SAR TEST REPORT

Report No: STS1711221H01

Issued for

Vonino Electronics LTD

Unit 1109, 11/F., Kowloon Centre, 33 Ashley Road, Tsim Sha Tsui, Kowloon, Hong Kong

Product Name:	mobilephone
Brand Name:	Vonino
Model Name:	NONO33
Series Model:	Nono M, Nono J, Nono Q, Nono Z
Test Standard:	EN 50360: 2001/ A1:2012; EN 62479: 2010;
	EN 62209-1: 2006; EN 62209-2: 2010;
	EN 50566: 2013/AC: 2014;
Max. SAR (10g):	Head: 0.638 W/kg
	Body: 1.216 W/kg

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Test Report Certification

Applicant's Name	:	Vonino Electronics LTD
Address	:	Unit 1109, 11/F., Kowloon Centre, 33 Ashley Road, Tsim Sha Tsui, Kowloon, Hong Kong
Manufacture's Name	:	Hona (HK) Technology Limited
Address	:	Room 603, 6/F, Block R2-B, No.20, Gaoxin S.Ave.7th, Southern Section, Hi-tech Industrial Park, Nanshan District, Shenzhen, China

Product Description

Product name	:	mobilephone
Brand name	:	Vonino
Model name	:	NONO33
Series Model	:	Nono M, Nono J, Nono Q, Nono Z
Standards	:	EN 50360: 2001/A1: 2012; EN 62479: 2010; EN 62209-1: 2006; EN 62209-2: 2010; EN 50566: 2013/AC 2014

This device described above has been tested by STS, and the test results show that the equipment under test (EUT) is in compliance with the 2014/53/EU RED Directive Art.3.1a requirements. And it is applicable only to the tested sample identified in the report.

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Date of Test	:	
Date (s) of performance of tests	:	22 Nov. 2017
Date of Issue	:	23 Nov. 2017
Test Result	:	**Pass**

Testing Engineer : Aaron Bu
(Aaron Bu)

Technical Manager : John Zou
(John Zou)

Authorized Signatory : Vita Li
(Vita Li)

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Revision History

Rev.	Issue Date	Report No.	Effect Page	Contents
00	23 Nov. 2017	STS1711221H01	ALL	Initial Issue
Note: **Format version** of the report -V01				

1. General Information

1.1 EUT Description

Product Name	mobilephone		
Brand Name	Vonino		
Model Name	NONO33		
Series Model	Nono M, Nono J, Nono Q, Nono Z		
Model Difference	Only different in model name,appearance and colors		
Hardware Version	H668M10-C10		
Software Version	Nono_33_6531E_QQVGA_V07_20171110		
Frequency Range	GSM 900: 880.2 MHz to 914.8 MHz GSM1800: 1710.2 MHz to 1784.8 MHz Bluetooth: 2402 MHz to 2480 MHz		
Max. Reported SAR(10g):	Mode	Head(W/ kg)	Body(W/ kg)
	GSM 900	0.638	1.216
	GSM 1800	0.253	0.299
	Limit	2.0 W/kg	
Adapter	Input: AC 100-240V, 300mA, 50/60 Hz Output: DC 5V, 500mA		
Battery	Rated Voltage: 3.7V Charge Limit: 4.2V Capacity : 600mAh		
Description test modes	SIM 1 and SIM 2 is a chipset unit and tested as single chipset , SIM 1 is used to tested		
Wireless Type:	GSM: GMSK for GSM/GPRS Bluetooth: V2.1 : GFSK		
Power control level	GSM900: 5, DCS1800: 0		
Power class	GSM900: 4 GSM1800: 1		
Antenna Specification:	GSM: PIFA Antenna Bluetooth: monopole Antenna		
Operating Mode:	Maximum continuous output		

1.2 Test Environment

Ambient conditions in the SAR laboratory:

Items	Required
Temperature (℃)	18-25
Humidity (%RH)	30-70

1.3 Test Factory

Shenzhen STS Test Services Co., Ltd.
Add. : 1/F., Building B, Zhuoke Science Park, No.190, Chongqing Road, Fuyong Street, Bao'an District, Shenzhen, Guangdong, China
CNAS Registration No.: L7649
FCC Registration No.: 625569;
IC Registration No.: 12108A
A2LA Certificate No.: 4338.01

2. Test Standards And Limits

No.	Identity	Document Title
1	EN 50360: 2001/ A1:2012	Product standard to demonstrate compliance of mobile phones with the basic restrictions related to human exposure to electromagnetic fields(300 MHz-3GHz)
2	EN 50566: 2013/ AC:2014	Product standard to demonstrate compliance of radio frequency fields from handheld and body-mounted wireless communication devices used by the general public (30 MHz - 6 GHz)
3	EN 62209-1: 2006	Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Human models, instrumentation, and procedures – Part 1: Procedure to determine the specific absorption rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)
4	EN 62209-2: 2010	Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Human models, instrumentation, and procedures –Part 2: Procedure to determine the Specific Absorption Rate (SAR) in the head and body for 30MHz to 6GHz Handheld and Body-Mounted Devices used inclose proximity to the body
5	EN 62479: 2010	Assessment of the compliance of low-power electronic and electrical equipment with the restrictions related to human exposure to electromagnetic fields(10 MHz to 300 GHz)

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

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

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

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

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.08	2.0	4.0

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

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

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

NOTE GENERAL POPULATION/UNCONTROLLED EXPOSURE PARTIAL BODY LIMIT 2.0 W/kg

3. SAR Measurement System

3.1 Definition Of Specific Absorption Rate (SAR)

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below:

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

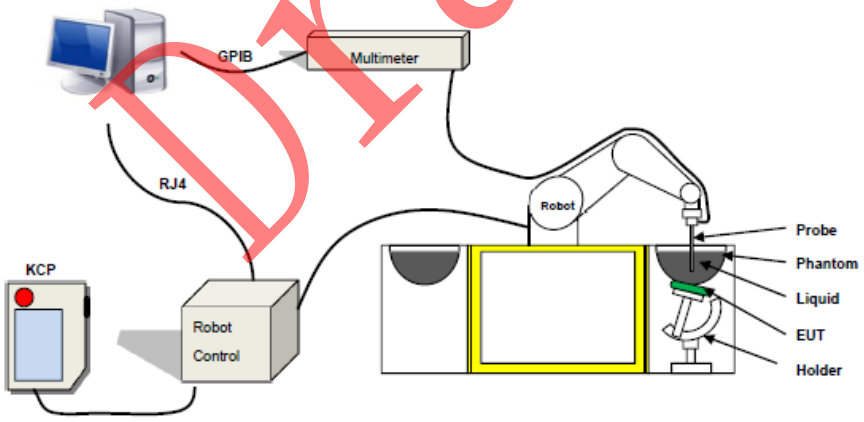
SAR is expressed in units of Watts per kilogram (W/kg) SAR measurement can be related to the electrical field in the tissue by

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

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

3.2 SAR System

MVG SAR System Diagram:



Comosar is a system that is able to determine the SAR distribution inside a phantom of human being according to different standards. The Comosar system consists of the following items:
- Main computer to control all the system
- 6 axis robot
- Data acquisition system
- Miniature E-field probe
- Phone holder
- Head simulating tissue

The following figure shows the system.

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

3.2.1 Probe

For the measurements the Specific Dosimetric E-Field Probe SN 14/16 EP309 with following specifications is used
- Dynamic range: 0.01-100 W/kg
- Tip Diameter: 5 mm
- Length of Individual Dipoles: 4.5 mm
- Maximum external diameter: 8 mm
- Distance between dipole/probe extremity: 8 mm (repeatability better than +/- 2.7mm)
- Probe linearity: 0±2.27%(±0.10dB)
- Axial Isotropy: < 0.10 dB
- Spherical Isotropy: < 0.10 dB
- Calibration range: 400 MHz to 3 GHz for head & body simulating liquid.
- Angle between probe axis (evaluation axis) and surface normal line: less than 30°

Figure 1-MVG COMOSAR Dosimetric E field Dipole

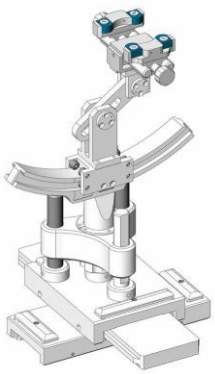
3.2.2 Phantom

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

Figure-SN 32/14 SAM115

Figure-SN 32/14 SAM116

3.2.3 Device Holder



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

4. Tissue Simulating Liquids

4.1 Simulating Liquids Parameter Check

The simulating liquids should be checked at the beginning of a series of SAR measurements to determine of the dielectric parameters are within the tolerances of the specified target values

The uncertainty due to the liquid conductivity and permittivity arises from two different sources. The first source of error is the deviation of the liquid conductivity from its target value (max _ 5 %) and the second source of error arises from the measurement procedures used to assess conductivity. The uncertainty shall be assessed using a rectangular probability For 10 g averaging, the maximum weighting coefficient for SAR is 0,5.

EN 62209 RECOMMENDED TISSUE DIELECTRIC PARAMETERS
The head and body tissue dielectric parameters recommended by the EN 62209 have been incorporated in the following table.

Frequency	εr		σ 10g S/m	
	Head	Body	Head	Body
300	45.3	45.3	0.87	0.87
450	43.5	43.5	0.87	0.87
900	41.5	41.5	0.97	0.97
1450	40.5	40.5	1.20	1.20
1800	40.0	40.0	1.40	1.40
2450	39.2	39.2	1.80	1.80
3000	38.5	38.5	2.40	2.40
5200	36.0	36.0	4.70	4.70

LIQUID MEASUREMENT RESULTS

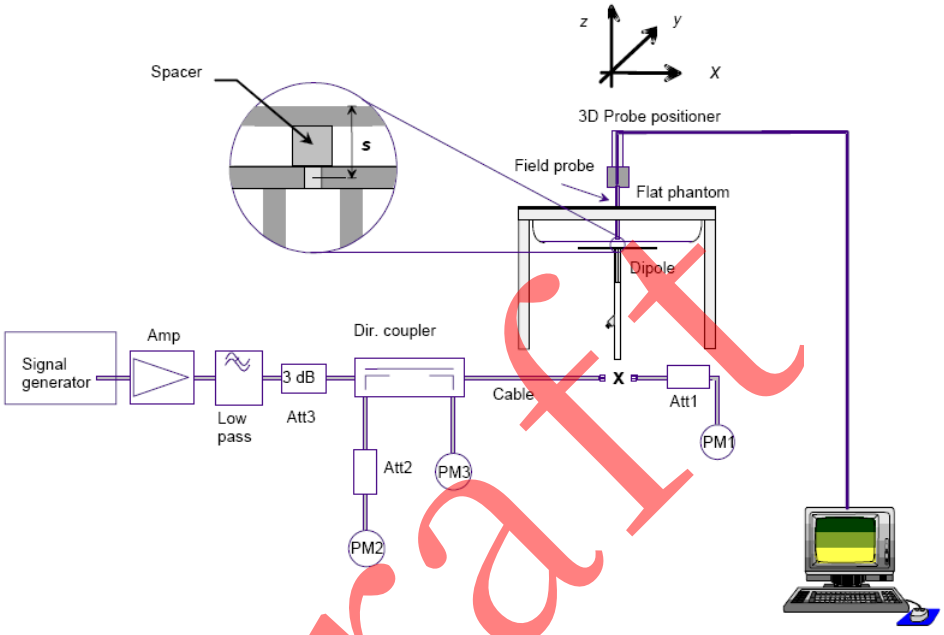
Date	Ambient condition		Head/Body Simulating Liquid		Parameters	Target	Measured	Deviation [%]	Limited [%]
	Temp. [°C]	Humidity [%]	Frequency	Temp. [°C]					
2017-11-22	22.8	57	900 MHz	22.4	Permittivity:	41.5	41.41	-0.23	±5
					Conductivity:	0.97	0.96	-0.73	± 5
2017-11-22	22.8	57	1800 MHz	22.4	Permittivity:	40	39.04	-2.40	± 5
					Conductivity:	1.4	1.40	0.00	± 5

5. SAR System Validation

5.1 Validation System

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

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



5.2 Validation Result

Comparing to the original SAR value provided by MVG, the validation data should be within its specification of ±10 %.

Date	Freq.	Power	Tested Value	Normalized SAR	Target SAR	Tolerance
	(MHz)	(mW)	(W/Kg)	(W/kg)	(W/kg)	(%)
2017-11-22	900	100	0.667	6.67	6.99	-4.65
2017-11-22	1800	100	2.048	20.48	20.1	1.91

6. SAR Evaluation Procedures

The procedure for assessing the average SAR value consists of the following steps:

- Establish a call with the maximum output power with a base station simulator. The connection between the mobile and the base station simulator is established via air interface.

- Measurement of the local E-field value at a fixed location. This value serves as a reference value for calculating a possible power drift.

- Measurement of the SAR distribution with a grid of 8 to 16mm * 8 to16 mm and a constant distance to the inner surface of the phantom. Since the sensors cannot directly measure at the inner phantom surface, the values between the sensors and the inner phantom surface are extrapolated. With these values the area of the maximum SAR is calculated by an interpolation scheme.

- Around this point, a cube of 30 * 30 * 30 mm or 32 * 32 * 32 mm is assessed by measuring 5 or 8 * 5 or 8*4 or 5 mm. With these data, the peak spatial-average SAR value can be calculated.

Area Scan& Zoom Scan:

First Area Scan is used to locate the approximate location(s) of the local peak SAR value(s). The measurement grid within an Area Scan is defined by the grid extent, grid step size and grid offset. Next, in order to determine the EM field distribution in a three-dimensional spatial extension, Zoom Scan is required. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR -distribution over 10 g. Area scan and zoom scan resolution setting follows KDB 865664 D01v01r01 quoted below.

When the 1-g SAR of the highest peak is within 2 dB of the SAR limit, additional zoom scans are required for other peaks within 2 dB of the highest peak that have not been included in any zoom scan to ensure there is no increase in SAR.

7. EUT Test Position

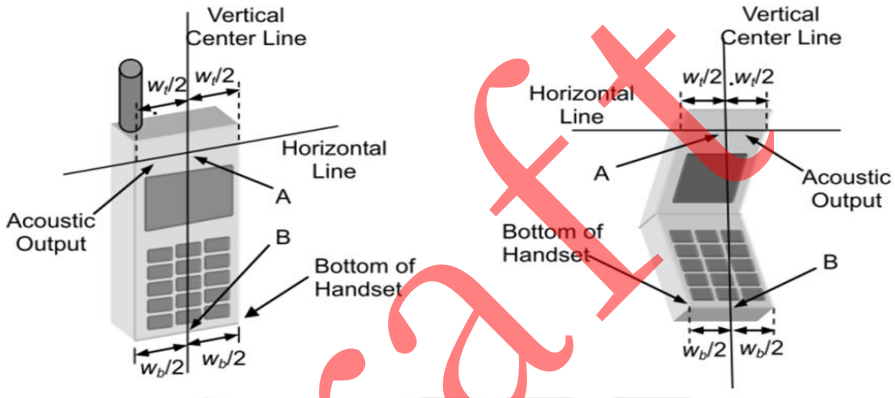
This EUT was tested in Right Cheek, Right Titled, Left Cheek, Left Titled, Front Face and Rear Face.

Define Two Imaginary Lines On The Handset:

1)The vertical centerline passes through two points on the front side of the handset the midpoint of the width wt of the handset at the level of the acoustic output, and the midpoint of the width wb of the handset.

2)The horizontal line is perpendicular to the vertical centerline and passes through the center of the acoustic output. The horizontal line is also tangential to the face of the handset at point A.

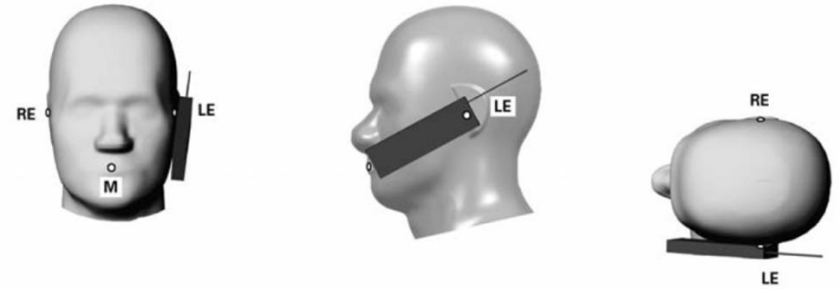
3)The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centerline is not necessarily to the front face of the handset, especially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



7.1 Cheek Position

1)To position the device with the vertical center line of the body of the device and the horizontal line crossing the center picec in a plane parallel to the sagittal plane of the phantom. While maintaining the device in this plane, align the vertical center line with the reference plane containing the ear and mouth reference point (M: Mouth, RE: Right Ear, and LE: Left Ear) and align the center of the ear piece with the line RE-LE.

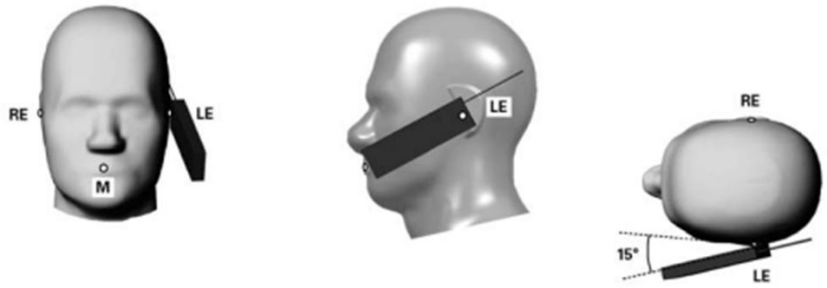
2)To move the device towards the phantom with the ear piece aligned with the the line LE-RE until the phone touched the ear. While maintaining the device in the reference plane and maintaining the phone contact with ear, move the bottom of the phone until any point on the front side is in contact with the cheek of the phantom or until contact with the ear is lost



7.2 Tilt Position

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

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



7.3 Body-worn Position Conditions

1) To position the EUT parallel to the phantom surface.

2) To adjust the EUT parallel to the flat phantom.

3) To adjust the distance between the EUT surface and the flat phantom to 5mm.

8. Measurement Uncertainty

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

NO	Source	Tol(%)	Prob. Dist.	Div. k	ci (1g)	ci (10g)	1gUi	10gUi	Veff
Measurement System□									
1	Probe calibration	5.8	N	1	1	1	5.8	5.8	∞
2	Axial isotropy	3.5	R	√3	(1-cp)1/2	(1-cp)1/2	1.43	1.43	∞
3	Hemispherical isotropy	5.9	R	√3	√Cp	√Cp	2.41	2.41	∞
4	Boundary effect	1.0	R	√3	1	1	0.58	0.58	∞
5	Linearity	4.7	R	√3	1	1	2.71	2.71	∞
6	System Detection limits	1.0	R	√3	1	1	0.58	0.58	∞
7	Readout electronics	0.5	N	1	1	1	0.50	0.50	∞
8	Response time	0	R	√3	1	1	0	0	∞
9	Integration time	1.4	R	√3	1	1	0.81	0.81	∞
10	Ambient noise	3.0	R	√3	1	1	1.73	1.73	∞
11	Ambient reflections	3.0	R	√3	1	1	1.73	1.73	∞
12	Probe positioner mech. restrictions	1.4	R	√3	1	1	0.81	0.81	∞
13	Probe positioning with respect to phantom shell	1.4	R	√3	1	1	0.81	0.81	∞
14	Max.SAR evaluation	1.0	R	√3	1	1	0.6	0.6	∞
Test sample related									
15	Device positioning	2.6	N	1	1	1	2.6	2.6	11
16	Device holder	3	N	1	1	1	3.0	3.0	7
17	Drift of output power	5.0	R	√3	1	1	2.89	2.89	∞
Phantom and set-up									
18	Phantom uncertainty	4.0	R	√3	1	1	2.31	2.31	∞
19	Liquid conductivity (target)	2.5	N	1	0.78	0.71	1.95	1.78	5
20	Liquid conductivity (meas)	4	N	1	0.23	0.26	0.92	1.04	5
21	Liquid Permittivity (target)	2.5	N	1	0.78	0.71	1.95	1.78	∞
22	Liquid Permittivity (meas)	5.0	N	1	0.23	0.26	1.15	1.30	∞
Combined standard			RSS	$U_C = \sqrt{\sum_{i=1}^{n} C_i^2 U_i^2}$			10.63%	10.54%	
Expanded uncertainty (P=95%)		$U = k\,U_C$,k=2					21.26%	21.08%	

9. Conducted Power Measurement

Test Result:

RF Output Power (dBm)						
Band	GSM 900			DCS 1800		
Channel	975	60	124	512	698	885
Frequency (MHz)	880.2	902.0	914.8	1710.2	1747.4	1784.8
GSM(GMSK, 1-Slot)	32.90	32.60	32.70	29.70	29.80	29.60
GPRS (GMSK, 1-Slot)	27.97	27.83	27.65	26.67	23.69	23.73
GPRS (GMSK, 2-Slot)	27.56	27.50	27.36	26.23	23.40	23.25
GPRS (GMSK, 3-Slot)	27.20	27.17	27.02	25.93	22.97	22.76
GPRS (GMSK, 4-Slot)	26.82	26.77	26.75	25.43	22.50	22.31
EGPRS(8PSK, 1-Slot)	-	-	-	-	-	-
EGPRS(8PSK, 2-Slot)	-	-	-	-	-	-
EGPRS(8PSK, 3-Slot)	-	-	-	-	-	-
EGPRS(8PSK, 4-Slot)	-	-	-	-	-	-
Remark: GPRS, CS4 coding scheme. EGPRS, MCS5 coding scheme. Multi-Slot Class 8 , Support Max 4 downlink, 1 uplink , 5 working link Multi-Slot Class 10 , Support Max 4 downlink, 2 uplink , 5 working link Multi-Slot Class 12 , Support Max 4 downlink, 4 uplink , 5 working link						

Fram- RF Output Power (dBm)						
Band	GSM 900			DCS 1800		
Channel	975	60	124	512	698	885
Frequency (MHz)	880.2	902.0	914.8	1710.2	1747.4	1784.8
GSM(GMSK, 1-Slot)	23.87	23.57	23.67	20.67	20.77	20.57
GPRS (GMSK, 1-Slot)	18.94	18.80	18.62	17.64	14.66	14.70
GPRS (GMSK, 2-Slot)	21.54	21.48	21.34	20.21	17.38	17.23
GPRS (GMSK, 3-Slot)	22.94	22.91	22.76	21.67	18.71	18.50
GPRS (GMSK, 4-Slot)	23.81	23.76	23.74	22.42	19.49	19.30
EGPRS(8PSK, 1-Slot)	-	-	-	-	-	-
EGPRS(8PSK, 2-Slot)	-	-	-	-	-	-
EGPRS(8PSK, 3-Slot)	-	-	-	-	-	-
EGPRS(8PSK, 4-Slot)	-	-	-	-	-	-
Remark : 1. SAR testing was performed on the maximum frame-averaged power mode. 2. The frame-averaged power is linearly proportion to the slot number configured and it is linearly scaled the maximum burst-averaged power based on time slots. The calculated method is shown as below: Frame-averaged power = Burst averaged power (1 Tx Slot) – 9.03 dB Frame-averaged power = Burst averaged power (2 Tx Slots) – 6.02 dB Frame-averaged power = Burst averaged power (3 Tx Slots) - 4.26 dB Frame-averaged power = Burst averaged power (4 Tx Slots) – 3.01 dB						

Bluetooth

Mode	Average EIRP Power (dBm)
GFSK(1Mbps)	5.96

Note: Per EN 62479,The available antenna power of this EUT is 5.96 dBm (3.95mW), the power Is less than the low-power exclusion level defined in 4.2 (Pmax:20mW), So bluetooth stand-alone SAR is not required.

10. Test Photos And Results

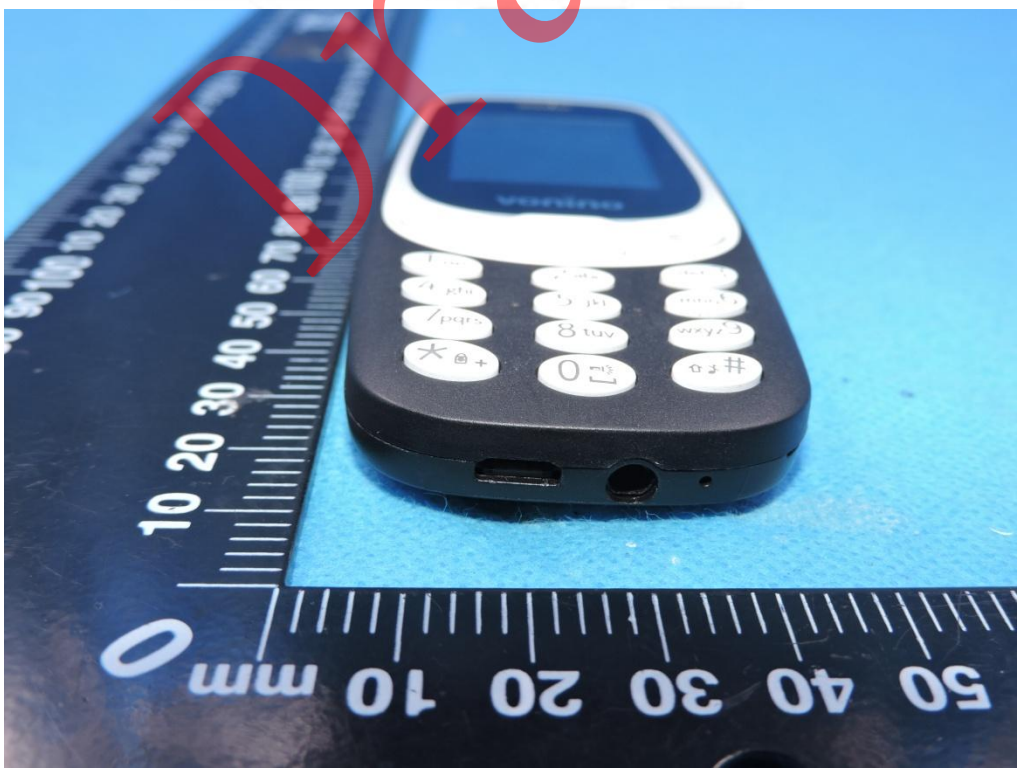
10.1 EUT Photos

Front side

Back side

Top side

Bottom side

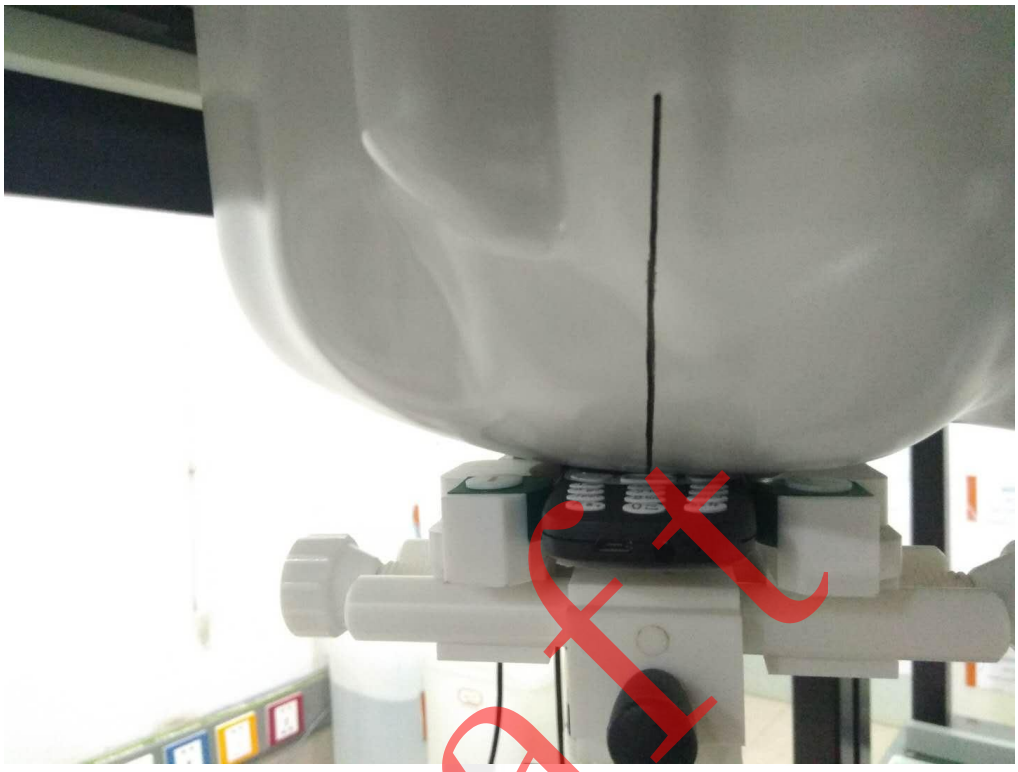


Left side

Right side

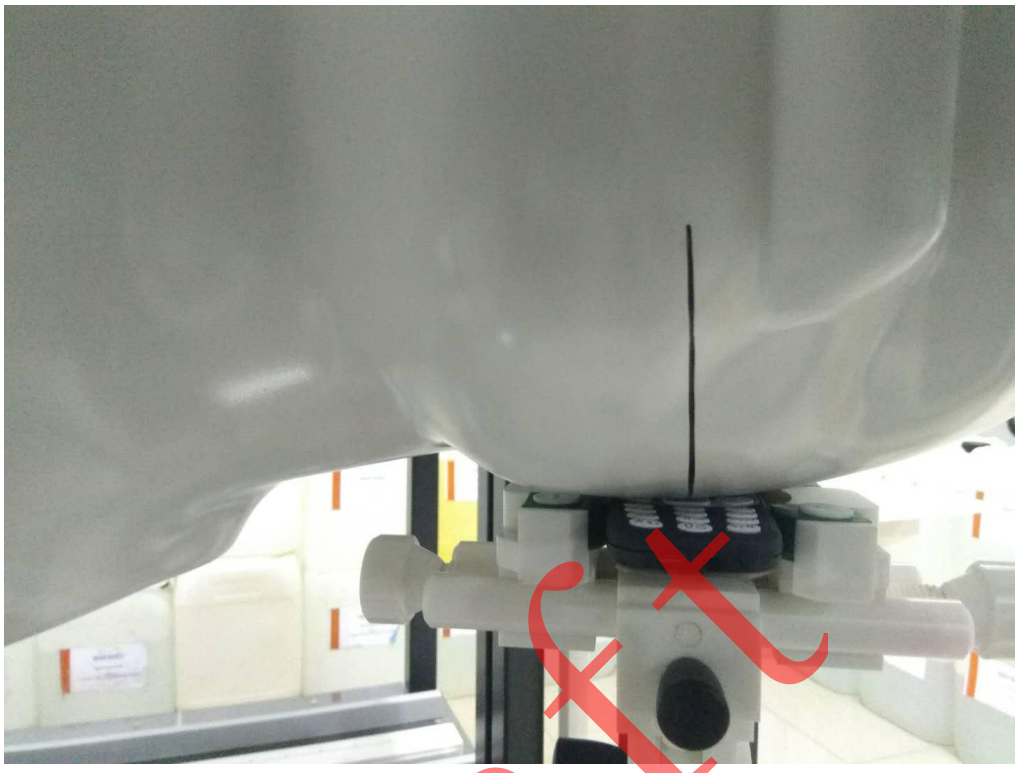
10.2 Setup Photos

Right Touch

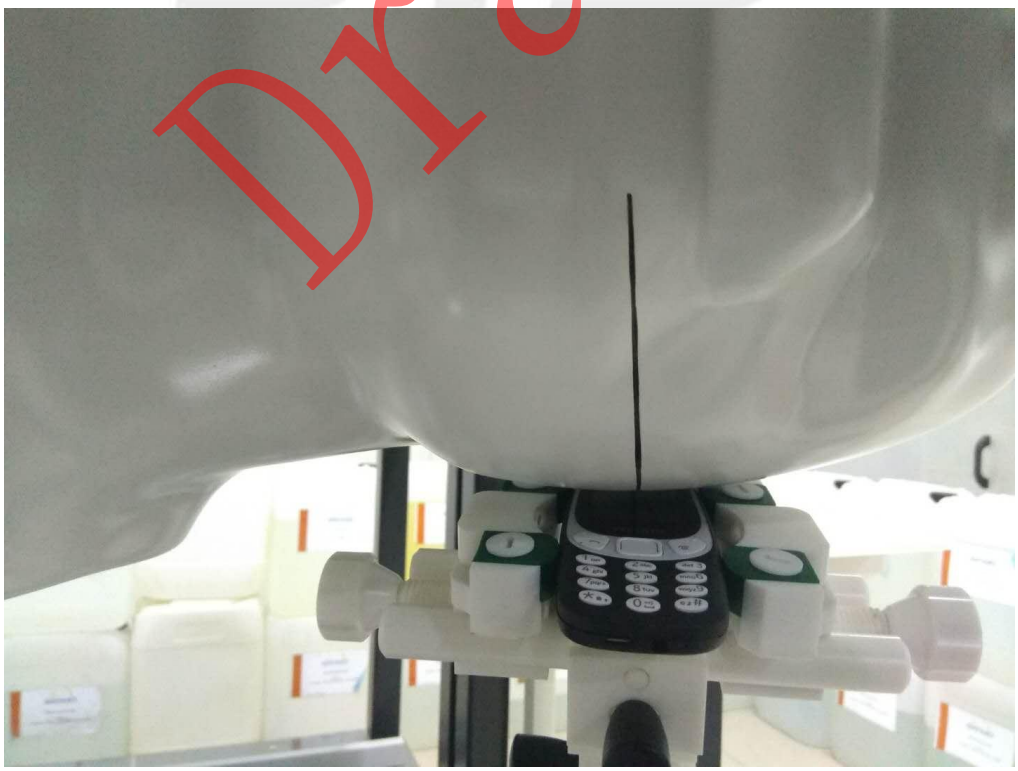


Right Tilt

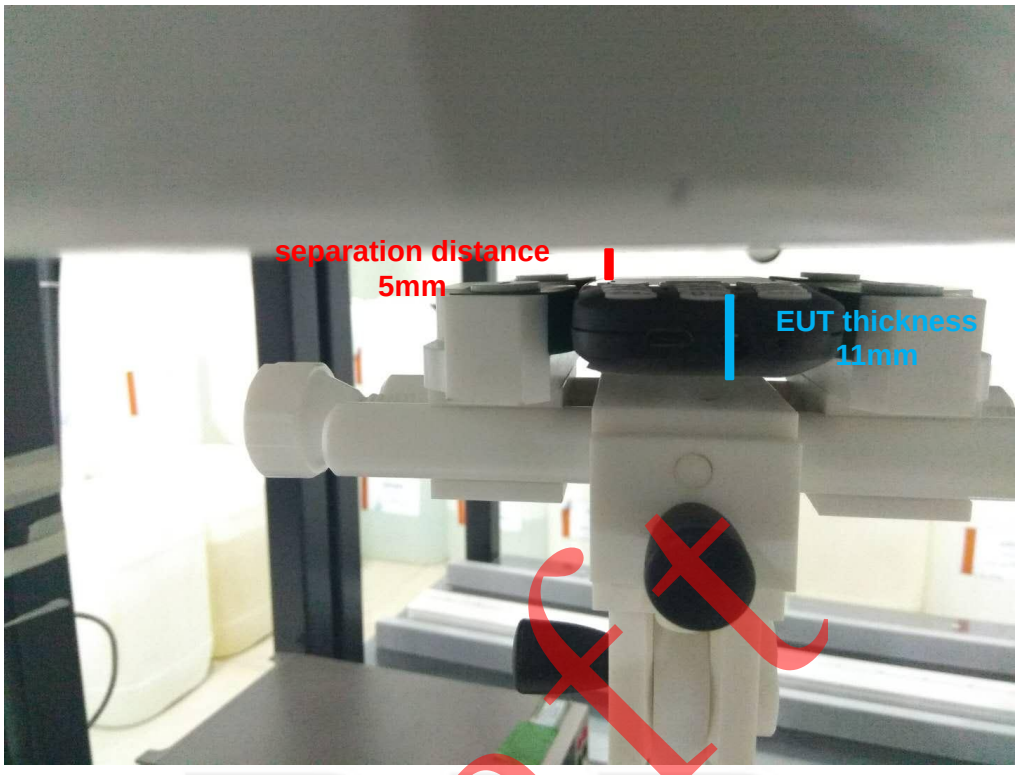
Left Touch



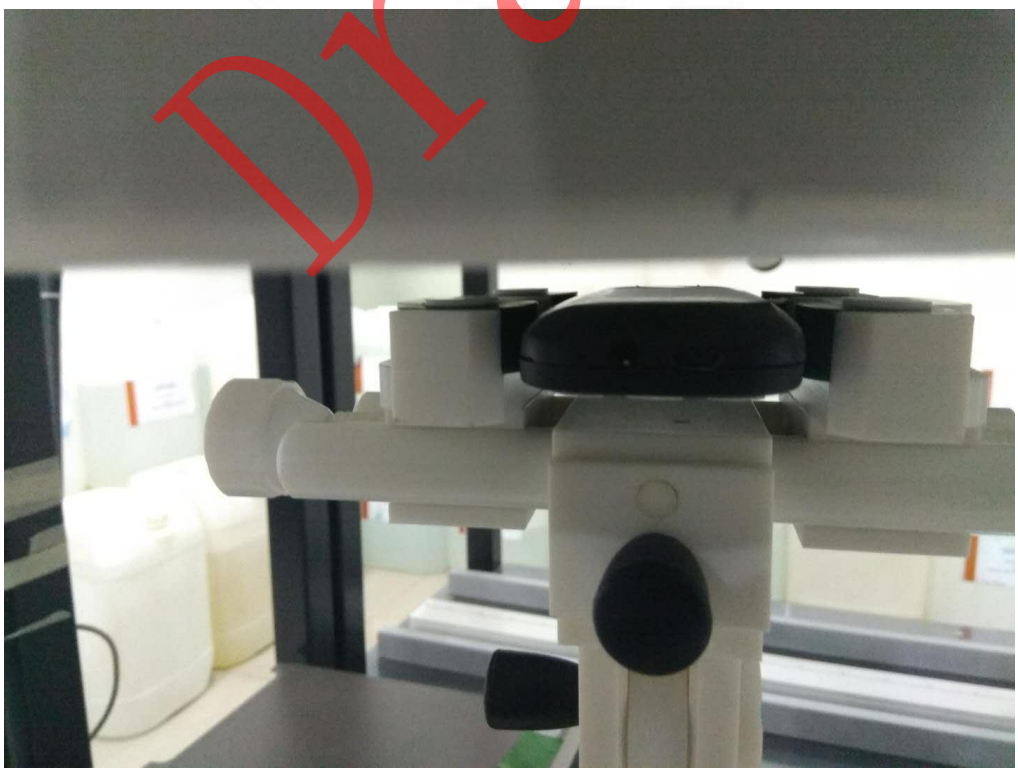
Left Tilt



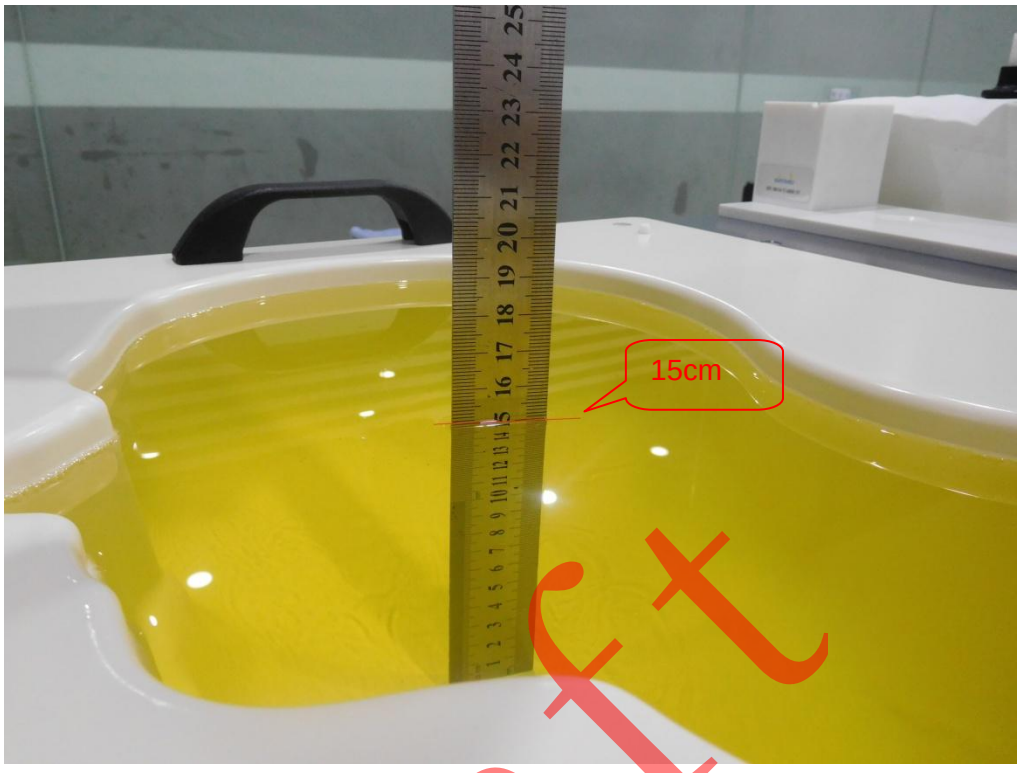
Body Front side



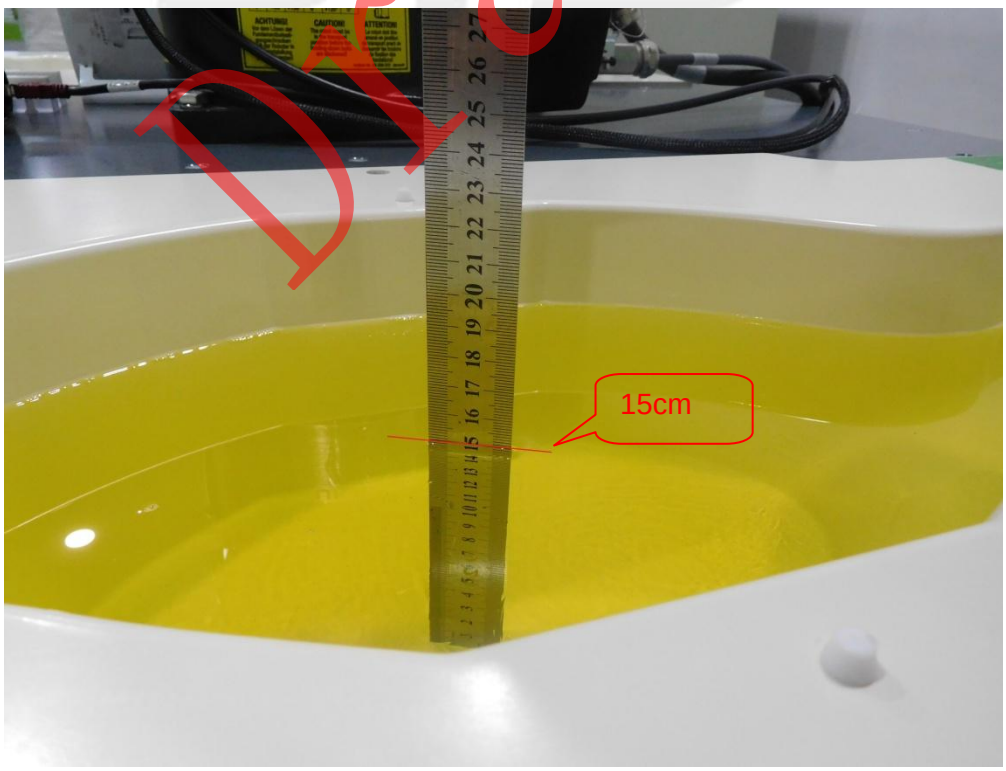
Body Back side



900 Head liquid depth (15 cm)

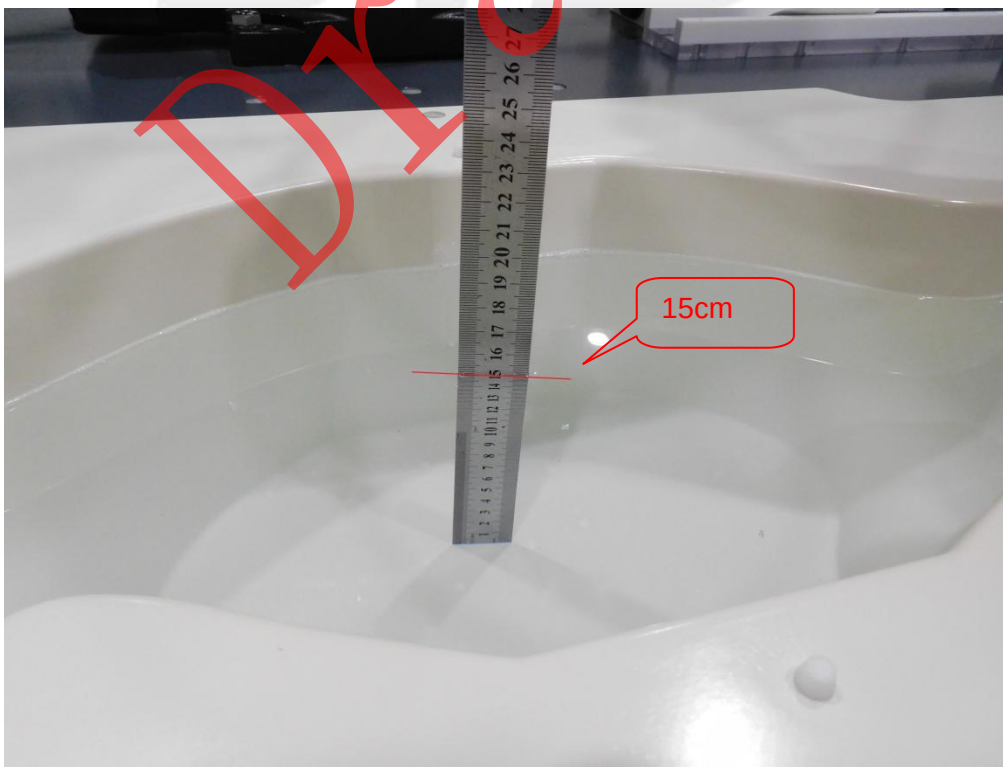


900 Body liquid depth (15 cm)



1800 Head liquid depth (15 cm)

1800 Body liquid depth (15 cm)



11. SAR Result Summary

Head:

Test Case of Head				Freq. (MHz)	Power Drift(%)	SAR (10g) (W/kg)	Meas. No.
Band	Model	Test Position	Channel				
GSM 900	Voice	Right Touch Cheek	CH 975	880.2	1.61	0.611	-
		Right Touch Cheek	CH 60	902.0	1.39	**0.638**	1
		Right Touch Cheek	CH 124	914.8	2.01	0.596	-
		Right Tilt	CH 60	902.0	0.05	0.324	-
		Left Touch Cheek	CH 60	902.0	0.76	0.622	-
		Left Tilt	CH 60	902.0	-1.45	0.308	-
GSM 1800	Voice	Right Touch Cheek	CH 698	1747.4	0.00	**0.253**	3
		Right Tilt	CH 698	1747.4	-3.97	0.137	-
		Left Touch Cheek	CH 698	1747.4	-1.00	0.246	-
		Left Tilt	CH 698	1747.4	-1.83	0.123	-

Body: (5mm between DUT and Phantom)

Test Case of Body				Freq. (MHz)	Power Drift(%)	SAR (10g) (W/kg)	Mea. No.
Band	Model	Test Position	Channel				
GSM 900	GPRS Data-4 Slot	Body Front	CH 60	902.0	0.04	0.633	-
		Body Back	CH 975	880.2	-0.29	0.950	-
		Body Back	CH 60	902.0	-0.31	**1.216**	2
		Body Back	CH 124	914.8	-3.08	1.061	-
GSM 1800	GPRS Data-4 Slot	Body Front	CH 698	1747.4	-1.07	0.148	-
		Body Back	CH 698	1747.4	-0.02	**0.299**	4

Note:

·Two SIM card slot can't work at the same time.

·When the 10g SAR is ≤1.0W/kg，testing for low and high channel is optional.

Simultaneous Multi-band Transmission Evaluation:
Application Simultaneous Transmission information:

Position	Simultaneous state
Head	GSM + BT
Body	GSM + BT

NOTE:

1. For simultaneous transmission at head and body exposure position, 2 transmitters simultaneous transmission was the worst state.

2. The reported SAR summation is calculated based on the same configuration and test position.

3. Multi-band transmission analysis for Body SAR is performed following EN 62209-2 procedure. One way of determining the threshold power level available to the secondary transmitter($P_{available}$) is to calculate it from the measured peak spatial-average SAR of the primary transmitter (SAR_1) according to the equation：

$$P_{available} = P_{th,m} * (SAR_{lim} - SAR_1)/SAR_{lim}$$

where :

$P_{th.m}$ is the threshold exclusion power level taken from Annex B of IEC 62479[7] for the frequency of the secondary transmitter at the separation distance used in the testing .

If the output power of the secondary transmitter is less than $P_{available}$, SAR measurement for the secondary transmitter is not necessary.

Simultaneous Mode	Position	SAR10 (W/Kg)	secondary transmitter Maximum Average Power		Separation distance (mm)	$P_{available}$ (mW)	Result
			dBm	mW			
GSM + BT	Head	0.638	5.96	3.945	5	13.620	No
	Body	1.216			5	7.840	No

Note：

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

The "No" is represent that SAR measurement for the secondary transmitter is not necessary.

12. Equipment List

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Calibrated Until
900MHz Dipole	MVG	SID900	SN 30/14 DIP0G900-328	2017.08.15	2020.08.14
1800MHz Dipole	MVG	SID1800	SN 30/14 DIP1G800-329	2017.08.15	2020.08.14
E-Field Probe	MVG	SSE5	SN 14/16 EP309	2016.12.05	2017.12.04
Dielectric Probe Kit	MVG	SCLMP	SN 32/14 OCPG67	2016.12.05	2017.12.04
Antenna	MVG	ANTA3	SN 07/13 ZNTA52	N/A	N/A
Phantom1	MVG	SAM	SN 32/14 SAM115	2014.09.01	N/A
Phantom2	MVG	SAM	SN 32/14 SAM116	2014.09.01	N/A
Phone holder	MVG	N/A	SN 32/14 MSH97	2014.09.01	N/A
Laptop holder	MVG	N/A	SN 32/14 LSH29	2014.09.01	N/A
Network Analyzer	Agilent	8753ES	US38432810	2017.03.16	2018.03.15
Multi Meter	Keithley	Multi Meter 2000	4050073	2017.10.15	2018.10.14
Signal Generator	Agilent	N5182A	MY50140530	2017.10.15	2018.10.14
Wireless Communication Test Set	Agilent	8960-E5515C	MY48360751	2017.10.15	2018.10.14
Power Amplifier	DESAY	ZHL-42W	9638	2017.10.15	2018.10.14
Power Meter	R&S	NRP	100510	2017.10.15	2018.10.14
Power Meter	Agilent	E4418B	GB43312526	2017.10.15	2018.10.14
Power Sensor	R&S	NRP-Z11	101919	2017.10.15	2018.10.14
Power Sensor	Agilent	E9301A	MY41497725	2017.10.15	2018.10.14
9dB Attenuator	Agilent	99899	DC-18GHz	2017.05.10	2018.05.09
11dB Attenuator	Agilent	8494B	DC-18GHz	2017.05.10	2018.05.09
110dB Attenuator	Agilent	8494B	DC-18GHz	2017.05.10	2018.05.09
Dual Directional Coupler	Agilent	SHWPDI-1080S	N/A	2017.05.09	2018.05.08
Temperature & Humitidy	MiEO	HH660	N/A	2017.10.18	2018.10.17

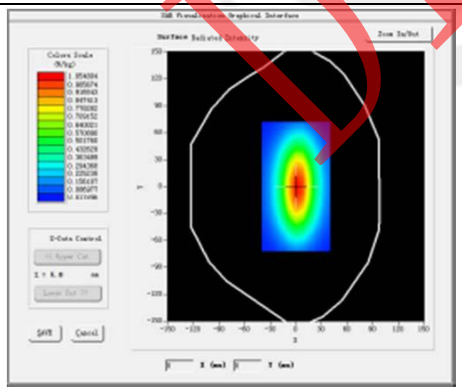
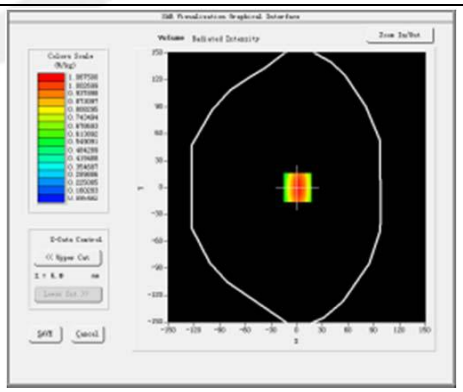
Appendix A. System Validation Plots

System Performance Check Data(900MHz)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 2017-11-22

Experimental conditions.

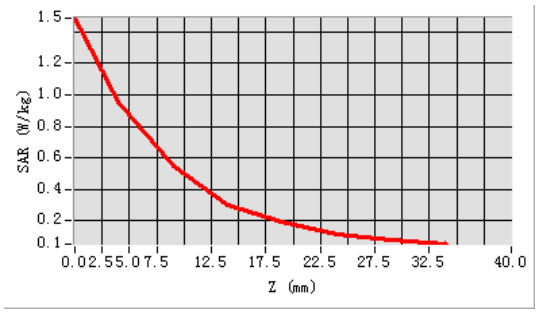
Phantom	Validation plane
Band	900MHz
Signal	CW
Frequency (MHz)	900MHz
Relative permittivity	41.41
Conductivity (S/m)	0.96
Power drift (%)	2.30
Probe	SN 14/16 EP309
ConvF	5.44
Crest factor:	1:1

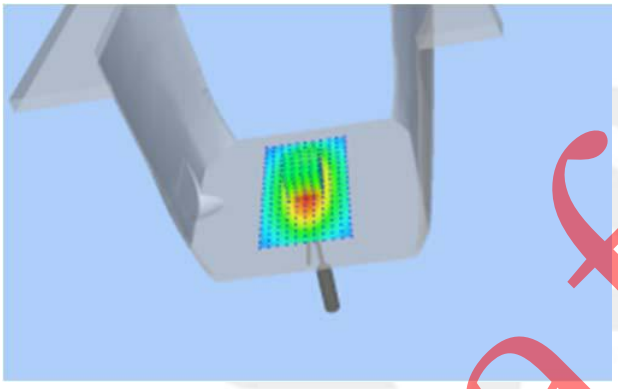
SURFACE SAR	VOLUME SAR
	

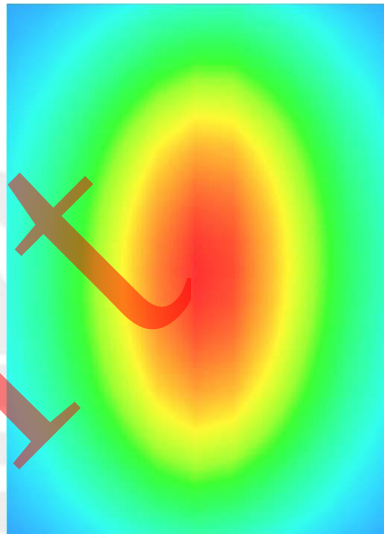
Maximum location: X=7.00, Y=-1.00

SAR 10g (W/Kg)	0.666510
SAR 1g (W/Kg)	1.103436

Z Axis Scan





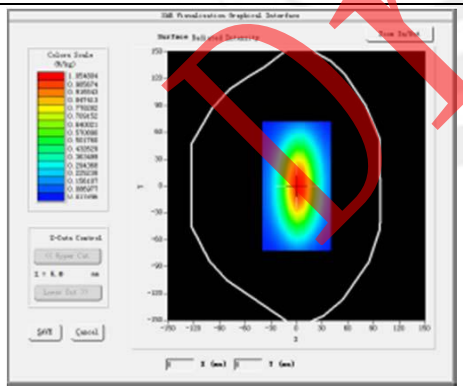
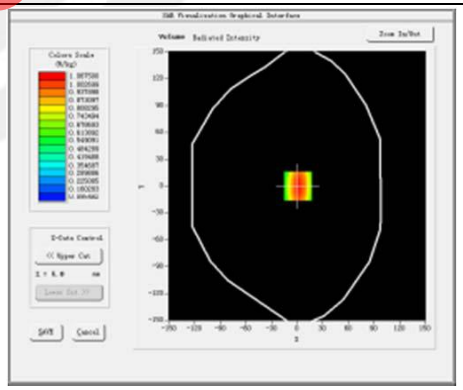


System Performance Check Data(1800MHz)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 2017-11-22

Experimental conditions.

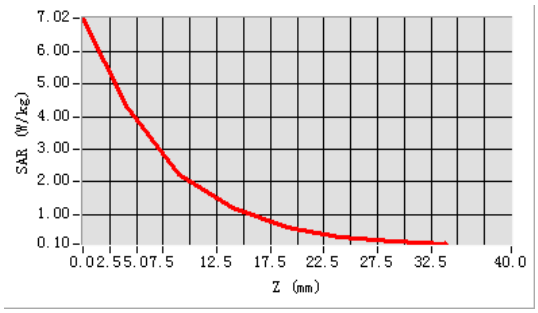
Phantom	Validation plane
Band	1800MHz
Signal	CW
Frequency (MHz)	1800MHz
Relative permittivity	39.04
Conductivity (S/m)	1.40
Power drift (%)	-1.39
Probe	SN 14/16 EP309
ConvF	4.69
Crest factor:	1:1

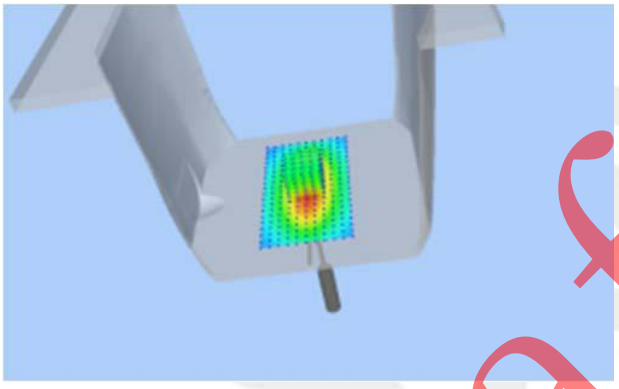
SURFACE SAR	VOLUME SAR
	

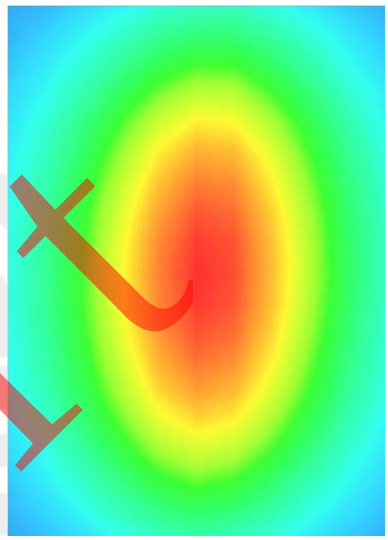
Maximum location: X=7.00, Y=-1.00

SAR 10g (W/Kg)	2.048352
SAR 1g (W/Kg)	3.932577

Z Axis Scan







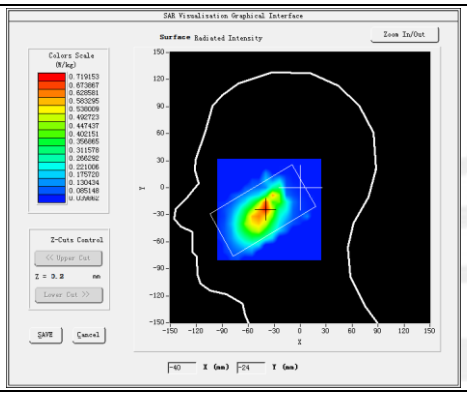
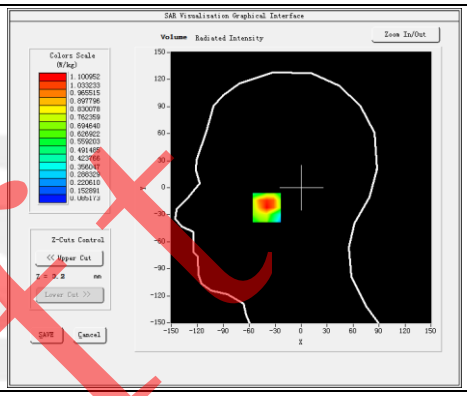
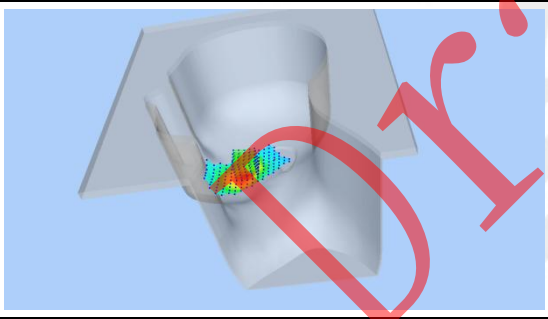
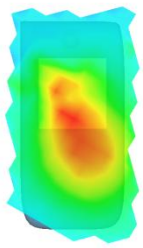
Appendix B. SAR Test Plots

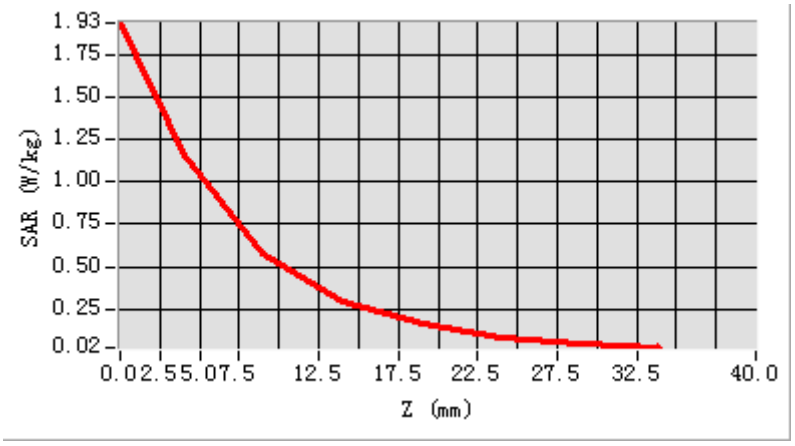
Plot 1: DUT: mobilephone; EUT Model: NONO33

Test Date	2017-11-22
Phantom	Right head
Device Position	Cheek
Band	GSM900
Channels	Middle

Maximum location: X=-40.00, Y=-22.00

SAR Peak: 1.96 W/kg

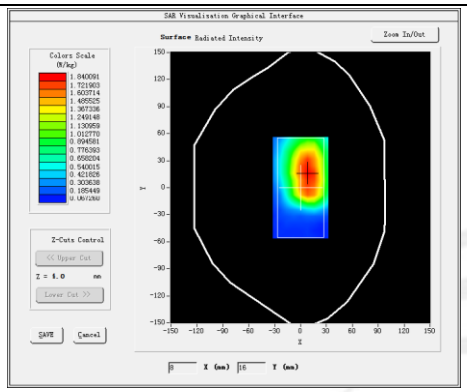
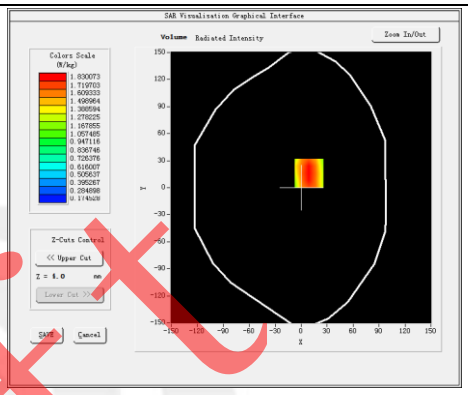
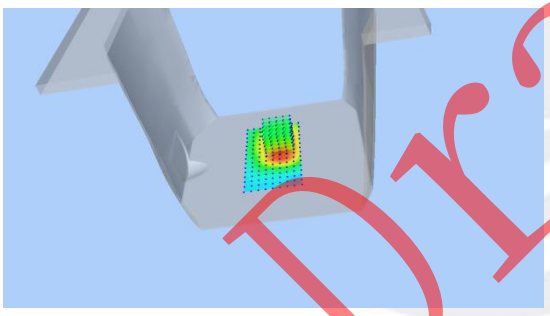
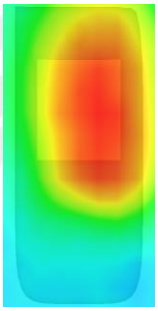
SURFACE SAR	VOLUME SAR
	
3D screen shot	**Hot spot position**
	
SAR 10g (W/Kg)	0.638294
SAR 1g (W/Kg)	1.103523
Variation (%)	1.39

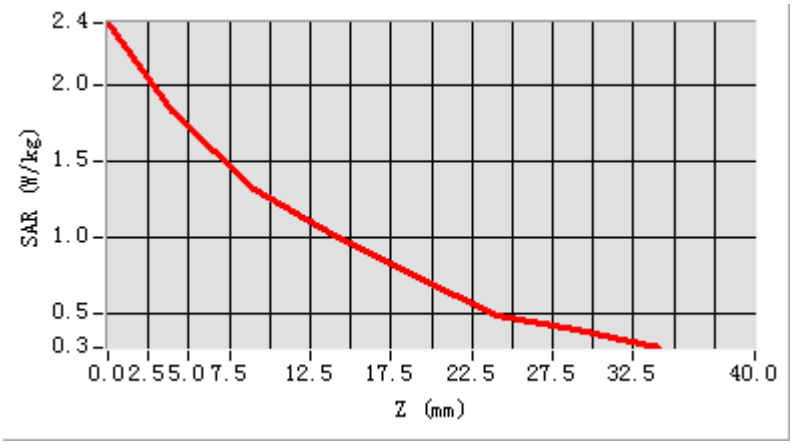


Plot 2: DUT: mobilephone; EUT Model: NONO33

Test Date	2017-11-22
Device Position	Body Back
Band	GPRS 900
Channels	Middle

Maximum location: X=9.00, Y=16.00
SAR Peak: 2.45 W/kg

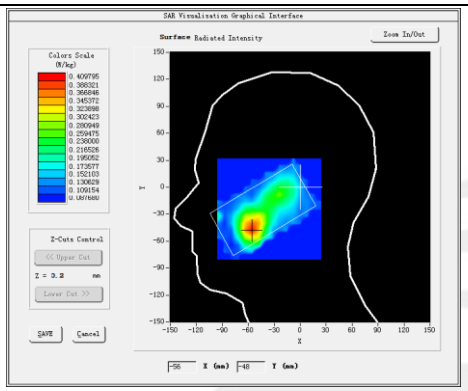
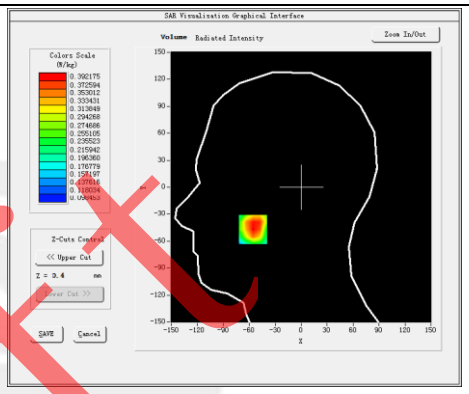
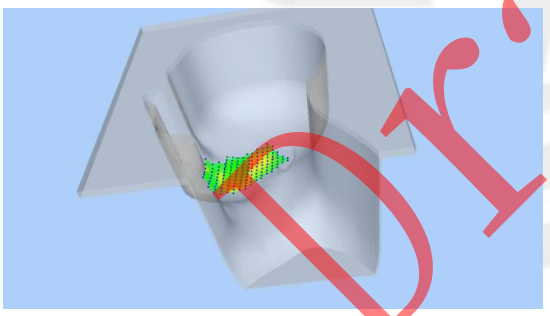
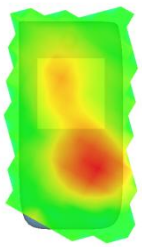
SURFACE SAR	VOLUME SAR
	
3D screen shot	**Hot spot position**
	
SAR 10g (W/Kg)	1.216093
SAR 1g (W/Kg)	1.770907
Variation (%)	-0.31

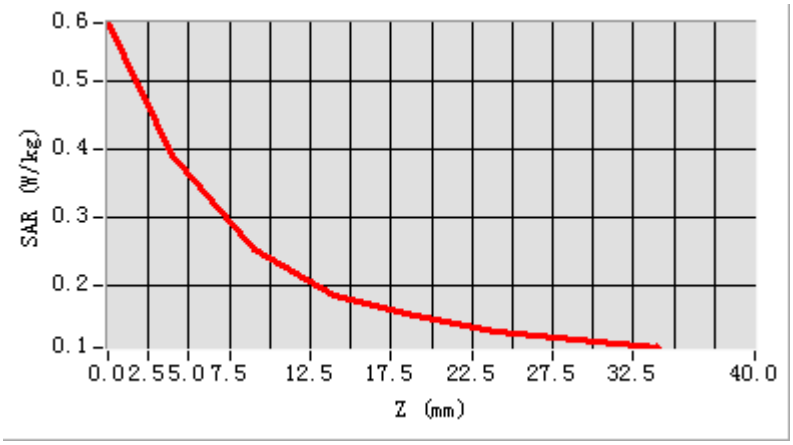


Plot 3: DUT: mobilephone; EUT Model: NONO33

Test Date	2017-11-22
Phantom	Right head
Device Position	Cheek
Band	GSM1800
Channels	Middle

Maximum location: X=-56.00, Y=-47.00
SAR Peak: 0.60 W/kg

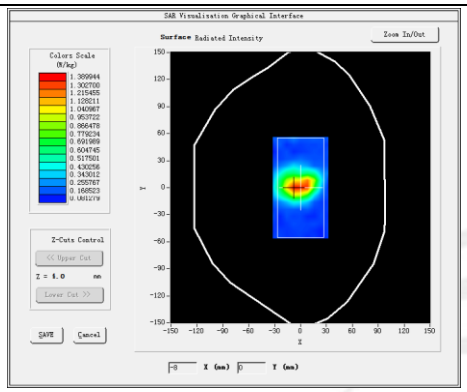
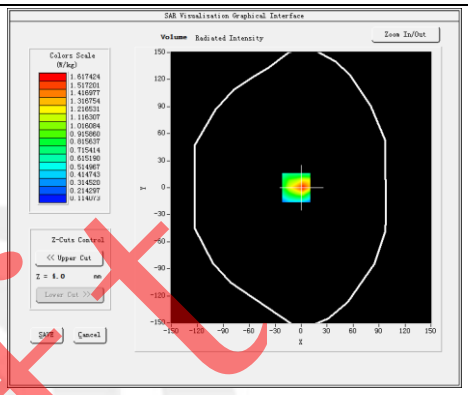
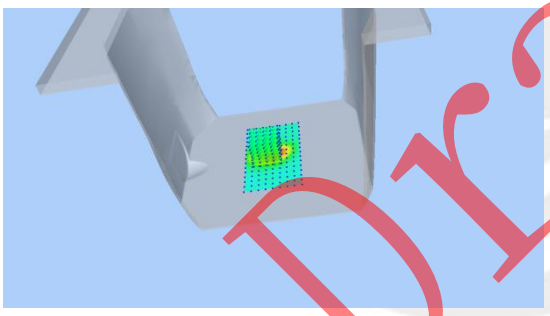
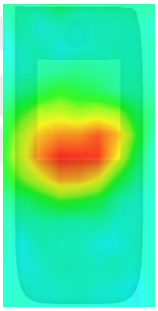
SURFACE SAR	VOLUME SAR
	
3D screen shot	**Hot spot position**
	
SAR 10g (W/Kg)	0.253180
SAR 1g (W/Kg)	0.390607
Variation (%)	0.00

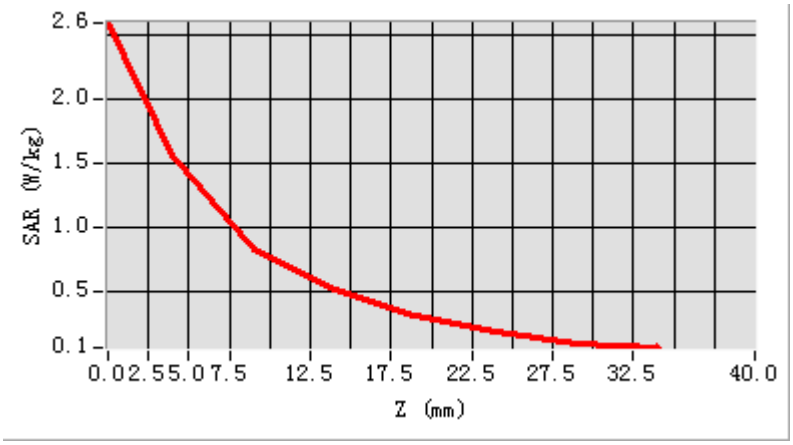


Plot 4: DUT: mobilephone; EUT Model: NONO33

Test Date	2017-11-22
Device Position	Body Back
Band	GPRS 1800
Channels	Middle

Maximum location: X=-6.00, Y=0.00
SAR Peak: 2.51 W/kg

SURFACE SAR	VOLUME SAR
	
3D screen shot	**Hot spot position**
	
SAR 10g (W/Kg)	0.763392
SAR 1g (W/Kg)	1.457212
Variation (%)	-2.08



Appendix C. Probe Calibration And Dipole Calibration Report

Refer the appendix Calibration Report.

※※※※※END OF THE REPORT※※※※※