FCC SAR TEST REPORT

Report No: STS1510002H01

Issued for

Joyplus International Enterprise Limited

805 Technology Building, Duoli Industrial Park, Shangmeilin, Meihua Road, Futian Dist., Shenzhen China

Product Name:	Tablet PC
Brand Name:	JOYPLUS
Model No.:	QI-10X
Series Model:	QI-116X, QI-120X
FCC ID:	Z4UQI-10X
Test Standard:	ANSI/IEEE Std. C95.1
	FCC 47 CFR Part 2 (2.1093)
	IEEE 1528: 2013
Max. SAR (1g):	Body:1.301 W/kg

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Test Report Certification

Applicant's name	:	Joyplus International Enterprise Limited
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Manufacture's Name	:	Shenzhen YunHui Digital Technology Co.,Ltd
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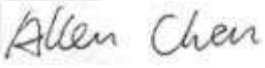
Product description

Product name	:	Tablet PC
Trademark	:	JOYPLUS
Model and/or type reference	:	QI-10X
Serial Model	:	QI-116X, QI-120X
Standards	:	ANSI/IEEE Std. C95.1-1992 FCC 47 CFR Part 2 (2.1093) IEEE 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.

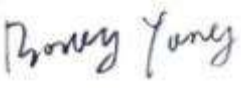
Date of Test	:	
Date (s) of performance of tests	:	24 Nov. 2015
Date of Issue	:	26 Nov. 2015
Test Result	:	**Pass**

Testing Engineer **:** 

(Allen Chen)

Technical Manager **:** 

(John Zou)

Authorized Signatory **:** 

(Bovey Yang)

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1. General Information

1.1 EUT Description

Equipment	Tablet PC	
Brand Name	JOYPLUS	
Model No.	QI-10X	
Serial Model	QI-116X, QI-120X	
FCC ID	Z4UQI-10X	
Model Difference	Only different in model name	
Adapter	Input: AC100-240V, 0.35A, 50/60 Hz Output: DC 5V, 2000mA	
Hardware Version	N/A	
Software Version	N/A	
Frequency Range	GSM 850: 824.2 ~ 848.8 MHz PCS1900: 1850.2 ~ 1909.8 MHz WCDMA V:826.4~846.6 MHz WLAN 802.11 b/g/n(HT20):2412~2462 MHz WLAN 802.11 n(HT40):2422~2452 MHz Bluetooth：2402~2480MHz	
Transmit Power(MAX):	GSM 850: 32.20dBm GSM 1900: 27.62dBm WCDMA V: 22.67dBm 802.11b: 9.01dBm	802.11g: 7.79dBm 802.11 n(HT20): 7.55dBm 802.11 n(HT40): 5.89dBm Bluetooth: 0.890dBm
Max. Reported SAR(1g):	Body: GSM 850: 0.198 W/kg GSM 1900: 1.301 W/kg WCDMA V: 0.300 W/kg	
Operating Mode:	GSM: GSM Voice, GPRS, EGPRS Class 12; WCDMA: RMC, HSDPA, HSUPA Release 6; WLAN: 802.11 b/g/n; 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	

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 Facility

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. C95.1-1992	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 v05r02	Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies
5	FCC KDB 865664 D01 v01r03	SAR Measurement 100 MHz to 6 GHz
6	FCC KDB 865664 D02 v01r01	RF Exposure Reporting
7	FCC KDB 941225 D01	SAR Measurement Procedures for 3G Devices
8	FCC KDB 248227 D01 Wi-Fi SAR v02	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:

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

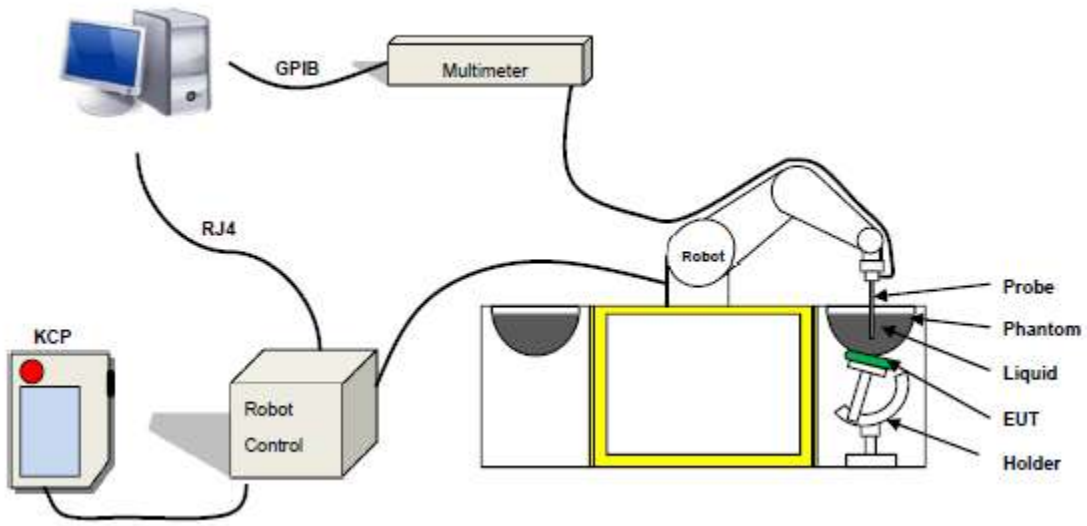
SAR is expressed in units of Watts per kilogram (W/kg) SAR measurement can be related to the electrical field in the tissue by

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

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.

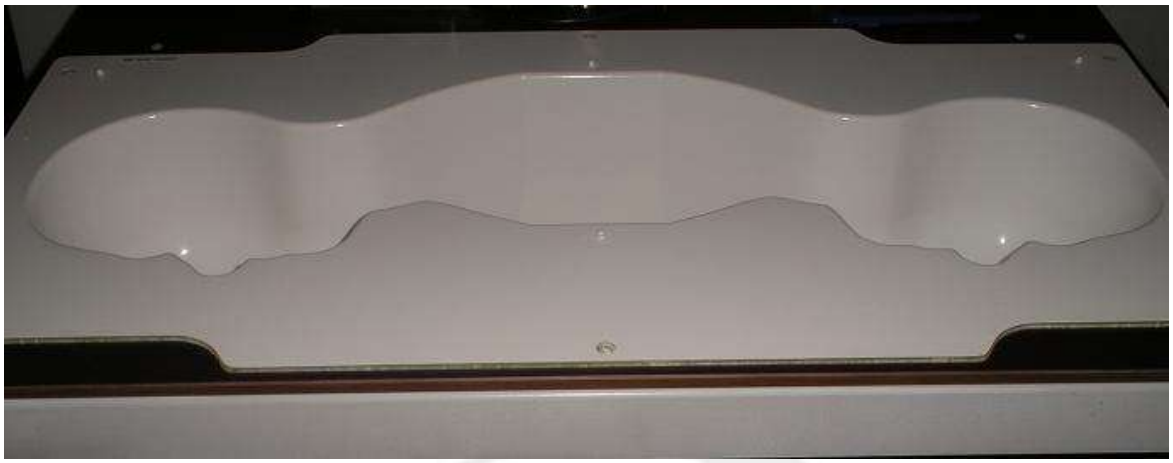
Angle between probe axis (evaluation axis) and suface normal line:less than 30°

Figure 1 – *Satimo COMOSAR Dosimetric E field Dipole*

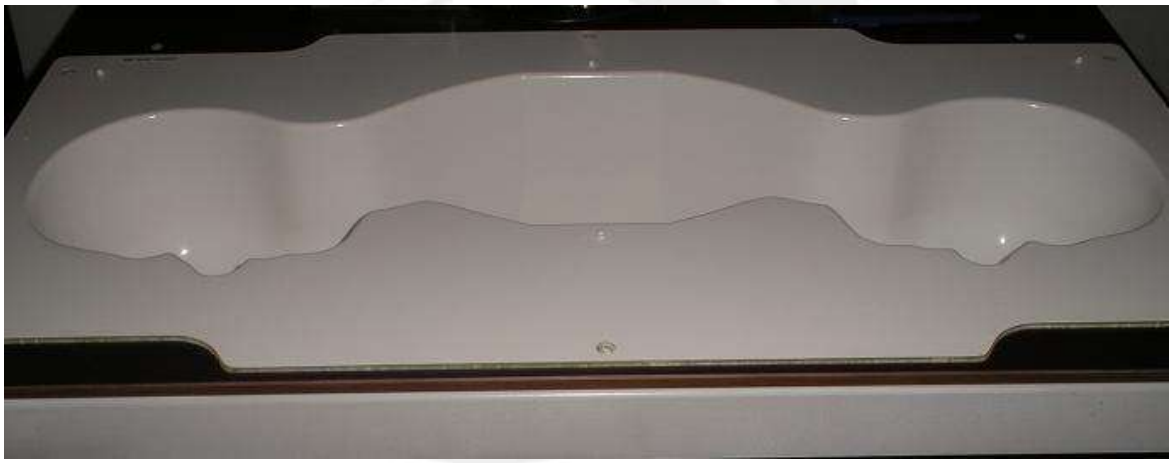
3.2.2 Phantom

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.

LIQUID MEASUREMENT RESULTS

Date: Nov 24, 2015 **Ambient condition:** Temperature 22.7°C **Relative humidity:** 49%

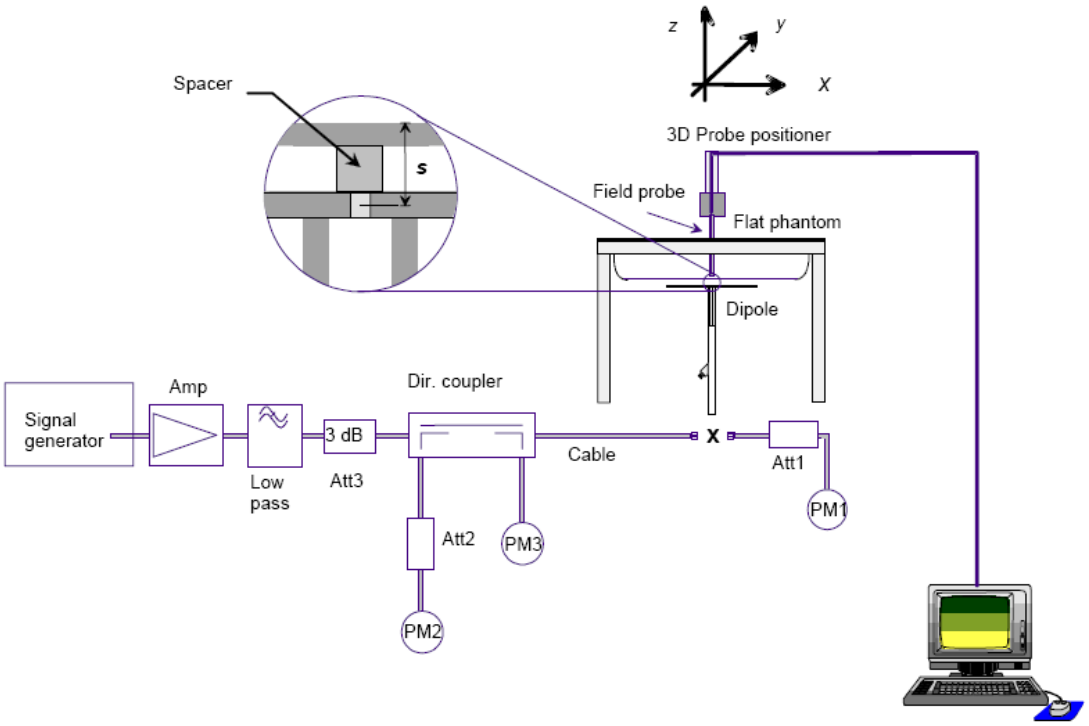
Body Simulating Liquid		Parameters	Target	Measured	Deviation[%]	Limited[%]
Frequency	Temp. [°C]					
835 MHz	22.30	Permitivity:	55.2	54.7	-0.91	± 5
		Conductivity:	0.97	0.98	1.03	± 5
1900 MHz	22.30	Permitivity:	53.3	52.31	-1.86	± 5
		Conductivity:	1.52	1.5	-1.32	± 5

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 system validation setup is shown as below.



5.2 Validation Result

Comparing to the original SAR value provided by SATIMO, the validation data should be within its specification of 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 Body	100	0.947	9.47	9.56	3.87	2015-11-24
1900 Body	100	3.987	39.87	39.8	4.33	2015-11-24

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

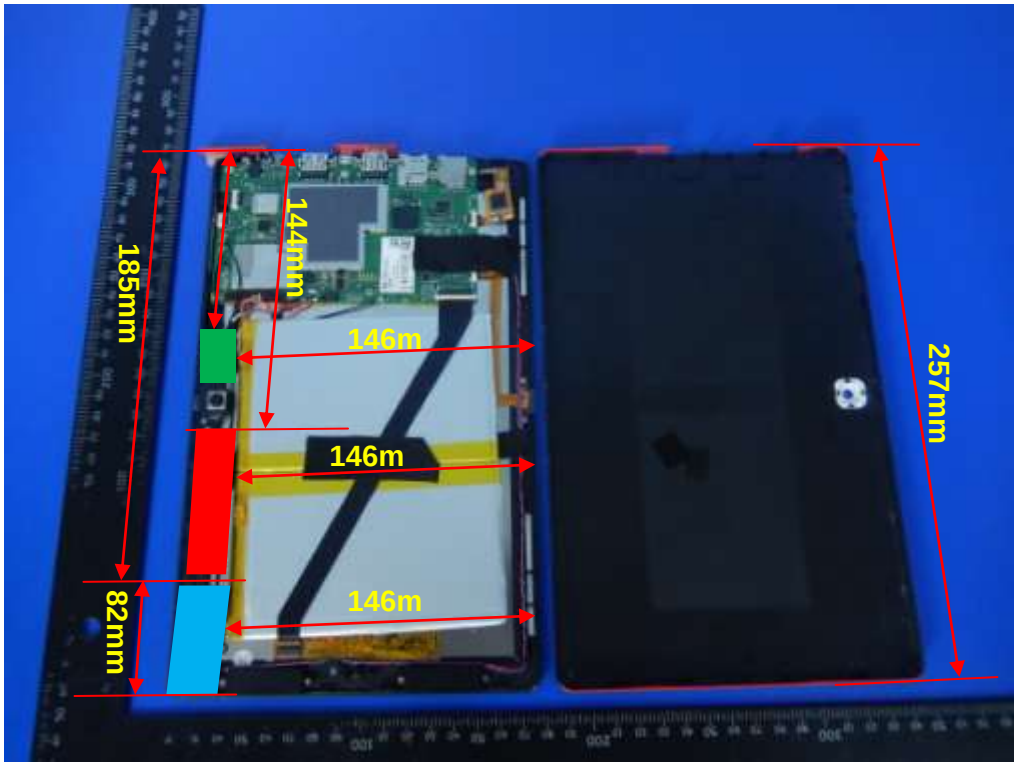
- Establish a call with the maximum output power with a base station simulator. The connection between the mobile and the base station simulator is established via air interface
- Measurement of the local E-field value at a fixed location. This value serves as a reference value for calculating a possible 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 D01v01r01 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 Tablet PC, support GSM mode and WCDMA mode.



WWAN Antenna

WIFI Antenna

BT Antenna

7.1 SAR TEST EXCLUSION CONSIDER TABLE

According with FCC KDB 447498 D01v05r02，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	＜5mm	185mm	＜5mm	146mm
	Yes	Yes	Yes	No	Yes	No
GSM1900	＜5mm	＜5mm	＜5mm	185mm	＜5mm	146mm
	Yes	Yes	Yes	No	Yes	No
WCDMA Band 5	＜5mm	＜5mm	＜5mm	185mm	＜5mm	146mm
	Yes	Yes	Yes	No	Yes	No
WLAN	＜5mm	＜5mm	82mm	144mm	＜5mm	146mm
	Yes	Yes	No	No	Yes	No
Bluetooth	＜5mm	＜5mm	＞25mm	＞25mm	＜5mm	146mm
	Yes	Yes	No	No	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 D01v05r02, 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 D01v05r02, 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 D01v05r02, 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 D01v05r02, 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 D02v02r02,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.

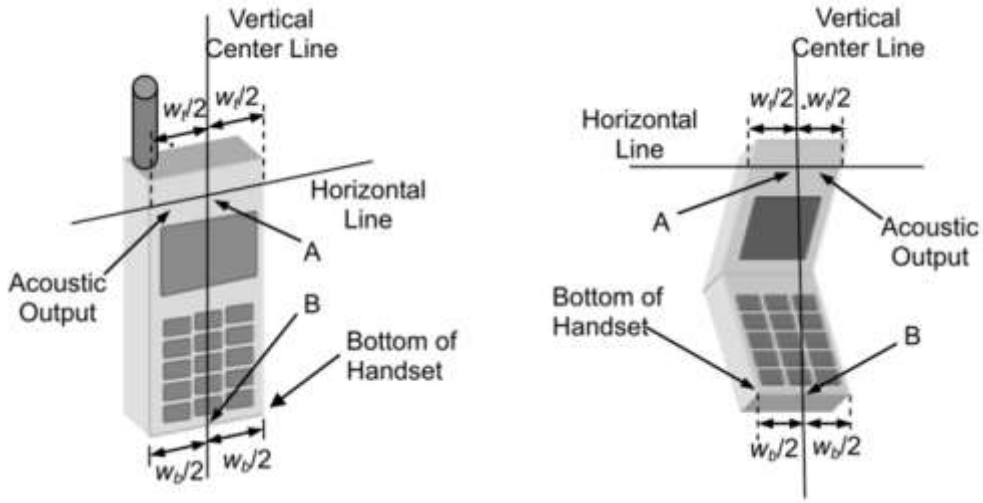
7. Per KDB 248227 D01v01r02,choose the highest output power channel to test SAR and determine futher SAR exclusion 8.for each frequency band ,testing at higher data rates and higher order modulations is not required when the maximum average output power for each of each of these configurations is less than 1/4db higher than those measured at the lower data rate than 11b mode ,thus the SAR can be excluded.

8. 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.



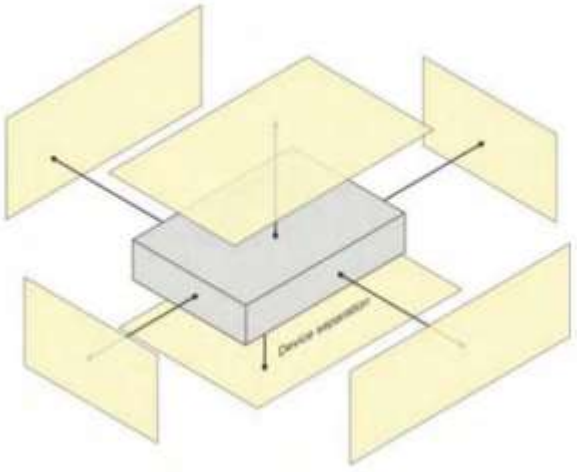
Cheek Position
1)To position the device with the vertical center line of the body of the device and the horizontal line crossing the center piece in a plane parallel to the sagittal plane of the phantom. While maintaining the device in this plane, align the vertical center line with the reference plane 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. 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: 2003.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
[redacted]									
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
Network Analyzer									
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					21.29%	21.10%	

10. Conducted Power Measurement

Test Result:

RF 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)	N/A	N/A	N/A	N/A	N/A	N/A
GPRS (GMSK, 1-Slot)	32.06	32.16	32.10	27.45	27.49	27.37
GPRS (GMSK, 2-Slot)	31.11	30.98	30.96	26.72	26.42	26.16
GPRS (GMSK, 3-Slot)	28.74	28.98	28.95	24.42	24.48	24.14
GPRS (GMSK, 4-Slot)	27.81	27.73	27.75	23.32	23.36	23.00
EGPRS(8PSK, 1-Slot)	32.01	32.20	31.94	27.30	27.62	27.40
EGPRS(8PSK, 2-Slot)	31.06	31.08	31.05	26.27	26.41	26.25
EGPRS(8PSK, 3-Slot)	28.79	29.00	29.02	24.50	24.55	24.13
EGPRS(8PSK, 4-Slot)	27.81	28.03	27.69	23.22	23.34	22.91

Remark: GPRS, CS4 coding scheme. EGPRS, MCS9 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

Fram- RF 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)	N/A	N/A	N/A	N/A	N/A	N/A
GPRS (GMSK, 1-Slot)	23.06	23.16	23.10	18.45	18.49	18.37
GPRS (GMSK, 2-Slot)	25.11	24.98	24.96	20.72	20.42	20.16
GPRS (GMSK, 3-Slot)	24.48	24.72	24.69	20.16	20.22	19.88
GPRS (GMSK, 4-Slot)	24.81	24.73	24.75	20.32	20.36	20.00
EGPRS(8PSK, 1-Slot)	23.01	23.20	22.94	18.30	18.62	18.40
EGPRS(8PSK, 2-Slot)	25.06	25.08	25.05	20.27	20.41	20.25
EGPRS(8PSK, 3-Slot)	24.53	24.74	24.76	20.24	20.29	19.87
EGPRS(8PSK, 4-Slot)	24.81	25.03	24.69	20.22	20.34	19.91

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 dB
Frame-averaged power = Burst averaged power (2 Tx Slots) - 6 dB
Frame-averaged power = Burst averaged power (3 Tx Slots) - 4.26 dB
Frame-averaged power = Burst averaged power (4 Tx Slots) - 3 dB

WCDMA

Band	WCDMA Band V		
Channel	4132	4182	4233
Frequency (MHz)	826.4	836.6	846.6
RMC 12.2Kbps	22.67	22.40	22.33
HSDPA Subtest-1	21.97	22.02	21.75
HSDPA Subtest-2	20.95	20.64	20.72
HSDPA Subtest-3	20.34	20.22	19.94
HSDPA Subtest-4	19.64	19.71	19.61
HSUPA Subtest-1	22.00	22.06	21.70
HSUPA Subtest-2	20.88	20.58	20.79
HSUPA Subtest-3	20.26	20.09	19.96
HSUPA Subtest-4	19.88	19.24	19.40
HSUPA Subtest-5	19.03	18.96	18.94

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	8.67
	6	2437	9.01
	11	2462	8.93
802.11g	1	2412	6.88
	6	2437	7.79
	11	2462	7.12
802.11n(HT-20)	1	2412	6.36
	6	2437	7.55
	11	2462	6.74
802.11n(HT-40)	3	2422	4.82
	6	2437	5.04
	9	2452	5.89

Justification for test configurations for WLAN per KDB publication 248227 D01Wi-Fi SAR v02:

1. Powermeasurements 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	0.890
	39	2441	0.558
	78	2480	-0.069
π/4-DQPSK(2Mbps)	0	2402	0.264
	39	2441	0.157
	78	2480	-0.524
8-DPSK(3Mbps)	0	2402	0.659
	39	2441	0.343
	78	2480	-0.259

BT 4.0

Mode	Channel Number	Frequency (MHz)	PEAK Power (dBm)
GFSK(1Mbps)	0	2402	-6.505
	19	2422	-6.772
	39	2442	-7.329

Mode	GSM850(AVG)	GSM1900(AVG)
GSM/PCS	N/A	N/A
GPRS (1 Slot)	31.5±1dBm	26.5±1dBm
GPRS (2 Slot)	30.5±1dBm	25.8±1dBm
GPRS (3 Slot)	28.0±1dBm	23.5±1dBm
GPRS (4 Slot)	27.0±1dBm	22.5±1dBm
EDGE (1 Slot)	31.5±1dBm	27.0±1dBm
EDGE (2 Slot)	30.5±1dBm	25.5±1dBm
EDGE (3 Slot)	28.5±1dBm	24.0±1dBm
EDGE (4 Slot)	27.5±1dBm	22.5±1dBm

Mode	WCDMA Band II(AVG)
RMC	22.0±1dBm
HSDPA Subtest-1	21.5±1dBm
HSDPA Subtest-2	20.0±1dBm
HSDPA Subtest-3	19.5±1dBm
HSDPA Subtest-4	19.0±1dBm
HSUPA Subtest-1	21.5±1dBm
HSUPA Subtest-2	20.0±1dBm
HSUPA Subtest-3	19.5±1dBm
HSUPA Subtest-4	19.0±1dBm
HSUPA Subtest-5	18.5±1dBm

Mode	WIFI(PEAK)
IEEE 802.11b	8.5±1dBm
IEEE 802.11g	7.0±1dBm
IEEE 802.11n HT20	7.0±1dBm
IEEE 802.11n HT40	5.0±1dBm

Mode	BT 3.0(PEAK)
GFSK	0±1dBm
π/4-DQPSK	0±1dBm
8DPSK	0±1dBm

Mode	BT 4.0(PEAK)
GFSK	-7.0±1dBm

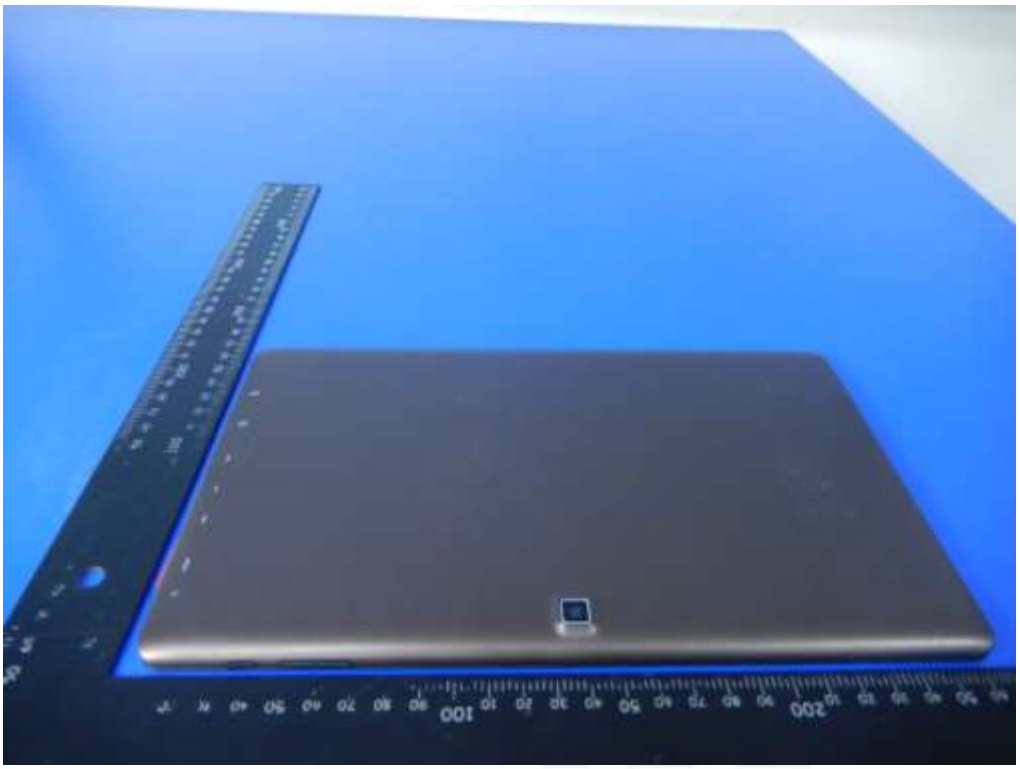
11. EUT And Test Setup Photo

11.1 EUT Photo

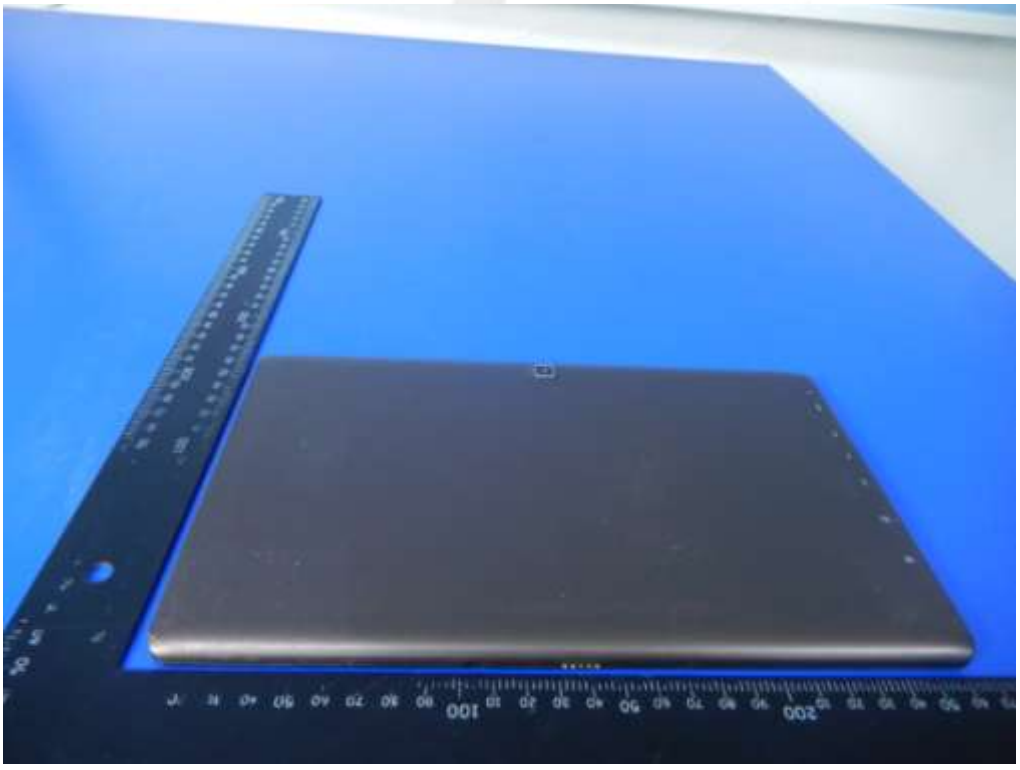
Front side

Back side

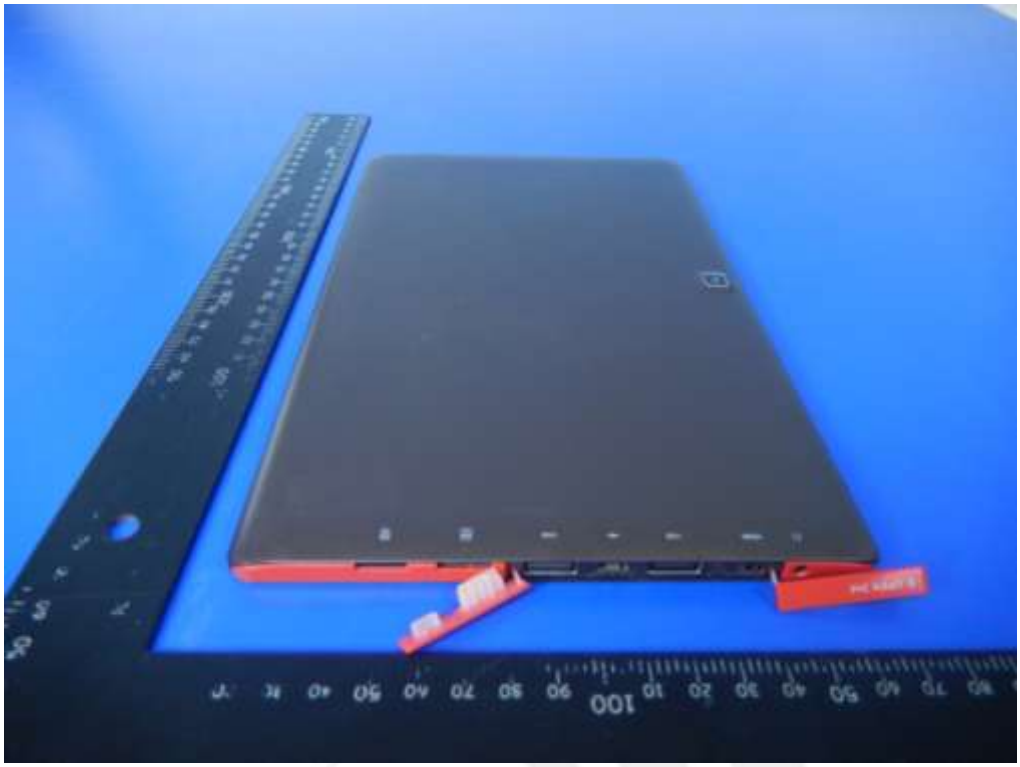
Top side



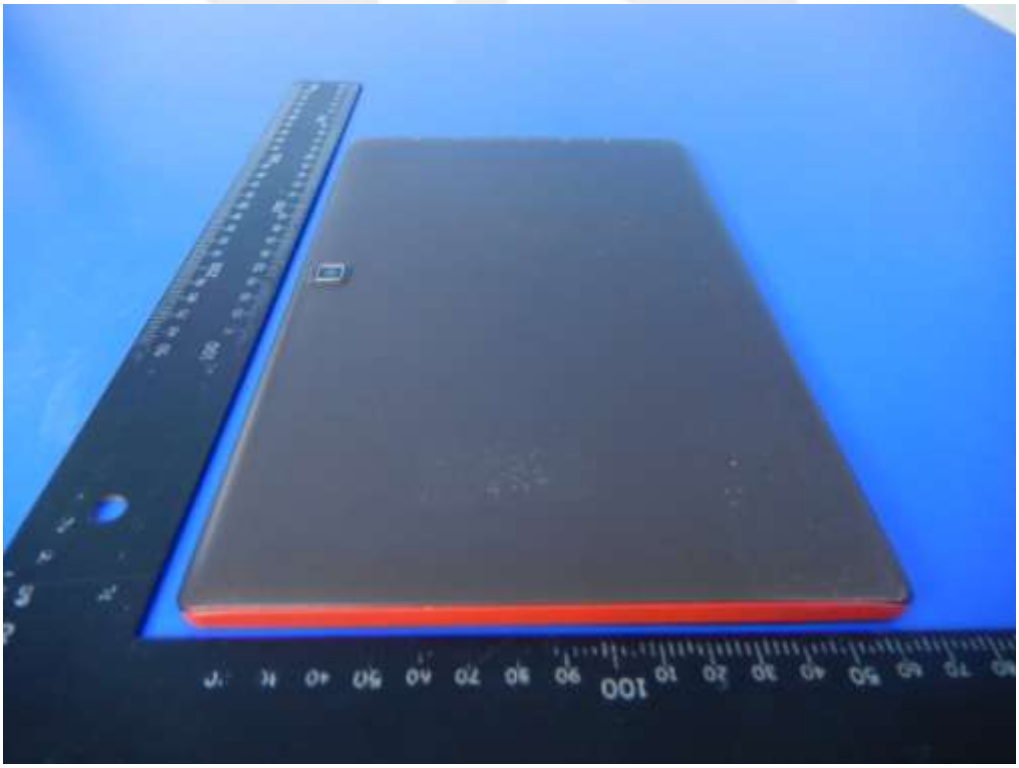
Bottom side



Left side



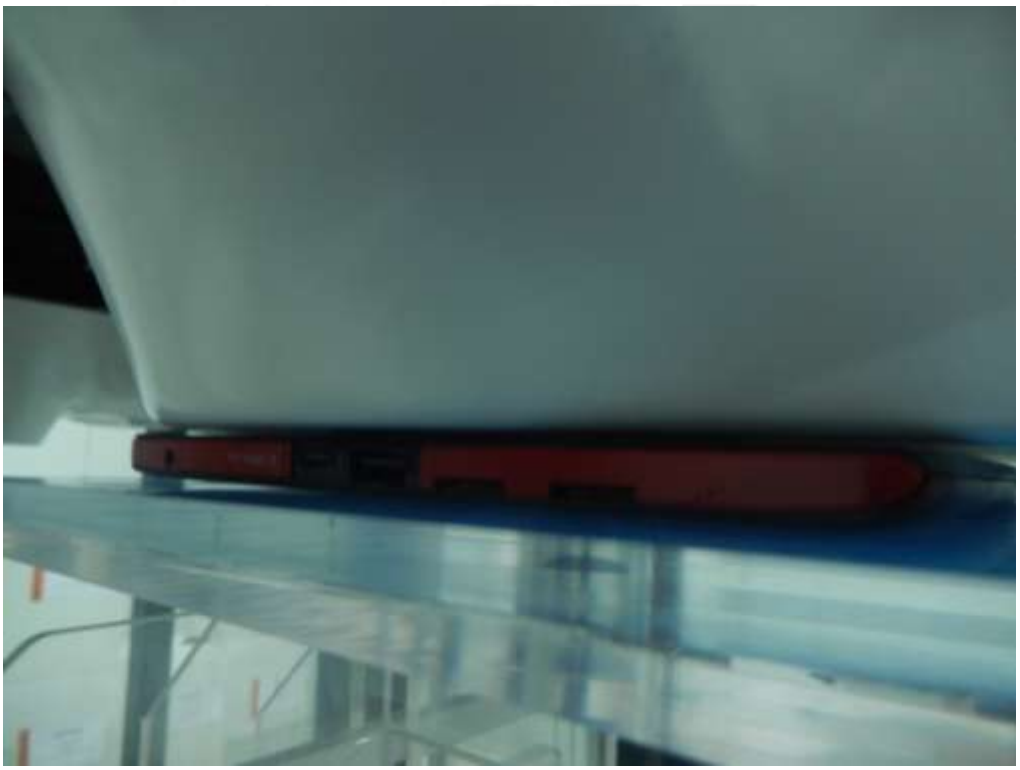
Right side



11.2 Setup Photo

Body Front side

Body Back side



Body Left side

Body Top side

Liquid depth (15 cm)

12. SAR Result Summary

12.1 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-2 Slot (hotspot)	Front side	CH 128	0.133	3.17	31.5	31.11	0.145	1
		Back side	CH 128	0.181	0.04	31.5	31.11	0.198	2
		Right side	CH 128	0.101	0.81	31.5	31.11	0.110	3
		Bottom side	CH 128	0.081	0.09	31.5	31.11	0.089	4
GSM 1900	GPRS Data-2 Slot (hotspot)	Front side	CH 512	0.970	-1.56	26.80	26.72	0.988	5
		Front side	CH 661	1.059	1.39	26.80	26.42	1.156	6
		Front side	CH 810	0.990	-1.00	26.80	26.16	1.147	7
		Back side	CH 512	0.981	1.17	26.80	26.72	0.999	9
		Back side	CH 661	1.041	-1.43	26.80	26.42	1.136	10
		Back side	CH 810	1.123	-0.31	26.80	26.16	1.301	11
		Right side	CH 810	0.361	-3.20	26.80	26.72	0.368	13
		Bottom side	CH 512	0.956	3.49	26.80	26.72	0.974	14
		Bottom side	CH 661	1.047	-1.61	26.80	26.42	1.143	15
		Bottom side	CH 810	1.082	-1.06	26.80	26.16	1.254	16
WCDMA II	RMC (body-worn and hotspot)	Front side	CH 4132	0.188	-0.29	23	22.67	0.203	18
		Back side	CH 4132	0.278	-0.22	23	22.67	0.300	19
		Right side	CH 4132	0.230	-0.26	23	22.67	0.248	20
		Bottom side	CH 4132	0.191	0.31	23	22.67	0.206	21

Note: 1. Two card slot can't work at the same time.
2. The test separation of all above table is 0mm.

Repeated 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 1900	GPRS Data-2 Slot (hotspot)	Front side	CH 810	0.976	-0.73	26.80	26.16	1.131	8
		Back side	CH 810	1.064	-2.50	26.80	26.16	1.233	12
		Bottom side	CH 810	1.101	-0.99	26.80	26.16	1.276	17

12.3 repeated SAR measurement

Band	Mode	Test Position	Channel	Original Measured SAR 1g(mW/g)	1 st Repeated SAR 1g	Ratio	Original Measured SAR 1g(mW/g)	2nd Repeated SAR 1g	Ratio
GSM 1900	GPRS Data-2 Slot (hotspot)	Front side	CH 810	0.990	0.976	1.01	-	-	-
		Back side	CH 810	1.123	1.064	1.06			
		Bottom side	CH 810	1.082	1.101	1.02			

Note:

1. Per KDB 865664 D01V01,for each frequency band ,repeated SAR measurement is required only when the measured SAR is≥0.8W/Kg.
2. Per KDB 865664 D01V01,if the ratio of largest to smallest SAR for the original and first repeated measurement is≤1.2and the measured SAR＜1.45W/Kg, only one repeated measurement is required.
3. Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is＞1.20 or when the original or repeated measurement is ≥ 1.45W/Kg
4. The ratio is the difference in percentage between original and repeated measured SAR.

Simultaneous Multi-band Transmission Evaluation:

Application Simultaneous Transmission information:

Position	Simultaneous state
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 v05, 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 / 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	Body	1	1.26	10	2.402	0.026
WIFI	Body	9.5	8.91	10	2.437	0.186

Simultaneous Mode	Position	Mode	Max. 1-g SAR (W/kg)	1-g Sum SAR (W/kg)
GSM + WIFI	Body-worn	GSM Data	1.301	1.487
		WIFI	0.186	
GSM + Bluetooth	Body-worn	GSM Data	1.301	1.327
		Bluetooth	0.026	
WCDMA RMC+ WIFI	Body-worn	WCDMA RMC	0.300	0.386
		WIFI	0.186	
WCDMA RMC+ Bluetooth	Body-worn	WCDMA RMC	0.300	0.326
		Bluetooth	0.026	

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	2015.08.31
1900MHz Dipole	SATIMO	SID1900	SN 30/14 DIP1G900-333	2014.09.01	2015.08.31
E-Field Probe	SATIMO	SSE5	SN 17/14 EP221	2014.09.01	2015.08.31
Antenna	SATIMO	ANTA3	SN 07/13 ZNTA52	2014.09.01	2015.08.31
Waveguide	SATIMO	SWG5500	SN 13/14 WGA32	2014.09.01	2015.08.31
Phantom1	SATIMO	SAM	SN 32/14 SAM115	2014.09.01	2015.08.31
Phantom2	SATIMO	SAM	SN 32/14 SAM116	2014.09.01	2015.08.31
SAR TEST BENCH	SATIMO	GSM and WCDMA mobile phone POSITIONNING SYSTEM	SN 32/14 MSH97	2014.09.01	2015.08.31
SAR TEST BENCH	SATIMO	LAPTOP POSITIONNING SYSTEM	SN 32/14 LSH29	2014.09.01	2015.08.31
Dielectric Probe Kit	SATIMO	SCLMP	SN 32/14 OCPG52	2014.09.01	2015.08.31
Multi Meter	Keithley	Multi Meter 2000	4050073	2014.11.20	2015.11.19
Signal Generator	Agilent	N5182A	MY50140530	2014.11.18	2015.11.17
Power Meter	R&S	NRP	100510	2014.10.25	2015.10.24
Power Sensor	R&S	NRP-Z11	101919	2014.10.24	2015.10.23
Power Sensor	Anritsu	MA2411B	1027253	2014.10.10	2015.10.09
Power Sensor	R&S	NRP-Z21	103971	2014.12.12	2015.12.11
Network Analyzer	Agilent	5071C	EMY46103472	2014.12.12	2015.12.11
Attenuator 1	PE	PE7005-10	N/A	2014.10.25	2015.10.24
Attenuator 2	PE	PE7005-3	N/A	2014.10.24	2015.10.23
Attenuator 3	Woken	WK0602-XX	N/A	2014.12.12	2015.12.11
Dual Directional Coupler	Agilent	778D	50422	2014.11.18	2015.11.17

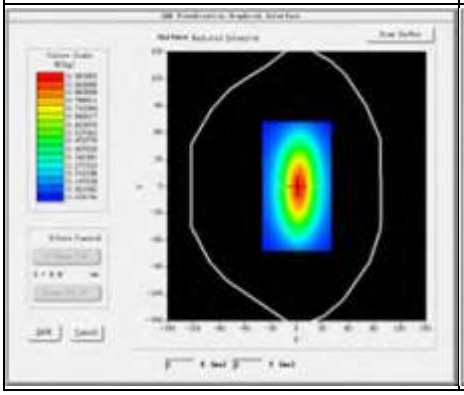
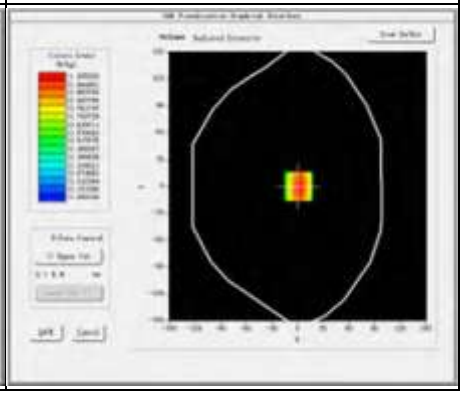
Appendix A. System Validation Plots

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: 2015-11-24
Measurement duration: 14 minutes 13 seconds

Experimental conditions.

Probe	
Phantom	Validation plane
Device Position	-
Band	835MHz
Channels	-
Signal	CW
Frequency (MHz)	835MHz
Relative permittivity (real part)	54.70
Relative permittivity	21.408187
Conductivity (S/m)	0.98
Power drift (%)	0.090000
Ambient Temperature:	22.7°C
Liquid Temperature:	22.3°C
ConvF:	5.02
Crest factor:	1:1

SURFACE SAR	VOLUME SAR
	

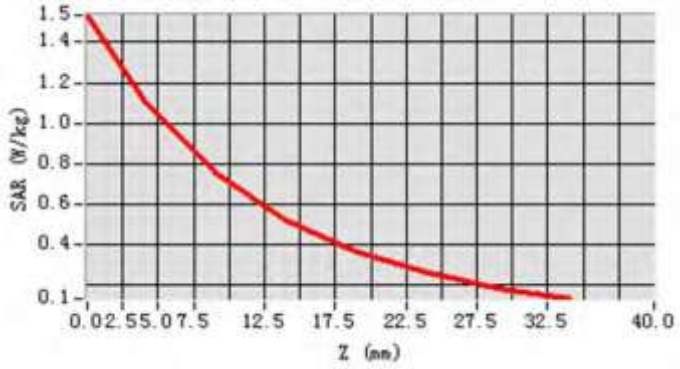
Maximum location: X=1.00, Y=0.00

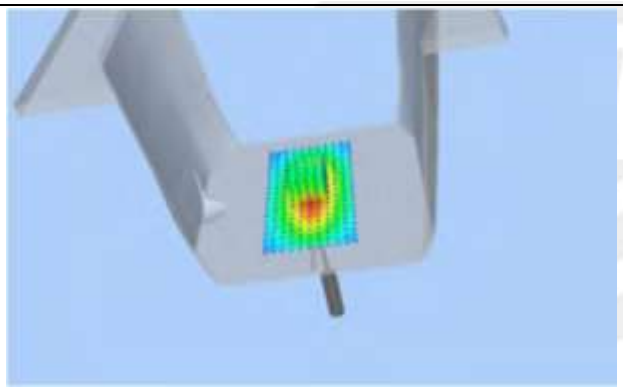
SAR Peak: 1.48 W/kg

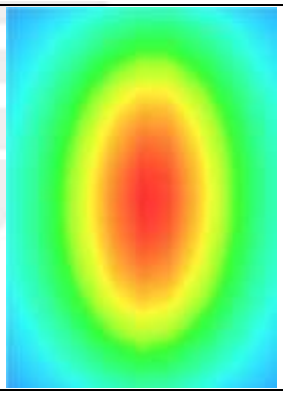
SAR 10g (W/Kg)	0.693221
SAR 1g (W/Kg)	0.946539

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





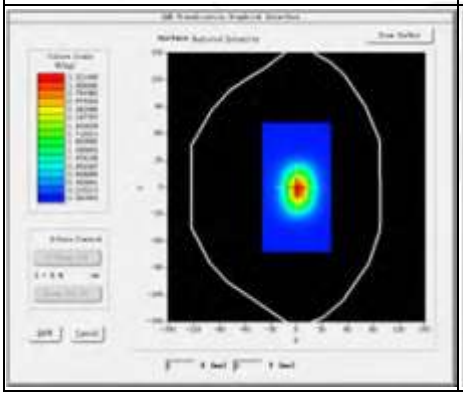
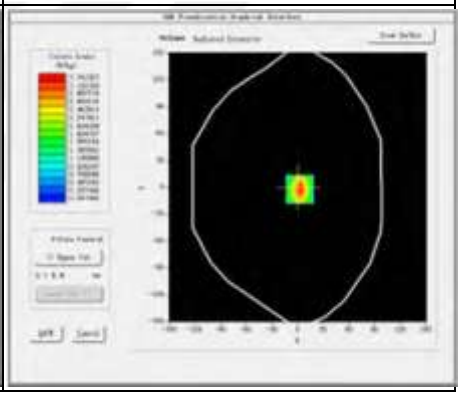


System Performance Check Data (1900MHz Body)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 2015-11-24
Measurement duration: 14 minutes 46 seconds

Experimental conditions.

Device Position	-
Band	1900MHz
Channels	-
Signal	CW
Frequency (MHz)	1900
Relative permittivity (real part)	52.31
Relative permittivity	12.87531
Conductivity (S/m)	1.50
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

SURFACE SAR	VOLUME SAR
	

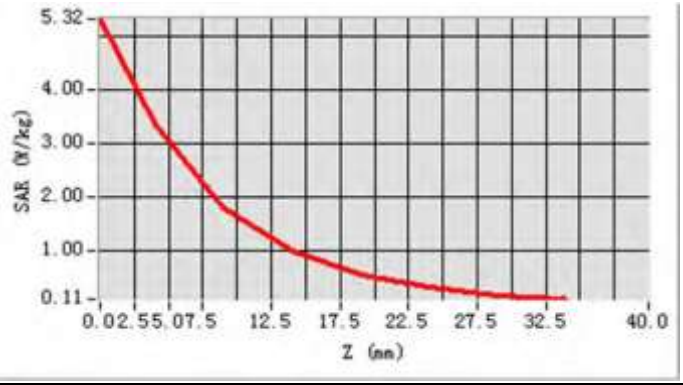
Maximum location: X=2.00, Y=2.00

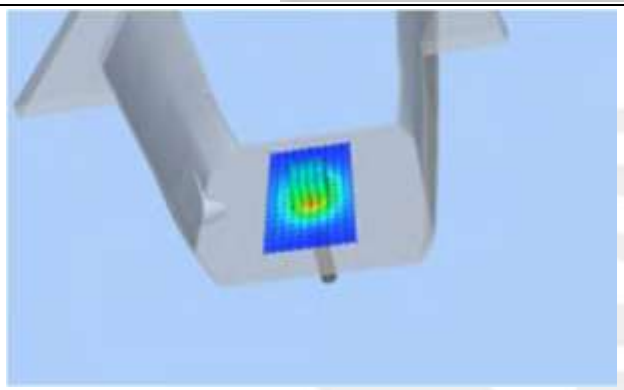
SAR Peak: 5.27 W/kg

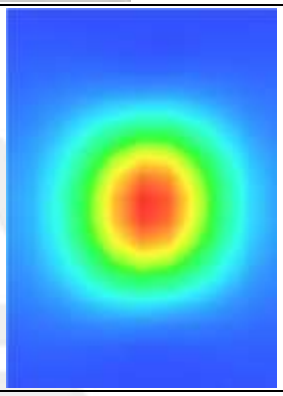
SAR 10g (W/Kg)	2.124122
SAR 1g (W/Kg)	3.986824

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







Appendix B. SAR Test Plots

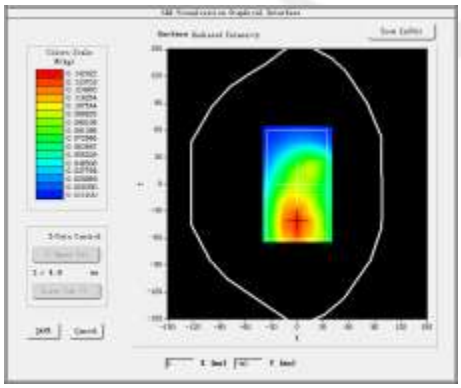
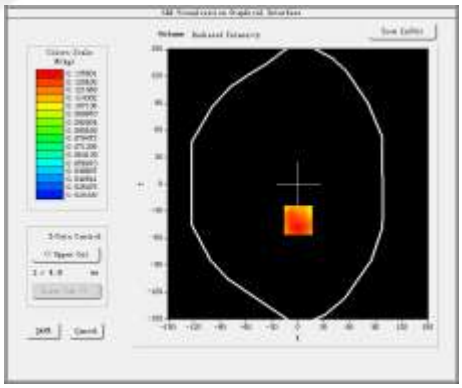
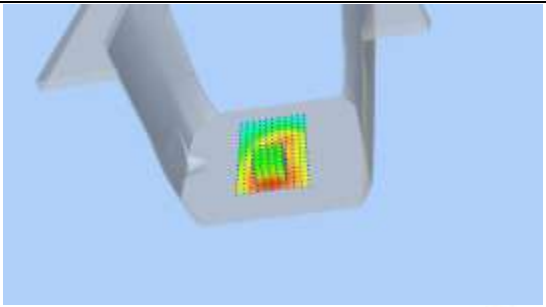
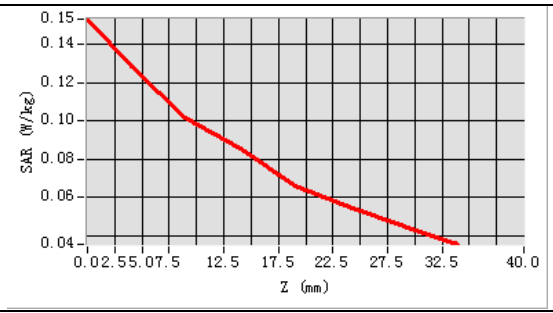
Plot 1: DUT: Tablet PC; EUT Model: QI-10X

Test Data	2015-11-24
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 Front
Band	GPRS 850
Channels	Low
Signal	Duty Cycle:4.00 (Crest factor:4.0)
Frequency (MHz)	824.2
Relative permittivity (real part)	55.5
Conductivity (S/m)	0.96
Variation (%)	3.17

Maximum location: X=0.00, Y=-40.00

SAR Peak: 0.18 W/kg

SAR 10g (W/Kg)	0.099601
SAR 1g (W/Kg)	0.132663

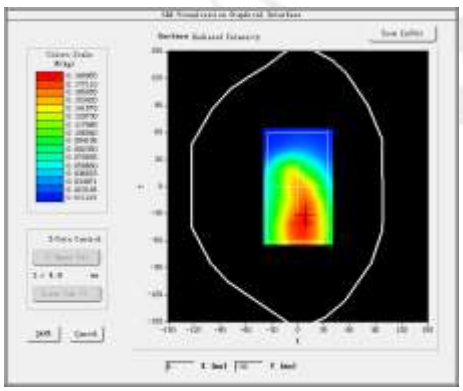
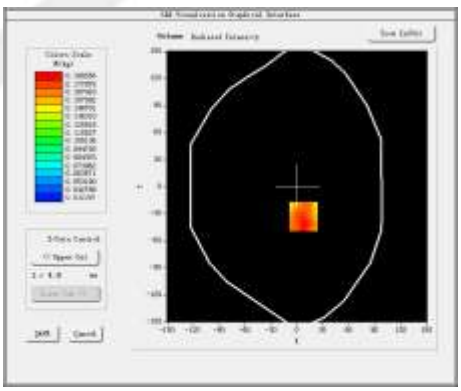
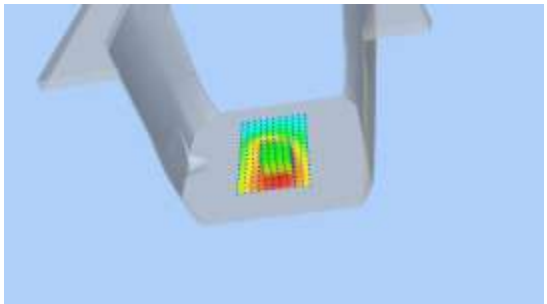
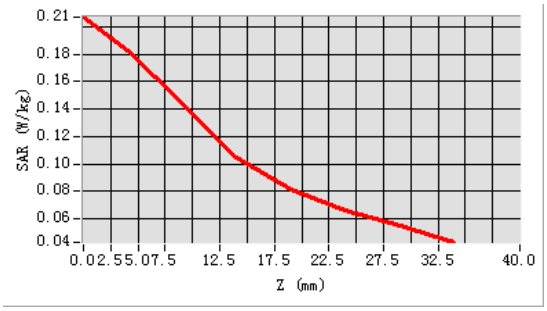
SURFACE SAR	VOLUME SAR
	
3D screen shot	**Z Axis Scan**
	

Plot 2: DUT: Tablet PC; EUT Model: QI-10X

Test Data	2015-11-24
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	Low
Signal	Duty Cycle:4.00 (Crest factor:4.0)
Frequency (MHz)	824.2
Relative permittivity (real part)	55.5
Conductivity (S/m)	0.96
Variation (%)	0.04

Maximum location: X=7.00, Y=-33.00
SAR Peak: 0.24 W/kg

SAR 10g (W/Kg)	0.131719
SAR 1g (W/Kg)	0.180711

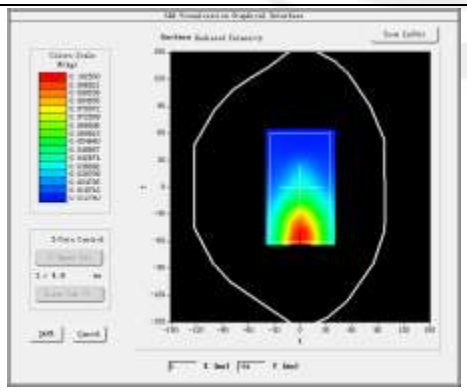
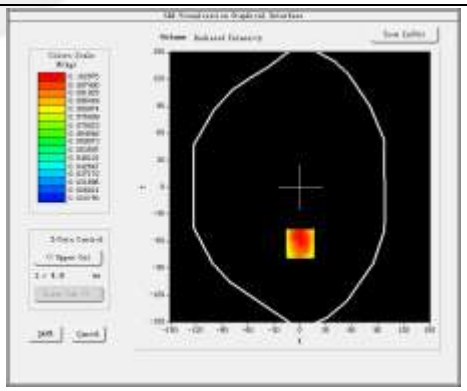
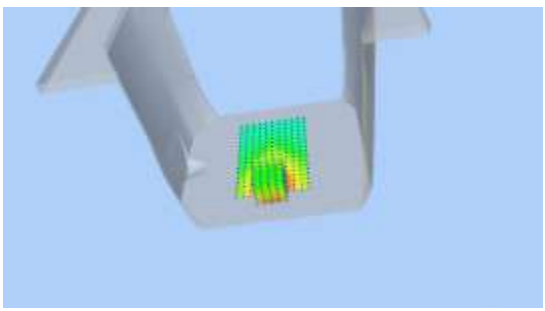
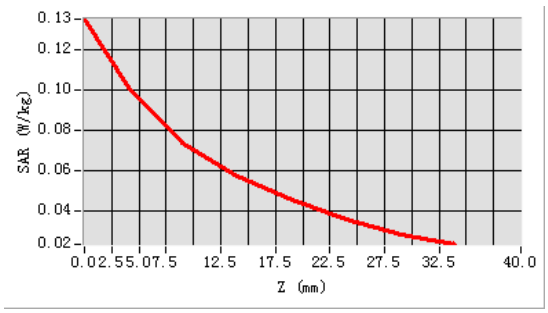
SURFACE SAR	VOLUME SAR
	
3D screen shot	**Z Axis Scan**
	

Plot 3: DUT: Tablet PC; EUT Model: QI-10X

Test Data	2015-11-24
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 right side
Band	GPRS 850
Channels	Low
Signal	Duty Cycle:4.00 (Crest factor:4.0)
Frequency (MHz)	824.2
Relative permittivity (real part)	55.5
Conductivity (S/m)	0.96
Variation (%)	0.81

Maximum location: X=0.00, Y=-63.00
SAR Peak: 0.14 W/kg

SAR 10g (W/Kg)	0.071438
SAR 1g (W/Kg)	0.100937

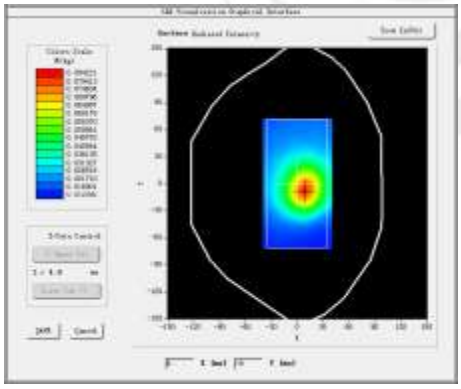
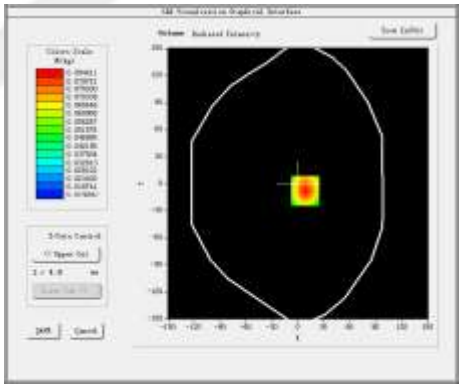
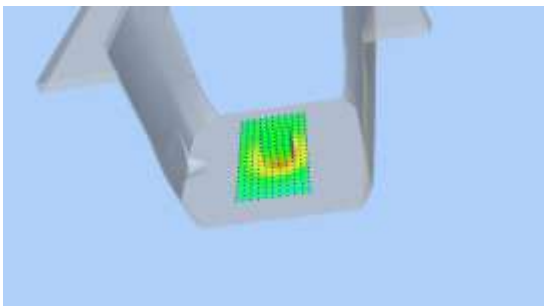
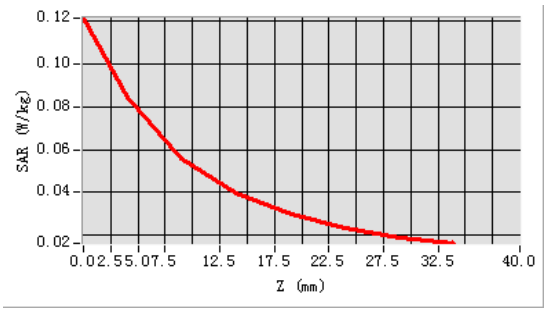
SURFACE SAR	VOLUME SAR
	
3D screen shot	**Z Axis Scan**
	

Plot 4: DUT: Tablet PC; EUT Model: QI-10X

Test Data	2015-11-24
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 bottom side
Band	GPRS 850
Channels	Low
Signal	Duty Cycle:4.00 (Crest factor:4.0)
Frequency (MHz)	824.2
Relative permittivity (real part)	55.5
Conductivity (S/m)	0.96
Variation (%)	-0.09

Maximum location: X=8.00, Y=-8.00
SAR Peak: 0.12 W/kg

SAR 10g (W/Kg)	0.052568
SAR 1g (W/Kg)	0.081135

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

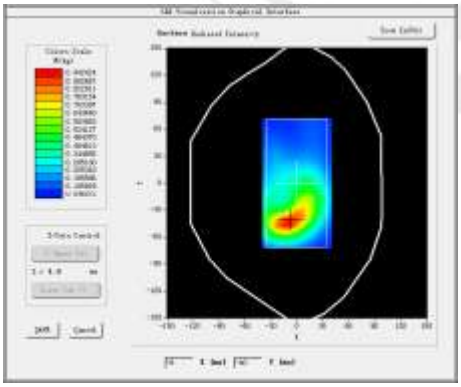
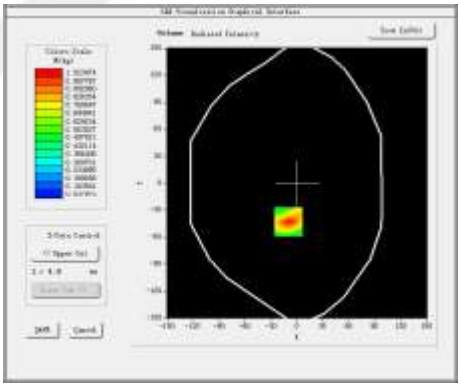
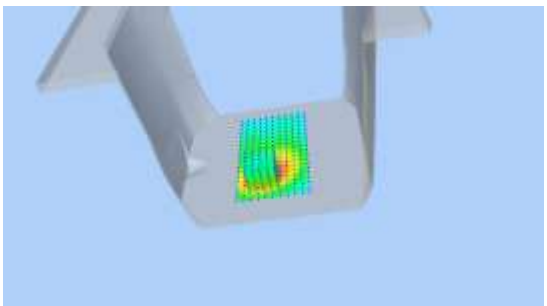
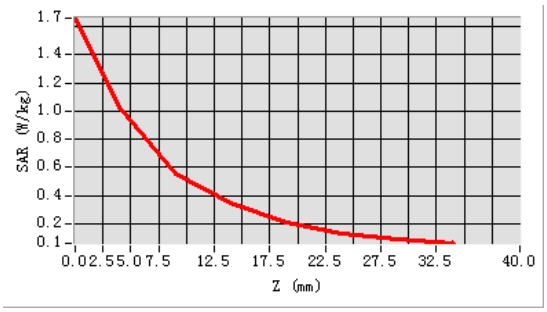
Plot 5: DUT: Tablet PC; EUT Model: QI-10X

Test Data	2015-11-24
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 front
Band	GPRS 1900
Channels	Low
Signal	Duty Cycle:4.00 (Crest factor:4.0)
Frequency (MHz)	1850.2
Relative permittivity (real part)	51.68
Conductivity (S/m)	1.51
Variation (%)	-1.56

Maximum location: X=-10.00, Y=-43.00

SAR Peak:1.67 W/kg

SAR 10g (W/Kg)	0.525011
SAR 1g (W/Kg)	0.970038

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

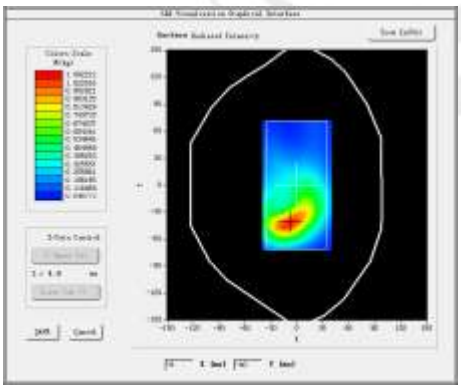
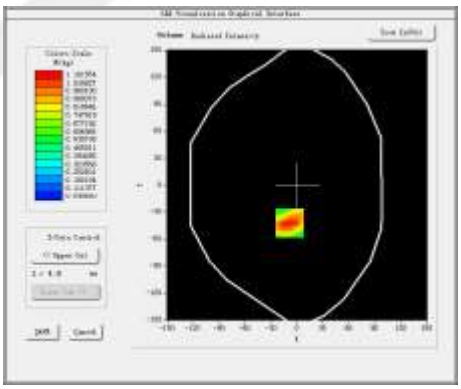
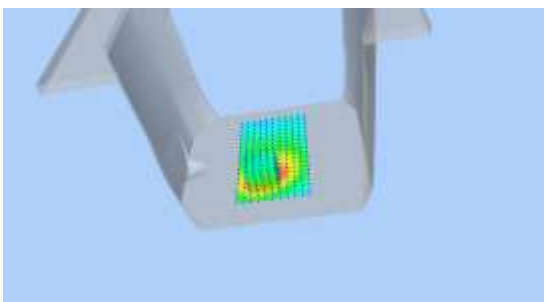
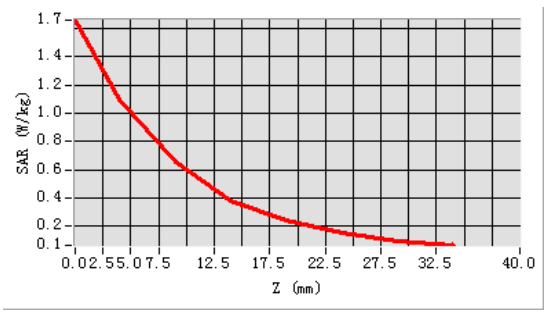
Plot 6: DUT: Tablet PC; EUT Model: QI-10X

Test Data	2015-11-24
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 front
Band	GPRS 1900
Channels	Middle
Signal	Duty Cycle:4.00 (Crest factor:4.0)
Frequency (MHz)	1880.0
Relative permittivity (real part)	51.68
Conductivity (S/m)	1.51
Variation (%)	1.39

Maximum location: X=-9.00, Y=-42.00

SAR Peak:1.72 W/kg

SAR 10g (W/Kg)	0.597929
SAR 1g (W/Kg)	1.058575

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

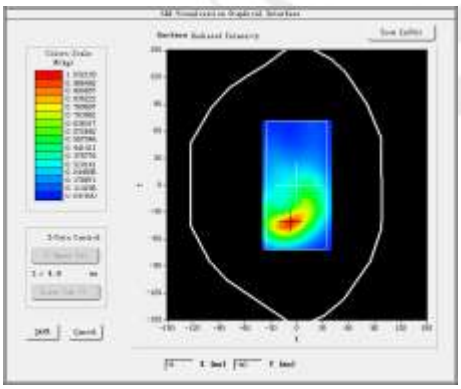
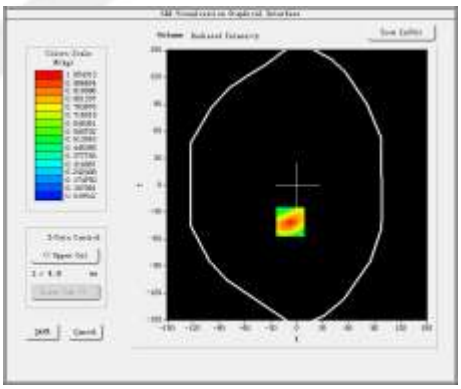
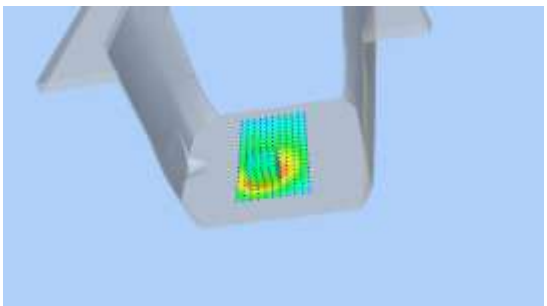
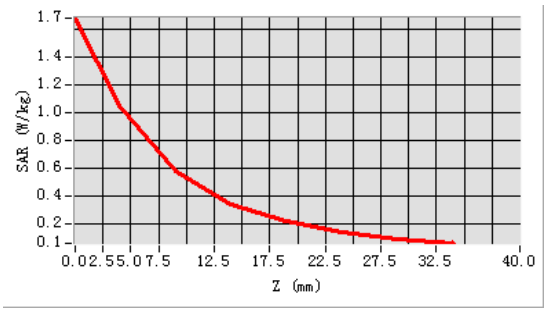
Plot 7: DUT: Tablet PC; EUT Model: QI-10X

Test Data	2015-11-24
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 front
Band	GPRS 1900
Channels	High
Signal	Duty Cycle:4.00 (Crest factor:4.0)
Frequency (MHz)	1908.8
Relative permittivity (real part)	51.68
Conductivity (S/m)	1.51
Variation (%)	-1.00

Maximum location: X=-8.00, Y=-41.00

SAR Peak:1.67 W/kg

SAR 10g (W/Kg)	0.545281
SAR 1g (W/Kg)	0.989571

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

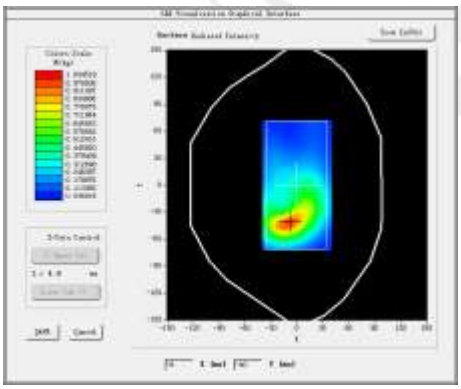
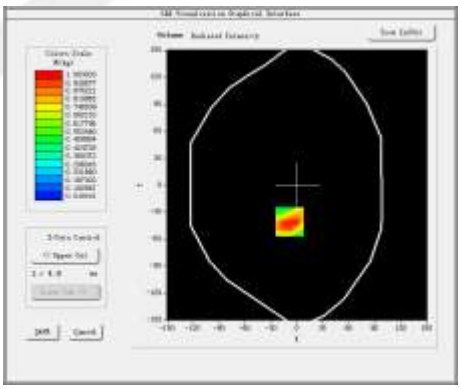
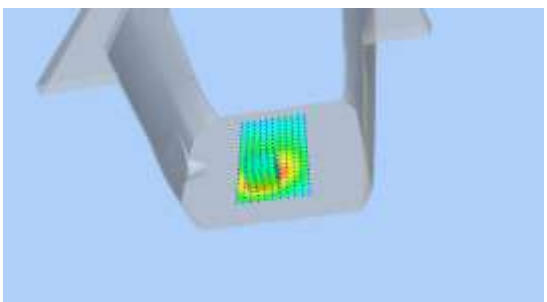
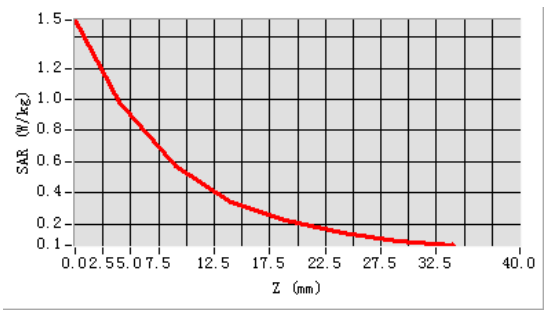
Plot 8: DUT: Tablet PC; EUT Model: QI-10X

Test Data	2015-11-24
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 front-repeated
Band	GPRS 1900
Channels	High
Signal	Duty Cycle:4.00 (Crest factor:4.0)
Frequency (MHz)	1908.8
Relative permittivity (real part)	51.68
Conductivity (S/m)	1.51
Variation (%)	-0.73

Maximum location: X=-9.00, Y=-41.00

SAR Peak:1.62 W/kg

SAR 10g (W/Kg)	0.541625
SAR 1g (W/Kg)	0.975879

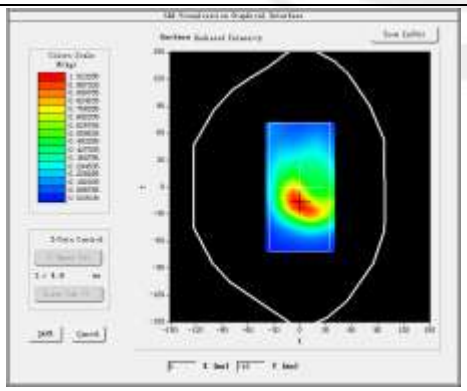
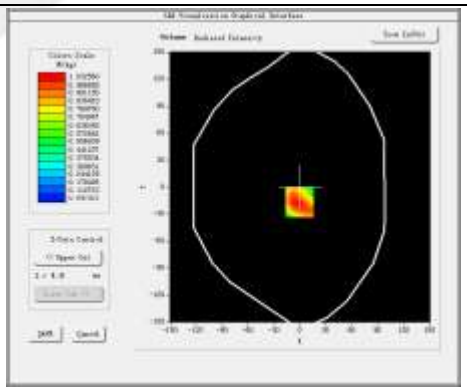
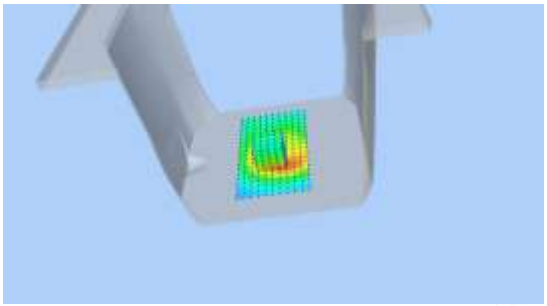
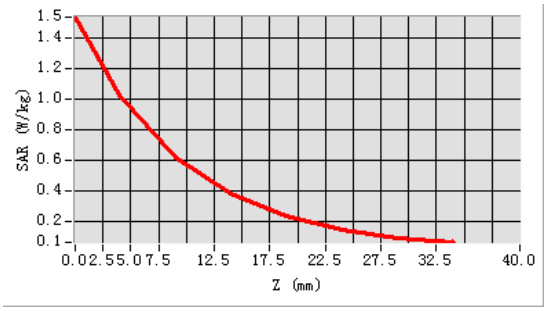
SURFACE SAR	VOLUME SAR
	
3D screen shot	**Z Axis Scan**
	

Plot 9: DUT: Tablet PC; EUT Model: QI-10X

Test Data	2015-11-24
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 Behind
Band	GPRS 1900
Channels	Low
Signal	Duty Cycle:4.00 (Crest factor:4.0)
Frequency (MHz)	1850.2
Relative permittivity (real part)	51.68
Conductivity (S/m)	1.51
Variation (%)	1.17

Maximum location: X=-1.00, Y=-17.00
SAR Peak: 1.56 W/kg

SAR 10g (W/Kg)	0.589324
SAR 1g (W/Kg)	0.981471

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

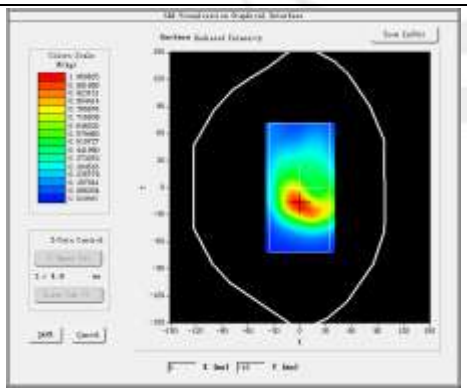
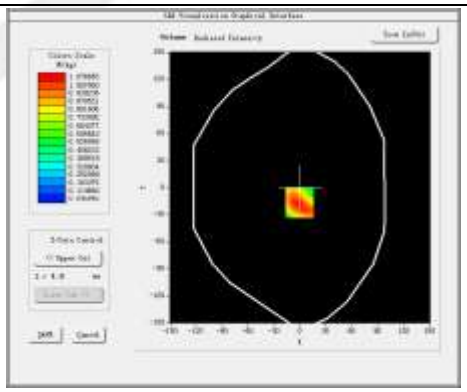
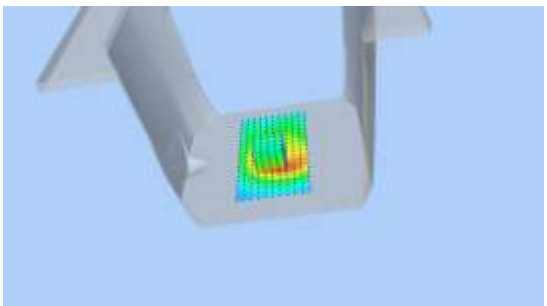
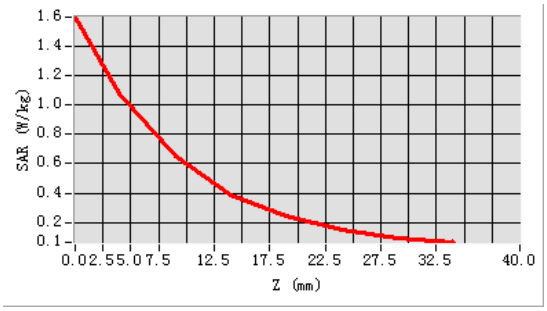
Plot 10: DUT: Tablet PC; EUT Model: QI-10X

Test Data	2015-11-24
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 Behind
Band	GPRS 1900
Channels	Middle
Signal	Duty Cycle:4.00 (Crest factor:4.0)
Frequency (MHz)	1880.0
Relative permittivity (real part)	51.68
Conductivity (S/m)	1.51
Variation (%)	-1.43

Maximum location: X=-1.00, Y=-17.00

SAR Peak: 1.65 W/kg

SAR 10g (W/Kg)	0.605537
SAR 1g (W/Kg)	1.041348

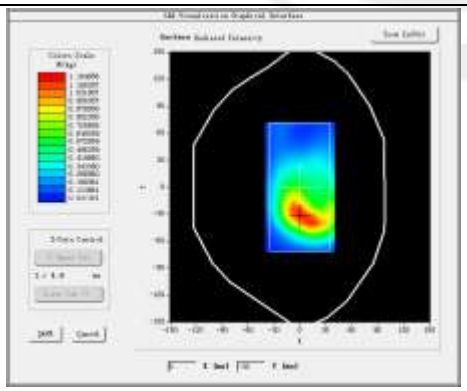
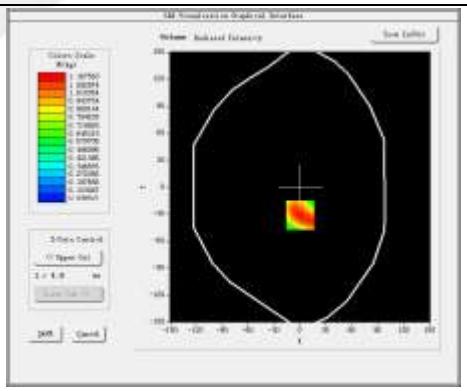
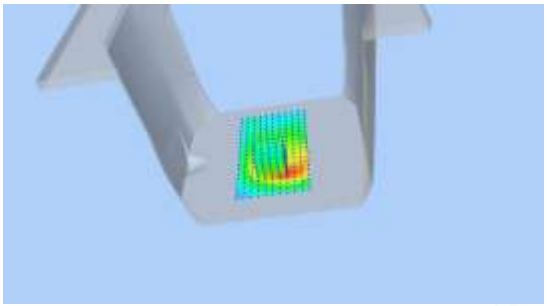
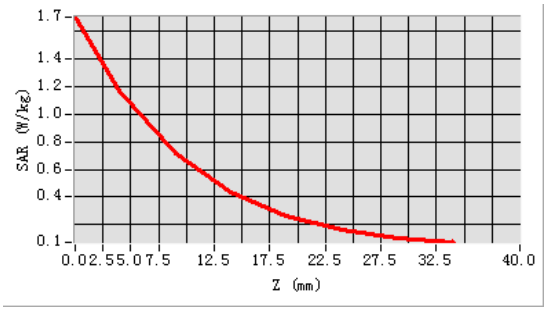
SURFACE SAR	VOLUME SAR
	
3D screen shot	**Z Axis Scan**
	

Plot 11: DUT: Tablet PC; EUT Model: QI-10X

Test Data	2015-11-24
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 Behind
Band	GPRS 1900
Channels	High
Signal	Duty Cycle:4.00 (Crest factor:4.0)
Frequency (MHz)	1909.8
Relative permittivity (real part)	51.68
Conductivity (S/m)	1.51
Variation (%)	-0.31

Maximum location: X=0.00, Y=-31.00
SAR Peak: 1.82 W/kg

SAR 10g (W/Kg)	0.653228
SAR 1g (W/Kg)	1.123389

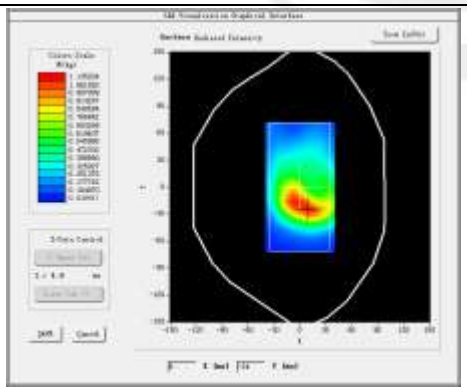
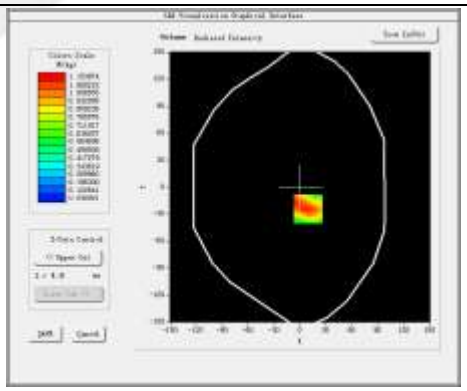
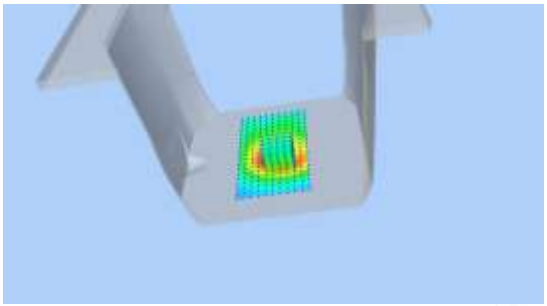
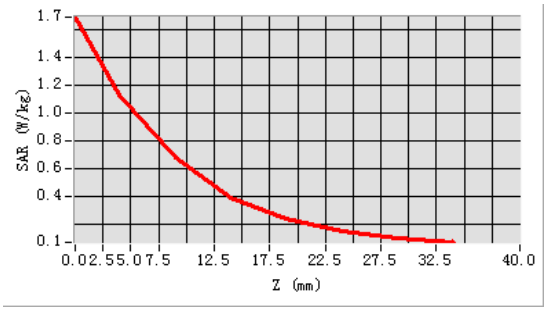
SURFACE SAR	VOLUME SAR
	
3D screen shot	**Z Axis Scan**
	

Plot 12: DUT: Tablet PC; EUT Model: QI-10X

Test Data	2015-11-24
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 Behind-repeated
Band	GPRS 1900
Channels	High
Signal	Duty Cycle:4.00 (Crest factor:4.0)
Frequency (MHz)	1909.8
Relative permittivity (real part)	51.68
Conductivity (S/m)	1.51
Variation (%)	-2.50

Maximum location: X=9.00, Y=-24.00
SAR Peak: 1.74 W/kg

SAR 10g (W/Kg)	0.623088
SAR 1g (W/Kg)	1.064457

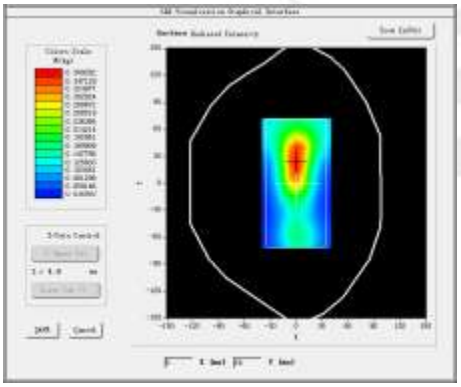
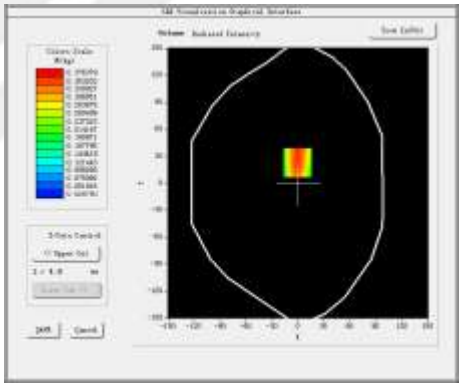
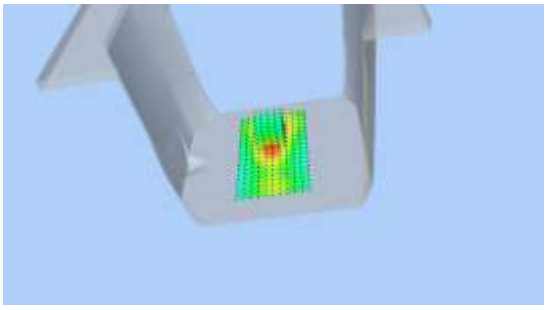
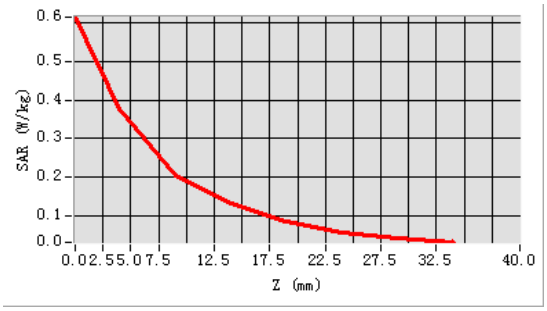
SURFACE SAR	VOLUME SAR
	
3D screen shot	**Z Axis Scan**
	

Plot 13: DUT: Tablet PC; EUT Model: QI-10X

Test Data	2015-11-24
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 right side
Band	GPRS 1900
Channels	Low
Signal	Duty Cycle:4.00 (Crest factor:4.0)
Frequency (MHz)	1850.2
Relative permittivity (real part)	51.68
Conductivity (S/m)	1.51
Variation (%)	-3.20

Maximum location: X=-1.00, Y=23.00
SAR Peak: 0.61 W/kg

SAR 10g (W/Kg)	0.208590
SAR 1g (W/Kg)	0.361350

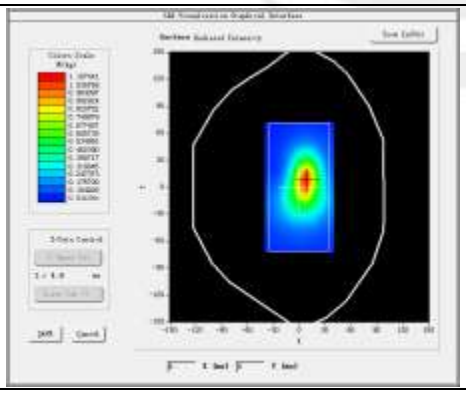
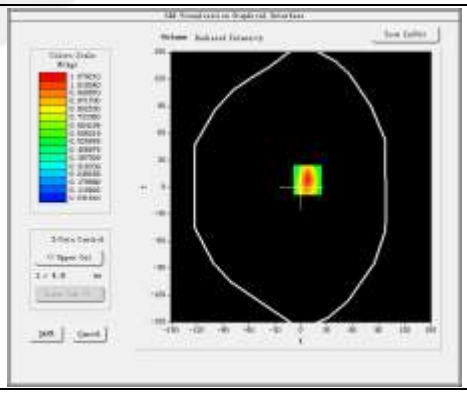
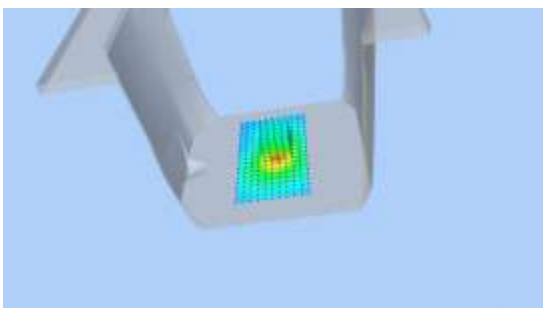
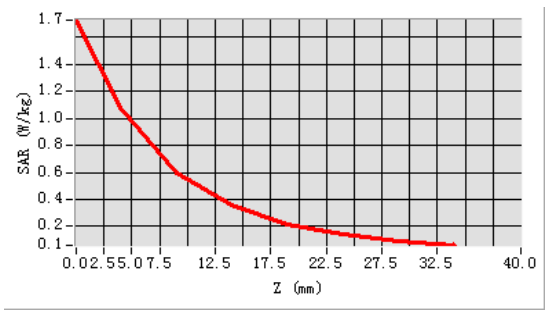
SURFACE SAR	VOLUME SAR
	
3D screen shot	**Z Axis Scan**
	

Plot 14: DUT: Tablet PC; EUT Model: QI-10X

Test Data	2015-11-24
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 bottom side
Band	GPRS 1900
Channels	Low
Signal	Duty Cycle:4.00 (Crest factor:4.0)
Frequency (MHz)	1850.2
Relative permittivity (real part)	51.68
Conductivity (S/m)	1.51
Variation (%)	3.49

Maximum location: X=7.00, Y=8.00
SAR Peak: 1.72 W/kg

SAR 10g (W/Kg)	0.555625
SAR 1g (W/Kg)	0.955578

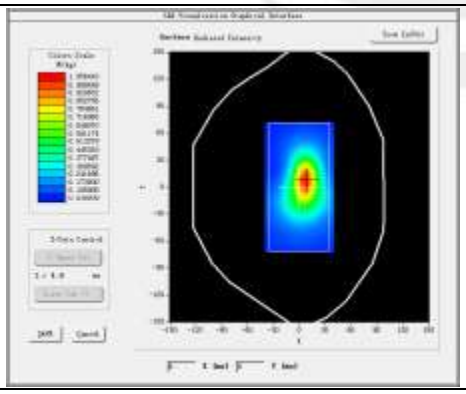
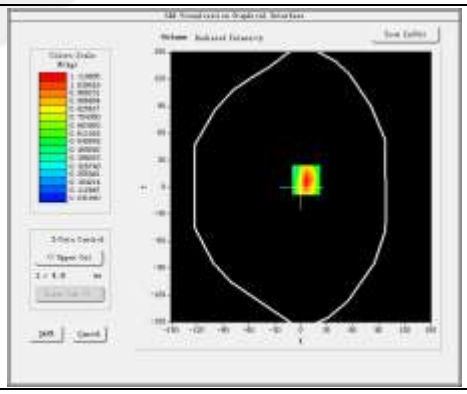
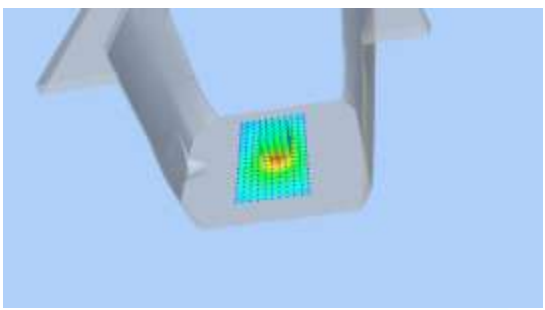
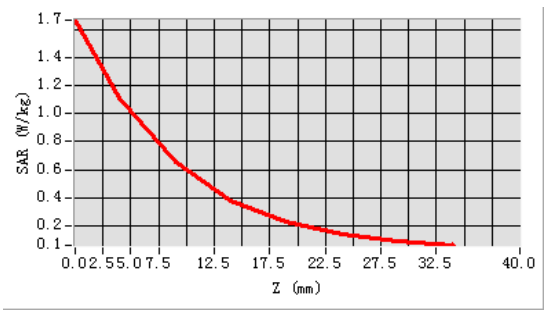
SURFACE SAR	VOLUME SAR
	
3D screen shot	**Z Axis Scan**
	

Plot 15: DUT: Tablet PC; EUT Model: QI-10X

Test Data	2015-11-24
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 bottom side
Band	GPRS 1900
Channels	Middle
Signal	Duty Cycle:4.00 (Crest factor:4.0)
Frequency (MHz)	1880.0
Relative permittivity (real part)	51.68
Conductivity (S/m)	1.51
Variation (%)	-1.61

Maximum location: X=6.00, Y=8.00
SAR Peak: 1.77 W/kg

SAR 10g (W/Kg)	0.563836
SAR 1g (W/Kg)	1.047277

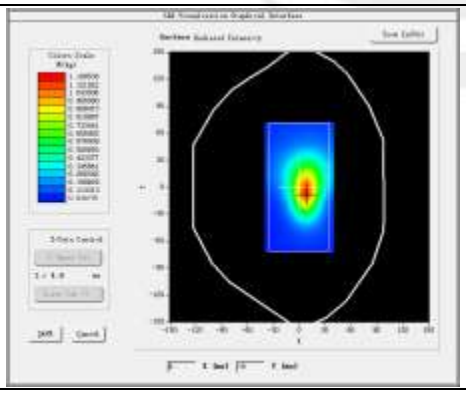
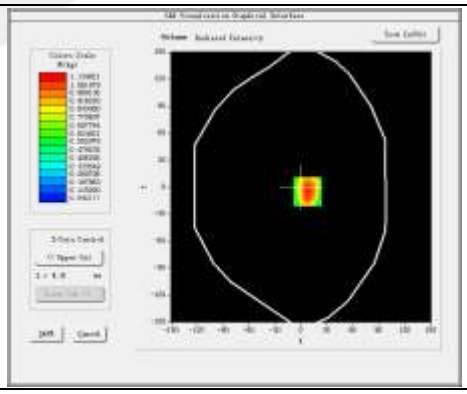
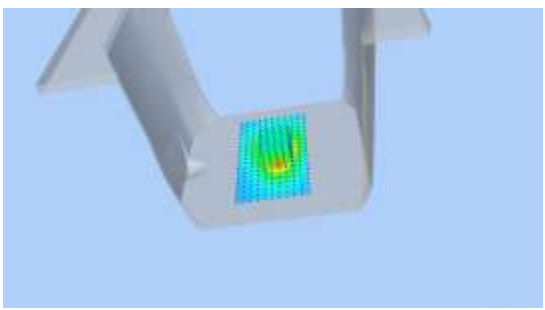
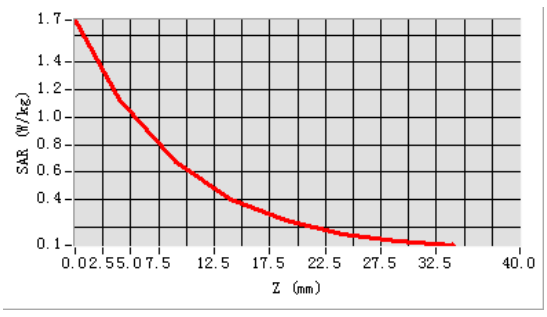
SURFACE SAR	VOLUME SAR
	
3D screen shot	**Z Axis Scan**
	

Plot 16: DUT: Tablet PC; EUT Model: QI-10X

Test Data	2015-11-24
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 bottom side
Band	GPRS 1900
Channels	High
Signal	Duty Cycle:4.00 (Crest factor:4.0)
Frequency (MHz)	1909.8
Relative permittivity (real part)	51.68
Conductivity (S/m)	1.51
Variation (%)	-1.06

Maximum location: X=7.00, Y=-5.00
SAR Peak: 1.72 W/kg

SAR 10g (W/Kg)	0.612617
SAR 1g (W/Kg)	1.082467

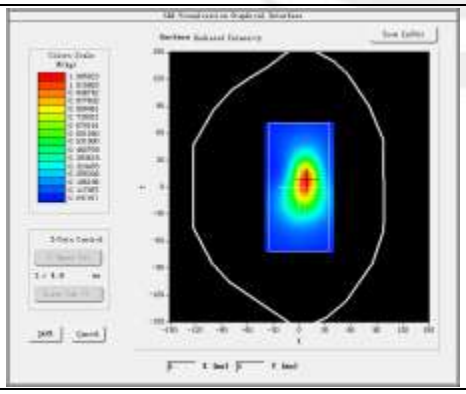
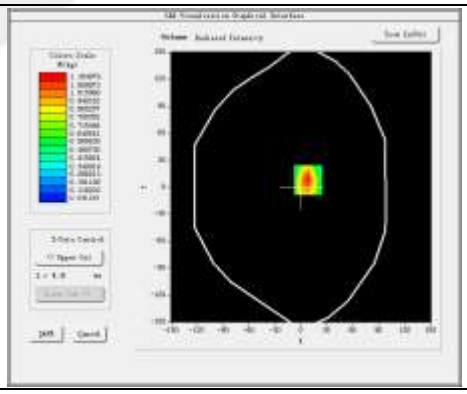
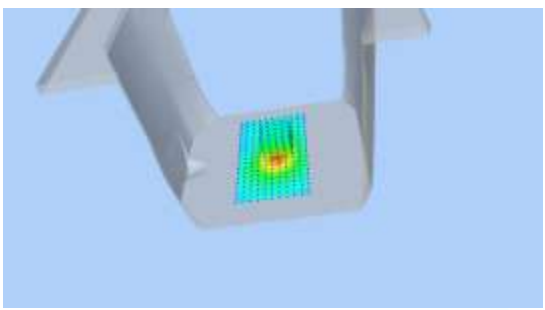
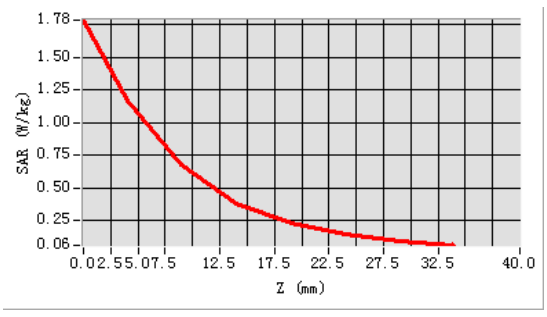
SURFACE SAR	VOLUME SAR
	
3D screen shot	**Z Axis Scan**
	

Plot 17: DUT: Tablet PC; EUT Model: QI-10X

Test Data	2015-11-24
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 bottom side-repeated
Band	GPRS 1900
Channels	High
Signal	Duty Cycle:4.00 (Crest factor:4.0)
Frequency (MHz)	1909.8
Relative permittivity (real part)	51.68
Conductivity (S/m)	1.51
Variation (%)	-0.99

Maximum location: X=8.00, Y=8.00
SAR Peak: 1.87 W/kg

SAR 10g (W/Kg)	0.590721
SAR 1g (W/Kg)	1.100753

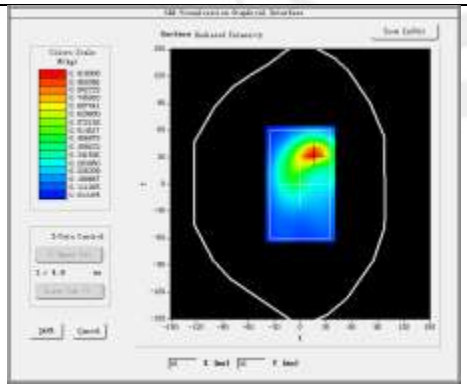
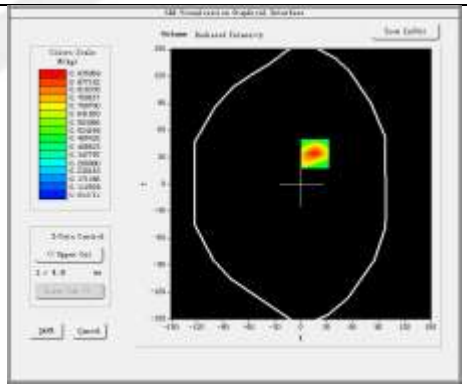
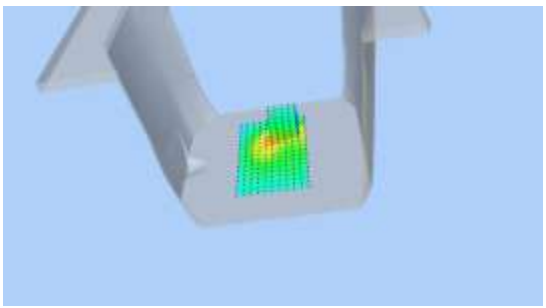
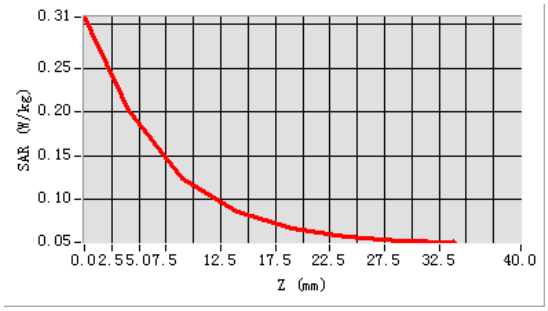
SURFACE SAR	VOLUME SAR
	
3D screen shot	**Z Axis Scan**
	

Plot 18: DUT: Tablet PC; EUT Model: QI-10X

Test Data	2015-08-25
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 front
Band	WCDMA V
Channels	Low
Signal	WCDMA (Crest factor: 1.0)
Frequency (MHz)	826.4
Relative permittivity (real part)	55.5
Conductivity (S/m)	0.96
Variation (%)	-0.29

Maximum location: X=-25.00, Y=62.00
SAR Peak: 0.31 W/kg

SAR 10g (W/Kg)	0.109962
SAR 1g (W/Kg)	0.188164

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

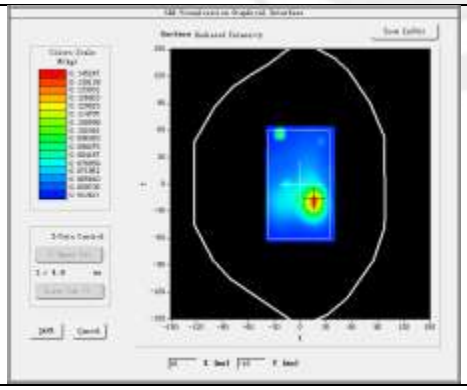
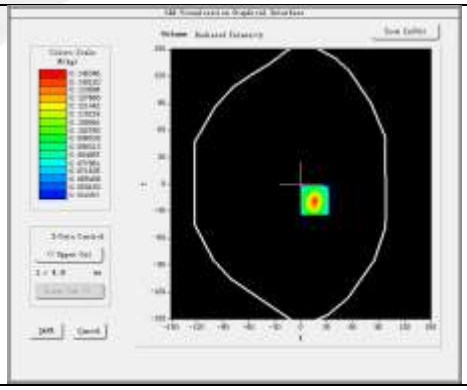
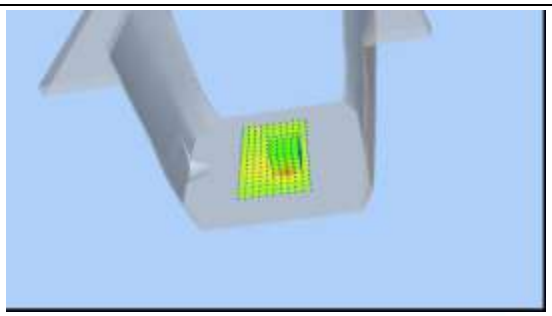
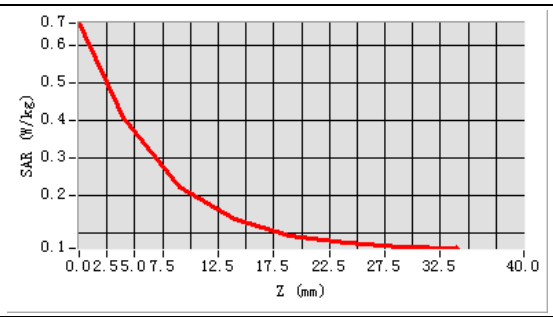
Plot 19: DUT: Tablet PC; EUT Model: QI-10X

Test Data	2015-08-25
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	Low
Signal	WCDMA (Crest factor: 1.0)
Frequency (MHz)	826.4
Relative permittivity (real part)	55.5
Conductivity (S/m)	0.96
Variation (%)	-0.22

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

SAR Peak: 0.65 W/kg

SAR 10g (W/Kg)	0.198306
SAR 1g (W/Kg)	0.277694

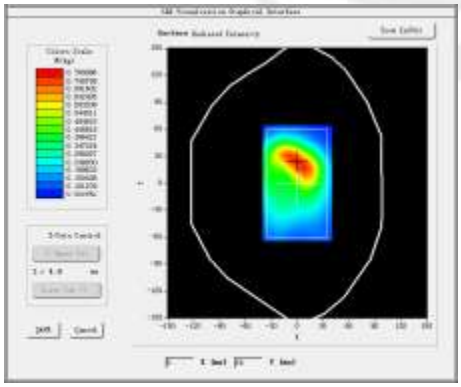
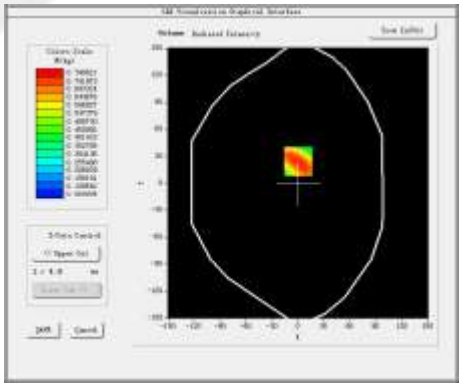
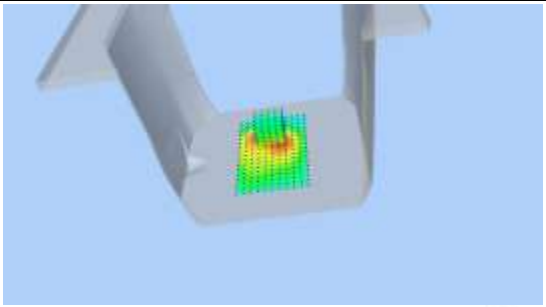
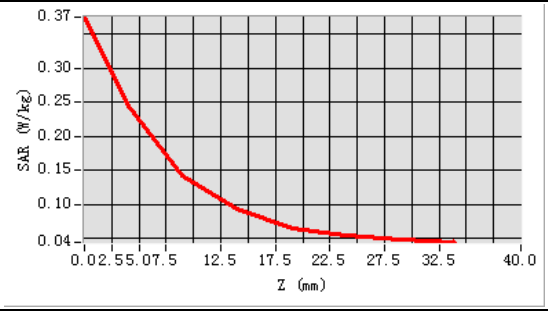
SURFACE SAR	VOLUME SAR
	
3D	**Z Axis Scan**
	

Plot 20: DUT: Tablet PC; EUT Model: QI-10X

Test Data	2015-08-25
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 right side
Band	WCDMA V
Channels	Low
Signal	WCDMA (Crest factor: 1.0)
Frequency (MHz)	826.4
Relative permittivity (real part)	55.5
Conductivity (S/m)	0.96
Variation (%)	-0.26

Maximum location: X=-6.00, Y=-13.00
SAR Peak: 0.37 W/kg

SAR 10g (W/Kg)	0.133049
SAR 1g (W/Kg)	0.230134

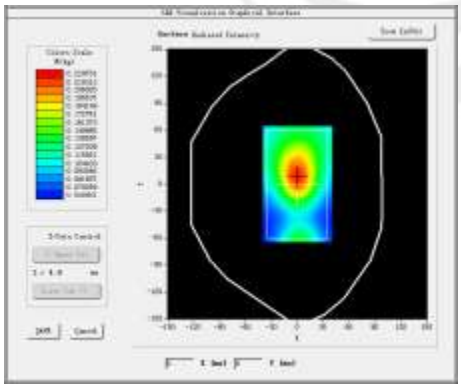
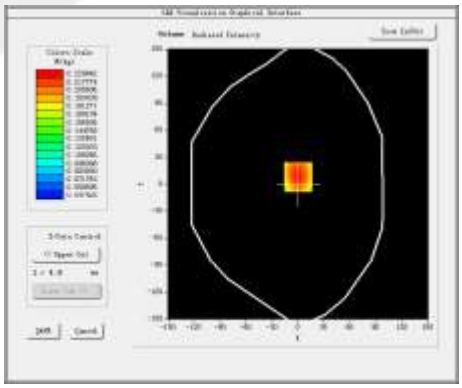
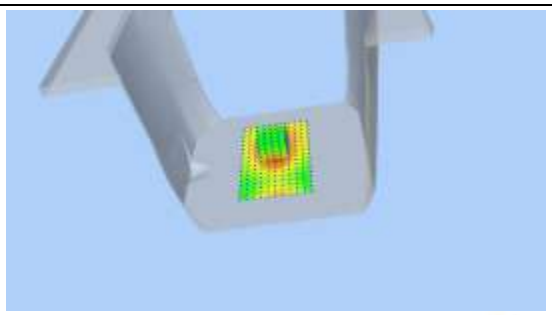
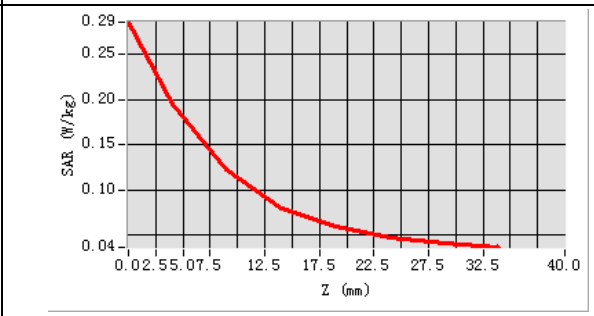
SURFACE SAR	VOLUME SAR
	
3D	**Z Axis Scan**
	

Plot 21: DUT: Tablet PC; EUT Model: QI-10X

Test Data	2015-08-25
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 bottom side
Band	WCDMA V
Channels	Low
Signal	WCDMA (Crest factor: 1.0)
Frequency (MHz)	826.4
Relative permittivity (real part)	55.5
Conductivity (S/m)	0.96
Variation (%)	0.31

Maximum location: X=32.00, Y=-16.00
SAR Peak: 0.30 W/kg

SAR 10g (W/Kg)	0.117388
SAR 1g (W/Kg)	0.190724

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

Appendix C. Probe Calibration And Dipole Calibration Report

Refer the appendix Calibration Report.

※※※※※END OF THE REPORT※※※※※