FCC SAR TEST REPORT

Report No.: STS2301309H02

Issued for

Qianxun Spatial Intelligence(Zhejiang) Inc.

No.1,Building12,Area C,Deqing Geographic Info Town,Wuyang Street,Deqing County,Huzhou City,Zhejiang Province,China

Product Name:	Handheld data collection terminal
Brand Name:	N/A
Model Name:	HC6
Series Model:	N/A
FCC ID:	2A33X-HC6
Test Standard:	ANSI/IEEE Std. C95.1
	FCC 47 CFR Part 2 (2.1093)
	IEEE 1528: 2013
Max. Report SAR:	Body: 0.484 W/kg(1g)
	Limbs: 0.720 W/kg(10g)

ShenZhen STS Test Services Co.,Ltd.
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Test Report Certification

Applicant's name ..... :	Qianxun Spatial Intelligence(Zhejiang) Inc.
Address ..... :	No.1,Building12,Area C,Deqing Geographic Info Town,Wuyang Street,Deqing County,Huzhou City,Zhejiang Province,China
Manufacture's Name ..... :	Qianxun Spatial Intelligence(Zhejiang) Inc.
Address ..... :	No.1,Building12,Area C,Deqing Geographic Info Town,Wuyang Street,Deqing County,Huzhou City,Zhejiang Province,China

Product description

Product name ..... :	Handheld data collection terminal
Brand name ..... :	N/A
Model name ..... :	HC6
Series Model..... :	N/A
Standards ..... :	ANSI/IEEE Std. C95.1-1992 FCC 47 CFR Part 2 (2.1093) IEEE 1528: 2013

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

Date of Test

Date (s) of performance of tests ..... :	08 Mar. 2023 ~ 15 Mar. 2023
Date of Issue ..... :	17 Mar. 2023
Test Result ..... :	**Pass**

Testing Engineer : Shi fan. long

(Shifan. Long)

Technical Manager : Sean She

(Sean she)

Authorized Signatory : Bovey Yang

(Bovey Yang)

Table of Contents

Revision History

Rev.	Issue Date	Report No.	Effect Page	Contents
00	17 Mar. 2023	STS2301309H02	ALL	Initial Issue

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	Handheld data collection terminal			
Brand Name	N/A			
Model Name	HC6			
Series Model	N/A			
Model Difference	N/A			
Battery	Rated Voltage:3.8V Charge Limit Voltage:4.35V Capacity: 5200mAh			
Device Category	Portable			
Product stage	Production unit			
RF Exposure Environment	General Population / Uncontrolled			
Hardware Version	V1.1			
Software Version	R0Q3.62.43.05			
Frequency Range	WCDMA Band V: 824 MHz ~ 849 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 40: 2305~2315MHz/2350~2360MHz LTE Band 41: 2496 MHz ~ 2690 MHz 2.4G WLAN: 802.11b/g/n 20: 2412~2462 MHz 802.11n (40MHz): 2422~2452MHz 5.2G WLAN: 5150 to 5250 MHz 5.8G WLAN: 5725 to 5875 MHz Bluetooth: 2402 MHz to 2480 MHz			
Max. Reported SAR:	Band	Mode	Body Worn and hotspot(W/kg)	Limbs and Hotspot(W/Kg
	TNT	WCDMA Band V	0.459	0.428
	DTS	2.4G WLAN	0.033	0.027
	DSS	BT	0.024	0.025
	NII	5.2G WLAN	0.116	0.057
	NII	5.8G WLAN	0.099	0.050
	TNT	LTE Band 5	0.421	0.535
	TNT	LTE Band 7	0.484	0.720
	TNT	LTE Band 38	0.267	0.311
	TNT	LTE Band 40	0.218	0.215
	TNT	LTE Band 41	0.296	0.306
	1-g Sum SAR		0.600	0.777
	Limit		1.6 W/kg(1g)	4.0 W/kg(10)g

FCC Equipment Class	Part 15 Spread Spectrum Transmitter (DSS) Digital Transmission System (DTS) Unlicensed National Information Infrastructure TX(NII) Licensed Non-Broadcast Transmitter Worn on Body(TNT)
Operating Mode	2.4G WLAN: 802.11 b/g/n20/n40 5G WLAN: 802.11 /a/n20/n40/ac20/ac40/ac80 WCDMA: RMC, HSDPA, HSUPA Release 6 LTE: QPSK, 16QAM
Antenna Specification	PIFA Antenna
SIM Card	SIM 1 and SIM 2 is a chipset unit and tested as single chipset, SIM 1 is used to tested.
Hotspot Mode	Support
DTM Mode	Not Support
Note: 1. The EUT battery must be fully charged and checked periodically during the test to ascertain uniform power	

1.2 Test Environment

Ambient conditions in the SAR laboratory:

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

1.3 Test Factory

ShenZhen STS Test Services Co.,Ltd.

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

FCC test Firm Registration No.: 625569

IC Registration No.: 12108A

A2LA Certificate No.: 4338.01

2. Test Standards and Limits

No.	Identity	Document Title
1	47 CFR Part 2	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
2	ANSI/IEEE Std. C95.1-1992	IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz
3	IEEE Std. 1528-2013	Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques
4	FCC KDB 447498 D04 v01	RF Exposure Procedures and Equipment Authorization Policies for Mobile and Portable Devices
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 648474 D04 v01r03	SAR Evaluation Considerations for Wireless Handsets
8	FCC KDB 248227 D01 Wi-Fi SAR v02r02	SAR Considerations for 802.11 Devices
9	FCC KDB 941225 D01 v03r01	SAR Measurement Procedures for 3G Devices
10	FCC KDB 941225 D06 v02r01	Hotspot Mode SAR
11	FCC KDB 941225 D05 v02r05	SAR for LTE Devices

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

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

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

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

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

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

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

NOTE

GENERAL POPULATION/UNCONTROLLED EXPOSURE

PARTIAL BODY LIMIT

1.6 W/kg

3. SAR Measurement System

3.1 Definition of Specific Absorption Rate (SAR)

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.
The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below:

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

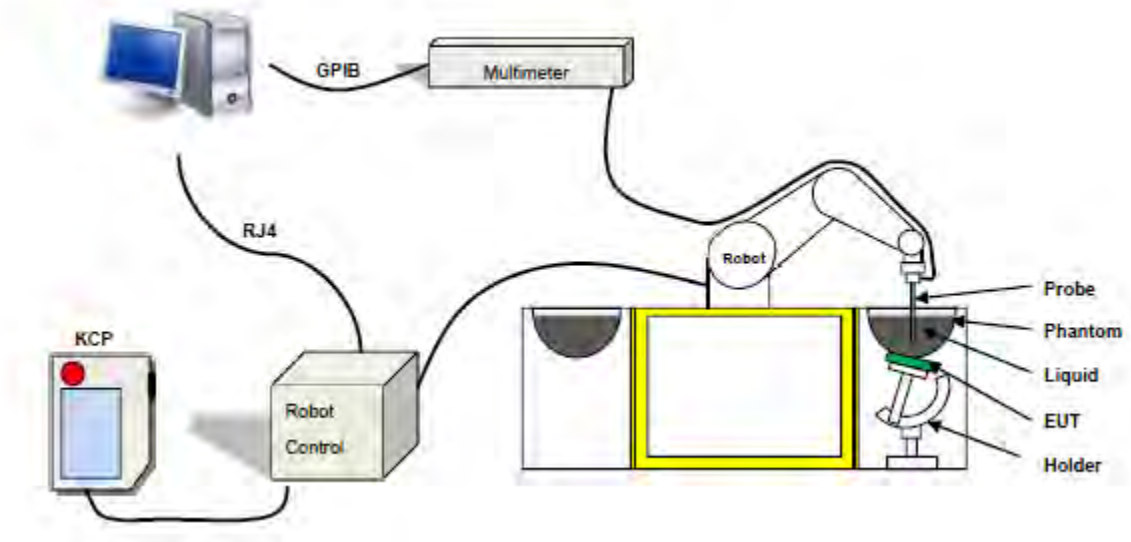
SAR is expressed in units of Watts per kilogram (W/kg) SAR measurement can be related to the electrical field in the tissue by

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

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

3.2 SAR System

MVG SAR System Diagram:



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

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

The following figure shows the system.

The EUT under test operating at the maximum power level is placed in the phone holder, under the phantom, which is filled with head simulating liquid. The E-Field probe measures the electric field inside the phantom. The 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 07/21 EPGO352 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: 150 MHz to 6 GHz for head & body simulating liquid.
- Angle between probe axis (evaluation axis) and surface normal line: less than 30°

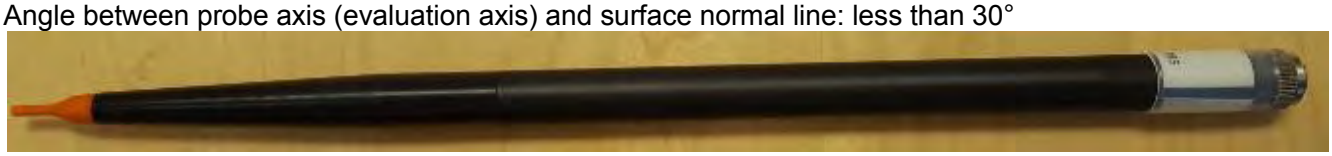


Figure 1-MVG COMOSAR Dosimetric E field Dipole

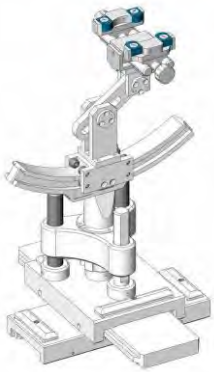
3.2.2 Phantom

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.

Figure-SN 32/14 SAM115

Figure-SN 21/21 ELLI48

3.2.3 Device Holder



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

4. Tissue Simulating Liquids

4.1 Simulating Liquids Parameter Check

The 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.

Head Tissue

Frequency (MHz)	cellulose	DGBE	HEC	NaCl	Preventol	Sugar	X100	Water	Conductivity	Permittivity
	%	%	%	%	%	%	%	%	σ	εr
750	0.2	/	/	1.4	0.2	57.0	/	41.1	0.89	41.9
835	0.2	/	/	1.4	0.2	57.9	/	40.3	0.90	41.5
900	0.2	/	/	1.4	0.2	57.9	/	40.3	0.97	41.5
1800	/	44.5	/	0.3	/	/	30.45	55.2	1.4	40.0
1900	/	44.5	/	0.3	/	/	30.45	55.2	1.4	40.0
2000	/	44.5	/	0.3	/	/	/	55.2	1.4	40.0
2450	/	44.9	/	0.1	/	/	/	55.0	1.80	39.2
2600	/	45.0	/	0.1	/	/	/	54.9	1.96	39.0

Body Tissue

Frequency (MHz)	cellulose	DGBE	HEC	NaCl	Preventol	Sugar	X100	Water	Conductivity	Permittivity
	%	%	%	%	%	%	%	%	σ	εr
750	0.2	/	/	0.9	0.1	47.2	/	51.7	0.96	55.5
835	0.2	/	/	0.9	0.1	48.2	/	50.8	0.97	55.2
900	0.2	/	/	0.9	0.1	48.2	/	50.8	1.05	55.0
1800	/	29.4	/	0.4	/	/	30.45	70.2	1.52	53.3
1900	/	29.4	/	0.4	/	/	30.45	70.2	1.52	53.3
2000	/	29.4	/	0.4	/	/	/	70.2	1.52	53.3
2450	/	31.3	/	0.1	/	/	/	68.6	1.95	52.7
2600	/	31.7	/	0.1	/	/	/	68.2	2.16	52.3

Tissue dielectric parameters for head and body phantoms				
Frequency	εr		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
3000	38.5	52.0	2.40	2.73
5800	35.3	48.2	5.27	6.00

LIQUID MEASUREMENT RESULTS

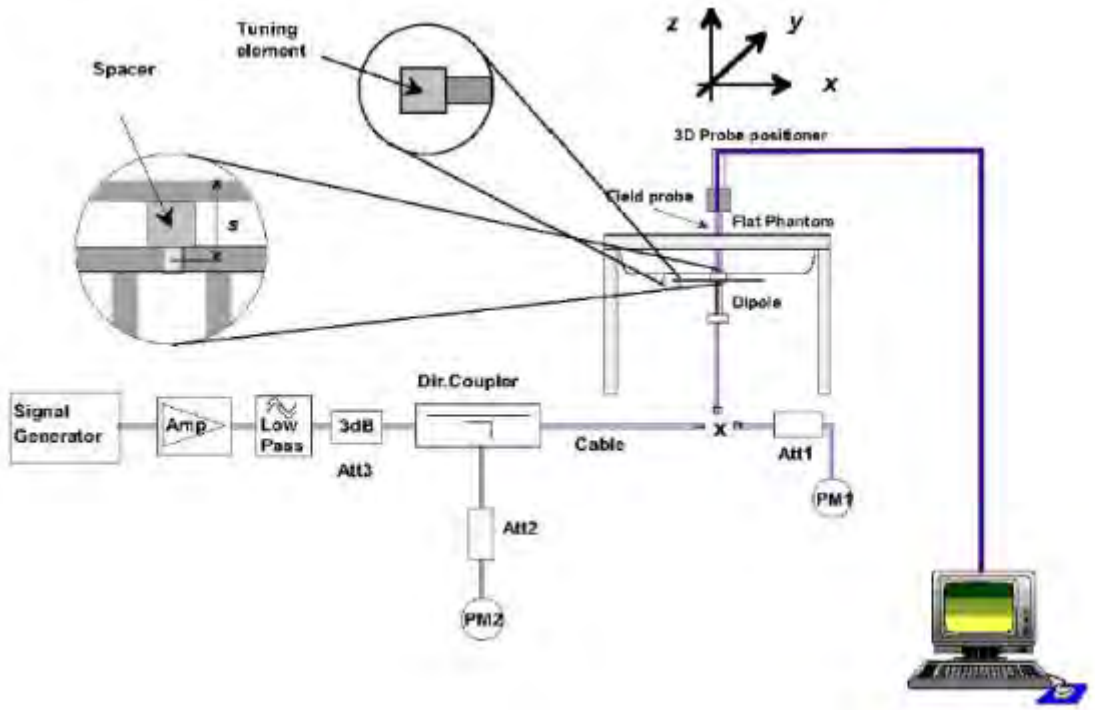
Date	Ambient		Simulating Liquid		Parameters	Target	Measured	Deviation %	Limited %
	Temp. [°C]	Humidity %	Frequency (MHz)	Temp. [°C]					
2023-03-08	23.7	44	826.4	23.4	Permittivity	41.54	41.00	-1.30	±5
					Conductivity	0.90	0.91	1.22	±5
2023-03-08	23.7	44	835	23.4	Permittivity	41.50	40.85	-1.57	±5
					Conductivity	0.90	0.89	-1.11	±5
2023-03-08	23.7	44	844	23.4	Permittivity	41.46	41.89	1.04	±5
					Conductivity	0.90	0.94	4.32	±5
2023-03-09	20.7	52	2310	20.4	Permittivity	39.45	40.12	1.70	±5
					Conductivity	1.68	1.62	-3.32	±5
2023-03-09	20.7	52	2450	20.4	Permittivity	39.20	40.20	2.55	±5
					Conductivity	1.80	1.76	-2.22	±5
2023-03-09	20.8	53	2462	20.5	Permittivity	39.18	40.04	2.20	±5
					Conductivity	1.81	1.82	0.52	±5
2023-03-09	20.8	53	2480	20.5	Permittivity	39.15	39.53	0.98	±5
					Conductivity	1.83	1.85	1.28	±5
2023-03-13	20.2	56	2510	20.0	Permittivity	39.12	40.25	2.89	±5
					Conductivity	1.86	1.87	0.32	±5
2023-03-13	20.3	56	2535	20.0	Permittivity	39.09	39.46	0.96	±5
					Conductivity	1.89	1.84	-2.68	±5
2023-03-13	20.4	56	2560	20.0	Permittivity	39.05	39.79	1.89	±5
					Conductivity	1.92	1.93	0.66	±5
2023-03-13	20.4	57	2600	20.1	Permittivity	39.00	40.02	2.62	±5
					Conductivity	1.96	1.98	1.02	±5
2023-03-13	20.5	57	2610	20.2	Permittivity	38.99	39.96	2.49	±5
					Conductivity	1.97	1.95	-1.07	±5
2023-03-13	20.6	57	2645	20.3	Permittivity	38.94	40.22	3.28	±5
					Conductivity	2.01	1.95	-2.96	±5
2023-03-15	23.4	58	5200	23.1	Permittivity	36.00	36.93	2.58	±5
					Conductivity	4.66	4.64	-0.43	±5
2023-03-15	21.2	40	5745	20.9	Permittivity	35.36	36.11	2.14	±5
					Conductivity	5.21	5.20	-0.24	±5
2023-03-15	21.3	40	5800	21.0	Permittivity	35.30	35.92	1.76	±5
					Conductivity	5.27	5.29	0.38	±5

5. SAR System Validation

5.1 Validation System

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

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



5.2 Validation Result

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

Date	Freq.	Power	Tested Value	Normalized SAR	Target SAR	Tolerance	Limit
	(MHz)	(mW)	(W/Kg)	(W/kg)	1g(W/kg)	(%)	(%)
2023-03-08	835	100	0.996	9.96	9.63	3.43	10
2023-03-09	2450	100	5.622	56.22	54.70	2.78	10
2023-03-13	2600	100	5.759	57.59	56.19	2.49	10
2023-03-15	5200	100	15.963	159.63	158.49	0.72	10
2023-03-15	5800	100	18.651	186.51	183.06	1.88	10

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:

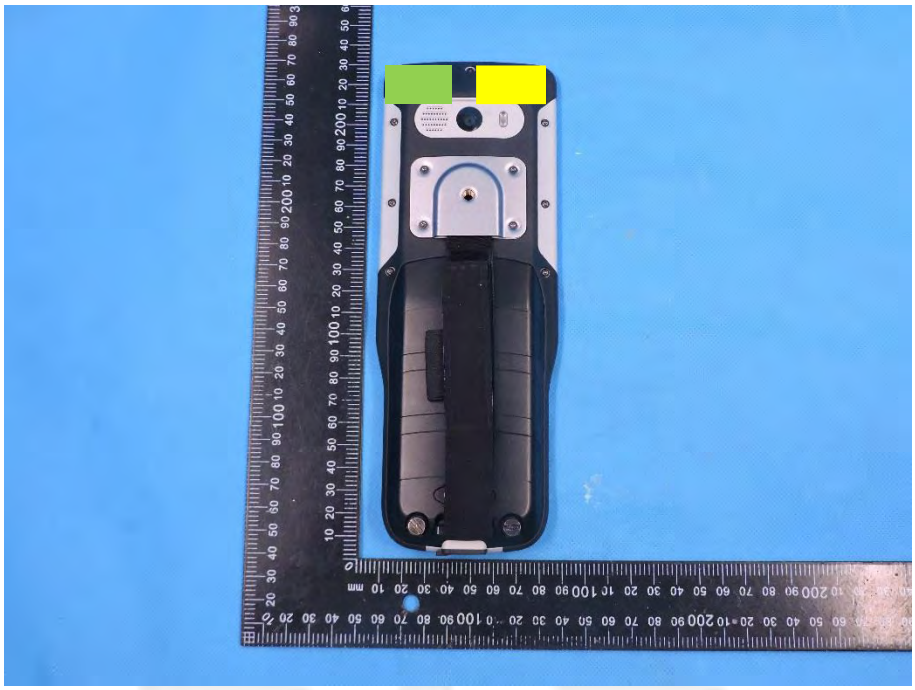
First Area Scan is used to locate the approximate location(s) of the local peak SAR value(s). The measurement grid within an Area Scan is defined by the grid extent, grid step size and grid offset. Next, in order to determine the EM field distribution in a three-dimensional spatial extension, Zoom Scan 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 D01v01r01 quoted below.
When the 1-g SAR of the highest peak is within 2 dB of the SAR limit, additional zoom scans are required for other peaks within 2 dB of the highest peak that have not been included in any zoom scan to ensure there is no increase in SAR.

7. EUT Antenna Location Sketch

It is a Handheld data collection terminal, support WWAN/BT/WLAN mode.

Top side

Left side



Right side

Bottom side
(Back view)

BT/WLAN ANT

WWAN ANT

Antenna Separation Distance(cm)						
ANT	Back Side	Front Side	Left Side	Right Side	Top Side	Bottom Side
WLAN/BT	≤0.5	≤0.5	5	≤0.5	≤0.5	20.3
WWAN	≤0.5	≤0.5	≤0.5	4	≤0.5	20.5

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

The WLAN SAR evaluation of Maximum power (dBm) summing tolerance.

Exposure Position	Wireless Interface	WCDMA V	LTE Band 5	LTE Band 7	LTE Band 38	LTE Band 40
	Calculated Frequency(GHz)	0.8264	0.844	2.535	2.61	2.31
	Maximum Turn-up power (dBm)	23	20	22	22	14.5
	Maximum rated power(mW)	199.53	100.00	158.49	158.49	28.18
Back Side	Separation distance (cm)	≤0.5	≤0.5	≤0.5	≤0.5	≤0.5
	exclusion threshold(mW)	9.38	9.11	2.67	2.61	2.88
	Testing required?	YES	YES	YES	YES	YES
Front Side	Separation distance (cm)	≤0.5	≤0.5	≤0.5	≤0.5	≤0.5
	exclusion threshold(mW)	9.38	9.11	2.67	2.61	2.88
	Testing required?	YES	YES	YES	YES	YES
Left Side	Separation distance (cm)	≤0.5	≤0.5	≤0.5	≤0.5	≤0.5
	exclusion threshold(mW)	9.38	9.11	2.67	2.61	2.88
	Testing required?	YES	YES	YES	YES	YES
Right Side	Separation distance (cm)	4	4	4	4	4
	exclusion threshold(mW)	175.06	174.88	141.58	234.89	146.25
	Testing required?	YES	NO	YES	NO	NO
Top Side	Separation distance (cm)	≤0.5	≤0.5	≤0.5	≤0.5	≤0.5
	exclusion threshold(mW)	9.38	9.11	2.67	2.61	2.88
	Testing required?	YES	YES	YES	YES	YES
Bottom Side	Separation distance (cm)	20.5	20.5	20.5	20.5	20.5
	exclusion threshold(mW)	1745.47	1783.25	3207.74	3208.24	3206.14
	Testing required?	NO	NO	NO	NO	NO

Exposure Position	Wireless Interface	LTE Band 41	BT	2.4G WLAN	5.2G WLAN	5.8G WLAN
	Calculated Frequency(GHz)	2.645	2.48	2.462	5.2	5.745
	Maximum Turn-up power (dBm)	20	5.5	11	12	11
	Maximum rated power(mW)	100.00	3.55	12.59	15.85	12.59
Back Side	Separation distance (cm)	≤0.5	≤0.5	≤0.5	≤0.5	≤0.5
	exclusion threshold(mW)	2.58	2.72	2.73	1.50	1.39
	Testing required?	YES	YES	YES	YES	YES
Front Side	Separation distance (cm)	≤0.5	≤0.5	≤0.5	≤0.5	≤0.5
	exclusion threshold(mW)	2.58	2.72	2.73	1.50	1.39
	Testing required?	YES	YES	YES	YES	YES
Left Side	Separation distance (cm)	≤0.5	5	5	5	5
	exclusion threshold(mW)	2.58	218.23	218.71	174.63	169.47
	Testing required?	YES	NO	NO	NO	NO
Right Side	Separation distance (cm)	4	≤0.5	≤0.5	≤0.5	≤0.5
	exclusion threshold(mW)	139.49	2.72	2.73	1.50	1.39
	Testing required?	NO	YES	YES	YES	YES
Top Side	Separation distance (cm)	≤0.5	≤0.5	≤0.5	≤0.5	≤0.5
	exclusion threshold(mW)	2.58	2.72	2.73	1.50	1.39
	Testing required?	YES	YES	YES	YES	YES
Bottom Side	Separation distance (cm)	20.5	20.5	20.5	20.5	20.5
	exclusion threshold(mW)	3208.47	3207.36	3207.24	3220.12	3221.84
	Testing required?	NO	NO	NO	NO	NO

Note：

1. maximum power is the source-based time-average power and represents the maximum RF output power among production units.
2. Per KDB 447498 D04, 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 D04, if the maximum time-averaged power available does not exceed 1 mW. This stand-alone SAR exemption test.

4. Per KDB 447498 D04, the available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold Pth (mW) described in the following formula. This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive). Pth is given by:

$$P_{th}\ (\text{mW}) = \begin{cases} ERP_{20\ cm}(d/20\ \text{cm})^{x} & d \le 20\ \text{cm} \\ ERP_{20\ cm} & 20\ \text{cm} < d \le 40\ \text{cm} \end{cases}$$

Where

$$x = -\log_{10}\left(\frac{60}{ERP_{20\ cm}\sqrt{f}}\right) \text{ and } f \text{ is in GHz;}$$

and

$$ERP_{20\ cm}\ (\text{mW}) = \begin{cases} 2040f & 0.3\ \text{GHz} \le f < 1.5\ \text{GHz} \\ 3060 & 1.5\ \text{GHz} \le f \le 6\ \text{GHz} \end{cases}$$

d = the separation distance (cm);

5. Per KDB 447498 D04, An alternative to the SAR-based exemption is using below table and the minimum separation distance (R in meters) from the body of a nearby person for the frequency (f in MHz) at which the source operates, the ERP (watts) is no more than the calculated value prescribed for that frequency. For the exemption in below table to apply, R must be at least λ/2π, where λ is the free-space operating wavelength in meters. If the ERP of a single RF source is not easily obtained, then the available maximum time-averaged power may be used in lieu of ERP if the physical dimensions of the radiating structure(s) do not exceed the electrical length of λ/4 or if the antenna gain is less than that of a half-wave dipole (1.64 linear value).

RF Source frequency (MHz)	Threshold ERP(watts)
0.3-1.34	1,920 R^2.
1.34-30	3,450 R^2/f^2.
30-300	3.83 R^2.
300-1,500	0.0128 R^2f.
1,500-100,000	19.2R^2.

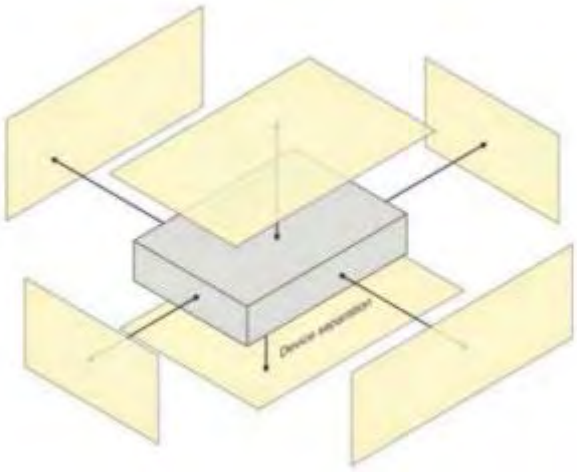
6. Per KDB 248227 D01, choose the highest output power channel to test SAR and determine further SAR exclusion 8.for each frequency band ,testing at higher data rates and higher order modulations is not required when the maximum average output power for each of each of these configurations is less than 1/4db higher than those measured at the lower data rate than 11b mode ,thus the SAR can be excluded.
7. Per KDB 616217 D04, SAR evaluation for the front surface of tablet display screens are generally not necessary.
8. Per KDB 248227, as maximum rated power for U-NII-2A＞U-NII-1, U-NII-2A was chosen for SAR evaluation. Based on the measurements obtained, SAR measurements on U-NII-1 are not required as highest reported SAR from U-NII-2A band is≤1.2W/Kg.

8. EUT Test Position

This EUT was tested in Back Side, Front Side, Left Side, Right Side and Top Side.

8.1 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 D04 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.



9. 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	5.72	N	1	1	1	5.72	5.72	∞
Axial Isotropy	0.18	R	√3	√0.5	√0.5	0.07	0.07	∞
Hemispherical Isotropy	1.04	R	√3	√0.5	√0.5	0.42	0.42	∞
Boundary effect	0.8	R	√3	1	1	0.46	0.46	∞
Linearity	1.25	R	√3	1	1	0.72	0.72	∞
System detection limits	1.20	R	√3	1	1	0.69	0.69	∞
Modulation response	3.42	R	√3	1	1	3.42	3.42	∞
Readout Electronics	0.26	N	1	1	1	0.26	0.26	∞
Response Time	0.17	R	√3	1	1	0.10	0.10	∞
Integration Time	1.43	R	√3	1	1	0.83	0.83	∞
RF ambient conditions-Noise	3.51	R	√3	1	1	2.03	2.03	∞
RF ambient conditions-reflections	3.15	R	√3	1	1	1.82	1.82	∞
Probe positioner mechanical tolerance	1.2	R	√3	1	1	0.69	0.69	∞
Probe positioning with respect to phantom shell	1.4	R	√3	1	1	0.81	0.81	∞
Post-processing	2.1	R	√3	1	1	1.21	1.21	∞
Test sample Related								
Test sample positioning	3.1	N	1	1	1	3.10	3.10	∞
Device holder uncertainty	3.8	N	1	1	1	3.80	3.80	∞
SAR drift measurement	4.5	R	√3	1	1	2.60	2.60	∞
SAR scaling	1.8	R	√3	1	1	1.04	1.04	∞
Phantom and tissue parameters								
Phantom uncertainty (shape and thickness uncertainty)	3.7	R	√3	1	1	2.14	2.14	∞
Uncertainty in SAR correction for deviations in permittivity and conductivity	2.1	N	1	1	0.84	2.10	1.76	∞
Liquid conductivity (temperature uncertainty)	2.4	R	√3	0.78	0.71	1.87	1.70	∞
Liquid conductivity (measured)	4.1	N	1	0.78	0.71	0.94	1.07	M
Liquid permittivity (temperature uncertainty)	2.7	R	√3	0.23	0.26	2.11	1.92	∞
Liquid permittivity (measured)	4.8	N	1	0.23	0.26	1.10	1.25	M
Combined Standard Uncertainty		RSS				10.37	10.27	
Expanded Uncertainty (95% Confidence interval)		K=2				20.74	20.53	

10. Conducted Power Measurement

10.1 Test Result

WCDMA

Band	WCDMA Band V		
Channel	4132	4183	4233
Frequency (MHz)	826.4	836.6	846.6
RMC 12.2Kbps	22.83	22.62	22.67
HSDPA Subtest-1	21.89	21.39	20.46
HSDPA Subtest-2	20.38	21.74	21.24
HSDPA Subtest-3	20.09	20.22	21.77
HSDPA Subtest-4	21.39	20.08	20.14
HSUPA Subtest-1	20.52	21.80	19.97
HSUPA Subtest-2	21.81	20.33	21.46
HSUPA Subtest-3	21.50	20.40	21.62
HSUPA Subtest-4	21.01	21.56	21.71
HSUPA Subtest-5	20.46	21.74	21.16

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 βc/βd=12/15, βhs/ βc=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.

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 $\leqslant$ 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 $\leqslant$ 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 $\leqslant$ 1.45 W/kg; Per KDB 941225 D05, smaller bandwidth SAR testing is not required.

LTE Band 5 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
1.4	1	0	QPSK	19.47	19.35	19.44
1.4	1	2		19.79	19.66	19.76
1.4	1	5		19.39	19.38	19.44
1.4	3	0		18.49	18.47	18.58
1.4	3	1		18.65	18.54	18.68
1.4	3	2		18.51	18.45	18.59
1.4	6	0		18.50	18.47	18.61
1.4	1	0	16-QAM	19.06	18.70	18.86
1.4	1	2		19.30	18.97	19.16
1.4	1	5		18.98	18.73	18.88
1.4	3	0		17.51	17.46	17.68
1.4	3	1		17.56	17.50	17.75
1.4	3	2		17.54	17.46	17.67
1.4	6	0		17.53	17.65	17.73
3	1	0	QPSK	19.53	19.43	19.51
3	1	7		19.67	19.64	19.74
3	1	14		19.46	19.52	19.57
3	8	0		18.51	18.51	18.62
3	8	4		18.49	18.53	18.68
3	8	7		18.54	18.54	18.63
3	15	0		18.47	18.51	18.60
3	1	0	16-QAM	18.98	18.63	18.59
3	1	7		19.14	18.81	18.75
3	1	14		18.96	18.68	18.60
3	8	0		17.56	17.64	17.71
3	8	4		17.55	17.61	17.75
3	8	7		17.57	17.61	17.72
3	15	0		17.55	17.68	17.75

LTE Band 5 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
5	1	0	QPSK	19.45	19.42	19.44
5	1	12		19.72	19.75	19.82
5	1	24		19.33	19.44	19.55
5	12	0		18.55	18.49	18.56
5	12	6		18.58	18.55	18.60
5	12	11		18.49	18.53	18.60
5	25	0		18.49	18.46	18.52
5	1	0	16-QAM	18.87	18.58	18.72
5	1	12		19.17	18.91	19.08
5	1	24		18.88	18.58	18.76
5	12	0		17.50	17.54	17.59
5	12	6		17.54	17.60	17.63
5	12	11		17.48	17.58	17.60
5	25	0		17.52	17.59	17.70
10	1	0	QPSK	19.47	19.30	19.39
10	1	24		19.71	19.65	19.96
10	1	49		19.40	19.39	19.52
10	25	0		18.47	18.46	18.62
10	25	12		18.49	18.54	18.62
10	25	24		18.41	18.51	18.61
10	50	0		18.41	18.46	18.60
10	1	0	16-QAM	18.56	18.64	18.67
10	1	24		18.82	18.98	19.04
10	1	49		18.55	18.66	18.73
10	25	0		17.50	17.56	17.67
10	25	12		17.55	17.64	17.68
10	25	24		17.45	17.57	17.68
10	50	0		17.50	17.57	17.70

LTE Band 7 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
5	1	0	QPSK	21.62	21.52	21.49
5	1	12		21.89	22.07	21.87
5	1	24		21.62	21.52	21.49
5	12	0		20.68	20.63	20.58
5	12	6		20.74	20.67	20.62
5	12	11		20.71	20.61	20.58
5	25	0		20.71	20.63	20.58
5	1	0	16-QAM	21.08	20.85	20.98
5	1	12		21.40	21.42	21.43
5	1	24		21.00	20.88	21.07
5	12	0		19.64	19.66	19.59
5	12	6		19.71	19.73	19.65
5	12	11		19.72	19.63	19.60
5	25	0		19.89	19.69	19.63
10	1	0	QPSK	21.67	21.73	21.56
10	1	24		21.79	21.87	21.67
10	1	49		21.65	21.71	21.55
10	25	0		20.72	20.70	20.68
10	25	12		20.70	20.64	20.63
10	25	24		20.76	20.72	20.65
10	50	0		20.70	20.65	20.63
10	1	0	16-QAM	20.90	20.50	20.92
10	1	24		21.03	20.66	21.10
10	1	49		20.90	20.60	21.00
10	25	0		19.79	19.72	19.65
10	25	12		19.85	19.72	19.60
10	25	24		19.86	19.72	19.69
10	50	0		19.95	19.76	19.71

LTE Band 7 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
15	1	0	QPSK	21.68	21.71	21.48
15	1	37		22.01	21.97	21.69
15	1	74		21.60	21.59	21.48
15	36	0		20.70	20.77	20.66
15	36	18		20.77	20.73	20.65
15	36	39		20.74	20.70	20.58
15	75	0		20.69	20.70	20.63
15	1	0	16-QAM	20.88	20.69	20.85
15	1	38		21.26	21.18	21.24
15	1	75		20.78	20.66	20.98
15	36	0		19.74	19.66	19.67
15	36	18		19.81	19.67	19.63
15	36	39		19.79	19.62	19.58
15	75	0		19.78	19.79	19.67
20	1	0	QPSK	21.62	21.63	21.59
20	1	49		21.83	22.11	21.77
20	1	99		21.61	21.61	21.53
20	50	0		20.63	20.66	20.67
20	50	24		20.73	20.69	20.60
20	50	49		20.66	20.70	20.48
20	100	0		20.63	20.62	20.51
20	1	0	16-QAM	20.93	20.70	20.77
20	1	49		21.12	21.02	20.96
20	1	99		20.73	20.79	20.83
20	50	0		19.73	19.71	19.78
20	50	24		19.75	19.74	19.62
20	50	49		19.71	19.74	19.59
20	100	0		19.76	19.76	19.61

LTE Band 38 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
5	1	0	QPSK	21.40	21.30	21.42
5	1	12		21.73	21.63	21.82
5	1	24		21.36	21.32	21.48
5	12	0		20.46	20.49	20.54
5	12	6		20.53	20.58	20.66
5	12	11		20.45	20.52	20.59
5	25	0		20.49	20.50	20.60
5	1	0	16-QAM	20.69	20.75	21.05
5	1	12		21.00	21.03	21.40
5	1	24		20.70	20.76	21.10
5	12	0		19.46	19.59	19.56
5	12	6		19.51	19.67	19.66
5	12	11		19.45	19.59	19.57
5	25	0		19.63	19.63	19.68
10	1	0	QPSK	21.40	21.48	21.52
10	1	24		21.58	21.64	21.71
10	1	49		21.45	21.46	21.55
10	25	0		20.56	20.56	20.56
10	25	12		20.51	20.48	20.57
10	25	24		20.49	20.54	20.62
10	50	0		20.51	20.52	20.54
10	1	0	16-QAM	20.92	20.66	20.45
10	1	24		21.12	20.84	20.64
10	1	49		21.03	20.62	20.49
10	25	0		19.61	19.66	19.58
10	25	12		19.62	19.57	19.59
10	25	24		19.59	19.61	19.65
10	50	0		19.68	19.77	19.66

LTE Band 38 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
15	1	0	QPSK	21.33	21.42	21.45
15	1	37		21.64	21.72	21.80
15	1	74		21.30	21.36	21.51
15	36	0		20.50	20.45	20.52
15	36	18		20.47	20.47	20.58
15	36	39		20.45	20.47	20.56
15	75	0		20.42	20.47	20.50
15	1	0	16-QAM	20.85	20.60	20.64
15	1	38		21.18	20.90	20.93
15	1	75		20.90	20.54	20.69
15	36	0		19.54	19.59	19.46
15	36	18		19.54	19.58	19.50
15	36	39		19.52	19.55	19.49
15	75	0		19.59	19.57	19.65
20	1	0	QPSK	21.29	21.36	21.35
20	1	49		21.62	21.66	21.69
20	1	99		21.32	21.38	21.51
20	50	0		20.49	20.50	20.46
20	50	24		20.46	20.52	20.56
20	50	49		20.46	20.52	20.49
20	100	0		20.46	20.45	20.46
20	1	0	16-QAM	20.59	20.64	20.54
20	1	49		20.93	20.90	20.92
20	1	99		20.67	20.60	20.61
20	50	0		19.63	19.55	19.56
20	50	24		19.61	19.58	19.59
20	50	49		19.62	19.54	19.50
20	100	0		19.65	19.67	19.60

LTE Band 40 2305-2315 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
5	1	0	QPSK	13.86	13.81	13.84
5	1	12		14.13	14.06	14.15
5	1	24		13.82	13.8	13.87
5	12	0		12.82	12.81	12.81
5	12	6		12.89	12.96	12.91
5	12	11		12.85	12.95	12.88
5	25	0		12.83	12.86	12.84
5	1	0	16-QAM	13.2	13.22	13.54
5	1	12		13.46	13.45	13.83
5	1	24		13.17	13.21	13.54
5	12	0		11.78	11.85	11.84
5	12	6		11.84	11.97	11.92
5	12	11		11.78	11.95	11.82
5	25	0		11.87	11.81	11.82
10	1	0	QPSK	/	/	13.93
10	1	24		/	/	14.16
10	1	49		/	/	13.89
10	25	0		/	/	12.89
10	25	12		/	/	12.92
10	25	24		/	/	12.93
10	50	0		/	/	12.89
10	1	0	16-QAM	/	/	13.43
10	1	24		/	/	13.61
10	1	49		/	/	13.4
10	25	0		/	/	11.89
10	25	12		/	/	11.92
10	25	24		/	/	11.95
10	50	0		/	/	11.92

LTE Band 40 2350-2360 Maximum Average Power [dBm]						
BW [MHz]	**RB Size**	**RB Offset**	**Mod**	**Lowest**	**Middle**	**Highest**
5	1	0	QPSK	13.43	13.40	13.40
5	1	12		13.69	13.65	13.67
5	1	24		13.40	13.34	13.37
5	12	0		12.42	12.42	12.40
5	12	6		12.46	12.46	12.47
5	12	11		12.40	12.40	12.45
5	25	0		12.44	12.46	12.44
5	1	0	16-QAM	12.82	12.80	13.14
5	1	12		13.07	13.06	13.41
5	1	24		12.77	12.78	13.12
5	12	0		11.39	11.47	11.44
5	12	6		11.43	11.48	11.50
5	12	11		11.40	11.45	11.47
5	25	0		11.46	11.38	11.39
10	1	0	QPSK	/	/	13.53
10	1	24		/	/	13.76
10	1	49		/	/	13.44
10	25	0		/	/	12.53
10	25	12		/	/	12.50
10	25	24		/	/	12.50
10	50	0		/	/	12.52
10	1	0	16-QAM	/	/	13.10
10	1	24		/	/	13.21
10	1	49		/	/	13.02
10	25	0		/	/	11.56
10	25	12		/	/	11.53
10	25	24		/	/	11.58
10	50	0		/	/	11.50

LTE Band 41 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
5	1	0	QPSK	19.47	19.35	19.44
5	1	12		19.79	19.66	19.76
5	1	24		19.39	19.38	19.44
5	12	0		18.49	18.47	18.58
5	12	6		18.65	18.54	18.68
5	12	11		18.51	18.45	18.59
5	25	0		18.50	18.47	18.61
5	1	0	16-QAM	19.06	18.70	18.86
5	1	12		19.30	18.97	19.16
5	1	24		18.98	18.73	18.88
5	12	0		17.51	17.46	17.68
5	12	6		17.56	17.50	17.75
5	12	11		17.54	17.46	17.67
5	25	0		17.53	17.65	17.73
10	1	0	QPSK	19.53	19.43	19.51
10	1	24		19.67	19.64	19.74
10	1	49		19.46	19.52	19.57
10	25	0		18.51	18.51	18.62
10	25	12		18.49	18.53	18.68
10	25	24		18.54	18.54	18.63
10	50	0		18.47	18.51	18.60
10	1	0	16-QAM	18.98	18.63	18.59
10	1	24		19.14	18.81	18.75
10	1	49		18.96	18.68	18.60
10	25	0		17.56	17.64	17.71
10	25	12		17.55	17.61	17.75
10	25	24		17.57	17.61	17.72
10	50	0		17.55	17.68	17.75

LTE Band 41 Maximum Average Power [dBm]						
BW [MHz]	**RB Size**	**RB Offset**	**Mod**	**Lowest**	**Middle**	**Highest**
15	1	0	QPSK	19.45	19.42	19.44
15	1	37		19.72	19.75	19.82
15	1	74		19.33	19.44	19.55
15	36	0		18.55	18.49	18.56
15	36	18		18.58	18.55	18.60
15	36	39		18.49	18.53	18.60
15	75	0		18.49	18.46	18.52
15	1	0	16-QAM	18.87	18.58	18.72
15	1	38		19.17	18.91	19.08
15	1	75		18.88	18.58	18.76
15	36	0		17.50	17.54	17.59
15	36	18		17.54	17.60	17.63
15	36	39		17.48	17.58	17.60
15	75	0		17.52	17.59	17.70
20	1	0	QPSK	19.47	19.30	19.39
20	1	49		19.71	19.65	19.76
20	1	99		19.40	19.39	19.52
20	50	0		18.47	18.46	18.62
20	50	24		18.49	18.54	18.62
20	50	49		18.41	18.51	18.61
20	100	0		18.41	18.46	18.60
20	1	0	16-QAM	18.56	18.64	18.67
20	1	49		18.82	18.98	19.04
20	1	99		18.55	18.66	18.73
20	50	0		17.50	17.56	17.67
20	50	24		17.55	17.64	17.68
20	50	49		17.45	17.57	17.68
20	100	0		17.50	17.57	17.70

2.4G WLAN

2.4GWIFI				
Mode	Channel Number	Frequency (MHz)	Average Power (dBm)	Output Power (mW)
802.11b	1	2412	10.46	11.12
	7	2442	9.95	9.89
	11	2462	10.93	12.39
802.11g	1	2412	5.39	3.46
	7	2442	5.28	3.37
	11	2462	5.79	3.79
802.11 n-HT20	1	2412	5.25	3.35
	7	2442	5.18	3.30
	11	2462	5.76	3.77
802.11 n-HT40	3	2422	5.61	3.64
	6	2437	5.4	3.47
	9	2452	6.15	4.12

5G WLAN

5.2G WLAN				
Mode	Channel Number	Frequency (MHz)	Output Power (dBm)	Output Power (mW)
802.11a20	36	5180	11.41	13.84
	40	5200	11.73	14.89
	48	5240	11.69	14.76
802.11 n-HT20	36	5180	11.18	13.12
	40	5200	11.52	14.19
	48	5240	11.48	14.06
802.11 n-HT40	38	5190	11.32	13.55
	46	5230	11.39	13.77
802.11ac-VHT20	36	5180	11.38	13.74
	40	5200	11.5	14.13
	48	5240	11.49	14.09
802.11ac-VHT40	38	5190	11.38	13.74
	46	5230	11.4	13.80
802.11ac-VHT80	42	5210	11.41	13.84

5.8G WLAN				
Mode	Channel Number	Frequency (MHz)	Output Power (dBm)	Output Power (mW)
802.11a20	149	5745	10.46	11.12
	157	5785	9.45	8.81
	165	5825	9.02	7.98
802.11 n-HT20	149	5745	10.27	10.64
	157	5785	9.49	8.89
	165	5825	8.84	7.66
802.11 n-HT40	151	5755	9.46	8.83
	159	5795	8.99	7.93
802.11ac-VHT20	149	5745	9.72	9.38
	157	5785	9.39	8.69
	165	5825	8.98	7.91
802.11ac-VHT40	151	5755	9.5	8.91
	159	5795	9.21	8.34
802.11ac-VHT80	155	5775	9.56	9.04

BT

BT				
Mode	Channel Number	Frequency (MHz)	Average Power (dBm)	Output Power (mW)
GFSK(1Mbps)	0	2402	4.06	2.55
	39	2441	3.68	2.33
	78	2480	4.47	2.80
π/4-QPSK(2Mbps)	0	2402	1.36	1.37
	39	2441	0.9	1.23
	78	2480	1.38	1.37
8DPSK(3Mbps)	0	2402	3.02	2.00
	39	2441	0.23	1.05
	78	2480	5.19	3.30

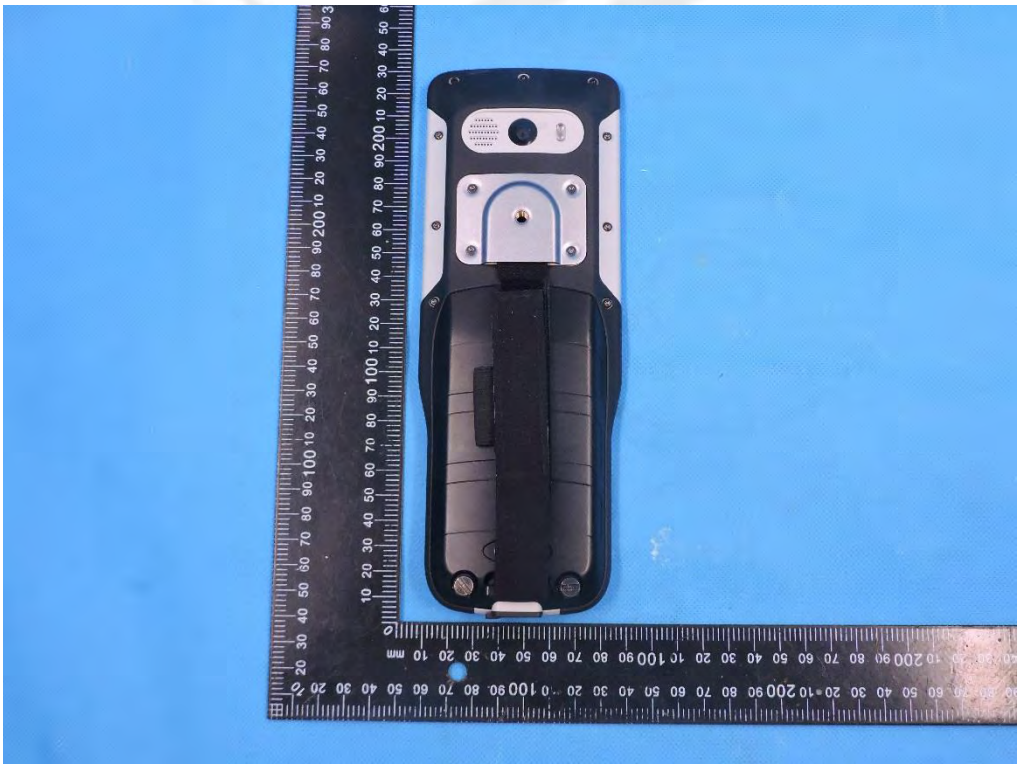
BLE				
Mode	Channel Number	Frequency (MHz)	Average Power (dBm)	Output Power (mW)
GFSK(1Mbps)	0	2402	-7.68	0.17
	19	2440	-7.83	0.16
	39	2480	-6.71	0.21

11. EUT And Test Setup Photo

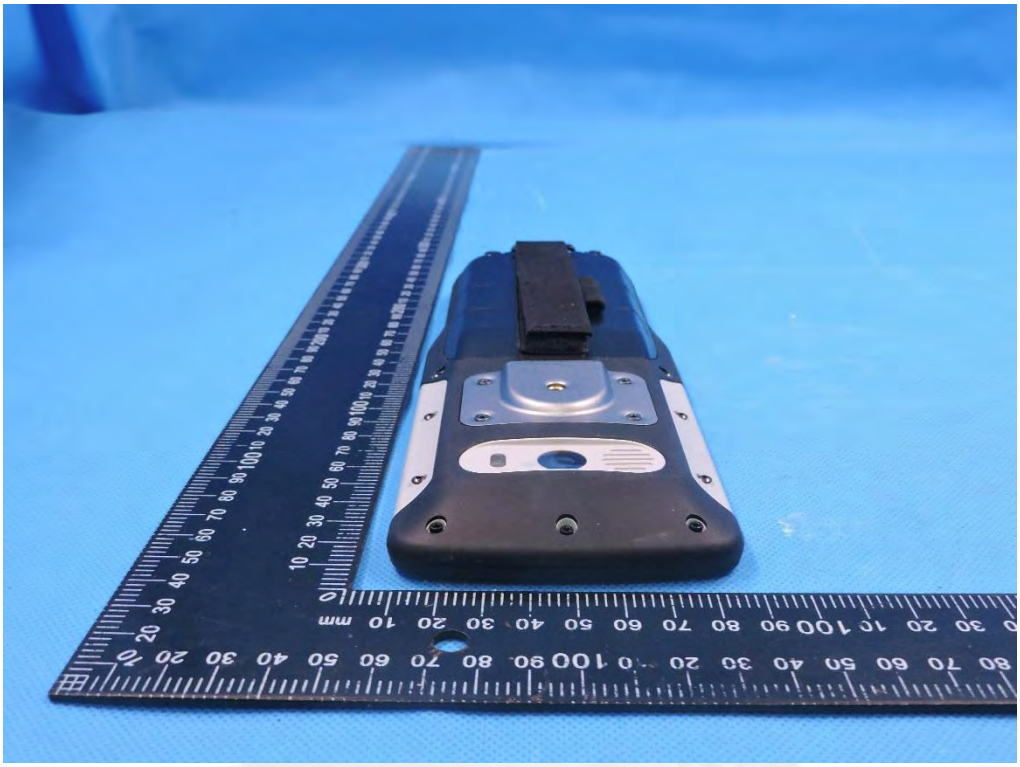
11.1 EUT Photo

Front side

Back side

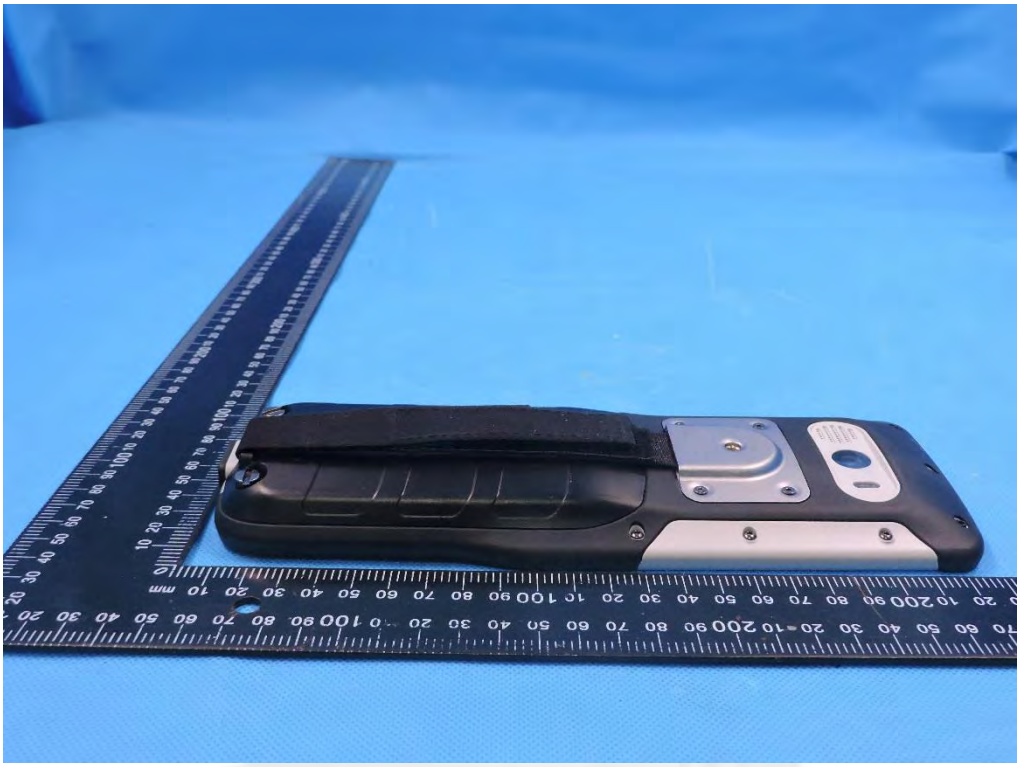


Top side

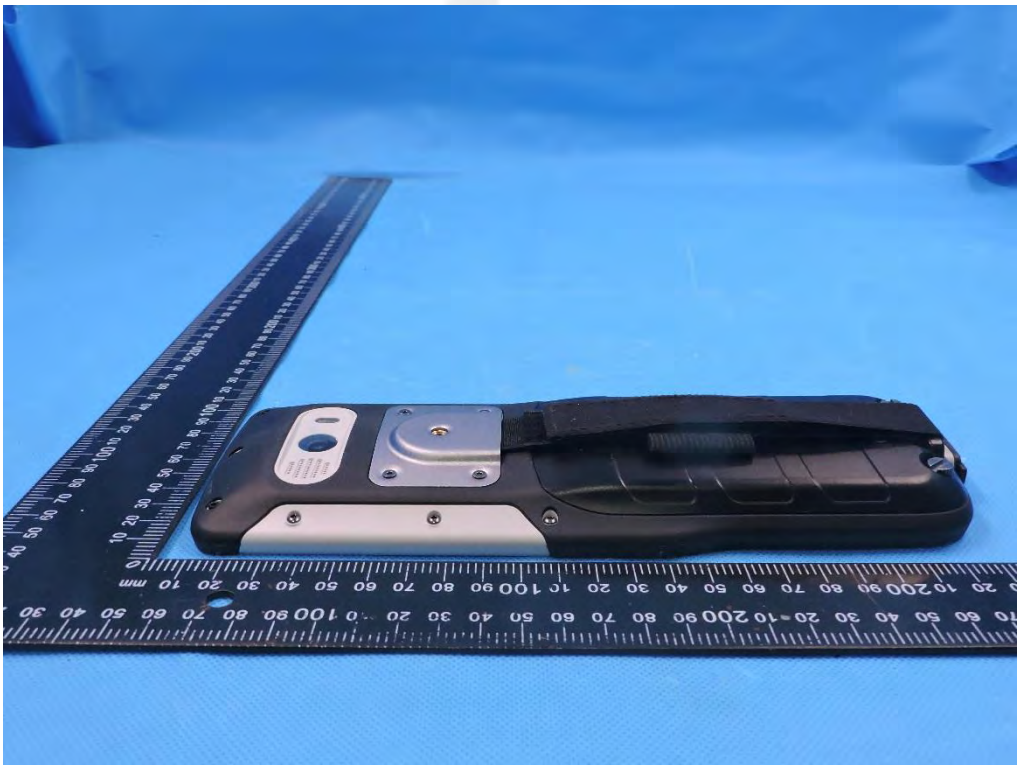


Bottom side

Left side



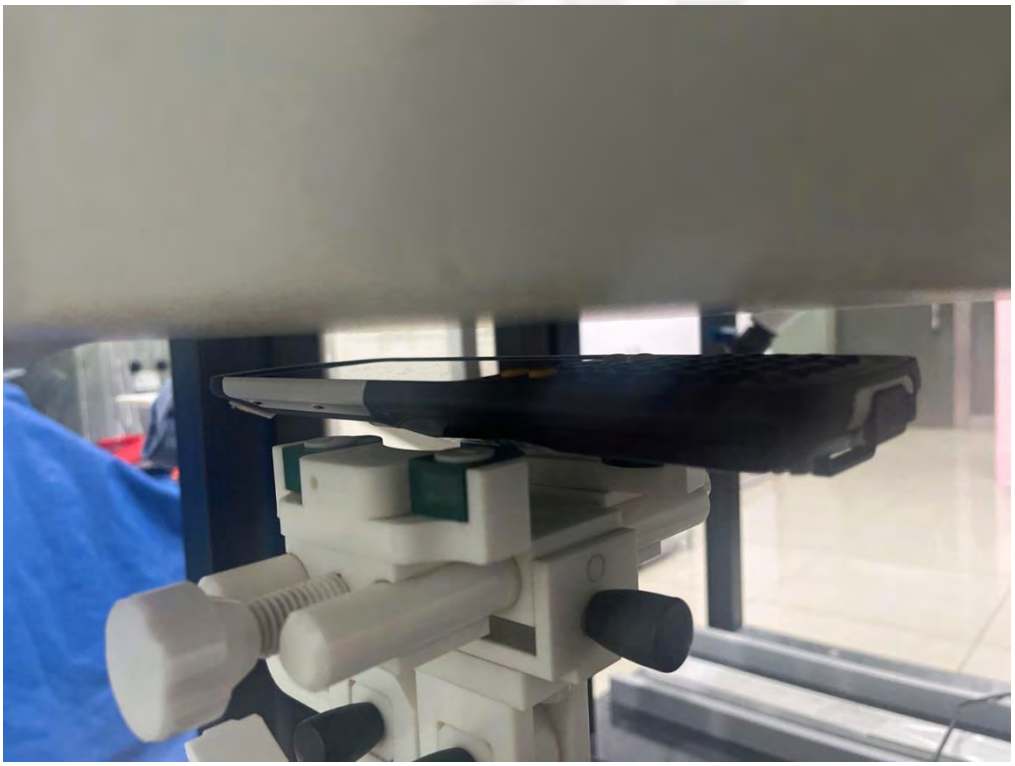
Right side



11.2 Setup Photo

Back side(separation distance is 10mm)

Front side(separation distance is 10mm)



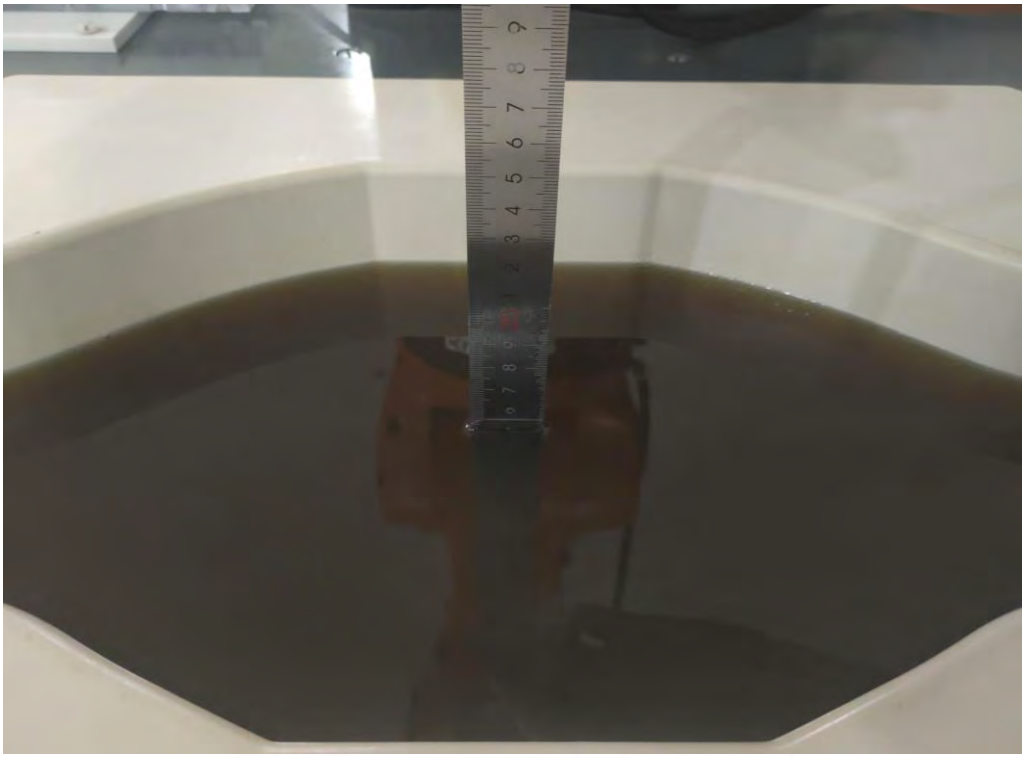
Right side(separation distance is 10mm)

Left Side(separation distance is 10mm)

Top side(separation distance is 10mm)

Back side(separation distance is 0mm)

Liquid depth (15 cm)



12. SAR Result Summary

12.1 Body-worn SAR

Band	Model	Test Position	Freq.	SAR (1g) (W/kg)	Power Drift(%)	Max.Turn-up Power(dBm)	Meas.Output Power(dBm)	Scaled SAR (W/Kg)	Meas.No.
WCDMA Band V	RMC	Front Side	826.4	0.441	1.78	23.00	22.83	**0.459**	**1**
		Back Side	826.4	0.287	-1.19	23.00	22.83	0.298	/
		Left Side	826.4	0.225	3.80	23.00	22.83	0.234	/
		Right Side	826.4	0.102	3.50	23.00	22.83	0.106	/
		Top Side	826.4	0.163	2.24	23.00	22.83	0.170	/
2.4GHz WLAN	802.11b	Front Side	2462	0.025	0.49	11.00	10.93	0.025	/
		Back Side	2462	0.026	1.57	11.00	10.93	0.026	/
		Left Side	2462	0.012	-1.65	11.00	10.93	0.012	/
		Right Side	2462	0.013	-3.81	11.00	10.93	0.013	/
		Top Side	2462	0.032	1.45	11.00	10.93	0.033	**2**
BT	GFSK	Front Side	2480	0.021	-3.21	5.50	5.19	0.023	/
		Back Side	2480	0.018	-2.82	5.50	5.19	0.019	/
		Left Side	2480	0.012	-0.76	5.50	5.19	0.013	/
		Right Side	2480	0.013	0.99	5.50	5.19	0.014	/
		Top Side	2480	0.022	2.55	5.50	5.19	**0.024**	**3**
5.2GHz WLAN	802.11a	Front Side	5200	0.088	-0.27	12.00	11.73	0.094	/
		Back Side	5200	0.080	-1.69	12.00	11.73	0.085	/
		Left Side	5200	0.041	-0.19	12.00	11.73	0.044	/
		Right Side	5200	0.045	-2.05	12.00	11.73	0.048	/
		Top Side	5200	0.109	-1.65	12.00	11.73	**0.116**	**4**
5.8GHz WLAN	802.11a	Front Side	5745	0.078	-3.73	10.50	10.46	0.079	/
		Left Side	5745	0.044	0.20	10.50	10.46	0.044	/
		Right Side	5745	0.046	-3.10	10.50	10.46	0.046	/
		Top Side	5745	0.098	-0.16	10.50	10.46	**0.099**	**5**

Band	BW (MHz)	Mod.	RB Size	RB offset	Test Position	Freq.	Result 1g (W/Kg)	Power Drift(%)	Max. Turn-up Power(dBm)	Meas. Output Power(dBm)	Scaled SAR (W/Kg)	Meas.No.
LTE Band 5	10M	QPSK	1	0	Front side	844	0.417	1.84	20	19.96	**0.421**	**6**
			25	0	Front side	844	0.352	-0.40	19	18.62	0.384	/
			1	0	Back Side	844	0.336	-0.53	20	19.96	0.339	/
			25	0	Back Side	844	0.341	2.28	19	18.62	0.372	/
			1	0	Left Side	844	0.201	-3.54	20	19.96	0.203	/
			25	0	Left Side	844	0.230	-2.07	19	18.62	0.251	/
			1	0	Top Side	844	0.255	3.41	20	19.96	0.257	/
			25	0	Top Side	844	0.241	-2.50	19	18.62	0.263	/
LTE Band 7	10M	QPSK	1	0	Front side	2510	0.412	-2.83	22.5	21.83	0.481	/
			1	0	Front side	2535	0.442	2.30	22.5	22.11	**0.484**	**7**
			1	0	Front side	2560	0.400	3.68	22.5	21.77	0.473	/
			50	0	Front side	2535	0.412	-0.78	21	20.73	0.438	/
			1	0	Back Side	2535	0.341	-3.23	22.5	22.11	0.373	/
			50	0	Back Side	2560	0.358	-0.28	21	20.73	0.381	/
			1	0	Left Side	2535	0.211	-0.58	22.5	22.11	0.231	/
			50	0	Left Side	2560	0.231	-0.51	21	20.73	0.246	/
			1	0	Right Side	2535	0.241	2.07	22.5	22.11	0.264	/
			50	0	Right Side	2560	0.239	1.42	21	20.73	0.254	/
			1	0	Top Side	2535	0.255	3.01	22.5	22.11	0.279	/
			50	0	Top Side	2560	0.214	3.80	21	20.73	0.228	/
LTE Band 38	20M	QPSK	1	0	Front side	2610	0.249	2.71	22	21.69	**0.267**	**8**
			50	0	Front side	2610	0.225	-3.78	21	20.56	0.249	/
			1	0	Back Side	2610	0.166	1.37	22	21.69	0.178	/
			50	0	Back Side	2610	0.178	2.16	21	20.56	0.197	/
			1	0	Left Side	2610	0.102	-0.80	22	21.69	0.110	/
			50	0	Left Side	2610	0.136	0.06	21	20.56	0.151	/
			1	0	Right Side	2610	0.125	0.41	22	21.69	0.134	/
			50	0	Right Side	2610	0.114	-0.67	21	20.56	0.126	/
			1	0	Top Side	2610	0.152	0.90	22	21.69	0.163	/
			50	0	Top Side	2610	0.136	0.42	21	20.56	0.151	/

LTE Band 40	20M	QPSK	1	0	Front side	2310	0.202	2.08	14.5	14.16	**0.218**	**9**
			50	0	Front side	2310	0.201	-0.12	13	12.93	0.204	/
			1	0	Back Side	2310	0.152	0.29	14.5	14.16	0.164	/
			50	0	Back Side	2310	0.136	1.66	13	12.93	0.138	/
			1	0	Left Side	2310	0.099	-3.96	14.5	14.16	0.107	/
			50	0	Left Side	2310	0.089	-3.18	13	12.93	0.090	/
			1	0	Right Side	2310	0.074	0.81	14.5	14.16	0.080	/
			50	0	Right Side	2310	0.075	0.71	13	12.93	0.076	/
			1	0	Top Side	2310	0.099	2.71	14.5	14.16	0.107	/
			50	0	Top Side	2310	0.102	3.40	13	12.93	0.104	/
LTE Band 41	20M	QPSK	1	0	Front side	2645	0.280	-1.39	20	19.76	**0.296**	**10**
			50	0	Front side	2645	0.256	0.98	19	18.62	0.279	/
			1	0	Back Side	2645	0.211	0.25	20	19.76	0.223	/
			50	0	Back Side	2645	0.198	2.82	19	18.62	0.216	/
			1	0	Left Side	2645	0.145	3.71	20	19.76	0.153	/
			50	0	Left Side	2645	0.136	3.84	19	18.62	0.148	/
			1	0	Right Side	2645	0.125	1.49	20	19.76	0.132	/
			50	0	Right Side	2645	0.144	-1.46	19	18.62	0.157	/
			1	0	Top Side	2645	0.133	-3.62	20	19.76	0.141	/
			50	0	Top Side	2645	0.102	-1.14	19	18.62	0.111	/

Note:

1. The test separation of all above table is 10mm.
2. The Bluetooth and WLAN can't simultaneous transmission at the same time.
3. 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
4. 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 $\leqslant$ 1.2 W/kg. (The highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power was **0.010** W/Kg for Body)

12.2 Limbs SAR

Band	Model	Test Position	Freq.	SAR (1g) (W/kg)	Power Drift(%)	Max.Turn-up Power(dBm)	Meas.Output Power(dBm)	Scaled SAR (W/Kg)	Meas.No.
WCDMA Band V	RMC	Back Side	826.4	0.412	2.22	23.00	22.83	**0.428**	**11**
2.4GHz WLAN	802.11b	Back Side	2462	0.027	2.82	11.00	10.93	**0.027**	**12**
BT	GFSK	Back Side	2480	0.023	-0.93	5.50	5.19	**0.025**	**13**
5.2GHz WLAN	802.11a	Back Side	5200	0.054	-3.76	12.00	11.73	**0.057**	**14**
5.8GHz WLAN	802.11a	Back Side	5745	0.050	-0.53	10.50	10.46	**0.050**	**15**

Band	BW (MHz)	Mod.	RB Size	RB offset	Test Position	Freq.	Result 1g (W/Kg)	Power Drift(%)	Max. Turn-up Power(dBm)	Meas. Output Power(dBm)	Scaled SAR (W/Kg)	Meas.No.
LTE Band 5	10M	QPSK	1	0	Back Side	844	0.530	0.64	20	19.96	**0.535**	**16**
			25	0	Back Side	844	0.455	2.75	19	18.62	0.497	/
LTE Band 7	10M	QPSK	1	0	Back Side	2510	0.610	3.36	22.5	21.83	0.712	/
			1	0	Back Side	2535	0.658	-2.12	22.5	22.11	**0.720**	**17**
			1	0	Back Side	2560	0.588	1.52	22.5	21.77	0.696	/
			50	0	Back Side	2535	0.575	0.29	21	20.73	0.612	/
LTE Band 38	20M	QPSK	1	0	Back Side	2610	0.290	0.62	22	21.69	**0.311**	**18**
			50	0	Back Side	2610	0.254	-3.05	21	20.56	0.281	/
LTE Band 40	20M	QPSK	1	0	Back Side	2310	0.199	1.58	14.5	14.16	**0.215**	**19**
			50	0	Back Side	2310	0.156	1.26	13	12.93	0.159	/
LTE Band 41	20M	QPSK	1	0	Back Side	2645	0.290	1.52	20	19.76	**0.306**	**20**
			50	0	Back Side	2645	0.275	1.70	19	18.62	0.300	/

Note:

1. The test separation of all above table is 0mm.
2. The Bluetooth and WLAN can't simultaneous transmission at the same time.
3. 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
4. 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 $\leqslant$ 1.2 W/kg. (The highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power was **0.008** W/Kg for Body)

12.3 Simultaneous Multi-band Transmission Evaluation:

Application Simultaneous Transmission information:

Position	Simultaneous State
Body	1. WCDMA + 2.4GHz WLAN/5G WLAN
	2. WCDMA + Bluetooth
	3. LTE + 2.4GHz WLAN/5G WLAN
	4. LTE + Bluetooth
Limbs	1. WCDMA + 2.4GHz WLAN/5G WLAN
	2. WCDMA + Bluetooth
	3. LTE + 2.4GHz WLAN/5G WLAN
	4. LTE + Bluetooth

NOTE:

1. Bluetooth and WLAN can't simultaneous transmission at the same time.
2. For simultaneous transmission at body exposure position, transmitters simultaneous transmission was the worst state.
3. If the test separation distance is <5mm, 5mm is used for excluded SAR calculation.
4. KDB 447498 Appendix E, 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:
   SAR_{est} =1.6 · Pant / Pth [W/kg].
   P_{ant} is maximum time-averaged power or effective radiated power (ERP), whichever is greater, and P_{th} is defined in Formula KDB 447498 (B.2).

Simultaneous Mode	Position	Mode	Max. SAR (W/kg)	Sum SAR (W/kg)
WCDMA + 2.4G WLAN	Body	WCDMA	0.459	0.492
		2.4G WLAN	0.033	
	Limbs	WCDMA	0.428	0.456
		2.4G WLAN	0.027	
WCDMA + Bluetooth	Body	WCDMA	0.459	0.483
		Bluetooth	0.024	
	Limbs	WCDMA	0.428	0.453
		Bluetooth	0.025	
WCDMA + 5G WLAN	Body	WCDMA	0.459	0.575
		5G WLAN	0.116	
	Limbs	WCDMA	0.428	0.486
		5G WLAN	0.057	
LTE + 2.4G WLAN	Body	LTE	0.484	0.517
		2.4G WLAN	0.033	
	Limbs	LTE	0.720	0.747
		2.4G WLAN	0.027	
LTE + Bluetooth	Body	LTE	0.484	0.508
		Bluetooth	0.024	
	Limbs	LTE	0.720	0.745
		Bluetooth	0.025	
LTE + 5G WLAN	Body	LTE	0.484	0.600
		5G WLAN	0.116	
	Limbs	LTE	0.720	0.777
		5G WLAN	0.057	

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
835MHz Dipole	MVG	SID835	SN 30/14 DIP0G835-332	2020.07.14	2023.07.13
2450MHzDipole	MVG	SID2450	SN 30/14 DIP2G450-335	2020.07.14	2023.07.13
2600MHz Dipole	MVG	SID2600	SN 30/14 DIP2G600-336	2020.07.14	2023.07.13
Waveguide	SATIMO	SWG5500	SN 13/14 WGA32	2020.07.14	2023.07.13
E-Field Probe	MVG	SSE2	SN 07/21 EPGO352	2023.02.24	2024.02.23
Dielectric Probe Kit	MVG	SCLMP	SN 32/14 OCPG67	2022.11.15	2023.11.14
Antenna	MVG	ANTA3	SN 07/13 ZNTA52	N/A	N/A
Phantom1	MVG	SAM	SN 32/14 SAM115	N/A	N/A
Phantom3	MVG	SAM	SN 21/21 ELLI48	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	2022.09.28	2023.09.27
Multi Meter	Keithley	Multi Meter 2000	4050073	2022.09.29	2023.09.28
Signal Generator	Agilent	N5182A	MY50140530	2022.09.28	2023.09.27
Wireless Communication Test Set	Agilent	8960-E5515C	MY48360751	2022.09.28	2023.09.27
Wireless Communication Test Set	R&S	CMW500	156324	2022.09.29	2023.09.28
Power Amplifier	DESAY	ZHL-42W	9638	2022.10.08	2023.10.07
Power Meter	R&S	NRP	100510	2022.09.28	2023.09.27
Power Sensor	R&S	NRP-Z11	101919	2022.09.28	2023.09.27
Power Sensor	Keysight	U2021XA	MY56280002	2022.09.29	2023.09.28
Temperature hygrometer	SuWei	SW-108	N/A	2022.09.30	2023.09.29
Thermograph	Elitech	RC-4	S/N EF7176501537	2022.09.30	2023.09.29

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

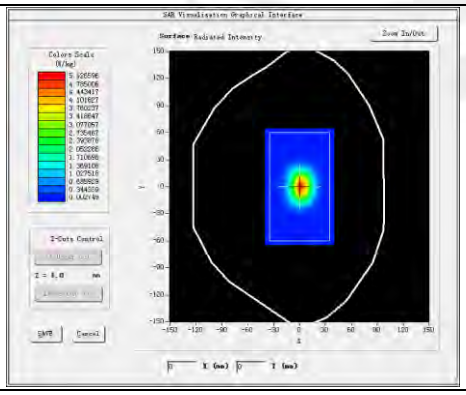
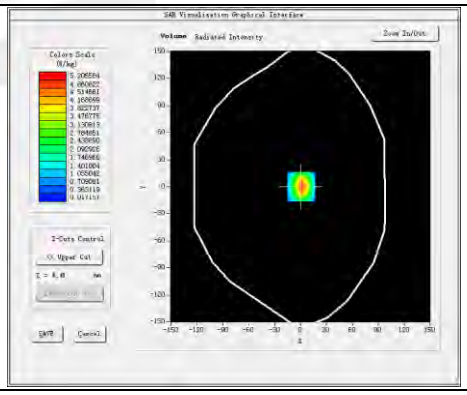
Appendix A. System Validation Plots

System Performance Check Data (835MHz)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm, dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 2023-03-08

Experimental conditions.

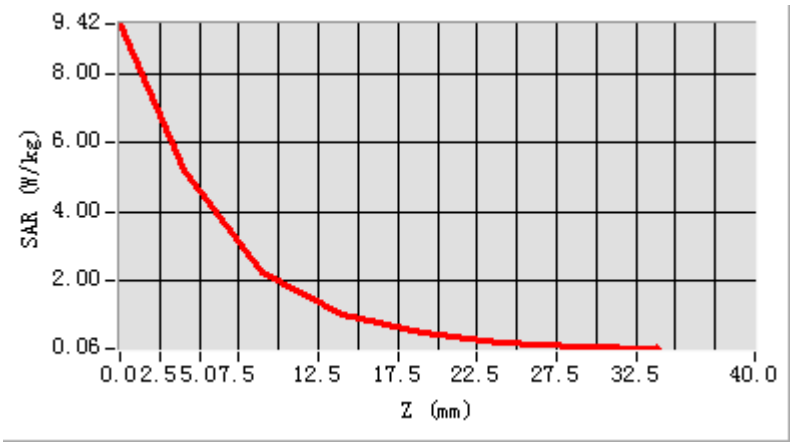
Device Position	Validation plane
Band	835 MHz
Channels	-
Signal	CW
Frequency (MHz)	835
Relative permittivity	40.85
Conductivity (S/m)	0.89
Probe	SN 07/21 EPGO352
ConvF	1.57
Crest factor:	1:1

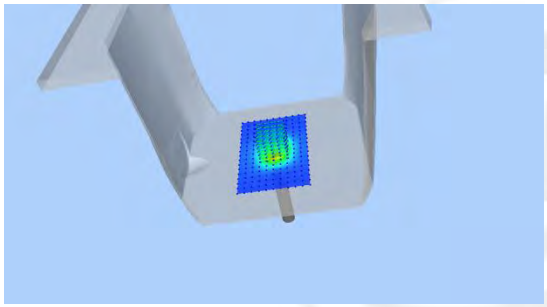
SURFACE SAR	VOLUME SAR
	

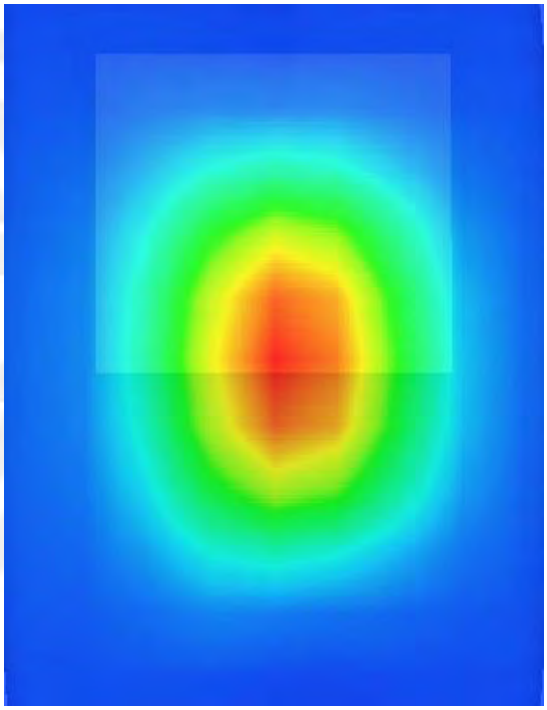
Maximum location: X=1.00, Y=0.00

SAR 10g (W/Kg)	0.615868
SAR 1g (W/Kg)	0.996219

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)



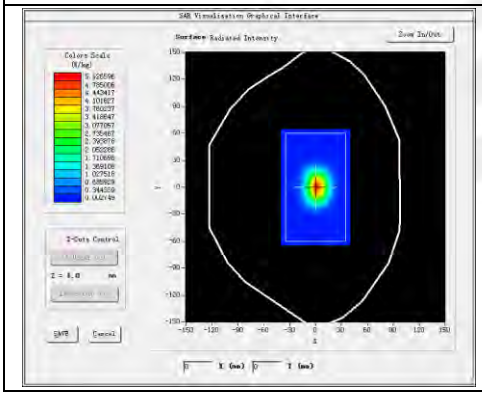
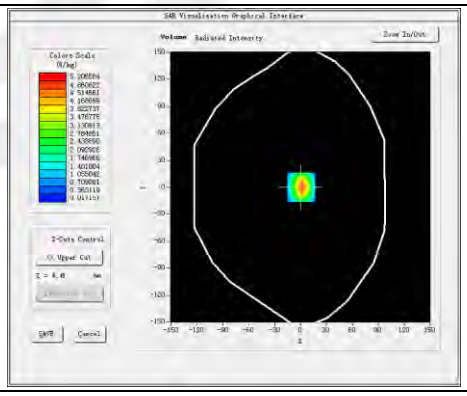


System Performance Check Data (2450MHz)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm, dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 2023-03-09

Experimental conditions.

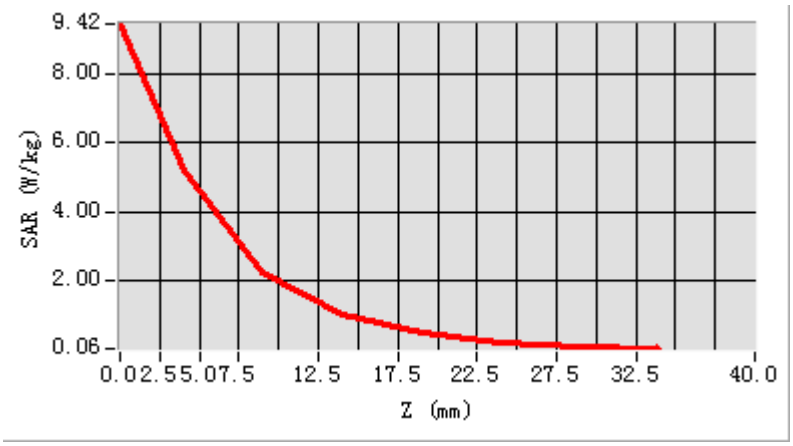
Device Position	Validation plane
Band	2450 MHz
Channels	-
Signal	CW
Frequency (MHz)	2450
Relative permittivity	40.20
Conductivity (S/m)	1.76
Probe	SN 07/21 EPGO352
ConvF	1.75
Crest factor:	1:1

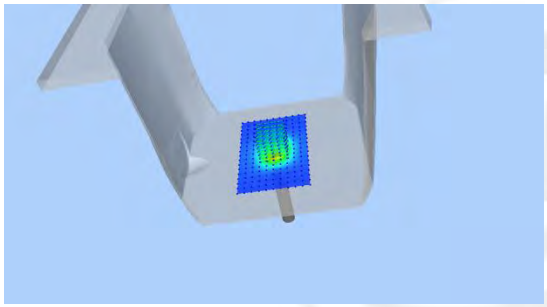
SURFACE SAR	VOLUME SAR
	

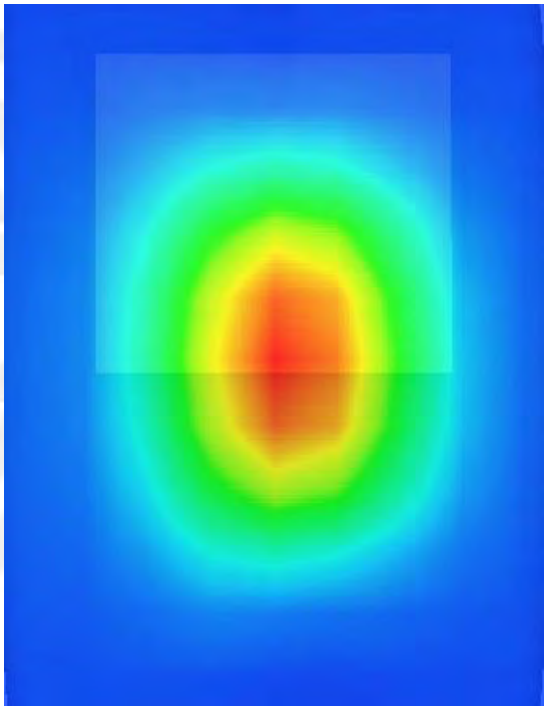
Maximum location: X=1.00, Y=0.00

SAR 10g (W/Kg)	2.397943
SAR 1g (W/Kg)	5.621881

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)



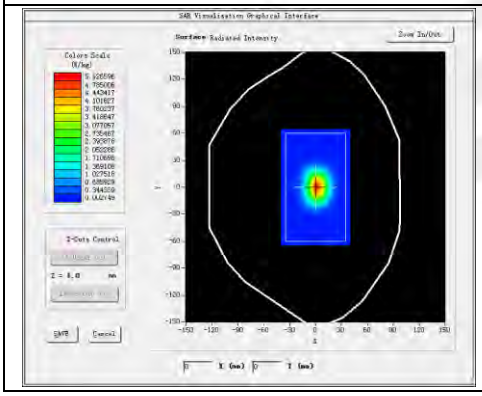
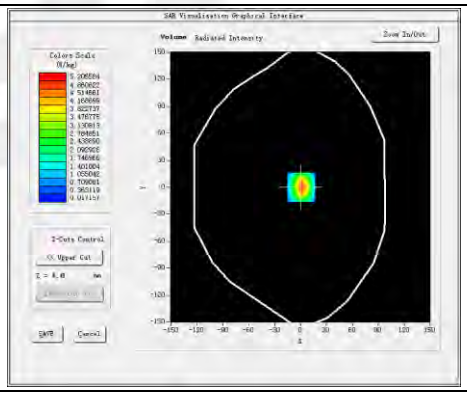


System Performance Check Data (2600MHz)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm, dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 2023-03-13

Experimental conditions.

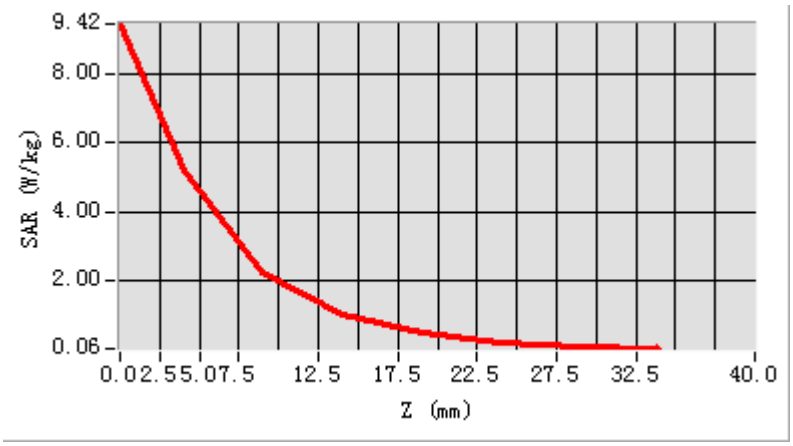
Device Position	Validation plane
Band	2600 MHz
Channels	-
Signal	CW
Frequency (MHz)	2600
Relative permittivity	40.02
Conductivity (S/m)	1.98
Probe	SN 07/21 EPGO352
ConvF	1.63
Crest factor:	1:1

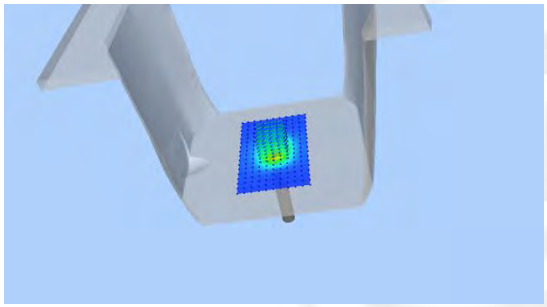
SURFACE SAR	VOLUME SAR
	

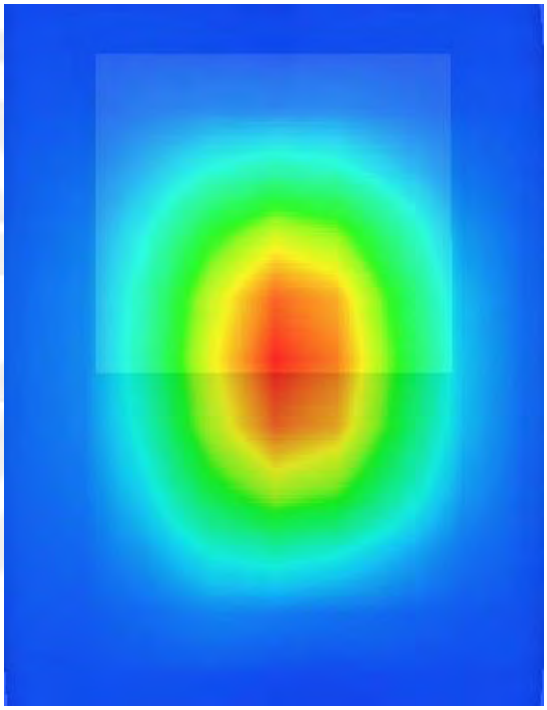
Maximum location: X=1.00, Y=0.00

SAR 10g (W/Kg)	2.424111
SAR 1g (W/Kg)	5.758808

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)



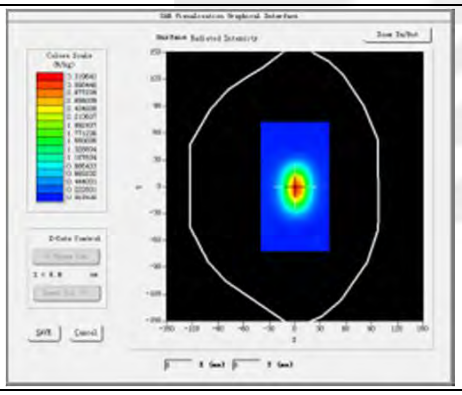
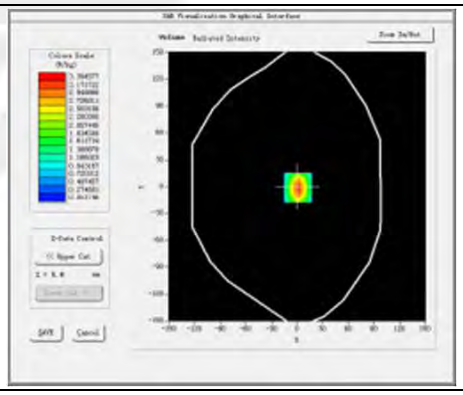


System Performance Check Data (5200MHz)

Type: Dipole measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=4mm, dy=4mm, dz=2mm
Date of measurement: 2023-03-15

Experimental conditions.

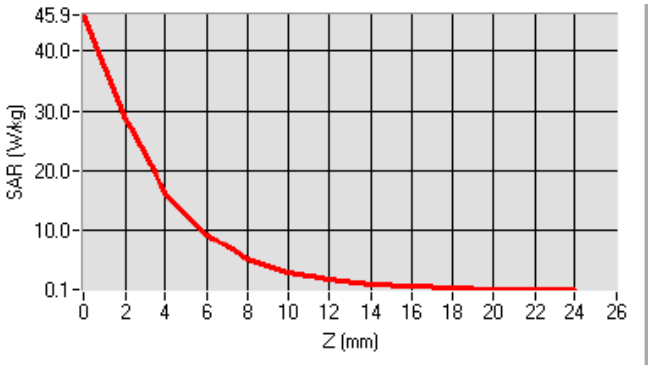
Device Position	Validation plane
Band	5200 MHz
Channels	-
Signal	CW
Frequency (MHz)	5200
Relative permittivity	36.93
Conductivity (S/m)	4.64
Probe	SN 07/21 EPGO352
ConvF	1.47
Crest factor:	1:1

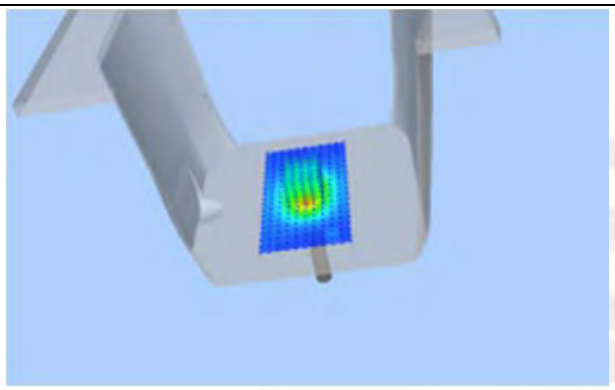
SURFACE SAR	VOLUME SAR
	

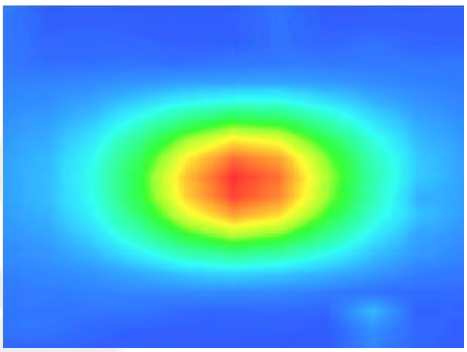
Maximum location: X=7.00, Y=2.00

SAR 10g (W/Kg)	5.56227
SAR 1g (W/Kg)	15.962834

Z Axis Scan





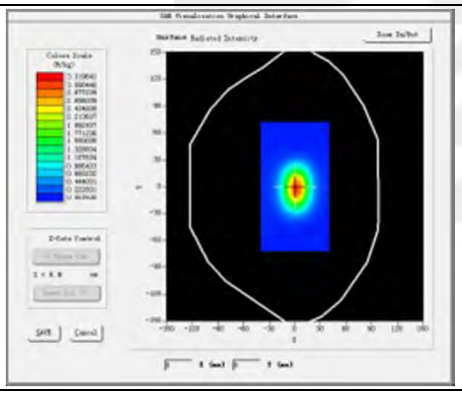
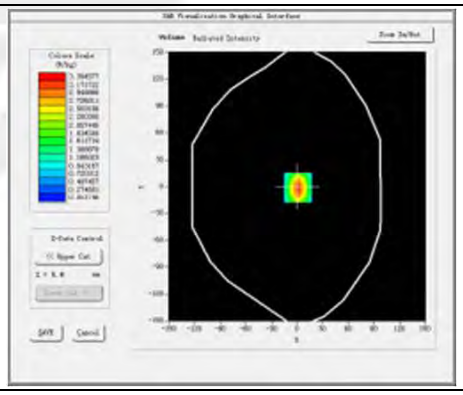


System Performance Check Data (5800MHz)

Type: Dipole measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=4mm, dy=4mm, dz=2mm
Date of measurement: 2023-03-15

Experimental conditions.

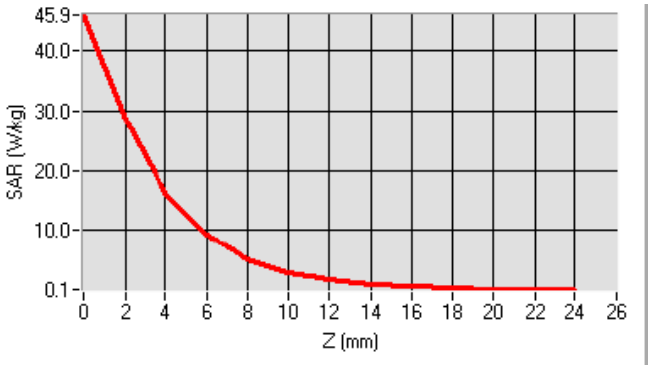
Device Position	Validation plane
Band	5800MHz
Channels	-
Signal	CW
Frequency (MHz)	5800
Relative permittivity	35.92
Conductivity (S/m)	5.29
Probe	SN 07/21 EPGO352
ConvF	1.64
Crest factor:	1:1

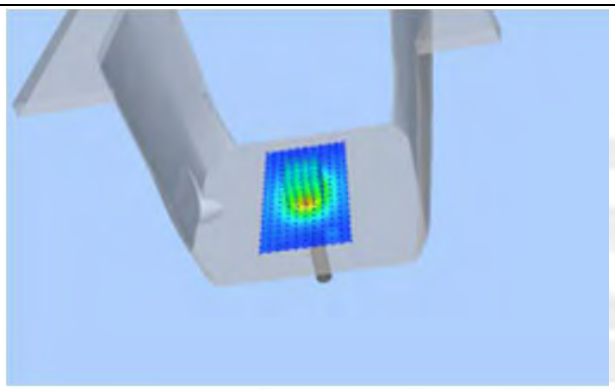
SURFACE SAR	VOLUME SAR
	

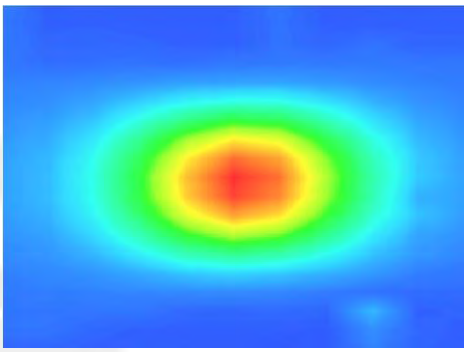
Maximum location: X=7.00, Y=2.00

SAR 10g (W/Kg)	6.163668
SAR 1g (W/Kg)	18.650955

Z Axis Scan







Appendix B. SAR Test Plots

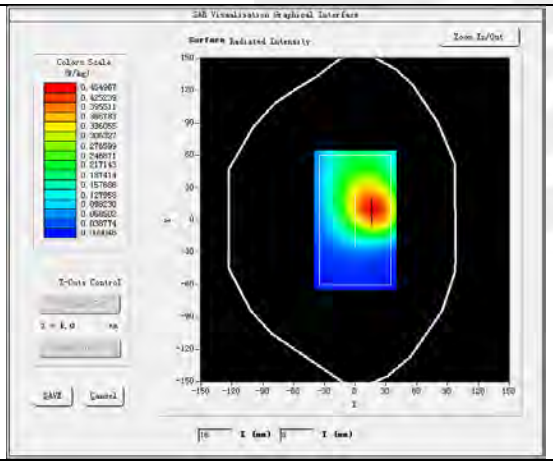
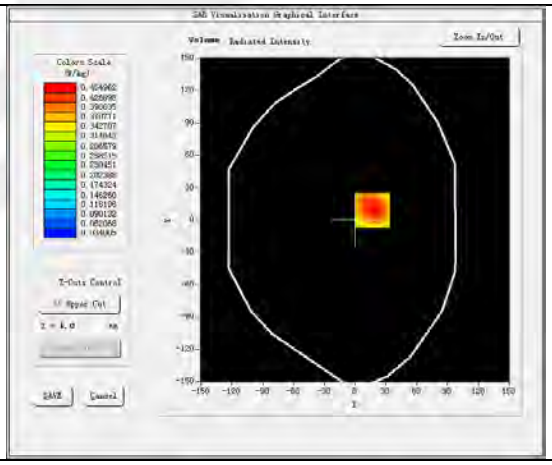
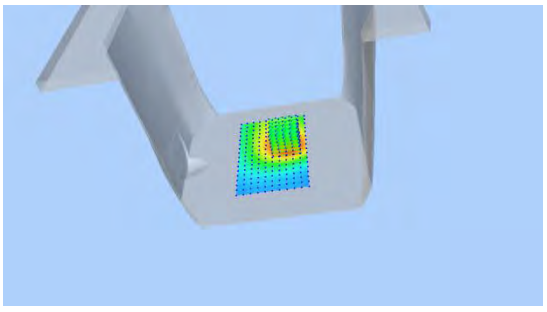
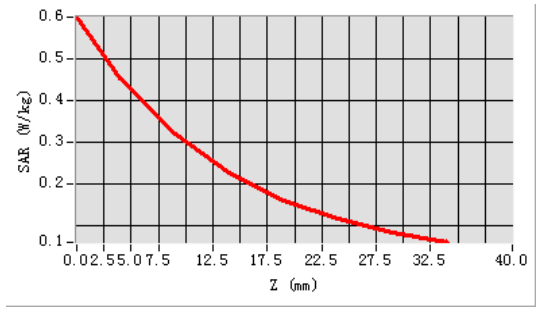
Plot 1: DUT:Handheld data collection terminal; EUT Model: HC6

Test Date	2023-03-08
Probe	SN 07/21 EPGO352
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	Front Side
Band	WCDMA V
Signal	WCDMA (Crest factor: 1.0)
Frequency (MHz)	826.4
Relative permittivity (real part)	41.00
Conductivity (S/m)	0.91

Maximum location: X=17.00, Y=9.00

SAR Peak: 0.61 W/kg

SAR 10g (W/Kg)	0.298342
SAR 1g (W/Kg)	0.440861

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

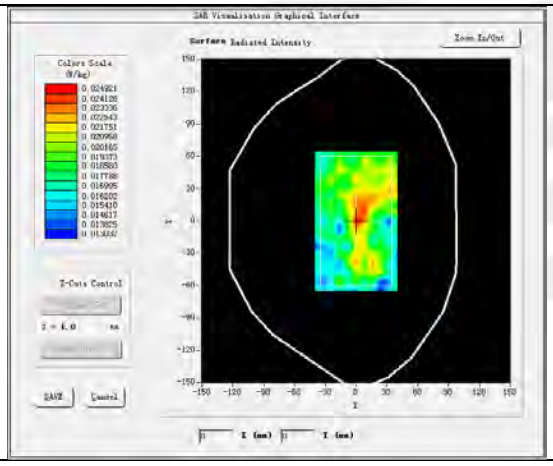
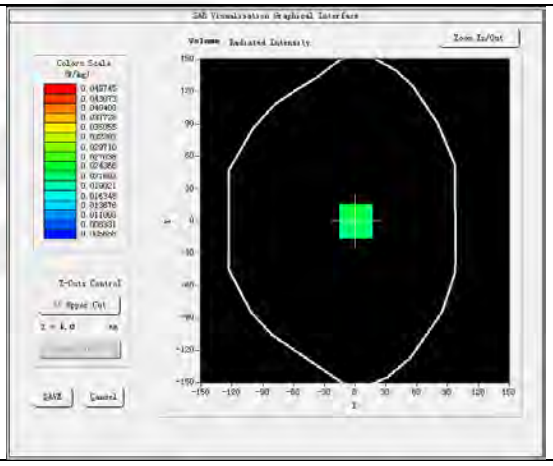
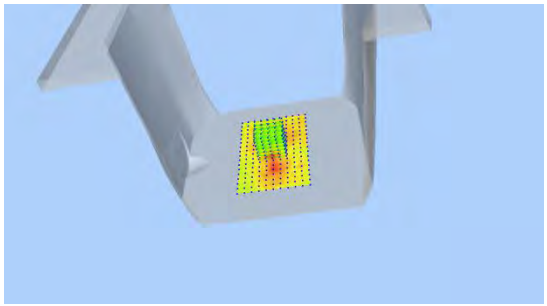
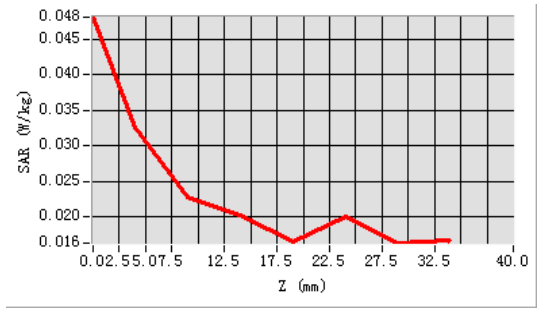
Plot 2: DUT:Handheld data collection terminal; EUT Model: HC6

Test Date	2023-03-09
Probe	SN 07/21 EPGO352
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	Top Side
Band	2.4G WLAN
Signal	IEEE802.b (Crest factor: 1.0)
Frequency (MHz)	2462
Relative permittivity (real part)	40.04
Conductivity (S/m)	1.82

Maximum location: X=1.00, Y=0.00

SAR Peak: 0.06 W/kg

SAR 10g (W/Kg)	0.021801
SAR 1g (W/Kg)	0.032086

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

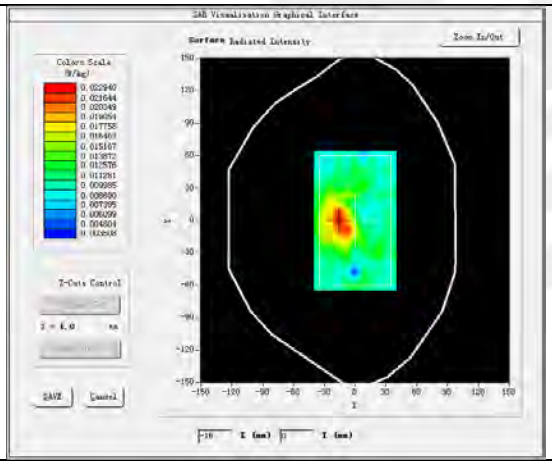
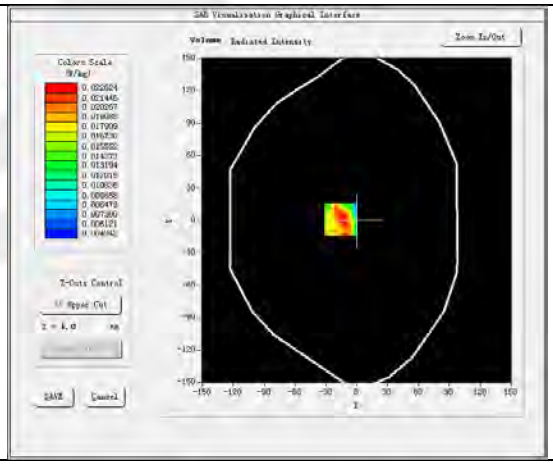
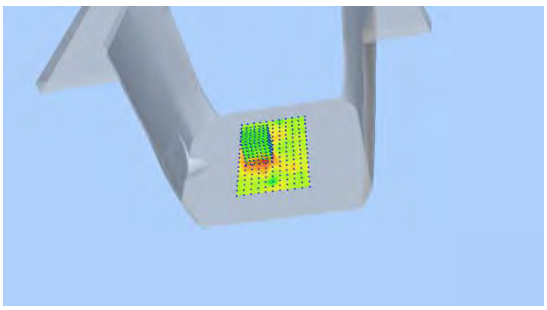
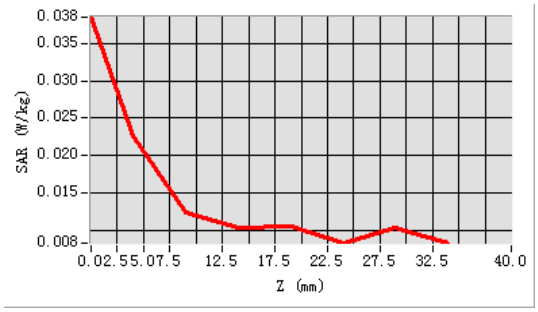
Plot 3: DUT:Handheld data collection terminal; EUT Model: HC6

Test Date	2023-03-09
Probe	SN 07/21 EPGO352
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	Top Side
Band	BT
Signal	GFSK (Crest factor: 1.0)
Frequency (MHz)	2480
Relative permittivity (real part)	39.53
Conductivity (S/m)	1.85

Maximum location: X=-16.00, Y=1.00

SAR Peak: 0.04 W/kg

SAR 10g (W/Kg)	0.013733
SAR 1g (W/Kg)	0.021928

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

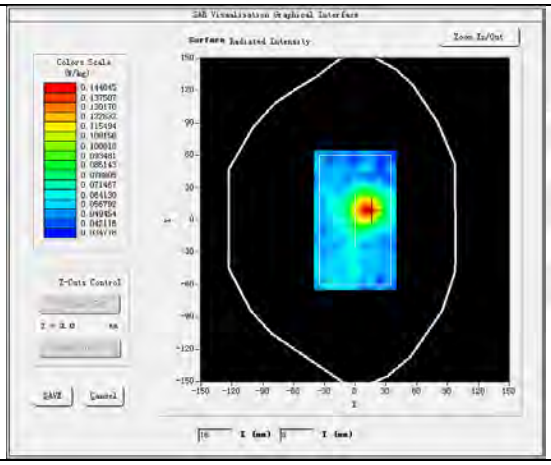
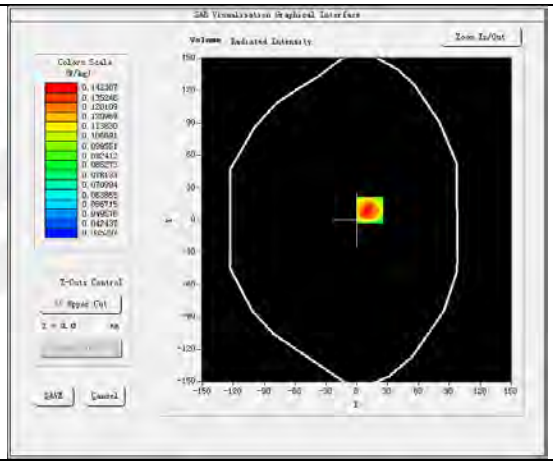
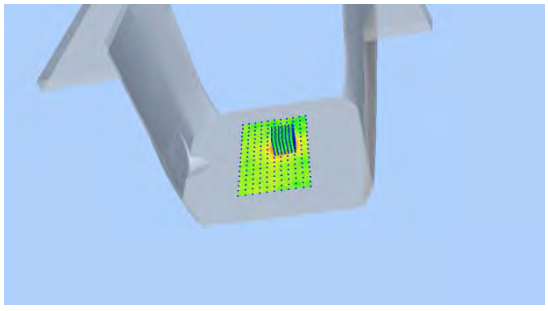
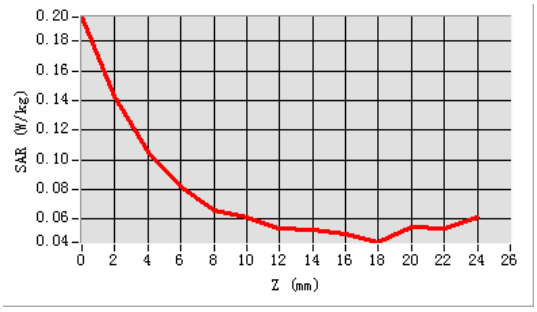
Plot 4: DUT:Handheld data collection terminal; EUT Model: HC6

Test Date	2023-03-15
Probe	SN 07/21 EPGO352
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	Top Side
Band	5.2G WLAN
Signal	IEEE802.11a (Crest factor: 1.0)
Frequency (MHz)	5200
Relative permittivity (real part)	36.93
Conductivity (S/m)	4.64

Maximum location: X=13.00, Y=9.00

SAR Peak: 0.21 W/kg

SAR 10g (W/Kg)	0.073199
SAR 1g (W/Kg)	0.109355

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

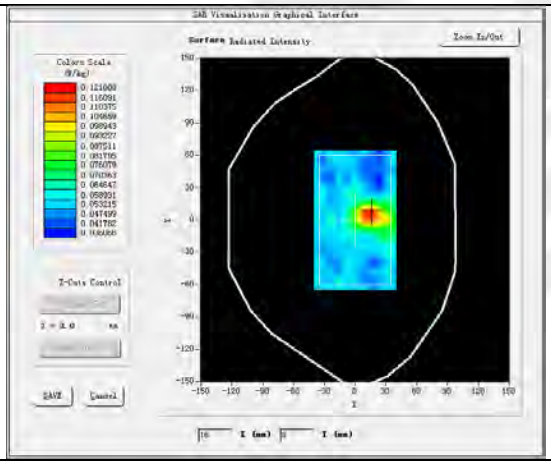
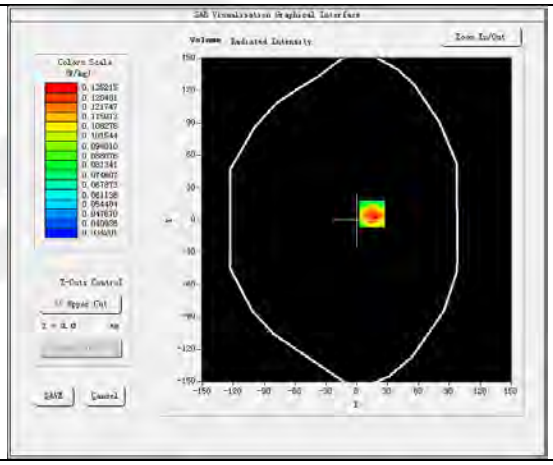
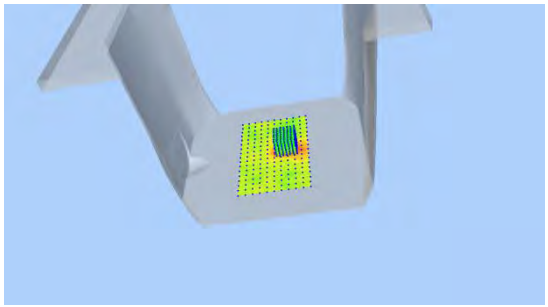
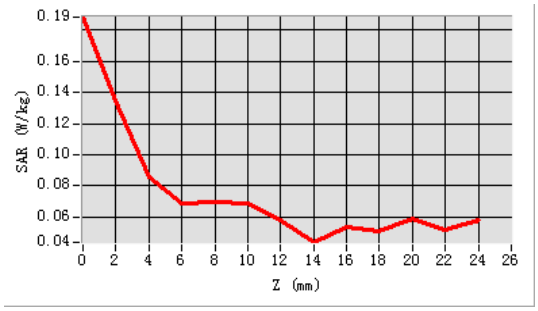
Plot 5: DUT:Handheld data collection terminal; EUT Model: HC6

Test Date	2023-03-15
Probe	SN 07/21 EPGO352
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	Top Side
Band	5.8G WLAN
Signal	IEEE802.11a (Crest factor: 1.0)
Frequency (MHz)	5745
Relative permittivity (real part)	36.11
Conductivity (S/m)	5.20

Maximum location: X=15.00, Y=6.00

SAR Peak: 0.20 W/kg

SAR 10g (W/Kg)	0.069766
SAR 1g (W/Kg)	0.097825

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

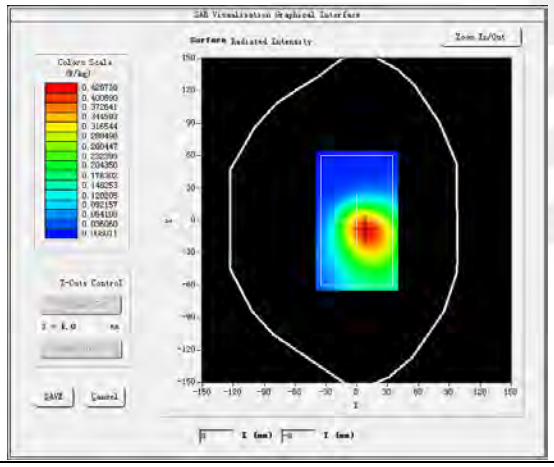
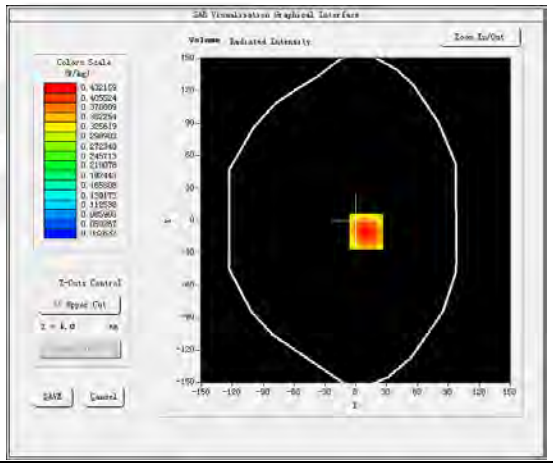
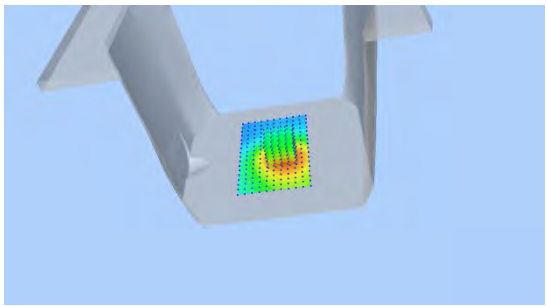
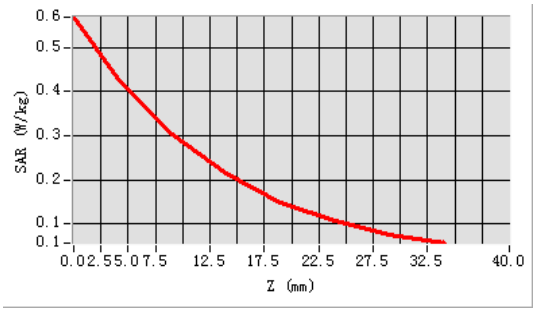
Plot 6: DUT:Handheld data collection terminal; EUT Model: HC6

Test Date	2023-03-08
Probe	SN 07/21 EPGO352
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	Front side
Band	LTE Band 5(RB 1)
Signal	LTE (Crest factor: 1.0)
Frequency (MHz)	844
Relative permittivity (real part)	41.89
Conductivity (S/m)	0.94

Maximum location: X=10.00, Y=-10.00

SAR Peak: 0.58 W/kg

SAR 10g (W/Kg)	0.280950
SAR 1g (W/Kg)	0.417265

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

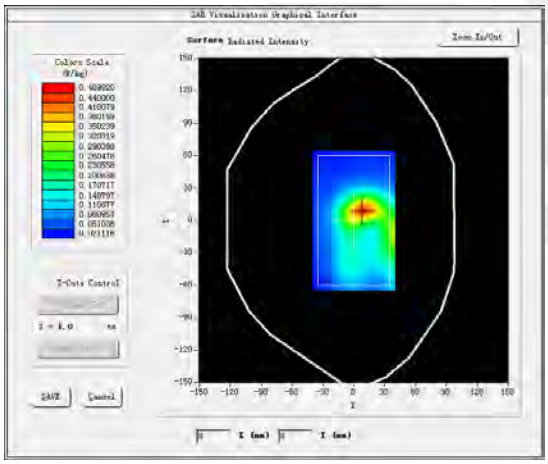
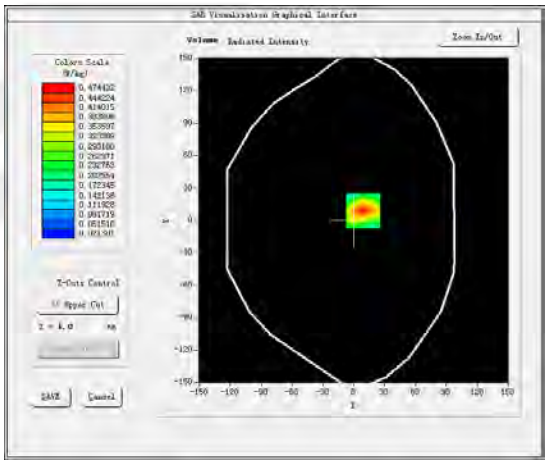
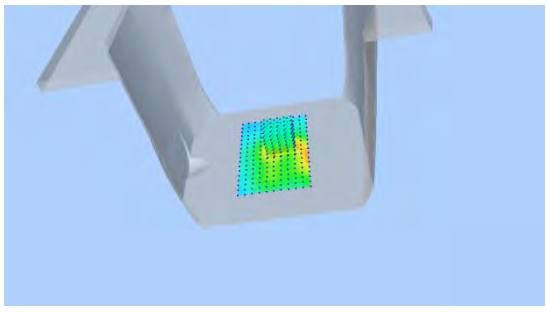
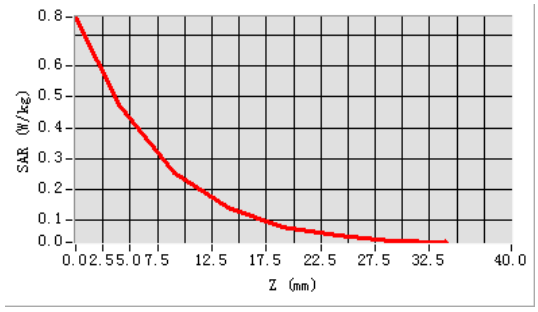
Plot 7: DUT:Handheld data collection terminal; EUT Model: HC6

Test Date	2023-03-13
Probe	SN 07/21 EPGO352
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	Front side
Band	LTE Band 7 (RB 1)
Signal	LTE (Crest factor: 1.0)
Frequency (MHz)	2535
Relative permittivity (real part)	39.46
Conductivity (S/m)	1.84

Maximum location: X=9.00, Y=9.00

SAR Peak: 0.75 W/kg

SAR 10g (W/Kg)	0.226700
SAR 1g (W/Kg)	0.442066

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

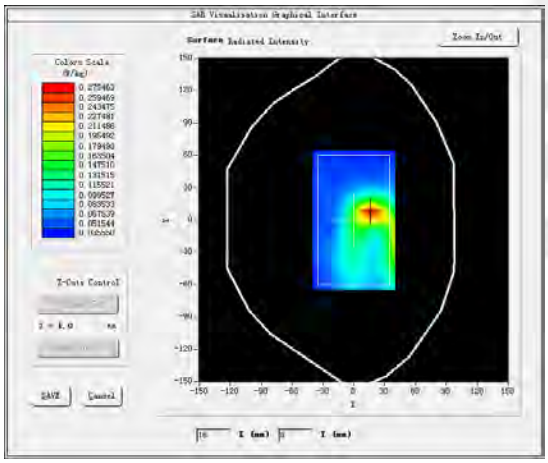
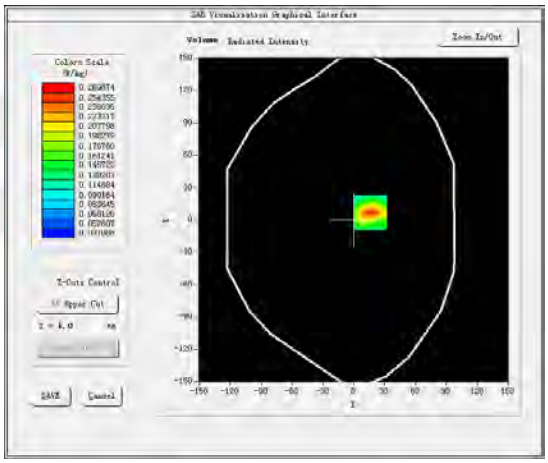
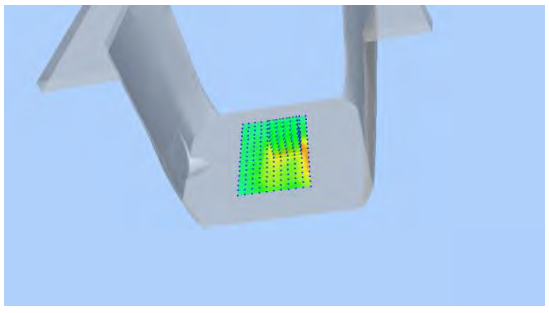
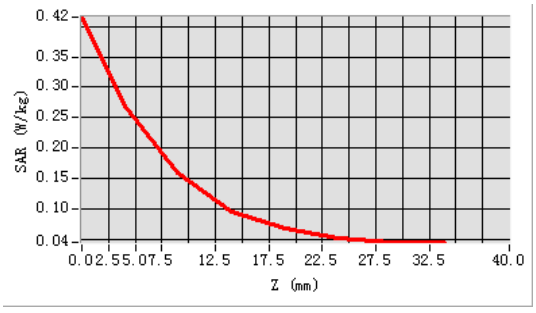
Plot 8: DUT:Handheld data collection terminal; EUT Model: HC6

Test Date	2023-03-13
Probe	SN 07/21 EPGO352
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	Front side
Band	LTE Band 38 (RB 1)
Signal	LTE (Crest factor: 1.0)
Frequency (MHz)	2610
Relative permittivity (real part)	39.96
Conductivity (S/m)	1.95

Maximum location: X=16.00, Y=7.00

SAR Peak: 0.42 W/kg

SAR 10g (W/Kg)	0.137679
SAR 1g (W/Kg)	0.248565

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

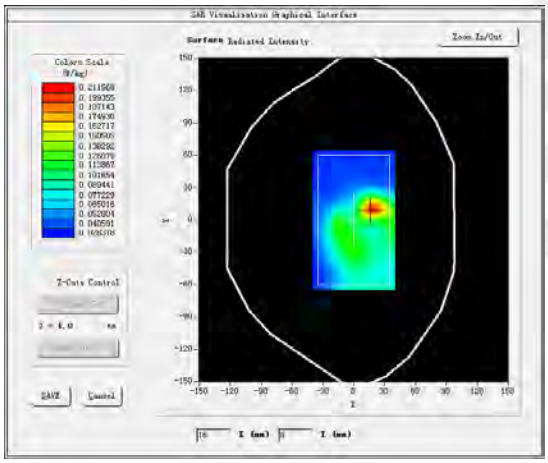
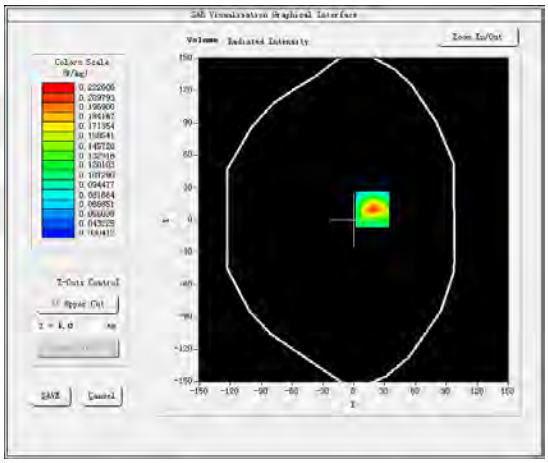
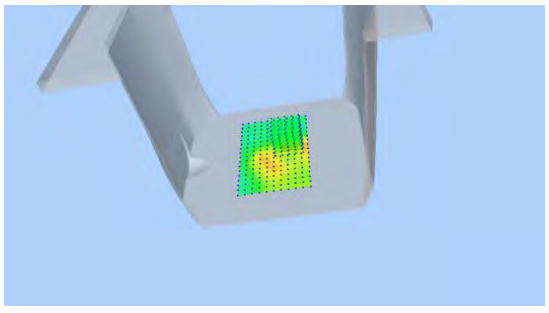
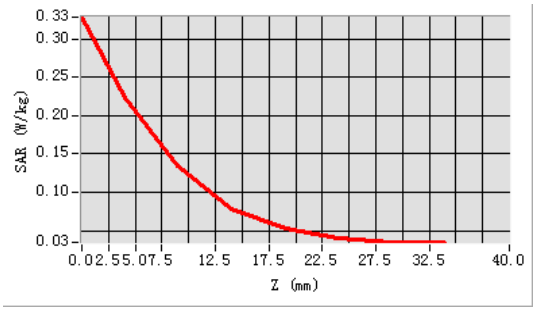
Plot 9: DUT:Handheld data collection terminal; EUT Model: HC6

Test Date	2023-03-09
Probe	SN 07/21 EPGO352
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	Front side
Band	LTE Band 40 (RB 1)
Signal	LTE (Crest factor: 1.0)
Frequency (MHz)	2310
Relative permittivity (real part)	40.12
Conductivity (S/m)	1.62

Maximum location: X=18.00, Y=10.00

SAR Peak: 0.33 W/kg

SAR 10g (W/Kg)	0.110489
SAR 1g (W/Kg)	0.201883

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

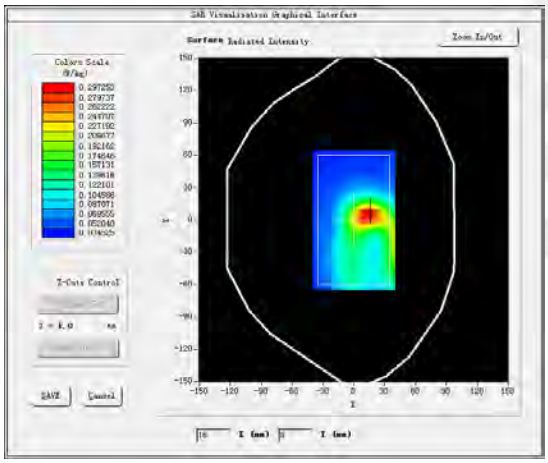
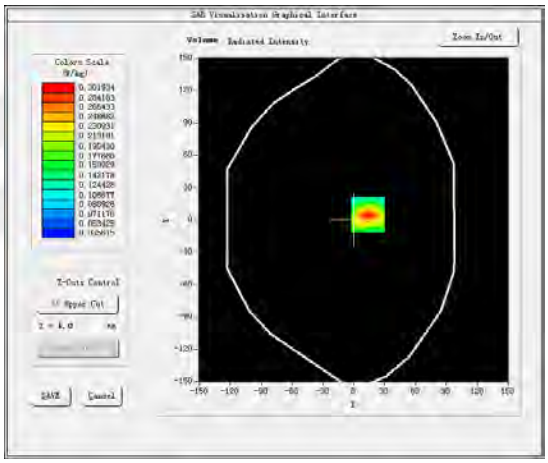
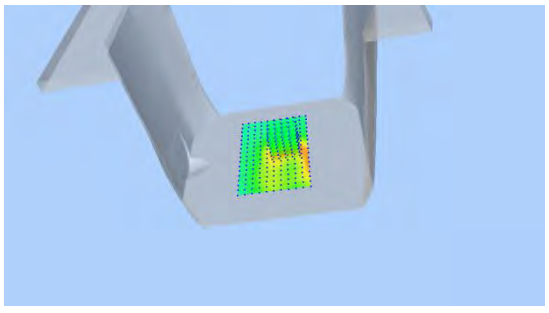
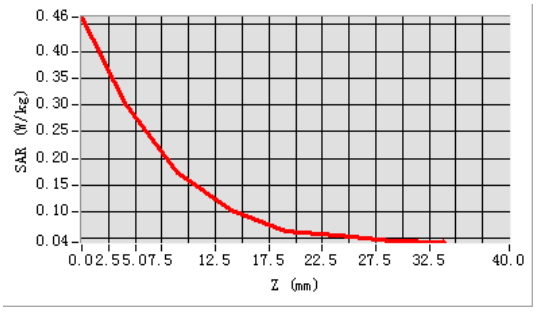
Plot 10: DUT:Handheld data collection terminal; EUT Model: HC6

Test Date	2023-03-13
Probe	SN 07/21 EPGO352
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	Front side
Band	LTE Band 41 (RB 1)
Signal	LTE (Crest factor: 1.0)
Frequency (MHz)	2645
Relative permittivity (real part)	40.22
Conductivity (S/m)	1.95

Maximum location: X=14.00, Y=5.00

SAR Peak: 0.47 W/kg

SAR 10g (W/Kg)	0.153615
SAR 1g (W/Kg)	0.280170

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

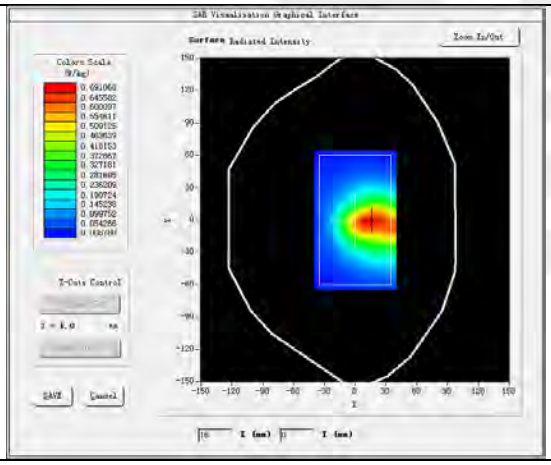
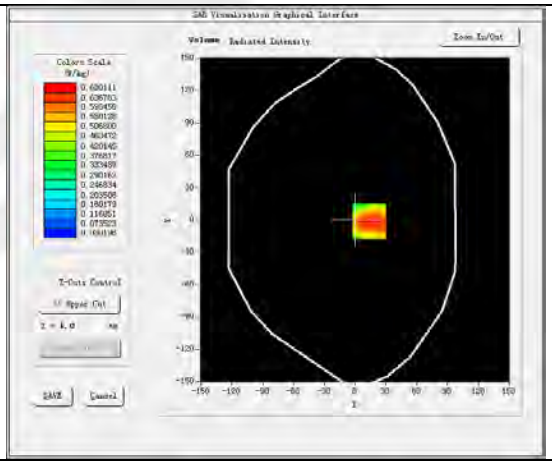
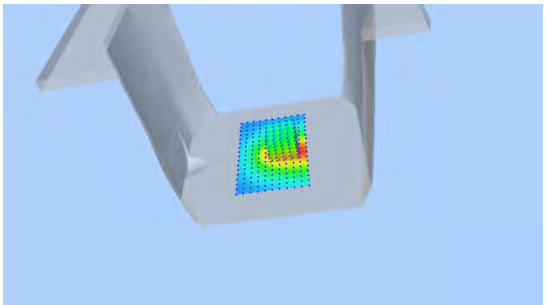
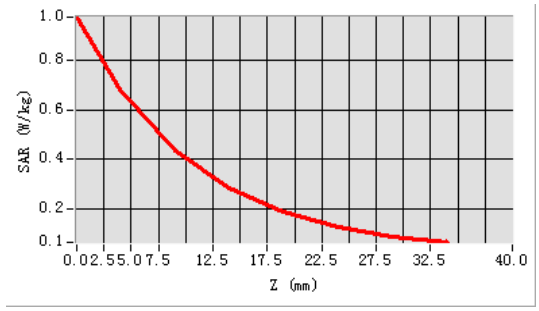
Plot 11: DUT:Handheld data collection terminal; EUT Model: HC6

Test Date	2023-03-08
Probe	SN 07/21 EPGO352
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	Front Side
Band	WCDMA V
Signal	WCDMA (Crest factor: 1.0)
Frequency (MHz)	826.4
Relative permittivity (real part)	41.00
Conductivity (S/m)	0.91

Maximum location: X=14.00, Y=-1.00

SAR Peak: 1.02 W/kg

SAR 10g (W/Kg)	0.411585
SAR 1g (W/Kg)	0.662698

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

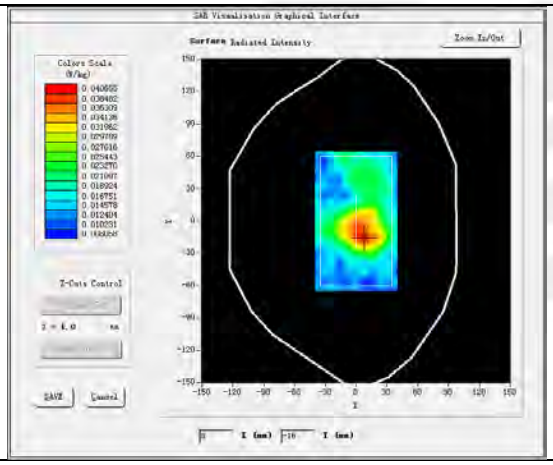
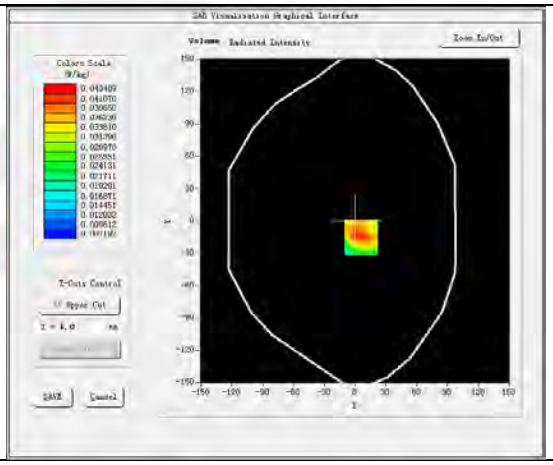
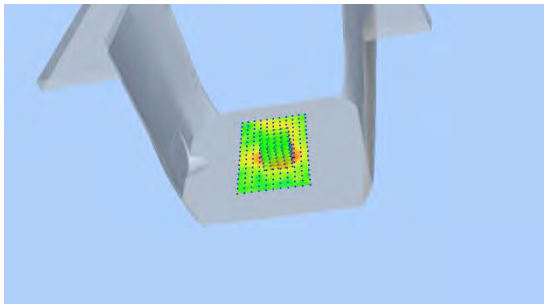
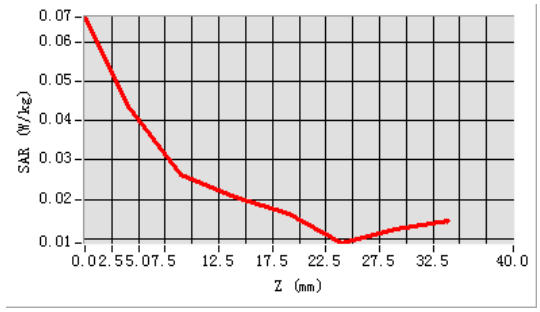
Plot 12: DUT:Handheld data collection terminal; EUT Model: HC6

Test Date	2023-03-09
Probe	SN 07/21 EPGO352
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	Top Side
Band	2.4G WLAN
Signal	IEEE802.b (Crest factor: 1.0)
Frequency (MHz)	2462
Relative permittivity (real part)	40.04
Conductivity (S/m)	1.82

Maximum location: X=6.00, Y=-15.00

SAR Peak: 0.08 W/kg

SAR 10g (W/Kg)	0.026608
SAR 1g (W/Kg)	0.043589

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

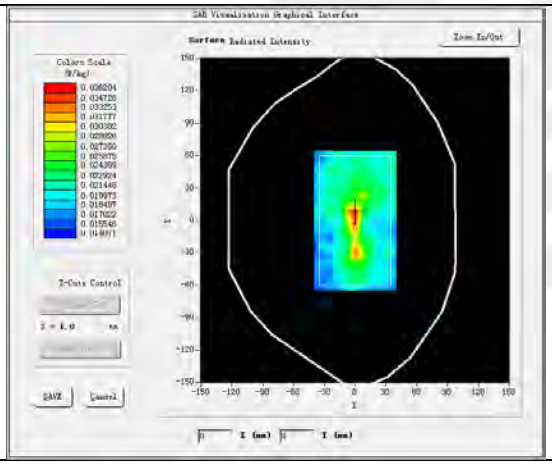
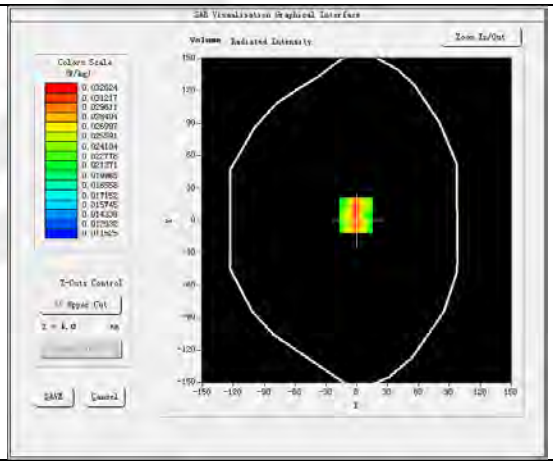
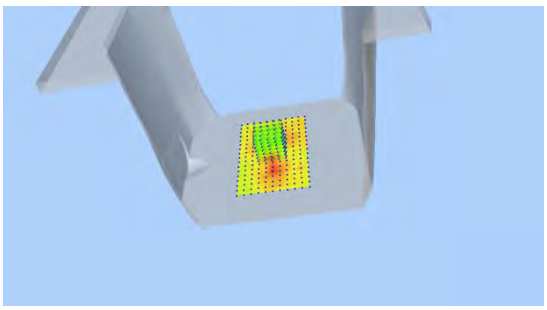
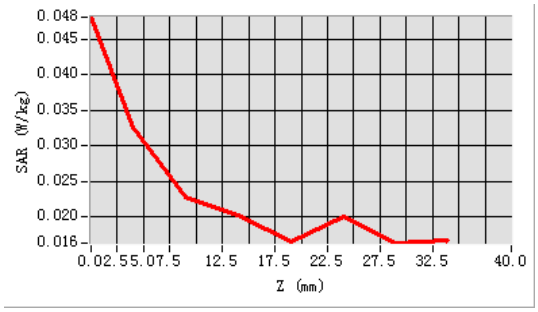
Plot 13: DUT:Handheld data collection terminal; EUT Model: HC6

Test Date	2023-03-09
Probe	SN 07/21 EPGO352
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	Top Side
Band	BT
Signal	GFSK (Crest factor: 1.0)
Frequency (MHz)	2480
Relative permittivity (real part)	39.53
Conductivity (S/m)	1.85

Maximum location: X=15.00, Y=8.00

SAR Peak: 0.04 W/kg

SAR 10g (W/Kg)	0.022020
SAR 1g (W/Kg)	0.026621

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

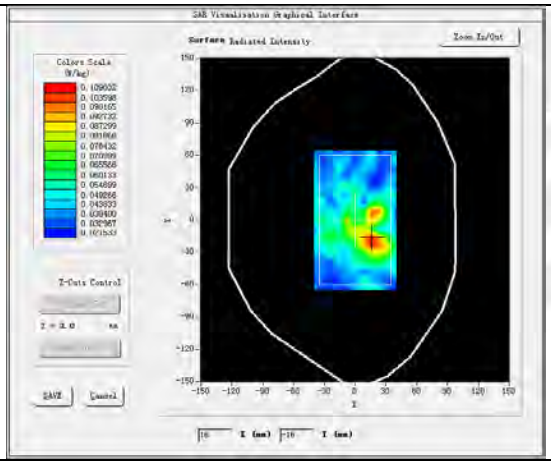
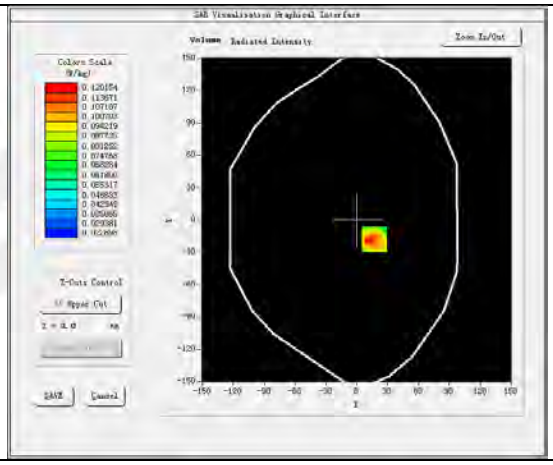
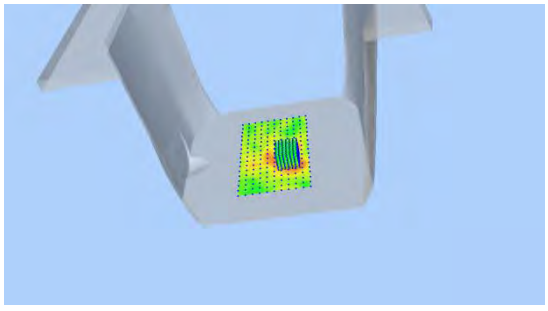
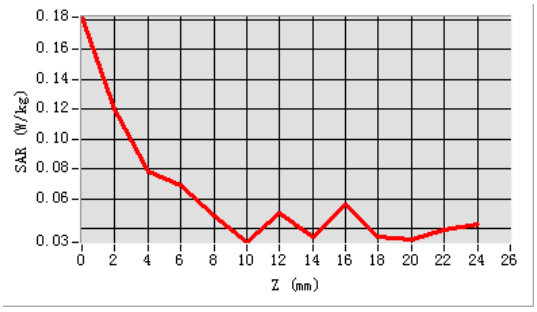
Plot 14: DUT:Handheld data collection terminal; EUT Model: HC6

Test Date	2023-03-15
Probe	SN 07/21 EPGO352
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	Top Side
Band	5.2G WLAN
Signal	IEEE802.11a (Crest factor: 1.0)
Frequency (MHz)	5200
Relative permittivity (real part)	36.93
Conductivity (S/m)	4.64

Maximum location: X=17.00, Y=-18.00

SAR Peak: 0.18 W/kg

SAR 10g (W/Kg)	0.054375
SAR 1g (W/Kg)	0.081123

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

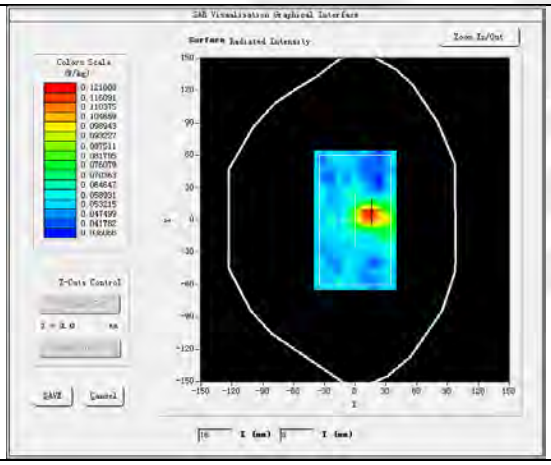
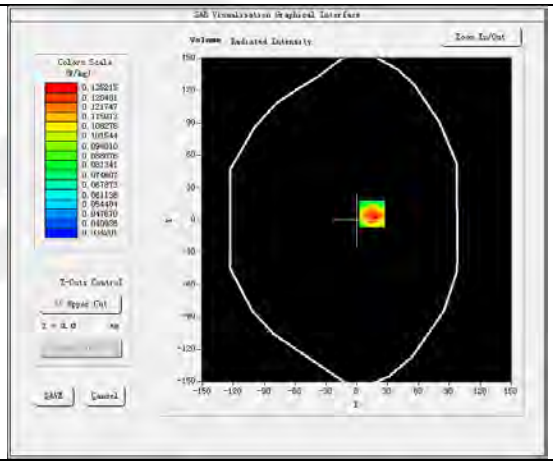
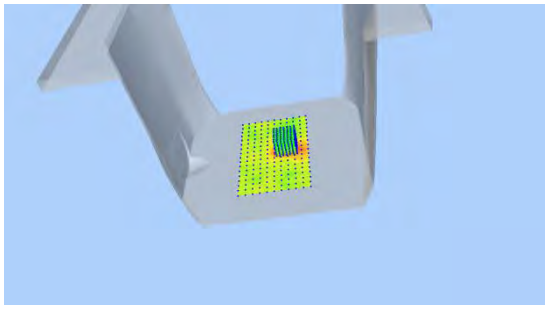
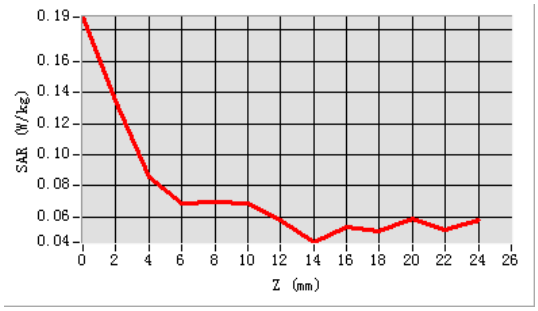
Plot 15: DUT:Handheld data collection terminal; EUT Model: HC6

Test Date	2023-03-15
Probe	SN 07/21 EPGO352
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	Top Side
Band	5.8G WLAN
Signal	IEEE802.11a (Crest factor: 1.0)
Frequency (MHz)	5745
Relative permittivity (real part)	36.11
Conductivity (S/m)	5.20

Maximum location: X=15.00, Y=6.00

SAR Peak: 0.20 W/kg

SAR 10g (W/Kg)	0.049666
SAR 1g (W/Kg)	0.097825

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

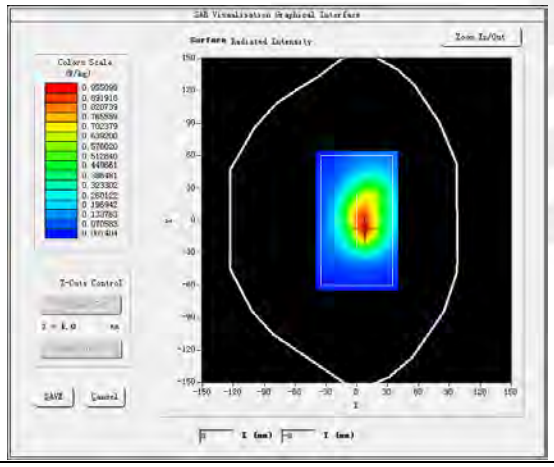
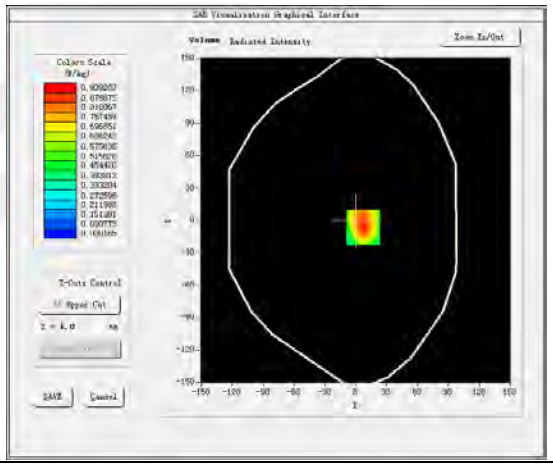
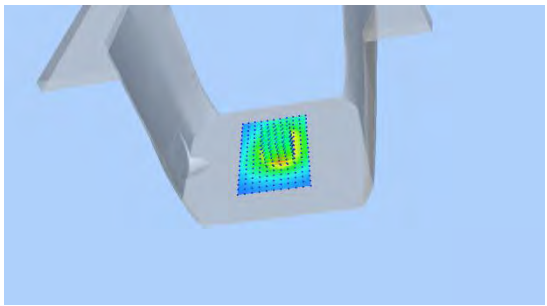
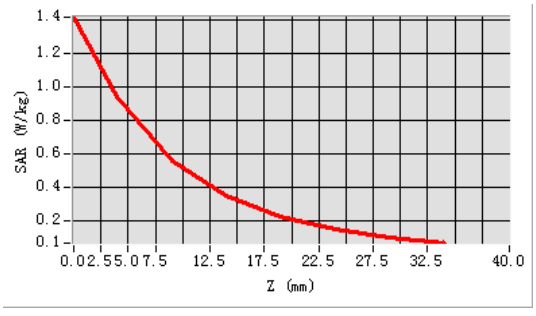
Plot 16: DUT:Handheld data collection terminal; EUT Model: HC6

Test Date	2023-03-08
Probe	SN 07/21 EPGO352
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	Front side
Band	LTE Band 5(RB 1)
Signal	LTE (Crest factor: 1.0)
Frequency (MHz)	844
Relative permittivity (real part)	41.89
Conductivity (S/m)	0.94

Maximum location: X=7.00, Y=-6.00

SAR Peak: 1.43 W/kg

SAR 10g (W/Kg)	0.530371
SAR 1g (W/Kg)	0.901931

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

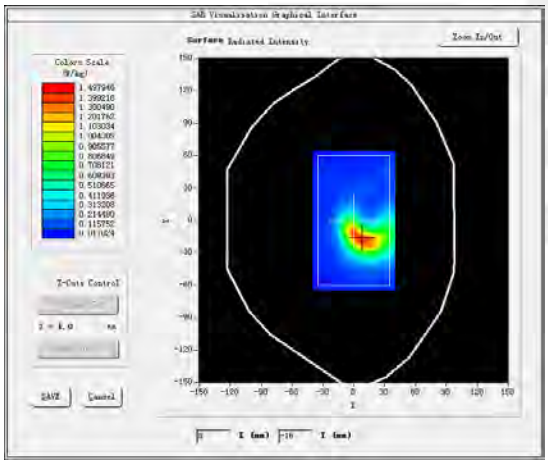
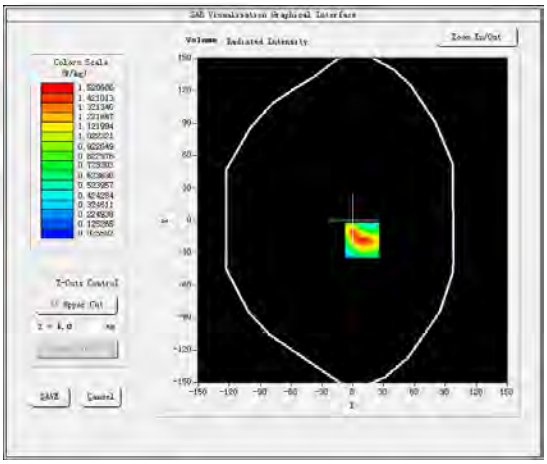
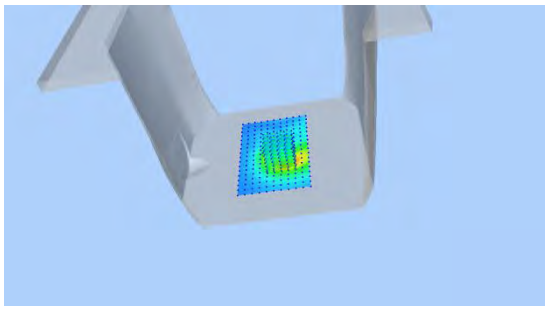
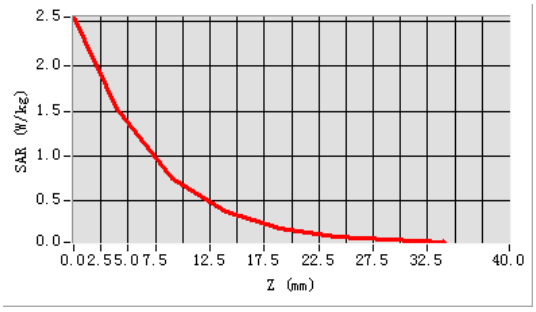
Plot 17: DUT:Handheld data collection terminal; EUT Model: HC6

Test Date	2023-03-13
Probe	SN 07/21 EPGO352
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	Front side
Band	LTE Band 7 (RB 1)
Signal	LTE (Crest factor: 1.0)
Frequency (MHz)	2535
Relative permittivity (real part)	39.46
Conductivity (S/m)	1.84

Maximum location: X=9.00, Y=-18.00

SAR Peak: 2.70 W/kg

SAR 10g (W/Kg)	0.657975
SAR 1g (W/Kg)	1.418090

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

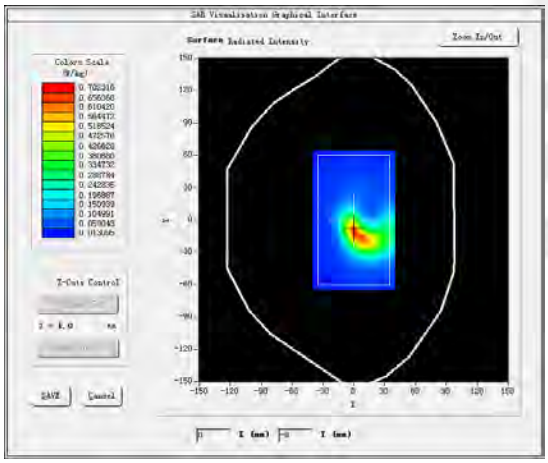
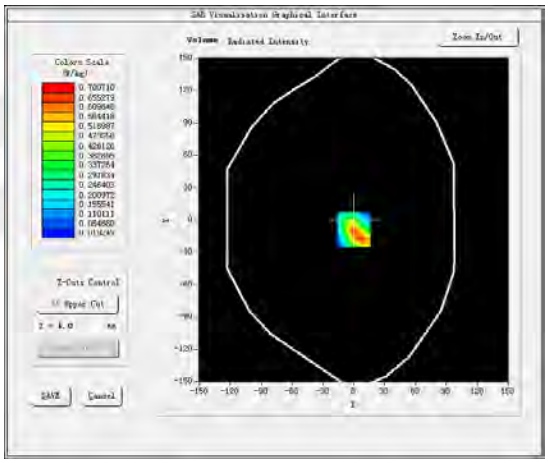
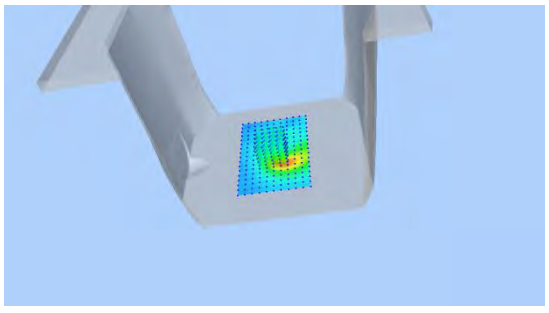
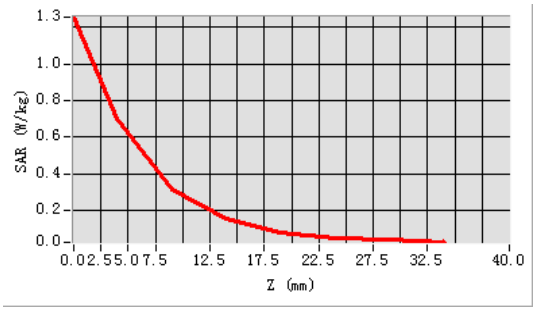
Plot 18: DUT:Handheld data collection terminal; EUT Model: HC6

Test Date	2023-03-13
Probe	SN 07/21 EPGO352
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	Front side
Band	LTE Band 38 (RB 1)
Signal	LTE (Crest factor: 1.0)
Frequency (MHz)	2610
Relative permittivity (real part)	39.96
Conductivity (S/m)	1.95

Maximum location: X=0.00, Y=-9.00

SAR Peak: 1.25 W/kg

SAR 10g (W/Kg)	0.290439
SAR 1g (W/Kg)	0.646756

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

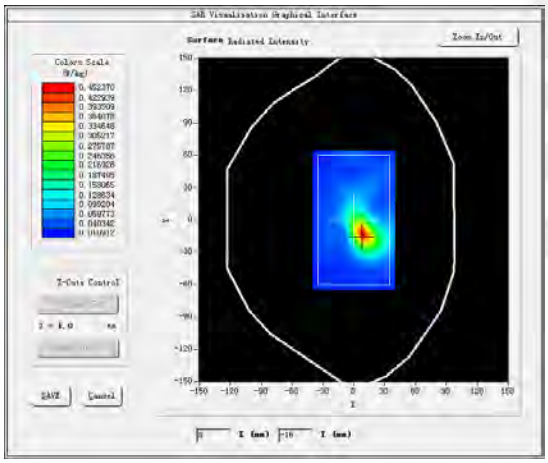
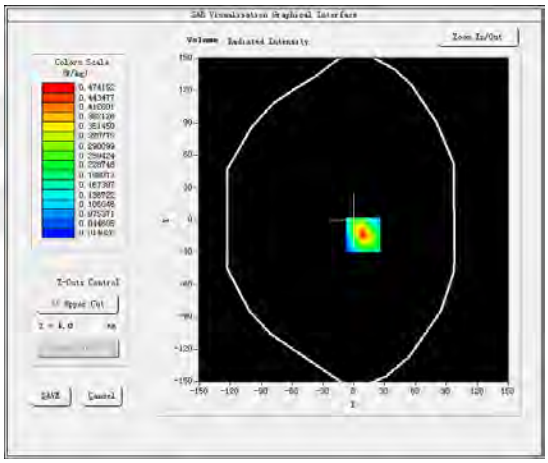
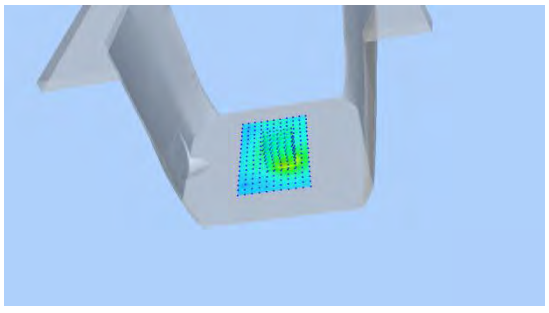
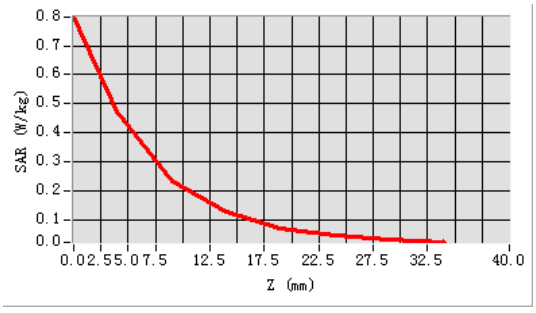
Plot 19: DUT:Handheld data collection terminal; EUT Model: HC6

Test Date	2023-03-09
Probe	SN 07/21 EPGO352
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	Front side
Band	LTE Band 40 (RB 1)
Signal	LTE (Crest factor: 1.0)
Frequency (MHz)	2310
Relative permittivity (real part)	40.12
Conductivity (S/m)	1.62

Maximum location: X=9.00, Y=-14.00

SAR Peak: 0.79 W/kg

SAR 10g (W/Kg)	0.198675
SAR 1g (W/Kg)	0.431297

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

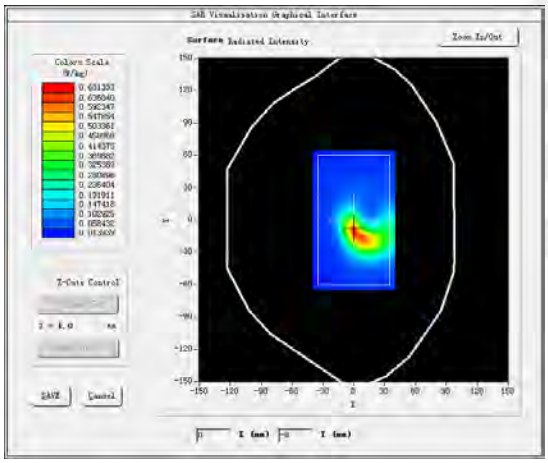
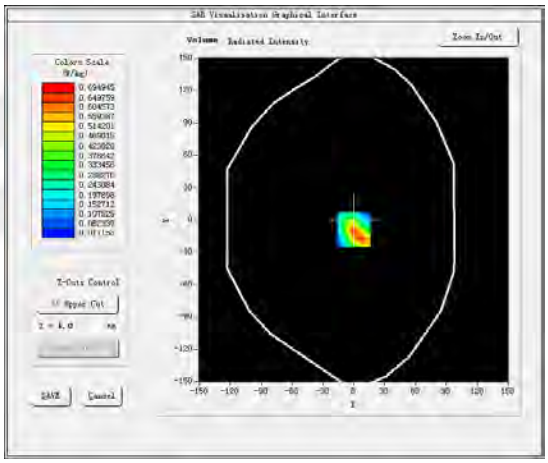
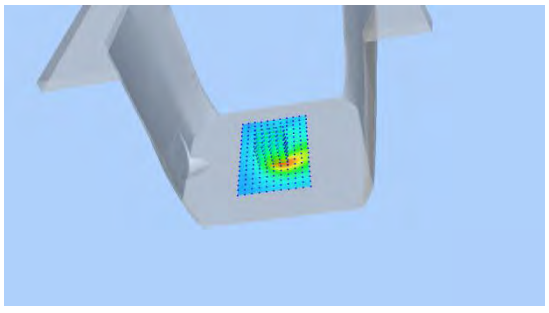
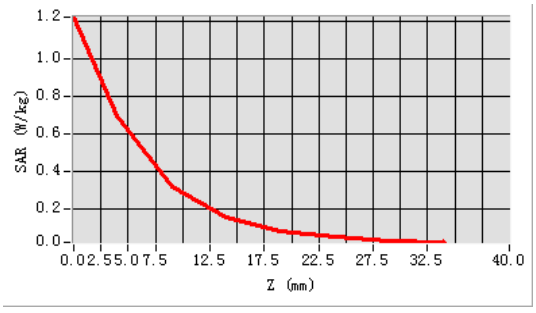
Plot 20: DUT:Handheld data collection terminal; EUT Model: HC6

Test Date	2023-03-13
Probe	SN 07/21 EPGO352
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	Front side
Band	LTE Band 41 (RB 1)
Signal	LTE (Crest factor: 1.0)
Frequency (MHz)	2645
Relative permittivity (real part)	40.22
Conductivity (S/m)	1.95

Maximum location: X=0.00, Y=-9.00

SAR Peak: 1.22 W/kg

SAR 10g (W/Kg)	0.289838
SAR 1g (W/Kg)	0.640543

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

Appendix C. Probe Calibration And Dipole Calibration Report

Refer the appendix Calibration Report.

※※※※※END OF THE REPORT※※※※※