FCC SAR EVALUATION REPORT

In accordance with the requirements of
FCC 47 CFR Part 2(2.1093) and
IEEE Std 1528-2013

Product Name : Professional Diagnostic Tool

Trademark : LAUNCH

Model Name : Creader Professional 129I V3

Family Model : See Page 7

Report No. : S25021701608001

FCC ID : XUJCRP123XV3

Prepared for

LAUNCH TECH CO., LTD.

Launch Industrial Park, North of Wuhe Road, Bantian Street, Longgang District,
Shenzhen City, Guangdong Province, P.R. China.

Prepared by

Shenzhen NTEK Testing Technology Co., Ltd.
No. 24 Xinfa East Road, Xiangshan Community, Xinqiao Street, Baoan District, Shenzhen
Guangdong, People's Republic of China
Tel. 0755-23200050 Website: http://www.ntek.org.cn

TEST RESULT CERTIFICATION

Applicant's name ..... LAUNCH TECH CO., LTD.

Address ..... Launch Industrial Park, North of Wuhe Road, Bantian Street, Longgang District, Shenzhen City, Guangdong Province, P.R. China.

Manufacturer's Name ..... LAUNCH TECH CO., LTD.

Address ..... Launch Industrial Park, North of Wuhe Road, Bantian Street, Longgang District, Shenzhen City, Guangdong Province, P.R. China.

Product description

Product name..... Professional Diagnostic Tool

Trademark ..... LAUNCH

Model Name ..... Creader Professional 129I V3

Family Model..... See Page 7

Standards..... FCC 47 CFR Part 2(2.1093)
IEEE Std 1528-2013
Published RF exposure KDB procedures

This device described above has been tested by Shenzhen NTEK. In accordance with the measurement methods and procedures specified in IEEE Std 1528-2013 and KDB 865664 D01. Testing has shown that this device is capable of compliance with localized specific absorption rate (SAR) specified in FCC 47 CFR Part 2(2.1093). 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.

This report shall not be reproduced except in full, without the written approval of Shenzhen NTEK, this document may be altered or revised by Shenzhen NTEK, personal only, and shall be noted in the revision of the document.

Test Sample Number S250217016009

Date of Test

Date (s) of performance of tests... Feb. 26, 2025~ Feb. 28, 2025

Date of Issue ..... Mar. 18, 2025

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

Prepared By :	Reviewed By :	Approved By :
Owen Xiao	Aaron Cheng	Alex Li
Owen Xiao	Aaron Cheng	Alex Li
(Project Engineer)	(Supervisor)	(Manager)

※ ※ Revision History ※ ※

REV.	DESCRIPTION	ISSUED DATE	REMARK
Rev.1.0	Initial Test Report Release	Mar. 18, 2025	Owen Xiao

TABLE OF CONTENTS

1. General Information 6
   1.1. RF exposure limits 6
   1.2. Statement of Compliance 7
   1.3. EUT Description 7
   1.4. Test specification(s) 9
   1.5. Ambient Condition 9
   1.6. Facilities And Accreditations 9
      1.6.1. Facilities 9
      1.6.2. Laboratory Accreditations And Listings 9
2. SAR Measurement System 10
   2.1. SATIMO SAR Measurement Set-up Diagram 10
   2.2. Robot 11
   2.3. E-Field Probe 12
      2.3.1. E-Field Probe Calibration 12
   2.4. SAM phantoms 13
      2.4.1. Technical Data 14
   2.5. Device Holder 15
   2.6. Test Equipment List 16
3. SAR Measurement Procedures 18
   3.1. Power Reference 18
   3.2. Area scan & Zoom scan 18
   3.3. Description of interpolation/extrapolation scheme 20
   3.4. Volumetric Scan 20
   3.5. Power Drift 20
4. System Verification Procedure 21
   4.1. Tissue Verification 21
      4.1.1. Tissue Dielectric Parameter Check Results 22
   4.2. System Verification Procedure 23
      4.2.1. System Verification Results 24
5. SAR Measurement variability and uncertainty 25
   5.1. SAR measurement variability 25
   5.2. SAR measurement uncertainty 25
6. RF Exposure Positions 26
   6.1. Tablet PC host platform exposure conditions 26
7. RF Output Power 27
   7.1. WLAN & Bluetooth Output Power 27
      7.1.1. Output Power Results Of WLAN 27
      7.1.2. Output Power Results Of Bluetooth 30
8. Antenna Location 31

9. SAR Results 34
9.1. SAR measurement results 34
9.1.1. SAR measurement Result of WLAN 2.4G 34
9.1.2. SAR measurement Result of WLAN 5.2G 34
9.1.3. SAR measurement Result of WLAN 5.8G 34
9.1.4. SAR measurement Result of Bluetooth EDR 35
9.1.5. SAR measurement Result of Bluetooth LE 36
9.2. Simultaneous Transmission Analysis 37
10. Appendix A. Photo documentation 38
11. Appendix B. System Check Plots 39
12. Appendix C. SAR Measurement Plots 46
13. Appendix D. Calibration Certificate 57

1. General Information

1.1. RF exposure limits

(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.

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).

General Population/Uncontrolled Environments:

Are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure.

NOTE: This product is used for inlaying inside the cabinet and operating by hand

1.2. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for Creader Professional 129I V3 are as follows.

Band	Max Reported SAR Value(W/kg)
	1-g Body (Separation distance of 0mm)
WLAN 2.4G	0.018
WLAN 5.2G	0.058
WLAN 5.8G	0.068
Bluetooth EDR	0.045
Bluetooth LE	0.037
Max Simultaneous Tx	0.113

1.3. EUT Description

Device Information	
Product Name	Professional Diagnostic Tool
Trade Name	LAUNCH
Model Name	Creader Professional 129I V3
Family Model	Creader Professional 123E V3, Creader Professional 129E V3, Creader Professional 123I V3, Creader Professional 123X V3, Creader Professional 129X V3, Creader Professional 129E PLUS V3, Creader Professional 129X PLUS V3, Millennium Master 3.0, Creader Professional 129 EVO, Creader Professional 129 EVO+, Creader Professional 123S(233), Creader Professional 129S(239), Creader Professional 129MT, Creader Professional 129S MT, Millennium MT
Model Difference	All models are the same circuit and RF module, except for the shape and color of the rubber sleeve and whether the product has button is different.
FCC ID	XUJCRP123XV3
Device Phase	Identical Prototype
Exposure Category	General population / Uncontrolled environment
Antenna Type	FPC Antenna
Battery Information	Battery1: DC 3.7V, 6000mAh, 22.2Wh Battery2: DC 3.6V, 6000mAh, 21.6Wh
Hardware version	V4

Software version	CCBF5B_Y_C		
Device Operating Configurations			
Supporting Mode(s)	WLAN 2.4G/5G, Bluetooth		
Test Modulation	WLAN(DSSS/OFDM), Bluetooth(GFSK, π/4-DQPSK, 8DPSK)		
Operating Frequency Range(s)	Band	Tx (MHz)	Rx (MHz)
	WLAN 2.4G	2412-2462	
	WLAN 5.2G	5180-5240	
	WLAN 5.8G	5745-5825	
	Bluetooth	2402-2480	

1.4. Test specification(s)

FCC 47 CFR Part 2(2.1093)
IEEE Std 1528-2013
KDB 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04
KDB 865664 D02 RF Exposure Reporting v01r02
KDB 447498 D01 General RF Exposure Guidance v06
KDB 248227 D01 802.11 Wi-Fi SAR v02r02
KDB 616217 D04 SAR for laptop and tablets v01r02

1.5. Ambient Condition

Ambient temperature	20°C – 24°C
Relative Humidity	30% – 70%

1.6. Facilities And Accreditations

1.6.1. Facilities

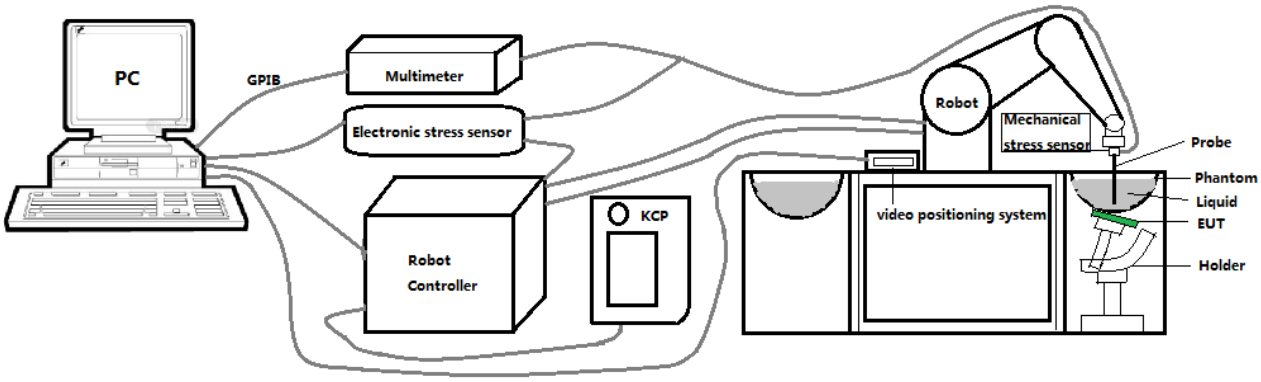
All measurement facilities used to collect the measurement data are located at
Building 1, No. 24 Xinfa East Road, Xiangshan Community, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, China
The sites are constructed in conformance with the requirements of IEC/IEEE 1528:2013

1.6.2. Laboratory Accreditations And Listings

Site Description
CNAS Lab. : The Certificate Registration Number is L5516
A2LA Lab. : The Certificate Registration Number is 4298.01
FCC Accredited : Test Firm Registration Number: 463705
Designation Number: CN1184
ISED Registration : Company Number: 9270A
CAB identifier: CN0074

2. SAR Measurement System

2.1. SATIMO SAR Measurement Set-up Diagram



These measurements were performed with the automated near-field scanning system OPENSAR from SATIMO. The system is based on a high precision robot (working range: 901 mm), which positions the probes with a positional repeatability of better than ±0.03 mm. The SAR measurements were conducted with dosimetric probe (manufactured by SATIMO), designed in the classical triangular configuration and optimized for dosimetric evaluation.

The first step of the field measurement is the evaluation of the voltages induced on the probe by the device under test. Probe diode detectors are nonlinear. Below the diode compression point, the output voltage is proportional to the square of the applied E-field; above the diode compression point, it is linear to the applied E-field. The compression point depends on the diode, and a calibration procedure is necessary for each sensor of the probe.

The Keithley multimeter reads the voltage of each sensor and send these three values to the PC. The corresponding E field value is calculated using the probe calibration factors, which are stored in the working directory. This evaluation includes linearization of the diode characteristics. The field calculation is done separately for each sensor. Each component of the E field is displayed on the "Dipole Area Scan Interface" and the total E field is displayed on the "3D Interface"

2.2. Robot

The SATIMO SAR system uses the high precision robots from KUKA. For the 6-axis controller system, the robot controller version (KUKA) from KUKA is used. The KUKA robot series have many features that are important for our application:

- High precision (repeatability ±0.03 mm)
- High reliability (industrial design)
- Jerk-free straight movements
- Low ELF interference (the closed metallic construction shields against motor control fields)

2.3. E-Field Probe

This E-field detection probe is composed of three orthogonal dipoles linked to special Schottky diodes with low detection thresholds. The probe allows the measurement of electric fields in liquids such as the one defined in the IEEE and CENELEC standards.

For the measurements the Specific Dosimetric E-Field Probe 3423-EPGO-426 with following specifications is used

- Dynamic range: 0.01-100 W/kg
- Tip Diameter : 2.5 mm
- Distance between probe tip and sensor center: 1 mm
- Distance between sensor center and the inner phantom surface: 2 mm (repeatability better than ±1 mm).
- Probe linearity: ±0.06 dB
- Axial isotropy: ±0.01 dB
- Hemispherical Isotropy: ±0.01 dB
- Calibration range: 650MHz to 5900MHz for head & body simulating liquid.
- Lower detection limit: 8mW/kg

Angle between probe axis (evaluation axis) and surface normal line: less than 30°.

2.3.1. E-Field Probe Calibration

Each probe needs to be calibrated according to a dosimetric assessment procedure with accuracy better than ±10%. The spherical isotropy shall be evaluated and within ±0.25dB. The sensitivity parameters (Norm X, Norm Y, and Norm Z), the diode compression parameter (DCP) and the conversion factor (Conv F) of the probe are tested. The calibration data can be referred to appendix D of this report.

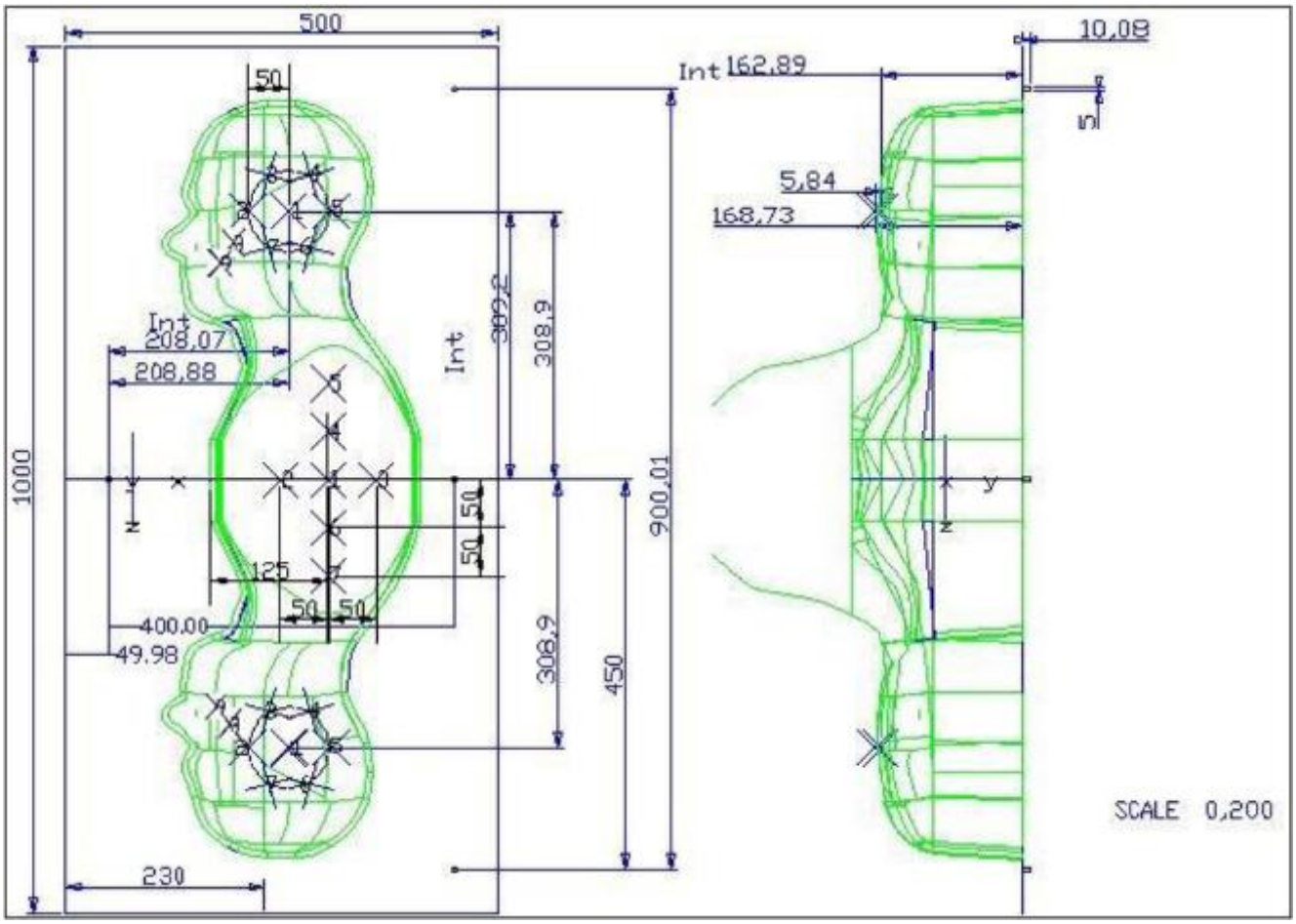
2.4. SAM phantoms

Photo of SAM phantom SN 16/15 SAM119

The SAM phantom is used to measure the SAR relative to people exposed to electro-magnetic field radiated by mobile phones.

2.4.1. Technical Data

Serial Number	Shell thickness	Filling volume	Dimensions	Positionner Material	Permittivity	Loss Tangent
SN 16/15 SAM119	2 mm ±0.2 mm	27 liters	Length:1000 mm Width:500 mm Height:200 mm	Gelcoat with fiberglass	3.4	0.02

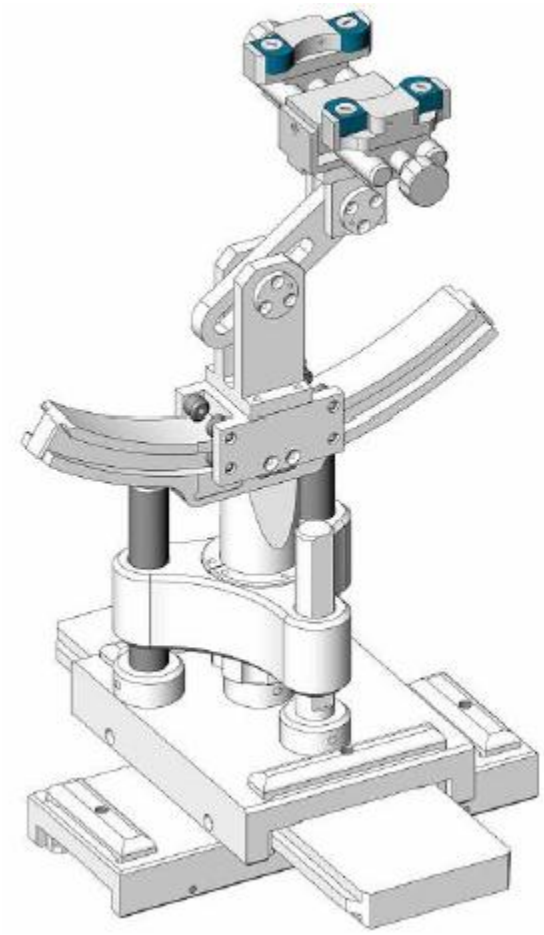


Serial Number	Left Head(mm)		Right Head(mm)		Flat Part(mm)	
SN 16/15 SAM119	2	2.02	2	2.08	1	2.09
	3	2.05	3	2.06	2	2.06
	4	2.07	4	2.07	3	2.08
	5	2.08	5	2.08	4	2.10
	6	2.05	6	2.07	5	2.10
	7	2.05	7	2.05	6	2.07
	8	2.07	8	2.06	7	2.07
	9	2.08	9	2.06	-	-

The test, based on ultrasonic system, allows measuring the thickness with an accuracy of 10 µm.

2.5. Device Holder

The positioning system allows obtaining cheek and tilting position with a very good accuracy. In compliance with CENELEC, the tilt angle uncertainty is lower than 1 degree.



Serial Number	Holder Material	Permittivity	Loss Tangent
SN 16/15 MSH100	Delrin	3.7	0.005

2.6. Test Equipment List

This table gives a complete overview of the SAR measurement equipment.
Devices used during the test described are marked ☒

	Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
					Last Cal.	Due Date
☒	MVG	E FIELD PROBE	SSE2	4024-EPGO-442	Oct. 04, 2024	Oct. 03, 2025
☐	MVG	750 MHz Dipole	SID750	SN 03/15 DIP 0G750-355	Feb. 21, 2024	Feb. 20, 2027
☐	MVG	835 MHz Dipole	SID835	SN 03/15 DIP 0G835-347	Feb. 21, 2024	Feb. 20, 2027
☐	MVG	900 MHz Dipole	SID900	SN 03/15 DIP 0G900-348	Feb. 21, 2024	Feb. 20, 2027
☐	MVG	1800 MHz Dipole	SID1800	SN 03/15 DIP 1G800-349	Feb. 21, 2024	Feb. 20, 2027
☐	MVG	1900 MHz Dipole	SID1900	SN 03/15 DIP 1G900-350	Feb. 21, 2024	Feb. 20, 2027
☐	MVG	2000 MHz Dipole	SID2000	SN 03/15 DIP 2G000-351	Feb. 21, 2024	Feb. 20, 2027
☒	MVG	2450 MHz Dipole	SID2450	SN 03/15 DIP 2G450-352	Feb. 21, 2024	Feb. 20, 2027
☐	MVG	2600 MHz Dipole	SID2600	SN 03/15 DIP 2G600-356	Feb. 21, 2024	Feb. 20, 2027
☒	MVG	5000 MHz Dipole	SWG5500	SN 13/14 WGA 33	Feb. 21, 2024	Feb. 20, 2027
☒	MVG	Liquid measurement Kit	SCLMP	SN 21/15 OCPG 72	NCR	NCR
☒	MVG	Power Amplifier	N/A	AMPLISAR_28/14_003	NCR	NCR
☒	KEITHLEY	Millivoltmeter	2000	4072790	Nov. 29, 2024	Nov. 28, 2025
☐	R&S	Universal radio communication tester	CMU200	117858	Apr. 26, 2024	Apr. 25, 2025
☐	R&S	Wideband radio communication tester	CMW500	103917	Apr. 26, 2024	Apr. 25, 2025
☒	HP	Network Analyzer	E5071C	LPS-461	Oct. 15,	Oct. 14,

					2024	2025
☒	Agilent	Calibration Kit	85033E	N/A	May. 31, 2024	May. 30, 2025
☒	Agilent	MXG Vector Signal Generator	N5182A	MY47070317	Apr. 25, 2024	Apr. 24, 2025
☒	Agilent	Power meter	E4419B	MY45102538	Apr. 25, 2024	Apr. 24, 2025
☒	Agilent	Power sensor	E9301A	LES-413-C	May. 30, 2024	May. 29, 2025
☒	Agilent	Power sensor	E9301A	US39212148	Apr. 25, 2024	Apr. 24, 2025
☒	MCLI/USA	Directional Coupler	CB11-20	0D2L51502	Apr. 26, 2024	Apr. 25, 2027
☒	N/A	Thermometer	N/A	LES-085	Mar. 27, 2023	Mar. 26, 2026
☒	MVG	SAM Phantom	SSM2	SN 16/15 SAM119	NCR	NCR
☒	MVG	Device Holder	SMPPD	SN 16/15 MSH100	NCR	NCR
☒	Mini-Circuits	Low Pass	LFCW-6000+	N/A	NCR	NCR
☒	Mini-Circuits	Attenuator	BW-S3W2+	N/A	NCR	NCR
☒	Mini-Circuits	Attenuator	BW-S3W2+	N/A	NCR	NCR
☒	Weinschel	Attenuator	33-10-33	N/A	NCR	NCR

Measurement Software

Manufacturer	Software Name	Software Version
SATIMO	OpenSAR	V5.3.15.11

3. SAR Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

(a) For WWAN power measurement, use base station simulator to configure EUT WWAN transmission in conducted connection with RF cable, at maximum power in each supported wireless interface and frequency band.

(b) Read the WWAN RF power level from the base station simulator.

(c) For WLAN/Bluetooth power measurement, use engineering software to configure EUT WLAN/Bluetooth continuously transmission, at maximum RF power in each supported wireless interface and frequency band.

(d) Connect EUT RF port through RF cable to the power meter, and measure WLAN/Bluetooth output power.

<SAR measurement>

(a) Use base station simulator to configure EUT WWAN transmission in radiated connection, and engineering software to configure EUT WLAN/Bluetooth continuously transmission, at maximum RF power, in the highest power channel.

(b) Place the EUT in the positions as Appendix A demonstrates.

(c) Set scan area, grid size and other setting on the OPENSAR software.

(d) Measure SAR results for the highest power channel on each testing position.

(e) Find out the largest SAR result on these testing positions of each band.

(f) Measure SAR results for other channels in worst SAR testing position if the reported SAR of highest power channel is larger than 0.8 W/kg.

According to the test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:

(a) Power reference measurement

(b) Area scan

(c) Zoom scan

(d) Power drift measurement

3.1. Power Reference

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

3.2. Area scan & Zoom scan

The area scan is a 2D scan to find the hot spot location on the DUT. The zoom scan is a 3D scan

above the hot spot to calculate the 1g and 10g SAR value.

Measurement of the SAR distribution with a grid of 8 to 16 mm * 8 to 16 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.

From the scanned SAR distribution, identify the position of the maximum SAR value, in addition identify the positions of any local maxima with SAR values within 2 dB of the maximum value that will not be within the zoom scan of other peaks; additional peaks shall be measured only when the primary peak is within 2 dB of the SAR compliance limit (e.g., 1 W/kg for 1,6 W/kg 1 g limit, or 1,26 W/kg for 2 W/kg, 10 g limit).

Area scan & Zoom scan scan parameters extracted from FCC KDB 865664 D01 SAR measurement 100 MHz to 6 GHz.

			≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface			5 ± 1 mm	½·δ·ln(2) ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location			30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}			≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
			When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	
Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm

Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.

* When zoom scan is required and the *reported* SAR from the *area scan based 1-g SAR estimation* procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.

3.3. Description of interpolation/extrapolation scheme

The local SAR inside the phantom is measured using small dipole sensing elements inside a probe body. The probe tip must not be in contact with the phantom surface in order to minimise measurements errors, but the highest local SAR will occur at the surface of the phantom.

An extrapolation is using to determinate this highest local SAR values. The extrapolation is based on a fourth-order least-square polynomial fit of measured data. The local SAR value is then extrapolated from the liquid surface with a 1 mm step.

The measurements have to be performed over a limited time (due to the duration of the battery) so the step of measurement is high. It could vary between 5 and 8 mm. To obtain an accurate assessment of the maximum SAR averaged over 10 grams and 1 gram requires a very fine resolution in the three dimensional scanned data array.

3.4. Volumetric Scan

The volumetric scan consists to a full 3D scan over a specific area. This 3D scan is useful form multi Tx SAR measurement. Indeed, it is possible with OpenSAR to add, point by point, several volumetric scan to calculate the SAR value of the combined measurement as it is define in the standard IEEE1528 and IEC62209.

3.5. Power Drift

All SAR testing is under the EUT install full charged battery and transmit maximum output power. In OpenSAR measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of EUT during SAR test. Both these procedures measure the field at a specified reference position before and after the SAR testing. The software will calculate the field difference in V/m. If the power drifts more than ±5%, the SAR will be retested.

4. System Verification Procedure

4.1. Tissue Verification

The following tissue formulations are provided for reference only as some of the parameters have not been thoroughly verified. The composition of ingredients may be modified accordingly to achieve the desired target tissue parameters required for routine SAR evaluation.

Ingredients (% of weight)	Head Tissue									
Frequency Band (MHz)	750	835	900	1800	1900	2000	2450	2600	5200	5800
Water	34.40	34.40	34.40	55.36	55.36	57.87	57.87	57.87	65.53	65.53
NaCl	0.79	0.79	0.79	0.35	0.35	0.16	0.16	0.16	0.00	0.00
1,2-Propanediol	64.81	64.81	64.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triton X-100	0.00	0.00	0.00	30.45	30.45	19.97	19.97	19.97	24.24	24.24
DGBE	0.00	0.00	0.00	13.84	13.84	22.00	22.00	22.00	10.23	10.23
Ingredients (% of weight)	Body Tissue									
Frequency Band (MHz)	750	835	900	1800	1900	2000	2450	2600	5200	5800
Water	50.30	50.30	50.30	69.91	69.91	71.88	71.88	71.88	79.54	79.54
NaCl	0.60	0.60	0.60	0.13	0.13	0.16	0.16	0.16	0.00	0.00
1,2-Propanediol	49.10	49.10	49.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triton X-100	0.00	0.00	0.00	9.99	9.99	19.97	19.97	19.97	11.24	11.24
DGBE	0.00	0.00	0.00	19.97	19.97	7.99	7.99	7.99	9.22	9.22

For SAR measurement of the field distribution inside the phantom, the phantom must be filled with homogeneous tissue simulating liquid to a depth of at least 15 cm. For head SAR testing, the liquid depth from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm.

Photo of Liquid depth for Head Position	Photo of Liquid depth for Body Position

4.1.1. Tissue Dielectric Parameter Check Results

The simulating liquids should be checked at the beginning of a series of SAR measurements to determine of the dielectric parameter are within the tolerances of the specified target values. The measured conductivity and relative permittivity should be within ±5% of the target values.

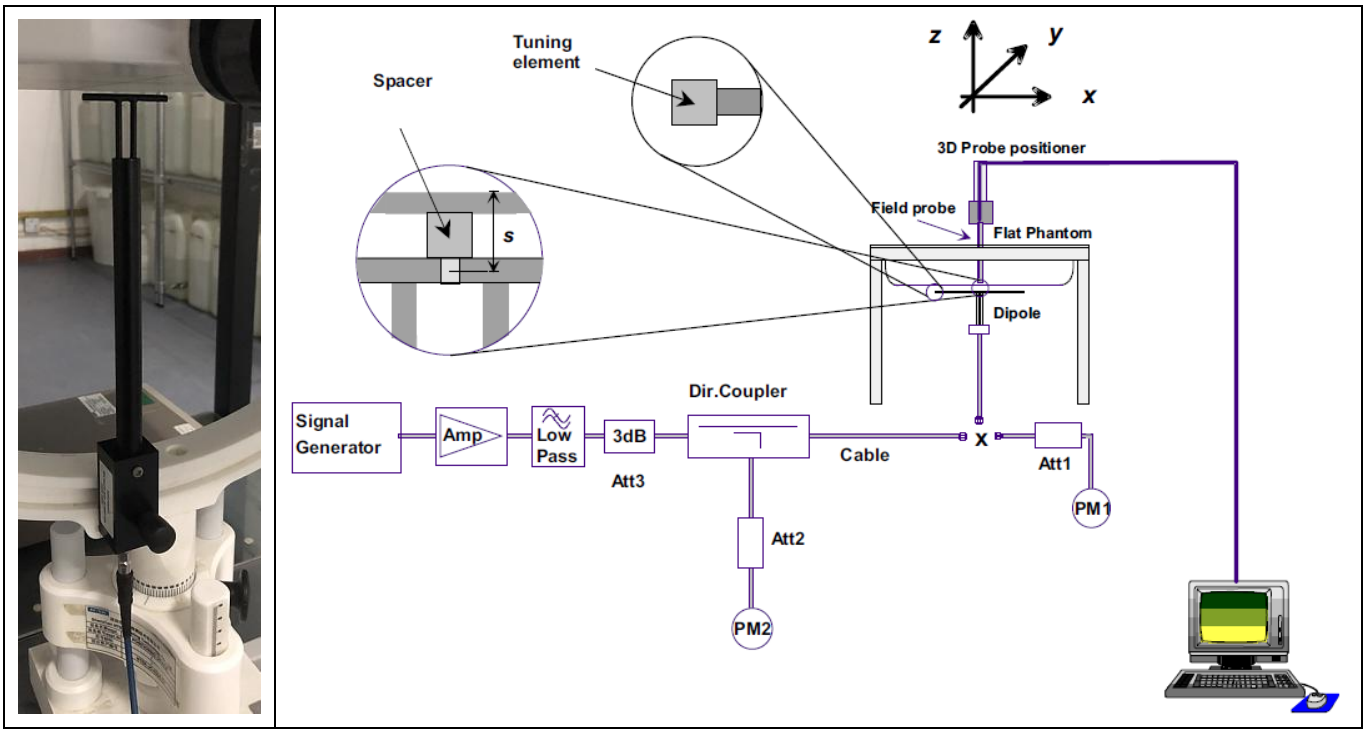
Tissue Type	Measured Frequency (MHz)	Target Tissue		Measured Tissue		Delta(%)		Liquid Temp.	Test Date
		εr	σ (S/m)	εr	σ (S/m)	εr	σ (S/m)		
Head 2450	2450	39.20	1.80	38.20	1.77	-2.55	-1.67	21.3 °C	Feb. 26, 2025
Head 5200	5200	36.00	4.66	37.28	4.59	3.56	-1.50	21.4 °C	Feb. 27, 2025
Head 5800	5800	35.30	5.27	36.22	5.14	2.61	-2.47	21.9 °C	Feb. 28, 2025

NOTE: The dielectric parameters of the tissue-equivalent liquid should be measured under similar ambient conditions and within 2 °C of the conditions expected during the SAR evaluation to satisfy protocol requirements.

4.2. System Verification Procedure

The system verification is performed for verifying the accuracy of the complete measurement system and performance of the software. The dipole is connected to the signal source consisting of signal generator and amplifier via a directional coupler, N-connector cable and adaption to SMA. To adjust this power a power meter is used. The power sensor is connected to the cable before the system verification to measure the power at this point and do adjustments at the signal generator. At the outputs of the directional coupler both return loss as well as forward power are controlled during the system verification to make sure that emitted power at the dipole is kept constant. This can also be checked by the power drift measurement after the test (result on plot).

The system verification is shown as below picture:



4.2.1. System Verification Results

Comparing to the original SAR value provided by SATIMO, the verification data should be within its specification of ±10%. Below table shows the target SAR and measured SAR after normalized to 1W input power. The table below indicates the system performance verification can meet the variation criterion and the plots can be referred to Appendix B of this report.

System Verification	Target SAR (1W)		Measured SAR			Measured SAR (Normalized to 1W)		Delta (%)		Liquid Temp.	Test Date
	1-g (W/Kg)	10-g (W/Kg)	Input Power (mW)	1-g (W/Kg)	10-g (W/Kg)	1-g (W/Kg)	10-g (W/Kg)	1-g (%)	10-g (%)		
2450MHz	50.05	23.80	100.00	5.167	2.214	51.67	22.14	3.24	-6.97	21.3 °C	Feb. 26, 2025
5200MHz	162.59	56.21	10.00	1.673	0.617	167.30	61.70	2.90	9.77	21.4 °C	Feb. 27, 2025
5800MHz	182.20	61.32	10.00	1.702	0.638	170.20	63.80	-6.59	4.04	21.9 °C	Feb. 28, 2025

5. SAR Measurement variability and uncertainty

5.1. SAR measurement variability

Per KDB865664 D01 SAR measurement 100 MHz to 6 GHz, SAR measurement variability must be assessed for each frequency band, which is determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. The additional measurements are repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device should be returned to ambient conditions (normal room temperature) with the battery fully charged before it is re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

1) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg; steps 2) through 4) do not apply.
2) When the original highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.
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 ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit).
4) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.

5.2. SAR measurement uncertainty

Per KDB865664 D01 SAR Measurement 100 MHz to 6 GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg, the extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval. The equivalent ratio (1.5/1.6) is applied to extremity and occupational exposure conditions.

6. RF Exposure Positions

6.1. Tablet PC host platform exposure conditions

Refer to KDB616217 D04, when the modular approach is used, transmitters and modules must be initially tested for standalone operations in generic host conditions according to the following minimum test separation distance and antenna installation requirements for incorporation in the tablet platform. The separation distance required for incorporation in qualified hosts is described in KDB 447498; item 5) of section 4.1 and item 1) of section 5.2.2 etc.

- ≤ 5 mm between the antenna and user for both back surface and edge exposure conditions
- the antennas used by the host must have been tested for equipment approval or qualify for SAR test exclusion
- the antenna polarization, physical orientation, rotation and installation configurations used by the host must have been tested for compliance or qualify for test exclusion
- when the *SAR Test Exclusion Threshold* in KDB 447498 applies, a *test separation distance* of 5 mm is required to determine test exclusion for the tablet platform

The antennas embedded in tablets are typically ≤ 5mm from the outer housing. The required antenna to user test separation distance is a “not to exceed test” distance required to apply the modular approach. Instead of the typical zero gap tablet edge test requirement between the edge of a tablet and the user, when an antenna has been tested at ≤ 5 mm according to the modular approach it can be incorporated into tablets with at least twice the tested distance from the outer housing of the tablet edge; otherwise, the tablet edge zero gap test requirement applies. When the dedicated host approach is applied, the back surface and edges of the tablet should be tested for SAR compliance with the tablet touching the phantom.

7. RF Output Power

7.1. WLAN & Bluetooth Output Power

7.1.1. Output Power Results Of WLAN

Battery1

Mode	Channel	Frequency (MHz)	Tune-up	Output Power (dBm)
802.11b	1	2412	16.00	15.88
	6	2437	16.00	15.54
	11	2462	16.00	15.20
802.11g	1	2412	14.00	13.87
	6	2437	14.00	13.58
	11	2462	14.00	13.25
802.11n HT20	1	2412	13.00	12.85
	6	2437	13.00	12.57
	11	2462	13.00	12.34
802.11n HT40	3	2422	13.00	12.89
	6	2437	13.00	12.63
	9	2452	13.00	12.65

NOTE: Power measurement results of WLAN 2.4G.

Mode	Channel	Frequency (MHz)	Tune-up (dBm)	Output Power (dBm)
802.11a	36	5180	12.00	10.66
	40	5200	12.00	10.70
	48	5240	12.00	11.59
802.11n HT20	36	5180	11.50	10.18
	40	5200	11.50	10.51
	48	5240	11.50	11.26
802.11n HT40	38	5190	12.00	10.65
	46	5230	12.00	11.59
802.11ac VHT20	36	5180	11.50	9.99
	40	5200	11.50	10.35
	48	5240	11.50	11.37
802.11ac VHT40	38	5190	12.00	10.62
	46	5230	12.00	11.70
802.11ac VHT80	42	5210	11.50	11.14

NOTE: Power measurement results of WLAN 5.2G.

Mode	Channel	Frequency (MHz)	Tune-up (dBm)	Output Power (dBm)
802.11a	149	5745	11.50	11.38
	157	5785	11.50	11.09
	165	5825	11.50	10.71
802.11n HT20	149	5745	11.50	10.77
	157	5785	11.50	11.12
	165	5825	11.50	10.62
802.11n HT40	151	5755	11.50	10.95
	159	5795	11.50	11.17
802.11ac VHT20	149	5745	11.50	11.04
	157	5785	11.50	11.02
	165	5825	11.50	10.73
802.11ac VHT40	151	5755	11.50	10.92
	159	5795	11.50	11.05
802.11ac VHT80	155	5775	11.50	11.12

NOTE: Power measurement results of WLAN 5.8G.

Battery2

Mode	Channel	Frequency (MHz)	Tune-up	Output Power (dBm)
802.11b	1	2412	16.00	15.78
	6	2437	16.00	15.47
	11	2462	16.00	15.36
802.11g	1	2412	14.00	13.84
	6	2437	14.00	13.63
	11	2462	14.00	13.45
802.11n HT20	1	2412	13.00	12.88
	6	2437	13.00	12.66
	11	2462	13.00	12.46
802.11n HT40	3	2422	13.00	12.98
	6	2437	13.00	12.85
	9	2452	13.00	12.72

NOTE: Power measurement results of WLAN 2.4G.

Mode	Channel	Frequency (MHz)	Tune-up (dBm)	Output Power (dBm)
802.11a	36	5180	12.00	10.67
	40	5200	12.00	11.04

	48	5240	12.00	11.90
802.11n HT20	36	5180	12.00	10.40
	40	5200	12.00	10.88
	48	5240	12.00	11.79
802.11n HT40	38	5190	12.00	10.87
	46	5230	12.00	11.80
802.11ac VHT20	36	5180	11.00	10.34
	40	5200	11.00	10.82
	48	5240	11.00	10.97
802.11ac VHT40	38	5190	11.00	10.77
	46	5230	11.00	10.91
802.11ac VHT80	42	5210	11.00	10.85

NOTE: Power measurement results of WLAN 5.2G.

Mode	Channel	Frequency (MHz)	Tune-up (dBm)	Output Power (dBm)
802.11a	149	5745	12.00	10.93
	157	5785	12.00	11.57
	165	5825	12.00	10.8
802.11n HT20	149	5745	12.00	11.00
	157	5785	12.00	11.68
	165	5825	12.00	10.73
802.11n HT40	151	5755	12.00	10.87
	159	5795	12.00	11.51
802.11ac VHT20	149	5745	11.00	10.68
	157	5785	11.50	11.35
	165	5825	11.50	10.78
802.11ac VHT40	151	5755	11.50	11.32
	159	5795	11.50	10.53
802.11ac VHT80	155	5775	11.50	11.25

NOTE: Power measurement results of WLAN 5.8G.

7.1.2. Output Power Results Of Bluetooth

Battery1

	Channel	Tune-up (dBm)	Output Power (dBm)
BLE	0CH	5.00	4.06
	19CH	5.00	4.47
	39CH	5.00	4.29

	Output Power (dBm)				
	Data Rates	Tune-up (dBm)	Channe		
			0CH	19CH	39CH
BR+ED	1M	4.00	3.32	3.80	3.69
	2M	4.00	3.34	3.87	3.72
	3M	5.00	3.90	4.39	4.53

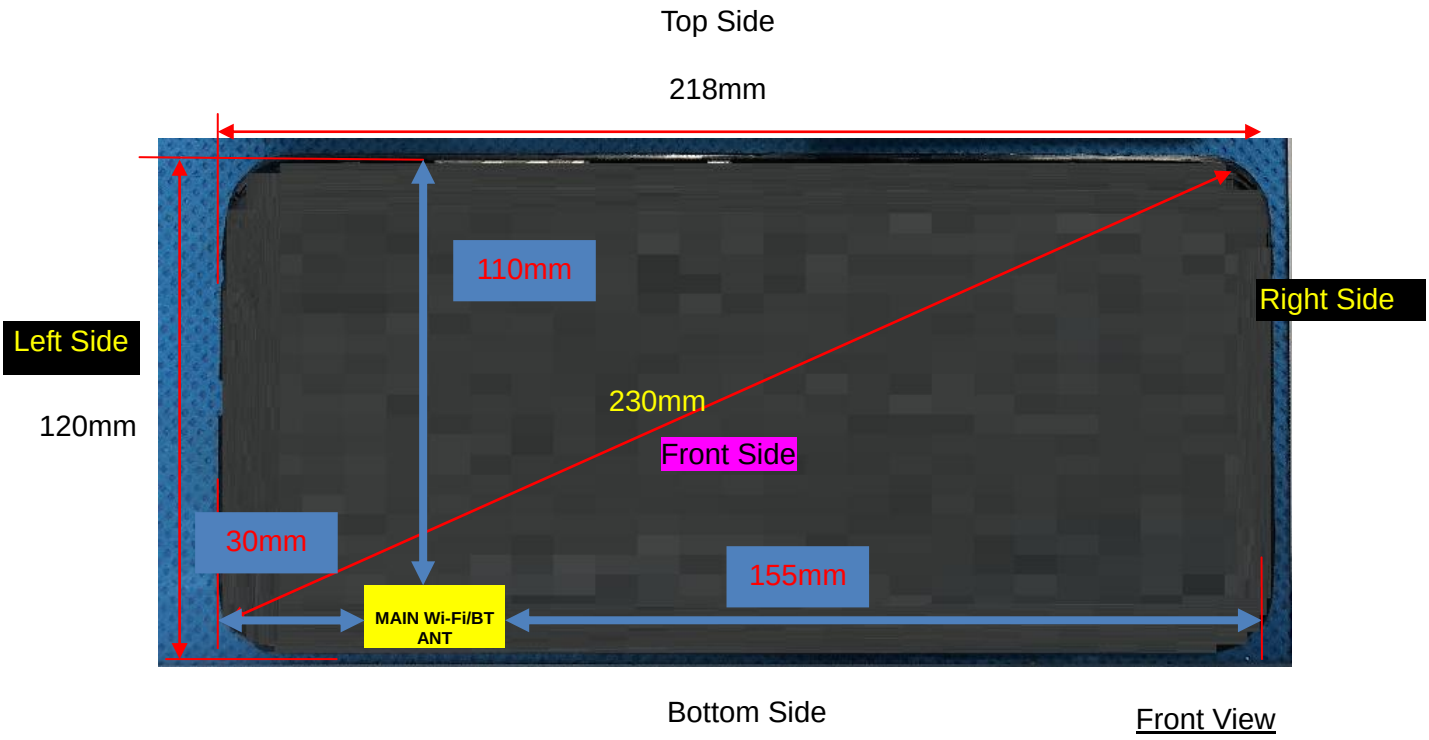
NOTE: Power measurement results of Bluetooth.

Battery2

	Channel	Tune-up (dBm)	Output Power (dBm)
BLE	0CH	4.00	3.71
	19CH	5.00	4.22
	39CH	5.00	4.03

	Output Power (dBm)				
	Data Rates	Tune-up (dBm)	Channe		
			0CH	19CH	39CH
BR+ED	1M	4.00	3.46	3.96	3.78
	2M	4.00	3.28	3.82	3.67
	3M	5.00	3.70	4.20	3.19

8. Antenna Location



Note: Since the confidentiality request of EUT，the antenna location example diagram see as above.

Distance of the Antenna to the EUT surface/edge						
Antennas	Front Side	Back Side	Left Side	Right Side	Top Side	Bottom Side
2.4G&5G WLAN	5	5	30	155	110	5

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

Positions for SAR tests		
Test separation distances ≤ 50 mm		
Exposure Positions	Tune-up Maximum power of WLAN 2.4G	
	16.00 dBm	39.81 mW
Front Side	Antenna to user(mm)	5
	SAR exclusion threshold(mW)	10
	SAR testing required?	YES
Back Side	Antenna to user(mm)	5
	SAR exclusion threshold(mW)	10
	SAR testing required?	YES
Left Side	Antenna to user(mm)	30
	SAR exclusion threshold(mW)	57
	SAR testing required?	NO
Bottom Side	Antenna to user(mm)	5
	SAR exclusion threshold(mW)	10

	SAR testing required?	YES
Exposure Positions	Tune-up Maximum power of WLAN 5.2G	
	12.00 dBm	15.85 mW
Front Side	Antenna to user(mm)	5
	SAR exclusion threshold(mW)	7
	SAR testing required?	YES
Back Side	Antenna to user(mm)	5
	SAR exclusion threshold(mW)	7
	SAR testing required?	YES
Left Side	Antenna to user(mm)	30
	SAR exclusion threshold(mW)	39
	SAR testing required?	NO
Bottom Side	Antenna to user(mm)	5
	SAR exclusion threshold(mW)	7
	SAR testing required?	YES
Exposure Positions	Tune-up Maximum power of WLAN 5.8G	
	11.50 dBm	14.13 mW
Front Side	Antenna to user(mm)	5
	SAR exclusion threshold(mW)	6
	SAR testing required?	YES
Back Side	Antenna to user(mm)	5
	SAR exclusion threshold(mW)	6
	SAR testing required?	YES
Left Side	Antenna to user(mm)	30
	SAR exclusion threshold(mW)	37
	SAR testing required?	YES
Bottom Side	Antenna to user(mm)	NO
	SAR exclusion threshold(mW)	6
	SAR testing required?	YES

Positions for SAR tests		
Test separation distances ＞ 50 mm		
Exposure Positions	Tune-up Maximum power of WLAN 2.4G	
	16.00 dBm	39.81 mW
Right Side	Antenna to user(mm)	155
	SAR exclusion threshold(mW)	1146
	SAR testing required?	NO
Top Side	Antenna to user(mm)	110
	SAR exclusion threshold(mW)	696
	SAR testing required?	NO
Exposure Positions	Tune-up Maximum power of WLAN 5.2G	

	12.00 dBm	15.85 mW
Right Side	Antenna to user(mm)	155
	SAR exclusion threshold(mW)	1116
	SAR testing required?	NO
Top Side	Antenna to user(mm)	110
	SAR exclusion threshold(mW)	666
	SAR testing required?	NO
Exposure Positions	Tune-up Maximum power of WLAN 5.8G	
	11.50 dBm	14.13 mW
Right Side	Antenna to user(mm)	155
	SAR exclusion threshold(mW)	1112
	SAR testing required?	NO
Top Side	Antenna to user(mm)	110
	SAR exclusion threshold(mW)	662
	SAR testing required?	NO

9. SAR Results

9.1. SAR measurement results

9.1.1. SAR measurement Result of WLAN 2.4G

Test Position of Body with 0mm	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
Front Side	6/2437	802.11b	0.009	0.005	2.91	15.54	16.00	0.010	2025/2/26	
Back Side	6/2437	802.11b	0.004	0.002	-3.99	15.54	16.00	0.004	2025/2/26	
Bottom Side	6/2437	802.11b	0.016	0.008	0.54	15.54	16.00	0.018	2025/2/26	5#
Bottom Side	1/2412	802.11b	0.015	0.007	0.99	15.88	16.00	0.015	2025/2/26	
Bottom Side	11/2462	802.11b	0.012	0.006	0.11	15.20	16.00	0.014	2025/2/26	

NOTE: Battery1 Body SAR test results of WLAN 2.4G

9.1.2. SAR measurement Result of WLAN 5.2G

Test Position of Body with 0mm	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
Front Side	46/5230	802.11ac VHT40	0.048	0.021	-1.99	11.70	12.00	0.051	2025/2/27	
Back Side	46/5230	802.11ac VHT40	0.018	0.016	-1.26	11.70	12.00	0.019	2025/2/27	
Bottom Side	46/5230	802.11ac VHT40	0.054	0.024	-2.90	11.70	12.00	0.058	2025/2/27	3#
Bottom Side	38/5190	802.11ac VHT40	0.041	0.190	-1.28	10.65	12.00	0.056	2025/2/27	

NOTE: Battery1 Body SAR test results of WLAN 5.2G

9.1.3. SAR measurement Result of WLAN 5.8G

Test Position of Body with 0mm	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
Front Side	159/5795	802.11n HT40	0.052	0.023	-1.48	11.51	12.00	0.058	2025/2/28	
Back Side	159/5795	802.11n HT40	0.023	0.011	-0.40	11.51	12.00	0.026	2025/2/28	
Bottom Side	159/5795	802.11n HT40	0.061	0.031	-4.50	11.51	12.00	0.068	2025/2/28	4#
Bottom Side	151/5775	802.11n HT40	0.042	0.018	-4.50	10.87	12.00	0.054	2025/2/28	

NOTE: Battery2 Body SAR test results of WLAN 5.8G

Test Position of Body with 0mm	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
Bottom Side Worst-case	155/5775	802.11ac VHT80	0.055	0.031	-4.50	11.12	11.50	0.060	2025/2/28	

NOTE: Battery1 Body SAR test results of WLAN 5.8G

NOTE: The battery is a non-radio frequency device. We tested the worst case and there was no significant difference. This indicates that the result only needs to measure the worst case with the maximum value.

9.1.4. SAR measurement Result of Bluetooth EDR

Test Position of Body with 0mm	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
Front Side	39/2441	GFSK	0.028	0.010	-2.17	4.39	5.00	0.032	2025/2/26	
Back Side	39/2441	GFSK	0.020	0.018	0.94	4.39	5.00	0.023	2025/2/26	
Bottom Side	39/2441	GFSK	0.039	0.015	-2.96	4.39	5.00	0.045	2025/2/26	1#
Bottom Side	0/2402	GFSK	0.031	0.013	-1.51	3.90	5.00	0.040	2025/2/26	
Bottom Side	78/2480	GFSK	0.033	0.014	-3.26	4.53	5.00	0.037	2025/2/26	

NOTE: Battery1 Body SAR test results of BT EDR

9.1.5. SAR measurement Result of Bluetooth LE

Test Position of Body with 0mm	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
Front Side	19/2440	GFSK	0.024	0.010	-1.57	4.47	5.00	0.027	2025/2/26	
Back Side	19/2440	GFSK	0.015	0.013	3.84	4.47	5.00	0.017	2025/2/26	
Bottom Side	19/2440	GFSK	0.033	0.014	-3.26	4.47	5.00	0.037	2025/2/26	2#
Bottom Side	0/2402	GFSK	0.026	0.013	-1.51	4.06	5.00	0.032	2025/2/26	
Bottom Side	39/2480	GFSK	0.030	0.014	-3.26	4.29	5.00	0.035	2025/2/26	

NOTE: Battery1 Body SAR test results of Bluetooth LE

9.2. Simultaneous Transmission Analysis

NO simultaneous transmissions are possible for this device of Bluetooth and 2.4G Wi-Fi.

Test Position		Scaled SAR_{MAX}		∑1-g SAR (W/Kg)	SPLSR	Remark
		BT EDR	WLAN 5G			
Body	Front Side	0.032	0.058	0.090	N/A	N/A
	Back Side	0.023	0.026	0.049	N/A	N/A
	Bottom Side	0.045	0.068	0.113	N/A	N/A

Test Position		Scaled SAR_{MAX}		∑1-g SAR (W/Kg)	SPLSR	Remark
		BT LE	WLAN 5G			
Body	Front Side	0.027	0.058	0.085	N/A	N/A
	Back Side	0.017	0.026	0.043	N/A	N/A
	Bottom Side	0.037	0.068	0.105	N/A	N/A

10. Appendix A. Photo documentation

Refer to appendix Test Setup photo---SAR

11. Appendix B. System Check Plots

Table of contents
MEASUREMENT 1 System Performance Check - 2450MHz
MEASUREMENT 2 System Performance Check - 5200MHz
MEASUREMENT 3 System Performance Check - 5800MHz

1# System check at 2450 MHz
Date of measurement: 26/2/2025

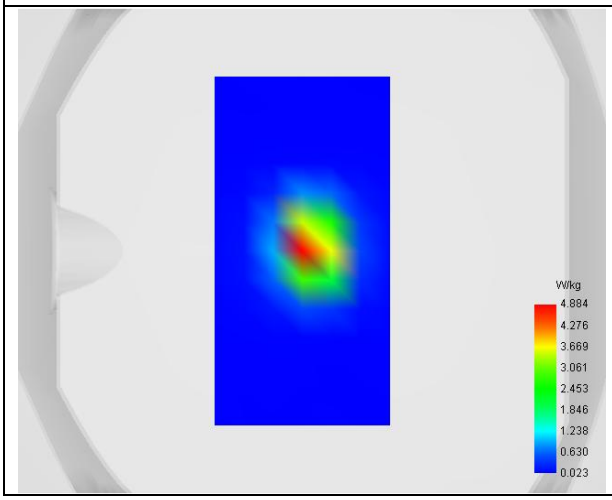
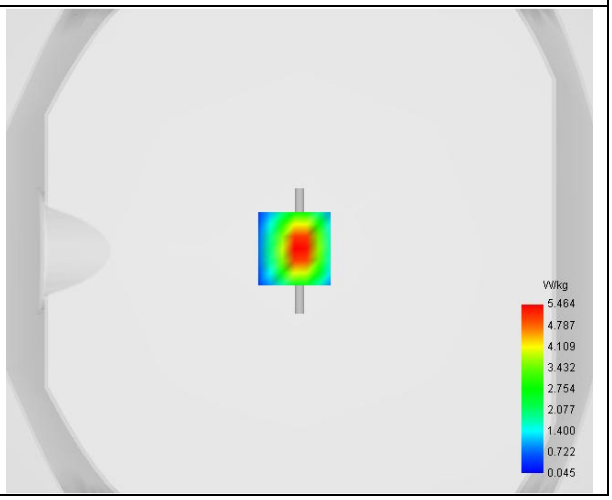
A. Experimental conditions.

Probe	4024-EPGO-442
ConvF	2.74
Area Scan	dx=12mm dy=12mm, Complete
Zoom Scan	7x7x7,dx=5mm dy=5mm dz=5.0mm,Complete
Phantom	Validation plane
Device Position	Dipole
Band	CW2450
Channels/Frequency	Middle
Signal	CW

B. Permitivity

Middle TX Frequency (MHz)	2450.000
Relative permitivity (real part)	38.20
Relative permitivity (imaginary part)	13.00
Conductivity (S/m)	1.77

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

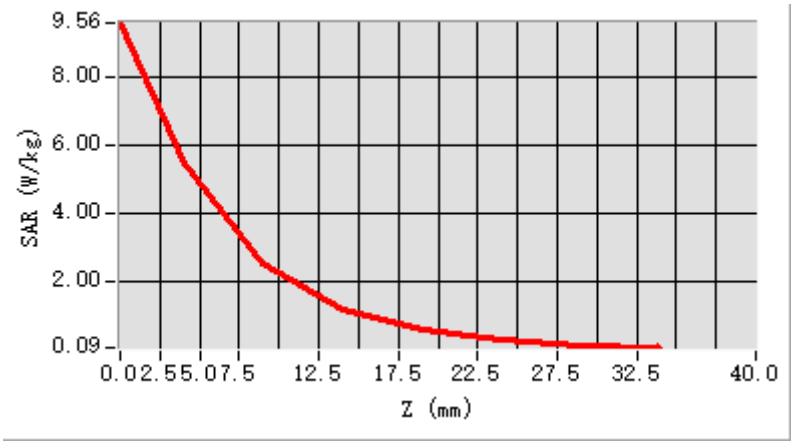
Maximum location: X=-2.00, Y=1.00 ; SAR Peak: 9.84 W/kg

D. SAR 1g & 10g

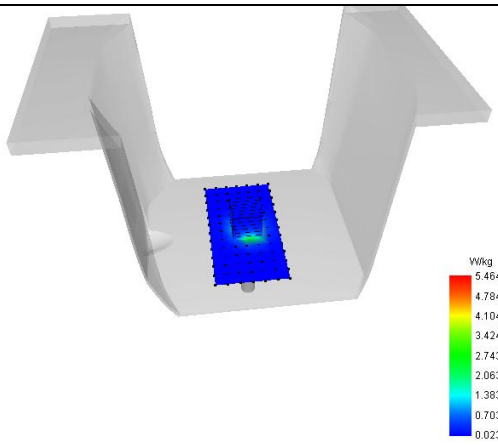
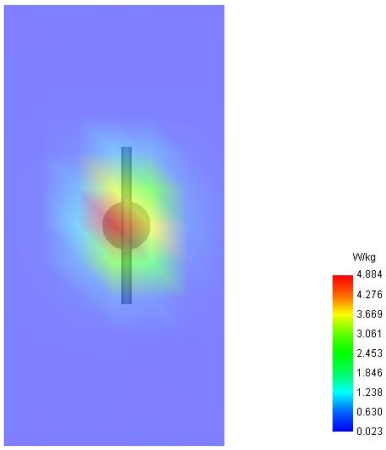
SAR 10g (W/Kg)	2.214
SAR 1g (W/Kg)	5.167
Variation (%)	0.68
Horizontal validation criteria: minimum distance (mm)	10.00
Vertical validation criteria: SAR ratio M2/M1 (%)	46.34

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	9.560	5.464	2.532	1.215	0.599	0.304	0.161



F. 3D Image

3D screen shot	Hot spot position
	

2# System check at 5200 MHz
Date of measurement: 27/2/2025

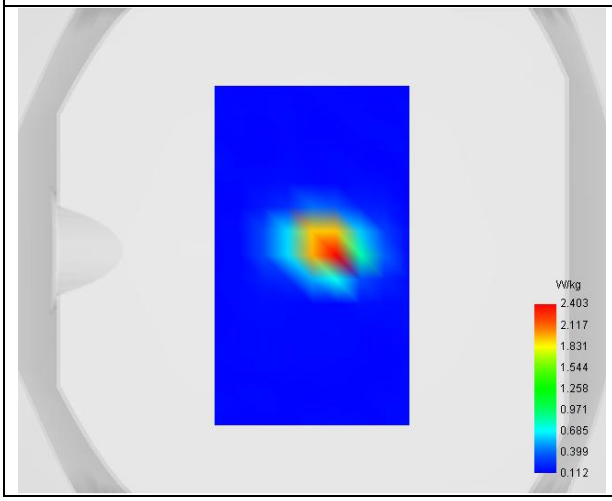
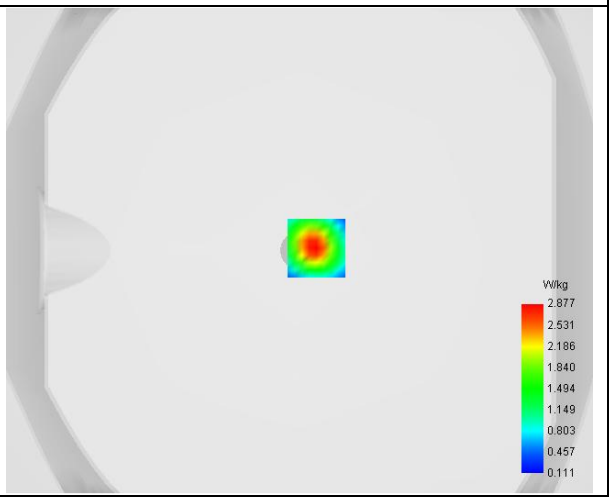
A. Experimental conditions.

Probe	4024-EPGO-442
ConvF	1.89
Area Scan	dx=10mm dy=10mm, Complete
Zoom Scan	9x9x16,dx=3mm dy=3mm dz=1.5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	CW5200
Channels/Frequency	Middle
Signal	CW

B. Permitivity

Middle TX Frequency (MHz)	5200.000
Relative permitivity (real part)	37.28
Relative permitivity (imaginary part)	15.88
Conductivity (S/m)	4.59

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

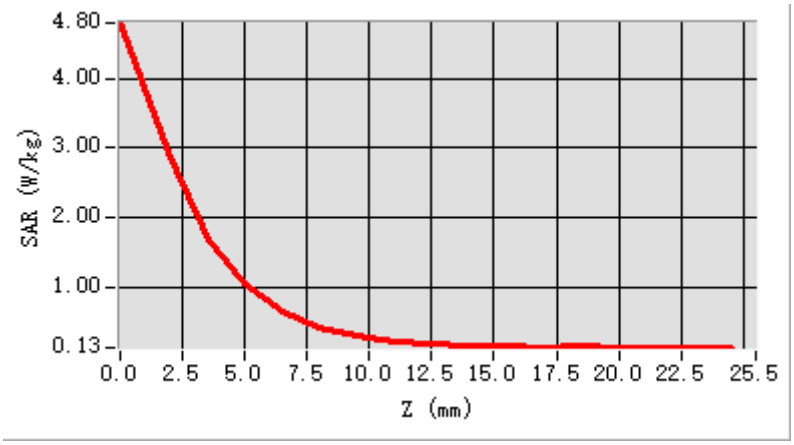
Maximum location: X=7.00, Y=1.00 ; SAR Peak: 5.16 W/kg

D. SAR 1g & 10g

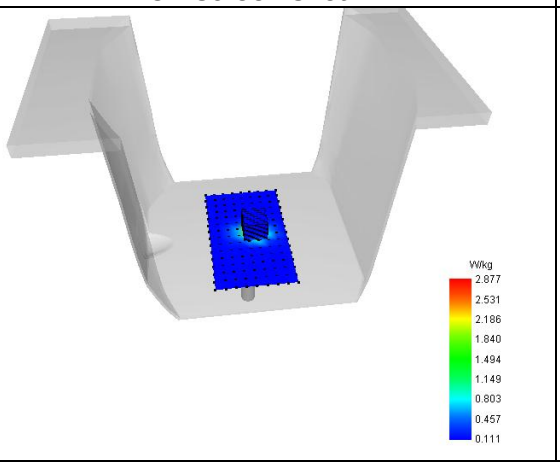
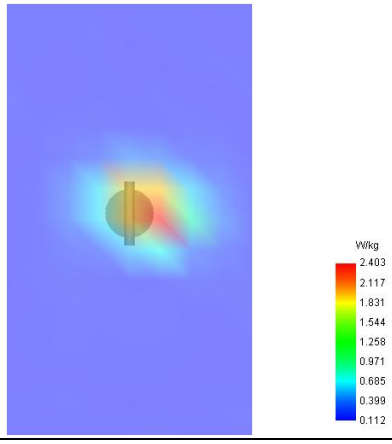
SAR 10g (W/Kg)	0.617
SAR 1g (W/Kg)	1.673
Variation (%)	-0.32
Horizontal validation criteria: minimum distance (mm)	9.00
Vertical validation criteria: SAR ratio M2/M1 (%)	58.73

E. Z Axis Scan

Z (mm)	0.00	2.00	3.50	5.00	6.50	8.00	9.50	11.00	12.50	14.00	15.50	17.00	18.50	20.00	21.50	23.00
SAR (W/Kg)	4.804	2.877	1.690	1.044	0.656	0.425	0.291	0.207	0.181	0.162	0.145	0.140	0.149	0.132	0.136	0.128



F. 3D Image

3D screen shot	Hot spot position
	

3# System check at 5800 MHz
Date of measurement: 28/2/2025

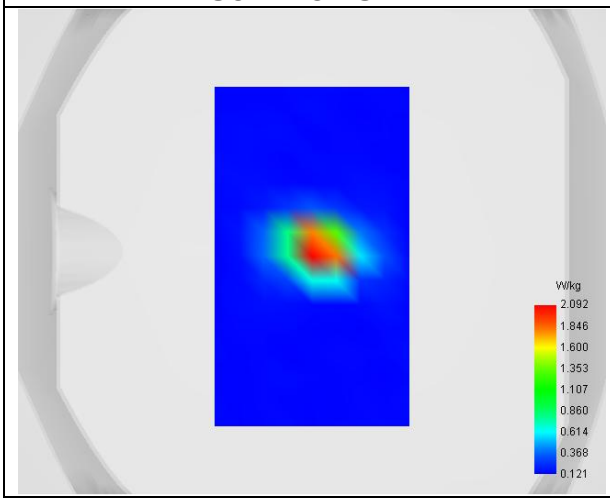
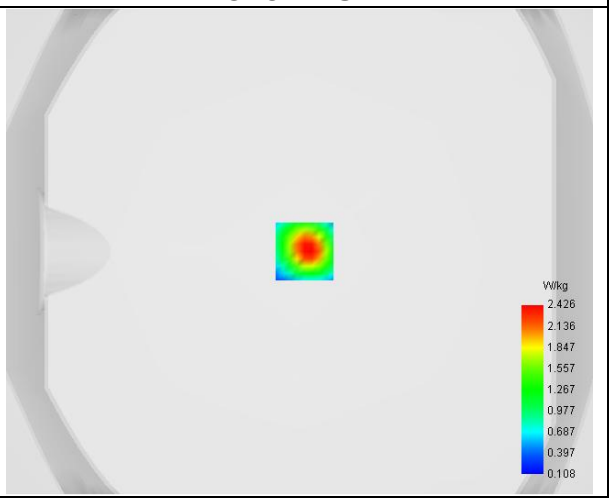
A. Experimental conditions.

Probe	4024-EPGO-442
ConvF	1.90
Area Scan	dx=10mm dy=10mm, Complete
Zoom Scan	9x9x16,dx=3mm dy=3mm dz=1.5mm,Complete
Phantom	Validation plane
Device Position	Dipole
Band	CW5800
Channels/Frequency	Middle
Signal	CW

B. Permitivity

Middle TX Frequency (MHz)	5800.000
Relative permitivity (real part)	36.22
Relative permitivity (imaginary part)	15.94
Conductivity (S/m)	5.14

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

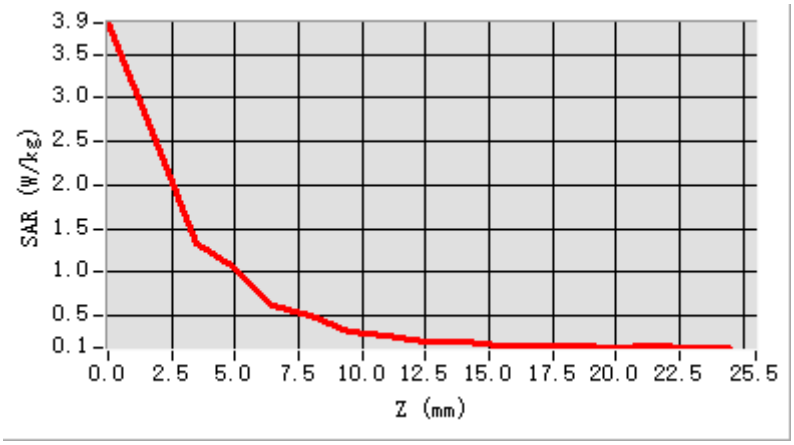
Maximum location: X=2.00, Y=0.00 ; SAR Peak: 4.14 W/kg

D. SAR 1g & 10g

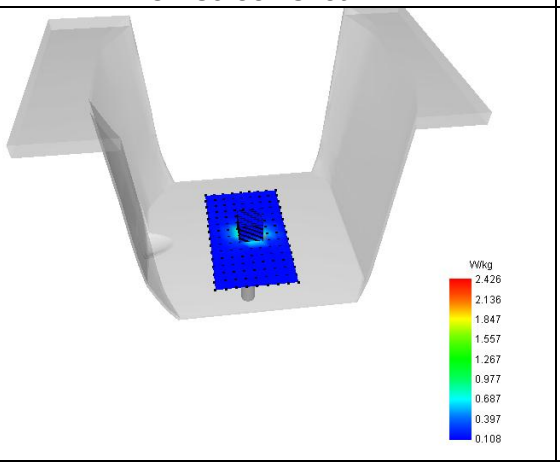
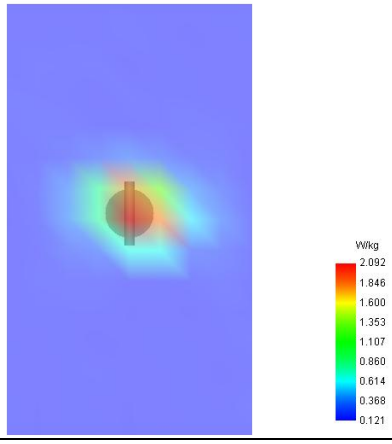
SAR 10g (W/Kg)	0.638
SAR 1g (W/Kg)	1.702
Variation (%)	0.23
Horizontal validation criteria: minimum distance (mm)	9.00
Vertical validation criteria: SAR ratio M2/M1 (%)	63.57

E. Z Axis Scan

Z (mm)	0.00	2.00	3.50	5.00	6.50	8.00	9.50	11.00	12.50	14.00	15.50	17.00	18.50	20.00	21.50	23.00
SAR (W/Kg)	3.860	2.426	1.319	1.046	0.607	0.499	0.321	0.261	0.210	0.198	0.166	0.153	0.147	0.142	0.145	0.133



F. 3D Image

3D screen shot	Hot spot position
	

12. Appendix C. SAR Measurement Plots

Table of contents
MEASUREMENT 1 Bluetooth BR+EDR
MEASUREMENT 2 Bluetooth LE
MEASUREMENT 3 WLAN 5.2G Body
MEASUREMENT 4 WLAN 5.8G Body
MEASUREMENT 5 WLAN 2.4G Body

1# SAR Measurement at Bluetooth (Body, Validation Plane)
Date of measurement: 26/2/2025

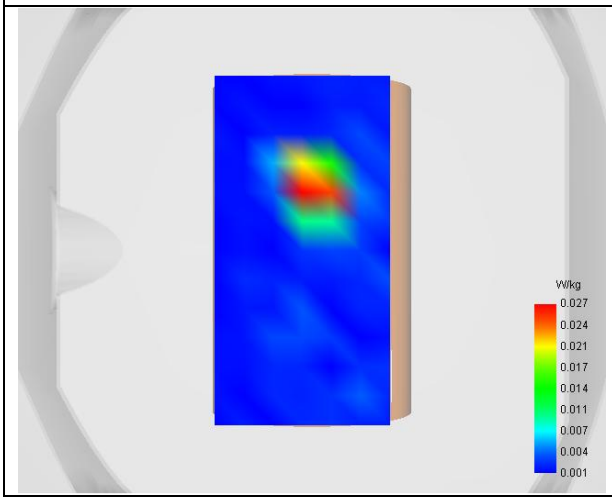
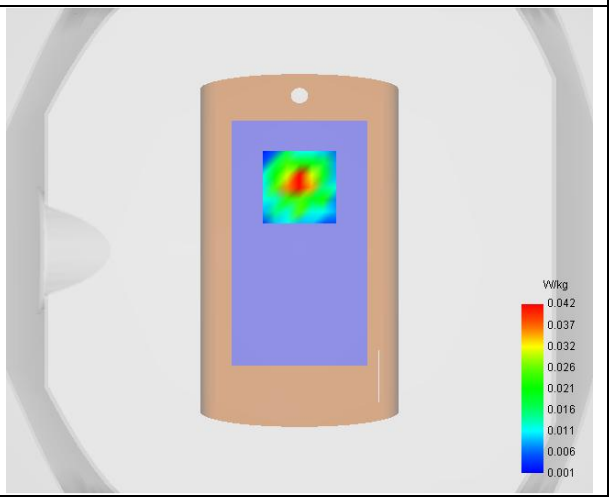
A. Experimental conditions.

Probe	4024-EPGO-442
ConvF	2.74
Area Scan	dx=12mm dy=12mm, Complete
Zoom Scan	7x7x7,dx=5mm dy=5mm dz=5.0mm,Complete
Phantom	Validation plane
Device Position	Body
Band	Bluetooth
Signal	Bluetooth
Channels/Frequency	Middle (39)/ frequency 2441.00 Mhz

B. Permitivity

Middle TX Frequency (MHz)	2441.00
Relative permitivity (real part)	38.23
Relative permitivity (imaginary part)	12.93
Conductivity (S/m)	1.75

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

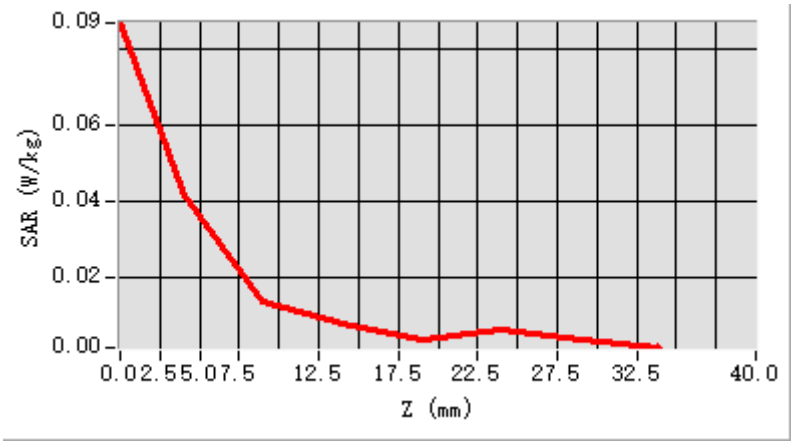
Maximum location: X=0.00, Y=26.00 ; SAR Peak: 0.10 W/kg

D. SAR 1g & 10g

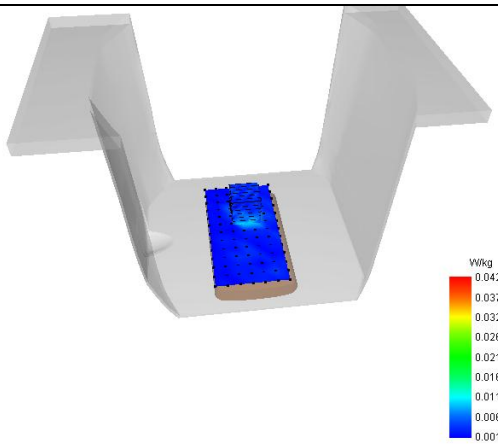
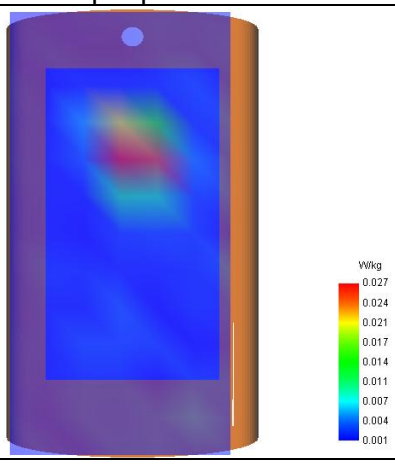
SAR 10g (W/Kg)	0.015
SAR 1g (W/Kg)	0.039
Variation (%)	-2.96
Horizontal validation criteria: minimum distance (mm)	7.07
Vertical validation criteria: SAR ratio M2/M1 (%)	46.52

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.087	0.042	0.014	0.008	0.004	0.007	0.004



F. 3D Image

3D screen shot	Hot spot position
	

2# SAR Measurement at Bluetooth (Body, Validation Plane)
Date of measurement: 26/2/2025

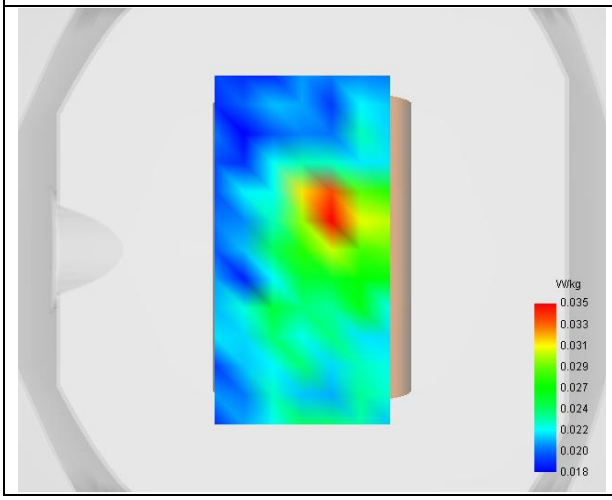
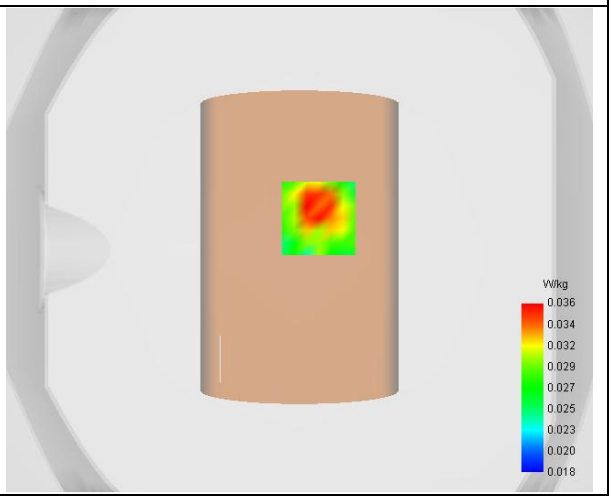
A. Experimental conditions.

Probe	4024-EPGO-442
ConvF	2.74
Area Scan	dx=12mm dy=12mm, Complete
Zoom Scan	7x7x7,dx=5mm dy=5mm dz=5.0mm,Complete
Phantom	Validation plane
Device Position	Body
Band	Bluetooth
Signal	Bluetooth
Channels/Frequency	Middle (19)/ frequency 2440.00 Mhz

B. Permitivity

Middle TX Frequency (MHz)	2440.00
Relative permitivity (real part)	38.23
Relative permitivity (imaginary part)	12.93
Conductivity (S/m)	1.75

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

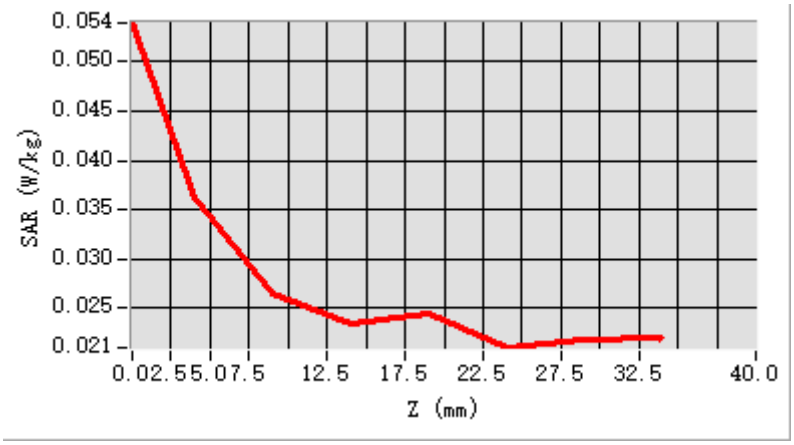
Maximum location: X=8.00, Y=13.00 ; SAR Peak: 0.05 W/kg

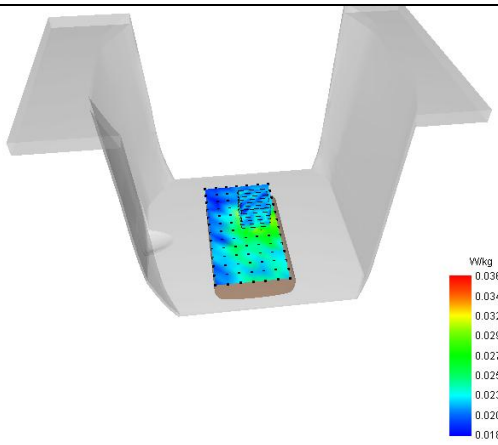
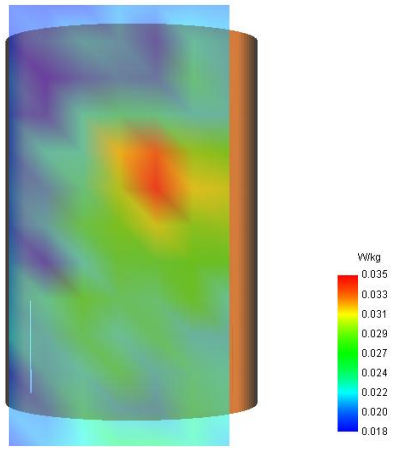
D. SAR 1g & 10g

SAR 10g (W/Kg)	0.014
SAR 1g (W/Kg)	0.033
Variation (%)	-3.26
Horizontal validation criteria: minimum distance (mm)	7.07
Vertical validation criteria: SAR ratio M2/M1 (%)	75.405798

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.054	0.036	0.027	0.023	0.024	0.021	0.022



F. 3D Image

3D screen shot	Hot spot position