S T S LAB

FCC SAR TEST REPORT

Report No.: STS2007301H01

Issued for

Wings Mobile Telecom SL

c/Beethoven 15, piso 4, Barcelona, Spain

Product Name:	Smart Phone
Brand Name:	Wings Mobile
Model Name:	W7
Series Model:	WX
FCC ID:	2ATQIW7
Test Standard:	ANSI/IEEE Std. C95.1
	FCC 47 CFR Part 2 (2.1093)
	IEEE 1528: 2013
Max. Report SAR (1g):	Head: 0.730 W/kg
	Body: 0.371 W/kg

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APPROVAL

Test Report Certification

Applicant's name ..... : Wings Mobile Telecom SL

Address ..... : c/Beethoven 15, piso 4, Barcelona, Spain

Manufacture's Name ..... : COOSEA GROUP (HK) COMPANY LIMITED

Address ..... : UNIT 5-6 16/F MULTIFIELD PLAZA 3-7A PRAT AVENUE TSIMSHATSUI KL

Product description

Product name ..... : Smart Phone

Brand name ..... : Wings Mobile

Model name ..... : W7

Series Model..... : WX

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..... : 09 Mar. 2020~18 Mar. 2020

Date of Issue..... : 23 July 2020

Test Result..... : **Pass**

Testing Engineer : Aaron Bu

(Aaron Bu)

Technical Manager : Jason Lu

(Jason Lu)

Authorized Signatory : Vita Li

(Vita Li)

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Revision History

Rev.	Issue Date	Report No.	Effect Page	Contents
00	20 Mar. 2020	STS2002185H02	ALL	Initial Issue
00	23 July 2020	STS2007301H01	ALL	Updated Brand name.
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	Smart Phone
Brand Name	Wings Mobile
Model Name	W7
Series Model	WX
FCC ID	2ATQIW7
Model Difference	Only different in model name and Software Version number.
Battery	Rated Voltage: 3.85V; Charge Limit: 4.4V; Capacity: 3950mAh
Device Category	Portable
Product stage	Production unit
RF Exposure Environment	General Population / Uncontrolled
IMEI	437465765768740 869899033422655
Hardware Version	K6306W_01
Software Version	K6307Q4WS.FHDJ.P0.ANASAPA9DATJDFTL.0103_1159.V3.04
Frequency Range	GSM 850:824.2~848.8MHz PCS1900:1850.2~1909.8MHz WCDMA Band II:1852.4~1907.6MHz WCDMA Band IV:1712.4~1752.6 MHz WCDMA Band V:826.4~846.6MHz LTE Band 2:1850.7~1909.3MHz LTE Band 4:1710.7~1754.3MHz LTE Band 5:824.7~848.3MHz LTE Band 7:2502.5~2567.5MHz WLAN 802.11b/g/n(HT20):2412~2462MHz WLAN 802.11n(HT40):2422~2452MHz 5GHz IEEE 802.11a/n/ac (20MHz): 5180~5310 MHz, 5745~5825 MHz 5GHz IEEE 802.11n/ac (40MHz): 5190~5310 MHz, 5755~5795MHZ 5GHz IEEE 802.11ac (80MHz): 5120 MHz, 5290 MHz, 5775 MHz GPS: 1575.42MHz FM: 87.5 MHz~108 MHz NFC: 13.56 MHz

	Band	Mode	Head (W/kg)	Body Worn and Hotspot(W/kg)
Max. Reported SAR(1g): (Limit:1.6W/kg)	PCE	GSM 850	0.265	0.241
	PCE	GSM 1900	0.095	0.145
	PCE	WCDMA Band II	0.168	0.266
	PCE	WCDMA Band IV	0.094	0.127
	PCE	WCDMA Band V	0.202	0.176
	PCE	LTE Band 2	0.156	0.231
	PCE	LTE Band 4	0.085	0.276
	PCE	LTE Band 5	0.246	0.184
	PCE	LTE Band 7	0.314	0.359
	DTS	2.4G WLAN	0.730	0.213
	NII	5.2G WLAN	0.361	0.362
	NII	5.3G WLAN	0.620	0.371
	NII	5.8G WLAN	0.183	0.203
	DTS	Bluetooth Note	0.167	0.084
1-g Sum SAR			1.044	0.730
FCC Equipment Class	Licensed Portable Transmitter Held to Ear (PCE) Part 15 Spread Spectrum Transmitter (DSS) Digital Transmission System (DTS) Unlicensed National Information Infrastructure TX (NII)			
Operating Mode:	GSM: GSM Voice; GPRS; EGPRS Class 12 WCDMA:RMC,HSDPA,HSUPA Release 6 LTE:QPSK,16QAM WLAN: 802.11 a/b/g/n(HT20/40)/ac(VHT20/40/80) Bluetooth: 4.2+EDR (GFSK +π/4DQPSK+8DPSK) BLE			
Antenna Specification:	GSM,WCDMA,LTE: PIFA Antenna BT,WLAN: PIFA Antenna			
SIM Card	Support dual-SIM, dual standby, the multiple SIM card with two lines cannot transmitting at the same time			
Hotspot Mode:	Support			
DTM Mode:	Not Support			

Note:
1. Bluetooth SAR was estimated
2. The dual SIM card mobile has 2 SIM slots and supports dual SIM dual standby. The WWAN radio transmission will be enabled by either one SIM at a time (Single active)
3. After pre-scan two SIM cards power, we found test result of the SIM1 was the worse, so we chose SIM1 card to perform all tests.
4. 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 D01 v03r01	SAR Measurement Procedures for 3G Devices
8	FCC KDB 941225 D05 v02r05	SAR for LTE Devices
9	FCC KDB 941225 D06 v02r01	Hotspot Mode SAR
10	FCC KDB 648474 D04 v01r03	SAR Evaluation Considerations for Wireless Handsets
11	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:

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

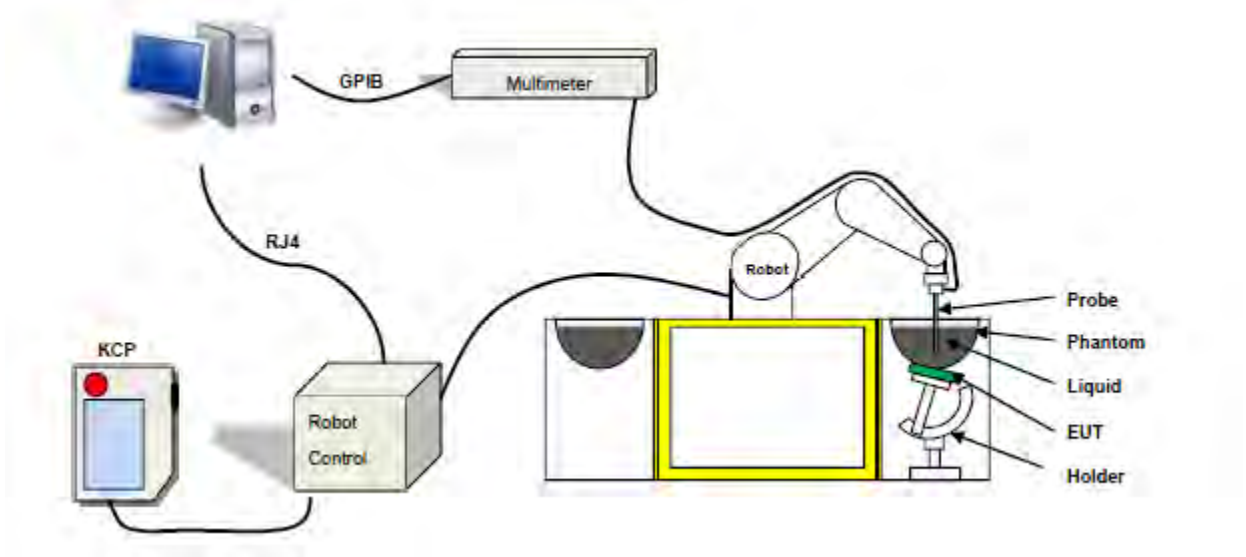
SAR is expressed in units of Watts per kilogram (W/kg) SAR measurement can be related to the electrical field in the tissue by

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

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 Open SAR 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 41/18 EPGO334 with following specifications is used

- Probe Length: 330 mm
- Length of Individual Dipoles: 2 mm
- Maximum external diameter: 8 mm
- Probe Tip External Diameter: 2.5 mm
- Distance between dipole/probe extremity: 1 mm
- Dynamic range: 0.01-100 W/kg
- Probe linearity: 3%
- Axial Isotropy: ＜0.10 dB
- Spherical Isotropy: ＜0.10 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 1-MVG COMOSAR Dosimetric E field Dipole

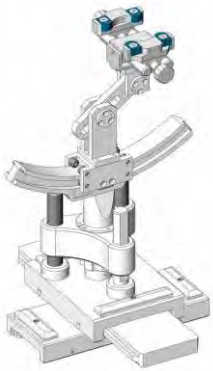
3.2.2 Phantom

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.

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-Propan ediol	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	36.8	51.2	4.84	5.16
5800	35.3	49.0	5.47	6.28

LIQUID MEASUREMENT RESULTS

Date	Ambient condition		Head Simulating Liquid		Parameters	Target	Measured	Deviation [%]	Limited [%]
	Temp. [°C]	Humidity [%]	Frequency	Temp. [°C]					
2020-03-09	22.8	54	835 MHz	22.5	Permittivity:	41.5	41.44	-0.14	±5
					Conductivity:	0.9	0.87	-3.33	±5
2020-03-10	23.1	52	1800 MHz	22.7	Permittivity:	40	40.52	1.30	±5
					Conductivity:	1.40	1.41	0.71	±5
2020-03-11	22.2	45	1900 MHz	21.8	Permittivity:	40	40.75	1.88	±5
					Conductivity:	1.4	1.38	-1.43	±5
2020-03-12	22.4	56	2450 MHz	22.1	Permittivity:	39.2	38.50	-1.79	±5
					Conductivity:	1.8	1.78	-1.11	±5
2020-03-13	21.7	52	2600 MHz	21.5	Permittivity:	39.0	38.16	-2.15	±5
					Conductivity:	1.96	1.94	-1.02	±5
2020-03-16	22.8	50	5200 MHz	22.5	Permittivity:	36.0	36.25	0.69	±5
					Conductivity:	4.66	4.70	0.86	±5
2020-03-17	22.4	51	5400 MHz	22.1	Permittivity:	35.9	35.75	-0.42	±5
					Conductivity:	4.76	4.81	1.05	±5
2020-03-18	22.7	47	5800 MHz	22.4	Permittivity:	35.3	35.46	0.45	±5
					Conductivity:	5.27	5.30	0.57	±5

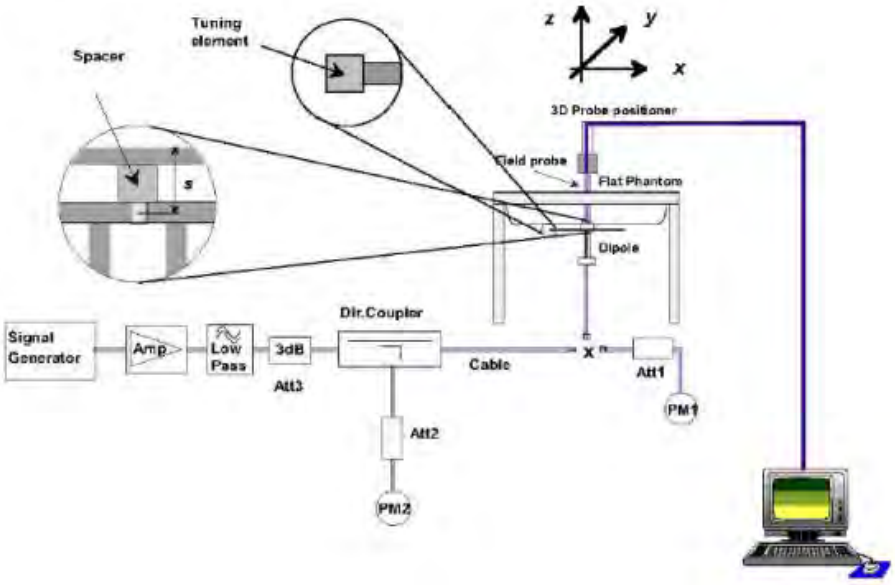
Date	Ambient condition		Body Simulating Liquid		Parameters	Target	Measured	Deviation [%]	Limited [%]
	Temp. [°C]	Humidity [%]	Frequency	Temp. [°C]					
2020-03-09	22.8	54	835 MHz	22.6	Permittivity:	55.2	55.69	0.89	±5
					Conductivity:	0.97	1.00	3.09	±5
2020-03-10	23.1	52	1800 MHz	22.8	Permittivity:	53.3	54.55	2.35	±5
					Conductivity:	1.52	1.48	-2.63	±5
2020-03-11	22.2	45	1900 MHz	21.8	Permittivity:	53.3	52.42	-1.65	±5
					Conductivity:	1.52	1.51	-0.66	±5
2020-03-12	22.4	56	2450 MHz	22.2	Permittivity:	52.7	54.22	2.88	±5
					Conductivity:	1.95	1.97	1.03	±5
2020-03-13	23.2	57	2600 MHz	22.9	Permittivity:	52.5	52.89	0.74	±5
					Conductivity:	2.16	2.11	-2.31	±5
2020-03-16	22.8	50	5200 MHz	22.5	Permittivity:	49.0	48.77	-0.47	±5
					Conductivity:	5.30	5.39	1.70	±5
2020-03-17	22.4	51	5400 MHz	22.1	Permittivity:	48.70	48.52	-0.37	±5
					Conductivity:	5.53	5.60	1.27	±5
2020-03-18	22.7	47	5800 MHz	22.5	Permittivity:	48.2	48.73	1.10	±5
					Conductivity:	6.00	6.11	1.83	±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 %.

Freq.(MHz)	Power(mW)	Tested Value (W/Kg)	Normalized SAR (W/kg/W)	Target (W/Kg/W)	Tolerance(%)	Date
835 Head	100	0.948	9.48	9.56	-0.84	2020-03-09
835 Body	100	0.955	9.55	9.56	-0.10	2020-03-09
1800 Head	100	3.882	38.82	38.4	1.09	2020-03-10
1800 Body	100	3.895	38.95	38.4	1.43	2020-03-10
1900 Head	100	3.948	39.48	39.7	-0.55	2020-03-11
1900 Body	100	3.994	39.94	39.7	0.60	2020-03-11
2450 Head	100	5.258	52.58	52.4	0.34	2020-03-12
2450 Body	100	5.434	54.34	52.4	3.70	2020-03-12
2600 Head	100	5.672	56.72	55.3	2.57	2020-03-03
2600 Body	100	5.745	57.45	55.3	3.89	2020-03-13
5200 Head	100	15.869	158.69	159	-0.19	2020-03-16
5200 Body	100	15.694	156.94	159	-1.30	2020-03-16
5400 Head	100	16.488	164.88	166.4	-0.91	2020-03-17
5400 Body	100	16.707	167.07	166.4	0.40	2020-03-17
5800 Head	100	17.253	172.53	181.2	-4.78	2020-03-18
5800 Body	100	17.285	172.85	181.2	-4.61	2020-03-18

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

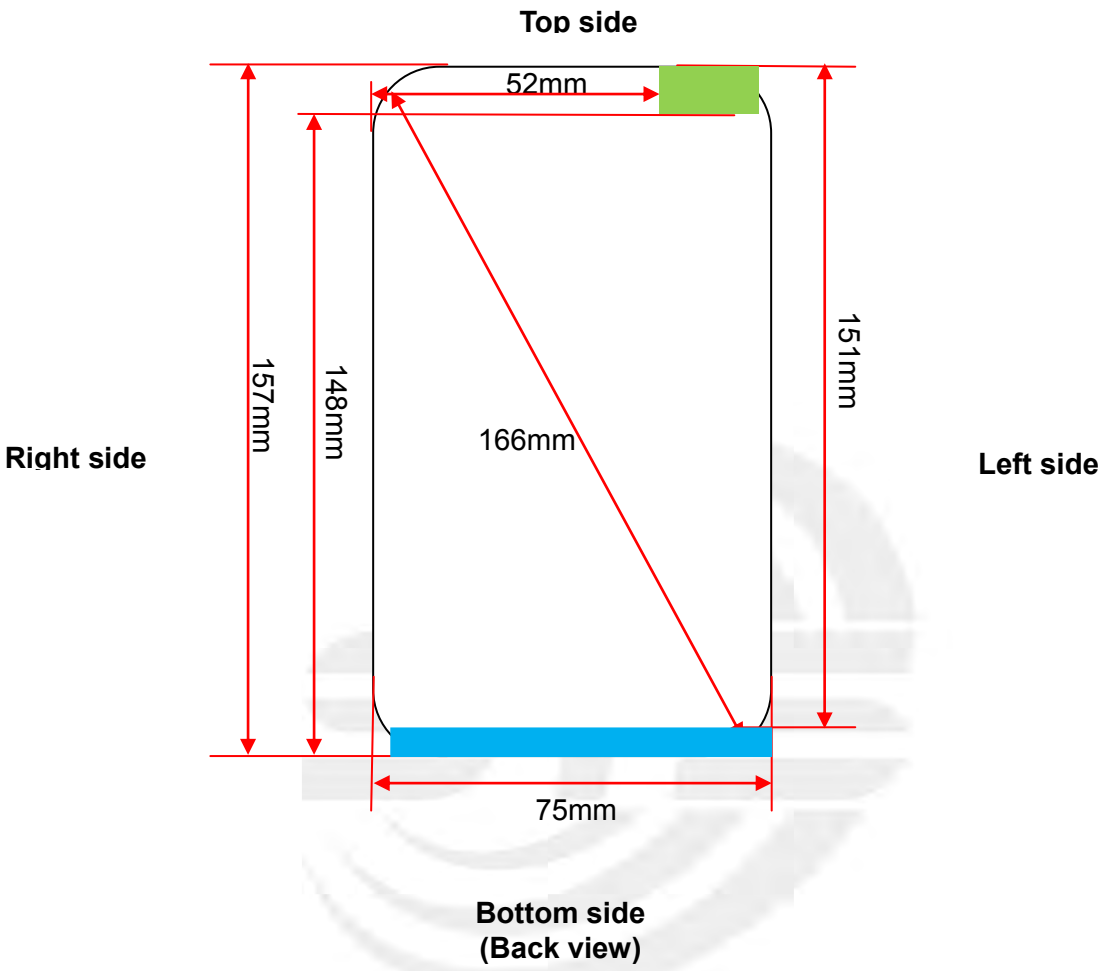
- Establish a call with the maximum output power with a base station simulator. The connection between the mobile and the base station simulator is established via air interface
- Measurement of the local E-field value at a fixed location. This value serves as a reference value for calculating a possible 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 Smart Phone, support Bluetooth/WIFI/GSM/WCDMA/LTE modes.



WWAN Antenna

WLAN/BT Antenna

Note 1: The antenna information refer the manufacturer provide report, applicable only to the tested sample identified in the report.

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
WWAN	＜5mm	＜5mm	＜5mm	＜5mm	151mm	＜5mm
	Yes	Yes	Yes	Yes	No	Yes
WLAN/BT	＜5mm	＜5mm	52mm	＜5mm	＜5mm	148mm
	Yes	Yes	No	Yes	Yes	No

Note：

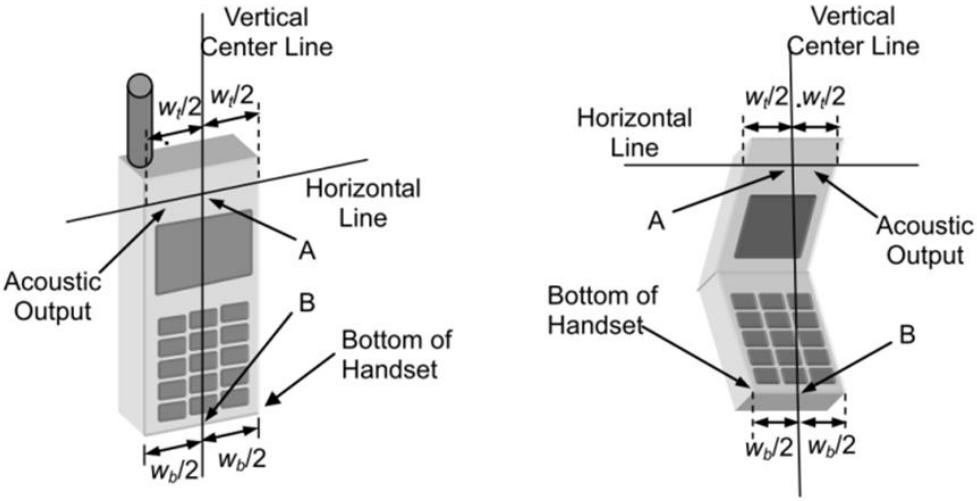
1. maximum power is the source-based time-average power and represents the maximum RF output power among production units.
2. per KDB 447498 D01, for larger devices, the test separation distance of adjacent edge configuration is determined by the closest separation between the antenna and the user.
3. 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

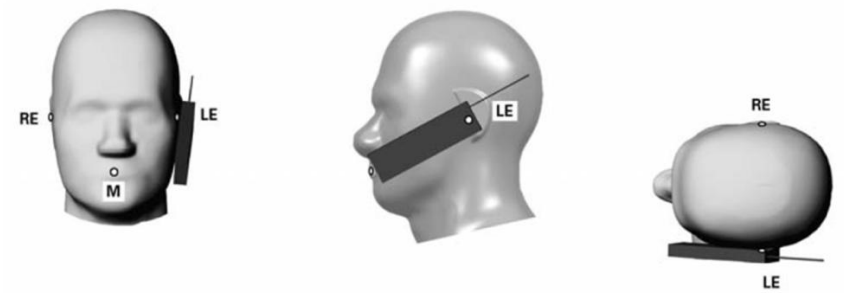
This EUT was tested in Right Cheek, Right Titled, Left Cheek, Left Titled, Front Face and Rear Face.

8.1 Define Two Imaginary Lines On The Handset

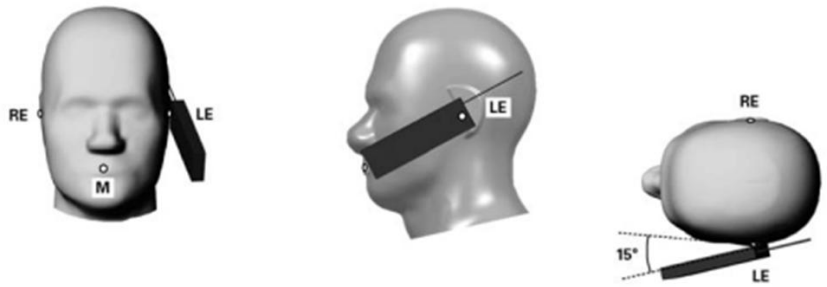
(1)The vertical centerline passes through two points on the front side of the handset the midpoint of the width wt of the handset at the level of the acoustic output, and the midpoint of the width wb of the handset.
(2)The horizontal line is perpendicular to the vertical centerline and passes through 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.



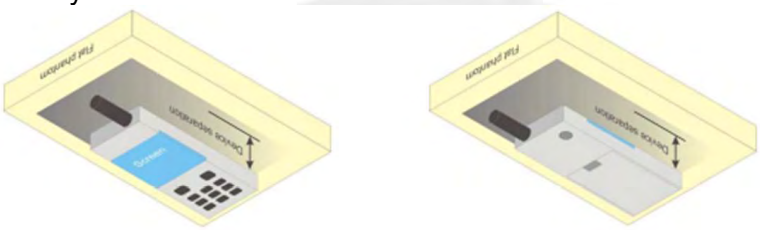
Cheek Position
1)To position the device with the vertical center line of the body of the device and the horizontal line crossing the center piece in a plane parallel to the sagittal plane of the phantom. While maintaining the device in this plane, align the vertical center line with the reference plane 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.

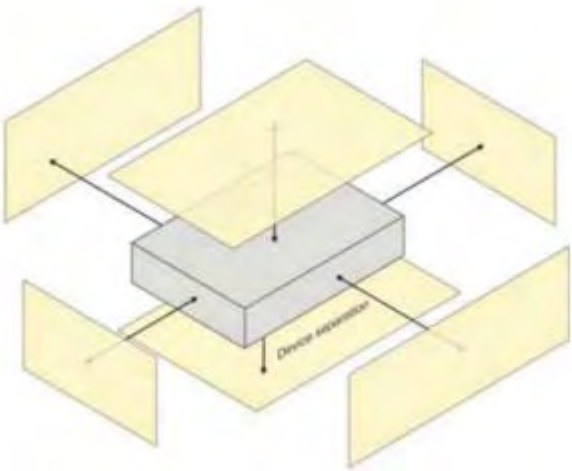


Body-worn Position Conditions:
Body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in KDB Publication 447498 D01 should be used to test for body-worn accessory SAR compliance, without a headset 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

Burst Average Power (dBm)						
Band	GSM 850			PCS 1900		
Channel	128	190	251	512	661	810
Frequency (MHz)	824.2	836.6	848.8	1850.2	1880.0	1909.8
GSM(GMSK, 1-Slot)	32.44	32.31	32.46	29.12	29.09	29.15
GPRS (GMSK, 1-Slot)	32.04	32.09	31.83	28.83	28.91	28.77
GPRS (GMSK, 2-Slot)	31.57	31.67	31.40	28.39	28.46	28.30
GPRS (GMSK, 3-Slot)	31.13	31.26	30.98	27.94	28.03	27.88
GPRS (GMSK, 4-Slot)	30.67	30.78	30.52	27.50	27.60	27.43
EGPRS(8PSK, 1-Slot)	31.62	31.72	31.77	28.64	28.70	28.63
EGPRS(8PSK, 2-Slot)	30.91	30.95	30.98	27.86	27.90	27.85
EGPRS(8PSK, 3-Slot)	30.20	30.18	30.18	27.07	27.15	27.09
EGPRS(8PSK, 4-Slot)	29.45	29.43	29.45	26.30	26.44	26.37

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- Average Power(dBm)						
Band	GSM 850			PCS 1900		
Channel	128	190	251	512	661	810
Frequency (MHz)	824.2	836.6	848.8	1850.2	1880.0	1909.8
GSM(GMSK, 1-Slot)	23.41	23.28	23.43	20.09	20.06	20.12
GPRS (GMSK, 1-Slot)	23.01	23.06	22.80	19.80	19.88	19.74
GPRS (GMSK, 2-Slot)	25.55	25.65	25.38	22.37	22.44	22.28
GPRS (GMSK, 3-Slot)	26.87	27.00	26.72	23.68	23.77	23.62
GPRS (GMSK, 4-Slot)	27.66	27.77	27.51	24.49	24.59	24.42
EGPRS(8PSK, 1-Slot)	22.59	22.69	22.74	19.61	19.67	19.60
EGPRS(8PSK, 2-Slot)	24.89	24.93	24.96	21.84	21.88	21.83
EGPRS(8PSK, 3-Slot)	25.94	25.92	25.92	22.81	22.89	22.83
EGPRS(8PSK, 4-Slot)	26.44	26.42	26.44	23.29	23.43	23.36

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

WCDMA

Band	WCDMA Band V			WCDMA Band IV			WCDMA Band II		
Channel	4132	4183	4233	1312	1413	1513	9262	9400	9538
Frequency (MHz)	826.4	836.6	846.6	1712.6	1740	1752.4	1852.4	1880.0	1907.6
AMR 12.2Kbps	22.68	22.74	22.82	22.75	22.71	22.79	23.03	22.91	22.82
RMC 12.2Kbps	22.72	22.81	22.87	22.83	22.72	22.84	23.12	22.98	22.88
HSDPA Subtest-1	21.56	21.69	21.61	22.13	22.05	22.29	21.73	21.59	21.60
HSDPA Subtest-2	21.13	21.26	21.20	21.66	21.62	21.88	21.27	21.15	21.18
HSDPA Subtest-3	20.70	20.86	20.74	21.29	21.14	21.46	20.94	20.67	20.83
HSDPA Subtest-4	20.30	20.41	20.32	20.87	20.66	21.12	20.45	20.24	20.53
HSUPA Subtest-1	20.83	20.65	20.66	21.89	21.71	21.76	20.54	20.75	20.69
HSUPA Subtest-2	19.91	19.70	19.75	21.03	20.77	20.83	19.60	19.81	19.71
HSUPA Subtest-3	19.86	19.26	19.30	20.99	20.35	20.36	19.60	19.32	19.31
HSUPA Subtest-4	19.51	18.95	18.97	20.68	20.02	19.99	19.18	18.86	18.97
HSUPA Subtest-5	18.03	17.55	17.53	19.27	18.56	18.50	17.69	17.38	17.51

According to 3GPP 25.101 sub-clause 6.2.2 , the maximum output power is allowed to be reduced by following the table.

Table 6.1A: UE maximum output power with HS-DPCCH and E-DCH

UE Transmit Channel Configuration	CM(db)	MPR(db)
For all combinations of ,DPDCH,DPCCH HS-DPDCH,E-DPDCH and E-DPCCH	0≤ CM≤3.5	MAX(CM-1,0)
Note: CM=1 for $\beta c/\beta d$=12/15, $\beta hs/\beta c$=24/15.For all other combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.		

The device supports MPR to solve linearity issues (ACLR or SEM) due to the higher peak-to average ratios (PAR) of the HSUPA signal. This prevents saturating the full range of the TX DAC inside of device and provides a reduced power output to the RF transceiver chip according to the Cubic Metric (a function of the combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH).

When E-DPDCH channels are present the beta gains on those channels are reduced firsts to try to get the power under the allowed limit. If the beta gains are lowered as far as possible, then a hard limiting is applied at the maximum allowed level.

The SW currently recalculates the cubic metric every time the beta gains on the E-DPDCH are reduced. The cubic metric will likely get lower each time this is done .However, there is no reported reduction of maximum output power in the HSUPA mode since the device also provides a compensation for the power back-off by increasing the gain of TX_AGC in the transceiver (PA) device.

The end effect is that the DUT output power is identical to the case where there is no MPR in the device.

WLAN

Mode	Channel Number	Frequency (MHz)	Average Power (dBm)
802.11b	1	2412	15.50
	6	2437	16.10
	11	2462	15.47
802.11g	1	2412	11.99
	6	2437	12.48
	11	2462	12.12
802.11n(HT 20)	1	2412	12.02
	6	2437	12.53
	11	2462	11.90
802.11n(HT 40)	3	2422	12.21
	6	2437	12.10
	9	2452	11.81

WLAN (5.2Gband)

Mode	Channel Number	Frequency (MHz)	Average Power (dBm)
802.11a	36	5180	12.83
	40	5200	12.13
	48	5240	12.66
802.11 n-HT20	36	5180	12.60
	40	5200	11.95
	48	5240	12.47
802.11 n-HT40	38	5190	10.51
	46	5230	9.97
802.11 ac-VHT20	36	5180	12.71
	40	5200	12.63
	48	5240	11.92
802.11 ac-VHT40	38	5190	10.55
	46	5230	10.44
802.11 ac-VHT80	42	5210	8.73

WLAN (5.3Gband)

Mode	Channel Number	Frequency (MHz)	Average Power (dBm)
802.11a	52	5260	12.56
	60	5300	12.39
	64	5320	13.04
802.11 n-HT20	52	5260	12.40
	60	5300	12.27
	64	5320	12.90
802.11 n-HT40	54	5270	10.49
	62	5310	10.85
802.11 ac-VHT20	52	5260	12.46
	60	5300	12.28
	64	5320	13.06
802.11 ac-VHT40	54	5270	10.47
	62	5310	10.33
802.11 ac-VHT80	58	5290	8.34

WLAN (5.8Gband)

Mode	Channel Number	Frequency (MHz)	Average Power (dBm)
802.11a	149	5745	10.47
	157	5785	9.92
	165	5825	9.80
802.11 n-HT20	149	5745	10.26
	157	5785	10.26
	165	5825	9.56
802.11 n-HT40	151	5755	10.12
	159	5795	9.89
802.11 ac-VHT20	149	5745	10.29
	157	5785	10.25
	165	5825	9.12
802.11 ac-VHT40	151	5755	10.07
	159	5795	9.39
802.11 ac-VHT80	155	5775	11.02

Bluetooth

Mode	Channel Number	Frequency (MHz)	Average Power (dBm)
GFSK(1Mbps)	0	2402	5.18
	39	2441	3.19
	78	2480	3.83
π/4-DQPSK(2Mbps)	0	2402	3.54
	39	2441	0.57
	78	2480	1.26
8DPSK(3Mbps)	0	2402	3.41
	39	2441	0.19
	78	2480	1.19

BLE

Mode	Channel Number	Frequency (MHz)	Average Power (dBm)
GFSK(1Mbps)	0	2402	2.49
	19	2440	3.45
	39	2480	3.50

LTE Conducted Power

General Note:

1. Anritsu CMW500 base station simulator was used to setup the connection with EUT; the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and at different configurations which are requested to be reported to FCC, for conducted power measurement and SAR testing.
2. Per KDB 941225 D05, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
4. Per KDB 941225 D05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
6. Per KDB 941225 D05, 16QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05, 16QAM SAR testing is not required.
7. Per KDB 941225 D05, Smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05, smaller bandwidth SAR testing is not required.

LTE Band 2

LTE Band 2 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
1.4	1	0	QPSK	22.53	22.68	22.37
1.4	1	2		22.24	22.45	22.11
1.4	1	5		22.01	22.24	21.84
1.4	3	0		21.81	21.95	21.54
1.4	3	1		21.61	21.68	21.29
1.4	3	2		21.36	21.48	21.09
1.4	6	0		21.15	21.21	20.79
1.4	1	0	16-QAM	22.31	22.42	22.15
1.4	1	2		22.05	22.19	21.90
1.4	1	5		21.81	21.98	21.65
1.4	3	0		21.54	21.73	21.39
1.4	3	1		21.24	21.48	21.10
1.4	3	2		21.02	21.27	20.87
1.4	6	0		20.77	21.05	20.63
3	1	0	QPSK	22.47	22.35	22.61
3	1	7		22.19	22.06	22.35
3	1	14		21.96	21.76	22.12
3	8	0		21.69	21.50	21.89
3	8	4		21.40	21.29	21.59
3	8	7		21.18	21.01	21.35
3	15	0		20.94	20.80	21.14
3	1	0	16-QAM	22.18	22.08	22.33
3	1	7		21.98	21.84	22.04
3	1	14		21.75	21.56	21.78
3	8	0		21.50	21.32	21.52
3	8	4		21.29	21.04	21.31
3	8	7		21.05	20.75	21.10
3	15	0		20.75	20.47	20.81

LTE BAND 2

LTE Band 2 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
5	1	0	QPSK	22.70	22.44	22.52
5	1	12		22.44	22.17	22.23
5	1	24		22.17	21.96	21.97
5	12	0		21.89	21.71	21.68
5	12	6		21.61	21.44	21.42
5	12	11		21.32	21.23	21.20
5	25	0		21.08	20.94	20.97
5	1	0	16-QAM	22.47	22.18	22.26
5	1	12		22.21	21.95	22.00
5	1	24		21.97	21.66	21.71
5	12	0		21.68	21.41	21.44
5	12	6		21.46	21.21	21.18
5	12	11		21.22	20.98	20.94
5	25	0		21.01	20.69	20.69
10	1	0	QPSK	22.48	22.65	22.35
10	1	24		22.24	22.36	22.05
10	1	49		22.02	22.08	21.83
10	25	0		21.79	21.84	21.62
10	25	12		21.56	21.56	21.34
10	25	24		21.35	21.34	21.05
10	50	0		21.13	21.13	20.78
10	1	0	16-QAM	22.25	22.43	22.11
10	1	24		21.98	22.23	21.83
10	1	49		21.78	21.94	21.54
10	25	0		21.54	21.66	21.26
10	25	12		21.26	21.41	20.98
10	25	24		21.02	21.17	20.70
10	50	0		20.76	20.93	20.41

LTE BAND 2

LTE Band 2 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
15	1	0	QPSK	22.65	22.39	22.61
15	1	37		22.39	22.12	22.32
15	1	74		22.18	21.85	22.06
15	36	0		21.88	21.59	21.84
15	36	18		21.59	21.34	21.61
15	36	39		21.31	21.13	21.35
15	75	0		21.03	20.88	21.14
15	1	0	16-QAM	22.40	22.15	22.35
15	1	38		22.18	21.89	22.12
15	1	75		21.95	21.61	21.92
15	36	0		21.66	21.38	21.65
15	36	18		21.40	21.11	21.40
15	36	39		21.16	20.83	21.17
15	75	0		20.95	20.55	20.91
20	1	0	QPSK	22.80	22.83	22.72
20	1	49		22.56	22.63	22.42
20	1	99		22.35	22.37	22.18
20	50	0		22.13	22.10	21.91
20	50	24		21.85	21.86	21.64
20	50	49		21.55	21.63	21.44
20	100	0		21.32	21.34	21.22
20	1	0	16-QAM	22.59	22.59	22.51
20	1	49		22.33	22.35	22.26
20	1	99		22.06	22.12	22.02
20	50	0		21.81	21.86	21.79
20	50	24		21.59	21.56	21.50
20	50	49		21.31	21.36	21.21
20	100	0		21.04	21.11	21.01

LTE BAND 4

LTE Band 4 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
1.4	1	0	QPSK	22.21	22.53	22.42
1.4	1	2		21.98	22.26	22.14
1.4	1	5		21.74	22.02	21.92
1.4	3	0		21.49	21.73	21.70
1.4	3	1		21.25	21.51	21.49
1.4	3	2		21.05	21.26	21.20
1.4	6	0		20.77	20.97	20.93
1.4	1	0	16-QAM	21.95	22.31	22.15
1.4	1	2		21.71	22.10	21.90
1.4	1	5		21.49	21.87	21.63
1.4	3	0		21.20	21.58	21.33
1.4	3	1		20.91	21.29	21.12
1.4	3	2		20.68	21.02	20.84
1.4	6	0		20.41	20.81	20.57
3	1	0	QPSK	22.34	22.49	22.51
3	1	7		22.06	22.22	22.27
3	1	14		21.80	21.97	22.00
3	8	0		21.53	21.70	21.76
3	8	4		21.26	21.47	21.49
3	8	7		21.00	21.21	21.22
3	15	0		20.77	20.91	20.95
3	1	0	16-QAM	22.11	22.20	22.25
3	1	7		21.88	21.96	22.02
3	1	14		21.59	21.74	21.73
3	8	0		21.37	21.45	21.50
3	8	4		21.11	21.17	21.22
3	8	7		20.89	20.89	21.00
3	15	0		20.66	20.67	20.74

LTE BAND 4

LTE Band 4 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
5	1	0	QPSK	22.24	22.32	22.31
5	1	12		21.97	22.07	22.03
5	1	24		21.73	21.85	21.79
5	12	0		21.48	21.57	21.53
5	12	6		21.23	21.30	21.28
5	12	11		20.95	21.07	21.08
5	25	0		20.71	20.80	20.81
5	1	0	16-QAM	22.04	22.09	22.04
5	1	12		21.81	21.79	21.80
5	1	24		21.52	21.55	21.54
5	12	0		21.31	21.29	21.26
5	12	6		21.07	21.02	21.00
5	12	11		20.77	20.78	20.72
5	25	0		20.55	20.57	20.46
10	1	0	QPSK	22.48	22.39	22.40
10	1	24		22.20	22.17	22.16
10	1	49		21.98	21.88	21.91
10	25	0		21.74	21.61	21.65
10	25	12		21.52	21.32	21.40
10	25	24		21.23	21.04	21.15
10	50	0		21.02	20.83	20.93
10	1	0	16-QAM	22.27	22.13	22.18
10	1	24		21.99	21.90	21.95
10	1	49		21.71	21.69	21.72
10	25	0		21.50	21.40	21.46
10	25	12		21.24	21.17	21.19
10	25	24		20.97	20.96	20.97
10	50	0		20.70	20.69	20.75

LTE BAND 4

LTE Band 4 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
15	1	0	QPSK	22.53	22.61	22.55
15	1	37		22.32	22.32	22.27
15	1	74		22.09	22.09	21.97
15	36	0		21.87	21.88	21.68
15	36	18		21.61	21.59	21.42
15	36	39		21.35	21.31	21.17
15	75	0		21.07	21.06	20.94
15	1	0	16-QAM	22.29	22.36	22.30
15	1	38		22.04	22.14	22.04
15	1	75		21.74	21.88	21.81
15	36	0		21.45	21.63	21.51
15	36	18		21.16	21.35	21.27
15	36	39		20.90	21.10	21.02
15	75	0		20.65	20.82	20.75
20	1	0	QPSK	22.72	22.79	22.80
20	1	49		22.49	22.56	22.59
20	1	99		22.20	22.35	22.32
20	50	0		21.90	22.08	22.08
20	50	24		21.64	21.84	21.78
20	50	49		21.42	21.63	21.49
20	100	0		21.18	21.35	21.28
20	1	0	16-QAM	22.51	22.57	22.51
20	1	49		22.25	22.32	22.28
20	1	99		22.01	22.04	22.07
20	50	0		21.71	21.82	21.86
20	50	24		21.42	21.52	21.60
20	50	49		21.17	21.30	21.33
20	100	0		20.90	21.01	21.11

LTE BAND 5

LTE Band 5 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
1.4	1	0	QPSK	22.42	22.38	22.45
1.4	1	2		22.19	22.15	22.25
1.4	1	5		21.98	21.89	22.03
1.4	3	0		21.72	21.62	21.80
1.4	3	1		21.46	21.37	21.51
1.4	3	2		21.21	21.15	21.24
1.4	6	0		20.97	20.86	20.96
1.4	1	0	16-QAM	22.20	22.17	22.24
1.4	1	2		21.91	21.97	21.98
1.4	1	5		21.65	21.70	21.74
1.4	3	0		21.44	21.43	21.52
1.4	3	1		21.17	21.16	21.29
1.4	3	2		20.91	20.95	21.04
1.4	6	0		20.65	20.67	20.78
3	1	0	QPSK	22.30	22.34	22.25
3	1	7		22.07	22.08	22.02
3	1	14		21.82	21.80	21.76
3	8	0		21.54	21.54	21.47
3	8	4		21.25	21.26	21.18
3	8	7		20.97	21.03	20.97
3	15	0		20.68	20.81	20.73
3	1	0	16-QAM	22.02	22.11	22.01
3	1	7		21.77	21.82	21.77
3	1	14		21.51	21.58	21.48
3	8	0		21.23	21.33	21.28
3	8	4		20.96	21.12	21.06
3	8	7		20.66	20.91	20.79
3	15	0		20.41	20.69	20.57

LTE BAND 5

LTE Band 5 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
5	1	0	QPSK	22.22	22.41	22.34
5	1	12		21.98	22.17	22.06
5	1	24		21.68	21.89	21.84
5	12	0		21.47	21.64	21.56
5	12	6		21.21	21.43	21.31
5	12	11		20.96	21.13	21.06
5	25	0		20.68	20.83	20.86
5	1	0	16-QAM	21.93	22.15	22.08
5	1	12		21.66	21.87	21.84
5	1	24		21.46	21.63	21.63
5	12	0		21.17	21.35	21.36
5	12	6		20.94	21.07	21.06
5	12	11		20.67	20.87	20.77
5	25	0		20.42	20.66	20.56
10	1	0	QPSK	22.57	22.60	22.57
10	1	24		22.35	22.31	22.33
10	1	49		22.08	22.09	22.11
10	25	0		21.84	21.81	21.82
10	25	12		21.63	21.57	21.60
10	25	24		21.38	21.27	21.33
10	50	0		21.10	21.07	21.05
10	1	0	16-QAM	22.31	22.38	22.35
10	1	24		22.10	22.13	22.11
10	1	49		21.89	21.86	21.84
10	25	0		21.69	21.65	21.59
10	25	12		21.42	21.44	21.31
10	25	24		21.16	21.19	21.05
10	50	0		20.89	20.98	20.75

LTE BAND 7

LTE Band 7 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
5	1	0	QPSK	22.21	22.12	22.30
5	1	12		21.97	21.88	22.05
5	1	24		21.76	21.67	21.76
5	12	0		21.51	21.46	21.46
5	12	6		21.23	21.21	21.20
5	12	11		21.02	20.98	20.90
5	25	0		20.81	20.72	20.61
5	1	0	16-QAM	21.91	21.83	22.05
5	1	12		21.71	21.54	21.82
5	1	24		21.42	21.28	21.60
5	12	0		21.21	21.06	21.38
5	12	6		20.96	20.83	21.09
5	12	11		20.66	20.61	20.84
5	25	0		20.38	20.40	20.62
10	1	0	QPSK	22.43	22.22	22.37
10	1	24		22.23	21.92	22.15
10	1	49		22.00	21.64	21.89
10	25	0		21.79	21.42	21.64
10	25	12		21.55	21.18	21.42
10	25	24		21.31	20.90	21.14
10	50	0		21.03	20.66	20.91
10	1	0	16-QAM	22.23	21.97	22.11
10	1	24		21.97	21.72	21.82
10	1	49		21.69	21.49	21.56
10	25	0		21.49	21.22	21.34
10	25	12		21.25	20.97	21.06
10	25	24		21.04	20.73	20.81
10	50	0		20.76	20.45	20.55

LTE BAND 7

LTE Band 7 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
15	1	0	QPSK	22.50	22.43	22.39
15	1	37		22.26	22.17	22.14
15	1	74		21.98	21.87	21.86
15	36	0		21.68	21.63	21.59
15	36	18		21.39	21.41	21.36
15	36	39		21.17	21.12	21.14
15	75	0		20.92	20.88	20.90
15	1	0	16-QAM	22.25	22.13	22.14
15	1	38		21.97	21.91	21.85
15	1	75		21.67	21.67	21.56
15	36	0		21.39	21.41	21.32
15	36	18		21.18	21.17	21.09
15	36	39		20.90	20.95	20.83
15	75	0		20.69	20.67	20.56
20	1	0	QPSK	22.61	22.67	22.51
20	1	49		22.39	22.37	22.24
20	1	99		22.18	22.09	21.98
20	50	0		21.90	21.84	21.70
20	50	24		21.61	21.61	21.41
20	50	49		21.34	21.32	21.11
20	100	0		21.09	21.07	20.89
20	1	0	16-QAM	22.39	22.41	22.30
20	1	49		22.14	22.21	22.09
20	1	99		21.85	21.94	21.81
20	50	0		21.59	21.70	21.52
20	50	24		21.29	21.46	21.28
20	50	49		21.09	21.24	21.03
20	100	0		20.88	20.95	20.76

10.2 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 **Bluetooth Head** (rounded to the nearest mW) and the antenna to user separation distance,
Bluetooth Head SAR was not required; [(3.981/5)* √2.480 = **1.25** < 3.0.

Based on the maximum conducted power of **Bluetooth Body** (rounded to the nearest mW) and the antenna to user separation distance,
Bluetooth Body SAR was not required; [(3.981/10)* √2.480] = **0.63** < 3.0.

Based on the maximum conducted power of **2.4 GHz WLAN Head** (rounded to the nearest mW) and the antenna to user separation distance,
2.4 GHz WLAN SAR was required; [(50.119/5)* √2.462] = **15.73** > 3.0.

Based on the maximum conducted power of **2.4 GHz WLAN Body** (rounded to the nearest mW) and the antenna to user separation distance,
2.4 GHz WLAN SAR was required; [(50.119/10)* √2.462] = **7.86** > 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; [(19.953/5)* √5.200] = **9.10** > 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; [(19.953/10)* √5.200] = **4.55** > 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; [(25.119/5)* √5.300] = **11.57** > 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; [(25.119/10)* √5.300] = **5.78** > 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; [(15.849/5)* √5.800] = **7.63** > 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 required; [(15.849/10)* √5.800] = **3.82** > 3.0.

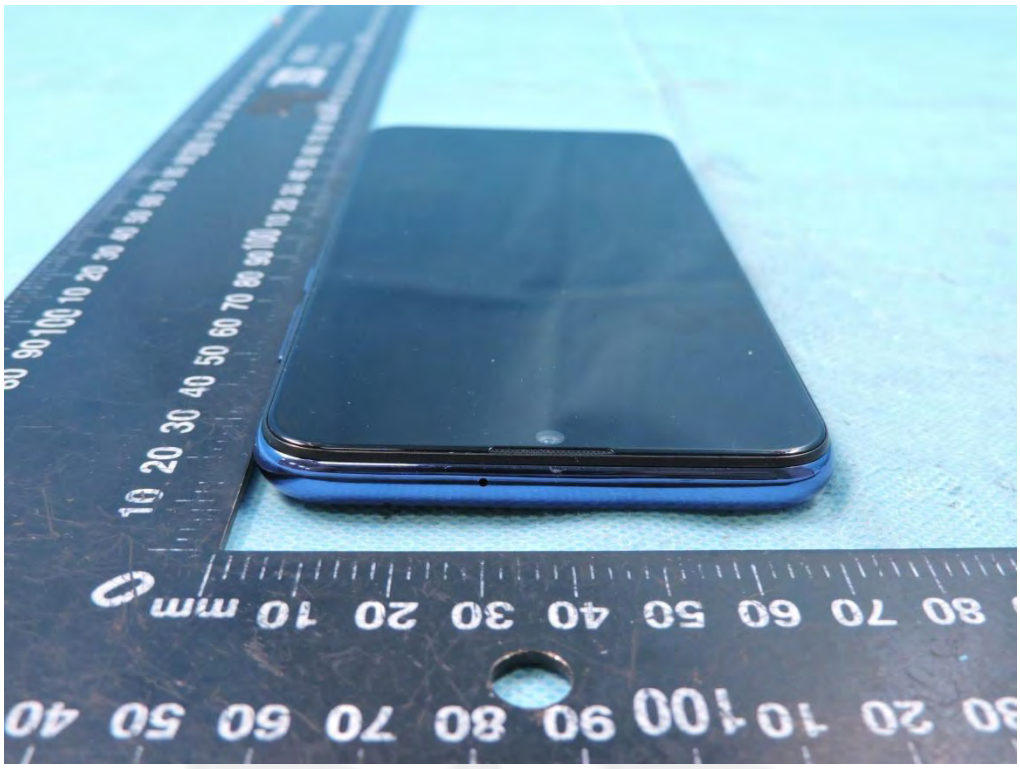
11. EUT And Test Setup Photo

11.1 EUT Photo

Front side

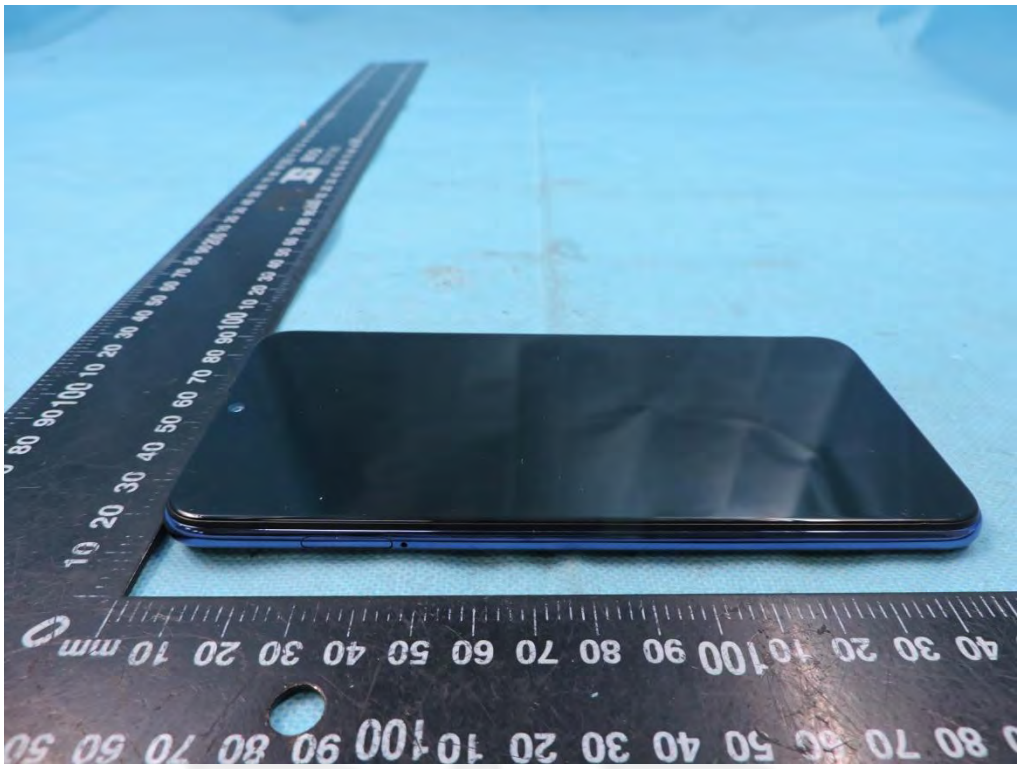
Back side

Top Edge



Bottom Edge

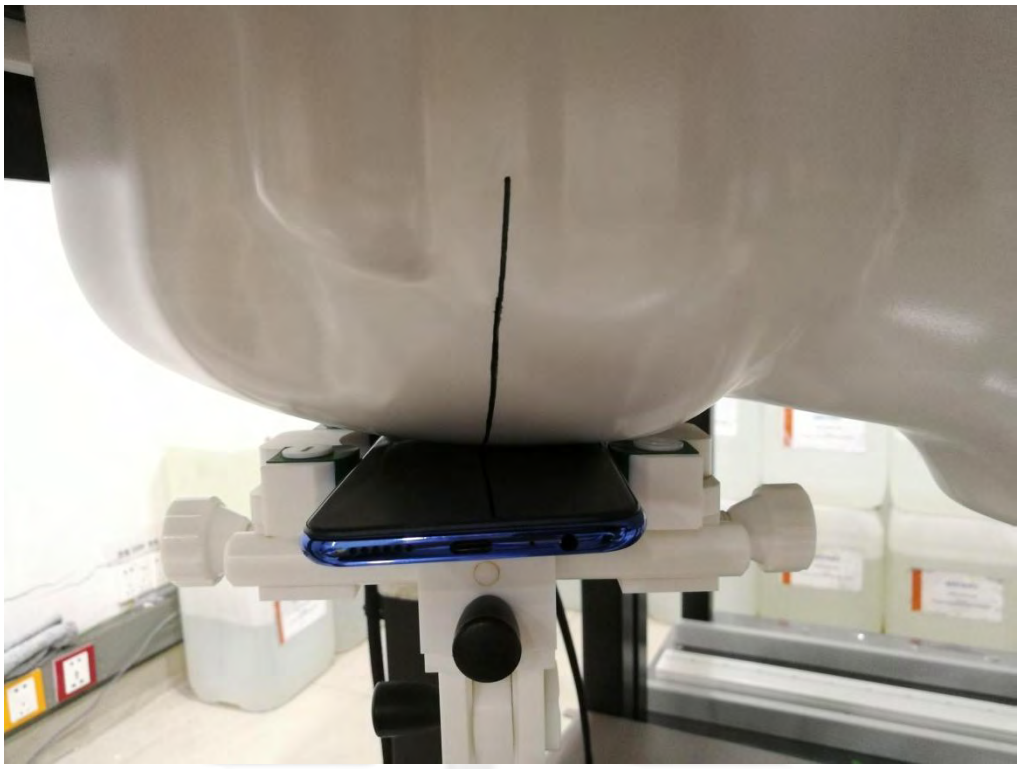
Left Edge



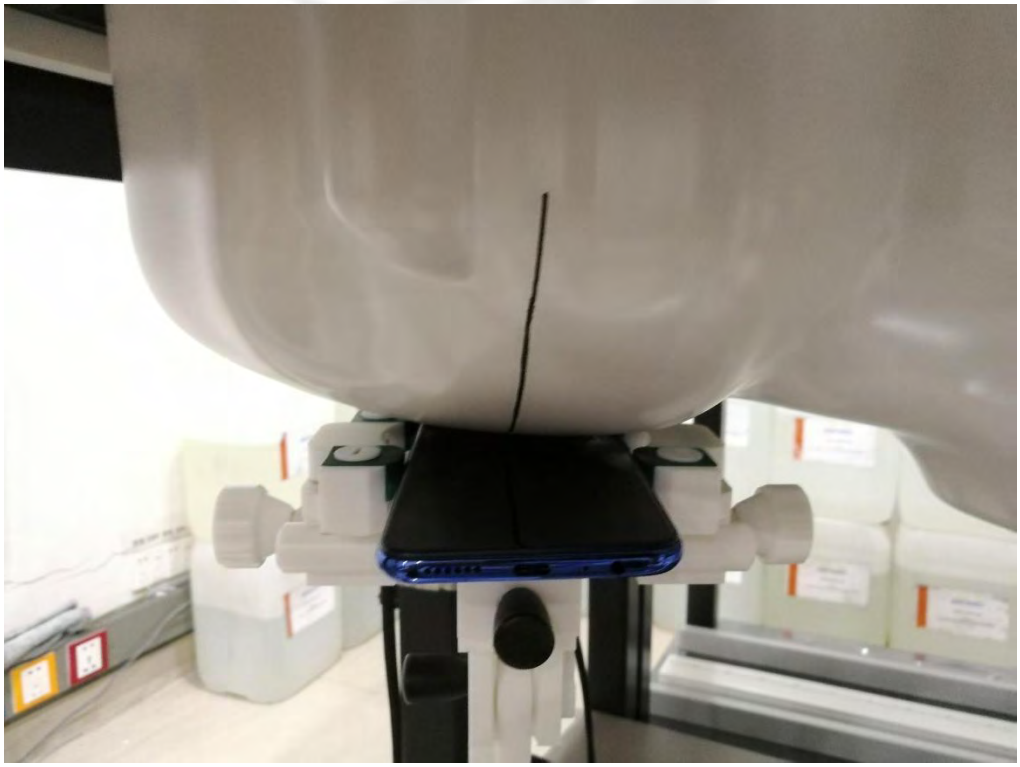
Right Edge

11.2 Setup Photo

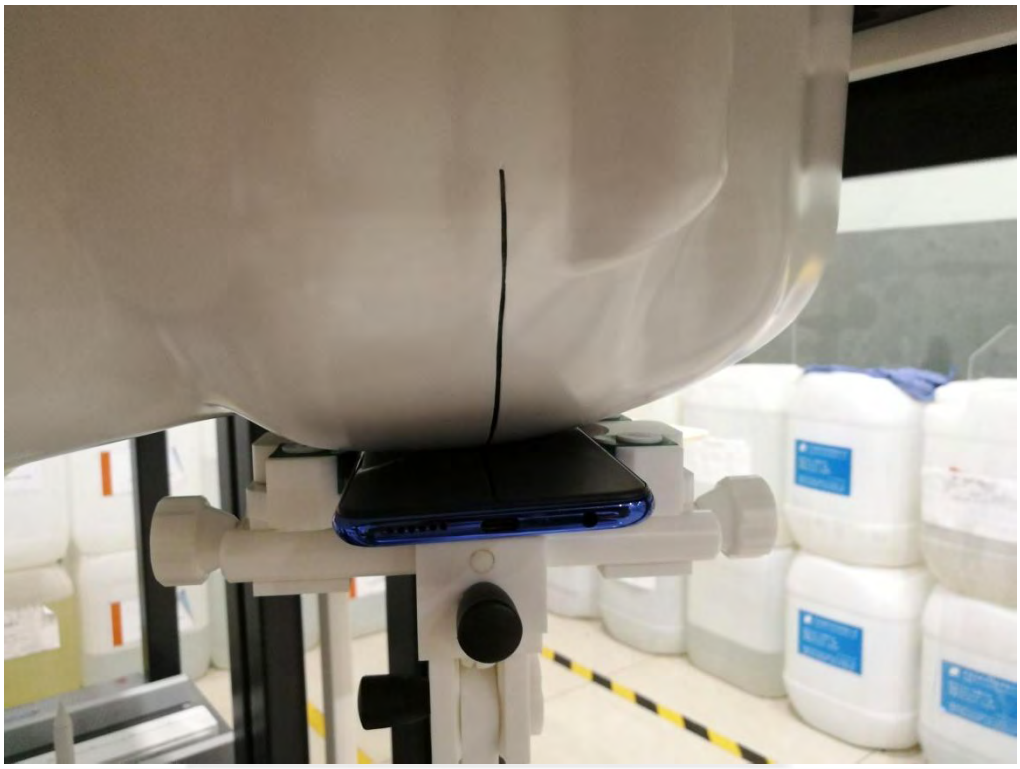
Right Touch



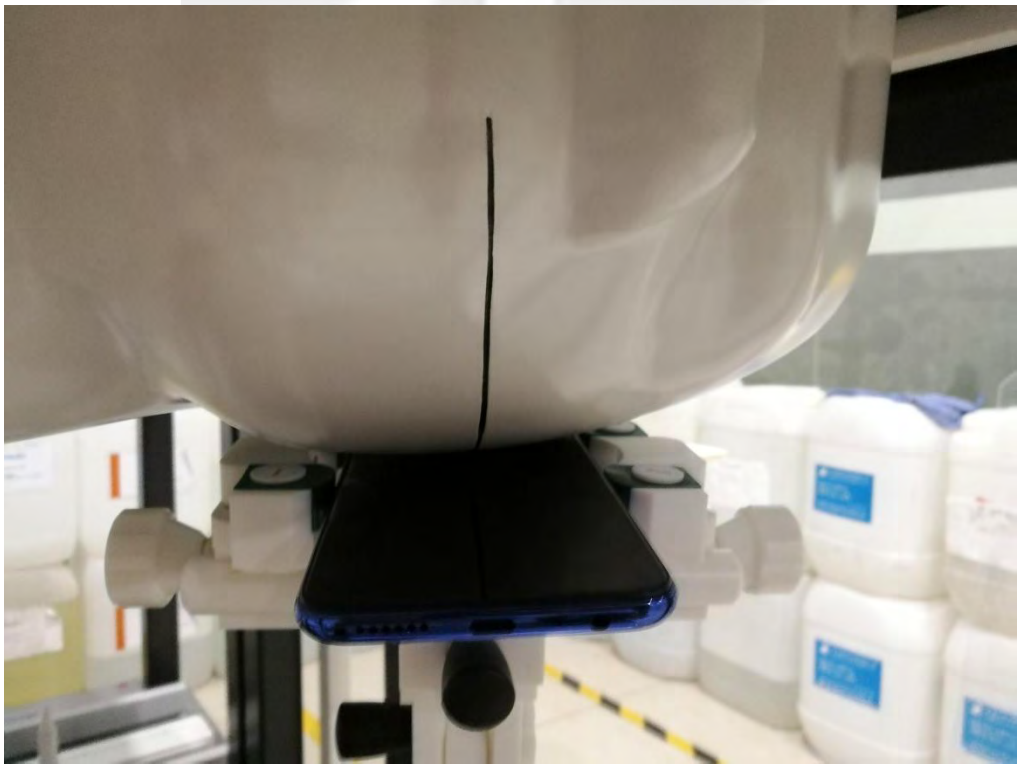
Right Tilt



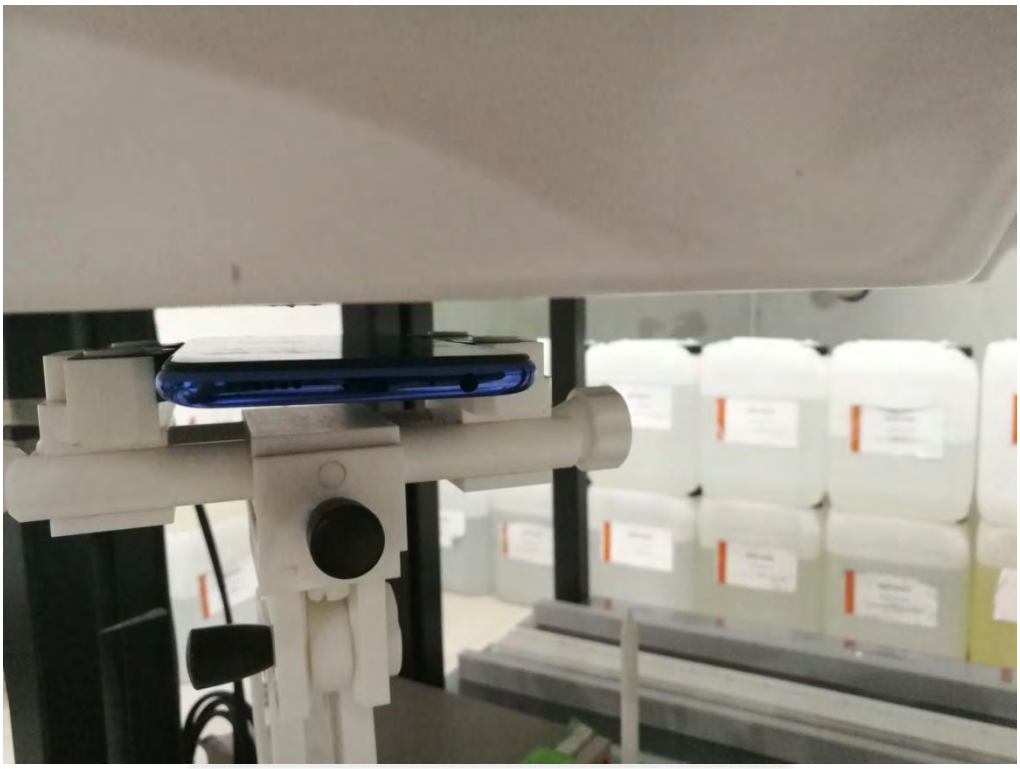
Left Touch



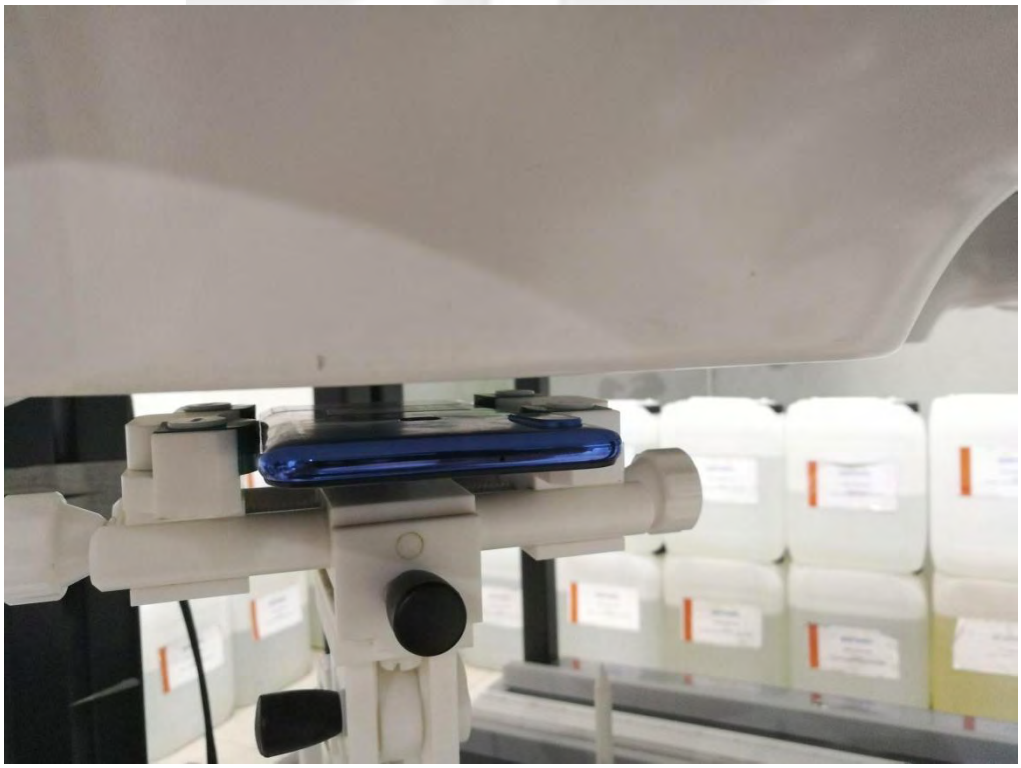
Left Tilt



Body Front side(separation distance is 10mm)



Body Back side(separation distance is 10mm)



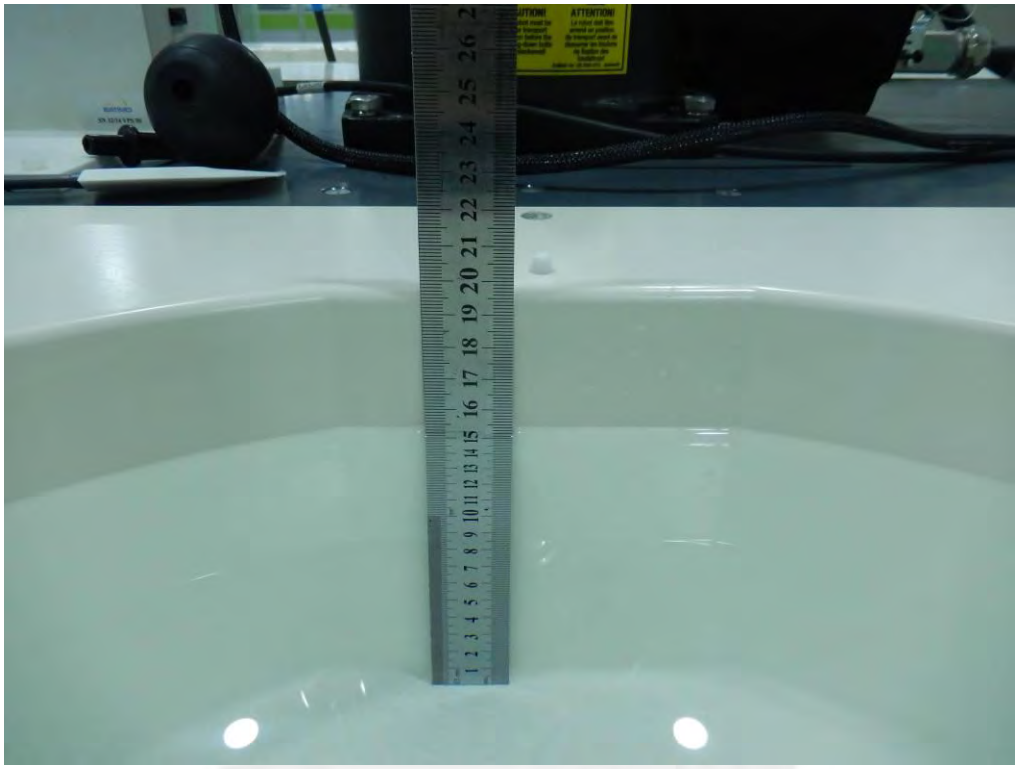
Left Edge(separation distance is 10mm)

Right Edge(separation distance is 10mm)

Top Edge(separation distance is 10mm)

Bottom 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)	Scaled SAR (W/Kg)	Meas. No.
GSM 850	GPRS Data-4 Slot	Right Cheek	190	0.252	2.67	31	30.78	**0.265**	1
		Right Tilt	190	0.193	0.98	31	30.78	0.203	/
		Left Cheek	190	0.216	-0.62	31	30.78	0.227	/
		Left Tilt	190	0.157	3.47	31	30.78	0.165	/
GSM1900	GPRS Data-4 Slot	Right Cheek	661	0.087	2.24	28	27.60	**0.095**	3
		Right Tilt	661	0.050	3.33	28	27.60	0.055	/
		Left Cheek	661	0.073	1.91	28	27.60	0.080	/
		Left Tilt	661	0.044	0.49	28	27.60	0.048	/
WCDMA II	RMC	Right Cheek	9262	0.137	0.93	24	23.12	**0.168**	5
		Right Tilt	9262	0.069	-1.05	24	23.12	0.084	/
		Left Cheek	9262	0.095	2.96	24	23.12	0.116	/
		Left Tilt	9262	0.047	3.19	24	23.12	0.058	/
WCDMA IV	RMC	Right Cheek	1513	0.091	2.58	23	22.84	**0.094**	7
		Right Tilt	1513	0.053	0.55	23	22.84	0.055	/
		Left Cheek	1513	0.076	-3.96	23	22.84	0.079	/
		Left Tilt	1513	0.039	-0.70	23	22.84	0.040	/
WCDMA V	RMC	Right Cheek	4233	0.196	-0.23	23	22.87	**0.202**	9
		Right Tilt	4233	0.113	-2.98	23	22.87	0.116	/
		Left Cheek	4233	0.145	-0.13	23	22.87	0.149	/
		Left Tilt	4233	0.098	0.61	23	22.87	0.101	/

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 2.4 G	802.11b	Right Cheek	6	0.593	1.29	17	16.10	100	**0.730**	11
		Right Tilt	6	0.512	-0.58	17	16.10	100	0.630	/
		Left Cheek	6	0.536	0.82	17	16.10	100	0.659	/
		Left Tilt	6	0.484	-2.15	17	16.10	100	0.595	/

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 KDB 248227- When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg. (The highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power was **0.317** W/Kg for Head)

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

Band	BW (MHz)	Mod.	RB Size	RB offset	Test Position	Ch.	Result 1g (W/Kg)	Power Drift(%)	Max. Turn-up Power(dBm)	Meas. Output Power(dBm)	Scaled SAR (W/Kg)	Meas. No.
LTE Band 2	20M	QPSK	1	0	Right Cheek	18900	0.150	0.72	23	22.83	**0.156**	13
			50	0	Right Cheek	18600	0.108	2.87	23	22.13	0.132	/
			1	0	Right Tilt	18900	0.073	2.16	23	22.83	0.076	/
			50	0	Right Tilt	18600	0.045	-1.68	23	22.13	0.055	/
			1	0	Left Cheek	18900	0.117	2.39	23	22.83	0.122	/
			50	0	Left Cheek	18600	0.072	-2.44	23	22.13	0.088	/
			1	0	Left Tilt	18900	0.054	-0.36	23	22.83	0.056	/
			50	0	Left Tilt	18600	0.036	-3.58	23	22.13	0.044	/
LTE Band 4	20M	QPSK	1	0	Right Cheek	20300	0.081	1.93	23	22.80	**0.085**	15
			50	0	Right Cheek	20175	0.055	-0.85	23	22.08	0.068	/
			1	0	Right Tilt	20300	0.047	0.36	23	22.80	0.049	/
			50	0	Right Tilt	20175	0.028	-2.35	23	22.08	0.035	/
			1	0	Left Cheek	20300	0.069	-0.48	23	22.80	0.072	/
			50	0	Left Cheek	20175	0.040	-0.41	23	22.08	0.049	/
			1	0	Left Tilt	20300	0.035	-1.73	23	22.80	0.037	/
			50	0	Left Tilt	20175	0.017	1.14	23	22.08	0.021	/
LTE Band 5	10M	QPSK	1	0	Right Cheek	20525	0.224	-2.29	23	22.60	**0.246**	17
			25	0	Right Cheek	20450	0.157	-3.57	22	21.84	0.163	/
			1	0	Right Tilt	20525	0.133	-0.85	23	22.60	0.146	/
			25	0	Right Tilt	20450	0.086	0.80	22	21.84	0.089	/
			1	0	Left Cheek	20525	0.194	0.56	23	22.60	0.213	/
			25	0	Left Cheek	20450	0.121	-1.63	22	21.84	0.126	/
			1	0	Left Tilt	20525	0.096	-0.76	23	22.60	0.105	/
			25	0	Left Tilt	20450	0.065	-1.75	22	21.84	0.067	/
LTE Band 7	20M	QPSK	1	0	Right Cheek	21100	0.291	1.61	23	22.67	**0.314**	19
			50	0	Right Cheek	20850	0.194	3.57	22	21.90	0.199	/
			1	0	Right Tilt	21100	0.171	0.10	23	22.67	0.184	/
			50	0	Right Tilt	20850	0.108	-2.80	22	21.90	0.111	/
			1	0	Left Cheek	21100	0.256	-0.41	23	22.67	0.276	/
			50	0	Left Cheek	20850	0.149	-2.03	22	21.90	0.152	/
			1	0	Left Tilt	21100	0.137	3.41	23	22.67	0.148	/
			50	0	Left Tilt	20850	0.075	3.85	22	21.90	0.077	/

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	36	0.347	0.47	13	12.83	100	**0.361**	21
		Right Tilt	36	0.311	1.38	13	12.83	100	0.323	/
		Left Cheek	36	0.308	-1.91	13	12.83	100	0.320	/
		Left Tilt	36	0.285	-1.75	13	12.83	100	0.296	/
WLAN 5.3 G	802.11ac (VHT20)	Right Cheek	64	0.499	1.36	14	13.06	100	**0.620**	23
		Right Tilt	64	0.457	-1.96	14	13.06	100	0.567	/
		Left Cheek	64	0.434	-2.67	14	13.06	100	0.539	/
		Left Tilt	64	0.410	0.66	14	13.06	100	0.509	/
WLAN 5.8 G	802.11ac (VHT80)	Right Cheek	155	0.146	-2.67	12	11.02	100	**0.183**	25
		Right Tilt	155	0.129	0.45	12	11.02	100	0.162	/
		Left Cheek	155	0.124	-1.93	12	11.02	100	0.155	/
		Left Tilt	155	0.106	3.81	12	11.02	100	0.133	/

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)	Scaled SAR (W/Kg)	Meas. No.
GSM 850	GPRS Data-4 Slot	Front side	190	0.215	1.57	31	30.78	0.226	/
		Back side	190	0.229	3.12	31	30.78	**0.241**	2
		Left Edge	190	0.083	-1.53	31	30.78	0.087	/
		Right Edge	190	0.050	-2.72	31	30.78	0.053	/
		Bottom Edge	190	0.097	2.20	31	30.78	0.102	/
GSM1900	GPRS Data-4 Slot	Front side	661	0.118	-2.15	28	27.60	0.129	/
		Back side	661	0.132	-2.66	28	27.60	**0.145**	4
		Left Edge	661	0.048	1.86	28	27.60	0.053	/
		Right Edge	661	0.053	0.42	28	27.60	0.058	/
		Bottom Edge	661	0.128	1.96	28	27.60	0.140	/
WCDMA II	RMC	Front side	9262	0.175	-2.26	24	23.12	0.214	/
		Back side	9262	0.217	-0.08	24	23.12	**0.266**	6
		Left Edge	9262	0.082	-0.65	24	23.12	0.100	/
		Right Edge	9262	0.055	-3.72	24	23.12	0.067	/
		Bottom Edge	9262	0.186	2.60	24	23.12	0.228	/
WCDMA IV	RMC	Front side	1513	0.089	0.83	23	22.84	0.092	/
		Back side	1513	0.122	-2.44	23	22.84	**0.127**	8
		Left Edge	1513	0.025	-0.32	23	22.84	0.026	/
		Right Edge	1513	0.038	3.47	23	22.84	0.039	/
		Bottom Edge	1513	0.107	0.16	23	22.84	0.111	/
WCDMA V	RMC	Front side	4233	0.114	2.08	23	22.87	0.117	/
		Back side	4233	0.171	3.83	23	22.87	**0.176**	10
		Left Edge	4233	0.046	0.66	23	22.87	0.047	/
		Right Edge	4233	0.023	-0.43	23	22.87	0.024	/
		Bottom Edge	4233	0.070	-3.35	23	22.87	0.072	/

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	802.11b	Front side	6	0.126	-0.70	17	16.10	100	0.155	/
		Back side	6	0.173	-2.38	17	16.10	100	**0.213**	12
		Left Edge	6	0.088	0.69	17	16.10	100	0.108	/
		Top Edge	6	0.065	-2.47	17	16.10	100	0.080	/

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. Per KDB 248227- When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤1.2 W/kg. (The highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power was **0.093** W/Kg for Body)
4. 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.

Band	BW (MHz)	Mod.	RB Size	RB offset	Test Position	Ch.	Result 1g (W/Kg)	Power Drift(%)	Max. Turn-up Power(dBm)	Meas. Output Power(dBm)	Scaled SAR (W/Kg)	Meas. No.
LTE Band 2	20M	QPSK	1	0	Front side	18900	0.161	0.12	23	22.83	0.167	/
			50	0	Front side	18600	0.115	-3.21	23	22.13	0.141	/
			1	0	Back Side	18900	0.222	0.63	23	22.83	**0.231**	14
			50	0	Back Side	18600	0.176	3.11	23	22.13	0.215	/
			1	0	Left Edge	18900	0.043	1.81	23	22.83	0.045	/
			50	0	Left Edge	18600	0.017	-3.48	23	22.13	0.021	/
			1	0	Right Edge	18900	0.156	-2.98	23	22.83	0.162	/
			50	0	Right Edge	18600	0.114	3.02	23	22.13	0.139	/
			1	0	Bottom Edge	18900	0.211	0.89	23	22.83	0.219	/
			50	0	Bottom Edge	18600	0.165	-1.97	23	22.13	0.202	/
LTE Band 4	20M	QPSK	1	0	Front side	20300	0.087	-1.36	23	22.80	0.091	/
			50	0	Front side	20175	0.054	1.52	23	22.08	0.067	/
			1	0	Back Side	20300	0.115	-2.43	23	22.80	0.120	/
			50	0	Back Side	20175	0.073	3.55	23	22.08	0.090	/
			1	0	Left Edge	20300	0.025	2.92	23	22.80	0.026	/
			50	0	Left Edge	20175	0.011	3.63	23	22.08	0.014	/
			1	0	Right Edge	20300	0.043	3.55	23	22.80	0.045	/
			50	0	Right Edge	20175	0.029	-1.32	23	22.08	0.036	/
			1	0	Bottom Edge	20300	0.264	-3.53	23	22.80	**0.276**	16
			50	0	Bottom Edge	20175	0.212	3.31	23	22.08	0.262	/
LTE Band 5	10M	QPSK	1	0	Front side	20525	0.166	-1.72	23	22.60	0.182	/
			25	0	Front side	20450	0.122	3.50	22	21.84	0.127	/
			1	0	Back Side	20525	0.168	3.82	23	22.60	**0.184**	18
			25	0	Back Side	20450	0.115	3.00	22	21.84	0.119	/
			1	0	Left Edge	20525	0.030	-3.37	23	22.60	0.033	/
			25	0	Left Edge	20450	0.014	-1.41	22	21.84	0.015	/
			1	0	Right Edge	20525	0.017	-2.96	23	22.60	0.019	
			25	0	Right Edge	20450	0.009	-0.30	22	21.84	0.009	
			1	0	Bottom Edge	20525	0.083	-0.85	23	22.60	0.091	/
			25	0	Bottom Edge	20450	0.050	-0.72	22	21.84	0.052	/
LTE Band 7	20M	QPSK	1	0	Front side	21100	0.274	3.80	23	22.67	0.296	/
			50	0	Front side	20850	0.228	-0.93	22	21.90	0.233	/
			1	0	Back Side	21100	0.333	1.04	23	22.67	**0.359**	20
			50	0	Back Side	20850	0.286	3.69	22	21.90	0.293	/
			1	0	Left Edge	21100	0.054	3.41	23	22.67	0.058	/
			50	0	Left Edge	20850	0.039	0.79	22	21.90	0.040	/
			1	0	Right Edge	21100	0.091	1.01	23	22.67	0.098	/
			50	0	Right Edge	20850	0.065	1.68	22	21.90	0.067	/
			1	0	Bottom Edge	21100	0.303	0.90	23	22.67	0.327	/
			50	0	Bottom Edge	20850	0.210	1.38	22	21.90	0.215	/

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	36	0.273	1.52	13	12.83	100	0.284	/
		Back side	36	0.348	-0.32	13	12.83	100	**0.362**	22
		Left Edge	36	0.251	-1.70	13	12.83	100	0.261	/
		Top Edge	36	0.223	-3.08	13	12.83	100	0.232	/
WLAN 5.3 G	802.11ac (VHT20)	Front side	64	0.205	-3.58	14	13.06	100	0.255	/
		Back side	64	0.299	3.07	14	13.06	100	**0.371**	24
		Left Edge	64	0.173	-0.03	14	13.06	100	0.215	/
		Top Edge	64	0.116	0.15	14	13.06	100	0.144	/
WLAN 5.8 G	802.11ac (VHT80)	Front side	155	0.085	0.31	12	11.02	100	0.107	/
		Back side	155	0.162	-1.04	12	11.02	100	**0.203**	26
		Left Edge	155	0.077	1.32	12	11.02	100	0.096	/
		Top Edge	155	0.081	-0.17	12	11.02	100	0.102	/

Simultaneous Multi-band Transmission Evaluation:

Application Simultaneous Transmission information:

Position	Simultaneous state
Head	1. GSM + WLAN
	2. GSM + Bluetooth
	3. WCDMA + WLAN
	4. WCDMA + Bluetooth
	5. LTE + WLAN
	6. LTE + Bluetooth
Body	1. GSM + WLAN
	2. GSM + Bluetooth
	3. WCDMA + WLAN
	4. WCDMA + Bluetooth
	5. LTE + WLAN
	6. LTE + Bluetooth

NOTE:

1. Bluetooth and WLAN can't simultaneous transmission at the same time.
2. For simultaneous transmission at head and body exposure position, 2 transmitters simultaneous transmission was the worst state.
3. Based upon KDB 447498 D01, BT SAR is excluded as below table.
4. If the test separation distance is <5mm, 5mm is used for excluded SAR calculation.
5. For minimum test separation distance≦50mm,Bluetooth standalone SAR is excluded according to [(max. power of channel, including tune-up tolerance, mW)/ (min. test separation distance, mm) ·[√f (GHz) /x] ≦3.0 for 1-g SAR and ≦7.5 for 10-g extremity SAR
6. The reported SAR summation is calculated based on the same configuration and test position.
7. KDB 447498 / 4.3.2 (2) when standalone SAR test exclusion applies to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to following to determine simultaneous transmission SAR test exclusion:
   a) (max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)]·[√f (GHz) /x] W/kg for test separation distances≤ 50 mm;
   Where x = 7.5 for 1-g SAR, and x = 18.75 for 10-g SAR.
   b) 0.4W/Kg for 1-g SAR and 1.0W/Kg for 10-g SAR, when the separation distance is >50mm.

Estimated SAR		Maximum Power		Antenna to user(mm)	Frequency(GHz)	Stand alone SAR(1g) [W/kg]
		dBm	mW			
BT	Head	6	3.981	5	2.480	0.167
	Body			10	2.480	0.084

Simultaneous Mode	Position	Mode	Max. 1-g SAR (W/kg)	1-g Sum SAR (W/kg)
GSM + 2.4GHz WLAN	Head	GSM	0.265	0.995
		2.4GHz WLAN	0.730	
	Body	GSM	0.241	0.454
		2.4GHz WLAN	0.213	
WCDMA RMC+ 2.4GHz WLAN	Head	WCDMA	0.202	0.932
		2.4GHz WLAN	0.730	
	Body	WCDMA	0.266	0.479
		2.4GHz WLAN	0.213	
LTE + 2.4GHz WLAN	Head	LTE	0.314	1.044
		2.4GHz WLAN	0.730	
	Body	LTE	0.359	0.572
		2.4GHz WLAN	0.213	
GSM + Bluetooth	Head	GSM	0.265	0.432
		Bluetooth	0.167	
	Body	GSM	0.241	0.325
		Bluetooth	0.084	
WCDMA + Bluetooth	Head	WCDMA	0.202	0.369
		Bluetooth	0.167	
	Body	WCDMA	0.266	0.350
		Bluetooth	0.084	
LTE + Bluetooth	Head	LTE	0.314	0.481
		Bluetooth	0.167	
	Body	LTE	0.359	0.443
		Bluetooth	0.084	
GSM + 5.2GHz WLAN	Head	GSM	0.265	0.626
		5.2GHz WLAN	0.361	
	Body	GSM	0.241	0.603
		5.2GHz WLAN	0.362	
WCDMA RMC+ 5.2GHz WLAN	Head	WCDMA	0.202	0.563
		5.2GHz WLAN	0.361	
	Body	WCDMA	0.266	0.628
		5.2GHz WLAN	0.362	
LTE + 5.2GHz WLAN	Head	LTE	0.314	0.675
		5.2GHz WLAN	0.361	
	Body	LTE	0.359	0.721
		5.2GHz WLAN	0.362	
GSM + 5.3GHz WLAN	Head	GSM	0.265	0.885
		5.3GHz WLAN	0.620	
	Body	GSM	0.241	0.612
		5.3GHz WLAN	0.371	
WCDMA RMC+ 5.3GHz WLAN	Head	WCDMA	0.202	0.822
		5.3GHz WLAN	0.620	
	Body	WCDMA	0.266	0.637
		5.3GHz WLAN	0.371	
LTE + 5.3GHz WLAN	Head	LTE	0.314	0.934
		5.3GHz WLAN	0.620	
	Body	LTE	0.359	0.730
		5.3GHz WLAN	0.371	

Simultaneous Mode	Position	Mode	Max. 1-g SAR (W/kg)	1-g Sum SAR (W/kg)
GSM + 5.8GHz WLAN	Head	GSM	0.265	0.448
		5.8GHz WLAN	0.183	
	Body	GSM	0.241	0.444
		5.8GHz WLAN	0.203	
WCDMA RMC+ 5.8GHz WLAN	Head	WCDMA	0.202	0.385
		5.8GHz WLAN	0.183	
	Body	WCDMA	0.266	0.469
		5.8GHz WLAN	0.203	
LTE + 5.8GHz WLAN	Head	LTE	0.314	0.497
		5.8GHz WLAN	0.183	
	Body	LTE	0.359	0.562
		5.8GHz WLAN	0.203	

Simultaneous transmission SAR test exclusion is determined for each operating configuration and exposure condition according to the reported standalone SAR of each applicable simultaneous transmitting antenna.

When the sum of SAR 1g of all simultaneously transmitting antennas in an operating mode and exposure condition combination is within the SAR limit (SAR-1g 1.6 W/kg), the simultaneous transmission SAR is not required. When the sum of SAR 1g is greater than the SAR limit (SAR-1g 1.6 W/kg), SAR test exclusion is determined by the SPLSR.

13. Equipment List

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Calibrated Until
750MHz Dipole	MVG	SID750	SN 30/14 DIP0G750-331	2017.08.15	2020.08.14
835MHz Dipole	MVG	SID835	SN 30/14 DIP0G835-332	2017.08.15	2020.08.14
1800MHz Dipole	MVG	SID1800	SN 30/14 DIP1G800-329	2017.08.15	2020.08.14
1900MHz Dipole	MVG	SID1900	SN 30/14 DIP1G900-333	2017.08.15	2020.08.14
2450MHzDipole	MVG	SID2450	SN 30/14 DIP2G450-335	2017.08.15	2020.08.14
2600MHz Dipole	MVG	SID2600	SN 30/14 DIP2G600-336	2017.08.15	2020.08.14
Waveguide	MVG	SWG5500	SN 13/14 WGA32	2017.08.15	2020.08.14
E-Field Probe	MVG	SSE2	SN 41/18 EPGO334	2019.06.04	2020.06.03
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	2019.10.11	2020.10.10
Multi Meter	Keithley	Multi Meter 2000	4050073	2019.10.11	2020.10.10
Signal Generator	Agilent	N5182A	MY50140530	2019.10.09	2020.10.08
Wireless Communication Test Set	Agilent	8960-E5515C	MY48360751	2019.10.09	2020.10.08
Wireless Communication Test Set	R&S	CMW500	117239	2019.10.09	2020.10.08
Power Amplifier	DESAY	ZHL-42W	9638	2019.10.09	2020.10.08
Power Meter	R&S	NRP	100510	2019.10.16	2020.10.15
Power Meter	Agilent	E4418B	GB43312526	2019.10.16	2020.10.15
Power Sensor	R&S	NRP-Z11	101919	2019.10.12	2020.10.11
Power Sensor	Agilent	E9301A	MY41497725	2019.10.12	2020.10.11
hygrothermograph	MiEO	HH660	N/A	2019.10.13	2020.10.12
Thermograph	Elitech	RC-4	S/N EF7176501537	2019.10.11	2020.10.10

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

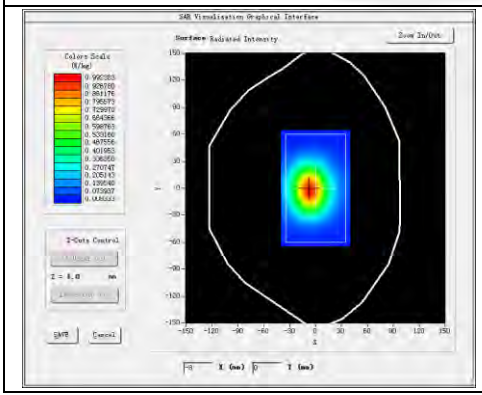
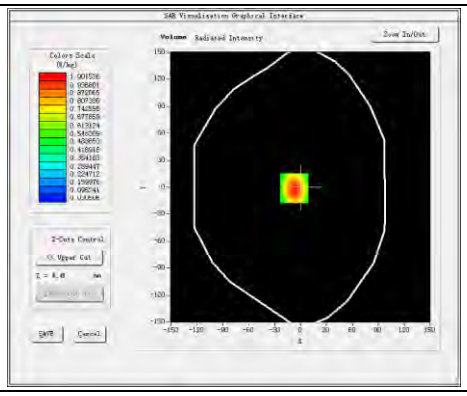
System Performance Check Data (835MHz Head)

Type: Phone measurement (Complete)

Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 2020-03-09

Experimental conditions

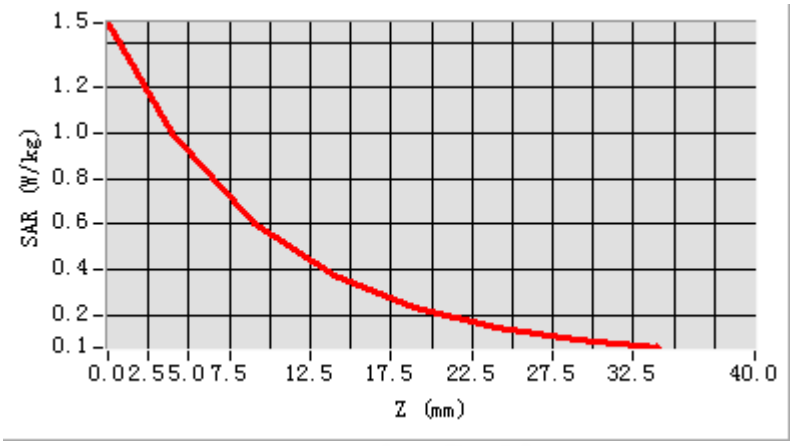
Phantom	Validation plane
Device Position	-
Band	835MHz
Channels	-
Signal	CW
Frequency (MHz)	835MHz
Relative permittivity	41.44
Conductivity (S/m)	0.87
Power drift (%)	0.15
Probe	SN 41/18 EPGO334
ConvF:	1.48
Crest factor:	1:1

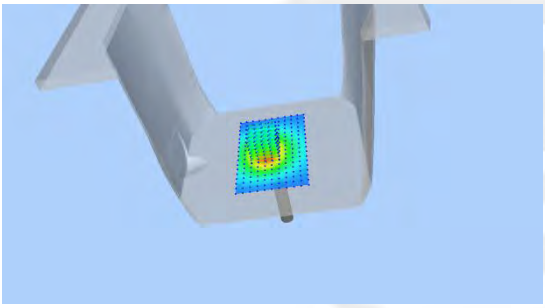
SURFACE SAR	VOLUME SAR
	

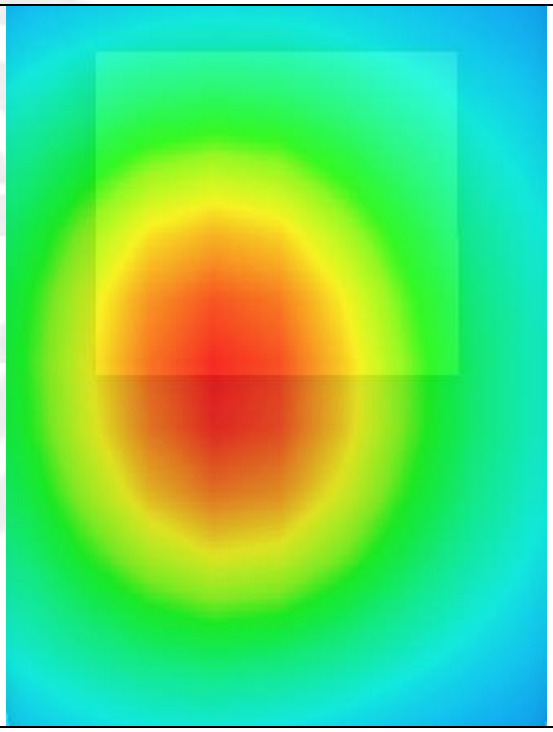
Maximum location: X=-7.00, Y=-1.00

SAR 10g (W/Kg)	0.638872
SAR 1g (W/Kg)	0.948064

Z Axis Scan


SAR (W/kg)
1.5
1.2
1.0
0.8
0.6
0.4
0.2
0.1
0.0 2.5 5.0 7.5 12.5 17.5 22.5 27.5 32.5 40.0
Z (mm)



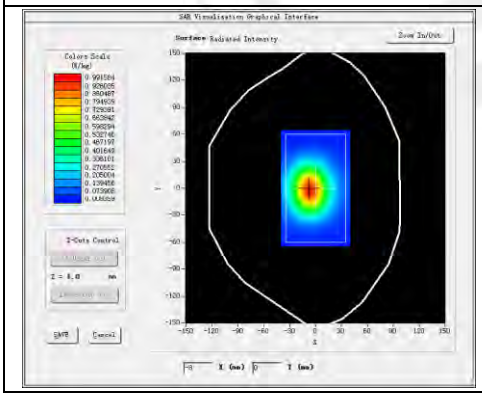
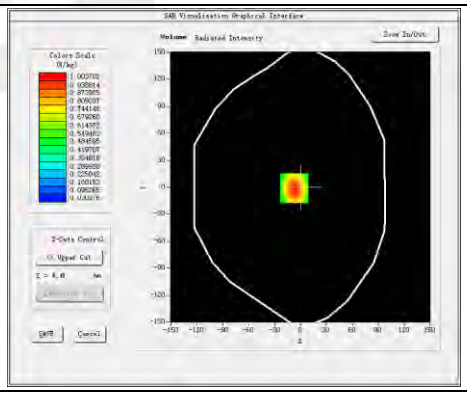


System Performance Check Data (835MHz Body)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 2020-03-09

Experimental conditions.

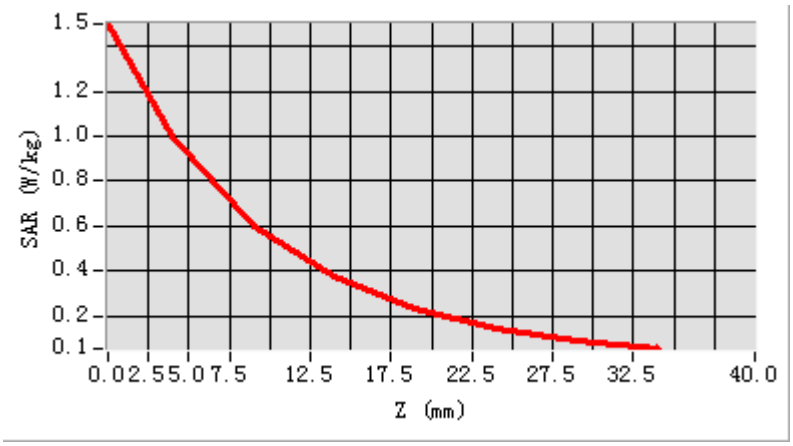
Probe	
Phantom	Validation plane
Device Position	-
Band	835MHz
Channels	-
Signal	CW
Frequency (MHz)	835MHz
Relative permittivity	55.69
Conductivity (S/m)	1.00
Power drift (%)	-0.33
Probe	SN 41/18 EPGO334
ConvF:	1.53
Crest factor:	1:1

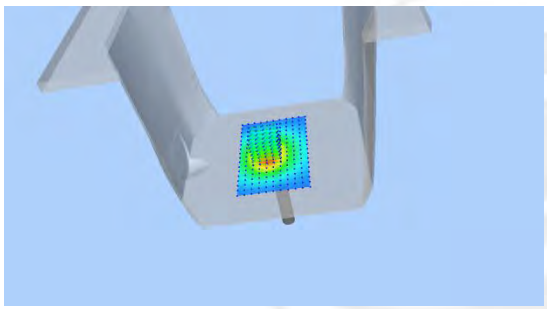
SURFACE SAR	VOLUME SAR
	

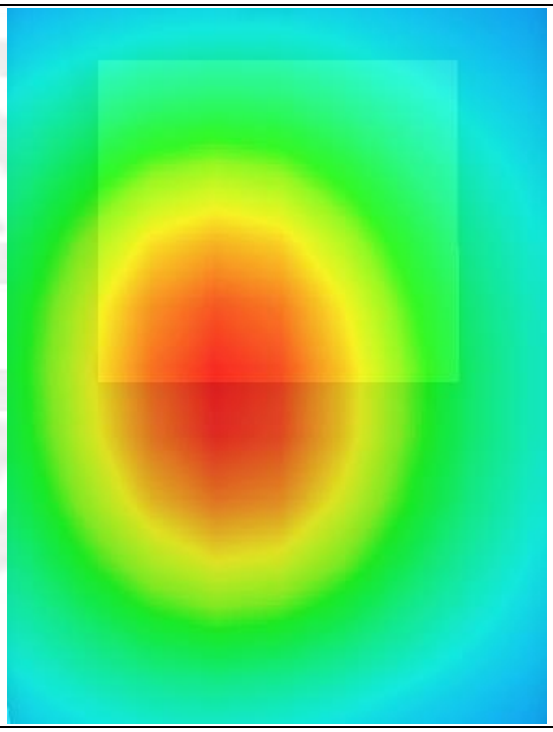
Maximum location: X=-7.00, Y=-1.00

SAR 10g (W/Kg)	0.600539
SAR 1g (W/Kg)	0.954919

Z Axis Scan


1.5
1.2
1.0
0.8
0.6
0.4
0.2
0.1
SAR (W/kg)
0.0 2.5 5.0 7.5 12.5 17.5 22.5 27.5 32.5 40.0
Z (mm)



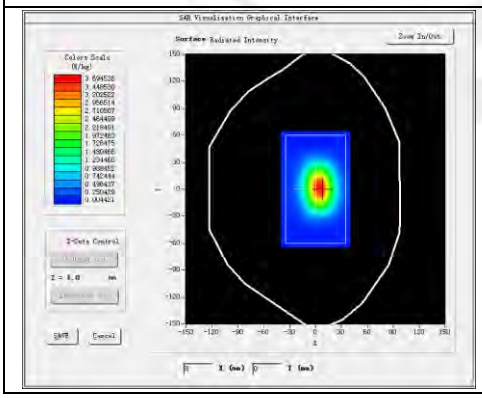
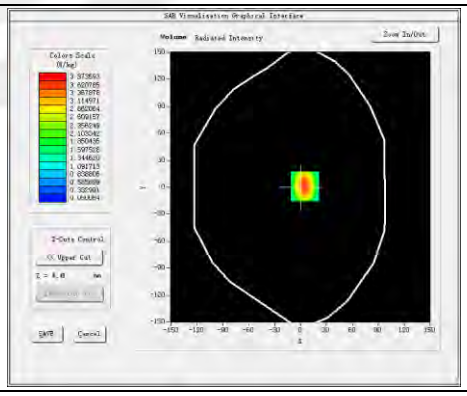


System Performance Check Data(1800MHz Head)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 2020-03-10

Experimental conditions.

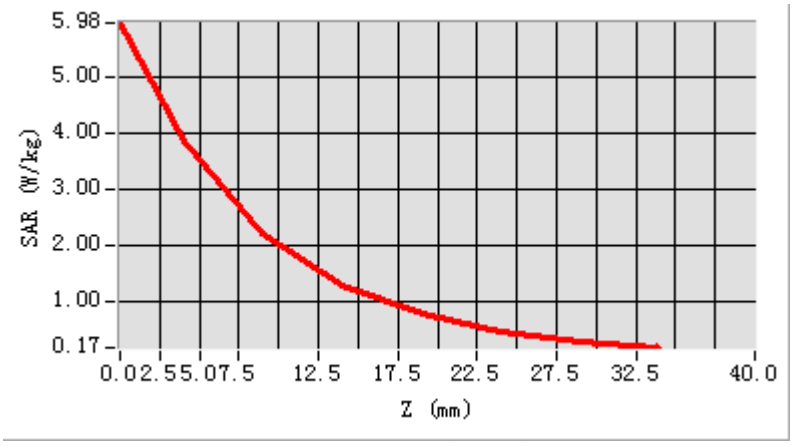
Phantom	Validation plane
Device Position	-
Band	1800MHz
Channels	-
Signal	CW
Frequency (MHz)	1800MHz
Relative permittivity	40.52
Conductivity (S/m)	1.41
Power drift (%)	1.25
Probe	SN 41/18 EPGO334
ConvF	1.60
Crest factor:	1:1

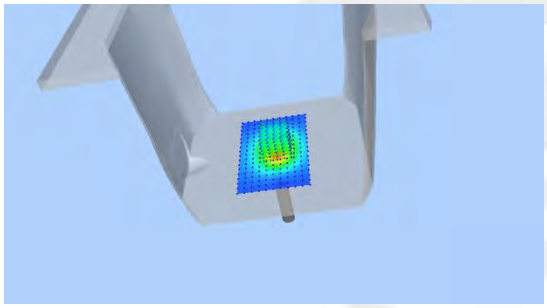
SURFACE SAR	VOLUME SAR
	

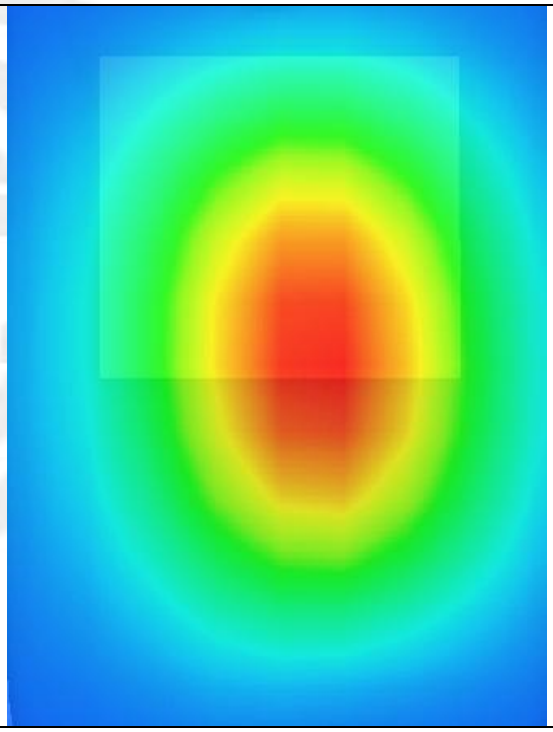
Maximum location: X=5.00, Y=1.00

SAR 10g (W/Kg)	1.995584
SAR 1g (W/Kg)	3.882151

Z Axis Scan


5.98
5.00
4.00
3.00
2.00
1.00
0.17
SAR (W/kg)
0.0 2.5 5.0 7.5 12.5 17.5 22.5 27.5 32.5 40.0
Z (mm)



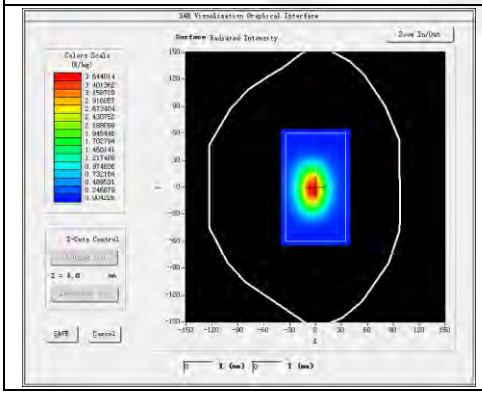
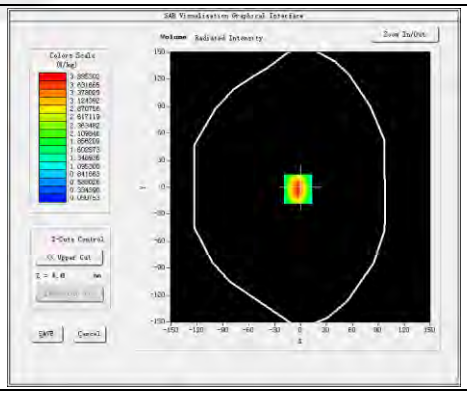


System Performance Check Data(1800MHz Body)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 2020-03-10

Experimental conditions.

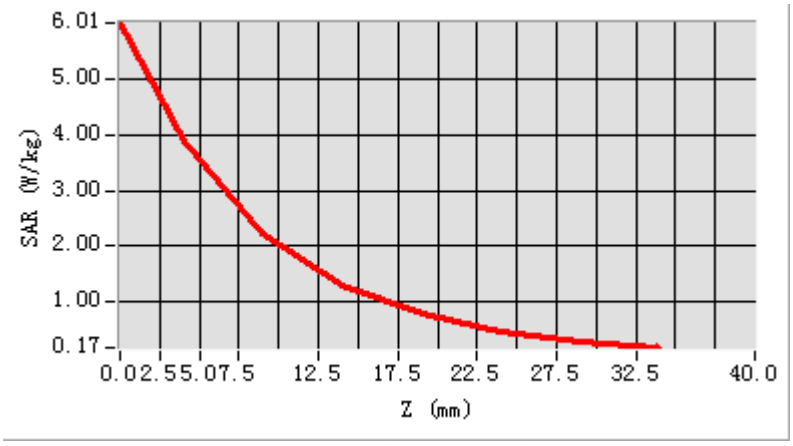
Phantom	Validation plane
Device Position	-
Band	1800MHz
Channels	-
Signal	CW
Frequency (MHz)	1800MHz
Relative permittivity	54.55
Conductivity (S/m)	1.48
Power drift (%)	-0.74
Probe	SN 41/18 EPGO334
ConvF	1.66
Crest factor:	1:1

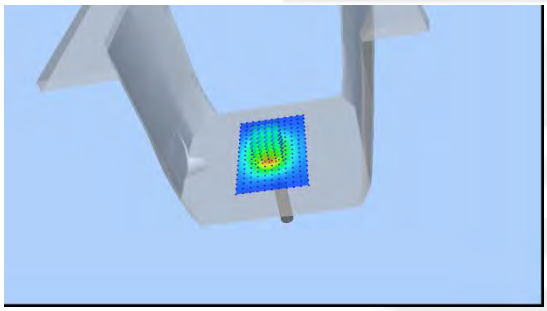
SURFACE SAR	VOLUME SAR
	

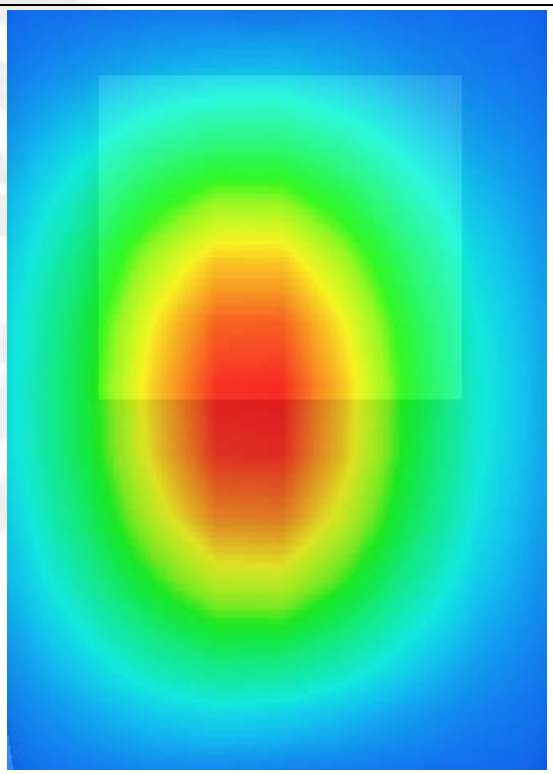
Maximum location: X=-3.00, Y=-2.00

SAR 10g (W/Kg)	2.053147
SAR 1g (W/Kg)	3.895426

Z Axis Scan


6.01
5.00
4.00
3.00
2.00
1.00
0.17
SAR (W/kg)
0.0 2.5 5.0 7.5 12.5 17.5 22.5 27.5 32.5 40.0
Z (mm)



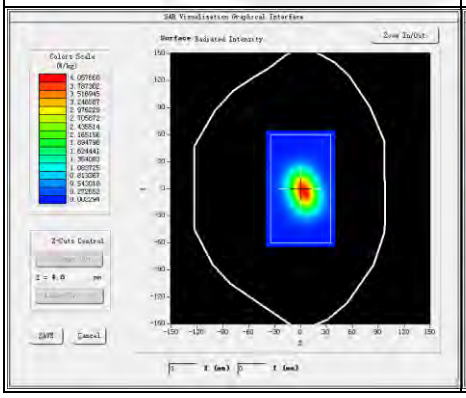
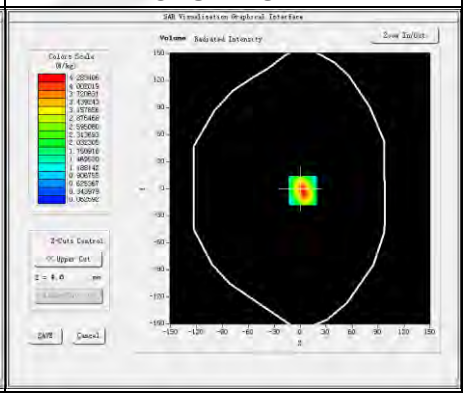


System Performance Check Data (1900MHz Head)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 2020-03-11

Experimental conditions.

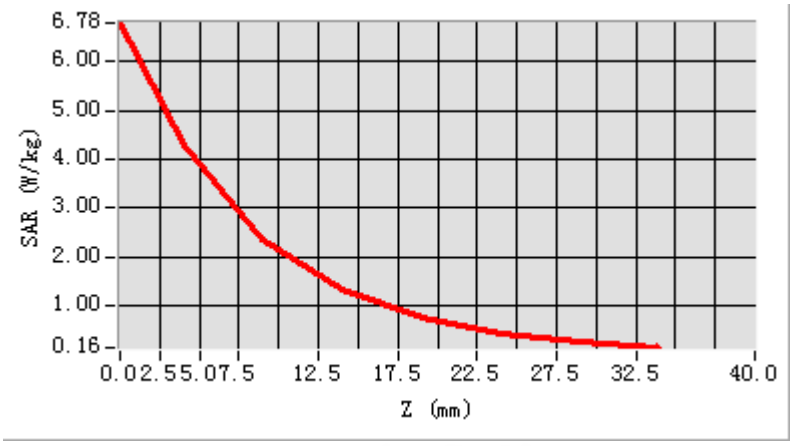
Phantom	Validation plane
Device Position	-
Band	1900MHz
Channels	-
Signal	CW
Frequency (MHz)	1900MHz
Relative permittivity	40.75
Conductivity (S/m)	1.38
Power drift (%)	0.43
Probe	SN 41/18 EPGO334
ConvF:	1.84
Crest factor:	1:1

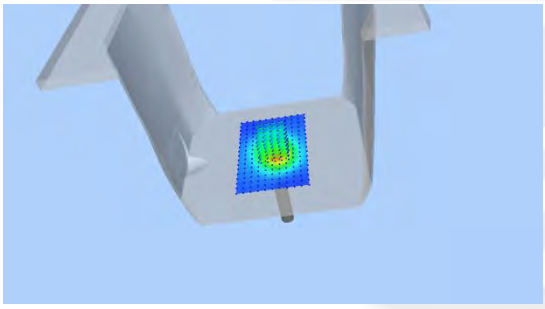
SURFACE SAR	VOLUME SAR
	

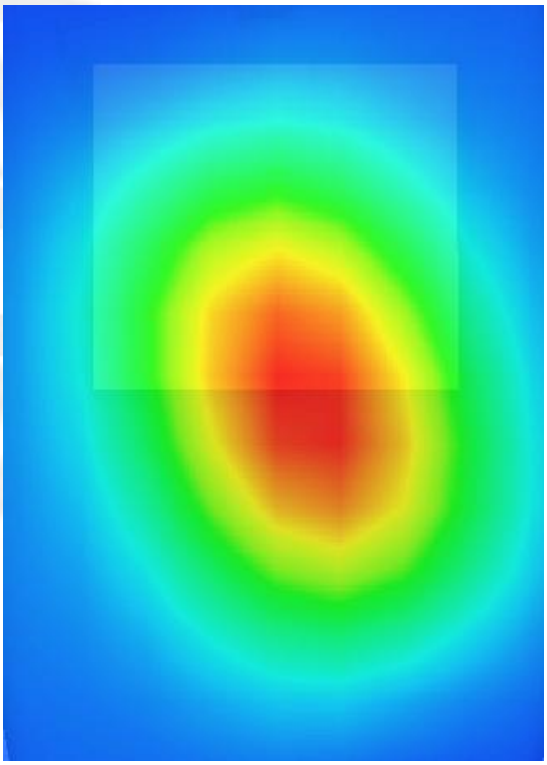
Maximum location: X=3.00, Y=-2.00

SAR 10g (W/Kg)	2.080347
SAR 1g (W/Kg)	3.948334

Z Axis Scan


6.78
6.00
5.00
4.00
3.00
2.00
1.00
0.16
SAR (W/kg)
0.0 2.5 5.0 7.5 12.5 17.5 22.5 27.5 32.5 40.0
Z (mm)



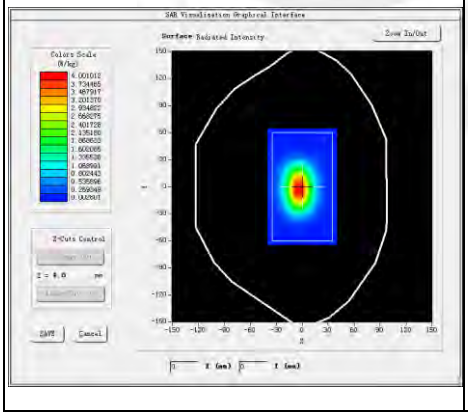
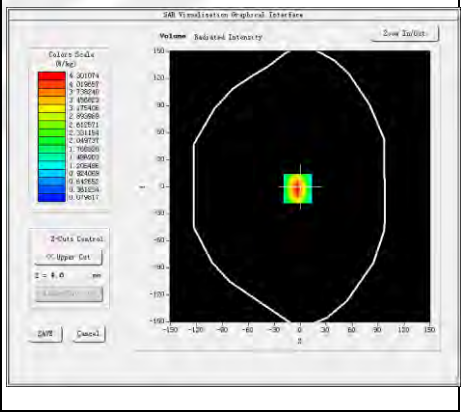


System Performance Check Data (1900MHz Body)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 2020-03-11

Experimental conditions.

Device Position	-
Band	1900MHz
Channels	-
Signal	CW
Frequency (MHz)	1900
Relative permittivity	52.42
Conductivity (S/m)	1.51
Power drift (%)	-0.36
Probe	SN 41/18 EPGO334
ConvF:	1.88
Crest factor:	1:1

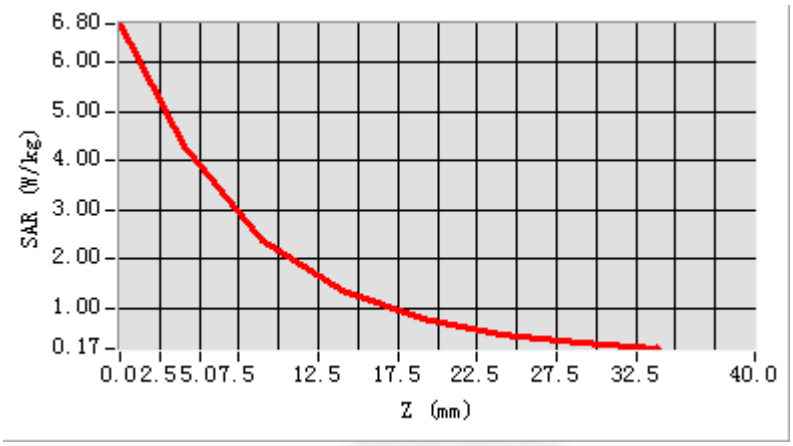
SURFACE SAR	VOLUME SAR
	

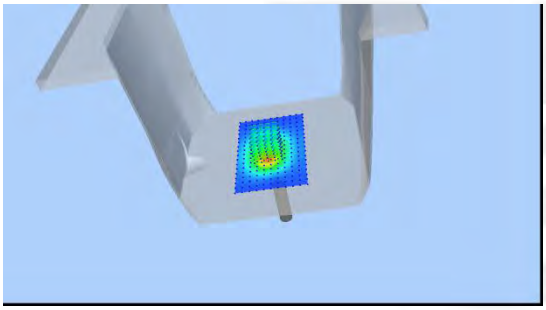
Maximum location: X=-3.00, Y=-2.00

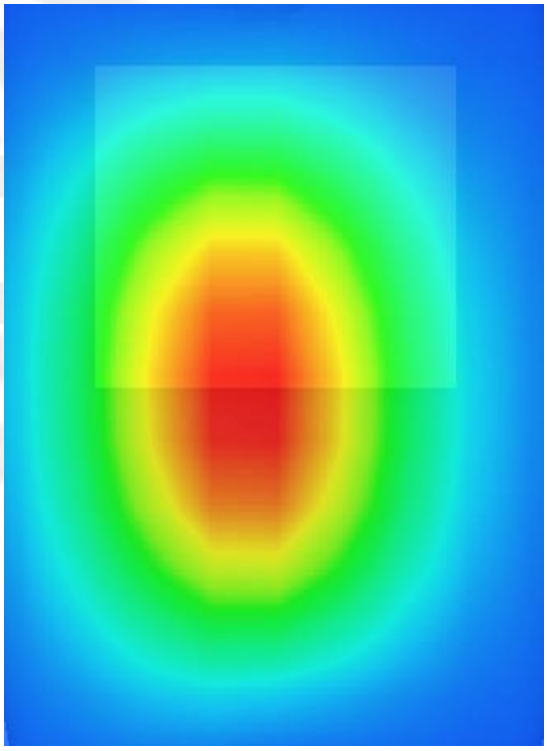
SAR Peak: 5.27 W/kg

SAR 10g (W/Kg)	2.110788
SAR 1g (W/Kg)	3.993642

Z Axis Scan


6.80
6.00
5.00
4.00
3.00
2.00
1.00
0.17
SAR (W/kg)
0.0 2.5 5.0 7.5 12.5 17.5 22.5 27.5 32.5 40.0
Z (mm)



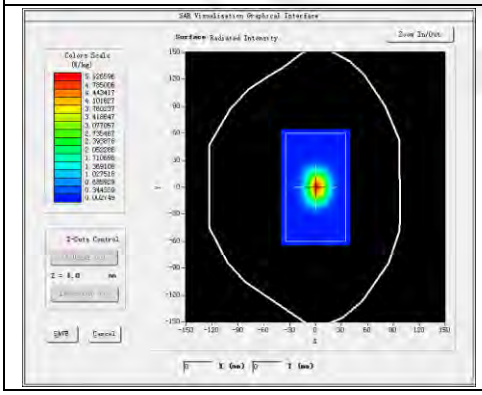
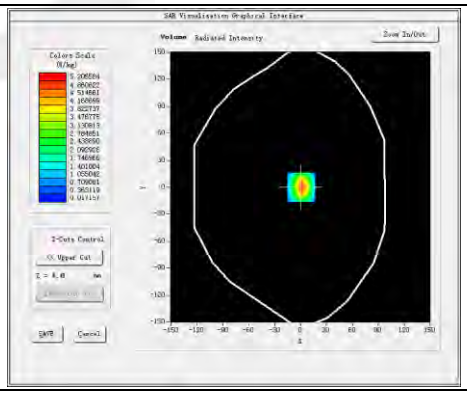


System Performance Check Data (2450MHz Head)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 2020-03-12

Experimental conditions.

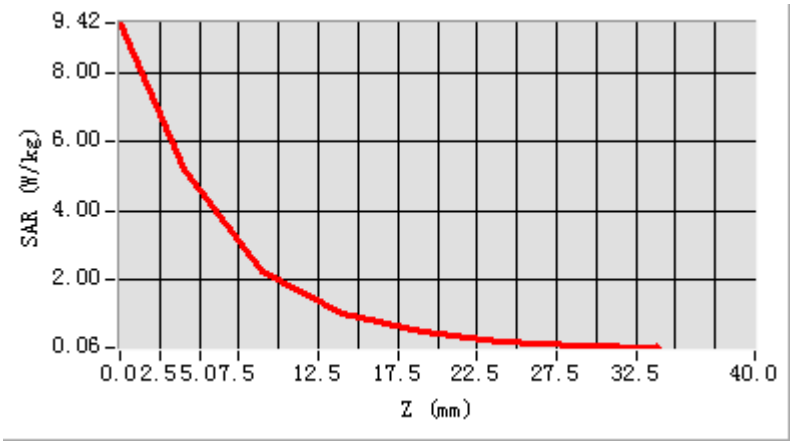
Device Position	Validation plane
Band	2450 MHz
Channels	-
Signal	CW
Frequency (MHz)	2450
Relative permittivity	38.50
Conductivity (S/m)	1.78
Power drift (%)	-1.55
Probe	SN 41/18 EPGO334
ConvF	1.97
Crest factor:	1:1

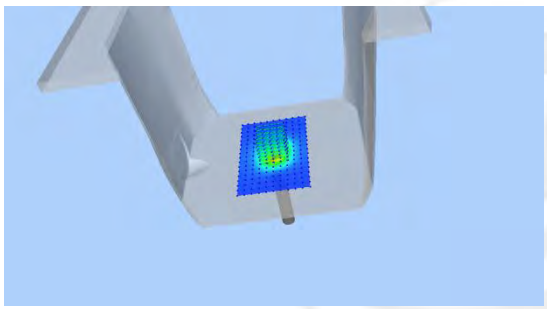
SURFACE SAR	VOLUME SAR
	

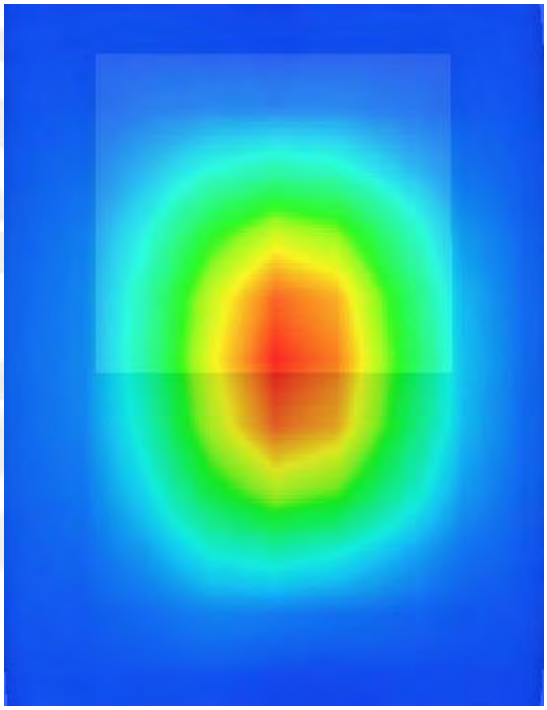
Maximum location: X=1.00, Y=0.00

SAR 10g (W/Kg)	2.266552
SAR 1g (W/Kg)	5.258314

Z Axis Scan


9.42
8.00
6.00
4.00
2.00
0.06
SAR (W/kg)
0.0 2.5 5.0 7.5 12.5 17.5 22.5 27.5 32.5 40.0
Z (mm)



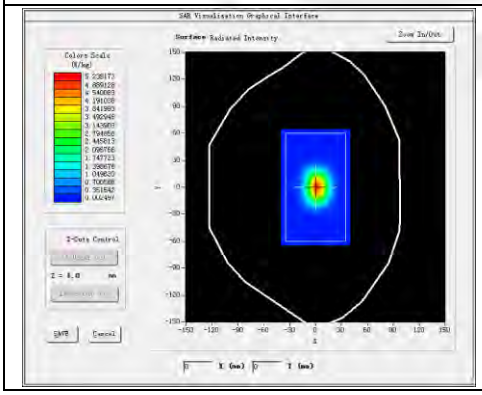
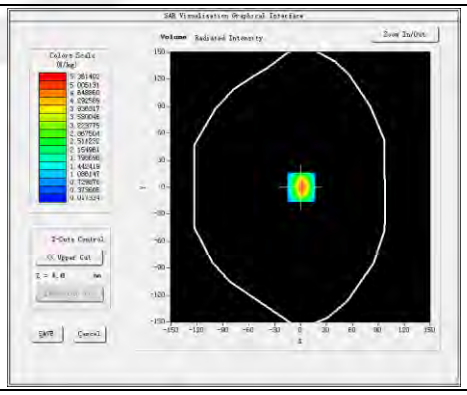


System Performance Check Data (2450MHz Body)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 2020-03-12

Experimental conditions.

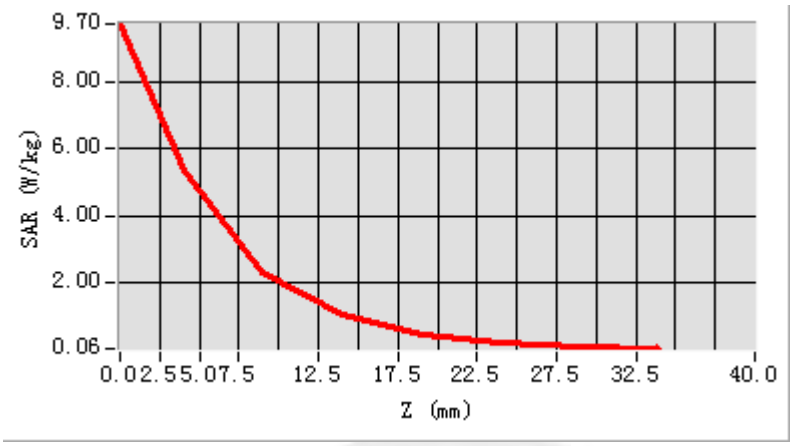
Device Position	Validation plane
Band	2450 MHz
Channels	-
Signal	CW
Frequency (MHz)	2450
Relative permittivity	54.22
Conductivity (S/m)	1.97
Power drift (%)	2.31
Probe	SN 41/18 EPGO334
ConvF	2.02
Crest factor:	1:1

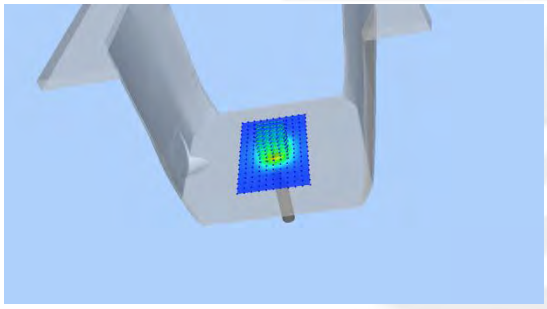
SURFACE SAR	VOLUME SAR
	

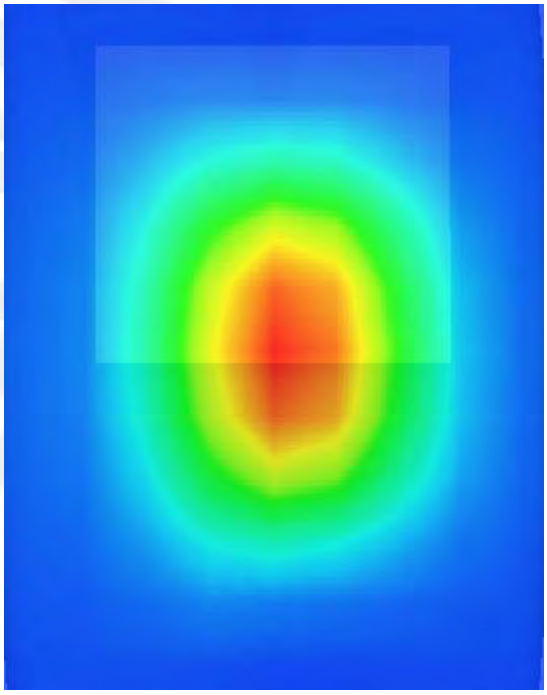
Maximum location: X=1.00, Y=0.00

SAR 10g (W/Kg)	2.509284
SAR 1g (W/Kg)	5.433937

Z Axis Scan


9.70
8.00
6.00
4.00
2.00
0.06
SAR (W/kg)
0.0 2.5 5.0 7.5 12.5 17.5 22.5 27.5 32.5 40.0
Z (mm)



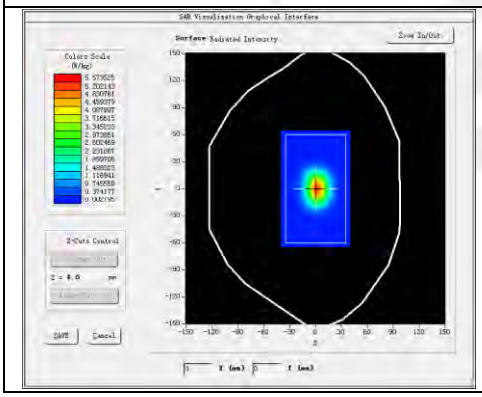
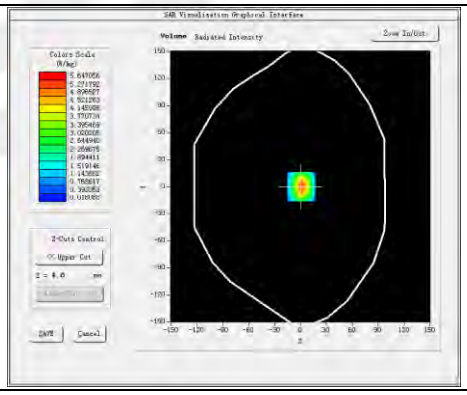


System Performance Check Data(2600MHz Head)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 2020-03-13

Experimental conditions.

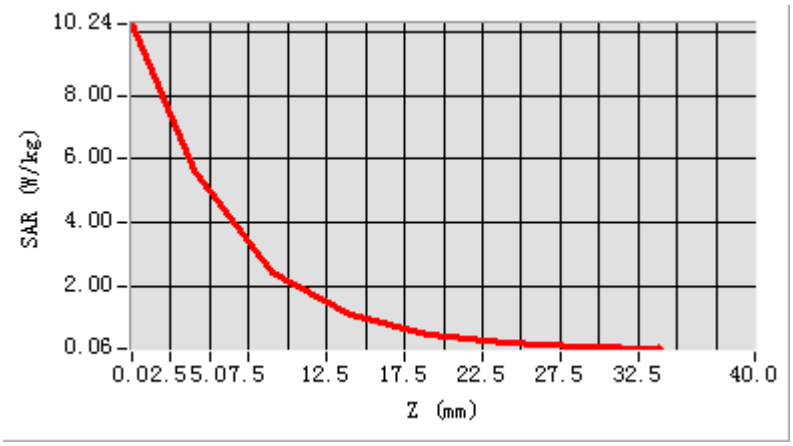
Device Position	Validation plane
Band	2600 MHz
Channels	-
Signal	CW
Frequency (MHz)	2600
Relative permittivity	38.16
Conductivity (S/m)	1.94
Power drift (%)	-2.10
Probe	SN 41/18 EPGO334
ConvF	1.85
Crest factor:	1:1

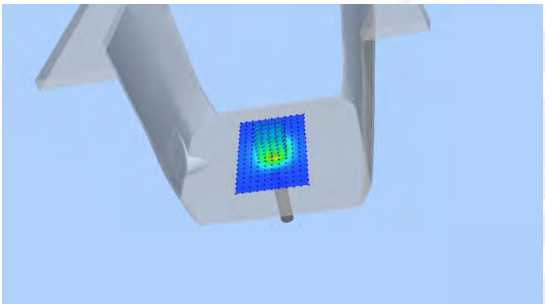
SURFACE SAR	VOLUME SAR
	

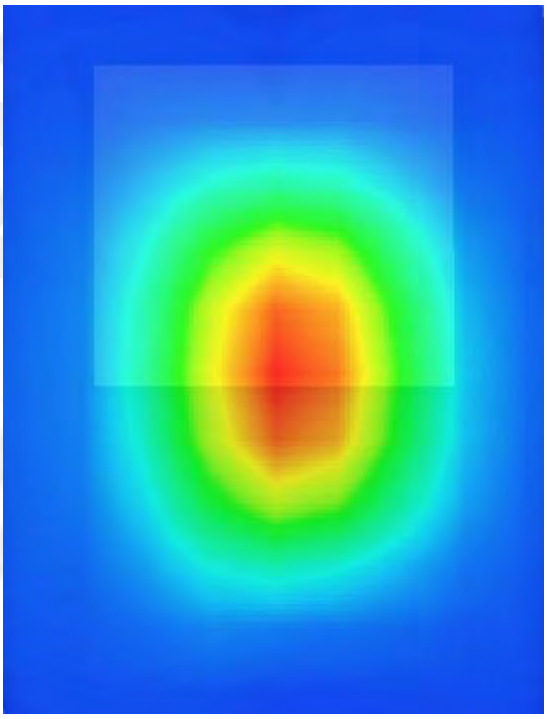
Maximum location: X=1.00, Y=0.00

SAR 10g (W/Kg)	2.448141
SAR 1g (W/Kg)	5.672494

Z Axis Scan


10.24
8.00
6.00
4.00
2.00
0.06
SAR (W/kg)
0.02.55.07.5
12.5
17.5
22.5
27.5
32.5
40.0
Z (mm)



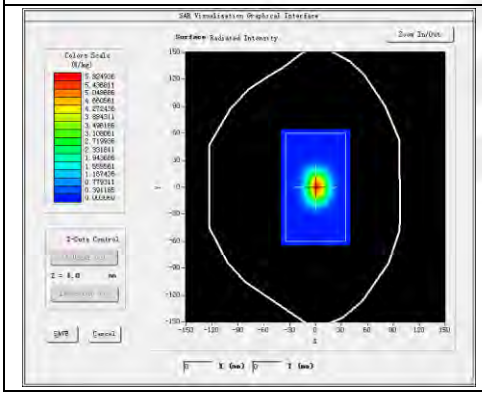
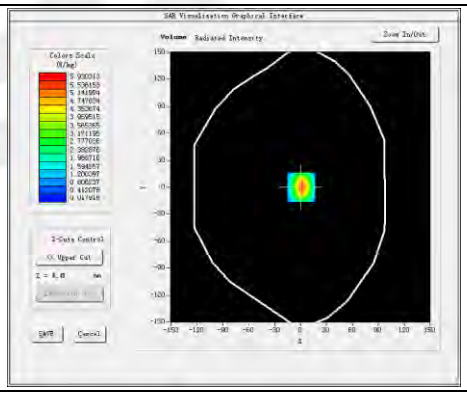


System Performance Check Data(2600MHz Body)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 2020-03-13

Experimental conditions.

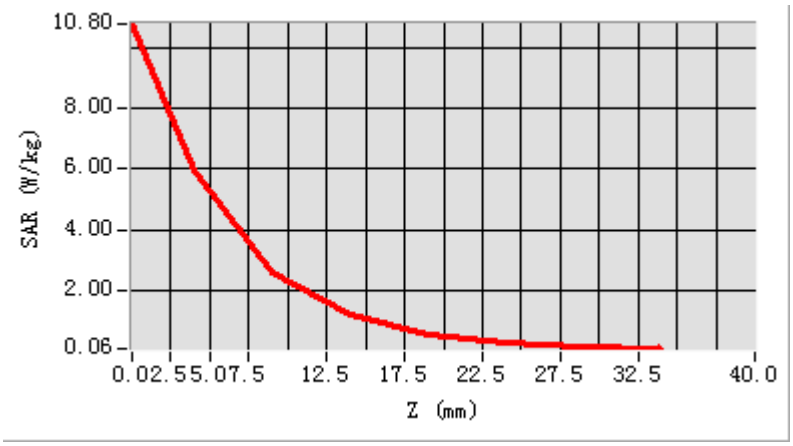
Device Position	Validation plane
Band	2600 MHz
Channels	-
Signal	CW
Frequency (MHz)	2600
Relative permittivity	52.89
Conductivity (S/m)	2.11
Power drift (%)	1.57
Probe	SN 41/18 EPGO334
ConvF	1.92
Crest factor:	1:1

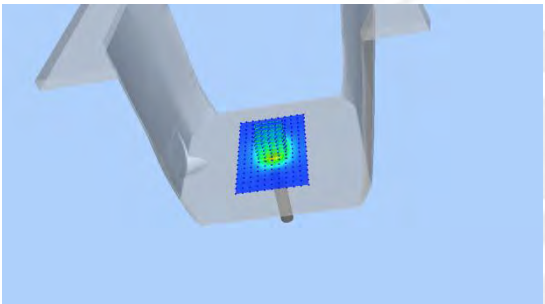
SURFACE SAR	VOLUME SAR
	

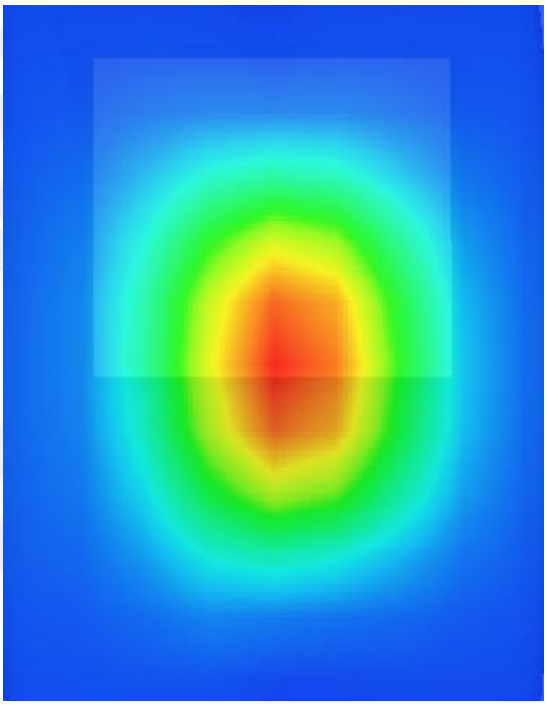
Maximum location: X=3.00, Y=1.00

SAR 10g (W/Kg)	2.355394
SAR 1g (W/Kg)	5.745082

Z Axis Scan


10.80
8.00
6.00
4.00
2.00
0.06
SAR (W/kg)
0.02.55.07.5
12.5
17.5
22.5
27.5
32.5
40.0
Z (mm)



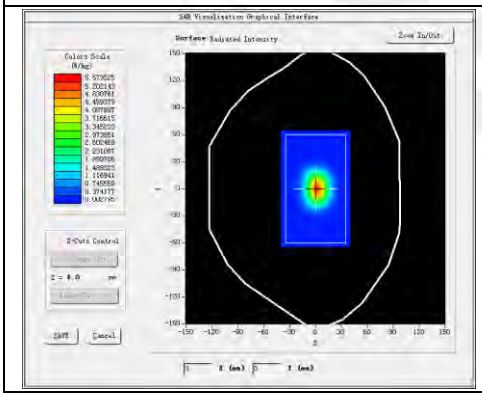
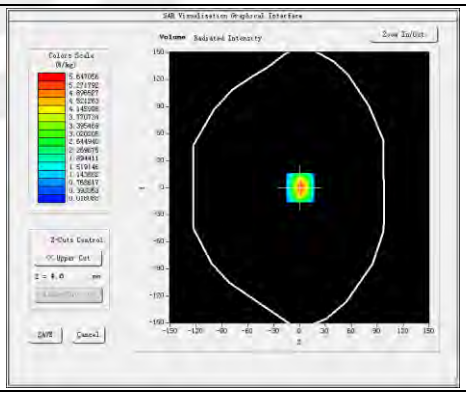


System Performance Check Data(5200MHz Head)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=4mm, dy=4mm, dz=2mm
Date of measurement: 2020-03-16

Experimental conditions.

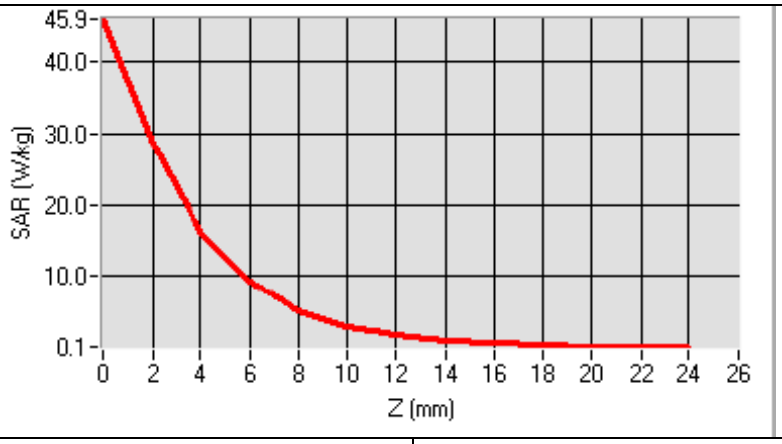
Device Position	Validation plane
Band	5200 MHz
Channels	-
Signal	CW
Frequency (MHz)	5200
Relative permittivity	36.25
Conductivity (S/m)	4.70
Power drift (%)	2.52
Probe	SN 41/18 EPGO334
ConvF	1.86
Crest factor:	1:1

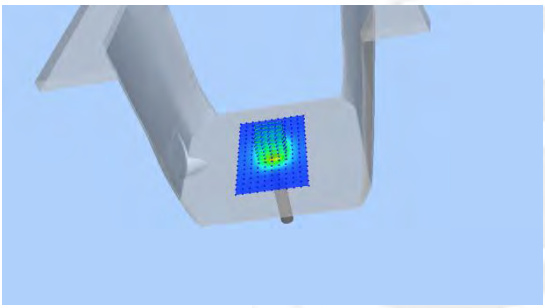
SURFACE SAR	VOLUME SAR
	

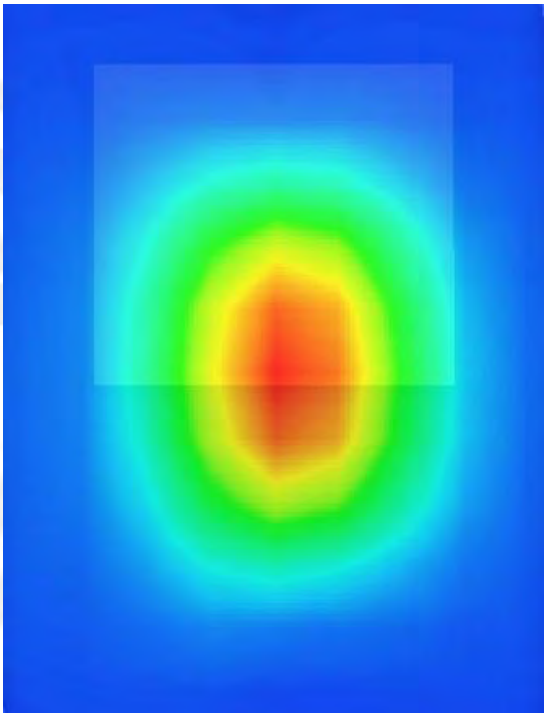
Maximum location: X=7.00, Y=2.00

SAR 10g (W/Kg)	5.831457
SAR 1g (W/Kg)	15.869211

Z Axis Scan





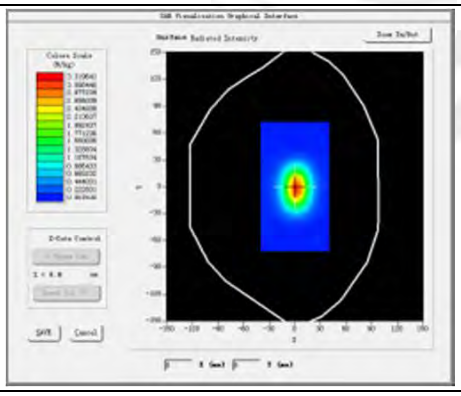
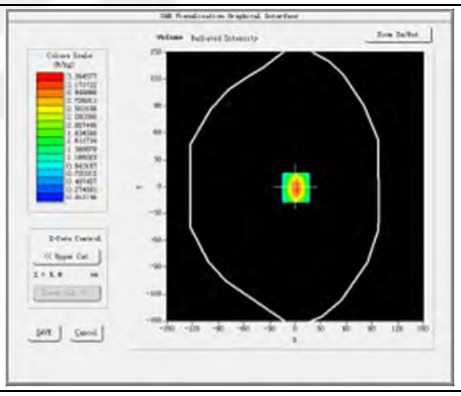


System Performance Check Data(5200MHz Body)

Type: Dipole measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=4mm, dy=4mm, dz=2mm
Date of measurement: 2020-03-16

Experimental conditions.

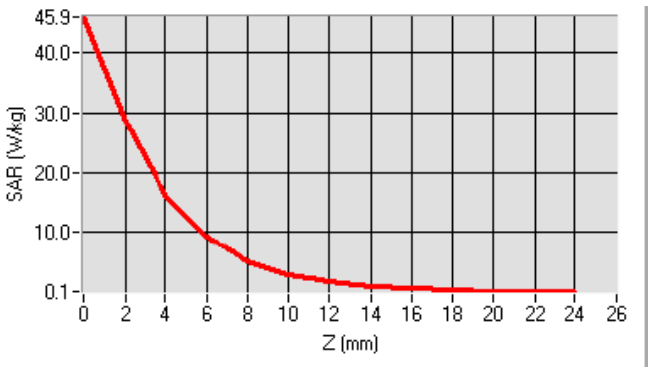
Device Position	Validation plane
Band	5200 MHz
Channels	-
Signal	CW
Frequency (MHz)	5200
Relative permittivity	48.77
Conductivity (S/m)	5.39
Power drift (%)	3.24
Probe	SN 41/18 EPGO334
ConvF	1.92
Crest factor:	1:1

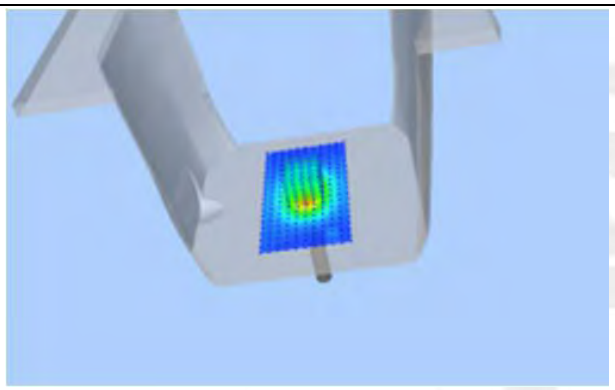
SURFACE SAR	VOLUME SAR
	

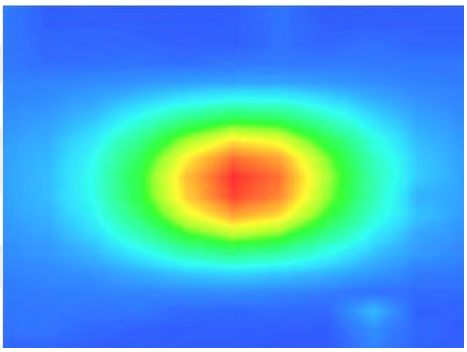
Maximum location: X=7.00, Y=2.00

SAR 10g (W/Kg)	5.776125
SAR 1g (W/Kg)	15.693547

Z Axis Scan





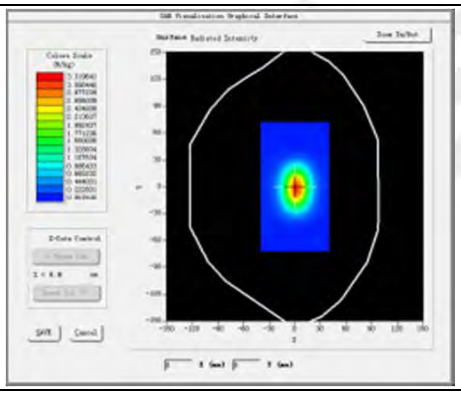
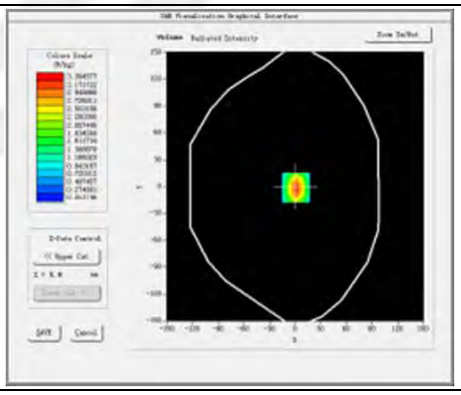


System Performance Check Data(5400MHz Head)

Type: Dipole measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=4mm, dy=4mm, dz=2mm
Date of measurement: 2020-03-17

Experimental conditions.

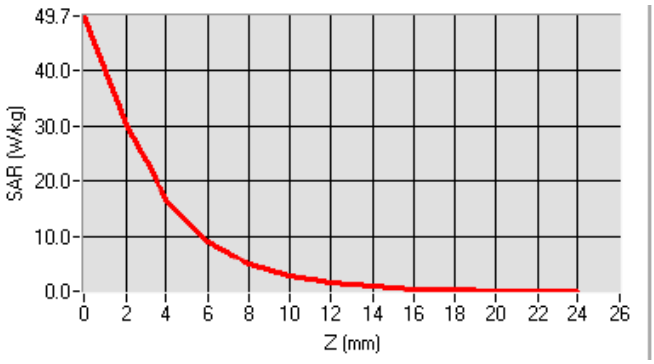
Device Position	Validation plane
Band	5400 MHz
Channels	-
Signal	CW
Frequency (MHz)	5400
Relative permittivity	35.75
Conductivity (S/m)	4.81
Power drift (%)	-1.63
Probe	SN 41/18 EPGO334
ConvF	2.07
Crest factor:	1:1

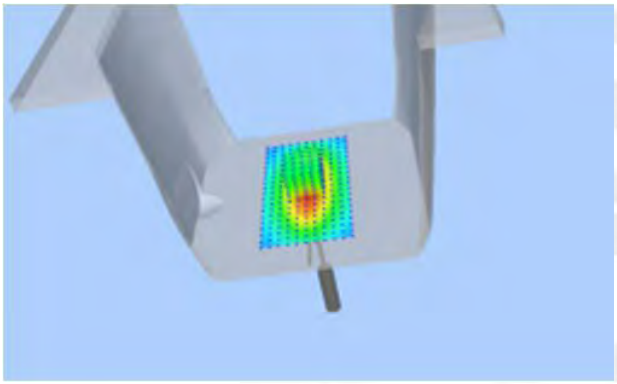
SURFACE SAR	VOLUME SAR
	

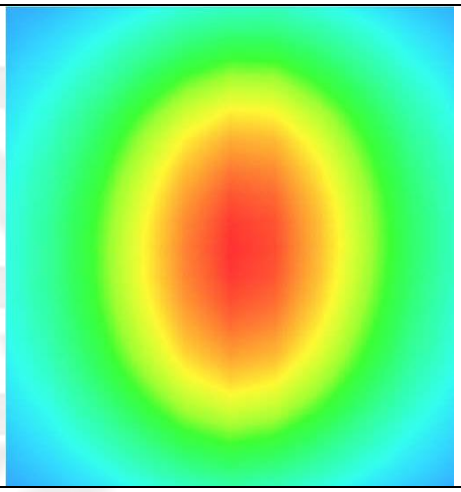
Maximum location: X=7.00, Y=2.00

SAR 10g (W/Kg)	5.940618
SAR 1g (W/Kg)	16.487632

Z Axis Scan





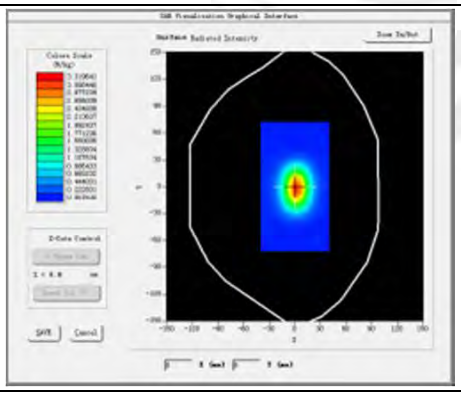
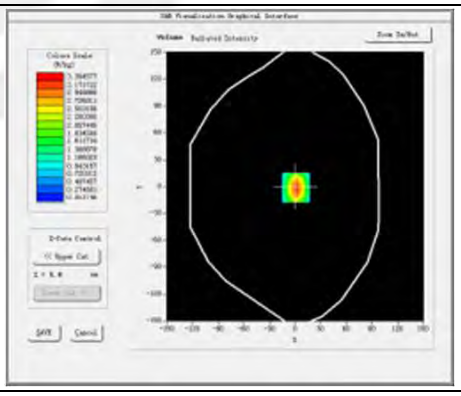


System Performance Check Data(5400MHz Body)

Type: Dipole measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=4mm, dy=4mm, dz=2mm
Date of measurement: 2020-03-17

Experimental conditions.

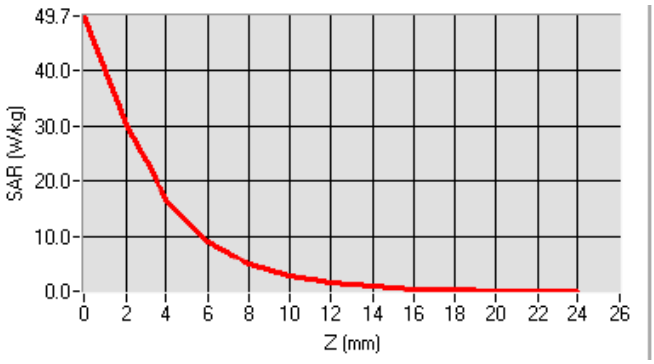
Device Position	Validation plane
Band	5300 MHz
Channels	-
Signal	CW
Frequency (MHz)	5300
Relative permittivity	48.52
Conductivity (S/m)	5.60
Power drift (%)	0.82
Probe	SN 41/18 EPGO334
ConvF	2.12
Crest factor:	1:1

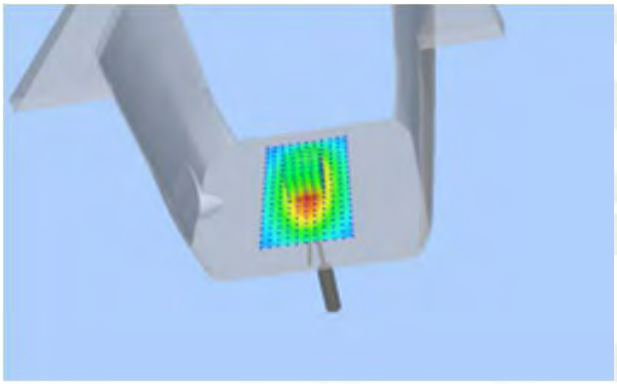
SURFACE SAR	VOLUME SAR
	

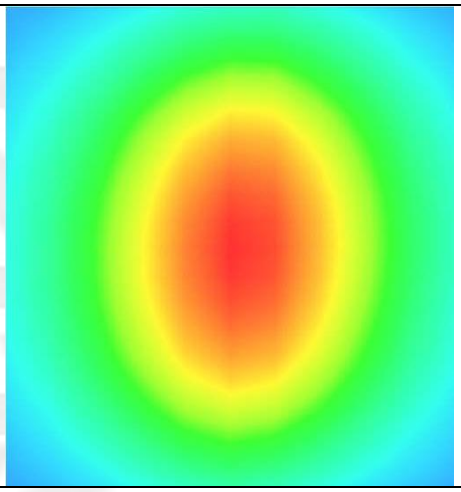
Maximum location: X=7.00, Y=2.00

SAR 10g (W/Kg)	5.986114
SAR 1g (W/Kg)	16.706827

Z Axis Scan





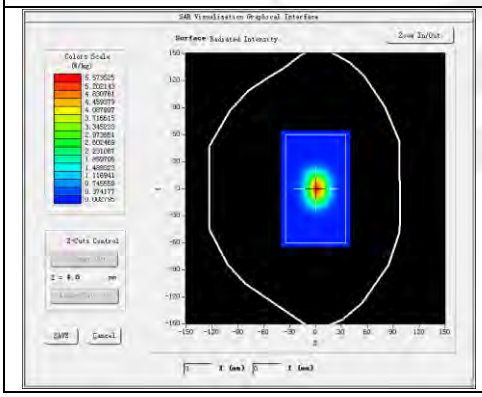
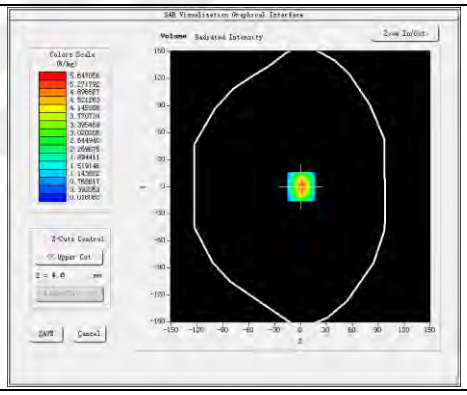


System Performance Check Data(5800MHz Head)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=4mm, dy=4mm, dz=2mm
Date of measurement: 2020-03-18

Experimental conditions.

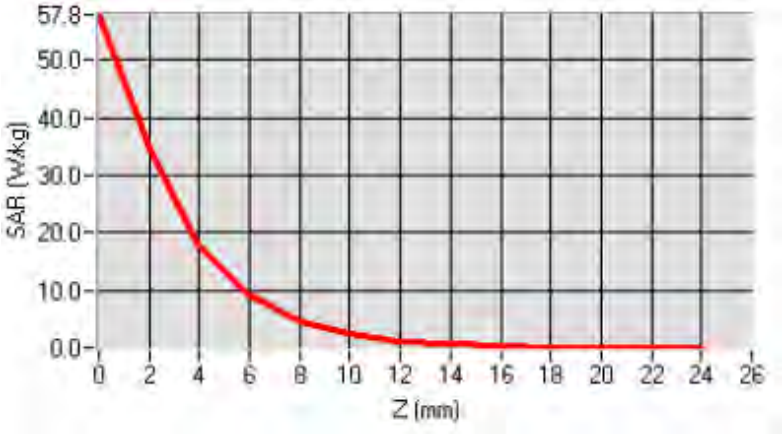
Device Position	Validation plane
Band	5800 MHz
Channels	-
Signal	CW
Frequency (MHz)	5800
Relative permittivity	35.46
Conductivity (S/m)	5.30
Power drift (%)	2.16
Probe	SN 41/18 EPGO334
ConvF	2.09
Crest factor:	1:1

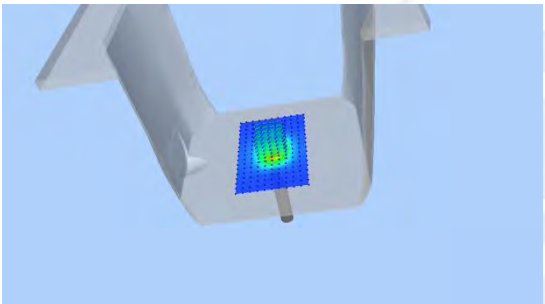
SURFACE SAR	VOLUME SAR
	

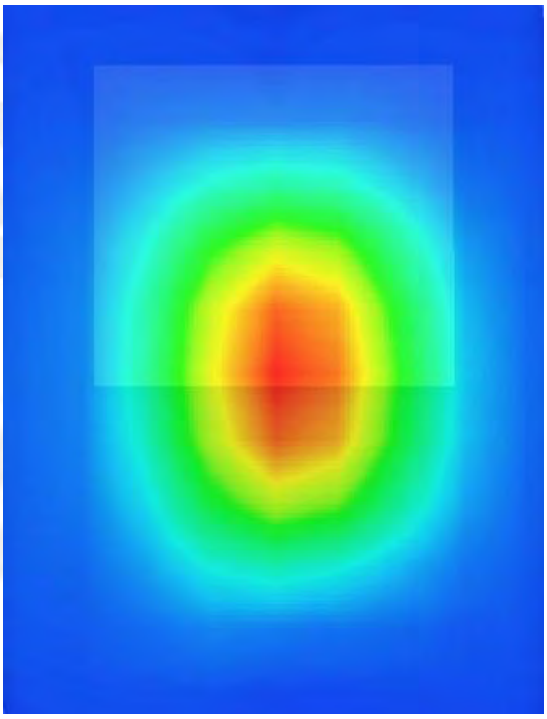
Maximum location: X=7.00, Y=2.00

SAR 10g (W/Kg)	6.045226
SAR 1g (W/Kg)	17.252986

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)



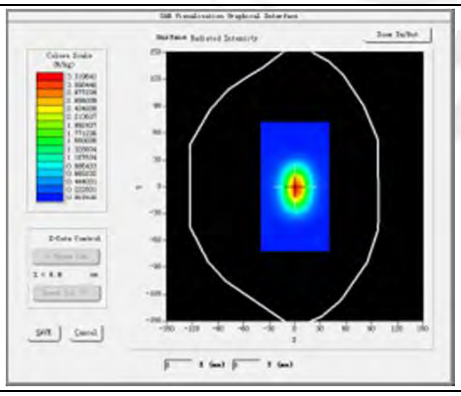
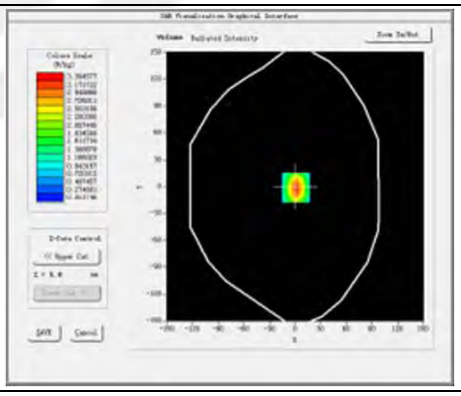


System Performance Check Data(5800MHz Body)

Type: Dipole measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=4mm, dy=4mm, dz=2mm
Date of measurement: 20120-03-18

Experimental conditions.

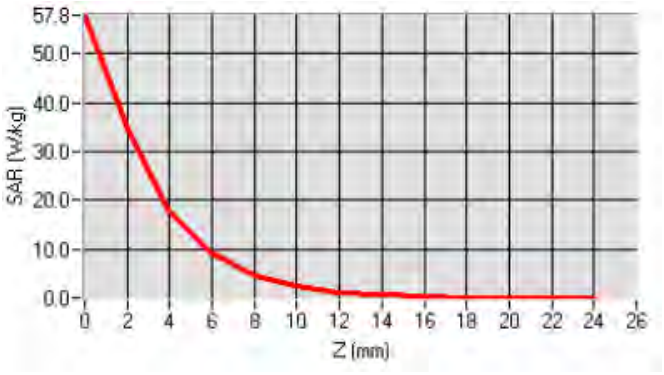
Device Position	Validation plane
Band	5800 MHz
Channels	-
Signal	CW
Frequency (MHz)	5800
Relative permittivity	48.73
Conductivity (S/m)	6.11
Power drift (%)	-1.47
Probe	SN 41/18 EPGO334
ConvF	2.16
Crest factor:	1:1

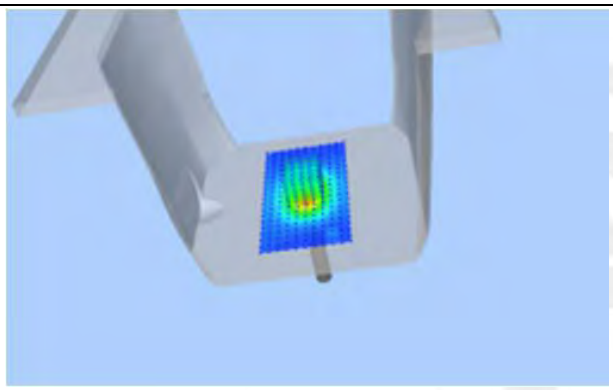
SURFACE SAR	VOLUME SAR
	

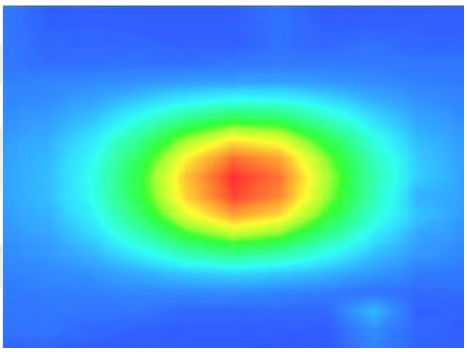
Maximum location: X=7.00, Y=2.00

SAR 10g (W/Kg)	6.125871
SAR 1g (W/Kg)	17.284739

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)





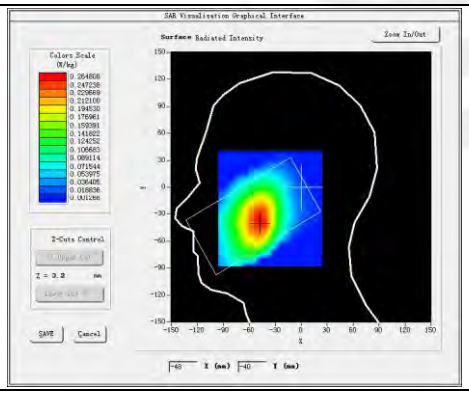
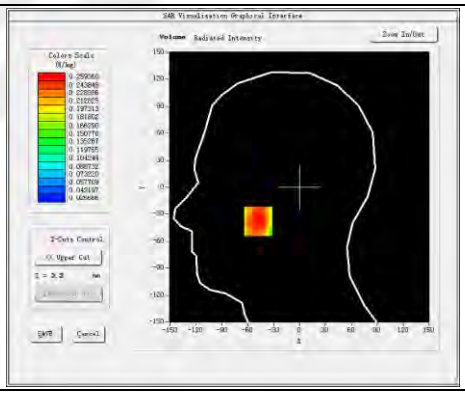
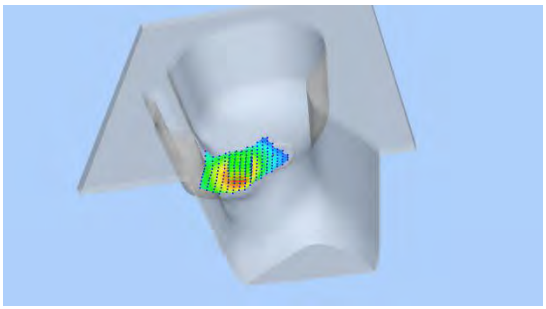
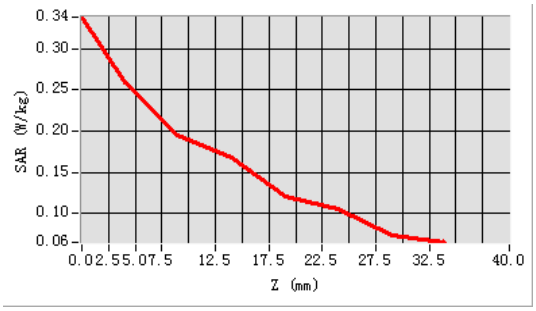
Appendix B. SAR Test Plots

Plot 1: DUT: Smart Phone; EUT Model: W7

Test Date	2020-03-09
Probe	SN 41/18 EPGO334
ConvF	1.48
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm, Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Right head
Device Position	Cheek
Band	GSM850
Channels	Middle
Signal	Duty Cycle: 1:2.00 (Crest factor: 2.0)
Frequency (MHz)	836.6
Relative permittivity (real part)	41.44
Conductivity (S/m)	0.87
Variation (%)	2.67

Maximum location: X=-48.00, Y=-38.00
SAR Peak: 0.33 W/kg

SAR 10g (W/Kg)	0.186739
SAR 1g (W/Kg)	0.252351

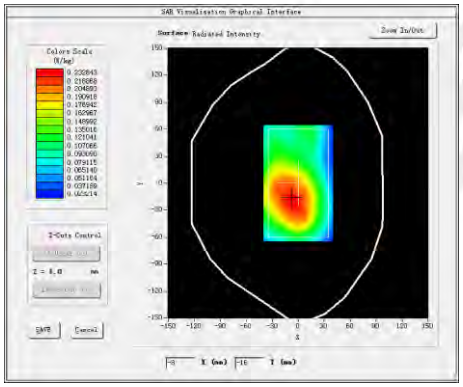
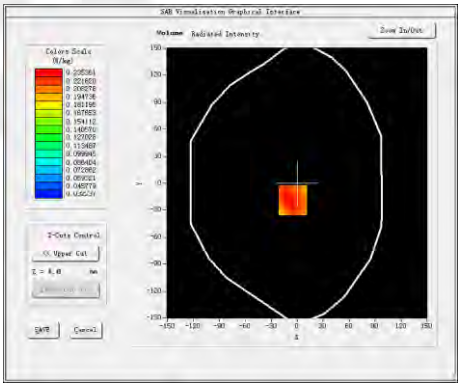
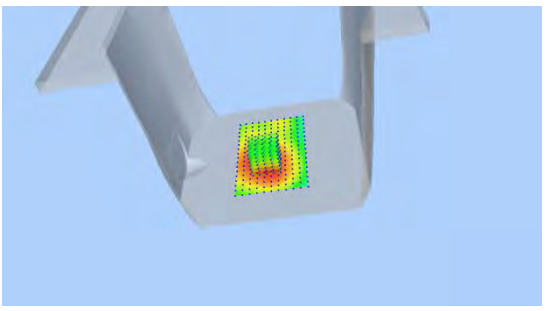
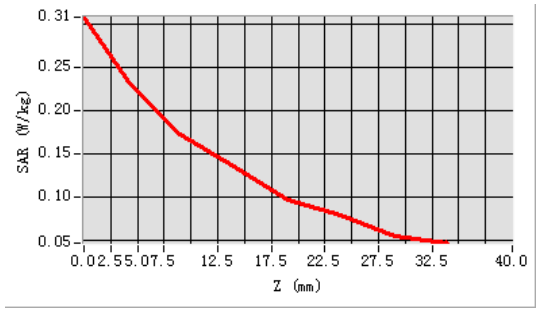
SURFACE SAR	VOLUME SAR
	
3D screen shot	**Z Axis Scan**
	

Plot 2: DUT: Smart Phone; EUT Model: W7

Test Date	2020-03-09
Probe	SN 41/18 EPGO334
ConvF	1.53
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm, Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Validation plane
Device Position	Back side
Band	GPRS 850
Channels	Middle
Signal	Duty Cycle: 1:2.00 (Crest factor: 2.0)
Frequency (MHz)	836.6
Relative permittivity (real part)	55.69
Conductivity (S/m)	1.00
Variation (%)	3.12

Maximum location: X=-5.00, Y=-19.00
SAR Peak: 0.30 W/kg

SAR 10g (W/Kg)	0.167789
SAR 1g (W/Kg)	0.229192

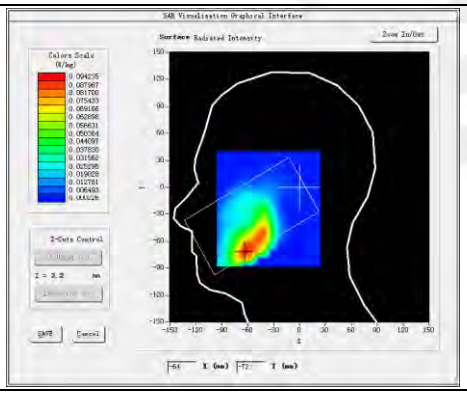
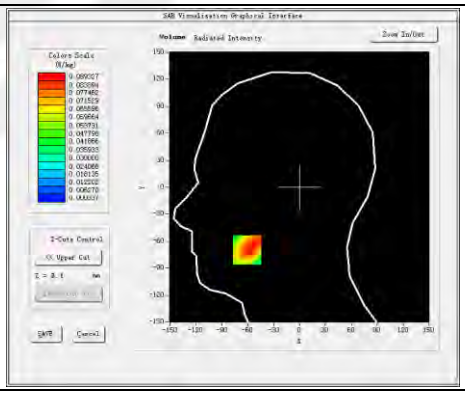
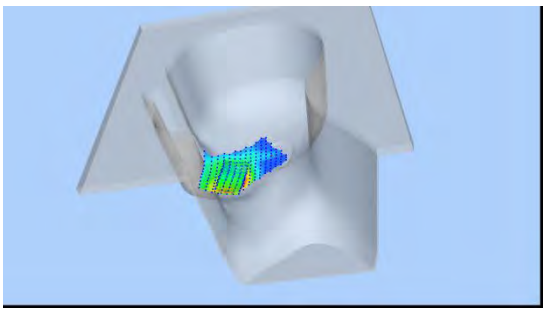
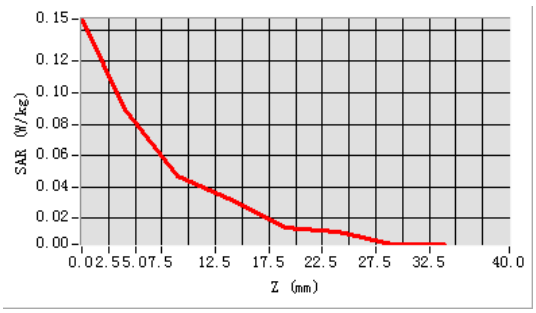
SURFACE SAR	VOLUME SAR
	
3D screen shot	**Z Axis Scan**
	

Plot 3: DUT: Smart Phone; EUT Model: W7

Test Date	2020-03-11
Probe	SN 41/18 EPGO334
ConvF	1.84
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm, Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Right head
Device Position	Cheek
Band	GSM1900
Channels	Middle
Signal	Duty Cycle: 1:2.00 (Crest factor: 2.0)
Frequency (MHz)	1880
Relative permittivity (real part)	40.75
Conductivity (S/m)	1.38
Variation (%)	2.24

Maximum location: X=-61.00, Y=-70.00
SAR Peak: 0.15 W/kg

SAR 10g (W/Kg)	0.048891
SAR 1g (W/Kg)	0.086952

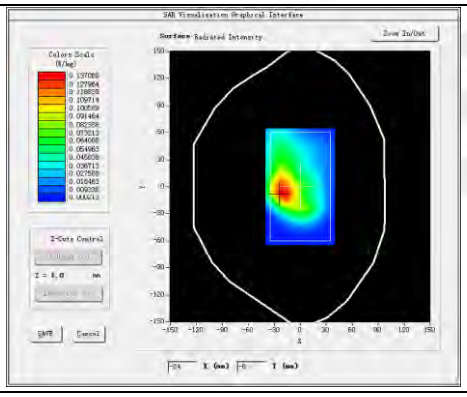
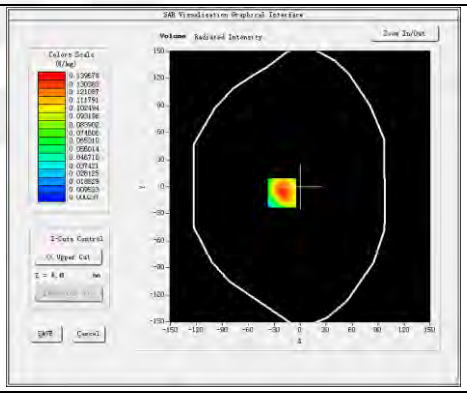
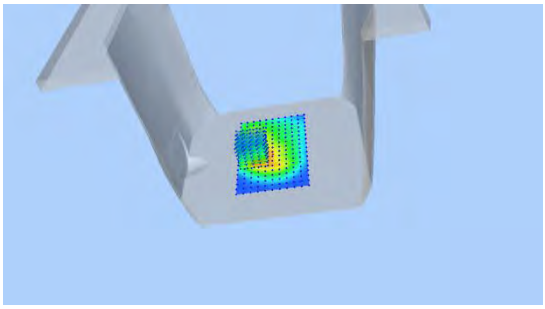
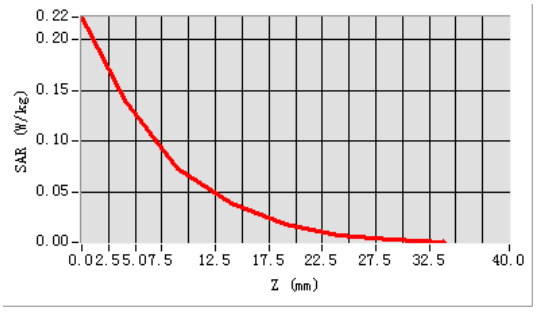
SURFACE SAR	VOLUME SAR
	
3D screen shot	**Z Axis Scan**
	

Plot 4: DUT: Smart Phone; EUT Model: W7

Test Date	2020-03-11
Probe	SN 41/18 EPGO334
ConvF	1.88
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm, Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Validation plane
Device Position	Back side
Band	GPRS 1900
Channels	Middle
Signal	Duty Cycle: 1:2.00 (Crest factor: 2.0)
Frequency (MHz)	1880
Relative permittivity (real part)	52.42
Conductivity (S/m)	1.51
Variation (%)	-2.66

Maximum location: X=-21.00, Y=-7.00
SAR Peak: 0.22 W/kg

SAR 10g (W/Kg)	0.069099
SAR 1g (W/Kg)	0.132044

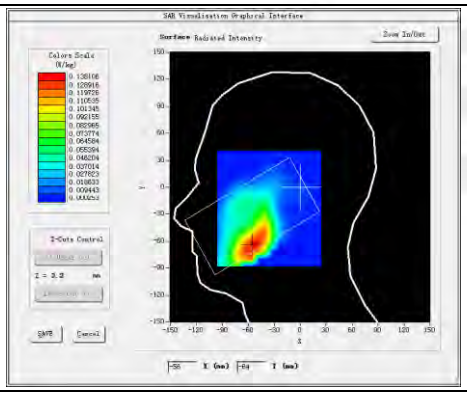
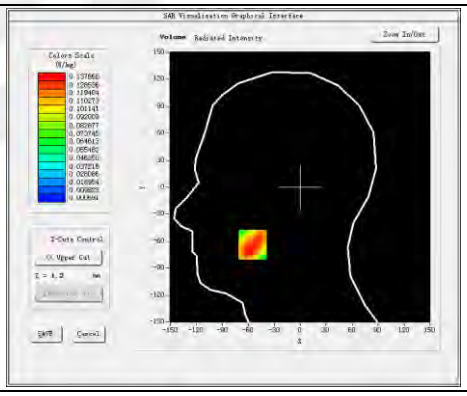
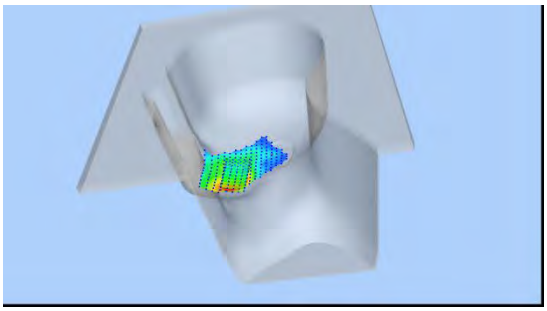
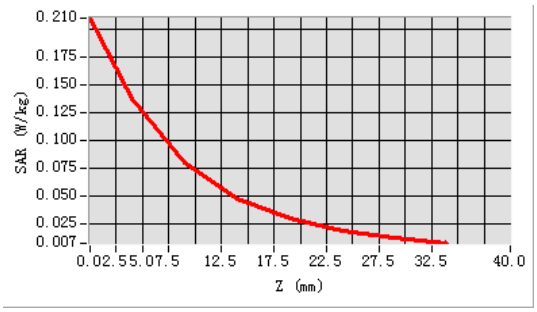
SURFACE SAR	VOLUME SAR
	
3D screen shot	**Z Axis Scan**
	

Plot 5: DUT: Smart Phone; EUT Model: W7

Test Date	2020-03-11
Probe	SN 41/18 EPGO334
ConvF	1.84
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm, Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Right head
Device Position	Cheek
Band	WCDMA II
Channels	Low
Signal	WCDMA (Crest factor: 1.0)
Frequency (MHz)	1852.4
Relative permittivity (real part)	40.75
Conductivity (S/m)	1.38
Variation (%)	0.93

Maximum location: X=-55.00, Y=-64.00
SAR Peak: 0.22 W/kg

SAR 10g (W/Kg)	0.077099
SAR 1g (W/Kg)	0.137080

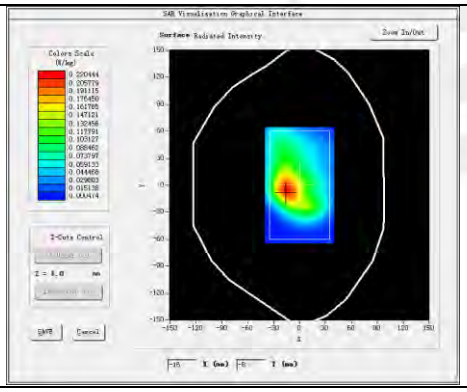
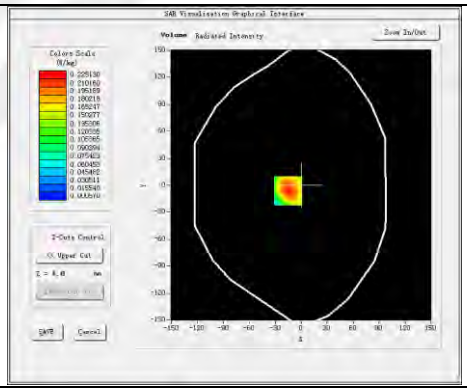
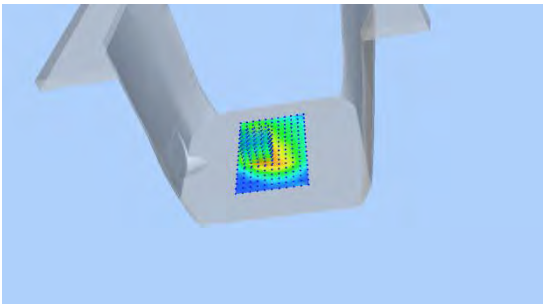
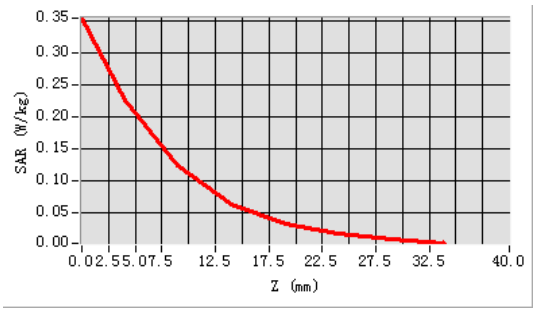
SURFACE SAR	VOLUME SAR
	
3D screen shot	**Z Axis Scan**
	

Plot 6: DUT: Smart Phone; EUT Model: W7

Test Date	2020-03-11
Probe	SN 41/18 EPGO334
ConvF	1.88
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm, Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Validation plane
Device Position	Back side
Band	WCDMA II
Channels	Low
Signal	WCDMA (Crest factor: 1.0)
Frequency (MHz)	1852.4
Relative permittivity (real part)	52.42
Conductivity (S/m)	1.51
Variation (%)	-0.08

Maximum location: X=-15.00, Y=-6.00
SAR Peak: 0.36 W/kg

SAR 10g (W/Kg)	0.115414
SAR 1g (W/Kg)	0.216855

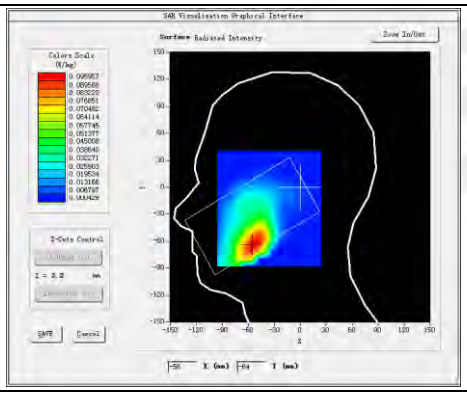
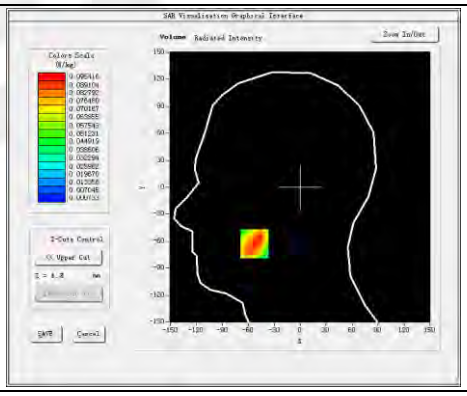
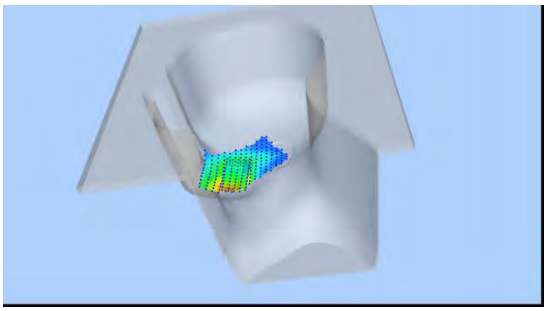
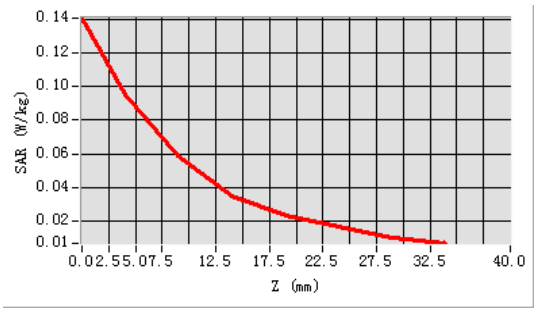
SURFACE SAR	VOLUME SAR
	
3D screen shot	**Z Axis Scan**
	

Plot 7: DUT: Smart Phone; EUT Model: W7

Test Date	2020-03-10
Probe	SN 41/18 EPGO334
ConvF	1.60
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm, Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Right head
Device Position	Cheek
Band	WCDMA IV
Channels	High
Signal	WCDMA (Crest factor: 1.0)
Frequency (MHz)	1752.4
Relative permittivity (real part)	40.52
Conductivity (S/m)	1.41
Variation (%)	2.58

Maximum location: X=-53.00, Y=-63.00
SAR Peak: 0.14 W/kg

SAR 10g (W/Kg)	0.052261
SAR 1g (W/Kg)	0.090789

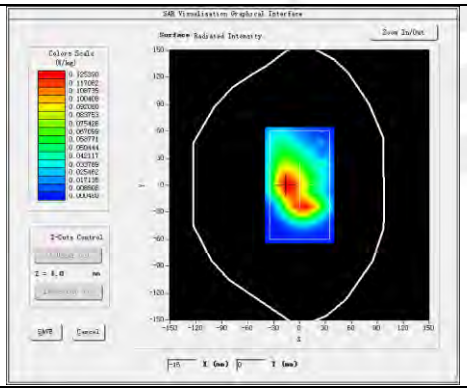
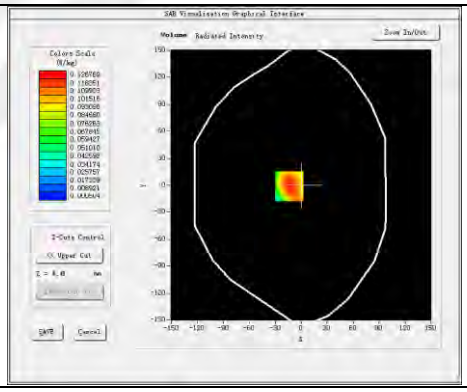
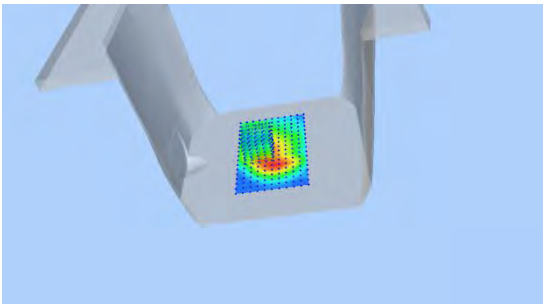
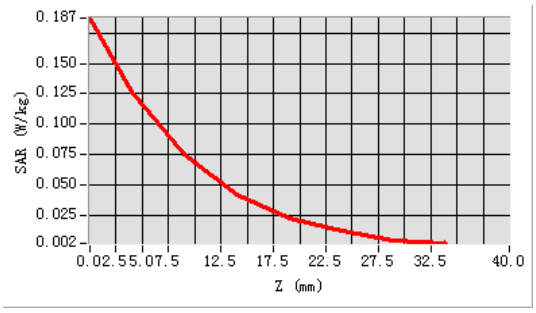
SURFACE SAR	VOLUME SAR
	
3D screen shot	**Z Axis Scan**
	

Plot 8: DUT: Smart Phone; EUT Model: W7

Test Date	2020-03-10
Probe	SN 41/18 EPGO334
ConvF	1.66
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm, Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Validation plane
Device Position	Back side
Band	WCDMA IV
Channels	High
Signal	WCDMA (Crest factor: 1.0)
Frequency (MHz)	1752.4
Relative permittivity (real part)	54.55
Conductivity (S/m)	1.48
Variation (%)	-2.44

Maximum location: X=-14.00, Y=-1.00
SAR Peak: 0.19 W/kg

SAR 10g (W/Kg)	0.069042
SAR 1g (W/Kg)	0.121744

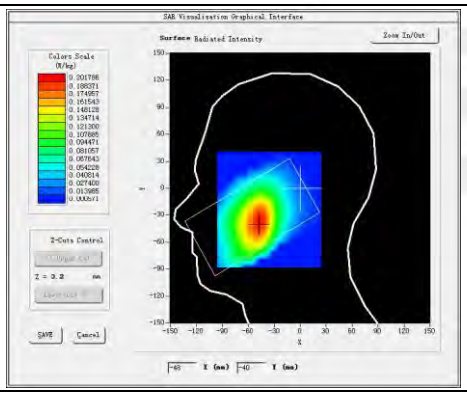
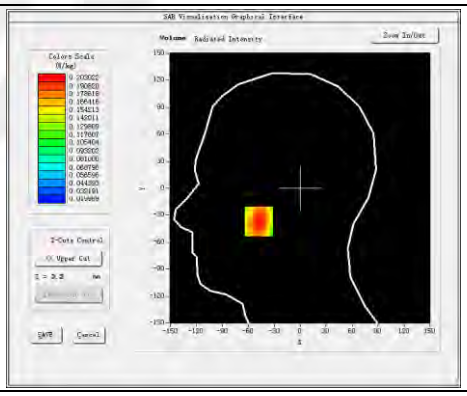
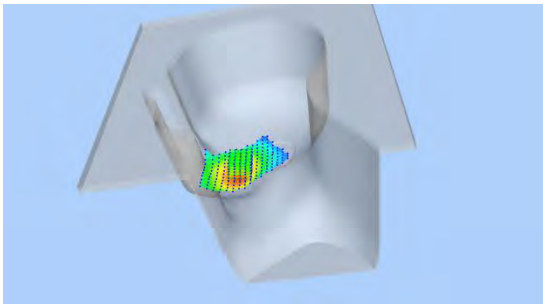
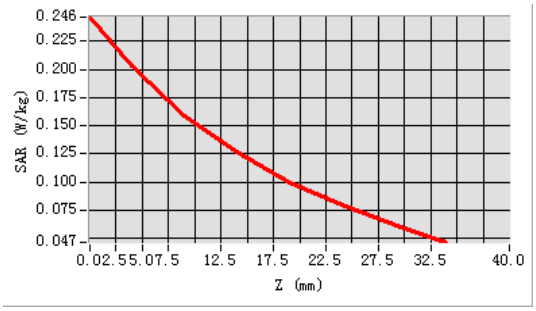
SURFACE SAR	VOLUME SAR
	
3D screen shot	**Z Axis Scan**
	

Plot 9: DUT: Smart Phone; EUT Model: W7

Test Date	2020-03-09
Probe	SN 41/18 EPGO334
ConvF	1.48
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm, Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Right head
Device Position	Cheek
Band	WCDMA V
Channels	High
Signal	WCDMA (Crest factor: 1.0)
Frequency (MHz)	846.6
Relative permittivity (real part)	41.44
Conductivity (S/m)	0.87
Variation (%)	-0.23

Maximum location: X=-48.00, Y=-37.00
SAR Peak: 0.25 W/kg

SAR 10g (W/Kg)	0.144168
SAR 1g (W/Kg)	0.196253

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

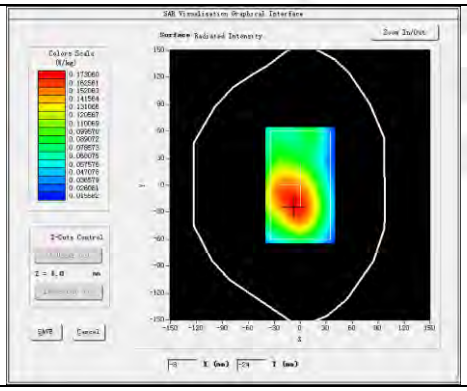
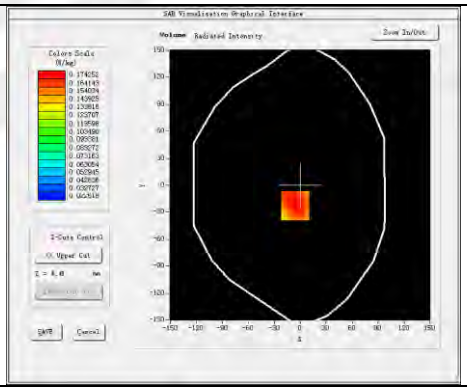
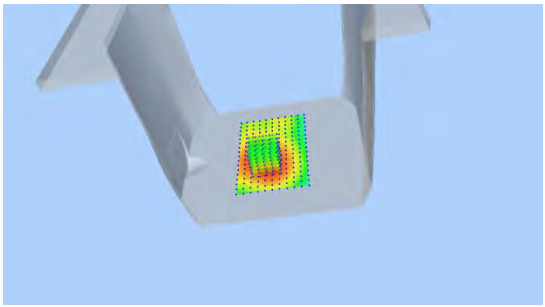
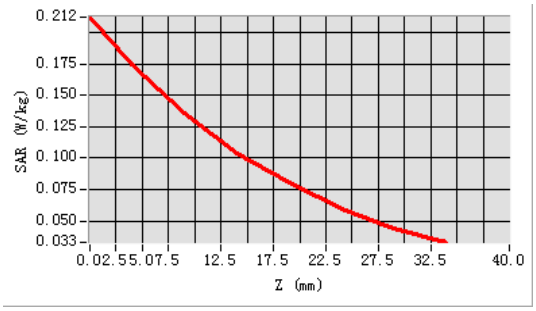
Plot 10: DUT: Smart Phone; EUT Model: W7

Test Date	2020-03-09
Probe	SN 41/18 EPGO334
ConvF	1.53
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm, Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Validation plane
Device Position	Back side
Band	WCDMA V
Channels	High
Signal	WCDMA (Crest factor: 1.0)
Frequency (MHz)	846.6
Relative permittivity (real part)	55.69
Conductivity (S/m)	1.00
Variation (%)	3.83

Maximum location: X=-6.00, Y=-23.00

SAR Peak: 0.22 W/kg

SAR 10g (W/Kg)	0.126486
SAR 1g (W/Kg)	0.170832

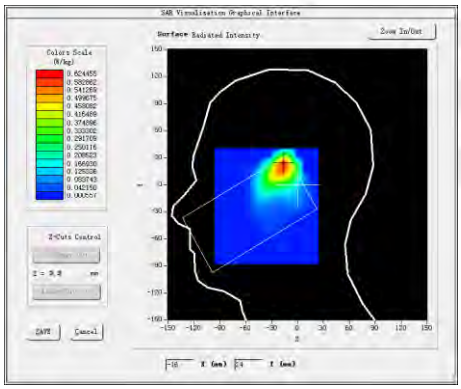
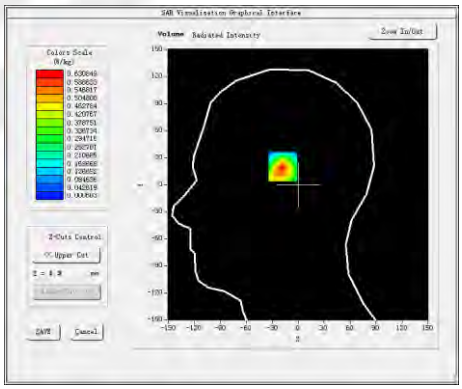
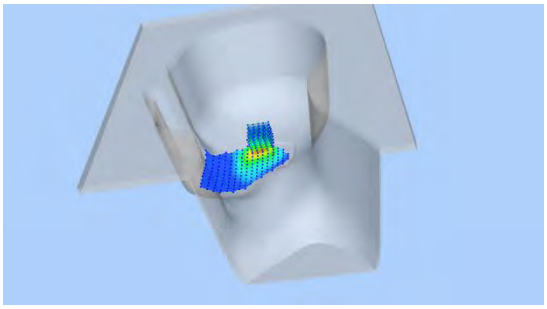
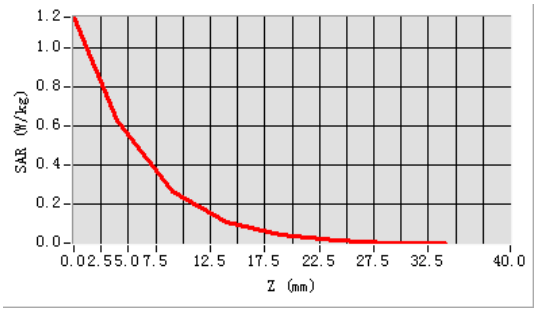
SURFACE SAR	VOLUME SAR
	
3D screen shot	**Z Axis Scan**
	

Plot 11: DUT: Smart Phone; EUT Model: W7

Test Date	2020-03-12
Probe	SN 41/18 EPGO334
ConvF	1.97
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm, Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Right head
Device Position	Cheek
Band	IEEE 802.11b ISM
Channels	Middle
Signal	IEEE802.b (Crest factor: 1.0)
Frequency (MHz)	2437
Relative permittivity (real part)	38.50
Conductivity (S/m)	1.78
Variation (%)	1.29

Maximum location: X=-16.00, Y=23.00
SAR Peak: 1.14 W/kg

SAR 10g (W/Kg)	0.267170
SAR 1g (W/Kg)	0.593374

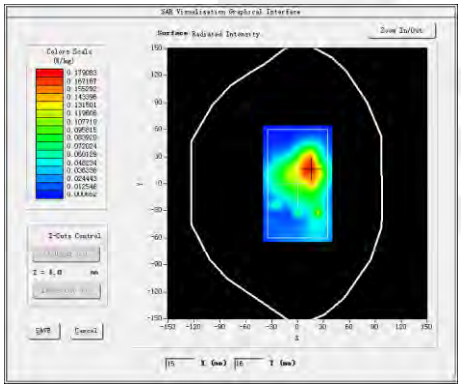
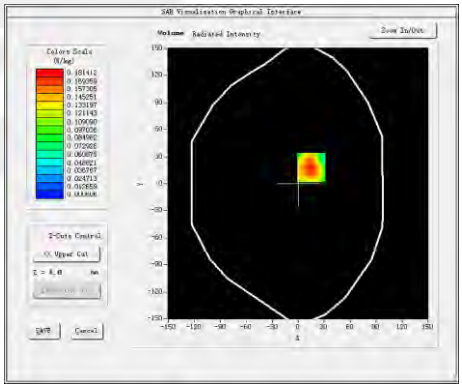
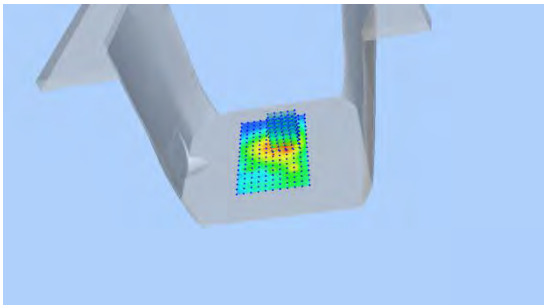
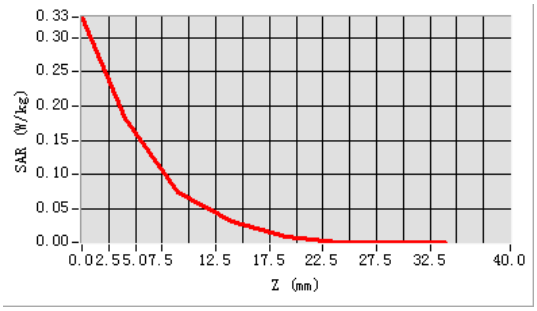
SURFACE SAR	VOLUME SAR
	
3D	**Z Axis Scan**
	

Plot 12: DUT: Smart Phone; EUT Model: W7

Test Date	2020-03-12
Probe	SN 41/18 EPGO334
ConvF	2.02
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm, Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Validation plane
Device Position	Back side
Band	IEEE 802.11b ISM
Channels	Middle
Signal	IEEE802.b (Crest factor: 1.0)
Frequency (MHz)	2437
Relative permittivity (real part)	54.22
Conductivity (S/m)	1.97
Variation (%)	-2.38

Maximum location: X=15.00, Y=18.00
SAR Peak: 0.33 W/kg

SAR 10g (W/Kg)	0.080670
SAR 1g (W/Kg)	0.173283

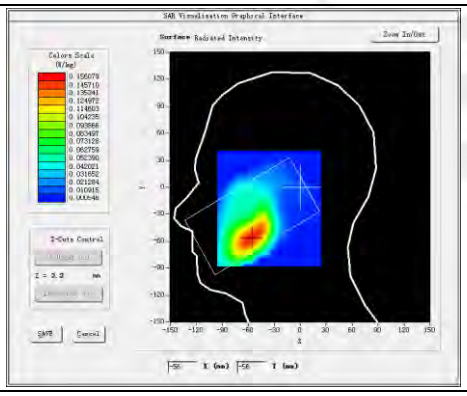
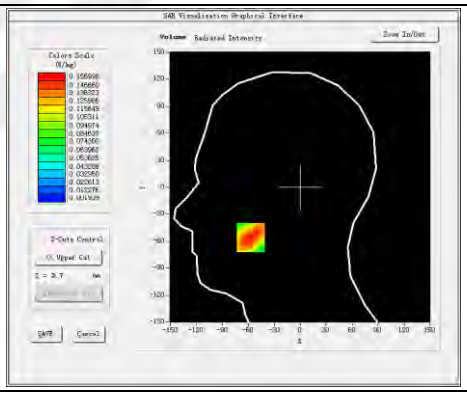
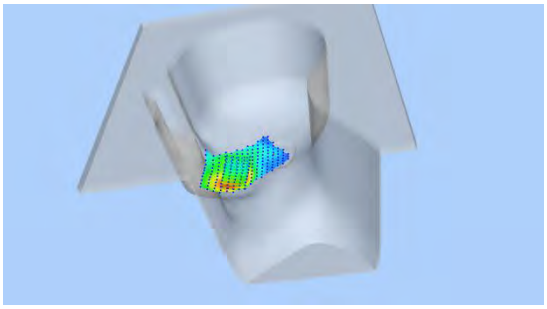
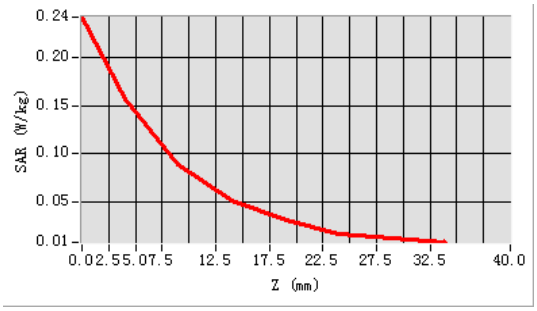
SURFACE SAR	VOLUME SAR
	
3D	**Z Axis Scan**
	

Plot 13: DUT: Smart Phone; EUT Model: W7

Test Date	2020-03-11
Probe	SN 41/18 EPGO334
ConvF	1.84
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm, Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Right head
Device Position	Cheek
Band	LTE Band 2 (RB 1)
Channels	Middle
Signal	LTE (Crest factor: 1.0)
Frequency (MHz)	1880
Relative permittivity (real part)	40.75
Conductivity (S/m)	1.38
Variation (%)	0.72

Maximum location: X=-57.00, Y=-56.00
SAR Peak: 0.24 W/kg

SAR 10g (W/Kg)	0.084649
SAR 1g (W/Kg)	0.150391

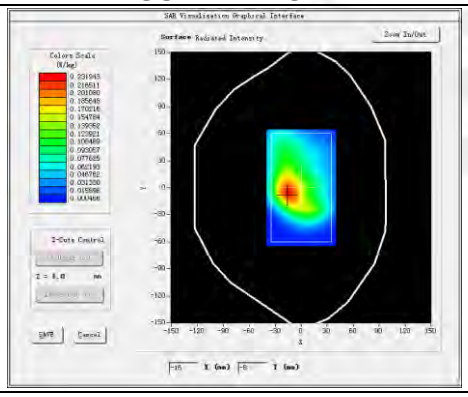
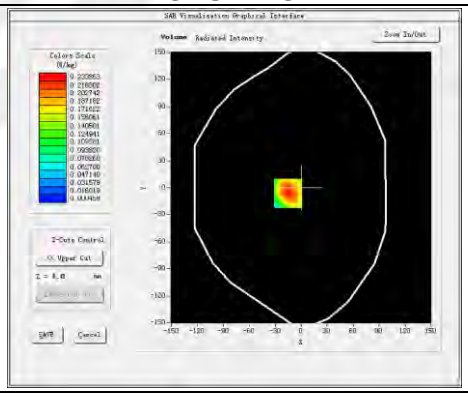
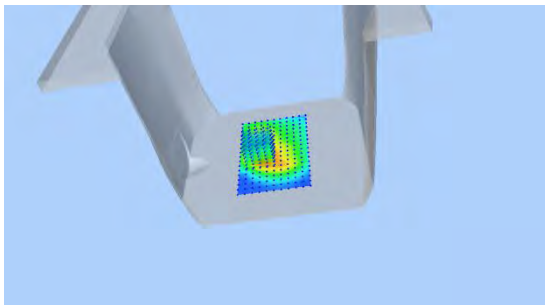
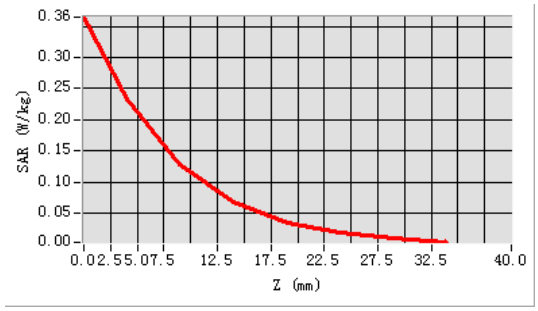
SURFACE SAR	VOLUME SAR
	
3D screen shot	**Z Axis Scan**
	

Plot 14: DUT: Smart Phone; EUT Model: W7

Test Date	2020-03-11
Probe	SN 41/18 EPGO334
ConvF	1.88
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm, Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Validation plane
Device Position	Back side
Band	LTE Band 2 (RB 1)
Channels	Middle
Signal	LTE (Crest factor: 1.0)
Frequency (MHz)	1880
Relative permittivity (real part)	52.42
Conductivity (S/m)	1.51
Variation (%)	0.63

Maximum location: X=-15.00, Y=-6.00
SAR Peak: 0.37 W/kg

SAR 10g (W/Kg)	0.119523
SAR 1g (W/Kg)	0.221940

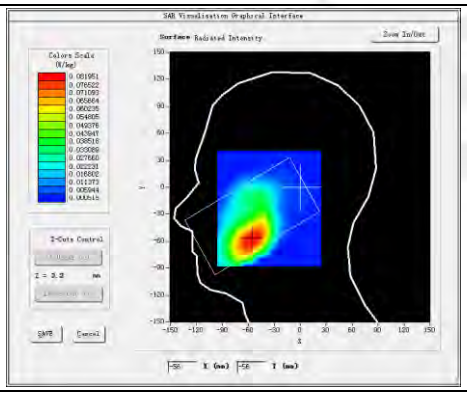
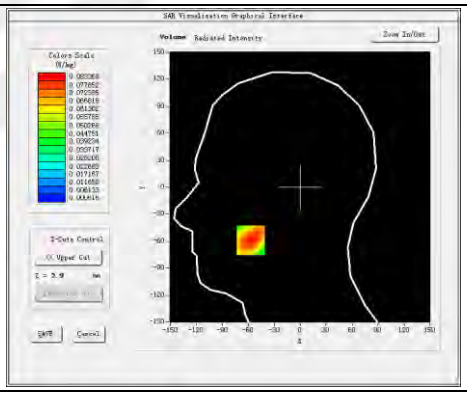
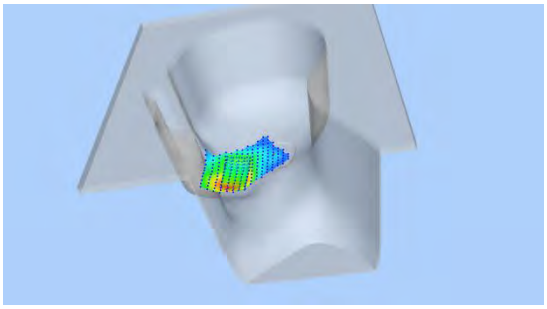
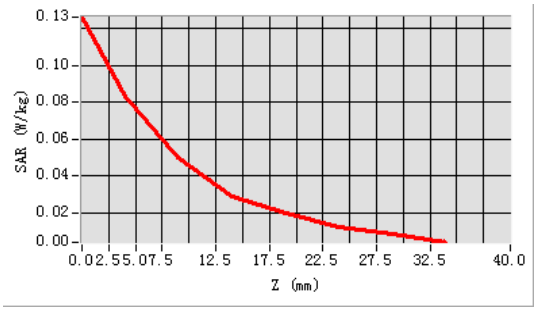
SURFACE SAR	VOLUME SAR
	
3D screen shot	**Z Axis Scan**
	

Plot 15: DUT: Smart Phone; EUT Model: W7

Test Date	2020-03-10
Probe	SN 41/18 EPGO334
ConvF	1.60
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm, Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Right head
Device Position	Cheek
Band	LTE Band 4 (RB 1)
Channels	High
Signal	LTE (Crest factor: 1.0)
Frequency (MHz)	1745.0
Relative permittivity (real part)	40.52
Conductivity (S/m)	1.41
Variation (%)	1.93

Maximum location: X=-57.00, Y=-59.00
SAR Peak: 0.13 W/kg

SAR 10g (W/Kg)	0.046734
SAR 1g (W/Kg)	0.080635

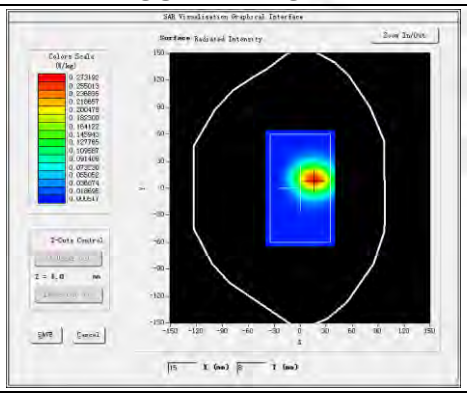
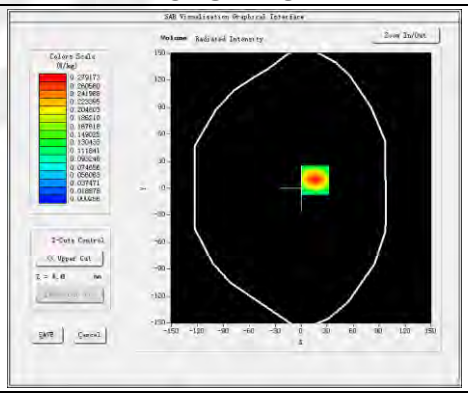
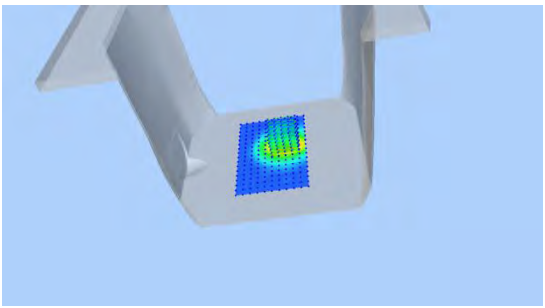
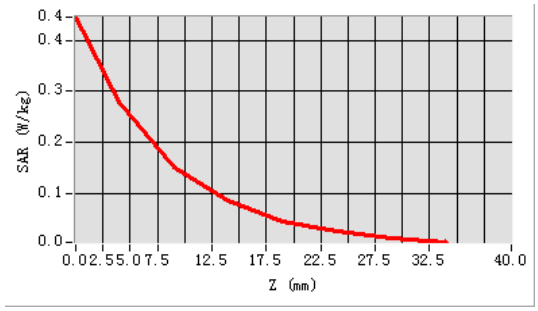
SURFACE SAR	VOLUME SAR
	
3D screen shot	**Z Axis Scan**
	

Plot 16: DUT: Smart Phone; EUT Model: W7

Test Date	2020-03-10
Probe	SN 41/18 EPGO334
ConvF	1.66
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm, Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Validation plane
Device Position	Bottom Edge
Band	LTE Band 4 (RB 1)
Channels	High
Signal	LTE (Crest factor: 1.0)
Frequency (MHz)	1745.0
Relative permittivity (real part)	54.55
Conductivity (S/m)	1.48
Variation (%)	-3.53

Maximum location: X=16.00, Y=9.00
SAR Peak: 0.44 W/kg

SAR 10g (W/Kg)	0.135797
SAR 1g (W/Kg)	0.263836

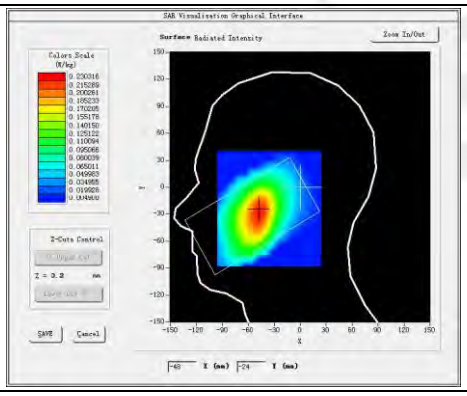
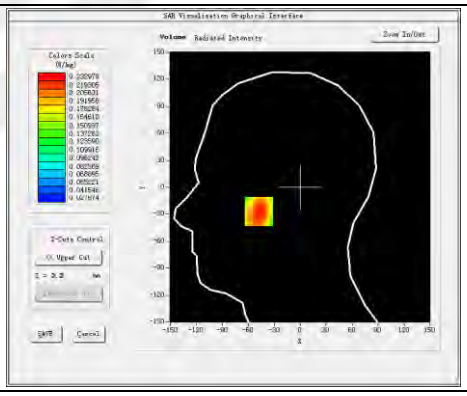
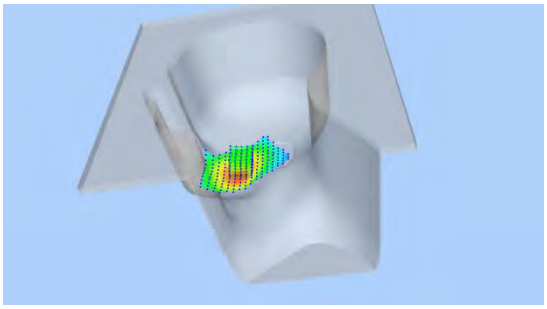
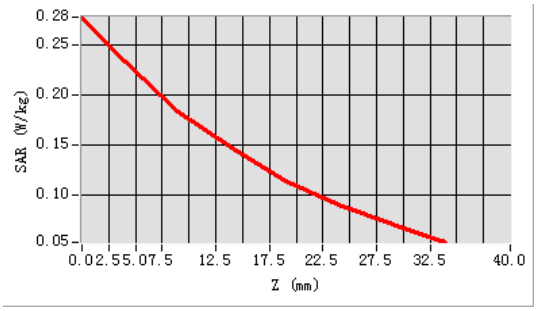
SURFACE SAR	VOLUME SAR
	
3D screen shot	**Z Axis Scan**
	

Plot 17: DUT: Smart Phone; EUT Model: W7

Test Date	2020-03-09
Probe	SN 41/18 EPGO334
ConvF	1.48
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm, Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Right head
Device Position	Cheek
Band	LTE Band 5 (RB 1)
Channels	Middle
Signal	LTE (Crest factor: 1.0)
Frequency (MHz)	836.5
Relative permittivity (real part)	41.44
Conductivity (S/m)	0.87
Variation (%)	-2.29

Maximum location: X=-48.00, Y=-27.00
SAR Peak: 0.28 W/kg

SAR 10g (W/Kg)	0.165273
SAR 1g (W/Kg)	0.224404

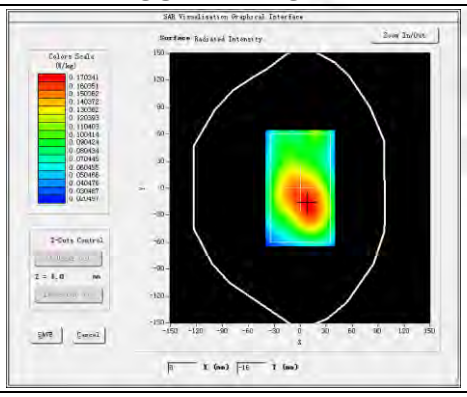
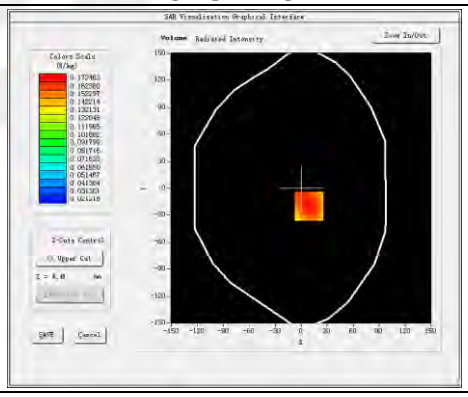
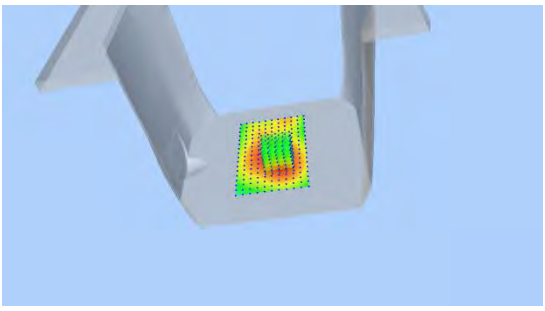
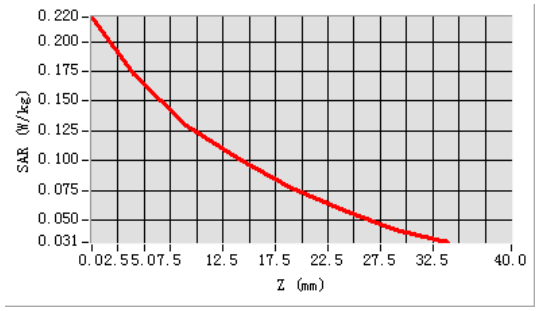
SURFACE SAR	VOLUME SAR
	
3D screen shot	**Z Axis Scan**
	

Plot 18: DUT: Smart Phone; EUT Model: W7

Test Date	2020-03-09
Probe	SN 41/18 EPGO334
ConvF	1.53
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm, Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Validation plane
Device Position	Back side
Band	LTE Band 5 (RB 1)
Channels	Middle
Signal	LTE (Crest factor: 1.0)
Frequency (MHz)	836.5
Relative permittivity (real part)	55.69
Conductivity (S/m)	1.00
Variation (%)	3.82

Maximum location: X=9.00, Y=-20.00
SAR Peak: 0.22 W/kg

SAR 10g (W/Kg)	0.123371
SAR 1g (W/Kg)	0.168379

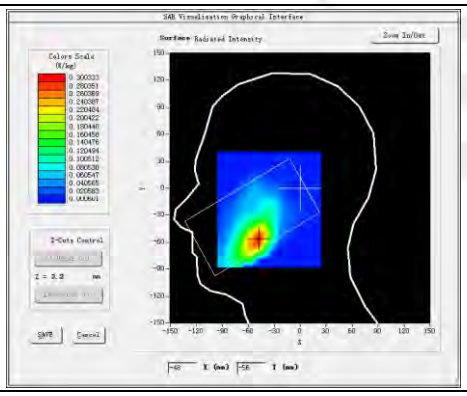
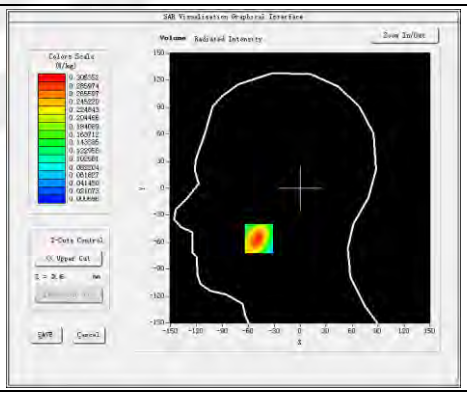
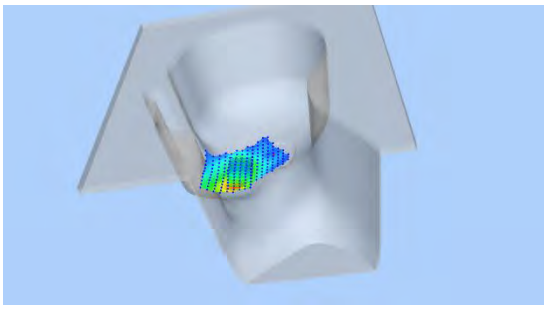
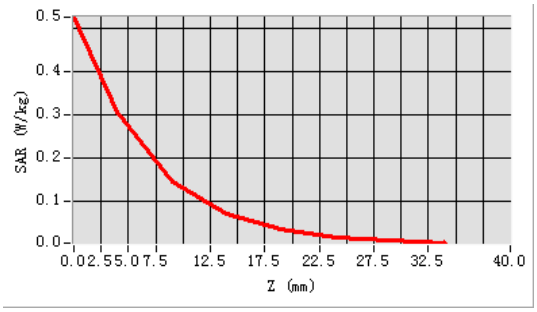
SURFACE SAR	VOLUME SAR
	
3D screen shot	**Z Axis Scan**
	

Plot 19: DUT: Smart Phone; EUT Model: W7

Test Date	2020-03-13
Probe	SN 41/18 EPGO334
ConvF	1.85
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm, Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Right head
Device Position	Cheek
Band	LTE Band 7 (RB 1)
Channels	Middle
Signal	LTE (Crest factor: 1.0)
Frequency (MHz)	2535
Relative permittivity (real part)	38.16
Conductivity (S/m)	1.94
Variation (%)	1.61

Maximum location: X=-48.00, Y=-56.00
SAR Peak: 0.52 W/kg

SAR 10g (W/Kg)	0.142091
SAR 1g (W/Kg)	0.290894

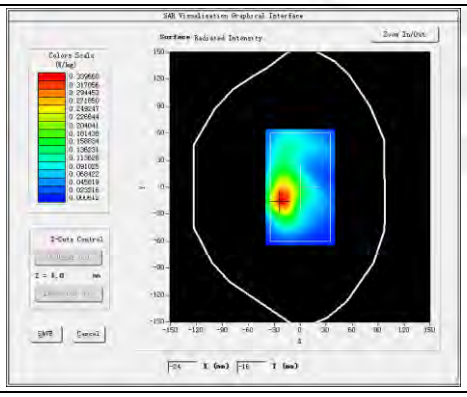
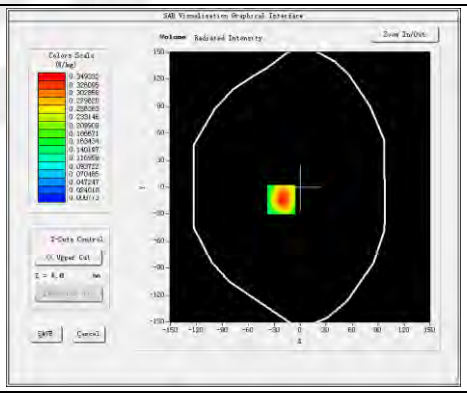
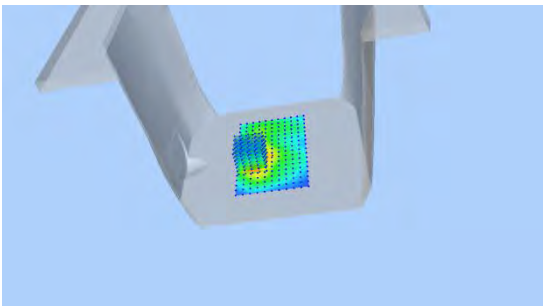
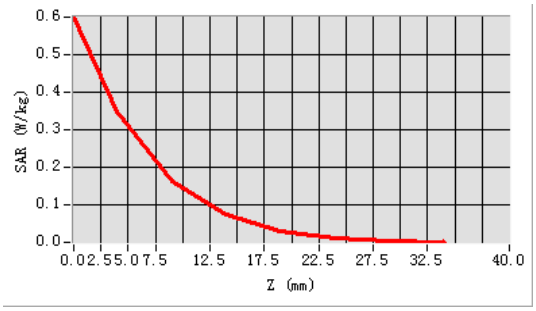
SURFACE SAR	VOLUME SAR
	
3D screen shot	**Z Axis Scan**
	

Plot 20: DUT: Smart Phone; EUT Model: W7

Test Date	2020-03-12
Probe	SN 41/18 EPGO334
ConvF	1.92
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm, Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Validation plane
Device Position	Back side
Band	LTE Band 7 (RB 1)
Channels	Middle
Signal	LTE (Crest factor: 1.0)
Frequency (MHz)	2535
Relative permittivity (real part)	52.89
Conductivity (S/m)	2.11
Variation (%)	1.04

Maximum location: X=-22.00, Y=-14.00
SAR Peak: 0.60 W/kg

SAR 10g (W/Kg)	0.162525
SAR 1g (W/Kg)	0.333454

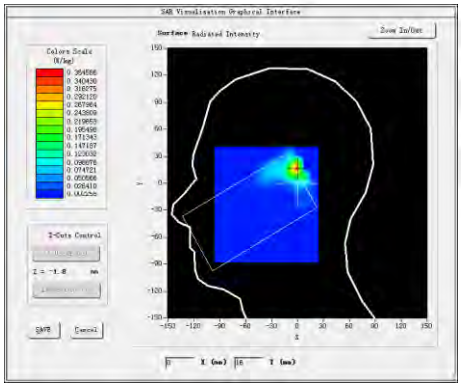
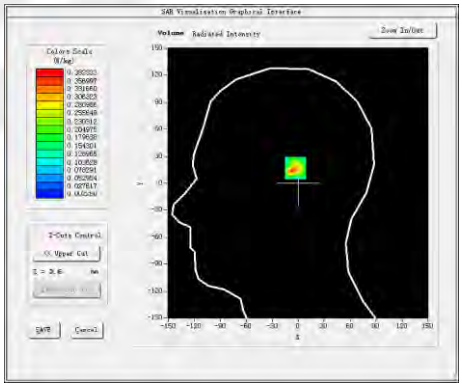
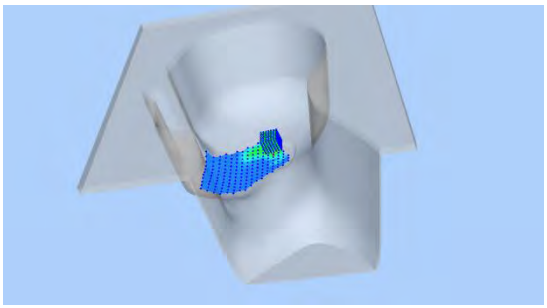
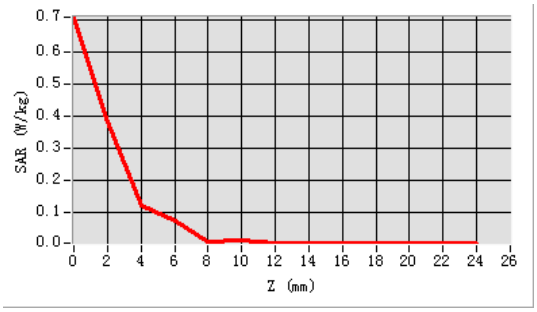
SURFACE SAR	VOLUME SAR
	
3D screen shot	**Z Axis Scan**
	

Plot 21: DUT: Smart Phone; EUT Model: W7

Test Date	2020-03-16
Probe	SN 41/18 EPGO334
ConvF	1.86
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	Right head
Device Position	Cheek
Band	IEEE 802.11a U-NII
Channels	36
Signal	IEEE802.a (Crest factor: 1.0)
Frequency (MHz)	5180
Relative permittivity (real part)	36.25
Conductivity (S/m)	4.70
Variation (%)	0.47

Maximum location: X=1.00, Y=17.00
SAR Peak: 1.09 W/kg

SAR 10g (W/Kg)	0.117852
SAR 1g (W/Kg)	0.346936

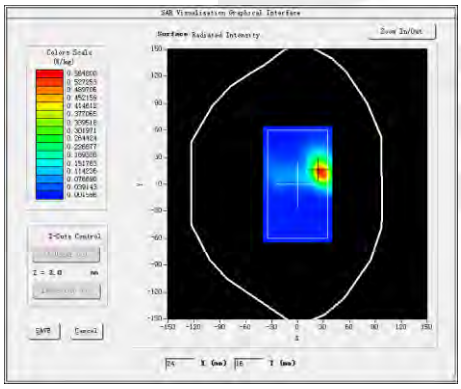
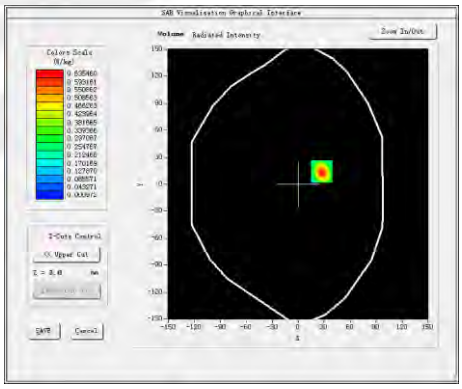
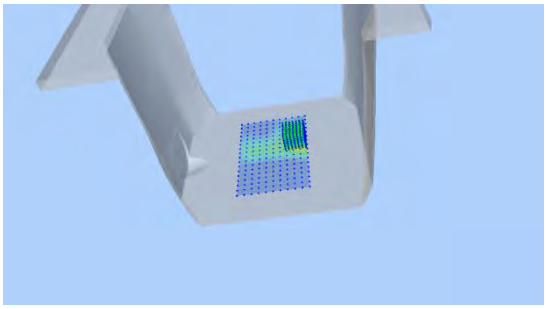
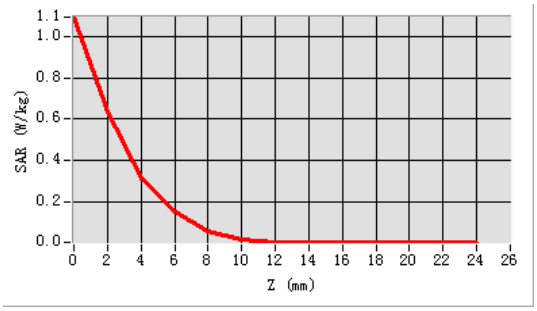
SURFACE SAR	VOLUME SAR
	
3D	**Z Axis Scan**
	

Plot 22: DUT: Smart Phone; EUT Model: W7

Test Date	2020-03-16
Probe	SN 41/18 EPGO334
ConvF	1.92
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	Back side
Band	IEEE 802.11a U-NII
Channels	36
Signal	IEEE802.a (Crest factor: 1.0)
Frequency (MHz)	5180
Relative permittivity (real part)	48.77
Conductivity (S/m)	5.39
Variation (%)	-0.32

Maximum location: X=27.00, Y=14.00
SAR Peak: 1.15 W/kg

SAR 10g (W/Kg)	0.121317
SAR 1g (W/Kg)	0.347720

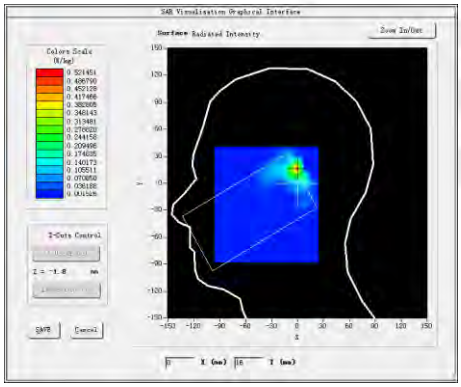
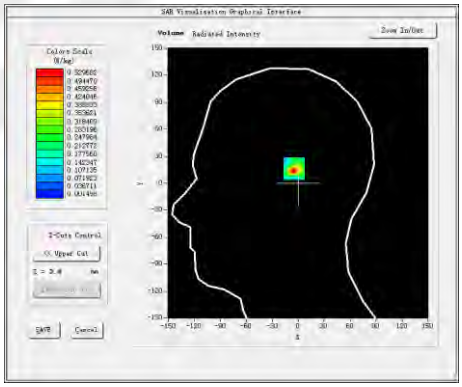
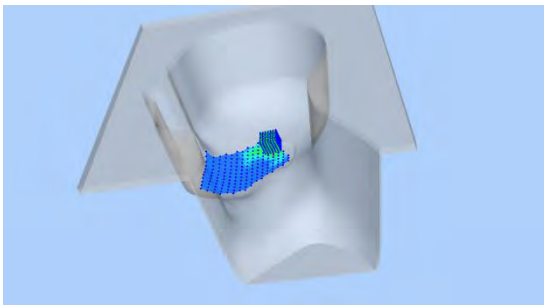
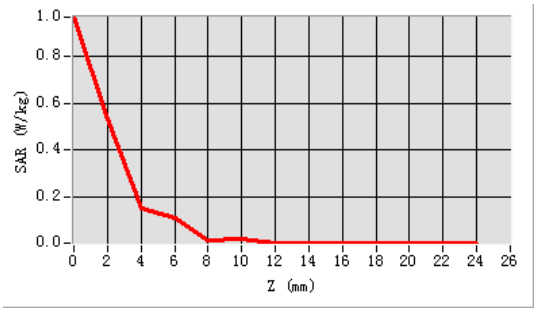
SURFACE SAR	VOLUME SAR
	
3D	**Z Axis Scan**
	

Plot 23: DUT: Smart Phone; EUT Model: W7

Test Date	2020-03-17
Probe	SN 41/18 EPGO334
ConvF	2.07
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	Right head
Device Position	Cheek
Band	IEEE 802.11ac U-NII
Channels	64
Signal	IEEE802.ac (Crest factor: 1.0)
Frequency (MHz)	5320
Relative permittivity (real part)	35.75
Conductivity (S/m)	4.81
Variation (%)	1.36

Maximum location: X=0.00, Y=16.00
SAR Peak: 1.57 W/kg

SAR 10g (W/Kg)	0.146593
SAR 1g (W/Kg)	0.499177

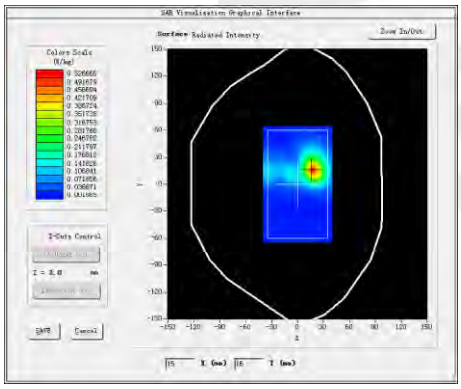
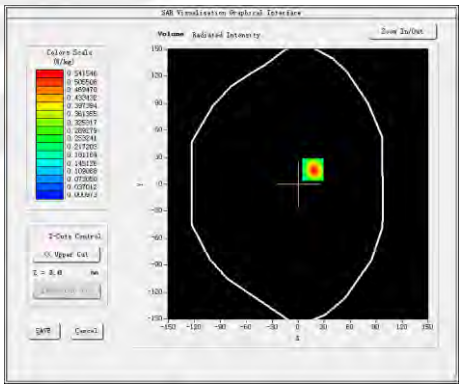
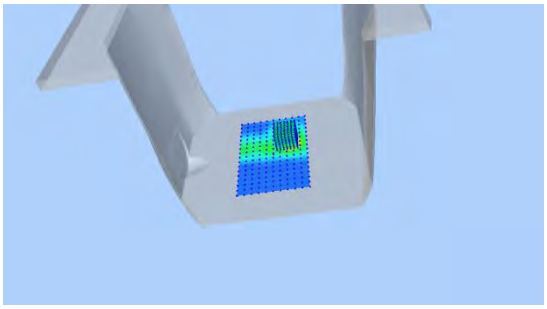
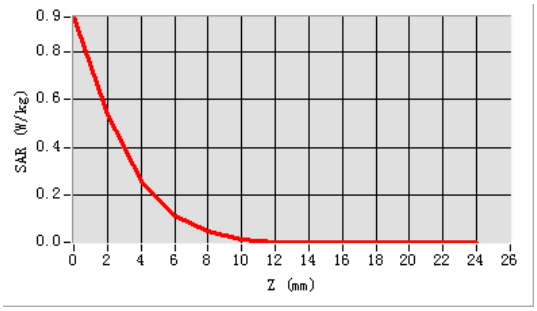
SURFACE SAR	VOLUME SAR
	
3D	**Z Axis Scan**
	

Plot 24: DUT: Smart Phone; EUT Model: W7

Test Date	2020-03-17
Probe	SN 41/18 EPGO334
ConvF	2.12
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	Back side
Band	IEEE 802.11ac U-NII
Channels	64
Signal	IEEE802.ac (Crest factor: 1.0)
Frequency (MHz)	5320
Relative permittivity (real part)	48.52
Conductivity (S/m)	5.60
Variation (%)	3.07

Maximum location: X=17.00, Y=16.00
SAR Peak: 1.00 W/kg

SAR 10g (W/Kg)	0.105702
SAR 1g (W/Kg)	0.298966

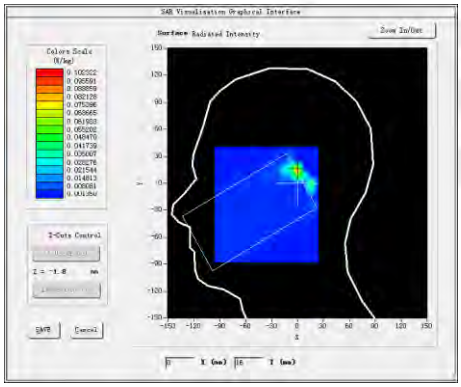
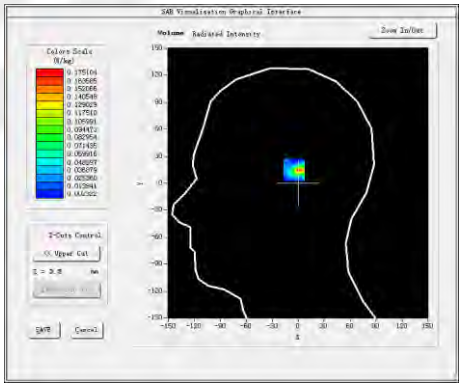
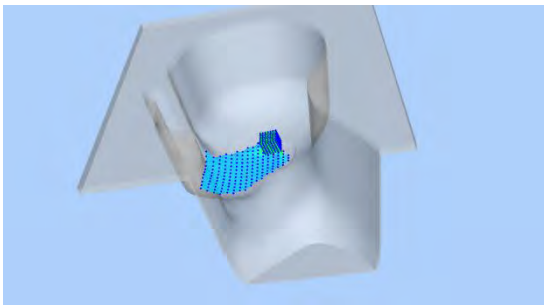
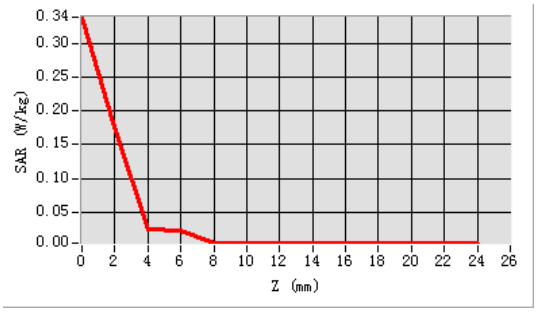
SURFACE SAR	VOLUME SAR
	
3D	**Z Axis Scan**
	

Plot 25: DUT: Smart Phone; EUT Model: W7

Test Date	2020-03-18
Probe	SN 41/18 EPGO334
ConvF	2.09
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	Right head
Device Position	Cheek
Band	IEEE 802.11ac U-NII
Channels	155
Signal	IEEE802.ac (Crest factor: 1.0)
Frequency (MHz)	5775
Relative permittivity (real part)	35.75
Conductivity (S/m)	4.81
Variation (%)	-2.67

Maximum location: X=0.00, Y=15.00
SAR Peak: 0.57 W/kg

SAR 10g (W/Kg)	0.035181
SAR 1g (W/Kg)	0.145962

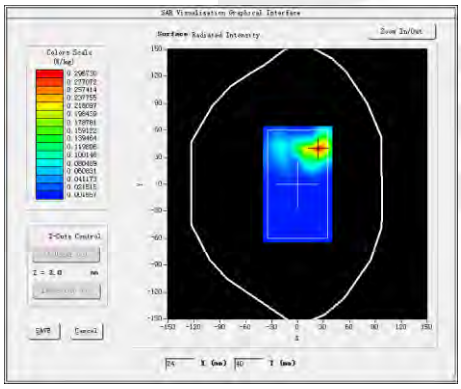
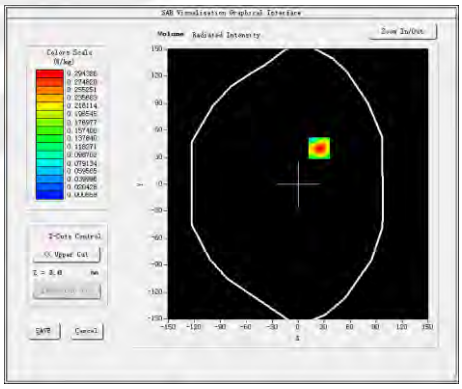
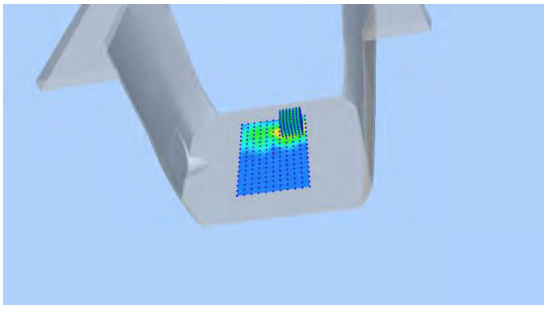
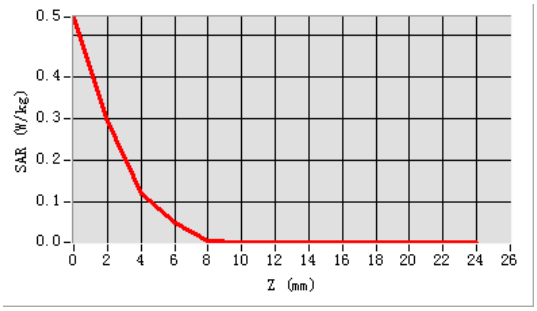
SURFACE SAR	VOLUME SAR
	
3D	**Z Axis Scan**
	

Plot 26: DUT: Smart Phone; EUT Model: W7

Test Date	2020-03-18
Probe	SN 41/18 EPGO334
ConvF	2.16
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	Back side
Band	IEEE 802.11ac U-NII
Channels	155
Signal	IEEE802.ac (Crest factor: 1.0)
Frequency (MHz)	5775
Relative permittivity (real part)	48.73
Conductivity (S/m)	6.11
Variation (%)	-1.04

Maximum location: X=24.00, Y=40.00
SAR Peak: 0.58 W/kg

SAR 10g (W/Kg)	0.060478
SAR 1g (W/Kg)	0.162194

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※※※※※