FCC SAR TEST REPORT

Report No.: STS1909242H01

Issued for

Shenzhen Chainway Information Technology Co., Ltd

9/F, Building 2, Daqian Industrial Park,Longchang Rd., District 67, Bao'an, Shenzhen, China

Product Name:	Mobile Data Terminal
Brand Name:	CHAINWAY®
Model Name:	C66
Series Model:	N/A
FCC ID:	N/A
Test Standard:	ANSI/IEEE Std. C95.1
	FCC 47 CFR Part 2 (2.1093)
	IEEE 1528: 2013
Max. Report SAR (1g):	Head: 0.232 W/kg
	Body: 0.397 W/kg

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Test Report Certification

Applicant's name ..... :	Shenzhen Chainway Information Technology Co., Ltd
Address ..... :	9/F, Building 2, Daqian Industrial Park,Longchang Rd., District 67, Bao'an, Shenzhen, China
Manufacture's Name ..... :	Shenzhen Chainway Information Technology Co., Ltd
Address ..... :	9/F, Building 2, Daqian Industrial Park,Longchang Rd., District 67, Bao'an, Shenzhen, China

Product description

Product name ..... :	Mobile Data Terminal
Brand name ..... :	CHAINWAY®
Model name ..... :	C66
Series Model..... :	N/A
Standards..... :	ANSI/IEEE Std. C95.1-1992 FCC 47 CFR Part 2 (2.1093) IEEE 1528: 2013

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

Date of Test..... :	
Date (s) of performance of tests..... :	26 Sep. 2019~27 Sep. 2019
Date of Issue..... :	30 Sep. 2019
Test Result..... :	**Pass**

Testing Engineer **:** Aaron Bu

(Aaron Bu)

Technical Manager **:** Jason Lu

(Jason Lu)

Authorized Signatory **:** Vita Li

(Vita Li)

Table of Contents

Revision History

Rev.	Issue Date	Report No.	Effect Page	Contents
00	30 Sep. 2019	STS1909242H01	ALL	Initial Issue
Note: **Format version** of the report -V01				

1.General Information

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

1.1 EUT Description

Product Name	Mobile Data Terminal
Brand Name	CHAINWAY®
Model Name	C66
Series Model	N/A
FCC ID	N/A
Model Difference	N/A
Battery	Rated Voltage: 3.8V; Charge Limit: 4.2V; Capacity: 4300mAh
Device Category	Portable
Product stage	Production unit
RF Exposure Environment	General Population / Uncontrolled
IMEI	N/A
Hardware Version	N/A
Software Version	N/A
Frequency Range	5GHz IEEE 802.11a/n/ac(20MHz): 5180~5825MHz 5GHz IEEE 802.11n/ac(40MHz): 5190~5795MHz 5GHz IEEE 802.11ac(80MHz): 5210~5775MHz

Max. Reported SAR(1g): (Limit:1.6W/kg)	Band	Mode	Head (W/kg)	Body Worn and Hotspot(W/kg)
	NII	5.2G WLAN	0.179	0.397
	NII	5.3G WLAN	0.232	0.252
	NII	5.6G WLAN	0.226	0.310
	NII	5.8G WLAN	0.165	0.234

FCC Equipment Class	Unlicensed National Information Infrastructure TX(NII)
Operating Mode:	WLAN: 802.11 n(HT20); n/a/ac(HT20/40); ac/(HT80)
Antenna Specification:	WLAN: Internal Antenna
SIM Card	Support Single Card
Hotspot Mode:	Support
DTM Mode:	Not Support

Note:
1. The EUT battery must be fully charged and checked periodically during the test to ascertain uniform power

1.2 Test Environment

Ambient conditions in the SAR laboratory:

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

1.3 Test Factory

SHENZHEN STS TEST SERVICES CO.,LTD.

A 1/F, Building B, Zhuoke Science Park, No.190 Chongqing Road, HepingShequ, Fuyong Sub-District,Bao'an District, Shenzhen, Guang Dong, China

FCC test Firm Registration No.: 625569

IC Registration No.: 12108A

A2LA Certificate No.: 4338.01

2.Test Standards And Limits

No.	Identity	Document Title
1	47 CFR Part 2	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
2	ANSI/IEEE Std. C95.1-1992	IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz
3	IEEE Std. 1528-2013	Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques
4	FCC KDB 447498 D01 v06	Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies
5	FCC KDB 865664 D01 v01r04	SAR Measurement 100 MHz to 6 GHz
6	FCC KDB 865664 D02 v01r02	RF Exposure Reporting
7	FCC KDB 941225 D06 v02r01	Hotspot Mode SAR
8	FCC KDB 648474 D04 v01r03	SAR Evaluation Considerations for Wireless Handsets
9	FCC KDB 248227 D01 Wi-Fi SAR v02r02	SAR Considerations for 802.11 Devices

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

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

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

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

NOTE: Whole-Body SAR is averaged over the entire body, partial-body SAR is averaged over any 1 gram of tissue defined as a tissue volume in the shape of a cube. SAR for hands, wrists, feet and ankles is averaged over any 10 grams of tissue defined as a tissue volume in the shape of a cube.

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

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

NOTE

GENERAL POPULATION/UNCONTROLLED EXPOSURE

PARTIAL BODY LIMIT

1.6 W/kg

3. SAR Measurement System

3.1 Definition Of Specific Absorption Rate (SAR)

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

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

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

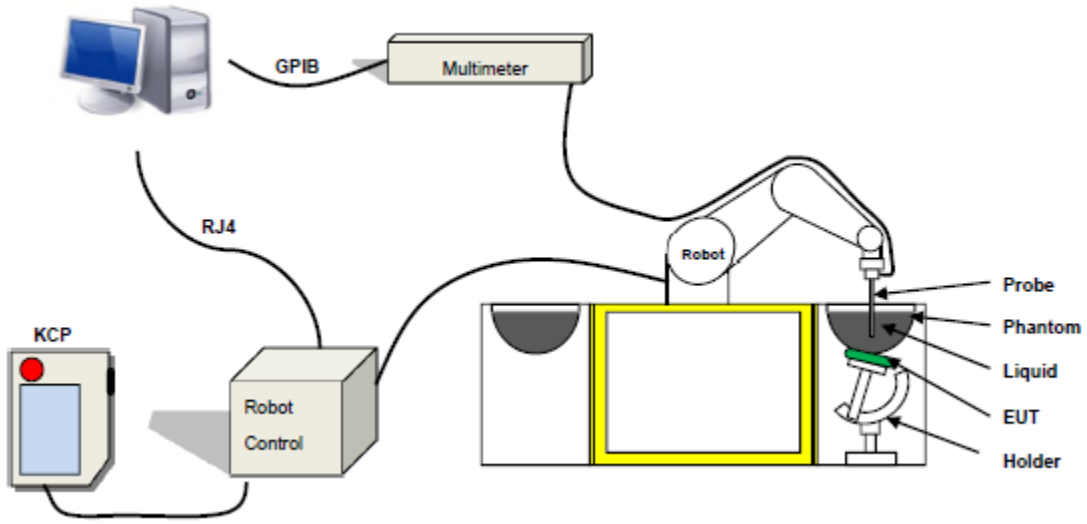
SAR is expressed in units of Watts per kilogram (W/kg) SAR measurement can be related to the electrical field in the tissue by

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

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

3.2 SAR System

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 45/15 EPGO281 with following specifications is used

- Dynamic range: 0.01-100 W/kg
- Tip Diameter: 2.5 mm
- Length of Individual Dipoles: 2 mm
- Maximum external diameter: 8 mm
- Distance between dipole/probe extremity: 8 mm (repeatability better than +/- 1mm)
- Probe linearity: 0±2.60%(0.11dB)
- Axial Isotropy: < 0.25 dB
- Spherical Isotropy: < 0.25 dB
- Calibration range: 450 MHz to 6 GHz for head & body simulating liquid.
- Angle between probe axis (evaluation axis) and surface normal line: less than 30°

Figure-MVG COMOSAR Dosimetric E field Dipole

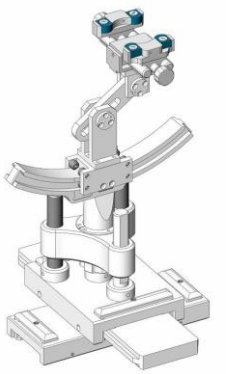
3.2.2 Phantom

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.

SN 32/14 SAM115

SN 32/14 SAM116

3.2.3 Device Holder



The SAR in the phantom is approximately inversely proportional to the square of the distance between the source and the liquid surface. For a source at 5 mm distance, a positioning uncertainty of ± 0.5 mm would produce a SAR uncertainty of ± 20 %. Accurate device positioning is therefore crucial for accurate and repeatable measurements. The positions in which the devices must be measured are defined by the standards.4. Tissue Simulating Liquids

4. Tissue Simulating Liquids

4.1 Simulating Liquids Parameter Check

The head tissue dielectric parameters recommended by the IEEE SCC-34/SC-2 in P1528 have been incorporated in the following table. These head parameters are derived from planar layer models simulating the highest expected SAR for the dielectric properties and tissue thickness variations in a human head. Other head and body tissue parameters that have not been specified in P1528 are derived from the tissue dielectric parameters computed from the 4-Cole-Cole equations described in Reference [12] and extrapolated according to the head parameters specified in P1528.

Frequency (MHz)	Bactericide	DGBE	HEC	NaCl	Sucrose	1,2-Propanediol	X100	Water	Conductivity	Permittivity
	%	%	%	%	%	%	%	%	σ	εr
750	/	/	/	0.79	/	64.81	/	34.40	0.97	41.8
835	/	/	/	0.79	/	64.81	/	34.40	0.97	41.8
900	/	/	/	0.79	/	64.81	/	34.40	0.97	41.8
1800	/	13.84	/	0.35	/	/	30.45	55.36	1.38	41.0
1900	/	13.84	/	0.35	/	/	30.45	55.36	1.38	41.0
2000	/	7.99	/	0.16	/	/	19.97	71.88	1.55	41.1
2450	/	7.99	/	0.16	/	/	19.97	71.88	1.88	40.3
2600	/	7.99	/	0.16	/	/	19.97	71.88	1.88	40.3

Tissue dielectric parameters for head and body phantoms				
Frequency	ε_r		σ S/m	
	Head	Body	Head	Body
300	45.3	58.2	0.87	0.92
450	43.5	56.7	0.87	0.94
900	41.5	55.0	0.97	1.05
1450	40.5	54.0	1.20	1.30
1800	40.0	53.3	1.40	1.52
2450	39.2	52.7	1.80	1.95
2600	38.5	52.0	1.95	2.23
5200	36.0	49.0	4.66	5.30
5800	35.3	48.2	5.27	6.00

LIQUID MEASUREMENT RESULTS

Date	Ambient condition		Head Simulating Liquid		Parameters	Target	Measured	Deviation [%]	Limited [%]
	Temp. [°C]	Humidity [%]	Frequency	Temp. [°C]					
2019-09-26	23.4	44	5200 MHz	23.1	Permittivity:	36.0	36.12	0.33	±10
					Conductivity:	4.66	4.70	0.86	±10
2019-09-26	23.4	44	5400 MHz	23.1	Permittivity:	35.9	36.03	0.36	±10
					Conductivity:	4.76	4.81	1.05	±10
2019-09-27	23.4	45	5600 MHz	23.2	Permittivity:	35.5	34.41	-3.07	±10
					Conductivity:	5.07	5.08	0.22	±10
2019-09-27	23.4	45	5800 MHz	23.2	Permittivity:	35.3	35.27	-0.08	±10
					Conductivity:	5.27	5.29	0.38	±10

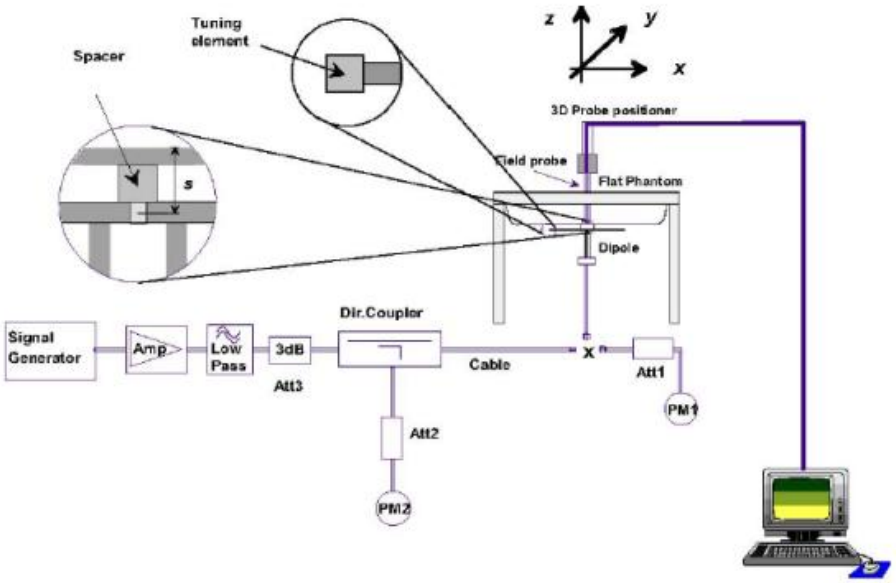
Date	Ambient condition		Body Simulating Liquid		Parameters	Target	Measured	Deviation [%]	Limited [%]
	Temp. [°C]	Humidity [%]	Frequency	Temp. [°C]					
2019-09-26	23.4	44	5200 MHz	23.1	Permittivity:	49.0	49.13	0.27	±10
					Conductivity:	5.30	5.26	-0.75	±10
2019-09-26	23.4	44	5400 MHz	23.1	Permittivity:	48.70	48.64	-0.12	±10
					Conductivity:	5.53	5.55	0.36	±10
2019-09-27	23.4	45	5600 MHz	23.2	Permittivity:	48.5	48.87	0.77	±10
					Conductivity:	5.77	5.76	-0.25	±10
2019-09-27	23.4	45	5800 MHz	23.2	Permittivity:	48.2	47.96	-0.50	±10
					Conductivity:	6.00	5.98	-0.33	±10

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 %.

Freq.(MHz)	Power(mW)	Tested Value (W/Kg)	Normalized SAR (W/kg/W)	Target (W/Kg/W)	Tolerance(%)	Date
5200 Head	100	15.894	158.94	159	-0.04	2019-09-26
5200 Body	100	15.875	158.75	159	-0.16	2019-09-26
5400 Head	100	16.679	166.79	166.4	0.23	2019-09-26
5400 Body	100	16.480	164.80	166.4	-0.96	2019-09-26
5600 Head	100	17.360	173.60	173.8	-0.11	2019-09-27
5600 Body	100	17.603	176.03	173.8	1.28	2019-09-27
5800 Head	100	18.094	180.94	181.2	-0.14	2019-09-27
5800 Body	100	18.141	181.41	181.2	0.12	2019-09-27

Note:

1. The tolerance limit of System validation ±10%.
2. The dipole input power (forward power) was 100 mW.
3. The results are normalized to 1 W input power.

6. SAR Evaluation Procedures

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

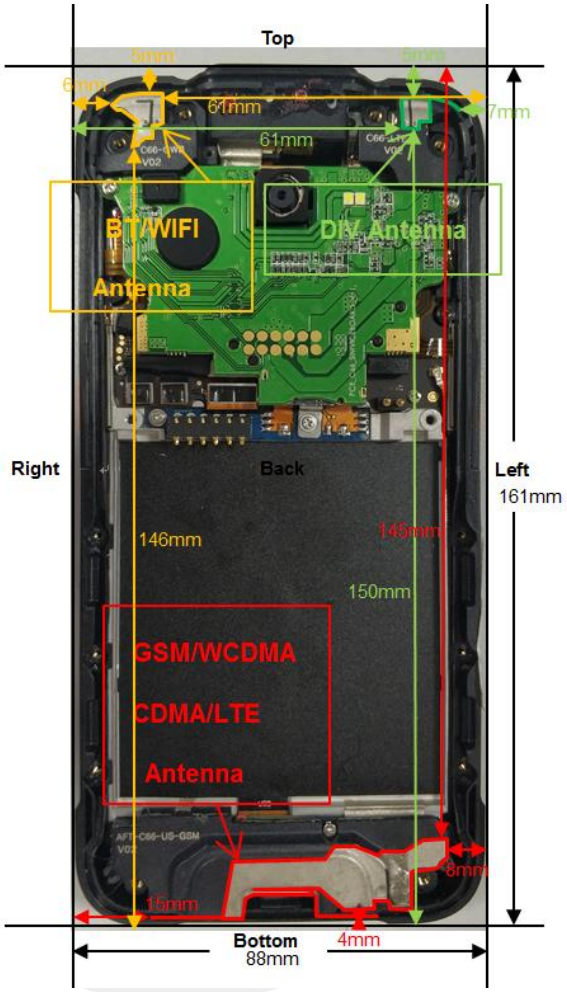
- Establish a call with the maximum output power with a base station simulator. The connection between the mobile and the base station simulator is established via air interface
- Measurement of the local E-field value at a fixed location. This value serves as a reference value for calculating a possible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

➢ Area Scan& Zoom Scan

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

7. EUT Antenna Location Sketch

It is a Mobile Data Terminal, support Bluetooth/WIFI/GSM/WCDMA/LTE modes.



7.1 SAR test exclusion consider table

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

Band	Test position configurations					
	Front	Back	Right edge	Left edge	Top edge	Bottom edge
WLAN	＜5mm	＜5mm	6mm	61	＜5mm	146mm
	Yes	Yes	Yes	No	Yes	No

Note：

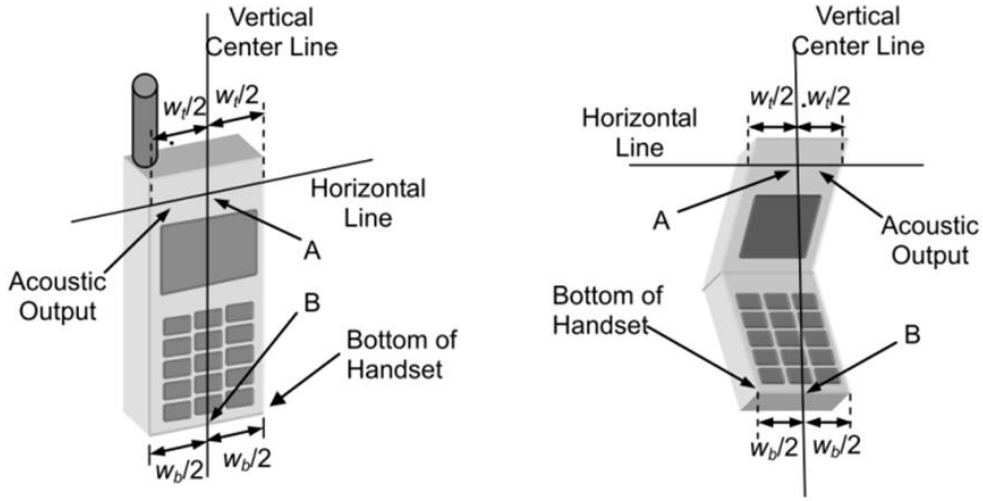
1. maximum power is the source-based time-average power and represents the maximum RF output power among production units.
2. per KDB 447498 D01, for larger devices, the test separation distance of adjacent edge configuration is determined by the closest separation between the antenna and the user.
3. per KDB 447498 D01, standalone SAR test exclusion threshold is applied; if the distance of the antenna to the user is <5mm, 5mm is user to determine SAR exclusion threshold
4. per KDB 447498 D01, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distance ≤50mm are determined by:
   [(max.power of channel, including tune-up tolerance, Mw)/(min. test separation distance, mm)]*[√f(GHZ）)≤3.0 for 1-g SAR and≤7.5 for10-g extremity SAR ,f(GHz) is the RF channel transmit frequency in GHz.Power and distance are rounded to the nearest mW and mm before calculation.The result is rounded to one decimal place for comparison
   For <50mm distance, we just calculate mW of the exclusion threshold value(3.0)to do compare
5. per KDB 447498 D01, at 100 MHz to 6GHz and for test separation distances >50mm, the SAR test exclusion threshold is determined according to the following
   a)[threshold at 50mm in step 1]+(test separation distance -50mm)*(f (MHz)/150)]Mw, at 100 MHz to 1500 MHz
   b) [threshold at 50mm in step1]+(test separation distance -50mm) *10]mW at＞ 1500MHz and≤6GHz
6. Per KDB 447498 D02, RMC 12.2kbps setting is used to evaluate SAR. If HSDPA/ HSUPA/DC-HSDPA output power is<0.25db higher than RMC 12.2Kbps,or reported SAR with RMC 12.2kbps setting is ≤1.2W/Kg, HSDPA/HSUPA/DC-HSDPA SAR evaluation can be excluded.
7. Per KDB 248227 D01, choose the highest output power channel to test SAR and determine futher SAR exclusion 8.for each frequency band ,testing at higher data rates and higher order modulations is not required when the maximum average output power for each of each of these configurations is less than 1/4db higher than those measured at the lower data rate than 11b mode ,thus the SAR can be excluded.

8. EUT Test Position

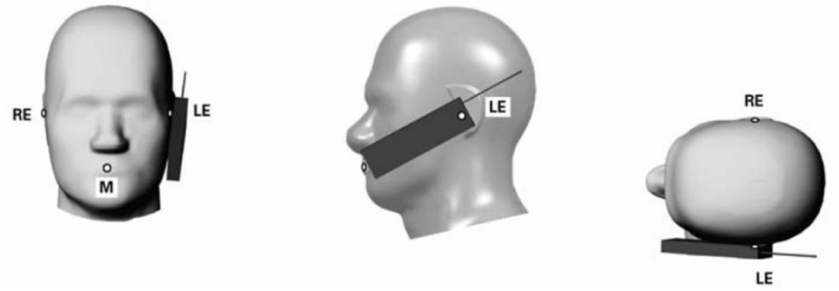
This EUT was tested in Right Cheek, Right Titled, Left Cheek, Left Titled, Front Face and Rear Face.

8.1 Define Two Imaginary Lines On The Handset

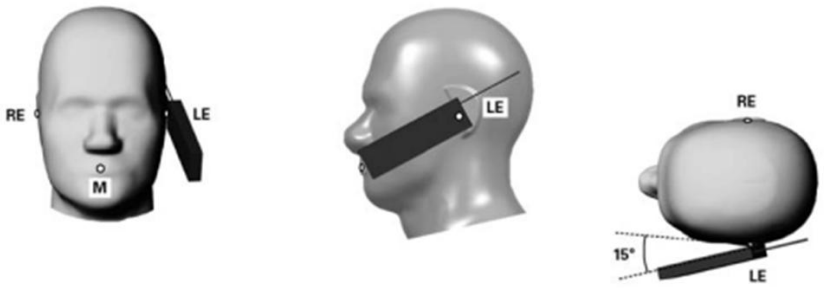
(1)The vertical centerline passes through two points on the front side of the handset the midpoint of the width wt of the handset at the level of the acoustic output, and the midpoint of the width wb of the handset.
(2)The horizontal line is perpendicular to the vertical centerline and passes through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



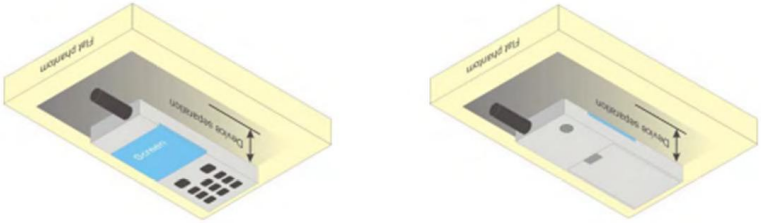
Cheek Position
1)To position the device with the vertical center line of the body of the device and the horizontal line crossing the center piece in a plane parallel to the sagittal plane of the phantom. While maintaining the device in this plane, align the vertical center line with the reference plane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



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

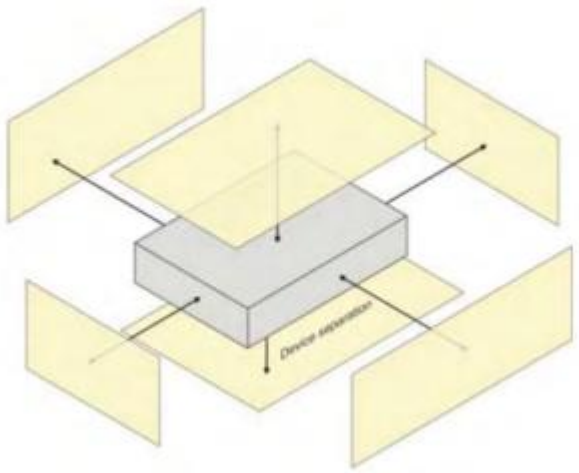


Body-worn Position Conditions:
Body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in KDB Publication 447498 D01 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. When the same wireless transmission configuration is used for testing body-worn accessory and hotspot mode SAR, respectively, in voice and data mode, SAR results for the most conservative *test separation distance* configuration may be used to support both SAR conditions. 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 the body-worn accessory with a headset attached to the handset.



8.2 Hotspot mode exposure position condition

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



9. Uncertainty

9.1 Measurement Uncertainty

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

Uncertainty Component	Tol (+- %)	Prob. Dist.	Div.	Ci (1g)	Ci (10g)	1g Ui (+-%)	10g Ui (+-%)	vi
Measurement System								
Probe calibration	5.831	N	1	1	1	5.83	5.83	∞
Axial Isotropy	0.695	R	$\sqrt{3}$	√0.5	√0.5	0.28	0.28	∞
Hemispherical Isotropy	1.045	R	$\sqrt{3}$	√0.5	√0.5	0.43	0.43	∞
Boundary effect	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Linearity	0.685	R	$\sqrt{3}$	1	1	0.40	0.40	∞
System detection limits	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Modulation response	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	∞
Readout Electronics	0.021	N	1	1	1	0.021	0.021	∞
Response Time	0	R	$\sqrt{3}$	1	1	0	0	∞
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	∞
Post-processing	2.3	R	$\sqrt{3}$	1	1	1.33	1.33	∞
Test sample Related								
Test sample positioning	2.6	N	1	1	1	2.6	2.6	∞
Device holder uncertainty	3	N	1	1	1	3	3	∞
SAR drift measurement	5	R	$\sqrt{3}$	1	1	2.89	2.89	∞
SAR scaling	5	R	$\sqrt{3}$	1	1	2.89	2.89	∞
Phantom and tissue parameters								
Phantom uncertainty（shape and thickness uncertainty）	4	R	$\sqrt{3}$	1	1	2.31	2.31	∞
Uncertainty in SAR correction for deviations in permittivity and conductivity	1.9	N	1	1	0.84	1.90	1.60	∞
Liquid conductivity （temperature uncertainty）	2.5	R	$\sqrt{3}$	0.78	0.71	1.13	1.02	∞
Liquid conductivity （measured）	4	N	1	0.78	0.71	3.12	2.84	M
Liquid permittivity （temperature uncertainty）	2.5	R	$\sqrt{3}$	0.23	0.26	0.33	0.38	∞
Liquid permittivity （measured）	5	N	1	0.23	0.26	1.15	1.30	M
Combined Standard Uncertainty		RSS				9.79	9.59	
Expanded Uncertainty (95% Confidence interval)		K=2				19.58	19.18	

9.2 System validation Uncertainty

Uncertainty Component	Tol (+- %)	Prob. Dist.	Div.	Ci (1g)	Ci (10g)	1g Ui (+-%)	10g Ui (+-%)	vi
Measurement System								
Probe calibration	5.831	N	1	1	1	5.83	5.83	∞
Axial Isotropy	0.695	R	$\sqrt{3}$	1	1	0.40	0.40	∞
Hemispherical Isotropy	1.045	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Boundary effect	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Linearity	0.685	R	$\sqrt{3}$	1	1	0.40	0.40	∞
System detection limits	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Modulation response	3.0	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Readout Electronics	0.021	N	1	1	1	0.021	0.021	∞
Response Time	0.0	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Integration Time	1.4	R	$\sqrt{3}$	0	0	0.00	0.00	∞
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	∞
Post-Processing	2.3	R	$\sqrt{3}$	1	1	1.33	1.33	∞
System validation source								
Deviation of experimental dipole from numerical dipole	5.0	N	1	1	1	5.00	5.00	∞
Input power and SAR drift measurement	5.0	R	$\sqrt{3}$	1	1	2.89	2.89	∞
Other source contribution Uncertainty	2.0	R	$\sqrt{3}$	1	1	1.15	1.15	∞
Phantom and set-up								
Phantom uncertainty（shape and thickness uncertainty）	4.0	R	$\sqrt{3}$	1	1	2.31	2.31	∞
Uncertainty in SAR correction for deviations in permittivity and conductivity	1.9	N	1	1	0.84	1.90	1.60	∞
Liquid conductivity （temperature uncertainty）	2.5	R	$\sqrt{3}$	0.78	0.71	1.13	1.02	∞
Liquid conductivity （measured）	4	N	1	0.78	0.71	3.12	2.84	M
Liquid permittivity （temperature uncertainty）	2.5	R	$\sqrt{3}$	0.23	0.26	0.33	0.38	∞
Liquid permittivity （measured）	5	N	1	0.23	0.26	1.15	1.30	M
Combined Standard Uncertainty		RSS				9.718	9.517	
Expanded Uncertainty (95% Confidence interval)		K=2				19.44	19.04	

10. Conducted Power Measurement

10.1 Test Result

WLAN (5.2Gband)

Mode	Channel Number	Frequency (MHz)	Average Power (dBm)
802.11a	36	5180	10.88
	40	5200	11.00
	48	5240	11.25
802.11 n-HT20	36	5180	11.13
	40	5200	11.16
	48	5240	11.26
802.11 n-HT40	38	5190	8.16
	46	5230	8.38
802.11 ac-HT20	36	5180	11.06
	40	5200	11.07
	48	5240	11.22
802.11 ac-HT40	38	5190	8.10
	46	5230	8.15
802.11 ac-HT80	42	5210	7.23

WLAN (5.3Gband)

Mode	Channel Number	Frequency (MHz)	Average Power (dBm)
802.11a	52	5260	11.55
	60	5300	12.63
	64	5320	12.94
802.11 n-HT20	52	5260	11.53
	60	5300	12.68
	64	5320	13.08
802.11 n-HT40	54	5270	8.93
	62	5310	8.86
802.11 ac-HT20	52	5260	11.54
	60	5300	12.53
	64	5320	13.01
802.11 ac-HT40	54	5270	8.71
	62	5310	8.70
802.11 ac-HT80	58	5290	8.37

WLAN (5.6Gband)

Mode	Channel Number	Frequency (MHz)	Average Power (dBm)
802.11a	100	5500	13.41
	120	5600	13.00
	144	5720	10.56
802.11 n-HT20	100	5500	13.36
	120	5600	13.00
	144	5720	10.58
802.11 n-HT40	102	5510	9.16
	118	5590	9.17
	142	5710	7.87
802.11 ac-HT20	100	5500	13.38
	120	5600	12.94
	144	5720	10.35
802.11 ac-HT40	102	5510	8.78
	118	5590	8.80
	142	5710	7.78
802.11 ac-HT80	106	5530	9.12
	138	5690	6.51

WLAN (5.8Gband)

Mode	Channel Number	Frequency (MHz)	Average Power (dBm)
802.11a	149	5745	9.67
	157	5785	9.15
	165	5825	8.93
802.11 n-HT20	149	5745	9.71
	157	5785	9.11
	165	5825	8.86
802.11 n-HT40	151	5755	6.65
	159	5795	6.35
802.11 ac-HT20	149	5745	9.73
	157	5785	9.22
	165	5825	8.86
802.11 ac-HT40	151	5755	6.53
	159	5795	6.13
802.11 ac-HT80	155	5775	6.17

10.2 Tune-up Power

WLAN (5.2Gband)

Mode	5.2G WLAN(AVG)
IEEE 802.11a	11±1dBm
IEEE 802.11n-HT20	11±1dBm
IEEE 802.11n-HT40	8±1dBm
IEEE 802.11ac-HT20	11±1dBm
IEEE 802.11ac-HT40	8±1dBm
IEEE 802.11ac-HT80	7±1dBm

WLAN (5.3Gband)

Mode	5.3G WLAN(AVG)
IEEE 802.11a	12±1dBm
IEEE 802.11n-HT20	12.1±1dBm
IEEE 802.11n-HT40	8±1dBm
IEEE 802.11ac-HT20	12.1±1dBm
IEEE 802.11ac-HT40	8±1dBm
IEEE 802.11ac-HT80	8±1dBm

WLAN (5.6Gband)

Mode	Frequency (MHz)	5.6G WLAN(AVG)
IEEE 802.11a	5500	13±1dBm
	5600	13±1dBm
	5720	10±1dBm
IEEE 802.11n-HT20	5500	13±1dBm
	5600	13±1dBm
	5720	10±1dBm
IEEE 802.11n-HT40	5510	9±1dBm
	5590	9±1dBm
	5710	7±1dBm
IEEE 802.11ac-HT20	5500	13±1dBm
	5600	12±1dBm
	5720	10±1dBm
IEEE 802.11ac-HT40	5510	8±1dBm
	5590	8±1dBm
	5710	7±1dBm
IEEE 802.11ac-HT80	5530	9±1dBm
	5690	6±1dBm

WLAN (5.8Gband)

Mode	WLAN(AVG)
IEEE 802.11a	9±1dBm
IEEE 802.11n HT20	9±1dBm
IEEE 802.11n HT40	6±1dBm
IEEE 802.11ac-HT20	9±1dBm
IEEE 802.11ac-HT40	6±1dBm
IEEE 802.11ac-HT80	6±1dBm

10.3 SAR Test Exclusions Applied

Per FCC KDB 447498D01, the 1-g SAR 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.

$$\frac{Max\ Power\ of\ Channel\ (mW)}{Test\ Separation\ Dist\ (mm)} * \sqrt{Frequency(GHz)} \leq 3.0$$

Based on the maximum conducted power of **5.2 GHz WLAN Head** (rounded to the nearest mW) and the antenna to user separation distance,

5.2 GHz WLAN SAR was required; [(15.849/5)* √5.200] = **7.23** > 3.0.

Based on the maximum conducted power of **5.2 GHz WLAN Body** (rounded to the nearest mW) and the antenna to user separation distance,

5.2 GHz WLAN SAR was required; [(15.849/10)* √5.200] = **3.61** > 3.0.

Based on the maximum conducted power of **5.3 GHz WLAN Head** (rounded to the nearest mW) and the antenna to user separation distance,

5.3 GHz WLAN SAR was required; [(20.417/5)* √5.300] = **9.40** > 3.0.

Based on the maximum conducted power of **5.3 GHz WLAN Body** (rounded to the nearest mW) and the antenna to user separation distance,

5.3 GHz WLAN SAR was required; [(20.417/10)* √5.300] = **4.70** > 3.0.

Based on the maximum conducted power of **5.6 GHz WLAN Head** (rounded to the nearest mW) and the antenna to user separation distance,

5.6 GHz WLAN SAR was required; [(25.119/5)* √5.600] = **11.89** > 3.0.

Based on the maximum conducted power of **5.6 GHz WLAN Body** (rounded to the nearest mW) and the antenna to user separation distance,

5.6 GHz WLAN SAR was required; [(25.119/10)* √5.600] = **5.94** > 3.0.

Based on the maximum conducted power of **5.8 GHz WLAN Head** (rounded to the nearest mW) and the antenna to user separation distance,

5.8 GHz WLAN SAR was required; [(10.000/5)* √5.800] = **4.82** > 3.0.

Based on the maximum conducted power of **5.8 GHz WLAN Body** (rounded to the nearest mW) and the antenna to user separation distance,

5.8 GHz WLAN SAR was not required; [(10.000/10)* √5.800] = **2.41** < 3.0.

11. EUT And Test Setup Photo

11.1 EUT Photo

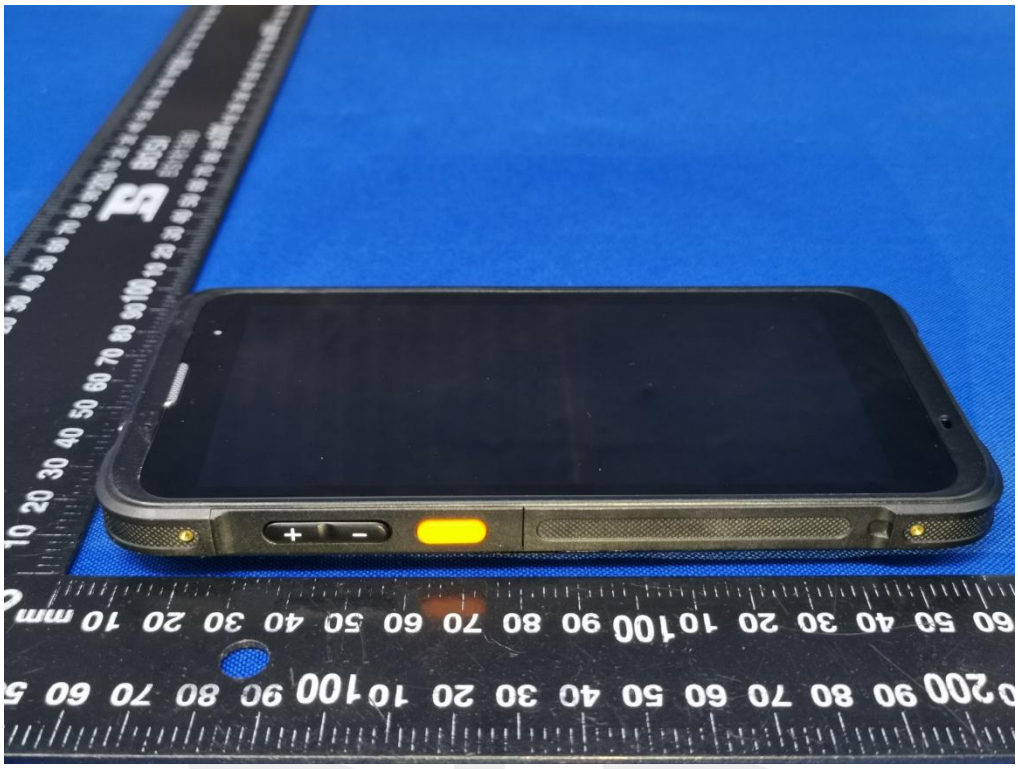
Front side

Back side

Top Edge

Bottom Edge

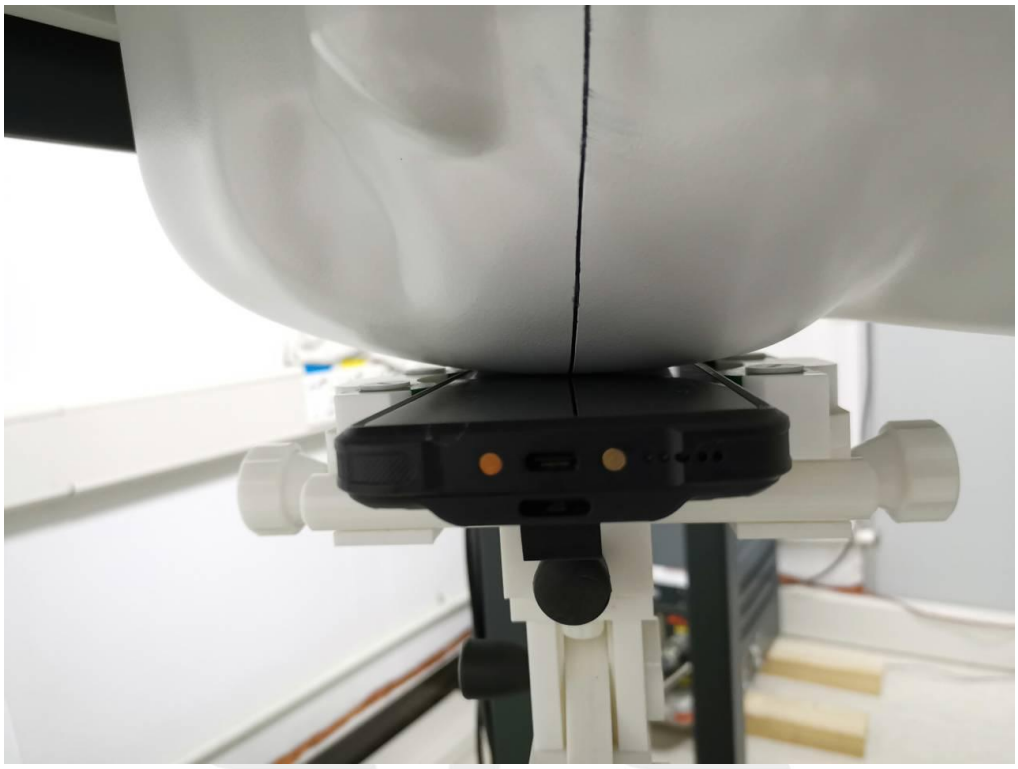
Left Edge



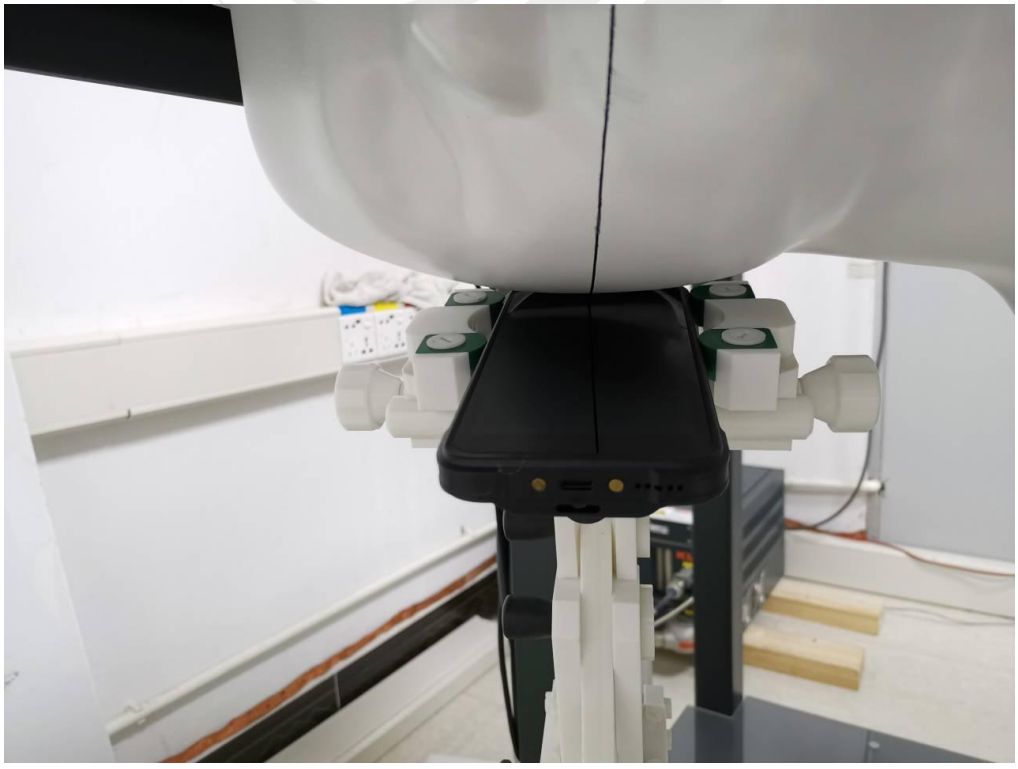
Right Edge

11.2 Setup Photo

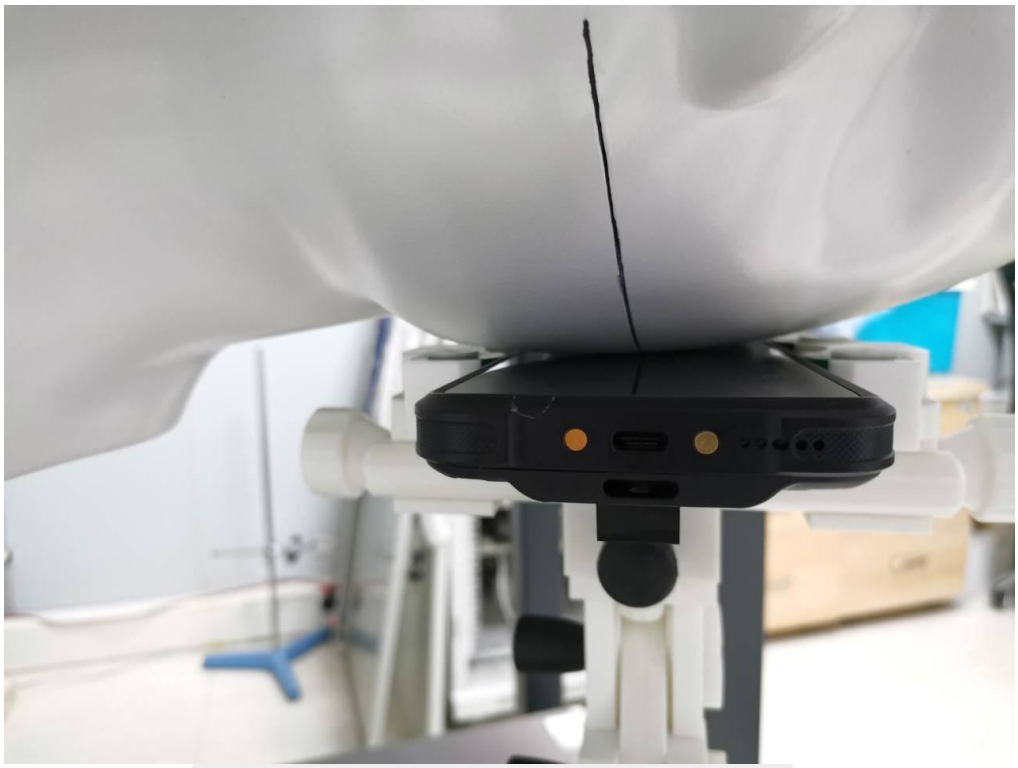
Right Touch



Right Tilt

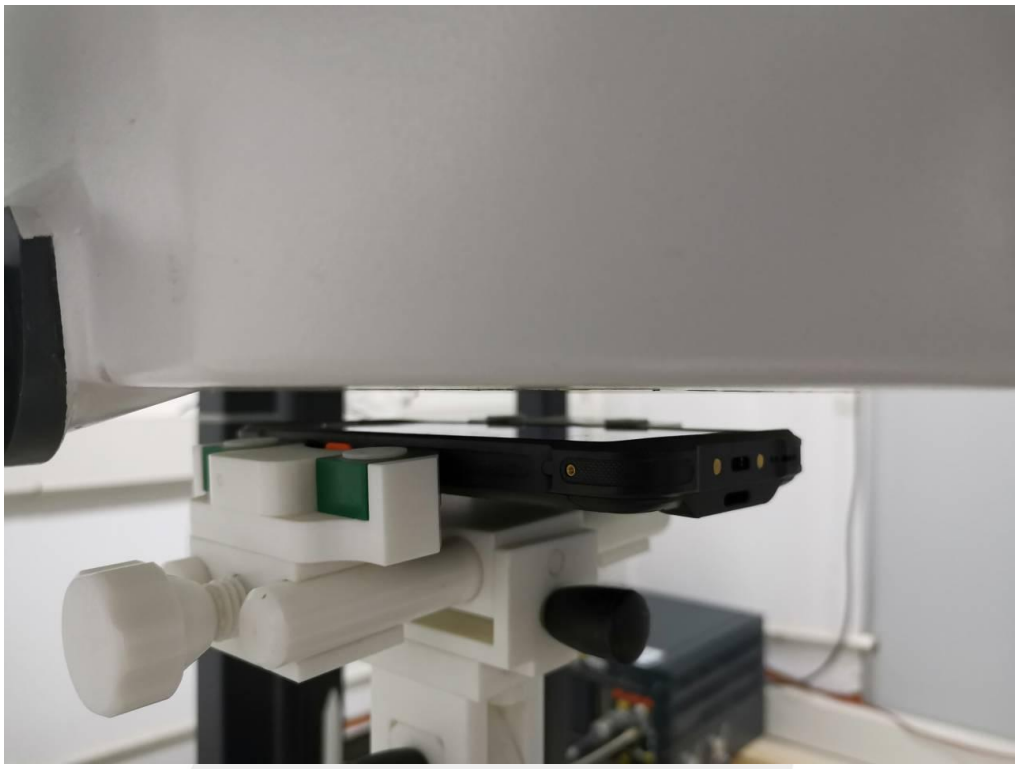


Left Touch

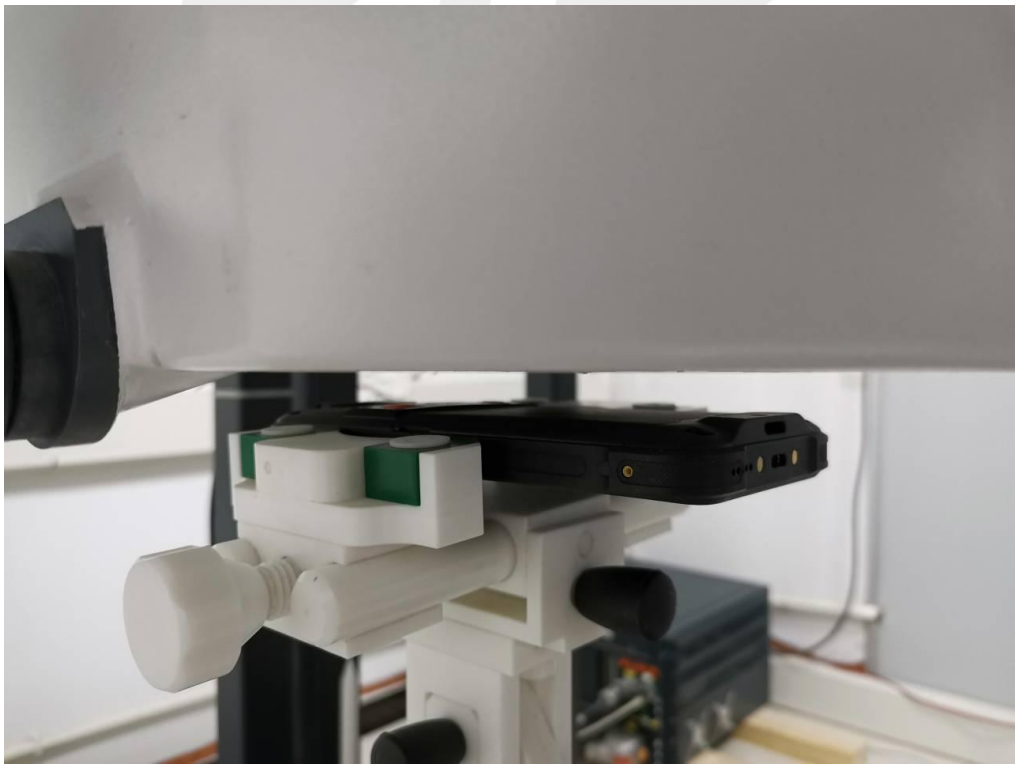


Left Tilt

Body Front side(separation distance is 10mm)



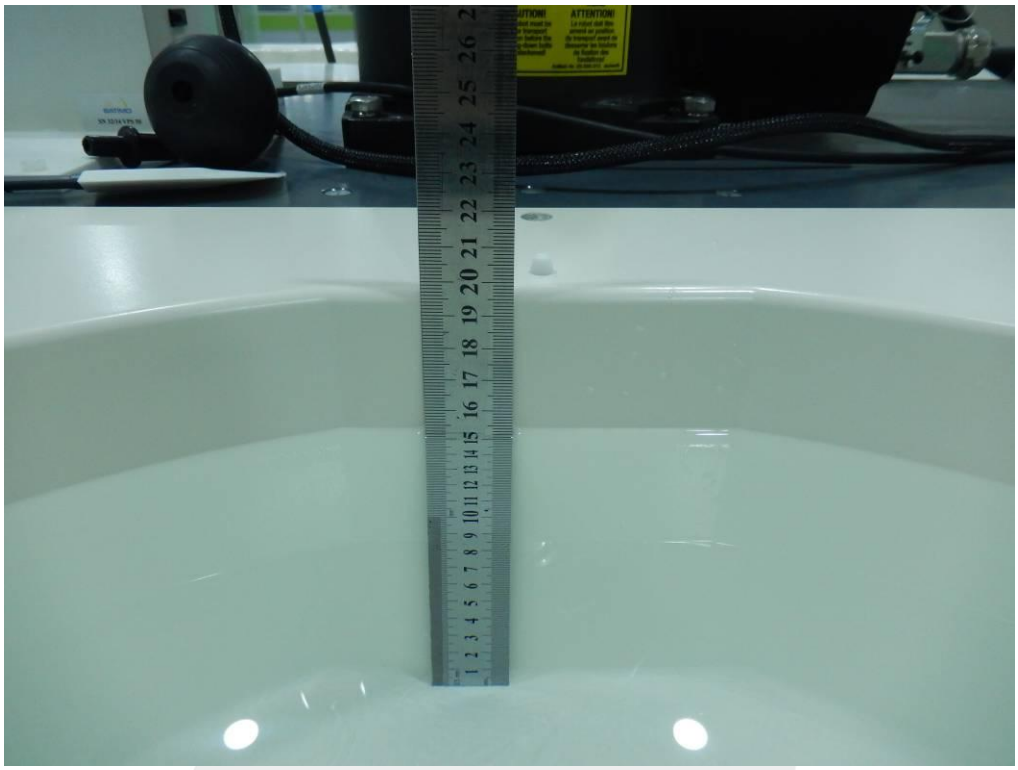
Body Back side(separation distance is 10mm)



Right Edge(separation distance is 10mm)

Top Edge(separation distance is 10mm)

Liquid depth (15 cm)



12. SAR Result Summary

12.1 Head SAR

Band	Mode	Test Position	Ch.	Result 1g (W/Kg)	Power Drift(%)	Max.Turn-up Power(dBm)	Meas.Output Power(dBm)	Duty cycle(%)	Scaled SAR (W/Kg)	Meas. No.
WLAN 5.2 G	802.11a	Right Cheek	48	0.130	0.97	12	11.25	100	0.155	/
		Right Tilt	48	0.120	1.45	12	11.25	100	0.143	/
		Left Cheek	48	0.151	1.77	12	11.25	100	**0.179**	1/
		Left Tilt	48	0.143	-0.34	12	11.25	100	0.170	/
WLAN 5.3 G	802.11a	Right Cheek	64	0.203	-2.52	13	12.94	100	0.206	/
		Right Tilt	64	0.113	-0.83	13	12.94	100	0.115	/
		Left Cheek	64	0.229	-3.71	13	12.94	100	**0.232**	3
		Left Tilt	64	0.116	0.11	13	12.94	100	0.118	/
WLAN 5.6 G	802.11a	Right Cheek	100	0.119	-2.13	14	13.41	100	0.136	/
		Right Tilt	100	0.124	0.10	14	13.41	100	0.142	/
		Left Cheek	100	0.197	-2.38	14	13.41	100	**0.226**	5
		Left Tilt	100	0.125	-2.84	14	13.41	100	0.143	/
WLAN 5.8 G	802.11a	Right Cheek	149	0.092	0.20	10	9.67	100	0.099	/
		Right Tilt	149	0.087	0.42	10	9.67	100	0.094	/
		Left Cheek	149	0.153	-1.80	10	9.67	100	**0.165**	7
		Left Tilt	149	0.083	2.10	10	9.67	100	0.090	/

Note:

1. Per KDB 447498 D01, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
   a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
   b. For WWAN: Scaled SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor

2. Per KDB865664 D01, Repeated measurement is not required when the original highest measured SAR is <0.80 W/kg

12.2 Body-worn and Hotspot SAR

Band	Mode	Test Position	Ch.	Result 1g (W/Kg)	Power Drift(%)	Max.Turn-up Power(dBm)	Meas.Output Power(dBm)	Duty cycle(%)	Scaled SAR (W/Kg)	Meas. No.
WLAN 5.2 G	802.11a	Front side	48	0.015	-1.78	12	11.25	100	0.018	/
		Back side	48	0.334	-2.82	12	11.25	100	**0.397**	2
		Right Edge	48	0.022	-1.19	12	11.25	100	0.026	/
		Top Edge	48	0.060	0.16	12	11.25	100	0.071	/
WLAN 5.3 G	802.11a	Front side	64	0.048	3.42	13	12.94	100	0.049	/
		Back side	64	0.249	0.21	13	12.94	100	**0.252**	4
		Right Edge	64	0.016	0.35	13	12.94	100	0.016	/
		Top Edge	64	0.031	2.00	13	12.94	100	0.031	/
WLAN 5.6 G	802.11a	Front side	100	0.016	1.14	14	13.41	100	0.018	/
		Back side	100	0.271	1.78	14	13.41	100	**0.310**	6
		Right Edge	100	0.008	1.38	14	13.41	100	0.009	/
		Top Edge	100	0.081	-2.93	14	13.41	100	0.093	/
WLAN 5.8 G	802.11a	Front side	149	0.028	2.79	10	9.67	100	0.030	/
		Back side	149	0.217	0.19	10	9.67	100	**0.234**	8
		Right Edge	149	0.014	-0.55	10	9.67	100	0.015	/
		Top Edge	149	0.043	0.42	10	9.67	100	0.046	/

Note:

1. The test separation of all above table is 10mm.
2. Per KDB 447498 D01, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
   a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
   b. For WWAN: Scaled SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
3. When the user enables the personal Wireless router functions for the handsets, actual operations include simultaneous transmission of both the Wi-Fi transmitting frequency and thus cannot be evaluated for SAR under actual use conditions. The “Portable Hotspot” feature on the handset was NOT activated, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal.

13. Equipment List

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Calibrated Until
Waveguide	SATIMO	SWG5500	SN 13/14 WGA32	2017.08.15	2020.08.14
E-Field Probe	MVG	SSE2	SN 45/15 EPGO281	2019.03.25	2020.03.24
Dielectric Probe Kit	MVG	SCLMP	SN 32/14 OCPG67	2018.12.01	2019.11.30
Antenna	MVG	ANTA3	SN 07/13 ZNTA52	N/A	N/A
Phantom1	MVG	SAM	SN 32/14 SAM115	N/A	N/A
Phantom2	MVG	SAM	SN 32/14 SAM116	N/A	N/A
Phone holder	MVG	N/A	SN 32/14 MSH97	N/A	N/A
Laptop holder	MVG	N/A	SN 32/14 LSH29	N/A	N/A
Attenuator	Agilent	99899	DC-18GHz	N/A	N/A
Directional coupler	Narda	4226-20	3305	N/A	N/A
Network Analyzer	Agilent	8753ES	US38432810	2019.03.02	2020.03.01
Multi Meter	Keithley	Multi Meter 2000	4050073	2018.10.13	2019.10.12
Signal Generator	Agilent	N5182A	MY50140530	2018.10.16	2019.10.15
Wireless Communication Test Set	Agilent	8960-E5515C	MY48360751	2018.10.16	2019.10.15
Wireless Communication Test Set	R&S	CMW500	117239	2018.10.13	2019.10.12
Power Amplifier	DESAY	ZHL-42W	9638	2018.10.13	2019.10.12
Power Meter	R&S	NRP	100510	2018.10.26	2019.10.25
Power Meter	Agilent	E4418B	GB43312526	2018.10.26	2019.10.25
Power Sensor	R&S	NRP-Z11	101919	2018.10.13	2019.10.12
Power Sensor	Agilent	E9301A	MY41497725	2018.10.13	2019.10.12
hygrothermograph	MiEO	HH660	N/A	2018.10.11	2019.10.10
Thermograph	Elitech	RC-4	S/N EF7176501537	2018.10.15	2019.10.14

Note:
Per KDB 865664 D01, Dipole SAR Validation Verification, STS LAB has adopted 3 years calibration intervals. On annual basis, every measurement dipole has been evaluated and is in compliance with the following criteria:
1. There is no physical damage on the dipole
2. System validation with specific dipole is within 10% of calibrated value
Return-loss in within 20% of calibrated measurement

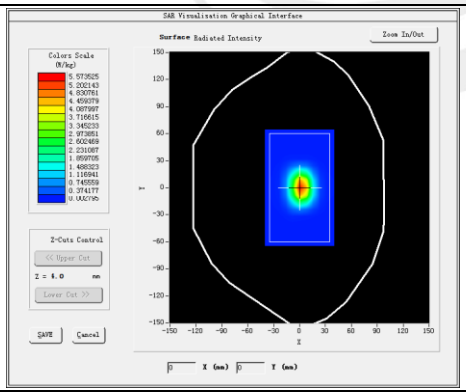
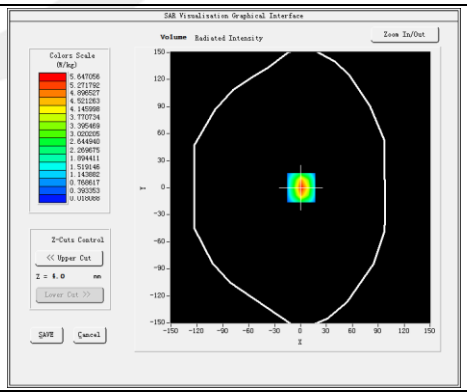
Appendix A. System Validation Plots

System Performance Check Data(5200MHz Head)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=4mm, dy=4mm, dz=2mm
Date of measurement: 2019-09-26

Experimental conditions.

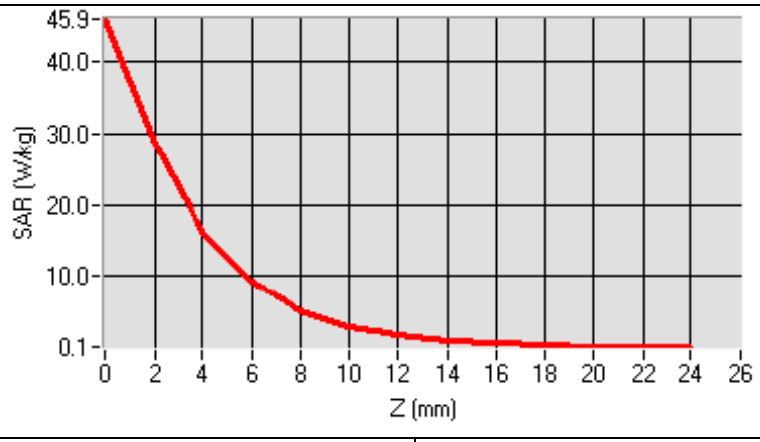
Device Position	Validation plane
Band	5200 MHz
Channels	-
Signal	CW
Frequency (MHz)	5200
Relative permittivity	36.12
Conductivity (S/m)	4.70
Power drift (%)	2.26
Probe	SN 45/15 EPGO281
ConvF	2.46
Crest factor:	1:1

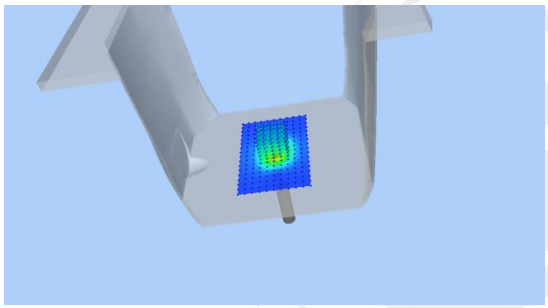
SURFACE SAR	VOLUME SAR
	

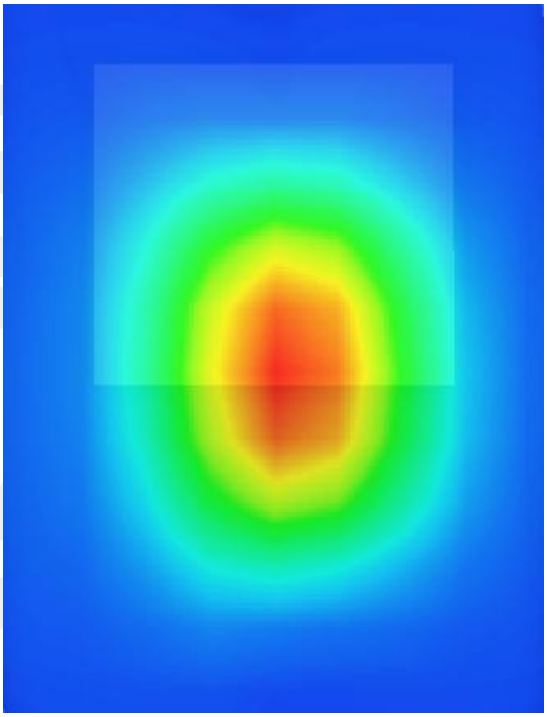
Maximum location: X=7.00, Y=2.00

SAR 10g (W/Kg)	5.834534
SAR 1g (W/Kg)	15.894202

Z Axis Scan





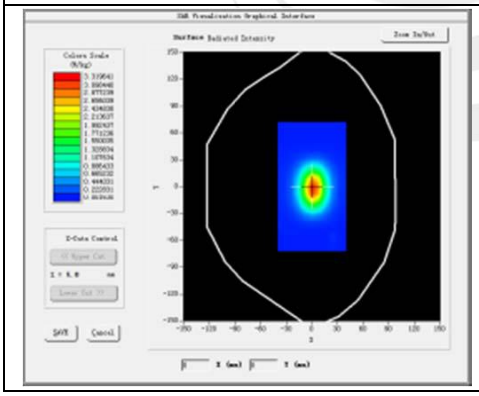
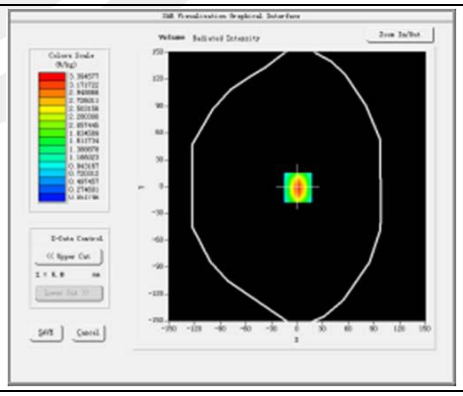


System Performance Check Data(5200MHz Body)

Type: Dipole measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=4mm, dy=4mm, dz=2mm
Date of measurement: 2019-09-26

Experimental conditions.

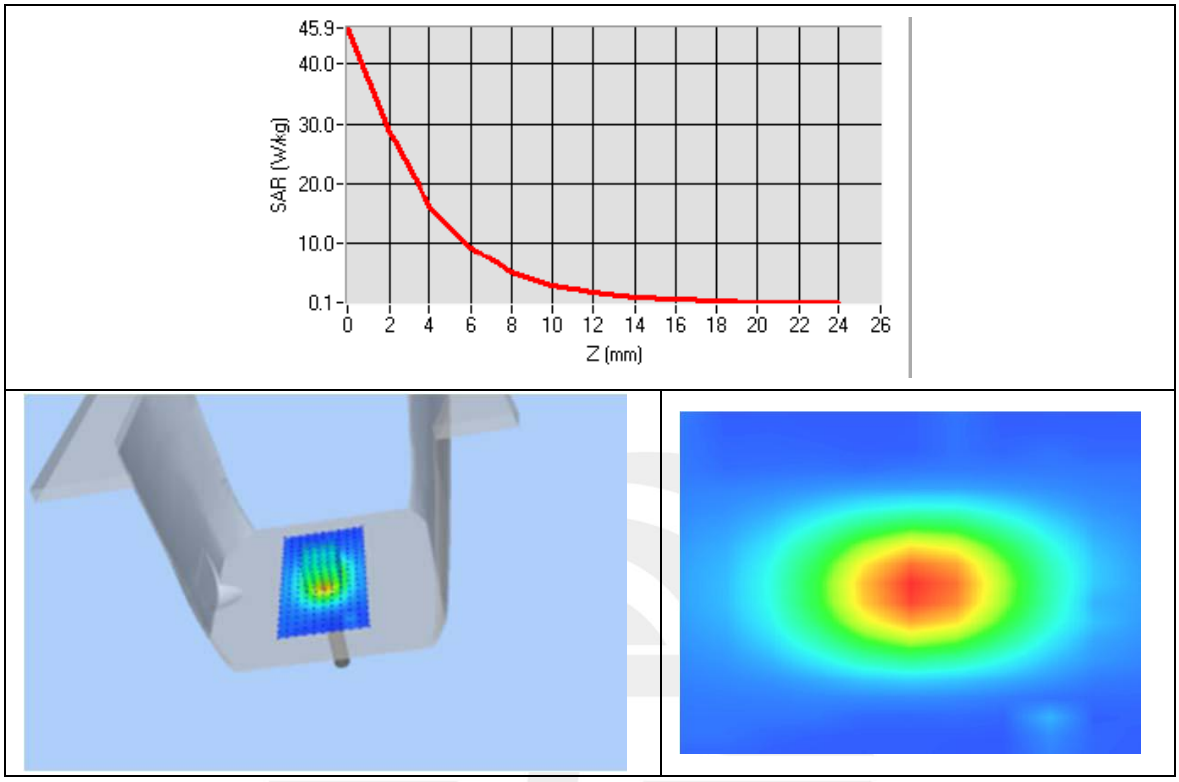
Device Position	Validation plane
Band	5200 MHz
Channels	-
Signal	CW
Frequency (MHz)	5200
Relative permittivity	49.13
Conductivity (S/m)	5.26
Power drift (%)	3.54
Probe	SN 45/15 EPGO281
ConvF	2.52
Crest factor:	1:1

SURFACE SAR	VOLUME SAR
	

Maximum location: X=7.00, Y=2.00

SAR 10g (W/Kg)	5.909253
SAR 1g (W/Kg)	15.874594

Z Axis Scan

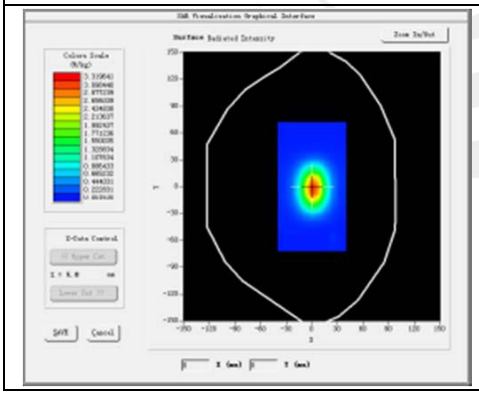
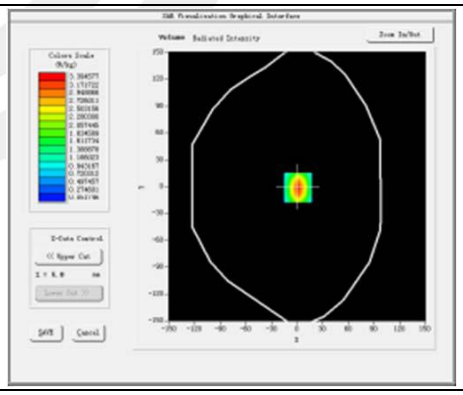


System Performance Check Data(5400MHz Head)

Type: Dipole measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=4mm, dy=4mm, dz=2mm
Date of measurement: 2019-09-26

Experimental conditions.

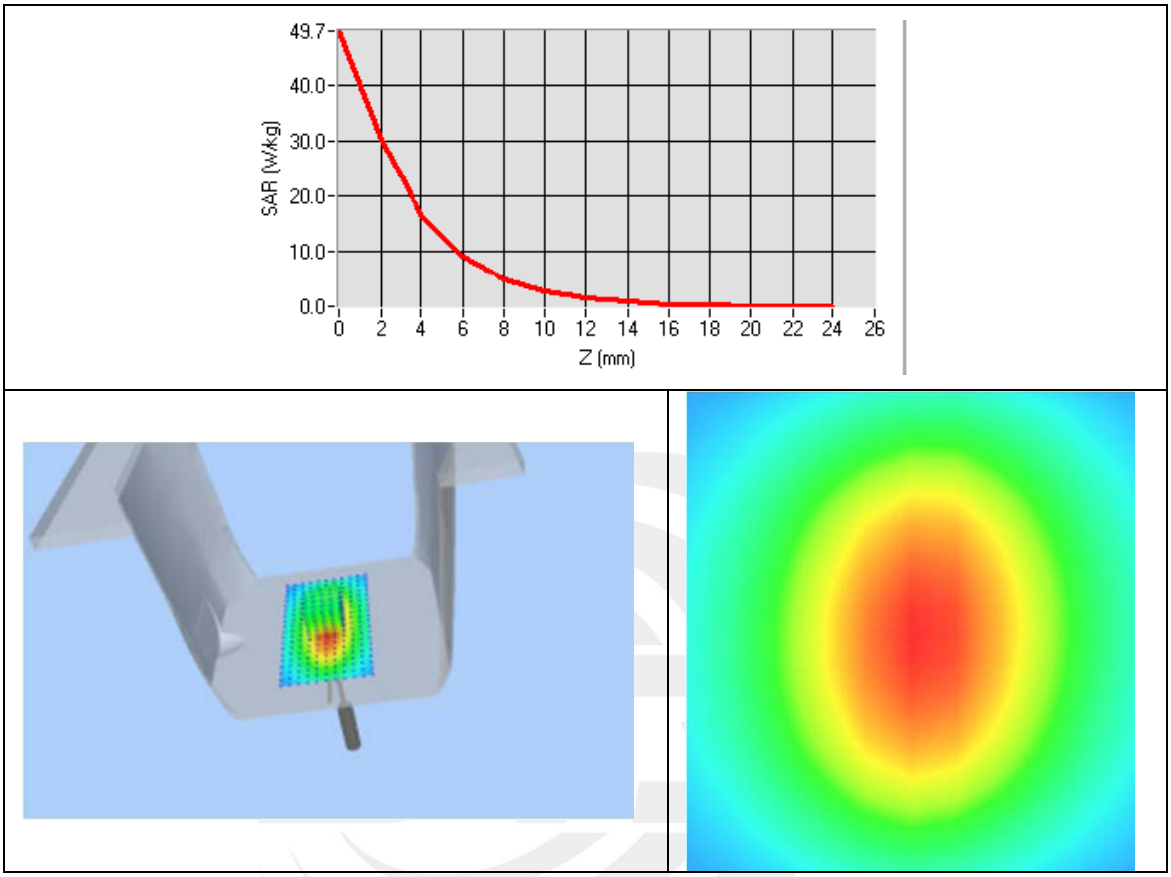
Device Position	Validation plane
Band	5300 MHz
Channels	-
Signal	CW
Frequency (MHz)	5300
Relative permittivity	36.03
Conductivity (S/m)	4.81
Power drift (%)	-1.75
Probe	SN 45/15 EPGO281
ConvF	2.70
Crest factor:	1:1

SURFACE SAR	VOLUME SAR
	

Maximum location: X=7.00, Y=2.00

SAR 10g (W/Kg)	5.970150
SAR 1g (W/Kg)	16.678742

Z Axis Scan

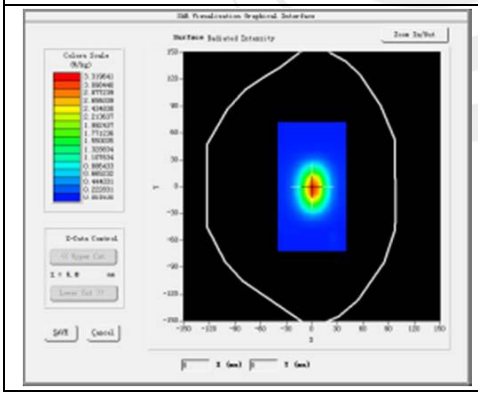
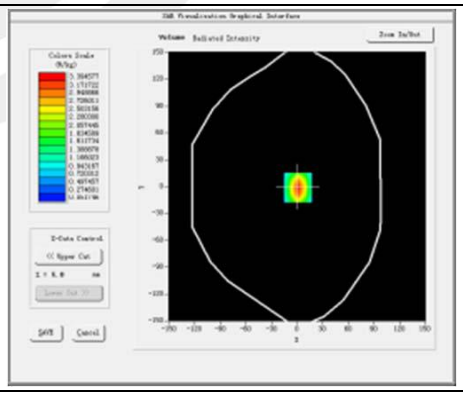


System Performance Check Data(5400MHz Body)

Type: Dipole measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=4mm, dy=4mm, dz=2mm
Date of measurement: 2019-09-26

Experimental conditions.

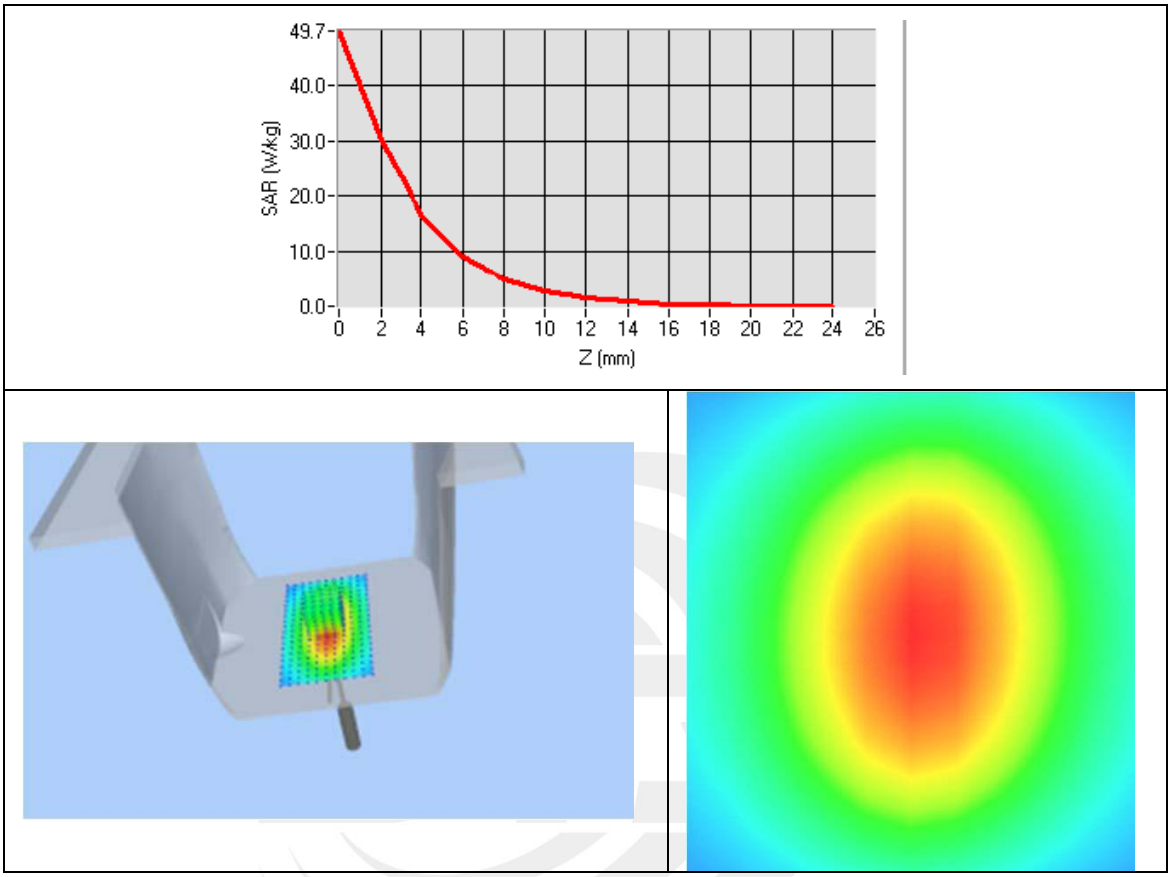
Device Position	Validation plane
Band	5300 MHz
Channels	-
Signal	CW
Frequency (MHz)	5300
Relative permittivity	48.64
Conductivity (S/m)	5.55
Power drift (%)	-2.89
Probe	SN 45/15 EPGO281
ConvF	2.79
Crest factor:	1:1

SURFACE SAR	VOLUME SAR
	

Maximum location: X=7.00, Y=2.00

SAR 10g (W/Kg)	5.961084
SAR 1g (W/Kg)	16.479665

Z Axis Scan

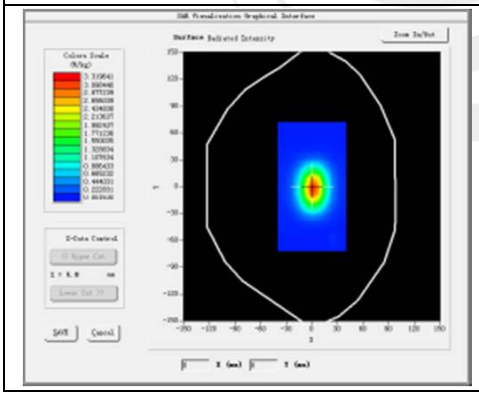
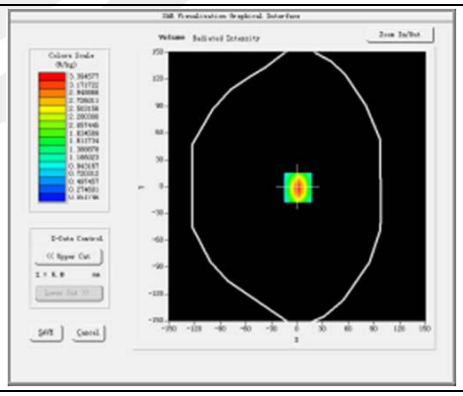


System Performance Check Data(5600MHz Head)

Type: Dipole measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=4mm, dy=4mm, dz=2mm
Date of measurement: 2019-09-27

Experimental conditions.

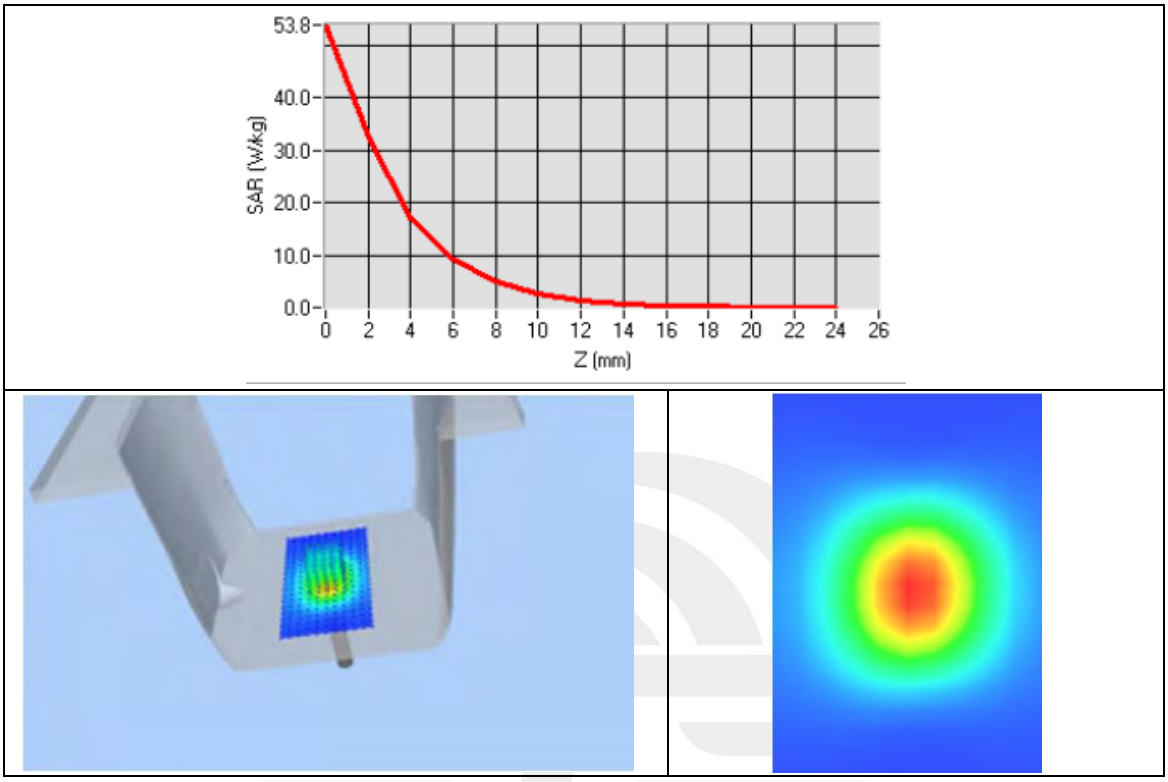
Device Position	Validation plane
Band	5600 MHz
Channels	-
Signal	CW
Frequency (MHz)	5600
Relative permittivity	35.28
Conductivity (S/m)	5.06
Power drift (%)	1.86
Probe	SN 45/15 EPGO281
ConvF	2.74
Crest factor:	1:1

SURFACE SAR	VOLUME SAR
	

Maximum location: X=7.00, Y=2.00

SAR 10g (W/Kg)	6.208917
SAR 1g (W/Kg)	17.360202

Z Axis Scan

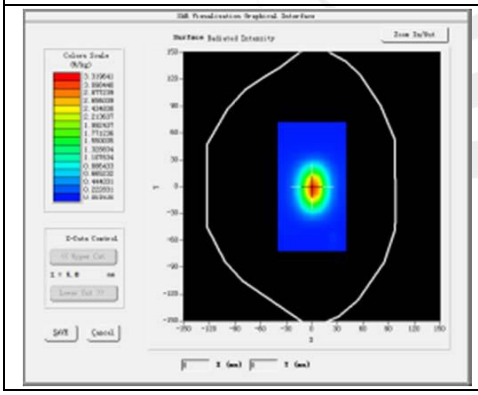
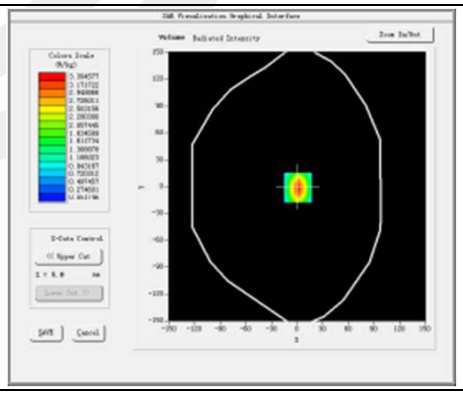


System Performance Check Data(5600MHz Body)

Type: Dipole measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=4mm, dy=4mm, dz=2mm
Date of measurement: 2019-09-27

Experimental conditions.

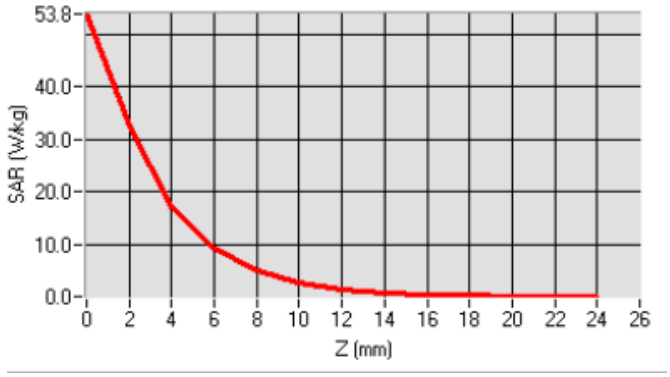
Device Position	Validation plane
Band	5600 MHz
Channels	-
Signal	CW
Frequency (MHz)	5600
Relative permittivity	48.87
Conductivity (S/m)	5.76
Power drift (%)	1.86
Probe	SN 45/15 EPGO281
ConvF	2.83
Crest factor:	1:1

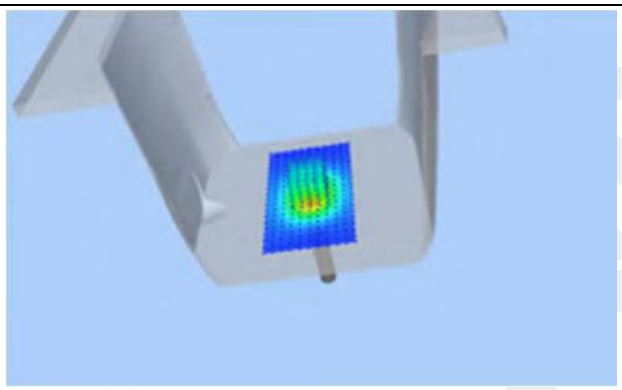
SURFACE SAR	VOLUME SAR
	

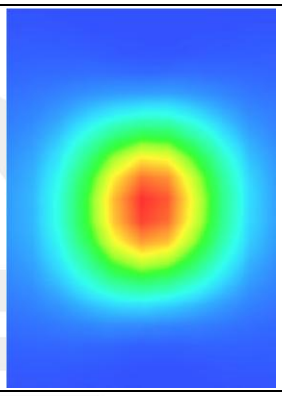
Maximum location: X=7.00, Y=2.00

SAR 10g (W/Kg)	6.198145
SAR 1g (W/Kg)	17.602559

Z Axis Scan





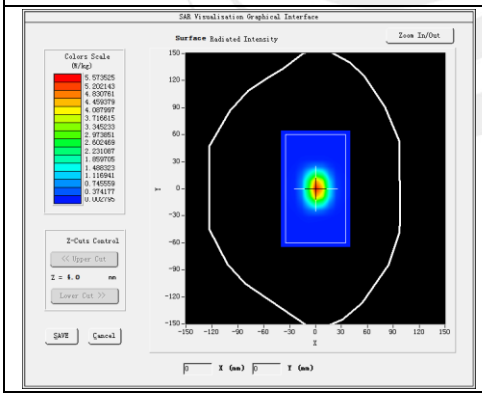
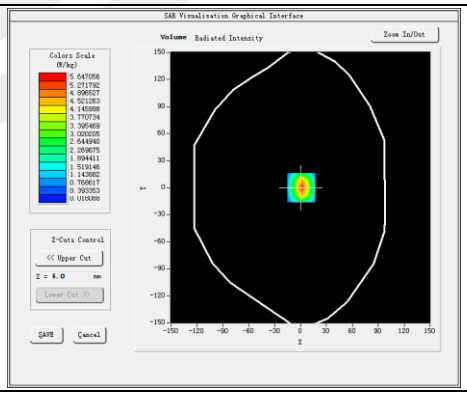


System Performance Check Data(5800MHz Head)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=4mm, dy=4mm, dz=2mm
Date of measurement: 2019-09-27

Experimental conditions.

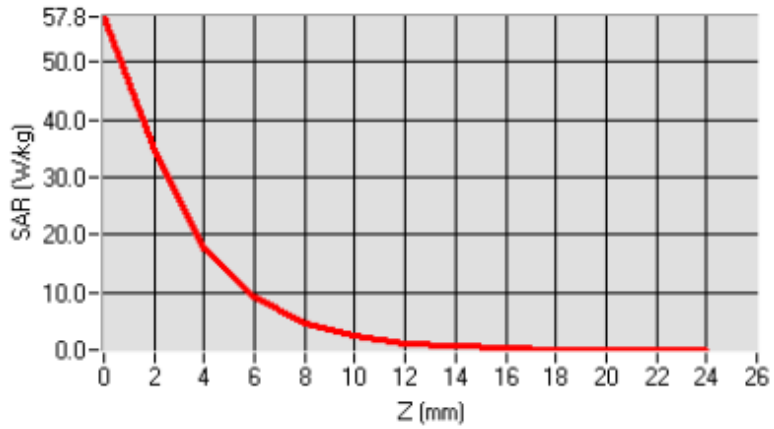
Device Position	Validation plane
Band	5800 MHz
Channels	-
Signal	CW
Frequency (MHz)	5800
Relative permittivity	35.27
Conductivity (S/m)	5.29
Power drift (%)	2.74
Probe	SN 45/15 EPGO281
ConvF	2.53
Crest factor:	1:1

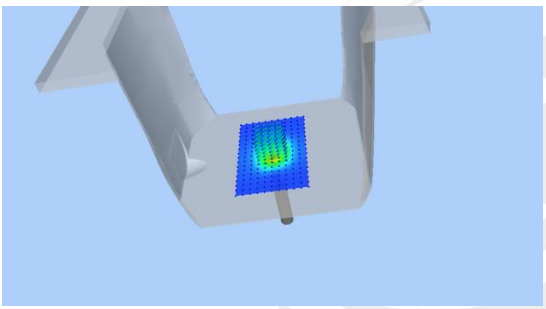
SURFACE SAR	VOLUME SAR
	

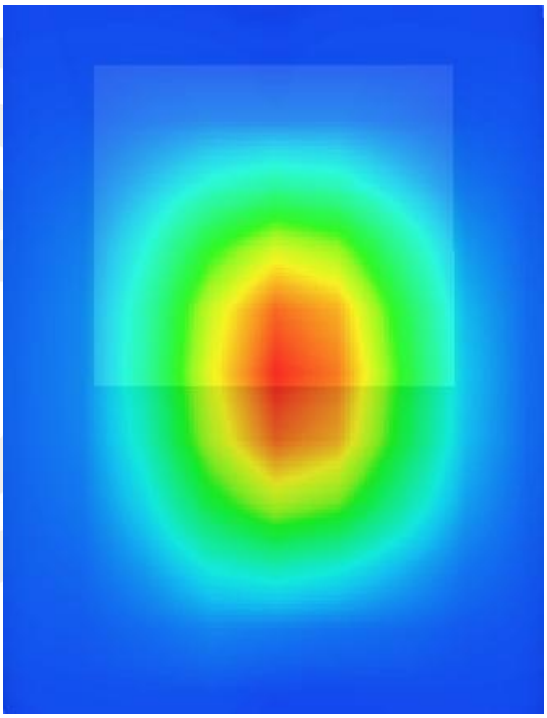
Maximum location: X=7.00, Y=2.00

SAR 10g (W/Kg)	6.091685
SAR 1g (W/Kg)	18.094229

Z Axis Scan


57.8
50.0
40.0
30.0
20.0
10.0
0.0
SAR (W/kg)
0 2 4 6 8 10 12 14 16 18 20 22 24 26
Z (mm)



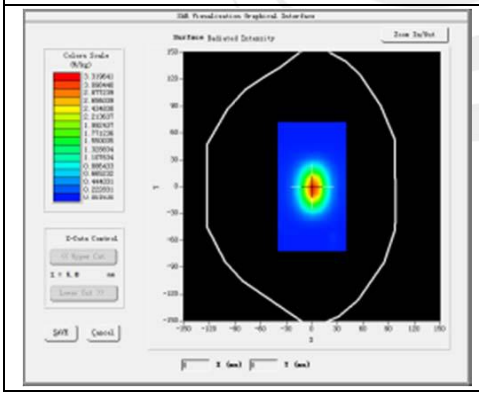
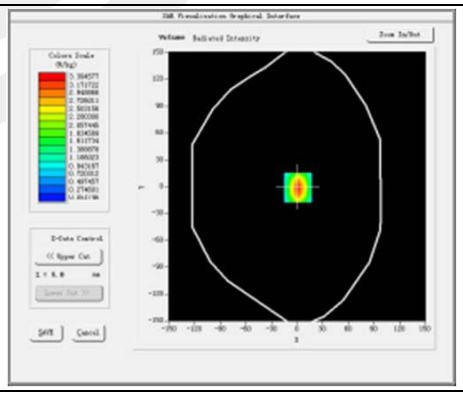


System Performance Check Data(5800MHz Body)

Type: Dipole measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=4mm, dy=4mm, dz=2mm
Date of measurement: 2019-09-27

Experimental conditions.

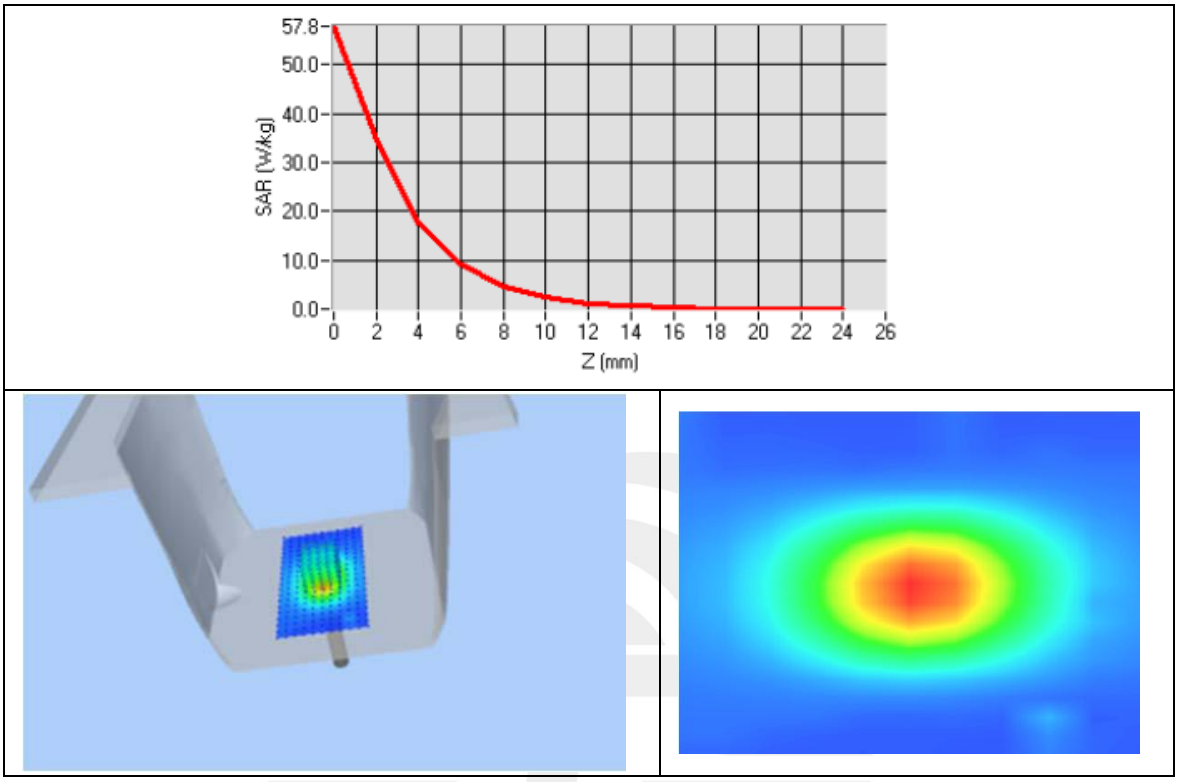
Device Position	Validation plane
Band	5800 MHz
Channels	-
Signal	CW
Frequency (MHz)	5800
Relative permittivity	47.98
Conductivity (S/m)	5.98
Power drift (%)	-1.00
Probe	SN 45/15 EPGO281
ConvF	2.60
Crest factor:	1:1

SURFACE SAR	VOLUME SAR
	

Maximum location: X=7.00, Y=2.00

SAR 10g (W/Kg)	5.961804
SAR 1g (W/Kg)	18.141254

Z Axis Scan


57.8
50.0
40.0
30.0
20.0
10.0
0.0
SAR (W/kg)
0 2 4 6 8 10 12 14 16 18 20 22 24 26
Z (mm)

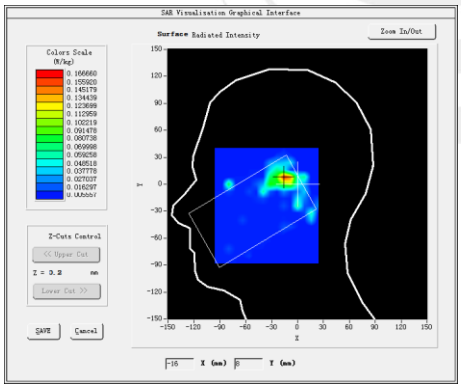
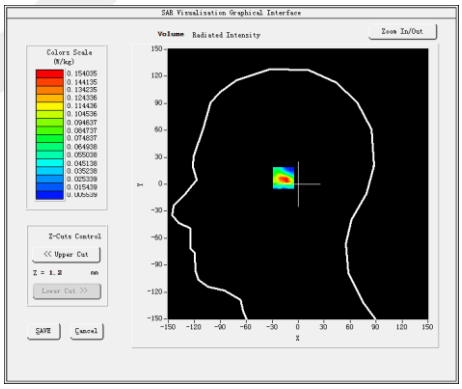
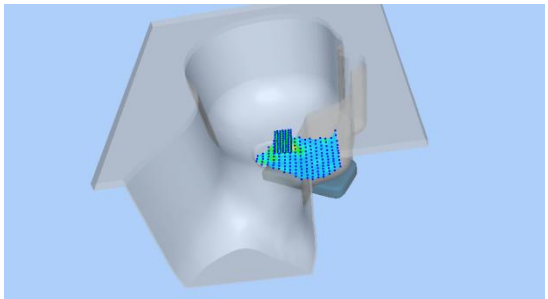
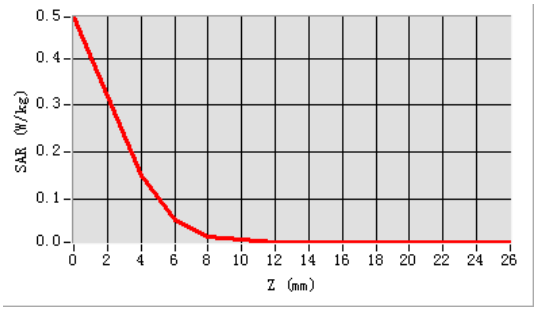
Appendix B. SAR Test Plots

Plot 1: DUT: Mobile Data Terminal; EUT Model: C66

Test Date	2019-09-26
Probe	SN 45/15 EPGO281
ConvF	2.46
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
Zoom Scan	7x7x12,dx=4mm dy=4mm dz=2mm,Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Left head
Device Position	Cheek
Band	IEEE 802.11a U-NII
Channels	48
Signal	IEEE802.a (Crest factor: 1.0)
Frequency (MHz)	5240
Relative permittivity (real part)	36.0
Conductivity (S/m)	4.66
Variation (%)	1.77

Maximum location: X=-14.00, Y=7.00
SAR Peak: 0.55 W/kg

SAR 10g (W/Kg)	0.045862
SAR 1g (W/Kg)	0.151611

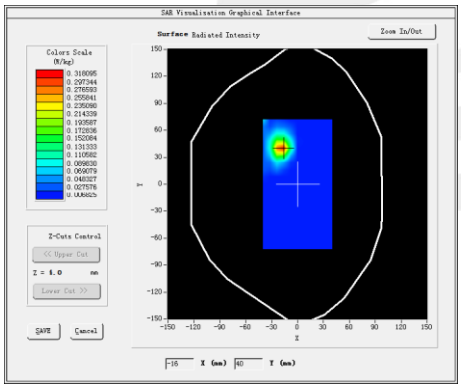
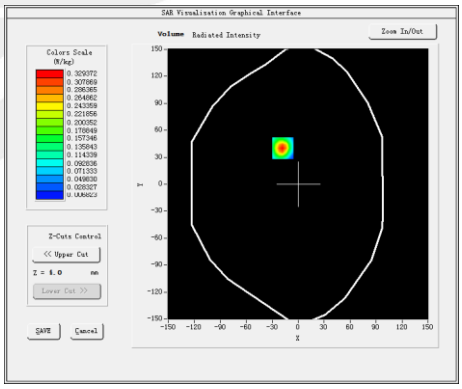
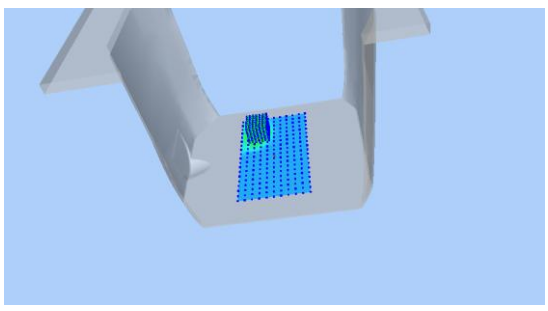
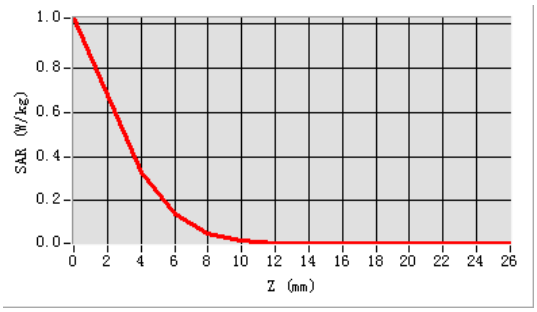
SURFACE SAR	VOLUME SAR
	
3D	**Z Axis Scan**
	

Plot 2: DUT: Mobile Data Terminal; EUT Model: C66

Test Date	2019-09-26
Probe	SN 45/15 EPGO281
ConvF	2.52
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
Zoom Scan	7x7x12,dx=4mm dy=4mm dz=2mm,Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Validation plane
Device Position	Body back
Band	IEEE 802.11a U-NII
Channels	48
Signal	IEEE802.a (Crest factor: 1.0)
Frequency (MHz)	5240
Relative permittivity (real part)	49.0
Conductivity (S/m)	5.30
Variation (%)	-2.82

Maximum location: X=-18.00, Y=40.00
SAR Peak: 0.99 W/kg

SAR 10g (W/Kg)	0.106163
SAR 1g (W/Kg)	0.334245

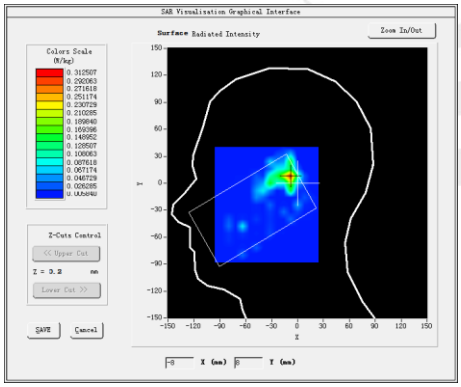
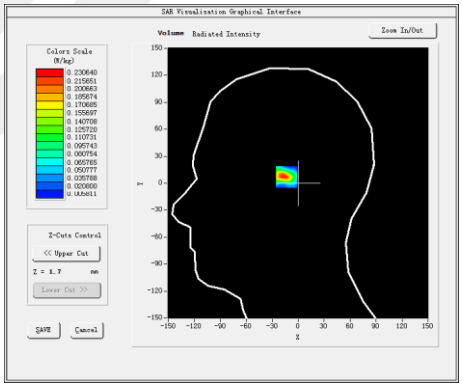
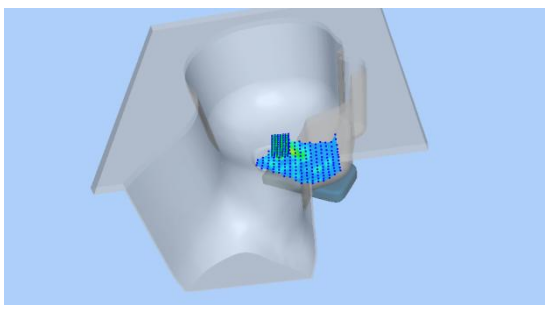
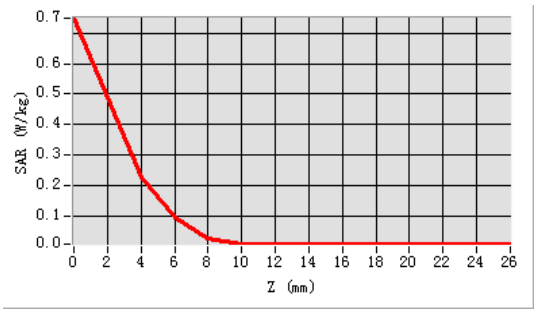
SURFACE SAR	VOLUME SAR
	
3D	**Z Axis Scan**
	

Plot 3: DUT: Mobile Data Terminal; EUT Model: C66

Test Date	2019-09-26
Probe	SN 45/15 EPGO281
ConvF	2.70
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
Zoom Scan	7x7x12,dx=4mm dy=4mm dz=2mm,Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Left head
Device Position	Cheek
Band	IEEE 802.11a U-NII
Channels	64
Signal	IEEE802.a (Crest factor: 1.0)
Frequency (MHz)	5320
Relative permittivity (real part)	35.80
Conductivity (S/m)	4.86
Variation (%)	-3.71

Maximum location: X=-9.00, Y=7.00
SAR Peak: 0.75 W/kg

SAR 10g (W/Kg)	0.066143
SAR 1g (W/Kg)	0.228717

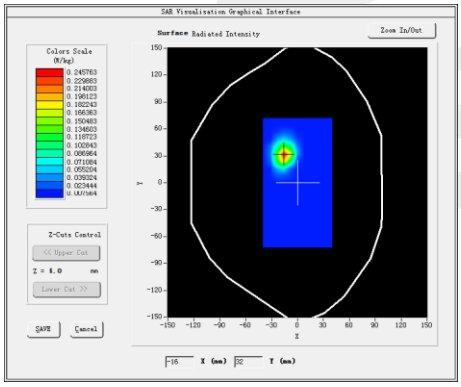
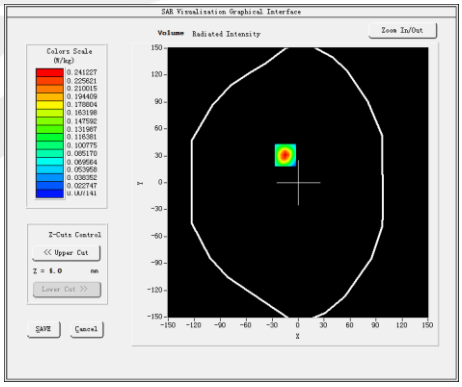
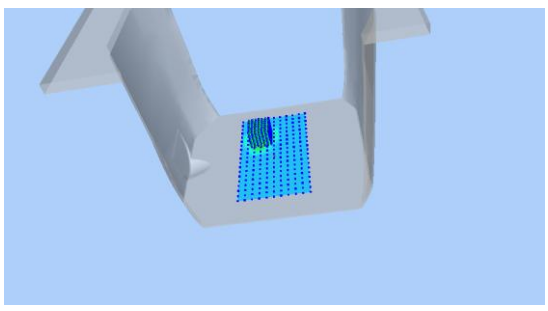
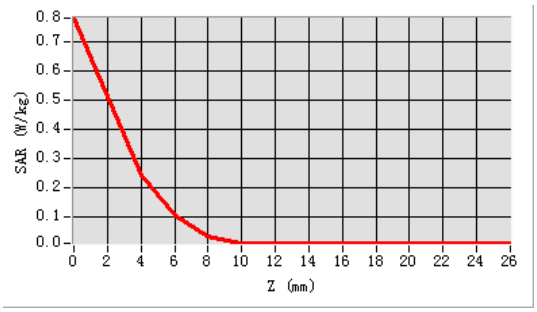
SURFACE SAR	VOLUME SAR
	
3D	**Z Axis Scan**
	

Plot 4: DUT: Mobile Data Terminal; EUT Model: C66

Test Date	2019-09-26
Probe	SN 45/15 EPGO281
ConvF	2.79
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
Zoom Scan	7x7x12,dx=4mm dy=4mm dz=2mm,Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Validation plane
Device Position	Body back
Band	IEEE 802.11a U-NII
Channels	64
Signal	IEEE802.a (Crest factor: 1.0)
Frequency (MHz)	5320
Relative permittivity (real part)	48.70
Conductivity (S/m)	5.53
Variation (%)	0.21

Maximum location: X=-15.00, Y=31.00
SAR Peak: 0.76 W/kg

SAR 10g (W/Kg)	0.083630
SAR 1g (W/Kg)	0.248901

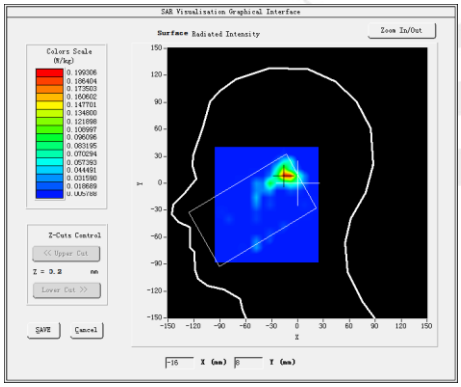
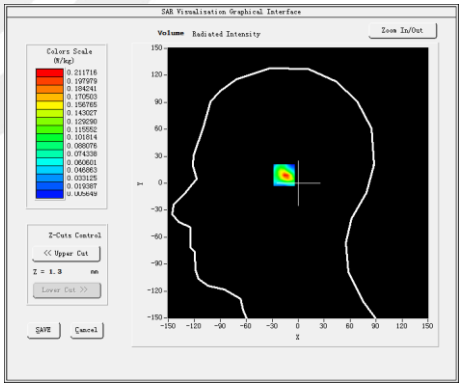
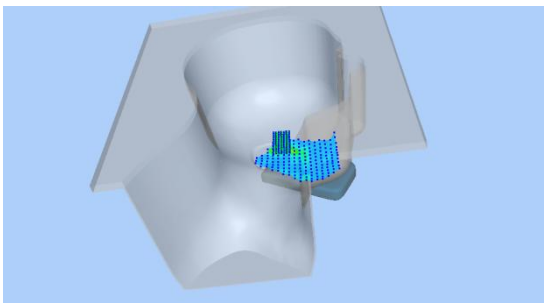
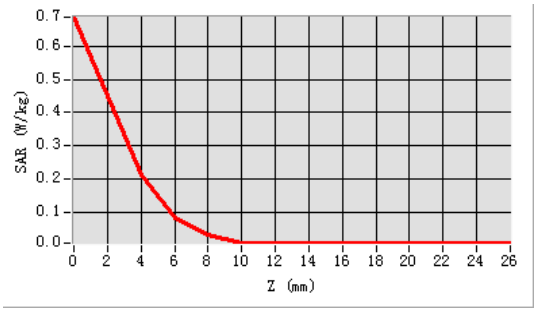
SURFACE SAR	VOLUME SAR
	
3D	**Z Axis Scan**
	

Plot 5: DUT: Mobile Data Terminal; EUT Model: C66

Test Date	2019-09-27
Probe	SN 45/15 EPGO281
ConvF	2.74
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
ZoomScan	7x7x12,dx=4mm dy=4mm dz=2mm,Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Left head
Device Position	Cheek
Band	IEEE 802.11a U-NII
Channels	100
Signal	IEEE802.a (Crest factor: 1.0)
Frequency (MHz)	5500
Relative permittivity (real part)	35.50
Conductivity (S/m)	5.07
Variation (%)	-2.38

Maximum location: X=-13.00, Y=9.00
SAR Peak: 0.69 W/kg

SAR 10g (W/Kg)	0.059586
SAR 1g (W/Kg)	0.197103

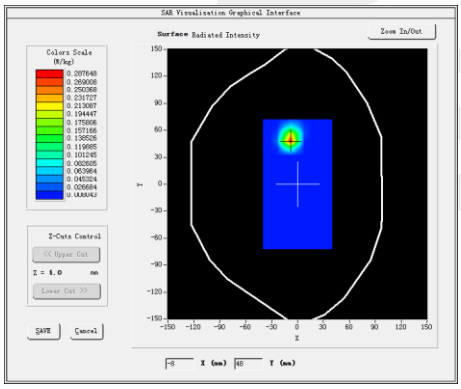
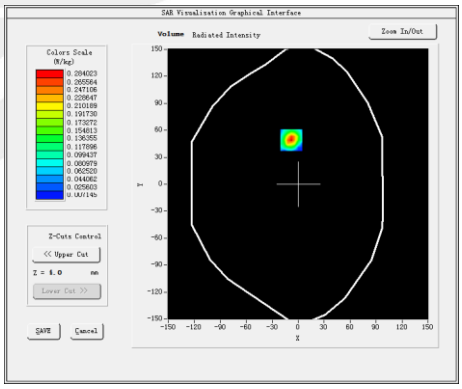
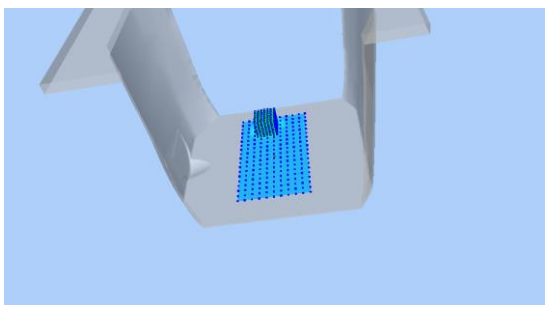
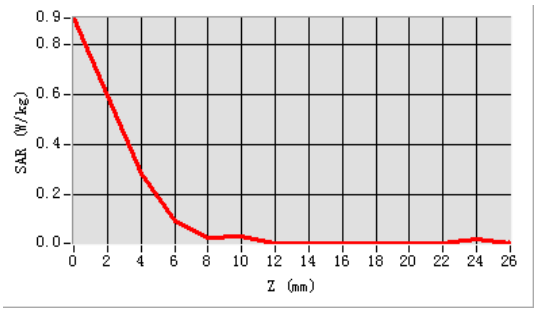
SURFACE SAR	VOLUME SAR
	
3D	**Z Axis Scan**
	

Plot 6: DUT: Mobile Data Terminal; EUT Model: C66

Test Date	2019-09-27
Probe	SN 45/15 EPGO281
ConvF	2.83
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
ZoomScan	7x7x12,dx=4mm dy=4mm dz=2mm,Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Validation plane
Device Position	Body back
Band	IEEE 802.11a U-NII
Channels	100
Signal	IEEE802.a (Crest factor: 1.0)
Frequency (MHz)	5500
Relative permittivity (real part)	48.50
Conductivity (S/m)	5.77
Variation (%)	1.78

Maximum location: X=-8.00, Y=49.00
SAR Peak: 0.88 W/kg

SAR 10g (W/Kg)	0.085390
SAR 1g (W/Kg)	0.270889

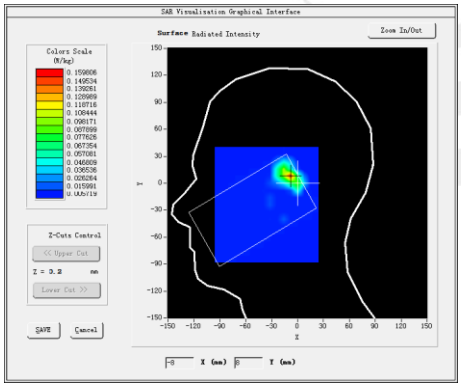
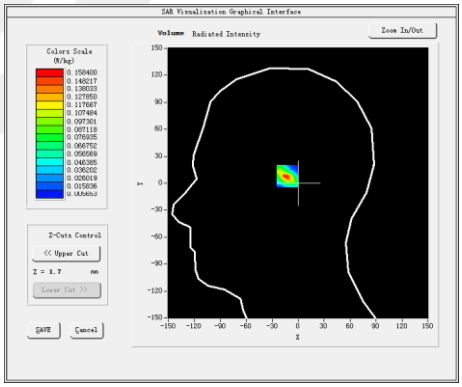
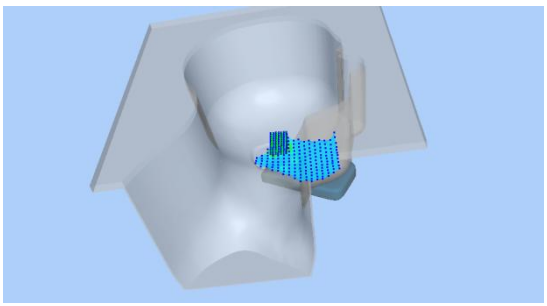
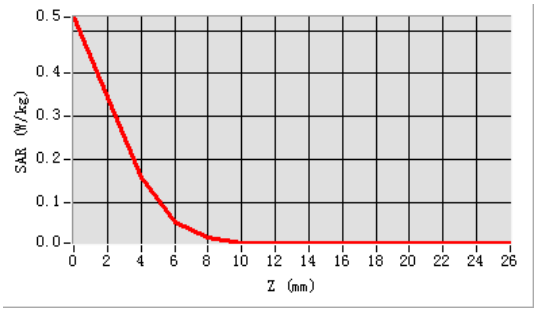
SURFACE SAR	VOLUME SAR
	
3D	**Z Axis Scan**
	

Plot 7: DUT: Mobile Data Terminal; EUT Model: C66

Test Date	2019-09-27
Probe	SN 45/15 EPGO281
ConvF	2.53
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
ZoomScan	7x7x12,dx=4mm dy=4mm dz=2mm,Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Left head
Device Position	Cheek
Band	IEEE 802.11a U-NII
Channels	149
Signal	IEEE802.a (Crest factor: 1.0)
Frequency (MHz)	5745
Relative permittivity (real part)	35.30
Conductivity (S/m)	5.27
Variation (%)	-1.80

Maximum location: X=-8.00, Y=8.00
SAR Peak: 0.53 W/kg

SAR 10g (W/Kg)	0.047071
SAR 1g (W/Kg)	0.153859

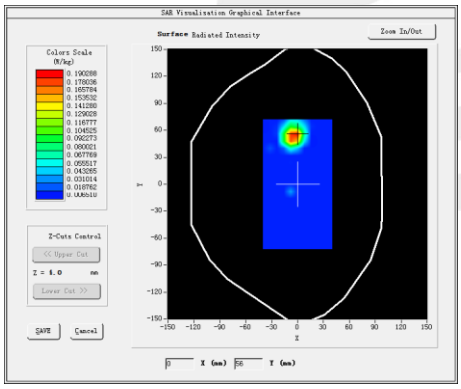
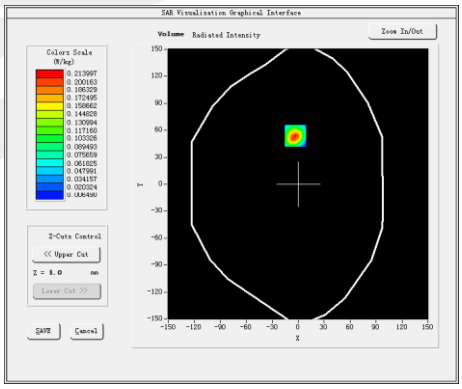
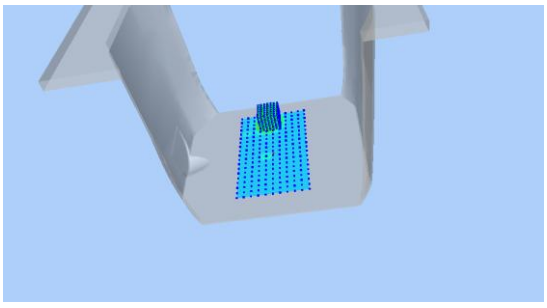
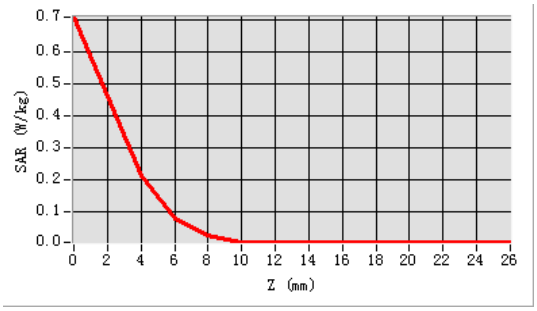
SURFACE SAR	VOLUME SAR
	
3D	**Z Axis Scan**
	

Plot 8: DUT: Mobile Data Terminal; EUT Model: C66

Test Date	2019-09-27
Probe	SN 45/15 EPGO281
ConvF	2.60
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
ZoomScan	7x7x12,dx=4mm dy=4mm dz=2mm,Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Validation plane
Device Position	Body back
Band	IEEE 802.11a U-NII
Channels	100
Signal	IEEE802.a (Crest factor: 1.0)
Frequency (MHz)	5745
Relative permittivity (real part)	48.20
Conductivity (S/m)	6.00
Variation (%)	0.19

Maximum location: X=-3.00, Y=54.00
SAR Peak: 0.68 W/kg

SAR 10g (W/Kg)	0.073360
SAR 1g (W/Kg)	0.216670

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

Appendix C. Probe Calibration And Dipole Calibration Report

Refer the appendix Calibration Report.

※※※※※END OF THE REPORT※※※※※