FCC SAR TEST REPORT

Report No: STS1601008H01

Issued for

Neoix, Inc

12396 World Trade Drive #303, San Diego, CA 92128

Product Name:	Smart phone
Brand Name:	AMORR
Model No.:	V328001MS8
Series Model:	8S5691
FCC ID:	2AFYCV328001MS8
Test Standard:	ANSI/IEEE Std.C95.1: 1999
	FCC 47 CFR Part 2 (2.1093)
	IEEE Std.1528: 2013
Max. Reported SAR (1g):	Head:0.280 W/kg
	Body:0.796 W/kg

Shenzhen STS Test Services Co., Ltd.
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Test Report Certification

Applicant's name	:	Neoix, Inc
Address	:	12396 World Trade Drive #303,San Diego, CA 92128
Manufacture's Name	:	Shenzhen Hexiang Electronics Co., Ltd
Address	:	3-006AB, 3F., Tianxia IC Industrial Park, No. 133, Yiyuan Road, Nanshan District, Shenzhen, 518052 China
Product description		
Product name	:	Smart phone
Trademark	:	AMORR
Model and/or type reference	:	V328001MS8
Series Model	:	8S5691
Standards	:	ANSI/IEEE Std. C95.1: 1999 FCC 47 CFR Part 2 (2.1093) IEEE Std.1528: 2013

The device was tested by Shenzhen STS Test Services Co., Ltd. in accordance with the measurement methods and procedures specified in KDB 865664. The test results in this report apply only to the tested sample of the stated device/equipment. Other similar device/equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Date of Test	:	
Date (s) of performance of tests	:	14 Jan. 2016
Date of Issue	:	15 Jan. 2016
Test Result	:	**Pass**

Testing Engineer **:** Allen Chen

(Allen Chen)

Technical Manager **:** John Zou

(John Zou)

Authorized Signatory **:** Bovey Yang

(Bovey Yang)

TABLE OF CONTENTS

1. General Information

Environmental evaluation measurements of specific absorption rate (SAR) distributions in emulated human head and body tissues exposed to radio frequency (RF) radiation from wireless portable devices for compliance with the rules and regulations of the U.S. Federal Communications Commission (FCC).

1.1 EUT Description

Equipment	Smart phone				
Brand Name	AMORR				
Model No.	V328001MS8				
Series Model	8S5691				
FCC ID	2AFYCV328001MS8				
Model Difference	Only different in model name				
Adapter	Input: AC100-240V, 0.15A, 50/60 Hz Output: DC 5V, 1000mA				
Battery	Rated Voltage: 3.8V Charge Limit: 4.35V Capacity: 2050mAh				
Device Category	Portable				
Product stage	Production unit				
RF Exposure Environment	General Population / Uncontrolled				
IMEI	355195154347843				
Hardware Version	V2.0				
Software Version	N/A				
Frequency Range	GSM 850:824.2 ~ 848.8 MHz PCS1900:1850.2 ~ 1909.8 MHz WCDMA II:1852.4~1907.6 MHz WCDMA V:826.4~846.6 MHz WLAN 802.11 b/g/n(HT20):2412~2462 MHz WLAN 802.11 n(HT40):2412~2462 MHz Bluetooth:2402~2480 MHz				
Transmit Power(Average)	GSM 850: 30.82dBm GSM 1900: 28.48dBm WCDMA II: 19.35dBm WCDMA V: 22.51dBm			802.11b: 18.31dBm 802.11g: 15.90dBm 802.11 n(HT20): 15.90dBm 802.11 n(HT20): 13.10dBm Bluetooth: 5.679dBm	
Max. Reported SAR(1g)	Band	Mode	Head (W/kg)	Body worn(W/kg)	Body Hotspot(W/kg)
	PCE	GSM 850	0.180	0.749	0.516
	PCE	GSM 1900	0.093	0.796	0.543
	PCE	WCDMA Band II	0.051	0.786	0.502
	PCE	WCDMA Band V	0.080	0.652	0.241
	DTS	WIFI	0.280	0.348	0.177
	DSS	Bluetooth[Note]	0.167	0.167	0.084
1-g Sum SAR			0.460	1.144	0.720
FCC Equipment Class	Licensed Portable Transmitter Held to Ear (PCE) Part 15 Spread Spectrum Transmitter (DSS) Digital Transmission System (DTS)				

Operating Mode	GSM: GSM Voice, GPRS EGPRS Class 12; WCDMA: RMC, HSDPA, HSUPA Release 6; WLAN: 802.11 b/g/n(HT20)/n(HT40); Bluetooth: V4.0 + EDR (GFSK +π/4DQPSK+8DPSK)
Antenna Specification	GSM/WCDMA: PIFA Antenna BT/WIFI: PIFA Antenna
Hotspot Mode	Support
DTM Mode	Not Support
Note: 1. Bluetooth SAR was estimated 2. The dual SIM card mobile has 2 SIM slots and supports dual SIM dual standby. The WWAN radio transmission will be enabled by either one SIM at a time (Single active) 3. After pre-scan two SIM cards power, we found test result of the SIM1 was the worse, so we chose SIM1 card to perform all tests. 4. The EUT battery must be fully charged and checked periodically during the test to ascertain uniform power	

1.2 Test Environment

Ambient conditions in the SAR laboratory:

Items	Required	Actual
Temperature (℃)	18-25	22~23
Humidity (%RH)	30-70	55~65

1.3 Test Factory

Shenzhen STS Test Services Co., Ltd.
Add. : 1/F, Building B, Zhuoke Science Park,No.190, Chongqing Road, Fuyong, Baoan District, Shenzhen, Guangdong, China
CNAS Registration No.: L7649
FCC Registration No.: 842334;
IC Registration No.: 12108A-1

2. Test Standards And Limits

No.	Identity	Document Title
1	47 CFR Part 2	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
2	ANSI/IEEE Std. C95.1-1999	IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz
3	IEEE Std. 1528-2013	Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques
4	FCC KDB 447498 D01 v06	Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies
5	FCC KDB 447498 D02 v02r01	SAR measurement procedures for USB dongle transmitters
6	FCC KDB 865664 D01 v01r04	SAR Measurement 100 MHz to 6 GHz
7	FCC KDB 865664 D02 v01r02	RF Exposure Reporting
8	FCC KDB 941225 D01 v03r01	SAR Measurement Procedures for 3G Devices
9	FCC KDB 941225 D06 Hotspot Mode v02r01	SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities
10	FCC KDB 648474 D04 v01r03	SAR Evaluation Considerations for Wireless Handsets
11	FCC KDB 248227 D01 Wi-Fi SAR v02r02	SAR Considerations for 802.11 Devices

This device belongs to portable device category because its radiating structure is allowed to be used within 20 centimeters of the body of the user. According to EN 50360 and 1999/519/EC the limit for General Population/Uncontrolled exposure should be applied for this device, it is 2.0 W/kg as averaged over any 10 gram of tissue.

(A). Limits for Occupational/Controlled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.4	8.0	20.0

(B). Limits for General Population/Uncontrolled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.08	1.6	4.0

NOTE: Whole-Body SAR is averaged over the entire body, partial-body SAR is averaged over any 10 gram of tissue defined as a tissue volume in the shape of a cube. SAR for hands, wrists, feet and ankles is averaged over any 10 grams of tissue defined as a tissue volume in the shape of a cube.

Population/Uncontrolled Environments:
are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure.

Occupational/Controlled Environments:
are defined as locations where there is exposure that may be incurred by people who are aware of the potential for exposure, (i.e. as a result of employment or occupation).

NOTE
GENERAL POPULATION/UNCONTROLLED EXPOSURE
PARTIAL BODY LIMIT
1.6 W/kg

3. SAR Measurement System

3.1 Definition Of Specific Absorption Rate (SAR)

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.

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 (ρ). The equation description is as below:

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

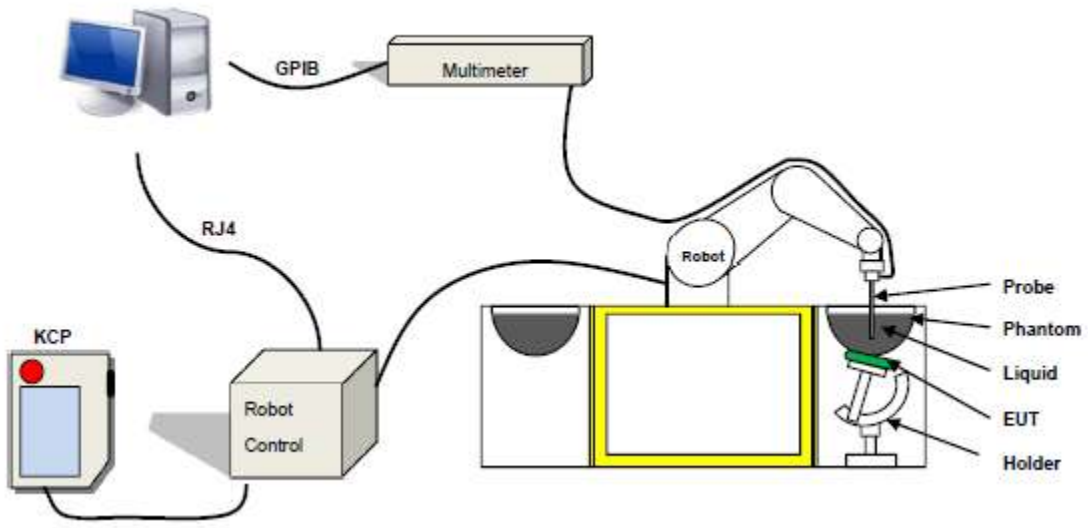
SAR is expressed in units of Watts per kilogram (W/kg) SAR measurement can be related to the electrical field in the tissue by

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

Where: σ is the conductivity of the tissue,
ρ is the mass density of the tissue and E is the RMS electrical field strength.

3.2 SAR System

SATIMO SAR System Diagram:



Comosar is a system that is able to determine the SAR distribution inside a phantom of human being according to different standards. The Comosar system consists of the following items:

- Main computer to control all the system
- 6 axis robot
- Data acquisition system
- Miniature E-field probe
- Phone holder
- Head simulating tissue

The following figure shows the system.

The EUT under test operating at the maximum power level is placed in the phone holder, under the phantom, which is filled with head simulating liquid. The E-Field probe measures the electric field inside the phantom. The OpenSAR software computes the results to give a SAR value in a 1g or 10g mass.

3.2.1 Probe

For the measurements the Specific Dosimetric E-Field Probe SN 17/14 EP221 with following specifications is used

- Dynamic range: 0.01-100 W/kg
- Tip Diameter :5 mm
- Distance between probe tip and sensor center: 2.7mm
- Distance between sensor center and the inner phantom surface: 4 mm (repeatability better than +/- 1mm)
- Probe linearity: < 0.25 dB
- Axial Isotropy: < 0.25 dB
- Spherical Isotropy: < 0.25 dB
- Calibration range: 450MHz to 2600MHz for head & body simulating liquid.

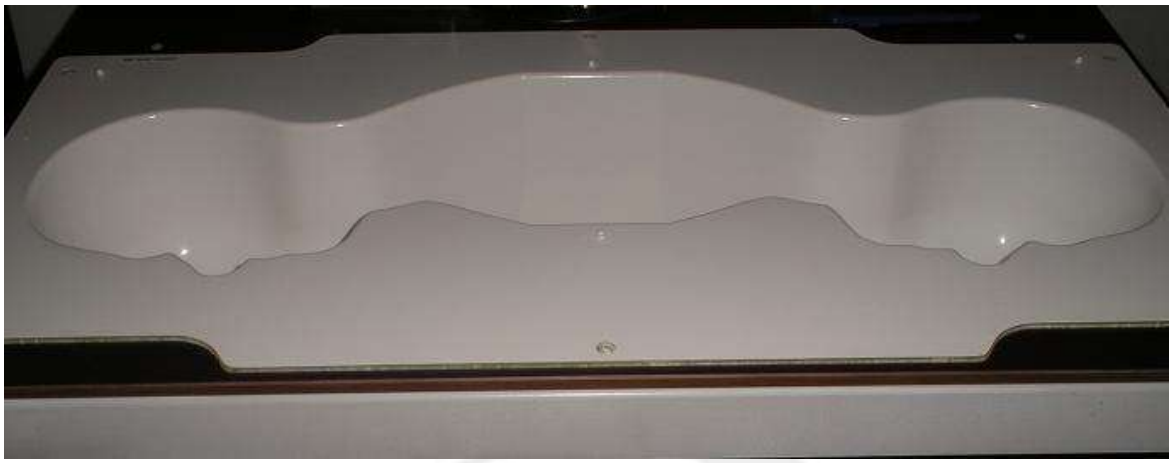
Angle between probe axis (evaluation axis) and suface normal line:less than 30°

Figure 1 – *Satimo COMOSAR Dosimetric E field Dipole*

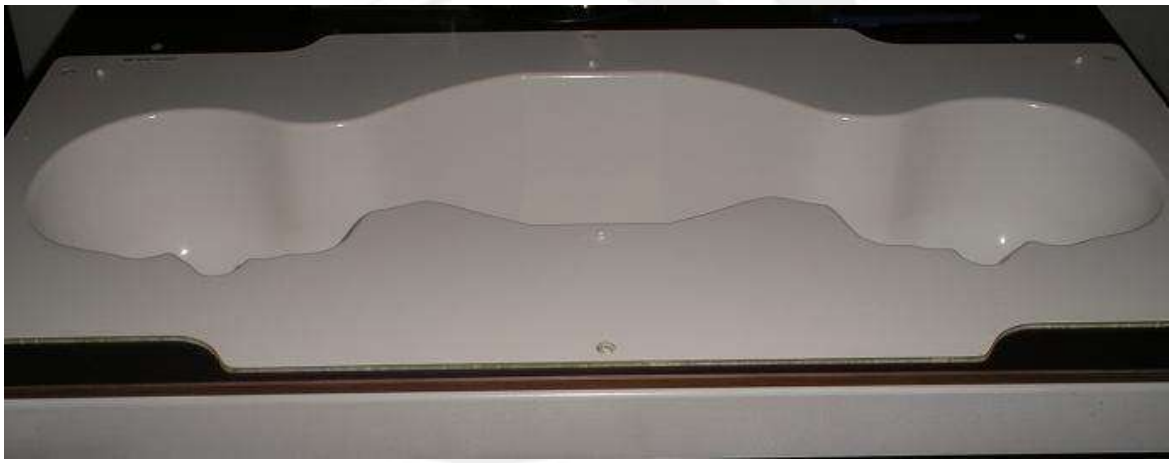
3.2.2 Phantom

For the measurements the Specific Anthropomorphic Mannequin (SAM) defined by the IEEE SCC-34/SC2 group is used. The phantom is a polyurethane shell integrated in a wooden table. The thickness of the phantom amounts to 2mm +/- 0.2mm. It enables the dosimetric evaluation of left and right phone usage and includes an additional flat phantom part for the simplified performance check. The phantom set-up includes a cover, which prevents the evaporation of the liquid.

SN 32/14 SAM115



SN 32/14 SAM116



3.2.3 Device Holder

The SAR in the phantom is approximately inversely proportional to the square of the distance between the source and the liquid surface. For a source at 5 mm distance, a positioning uncertainty of ± 0.5 mm would produce a SAR uncertainty of ± 20 %. Accurate device positioning is therefore crucial for accurate and repeatable measurements. The positions in which the devices must be measured are defined by the standards.

4. Tissue Simulating Liquids

4.1 Simulating Liquids Parameter Check

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 variations 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.

Frequency (MHz)	Bactericide	DGBE	HEC	NaCl	Sucrose	X100	Water	Conductivity	Permittivity
	%	%	%	%	%	%	%	σ	εr
835	0.10	/	1.00	1.45	57.00	/	40.45	0.90	41.6
900	0.10	/	1.00	1.48	56.50	/	40.92	0.98	41.2
1800	/	44.92	/	0.18	/	/	54.9	1.40	40.4
1900	/	44.92	/	0.18	/	/	54.9	1.42	39.9
2100	/	50.0	/	/	/	/	50.0	1.51	36.8
2450	/	7.99	/	0.16	/	/	50.0	1.88	40.3

Tissue dielectric parameters for head and body phantoms				
Frequency	ε_r		σ S/m	
	Head	Body	Head	Body
300	45.3	58.2	0.87	0.92
450	43.5	58.7	0.87	0.94
900	41.5	55.0	0.97	1.05
1450	40.5	54.0	1.20	1.30
1800	40.0	53.3	1.40	1.52
2450	39.2	52.7	1.80	1.95
3000	38.5	52.0	2.40	2.73
5800	35.3	48.2	5.27	6.00

LIQUID MEASUREMENT RESULTS

Date: January.14, 2016 **Ambient condition:** Temperature 22.0°C **Relative humidity:** 49%

Head Simulating Liquid		Parameters	Target	Measured	Deviation[%]	Limited[%]
Frequency	Temp. [°C]					
835 MHz	21.5	Permitivity:	41.5	41.19	-0.75	±5
		Conductivity:	0.90	0.89	-1.11	± 5
1900 MHz	21.5	Permitivity:	40.0	39.44	-1.40	± 5
		Conductivity:	1.40	1.42	1.43	± 5
2450 MHz	21.5	Permitivity:	39.2	39.38	0.46	± 5
		Conductivity:	1.80	1.77	-1.67	± 5

Body Simulating Liquid		Parameters	Target	Measured	Deviation[%]	Limited[%]
Frequency	Temp. [°C]					
835 MHz	21.5	Permitivity:	55.2	54.26	-1.70	± 5
		Conductivity:	0.97	0.99	2.06	± 5
1900 MHz	21.5	Permitivity:	53.30	52.78	-0.98	± 5
		Conductivity:	1.52	1.55	1.97	± 5
2450 MHz	21.5	Permitivity:	52.70	52.41	-0.55	± 5
		Conductivity:	1.95	1.93	-1.03	± 5

5. SAR System Validation

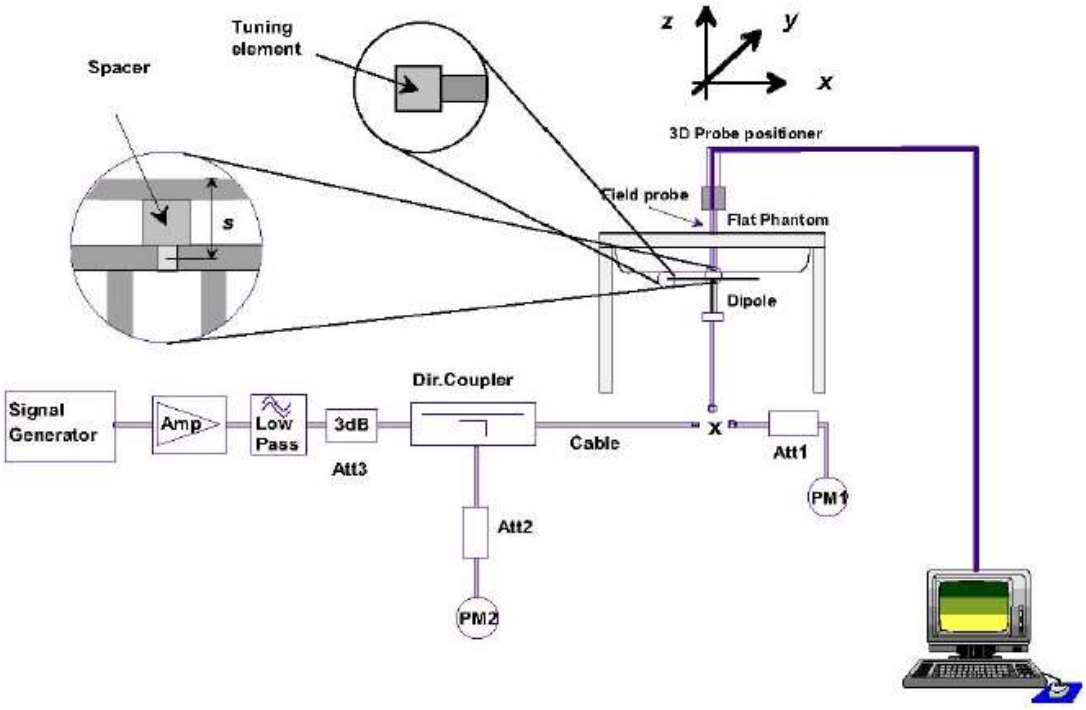
5.1 Validation System

Each SATIMO system is equipped with one or more system validation kits. These units, together with the predefined measurement procedures within the SATIMO software, enable the user to conduct the system performance check and system validation. System kit includes a dipole, and dipole device holder.

The system check verifies that the system operates within its specifications. It's performed daily or before every SAR measurement. The system check uses normal SAR measurement in the flat section of the phantom with a matched dipole at a specified distance.

The purpose of the system check is to verify that the system operates within its specifications at the decice test frequency. The system check is simple check of repeatability to make sure that the system works correctly at the time of the compliance test.

The system validation setup is shown as below.



5.2 Validation Result

Comparing to the original SAR value provided by SATIMO, System check results have to be equal or near the values determined during dipole calibration with the relevant liquids and test system (±10 %).

Ambient condition: Temperature 22.7°C **Relative humidity:** 49%

Freq.(MHz)	Power(mW)	Tested Value (W/Kg)	Normalized SAR (W/kg)	Target(W/Kg)	Tolerance(%)	Date
835 Head	100	0.928	9.28	9.56	3.02	2016-01-14
835 Body	100	0.988	9.88	9.56	-3.24	2016-01-14
1900 Head	100	3.892	38.92	39.7	2.26	2016-01-14
1900 Body	100	4.124	41.24	39.7	-3.49	2016-01-14
2450 Head	100	5.156	51.56	52.4	1.63	2016-01-14
2450 Body	100	5.108	51.08	52.4	2.58	2016-01-14

Note: The tolerance limit of System validation ±10%.

6. SAR Evaluation Procedures

The procedure for assessing the average SAR value consists of the following steps:
The following steps are used for each test position

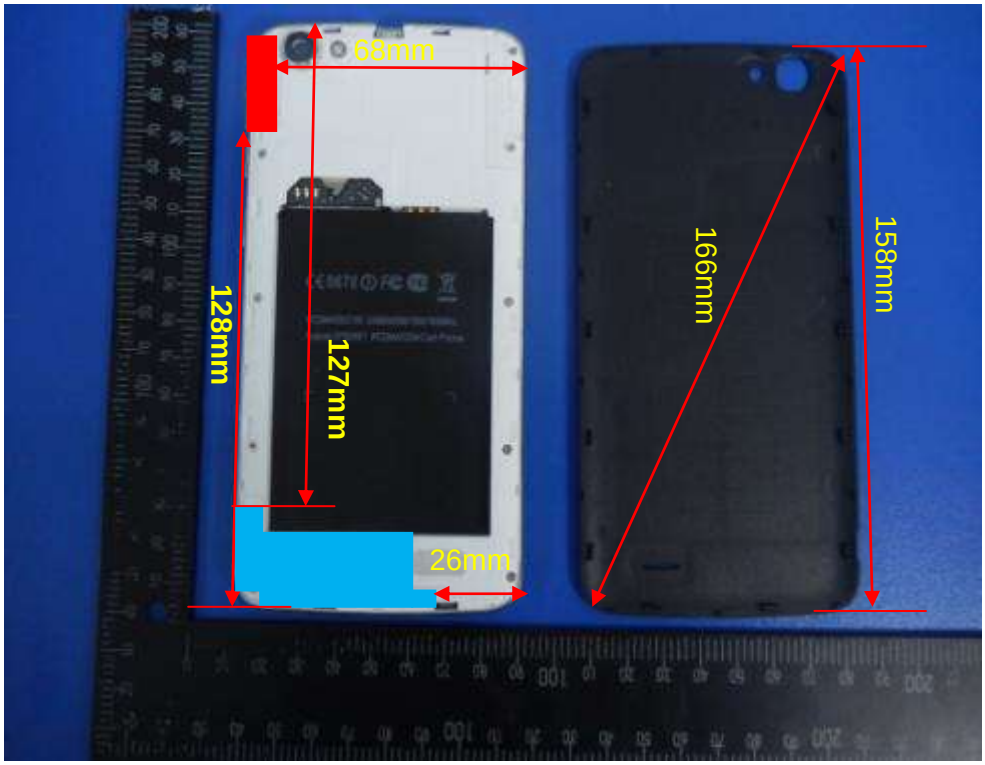
- Establish a call with the maximum output power with a base station simulator. The connection between the mobile and the base station simulator is established via air interface
- Measurement of the local E-field value at a fixed location. This value serves as a reference value for calculating a possible power drift.
- Measurement of the SAR distribution with a grid of 8 to 16mm * 8 to16 mm and a constant distance to the inner surface of the phantom. Since the sensors cannot directly measure at the inner phantom surface, the values between the sensors and the inner phantom surface are extrapolated. With these values the area of the maximum SAR is calculated by an interpolation scheme.
- Around this point, a cube of 30 * 30 * 30 mm or 32 * 32 * 32 mm is assessed by measuring 5 or 8 * 5 or 8*4 or 5 mm. With these data, the peak spatial-average SAR value can be calculated.

➢ Area Scan& Zoom Scan

First Area Scan is used to locate the approximate location(s) of the local peak SAR value(s). The measurement grid within an Area Scan is defined by the grid extent, grid step size and grid offset. Next, in order to determine the EM field distribution in a three-dimensional spatial extension, Zoom Scan is required. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR-distribution over 10 g. Area scan and zoom scan resolution setting follows KDB 865664 D01 quoted below.
When the 1-g SAR of the highest peak is within 2 dB of the SAR limit, additional zoom scans are required for other peaks within 2 dB of the highest peak that have not been included in any zoom scan to ensure there is no increase in SAR.

7. EUT Antenna Location Sketch

It is a Smart phone, support GSM mode and WCDMA mode.



WWAN Antenna

WIFI/BT Antenna

7.1 SAR TEST EXCLUSION CONSIDER TABLE

According with FCC KDB 447498 D01，appendix A，<SAR test exclusion thresholds for 100MHz~6GHz and≤50mm＞table，this device SAR test configurations consider as following：

Band	Test position configurations					
	Front	Back	Left edge	Right edge	Top edge	Bottom edge
GSM850	＜5mm	＜5mm	26mm	＜5mm	127mm	＜5mm
	Yes	Yes	No	Yes	No	Yes
GSM1900	＜5mm	＜5mm	26mm	＜5mm	127mm	＜5mm
	Yes	Yes	No	Yes	No	Yes
WCDMA Band2	＜5mm	＜5mm	26mm	＜5mm	127mm	＜5mm
	Yes	Yes	No	Yes	No	Yes
WCDMA Band5	＜5mm	＜5mm	26mm	＜5mm	127mm	＜5mm
	Yes	Yes	No	Yes	No	Yes
WLAN	＜5mm	＜5mm	68mm	＜5mm	＜5mm	128mm
	Yes	Yes	No	Yes	Yes	No
Bluetooth	＜5mm	＜5mm	68mm	＜5mm	＜5mm	128mm
	Yes	Yes	No	Yes	Yes	No

Note：

1. maximum power is the source-based time-average power and represents the maximum RF output power among production units.
2. per KDB 447498 D01, for larger devices, the test separation distance of adjacent edge configuration is determined by the closest separation between the antenna and the user.
3. per KDB 447498 D01, standalone SAR test exclusion threshold is applied; if the distance of the antenna to the user is <5mm, 5mm is user to determine SAR exclusion threshold
4. per KDB 447498 D01, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distance ≤50mm are determined by:
   [(max.power of channel, including tune-up tolerance, Mw)/(min. test separation distance, mm)]*[√f(GHZ）)≤3.0 for 1-g SAR and≤7.5 for10-g extremity SAR f(GHz) is the RF channel transmit frequency in GHz Power and distance are rounded to the nearest mW and mm before calculation The result is rounded to one decimal place for comparison for <50mm distance, we just calculate mW of the exclusion threshold value(3.0)to do compare
5. per KDB 447498 D01, at 100 MHz to 6GHz and for test separation distances >50mm, the SAR test exclusion threshold is determined according to the following
   a)[threshold at 50mm in step 1]+(test separation distance -50mm)*(f (MHz)/150)]Mw, at 100 MHz to 1500 MHz
   b) [threshold at 50mm in step1]+(test separation distance -50mm) *10]mW at＞1500MHz and≤ 6GHz
6. Per KDB 447498 D02, RMC 12.2kbps setting is used to evaluate SAR. If HSDPA/HSUPA/

DC-HSDPA output power is<0.25db higher than RMC 12.2Kbps,or reported SAR with RMC 12.2kbps setting is ≤1.2W/Kg, HSDPA/HSUPA/DC-HSDPA SAR evaluation can be excluded.

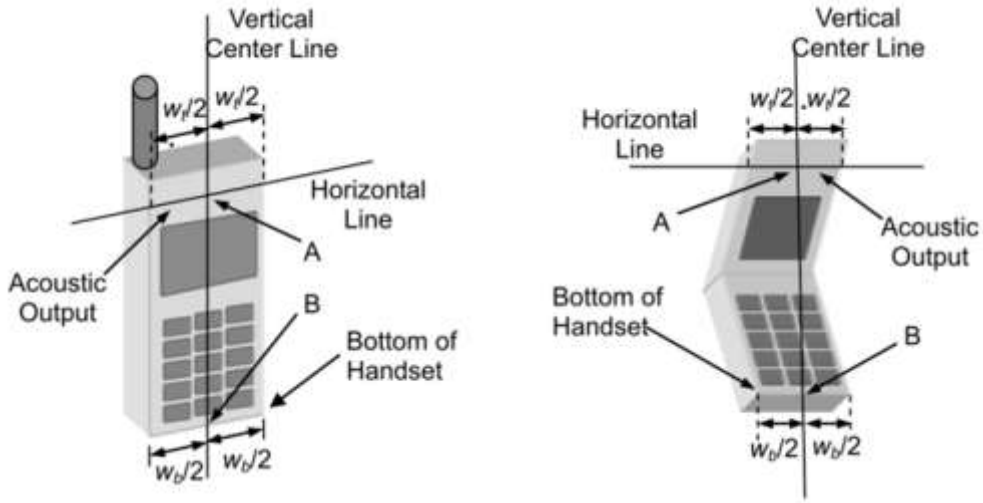
7. Per KDB 248227 D01, choose the highest output power channel to test SAR and determine futher SAR exclusion 8.for each frequency band ,testing at higher data rates and higher order modulations is not required when the maximum average output power for each of each of these configurations is less than 1/4db higher than those measured at the lower data rate than 11b mode ,thus the SAR can be excluded.
8. Referring to KDB941225 D06, when the overall device length and width are >9cm*5cm, the test distance is 10mm. SAR must be measured for all sides and surfaces with a transmitting antenna located within 25mm from that surface or edge.

8. EUT Test Position

This EUT was tested in Right Cheek, Right Titled, Left Cheek, Left Titled, Front Face and Rear Face.

8.1 Define Two Imaginary Lines On The Handset

(1)The vertical centerline passes through two points on the front side of the handset the midpoint of the width wt of the handset at the level of the acoustic output, and the midpoint of the width wb of the handset.
(2)The horizontal line is perpendicular to the vertical centerline and passes through the center of the acoustic output. The horizontal line is also tangential to the face of the handset at point A.
(3)The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centerline is not necessarily to the front face of the handset, especially for clamshell handsets, handsets with flip covers, and other irregularly shaped handsets.



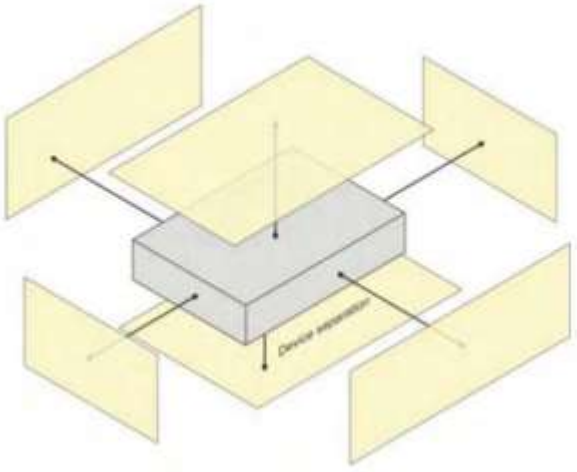
Cheek Position
1)To position the device with the vertical center line of the body of the device and the horizontal line crossing the center piece in a plane parallel to the sagittal plane of the phantom. While maintaining the device in this plane, align the vertical center line with the reference plane containing the ear and mouth reference point (M: Mouth, RE: Right Ear, and LE: Left Ear) and align the center of the ear piece with the line RE-LE.
2)To move the device towards the phantom with the ear piece aligned with the the line LE-RE until the phone touched the ear. While maintaining the device in the reference plane and maintaining the phone contact with ear, move the bottom of the phone until any point on the front side is in contact with the cheek of the phantom or until contact with the ear is lost

Title Position
(1)To position the device in the “cheek” position described above.
(2) While maintaining the device in the reference plane described above and pivoting against the ear, moves it outward away from the mouth by an angle of 15 degrees or until with the ear is lost.

Body-worn Position Conditions
(1) To position the EUT parallel to the phantom surface.
(2) To adjust the EUT parallel to the flat phantom.
(3) To adjust the distance between the EUT surface and the flat phantom to 5mm.

8.2 Hotspot mode exposure position condition

For handsets that support hotspot mode operations, with wireless router capabilities and various web browsing function, the relevant hand and body exposure condition are tested according to the hotspot SAR procedures in KDB 941225 D01. A test separation distance of 10 mm is required between the phantom and all surface and edges with a transmitting antenna located within 25 mm form that surface or edge. When form factor of a handset is smaller than 9cm x 5cm, a test separation distance of 5mm(instead of 10mm)is required for testing hotspot mode. When the separate distance required for body-worn accessory testing is larger than or equal to that tested for hotspot mode, in the same wireless mode and for the same surface of the phone, the hotspot mode SAR data may be used to support body-worn accessory SAR compliance for that particular configuration(surface).



9. Uncertainty

9.1 Measurement Uncertainty

The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in IEEE 1528: 2013.This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

NO	Source	Tol(%)	Prob. Dist.	Div. k	ci (1g)	ci (10g)	1gUi	10gUi	Veff
Measurement System									
1	Probe calibration	5.8	N	1	1	1	5.8	5.8	∞
2	Axial isotropy	3.5	R	√3	$(1\text{-cp})^{1/2}$	$(1\text{-cp})^{1/2}$	1.43	1.43	∞
3	Hemispherical isotropy	5.9	R	√3	$\sqrt{C_p}$	$\sqrt{C_p}$	2.41	2.41	∞
4	Boundary effect	1.0	R	√3	1	1	0.58	0.58	∞
5	Linearity	4.7	R	√3	1	1	2.71	2.71	∞
6	System Detection limits	1.0	R	√3	1	1	0.58	0.58	∞
7	Readout electronics	0.5	N	1	1	1	0.50	0.50	∞
8	Response time	0	R	√3	1	1	0	0	∞
9	Integration time	1.4	R	√3	1	1	0.81	0.81	∞
10	Ambient noise	3.0	R	√3	1	1	1.73	1.73	∞
11	Ambient reflections	3.0	R	√3	1	1	1.73	1.73	∞
12	Probe positioner mech. restrictions	1.4	R	√3	1	1	0.81	0.81	∞
13	Probe positioning with respect to phantom shell	1.4	R	√3	1	1	0.81	0.81	∞
14	Max.SAR evaluation	1.0	R	√3	1	1	0.6	0.6	∞
Test sample related									
15	Device positioning	2.6	N	1	1	1	2.6	2.6	11
16	Device holder	3	N	1	1	1	3.0	3.0	7

17	Drift of output power	5.0	R	√3	1	1	2.89	2.89	∞
Phantom and set-up									
18	Phantom uncertainty	4.0	R	√3	1	1	2.31	2.31	∞
19	Liquid conductivity (target)	2.5	N	1	0.78	0.71	1.95	1.78	5
20	Liquid conductivity (meas)	4	N	1	0.23	0.26	0.92	1.04	5
21	Liquid Permittivity (target)	2.5	N	1	0.78	0.71	1.95	1.78	∞
22	Liquid Permittivity (meas)	5.0	N	1	0.23	0.26	1.15	1.30	∞
Combined standard			RSS	$U_C = \sqrt{\sum_{i=1}^{n} C_i^2 U_i^2}$			10.63%	10.54%	
Expanded uncertainty (P=95%)		$U = k\,U_C$,k=2					21.26%	21.08%	

9.2 System validation Uncertainty

NO	Source	Tol(%)	Prob. Dist.	Div. k	ci (1g)	ci (10g)	1gUi	10gUi	Veff
Measurement System									
1	Probe calibration	5.8	N	1	1	1	5.8	5.8	∞
2	Axial isotropy	3.5	R	√3	$(1\text{-cp})^{1/2}$	$(1\text{-cp})^{1/2}$	1.43	1.43	∞
3	Hemispherical isotropy	5.9	R	√3	$\sqrt{C_p}$	$\sqrt{C_p}$	2.41	2.41	∞
4	Boundary effect	1.0	R	√3	1	1	0.58	0.58	∞
5	Linearity	4.7	R	√3	1	1	2.71	2.71	∞
6	System Detection limits	1.0	R	√3	1	1	0.58	0.58	∞
7	Modulation response	0	N	1	1	1	0	0	∞
8	Readout electronics	0.5	N	1	1	1	0.50	0.50	∞
9	Response time	0	R	√3	1	1	0	0	∞
10	Integration time	1.4	R	√3	1	1	0.81	0.81	∞
11	Ambient noise	3.0	R	√3	1	1	1.73	1.73	∞
12	Ambient reflections	3.0	R	√3	1	1	1.73	1.73	∞
13	Probe positioner mech. restrictions	1.4	R	√3	1	1	0.81	0.81	∞
14	Probe positioning with respect to phantom shell	1.4	R	√3	1	1	0.81	0.81	∞
15	Max.SAR evaluation	1.0	R	√3	1	1	0.6	0.6	∞
Dipole									
16	Deviation of experimental source from	4	N	1	1	1	4.00	4.00	∞
17	Input power and SAR drit measurement	5	R	√3	1	1	2.89	2.89	∞

18	Dipole Axis to liquid Distance	2	R	√3	1	1			∞
Phantom and set-up									
19	Phantom uncertainty	4.0	R	√3	1	1	2.31	2.31	∞
20	Uncertainty in SAR correction for deviation(in	2.0	N	1	1	0.84	2	1.68	∞
21	Liquid conductivity (target)	2	N	1	1	0.84	2.00	1.68	∞
22	Liquid conductivity (temperature uncertainty)	2.5	N	1	0.78	0.71	1.95	1.78	5
23	Liquid conductivity (meas)	4	N	1	0.23	0.26	0.92	1.04	5
24	Liquid Permittivity (target)	2.5	N	1	0.78	0.71	1.95	1.78	∞
25	Liquid Permittivity (temperature uncertainty)	2.5	N	1	0.78	0.71	1.95	1.78	5
26	Liquid Permittivity (meas)	5.0	N	1	0.23	0.26	1.15	1.30	∞
Combined standard			RSS	$U_C = \sqrt{\sum_{i=1}^{n} C_i^2 U_i^2}$			10.15%	10.05%	
Expanded uncertainty (P=95%)		$U = k\,U_C$,k=2					20.29%	20.10%	

10. Conducted Power Measurement

Test Result:

Maximum Burst-Averaged Output Power (dBm)						
Band	GSM 850			PCS 1900		
Channel	128	190	251	512	661	810
Frequency (MHz)	824.2	836.6	848.8	1850.2	1880.0	1909.8
GSM(GMSK, 1-Slot)	30.82	30.79	30.69	28.48	28.39	28.34
GPRS (GMSK, 1-Slot)	30.74	30.76	30.64	28.43	28.32	28.29
GPRS (GMSK, 2-Slot)	29.78	29.79	29.69	27.51	27.56	27.35
GPRS (GMSK, 3-Slot)	28.42	28.43	28.46	26.12	26.17	25.99
GPRS (GMSK, 4-Slot)	27.28	27.80	27.78	25.62	25.49	25.41
EGPRS (8PSK, 1-Slot)	30.70	30.67	30.58	28.35	28.29	28.21
EGPRS (8PSK, 2-Slot)	29.77	29.88	29.62	27.45	27.39	27.31
EGPRS (8PSK, 3-Slot)	28.41	28.48	28.28	26.13	26.02	26.04
EGPRS (8PSK, 4-Slot)	27.84	27.67	27.67	25.63	25.50	25.47
Remark: GPRS, CS4 coding scheme. Multi-Slot Class 8 , Support Max 4 downlink, 1 uplink , 5 working link Multi-Slot Class 10 , Support Max 4 downlink, 2 uplink , 5 working link Multi-Slot Class 12 , Support Max 4 downlink, 4 uplink , 5 working link						

Maximum Frame-Averaged Output Power(dBm)						
Band	GSM 850			PCS 1900		
Channel	128	190	251	512	661	810
Frequency (MHz)	824.2	836.6	848.8	1850.2	1880.0	1909.8
GSM(GMSK, 1-Slot)	21.79	21.76	21.66	19.45	19.36	19.31
GPRS (GMSK, 1-Slot)	21.71	21.73	21.61	19.40	19.29	19.26
GPRS (GMSK, 2-Slot)	23.76	23.77	23.67	21.49	21.54	21.33
GPRS (GMSK, 3-Slot)	24.16	24.17	24.20	21.86	21.91	21.73
GPRS (GMSK, 4-Slot)	24.27	24.79	24.77	22.61	22.48	22.40
EGPRS (8PSK, 1-Slot)	21.67	21.64	21.55	19.32	19.26	19.18
EGPRS (8PSK, 2-Slot)	23.75	23.86	23.60	21.43	21.37	21.29
EGPRS (8PSK, 3-Slot)	24.15	24.22	24.02	21.87	21.76	21.78
EGPRS (8PSK, 4-Slot)	24.83	24.66	24.66	22.62	22.49	22.46
Remark : 1. SAR testing was performed on the maximum frame-averaged power mode. 2. The frame-averaged power is linearly proportion to the slot number configured and it is linearly scaled the maximum burst-averaged power based on time slots. The calculated method is shown as below: Frame-averaged power = Burst averaged power (1 Tx Slot) – 9.03 dB Frame-averaged power = Burst averaged power (2 Tx Slots) – 6.02 dB Frame-averaged power = Burst averaged power (3 Tx Slots) - 4.26 dB Frame-averaged power = Burst averaged power (4 Tx Slots) – 3.01 dB						

WCDMA

Band	WCDMA Band V			WCDMA Band II		
Channel	4132	4183	4233	9262	9400	9538
Frequency (MHz)	826.4	836.6	846.6	1852.4	1880.0	1907.6
AMR 12.2Kbps	22.51	22.06	22.18	19.02	19.35	17.86
RMC 12.2Kbps	22.59	22.12	22.27	19.11	19.39	17.89
HSDPA Subtest-1	22.09	21.69	21.83	18.63	18.90	17.41
HSDPA Subtest-2	21.72	21.22	21.33	18.19	18.39	16.93
HSDPA Subtest-3	21.27	20.72	20.91	17.69	17.91	16.51
HSDPA Subtest-4	20.74	20.18	20.35	17.16	17.28	15.93
HSUPA Subtest-1	21.63	21.26	21.42	18.14	18.44	16.99
HSUPA Subtest-2	21.21	20.87	20.83	17.68	17.95	16.58
HSUPA Subtest-3	20.80	20.38	20.35	17.27	17.53	16.16
HSUPA Subtest-4	20.10	19.68	19.66	16.68	17.00	15.49
HSUPA Subtest-5	19.58	19.13	19.02	16.01	16.37	14.96

According to 3GPP 25.101 sub-clause 6.2.2, the maximum output power is allowed to be reduced by following the table.

Table 6.1A: UE maximum output power with HS-DPCCH and E-DCH

UE Transmit Channel Configuration	CM(db)	MPR(db)
For all combinations of ,DPDCH,DPCCH HS-DPDCH,E-DPDCH and E-DPCCH	0≤ CM≤3.5	MAX(CM-1,0)
Note: CM=1 for βc/βd=12/15, βhs/ βc=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.		

The device supports MPR to solve linearity issues (ACLR or SEM) due to the higher peak-to average ratios (PAR) of the HSUPA signal. This prevents saturating the full range of the TX DAC inside of device and provides a reduced power output to the RF transceiver chip according to the Cubic Metric (a function of the combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH).

When E-DPDCH channels are present the beta gains on those channels are reduced firsts to try to get the power under the allowed limit. If the beta gains are lowered as far as possible, then a hard limiting is applied at the maximum allowed level.

The SW currently recalculates the cubic metric every time the beta gains on the E-DPDCH are reduced. The cubic metric will likely get lower each time this is done .However, there is no reported reduction of maximum output power in the HSUPA mode since the device also provides a compensation for the power back-off by increasing the gain of TX_AGC in the transceiver (PA) device.

The end effect is that the DUT output power is identical to the case where there is no MPR in the device.

WIFI

Mode	Channel Number	Frequency (MHz)	Peak Power (dBm)
802.11b	1	2412	18.25
	6	2437	18.31
	11	2462	18.24
802.11g	1	2412	14.30
	6	2437	15.70
	11	2462	15.90
802.11n(HT-20)	1	2412	14.40
	6	2437	15.70
	11	2462	15.90
802.11n(HT-40)	3	2422	11.60
	6	2437	13.10
	9	2452	13.10

Justification for test configurations for WLAN per KDB publication 248227 D01:

1. Power measurements were performed for the transmission mode configuration with the highest maximum output power specified for production units.
2. For transmission modes with the same maximum output power specification, power were measured for the largest Channel bandwidth, lowest order modulation and lowest data rate.
3. For transmission modes with identical maximum specified output power, channel bandwidth, modulation and data rates, power measurements were required for all identical configurations.
4. For each transmission mode configuration, powers were measured for the highest and lowest channels; and at the mid-band channel(s) when there were at least 3 channels supported. For configurations with multiple mid-band channels, due to an even number of channels, both channels were measured.
5. The bolded data rate and channel above were tested for SAR.

Bluetooth

Mode	Channel Number	Frequency (MHz)	Peak Power (dBm)
GFSK(1Mbps)	0	2402	5.679
	39	2441	4.751
	78	2480	4.554
π/4-DQPSK(2bps)	0	2402	5.275
	39	2441	4.317
	78	2480	4.085
8-DPSK(3Mbps)	0	2402	5.501
	39	2441	4.555
	78	2480	4.338

BT 4.0

Mode	Channel Number	Frequency (MHz)	Peak Power (dBm)
GFSK(1Mbps)	0	2402	-1.689
	39	2441	-2.684
	78	2480	-3.095

Mode	GSM850(AVG)	GSM1900(AVG)
GSM/PCS	30.0±1dBm	27.5±1dBm
GPRS (1 Slot)	30.0±1dBm	27.5±1dBm
GPRS (2 Slot)	29.0±1dBm	27.0±1dBm
GPRS (3 Slot)	27.5±1dBm	25.5±1dBm
GPRS (4 Slot)	27.0±1dBm	25.0±1dBm
EGPRS (1 Slot)	30.0±1dBm	27.5±1dBm
EGPRS (2 Slot)	29.0±1dBm	26.5±1dBm
EGPRS (3 Slot)	27.5±1dBm	25.5±1dBm
EGPRS (4 Slot)	27.0±1dBm	25.0±1dBm

Mode	WCDMA Band V(AVG)	WCDMA Band II(AVG)
AMR	22.0±1dBm	18.5±1dBm
RMC	22.0±1dBm	18.5±1dBm
HSDPA Subtest-1	21.5±1dBm	18.0±1dBm
HSDPA Subtest-2	21.0±1dBm	17.5±1dBm
HSDPA Subtest-3	20.5±1dBm	16.5±1dBm
HSDPA Subtest-4	20.0±1dBm	18.5±1dBm
HSUPA Subtest-1	21.0±1dBm	17.5±1dBm
HSUPA Subtest-2	20.5±1dBm	17.0±1dBm
HSUPA Subtest-3	20.0±1dBm	17.0±1dBm
HSUPA Subtest-4	19.5±1dBm	16.1±1dBm
HSUPA Subtest-5	19.0±1dBm	15.5±1dBm

Mode	WIFI(PEAK)
IEEE 802.11b	18±1dBm
IEEE 802.11g	15±1dBm
IEEE 802.11n HT20	15±1dBm
IEEE 802.11n HT40	12.2±1dBm

Mode	BT(PEAK)
GFSK	5±1dBm
π/4-DQPSK	4.5±1dBm
8DPSK	5±1dBm

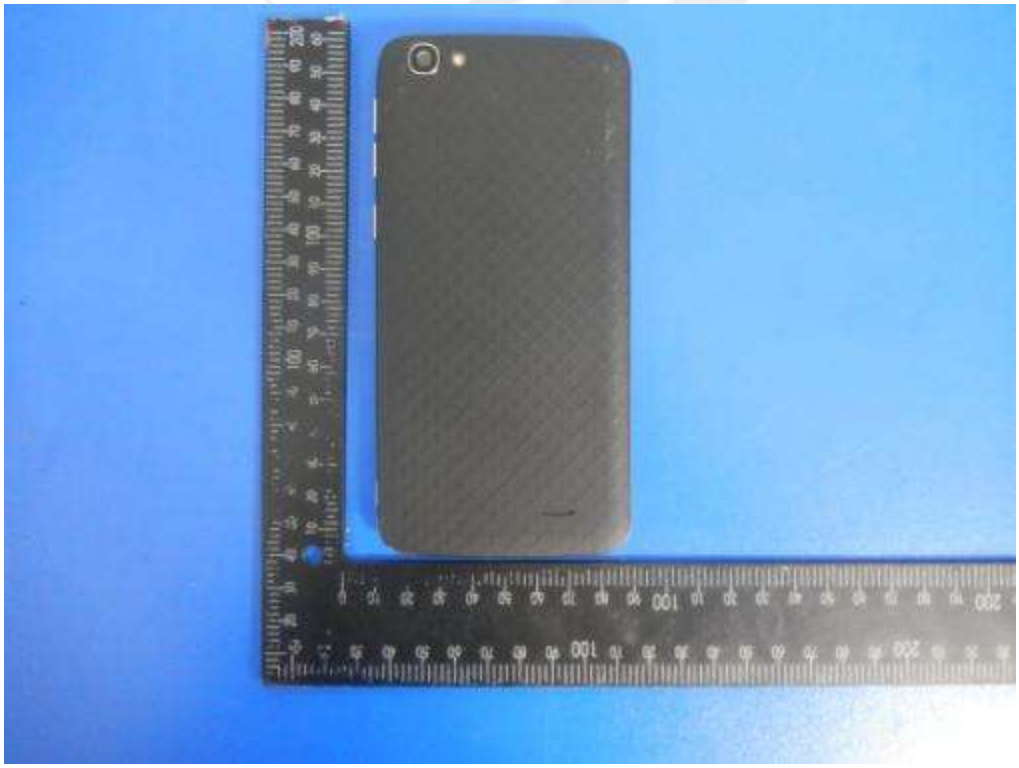
Mode	BT4.0(PEAK)
GFSK	-2.2±1dBm

11. EUT And Test Setup Photo

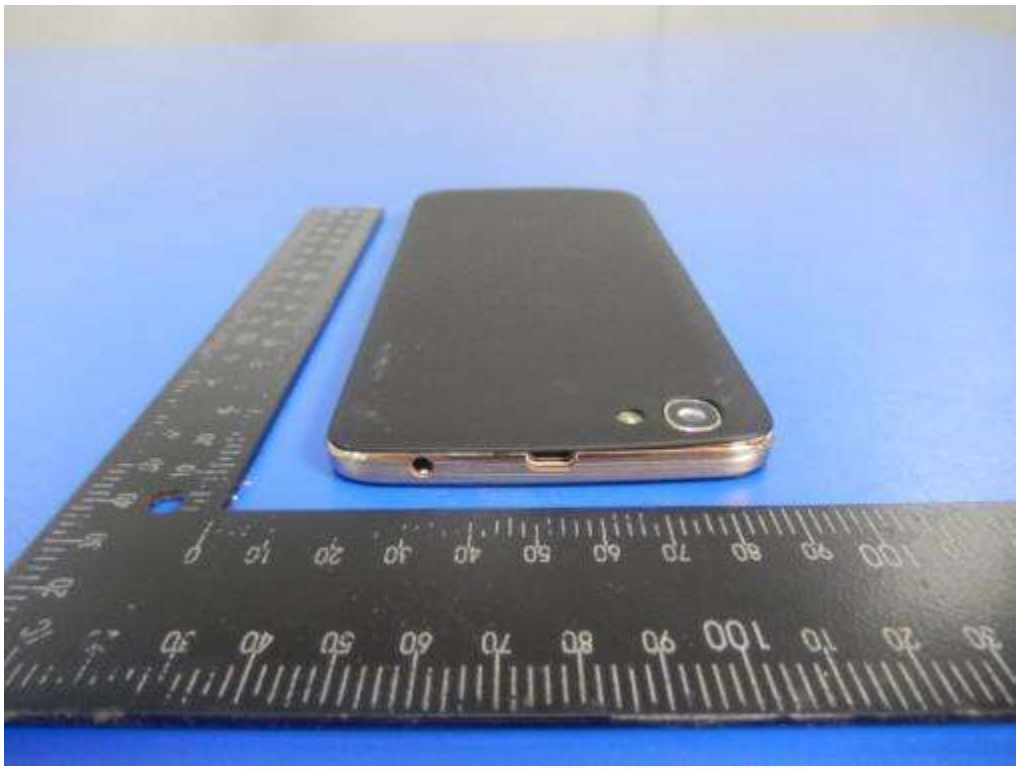
11.1 EUT Photo

Front side

Back side

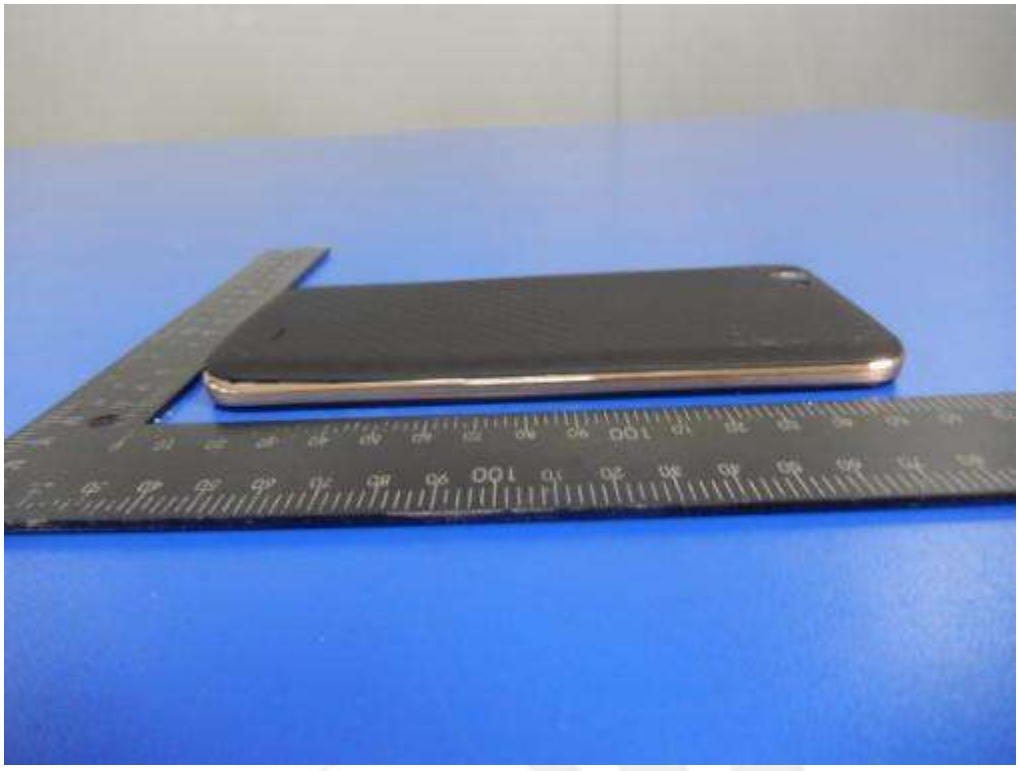


Top side

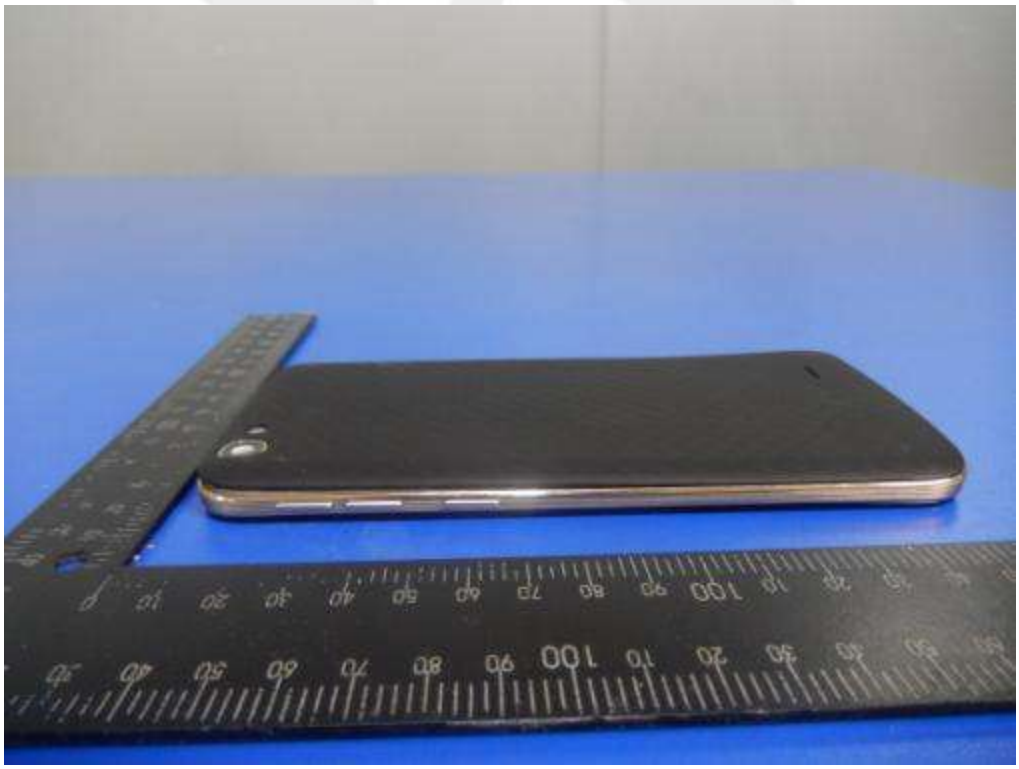


Bottom side

Left side

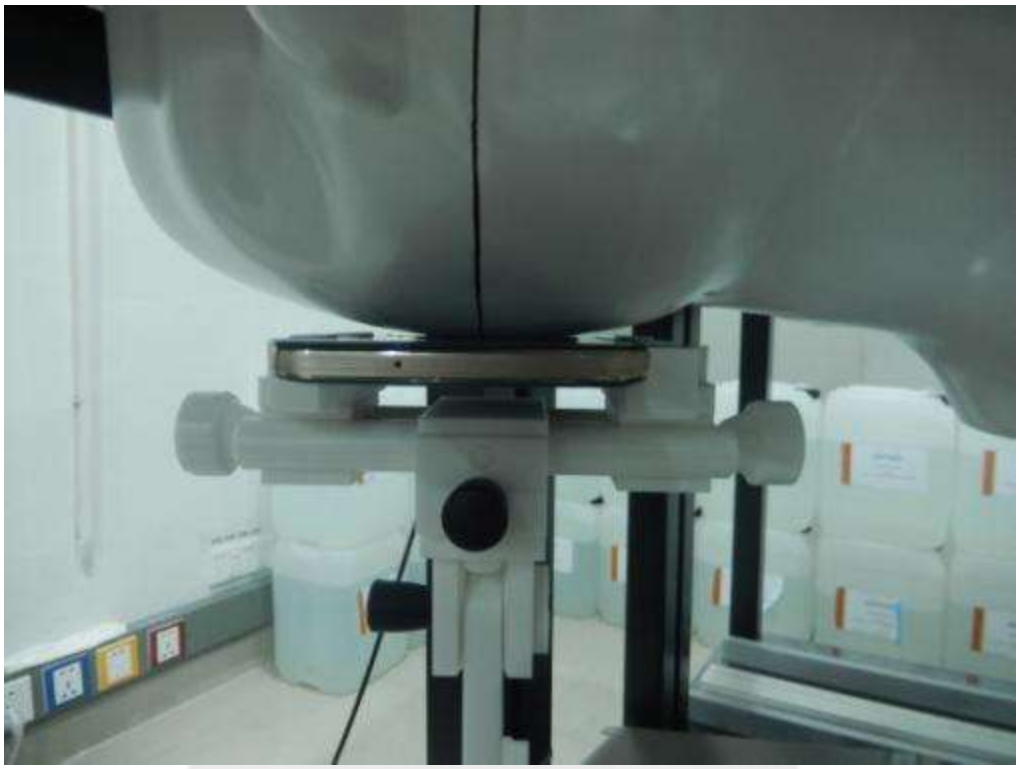


Right side

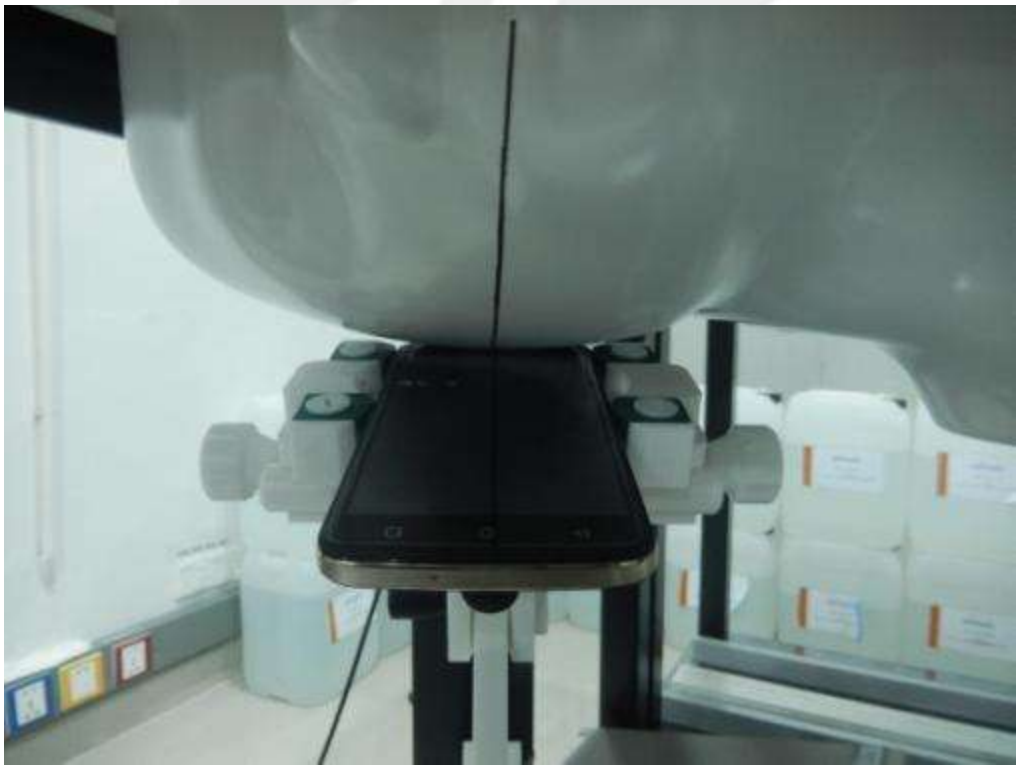


11.2 Setup Photo

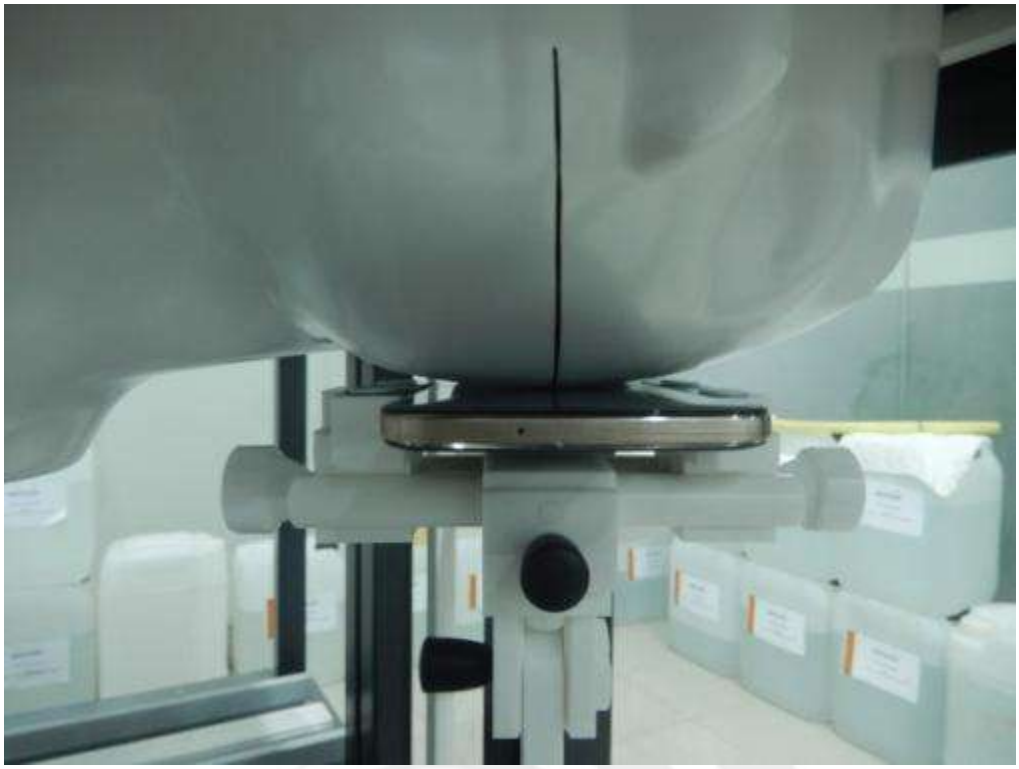
Right Touch



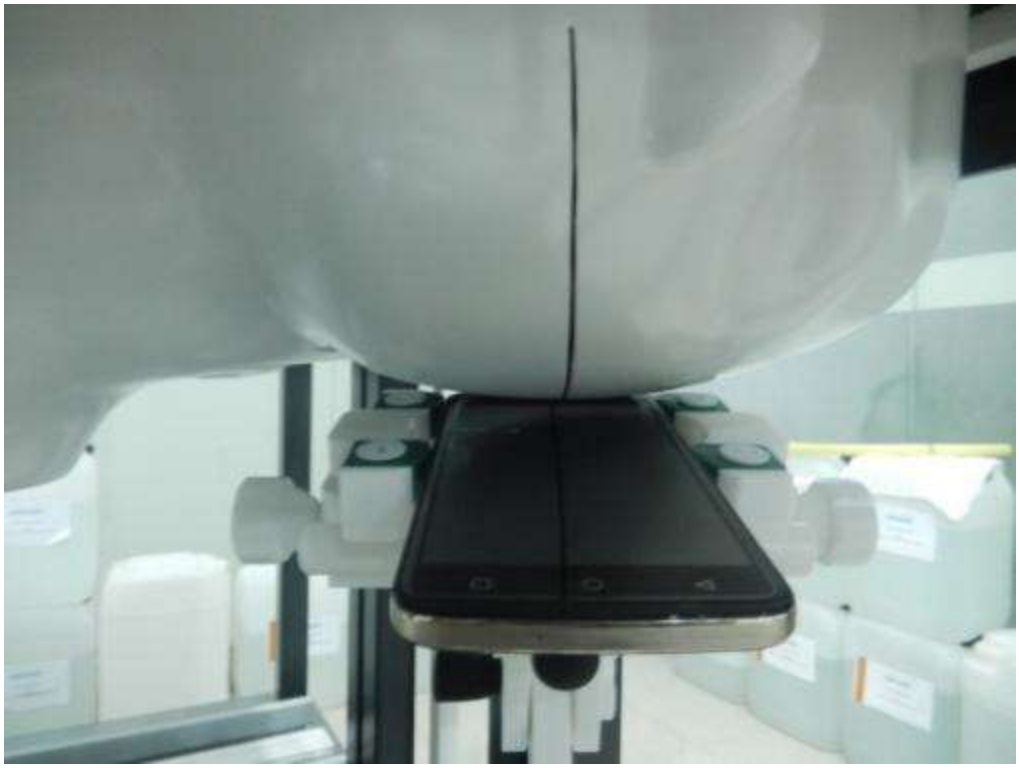
Right Tilt



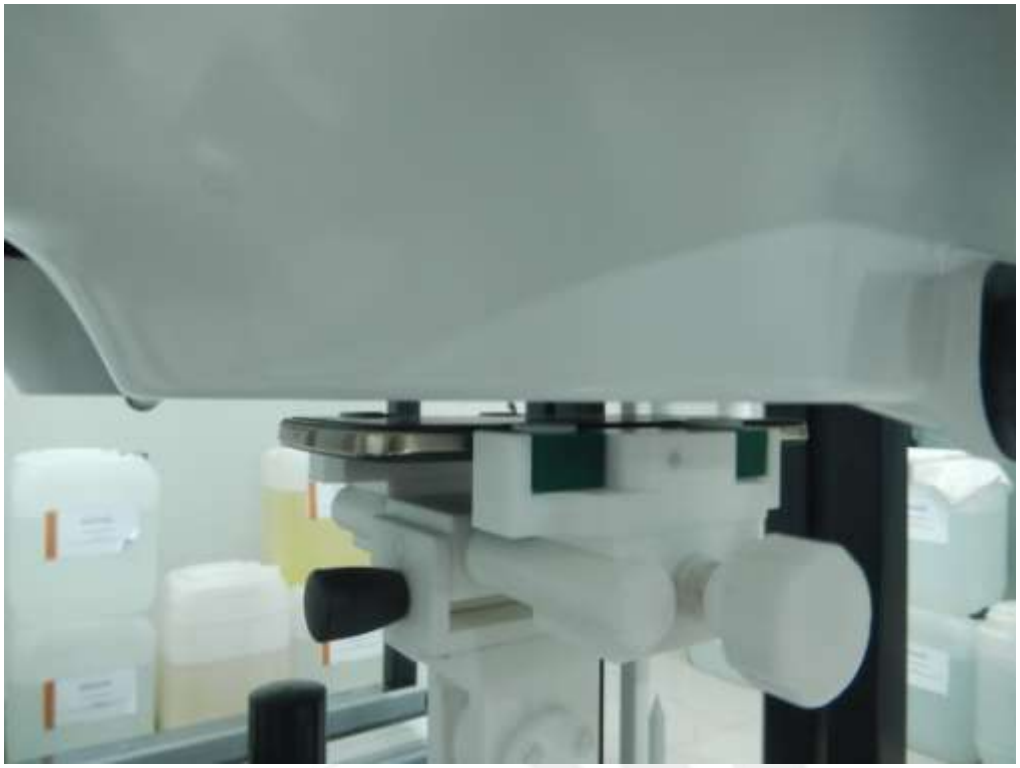
Left Touch



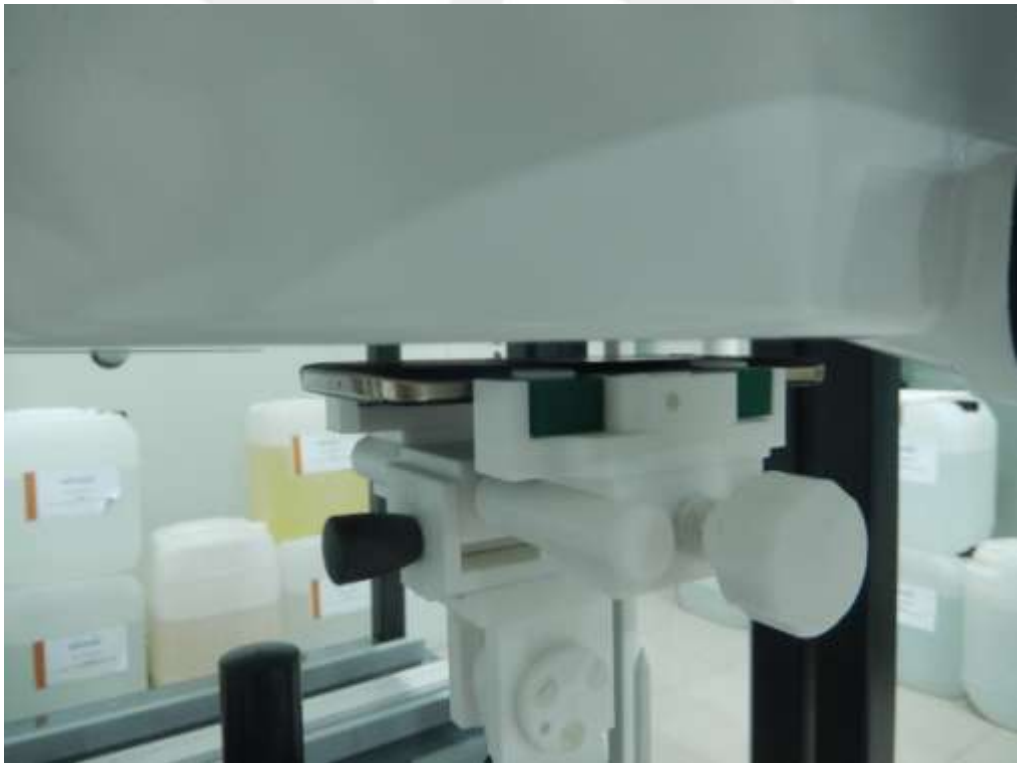
Left Tilt



Body Front side (separation distance is 5mm)

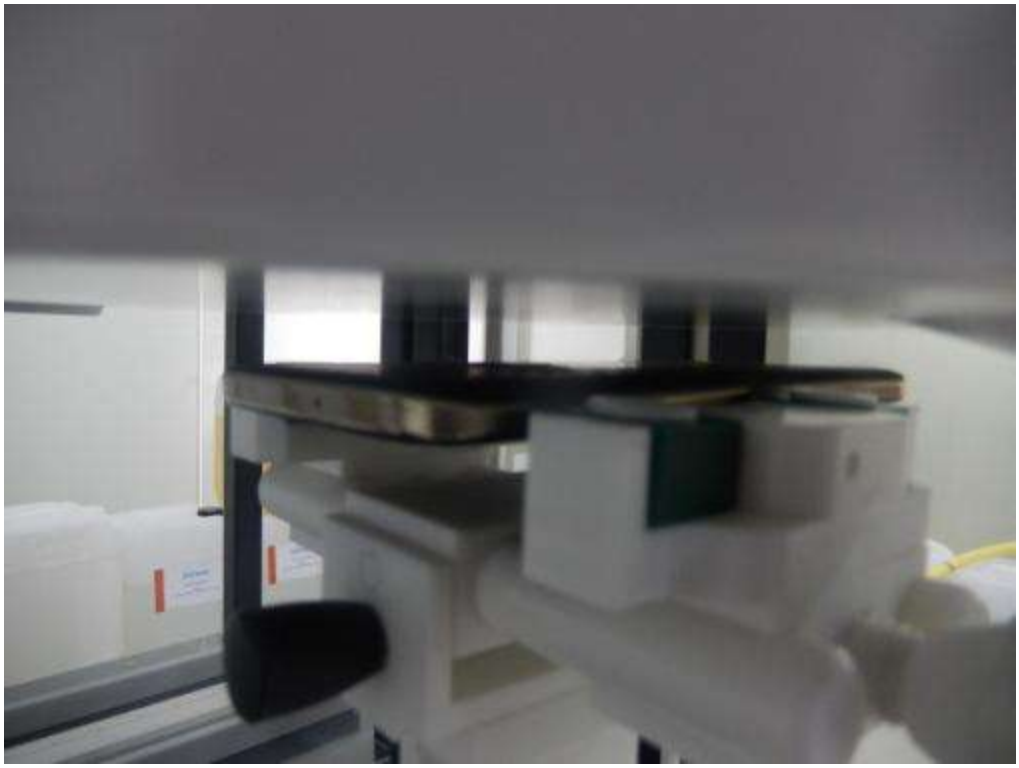


Body Back side (separation distance is 5mm)



Body Front side (separation distance is 10mm)

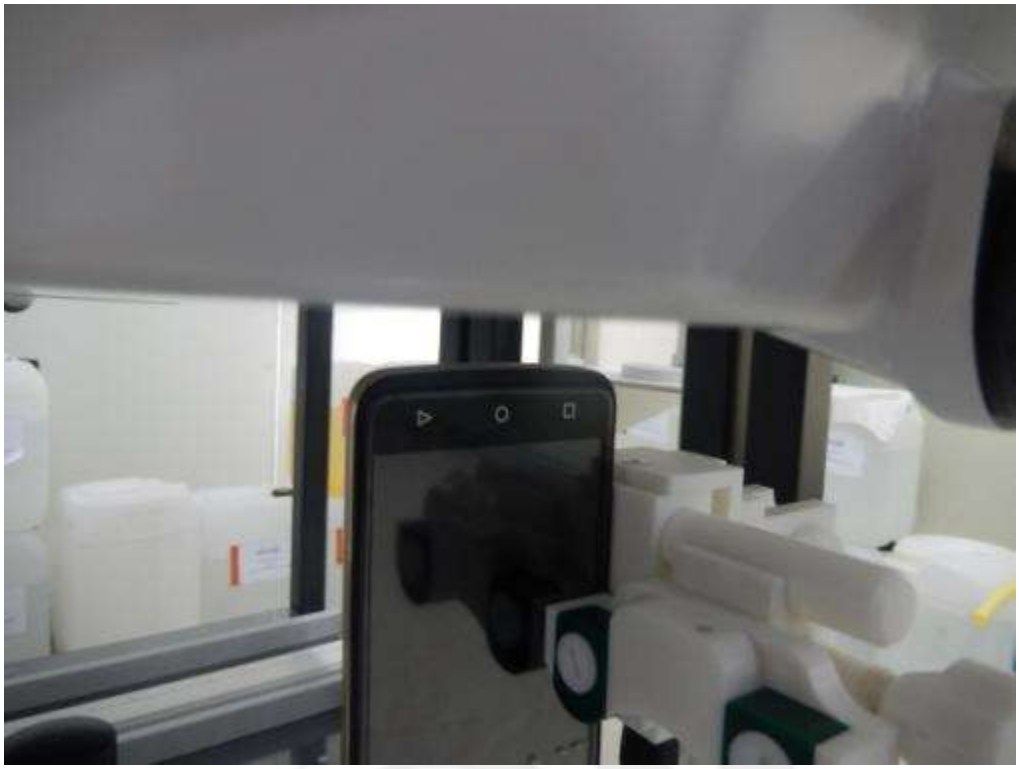
Body Back side (separation distance is 10mm)



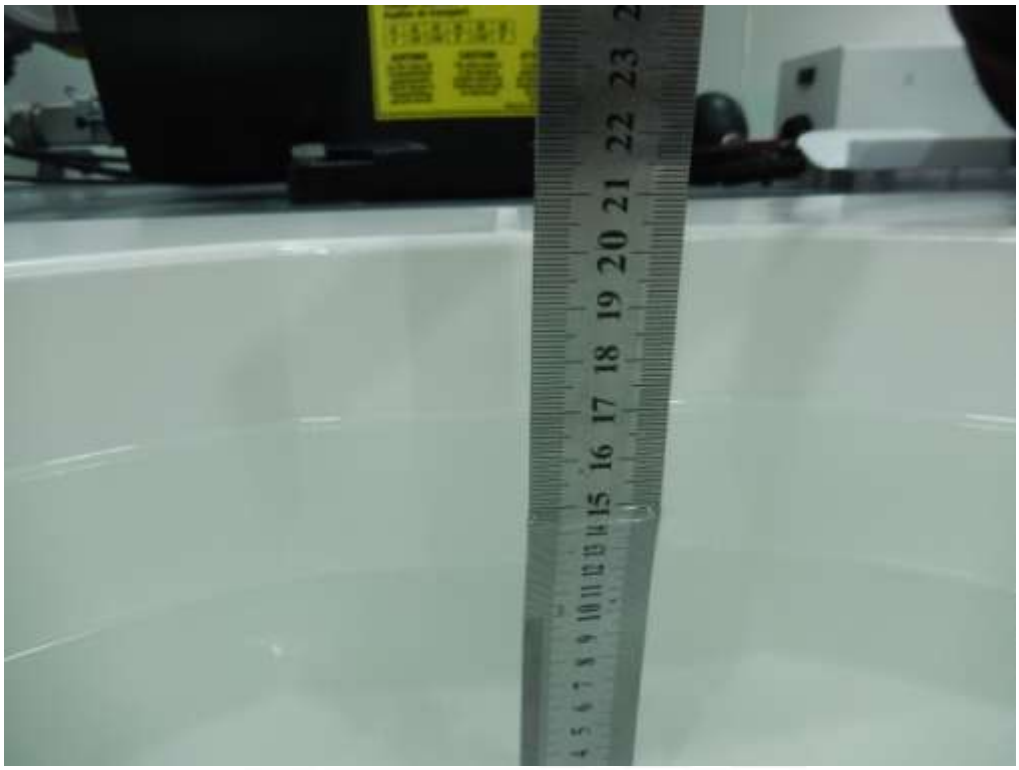
Body Right side (separation distance is 10mm)

Body Top side (separation distance is 10mm)

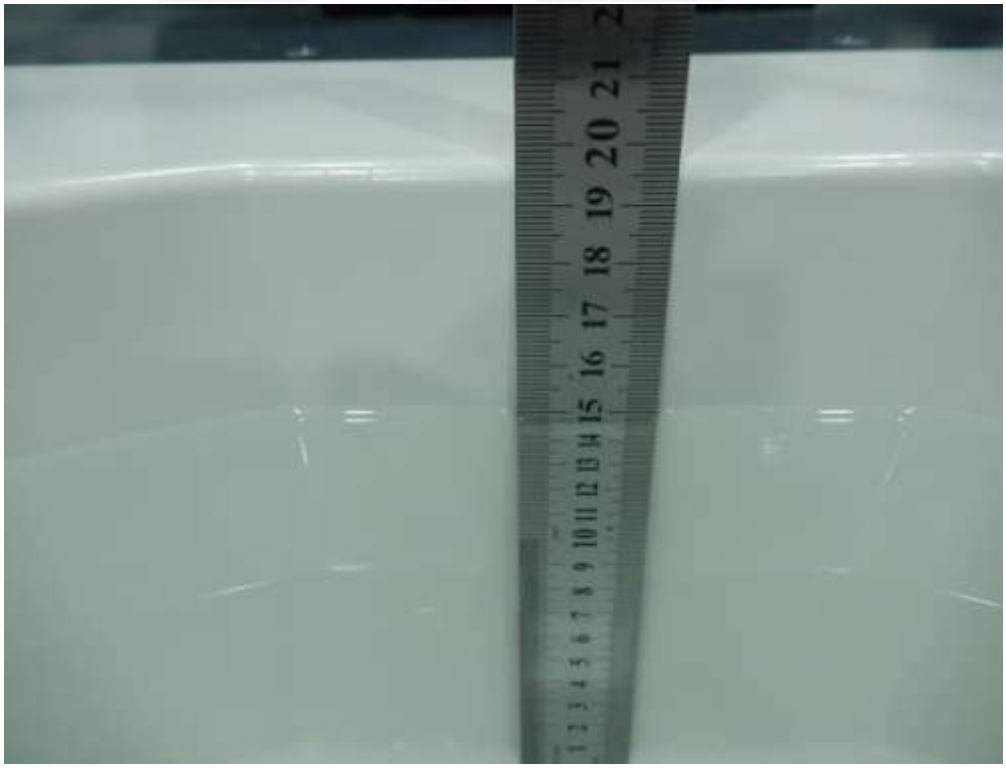
Body Bottom side (separation distance is 10mm)



835 Head Liquid depth (15 cm)



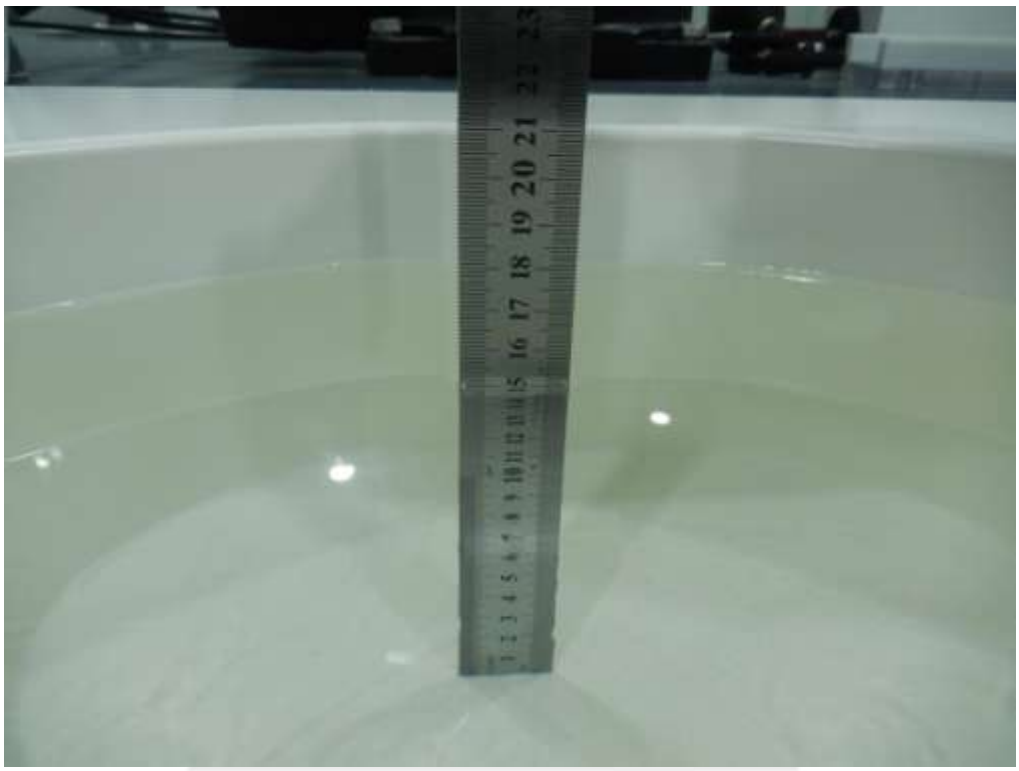
835 Body Liquid depth (15 cm)



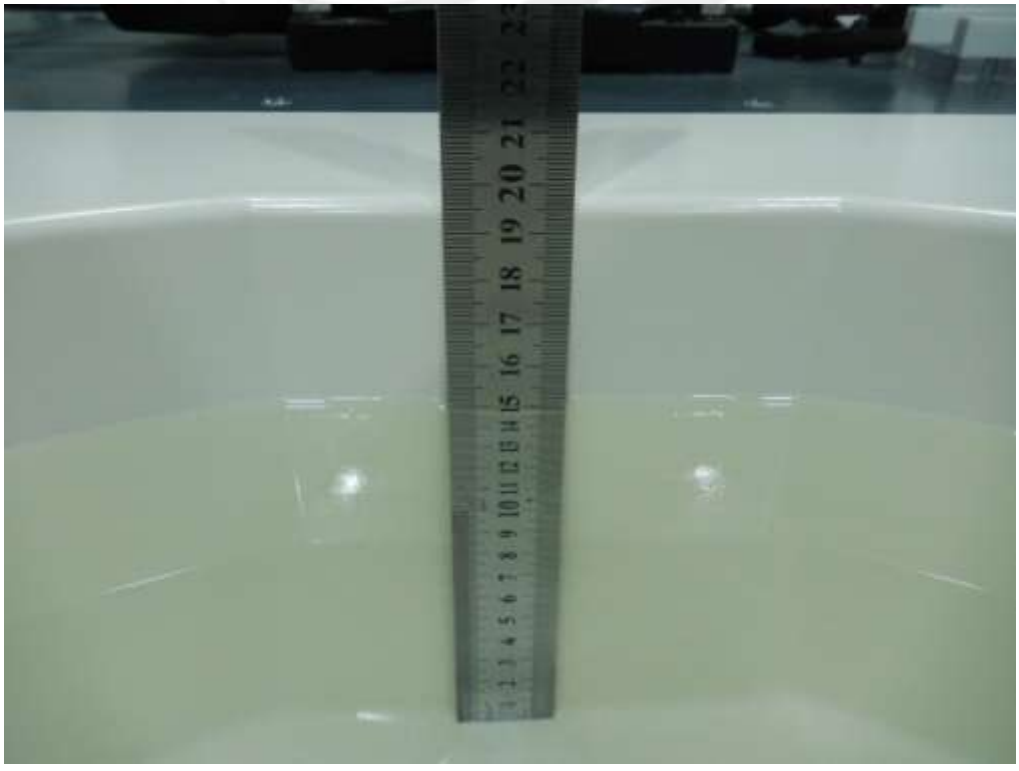
1900 Head Liquid depth (15 cm)

1900 Body depth (15 cm)

2450 Head Liquid depth (15 cm)



2450 Body Liquid depth (15 cm)



12. SAR Result Summary

12.1 Head SAR

Band	Mode	Test Position	Channel	Result 1g (W/Kg)	Power Drift(%)	Max.Turn-up Power(dBm)	Meas.Output Power(dBm)	Scaled SAR (W/Kg)	Meas. No.
GSM 850	GPRS Data-4 Slot	Right Cheek	CH 128	0.134	-1.87	28	27.80	0.140	/
		Right Tilt	CH 128	0.075	-0.55	28	27.80	0.079	/
		Left Cheek	CH 128	0.172	-1.91	28	27.80	**0.180**	1
		Left Tilt	CH 128	0.041	-0.22	28	27.80	0.043	/
GSM1900	EGPRS Data-4 Slot	Right Cheek	CH 512	0.077	-2.25	26	25.63	0.084	/
		Right Tilt	CH 512	0.032	-2.90	26	25.63	0.035	/
		Left Cheek	CH 512	0.085	-2.83	26	25.63	**0.093**	3
		Left Tilt	CH 512	0.037	0.07	26	25.63	0.040	/
WCDMA II	RMC	Right Cheek	CH 9537	0.050	-2.15	19.5	19.39	**0.051**	5
		Right Tilt	CH 9537	0.020	0.63	19.5	19.39	0.021	/
		Left Cheek	CH 9537	0.023	0	19.5	19.39	0.024	/
		Left Tilt	CH 9537	0.010	0.64	19.5	19.39	0.010	/
WCDMA V	RMC	Right Cheek	CH4182	0.051	0	23	22.59	0.056	/
		Right Tilt	CH4182	0.037	2.25	23	22.59	0.041	/
		Left Cheek	CH4182	0.073	2.09	23	22.59	**0.080**	7
		Left Tilt	CH4182	0.038	-2.28	23	22.59	0.042	/

Band	Mode	Test Position	Channel	Result 1g (W/Kg)	Power Drift(%)	Max.Turn-up Power(dBm)	Meas.Output Power(dBm)	Duty cycle(%)	Scaled SAR (W/Kg)	Meas. No.
WIFI	802.11b	Right Cheek	CH11	0.085	-1.27	19	18.31	100	0.100	/
		Right Tilt	CH11	0.090	-3.94	19	18.31	100	0.105	/
		Left Cheek	CH11	0.239	-1.67	19	18.31	100	**0.280**	9
		Left Tilt	CH11	0.216	-1.21	19	18.31	100	0.253	/

Note: 1. Per KDB865664 D01, Repeated measurement is not required when the original highest measured SAR is <0.80 W/kg
2. Per KDB 248227 D01- 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 ≤ 1.2 W/kg. (The highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power was **0.161** W/Kg for Head)

12.2 Body-worn SAR

Band	Mode	Test Position	Channel	Result 1g (W/Kg)	Power Drift(%)	Max.Turn-up Power(dBm)	Meas.Output Power(dBm)	Scaled SAR (W/Kg)	Meas. No.
GSM 850	GPRS Data-4 Slot	Front side	CH 128	0.261	0.10	28	27.80	0.273	/
		Back side	CH 128	0.715	1.05	28	27.80	**0.749**	2
GSM 1900	EGPRS Data-4 Slot	Front side	CH 512	0.169	1.71	26	25.63	0.184	/
		Back side	CH 512	0.731	1.48	26	25.63	**0.796**	4
WCDMA II	RMC (body-worn)	Front side	CH 9537	0.182	0.23	19.5	19.39	0.187	/
		Back side	CH 9537	0.766	-0.38	19.5	19.39	**0.786**	6
WCDMA V	RMC (body-worn)	Front side	CH4182	0.135	-1.83	23	22.59	0.148	/
		Back side	CH4182	0.593	2.97	23	22.59	**0.652**	8

Band	Mode	Test Position	Channel	Result 1g (W/Kg)	Power Drift(%)	Max.Turn-up Power(dBm)	Meas.Output Power(dBm)	Duty cycle(%)	Scaled SAR (W/Kg)	Meas. No.
WIFI	802.11b	Front side	CH11	0.128	0.08	19	18.31	100	0.150	/
		Back side	CH11	0.297	1.71	19	18.31	100	**0.348**	10

Note: 1.The test separation of all above table is 5mm.

2. Per KDB 248227 D01- 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 ≤ 1.2 W/kg. (The highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power was **0.200** W/Kg for Body-worn)

12.3 Body SAR And Hotspot

Band	Mode	Test Position	Channel	Result 1g (W/Kg)	Power Drift(%)	Max.Turn-up Power(dBm)	Meas.Output Power(dBm)	Scaled SAR (W/Kg)	Meas. No.
GSM 850	GPRS Data-4 Slot (hotspot)	Front side	CH 128	0.137	-0.78	28	27.80	0.143	/
		Back side	CH 128	0.493	1.31	28	27.80	**0.516**	/
		Right side	CH 128	0.184	-1.78	28	27.80	0.193	/
		Bottom side	CH 128	0.167	-2.39	28	27.80	0.175	/
GSM 1900	EGPRS Data-4 Slot (hotspot)	Front side	CH 512	0.025	3.50	26	25.63	0.027	/
		Back side	CH 512	0.499	-2.73	26	25.63	**0.543**	/
		Right side	CH 512	0.158	-2.30	26	25.63	0.172	/
		Bottom side	CH 512	0.094	-0.80	26	25.63	0.102	/
WCDMA II	RMC (hotspot)	Front side	CH 9537	0.029	-0.52	19.5	19.39	0.030	/
		Back side	CH 9537	0.489	0.48	19.5	19.39	**0.502**	/
		Right side	CH 9537	0.122	-0.19	19.5	19.39	0.125	/
		Bottom side	CH 9537	0.067	4.63	19.5	19.39	0.069	/
WCDMA V	RMC (hotspot)	Front side	CH4182	0.068	-3.79	23	22.59	0.075	/
		Back side	CH4182	0.219	-2.23	23	22.59	**0.241**	/
		Right side	CH4182	0.124	-2.98	23	22.59	0.136	/
		Bottom side	CH4182	0.064	-2.58	23	22.59	0.070	/

Band	Mode	Test Position	Channel	Result 1g (W/Kg)	Power Drift(%)	Max.Turn-up Power(dBm)	Meas.Output Power(dBm)	Duty cycle(%)	Scaled SAR (W/Kg)	Meas. No.
WIFI	802.11b	Front side	CH11	0.049	-3.32	19	18.31	100	0.057	/
		Back side	CH11	0.151	0.04	19	18.31	100	**0.177**	/
		Right side	CH11	0.050	-0.24	19	18.31	100	0.059	/
		Top side	CH11	0.037	-2.12	19	18.31	100	0.043	/

Note:

1. The test separation of all above table is 10mm.
2. Per KDB 248227 D01- 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 ≤ 1.2 W/kg. (The highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power was **0.102** W/Kg for Body/Hotspot)
3. When the user enables the personal Wireless router functions for the handsets, actual operations include simultaneous transmission of both the Wi-Fi transmitting frequency and thus cannot be evaluated for SAR under actual use conditions.The “Portable Hotspot” feature on the handset was NOT activated, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal.

Simultaneous Multi-band Transmission Evaluation:

Application Simultaneous Transmission information:

Position	Simultaneous state
Head	1. GSM + WIFI
	2. GSM + Bluetooth
	3. WCDMA + WIFI
	4. WCDMA + Bluetooth
Body	1. GSM + WIFI
	2. GSM + Bluetooth
	3. WCDMA + WIFI
	4. WCDMA + Bluetooth

NOTE:

1. Bluetooth and WIFI can't simultaneous transmission at the same time.
2. For simultaneous transmission at head and body exposure position, 2 transmitters simultaneous transmission was the worst state.
3. Based upon KDB 447498 D01, BT SAR is excluded as below table.
4. If the test separation distance is <5mm, 5mm is used for excluded SAR calculation.
5. For minimum test separation distance ≤50mm,Bluetooth standalone SAR is excluded according to [(max. power of channel, including tune-up tolerance, mW)/ (min. test separation distance, mm) ·[√f (GHz) /x] ≤3.0 for 1-g SAR and ≤7.5 for 10-g extremity SAR
6. The reported SAR summation is calculated based on the same configuration and test position.
7. KDB 447498 D01 / 4.3.2 (2) when standalone SAR test exclusion applies to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to following to determine simultaneous transmission SAR test exclusion:

   a) (max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)]·[√f (GHz) /x] W/kg for test separation distances≤ 50 mm; Where x = 7.5 for 1-g SAR, and x = 18.75 for 10-g SAR.

   b) 0.4W/Kg for 1-g SAR and 1.0W/Kg for 10-g SAR, when the separation distance is >50mm.

Estimated SAR		Maximum Average Power		Antenna to user(mm)	Frequency(GHz)	Stand alone SAR(1g) [W/kg]
		dBm	mW			
BT	Head	6	3.981	5	2.480	0.167
	Body-worn			5	2.480	0.167
	Body-Hotspot			10	2.480	0.084

Simultaneous Mode	Position	Mode	Max. 1-g SAR (W/kg)	1-g Sum SAR (W/kg)
GSM + WIFI	Head	GSM DATA	0.180	0.460
		WIFI	0.280	
	Body-worn	GSM DATA	0.796	1.144
		WIFI	0.348	
	Body-Hotspot	GSM DATA	0.543	0.720
		WIFI	0.177	
GSM + Bluetooth	Head	GSM DATA	0.180	0.347
		Bluetooth	0.167	
	Body-worn	GSM DATA	0.796	0.963
		Bluetooth	0.167	
	Body-Hotspot	GSM DATA	0.543	0.627
		Bluetooth	0.084	
WCDMA RMC+ WIFI	Head	WCDMA RMC	0.080	0.360
		WIFI	0.280	
	Body-worn	WCDMA RMC	0.786	1.134
		WIFI	0.348	
	Body-Hotspot	WCDMA RMC	0.502	0.679
		WIFI	0.177	
WCDMA RMC+ Bluetooth	Head	WCDMA RMC	0.080	0.247
		Bluetooth	0.167	
	Body-worn	WCDMA RMC	0.786	0.953
		Bluetooth	0.167	
	Body-Hotspot	WCDMA RMC	0.502	0.586
		Bluetooth	0.084	

Simultaneous transmission SAR test exclusion is determined for each operating configuration and exposure condition according to the reported standalone SAR of each applicable simultaneous transmitting antenna.

When the sum of SAR 1g of all simultaneously transmitting antennas in an operating mode and exposure condition combination is within the SAR limit (SAR-1g 1.6 W/kg), the simultaneous transmission SAR is not required. When the sum of SAR 1g is greater than the SAR limit (SAR-1g 1.6 W/kg), SAR test exclusion is determined by the SPLSR.

13. Equipment List

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Calibrated Until
835MHz Dipole	SATIMO	SID835	SN 30/14 DIP0G835-332	2014.09.01	2017.08.31
1900MHz Dipole	SATIMO	SID1900	SN 30/14 DIP1G900-333	2014.09.01	2017.08.31
2450 MHz Dipole	SATIMO	SID2450	SN 30/14 DIP2G450-335	2014.09.01	2017.08.31
E-Field Probe	SATIMO	SSE5	SN 17/14 EP221	2015.09.01	2016.08.31
Antenna	SATIMO	ANTA3	SN 07/13 ZNTA52	2014.09.01	2017.08.31
Waveguide	SATIMO	SWG5500	SN 13/14 WGA32	2014.09.01	2017.08.31
Phantom1	SATIMO	SAM	SN 32/14 SAM115	N/A	N/A
Phantom2	SATIMO	SAM	SN 32/14 SAM116	N/A	N/A
SAR TEST BENCH	SATIMO	MOBILE PHONE POSITIONNING SYSTEM	SN 32/14 MSH97	N/A	N/A
SAR TEST BENCH	SATIMO	LAPTOP POSITIONNING SYSTEM	SN 32/14 LSH29	N/A	N/A
Dielectric Probe Kit	SATIMO	SCLMP	SN 32/14 OCPG52	2015.09.01	2016.08.31
Multi Meter	Keithley	Multi Meter 2000	4050073	2015.11.20	2016.11.19
Signal Generator	Agilent	N5182A	MY50140530	2015.11.18	2016.11.17
Power Meter	R&S	NRP	100510	2015.10.25	2016.10.24
Power Sensor	R&S	NRP-Z11	101919	2015.10.24	2016.10.23
Power Sensor	Anritsu	MA2411B	1027253	2015.10.10	2016.10.09
Power Sensor	R&S	NRP-Z21	103971	2015.12.12	2016.12.11
Network Analyzer	Agilent	5071C	EMY46103472	2015.12.12	2016.12.11
Attenuator 1	PE	PE7005-10	N/A	2015.10.25	2016.10.24
Attenuator 2	PE	PE7005-3	N/A	2015.10.24	2016.10.23
Attenuator 3	Woken	WK0602-XX	N/A	2015.12.12	2016.12.11
Dual Directional Coupler	Agilent	778D	50422	2015.11.18	2016.11.17

Appendix A. System Validation Plots

System Performance Check Data (835MHz Head)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 2016-01-14
Measurement duration: 13 minutes 27 seconds

Experimental conditions

Phantom	Validation plane
Device Position	Dipole
Band	835MHz
Channels	-
Signal	CW
Frequency (MHz)	835MHz
Relative permittivity (real part)	41.19
Relative permittivity	18.72
Conductivity (S/m)	0.89
Power drift (%)	0.45
Ambient Temperature:	22.7°C
Liquid Temperature:	22.3°C
ConvF:	4.83
Crest factor:	1:1

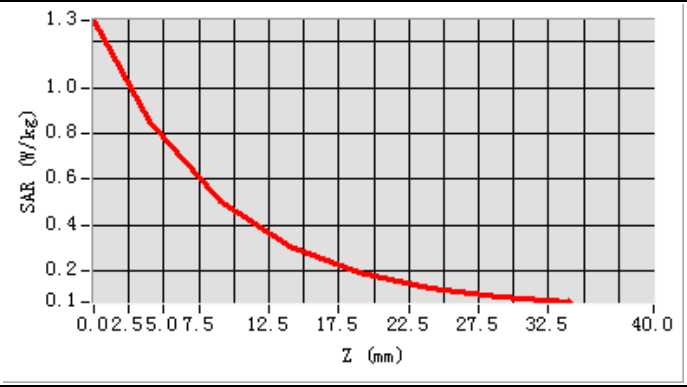
Maximum location: X=1.00, Y=0.00

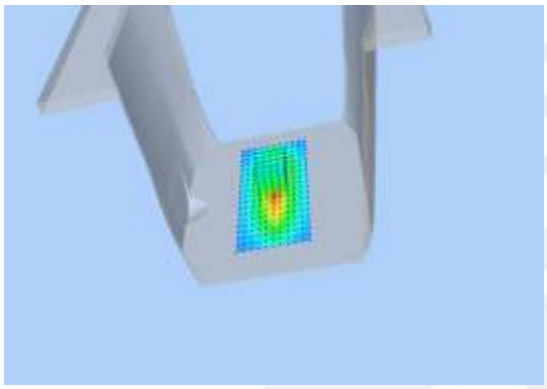
SAR Peak: 1.46 W/kg

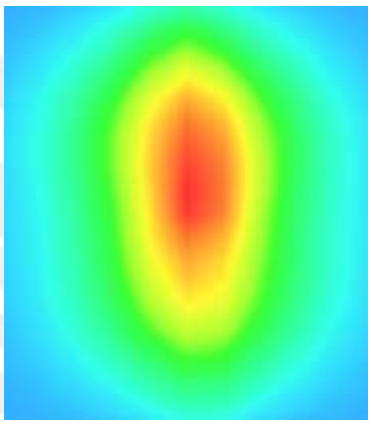
SAR 10g (W/Kg)	0.612584
SAR 1g (W/Kg)	0.928356

Z Axis Scan

Z (mm)	0	4	9	14	19	24	29
SAR(W/Kg)	1.3472	0.97891	0.66265	0.5042	0.3512	0.2505	0.11794







System Performance Check Data (835MHz Body)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 2016-01-14
Measurement duration: 14 minutes 13 seconds

Experimental conditions.

Phantom	Validation plane
Device Position	Dipole
Band	835MHz
Channels	-
Signal	CW
Frequency (MHz)	835MHz
Relative permittivity (real part)	54.26
Relative permittivity	21.408187
Conductivity (S/m)	0.99
Power drift (%)	0.090000
Ambient Temperature:	22.7°C
Liquid Temperature:	22.3°C
ConvF:	5.02
Crest factor:	1:1

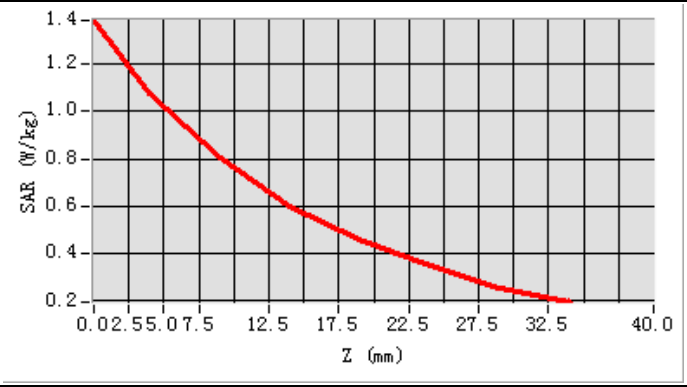
Maximum location: X=1.00, Y=0.00

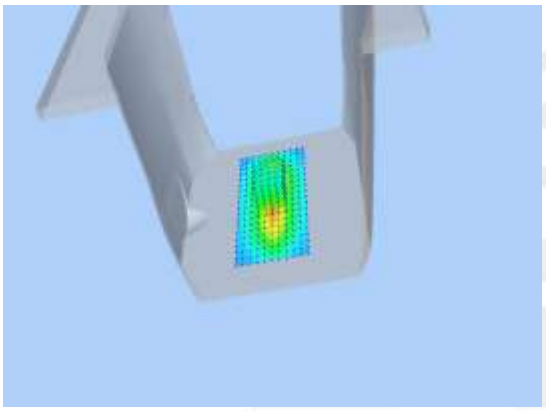
SAR Peak: 1.48 W/kg

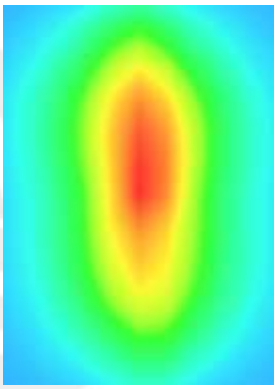
SAR 10g (W/Kg)	0.695261
SAR 1g (W/Kg)	0.987695

Z Axis Scan

Z (mm)	0	4	9	14	19	24	29
SAR(W/Kg)	1.3725	1.0058	0.6838	0.4755	0.3314	0.2365	0.1688







System Performance Check Data (1900MHz Head)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 2016-01-14
Measurement duration: 14 minutes 12 seconds

Experimental conditions.

Phantom	Validation plane
Device Position	-
Band	1900MHz
Channels	-
Signal	CW
Frequency (MHz)	1900MHz
Relative permittivity (real part)	39.44
Relative permittivity	13.26
Conductivity (S/m)	1.42
Power drift (%)	0.47
Ambient Temperature:	22.7°C
Liquid Temperature:	22.3°C
Probe	SN 17/14 EP221
ConvF:	4.71
Crest factor:	1:1

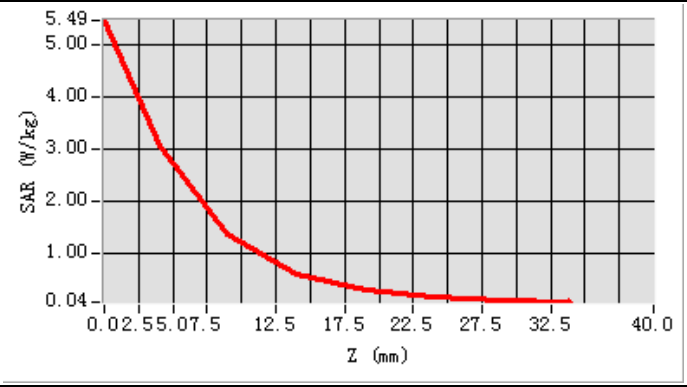
Maximum location: X=1.00, Y=0.00

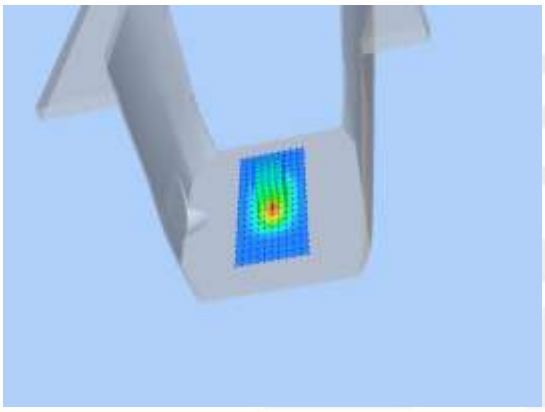
SAR Peak: 5.49 W/kg

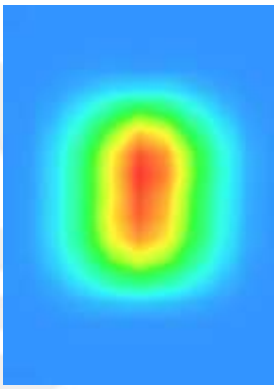
SAR 10g (W/Kg)	1.975658
SAR 1g (W/Kg)	3.892354

Z Axis Scan

Z (mm)	0	4	9	14	19	24	29
SAR(W/Kg)	6.5296	4.1946	2.3311	1.3187	0.5733	0.3288	0.1617







System Performance Check Data (1900MHz Body)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 2016-01-14
Measurement duration: 14 minutes 46 seconds

Experimental conditions.

Device Position	-
Band	1900MHz
Channels	-
Signal	CW
Frequency (MHz)	1900
Relative permittivity (real part)	52.78
Relative permittivity	12.87531
Conductivity (S/m)	1.55
Power drift (%)	0.37
Ambient Temperature:	22.7°C
Liquid Temperature:	22.3°C
Probe	SN 17/14 EP221
ConvF:	4.85
Crest factor:	1:1

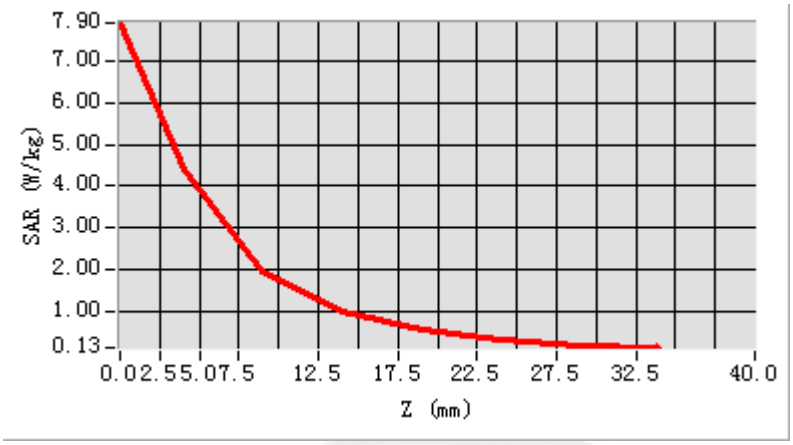
Maximum location: X=2.00, Y=2.00

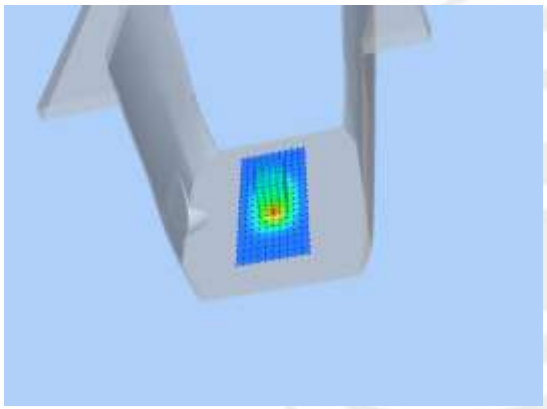
SAR Peak: 7.90 W/kg

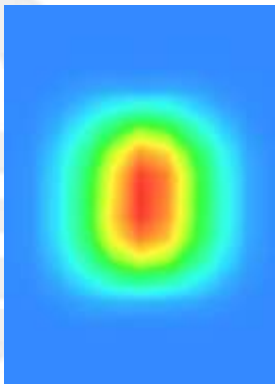
SAR 10g (W/Kg)	2.135625
SAR 1g (W/Kg)	4.123621

Z Axis Scan

Z (mm)	0	4	9	14	19	24	29
SAR(W/Kg)	5.3196	3.3419	1.8167	1.0186	0.5752	0.3285	0.1898







System Performance Check Data (2450MHz Head)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 2016-01-14
Measurement duration: 13 minutes 51seconds

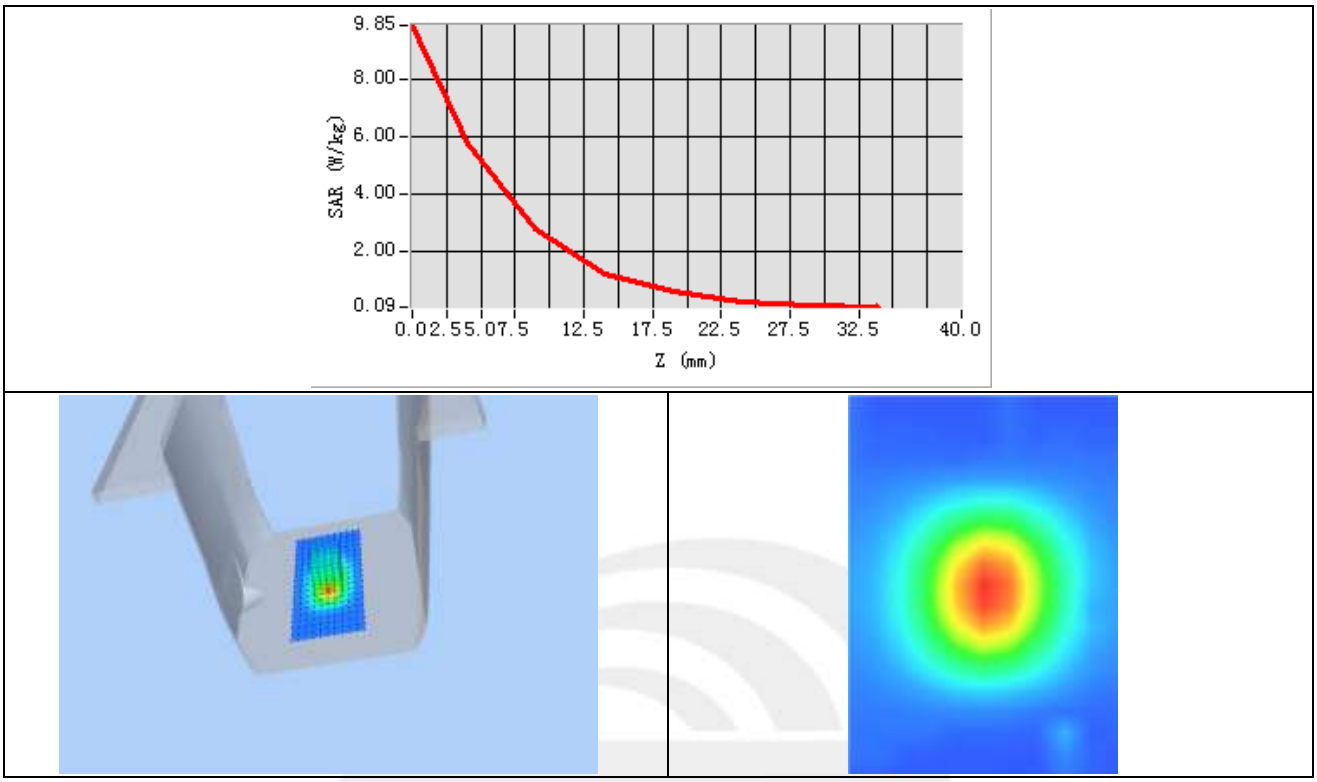
Experimental conditions.

Device Position	Validation plane
Band	2450 MHz
Channels	-
Signal	CW
Frequency (MHz)	2450
Relative permittivity (real part)	39.38
Relative permittivity	12.930000
Conductivity (S/m)	1.77
Power drift (%)	-1.200000
Ambient Temperature	22.7°C
Liquid Temperature	22.3°C
Probe	SN 17/14 EP221
ConvF	4.11
Crest factor:	1:1

Maximum location: X=7.00, Y=6.00

SAR 10g (W/Kg)	2.635821
SAR 1g (W/Kg)	5.156285

Z Axis Scan


9.85
8.00
6.00
4.00
2.00
0.09
SAR (W/kg)
0.0 2.5 5.0 7.5 12.5 17.5 22.5 27.5 32.5 40.0
Z (mm)

System Performance Check Data (2450MHz Body)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 2016-01-14
Measurement duration: 14 minutes 23 seconds

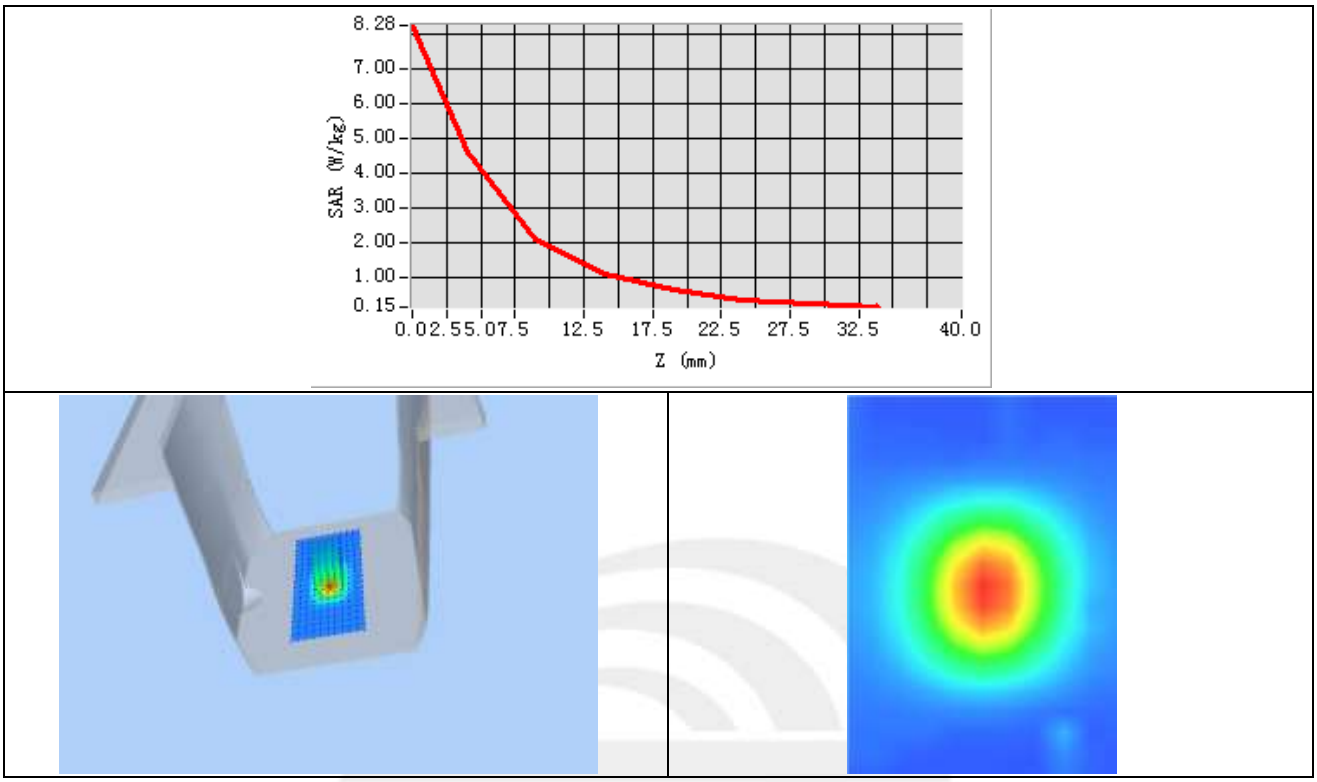
Experimental conditions.

Device Position	Validation plane
Band	2450 MHz
Channels	-
Signal	CW
Frequency (MHz)	2450
Relative permittivity (real part)	52.41
Relative permittivity	12.930000
Conductivity (S/m)	1.93
Power drift (%)	-1.200000
Ambient Temperature	22.7°C
Liquid Temperature	22.3°C
Probe	SN 17/14 EP221
ConvF	4.25
Crest factor:	1:1

Maximum location: X=3.00, Y=1.00

SAR 10g (W/Kg)	2.536281
SAR 1g (W/Kg)	5.108165

Z Axis Scan


8.28
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.15
SAR (W/kg)
0.0 2.5 5.0 7.5 12.5 17.5 22.5 27.5 32.5 40.0
Z (mm)

Appendix B. SAR Test Plots

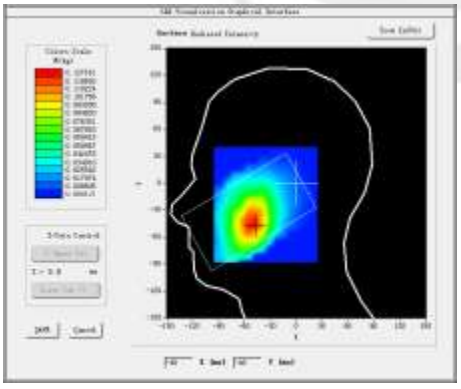
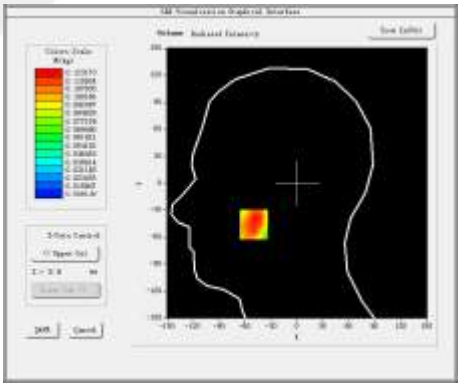
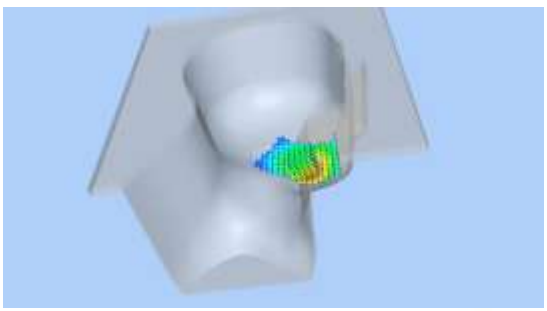
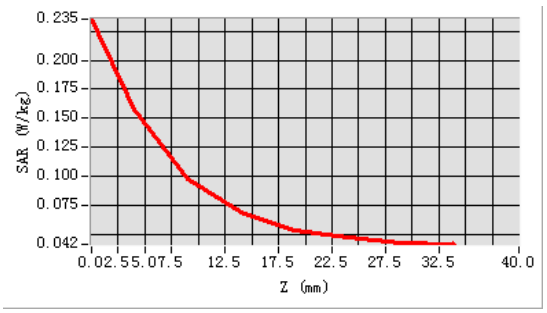
Plot 1: DUT: Smart phone; EUT Model: V328001MS8

Test Data	2016-01-14
Ambient Temperature(°C)	22.70
Liquid Temperature(°C)	22.30
Probe	SN 17/14 EP221
ConvF	4.83
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm, Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Left head
Device Position	Cheek
Band	GPRS 850
Channels	Middle
Signal	Duty Cycle: 1:2 (Crest factor: 2.0)
Frequency (MHz)	836.6
Relative permittivity (real part)	42.27
Conductivity (S/m)	0.91
Variation (%)	-1.91

Maximum location: X=-49.00, Y=-46.00

SAR Peak: 0.24 W/kg

SAR 10g (W/Kg)	0.097167
SAR 1g (W/Kg)	0.172163

SURFACE SAR	VOLUME SAR
	
3D screen shot	**Z Axis Scan**
	

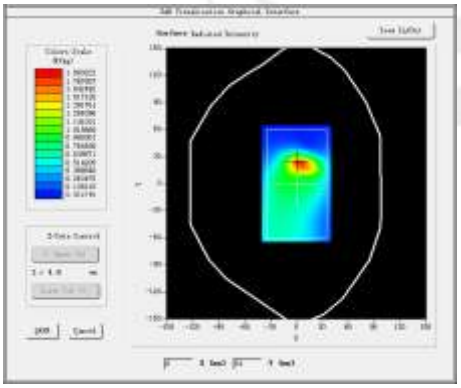
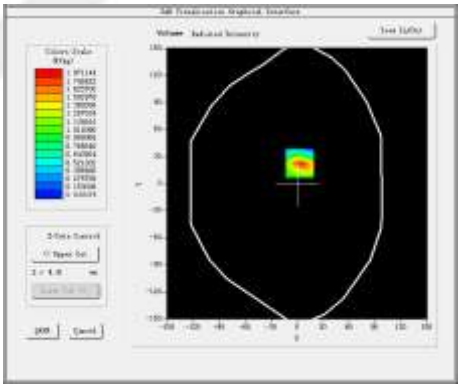
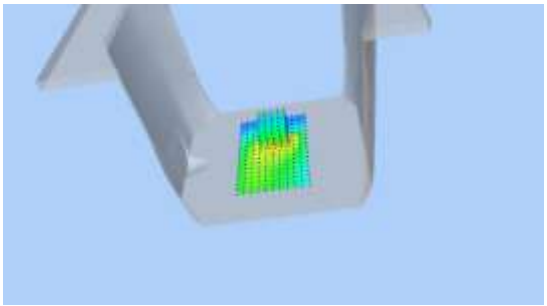
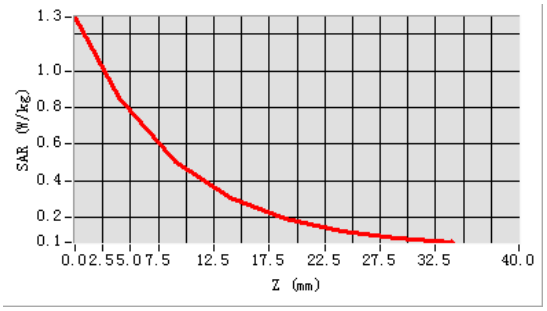
Plot 2: DUT: Smart phone; EUT Model: V328001MS8

Test Data	2016-01-14
Ambient Temperature(°C)	22.70
Liquid Temperature(°C)	22.30
Probe	SN 17/14 EP221
ConvF	5.02
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm, Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Validation plane
Device Position	Body Back
Band	GPRS 850
Channels	Middle
Signal	Duty Cycle: 1:2 (Crest factor: 2.0)
Frequency (MHz)	836.6
Relative permittivity (real part)	55.5
Conductivity (S/m)	0.96
Variation (%)	1.05

Maximum location: X=3.00, Y=23.00

SAR Peak: 1.30 W/kg

SAR 10g (W/Kg)	0.471682
SAR 1g (W/Kg)	0.714934

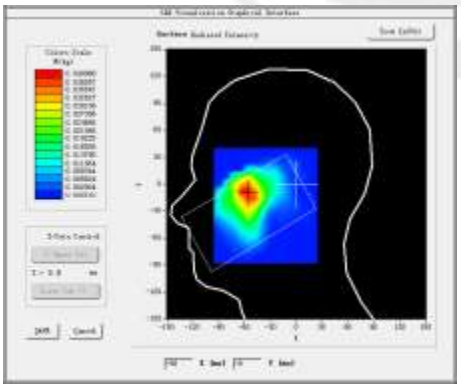
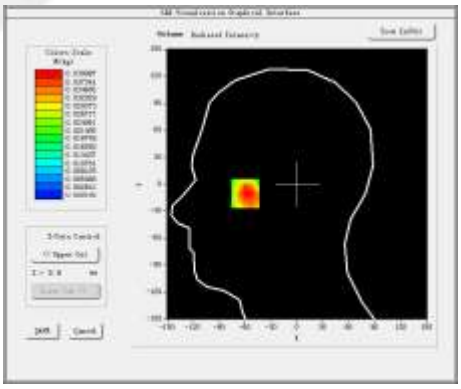
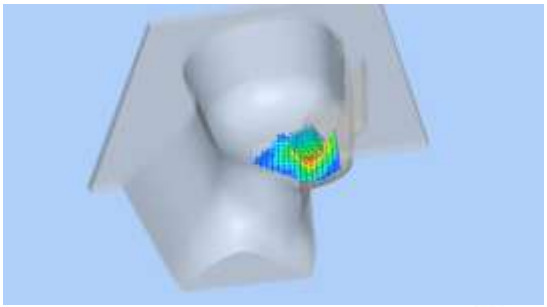
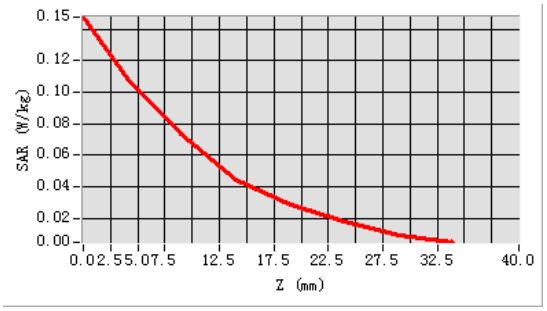
SURFACE SAR	VOLUME SAR
	
3D screen shot	**Z Axis Scan**
	

Plot 3: DUT: Smart phone; EUT Model: V328001MS8

Test Data	2016-01-14
Ambient Temperature(°C)	22.70
Liquid Temperature(°C)	22.30
Probe	SN 17/14 EP221
ConvF	4.71
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm, Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Left head
Device Position	Cheek
Band	EGPRS 1900
Channels	Low
Signal	Duty Cycle:2.00 (Crest factor:2.0)
Frequency (MHz)	1850.2
Relative permittivity (real part)	39.57
Conductivity (S/m)	1.43
Variation (%)	-2.83

Maximum location: X=-60.00, Y=-8.00
SAR Peak: 0.15 W/kg

SAR 10g (W/Kg)	0.037164
SAR 1g (W/Kg)	0.085138

SURFACE SAR	VOLUME SAR
	
3D screen shot	**Z Axis Scan**
	

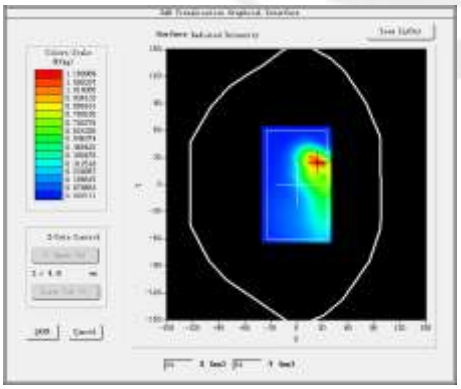
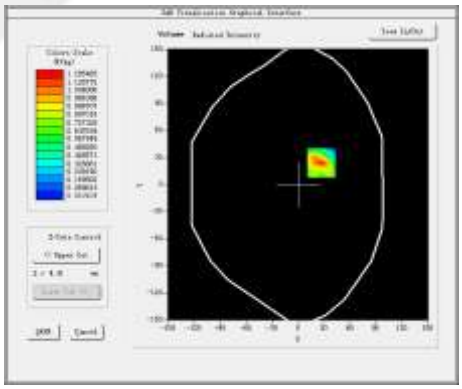
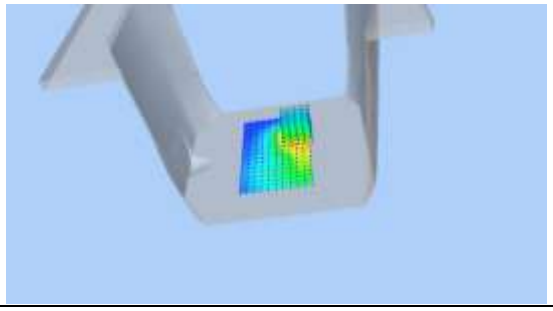
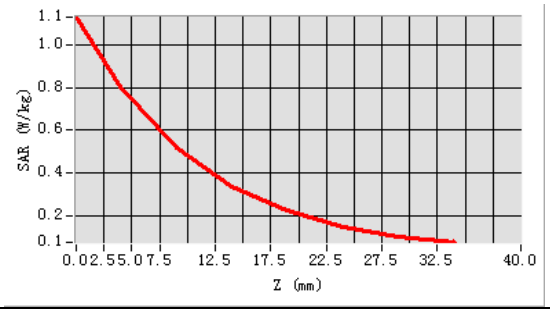
Plot 4: DUT: Smart phone; EUT Model: V328001MS8

Test Data	2016-01-14
Ambient Temperature(°C)	22.70
Liquid Temperature(°C)	22.30
Probe	SN 17/14 EP221
ConvF	4.85
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm, Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Validation plane
Device Position	Body Back
Band	EGPRS 1900
Channels	Low
Signal	Duty Cycle:2.00 (Crest factor:2.0)
Frequency (MHz)	1850.2
Relative permittivity (real part)	51.68
Conductivity (S/m)	1.51
Variation (%)	1.48

Maximum location: X=27.00, Y=24.00

SAR Peak: 1.11 W/kg

SAR 10g (W/Kg)	0.401377
SAR 1g (W/Kg)	0.730832

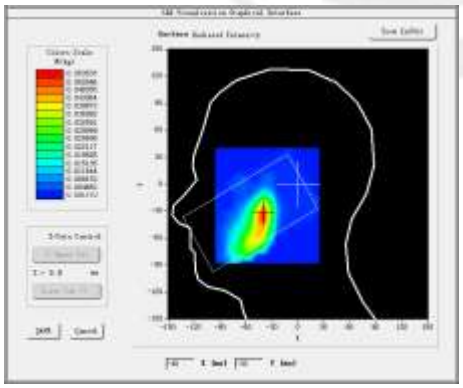
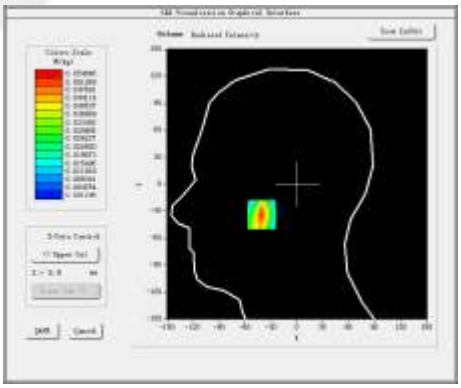
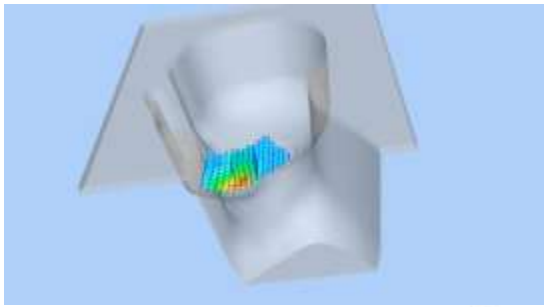
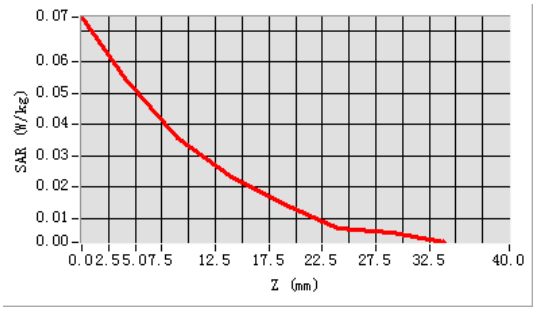
SURFACE SAR	VOLUME SAR
	
3D screen shot	**Z Axis Scan**
	

Plot 5: DUT: Smart phone; EUT Model: V328001MS8

Test Data	2016-01-14
Ambient Temperature(°C)	22.70
Liquid Temperature(°C)	22.30
Probe	SN 17/14 EP221
ConvF	4.71
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm, Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Right head
Device Position	Cheek
Band	WCDMA II
Channels	Low
Signal	WCDMA (Crest factor: 1.0)
Frequency (MHz)	1852.4
Relative permittivity (real part)	40.00
Conductivity (S/m)	1.40
Variation (%)	-2.15

Maximum location: X=-41.00, Y=-34.00
SAR Peak: 0.08 W/kg

SAR 10g (W/Kg)	0.026484
SAR 1g (W/Kg)	0.049666

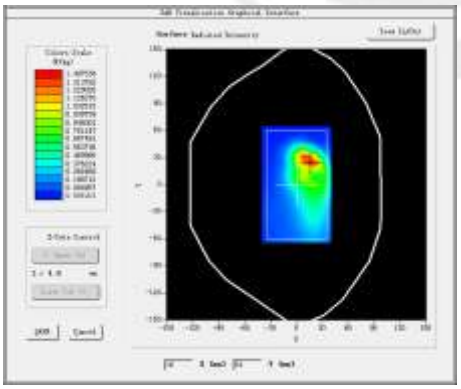
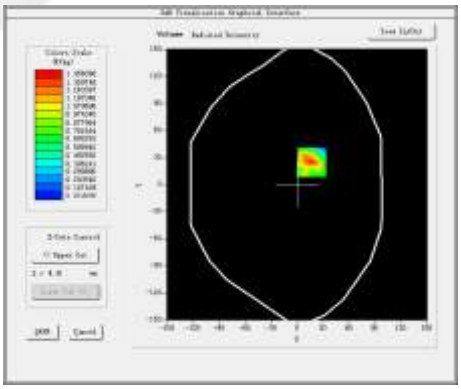
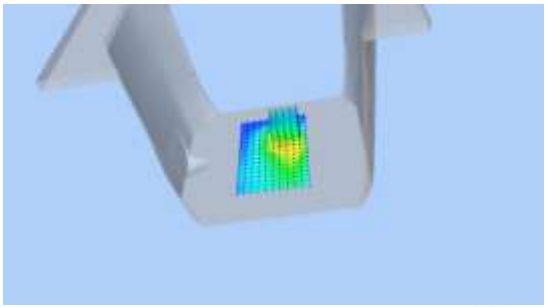
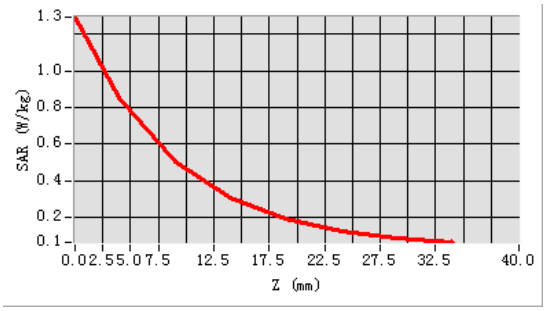
SURFACE SAR	VOLUME SAR
	
3D screen shot	**Z Axis Scan**
	

Plot 6: DUT: Smart phone; EUT Model: V328001MS8

Test Data	2016-01-14
Ambient Temperature(°C)	22.70
Liquid Temperature(°C)	22.30
Probe	SN 17/14 EP221
ConvF	4.85
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm, Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Validation plane
Device Position	Body Back
Band	WCDMA II
Channels	Low
Signal	WCDMA (Crest factor: 1.0)
Frequency (MHz)	1852.4
Relative permittivity (real part)	53.30
Conductivity (S/m)	1.52
Variation (%)	-0.38

Maximum location: X=17.00, Y=25.00
SAR Peak: 1.30 W/kg

SAR 10g (W/Kg)	0.410756
SAR 1g (W/Kg)	0.765913

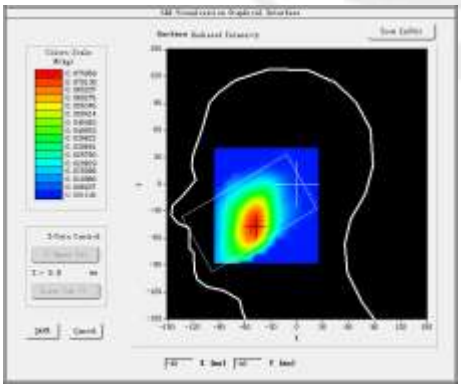
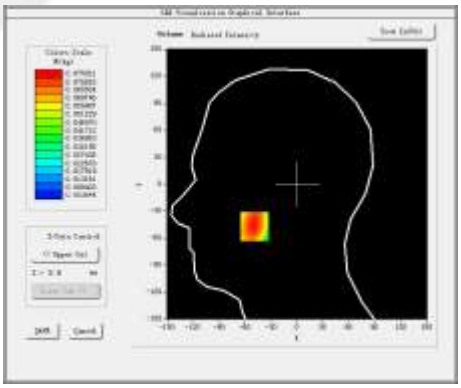
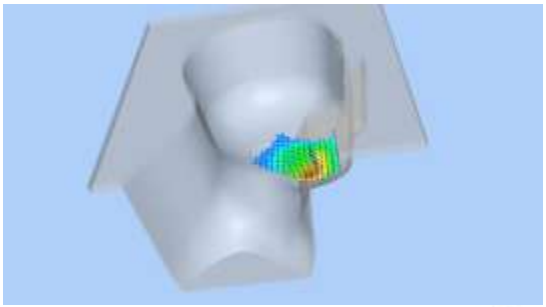
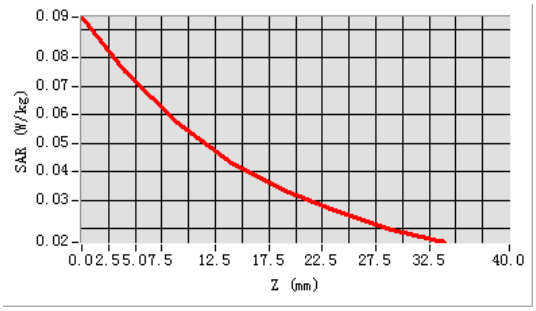
SURFACE SAR	VOLUME SAR
	
3D screen shot	**Z Axis Scan**
	

Plot 7: DUT: Smart phone; EUT Model: V328001MS8

Test Data	2016-01-14
Ambient Temperature(°C)	22.70
Liquid Temperature(°C)	22.30
Probe	SN 17/14 EP221
ConvF	4.83
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm, Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Left head
Device Position	Cheek
Band	WCDMA V
Channels	Middle
Signal	WCDMA (Crest factor: 1.0)
Frequency (MHz)	836.6
Relative permittivity (real part)	42.27
Conductivity (S/m)	0.91
Variation (%)	2.09

Maximum location: X=-49.00, Y=-47.00
SAR Peak: 0.10 W/kg

SAR 10g (W/Kg)	0.038427
SAR 1g (W/Kg)	0.073184

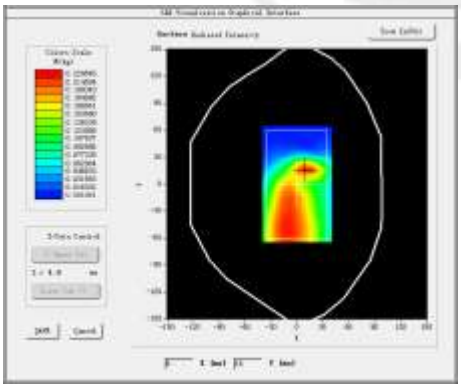
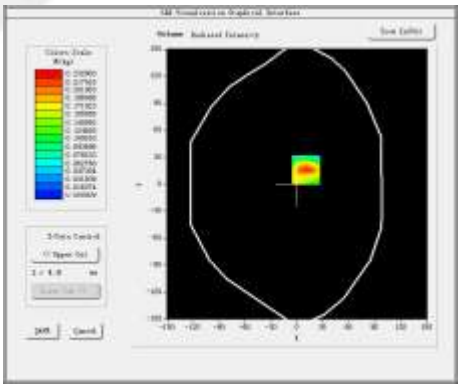
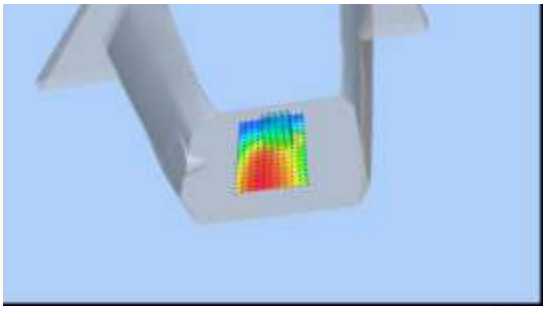
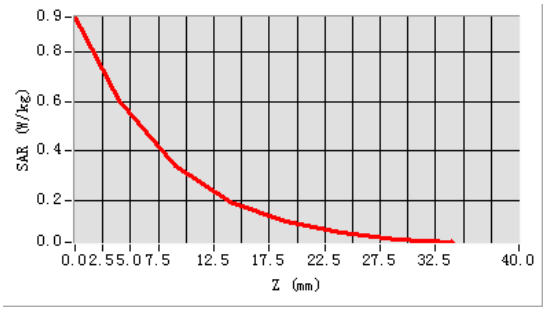
SURFACE SAR	VOLUME SAR
	
3D screen shot	**Z Axis Scan**
	

Plot 8: DUT: Smart phone; EUT Model: V328001MS8

Test Data	2016-01-14
Ambient Temperature(°C)	22.70
Liquid Temperature(°C)	22.30
Probe	SN 17/14 EP221
ConvF	5.02
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm, Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Validation plane
Device Position	Body Back
Band	WCDMA V
Channels	Middle
Signal	WCDMA (Crest factor: 1.0)
Frequency (MHz)	836.6
Relative permittivity (real part)	55.5
Conductivity (S/m)	0.96
Variation (%)	2.97

Maximum location: X=5.00, Y=22.00
SAR Peak: 0.91 W/kg

SAR 10g (W/Kg)	0.239848
SAR 1g (W/Kg)	0.593056

SURFACE SAR	VOLUME SAR
	
3D screen shot	**Z Axis Scan**
	

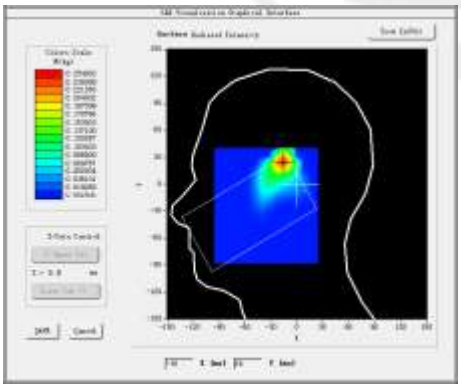
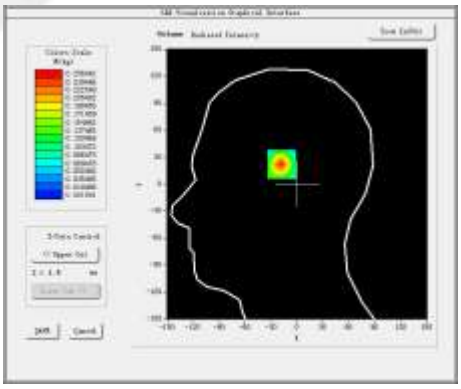
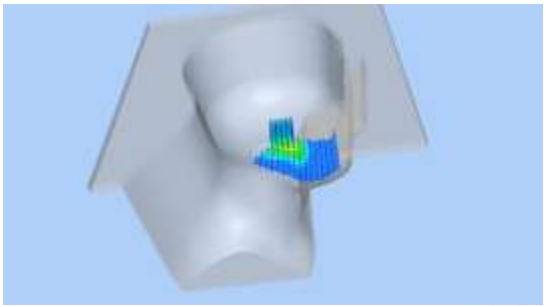
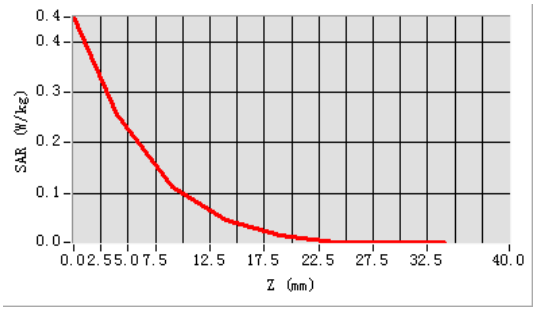
Plot 9: DUT: Smart phone; EUT Model: V328001MS8

Test Data	2016-01-14
Ambient Temperature(°C)	22.70
Liquid Temperature(°C)	22.30
Probe	SN 17/14 EP221
ConvF	4.11
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
ZoomScan	5x5x7,dx=5mm dy=5mm dz=4mm, Complete/ndx=5mm dy=5mm, h= 5.00 mm
Phantom	Left head
Device Position	Cheek
Band	IEEE 802.11b ISM
Channels	High
Signal	IEEE802.11b (Crest factor: 1.0)
Frequency (MHz)	2462
Relative permittivity (real part)	37.8
Conductivity (S/m)	1.86
Variation (%)	-1.67

Maximum location: X=-16.00, Y=25.00

SAR Peak: 0.45 W/kg

SAR 10g (W/Kg)	0.104726
SAR 1g (W/Kg)	0.239175

SURFACE SAR	VOLUME SAR
	
3D screen shot	**Z Axis Scan**
	

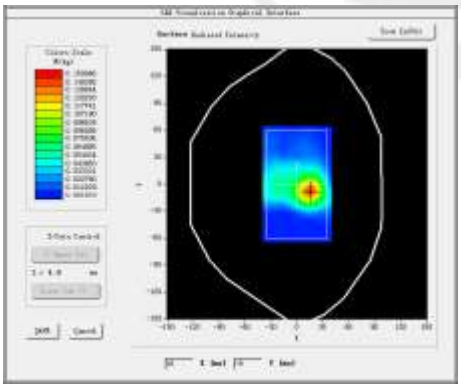
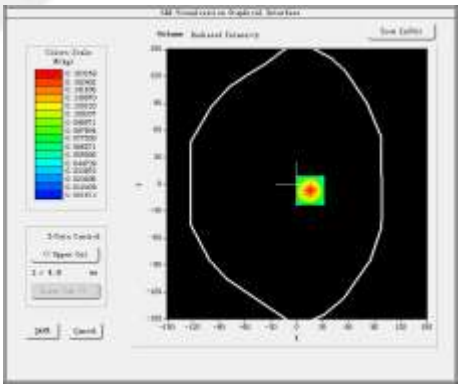
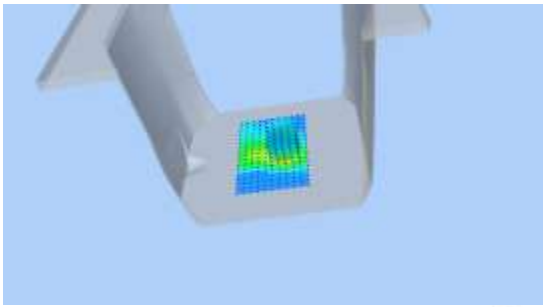
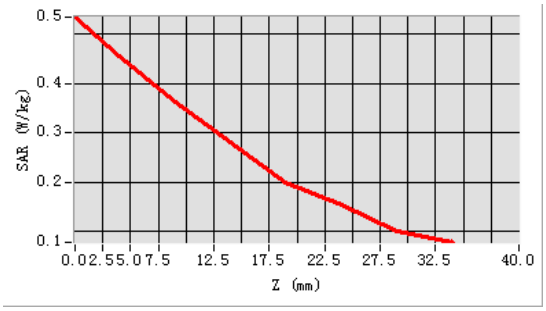
Plot 10: DUT: Smart phone; EUT Model: V328001MS8

Test Data	2016-01-14
Ambient Temperature(°C)	22.70
Liquid Temperature(°C)	22.30
Probe	SN 17/14 EP221
ConvF	4.25
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
ZoomScan	5x5x7,dx=5mm dy=5mm dz=4mm, Complete/ndx=5mm dy=5mm, h= 5.00 mm
Phantom	Validation plane
Device Position	Body Back
Band	IEEE 802.11b ISM
Channels	High
Signal	IEEE802.11b (Crest factor: 1.0)
Frequency (MHz)	2462
Relative permittivity (real part)	51.2
Conductivity (S/m)	1.95
Variation (%)	1.71

Maximum location: X=12.00, Y=-9.00

SAR Peak: 0.53 W/kg

SAR 10g (W/Kg)	0.168249
SAR 1g (W/Kg)	0.297138

SURFACE SAR	VOLUME SAR
	
3D screen shot	**Z Axis Scan**
	

Appendix C. Probe Calibration And Dipole Calibration Report

Refer the appendix Calibration Report.

※※※※※END OF THE REPORT※※※※※