FCC SAR TEST REPORT

ISSUED BY
Shenzhen BALUN Technology Co., Ltd.

FOR

weePHONE

ISSUED TO
weeCONOMY ASIA LIMITED.

Unit B, 11 Floor, Silvercorp International Tower, 707-713 Nathan Road, KowLoon HongKong

Tested by: Tu Lang
Tu Lang
(Engineer)
Date Sep. 15, 2015

Approved by:
Wei Yanquan
(Chief Engineer)
Date Sep. 15, 2015

Report No.:	BL-SZ1550200-701
EUT Type:	weePHONE
Model Name:	WP11
Brand Name:	weeCONOMY
FCC ID:	2AFSQWP11
Test Standard:	FCC 47 CFR Part 2.1093
	ANSI C95.1: 1992
	IEEE 1528: 2013
Maximum SAR:	Head (1 g): 0.369 W/kg
	Body (1 g): 1.164 W/kg
Test Conclusion:	Pass
Test Date:	Jun. 2, 2015 ~ Jun. 10, 2015
Date of Issue:	Sep. 15, 2015

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Revision History

Version	Issue Date	Revisions
Rev. 01	Sep. 15, 2015	Initial Issue

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1 GENERAL INFORMATION

1.1 Identification of the Testing Laboratory

Company Name	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1st FL, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Phone Number	+86 755 6685 0100
Fax Number	+86 755 6182 4271

1.2 Identification of the Responsible Testing Location

Test Location	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1st FL, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Accreditation Certificate	The laboratory has been listed by Industry Canada to perform electromagnetic emission measurements. The recognition numbers of test site are 11524A-1. The laboratory has been listed by US Federal Communications Commission to perform electromagnetic emission measurements. The recognition numbers of test site are 832625. The laboratory has met the requirements of the IAS Accreditation Criteria for Testing Laboratories (AC89), has demonstrated compliance with ISO/IEC Standard 17025:2005. The accreditation certificate number is TL-588. The laboratory is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L6791.
Description	All measurement facilities used to collect the measurement data are located at Block B, FL 1, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China 518055

1.3 Test Environment Condition

Ambient Temperature	20 to 23 ℃
Ambient Relative Humidity	35 to 50 %
Ambient Pressure	100 to 102 kPa

1.4 Announce

(1) The test report is invalid if not marked with the signatures of the persons responsible for preparing and approving the test report.

(2) The test report is invalid if there is any evidence and/or falsification.

(3) The results documented in this report apply only to the tested sample, under the conditions and modes of

operation as described herein.

(4) This document may not be altered or revised in any way unless done so by BALUN and all revisions are duly noted in the revisions section.

(5) Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.

2 PRODUCT INFORMATION

2.1 Applicant

Applicant	weeCONOMY ASIA LIMITED.
Address	Unit B, 11 Floor, Silvercorp International Tower, 707-713 Nathan Road, KowLoon HongKong

2.2 Manufacturer

Manufacturer	weeCONOMY ASIA LIMITED.
Address	Unit B, 11 Floor, Silvercorp International Tower, 707-713 Nathan Road, KowLoon HongKong

2.3 General Description for Equipment under Test (EUT)

EUT Type	weePHONE
EUT Model Name	WP11
Hardware Version	N/A
Software Version	N/A
Dimensions	142×71×6 mm
Weight	133.1 g
Network and Wireless connectivity	2G Network GSM 850 / 1900, GPRS Class 12, EGPRS Class 12; 3G Network WCDMA Band 2, HSDPA, HSUPA; WLAN; Bluetooth

2.4 Technical Information

The requirement for the following technical information of the EUT was tested in this report:

Operating Mode	GSM, WCDMA, FDD-LTE, 2.4G WLAN, Bluetooth		
Frequency Range	GSM 850	TX: 824 MHz ~ 849 MHz	RX: 869 MHz ~ 894 MHz
	GSM 1900	TX: 1850 MHz ~ 1910 MHz	RX: 1930 MHz ~ 1990 MHz
	WCDMA Band 2	TX: 1850 MHz ~ 1910 MHz	RX: 1930 MHz ~ 1990 MHz
	802.11b/g/n (HT20/HT40)	2400 ~ 2483.5 MHz	
	Bluetooth	2400 ~ 2483.5 MHz	
Antenna Type	WWAN: PIFA Antenna WLAN: PIFA Antenna Bluetooth: PIFA Antenna		
DTM	Not Support		
Hotspot Function	Support		
Environment	Uncontrolled		
EUT Stage	Portable Device		

2.5 Ancillary Equipment

Ancillary Equipment 1	Battery	
	Brand Name	N/A
	Model No.	WP11
	Serial No.	(n.a. marked #1 by test site)
	Capacitance	2000mAh
	Rated Voltage	3.8 V
	Extreme Voltage	Low: 3.5 V / High:4.35 V
Ancillary Equipment 2	AC Adapter (Charger for Battery)	
	Brand Name	N/A
	Model No.	GE0061U - 05100
	Serial No.	(n.a. marked #1 by test site)
	Rated Input	~ 100 - 240 V, 300 mA, 50/60 Hz
	Rated Output	⎓ 5 V, 1000 mA

3 SUMMARY OF TEST RESULTS

3.1 Test Standards

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 941225 D01 v03	3G SAR MEAUREMENT PROCEDURES
6	FCC KDB 941225 D05 v02r03	SAR Evaluation Considerations for LTE Devices
7	FCC KDB 941225 D06 v01r01	SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities
8	FCC KDB 865664 D01 v01r03	SAR Measurement 100 MHz to 6 GHz
9	FCC KDB 865664 D02 v01r01	RF Exposure Reporting

3.2 Device Category and SAR Limit

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. Limit for General Population / Uncontrolled exposure should be applied for this device, it is 1.6 W/kg as averaged over any 1 gram of tissue.

Table of Exposure Limits:

Body Position	SAR Value (W/Kg)	
	General Population/ Uncontrolled Exposure	Occupational/ Controlled Exposure
Whole-Body SAR (averaged over the entire body)	0.08	0.4
Partial-Body SAR (averaged over any 1 gram of tissue)	1.60	8.0
SAR for hands, wrists, feet and ankles (averaged over any 1 grams of tissue)	4.0	20.0

NOTE:

General Population/Uncontrolled: Locations where there is the exposure of individuals who have no knowledge or control of their exposure. General population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

Occupational/Controlled: Locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. This exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

3.3 Test Result Summary

3.3.1 Highest SAR (1 g Value)

Position	Band	Maximum Scaled SAR (W/kg)	Maximum Report SAR (W/kg)	Limit (W/kg)	Verdict
Head	GSM 850	0.072	0.369	1.6	Pass
	GSM 1900	0.095			Pass
	WCDMA Band 2	0.169			Pass
	WLAN	0.369			Pass
Body - worn	GSM 850	0.148	1.164	1.6	Pass
	GSM 1900	0.689			Pass
	WCDMA Band 2	1.164			Pass
	WLAN	0.181			Pass
Hotspot Mode	GSM 850	0.198	1.164	1.6	Pass
	GSM 1900	1.084			Pass
	WCDMA Band 2	1.164			Pass
	WLAN	0.181			Pass

3.3.2 Highest Simultaneous SAR

Position	Simultaneous Configuration	Simultaneous SAR (W/kg)	Limit (W/kg)	Verdict
Head	WCDMA RMC + WLAN	0.583	1.6	Pass
Body - worn	WCDMA RMC + WLAN	1.345	1.6	Pass
Hotspot Mode	WCDMA RMC + WLAN	1.345	1.6	Pass

3.4 Test Uncertainty

3.4.1 Measurement uncertainly evaluation for SAR test

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. The system measurement uncertainty frequency range is from 300 MHz to 3 GHz.

Uncertainty Component	Tol. (+- %)	Prob. Dist.	Div.	Ci (1g)	Ci (10g)	1g Ui (+-%)	10g Ui (+-%)	Vi
Measurement System								
Probe calibration	5.8	N	1	1	1	5.80	5.80	∞
Axial Isotropy	3.5	R	$\sqrt{3}$	0.7	0.7	1.41	1.41	∞
Hemispherical Isotropy	5.9	R	$\sqrt{3}$	0.7	0.7	2.38	2.38	∞
Boundary effect	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Linearity	4.7	R	$\sqrt{3}$	1	1	2.71	2.71	∞
System detection limits	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Readout Electronics	0.5	N	1	1	1	0.50	0.50	∞
Reponse Time	0.0	R	$\sqrt{3}$	1	1	0.00	0.00	∞
Integration Time	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
RF ambient Conditions - Noise	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	∞
RF ambient Conditions - Reflections	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	∞
Probe positioner Mechanical Tolerance	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
Probe positioning with respect to Phantom Shell	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
Extrapolation, interpolation and integration Algoritms for Max. SAR Evaluation	2.3	R	$\sqrt{3}$	1	1	1.33	1.33	∞
Test sample Related								
Test sample positioning	2.6	N	1	1	1	2.60	2.60	N−1
Device Holder Uncertainty	1.0	N	1	1	1	1.00	1.00	N−1
Output power Variation - SAR drift measurement	5.0	R	$\sqrt{3}$	1	1	2.89	2.89	∞
SAR scaling	2.00	R	$\sqrt{3}$	1	1	1.15	1.15	∞
Phantom and Tissue Parameters								
Phantom Uncertainty (Shape and thickness tolerances)	4.0	R	$\sqrt{3}$	1	1	2.31	2.31	∞
Liquid conductivity (deviation from target values)	2.5	N	$\sqrt{3}$	0.64	0.43	0.92	0.62	∞
Liquid conductivity - measurement uncertainty	5.0	N	1	0.64	0.43	3.20	2.15	M
Liquid permittivity (deviation from target values)	2.5	N	$\sqrt{3}$	0.60	0.49	0.87	0.71	∞
Liquid permittivity - measurement uncertainty	5.0	N	1	0.60	0.49	3.00	2.45	M
Combined Standard Uncertainty		RSS				10.14	9.67	
Expanded Uncertainty (95 % Confidence interval)		k				20.29	19.35	

3.4.2 Measurement uncertainly evaluation for system check

This measurement uncertainty budget is suggested by IEEE 1528. The break down of the individual uncertainties is as follows:

Uncertainty Component	Tol. (+- %)	Prob. Dist.	Div.	Ci (1g)	Ci (10g)	1g Ui (+- %)	10g Ui (+- %)	Vi
Measurement System								
Probe calibration	5.8	N	1	1	1	5.80	5.80	∞
Axial Isotropy	3.5	R	$\sqrt{3}$	0.7	0.7	1.41	1.41	∞
Hemispherical Isotropy	5.9	R	$\sqrt{3}$	0.7	0.7	2.38	2.38	∞
Boundary effect	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Probe Linearity	4.7	R	$\sqrt{3}$	1	1	2.71	2.71	∞
System detection limits	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Readout Electronics	0.5	N	1	1	1	0.50	0.50	∞
Reponse Time	0.0	R	$\sqrt{3}$	1	1	0.00	0.00	∞
Integration Time	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
RF ambient Conditions - Noise	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	∞
RF ambient Conditions - Reflections	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	∞
Probe positioner Mechanical Tolerance	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
Probe positioning with respect to Phantom Shell	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
Extrapolation, interpolation and integration Algoritms for Max. SAR Evaluation	2.3	R	$\sqrt{3}$	1	1	1.33	1.33	∞
Dipole								
Deviation of experimental dipole	5.5	R	$\sqrt{3}$	1	1	3.20	3.20	∞
Dipole axis to liquid distance	2.0	R	1	1	1	1.20	1.20	∞
Power drift	4.7	R	$\sqrt{3}$	1	1	2.70	2.70	∞
Phantom and Tissue Parameters								
Phantom Uncertainty (Shape and thickness tolerances)	4.0	R	$\sqrt{3}$	1	1	2.31	2.31	∞
Liquid conductivity (deviation from target values)	2.5	N	$\sqrt{3}$	0.64	0.43	0.92	0.62	∞
Liquid conductivity - measurement uncertainty	5.0	N	1	0.64	0.43	3.20	2.15	M
Liquid permittivity (deviation from target values)	2.5	N	$\sqrt{3}$	0.60	0.49	0.87	0.71	∞
Liquid permittivity - measurement uncertainty	5.0	N	1	0.60	0.49	3.00	2.45	M
Combined Standard Uncertainty		RSS				10.22	9.75	
Expanded Uncertainty (95% Confidence interval)		k				20.44	19.50	

4 SAR MEASUREMENT SYSTEM

4.1 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:

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

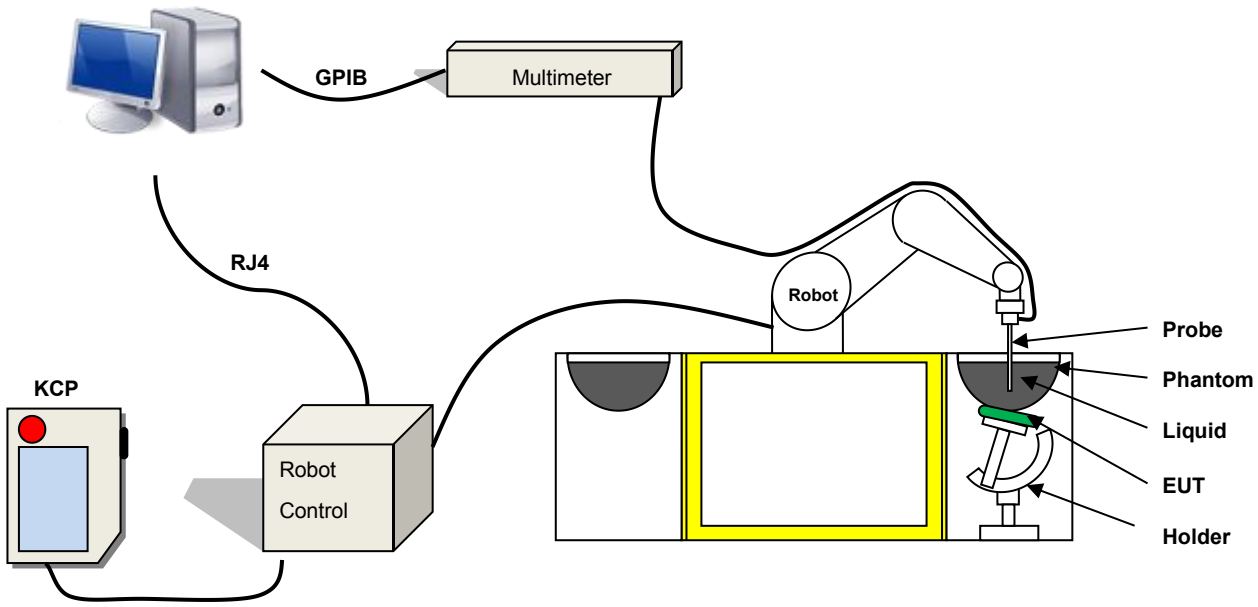
SAR is expressed in units of Watts per kilogram (W/kg) SAR measurement can be related to the electrical field in the tissue by

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

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

4.2 SATIMO SAR System

4.2.1 SATIMO SAR System Diagram



These measurements were performed with the automated near-field scanning system OPENSAR from SATIMO. The system is based on a high precision robot (working range: 850 mm), which positions the probes with a positional repeatability of better than ± 0.02 mm. Special E- and H-field probes have been developed for measurements close to material discontinuity, the sensors of which are directly loaded with a Schottky diode and connected via highly resistive lines to the data acquisition unit.

The SAR measurements were conducted with dosimetric probe (manufactured by SATIMO), designed in the classical triangular configuration and optimized for dosimetric evaluation. The probe has been calibrated according to the procedure described in SAR standard with accuracy of better than ±10%. The spherical isotropy was evaluated with the procedure described in SAR standard and found to be better than ±0.25 dB. The phantom used was the SAM Phantom as described in FCC supplement C, IEEE P1528 and CENELEC EN62209-1/-2.

4.2.2 Robot

The SATIMO SAR system uses the high precision robots from KUKA. For the 6-axis controller system, the robot controller version (KUKA) from KUKA is used. The KUKA robot series have many features that are important for our application:

- High precision (repeatability ±0.035 mm)
- High reliability (industrial design)
- Jerk-free straight movements
- Low ELF interference (the closed metallic construction shields against motor control fields)

4.2.3 E-Field Probe

For the measurements the Specific Dosimetric E-Field Probe SN 27/13 EP187 with following specifications is used

- Dynamic range: 0.01-100 W/kg
- Tip Diameter : 2.5 mm
- Distance between probe tip and sensor center: 1.0mm
- Distance between sensor center and the inner phantom surface: 4 mm

(repeatability better than +/- 1mm)

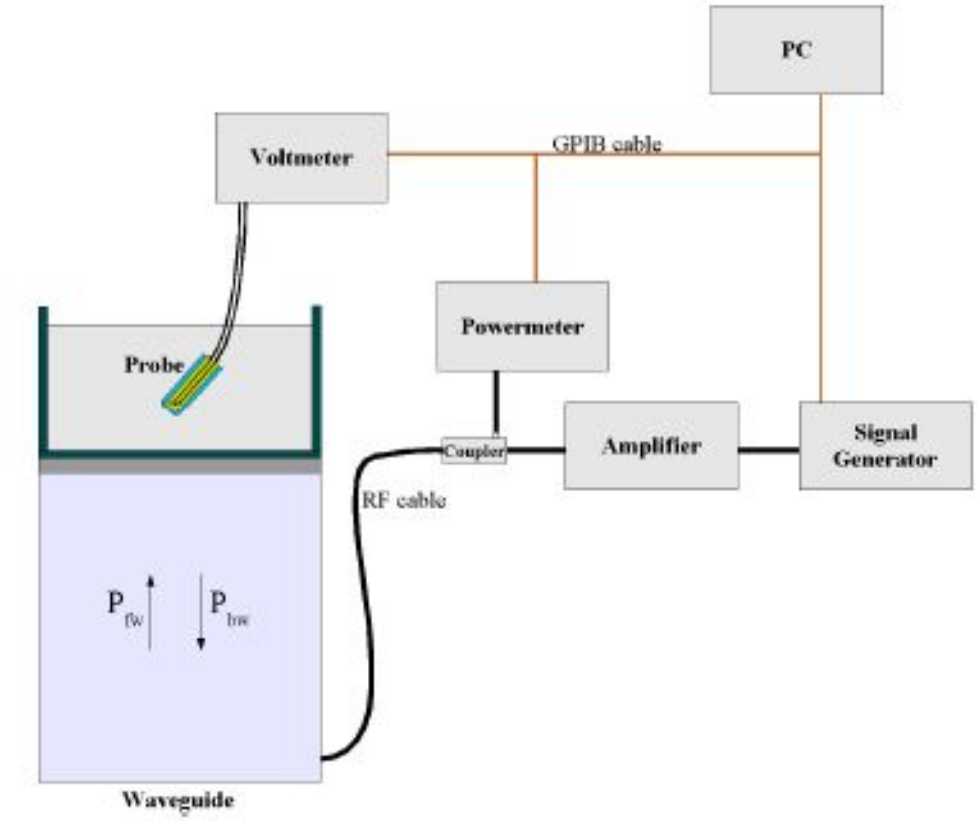
- Probe linearity: +/- 0.06 dB

- Axial Isotropy: ＜0.15 dB
- Spherical Isotropy: ＜0.15 dB
- Calibration range: 750MHz to 2600MHz for head & body simulating liquid.

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

E-Field Probe Calibration Process

Probe calibration is realized, in compliance with CENELEC EN 62209-1/-2 and IEEE 1528 std, with CALISAR, Antennessa proprietary calibration system. The calibration is performed with the EN 62209-1/2 annexe technique using reference guide at the five frequencies.



Where :

Pfw = Forward Power

Pbw = Backward Power

a and b = Waveguide dimensions

ı = Skin depth

Keithley configuration:

Rate = Medium; Filter =ON; RDGS=10; FILTER TYPE =MOVING AVERAGE; RANGE AUTO After each calibration, a SAR measurement is performed on a validation dipole and compared with a NPL calibrated probe, to verify it.

The calibration factors, CF(N), for the 3 sensors corresponding to dipole 1, dipole 2 and dipole 3 are:

CF(N)=SAR(N)/Vlin(N) (N=1,2,3)

The linearised output voltage Vlin(N) is obtained from the displayed output voltage V(N) using

Vlin(N)=V(N)*(1+V(N)/DCP(N)) (N=1,2,3)

Where the DCP is the diode compression point in mV.

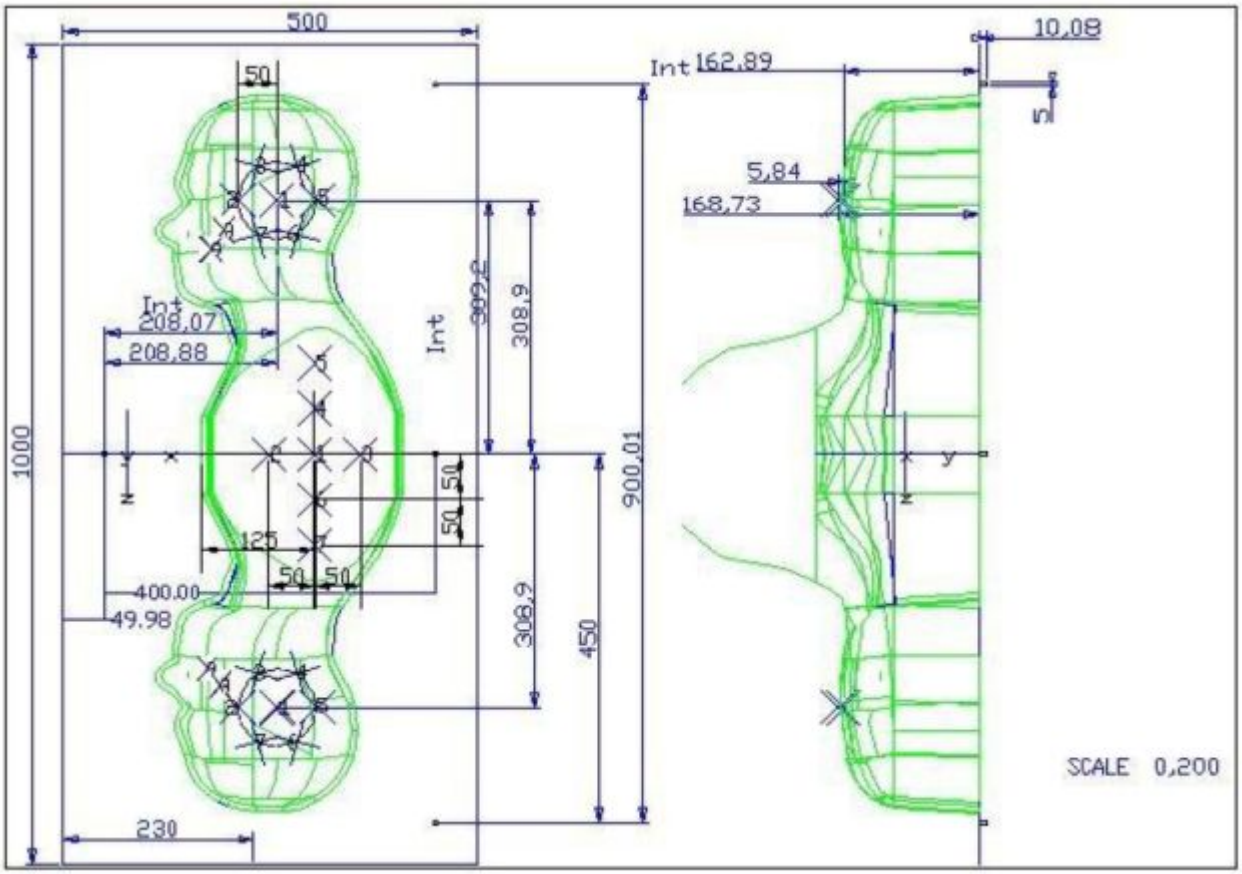
4.2.4 Phantoms

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.

Photo of Phantom SN 30/13 SAM103

Photo of Phantom SN 30/13 SAM104

Serial Number	Positionner Material	Permittivity	Loss Tangent
SN 30/13 SAM103	Gelcoat with fiberglass	3.4	0.02
SN 30/13 SAM104	Gelcoat with fiberglass	3.4	0.02



Serial Number	Left Head		Right Head		Flat Part	
SN 30/13 SAM103	2	2.00	2	2.03	1	2.09
	3	2.02	3	2.05	2	2.10
	4	2.04	4	2.04	3	2.09
	5	2.04	5	2.07	4	2.11
	6	2.02	6	2.07	5	2.11
	7	2.01	7	2.09	6	2.09
	8	2.04	8	2.10	7	2.11
	9	2.02	9	2.09	-	-
SN 30/13 SAM104	2	2.05	2	2.06	1	2.03
	3	2.08	3	2.03	2	2.03
	4	2.05	4	2.03	3	2.01
	5	2.06	5	2.02	4	2.03
	6	2.08	6	2.02	5	2.03
	7	2.06	7	2.04	6	2.00
	8	2.07	8	2.04	7	1.98
	9	2.07	9	2.05	-	-

4.2.5 Device Holder

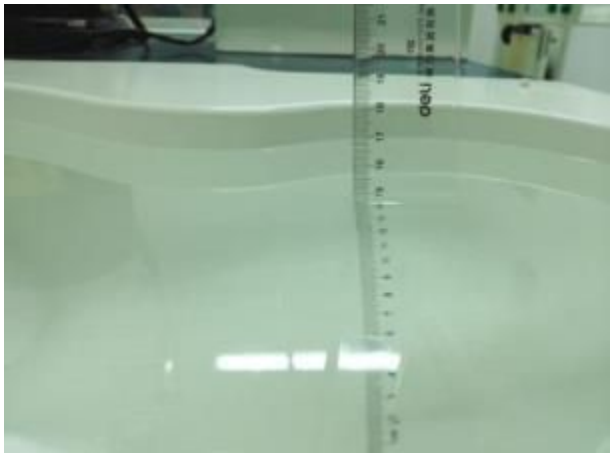
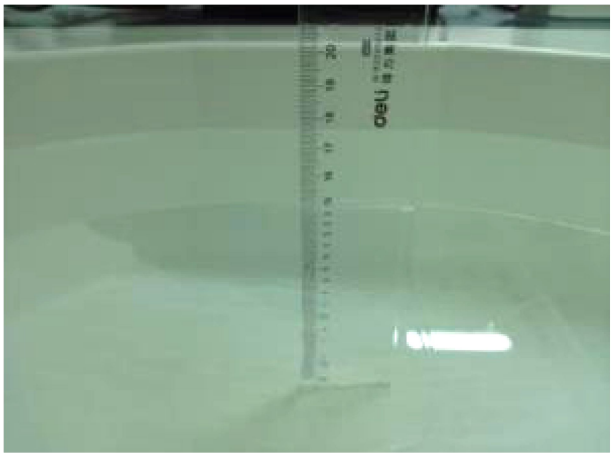
The SAR in the phantom is approximately inversely proportional to the square of the distance between the source and the liquid surface. For a source at 5 mm distance, a positioning uncertainty of ± 0.5 mm would produce a SAR uncertainty of ± 20 %. Accurate device positioning is therefore crucial for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

Serial Number	Holder Material	Permittivity	Loss Tangent
SN 25/13 MSH87	Deirin	3.7	0.005
SN 25/13 MSH88	Deirin	3.7	0.005

The positioning system allows obtaining cheek and tilting position with a very good accuracy. In compliance with CENELEC, the tilt angle uncertainty is lower than 1°.

4.2.6 Simulating Liquid

For SAR measurement of the field distribution inside the phantom, the phantom must be filled with homogeneous tissue simulating liquid to a depth of at least 15 cm. For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm. The nominal dielectric values of the tissue simulating liquids in the phantom and the tolerance of 5% .

Head Liquid Depth	Body Liquid Depth
	

The following table gives the recipes for tissue simulating liquid.

Frequency (MHz)	Water %	Sugar %	Cellulose %	Salt %	Preventol %	DGBE %	Conductivity σ	Permittivity ε
Head(Reference IEEE1528)								
750	41.1	57.0	0.2	1.4	0.2	0	0.89	41.9
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
900	40.3	57.9	0.2	1.4	0.2	0	0.97	41.5
1800, 1900, 2000	55.2	0	0	0.3	0	44.5	1.4	40.0
2450	55.0	0	0	0.1	0	44.9	1.80	39.2
2600	54.9	0	0	0.1	0	45.0	1.96	39.0
Body(From instrument manufacturer: SATIMO)								
750	51.7	47.2	0	0.9	0.1	0	0.96	55.5
835	50.8	48.2	0	0.9	0.1	0	0.97	55.2
900	50.8	48.2	0	0.9	0.1	0	1.05	55.0
1800, 1900, 2000	70.2	0	0	0.4	0	29.4	1.52	53.3
2450	68.6	0	0	0.1	0	31.3	1.95	52.7
2600	68.2	0	0	0.1	0	31.7	2.16	52.5

5 SYSTEM VERIFICATION

5.1 Antenna Port Test Requirement

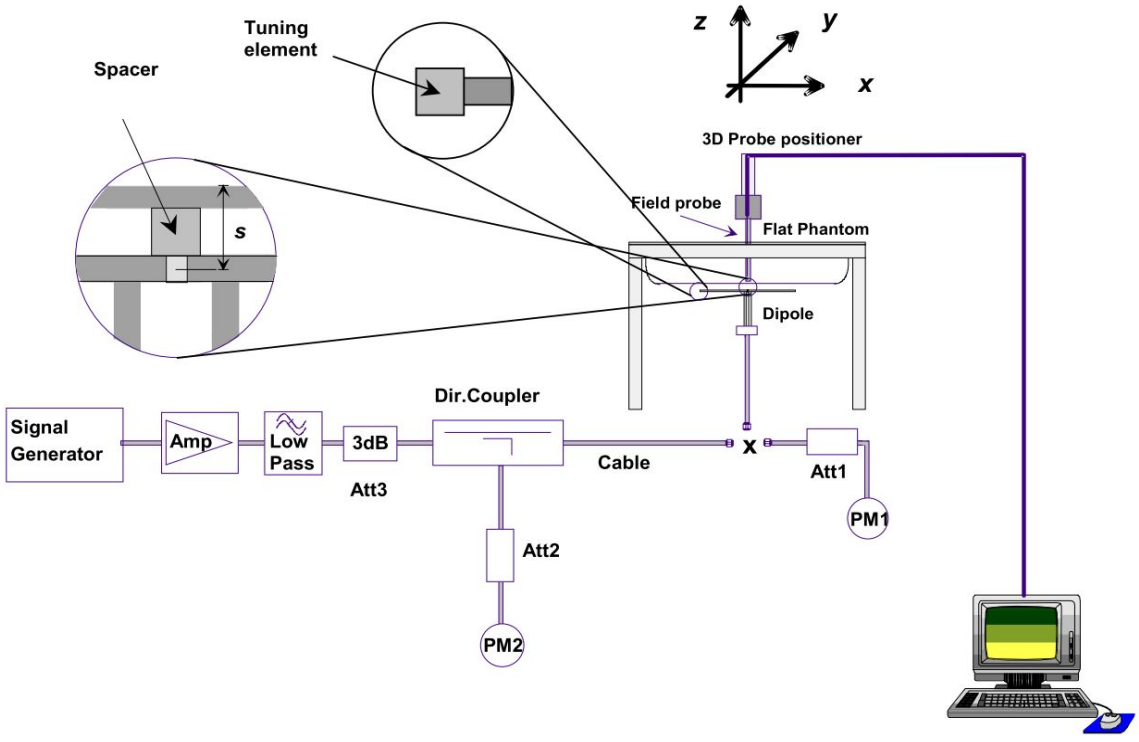
The SATIMO SAR system is equipped with one or more system validation kits. These units together with the predefined measurement procedures within the SATIMO software enable the user to conduct the system performance check and system validation. System validation kit includes a dipole, tripod holder to fix it underneath the flat phantom and a corresponding distance holder.

5.2 Purpose of System Check

The system performance check verifies that the system operates within its specifications. System and operator errors can be detected and corrected. It is recommended that the system performance check be performed prior to any usage of the system in order to guarantee reproducible results. The system performance check uses normal SAR measurements in a simplified setup with a well characterized source. This setup was selected to give a high sensitivity to all parameters that might fail or vary over time. The system check does not intend to replace the calibration of the components, but indicates situations where the system uncertainty is exceeded due to drift or failure.

5.3 System Check Setup

In the simplified setup for system evaluation, the EUT is replaced by a calibrated dipole and the power source is replaced by a continuous wave that comes from a signal generator. The calibrated dipole must be placed beneath the flat phantom section of the SAM twin phantom with the correct distance holder. The distance holder should touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom. The equipment setup is shown below:



6 EUT TEST POSITION CONFIGURATUONS

According to KDB 648474 D04 Handset v01r02, handsets are tested for SAR compliance in head, body-worn accessory and other use configurations described in the following subsections.

6.1 Head Exposure Conditions

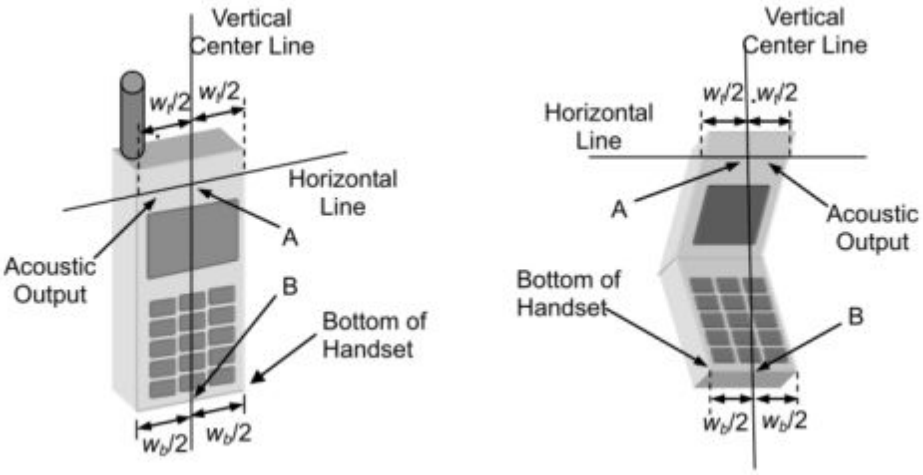
Head exposure is limited to next to the ear voice mode operations. Head SAR compliance is tested according to the test positions defined in IEEE Std 1528-2013 using the SAM phantom illustrated as below.

6.1.1 Define two imaginary lines on the handset

(a) The vertical centerline passes through two points on the front side of the handset - the midpoint of the width w t of the handset at the level of the acoustic output, and the midpoint of the width w b of the bottom of the handset.

(b) 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.

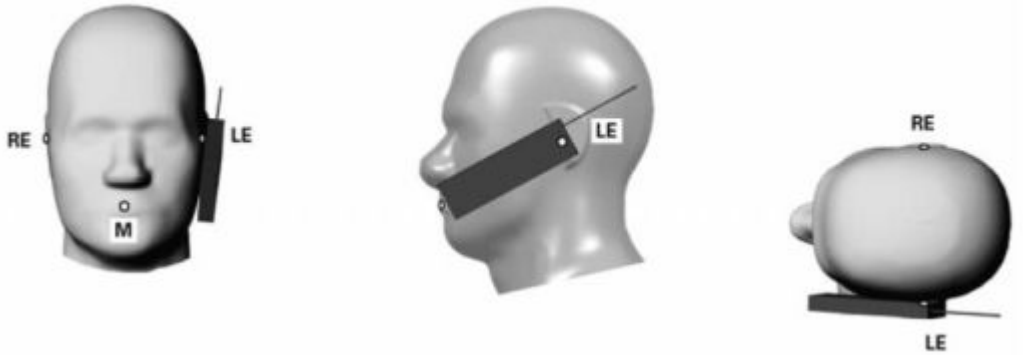
(c) The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centerline is not necessarily parallel to the front face of the handset, especially for clamshell handsets, handsets with flip covers, and other irregularly shaped handsets.



6.1.2 Cheek Position

(a) 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 three 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.

(b) To move the device towards the phantom with the ear piece aligned with the line LE-RE until the phone touched the ear. While maintaining the device in the reference plane and maintaining the phone contact with the 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.



6.1.3 Tilted Position

(a) To position the device in the “cheek” position described above.

(b) While maintaining the device 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 contact with the ear is lost.

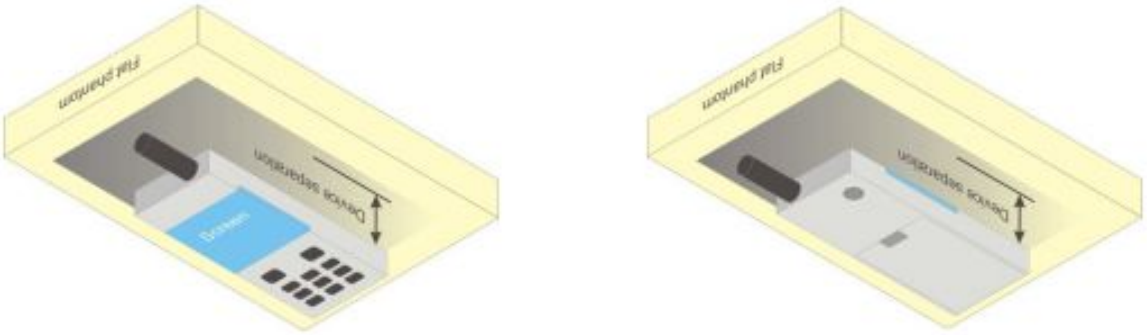
6.2 Body-worn Position Conditions

Body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in KDB 447498 are used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode. When the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

Body-worn accessories that do not contain metallic or conductive components may be tested according to worst-case exposure configurations, typically according to the smallest test separation distance required for the group of body-worn accessories with similar operating and exposure characteristics. All body-worn accessories containing metallic components are tested in conjunction with the host device.

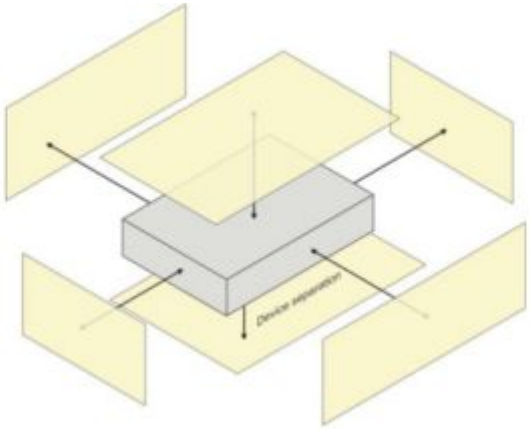
Body-worn accessory SAR compliance is based on a single minimum test separation distance for all wireless and operating modes applicable to each body-worn accessory used by the host, and according to the relevant voice and/or data mode transmissions and operations. If a body-worn accessory supports voice only operations in its normal and expected use conditions, testing of data mode for body-worn compliance is not required. A

conservative minimum test separation distance for supporting off-the-shelf body-worn accessories that may be acquired by users of consumer handsets is used to test for body-worn accessory SAR compliance. This distance is determined by the handset manufacturer, according to the requirements of Supplement C 01-01. Devices that are designed to operate on the body of users using lanyards and straps, or without requiring additional body-worn accessories, will be tested using a conservative minimum test separation distance <= 5 mm to support compliance.



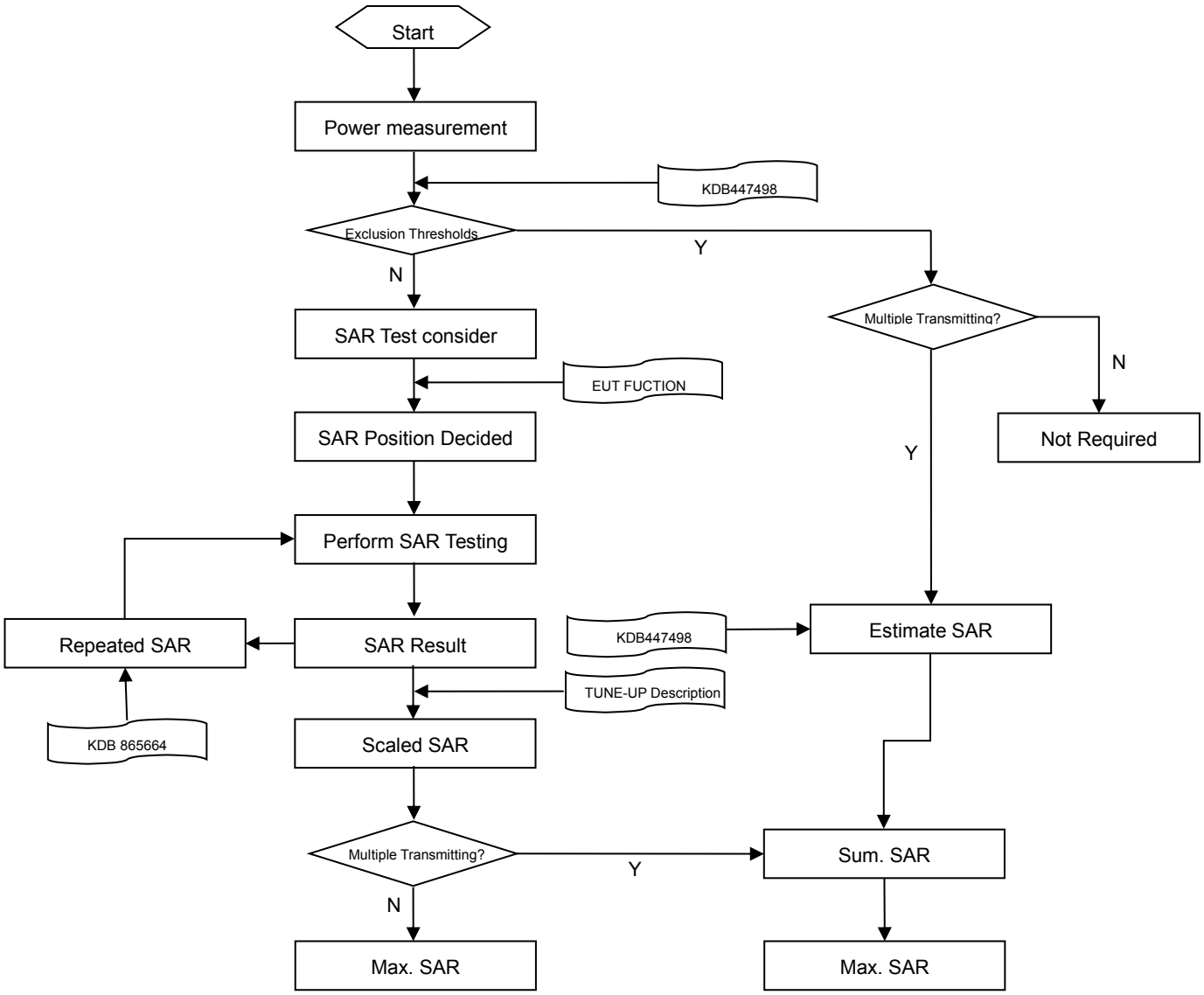
6.3 Hotspot Mode Exposure Position Conditions

For handsets that support hotspot mode operations, with wireless router capabilities and various web browsing functions, the relevant hand and body exposure conditions 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 surfaces and edges with a transmitting antenna located within 25 mm from that surface or edge. When the form factor of a handset is smaller than 9 cm x 5 cm, a test separation distance of 5 mm (instead of 10 mm) is required for testing hotspot mode. When the separation 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).



7 SAR MEASUREMENT PROCEDURES

7.1 SAR Measurement Process Diagram



7.2 SAR Scan General Requirements

Probe boundary effect error compensation is required for measurements with the probe tip closer than half a probe tip diameter to the phantom surface. Both the probe tip diameter and sensor offset distance must satisfy measurement protocols; to ensure probe boundary effect errors are minimized and the higher fields closest to the phantom surface can be correctly measured and extrapolated to the phantom surface for computing 1-g SAR. Tolerances of the post-processing algorithms must be verified by the test laboratory for the scan resolutions used in the SAR measurements, according to the reference distribution functions specified in IEEE Std 1528-2013.

<table>
<tr><th colspan="3"></th><th>≤3GHz</th><th>>3GHz</th></tr>
<tr><td colspan="3">Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface</td><td>5±1 mm</td><td>½·δ·ln(2)±0.5 mm</td></tr>
<tr><td colspan="3">Maximum probe angle from probe axis to phantom surface normal at the measurement location</td><td>30°±1°</td><td>20°±1°</td></tr>
<tr><td colspan="3" rowspan="2">Maximum area scan spatial resolution: Δx Area , Δy Area</td><td>≤ 2 GHz: ≤ 15 mm
2 – 3 GHz: ≤ 12 mm</td><td>3 – 4 GHz: ≤ 12 mm
4 – 6 GHz: ≤ 10 mm</td></tr>
<tr><td colspan="2">When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.</td></tr>
<tr><td colspan="3">Maximum zoom scan spatial resolution: Δx Zoom , Δy Zoom</td><td>≤ 2 GHz: ≤ 8 mm
2 – 3 GHz: ≤ 5 mm*</td><td>3 – 4 GHz: ≤ 5 mm*
4 – 6 GHz: ≤ 4 mm*</td></tr>
<tr><td rowspan="6">Maximum zoom scan spatial resolution, normal to phantom surface</td><td colspan="2" rowspan="3">uniform grid: Δz Zoom (n)</td><td rowspan="3">≤ 5 mm</td><td>3–4 GHz: ≤ 4 mm</td></tr>
<tr><td>4–5 GHz: ≤ 3 mm</td></tr>
<tr><td>5–6 GHz: ≤ 2 mm</td></tr>
<tr><td rowspan="3">graded grid</td><td rowspan="2">Δz Zoom (1): between 1st two points closest to phantom surface</td><td rowspan="2">≤ 4 mm</td><td>3–4 GHz: ≤ 3 mm</td></tr>
<tr><td>4–5 GHz: ≤ 2.5 mm</td></tr>
<tr><td>Δz Zoom (n>1): between subsequent points</td><td colspan="2">≤ 1.5·Δz Zoom (n-1)</td><td>5–6 GHz: ≤ 2 mm</td></tr>
<tr><td rowspan="3">Minimum zoom scan volume</td><td colspan="2" rowspan="3">x, y, z</td><td rowspan="3">≥30 mm</td><td>3 – 4 GHz: ≥ 28 mm</td></tr>
<tr><td>4 – 5 GHz: ≥ 25 mm</td></tr>
<tr><td>5 – 6 GHz: ≥ 22 mm</td></tr>
<tr><td colspan="5">Note:
1. δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.
2. * When zoom scan is required and the reported SAR from the area scan based 1-g SAR estimation procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.</td></tr>
</table>

7.3 SAR Measurement Procedure

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.
-

7.4 Area & Zoom Scan Procedures

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 D01v01r03 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.

8 CONDUCTED RF OUPUT POWER

GSM						
GSM 850 Band	Burst Average Power(dBm)			Frame-averaged power(dBm)		
Channel	128	190	251	128	190	251
Frequency (MHz)	824.2	836.6	848.8	824.2	836.6	848.8
GSM (GMSK, 1-Slot)	32.42	32.44	32.45	23.42	23.44	23.45
GPRS (GMSK, 1-Slot)	32.32	32.43	32.47	23.32	23.43	23.47
GPRS (GMSK, 2-Slots)	30.37	30.51	30.47	24.37	24.51	24.47
GPRS (GMSK, 3-Slots)	25.42	25.39	25.41	21.16	21.13	21.15
GPRS (GMSK, 4-Slots)	23.48	23.45	23.42	20.48	20.45	20.42
EGPRS (8PSK, 1-Slot)	25.52	25.35	25.12	16.52	16.35	16.12
EGPRS (8PSK, 2-Slots)	23.11	23.12	22.85	17.11	17.12	16.85
EGPRS (8PSK, 3-Slots)	20.18	20.86	20.87	15.92	16.60	16.61
EGPRS (8PSK, 4-Slots)	18.85	18.63	18.67	15.85	15.63	15.67
GSM 1900 Band	Burst Average Power (dBm)			Frame-averaged power(dBm)		
Channel	512	661	810	512	661	810
Frequency (MHz)	1850.2	1880.0	1909.8	1850.2	1880.0	1909.8
GSM (GMSK, 1-Slot)	29.67	29.58	29.61	20.67	20.58	20.61
GPRS (GMSK, 1-Slot)	29.64	29.52	29.38	20.64	20.52	20.38
GPRS (GMSK, 2-Slots)	27.64	27.45	27.16	21.64	21.45	21.16
GPRS (GMSK, 3-Slots)	25.52	25.36	25.29	21.26	21.10	20.03
GPRS (GMSK, 4-Slots)	23.57	23.48	23.41	20.57	20.48	20.41
EGPRS (8PSK, 1-Slot)	25.54	25.32	25.29	16.54	16.32	16.29
EGPRS (8PSK, 2-Slots)	23.12	23.11	23.09	17.12	17.11	17.09
EGPRS (8PSK, 3-Slots)	20.18	20.22	20.15	15.92	15.96	15.89
EGPRS (8PSK, 4-Slots)	18.71	18.68	18.56	15.71	15.68	15.56

Note:

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

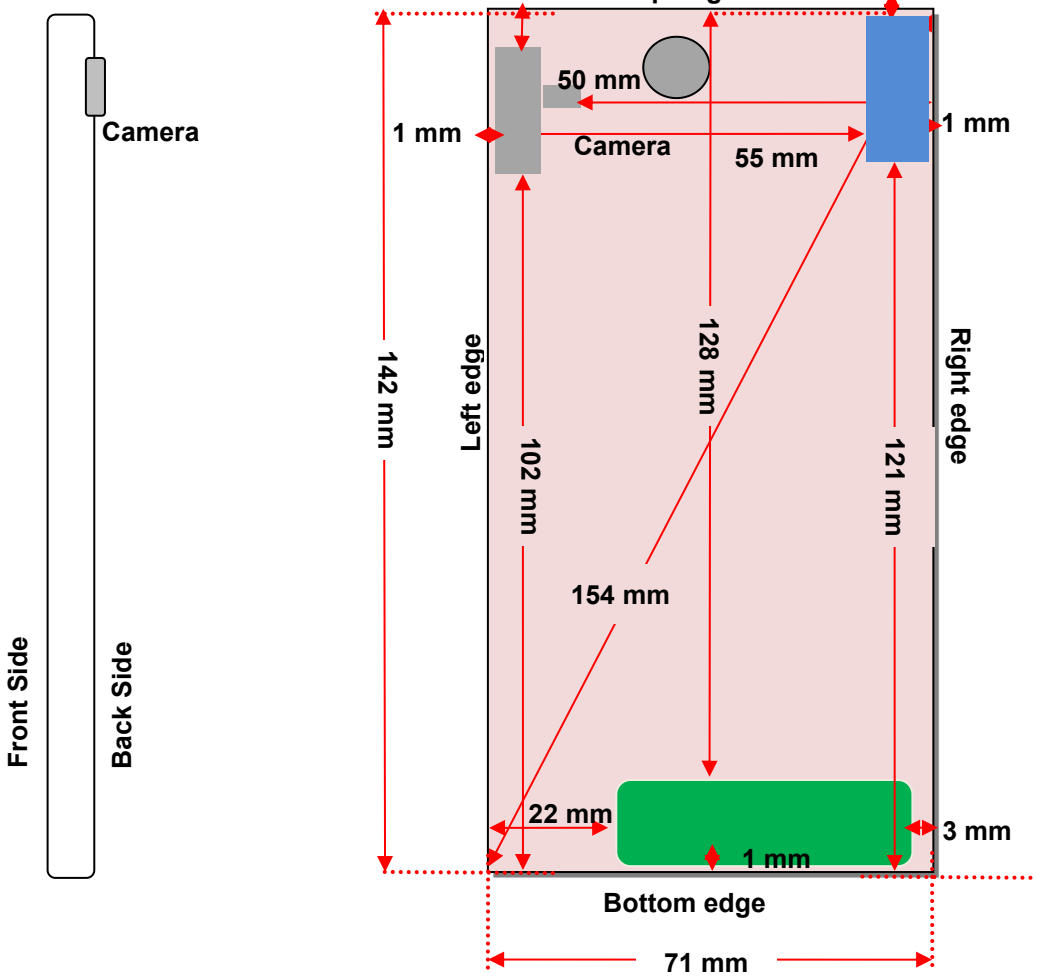
   Frame-averaged power = Burst averaged power (4 Tx Slots) - 3 dB

WCDMA			
Band	Band 2		
Channel	9262	9400	9538
Frequency (MHz)	1852.4	1880.0	1907.6
RMC 12.2Kbps	23.12	**23.15**	23.14
HSDPA Subtest-1	23.10	23.11	23.14
HSDPA Subtest-2	21.85	21.87	21.92
HSDPA Subtest-3	21.33	21.32	21.17
HSDPA Subtest-4	21.25	21.28	21.11
HSUPA Subtest-1	21.23	21.28	21.16
HSUPA Subtest-2	19.06	19.33	19.19
HSUPA Subtest-3	21.34	21.15	21.19
HSUPA Subtest-4	19.57	19.62	19.56
HSUPA Subtest-5	21.15	21.42	21.36

WLAN 2.4G						
Mode	802.11b			802.11g		
Channel	1	7	13	1	7	13
Frequency (MHz)	2412	2442	2472	2412	2442	2472
Average Power (dBm)	17.62	**18.73**	17.54	17.69	18.71	17.73
Mode	802.11n(HT-20)			802.11n(HT-40)		
Channel	1	7	13	3	7	11
Frequency (MHz)	2412	2442	2472	2422	2442	2462
Average Power (dBm)	17.53	18.37	17.57	17.63	18.27	17.18

BLUETOOTH						
Mode	GFSK			π/4-DQPSK		
Channel	0	39	78	0	39	78
Frequency (MHz)	2402	2441	2480	2402	2441	2480
Peak Power (dBm)	6.471	6.150	6.322	**6.741**	6.344	6.508
Mode	8-DPSK			BLE		
Channel	0	39	78	0	19	39
Frequency (MHz)	2402	2441	2480	2402	2440	2480
Peak Power (dBm)	4.721	4.322	4.607	N/A	N/A	N/A

9 EUT ANTENNA LOCATION SKETCH



WLAN/BT Antenna

WWAN Antenna

GPS Antenna

EUT Back View

9.1 SAR Test Exclusion Consider Table

According with FCC KDB 447498 D01v05r02, Appendix A, <SAR Test Exclusion Thresholds for 100 MHz – 6 GHz and ≤ 50 mm> Table, this Device SAR test configurations consider as following :

Band	Mode	Max. Peak Power		Test Position Configurations					
		dBm	mW	Head	Front/ Back	Left Edge	Right Edge	Top Edge	Bottom Edge
GSM 850	Distance to User			<5mm	<5mm	22mm	<5mm	128mm	<5mm
	Voice	32.45	1757.92	Yes	Yes	Yes	Yes	No	Yes
	Data	23.48	222.84	No	Yes	Yes	Yes	No	Yes
GSM 1900	Distance to User			<5mm	<5mm	22mm	<5mm	128mm	<5mm
	Voice	29.68	928.97	Yes	Yes	Yes	Yes	No	Yes
	Data	23.57	227.51	No	Yes	Yes	Yes	No	Yes
WCDMA Band 2	Distance to User			<5mm	<5mm	22mm	<5mm	128mm	<5mm
	RMC	23.15	206.54	Yes	Yes	Yes	Yes	No	Yes
WLAN 2.4 G	Distance to User			<5mm	<5mm	55mm	<5mm	<5mm	121mm
	802.11b	18.73	74.64	Yes	Yes	No	Yes	Yes	No
	802.11g	18.71	74.30	No	No	No	No	No	No
	802.11n(HT20)	18.37	68.71	No	No	No	No	No	No
	802.11n(HT40)	18.27	67.14	No	No	No	No	No	No
Bluetooth	Distance to User			<5mm	<5mm	55mm	<5mm	<5mm	121mm
	BT	6.741	4.72	No	No	No	No	No	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 used 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 distances ≤ 50 mm 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 for 10-g extremity SAR
   a. f(GHz) is the RF channel transmit frequency in GHz
   b. Power and distance are rounded to the nearest mW and mm before calculation
   c. The result is rounded to one decimal place for comparison
   d. For < 50 mm distance, we just calculate mW of the exclusion threshold value (3.0) to do compare.
   This formula is [3.0] / [√f(GHz)] ·[(min. test separation distance, mm)] = exclusion threshold of mW.
5. Per KDB 447498 D01v05r02, at 100 MHz to 6 GHz and for test separation distances > 50 mm, the SAR test exclusion threshold is determined according to the following
   a. [Threshold at 50 mm in step 1) + (test separation distance - 50 mm)·(f(MHz)/150)] mW, at 100 MHz to 1500 MHz
   b. [Threshold at 50 mm in step 1) + (test separation distance - 50 mm)·10] mW at > 1500 MHz and ≤ 6 GHz
6. Per KDB 941225 D01v03, RMC 12.2kbps setting is used to evaluate SAR. If HSDPA /HSUPA /DC-HSDPA output power is < 0.25dB higher than RMC12.2Kbps, 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 v02, choose the highest output power channel to test SAR and determine further 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 these configurations is less than 1/4dB higher than those measured at the lowest data rate

8. Apply the test exclusion rule in KDB 248227 D01 v02 11g, 11n-HT20 and HT40 output power is less than 1/4dB higher than 11b mode, thus the SAR can be excluded.

9.2 10g Extremity Exposure Consider

According with FCC KDB 648474 D04 v01r02, for smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm that provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets that support voice calls next to the ear, unless it is confirmed otherwise through KDB inquiries, the following phablet procedures should be applied to evaluate SAR compliance for each applicable wireless modes and frequency band. Devices marketed as phablets, regardless of form factors and operating characteristics must be tested as a phablet to determine SAR compliance;

The UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna located at ≤ 25 mm from that surface or edge, in direct contact with a flat phantom, for 10-g extremity SAR according to the body-equivalent tissue dielectric parameters in KDB 865664 to address interactive hand use exposure conditions. The UMPC mini-tablet 1-g SAR at 5 mm is not required. When hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg.

Conclusion:
The EUT hotspot mode 1-g reported SAR is 1.164 W/Kg, which is less than 1.2W/Kg, 10-g extremity SAR is not required.

10 TEST RESULTS

10.1 Head SAR (1 g Value)

Band	Mode	Position	Ch.	Freq. (MHz)	Power Drift	Meas. SAR (W/Kg)	Meas. Power (dBm)	Max. tune-up Power(dBm)	Scaling Factor	Scaled SAR(W/Kg)	Meas. No.
GSM 850	Voice	Left Cheek	251	848.8	-4.06	0.054	32.45	32.50	1.012	0.055	/
		Left Tilt	251	848.8	-1.61	0.027	32.45	32.50	1.012	0.027	/
		Right Cheek	251	848.8	-1.06	0.071	32.45	32.50	1.012	**0.072**	1#
		Right Tilt	251	848.8	1.73	0.030	32.45	32.50	1.012	0.030	/
GSM 1900	Voice	Left Cheek	512	1850.2	-2.68	0.094	29.67	29.70	1.007	**0.095**	2#
		Left Tilt	512	1850.2	-2.84	0.029	29.67	29.70	1.007	0.029	/
		Right Cheek	512	1850.2	3.31	0.052	29.67	29.70	1.007	0.052	/
		Right Tilt	512	1850.2	-1.62	0.037	29.67	29.70	1.007	0.037	/
WCDMA Band 2	RMC	Left Cheek	9400	1880.0	-2.81	0.167	23.15	23.20	1.012	**0.169**	3#
		Left Tilt	9400	1880.0	-0.17	0.031	23.15	23.20	1.012	0.031	/
		Right Cheek	9400	1880.0	-2.72	0.115	23.15	23.20	1.012	0.116	/
		Right Tilt	9400	1880.0	2.42	0.045	23.15	23.20	1.012	0.046	/
802.11b	DATA	Left Cheek	7	2442	-1.74	0.149	18.73	18.80	1.016	0.151	/
		Left Tilt	7	2442	-1.93	0.155	18.73	18.80	1.016	0.158	/
		Right Cheek	7	2442	1.13	0.363	18.73	18.80	1.016	**0.369**	4#
		Right Tilt	7	2442	3.94	0.289	18.73	18.80	1.016	0.294	/

10.2 Body-worn And Hotspot Mode SAR (10mm separation)

Band	Mode	Position	Ch.	Freq. (MHz)	Power Drift	Meas. SAR (W/Kg)	Meas. Power (dBm)	Max. tune-up Power(dBm)	Scaling Factor	Scaled SAR(W/Kg)	Meas. No.
GSM 850	Voice (Body-worn)	Front Side	251	848.8	-1.13	0.054	32.45	32.50	1.012	0.055	/
		Back Side	251	848.8	-2.12	0.146	32.45	32.50	1.012	**0.148**	5#
		Left Edge	251	848.8	-2.38	0.058	32.45	32.50	1.012	0.059	/
		Right Edge	251	848.8	2.93	0.020	32.45	32.50	1.012	0.020	/
		BottomEdge	251	848.8	4.11	0.025	32.45	32.50	1.012	0.025	/
	GPRS Data (Hotspot) Slot 4	Front Side	128	824.2	-3.46	0.080	23.48	23.50	1.005	0.080	/
		Back Side	128	824.2	3.22	0.171	23.48	23.50	1.005	**0.172**	6#
		Left Edge	128	824.2	1.49	0.068	23.48	23.50	1.005	0.068	/
		Right Edge	128	824.2	-2.46	0.022	23.48	23.50	1.005	0.022	/
		BottomEdge	128	824.2	-1.87	0.028	23.48	23.50	1.005	0.028	/
	EDGE Data (Hotspot) Slot 4	Front Side	128	824.2	3.33	0.072	18.85	18.90	1.012	0.073	/
		Back Side	128	824.2	-1.85	0.196	18.85	18.90	1.012	**0.198**	7#
		Left Edge	128	824.2	-1.12	0.094	18.85	18.90	1.012	0.095	/
		Right Edge	128	824.2	-2.27	0.042	18.85	18.90	1.012	0.042	/
		BottomEdge	128	824.2	-1.16	0.025	18.85	18.90	1.012	0.025	/
GSM 1900	Voice (Body-worn)	Front Side	512	1850.2	4.67	0.283	29.67	29.70	1.007	0.285	/
		Back Side	512	1850.2	2.06	0.684	29.67	29.70	1.007	**0.689**	8#
		Left Edge	512	1850.2	-1.96	0.079	29.67	29.70	1.007	0.080	/
		Right Edge	512	1850.2	-1.74	0.117	29.67	29.70	1.007	0.118	/
		BottomEdge	512	1850.2	-1.46	0.576	29.67	29.70	1.007	0.580	/
	GPRS Data (Hotspot) Slot 4	Front Side	512	1850.2	-1.84	0.478	23.57	23.60	1.007	0.481	/
		Back Side	512	1850.2	1.27	1.032	23.57	23.60	1.007	**1.039**	9#
		Left Edge	512	1850.2	3.25	0.170	23.57	23.60	1.007	0.171	/
		Right Edge	512	1850.2	-2.94	0.102	23.57	23.60	1.007	0.103	/
		BottomEdge	512	1850.2	-0.94	0.718	23.57	23.60	1.007	0.723	/
	EDGE Data (Hotspot) Slot 4	Front Side	512	1850.2	-0.79	0.407	18.71	18.80	1.021	0.416	/
		Back Side	512	1850.2	-0.49	1.062	18.71	18.80	1.021	**1.084**	10#
		Left Edge	512	1850.2	-0.38	0.150	18.71	18.80	1.021	0.153	/
		Right Edge	512	1850.2	-1.99	0.261	18.71	18.80	1.021	0.266	/
		BottomEdge	512	1850.2	-3.37	0.899	18.71	18.80	1.021	0.918	/
WCDMA Band 2	RMC (Body-Worn and hotspot)	Front Side	9400	1880.0	-0.99	0.494	23.15	23.20	1.012	0.500	/
		Back Side	9400	1880.0	1.90	1.070	23.15	23.20	1.012	**1.082**	11#
		Left Edge	9400	1880.0	-0.82	0.106	23.15	23.20	1.012	0.107	/
		Right Edge	9400	1880.0	0.20	0.194	23.15	23.20	1.012	0.196	/
		BottomEdge	9400	1880.0	-1.12	0.784	23.15	23.20	1.012	0.793	/
802.11b	DATA (Hotspot)	Front Side	7	2442	-1.99	0.082	18.73	18.80	1.016	0.083	/
		Back Side	7	2442	1.22	0.178	18.73	18.80	1.016	**0.181**	12#
		Right Edge	7	2442	-1.51	0.140	18.73	18.80	1.016	0.142	/
		Top Edge	7	2442	-1.33	0.115	18.73	18.80	1.016	0.117	/
Additional Channels											

GSM1900	GPRS Data (Hotspot) Slot 4	Back Side	661	1880.0	-2.29	0.906	23.48	23.60	1.028	0.931	13#
		Back Side	810	1909.8	-2.35	0.817	23.41	23.60	1.045	0.854	14#
	EDGE Data (Hotspot) Slot 4	Back Side	661	1880.0	0.70	1.002	18.68	18.80	1.028	1.030	15#
		Back Side	810	1909.8	-1.99	0.847	18.56	18.80	1.057	0.895	16#
		BottomEdge	661	1880.0	1.16	0.787	18.68	18.80	1.028	0.809	17#
		BottomEdge	810	1909.8	1.44	0.626	18.56	18.80	1.057	0.662	18#
WCDMA Band2	RMC (Body-Worn and hotspot)	Back Side	9262	1852.4	-0.71	1.143	23.12	23.20	1.019	**1.164**	19#
		Back Side	9538	1907.6	-2.10	0.728	23.14	23.20	1.014	0.738	20#

10.3 SAR Measurement Variability

According to KDB 865664 D01 v01r03, SAR measurement variability was assessed for each frequency band, which is determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media are required for SAR measurements in a frequency band, the variability measurement procedures should be applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue-equivalent medium. Alternatively, if the highest measured SAR for both head and body tissue-equivalent media are ≤ 1.45 W/kg and the ratio of these highest SAR values, i.e., largest divided by smallest value, is ≤ 1.10, the highest SAR configuration for either head or body tissue-equivalent medium may be used to perform the repeated measurement. These additional measurements are repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device should be returned to ambient conditions (normal room temperature) with the battery fully charged before it is re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

SAR repeated measurement procedure:

1. When the highest measured SAR is < 0.80 W/kg, repeated measurement is not required.
2. When the highest measured SAR is >= 0.80 W/kg, repeat that measurement once.
3. 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 >= 1.45 W/kg, perform a second repeated measurement.
4. If the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20, and the original, first or second repeated measurement is >= 1.5 W/kg, perform a third repeated measurement.

SAR Repeated Measurement

Band	Mode	Position	Ch.	Freq.	Original	first repeated	ratio	second repeated	ratio	third repeated	ratio
GSM 1900	GPRS Data (Hotspot) Slot 4	Back Side	512	1850.2	1.032	1.023	1.01	-	-	-	-
		Back Side	661	1880.0	0.906	0.870	1.04	-	-	-	-
		Back Side	810	1909.8	0.817	0.813	1.00	-	-	-	-
	EDGE Data (Hotspot) Slot 4	Back Side	512	1850.2	1.062	1.057	1.00	-	-	-	-
		Back Side	661	1880.0	0.988	1.002	1.01	-	-	-	-
		Back Side	810	1909.8	0.847	0.829	1.02	-	-	-	-
		BottomEdge	512	1850.2	0.899	0.868	1.04	-	-	-	-
WCDMA Band2	RMC (Body-Worn and hotspot)	Back Side	9400	1880.0	1.070	1.009	1.06	-	-	-	-
		Back Side	9262	1852.4	1.143	0.980	1.17	-	-	-	-

11 SIMULTANEOUS TRANSMISSION

11.1 Simultaneous Transmission Mode Consider

Simultaneous Transmitting (Yes/NO)	BT	WLAN	WCDMA RMC	GSM Data	GSM Voice
GSM Voice	Yes	Yes	NO	NO	-
GSM Data	Yes	Yes	NO	-	-
WCDMA RMC	Yes	Yes	-		-
WLAN	NO	-	-	-	-
BT	-	-	-	-	-
Note: The BT and WLAN share the same antenna, cannot transmitting together.					

11.2 Estimated SAR Calculation

According to KDB 447498 D01v05r02, when standalone SAR test exclusion applies to an antenna that transmits simultaneously with other antennas, the standalone SAR was estimated according to following formula to result in substantially conservative SAR values of <= 0.4 W/kg to determine simultaneous transmission SAR test exclusion.

$$Estimate\ SAR = \frac{Max.Tune\ Up\ Power(mW)}{Min.Test\ Separation\ Distance(mm)} * \frac{\sqrt{f_{GHz}}}{7.5}$$

If the minimum test separation distance is < 5 mm, a distance of 5 mm is used for estimated SAR calculation. When the test separation distance is > 50 mm, the 0.4 W/kg is used for SAR-1g.

Band	Mode	Position	Antenna To user (mm)	SAR Testing	Max. Tune-up Power (dBm)	Max. Tune-up Power (mW)	Frequency (GHz)	Calculation Distance/Gap (mm)	Estimated SAR (W/kg)
Bluetooth	GFSK	Right Cheek	5	NO	6.80	4.79	2.402	5	0.198
		Left Cheek	5	NO	6.80	4.79	2.402	5	0.198
		Front side	10	NO	6.80	4.79	2.402	10	0.099
		Back Side	10	NO	6.80	4.79	2.402	10	0.099
		Right Edge	10	NO	6.80	4.79	2.402	10	0.099
		Top Edge	10	NO	6.80	4.79	2.402	10	0.099

11.3 Sum SAR of Simultaneous Transmission

Simultaneous Mode	Position	Mode	Max. 1g SAR (W/kg)	1g Sum SAR (W/kg)
GSM Voice + BT	Head	GSM Voice	0.095	0.293
		BT	0.198	
	Body-worn	GSM Voice	0.689	0.788
		BT	0.099	
GSM DATA + BT	Hotspot Mode	GSM DATA	1.084	1.183
		BT	0.099	
GSM Voice + WLAN	Head	GSM Voice	0.095	0.464
		WLAN	0.369	
	Body-worn	GSM Voice	0.689	0.870
		WLAN	0.181	
GSM DATA + WLAN	Hotspot Mode	GSM DATA	1.084	1.265
		WLAN	0.181	
WCDMA RMC + BT	Head	WCDMA RMC	0.169	0.367
		BT	0.198	
	Body-worn Hotspot	WCDMA RMC	1.164	1.263
		BT	0.099	
WCDMA RMC + WLAN	Head	WCDMA RMC	0.169	0.538
		WLAN	0.369	
	Body-worn Hotspot	WCDMA RMC	1.164	1.345
		WLAN	0.181	

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.

12 TEST EQUIPMENTS LIST

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
PC	Dell	N/A	N/A	N/A	N/A
835MHz Dipole	SATIMO	SID 835	S/N 25/13 DIP 0G835-246	2015/03/16	2016/03/15
1900MHz Dipole	SATIMO	SID 1900	S/N 25/13 DIP 1G900-249	2015/03/16	2016/03/15
2450MHz Dipole	SATIMO	SID 2450	S/N 25/13 DIP 2G450-251	2015/03/16	2016/03/15
E-Field Probe	SATIMO	SSE1	SN 27/13 EP187	2014/08/17	2015/08/16
Antenna	SATIMO	ANTA3	SN 17/13 ZNTA45	N/A	N/A
Phantom1	SATIMO	SAM	SN 30/13 SAM013	N/A	N/A
Phantom2	SATIMO	SAM	SN 30/13 SAM014	N/A	N/A
Dielectric Probe Kit	SATIMO	SCLMP	SN 25/13 OCPG56	2014/08/17	2015/08/16
MultiMeter	Keithley	MultiMeter 2000	4024022	2014/12/13	2015/12/12
Signal Generator	R&S	SMF100A	1167.0000k02/104260	2014/07/07	2015/07/06
Power Meter	Agilent	5738A	11290	2014/10/18	2015/10/17
Power Sensor	R&S	NRP-Z21	103971	2014/11/03	2015/11/02
Power Amplifier	SATIMO	6552B	22374	N/A	N/A
Wireless Communication Test Set	Agilent	8960-E5515C	MY50260493	2015/01/30	2016/01/29
Wireless Communication Test Set	R&S	CMW 500	138884	2014/07/07	2015/07/06
Network Analyzer	Agilent	5071C	EMY46103472	2014/11/03	2015/11/02
Attenuator	COM-MW	ZA-S1-31	1305003187	N/A	N/A
Directional coupler	AA-MCS	AAMCS-UDC	000272	N/A	N/A

ANNEX A SIMULATING LIQUID VERIFICATION RESULT

The dielectric parameters of the liquids were verified prior to the SAR evaluation using an SATIMO SCLMP Dielectric Probe Kit and a Network Analyzer.

Date	Liquid Type	Freq. (MHz)	Temp. (℃)	Meas. Conductivity (σ)	Meas. Permittivity (ε)	Target conductivity (σ)	Target Permittivity (ε)	Conductivity tolerance (%)	Permittivity tolerance (%)
2015.06.02	Head	835	22.2	0.93	40.86	0.90	41.50	3.33	-1.54
2015.06.02	Body	835	22.2	0.95	56.10	0.97	55.20	-2.06	1.63
2015.06.03	Head	1900	22.2	1.38	38.50	1.40	40.00	-1.43	-3.75
2015.06.04	Body	1900	22.2	1.49	54.26	1.52	53.30	-1.97	1.80
2015.06.09	Body	1900	22.2	1.56	52.14	1.52	53.30	2.63	-2.18
2015.06.10	Head	2450	22.2	1.85	39.68	1.80	39.20	2.78	1.22
2015.06.10	Body	2450	22.2	2.01	53.56	1.95	52.70	3.08	1.63
Note: The tolerance limit of Conductivity and Permittivity is± 5%.									

ANNEX B SYSTEM CHECK RESULT

Comparing to the original SAR value provided by SATIMO, the validation data should be within its specification of 10 %(for 1 g).

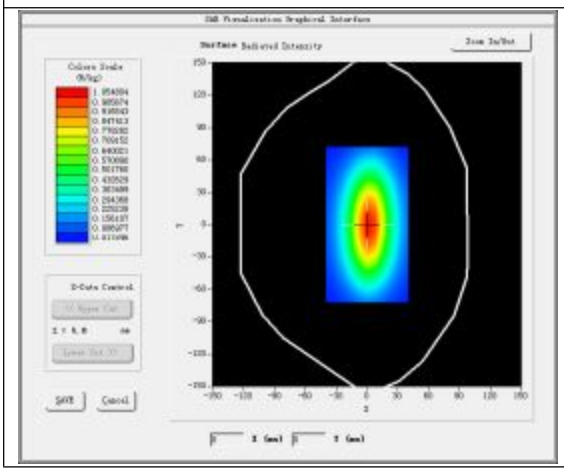
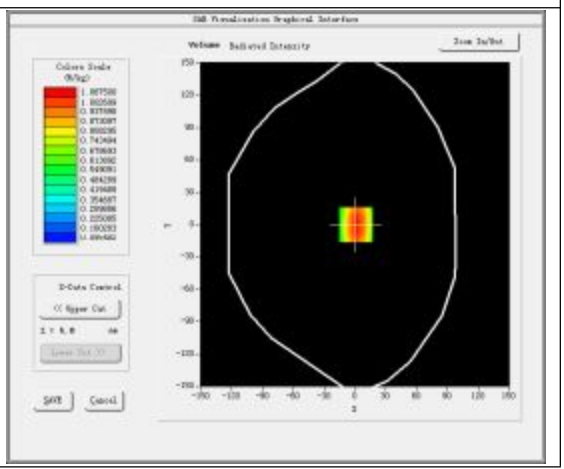
Date	Liquid Type	Freq. (MHz)	Power (mW)	Measured SAR (W/kg)	Normalized SAR (W/kg)	Dipole SAR (W/kg)	Tolerance (%)	Targeted SAR(W/kg)	Tolerance (%)
2015.06.02	Head	835	100	0.992	9.92	9.81	1.12	9.56	3.77
2015.06.02	Body	835	100	1.005	10.05	10.53	-4.56	9.56	5.13
2015.06.03	Head	1900	100	4.035	40.35	40.75	-0.98	39.70	1.64
2015.06.04	Body	1900	100	4.116	41.16	42.06	-2.14	39.70	3.68
2015.06.09	Body	1900	100	4.256	42.56	42.06	1.19	39.70	7.20
2015.06.10	Head	2450	100	5.356	53.56	54.29	-1.34	52.40	2.21
2015.06.10	Body	2450	100	5.463	54.63	54.70	-0.13	52.40	4.26
Note: The tolerance limit of System validation ±10%.									

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: 2015.06.02
Measurement duration: 13 minutes 27 seconds

Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	-
Band	835MHz
Channels	-
Signal	CW
Frequency (MHz)	835 MHz
Relative permittivity (real part)	40.863526
Relative permittivity	19.236865
Conductivity (S/m)	0.925683
Power drift (%)	-3.100000
Ambient Temperature:	22.8°C
Liquid Temperature:	22.2°C
ConvF:	3.34
Crest factor:	1:1

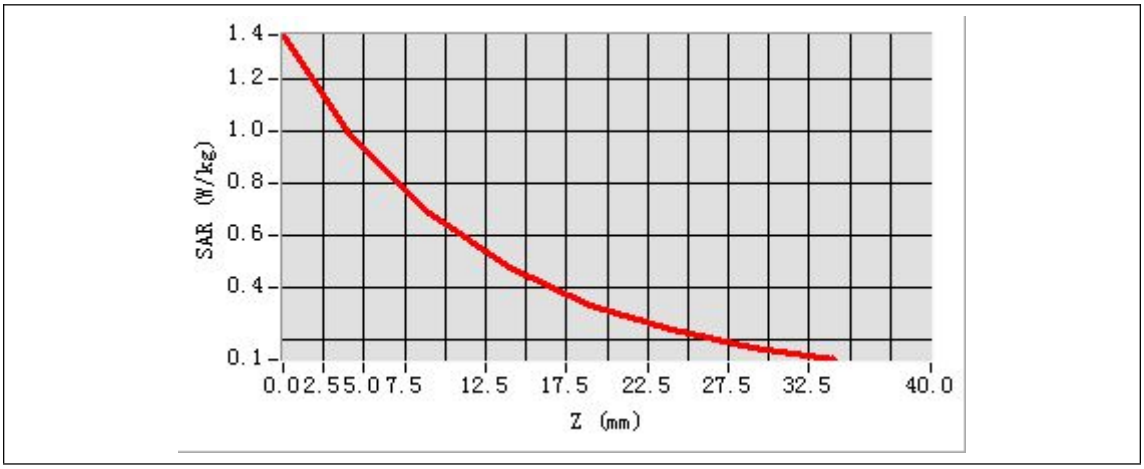
SURFACE SAR	VOLUME SAR
	

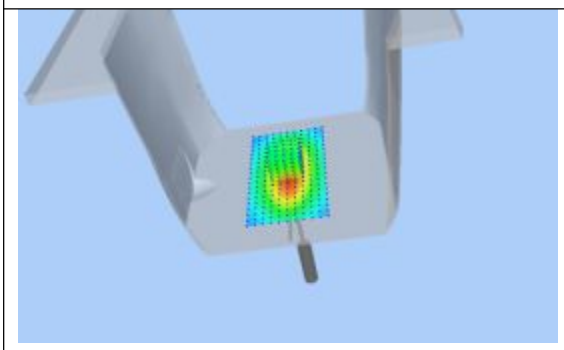
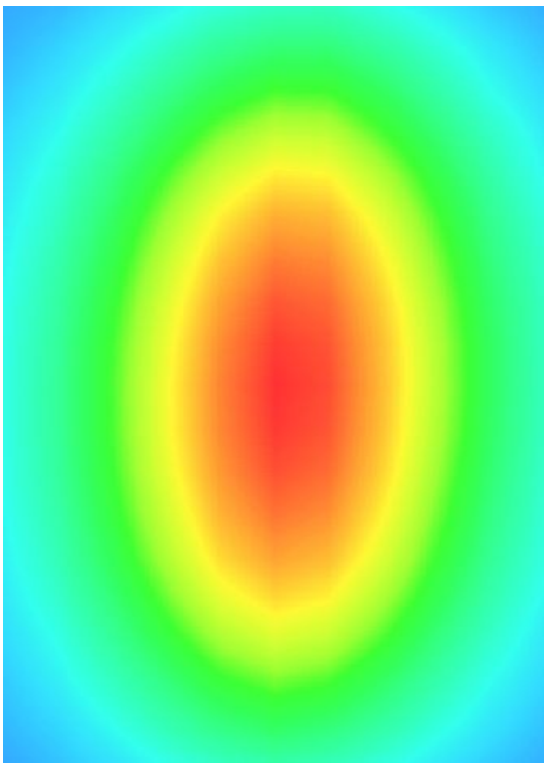
Maximum location: X=1.00, Y=0.00

SAR Peak: 1.38 W/kg

SAR 10g (W/Kg)	0.675863
SAR 1g (W/Kg)	0.992356

Z Axis Scan



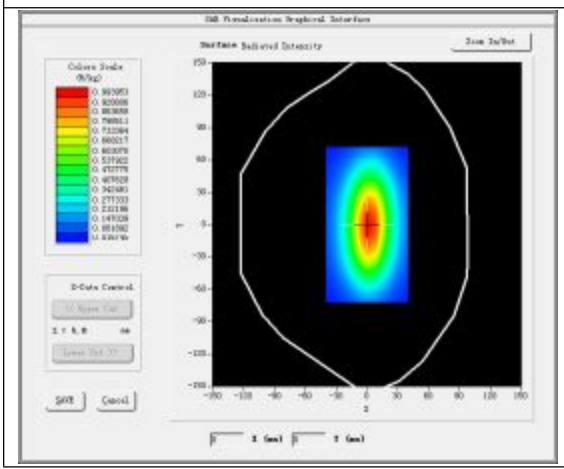
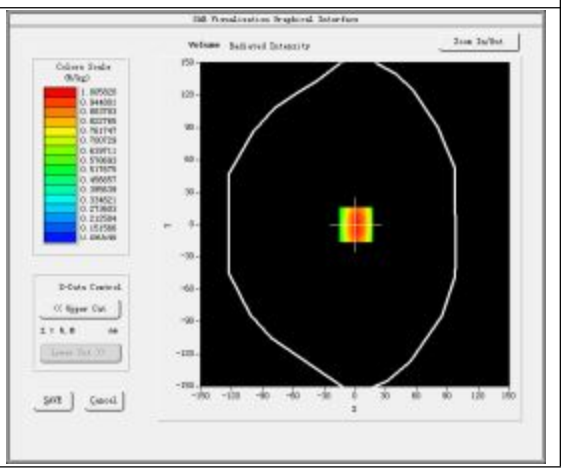
3D screen shot	Hot spot position
	

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: 2015.06.02
Measurement duration: 14 minutes 13 seconds

Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	-
Band	835MHz
Channels	-
Signal	CW
Frequency (MHz)	835MHz
Relative permittivity (real part)	56.102359
Relative permittivity	21.253685
Conductivity (S/m)	0.954365
Power drift (%)	0.090000
Ambient Temperature:	22.8°C
Liquid Temperature:	22.2°C
ConvF:	3.58
Crest factor:	1:1

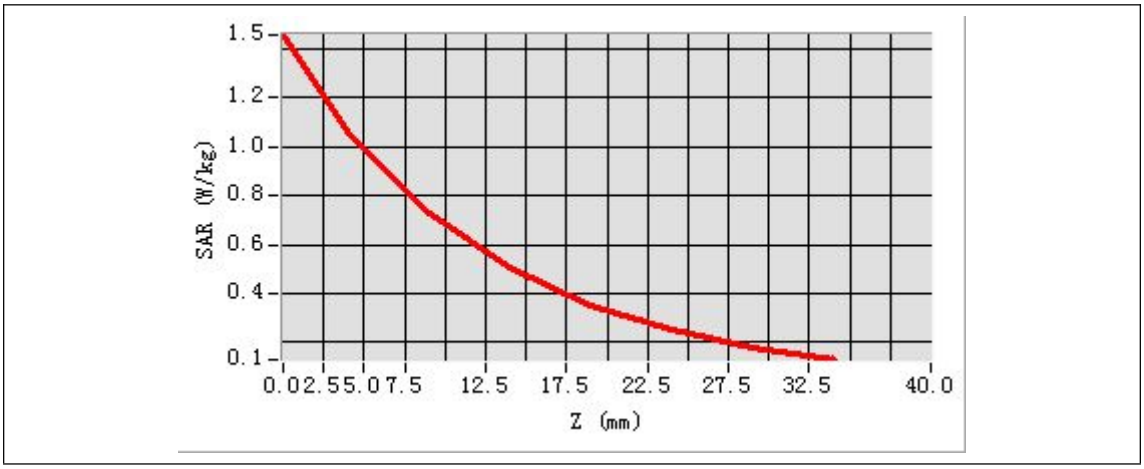
SURFACE SAR	VOLUME SAR
	

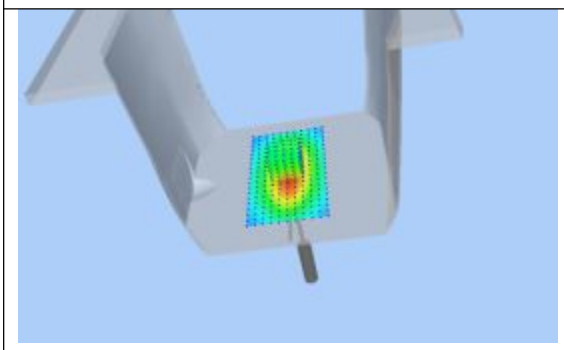
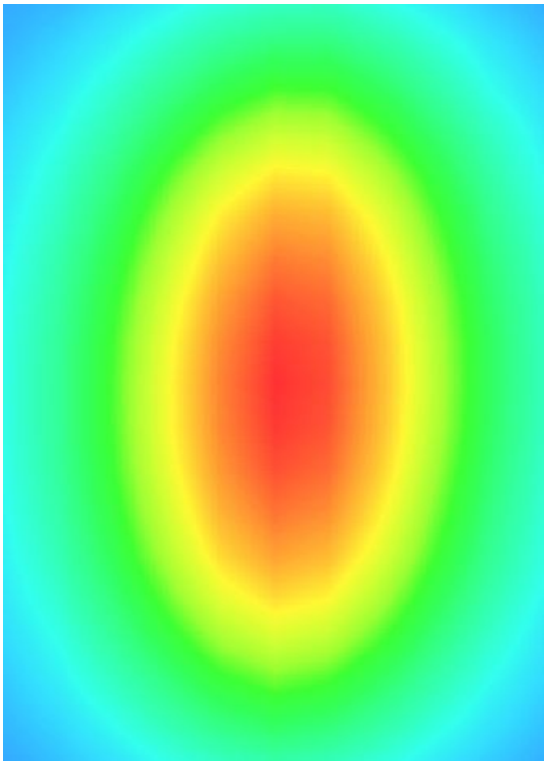
Maximum location: X=1.00, Y=0.00

SAR Peak: 1.47 W/kg

SAR 10g (W/Kg)	0.686523
SAR 1g (W/Kg)	1.004952

Z Axis Scan



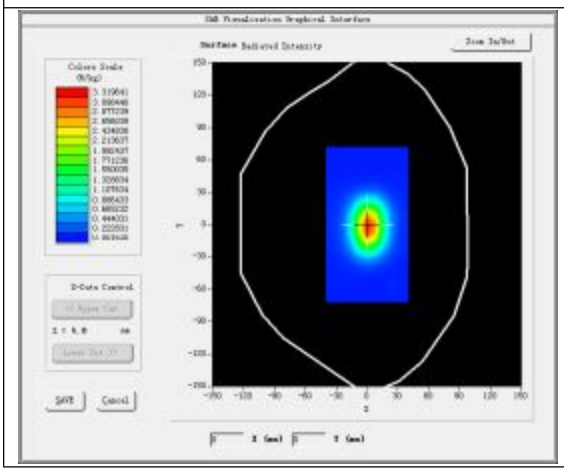
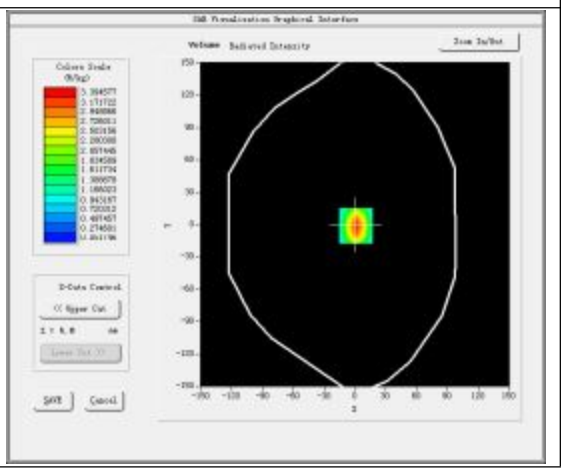
3D screen shot	Hot spot position
	

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: 2015.06.03
Measurement duration: 14 minutes 12 seconds

Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	-
Band	1900MHz
Channels	-
Signal	CW
Frequency (MHz)	1900MHz
Relative permittivity (real part)	39.502536
Relative permittivity	13.198636
Conductivity (S/m)	1.380025
Power drift (%)	0.020000
Ambient Temperature:	22.8°C
Liquid Temperature:	22.2°C
ConvF:	4.27
Crest factor:	1:1

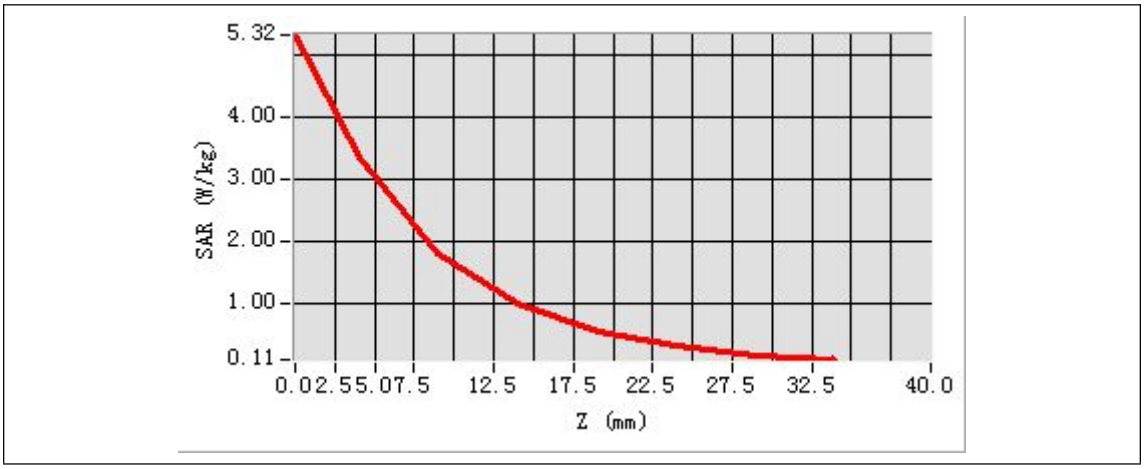
SURFACE SAR	VOLUME SAR
	

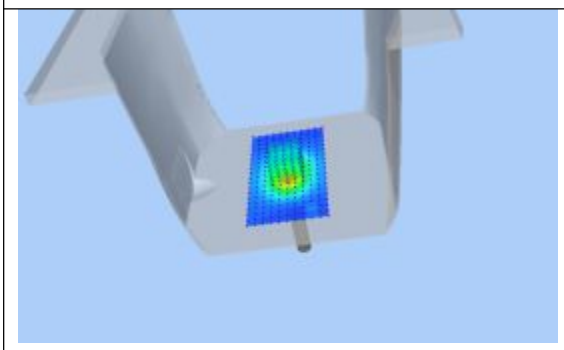
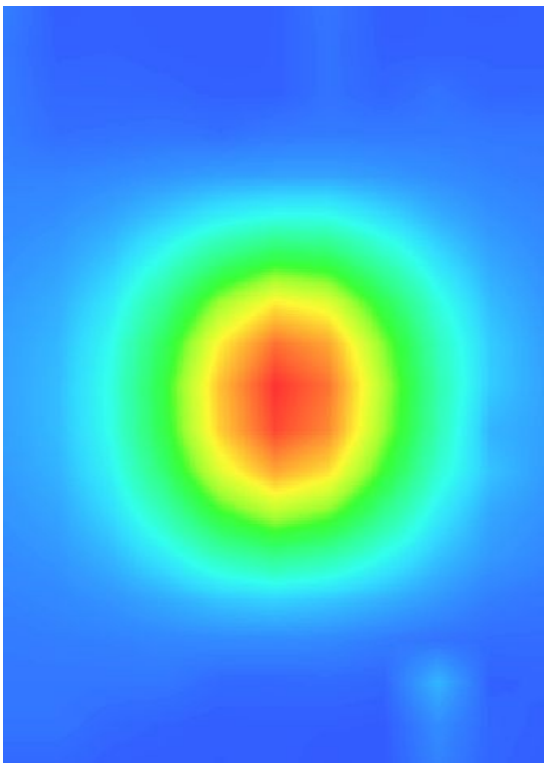
Maximum location: X=1.00, Y=-1.00

SAR Peak: 5.28 W/kg

SAR 10g (W/Kg)	1.602536
SAR 1g (W/Kg)	3.852368

Z Axis Scan



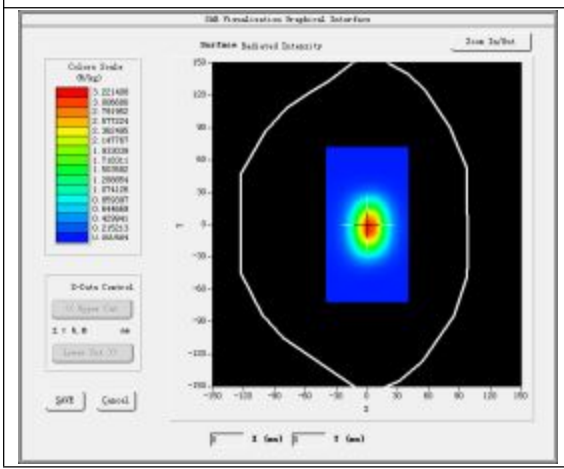
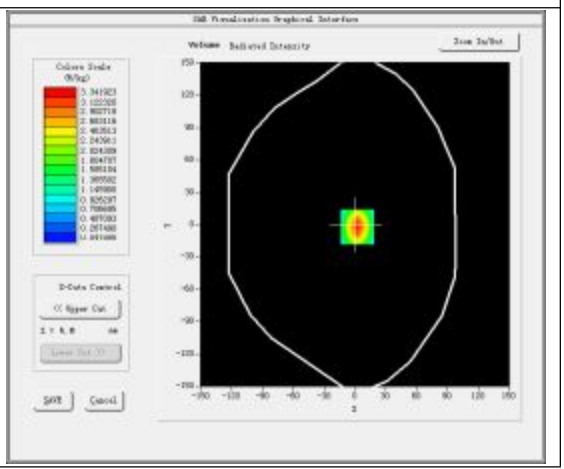
3D screen shot	Hot spot position
	

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: 2015.06.04
Measurement duration: 14 minutes 46 seconds

Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	-
Band	1900MHz
Channels	-
Signal	CW
Frequency (MHz)	1900.000000
Relative permittivity (real part)	54.260000
Relative permittivity	12.905356
Conductivity (S/m)	1.490023
Power drift (%)	0.370000
Ambient Temperature:	22.8°C
Liquid Temperature:	22.2°C
ConvF:	4.38
Crest factor:	1:1

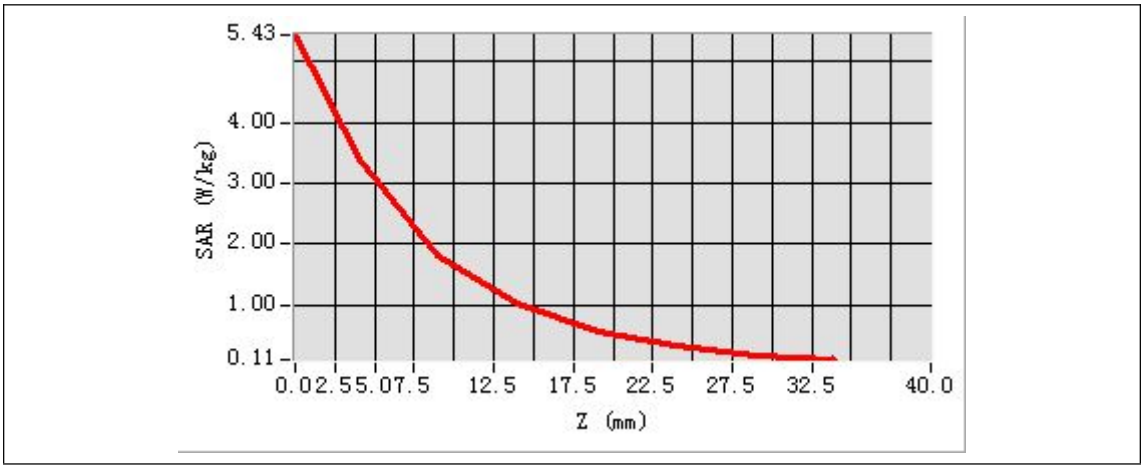
SURFACE SAR	VOLUME SAR
	

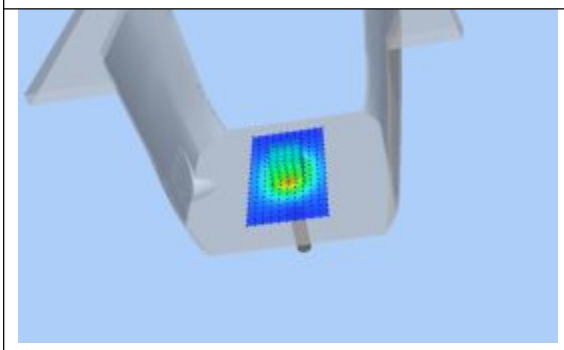
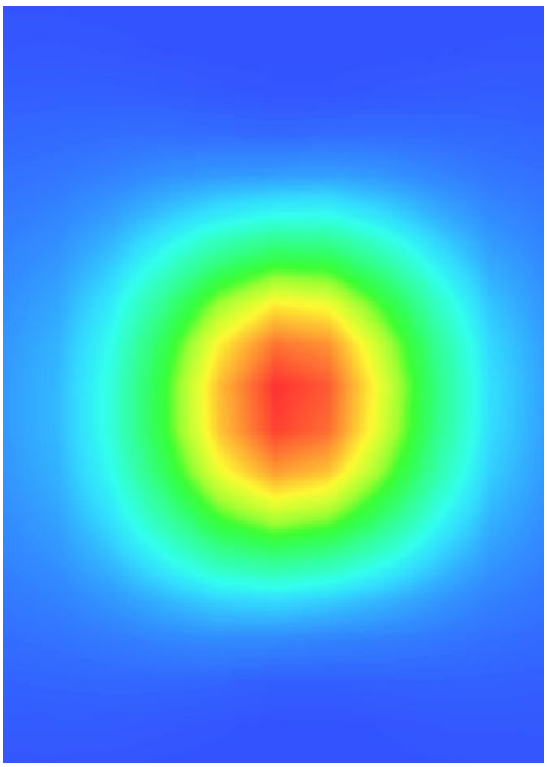
Maximum location: X=2.00, Y=-2.00

SAR Peak: 5.38 W/kg

SAR 10g (W/Kg)	1.985632
SAR 1g (W/Kg)	4.115863

Z Axis Scan



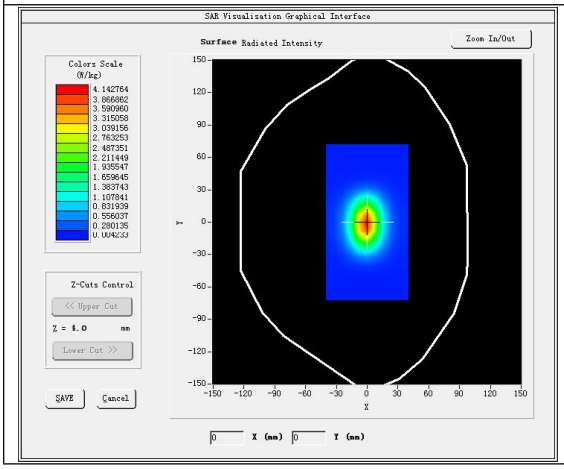
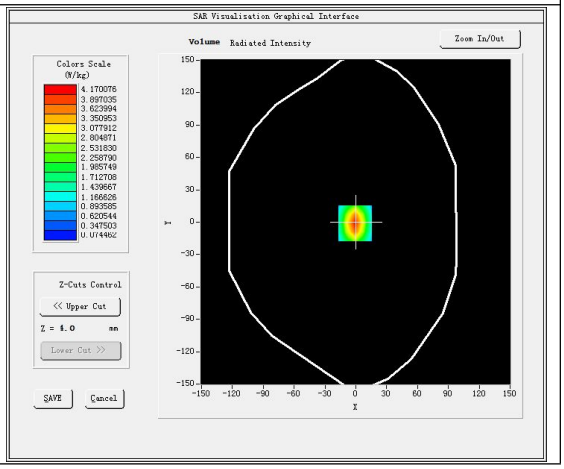
3D screen shot	Hot spot position
	

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: 2015.06.09
Measurement duration: 14 minutes 46 seconds

Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	-
Band	1900MHz
Channels	-
Signal	CW
Frequency (MHz)	1900.000000
Relative permittivity (real part)	52.140000
Relative permittivity	12.536523
Conductivity (S/m)	1.560253
Power drift (%)	0.460000
Ambient Temperature:	22.8°C
Liquid Temperature:	22.2°C
ConvF:	4.38
Crest factor:	1:1

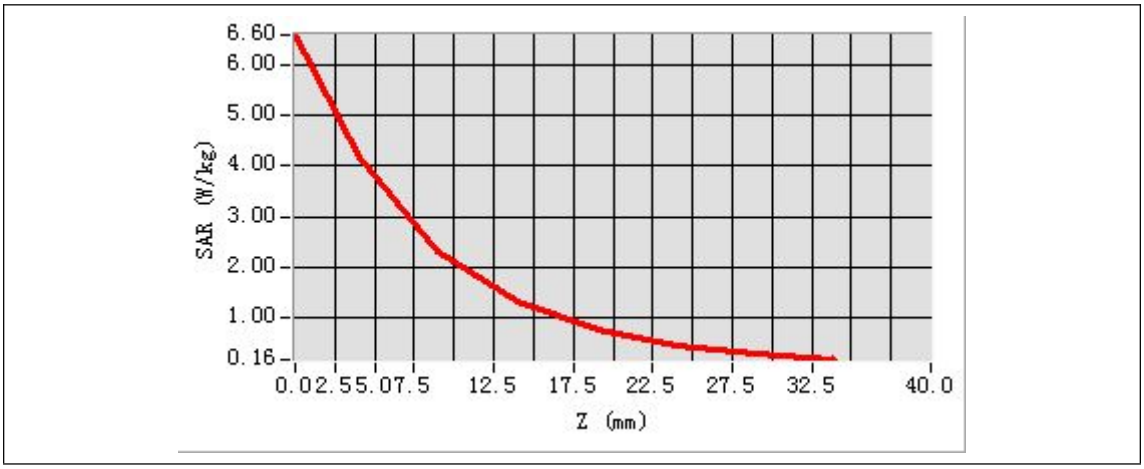
SURFACE SAR	VOLUME SAR
	

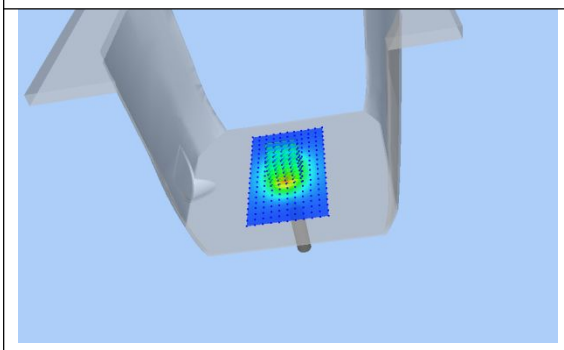
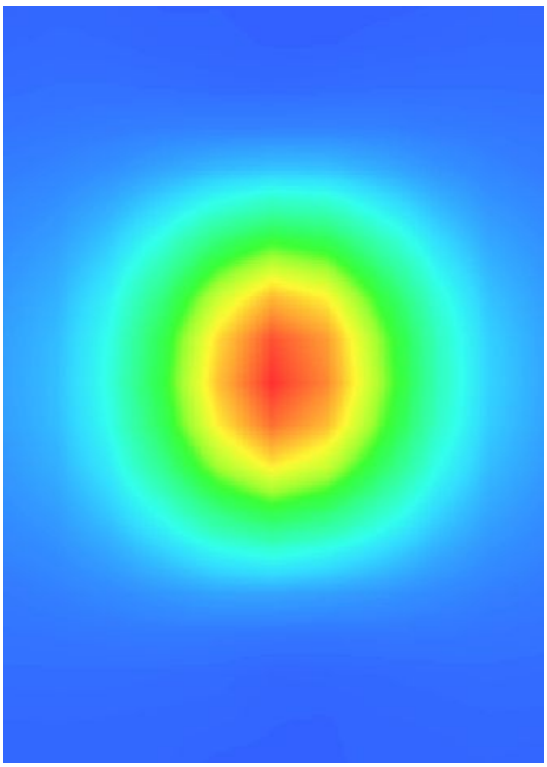
Maximum location: X=0.00, Y=0.00

SAR Peak: 6.52 W/kg

SAR 10g (W/Kg)	1.992362
SAR 1g (W/Kg)	4.255893

Z Axis Scan



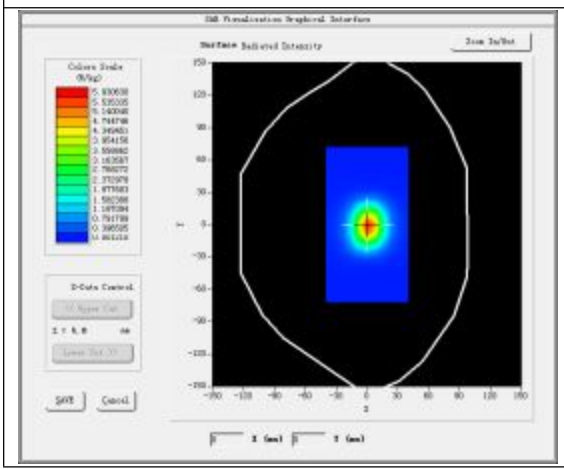
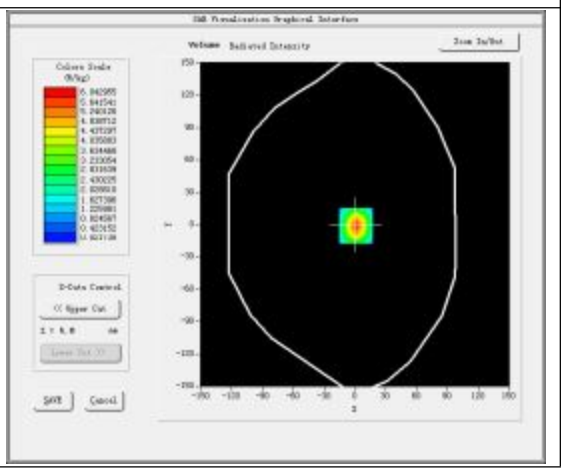
3D screen shot	Hot spot position
	

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: 2015.06.10
Measurement duration: 12 minutes 38 seconds

Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	-
Band	24500MHz
Channels	-
Signal	CW
Frequency (MHz)	2450.000000
Relative permittivity (real part)	39.680052
Relative permittivity	13.215236
Conductivity (S/m)	1.853262
Power drift (%)	-1.200000
Ambient Temperature:	22.6°C
Liquid Temperature:	22.1°C
ConvF:	4.38
Crest factor:	1:1

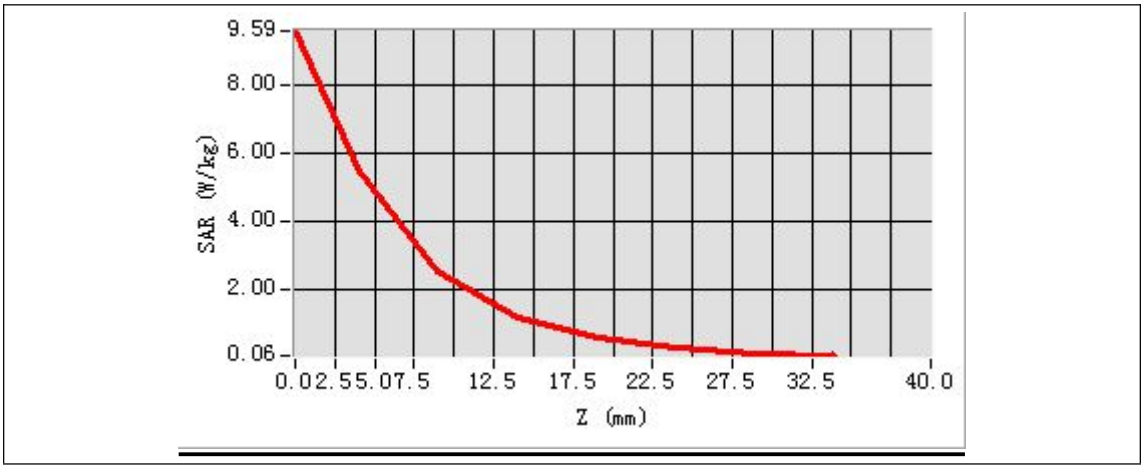
SURFACE SAR	VOLUME SAR
	

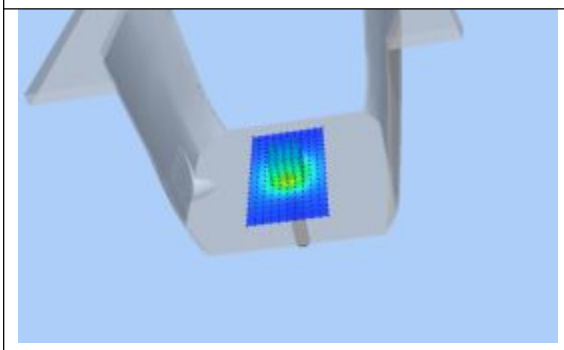
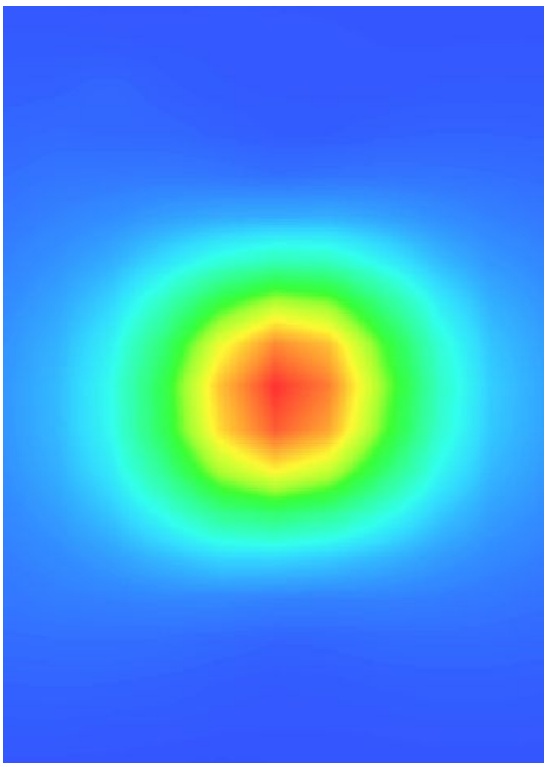
Maximum location: X=1.00, Y=-1.00

SAR Peak: 9.56 W/kg

SAR 10g (W/Kg)	2.297836
SAR 1g (W/Kg)	5.356203

Z Axis Scan



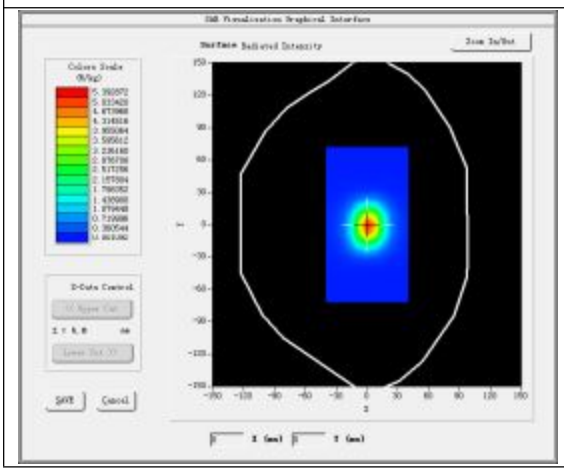
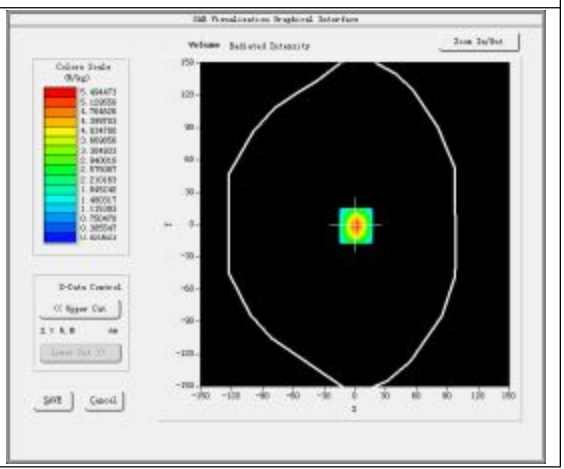
3D screen shot	Hot spot position
	

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: 2015.06.10
Measurement duration: 14 minutes 46 seconds

Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	-
Band	2450MHz
Channels	-
Signal	CW
Frequency (MHz)	2450.000000
Relative permittivity (real part)	53.560000
Relative permittivity	11.982563
Conductivity (S/m)	2.013568
Power drift (%)	0.370000
Ambient Temperature:	22.6°C
Liquid Temperature:	22.1°C
ConvF:	4.42
Crest factor:	1:1

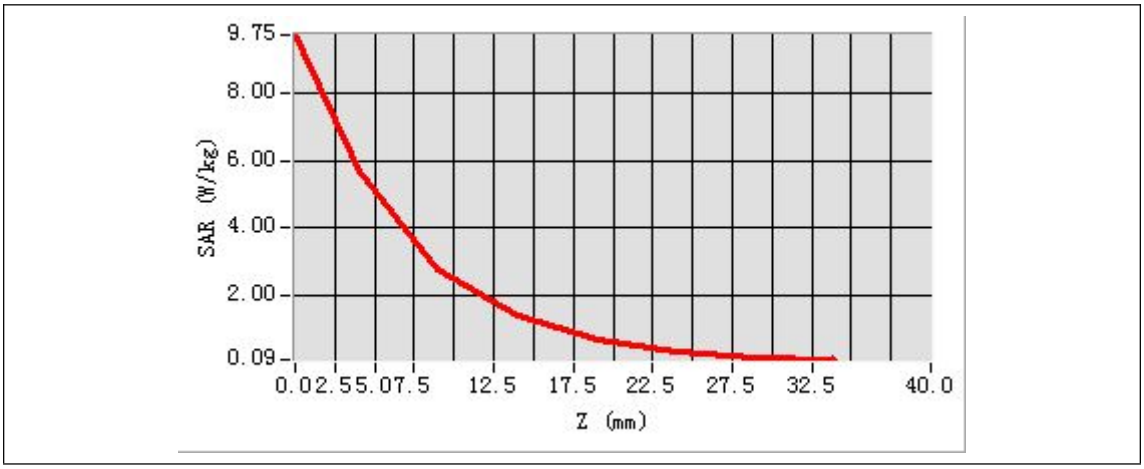
SURFACE SAR	VOLUME SAR
	

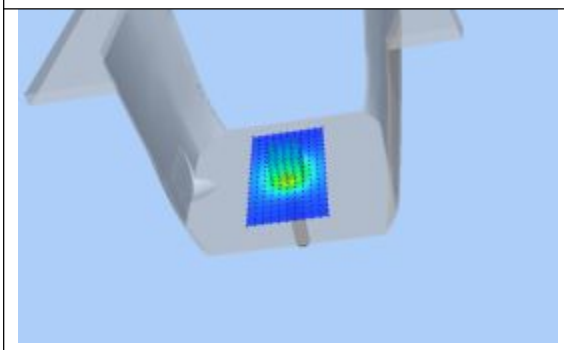
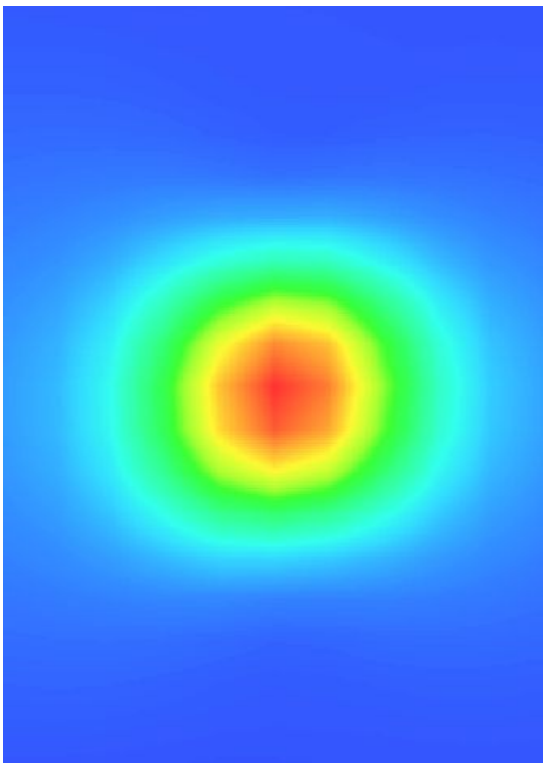
Maximum location: X=1.00, Y=-1.00

SAR Peak: 9.72 W/kg

SAR 10g (W/Kg)	2.302133
SAR 1g (W/Kg)	5.462953

Z Axis Scan



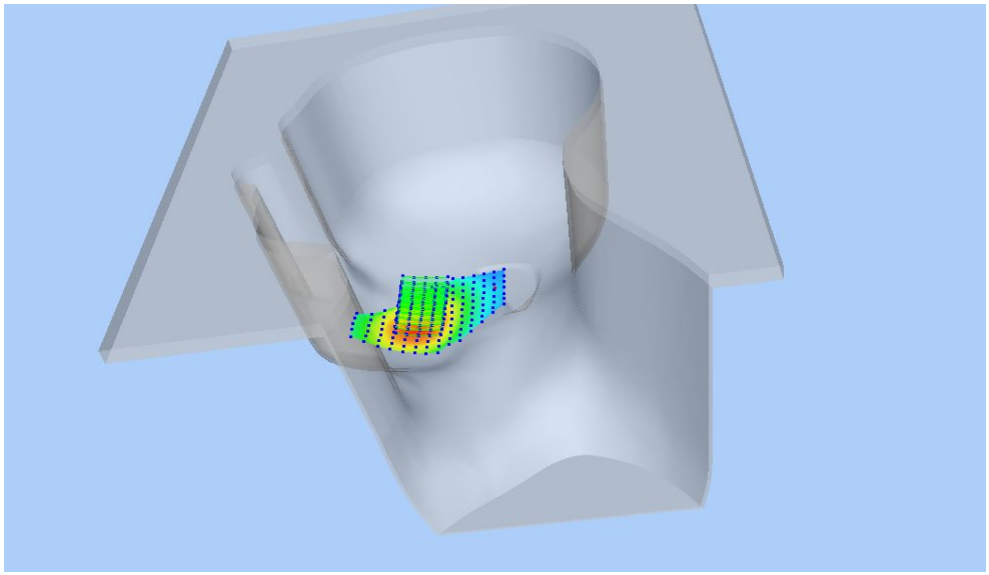
3D screen shot	Hot spot position
	

ANNEX C TEST DATA

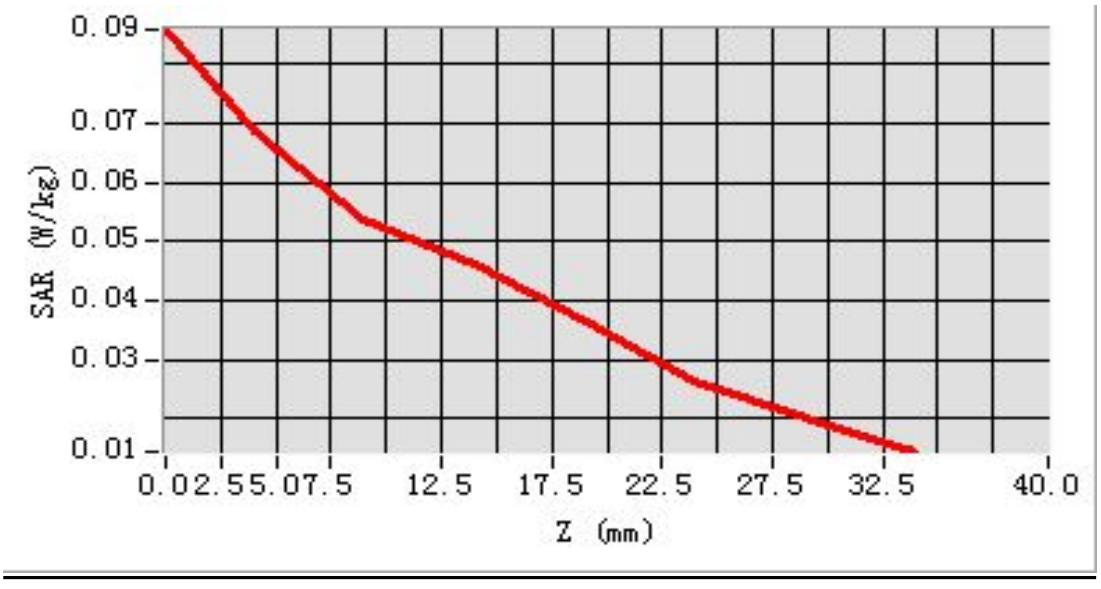
MEAS. 1 Right Head with Cheek on High Channel in GSM850 mode

Test Date:	2/6/2015
Signal:	GSM, f=848.8 MHz, Duty Cycle: 1:8.3
Liquid Parameters:	Permittivity: 40.98; Conductivity: 0.91 S/m
Test condition:	Ambient Temperature: 22.8°C, Liquid Temperature: 22.2°C
Probe:	EP187, ConvF: 3.34
Area Scan:	sam_direct_droit2_surf8mm.txt, h= 5.00 mm
Zoom Scan:	5x5x7,dx=8mm, dy=8mm, dz=5mm,Complete
Maximum location:	X=-56.000000, Y=-32.000000
SAR 10g (W/Kg):	0.050724
SAR 1g (W/Kg):	0.071351
Power drift (%):	-1.06

3D screen shot



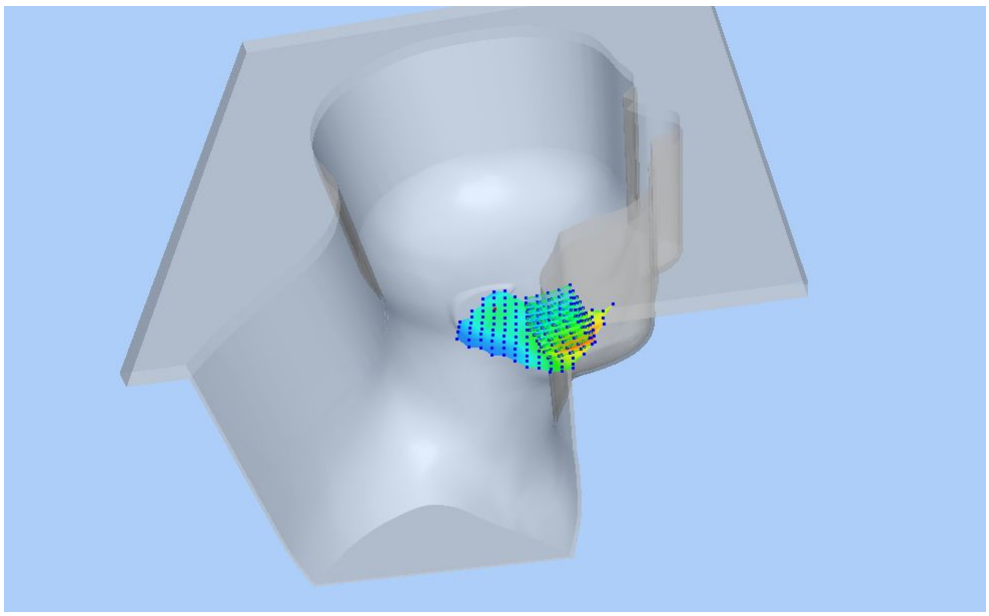
Z Axis Scan



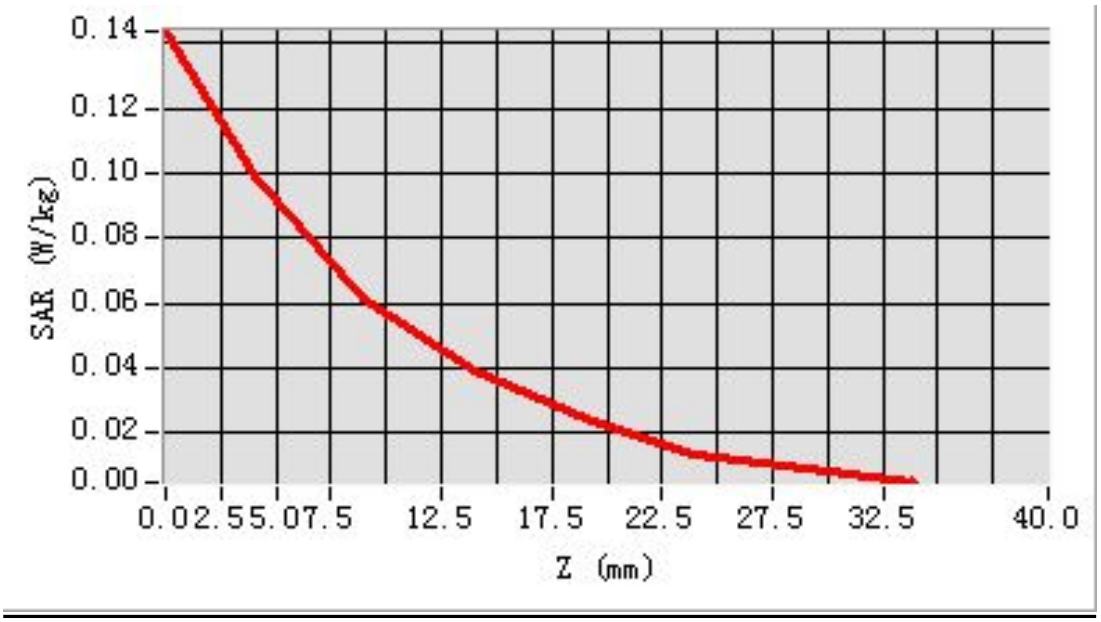
MEAS. 2 Left Head with Cheek on Low Channel in GSM1900 mode

Test Date:	3/6/2015
Signal:	GSM, f=1850.2 MHz, Duty Cycle: 1:8.3
Liquid Parameters:	Permittivity: 39.86; Conductivity: 1.35 S/m
Test condition:	Ambient Temperature: 22.8°C, Liquid Temperature: 22.2°C
Probe:	EP187, ConvF: 4.27
Area Scan:	sam_direct_droit2_surf8mm.txt, h= 5.00 mm
Zoom Scan:	5x5x7,dx=8mm, dy=8mm, dz=5mm,Complete
Maximum location:	X=-56.000000, Y=-48.000000
SAR 10g (W/Kg):	0.052233
SAR 1g (W/Kg):	0.093748
Power drift (%):	-2.68

3D screen shot



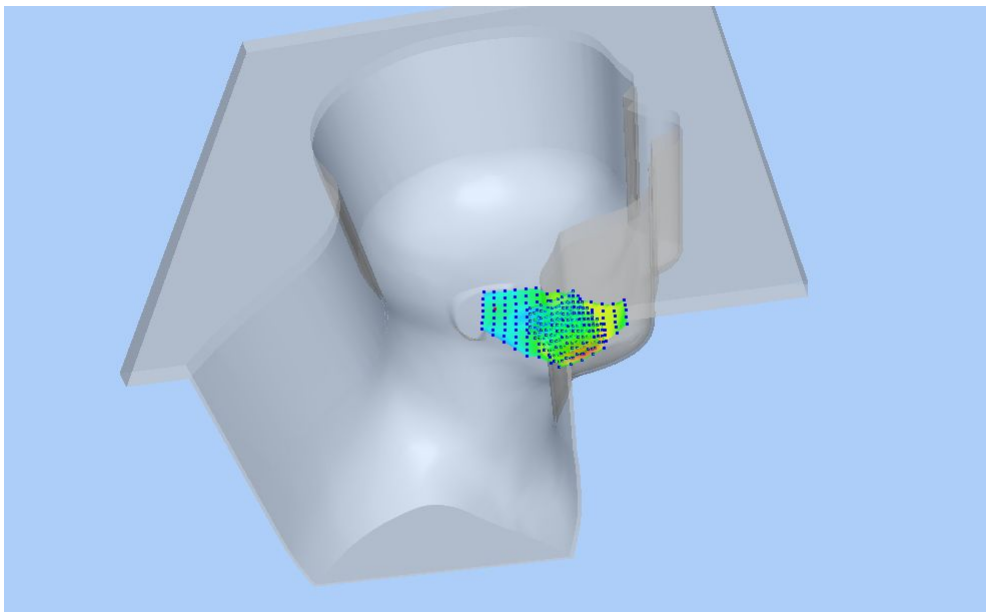
Z Axis Scan



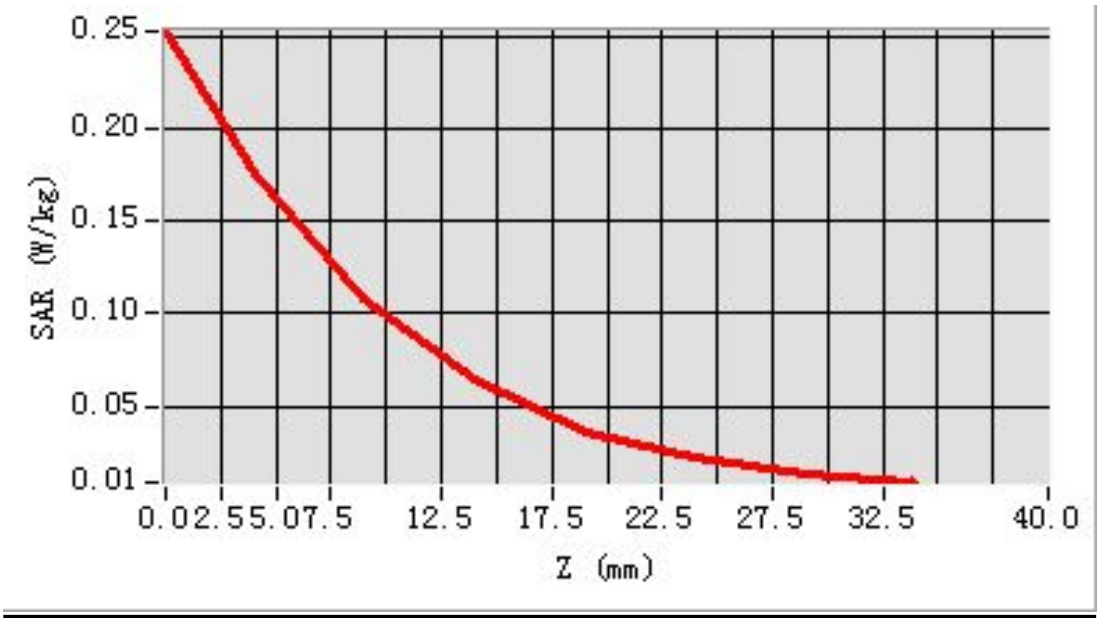
MEAS. 3 Left Head with Cheek on Middle Channel in WCDMA Band2 mode

Test Date:	3/6/2015
Signal:	WCDMA, f=1880.0 MHz, Duty Cycle: 1:1.0
Liquid Parameters:	Permittivity: 40.12; Conductivity: 1.42 S/m
Test condition:	Ambient Temperature: 22.8°C, Liquid Temperature: 22.2°C
Probe:	EP187, ConvF: 4.27
Area Scan:	sam_direct_droit2_surf8mm.txt, h= 5.00 mm
Zoom Scan:	5x5x7,dx=8mm, dy=8mm, dz=5mm,Complete
Maximum location:	X=-64.000000, Y=-64.000000
SAR 10g (W/Kg):	0.094836
SAR 1g (W/Kg):	0.167082
Power drift (%):	-2.81

3D screen shot



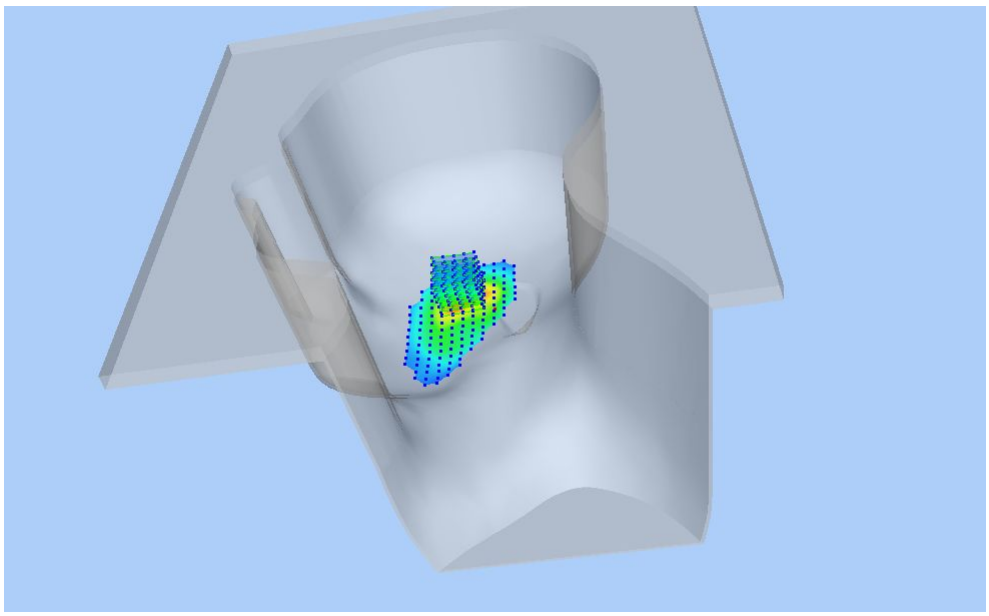
Z Axis Scan



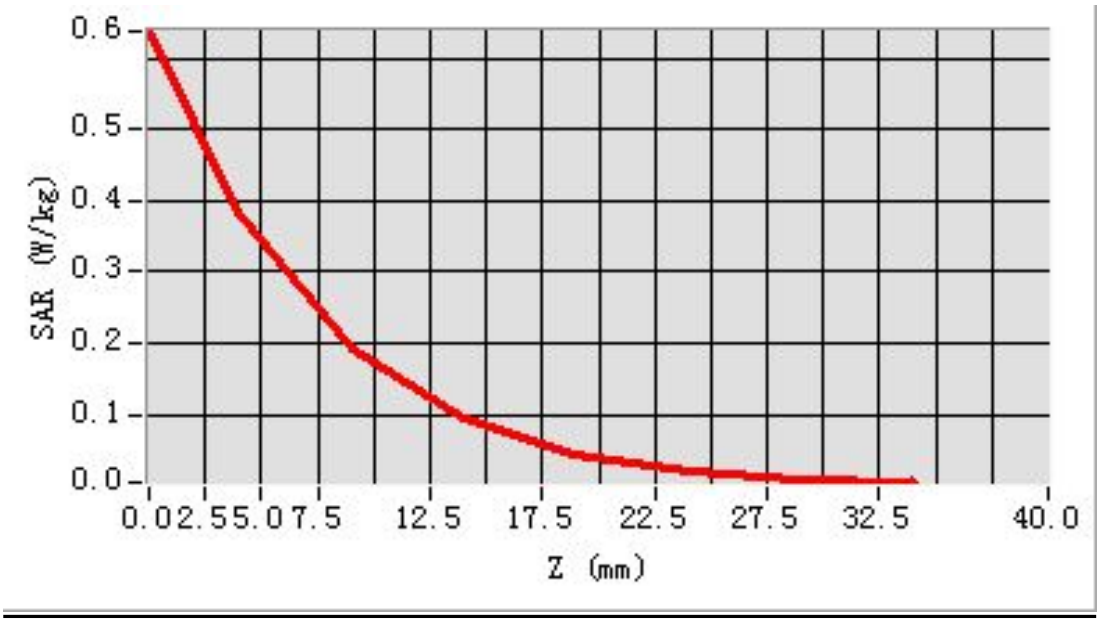
MEAS. 4 Right Head with Cheek on Middle Channel in IEEE 802.11b mode

Test Date:	10/6/2015
Signal:	WLAN, f=2442.0 MHz, Duty Cycle: 1:1.0
Liquid Parameters:	Permittivity: 40.44; Conductivity: 1.82 S/m
Test condition:	Ambient Temperature: 22.8°C, Liquid Temperature: 22.2°C
Probe:	EP187, ConvF: 4.38
Area Scan:	sam_direct_droit2_surf8mm.txt, h= 5.00 mm
Zoom Scan:	5x5x7,dx=8mm, dy=8mm, dz=5mm,Complete
Maximum location:	X=-24.000000, Y=16.000000
SAR 10g (W/Kg):	0.175770
SAR 1g (W/Kg):	0.363389
Power drift (%):	1.13

3D screen shot



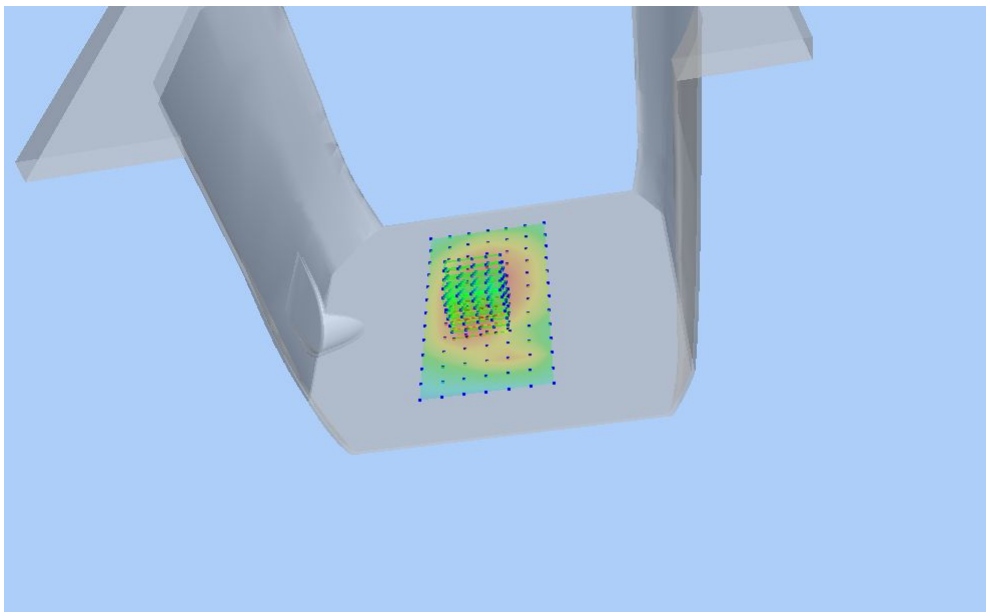
Z Axis Scan



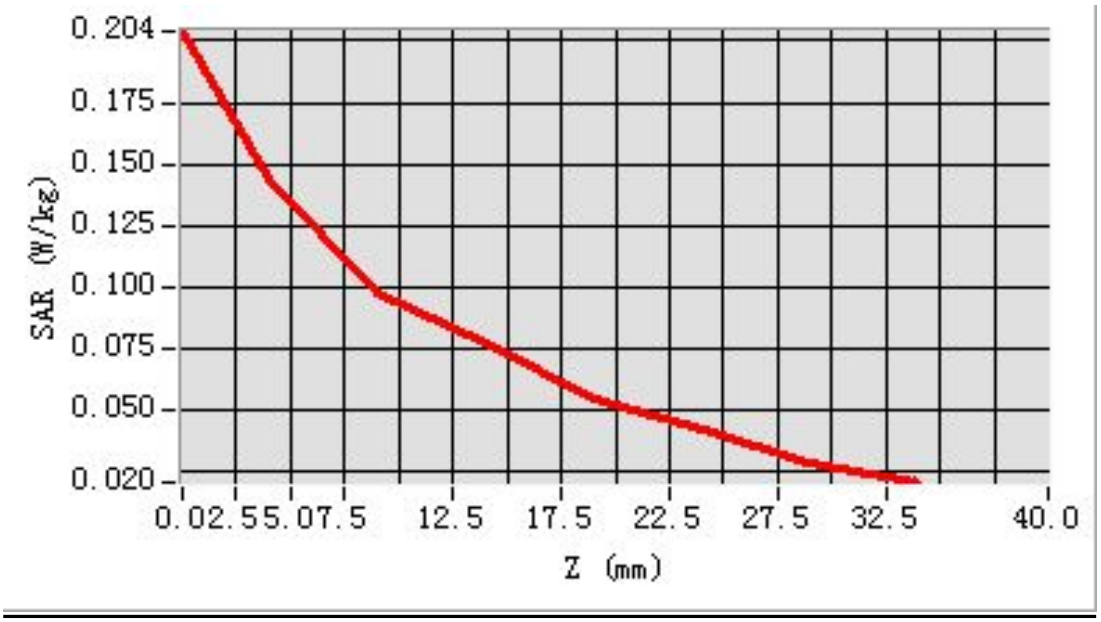
MEAS. 5 Body Plane with Back Side on High Channel in GSM850 mode

Test Date:	2/6/2015
Signal:	GSM, f=848.8 MHz, Duty Cycle: 1:8.3
Liquid Parameters:	Permittivity: 55.98; Conductivity: 0.95 S/m
Test condition:	Ambient Temperature: 22.8°C, Liquid Temperature: 22.2°C
Probe:	EP187, ConvF: 3.58
Area Scan:	sam_direct_droit2_surf12mm.txt, h= 5.00 mm
Zoom Scan:	5x5x7,dx=8mm, dy=8mm, dz=5mm,Complete
Maximum location:	X=-4.000000, Y=12.000000
SAR 10g (W/Kg):	0.100344
SAR 1g (W/Kg):	0.145542
Power drift (%):	-2.12

3D screen shot



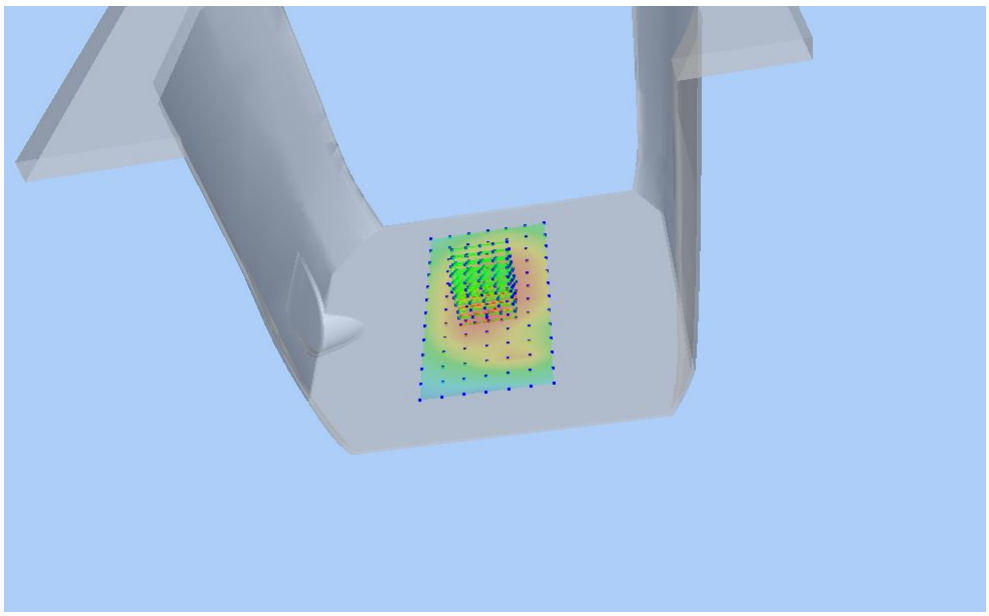
Z Axis Scan



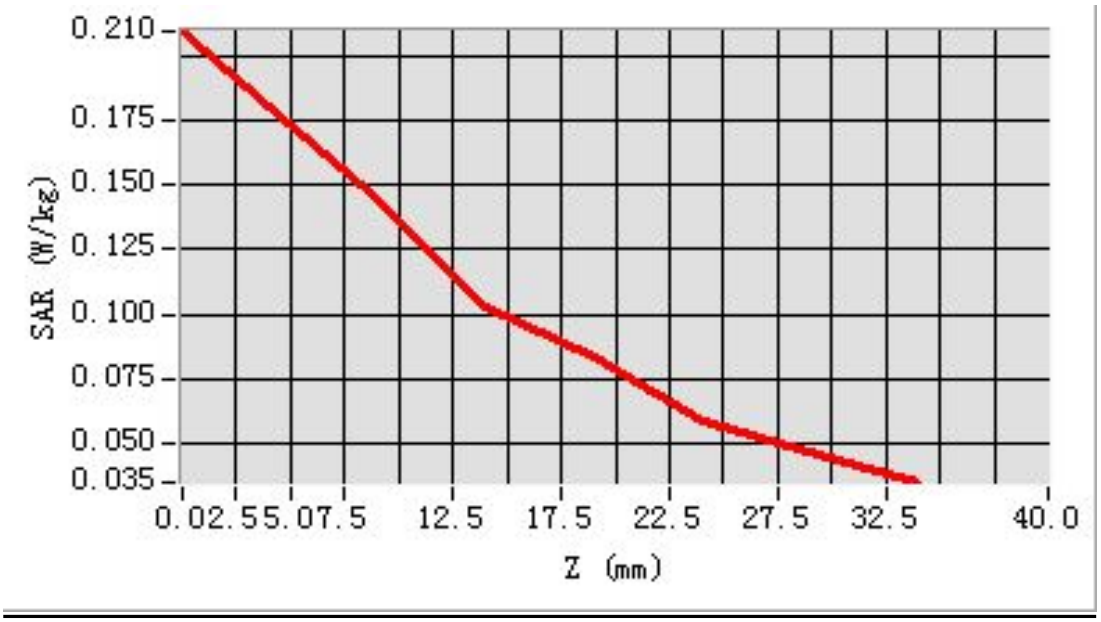
MEAS. 6 Body Plane with Back Side on Low Channel in GPRS850-12 mode

Test Date:	2/6/2015
Signal:	GPRS, f=824.2 MHz, Duty Cycle: 1:2.0
Liquid Parameters:	Permittivity: 55.24; Conductivity: 0.98 S/m
Test condition:	Ambient Temperature: 22.8°C, Liquid Temperature: 22.2°C
Probe:	EP187, ConvF: 3.58
Area Scan:	sam_direct_droit2_surf12mm.txt, h= 5.00 mm
Zoom Scan:	5x5x7,dx=8mm, dy=8mm, dz=5mm,Complete
Maximum location:	X=-4.000000, Y=0.000000
SAR 10g (W/Kg):	0.125351
SAR 1g (W/Kg):	0.171489
Power drift (%):	3.22

3D screen shot



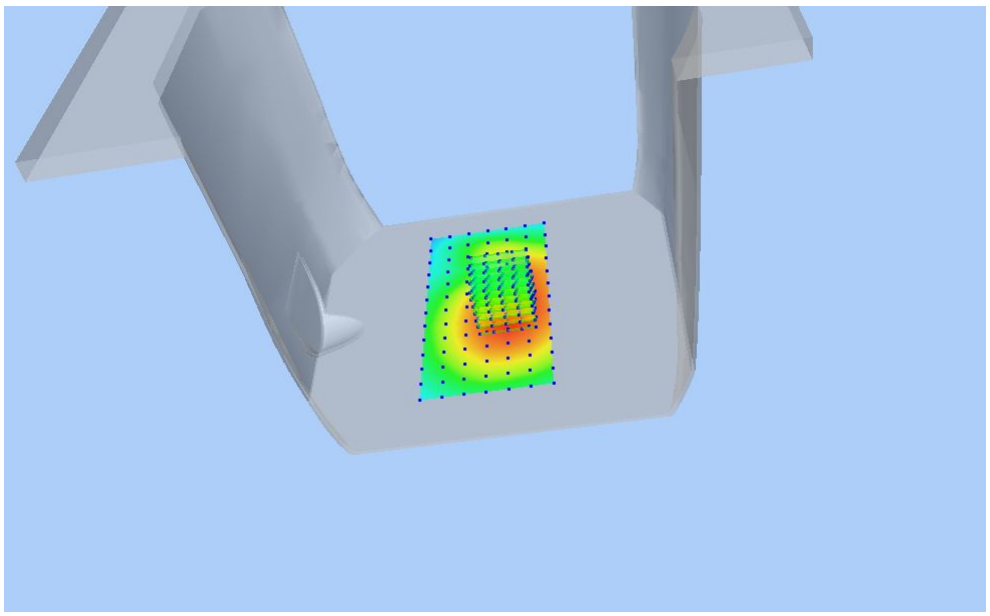
Z Axis Scan



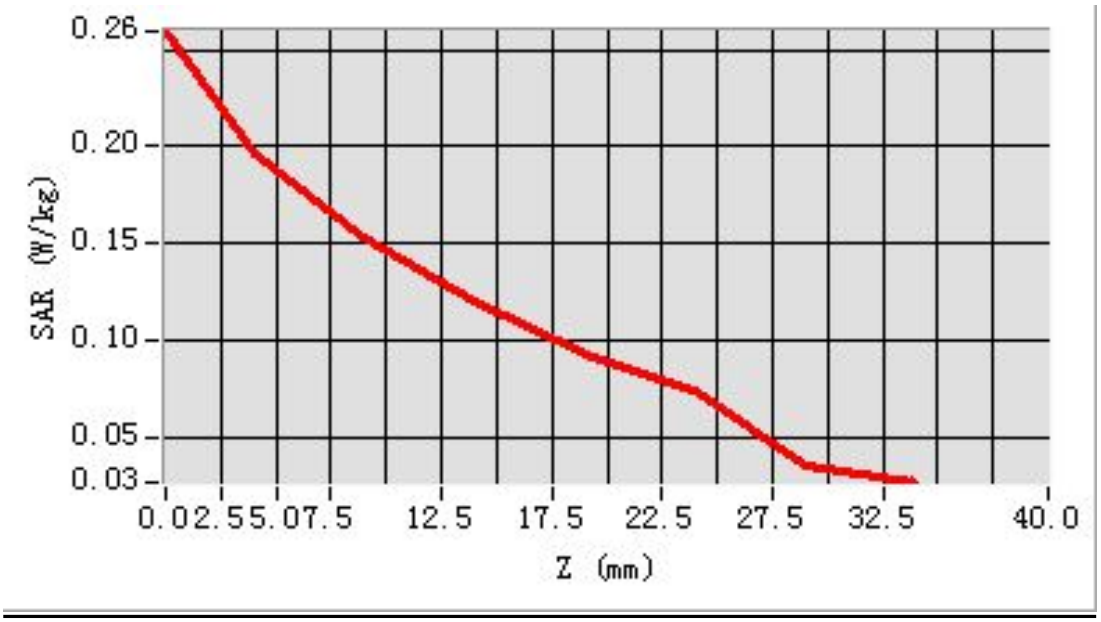
MEAS. 7 Body Plane with Back Side on Low Channel in EGPRS850-12 mode

Test Date:	2/6/2015
Signal:	EGPRS, f=824.2 MHz, Duty Cycle: 1:2.0
Liquid Parameters:	Permittivity: 55.24; Conductivity: 0.98 S/m
Test condition:	Ambient Temperature: 22.8°C, Liquid Temperature: 22.2°C
Probe:	EP187, ConvF: 3.58
Area Scan:	sam_direct_droit2_surf12mm.txt, h= 5.00 mm
Zoom Scan:	5x5x7,dx=8mm, dy=8mm, dz=5mm,Complete
Maximum location:	X=8.000000, Y=-12.000000
SAR 10g (W/Kg):	0.141746
SAR 1g (W/Kg):	0.195679
Power drift (%):	-1.85

3D screen shot



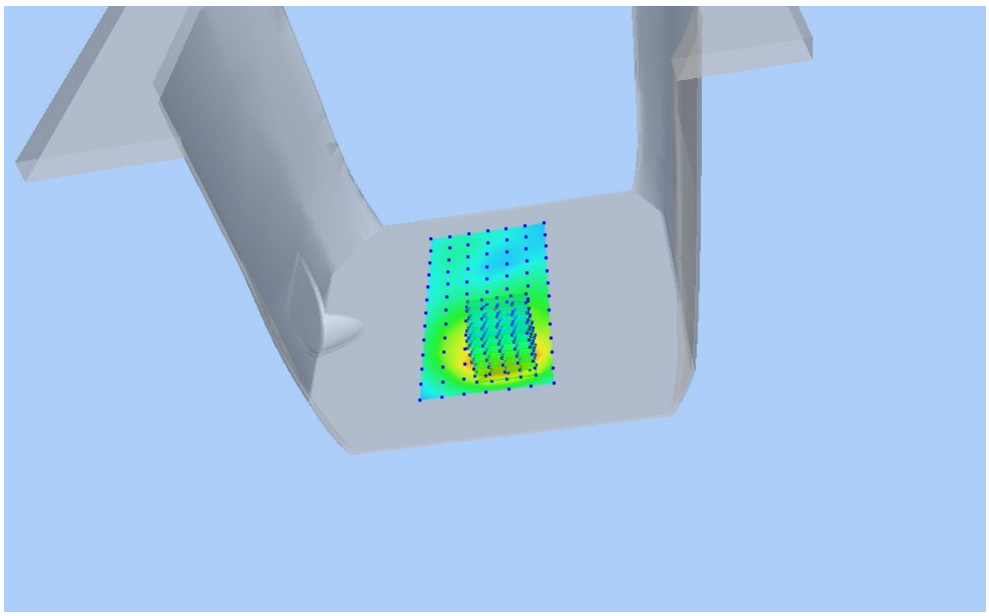
Z Axis Scan



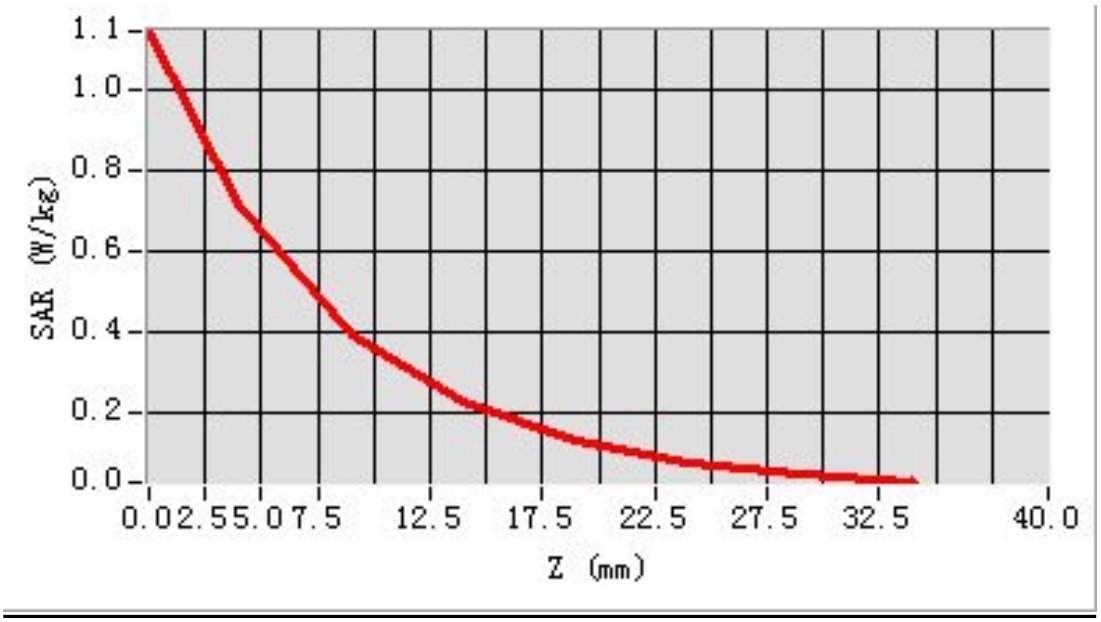
MEAS. 8 Body Plane with Back Side on Low Channel in GSM1900 mode

Test Date:	4/6/2015
Signal:	GSM, f=1850.2 MHz, Duty Cycle: 1:8.3
Liquid Parameters:	Permittivity: 54.13; Conductivity: 1.48 S/m
Test condition:	Ambient Temperature: 22.8°C, Liquid Temperature: 22.2°C
Probe:	EP187, ConvF: 4.38
Area Scan:	sam_direct_droit2_surf12mm.txt, h= 5.00 mm
Zoom Scan:	5x5x7,dx=8mm, dy=8mm, dz=5mm,Complete
Maximum location:	X=-4.000000, Y=-48.000000
SAR 10g (W/Kg):	0.359224
SAR 1g (W/Kg):	0.684215
Power drift (%):	2.06

3D screen shot



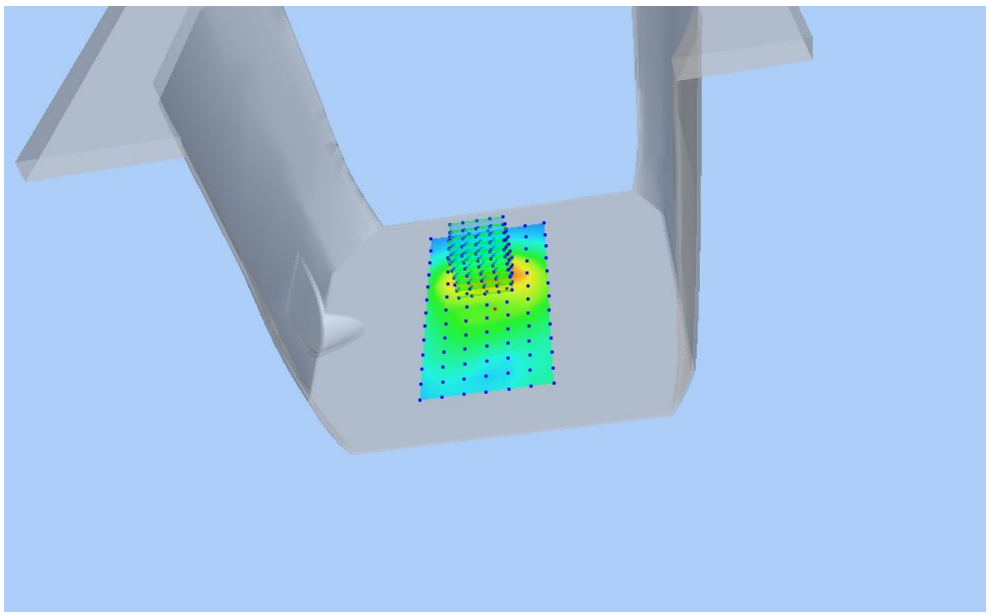
Z Axis Scan



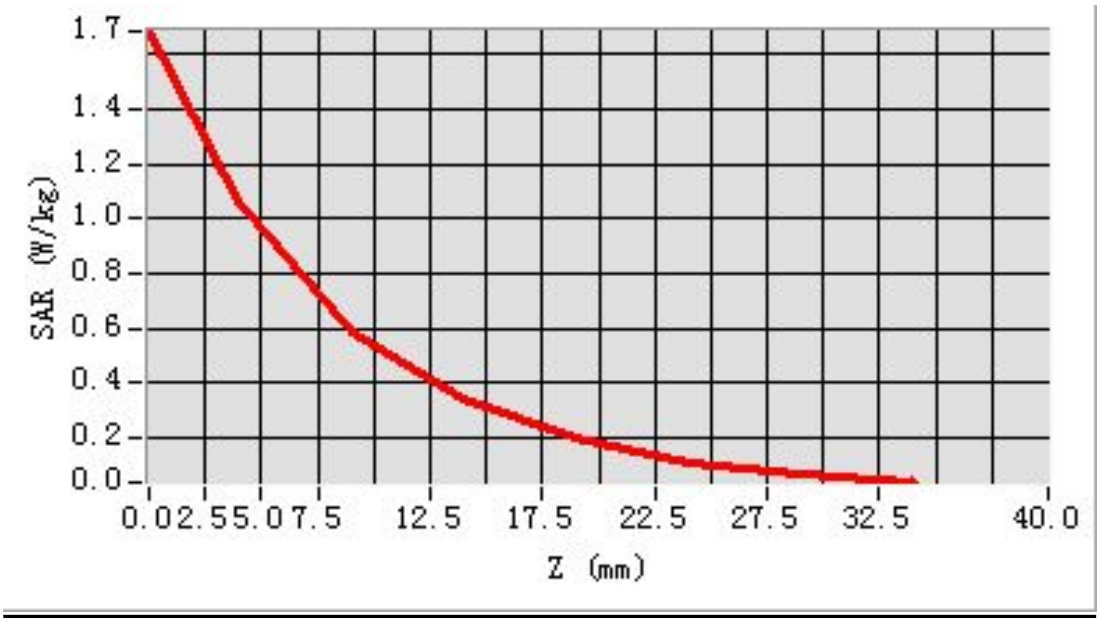
MEAS. 9 Body Plane with Back Side on Low Channel in GPRS1900-12 mode

Test Date:	4/6/2015
Signal:	GPRS, f=1850.2 MHz, Duty Cycle: 1:2.0
Liquid Parameters:	Permittivity: 54.13; Conductivity: 1.48 S/m
Test condition:	Ambient Temperature: 22.8°C, Liquid Temperature: 22.2°C
Probe:	EP187, ConvF: 4.38
Area Scan:	sam_direct_droit2_surf12mm.txt, h= 5.00 mm
Zoom Scan:	5x5x7,dx=8mm, dy=8mm, dz=5mm,Complete
Maximum location:	X=-4.000000, Y=24.000000
SAR 10g (W/Kg):	0.545970
SAR 1g (W/Kg):	1.031850
Power drift (%):	1.27

3D screen shot



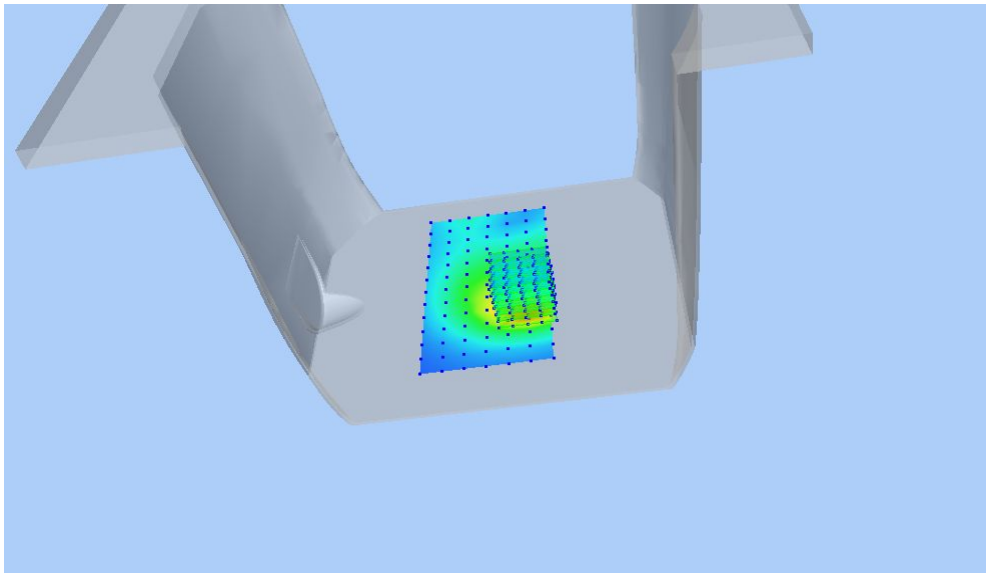
Z Axis Scan



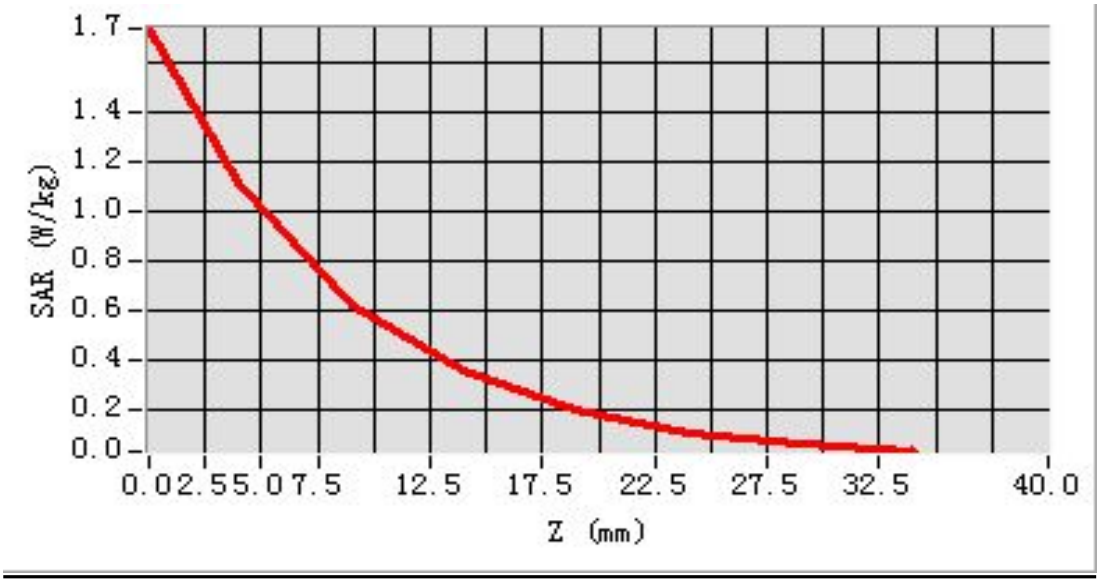
MEAS. 10 Body Plane with Back Side on Low Channel in EGPRS1900-12 mode

Test Date:	4/6/2015
Signal:	EGPRS, f=1850.2 MHz, Duty Cycle: 1:2.0
Liquid Parameters:	Permittivity: 54.13; Conductivity: 1.48 S/m
Test condition:	Ambient Temperature: 22.8°C, Liquid Temperature: 22.2°C
Probe:	EP187, ConvF: 4.38
Area Scan:	sam_direct_droit2_surf12mm.txt, h= 5.00 mm
Zoom Scan:	5x5x7,dx=8mm, dy=8mm, dz=5mm,Complete
Maximum location:	X=8.000000, Y=-36.000000
SAR 10g (W/Kg):	0.554772
SAR 1g (W/Kg):	1.062059
Power drift (%):	-0.49

3D screen shot



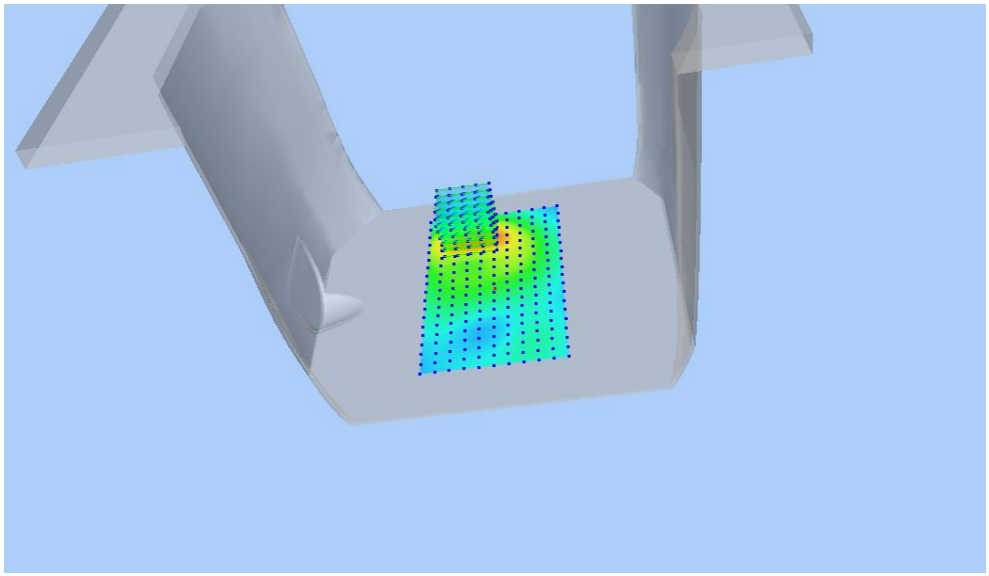
Z Axis Scan



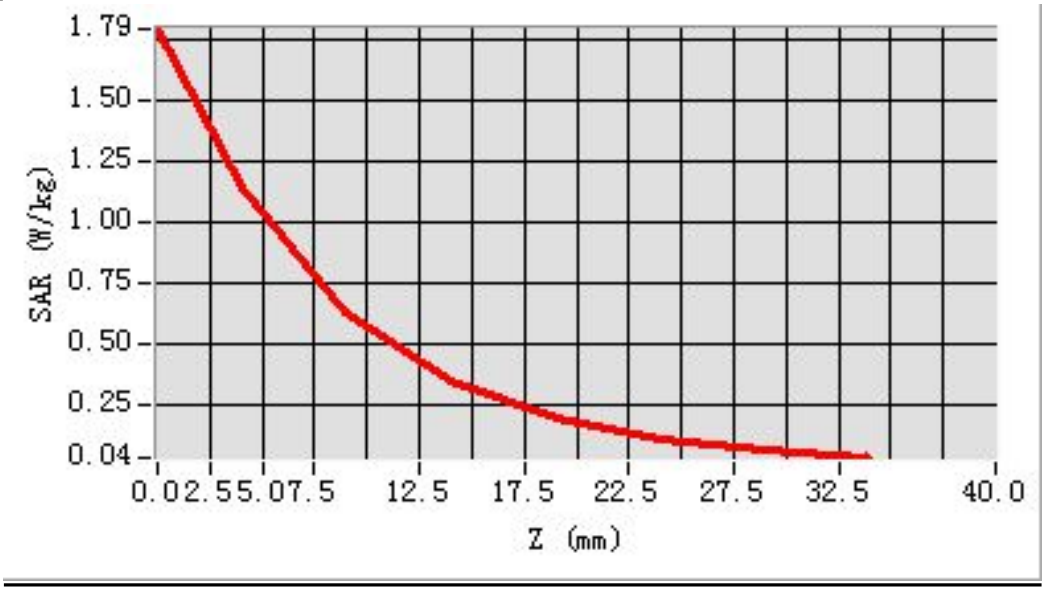
MEAS. 11 Body Plane with Back Side on Middle Channel in WCDMA Band2 mode

Test Date:	9/6/2015
Signal:	WCDMA, f=1880.0 MHz, Duty Cycle: 1:1.0
Liquid Parameters:	Permittivity: 54.05; Conductivity: 1.49 S/m
Test condition:	Ambient Temperature: 22.8°C, Liquid Temperature: 22.2°C
Probe:	EP187, ConvF: 4.38
Area Scan:	sam_direct_droit2_surf8mm.txt, h= 5.00 mm
Zoom Scan:	5x5x7,dx=8mm, dy=8mm, dz=5mm,Complete
Maximum location:	X=-16.000000, Y=48.000000
SAR 10g (W/Kg):	0.569272
SAR 1g (W/Kg):	1.069911
Power drift (%):	1.90

3D screen shot



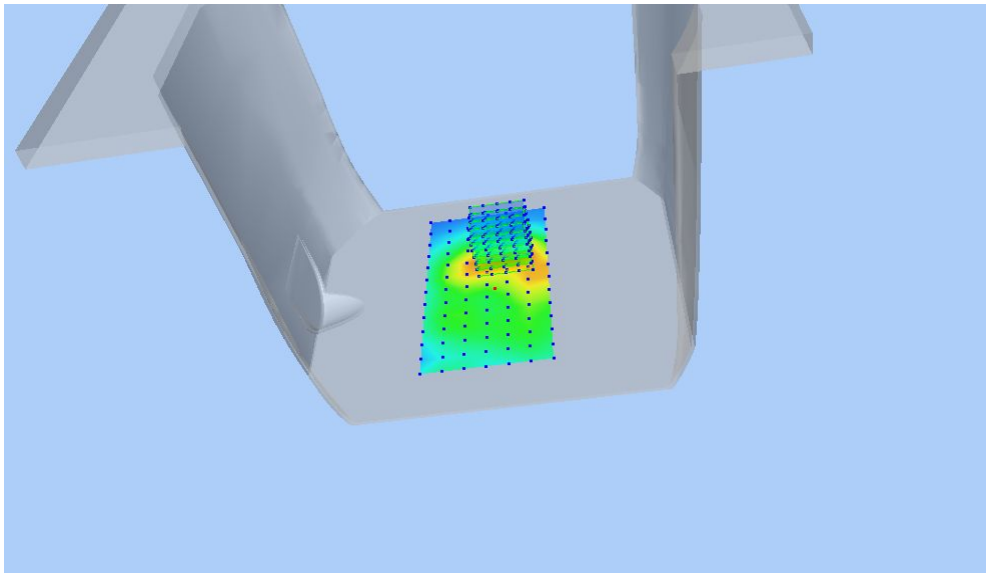
Z Axis Scan



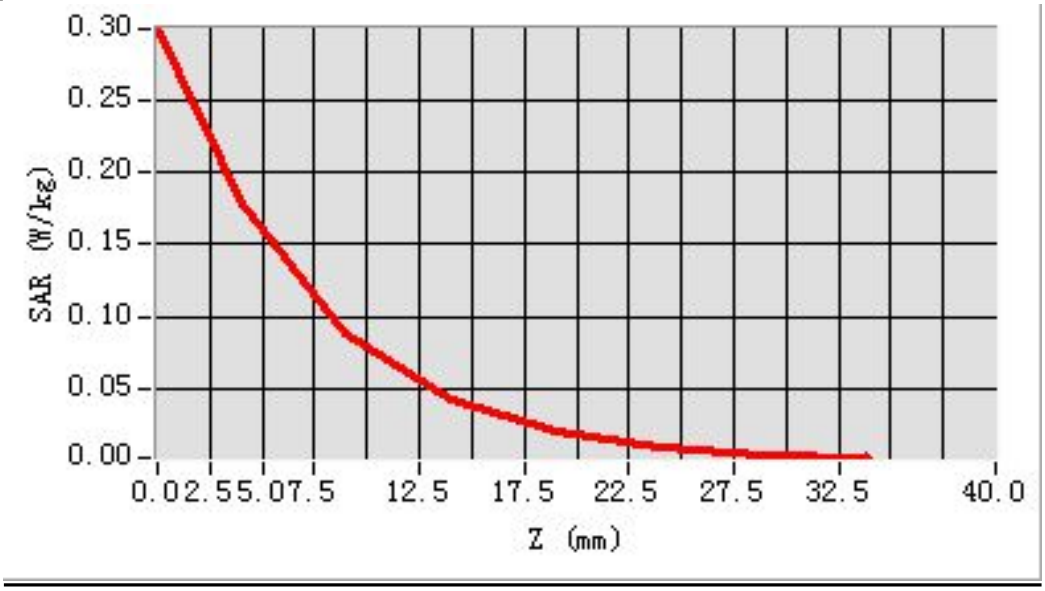
MEAS. 12 Body Plane with Back Side on Middle Channel in IEEE 802.11b mode

Test Date:	10/6/2015
Signal:	WLAN, f=2442.0 MHz, Duty Cycle: 1:1.0
Liquid Parameters:	Permittivity: 52.72; Conductivity: 1.94 S/m
Test condition:	Ambient Temperature: 22.8°C, Liquid Temperature: 22.2°C
Probe:	EP187, ConvF: 4.42
Area Scan:	sam_direct_droit2_surf12mm.txt, h= 5.00 mm
Zoom Scan:	5x5x7,dx=8mm, dy=8mm, dz=5mm,Complete
Maximum location:	X=8.000000, Y=24.000000
SAR 10g (W/Kg):	0.085125
SAR 1g (W/Kg):	0.177676
Power drift (%):	1.22

3D screen shot



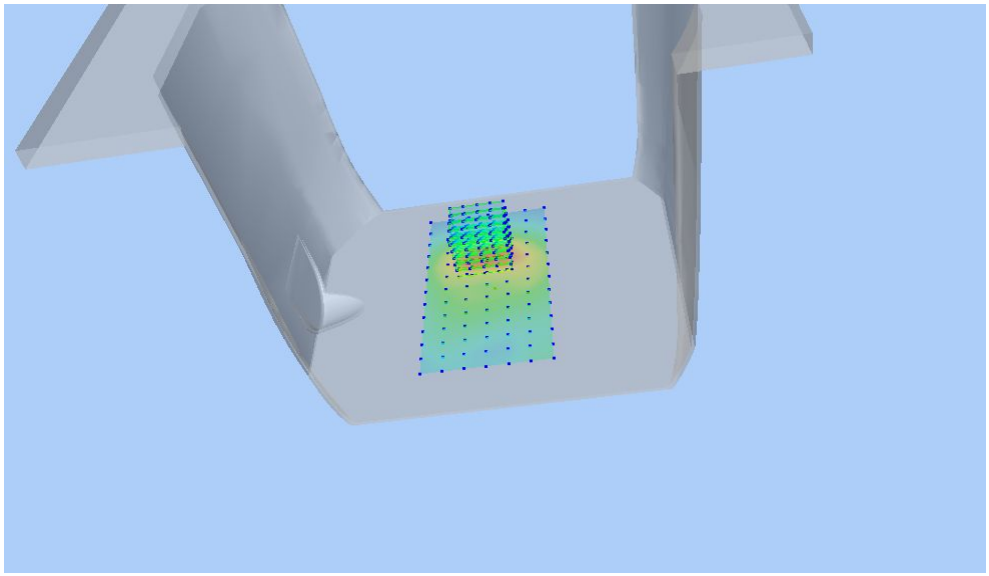
Z Axis Scan



MEAS. 13 Body Plane with Back Side on Middle Channel in GPRS1900-12 mode

Test Date:	4/6/2015
Signal:	GPRS, f=1880.0 MHz, Duty Cycle: 1:2.0
Liquid Parameters:	Permittivity: 53.15; Conductivity: 1.55 S/m
Test condition:	Ambient Temperature: 22.8°C, Liquid Temperature: 22.2°C
Probe:	EP187, ConvF: 4.38
Area Scan:	sam_direct_droit2_surf12mm.txt, h= 5.00 mm
Zoom Scan:	5x5x7,dx=8mm, dy=8mm, dz=5mm,Complete
Maximum location:	X=-4.000000, Y=24.000000
SAR 10g (W/Kg):	0.473203
SAR 1g (W/Kg):	0.905860
Power drift (%):	-2.29

3D screen shot

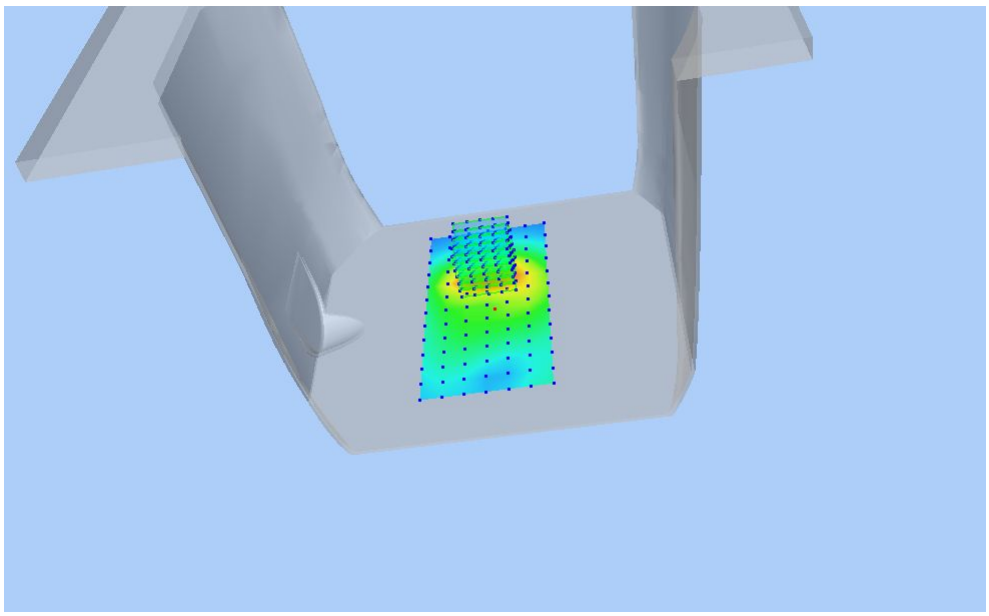


Z Axis Scan

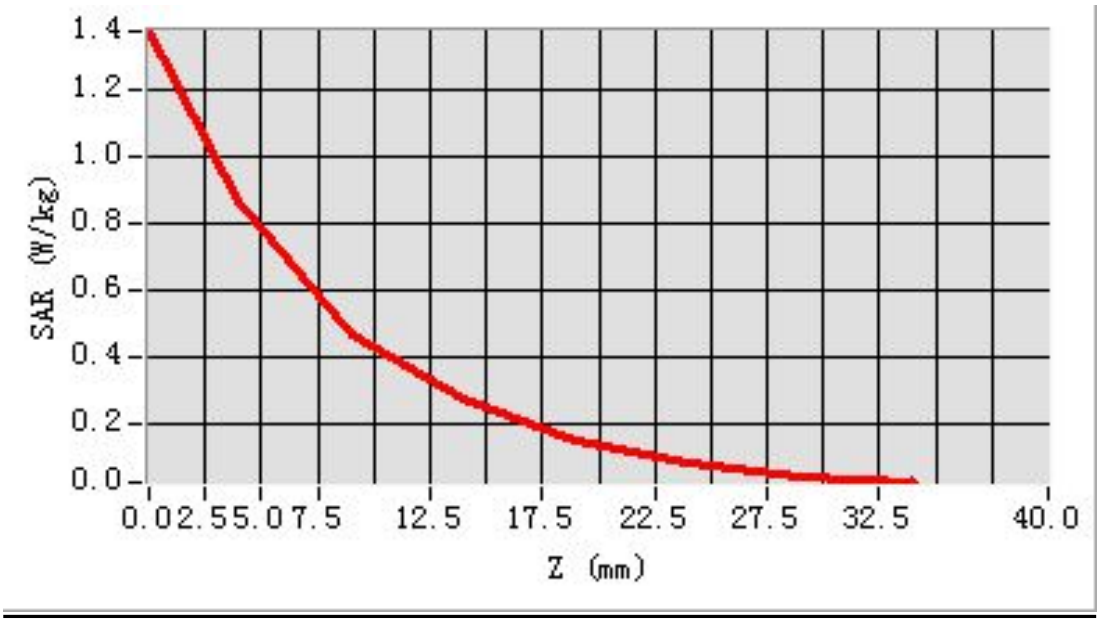
MEAS. 14 Body Plane with Back Side on High Channel in GPRS1900-12 mode

Test Date:	4/6/2015
Signal:	GPRS, f=1909.8 MHz, Duty Cycle: 1:2.0
Liquid Parameters:	Permittivity: 52.67; Conductivity: 1.58 S/m
Test condition:	Ambient Temperature: 22.8°C, Liquid Temperature: 22.2°C
Probe:	EP187, ConvF: 4.38
Area Scan:	sam_direct_droit2_surf12mm.txt, h= 5.00 mm
Zoom Scan:	5x5x7,dx=8mm, dy=8mm, dz=5mm,Complete
Maximum location:	X=-4.000000, Y=24.000000
SAR 10g (W/Kg):	0.423605
SAR 1g (W/Kg):	0.817330
Power drift (%):	-2.35

3D screen shot



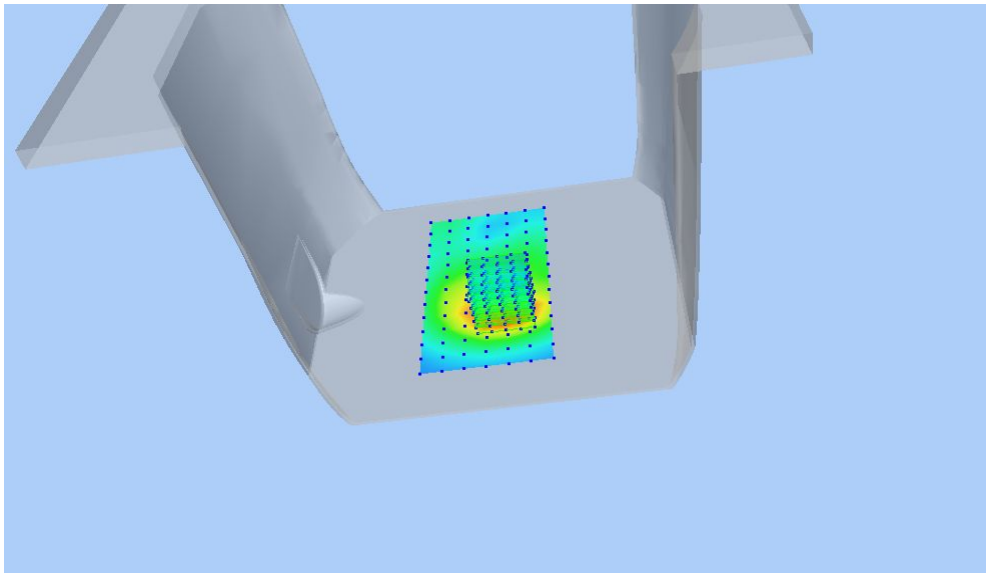
Z Axis Scan



MEAS. 15 Body Plane with Back Side on Middle Channel in EGPRS1900-12 mode

Test Date:	9/6/2015
Signal:	EGPRS, f=1880.0 MHz, Duty Cycle: 1:2.0
Liquid Parameters:	Permittivity: 52.86; Conductivity: 1.53 S/m
Test condition:	Ambient Temperature: 22.8°C, Liquid Temperature: 22.2°C
Probe:	EP187, ConvF: 4.38
Area Scan:	sam_direct_droit2_surf12mm.txt, h= 5.00 mm
Zoom Scan:	5x5x7,dx=8mm, dy=8mm, dz=5mm,Complete
Maximum location:	X=8.000000, Y=-24.000000
SAR 10g (W/Kg):	0.534432
SAR 1g (W/Kg):	1.002062
Power drift (%):	0.70

3D screen shot

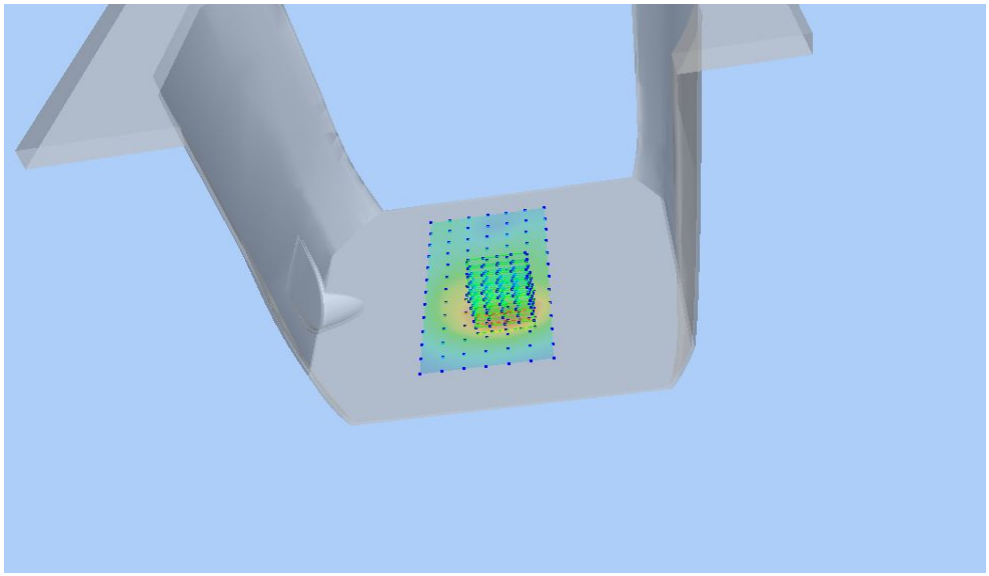


Z Axis Scan

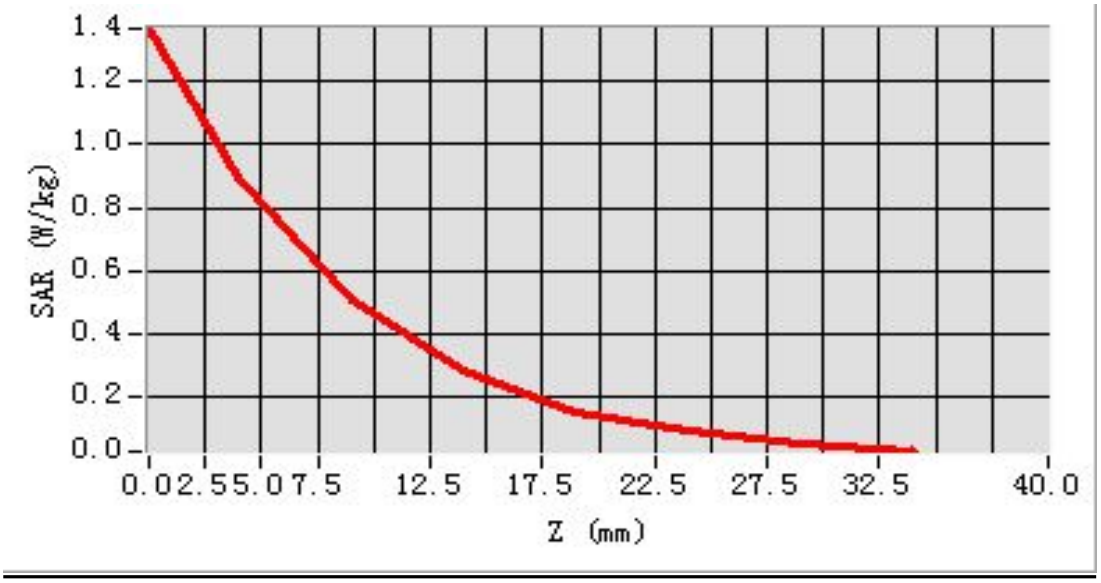
MEAS. 16 Body Plane with Back Side on High Channel in EGPRS1900-12 mode

Test Date:	9/6/2015
Signal:	EGPRS, f=1909.8 MHz, Duty Cycle: 1:2.0
Liquid Parameters:	Permittivity: 52.35; Conductivity: 1.58 S/m
Test condition:	Ambient Temperature: 22.8°C, Liquid Temperature: 22.2°C
Probe:	EP187, ConvF: 4.38
Area Scan:	sam_direct_droit2_surf12mm.txt, h= 5.00 mm
Zoom Scan:	5x5x7,dx=8mm, dy=8mm, dz=5mm,Complete
Maximum location:	X=8.000000, Y=-24.000000
SAR 10g (W/Kg):	0.447425
SAR 1g (W/Kg):	0.847212
Power drift (%):	-1.99

3D screen shot



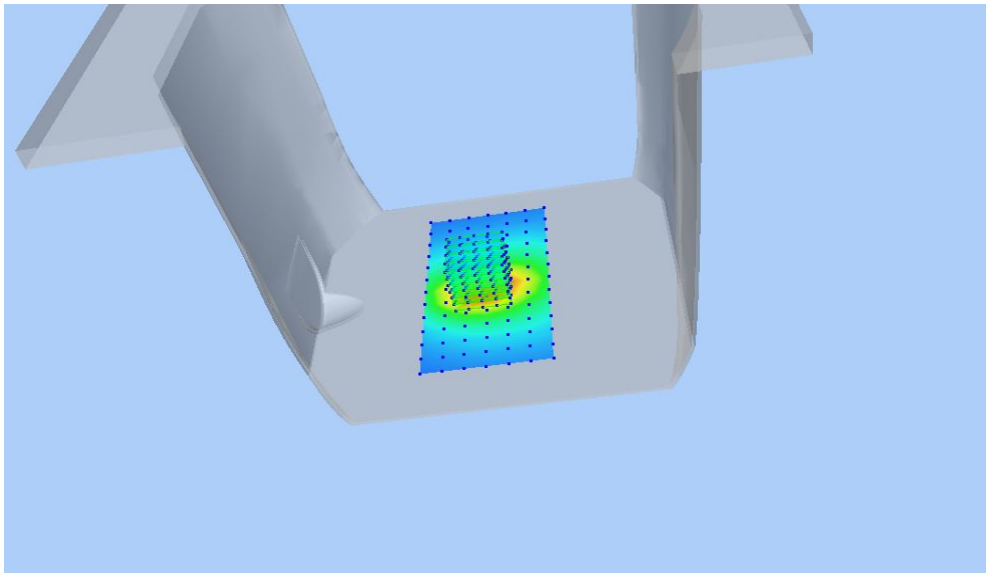
Z Axis Scan



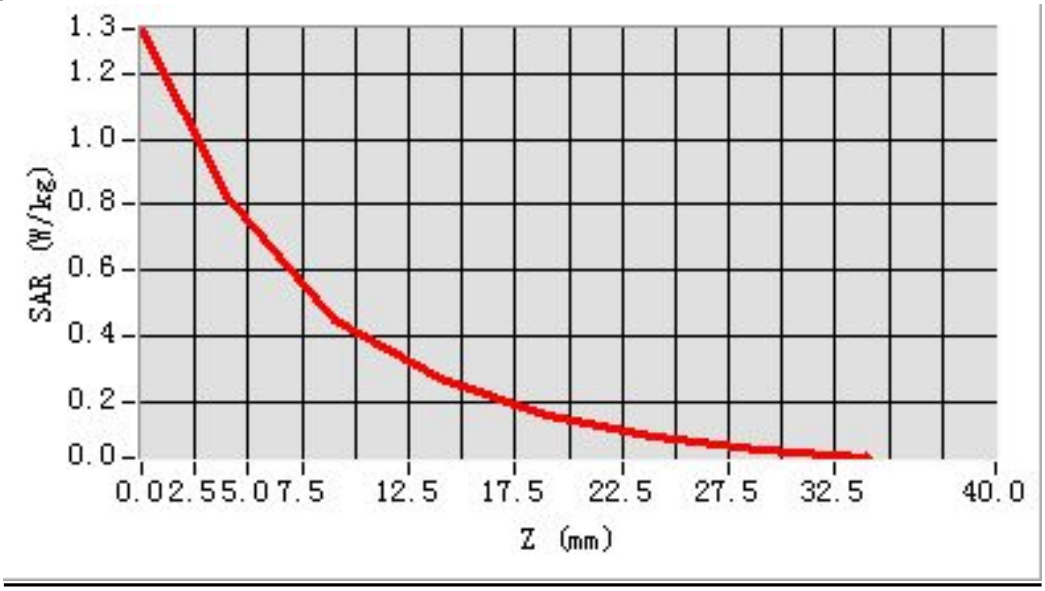
MEAS. 17 Body Plane with Bottom Edge on Middle Channel in EGPRS1900-12 mode

Test Date:	9/6/2015
Signal:	EGPRS, f=1880.0 MHz, Duty Cycle: 1:2.0
Liquid Parameters:	Permittivity: 52.86; Conductivity: 1.53 S/m
Test condition:	Ambient Temperature: 22.8°C, Liquid Temperature: 22.2°C
Probe:	EP187, ConvF: 4.38
Area Scan:	sam_direct_droit2_surf12mm.txt, h= 5.00 mm
Zoom Scan:	5x5x7,dx=8mm, dy=8mm, dz=5mm,Complete
Maximum location:	X=-4.000000, Y=0.000000
SAR 10g (W/Kg):	0.413573
SAR 1g (W/Kg):	0.786508
Power drift (%):	1.16

3D screen shot



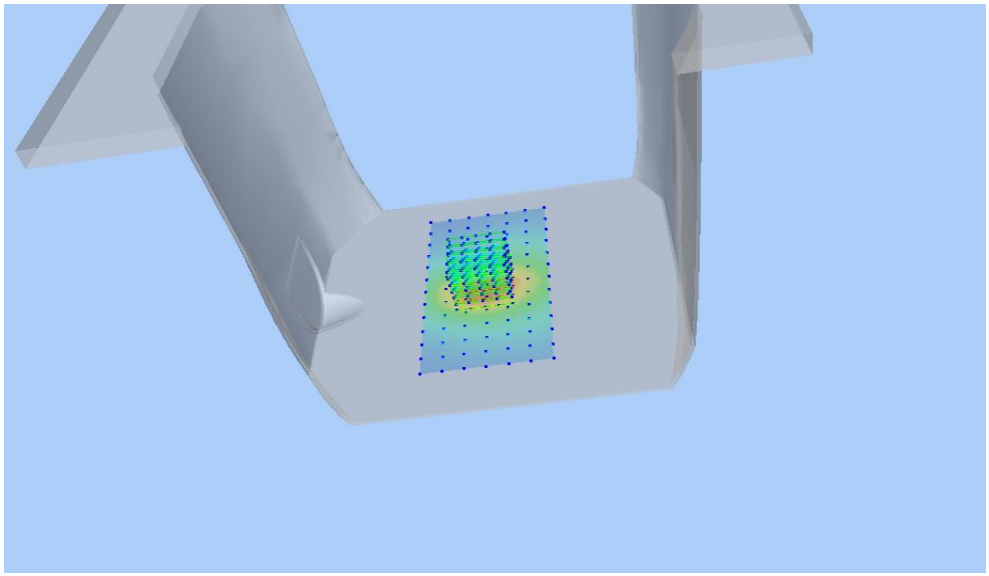
Z Axis Scan



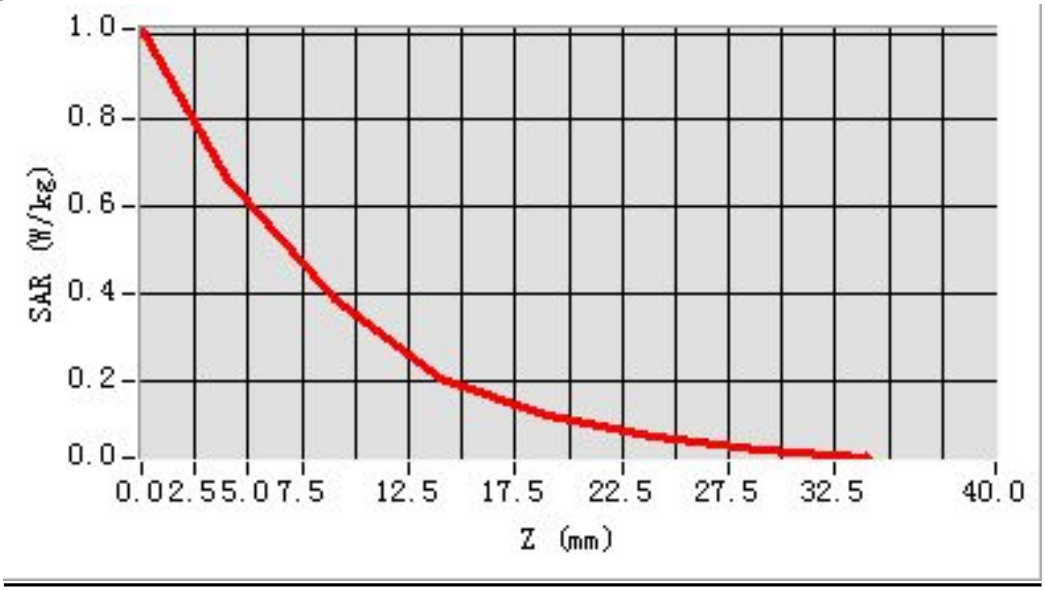
MEAS. 18 Body Plane with Bottom Edge on High Channel in EGPRS1900-12 mode

Test Date:	9/6/2015
Signal:	EGPRS, f=1909.8 MHz, Duty Cycle: 1:2.0
Liquid Parameters:	Permittivity: 52.35; Conductivity: 1.58 S/m
Test condition:	Ambient Temperature: 22.8°C, Liquid Temperature: 22.2°C
Probe:	EP187, ConvF: 4.38
Area Scan:	sam_direct_droit2_surf12mm.txt, h= 5.00 mm
Zoom Scan:	5x5x7,dx=8mm, dy=8mm, dz=5mm,Complete
Maximum location:	X=-4.000000, Y=0.000000
SAR 10g (W/Kg):	0.337695
SAR 1g (W/Kg):	0.625635
Power drift (%):	1.44

3D screen shot



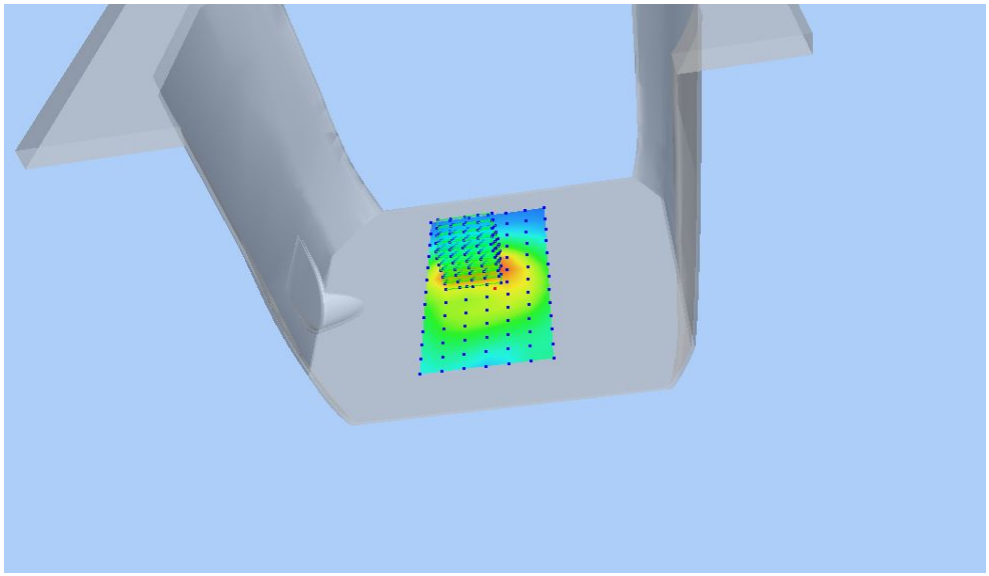
Z Axis Scan



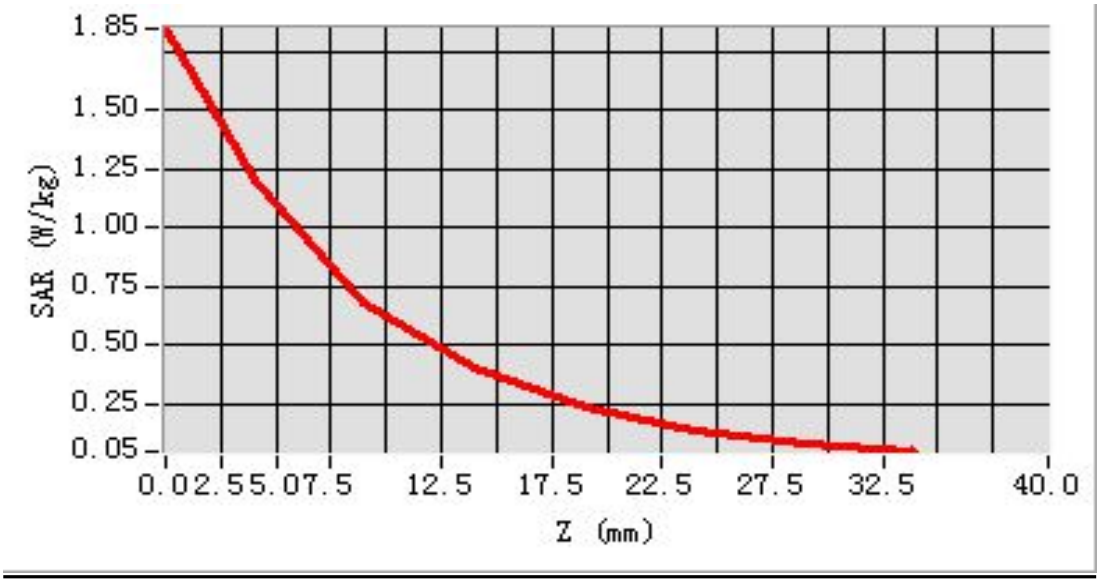
MEAS. 19 Body Plane with Back Side on Low Channel in WCDMA Band2 mode

Test Date:	9/6/2015
Signal:	WCDMA, f=1852.4 MHz, Duty Cycle: 1:1.0
Liquid Parameters:	Permittivity: 54.25; Conductivity: 1.43 S/m
Test condition:	Ambient Temperature: 22.8°C, Liquid Temperature: 22.2°C
Probe:	EP187, ConvF: 4.38
Area Scan:	sam_direct_droit2_surf12mm.txt, h= 5.00 mm
Zoom Scan:	5x5x7,dx=8mm, dy=8mm, dz=5mm,Complete
Maximum location:	X=-16.000000, Y=12.000000
SAR 10g (W/Kg):	0.623443
SAR 1g (W/Kg):	1.143234
Power drift (%):	-0.71

3D screen shot



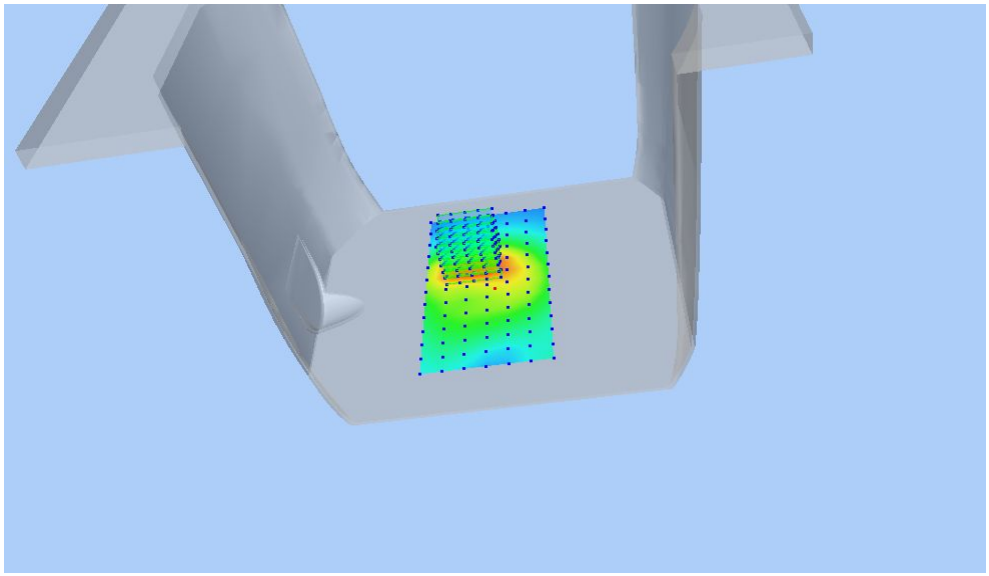
Z Axis Scan



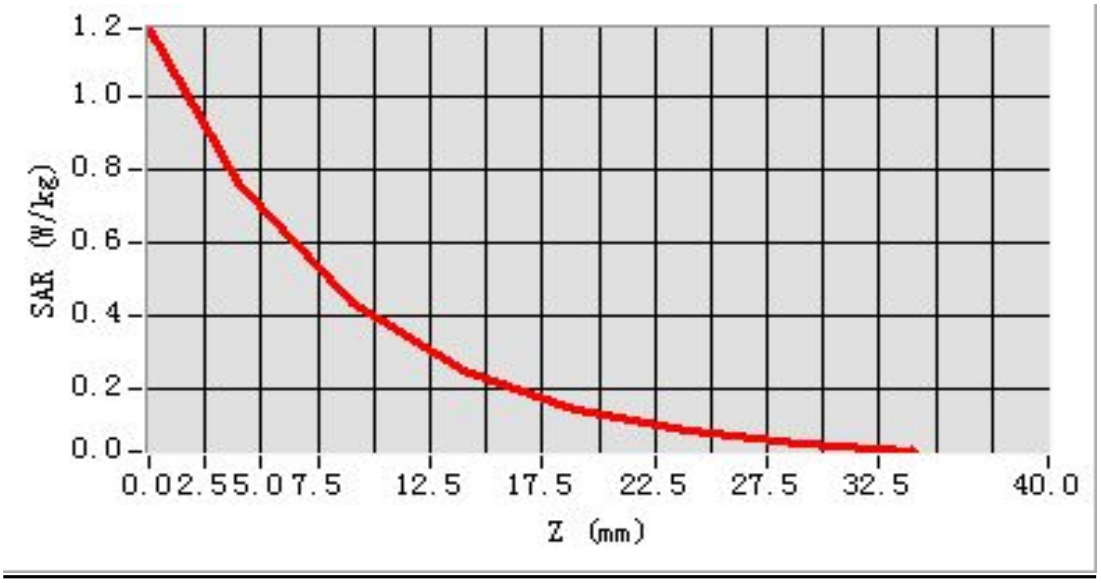
MEAS. 20 Body Plane with Back Side on High Channel in WCDMA Band2 mode

Test Date:	9/6/2015
Signal:	WCDMA, f=1907.6 MHz, Duty Cycle: 1:1.0
Liquid Parameters:	Permittivity: 54.10; Conductivity: 1.49 S/m
Test condition:	Ambient Temperature: 22.8°C, Liquid Temperature: 22.2°C
Probe:	EP187, ConvF: 4.38
Area Scan:	sam_direct_droit2_surf12mm.txt, h= 5.00 mm
Zoom Scan:	5x5x7,dx=8mm, dy=8mm, dz=5mm,Complete
Maximum location:	X=-16.000000, Y=24.000000
SAR 10g (W/Kg):	0.396111
SAR 1g (W/Kg):	0.728391
Power drift (%):	-2.10

3D screen shot



Z Axis Scan



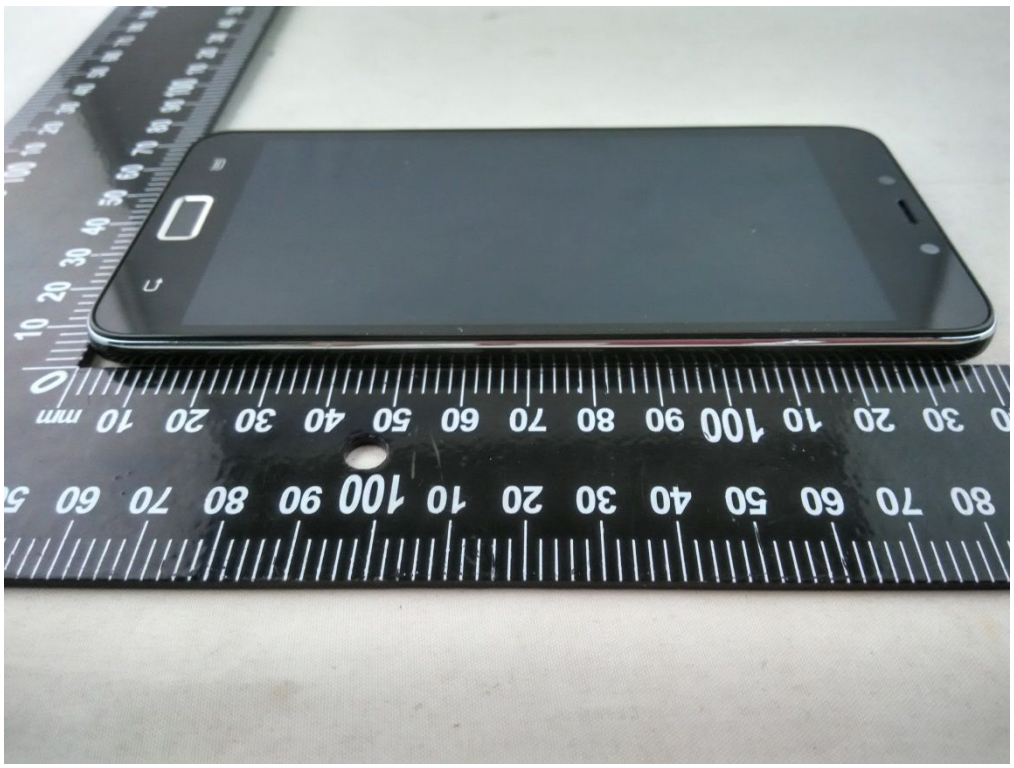
ANNEX D EUT PHOTO

THE FRONT OF EUT

THE BACK OF EUT

THE LEFT OF EUT

THE RIGHT OF EUT



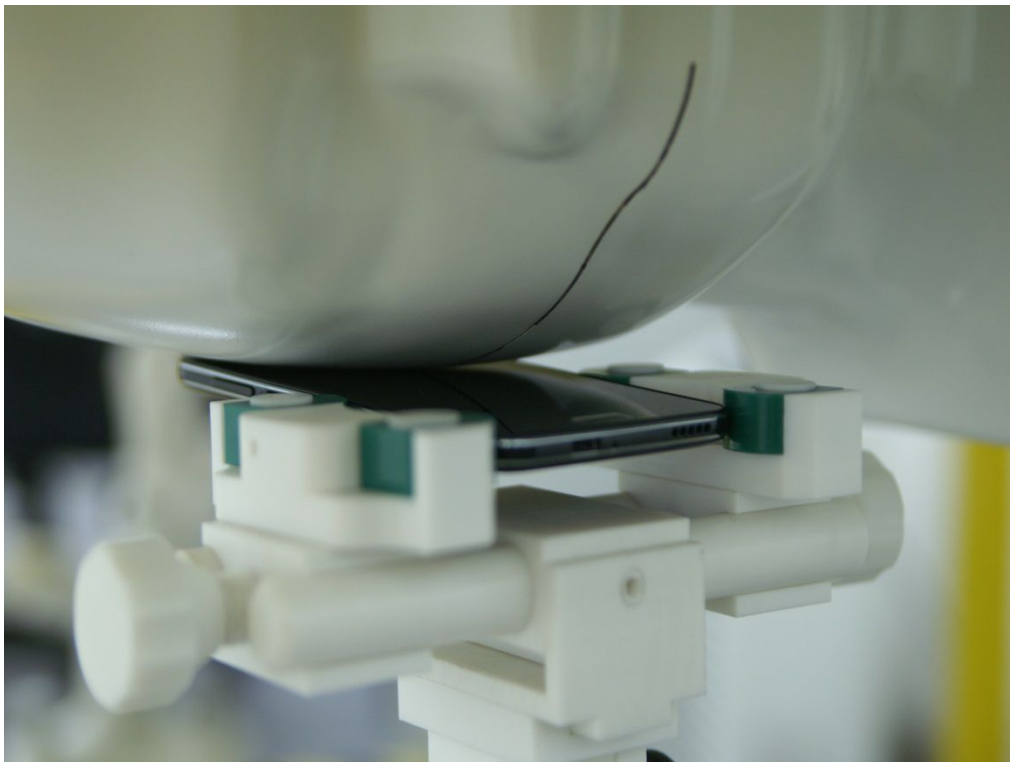
THE UP OF EUT

THE DOWN OF EUT

THE INSIDE OF EUT

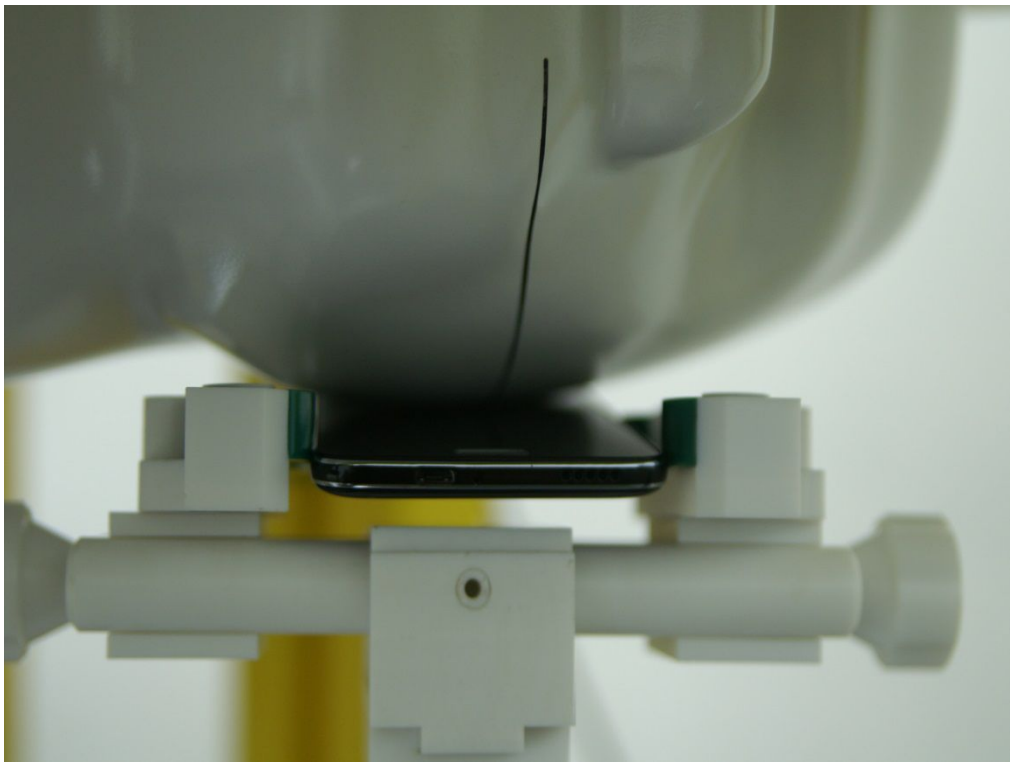
ANNEX E TEST SETUP PHOTOS

Right Head Cheek

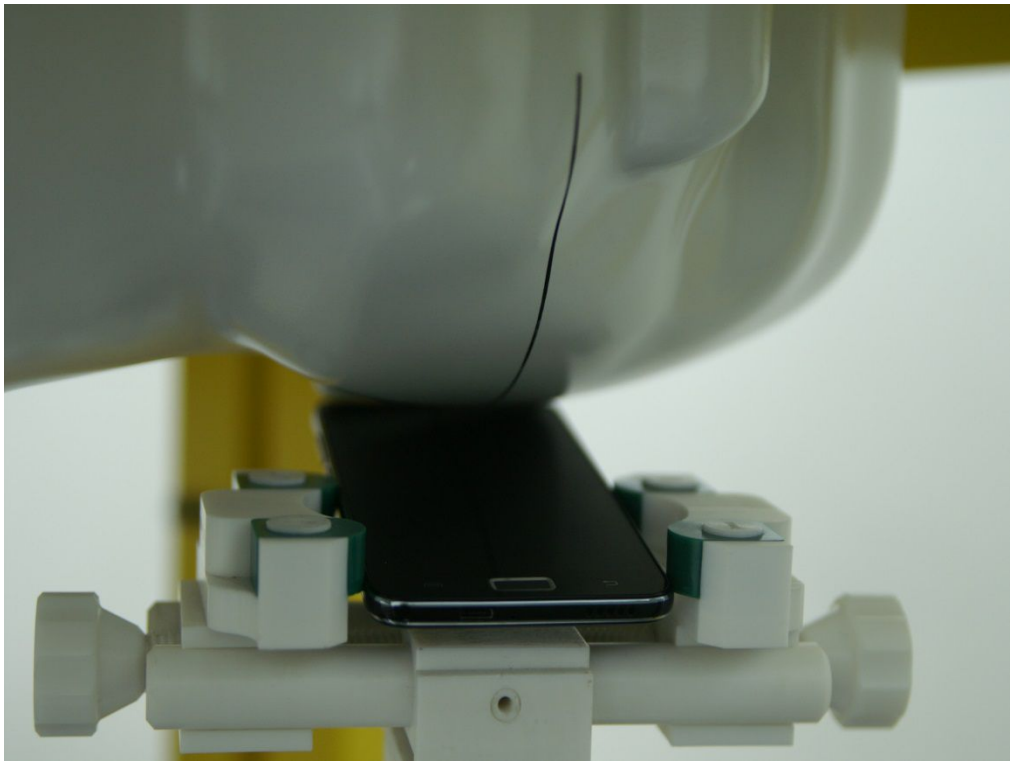


Right Head Tilt

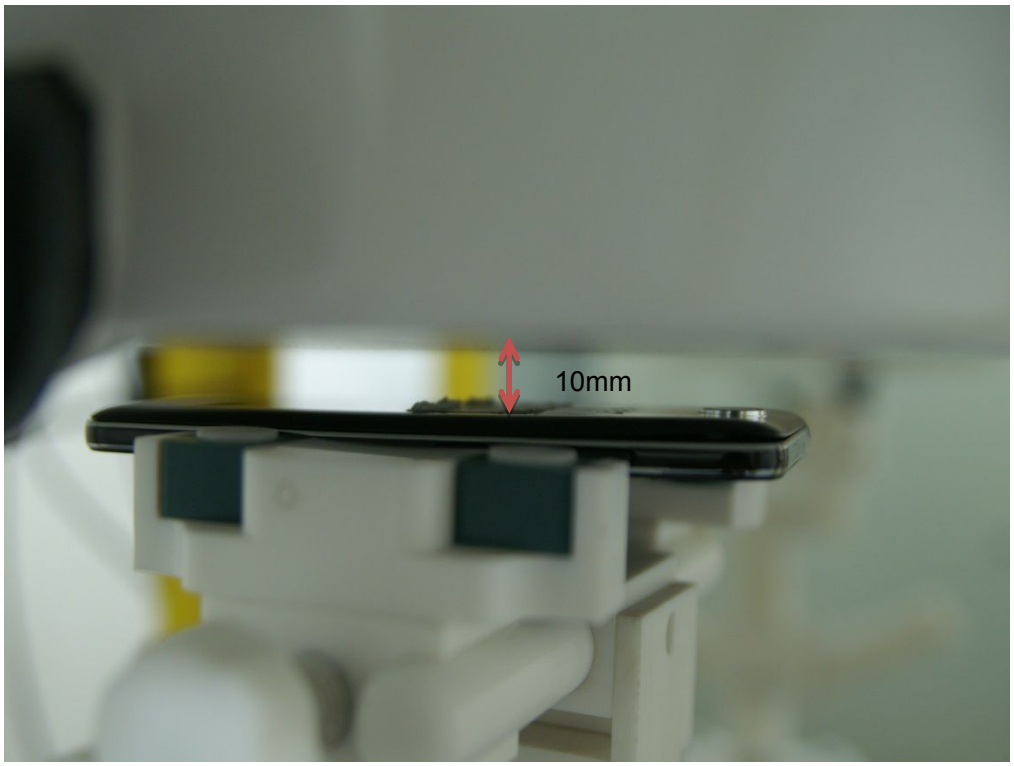
Left Head Cheek



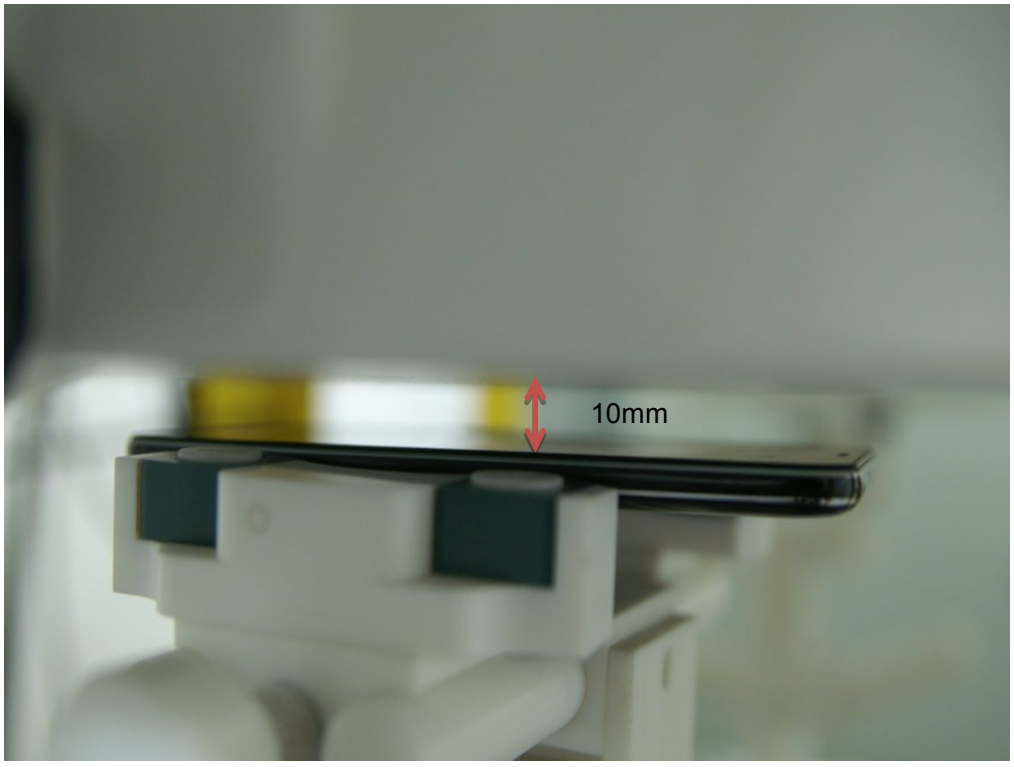
Left Head Tilt



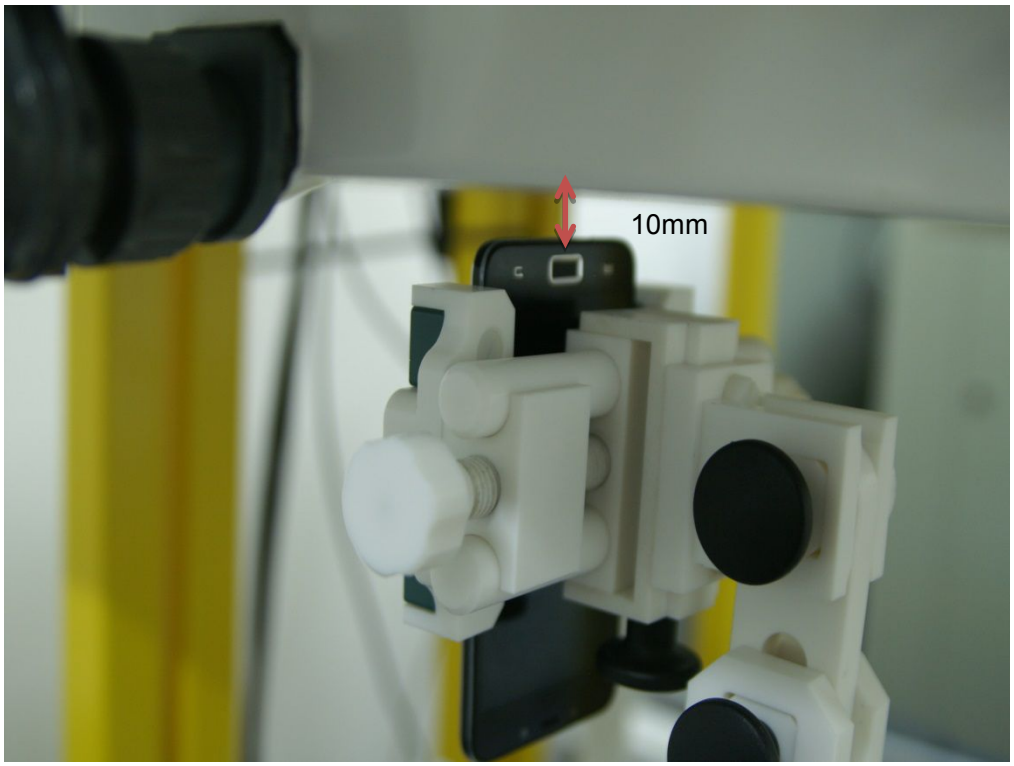
Back Side (10mm separation)



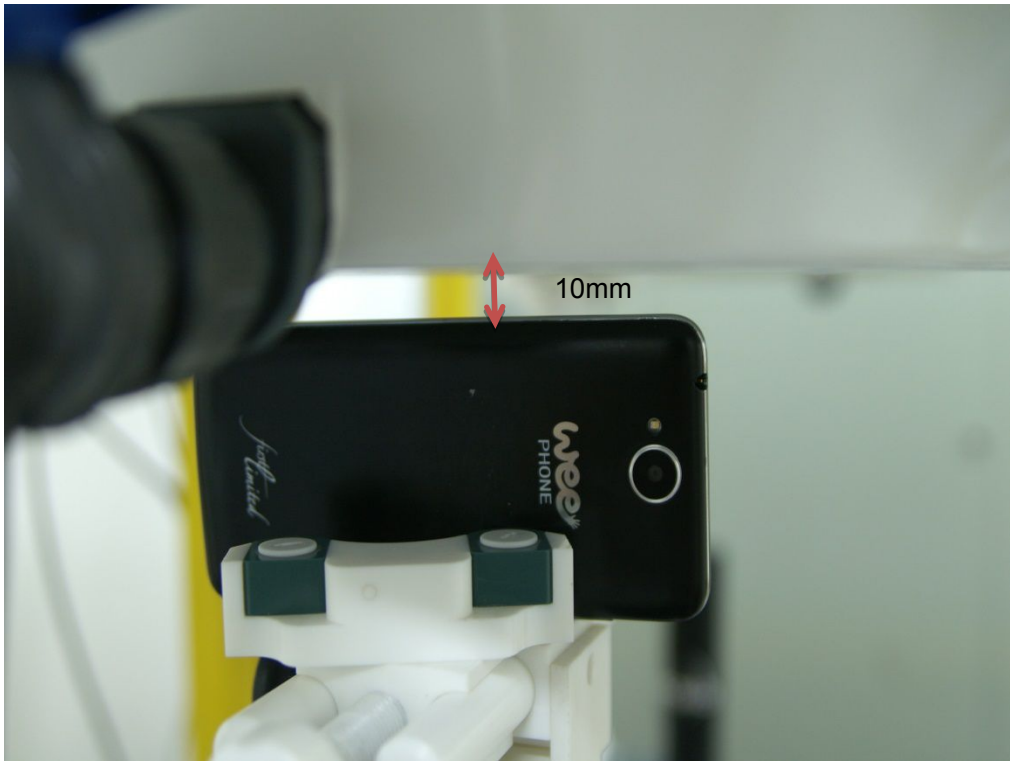
Front Side (10mm separation)



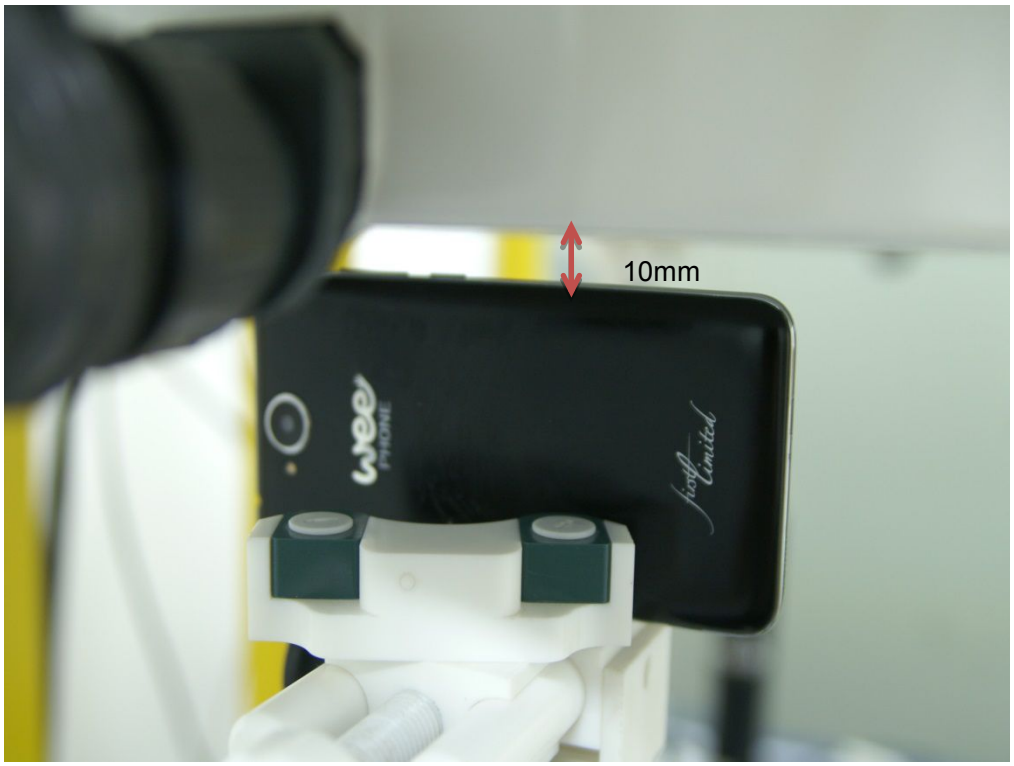
Bottom Edge (10mm separation)



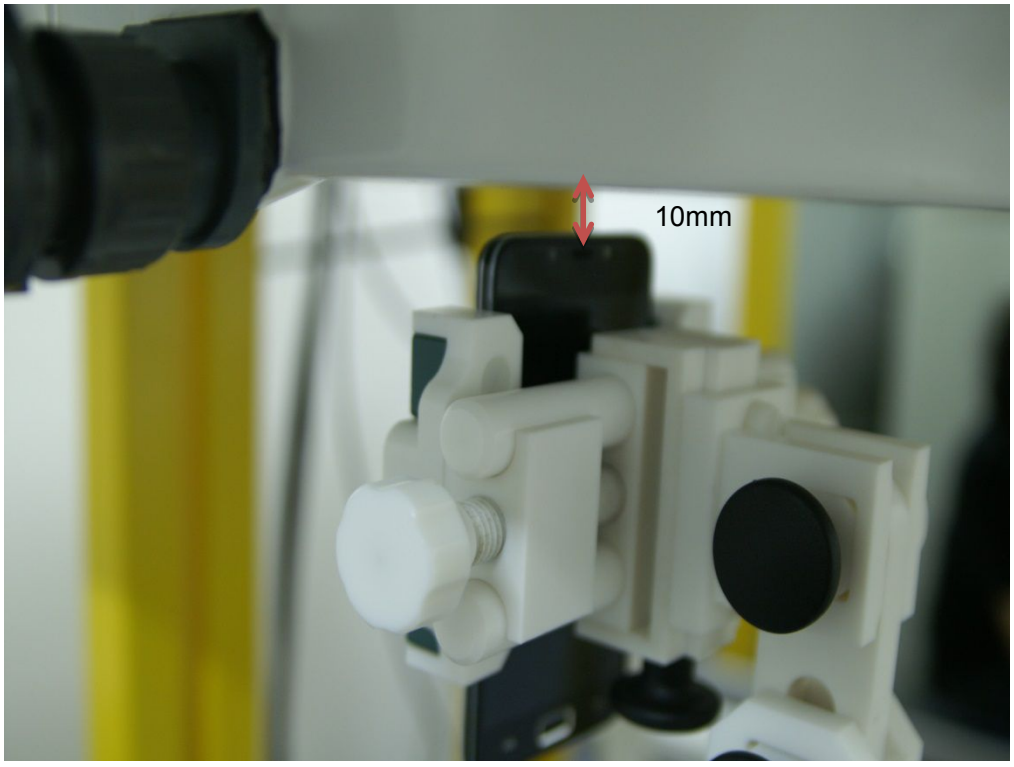
Left Edge (10mm separation)



Right Edge (10mm separation)



Top Edge (10mm separation)



ANNEX F CALIBRATION REPORT

F.1 E-Field Probe

SATIMO
The microwave vision company

受控文件

COMOSAR E-Field Probe Calibration Report

Ref : ACR.219.1.13.SATU.A

SHENZHEN BALUN TECHNOLOGY CO., LTD.
BLOCK B, FL 1, BAISHA SCIENCE AND TECHNOLOGY PARK, SHAHE XI ROAD, NANSHAN DISTRICT, SHENZHEN, GUANGDONG PROVINCE, 518055 P. R. CHINA
SATIMO COMOSAR DOSIMETRIC E-FIELD PROBE
SERIAL NO.: SN 27/13 EP187

Calibrated at SATIMO US
2105 Barrett Park Dr. - Kennesaw, GA 30144

ACCREDITED
Calibration CERT #2246.02

17/08/2014

Summary:

This document presents the method and results from an accredited SAR reference dipole calibration performed in SATIMO USA using the COMOSAR test bench. All calibration results are traceable to national metrology institutions.

	Name	*Function*	*Date*	*Signature*
Prepared by :	Jérôme LUC	Product Manager	8/17/2014	
Checked by :	Jérôme LUC	Product Manager	8/17/2014	
Approved by :	Kim RUTKOWSKI	Quality Manager	8/17/2014	

	Customer Name
Distribution :	Shenzhen Balun Technology Co.,Ltd.

Issue	*Date*	*Modifications*
A	8/17/2014	Initial release

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