SAR TEST REPORT

Product Name: WiFi Bluetooth Adapter AX900

Model Name: WD-AX907B

FCC ID: 2BMUG-WD-AX907B

Issued For : Shenzhen Longbrush Technology Co., Ltd.

B2008, Building 3, Phase 3, Hongji Garden, District 4, Jixiang Community Center City, Longcheng Street, Shenzhen, China

Issued By : Shenzhen LGT Test Service Co., Ltd.

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Report Number:	LGT25B106HA01
Sample Received Date:	Feb. 26, 2025
Date of Test:	Feb. 26, 2025 ~ Mar. 07, 2025
Date of Issue:	Mar. 14, 2025
Max. SAR (1g):	Body: 0.926 W/kg

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Revision History

Rev.	Issue Date	Contents
00	Mar. 14, 2025	Initial Issue

TEST REPORT CERTIFICATION

Applicant	Shenzhen Longbrush Technology Co., Ltd.
Address	B2008, Building 3, Phase 3, Hongji Garden, District 4, Jixiang Community Center City, Longcheng Street, Shenzhen, China
Manufacture	Shenzhen Longbrush Technology Co., Ltd.
Address	B2008, Building 3, Phase 3, Hongji Garden, District 4, Jixiang Community Center City, Longcheng Street, Shenzhen, China
Product Name	WiFi Bluetooth Adapter AX900
Trademark	N/A
Model Name	WD-AX907B
Sample number	LGT2502104-1

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
ANSI/IEEE Std. C95.1-2019 FCC 47 CFR Part 2 (2.1093) IEEE 1528: 2013	PASS

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SHENZHEN LGT TEST SERVICE CO., LTD.
LGT
领冠检测

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	WiFi Bluetooth Adapter AX900	
Trademark	N/A	
Model Name	WD-AX907B	
Series Model	N/A	
Model Difference	N/A	
Device Category	Portable	
Product stage	Production unit	
RF Exposure Environment	General Population / Uncontrolled	
Hardware Version	V1.0	
Software Version	V1.0	
Frequency Range	WLAN 802.11b/g/n/ax20: 2412 MHz ~ 2462 MHz WLAN 802.11n/ax40: 2422 MHz ~ 2452 MHz WLAN 802.11a/n20/n40/ac20/ac40/ac80/ax20/ax40/ax80: 5150 ~ 5250 MHz WLAN 802.11a/n20/n40/ac20/ac40/ac80/ax20/ax40/ax80: 5250 ~ 5350 MHz WLAN 802.11a/n20/n40/ac20/ac40/ac80/ax20/ax40/ax80: 5470 ~ 5725 MHz WLAN 802.11a/n20/n40/ac20/ac40/ac8/ax20/ax40/ax800: 5725 ~ 5850 MHz Bluetooth: 2402 ~ 2480 MHz	
Max. Reported SAR(1g): (Limit:1.6W/kg) Test distance: Body:5mm	Mode	Body (W/ kg)
	2.4G WLAN	0.926
	5.2G WLAN	0.260
	5.3G WLAN	0.281
	5.6G WLAN	0.441
	5.8G WLAN	0.434
Operating Mode:	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 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 Bluetooth: GFSK +π/4DQPSK+8DPSK BLE: GFSK	
Antenna Specification	Bluetooth: Internal Antenna WLAN: Internal Antenna	
Operating Mode	Maximum continuous output	
Hotspot Mode	Not Support	
DTM Mode	Not Support	

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	ANSI/IEEE Std. C95.1-2019	IEEE Standard for Safety Levels with Respect to Human Exposure to Electric, Magnetic, and Electromagnetic Fields, 0 Hz to 300 GHz
3	IEEE Std. 1528-2013	Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques
4	FCC KDB 447498 D01 v06	Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies
5	FCC KDB 865664 D01 v01r04	SAR Measurement 100 MHz to 6 GHz
6	FCC KDB 865664 D02 v01r02	RF Exposure Reporting
7	FCC KDB 941225 D06 v02r01	Hotspot Mode SAR
8	FCC KDB 648474 D04 v01r03	SAR Evaluation Considerations for Wireless Handsets
9	FCC KDB 248227 D01 Wi-Fi SAR v02r02	SAR Considerations for 802.11 Devices
10	FCC KDB 447498 D02 v02r01	SAR Procedures for Dongle

(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:

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

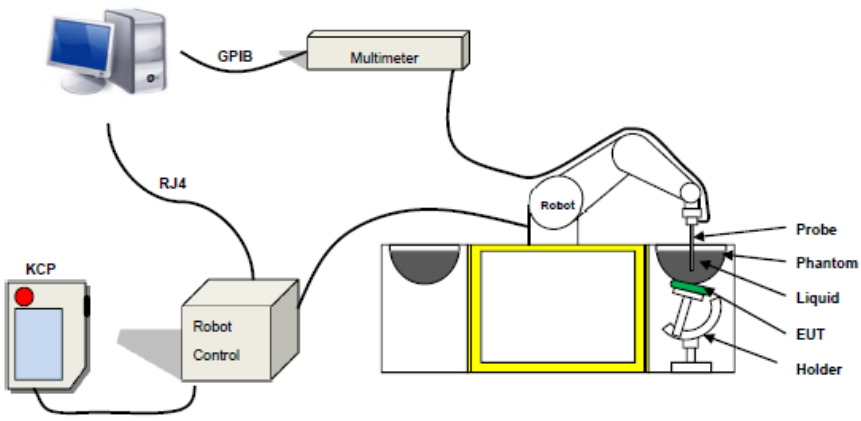
SAR is expressed in units of Watts per kilogram (W/kg) SAR measurement can be related to the electrical field in the tissue by

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

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°

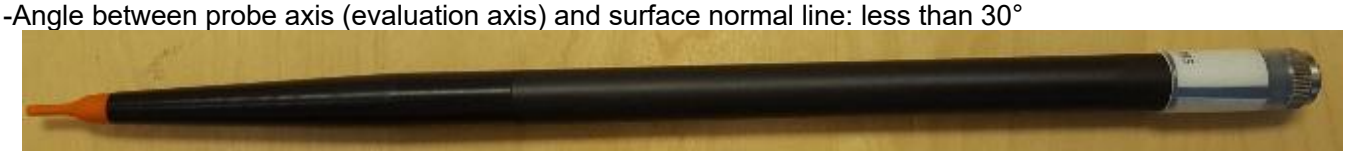


Figure 1-MVG COMOSAR Dosimetric E field Probe

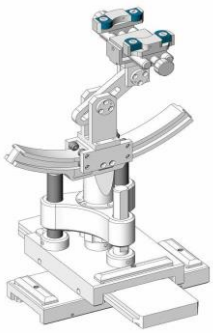
3.2.2 Phantom

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

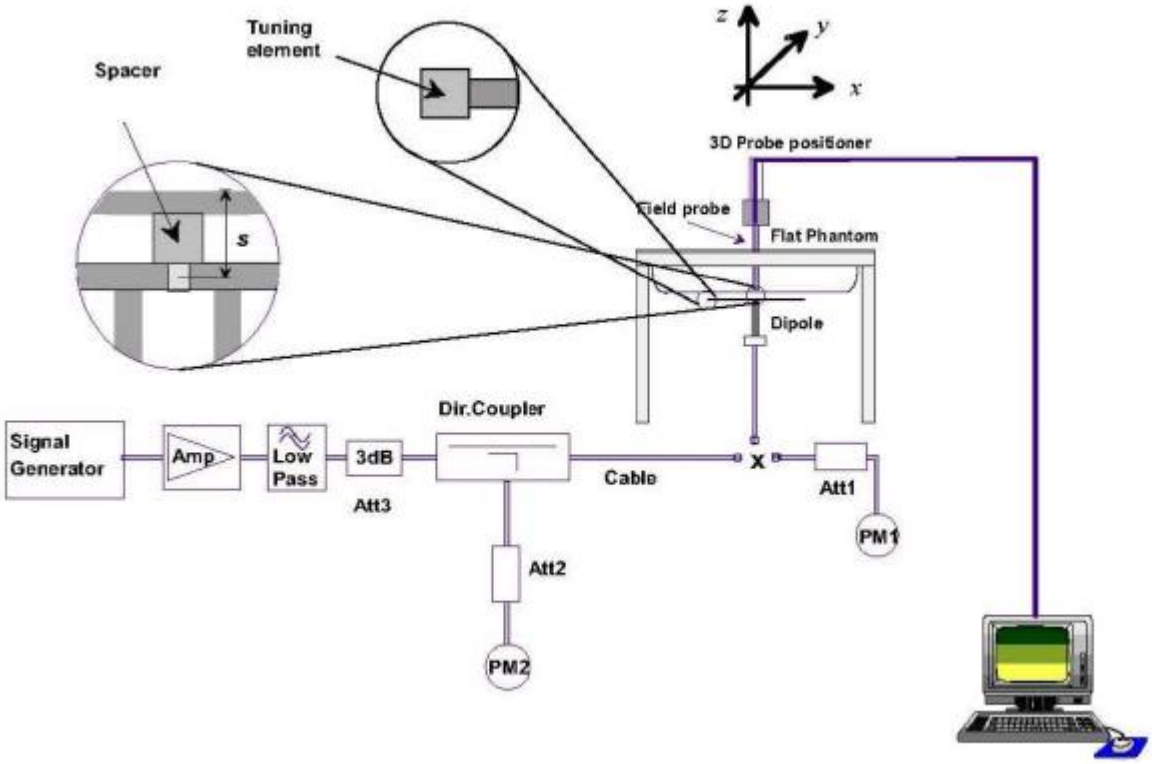
Date	Ambient		Simulating Liquid		Parameters	Target	Measured	Deviation %	Limited %
	Temp. [°C]	Humidity %	Frequency (MHz)	Temp. [°C]					
2025-02-27	23.4	48	2450	23.3	Permittivity	39.20	39.32	0.31	±5
					Conductivity	1.80	1.84	2.22	±5
2025-03-07	22	53	5200	21.7	Permittivity	36.00	36.55	1.53	±5
					Conductivity	4.66	4.59	-1.50	±5
2025-03-07	23	56	5400	22.7	Permittivity	35.80	36.23	1.20	±5
					Conductivity	4.86	4.88	0.41	±5
2025-03-06	23.7	57	5600	23.4	Permittivity	35.55	36.15	1.69	±5
					Conductivity	5.07	5.09	0.49	±5
2025-03-07	20.1	58	5800	19.8	Permittivity	35.30	36.41	3.14	±5
					Conductivity	5.27	5.23	-0.76	±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	Power drift	Tested Value	Normalized SAR	Target SAR	Tolerance
	(MHz)	(mW)	(%)	(W/Kg)	(W/kg)	1g(W/kg)	(%)
2025-02-27	2450	100	5.404	54.04	54.21	-0.31	10
2025-03-07	5200	100	8.109	81.09	80.96	0.16	10
2025-03-07	5400	100	8.465	84.65	84.63	0.02	10
2025-03-06	5600	100	8.125	81.25	80.97	0.35	10
2025-03-07	5800	100	8.162	81.62	81.68	-0.07	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.

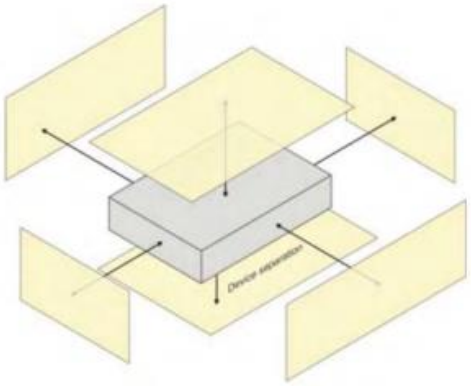
When the 1-g SAR of the highest peak is within 2 dB of the SAR limit, additional zoom scans are required for other peaks within 2 dB of the highest peak that have not been included in any zoom scan to ensure there is no increase in SAR.

7. EUT Test Position

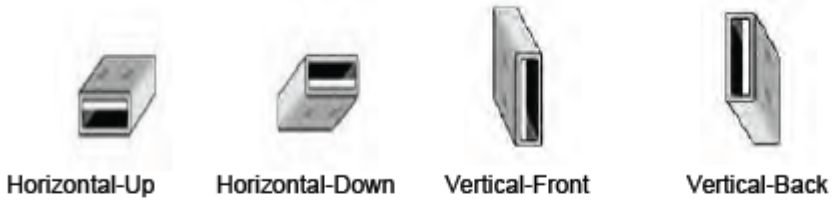
According to KDB 447498 D02, USB connector orientations on laptop computers, which is tested for SAR compliance in body-worn accessory and other use configurations described in the following subsections.

7.1 Hotspot mode exposure position condition

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



7.2 USB connector Orientations Implemented on Laptop Computers



Note: These are USB connector orientations on laptop computers; USB dongles have the reverse configuration for plugging into the corresponding laptop computers.

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.

Uncertainty Component	Tol (+- %)	Prob. Dist.	Div.	Ci (1g)	Ci (10g)	1g Ui (+-%)	10g Ui (+-%)	vi
Measurement System								
Probe calibration	5.8	N	1	1	1	5.8	5.8	∞
Axial Isotropy	3.5	R	$\sqrt{3}$	√0.5	√0.5	1.43	1.43	∞
Hemispherical Isotropy	5.9	R	$\sqrt{3}$	√0.5	√0.5	2.41	2.41	∞
Boundary effect	1	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Linearity	4.7	R	$\sqrt{3}$	1	1	2.71	2.71	∞
System detection limits	1	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Modulation response	3	R	$\sqrt{3}$	1	1	1.73	1.73	∞
Readout Electronics	0.5	N	1	1	1	0.50	0.50	∞
Response Time	0	R	$\sqrt{3}$	1	1	0.00	0.00	∞
Integration Time	1.4	R	$\sqrt{3}$	1	1	1.81	1.81	∞
RF ambient conditions-Noise	3	R	$\sqrt{3}$	1	1	1.73	1.73	∞
RF ambient conditions-reflections	3	R	$\sqrt{3}$	1	1	1.73	1.73	∞
Probe positioner mechanical tolerance	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
Probe positioning with respect to phantom shell	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
Extrapolation, Interpolation and Integration Algoritms for Max, SAR	2.3	R	$\sqrt{3}$	1	1	1.33	1.33	∞
Test sample Related								
Test sample positioning	2.6	N	1	1	1	2.60	2.60	11
Device holder uncertainty	3	N	1	1	1	3.00	3.00	7
Output Power Variation - SAR Drift Measurement	5	R	$\sqrt{3}$	1	1	2.89	2.89	∞
SAR scaling	2	R	$\sqrt{3}$	1	1	1.15	1.15	∞
Phantom and tissue parameters								
Phantom uncertainty (shape and thickness uncertainty)	4	R	$\sqrt{3}$	1	1	2.31	2.31	∞
Uncertainty in SAR correction for deviations in permittivity and conductivity	2	N	1	1	0.84	2.00	1.68	∞
Liquid Conductivity - Measurement Uncertainty)	4	N	1	0.78	0.71	3.12	2.84	5
Liquid Permittivity - Measurement Uncertainty	5	N	1	0.23	0.26	1.15	1.30	5
Liquid Conductivity (Temperature Uncertainty)	2.5	R	$\sqrt{3}$	0.78	0.71	1.13	1.02	∞
Liquid Permittivity (Temperature Uncertainty)	2.5	R	$\sqrt{3}$	0.23	0.26	0.33	0.38	∞
Combined Standard Uncertainty		RSS				10.47	10.34	
Expanded Uncertainty (95% Confidence interval)		K				20.95	20.69	

8.2 System validation Uncertainty

Uncertainty Component	Tol (+- %)	Prob. Dist.	Div.	Ci (1g)	Ci (10g)	1g Ui (+-%)	10g Ui (+-%)	vi
Measurement System								
Probe calibration	5.8	N	1	1	1	5.8	5.8	∞
Axial Isotropy	3.5	R	$\sqrt{3}$	1	1	2.02	2.02	∞
Hemispherical Isotropy	5.9	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Boundary effect	1	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Linearity	4.7	R	$\sqrt{3}$	1	1	0.71	0.71	∞
System detection limits	1	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Modulation response	0	N	$\sqrt{3}$	0	0	0.00	0.00	∞
Readout Electronics	0.5	N	1	1	1	0.50	0.50	∞
Response Time	0	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Integration Time	1.4	R	$\sqrt{3}$	0	0	0.00	0.00	∞
RF ambient conditions-Noise	3	R	$\sqrt{3}$	1	1	1.73	1.73	∞
RF ambient conditions-reflections	3	R	$\sqrt{3}$	1	1	1.73	1.73	∞
Probe positioner mechanical tolerance	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
Probe positioning with respect to phantom shell	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
Extrapolation, Interpolation and Integration Algoritms for Max, SAR	2.3	R	$\sqrt{3}$	1	1	1.33	1.33	∞
Dipole								
Deviation of Experimental Source from Numerical Source	5	N	1	1	1	5.00	5.00	∞
Input Power and SAR Drift Measurement	0.5	R	$\sqrt{3}$	1	1	0.29	0.29	∞
Dipole Axis to Liquid Distance	2	R	$\sqrt{3}$	1	1	1.15	1.15	∞
Phantom and Tissue Parameters								
Phantom uncertainty (shape and thickness uncertainty)	4	R	$\sqrt{3}$	1	1	2.31	2.31	∞
Uncertainty in SAR correction for deviations in permittivity and conductivity	2	N	1	1	0.84	2.00	1.68	∞
Liquid Conductivity - Measurement Uncertainty)	4	N	1	0.78	0.71	3.12	2.84	5
Liquid Permittivity - Measurement Uncertainty	5	N	1	0.23	0.26	1.15	1.30	5
Liquid Conductivity (Temperature Uncertainty)	2.5	R	$\sqrt{3}$	0.78	0.71	1.13	1.02	∞
Liquid Permittivity (Temperature Uncertainty)	2.5	R	$\sqrt{3}$	0.23	0.26	0.33	0.38	∞
Combined Standard Uncertainty		RSS				10.16	10.03	
Expanded Uncertainty (95% Confidence interval)		K				20.32	20.06	

9. Conducted Power Measurement

9.1 Test Result

2.4G WLAN

2.4GWIFI				
Mode	Channel Number	Frequency (MHz)	Average Power (dBm)	Output Power (mW)
802.11b	1	2412	17.895	61.59
	7	2437	17.047	50.66
	11	2462	16.555	45.24
802.11g	1	2412	16.108	40.81
	7	2437	15.957	39.42
	11	2462	16.025	40.04
802.11n-HT20	1	2412	15.394	34.63
	7	2437	15.384	34.55
	11	2462	15.900	38.90
802.11n-HT40	3	2422	14.770	29.99
	6	2437	15.013	31.72
	9	2452	14.227	26.47
802.11ax-HE20	1	2412	15.061	32.07
	7	2437	14.912	30.99
	11	2462	14.920	31.05
802.11ax-HE40	3	2422	15.565	36.02
	6	2437	15.167	32.86
	9	2452	14.663	29.26

Bluetooth

BT		
Mode	Average Power (dBm)	Output Power (mW)
GFSK(1Mbps)	8.849	7.67
π/4-QPSK(2Mbps)	8.968	7.88
8DPSK(3Mbps)	9.007	7.96

BLE

BLE				
Mode	Channel Number	Frequency (MHz)	Average Power (dBm)	Output Power (mW)
GFSK(1Mbps)	0	2402	8.681	7.38
	19	2440	8.674	7.37
	39	2480	8.619	7.28
GFSK(2Mbps)	0	2402	8.271	6.72
	19	2440	8.640	7.31
	39	2480	8.287	6.74

WLAN (5.2Gband)

5.2G WLAN				
Mode	Channel Number	Frequency (MHz)	Output Power (dBm)	Output Power (mW)
802.11a20	36	5180	14.814	30.30
	40	5200	14.726	29.69
	48	5240	14.788	30.12
802.11n-HT20	36	5180	14.196	26.28
	40	5200	13.661	23.23
	48	5240	13.601	22.91
802.11n-HT40	38	5190	13.872	24.39
	46	5230	14.045	25.38
802.11ac-VHT20	36	5180	14.343	27.18
	40	5200	13.563	22.71
	48	5240	13.463	22.20
802.11ac-VHT40	38	5190	14.762	29.94
	46	5230	13.670	23.28
802.11ac-VHT80	42	5210	14.874	30.72
802.11ax-HE20	36	5180	14.012	25.19
	40	5200	13.804	24.01
	48	5240	13.550	22.65
802.11ax-HE40	38	5190	14.008	25.17
	46	5230	13.858	24.31
802.11ax-HE80	42	5210	14.423	27.69

WLAN (5.3Gband)

5.3G WLAN				
Mode	Channel Number	Frequency (MHz)	Output Power (dBm)	Output Power (mW)
802.11a20	52	5260	13.879	24.43
	60	5300	14.489	28.11
	64	5320	13.460	22.18
802.11n-HT20	52	5260	14.168	26.11
	60	5300	14.681	29.38
	64	5320	13.213	20.96
802.11n-HT40	54	5270	14.295	26.88
	62	5310	14.043	25.37
802.11ac-VHT20	52	5260	14.764	29.95
	60	5300	14.611	28.91
	64	5320	14.473	28.01
802.11ac-VHT40	54	5270	14.629	29.03
	62	5310	14.179	26.18
802.11ac-VHT80	58	5290	14.959	31.33
802.11ax-HE20	52	5260	14.522	28.33
	60	5300	13.518	22.48
	64	5320	12.965	19.79
802.11ax-HE40	54	5270	14.347	27.21
	62	5310	13.392	21.84
802.11ax-HE80	58	5290	14.545	28.48

WLAN (5.6G band)

5.6G WLAN				
Mode	Channel Number	Frequency (MHz)	Output Power (dBm)	Output Power (mW)
802.11a20	100	5500	14.685	29.41
	116	5580	14.096	25.68
	140	5700	13.796	23.97
802.11n-HT20	100	5500	13.584	22.82
	116	5580	14.150	26.00
	140	5700	14.226	26.46
802.11n-HT40	102	5510	13.624	23.04
	134	5670	14.329	27.10
802.11ac-VHT20	100	5500	14.287	26.83
	116	5580	13.845	24.24
	140	5700	13.108	20.46
802.11ac-VHT40	102	5510	13.797	23.97
	134	5670	14.842	30.49
802.11ac-VHT80	106	5530	13.924	24.68
802.11ax-HE20	100	5500	14.445	27.83
	116	5580	13.802	24.00
	140	5700	13.586	22.83
802.11ax-HE40	102	5510	13.597	22.89
	134	5670	14.917	31.02
802.11ax-HE80	106	5530	14.910	30.97

WLAN (5.8G band)

5.8G WLAN				
Mode	Channel Number	Frequency (MHz)	Output Power (dBm)	Output Power (mW)
802.11a20	149	5745	14.556	28.55
	157	5785	13.233	21.05
	165	5825	12.971	19.82
802.11n-HT20	149	5745	14.288	26.84
	157	5785	13.053	20.20
	165	5825	13.333	21.54
802.11n-HT40	151	5755	14.027	25.28
	159	5795	13.670	23.28
802.11ac-VHT20	149	5745	13.184	20.82
	157	5785	13.538	22.58
	165	5825	13.293	21.35
802.11ac-VHT40	151	5755	13.966	24.92
	159	5795	13.846	24.24
802.11ac-VHT80	155	5775	13.187	20.83
802.11ax-HE20	149	5745	13.714	23.52
	157	5785	13.680	23.33
	165	5825	13.788	23.92
802.11ax-HE40	151	5755	13.212	20.95
	159	5795	12.638	18.36
802.11ax-HE80	155	5775	12.833	19.20

9.2 SAR Test Exclusions Applied

Per FCC KDB 447498D01, the 1-g SAR and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz
at test separation distances ≤ 50 mm are determined by:
[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)]·[√f(GHZ)]≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where:

• f(GHZ) is the RF channel transmit frequency in GHz
• Power and distance are rounded to the nearest mW and mm before calculation
• The result is rounded to one decimal place for comparison

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

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

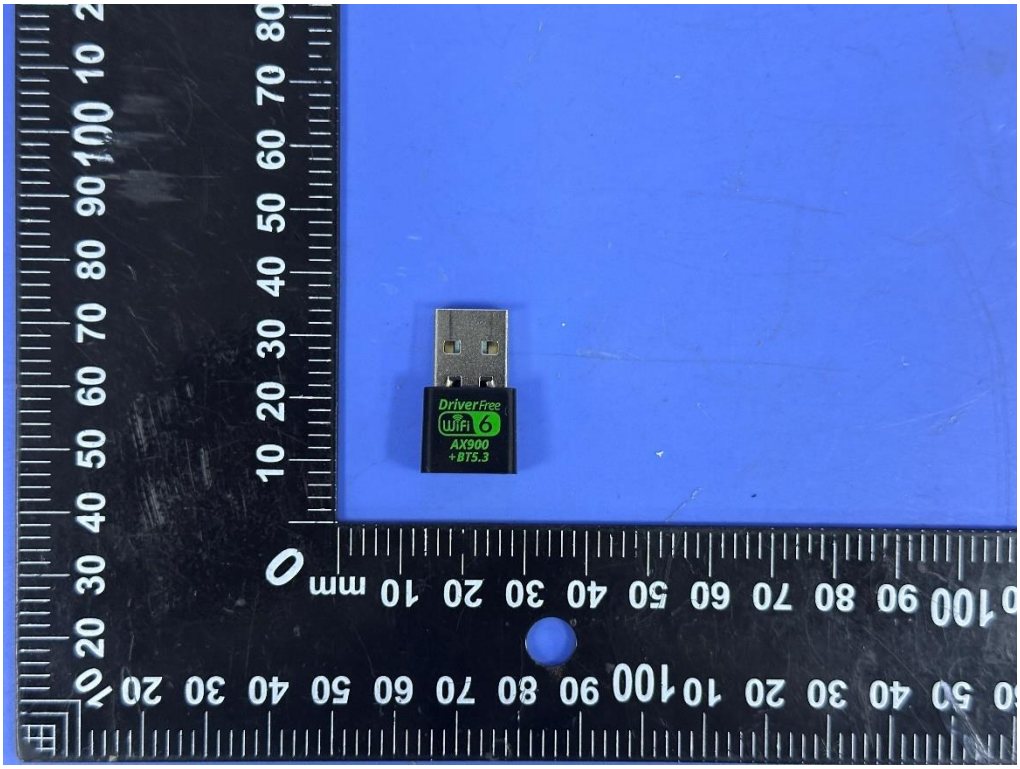
RF Function	Frequency (MHz)	Max Turn up Power (dBm)	Max Turn up Power (mW)	Estimated SAR	Limit	Result
BT	2480	9.50	8.91	2.807	3	PASS

Based on the maximum conducted power of BT(rounded to the nearest mW) and the antenna to user separation distance(5mm), BLE SAR was not required.

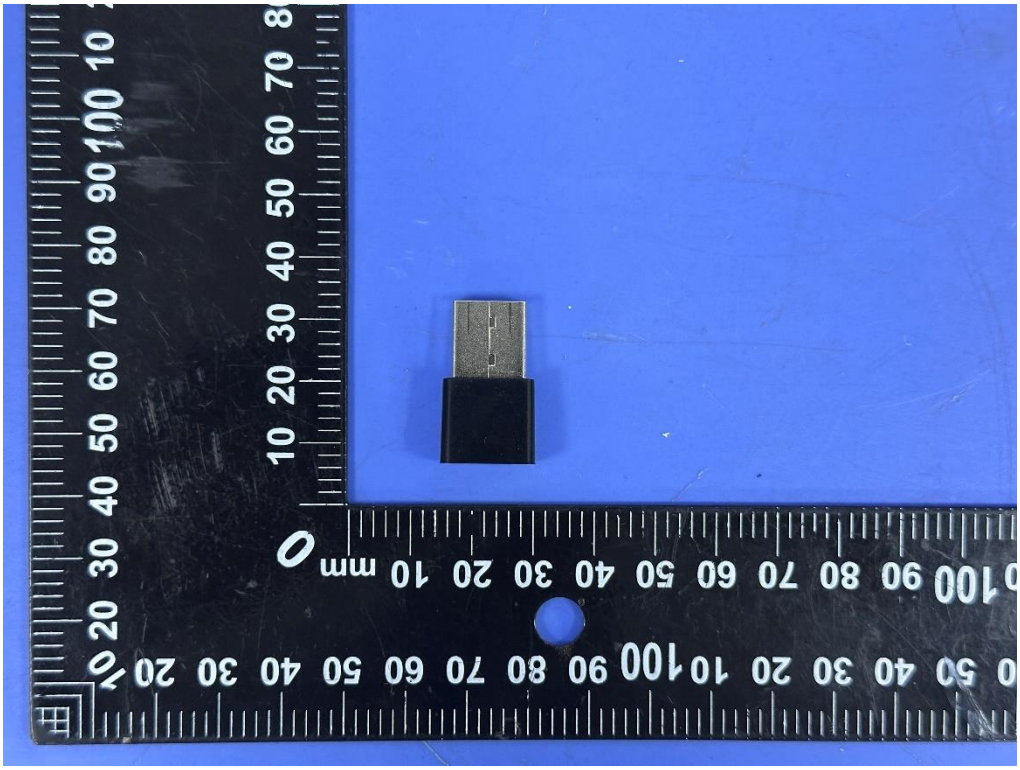
10. EUT and Test Setup Photo

10.1 EUT Photos

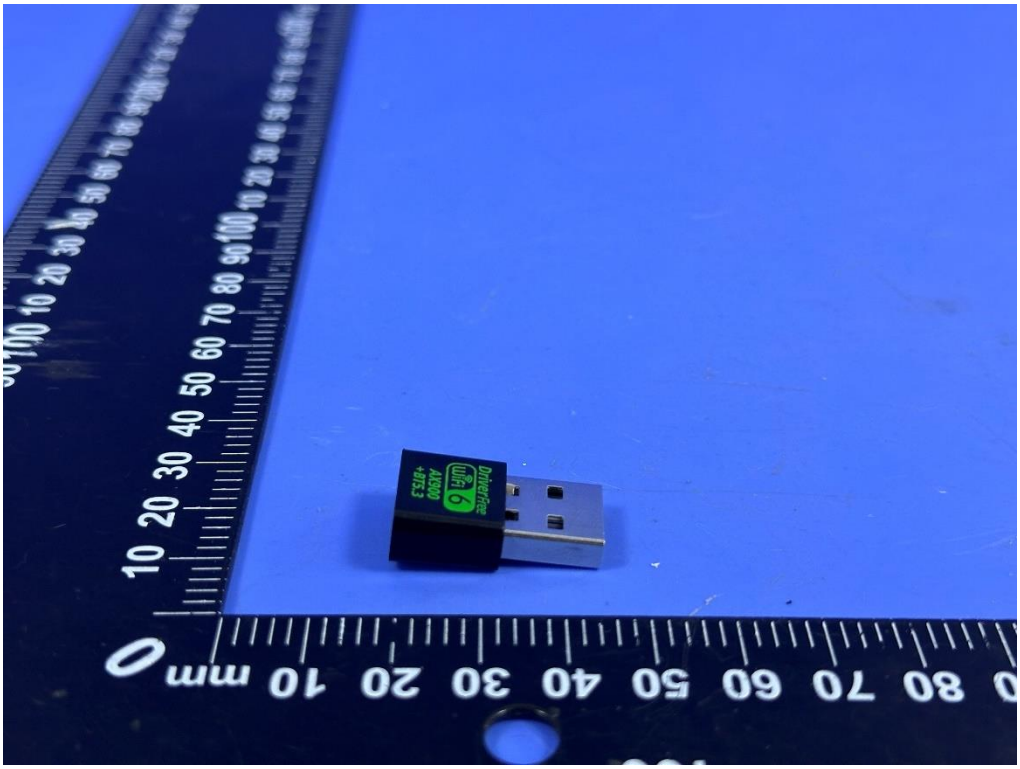
Front side



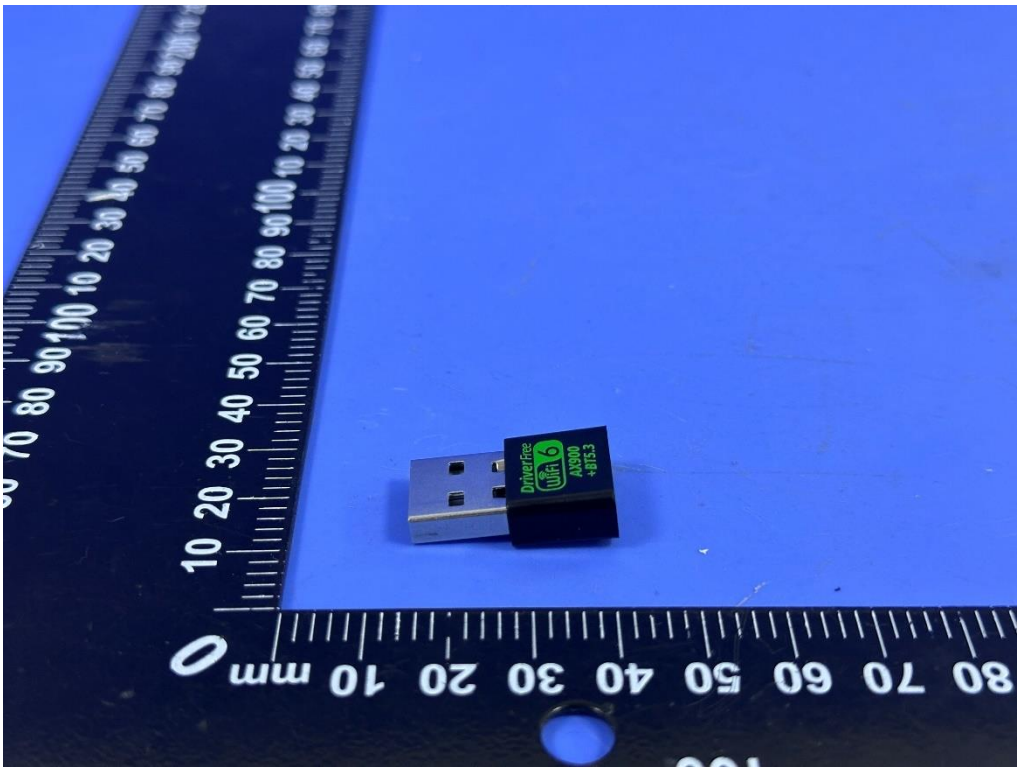
Back side



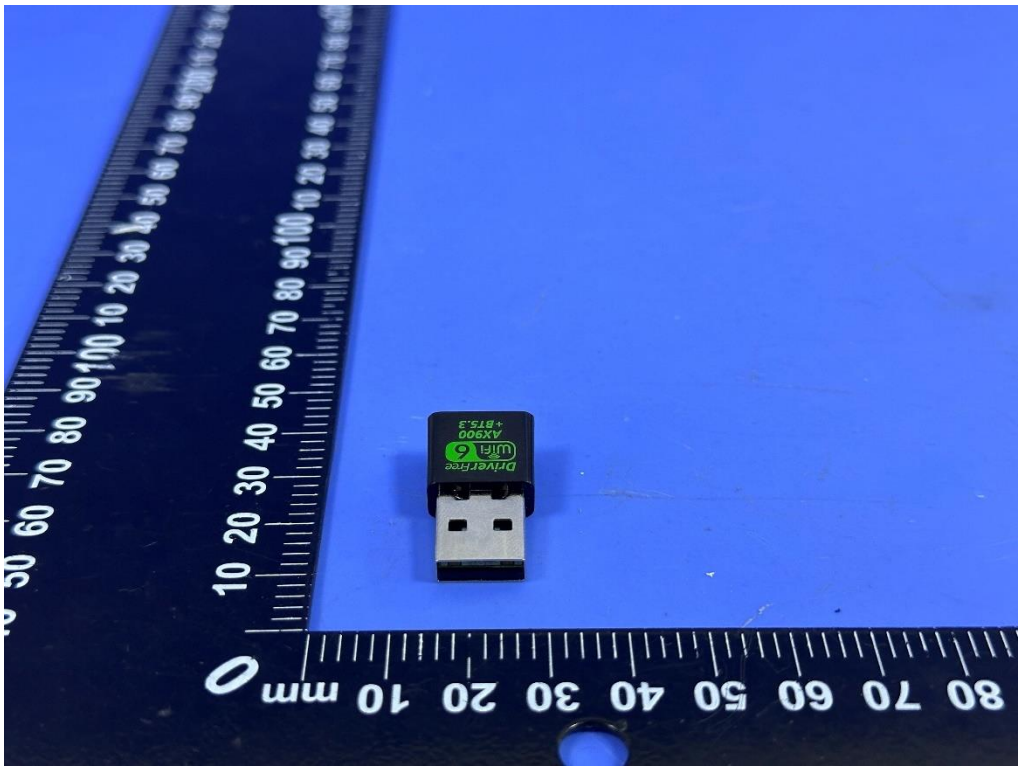
Right Edge



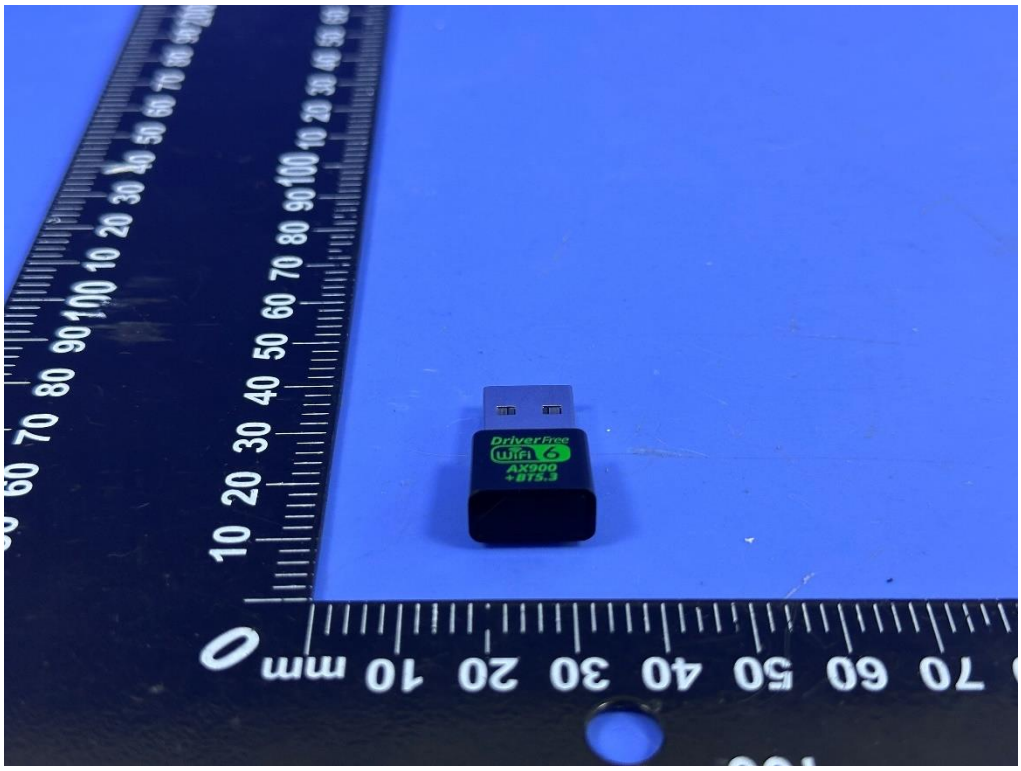
Left Edge



Top Edge

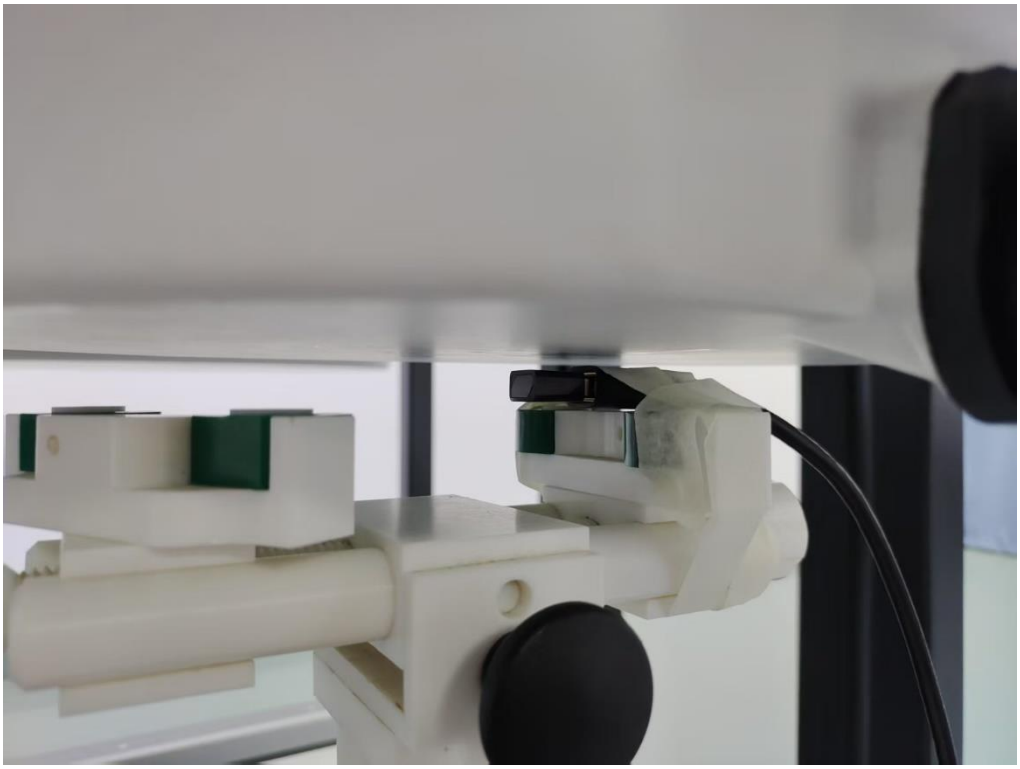


Bottom Edge

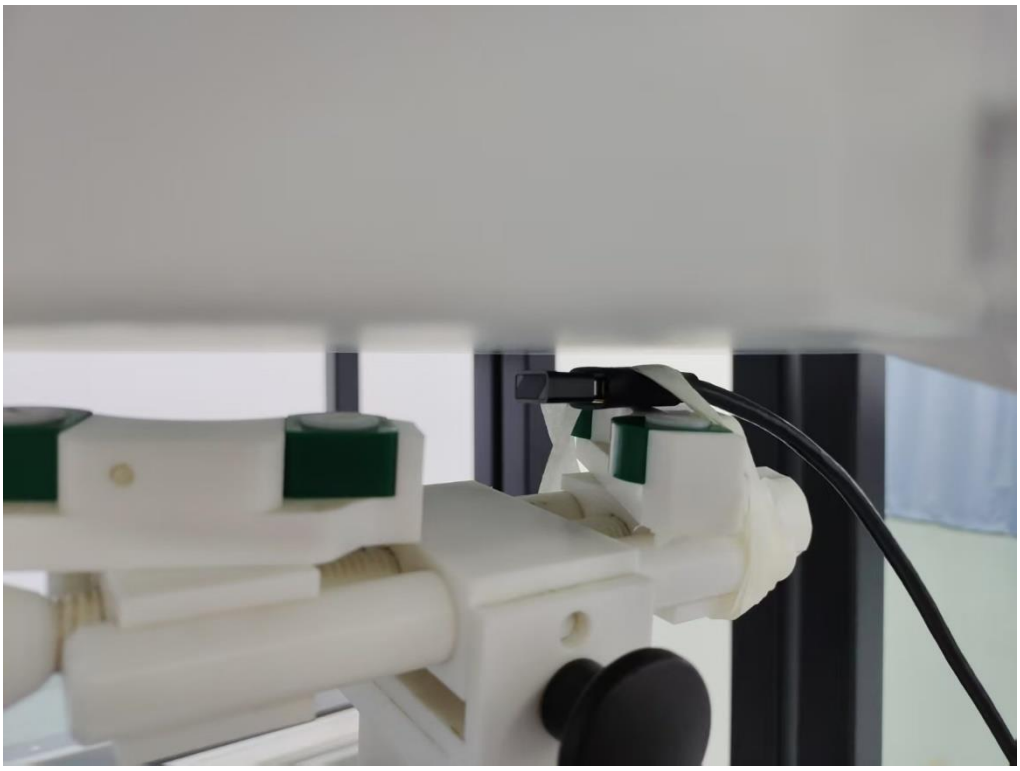


10.2 Setup Photos

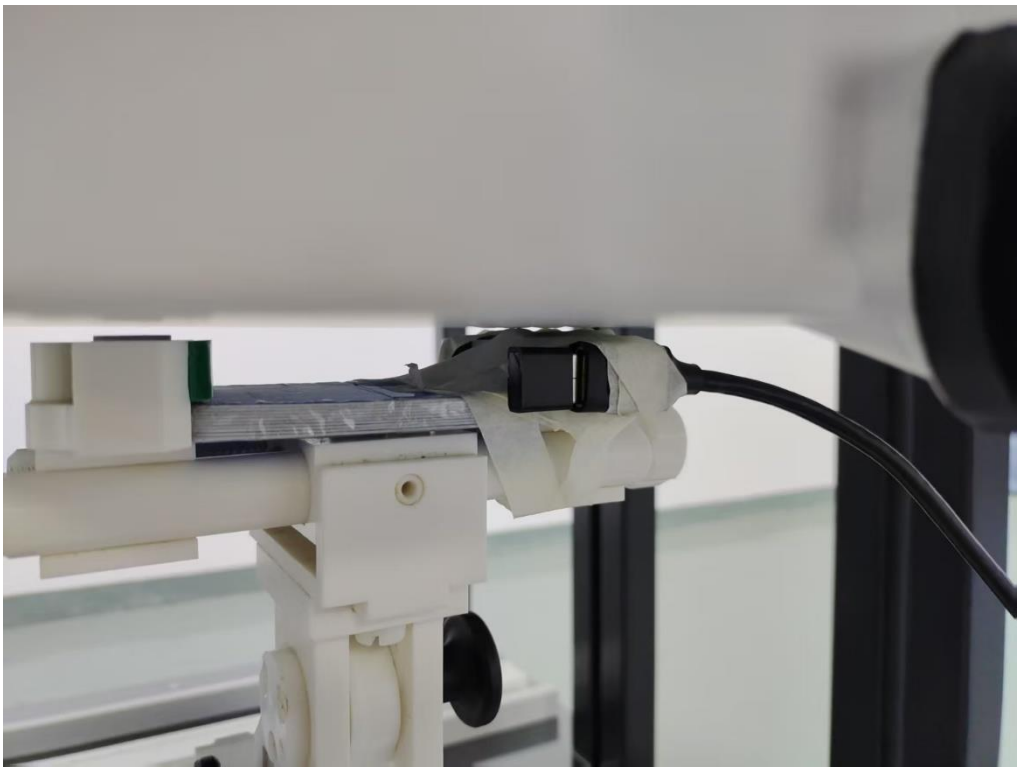
Horizontal-UP (separation distance is 5mm)



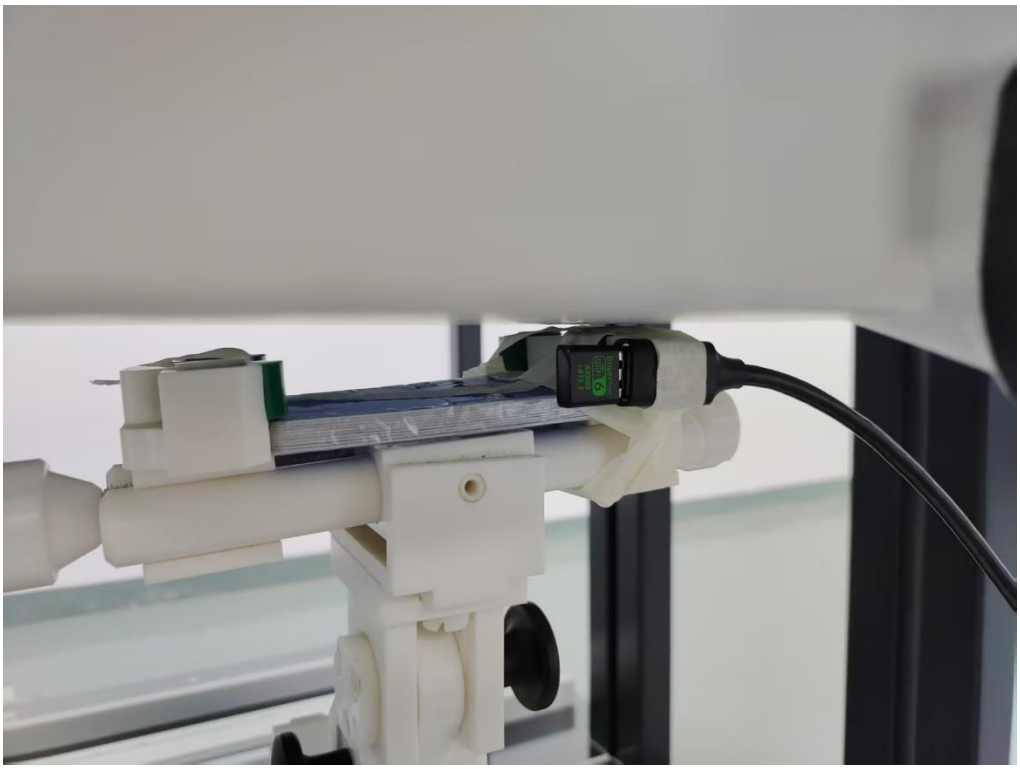
Horizontal-Down (separation distance is 5mm)



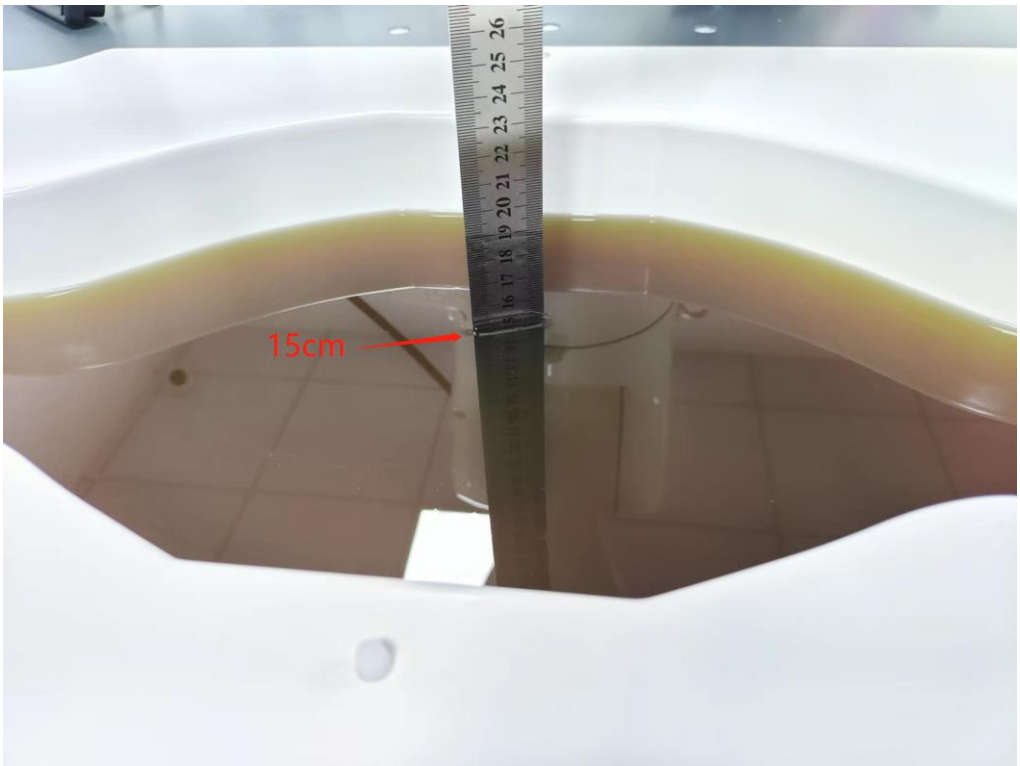
Vertical-Front (separation distance is 5mm)



Vertical-Back (separation distance is 5mm)



Liquid depth (15 cm)



11. SAR Result Summary

11.1 Body 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	Horizontal-UP	2412	0.713	-3.28	18.00	17.90	0.730	/
		Horizontal-Down	2412	0.904	-1.12	18.00	17.90	**0.926**	**1**
		Horizontal-Down	2437	0.726	3.70	18.00	17.05	0.904	/
		Horizontal-Down	2462	0.655	3.47	18.00	16.56	0.914	/
		Vertical-Front	2412	0.724	1.62	18.00	17.90	0.742	/
		Vertical-Back	2412	0.480	0.10	18.00	17.90	0.492	/
5.2GHz WLAN	802.11ac80	Horizontal-UP	5210	0.205	2.56	15.00	14.87	0.211	/
		Horizontal-Down	5210	0.253	1.69	15.00	14.87	**0.260**	**2**
		Vertical-Front	5210	0.213	0.82	15.00	14.87	0.219	/
		Vertical-Back	5210	0.127	-0.86	15.00	14.87	0.131	/
5.3GHz WLAN	802.11ac80	Horizontal-UP	5290	0.225	3.05	15.00	14.96	0.227	/
		Horizontal-Down	5290	0.278	0.56	15.00	14.96	**0.281**	**3**
		Vertical-Front	5290	0.233	2.37	15.00	14.96	0.235	/
		Vertical-Back	5290	0.142	0.42	15.00	14.96	0.143	/
5.6GHz WLAN	802.11ax40	Horizontal-UP	5670	0.342	-1.08	15.10	14.92	0.357	/
		Horizontal-Down	5670	0.423	-1.70	15.10	14.92	**0.441**	**4**
		Vertical-Front	5670	0.351	0.74	15.10	14.92	0.366	/
		Vertical-Back	5670	0.213	-3.89	15.10	14.92	0.222	/
5.8GHz WLAN	802.11a	Horizontal-UP	5745	0.317	0.52	15.00	14.56	0.351	/
		Horizontal-Down	5745	0.392	1.92	15.00	14.56	**0.434**	**5**
		Vertical-Front	5745	0.326	1.97	15.00	14.56	0.361	/
		Vertical-Back	5745	0.198	1.68	15.00	14.56	0.219	/

Note:

1. The test separation of all above table is 5mm.
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. When the user enables the personal Wireless router functions for the handsets, actual operations include simultaneous transmission of both the Wi-Fi transmitting frequency and thus cannot be evaluated for SAR under actual use conditions. The “Portable Hotspot” feature on the handset was NOT activated, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal.
4. The Bluetooth and WLAN can’t simultaneous transmission at the same time.
5. The 2.4GHz WLAN and 5GHz WLAN can’t simultaneous transmission at the same time.

11.2 Repeated SAR

Band	Mode	Test Position	Ch.	Result 1g (W/Kg)	Power Drift (%)	Max. Turn-up Power(dBm)	Meas. Output Power(dBm)	Scaled SAR(W/Kg)
2.4GHz WLAN	802.11b	Horizontal-Down	2412	0.885	3.34	18.00	17.90	0.907
		Horizontal-Down	2437	0.720	-2.22	18.00	17.05	0.896
		Horizontal-Down	2462	0.624	-2.93	18.00	16.56	0.870

11.3 Repeated SAR measurement

Band	Mode	Test Position	Ch.	Original Measured SAR 1g(W/kg)	1 st Repeated SAR 1g	Ratio
2.4GHz WLAN	802.11b	Horizontal-Down	2412	0.904	0.885	1.021
		Horizontal-Down	2437	0.726	0.720	1.009
		Horizontal-Down	2462	0.655	0.624	1.050

Note:

1. Per KDB 865664 D01,for each frequency band ,repeated SAR measurement is required only when the measured SAR is⩾0.8W/Kg.
2. Per KDB 865664 D01,if the ratio of largest to smallest SAR for the original and first repeated measurement is⩽1.2 and the measured SAR＜1.45W/Kg, only one repeated measurement is required.
3. Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is＞1.20 or when the original or repeated measurement is ⩾1.45W/Kg.
4. The ratio is the difference in percentage between original and repeated measured SAR.

12. Equipment List

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Calibrated Until
2450MHz Dipole	MVG	DIP2G450	SN 06/22 DIP2G450-645	2025.02.05	2028.02.04
5000MHz Dipole	MVG	DIP5G000	SN 06/22 DIP5G000-653	2025.02.05	2028.02.04
E-Field Probe	MVG	EPGO364	SN 04/22 EPGO364	2025.02.05	2026.02.04
Liquid Calibration Kit	MVG	OCPG 87	SN 06/22 OCPG87	2025.02.05	2026.02.04
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	ZVL	R&S	116184-HC	2025.03.05	2026.03.04
Multi Meter	DMM6500	Keithley	4527252	2025.03.06	2026.03.05
Signal Generator	Keysight	N5182B	MY59100717	2025.03.05	2026.03.04
Wireless Communication Test Set	R&S	CMW500	137737	2025.03.05	2026.03.04
Power Sensor	R&S	Z11	116184	2025.03.05	2026.03.04
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

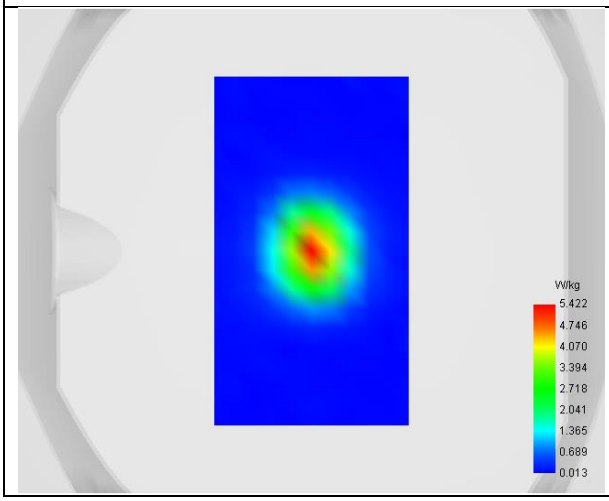
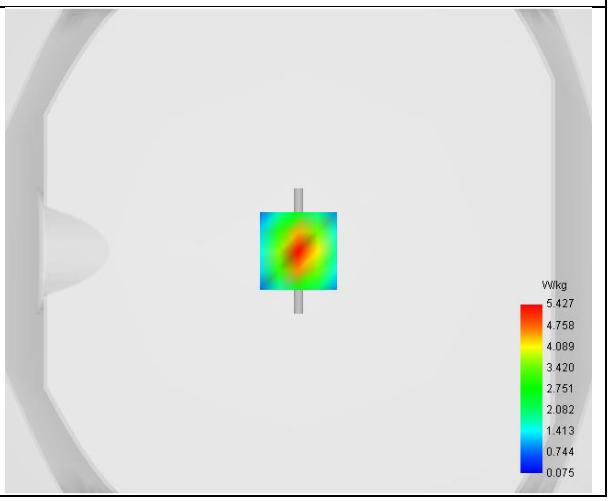
Appendix A. System Validation Plots

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:2025-02-27

Experimental conditions.

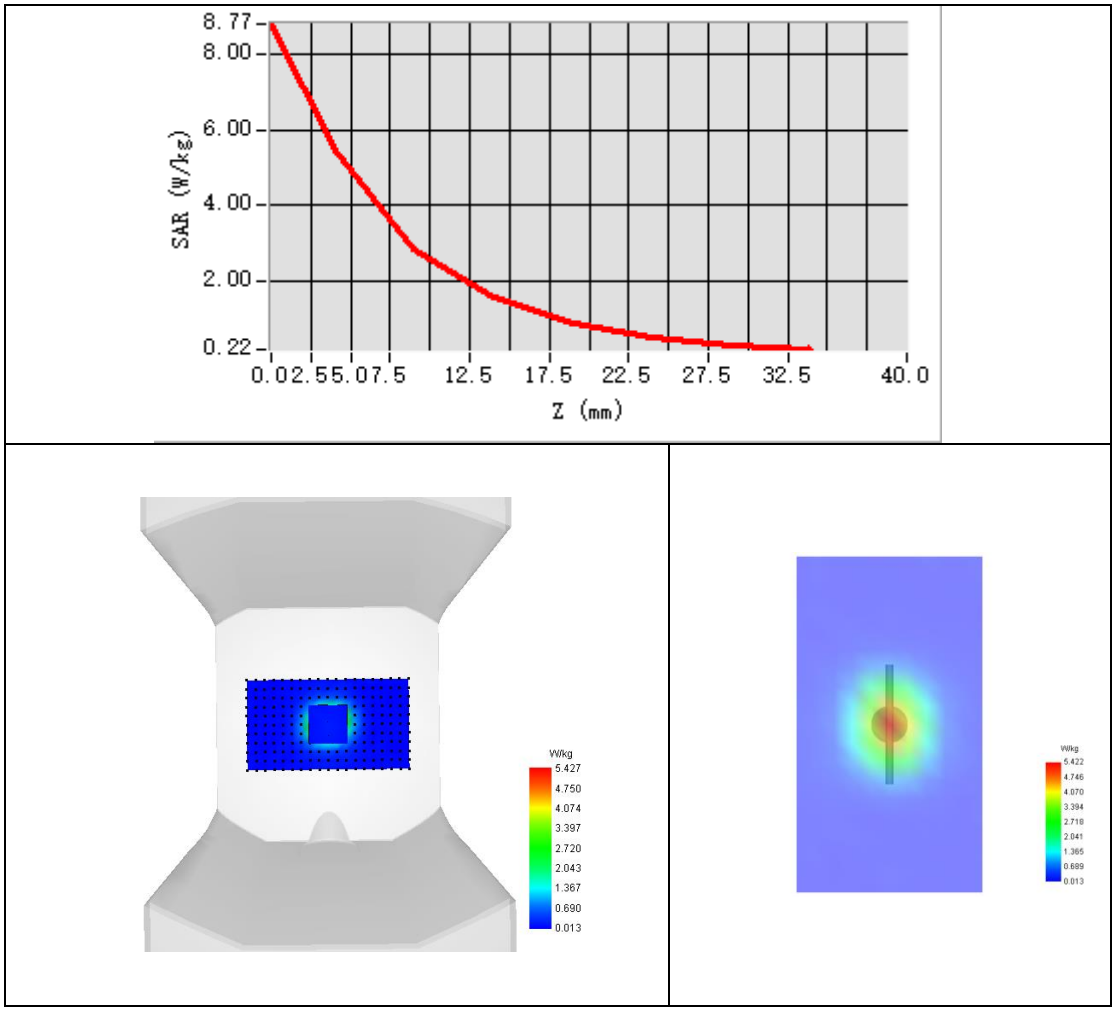
Phantom	Validation plane
Device Position	Dipole
Band	CW2450
Channels	Middle
Signal	CW
Frequency (MHz)	2450.000
Relative permittivity	39.32
Conductivity (S/m)	1.84
Probe	SN 04/22 EPGO364
ConvF	2.33
Crest factor:	1:1

SURFACE	VOLUME SAR
	

Maximum location: X=0.00, Y=0.00 ; SAR Peak: 8.71 W/kg

SAR 10g (W/Kg)	2.384
SAR 1g (W/Kg)	5.404

Z Axis Scan

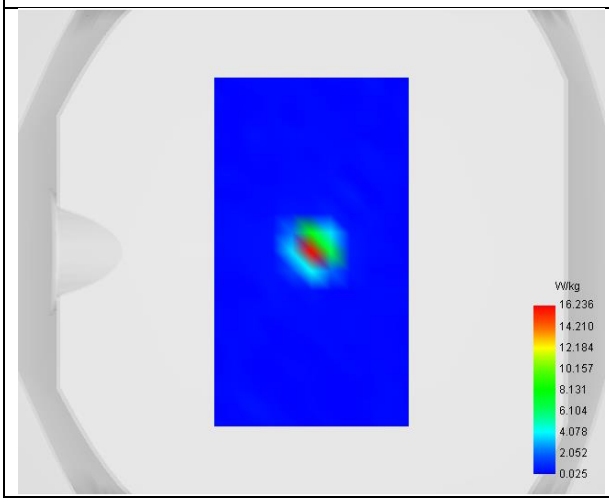
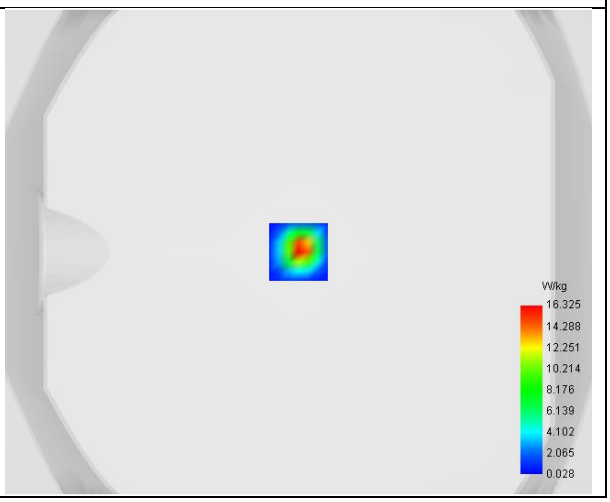

8.77
8.00
6.00
4.00
2.00
0.22
SAR (W/kg)
0.0 2.5 5.0 7.5 12.5 17.5 22.5 27.5 32.5 40.0
Z (mm)
W/kg
5.427
4.750
4.074
3.397
2.720
2.043
1.367
0.690
0.013
W/kg
5.422
4.746
4.070
3.394
2.718
2.041
1.365
0.689
0.013

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:2025-03-07

Experimental conditions.

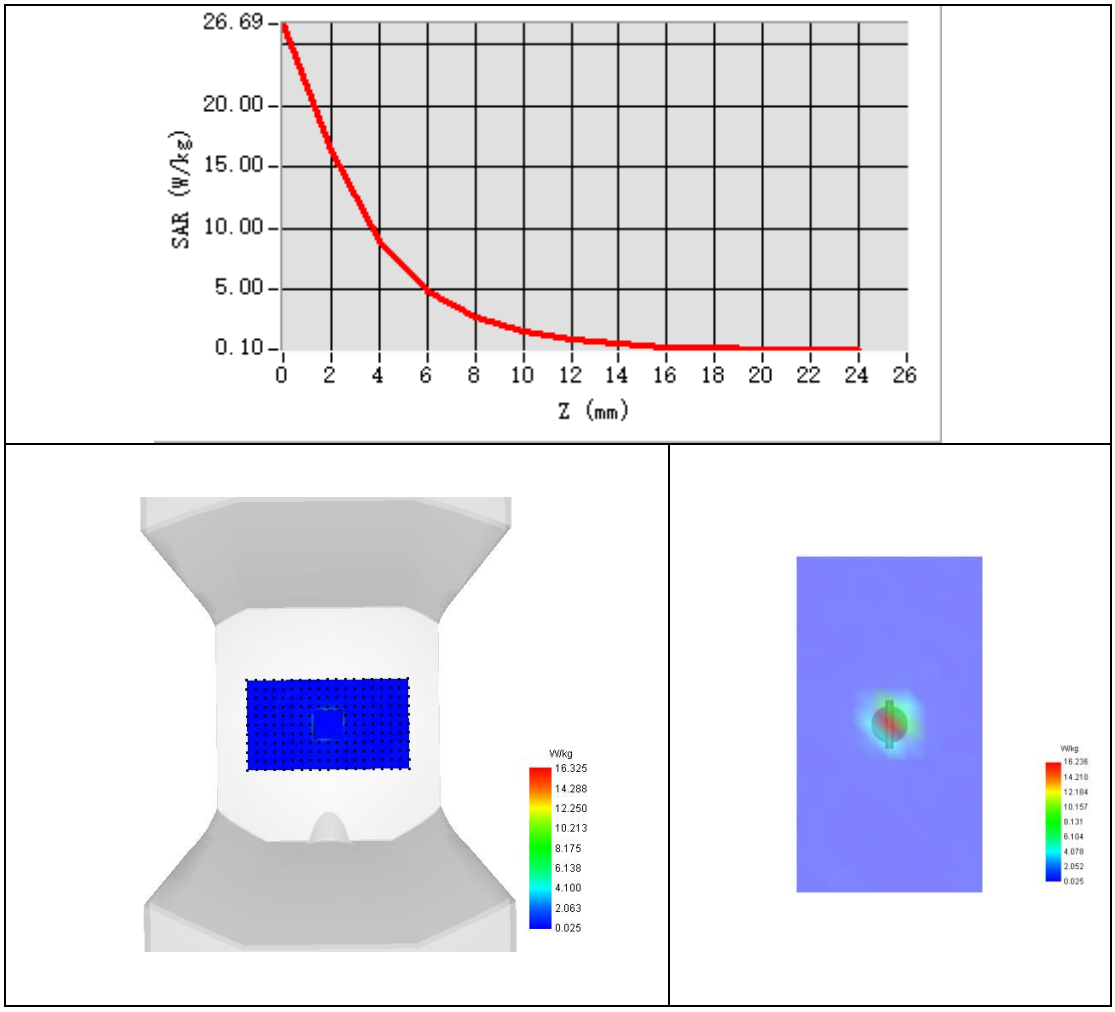
Phantom	Validation plane
Device Position	Dipole
Band	CW5200
Channels	Middle
Signal	CW
Frequency (MHz)	5200.000
Relative permittivity	36.55
Conductivity (S/m)	4.59
Probe	SN 04/22 EPGO364
ConvF	1.99
Crest factor:	1:1

SURFACE	VOLUME SAR
	

Maximum location: X=0.00, Y=0.00 ; SAR Peak: 28.79 W/kg

SAR 10g (W/Kg)	2.287
SAR 1g (W/Kg)	8.109

Z Axis Scan

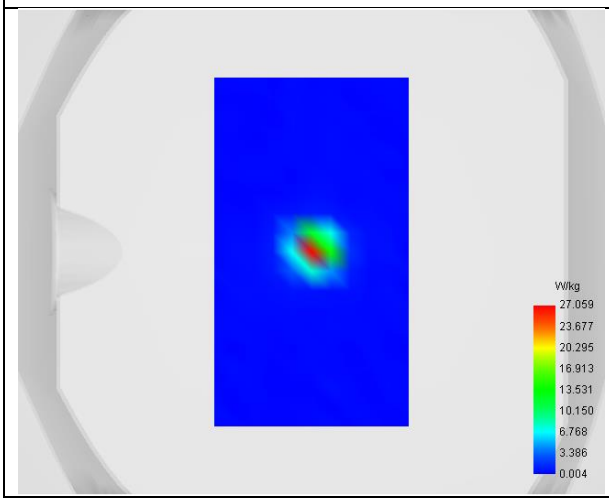
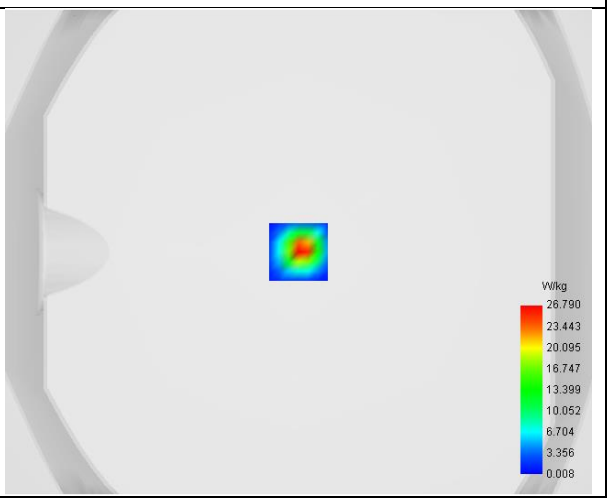

26.69
20.00
15.00
10.00
5.00
0.10
SAR (W/kg)
0 2 4 6 8 10 12 14 16 18 20 22 24 26
Z (mm)
W/kg
16.325
14.288
12.250
10.213
8.175
6.138
4.100
2.063
0.025

System Performance Check Data (5400MHz)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm, dy=8mm
Zoom scan resolution: dx=4mm, dy=4mm, dz=2mm
Date of measurement:2025-03-07

Experimental conditions.

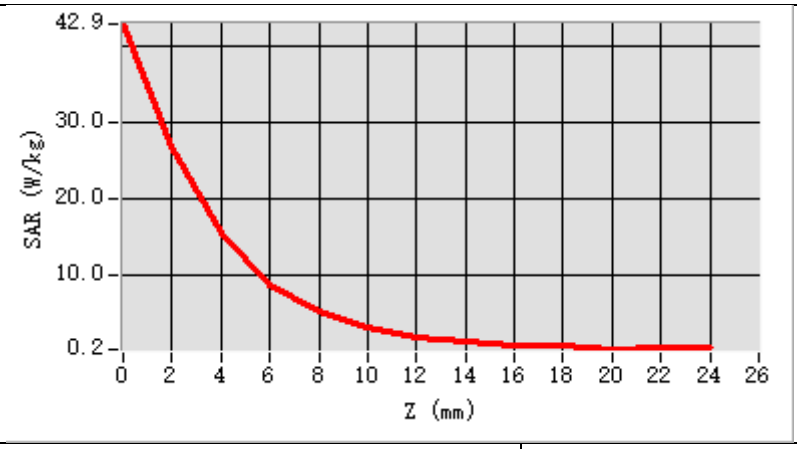
Phantom	Validation plane
Device Position	Dipole
Band	CW5400
Channels	Middle
Signal	CW
Frequency (MHz)	5400.000
Relative permittivity	36.23
Conductivity (S/m)	4.88
Probe	SN 04/22 EPGO364
ConvF	1.87
Crest factor:	1:1

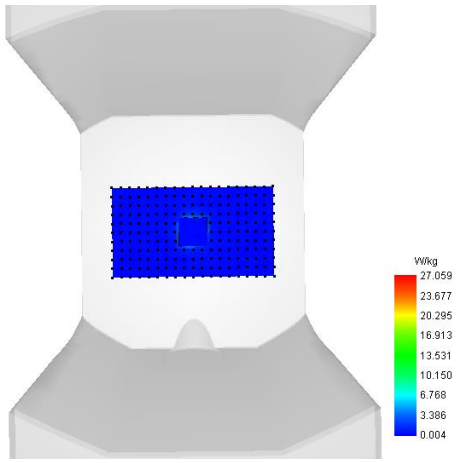
SURFACE	VOLUME SAR
	

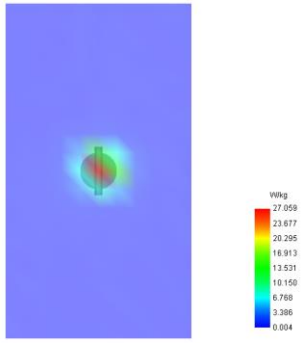
Maximum location: X=0.00, Y=0.00 ; SAR Peak: 46.43 W/kg

SAR 10g (W/Kg)	2.410
SAR 1g (W/Kg)	8.465

Z Axis Scan


42.9
30.0
20.0
10.0
0.2
SAR (W/kg)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
Z (mm)


W/kg
27.059
23.677
20.295
16.913
13.531
10.150
6.768
3.386
0.004

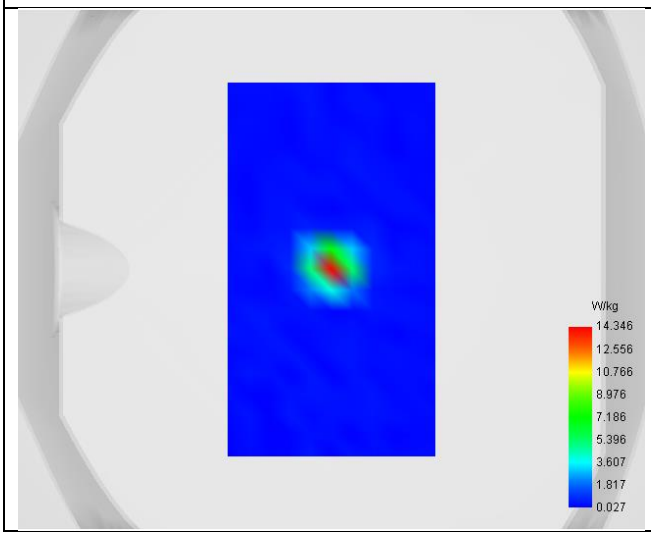
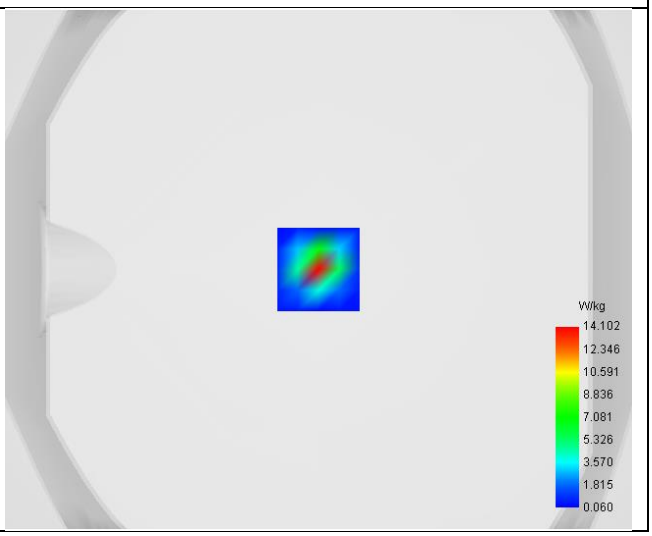

W/kg
27.059
23.677
20.295
16.913
13.531
10.150
6.768
3.386
0.004

System Performance Check Data (5600MHz)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm, dy=8mm
Zoom scan resolution: dx=4mm, dy=4mm, dz=2mm
Date of measurement:2025-03-06

Experimental conditions.

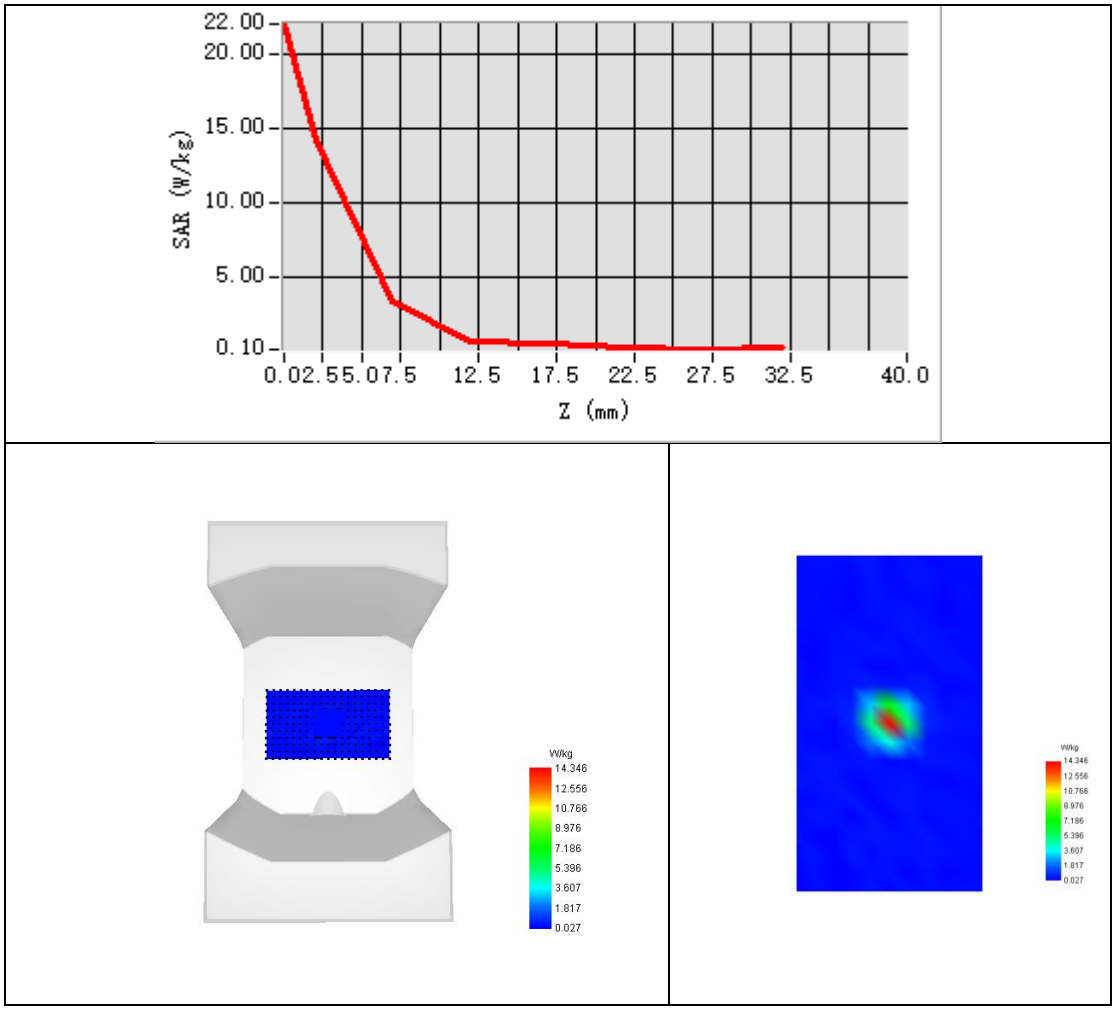
Phantom	Validation plane
Device Position	Dipole
Band	CW5600
Channels	Middle
Signal	CW
Frequency (MHz)	5600.000
Relative permittivity	36.15
Conductivity (S/m)	5.09
Probe	SN 04/22 EPGO364
ConvF	1.87
Crest factor:	1:1

SURFACE	VOLUME SAR
	

Maximum location: X=-6.00, Y=5.00 ; SAR Peak: 25.78 W/kg

SAR 10g (W/Kg)	2.306
SAR 1g (W/Kg)	8.125

Z Axis Scan

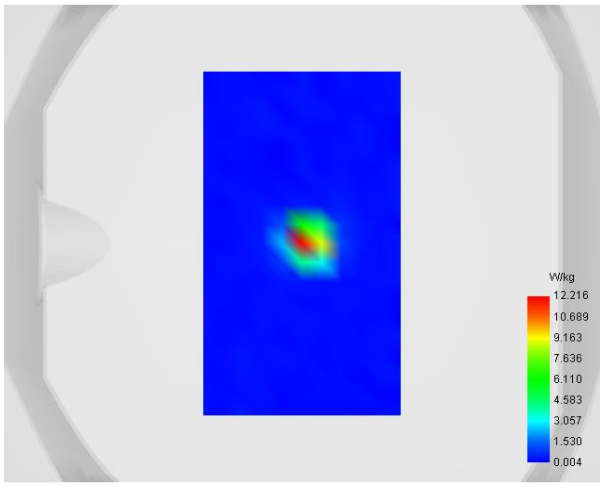
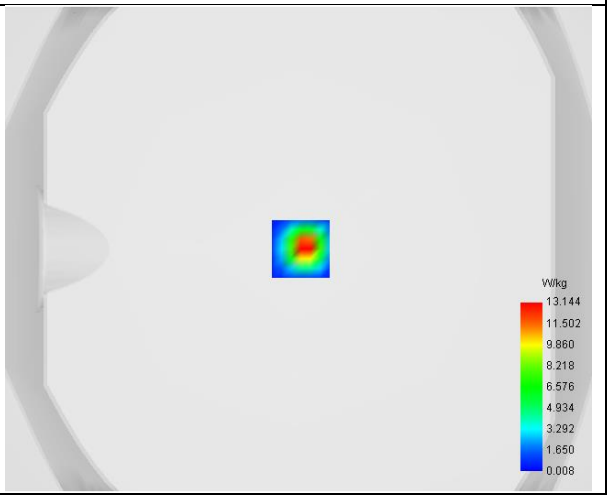

22.00
20.00
15.00
10.00
5.00
0.10
SAR (W/kg)
0.02.55.07.5
12.5
17.5
22.5
27.5
32.5
40.0
Z (mm)
W/kg
14.346
12.556
10.766
8.976
7.186
5.396
3.607
1.817
0.027

System Performance Check Data (5800MHz)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm, dy=8mm
Zoom scan resolution: dx=4mm, dy=4mm, dz=2mm
Date of measurement:2025-03-07

Experimental conditions.

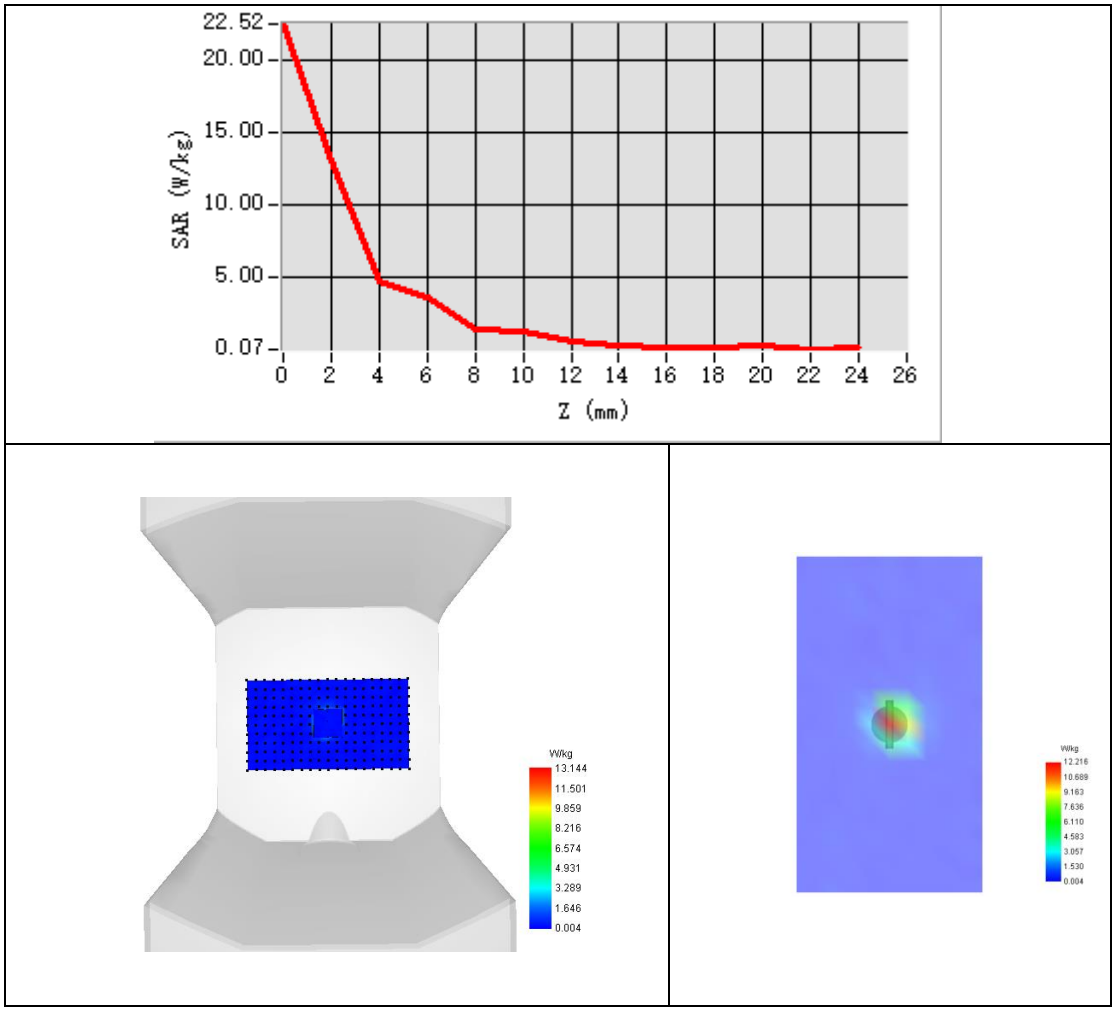
Phantom	Validation plane
Device Position	Dipole
Band	CW5800
Channels	Middle
Signal	CW
Frequency (MHz)	5800.000
Relative permittivity	36.41
Conductivity (S/m)	5.23
Probe	SN 04/22 EPGO364
ConvF	1.70
Crest factor:	1:1

SURFACE	VOLUME SAR
	

Maximum location: X=1.00, Y=0.00 ; SAR Peak: 24.09 W/kg

SAR 10g (W/Kg)	2.379
SAR 1g (W/Kg)	8.162

Z Axis Scan

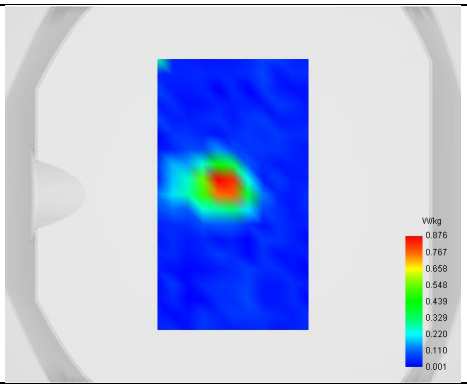
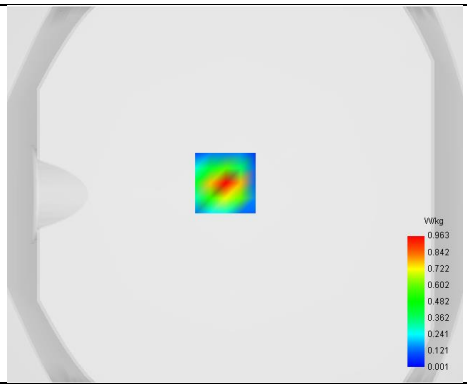
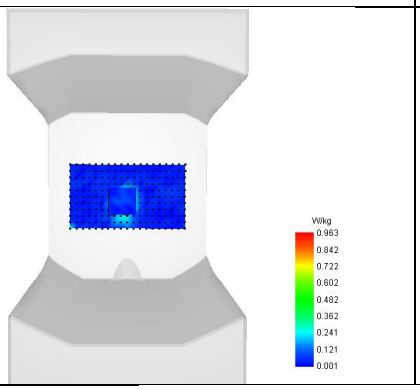
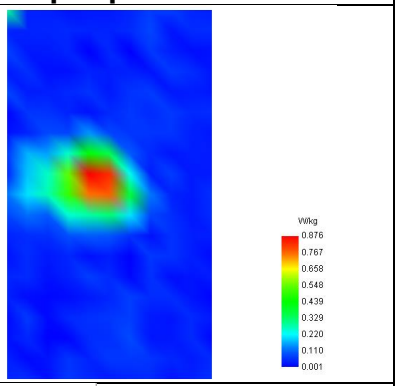

22.52
20.00
15.00
10.00
5.00
0.07
SAR (W/kg)
0 2 4 6 8 10 12 14 16 18 20 22 24 26
Z (mm)
W/kg
13.144
11.501
9.859
8.216
6.574
4.931
3.289
1.646
0.004
W/kg
12.216
10.689
9.163
7.636
6.110
4.583
3.057
1.530
0.004

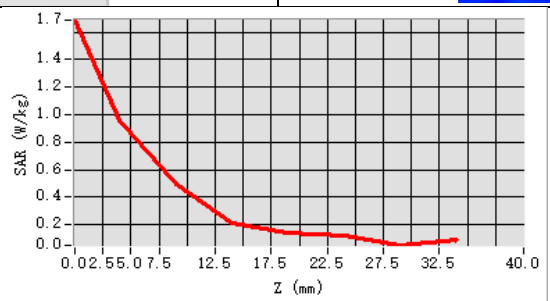
Appendix B. SAR Test Plots

Plot 1:

Test Date	2025-02-27
Area Scan	dx=8mm dy=8mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Horizontal-Down
Band	ISM
Signal	IEEE 802.11b
Frequency	2412
SAR 10g (W/Kg)	0.395
SAR 1g (W/Kg)	0.904
ConvF	2.33
Relative permittivity	39.32
Conductivity (S/m)	1.84

Maximum location: X=-5.00, Y=6.00 ; SAR Peak: 1.74 W/kg

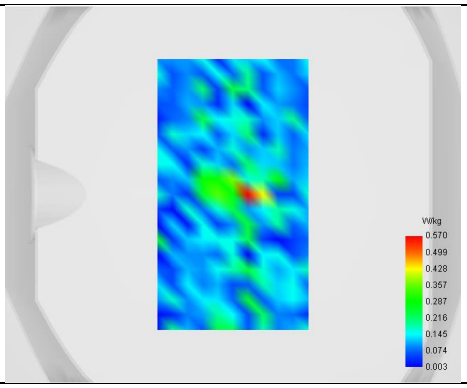
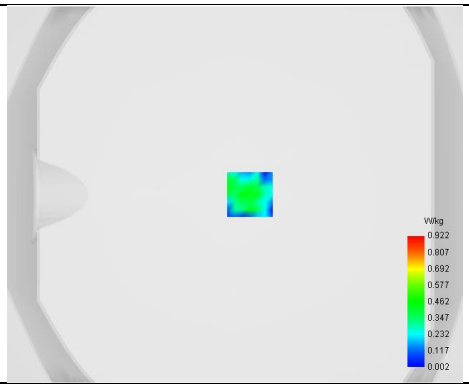
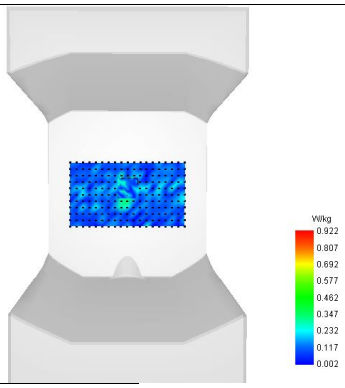
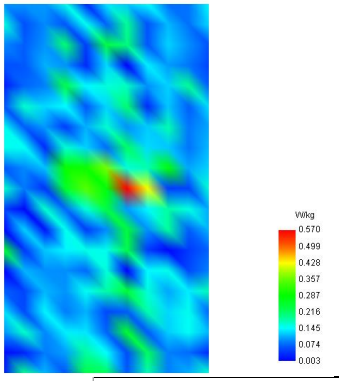
SURFACE SAR	VOLUME SAR
	
3D screen shot	**Hot spot position**
	

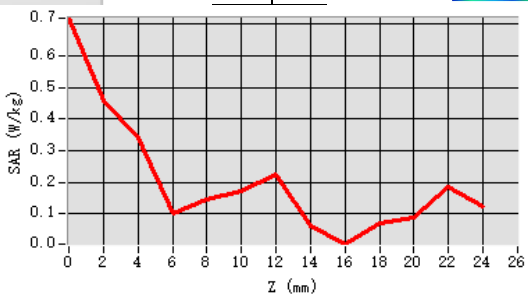


Plot 2:

Test Date	2025-03-07
Area Scan	dx=8mm dy=8mm
Zoom Scan	7x7x12,dx=4mm dy=4mm dz=2mm
Phantom	Validation plane
Device Position	Horizontal-Down
Band	U-NII-1
Signal	IEEE 802.11a
Frequency	5210
SAR 10g (W/Kg)	0.116
SAR 1g (W/Kg)	0.253
ConvF	1.99
Relative permittivity	36.55
Conductivity (S/m)	4.59

Maximum location: X=8.00, Y=0.00 ; SAR Peak: 1.15 W/kg

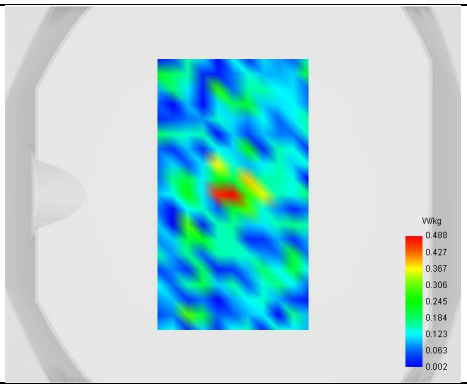
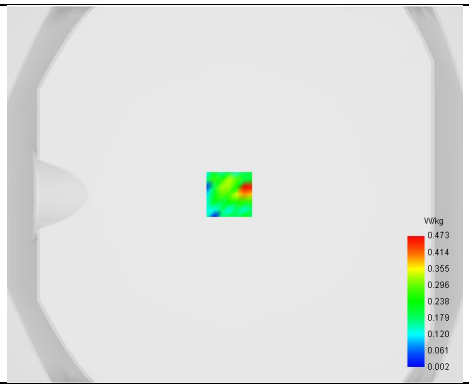
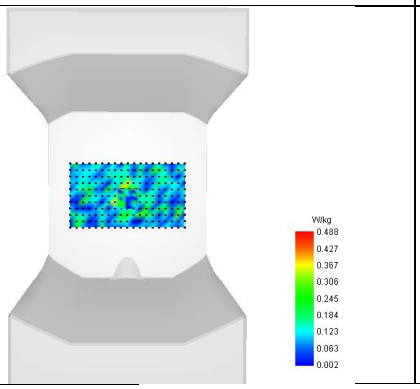
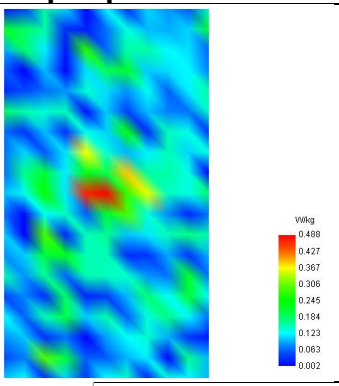
SURFACE SAR	VOLUME SAR
	
3D screen shot	**Hot spot position**
	

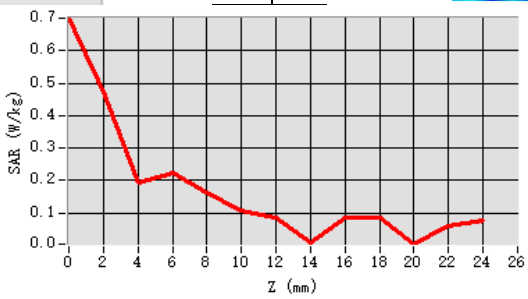


Plot 3:

Test Date	2025-03-07
Area Scan	dx=8mm dy=8mm
Zoom Scan	7x7x12,dx=4mm dy=4mm dz=2mm
Phantom	Validation plane
Device Position	Horizontal-Down
Band	U-NII-2a
Signal	IEEE 802.11a
Frequency	5290
SAR 10g (W/Kg)	0.143
SAR 1g (W/Kg)	0.278
ConvF	1.70
Relative permittivity	36.23
Conductivity (S/m)	4.88

Maximum location: X=-3.00, Y=0.00 ; SAR Peak: 1.19 W/kg

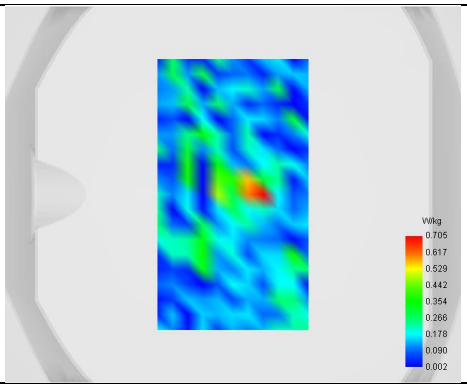
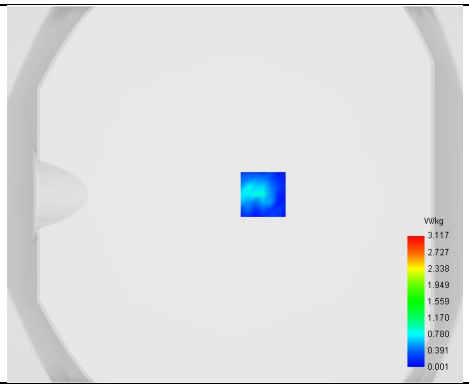
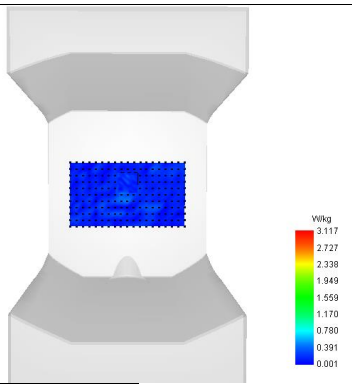
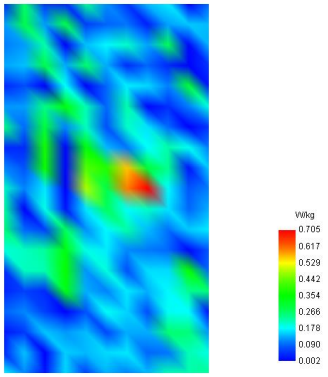
SURFACE SAR	VOLUME SAR
	
3D screen shot	**Hot spot position**
	

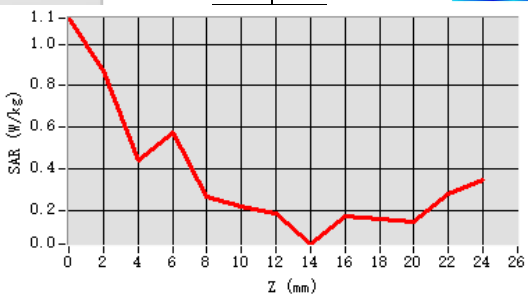


Plot 4:

Test Date	2025-03-06
Area Scan	dx=8mm dy=8mm
Zoom Scan	7x7x12,dx=4mm dy=4mm dz=2mm
Phantom	Validation plane
Device Position	Horizontal-Down
Band	U-NII-2c
Signal	IEEE 802.11a
Frequency	5670
SAR 10g (W/Kg)	0.195
SAR 1g (W/Kg)	0.423
ConvF	1.70
Relative permittivity	36.15
Conductivity (S/m)	5.09

Maximum location: X=15.00, Y=0.00 ; SAR Peak: 3.49 W/kg

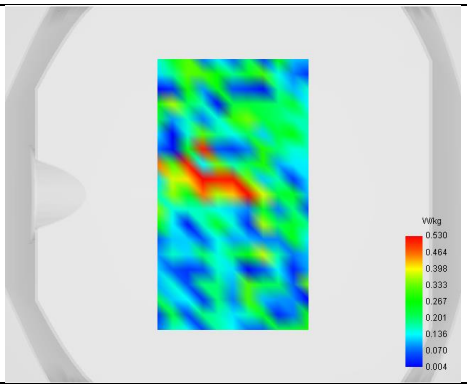
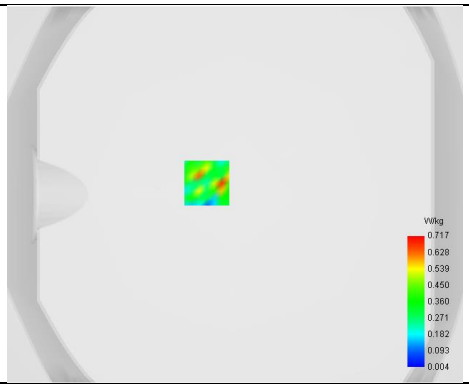
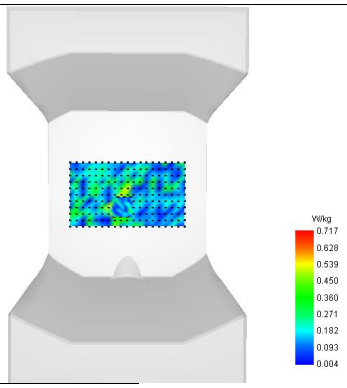
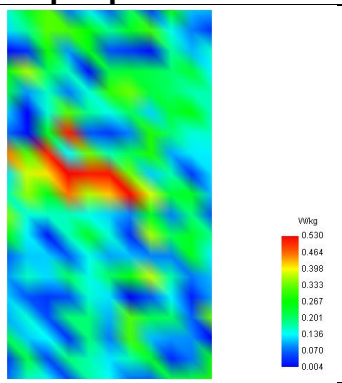
SURFACE SAR	VOLUME SAR
	
3D screen shot	**Hot spot position**
	

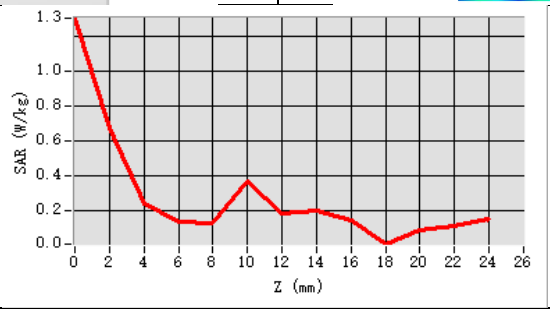


Plot 5:

Test Date	2025-03-07
Area Scan	dx=8mm dy=8mm
Zoom Scan	7x7x12,dx=4mm dy=4mm dz=2mm
Phantom	Validation plane
Device Position	Horizontal-Down
Band	U-NII-3
Signal	IEEE 802.11a
Frequency	5745
SAR 10g (W/Kg)	0.175
SAR 1g (W/Kg)	0.392
ConvF	1.70
Relative permittivity	36.41
Conductivity (S/m)	5.23

Maximum location: X=-15.00, Y=6.00 ; SAR Peak: 1.88 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※※※※※