FCC SAR TEST REPORT

for

Tablet PC

Model: M702

FCC ID: OI2M7021

Prepared for: ILIFE TECHNOLOGY (HK) LIMITED

3rd Floor, Bld.3, LiJinCheng Industrial Park, The East of Gong Ye Road, Longhua, Shenzhen, China, 518109

Prepared by: Shenzhen TCT Testing Technology Co.,Ltd

1F, Building 1, Yibaolai Industrial Park, Qiaotou Village, Fuyong Town, Baoan District, Shenzhen, Guangdong, China

TEL: +86-0755-27673339

FAX: +86-0755-27673332

Testing laboratory: World Standardization Certification & Testing CO., LTD.

Building A, Baoshi Science & Technology Park, Baoshi Road, Bao'an District, Shenzhen, Guangdong, China

Tel: +86-755-26996192

Fax: +86-755-26996253

Report Number： TCT131212017F2-SAR

Reviewed By: Jack Kang 

Table of contents

Modified History

REV.	Modification Description	Issued Date	Remark
REV.1.0	Initial Test Report Relesse	2014-02-25	Jack Kang

1 General information

1.1 Notes

The test results of this test report relate exclusively to the test item specified in this test report. TCT Testing Technology does not assume responsibility for any conclusions and generalisations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report is not to be reproduced or published in full without the prior written permission.

1.2 Application details

Date of receipt of test item: 2014-02-15
Start of test: 2014-02-22
End of test: 2013-02-24

1.3 Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for ILIFE TECHNOLOGY (HK) LIMITED,Model Name: M702 is as below:

Band	Position	MAX Reported SAR_{1g} (W/kg)
GSM850	Head	0.096
	Body 0mm	0.841
GSM1900	Head	0.026
	Body 0mm	**0.878**
UMTS Band V	Head	0.067
	Body 0mm	0.839
UMTS Band II	Head	0.016
	Body 0mm	0.783
WiFi 2450	Head	0.128
	Body 0mm	0.368
The highest simultaneous SAR is 1.246 W/kg per KDB690783 D01		

The device is in compliance with Specific Absorption Rate （SAR）for general population/uncontraolled exposure limits of 1.6 W/Kg as averaged over any 1g tissue according to the FCC rule §2.1093, the ANSI/IEEE C95.1:2005, the NCRP Report Number 86 for uncontrolled environment, according to the Industry Canada Radio Standards Specification RSS-102 for General Population/Uncontrolled exposure, and had been tested in accordance with the measurement methods and procedures specified in IEEE Std 1528-2003 & IEEE Std 1528a-2005.

1.4 EUT Information

Device Information：			
Product Type:	Tablet PC		
Model:	M702		
Device Type:	Portable device		
Exposure Category:	uncontrolled environment / general population		
Production Unit or Identical Prototype：	Production Unit		
Hardware version:	NA		
Software version :	NA		
Antenna Type :	internal antenna		
Device Operating Configurations:			
Supporting Mode(s) :	GSM850/1900,UMTS Band V/II,WiFi (tested),BT		
Modulation:	GMSK,QPSK, OFDM/CCK GFSK/π/4-DQPSK/ 8-DPSK		
Operating Frequency Range(s)	Band	TX(MHz)	RX(MHz)
	GSM850	824~849	869~894
	GSM1900	1850~1910	1930~1990
	UMTS Band V	824~849	869~894
	UMTS Band II	1850~1910	1930~1990
	WIFI	2412~2462	2412~2462
	BT	2402~2480	2402~2480
Test Channels (low-mid-high):	128-190-251(GSM850)		
	512-661-810(GSM1900)		
	4132-4182-4233(UMTS Band V)		
	9262-9400-9538(UMTS Band II)		
	1-6-11 (WiFi)		
	0-39-78(BT)		
Power Source:	3.7 VDC/2800mAh Rechargeable Battery		
SIM cards:	WCDMA testing was done in SIM 1 and SIM1 only support WCDMA;GSM testing was done in SIM2 and SIM2 only support GSM		

1.5 Test standard/s:

ANSI Std C95.1-2005	Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.
IEEE Std 1528-2003	Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques
IEEE Std 1528a-2005	IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques Amendment 1: CAD File for Human Head Model (SAM Phantom)
RSS-102	Radio Frequency Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands (Issue 4 of March 2010)
KDB941225 D01	SAR test for 3G devices v02
KDB941225 D02	HSPA and 1x Advanced v02r02
KDB941225 D03	SAR Test Reduction GSM GPRS EDGE vo1
KDB447498 D01	General RF Exposure Guidance v05r01
KDB248227 D01	SAR meas for 802.11 a/b/g v01r02
KDB865664 D01	SAR Measurement 100 MHz to 6 GHz v01r03
KDB865664 D02	RF Exposure Reporting v01r01
KDB616217 D04	SAR for laptop and tablets v01r01

1.6 RF exposure limits

Human Exposure	Uncontrolled Environment General Population	Controlled Environment Occupational
Spatial Peak SAR* (Brain/Body/Arms/Legs)	**1.60 mW/g**	8.00 mW/g
Spatial Average SAR** (Whole Body)	0.08 mW/g	0.40 mW/g
Spatial Peak SAR*** (Hands/Feet/Ankle/Wrist)	4.00 mW/g	20.00 mW/g

The limit applied in this test report is shown in bold letters

Notes:

* The Spatial Peak value of the SAR averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

** The Spatial Average value of the SAR averaged over the whole body.

*** The Spatial Peak value of the SAR averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

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

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

1.7 SAR Definition

Specific Absorption Rate is defined as 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).

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

SAR is expressed in units of watts per kilogram (W/kg). SAR can be related to the electric field at a point by

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

where:

σ = conductivity of the tissue (S/m)

ρ = mass density of the tissue (kg/m^3)

E = rms electric field strength (V/m)

2 Testing laboratory

Test Site	World Standardization Certification & Testing CO., LTD.
Test Location	Building A, Baoshi Science & Technology Park, Baoshi Road, Bao'an District, Shenzhen, Guangdong, China
Telephone	+86-755-26996192
Fax	+86-755-26996253

3 Test Environment

	Required	Actual
Ambient temperature:	18 – 25 °C	22 ± 2 °C
Tissue Simulating liquid:	22 ± 2 °C	22 ± 2 °C
Relative humidity content:	30 – 70 %	30 – 70 %

4 Applicant and Manufacturer

Applicant/Client Name	ILIFE TECHNOLOGY (HK) LIMITED
Applicant Address	3rd Floor, Bld.3, LiJinCheng Industrial Park, The East of Gong Ye Road, Longhua, Shenzhen, China, 518109
Manufacturer Name	ILIFE TECHNOLOGY (HK) LIMITED
Manufacturer Address	3rd Floor, Bld.3, LiJinCheng Industrial Park, The East of Gong Ye Road, Longhua, Shenzhen, China, 518109

5 SAR Measurement System

5.1 The Measurement System

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

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

The following figure shows the system.

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

5.2 Robot

The COMOSAR system uses the high precision robots KR 6 R900 sixx type out of the newer series from Satimo SA (France).For the 6-axis controller COMOSAR system, the KUKA robot controller version from Satimo is used. The KR 6 R900 sixx robot series have many features that are important for
our application:

- High precision (repeatability 0.02 mm)
- High reliability (industrial design)
- Jerk-free straight movements
- Low ELF interference (the closed metallic construction shields against motor control fields)
- 6-axis controller

5.3 Probe

For the measurements the Specific Dosimetric E-Field Probe SSE 5 with following specifications is used

- Dynamic range: 0.01-100 W/kg
- Tip Diameter : 5 mm
- Distance between probe tip and sensor center: 2.5mm
- Distance between sensor center and the inner phantom surface: 4 mm (repeatability better than +/- 1mm)
- Probe linearity: ＜0.25 dB
- Axial Isotropy: ＜0.25 dB
- Spherical Isotropy: ＜0.50 dB
- Calibration range: 835 to 2500MHz for head & body simulating liquid.

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

5.4 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 16 mm * 8 to 16 mm and a constant distance to the inner surface of the phantom.Since the sensors can not 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.

5.5 Description of interpolation/extrapolation scheme

- The local SAR inside the phantom is measured using small dipole sensing elements inside a probe body.The probe tip must not be in contact with the phantom surface in order to minimise measurements errors,but the highest local SAR will occur at the surface of the phantom.

- An extrapolation is using to determinate this highest local SAR values.
  The extrapolation is based on afourth-order least-square polynomial fit of measured data.The local SAR value is then extrapolated from the liquid surface with a 1 mm step.

- The measurements have to be performed over a limited time(due to the duration of the battery) so the step of measurement is high.It could vary between 5 and 8 mm.To obtain an accurate assessment of the maximum SAR average over 10 grams and 1gram requires a very fine resolution in the three dimensional scanned data array.

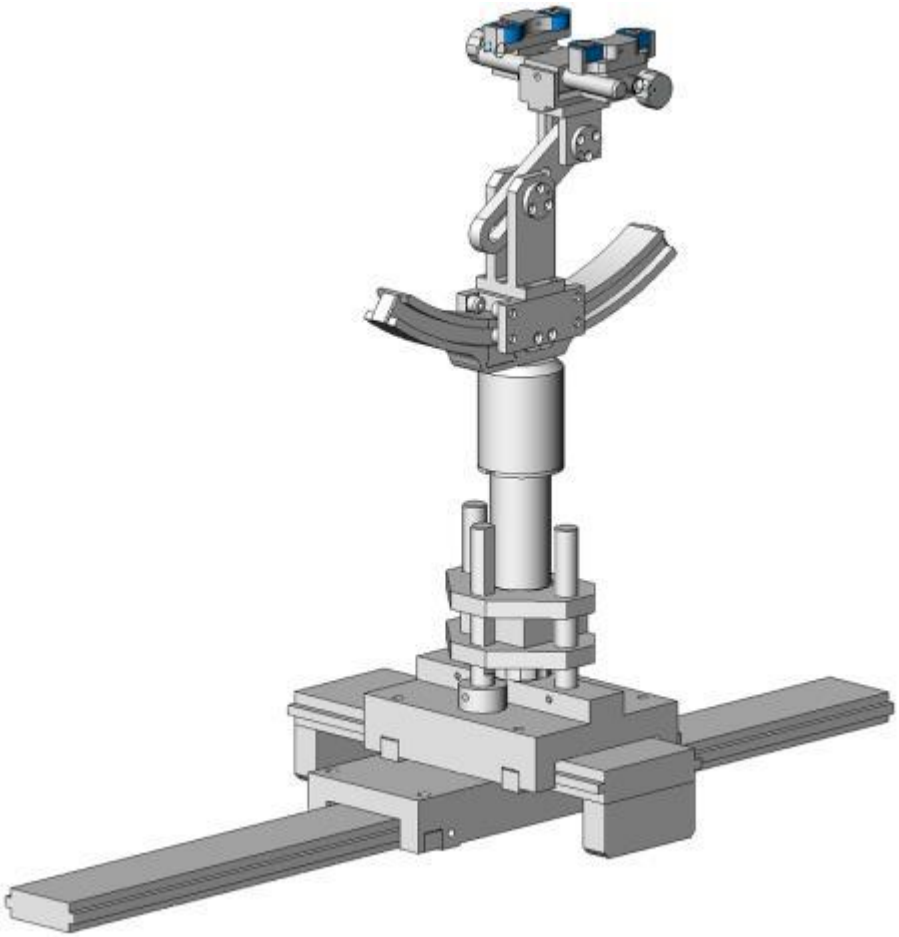
5.6 Phantom

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

System Material	Permittivity	Loss Tangent
Delrin	3.7	0.005

5.7 Device Holder

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°.



Device holder

System Material	Permittivity	Loss Tangent
Delrin	3.7	0.005

5.8 Video Positioning System

- The video positioning system is used in OpenSAR to check the probe. Which is composed of a camera, LED, mirror and mechanical parts. The camera is piloted by the main computer with firewire link.

- During the process, the actual position of the probe tip with respect to the robot arm is measured, as well as the probe length and the horizontal probe offset. The software then corrects all movements, such that the robot coordinates are valid for the probe tip.

- The repeatability of this process is better than 0.1 mm. If a position has been taught with an aligned probe, the same position will be reached with another aligned probe within 0.1 mm, even if the other probe has different dimensions. During probe rotations, the probe tip will keep its actual position.

5.9 Tissue simulating liquids: dielectric properties

The following materials are used for producing the tissue-equivalent materials.

(Liquids used for tests are marked with☒):

Ingredients(% of weight)	**Frequency (MHz)**				
frequency band	☐ 450	☒ 835	☐ 1800	☒ 1900	☒ 2450
Tissue Type	Head	Head	Head	Head	Head
Water	38.56	41.45	52.64	55.242	62.7
Salt (NaCl)	3.95	1.45	0.36	0.306	0.5
Sugar	56.32	56.0	0.0	0.0	0.0
HEC	0.98	1.0	0.0	0.0	0.0
Bactericide	0.19	0.1	0.0	0.0	0.0
Triton X-100	0.0	0.0	0.0	0.0	36.8
DGBE	0.0	0.0	47.0	44.542	0.0
Ingredients(% of weight)	**Frequency (MHz)**				
frequency band	☐ 450	☒ 835	☐ 1800	☒ 1900	☒ 2450
Tissue Type	Body	Body	Body	Body	Body
Water	51.16	52.4	69.91	69.91	73.2
Salt (NaCl)	1.49	1.40	0.13	0.13	0.04
Sugar	46.78	45.0	0.0	0.0	0.0
HEC	0.52	1.0	0.0	0.0	0.0
Bactericide	0.05	0.1	0.0	0.0	0.0
Triton X-100	0.0	0.0	0.0	0.0	0.0
DGBE	0.0	0.0	29.96	29.96	26.7

Salt: 99+% Pure Sodium Chloride
Sugar: 98+% Pure Sucrose
Water: De-ionized, 16MΩ+ resistivity
HEC: Hydroxyethyl Cellulose
DGBE: 99+% Di(ethylene glycol) butyl ether, [2-(2-butoxyethoxy)ethanol]
Triton X-100(ultra pure): Polyethylene glycol mono [4-(1,1,3,3-tetramethylbutyl)phenyl]ether

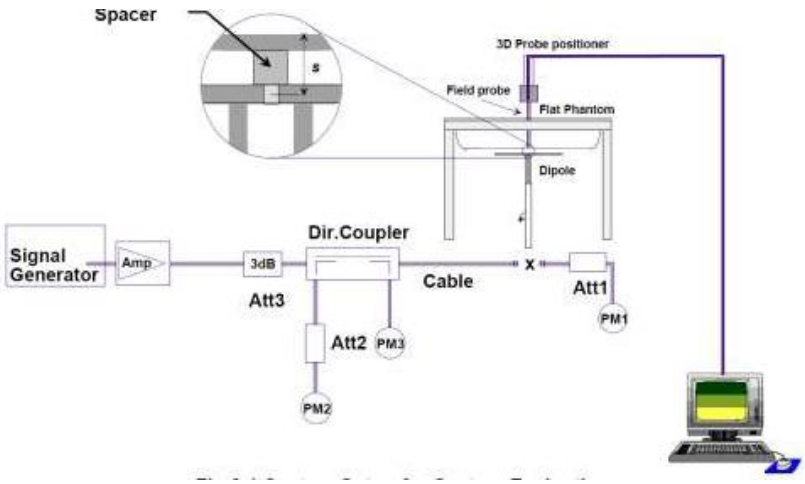
5.10 Tissue simulating liquids: parameters

Tissue Type	Measured Frequency (MHz)	Target Tissue		Measured Tissue		Liquid Temp.	Test Date
		ε_r (+/-5%)	σ (S/m) (+/-5%)	ε_r	σ (S/m)		
835MHz Head	825	41.60 (39.52~43.68)	0.90 (0.86~0.95)	39.94	0.88	21.7°C	2014-02-22
	835	41.50 (39.43~43.58)	0.90 (0.86~0.95)	39.80	0.90		
	850	41.50 (39.43~43.58)	0.92 (0.87~0.96)	39.65	0.92		
835MHz Body	825	55.52 (52.44~57.96)	0.97 (0.92~1.02)	53.62	0.95	21.7°C	2014-02-22
	835	55.52 (52.44~57.96)	0.97 (0.92~1.02)	53.43	0.96		
	850	55.52 (52.44~57.96)	0.99 (0.94~1.04)	53.23	0.99		
1900MHz Head	1850	40.00 (38.00~42.00)	1.40 (1.33~1.47)	39.61	1.39	21.7°C	2014-02-22
	1880	40.00 (38.00~42.00)	1.40 (1.33~1.47)	39.44	1.42		
	1900	40.00 (38.00~42.00)	1.40 (1.33~1.47)	39.30	1.43		
	1910	40.00 (38.00~42.00)	1.40 (1.33~1.47)	39.18	1.44		
1900MHz Body	1850	53.30 (50.64~55.97)	1.52 (1.44~1.60)	52.12	1.49	21.7°C	2014-02-22
	1880	53.30 (50.64~55.97)	1.52 (1.44~1.60)	52.06	1.52		
	1900	53.30 (50.64~55.97)	1.52 (1.44~1.60)	51.93	1.55		
	1910	53.30 (50.64~55.97)	1.52 (1.44~1.60)	51.93	1.56		
2450MHz Head	2410	39.30 (37.34~41.26)	1.76 (1.67~1.85)	38.89	1.75	21.7°C	2014-02-24
	2435	39.20 (37.24~41.16)	1.79 (1.70~1.88)	38.77	1.77		
	2450	39.20 (37.24~41.16)	1.80 (1.71~1.89)	38.87	1.81		
	2460	39.20 (37.24~41.16)	1.81 (1.72~1.90)	38.92	1.84		
2450MHz Body	2410	52.80 (50.16~55.44)	1.91 (1.81~2.00)	52.75	1.92	21.7°C	2014-02-24
	2435	52.70 (50.07~55.34)	1.94 (1.84~2.04)	52.71	1.96		
	2450	52.70 (50.07~55.34)	1.95 (1.85~2.05)	52.82	1.98		
	2460	52.70 (50.07~55.34)	1.96 (1.86~2.06)	52.85	1.99		
ε_r= Relative permittivity, σ= Conductivity							

6 System Check

6.1 System check procedure

The System check is performed by using a System check dipole which is positioned parallel to the planar part of the SAM phantom at the reference point. The distance of the dipole to the SAM phantom is determined by a spacer. The dipole is connected to the signal source consisting of signal generator and amplifier via a directional coupler, N-connector cable and adaption to SMA. It is fed with a power of 100 mW. To adjust this power a power meter is used. The power sensor is connected to the cable before the System check to measure the power at this point and do adjustments at the signal generator. At the outputs of the directional coupler both return loss as well as forward power are controlled during the validation to make sure that emitted power at the dipole is kept constant. This can also be checked by the power drift measurement after the test (result on plot).
System check results have to be equal or near the values determined during dipole calibration (target SAR in table above) with the relevant liquids and test system.



6.2 System check results

The system Check is performed for verifying the accuracy of the complete measurement system and performance of the software.The following table shows System check results for all frequency bands and tissue liquids used during the tests (plot(s) see annex A).

System Check	Target SAR (1W) (+/-10%)		Measured SAR (Normalized to 1W)		Liquid Temp.	Test Date
	1-g (mW/g)	10-g (mW/g)	1-g (mW/g)	10-g (mW/g)		
D835V2 Head	9.74 (8.77~10.71)	6.29 (5.66~6.92)	10.11	6.56	21.7°C	2014-02-22
D1900V2 Head	40.73 (36.66~44.80)	20.89 (18.80~22.98)	39.17	20.59	21.7°C	2014-02-22
D2450V2 Head	52.25 (47.03~57.48)	23.67 (21.30~26.04)	48.69	22.08	21.7°C	2014-02-24
D835V2 Body	10.02 (9.02~11.02)	6.56 (5.90~7.22)	10.94	7.12	21.7°C	2014-02-22
D1900V2 Body	39.83 (35.85~43.81)	20.84 (18.43~22.53)	37.89	19.71	21.7°C	2014-02-22
D2450V2 Body	51.89 (46.70~57.08)	23.96 (21.56~26.36)	49.48	22.79	21.7°C	2014-02-24
Note: All SAR values are normalized to 1W forward power.						

7 Measurement uncertainty evaluation

7.1 Measurement uncertainty evaluation for SAR test

The following table includes the uncertainty table of the IEEE 1528. The values are determined by Satimo.The breakdown of the individual uncertainties is as follows:

Measurement Uncertainty evaluation for SAR test								
Uncertainty Component	Tol. (±%)	Prob. Dist.	Div.	C_i (1g)	C_i (10g)	1g U_i (±%)	10g U_i (±%)	V_i
measurement system								
Probe Calibration	5.8	N	1	1	1	5.8	5.8	∞
Axial Isotropy	3.5	R	$\sqrt{3}$	$(1\text{-}C_p)^{1/2}$	$(1\text{-}C_p)^{1/2}$	1.43	1.43	∞
Hemispherical Isotropy	5.9	R	$\sqrt{3}$	$\sqrt{C_p}$	$\sqrt{C_p}$	2.41	2.41	∞
Boundary Effect	1	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	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Modulation response	3	N	1	1	1	3.00	3.00	∞
Readout Electronics	0.5	N	1	1	1	0.50	0.50	∞
Response Time	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	R	$\sqrt{3}$	1	1	1.73	1.73	∞
RF Ambient Conditions-Reflections	3	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 Algorithms for Max.SAR Evaluation	2.3	R	$\sqrt{3}$	1	1	1.33	1.33	∞
Test sample Related								
Test Sample Positioning	2.7	N	1	1	1	2.70	2.70	11
Device Holder Uncertainty	3	N	**1**	1	1	3.00	3.00	7
Output Power Variation-SAR drift measurement	5	R	$\sqrt{3}$	1	1	2.89	2.89	∞
SAR scaling	2	R	$\sqrt{3}$	1	1	1.15	1.15	∞
Phantom and Tissue Parameters								
Phantom Uncertainty (shape and thickness tolerances)	4	R	$\sqrt{3}$	1	1	2.31	2.31	∞
Uncertainty in SAR correction for deviation (in permittivity and conductivity)	2	N	1	1	0.84	2.00	1.68	∞
Liquid conductivity（meas.）	2.5	N	1	0.64	0.43	1.60	1.08	5
Liquid conductivity (target.)	5	R	$\sqrt{3}$	0.64	0.43	1.85	1.24	5
Liquid Permittivity（meas.）	2.5	N	1	0.60	0.49	1.50	1.23	∞
Liquid Permittivity (target.)	5	R	$\sqrt{3}$	0.60	0.49	1.73	1.42	∞
Combined Standard Uncertainly		Rss				10.21	9.96	
Expanded Uncertainty{95% CONFIDENCE INTERRVAL}		k				20.42	19.92	

7.2 Measurement uncertainty evaluation for system check

The following table includes the uncertainty table of the IEEE 1528. The values are determined by Satimo.The breakdown of the individual uncertainties is as follows:

Uncertainty For System Performance Check								
Uncertainty Component	Tol. (±%)	Prob. Dist.	Div.	C_i 1g	C_i 10g	1g U_i(±%)	10g U_i (±%)	V_i
measurement system								
Probe Calibration	5.8	N	1	1	1	5.80	5.80	∞
Axial Isotropy	3.5	R	$\sqrt{3}$	$(1\text{-}C_p)^{1/2}$	$(1\text{-}C_p)^{1/2}$	1.43	1.43	∞
Hemispherical Isotropy	5.9	R	$\sqrt{3}$	$\sqrt{C_p}$	$\sqrt{C_p}$	2.41	2.41	∞
Boundary Effect	1	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	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Modulation response	0	N	1	1	1	0.00	0.00	∞
Readout Electronics	0.5	N	1	1	1	0.50	0.50	∞
Response Time	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	R	$\sqrt{3}$	1	1	1.73	1.73	∞
RF ambient Conditions – Reflections	3	R	$\sqrt{3}$	1	1	1.73	1.73	∞
Probe positioned 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 Algorithms for Max. SAR Evaluation	2.3	R	$\sqrt{3}$	1	1	1.33	1.33	∞
Dipole								
Deviation of experimental source from numerical source	4	N	1	1	1	4.00	4.00	∞
Input power and SAR drift measurement	5	R	$\sqrt{3}$	1	1	2.89	2.89	∞
Dipole axis to liquid Distance	2	R	$\sqrt{3}$	1	1	1.16	1.16	∞
Phantom and Tissue Parameters								
Phantom Uncertainty (shape and thickness tolerances)	4	R	$\sqrt{3}$	1	1	2.31	2.31	∞
Uncertainty in SAR correction for deviation (in permittivity and conductivity)	2	N	1	1	0.84	2.00	1.68	∞
Liquid conductivity（meas.）	2.5	N	1	0.64	0.43	1.60	1.08	5
Liquid conductivity (target.)	5	R	$\sqrt{3}$	0.64	0.43	1.85	1.24	5
Liquid Permittivity（meas.）	2.5	N	1	0.60	0.49	1.50	1.23	∞
Liquid Permittivity (target.)	5	R	$\sqrt{3}$	0.60	0.49	1.73	1.41	∞
Combined Standard Uncertainty		Rss				9.74	9.48	
Expanded Uncertainty (95% Confidence interval)		k				19.49	18.96	

8 SAR Test Test Configuration

8.1 GSM Test Configurations

SAR tests for GSM850 and GSM1900, a communication link is set up with a base station by air link. Using CMU200 the power lever is set to “5”and “0” in SAR of GSM850 and GSM1900. The tests in the band of GSM 850 and GSM 1900 are performed in the mode of GPRS function. Since the GPRS class is 12 for this EUT, it has at most 4 timeslots in uplink and at most 4 timeslots in downlink, the maximum total timeslot is 5.

8.2 WCDMA Test Configurations

1) RMC

As the SAR body tests for UMTS Band V\II, we established the radio link through call processing. The maximum output power were verified on high, middle and low channels for each test band according to 3GPP TS 34.121 with the following configuration:

1) 12.2kbps RMC, 64,144,384 kbps RMC with TPC set to “all 1”
2) Test loop Mode 1.

HSDPA Setup Configuration:

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

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

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

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

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

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

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

Setup Configuration

HSUPA Setup Configuration:

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

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

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

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

Setup Configuration

8.3 WiFi Test Configuration

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

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

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

Mode	Band	GHz	Channel	"Default Test Channels"	
				802.11b	802.11g
802.11b/g	2.4 GHz	2412	1#	√	Δ
		2437	6	√	Δ
		2462	11#	√	Δ

Notes:

√ = "default test channels"

Δ = possible 802.11g channels with maximum average output ¼ dB the "default test channels"

= when output power is reduced for channel 1 and /or 11 to meet restricted band requirements the highest output channels closest to each of these channels should be tested.

802.11 Test Channels per FCC Requirements

9 Detailed Test Results

9.1 Conducted Power measurements

The output power was measured using an integrated RF connector and attached RF cable.

9.1.1 Conducted Power of GSM850

GSM850		Burst-Averaged output Power (dBm)			Division Factors	Source Based time Average Power(dBm)		
		128CH	190CH	251CH		128CH	190CH	251CH
GSM(CS)		31.94	31.94	31.94	-9.03	22.91	22.91	22.91
GPRS (GMSK)	1 Tx Slot	31.80	31.81	31.82	-9.03	22.77	22.78	22.79
	2 Tx Slots	31.14	31.15	31.12	-6.02	25.78	25.79	25.80
	3 Tx Slots	29.51	29.49	29.46	-4.26	26.88	**26.89**	26.86
	4 Tx Slots	28.70	28.71	28.69	-3.01	25.69	25.70	25.68

Note: 1) The conducted power of GSM850 is measured with RMS detector.

2) Source Based time Average Power was calculated from the measured burst-averaged output power by converting the slot powers into linear units and calculating the energy over 8 timeslots.

3)The bolded GPRS 3Tx slots mode was selected for SAR testing according the highest Source Based time Average Power table.

4) channel /Frequency: 128/824.2; 190/836.6; 251/848.8

9.1.2 Conducted Power of GSM1900

GSM1900		Burst-Averaged output Power (dBm)			Division Factors	Source Based time Average Power(dBm)		
		512CH	661CH	810CH		512CH	661CH	810CH
GSM(CS)		29.45	29.41	29.52	-9.03	20.42	20.38	20.49
GPRS (GMSK)	1 Tx Slot	29.59	29.55	29.65	-9.03	20.56	20.52	20.62
	2 Tx Slots	28.66	28.66	28.76	-6.02	22.64	22.64	22.74
	3 Tx Slots	27.03	27.02	27.15	-4.26	22.77	22.76	22.89
	4 Tx Slots	26.23	26.21	26.37	-3.01	23.22	23.20	**23.36**

Note: 1) The conducted power of GSM1900 is measured with RMS detector.

2) Source Based time Average Power was calculated from the measured burst-averaged output power by converting the slot powers into linear units and calculating the energy over 8 timeslots.

3)The bolded GPRS 4Tx slots mode was selected for SAR testing according the highest Source Based time Average Power table.

4) channel /Frequency: 512/1850.2; 661/1880; 810/1909.8

9.1.3 Conducted Power of UMTS Band V

UMTS Band V		Conducted Power (dBm)		
		4132CH	4182CH	4233CH
WCDMA	12.2kbps RMC	22.48	22.73	22.37
HSDPA	Subtest 1	22.14	22.44	22.03
	Subtest 2	22.05	22.25	21.76
	Subtest 3	21.82	22.02	21.34
	Subtest 4	21.35	21.79	21.14
HSUPA	Subtest 1	21.83	21.78	21.66
	Subtest 2	20.26	20.03	20.45
	Subtest 3	20.82	20.84	20.67
	Subtest 4	20.54	20.35	20.61
	Subtest 5	21.81	21.42	21.53

1) channel /Frequency: 4132/826.4; 4182/836.4; 4233/846.6

9.1.4 Conducted Power of UMTS Band II

UMTS Band II		Conducted Power (dBm)		
		9262CH	9400CH	9538CH
WCDMA	12.2kbps RMC	22.64	22.63	22.82
HSDPA	Subtest 1	22.51	22.31	22.70
	Subtest 2	22.12	21.84	22.34
	Subtest 3	22.07	21.81	22.22
	Subtest 4	21.97	21.63	22.14
HSUPA	Subtest 1	21.82	21.64	21.79
	Subtest 2	20.15	20.71	20.82
	Subtest 3	20.64	20.89	21.12
	Subtest 4	20.20	20.15	20.25
	Subtest 5	21.98	21.90	21.84

1) channel /Frequency: 9262/1852.4; 9400/1880; 9538/1907.6

9.1.5 Conducted Power of WiFi

Wi-Fi 2450MHz	Channel	Average Conducted Power (dBm)
802.11b	1	9.45
	6	9.62
	11	**10.25**
802.11g	1	9.11
	6	9.63
	11	10.04
802.11n (20M)	1	9.45
	6	9.22
	11	9.28
802.11n (40M)	3	7.83
	6	7.42
	9	7.23

Note:

1). The Average conducted power of WiFi is measured with RMS detector.

2). Per KDB248227, 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.

3) channel /Frequency:1/2412,6/2437,11/2462

9.1.6 Conducted Power of BT

BT	Average Conducted Power (dBm)		
	0CH	39CH	78CH
	-0.24	**-0.11**	-2.33

Note: 1) channel /Frequency:0/2402,39/2441,78/2480.

9.2 SAR test results

9.2.1 Results overview of GSM850

Test Position of Head	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (%)	Conducted Power (dBm)	Tune-up Limit (dBm)	Scaled SAR_{1-g} (W/kg)	Liquid Temp.
			1-g	10-g					
Left Hand Tilted 15°	190/836.6	GSM	0.053	0.040	-0.570	31.94	32.00	0.054	21.7°C
Left Hand Tilted 15°	190/836.6	GSM	0.036	0.027	0.400	31.94	32.00	0.037	21.7°C
Right Hand Touched	190/836.6	GSM	0.095	0.070	-2.970	31.94	32.00	**0.096**	21.7°C
Right Hand Tilted 15°	190/836.6	GSM	0.044	0.033	-0.340	31.94	32.00	0.045	21.7°C
Test Position of Body With 0mm	**Test channel /Freq.(MHz)**	**Test Mode**	**SAR Value (W/kg)**		**Power Drift (%)**	**Conducted Power (dBm)**	**Tune-up Limit (dBm)**	**Scaled SAR_{1-g} (W/kg)**	**Liquid Temp.**
			1-g	**10-g**					
Towards Ground	190/836.6	GPRS 3TS	0.748	0.433	0.500	29.49	30.00	**0.841**	21.7°C
Towards Ground	128/824.2	GPRS 3TS	0.723	0.452	0.570	29.51	30.00	0.809	21.7°C
Towards Ground	251/848.8	GPRS 3TS	0.732	0.461	-4.550	29.46	30.00	0.829	21.7°C
Left edge	190/836.6	GPRS 3TS	0.142	0.084	-0.240	29.49	30.00	0.160	21.7°C
Right edge	190/836.6	GPRS 3TS	0.196	0.120	2.450	29.49	30.00	0.220	21.7°C
Bottom edge	190/836.6	GPRS 3TS	0.680	0.338	-3.360	29.49	30.00	0.765	21.7°C
Towards Ground with Headset	190/836.6	GSM	0.542	0.314	4.050	31.94	32.00	0.550	21.7°C

Note:

1) The maximum SAR value of each test band is shown in **bold** letters.

2) Per KDB447498 D01v05,the SAR test shall be performed at the high, middle and low frequency channels of each operating mode. If the scaled SAR measured at mid-band channel for each test configuration is at least 3.0 dB lower than the SAR limit (< 0.8 W/kg), testing at the high and low channels is optional.

3) Per KDB865664 D01v01,for each frequency band,repeated SAR measurement is required only when the measured SAR is ≥ 0.8W/kg;if the deviation among the repeated measurement is ≤ 20%,and the measured SAR < 1.45W/kg;only one repeated measurement is required.

4) All measurement SAR result is scaled-up to account for tune-up tolerance is compliant.

5) For the antenna-to-edge distance is greater than 5cm,so the Top side does not need to be tested.

9.2.2 Results overview of GSM1900

Test Position of Head	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (%)	Conducted Power (dBm)	Tune-up Limit (dBm)	Scaled SAR_{1-g} (W/kg)	Liquid Temp.
			1-g	10-g					
Left Hand Touched	661/1880	GSM	0.023	0.013	0.300	29.41	30.00	**0.026**	21.7°C
Left Hand Tilted 15°	661/1880	GSM	0.010	0.006	-1.000	29.41	30.00	0.011	21.7°C
Right Hand Touched	661/1880	GSM	0.008	0.005	2.990	29.41	30.00	0.009	21.7°C
Right Hand Tilted 15°	661/1880	GSM	0.011	0.007	-2.330	29.41	30.00	0.013	21.7°C
Test Position of Body With 0mm	**Test channel /Freq.(MHz)**	**Test Mode**	**SAR Value (W/kg)**		**Power Drift (%)**	**Conducted Power (dBm)**	**Tune-up Limit (dBm)**	**Scaled SAR_{1-g} (W/kg)**	**Liquid Temp.**
			1-g	**10-g**					
Towards Ground	661/1880	GPRS 4TS	0.732	0.386	2.230	26.21	27.00	**0.878**	21.7°C
Towards Ground	512/1850.2	GPRS 4TS	0.678	0.389	1.020	26.23	27.00	0.810	21.7°C
Towards Ground	810/1909.8	GPRS 4TS	0.696	0.366	0.100	26.37	27.00	0.805	21.7°C
Left edge	661/1880	GPRS 4TS	0.249	0.130	-3.990	26.21	27.00	0.299	21.7°C
Right edge	661/1880	GPRS 4TS	0.043	0.022	-3.120	26.21	27.00	0.052	21.7°C
Bottom edge	661/1880	GPRS 4TS	0.641	0.346	-1.060	26.21	27.00	0.769	21.7°C
Towards Ground with Headset	661/1880	GSM	0.345	0.187	4.150	29.41	30.00	0.395	21.7°C

Note:

1) The maximum SAR value of each test band is shown in **bold** letters.

2) Per KDB447498 D01v05,the SAR test shall be performed at the high, middle and low frequency channels of each operating mode. If the scaled SAR measured at mid-band channel for each test configuration is at least 3.0 dB lower than the SAR limit (< 0.8 W/kg), testing at the high and low channels is optional.

3) Per KDB865664 D01v01,for each frequency band,repeated SAR measurement is required only when the measured SAR is ≥ 0.8W/kg;if the deviation among the repeated measurement is ≤ 20%,and the measured SAR < 1.45W/kg;only one repeated measurement is required.

4) All measurement SAR result is scaled-up to account for tune-up tolerance is compliant.

5) For the antenna-to-edge distance is greater than 5cm,so the Top side does not need to be tested.

9.2.3 Results overview of UMTS Band V

Test Position of Head	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (%)	Conducted Power (dBm)	Tune-up Limit (dBm)	Scaled SAR_{1-g} (W/kg)	Liquid Temp.
			1-g	10-g					
Left Hand Touched	4182/836.4	RMC	0.051	0.039	4.260	22.73	23.00	0.054	21.7°C
Left Hand Tilted 15°	4182/836.4	RMC	0.031	0.023	-0.110	22.73	23.00	0.033	21.7°C
Right Hand Touched	4182/836.4	RMC	0.063	0.048	-1.400	22.73	23.00	**0.067**	21.7°C
Right Hand Tilted 15°	4182/836.4	RMC	0.036	0.027	-0.120	22.73	23.00	0.038	21.7°C
Test Position of Body With 0mm	**Test channel /Freq.(MHz)**	**Test Mode**	**SAR Value (W/kg)**		**Power Drift (%)**	**Conducted Power (dBm)**	**Tune-up Limit (dBm)**	**Scaled SAR_{1-g} (W/kg)**	**Liquid Temp.**
			1-g	**10-g**					
Towards Ground	4182/836.4	RMC	0.763	0.455	-2.540	22.73	23.00	0.812	21.7°C
Towards Ground	4132/826.4	RMC	0.744	0.486	-4.170	22.48	23.00	**0.839**	21.7°C
Towards Ground	4233/846.6	RMC	0.724	0.479	-3.880	22.37	23.00	0.837	21.7°C
Left edge	4182/836.4	RMC	0.067	0.042	2.680	22.73	23.00	0.071	21.7°C
Right edge	4182/836.4	RMC	0.116	0.075	-1.070	22.73	23.00	0.123	21.7°C
Bottom edge	4182/836.4	RMC	0.525	0.291	-3.240	22.73	23.00	0.559	21.7°C
Towards Ground with Headset	4182/836.4	RMC	0.491	0.282	0.450	22.73	23.00	0.522	21.7°C

Note:

1) The maximum SAR value of each test band is shown in **bold** letters.

2) Per KDB447498 D01v05,the SAR test shall be performed at the high, middle and low frequency channels of each operating mode. If the scaled SAR measured at mid-band channel for each test configuration is at least 3.0 dB lower than the SAR limit (< 0.8 W/kg), testing at the high and low channels is optional.

3) Per KDB865664 D01v01,for each frequency band,repeated SAR measurement is required only when the measured SAR is ≥ 0.8W/kg;if the deviation among the repeated measurement is ≤ 20%,and the measured SAR < 1.45W/kg;only one repeated measurement is required.

4) All measurement SAR result is scaled-up to account for tune-up tolerance is compliant.

5) For the antenna-to-edge distance is greater than 5cm,so the Top side does not need to be tested.

9.2.4 Results overview of UMTSBand II

Test Position of Head	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (%)	Conducted Power (dBm)	Tune-up Limit (dBm)	Scaled SAR_{1-g} (W/kg)	Liquid Temp.
			1-g	10-g					
Left Hand Touched	9400/1880	RMC	0.015	0.009	0.010	22.63	23.00	**0.016**	21.7°C
Left Hand Tilted 15°	9400/1880	RMC	0.007	0.004	1.210	22.63	23.00	0.008	21.7°C
Right Hand Touched	9400/1880	RMC	0.008	0.004	-2.900	22.63	23.00	0.009	21.7°C
Right Hand Tilted 15°	9400/1880	RMC	0.011	0.006	-2.040	22.63	23.00	0.012	21.7°C
Test Position of Body With 0mm	**Test channel /Freq.(MHz)**	**Test Mode**	**SAR Value (W/kg)**		**Power Drift (%)**	**Conducted Power (dBm)**	**Tune-up Limit (dBm)**	**Scaled SAR_{1-g} (W/kg)**	**Liquid Temp.**
			1-g	**10-g**					
Towards Ground	9400/1880	RMC	0.719	0.401	0.260	22.63	23.00	**0.783**	21.7°C
Left edge	9400/1880	RMC	0.254	0.126	-3.930	22.63	23.00	0.277	21.7°C
Right edge	9400/1880	RMC	0.036	0.021	0.040	22.63	23.00	0.039	21.7°C
Bottom edge	9400/1880	RMC	0.662	0.346	0.780	22.63	23.00	0.721	21.7°C
Towards Ground with Headset	9400/1880	RMC	0.642	0.360	0.220	22.63	23.00	0.699	21.7°C

Note:

1) The maximum SAR value of each test band is shown in **bold** letters.

2) Per KDB447498 D01v05,the SAR test shall be performed at the high, middle and low frequency channels of each operating mode. If the scaled SAR measured at mid-band channel for each test configuration is at least 3.0 dB lower than the SAR limit (< 0.8 W/kg), testing at the high and low channels is optional.

3) Per KDB865664 D01v01,for each frequency band,repeated SAR measurement is required only when the measured SAR is ≥ 0.8W/kg;if the deviation among the repeated measurement is ≤ 20%,and the measured SAR < 1.45W/kg;only one repeated measurement is required.

4) All measurement SAR result is scaled-up to account for tune-up tolerance is compliant.

5) For the antenna-to-edge distance is greater than 5cm,so the Top side does not need to be tested.

9.2.5 Results overview of WiFi 2.4G

Test Position of Head	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (%)	Conducted Power (dBm)	Tune-up Limit (dBm)	Scaled SAR_{1-g} (W/kg)	Liquid Temp.
			1-g	10-g					
Left Hand Touched	11/2462	802.11b	0.035	0.018	-0.230	10.25	11.00	0.042	21.7°C
Left Hand Tilted 15°	11/2462	802.11b	0.057	0.029	0.100	10.25	11.00	0.068	21.7°C
Right Hand Touched	11/2462	802.11b	0.108	0.046	0.740	10.25	11.00	**0.128**	21.7°C
Right Hand Tilted 15°	11/2462	802.11b	0.091	0.040	0.310	10.25	11.00	0.108	21.7°C
Test Position of Body With 0mm	**Test channel /Freq.(MHz)**	**Test Mode**	**SAR Value (W/kg)**		**Power Drift (%)**	**Conducted Power (dBm)**	**Tune-up Limit (dBm)**	**Scaled SAR_{1-g} (W/kg)**	**Liquid Temp.**
			1-g	**10-g**					
Towards Ground	11/2462	802.11b	0.310	0.141	-0.190	10.25	11.00	**0.368**	21.7°C
Left edge	11/2462	802.11b	0.051	0.021	-3.670	10.25	11.00	0.061	21.7°C
Top edge	11/2462	802.11b	0.226	0.095	-0.740	10.25	11.00	0.269	21.7°C

Note:

1) The maximum SAR value of each test band is shown in **bold** letters.

2) Per KDB447498 D01v05,the SAR test shall be performed at the high, middle and low frequency channels of each operating mode. If the scaled SAR measured at mid-band channel for each test configuration is at least 3.0 dB lower than the SAR limit (< 0.8 W/kg), testing at the high and low channels is optional.

3) Per KDB865664 D01v01,for each frequency band,repeated SAR measurement is required only when the measured SAR is ≥ 0.8W/kg;if the deviation among the repeated measurement is ≤ 20%,and the measured SAR < 1.45W/kg;only one repeated measurement is required.

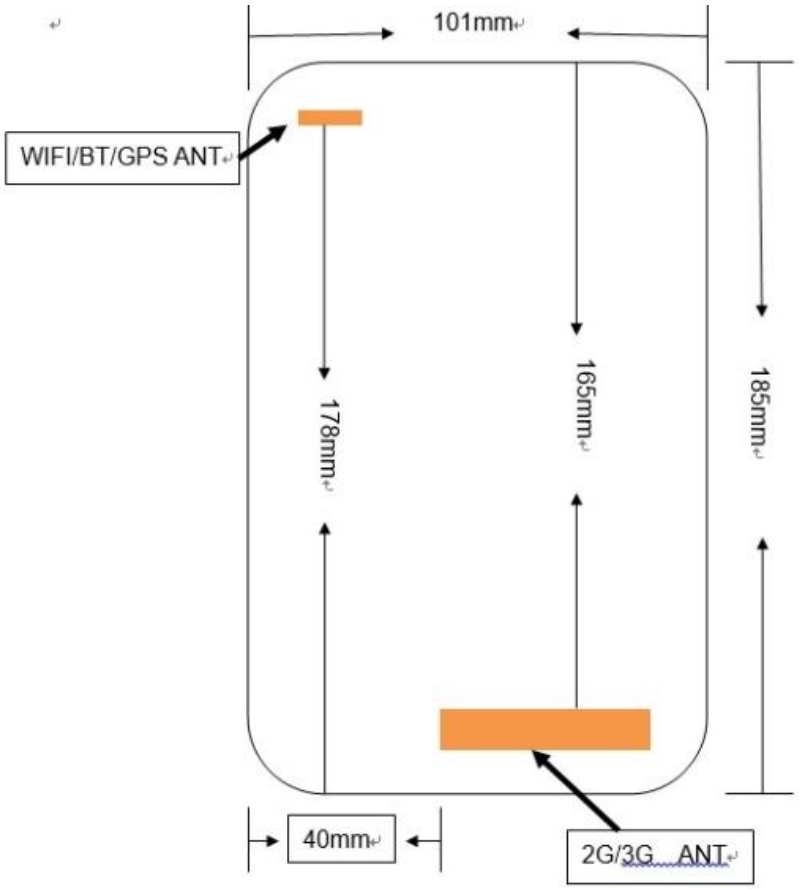
4) All measurement SAR result is scaled-up to account for tune-up tolerance is compliant.

5) For the antenna-to-edge distance is greater than 5cm,so the Top side does not need to be tested.

.

10 Multiple Transmitter Information

The location of the antennas inside M702 is shown as below picture:



Front view

The SAR measurement positions of each side are as below:

Mode	Front Side	Rear Side	Left Side	Right Side	Top Side	Bottom Side
2G/3G Antenna	No	Yes	Yes	Yes	No	Yes
WiFi / BT	No	Yes	Yes	No	Yes	No

Note: 1) Per KDB616217 D04v01, SAR evaluation is required for the back surface and edges of the tablet when the diagonal dimension of the device is >20cm. When the antenna-to-edge distance is greater than 5 cm, the side does not need to be tested.

10.1.1 Stand-alone SAR test exclusion

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,where

• f(GHz) is the RF channel transmit frequency in GHz

• Power and distance are rounded to the nearest mW and mm before calculation

• The result is rounded to one decimal place for comparison

When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

a)Head position

Mode	Pmax(dBm)	Pmax(mW)	Distance(mm)	f(GHz)	Calculation Result	exclusion Threshold	SAR test exclusion
GSM850	32.00	1584.89	5.00	0.850	292.24	3.00	No
GSM1900	30.00	1000.00	5.00	1.900	275.68	3.00	No
UMTS Band V	23.00	199.53	5.00	0.850	36.79	3.00	No
UMTS Band II	23.00	199.53	5.00	1.900	55.01	3.00	No
WiFi	11.00	12.59	5.00	2.450	3.94	3.00	No
BT	1.00	1.26	5.00	2.450	0.39	3.00	Yes

b)Body position

Mode	Pmax(dBm)	Pmax(mW)	Distance(mm)	f(GHz)	Calculation Result	exclusion Threshold	SAR test exclusion
GSM850	32.00	1584.89	5.00	0.850	292.24	3.00	No
GSM1900	30.00	1000.00	5.00	1.900	275.68	3.00	No
UMTS Band V	23.00	199.53	5.00	0.850	36.79	3.00	No
UMTS Band II	23.00	199.53	5.00	1.900	55.01	3.00	No
WiFi	11.00	12.59	5.00	2.450	3.94	3.00	No
BT	1.00	1.26	5.00	2.450	0.39	3.00	Yes

When the standalone SAR test exclusion applies to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to the following to determine simultaneous transmission SAR test exclusion

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

When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

Mode	Position	Pmax(dBm)	Pmax(mW)	Distance(mm)	f(GHz)	X	Estimated SAR(W/Kg)
BT	Head	1	1.26	5.00	2.45	7.50	0.053
BT	Body	1	1.26	5.00	2.45	7.50	0.053

10.1.2 Simultaneous Transmission Possibilities

The Simultaneous Transmission Possibilities are as below:

Simultaneous Transmission Possibilities			
Simultaneous Tx Combination	Configuration	Head	Body
1	GSM/GPRS+WIFI	YES	YES
2	GSM/GPRS+BT	YES	YES
3	UMTS+WIFI	YES	YES
4	UMTS+BT	YES	YES

Note: The device does not support simultaneous BT and WiFi ,because the BT and WiFi share the same antenna and can't transmit simultaneously.

10.1.3 SAR Summation Scenario

Test Position		Scaled SAR_{Max}		$\sum_{1-g}$ SAR	SPLSP
		GSM850	WIFI		
Head	Left Hand Tilted 15°	0.054	0.042	0.096	NA
	Left Hand Tilted 15°	0.037	0.068	0.105	NA
	Right Hand Touched	0.096	0.128	0.224	NA
	Right Hand Tilted 15°	0.045	0.108	0.153	NA
Body	Towards Ground	0.841	0.368	**1.209**	NA
	Left edge	0.160	0.061	0.221	NA
	Right edge	0.220	0	0.220	NA
	Bottom edge	0.765	0	0.765	NA
	Top edge	0	0.269	0.269	NA

Note: Simultaneous Tx Combination of GSM850 and WIFI

Test Position		Scaled SAR_{Max}		$\sum_{1-g}$ SAR	SPLSP
		GSM1900	WIFI		
Head	Left Hand Tilted 15°	0.026	0.042	0.068	NA
	Left Hand Tilted 15°	0.011	0.068	0.079	NA
	Right Hand Touched	0.009	0.128	0.137	NA
	Right Hand Tilted 15°	0.013	0.108	0.121	NA
Body	Towards Ground	0.878	0.368	**1.246**	NA
	Left edge	0.299	0.061	0.360	NA
	Right edge	0.052	0	0.052	NA
	Bottom edge	0.769	0	0.769	NA
	Top edge	0	0.269	0.269	NA

Note: Simultaneous Tx Combination of GSM1900 and WIFI

Test Position		Scaled SAR_{Max}		$\sum_{1-g}$ SAR	SPLSP
		UMTS Band V	WIFI		
Head	Left Hand Tilted 15°	0.054	0.042	0.096	NA
	Left Hand Tilted 15°	0.033	0.068	0.101	NA
	Right Hand Touched	0.067	0.128	0.195	NA
	Right Hand Tilted 15°	0.038	0.108	0.146	NA
Body	Towards Ground	0.839	0.368	**1.207**	NA
	Left edge	0.071	0.061	0.132	NA
	Right edge	0.123	0	0.123	NA
	Bottom edge	0.559	0	0.559	NA
	Top edge	0	0.269	0.269	NA

Note: Simultaneous Tx Combination of UMTS Band V and WIFI

Test Position		Scaled SAR_{Max}		$\sum_{1-g}$ SAR	SPLSP
		UMTS Band II	WIFI		
Head	Left Hand Tilted 15°	0.016	0.042	0.058	NA
	Left Hand Tilted 15°	0.008	0.068	0.076	NA
	Right Hand Touched	0.009	0.128	0.137	NA
	Right Hand Tilted 15°	0.012	0.108	0.120	NA
Body	Towards Ground	0.783	0.368	**1.151**	NA
	Left edge	0.277	0.061	0.338	NA
	Right edge	0.039	0	0.039	NA
	Bottom edge	0.721	0	0.721	NA
	Top edge	0	0.269	0.269	NA

Note: Simultaneous Tx Combination of UMTS Band II and WIFI

Test Position		Scaled SAR_{Max}		$\sum_{1-g}$ SAR	SPLSP
		GSM850	BT		
Head	Left Hand Tilted 15°	0.054	0.053	0.107	NA
	Left Hand Tilted 15°	0.037	0.053	0.090	NA
	Right Hand Touched	0.096	0.053	0.149	NA
	Right Hand Tilted 15°	0.045	0.053	0.098	NA
Body	Towards Ground	0.841	0.053	**0.894**	NA
	Left edge	0.160	0.053	0.213	NA
	Right edge	0.220	0.053	0.273	NA
	Bottom edge	0.765	0.053	0.818	NA
	Top edge	0	0.053	0.053	NA

Note: Simultaneous Tx Combination of GSM850 and BT

Test Position		Scaled SAR_{Max}		$\sum_{1-g}$ SAR	SPLSP
		GSM1900	BT		
Head	Left Hand Tilted 15°	0.026	0.053	0.079	NA
	Left Hand Tilted 15°	0.011	0.053	0.064	NA
	Right Hand Touched	0.009	0.053	0.062	NA
	Right Hand Tilted 15°	0.013	0.053	0.066	NA
Body	Towards Ground	0.878	0.053	**0.931**	NA
	Left edge	0.299	0.053	0.352	NA
	Right edge	0.052	0.053	0.105	NA
	Bottom edge	0.769	0.053	0.822	NA
	Top edge	0	0.053	0.053	NA

Note: Simultaneous Tx Combination of GSM1900 and BT

Test Position		Scaled SAR_{Max}		$\sum_{1-g}$ SAR	SPLSP
		UMTS Band V	BT		
Head	Left Hand Tilted 15°	0.054	0.053	0.107	NA
	Left Hand Tilted 15°	0.033	0.053	0.086	NA
	Right Hand Touched	0.067	0.053	0.120	NA
	Right Hand Tilted 15°	0.038	0.053	0.091	NA
Body	Towards Ground	0.839	0.053	**0.892**	NA
	Left edge	0.071	0.053	0.124	NA
	Right edge	0.123	0.053	0.176	NA
	Bottom edge	0.559	0.053	0.612	NA
	Top edge	0	0.053	0.053	NA

Note: Simultaneous Tx Combination of UMTS Band V and BT

Test Position		Scaled SAR_{Max}		$\sum_{1-g}$ SAR	SPLSP
		UMTS Band II	BT		
Head	Left Hand Tilted 15°	0.016	0.053	0.069	NA
	Left Hand Tilted 15°	0.008	0.053	0.061	NA
	Right Hand Touched	0.009	0.053	0.062	NA
	Right Hand Tilted 15°	0.012	0.053	0.065	NA
Body	Towards Ground	0.783	0.053	**0.836**	NA
	Left edge	0.277	0.053	0.330	NA
	Right edge	0.039	0.053	0.092	NA
	Bottom edge	0.721	0.053	0.774	NA
	Top edge	0	0.053	0.053	NA

Note: Simultaneous Tx Combination of UMTS Band II and BT

11 Test equipment and ancillaries used for tests

To simplify the identification of the test equipment and/or ancillaries which were used, the reporting of the relevant test cases only refer to the test item number as specified in the table below.

	Manufacturer	Device Type	Type(Model)	Serial number	Date of last calibration
☒	SATIMO	COMOSAR DOSIMETRIC E FIELD PROBE	SSE5	SN 09/13 EP170	2013-04-11
☒	SATIMO	COMOSAR 835 MHz REFERENCE DIPOLE	SID835	SN 14/13 DIP0G835-235	2013-04-11
☐	SATIMO	COMOSAR 900 MHz REFERENCE DIPOLE	SID900	SN 14/13 DIP0G900-231	2013-04-11
☐	SATIMO	COMOSAR 1800 MHz REFERENCE DIPOLE	SID1800	SN 14/13 DIP1G800-232	2013-04-11
☒	SATIMO	COMOSAR 1900 MHz REFERENCE DIPOLE	SID1900	SN 14/13 DIP1G900-236	2013-04-11
☐	SATIMO	COMOSAR 2000 MHz REFERENCE DIPOLE	SID2000	SN 14/13 DIP2G000-237	2013-04-11
☒	SATIMO	COMOSAR 2450 MHz REFERENCE DIPOLE	SID2450	SN 14/13 DIP2G450-238	2013-04-11
☒	SATIMO	Software	OPENSAR	N/A	N/A
☒	SATIMO	Phantom	COMOSAR IEEE SAM PHANTOM	SN 14/13 SAM99	N/A
☒	R & S	Universal Radio Communication Tester	CMU 200	117528	2013-09-22
☒	HP	Network Analyser	8753D	3410A08889	2013-08-19
☒	HP	Signal Generator	E4421B	GB39340770	2013-08-28
☒	Keithley	Multimeter	Keithley 2000	4014539	2013-08-22
☒	SATIMO	Amplifier	Power Amplifier	MODU-023-A-0004	2013-08-19
☒	Agilent	Power Meter	E4418B	GB43312909	2013-08-22
☒	Agilent	Power Meter Sensor	E4412A	MY41500046	2013-08-22

Note: All the test equipments are calibrated once a year, except the dipoles, which are calibrated every three years. Moreover, we have self-calibration every year to the dipoles

Annex A: System performance verification

(**Please See the SAR Measurement Plots of annex A.**)

Annex B: Measurement results

(**Please See the SAR Measurement Plots of annex B.**)

Annex C: Calibration reports

(Please See the Calibration reports of annex C.)

Annex D: Photo documentation

Photo 1: Measurement System OPENSAR	Photo 2: Front view
	
Photo 3: Rear View	Photo 4: Left Hand Touched
	

Photo 5: Left Hand Tilted 15°	Photo 6: Right Hand Touched

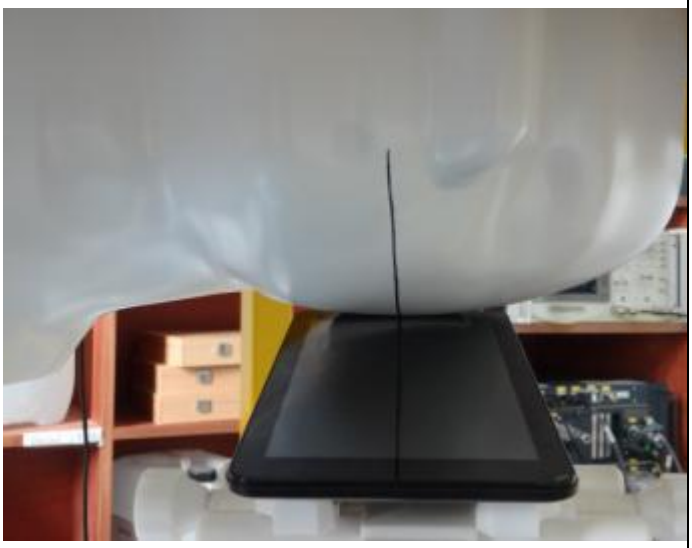
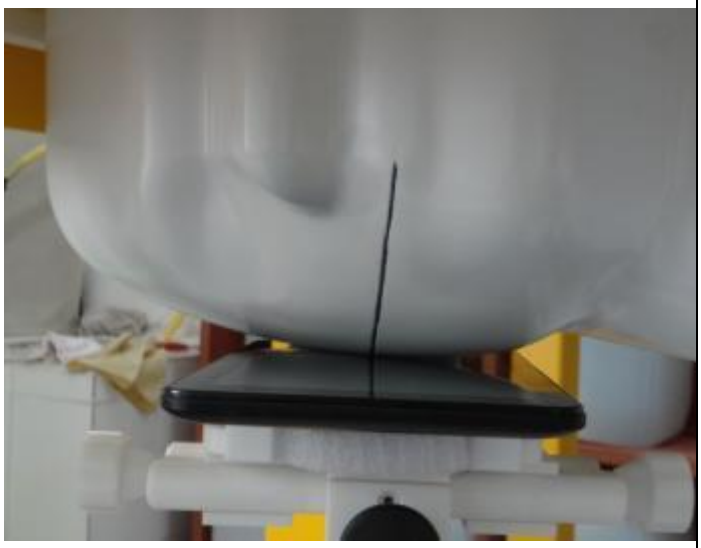

	

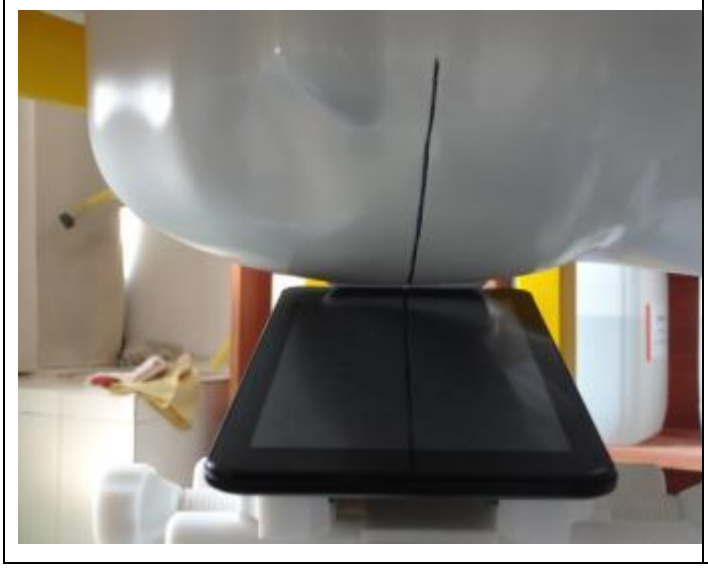
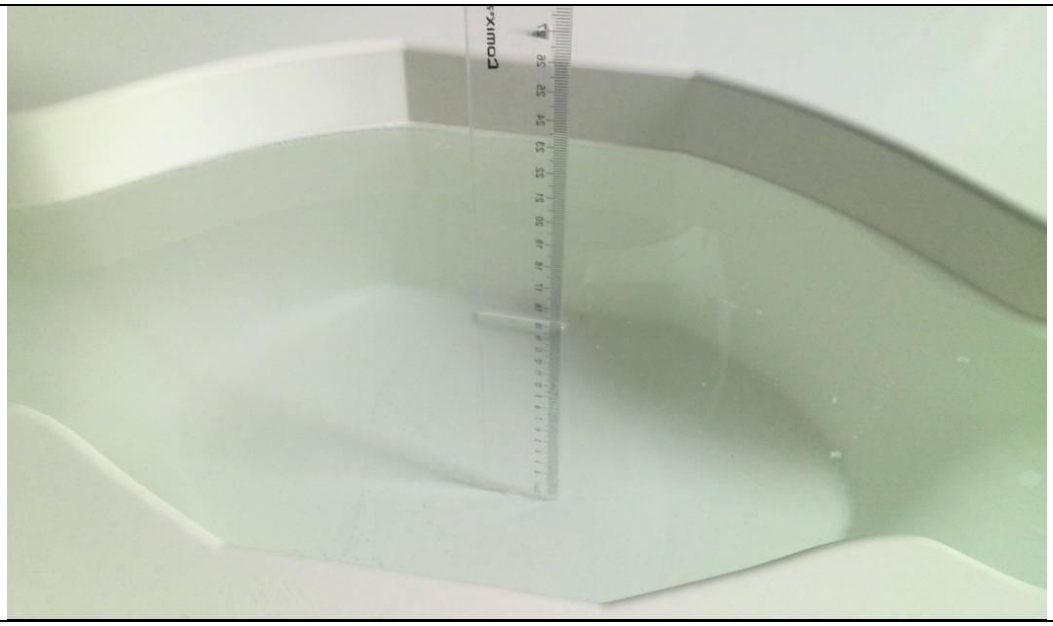
Photo 7: Right Hand Tilted 15°	Photo 8: Towards Ground 0mm
	

Photo 9: Left edge 0mm	Photo 10: Right edge 0mm
	
Photo 11: Top edge 0mm	Photo 12: Bottom edge 0mm
	

Photo 13: Liquid Depth ≥ 15.0cm



End