SAR TEST REPORT

Product Name: Laptop, Dual screen Laptop

Model Name: X1, X2, X3, X5, X6, X7, X8, X9, Z1A, Z2N, Z3N, Z5N, Z6N, Z7N, Z8N, Z9N, Z1M, Z2K

FCC ID: 2AVBM-X1

Issued For	:	Shenzhen CYX Industrial Co., Ltd. 2F&5F, Bldg A, Xia Zao Digital Industry Park, No.8 Huali Rd, Gaofeng COMM, Dalang Str, Longhua Dist, Shenzhen, China
Issued By	:	Shenzhen LGT Test Service Co., Ltd. Room 205, Building 13, Zone B, Zhenxiong Industrial Park, No.177, Renmin West Road, Jinsha, Kengzi Street, Pingshan District, Shenzhen, Guangdong, China

Report Number:	LGT24G092HA02
Sample Received Date:	July 11, 2024
Date of Test:	July 16, 2024
Date of Issue:	July 31, 2024
Max. SAR (1g):	Body: 0.182 W/kg

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Revision History

Rev.	Issue Date	Contents
00	July 26, 2024	Initial Issue

TEST REPORT CERTIFICATION

Applicant	Shenzhen CYX Industrial Co., Ltd.
Address	2F&5F, Bldg A, Xia Zao Digital Industry Park, No.8 Huali Rd, Gaofeng COMM, Dalang Str, Longhua Dist, Shenzhen, China
Manufacture	Shenzhen CYX Industrial Co., Ltd.
Address	2F&5F, Bldg A, Xia Zao Digital Industry Park, No.8 Huali Rd, Gaofeng COMM, Dalang Str, Longhua Dist, Shenzhen, China
Product Name	Laptop, Dual screen Laptop
Trademark	ACEMAGIC
Model Name	X1, X2, X3, X5, X6, X7, X8, X9, Z1A, Z2N, Z3N, Z5N, Z6N, Z7N, Z8N, Z9N, Z1M, Z2K
Sample number	LGT2407092-1

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
IEEE Std C95.1-2005 FCC 47 CFR Part 2 (2.1093) IEEE 1528: 2013	PASS

Prepared by:

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Manager

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

<table>
<tr><td>Product Name</td><td colspan="2">Laptop, Dual screen Laptop</td></tr>
<tr><td>Trademark</td><td colspan="2">ACEMAGIC</td></tr>
<tr><td>Model Name</td><td colspan="2">X1</td></tr>
<tr><td>Series Model</td><td colspan="2">X2, X3, X5, X6, X7, X8, X9, Z1A, Z2N, Z3N, Z5N, Z6N, Z7N, Z8N, Z9N, Z1M, Z2M</td></tr>
<tr><td>Model Difference</td><td colspan="2">The marketing name is different</td></tr>
<tr><td>Device Category</td><td colspan="2">Portable</td></tr>
<tr><td>Product stage</td><td colspan="2">Production unit</td></tr>
<tr><td>RF Exposure Environment</td><td colspan="2">General Population / Uncontrolled</td></tr>
<tr><td>Hardware Version</td><td colspan="2">Z1A V11</td></tr>
<tr><td>Software Version</td><td colspan="2">23H2</td></tr>
<tr><td>Frequency Range</td><td colspan="2">WLAN 802.11b/g/n20/ax20: 2412 MHz to 2462 MHz
WLAN 802.11n40/ax40: 2422 MHz to 2452 MHz
WLAN 802.11a/n20/n40/ac20/ac40/ac80/ax20/ax40/ax80: 5150 to 5250 MHz
Bluetooth: 2402 MHz to 2480 MHz</td></tr>
<tr><td rowspan="5">Max. Reported SAR(1g):
(Limit:1.6W/kg)
Test distance: 0mm</td><td>Mode</td><td>Body Worn and Hotspot(W/kg))</td></tr>
<tr><td>2.4GHz WLAN</td><td>0.104</td></tr>
<tr><td>5.2GHz WLAN</td><td>0.182</td></tr>
<tr><td>Bluetooth</td><td>0.080</td></tr>
<tr><td>Limit</td><td>1.6 W/kg</td></tr>
<tr><td>Battery</td><td colspan="2">Rated Voltage: 15.48V
Capacity: 4000mAh</td></tr>
<tr><td>Operating Mode:</td><td colspan="2">2.4G WLAN: 802.11b(DSSS): CCK, DQPSK, DBPSK
802.11g(OFDM): BPSK, QPSK,16-QAM,64-QAM
802.11n(OFDM): BPSK, QPSK,16-QAM,64-QAM
802.11ax(OFDM, OFDMA): BPSK,QPSK,16-QAM,64-QAM,256-QAM,1024QAM
5G WLAN: 802.11a(OFDM): BPSK, QPSK,16-QAM,64-QAM
802.11n(OFDM): BPSK, QPSK,16-QAM,64-QAM
802.11ac (OFDM): BPSK, QPSK,16-QAM,64-QAM,256-QAM
802.11ax(OFDM, OFDMA): BPSK,QPSK,16-QAM,64-QAM,256-QAM,1024QAM
Bluetooth: GFSK +π/4DQPSK+8DPSK
BLE: GFSK</td></tr>
<tr><td>Antenna Specification</td><td colspan="2">Bluetooth: PCB Antenna
WLAN: PCB Antenna</td></tr>
<tr><td>Operating Mode</td><td colspan="2">Maximum continuous output</td></tr>
<tr><td>Hotspot Mode</td><td colspan="2">Support</td></tr>
<tr><td>DTM Mode</td><td colspan="2">Not Support</td></tr>
<tr><td colspan="3">Note:
1. The EUT battery must be fully charged and checked periodically during the test to ascertain uniform power
2. BT and WLAN cannot transmit simultaneously.
3. 2.4G WLAN and 5.2G WLAN cannot transmit simultaneously.</td></tr>
</table>

1.2 Test Environment

Ambient conditions in the SAR laboratory:

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

1.3 Test Factory

Company Name:	Shenzhen LGT Test Service Co., Ltd.
Address:	Room 205, Building 13, Zone B, Zhenxiong Industrial Park, No.177, Renmin West Road, Jinsha, Kengzi Street, Pingshan District, Shenzhen, Guangdong, China
Accreditation Certificate	FCC Registration No.: 746540
	A2LA Certificate No.: 6727.01
	IC Registration No.: CN0136

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	IEEE Std C95.1-2005	IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz
3	IEEE Std. 1528-2013	Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques
4	FCC KDB 447498 D01 v06	Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies
5	FCC KDB 865664 D01 v01r04	SAR Measurement 100 MHz to 6 GHz
6	FCC KDB 865664 D02 v01r02	RF Exposure Reporting
7	FCC KDB 248227 D01 Wi-Fi SAR v02r02	SAR Considerations for 802.11 Devices
8	FCC KDB 941225 D06 v02r01	Hotspot Mode SAR
9	FCC KDB 616217 D04 SAR for laptop and tablets v01r02	SAR Evaluation Considerations for Laptop, Notebook, Netbook and Tablet Computers

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

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

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

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

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

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

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

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

3. SAR Measurement System

3.1 Definition of Specific Absorption Rate (SAR)

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

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

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

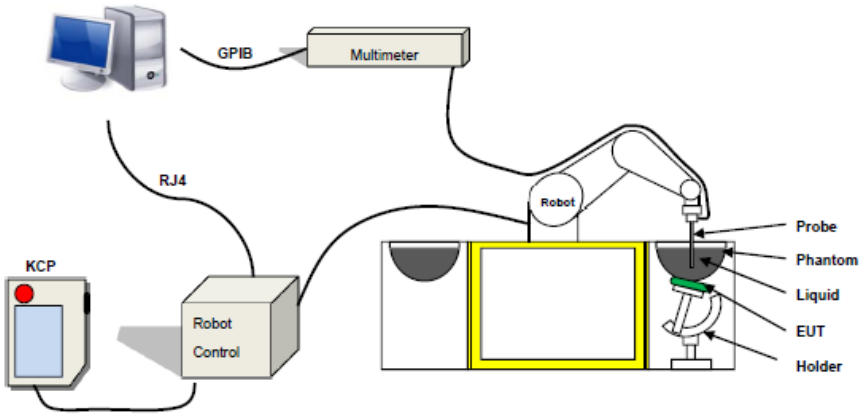
SAR is expressed in units of Watts per kilogram (W/kg) SAR measurement can be related to the electrical field in the tissue by

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

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

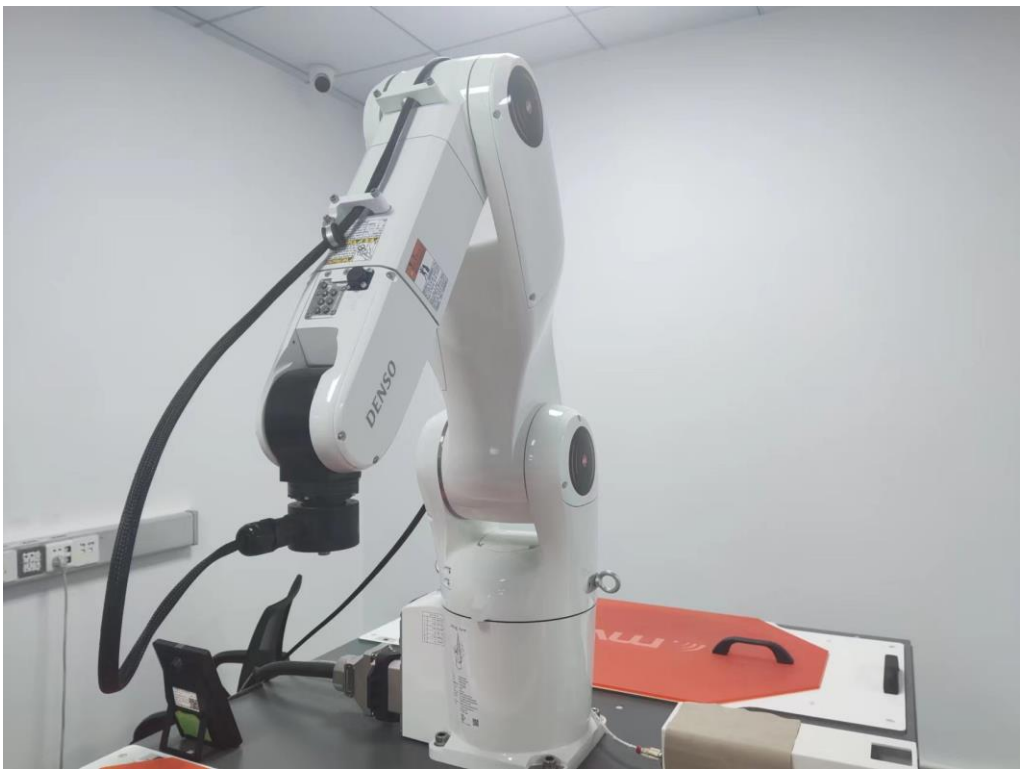
3.2 SAR System

MVG SAR System Diagram:



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

The following figure shows the system.



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

3.2.1 Probe

For the measurements the Specific Dosimetric E-Field Probe SN 04/22 EPGO364 with following specifications is used
- Probe Length: 330 mm
- Length of Individual Dipoles: 2mm
- 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: 600 MHz to 6 GHz for head & body simulating liquid.
-Angle between probe axis (evaluation axis) and surface normal line: less than 30°

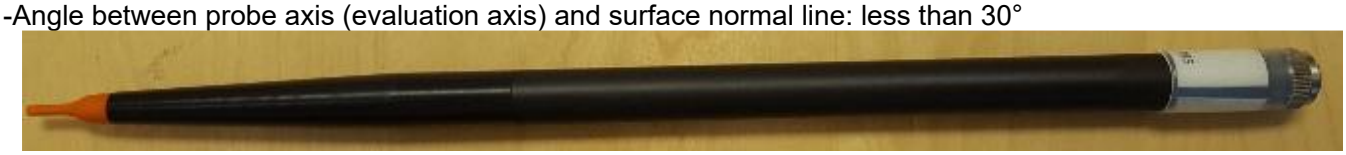


Figure 1-MVG COMOSAR Dosimetric E field Probe

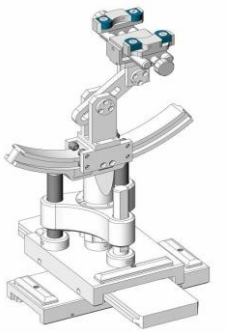
3.2.2 Phantom

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 06/22 SAM 148

Figure-SN 06/22 ELLI 51

3.2.3 Device Holder



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

4. Tissue Simulating Liquids

4.1 Simulating Liquids Parameter Check

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

The uncertainty due to the liquid conductivity and permittivity arises from two different sources. The first source of error is the deviation of the liquid conductivity from its target value (max _ 5 %) and the second source of error arises from the measurement procedures used to assess conductivity. The uncertainty shall be assessed using a rectangular probability For 1 g averaging, the maximum weighting coefficient for SAR is 0,5.

IEEE SCC-34/SC-2 RECOMMENDED TISSUE DIELECTRIC PARAMETERS
The head and body tissue dielectric parameters recommended by the IEEE SCC-34/SC-2 have been incorporated in the following table.

Frequency	εr	σ 10g S/m
300	45.3	0.87
450	43.5	0.87
750	41.9	0.89
835	41.5	0.90
900	41.5	0.97
1450	40.5	1.20
1800 to 2000	40.0	1.40
2100	39.8	1.49
2450	39.2	1.80
2600	39.0	1.96
3000	38.5	2.40
3500	37.9	2.91
4000	37.4	3.43
4500	36.8	3.94
5000	36.2	4.45
5200	36.0	4.66
5400	35.8	4.86
5600	35.5	5.07
5800	35.3	5.27

LIQUID MEASUREMENT RESULTS

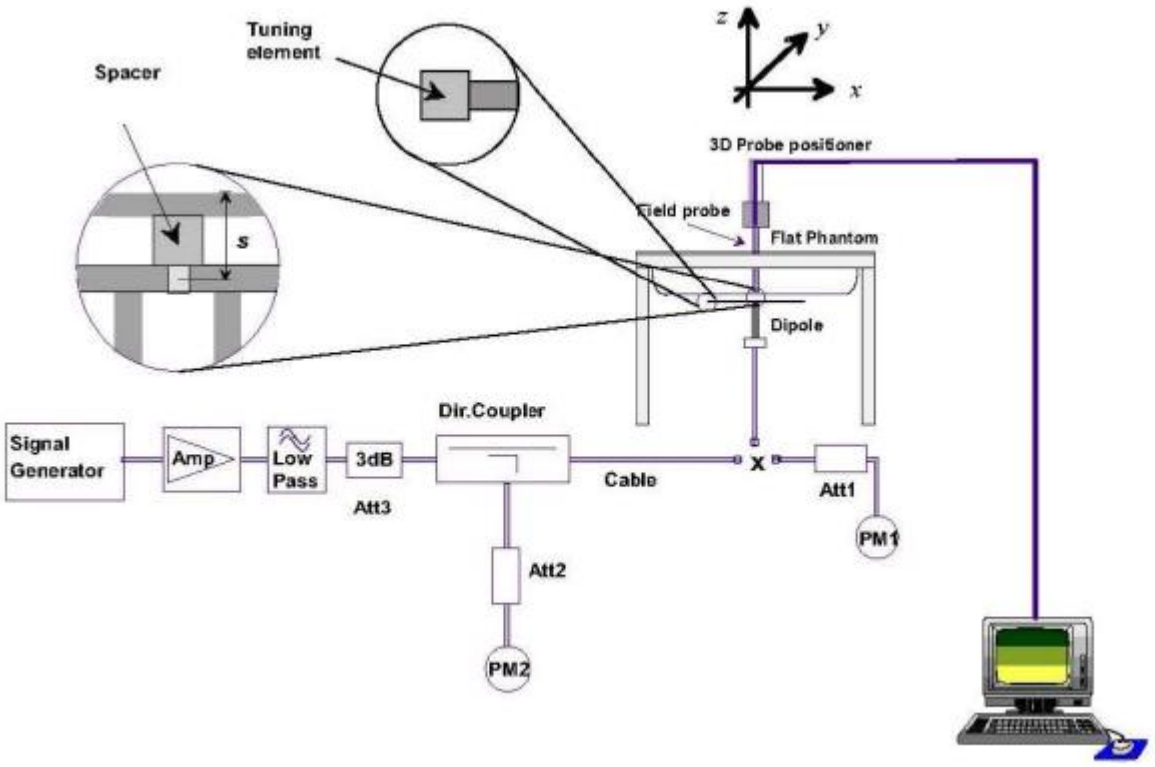
Date	Ambient		Simulating Liquid		Parameters	Target	Measured	Deviation %	Limited %
	Temp. [°C]	Humidity %	Frequency (MHz)	Temp. [°C]					
2024-07-16	20.2	53	2402	21	Permittivity	39.26	39.90	1.62	±5
					Conductivity	1.75	1.70	-2.79	±5
2024-07-16	20.3	53	2412	20	Permittivity	39.27	40.31	2.65	±5
					Conductivity	1.77	1.79	1.35	±5
2024-07-16	20.3	53	2450	20.1	Permittivity	39.20	40.21	2.58	±5
					Conductivity	1.80	1.87	3.89	±5
2024-07-16	20.4	53	5210	20.1	Permittivity	35.99	37.06	2.97	±5
					Conductivity	4.67	4.70	0.64	±5
2024-07-16	20.5	53	5200	20.2	Permittivity	36.00	36.11	0.31	±5
					Conductivity	4.66	4.63	-0.64	±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)	(%)	(%)
2024-07-16	2450	100	5.382	53.82	54.28	-0.85	10
2024-07-16	5200	100	7.780	77.80	77.64	0.21	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.

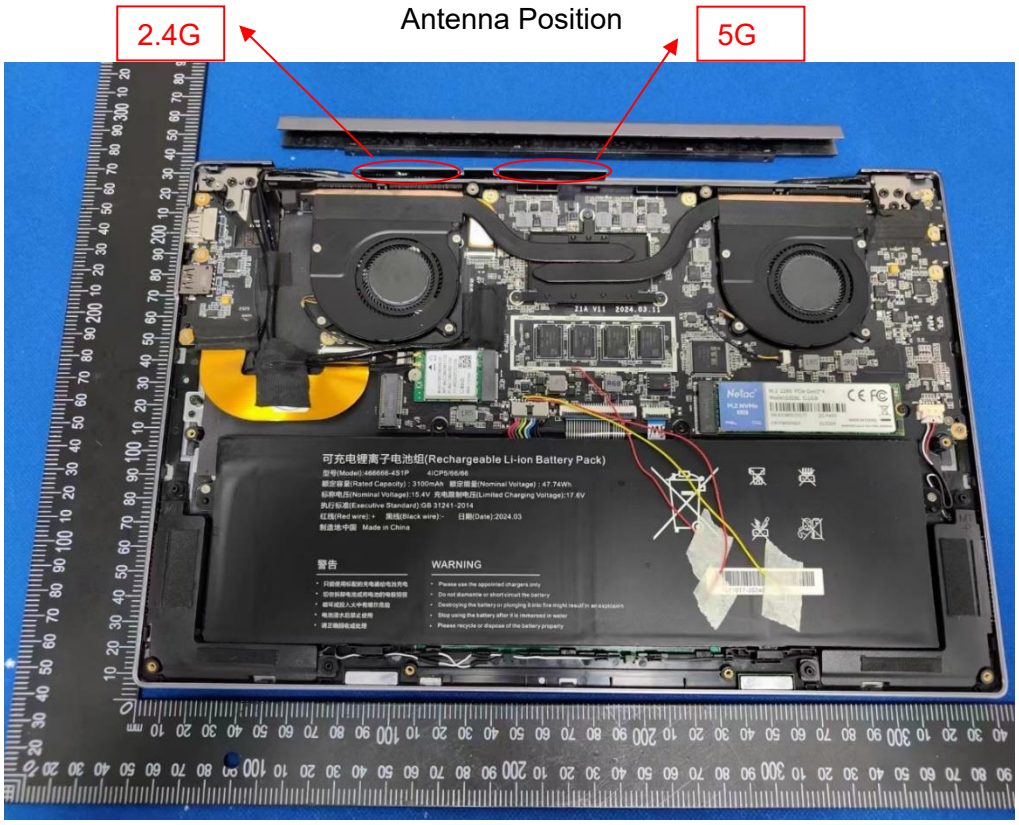
Area Scan& Zoom Scan

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 D01 quoted below.

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

7. EUT Test Position

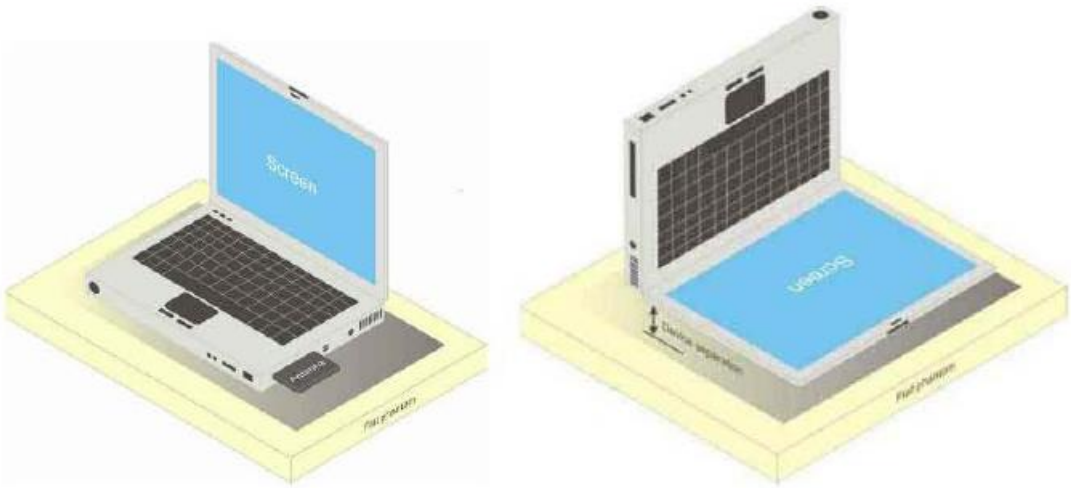
It is a Laptop, Dual screen Laptop, support BT/WLAN mode.



1) This EUT was tested in Back side.
2) The EUT is not support tablet use conditions, SAR tests is not required on bystander exposure from the edges of the Keyboard and display screen of laptop computer.

7.1 Body-worn Position Conditions

The required minimum test separation distance for incorporating transmitters and antennas into laptop, notebook and netbook computer displays is determined with the display screen opened at an angle of 90° to the keyboard compartment. If a computer has other operating configurations that require a different or more conservative display to keyboard angle for normal use, a KDB inquiry should be submitted to determine the test requirements. When antennas are incorporated in the keyboard section of a laptop computer, SAR is required for the bottom surface of the keyboard. Provided tablet use conditions are not supported by the laptop computer, SAR tests for bystander exposure from the edges of the Keyboard and display screen of laptop computers are generally not required.



8. Uncertainty

8.1 Measurement Uncertainty

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

Symbol	Uncertainty Component	Prob. Dist.	Unc. $a(x_i)$	Div. q_i	$u(x_i) = a(x_i)/q_i$	C_i	$u(y) = C_i * u(x_i)$	v_i
Measurement system errors								
CF	Probe calibration	N (k = 2)	5.8	2	2.90	1	2.90	∞
CF_{drift}	Probe calibration drift	R	0.12	√3	0.07	1	0.07	∞
LIN	Probe linearity and detection limit	R	1.91	√3	1.10	1	1.10	∞
BBS	Broadband signal	R	0.15	√3	0.09	1	0.09	∞
ISO	Probe isotropy	R	0.18	√3	0.10	1	0.10	∞
DAE	Other probe and data acquisition errors	N	2.7	1	2.70	1	2.70	∞
AMB	RF ambient and noise	N	1.73	1	1.73	1	1.73	∞
Δ_{xyz}	Probe positioning errors	N	0.81	1	0.81	2/δ	0.81	
DAT	Data processing errors	N	2.5	1	2.50	1	2.50	∞
Phantom and device (DUT or validation antenna) errors								
LIQ(σ)	Measurement of phantom conductivity(σ)	N	4.4	1	4.4	cε, cσ	4.40	∞
LIQ(T_c)	Temperature effects (medium)	R	2.9	√3	1.67	cε, cσ	1.67	∞
EPS	Shell permittivity	R	3.4	√3	1.96	See 8.4.2.3	0.49	∞
DIS	Distance between the radiating element of the DUT and the phantom medium	N	0.8	1	0.8	2	1.60	∞
D_{xyz}	Repeatability of positioning the DUT or source against the phantom	N	1.5	1	1.5	1	1.50	5
H	Device holder effects	N	3	1	3	1	3.00	
MOD	Effect of operating mode on probe sensitivity	R	3.59	√3	2.07	1	2.07	∞
TAS	Time-average SAR	R	1.73	√3	1.00	1	1.00	∞
RF_{drift}	Variation in SAR due to drift in output of DUT	N	2.89	1	2.89	1	2.89	
VAL	Validation antenna uncertainty (validation measurement only)	N	1.45	1	1.45	1	1.45	
P_{in}	Uncertainty in accepted power (validation measurement only)	N	2.5	1	2.5	1	2.50	
Corrections to the SAR result (if applied)								
C(ε′,σ)	Phantom deviation from target (ε′,σ))	N	2.31	1	2.31	1	2.31	
C(R)	SAR scaling	R	1.15	√3	0.66	1	0.66	
u(ΔSAR)	Combined uncertainty						9.53	
U	Expanded uncertainty and effective degrees of freedom					U =	19.06	

9. Conducted Power Measurement

9.1 Test Result

2.4G WLAN

2.4GWIFI				
Mode	Channel Number	Frequency (MHz)	Output Power (dBm)	Output Power (mW)
802.11b	1	2412	14.88	30.76
	6	2437	14.87	30.69
	11	2462	14.45	27.86
802.11g	1	2412	18.89	77.45
	6	2437	18.20	66.07
	11	2462	18.19	65.92
802.11n-HT20	1	2412	18.79	75.68
	6	2437	18.21	66.22
	11	2462	17.96	62.52
802.11n-HT40	3	2422	18.50	70.79
	6	2437	18.49	70.63
	9	2452	18.37	68.71
802.11ax-HE20	1	2412	19.47	88.51
	6	2437	18.16	65.46
	11	2462	18.55	71.61
802.11ax-HE40	3	2422	19.47	88.51
	6	2437	18.95	78.52
	9	2452	18.55	71.61

Bluetooth

BT				
Mode	Channel Number	Frequency (MHz)	Output Power (dBm)	Output Power (mW)
GFSK(1Mbps)	0	2402	1.14	1.30
	39	2441	1.12	1.29
	78	2480	0.84	1.21
π/4-QPSK(2Mbps)	0	2402	1.22	1.32
	39	2441	1.25	1.33
	78	2480	0.89	1.23
8DPSK(3Mbps)	0	2402	1.62	1.45
	39	2441	1.65	1.46
	78	2480	1.24	1.33

BLE

BLE				
Mode	Channel Number	Frequency (MHz)	Output Power (dBm)	Output Power (mW)
GFSK(1Mbps)	0	2402	1.91	1.55
	19	2440	1.71	1.48
	39	2480	1.25	1.33
GFSK(2Mbps)	0	2402	1.56	1.43
	19	2440	1.72	1.49
	39	2480	0.67	1.17

5.2G WLAN

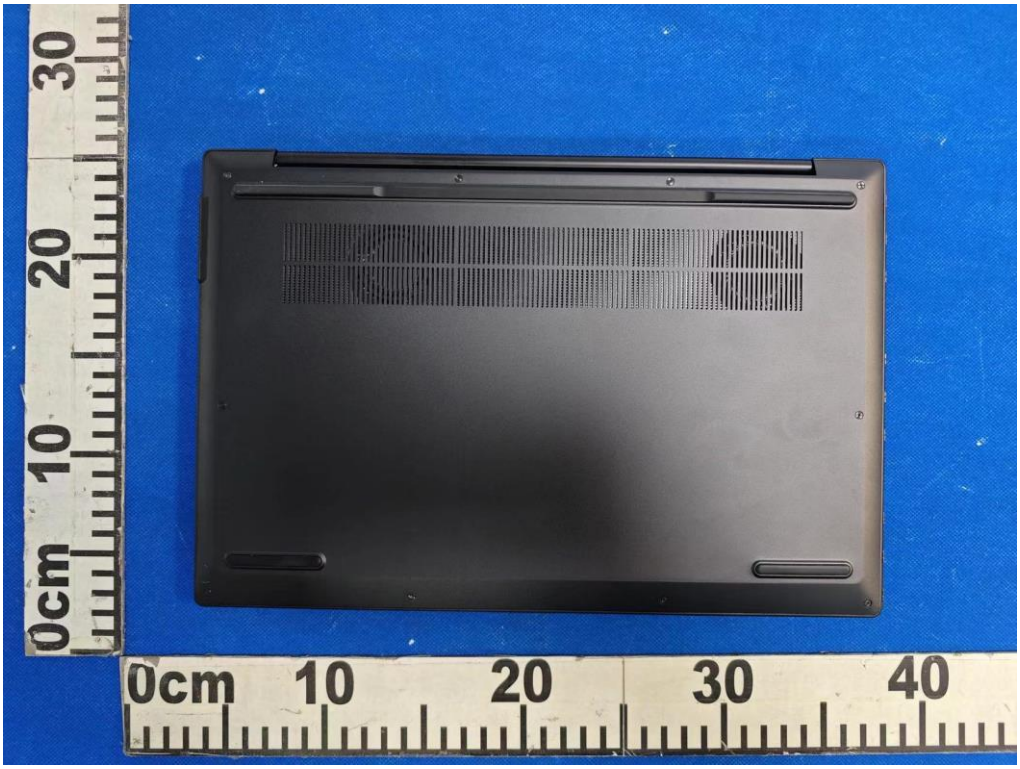
5.2G WLAN				
Mode	Channel Number	Frequency (MHz)	Output Power (dBm)	Output Power (mW)
802.11a20	36	5180	8.63	7.29
	40	5200	8.71	7.43
	48	5240	7.82	6.05
802.11n-HT20	36	5180	8.73	7.46
	40	5200	8.85	7.67
	48	5240	8.37	6.87
802.11n-HT40	38	5190	11.12	12.94
	46	5230	11.05	12.74
802.11ac-VHT20	36	5180	9.13	8.18
	40	5200	9.11	8.15
	48	5240	8.53	7.13
802.11ac-VHT40	38	5190	11.70	14.79
	46	5230	11.33	13.58
802.11ac-VHT80	42	5210	14.04	25.35
802.11ax-HE20	36	5180	9.43	8.77
	40	5200	9.12	8.17
	48	5240	8.39	6.90
802.11ax-HE40	38	5190	11.62	14.52
	46	5230	11.11	12.91
802.11ax-HE80	42	5210	13.65	23.17

10. EUT and Test Setup Photo

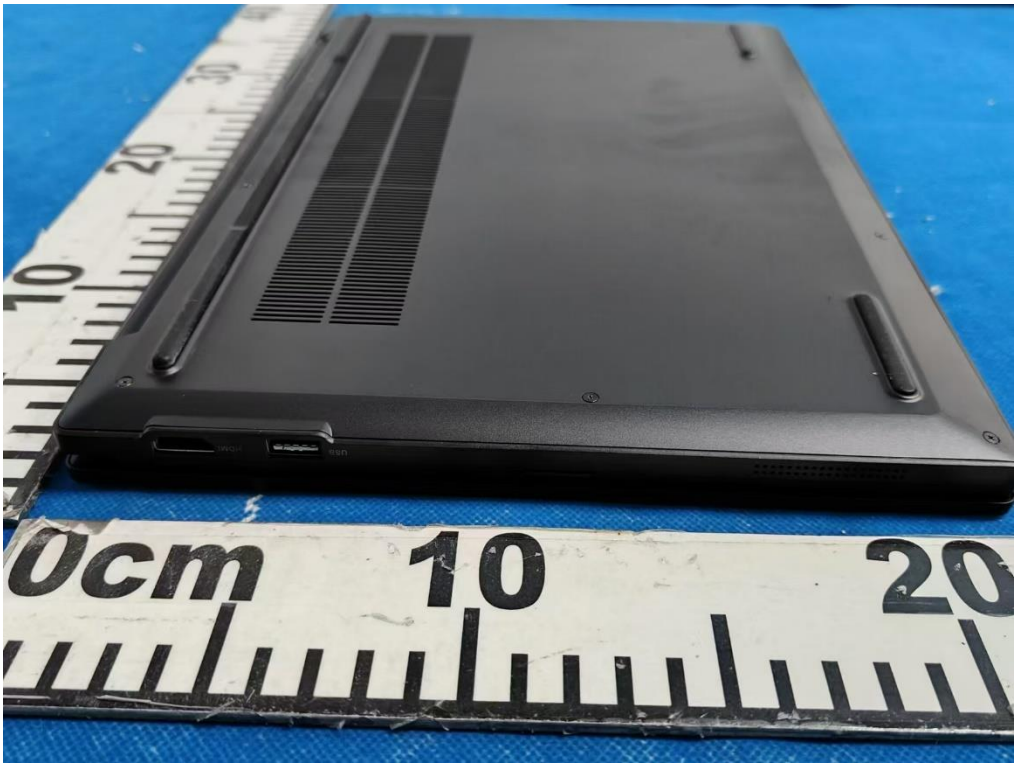
10.1 EUT Photos

Front side

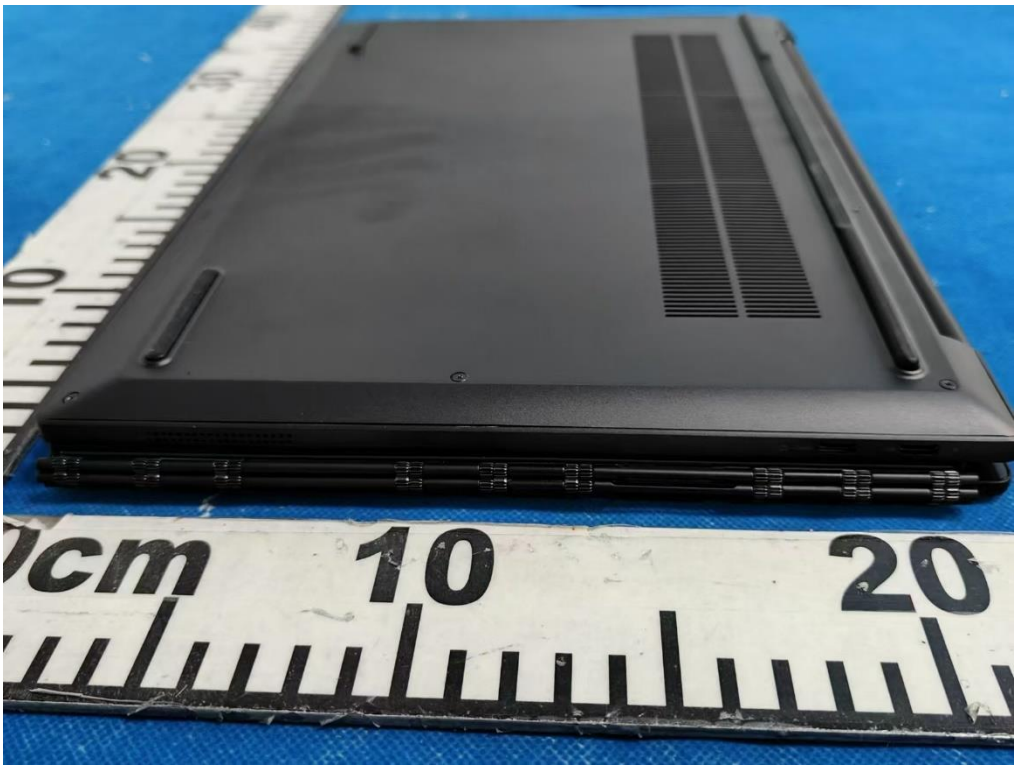
Back side



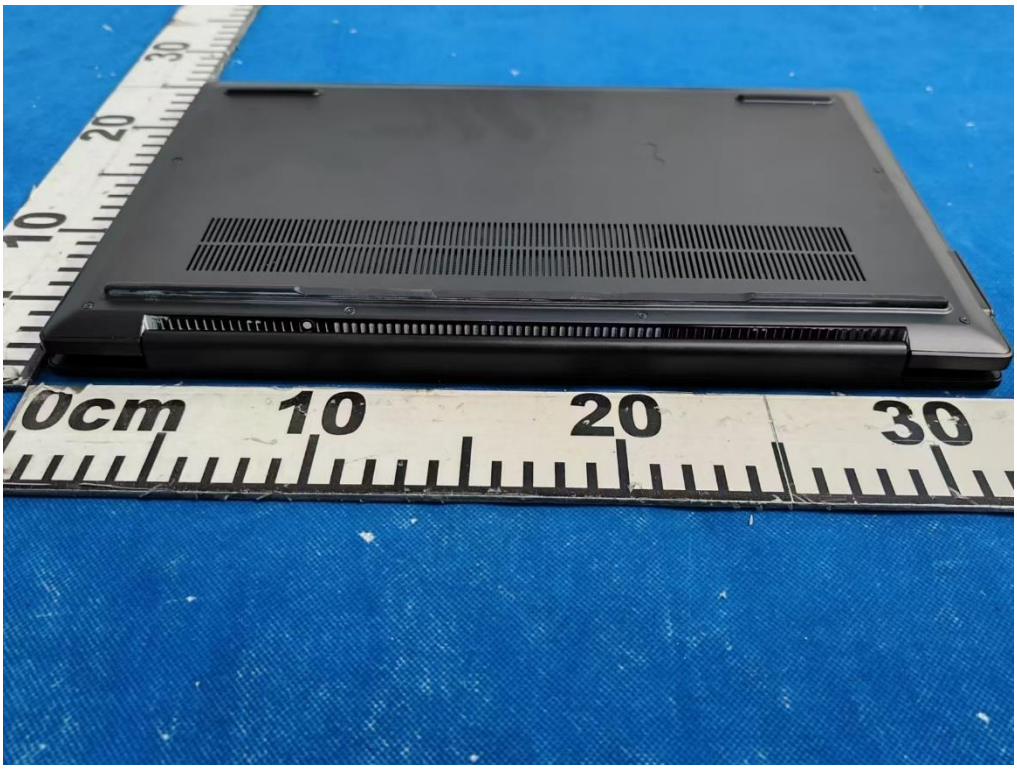
Right Edge



Left Edge



Top Edge



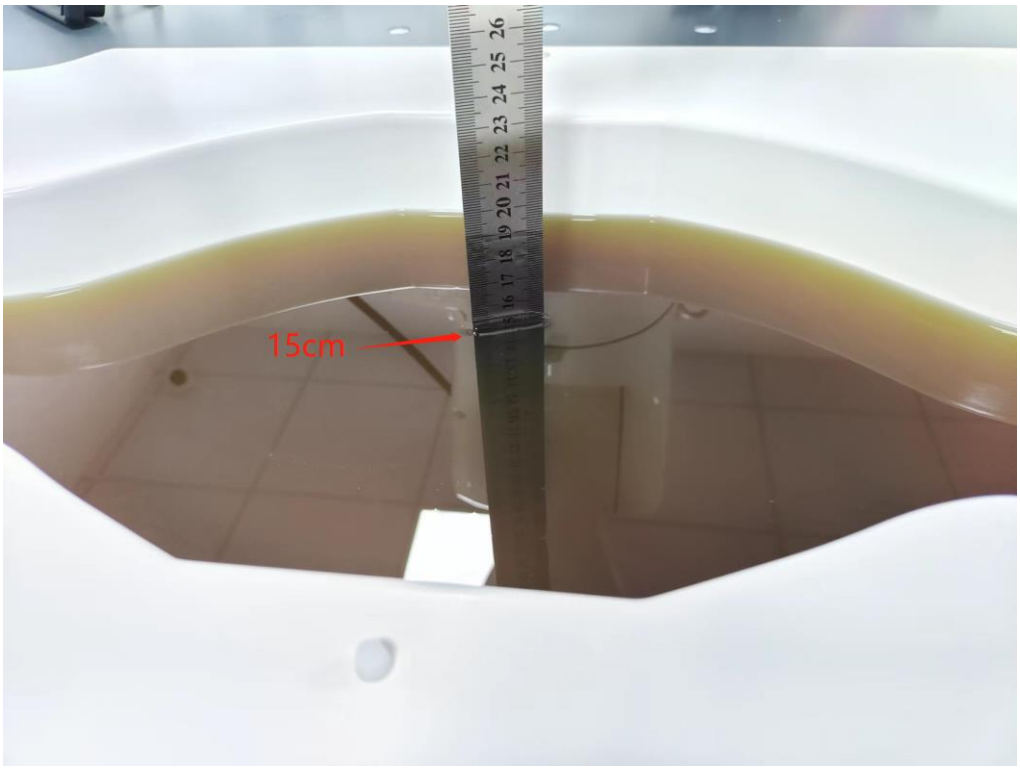
Bottom Edge

Open Photo

10.2 Setup Photos

Body Bottom side (separation distance is 0mm)

Liquid depth (15 cm)



11. SAR Result Summary

11.1 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.
2.4GHz WLAN	802.11b	Bottom Side	2412	0.084	-1.35	15.00	14.88	**0.086**	**1**
2.4GHz WLAN	802.11ax-HE20	Bottom Side	2412	0.103	2.58	19.50	19.47	**0.104**	**2**
BLE	GFSK	Bottom Side	2402	0.078	3.12	2.00	1.91	**0.080**	**3**
5.2GHz WLAN	802.11ac-VHT80	Bottom Side	5210	0.164	2.20	14.50	14.04	**0.182**	**4**

Note:

1. The test separation of all above table is 0mm.
2. Per KDB 447498 D01, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
   a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
   b. Scaled SAR(W/kg) = Measured SAR(W/kg) *Tune-up Scaling Factor
3. BT and WLAN cannot transmit simultaneously.
4. 2.4G WLAN and 5.2G WLAN cannot transmit simultaneously.

12. Equipment List

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Calibrated Until
2450MHz Dipole	MVG	DIP2G450	SN 06/22 DIP2G450-645	2022.02.11	2025.02.10
5000MHz Dipole	MVG	DIP5G000	SN 06/22 DIP5G000-653	2022.02.11	2025.02.10
E-Field Probe	MVG	EPGO364	SN 04/22 EPGO364	2024.02.07	2025.02.06
Liquid Calibration Kit	MVG	OCPG 87	SN 06/22 OCPG87	2024.02.07	2025.02.06
Antenna	MVG	ANTA 73	SN 06/22 ANTA 73	N/A	N/A
Ellipsoid Phantom	MVG	ELLI 51	SN 06/22 ELLI 51	N/A	N/A
Phantom	MVG	SAM 148	SN 06/22 SAM148	N/A	N/A
Phone holder	MVG	MSH 117	SN 06/22 MSH 117	N/A	N/A
Laptop positioner	MVG	LSH 36	SN 06/22 LSH 38	N/A	N/A
Directional coupler	SHW	SHWDCP	202203280013	N/A	N/A
Network Analyzer	R&S	ZVL	116184-HC	2024.03.25	2025.03.24
Multi Meter	Keithley	DMM6500	4527252	2024.03.15	2025.03.14
Signal Generator	Keysight	N5182B	MY59100717	2024.03.09	2025.03.08
Wireless Communication Test Set	R&S	CMW500	137737	2024.03.09	2025.03.08
Power Sensor	R&S	Z11	116184	2024.02.23	2025.02.22
Electronic Temperature hygrometer	N/A	ST-W2318	N/A	2024.03.11	2025.03.10
Temperature hygrometer	N/A	TP101	N/A	2024.03.11	2025.03.10

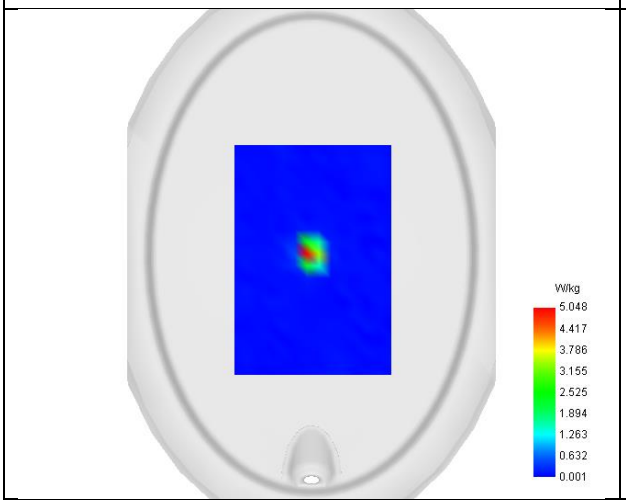
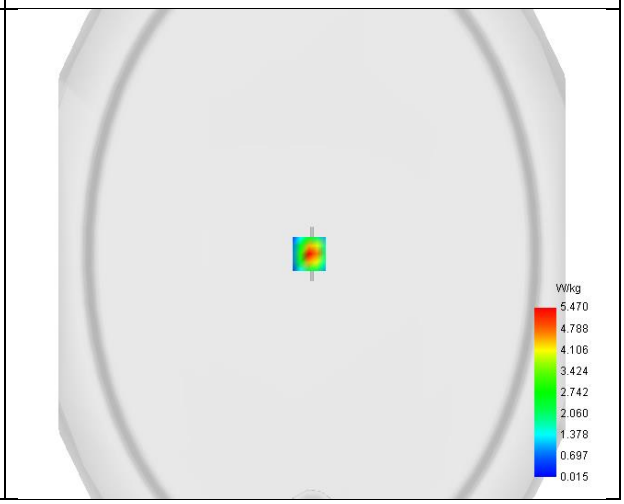
Appendix A. System Validation Plots

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: 2024-07-16

Experimental conditions.

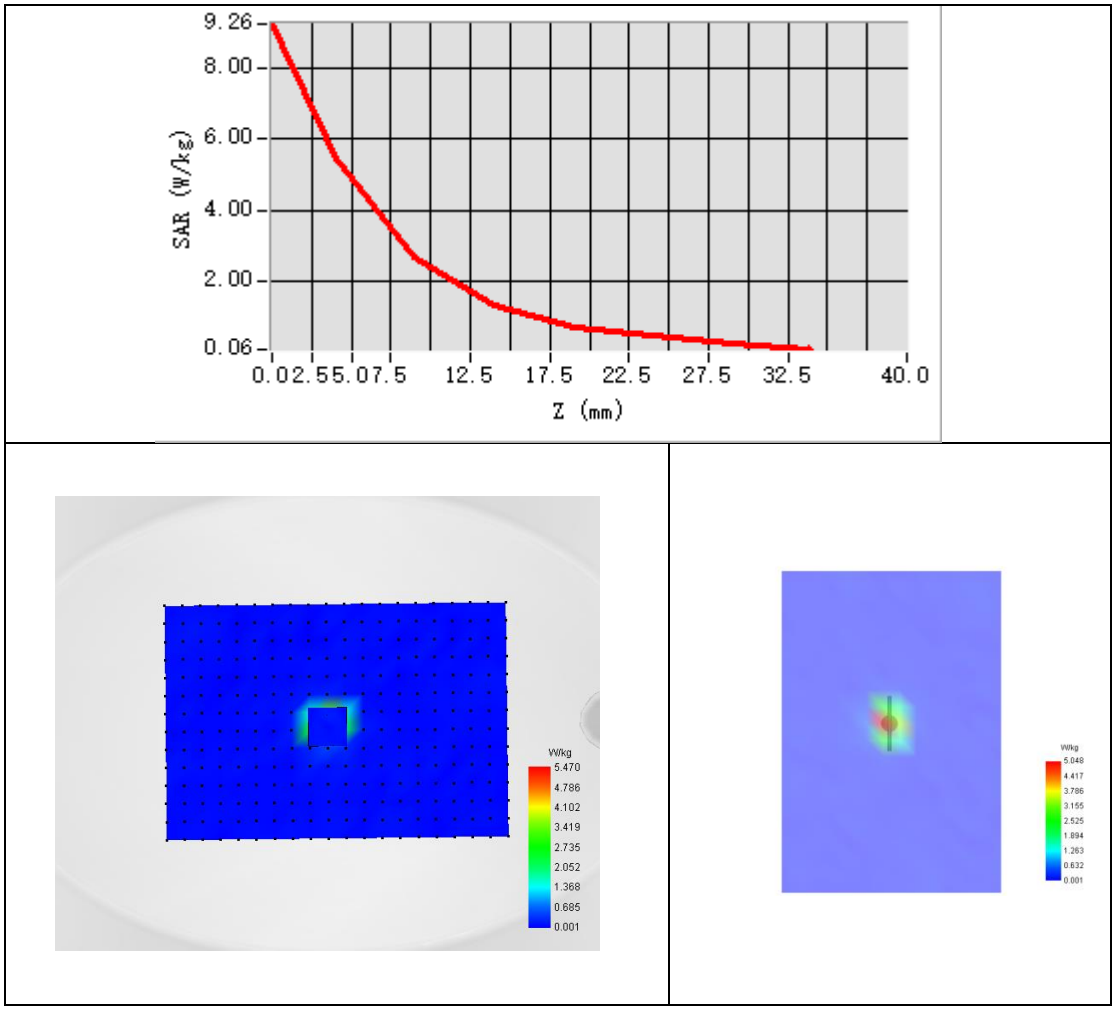
Phantom	Validation plane
Device Position	Dipole
Band	CW2450
Channels	Middle
Signal	CW
Frequency (MHz)	2450.000
Relative permittivity	40.21
Conductivity (S/m)	1.87
Probe	SN 04/22 EPGO364
ConvF	2.30
Crest factor:	1:1

SURFACE	VOLUME SAR
	

Maximum location: X=-3.00, Y=0.00 ; SAR Peak: 9.48 W/kg

SAR 10g (W/Kg)	2.342
SAR 1g (W/Kg)	5.382

Z Axis Scan

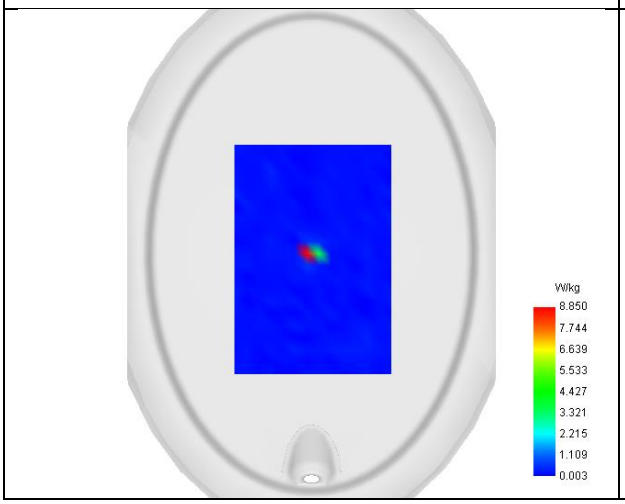
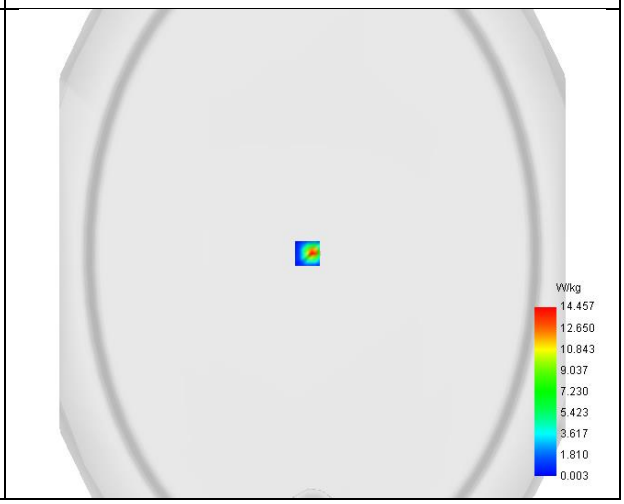

9.26
8.00
6.00
4.00
2.00
0.06
SAR (W/kg)
0.0 2.5 5.0 7.5 12.5 17.5 22.5 27.5 32.5 40.0
Z (mm)
W/kg
5.470
4.786
4.102
3.419
2.735
2.052
1.368
0.685
0.001

System Performance Check Data (5200MHz)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=4mm dy=4mm dz=2mm
Date of measurement: 2024-07-16

Experimental conditions.

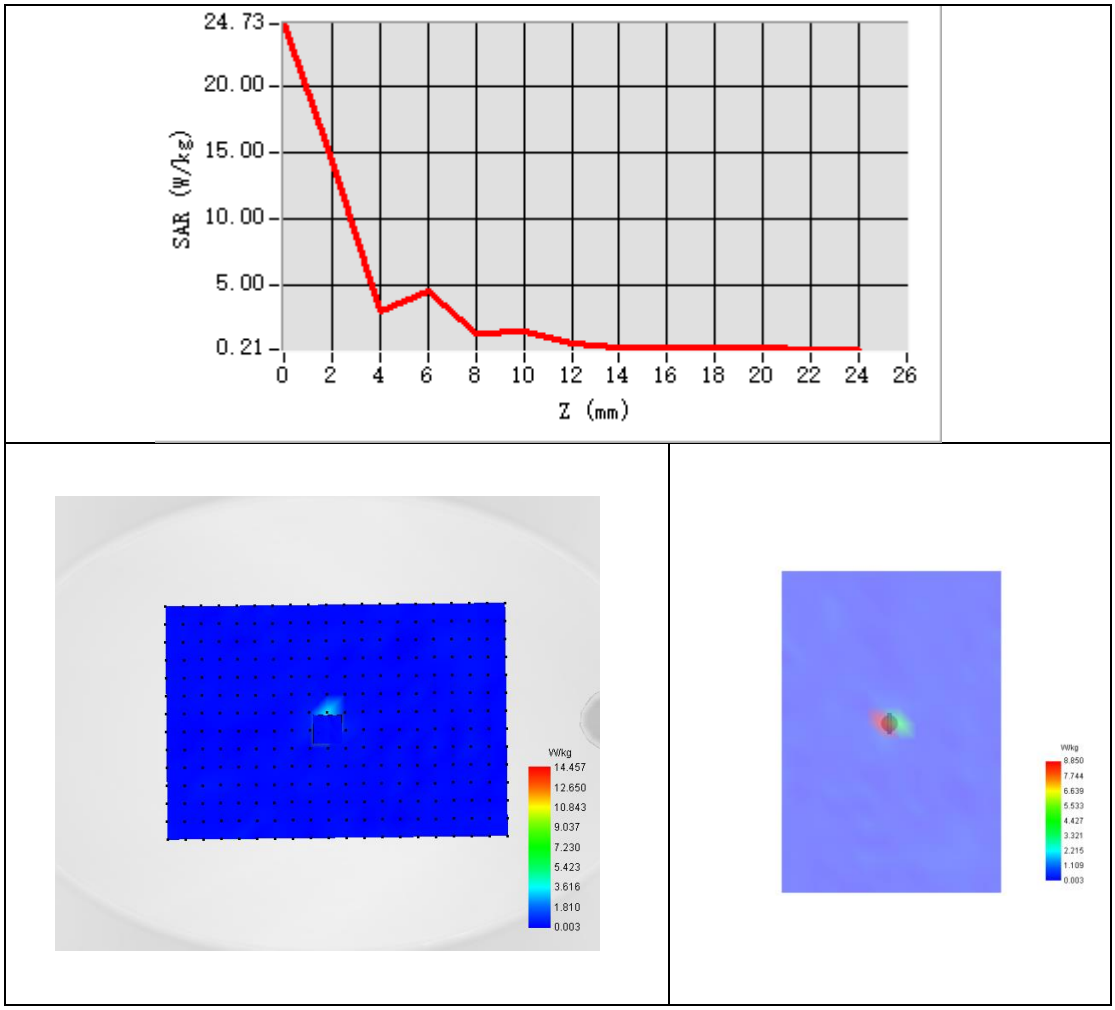
Phantom	Validation plane
Device Position	Dipole
Band	CW5200
Channels	Middle
Signal	CW
Frequency (MHz)	5200MHz
Relative permittivity	36.11
Conductivity (S/m)	4.63
Probe	SN 04/22 EPGO364
ConvF	1.98
Crest factor:	1:1

SURFACE	VOLUME SAR
	

Maximum location: X=-5.00, Y=0.00 ; SAR Peak: 24.89 W/kg

SAR 10g (W/Kg)	2.151
SAR 1g (W/Kg)	7.780

Z Axis Scan

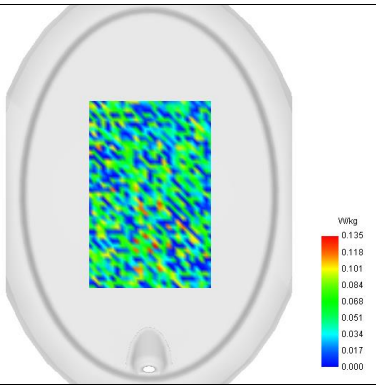
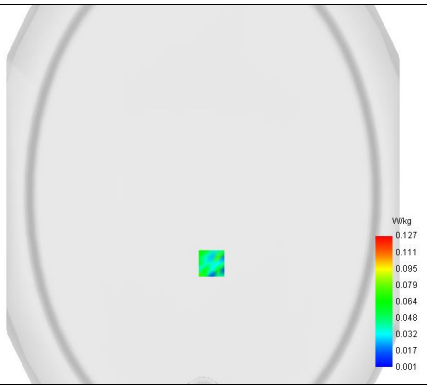
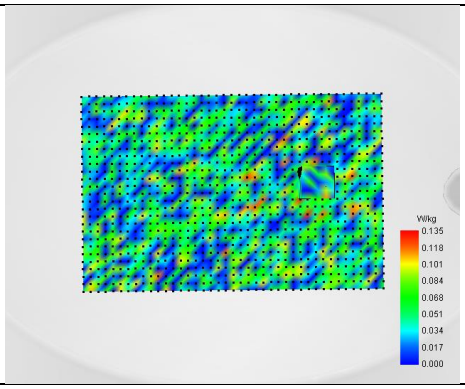
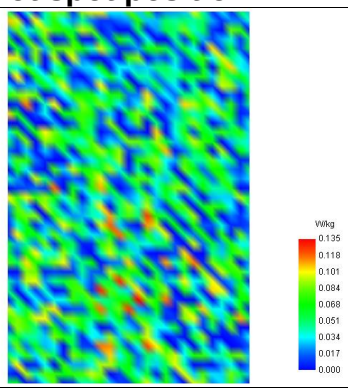
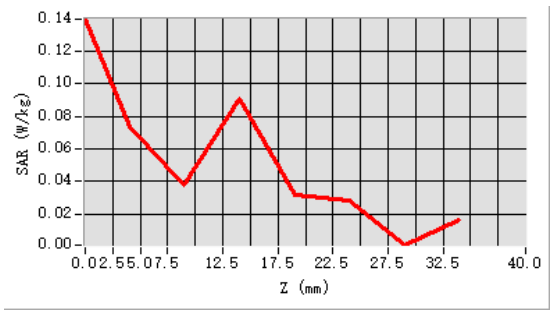

24.73
20.00
15.00
10.00
5.00
0.21
SAR (W/kg)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
Z (mm)
W/kg
14.457
12.650
10.843
9.037
7.230
5.423
3.616
1.810
0.003
W/kg
8.850
7.744
6.639
5.533
4.427
3.321
2.215
1.109
0.003

Appendix B. SAR Test Plots

Plot 1:

Test Date	2024-07-16
Area Scan	dx=8mm dy=8mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	ELLI
Device Position	Bottom Side
Band	ISM
Signal	IEEE 802.11b
Frequency	2412
Relative permittivity	40.31
Conductivity (S/m)	1.79
ConvF	2.30
SAR 10g (W/Kg)	0.038
SAR 1g (W/Kg)	0.084

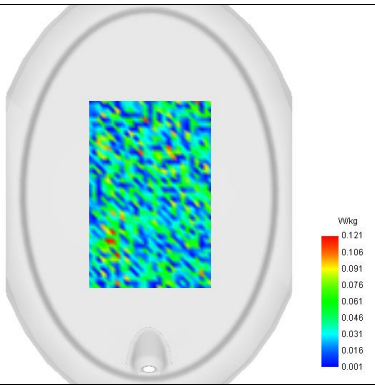
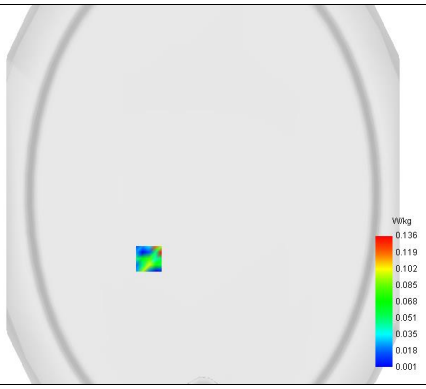
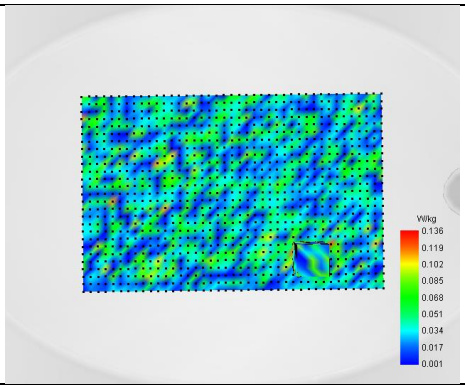
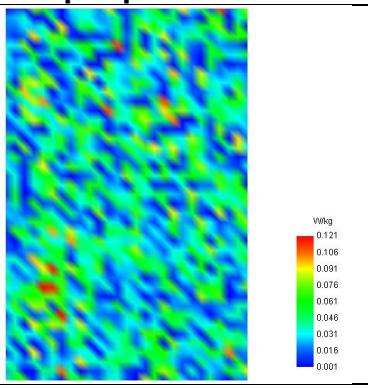
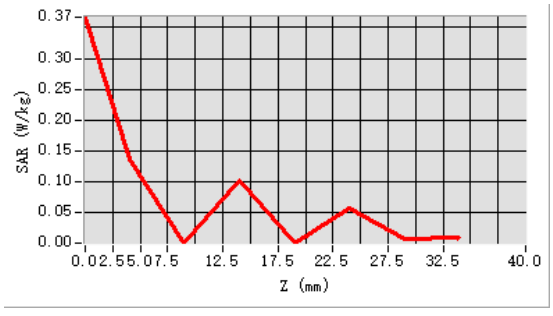
Maximum location: X=11.00, Y=-86.00 ; SAR Peak: 0.22 W/kg

SURFACE SAR	VOLUME SAR
	
3D screen shot	**Hot spot position**
	
	

Plot 2:

Test Date	2024-07-16
Area Scan	dx=8mm dy=8mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	ELLI
Device Position	Bottom Side
Band	ISM
Signal	IEEE 802.11ax
Frequency	2412
Relative permittivity	40.31
Conductivity (S/m)	1.79
ConvF	2.30
SAR 10g (W/Kg)	0.048
SAR 1g (W/Kg)	0.103

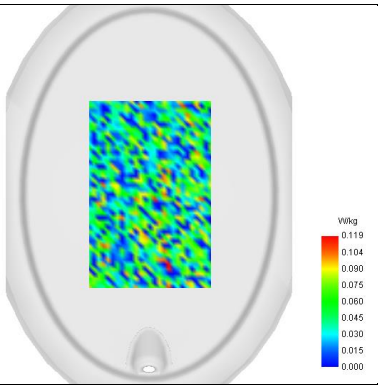
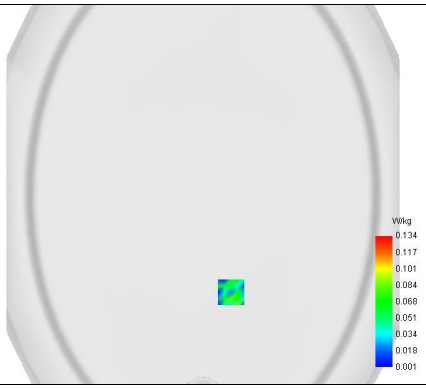
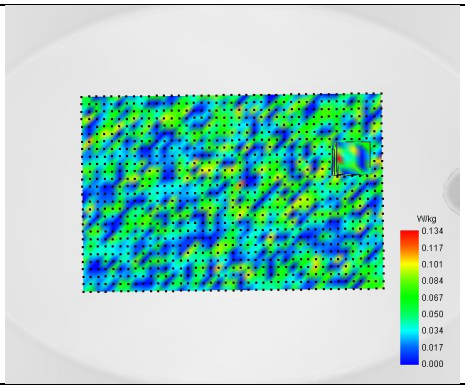
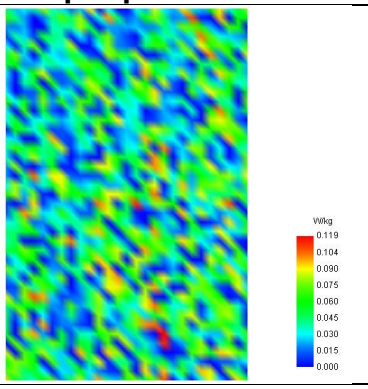
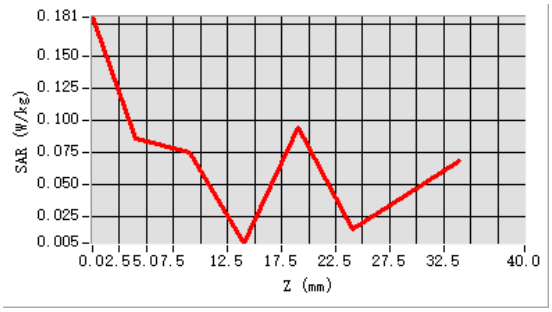
Maximum location: X=-67.00, Y=-80.00 ; SAR Peak: 0.25 W/kg

SURFACE SAR	VOLUME SAR
	
3D screen shot	**Hot spot position**
	
	

Plot 3:

Test Date	2024-07-16
Area Scan	dx=8mm dy=8mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	ELLI
Device Position	Bottom Side
Band	Bluetooth
Signal	Bluetooth
Frequency	2402
Relative permittivity	39.90
Conductivity (S/m)	1.70
ConvF	2.30
SAR 10g (W/Kg)	0.037
SAR 1g (W/Kg)	0.078

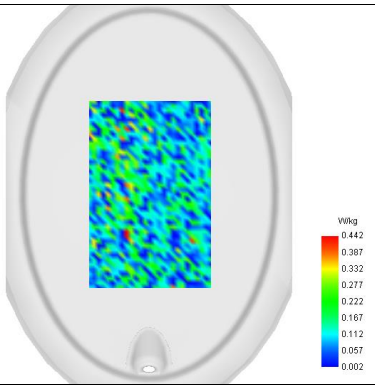
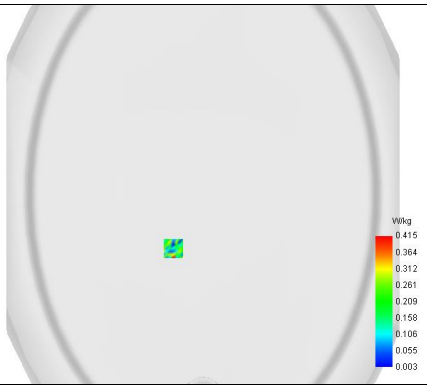
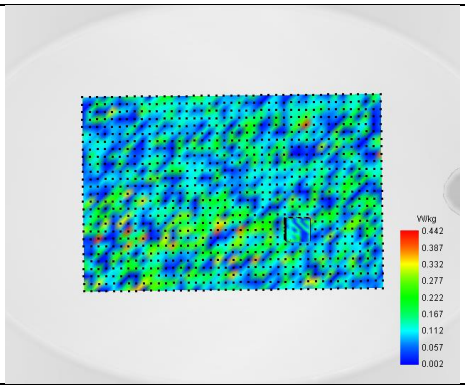
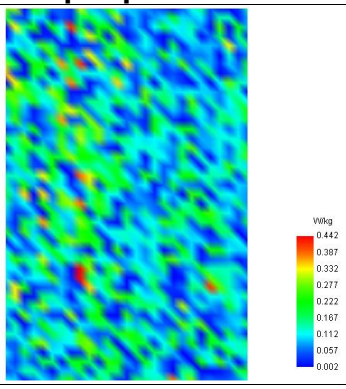
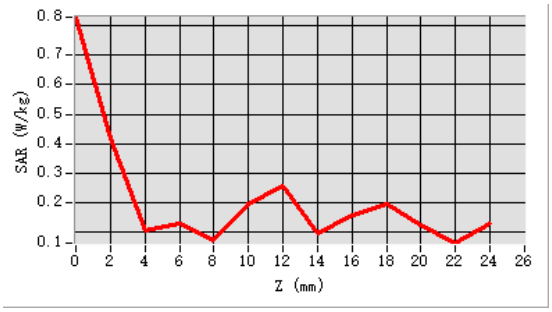
Maximum location: X=35.00, Y=-122.00 ; SAR Peak: 0.32 W/kg

SURFACE SAR	VOLUME SAR
	
3D screen shot	**Hot spot position**
	
	

Plot 4:

Test Date	2024-07-16
Area Scan	dx=8mm dy=8mm
Zoom Scan	7x7x12,dx=4mm dy=4mm dz=2mm
Phantom	ELLI
Device Position	Bottom Side
Band	U-NII-1
Signal	802.11ac
Frequency	5210
Relative permittivity	37.06
Conductivity (S/m)	4.70
ConvF	1.98
SAR 10g (W/Kg)	0.098
SAR 1g (W/Kg)	0.164

Maximum location: X=-37.00, Y=-67.00 ; SAR Peak: 1.72 W/kg

SURFACE SAR	VOLUME SAR
	
3D screen shot	**Hot spot position**
	
	

Appendix C. Probe Calibration and Dipole Calibration Report

Refer the appendix Calibration Report.

※※※※※END OF THE REPORT※※※※※