TEST REPORT

Reference No......	:	WTX23X04078159W
FCC ID.....	:	2BALO-MYT1
Applicant	:	digital network technology company limited
Address.....	:	Room 6006, Building B, TCL Technology Building, No.1055, Nanhai Avenue, Nanshan District, ShenZhen
Manufacturer.....		The same as Applicant
Address.....		The same as Applicant
Product Name	:	Tablet Computer
Model No......	:	V88
Standards	:	FCC Part 2.1093, IEEE Std C95.1: 2019 IEEE Std C95.3: 2002 + Rev. 2008
Date of Receipt sample	:	2023-04-14
Date of Test.....	:	2023-04-17 to 2023-04-18
Date of Issue	:	2023-04-18
Test Report Form No.	:	WTX_Part2_1093W
Test Result.....	:	**Pass**

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of approver.

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TABLE OF CONTENTS

1. General Information **4**
1.1 Product Description for Equipment Under Test (EUT) 4
1.2 Test Standards 6
1.3 Test Methodology 6
1.4 Test Facility 6
2. Summary of Test Results **7**
3. Specific Absorption Rate (SAR) **8**
3.1 Introduction 8
3.2 SAR Definition 8
4. SAR Measurement System **9**
4.1 The Measurement System 9
4.2 Probe 9
4.3 Probe Calibration Process 11
4.4 Phantom 11
4.5 Device Holder 12
4.6 Test Equipment List 13
5. Tissue Simulating Liquids **14**
5.1 Composition of Tissue Simulating Liquid 14
5.2 Tissue Dielectric Parameters for Head and Body Phantoms 15
5.3 Tissue Calibration Result 16
6. SAR Measurement Evaluation **17**
6.1 Purpose of System Performance Check 17
6.2 System Setup 17
6.3 Validation Results 18
7. EUT Testing Position **19**
7.1 Body Position 19
7.2 EUT Antenna Position 19
7.2 EUT Testing Position 20
8. SAR Measurement Procedures **21**
8.1 Measurement Procedures 21
8.2 Spatial Peak SAR Evaluation 21
8.3 Area & Zoom Scan Procedures 22
8.4 Volume Scan Procedures 22
8.5 SAR Averaged Methods 22
8.6 Power Drift Monitoring 22
9. SAR Test Result **23**
9.1 Conducted RF Output Power 23
9.2 Test Results for Standalone SAR Test 25
10. Measurement Uncertainty **26**
10.1 Uncertainty for SAR Test 26
Annex A. Plots of System Performance Check **28**
Annex B. Plots of SAR Measurement **30**
Annex C. EUT Photos **34**
Annex D. Test Setup Photos **36**
Annex E. Calibration Certificate **38**

Report version

Version No.	Date of issue	Description
Rev.00	2023-04-18	Original
/	/	/

1. General Information

1.1 Product Description for Equipment Under Test (EUT)

General Description of EUT	
Product Name:	Tablet Computer
Trade Name:	ceciilavii
Model No.:	V88
Adding Model(s):	T7, T7A,T7B,T7C,T8,T8A,T8B,T8C,T10,T10A,T10B,T10C
Rated Voltage:	DC3.7V
Battery Capacity:	3000mAh
Power Adapter Model:	/
Software Version:	AQ8_68T5F.A133S.V10.01DL.P2212.G2210g.N7000.R25873.20221213.b6.mipi_wsvga_p_hsd695_706_30p.7inch.gsl1680_zy_q8.aic8800.fled.type_c.ddr_combo.b6.c_pk_s_v0
Hardware Version:	ZX AQ8-68T5R
Note: The test data is gathered from a production sample provided by the manufacturer. The appearance of others models listed in the report is different from main-test model V88, but the circuit and the electronic construction do not change, declared by the manufacturer.	

Technical Characteristics of EUT:	
WIFI(2.4GHz)	
Support Standards:	802.11b, 802.11g, 802.11n-HT20/HT40
Frequency Range:	2412-2462MHz for 802.11b/g/n(HT20), 2422-2452MHz for 802.11n(HT40)
RF Output Power:	25.573dBm (Conducted)
Type of Modulation:	DBPSK,BPSK,DQPSK,QPSK,16QAM,64QAM
Quantity of Channels:	11 for 802.11b/g/n-HT20,7 for 802.11b/g/n-HT40
Channel Separation:	5MHz
Antenna Type:	FPC Antenna
Antenna Gain:	2.16dBi
Bluetooth	
Bluetooth Version:	V5.0
Frequency Range:	2402-2480MHz
RF Output Power:	12.824dBm (Conducted)
Modulation:	GFSK, π/4 DQPSK, 8DPSK
Quantity of Channels:	79/40
Channel Separation:	1MHz/2MHz
Antenna Type:	FPC Antenna
Antenna Gain:	2.16dBi
Note: The Antenna Gain is provided by the customer and can affect the validity of results.	

1.2 Test Standards

The following report is accordance with FCC 47 CFR Part 2.1093, IEEE Std C95.1: 2019, IEEE Std C95.3: 2002 + Rev. 2008, IEEE 1528:2013, and KDB 865664 D01 v01r04 and KDB 865664 D02 v01r02 and KDB 941225 D07 v01r02 and 248227 D01 802 11 Wi-Fi SAR v02r02.

The objective is to determine compliance with FCC Part 2.1093 of the Federal Communication Commissions rules.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which is result in lowering the emission, should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with KDB 865664 D01 v01r04 and KDB 865664 D02 v01r02. The public notice KDB 447498 D01 v06 for Mobile and Portable Devices RF Exposure Procedure also.

1.4 Test Facility

Address of the test laboratory
Laboratory: Waltek Testing Group (Shenzhen) Co., Ltd.
Address: 1/F., Room 101, Building 1, Hongwei Industrial Park, Liuxian 2nd Road, Block 70 Bao'an District, Shenzhen, Guangdong, China

FCC – Registration No.: 125990
Waltek Testing Group (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. The Designation Number is CN5010.Test Firm Registration Number is 125990.

Industry Canada (IC) Registration No.: 11464A
The 3m Semi-anechoic chamber of Waltek Testing Group (Shenzhen) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.

2. Summary of Test Results

The maximum results of Specific Absorption Rate (SAR) have found during testing are as follows:

Frequency Band	Body (5mm Gap) Maximum SAR_{1g} (W/kg)	SAR_{1g} Limit (W/kg)
WLAN 2.4GHz	**0.775**	1.6
BT	0.090	1.6

The device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg) specified in FCC 47 CFR Part 2.1093 and IEEE Std C95.1: 2019, and had been tested in accordance with the measurement methods and procedure specified in KDB 865664 D01 v01r04, KDB 865664 D02 v01r02 and IEC 62209-2:2010+AMD1 (2019).

3. Specific Absorption Rate (SAR)

3.1 Introduction

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.

3.2 SAR Definition

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:

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

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

$$\mathbf{SAR} = \mathbf{C}\left(\frac{\boldsymbol{\delta}\mathbf{T}}{\boldsymbol{\delta}\mathbf{t}}\right)$$

Where: C is the specific heat capacity, δ T is the temperature rise and δ t is the exposure duration, or related to the
electrical field in the tissue by

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

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

However for evaluating SAR of low power transmitter, electrical field measurement is typically applied.

4. SAR Measurement System

4.1 The Measurement System

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

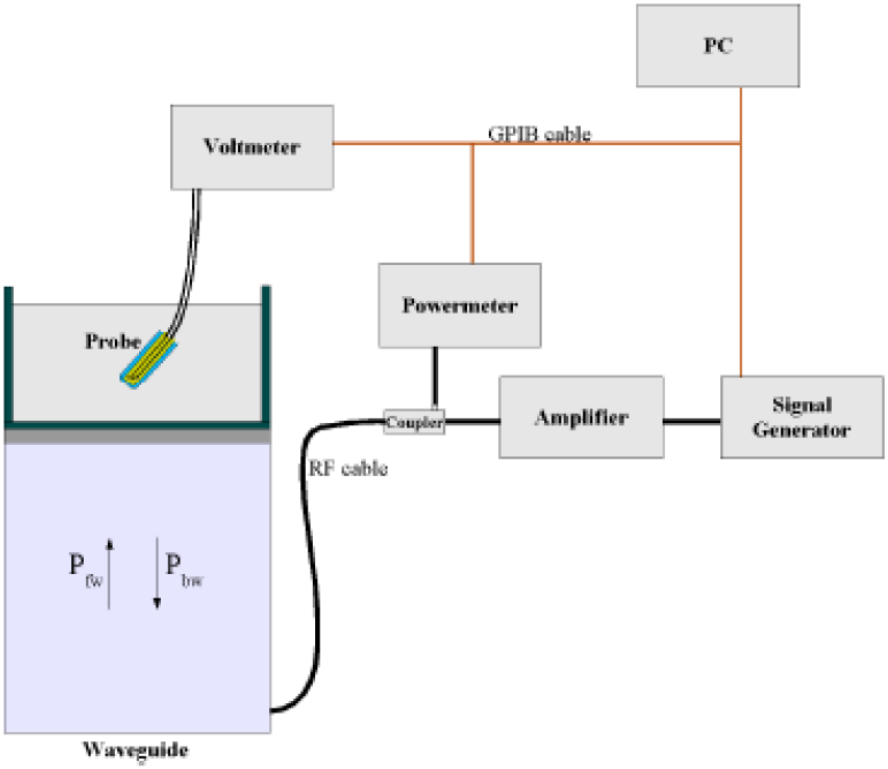
The following figure shows the system.

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 10g mass.

4.2 Probe

For the measurements the Specific Dosimetric E-Field Probe SSE2 SN 18/21 EPGO356, and refer to the calibration report for probe parameters.

Probe calibration is realized, in compliance with EN 62209-1 and IEEE 1528:2013 STD, with CALISAR, Antenna proprietary calibration system. The calibration is performed with the EN 62209-1 annexes technique using reference guide at the five frequencies.



$$SAR = \frac{4\left(P_{fw} - P_{bw}\right)}{ab\delta} \cos^2\left(\pi \frac{y}{a}\right) e^{(2z/\delta)}$$

Where :

Pfw = Forward Power

Pbw = Backward Power

a and b =Waveguide dimensions

I = Skin depth

Keithley configuration:

Rate = Medium; Filter = ON; RDGS = 10; Filter type = Moving Average; Range auto after each calibration, a SAR measurement is performed on a validation dipole and compared with a NPL calibrated probe, to verify it.

The calibration factors, CF(N), for the 3 sensors corresponding to dipole 1, dipole 2 and dipole 3 are:

CF(N)=SAR(N)/Vlin(N) (N=1,2,3)

The linearised output voltage Vlin(N) is obtained from the displayed output voltage V(N) using

Vlin(N)=V(N)*(1+V(N)/DCP(N)) (N=1,2,3)

where DCP is the diode compression point in mV.

4.3 Probe Calibration Process

Dosimetric Assessment Procedure

Each E-Probe/Probe Amplifier combination has unique calibration parameters. SATIMO Probe calibration procedure is conducted to determine the proper amplifier settings to enter in the probe parameters. The amplifier settings are determined for a given frequency by subjecting the probe to a known E-field density (1 mW/cm2) using an with CALISAR, Antenna proprietary calibration system.

Free Space Assessment Procedure

The free space E-field from amplified probe outputs is determined in a test chamber. This calibration can be performed in a TEM cell if the frequency is below 1 GHz and in a waveguide or other methodologies above 1 GHz for free space. For the free space calibration, the probe is placed in the volumetric center of the cavity and at the proper orientation with the field. The probe is rotated 360 degrees until the three channels show the maximum reading. The power density readings equates to 1mW/cm2.

Temperature Assessment Procedure

E-field temperature correlation calibration is performed in a flat phantom filled with the appropriate simulated head tissue. The E-field in the medium correlates with the temperature rise in the dielectric medium. For temperature correlation calibration a RF transparent thermistor-based temperature probe is used in conjunction with the E-field probe.

$$SAR = C\frac{\Delta T}{\Delta t}$$

Where:

Δt = exposure time (30 seconds),

C = heat capacity of tissue (brain or muscle),

ΔT = temperature increase due to RF exposure.

SAR is proportional to ΔT/Δt, the initial rate of tissue heating, before thermal diffusion takes place. The electric field in the simulated tissue can be used to estimate SAR by equating the thermally derived SAR to that with the E- field component.

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

Where:

σ = simulated tissue conductivity,

ρ = Tissue density (1.25 g/cm3 for brain tissue)

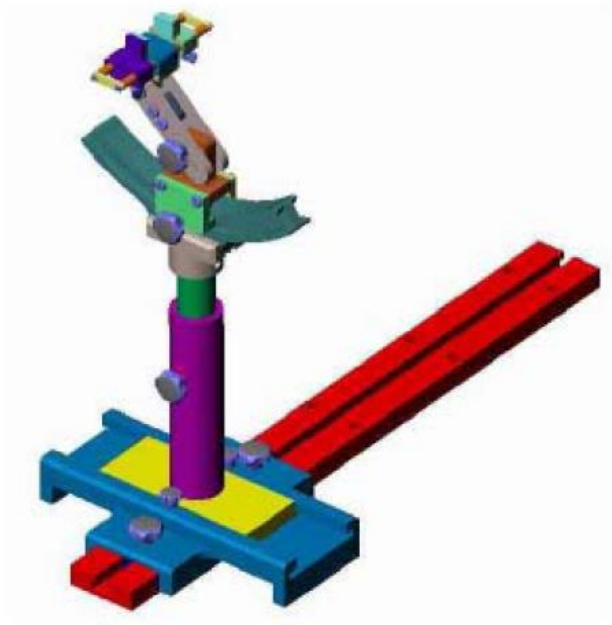
4.4 Phantom

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.

4.5 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°.



System Material	Permittivity	Loss Tangent
Delrin	3.7	0.005

4.6 Test Equipment List

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
E-Field Probe	MVG	SSE2	SN 18/21 EPGO356	2022-07-08	2023-07-07
2450MHz Dipole	MVG	SID2450	SN 09/15 DIP	2020-08-29	2023-08-28
5 GHz Dipole	MVG	SWG5500	SN 49/16 WGA45	2020-07-03	2023-07-02
Dielectric Probe	SATIMO	SCLMP	SN 47/12 OCPG49	2023-02-25	2024-02-24
SAM Phantom	SATIMO	SAM	SN/ 47/12 SAM95	N/A	N/A
Multi Meter	Keithley	Keithley 2000	4006367	2023-02-25	2024-02-24
Power meter	Keithley	3500	JC-2017-09-001	2023-02-25	2024-02-24
Power meter	Keithley	3500	JC-2017-09-001	2023-02-25	2024-02-24
Power Sensor	HP	11636B	JC-2017-10-002	2023-02-25	2024-02-24
MXG X-Series RF Vector Signal Generator	KEYSIGHT	N5182B	MY57300664	2023-02-25	2024-02-24
Universal Tester	Rohde & Schwarz	CMU200	112315	2023-02-25	2024-02-24
Universal Radio Communication Tester	Rohde & Schwarz	CMW500	148650	2023-02-25	2024-02-24
Network Analyzer	HP	8753C	2901A00831	2023-02-25	2024-02-24

5. Tissue Simulating Liquids

5.1 Composition of Tissue Simulating Liquid

For the measurement of the field distribution inside the SAM phantom with SMTIMO, the phantom must be filled with around 25 liters of homogeneous body tissue simulating liquid. For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm. Please see the following photos for the liquid height.

Liquid Height for Body SAR

The Composition of Tissue Simulating Liquid

Frequency (MHz)	Water (%)	Salt (%)	1,2-Propane diol (%)	HEC (%)	Preventol (%)	DGBE (%)
Body						
2450	55.0	0.1	0	0	0	44.9

5.2 Tissue Dielectric Parameters for Head and Body Phantoms

According to FCC KDBs, IEEE 1528:2013 and CEI/IEC 62209 standards state that the system validation measurements must be performed using a reference dipole meeting the fore mentioned return loss and mechanical dimension requirements. The validation measurement must be performed against a liquid filled flat phantom, with the phantom constructed as outlined in the fore mentioned standards. Per the standards, the dipole shall be positioned below the bottom of the phantom, with the dipole length centered and parallel to the longest dimension of the flat phantom, with the top surface of the dipole at the described distance from the bottom surface of the phantom.

Target Frequency (MHz)	**Head**		**Body**	
	Conductivity (σ)	**Permittivity** (ε_r)	**Conductivity** (σ)	**Permittivity** (ε_r)
150	0.76	52.3	0.80	61.9
300	0.87	45.3	0.92	58.2
450	0.87	43.5	0.94	56.7
750	0.89	41.9	0.96	55.5
835	0.90	41.5	0.97	55.2
900	0.97	41.5	1.05	55.0
915	0.98	41.5	1.06	55.0
1450	1.20	40.5	1.30	54.0
1610	1.29	40.3	1.40	53.8
1800-2000	1.40	40.0	1.52	53.3
2300	1.67	39.5	1.81	52.9
2450	**1.80**	**39.2**	**1.95**	**52.7**
2600	1.96	39.0	2.16	52.5
3000	2.40	38.5	2.73	52.0
5200	4.66	36.0	5.30	49.0
5400	4.86	35.8	5.53	48.7
5600	5.07	35.5	5.77	48.5
5800	5.27	35.3	6.00	48.2

5.3 Tissue Calibration Result

The dielectric parameters of the liquids were verified prior to the SAR evaluation using COMOSAR Dielectric Probe Kit and an Agilent Network Analyzer.

Calibration Result for Dielectric Parameters of Tissue Simulating Liquid

Head Tissue Simulating Liquid									
Freq. MHz.	Temp. (℃)	Conductivity			Permittivity			Limit (%)	Date
		Reading (σ)	Target (σ)	Delta (%)	Reading (ε r)	Target (ε r)	Delta (%)		
2450	22.3	1.93	1.95	-1.03	51.06	52.7	-3.11	±5	2023-04-17

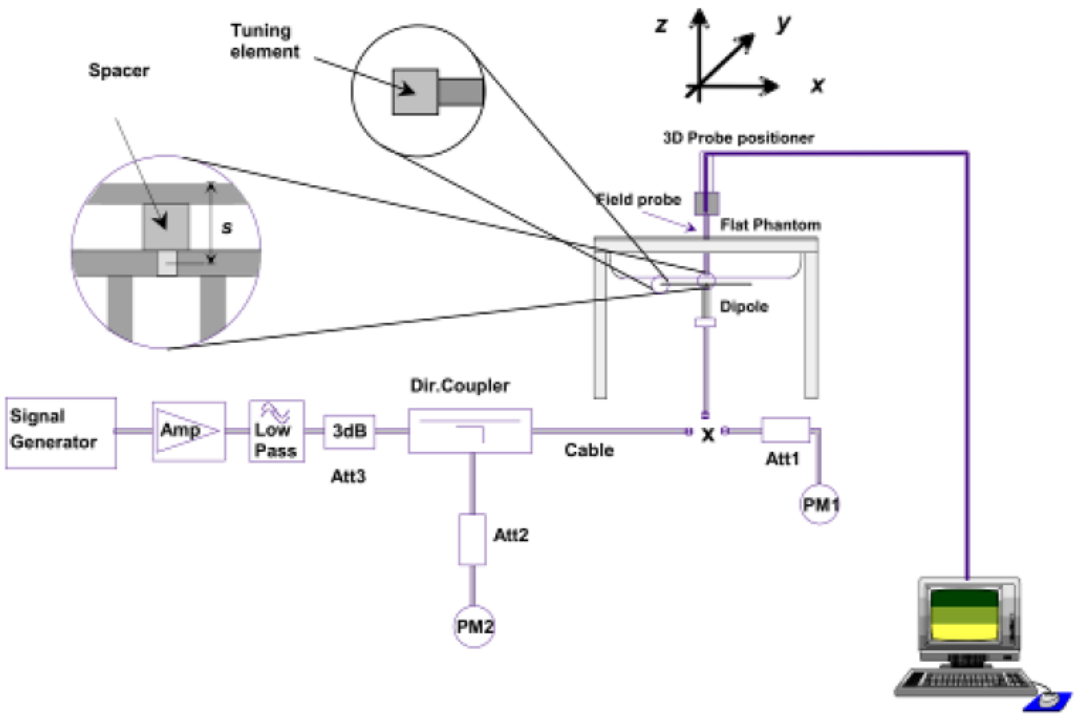
6. SAR Measurement Evaluation

6.1 Purpose of System Performance Check

The system performance check verifies that the system operates within its specifications. System and operator errors can be detected and corrected. It is recommended that the system performance check be performed prior to any usage of the system in order to guarantee reproducible results. The system performance check uses normal SAR measurements in a simplified setup with a well characterized source. This setup was selected to give a high sensitivity to all parameters that might fail or vary over time. The system check does not intend to replace the calibration of the components, but indicates situations where the system uncertainty is exceeded due to drift or failure.

6.2 System Setup

In the simplified setup for system evaluation, the EUT is replaced by a calibrated dipole and the power source is replaced by a continuous wave which comes from a signal generator at frequency 2450MHz and 5000MHz. The calibrated dipole must be placed beneath the flat phantom section of the SAM twin phantom with the correct distance holder. The distance holder should touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom.



System Verification Setup Block Diagram

Setup Photo of Dipole Antenna

The output power on dipole port must be calibrated to 24 dBm(250 mW) before dipole is connected.
The output power on 5 GHz Waveguide must be calibrated to 20 dBm (100mW) before 5 GHz Waveguide is connected.

6.3 Validation Results

Comparing to the original SAR value provided by SATIMO, the validation data should be within its specification of 10 %. Table 6.1 shows the target SAR and measured SAR after normalized to 1W input power. The table below indicates the system performance check can meet the variation criterion.

Frequency	**Targeted SAR_{1g}**	**Measured SAR_{1g}**	**Normalized SAR_{1g}**	**Tolerance**	**Date**
MHz	**(W/kg)**	**(W/kg)**	**(W/kg)**	**(%)**	
Body					
2450	53.67	13.03	52.12	-2.89	2023-04-17

Targeted and Measurement SAR

Please refer to Annex A for the plots of system performance check.

7. EUT Testing Position

7.1 Body Position

(a) To position the device parallel to the phantom surface with each side.
(b) To adjust the device parallel to the flat phantom.
(c) To adjust the distance between the device surface and the flat phantom to 5mm.

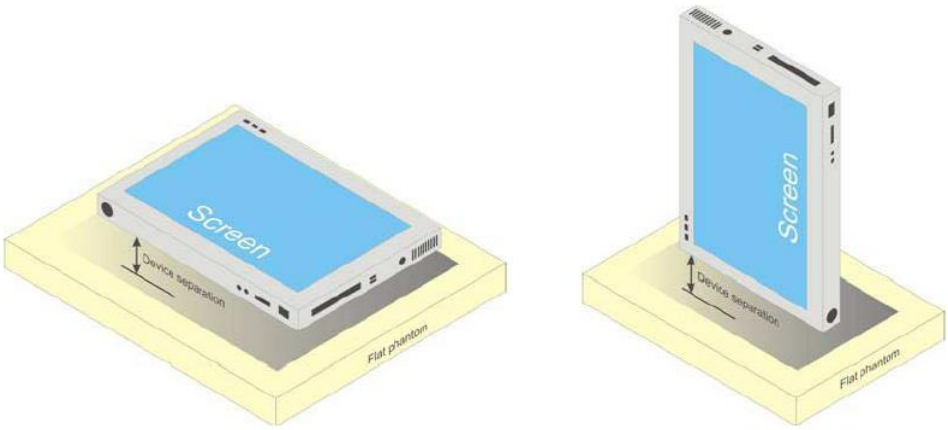
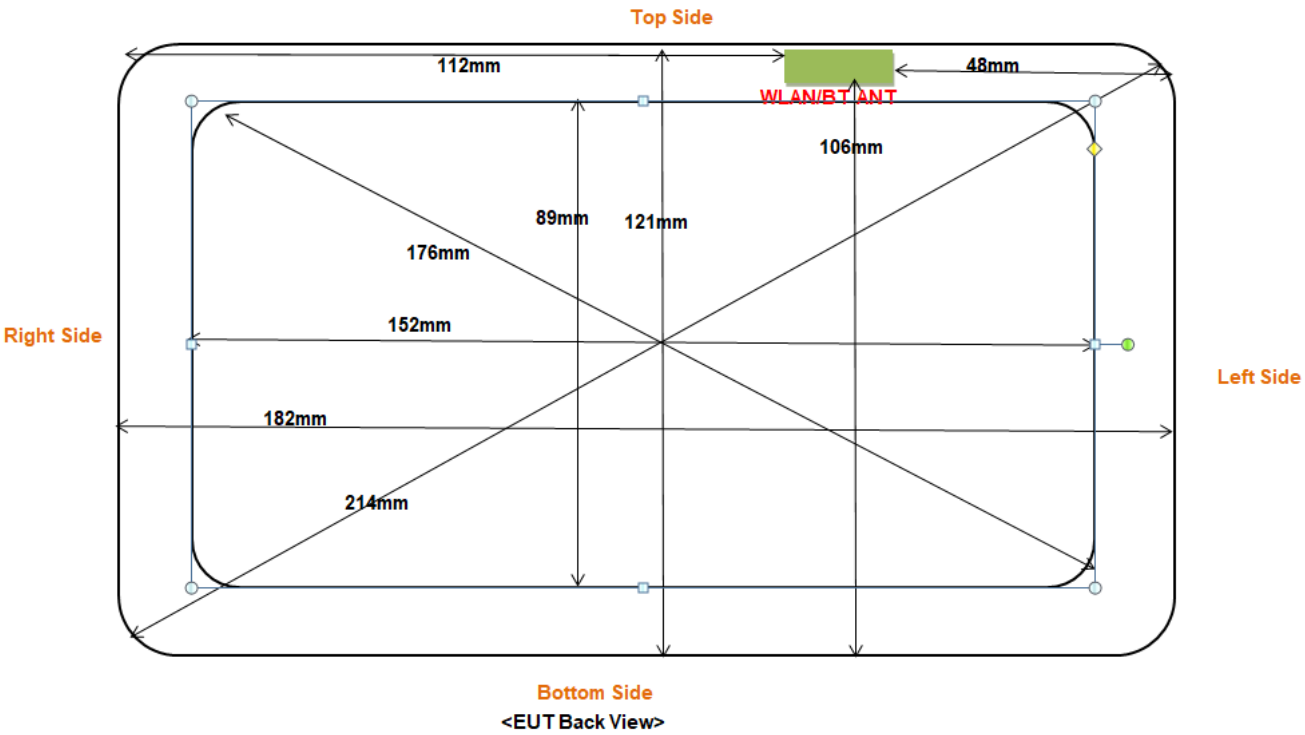


Illustration for Body Position

7.2 EUT Antenna Position



Display diagonal dimension: 176mm
Overall diagonal dimension: 214mm
Fig 7.1 Block Diagram for EUT Antenna Position

Distance of EUT antenna-to-edge/surface(mm), Test distance:5mm						
Antennas	**Front**	**Back**	**Right Side**	**Left Side**	**Top Side**	**Bottom Side**
WLAN/BT	<25	<25	112	48	<25	106

7.3 EUT Testing Position

Body mode SAR assessments are required for this device. This EUT was tested in different positions for different SAR test modes, more information as below:

Body SAR tests, Test distance: 5mm						
Antennas	**Front**	**Back**	**Right Side**	**Left Side**	**Top Side**	**Bottom**
WLAN(2.4GHz)/Bluetooth	Yes	Yes	No	No	Yes	No

Remark:

1. This device with a display < 20 cm (-7.9"), and is typically operated like a mini-tablet and are usually designed with certain UMPC features and operating characteristics. Referring to 941225 D07 v01r02, UMPC mini-tablet devices must be tested for 1-g SAR on all surfaces and side edges with a transmitting antenna located at <25 mm from that surface or edge, at 5 mm separation from a flat phantom, for the data modes, wireless technologies and frequency bands supported by the device to determine SAR compliance.

Please refer to Annex D for the EUT test setup photos.

8. SAR Measurement Procedures

8.1 Measurement Procedures

The measurement procedures are as follows:
(a) Use base station simulator (if applicable) or engineering software to transmit RF power continuously (continuous Tx) in the highest power channel.
(b) Keep EUT to radiate maximum output power or 100% factor (if applicable)
(c) Measure output power through RF cable and power meter.
(d) Place the EUT in the positions as Annex D demonstrates.
(e) Set scan area, grid size and other setting on the SATIMO software.
(f) Measure SAR results for the highest power channel on each testing position.
(g) Find out the largest SAR result on these testing positions of each band
(h) Measure SAR results for other channels in worst SAR testing position if the 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

8.2 Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1g and 10g, as well as for user-specific masses. The SATIMO software includes all numerical procedures necessary to evaluate the spatial peak SAR value.
The base for the evaluation is a "cube" measurement. The measured volume must include the 1g and 10g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.
The entire evaluation of the spatial peak values is performed within the post-processing engine. The system always gives the maximum values for the 1g and 10g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:
(a) Extraction of the measured data (grid and values) from the Zoom Scan
(b) Calculation of the SAR value at every measurement point based on all stored data
(c) Generation of a high-resolution mesh within the measured volume
(d) Interpolation of all measured values form the measurement grid to the high-resolution grid
(e) Extrapolation of the entire 3D field distribution to the phantom surface over the distance from sensor to surface
(f) Calculation of the averaged SAR within masses of 1g and 10g

8.3 Area & Zoom Scan Procedures

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 measures 5x5x7 points with step size 8, 8 and 5 mm for 300 MHz to 3 GHz, and 8x8x8 points with step size 4, 4 and 2.5 mm for 3 GHz to 6 GHz. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR-distribution over 10 g.

8.4 Volume Scan Procedures

The volume scan is used for assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 1g aggregate SAR, the EUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing (step-size is 4, 4 and 2.5 mm). When all volume scan were completed, the software can combine and subsequently superpose these measurement data to calculating the multiband SAR.

8.5 SAR Averaged Methods

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 minimize 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 1mm 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 10g and 1 g requires a very fine resolution in the three dimensional scanned data array.

8.6 Power Drift Monitoring

All SAR testing is under the EUT install full charged battery and transmit maximum output power. In SATIMO 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 dB. If the power drift more than 5%, the SAR will be retested.

9. SAR Test Result

9.1 Conducted RF Output Power

WLAN(2.4GHz)					
Test Mode	**Data Rate**	**Channel**	**Frequency (MHz)**	**Conducted Power (dBm)**	**Tune-up power (dBm)**
802.11b	11Mbps	CH 01	2412	**25.573**	26.0
		CH 06	2437	25.556	26.0
		CH 11	2462	25.448	25.5
802.11g	54Mbps	CH 01	2412	24.593	25.0
		CH 06	2437	24.683	25.0
		CH 11	2462	24.486	24.5
802.11n (20MHz)	MCS7	CH 01	2412	24.472	24.5
		CH 06	2437	24.586	25.0
		CH 11	2462	24.249	24.5
802.11n (40MHz)	MCS7	CH 03	2422	23.773	24.0
		CH 07	2437	24.135	24.5
		CH 11	2452	23.864	24.0

Remark:

1. Per KDB 248227 D01 v02r02, For 802.11b DSSS SAR measurements, DSSS SAR procedure applies to fixed exposure test position and initial test position procedure applies to multiple exposure test positions.
2. Per KDB 248227 D01 v02r02, For 802.11b DSSS SAR measurements ,when the reported SAR of the highest measured maximum output power channel (see 3.1) for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required for 802.11b DSSS in that exposure configuration. When the reported SAR is > 0.8 W/kg, SAR is required for that exposure configuration using the next highest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR is required for the third channel; i.e., all channels require testing.
3 .For OFDM modes (802.11g/n), SAR is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and it is <= 1.2W/kg.

Bluetooth			
Test Mode	**Data Rate**	**Conducted Power (dBm)**	**Tune-up power (dBm)**
GFSK	1Mbps	12.532	13.0
Pi/4 QDPSK	2Mbps	12.671	13.0
8DPSK	3Mbps	**12.824**	13.0

Remark:

The WIFI/BT Output power are provided by Shenzhen CTB testing technology Co., LTD.

9.2 Test Results for Standalone SAR Test

Body SAR

WLAN 2.4GHz –Body SAR Test(5mm)									
Plot No.	**Mode**	**Test Position Body**	**Frequency**		**Output Power (dBm)**	**Rated Limit (dBm)**	**Scaling Factor**	**SAR1g (W/kg)**	**Scaled SAR1g (W/kg)**
			CH.	**MHz**					
	802.11b	Back Face	CH 01	2412	25.573	26.0	1.103	0.579	0.639
1.	802.11b	Front Face	CH 01	2412	25.573	26.0	1.103	0.702	**0.775**
	802.11b	Top Side	CH 01	2412	25.573	26.0	1.103	0.309	0.341

Bluetooth–Body SAR Test(5mm)									
Plot No.	**Mode**	**Test Position Body**	**Frequency**		**Output Power (dBm)**	**Rated Limit (dBm)**	**Scaling Factor**	**SAR1g (W/kg)**	**Scaled SAR1g (W/kg)**
			CH.	**MHz**					
	8DPSK	Back Face	79	2480	12.824	13.0	1.041	0.060	0.062
2.	8DPSK	Front Face	79	2480	12.824	13.0	1.041	0.086	**0.090**
	8DPSK	Top Side	79	2480	12.824	13.0	1.041	0.046	0.048

Remark: Per KDB 447498 D01 v06, if the highest output channel SAR for each exposure position ≤ 0.8 W/kg other channels SAR tests are not necessary.

10. Measurement Uncertainty

10.1 Uncertainty for SAR Test

a	b	c	d	e= f(d,k)	f	g	h= c*f/e	i= c*g/e	k
Uncertainty Component	**Sec.**	**Tol (+- %)**	**Prob. Dist.**	**Div.**	**Ci (1g)**	**Ci (10g)**	**1g Ui (+-%)**	**10g Ui (+-%)**	**Vi**
Measurement System									
Probe calibration	E.2.1	7.0	N	1	1	1	7.00	7.00	∝
Axial Isotropy	E.2.2	2.5	R	√3	(1_Cp)^1/2	(1_Cp)^1/2	1.02	1.02	∝
Hemispherical Isotropy	E.2.2	4.0	R	√3	(Cp)^1/2	(Cp)^1/2	1.63	1.63	∝
Boundary effect	E.2.3	1.0	R	√3	1	1	0.58	0.58	∝
Linearity	E.2.4	5.0	R	√3	1	1	2.89	2.89	∝
System detection limits	E.2.5	1.0	R	√3	1	1	0.58	0.58	∝
Readout Electronics	E.2.6	0.02	N	1	1	1	0.02	0.02	∝
Reponse Time	E.2.7	3.0	R	√3	1	1	1.73	1.73	∝
Integration Time	E.2.8	2.0	R	√3	1	1	1.15	1.15	∝
RF ambient Conditions – Noise	E.6.1	0	R	√3	1	1	1.73	1.73	∝
RF ambient Conditions - Reflections	E.6.1	0	R	√3	1	1	1.73	1.73	∝
Probe positioner Mechanical Tolerance	E.6.2	2.0	R	√3	1	1	1.15	1.15	∝
Probe positioning with respect to Phantom Shell	E.6.3	0.05	R	√3	1	1	0.03	0.03	∝
Extrapolation, interpolation and integration Algoritms for Max. SAR Evaluation	E.5	5.0	R	√3	1	1	2.89	2.89	∝
Test Sample Related									
Test sample positioning	E.4.2	0.03	N	1	1	1	0.03	0.03	N−1
Device Holder Uncertainty	E.4.1	5.00	N	1	1	1	5.00	5.00	
Output power Variation - SAR drift measurement	E.2.9	12.02	R	√3	1	1	6.94	6.94	∝
SAR scaling	E6.5	0.0	R	√3	1	1	0.0	0.0	∝
Phantom and Tissue Parameters									
Phantom Uncertainty (Shape and thickness tolerances)	E.3.1	0.05	R	√3	1	1	0.03	0.03	∝
Uncertainty in SAR correction for deviations in permittivity and conductivity	E3.2	1.9	R	√3	1	0.84	1.10	0.90	∝

Liquid conductivity - deviation from target value	E.3.2	0	R	√3	0	0.43	0	0	∝
Liquid conductivity - measurement uncertainty	E.3.3	4.00	N	1	0.64	0.43	1.10	1.10	∝
Liquid permittivity - deviation from target value	E.3.2	0	R	√3	0	0.49	0	0	∝
Liquid permittivity - measurement uncertainty	E.3.3	5.00	N	1	0.6	0.49	1.47	1.47	∝
Combined Standard Uncertainty			RSS				10.20	10.00	
Expanded Uncertainty (95% Confidence interval)			K=2				20.40	20.00	

Annex A. Plots of System Performance Check

MEASUREMENT 1

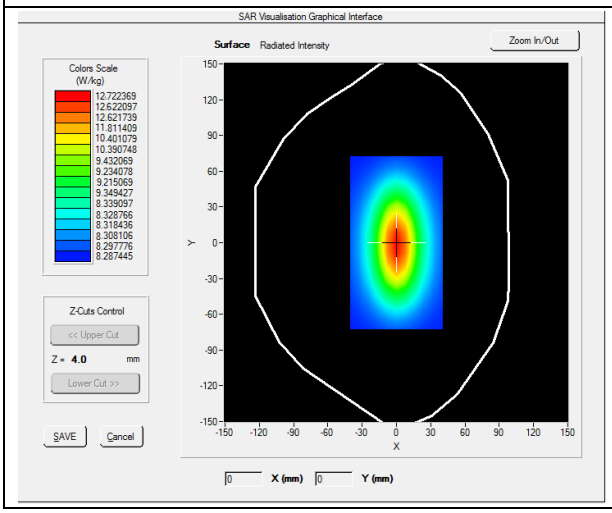
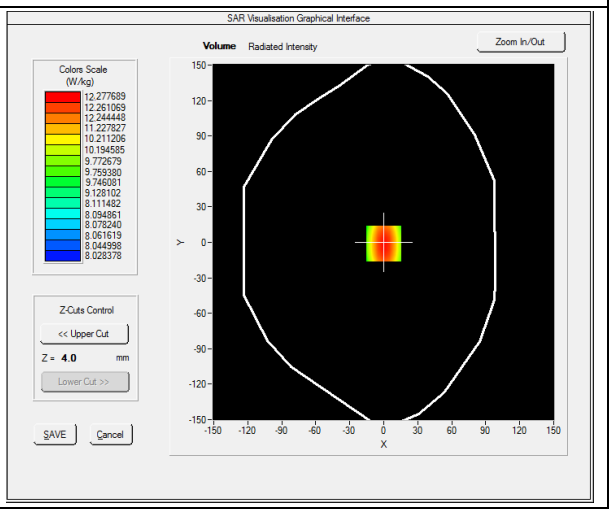
Type: Validation measurement (Fast, 75.00 %)
Date of measurement: 2023-04-17
Measurement duration: 12 minutes 21 seconds
E-field Probe: SSE2 - SN 18/21 EPGO356; ConvF: 2.60; Calibrated: 2022-07-08

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=5mm dy=5mm dz=4mm
Phantom	Validation plane
Device Position	Dipole
Band	CW2450
Signal	CW (Crest factor: 1.0)

B. SAR Measurement Results

Frequency (MHz)	2450.000000
Relative Permittivity (real part)	51.063275
Conductivity (S/m)	1.932149
Power Variation (%)	-1.050000
Ambient Temperature	22.3
Liquid Temperature	22.3

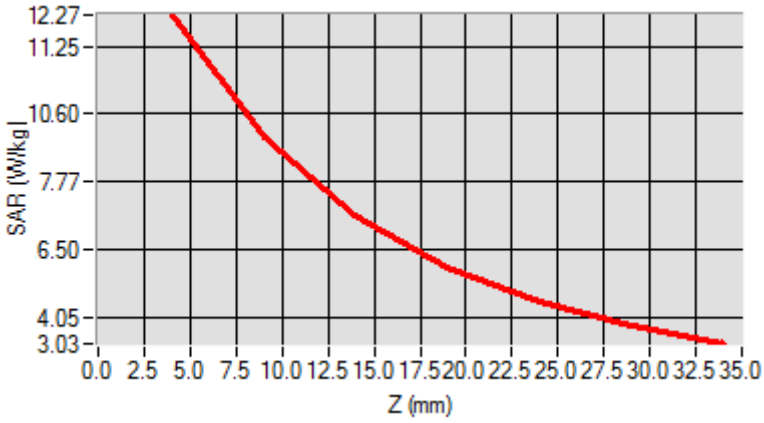
SURFACE SAR	VOLUME SAR
	

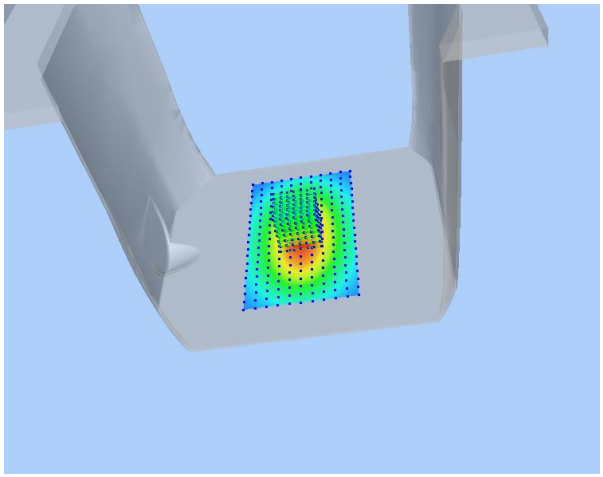
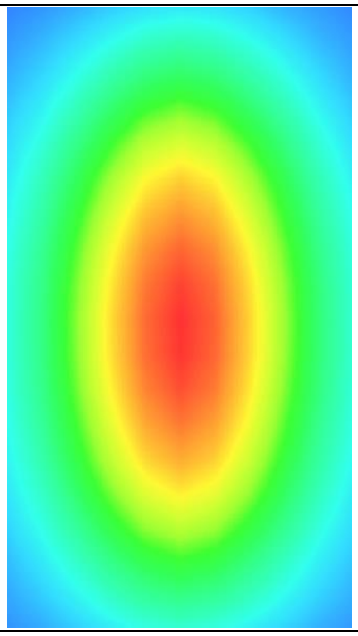
Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	**5.821735**
SAR 1g (W/Kg)	**13.031201**

Z Axis Scan

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**	**24.00**	**29.00**
SAR (W/Kg)	**0.0000**	**12.2365**	**10.3321**	**8.4512**	**6.4365**	**5.6123**	**3.5621**



3D screen shot	**Hot spot position**
	

Annex B. Plots of SAR Measurement

MEASUREMENT 1

Type: Phone measurement (Complete)
Date of measurement: 2023-04-17
Measurement duration: 12 minutes 3 seconds

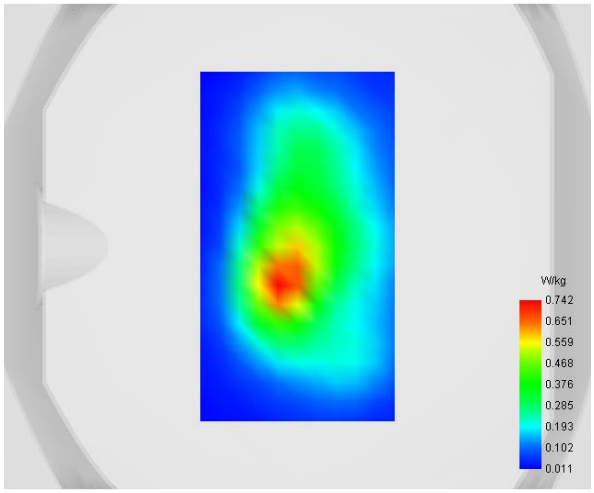
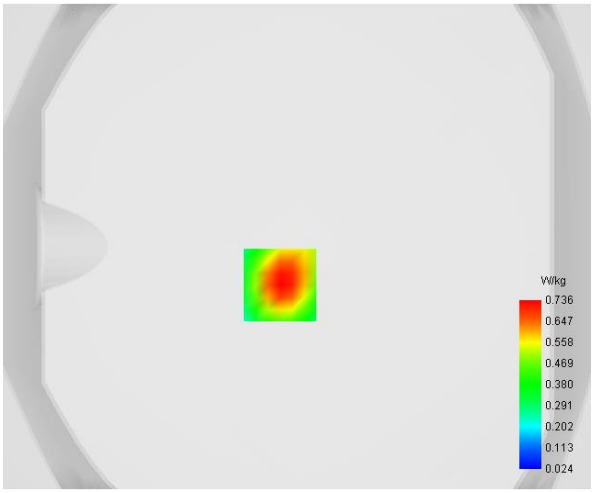
A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=5mm dy=5mm dz=4mm
Phantom	Flat Plane
Device Position	Back
Band	WiFi_802.11b
Channels	Low
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	2412.000000
Relative Permittivity (real part)	40.275268
Conductivity (S/m)	1.801572
Power Variation (%)	-0.450000
Ambient Temperature	22.3
Liquid Temperature	22.3

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

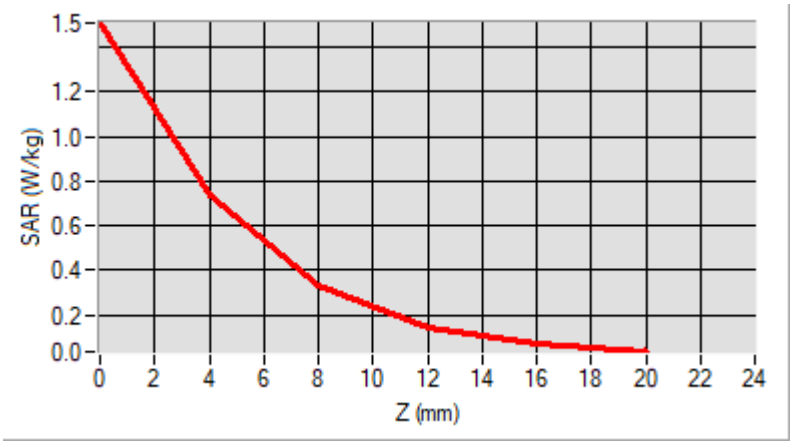
Maximum location: X=-7.00, Y=-16.00

D. SAR 1g & 10g

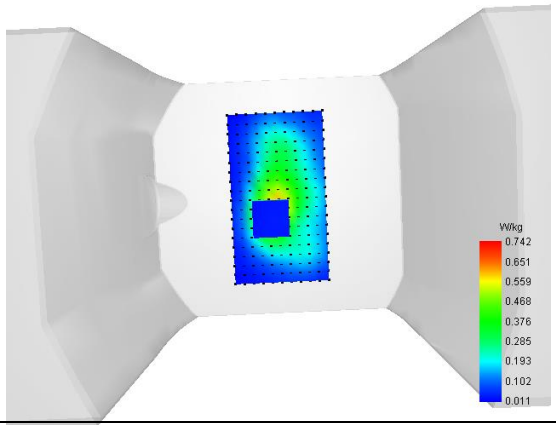
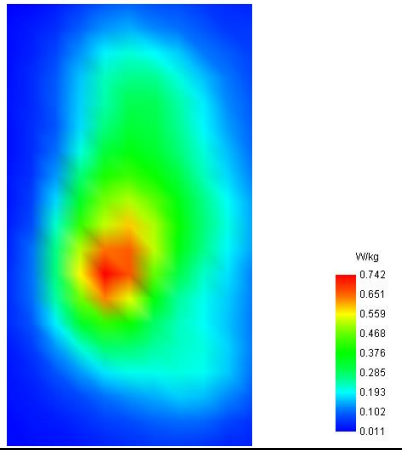
SAR 10g (W/Kg)	**0.326640**
SAR 1g (W/Kg)	**0.701685**

E. Z Axis Scan

Z (mm)	**0.00**	**4.00**	**8.00**	**12.00**	**16.00**
SAR (W/Kg)	**1.5065**	**0.7363**	**0.3335**	**0.1487**	**0.0728**



F. 3D Image

3D screen shot	**Hot spot position**
	

MEASUREMENT 2

Type: Phone measurement (Complete)
Date of measurement: 2023-04-17
Measurement duration: 12 minutes 3 seconds

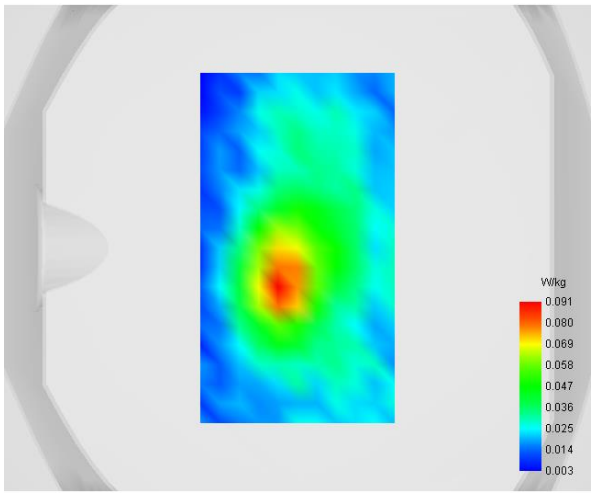
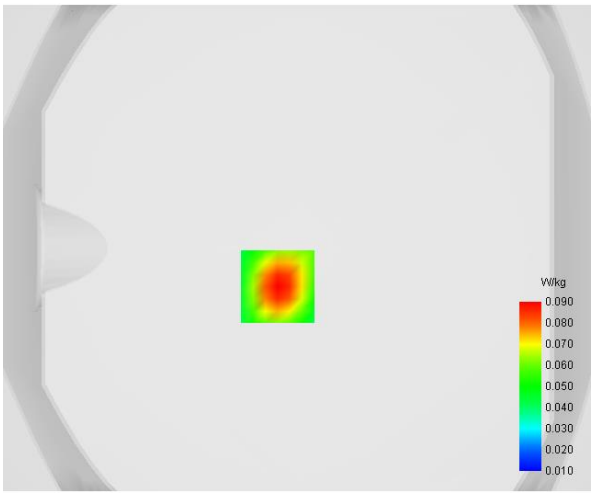
A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=5mm dy=5mm dz=4mm
Phantom	Flat Plane
Device Position	Top
Band	Bluetooth_8DPSK
Channels	High
Signal	Duty Cycle: 1:1

B. SAR Measurement Results

Frequency (MHz)	2480.000000
Relative Permittivity (real part)	51.063299
Conductivity (S/m)	1.934148
Power Variation (%)	-1.620000
Ambient Temperature	22.3
Liquid Temperature	22.3

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

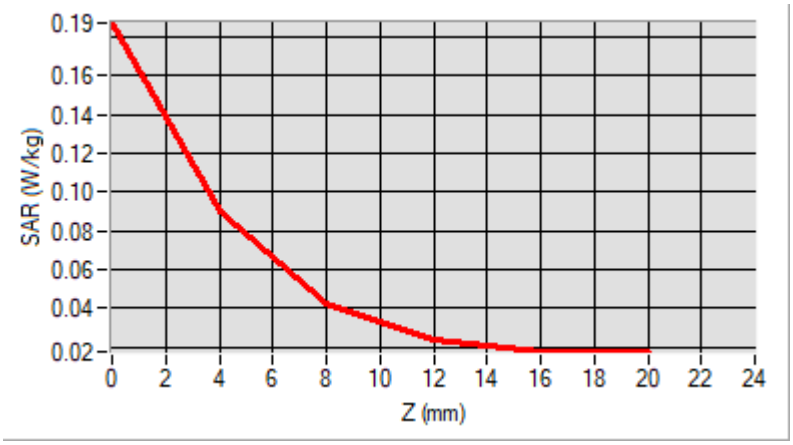
Maximum location: X=-8.00, Y=-16.00

D. SAR 1g & 10g

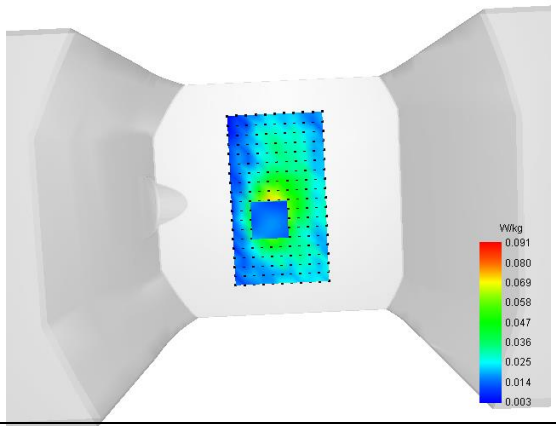
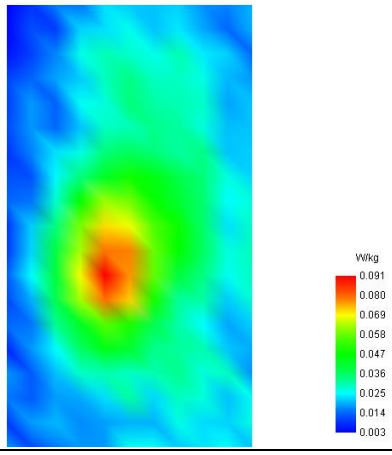
SAR 10g (W/Kg)	**0.045923**
SAR 1g (W/Kg)	**0.086765**

E. Z Axis Scan

Z (mm)	**0.00**	**4.00**	**8.00**	**12.00**	**16.00**
SAR (W/Kg)	**0.1872**	**0.0905**	**0.0427**	**0.0234**	**0.0180**



F. 3D Image

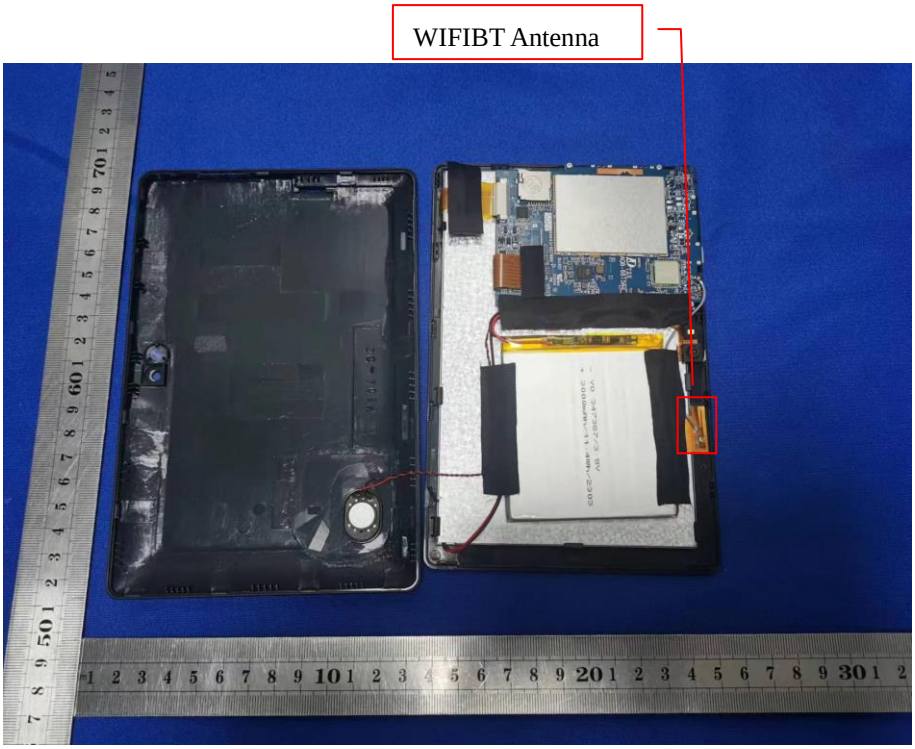
3D screen shot	**Hot spot position**
	

Annex C. EUT Photos

EUT View 1

EUT View 2

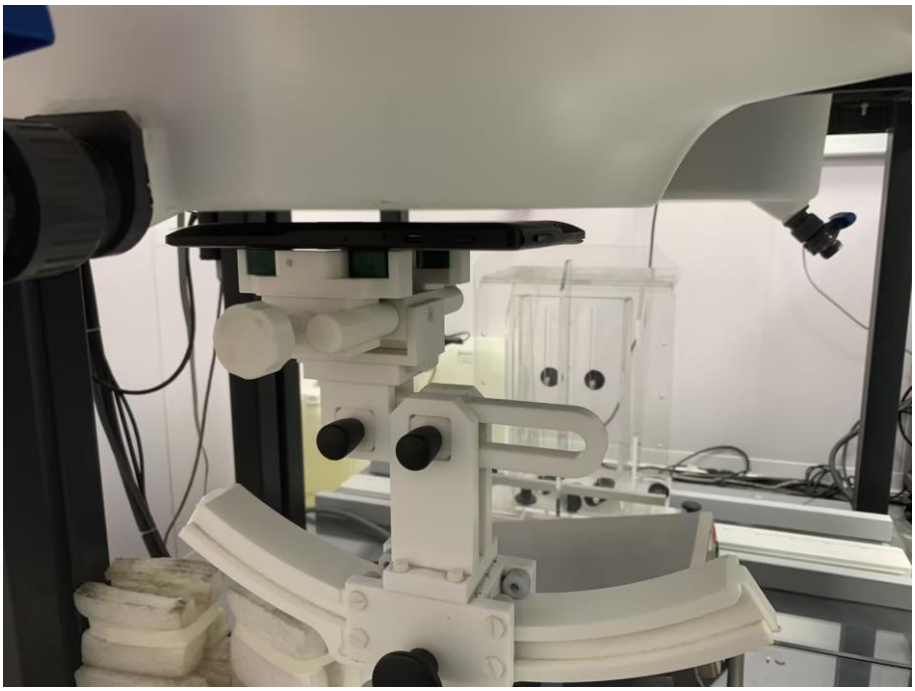
Antenna View



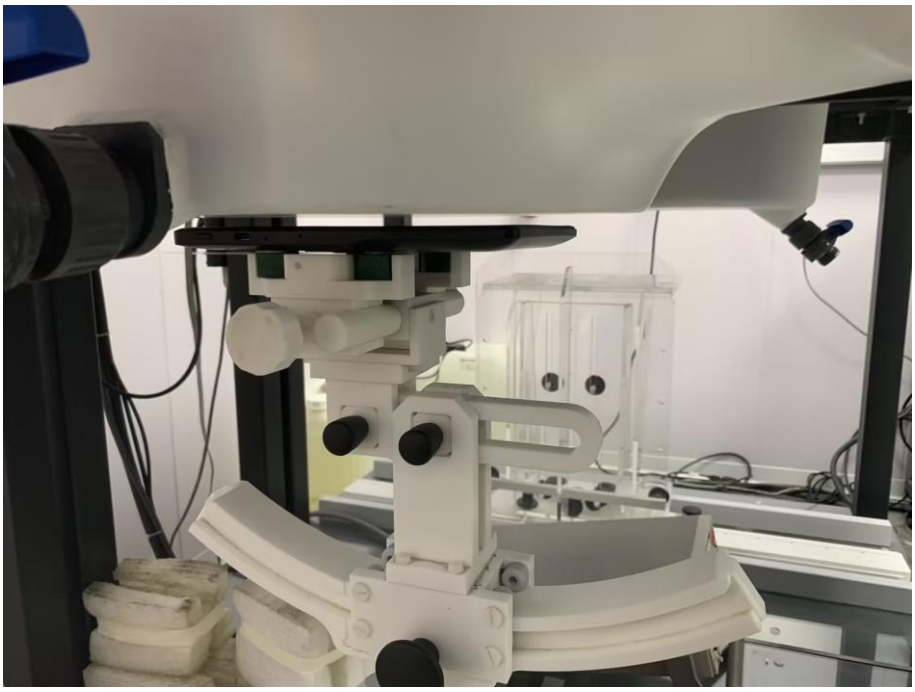
Annex D. Test Setup Photos

Body mode Exposure Conditions
Test distance: 5mm

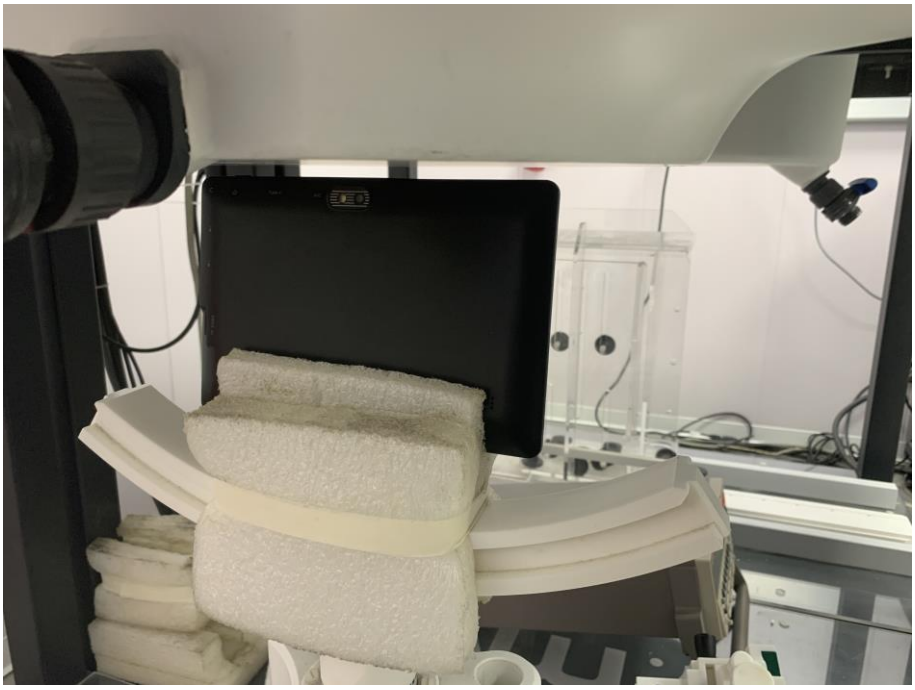
Body Back



Body Front



Body Top



Annex E. Calibration Certificate

Please refer to the exhibit for the calibration certificate

******* END OF REPORT *******