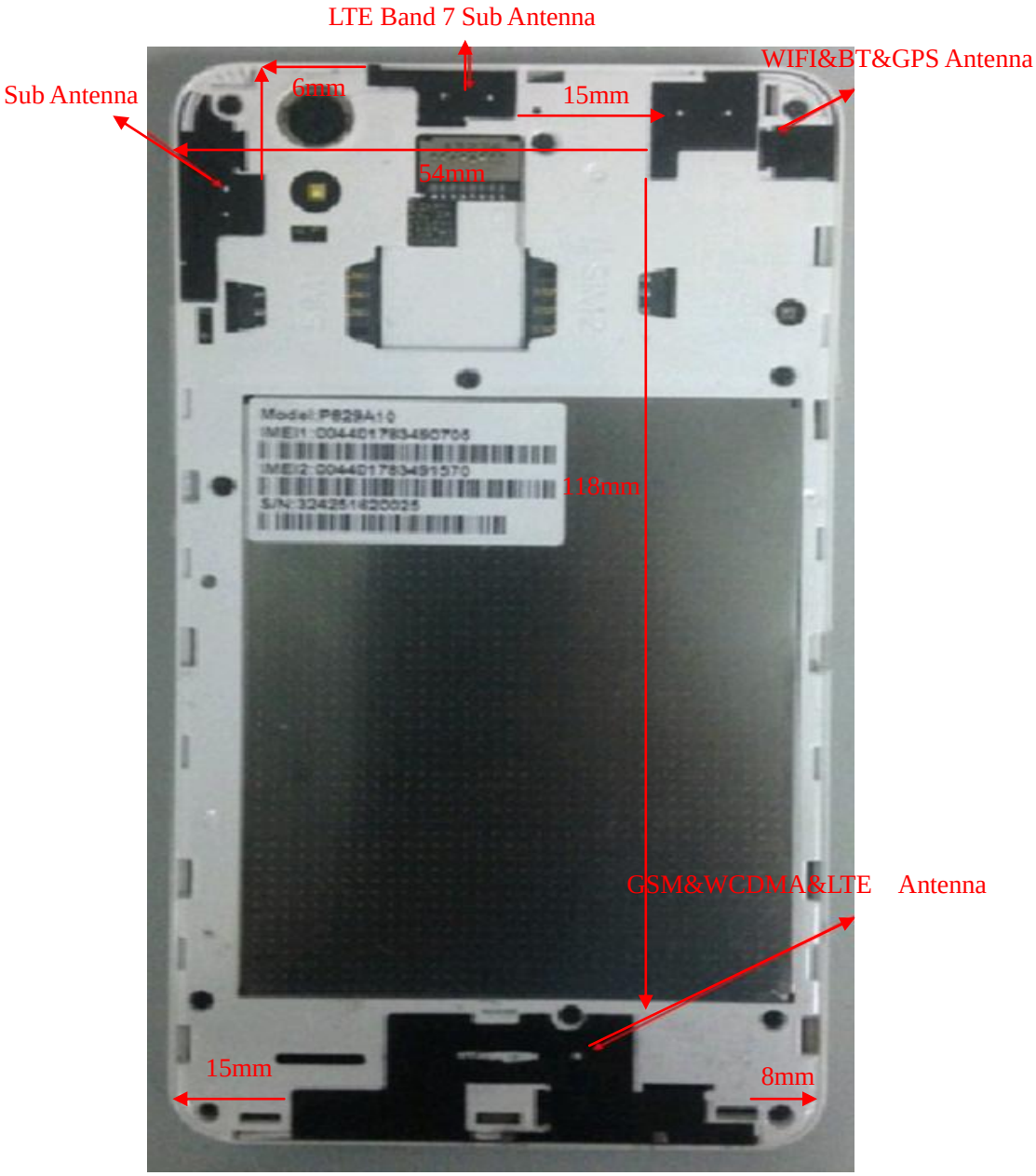


Fig. 3 Position of the antennas

The Body SAR measurement positions of each band are as below:

Antenna	Front	Back	Edge A	Edge B	Edge C	Edge D
2G /3G /4G Antenna Body-worn	Yes	Yes	No	No	No	No
2G /3G /4G Antenna hotspot	Yes	Yes	No	Yes	Yes	Yes
WIFI Antenna Body-worn	Yes	Yes	No	No	No	No
WIFI Antenna hotspot	Yes	Yes	Yes	No	No	Yes

Note: According to KDB941225 antenna-to-edge>2.5cm, SAR is not required.

7 CHARACTERISTICS OF THE TEST

7.1 Applicable Limit Regulations

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

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

7.2 Applicable Measurement Standards

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

FCC 47 CFR Part2 (2.1093)
ANSI/IEEE C95.1-1992
IEEE 1528-2013
FCC KDB 248227 D01 802.11 Wi-Fi SAR v02r01
FCC KDB 447498 D01 v05r02 General RF Exposure Guidance
FCC KDB 648474 D04 v01r02 Handset SAR
FCC KDB 865664 D01 v01r04 SAR Measurement 100MHz to 6GHz
FCC KDB 865664 D02 v01r01 SAR Exposure Reporting
FCC KDB 941225 D01 v03 3G SAR Procedures
FCC KDB 941225 D05 v02r03 SAR for LTE Devices
FCC KDB 941225 D06 v02 Hotspot Mode

8 LABORATORY ENVIRONMENT

The Ambient Conditions during SAR Test

Temperature	Min. = 22 ° C, Max. = 25 ° C
Atmospheric pressure	Min.=86 kPa, Max.=106 kPa
Relative humidity	Min. = 45%, Max. = 75%
Ground system resistance	< 0.5 Ω
Ambient noise is checked and found very low and in compliance with requirement of standards. Reflection of surrounding objects is minimized and in compliance with requirement of standards.	

9.Conducted RF Output Power

9.1 GSM Conducted Power

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
	GSM	32.68	32.63	32.81	23.65	23.6	23.78
	GPRS (Slot 1)	32.47	32.55	32.67	23.44	23.52	23.64
	GPRS (Slot 2)	29.87	29.91	29.83	23.85	23.89	23.81
	GPRS (Slot 3)	27.71	27.85	27.79	23.45	23.59	23.53
	GPRS (Slot 4)	26.12	26.1	26.05	23.11	23.09	23.04
	EDGE (Slot 1)	31.86	31.95	31.84	22.83	22.92	22.81
	EDGE (Slot 2)	29.54	29.47	29.52	23.52	23.45	23.5
	EDGE (Slot 3)	27.31	27.39	27.36	23.05	23.13	23.1
	EDGE (Slot 4)	25.86	25.91	25.89	22.85	22.9	22.88
GSM1900	TX Channel	512	661	810	512	661	810
	Frequency(MHz)	1850.2	1880	1909.8	1850.2	1880	1909.8
	GSM	29.18	29.25	29.16	20.15	20.22	20.13
	GPRS (Slot 1)	29.09	29.22	29.13	20.06	20.19	20.1
	GPRS (Slot 2)	27.24	27.19	27.18	21.22	21.17	21.16
	GPRS (Slot 3)	25.72	25.67	25.75	21.46	21.41	21.49
	GPRS (Slot 4)	24.14	24.18	24.07	21.13	21.17	21.06

	EDGE (Slot 1)	28.77	28.82	28.73	19.74	19.79	19.7
	EDGE (Slot 2)	26.95	26.86	26.91	20.93	20.84	20.89
	EDGE (Slot 3)	25.42	25.39	25.36	21.16	21.13	21.1
	EDGE (Slot 4)	23.82	23.91	23.85	20.81	20.9	20.84

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

For Head SAR testing, GSM should be evaluated, therefore the EUT was set in GSM Voice for GSM850 and GSM1900 due to its highest frame-average power.

For Body worn SAR testing, GSM should be evaluated, therefore the EUT was set in GSM Voice for GSM850 and GSM 1900 due to its highest frame-average power.

For hotspot mode SAR testing, GPRS and EDGE should be evaluated, therefore the EUT was set in GPRS850（2Tx slots）and GPRS1900 (**3**Tx slots) due to its highest frame-average power.

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	1:2.67	1:2
Crest Factor	-9.03dB	-6.02dB	-4.26dB	-3.01dB

9.2 WCDMA Conducted peak output Power

WCDMA conducted peak output power

Item	band	WCDMA 850			WCDMA 1900			WCDMA 1700		
	ARFCN	4132	4183	4233	9262	9400	9538	1312	1413	1513
	subtest	dBm			dBm					
RMC 12.2kbps	non	22.73	22.80	22.67	22.15	22.17	22.09	22.18	22.21	22.25
HSDPA	1	22.45	22.41	22.38	21.78	21.83	21.76	22.05	21.94	22.01
	2	22.35	22.40	22.31	21.89	21.83	21.87	21.81	21.75	21.78
	3	22.22	22.17	22.21	21.78	21.81	21.75	21.89	21.89	21.97
	4	22.01	22.12	22.09	21.57	21.61	21.58	21.79	21.91	21.80
HSUPA	1	22.29	22.18	22.17	21.87	21.79	21.81	21.74	21.67	21.71
	2	22.31	22.37	22.24	21.54	21.61	21.58	21.53	21.42	21.39
	3	21.81	21.75	21.83	21.25	21.37	21.31	21.77	21.75	21.80
	4	22.06	22.15	22.20	21.82	21.85	21.81	21.37	21.41	21.54
	5	21.97	21.88	21.92	21.51	21.47	21.58	21.62	21.55	21.51
Note:	The Conducted RF Output Power test of WCDMA /HSDPA /HSUPA were tested by power meter.									

HSUPA Setup Configuration:

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

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

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

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

Setup Configuration

HSDPA Setup Configuration:

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

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

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

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

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

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

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

Note:

1. WCDMA SAR was tested under PMC 12.2kbps with HSPA Inactive per KDB Publication 941225 D01.HSPA SAR was not requires since the average output power of the HSPA subtests was not more than 0.25dB higher than the RMC level and SAR was less than 1.2W/kg.
2. It is expected by the manufacturer that MPR for some HSPA subtests may be up to 2dB more than specified by 3GPP, but also as low as 0dB according to the chipset implementation in this model.

9.3 LTE Conducted peak output Power

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.

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	22.84	22.81	22.85
20	QPSK	1	49	22.82	22.79	22.78
20	QPSK	1	99	22.72	22.74	22.75
20	QPSK	50	0	21.79	21.87	21.73
20	QPSK	50	24	21.67	21.75	21.64
20	QPSK	50	49	21.64	21.72	21.75
20	QPSK	100	0	21.75	21.81	21.77
20	16QAM	1	0	21.28	21.31	21.35
20	16QAM	1	49	21.34	21.45	21.43
20	16QAM	1	99	21.54	21.60	21.57
20	16QAM	50	0	20.67	20.79	20.76
20	16QAM	50	24	20.75	20.67	20.78
20	16QAM	50	49	20.67	20.58	20.61
20	16QAM	100	0	20.79	20.85	20.83
Channel				18675	18900	19125
Frequency(MHz)				1857.5	1880	1902.5
15	QPSK	1	0	22.75	22.80	22.76
15	QPSK	1	37	22.77	22.74	22.71
15	QPSK	1	74	22.81	22.76	22.77
15	QPSK	36	0	21.71	21.70	21.74
15	QPSK	36	18	21.58	21.64	21.54
15	QPSK	36	37	21.68	21.65	21.73
15	QPSK	75	0	21.63	21.58	21.64
15	16QAM	1	0	21.71	21.63	21.77
15	16QAM	1	37	21.46	21.57	21.59
15	16QAM	1	74	21.57	21.42	21.55
15	16QAM	36	0	20.67	20.71	20.75
15	16QAM	36	18	20.56	20.66	20.59
15	16QAM	36	37	20.71	20.64	20.75
15	16QAM	75	0	20.89	20.75	20.77

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	22.81	22.84	22.83
10	QPSK	1	24	22.72	22.71	22.79
10	QPSK	1	49	22.82	22.79	22.71
10	QPSK	25	0	21.64	21.76	21.75
10	QPSK	25	12	21.58	21.65	21.57
10	QPSK	25	24	21.64	21.70	21.65
10	QPSK	50	0	21.66	21.72	21.71
10	16QAM	1	0	21.67	21.75	21.64
10	16QAM	1	24	21.64	21.59	21.61
10	16QAM	1	49	21.75	21.79	21.68
10	16QAM	25	0	20.63	20.70	20.76
10	16QAM	25	12	20.69	20.66	20.75
10	16QAM	25	24	20.54	20.57	20.64
10	16QAM	50	0	20.86	20.71	20.81
Channel				18625	18900	19175
Frequency(MHz)				1852.5	1880	1907.5
5	QPSK	1	0	22.84	22.78	22.80
5	QPSK	1	12	22.82	22.77	22.75
5	QPSK	1	24	22.81	22.75	22.71
5	QPSK	12	0	21.64	21.69	21.72
5	QPSK	12	6	21.64	21.54	21.59
5	QPSK	12	11	21.71	21.64	21.57
5	QPSK	25	0	21.61	21.71	21.62
5	16QAM	1	0	21.59	21.64	21.71
5	16QAM	1	12	21.35	21.41	21.28
5	16QAM	1	24	21.51	21.40	21.39
5	16QAM	12	0	20.86	20.94	20.81
5	16QAM	12	6	20.67	20.75	20.81
5	16QAM	12	11	20.64	20.71	20.65
5	16QAM	25	0	20.86	20.91	20.88

BW(MHz)	Modulation	RB Size	RB Offset	Power(dBm) Low Ch./Freq.	Power(dBm) Middle Ch./Freq.	Power(dBm) High Ch./Freq.
Channel				18615	18900	19185
Frequency(MHz)				1851.5	1880	1908.5
3	QPSK	1	0	22.83	22.72	22.77
3	QPSK	1	7	22.77	22.81	22.75
3	QPSK	1	14	22.74	22.67	22.72
3	QPSK	8	0	21.75	21.67	21.79
3	QPSK	8	4	21.68	21.75	21.73
3	QPSK	8	7	21.64	21.68	21.75
3	QPSK	15	0	21.71	21.79	21.83
3	16QAM	1	0	21.61	21.55	21.62
3	16QAM	1	7	21.74	21.78	21.83
3	16QAM	1	14	21.64	21.75	21.72
3	16QAM	8	0	20.92	20.89	20.87
3	16QAM	8	4	20.85	20.77	20.92
3	16QAM	8	7	20.84	20.79	20.89
3	16QAM	15	0	20.67	20.72	20.70
Channel				18607	18900	19193
Frequency(MHz)				1850.7	1732.5	1909.3
1.4	QPSK	1	0	22.80	22.74	22.77
1.4	QPSK	1	2	22.81	22.72	22.76
1.4	QPSK	1	5	22.71	22.66	22.69
1.4	QPSK	3	0	21.80	21.71	21.89
1.4	QPSK	3	1	21.74	21.62	21.73
1.4	QPSK	3	2	21.54	21.38	21.41
1.4	QPSK	6	0	21.50	21.46	21.53
1.4	16QAM	1	0	21.47	21.39	21.38
1.4	16QAM	1	2	21.42	21.50	21.45
1.4	16QAM	1	5	21.67	21.76	21.74
1.4	16QAM	3	0	20.65	20.71	20.67
1.4	16QAM	3	1	20.44	20.53	20.45
1.4	16QAM	3	2	20.50	20.57	20.53
1.4	16QAM	6	0	20.79	20.71	20.74

2. 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	22.87	**22.92**	22.85
20	QPSK	1	49	22.74	22.75	22.81
20	QPSK	1	99	22.84	22.77	22.75
20	QPSK	50	0	21.72	21.74	21.67
20	QPSK	50	24	21.77	21.75	21.81
20	QPSK	50	49	21.68	21.72	21.82
20	QPSK	100	0	21.71	21.75	21.84
20	16QAM	1	0	21.20	21.31	21.34
20	16QAM	1	49	21.54	21.65	21.53
20	16QAM	1	99	21.84	21.90	21.77
20	16QAM	50	0	20.67	20.75	20.72
20	16QAM	50	24	20.69	20.67	20.80
20	16QAM	50	49	20.61	20.71	20.66
20	16QAM	100	0	20.84	20.75	20.81
Channel				20025	20175	20325
Frequency(MHz)				1717.5	1732.5	1747.5
15	QPSK	1	0	22.87	22.90	22.82
15	QPSK	1	37	22.73	22.81	22.74
15	QPSK	1	74	22.80	22.77	22.83
15	QPSK	36	0	21.72	21.77	21.81
15	QPSK	36	18	21.68	21.76	21.71
15	QPSK	36	37	21.66	21.74	21.80
15	QPSK	75	0	21.59	21.56	21.62
15	16QAM	1	0	21.76	21.67	21.73
15	16QAM	1	37	21.70	21.65	21.59
15	16QAM	1	74	21.47	21.52	21.58
15	16QAM	36	0	20.66	20.73	20.74
15	16QAM	36	18	20.49	20.53	20.57
15	16QAM	36	37	20.59	20.70	20.63
15	16QAM	75	0	20.78	20.71	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				20000	20175	20350
Frequency(MHz)				1715	1732.5	1750
10	QPSK	1	0	22.82	22.80	22.75
10	QPSK	1	24	22.71	22.82	22.73
10	QPSK	1	49	22.72	22.69	22.66
10	QPSK	25	0	21.74	21.76	21.85
10	QPSK	25	12	21.72	21.69	21.80
10	QPSK	25	24	21.71	21.80	21.85
10	QPSK	50	0	21.66	21.82	21.71
10	16QAM	1	0	21.67	21.75	21.64
10	16QAM	1	24	21.61	21.72	21.65
10	16QAM	1	49	21.68	21.59	21.56
10	16QAM	25	0	20.80	20.93	20.90
10	16QAM	25	12	20.68	20.70	20.72
10	16QAM	25	24	20.62	20.65	20.54
10	16QAM	50	0	20.82	20.76	20.79
Channel				19975	20175	20375
Frequency(MHz)				1712.5	1732.5	1752.5
5	QPSK	1	0	22.78	22.81	22.87
5	QPSK	1	12	22.75	22.68	22.72
5	QPSK	1	24	22.81	22.73	22.78
5	QPSK	12	0	21.81	21.77	21.82
5	QPSK	12	6	21.51	21.60	21.58
5	QPSK	12	11	21.61	21.73	21.77
5	QPSK	25	0	21.59	21.68	21.65
5	16QAM	1	0	21.67	21.76	21.60
5	16QAM	1	12	21.61	21.57	21.49
5	16QAM	1	24	21.49	21.51	21.55
5	16QAM	12	0	20.61	20.71	20.76
5	16QAM	12	6	20.76	20.62	20.69
5	16QAM	12	11	20.65	20.75	20.72
5	16QAM	25	0	20.73	20.78	20.70

BW(MHz)	Modulation	RB Size	RB Offset	Power(dBm) Low Ch./Freq.	Power(dBm) Middle Ch./Freq.	Power(dBm) High Ch./Freq.
Channel				19965	20175	20385
Frequency(MHz)				1711.5	1732.5	1753.5
3	QPSK	1	0	22.86	22.74	22.78
3	QPSK	1	7	22.81	22.80	22.83
3	QPSK	1	14	22.72	22.75	22.77
3	QPSK	8	0	21.67	21.71	21.76
3	QPSK	8	4	21.70	21.75	21.78
3	QPSK	8	7	21.79	21.72	21.81
3	QPSK	15	0	21.67	21.64	21.71
3	16QAM	1	0	21.51	21.55	21.49
3	16QAM	1	7	21.57	21.65	21.63
3	16QAM	1	14	21.58	21.60	21.56
3	16QAM	8	0	20.73	20.80	20.82
3	16QAM	8	4	20.64	20.68	20.78
3	16QAM	8	7	20.53	20.52	20.65
3	16QAM	15	0	20.72	20.66	20.78
Channel				19957	20175	20393
Frequency(MHz)				1710.7	1732.5	1754.3
1.4	QPSK	1	0	22.75	22.79	22.82
1.4	QPSK	1	2	22.91	22.82	22.78
1.4	QPSK	1	5	22.77	22.69	22.73
1.4	QPSK	3	0	21.81	21.78	21.72
1.4	QPSK	3	1	21.57	21.47	21.52
1.4	QPSK	3	2	21.46	21.37	21.41
1.4	QPSK	6	0	21.57	21.46	21.53
1.4	16QAM	1	0	21.72	21.77	21.69
1.4	16QAM	1	2	21.63	21.74	21.71
1.4	16QAM	1	5	21.41	21.51	21.44
1.4	16QAM	3	0	20.75	20.74	20.85
1.4	16QAM	3	1	20.57	20.63	20.61
1.4	16QAM	3	2	20.50	20.51	20.67
1.4	16QAM	6	0	20.49	20.52	20.63

3. 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	22.62	22.70	22.65
10	QPSK	1	24	22.65	22.62	22.63
10	QPSK	1	49	22.52	22.49	22.46
10	QPSK	25	0	21.74	21.76	21.81
10	QPSK	25	12	21.72	21.69	21.80
10	QPSK	25	24	21.71	21.80	21.75
10	QPSK	50	0	21.66	21.75	21.71
10	16QAM	1	0	21.67	21.75	21.64
10	16QAM	1	24	21.61	21.72	21.65
10	16QAM	1	49	21.68	21.59	21.56
10	16QAM	25	0	20.80	20.93	20.90
10	16QAM	25	12	20.68	20.70	20.72
10	16QAM	25	24	20.62	20.65	20.54
10	16QAM	50	0	20.82	20.76	20.79
Channel				20425	20525	20625
Frequency(MHz)				826.5	836.5	846.5
5	QPSK	1	0	22. 65	22.61	22.62
5	QPSK	1	12	22.45	22.48	22.52
5	QPSK	1	24	22.51	22.43	22.49
5	QPSK	12	0	21.81	21.77	21.82
5	QPSK	12	6	21.51	21.60	21.58
5	QPSK	12	11	21.61	21.73	21.77
5	QPSK	25	0	21.59	21.68	21.65
5	16QAM	1	0	21.67	21.76	21.60
5	16QAM	1	12	21.61	21.57	21.49
5	16QAM	1	24	21.49	21.51	21.55
5	16QAM	12	0	20.61	20.71	20.76
5	16QAM	12	6	20.76	20.62	20.69
5	16QAM	12	11	20.65	20.75	20.72
5	16QAM	25	0	20.73	20.78	20.70

BW(MHz)	Modulation	RB Size	RB Offset	Power(dBm) Low Ch./Freq.	Power(dBm) Middle Ch./Freq.	Power(dBm) High Ch./Freq.
Channel				20415	20525	20635
Frequency(MHz)				825.5	836.5	847.5
3	QPSK	1	0	22.66	22.64	22.58
3	QPSK	1	7	22.53	22.50	22.61
3	QPSK	1	14	22.42	22.52	22.47
3	QPSK	8	0	21.67	21.73	21.76
3	QPSK	8	4	21.70	21.75	21.78
3	QPSK	8	7	21.79	21.72	21.81
3	QPSK	15	0	21.67	21.64	21.72
3	16QAM	1	0	21.51	21.55	21.49
3	16QAM	1	7	21.57	21.65	21.63
3	16QAM	1	14	21.58	21.60	21.56
3	16QAM	8	0	20.73	20.80	20.82
3	16QAM	8	4	20.64	20.68	20.78
3	16QAM	8	7	20.53	20.52	20.65
3	16QAM	15	0	20.72	20.66	20.78
Channel				20407	20525	20643
Frequency(MHz)				824.7	836.5	848.3
1.4	QPSK	1	0	22.65	22.59	22.62
1.4	QPSK	1	2	22.61	22.52	22.58
1.4	QPSK	1	5	22.47	22.49	22.53
1.4	QPSK	3	0	21.53	21.58	21.42
1.4	QPSK	3	1	21.57	21.47	21.52
1.4	QPSK	3	2	21.46	21.37	21.41
1.4	QPSK	6	0	21.57	21.46	21.53
1.4	16QAM	1	0	21.72	21.67	21.61
1.4	16QAM	1	2	21.63	21.74	21.71
1.4	16QAM	1	5	21.57	21.61	21.64
1.4	16QAM	3	0	20.73	20.74	20.82
1.4	16QAM	3	1	20.67	20.73	20.61
1.4	16QAM	3	2	20.59	20.55	20.67
1.4	16QAM	6	0	20.49	20.52	20.62

4. 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	22.52	22.61	22.57
20	QPSK	1	49	22.58	22.47	22.53
20	QPSK	1	99	22.41	22.37	22.45
20	QPSK	50	0	21.82	21.84	21.87
20	QPSK	50	24	21.77	21.75	21.71
20	QPSK	50	49	21.64	21.72	21.72
20	QPSK	100	0	21.72	21.75	21.80
20	16QAM	1	0	21.60	21.71	21.61
20	16QAM	1	49	21.54	21.65	21.53
20	16QAM	1	99	21.58	21.60	21.54
20	16QAM	50	0	20.67	20.75	20.78
20	16QAM	50	24	20.59	20.67	20.70
20	16QAM	50	49	20.61	20.71	20.76
20	16QAM	100	0	20.74	20.75	20.81
Channel				20825	21100	21375
Frequency(MHz)				2507.5	2535	2562.5
15	QPSK	1	0	22.69	22.60	22.63
15	QPSK	1	37	22.61	22.55	22.49
15	QPSK	1	74	22.55	22.47	22.51
15	QPSK	36	0	21.77	21.80	21.82
15	QPSK	36	18	21.82	21.75	21.81
15	QPSK	36	37	21.64	21.72	21.76
15	QPSK	75	0	21.68	21.75	21.77
15	16QAM	1	0	21.80	21.67	21.73
15	16QAM	1	37	21.54	21.58	21.63
15	16QAM	1	74	21.84	21.80	21.76
15	16QAM	36	0	20.67	20.75	20.78
15	16QAM	36	18	20.69	20.67	20.72
15	16QAM	36	37	20.75	20.71	20.86
15	16QAM	75	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	22.59	22.62	22.57
10	QPSK	1	24	22.54	22.50	22.44
10	QPSK	1	49	22.51	22.48	22.53
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	21.60	21.71	21.65
10	16QAM	1	24	21.64	21.69	21.63
10	16QAM	1	49	21.84	21.90	21.74
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	20.84	20.75	20.81
Channel				20775	21100	21425
Frequency(MHz)				2502.5	2535	2567.5
5	QPSK	1	0	22.67	22.59	22.58
5	QPSK	1	12	22.56	22.45	22.59
5	QPSK	1	24	22.51	22.49	22.50
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	21.70	21.61	21.67
5	16QAM	1	12	21.64	21.55	21.63
5	16QAM	1	24	21.84	21.78	21.74
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	20.85	20.81

WLAN 2.4GHz Band Conducted Power

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.

Wi-Fi 2450MHz	Channel/Freq.(MHz)	Peak Power (dBm) for Data Rates (Mbps)							
		1	2	5.5	11	/	/	/	/
802.11b	1(2412)	16.21	16.16	16.20	/	/	/	/	/
	6(2437)	16.05	16.02	16.04	/	/	/	/	/
	11(2462)	16.02	16.01	15.98	/	/	/	/	/
802.11g	Channel	6	9	12	18	24	36	48	54
	1(2412)	14.28	14.26	14.21	14.24	14.27	14.26	14.27	14.23
	6(2437)	14.31	14.26	14.29	14.30	14.24	14.27	14.29	14.28
	11(2462)	14.46	14.45	14.40	14.43	14.36	14.37	14.42	14.41
802.11n (HT20)	Channel	MCS0	MCS1	MCS 2	MCS 3	MCS 4	MCS 5	MCS 6	MCS 7
	1(2412)	14.44	14.41	14.40	14.39	14.43	14.38	14.35	14.36
	6(2437)	14.29	14.23	14.26	14.28	14.26	14.27	14.24	14.28
	11(2462)	14.13	14.10	14.12	14.06	14.08	14.10	14.09	14.06

Note:

1. Per KDB 248227 D01 v02r01, choose the highest output power channel to test SAR and determine further SAR exclusion
2. For each frequency band, testing at higher data rates and higher order modulations is not required when the maximum average output power for each of these configurations is less than 1/4dB higher than those measured at lowest data rate
3. Per KDB 248227 D01 v02r01, 802.11g /11n-HT20/11n-HT40 is not required. . When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤1.2W/Kg. Thus the SAR can be excluded.

Bluetooth Conducted Power

Channel	Frequency (MHz)	BT3.0 Output Power(dBm)		
		GFSK	π /4-DQPSK	8-DPSK
CH 0	2402	0.40	0.16	0.04
CH 39	2441	0.88	0.82	0.75
CH 78	2480	0.19	0.06	-0.15

Channel	Frequency (MHz)	BT4.0 Output Power(dBm)
		GFSK
CH 0	2402	0.66
CH 20	2441	1.46
CH 39	2480	0.24

Note:

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

Bluetooth Max Power (dBm)	mW	Test Distance (mm)	Frequency(Ghz)	Exclusion Thresholds
1.5	1.413	5	2.4	0.438

Per KDB 447498 D01v05r02 exclusion thresholds is 0.438<3, RF exposure evaluation is not required.
BT estimated SAR value=Exclusion Thresholds/7.5=0.438/7.5=0.058W/Kg

Bluetooth Max Power (dBm)	mW	Test Distance (mm)	Frequency(Ghz)	Exclusion Thresholds
1.5	1.413	10	2.4	0.219

Per KDB 447498 D01v05r02 exclusion thresholds is 0.219<3, RF exposure evaluation is not required.
BT estimated SAR value=Exclusion Thresholds/7.5=0.219/7.5=0.029W/Kg

The estimated SAR value is used for simultaneous transmission analysis.

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. As the manufacture required, the separation distance use 5mm for Hotspot mode.
4. Per KDB 865664 D01v01r04,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 D01v03, 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. Per KDB 248227 D01 v02r01, 802.11g /11n-HT20/11n-HT40 is not required. When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤1.2W/Kg. Thus the SAR can be excluded.

9.3. Scaling Factor calculation

Operation Mode	Channel	Output Power(dBm)	Tune up Power in tolerance(dBm)	Scaling Factor
GSM 850	128	32.68	32.5 ± 0.5	1.076
	190	32.63	32.5 ± 0.5	1.089
	251	32.81	32.5 ± 0.5	1.045
GPRS 850(2Tx)	128	29.87	29.5± 0.5	1.030
	190	29.91	29.5± 0.5	1.021
	251	29.83	29.5± 0.5	1.040
GSM1900	512	29.18	29.0 ± 0.5	1.076
	661	29.25	29.0 ± 0.5	1.059
	810	29.16	29.0 ± 0.5	1.081
GPRS1900(3Tx)	512	25.72	25.3 ± 0.5	1.019
	661	25.67	25.3 ± 0.5	1.030
	810	25.75	25.3 ± 0.5	1.012
WCDMA850	4132	22.73	22.5 ± 0.5	1.064
	4183	22.80	22.5 ± 0.5	1.047
	4233	22.67	22.5 ± 0.5	1.079
WCDMA1700	1312	22.18	22.0 ± 0.5	1.076
	1413	22.21	22.0 ± 0.5	1.069
	1513	22.25	22.0 ± 0.5	1.059
WCDMA1900	9262	22.15	22.0 ± 0.5	1.084
	9400	22.17	22.0 ± 0.5	1.079
	9538	22.09	22.0 ± 0.5	1.099
LTE B2 20MHz 1RB#0	18700	22.84	22.4 ± 0.5	1.014
	18900	22.81	22.4 ± 0.5	1.021
	19100	22.85	22.4 ± 0.5	1.012
LTE B2 20MHz 50RB#0	18700	21.79	21.5 ± 0.5	1.050
	18900	21.87	21.5 ± 0.5	1.030
	19100	21.73	21.5 ± 0.5	1.064
LTE B2 20MHz 100RB#0	18700	21.75	21.4 ± 0.5	1.035
	18900	21.81	21.4 ± 0.5	1.021
	19100	21.77	21.4± 0.5	1.030
LTE B4 20MHz 1RB#0	20050	22.87	22.5 ± 0.5	1.030
	20175	22.92	22.5 ± 0.5	1.019
	20300	22.85	22.5 ± 0.5	1.035

LTE B4 20MHz 50RB#49	20050	21.68	21.4 ± 0.5	1.052
	20175	21.72	21.4 ± 0.5	1.042
	20300	21.82	21.4 ± 0.5	1.019
LTE B4 20MHz 100RB#0	20050	21.71	21.4 ± 0.5	1.045
	20175	21.75	21.4 ± 0.5	1.035
	20300	21.84	21.4 ± 0.5	1.014
LTE B5 10MHz 1RB#0	20450	22.62	22.5 ± 0.5	1.091
	20525	22.70	22.5 ± 0.5	1.072
	20600	22.65	22.5 ± 0.5	1.084
LTE B510MHz 25RB#0	20450	21.74	21.4 ± 0.5	1.038
	20525	21.76	21.4 ± 0.5	1.033
	20600	21.81	21.4 ± 0.5	1.021
LTE B5 10MHz 50RB#0	20450	21.66	21.3 ± 0.5	1.033
	20525	21.75	21.3 ± 0.5	1.012
	20600	21.71	21.3 ± 0.5	1.021
LTE B7 20MHz 1RB#0	20850	22.52	22.2 ± 0.5	1.042
	21100	22.61	22.2 ± 0.5	1.021
	21350	22.57	22.2 ± 0.5	1.030
LTE B7 20MHz 50RB#0	20850	21.82	21.4 ± 0.5	1.019
	21100	21.84	21.4 ± 0.5	1.014
	21350	21.87	21.4 ± 0.5	1.007
LTE B7 20MHz 100RB#0	20850	21.72	21.3 ± 0.5	1.067
	21100	21.75	21.3 ± 0.5	1.059
	21350	21.80	21.3 ± 0.5	1.047
WIFI 802.11b	1	16.21	16.0 ± 0.5	1.069
	6	16.05	16.0 ± 0.5	1.109
	11	16.02	16.0 ± 0.5	1.117
BT	39	1.46	-0.5± 2.0	1.009

Simultaneous SAR

No.	Transmitter Combinations	Scenario Supported or not	Supported for Mobile Hotspot or not
1	GSM(Voice)+GSM(Data)	No	No
2	WCDMA(Voice)+WCDMA(Data)	Yes	No
3	GSM(Voice)+ WCDMA(Data)	No	No
4	WCDMA(Voice)+GSM(Data)	No	No
5	GSM(Voice)+ WCDMA(Voice)	No	No
6	GSM(Voice)+Wifi	Yes	No
7	WCDMA(Voice) +Wifi	Yes	No
8	GSM(Voice)+ BT	Yes	No
9	WCDMA(Voice) + BT	Yes	No
10	GSM(Data)+wifi	Yes	Yes
11	WCDMA(Data) +wifi	Yes	Yes
12	LTE(Data)+GSM(Voice/Data)	No	No
13	LTE(Data)+WCDMA(Voice/Data)	No	No
14	LTE(Data)+WIFI	Yes	Yes

10 TEST RESULTS

10.1 Summary of SAR Measurement Results

Table 7: SAR Values of GSM 850MHz Band

Temperature: 23.0~23.5°C, humidity: 62~64%.					
Test Positions			Channel /Frequency (MHz)	SAR(W/Kg), 1.6 (1g average)	
				SAR(W/Kg),1g	Scaled SAR(W/Kg),1g
Right Side of Head	Cheek		251/848.8	**0.398**	**0.416**
	Tilt 15 degrees		251/848.8	0.241	0.252
Left Side of Head	Cheek		251/848.8	0.288	0.301
	Tilt 15 degrees		251/848.8	0.182	0.190
Body-worn (10mm Separation)	GSM	Face Upward	251/848.8	0.231	0.241
		Back Upward	251/848.8	**0.328**	**0.343**
Hotspot (10mm Separation)	GPRS (2Tx)	Face Upward	190/836.6	0.217	0.258
		Back Upward	190/836.6	**0.267**	**0.318**
		Edge B	190/836.6	0.245	0.292
		Edge C	190/836.6	0.173	0.206
		Edge D	190/836.6	0.110	0.131

Table 8: SAR Values of GSM1900 MHz Band

Temperature: 23.0~23.5°C, humidity: 62~64%.					
Test Positions			Channel /Frequency (MHz)	SAR(W/Kg), 1.6 (1g average)	
				SAR(W/Kg),1g	Scaled SAR(W/Kg),1g
Right Side of Head	Cheek		661/1880.0	0.177	0.187
	Tilt 15 degrees		661/1880.0	0.084	0.089
Left Side of Head	Cheek		661/1880.0	**0.207**	**0.219**
	Tilt 15 degrees		661/1880.0	0.067	0.071
Body-worn (10mm Separation)	GSM	Face Upward	661/1880.0	0.127	0.134
		Back Upward	661/1880.0	**0.402**	**0.426**
Hotspot (10mm Separation)	GPRS (3Tx)	Face Upward	810/1909.8	0.119	0.121
		Back Upward	810/1909.8	0.307	0.313
		Edge B	810/1909.8	0.045	0.046
		Edge C	810/1909.8	**0.526**	**0.536**
		Edge D	810/1909.8	0.068	0.069

Table 9: SAR Values of WCDMA850

Temperature: 23.0~23.5°C, humidity: 62~64%.				
Test Positions		Channel /Frequency (MHz)	SAR(W/Kg), 1.6 (1g average)	
			SAR(W/Kg),1g	Scaled SAR(W/Kg),1g
Right Side of Head	Cheek	4183/836.6	0.154	0.161
	Tilt 15 degrees	4183/836.6	0.139	0.146
Left Side of Head	Cheek	4183/836.6	**0.177**	**0.185**
	Tilt 15 degrees	4183/836.6	0.132	0.138
Body-worn (10mm Separation)	Face Upward	4183/836.6	0.162	0.170
	Back Upward	4183/836.6	**0.262**	**0.274**
Hotspot (10mm Separation)	Face Upward	4183/836.6	0.162	0.170
	Back Upward	4183/836.6	**0.262**	**0.274**
	Edge B	4183/836.6	0.191	0.200
	Edge C	4183/836.6	0.154	0.161
	Edge D	4183/836.6	0.080	0.084

Table10: SAR Values of WCDMA1700

Temperature: 23.0~23.5°C, humidity: 62~64%.				
Test Positions		Channel /Frequency (MHz)	SAR(W/Kg), 1.6 (1g average)	
			SAR(W/Kg),1g	Scaled SAR(W/Kg),1g
Right Side of Head	Cheek	1513/1752.6	**0.574**	**0.608**
	Tilt 15 degrees	1513/1752.6	0.334	0.354
Left Side of Head	Cheek	1513/1752.6	0.545	0.577
	Tilt 15 degrees	1513/1752.6	0.264	0.280
Body-worn (10mm Separation)	Face Upward	1513/1752.6	0.168	0.178
	Back Upward	1513/1752.6	**0.234**	**0.248**
Hotspot (10mm Separation)	Face Upward	1513/1752.6	0.168	0.178
	Back Upward	1513/1752.6	**0.234**	**0.248**
	Edge B	1513/1752.6	0.157	0.166
	Edge C	1513/1752.6	0.058	0.061
	Edge D	1513/1752.6	0.100	0.106

Table 11: SAR Values of WCDMA1900

Temperature: 23.0~23.5°C, humidity: 62~64%.				
Test Positions		Channel /Frequency (MHz)	SAR(W/Kg), 1.6 (1g average)	
			SAR(W/Kg1g Peak)	Scaled SAR(W/Kg),1g
Right Side of Head	Cheek	9400/1880.0	0.381	0.411
	Tilt 15 degrees	9400/1880.0	0.238	0.257
Left Side of Head	Cheek	9262/1852.4	1.154	1.125
		9400/1880.0	1.156	1.124
		9538/1907.6	**1.188**	**1.306**
		9538/1907.6 Repeat	1.122	1.233
	Tilt 15 degrees	9400/1880.0	0.513	0.554
Body-worn (10mm Separation)	Face Upward	9400/1880.0	0.285	0.308
	Back Upward	9262/1852.4	0.861	0.933
		9400/1880.0	0.875	0.944
		9538/1907.6	**0.889**	**0.977**
		9538/1907.6 Repeat	0.884	0.972
Hotspot (10mm Separation)	Face Upward	9400/1880.0	0.285	0.308
	Back Upward	9262/1852.4	0.861	0.933
		9400/1880.0	0.875	0.944
		9538/1907.6	0.889	0.977
		9538/1907.6 Repeat	0.884	0.972
	Edge B	9400/1880.0	0.163	0.176
	Edge C	9262/1852.4	1.256	1.362
		9400/1880.0	1.266	1.366
		9538/1907.6	**1.285**	**1.412**
		9538/1907.6 Repeat1	1.281	1.408
	Edge D	9400/1880.0	0.255	0.275

Table 12: SAR Values of LTE Band 2 , 20MHz

Temperature: 23.0~23.5°C, humidity: 62~64%.				
Test Positions		Channel /Frequency (MHz)	SAR(W/Kg), 1.6 (1g average)	
			SAR(W/Kg),1g	Scaled SAR(W/Kg),1g
1RB				
Right Side of Head	Cheek	19100/1900	0.423	0.428
	Tilt 15 degrees	19100/1900	0.151	0.153
Left Side of Head	Cheek	19100/1900	**0.496**	**0.502**
	Tilt 15 degrees	19100/1900	0.155	0.157
Body (10mm Separation) Body-worn	Face Upward	19100/1900	0.233	0.236
	Back Upward	19100/1900	**0.537**	**0.543**
Body (10mm Separation) Hotspot	Face Upward	19100/1900	0.233	0.236
	Back Upward	19100/1900	0.537	0.543
	Edge B	19100/1900	0.102	0.103
	Edge C	18700/1860	0.914	0.927
		18900/1880	0.929	0.949
		19100/1900	**0.955**	**0.966**
		19100/1900 Repeat	0.954	0.965
	Edge D	19100/1900	0.150	0.152
50%RB				
Right Side of Head	Cheek	18900/1880	0.393	0.405
	Tilt 15 degrees	18900/1880	0.142	0.146
Left Side of Head	Cheek	18900/1880	**0.465**	**0.479**
	Tilt 15 degrees	18900/1880	0.145	0.149
Body (10mm Separation) Body-worn	Face Upward	18900/1880	0.221	0.228
	Back Upward	18900/1880	**0.523**	**0.539**
Body (10mm Separation) Hotspot	Face Upward	18900/1880	0.213	0.219
	Back Upward	18900/1880	0.514	0.529
	EdgeB	18900/1880	0.098	0.101
	Edge C	18700/1860	0.901	0.946
		18900/1880	0.902	0.929
		19100/1900	**0.906**	**0.964**
		19100/1900 Repeat	0.901	0.959
	Edge D	18900/1880	0.141	0.145
100%RB				
Right Side of Head	Cheek	18900/1880	0.373	0.381
	Tilt 15 degrees	18900/1880	0.123	0.126
Left Side of Head	Cheek	18900/1880	**0.421**	**0.430**
	Tilt 15 degrees	18900/1880	0.123	0.126
Body (10mm Separation) Body-worn	Face Upward	18900/1880	0.203	0.207
	Back Upward	18900/1880	0.423	0.432
Body (10mm Separation)	Face Upward	18900/1880	0.192	0.196
	Back Upward	18900/1880	0.502	0.513

Hotspot	Edge B	18900/1880	0.075	0.077
	Edge C	18700/1860	**0.891**	**0.922**
		18900/1880	0.892	0.919
		19100/1900	0.893	0.920
		19100/1900 Repeat	0.891	0.918
	Edge D	18900/1880	0.121	0.124

Table 13: SAR Values of LTE Band 4 , 20MHz

Temperature: 23.0~23.5°C, humidity: 62~64%.				
Test Positions		Channel /Frequency (MHz)	SAR(W/Kg), 1.6 (1g average)	
			SAR(W/Kg),1g	Scaled SAR(W/Kg),1g
1RB				
Right Side of Head	Cheek	20175/1732.5	0.499	0.508
	Tilt 15 degrees	20175/1732.5	0.254	0.259
Left Side of Head	Cheek	20050/1720	0.807	0.831
		20175/1732.5	0.805	0.820
		20300/1745	**0.825**	**0.854**
		20300/1745 Repeat	0.811	0.839
	Tilt 15 degrees	20175/1732.5	0.347	0.354
Body (10mm Separation) Body-worn	Face Upward	20175/1732.5	0.423	0.431
	Back Upward	20175/1732.5	**0.723**	**0.737**
Body (10mm Separation) Hotspot	Face Upward	20175/1732.5	0.423	0.431
	Back Upward	20175/1732.5	0.723	0.737
	Edge B	20175/1732.5	0.158	0.161
	Edge C	20050/1720	1.091	1.124
		20175/1732.5	1.094	1.115
		20300/1745	**1.095**	**1.133**
		20300/1745 Repeat	1.092	1.130
	Edge D	20175/1732.5	0.152	0.155
50%RB				
Right Side of Head	Cheek	20300/1745	0.359	0.366
	Tilt 15 degrees	20300/1745	0.214	0.218
Left Side of Head	Cheek	20050/1720	0.745	0.784
		20175/1732.5	0.781	0.814
		20300/1745	**0.793**	**0.808**
		20300/1745 Repeat	0.792	0.807
	Tilt 15 degrees	20300/1745	0.217	0.221
Body (10mm Separation) Body-worn	Face Upward	20300/1745	0.313	0.319
	Back Upward	20300/1745	**0.683**	**0.696**
Body (10mm Separation) Hotspot	Face Upward	20300/1745	0.313	0.319
	Back Upward	20300/1745	0.683	0.696
	Edge B	20300/1745	0.138	0.141
	Edge C	20050/1720	1.041	1.095

		20175/1732.5	1.034	1.077
		20300/1745	**1.045**	**1.065**
		20300/1745 Repeat	1.041	1.061
	Edge D	20300/1745	0.121	0.123
100%RB				
Right Side of Head	Cheek	20300/1745	0.295	0.299
	Tilt 15 degrees	20300/1745	0.187	0.190
Left Side of Head	Cheek	20300/1745	**0.681**	**0.691**
	Tilt 15 degrees	20300/1745	0.206	0.209
Body (10mm Separation) Body-worn	Face Upward	20300/1745	0.292	0.296
	Back Upward	20300/1745	**0.652**	**0.661**
Body (10mm Separation) Hotspot	Face Upward	20300/1745	0.292	0.296
	Back Upward	20300/1745	0.652	0.661
	Edge B	20300/1745	0.112	0.114
	Edge C	20050/1720	1.014	1.060
		20175/1732.5	1.001	1.046
		20300/1745	**1.025**	**1.039**
		20300/1745 Repeat	1.013	1.027
	Edge D	20300/1745	0.113	0.115

Table 14: SAR Values of LTE Band 5 , 10MHz

Temperature: 23.0~23.5°C, humidity: 62~64%.				
Test Positions		Channel /Frequency (MHz)	SAR(W/Kg), 1.6 (1g average)	
			SAR(W/Kg),1g	Scaled SAR(W/Kg),1g
1RB				
Right Side of Head	Cheek	20525/836.5	0.096	0.103
	Tilt 15 degrees	20525/836.5	0.089	0.095
Left Side of Head	Cheek	20525/836.5	**0.102**	**0.109**
	Tilt 15 degrees	20525/836.5	0.079	0.085
Body (10mm Separation) Body-worn	Face Upward	20525/836.5	0.089	0.095
	Back Upward	20525/836.5	**0.174**	**0.230**
Body (10mm Separation) Hotspot	Face Upward	20525/836.5	0.089	0.095
	Back Upward	20525/836.5	**0.174**	**0.230**
	Edge B	20525/836.5	0.108	0.116
	Edge C	20525/836.5	0.084	0.090
	Edge D	20525/836.5	0.041	0.044
50%RB				
Right Side of Head	Cheek	20600/844.0	0.085	0.087
	Tilt 15 degrees	20600/844.0	0.072	0.074
Left Side of Head	Cheek	20600/844.0	**0.096**	**0.098**
	Tilt 15 degrees	20600/844.0	0.061	0.062
Body (10mm Separation) Body-worn	Face Upward	20600/844.0	0.075	0.077
	Back Upward	20600/844.0	**0.156**	**0.159**
Body (10mm	Face Upward	20600/844.0	0.075	0.077

Separation) Hotspot	Back Upward	20600/844.0	**0.156**	**0.159**
	EdgeB	20600/844.0	0.092	0.094
	Edge C	20600/844.0	0.075	0.077
	Edge D	20600/844.0	0.039	0.040
100%RB				
Right Side of Head	Cheek	20525/836.5	0.076	0.077
	Tilt 15 degrees	20525/836.5	0.063	0.064
Left Side of Head	Cheek	20525/836.5	**0.086**	**0.087**
	Tilt 15 degrees	20525/836.5	0.052	0.053
Body (10mm Separation) Body-worn	Face Upward	20525/836.5	0.061	0.062
	Back Upward	20525/836.5	**0.142**	**0.144**
Body (10mm Separation) Hotspot	Face Upward	20525/836.5	0.061	0.062
	Back Upward	20525/836.5	**0.142**	**0.144**
	Edge B	20525/836.5	0.081	0.082
	Edge C	20525/836.5	0.066	0.067
	Edge D	20525/836.5	0.031	0.031

Table 15: SAR Values of LTE Band 7,20MHz

Temperature: 23.0~23.5°C, humidity: 62~64%.				
Test Positions		Channel /Frequency (MHz)	SAR(W/Kg), 1.6 (1g average)	
			SAR(W/Kg),1g	Scaled SAR(W/Kg),1g
1RB				
Right Side of Head	Cheek	20850/2510	0.856	0.892
		21100/2535	0.919	0.938
		21100/2535 Repeat	0.905	0.932
		21350/2560	0.873	0.899
	Tilt 15 degrees	21100/2535	0.279	0.285
Left Side of Head	Cheek	20850/2510	1.141	1.189
		21100/2535	**1.155**	**1.190**
		21100/2535 Repeat	1.152	1.176
		21350/2560	1.142	1.176
	Tilt 15 degrees	21100/2535	0.330	0.337
Body (10mm Separation) Body-worn	Face Upward	21100/2535	0.388	0.396
	Back Upward	21100/2535	**0.765**	**0.781**
Body (10mm Separation) Hotspot	Face Upward	21100/2535	0.388	0.396
	Back Upward	21100/2535	0.765	0.781
	Edge B	21100/2535	0.099	0.101
	Edge C	20850/2510	1.189	1.239
		21100/2535	1.205	1.230
		21350/2560	**1.207**	**1.243**
		21350/2560 Repeat	1.203	1.239
	Edge D	21100/2535	0.431	0.440

50%RB				
Right Side of Head	Cheek	20850/2510	0.814	0.829
		21100/2535	0.901	0.914
		21100/2535 Repeat	0.899	0.912
		21350/2560	0.812	0.818
	Tilt 15 degrees	21350/2560	0.252	0.254
Left Side of Head	Cheek	20850/2510	1.123	1.144
		21100/2535	**1.141**	1.157
		21100/2535 Repeat	1.140	1.156
		21350/2560	1.132	1.140
	Tilt 15 degrees	21350/2560	0.321	0.323
Body (10mm Separation) Body-worn	Face Upward	21350/2560	0.317	0.319
	Back Upward	21350/2560	**0.724**	0.729
Body (10mm Separation) Hotspot	Face Upward	21350/2560	0.317	0.319
	Back Upward	21350/2560	0.724	0.729
	Edge B	21350/2560	0.087	0.088
	Edge C	20850/2510	1.185	1.208
		21100/2535	1.182	1.199
		21350/2560	**1.201**	1.209
		21350/2560 Repeat	1.200	1.208
	Edge D	21350/2560	0.403	0.406
100%RB				
Right Side of Head	Cheek	20850/2510	0.801	0855
		21100/2535	0.875	0.927
		21100/2535 Repeat	0.863	0.914
		21350/2560	0.803	0.841
	Tilt 15 degrees	21350/2560	0.214	0.224
Left Side of Head	Cheek	20850/2510	1.105	1.179
		21100/2535	1.113	**1.179**
		21350/2560 Repeat	1.115	1.167
		21350/2560	1.115	1.167
	Tilt 15 degrees	21350/2560	0.301	0.315
Body (10mm Separation) Body-worn	Face Upward	21350/2560	0.311	0.326
	Back Upward	21350/2560	0.701	0.734
Body (10mm Separation) Hotspot	Face Upward	21350/2560	0.311	0.326
	Back Upward	21350/2560	0.701	0.734
	Edge B	21350/2560	0.069	0.072
	Edge C	20850/2510	1.085	1.158
		21100/2535	1.072	1.135
		21350/2560	**1.106**	**1.158**
		21350/2560 Repeat	1.102	1.154
	Edge D	21350/2560	0.365	0.382

Table 16: SAR Values of Wi-Fi 802.11b

Test Positions		Channel /Frequency (MHz)	SAR(W/Kg), 1.6 (1g average)	
			SAR(W/Kg1g Peak)	Scaled SAR(W/Kg),1g
Right Side of Head	Cheek	1/2412	0.156	0.167
	Tilt 15 degrees	1/2412	**0.260**	**0.278**
Left Side of Head	Cheek	1/2412	0.153	0.164
	Tilt 15 degrees	1/2412	0.153	0.164
Body-worn (10mm Separation)	Face Upward	1/2412	0.030	0.032
	Back Upward	1/2412	**0.056**	**0.060**
Hotspot (10mm Separation)	Face Upward	1/2412	0.030	0.032
	Back Upward	1/2412	0.056	0.060
	Edge A	1/2412	0.035	0.037
	Edge D	1/2412	0.030	0.032

Note: When the 1-g SAR for the mid-band channel or the channel with the Highest output power satisfy the following conditions, testing of the other channels in the band is not required.(Per KDB 447498 D01 General RF Exposure Guidance v05r02)
• ≤ 0.8 W/kg, when the transmission band is ≤ 100 MHz
• ≤ 0.6 W/kg, when the transmission band is between 100 MHz and 200 MHz
• ≤ 0.4 W/kg, when the transmission band is ≥ 200 MHz

10.2 Conclusion

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

SIMULTANEOUS TRANSMISSION ANALYSIS

Test Position		Right Cheek	Right Title	Left Cheek	Left Tilt
Head MAX 1-g SAR(W/Kg)	GSM850	0.416	0.252	0.301	0.190
	GSM1900	0.187	0.089	0.219	0.071
	WCDMA850	0.161	0.146	0.185	0.138
	WCDMA1900	0.411	0.257	1.306	1.233
	WCDMA1700	0.608	0.354	0.577	0.280
	LTE Band2	0.428	0.153	0.502	0.157
	LTE Band4	0.508	0.259	0.854	0.354
	LTE Band5	0.103	0.095	0.109	0.085
	LTE Band7	0.938	0.285	1.190	0.337
	WIFI 802.11b	0.167	0.278	0.164	0.164
	BT	*0.058	*0.058	*0.058	*0.058
BT Simultaneous ∑1-g SAR(W/Kg)		0.996	0.412	**1.364**	1.291
WiFi Simultaneous ∑1-g SAR(W/Kg)		1.105	0.632	**1.470**	1.397

Simultaneous Tx Combination of GSM/WCDMA/LTE and BT/WIFI (Head).

Test Position		Face	Back	Edge A	Edge B	Edge C	Edge D
Body-worn 10mm separation MAX 1-g SAR(W/Kg)	GSMS850	0.241	0.343	--	--	--	--
	GSM1900	0.134	0.426	--	--	--	--
	WCDMA850	0.162	0.262	--	--	--	--
	WCDMA1700	0.178	0.248				
	WCDMA1900	0.308	0.977	--	--	--	--
	LTE Band2	0.236	0.543	--	--	--	--
	LTE Band4	0.431	0.737	--	--	--	--
	LTE Band5	0.095	0.230	--	--	--	--
	LTE Band7	0.396	0.781	--	--	--	--
	WIFI 802.11b	0.032	0.060	--	--	--	--
	BT	*0.029	*0.029	--	--	--	--
BT Simultaneous ∑1-g SAR(W/Kg)		0.460	**1.006**	--	--	--	--
WiFi Simultaneous ∑1-g SAR(W/Kg)		0.463	**1.037**	--	--	--	--

Simultaneous Tx Combination of GSM/WCDMA/LTE and BT/WIFI (Body).

Test Position		Face	Back	Edge A	Edge B	Edge C	Edge D
Hotspot 10mm separation MAX 1-g SAR(W/Kg)	GPRS850	0.258	0.318	--	0.292	0.206	0.112
	GPRS1900	0.121	0.313	--	0.046	0.536	0.069
	WCDMA 850	0.170	0.274	--	0.200	0.161	0.084
	WCDMA 1700	0.178	0.248	--	0.166	0.061	0.106
	WCDMA 1900	0.308	0.977	--	0.176	1.412	0.275
	LTE Band2	0.236	0.543	--	0.103	0.966	0.152
	LTE Band4	0.431	0.737	--	0.161	1.133	0.155
	LTE Band5	0.095	0.230	--	0.116	0.090	0.044
	LTE Band7	0.396	0.781	--	0.101	1.243	0.440
	WIFI 802.11b	0.032	0.060	0.037	--	--	0.032
	BT	*0.029	*0.029	*0.029	--	--	*0.029
BT Simultaneous ∑1-g SAR(W/Kg)		0.460	1.006	0.066	0.292	**1.412**	0.469
WiFi Simultaneous ∑1-g SAR(W/Kg)		0.463	1.037	0.066	0.292	**1.412**	0.472

Simultaneous Tx Combination of GSM/WCDMA/LTE and WIFI (Body).

The estimated SAR value with * Signal

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

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	1.4	R	$\sqrt{3}$	1	0.81	∞
10	－Integration Time	B	3.0	R	$\sqrt{3}$	1	1.73	∞
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	－Position of the DUT	A	2.6	N	$\sqrt{3}$	1	2.6	5
16	－Holder of the DUT	A	3	N	$\sqrt{3}$	1	3.0	5

17	—Output Power Variation –SAR drift measurement	B	5.0	R	$\sqrt{3}$	1	2.89	∞
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			10.63	
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

EQUIPMENT	TYPE	Series No.	Calibration Date	calibration period
System Simulator	E5515C	GB 47200710	2015/06/10	1 Year
System Simulator	CMW500	130805	2015/08/10	1 Year
SAR Probe	SATIMO	SN_0413_EP166	2015/08/10	1 Year
Dipole	SID835	SN09/13 DIP0G835-217	2014/08/28	2 Year
Dipole	SID1800	SN09/13 DIP1G800-216	2014/08/28	2 Year
Dipole	SID1900	SN09/13 DIP1G900-218	2014/08/28	2 Year
Dipole	SID2450	SN09/13 DIP2G450-220	2014/08/28	2 Year
Dipole	SID2600	SN32/14 DIP2G600-338	2014/08/12	2 Year
Vector Network Analyzer	ZVB8	A0802530	2015/06/08	1 Year
Signal Generator	SMR27	A0304219	2015/06/08	1 Year
Power Meter	NRP2	A140401673	2015/03/27	1 Year
Power Sensor	NPR-Z11	1138.3004.02-114072-nq	2015/03/27	1 Year
Amplifier	Nucletudes	143060	2015/03/27	1 Year
Directional Coupler	DC6180A	305827	2015/03/27	1 Year
Power Meter	NRVS	A0802531	2015/03/27	1 Year
Power Sensor	NRV-Z4	100069	2015/03/27	1 Year
Multimeter	Keithley-2000	4014020	2015/03/27	1 Year

ANNEX A

of

CCIC-SET

CONFORMANCE TEST REPORT FOR

HUMAN EXPOSURE TO ELECTROMAGNETIC FIELDS

SET2015-15028

LTE Digital Mobile Phone

Type Name: ZTE Blade A570, Blade A570, Blade D Lux, ZTE Blade D Lux, ZTE T617

Hardware Version: P829A10 HW 1.0

Software Version: GEN_SA28_P829A10V0.0.0B01

TEST SETUP

This Annex consists of 7 pages

Date of Report: 2015-10-27

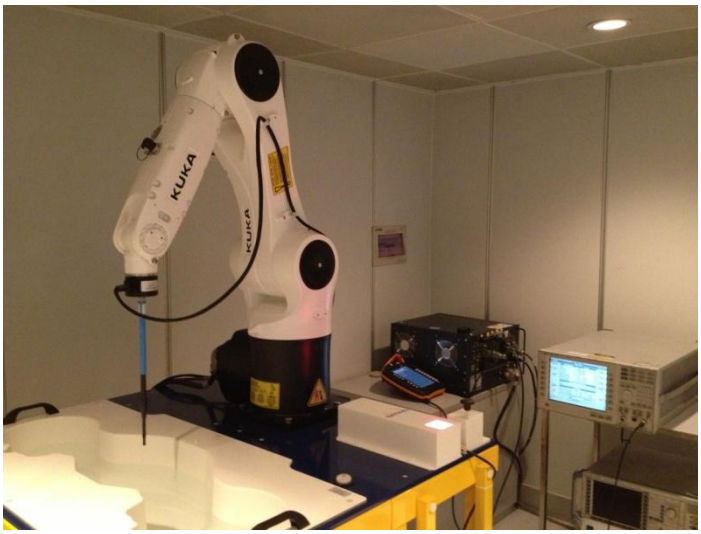


Fig.1 COMO SAR Test System

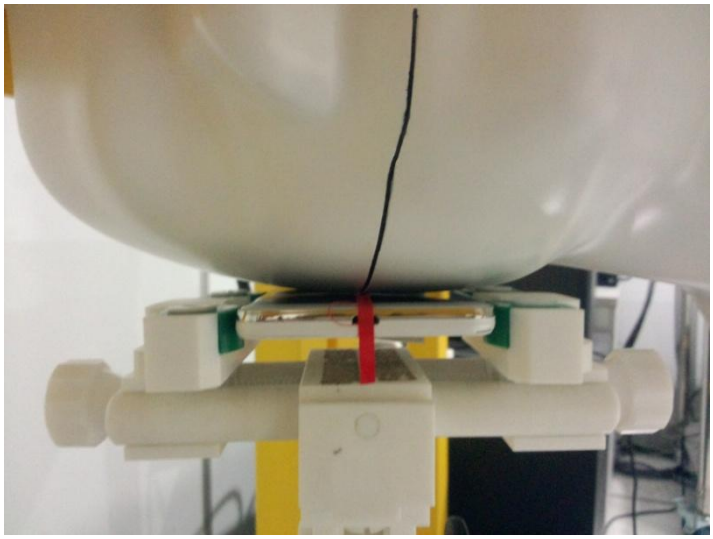


Fig.2 Right_Cheek

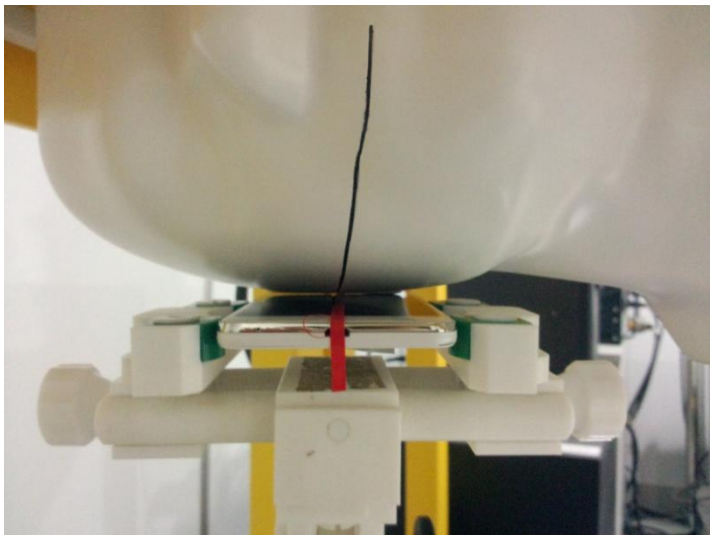


Fig.3 Right_Tilt

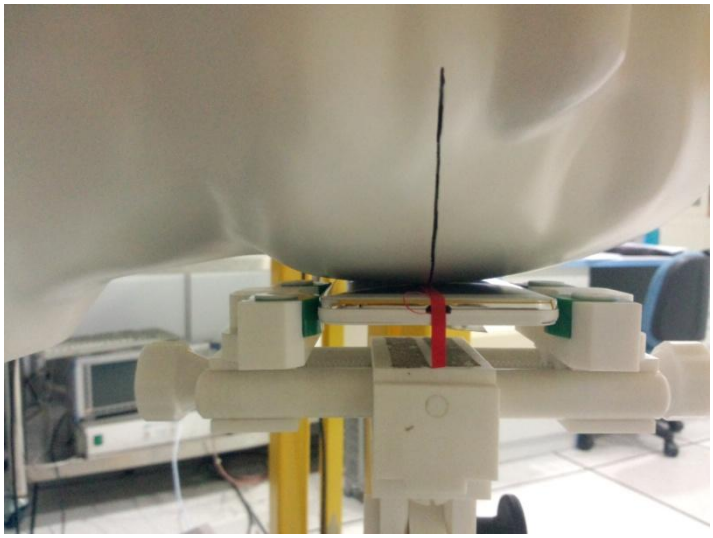


Fig.4 Left Cheek

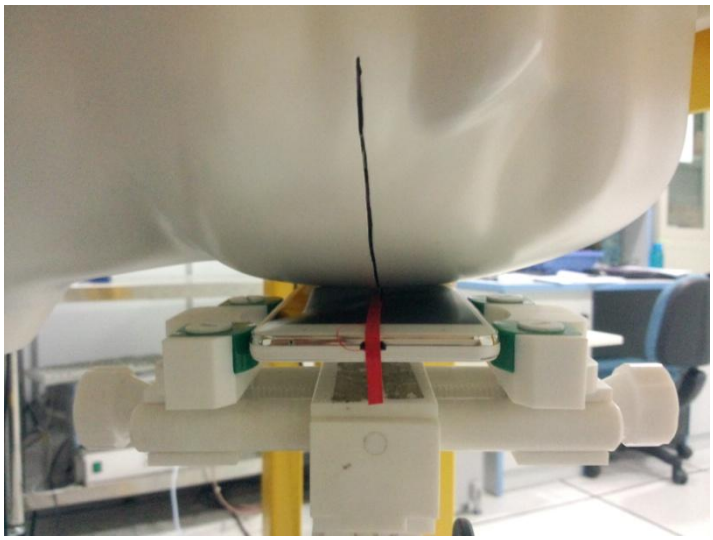


Fig.5 Left_Tilt

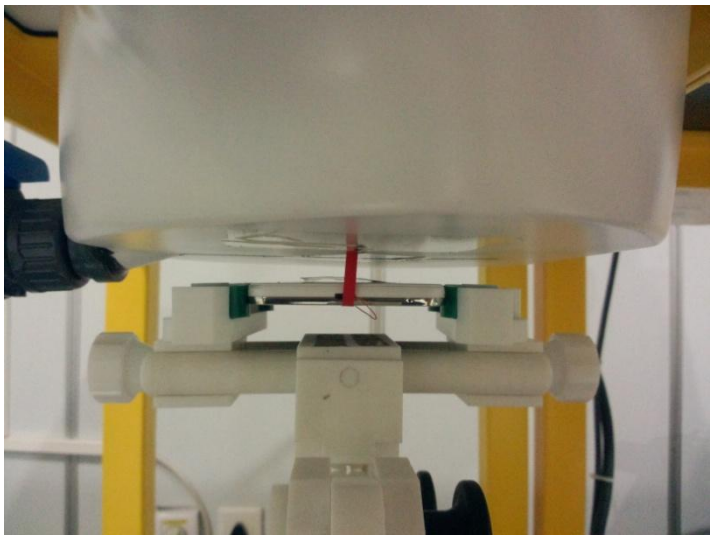


Fig.6 Body (Back upside,10mm separation)

Fig.7 Body (Face upside,10mm separation)

Fig.8 Body Edge A(10mm separation)

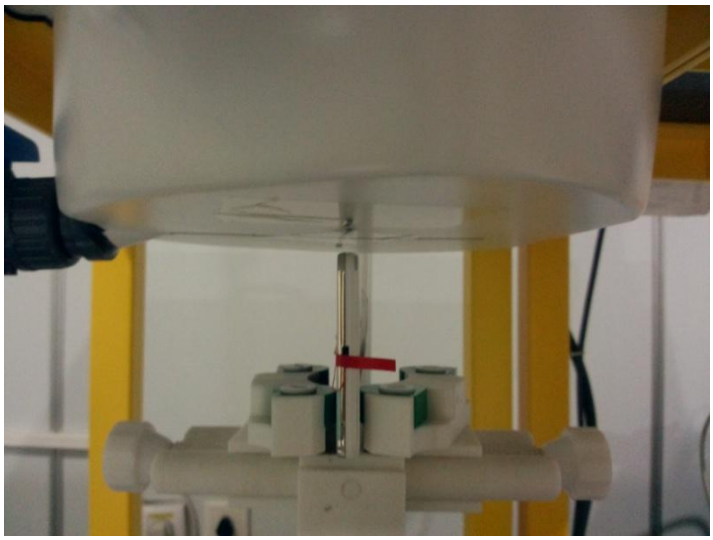


Fig.9 Body Edge B(10mm separation)

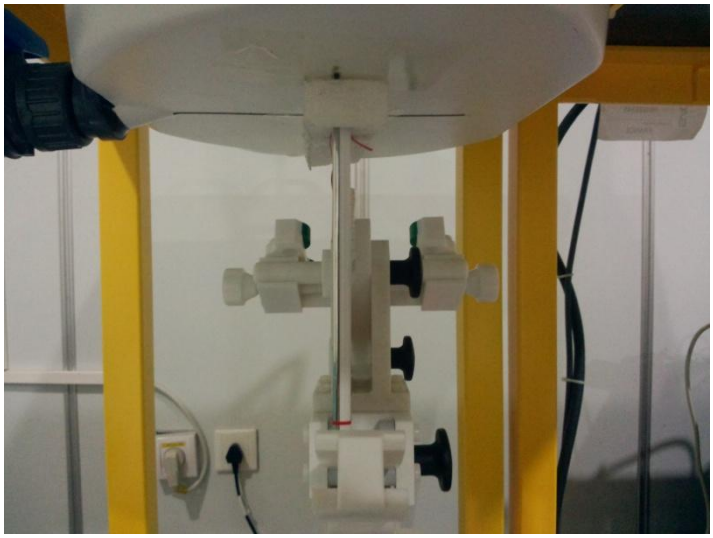


Fig.10 Body Edge C(10mm separation)

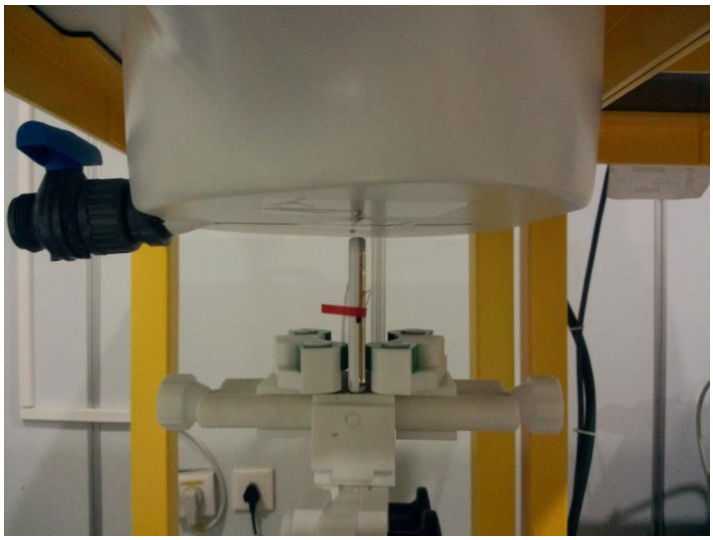


Fig.11 Body Edge D(10mm separation)

Fig.12 Head Liquid of 850MHz(15cm)

Fig.13 Body Liquid of 850MHz (15cm)

Fig.14 Head Liquid of 1800-1900MHz(15cm)

Fig.15 Body Liquid of 1800-1900MHz(15cm)

Fig.16 Head Liquid of 2450-2600MHz(15cm)

Fig.17 Body Liquid of 2450-2600MHz(15cm)

ANNEX B

of

CCIC-SET

CONFORMANCE TEST REPORT FOR

HUMAN EXPOSURE TO ELECTROMAGNETIC FIELDS

SET2015-15028

LTE Digital Mobile Phone

Type Name: ZTE Blade A570, Blade A570, Blade D Lux, ZTE Blade D Lux, ZTE T617

Hardware Version: P829A10 HW 1.0

Software Version: GEN_SA28_P829A10V0.0.0B01

Sample Photographs

This Annex consists of 2 pages

Date of Report: 2015-10-27

1. Appearance

Appearance and size (obverse)

Appearance and size (reverse)

ANNEX C

of

CCIC-SET

CONFORMANCE TEST REPORT FOR

HUMAN EXPOSURE TO ELECTROMAGNETIC FIELDS

SET2015-15028

LTE Digital Mobile Phone

Type Name: ZTE Blade A570, Blade A570, Blade D Lux, ZTE Blade D Lux, ZTE T617

Hardware Version: P829A10 HW 1.0

Software Version: GEN_SA28_P829A10V0.0.0B01

System Performance Check Data and Highest SAR Plots

This Annex consists of 56 pages

Date of Report: 2015-10-27

System Performance Check (Head, 835MHz)

Type: Validation measurement

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

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

Date of measurement:12/10/2015

Measurement duration: 21 minutes 21 seconds

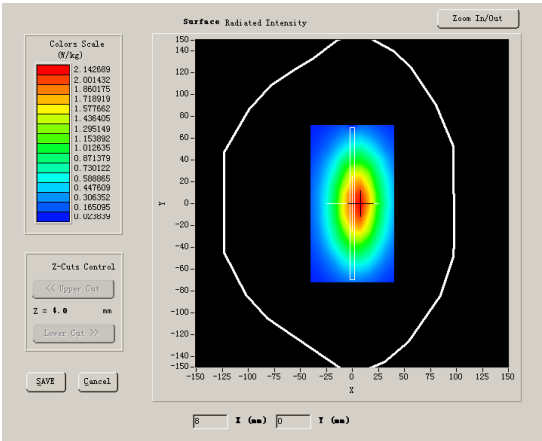
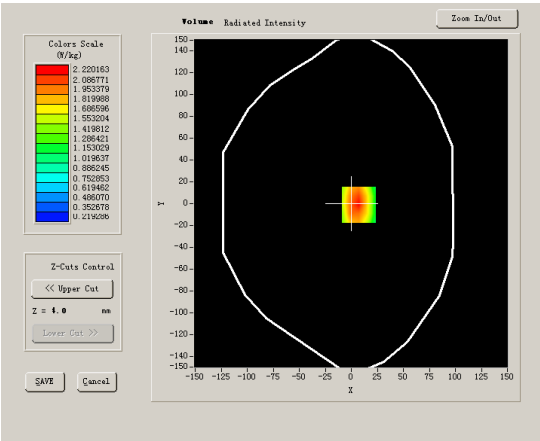
A. Experimental conditions.

Phantom File	dx=8mm dy=8mm
Phantom	5x5x7,dx=8mm dy=8mm dz=5mm
Device Position	
Band	835MHz
Channels	
Signal	CW

B. SAR Measurement Results

Band SAR

E-Field Probe	SATIMO SN_04/13_EP166
Frequency (MHz)	835
Relative permittivity (real part)	41.34
Relative permittivity	18.64
Conductivity (S/m)	0.88
Power drift (%)	-0.57
Ambient Temperature:	23.2 ℃
Liquid Temperature:	23.5 ℃
ConvF:	5.69
Duty factor:	1:1

SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=7.00, Y=-1.00

SAR 10g (W/Kg)	1.830124
SAR 1g (W/Kg)	2.410372

System Performance Check (Head, 1800MHz)

Type: Validation measurement

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

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

Date of measurement:13/10/2015

Measurement duration: 20 minutes 24seconds

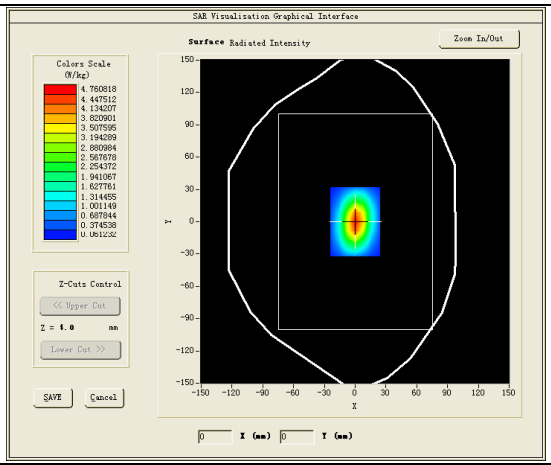
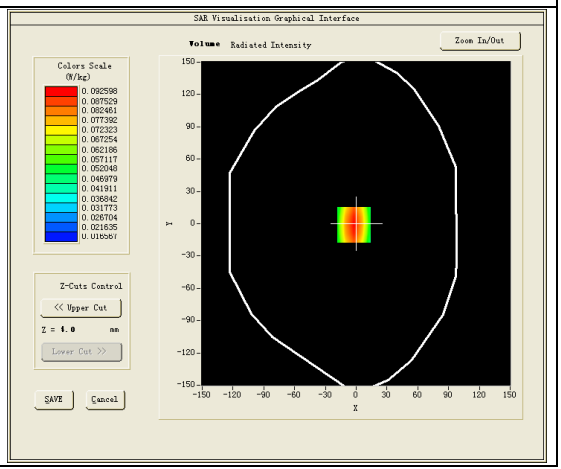
A. Experimental conditions.

Phantom File	dx=8mm dy=8mm
Phantom	5x5x7,dx=8mm dy=8mm dz=5mm
Device Position	
Band	1800MHz
Channels	
Signal	CW

B. SAR Measurement Results

Band SAR

E-Field Probe	SATIMO SN_04/13_EP166
Frequency (MHz)	1800
Relative permittivity (real part)	39.81
Relative permittivity	13.90
Conductivity (S/m)	1.39
Power drift (%)	0.62
Ambient Temperature:	22.2 ℃
Liquid Temperature:	22.5 ℃
ConvF:	4.75
Duty factor:	1:1

SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=6.00, Y=0.00

SAR 10g (W/Kg)	4.975230
SAR 1g (W/Kg)	9.488341

System Performance Check (Head, 1900MHz)

Type: Validation measurement

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

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

Date of measurement: 14/10/2015

Measurement duration: 22 minutes 26 seconds

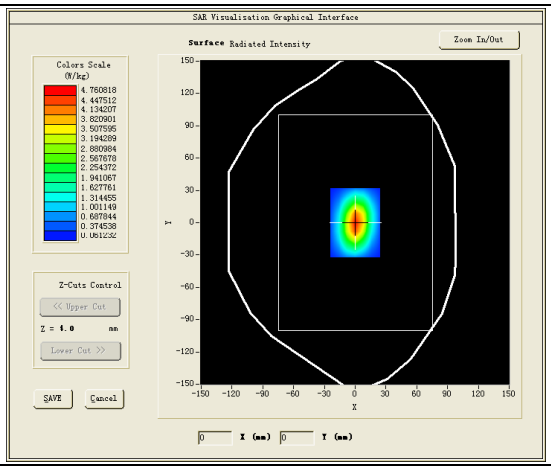
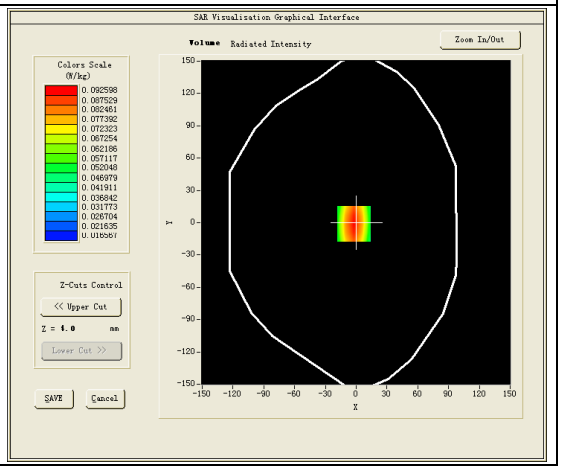
A. Experimental conditions.

Phantom File	dx=8mm dy=8mm
Phantom	5x5x7,dx=8mm dy=8mm dz=5mm
Device Position	
Band	1900MHz
Channels	
Signal	CW

B. SAR Measurement Results

Band SAR

E-Field Probe	SATIMO SN_04/13_EP166
Frequency (MHz)	1900
Relative permittivity (real part)	39.85
Relative permittivity	13.17
Conductivity (S/m)	1.39
Power drift (%)	-0.51
Ambient Temperature:	22.2 ℃
Liquid Temperature:	22.5 ℃
ConvF:	5.25
Duty factor:	1:1

SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=6.00, Y=0.00

SAR 10g (W/Kg)	5.147632
SAR 1g (W/Kg)	9.886357

System Performance Check (Head, 2450MHz)

Type: Phone measurement

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

Zoom scan resolution: dx=5mm dy=5mm dz=4mm

Date of measurement:15/10/2015

Measurement duration: 21 minutes 21 seconds

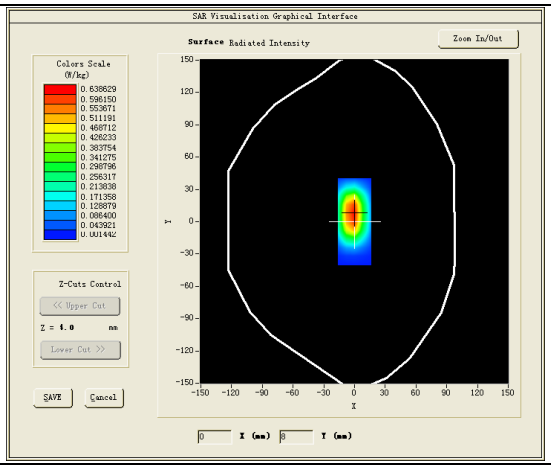
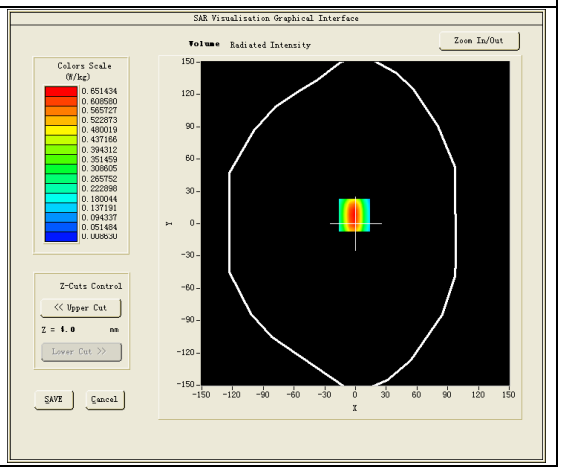
A. Experimental conditions.

Phantom File	dx=8mm dy=8mm
Phantom	7x7x8,dx=5mm dy=5mm dz=4mm
Device Position	Dipole
Band	2450MHz
Channels	
Signal	CW

B. SAR Measurement Results

Band SAR

E-Field Probe	SATIMO SN_04/13_EP166
Frequency (MHz)	2450
Relative permittivity (real part)	38.97
Relative permittivity	13.22
Conductivity (S/m)	1.80
Power Drift (%)	-1.31
ConvF:	4.93
Duty factor:	1:1

SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=0.00, Y=8.00

SAR 10g (W/Kg)	5.926420
SAR 1g (W/Kg)	13.210681

System Performance Check (Head,2600MHz)

Type: Phone measurement

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

Zoom scan resolution: dx=5mm, dy=5mm, dz=4mm

Date of measurement: 15/10/2015

Measurement duration: 22 minutes 18 seconds

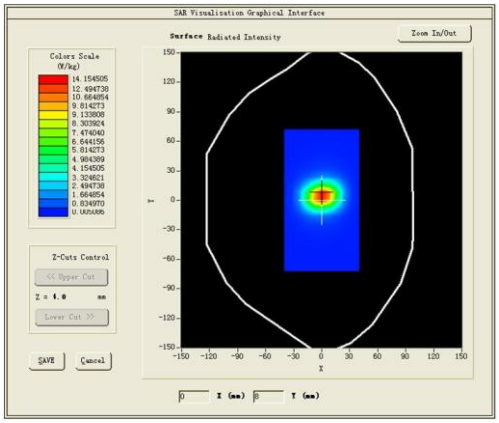
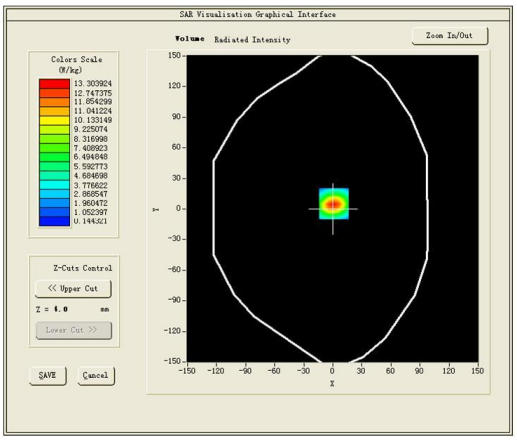
A. Experimental conditions.

Phantom File	dx=8mm dy=8mm
Phantom	7x7x8,dx=5mm dy=5mm dz=4mm
Device Position	Dipole
Band	2600MHz
Channels	
Signal	CW

B. SAR Measurement Results

Band SAR

E-Field Probe	SATIMO SN_09/13_EP169
Frequency (MHz)	2600
Relative permittivity (real part)	38.91
Relative permittivity	13.43
Conductivity (S/m)	1.94
Power drift (%)	-0.70
Ambient Temperature:	22.2°C
Liquid Temperature:	22.5°C
Crest factor:	1:1
ConvF:	5.08

SURFACE SAR	VOLUME SAR
	

Maximum location: X=1.00, Y=5.00

SAR 10g (W/Kg)	5.976371
SAR 1g (W/Kg)	13.968354

System Performance Check (Body, 835MHz)

Type: Validation measurement

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

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

Date of measurement: 19/10/2015

Measurement duration: 20 minutes 15 seconds

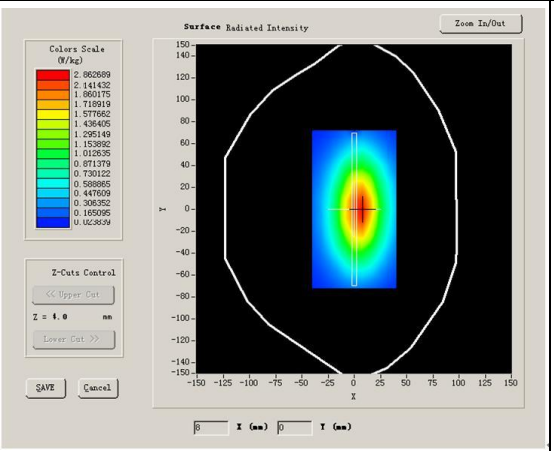
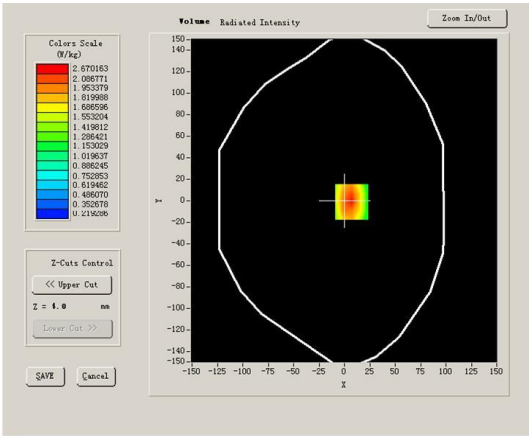
A. Experimental conditions.

Phantom File	dx=8mm dy=8mm
Phantom	5x5x7,dx=8mm dy=8mm dz=5mm
Device Position	Dipole
Band	835MHz
Channels	
Signal	CW

B. SAR Measurement Results

Band SAR

E-Field Probe	SATIMO SN_04/13_EP166
Frequency (MHz)	835
Relative permittivity (real part)	54.82
Relative permittivity	23.04
Conductivity (S/m)	0.96
Power drift (%)	-1.07
Ambient Temperature:	22.2 ℃
Liquid Temperature:	22.5 ℃
ConvF:	5.82
Duty factor:	1:1

SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=7.00, Y=-1.00

SAR 10g (W/Kg)	1.642154
SAR 1g (W/Kg)	2.532876

System Performance Check (Body, 1800MHz)

Type: Phone measurement

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

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

Date of measurement: 20/10/2015

Measurement duration: 20 minutes 08 seconds

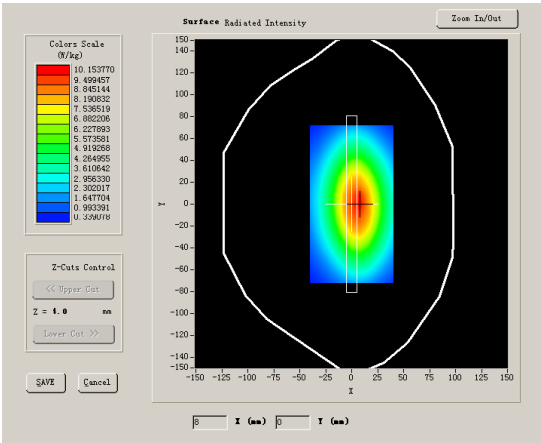
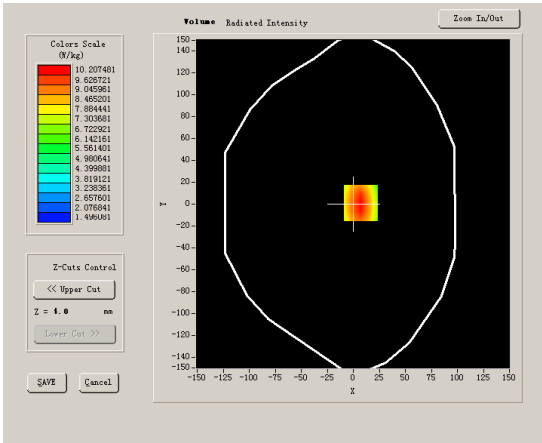
A. Experimental conditions.

Phantom File	dx=8mm dy=8mm
Phantom	5x5x7,dx=8mm dy=8mm dz=5mm
Device Position	Dipole
Band	1800MHz
Channels	
Signal	CW

B. SAR Measurement Results

Band SAR

E-Field Probe	SATIMO SN_04/13_EP166
Frequency (MHz)	1800
Relative permittivity (real part)	54.82
Relative permittivity	20.12
Conductivity (S/m)	0.95
Power drift (%)	0.75
Ambient Temperature:	22.2 ℃
Liquid Temperature:	22.6 ℃
ConvF:	4.96
Crest factor:	1:1

SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=7.00, Y=1.00

SAR 10g (W/Kg)	5.035472
SAR 1g (W/Kg)	9.866453

System Performance Check (Body, 1900MHz)

Type: Validation measurement

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

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

Date of measurement: 21/10/2015

Measurement duration: 21 minutes 27 seconds

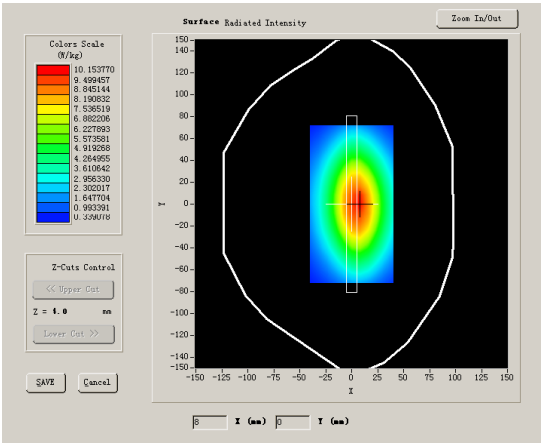
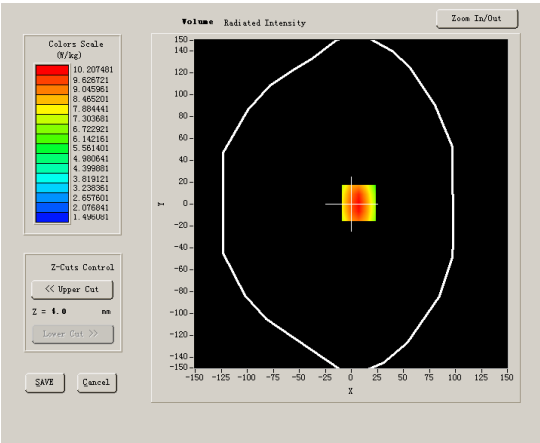
A. Experimental conditions.

Phantom File	dx=8mm dy=8mm
Phantom	5x5x7,dx=8mm dy=8mm dz=5mm
Device Position	Dipole
Band	1900MHz
Channels	
Signal	CW

B. SAR Measurement Results

Band SAR

E-Field Probe	SATIMO SN_04/13_EP166
Frequency (MHz)	1900
Relative permittivity (real part)	52.87
Relative permittivity	14.21
Conductivity (S/m)	1.50
Power Drift (%)	-2.05
Ambient Temperature:	22.1 ℃
Liquid Temperature:	22.6 ℃
ConvF:	5.43
Duty factor:	1:1

SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=1.00, Y=6.00

SAR 10g (W/Kg)	5.286541
SAR 1g (W/Kg)	10.126357

System Performance Check (Body, 2450MHz)

Type: Phone measurement

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

Zoom scan resolution: dx=5mm, dy=5mm, dz=4mm

Date of measurement: 22/10/2015

Measurement duration: 22 minutes 20 seconds

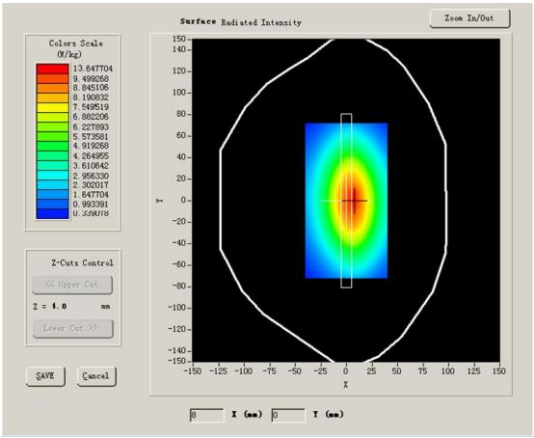
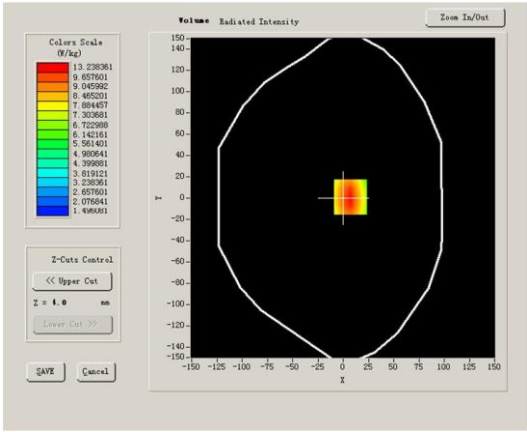
A. Experimental conditions.

Phantom File	dx=8mm dy=8mm
Phantom	7x7x8,dx=5mm dy=5mm dz=4mm
Device Position	Dipole
Band	2450MHz
Channels	
Signal	CW

B. SAR Measurement Results

Band SAR

E-Field Probe	SATIMO SN_04/13_EP166
Frequency (MHz)	2450
Relative permittivity (real part)	52.47
Relative permittivity	14.25
Conductivity (S/m)	1.94
Power Drift (%)	0.57
Duty factor:	1:1
ConvF:	5.09

SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=0.00, Y=8.00

SAR 10g (W/Kg)	6.053287
SAR 1g (W/Kg)	13.093541

System Performance Check (Body,2600MHz)

Type: Phone measurement

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

Zoom scan resolution: dx=5mm, dy=5mm, dz=4mm

Date of measurement: 22/10/2015

Measurement duration: 22 minutes 18 seconds

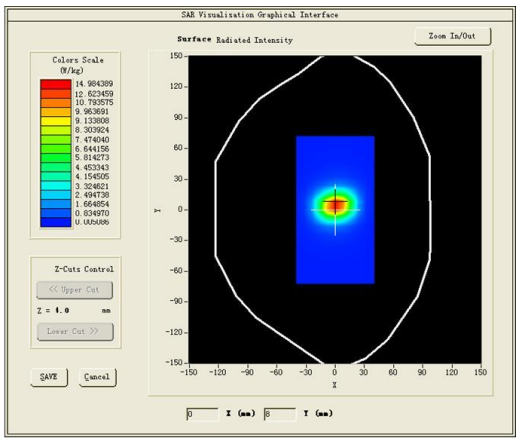
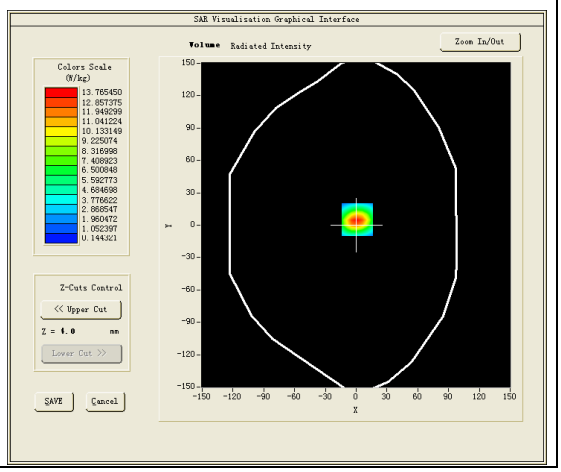
A. Experimental conditions.

Phantom File	dx=8mm dy=8mm
Phantom	7x7x8,dx=5mm dy=5mm dz=4mm
Device Position	Dipole
Band	2600MHz
Channels	
Signal	CW

B. SAR Measurement Results

Band SAR

E-Field Probe	SATIMO SN_09/13_EP169
Frequency (MHz)	2600
Relative permittivity (real part)	52.73
Relative permittivity	14.95
Conductivity (S/m)	2.16
Power drift (%)	2.35
Ambient Temperature:	22.2°C
Liquid Temperature:	22.5°C
Crest factor:	1:1
ConvF:	5.22

SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=1.00, Y=4.00

SAR 10g (W/Kg)	5.986242
SAR 1g (W/Kg)	14.07687

GSM850, Right Cheek, High

Type: Phone measurement

Date of measurement: 12/10/2015

Measurement duration: 6 minutes 19 seconds

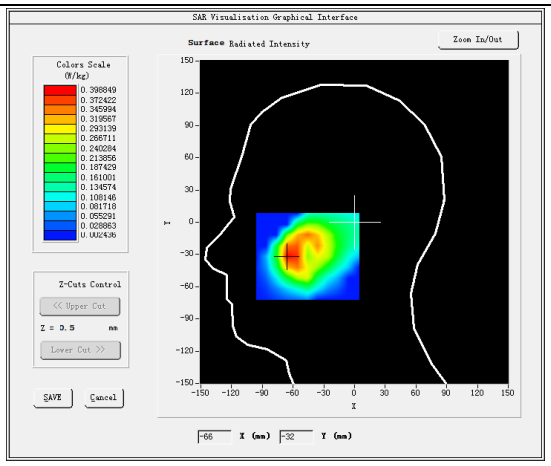
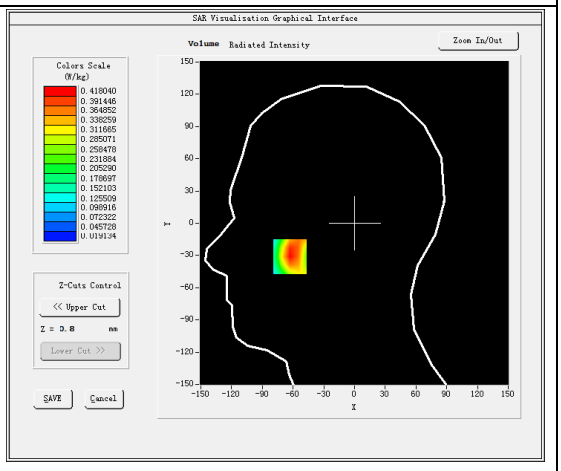
Mobile Phone IMEI number: --

A. Experimental conditions.

Area Scan	dx=8mm dy=8mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Right head
Device Position	Cheek
Band	GSM850
Channels	251
Signal	GSM (Duty cycle: 1:8)

B. SAR Measurement Results

E-Field Probe	SATIMO SN_04/13_EP166
Frequency (MHz)	848.8
Relative permittivity (real part)	41.34
Relative permittivity (imaginary part)	18.64
Conductivity (S/m)	0.88
Variation (%)	-2.88
ConvF:	5.69

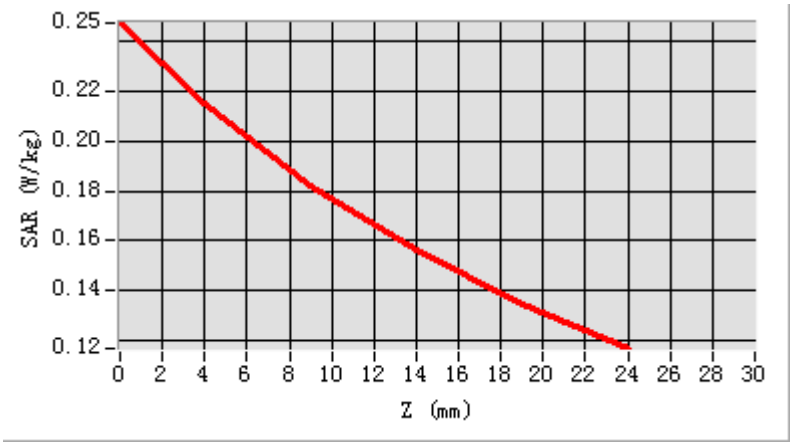
SURFACE SAR	VOLUME SAR
	

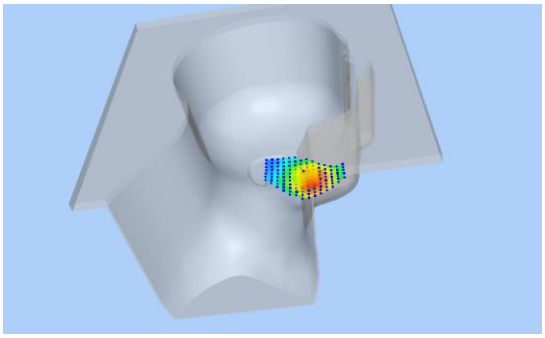
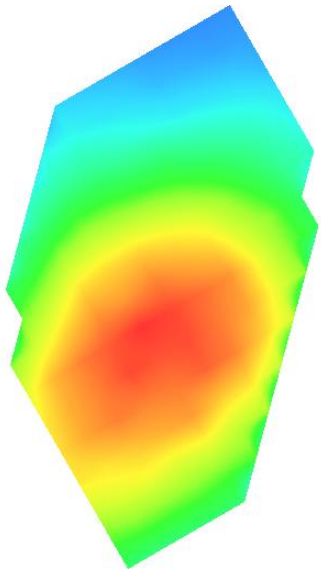
Maximum location: X=-63.00, Y=-31.00

SAR Peak: 0.64 W/kg

SAR 10g (W/Kg)	0.234419
SAR 1g (W/Kg)	0.398450

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.2475	0.2156	0.1824	0.1560	0.1348



3D screen shot	Hot spot position
	

GSM850, Back, High

Type: Phone measurement

Date of measurement: 19/10/2015

Measurement duration: 7 minutes 01 seconds

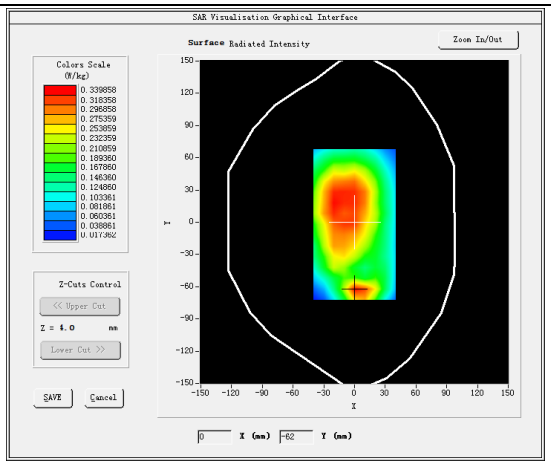
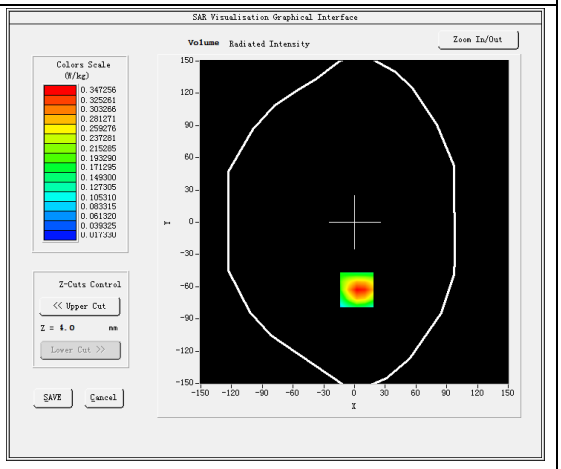
Mobile Phone IMEI number: --

A. Experimental conditions.

Area Scan	dx=8mm dy=8mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	GSM850
Channels	251
Signal	GSM(Duty cycle: 1:8)

B. SAR Measurement Results

E-Field Probe	SATIMO SN_04/13_EP166
Frequency (MHz)	848.8
Relative permittivity (real part)	54.82
Relative permittivity (imaginary part)	23.04
Conductivity (S/m)	0.96
Variation (%)	-0.80
ConvF:	5.82

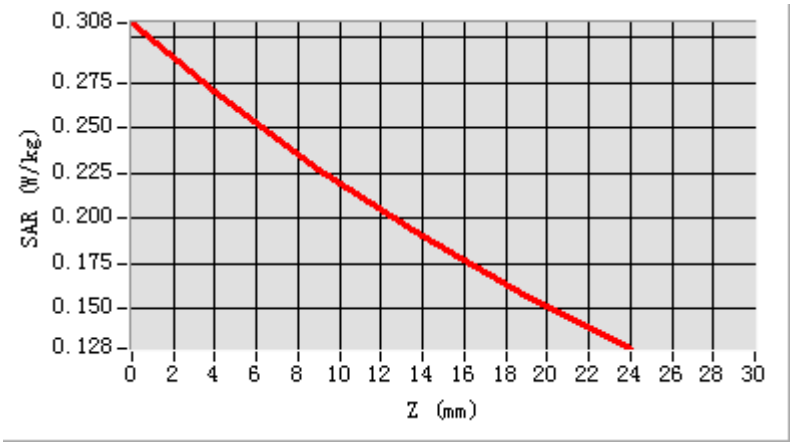
SURFACE SAR	**VOLUME SAR**
	

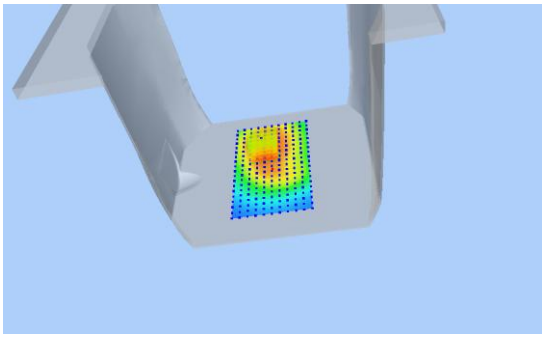
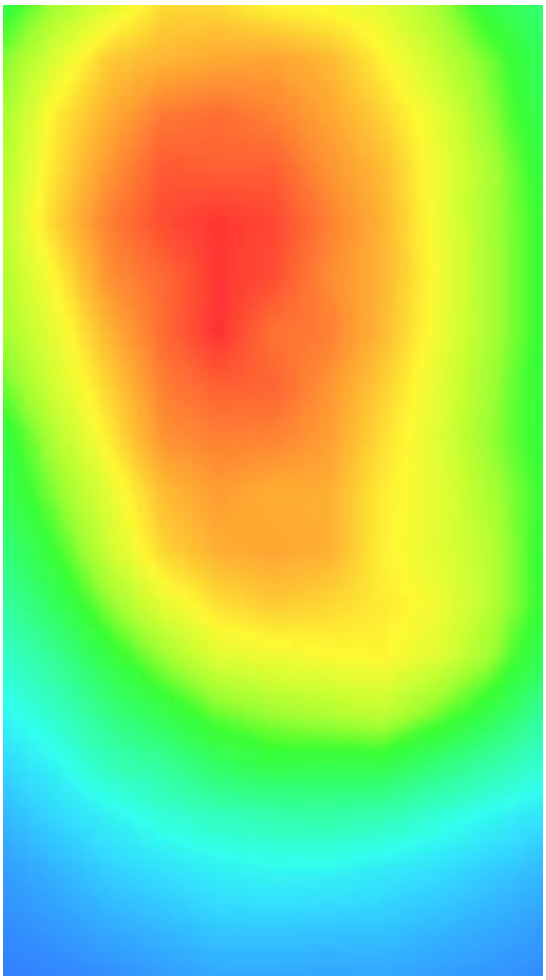
Maximum location: X=2.00, Y=-63.00

SAR Peak: 0.53 W/kg

SAR 10g (W/Kg)	0.191098
SAR 1g (W/Kg)	0.328397

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.3080	0.2698	0.2271	0.1898	0.1570



3D screen shot	Hot spot position
	

GPRS850, Back, Middle

Type: Phone measurement

Date of measurement: 19/10/2015

Measurement duration: 7 minutes 10 seconds

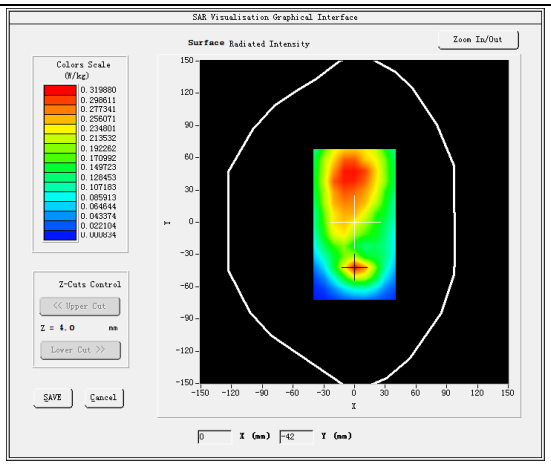
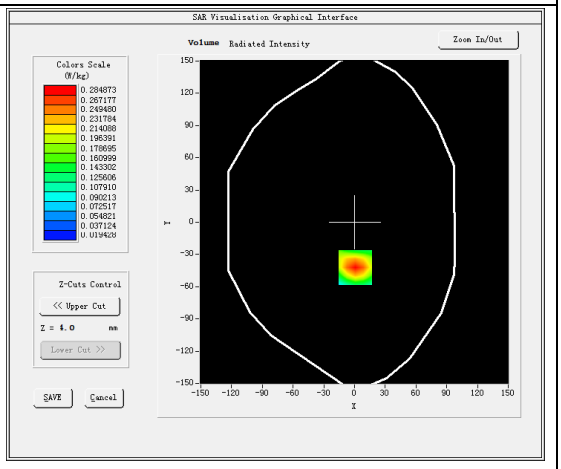
Mobile Phone IMEI number: --

A. Experimental conditions.

Area Scan	dx=8mm dy=8mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Back
Band	GSPRS850_2Tx
Channels	190
Signal	GPRS(Duty cycle: 1:4)

B. SAR Measurement Results

E-Field Probe	SATIMO SN_04/13_EP166
Frequency (MHz)	836.6
Relative permittivity (real part)	54.82
Relative permittivity (imaginary part)	23.04
Conductivity (S/m)	0.96
Variation (%)	1.07
ConvF:	5.82

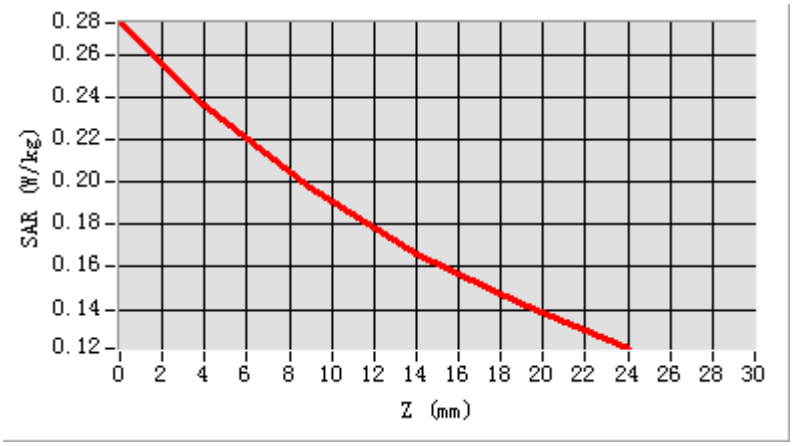
SURFACE SAR	**VOLUME SAR**
	

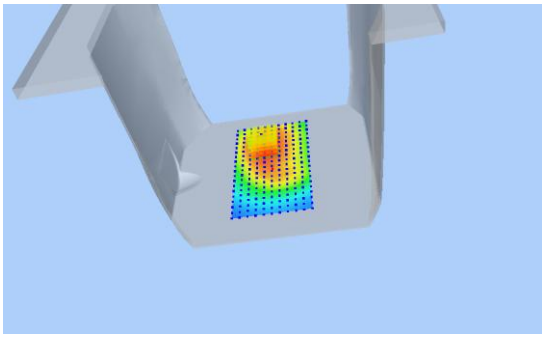
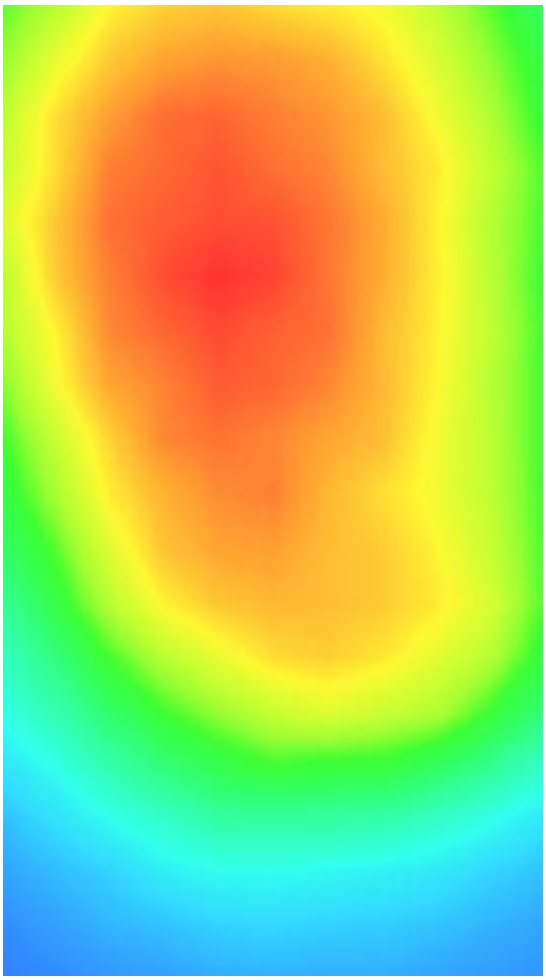
Maximum location: X=1.00, Y=-42.00

SAR Peak: 0.38 W/kg

SAR 10g (W/Kg)	0.166633
SAR 1g (W/Kg)	0.266699

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.2752	0.2368	0.1974	0.1666	0.1422



3D screen shot	Hot spot position
	

GSM1900, Left Cheek, Middle

Type: Phone measurement

Date of measurement: 14/10/2015

Measurement duration: 7 minutes 16 seconds

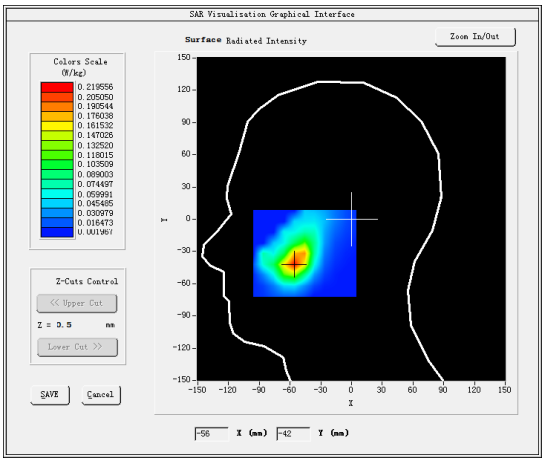
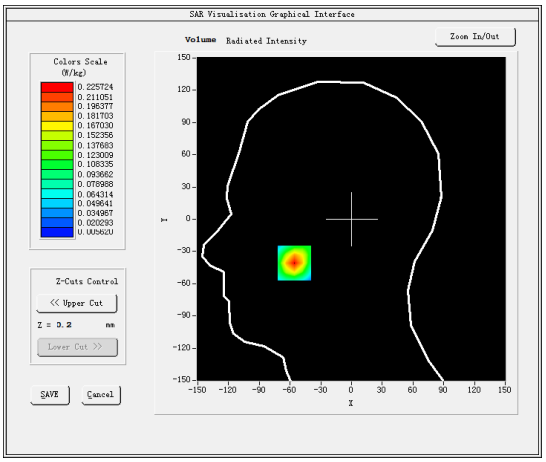
Mobile Phone IMEI number: --

A. Experimental conditions.

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

B. SAR Measurement Results

E-Field Probe	SATIMO SN_04/13_EP166
Frequency (MHz)	1880.0
Relative permittivity (real part)	39.85
Relative permittivity (imaginary part)	13.17
Conductivity (S/m)	1.39
Variation (%)	-0.51
ConvF:	5.25

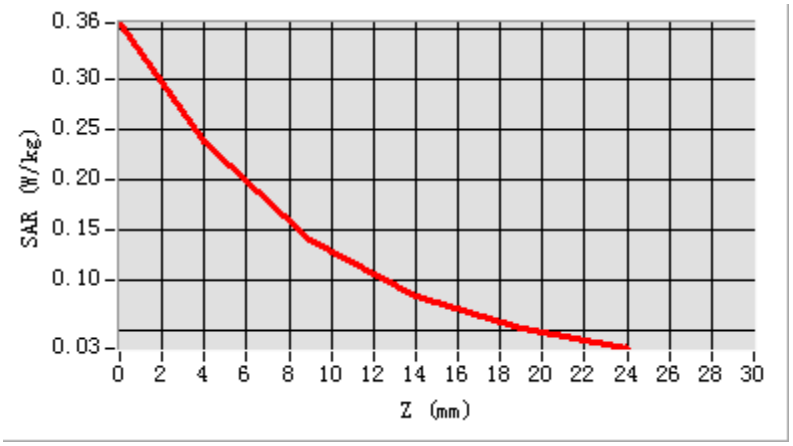
SURFACE SAR	VOLUME SAR
	

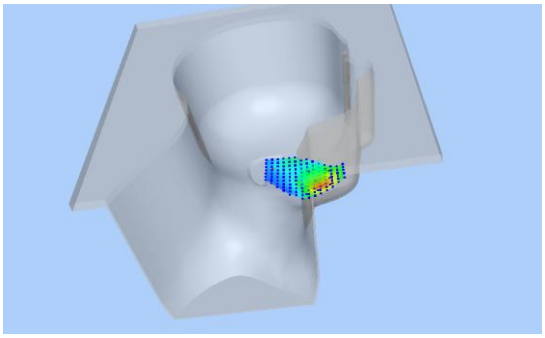
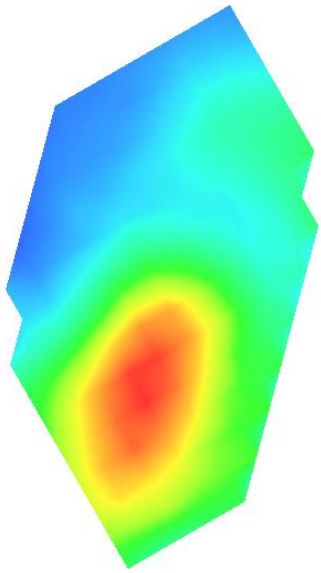
Maximum location: X=-56.00, Y=-41.00

SAR Peak: 0.30 W/kg

SAR 10g (W/Kg)	0.117237
SAR 1g (W/Kg)	0.207099

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.3563	0.2375	0.1408	0.0844	0.0527



3D screen shot	Hot spot position
	

GSM1900, Back, Middle

Type: Phone measurement

Date of measurement: 21/10/2015

Measurement duration: 6 minutes 14 seconds

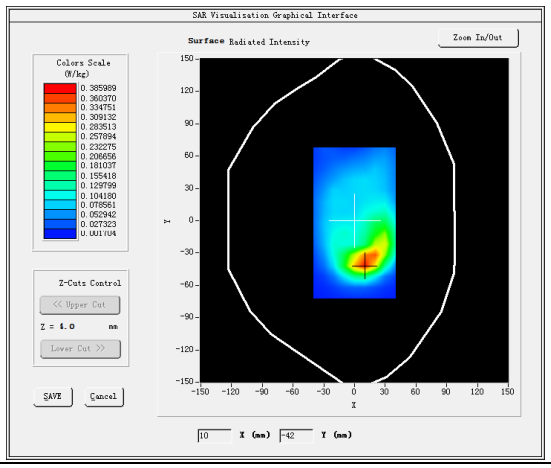
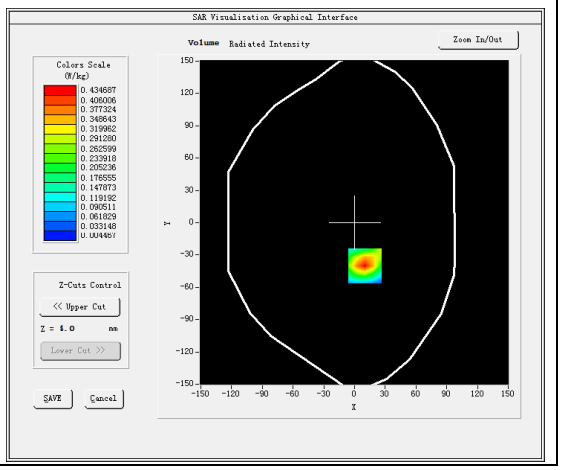
Mobile Phone IMEI number: --

A. Experimental conditions.

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

B. SAR Measurement Results

E-Field Probe	SATIMO SN_04/13_EP166
Frequency (MHz)	1880.0
Relative permittivity (real part)	52.87
Relative permittivity (imaginary part)	14.21
Conductivity (S/m)	1.50
Variation (%)	-2.08
ConvF:	5.43

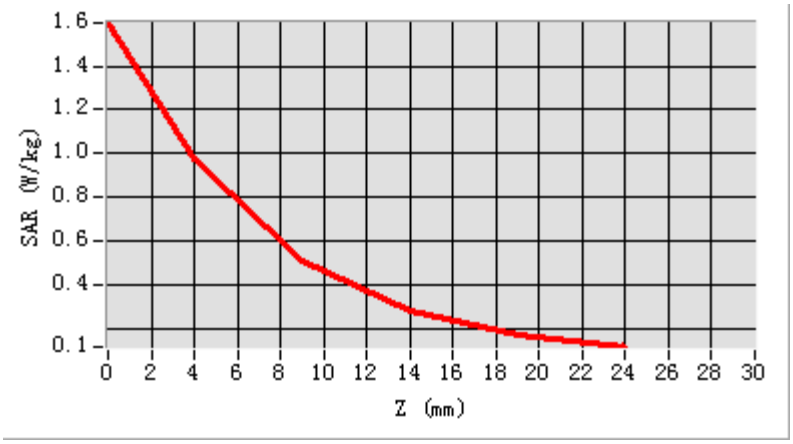
SURFACE SAR	VOLUME SAR
	

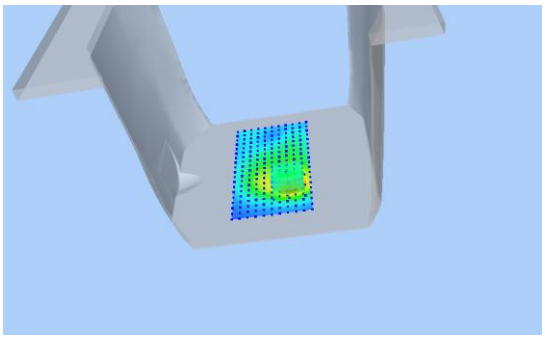
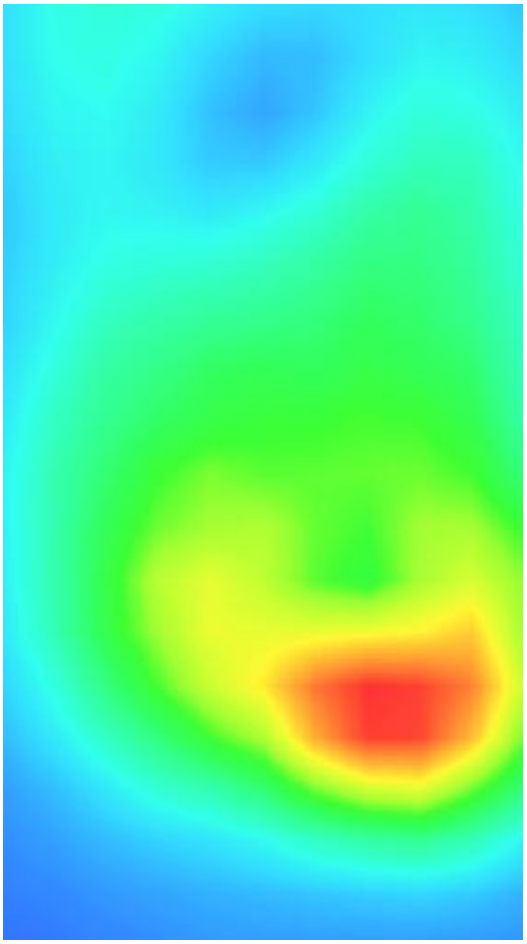
Maximum location: X=10.00, Y=-40.00

SAR Peak: 0.69 W/kg

SAR 10g (W/Kg)	0.205374
SAR 1g (W/Kg)	0.401810

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.5862	0.9654	0.5105	0.2801	0.1718



3D screen shot	Hot spot position
	

GPRS1900, Back, High

Type: Phone measurement

Date of measurement: 21/10/2015

Measurement duration: 6 minutes 33 seconds

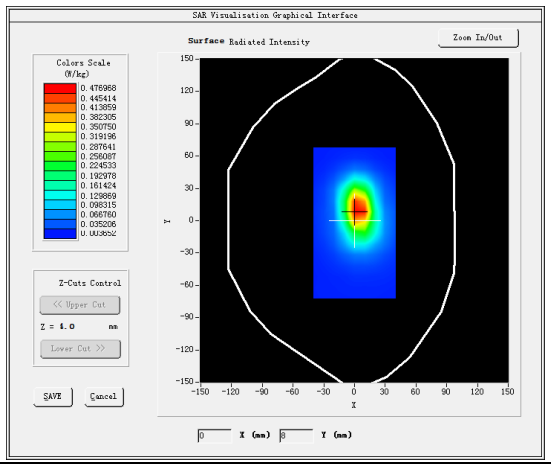
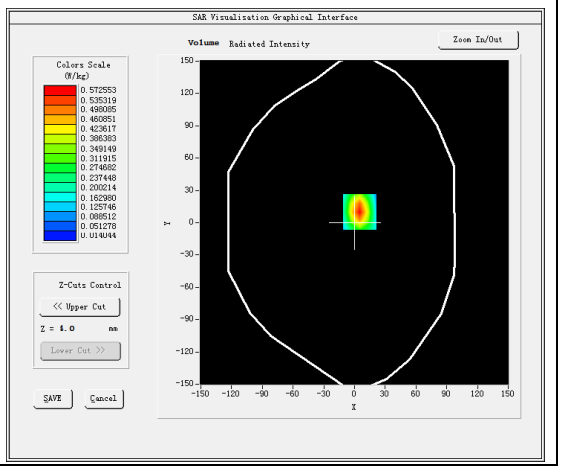
Mobile Phone IMEI number: --

A. Experimental conditions.

Area Scan	dx=8mm dy=8mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Back
Band	GSM1900
Channels	810
Signal	GSM (Duty cycle: 1:8)

B. SAR Measurement Results

E-Field Probe	SATIMO SN_04/13_EP166
Frequency (MHz)	1909.8
Relative permittivity (real part)	52.87
Relative permittivity (imaginary part)	14.21
Conductivity (S/m)	1.50
Variation (%)	1.60
ConvF:	5.43

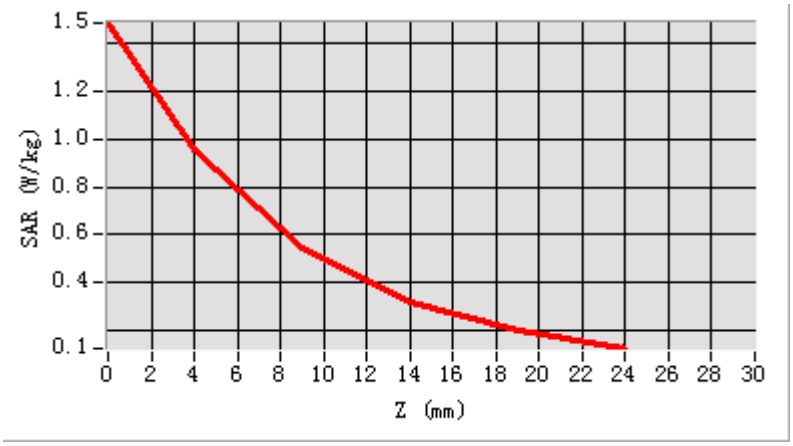
SURFACE SAR	VOLUME SAR
	

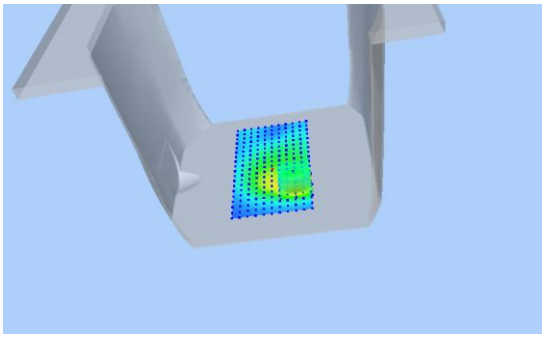
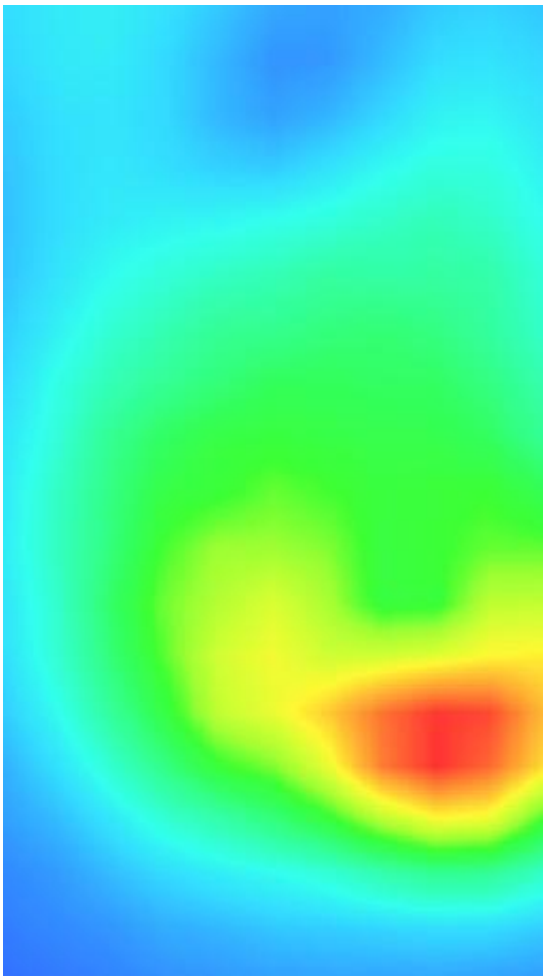
Maximum location: X=5.00, Y=10.00

SAR Peak: 0.84 W/kg

SAR 10g (W/Kg)	0.281605
SAR 1g (W/Kg)	0.526016

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.4860	0.9574	0.5431	0.3151	0.1955



3D screen shot	Hot spot position
	

WCDMA850, Left Cheek, Middle

Type: Phone measurement

Date of measurement: 12/10/2015

Measurement duration: 6 minutes 09 seconds

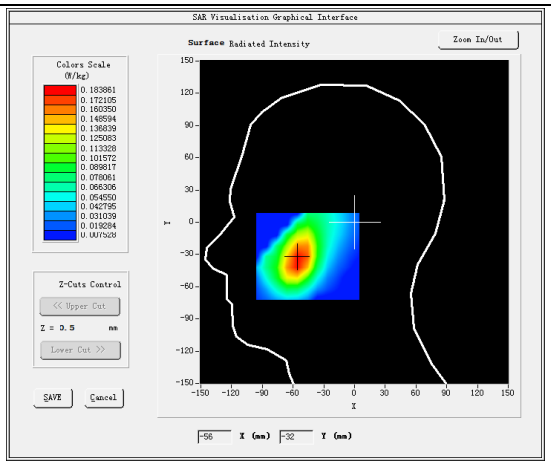
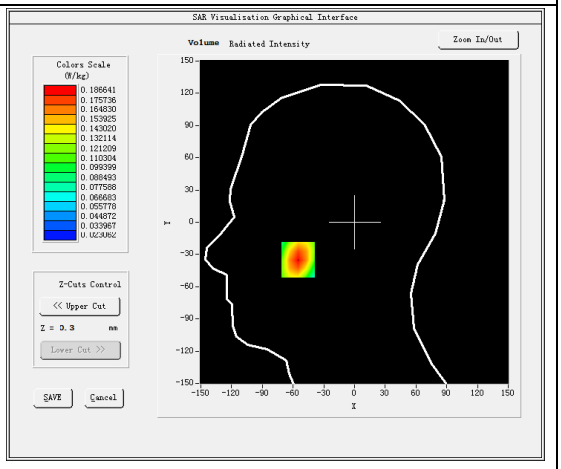
Mobile Phone IMEI number: --

A. Experimental conditions.

Area Scan	dx=8mm dy=8mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Left head
Device Position	Cheek
Band	Band5_WCDMA850
Channels	4183
Signal	WCDMA (Duty cycle: 1:1)

B. SAR Measurement Results

E-Field Probe	SATIMO SN_04/13_EP166
Frequency (MHz)	836.6
Relative permittivity (real part)	41.34
Relative permittivity (imaginary part)	18.64
Conductivity (S/m)	0.88
Variation (%)	0.70
ConvF:	5.69

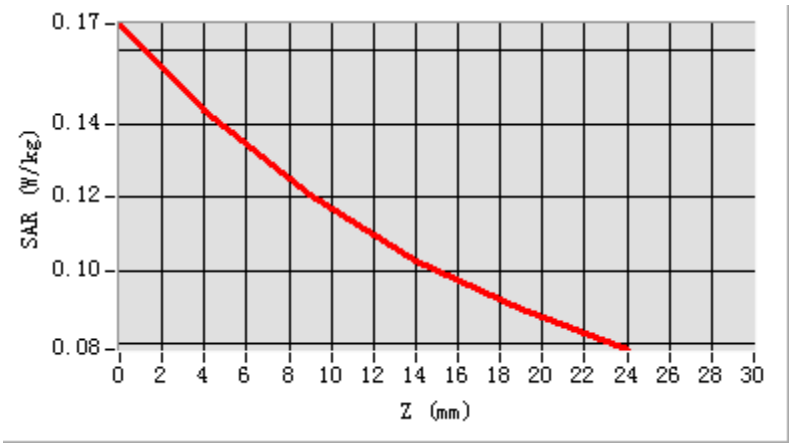
SURFACE SAR	**VOLUME SAR**
	

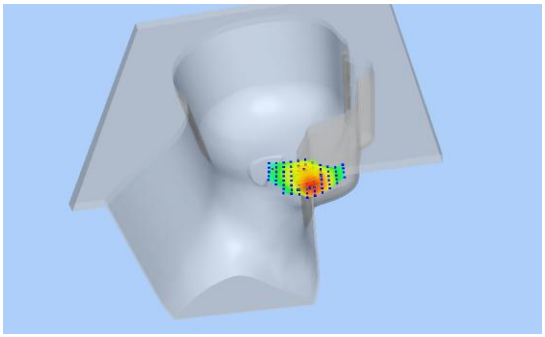
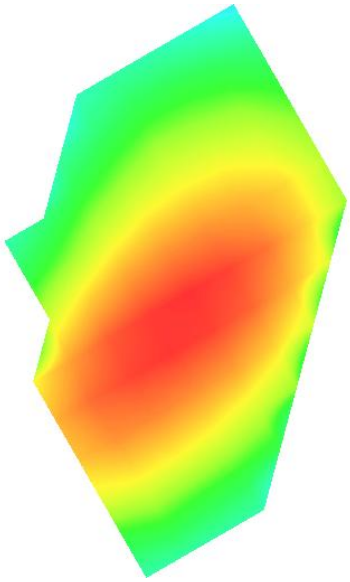
Maximum location: X=-55.00, Y=-35.00

SAR Peak: 0.23W/kg

SAR 10g (W/Kg)	0.121928
SAR 1g (W/Kg)	0.177029

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.1672	0.1438	0.1204	0.1028	0.0895



3D screen shot	Hot spot position
	

WCDMA850, Back, Middle

Type: Phone measurement

Date of measurement:19/10/2015

Measurement duration: 7 minutes 04 seconds

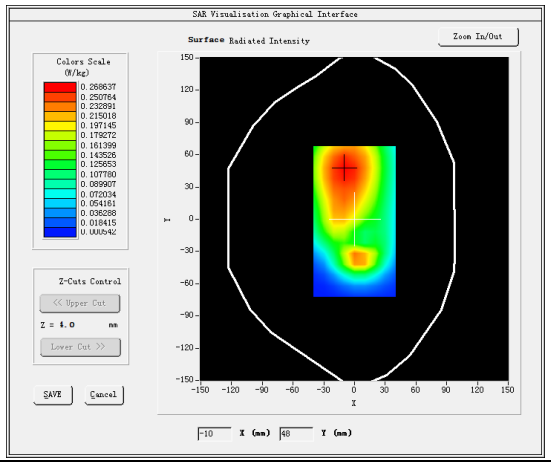
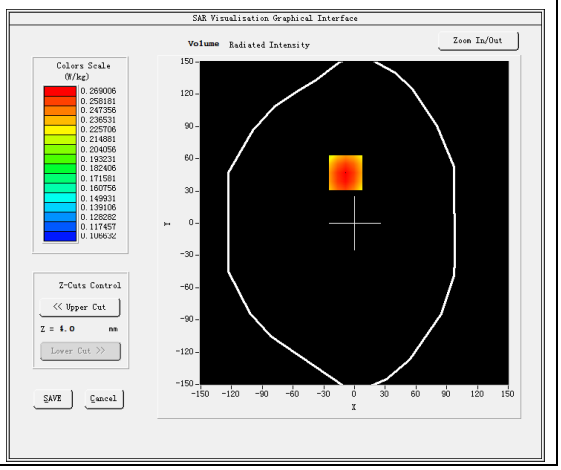
Mobile Phone IMEI number: --

A. Experimental conditions.

Area Scan	dx=8mm dy=8mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Back
Band	Band5_WCDMA850
Channels	4183
Signal	WCDMA (Duty cycle: 1:1)

B. SAR Measurement Results

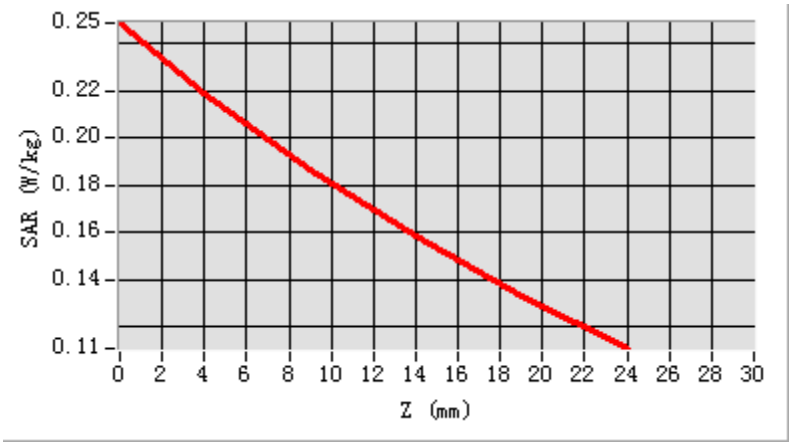
E-Field Probe	SATIMO SN_04/13_EP166
Frequency (MHz)	836.6
Relative permittivity (real part)	54.82
Relative permittivity (imaginary part)	23.04
Conductivity (S/m)	0.96
Variation (%)	0.26
ConvF:	5.82

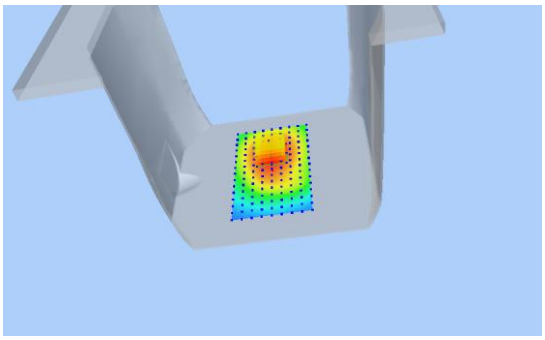
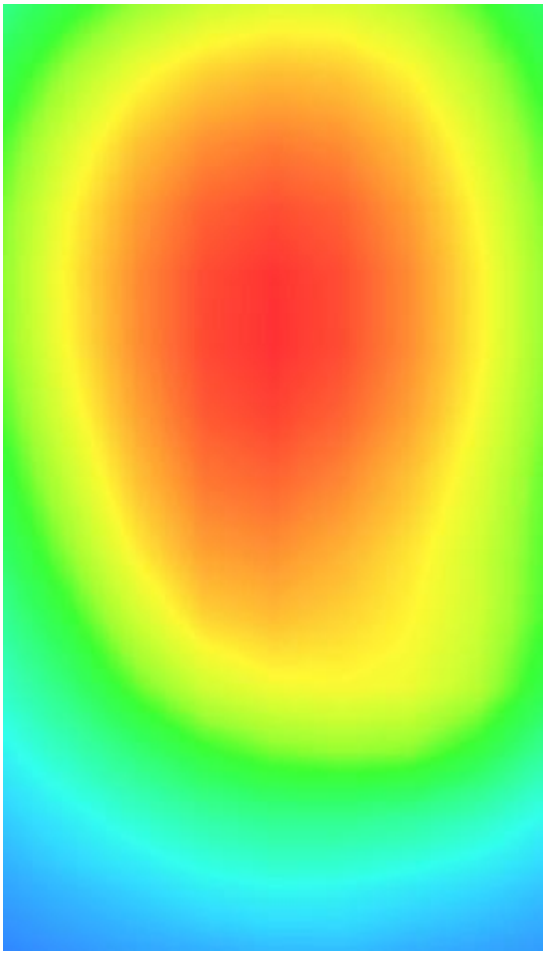
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-9.00, Y=47.00
SAR Peak: 0.31 W/kg

SAR 10g (W/Kg)	0.210654
SAR 1g (W/Kg)	0.262248

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.2486	0.2193	0.1866	0.1582	0.1333



3D screen shot	Hot spot position
	

WCDMA1700, Left Cheek, High

Type: Phone measurement

Date of measurement: 14/10/2015

Measurement duration: 7 minutes 02 seconds

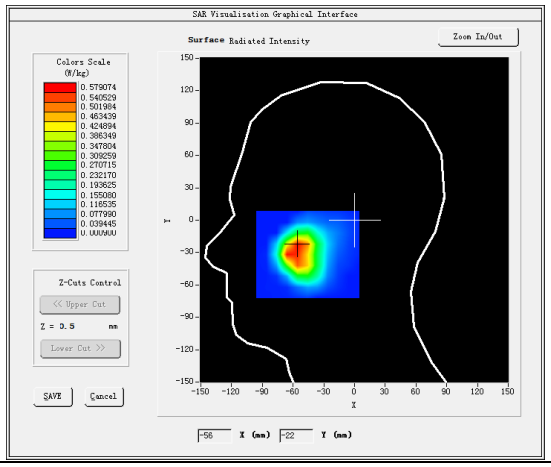
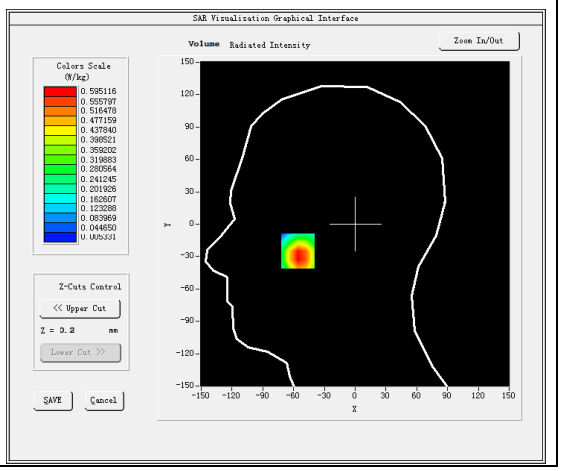
Mobile Phone IMEI number: --

A. Experimental conditions.

Area Scan	dx=8mm dy=8mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Left head
Band	Cheek
Channels	1513
Signal	WCDMA (Duty cycle: 1:1)

B. SAR Measurement Results

E-Field Probe	SATIMO SN_04/13_EP166
Frequency (MHz)	1752.6
Relative permittivity (real part)	39.81
Relative permittivity (imaginary	13.90
Conductivity (S/m)	1.39
Variation (%)	3.86
ConvF:	5.25

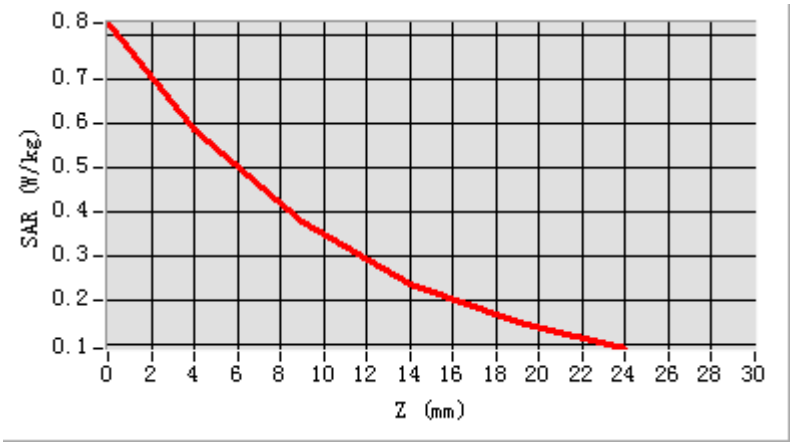
SURFACE SAR	VOLUME SAR
	

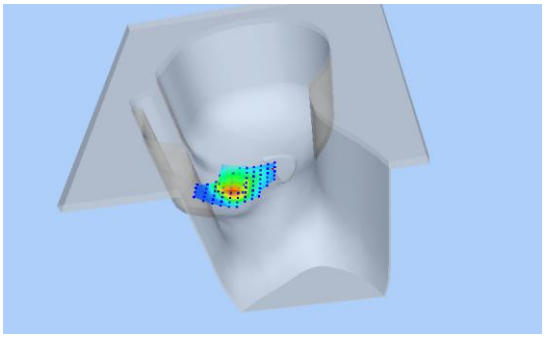
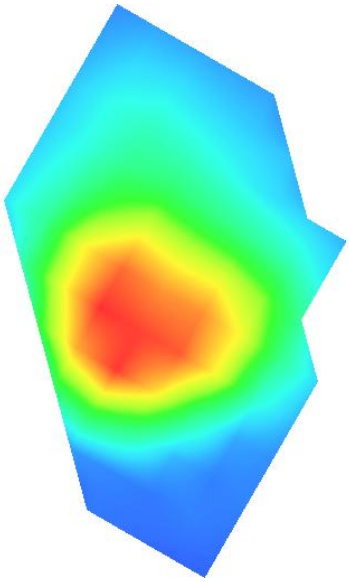
Maximum location: X=-56.00, Y=-25.00

SAR Peak: 0.87 W/kg

SAR 10g (W/Kg)	0.331157
SAR 1g (W/Kg)	0.573572

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.8295	0.5878	0.3758	0.2384	0.1508



3D screen shot	Hot spot position
	

WCDMA1700, Back, High

Type: Phone measurement

Date of measurement: 21/10/2015

Measurement duration: 7 minutes 14seconds

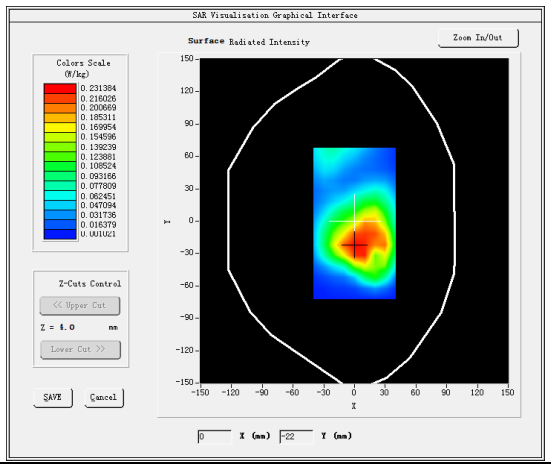
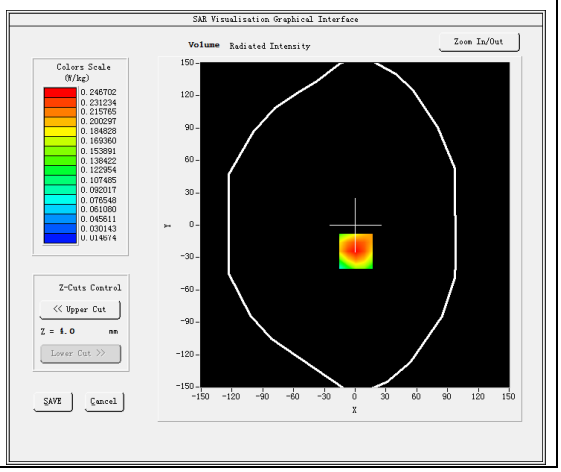
Mobile Phone IMEI number: --

A. Experimental conditions.

Area Scan	dx=8mm dy=8mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Back
Band	Band4_WCDMA1700
Channels	1513
Signal	WCDMA (Duty cycle: 1:1)

B. SAR Measurement Results

E-Field Probe	SATIMO SN_04/13_EP166
Frequency (MHz)	1752.6
Relative permittivity (real part)	54.82
Relative permittivity (imaginary	20.12
Conductivity (S/m)	0.95
Variation (%)	2.99
ConvF:	5.43

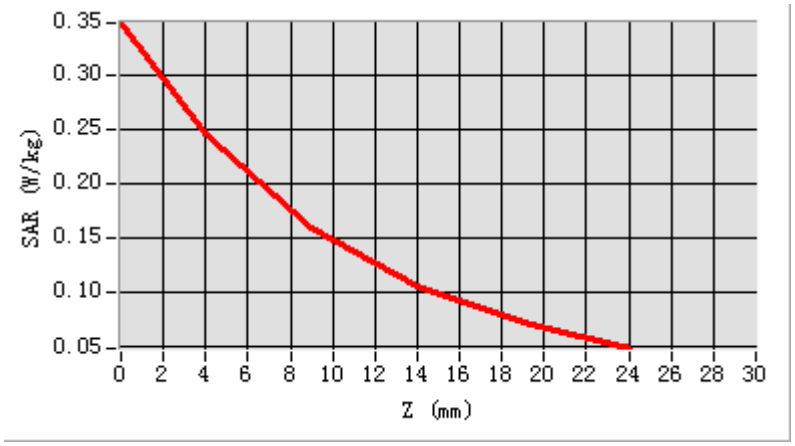
SURFACE SAR	VOLUME SAR
	

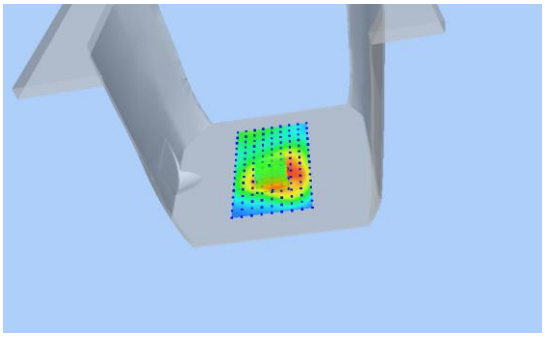
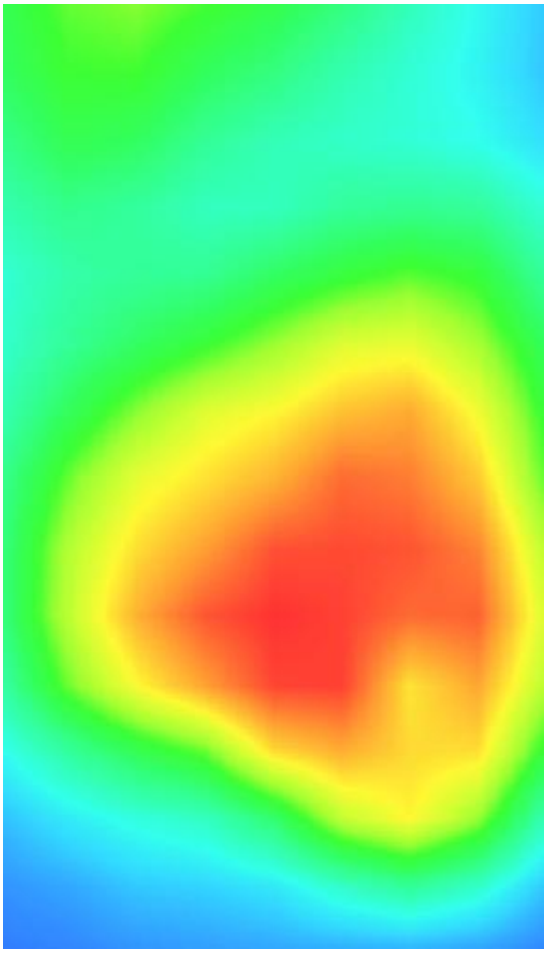
Maximum location: X=1.00, Y=-24.00

SAR Peak: 0.35 W/kg

SAR 10g (W/Kg)	0.145768
SAR 1g (W/Kg)	0.234339

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.3481	0.2467	0.1595	0.1047	0.0710



3D screen shot	Hot spot position
	

WCDMA1900, Left Cheek, High

Type: Phone measurement

Date of measurement: 14/10/2015

Measurement duration: 7 minutes 02 seconds

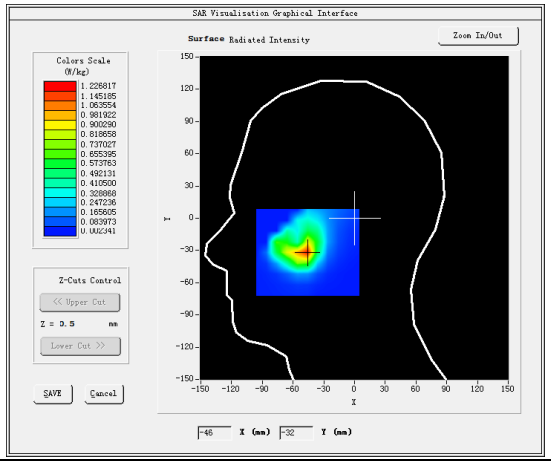
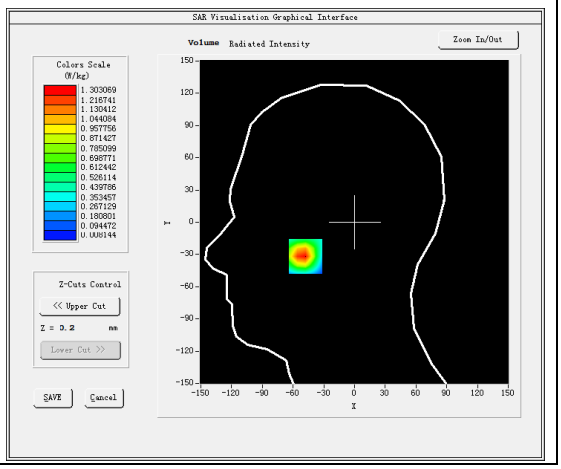
Mobile Phone IMEI number: --

A. Experimental conditions.

Area Scan	dx=8mm dy=8mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Left head
Band	Cheek
Channels	9538
Signal	WCDMA (Duty cycle: 1:1)

B. SAR Measurement Results

E-Field Probe	SATIMO SN_04/13_EP166
Frequency (MHz)	1907.6
Relative permittivity (real part)	39.85
Relative permittivity (imaginary	13.17
Conductivity (S/m)	1.39
Variation (%)	-0.22
ConvF:	5.25

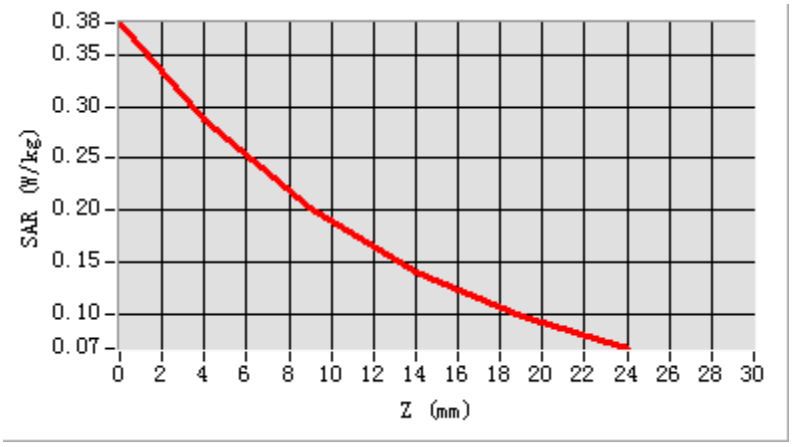
SURFACE SAR	VOLUME SAR
	

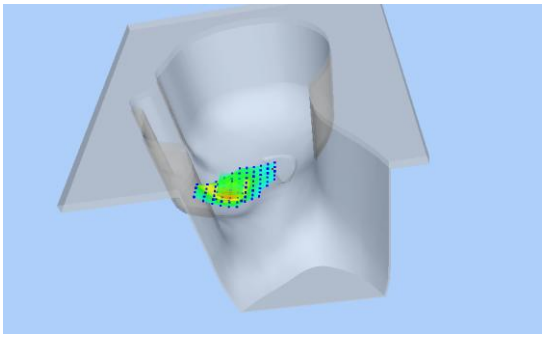
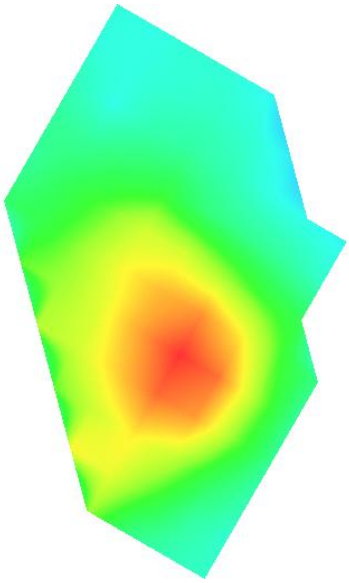
Maximum location: X=-48.00, Y=-32.00

SAR Peak: 2.07 W/kg

SAR 10g (W/Kg)	0.612344
SAR 1g (W/Kg)	1.188236

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.3804	0.2882	0.2020	0.1413	0.0987



3D screen shot	Hot spot position
	

WCDMA1900, Back, High

Type: Phone measurement

Date of measurement: 21/10/2015

Measurement duration: 7 minutes 14seconds

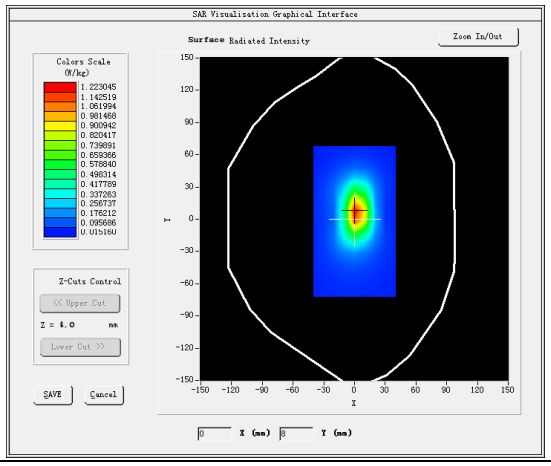
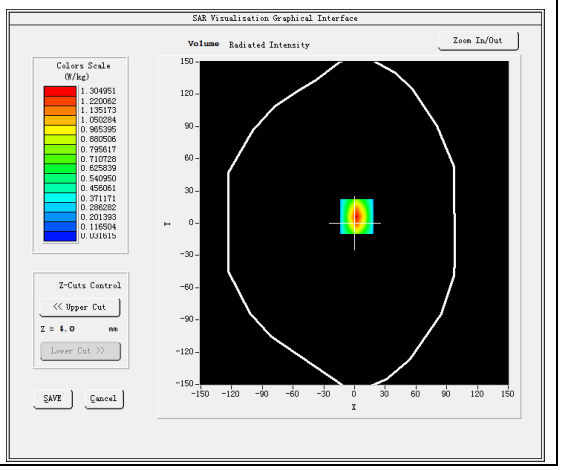
Mobile Phone IMEI number: --

A. Experimental conditions.

Area Scan	dx=8mm dy=8mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Back
Band	Band2_WCDMA1900
Channels	9538
Signal	WCDMA (Duty cycle: 1:1)

B. SAR Measurement Results

E-Field Probe	SATIMO SN_04/13_EP166
Frequency (MHz)	1907.6
Relative permittivity (real part)	52.87
Relative permittivity (imaginary	14.21
Conductivity (S/m)	1.50
Variation (%)	1.19
ConvF:	5.43

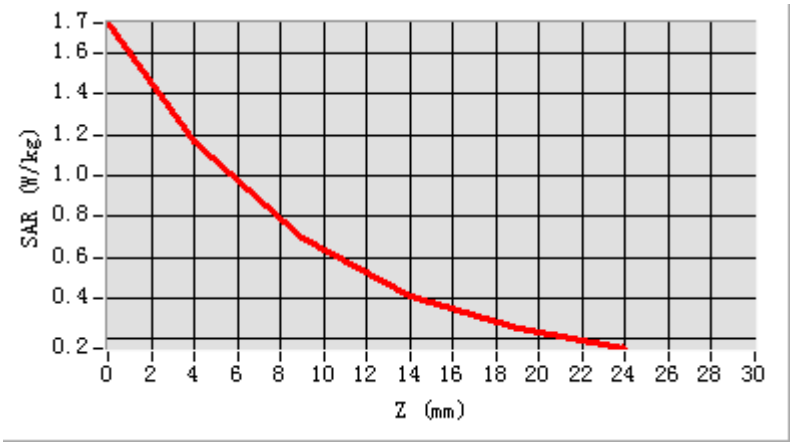
SURFACE SAR	VOLUME SAR
	

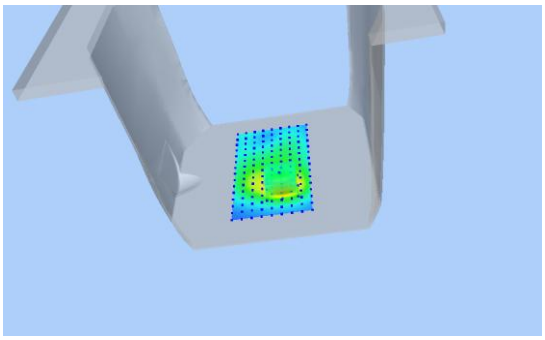
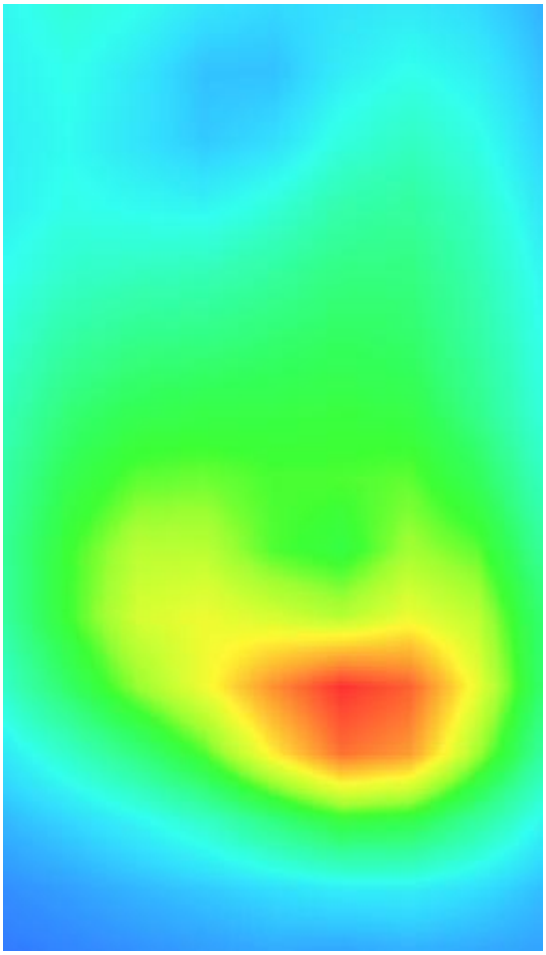
Maximum location: X=2.00, Y=6.00

SAR Peak: 1.95W/kg

SAR 10g (W/Kg)	0.617496
SAR 1g (W/Kg)	1.285116

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.7448	1.1666	0.6931	0.4147	0.2561



3D screen shot	Hot spot position
	

LTE Band 2,20MHz, Left Cheek, Middle

Type: Phone measurement

Date of measurement: 14/10/2015

Measurement duration: 7 minutes 02 seconds

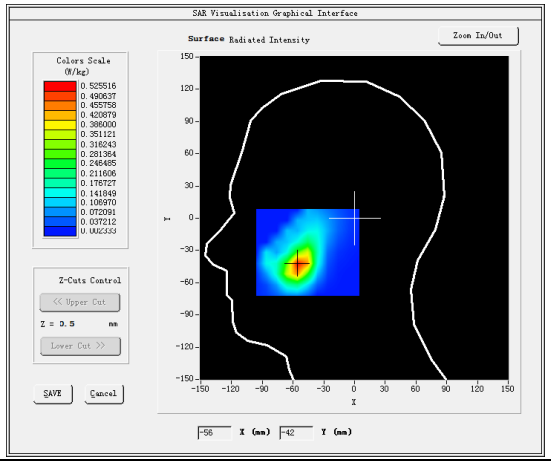
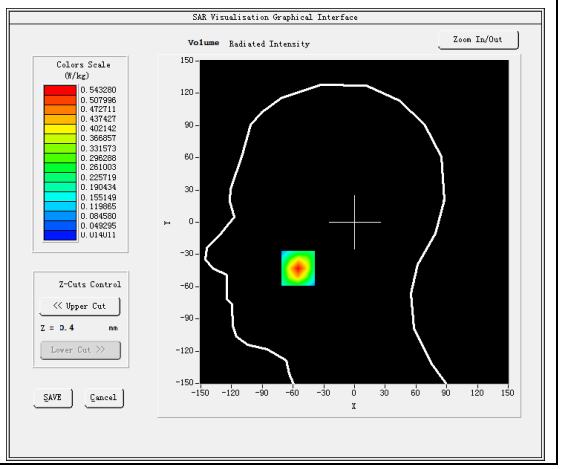
Mobile Phone IMEI number: --

A. Experimental conditions.

Area Scan	dx=8mm dy=8mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Left Cheek
Band	LTE Band2
Channels	19100
Signal	Duty cycle: 1:1

B. SAR Measurement Results

E-Field Probe	SATIMO SN_04/13_EP166
Frequency (MHz)	1900
Relative permittivity (real part)	39.85
Relative permittivity (imaginary	13.17
Conductivity (S/m)	1.39
Variation (%)	1.25
ConvF:	5.25

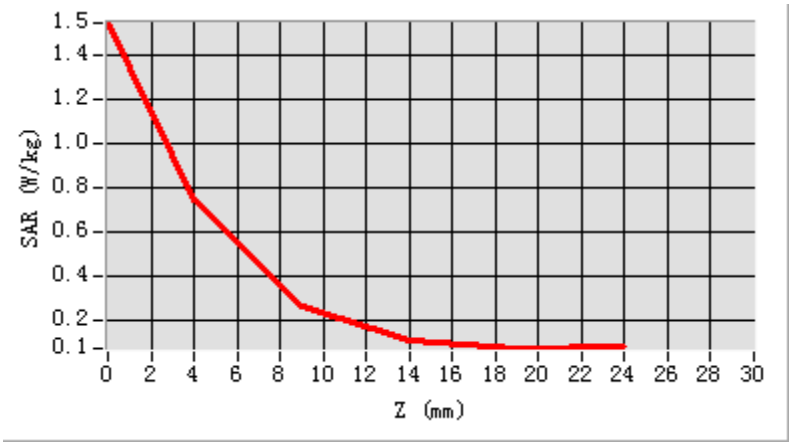
SURFACE SAR	VOLUME SAR
	

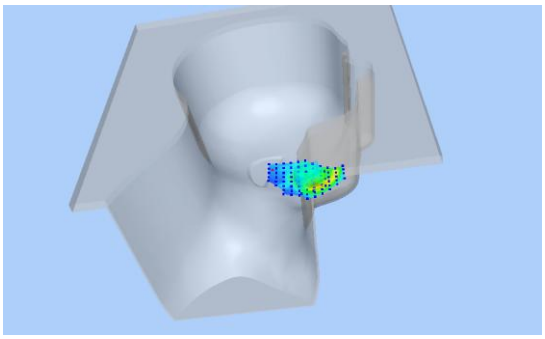
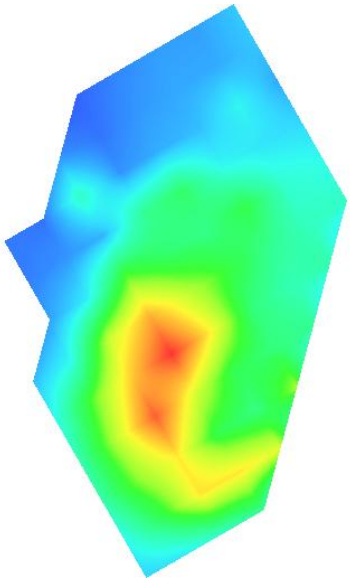
Maximum location: X=-55.00, Y=-43.00

SAR Peak: 0.74W/kg

SAR 10g (W/Kg)	0.276605
SAR 1g (W/Kg)	0.496372

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.5447	0.7448	0.2693	0.1093	0.0762



3D screen shot	Hot spot position
	

LTE Band2, 20MHz, Edge C, High

Type: Phone measurement

Date of measurement: 21/10/2015

Measurement duration: 7 minutes 16 seconds

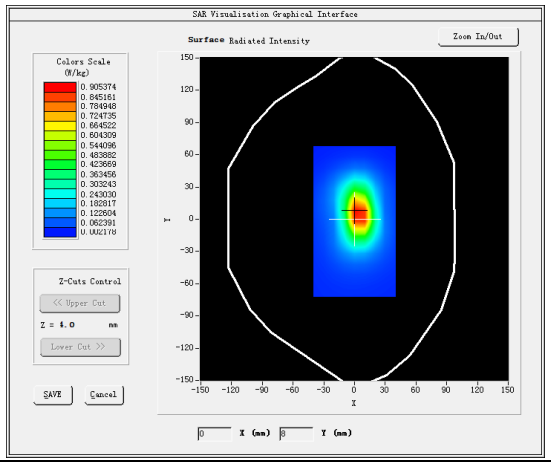
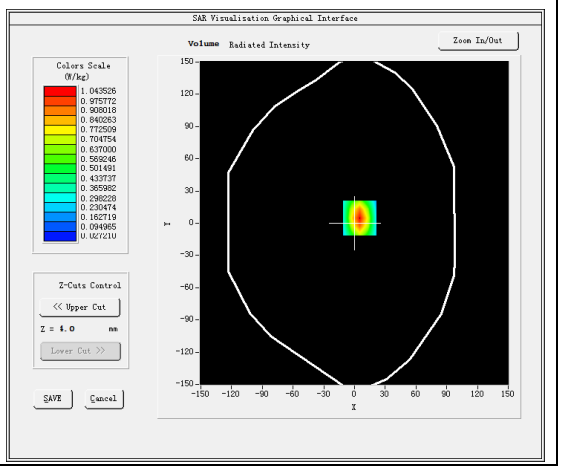
Mobile Phone IMEI number: --

A. Experimental conditions.

Area Scan	dx=8mm dy=8mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	LTE Band2
Channels	19100
Signal	Duty cycle: 1:1

B. SAR Measurement Results

E-Field Probe	SATIMO SN_04/13_EP166
Frequency (MHz)	1900
Relative permittivity (real part)	52.87
Relative permittivity (imaginary	14.21
Conductivity (S/m)	1.50
Variation (%)	-0.16
ConvF:	5.43

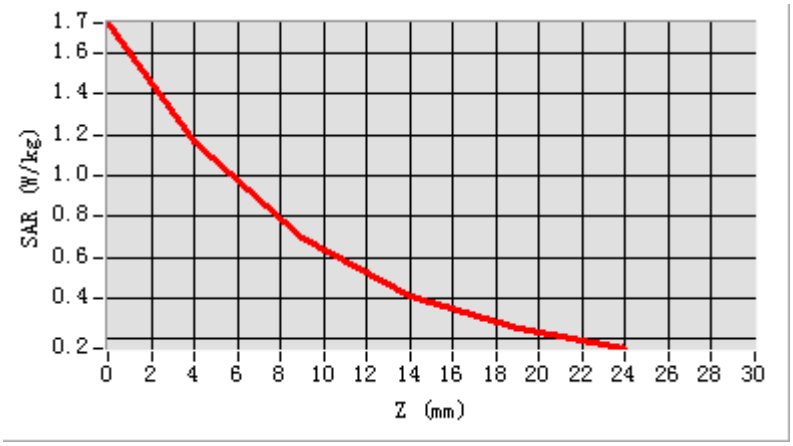
SURFACE SAR	VOLUME SAR
	

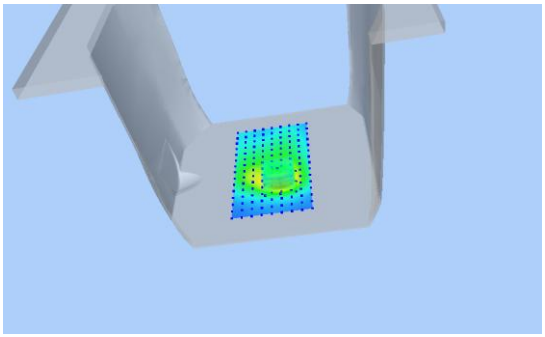
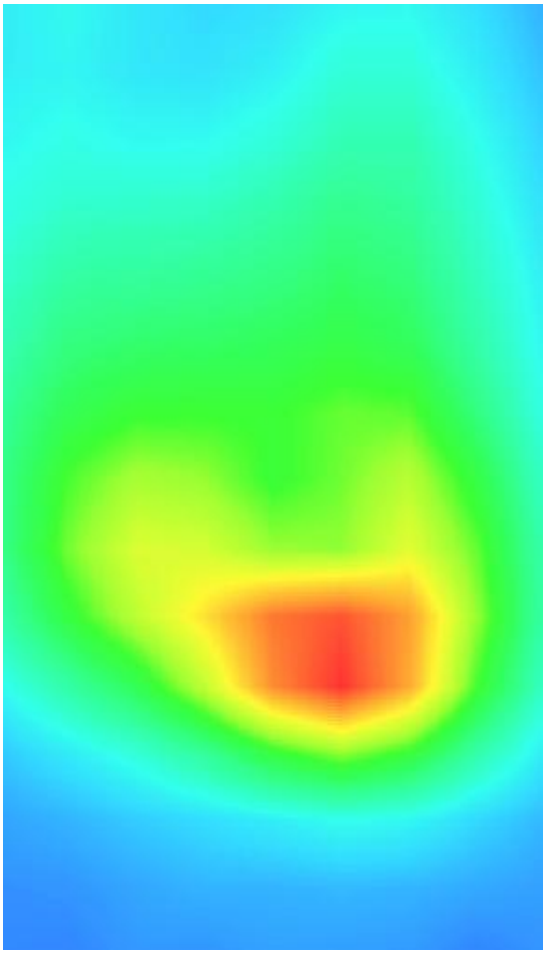
Maximum location: X=5.00, Y=5.00

SAR Peak: 1.54 W/kg

SAR 10g (W/Kg)	0.512720
SAR 1g (W/Kg)	0.955118

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.7528	1.1653	0.6942	0.4150	0.2554



3D screen shot	Hot spot position
	

LTE Band4, 20MHz, Left Cheek, High

Type: Phone measurement

Date of measurement: 13/10/2015

Measurement duration: 7 minutes 03 seconds

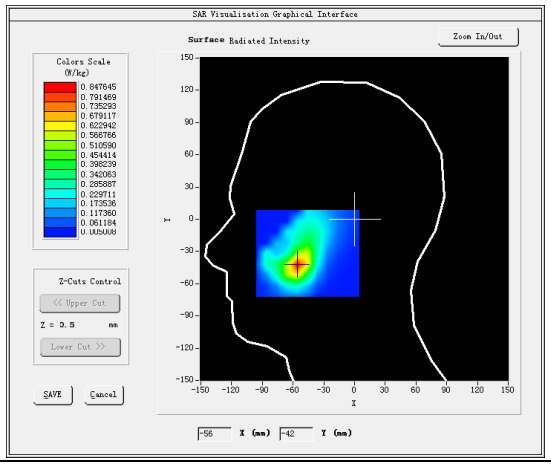
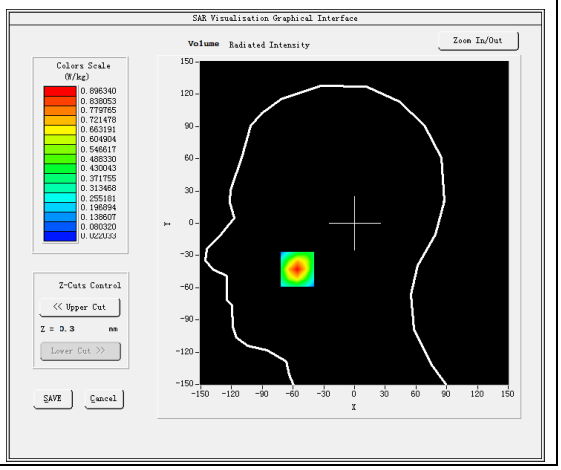
Mobile Phone IMEI number: --

A. Experimental conditions.

Area Scan	dx=8mm dy=8mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Left head
Band	Cheek
Channels	20300
Signal	LTE (Duty cycle: 1:1)

B. SAR Measurement Results

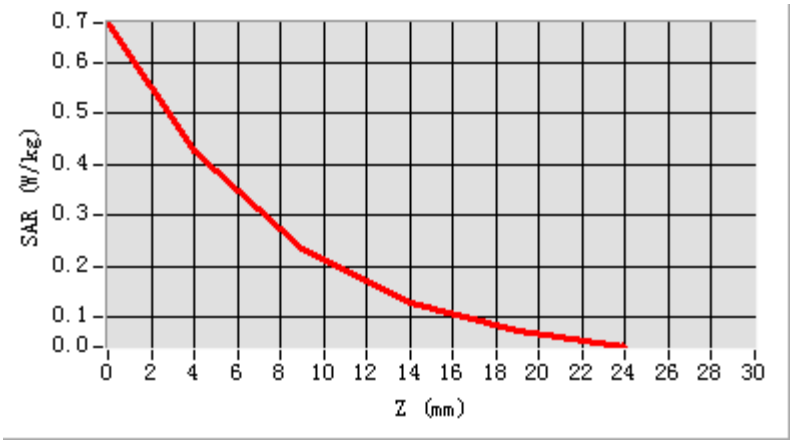
E-Field Probe	SATIMO SN_04/13_EP166
Frequency (MHz)	1745
Relative permittivity (real part)	39.81
Relative permittivity (imaginary	13.90
Conductivity (S/m)	1.39
Variation (%)	0.93
ConvF:	4.75

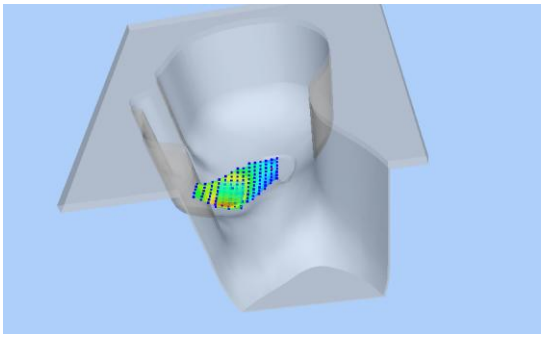
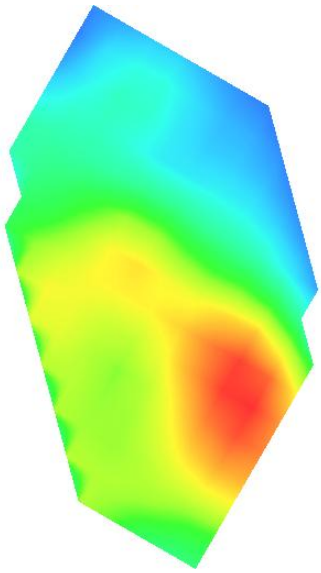
SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=-56.00, Y=-43.00

SAR 10g (W/Kg)	0.463993
SAR 1g (W/Kg)	0.824924

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.6392	0.4278	0.2330	0.1273	0.0729



3D screen shot	Hot spot position
	

LTE Band4, 20MHz, Edge C, High

Type: Phone measurement

Date of measurement: 20/10/2015

Measurement duration: 7 minutes 14 seconds

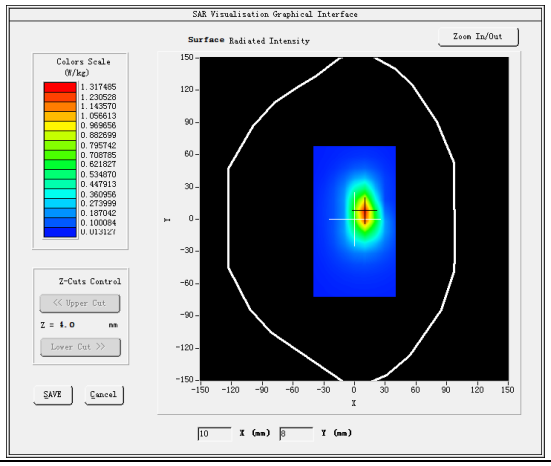
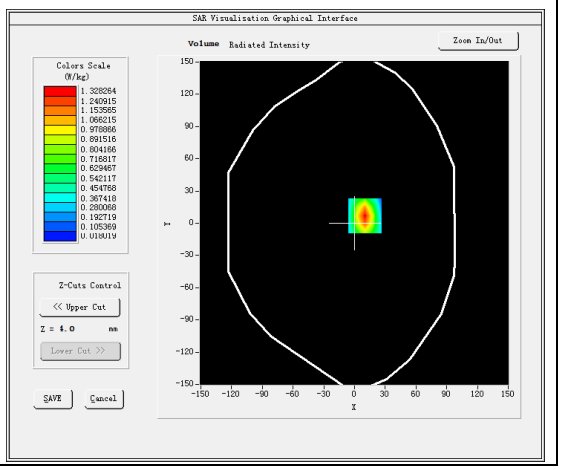
Mobile Phone IMEI number: --

A. Experimental conditions.

Area Scan	dx=8mm dy=8mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	LTE Band 4
Channels	20300
Signal	LTE (Duty cycle: 1:1)

B. SAR Measurement Results

E-Field Probe	SATIMO SN_04/13_EP166
Frequency (MHz)	1745
Relative permittivity (real part)	54.82
Relative permittivity (imaginary	20.12
Conductivity (S/m)	0.95
Variation (%)	-0.01
ConvF:	4.96

SURFACE SAR	VOLUME SAR
	

Maximum location: X=10.00, Y=7.00
SAR Peak: 1.95 W/kg

SAR 10g (W/Kg)	0.506321
SAR 1g (W/Kg)	1.095213